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U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL. 975
OCTOBER
1978

MICRO PHOTO DIVISION
BELL & HOWELL

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

October 3, 1978 Volume 975 Number 1

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THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $300.00 per annum for first-class mailing, also available as fourth-class mail at $200.00; foreign first-class mailing rates will be furnished upon request; single copies each, $4.00 domestic, $5.00 foreign.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

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PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 2, 1978.

Reinstatement of Patent Attorneys and Agents Registered to Practice Before the U.S. Patent and Trademark Office

Any person whose name has been removed from the Register of Attorneys or the Register of Agents pursuant to 37 CFR 1.347 may request reinstatement on the appropriate register. However, where the long lapse of time since removal or other circumstances indicate that the person may no longer be qualified for registration, the Committee on Enrollment may require the person to again show that he or she satisfies the requirements of 37 CFR 1.341(c) and that registration would be appropriate before reinstatement is granted.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Aug. 21, 1978.

Reprint of the September 12, 1978 List of Patentees

The List of Patentees published in the September 12, 1978 OFFICIAL GAZETTE erroneously listed Application Serial Numbers preceded by the letter "B" instead of Patent Numbers. The corrected List of Patentees to whom patents were issued on the 12th day of September 1978 is reprinted in its entirety in the October 3, 1978 OFFICIAL GAZETTE (Vol. 975, No. 1), and is the last Index in this publication.

BRADFORD R. HUTHER,
Deputy Assistant Commissioner for Administration.

Sept. 20, 1978.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,798,213, W. G. Rowell, CHECKING TECHNIQUE AND SYSTEM; **2,798,214,** same, **filed** Mar. 25, 1977, D.C. Mass. (Boston), Doc. 77-1144, *Scully Signal Company* v. *Electronics Corporation of America.* The judgment of the district court is affirmed. **Same, filed** Mar. 18, 1977, D.C. Mass. (Boston), Doc. 77-1133, *Scully Signal Company* v. *Electronics Corporation of America.* The judgment of the district court is affirmed.

2,798,214. (See 2,798,213.)

3,009,235, G. De Mestral, SEPARABLE FASTENING DEVICE, **filed** Feb. 28, 1977, D.C., W.D. Tenn. (Memphis), Doc. C-77-2133, *Velcro S.A. and Actief N.V.* v. *Comfort Care Products, Inc.* Inasmuch as the record indicates that neither plaintiff nor defendant held patent title at the inception of the suit and have failed to establish title in compliance with the court earlier, order, defendant's motion to dismiss is granted. This cause is hereby dismissed, Mar. 14, 1978.

3,087,005, Sabatino and Lowe, METHOD OF MAKING STORAGE BATTERY ELEMENTS; **3,229,339,** same; **3,238,579, same,** METHOD OF MAKING BATTERY ELEMENTS; **3,313,658,** Sabatino and Orlando, STORAGE BATTERY CONSTRUCTION; **3,364,076,** Buttke and Orlando, ALIGNING ARRANGEMENT FOR MULTICELL BATTERIES; **3,388,007,** R. M. Fiandt, A THIN WALL POLYPROPYLENE BATTERY CASE; **3,897,269,** same, STORAGE BATTERY CONSTRUCTION AND METHOD OF MAKING SAME, **filed** July 1, 1977, D.C. Del. (Wilmington), Doc. 77-246, *ESB, Inc.* v. *Globe-Union Inc.*

3,150,840, Briskin, Moore, Pastor, and Rom, TAPE CARTRIDGE, **filed** Feb. 27, 1978, D.C., S.D.N.Y. Doc. 78-C-881, *Minnesota Mining & Manufacturing Co.* v. *Microfilm Products, Inc.*

3,214,936, L. J. Di Peri, DRY-AIR EVAPORATIVE COOLER; **3,877,244,** same, MODULAR DRY-AIR EVAPORATIVE COOLER, **filed** Jan. 30, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-219 WAI, *Leonard J. Di Peri and Di Peri Manufacturing Corp.* v. *American Environmental Systems, Inc. et al.*

3,224,201, J. L. Brunton, SHORING APPARATUS, **filed** Sept. 30, 1974, D.C. Ariz. (Phoenix) Doc. C74-644-PhX, *Speed Shore Corporation* v. *Woudenberg Enterprises, Inc., doing business as Starlite Barricade & Sign.* Final judgment and writ of permanent injunction granted plaintiff, Feb. 22, 1978.

3,229,339. (See 3,087,005.)

3,238,579. (See 3,087,005.)

3,276,784, H. M. Anderson, LAMINATED SKI HAVING A FOAM FILLED HONEYCOMB CORE, **filed** Feb. 9, 1976, D.C., N.D. Ohio (Toledo), Doc. C76-36, *Henry M. Anderson, Jr.* v. *The George Hafelder Co., Inc.* Stipulated settlement endorsed by Judge Young, defendants are permanently enjoining against infringing any claim of said patent during unexpired term, Feb. 24, 1978.

3,285,182, H. E. Pinkerton, DIAPHRAGM METERING PUMP, **filed** Feb. 23, 1978, D.C., E.D.N.Y. (Brooklyn), Doc. 78-C-337, *General Signal Corp.* v. *Harry E. Pinkerton and Fluid Metering, Inc.*

3,313,658. (See 3,087,005.)

3,364,076. (See 3,087,005.)

3,388,007. (See 3,087,005.)

3,396,342, A. E. Feinberg, POWER SUPPLY CIRCUIT FOR CONTINUOUS WAVE MAGNETRON OPERATED BY PULSED DIRECT CURRENT, **filed** Oct. 12, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2555, *Advance Transformer Co.* v. *Sears Roebuck and Co.* The court finds, and it is ordered, adjudged and decreed that this action is and shall be dismissed without prejudice, Jan. 11, 1977.

3,442,623, P. E. Aegidius, METHOD OF DETERMINING THE FAT CONTENT OF MILK AND RELATED PRODUCTS, **filed** Feb. 16, 1978, D.C., S.D.N.Y. Doc. 78-C-713, *A/S N. Foss Electric* v. *On-Line Instrumentation, Inc.*

3,471,011, Iannicelli, Millman, and Stone, PROCESS FOR IMPROVING THE BRIGHTNESS OF CLAYS, **filed** Jan. 27, 1977, D.C.N.J. (Trenton), Doc. 77-173, *Engelhard Minerals and Chemicals Corp.* v. *J. M. Huber Corp.* Voluntarily dismissed by plaintiff, Feb. 14, 1978.

3,630,505, B. R. MacKay, SILVER RECOVERY; **3,692,291,** same; **3,744,995,** same, **filed** Mar. 28, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-1128-WMB, *Byron R. MacKay et al.* v. *West Coast Silver Refining Corp.* Filed Stipulated and consent decree and order thereon that plaintiffs' patents are valid; that defendant, etc. are permanently enjoined from further infringement of plaintiffs patent as consented to herein, Jan. 31, 1978.

3,692,291. (See 3,630,505.)

3,744,995. (See 3,630,505.)

3,826,057, J. W. Franklin, TRUSS SYSTEM; **3,942,618,** same, ROLLERWAY FOR HANDLING MOLDING APPARATUS; **4,005,629,** same, TRUSS BOLT DRIFT PIN, **filed** Oct. 31, 1977, D.C. N. Mex. (Albuquerque), Doc. C-77-685M, *Form-Eze Systems, Inc.* v. *Ecco International, Ltd.* That the defendants are permanently enjoined from infringing Letters Patent including making, using or selling any device that embodies the invention claimed in such Letters Patent, Feb. 28, 1978.

3,848,764, G. Salg, ELECTRICAL BOX STRUCTURE FOR SECUREMENT TO WALL PANELING WITHOUT SEPARATE FASTENERS, **filed** Feb. 1, 1978, D.C., N.D. Ill. (Chicago) Doc. 78c362, *Unarco Industries, Inc.* v. *Ware Fuse Corporation.*

3,877,244. (See 3,214,936.)

3,897,269. (See 3,087,005.)

3,942,618. (See 3,826,057.)

3,954,265. D. L. Taylor, BALANCED GOLF CLUB; **D. 240,715,** R. R. Schwartz, TISSUE BOX COVER OR SIMILAR ARTICLE, **filed** Aug. 8, 1977, D.C., S.D. Calif. (San Diego), Doc. 77-0518-S, *Taylorcraft* v. *Glf. Inc.* The infringement of plaintiff's United States Letters Patent and United States trademarks by defendant will continue to the irreparable harm of plaintiff unless it is enjoined by this court, Sept. 26, 1977.

4,005,629. (See 3,826,057.)

4,034,210, Hill, Dahlstrom, and Fisher, CREDIT CARD CARRIERS AND METHOD OF MANUFACTURE, **filed** Feb. 1, 1978, D.C. Minn. (Minneapolis), Doc. 4-78-C 42, *Data Card Corporation* v. *Dynetics Engineering Corporation.* **Same, filed** Feb. 1, 1978, D.C., N.D. Ill. (Chicago) Doc. 78c343, *Dynetic Engineering Corporation* v. *Continental Illinois National Bank and Trust Company.*

4,036,205, R. W. Hayes, FIREPLACE STOVE, **filed** Mar. 10, 1978, D.C. Conn. (Hartford), Doc. H78-126, *C & D Distributors, Inc.* v. *Hayes-Te Equipment Corporation.*

D. 176,907, W. C. Carmichael, SPECTACLE FRAME OR THE LIKE, **filed** Sept. 17, 1976, D.C.N.J. (Newark), Doc. C-76-1822, *Energy Unlimited, Inc.* v. *George Merkl.* Order dismissing action without costs, Dec. 21, 1977.

D. 197,341, J. E. Cornish, INFANT'S RIDING TOY, **filed** Feb. 17, 1978, D.C.N.J. (Trenton), Doc. C-78-316, *Judson E. Cornish* v. *Frank Caplan.*

D. 215,979, H. P. Post, DISPLAY CABINET FOR MERCHANDISE, **filed** Dec. 5, 1977, D.C. Conn. (Hartford), Doc. H77-623, *M. G. Design Associates, Inc.* v. *Display Workshop Inc. and Harold P. Post.* Notice of dismissal filed by plaintiff on Jan. 27, 1978.

D. 224,898, Wallach and Franzino, CRYOSURGICAL INSTRUMENT, **filed** July 28, 1977, D.C. Conn. (Bridgeport), Doc. B-77-227, *Cryomedics, Inc.* v. *Medical Specialties-Northeast, Inc.*

D. 245,715. (See 3,954,265.)

D. 246,874, L. B. Schwartz, HANDBAG, **filed** Mar. 15, 1978, D.C., S.D.N.Y. Doc. 78-C-1145CHT, *Acricite Co., Inc.* v. *Jaclyn, Inc.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,244,681, Re. S.N. 933,384, Filed Aug. 11, 1978, Cl. 526/64, PRESSURE RELIEF SYSTEM FOR PRESSURE VESSELS, Raymond G. Rohlfing, et al., Owner of Record: *Phillips Petroleum Company, Bartlesville, Okla.,* Attorney or Agent: Donald J. Quigg, et al., Ex. Gp.: 144

3,405,109, Re. S.N. 933,408, Filed Aug. 11, 1978, Cl. 260/64, POLYMERIZATION PROCESS, Raymond G. Rohlfing, Owner of Record: *Phillips Petroleum Company, Bartlesville, Okla.,* Attorney or Agent: Donald J. Quigg, et al., Ex. Gp.: 144

3,814,730, Re. S.N. 928,844, Filed Jul. 27, 1978, Cl. 260/46.5 UA, PLATINUM COMPLEXES OF UNSATURATED SILOXANES AND PLATINUM CONTAINING ORGANOPOLYSILOXANES, Bruce D. Karstedt, Owner of Record: *General Electric Company, Waterford, N.Y.,* Attorney or Agent: Donald J. Vass, et al., Ex. Gp.: 143

3,888,312, Re. S.N. 930,843, Filed Aug. 3, 1978, Cl. 166/308, METHOD AND COMPOSITIONS FOR FRACTURING WELL FORMATIONS, Robert L. Tiner, et al., Owner of Record: *Halliburton Company, Duncan, Okla.,* Attorney or Agent: John H. Tregoning, et al., Ex. Gp.: 354

3,973,912, Re. S.N. 933,209, Filed Aug. 10, 1978, Cl. 23/230 B, MICRO-GASOMETRIC METHOD AND APPARATUS, John E. Trafton, et al., Owner of Record: *American Hospital Supply Corporation, Evanston, Ill.,* Attorney or Agent: Timothy L. Tilton, et al., Ex. Gp.: 171

3,981,671, Re. S.N. 929,685, Filed Jul. 31, 1978, Cl. 425/453, LIQUID REACTION MOLDING PRESS, Bobbie Lee Edwards, Owner of Record: *Cincinnati Milacron Inc., Cincinnati, Ohio,* Attorney or Agent: Daniel P. Worth, et al., Ex. Gp.: 322

3,993,867, Re. S.N. 929,761, Filed Jul. 28, 1978, Cl. 178/58, DIGITAL SINGLE SIGNAL LINE FULL DUPLEX METHOD AND APPARATUS, William R. Blood, Jr., Owner of Record: *Motorola, Inc., Chicago, Ill.,* Attorney or Agent: Marvin A. Glazer, et al., Ex. Gp.: 232

3,996,397, Re. S.N. 925,962, Filed Jul. 18, 1978, Cl. 427/145, THERMOGRAPHIC RECORDING PROCESS, Urbain Leopold Laridon, Owner of Record: *AGFA-Gevaert, Mortsel, Belgium,* Attorney or Agent: William J. Daniel, Ex. Gp.: 162

4,035,510, Re. S.N. 931,093, Filed Aug. 4, 1978, Cl. 424/325, TREATMENT OF ACNE UTILIZING N-METHYLDIETHANOLAMINE, Eugene J. Van Scott, et al., Owner of Record: *Inventors,* Attorney or Agent: Robert E. Le Blanc, et al., Ex. Gp.: 125

4,054,793, Re. S.N. 925,603, Filed Jul. 17, 1978, Cl. 362/127, LIGHTING SYSTEM, Sylvan R. Shemitz, Owner of Record: *Sylvan R. Shemitz and Associates, Inc., West Haven, Conn.,* Attorney or Agent: Anthony P. Delio, et al., Ex. Gp.: 221

4,062,188, Re. S.N. 905,117, Filed May 11, 1978, Cl. 60/599, TURBOCHARGER SYSTEM FOR AN INTERNAL COMBUSTION ENGINE, John Frederick Cutler, Owner of Record: *Wallace Murray Corporation, New York, N.Y.,* Attorney or Agent: Thomas J. Greer, Jr., et al., Ex. Gp.: 343

Patent Cooperation Treaty (PCT): Information for Prospective Applicants

This notice includes information on the following topics of interest to prospective PCT applicants:

I. Fees for the processing of International applications
II. PCT Member States which may be designated in International applications
III. PCT International application transmittal letter for use by applicants
IV. Documents concerning the PCT available from the World Intellectual Property Organization (WIPO)

TOPIC I: FEES FOR THE PROCESSING OF INTERNATIONAL APPLICATIONS

(The amounts of the fees have not been changed. The listing appearing in the May 16, 1978 OFFICIAL GAZETTE is reprinted here for the convenience of the public.)

The Patent and Trademark Office when acting as a Receiving Office and International Searching Authority will charge certain fees for the processing of International applications. The name of the fee, the amount and the date when the fee is due are listed below. Applicants are cautioned that the fee amounts are subject to change. Any changes in the amount of the fees, and the effective dates of the changed amounts will be listed in the OFFICIAL GAZETTE.

As failure to pay in full upon filing those fees due upon filing will result in the withdrawal of the International application, applicants are strongly urged to consult the OFFICIAL GAZETTE for specific fee amounts before filing.

PCT PROCESSING FEES (AS OF 01 JUNE 1978)

Fee	*Amount*	*Time Due*
Transmittal Fee	$35.00	Upon filing.
Search Fee	300.00	Upon filing.
Supplemental Search Fee	200.00 per invention	Within time limit set in notice to applicant.
International Fee		
(1) Basic Fee		
First 30 sheets of application	$165.00	Upon filing.
Each sheet over 30	3.00	Upon filing.
(2) Designation Fee		
Each State for which a patent is sought, or, each group of States for which the same Regional patent is sought.	40.00	12 months from priority date or, if no priority date, 12 months from the International application filing date.

TOPIC II: PCT MEMBER STATES WHICH MAY BE DESIGNATED IN INTERNATIONAL APPLICATIONS

Twenty (20) States have ratified or acceded to the Patent Cooperation Treaty. Their names and the date from which these states may be designated in International applications will be printed in the OFFICIAL GAZETTE.

It should be noted that Japan may be designated in international applications filed on and after 01 October 1978, and that Denmark may be designated in international applications filed after 01 December 1978.

The footnotes to the listing of States indicate those States for which regional patent protection is available and any restrictions on the availability of patent protection using PCT.

Applicants are urged to consult also the "PCT Applicant's Guide" and the "Gazette of International Patent Applications" published by the World Intellectual Property Organization (WIPO) as well as the national laws of the Member States for detailed information regarding the availability of protection other than patents in each Member State.

State	*Ratification or Accession*	*Date of Ratification or Accession*	*Date From Which State May Be Designated*
(1) Central African Empire*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar	Ratification	27 March 1972	01 June 1978
(4) Malawi	Accession	16 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	29 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978

* Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member states. A designation of any state is an indication that all OAPI states have been designated. Note: only one designation fee is due regardless of the number of OAPI member states designated.

** Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member States are available through PCT, *except for France*, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due if the regional patent protection is sought for several States.

TOPIC III: PCT INTERNATIONAL APPLICATION TRANSMITTAL LETTER

A PCT International application transmittal letter, form PTO–1382, is now available free of charge for applicants to use when filing PCT International applications with the United States Receiving Office. The form, a copy of which is reproduced below, is intended to simplify the filing of PCT International applications by providing a one-page letter which covers the most common requests and concerns of applicants. Specifically covered are:

1) Requests under 37 CFR 1.451 for preparation and transmittal to the International Bureau of certified copies of U.S. national applications, the priority of which is claimed in International applications;
2) Requests for transmittal of the Record Copy by the applicant to the International Bureau under 37 CFR 1.461;
3) Authorizations for any required Supplemental search fees to be charged to a deposit account subject to oral confirmation of the authorization.
4) Statements of preference and authorization for any refund or reimbursement of the Search fee or Supplemental search fee to be credited to a deposit account or to be refunded by U.S. Treasury Department check;
5) Indications of information concerning differences in disclosure, if any, between the International application and related applications to assist in determining any foreign transmittal licensing requirements as well as for other purposes; and
6) Requests for foreign transmittal license.

Copies of the PCT International application transmittal letter, form PTO–1382, may be ordered by mail addressed to the Commissioner of Patents and Trademarks, Box PCT, Washington, D.C., 20231, or by telephone at (703) 557–2003. Copies are also available in Crystal Plaza Building 2, Room 4–C–08, and in the lobby of Crystal Plaza Building 3.

TOPIC IV: DOCUMENTS CONCERNING THE PCT AVAILABLE FROM THE WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO)

Prices in U.S. dollars per copy, including mailing charges valid until at least 31 October 1978.

	By surface mail	By airmail
PCT Applicant's Guide	First copy free of charge. For each additional copy: $4.00	$8.00
PCT (Treaty and Regulations)	4.00	5.00
PCT Gazette:		
Subscription for 1978	50.00	60.00
Single issues in 1978	6.00	8.00
Items of Non-Patent Literature under PCT Rule 34.1(b)(iii) (included in the PCT Gazette No. 2) (previously document PCT/INT/3)	6.00	8.00
Administrative Instructions under the Patent Cooperation Treaty (included in the PCT Gazette No. 1)	6.00	8.00
As a separate A4 brochure	3.00	4.00
With its Annexes (all PCT Forms) (previously document PCT/INT/2)	23.00	28.00
Receiving Office Guidelines for the Processing of International Applications under the Patent Cooperation Treaty (document PCT/INT/4)	3.00	4.00
Guidelines for International Search to be Carried Out under the Patent Cooperation Treaty (document PCT/INT/5)	2.00	2.00
Guidelines for International Preliminary Examination to be Carried Out Under the Patent Cooperation Treaty (document PCT/INT/6)	3.00	4.00
Guidelines for Drawings under the Patent Cooperation Treaty (document PCT/INT/7)	First copy free of charge. For each additional copy: 0.50	1.00
Guidelines for the Preparation of Abstracts under the Patent Cooperation Treaty (document PCT/INT/8)	First copy free of charge. For each additional copy: 0.50	1.00
Guidelines for Publication under the Patent Cooperation Treaty (document PCT/INT/9)	4.00	5.00
Time Limits under the Patent Cooperation Treaty (document PCT/INT/10)	6.00	6.00
Records of the Washington Diplomatic Conference (1970)	63.00	76.00

Mode of Ordering and Paying

Orders should be addressed to:
WIPO—World Intellectual Property Organization

If by mail:
34, Chemin des Colombettes
1211 Geneva 20
Switzerland

If by telex:
22376 WIPO CH

If by telephone:
99 91 11 (ask for the PCT Division)

Payments may be effected by check or by transfer to our account at the Swiss Credit Bank, 1211 Geneva 11 (Switzerland).

RENE D. TEGTMEYER,
Sept. 12, 1978. *Assistant Commissioner for Patents.*

PCT INTERNATIONAL APPLICATION TRANSMITTAL LETTER	DATE:
REGARDING THE INTERNATIONAL APPLICATION OF	DOCKET OR REFERENCE NUMBER
ENTITLED	

To the United States Receiving Office (RO/US):

Accompanying this transmittal letter is the above-identified International application, including a completed request form (PCT/RO/101). Please process the application according to the provisions of the Patent Cooperation Treaty.

The following requests are made of the RO/US:

1. ☐ CERTIFIED COPY PREPARATION—Please prepare a certified copy of the priority document for the above-identified International application and transmit the certified copy to the International Bureau according to the provisions of 37 CFR 1.451.

IDENTIFICATION OF PRIORITY DOCUMENT	U.S. SERIAL NUMBER	U.S. FILING DATE	APPLICANT

To cover the cost of copy preparation and certification,

☐ a (check) (money order) in the amount of $ _____ is attached to this transmittal letter.

☐ the RO/US is hereby authorized to charge the following deposit account no.: _____.

2. ☐ ALTERNATE TRANSMITTAL OF RECORD COPY—As the accompanying International application is being filed within 11 months of the claimed priority date, according to the provisions of 37 CFR 1.461,

☐ hold the Record Copy available for pickup by 10 days before the expiration of 13 months from the claimed priority date in room 2-4C08, Crystal Plaza, Arlington, VA.

☐ mail the Record Copy to me by 15 days before the expiration of 13 months from the priority date.

3. ☐ SUPPLEMENTAL SEARCH FEES—Please charge any Supplemental Search fees that may be required by the United States International Searching Authority (ISA/US) to deposit account no.: _____.

I understand that this authorization is subject to my oral confirmation thereof in each instance and that it in no way limits my right to submit a protest against payment of the Supplemental Search fees, but is merely an administrative aid to assure that the ISA/US may timely complete the Search Report.

4. ☐ REFUND OF SEARCH FEES/SUPPLEMENTAL SEARCH FEES—If the ISA/US determines that a refund or reimbursement of the Search fee and/or any Supplemental Search fees is warranted due to the benefit of a prior search, or due to a decision that applicant's protest is justified, such refund is

☐ to be in the form of a U.S. Treasury check.

☐ authorized to be credited to the following deposit account no.: _____.

5. ☐ DISCLOSURE INFORMATION—In order to assist in screening the accompanying International application for purposes of determining whether a license for foreign transmittal should and could be granted and for other purposes, the following information is supplied:

A. ☐ There is no prior filed application relating to this invention.

B. ☐ There is a prior application, serial number _____ filed on _____ which contains subject matter that is

1. ☐ substantially identical to that of the accompanying International application.

2. ☐ less than that of the accompanying International application. The additional subject matter of the International application appears on page(s) and line(s) _____.

3. ☐ more than that of the accompanying International application.

C. ☐ Disclosure information cannot be covered by the language of Points 5A or 5B above due to the involvement of several prior applications or for other reasons. A separate sheet on which the disclosure information is explained is attached to this transmittal letter.

6. ☐ REQUEST FOR FOREIGN TRANSMITTAL LICENSE—According to the provisions of 35 U.S.C. 184 and 37 CFR 5.11, a license to transmit the accompanying International application to foreign agencies or international authorities is hereby requested.

SIGNER IS THE:	NAME OF SIGNER (typed)
☐ APPLICANT ☐ COMMON REPRESENTATIVE ☐ (ATTORNEY) (AGENT) REG. NO. _____	SIGNATURE

PTO-1382 (6/78) U.S. DEPT. of COMM.-Pat. & TM Off.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 3, 1978

Re.29,410	4,065,298	4,080,455	4,085,142
Re.29,603	4,065,413	4,081,250	4,085,153
3,644,274	4,065,701	4,081,490	4,085,300
3,644,384	4,066,483	4,081,608	4,085,350
3,723,597	4,067,969	4,081,652	4,085,730
3,857,712	4,069,063	4,081,768	4,085,862
3,858,176	4,069,939	4,081,806	4,085,909
3,880,817	4,070,294	4,081,879	4,086,151
3,887,400	4,071,145	4,081,882	4,086,186
3,902,047	4,071,627	4,082,019	4,086,262
3,930,994	4,071,725	4,082,129	4,086,302
3,951,250	4,071,736	4,082,178	4,086,531
3,954,469	4,072,541	4,082,358	4,086,559
3,962,549	4,072,542	4,082,412	4,086,613
4,004,873	4,072,746	4,082,692	4,086,772
4,007,451	4,072,750	4,082,782	4,086,941
4,010,033	4,073,148	4,082,839	4,087,036
4,029,433	4,073,307	4,082,841	4,087,380
4,030,015	4,073,662	4,082,858	4,087,414
4,030,026	4,073,797	4,082,946	4,087,576
4,036,589	4,073,818	4,083,047	4,087,584
4,040,558	4,073,930	4,083,070	4,087,818
4,041,641	4,074,795	4,083,095	4,088,067
4,042,130	4,074,997	4,083,119	4,088,123
4,042,403	4,075,006	4,083,149	4,088,307
4,043,095	4,075,487	4,083,232	4,088,418
4,043,364	4,076,519	4,083,385	4,088,433
4,043,630	4,076,786	4,083,561	4,088,575
4,044,029	4,076,826	4,083,596	4,088,621
4,046,541	4,076,886	4,083,698	4,088,736
4,047,595	4,076,962	4,083,889	4,088,870
4,048,230	4,077,219	4,083,941	4,089,010
4,053,223	4,077,338	4,084,123	4,089,187
4,055,541	4,078,507	4,084,154	4,089,516
4,058,634	4,078,934	4,084,254	4,090,302
4,058,738	4,079,558	4,084,293	4,090,517
4,061,779	4,080,226	4,084,355	4,090,941
4,062,909	4,080,275	4,084,988	4,091,388
4,064,137	4,080,290	4,085,057	
4,065,078	4,080,364	4,085,058	

Disclaimers

3,217,546.—*Ray R. Cordell* and *Wayne F. Gustafson*, Minneapolis, Minn. AUTOMATIC GRAIN SAMPLING DEVICE. Patent dated Nov. 16, 1965. Disclaimer filed Mar. 24, 1977, by the assignee, *Gustafson, Inc.*

Hereby enters this disclaimer to claims 1–10 of said patent.

3,855,607.—*Henry Kressel*, Elizabeth, N.J., *Harry Francis Lockwood*, New York, N.Y., and *Frank Zygmunt Haavrylo*, Trenton, N.J. SEMICONDUCTOR INJECTION LASER WITH REDUCED DIVERGENCE OF EMITTED BEAM. Patent dated Dec. 17, 1974. Disclaimer filed July 28, 1978, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6 and 8, of said patent.

3,949,826.—*Noah A. Shealy*, Niles, Mich. LUBRICATION SYSTEM FOR TRUNNION MOUNTING AXLE. Patent dated Apr. 13, 1976. Disclaimer filed Aug. 11, 1978, by the assignee, *Clark Equipment Company.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

4,019,372.—*Erwin C. Parkell*, Galena, Md., and *John A. Stamm*, Wilmington, Del. CHROMATOGRAPHIC DETECTOR SYSTEM. Patent dated Apr. 26, 1977. Disclaimer filed Aug. 21, 1978, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to all claims of said patent.

4,052,590.—*Richard F. Anderl*, Chippewa Falls, and *Lawrence J. Tienor*, Eau Claire, Wis. ELECTRIC APPLIANCE WITH INTERMITTENTLY STAKED SHEATHED HEATING ELEMENT. Patent dated Oct. 4, 1977. Disclaimer filed Mar. 20, 1978, by the assignee, *National Presto Industries, Inc.*

Hereby enters this disclaimer to claim 4 of said patent.

4,058,949.—*Norman A. Bellem*, Kansas City, Mo. BUILDING ROOF INSULATION. Patent dated Nov. 22, 1977. Disclaimer filed Aug. 8, 1978, by the assignee, *Butler Manufacturing Company.*

Hereby enters this disclaimer to claims 1 and 5 through 15 of said patent.

Disclaimer and Dedication

3,663,880.—*Andrew Gabor*, Danville, Calif. APPARATUS FOR CONTROLLING THE RELATIVE POSITION BETWEEN TWO RELATIVELY MOVABLE MEMBERS. Patent dated May 16, 1972. Disclaimer and dedication filed June 21, 1978, by the assignee, *Xerox Corporation.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

Patents Available for Licensing or Sale

3,734,241. DRIVE ON NO SLIP BLOCK. Chester A. Hale, 137 Bandy, Apt. 4, West Covina, Calif. 91790.

3,823,723. FALSE EYE BROUS. Marie O. Miller, 4165–A Parkway, Sacramento, Calif. 95823.

4,068,345. SHOWER CURTAIN ROD ASSEMBLY. Riloga-Werk Julius Schmidt, Germany. Correspondence to: Michael J. Stricker, 360 Lexington Ave., New York, N.Y. 10017.

4,076,201. ADJUSTABLE CHAIR SPINDLE ASSEMBLY. Walter E. Hudnall, 2157 W. 236th Place, Torrance, Calif. 90501.

4,105,246. MULTI-PURPOSE DASHBOARD UNIT. Gerald M. Trumbull, 522 Irish Settlement Road, Freeville, N.Y. 13068.

The General Electric Company is prepared to grant nonexclusive licenses under the following 24 patents upon reasonable terms to domestic manufacturers.

Application for license may be addressed to the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,562,066. DIE STRUCTURE FOR HOT STAMPING MACHINE.

3,882,797. EXPANSION GRATE FOR INCINERATOR.

3,891,086. COMPOSTE PACKAGE.

3,941,339. MOUNTING ARRANGEMENT FOR FAN MOTOR.

3,952,369. HINGE STRUCTURE.

3,964,272. AIR CONDITIONING MOUNTING SYSTEM FOR A MOBILE HOME.

4,067,256. FASTENER ANCHOR FORMED IN THERMOPLASTIC SHEET.

4,067,628. FOAM-INSULATED SIDE-BY-SIDE REFRIGERATOR.

4,070,728. VERTICAL ADJUSTABLE DOOR HINGE ASSEMBLY.

4,072,374. SIDE FASTENER CLIP FOR A PLATE-LIKE MEMBER.

4,074,987. DEFROST SENSING SYSTEM FOR FREEZER COMPARTMENT.

4,075,864. AIR CONDITIONING FAN CONTROL.

4,081,997. CLOTHES DRYER AIR BLOW TEST DEVICE AND METHOD.

4,086,053. CLOTHES DRYER GAS HEATER.

4,087,987. DEFROST PRESSURE CONTROL SYSTEM.

Applications for license may be addressed to Patent Counsel, Turbine Patent Operation, General Electric Company, 1 River Road, Building 1SA–5th Floor, Schenectady, N.Y. 12345.

3,991,333. WINDING SUPPORT STRUCTURE FOR SUPERCONDUCTING ROTOR.

3,991,587. METHOD OF SUPPLYING CRYOGENIC FLUID THROUGH A TRANSFER JOINT EMPLOYING A STEPPED BAYONET RELATIVE-MOTION GAP.

3,991,588. CRYOGENIC FLUID TRANSFER JOINT EMPLOYING A STEPPED BAYONET RELATIVE-MOTION GAP.

3,995,180. GENERATOR ROTOR OUTLETS FOR INCREASED VENTILATION.

4,018,059. CRYOGENIC FLUID TRANSFER JOINT EMPLOYING GASEOUS SEALS.

4,048,529. FLOW CONTROL DEVICE FOR SUPERCONDUCTIVE ROTOR REFRIGERANT.

4,054,809. STATOR CORE END MAGNETIC SHIELD FOR LARGE A.C. MACHINES.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Building #500, Room 218, Schenectady, N.Y. 12345.

3,967,353. GAS TURBINE BUCKET-ROAT SIDEWALL PIECE SEALS.

Applications for license may be addressed to Division Patent Counsel, Switchgear and Distribution Transformer Division, General Electric Company, 6901 Elmwood Avenue, Philadelphia, Pa. 19142.

3,814,885. METHOD OF DETECTING A LEAK IN A VACUUM INTERRUPTER LOCATED INSIDE A HOUSING CONTAINING PRESSURIZED GAS.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y. 10036.

Re. 29,662. RARE EARTH ACTIVATED LANTHANUM AND LUTETIUM OXY-CHALCOGENIDE PHOSPHORS.

4,093,152. DISC CADDY AND DISC PLAYER SYSTEM THEREFOR.

4,093,959. CHROMINANCE SIGNAL TRANSCODING APPARATUS.

4,094,582. LIQUID CRYSTAL MATRIX DISPLAY DEVICE WITH TRANSISTORS.

4,094,584. FORMAT FOR COLOR DIFFRACTIVE SUBTRACTIVE FILTERS.

4,095,011. ELECTROLUMINESCENT SEMICONDUCTOR DEVICE WITH PASSIVATION LAYER.

4,095,155. DIRECTION REVERSING DIRECT CURRENT MOTORS AND THEIR CONTROL.

4,095,164. VOLTAGE SUPPLY REGULATED IN PROPORTION TO SUM OF POSITIVE- AND NEGATIVE-TEMPERATURE-COEFFICIENT OFFSET VOLTAGES.

4,095,255. CONTROLLED OSCILLATOR WITH INCREASED IMMUNITY TO PARASITIC CAPACITANCE.

4,095,281. RANDOM ACCESS-ERASABLE READ ONLY MEMORY CELL.

4,095,876. LIQUID CRYSTAL DEVICE AND METHOD FOR PREPARING SAME.

4,096,387. ULTRAVIOLET RADIATION DETECTOR.

4,096,401. SENSE CIRCUIT FOR AN MNOS ARRAY USING A PAIR OF CMOS INVERTERS CROSS-COUPLED VIA CMOS GATES WHICH ARE RESPONSIVE TO THE INPUT SENSE SIGNALS.

4,096,415. SWITCHED VERTICAL DEFLECTION CIRCUIT.

4,096,416. VERTICAL DEFLECTION CIRCUIT WITH RETRACE SWITCH PROTECTION.

4,096,451. HIGH SIGNAL-TO-NOISE RATIO NEGATIVE RESISTANCE CRYSTAL OSCILLATOR.

4,096,454. AMPLITUDE AND DELAY EQUALIZATION OF SURFACE ACOUSTIC WAVE FILTERS IN AMPLITUDE MODULATION SYSTEM.

4,096,512. MONOLITHIC LIGHT DETECTOR.

4,096,513. COLOR VIDEO SIGNAL PROCESSING CIRCUITS.

4,096,516. ELECTRONIC SIGNAL PROCESSING APPARATUS.

4,096,517. VIDEO AMPLIFIER.

4,096,518. AVERAGE BEAM CURRENT LIMITER.

4,096,528. STANDARD/NONSTANDARD INTERNAL VERTICAL SYNC PRODUCING APPARATUS.

4,096,756. VARIABLE ACOUSTIC WAVE ENERGY TRANSFER-CHARACTERISTIC CONTROL DEVICE.

4,097,117. OPTICAL COUPLER HAVING IMPROVED EFFICIENCY.

4,097,118. OPTICAL WAVEGUIDE COUPLER EMPLOYING DEFORMED SHAPE FIBER-OPTIC CORE COUPLING PORTION.

4,097,314. METHOD OF MAKING A SAPPHIRE GATE TRANSISTOR.

4,097,618. METHOD OF TRANSFERRING A SURFACE RELIEF PATTERN FROM A POLY(1-METHYL-1-CYCLOPROPENE SULFONE) LAYER TO A NON-METALLIC INORGANIC LAYER.

4,097,636. METALLIZED DEVICE.

4,097,761. IMAGE TUBE CATHODE.

4,097,770. SCR TRIGGER CIRCUIT.

4,097,775. INFRARED SENSITIVE PHOTOCONDUCTIVE PICKUP TUBE.

4,097,810. PHASE LOCKED LOOP TUNING SYSTEM WITH A PRESET CHANNEL MEMORY.

4,097,889. COMBINATION GLASS/LOW TEMPERATURE DEPOSITED Si W N X H Y O Z PASSIVATING OVERCOAT WITH IMPROVED CRACK AND CORROSION RESISTANCE FOR A SEMICONDUCTOR DEVICE.

4,097,895. MULTILAYER OPTICAL RECORD.

4,097,896. SYNC SEPARATOR CIRCUIT.

4,097,899. VIDEO RECORD PLAYER SWITCHING SYSTEM.

4,097,920. HARDWARE CONTROL FOR REPEATING PROGRAM LOOPS IN ELECTRONIC COMPUTERS.

4,098,030. METHOD FOR FORMING A NARROWED-ELECTRODE PICKUP STYLUS FOR VIDEO DISC SYSTEMS.

4,098,301. METHOD TO PROVIDE HOMOGENEOUS LIQUID CRYSTAL CELLS CONTAINING A DYESTUFF.

4,098,511. VIDEO DISC HANDLING SYSTEM FOR A VIDEO DISC PLAYER.

4,099,041. SUSCEPTOR FOR HEATING SEMICONDUCTOR SUBSTRATES.

4,099,085. PARALLEL VANE STRUCTURE FOR A FLAT DISPLAY DEVICE.

4,099,087. GUIDED BEAM FLAT DISPLAY DEVICE WITH FOCUSING GUIDE ASSEMBLY MOUNTING MEANS.

4,099,187. SHADOW MASK COLOR PICTURE TUBE HAVING A MOSAIC COLOR SCREEN WITH IMPROVED TOLERANCES.

4,099,372. TIMEKEEPING APPARATUS WITH POWER LINE DROPOUT PROVISIONS.

4,099,417. METHOD AND APPARATUS FOR DETECTING ULTRASONIC ENERGY.

4,099,724. AUTOMATIC DISC WIPING APPARATUS.

4,099,924. APPARATUS IMPROVEMENTS FOR GROWING SINGLE CRYSTALLINE SILICON SHEETS.

4,099,997. METHOD OF FABRICATING A SEMICONDUCTOR DEVICE.

4,100,313. PROCESS FOR FORMING AN OPTICAL WAVEGUIDE.

4,100,449. UNIFORM FILAMENT AND METHOD OF MAKING THE SAME.

4,100,465. TURNTABLE SPEED CONTROL SYSTEM.

4,100,508. SEMICONDUCTOR LASER HAVING FUNDAMENTAL LATERAL MODE SELECTIVITY.

4,100,518. ECCENTRIC CONVERGENCE APPARATUS FOR IN-LINE BEAM CATHODE RAY TUBES.

4,100,561. PROTECTIVE CIRCUIT FOR MOS DEVICES.

4,100,565. MONOLITHIC RESISTOR FOR COMPENSATING BETA OF A LATERAL TRANSISTOR.

4,101,402. ADHERENCE OF METAL FILMS TO POLYMERIC MATERIALS.

4,101,802. FLAT DISPLAY DEVICE WITH BEAM GUIDE.

4,101,814. SIDE PINCUSHION DISTORTION CORRECTION CIRCUIT.

4,101,815. HORIZONTAL DEFLECTION CIRCUIT WITH HIGH VOLTAGE SELECTION CAPABILITY.

4,101,823. METHOD AND APPARATUS FOR MEASURING CATHODE EMISSION SLUMP.

4,101,907. OVERCOAT STRUCTURE FOR OPTICAL VIDEO DISC.

4,101,926. TELEVISION SYNCHRONIZING APPARATUS.
4,102,760. OPTICAL COUPLER.
4,102,683. NONREFLECTING PHOTORESIST PROCESS.
4,103,183. QUASI-STATIC INVERTER CIRCUIT.
4,103,185. MEMORY CELLS.
4,103,188. COMPLEMETARY-SYMMETRY AMPLIFIER.
4,103,203. WAFER MOUNTING STRUCTURE FOR PICK-UP TUBE.
4,103,204. FLAT DISPLAY DEVICE WITH BEAM GUIDE.
4,103,205. FLAT DISPLAY DEVICE WITH BEAM GUIDE.
4,103,219. SHUNT VOLTAGE REGULATOR.
4,103,228. MEHOD FOR DETERMINING WHETHER HOLES IN DIELECTRIC LAYERS ARE OPENED.
4,103,246. SWITCHABLE CURRENT AMPLIFIER.
4,103,262. DUAL CHANNEL TRANSMISSION OF MICROWAVE POWER THROUGH AN INTERFACE OF RELATIVE ROTATION.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensees information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE ARMY
Office of Judge Advocate, Patent Division, RM 2C-455
Pentagon, Washington, D.C. 20314

Patent 3,905,129. True Dimensioning and Tolerancing Demonstrator. Filed May 24, 1974. Patented Sept. 16, 1975. Not available NTIS.

Patent 4,034,285. Superheterodyne Noise Measuring Discriminators. Filed Aug. 30, 1976. Patented July 5, 1977. Not available NTIS.

Patent 4,035,088. High Energy Laser Beam Sampling Meter. Filed Aug. 5, 1975. Patented July 12, 1977. Not available NTIS.

Patent 4,036,170. Means for Applying Zinc Stearate Coatings to the Bore Surfaces of Ferrous Alloy Tubes. Filed Oct. 10, 1975. Patented July 19, 1977. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 743,375. Charge Exchange System. Filed Nov. 19, 1976.

Patent 3,932,657. Liposome Encapsulation of Chelating Agents. Filed Nov. 12, 1973. Patented Jan. 13, 1976. Not available NTIS.

Patent 4,017,163. Angle Amplifying Optics Using Plane and Ellipsoidal Reflectors. Filed Apr. 16, 1976. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,017,578. Method for Producing Laser Targets. Filed June 12, 1975. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,021,280. Method of Making Foam-Encapsulated Laser Targets. Filed Sept. 2, 1975. Patented May 3, 1977. Not available NTIS.

Patent 4,031,921. Hydrogen-Isotope Permeation Barrier. Filed Sept. 9, 1975. Patented June 28, 1977. Not available NTIS.

Patent 4,034,032. Method for Foam Encapsulating Laser Targets. Filed Sept. 2, 1975. Patented July 5, 1977. Not available NTIS.

Patent 4,038,125. Method for Mounting Laser Fusion Targets for Irradiation. Filed June 18, 1975. Patented July 26, 1977. Not available NTIS.

Patent 4,054,686. Method for Preparing High Transition Temperature Nb Sub 3 Ge Superconductors. Filed June 26, 1975. Patented Oct. 18, 1977. Not available NTIS.

Patent 4,055,782. Method of Enhancing Cyclotron Beam Intensity. Filed Apr. 22, 1977. Patented Oct. 25, 1977. Not available NTIS.

Patent 3,930,405. Method and Means for Measuring Acoustic Emissions. Filed Sept. 17, 1974. Patented Jan. 6, 1976. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research—
Code 302, Arlington, Va. 22217

Patent 4,066,819. Method of Bonding Gold Films to Non-Electrically Conducting Oxides and Product Thereby Obtained. Filed Oct. 21, 1971. Patented Jan. 3, 1978. Not available NTIS.

Patent 4,073,590. Laser Total Reflectometer. Filed Nov. 18, 1976. Patented Feb. 14, 1978. Not available NTIS.

Patent 4,076,524. Reduction in Swelling of Iron Caused by Irradiation. Filed Nov. 15, 1973. Patented Feb. 28, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP-2, Washington, D.C. 20546

Patent application 706,073. Method of Controlling Defect Orientation in Silicon Crystal Ribbon Growth. Filed July 16, 1976.

Patent application 894,213. Method and Apparatus for Holding Two Separate Metal Pieces Together for Welding. Filed Apr. 6, 1978.

Patent application 897,830. Active Nutation Controller. Filed Apr. 19, 1978.

Patent application 900,842. High-Temperature Microphone System. Filed Apr. 28, 1978.

Patent application 900,843. Combined Solar Collector and Energy Storage System. Filed Apr. 28, 1978.

Patent application 897,831. Portable Heatable Container. Filed Apr. 19, 1978.

Patent application 897,832. Underground Mineral Extraction. Filed Apr. 19, 1978.

Patent application 900,848. Negative Ion Source. Filed Apr. 28, 1978.

Patent application 901,054. Limited Scan Dual-Band High Gain Antenna. Filed Apr. 28, 1978.

Patent application 901,055. A Method of Growing a Ribbon Crystal Particularly Suited for Facilitating Automated Control of Ribbon Width. Filed Apr. 28, 1978.

Patent application 901,056. Versatile Transponder Receiver. Filed Apr. 28, 1978. Not available NTIS.

Patent application 906,298. Method and Apparatus for Slicing Crystals. Filed May 15, 1978.

Patent application 906,299. Crystalline Polyimides. Filed May 16, 1978. Not available NTIS.

Patent 4,077,813. Method of Producing Complex Aluminum Alloy Parts of High Temper, and Products Thereof. Filed July 26, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,077,921. Sprayable Low Density Ablator and Application Process. Filed Jan. 19, 1977. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,078,175. Apparatus for Use in Examining the Lattice of a Semiconductor Wafer by X-Ray Diffraction. Filed Sept. 20, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,078,290. Stator Rotor Tools. Filed Nov. 8, 1976. Patented Mar. 14, 1978. Not available NTIS.

Patent 4,078,378. Automotive Gas Turbine Fuel Control. Filed Nov. 8, 1976. Patented Mar. 14, 1978. Not available NTIS.

Patent 4,080,901. Molded Composite Pyrogen Igniter for Rocket Motors. Filed Apr. 20, 1976. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,082,001. Non-Destructive Method for Applying and Removing Instrumentation on Helicopter Rotor Blades. Filed Apr. 19, 1977. Patented Apr. 4, 1978. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 26, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-1-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-25-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-3-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-30-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-22-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	11-29-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-6-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-13-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-15-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 3, 1978

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

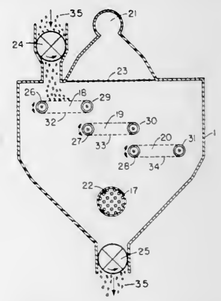
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T975,001

APPARATUS FOR CONDITIONING SEED COTTON

Gino J. Mangialardi, Jr., Greenville, and Anselm C. Griffin, Jr., Leland, both of Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 28, 1977, Ser. No. 846,478
Int. Cl.[2] D01B *9/00*
U.S. Cl 19—66 CC
4 Sheets Drawing. 16 Pages Specification



An apparatus for conditioning seed cotton during the ginning operation is disclosed. Seed cotton which is to be conditioned to a proper moisture content is fed through a rotating vacuum seal dropper onto a series of moving belts located within a conditioning chamber. The moving belts are arranged to retain the seed cotton for a predetermined critical period within the chamber. Conditioned air is circulated through the chamber and brought into intimate contact with the seed cotton thereby properly adjusting the moisture content. The seed cotton is then vented through a rotating vacuum seal dropper into gin processing equipment.

T975,002

METHOD FOR CONTROLLING BIOFOULING IN DRIP IRRIGATION SYSTEM EMITTER ORIFICES

Frederick William Linda, Florence, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jul. 27, 1977, Ser. No. 819,532
Int. Cl.[2] C02B *3/06*
U.S. Cl. 210—62
No Drawing. 18 Pages Specification

An improved method for controlling biofouling in drip irrigation system emitter orifices wherein a chlorinated derivative of cyanuric acid, such as trichloroisocyanuric acid, dichloroisocyanuric acid, sodium dichloroisocyanurate, and its hydrates or mixtures thereof, is employed as the chlorinating source. The chlorinated derivative of cyanuric acid is metered into the irrigation water at a point near the main irrigation water supply pump in an amount sufficient to meet the chlorine demand of the irrigation water and to provide a residual chlorine content of about 0.5 ppm available chlorine in the irrigation water at the drip emitter most distant from the chlorination point.

T975,003

PRIMER COATING COMPOSITIONS COMPRISING POLYALKYLENEIMINE AND CELLULOSE-ACETATE PROPIONATE

Don R. Leonard, Rte. 15, 421 Old Castle Rd., and Charles H. Coney, 2008 Canterbury Rd., both of Kingsport, Tenn. 37660

Continuation of Ser. No. 779,433, Mar. 21, 1977, abandoned.
This application Nov. 7, 1977, Ser. No. 849,376
Int. Cl.[2] B05D *7/10;* **B32B** *21/08, 27/10*
U.S. Cl. 427—407 R
No Drawing. 13 Pages Specification

Coating compositions comprising polyalkyleneimine and cellulose acetate propionate in solution, and related process and product, are disclosed. Such compositions are particularly useful as primer coatings for substrates of regenerated cellulose, paper and paperboard where cellulose ester top coatings are used. Use of such compositions as primer coatings improves adhesion of the top coating to the substrate, particularly where the coated substrate is heat-sealed, for example, in packaging applications. Also, the coating composition provides increased resistance to blocking, which is especially important where the substrate is sheet material wound in a roll.

T975,004

OIL-FREE, PRESSURE SENSITIVE ADHESIVE

David R. Hansen, and George T. Coker, Jr., both of Houston, Tex., assignors to Shell Oil Company

Filed Jan. 31, 1978, Ser. No. 873,819
Int. Cl.[2] C08L *45/00*
U.S. Cl. 260—829
No Drawing. 9 Pages Specification

An oil-free, pressure sensitive adhesive composition comprises a monoalkenyl arene/isoprene block copolymer, a tackifying resin compatible with the isoprene block and a predominately aromatic second resin compatible with the monoalkenyl arene block. These adhesive compositions possess excellent adhesive properties along with a lower melt viscosity and lower cost.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,789

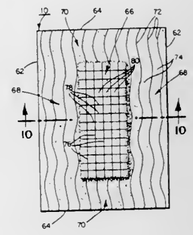
ABSORBENT ARTICLES FOR DISPOSABLE DIAPER

Charles G. Kolbach, Media, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Original No. 3,860,002, dated Jan. 14, 1975, Ser. No. 360,124, May 14, 1973. Application for reissue Nov. 20, 1975, Ser. No. 634,826

Int. Cl.[2] **A61F** *13/16*

U.S. Cl. 128—284 **22 Claims**



1. An absorbent article suitable for use as a disposable diaper and the like; said absorbent article comprising a unitary assemblage of randomly arranged fibers in the form of a web, said web having a transverse dimension defined between spaced, elongate side edges and an elongate dimension defined between spaced end edges; a medial portion of said web having a greater basis weight and greater average thickness than flanking end and side portions thereof for establishing a step configuration in a upper surface of said web in both the elongate and transverse direction; adhesive means on said upper surface of said web for bonding together exposed surface fibers in said upper surface to provide an abrasion resistant, non-piling, facing layer, and to aid in maintaining the structural integrity of said web and stabilizing means for stabilizing a lower surface of said web; said upper surface being adapted to be positioned in contact with a wearer with the medial portion of the web in the perineal region, the flanking side portions about the thigh regions, and the flanking end portions about the front and back regions.

Re. 29,790

PROCESS FOR HANDLING FLUIDS IN HEAT TRANSFER EQUIPMENT

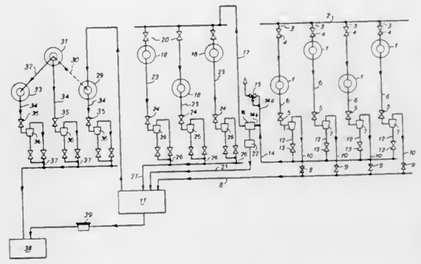
Abraham C. Miselem Asfura, Pachuca No. 87-102, Mexico City, D.F., Mexico

Original No. 3,828,843, dated Aug. 13, 1974, Ser. No. 322,198, Jan. 9, 1973. Application for reissue Sep. 6, 1974, Ser. No. 503,626

Int. Cl.[2] **F26B** *13/18*

U.S. Cl. 165—1 **12 Claims**

1. Process for handling fluids in heat transfer apparatus, comprising the steps of providing a first group of heat transfer units, feeding *a flow of* steam to this first group, through a common header; connecting the outlets of said heat transfer units to first modified steam-trap units [to traps] that separate condensate and extraction steam, *thereby providing a flow of condensate separate from a flow of extraction* steam; piping the condensate flow through a common header to a flash tank and feeding the *flow of* extraction steam to a second group of heat transfer units, through a separator and an air eliminator; [in this second group of heat transfer units, the steam is passed through corresponding steam traps, but in this case the steam traps] *feeding the flow of extraction steam to the second group of heat transfer units, through a common header; connecting the outlets of the second group of heat-transfer units to second steam modified traps, the second steam traps being connected to* discharge, both the extraction steam and the condensate, together through a header to the flash tank; *connecting* said flash tank *to feed* [feeds] the flash steam through a pipe to one of the heat transfer units of a third group, that operates at the lowest



pressure of all groups; [from this unit, steam is extracted to the next unit and from the latter to a third unit,] *extracting steam from said one unit and feeding the same to a second unit of the third group, and extracting steam from said second unit and feeding the same to a third unit of the third group,* producing by [this] *such* extraction an automatic pressure drop from one unit to the next.

Re. 29,791

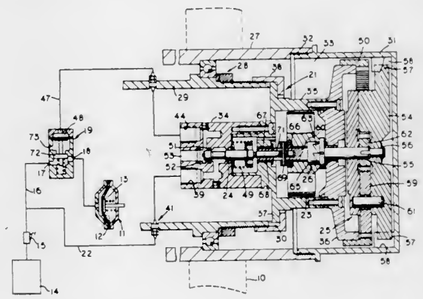
ANTI-SKID CONTROL DEVICE AND SYSTEM

Walter H. Morse, South Windsor, and Ira R. Ames, Jr., Salisbury, both of Conn., assignors to The Jacobs Manufacturing Company, West Hartford, Conn.

Original No. 3,908,805, dated Sep. 30, 1975, Ser. No. 431,952, Jan. 9, 1974. Application for reissue Sep. 28, 1977, Ser. No. 837,748

Int. Cl.[2] **B60T** *8/16*

U.S. Cl. 188—181 A **39 Claims**



20. An anti-wheel lock-up control device for controlling lock-up in a wheel of a motor vehicle having a braking mechanism, comprising: an input drive shaft having a drive connection; flywheel means, supported in the control device for rotation and axial movement relative to the input drive shaft; axially disengageable cam toothed clutch means, including a driven member, carried by the flywheel means and normally engaging a driving member, carried by the input drive shaft; signal means responsive to axial

movement of the flywheel means relative to the input drive shaft amd axially shiftable from a first position to a second position; and spring means constantly biasing the signal means axially towards its first position and towards the flywheel means; the driven clutch member being axially disengageable from the driving clutch member to shift the flywheel means axially and, as a result, to shift the signal means axially from its first position to its second position as a consequence of a sudden deceleration of the driving clutch member.

Re. 29,792

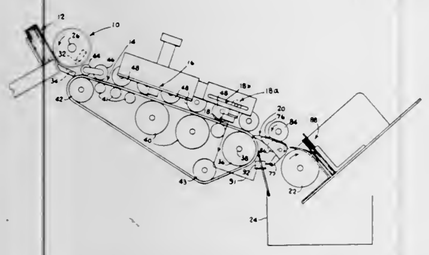
BATCH TICKET READER

Herbert Tramposch, Riverside, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Original No. 3,791,516, dated Feb. 12, 1974, Ser. No. 216,536, Jan. 10, 1972. Application for reissue Dec. 8, 1975, Ser. No. 638,596

Int. Cl.[2] **B07C** *3/14*

U.S. Cl. 209—583 **14 Claims**



1. Batch ticket processing apparatus, comprising in combination:

A. a reading station having means for reading information encoded on tickets to be processed, *said reading station being provided with at least two light sources and two detectors in adjacent positions and laterally spaced apart relationship, each of said detectors being positioned along an axis normal to said path to read ticket encoded information for each possible end-for-end orientation of a ticket, whereby ticket information may be read regardless of end-for-end ticket orientation;*

B. feed means for moving tickets singly in a path adjacent said reading station,

1. including guide means for substantially aligning the ticket before it passes said reading station;

C. recording and control means electrically connected to said reading means;

D. switch means positioned adjacent said feed path for actuation by a ticket,

1. said switch means spaced downstream from said reading station along said feed path,

2. said switch means being electrically connected to said recording and control means and selectively enabled thereby;

E. ticket routing gate means interposed in said feed path and spaced downstream from said switch means for diverting tickets to one of two routes,

1. said gate means being electrically energized through said switch means upon the coincidence of enablement by said recording and control means and actuation by a ticket, whereby a ticket is diverted to one of said two routes depending upon whether or not information is accurately read therefrom as determined and controlled by said recording and control means.

Re. 29,793

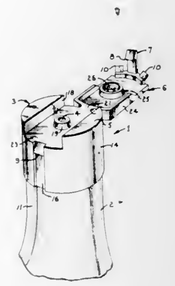
CONTAINER COVER AND SAFETY CLOSURE

Harold T. Pehr, 3920 W. 96th St., Overland Park, Kans. 66207

Original No. 4,022,352, dated May 10, 1977, Ser. No. 680,524, Apr. 26, 1976. Application for reissue Sep. 29, 1977, Ser. No. 837,916

Int. Cl.[2] **B65D** *5/32*

U.S. Cl. 222—153 **15 Claims**



1. A safety container comprising:

a. container body having a side wall and a top wall, said top wall having a material dispensing aperture;

b. a closure member hingedly mounted on said top wall, said closure member being defined by a wall portion having a peripheral edge;

c. means on said closure member for closing the material dispensing aperture when said closure member is in covering relation with said material dispensing aperture;

d. a latch member on one of said closure member and container, said latch member extending from the peripheral edge of said wall portion of said closure member;

e. cooperating means on the other of said closure member and said container and on said latch member and engageable one with the other for retaining said closure member in covering relation with said material dispensing aperture;

f. resilient means on one of said closure member and said container for urging said cooperating means into retaining engagement, a portion of said closure member being movable toward said container against resistance of said resilient means to permit separation of said cooperating means on said latch member and other of said closure member and container; and

g. said cooperating means for retaining said closure member in covering relation with said material dispensing aperture includes:

1. a downwardly inclined shoulder on said side wall of said container body; and

2. an upwardly inclined shoulder on said latch member and engageable with said downwardly inclined shoulder on said container body whereby said resilient means urge said latch member shoulder into engagement with said container body shoulder.

Re. 29,794

METHOD OF PRODUCING WEB UNITS

James B. Fulk, Monte Sereno, Calif., assignor to Paper Converting Machine Company, Green Bay, Wis.

Original No. 3,596,899, dated Aug. 3, 1971, Ser. No. 859,020, Sep. 18, 1969. Application for reissue Dec. 8, 1975, Ser. No. 638,767

Int. Cl.[2] **B65H** *41/00*

U.S. Cl. 270—52.5 **11 Claims**

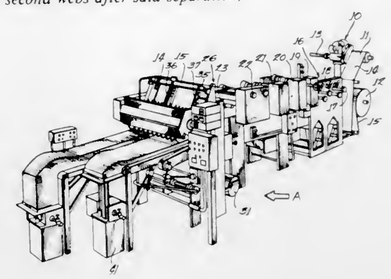
15. A method of manufacturing business forms from rolls of paper webs comprising:

advancing the webs from the rolls into a contiguous superimposed relationship along a common straight line path, processing the webs simultaneously while they are moving in said superimposed relationship,

maintaining a first one of the webs along said straight line path

advancing a second of said webs laterally into a path which is parallel to the path of said first web to separate said first and second webs and

performing a further processing operation on said first and second webs after said separation,



all of said processing operations occurring while the webs are moving continuously from said rolls.

PATENTS

GRANTED OCTOBER 3, 1978

GENERAL AND MECHANICAL

4,117,552

PROTECTIVE CLOTHING

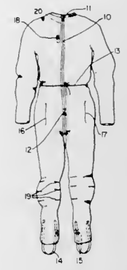
Robert Emmerson Simpson, Fleet, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 13, 1977, Ser. No. 796,707

Claims priority, application United Kingdom, May 14, 1976, 20136/76

Int. Cl.[2] **A62B** *17/00*

U.S. Cl. 2—2.1 A **5 Claims**



1. A garment liner for wearing between inner and outer garments having a torso member with a neck region thereto, two leg members and two arm members and wearable by a human subject to cover at least his torso, arms and legs, said garment liner being formed of a fabric comprising a layer of air-permeable cloth treated with an oleophobic compound to render the designated outer surface thereof liquid repellent and having activated carbon approximate the designated inner surface thereof, said arm and leg members being long enough satisfactorily to envelop the arms and legs respectively of the longest limbed subject for whom said garment is otherwise suitable, said garment also having elasticated adjustable stirrups operative in use to maintain envelopment of each whole leg by said leg members, one stirrup anchored within each leg member at a station above that required for the stirrups satisfactorily to maintain leg member envelopment of the legs of the shortest legged subject for whom said garment is otherwise suitable, whereby excess garment leg fabric can be cut away or turned up, a donning, doffing and access fastener means extending from said neck region down the designated front of said garment at least to a crotch region between said leg members, said fastener means being both selectively openable to permit access to said crotch region for the purpose of urination and completely openable for donning/doffing purposes, and said arm and leg members being provided with excess fabric in outer elbow and knee regions thereof.

4,117,553

HELMET SHIELD AND VISOR APPARATUS

William P. Bay, Rte. 1, Box 53, Ormond Beach, Fla. 32974

Filed Apr. 12, 1977, Ser. No. 786,900

Int. Cl.[2] **A61F** *9/00;* **A42B** *1/08*

U.S. Cl. 2—10 **7 Claims**

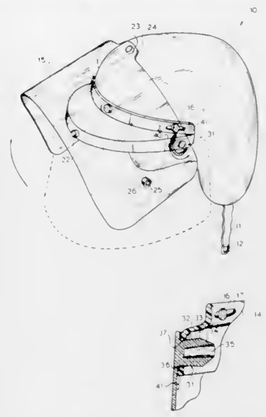
1. A helmet shield and visor combination comprising:

a visor having openings formed therein at pre-determined locations;

a visor attachment means for attaching said visor to a helmet;

a transparent shield for attachment to said visor; and

shield attachment means for rotatably attaching said shield to said visor, said shield attachment means having a pair of plastic studs formed thereon at pre-determined locations each stud having an angled surface thereon and an opening therein, and adapted to fit into said visor openings, said angled surface being adapted to rotatably hold said shield to said visor, said shield also being formed to bias said angled surfaces on said stud against the edge of said visor openings, said shield attachment means including means to wedge said shield against said visor upon rotation of said



visor, whereby said shield is rotatably attached to said visor, so that it may be moved to and held in different positions; and said transparent shield having a center snap fastener portion formed therein for attaching to a snap fastener portion on said visor at a pre-determined location to hold said shield in a pre-determined position on said visor.

4,117,554

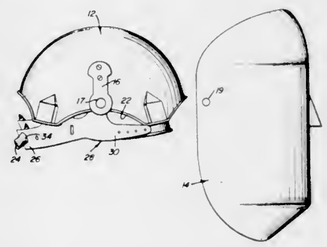
PROTECTIVE HARD HAT AND WELDER'S HOOD

Julius T. Palumbo, Sulphur, La., assignor to Arthur J. Planchard, Sulphur, La., a part interest

Filed May 17, 1977, Ser. No. 797,743

Int. Cl.[2] **A42B** *3/00*

U.S. Cl. 2—418 **10 Claims**



1. Head protective apparatus, comprising:

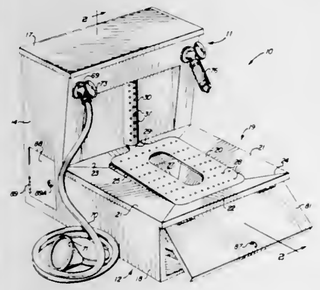
hat means for fitting over at least the external upper portions of the cranium of a wearer, the hat means being formed of a substantially rigid, protective material;

suspension mounting means attached to interior surfaces of the hat means for mounting the hat means on the head of a wearer, the suspension mounting means including an annular bandlike strap means which is discontinuous along

a portion thereof, ends of the strap means at the discontinuous portion being spaced apart; and,

an elastically deformable band disposed between the spaced ends of the strap means and adjustably connected thereto to lengthen and shorten that portion of the band lying between said spaced ends, the spaced ends of the strap means and the deformable band held therebetween being disposed outwardly of the hat means and exposed to be grasped at one end of the deformable band for adjustment of the fit of the suspension mounting means on the head of the wearer.

4,117,555
CANINE TOILET
Bethel E. Dennis, 3115 E. Glenrosa, Phoenix, Ariz. 85016
Filed Jul. 15, 1977, Ser. No. 815,949
Int. Cl.[2] A47K *17/00*
U.S. Cl. 4—1 **10 Claims**



1. In a canine toilet, including a cabinet having a rear upright portion and a forwardly extending extension; a source of water in said upright portion and a hingedly mounted toilet seat pedestal in the forward extension, the improvement consisting of:

(a) a defecating slot in said toilet seat pedestal;

(b) a flush bowl immediately below said toilet seat pedestal;

(c) a flushing system for said bowl connected to said water supply by a water system including a valve;

(d) means for biasing said toilet seat pedestal in a canted position with the rear portion thereof upraised; and

(e) means for connecting the rear portion of said toilet seat pedestal to said valve,

whereby a dog seated on said toilet seat pedestal opens said valve to cause water to flow from said water supply through said flushing system, and removal of the dog from said toilet seat pedestal causes said valve to close, and flushing continues all of the time that the dog is seated on the pedestal.

4,117,556
FLUSH WATER CONSERVER
Oskar A. Semler, Belmont, Calif., assignor to Eleonore Josephine Semler, Belmont, Calif.
Continuation-in-part of Ser. No. 690,958, May 28, 1976. This application Dec. 17, 1976, Ser. No. 751,682
Int. Cl.[2] E03D *5/02*
U.S. Cl. 4—325 **6 Claims**

1. A flush toilet, comprising:

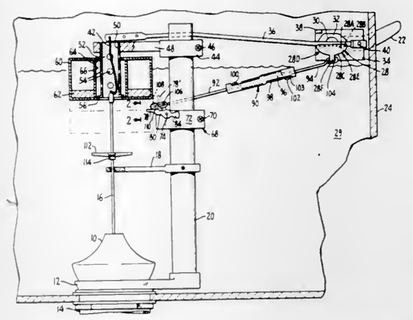
a single operating handle operable in a first direction to produce a full flush and operable in a second direction to produce a short flush;

flush ball means for permitting the outflow of flush water from the flush toilet tank when withdrawn from its seat by operation of said operating handle in either direction;

auxiliary float means for bearing upon said flush ball means and urging said flush ball means towards its seat when the surface of the water in said tank has receded from its quiescient level by a predetermined distance; and

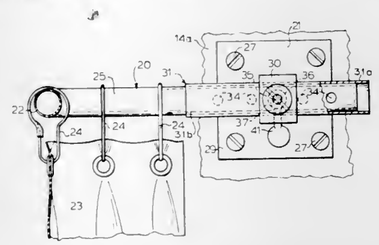
latch means for preventing said auxiliary float means from dropping far enough to bear upon said flush ball means when latched;

said latch means, if unlatched, being moved in a latching



direction to a latching position for preventing said auxiliary float means from thus dropping when said operating handle is moved in said first direction, and, if latched, being moved in an unlatching direction to a non-latching position for permitting said auxiliary float means to bear upon said flush ball means when said operating handle is moved in said second direction.

4,117,557
HORIZONTALLY ADJUSTABLE CURTAIN RODS FOR BATHROOM STALLS
Walter G. McPeak, 3505 Kilkenny, West, Tallahassee, Fla. 32303, and James K. Myhand, P.O. Box 37, Pine Mountain, Ga. 31822
Filed Jun. 27, 1977, Ser. No. 810,382
Int. Cl.[2] A47K *3/14;* **A47H** *1/022*
U.S. Cl. 4—149 **3 Claims**



1. In a bath compartment (**10**) having a back wall (**12**), a pair of side walls (**14**, **15**), a front doorway (**19**) between said side walls, a U-shaped rod assembly (**20**) including a pair of parallel leg segments (**25**, **25**) and an intermediate trough segment (**26**) lying substantially in a common plane, and means for suspending a curtain (**23**) from said leg and trough segments, in combination with means for cantilevering said assembly for back and forth bodily movement in a retilinear path through said doorway comprising

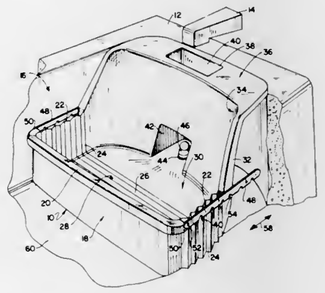
a pair of juxtaposed hubs (**30**, **30**) cantilevered respectively from said side walls and inwardly of said compartment;

a pair of parallel sleeves (**31**, **31**) for telescopically receiving said leg segments (**25**, **25**) respectively, and

means for fixedly mounting each of said sleeves (**31**, **31**) transversely upon the free end portion of its associated cantilevered hub (**30**) and in spaced relation to its proximate side wall, the opposite end portions (**31***a*, **31***b*) of said sleeve being cantilevered from its mount rearwardly and forwardly of said compartment respectively,

whereby said rearwardly cantilevered sleeve portions (**31***a*, **31***a*) will react downwardly to the weight of the cantilevered assembly (**20**) and said forwardly cantilevered sleeve portions (**31***b*, **31***b*) will react upwardly.

4,117,558
COLLAPSIBLE TUB INSERT
Robert Poth, 1048 Val Martin, Laval, Canada (H7V 3K5)
Filed Oct. 20, 1977, Ser. No. 843,868
Int. Cl.[2] A47K *3/00, 3/06*
U.S. Cl. 4—173 R **7 Claims**



1. A collapsible tub insert comprising

a container having a base and walls extending upwardly therefrom, said base and said walls defining an open mouth portion residing above said base and adjacent the upper most marginal edges of said walls, a pair of portions of said walls having a pleated-like cross-section, said pleated-like cross-section defined by a plurality of vertical lines extending upwardly from said base to said marginal edges, a portion of said base having a pleated-like construction, said pleated-like construction of said base defining a plurality of horizontal lines, said plurality of horizontal lines intersecting said plurality of vertical lines, another portion of said walls having the upper most marginal edge thereof residing substantially in the same plane as the marginal edges of said pair of portions of said walls, the remaining portion of said walls having the marginal edge thereof extending upwardly from said marginal edge of said pair of portions,

a passageway located in said remaining portion of said wall, one end of said passageway located in said marginal edge of said remaining portion of said walls, the other end of said passageway fluidly communicating to said base and extending passing through an opening in the interior surface of said remaining portion of said wall, said opening being located adjacent said base, said passageway having a drainage hole communicating to an exterior surface of said remaining portion of said walls,

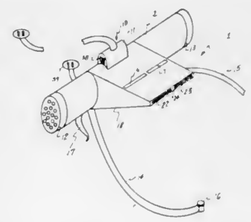
a stopper, said stopper removably installed closing said drainage hole, means to manually position said portion of said walls at selected locations away from said remaining portion of said walls.

4,117,559
BATHROOM DEODORIZER AND ODORIZER DEVICES AND METHODS OF MAKING AND USING THE SAME
Delbert D. Boyle, 1354 Lee Dr., Edwardsville, Ill. 62025
Filed May 31, 1977, Ser. No. 801,471
Int. Cl.[2] E03D *9/04*
U.S. Cl. 4—209 R **1 Claim**

1. A bathroom deodorizer and odorizer device for use with a conventional toilet bowl comprising,

housing means, said housing means provided with a motor chamber therein, said housing means provided with first and second inlet ports and chambers and first and second outlet ports and chambers, said first inlet port and chamber communicating with said first outlet port and chamber and said second inlet port and chamber communicating with said second outlet port and chamber,

motor means provided with a first and second shaft and fan means operably mounted in said motor chamber, said first fan means disposed in said first outlet chamber and said second fan means disposed in said second outlet chamber, said motor means provided with first energy coupling means operably mounted thereon, a motor chamber cover provided with second energy coupling means operably mounted thereon operably mounted on said housing means, said first and second energy coupling means disposed to engage with each other when said cover is in place, said housing means shaped in the form of an elongated cylinder with the axis thereof essentially parallel to said motor shaft means in combination with a bill portion



attached to external wall of said cylinder, said bill portion having a rectangular cross section which decreases in width as the distance from the cylinder increases, said inlet ports and chambers disposed transverse to the axis of said cylinder and within said bill portion, said outlet ports and chambers disposed longitudinally within said cylinder,

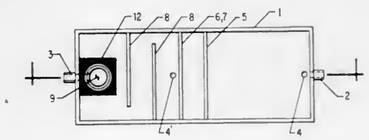
deodorizing and odorizing wafers removably disposed in said first and second inlet chambers apertured and covers operably mounted on said outlet ports at opposite ends of said cylinder,

bowl seal means operably disposed proximate said housing means,

switching means operably disposed in said seal means and operably connected to said energy coupling means on said motor chamber cover, said housing means shaped to fit within the open contour of a conventional bowl and lid and

clip means mounted on said housing means.

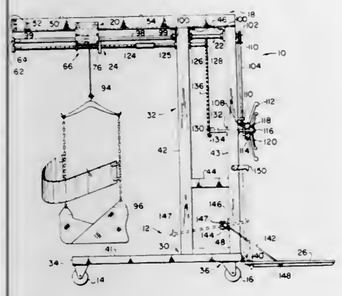
4,117,560
APPARATUS FOR TREATING FLUIDS AND TREATING TABLETS THEREFOR
William E. Kidon, Chardon, and Neil W. Stillman, Madison, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
Filed Jun. 8, 1977, Ser. No. 804,639
Int. Cl.[2] E03D *1/00;* **C02C** *1/40, 1/00*
U.S. Cl. 4—321 **12 Claims**



1. An apparatus for treating fluid which comprises a con-

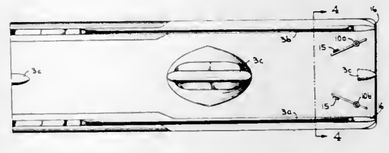
tainer for temporarily receiving a fluid therethrough, said container including an inlet means for introducing the fluid into said container, and an outlet means for discharging the fluid from said container, at least one holding means for a treating agent, the holding means being in open communication with said outlet means, with the fluid in said container and with the exterior of the container for recharging the treating agent, said holding means having the treating agent therein exposed to contact with the fluid and requiring passage of said fluid through said holding means in close proximity to the treating agent before exiting via the outlet means, and a baffle means interposed between said inlet means and said holding means, said baffle means comprising an underflow weir associated with a downstream overflow weir wherein the fluid passing under the underflow weir must first rise before going over the overflow weir.

4,117,561
PATIENT LIFT DEVICE
Rodvinon I. Zamotin, P.O. Box 721, Miami Springs, Fla. 33166
Filed Apr. 16, 1976, Ser. No. 677,805
Int. Cl.[2] A61G *7/10*
U.S. Cl. 5—83 **10 Claims**



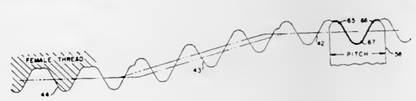
1. A patient lift device comprising
a support assembly;
an elongate, substantially horizontal boom assembly supported by said support assembly and comprising a substantially horizontal track;
movable suspension means for suspending a means for holding a patient comprising
a travelling trolley assembly mounted on and movable over said track, said trolley assembly comprising a rigid frame and a plurality of wheels rotatably mounted to said frame at the upper ends thereof for movable engagement with said track, said frame having a threaded orifice therein, the axis of which extends in the longitudinal direction,
and vertical adjustment means for vertically moving the patient holding means comprising a drum horizontally rotatably mounted to and carried by said trolley assembly, a flexible cable means having one end wound around said drum and the other end for connecting to the patient carrying means and means for rotating said drum for raising and lowering the other end of said cable, said drum rotating means comprising an elongate member rotatably mounted on said boom assembly and means for rotating said elongate member, and wherein said drum has a central bore completely therethrough for slidably mounting said drum on said elongate member and is keyed to said elongate member such that rotation of said elongate member results in rotation of said drum;
and horizontal adjustment means for horizontally moving said trolley assembly along said track comprising a rotatably mounted threaded shaft in threaded engagement with said trolley assembly and means for rotating said threaded shaft such that rotation thereof results in axial movement of said trolley assembly with said drum along said track, said threaded shaft rotating means comprising
an upstanding post assembly rigidly mounted to said support assembly, a first hand wheel rotatably mounted on said post assembly and linkage transferring the rotation of said hand wheel to said threaded shaft, and said elongage member rotating means comprises a second hand wheel concentrically rotatably mounted with said first hand wheel and linkage transferring the rotation of said second hand wheel to one end of said elongate shaft,
said device further comprising a platform mounted to said support assembly at the location where said post assembly is mounted to said support assembly, said support assembly having a control station located where said post assembly is mounted to said support assembly, and said hand wheels being operable by an operator of said lift device when supported by said platform.

4,117,562
WATER WALKER
Peter H. Schaumann, 15 Jasmine La., Port St. Lucie, Fla. 33452
Continuation-in-part of Ser. No. 656,578, Feb. 9, 1976, abandoned, which is a division of Ser. No. 400,193, Sep. 21, 1973, Pat. No. 3,936,897. This application May 2, 1977, Ser. No. 792,571
Int. Cl.[2] A63C *15/00*
U.S. Cl. 9—310 D **9 Claims**



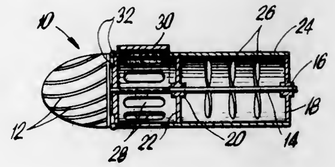
1. Apparatus for enabling an individual to walk on water including a pair of elongated buoyant water walker assemblies adapted for attachment to the feet of such individuals, each of said assemblies comprising:
a buoyant flotation member;
a runner member extending longitudinally along a substantial portion of the bottom of said buoyant member, said runner member having side walls forming a hollow section extending along its entire longitudinal length and being open at both longitudinal ends;
a cover member covering the bottom of said hollow section of said runner member;
control means arranged within said hollow section of said runner and being movable between a first position for allowing movement of said buoyant member in a forward direction and a second position for preventing slippage of said buoyant member in a rearward direction; and
said runner member further including a longitudinally extending member spaced between said side walls of said runner member so as to form two longitudinally extending hollow sections within said runner member and said control means including two pivotable plates mounted along a vertical axis within each of said hollow sections and being pivotable between an open position so that as said water walker moves in a forward direction water is allowed to pass through said hollow section and a closed position in which said plates substantially closes said hollow section and blocks passage of water through said hollow section thereby retarding movement of said buoyant member, as well as a stop mounted in said hollow section for each of said pivotable plates for holding said pivotable plates inclined relative to the water flow through said hollow section with said plates in the open position.

4,117,563
THREAD CHASER TOOL FOR CONTIGUOUS STRAIGHT AND TAPERED THREAD RUNS
John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Continuation-in-part of Ser. No. 555,639, Mar. 5, 1975, Pat. No. 3,940,764. This application Nov. 29, 1976, Ser. No. 745,799
Int. Cl.[2] B23G *1/00*; B26D *1/12*
U.S. Cl. 10—101 R **5 Claims**



1. A thread chaser tool useful in cutting mating male and female contiguous straight tapered thread profiles having the same predetermined pitch, with pitch continuity maintained throughout the profile, said tool comprising: a cutting edge crest forming profile midway between a pair of symmetrically disposed, like-shaped root-forming point profiles with flank cutting edges contiguous with said crest forming profile; with the distance between said root-forming point profiles equal to the normal pitch distance of the male and female threads cut by said thread chaser tool minus a small space increment relative to the predetermined normal pitch distance; with the predetermined normal pitch distance being a definitive measurement function of the rate of cutting edge advance and cutting speed effected by relative rotation between said tool and the member to be threaded about the longitudinal axis of the member to be threaded.

4,117,564
OIL TANK CLEANING APPARATUS
Alberto Russo, 413 Waverley Ave., Mamaroneck, N.Y. 10543
Filed Sep. 6, 1977, Ser. No. 830,648
Int. Cl.[2] E04H *3/20*
U.S. Cl. 15—1.7 **7 Claims**



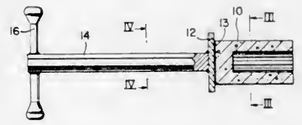
1. Apparatus comprising rotary cutting means for rotatably penetrating a surface, conduit means associated with said cutting means, said cutting means being rotatably mounted on shaft means, said cutting means having edge means extending therefrom and adapted to cut through a surface, said edge means being pitched sufficiently to propel said cutting means and said conduit means as said cutting means is rotated, impeller means operatively associated with said cutting means for rotating said cutting means, said conduit means being arranged to cause a fluid to impinge against said impeller means and thereby rotate said impeller means, said shaft means being mounted in a hollow housing, said conduit means operatively connected to said housing, opening means being provided in said housing next adjacent said cutting means for leading a fluid from said cutting means to said conduit means, said opening means having cap means thereon for partially blocking said opening means said cap means being movable on said housing to change the location of said opening means which may be blocked by said cap means.

4,117,565
CHROMIUM BASE ALLOY COMPOSITE MATERIALS REINFORCED WITH CONTINUOUS SILICON CARBIDE FIBERS AND A METHOD FOR PRODUCING THE SAME
Chiaki Asada, Nagoya; Katsushi Kusaka, Tokai, and Hisashi Kajima, Asahi, all of Japan, assignors to The Foundation: The Research Institute For Special Inorganic Materials, Japan
Filed Aug. 23, 1977, Ser. No. 827,060
Claims priority, application Japan, Aug. 31, 1976, 51/103829
Int. Cl.[2] B22F *3/14*
U.S. Cl. 75—204 **4 Claims**

1. Chromium base alloy composite materials reinforced with silicon carbide fibers obtained by incorporating silicon carbide fibers containing 0.01 - 20% by weight of free carbon into chromium base alloy consisting of 20 - 98% by weight of chromium and the remainder iron in a volume fraction of 5 - 20%.

3. A method for producing chromium base alloy composite materials reinforced with silicon carbide fibers, which comprises laminating and arranging a volume fraction of 2 - 50% of silicon carbide fibers containing 0.01 - 20% by weight of free carbon which have been produced by heating the spun fibers composed of organosilicon high molecular weight compounds having silicon and carbon as the main skeleton components at a temperature of 1,000°- 2,000° C, in chromium base alloy powders consisting of 20 - 98% by weight of Cr and the remainder Fe and then compressing and sintering the resulting assembly to react the free carbon in the silicon carbide fibers with chromium base alloy powders to form carbides, whereby the binding ability of the silicon carbide fibers and chromium base alloy is increased.

4,117,566
VEHICULAR LUG NUT CLEANING DEVICE
Timothy J. Ward, New Orleans, La., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Apr. 27, 1977, Ser. No. 791,391
Int. Cl.[2] A47L *13/16*
U.S. Cl. 15—244 R **3 Claims**

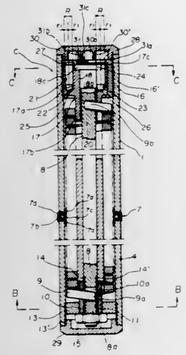


1. A vehicular lug nut cleaning device, comprising:
a sponge engageable with a lug nut, the sponge forming a shaftway extending from an outer face thereof and engageable with a side of the lug nut,
the shaftway having interiorly projecting ribs extending inwardly from an inner surface of the shaftway,
a shaft attached to a bottom plate,
an adhesive material attached to a bottom of the bottom plate and attached to an inner face of the sponge, whereby the sponge is attached to the shaft, and
a cross handle attached perpendicularly to a distal end of the shaft for rotating the same.

4,117,567
DOOR CLOSER

Toyoaki Shimizu, Tokyo, Japan, assignor to Nikkey Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1977, Ser. No. 852,813
Claims priority, application Japan, Oct. 8, 1977, 52-135553[U]
Int. Cl.[2] E05F *3/20, 3/22*
U.S. Cl. 16—50 8 Claims



1. A door closer which comprises:

two hollow cylinders formed integrally with hinge pieces, respectively, said two cylinders being adjacent to each other in the axial direction thereof and rotatable with respect to each other around one and the same axis thereof; a support shaft penetrating said two cylinders; a coil spring surrounding said support shaft, said support shaft and coil spring being incorporated in said two cylinders; an intermediate rotary cylinder member provided between one end portion of said support shaft and the inner wall of first cylinder by inserting said one end portion of said support shaft thereinto, said intermediate rotary cylinder member being rotatable with respect to said support shaft and said first cylinder, the other end portion of said support shaft being provided in second cylinder in such a manner that said other end portion of said support shaft is not rotatable therein, one end portion of said coil spring being non-rotatably secured to said intermediate rotary cylinder member placed at the upper end portion of said first cylinder, while the other end portion of said coil spring being non-rotatably secured to the lower end portion of the second cylinder, grooves being formed at predetermined positions on the inner wall of the upper end portion of said first cylinder, the outer wall of the upper end portion of said support shaft, and the inner and outer walls of said intermediate rotary cylinder member, said grooves being rotatably moved so as to form two holes into which two connecting pins are detachably inserted respectively.

4,117,568
CRANK HANDLE FOR WINDOW REGULATOR SHAFT

Paul Bullock, Grosse Pointe Woods, Mich., assignor to Robin Products Company, Farmington Hills, Mich.

Filed Jan. 7, 1977, Ser. No. 757,541
Int. Cl.[2] G05G *1/10*
U.S. Cl. 16—110 R 3 Claims

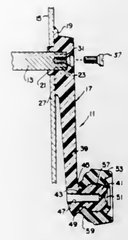
1. A crank handle for a window regulator shaft comprising a unit body of a plastic material including an elongated shank;

a head at one end of the shank on one side thereof having a transverse irregularly shaped bore adapted to frictionally receive said shaft for securing thereto;

a knob element of generally spherical shape at the other end of said shank as an integral part thereof and extending laterally to the opposite side thereof;

a hollow swivel knob of different plastic material having a spherically shaped bore, open at one end defining a flexible annular lip, loosely assembled over and enclosing said knob element, said knob element being rotatable relative to said knob;

said annular lip being out-turned, of conical shape and of such dimension relative to said knob element and of such elasticity as to be force assembled over said knob element and interlocked therewith;



said head having a flat end face at right angles to said bore defining a bearing surface;

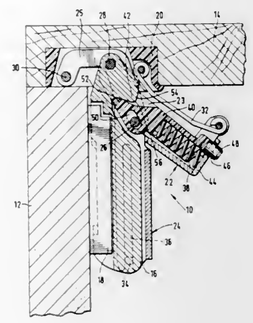
and a sleeve receiving said shaft projecting laterally from said end face coaxial of said bore and adapted for extension through a wall panel, said bearing surface adapted to cooperatively engage said wall panel;

and a neck of uniform diameter between said shank other end and knob element, spacing said knob element outwardly of said shank and cooperatively receiving the annular lip of said swivel knob, said different plastic materials providing lubrication between said knob element and swivel knob reducing friction there between.

4,117,569
OVER-CENTER KNUCKLE-JOINT HINGE

Karl Lautenschläger, Jr., and Reinhard Lautenschläger, both of Reinheim, Fed. Rep. of Germany, assignors to Karl Lautenschlager KG, Reinheim, Fed. Rep. of Germany

Filed Nov. 11, 1976, Ser. No. 740,980
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1975, 2552729; Apr. 17, 1976, 2617070
Int. Cl.[2] E05D *11/10*
U.S. Cl. 16—139 6 Claims



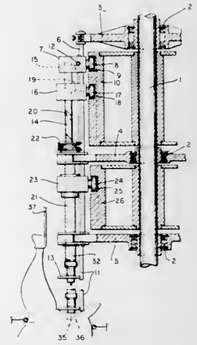
1. A knuckle-joint over-center hinge adapted to occupy two end positions offset by an angle of from 170° to 180° with respect to each other and a dead-center position, in combination with a first member for connection to a cabinet wall and a second member for connecting to a cabinet door, comprising:

a first arm and a second arm, one end of said first arm being pivotally linked to said first member, and one end of said second arm being pivotally linked to said second member, the other end of said first arm being coupled to said second member so as to be variable as to position along a predetermined spatial curve, the other end of said second arm being coupled to said first member so as to be variable as to position along a predetermined spatial curve, and an over-center mechanism forcing said hinge resiliently towards one of said end positions, said mechanism including a closing spring having a first end disposed and supported at said first arm and a second end, a counter-surface which changes its spatial position relative to said second spring end during the pivoting movement of said hinge from one end position to the other end position such that the spring undergoes a maximum deflection in an intermediate position of said hinge, said first arm having a portion of U-shaped cross-section, and a transverse wall, a pusher displaceably mounted in said first arm, said closing spring being disposed within said portion of U-shaped cross-section and supporting itself with its said first end on said transverse wall, said second end of said spring engaging said pusher, said first member having a cam projection in the vicinity of the point where said first arm is pivotally linked to said first member, said counter-surface being formed on said cam projection, said pusher supporting itself on said counter-surface.

4,117,570
APPARATUS FOR CUTTING OUT THE VENT OF A FOWL

Pieter Meyn, Noordeinde 68, Oostzaan, Netherlands

Filed Jul. 25, 1977, Ser. No. 818,767
Int. Cl.[2] A22B *3/08;* A22C *21/00*
U.S. Cl. 17—11 9 Claims



1. In an installation for processing slaughtered poultry, including an overhead conveyor supporting a plurality of shackles, each adapted to carry a fowl by its ankle joints:

apparatus for cutting out the vent of a fowl depending from one of said shackles, comprising:

a frame;

at least one cutting means carried by said frame; and

means connected with said frame for moving said cutting means along with said conveyor and relative thereto towards and away from said fowl;

said cutting means comprising

a hollow cylindrical knife mounted for rotation about a center pin, adapted to be inserted into the fowl's vent opening as said cutting means is moved towards said fowl, for bringing said rotating knife into the right position for cutting out the fowl's vent;

driving means for rotating said knife; and

means for axially moving said rotating knife and said center pin relative to each other;

said cutting means further comprising:

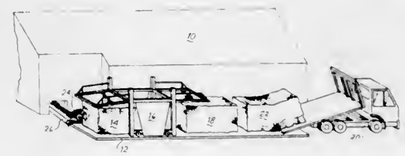
a helical hook within said knife, concentrically surrounding said center pin with some play and rigidly connected therewith; and p2 means for rotating said center pin and said hook about a common axis;

and means for controlling the relative movements of said knife and said center pin in such manner, that said pin while being inserted into the vent opening is rotated together with said hook over a limited angle about said common axis, so that said hook grips the fowl's vent in the manner of a corkscrew, after which the vent is pulled up towards said knife by said hook and is cut out by said knife, and finally said hook is rotated in the opposite direction and freed from the cut out vent.

4,117,571
METHOD OF FEEDING COTTON TO A GIN

Jimmy F. Prather, Rte. 1, Brownfield, Tex. 79316

Filed Feb. 18, 1977, Ser. No. 769,919
Int. Cl.[2] D01G *7/00*
U.S. Cl. 19—64.5 1 Claim



1. In the method of feeding seed cotton to a cotton gin, including

a. placing a first rick of seed cotton on a slab and

b. advancing a feeder unit against the first rick of seed cotton, thereby

c. taking the seed cotton from the first rick into a first side of the feeder unit and feeding it to the gin; the improvement comprising the following steps:

d. placing a second rick of seed cotton on the slab on the opposite side of the feeder unit from the first rick,

e. reversing directions of travel of the feeder unit after the first rick is finished feeding into the gin, and

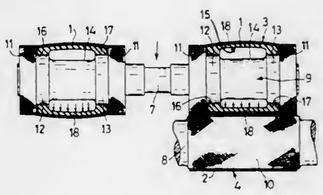
f. advancing the feeder unit against the second rick thereby engaging the opposite side of said feeder unit with said second rick,

g. taking the seed cotton from the second rick into said opposite side of the feeder unit and feeding it to the gin.

4,117,572
DRAWING FRAME WITH A BELT CONTROL SYSTEM, FOR SPINNING FRAMES

Goffredo Fusaroli, Milan, Italy, assignor to S.A.M.P.R.E. S.p.A., Milan, Italy

Filed Nov. 17, 1976, Ser. No. 742,434
Claims priority, application Italy, Nov. 28, 1975, 29817 A/75
Int. Cl.[2] D01H *5/86*
U.S. Cl. 19—244 1 Claim



1. A drawing frame with a belt control system for spinning frames comprising a couple of feeding cylinders, a couple of

drawing cylinders and, arranged between said couples of cylinders, a control system composed of two superposed belts each passed over one of a pair of further, vertically spaced cylinders and an associated tightening member, the cylinder for the upper belt comprising

a central axle,

at least one rotary bushing mounted on said axle, said bushing being pressed downwardly toward the lower, driving cylinder of said pair, and having thereon a pair of laterally spaced, circumferential shoulders of equal diameter projecting radially outwardly and coaxially relative to a central depressed zone thereof, and

a hollow sleeve of an elastomeric material mounted on said bushing and surrounding the depressed area thereof and having a barrel-like shape and an axial bore with a diameter at its centre which is greater than the diameter of said bore at the ends of the sleeve, whereby said sleeve has enlarged borders of similar configuration at opposite ends thereof,

said barrel-shaped sleeve being mounted between, and laterally retained by, the two shoulders of the bushing and having its enlarged borders seated on spaced, cylindrical zones of equal diameter formed on said bushing adjacent to said shoulders,

the depressed central zone of the bushing being located between said cylindrical zones, and the diameters of said zones being smaller that the diameter of said shoulders, and

the thickness of said borders of the barrel-shaped sleeve being substantially equal to the diameter differential between said cylindrical zones and said shoulders of said bushing, whereby said shoulders on said bushing are maintained in drive transmitting relationship with said lower, driving cylinder of said pair, and

said shoulders on said bushing operatively clamping said borders against lateral expansion on said cylindrical zones, whereby during use passage of a fiber tow between said pair of cylinders will cause said sleeve to curve inwardly only at its central portion into said depressed zone of said bushing.

4,117,573

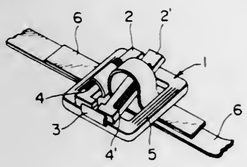
PACKING BAND TIGHTENING DEVICE

Minoru Nakamura, Osaka, Japan, assignor to Idemitsu Lion Co., Ltd., Ichihara, Japan

Filed Aug. 4, 1977, Ser. No. 821,812

Int. Cl.[2] A44B *11/00, 11/02*

U.S. Cl. 24—74 A **9 Claims**



1. A band tightening device wholly of synthetic resin material and comprising

a frame having sides and ends defining a generally rectangular opening;

two parallel legs connected to an end of the frame by integral hinge means for hinging the legs for movement to a position seated on the ends of said frame;

a longitudinal rib integral with and projecting upwardly from a top portion of each leg;

a longitudinal rib integral with and projecting downwardly from a bottom portion of each leg; and

ridges on the top and bottom of said sides and extending in the direction of said legs;

said ribs engaging a synthetic material packing band extending around said legs and under said sides of the frame to grip said bands without danger of cutting the material of the band, and reinforcing said legs to resist deformation under the action of the band; and wherein

said ribs of each leg have a length less than the length of said rectangular opening, and said legs, in said seated position on the frame, each have a rib extending into the frame opening.

4,117,574

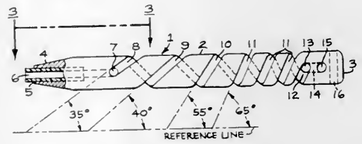
KNOTLESS FISH LINE CONNECTOR

William Goro Yoshida, 47-197 Iuiu St., Kaneohe, Hi. 96744

Filed Mar. 31, 1978, Ser. No. 892,078

Int. Cl.[2] F16G *11/00;* **A01K** *91/04*

U.S. Cl. 24—129 R **10 Claims**



1. A knotless fish line connector comprising a shaft with a cylindrical opening at one end and a leader opening at the other end, at the end of the cylindrical opening are spiral grooves in the surface of the shaft, at the end of the last spiral groove is at least one locking groove in the surface of the shaft, at the end of the last locking groove are at least two locking holes in the shaft.

4,117,575

FASTENER

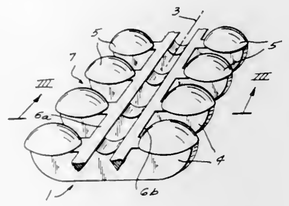
Helmut Heimberger, Locarno, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

Filed Apr. 6, 1977, Ser. No. 785,167

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2615051

Int. Cl.[2] A44B *19/14;* **A44G** *17/00*

U.S. Cl. 24—205.13 D **7 Claims**



1. A fastener comprising:

a pair of interdigitable coupling elements, each of said coupling elements having a multiplicity of carrier members extending transverse to its axis and in mutually spaced relation therealong;

a respective coupling head on each of said carriers, said coupling heads defining inter-head spaces for receiving the heads of the other coupling element between them; and

a pair of connecting strands unitary with the coupling element extending along each of said coupling elements in transversely spaced parallel relation, said strands forming flexible ligatures interconnecting the successive carriers and forming abutments limiting lateral displacement of said coupling elements upon the interdigitation of the heads thereof, each of said carriers being formed with a pair of such heads, the heads of each coupling element forming two rows, said strands lying inwardly of said rows.

4,117,576

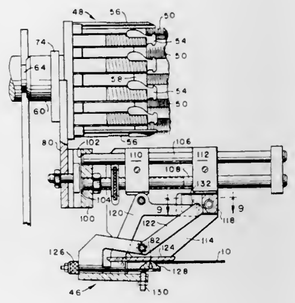
SELVEDGE DETECTOR AND GUIDE

Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 713,394, Aug. 11, 1976, Pat. No. 4,054,974. This application Feb. 14, 1977, Ser. No. 768,060

Int. Cl.[2] D06C *13/08*

U.S. Cl. 26—9 **1 Claim**



1. Apparatus to perform a function on a web of fabric having a raised surface and a selvedge comprising a control means, said control means including a fluidic sensing device operably associated with said apparatus and mounted thereon, said fluidic sensing device including a first conduit being supplied with air under pressure and a second conduit receiving air under pressure from said first conduit, a pair of flag members, means pivotally mounting said flag members between said first conduit and said second conduit, means biassing said flag members to a predetermined position between said conduits to permit a selected portion of the air under pressure to pass from the first conduit to the second conduit to maintain the apparatus in a normal operating position, said flag members being responsive to variations in selvedge width to alter the selected air portion received by said second conduit, one of the flag members being biassed from the predetermined position by engagement with a selvedge greater than a predetermined width and the other of the flag members being biassed from the predetermined position by engagement with the raised surface when the selvedge is less than the predetermined width and means responsive to such air alterations to actuate the control means accordingly.

4,117,577

METHOD TO PROTECT FABRIC SELVEDGE ON LOOP PILE CUTTING MACHINE

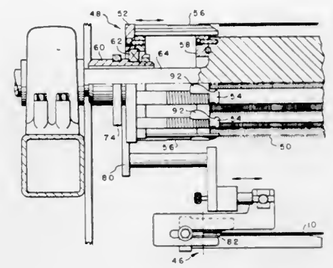
Michael William Gilpatrick, Chesnee, S.C., and Walter Engels, Tryon, N.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 714,100, Aug. 13, 1976, Pat. No. 4,069,561. This application Jun. 20, 1977, Ser. No. 808,094

Int. Cl.[2] D06C *13/08*

U.S. Cl. 26—9 **1 Claim**

1. The method of providing a cut loop pile fabric on a machine having a rotor across which is mounted a plurality of rows of cutting blades comprising the steps of: supplying a web of loop pile fabric having a selvedge area, rotating the rotor, passing the web of loop pile fabric over the rotor with the main body of the loop pile fabric in contact with the cutting blades while providing means to hold the selvedge away from the cutting blades, cutting the loops in the main body of the loop pile fabric while sensing the position of the selvedge to automatically position the means to maintain the selvedge away from the cutting blades and taking up the cut loop pile fabric.



4,117,578

PROCESS FOR HEAT TREATING A NEEDLED BATT

Herman Hans Forsten, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 681,580, Apr. 29, 1976, abandoned. This application Apr. 5, 1977, Ser. No. 784,826

Int. Cl.[2] D04H *1/46, 1/50, 5/02*

U.S. Cl. 28—112 **7 Claims**

1. Process for preparing a needled, dimensionally stable, scrimless felt comprising the steps of (1) preparing a batt containing at least 80% by weight drawn, amorphous poly(m-phenylene isophthalamide) staple fibers having a length of 4 to 16 cm. and a shrinkage of at least 10% at 285°–300° C, (2) needling the batt on a needle loom to the extent of 150 to 1000 needle penetrations/cm^2 and (3) treating the needled batt while the batt is under lateral and longitudinal restraint sufficient to prevent more than 10% lateral or longitudinal shrinkage of the batt under conditions such that the unrestrained shrinkage of the fibers would be at least 10%.

4,117,579

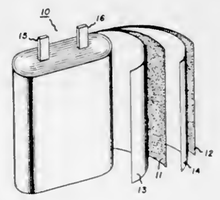
METHOD OF IMPREGNATING A CAPACITOR

David G. Shaw, Glens Falls, and Vandos Shedigian, Hudson Falls, both of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Continuation of Ser. No. 691,886, Jun. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 597,694, Jul. 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 403,787, Oct. 5, 1973, abandoned. This application Jul. 20, 1977, Ser. No. 817,145

Int. Cl.[2] H01G *4/22*

U.S. Cl. 29—25.42 **6 Claims**

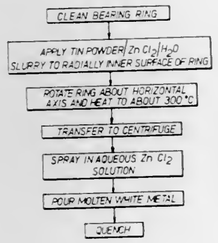


1. The process of impregnating a capacitor with an aromatic dielectric liquid comprising

a. mixing with said liquid an antioxidant in an amount of greater than about 0.01% and up to about 10.0% by weight of said liquid.

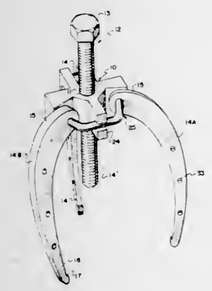
b. refining the mixture including passing the mixture through a filtering process to remove impurities but to retain some antioxidant therein.
c. heating said mixture to an elevated temperature.
d. vacuum impregnating a capacitor with said mixture.
e. and sealing said capacitor with said capacitor retaining therein from between about 0.01 to 5.0% of said antioxidant by weight of said liquid.

4,117,580
MANUFACTURE OF BEARINGS
Friedrich Heck, Baingser Weg 47, Deilinghofen, Fed. Rep. of Germany
Continuation of Ser. No. 565,618, Apr. 7, 1975, abandoned. This application Feb. 17, 1977, Ser. No. 769,652
Int. Cl.[2] B21D *53/10*
U.S. Cl. 29—149.5 **23 Claims**



1. In a method of making a lined bearing which comprises applying a layer of metallic bonding material selected from tin and tin alloys to the radially inner surface of a bearing ring and centrifugally casting on a layer of a lining material, the improvement which comprises supplying the bonding material in the form of a powder as a slurry with water and a flux at the radially inner surface of the bearing ring, heating the ring to at least a tinning temperature, being a temperature sufficient to cause conversion of water to steam, applying a flux/water mixture to the thus applied layer of bonding material on the radially inner surface of the hot bearing ring and, without intermediate cooling, centrifugally casting on the layer of lining material.

4,117,581
MULTI-PURPOSE PULLER
Michael Brodie, P.O. Box 64, Vilna, Canada (T0A 3L0)
Filed Jul. 14, 1977, Ser. No. 815,588
Int. Cl.[2] B23P *17/04*
U.S. Cl. 29—261 **10 Claims**



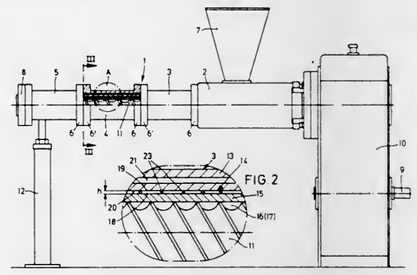
1. A puller selectively usable as a two-jaw puller, a three-jaw puller, an internal puller and an external puller and comprising in combination a head, a pressure bolt screw threadably engageable through said head, a first jaw pivotally secured by one end thereof to one side of said head, a second and third jaw, means pivotally securing said second and third jaws by one end thereof, to said head spaced from said first jaw, a primary mounting portion formed on said head for said second jaw, a further primary mounting portion formed on said head for said third jaw, a common mounting portion formed on said head between said primary mounting portions, article engaging hooks on the other ends of all of said jaws, and means to position said second and third jaws in either of two positions relative to said first jaw, one position being whereby said three jaws are substantially at 120° from one another, and the other position being whereby said second and third jaws are in side by side, spaced and parallel relationship with one another, said means to pivotally secure said second and third jaws taking the form of a U-bolt assembly secured by the ends thereof to said primary mounting portions and engaging through said common mounting portion, said second and third jaws being pivoted on the portion of said U-bolt assembly extending between said primary mounting portions and said common mounting portion and being slidable from one of said positions to the other of said positions and vice-versa.

4,117,582
APPARATUS FOR PRODUCING PARALLEL WIRE STRANDS FOR BRIDGES AND THE LIKE BY WINDING AND UNWINDING STRAND OF LARGE CROSS-SECTION AND FOR SIMULTANEOUSLY APPLYING CORROSION PROTECTION THERETO
Wolfgang Borelly, Schwanenstr. 2C, 68 Mannheim 51, Fed. Rep. of Germany
Division of Ser. No. 439,742, Feb. 5, 1974, Pat. No. 3,919,762, and a continuation-in-part of Ser. No. 385,683, Aug. 6, 1973, abandoned. This application Nov. 12, 1975, Ser. No. 631,322
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1972, 2238714; Jan. 9, 1974, 2400886; Nov. 15, 1973, 2357006
Int. Cl.[2] B23P *11/02*
U.S. Cl. 29—419 R **17 Claims**



1. A process for winding upon a base of a cable drum for transport or storage a parallel wire strand made up of a plurality of tightly adjacent vertically and horizontally arranged parallel wires, the strand including at least a leading end fitting securing the ends of the wires together, comprising the steps of:
(a) mounting the drum for rotation about a winding axis;
(b) fanning out and rearranging the strand wires rearwardly of the leading end fitting to form at least one flat layer of parallel individual wires disposed in a single plane extending generally parallel with the drum winding axis;
(c) clamping together the leading end portions of the wires at a point forwardly of the fanning out and rearranging location independently and rearwardly of the end fitting where the wires are in flat layer form while the wires are equally tensioned between the clamping location and a point on the strand located rearwardly of the fanning out and rearranging location, and attaching the wires to the cable drum at the point where they are clamped together; and
(d) winding the wires in flat layers about the drum base by rotating the drum about its winding axis, whereby the wires are drawn into the drum in flat layers under equal tension and without relative sliding between the wires in the strand.

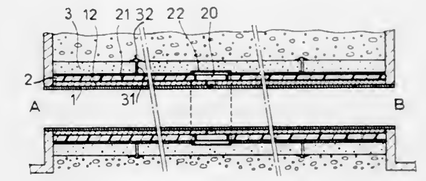
4,117,583
METHOD OF PROVIDING A WEAR-RESISTANT LINING IN THE WORK CHAMBER OF A SCREW EXTRUDER
Gerhard Gnädig, Ditzingen, and Wilhelm Seufert, Korntal, both of Germany, assignors to Werner & Pfleiderer, Stuttgart, Germany
Filed Dec. 15, 1976, Ser. No. 750,705
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558611
Int. Cl.[2] B23P *11/02*
U.S. Cl. 29—447 **11 Claims**



1. A method for providing a wear-resistant lining for a work chamber of a screw extruder having a wearing barrel of non-circular external cross-section attached in a thermally conductive manner to the extruder housing, the internal cross-section of the screw extruder housing being of corresponding non-circular cross-section but slightly larger than the external cross-section of the wearing barrel so to define an interstice having a given gap width, comprising:
adding mineral and/or metallic particles as additives to a soft material which is to subsequently become hard, at least some of said particles having a granulometry substantially equal to said gap width and none of said particles having a granulometry greater than said gap width;
applying a layer of said soft material, which subsequently becomes hard with said mineral and/or metallic particles therein onto the external surface of the wearing barrel, said layer having a thickness which is greater than said gap width of said interstice between the external wall of said wearing barrel and the internal wall of said extruder housing;
heating said extruder housing to an extent sufficient to sufficiently enlarge the interior of said extruder housing to allow said wearing barrel having said layer of material in soft condition to be inserted therein; and
inserting said wearing barrel having said layer of material in soft condition hereon into the heater enlarged said extruder housing.

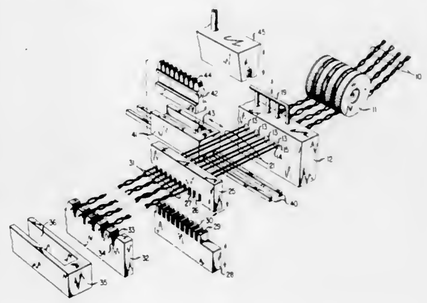
4,117,584
METHOD OF MANUFACTURING AN IMPROVED CONDUIT FOR CONVEYANCE OF HOT FLUID
Pierre Lagarde, Versailles, and Gaston Denoor, Grenoble, both of France, assignors to Metalimphy & B.V.S., Paris, France
Filed Apr. 6, 1977, Ser. No. 785,214
Claims priority, application France, Apr. 13, 1976, 76 10760
Int. Cl.[2] B21D *39/00*
U.S. Cl. 29—452 **2 Claims**

1. In a method of manufacturing a conduit for conveying a fluid at a temperature and pressure substantially higher than ambient temperature and pressure, said conduit comprising an inner tube of a material having a low thermal expansion and surrounded by thermal insulation, said tube having a high working temperature when conveying said fluid, the improvement comprising the steps of:
(a) forming said inner tube without expansioncompensating means;
(b) applying about said inner tube, at an installation temperature lower than said working temperature, a wrapping of a binding material whereby expansion of said inner tube in response to said fluid pressure is resisted by binding force of said wrapping, said binding material having a thermal expansion greater than that of said inner tube;
(c) anchoring the ends of said tube at said installation temperature; and



(d) prestressing said wrapping at said installation temperature whereby to compensate the reduction in said binding force at said working temperature resulting from the different thermal expansions of said tube and said wrapping, said prestressing producing elastic elongation of said inner tube, whereby at least in part of compensate compressive stress in said inner tube at said working temperature resulting from the longitudinal thermal expansion of said anchored inner tube.

4,117,585
APPARATUS FOR WIRING ELECTRICAL CABINETS
Arnold Ray Smith, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 31, 1977, Ser. No. 801,587
Int. Cl.[2] H01R *43/00, 43/04*
U.S. Cl. 29—566.3 **13 Claims**



1. Apparatus for wiring electrical cabinets with a plurality of twisted pairs of wires comprising: p1 pair-indexing means for selectively presenting members of each said twisted pair in a preselected orientation;
means for temporarily extending the orientation of each of said pair members;
mass-terminating means for connecting all of said extended pair members to an electrical connector block and for forming ends of said pairs; and
means for holding said connector block at a position substantially displaced from said extending means for defining therebetween a substantial length of said twisted pairs in a predetermined sequence while said members are oriented in said preselected orientation to permit the one-pair-at-a-

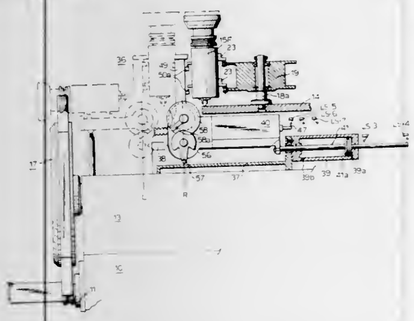
time electrical connection of the ends of said pairs away from said connector block.

4,117,586

MACHINE TOOL WITH AUTOMATIC TOOL CHANGER

Yoshiro Uchida; Toshihiko Mizuno; Isao Higuchi; Susumu Imai, and Shyoichiro Usui, all of Abiko, Japan, assignors to Hitachi Seiki Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1976, Ser. No. 675,897
Int. Cl.[2] B23Q *3/157*
U.S. Cl. 29—568 **4 Claims**



1. A machine tool comprising:

a tool storage magazine having a plurality of first tool storing means with recesses therein with a shape corresponding to a first tool shank configuration for holding tools having a first shank configuration, a plurality of second tool storing means with recesses therein with a shape corresponding to a second tool shank configuration which is larger than the first tool shank configuration, at least one tool adapter having an exterior shape corresponding to the second tool shank configuration and positioned in at least one of said second tool storing means and further having a recess therein with a shape corresponding to the first tool shank configuration, whereby small tools having a first tool shank configuration can be stored in said first tool storing means and in said adapters in said second tool storing means, and large tools having a second tool shank configuration can be stored in said second tool storing means;

a tool spindle with a tool seat in a forward end thereof projecting out of the machine tool, said tool seat having a recess therein corresponding to the second tool shank configuration, a tool clamping rod movable axially within said tool spindle and having a pull stud engaging means on the end of said clamping rod toward said tool seat for engaging a pull stud on the rear of the shank of the large tool when said clamping rod is retracted into said spindle and for permitting the pull stud to be disengaged from said clamping rod when said clamping rod is moved toward said tool seat a first distance, spring means urging said clamping rod in the retracting direction, each of said adapters having a shank holding means movable in the direction of retraction of said clamping rod for holding the shank of a small tool in the adapter and being movable axially toward the forward end of said spindle by movement of said clamping rod toward said tool seat a second distance less than said first distance for releasing the shank of the small tool without releasing said adapter from said tool seat;

an automatic tool changer comprising a rotatable center shaft parallel to said spindle, a tool change arm transversely mounted on the outer end of said center shaft, a pair of tool holding jaws mounted on the opposite ends of said tool change arm and movable from a fully open position to at least an intermediate position in which they can grasp a large tool and to a fully closed position in which they can grasp a small tool, a rotational drive means coupled to said rotatable center shaft for reciprocatably rotating said center shaft around the axis of said center shaft from a position where the jaws on one end of said tool change arm can grasp a tool in the spindle to a position where the jaws on the other end of said tool change arm can grasp a tool in said spindle, an axial drive means coupled to said center shaft for driving said center shaft axially, and jaw driving means coupled to said jaws for driving said jaws to close said jaws to said intermediate or fully closed positions depending on the size of the tool to be grasped and to return the jaws to the fully open position; and

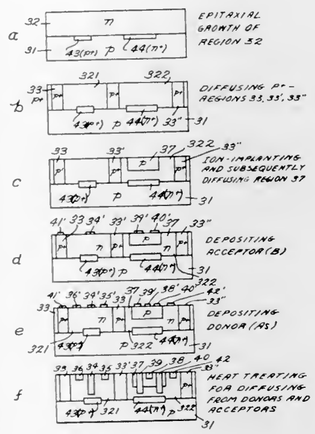
means for engaging a tool storing means and reciprocally carrying it from said tool storage magazine to a position at which the jaws on the other end of said tool change arm can grip a tool in the tool storing means.

4,117,587

NEGATIVE-RESISTANCE SEMICONDUCTOR DEVICE

Gota Kano, Nagaoka-kyo, and Hitoo Iwasa, Takatsuki, both of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Continuation-in-part of Ser. No. 683,824, May 6, 1976, abandoned, which is a continuation of Ser. No. 526,931, Nov. 25, 1974, abandoned. This application Aug. 6, 1976, Ser. No. 712,583
Claims priority, application Japan, Nov. 30, 1973, 48-135552
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 **4 Claims**



1. A method of making negative-resistance semiconductor devices of the type comprising two complimentary depletion type junction field effect transistors (FETs) interconnected together and the respective gates of said FETs are connected to the drain of the other FET, the method comprising the step of:

forming diffused separation regions in an epitaxial region of a first conductivity type formed on a substrate of a second conductivity type, in a maner such that said diffused separation regions penetrate and hence divide said epitaxial region to form at least two islands which are isolated from each other by p-n junctions,

forming a diffused well region of said second conductivity type in one of said islands,

depositing shaped members of high concentration donor and of high concentration acceptor on specified portions of surfaces of the other one of said island regions and of said diffused well region, said specified portions being relatively disposed corresponding to the respective gates, drains and sources of said FETs,

heat treating for simultaneously diffusing from said members of high concentration donor and said members of high concentration acceptor to form n^+-regions and p^+-regions, respectively, and thereby the gate, source and drain regions of said FETs,

forming contact electrodes to said gate, drain and source regions; and

forming electrical connections between the respective source regions of said FETs and between the respective gate regions of each FET to the drain region of the other FET.

4,117,588

METHOD OF MANUFACTURING THREE DIMENSIONAL INTEGRATED CIRCUITS

Leopold J. Johnson, Escondico, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1977, Ser. No. 761,749
Int. Cl.[2] H01F *41/02*
U.S. Cl. 29—608 **5 Claims**



1. A method of manufacturing three-dimensional integrated circuit elements from compatible co-fireable materials the steps of:

(a) selecting a number of different compatible co-fireable materials from a group in accordance with a specific electrical requirement;

(b) batching together selected groups of the compatible co-fireable materials with a suitable binder to form a plurality of different discrete composite materials in a condition suitable for extrusion;

(c) extruding said discrete composite materials together in predetermined patterns to form extruded blocks having uniform cross-section throughout the entire length of the block,

(d) stacking a plurality of sections, said plurality of sections having at least one section of specified width from a plurality of different extruded blocks and being in registry such that patterns on different sections are superposed in a desired circuit pattern,

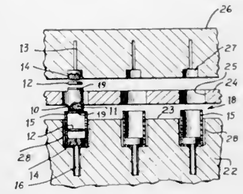
(e) applying temperature and pressure to said stacked sections in a furnace according to a predetermined temperature-time profile.

4,117,589

METHOD OF MANUFACTURING A HERMETICALLY SEALED ELECTRONIC COMPONENT

Gaylord Lee Francis, Califon, and Amedeo John Morelli, Randolph, both of N.J., assignors to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 616,651, Sep. 25, 1975, Pat. No. 4,016,527. This application Mar. 3, 1977, Ser. No. 774,136
Int. Cl.[2] H01C *17/28*
U.S. Cl. 29—619 **14 Claims**



1. A method of manufacturing a hermetically sealed component comprising the steps of:

placing a bottle having an attached first terminal on a closed end in a cavity in a boat;

inserting a first solderable preform in said bottle in said boat;

thereafter introducing a passive electrical core element having ends coated with refractory metal in said bottle;

thereafter introducing a second solderable preform in said bottle;

thereafter introducing a second terminal into said bottle; and

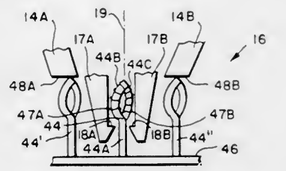
sealing said bottle by applying heat to said bottle around said second terminal.

4,117,590

WIRE LEAD AND SOLDER REMOVAL TOOL

Willard Emanuel Rapp, Princeton, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 7, 1977, Ser. No. 840,429
Int. Cl.[2] B25B *27/14*
U.S. Cl. 29—764 **21 Claims**



1. A tool for removing at least one wire lead from a terminal with a plurality of surfaces, the tool comprising:

a plurality of scrapers, each including a scraping edge;

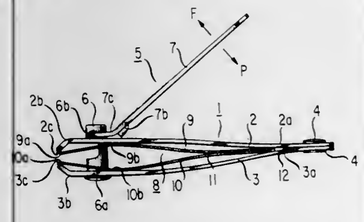
means, so mounting said plurality of scrapers that each scraping edge faces a scraping edge of an associated scraper, for moving said plurality of scrapers linearly between an extended position and a withdrawn position thereof;

means, urging said facing scraping edges of said plurality of scrapers apart, and responsive to said plurality of scrapers moving into said extended position thereof, for separating said facing scraping edges of said scrapers, such that the plurality of scrapers may readily be positioned axially along the terminal beyond at least one wire lead thereon; and

means, urging said facing scraping edges of said plurality of scrapers toward one another, and responsive to said plurality of scrapers moving away from said extended position thereof, for so displacing said facing scraping edges toward one another as to engage said scraping edges

firmly with said plurality of surfaces of the terminal upon axial movement of said plurality of scrapers toward said withdrawn position thereof during operation of said moving means, thereby scraping the wire lead or leads axially off the terminal.

4,117,591
NAIL CLIPPER WITH TRIM RETAINING CLAMP
Catherine S. Terry, 1 Falmouth Rd., Chatham Township, Morris County, N.J. 07928
Filed Feb. 22, 1977, Ser. No. 770,703
Int. Cl.[2] B26B *17/02*
U.S. Cl. 30—124 5 Claims

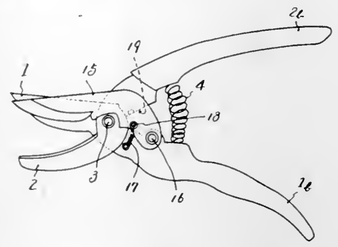


1. In combination with a nail clipping device having a dual set of elongated spring arms of a first resilient material, said spring arms constructed and arranged in superimposed relation with one of their ends fixedly joined together to form a fixed juncture including an arm cantilever point, the free ends of said spring arms opposite said fixed juncture disposed to diverge from said arm cantilever point and be normally spaced-apart due to the resiliency of said first material, said free ends having transversely extending, inwardly directed lips with cutting edges constructed to project together in cooperative cutting relation,

a pin extending through aligned holes disposed near said free ends, a lever pivotally attached to said pin, said pin held in place by a seat on one end and by said lever at the other end, said lever having a cam contacting one of said arms for moving said lips towards each other in cutting relation to a portion of an interjected nail of a user:

means for clamping said nail portion, said clamping means formed from a pair of superposed, elongated blades of a second resilient material and disposed between said spring arms, each said blade having an opening constructed to straddle said pin, said blades fastened together at one of their ends to form a fixed juncture including a blade cantilever point, said blades disposed to diverge from said blade cantilever point towards said free ends of said spring arms, said blades having their forward ends normally spaced-apart by the spring action of said second resilient material, said forward ends of said blades being bent towards one another from oppositely directed vertices, said blades constrained by contact of said vertices with the inner surfaces of said spring arms, said free ends of said blades projecting laterally to define jaws constructed to cooperatively engage the interjected nail of the user prior to and during cutting in response to operation of said lever to close said blades, and said blades responsive to a reduction of pressure exerted on said lever to release said nail trimming for proper discarding.

4,117,592
GARDEN SHEARS
Eizo Mori, and Takao Mori, both of 11 of 473-banchi, Oaza Kuzuha, Hirakata-shi, Osaka-fu, Japan
Continuation-in-part of Ser. No. 645,659, Dec. 31, 1975, abandoned. This application Feb. 14, 1977, Ser. No. 768,197
Claims priority, application Japan, Jan. 7, 1975, 50-4725; Apr. 30, 1975, 50-53022
Int. Cl.[2] B26B *13/14*
U.S. Cl. 30—135 1 Claim

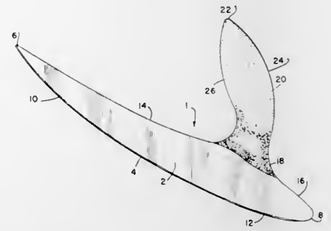


1. A pair of garden shears comprising a pair of elongated shear elements having complementary cutting portions at the forward end of each and having gripping means for actuating the shear elements at the opposite ends thereof, pivot means spaced rearwardly of said cutting portions connecting said shear elements to one another in pivotal relationship for opening and closing the cutting portions of the shear elements, spring means spaced rearwardly of said pivot means and connecting the shear elements to one another under compression to keep the cutting portions of the shear elements in a normally open state, branch retaining means pivotally mounted adjacent its rearward end thereof to the lateral face of one of the shear elements with which the branch retaining means will not be in cooperation to retain the branch when cut and rearwardly of the pivot point of the shear elements, said branch retaining means having a branch engaging portion at the forward end thereof and lying in superposed relationship with the cutting portion of the shear element to which the branch retaining means is pivoted, said branch engaging means being in aligned operating relationship with the cutting portion of the other shear element, and activating means associated with said branch engaging means for actuating same in association with a shear element to engage a branch to be cut prior to cutting through of the branch, said actuating means comprising projection pin means mounted on said branch retaining means rearwardly of the pivot means on which said shear elements are mounted and forwardly of the point at which said branch retaining means are pivotally mounted to a shear element, said projection pin means being in cooperative relationship with a portion of the inner side edge of the shear element to which said branch retaining means is not mounted to rotate the branch retaining means into strong engagement with the branch to be cut.

4,117,593
KNIFE
Dimi Piligrino, 2152 Maha Pl., Honolulu, Hi. 96819
Filed May 17, 1977, Ser. No. 797,836
Int. Cl.[2] B26B *3/03, 9/02*
U.S. Cl. 30—314 12 Claims

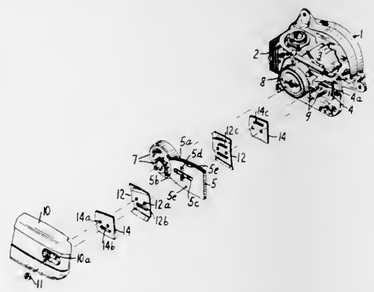
1. A knife comprising a blade having a convex curved lower elongated cutting edge terminating forwardly and rearwardly respectively in a forward sharp end and a rearward sharp end and having at least one of the ends pointed, the blade having an upper surface opposite the cutting edges between the forward and rearward ends, and a continuously uniformly curving stem extending upwardly from an upper surface of the blade at a position from the forward to the rearward ends, a handle connected to the stem, and continuously uniformly curving

with the stem and extending outward therefrom away from the blade and wherein the handle has an elongated upper convex



curve opposite to the convex curve of the cutting edge of the blade in a plane of the blade.

4,117,594
GUIDE BAR MOUNT FOR CHAIN SAW
James A. Arbuckle, Omro, Wis., assignor to Textron Inc., Providence, R.I.
Filed Oct. 2, 1977, Ser. No. 843,954
Int. Cl.[2] B27B *17/02*
U.S. Cl. 30—381 7 Claims



1. In a chain saw comprising a powerhead with a case having a support surface for mounting a guide bar thereon, a guide bar having an apertured rear end portion for mounting on said support surface, a cover for the rear end portion of said guide bar, and bolt means for securing said cover to said motor case with the rear end portion of said guide bar therebetween, said bolt means passing through an aperture in said guide bar, the improvement which comprises interposing a pad of vibration damping material between said guide bar and said support surface of said motor case and a pad of vibration damping material between said guide bar and said cover, whereby said guide bar is gripped between said pads of vibration damping material and is thereby vibration-isolated from said powerhead case.

4,117,595
METHOD FOR REPAIR OF PORCELAIN DENTAL PROSTHESES
Robert L. Ibsen, and William Richard Glace, both of Santa Maria, Calif., assignors to Den-Mat, Inc., Santa Maria, Calif.
Filed Apr. 15, 1977, Ser. No. 787,754
Int. Cl.[2] A61C *13/00*
U.S. Cl. 32—8 7 Claims

1. A method of repairing in situ a damaged dental porcelain prosthesis on a suitable base:

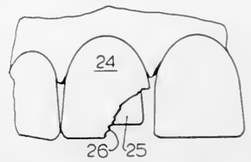
(a) mechanically removing all plaque adjacent the damaged site,

(b) mechanically removing all friable porcelain at the damaged site,

(c) washing the damaged site with a priming agent consisting essentially of an aqueous solution of a weak acid,

(d) removing said agent with a water wash and drying said site,

(e) applying to the damaged site a bonding agent to adhere a



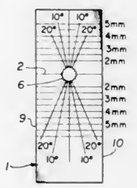
restorative material to said base and to said porcelain and allowing to remain for at least 20 seconds,

(f) mixing together a liquid resin and white powder in such amounts that the resulting mixture is wet and just barely too thick to flow,

(g) applying said mixture of resin and powder to at least fill the damaged site and allow to set and harden, and

(h) finishing the surface of the filled site.

4,117,596
APPARATUS AND METHOD FOR MOUNTING ORTHODONTIC APPLIANCES TO TEETH
Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214
Filed Jul. 6, 1977, Ser. No. 813,337
Int. Cl.[2] A61C *7/00*
U.S. Cl. 32—14 R 35 Claims



1. Apparatus for mounting an orthodontic appliance on a tooth comprising:

an adhesive member which is adapted to be temporarily adhered to a surface of a tooth;

said adhesive member including means for mounting an orthodontic appliance thereon in a given orientation relative to said adhesive member; and

said adhesive member further including means for measuring and indicating an orientation of said orthodontic appliance relative to at least one of said adhesive member and a tooth.

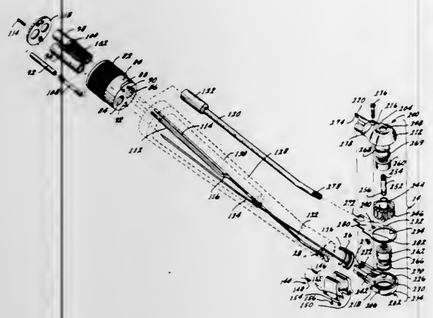
4,117,597
DENTAL DRILL
Nicolas P. Trist, Calabasas; Robert E. Guffin, La Habra; Walter M. Franklin, Sunland; James B. Crosby, Jr., North Hollywood; Glen N. Hallaway, Saugus, and James G. Tellier, Canoga Park, all of Calif., assignors to L.A. Gauge Co. Inc., Sun Valley, Calif.
Filed Jul. 30, 1976, Ser. No. 710,198
Int. Cl.[2] A61C *1/10*
U.S. Cl. 32—27 27 Claims

1. An air-operated dental drill, including

an elongated handle including means at one end for connection to a tubing connector, and including an elongated tube extending from the means at one end to the other end

of the elongated handle for providing a passage of air from one end of the handle to the other end of the handle,

a head member supported at the other end of the handle and including an air turbine motor located within the head member for receiving the air passed to the other end of the handle, and



the outer housing of the head member formed from a pair of complementary hollow members each mounted on opposite sides of a divider plate to accurately align and lock the pair of hollow members relative to each other.

4,117,598

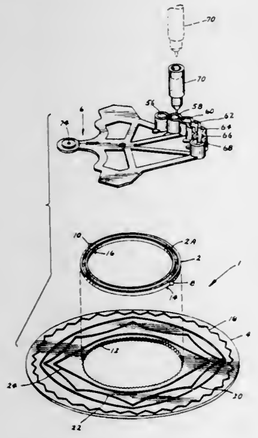
DRAWING INSTRUMENT OR APPARATUS

Denys Fisher, Kirkconnel Lea, Glencaple, Dumfries, Scotland

Filed Oct. 17, 1977, Ser. No. 842,657

Int. Cl.[2] B43L *11/00, 9/00*

U.S. Cl. 33—27 L **24 Claims**



1. A design drawing instrument comprising a primary member, said primary member including a ring and at least one guide plate which interfits together with said ring, the top surface of said ring having a groove therein, said guide plate having one or more guide paths, a secondary member which is movable relative to said primary member by the engagement of two spigots with said one or more guide paths, one of said spigots being attached to the undersurface of said secondary member, said groove adapted to receive said one spigot, one of said members having one or more holes or apertures through which may project the tip or point of a writing, drawing, or scribing instrument such that a design or drawing is produced on the other of said members, when said primary and secondary members are moved relative to each other.

4,117,599

APPARATUS FOR DRAFTING INACCURATE CONIC PERSPECTIVE

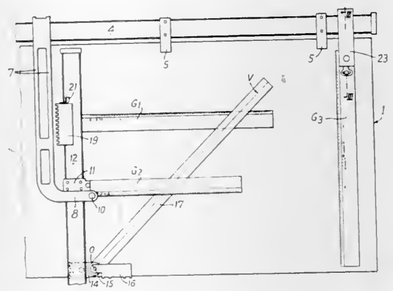
Jean Tavernier, and Eugene Henaut, both of Paris, France, assignors to Societe de Recherches et de Promotion d'Activities Nouvelles Acno, Paris, France

Filed Feb. 2, 1977, Ser. No. 765,016

Claims priority, application France, Feb. 6, 1976, 76 03349

Int. Cl.[2] B43L *13/14*

U.S. Cl. 33—77 **1 Claim**



1. An apparatus for drafting in conic perspective over a drawing board, said apparatus comprising:

a cursor,

a guide rail supporting said cursor for movement along the upper edge of said board;

a slide bracket slidably mounted along the lower edge of said board and carrying a first pivot;

a guide bracket pivotably mounted on said first pivot;

a guide member slidably mounted in said guide bracket, a support bracket secured to said guide member and carrying a second pivot, and a slide member having a slot therealong for slidably receiving therein said guide member, said slide member being slidable along said guide member over said support bracket;

an arm having an upper end coupled to for movement with said cursor, an intermediate portion parallel to and spaced from the plane of said board, and a lower end laterally offset from said intermediate portion, said lower end being pivotably mounted on said second pivot, whereby the axis of said intermediate portion is parallel to a line passing through said first and second pivots;

a transparent ruler carrying a datum line, said ruler being pivotably mounted about said first pivot, said datum line passing through the axes of said first and second pivots when said ruler is in its rest position;

a first transparent graduated scale mounted on said slide member, said first scale being parallel to the plane of said board and lying under said ruler, a second transparent graduated scale mounted on said support bracket above said ruler, the zero graduations of said first and second scales lying on a line passing through the axes of said first and second pivots;

and a third graduated scale coupled to for movement with said cursor, the axis of said third scale being substantially perpendicular to the direction of movement of said cursor, and being laterally spaced from said guide member.

4,117,600

METHOD AND APPARATUS FOR PROVIDING REPEATABLE WIRELINE DEPTH MEASUREMENTS

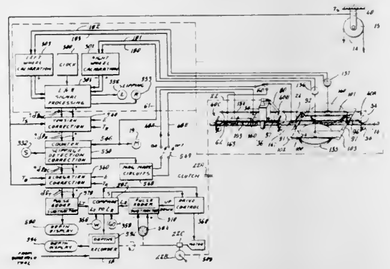
Jean Guignard, Petit Sainte-Mesme, and Jean-Marie Lorre, Gif-sur-Yvette, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jul. 16, 1976, Ser. No. 706,105

Claims priority, application France, Jul. 22, 1975, 75 22777

Int. Cl.[2] G01B *3/12, 5/04*

U.S. Cl. 33—133 **26 Claims**



1. Apparatus for providing a repeatable signal representative of movement of a wireline under varying wireline measurement conditions and driving a recorder for depth recording measurements from borehole tools lowered in a borehole on said wireline, said wireline having been previously marked with magnetic marks placed on said wireline at selected intervals measured under a known reference tension, comprising:

means for producing signals corresponding to different types of wireline movement measurements at generally the same point on said wireline and at common reference conditions, said means for producing signals comprising:

first means mechanically coupled to said wireline for providing incremental first type signals corresponding to incremental movement for said wireline at said point;

second means for providig second type signals corresponding to movement past said point of said magnetic marks placed on said wireline at selected intervals measured under a known reference tension; and

tension measurement and tension correcting means for measuring the tension of said wireline during said movement and tension correcting said incremental first type signals to said known reference tension, whereby said second type and tension-corrected first type signals correspond to the same movement of said wireline under ideal measurement conditions; and

means for automatically utilizing said second type signals to start and stop counting said incremental tension-corrected first type signals to obtain a count for an interval between successive second type signals and correcting said tension-corrected first type signals when said count is less than a number corresponding to the number of counts normally expected for said selected intervals to provide a repeatable signal representative of said wireline movement under varying mechanicallly coupled wireline measurement conditions.

4,117,601

LONGITUDINAL MEASURING INSTRUMENT

Hans-Rudolf Kober, and Alfons Ernst, both of Traunreut, Fed. Rep. of Germany, assignors to Firma Dr. Johannes Heidenhain GmbH., Traunreut, Fed. Rep. of Germany

Filed Feb. 7, 1977, Ser. No. 766,389

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605020

Int. Cl.[2] G01B *7/02*

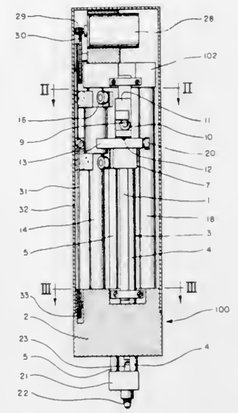
U.S. Cl. 33—172 E **15 Claims**

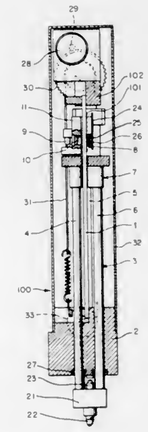
11. An instrument for measuring distances along a path comprising:

a frame member;

a scale mounted to said frame member and having a longitudinal graduation axis;

means for supporting a measuring probe, said probe supporting means mounted on said frame member for displacement parallel to the axis of said scale, and having at least two bars symmetrically positioned parallel to the graduation axis;





means for scanning said scale along the graduation axis, said scanning means mounted to said probe supporting means; and

a measuring probe attached to said bars of said probe supporting means, said bars having a length sufficient to position said measuring probe beyond an end of said scale along a straight-line extension of the longitudinal graduation axis.

4,117,602

ELECTROMAGNETIC COMPASS

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Apr. 4, 1977, Ser. No. 784,272

Int. Cl.[2] G01C *17/28*

U.S. Cl. 33—352 **6 Claims**

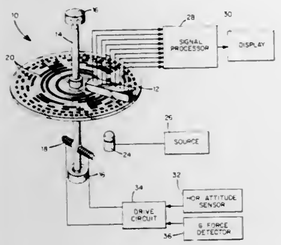
1. A magnetic compass operative to be energized only when

the compass magnet is substantially in a horizontal disposition comprising:

a normally stationary compass disk having indicia thereon representing compass headings;

means supporting said disk for rotation about its normally vertical axis;

an electromagnet affixed to and rotatable with said disk, and being non-energized except when in a horizontal disposition;



means for sensing the horizontal disposition of said electromagnet and providing a signal representative thereof; and

means operative in response to said signal to provide an energizing signal to said electromagnet to permit alignment of the energized electromagnet with the earth's magnetic field and orientation of the compass disk to provide an indication of compass heading.

4,117,603

HIGH VACUUM FREEZE-DRYING

Walton J. Smith, Rte. 4, Grafton, N.H. 03240

Filed Dec. 28, 1976, Ser. No. 755,000

Int. Cl.[2] F26B *5/06*

U.S. Cl. 34—5 **5 Claims**

1. A method of preparing a water-soluble, substantially anhydrous material stable to hydrolysis comprising subjecting a freeze-dried, water-soluble material containing molecularly bound water which is susceptible to hydrolysis to a vacuum of 10 microns or less Hg to remove said molecularly bound water and condensing the removed water on a condenser below −50° C.

4,117,604

DRYER FOR PHOTOGRAPHIC PROCESSORS

John S. Burg, Crystal; Donald M. Davidson, New Hope; Marvin K. McClure, Minneapolis, and Benjamin H. Sannel, St. Louis Pk., all of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Mar. 31, 1977, Ser. No. 783,174

Int. Cl.[2] F26B *19/00*

U.S. Cl. 34—70 **6 Claims**

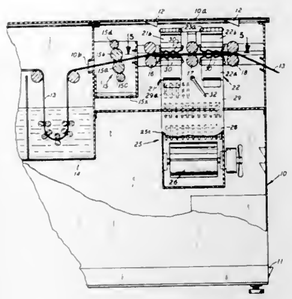
1. A compact dryer unit for drying photographic sheet material being processed, said drying unit comprising:

a housing having a material receiving opening and a material discharge opening and defining a drying chamber having vents for intake and exhaust air therein,

a pair of liquid spreading and removing rollers adjacent the material receiving opening and engaging the surfaces of the photographic sheet to remove and uniformly spread the liquid on the photographic surface of the sheet,

a plurality of rollers and sheet guiding means constructed and arranged to define a transport path extending in substantially straight line relation between the receiving opening and the discharge opening,

at least one pair of opposed spaced apart hollow air distribution manifolds in said drying chamber and respectively mounted on opposite sides of said transport path and having opposed portions said manifolds having air intakes disposed at the same side of the drying chamber and including a plurality of spaced air discharge openings formed in said opposed portions and arranged in such a way to discharge in substantially uniform quantities and velocities drying air against the surface areas on both sides of the sheet material being transported along said transport path from said material receiving opening to said material discharge opening, a single blower remote from said manifold for supplying drying air to said drying chamber and the air intakes of said manifolds, and means for heating the drying air.



4,117,605

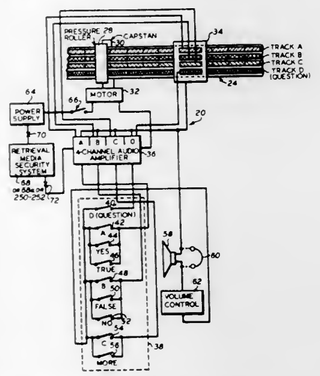
REAL TIME CONVERSATIONAL TOY HAVING SECURE PLAYBACK RESPONSE

Lawrence G. Kurland, Melville, N.Y., and Michael J. Freeman, 12 Maplewood Rd., Hartsdale, N.Y. 10530, assignors to Michael J. Freeman, Hartsdale, N.Y.

Filed Jun. 24, 1976, Ser. No. 699,433

Int. Cl.[2] G09B *7/04*

U.S. Cl. 35—9 A **24 Claims**



1. A real time conversational verbal interactive toy apparatus comprising a removably insertable magnetic storage medium having a housing for said storage medium, said magnetic storage medium comprising a plurality of coextensive multipurpose audio tracks capable of having audio information stored thereon for multipurpose audio playback therefrom; receptacle means for removably receiving said inserted storage medium housing wiith said storage medium in a playback position thereof; audio playback means adjacent said multitrack storage medium and in alignment therewith in said playback position of said received inserted storage medium housing for selectively obtaining said stored audio information from each of said coextensive tracks; multiple choice multipurpose selection means operatively connected to said playback means for directly selecting one of said tracks for reproducing said selected information stored thereon in accordance with a predetermined variable purpose for said multipurpose audio track; and audio output means operatively connected to said playback means and said direct selection means for directly providing said selected track information from said selectively obtained stored audio information for selectively reproducing said information as an audio output therefrom, said information being stored on each track in a plurality of reproducible information segments, each of said segments comprising a complete message reproducible by said playback means directly in response to the selection of said track upon which said segments are stored, each of said information segments on each of said coextensive tracks being spatially related in real time along said tracks and related in content to said information segments on the other of said coextensive tracks in said plurality thereof, said selection means comprising means for designating only one of said coextensive tracks as an interrogatory message track with said information stored thereon comprising interrogatory messages and for designating said other of said coextensive tracks as responsive message tracks with said stored information thereon conprising selectable responsive messages spatially related along said other tracks in said real time and related in content to said interrogatory messages on said one designated interogatory message track dependent on said predetermined purpose for said multipurpose tracks, each of said tracks having substantially the same associated track width, said verbal interactive toy having a timed relationship between adjacent successive interrogatory messages solely dependent on the spatial relationship between said adjacent successive interrogatory messages on said one designated interrogatory message track and said responsive messages on said other tracks whereby said verbal interactive toy apparatus is capable of controlling verbal interaction in real time solely dependent on said spatial relationship, said interrogatory message containing a predetermined category of response thereto, each of said predetermined variable purposes corresponding to a different category of response to said interrogatory messages on said designated interrogatory message track, said multipurpose selection means enabling said category of response to be varied in accordance with a variation in said predetermined category of response contained in said interrogatory message on said designated real time related interrogatory message track; insertion security means operatively associated with said receptacle means for providing an insertion condition for said inserted received multitrack magnetic storage medium housing with respect to said receptacle means, said multitrack storage medium housing having means disposed thereon comprising a playback authorization code for reproduction from said multitrack storage medium, said insertion security means comprising means responsive to said playback authorization code for providing said insertion condition therefrom; and condition responsive means operatively associated with said insertion security means for controllably enabling the provision of said selectable reproduction of said selected information from said multitrack storage medium, said playback means having an enable condition and a disable condition for enabling the provision of said selectable reproduction therefrom only in said enable condition thereof, said condition rsponsive means being responsive to said insertion security means provided insertion condition for providing said enable condition to said playback means only when said provided insertion condition corresponds to a predetermined playback authorization code, whereby only a magnetic storage medium capable of providing said real time conversational type response to an interrogatory message may be employed in said verbal interactive toy apparatus for ensuring secure provision of said real time conversational type response; said multiple choice multipurpose selection means comprising a plurality of switch means, one of said switch means being associated with each of said plurality of audio tracks, at least one of said switch means associated with one of said selectable other designated responsive message tracks comprising a parallel connected switch bank having a plurality of separately operable different single purpose switch members, each of said different single purpose corresponding to a different category of response to an associated real time related interrogatory message, means associated with said switch bank whereby only one of said switch members is operable at a time for said direct selection of said one associated track dependent on said predetermined category of response, said predetermined category of response being defined in said real time related interrogatory message on said interrogatory message track, whereby the category of multiple choice response to said interrogatory messages may be varied and said real time conversational type response may be ensured for each category; said one interrogatory message containing track further comprising associated multiple choice selectable responses to a particular interrogatory message, said other tracks comprising responsive messages related in real time and content to said interrogatory messages and corresponding to said multiple choice selectable responses, only one of said plurality of other tracks comprising the correct selectable responsive message to a particular real time related interrogatory message.

4,117,606

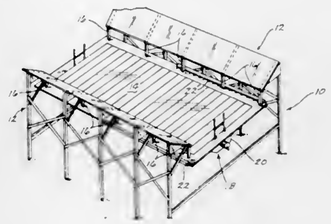
METHOD AND MEANS OF SEQUENTIALLY OBSERVING PLAYER POSITIONS IN PREDETERMINED GAME PLAYS

Richard A. Pundt, 4110 Hickory Hill La., SE., Cedar Rapids, Iowa 52403

Filed Jul. 22, 1977, Ser. No. 818,284

Int. Cl.[2] A63F *7/06*

U.S. Cl. 35—29 R **9 Claims**



1. A method of observing sequentially player positions in predetermined game plays, comprising,

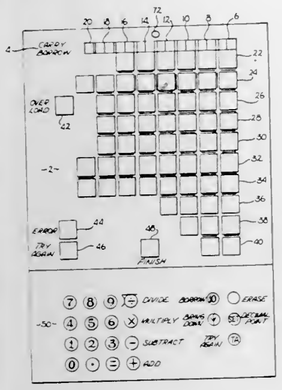
selecting a first battery of a plurality of simulated offensive and defensive player positions for an offensive team for an offensive play,

selecting a second battery of a plurality of simulated offensive and defensive player positions for a defensive team to defend said offensive play wherein at least some of the offensive and defensive player positions of said batteries are identical,

providing a plurality of predetermined master play segments utilizing only some of said identical simulated player positions from said offensive and defensive teams wherein said batteries and said master play segments are opaque play sheets with translucent apertures for player positions,

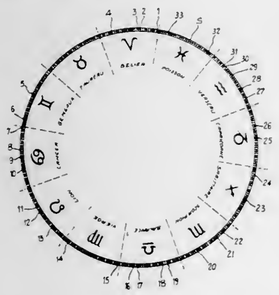
and intermittently and sequentially comparing by superimposing over each other to register the player positions which are common to all three sheets said master play segments in a visual medium with said first and second batteries so that the changing player positions of the offensive and defensive teams throughout the duration of each play can be visually observed.

4,117,607
MATHEMATICS TEACHING SYSTEM
Gary Gill, 1440 E. Sycamore Ave., El Segundo, Calif. 90245
Filed Apr. 11, 1977, Ser. No. 786,291
Int. Cl.[2] G09B *19/02*
U.S. Cl. 35—31 R 34 Claims



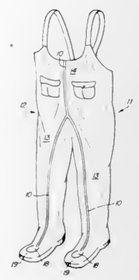
1. A mathematics teaching system for use by a student, for performing operations involved in calculation comprising:
entry means operable by said student to enter a mathematics problem and a step-by-step solution of said problem;
calculating means for automatically calculating a correct step-by-step solution to said problem; and
display means, said calculating means providing carry and borrow information to assist the student in performing calculations required in calculating said step-by-step solution of said problem, said display means being responsive to said entry means to display the entered calculation steps and being responsive to said calculating means to display said carry and borrow information to assist said student in performing calculations required in calculating said step-by-step solution.

4,117,608
ASTROLOGICAL DEVICE
Eckhart Trenkle, 38 Passage Choiseul, Paris, France
Filed Mar. 23, 1977, Ser. No. 780,493
Claims priority, application France, Apr. 5, 1976, 76 09797
Int. Cl.[2] G09B *29/00*
U.S. Cl. 35—44 3 Claims



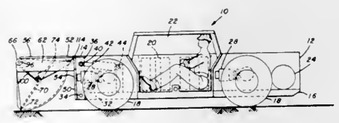
1. An astrological device comprising in combination an endless string of 360 elements of the same thickness, in combination with an astrological board having the 12 signs of the zodiac arranged in an annular series of about the same circumference as the string of elements and with indicia marking the borders between the signs of the zodiac, whereby when the string of elements is superposed on the board, said indicia will delimit 12 groups of 30 said elements, certain of said elements being visibly different from certain others of said elements.

4,117,609
RIP CORD SAFETY DEVICE FOR WADERS
Raymond E. Helt, Pocatello, Id., assignor to Rass, Inc., Pocatello, Id.
Filed Mar. 25, 1977, Ser. No. 781,193
Int. Cl.[2] A43B *1/10*
U.S. Cl. 36—4 6 Claims



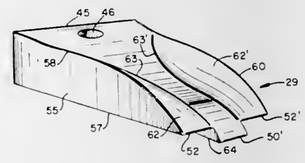
1. A rip cord safety device providing a means of opening waders of bib-type to escape therefrom, comprising in combination:
a cord disposed within the walls of each wader boot and extending upwardly from each boot toe to the abdomen area, said cords uniting in said abdomen area and then extending upwardly as a single cord to the top of the bib;
a ring attached to the toe end of each cord at the toe;
a waterproof coating for sealing said cord within said wader walls; and
a flap for disposing over the ring on the toe of the waders.

4,117,610
COMBINATION BULLDOZER BLADE AND BUCKET ASSEMBLY FOR EARTH WORKING EQUIPMENT
George A. Yates, 111 Woodlawn Ave., Grove City, Ohio 43123
Continuation of Ser. No. 713,640, Aug. 12, 1976, abandoned.
This application Oct. 26, 1977, Ser. No. 845,823
Int. Cl.[2] E02F *3/76*
U.S. Cl. 37—117.5 8 Claims



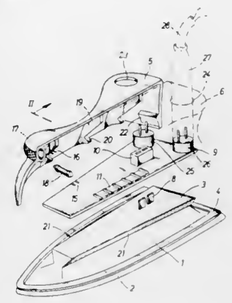
1. A combination bulldozer blade and scoop assembly for earth working equipment comprising,
support means to support a bulldozer blade and a scoop in operative position for bulldozing with a bulldozer blade and for transporting material in a scoop,
a bulldozer blade fixedly secured to said support means and having an upper edge portion and a lower edge portion,
a scoop having a bottom portion and a pair of parallel side portions connected to said bottom portion, said scoop bottom portion having an arcuate semi-cylindrical configuration, each of said scoop side portions having an edge portion,
pivot means pivotally connecting each of said scoop side portions to said support means to thereby pivotally connect said scoop to said support means with said bulldozer blade positioned within said scoop bottom portion,
each of said scoop parallel side portions having a bracket plate secured thereto and depending downwardly below said pivot means,
said scoop arranged to move through a circular path around said bulldozer blade so that in a first retracted position of said scoop said bulldozer blade is in an operative position for bulldozing and, in a second advanced position of said scoop said bulldozer blade provides the back wall of an upwardly open bucket, and
piston cylinder assemblies connected at one end to said support means and at the other end to said bracket plates secured to said scoop side portions at a location below said pivot means and said support means, one end of said piston cylinder assemblies connected to said support means at an elevation above the connection of said other end so that upon extension of said piston cylinder assemblies said scoop pivots about said pivot means and moves around said bulldozer blade lower edge portion in a circular path from a retracted position to an extended position while said scoop remains at an elevation below said support means.

4,117,611
DIGGING TEETH FOR AN EXCAVATING BUCKET
Charles Wayne Hemphill, 800 S. 5th Ave., Mansfield, Tex. 76063
Division of Ser. No. 715,560, Aug. 18, 1976, Pat. No. 4,037,337.
This application Apr. 29, 1977, Ser. No. 792,339
Int. Cl.[2] E02F *9/28*
U.S. Cl. 37—142 R 9 Claims



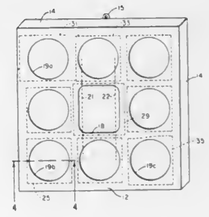
1. A digging tooth for attachment to the lip of an excavating bucket, said tooth having a leading end spaced from a trailing end;
a shank formed at said trailing end by which said tooth can be affixed to a digging implement; a ground engaging member formed at said leading end so that movement of the tooth in a direction towards said leading end enables said tooth to engage the ground and excavate material therefrom;
said ground engaging member includes a penetrating member and a secondary member, said penetrating member extends forward of said secondary member;
said secondary member has a forward ground engaging edge and an upper face, said upper face commences at said edge and upwardly slopes towards said trailing end;
opposed sidewalls, said penetrating member and said secondary member each have one of said opposed sidewalls; said penetrating member has an upper face which commences at one said sidewall and slopes downward towards said face of said secondary member; said penetrating member is progressively reduced in crosssection towards the leading end thereof and terminates in a pointed chisel;
said secondary member includes a forward terminal end portion in the form of a cutting edge which extends substantially half of the width of the tooth;
a wall, said chisel of said penetrating member and said cutting edge of said secondary member are spaced from one another by the last said wall with the last said wall being spaced from each of said opposed walls.

4,117,612
SMOOTHING OR PRESSING IRON
Erich Rudolf Baumgartner, Tiroler Platz 4, and Peter Doehler, Kaulbachstrasse 59, both of Munich, Fed. Rep. of Germany
Filed Mar. 1, 1977, Ser. No. 773,252
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1976, 2608500
Int. Cl.[2] D06F *75/34*
U.S. Cl. 38—91 16 Claims



1. A smoothing or pressing iron comprising a sole-body including a heating means for applying heat, a housing clamped to said sole-body, and a clamping means, said sole-body further comprising a first set of inclined surfaces located on opposite sides of said sole-body extending downwardly and converging inwardly with respect to the normal position of the iron when in use, said housing comprising two housing halves which, on the inner sides thereof, have a second set of inclined surfaces for cooperating with said first set of inclined surfaces, said clamping means engaging said housing halves for clamping said housing halves together to urge said second set of said inclined surfaces of said housing inwardly against said first set of said inclined surfaces of said sole-body to thereby grip said sole-body with said housing halves via said inclined surfaces.

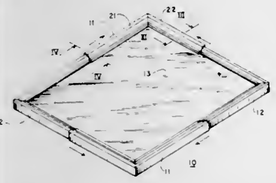
4,117,613
PICTURE DISPLAY ASSEMBLY
Thomas M. Hosker, 17 Dona St., Lynn, Mass. 01904
Filed Mar. 29, 1977, Ser. No. 782,422
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—152.1 12 Claims



1. In an assembly for framing a plurality of pictures the combination of a top panel having a like plurality of openings formed therethrough, the area of each said opening being less than that of a picture to be framed thereby, at least one of said openings having a major dimension which may be the diagonal thereof greater in size than a minor dimension of any of said

plurality of said pictures whereby said pictures may be inserted through said one of said openings, and resilient backing means disposed behind but not connected to said top panel at any points adjacent said openings said resilient backing means urging said pictures into frictional engagement with the underside of said top panel.

4,117,614
ADJUSTABLE PICTURE FRAMES
Edgar Bickford, Danbury, Conn., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Nov. 16, 1976, Ser. No. 742,187
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—155 **1 Claim**



1. A kit for forming a picture frame to one of many desired sizes comprising

a rear panel, and

two pairs of frame sections, with each pair of frame sections formed of two mutually perpendicular arm sections, each formed as an open channel member, and with

each arm section of the first pair of frame sections shaped to telescopically slide over an arm section of one of the second pair of frame sections,

each said frame section shaped to abut, in the assembled condition a front face of a panel mounted in said frame sections and a rear face of a panel mounted in said frame section, in which

each arm section of each first frame section is shaped with a pair of projecting sections that extend for substantially the length of the respective arm section, with one of said projecting sections of each arm section formed to abut the front face of a panel mounted in the frame section and the other of said projecting sections of each arm section formed to abut the rear face of a panel mounted in the frame section, and in which

each second frame section is formed with a projecting section that extends for substantially the length of each arm section, with said projecting section shaped to abut the front face of a panel mounted in the said frame section, together with a tab section on the joint of the two arm sections, which tab section is shaped to abut the rear face of a panel mounted in the said frame section.

4,117,615
VIEWING PANEL FOR PRODUCING MULTIPLE IMAGES OF A DESIGN
Theodore M. Gomolak, Kalamazoo, Mich., assignor to Johnstons & Associates, Inc., Kalamazoo, Mich.
Filed Feb. 10, 1977, Ser. No. 767,471
Int. Cl.[2] G09F *11/00*
U.S. Cl. 40—363 **3 Claims**

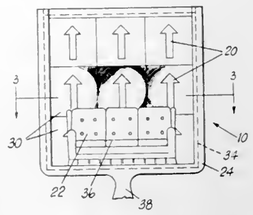
1. A viewing panel for viewing various designs as a background for various pieces of furniture comprising:

a frame having a transparent lens sheet supported in planar relation therein, said sheet having a plurality of fresnel lenses formed therein in adjacent horizontal and vertical rows,

a plurality of silhouette cards having at least one dimension shorter than the corresponding dimension of said frame and sheet and representing the shapes of various articles of furniture,

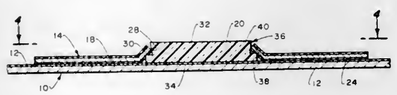
means on said frame for selectively and removably holding one of said cards in overlapped relation over a portion of said sheet,

and a handle on said frame,



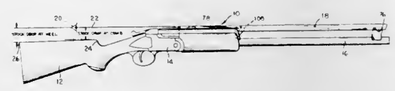
whereby a person holding said frame in spaced relation between his eyes and a portion of a repeating design such as sample of wall paper will see images of the design reproduced in horizontal rows behind one of the silhouette cards.

4,117,616
REFLECTORIZED SYMBOL SIGN AND METHOD OF FABRICATING AND ASSEMBLING
Hugh V. Penton, San Marino, Calif., assignor to California Metal Enameling Company, Los Angeles, Calif.
Filed Nov. 19, 1976, Ser. No. 743,285
Int. Cl.[2] G09F *13/00*
U.S. Cl. 40—550 **8 Claims**



1. In a reflectorized sign symbol construction adapted for attachment to a generally flat front face of a sign panel; the combination of; a sheet-like sign symbol having generally flat front and back faces with at least one reflector opening therethrough, symbol forwardly angled edge portions projecting only forwardly of said front and back faces peripherally defining said reflector opening at and forwardly of said front and back faces; a reflector extending through said symbol reflector opening and having edge surfaces adjacent said symbol angled edge portions, said reflector having a back face generally parallel to and aligned with said symbol back face providing a symbol and reflector coextensive back face for mounting on a flat surface; abutment means between said symbol angled edge portions and said reflector edge surfaces for retaining said reflector in said symbol opening and positively resisting forward and rearward movement of said reflector relative to said symbol angled edge portions; said reflector edge surfaces including inwardly stepped edge surfaces from rearwardly to forwardly forming rearward surface parts and forward surface parts, said symbol angled edge portions overlying said reflector rearward surface parts and pressure edge engaging said reflector forward surface parts, said pressure engagement forming at least a part of said abutment means.

4,117,617
ADJUSTABLE SIGHTING RIB
John P. Linde, Richfield Springs, N.Y.; Martin W. Kopinski, Houston, Tex., and Donald R. Lewis, Little Falls, N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Sep. 30, 1977, Ser. No. 838,135
Int. Cl.[2] F41G *1/00*
U.S. Cl. 42—1 S **25 Claims**



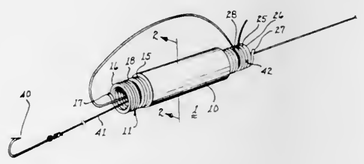
1. In a shotgun having a stock and a gun barrel through which a projectile means is fired, an adjustable sighting means for changing the point of impact of said fired projectile means with a given sight picture, said adjustable sighting means comprising an elongated rib, and means pivotally mounting said elongated rib on said barrel so that the rib pivots about a point rearwardly of said elongated rib and the drop of the stock at the comb remains constant throughout the pivotal movement of the rib.

4,117,618
FISHING POLE WITH SPACED ILLUMINATING MEANS
Charles S. Utsler, Rte. 1, Hackensack, Minn. 56452
Filed Feb. 3, 1977, Ser. No. 765,386
Int. Cl.[2] A01K *87/00*
U.S. Cl. 43—17.5 **2 Claims**



1. A fishing pole comprising a handle; a length of rod attached to one end of said handle; an energy means contained within said handle; a push button switch contained within an other end of said handle and having one contact connected to one side of said energy source; a pair of electrical wires disposed within said rod and connected to an other side of said energy source and an other contact of said switch, and; a plurality of at least three light emitting diodes disposed internal to the length of said rod, distributed along the length of said hollow rod and connected across said pair of electrical wires whereby said light emitting diodes selectively illuminate lengthwise spaced portions of said hollow rod.

4,117,619
SPRING TIE FISHING SINKER
Curtis A. Stevenson, 1424 E. Osborn, #18, Phoenix, Ariz. 85014
Filed Dec. 27, 1976, Ser. No. 754,495
Int. Cl.[2] A01K *95/00*
U.S. Cl. 43—43.1 **10 Claims**



1. A detachable weighted coupling device for connecting the loop of a leader to a fishing line, said device comprising in combination:

a. weight means having a channel extending therethrough;

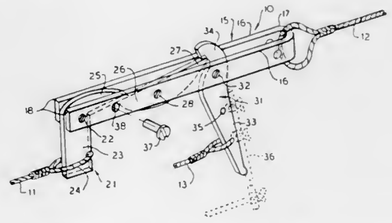
b. a tightly wound coil spring section extending from said weight means in proximity to at least one end of the channel, said coil spring section defining a cavity in communication with the channel;

c. terminal coil means of said coil spring section for engaging the loop of the leader inserted through the channel and the cavity; and

d. further coil means of said coil section disposed intermediate said terminal coil and said weight means for gripping the fishing line threaded into and out of said further coil means;

whereby, the gripping force of said coil spring section is increased proportionally to opposing forces applied to the leader and the fishing line.

4,117,620
RELEASE DEVICE FOR DEADFALL TRAPS
Eric Stauffer, 3964 Old Lakelse Lake Dr., Terrace, B. C., Canada (V8G 3V1)
Filed Mar. 1, 1977, Ser. No. 773,323
Int. Cl.[2] A01M *23/00*
U.S. Cl. 43—77 **1 Claim**



1. A release device for deadfall traps of the type having a load line for securing a deadfall in a raised position, the device comprising:

(a) an elongated body member adapted to be anchored at one end,

(b) an L-shaped load line engaging member having a load line engaging arm and a detent engaging arm swingably mounted at the opposite end of the body member for free swinging movement between a load line engaging position in which the load line engaging arm extends substantially at right angles to the body member for receiving a loop of load line and a release position in which the load line engaging arm extends substantially in alignment with the body member for releasing the load line,

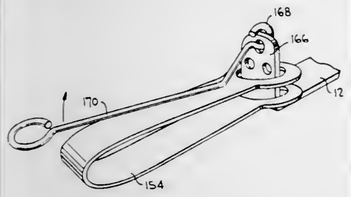
(c) an elongated detent member swingably mounted intermediate its ends on the body member adjacent the load line engaging member for free swinging movement and being adapted to be disposed in a set position in which one end extends in the path of and engages the detent engaging arm of the load line member when the latter is arranged in the load line engaging position,

(d) a trigger member swingably mounted on the body member adjacent said one end of the latter, the trigger member having a hooked head portion adapted to be swung into engagement with the opposite end of the detent member when the latter is arranged in a set position for preventing swinging movement of the latter so as to maintain the load line engaging member in the load line engaging position against the pull of the load line, the trigger member having a lever portion for connection to a bait line for swinging the hooked member, upon tension being applied to the bait line, out of engagement with the detent member so as to enable the load line engaging member to swing to the release position.

4,117,621
ANIMAL TRAP INCLUDING SPRING-ENGAGING INERTIAL SNUBBER TO REDUCE INITIAL JAW IMPACT

Herbert H. Loeffler, Cambridge, Mass., assignor to Woodstream Corporation, Lititz, Pa.

Continuation of Ser. No. 660,387, Feb. 23, 1976, Pat. No. 4,065,871. This application Jul. 13, 1977, Ser. No. 815,452
Int. Cl.[2] A01M *23/26*
U.S. Cl. 43—88 2 Claims

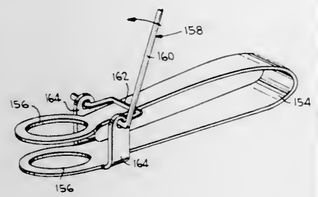


1. In an animal trap of the leghold type having a base, a pair of U-shaped coacting jaws swingably mounted on said base, spring means biasing said jaws to a closed position, and trigger means for locking said jaws in an open position until released, the improvement comprising means for reducing the impact of said jaws when they close without significantly reducing the closing speed or holding power, said base being elongated and having upstanding first and second ears at the ends thereof; said jaws each comprising a pair of substantially parallel spaced legs and a cross member, said legs terminating in laterally outwardly directed pintles journalled through bores in said ears; said spring means being a leaf spring and comprising an eye at one end thereof; said eye encircling one leg of each jaw so that when said jaws are in the open position and said spring is released the eye thereof rides up said one leg of each jaw to thereby close said jaws, said impact reducing means comprising an inertial snubber pivotally mounted in a bore in one of said ears and lying longitudinally along said spring to be operatively engaged by said spring before impact of said jaws to thereby absorb excess spring energy and cause the spring travel to lag behind the jaw travel.

4,117,622
LOW IMPACT ANIMAL TRAP

Herbert H. Loeffler, Cambridge, Mass., assignor to Woodstream Corporation, Lititz, Pa.

Division of Ser. No. 660,387, Feb. 23, 1976, Pat. No. 4,065,871. This application Jul. 13, 1977, Ser. No. 815,450
Int. Cl.[2] A01M *23/26*
U.S. Cl. 43—88 2 Claims

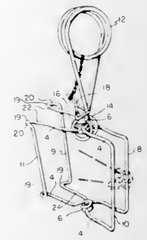


1. In an animal trap of the leghold type having a base, a pair of U-shaped coacting jaws swingably mounted on said base, spring means biasing said jaws to a closed position, trigger means for locking said jaws in an open position until released, the improvement comprising means for reducing the impact of said jaws when they close without significantly reducing the closing speed or holding power, said spring means being a leaf spring and said impact reducing means comprising a pair of upstanding legs at one end of said trap at either side of said spring, a crank mounted in bores in said legs and an inertia arm connected to said crank, said crank extending over said spring to be operatively engaged and pivoted by said spring during movement of said jaws from said open to said closed position to thereby absorb spring energy and cause the spring to lag behind the jaws during further movement of said jaws to said closed position.

4,117,623
MODIFIED JAWS FOR ANIMAL TRAP

Frank R. Conibear, Victoria, Canada, assignor to Woodstream Corporation, Lititz, Pa.

Filed Aug. 29, 1974, Ser. No. 501,755
Int. Cl.[2] A01M *23/26*
U.S. Cl. 43—90 10 Claims



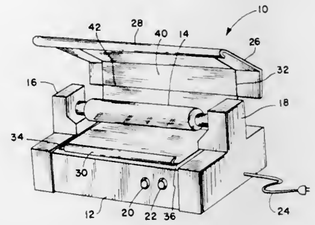
1. In an animal trap of the type having two similar frames, each having jaw forming sides which lie in a common plane and ends extending therebetween to support said jaws, said ends each having a central portion in which the frames are pivotally connected through adjacent ends for rotation about a common axis between set and closed positions and outer portions on each side of the central portion extending to said jaws, a trigger means for releasably maintaining the trap in set position and at least one actuator, capable of rapidly and forcefully effecting such rotation, which has two arms spring-biased at one end so that the other ends, which terminate in rings encircling adjacent ends of both frames on opposite sides of said axis, would, if unobstructed, move apart to a distance substantially greater than the length of said frame ends, the improvement wherein an outer portion of at least one of said ends of a frame encircled by said rings is so shaped, as it progresses radially outwardly from said axis, that it extends to a point out of the common plane of said jaws on the side thereof remote from the other frame when viewed with the trap in closed position, and thence returns to said plane wherein it connects with one end of a jaw, said point being located at a distance from said common axis that is about the same as the distance from said axis to said one end of a jaw.

4,117,624
INSECT TRAP

Dennis G. Phillips, Lititz, Pa., assignor to Pestolite, Inc., Lancaster, Pa.

Filed Jul. 25, 1977, Ser. No. 818,393
Int. Cl.[2] A01M *1/04*
U.S. Cl. 43—113 5 Claims

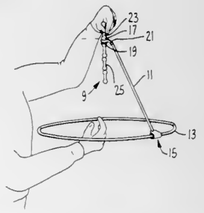
1. An apparatus for trapping insects while attracting them by ultra-violet radiation comprising:
- an ultraviolet radiation source;
- a support means for supplying electrical power to and supporting the radiation source;
- a holder means detachably connected to the support means and oriented to essentially enclose the radiation source on three sides; and
- a trapping means, detachably held against the inside surface of the holder means, comprising a sheet of material reflectorized on one surface, and coated with a sticky substance on that same surface, said sticky substance capable of trapping insects, said trapping means being oriented so that the reflectorized sticky surface is facing toward the ultra-violet radiation source.



4,117,625
ROPE SPINNING TOY

James R. O'Neil, 100-36th Ave., San Francisco, Calif. 94122

Filed Jun. 27, 1977, Ser. No. 810,607
Int. Cl.[2] A63H *1/32*
U.S. Cl. 46—51 2 Claims

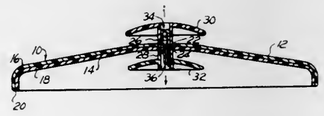


1. A rope spinning toy having a honda wherein said honda includes a U-shaped member of a flexible material having a first end and a second end with a bight between the ends with a first hole near the end in said first end, a second hole near the bight of the second end and a notch in the end of the second end of said U a cord having a loop at one end of said cord over said second hole within said U, the opposite end of said cord being brought through said loop, through said second hole, through said notch and then through said first hole to form stem and loop of the toy.

4,117,626
SOUND-EMITTING TOY FLYING SAUCER

Harry P. Kifferstein, 27250 Harvard, Southfield, Mich. 48076, and Warren M. Kifferstein, 29632 Middlebelt, Farmington Hills, Mich. 48024

Continuation-in-part of Ser. No. 653,786, Jan. 30, 1976, abandoned. This application Nov. 8, 1976, Ser. No. 739,653
Int. Cl.[2] A63H *33/18*
U.S. Cl. 46—74 D 11 Claims

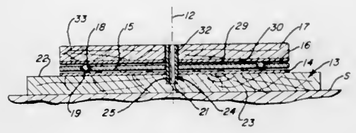


1. In a toy flying saucer comprising a substantially circular dome-shaped body and a downwardly extending rim formed at the periphery of said body, the improvement comprising said body made of lower and upper separable wall portions joined proximate said rim, wherein at least one of said wall portions is made of a resiliently deformable material, an aperture is provided in one of said wall portions, and an air flow actuated noise-making element is disposed in said aperture for emitting a sound when said wall portions are allowed to be resiliently displaced relative to each other thus causing air to circulate through said noise-making element.

4,117,627
ROTATABLE STAND

Henry H. Slingerland, Jr., 2800 Ramona Ct., Wilmette, Ill. 60091

Filed Jun. 3, 1977, Ser. No. 803,342
Int. Cl.[2] A47G *7/00*
U.S. Cl. 47—39 8 Claims



1. A freely rotatable, effectively tilt-free plant stand comprising:
- a base member;
- a metal lower bearing plate facially adhesively secured to said base member and having a small central opening;
- a ball race plate formed of wood facially superposed to said lower bearing plate and having an annular array of circumferentially spaced peripheral through holes;
- a metal upper bearing plate facially superposed to said ball race plate and having a small central opening;
- a plurality of ball bearings received one each in said holes and having a diameter greater than the thickness of said ball race plate to have rolling engagement with each of said lower and upper bearing plates;
- an axle member fixedly secured to said base member and projecting upwardly therefrom freely through said lower bearing plate opening, said ball race plate coaxially of said annular array, and said upper bearing plate opening for maintaining free coaxial rotatability of said upper bearing plate on said ball bearings in said annular array; and
- a mounting plate facially adhesively secured to said upper bearing plate for rotation therewith coaxially of said array.

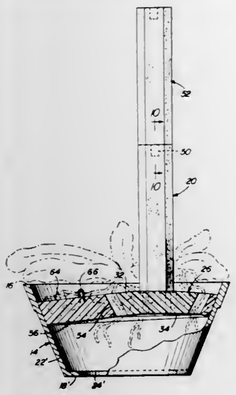
4,117,628
CULTURE AND GROWTH SYSTEM FOR EPIPHYTIC PLANTS

Robert C. Smith, Rte. #6, Pembroke Hwy., Statesboro, Ga. 30458

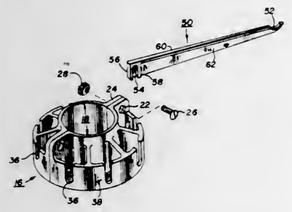
Filed Jun. 14, 1977, Ser. No. 806,494
Int. Cl.[2] A01G *9/02*
U.S. Cl. 47—59 12 Claims

1. In combination with a container having a downwardly converging interior wall, a cultural support for epiphytic plants comprising a support body made of a water impermeable material which is not normally subject to decay, said support body including a peripheral edge wedgingly engaged with the container, said peripheral edge having openings formed therein through which air circulation is conducted, said supporting body having external surfaces vertically spaced from each other by said peripheral edge, an upper one of the surfaces having a convex curvature gravitationally

inducing drainage of liquid collected thereon through the openings in the peripheral edge, and means for supporting and anchoring roots of epiphytic plants externally on said upper surface to expose the roots to ambient air and moisture.

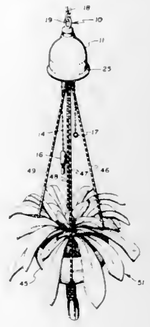


4,117,629
POT HOLDING ARM SUPPORT
Paul Ekdahl, Dutch Lane Rd., Freehold Township, Monmouth County, N.J. 07728
Filed Aug. 9, 1977, Ser. No. 823,120
Int. Cl.[2] A01G *9/02*
U.S. Cl. 47—67 **20 Claims**



1. A pot-holder assembly for holding flowers, plants and the like and characterized in that a plurality of pot holding arms are removably mounted in a receiving member, the assembly including: (a) a receiving member having a semicircular configuration with a determined inner diameter ring-like portion and an outer periphery and rim portion; (b) a plurality of like slots formed in the outer periphery of the rim portion of said receiving member, each of said slots open to the top of the receiving member, and providing on each side of the slot a rim portion providing a retaining shoulder means; (c) means for retaining the outer peripheral rim in spaced alignment with the inner ring-like portion; (d) securing means provided on the semicircular member enabling one semicircular member to be secured to a like member to form a ring-like receiving member, said securing means also enabling the semicircular member to be fastened to a wall; (e) at least one arm with an outer means for engaging and supporting a bail, chain and the like by which a pot and the like may be hung from an arm that is removably mounted in and on the receiving member; (f) said arm having two rib portions on each side of a theoretical center line of the arm, these rib portions engaging the outer peripheral rim at least on its inner surface of the rim and at two spaced-apart portions, and (g) means provided on said arm and cooperatively arranged in spaced array from said rib portions to maintain the mounted arm in a determined attitude and position on the receiving member.

4,117,630
REVOLVING PLANTER
Barbara A. Kalas, 8615 Colfax Ave. South, Minneapolis, Minn. 55420
Filed Mar. 14, 1977, Ser. No. 777,008
Int. Cl.[2] A01G *9/02*; **G09F** *11/00*
U.S. Cl. 47—67 **7 Claims**



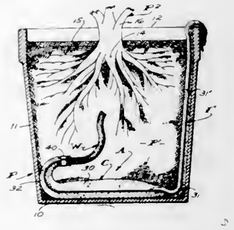
1. A revolving hanger for a planter, said hanger comprising a supporting member adapted to be supported from a suitable supporting surface,

a housing secured to and supported from said supporting member and having a weight operated clockwork mechanism therein, said weight operated clockwork mechanism having a weight actuated chain passing over a rotary toothed clockwork actuating member with which it is coupled so that when a planter is secured to said planter support beneath said housing the gravitational force exerted by the weight as it descends will cause actuation of said clockwork mechanism and slow rotation of the planter, and

a planter support projecting down from and beneath said housing and adapted to support a planter therefrom,

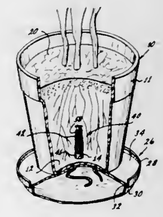
said clockwork mechanism being designed to cause relative rotation between said supporting member and said housing to cause slow rotation of said planter support about the axis thereof and relative to said supporting surface.

4,117,631
POTTED PLANT WATERING MEANS
Steven L. Tull, 17424 Strathern, Northridge, Calif. 91324
Filed May 12, 1977, Ser. No. 796,140
Int. Cl.[2] A01G *27/00*
U.S. Cl. 47—81 **10 Claims**



1. A well and wick type watering device for engagement in the bottom of a flower pot having a bottom, vertical sides and an upper rim and in which soil is deposited; said device including a formable container arranged in and conforming to a lower portion of the pot beneath the soil therein and having flexible walls defining a water supply chamber, an elongate substantially vertically extending tubular neck with a lower end communicating with the container and an open upper end arranged above the top surface of the soil in the pot, an elongate wick with a lower inner portion in the lower portion of the chamber defined by the container, a central portion engaged through the container in substantial sealed engagement therewith and an upper outer end portion extending upwardly into said soil and support means in the container to support the overburden of soil above and acting upon the container and to maintain adjacent and opposing portions of the chamber defining flexible walls in spaced relationship.

4,117,632
PLANT WATERING DEVICE
Woodrow W. Pearce, 911 Air Way, Glendale, Calif. 91201
Filed Jul. 1, 1976, Ser. No. 701,558
Int. Cl.[2] A01G *27/00*
U.S. Cl. 47—81 **9 Claims**



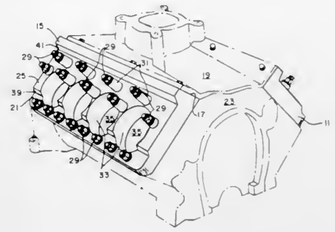
1. A plant watering device including a container containing material for growing a plant, means below the container for holding a supply of water, at least one probe extending upwardly in the container into said material, the probe having a central bore and being perforated so that a passage is provided through said probe between said material and said means for holding a supply of water, and a wick having one end submerged in water contained in said means for holding a supply of water and extending upwardly through the probe and out through a perforation in said probe with a second end of said wick being wrapped around the outside of the probe forming convolutions positioned in contact with said material whereby water can be drawn up through the wick by capillary attraction and into and out through the probe and delivered to the material in the container.

4,117,633
HONING PLATE
Cecil L. Yother, 1932 Vining St., San Leandro, Calif. 94579
Filed Sep. 12, 1977, Ser. No. 832,574
Int. Cl.[2] B24B *41/00*
U.S. Cl. 51—262 R **5 Claims**

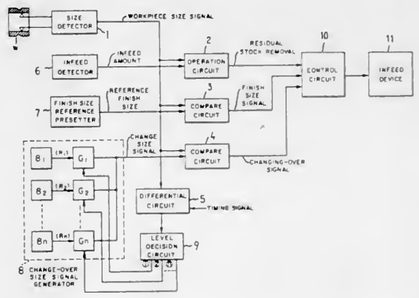
1. An improvement in a honing plate which is bolted to an engine block during re-boring and honing of the cylinder walls within said engine block to stress and distort said engine block to simulate its natural operating condition, comprising

a solid metal plate having a flat surface which is formed to mate with the surface of said engine block in the position where the cylinder head is normally affixed to said engine block, said plate having formed therein a first set of holes to accommodate the cylinder head bolt studs and a second set of larger holes formed therein being disposed concentric with and slightly larger than the cylinder bores in said engine block when said plate is mounted thereon, and

said plate having a varied thickness and means for attachment of the engine intake manifold thereto, whereby said plate imposes forces on said engine block which cause the normal stress and distortion to occur within said engine block as when the cylinder heads and intake manifold are secured in operative position thereon.



4,117,634
CONTROLLING METHOD FOR A GRINDING MACHINE
Terumitsu Sugita, and Yasuo Tateishi, both of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan
Filed Jan. 31, 1977, Ser. No. 764,074
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—281 R **5 Claims**



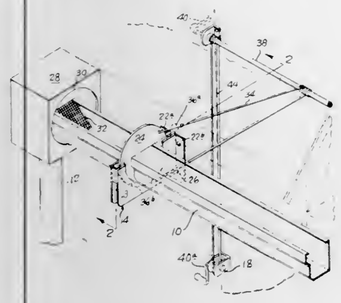
1. A method of controlling a grinding machine during grinding of a workpiece, comprising:

rough grinding the workpiece; measuring a rate of stock removal during a reference interval during the rough grinding of the workpiece; comparing the value of stock removal rate measured during the rough grinding with a predetermined reference value of stock removal rate corresponding to a particular value of workpiece dimension; measuring the value of the workpiece dimension during the rough grinding; and changing from rough grinding to fine grinding of the workpiece when the measured value of the workpiece dimension is equal to the reference value of the workpiece dimension corresponding to the measured value of stock removal rate.

4,117,635
EASY CLEAN EAVE TROUGH
Vernon L. Nelson, Rte. 2, Box 115, Portland, Oreg. 97231
Filed Feb. 3, 1977, Ser. No. 765,289
Int. Cl.[2] E04D *13/06*
U.S. Cl. 52—11 **6 Claims**

1. Apparatus for cleaning a gutter below the eaves of a building comprising: support means for the gutter on a vertical face of the building, and means to rotate and invert the gutter so as to empty any accumulated debris including at least one disc surrounding said gutter carried on said support means connected to a shaft which is horizontally offset from and

parallel to said gutter, said shaft also supported on a vertical face of the building, said disc and said shaft connected by a single flexible element, said flexible element having two terminal portions, one terminal portion of which is connected to a first link which is connected to said disc along the outer periphery of, said other terminal portion also connected to a



second link which is connected to the outer periphery of said disc diametrically opposed from said first link, said flexible element having a medial portion which is wound about said shaft and means to rotate said shaft so that when said shaft rotates said disc and the gutter rotates therewith through said flexible element by said flexible element wrapping and unwrapping about said shaft.

4,117,636

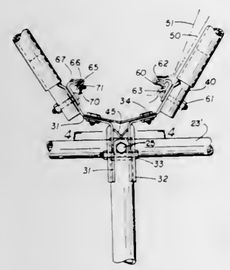
PLASTIC COVERED GUTTER CONNECTED GREENHOUSE BUILDING STRUCTURE

Richard W. Smith, Rumson, N.J., assignor to X. S. Smith, Inc., Red Bank, N.J.

Continuation of Ser. No. 731,863, Oct. 13, 1976, abandoned. This application Apr. 22, 1977, Ser. No. 790,111

Int. Cl.² E04B *1/315;* **E04D** *13/00*

U.S. Cl. 52—13 **6 Claims**



1. In a greenhouse building structure comprising a plurality of rafter members positioned in spaced apart relationship, and secured at their ends upon columns, fastening means for securing the ends of plastic covers along the length of the structure, said fastening means comprising a longitudinally extending male member, a longitudinally extending female member, said members providing inter-fitting splined portions along their length within a V-shaped clamping area and between which the end of a plastic cover is to be clamped, said female member providing a flange integrally formed and extending substantially along the length thereof parallel with said splined portions and screw means perpendicular to and threaded through said flange for pressing against an outer surface of a leg of the Vshaped area of said male member for clamping said splined portions and said V-shaped areas together.

4,117,637

CYCLIC SHEAR ENERGY ABSORBER

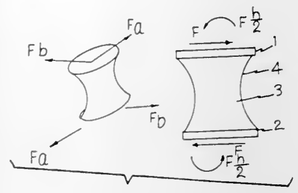
William Henry Robinson, 9 Nikau St., Eastbourne, New Zealand

Filed Oct. 12, 1976, Ser. No. 731,453

Claims priority, application New Zealand, Oct. 14, 1975, 178949

Int. Cl.² E04B *1/34*

U.S. Cl. 52—167 **46 Claims**



1. A cyclic shear energy absorber to be interposed between members of a structure which may be caused by incoming energy to oscillate relative to each other, said absorber comprising a first portion engagable to one member of the structure and a second portion spaced from said first portion which is engagable to a different member of said structure, said different member being one that may be caused to oscillate relative to the member to which said first portion is engaged, there being fixed in a sandwich-like manner plastically strainable cyclically in shear between said two portions at least one member of lead, the cross-section of said lead in a plane substantially parallel to the sandwich-like arrangement of said lead and said two portions is substantially rectangular and at least one of the sides of the cross-sectional area is smaller adjacent the center of the lead in the sandwich-like arrangement.

4,117,638

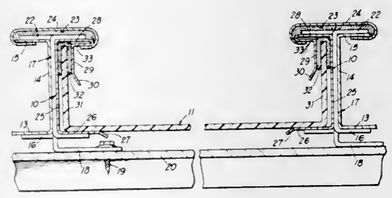
SKYLIGHT FOR STANDING RIB METAL ROOFS

James M. Kidd, Jr., Smyrna, and Jay G. Woods, Forest Park, both of Ga., assignors to Atlanta Metal Products, Inc., Atlanta, Ga.

Filed Nov. 25, 1977, Ser. No. 854,544

Int. Cl.² E04D *13/03;* **E04B** *7/18*

U.S. Cl. 52—200 **10 Claims**



1. In a standing rib metal roof having multiple side-by-side metal roof panels and intervening roof panel support clips for attaching the roof panels to purlins and cap strips for locking the opposing side walls of adjacent roof panels to said intervening clips, the improvement which comprises a skylight panel disposed between one pair of said clips in the space normally occupied by a metal roof panel, and a pair of side metal suspension channels mounted on opposite side walls of the skylight panel and floatingly supporting the skylight panel for restricted movements relative to said suspension channels and other components of the standing rib roof, and said side metal suspension channels configured for engagement with said support clips and said cap strips in substantially the same manner that the metal roof panels of the standing rib roof are engaged with said clips.

4,117,639

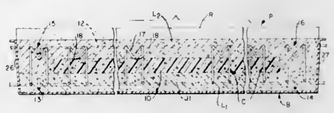
REINFORCED INSULATED CONCRETE BUILDING PANEL

Thomas William Steenson, Richmond Hill, and W. Donald Paton, Aurora, Canada, assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Jun. 29, 1977, Ser. No. 811,300

Int. Cl.² E04B *1/16, 2/28*

U.S. Cl. 52—223 R **3 Claims**



1. In a reinforced insulated concrete building panel having an inner layer of concrete, an outer layer of concrete, a layer of insulating material sandwiched therebetween, and prestressed reinforcing strands extending longitudinally through the inner and outer layers of concrete, the improvement comprising a plurality of reinforcing shear connectors embedded in the inner layer of concrete and extending through the layer of insulation into the outer layer of concrete to bond the layers together into a composite panel and to prevent delamination failure of the panel, said shear connectors each being spaced from all of the reinforcing strands, each shear connector being generally U-shaped, and having a pair of depending legs joined at one of their ends to a bight portion, the bight portion being bent downwardly in the central portion thereof to extend generally in the same direction as the legs to define a depth gauge, whereby the legs may be inserted through the layer of insulating material and into one of said layers of concrete until the depth gauge contacts the layer of insulating material, thus leaving a portion of the shear connector exposed above the layer of insulating material, the other ends of each of the depending legs having terminal portions extending in a common direction at approximately a right angle to the axis of the leg to form a secure bond between the one layer of concrete and the shear connector, said terminal portions being spaced from all of said reinforcing strands whereby said shear connectors are in spaced relationship with said reinforcing strands, said shear connectors being positioned such that the legs thereof lie in a plane generally parallel to the longitudinal axis of the panel, whereby during manufacture of the panel the shear connector can be readily accurately and securely positioned at a proper depth in the panel.

4,117,640

THERMAL BARRIER SYSTEM FOR PANEL INSTALLATIONS

Cornelius Christian Vanderstar, 813 N. Foothill Rd., Beverly Hills, Calif. 90210

Filed Mar. 14, 1977, Ser. No. 776,992

Int. Cl.² E04B *1/62*

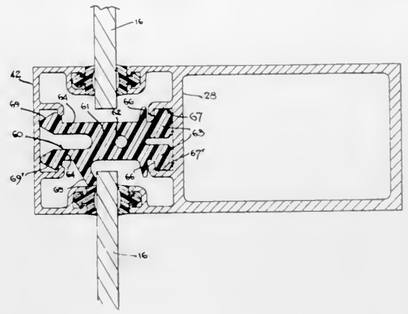
U.S. Cl. 52—398 **14 Claims**

1. A thermal barrier system for panel installations comprising:

at least one gutter member including means for attachment to a structure, said gutter member defining first forwardly facing slot means and including first flange means adjacent said first slot means;

at least one face member, said face member defining second rearwardly facing slot means and including second flange means adjacent said second slot means;

at least one coupler member comprising a unitary body of heat insulating material, the latter member having first connector means rotatable in one direction in said first slot means of said gutter member to form a locking engagement with said first slot means and said first flange means, said coupler member further including resilient second connector means snap fittable into said second slot means of said face member to form a locking engagement with said second slot means and said second flange means, said first connector means and said second connector means being disengageable from said gutter member and said



face member, respectively, by a reverse rotation of said coupler member; and means adjacent said first and second slot means, respectively, for engaging and holding an edge of a panel member.

4,117,641

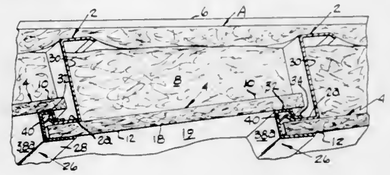
INSULATION SYSTEM FOR BUILDING STRUCTURES

David Lee Wells, Denver, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 691,689, Jun. 1, 1976, abandoned. This application Mar. 11, 1977, Ser. No. 776,694

Int. Cl.² E04B *5/52*

U.S. Cl. 52—404 **11 Claims**



1. An insulation system for building structures having a plurality of parallel structural members and a covering material spanning the structural members on the exterior side, both the structural members and the covering material having a relatively high coefficient of thermal conductivity, comprising:

(a) first insulation board-like means for isolating the structural members from the interior of the building, said first insulation means being supported along a first edge portion adjacent to a lower portion of a first structural member, said first insulation means spanning to and having a second edge portion extending beneath an adjacent second structural member,

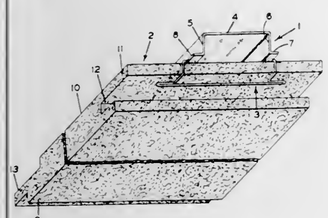
(b) a second insulation means located adjacent to and above a major surface of said first insulation means and between adjacent structural members, said second insulation means having a lower density and a higher thermal insulation value than said first insulation means,

(c) fastening means for urging the second edge portion of said first insulation means into contact with the lower portion of said second structural member,

(d) said fastening means comprising clip means for holding the second edge portion of said first insulation means onto said structural member such that a portion of said clip means provides support for a first edge portion of an adjacent first insulation means, said clip means extending

from a major surface on said first insulation means opposite said structural member, around a minor surface of said second edge portion, and onto an upper surface of the lower portion of said structural member.

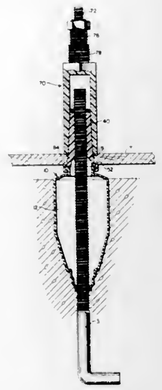
4,117,642
CEILING PANEL ATTACHMENT CLIP
Lewis W. Eckert, Lancaster; Harold W. Nikolaus, Columbia, and James C. Ollinger, Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed Jul. 29, 1977, Ser. No. 820,047
Int. Cl.² E04B *5/57*; E04D *1/34*
U.S. Cl. 52—486 **3 Claims**



1. A ceiling construction comprising:
(a) at least one support channel fastened to the structural ceiling of a room, said support channel having two flanges horizontally disposed, one on each side of the support channel;
(b) an acoustical fibrous ceiling panel having a front and back surface, said back surface being positioned adjacent said support channel, at least two opposite edges of the panel having flanges projecting therefrom, one edge having its flange adjacent the back surface of the ceiling panel and the other opposite edge having its flange near the front surface of the ceiling panel, said flanges having a thickness less than the thickness of the ceiling panel as measured from the front to the back surfaces thereof;
(c) clip means engaging the flanges of the support channel and the flange of the ceiling panel adjacent the back surface thereof to fasten the ceiling panel to the support channel;
(d) the improvement comprising:
(1) forming the clip means from spring steel;
(2) said clip means having two ends, each end engaging one of said flanges of said support channels;
(3) said clip means having legs extending from its ends and bent around the flange of the ceiling panel; and
(4) said clip means having a body portion bearing against the ceiling panel flange and connecting together said leg means.

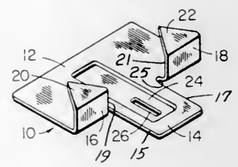
4,117,643
ANCHOR BOLT THREAD PROTECTOR AND SLEEVE SYSTEM
Surguies M. Lamothe, 1813 Feronia St., Metarie, La. 70005
Filed Feb. 22, 1977, Ser. No. 770,283
Int. Cl.² E04B *1/41*; E04C *5/07*; F16B *35/00, 37/00*
U.S. Cl. 52—699 **27 Claims**

1. An assembly for securing, protecting and enabling adjustment of an anchor bolt in a body of concrete or the like which comprises the combination of:
(a) a sleeve open at both ends which fits onto and provides a void space around a segment of the intermediate length of the anchor bolt, said sleeve having connecting means exteriorly positioned in proximity to its upper end;
(b) a hollow, generally cylindrical connecting member open at both ends and having interiorly positioned connecting means in proximity to its lower end interconnectable with said exteriorly positioned connecting means of the sleeve to effect detachable attachment between the connecting member and the sleeve, said connecting member additionally having a radially inwardly deformable portion; and
(c) a hollow tubular fastening member open at its lower end and closed at its upper end and having a generally cylindrical hollow interior sized and shaped to fit around and securely engage an exterior portion of said connecting member, the internal diameter of a lower interior portion



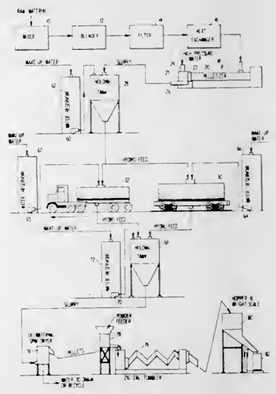
of said fastening member being undersized relative to the external diameter of an exterior portion of said connecting member so that when said fastening member is fitted onto said connecting member said lower interior portion engages said exterior portion and causes the radially deformable portion of said connecting member to deform inwardly to effect gripping engagement between a portion of the interior of said connecting member and a threaded portion of the anchor bolt inserted therein.

4,117,644
WALLBOARD FASTENER
Roger Neil Weinar, 168 W. Woodside Ave., Buffalo, N.Y. 14220
Filed Oct. 28, 1976, Ser. No. 736,425
Int. Cl.² E04B *1/38*
U.S. Cl. 52—714 **7 Claims**



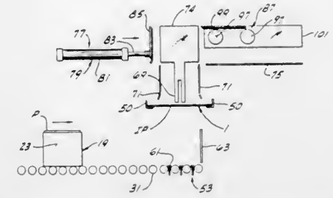
1. Wallboard fasteners useful for holding a first wallboard panel to a framing member at an end thereof and for joining to a second wallboard panel to be installed coplanar with and having an end thereof abutting the held end of the first panel so that parts of said fasteners, on installation of the second wallboard, contact the first panel, to which said fasteners are not joined, and prevent transverse movements of the second panel, which fasteners are each of a single piece of sheet metal having a substantially flat plate portion, a tongue portion extending from the plate portion and coplanar therewith, a pair of web portions, one on each side of the tongue portion and each extending at a right angle from said plate portion and an impaling flange portion extending from each web portion in the same direction essentially parallel to and overlying said plate portion and opposite to the direction in which the tongue extends so that the plate portion may contact the surface of the wallboard panel while the impaling flange portion is impaling said panel at an edge thereof, said fasteners including a walled depressed area in the plate and tongue portions with a longitudinal slot in the tongue portion, the depression being in a direction opposite to that in which the webs extend, and said fasteners being free of impaling portions extending in the direction of the tongue portion and being free of webs extending beyond the depression from the tongue and from the plate portions in the direction the depression extends from such portions.

4,117,645
METHOD FOR HANDLING AND TRANSPORTING THERMOPLASTIC MATERIALS
Michael Phillips, Pittstown, N.J., assignor to L.A. Dreyfus Company, Plainfield, N.J.
Filed Aug. 19, 1977, Ser. No. 826,036
Int. Cl.² B65B *3/00*
U.S. Cl. 53—431 **7 Claims**



1. In a process for handling and transporting thermoplastic material in bulk, which material exhibits adhesive and agglomerative characteristics at ambient or higher temperature, the improvement comprising:
providing pelletizing means having an inlet for receiving thermoplastic material and an outlet for expelling pellets formed therefrom;
providing a source of water or other fluid under a high pressure in communication with said pelletizing means at the outlet therefrom;
pelletizing said material in said means and simultaneously entraining said pellets in water from said source to form a slurry of said pellets in said water;
providing a water tight bulk shipping container;
conveying said slurry to said container and admitting said slurry into said container;
adjusting the concentration of the slurry in said container so that said pellets are present in a concentration of about 40 to 60%, by weight, and are covered with water whereby said pellets may be transported as a slurry in said container to eliminate agglomeration thereof during shipping.

4,117,646
METHOD OF APPLYING A LID TO A CASE
Robert C. James; David A. Wilson, both of Sheboygan, and Dennis P. Horsman, Sheboygan County, all of Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.
Filed Jul. 9, 1976, Ser. No. 703,973
Int. Cl.² B65B *7/20, 7/28*
U.S. Cl. 53—488 **3 Claims**



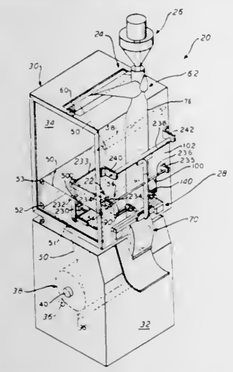
1. A method of applying a lid to an open top filled case, said lid being formed from a flat one piece blank having a central panel and side and end flaps at the sides and ends of the central panel adapted to be folded down on fold lines on the sides and ends of the central panel, with one of the pairs of flaps constituting major flaps and having end portions extending out beyond said central panel and with the other pair of flaps constituting minor flaps, said method comprising the steps of:
applying adhesive to selected areas of said blank for securement of said outer end portions of said major flaps to said minor flaps;
placing a blank in an initial blank position;
lifting a filled case from a position below said initial blank position to engage said blank and to move it upwardly along a vertical path to a raised position;
folding down the major and minor flaps of the lid blank on the case as the lid blank and the case are moved upwardly toward said raised position;
effecting partial folding of the outer end portions of said major flaps on vertical fold axes in on said minor flaps by the upward movement of said case and said lid bank while the case and the lid are being lifted;
moving said case with said partially formed lid thereon laterally when the case is in its said raised position into major flap-to-major flap abutting engagement with a previously lidded case while pressing a trailing major flap of the partially formed lid in against its case so that the major flaps of said partially formed lid are pressed in against their respective case; and
compressing said partially folded in outer end portions of said major flaps and said minor flaps of said partially formed lid against one another and against its respective case while both of said major flaps of said partially formed lid are under compression thereby to square up said lid on its case and to effect the securement of said outer end portions and said minor flaps together while the lid is squared up.

4,117,647
FLEXIBLE POUCH, FORMING, FILLING AND SEALING MACHINE
Alfred F. Rossi, 503 Old Woods Rd., Wyckoff, N.J. 07481
Continuation of Ser. No. 734,034, Oct. 20, 1976, abandoned. This application Jun. 27, 1977, Ser. No. 810,679
Int. Cl.² B65B *10/46, 57/14, 9/08*
U.S. Cl. 53—502 **33 Claims**

1. A packaging machine: comprising
(a) component support means;
(b) packaging stock support means carried by said component support means for positioning a supply of flat packaging stock proximate the beginning of a stock feed path;
(c) stock feed means for feeding packaging stock to and through said stock feed path;

(d) a tube former carried by said component support means proximate said stock feed path for receiving packaging stock as it moes therealong and for forming the flat stock into a tubular configuration with the longitudinally extending edges of the stock overlapping but not secured together;

(e) packaging material sealing means carried by said component support means proximate said stock feed path and for coaction with the packaging material after it has been formed into a tubular configuration by said tube former to effect a seal across the width of the tube so formed and for a predetermined extent of the overlapping edges of the packaging stock in the longitudinal direction thereof from the seal across the width of the tube to thereby form a pouch at the end of the tube of packaging material for the receipt of material to ba packaged;



(f) material directing means carried by said component support means proximate said stock feed path for directing material to be packaged into the pouch formed at the end of the tube of packaging material;

(g) material responsive means carried by said component support means and responsive to the amount of material entering the pouch at the end of the tube of packaging material;

(h) selectively settable means coacting with said material responsive means and selectively settable to a plurality of desired amounts of material; and

(i) control and circuit means interconnecting said stock feed means, said package material sealing means, and said material responsive means into an integrated and coordinated system, said material responsive means providing an output signal to arrest the flow of material to said material directing means upon sensing that the selective set amount of material has been deposited in the pouch.

4,117,648

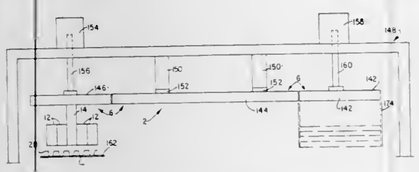
AUTOMATIC COLLATOR

James A. Goodman, 540 Lincoln Ave., Glencoe, Ill. 60022

Filed Apr. 28, 1977, Ser. No. 791,698

Int. Cl.² B65B *5/08, 35/38*

U.S. Cl. 53—537 **22 Claims**



1. A high speed automatic collating apparatus for collating a plurality of flanged containers and positioning the collated containers into a packing carton; said apparatus comprising:

a support structure;

carrier means coupled to said support structure;

a support bracket having means for being coupled to the carrier means;

a collator head assembly coupled to the support bracket;

air vacuum means coupled to the collator head assembly enabling said plurality of flanged containers to be coupled thereto in a predetermined configuration; and

collating means coupled to the collator head assembly for overlapping the flanges of adjacent containers to form a collated group at a time after said containers are coupled to the collator head assembly.

4,117,649

SYSTEM FOR FORMING, FILLING AND CLOSING BAGS

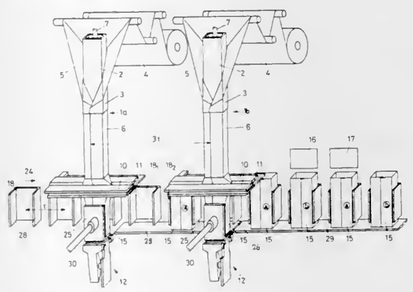
Alwin Egli, Beringen, Switzerland, assignor to Sig Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Mar. 29, 1977, Ser. No. 782,545

Claims priority, application Switzerland, Mar. 29, 1976, 3887/76

Int. Cl.² B65B *1/02, 3/02*

U.S. Cl. 53—558 **1 Claim**



1. In a system including a bag forming apparatus for forming a succession of bags, bag filling and closing means, and a conveying apparatus for conveying each bag, after it is formed, along a conveying path from the bag forming apparatus to the filling and closing means, the conveying apparatus being composed of a plurality of supporting members each serving to support and convey a respective bag from the forming apparatus, the improvement wherein: said bag forming apparatus is disposed laterally to one side of the conveying path defined by said conveying apparatus; said bag forming apparatus comprises a bag transporting member mounted to undergo forward and return movement perpendicular to the conveying direction for inserting each bag, after it has been formed, into a respective supporting member, whereby the conveying apparatus can convey bags which were previously formed while further bags are being formed by said bag forming apparatus; each of said supporting members has a U-shaped cross section in the horizontal plane; said bag transporting member has a horizontal arm defining a bag supporting surface and a vertical arm which give said bag transporting member an L-shaped cross section in a vertical plane transverse to the conveying path; said conveying apparatus comprises means defining a stationary supporting surface extending along the conveying path beneath said supporting members for supporting the bottoms of bags being conveyed by said conveying apparatus, the stationary surface having a gap adjacent said bag transporting member into which gap said horizontal arm moves, during forward movement of said bag transporting member, to come into alignment with said stationary supporting surface; and said conveying apparatus further comprises means defining a movable bag supporting surface movable between a rest position in which said movable supporting surface is disposed in the gap and at the same level as the stationary supporting surface and a retracted position in which said movable supporting surface is spaced from the gap, said movable supporting surface being moved to its retracted position in response to forward movement of said bag transporting member and returning to its rest position during return movement of said bag transporting apparatus.

4,117,650

TAPE WINDING ARRANGEMENT FOR PAPER BUNDLE BINDING APPARATUS

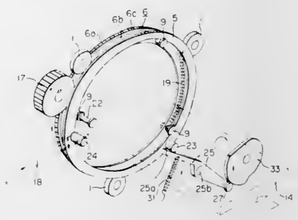
Yukio Ito, Fujisawa, and Susumu Morishima, Kamakura, both of Japan, assignors to Hitachi Denshi Engineering Kabushiki Kaisha and Musashi Kabushiki Kaisha, Tokyo, both of, Japan

Filed Apr. 26, 1977, Ser. No. 791,150

Claims priority, application Japan, Apr. 27, 1976, 51-47210

Int. Cl.² B65B *13/04, 27/08*

U.S. Cl. 53—587 **4 Claims**



1. An apparatus for winding a binder tape around a stack of paper sheets, said apparatus comprising::

an annular flyer body having an inner hollow space in which a stack of paper sheets to be bound is adapted to be disposed;

means for rotatably supporting said annular flyer body;

means for rotating said annular flyer body about the center point thereof;

a first guide roller mounted on said flyer body at a predetermined position thereof;

an annular plate supported by said annular flyer body to be coaxial therewith, said annular plate being circumferentially movable with respect to said annular flyer body;

a second guide roller mounted on said annular plate so as to be movable with said annular plate into disengageable contact with said first guide roller for holding and guiding a binder tape in tension in coopertion with said first guide roller;

spring means for urging said second guide roller toward a position to contact said first guide roller; and

means for displacing said second guide roller away from said first guide roller.

4,117,651

LAWN MOWER WITH CUTTER BLADE INTERLOCK

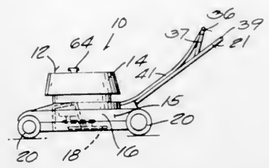
Herman H. Martin, Jr., Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 12, 1976, Ser. No. 704,282

Int. Cl.² A01D *75/20*

U.S. Cl. 56—10.5 **17 Claims**

1. A lawn mower comprising a frame, a rotatable cutter blade supported on said frame, a prime mover supported on said frame, selectively operable means connected to said prime mover for starting thereof, a drive mechanism for selectively connecting said prime mover in driving engagement with said cutter blade, said drive mechanism being movable between a first position wherein said prime mover is drivingly engaged with said cutter blade and a second position wherein said prime mover is disengaged from said cutter blade, means biasing said drive mechanism toward the second position, and interlock means operably connected to said drive mechanism and to said means for starting said prime mover and including an element movable between a first position preventing starting of said prime mover when said drive mechanism is in the first position and a second position permitting starting of said prime mover when said drive mechanism is in the second position, said biasing means also biasing said element toward the second position.



4,117,652

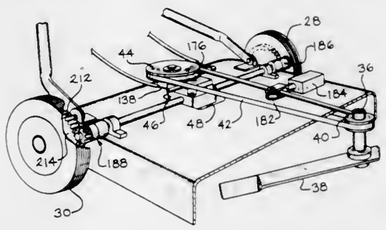
TRANSMISSION FOR SELF-PROPELLED, WALKING LAWN MOWERS

Ronald N. Jones, Fredericktown, and Devin R. Cline, Mount Vernon, both of Ohio, assignors to The J. B. Foote Foundry Co., Fredericktown, Ohio

Filed Sep. 30, 1976, Ser. No. 728,044

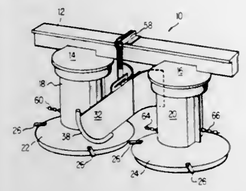
Int. Cl.² A01D *35/26;* **B62D** *51/04*

U.S. Cl. 56—11.8 **10 Claims**



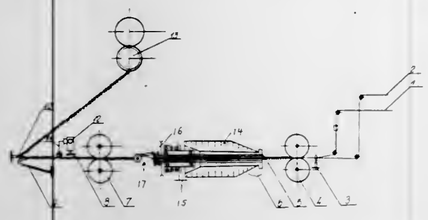
1. In combination, a self-propelled rotary lawn mower having a deck, two substantially aligned drive wheels rotatably supported by said deck, a handle extending upwardly from said deck, an engine mounted above said deck and having a drive shaft extending therethrough, a mower blade affixed to said drive shaft below said deck, a drive pulley affixed to said drive shaft above said mower blade, a transmission having a housing, means mounting said transmission on the lawn mower, an input shaft extending upwardly from said housing and having a driven pulley, a belt connecting said drive pulley and said driven pulley, a first gear mounted on said input shaft within said housing, an output shaft mounted in said housing and extending horizontally outwardly beyond opposite sides thereof, a second gear rotatably mounted on said output shaft in said housing and meshing with said first gear, a clutch dog within said housing affixed to said output shaft at one side of said second gear for rotation with said output shaft and for longitudinal movement with respect thereto, said clutch dog having an engaged position engaged with said second gear and a disengaged position spaced from said second gear, a shifter fork carried by said housing and engagable with said clutch dog, a shift lever carried by said housing for moving said shifter fork and said clutch dog between its two positions, said shift lever being movable by remote control means mounted on the handle of said lawn mower, and means on opposite end portions of said output shaft engagable with said two drive wheels of said mower for driving same.

4,117,653
SPREADING DEVICE FOR DRUM MOWERS
Samuel Allen Tarver, Jr., Hwy. 25 N, Folsom, La. 70437
Filed Aug. 26, 1976, Ser. No. 718,005
Int. Cl.[2] A01D *35/264*
U.S. Cl. 56—13.6 6 Claims



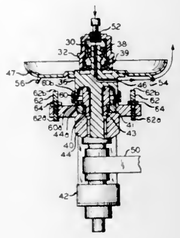
1. In a rotary mowing machine including a frame member and at least a pair of rotary mower drums rotatably mounted to said frame member, a spreading device for evenly distributing a mowed crop over a mowed swath comprising:
a crop divider for dividing crops to be mowed, said crop divider secured to said frame member at a position between said mower drums and extending forward of said drums in the direction of mowing, said crop divider including an upstanding main body portion having rewardly extending crop channelling fins;
said mower drums rotating toward said crop divider in said direction of mowing; and,
feeder chain means coupled to each of said mower drums for sweeping said mowed crop toward said crop divider and cooperating with said crop channelling fins for distributing the mowed crop uniformly across the mowed swath.

4,117,654
METHOD OF AND APPARATUS FOR THE CONTROL OF COMPOSITE EFFECT YARNS
Georgi Mitev Petrov; Blagoy Alexandrov Andonov; Svetozar Paissiev Trayanov, and Georgi Dimitrov Georgiev, all of Sofia, Bulgaria, assignors to Institute Po Obleklo I Textil, Sofia, Bulgaria
Filed Nov. 18, 1977, Ser. No. 852,616
Int. Cl.[2] D01H *13/22, 13/16*
U.S. Cl. 57—19 8 Claims



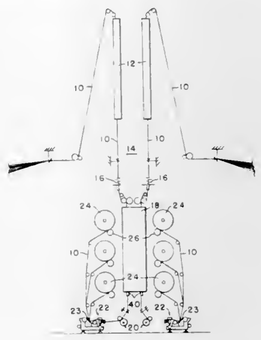
5. Apparatus for controlling composite effect yarn with enlargements, such yarns being formed by twisting components thereof by a driven hollow spindle, comprising a guide for the composite effect yarn disposed a substantial distance downstream of the driven hollow spindle, driven means for pulling the composite effect yarn from the spindle and forwarding it in a span under tension to the yarn guide, means disposed immediately upstream of the yarn guide for catching composite effect yarn in said span having abnormally large enlargements so as at least to slow its forward progress, means for detecting a decrease in tension in the composite effect yarn in the portion thereof between the yarn feeding means and the means for catching abnormally large enlargements in the composite effect yarn, and means responsive to said tension detecting means to stop the feeding of the components into the spindle upon such decrease in tension in the composite effect yarn.

4,117,655
2-FOR-1 TWISTER EQUIPPED WITH ANTIWRAPPING MEMBERS
Kenneth E. Smith, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Mar. 8, 1977, Ser. No. 775,501
Int. Cl.[2] D01H *7/86*
U.S. Cl. 57—58.83 7 Claims



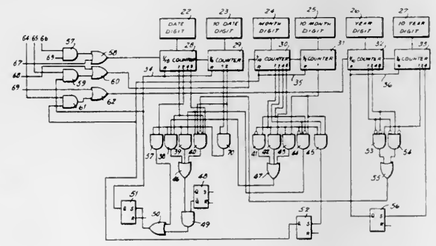
1. A 2-for-1 twister comprising spindle support means, spindle having a yarn orifice, yarn support means, and at least two antiwrap members,
wherein said spindle is rotatably connected to said spindle support means and forms an intersection therewith adjacent and immediately below said yarn orifice, said yarn support means is connected to said spindle above said yarn orifice, and said antiwrap members are positioned adjacent said intersection of the spindle and the spindle support means and equally spaced around said spindle so that the antiwrap members receive wraps of a yarn fed from the spindle upon breakage of the yarn and the wraps of yarn are held out of the intersection of the spindle and the spindle support means.

4,117,656
HANDLING YARN IN A COMBINATION FALSE TWIST AND CO-MINGLING JET APPARATUS
Robert M. Ingham, Jr., Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed Oct. 17, 1977, Ser. No. 843,078
Int. Cl.[2] D02G *1/20;* D01H *9/14, 11/00*
U.S. Cl. 57—157 TS 1 Claim



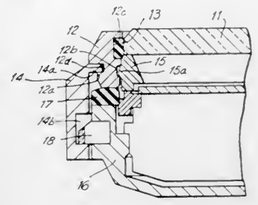
1. The method of doffing a combination of a false twist and co-mingling multifilament yarn producing machine having a co-mingling air jet downstream from a false twist producing device comprising the steps of: inserting a suction nozzle into the outlet end of the air jet to cut off the end of yarn being produced and direct the yarn being produced to a waste collection point, doffing a completed package while the yarn is being directed to the waste collection point, placing an empty yarn container on the take-up mechanism and moving the nozzle adjacent the empty yarn container to place the yarn being produced on the empty yarn container.

4,117,657
ELECTRONIC TIMEPIECE CALENDAR CIRCUIT
Eisaku Shimizu, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Dec. 10, 1976, Ser. No. 748,866
Claims priority, application Japan, Dec. 10, 1975, 50-147001
Int. Cl.[2] G04B *19/24*
U.S. Cl. 58—4 A 14 Claims



1. In an electronic timepiece having year counter means for producing a signal representative of a leap year and including date counter means adapted to receive a clock pulse having a period of one-day and in response to each said clock pulse received thereby, said date counter means being indexed through a counting cycle from one to at least 31 to thereby produce a date signal representative of the count thereof, and a month counter means for detecting each return of the date counter to a count of one and in response thereto being indexed by a count of one through a counting cycle from one to at least 12 and thereby produce a month signal representative of the count thereof, and control means for receiving said month signal and day signal and when said month signal is representative of a count of two, said control means, in the absence of a leap year signal applied thereto, being adapted to return the date counter means to a count of one in response to detecting when the count of the day counter is changed from 28 to 29, said control means being further adapted, in response to the presence of a leap year signal applied thereto to return the count of the day counter means to one when the count of the date counter means is changed from 29 to 30, the improvement comprising said year counter means including a year counter adapted to be indexed by a count of one through a counting cycle from zero to nine and thereby produce a year signal representative thereof, and a 10-year counter series connected to said year counter for being cycled at least through one odd and one even counting cycle in response to each return of the count of the year counter to zero, and producing a 10-year signal representative of the count thereof, and judging circuit means for receiving said year counting signal and said 10-year counting signal, and in response to detecting one of the year signals having one of a count of zero, four and eight and said 10-year signal having an even count, and the year signal having one of a count of two and six and the 10-year signal having an odd count, applying a leap year signal to said control means.

4,117,658
WATERPROOF WATCH CASE
Tsutomu Miyasaka; Yoshiaki Fujimori; Shigeru Matsui, and Tetsuo Komaki, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Sep. 7, 1976, Ser. No. 721,146
Claims priority, application Japan, Sep. 5, 1975, 50-108435
Int. Cl.[2] G04B *37/08, 39/00*
U.S. Cl. 58—90 R 6 Claims



1. A waterproof watch case, comprising a watch crystal, a glass bezel surrounding said crystal, said bezel having first and second grooves therein, said first groove facing said watch crystal, first gasket means in said first groove, a glass ring inside said bezel and below said crystal and having a ridge thereon mating with said second groove for pressing said gasket against the periphery of said watch crystal for forming a waterproof seal between said watch crystal and said glass bezel and for locating said watch crystal with respect to said bezel, a case band, fixing means holding said case band to said glass bezel in fixed relationship, a back cover, second gasket means between said back cover and said glass bezel, and biasing means between said case band and said back cover for biasing said back cover axially upward to form a waterproof seal between said back cover and said glass bezel.

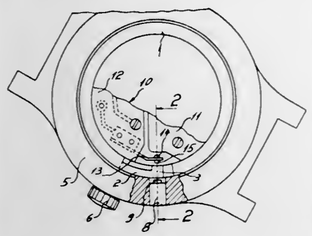
4,117,659
DISPLAY CELL
Hiroshi Takeshita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed May 5, 1976, Ser. No. 683,444
Claims priority, application Japan, May 7, 1975, 50-55099
Int. Cl.[2] G04C *3/00;* G02F *1/23*
U.S. Cl. 58—23 R 4 Claims

1. A solution for use in an electrochromic display cell comprising an aqueous solution of a n,n'-diheptyl-4,4'-bipyridinium bromide,
and a buffer means selected from the group consisting of NaOH and potassium primary arsenate; NaCl, glycol and HCl, HCl and sodium secondary citrate; potassium biphthalate; HCl and KCl; HCl and potassium acid phthalate; and NaOH and sodium secondary citrate, to prevent an increase in pH above about 7.2 when said solution is subjected to repeated application of voltage.

4,117,660
CASING RING FOR WATCH MOVEMENT
Erich Walker, Orvin, Switzerland, assignor to Bulova Watch Company, Inc., Flushing, N.Y.
Filed Jan. 24, 1977, Ser. No. 761,962
Claims priority, application Switzerland, Feb. 12, 1976, 1695/76
Int. Cl.[2] G04B *37/00*
U.S. Cl. 58—23 R 5 Claims

1. A casing ring formed of synthetic plastic material adapted to encircle a watch movement having an external diameter that is smaller than the internal diameter of a watch case into which the movement is to be fitted, the ring serving to effectively magnify the movement diameter so that it substantially matches that of the case, said case having an actuating member mounted therein which is inwardly movable and is intended to

cooperate within an operating element included in the movement for carrying out an operating function, said member being constituted by a press-button which is biased to normally assume an inactive position, the portion of said ring interposed between said actuating member and said operating element being formed into a swingable intermediate link deflectable by



the press-button when it is actuated to assume an active position to transmit the motion thereof to said operating element, said operating element being constituted by an electrical switch having normally-disengaged contacts, said link having a push pad integral therewith whose position is such that when said link is deflected by the press-button, the pad then pushes said contacts into engagement.

4,117,661

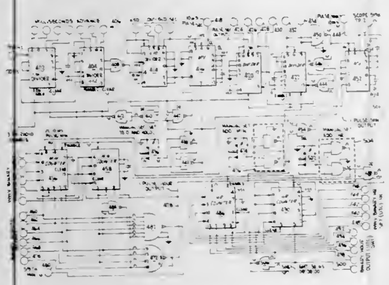
PRECISION AUTOMATIC LOCAL TIME DECODING APPARATUS

Ellis H. Bryant, Jr., 4881 Powers Ferry Rd., NW., Atlanta, Ga. 30327

Continuation of Ser. No. 557,402, Mar. 10, 1975, abandoned, which is a continuation of Ser. No. 406,982, Oct. 16, 1973, abandoned. This application Dec. 14, 1976, Ser. No. 750,431

Int. Cl.[2] G04C *13/02*

U.S. Cl. 58—24 R **24 Claims**



1. Time detecting apparatus, comprising:

means for receiving repetitive binary coded sets of data including time data in a predetermined format;

detecting means for determining from one set of said received data the components thereof representative of time;

storage means for temporarily storing said components;

control means for actuating said detecting means after a preselected time interval to determine from at least one successive set of said received data the components thereof representative of time;

means for updating said stored components by said time interval;

comparison means for comparing the updated stored time components with the time components of said at least one successive set of data;

means responsive to said comparison means for generating signals indicating that said time components from said one set and said at least one successive set of said received data are identical; and

means responsive to said signals to read out said updated stored components from said storage means.

4,117,662

WATCHES

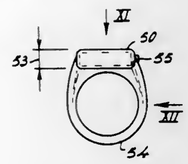
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Nov. 16, 1976, Ser. No. 742,242

Claims priority, application Netherlands, Nov. 17, 1975, 7513381

Int. Cl.[2] G04B *37/12;* **G04C** *19/00*

U.S. Cl. 58—50 R **22 Claims**



1. A watch to be worn on a finger comprising a case, a display face and mechanism for producing images on said display face for viewing by the wearer of the ring mounted on said case, fastening means connected to said case for fastening the watch on a finger, said mechanism including actuating means comprising at least one push button for actuating same whereby an image is produced on said display face, said push button being disposed so that it can be readily operated by one of the other fingers of the same hand.

4,117,663

ELECTRONIC WATCH WITH TIME CORRECTION SYSTEM

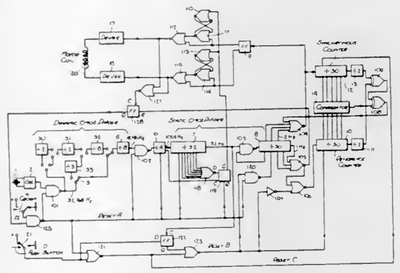
Peter Hubert Mosimann, Bellmund, and Hans Rudolf Sutter, Pieterlen, both of Switzerland, assignors to Bulova Watch Company, Inc., Flushing, N.Y.

Filed Apr. 12, 1977, Ser. No. 786,873

Claims priority, application Switzerland, Apr. 23, 1976, 5101/76

Int. Cl.[2] G04B *27/08*

U.S. Cl. 58—85.5 **15 Claims**



1. An electronic watch wherein high-frequency time base pulses are converted by the stages of a frequency divider into low-frequency pulses which are supplied through a control network to a stepping motor for advancing the hands of the time display, said watch being provided with a system for automatically effecting a rapid correction of the seconds hand display, comprising:

A. an actuating element accessible to the user and operatively coupled to a switch to activate same;

B. means connecting said switch through a reset line to several of the last stages of said divider to effect a reset thereof when said switch is activated;

C. a resettable reference counter coupled to the output of said frequency divider, said counter being connected to said reset line and being reset when said switch is activated;

D. a synchronous counter;

E. a logic circuit coupling said divider both to said synchronous counter and to the control network for the stepping motor to supply pulses thereto for advancing said display and for maintaining said synchronous counter in synchronism therewith;

F. A comparator circuit coupled to said reference and synchronous counters to determine whether a deviation exists therebetween and the extent of such deviation and to govern the number of pulses per unit of time that said logic circuit supplies to said control network and said synchronous counter to an extent correcting for said deviation, said logic circuit including means causing it to function as decoding logic to define a pulse transfer period which is no longer than the last quarter of the longest duration pulse period of the divider, said logic circuit being so connected to the outputs of the resettable divider stages that the transmission of pulses from the divider to the two counters can only be carried out during said pulse transfer period.

4,117,664

PIVOTING DEVICE FOR A WATCH BARREL

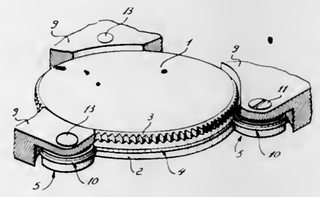
Pierre Mathys, Begnins, Switzerland, assignor to Bouchet-Lassale S.A., Geneva, Switzerland

Filed Feb. 1, 1977, Ser. No. 764,685

Claims priority, application Switzerland, Feb. 18, 1976, 1963/76; Oct. 12, 1976, 12861/76

Int. Cl.[2] G04B *1/16*

U.S. Cl. 58—86 **6 Claims**



1. A watch having a plate, a barrel having a circular periphery, at least three small wheels that are mounted solely on and rotatable relative to said plate, said wheels being spaced about and engaging said periphery to support said barrel on said plate.

4,117,665

MAGNETIC SHIELD PLATE MOUNTING STRUCTURE FOR AN ELECTRONIC TIMEPIECE

Hideyuki Nakao; Yasuhiro Kasai; Yukio Ikehata; Shigeyuki Masuda; Nobuo Obara, and Isamu Nishida, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

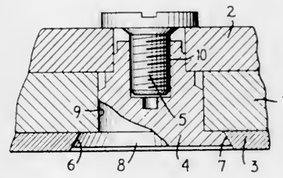
Filed Dec. 23, 1976, Ser. No. 753,848

Claims priority, application Japan, Dec. 26, 1975, 51-178990[U]

Int. Cl.[2] G04B *43/00*

U.S. Cl. 58—106.5 **2 Claims**

1. In a timepiece: a baseplate having a pair of opposed major surfaces and having a bore extending therethrough between said pair of major surfaces; a magnetic shield plate disposed on one of said major surfaces and continuously in contact with said one major surface, said magnetic shield plate having an aperture therethrough aligned with the bore through said baseplate, and the aperture through said magnetic shield plate having a diameter greater than that of the bore and having a periphery defined by a sloped peripheral surface sloped inwardly of the aperture in a direction toward said baseplate; a member of magnetic material disposed on the other of said major surfaces and having a hole therethrough aligned with the aperture through said magnetic shield plate and the bore through said baseplate, and the hole having a diameter smaller than the diameter of the bore through said baseplate; a pin inserted through the aperture through said magnetic shield plate, through the bore through said baseplate and through the hole through said member of magnetic material, said pin including a head portion having a diameter equal to the diameter of the aperture through said shield plate and having a tapered peripheral surface portion complementary to said inwardly sloped peripheral surface of the aperture through said shield plate with said tapered peripheral surface portion of said head portion seated on said inwardly sloped peripheral surface of



the aperture through said shield plate, and said head portion having a thickness less than the thickness of said shield plate so that said head portion of said pin does not protrude above a surface of said shield plate, said pin further including an end portion remote from said head portion and having a diameter effective to permit said end portion of said pin to fit closely within the hole through said member of magnetic material, and said pin further including an intermediate body portion between said head portion and said end portion of said pin and dimensioned to fit closely within the bore through said baseplate; and means having a head greater in diameter than the hole through said member of magnetic material for engaging said pin for fixing said magnetic shield plate, said baseplate and said member of magnetic material together, with said magnetic shield plate continuously in contact with said one major surface of said baseplate to remain undeformed by said head portion of said pin bearing against said shield plate.

4,117,666

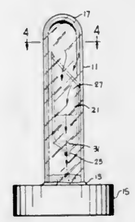
QUICK RESET TIMER

Henry Aguilar, 1309 27th Ave., San Francisco, Calif. 94122

Filed Oct. 3, 1977, Ser. No. 838,852

Int. Cl.[2] G04F *1/06*

U.S. Cl. 58—144 **6 Claims**



1. A quick reset timer comprising,

a greater elongated transparent cylinder of a first inside diameter and a first length, having first and second closed ends,

a lesser, elongated transparent cylinder of a second outside diameter and a second length, both lesser than said first

diameter and first length, and having first and second ends, said first end resembling the pouring spout of a funnel and spaced a first distance from the first end of said greater cylinder, said second end having a chord-wise truncated, sloped, funnel-shaped rim defining a gap between lesser and greater cylinders, said rim being bonded to the inner wall of the greater cylinder at a second distance from the second end of said greater cylinder, and an amount of fluidic material disposed in said greater cylinder capable of flowing through the first end of said lesser cylinder to collect in the first end of the first cylinder and when inverted capable of flowing through said gap to collect in the second end of the first cylinder, said first and second distances each of a magnitude for defining volumetric regions in said greater cylinder for containing all of said amount of fluidic material exclusive of said lesser cylinder.

4,117,667

SEGMENTED BAND

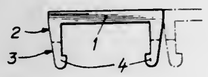
Willi Tanner, 43 Hirschengraben, Luzern 6000, Switzerland

Filed May 25, 1977, Ser. No. 800,583

Claims priority, application Switzerland, Jun. 2, 1976, 006899/76; Oct. 11, 1976, 012912/76

Int. Cl.[2] F16G *13/18*

U.S. Cl. 59—80 **4 Claims**



1. A segmented band with profile segments the profile surface of which ressembles an equilateral trapezium on the outside and is right angled on the inside, and two adjacent side walls each lying crosswise to the band direction, and two neighbouring profile segments being held together by at least one connecting link in such a way that the profile segments are manoeuvrable along edges lying adjacent to each other, characterized in that the profile segments have a U-profile form the legs of which form said side walls having projecting arms which are equipped with hooks on their ends, and the wall section between the arms is intended to hold the connecting link, in that the connecting link shows a longitudinal groove intended to hold together the side wall sections, lying between the arms, of two neighbouring U-profile segments, in that upper and lower limiting surfaces of the connecting link are slanted to enable the manoeuvrability of the profile segments, and in that closure means are provided to engage in the hooks of the arms which serve to prevent the connecting links from slipping out of the U-profile segments.

4,117,668

STALL DETECTOR FOR GAS TURBINE ENGINE

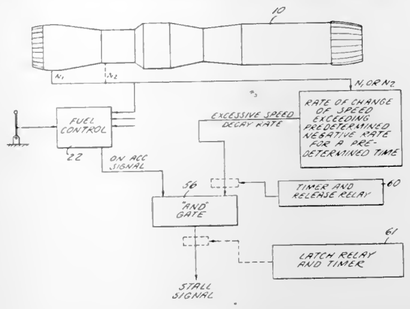
Fred L. Elsaesser, Glastonbury, and Joseph H. Hall, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 19, 1975, Ser. No. 633,310

Int. Cl.[2] F02C *7/22*

U.S. Cl. 60—39.03 **28 Claims**

1. Stall detector for a gas turbine engine having a compressor, burner and turbine, in combination with a fuel control having a fuel metering valve regulating the flow of fuel to the burner and independent coordinating means providing an acceleration schedule limiting said fuel metering valve, said stall detector including means responsive to said acceleration schedule for producing a first signal whenever said fuel control is on or near the acceleration schedule, means responsive to the rate of change of speed of said compressor for producing a second signal when the rate of speed decay exceeds a predetermined value and means responsive to both said first signal and said second signal for producing a third signal indicative of



stall solely when said first signal and said second signal are received.

4,117,669

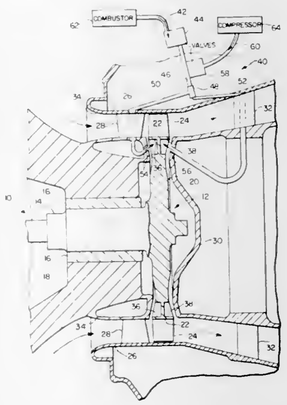
APPARATUS AND METHOD FOR REDUCING THERMAL STRESS IN A TURBINE ROTOR

Jack A. Heller, Shaker Heights, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 4, 1977, Ser. No. 776,029

Int. Cl.[2] F02C *7/26;* **F01B** *5/18*

U.S. Cl. 60—39.14 **12 Claims**



1. In a turbine comprising a combustor, a rotor having a central disc with a peripheral rim, a plurality of blades extending radially outwardly from said rim, and a flow path for a main flow of hot gases from the combustor to the turbine rotor, the improvement comprising: a duct arrangement bypassing said flow path and in fluid communication with said combustor for directing hot gases from said combustor to the under side of the rim of the rotor during turbine start up.

4,117,670

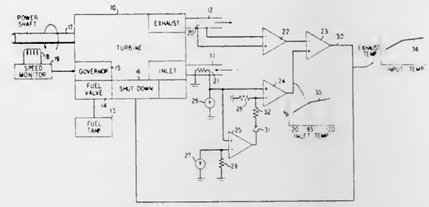
DUAL SLOPE TEMPERATURE DIFFERENTIAL SHUTDOWN CONTROL FOR GAS TURBINES

Walter Stephen Dombkowsi, Long Valley, and Erwin August Rosin, West Caldwell, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1976, Ser. No. 753,714

Int. Cl.[2] F02C *9/08*

U.S. Cl. 60—39.28 T **9 Claims**



1. A temperature differential responsive control circuit comprising,

first sensor means for deriving a signal responsive to a first temperature level,

second sensor means for deriving a signal responsive to a second temperature level,

temperature responsive signal generation means coupled to said second sensor means and including means for controlling a temperature responsive signal amplitude function comprising threshold responsive means having an input coupled to said second sensor means and a variable reference signal source means responding to a signal output of said threshold responsive means and coupled to an input of said temperature responsive signal generation means, said temperature responsive signal generation means responding to said variable reference signal source means to establish a first temperature responsive signal amplitude function output below a predetermined threshold and establish a second temperature responsive signal amplitude function output above a predetermined threshold,

comparator means, having first and second inputs,

said first sensor means and an output of said temperature responsive signal generation means being coupled to said first and second inputs of said comparator means, respectively, and

means coupled to an output of said comparator means for responding to a predetermined temperature differential as defined by said comparator.

4,117,671

NOISE SUPPRESSING EXHAUST MIXER ASSEMBLY FOR DUCTED-FAN, TURBOJET ENGINE

Brian Neal, Seattle, and Lars Q. Andersen, Bothell, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 30, 1976, Ser. No. 755,837

Int. Cl.[2] F02K *1/26, 3/04*

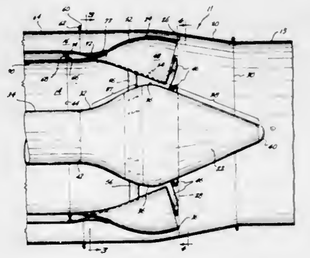
U.S. Cl. 60—262 **8 Claims**

1. A mixer assembly for suppressing noise emanating from the exhaust of a ducted-fan turbojet propulsion engine of the type having an exhaust end for receiving said assembly which defines an annular turbine outlet and an annular fan duct outlet, said fan duct outlet coaxially surrounding said turbine outlet, and said assembly comprising:

a sleeve, a bulb-shaped plug having an axis of symmetry and being disposed coaxially within said sleeve so that the exterior surface of said plug is spaced radially inwardly from the interior surface of said sleeve, a mixer duct of generally annular shape disposed coaxially between said plug and said sleeve, and said sleeve, plug and mixer duct having concentric, radially spaced apart forward ends adapted for attachment to the exhaust end of the engine so that said plug and said mixer duct define therebetween a rearward extension of said turbine outlet and such that said mixer duct and said sleeve define therebetween a rearward extension of said fan duct outlet;

said plug having a neck portion at its forward end and having a circular cross section that varies in diameter along the axis of said plug between said neck portion and a rear end of said plug, said circular cross section first increasing in diameter to the rear of said neck portion to form a radially outwardly flared offset portion that diverges rearwardly and terminates at a circular cross section of maximum diameter, said circular cross section thereafter decreasing in diameter to form an aft tapered portion that converges radially inwardly and rearwardly and terminates at said rear end of said plug;

said mixer duct being formed with corrugations that are oriented parallel to the axis of said duct, said corrugations commencing at the forward end of said mixer duct and generally increasing in radial dimension toward the rear end of said mixer duct, said corrugations of said mixer duct defining first and second sets of channels, the first set of channels being defined between mutually opposed surfaces of said mixer duct and said plug and said second set of channels being defined between mutually opposed surfaces of said mixer duct and said sleeve, and channels of said first set alternating circumferentially with channels of said second set, said mixer duct being sized and arranged relative to said plug such that said first set of channels are



in radial registration with said offset portion of said plug and such that the radially outermost boundaries of said first set of channels diverge radially outwardly and rearwardly substantially matching the rearward divergence of said offset portion of said plug such that said first set of channels redirects primary flow from the turbine outlet causing such flow to diverge radially outwardly and rearwardly, said mixer duct being sized and arranged relative to said sleeve such that the radially innermost boundaries of said mixer duct that define said second set of channels slope radially inwardly and rearwardly at a slope that generally matches an angle of convergence of the tapered portion of said plug, said second set of channels redirecting the fan flow to cause it to converge radially inwardly and rearwardly and to intersect with the primary flow at an angle of intersection that substantially equals the sum of the angle of divergence of the primary flow and of the angle of convergence of the fan flow, and said radially innermost boundaries of the mixer duct that define said second set of channels being generally aligned with the tapered portion of said plug so that fan flow exiting from said second set of channels flows along said tapered portion of said plug and thereby inhibits the formation of pressure voids along said tapered portion of said plug due to a tendency for the primary flow to separate from the surface of said plug as the primary flow passes across the maximum diameter cross section of the plug.

4,117,672

EXHAUST REACTION CHAMBER SYSTEM OF ENGINE

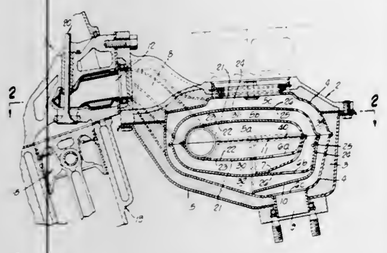
Shuichi Yamazaki, Kamifukuoka; Ikuo Kajitani, Niiza, and Yasuo Kosato, Ooimachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1976, Ser. No. 712,348

Claims priority, application Japan, Aug. 15, 1975, 50/112068[U]; Aug. 15, 1975, 50/112069[U]

Int. Cl.² F01N *3/10*

U.S. Cl. 60—282 9 Claims



1. In an engine exhaust reaction chamber system including an exhaust manifold having an inlet and an outlet, the improvement comprising: an inner exhaust reaction chamber having an outlet and inlet, said inlet being in communication with said exhaust manifold inlet; an outer exhaust reaction chamber annularly enveloping said inner exhaust reaction chamber and having an inlet in communication with said inner exhaust reaction chamber outlet and an outlet in communication with said exhaust manifold outlet; a guide plate positioned within said outer exhaust reaction chamber, said guide plate separating said outer exhaust reaction chamber into first and second outer exhaust reaction chamber passages, said first outer exhaust reaction chamber passage connecting said outer exhaust reaction chamber inlet to said second outer exhaust reaction chamber passage and said second outer exhaust reaction chamber passage connecting said first outer exhaust reaction chamber passage to said outer exhaust reaction chamber outlet; and a partition plate means positioned within said outer exhaust reaction chamber for preventing flow bypass between said inner exhaust reaction chamber outlet and said outer exhaust reaction chamber outlet, whereby exhaust manifold gases are forced to pass in the same direction through the annular space within said outer exhaust reaction chamber prior to exiting said exhaust manifold.

4,117,673

EXHAUST REACTION ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

Shuichi Yamazaki, Kamifukuoka, and Ikuo Kajitani, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

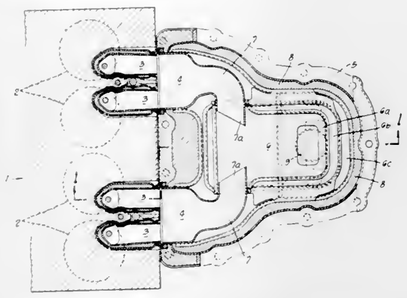
Filed Aug. 30, 1976, Ser. No. 718,676

Claims priority, application Japan, Sep. 4, 1975, 50-106493

Int. Cl.² F01N *3/10*

U.S. Cl. 60—282 8 Claims

1. An exhaust reaction chamber assembly for a multi-cylinder internal combustion engine having at least four exhaust ports spaced to form two groups, comprising, in combination: an exhaust manifold having walls forming two preliminary reaction chambers each adapted to receive exhaust gases from one of said groups of exhaust ports, respectively, the exhaust manifold also having walls forming a main reaction chamber, said main reaction chamber being elongated in a first direction, walls forming a first passage connecting one of said preliminary reaction chambers to said main reaction chamber, walls forming a second passage connecting the other of said preliminary reaction chambers to said main reaction chamber, said passages having aligned outlets so that exhaust gases from each passage are directed toward the other passage and the discharge ends of said passages being at a first end of said main reaction chamber perpendicular to said first direction to cause



a mixing of gases entering said main reaction chamber and to cause movement of gases in said first direction substantially perpendicular to the flow of gases into said main reaction chamber.

4,117,674

ENGINE AND REACTOR CONNECTION SYSTEM

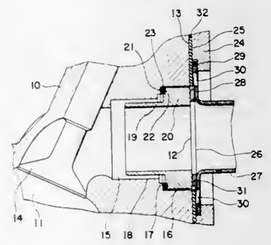
Tomoo Tadokoro, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Sep. 8, 1976, Ser. No. 721,546

Claims priority, application Japan, Sep. 25, 1975, 50-131672[U]

Int. Cl.² F01N *3/10*

U.S. Cl. 60—282 32 Claims



1. A system for connecting a thermal reactor to an internal combustion engine, said thermal reactor including outer and inner casings, said inner casing defining therein a reaction chamber and said outer casing surrounding the inner casing and having at least one mounting flange through which the thermal reactor is operatively coupled to the internal combustion engine, said outer casing further having a first flat, planar surface in which an intake port is defined in communication with the reaction chamber, said combustion engine including an engine casing having at least one combustion chamber defined therein, said engine casing further having a second flat, planar surface in which an exhaust port is defined in communication with the combustion chamber, said connecting system comprising, in combination:

an exhaust passage defining portion of the engine casing having an exhaust passage defined therein and having one end radially outwardly enlarged to provide a larger diameter portion and the other end in communication with the combustion chamber;

a tubular insert having on one end a radially outwardly extending flange and loosely inserted within the exhaust passage with said flange on said tubular insert situated within the large diameter portion, and the other end facing the combustion chamber, the opening at said one end of the tubular insert constituting said exhaust port;

an intake pipe having one end opening into the reaction chamber through the inner casing and the other end having a radially outwardly extending flange, said flange on said intake pipe having an outer peripheral portion engaged with the mounting flange;

a connecting member in position between one of the opposed annular faces of the flange on the tubular insert facing the intake pipe and the opposed annular face of the flange on the intake pipe facing the tubular insert and having a thickness greater than the distance between the engine casing and the face of the flange on said intake pipe which faces said engine casing when said thermal reactor is mounted on said engine casing;

said flange on the intake pipe having an area of reduced surface contact thereon, said flange on the intake pipe being bent in a direction towards the flange on the tubular insert when the mounting flange is secured to the engine casing by the outer peripheral portion of the flange on the intake pipe being pressed towards the second planar surface surrounding the exhaust port for generating a resilient force; and

said connecting member, when said mounting flange is secured to the engine casing, receiving said resilient force and transmitting it to said tubular insert for fixing said tubular insert and said intake pipe in position in said exhaust passage and said intake port.

4,117,675

EXHAUST PURIFYING SYSTEM FOR INTERNAL COMBUSTION ENGINES

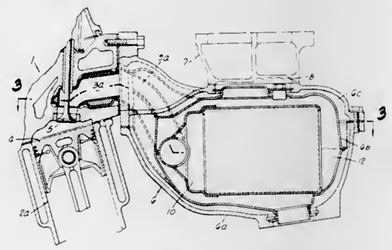
Minoru Tanaka, Choufu; Ikuo Kajitani, Niiza, and Hidenobu Nagase, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1976, Ser. No. 712,346

Claims priority, application Japan, Aug. 11, 1975, 50-96662

Int. Cl.² F01N *3/15*

U.S. Cl. 60—302 1 Claim



1. Apparatus for purifying the exhaust gases from a multi-cylinder internal combustion engine operating on an intake mixture leaner than stoichiometric, the engine having multiple pairs of adjacent exhaust ports of successive firing order, comprising:

an exhaust manifold comprising an induction pipe extending from one pair of exhaust ports to an adjacent pair and having enlarged end portions each arranged to receive exhaust gases directly from a pair of adjacent exhaust ports, said enlarged end portions defining first preliminary reaction chambers;

said induction pipe having an outlet opening between its ends;

means forming a second reaction chamber communicating with said outlet opening;

a first liner forming a catalytic reaction chamber having an entrance opening communicating with said second reaction chamber and containing oxidative catalysts of base metals, and a discharge opening;

a second liner of relatively thin walls, enclosing and spaced from said induction pipe, said second reaction chamber and said first liner and defining an oxidative chamber in communication with said discharge opening, said oxidative chamber communicating with an exhaust pipe; and

an outer shell of relatively thick walls enclosing and spaced from said second liner.

4,117,676

INCORPORABLE HYDROMOTIVE ASSEMBLY

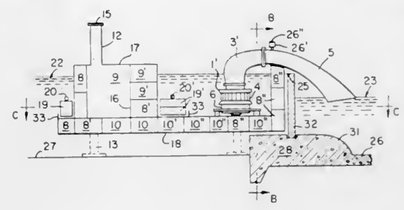
Francisco José Gutierrez Atencio, Diamante 3105, Entre Rios, Argentina

Filed Aug. 25, 1976, Ser. No. 717,515

Claims priority, application Argentina, Sep. 3, 1975, 260247

Int. Cl.² F16D *33/00*

U.S. Cl. 60—327 10 Claims



1. An incorporable hydromotive assembly for an energy storing dam having means for retaining water behind it, said assembly including, a water conduit having a lateral wall defining a first open end and a second open end, said conduit provided with an ascending branch having said first open end and joined with a descending branch having said second open end, energy generation means disposed adjacent said ascending branch open end and adapted for actuation as water is directed through said conduit into said first open end and out through said second end and at least one chamber structurally fixed relative said assembly and of a volume at least sufficient to provide floatation and sinking of said assembly when said chamber is filled with gas or liquid, respectively, to position said assembly adjacent said water retaining means with said conduit archingly disposed over said water retaining means.

4,117,677

STATOR FOR A TORQUE CONVERTER

Noboru Murakami, Nagoya, and Choji Furusawa, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 9, 1977, Ser. No. 767,190

Claims priority, application Japan, Feb. 16, 1976, 51/15555

Int. Cl.² F16D *33/00*

U.S. Cl. 60—345 3 Claims

1. A stator assembly for a torque converter comprising

a stator shaft,

a stator wheel concentrically located relative to said stator shaft,

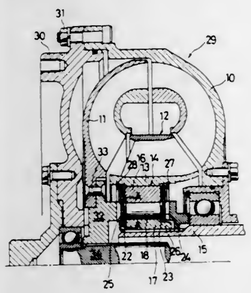
a one-way brake interposed between said stator shaft and said stator wheel including an outer race secured to the inner circumference of said stator wheel, an inner race secured to said stator shaft and roller means interposed between said inner race and said outer race for connecting said stator wheel to said stator shaft, said inner race including an axially extending boss,

washers mounted on said boss with a clearance gap and a pair of thrust disposed between said stator wheel and said stator shaft on opposite side of said one-way brake with the outer circumferences of said thrust washers being

sufficiently spaced at all times from the inner surface of said stator wheel,

a pair of snap rings secured to said stator wheel on opposite side of said thrust washers at a distance from said one-way brake greater than the thickness of a respective thrust washer for locating said thrust washers adjacent said one-way brake, and

a pair of annular plate means mounted on said base and



interposed between each thrust washer and said inner race for holding said roller means of said one-way brake, the axial length of said outer race of said one-way brake is shorter than the distance from the outer side of one annular plate means to the outer side of the other annular plate means,

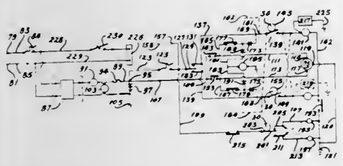
whereby an axially directed thrust force against said thrust washers is transmitted through said plate means only to said inner race of said one-way brake.

4,117,678

SELF-CONTAINED HYDRAULIC SWITCH OPERATOR

John L. Turner, and Fred L. Diener, both of Fairview Heights, Ill., assignors to Turner Electric Corporation, East St. Louis, Ill.

Filed Nov. 8, 1976, Ser. No. 739,473
Int. Cl.[2] F16D *31/02*
U.S. Cl. 60—369 **12 Claims**



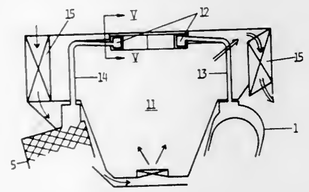
1. A self-contained power operator powered from an external alternating current electrical power source for opening and closing an electric power line switch, comprising a reversible hydraulic rotary actuator, means for mechanically connecting said actuator to the line switch to produce rotary directional movements of the line switch corresponding to rotary directional movements of the actuator, a reversible hydraulic pump having separate outlet ports, separate means hydraulically connecting said outlet ports to opposite sides of said actuator, each of said hydraulic connecting means comprising a single conduit connected at its opposite ends to one of said pump outlet ports and to the corresponding side of said actuator, a reversible direct current electric motor drivingly coupled to said pump for driving the same selectively in opposite directions to produce respectively switch opening and closing directional rotary movements of said actuator, permanent means for electrical connection to an external alternating current electrical power source, an electric storage battery, a battery charger including a rectifier fed by said external alternating current power source connection means and permanently connected to said storage battery to maintain the same in charged condition, separate normally open power circuits connecting said storage battery to opposite poles of said motor for respectively energizing said motor for rotation in opposite directions, separate control circuits for selectively closing said power circuits to cause said motor to rotate in opposite directions, means for selectively energizing the respective control circuit, each said control circuit consisting solely of a limit switch and a relay coil in series, the limit switch in one of said control circuits being closed responsive to full closure of the line switch and opened when the line switch is open, the limit switch in the other of said control circuits being opened responsive to fully closure of the line switch and closed when the line switch is open, each said power circuit having a normally open switch consisting of a contactor of the relay coil in the corresponding control circuit closeable by energization of the latter whereby to energize the motor in the selected direction, a holding circuit connecting each said power circuit to the corresponding control circuit to maintain the latter energized throughout the full respective opening or closing movement of the line switch, said holding circuit including a normally closed switch consisting of a contactor of the relay coil in the opposite control circuit and openable when the opposite control circuit is energized to open said holding circuit switch and prevent energization of the corresponding control circuit and initiation of movements of the line switch in either direction during energization of the opposite control circuit and movements of the line switch in the other direction, each control circuit having a terminal intermediate the connection to the control circuit of the corresponding hold circuit and the limit switch in the control circuit for conductive attachment of remote control equipment, whereby to permit initial energization of the respective control circuits from remote locations, both said control circuits having a ground line with a normally closed switch therein, a time delay relay coil energizable by said control circuits and having a contactor forming the normally closed switch in said ground line, said time delay relay coil being constructed and arranged to open its contactor a predetermined short interval after its energization from either of said hold circuits, whereby to open said control circuits if the respective opening or closing operation of the line switch is not completed at the expiration of such time interval and thereby prevent damage to the operator if the line switch is inoperable for any reason.

4,117,679

HOT GAS ENGINE HEATER HEAD

Per Göran Grahn, Lund, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Mar. 2, 1977, Ser. No. 773,798
Int. Cl.[2] F02G *1/04*
U.S. Cl. 60—525 **4 Claims**



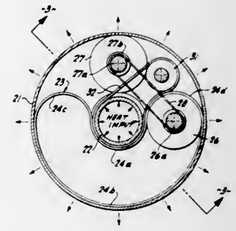
1. A hot gas engine heater head comprising in combination, a set of cylinders and regenerators positioned about an axis, a combustion chamber surrounding said axis with a predetermined internal diameter, heat exchange tubes connecting said cylinders and regenerators extending upwardly into said combustion chamber and inwardly toward said axis, and a set of manifold segments coupling together the respective heat exchange tubes connecting said cylinders and regenerators forming a ring about said axis of a diameter substantially smaller than that of said combustion chamber.

4,117,680

CONTINUOUS LOOP SHAPE MEMORY EFFECT HEAT ENGINE

Ronald H. Smith, San Francisco, Calif., assignor to Solergy, Inc., San Francisco, Calif.

Filed Dec. 7, 1976, Ser. No. 748,312
Int. Cl.[2] F03G *7/06*
U.S. Cl. 60—527 **4 Claims**



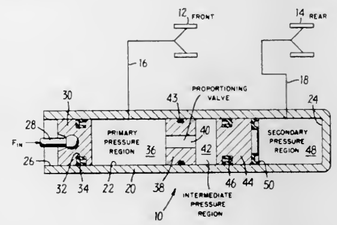
1. In a thermal engine: first and second relatively rotatable bodies having circular external and internal contours, respectively, said first body being positioned within said second body, a band of thermally responsive shape memory material constrained between the first and second bodies and tending to return generally to the internal contour of the second body when heated above a predetermined temperature, means for applying heat energy to the first body, and a flexible band of thermally conductive material trained about the first body and engaging a portion of the band of shape memory material between the first and second bodies for transferring heat energy from the first body to the band of shape memory material.

4,117,681

TANDEM MASTER CYLINDER WITH INTEGRAL PROPORTIONING VALVE

Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, St. Louis, Mo.

Filed Feb. 7, 1977, Ser. No. 765,885
Int. Cl.[2] B60T *11/20*
U.S. Cl. 60—562 **8 Claims**



1. In a fluid brake system the improvement comprising:

(a) a tandem brake master cylinder having;

(b) a first, a second and an intermediate pressure region;

(c) first conduit means for supplying fluid pressure from said first pressure region of the cylinder to a first set of brakes, said first conduit means providing a continuously open fluid communication between said first pressure region and said first set of brakes;

(d) first piston means movable in said first pressure region of the cylinder for generating fluid pressure therein;

(e) second conduit means for supplying fluid pressure from said second pressure region of the cylinder to a second set of brakes;

(f) second piston means movable in said second region of the cylinder for generating fluid pressure therein on a first side of said second piston means;

(g) proportioning valve means positioned between said first pressure region and a second side of said second piston means and forming between itself and said second side of said second piston means said intermediate pressure region;

(h) said proportioning valve means at least in part controlling the relationship of fluid pressure in said first and intermediate pressure regions; and

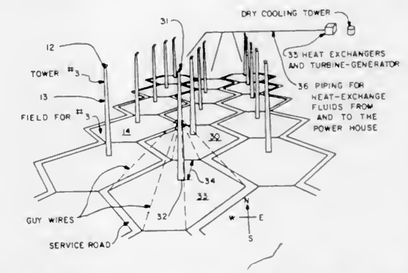
(i) the fluid pressure in said intermediate region urging said second piston means toward a position for generating fluid pressure in said second pressure region.

4,117,682

SOLAR COLLECTOR SYSTEM

Otto J. M. Smith, 612 Euclid Ave., Berkeley, Calif. 94708

Filed Nov. 1, 1976, Ser. No. 737,489
Int. Cl.[2] F03G *7/02*
U.S. Cl. 60—641 **52 Claims**



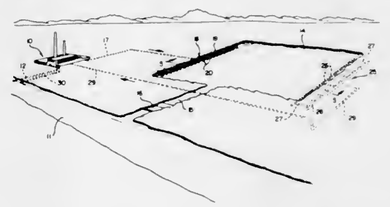
1. A solar collector system comprising: a plurality of solar receptors supported on towers; a plurality of heliostatic mirrors, a predetermined plurality of such mirrors laid out in a geometric pattern forming a field module with a unique associated tower on which such field module concentrates solar energy, each of said field modules being substantially contiguous to one another and interlocked, said unique tower being located outside of its associated field module.

4,117,683

SYSTEM AND METHOD FOR COOLING HOT WATER FROM INDUSTRIAL PLANT COOLING USE

Ross H. Rasmussen, R.F.D. #2, Hooper, Nebr. 68031

Filed Jan. 24, 1977, Ser. No. 762,205
Int. Cl.[2] E02B *3/00*
U.S. Cl. 405—61 **27 Claims**



1. A system for thermal disposal and port improvement comprising:

an industrial plant constituting a source of hot cooling water which must be cooled located along a navigable river, lake or ocean,

a body of water, constituting a port in the vicinity of the industrial plant, separate from but in navigable communication with the river, lake or ocean,

means for delivering hot cooling water from the industrial plant to the port water to cool the water throughout the year and to prevent it from freezing shut in winter, and

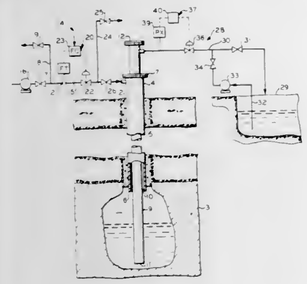
means for removing cool cooling water from the port water and delivering it to the industrial plant and/or to a river, lake or ocean.

4,117,684

UNDERGROUND STORAGE

Hurshel V. Hendrix, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 16, 1977, Ser. No. 797,211
Int. Cl.² E21F *17/16*
U.S. Cl. 405—54 **16 Claims**



1. A method of controlling the filling of an underground storage cavern with a fluid product, said cavern comprising an underground cavity defined by an impermeable formation and an access bore defined by a surface and extending from said cavity to the ground surface, said cavern normally containing a displacing liquid heavier than and immiscible with said product with an interface formed therebetween, said cavern being provided with a conduit extending into said cavity and communicating with said cavity at its lower end, the lower end of said conduit being adjacent the bottom of said cavern at a point normally below said interface, said method comprising the steps of:

introducing said product into said cavern via said access bore so as to displace a portion of said liquid from said cavern;

discharging the displaced portion of the liquid from said cavern via said conduit;

continuously measuring, at a point in said conduit adjacent the ground surface, the static pressure in said conduit;

terminating the discharge of fluid through the conduit when said pressure reaches a predetermined level indicating presence of said product in said conduit; and

terminating introduction of product into said cavern.

4,117,685

METHOD AND MEANS FOR IRRIGATING SOIL AND GROWING PLANTS HAVING VARYING WATER REQUIREMENTS

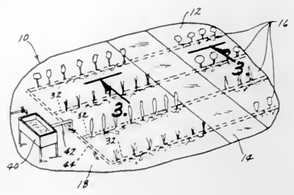
William Skaife, Dubuque, Iowa, assignor to Margaret R. Skaife, Dubuque, Iowa

Filed Jul. 5, 1977, Ser. No. 812,793
Int. Cl.² A01G *27/00*; **E02B** *13/00*
U.S. Cl. 405—36 **8 Claims**

1. A method of irrigating soil and growing plants having varying water requirements including the steps of,

providing a growing medium having top and bottom layers with the top layer being soil and the bottom layer being a material having substantially greater water holding and retention characteristics than said top layer of soil thereby substantially restricting the transmission of water from said bottom layer to said top layer by capillary action,

insulating the bottom layer from soil to the sides and therebelow, and



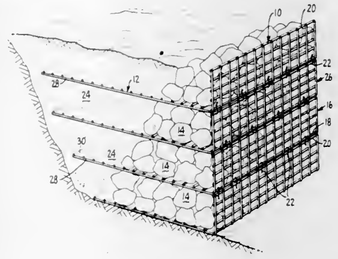
supplying water to the bottom layer of growing medium to maintain it substantially saturated whereby plant roots may grow downwardly toward and into said lowermost layer to the level suitable for their water requirements.

4,117,686

FABRIC STRUCTURES FOR EARTH RETAINING WALLS

William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Co., Eureka, Calif.

Continuation-in-part of Ser. No. 724,267, Sep. 17, 1976, abandoned. This application Nov. 16, 1977, Ser. No. 852,190
Int. Cl.² E02D *5/00*
U.S. Cl. 405—284 **12 Claims**



1. A retaining wall structure comprising: a generally rectangular steel wire tray defined by an elongate floor section extending over the length of the tray and a face section of a depth less than the length of the floor section extending at an angle relative to the floor section, said tray having longitudinal rods extending continuously over the length thereof and across said floor and face sections in spaced, generally parallel relationship to one another and cross-rods welded to and extending transversely across said longitudinal rods in spaced relationship to one another; and, a mat overlaying the face section to the side thereof from which the floor section extends, said mat being generally coextensive with the face section and fabricated of a water-permeable material of sufficient density to prevent the substantial erosion of soil therethrough.

PATENTS

GRANTED OCT. 3, 1978

ERRATA

For CLASS	See PATENT NO.
075–204	4,117,565
405–061	4,117,683
405–054	4,117,684
405–036	4,117,685
405–284	4,117,686
405–292	4,117,687
405–188	4,117,688
405–163	4,117,689
405–227	4,117,690
405–205	4,117,691
405–166	4,117,692
405–171	4,117,693
280–255	4,117,915
235–061	4,117,973
308–006 C	4,118,101
424–012	4,118,192
422–094	4,118,193
422–098	4,118,194
222–215	4,118,195
422–232	4,118,196
422–246	4,118,197
422–173	4,118,198
422–171	4,118,199
062–176 D	4,118,209
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526–036	4,118,378
562–503	4,118,415
562–503	4,118,416
562–401	4,118,417
562–439	4,118,418
562–534	4,118,419
562–583	4,118,420
568–767	4,118,586
350–096.23	4,118,594
325–026	4,118,598
040–361	4,118,654
222–003	4,118,691

4,117,687

MINE ROOF SUPPORTS

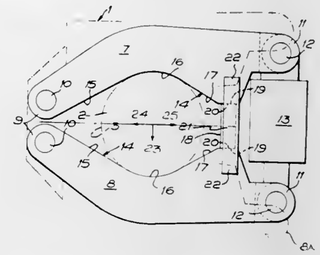
Arthur Scarfe, and John Cambridge Smith, both of Wakefield, England, assignors to Fletcher Sutcliffe Wild Limited, Wakefield, England

Filed Dec. 20, 1977, Ser. No. 862,385

Claims priority, application United Kingdom, Dec. 29, 1976, 54266/76

Int. Cl.[2] E21D *15/44*

U.S. Cl. 405—292 **10 Claims**



1. A mine roof support comprising a roof beam, a base member, at least one hydraulically extensible chock leg connected at an upper end thereof in articulated manner to said roof beam, and connected at a lower end thereof in articulated manner to said base member, a pair of links each having bearing surfaces embracing a common chock leg by bearing on opposite sides thereof, one end of each said links being pivotally attached to said base member at a pivot point located to one side of a diametral plane passing through the longitudinal axis of said chock leg, the other end of each of said links being located to the other side of said diametral plane, a restoring ram acting upon said other ends of said links and adapted to displace at least one of said links about said pivot point, to restore said leg to its predetermined position upon release of said support from a mine roof, and also to resist tendency for said leg to become displaced from said predetermined position whilst said support is engaged with said mine roof, and stop means also mounted on said base member and engageable by at least one of said other ends of said links end to determine the maximum displacement of at least one of said other ends of said links by said restoring ram.

4,117,688

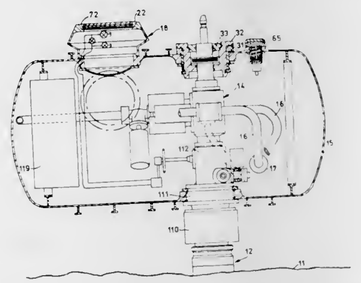
APPARATUS FOR WORKING UNDER WATER

Kenneth Ball, Liverpool, England, assignor to Vickers-Intertek Limited, London, England

Division of Ser. No. 456,769, Apr. 1, 1974, Pat. No. 3,968,656. This application May 12, 1976, Ser. No. 685,676

Int. Cl.[2] B63C *11/00*

U.S. Cl. 405—188 **5 Claims**



1. A sub-sea capsule comprising a hollow body which is adapted in its position of use to surround a sub-sea installation and be at all times water filled with the pressure of water in said capsule varying between pressure equal to external sea pressure and substantially atmospheric pressure depending on whether the interior of said sub-sea capsule is exposed to external sea pressure or to substantially atmospheric pressure of a transit capsule connected to said sub-sea capsule, said sub-sea capsule being resistant to external sea pressure when the pressure of water filling said capsule is at substantially atmospheric, means associated with said capsule permitting mounting thereof in sealed relationship around an installation, means carried by said capsule for cooperation with complementary means on a transit capsule to form access means between said sub-sea capsule and said transit capsule, and leak detection means located within the upper part of said capsule for detecting any leakage floating up from an installation through water filling said capsule when the latter is in its position of use surrounding said installation.

4,117,689

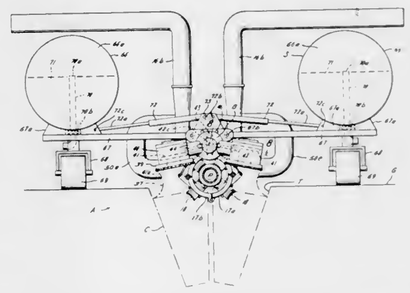
SUBMARINE PIPE TRENCHING APPARATUS

Charles Francis Martin, P.O. Box 197, Porter, Tex. 77365

Continuation-in-part of Ser. No. 211,386, Dec. 23, 1971, Pat. No. 4,022,028. This application May 9, 1977, Ser. No. 795,026

Int. Cl.[2] E02F *5/08*

U.S. Cl. 405—163 **19 Claims**



1. An underwater trenching apparatus for burying a pipeline or the like beneath the bottom of a body of water comprising:

a frame for positioning over the pipeline to be buried;

jet support means supported on said frame for oscillatory movement with respect to said frame about a first axis generally transverse to said pipeline;

a plurality of nozzles on said jet support means for digging a trench in said bottom for burying said pipeline;

oscillating means operatively connected to said jet support means for oscillating said jet support means with respect to said frame;

a plurality of rollers secured to said apparatus and contacting said pipeline to direct said apparatus along said pipeline;

drive means to drive at least a first of said rollers for movement of said apparatus along said pipeline; and

biasing means operative between at least one of said rollers and said frame to permit movement of said roller toward and away from the axis of said pipeline while following variations in the circumference in said pipeline.

4,117,690

COMPLIANT OFFSHORE STRUCTURE

Celestine Paul Besse, New Orleans, La., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 720,035, Sep. 2, 1976. This application Oct. 11, 1977, Ser. No. 840,695

Int. Cl.[2] E02B *17/00*

U.S. Cl. 405—227 **46 Claims**



1. A marine structure for supporting sundry equipment, said structure comprising:

a deck having sufficient stiffness to remain relatively horizontal when said deck sways due to wind and wave forces against said marine structure;

a plurality of elongated tubular support legs in a spaced relationship from each other extending from said deck to the floor of said body of water, said legs being hollow and reducing in diameter at the upper end of said legs whereby said legs have reduced moment of inertia and in turn a reduced section modulus so as to have a high ratio of deck stiffness to the stiffness of the adjacent leg members, whereby said deck remains relatively horizontal;

a plurality of sets of horizontal members, wherein each of said horizontal members is connected to said legs so that each of said sets is in one horizontal plane when said structure is undeflected;

said horizontal members having a varying cross-section and a corresponding moment of inertia which allows said deck to horizontally sway so as to reduce the dynamic amplification of design stress.

4,117,691

FLOATING OFFSHORE DRILLING PLATFORM

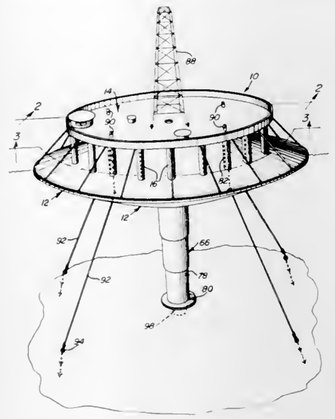
Claude Spray, 6008 Arlington Blvd., Richmond, Calif. 94805

Filed Aug. 11, 1977, Ser. No. 823,855

Int. Cl.[2] E02B *17/00*

U.S. Cl. 405—205 **7 Claims**

1. A floating offshore drilling platform including a hollow generally circular horizontal float body tapering in thickness from its central portion to its outer periphery, said body including upper and lower walls which are inclined downwardly and upwardly, respectively, from said central portion to said outer periphery, a horizontal work platform spaced above said body and supported therefrom by upstanding supports extending and secured between said body and platform at points spaced about said central portion, said body including means defining a central vertical passage therethrough, the interior of said body spaced outwardly of and about said central portion including means defining ballast tanks which may be selectively flooded and evacuated of water, and a central upstanding tubular caisson supported at its upper end from said body about said passage and adapted at its lower end for engagement with the ocean floor, at least the lower end portion of said caisson comprising an extendable and retractable end portion thereof, said retractable end portion including selectively operable flotation means for buoying said lower end portion upwardly toward a retracted position, said flotation means including



means defining a closed outer flotation chamber supported from said retractable end portion, flexible air conduit means extending downwardly along said caisson and having a lower end opening into said outer flotation chamber, and purge passage means opening inwardly of the lower portion of said outer flotation chamber and outwardly of the latter.

4,117,692

METHOD AND A SYSTEM FOR PRODUCING AND LAYING OIL OR GAS PIPELINES ON THE SEA BOTTOM

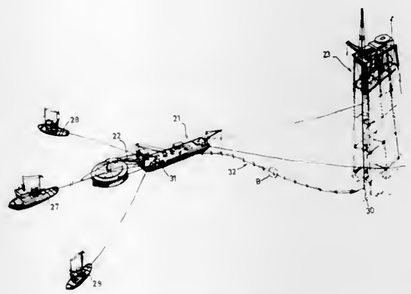
Karl Erik Öberg, Förrådsgatan 1, S-171 32 Solna, Sweden

Filed Mar. 21, 1977, Ser. No. 779,546

Claims priority, application Sweden, Mar. 26, 1976, 7603676

Int. Cl.[2] F16L *1/04*

U.S. Cl. 405—166 **8 Claims**



1. In a method for establishing a pipeline on the bottom of a body of water the steps comprising: joining pipe lengths end-to-end in sequence at a first location to form a continuous pipeline; forwarding the pipeline in its longitudinal direction, as it is formed, to a second location and winding the pipeline at the second location on to a floating storage reel maintained in said body of water; moving the floating storage reel through the water to a pipe-layig site; coupling the reel to a floating pipe-laying vessel at the site while maintaining the reel floating independently of the vessel; unwinding the pipeline from the floating drum and transferring the pipeline in its longitudinal direction, as it is unwound, to the pipe-laying vessel; and feeding the pipeline in its longitudinal direction, as it is received from the floating reel from the pipe-laying vessel to the submerged bottom.

4,117,693

PLACING CONDUITS ON THE SEA FLOOR BY HAULING AND CONTROLLED IMMERSION

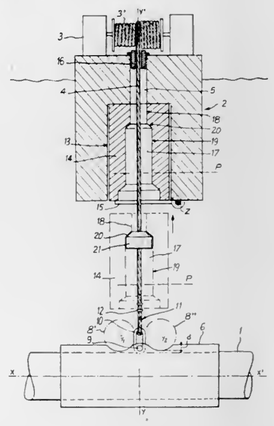
Rene Fournie, Pau, France, assignor to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Jun. 10, 1977, Ser. No. 805,427

Claims priority, application France, Jun. 14, 1976, 76 17948

Int. Cl.[2] F16L *1/00*

U.S. Cl. 405—171 **4 Claims**



1. Apparatus for positioning on the sea floor, a pipeline for the transfer of liquid or gaseous fluids, comprising a plurality of lightening and handling devices distributed along the pipeline, each of said handling devices being supported by at least one lightening means comprising a primary float, a coupling means on the pipeline, a cable on the handling means, a pivotal connector connected between the coupling means and the cable, at least one additional lightening means comprising a secondary float, said secondary float having the same axis of symmetry as the handling cable, said coupling means on the pipe presenting a seat, and said secondary float resting on the coupling seat, means releasably connecting the secondary float to the coupling means, said secondary float and primary float comprising male and female engaging sections, so that the secondary float after release from the coupling means of the pipeline, can be engaged with the mating parts of the primary float and secured thereto to provide a single assembly.

4,117,694

ROTATABLE REFRIGERATED VALVE

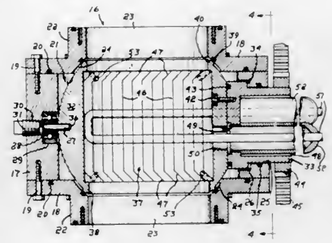
Richard J. Belmore, 2 Francis Dr., Randolph, Mass. 02368

Filed Feb. 9, 1977, Ser. No. 767,158

Int. Cl.[2] B01D *5/00*

U.S. Cl. 62—55.5 **9 Claims**

1. A valve to be installed in vacuum and like pumping systems, said valve including a casing having a chamber, a port of circular cross section opening into the chamber with its axis inclusive of the center of said chamber, and an inlet and an outlet opening into the chamber, a valve element rotatable within the chamber and including a neck extending through said port, sealing means between said casing and said neck, said valve element having a transverse passage disposed to effect connection between said inlet and outlet in a first element position and to block such connection in another position thereof, sealing means between said element and said casing,



and refrigerating means within said passage and supported by said element and operable when connected to a refrigerant source to refrigerate said valve element.

4,117,695

THERMODYNAMIC METHOD AND DEVICE FOR CARRYING OUT THE METHOD

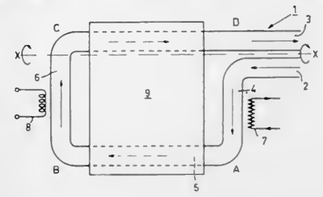
Clifford McDonald Hargreaves, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1972, Ser. No. 259,915

Claims priority, application Netherlands, Jun. 14, 1971, 7108157

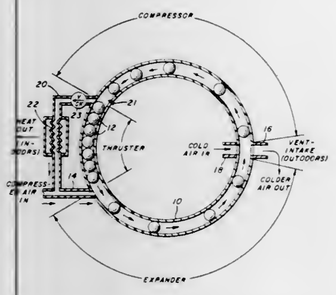
Int. Cl.[2] F25B *9/00*

U.S. Cl. 62—86 **2 Claims**



1. Apparatus for compressing a gas, which comprises a rotor, means for rotating said rotor about its axis, gas inlet means adjacent said axis, separate gas outlet means adjacent said axis, a gas compression duct extending generally radially outwardly from said inlet means, a gas communication duct extending generally axially from said compression duct, a gas expansion duct extending generally radially inwardly from said communication duct to said outlet means, cooling means for removing thermal energy from compressed gas in said compression duct, heating means for supplying sufficient thermal energy to expanded gas in said expansion duct to thereby maintain the temperature of said expanded gas higher than the temperature of the compressed gas in the compression duct, and heat exchanger means for transferring heat from the expanded gas in said outlet means to the compressed gas in said communication duct, whereby gas is pumped from said inlet means to said outlet means by centrifugal force.

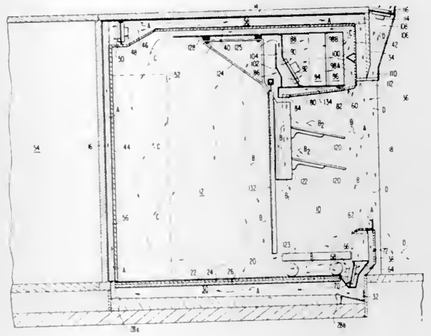
4,117,696
HEAT PUMP
Sherwood L. Fawcett, Columbus, and James N. Anno, Cincinnati, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio
Filed Jul. 5, 1977, Ser. No. 812,559
Int. Cl.[2] F25B *1/00, 13/00;* F16D *31/00;* F01C *1/00*
U.S. Cl. 62—115 21 Claims



1. Heat pump apparatus comprising:
(a) a continuous loop passageway containing a plurality of freely movable, unrestrained bodies,
(b) means for generating a force by isentropic expansion of fluid in an expander region of said passageway to thereby accelerate successive ones of the bodies in one direction around the passageway,
(c) a compression region in the passageway beyond the expander region wherein fluid is isentropically compressed between successive ones of the propelled bodies,
(d) port means in the passageway between the end of the expander region and the beginning of the compression region to permit the venting of fluid which has been expanded and the entrance of fluid which is to be compressed,
(e) a thruster region in the passageway beyond the compression region wherein a force is applied to successive ones of the bodies to counterbalance the external forces acting against the bodies as they traverse the loop passageway and to return them from the end of the compression region to the beginning of the expander region, and
(f) heat exchanger means having its entrance connected to the passageway at the end of the compression region and its exit connected to the passageway in the expander region, wherein heat is extracted from the compressed fluid leaving the compression region and the fluid is then introduced into the expander region.

16. A method for increasing the heat content of a fluid and thereafter transferring the heat content to an ambient atmosphere, which comprises the steps of:
(a) providing a closed-continuous loop passageway containing a plurality of freely movable, unrestrained bodies,
(b) generating a force between successive ones of said bodies by isentropic expansion of fluid in an expander region of said passageway to increase the kinetic energy of the bodies and thereby propel successive ones of the bodies in one direction around the passageway,
(c) exiting said fluid after isentropic expansion thereof from the interior of said passageway at a reduced temperature,
(d) introducing a fluid at a temperature higher than said reduced temperature into the interior of said passageway and thereafter compressing said introduced fluid between successive ones of the bodies propelled by isentropic expansion, and
(e) thereafter passing the compressed fluid through heat exchanger means connected to the passageway at the completion of compression of said fluid for extracting heat from the fluid thus compressed.

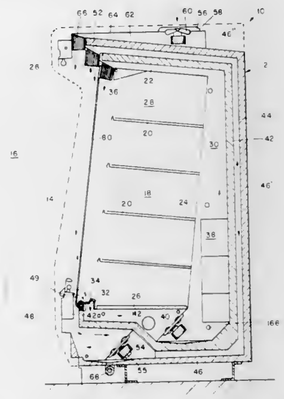
4,117,697
ROLL-IN OPEN-FRONT FROZEN FOOD REFRIGERATION CASE
James E. Myers, and Tom E. Kennedy, both of Niles, Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.
Filed Jan. 31, 1977, Ser. No. 764,157
Int. Cl.[2] A47F *3/04*
U.S. Cl. 62—256 29 Claims



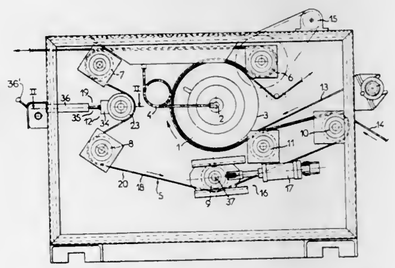
1. In a commercial refrigerator, suitable for use in supermarkets, having an open front display section and a rear storage section, the improvements comprising:
first air circulating fan means, and refrigeration coil means located downstream of said first fan means, wherein said first fan means is disposed to draw air from said storage section and propell said air through said refrigeration coil means;
first conduit means located downstream of said coil means for directing at least some refrigerated air propelled by said first fan means through said refrigeration coil means along a first path directly into said storage section and for directing other of said refrigerated air propelled by said first fan means through said coil means along a second path directly across the open front of said display section to form a relatively inner air curtain;
means for directing the downstream end of said inner air curtain across the front of said display section and into said storage section;
second air circulating fan means; and
further conduit means for directing air propelled by said second fan means around the exterior of said storage and display sections and across said access opening to form a relatively outer air curtain.

4,117,698
REFRIGERATED DISPLAY
Robert E. Vogel, Marshall, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.
Filed Jun. 29, 1977, Ser. No. 810,973
Int. Cl.[2] A47F *3/04;* F25D *11/00*
U.S. Cl. 62—256 10 Claims

10. An open front, multiple curtain refrigerated display case having a top, a bottom, a rear, a front side, and an access opening in said front side communicating a storage and display space within the cabinet with the ambient atmosphere, at least two air outlets, an inner one and an adjacent one, extending across the upper edge of said access opening; and corresponding inner and adjacent air inlets extending across the opposite lower edge of said access opening; an inner conduit extending from said inner inlet, around the bottom, back and top of said cabinet, to said inner outlet; an adjacent conduit extending from said adjacent inlet around said cabinet to said adjacent outlet; a refrigeration coil in said inner conduit; a plurality of refrigerated-air, circulating fans in said inner conduit to propel refrigerated air from said inner inlet, across said coil, to said inner outlet, and across said access opening to said inner inlet as a refrigerated air curtain; a plurality of guard-air, circulating fans in said adjacent conduit to propel air in said adjacent conduit, to said adjacent outlet, and across said access opening to said adjacent inlet as a guard air curtain parallel to said refrigerated air curtain; the improvement comprising, in combination with the above;
a flexible, retractable, roll-up night curtain having one end mounted between said inner and adjacent inlets and extensible to a position extending across said access opening between said refrigerated air curtain and said guard air curtain; securing means for holding said perforate night curtain in said extended condition; said guard air circulating fans being operable to propel air in one direction for normal operation, and during defrost to propel defrost air in said adjacent conduit in the reverse direction to melt frost and ice from on and about said night curtain when extended, and to flow into said inner inlet for defrosting said coil when said night curtain is not extended.

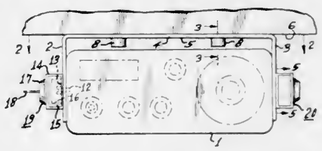


4,117,699
CALENDERS FOR THE THERMAL TREATMENT OF LAMINAR MATERIAL
Henry Renaut, Roubaix, France, assignor to Lemaire & Cie, France
Filed Nov. 23, 1976, Ser. No. 744,262
Claims priority, application France, Feb. 19, 1976, 76 05168
Int. Cl.[2] B41F *3/52;* B65H *5/02*
U.S. Cl: 68—5 D 2 Claims



1. A calender for thermal treatment of laminar material to transfer a design from a band of inert material to the laminar material, the calender comprising:
a cylindrical, heatable drum rotatably mounted about an axis thereof;
an endless longitudinal belt and "messenger" which comprises a plurality of endless longitudinal bands with longitudinal edges thereof positioned side-by-side and which hugs the drum to force laminar material and a belt of inert material against one another;
means for driving the messenger in translatory movement along its length and for rotatably driving the drum about its axis;
separate regulating devices, each for regulating the tension of one of the bands, each regulating device comprising at least three rollers, rotatably mounted about a single axis parallel to the axis of the drum and disposed in contact, around a portion of the rollers' circumference, with one face of the corresponding band; and
thrust means for applying to the rollers adjustable forces directed towards said face of the band, the thrust means comprising at least two arms fixed relative to the drum's axis at least in the direction of the adjustable force and disposed respectively between two of the rollers.

4,117,700
LOCKING ARRANGEMENT FOR RADIOS OR THE LIKE
Charlie H. Saunders, 167 Highland St., Valparaiso, Fla. 32580
Filed Jan. 18, 1978, Ser. No. 870,293
Int. Cl.[2] E05B *73/00*
U.S. Cl. 70—58 11 Claims



1. In a locking device for covering against access the head of a mounting bolt for mounting a CB radio or the like to a mounting bracket, an elongated sleeve having opposite front and back walls and an open end, an elongated bar slideable into said sleeve through said open end, said back wall being provided with a hole proportioned to pass the shank but not the head of such mounting bolt and said front wall being provided with a second hole aligned with said first hole proportioned to pass the head of such mounting bolt, said front wall and said bar comprising wall portions defining a continuous aperture extending through said front wall and into said bar when said bar is in a predetermined position in said sleeve, a lock having a portion disposed removably in said aperture through said front wall and into said bar, said lock comprising means movable with respect to said portion from a locked to an unlocked position cooperative, when in locked position, with said sleeve and bar to retain said portion so disposed in said aperture, said bar comprising a portion which is disposed, when said bar is in said predetermined position within said sleeve, in covering relation to said second hole.

4,117,701
ELECTRO-THERMAL LOCK
Luigi Giovanni Del Mei, 1178 Park St., Pretoria, South Africa
Filed Aug. 11, 1977, Ser. No. 823,642
Claims priority, application South Africa, Jan. 20, 1977, 77/0322; Jun. 17, 1977, 77/3627; Jun. 21, 1977, 77/3693
Int. Cl.[2] E05B *47/06*
U.S. Cl. 70—150 14 Claims

1. A locking device comprising:
a latching element movable between a locking position and an inoperative position;
operating means for moving the latching element from the locking position to the inoperative position; and

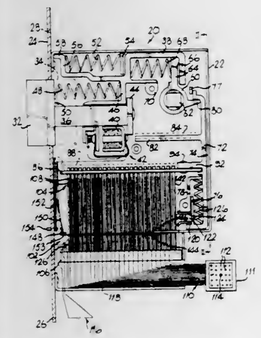
blocking means operable for preventing the operating means from moving the latching element from the locking position to the inoperative position;

wherein the blocking means comprises:

a blocking member movable to a blocking position for mechanically preventing the operating means from moving the latching element from the locking position to the inoperative position;

thermally responsive holding means for adopting a holding condition for temporarily holding the blocking member in the blocking position;

thermo-electric control means for heating said thermally responsive holding means to move said thermally responsive holding means from said holding condition, thereby permitting said blocking member to move from said blocking position;



actuating means operable in a predetermined mode for energising said thermo-electric control means to heat said thermally responsive holding means;

thermally responsive safety means for normally adopting an inoperative condition; and

thermo-electric safety control means for heating said thermally responsive safety means to move said thermally responsive safety means to a holding condition for temporarily holding the blocking member in the blocking position;

said actuating means including switching means for energising the thermo-electric safety control means upon operation of said actuating means in at least one mode other than said predetermined mode.

4,117,702

ROLLING MACHINES FOR CONTOURING TAPERED STRUCTURAL MEMBERS

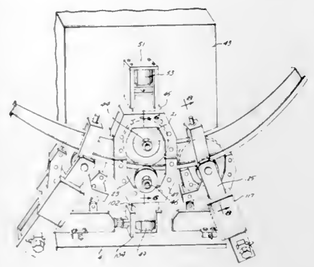
Gene B. Foster, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 6, 1977, Ser. No. 803,683.
Int. Cl.[2] B21D *7/08, 7/14*
U.S. Cl. 72—7 **18 Claims**

16. In a rolling machine for contouring elongate parts as said parts are moved past a plurality of contouring rolls, at least one of which is position adjustable along at least one forming axis, the improvement comprising:

fashioning each of said plurality of contouring rolls from at least two segments located side-by-side along the axis of rotation of the related contouring roll, selected ones of said segments being transversely movable with respect to the axis of rotation of the related contouring roll; and,

movement means coupled to predetermined ones of said transversely movable segments of said plurality of contouring rolls for instantaneously controlling the position



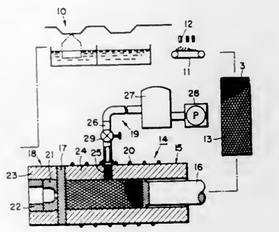
of said predetermined ones of said transversely movable segments.

4,117,703

APPARATUS FOR MANUFACTURING EXTRUDED STRUCTURAL PROFILES FROM ALUMINUM BASED METAL SCRAPS

Toshiro Takahashi; Toshihiro Nagano; Shozo Iguchi, all of Shizuoka; Masaru Kikuchi, Fiji; Katsuhiko Nakamura, Shizuoka, and Atsushi Mochizuki, Shimizu, all of Japan, assignors to Riken Keikinzoku Kogyo Kabushiki Kaisha, Shizuoka, Japan

Division of Ser. No. 585,860, Jun. 11, 1975, Pat. No. 4,050,142.
This application May 31, 1977, Ser. No. 801,910
Claims priority, application Japan, Jun. 14, 1974, 49-67944
Int. Cl.[2] B21C *23/01, 23/04*
U.S. Cl. 72—38 **2 Claims**



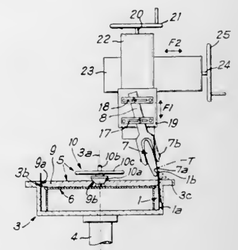
1. Apparatus for producing extruded structural profiles from aluminum based metal scrap materials comprising means defining an extruder housing for receiving the scrap materials to be extruded, means forming a die disposed at one end of said housing means and having an extruding opening, a power operated extruding ram slidably disposed in said extruder housing for applying extruding pressure to the scraps in said housing, and means for exhausting air from said housing, said air exhausting means including a vacuum pump, a vacuum tank connected with the vacuum pump, an air exhausting plate having passage means for connecting the interior of the extruder housing with the vacuum pump, a die slide, said plate being mounted on said die slide together with said die, said die slide being operable to alternately place the air exhausting plate and the die in engagement with the extruding end of the extruder housing.

4,117,704

METHOD AND APPARATUS FOR PRODUCING A BENT ANGLE PIECE FROM A SHEET-METAL

Robert Nakache, Paris, and Christian Lequeux, Thionville, both of France, assignors to Societe Coil Protection Service, Thionville, France

Filed May 13, 1977, Ser. No. 796,656
Int. Cl.[2] B21D *19/04*
U.S. Cl. 72—83 **16 Claims**



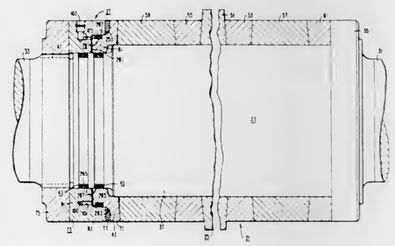
1. A method for producing, from a plane sheet-metal or a plane strip-iron, a bent angle piece with a cylindrical flange and an annular flange, which angle piece is split over its entire length along a generating line so that the two lateral ends of the angle piece can be overlapping, wherein the plane sheet-metal is first shaped into a cylinder split along a generating line so that the ends of the sheet-metal are overlapping, wherein the portion of the sheet-metal cylinder intended to constitute the cylindrical flange of the angle piece is clamped on a support such as a mandrel moving in rotation about the axis of the cylinder, and wherein whilst the support is rotating, successive areas adjacent the unclamped end portion of the sheet-metal cylinder are progressively bent by a thrusting operation until said unclamped end portion occupies a position which is at least nearly perpendicular to the axis of the cylindrical part.

4,117,705

WORK REDUCING AND PRESSURE APPLYING

Martin J. Dempsey, Bethel Park, Pa., assignor to Asko, Inc., West Homestead, Pa.

Filed Aug. 8, 1977, Ser. No. 822,626
Int. Cl.[2] B21B *31/08*
U.S. Cl. 72—237 **18 Claims**



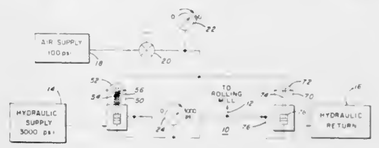
1. Roll apparatus for reducing work including an arbor, roll means mounted on said arbor for rotation therewith, a member mounted on said arbor adjacent said roll means, said member cooperatively forming with said roll means a chamber and a gap, said gap being located laterally of said roll means and being accessible from the outside of said member and roll means, means for sealing said chamber, means, connected to said arbor and member, for preventing movement of said member along said arbor relative to said arbor, means, connected to said chamber, selectively operable, for injecting fluid into said chamber, to exert pressure in said chamber to elongate said arbor and to enlarge the width of said gap, and for draining said fluid from said chamber to contract said arbor and reduce the pressure in said chamber to reduce the width of said gap, and a spacer having a width greater than said reduced width of said gap and smaller than said enlarged width of said gap to be interposed in said gap after its width is enlarged and to be compressed after the width of said gap is reduced, said spacer when so interposed impressing lateral pressure on said roll means to prevent rotation of said roll means relative to said arbor.

4,117,706

REMOTELY ADJUSTABLE HYDRAULIC PRESSURE REGULATOR

Richard A. Lami, Hennepin, Ill., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Sep. 23, 1977, Ser. No. 835,888
Int. Cl.[2] B21B *31/32*
U.S. Cl. 72—245 **20 Claims**



1. A remotely adjustable, back pressure relieving hydraulic pressure regulating system for providing hydraulic fluid at a regulated pressure from a hydraulic supply, in response to a control air signal, comprising:

a first air-operated valve operable between an open position and a closed position, having an inlet connected to the hydraulic supply and an outlet, constructed to be biased to the open position by the pressure of the control air signal and baised to the closed position by the hydraulic pressure at its outlet;

a second air-operated valve operable between an open position and a closed position, having an inlet connected to the outlet of said first air-operated valve and an outlet connected to a hydraulic return, constructed to be biased to the closed position by the pressure of the control air signal and biased to the open position by the hydraulic pressure at its inlet; and,

air pressure adjusting means for adjusting the pressure of the control air signal.

4,117,707

APPARATUS FOR SHAPING ELECTRICAL COILS FOR DYNAMOELECTRIC MACHINES

Mark Kolesar, N. Huntingdon Twp., Westmoreland County, and Harry C. Rettger, Wilkins Twp., Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 23, 1977, Ser. No. 836,172
Int. Cl.[2] B21D *11/10*
U.S. Cl. 72—306 **11 Claims**

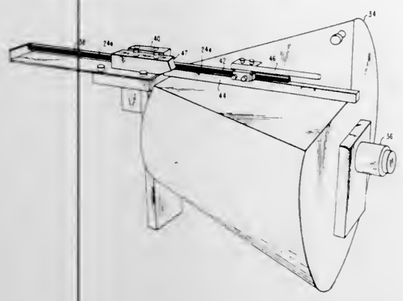
1. An apparatus for shaping electrical coil bars for dynamoelectric machines, said apparatus comprising:

means for securing a first portion of an electrical coil bar in a substantially straight configuration;

a rotatable member having an axis of rotation generally parallel to the coil bar's first portion, said member including a frustoconically shaped portion having predetermined major and minor axes and a predetermined cone angle;

first means for bending a second portion of the bar at a predetermined angle to said first portion to form a drop bend radius therein and to cause it to lie along said frustoconical portion's surface;

means for rotating the frustoconical portion through selected angular displacements; and



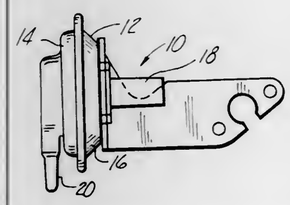
means for guiding the second coil bar portion in a spiral configuration along the surface and about the axis of the frustoconical portion during its rotation to impart a cell bend radius to said second coil portion.

4,117,708

METHOD OF MAKING HOUSING COVER AND TUBE

Leon F. LaVene, Durand, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Filed Sep. 14, 1977, Ser. No. 832,998
Int. Cl.[2] B21D *51/38*
U.S. Cl. 72—324 **11 Claims**



1. The process of forming a housing member with an integral inlet tube extending radially therefrom from a flat metallic member comprising: forming a circular work piece portion in said flat metallic member, progressively shaping said circular work piece portion to form a tube extending parallel to and at one side of the axis of said circular work piece portion, tilting the tube relative to said circular work piece portion to a position diverging from the axis thereof, displacing the tube from its diverging position to a radially extending position, and separating said cover from said flat metallic member.

4,117,709

CAMBER ADJUSTING TOOL

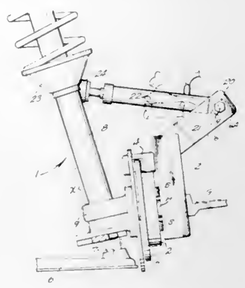
Edwin C. Jackson, 200 W. 22nd St., McMinnville, Oreg. 97128

Filed Jun. 22, 1977, Ser. No. 809,112
Int. Cl.[2] B21D *1/12*
U.S. Cl. 72—386 **2 Claims**

1. A tool for adjusting the camber of an automobile wheel of an automobile having a strut type wheel suspension system, said tool comprising,

a base for attachment to the wheel carrying member of the automobile suspension system, said base defining an opening within which the spindle housing of the suspension system may be received and which enables the temporary attachment of a camber sight gauge to the spindle housing, said base including upwardly and outwardly inclined arms,

an abutment assembly carried at the upper distal ends of said arms and including a fitting having an abutment surface thereon, fastener means extending intermediate said arms and mounting said fitting therebetween and permitting rotational positioning and locking of said fitting and the abutment surface thereon about a horizontal axis to locate said surface normal to the inclined axis of a portable hydraulic cylinder locatable intermediate said abutment assembly and the upper end of the strut associated with the wheel regardless of variances in length such struts utilized on different makes and models of automobiles and resulting cylinder inclination changing therebetween to enable remedial bending of the strut for camber adjustment.

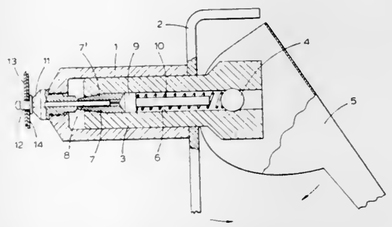


4,117,710

BLIND RIVETING TOOLS

James F. Fluester, Thornton Heath, England, assignor to Spiralux Limited, England

Filed Apr. 28, 1977, Ser. No. 791,778
Claims priority, application United Kingdom, May 5, 1976, 18398/76
Int. Cl.[2] B21J *15/34*
U.S. Cl. 72—391 **7 Claims**



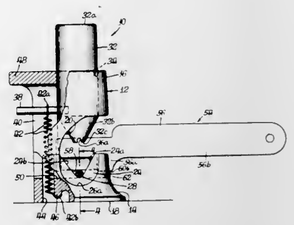
1. A multi-part collet for a blind riveting tool, the internal surface of each part of the collet being provided with a shape which further includes a longitudinal groove, that portion of the internal surface of each collet part which forms a gripping surface for the mandrel of a rivet being formed with a plurality of transverse ridges, and the groove of each collet part extending over the entire length of said ridged portion, wherein each longitudinal groove is so shaped that it defines with the adjacent edges of each transverse ridge areas a substantial point contact with the mandrel of a blind rivet.

4,117,711

COMBINATION CUTTING AND CRIMPING TOOL

Wayne R. Medcraft, Lakeville, Minn., assignor to Belden Corporation, Geneva, Ill.

Filed Oct. 17, 1977, Ser. No. 842,627
Int. Cl.[2] B21K *13/02*
U.S. Cl. 72—413 **10 Claims**



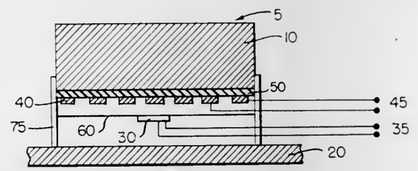
1. A combination cutting and crimping tool arrangement comprising, in combination, a housing defining anvil means adapted to receive a cable thereon in supporting relation therewith, said housing further defining a mandrel guide bore having an axis intersecting said anvil means, a mandrel supported within said guide bore and longitudinally movable therein, said mandrel having crimping means thereon for cooperation with said anvil means to crimp a connector body onto the portion of said cable supported on said anvil means when said mandrel is impacted to effect engagement of said crimping means with said connector body, said housing having a slot formed therein intersecting said anvil means and lying in a plane coplanar with the axis of said mandrel, and a cutting tool adapted to be inserted within said slot so as to overlie said anvil means and underlie said mandrel, said cutting tool having a cutting edge thereon adapted to cut a cable supported on said anvil means when an axial force is imparted to said mandrel in a direction to impart an impact force to said cutting edge sufficient to shear the cable.

4,117,712

EMISSIMETER AND METHOD OF MEASURING EMISSIVITY

Nathaniel E. Hager, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jan. 23, 1976, Ser. No. 651,762
Int. Cl.[2] G01N *25/00*
U.S. Cl. 73—15 A **14 Claims**



1. A method of measuring total hemispherical emissivity of a surface without prior knowledge of the surface's temperature without requiring maintenance of a known temperature difference during measurement and comprising the steps of:

(a) providing a heat sink, having a heater and a heat flux sensor with an exposed surface of known emissivity;

(b) equalizing the temperature of said heat sink and of said surface whose emissivity is to be measured;

(c) spacing said sink from said surface by a predetermined distance with said sink surface of known emissivity opposite said surface to be measured;

(d) energizing said heater with a predetermined current; and,

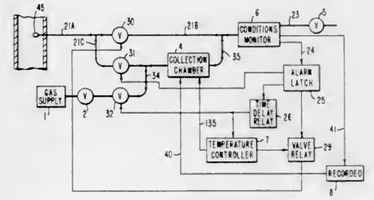
(e) monitoring said heat sensor output at its steady-state value.

4,117,713

PARTICULOGRAPHY AS AN ON-LINE TECHNIQUE FOR DETECTION AND LOCATION OF FAULTS WITHIN A GAS-COOLED DYNAMOELECTRIC MACHINE CAUSED BY OVERHEATING

David C. Phillips, Penn Hills; William M. Hickam, Churchill Borough, and Gerald L. Carlson, Mt. Lebanon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 28, 1977, Ser. No. 763,482
Int. Cl.[2] G01N *25/02*
U.S. Cl. 73—17 R **9 Claims**



1. An on-line method of using thermoparticulography as a technique of identifying thermoparticulates in a gas stream, comprising:

detecting the presence of said thermoparticulates in said gas stream;

collecting a sample of said thermoparticulates from said gas stream;

isolating said sample from said gas stream,

reparticulating said sample by heating said sample at a predetermined rate;

measuring the temperature of said sample while measuring the particulate intensity as indicated by the output signal of said gas stream monitor; and

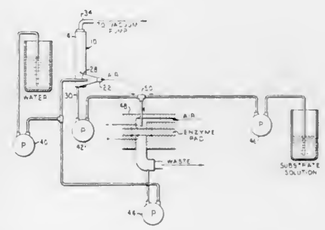
preparing a thermoparticulograph by plotting said particulate intensity as a function of temperature of said collected sample during reparticulation.

4,117,714

METHOD AND APPARATUS FOR CONTINUOUSLY EXTRACTING TRACE CONTAMINANTS FROM AIR AND MONITORING THE CONTAMINANT CONTENT THEREOF

Louis H. Goodson, Kansas City, and William B. Jacobs, Independence, both of Mo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed May 12, 1977, Ser. No. 796,160
Int. Cl.[2] G01N *31/00*
U.S. Cl. 73—23 **8 Claims**

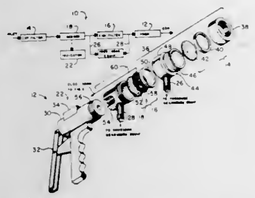


1. A method of extracting impurities from a gas and monitoring the impurity content thereof on a real time basis, said method comprising the steps of:

providing a receptacle having a region defined by a generally cylindrical wall;
continuously supplying a fresh scrubbing liquid to said receptacle which flows to said region;
continuously withdrawing the liquid from said region at substantially the same rate that it is being supplied thereto to maintain a predetermined quantity of scrubbing liquid therein;
introducing said gas under pressure into said region in a direction tangentially of said wall to rotate the liquid therein as a thin film and cause the gas to pass through said film in scrubbing relationship thereto, so that impurities in the gas are extracted into the liquid, and out of said region; and
examining at least a portion of the withdrawn liquid to detect impurities therein extracted from the gas.

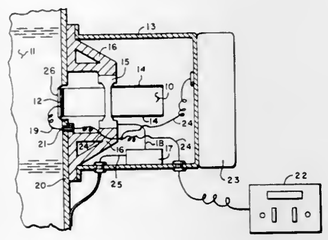
3. Apparatus for extracting impurities from a gas and for monitoring the impurity content on a real time basis, said apparatus comprising:
a receptacle having a region provided with a generally cylindrical wall, an inlet in said wall at said region, and a gas outlet communicating with said receptacle,
said receptacle containing a scrubbing liquid in said region and having a liquid outlet communicating with said region;
liquid input means for introducing said scrubbing liquid into said receptacle for flow to said region;
means connected to said input means and said liquid outlet for continuously supplying fresh liquid to said region and continuously withdrawing the liquid therefrom to maintain a predetermined quantity of scrubbing liquid therein;
means registering with said inlet for introducing gas under pressure into said region in a direction tangentially of said wall to rotate the liquid therein as a thin film forming a seal with said wall above said inlet, and cause the gas to pass through said film in scrubbing relationship thereto to said outlet, whereby impurities in the gas are extracted into the liquid;
means for detecting impurities in said liquid; and
means for flowing at least a portion of said withdrawn liquid to said detecting means to monitor the presence of impurities in the withdrawn liquid extracted from the gas.

4,117,715
APPARATUS FOR MEASURING CHARGE ON, AND DENSITY OF, AIRBORNE PARTICULATES
Stuart A. Hoenig, Tucson, Ariz., assignor to Ransburg Corporation, Indianapolis, Ind.
Filed Jul. 5, 1977, Ser. No. 812,713
Int. Cl.[2] G01N *31/00*; **G01R** *5/28*
U.S. Cl. 73—28 **17 Claims**



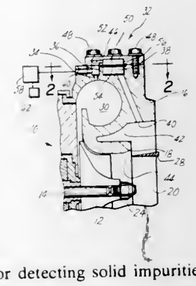
1. Apparatus for measuring the density of, and charge on, particulate contaminants suspended in a gas comprising means for providing a predetermined flow rate of contaminant-laden gas, means for sensing the charge on the particulate contaminants in the flow reaching the sensing means and for providing an indication of the sensed charge, the sensing means including filter means having an electrically conductive element for contacting particles within a predetermined size range to produce on the electrically conductive element an electrical indication of the polarity of the charge on the particulate contaminants within such size range, and means for measuring the density of particulate contaminants reaching the sensing means at the predetermined flow rate and for providing an indication of such density.

4,117,716
DENSITOMETER APPARATUS
Frank N. Simon, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Continuation of Ser. No. 479,926, Jun. 17, 1974, abandoned.
This application Nov. 24, 1975, Ser. No. 634,689
Int. Cl.[2] G01N *11/16*
U.S. Cl. 73—32 A **16 Claims**



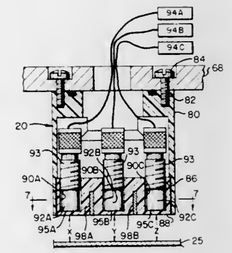
1. A sensor capable of providing a representation of density of a fluid and a representation of sonic velocity in a fluid, said sensor comprising:
a piezoelectric transformer, having electrical terminals therein serving as input terminals and output terminals, said transformer having surfaces thereof placed in motion in directions in which they are capable of imparting longitudinal wave energy to those portions of said fluid sufficiently near said surfaces;
oscillator circuitry means connected to provide an oscillating electrical signal at said input terminals; and
output voltage sensing means connected to sense an output voltage signal provided between said output terminals to provide at least one of said representations.

4,117,717
SOLID IMPURITY DETECTOR
Walter F. Isley, Grosse Pointe Farms, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Jun. 23, 1977, Ser. No. 809,298
Int. Cl.[2] G01N *15/00*
U.S. Cl. 73—38 **6 Claims**



1. A device for detecting solid impurities in a pressurized fluid comprising;
a housing;
a fluid pump in said housing, said fluid pump having a high pressure outlet and a low pressure inlet;
said housing having a fluid passageway open at its first end to the pump outlet and open at its second end to a chamber formed annularly around the pump inlet, said annular chamber being open to the pump inlet;
a filter element disposed across and covering said fluid passageway; and
pressure sensing means in communication with said passageway between its first end and said filter element.

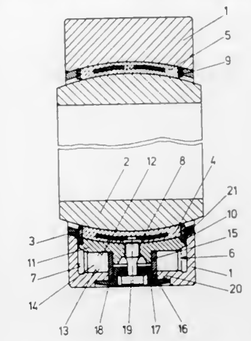
4,117,718
INTERNAL PRESSURE AND VACUUM MONITORING APPARATUS
Gary G. Hayward, Falmouth, Mass., assignor to Benthos Incorporated, Falmouth, Mass.
Filed Jul. 15, 1977, Ser. No. 815,987
Int. Cl.[2] G01M *3/36*
U.S. Cl. 73—52 **26 Claims**



1. Apparatus for monitoring the internal pressure within an enclosure having at least a flexible wall portion comprising:
first sensing means for measuring the distance between at least a first point on said flexible wall portion and said first sensing means and for providing in response thereto a first electrical signal, said first electrical signal being proportional to the distance between said first point and said first sensing means;
second sensing means for measuring the average of the distances between at least two other points on said flexible wall portion spaced from said first point and said second sensing means and for providing in response thereto a second electrical signal, said second electrical signal being proportional to the average of said distances between said at least two points and said second sensing means; and
means for comparing said first and second electrical signals and for providing in response to said comparison a third electrical signal, said third electrical signal being substantially proportional to the difference between said first and second electrical signals and substantially linearly proportional to the amount of deflection of said flexible wall portion.

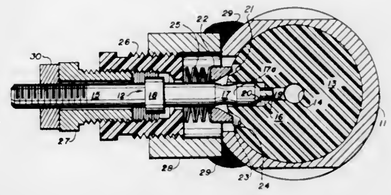
4,117,719
MEASURING FRICTION BEARINGS
Karl Heinz Schültz, Püttlingen, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Oct. 25, 1977, Ser. No. 845,209
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 7633570[U]
Int. Cl.[2] G01L *5/00*
U.S. Cl. 73—141 A **12 Claims**

12. In a measuring friction bearing assembly, such as a ball-and-socket bearing joint, which includes outer and inner bearing rings and a plurality of sliding bearing elements situated between said rings in sliding and bearing relationship, the improvement wherein said outer bearing ring comprises a wall portion having an inside surface facing said inner bearing ring with a recess defined in said surface and facing said inside ring, and wherein at least one of said sliding elements is replaced by a force-measuring element which is situated in said recess and comprises a sliding disk engaging said inner bearing ring, a supporting disk adjacent and secured to said sliding disk, a piezoelectric measuring means intermediate said support disk and said inside surface, and means for urging said supporting



disk toward said inside surface for securing said measuring means therebetween, whereby bearing load forces can be transmitted between said inner and outer bearing rings and measured via said force-measuring element.

4,117,720
ELECTRIC MEASURING DEVICE HAVING A SMALL-BORE LIQUID CONTAINER WITH IMPROVED ELECTRODE SEALING MEANS
John Simonsen, Canandaigua; Bruce Douglas Gibson, and Heinz Walter Gruner, both of Irondequoit, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed Dec. 6, 1976, Ser. No. 747,709
Int. Cl.[2] G01F *1/58*
U.S. Cl. 73—194 EM **15 Claims**

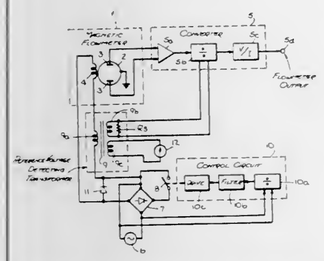


1. An electric measuring device comprising a structure having a bore surrounded by a relatively thick deformable wall for containing fluid, said wall having a bore therethrough, such wall bore having one end opening into the first said bore and its other end opening through the exterior surface of said wall, said wall having an integral collar of compressible sealing material projecting outwardly of said first said bore, and said wall bore's said other end being surrounded by said collar;
(a) said device also comprising electrodes, one such electrode being in said wall bore and projecting through said collar externally of said wall; there being compression means for compressing said collar toward and around said one electrode for sealing said one electrode in said wall bore;
(b) said device also comprising measuring circuitry connected to said electrodes.

4,117,721
MAGNETIC FLOWMETER

Kazuie Suzuki; Takashi Torimaru, both of Tokyo, and Chuji Akiyama, Yokohama, all of Japan, assignors to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Sep. 21, 1977, Ser. No. 835,327
Int. Cl.[2] G01F *1/60*
U.S. Cl. 73—194 EM **10 Claims**



1. In combination with a magnetic flowmeter in which the fluid to be metered is conducted through a flow tube having detecting electrodes therein, the fluid intercepting a magnetic field produced by an electromagnet to induce a flow rate signal in said electrodes, a system comprising:

A. circuit means to supply to said electromagnet a low-frequency excitation current having an a-c component and a d-c component;

B. a reference-voltage detecting transformer having a primary winding interposed in said excitation current supply means and a secondary winding across which is developed a reference voltage proportional to said excitation current, said transformer having a core subject to saturation by the magnetic flux generated by said d-c component;

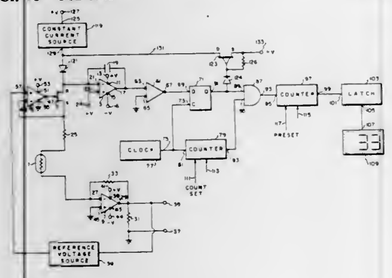
C. a converter responsive to said reference voltage and coupled to said electrodes to provide an output flow rate signal in which the influence of fluctuations in said a-c component on the detected flow rate signal is minimized; and

D. compensating means associated with said transformer to produce a magnetic flux therein which counteracts the effect of the magnetic flux produced by said d-c component thereby avoiding saturation of said core and the resultant distortion of the reference voltage.

4,117,722
MEASURING APPARATUS PROVIDING SEPARATE ANALOG AND DIGITAL OUTPUTS

Paul M. Helmstetter, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 14, 1977, Ser. No. 851,482
Int. Cl.[2] G01K *7/22*
U.S. Cl. 73—362 AR **8 Claims**



1. Measuring apparatus for providing both an analog output and a digital output which are representative of the value of a condition to which a condition sensing element is exposed, comprising

a condition sensing element having an electrical characteristic of a value dependent upon the value of the condition to which the element is exposed,

means connected to said element for passing a current through said element to cause the value of said current to be a function of said charactistic of said element, and for deriving an integral signal of a value which is the time integral of the value of said current,

means connected to receive said integral signal and responsive to the value thereof for shifting that value to a base level each time that that value crosses a reference level, and for producing a pulse in a second signal upon each such shift,

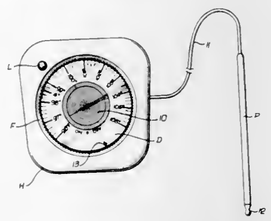
means connected to receive said second signal for counting said pulses thereof for a predetermined time period to provide a numerical count which is a function of the value of said current, and for providing a digital output representative of said count and hence of the digital value of said condition, and

means connected to respond to the value of said current for producing an analog output signal which is a function of the value of said current and hence is representative of the value of said condition.

4,117,723
ELECTRONIC THERMOMETER

Rudolph Maravich, 1842 Galaxy Dr., Newport Beach, Calif. 92660

Filed Oct. 26, 1976, Ser. No. 735,592
Int. Cl.[2] G01K *7/24*
U.S. Cl. 73—362 AR **7 Claims**



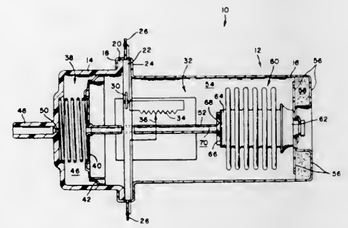
1. An electronic thermometer comprising: a bridge circuit a temperature variable resistor and a manually variable resistor, dial means for adjusting the manually variable resistor and indicating temperature, and light emitting diode means for indicating that the temperature sensed by the temperature variable resistor is indicated by said dial means including means for instantaneously energizing said diode means when said dial indicates the temperature sensed by said temperature variable resistor.

4,117,724
AMBIENT PRESSURE SENSOR

John E. Cook, Chatham, Canada, assignor to Fram Corporation, East Providence, R.I.

Filed Sep. 7, 1977, Ser. No. 831,219
Int. Cl.[2] G01L *7/12, 9/02*
U.S. Cl. 73—386 **13 Claims**

1. An ambient pressure sensor for generating an electrical signal which varies in response to changes in ambient pressure level comprising ambient pressure responsive means having a physical characteristic which varies in response to variations in ambient pressure level, a housing, a fluid motor responsive to fluid pressure to move within said housing, an actuating member carried by said fluid motor, said actuating member and said ambient pressure responsive means including valve means responsive to variations in said physical characteristic of the ambient pressure responsive means for regulating the fluid

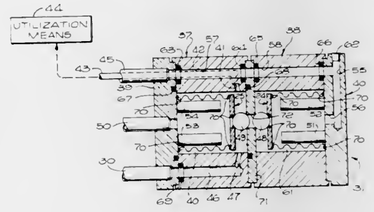


pressure communicated to said fluid motor, means responsive to movement of the fluid motor for generating an electrical signal which varies in accordance with the movements of the fluid motor, said fluid motor including means communicating the latter to a source of vacuum.

4,117,725
FLUID SAMPLING SYSTEM

Robert R. Austin, Pasadena, and A. M. D. Moen, Covina, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 11, 1976, Ser. No. 665,956
Int. Cl.[2] G01N *1/22*
U.S. Cl. 73—421.5 R **15 Claims**

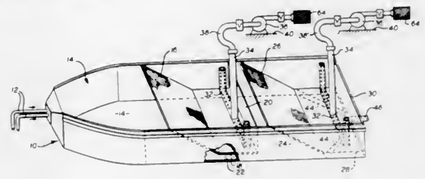


1. A fluid sampling system, said system comprising: a substantially fluid tight housing having a hollow interior divided by a partition into first and second chambers, said partition having a hole therethrough; a first valve mounted on said housing and actuable to close an end of said hole opening into said first chamber; a second valve mounted on said housing and actuable to close the other end of said hole, said other hole end opening into said second chamber, said housing having spaced inlet and outlet passages opening into and out of said second chamber, respectively, for circulation of a carrier fluid through said second chamber, said housing having opening means extending therethrough into said first chamber to permit a sample fluid to flow into said first chamber; actuating means to open and to close said first valve in succession while holding said second valve closed, and vice versa, said first and second valves being spaced apart when both are closed, said first and second valves and said partition defining a closed sample chamber in said hole when said first and second valves are closed, a sample of said sample fluid being permitted to fill said sample chamber when said second valve is closed and said first valve is opened, said sample chamber being filled with said sample fluid upon closure of said first valve, subsequent opening of said second valve permitting a carrier fluid circulated through said second chamber to purge said sample chamber of said sample fluid previously trapped or captured therein, said actuating means repeating the aforesaid opening and closing of said first and second valves so as to expose a sample fluid filled sample chamber to said second chamber at regular intervals to permit purging thereof at regular intervals by a constant flow of carrier gas.

4,117,726
APPARATUS AND METHOD FOR SAMPLING WATER FOR FISH LARVAE AND OTHER TROPHIC LEVELS

Peter M. McGroddy, Suffern, N.Y., assignor to Lawler, Matusky & Skelly Engineers, Tappan, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,367
Int. Cl.[2] G01N *1/10;* **A01K** *79/00*
U.S. Cl. 73—421 R **14 Claims**

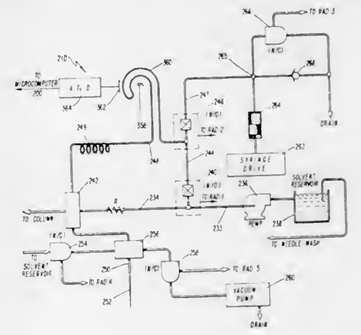


1. Apparatus for collecting fish larvae and other trophic levels without damage to the larvae by passage through a pump, said apparatus including in combination a chamber into which water containing the larvae flows, a fine mesh partition at one end of the chamber and through which water passes, the mesh being too fine to permit passage of the larvae to be collected so that the larvae become concentrated in the water that has not yet passed through the mesh, the mesh partition sloping downward in the direction in which the water flows toward the mesh partition, the partition being in such position that water passes upward through the mesh partition, a passage through which water containing concentrated larvae flows from the chamber to a collection region, and means for reducing the pressure in the chamber, on the upstream side of the mesh partition, below that of the water from which the larvae are collected, so that water flows into the chamber freely without passing through a pump, and means for reducing the water pressure on the downstream side of the mesh partition to obtain a controlled rate of flow through the mesh partition.

4,117,727
BUBBLE SENSOR AND METHOD

David R. Friswell, 394 Gorwin Dr., Holliston, Mass. 01746, and Burleigh M. Hutchins, 59 Lakewood Dr., North Attleboro, Mass. 02760

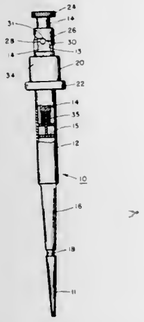
Filed Dec. 12, 1977, Ser. No. 859,531
Int. Cl.[2] G01N *1/10*
U.S. Cl. 73—422 GC **25 Claims**



1. In a liquid chromatographic system, the combination comprising:

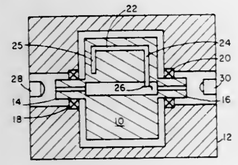
a sample conduit,
a pressure sensor coupled to said conduit,
means for forming an enclosed space including said conduit,
means for changing the volume of said enclosed space by increments starting from a first volume to change the pressure applied to said conduit with sample enclosed by increments starting from a first pressure,
whereby the incremental changes in pressure sensed by said sensor resulting from said volume changes afford an indication of bubble inclusion in said sample.

4,117,728
PIPETTE
Leighton Clifford Johnson, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Dec. 22, 1977, Ser. No. 863,223
Int. Cl.[2] B01L *3/02*
U.S. Cl. 73—425.6 **10 Claims**



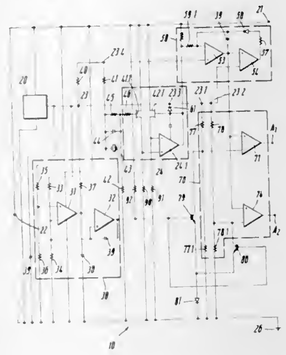
1. In a pipette or the like having a barrel provided at one end with a restricted opening, a piston within said barrel having a plunger attached thereto and coaxially projecting from the other end of said barrel, the improvement which comprises cooperable shoulder means on said barrel and plunger relatively movable to a plurality of operative positions, said shoulder means defining first and second axially spaced positions of said plunger with respect to said barrel and at least one third position of said plunger located intermediate said first and second plunger positions, said shoulder means defining said plunger positions at respectively different operative positions.

4,117,729
INERTIAL MEASUREMENT DEVICE
Roger O. Topliffe, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Oct. 17, 1977, Ser. No. 842,705
Int. Cl.[2] G01P *15/08*
U.S. Cl. 73—516 LM **9 Claims**



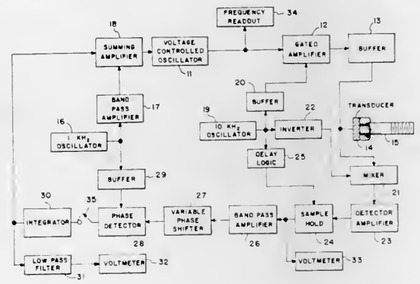
1. An inertial measurement device, comprising:
a stator;
a rotatable member arranged for rotation within said stator and a fluid-filled chamber therein, said chamber located on an axis parallel to the axis of rotation of said rotatable member but not coincident therewith;
resilient means coupled to said rotor and responsive to the inertial forces incident on said fluid;
a source of radiation; and
means coupled to said resilient means for modulating the output of said source of radiation.

4,117,730
SENSOR SYSTEM FOR RELEASING PASSIVE SAFETY APPARATUS IN CAR CRASHES
Johann Spies, Pfaffenhofen, and Alfons Wohrl, Schrobenhausen, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany
Filed Mar. 22, 1977, Ser. No. 780,015
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1976, 2612215
Int. Cl.[2] B60R *21/00*
U.S. Cl. 73—517 R **16 Claims**



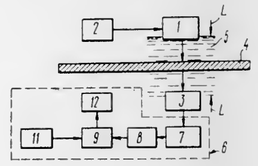
1. A sensor system for releasing passive safety systems such as air cushions, belt tighteners or similar arrangements, during car collisions, comprising:
transducer means for providing an electrical signal responsive to vehicular accelerations;
means for supplying an input voltage;
reference voltage means, responsive to said means for supplying an input voltage, for supplying a stabilized reference voltage to said sensor system;
amplifier means responsive to said electrical signal from said transducer means for effecting bipolar asymmetrical limitation of said electrical signal;
means responsive to said electrical signal from said transducer means and to said amplifier means for integrating said electrical signal;
switching threshold means for providing release signals to said passive safety systems, said switching threshold means further including evaluation circuit means for setting predetermined switching conditions of said switching threshold means, said switching threshold means responsive to said integrating means and said reference voltage means; and
voltage monitor means responsive to said input voltage supply means and said reference voltage means for blocking the release signals from the switching threshold means upon the occurrence of an improper voltage condition.

4,117,731
PSEUDO CONTINUOUS WAVE INSTRUMENT
Joseph S. Heyman, Gloucester, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Dec. 8, 1977, Ser. No. 858,763
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—579 **10 Claims**



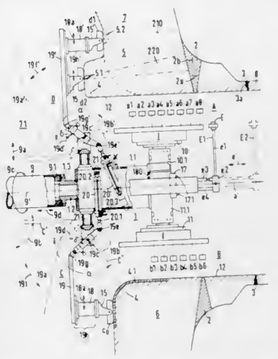
1. A device for measuring the acoustic properties and their changes in a sample comprising:
a variable frequency source;
transducer means for applying the output of said variable frequency source to said sample;
means for periodically interrupting the application of said variable frequency source to said sample for a short duration;
means connected to said transducer means for receiving the resulting acoustic signals during said interruptions for producing a control signal indicative of a difference in the frequency of the output of said variable frequency source and the frequency of a mechanical resonant peak of said sample; and
means for applying said control signal to said variable frequency source to maintain the frequency of the output of said variable frequency source at the frequency of said mechanical resonant peak.

4,117,732
METHOD FOR CHECKING THICKNESS OF SHEET MATERIALS BY USING ACOUSTIC OSCILLATION AND DEVICE FOR EFFECTING SAME
Nikolai Ivanovich Brazhnikov, 1 ulitsa Bebelya 3, korpus 11, kv. 48, Moscow, U.S.S.R.
Filed Feb. 17, 1976, Ser. No. 658,478
Int. Cl.[2] G01B *17/00*
U.S. Cl. 73—599 **12 Claims**



1. A method of checking the thickness of sheet materials by using acoustic oscillations, comprising the steps of placing a sheet of material being checked into an acoustically conducting medium; periodically transmitting acoustic oscillations into the acoustically conducting medium and establishing a travelling wave which is directed in a direction substantially perpendicular to the surface of the sheet; receiving and measuring the transmitted acoustic oscillations in said medium which have passed through the sheet material being checked; comparing the amplitude of the measured acoustic oscillations or signals which have passed through the sheet with a reference signal which has an amplitude corresponding to that of acoustic oscillations or signals passed through material of a predetermined thickness; and determining the thickness of the sheet material being checked based on the relative values of the transmitted and reference signals.

4,117,733
TEST SYSTEM CARRIER FOR ULTRASONIC TESTING OF NOZZLE SEAMS, PIPE CONNECTION SEAMS AND NOZZLE CORNERS IN PRESSURE VESSELS, PARTICULARLY REACTOR PRESSURE VESSELS OF NUCLEAR POWER PLANTS
Georg Gugel, Kalchreuth, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Germany
Filed Dec. 20, 1976, Ser. No. 752,299
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2557992
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—634 **10 Claims**



1. Test system carrier for ultrasonic testing of nozzle seams, pipe connection seams and nozzle corners in pressure vessels, the carrier being supported at the end of a telescopic tube for executing stroke and rotary motions in or about the axis of the nozzle, the telescopic tube being adjustably mounted on the central mast of a central-mast manipulator so as to be adjustable in elevation and rotatable about the axis of the central mast as well as about its own axis comprising, in combination, inner-periphery test-head carrier means for ultrasonically testing seams formed in the nozzle and seams between pipe connections and the nozzle as well as zones adjacent thereto; a tiltable test-head carrier having at least one drag lever pivotally attached to the test system carrier, said drag lever having an inner and an outer lever arm, tilting drive means coupled to said inner lever arm for tilting the same, test-head means carried by said outer lever for testing the nozzle corners, said drag lever being successively movable so as to bring said test-head means into contact with surfaces at the end of the nozzle, the corner of the nozzle and the inner periphery of the nozzle and movable in test tracks within the entire respective peripheral angle range thereof; said test head means being engageable with the respective test tracks to be contacted, means for telescoping said telescopic tube so as to shift the pivot axis of said drag lever axially away from the telescoping tube, said drag lever having an angular position with respect to the telescoping tube that is variable for contacting the respective test tracks, said drag lever being controllably movable into an inward folded-up rest position wherein said arms thereof are disposed on a diameter that is smaller than the daimeter of the inner periphery of the nozzle so that the test system carrier

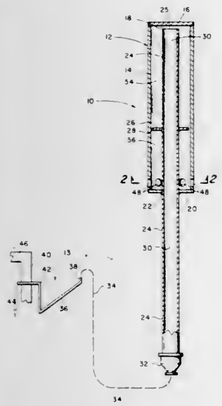
with said inner-periphery test-head carrier is axially displaceable unobstructedly through the nozzle.

4,117,734

APPARATUS FOR INDICATING TRUE FURNACE DRAFT

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Nov. 28, 1977, Ser. No. 855,235
Int. Cl.[2] G01L *7/00*
U.S. Cl. 73—756 **4 Claims**



1. In a furnace system, apparatus for indicating true furnace draft, comprising;
(a) piezometric chamber means for indicating a true average value of atmospheric pressure;
(b) an inclined tube draft manometer, the atmospheric pressure end or first end connected to said piezometric chamber, the second end connected to a tube passing through the wall of said furnace into the interior thereof;
and wherein said piezometric chamber comprises;
(c) an elongated vertical first pipe of a first internal diameter D, closed at the top and bottom, a plurality of small diameter ports drilled through the wall, near the bottom end thereof, uniformly spaced circumferentially;
(d) a second pipe of smaller internal diameter *d*, inserted coaxially through the bottom closure of said first pipe, and extending almost to the top thereof;
(e) an annular baffle plate of less diameter than D, attached to said smaller pipe, inside of said chamber, providing a narrow annular passage for flow of air from and to said ports and the interior of said second pipe; and
(f) tubular means connecting the bottom end of said second pipe to said first end of said manometer.

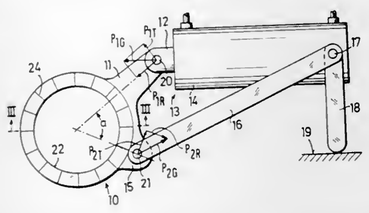
4,117,735

POWER WRENCH

Paul-Heinz Wagner, Much-Birrenbachshöhe; Richard Hirtsiefer, Neunkirchen, and Johann Müller, Much-Nesshoven, all of Fed. Rep. of Germany, assignors to Paul-Heinz Wagner Maschinenfabrikation, Fed. Rep. of Germany

Filed Mar. 11, 1977, Ser. No. 776,745
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654466
Int. Cl.[2] F16H *21/18*
U.S. Cl. 74—47 **10 Claims**

1. A power wrench comprising first and second relatively linearly movable members, an at least partially annular drive head means for rotating screws, nuts and the like, first pivot means for pivotally connecting a first end portion of said first member to said drive head at a first position of the latter, a third member having first and second end portions, second pivot means for pivotally connecting said third member first end portion to said second member, third pivot means for pivotally connecting said third member second end portion to said drive head at a second position of the latter arcuately spaced from said first position whereby upon relative linear movement of said first and second members turning torque is imparted to said drive head means through both said first and



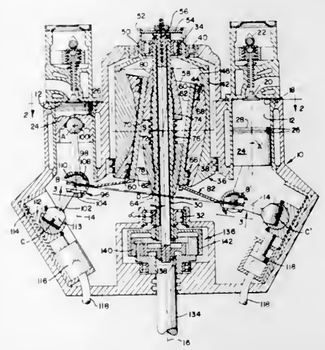
third members whereby said drive head means is rotated through a predetermined arc under the control of said third member, supporting means articulately connected to said second member for freely contacting a support surface along any one of a plurality of points thereof, and said supporting means being disposed generally normal to said second member during the operation of said power wrench including the relative linear movement of said first and second members.

4,117,736

VARIABLE STROKE EXPANSIBLE ENERGY CONVERSION MACHINE HAVING STATIC CONTROL MEANS

Yves Jean Kemper, Birmingham, Mich., and Harvey N. Pouliot, Livermore, Calif., assignors to Vadetec Corporation, Troy, Mich.

Filed Jan. 19, 1977, Ser. No. 760,693
Int. Cl.[2] F16H *23/00*
U.S. Cl. 74—60 **14 Claims**



1. In an expansible chamber energy conversion machine having a frame, a torque transmitting member supported by the frame for rotation about a first axis, a nutatable member having journal surfaces concentric with a second axis intersecting the first axis at an angle to establish a point of axes intersection, support means rotatable on the first axis and rotatably supporting the nutatable member for movement of the second axis in a biconical path about the first axis with the apex of the biconical path coincident with the point of axes intersection, a piston reciprocable on a third axis through a stroke distance in a working fluid chamber having an end face fixed relative to the frame and a linkage assembly having a swivelling compression

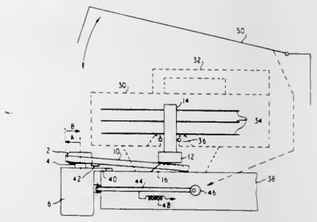
link for interconnecting the piston with the nutating member, one end of the link being swivelled on the frame and the other end thereof being swivelled with the nutating member for movement in a path perpendicular to and symmetric about a line passing through the point of axes intersection, the improvement comprising:
journal means carried by the support means to rotatably engage the journal surfaces on the nutating member;
means for changing the angle of first and second axes intersection upon axial movement of said journal means relative to the support means, said angle changing means including complementing and oppositely inclined ramp surfaces effective at the respective opposite ends of the nutating member, said ramp surfaces being formed on the support means and said journal means respectively; and
adjustable means to support the end of the swivel link swivelled on the frame for movement in a direction to shift the nutating member axially of the support member and frame, thereby to change the nutational throw of the nutatable member and the stroke distance of the piston.

4,117,737

DRIVE BELT LOADING SYSTEM

Patrick John Mulholland, Eastleigh, and Colin Arthur Thomas, Alresford, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1976, Ser. No. 746,904
Claims priority, application United Kingdom, Dec. 29, 1975, 52961/75
Int. Cl.[2] F16H *7/22, 7/08, 7/10;* **G11B** *17/00*
U.S. Cl. 74—242 **6 Claims**



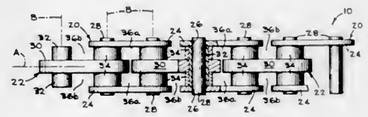
1. A system for automatically loading and unloading a drive belt onto a driven pulley which is permanently associated with a replaceable device which is removable in a non-horizontal direction parallel to the axis of rotation of said driven pulley, said system comprising:
(1) means for supporting said device with the axis of rotation of said driven pulley substantially parallel to said direction and in a non-horizontal plane;
(2) means positioned between said device supporting means and the said driven pulley and non-removably attached to said supporting means for guiding a drive belt from a first untensioned position to a second tensioned position on said driven pulley, said guide means including at least one surface sloping towards said driven pulley from said supporting means defining a portion of a conical frustum having its axis positioned coaxially with the axis of rotation of said driven pulley and a belt support surface extending normal to the axis of said frustum;
(3) a driving pulley having an axis of rotation substantially parallel to said axis of rotation of said driven pulley and positioned in substantially the same plane as said driven pulley;
(4) means permanently associated with said driving pulley for preventing gravity from disengaging said belt completely from said driving pulley when the belt is not under tension; and
(5) means for applying tension to said belt when said belt is in said first position to cause said guide means to automatically transfer said belt to said driven pulley as said driving pulley is rotated and to transfer said belt to said guiding surface by gravity when said tension is released and said driving pulley stops.

4,117,738

CHAIN FOR ENGAGEMENT WITH DOUBLE SPROCKET

John F. McKeon, Carmel, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 3, 1976, Ser. No. 738,499
Int. Cl.[2] F16H *57/04*
U.S. Cl. 74—250 R **4 Claims**



1. A chain for engagement with a double sprocket comprising in combination
a plurality of pin links, each having a pair of laterally spaced longitudinally extending side bars and a pair of longitudinally spaced laterally extending pins between and connecting said side bars,
a plurality of center links each having a center bar provided with longitudinally spaced apertures receiving said pins therethrough,
said center bars disposed between said side bar pairs and parallel thereto in laterally spaced relation thereto,
said center bars alternately arranged with respect to said pin links each so that each center bar between adjacent pairs of pin links receives a pin of one pin link pair through one center bar aperture and receives a pin of the other pin link pair longitudinally adjacent thereto through the other center bar aperture,
said adjacent center bars having a closely spaced end-to-end non-overlapping relationship to each other with adjacent ends of each two bars disposed between a single pair of pin link side bars, and,
said side bars of adjacent pin links having a closely spaced end-to-end relationship with each other,
thereby defining pockets for cooperation with said sprocket between each side bar and the ends of a laterally adjacent pair of end-to-end center bars, and between each center bar and the ends of a laterally adjacent pair of end-to-end side bars.

4,117,739

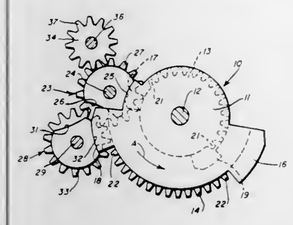
GEAR DRIVES WITH DIRECTION OF ROTATION REVERSAL

Heinz Meier; Egon Zurawski, both of Berlin, and Paul Greppmaier, Nuremberg, all of Fed. Rep. of Germany, assignors to Triumph Werke Nurnberg A.G., Nuremberg, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,653
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2648911
Int. Cl.[2] F16H *57/00, 55/04*
U.S. Cl. 74—404 **11 Claims**

1. A gear mechanism for use in rotating a character wheel, the mechanism comprising:
a rotatable driving gear having at least one segment of gear teeth,
a first idler gear having gear teeth which are engagable with said driving gear,
a second idler gear having gear teeth which are engagable with said driving gear,

a driven gear having gear teeth in engagement with at least one of said idler gears, said mechanism causing the driven gear to be sequentially rotated in two directions in response to the driving gear rotating in one direction.

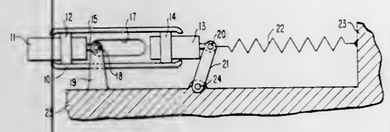


4,117,740

MULTI-STROKE THROTTLE LINKAGE MECHANISM

Leland L. Howland, Rosemount, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Jul. 12, 1977, Ser. No. 814,960
Int. Cl.[2] G01M *1/16*
U.S. Cl. 74—469 **4 Claims**



1. A multi-position throttle mechanism for an engine having an engine frame and a pivoted throttle lever, comprising a link body, a first servo device carried by said body and having an arm extendable from a first position to a second position upon actuation of its servo mechanism, a second servo device carried by said body and having an arm extendable from a first position to a second position upon actuation of its servo mechanism, the free end of the arm of said first servo device being secured to the engine frame and the free end of the arm of the second servo device being secured to the throttle lever pivoted on the engine frame whereby selective actuation of one or the other or both or neither of said first and second servo devices results in at least three selectively different pre-set throttle positions of the throttle lever.

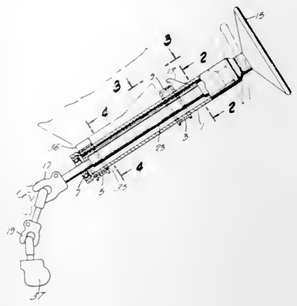
4,117,741

COLLAPSIBLE STEERING COLUMN

Shigeru Yazane, Sakado, and Youetsu Mogami, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1976, Ser. No. 746,510
Int. Cl.[2] B62D *1/18*
U.S. Cl. 74—492 **9 Claims**

1. A collapsible steering column system comprising a steering shaft housed within a steering column; collapsible plate means positioned adjacent said steering column; and a press plate member secured to said steering column and positioned to engage said collapsible plate means and restrain said steering column, whereby said press plate member engages and collapses said collapsible plate means at impact and allows said steering column to move forward, and wherein said collapsible plate means is further defined as a plate having a portion of reduced cross-sectional area and two end portions adapted to anchor said collapsible plate means; and said press plate member is positioned to engage said portion of reduced cross-sectional area of said collapsible plate.

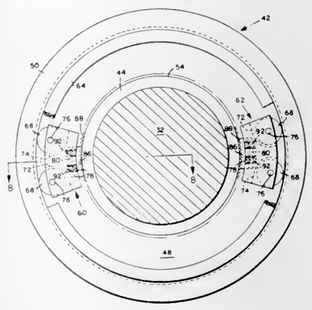


4,117,742

PERMANENT AUTOMATIC ROTOR BALANCER FOR SHAFTS OPERATING ABOVE CRITICAL SPEED

Philip C. Stein, 20th St. & Indiana Ave., Philadelphia, Pa. 19132

Filed Jul. 29, 1977, Ser. No. 820,295
Int. Cl.[2] F16H *3/44, 57/10*
U.S. Cl. 74—573 R **14 Claims**



1. In combination with a rotor adapted to rotate above critical speed the improvement comprising an automatic balancer for the rotor comprising:

an annular housing secured to the rotor,

a pair of balancing weights on opposite sides of the center line of the rotor and mounted in the housing for movement about the axis of the rotor,

speed dependent clutch means for automatically maintaining said weights locked against movement about the axis of the rotor when the rotor is rotating below critical speed and unlocked and free to move about the axis of the rotor when the rotor is rotating above critical speed.

4,117,743

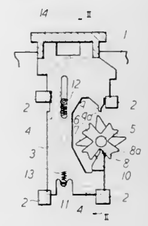
DEVICE FOR RETAINING TWO ALTERNATE POSITIONS

Tetsuro Suzuki; Masaaki Oishi, and Itaru Ashida, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Japan

Filed Apr. 19, 1977, Ser. No. 788,967
Claims priority, application Japan, Apr. 19, 1976, 51/44320
Int. Cl.[2] F16H *31/00*; H01H *19/14*
U.S. Cl. 74—577 M **3 Claims**

1. A device for retaining a member in two alternate positions

comprising a base plate, an operating member slidably supported on said base plate for reciprocatory movement in a selected direction and having two opposed pawls which are spaced apart and project toward one another in the direction of movement of said operating member, a position control cam and an integral supplementary cam rotatably mounted on said base plate between said pawls, said pawls being in different planes so that a first pawl is engageable with said position control cam and a second pawl is engageable with said supplementary cam, said position control cam having in its periphery deep concaves and shallow concaves alternately disposed and said supplementary cam having teeth at positions corresponding to the concaves of said position control cam, means biasing



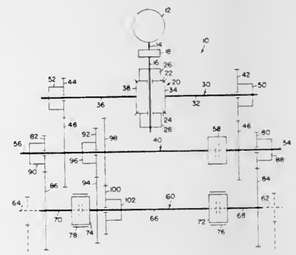
siad operating member in a direction to bring said first pawl of said operating member alternately into engagement in said deep concaves and said shallow concaves of said position control cam and said second pawl being engageable with said teeth of said supplementary cam upon movement of said operating member in a direction opposite to said bias to index said supplementary cam and said position control cam to bring a succeeding cavity of said position control cam into position to be engaged by said first pawl upon return movement by said biasing means, said operating member being positioned in one position when said first pawl is in engagement in a deep concave of said position control cam and in a second position when said first pawl is in engagement in a shallow concave of said control cam.

4,117,744

TRANSMISSION FOR CRAWLER TRACTORS

Michael Butculescu, Offenbach am Main, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jan. 4, 1977, Ser. No. 756,661
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1976, 2601113
Int. Cl.[2] F16H *37/06*
U.S. Cl. 74—665 G **5 Claims**



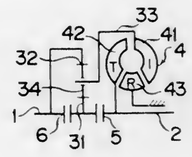
1. A transmission for driving the opposite tracks of a track laying vehicle, comprising: an input shaft; a first shaft assembly arranged crosswise to and including first and second shaft sections located in axial alignment with each other and on opposite sides of the input shaft; a controllable reversing gear means connected between the input shaft and the first and second shaft sections for selectively driving the first shaft section in opposite directions while simultaneously driving the second shaft section oppositely to the first shaft section; a further shaft assembly arranged parallel to the first shaft assembly and including first and second axially aligned final drive input shaft sections; and first selectively engageable drive means connected between the first shaft section and first final drive input shaft section for establishing a drive connection between the first shaft section and the first final drive input shaft section and second selectively engageable drive means connected between the second shaft section and second final drive input shaft section for establishing a drive connection between the second shaft section and the second final drive input shaft section whereby simultaneous engagement of the first and second drive means will effect opposite rotation of the final drive input shaft sections and separate engagements of the first and second drive means will effect rotation of a selected one of the final drive input shaft sections.

4,117,745

TORQUE CONVERTER AND PLANETARY GEAR SET THEREFOR

Akinori Yokoyama, and Mitsuaki Komatsu, both of Yokohama, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 13, 1976, Ser. No. 732,149
Claims priority, application Japan, Oct. 13, 1975, 50/122448
Int. Cl.[2] F16H *47/08*
U.S. Cl. 74—688 **20 Claims**



1. A torque converter and a planetary gear set therefor, said torque converter comprising an impeller, a turbine and a reactor; said planetary gear set comprising input means, a sun gear, a ring gear, a plurality of planet gears, a planetary carrier for connecting said planet gears, an output means, a first clutch connected to said output means, and a second clutch connected to said input means wherein one of the elements among said sun gear, said ring gear and said planetary carrier is connected directly to said input means, another element is connected directly to said impeller of said torque converter, and the other element is connected to said output means via said first clutch.

4,117,746

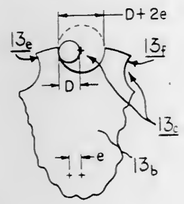
ORBITAL DRIVE MECHANISM

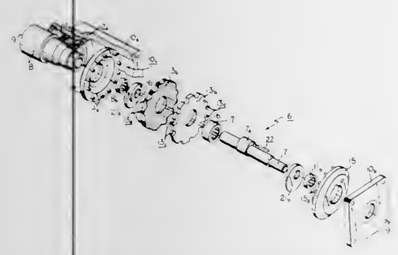
Michel A. Pierrat, Andover, Mass., assignor to Compudrive Corporation, Medford, Mass.

Filed Oct. 29, 1976, Ser. No. 736,899
Int. Cl.[2] F16H *1/28*
U.S. Cl. 74—805 **9 Claims**

1. An orbital drive mechanism comprising two orbiting elements, one of which has peripheral surfaces acting as gear teeth and the other of which has peripheral open recesses which promote angular coupling isolated from orbital motion, means supporting said two elements for movements together eccentrically about an axis, two non-orbiting elements concentric with said axis, one of said non-orbiting elements being nested with said one of said orbiting elements and having peripheral surfaces acting as gear teeth which differ in number from the number of said gear teeth of said one of said orbiting elements, the other of said non-orbiting elements having peripheral surfaces of substantially circular curvature disposed within said peripheral open recesses of said other of said orbit-

ing elements, margins of said peripheral open recesses being shaped substantially as arcs of a circle having a diameter equal substantially to the diameter of said circular curvature plus





twice the eccentricity of said orbiting elements about said axis, and means restraining one of said non-orbiting elements from following angular movements of the orbiting element meshed therewith.

4,117,747

ELECTRONIC CONTROL SYSTEM FOR AUTOMATIC GEARBOXES

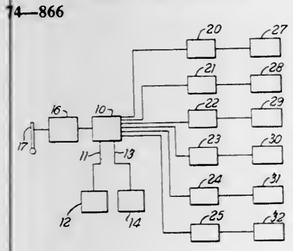
Harry Mellows Windsor, Leamington Spa, England, assignor to Automotive Products Limited, England

Continuation of Ser. No. 522,142, Nov. 8, 1974, abandoned. This application Aug. 25, 1976, Ser. No. 717,588

Claims priority, application United Kingdom, Nov. 21, 1973, 54112/73

Int. Cl.[2] B60K *41/18*

U.S. Cl. 74—866 **1 Claim**



1. An automatic gearbox comprising a planetary gear system which provides at least three forward gear ratios, fluid pressure operated friction elements operatively connected thereto to change the gear ratios thereof, means for generating an electrical signal indicative of vehicle speed, means for generating an electrical signal indicative of throttle opening, electronic control circuits responsive to said signal means indicative of vehicle speed and throttle opening to control fluid pressure operation of said friction elements by means of solenoid valves so a gear is engaged which is appropriate to the vehicle speed and throttle opening, said electronic control circuits including means for combining said signal means indicative of vehicle speed and said signal means indicative of throttle opening, and a plurality of bistable state switching circuits each operatively connected with a forward gear change and each arranged to switch states when said combined signal is at a predetermined value, a manually operable switch for establishing connections for providing manual overriding signals to said electronic control circuits for the manual selection of forward gears, and at least one diode operatively connected between said throttle signal generating means and said switch and operatively connected when a gear is selected by operation of said manually operable switch, said diode provides a short-circuit connection to simulate for at least said selected and higher gears at least a full throttle opening condition, whereby the operation of the friction elements operatively connected with said selected gear and higher gears than said selected gear is not carried out until vehicle speeds at least equal to the vehicle speeds at which the friction elements are operated at full throttle opening under automatic control, wherein said selector switch has a fixed contact operatively connected with each forward gear ratio and a movable contact which can be moved into contact with any one of the fixed contacts, a diode is connected across successive pairs of fixed contacts whereby when the movable contact is moved into contact with one of said fixed contacts the diode or diodes connected to that and contacts operatively connected with higher gear ratios are forward-biased to provide said short circuit connection and the diode or diodes connected to contacts operatively connected with lower gear ratios are reverse biased.

4,117,748

KNIFE SCABBARD AND SHARPENING DEVICE

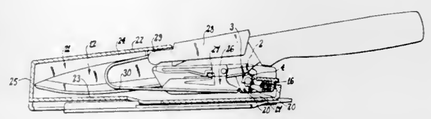
Keith Ernest Watts, Brunswick, Australia, assignor to Wiltshire Cutlery Company Proprietary Limited, South Melbourne, Australia

Filed Jul. 5, 1977, Ser. No. 812,693

Claims priority, application Australia, Jul. 28, 1976, 6786/76

Int. Cl.[2] B21K *11/02*

U.S. Cl. 76—86 **5 Claims**



1. A knife scabbard including; a housing having an elongate blade receiving passage formed therein and having an open front end, said passage having a longitudinal axis; a carrier member movably mounted within said passage adjacent said front end; a sharpening device having a support block pivotally mounted on said carrier member for relative movement about a pivot axis extending transverse to the longitudinal axis of said passage, and a pair of sharpening plates rigidly secured to said support block, said sharpening plates being relatively arranged so as to have respective broad surfaces in opposed and overlapping relationship to define a zone of overlap, and said broad surfaces being substantially parallel to said support block pivot axis; a sharpening recess defined between edges of said plates which extend beyond the zone of overlap and are relatively arranged such that a knife blade located in said recess and engaging said edges is sharpened when moved longitudinally in said passage in either direction relative to said plates; said opposed surfaces being spaced apart so that a gap exists between them at least along said edges for the full depth of said recess and an immediately adjacent part of said zone of overlap; and each said opposed surface is polished to have a degree of roughness not greater than 0.5 micro meters Ra value.

4,117,749

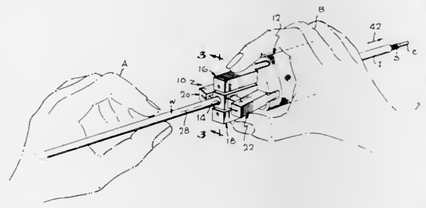
WIRE STRIPPER

Merle A. Economu, Palmdale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 9, 1976, Ser. No. 713,027

Int. Cl.[2] H02G *1/12*

U.S. Cl. 81—9.5 R **3 Claims**



1. A wire stripper comprising:
a body forming a wire-receiving hole extending along a predetermined axis;
a first pair of jaws moveably mounted on said body to move toward and away from said axis, each of said first jaws having a blade with an edge that extends substantially perpendicular to said axis, said jaws positioned directly opposite one another so their blades can form part of the same circumferential cut in the wire; and
a second pair of jaws moveably mounted on said body to move toward and away from said axis, at least one of said second jaws having a blade with an edge that extends substantially parallel to said axis, whereby a person can clamp the first jaws and pivot the body by 90° in opposite directions to form an approximately 360° circumferential cut in the insulation and then clamp the second jaws to cut the insulation longitudinally as the wire moves out of said hole.

4,117,750

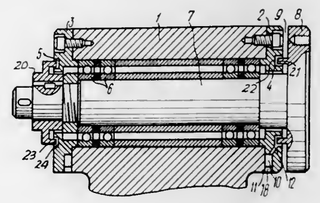
SPINDLE ASSEMBLY FOR A PRECISION MACHINE TOOL

Fridrikh Lvovich Kopelev, ulitsa Komsomolskaya, 43, kv. 5; Valentin Vladimirovich Kossek, ulitsa Generala Petrova, 68, kv. 61; Askold Fedorovich Dubinenko, ulitsa Kosmonavtov, 13, kv. 8, and Semen Markovich Sherstinsky, ulitsa Artema, 22, kv. 10, all of, Odessa, U.S.S.R.

Filed Apr. 19, 1977, Ser. No. 788,939

Int. Cl.[2] B23B *19/02;* **F16C** *1/24*

U.S. Cl. 82—30 **6 Claims**



1. A spindle assembly for a precision machine, comprising: a housing having a front lid and a rear lid; antifriction bearings mounted inside said housing; a spindle mounted for rotation in said antifriction bearings within said housing, said spindle having a flange situated adjacent said front lid of said housing with a clearance left therebetween, said flange interacting with said front lid to define a first labyrinth seal; connecting means attached to said spindle and spaced from said rear lid for determining the relationship between said spindle and said housing, said connecting means interacting with said rear lid to define a second labyrinth seal; control means for controlling the effects of suction created within the clearance defined between said flange and said front lid by the rotation of the spindle, said control means preventing drawing-in of air from the ambient atmosphere into said housing through said second labyrinth seal, said control means including a passage, said passage having an inlet communicating with the ambient atmosphere, said passage further having an outlet communicating with said first labyrinth seal.

4,117,751

APPARATUS FOR INCISING ON A FILM THE PRECISE CONTOUR OF A REQUIRED IMAGE

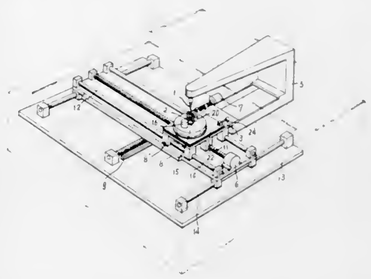
Yoshio Inoue, No. 10, 2-chome, Tanabehigashino-cho, Higashisumiyoshi-ku, Osaka-shi, Japan

Filed Nov. 26, 1976, Ser. No. 745,118

Claims priority, application Japan, Dec. 26, 1975, 50/159507

Int. Cl.[2] B26D *3/08*

U.S. Cl. 83—868 **1 Claim**



1. In a precision instrument for incising on a film placed on a second surface of an output unit, the contour of an image located on a first surface of an input unit, each unit having a lower table with longitudinal guides, moveable in the longitudinal direction and an upper table with transverse guides disposed on said lower table moveable in the transverse direction and threaded drive shafts including servomotor drive means coupled to each table so that the location of the input unit upper table can be substantially reproduced with the output unit upper table, in combination:
(a) an arm **33** on said output unit with a vertical cutting needle **34** extending therefrom disposed for cutting a film placed on said second flat surface including solenoid means for raising and lowering said needle;
(b) an arm **5** on the input unit extending over said unit with a vertical light pen **1** moveable in the horizontal plane disposed thereon, said pen having an upper pen end held by said arm and a light emitting lower end for emitting light towards said input unit upper table;
(c) a glass plate **4** disposed between said input unit upper table and said light pen **1** said glass plate **4** serving to support the image whose contours are to be followed;
(d) a horizontally rotatable light receiving table **15** disposed on said input unit upper table under said light pen **1**, said rotatable table **15** including a lens **27** disposed over the table, photoelectric conversion units **2** disposed on said rotatable table for receiving said light, said table being adapted to rotate in such a way that the alignment of the photoelectric conversion units **2** is at right angles to the direction of the movement of said light pen **1**;
(e) hammer means **26** held by said arm **5** at said upper pen end and piezoelectric sensing elements disposed opposite said hammer; and,
(f) servo means coupled to said photoelectric conversion

units 2, said piezoelectric sensing elements, and said servomotor drive to drive said light pen 1 over said contour and drive, said cutting needle 34 to follow the movements of said pen.

4,117,752

EMERGENCY SYSTEM FOR STOPPING A BAND BLADE OF A CUTTING APPARATUS

Kichi Yoneda, 396, Tsutsui, Nantan-cho, Mihara-gun Hyogo Prefecture, Japan

Filed Apr. 15, 1977, Ser. No. 787,939

Claims priority, application Japan, May 25, 1976, 51-67437[U]

Int. Cl.[2] B27G *19/00*

U.S. Cl. 83—58 **4 Claims**



1. In a cutting apparatus having pulleys rotatably mounted on a base which is in turn mounted on a support and the pulleys driving a band blade reeved therearound by means of a motor driving one of the pulleys and a power supply for said apparatus, an emergency system for stopping the band blade comprising an amplifier having an input in direct electric contact with the band blade, first relay means electrically coupled to the amplifier, said first relay means being electrically coupled between the power supply and the motor and operated for disconnecting said power supply and said motor when the amplifier receives and amplifies the electric charge potential of a human body only when the body contacts said blade, an electrically actuated brake mounted on said support and engagable with the driven pulley for braking the pulley, a further electrically actuated brake mounted on said base and engagable with said band blade for braking the band blade, and second relay means electrically coupled to the amplifier and electrically coupled between said power supply and said brakes and actuated to electrically connect said power supply and said brakes when the amplifier receives and amplifies the electric charge potential of a human body when the body contacts the blade.

4,117,753

SHEET CUTTING APPARATUS

William D. Friddle, Sr., Covington Rd., Greenville, S.C. 29609; William D. Friddle, Jr., Eastcliff Way, and Wilbourne D. O'Steen, 44 Smythe Ave. Dunean, both of Greenville, S.C. 29611

Filed Apr. 7, 1976, Ser. No. 674,373

Int. Cl.[2] B26D *5/08, 7/06*

U.S. Cl. 83—143 **3 Claims**

1. A cutting apparatus for severing a length of sheet material from a roll dispensing sheet material comprising:

a free standing cutting blade movable across said sheet material for severing the sheet material;

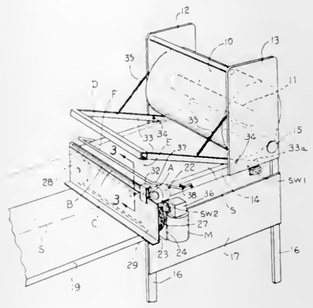
a base member beneath and extending across said sheet material;

a first open elongated channel in said base member through which said cutting blade extends into severing relation to the sheet material;

a pressure bar carried above said sheet material movable downwardly into holding engagement with said base member adjacent said open channel during severing movement of said cutting blade across said sheet material;

a second channel in said pressure bar opening opposite said first channel and in alignment therewith for receiving and shielding a free end of said cutting blade therein during severing movement of said cutting blade across said sheet material so that said pressure bar containing said second channel serves also as a guard for said cutting blade;

a spring biased pivoted arm depressible for carrying said pressure bar for arcuate movement into said holding engagement; and



a lifting bar spring biased upwardly over which said sheet material passes from said roll to said cutting blade, depressed by engagement with said spring biased pivoted arm during downward movement of said pressure bar and during severing movement of said cutting blade, and raised thereafter upon raising of the pressure bar and release thereby to lift a severed end of sheet material to facilitate further dispensing of sheet material from said roll.

4,117,754

TRANSVERSE CUTTER

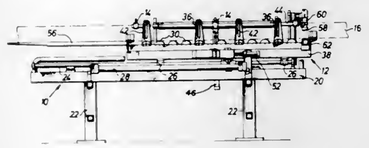
Jan-Olof Johansson, Höganäs; Heikki Korpela, Helsingborg, and Karel Spacek, Mörarp, all of Sweden, assignors to Gullfiber AB, Billesholm, Sweden

Filed Dec. 28, 1976, Ser. No. 755,019

Claims priority, application Sweden, Dec. 29, 1975, 7514724

Int. Cl.[2] B23D *25/04;* **B26D** *1/56*

U.S. Cl. 83—307.2 **2 Claims**



1. An apparatus for transverse cutting of a web of cellular plastic fed continuously out of a forming machine comprising:

a support stand;

a carriage means mounted for reciprocating motion on said support stand;

a plurality of cutting devices comprising mutually spaced hot filaments reciprocably mounted on and extending transversely across said carriage means;

means for moving said carriage means in successive synchronized traverses with said web and simultaneously moving said plurality of cutting devices perpendicular to the plane of said carriage; and

said means for moving said carriage means in successive synchronized traverses with said web moves said plurality of cutting devices towards said carriage means from above said web and alternately moves said plurality of cutting devices away from said carriage means from below said web during successive synchronized traverses of said carriage means in the direction of motion of said web to divide said web transversely into separate lengths by means of said cutting devices.

4,117,755

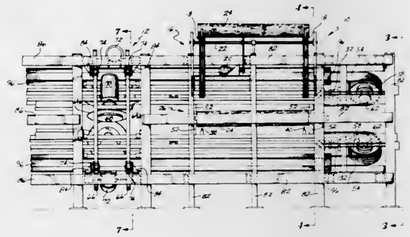
LOG TRANSPORT AND SAWING SYSTEM

Earl Dean Hasenwinkle, and Frank Wislocker, both of Longview, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Jan. 13, 1977, Ser. No. 759,168

Int. Cl.[2] B27B *15/08, 24/08*

U.S. Cl. 83—435.1 **5 Claims**



1. An apparatus having an infeed end and an outfeed end for axially transporting logs through a work station, comprising:

means for positioning a log upstream from said work station and placing it in an aligned orientation where its center line is substantially in line with the axial path it will travel when being transported through said work station,

means for dogging and holding said log in its aligned orientation at a plurality of locations circumferentially spaced on each cross-sectional end of said log with said locations being substantially opposed and coaxial at opposite ends of said log and spaced outwardly from said center line, said dogging means including a plurality of dogging members extending inwardly toward the center line but terminating outwardly therefrom,

carriage means angularly spaced from one another for supporting said dogging and holding means as a log is transported axially through said work station from said infeed end to said outfeed end,

means at said work station for working on a traveling log at locations angularly spaced between said dogging and holding means,

means at said outfeed end for releasing the worked-upon log from said dogging and holding means, and

means for driving said carriage means axially from said infeed end to said outfeed end and back to said infeed end.

4,117,756

VERTICAL BAND SAW AND FEED TABLE

Gerald R. Harris, 1230 Camelia Dr., Livermore, Calif. 94550

Filed Oct. 13, 1976, Ser. No. 732,107

Int. Cl.[2] B23D *53/04;* **B27B** *13/00*

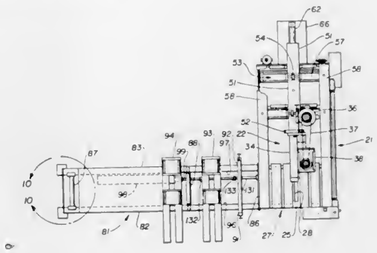
U.S. Cl. 83—801 **1 Claim**

1. A band saw having a base formed with guideway means therein, a carriage including a saw frame and an arm rigidly secured thereto with said arm being mounted to said guideway means for reciprocal motion with respect thereto, a pair of wheels rotatably mounted to said saw frame, a band saw blade mounted to and distended between said wheels, blade drive means operatively connected to drive said saw blade, and carriage drive means operatively connected to drive said carriage to effect cutting of a work piece, wherein the improvement in said band saw comprises:

said arm is cantilevered from said carriage to extend away from a side of said saw frame remote from the side on which said saw blade effects cutting of said work piece;

said arm is formed with a hollow portion;

said guideway means is positioned on said base on a remote side of said frame from the side on which said saw blade effects cutting; and



said carriage drive means is mounted to said carriage and said base in a position in axial alignment with said arm, said carriage drive means having piston means extensible therefrom to effect driving of said carriage, and said carriage drive means being positioned at least partially inside said hollow portion of said arm with said piston means being positioned substantially entirely within said hollow portion.

4,117,757

RECTANGULAR WAVEFORM SIGNAL REPRODUCING CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

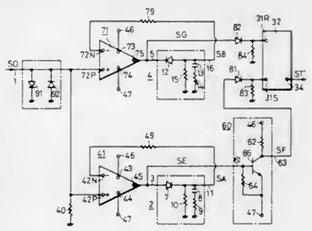
Keiji Akamatu, Takatsuki, Japan, assignor to Roland Corporation, Japan

Filed Feb. 14, 1977, Ser. No. 768,585

Claims priority, application Japan, Feb. 16, 1976, 51-16332

Int. Cl.[2] G10H *1/00;* **H03K** *5/13*

U.S. Cl. 84—1.01 **3 Claims**



1. A rectangular waveform signal reproducing circuit for electronic musical instruments, comprising:

a first charge-discharge circuit having a relatively small charge time constant and a relatively large discharge time constant for charging and discharging positive components of a monophonic signal;

a second charge-discharge circuit having a relatively small charge time constant and a relatively large discharge time constant for charging and discharging negative components of the monophonic signal;

first comparing means for comparing the monophonic signal with the output from the first charge-discharge circuit to produce a first compared output representing that the level of the former is larger than that of thelatter in the positive direction;

second comparing means for comparing the monophonic

signal with the output from the second charge-discharge circuit to produce a second compared output representing that the level of the former is larger than that of the latter in the negative direction; and

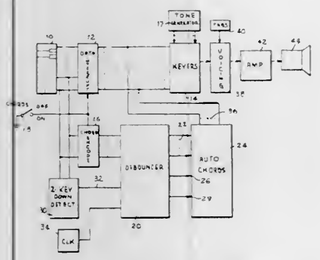
a flip-flop having first and second input terminals respectively supplied with the outputs from the first and second comparing means to produce a rectangular waveform signal having the fundamental period of the monophonic signal.

4,117,758

BINARY WORD DEBOUNCER

James Patrick Osburn, Terre Haute, and John William Robinson, Jasper, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Nov. 4, 1976, Ser. No. 738,754
Int. Cl.[2] G06F *3/02;* **G10H** *1/00;* **H04L** *15/06*
U.S. Cl. 84—1.01 **20 Claims**



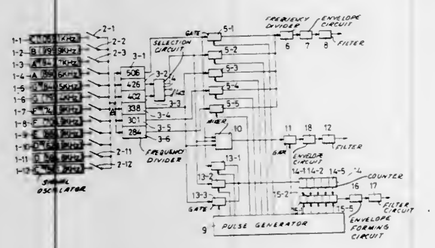
1. The method of compensating for the effect of switch bounce in a signal wherein the signal originates at a switch and is supplied to place of use, said method comprising: supplying the signal from the switch to the input side of a storage station which also has an output side, repetitively inserting the signal at the input side of the storage station into the station, comparing the signal in the storage station with the signal at the input side of the storage station, and supplying the signal in the storage station to said place of use at the end of a predetermined time delay period during which the signal supplied to the input side of the storage station remains the same as the signal in the storage station.

4,117,759

APPARATUS FOR FORMING CHORD SIGNAL

Hiroshi Kato, Okegawa, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Oct. 22, 1976, Ser. No. 735,213
Claims priority, application Japan, Dec. 17, 1975, 50-149433
Int. Cl.[2] G10H *1/00, 5/06*
U.S. Cl. 84—1.03 **5 Claims**



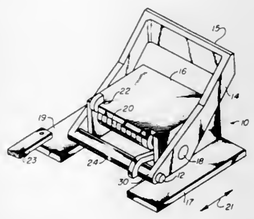
1. Apparatus for forming a chord signal comprising in combination: at least a frequency divider for root, a frequency divider for minor third, a frequency divider for major third and a frequency divider for fifth or a frequency divider for seventh, tone signal means connected to input terminals of said frequency dividers, the input terminals of said frequency dividers being connected together, the frequency divider for minor third and frequency divider for major third having a selection circuit for selectively taking out an output signal according to a major chord or a minor chord of music, the tone source signal from said tone source signal means being frequency-divided by the frequency dividers for root, minor third, major third and fifth or seventh for producing musical tone signals for chord, gate circuits, and a rhythm pulse generator, respective output terminals of the frequency divider for root, the selective circuit and the frequency divider for fifth or the frequency divider for seventh being connected together through respective ones of said gate circuits, said gate circuits having means for opening and closing said gates by an output pulse signal of said rhythm pulse generator.

4,117,760

FEED PAWL ANTIBOUNCE DEVICE

Charles J. Schertz, Bel Air, Md., and Dennis L. Wilson, Davenport, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 14, 1977, Ser. No. 787,407
Int. Cl.[2] F41D *9/02*
U.S. Cl. 89—33 C **6 Claims**



1. A feed pawl antibounce device for use in feeding rounds into an automatic weapon, said device comprising a feed pawl assembly and a feed tray,

said feed tray having a ledge upon which rounds are deposited for feeding into the receiver of said weapon,

said feed pawl assembly having a carrier movably mounted on said weapon,

a feed pawl pivotally mounted on said carrier for movement between a depressed position as said pawl passes under a round on said ledge, and a spring urged raised ready-to-feed position wherein said pawl moves said round from said ledge into said receiver, and

means retaining said pawl in said raised position as said pawl moves said round into said receiver,

said retaining means including a wall in said tray with a slot therein,

said slot having a ramp portion terminating flush with said wall, and

depressible means on said pawl engageable with said slot,

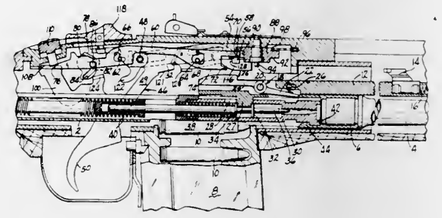
said depressible means being depressed by said ramp to free said pawl for pivotal movement as said carrier moves on said weapon.

4,117,761

FIRE CONTROL MECHANISM

James H. Johnson, New Haven; Arnold L. Fowler, Guilford; Julius E. Brooks, Branford, and Harvey H. Friend, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 31, 1966, Ser. No. 540,150
Int. Cl.[2] F41D *11/10*
U.S. Cl. 89—129 B **6 Claims**



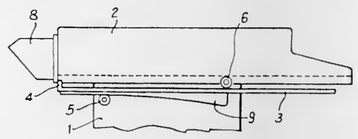
1. In a firearm; an operating rod disposed for reciprocation between a breech closed position and a recoil position in response to the cyclic rate of the firearm; sear means spring biased into a holding position for retaining said operating rod in a cocked position; trigger means pivotable into a firing position to release said sear from said holding position; counter cam means having a cam surface rotatably mounted in said firearm in a position to be rotated by said operating rod; a trigger bar mounted in said firearm for movement into one of three preselected positions, said preselected positions including an automatic position, a semi-automatic position, and a controlled burst fire position; selector means for moving said trigger bar into said preselected positions; said trigger bar in said semiautomatic position being out of contact with said sear means and engageable with said counter cam to prevent said counter cam from being rotated whereby a single round is fired with each pivot of said trigger means, in said automatic position being engageable with said counter cam to prevent rotation thereof and operable to be moved by said trigger means upon pivoting thereof to a position to cam said sear and prevent said sear from retaining said operating rod in a cocked position whereby rounds are continuously fired as long as said trigger means remains pivoted, in said controlled burst fire position being engageable with said cam surface of said counter cam to be moved upon rotation of said counter cam into a position to cam said sear and pevent said sear from retaining said operating rod in a cocked position whereby a predetermined number of rounds are fired upon pivoting said trigger means.

4,117,762

MACHINE TOOLS WITH SLIDING TOOL-HOLDING RAM

Michel E. Sachot, Orsay, France, assignor to Societe Hure S.A., Bagneux, France

Filed Jan. 30, 1976, Ser. No. 653,750
Claims priority, application France, Feb. 3, 1975, 75 03217
Int. Cl.[2] B23B *47/26;* **B23C** *1/00*
U.S. Cl. 90—11 F **12 Claims**



1. In a machine tool of the type having a ram and support means mounting said ram for horizontal movement with respect thereto, said ram having an anterior portion for carrying the tool which overhangs the support means by varying amounts when the ram moves, means for providing an upward force to the overhanging anterior portion of the ram to counterbalance its weight and the weight of the tool carried thereby comprising:

at least one bar having an anterior end coupled with the overhanging anterior portion of said ram, said at least one bar being mounted externally of said ram for horizontal movement with said ram and lengthwise pivotal movement independent of said ram;

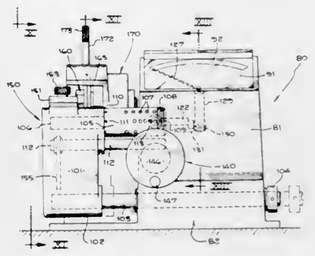
first and second means mounted on said support means for engaging said bar, said first bar engaging means being located closer to the anterior portion of said ram than said second bar engaging means, said bar being carried on said first bar engaging means and under said second bar engaging means so that said engaging means apply oppositely directed forces thereto, whereby a rotational moment is applied to said bar which provides an upward force to said ram anterior portion to substantially counteract the downward displacement of said anterior portion produced by increasing overhang.

4,117,763

KEY DECODING AND DUPLICATING APPARATUS AND METHOD

Tim M. Uyeda, South San Gabriel, Calif., assignor to Klaus W. Gartner, La Palma, Calif.

Continuation-in-part of Ser. No. 582,639, Jun. 2, 1975, Pat. No. 4,012,991. This application Jul. 8, 1976, Ser. No. 695,317
Int. Cl.[2] B23C *1/16*
U.S. Cl. 90—13.05 **11 Claims**



1. Apparatus for duplicating a key having a shank portion with a plurality of spaced transverse notches of differing depths and spacing therebetween, said notches being coded to predetermined coded depth and spacing information therebetween, said apparatus comprising:

housing means including a card receiving slot for removably receiving card means therein;

coded indicia bearing card means removably and freely insertable into said slot in said housing means without connection to said housing means and having coded depth indicia thereon comprising a sequential index corresponding to at least a predetermined coded depth information for a singly type of key being duplicated;

blank key holding and positioning means mounted adjacent said housing means for holding a blank key having a blank shank portion in a predetermined relationship thereon;

notch cutting means mounted adjacent said housing means and adapted to cut a notch in said blank shank portion;

key moving means mounted adjacent said housing means and said holding and positioning means for moving said key having said blank shank portion into cutting engagement with said cutting means; and

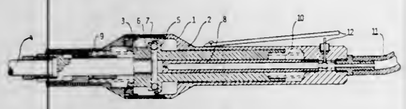
indicating means provided within said housing means for continuously indicating the position of said notch cutting means and continuously indicating the depth of cut of the

notches to be cut in said blank in comparison with said coded depth indicia on said card means.

4,117,764
VIBRATION ATTENUATING DEVICE

Göran Alfred Nilsson, Box 61, 820 22 Sandarne; Kjell Edström, Asbacksgatan 45, 826 00 Soderhamn, and Henry Wiklund, Backvägen 1, 820 10 Arbra, all of Sweden

Filed Mar. 15, 1977, Ser. No. 777,727
Claims priority, application Sweden, Mar. 15, 1976, 032523
Int. Cl.[2] F01L *21/02;* **F01B** *15/02*
U.S. Cl. 91—50 **5 Claims**



1. A balanced two-mass system for attenuating vibrations in implements equipped with a fluid pressure operated impact mechanism, comprising:

a housing for supporting the implement;

a working member and a stop member movably mounted within said housing, said members being in axial alignment and being axially movable relative to one another; resilient means acting upon said

working member and said stop member for exerting a force on said working member in a direction towards said stop member and for exerting a force on said stop member in a direction towards said working member;

a pressure chamber defined between said working member and said stop member;

sealing means interconnecting said working member and said stop member such that said pressure chamber is deformable to a predetermined value when said working member and said stop member move apart from each other;

means for supplying a pressure medium to said pressure chamber;

the forces exerted by said pressure medium being effective to drive said working member and said stop member in a direction away from one another beyond said predetermined value such that said sealing means is broken, thereby reducing pressure within said pressure chamber, and resulting in movement of said working member and said stop member toward one another into their initial positions by said forces exerted thereon by said resilient means.

4,117,765
POWER SERVO CONTROL

Stanley R. Paduch, Somers, and Lawrence S. Smith, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 9, 1976, Ser. No. 748,981
Int. Cl.[2] F15B *9/03, 9/09, 13/16, 15/17*
U.S. Cl. 91—361 **7 Claims**

1. An electrohydraulic servo system comprising:

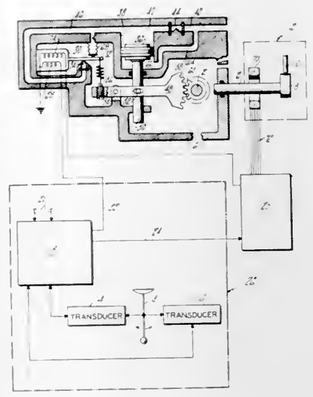
transducer means including a plurality of transducers associated with and responsive to displacement of a lever to produce a signal proportional to the displacement,

a torque motor actuated by said signal,

hydraulic means including a piston connected to a shaft and controlled by said torque motor to turn said shaft an amount proportional to the lever displacement,

a gear on said shaft,

an additional lever having a gear segment in mesh with said gear and connected to said piston to be moved thereby, and

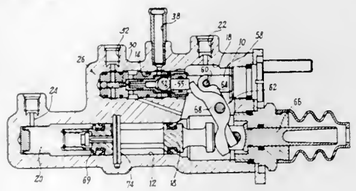


a feedback mechanism interconnecting the lever to the torque motor to apply a balancing force on the motor proportional to turning of the shaft.

4,117,766
HYDRAULIC BOOSTER

Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Oct. 15, 1976, Ser. No. 732,613
Claims priority, application France, Nov. 21, 1975, 75 35602
Int. Cl.[2] F15B *11/08, 13/04, 13/10*
U.S. Cl. 91—457 **1 Claim**



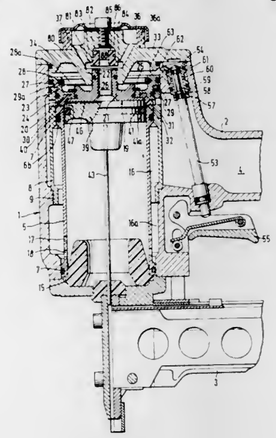
1. A hydraulic booster of the closed-center type comprising a housing containing a working chamber, an actuating piston slidable in the working chamber, a set of control valves comprising a high-pressure valve and an exhaust valve, the high-pressure valve being a ball valve having a seat and a ball valve member, said ball valve being situated between a high-pressure orifice adapted to be connected in use to a pressure fluid accumulator and an inlet compartment connected to the working chamber, tappet means controlling the ball valve under the influence of a lever mechanism according to the relative positions of the actuating piston and of a control rod projecting into the working chamber, the tappet means supporting the exhaust valve, said exhaust valve controlling the connection between the working chamber and an exhaust compartment, said exhaust valve being moved into its closed position before the ball valve opens upon actuation of said control rod, said tappet means comprising a sleeve having a central passage therein and being mounted in a fluid-tight manner across a wall separating the inlet compartment from the exhaust compartment, a valve element situated in the exhaust compartment and cooperating with a seat on the sleeve at the opening of the central passage so as to form the exhaust valve, and a sliding block which is mounted in a fluid-tight manner in a wall separating the exhaust compartment from the working chamber and said block cooperates with the valve element and lever

mechanism respectively, said sleeve, exhaust valve seat, sliding block and ball valve seat having effective cross sections, said sleeve effective cross section being equal to said exhaust valve seat effective cross section which is equal to the sum of said sliding block effective cross section and said ball valve seat effective cross section.

4,117,767
COMPRESSED AIR-OPERATED FASTENER DRIVER

Wolfgang Elliesen, Ahrensburg, Fed. Rep. of Germany, assignor to Joh. Friedrich Behrens Aktiengesellschaft, Ahrensburg, Fed. Rep. of Germany

Filed Nov. 18, 1976, Ser. No. 742,904
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601836
Int. Cl.[2] F15B *13/042;* **B25C** *1/04*
U.S. Cl. 91—461 **2 Claims**

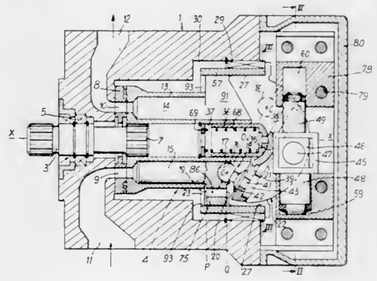


1. A compressed air operated driver comprising, in combination, a casing, a cylinder defined within said casing having an axis and a control end, a piston reciprocally mounted within said cylinder, said cylinder, piston and control end defining a stroke chamber, a compressed air source, a manually operated first valve mounted on said casing communicating with said air source, a control valve mounted in said casing coaxial with said cylinder and defining said cylinder control end, said control valve being movable within said casing in the axial direction of said cylinder between first and second positions under the influence of said first valve, at least one port defined in said casing selectively communicating with said compressed air source and said stroke chamber, said control valve closing said port as said first position and opening said port at said second position, an exhaust port defined in said casing selectively communicating with said chamber, an exhaust valve movably mounted in said casing controlling flow through said exhaust port, said exhaust valve comprising an annular member in axial alignment with said control valve axially slidably movable within said casing, said exhaust valve including a first pressure surface and a second opposed pressure surface having a greater area than said first surface, a bore in said exhaust valve connecting said surfaces and an exhaust valve seat engaging said second surface whereby pressurized air exposed to said first surface biases said exhaust valve toward said control valve toward a position closing said exhaust port and pressurized air exposed to said second surface biases said exhaust valve in the opposite direction toward a position opening said exhaust port, said abutment selectively engaging said second surface during movement of said control valve from said first position to said second position an exhaust passage defined in said control valve communicating with said chamber and selectively communicating with said exhaust port, and an abutment defined on said control valve engaging said exhaust valve and closing said exhaust port upon said control valve moving from said first position to said second position, said exhaust valve closing said exhaust port until said control valve returns to said first position.

4,117,768
HYDRAULIC ROTARY DEVICES

Robert Affouard, 3, rue R. Lanen, 92190 Meudon, France

Filed Apr. 9, 1976, Ser. No. 675,266
Claims priority, application France, Apr. 16, 1975, 75 11869
Int. Cl.[2] F01B *13/04*
U.S. Cl. 91—499 **5 Claims**



1. A rotary device with a cylinder barrel which can serve as a pump or as a motor, of the type comprising a stator enclosing a rotor with a cylinder barrel and an oblique plate which acts, by means of spherical head and seating assemblies, on the outer ends of a plurality of cylindrical pistons partially engaged in cylinders which are formed in the cylinder barrel and the geometrical axes of which are regularly distributed over a surface of revolution co-axial with said cylinder barrel, the portion of each piston which is adjacent to the corresponding spherical head and seating assembly being rigidly connected to a rigid supporting element which slides axially against the internal face of an external skirt, which skirt is rigidly connected to the cylinder barrel for rotation therewith and surrounds all those portions of all of the pistons which are outside the cylinders, wherein:

the said oblique plate is stationary and has a plane surface on which there slide shoes articulated on the piston by means of said spherical head and seating assemblies;

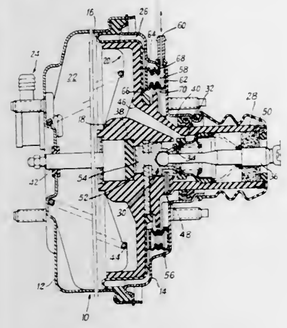
the spherical heads are rigidly connected to the said shoes and are each engaged in a matching spherical seating which terminates the outer end of the corresponding piston;

each supporting element extends between two planes perpendicular to the axis of the cylinder barrel and connected to the associated piston, each supporting element contacts said internal face of said external skirt between said two planes, the two planes consisting of a first plane which is spaced from the center of the spherical seating of the associated piston on the side opposite to the oblique plate, and a second plane which passes at least proximately to the center of the spherical seating, each supporting element forming part of a block bounded by two plane faces, by a portion of cylindrical surface on the side of the block opposite to the axis of the cylinder barrel and by another portion of a cylindrical surface on the side of the block closer to this axis, the block sliding in a recess of complementary shape formed in the cylinder barrel.

4,117,769
VACUUM BOOSTER

Jean-Jacques Carré, Montreuil, and Roland Levrai, Stains, both of France, assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 3, 1976, Ser. No. 747,459
Claims priority, application France, Dec. 10, 1975, 75 37751
Int. Cl.² F01B *7/00*; F15B *9/10*; F01B *19/00*; F16J *3/04*
U.S. Cl. 91—170 R **6 Claims**

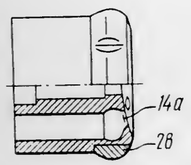


1. A servomotor for providing an output force comprising:
a housing having a cavity therein:
a piston for separating said cavity into a first pressure chamber and a second pressure chamber;
an inlet control member responsive to an operator input for moving a control valve for controlling the communication of a fluid to said first pressure chamber, said fluid in the first pressure chamber developing a pressure differential between said first chamber and said second chamber, said pressure differential moving said piston from an idle position toward said second pressure chamber to produce a first output force; and
expandable means defining at least an auxillary chamber within said first chamber, said auxillary chamber being connected to an external pressure source, said expandable means being responsive to said external pressure source for moving into engagement with said piston and thereafter moving said piston from the idle position toward said second pressure chamber to develop a second output force independently of the operation of said inlet control member by the operator input.

4,117,770
AXIAL-PISTON HYDRAULIC MACHINE

Gennady Petrovich Koshelenko, ulitsa Sovetskoi Militssi, 10, kv. 31, Odessa; Rafail Moiseevich Pasynkov, ulitsa Cheljuskinskaya, 8, kv. 46; Mikhail Alexandrovich Sin, Sevastopolsky prospekt, 44, korpus 4, kv. 264, both of Moscow, and Leonid Isaakovich Shemper, ulitsa Generala Petrova, 27, korpus 3, kv. 47, Odessa, all of U.S.S.R.

Filed May 13, 1976, Ser. No. 686,802
Int. Cl.² F01B *13/04*
U.S. Cl. 92—57 **2 Claims**

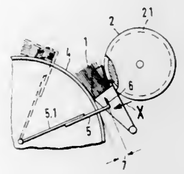


1. An axial-piston hydraulic machine comprising: a rotating cylinder block with axial bores; pistons reciprocating in said axial bores and enclosing working chambers in said bores; passages communicating some of the working chambers with a high-pressure space, other passages communicating the others of said chambers with a low-pressure space, said working chambers having minimum volume when said pistons are at their end positions, the surface of each of said working chamber in the end position of the respective piston being spherical and merging smoothly into a corresponding passage, said block having uniform wall thickness along the working chambers, the outside configuration of said block conforming to the inside shapes of the chambers, said block being of uniform strength construction, the external surface of said block having a corrugated form only in the zone of the working chambers where fluid compression occurs, the surface of said block being cylindrical in the zone of the piston bores; a reinforcing band attached to the external surface of said cylindrical block and located in the zone of said working chambers with a spherical surface, the external surface of said band being concentric with said surface of the chambers.

4,117,771
APPARATUS FOR FORMING BUNDLES OF FLATTENED BAGS

Friedhelm Brinkmeier, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 4, 1977, Ser. No. 784,466
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1976, 2629064
Int. Cl.² B31B *1/98*
U.S. Cl. 93—93 HT **3 Claims**



1. Apparatus for forming bundles of flattened bags and successively transporting said bundles away, comprising a depositing table; a rotary depositing cylinder effective to deposit successive said bags edgewise on the depositing table, said table being disposed substantially radially with respect to said cylinder; resilient holding means for resiliently holding said deposited bags in juxtaposition substantially perpendicular to said table to form a stack and disposed laterally of said table and axially of said cylinder; and gripper means for separating a bundle from said stack of juxtaposed bags from said table and for lifting said separated bundle from said table, said gripper means being adapted to pass through a portion of said stack and said depositing table in a direction opposite to the direction of rotation of said cylinder so that said bundle of bags lifted thereby contains only part of said stack of juxtaposed bags on said depositing table, the length of said gripper means being adjustable to vary the size of said bundle lifted by said gripping means.

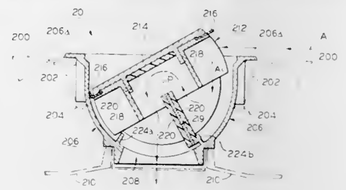
4,117,772
VENTED WINDOW ASSEMBLY FOR AUTOMOTIVE VEHICLES

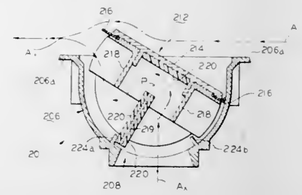
Paul B. Specht, Wilmette, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 1, 1977, Ser. No. 773,434
Int. Cl.² B60H *1/24*
U.S. Cl. 98—2 **1 Claim**

1. A vented window assembly for use with automotive vehicles comprising, in combination:

a window frame;
a substantially transparent window member fastened to said frame within the perimeter thereof;
a vent housing fixedly mounted between said frame and said window member and providing a passageway therein extending on opposite sides of said frame;
a vent member sealingly engaging and movable mounted within said passageway of said housing for selectively opening said passageway into a first direction along one side of said frame and into a second direction along said one side which is substantially opposite to that of said first direction, and to substantially close said passageway;
wherein said vent member is generally cylindrical and is pivotally mounted about its longitudinal axis within said vent housing and wherein said axis of said vent member is





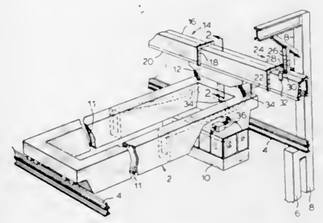
substantially perpendicular to said first and second directions;
wherein the generally cylindrical portion of said vent member includes a flat portion extending substantially from end to end thereof and wherein the width of said flat portion is substantially equal to the width of said passageway at said one side of said frame whereby the surface of said assembly is substantially flush when said vent member closes said passgeway;
wherein said vent member includes first and second longitudinally extending openings along said generally cylindrical surface portion respectively disposed adjacent said flat portion along opposite sides thereof; and,
wherein said vent member includes a plurality of partitions extending radially inwardly from the inner walls thereof.

4,117,773
VENTILATION SYSTEM FOR THE SUPPLY OF AIR OR EXHAUSTION OF FUMES

William George Johnson, Hamilton, Canada, assignor to Crane Air Trac Incorporated, Burlington, Canada

Filed May 5, 1977, Ser. No. 793,789
Int. Cl.² F23J *11/00*
U.S. Cl. 98—115 VM **33 Claims**

1. In a ventilation system of the kind wherein gases are transferred between a stationary trunking and at least one travelling tap movable longitudinally of the trunking, the trunking having a longitudinally extending opening and sealing means disposed so as normally to seal said opening, and the tap includes means locally to displace said sealing means so as to permit the transfer of gases between said trunking and said tap, the improvement wherein:
a. said seal comprises at least one and not more than two rows of elongated essentially planar metal strips, locating means on at least one side of the opening, the strips being individually located by said locating means in overlapping relationship with said opening and against displacement in their own plane longitudinally or laterally, and the strips as located being sufficiently flexible so as to be non-self-supporting in the longitudinal direction and sufficiently rigid in the lateral direction to support themselves and sustain forces due to differences in gas pressure within and without the trunking;
b. the seal displacement means comprises roller means carried by the tap and extending therefrom so as rollingly to engage said strips sequentially in each row as said tap travels relative to said trunking whereby locally to deflect a portion of at least one strip so engaged in each row out

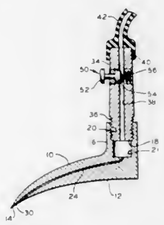


of its sealing position to define an orifice into said trunking, the seal displacement means engaging the strips on their surfaces which sustain the lower gas pressure when the system is in use;
c. means extend from said tap towards said trunking to define a substantially enclosed passage between said tap and the orifice into said trunking defined by said at least one displaced flap portion;
d. said trunking is rigidly connected to longitudinally extending guide means; and
e. said tap includes means locating it in said guide means for movement longitudinally of the trunking in a defined relationship to the latter.

4,117,774
EGG SHELLER

Everett R. Wilburn, 1847 Princeton Dr., Toledo, Ohio 43614, and James A. Sorter, 6125 Windamar Rd., Toledo, Ohio 43611

Filed Mar. 25, 1977, Ser. No. 781,211
Int. Cl.² A47J *43/00*
U.S. Cl. 99—568 **5 Claims**



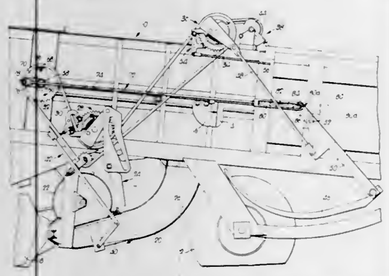
1. An apparatus for removing the shell from a previously cooked egg comprising a main body portion having a major surface thereof formed in the general configuration of a portion of the outer peripheral surface of an egg and terminating in a relatively thin leading edge for; insertion between a cracked egg shell and the cooked egg white;
fluid outlet means in the leading edge of said main body portion;
fluid passageway means providing communication between said outlet means and a source of pressure fluid; and

valve means in said passageway means for controlling the flow of fluid therethrough, whereby when pressure fluid is released through said outlet means the egg shell is removed from the associated cooked egg white.

4,117,775
TYING NEEDLE SAFETY CONTROL FOR CROP BALERS

Allen A. White, Peabody; George Yatcilla, and Cecil L. Case, both of Newton, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed May 10, 1977, Ser. No. 795,616
Int. Cl.[2] B65B *13/08*
U.S. Cl. 100—19 R **9 Claims**



1. In a safety control arrangement for a baler where damage is prevented between the reciprocatory plunger and malfunctioned tying structure left in the path of travel of the plunger during the preceding tying cycle as a result of the drive train for the structure becoming inoperative, the improvement comprising:

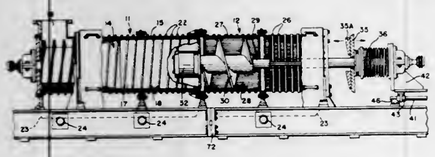
means for withdrawing said structure from said path of travel,

said withdrawing means including linkage shiftable during each operation of said plunger, which linkage has a lost-motion connection with said structure that is operable to effect said withdrawal when necessary, yet permits the structure to remain idle when it is out of said path of travel between tying cycles notwithstanding said operation of the plunger and said shifting of the linkage.

4,117,776
SCREW PRESS APPARATUS

Arthur J. Hunt, Ormond Beach, Fla., assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Continuation-in-part of Ser. No. 771,905, Feb. 25, 1977, abandoned. This application Oct. 25, 1977, Ser. No. 844,711
Int. Cl.[2] B30B *9/16, 9/18*
U.S. Cl. 100—117 **7 Claims**



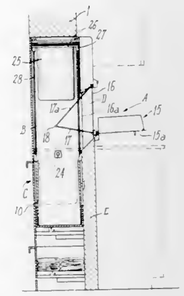
1. In a rotary screw press for expressing liquid from material and including a cage having means defining an elongated pressing chamber with an inlet end and a discharge end and having means defining fluid discharge openings extending through said cage, a rotatable screw in said chamber extending from said inlet and part way through said chamber and including an elongated body and a spiral flight projecting outwardly from said body, means for rotating said screw, means for compressing material within a first part of said chamber in response to rotation of said screw and forcing the material into a second part of said chamber beyond said screw, choke means controlling the flow of material through said discharge end from said second part of said chamber,

the improvement comprising an auger member normally located in said second part of said chamber and cooperating with said screw to form a plug of material of controllable density by correlating the rotational speeds of said screw and said auger member, means mounting said auger and said choke means for withdrawing movement as a unit in a direction lengthwise of said second part of said chamber, and means including a shaft for rotating said auger member separately from said screw.

4,117,777
REFUSE CONTAINER, AND REFUSE COMPACTING AND DISCHARGING DEVICE THEREFOR

Jean-Marie Schipman, 170, rue Saint Charles, Paris, France (75015)

Filed Jun. 1, 1977, Ser. No. 802,529
Claims priority, application France, Jun. 3, 1976, 76 16788; Nov. 30, 1976, 76 36011
Int. Cl.[2] B30B *15/30*
U.S. Cl. 100—215 **9 Claims**



1. A refuse, collecting, compacting and discharge system for use in a building, said system comprising:

a refuse chute positioned within an exterior wall of a building;

a refuse compacting assembly positioned within an upper portion of said refuse chute;

a refuse collecting assembly positioned within a lower portion of said refuse chute;

an insulating partition separating said refuse collecting assembly from the interior of the building, said insulating partition comprising framing defining hollow walls filled with insulating material;

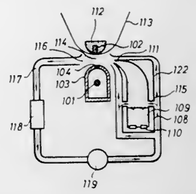
an aperture communicating the interior of the building with said refuse chute at a position above said refuse collecting assembly, said aperture having a lower edge defined by a surface which is inclined inwardly and downwardly in a direction from the interior of the building to said refuse chute; and

a box-shaped trap adapted to receive refuse, said trap being hingedly mounted at said lower edge of said aperture such that said trap is pivotably movable between a first position closing said aperture and a second position extending into the interior of the building away from said aperture.

4,117,778
HIGH SPEED PRINTER WITH ARC PREVENTING FLUOROCARBON GAS

Akinori Watanabe; Katsuhide Tanoshima; Matsusaburo Noguchi, and Kinya Hattori, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 618,809, Oct. 2, 1975, abandoned. This application May 27, 1977, Ser. No. 801,206
Claims priority, application Japan, Oct. 30, 1974, 49/124270
Int. Cl.[2] H01T *19/04;* **B03C** *3/40*
U.S. Cl. 101—1 **3 Claims**



1. A high speed printer comprising an anode and a cathode respectively charged to cause ions to move from said anode to said cathode, an aperture board for modulating said ions, said aperture board enclosing said anode and having an aperture through which said ions may pass to be modulated, an ink mist located between said aperture board and said cathode such that said modulated ions combine therewith to electrically charge the ink particles of the ink mist to perform printing, and gas supply means connected to said aperture board to supply an electronegative gas consisting essentially of a fluoride compound to the region within said aperture board between said anode and said aperture board to prevent corona arc discharge and to prevent corrosion of said aperture board.

4,117,779
MEANS TO PROVIDE UNIFORM LENGTHWISE SQUEEGEE ANGLE OF ATTACK

Jacobus Gerardus Vertegaal, Boxmeer, Netherlands, assignor to Stork Brabant B.V., Boxmeer, Netherlands

Filed Aug. 31, 1976, Ser. No. 719,240
Claims priority, application Netherlands, Sep. 3, 1975, 7510421
Int. Cl.[2] B41F *15/38, 15/44*
U.S. Cl. 101—120 **5 Claims**

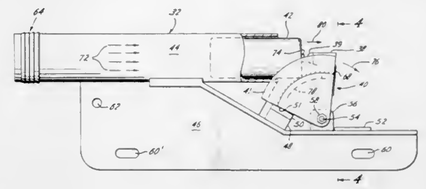


1. In a rotary screen printing machine having a cylindrical stencil rotatably supported upon a frame and a squeegee device disposed within the cylindrical stencil, the squeegee device comprising a squeegee holder to which is attached a flexible squeegee blade such that a portion of the blade protrudes from the holder, the protruding portion of said blade having a trailing edge contacting the inner surface of said stencil in the region of the stencil contacting the material to be printed to define an angle with respect to the inner surface of the stencil, said squeegee device having ends and a central portion, and means on the printing machine acting upon said stencil for modifying the relative position of the inner surface of the stencil and trailing edge of the blade at the ends of the squeegee device to increase the angle at the ends of the squeegee device such that a uniform angle is obtained along the entire length of the blade.

4,117,780
LINEAR EJECTION UNDERWATER CHARGE LAUNCHER

John C. Mollere, Nassau Bay, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.

Filed Jun. 10, 1977, Ser. No. 805,267
Int. Cl.[2] G01V *1/08*
U.S. Cl. 102—22 R **8 Claims**



1. In a ship-towed underwater charge launcher for ejecting cylindrical explosive cartridges into a body of water along a linear path for use in seismic exploration, said explosive cartridge being armed by a percussion-ignitable delay cap embedded therein and being propelled by water pressure from said towing ship, through a flexible hose, one end being attached to said ship, the other end trailing in the water, a detonator gun coupled to the trailing end of said hose, the detonator gun comprising:

an elongated cylindrical ejection barrel, having one end open to the water, for receiving an armed explosive cartridge from said flexible hose and for ejecting said cartridge into said body of water;

a rotatable, striker plate assembly, having a U-shaped rim, positioned adjacent the open end of said ejection barrel; and

a firing pin secured to said striker plate assembly for receiving the impact of said embedded percussion cap when said armed explosive cartridge first emerges from said ejection barrel.

4,117,781
UTILITY DESK

Charles A. Middleton, and Trudy B. Middleton, both of Phoenix, Ariz., assignors to TCM Corporation, Phoenix, Ariz.

Filed Jul. 5, 1977, Ser. No. 812,565
Int. Cl.[2] A47B *85/00*
U.S. Cl. 108—11 **3 Claims**



1. A portable utility desk, usable in a multiplicity of positions, including:

(a) a generally-rectangular, substantially-flat table member having a notch midway along an edge of said table member;

(b) a positionally adjustable leg member;

(c) first mechanical means for detachably connecting said leg member to said table member;

(d) a book support member on said table member above said notch, said book-support member including second mechanical means for preventing a book on said table member from sliding or falling;

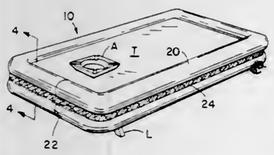
(e) third mechanical means for preventing the pages of a book on said table from turning;
(f) a first and second longitudinal frame member, each said frame member having an L-shaped cross-section;
(g) said table member having first and second opposed edges approximately the length of said first and second frame members;
(h) said first edge abutting the internal angle of said first frame member and said second edge abutting the internal angle of said second frame member;
(i) a third edge of said table member having said notch situated midway along said third edge;
(j) a first and second transverse book support bar between said frame members and adjacent said table member above said notch, and mechanical connector means for detachably connecting the ends of said book support bars to said frame members; and
(k) a pair of elastic bands around said book support bars and stretched therebetween.

4,117,782

GUARD FOR PREVENTING HUMAN INJURIES ON IMPACT WITH FURNISHINGS

Richard C. Cahill, 3019 Oak Green Ct., Apt. F, Ellicott City, Md. 21043

Filed Jul. 29, 1977, Ser. No. 820,218
Int. Cl.[2] A47B *13/08*
U.S. Cl. 108—27 **7 Claims**



1. In a removable impact guard for preventing injury to humans on striking the edge of a table or the like, the improvement comprising: a pneumatic tubing flexible elongate member, means for detachably attaching the pneumatic tubing flexible elongate member with ends overlapped adjustably, in a loop around a table or the like including a flexible fastening strip secured along the pneumatic tubing flexible elongate member and having a portion thereof extending beyond the pneumatic tubing flexible elongate member, the flexible fastening strip having means thereon for fastening to itself when the pneumatic tubing flexible elongate member is in a loop around a table or the like, whereby the overlapped ends tend to fair in when pressure is applied on fastening of said strip.

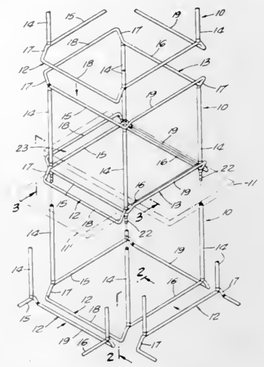
4,117,783

MODULAR STORAGE UNIT

Leonard B. Eckel, Helena, Mont.; James P. Sullivan, Tustin, and Elias D. Quintana, Huntington Beach, both of Calif., assignors to Design West Incorporated, Irvine, Calif.

Filed Dec. 2, 1977, Ser. No. 856,857
Int. Cl.[2] A47B *45/00*
U.S. Cl. 108—91 **4 Claims**

1. A storage unit in which a plurality of frame modules are interrelated to form an integral structure and include shelving members slidingly interconnecting the modules providing supportive storage, comprising:
each module including,
upper and lower open frames of identical generally rectangular configuration, having a first pair of parallel sides lying in one plane, a second pair of parallel sides lying in a second plane spaced from and parallel to the first plane, and slanting members interconnecting the ends of first parallel sides to the ends of the second parallel sides, studlike means affixed to each frame adjacent the junction of the slanting members and the respective first parallel sides, said studlike means all extending in the same direction, and a plurality of spacers, each spacer having first and second ends with openings therein;



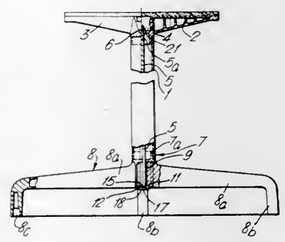
said spacer openings being received onto the studlike means of the upper and lower frames, thereby holding the two frames in a fixed predetermined configuration.

4,117,784

DISASSEMBLABLE TABLE

Giancarlo Piretti, Bologna, Italy, assignor to Societa Anonima Castelli s.a.s. Di C. Castelli & C., Bologna, Italy

Continuation of Ser. No. 504,960, Sep. 11, 1974, abandoned, which is a continuation of Ser. No. 289,133, Sep. 14, 1972, abandoned. This application Jul. 26, 1976, Ser. No. 708,435
Claims priority, application Italy, Sep. 14, 1971, 52866 A/71
Int. Cl.[2] A47B *13/02*
U.S. Cl. 108—150 **3 Claims**



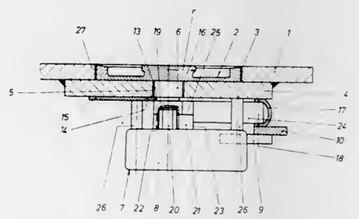
1. A disassemblable table structure comprising at least one vertical column, and at least one table top on one end of said column and a plurality of foot members having side walls and extending radially outwardly from the lower end of said column to support said column, each of said radial foot members being connected to said column by means of a removable base mounting comprising a plurality of groove joints circumferentially spaced from each other and adapted to engage complementary conical tapering male tongue joint members on the inner end of each foot member, and a vertical rod adapted to be inserted through said base mounting to connect said foot members and base mounting to said column, said plurality of groove joints of said base mounting including a number of circumferentially spaced female grooves which conically taper upwardly and have closed upper ends and open lower ends, and including a pair of recesses for each of said grooves extending from opposite sides of said grooves and facing outwardly of said base mounting; said female grooves adapted to receive the male complementary shaped, conical tapering tongue joint members disposed at said inner end of each of said foot members, each of said tongue joint members further having two lateral male sector arms, adjacent said conical tapering male tongue joint member, which extend laterally beyond the side walls of said foot member so as to extend circumferentially about a substantial peripheral sector portion of said base mounting and are adapted to engage said recesses extending from opposite sides of said groove to ensure greater lateral stability of each foot member under a load on said table top; whereby with a plurality of bases for said columns employing the same or a different number of groove joints, tables of different designs can be structured to form in plan various polygonal shapes.

4,117,785

SAFE WITH RECESSED DIAL

Erwin Drescher, Melsungen, Fed. Rep. of Germany, assignor to Melsunger Metall-Werk, Erwin Drescher, Melsungen, Fed. Rep. of Germany

Filed Apr. 27, 1977, Ser. No. 791,390
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705711
Int. Cl.[2] E05G *1/04*
U.S. Cl. 109—59 T **11 Claims**



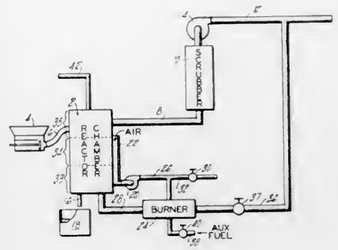
1. A safe with a safe door; a recessed dial in said door, a lock and a bolt system connected to said recessed dial; said recessed dial having a first portion movable for actuating said lock to an open position; means connected to said lock for releasing said bolt system from a blocked state when said lock has been actuated to the open position; means connecting said recessed dial to said lock for actuating said lock to said open position when said recessed dial is moved to a predetermined position corresponding to the open position of said lock; auxiliary bolt means connected to said lock and having means engaging said recessed dial, said recessed dial having forward and retracted positions, means connecting said lock and said auxiliary bolt means for disengaging said auxiliary bolt means from said recessed dial when said lock has been actuated to said open position; means connecting said lock and said bolt system for releasing said bolt system when said lock is in said open position; means mounting said recessed dial, said recessed dial being movable forward from said safe door in an axial direction of said dial after said auxiliary bolt means has been disengaged from said recessed dial by said lock, said recessed dial being movable in axial direction of said mounting means to the forward position from retracted position, said engaging means of said auxiliary bolt means engaging said recessed dial for inhibiting movement of said recessed dial to the forward position from the retracted position when said lock is in locked position; said auxiliary bolt means engaging said recessed dial when said lock is in locked position; said dial having a second movable portion; means connecting said dial to said bolt system for actuating said bolt system to an open position in said forward position of said dial by moving said second movable portion.

4,117,786

INLET AIR PREHEATING FOR PYROLYSIS SYSTEM

Harlan F. Brose, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 24, 1977, Ser. No. 800,113
Int. Cl.[2] F23L *15/00*; C10B *49/02*
U.S. Cl. 110—229 **6 Claims**



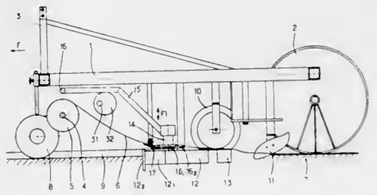
1. In a pyrolytic reactor,
a reaction chamber having a process gas outlet adjacent the top leading to a point of utilization of the process gas,
means for supplying air to the base of the chamber to promote combustion and a pyrolytic action in the chamber,
a burner in said air supplying means, and
a branch connection from said gas outlet to said burner in said air supplying means for mixing some of the process gas with the supplied air to be burned therein for raising the temperature of the entering air.

4,117,787

MACHINE FOR PERFORMING CULTIVATION UNDER PLASTICS

Jean-Paul Pavan, Monheurt Damazan, France

Filed Mar. 17, 1977, Ser. No. 778,426
Claims priority, application France, Sep. 20, 1976, 76 28212; Feb. 24, 1977, 77 05441
Int. Cl.[2] A01C *11/00*
U.S. Cl. 111—2 **17 Claims**



1. A machine for performing cultivation under plastics, comprising a framework, wheels for supporting said framework for rolling movement over the ground, a ploughshare supported on said framework to make a furrow in the ground, an axle supporting a roll of plastic sheet on said framework arranged to dispense said sheet toward the ground above the furrow, means supported from said framework for perforating the sheet before it reaches the ground, perforations being made in the sheet vertical to the furrow, a seat for an operator on said framework and a clamping tongue for clamping a seedling in the furrow, said tongue being secured to said framework beneath the sheet as it is dispensed onto the ground.

4,117,788

SEED DRILL INCLUDING DISCS DRIVEN BY GROUND WHEEL DRIVE

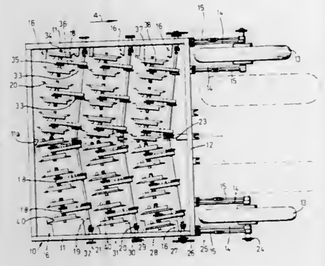
Edward Whitehead, Little Hill Farm, Dodwell, Stratford-upon-Avon, Warwickshire, England

Filed Apr. 6, 1977, Ser. No. 785,183

Claims priority, application United Kingdom, Apr. 7, 1976, 14088/76

Int. Cl.[2] **A01C** *5/06, 7/00*

U.S. Cl. 111—52 **16 Claims**



1. Seed sowing apparatus comprising:

(a) a plurality of rotatable ground-engaging discs arranged in two or more rows extending transversely of the direction of intended travel of the apparatus with the discs in each row laterally offset relative to those of the or each other row so that the discs in combination form a plurality of parallel grooves in the soil when the apparatus is in use;

(b) at least one ground-engaging wheel mounted to be driven by ground engagement as the apparatus is advanced;

(c) transmission means drivingly connecting said discs to said ground-engaging wheel so as to rotate said discs at a rate related to the ground speed of the apparatus; and

(d) associated with each such disc a respective seed metering device comprising:

(i) a hub member secured to the disc so as to rotate therewith;

(ii) a sleeve member encompassing the periphery of said hub member and held against rotation therewith; and

(iii) a seed receptacle affording an outlet effectively closed by said hub member, the hub member being formed or provided with a plurality of seed receiving pockets disposed at spaced intervals around its circumference so as to accept seeds from said outlet of the receptacle and convey same circumferentially to a discharge opening formed in the sleeve member or near its lowest point adjacent to said disc.

4,117,789

AUTOMATIC, IN SITU BOBBIN SPOOL LOADING

Herman Rovin, Norwalk, Conn.; Lawrence J. Levine, Valley Stream, N.Y.; Theodore Opuszenski, Darien, Conn.; Joseph Pellicano, Greenwich, Conn., and Alan F. Swenson, Norwalk, Conn., assignors to Automatech Industries, Inc., Bridgeport, Conn.

Filed Sep. 14, 1977, Ser. No. 833,178

Int. Cl.[2] **D05B** *57/26, 37/04, 45/00;* **H03K** *17/00*

U.S. Cl. 112—181 **17 Claims**

1. In an in-situ bobbin reloader of the type having

(a) means for rotating the bobbin spool at high speed,

(b) a feed tube movable into operative relation to said spool to guide thread onto said spool during reloading,

(c) means supplying a measured length of thread during reloading,

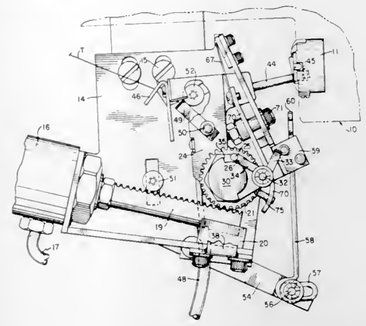
(d) a thread manipulator to engage the loaded thread under a bobbin tension spring, and

(e) means for severing the loaded thread, the improvement which comprises

(f) a mounting bracket for securing said reloader to a sewing machine,

(g) a support sleeve mounted on said bracket,

(h) a loading arm mounted on said sleeve for pivoting movement into and out of loading position and carrying said loading tube,



(i) a drive gear mounted on said sleeve and having a lost motion driving engagement with said loading arm, and

(j) an actuator mounted on said bracket and operatively associated with said drive gear for rotating the same to effect controlled pivoting movement of said loading arm into and out of loading position.

4,117,790

AUTOMATIC SEWING MACHINE

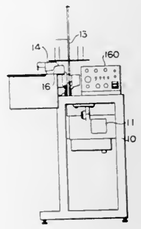
Yoshio Hasegawa, Machida; Koji Hiroyama, Gifu; Minoru Shimada, and Haruhiko Kawasaki, both of Sagamihara, all of Japan, assignors to Kayaba Industry Co., Ltd., Tokyo, Japan

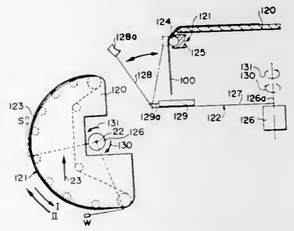
Filed May 4, 1977, Ser. No. 793,856

Claims priority, application Japan, May 4, 1976, 51/51204

Int. Cl.[2] **D05B** *27/14*

U.S. Cl. 112—205 **7 Claims**





1. An automatic sewing machine for successively sewing contiguous edges of a workpiece which extend at angles with respect to each other, said machine comprising:

a table having an upper surface for supporting a workpiece to be sewn;

a sewing needle located at a position fixed with respect to said table for sewing successive contiguous edges of the workpiece;

means for advancing the workpiece over said table in a sewing direction such that a given edge of the workpiece is maintained in a predetermined position with respect to said sewing needle;

said table having at least one arcuate side face dimensioned such that a portion of the workpiece opposite the edge thereof being sewn hangs down over and slidably engages said arcuate side face; and

feed mechanism means, positioned adjacent the bottom of said table and extending substantially along the contour of said arcuate side face thereof, for frictionally engaging the portion of the workpiece hanging down over said arcuate side face of said table, and for, upon completion of sewing of one edge of the workpiece, turning the workpiece with respect to said table until the workpiece is positioned such that the next adjacent contiguous edge of the workpiece is aligned with said sewing direction.

4,117,791

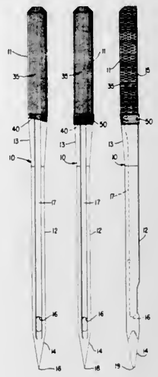
DUAL COLOR CODED SEWING MACHINE NEEDLES

Wayne A. Current, Holmdel; Bruce I. Genge, South Plainfield; Herbert J. Hurme, Morristown, all of N.J., and Josef Zocher, Haaren, Aachen, Fed. Rep. of Germany, assignors to The Singer Company, New York, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,343

Int. Cl.[2] **D05B** *85/00*

U.S. Cl. 112—222 **4 Claims**



1. A sewing machine needle having a shank portion adapted to cooperate with the needle clamp on a sewing machine needle bar, a blade portion formed with a needle eye and a thread accommodating groove extending from said eye at substantially uniform depth along said blade, and a shoulder portion at the juncture of said shank and blade portion, a dual color coding system comprising a a first color coded area of uniform color having predetermined correlation to a first characteristic of said needle and provided by a dye which leaves no discernable surface coating, said first color coded area extending on said needle shank, and a second color coded area of uniform color having predetermined correlation to a second characteristic of said needle and provided by a layer of opaque material applied as a surface coating on said needle shoulder.

4,117,792

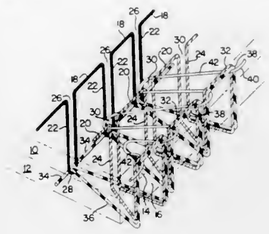
OVEREDGE STITCH FORMATION

Gerald S. Navlyt, Woodstock, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed Aug. 31, 1977, Ser. No. 829,303

Int. Cl.[2] **B32B** *31/00;* **D05B** *1/20*

U.S. Cl. 112—433 **4 Claims**



1. An overedge stitch comprising;

a pair of upper threads formed into two fabric penetrating thread loops which project through a workpiece at spaced intervals;

a looper thread passing through the bight portion of one of said thread loops and around the bight portion of the other thread loop; and

a thread formed into a corresponding thread loop passing through the bight portion of said other thread loop and the bight portion of said looper thread and extending for subsequent penetration by a fabric penetrating thread loop whereby forming an overedge stitch.

4,117,793

POLE CLAW MEMBER FOR A DYNAMO ELECTRIC MACHINE ROTOR

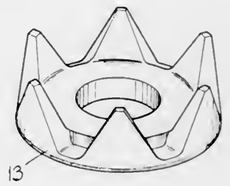
Kenneth Preece, Solihull, and Walter Graham Cheary, Birmingham, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 21, 1977, Ser. No. 779,661

Claims priority, application United Kingdom, Apr. 7, 1976, 14040/76

Int. Cl.[2] **B21D** *53/26*

U.S. Cl. 113—116 D **16 Claims**



1. A method of manufacturing a pole claw member including the steps of:

(a) bending an elongate strip of ferrous material, having one of its long edges generally plain and its opposite long edge serrated, to form a cylinder, whereby one axial end of the cylinder is generally plain and the other axial end of the cylinder is serrated, with the serrations extending axially of the cylinder and being equal in number to the number of claws of the member to be manufactured;

(b) interconnecting the ends of the strip; and

(c) utilizing mating dies to deform the generally plain end of the cylinder to produce an annular base extending in a

plane generally at right angles to the axis of the cylinder and to shape the serrations to the desired claw shape.

4,117,794

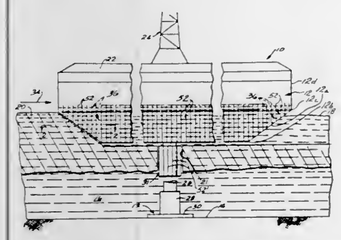
ICE MELTING SYSTEM AND METHOD

Charles Norman Sjogren, San Gabriel, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Division of Ser. No. 609,030, Aug. 29, 1975, Pat. No. 4,075,964. This application Apr. 11, 1977, Ser. No. 786,239

Int. Cl.² B63B *35/08*

U.S. Cl. 114—40 **25 Claims**



1. A method of melting a solid layer moving toward an object having an exterior thermally conductive surface in the path of movement of the layer, the method comprising the steps of:

disposing in the path of movement of the layer a section of said exterior surface having surface indentations configured and arranged such that said exterior surface includes a plurality of elongated, spaced apart front portions which confront the moving layer and a plurality of elongated, spaced apart recessed portions which are located remotely from the layer relative to said front portions of the exterior surface, the recessed portions extending from the region of the surface proximately adjacent the portion of the layer to be melted to a location above the top surface of the layer;

directing heat outwardly from said exterior surface to a portion of the layer located proximately adjacent said surface to melt the layer; and

continuously maintaining a force between said exterior surface and the adjacent portion of said layer to maintain heat transfer between said surface and said layer;

the recessed portions of said surface providing areas of heat concentration plus acting as conduits for removing melted material from the interface between said surface and said layer.

4,117,795

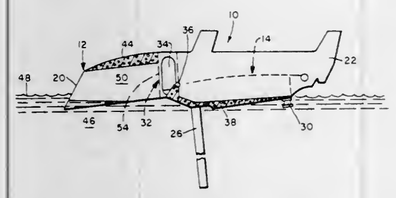
MULTI-HULL SELF RESCUING SYSTEM

Carlos Santiago Ruiz, PROMSA P.O. Box 1478, San Salvador, El Salvador

Filed Jun. 17, 1977, Ser. No. 807,633

Int. Cl.² B63B *43/10*

U.S. Cl. 114—68 **20 Claims**



1. A method of inverting a marine craft having air entrapped therein while floating in a capsized condition on a body of water, comprising the steps of: pivotally connecting an elongated boom to the capsized craft; suspending a counterweight from said boom substantially immersed in the water to establish a rotational axis for the craft; venting air entrapped in the craft to admit water therein causing angular displacement in one direction about said rotational axis until the craft reaches a stabilized intermediate position; and pivotally displacing the boom relative to the craft to raise the counterweight out of the water causing continued angular displacement in said one direction from the intermediate position until the craft is floating in an upright position.

9. In combination with a marine craft having a keel extending between bow and stern ends, apparatus for inverting the craft from a capsized position in water to an upright position, including buoyancy support means mounted within the craft intermediate said bow and stern ends for establishing a rotational axis about which the craft is angularly displaceable between the capsized and upright positions, flotation means restrictively mounted by the craft on opposite sides of the rotational axis for enabling angular displacement of the craft relative to said rotational axis, and means for inducing said angular displacement.

4,117,796

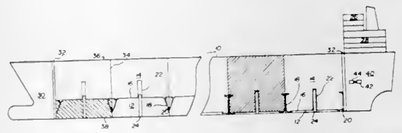
DOUBLE SECTIONED TANK

Patrick J. Strain, 27 Tanglewood Dr., Ottawa, Ontario, Canada (K2H 6P5)

Filed Aug. 1, 1977, Ser. No. 820,703

Int. Cl.² B63B *25/12*

U.S. Cl. 114—74 R **14 Claims**



1. A fluid cargo and ballast tank for the cargo and ballast space of a ship, wherein a vertically movable rigid partition being the top of the lower section and bottom of the upper section divides the space into an upper and lower section, each section to be used to carry fluid at a different time than the other and the partition being movable between upper and lower positions and guided therebetween by appropriate means, the top of the lower section further having a rigid, peripheral top portion secured to the edge of the tank with which the rigid partition mates when in its upper position to provide a rigid top of the lower section extending from wall to wall of the tank, an impermeable, flexible sheet of material secured to the movable partition and to the rigid peripheral top portion of the top of the lower section to prevent fluid communication between the sections, and appropriate fluid inlets and outlets being provided for each section, whereby different fluids can be carried at different times in each section in substantially the same physical space, while not allowing any intermingling between the residues of the fluids from one section to the other.

4,117,797

MAST AND KEEL MOVEMENT FOR SAILING VESSELS

Hartleigh Kelly, 3 Weewanda St., Glenelg South, Australia (5045); Bruce A. Kelly, 54 Kauri Parade, Seacliff, Australia (5049), and Ross A. Kelly, 2A Clearview St., Beaumont, Australia (5066)

Filed Mar. 16, 1977, Ser. No. 778,090

Claims priority, application Australia, Apr. 1, 1976, PC5451

Int. Cl.² B63B *15/00*

U.S. Cl. 114—91 **3 Claims**

1. A sailing vessel comprising:

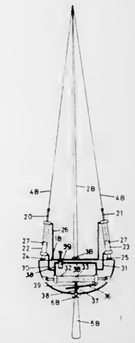
a hull,

a mast upstanding from said hull and connected thereto to be free to tilt on said hull about an axis arranged longitudinally of said hull,

a keel depending from said hull and connected thereto to be free to tilt on said hull about an axis also arranged longitudinally on said hull, and

means interconnecting said mast and said keel to cause rotation about said axes in the same sense,

said interconnecting means being hydraulic and comprising a pair of oppositely acting actuators connected to said mast to displace hydraulic fluid in proportion to mast movement about said hull, lines from said actuators to a



further hydraulic actuator which is connected to said keel, said further actuator receiving displaced fluid from said oppositely acting actuators to transmit mast movement to said keel about said hull, and means to by-pass fluid from one side to the other side of said further actuator to vary the relative angle of said keel to said mast,

said keel having sufficient weight to hold said mast upright but allowing it to deflect leeward about said hull under wind pressure, said keel balancing said leeward deflection by tilt to windward, whereby the tilt of the mast is balanced by said keel and said hull does not necessarily deflect.

4,117,798

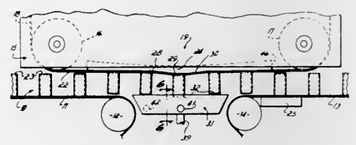
APPARATUS FOR TREATING EDGE-BEAD FORMATION

James W. Cornelius, and Robert T. Mallon, both of Cincinnati, Ohio, assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 709,504, Jul. 28, 1976, Pat. No. 4,020,198. This application Jan. 10, 1977, Ser. No. 757,916

Int. Cl.² B05C *3/02, 3/10, 11/08*

U.S. Cl. 118—4 **8 Claims**



1. In apparatus for applying a free-flowing, hardenable coating material to an inverted metal can, said apparatus being of the type in which the coating material is sprayed onto the inverted can, flows downwardly and accumulates as a bead at a lower edge of the can, the can after spraying on a coating belt is transferred by an overhead transfer conveyor from the coating belt to an oven belt which carries the can into an oven wherein the coating material is hardened, and said transfer conveyor has can lifting and holding means associated with it for lifting cans off the coating belt and holding them suspended;

means for eliminating an excessively thick bead of coating material on said lower edge, said means comprising,

a tank containing a pool of thinner for said coating material, said tank disposed between the coating conveyor and the oven conveyor,

means for maintaining the surface of said pool at a predetermined level in operation,

the transfer conveyor being positioned to dip the can into the pool at a point before said coating material has hardened, said transfer conveyor thereafter moving the can on a path such that only the lower edge of the can and the bead thereon are below the surface of the pool, said transfer conveyor moving said can on said path for a sufficient distance that the thinner in said pool dissolves and substantially removes the coating material from the lower edge,

said transfer conveyor further arranged to lift the can from said pool before said coating material has hardened on the can above said lower edge,

the can lifting and holding means holding the can in essentially vertical position at its point of deepest immersion so that the lower edge is uniformly immersed in said thinner, said can lifting and holding means holding the can after it has been lifted from the pool, at an angle which is substantially vertical so that unhardened coating material remaining on the can will flow downwardly substantially uniformly,

the can lifting and holding means releasing the can onto the oven belt for carrying it into said oven,

the position at which said can lifting and holding means lifts the can from the pool being spaced sufficiently from the oven that unhardened coating material on the can above said lower edge will in operation flow downwardly and recoat said lower edge but without forming an undesirable bead, before said coating material is hardened.

4,117,799

APPARATUS FOR COATING BLANKS OR THE LIKE FORMED OF TEXTILE MATERIAL, ESPECIALLY CLOTHING INSERTS

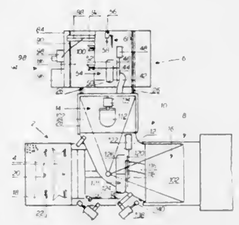
Zdenek Koula, Regensdorf; Peter Nirk, Walchwil, and Hans Wullschleger, Zurich, all of Switzerland, assignors to Stots & Co. AG, Zurich, Switzerland

Filed Feb. 10, 1977, Ser. No. 767,494

Claims priority, application Switzerland, Feb. 13, 1976, 1797/76

Int. Cl.² B05C *13/02*

U.S. Cl. 118—6 **55 Claims**



1. An apparatus for automatically, at least zone-wise, coating blanks, especially clothing inserts, formed of textile material, comprising:

a device for the successive exact positioning of at least one blank;

a coating device for the successive, at least zone-wise, coating of at least one blank;

a heating device for the thermal treatment of the coated blanks;

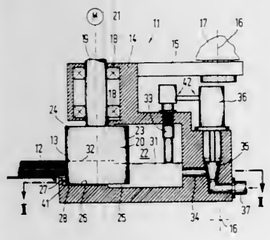
a conveyor device for the exact aligned transfer of the blanks from one device to the other; said conveyor device comprising: distributor chamber means;
blower means including a suction side;
means for connecting the distributor chamber means the suction side of the blower means;
a perforated plate serving to receive at least one blank and forming a wall of said distributor chamber means;
said perforated plate having a proportion of perforations amounting to at least 10 percent of the surface area of said perforated plate.

4,117,800

DEVICE FOR SPREADING GLUE

Dieter Maus, Neuffen, and Hermann Buck, Huelben, both of Fed. Rep. of Germany, assignors to Bielomatik Leuze & Co., Neuffen, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 839,702
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1976, 2652133
Int. Cl.² B05C *1/02*
U.S. Cl. 118—7 **16 Claims**



1. A device for spreading glue on articles such as the abutting ends of stacks of sheet paper or book backs, comprising:
a glue tank, a rotatable glue-spreading roller which projects into the glue tank and is arranged, in use, to project from above into a glue supply in the glue tank and be wetted with glue, wipers being arranged to act on the surface of the glue-spreading roller in the regions where the glue-spreading roller enters and leaves the glue tank, and a level regulating device for maintaining a desired glue level with a free upper glue surface in the glue tank, whereby the glue-spreading roller may be wetted with glue over only a part of its axial length, the extent of wetting being determined by the glue level in the glue tank.

4,117,801

APPARATUS FOR SPRAY COATING DISCRETE PARTICLES

Clarence C. Dannelly, and Charles R. Leonard, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 10, 1976, Ser. No. 694,757
Int. Cl.² B05C *5/00*
U.S. Cl. 118—20 **4 Claims**

1. Apparatus for spray coating discrete particles in which upwardly flowing gases continuously move particles from a storage zone, lift them into a coating zone through an atomized spray of liquid coating material for coating of the particles individually, further lift the particles into a drying zone and further separate the particles for solidification of the coating on the particles and still further lift the particles into a deceleration zone for return to the storage zone and subsequent recirculation through the zones, the apparatus comprising:
a hollow column;
a tapered hollow member being open at both ends and being mounted within said hollow column with its larger open end being adjacent one end of said hollow column to form a storage zone for the particles between the inner wall of said hollow column and the outer wall of said tapered hollow member and to form therewithin the coating and drying zones, and to form adjacent its smaller open end in said hollow column the deceleration zone;
a gas plenum assembly for supplying flowing gases to said one end of the hollow column, said gas plenum assembly including an aerodynamic gas shaping structure means for shaping the flowing gases to direct them into and through said tapered hollow member in such a manner as to create



a reduced pressure region surrounding said flowing gases to pull the particles from the storage zone and entrain the particles in said flowing gases to transport them through said tapered hollow member and into the deceleration zone in said hollow column for return by gravity into the storage zone;
and a spray assembly for spraying the liquid coating material into the flowing gases immediately downstream of said aerodynamic gas shaping structure means to coat said particles as they are transported through the coating zone by the flowing gases.

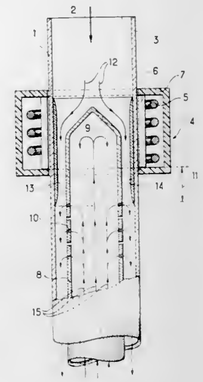
4,117,802

METHOD AND DEVICE FOR DEPOSITING A LAYER OF GLASS ON THE INNER WALL OF A TUBE

Christian Le Sergent, Marcoussis, and Michel Liegois, Paris, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Aug. 24, 1977, Ser. No. 827,273
Claims priority, application France, Sep. 9, 1976, 76 27073
Int. Cl.² B05C *7/04*
U.S. Cl. 118—48 **6 Claims**

1. A device for depositing a layer of glass on the inner wall of a tube constituted mainly of silica, said device comprising:
means for causing a flow inside said tube, from one end to the other of the tube of a gaseous mixture containing volatile chemical compounds suitable for reacting together to form said glass;
means for heating said tube along a part of its length;
means for moving said tube and said heating means in relation to each other along the axis of the tube so as to cause said compounds to react together and deposit a layer of said glass on the inner wall of tube;
a cylindrical element disposed inside said tube, said cylindrical element being fixed in relation to said heating means, the tube and the cylindrical element being coaxial, a first end of the cylindrical element being situated in the vicinity of the zone heated by said heating means, the second end of the cylindrical element being situated downstream from said zone in relation to the flow direction of said gaseous mixture, said cylindrical element defining between its outer cylindrical surface and the inner wall of the tube a space in which said gaseous mixture is channelled,
said cylindrical element being tubular along the greater part of its length, said cylindrical tubular element being closed at one of its ends and including a plurality of orifices passing through its cylindrical wall, said orifices being



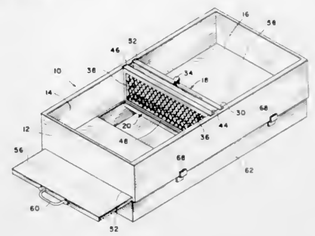
situated downstream from said heating zone, and wherein the device includes means for injecting a cooling gas in said cylindrical tubular element by its other end in order to cool said element, the cooling gas being neutral in relation to the volatile chemical compounds, the cooling gas passing through said orifices to mix with said first gas.

4,117,804

SELF-DEODORIZING LITTER BOX

Ray G. Moore, and William M. Coffman, Jr., both of Tulsa, Okla., assignors to Ivan Pope, Tulsa, Okla., a part interest

Filed Apr. 15, 1977, Ser. No. 787,747
Int. Cl.² A01K *29/00*
U.S. Cl. 119—1 **5 Claims**



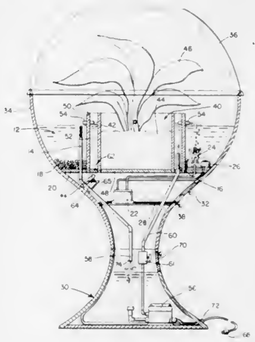
1. A pet litter box comprising at least two open compartments for receiving a quantity of litter therein, a closed compartment disposed beneath the open compartments, independent removable floor plate means provided for each open compartment and interposed between the open compartment and the closed compartment, said floor plate means being movable between open and closed positions to provide selective communication between the open compartment and the closed compartment, removable partition means interposed between said open compartments to provide a positive separation therebetween, and filter means interposed between said open compartments for cleaning any litter moving from one open compartment to the other open compartment.

4,117,805

VIVARIUM

Nazareen Ward, Oakland, Calif., assignor to Elizabeth Ward; John Tribble; Lee Gordon and Frank Irving, all of Oakland, Calif.

Filed Dec. 3, 1976, Ser. No. 747,430
Int. Cl.² A01K *64/00*
U.S. Cl. 119—5 **10 Claims**



1. A vivarium comprising:
a. an aquarium having a water outlet and a water inlet;
b. a terrarium having walls forming a solids retaining space, a portion of said terrarium positioned within said aquarium, said terrarium walls structurally connected with the structure of said aquarium;
c. a shield surrounding said terrarium walls and forming an expansion chamber therebetween, said shield substantially rigidly selectively mounted to said aquarium and connected terrarium, said shield providing access between

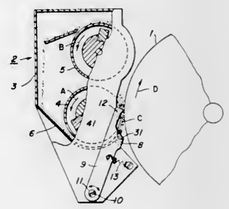
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4,117,803

DEVELOPER FLOW REGULATOR FOR A MAGNETIC BRUSH DEVELOPING DEVICE

Hidetoshi Kito, Ebina, Japan, assignor to Rank Xerox, Ltd., London, England

Filed May 3, 1977, Ser. No. 793,456
Claims priority, application Japan, May 17, 1976, 51-055438
Int. Cl.² G03G *15/09*
U.S. Cl. 118—658 **4 Claims**



1. In a magnetic brush developing device for developing an electrostatic image on an electrostatic latent image bearing member with developer formed into a brush-like configuration on a developing roll the improvement comprising a developer discharge-regulating plate for regulating the amount of the developer on said developing roll as a function of the clearance between said roll and said member wherein said plate is carried by a pair of arms, said arms are mounted for pivotal movement toward and away from said roll in response to the distance between said roll and said surface.

said aquarium and said chamber by means for providing an opening through said shield, said means being positioned at a higher level than said aquarium outlet, said means serving as said aquarium inlet;

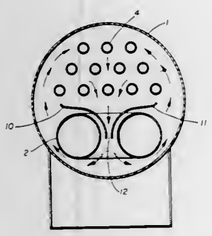
d. pump means for providing circulation of the aquarium water collected from said aquarium outlet to said aquarium inlet.

4,117,806

CONVECTION BAFFLES

William P. Manning, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 25, 1976, Ser. No. 699,778
Int. Cl.² F22B *1/02*; F22D *7/00*
U.S. Cl. 122—33 **4 Claims**



1. In an indirect heater comprising a horizontally extended shell within which a heat source is mounted to extend horizontally through a substantial length of the lower volume of the shell and a coil bundle is mounted to extend horizontally through a substantial length of the upper volume of the shell and the remainder of the shell volume being filled with liquid, wherein the heat source is in the form of a return-bend firetube with both legs at substantially the same height above the bottom of the shell, and including,

a baffle plate extended longitudinally and parallel closely above and substantially the length of each leg of the firetube with a substantial portion of its transverse dimensions inclined at an acute angle to the vertical with the plates diverging from each other,

whereby those portions of the liquid body directly above each leg and on the underside of each baffle plate are heated by the legs and guided by the plates into rising streams flowed around the side of the coil bundle and then into direct contact with the coil bundle which cools them so that the portions sink in a stream which is directed down between the plates and then flows over the legs for reheating and recycling.

4,117,807

FUEL INJECTION CUT OFF MEANS FOR OVER TEMPERATURE PROTECTION OF EXHAUST TREATMENT DEVICE

Daniel D. Barnard, Farmington Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 2, 1977, Ser. No. 765,019
Int. Cl.² F02B *3/00*
U.S. Cl. 123—32 EE **8 Claims**

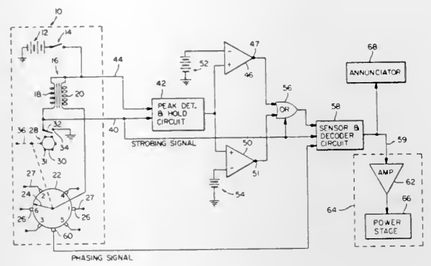
1. For use with an internal combustion engine equipped with an electronic fuel injection system including a plurality of injectors, apparatus for detecting misfiring of at least one of a plurality of fuel ignitors and for inhibiting operation of the electronic fuel injection system to certain of the plurality of injectors in response thereto, comprising:

means for providing a signal for each of a plurality of fuel ignition occurrences including the misfiring of the fuel ignitors;

means for providing a signal proportional to said fuel ignition occurrence signal;

means responsive to the fuel ignition occurrence signals and said proportional signal for detecting the level of the proportional signal for each of the plurality of fuel ignition occurrences and for providing a corresponding signal;

comparison means including means establishing a signal range for comparing the signal from the detecting means to said signal range and for providing comparison signals for providing an error signal when at least one of the fuel



ignition occurrence signals falls outside of the predetermined signal range to indicate a corresponding fuel ignitor misfire; and

means responsive to the error signal for providing an inhibit signal for inhibiting a fuel injector in the electronic fuel injection system corresponding to the certain of the misfiring fuel ignitor.

4,117,808

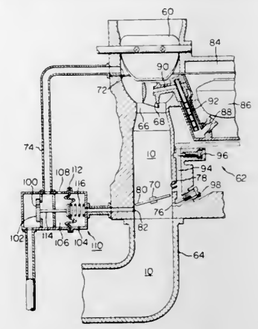
GAS INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

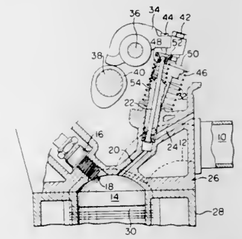
Bonnosuke Takamiya, Johyoh, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1977, Ser. No. 802,559
Claims priority, application Japan, Jul. 2, 1976, 51-79263; Feb. 23, 1977, 52-19540
Int. Cl.² F02D *33/02*
U.S. Cl. 123—75 B **12 Claims**

1. A gas injection system for an internal combustion engine including a combustion chamber having an inlet port connected to a main intake passage in which a throttle valve is mounted, a spark plug having a spark gap facing into the combustion chamber, an injection bore provided near to said spark gap for injecting gas into said combustion chamber in a predetermined direction, and a secondary intake passage connected to the injection bore through a secondary inlet valve, said system comprising a first port provided in a wall of said main intake passage at a location in which said port is disposed slightly downstream of said throttle valve at an idling position thereof, but disposed upstream of the throttle valve when the latter is turned open, a flow of the gas supplied to said secondary intake passage being controlled by a negative pressure

produced at said first port so as to increase more the gas flow at a driving range in which said throttle valve is downstream of





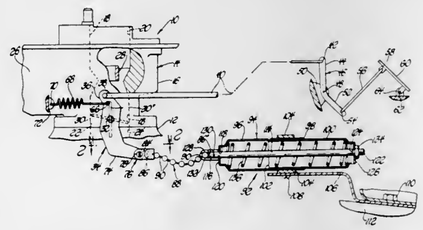
said first port than the gas flow at a driving range in which said throttle valve is upstream of said first port.

4,117,809

RESILIENT THROTTLE STOP MEANS

Milton J. Kittler, 6701 Kasba Cir., Scottsdale, Ariz. 85253

Division of Ser. No. 522,236, Nov. 8, 1974, Pat. No. 4,016,842.
This application Sep. 20, 1976, Ser. No. 724,557
Int. Cl.² F02D *11/02*; G05G *5/04*
U.S. Cl. 123—98 **4 Claims**



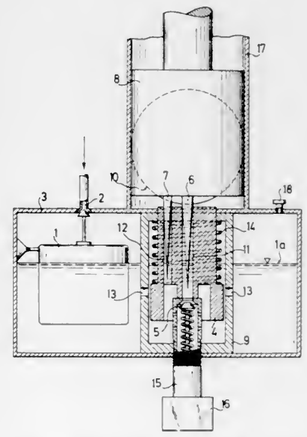
1. Resilient throttle stop apparatus for use in combination with an internal combustion engine having an intake structure with induction passage means formed therein and rotatable throttle valve means for controlling flow in said induction passage means, comprising first resilient means, second resilient means, and connecting means for operatively connecting said second resilient means to said throttle valve means of said induction passage means, said intake structure induction passage means being fixedly secured to and supported by said engine, said first resilient means being operatively connected to said throttle valve means as to apply thereto a first resilient force for urging said throttle valve means in a closing direction, said connecting means comprising functional lost-motion means effective to cause said second resilient means regardless of whether or not said engine is operating to exhibit an added resilient resistance force resisting further opening movement of said throttle valve means by associated throttle lever means after said throttle valve means has been opened to a preselected degree, said second resilient means said intake structure induction passage means said throttle valve means and said connecting means all being commonly supported by said engine, said second resilient means comprising coiled axially extending spring means, said connecting means operatively interconnecting said spring means and said throttle lever means, said lost-motion means permitting a predetermined degree of rotational movement of said throttle lever means in the throttle opening direction before said spring means exhibits said added resilient resistance force to further opening movement of said throttle valve means, said connecting means further comprising an axially movable rod-like member axially extending through said spring means, a movable spring seat connected to said rod-like member, said lost-motion means operatively interconnecting said throttle lever means to said rod-like member, and a relatively fixed second spring seat operatively engaging one end of said spring means, wherein said second spring seat is of a generally cup-shaped configuration with an end wall and a generally annular side wall joined to said end wall, said annular side wall defining an opening of a dimension sufficient to accept said spring means, and wherein said rod-like member extends through said end wall.

4,117,810

PROCESS FOR DEVICE FOR PREPARING IGNITABLE FUEL MIXTURES

Veit John, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 594,129, Jul. 28, 1975, Pat. No. 4,033,307.
This application Mar. 10, 1977, Ser. No. 776,362
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1974, 2433061; Oct. 30, 1974, 2451470
Int. Cl.² F07M *25/06*
U.S. Cl. 123—1 R **3 Claims**



1. A process for preparing an ignitable mixture of fuels having different calorific values for internal-combustion engines, which comprises the steps of admixing a fuel mixture including monohydric saturated aliphatic alcohols having from 1 to 4 carbon atoms in accordance with its calorific value with atmospheric oxygen over two adjustable dosing devices, feeding the ignitable mixture obtained to the internal combustion engine and adding hot exhaust gases from the internal combus-

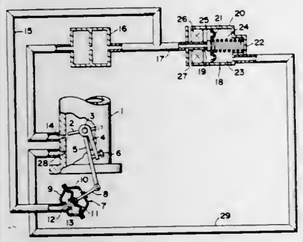
tion engine to the fuel mixture during said feeding step in an amount depending on the load on the engine.

4,117,811

THROTTLE VALVE POSITIONER

Toshiro Yoshida, Toyota, Japan, assignor to Toyota Jidosha Kogyo K.K., Japan

Filed Apr. 1, 1976, Ser. No. 672,635
Claims priority, application Japan, Aug. 26, 1975, 50-103346
Int. Cl.[2] F02D *11/08*
U.S. Cl. 123—103 R **2 Claims**



1. A throttle valve positioner in combination with an internal combustion engine having an air intake and a throttle valve provided in said air intake, said throttle valve positioner comprising:

a stopper provided adjacent said throttle valve for varying the position of said throttle valve and coupled to said throttle valve via a first adjustment means;

a means for normally operating said throttle valve;

a first vacuum bleed port provided in said air intake at a point downstream from said throttle valve when said engine is idling and upstream from said throttle valve when said engine is running at a steady speed;

a throttle valve positioner diaphragm device mechanically coupled to said stopper for moving said stopper in response to a vacuum at said first vacuum bleed port, said diaphragm device comprising a casing having first and second ends and an opening in each of said ends, a diaphragm dividing said casing and defining a chamber between said first end and said diaphragm and a spring biasing said diaphragm away from said first end and wherein said opening in said first end is coupled to said first vacuum bleed port by a first conduit and wherein said stopper is mechanically connected to said diaphragm via said opening in said second end;

a means for delaying the response of said throttle valve positioner diaphragm device to a change in vacuum at said first vacuum bleed port provided in said first conduit, said delay means comprising a flow restricting means having such a structure that the flow rate of fluid from said first vacuum bleed port toward said diaphragm chamber is greater than that in the reverse direction and further comprises a pair of flow restricting means arranged in parallel with each other, and a check valve disposed in series with one of said flow restricting means, said check valve permitting solely the flow of fluid from said first vacuum bleed port toward said chamber of said diaphragm device;

a second vacuum bleed port provided in said air intake at a point which is always downstream of said throttle valve; and

a vacuum control valve for fixing the vacuum of said first vacuum bleed port at atmospheric pressure whenever a vacuum at said second vacuum bleed port is greater than a predetermined value, said vacuum control valve comprising:

a casing having an open end communicating with the atmosphere;

a diaphragm provided within said casing with the outer periphery thereof brought into fluid-tight engagement with the inner wall of said casing and defining a chamber therein;

a branch conduit extending at one end thereof into said open end of said casing and connected at the other end thereof to said chamber of said throttle valve positioner diaphragm device;

a valve member mounted to said diaphragm for openably closing said end of said branch conduit extending into said casing;

biasing means for normally biasing said diaphragm in a direction in which said end of said branch conduit extending into said casing is closed by said valve member, said biasing means being disposed between said diaphragm and said casing, and the biasing pressure thereof being adjusted as desired by adjustment means, said adjustment means comprising a screw in screw threaded engagement with said casing;

a filler provided in the space formed between the rear end of said screw and said casing for inhibiting inflow of positive pressure into said vacuum control valve diaphragm chamber through the screw threads; and

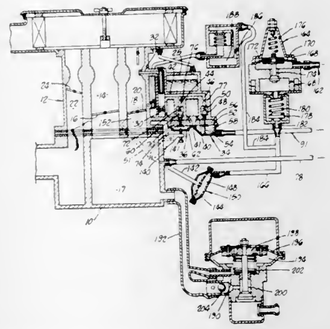
another conduit for admitting the vacuum at said second vacuum bleed port into said vacuum control valve diaphragm chamber.

4,117,812

AUXILIARY FUEL FEED AND TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Naohiko Sato, Saitama, and Keiichi Osawa, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1977, Ser. No. 757,689
Claims priority, application Japan, Jan. 17, 1976, 51/3774
Int. Cl.[2] F02P *5/14;* **F02M** *7/06*
U.S. Cl. 123—117 A **4 Claims**



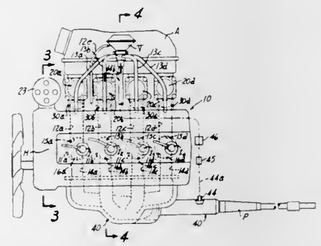
1. For use with an internal combustion engine having fuel supplied thereto by a carburetor assembly having at least one intake passage and a throttle valve positioned within said passage, said carburetor assembly including a first fuel feed means to deliver fuel to said passage, a second fuel feed system comprising, in combination: a fuel valve of the diaphram type including a vacuum chamber formed on one side of a flexible diaphragm and a fuel chamber on the other side of said diaphragm, the passage connecting said fuel chamber to the intake passage, a speed detector, selector valve and check valve means whereby said vacuum chamber is connected to said engine intake passage downstream from said throttle valve at low speeds, connected to said passage through a check valve at medium speeds and vented to the atmosphere when high speeds are attained.

4,117,813

INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATING IT

Ryuichi Yamashita, and Hiromitsu Matsumoto, Hamamatsu, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 496,142, Aug. 12, 1974, abandoned, which is a division of Ser. No. 496,141, Aug. 12, 1974, abandoned. This application Oct. 28, 1976, Ser. No. 736,461
Int. Cl.[2] F02M *7/00, 25/06;* **F02P** *5/04;* **F02M** *31/00*
U.S. Cl. 123—119 R **93 Claims**



1. In an internal combustion engine of the type which includes a combustion chamber, induction means for introducing an air/fuel charge to said combustion chamber, and exhaust means for exhausting a spent charge from said combustion chamber, the improvement comprising: means for constituting in said induction means said air/fuel charge which is leaner than stoichiometric with the possible exceptions of starting and warm-up operations, and leaner than stoichiometric, or stoichiometric, or nearly stoichiometric, at starting and warm-up operations; and means tending to maintain the numerical value of the residual fraction at low load conditions such that the engine operates on said air/fuel charge at said low load conditions without substantial misfiring, said residual fraction being defined as follows:

$$\text{Residual fraction} = \frac{\text{Amount of residual gases remaining in combustion chamber from previous cycle}}{\text{Amount of air (or air/fuel mixture) taken into combustion chamber for next cycle} + \text{Amount of residual gases remaining in combustion chamber from previous cycle}}$$

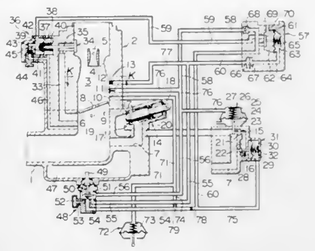
4,117,814

INTAKE REGULATOR FOR INTERNAL COMBUSTION ENGINE

Akira Takahashi, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jun. 21, 1977, Ser. No. 808,623
Claims priority, application Japan, Mar. 4, 1977, 52-24024
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **7 Claims**

1. An intake regulator for an internal combustion engine comprising means defining an exhaust-gas recirculation passage connecting an exhaust passage with an intake passage to recycle part of the exhaust-gas back to the intake passage, a recirculated exhaust-gas control valve in said exhaust-gas recirculation passage for controlling the quantity of the recirculated exhaust-gas, differential-pressure responsive means actuating said recirculated exhaust-gas control valve by a vacuum established in a vacuum chamber thereof leading to the intake passage, an air passage for diluting air-fuel mixtures by supplying air into the intake passage or the fuel passage in the carburetor, an air control valve in said air passage for controlling the quantity of air supply, differential-pressure responsive means actuating said air control valve by a vacuum established in a vacuum chamber thereof leading to the intake passage, means defining open-to-atmosphere passages leading from each of said two vacuum chambers, and valve control means closing either of said recirculated exhaust-gas control



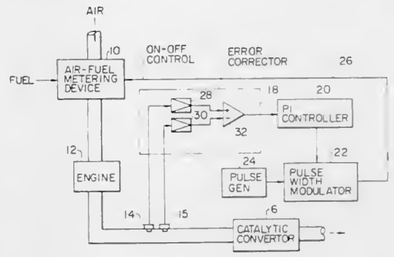
valve and said air control valve when the other is open by opening and closing said open-to-atmosphere passages.

4,117,815

CLOSED-LOOP MIXTURE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE USING ERROR-CORRECTED EXHAUST COMPOSITION SENSORS

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 13, 1976, Ser. No. 676,480
Claims priority, application Japan, Apr. 22, 1975, 50-48200; Apr. 30, 1975, 50-51562; Jun. 24, 1975, 50-88311[U]
Int. Cl.[2] F02M *7/00*
U.S. Cl. 123—119 EC **14 Claims**



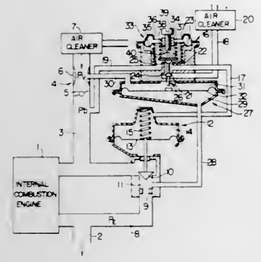
1. A mixture control system for an internal combustion engine, comprising first and second means for detecting an exhaust composition of the engine to generate signals of different amplitude and slope characteristics as a function of the air-fuel ratio of the mixture detected thereby, said detecting means comprising exhaust composition sensors at substantially the same location in the exhaust system of the engine, said sensors having a tendency to generate signals having errors in the detected composition arising from changes in the performance characteristics of the detecting means, and means responsive to and for combining the signals derived from the first and second composition detecting means to generate a signal substantially free from the errors arising from the changes in performance characteristics of the first and second composition detecting means.

4,117,816

EXHAUST GAS RECIRCULATING SYSTEM FOR USE IN INTERNAL COMBUSTION ENGINE

Mikio Minoura, Nagoya, Japan, assignor to Aisan Industry Co., Ltd., Japan

Filed Dec. 10, 1976, Ser. No. 749,325
Claims priority, application Japan, Dec. 23, 1975, 50-154503
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **5 Claims**



1. An exhaust gas recirculating system for use in an internal combustion engine, comprising:
an exhaust gas return passage interconnecting the exhaust passage and the intake passage to said internal combustion engine;
a carburetor communicating with said intake passage, said carburetor having a throttle valve and a venturi portion;
a fixed orifice provided in said exhaust gas return passage;
a regulating valve provided in said exhaust gas return passage downstream of said fixed orifice and controlling the pressure in a pressure chamber defined between said regulating valve and said fixed orifice;
a regulating valve drive means having a pressure-variable space for actuating said regulating valve in response to the pressure in said space; and
a control means for controlling the pressure in said pressure-variable space, said control means including: a first passage communicating with said pressure-variable space; a second passage communicating with the atmosphere; a third passage communicating with said intake passage downstream of said throttle valve in said carburetor; a first port for bringing said first passage into communication with said second passage; a second port for bringing said first passage in communication with said third passage; a pilot valve movable between a first position to close said first port and open said second port, and a second position to open said first port and close said second port; means for urging said pilot valve toward said first position in resonse to a difference between a pressure in said pressure chamber and a pressure in said venturi portion of said carburetor; a spring means for urging said pilot valve toward said second position at all times; and means for increasing a force of said spring means, depending on a reduction in pressure in said intake passage downstream of said throttle valve when the pressure in said intake passage becomes lower than a given pressure level.

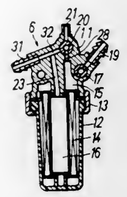
4,117,817

SYSTEM FOR DRAINING AIR FROM AN ENGINE FUEL FILTER

Tsuyeshi Nishida, Sakaishi, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Apr. 8, 1977, Ser. No. 785,830
Claims priority, application Japan, Jan. 24, 1977, 52-7141
Int. Cl.² F02M *59/44*; B65D *25/54*
U.S. Cl. 123—136 **8 Claims**

1. A system for draining air and entrained vapor contained within a fuel strainer and connected fuel paths of an engine, said system including:
an engine;
a fuel reservoir located on the engine at a relatively high position;
fuel pump means located on the engine at a relatively low position;
a fuel strainer located on the engine between said fuel reservoir and said fuel pump means, said strainer including a fuel cock and a drain cock in the upper portion thereof, and having an unfiltered-fuel chamber and a filtered fuel chamber;



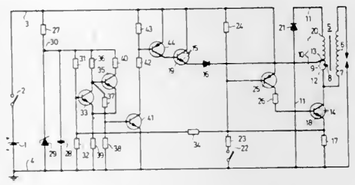
a fuel supply pipe connecting said fuel cock with the bottom of said fuel reservoir;
an escape line connecting said drain cock with said fuel reservoir; and
a downwardly inclined conduit leading from said strainer to said fuel pump means;
said drain cock being constructed and arranged to be switchable to any one of three positions, including a first position wherein said unfiltered-fuel chamber is connected with said escape line, a second position wherein said filtered-fuel chamber is connected with said escape line, and a third position wherein neither of said chambers is connected with said escape line.

4,117,818

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH TAPPED IGNITION COIL

Bernd Bodig, Leinfelden; Helmut Schmied, Schwaikheim, and Gerd Hohne, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 9, 1976, Ser. No. 704,116
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1975, 2531337
Int. Cl.² F02P *3/02*
U.S. Cl. 123—148 E **18 Claims**



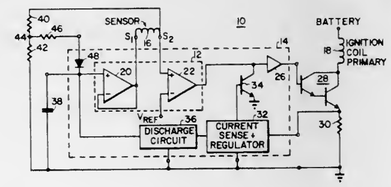
1. Ignition system for an internal combustion engine to generate an ignition event having means (3,4) forming a current supply; and comprising
an ignition coil (5) with a tapped primary (8) which forms a first primary partial portion (9) and a second primary portion (10), the second primary portion having an inductance which is high with respect to the inductance of said first primary partial portion (9);
a supply circuit connected to said current supply, including a controlled switch (14), connected in circuit with said first primary portion (9) only to energize only said first portion when the controlled switch (14) is closed;
control means connected to and controlling said supply circuit during succesive time intervals as a function of electromagnetic energy stored in the coil to become conductive and control current flow from said current supply through said first partial primary portion to store electromagnetic energy in the coil (5);
and a shunt circuit (11) connected to said second primary portion (10) and carrying the inductive current in the primary winding arising after the end of and during the periods between the respective time intervals.

4,117,819

THRESHOLD CIRCUIT SUITABLE FOR USE IN ELECTRONIC IGNITION SYSTEMS

Robert B. Jarrett, and Don W. Zobel, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1976, Ser. No. 735,472
Int. Cl.² F02P *9/00*
U.S. Cl. 123—148 E **8 Claims**



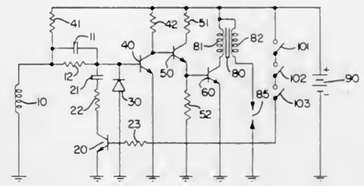
1. In a variable dwell ignition system suitable for controlling the operation of an engine by receiving timing signals generated across a sensor coil in timed relationship to the operation of the engine to cause the duration of current flow through an ignition coil to be varied as engine speed is varied, the ignition system including a monolithic integrated threshold circuit coupled across the sensor coil which is responsive to the timing signals for producing a control signal that is utilized to vary the dwell time of the system, the improvement comprising:
the threshold circuit including
(a) an input amplifier circuit comprising a Darlington amplifier and an unity gain amplifier, said Darlington amplifier having a high impedance input to which a variable direct current potential representative of the magnitude of the generated timing signals is applied thereto and an output, said unity gain amplifier having an input coupled to said output of said Darlington amplifier and a low impedance output which is coupled to a first terminal of the sensor coil such that the magnitude of the potential appearing at the first terminal of the sensor coil varies in accordance with said direct current potential being varied, the operating characteristics of said unity gain amplifier being a function of both fabrication process variations and variations in operating temperatures; and
(b) a comparator circuit having an input coupled to a second terminal of the sensor coil for producing the control signal at an output thereof when the magnitude of the potential appearing at said input becomes greater then the magnitude of a predetermined reference potential, said comparator circuit having operating characteristics substantially identical with said unity gain amplifier such that the dwell time does not vary due to process and temperature variations.

4,117,820

IGNITION CIRCUIT

Seiichi Kashiwazaki, and Taiji Hasegawa, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 27, 1976, Ser. No. 754,277
Claims priority, application Japan, Dec. 26, 1975, 50-154986
Int. Cl.² F02P *1/08*; H05B *41/00*
U.S. Cl. 123—148 E **6 Claims**



1. An ignition circuit for use in an internal combustion engine comprising:
a transformer for producing a high voltage signal for spark plugs in response to an abrupt interruption of primary current flowing therethrough;
a current source connected to said transformer in series;
first means having an on and an off condition and forming a series circuit with said transformer and said current source, said first means permitting a current to flow in said series circuit when in said on condition;
second means for generating an alternating voltage signal synchronous with rotation of the engine and with a peak voltage proportional to this speed of rotation;
third means for controlling the on and off condition of said first means in response to the alternating voltage signal from said second means;
delay means including resistance means and capacitance means for alternately charging to positive and negative voltages in accordance with the alternating voltage signal from said second means when said delay means is actuated to thereby delay the on and off condition operation of said first means, the capacitance value of said capacitance means and the resistance value of said resistance means being chosen such that the on and off condition operation of said first means is delayed by a constant angle with respect to the rotating angle of the engine; and
switching means for actuating said delay means in accordance with the operating condition of the engine.

4,117,821

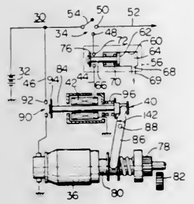
ENGINE STARTING SYSTEM

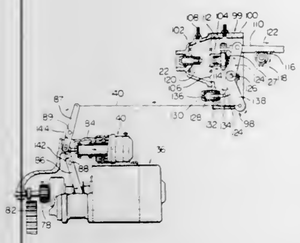
Michio Kawai, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 19, 1976, Ser. No. 743,098
Claims priority, application Japan, Nov. 20, 1975, 50-139514
Int. Cl.² F02N *17/00*
U.S. Cl. 123—179 L **9 Claims**

1. A starting system for an engine, comprising:
a starter motor for starting said engine;
first means for temporarily effecting an increase in the amount of fuel fed to a combustion chamber of said engine to a value for starting said engine;
a common actuator, including an electrically-activated solenoid, operatively connected to said starter motor and to said first means, and having a starting position into which said common actuator is movable and in which said common actuator connects said starter motor to said engine and concurrently operates said first means;
second means for moving said common actuator into said starting position, said second means including an electric power source and a starter key switch electrically connected to said electric power source and to said solenoid

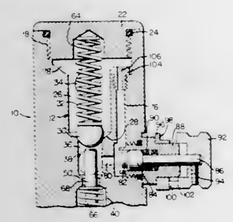
to energize said solenoid when said starter key switch is closed;
third means for actuating said starter motor; and





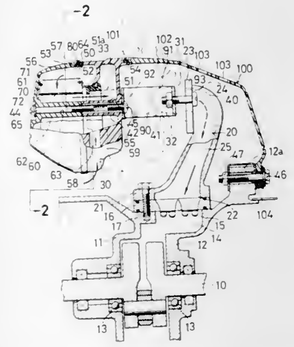
an operating rod operatively connected to said starter motor and to said first means and located with respect to said solenoid to be moved into said starting position in response to energization of said solenoid.

4,117,822
ENGINE PROTECTIVE DEVICE WITH RESTRICTED MANUAL OVERRIDE
J. T. Mills, Houston, Tex., assignor to Sentinel Distributors, Inc., Denver, Colo.
Filed Apr. 22, 1977, Ser. No. 789,884
Int. Cl.[2] F02B *77/08*
U.S. Cl. 123—198 DB **2 Claims**



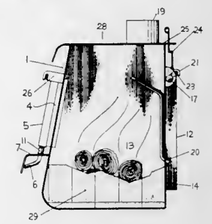
1. In apparatus for controlling the flow of fuel to an internal combustion engine in response to pressure conditions existing in a pressure-lubricating system of the type comprising a body having a main fuel passageway therein, fuel inlet and outlet ports communicating with said passageway adapted to be connected to the fuel supply line of the engine, a valve in said passageway controlling the normal flow of fuel between said inlet and outlet ports, pressure-actuated means normally subject to a pressure equal to that of the lubricant in said lubricating system for maintaining said valve in open position as long as the pressure exerted on said means is at least equal to a predetermined value, and means operable to close said valve when the pressure exerted on said pressure-actuated means drops below said predetermined value, the improvement which comprises; manually operable means for supplying to said engine after said valve has closed automatically due to a drop in lubricant pressure a restricted amount of fuel sufficient only to run the engine at reduced power and reduced speed, said means comprising a bypass fuel passageway in said main body, bypassing the portion of said main passageway controlled by said valve, means for passing a predetermined restricted amount of fuel through said bypass passageway, an override body threaded into said main body adjacent a portion of said bypass passageway, a plunger including a sealing member slidably mounted in said override body, a spring in said override body normally urging said plunger and sealing member inwardly with respect to said main body so as to close said bypass passageway, a manually operable control cap fixed to said plunger for pulling said plunger and sealing member outwardly against the pressure of said spring and for rotating the plunger, an override stop member fixed to said override body having two stop surfaces of different heights circumferentially spaced from one another, and a projection on said control cap normally resting on the lower of said stop surfaces so that said spring urges said plunger and sealing member inwardly to close said bypass passageway, but adapted to rest on the higher of said stop surfaces and thereby open said bypass passageway when said plunger and sealing member are manually pulled outwardly and then rotated so as to move said projection from one stop surface to the other.

4,117,823
AIR SUCKING DEVICE FOR ENGINES
Katsunori Funabashi, and Mikihiro Kohyama, both of Kawagoe, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1976, Ser. No. 746,238
Claims priority, application Japan, Dec. 13, 1975, 50/168602[U]
Int. Cl.[2] F02B *77/00*
U.S. Cl. 123—198 E **8 Claims**



1. An air sucking device for engines, comprising, in combination:
an engine with a crankcase;
a suction pipe connected to and projecting from said crankcase of said engine;
a carburetor connected to a front end portion of said suction pipe;
an air cleaner case, in which an air cleaner is fitted, connected to a front end portion of said carburetor;
a cleaner cover removably connected to a front end of said air cleaner case;
a covering member, covering at least the upper surfaces of said carburetor and suction pipe, connected at one end thereof with said air cleaner case and at the other end thereof with the crankcase side to cover air cleaner case, carburetor, and suction pipe;
a groove made in the rear surface of said air cleaner case;
said covering member being engaged at its front end with said groove;
a fitting member (**12***a*) being provided projecting from said crankcase; and
said convering member (**100**) being connected in its lower end portion bent and suspended along said suction pipe to said fitting member (**12***a*) projected on said crankcase.

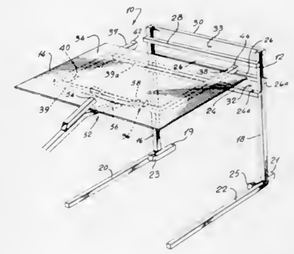
4,117,824
AUTOMATIC WOOD BURNING HEATING STOVE
Kendrick H. McIntire, Rte. 2, Box 1000, and John E. McIntire, Rte. 2, Box 151-A, both of Aurora, Oreg. 97002
Filed Nov. 17, 1976, Ser. No. 742,558
Int. Cl.[2] F24B *11/00*
U.S. Cl. 126—15 R **11 Claims**



1. In a fireplace stove, a body having a front fireplace opening, an upper exhaust opening and a rear intake air opening,
fireplace door means movable from a closed position sealing said front fireplace opening to an open position opening said front fireplace opening,
closure means for closing said rear intake air opening while said door means is open and for opening said rear intake air opening when said door means is closed, and
an air preheating passage extending downwardly along the back wall of said body to said rear intake air opening, said passage being open at its top,
said back wall of said stove being of metal and forming one wall of said passage,
the portion of said back wall forming said one wall of said passage being uninsulated substantially from the top of said passage to said rear intake air opening, whereby a fire in said stove can heat air entering said air preheating passage,
said door means comprising reflective means for directing heat toward said portion of said back wall that forms said one wall of said passage.

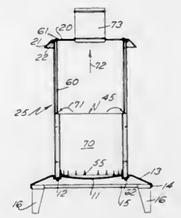
4,117,825
COOKING STAND
Thomas Alexander Robertson, Sheldrake Lake, R.R. No. 3, Armdale, Halifax County, Nova Scotia, Canada
Filed May 26, 1976, Ser. No. 690,194
Claims priority, application Canada, Jun. 12, 1975, 230081
Int. Cl.[2] A47J *33/00;* **F24B** *1/26, 3/00*
U.S. Cl. 126—29 **2 Claims**

1. A cooking stand comprising an upstanding supporting frame comprising a pair of vertically disposed spaced apart legs each having a forwardly extending foot at its lower end, and including at least one pair of horizontally disposed, spaced apart retaining bars, remote from said lower end, said pair including an upper bar having a lower downwardly facing wall and a lower bar having an upper upwardly facing wall defining a horizontal slot therebetween; one of said pair of retaining bars extending outwardly, forwardly of said legs, and the other of said pair extending outwardly, rearwardly of said legs; and a support member comprising a plate having a flat upper cooking surface and including at least a pair of spaced apart retaining arms disposed adjacent opposite side edges of said plate and having upper and lower surfaces, extending from an underside of said plate, said arms being removably supported in said slot with bearing contact between said lower wall of said upper bar and said upper surfaces and between said upper wall of said lower bar and said lower surfaces, whereby said support member is held in said frame to dispose said cooking surface horizontally, such that in use the cooking surface



can be located vertically above a source of heat for cooking; each said foot being hingedly mounted on its leg by a hinge element mounted on said let whereby said foot can be pivoted to a compact carrying position adjacent said leg, said hinge element having looking means for locking said foot in a forwardly extending position during use and having a vertically downwardly extending slot defined therein adapted to receive and hold an outer edge of said plate when said foot is in said compact carrying position.

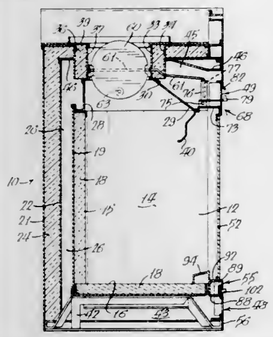
4,117,826
WOOD BURNING STOVE
Joseph A. Bette, R.F.D. #4, Southbury, Conn. 06488
Filed Mar. 7, 1977, Ser. No. 775,254
Int. Cl.[2] F23M *5/00*
U.S. Cl. 126—65 **3 Claims**



1. A stove comprising
a generally horizontal imperforate bottom wall,
a generally horizontal top wall,
a generally vertical outer casing extending between said bottom and top wall,
a liner within said casing extending completely about the same and spaced therefrom to provide a draft conduit through the space, said liner resting on said bottom wall and of a vertical extent less than said casing to be spaced from the top wall, said liner providing with said bottom wall a fire box, Serial No. **775,254**
said bottom wall having an upwardly opening recess with opposite upstanding spaced walls, said casing and liner being located in said recess between said upstanding walls,
said liner being provided with draft openings adjacent its lower edge for the entrance of air therethrough,
means to provide the entrance of air through said casing to

the conduit formed by said liner whereby air is conveyed to said draft openings and to said fire box,
and means to direct the heated gases from the casing.

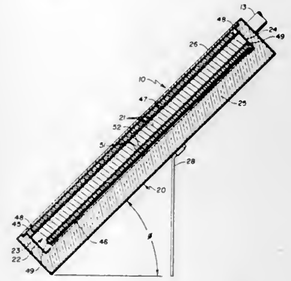
4,117,827
FIREPLACE CONSTRUCTION
Thomas F. Billmeyer, Wisconsin Rapids, Wis., assignor to Preway Inc., Wisconsin Rapids, Wis.
Filed Mar. 14, 1977, Ser. No. 777,063
Int. Cl.[2] F24B *7/04*
U.S. Cl. 126—121 **12 Claims**



1. In a prebuilt fireplace construction adapted to be installed in a structure, the combination comprising:
a firebox having an open forward side and an outlet for combustion gases;
a housing at least partially surrounding said firebox in close proximity thereto, said outlet extending through the top of said housing;
a damper disposed within said outlet mounted for rotation between open and closed positions;
a shaft rotatably supported within the fireplace to support said damper, said shaft extending through said housing and having one end remote from said damper transverse to the rotational axis of said shaft positioned adjacent a forward wall of said housing;
means movably supported for external actuation of said shaft from the front of the fireplace and having a finger portion for engaging said transverse shaft end and a handle portion external of said housing for operator manipulation of said actuation means whereby movement of said finger portion rotates said shaft to position said damper;
an inlet conduit extending along the forward portion of said housing between the foreward wall of said housing and the forward bottom edge of said firebox, said inlet conduit defining an internal passage communicating externally of said housing through first passage means in the lower part of the forward wall thereof and through second passage means in the upper wall thereof with said firebox, combustion air thereby being drawn in through said first passage means and delivered through said second passage means upwardly into said firebox; and
closure means adjacent said first passageway slidably disposed within said conduit for opening and closing said first passage means thereby controlling the amount of air drawn into said firebox.

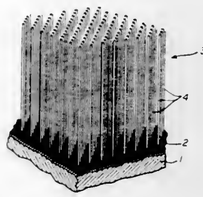
4,117,828
SOLAR COLLECTOR
Jerry A. Brownfield, 107 W. Rustic Lodge Ave., Minneapolis, Minn. 55409
Filed Dec. 4, 1975, Ser. No. 637,696
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **11 Claims**

1. A solar collector for heating a gaseous fluid comprising a housing, a plurality of substantially parallel radiation absorbing, substantially non-reflective, vanes mounted in said housing with the spacing between said vanes being between one-half and one-sixth of the depth thereof, said vanes each having fixedly associated with the inner portion thereof an inner radiation absorbing, substantially nonreflective surface, said housing having a closed inner wall and a radiation transparent outer wall mounted closely adjacent and generally parallel to the outer portions of said vanes so as to define with said vanes and said inner radiation absorbing surface a plurality of relatively narrow, contiguous unobstructed channels, each open to direct



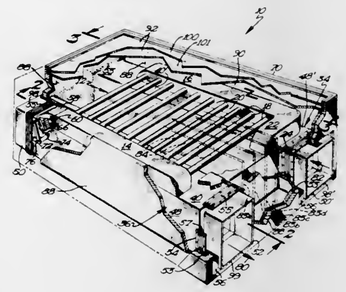
radiation at said outer portions of said vanes, said housing having an inlet manifold at one end thereof communicating with one set of extremities of said channels and having an outlet manifold at the opposite end thereof communicating with the opposite set of extremities of said channels, and means for circulating a gaseous heat exchange fluid through said inlet manifold, said channels and said outlet manifold to heat utilizing apparatus, said spacing between said vanes being between one-eighth and one-fourth of an inch and the velocity of said fluid being sufficiently small that the flow of said gaseous fluid through said vanes is laminar.

4,117,829
FUR-LIKE PHOTOTHERMAL CONVERTER SURFACE
Daniel Gross, Carouge, Geneva, and Pierre Genequand, Geneva, both of Switzerland, assignors to Battelle Development Corporation, Columbus, Ohio
Filed Jan. 6, 1977, Ser. No. 757,202
Claims priority, application Switzerland, Jan. 8, 1976, 156/76
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **26 Claims**



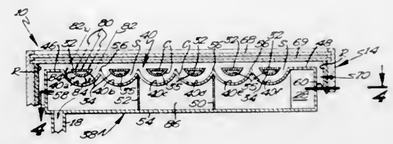
1. Photothermal converter apparatus for converting incident photon energy into heat, comprising a heat-absorbing surface and a multiplicity of substantially parallel fibres secured to said surface and extending substantially rectilinearly therefrom and having a length of at least about 1 cm, said fibers being arranged substantially equidistant from each other and being comprised of a material which is transparent to the incident photon energy and at least partially opaque to infrared thermal radiation re-emitted by said surface, whereby said fibres act as a light guiding structure with respect to the incident photon energy and serve to suppress energy losses from the converter by inhibiting infrared thermal reradiation from said surface and by inhibiting convection losses.

4,117,830
GANGABLE RADIANT ENERGY COLLECTOR
Jag M. Bansal, and Anil Kumar, both of 1301 Highway No. 7, Hopkins, Minn. 55343
Continuation-in-part of Ser. No. 746,547, Dec. 1, 1976. This application Mar. 1, 1977, Ser. No. 773,297
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **15 Claims**



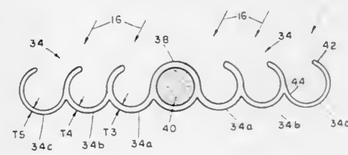
1. In combination with a radiant energy collector having an inlet and outlet through which a circulatable heat transfer medium may flow, a ganging apparatus for ganging said energy collector with leading and trailing energy collectors ganging apparatus comprising:
an insulative housing surrounding said energy collector, defining a plenum chamber within said housing, and including window means through which radiant energy may be incident on said energy collector;
a supply duct capable of passing heat transfer medium therealong, said supply duct being within said housing and extending through said housing with an entrance and exit outside said housing, said supply duct being connected in fluid flow communication with said inlet of said collector, and said supply duct entrance and exit being connectable in fluid flow communication with ganging apparatuses on the leading and trailing energy collectors, respectively;
a return duct capable of passing heat transfer medium therealong, said return duct being within said housing and extending through said housing with an entrance and exit outside said housing, said return duct being connected in fluid flow communication with said outlet of said energy collector, and said exit and entrance of said return duct being connctable in fluid flow communication with ganging apparatuses on the leading and trailing energy collectors, respectively, permitting the circulatable heat transfer medium to flow along said supply and return ducts to and from the ganging apparatuses of leading and trailing energy collectors and throgh said energy collector;
each said duct including a central segment and a pair of terminal segments at opposite ends of said central segment, said terminal segments being thermally insulated from said central segment to substantially reduce conductive heat loss from said central segment to said terminal segments, said terminal segments being connected in fluid flow communication with said central segment; and
said central segment being wholly within said housing and said terminal segments extending through said housing to define said entrance and said exit.

4,117,831
ENERGY COLLECTOR FOR COLLECTING SOLAR ENERGY AND THE LIKE
Jag M. Bansal, and Anil Kumar, both of Hopkins, Minn., assignors to Manju Bansal, Hopkins, Minn.
Filed Dec. 1, 1976, Ser. No. 746,547
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **13 Claims**



1. An energy collector for collecting radiant energy from an energy source and usable with a circulation system having a fluid heat-transfer medium, the collector comprising:
first radiation-absorbing means connectable with the circulation system, said first radiation-absorbing means including a plurality of radiation-absorbing, hollow-interior conduits confronting the energy source and separated from each other by slots, each said conduit capable of channeling the heat-transfer medium therethrough, said conduits capable of absorbing radiation energy from the energy source and conducting such energy to heat-transfer medium within said hollow interior;
second radiation-absorbing means connected to said first radiation-absorbing means to permit flow of heat-transfer medium therebetween and connectable to the circulation system to permit heat-transfer medium flow within said second absorbing means and between said second absorbing means and the circulation system, said second absorbing means having a face which extends below said conduits and confronts said conduits from below, confronts said slots and also confronts the energy source through said slots, said face extending uninterruptedly adjacent said slots and conduits to receive and absorb most radiant energy passing through said slots and incident on said face so as to conduct the energy to the heat-transfer medium, and also to define a reflector for reflecting radiant energy which is not absorbed by said second means toward said first absorbing means, thereby increasing radiation intensity and absorption by said first absorbing means; and
an insulative housing adjacent said first and second radiation absorbing means and defining a plenum about said first and second absorbing means to contain plenum fluid in said plenum and to decrease energy loss from said first and second absorbing means, said housing including window means through which radiation energy may be incident on said first and second radiation-absorbing means.

4,117,832
SOLAR ENERGY COLLECTOR
Raymond R. Lupkas, 54 Mt. Pleasant Dr., Trumbull, Conn. 06611
Filed Nov. 7, 1977, Ser. No. 849,237
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **3 Claims**



1. A collector for capturing solar rays and transferring the

heat energy therein to a circulating fluid for utilization comprising:

A. a plurality of longitudinally extending adjoining tubes in heat exchange relationship with one another, each of said tubes having a longitudinally extending opening therein which subscribes an arc of approximately 90° and said openings are oriented in the first quadrant for half of the adjoining tubes and in the second quadrant for the other half of the adjoining tubes to permit a first portion of the interior of said tubes to be directly exposed to solar rays, said tubes having a second interior portion to be exposed to solar rays reflected from said first portion, the interior and exterior surfaces of said tubes having a heat absorbing coating thereon, and

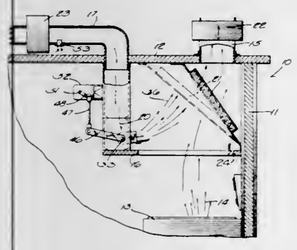
B. at least one fluid carrying conduit located in heat exchange relationship with two of said tubes, and each of said plurality of tubes having a cross sectional wall thickness dimension in inverse proportion to its distance from said conduit whereby the tubes in heat exchange relationship with said conduit have a greater wall thickness than the next adjacent tubes and the tubes most remote from said conduit have the thinnest wall thickness.

4,117,833

EXHAUST HOOD WITH ADJUSTABLE AIR INJECTION NOZZLE

Robert H. Mueller, Rte. 2, Box 34, Sheboygan Falls, Wis. 53085

Filed Feb. 16, 1977, Ser. No. 769,372
Int. Cl.[2] F21C *15/08*; F23J *11/00*
U.S. Cl. 126—299 D **12 Claims**



1. In an exhaust hood having an input air plenum, an air exhaust duct and a filter therebetween, the improvement for adjusting the path of air introduced through said input air plenum into said hood with respect to the position of the filter, said improvement comprising said input plenum having a nozzle spout opening, a nozzle spout in said opening and a bearing on which said nozzle spout is turnable in said opening to inject air from said plenum into said hood at the desired angle of incidence to said filter, said nozzle spout having a lip and a hinge on which the lip is adjustably connected to the spout to function as a deflector to further control the path of flow of air injected into the exhaust hood by the spout.

4,117,834

PHYSIOLOGICAL MOTOR ACTIVITY MONITORING APPARATUS

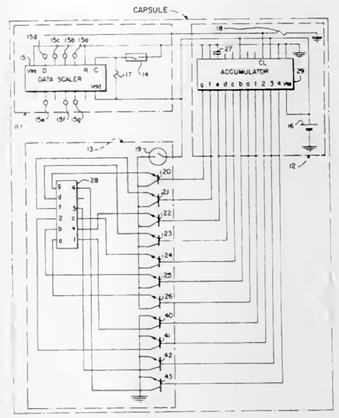
Richard J. Mc Partland, 5995 Library Rd., Bethel Park, Pa. 15102; F. Gordon Foster, 6409 Howe St., Pittsburgh, Pa. 15206, and David J. Kupfer, 834 Amberson Ave., Pittsburgh, Pa. 15232

Filed Dec. 2, 1976, Ser. No. 746,852
Int. Cl.[2] A61B *5/10*
U.S. Cl. 128—2 S **10 Claims**

1. Apparatus for monitoring physiological motor activity comprising a miniaturized capsule adapted to be affixed to and worn by the person being monitored, said capsule containing:

(a) a motion sensing means sensitive to linear and rotational movements of said capsule,

(b) electronic scaling means in circuit with said motion sensing means for providing an output of pulses corresponding in number to units of motor activity, each unit of which comprises a predetermined plurality of said movements, as registered by said motion sensing means,



(c) an integrated electronic accumulator connected to said scaling means for accumulating said output of pulses from said scaling means, and

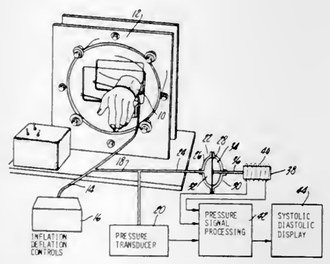
(d) an electronic-sensory means for registering and signalling the output of pulses in said accumulator relating to the number of units of motor activity.

4,117,835

METHOD AND APPARATUS FOR BLOOD PRESSURE MEASUREMENTS

William J. Williams, Ann Arbor, Mich., assignor to Weisman & Allen, Madison Heights, Mich.

Filed Dec. 8, 1976, Ser. No. 748,528
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—2.05 M **21 Claims**



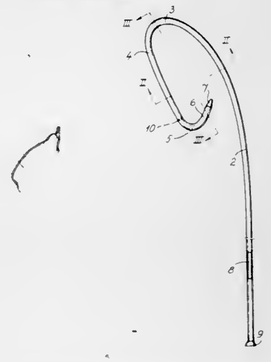
1. A method of determining the systolic and diastolic blood pressure of a subject, including the steps of: applying a deformable fluid pressure enclosure to an extremity of the subject; varying the pressure in said deformable fluid pressure enclosure between a maximum pressure value corresponding to that required to completely occlude the blood pressure vessels of the subject in the extremity to which the fluid pressure enclosure is applied and a minimum pressure value less than that at which significant occlusion of the blood vessels occurs; monitoring the pressure existing in said deformable fluid pressure enclosure over the cycle between said maximum pressure and said minimum pressure and generating signals corresponding thereto; storing said signals in a signal memory; monitoring the rate of change of pressure in said deformable fluid pressure enclosure over said cycle and generating signals corresponding thereto; detecting the onset of precipitous increase and decrease in said rate of pressure change signals during said variation in pressure; determining systolic and diastolic pressure from said detecting step, including the step of ascertaining the respective pressure signals existing at said onset of precipitous increase and decrease respectively of rate of pressure change signals; whereby said systolic and diastolic pressure may be obtained.

4,117,836

CATHETER FOR SELECTIVE CORONARY ARTERIOGRAPHY OF THE LEFT CORONARY ARTERY

Uno Eugen Erikson, Uppsala, Sweden, assignor to Siemens-Elema AB, Solna, Sweden

Filed Jun. 23, 1976, Ser. No. 698,997
Claims priority, application Sweden, Jun. 23, 1975, 7507201
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—2.05 R **4 Claims**



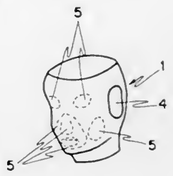
1. A catheter for selective coronary arteriography of the left coronary artery, which catheter comprises an elongated, tubular member having an interior channel therein extending the length of said catheter, said catheter having a main part and an end section which latter comprises by turn from the main part a slightly curved part, a first short strongly curved part, a straight part, a second short strongly curved part and a short end part which is shaped to end in a taper, which catheter is characterized by being provided with a single perforation just means opening into the tubular channel in said straight part at the end thereof before the beginning of the second strongly curved part and on the side of the catheter which is facing the onlooker when the catheter is placed with the curvatures clockwise from the main part.

4,117,837

MONOPIECE FACE MASK FOR BEAUTY TREATMENT

Jose Maria Masso Remiro, Barcelona, Spain, assignor to Turbo, S.A., Barcelona, Spain

Filed May 9, 1977, Ser. No. 795,184
Claims priority, application Spain, May 26, 1976, 221.224[U]
Int. Cl.[2] A61F *5/08*
U.S. Cl. 128—76 B **1 Claim**



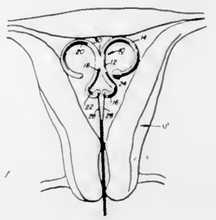
1. Monopiece face mask for beauty treatment, essentially characterized in that it comprises a sheet, stretchable in all directions and impermeable, which is shaped according to the head of a human being and which covers said head up to the neck with the exception of the cranial cavity, said sheet being provided with two openings for the ears and having superficially a series of markings defining zones which can be cut out so that the elastic action of the mask is directed to specific regions of the skin.

4,117,838

INTRAUTERINE CONTRACEPTIVE DEVICE

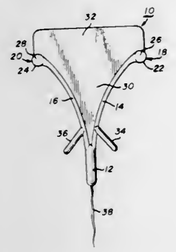
Harrith M. Hasson, 345 Fullerton Pkway., Chicago, Ill. 60614

Continuation-in-part of Ser. No. 719,959, Sep. 2, 1976, abandoned. This application Mar. 14, 1977, Ser. No. 777,076
Int. Cl.[2] A61F *5/46*
U.S. Cl. 128—130 **17 Claims**



1. An intrauterine contraceptive device which comprises: a member adapted for insertion in the uterus formed of flexible material and having a central portion; a first upper arm extending outwardly and around from said central portion and back toward said central portion to form a first loop; a second arm extending downwardly from said central portion, then outwardly and inwardly to form a retaining member; and a third upper arm extending outwardly and around from said central portion and back toward said central portion in a direction opposite from said first arm to form another loop, the distal ends of said first and third upper arms being substantially non-overlapping with respect to said central portion to prevent the formation of a spiral under normal compression which may cause said distal ends to extend out of the main plane of the member, said second arm defining a hinge portion; a filament connected to said second arm, said hinge and filament cooperating to permit said second arm to be straightened easily when the filament is pulled downwardly.

4,117,839
INTRAUTERINE DEVICE
John McLean Morris, Cedar Rd., Woodbridge, Conn. 06525
Division of Ser. No. 549,584, Feb. 13, 1975, Pat. No. 4,038,978.
This application May 16, 1977, Ser. No. 797,369
Int. Cl.[2] A61F *5/46*
U.S. Cl. 128—130 5 Claims



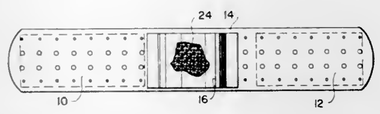
1. An intrauterine device comprising a resilient Y- or V-shaped member, said resilient member having two arms gradually and continuously diverging upwardly and outwardly from the intersection thereof adjacent the base portion of said resilient member; said arms being sufficiently resilient so said arms can be urged together during positioning of said intrauterine device in an inserter for inserting said intrauterine device into a uterus; a unitary flexible membrane extending between said arms, said membrane covering the entire area between said arms and extending above an imaginary line passing through the end of said arms a dimension sufficient to contact the fundus of a uterus, the extending portion of said membrane terminating in a substantially linear edge and covering a substantially rectangular area defined by said end portions and said substantially linear edge and a flexible string attached to said intersection, said string being adapted to extend outwardly through the cervix when said intrauterine device is in position within the uterus.

4,117,840
PEDIATRIC RESTRAINT GARMENT
Rebecca Ann Rasure, Rte. No. 5 Cedar La., Rome, Ga. 30161
Filed Mar. 22, 1977, Ser. No. 779,982
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—134 8 Claims



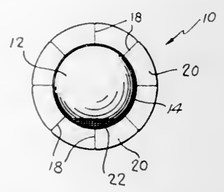
1. A restraint garment for at least partially inhibiting the movements of a person on a supporting structure, comprising:
a flexible panel member having anterior and posterior portions, the panel member having an opening formed centrally therein between said anterior and posterior portions, the opening receiving the head and neck of a user, the anterior and posterior portions of the panel member respectively fitting over and generally loosely conforming to the frontal surfaces and rear surfaces of the upper torso of said user;
flap-like wing members extending laterally from each side of the posterior portion of the panel member;
contact fastening means disposed on inner surfaces of the wing members and on outer surfaces of the lower portions of the anterior portion of the panel member, the fastening means mating and connecting together on folding of the wing members over and into engagement with the lower portions of the anterior portion of the panel member, thereby to secure the panel member about the upper torso of the user;
shoulder belt means connected to the panel member near the opening and extending longitudinally of the body of the user to connection with the supporting structure; and,
waist belt means connected to the panel member at lower portions of the posterior portion of the panel member and extending transversely of the body of the user to connection with the supporting structure.

4,117,841
MEDICATED BANDAGE POCKET
Anthony Perrotta, and Charles Rollo, both of Box 81 Kensington Sta., Brooklyn, N.Y. 11218
Filed Feb. 7, 1977, Ser. No. 766,244
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—155 6 Claims



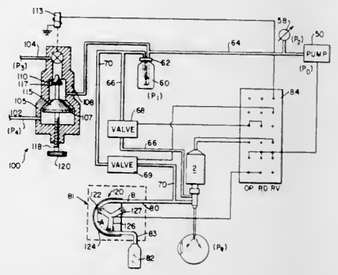
1. A bandage adapted to releasably confine a quantity of active substance therefrom, comprising at least one adhesively coated bandage strip having two opposing surfaces, said adhesive being on one surface thereof, at least one partially rigid pointed member disposed on a portion of said one surface and facing downward away therefrom, a liquid impermeable sheet communicating with said one surface at opposing ends thereof and being spaced apart therebetween forming a cavity exposing said pointed members, said liquid impermeable sheet extending partially over said one surface of said adhesively coated strip, a quantity of liquid or gell active substance disposed in said cavity and adapted to be released therefrom by forcibly puncturing said liquid impermeable sheet.

4,117,842
TREATMENT OF CONJUNCTIVITIS WITH POWDERED ALUMINUM AND EYE PROTECTOR/APPLICATOR
Frank Hutchins, P.O. Box 9035, 67 Pinedale Rd., Asheville, N.C. 28805
Filed Feb. 24, 1977, Ser. No. 771,645
Int. Cl.[2] A61F *13/12*
U.S. Cl. 128—163 35 Claims



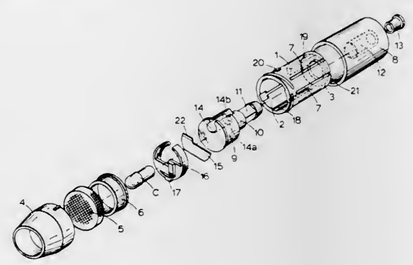
1. A process for administering powdered aluminum to a diseased eye of an animal afflicted with conjunctivitis, which comprises spraying the powdered aluminum on the inner surface of an eye protector and mounting said eye protector to cover without contacting the afflicted eye.

4,117,843
SURGICAL OPERATING SYSTEM WITH UPPER PRESSURE LIMIT
Anton Banko, Bronx, N.Y., assignor to Surgical Design Corp., Long Island City, N.Y.
Filed May 12, 1977, Ser. No. 796,361
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—230 11 Claims



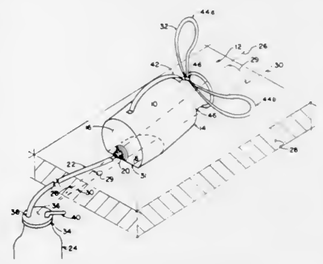
1. A surgical system comprising:
first means including a passage for removing material from an operating site,
second means for infusing a fluid into said operating site,
third means coupled to said second means for infusing a fluid through said passage of said first means in a direction opposite to that of the flow of material being removed from the operating site,
said second means including first control means responsive to the operation of the first means for establishing the pressure of the fluid infused into the operating site at a first predetermined pressure when said first means is operating to remove material from the operating site and responsive to the operation of the third means for establishing the pressure of the fluid infused into the operating site by said third means at a second predetermined pressure which is greater than said first predetermined pressure.

4,117,844
DEVICE FOR DISPENSING MEDICAMENTS
Michael James, Welwyn Garden City, England, assignor to Allen & Hanburys Limited, London, England
Filed Feb. 10, 1977, Ser. No. 767,512
Claims priority, application United Kingdom, Feb. 11, 1976, 5353/76
Int. Cl.[2] A61M *15/00*
U.S. Cl. 128—266 8 Claims



1. An inhalation device for administering to a patient medicaments contained in a capsule, said device comprising a chamber arranged to receive a capsule containing a powdered medicament, at least one air inlet aperture leading into said chamber, a nozzle communicating with said chamber through which air can be inhaled therefrom, a magazine attached to said chamber and slidable and rotatable along and about a longitudinal axis in said chamber and having a longitudinal capsule loading receptacle transversely offset from said axis, said receptacle including means such that a capsule inserted therein will have an end portion projecting from said receptacle into said chamber, a knive coupled to and located in said chamber adjacent said receptacle and having a cutting edge movable across a path intercepting the longitudinal axis of said receptacle whereby rotation of said magazine with respect of said chamber will cause said projecting portion of said capsule located in said receptacle to engage said cutting edge of said knife thereby to sever said projecting portion of said capsule from the remainder of said capsule, and capsule ejecting means mounted on and arranged inside said chamber in a position transversely offset from said longitudinal axis in said chamber and means for rotating and sliding magazine whereby it will enter said capsule loading receptacle when such receptacle has first been registered with said ejecting means by appropriate rotation of the magazine with respect to said chamber and then by sliding said magazine with respect to said chamber thereby to eject the remaining part of said capsule from said loading receptacle into said chamber so that the contents of said capsule may be inhaled through said nozzle, and means for preventing the parts of the severed capsule leaving the chamber when the patient inhales through the nozzle.

4,117,845
BED URINAL APPARATUS
Esther S. Brown, 2000 S. 21st St. East, Salt Lake City, Utah 84108
Filed Sep. 13, 1976, Ser. No. 722,730
Int. Cl.[2] A61F *5/44*
U.S. Cl. 128—295 5 Claims



1. Apparatus for continuously collecting urine from bedridden male patients, comprising:
an enclosed vessel shaped and dimensioned for placement between the legs of the patient, said vessel having:
a substantial liquid capacity,
a mouth for receiving the urine of said patient and positioned with respect to said vessel to form a shoulder inhibiting the flow of liquid out from said vessel when said vessel is placed between the legs of said patient, said mouth being smaller in crosssection than said vessel and substantially larger in cross-section than the penis of a male patient,
an outlet adapted for connection to a drain tube, said outlet being formed in said vessel near the natural collection point of liquids when said vessel is positioned between the legs of said patient,
an axis and a base, said base being a substantially flat surface which is oblique to said axis and which intersects said closed end at an angle to orient the axis and in turn the mouth upward when the vessel is placed on the

bed of a patient, said base being sized in area to stably support said vessel when both empty and full of liquids when in place on the bed of the patient between the legs of said patient and a substantial liquid capacity,

a flaring section outward of said mouth which flares outward from said mouth and said axis, and

a handle secured to said vessel;

attachment means for securing said vessel to said patient with said mouth positioned to receive the penis of said patient and with said vessel oriented upward from said bed to place said outlet at about said natural collection point of liquids, said attachment means being comprised of straps of sufficient length to be led over the thighs and around the patient at about his hips and means to secure said straps directly to said enclosed vessel and to each other at their distal ends, and wherein said straps are tensionally secured to said patient to orient said base of the vessel upward from the plane of the mattress of said bed at an angle from about one degree to about two degrees;

an enclosed collection vessel having a vent and positioned below said enclosed vessel to receive urine; and

a tube to interconnect said enclosed collection vessel and said outlet and positioned to permit gravitational flow therebetween.

4,117,846

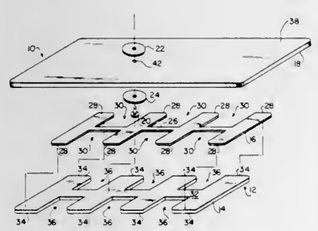
SKIN CONDUCTING ELECTRODE AND ELECTRODE ASSEMBLY

Frank R. Williams, Utica, N.Y., assignor to Consolidated Medical Equipment, Utica, N.Y.

Continuation of Ser. No. 684,317, May 7, 1976, abandoned. This application Jul. 19, 1977, Ser. No. 816,952

Int. Cl.[2] A61N *3/06*

U.S. Cl. 128—303.13 **5 Claims**



1. A skin conducting electrode assembly for use on a patient comprising, in combination, an electrode, said electrode comprising a thin conductive plate having a main body portion and a plurality of projections around the periphery of the main body portion to provide at least one recess in the contour thereof; means for making an electrical connection to said electrode; an adhesive pad in adhesive contact with one side of said electrode; a gel pad in contact with the other side of said electrode, said gel pad extending beyond the peripheral edges of the main body portion and the projections of the electrode, said adhesive pad extending over the at least one recess in the electrode and beyond the outer edges of the gel pad around the entire periphery thereof, the at least one recess between the projections being sufficiently large to insure that when the electrode assembly is placed in contact with a patient, the adhesive pad seals the assembly to the patient around the periphery thereof and within the at least one recess in the electrode to maintain the gel pad and electrode in firm contact with the skin and the gel pad covers the entire face and edges of the electrode to prevent direct contact of the electrode with the skin of the patient.

4,117,847

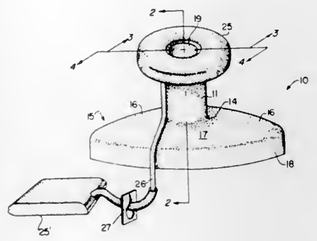
COLON CATHETER

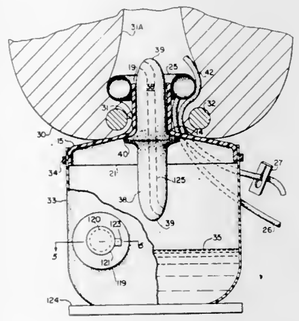
Ralph S. Clayton, 3044 Fillmore Ave., El Paso, Tex. 79930

Continuation-in-part of Ser. No. 655,444, Feb. 5, 1976, abandoned, and a continuation-in-part of Ser. No. 618,471, Oct. 1, 1975, abandoned. This application Apr. 23, 1976, Ser. No. 679,567

Int. Cl.[2] A61M *25/00*

U.S. Cl. 128—348 **53 Claims**





1. A catheter for removing solid and other waste material from the colon through the anal opening comprising:

an elongated hollow tube of solid non-inflatable construction having means defining an upper opening at an upper end of the tube and means defining a lower opening at the lower end of the tube, and including a lumen of sufficient cross-section for the passage of solid waste-colon material from the upper opening therethrough to the lower opening,

the upper part of the tube being rounded and being insertable into the anal opening,

an annular expandable member fixed to and encircling the upper part adjacent the upper opening and constructed to be expanded radially outwardly to circumferentially surround the tube adjacent the said upper opening to seal off the anal canal such that waste material can escape from the colon only through the hollow tube, and including means for directing fluid to the expandable member to expand it after it is located within the anal canal,

said catheter including a shoulder at the lower end of the upper part, at which shoulder the material of the tube flares outwardly to form a flared out part of essentially uniform thickness from said shoulder to the lower end of the flared out part which is at the lower end of the tube, such that the flared out part flares out essentially similarly both externally and internally,

said exterior of the flared out part including surface means extending at least forwardly and rearwardly to lie against the perineum fore and aft of the anal opening to limit movement of the upper part up into the anal opening,

the spacing along the exterior of the tube between the expandable member and the surface means being such that after the upper part of the tube has been inserted into the anal opening and the expandable member expanded, the anal canal is compressed vertically between the annular expandable member and the surface means to seal the anal canal externally of the tube such that waste colon material flows out only through the tube and including means at the lower end of the tube for securing a collection bag to the enlarged lower end of the flared out part for the passage of waste-colon material out of the enlarged lower end and into the collection bag.

4,117,848

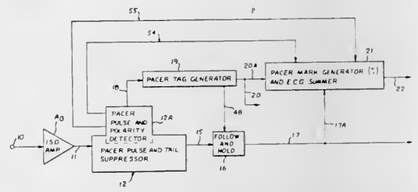
CARDIAC INSTRUMENTATION APPARATUS WITH PACER DIAGNOSTICS

Thomas Kipling Naylor, Belmont, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 1, 1977, Ser. No. 820,523

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—419 PT **8 Claims**



1. In cardiac instrumentation apparatus adapted to receive at an input thereof an ECG signal containing pacer pulses, means for processing at least either said ECG signal or said pacer pulses, and output means for the processed signal, the improvement wherein said processing means comprises:

means for detecting pacer impulses in said ECG signal and for determining the polarity of the respective said detected pacer pulses;

means responsive to said pacer pulse detecting and polarity determining means for generating respective standardized pacer pulse signals representative of the polarity of the respective said detected pacer pulses; and

means for extending said standardized pacer pulse signals to said output means.

4,117,849

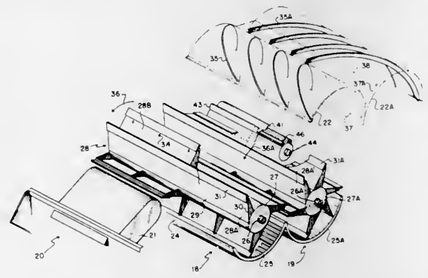
ROTARY COMBINE

Daniel Pakosh, Winnipeg, Canada, assignor to Versatile Manufacturing Ltd., Winnipeg, Canada

Filed Sep. 20, 1976, Ser. No. 724,986

Int. Cl.[2] A01F *12/18*

U.S. Cl. 130—27 Q **18 Claims**



17. A rotary combine which includes a wheel mounted supporting framework, crop pick-up means and means to connect the combine to a source of power such as a tractor or the like; said combine comprising in combination a pair of rotary impeller assemblies mounted transversely of the supporting framework, means operatively connecting said crop pick-up means to the side wall of one of said rotary impeller assemblies whereby crop enters said one rotary impeller assembly at right angles to the rotary axis of said rotary impeller assembly, crop transfer means in said one rotary impeller assembly operatively connecting said one rotary impeller assembly with the other said rotary impeller assembly through the side wall of said other rotary impeller assembly and at right angles to the rotary axis of said other rotary impeller asssembly, and discharge means in said other rotary impeller assembly whereby said crop leaves said other rotary impeller assembly at right angles to the axis of rotation of said other rotary impeller assembly, each of said rotary impeller assemblies including means to thresh said crop and separate grain therefrom, and threshing grates in the bases of said rotary impeller assemblies through which grain passes which is separated from said crop, each of said rotary impeller assemblies including a transversely extending substantially cylindrical casing, a drum journalled for rotation within each said casing, a plurality of beater blades secured to and extending substantially radially from said drum, and extending in a continuous manner from one end of said drum to the other, each beater blade lying parallel to the longitudinal axis of said drum and a plurality of spaced and parallel stationary fins secured to the upper portion of each of said casing, said fins in conjunction with said beater blades, moving said crop spirally from where said crop enters said rotary impeller assembly towards where said crop leaves said rotary impeller assembly.

4,117,850

SMOKING MIXTURES

William Malcolm Logan Wood, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 3, 1976, Ser. No. 682,788

Claims priority, application United Kingdom, May 27, 1975, 23151/75

Int. Cl.[2] A24D *1/18*

U.S. Cl. 131—2 **17 Claims**

1. A smoking material comprising smoke-producing fuel, fortifying nicotine, calcium and/or magnesium carbonate as incombustible filler, at least one water-soluble salt selected from water-soluble calcium and magnesium salts, and sodium and potassium sulphate in the case where the incombustible filler is calcium carbonate, and a phsophate buffer consisting of an acid salt of orthophosphoric acid or of a polyphosphoric acid, the amount of such phosphate buffer being sufficient to improve the nicotine stability and such that when the smoking material is slurried with water to give a 15% solution/suspension the aqueous solution has a pH between 6 and 4.

4,117,851

TOBACCO ROD FORMING APPARATUS IN CIGARETTE MAKERS

Athos Cristiani, Via Don Luigi, Sturzo 7, Bologna, Italy

Filed Oct. 6, 1976, Ser. No. 729,743

Claims priority, application Italy, Nov. 18, 1975, 12888 A/75

Int. Cl.[2] A24C *5/18*

U.S. Cl. 131—84 B **4 Claims**

1. Apparatus for forming a continuous cut tobacco braid, comprising

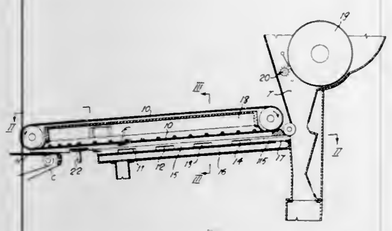
a narrow endless belt type air permeable tape having a bottom run moving at a predetermined speed in a predetermined direction;

vacuum means for creating a suction through the bottom run of said tape;

means for creating a wide shower of cut tobacco along a line transverse to the direction of movement of the bottom run of said tape;

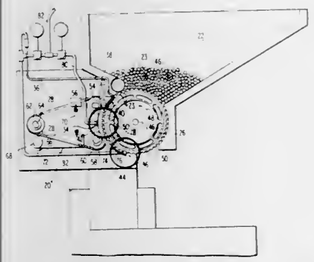
fixed channel means comprising a longitudinal channel

closed at the top by the bottom run of said tape, and a plurality of feed channels closed at the top and disposed oblique relative to said longitudinal channel;
all of said channels having inlet ends disposed in an orderly series along the width of and communicating with said shower to receive cut tobacco;



said feed channels having outlet ends spaced longitudinally along and communicating with said longitudinal channel;
and means for creating air flow in said channel means moving cut tobacco received from said shower at a speed and direction concordant with the speed and direction of said tape when received thereby.

4,117,852
METHOD AND APPARATUS FOR RECLAIMING TOBACCO FROM CIGARETTES
Thomas A. Newman, Midlothian, and Erich O. Kettner, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Aug. 31, 1976, Ser. No. 719,473
Int. Cl.[2] A24C *5/36*
U.S. Cl. 131—96 **11 Claims**



1. An apparatus for reclaiming tobacco from cigarettes comprising:
(a) a structural frame;
(b) a hopper carried by said frame for temporarily storing a supply of cigarettes;
(c) conveying means connected to said frame for conveying said cigarettes consecutively from said hopper to points of treatment to remove the tobacco from its surrounding paper tube of each cigarette;
(d) intermediate air jetting means connected to said frame at an intermediate station for introducing a jet of air into a receiving end of each cigarette as the cigarette is conveyed past said intermediate station by said conveying means, a sufficient pressure differential being developed across the length of the cigarette to eject the tobacco from the surrounding paper tube thereof, said air jetting means being comprised of a sealing plate, an air passage disposed in said sealing plate and supplied with air under pressure, and a jetting orifice terminating said passage;
(e) pneumatic positioning means connected to said frame at a first station for consecutively positioning the cigarettes relative to said conveying means to assure direct proximity of said receiving end of each cigarette to said intermediate air jetting means so that the tobacco is ejected from the surrounding paper tube of the cigarette;
(f) sealing means connected to said frame for effecting an essentially hermetic seal between said intermediate air jetting means and said receiving end of each cigarette as the cigarette is conveyed past said air jetting means, said sealing means being comprised of an inclined surface of said sealing plate, against which each cigarette is progressively more firmly pressed as the cigarette is conveyed by said conveying means, said inclined surface surrounding said jetting orifice; and
(g) recovering means connected to said frame for collecting the tobacco ejected from the surrounding paper tubes of the cigarettes.

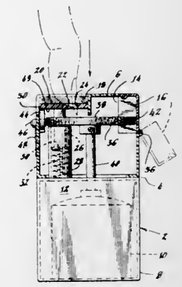
4,117,853
FILM-FORMING VINYL ACETATE COPOLYMERIZATES IN AN IMPROVED PROCESS FOR SETTING HAIR AND AS HAIR SETTING AGENTS
Günter Reese, Dusseldorf; Hermann Kroke, Erkrath-Unterbach, and Fanny Scheuermann, Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 627,102, Oct. 30, 1975, abandoned. This application Sep. 14, 1977, Ser. No. 833,142
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1974, 2453629
Int. Cl.[2] A45D *7/00*; A61K *7/11*
U.S. Cl. 132—7 **15 Claims**

10. In the process of setting hair comprising arranging the hair in the desired configuration and applying a thin film of a film-forming substance on the so-arranged hair, the improvement consisting of utilizing, as said film-forming substance, a film-forming vinyl acetate copolymerizate having a K-value of from 20 to 70, of monomer units consisting of
(a) from 65% to 80% by weight of vinyl acetate units,
(b) from 10% of 20% by weight of units of a maleic acid diester with straight-chained primary alcohols selected from the group consisting of n-octanol-1, n-decanol-1 and mixtures thereof,
(c) from 5% to 20% by weight of units of a mono-olefinically unsaturated ester copolymerizable with vinyl acetate and having from 6 to 8 carbon atoms and a hydrophilic group selected from the group consisting of carboxyl groups, hydroxyl groups and keto groups, and
(d) from 3% to 10% by weight of crotonic acid units, and the salts thereof, in the form wherein at least 50% of the acid groups therein are neutralized.

4,117,854
ELECTRIC MANICURE
William J. Rosenbloom, 8 Pioneer Rd., Westport, Conn. 06880
Filed Feb. 10, 1977, Ser. No. 776,295
Int. Cl.[2] A45D *29/05*
U.S. Cl. 132—75.8 **7 Claims**

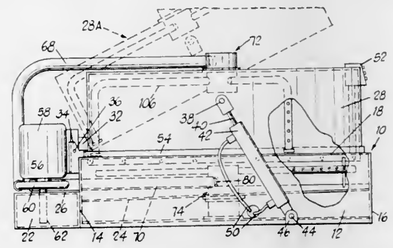
1. An electric manicuring device for automatically trimming the fingernails to a predetermined desired length without abrading the fingertips comprising a housing, grinding means located within the housing for grinding fingernails for trimming, the grinding means presenting a substantially flat face to and being movably powered for motion relative to a fingernail placed in contact therewith for grinding the fingernail, electric motor means located within the housing for powering the grinding means, touch-plate means for receiving the finger having the fingernail to be trimmed, the touch-plate means forming part of the housing and being positioned adjacent to but spaced from the grinding means, the touch-plate means having an opening therein providing communication with the grinding means for inserting the fingernail, the touch-plate means being yieldingly mounted on biasing means for biasing

the touch-plate away from the grinding means, the biasing means being such that it yields under pressure of the finger to permit the touch-plate means to advance toward the grinding means to enable contact between the face of the grinding means and the fingernail to be trimmed, the touch-plate means



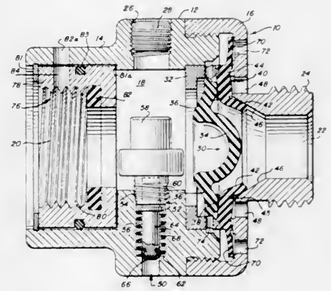
and grinding means being adjustably spaced from one another, means for controllably varying the spacing between the touch-plate means and the grinding means after advance of the touch-plate means under pressure of the finger and setting the spacing to a preselected value determining the length of the fingernail after grinding by the grinding means.

4,117,855
WASHING MACHINE FOR INDUSTRIAL PARTS
Richard J. Olcott, 329 Grand St., Allegan, Mich. 49010, and Ronald H. Cross, 7622 Sprinkle Rd., Kalamazoo, Mich. 49001
Filed May 11, 1977, Ser. No. 795,809
Int. Cl.[2] B08B *3/02*
U.S. Cl. 134—141 **10 Claims**



1. An industrial washing machine for machines and machine parts comprising:
an upright base having a top wall defining a central opening,
a tank associated with said base and located below the top thereof,
a collector plate mounted within said base intermediate of the height thereof below said central opening and inclined toward said tank,
a work supporting grid supported in said base adjacent the plane of said central opening,
a downwardly opening concave hood movably supported on said top wall and covering said central opening and having a top wall spaced above the top wall of the base,
said hood and said base forming a washing chamber above said collector plate when said hood is losed on said base,
power driven means connected to raise said hood to open position above said base and said grid,
liquid delivery couplings mounted centrally of said collector plate and the top of said hood and projecting in sealed relation thereto into said washing chamber,
receiving rings rotatably mounted on said delivery couplings interiorly of said washing chamber and arranged to receive liquid from said couplings,
spray pipes connected to said receiving rings and rotatable therewith in radially extending position therefrom and in liquid communicating relation therewith,
jet openings formed in said spray pipes directed inwardly of said washing chamber and at angles to planes through the axes of the rings to rotate the pipes and rings about said couplings,
a pump and driving motor therefor arranged to draw liquid from the tank,
conduits connected between the outlet of said pump and said liquid delivery couplings exteriorly of said washing chamber,
the conduit connected to the delivery coupling on the hood being flexible,
and means forming a drain connection from a low point on said collector plate to said tank.

4,117,856
FROSTPROOF BACKFLOW PREVENTER
Donald E. Carlson, Highland Park, Ill., assignor to Mark Controls Corporation, Lake Zurich, Ill.
Filed Sep. 27, 1976, Ser. No. 726,777
Int. Cl.[2] F16K *24/00*
U.S. Cl. 137—62 **12 Claims**



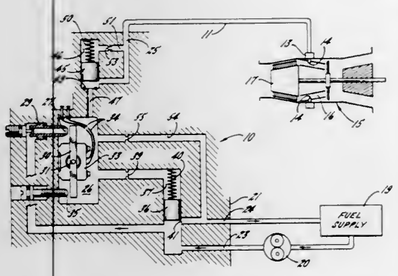
1. A backflow preventer comprising in combination:
a housing defining an inlet and an outlet and a chamber between said inlet and said outlet;
pressure operated valve means mounted within said housing between said chamber and said outlet for preventing flow from said chamber to said outlet when inlet pressure does not exceed outlet pressure;
a plurality of drain passage means extending from said chamber to the exterior of said housing;
check valve means for closing said drain passage means when pressure within said chamber exceeds pressure exterior of said housing; a relief port in said housing for establishing communication between said chamber and atmosphere, relief valve means closing said port when ambient temperature is above a predetermined condition, and temperature responsive means for opening said relief valve means to vent said chamber to atmosphere in response to ambient temperature reaching said predetermined temperature condition, said check valve means opening at least some of said drain passage means in response to venting of said chamber to atmosphere, whereby fluid within said chamber may flow outwardly therefrom through said opened drain passage means.

4,117,857

FUEL CONTROL SYSTEM FOR A PRIME MOVER

Garin M. Van De Mark, Fort Collins, Colo., assignor to Woodward Governor Company, Rockford, Ill.

Filed Dec. 22, 1976, Ser. No. 753,262
Int. Cl.[2] F02C *9/10*; G05D *11/00*
U.S. Cl. 137—117 **4 Claims**



1. A system for supplying fuel to a prime mover, said system comprising a chamber having an inlet and an outlet, said outlet being connected to communicate with said prime mover, means for delivering pressurized fuel into said chamber through said inlet, means for maintaining a substantially constant pressure drop across said inlet when fuel is flowing into said inlet and out of said outlet, a flapper valve supported to pivot within said chamber, means for moving said flapper valve between different positions in which said flapper valve changes the effective area of said inlet thereby to vary the rate of fuel flow into said chamber, the effective area of said inlet varying as a substantially linear function of the position of said flapper valve, a valve member, means biasing said valve member toward a position closing said outlet, a resiliently yieldable seal, said seal being compressed when said valve member is in a position closing said outlet and serving to prevent the flow of fuel from said chamber through said outlet, said valve member being exposed to the pressure in said chamber with said pressure being effective to overcome said biasing means and to hold said valve member in a position opening said outlet as long as said pressure equals or exceeds a predetermined value, and a passage leading from said chamber for bleeding fuel out of said chamber and effective to cause the pressure in said chamber to fall below said predetermined value when said flapper valve is positioned to reduce the fuel flow through said inlet below a predetermined rate whereby said biasing means shift said valve member to a position closing said outlet and compressing said seal to cut off all flow of fuel to said prime mover.

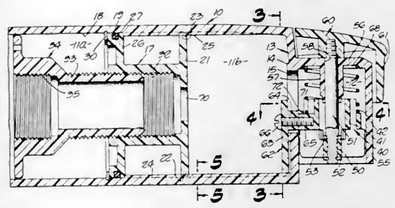
4,117,858

FLAPPER TYPE SPOUT ASSEMBLY

Ernest H. Bucknell, Los Angeles, and Jack K. Rauh, Hacienda Heights, both of Calif., assignors to TRE Corporation, Beverly Hills, Calif.

Filed Oct. 28, 1971, Ser. No. 193,399
The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.
Int. Cl.[2] F16K *31/44*
U.S. Cl. 137—119 **5 Claims**

1. A diverter spout assembly comprising
plastic body means including an inlet fluid chamber and an outlet fluid chamber separated by an intermediate partition means having an aperture therein through which fluid may flow from said inlet chamber to said outlet chamber and having an upstream face,
reciprocal means including a plunger with a plurality of fluid directing vanes forming a nozzle mounted for movement in said outlet chamber, and
plastic flapper means disposed in said inlet chamber for selectively enabling blocking of said aperture in said partition means, said flapper means including a body portion within said inlet chamber and disposed to cooperate with the upstream face of said partition means at said aperture therein, and including a connector extending through said



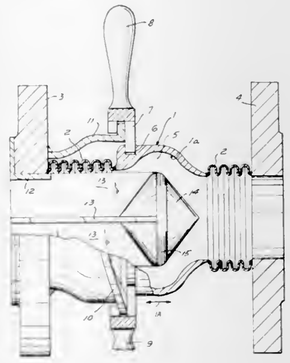
aperture and secured to said reciprocal means for enabling selective positioning of said flapper means by said reciprocal means for either allowing fluid to flow through said aperture to said outlet chamber or for blocking fluid flow through said aperture.

4,117,859

VALVE

Alois Illy, Limburgerhof, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 1, 1977, Ser. No. 783,651
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1976, 2615236
Int. Cl.[2] F16K *31/122, 31/524*
U.S. Cl. 137—219 **1 Claim**



1. A valve comprising a body including deformable first and second tubular sections; a valve element disposed in the interior of and spaced apart from said body so that said body and said element define an annular passage for the flow of fluid; and an annular valve seat disposed between and sealingly secured to said tubular sections, said seat being movable axially of said passage with attendant deformation of said sections and relative to said element to thereby change the effective cross-sectional area of said passage; means for moving said seat relative to said valve element, said moving means comprising a helical cam located outside of said body, a follower coupled to said seat and arranged to track said cam, means for moving said follower relative to said cam, said seat having an external circumferential groove and said follower having a portion extending into said groove, and said helical cam, said groove and said follower being positioned so that the said deformable first and second tubular sections are permitted to shift due to conditions other than the operation of the valve, such as temperature change, without affecting operation of the valve and

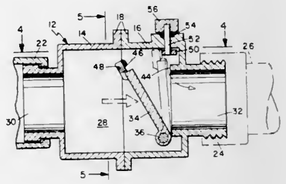
the selected axial position of the seat since the follower will be biased against the helical cam at the same time and the angular position of the follower will not change.

4,117,860

PRESSURE DIFFERENTIAL FLOW RETARDANT VALVE

Jack M. Carlin, R.F.D. Box 135, Del Mar, Calif. 92014

Filed Apr. 8, 1977, Ser. No. 784,962
Int. Cl.[2] F16K *15/03*
U.S. Cl. 137—513.5 **9 Claims**



1. A pressure differential flow retarding valve comprising:
(a) a casing defining a water chamber having an inlet and an outlet;
(b) gate means in said casing movable from a first position substantially seated against said outlet to a second position clear of said outlet and substantially clear of a fluid flow path defined between said inlet and outlet;
(c) means biasing said gate means from said first position to said second position;
(d) bypass means defining a restricted passageway communicating between said inlet and said outlet bypassing said gate means;
(e) a detent which is releasible by the action of an inflow of fluid through said inlet for positioning said gate means in the fluid path between said inlet and outlet, whereby upon the inlet of said valve being connected to a source of high pressure and the outlet being connected to an initially evacuated hose, the pressure differential across said chamber will ensure that said gate means is in said first position and maintain same in said first position until fluid flow through said communication passageway fills said hose and abates said pressure differential, whereupon said gate means moves to said second position under action of said bias means to open said valve.

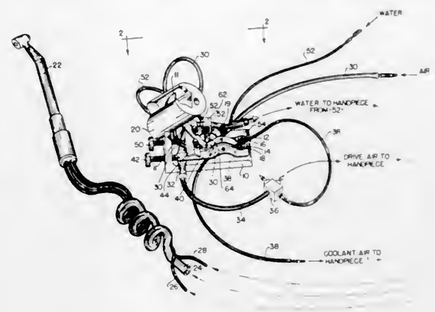
4,117,861

CONTROL AND SELECTOR UNIT FOR DENTAL HANDPIECES

Frank A. Betush, Santa Monica, Calif., assignor to Progressive Machine Products, Inc., Los Angeles, Calif.

Filed Apr. 28, 1977, Ser. No. 791,711
Int. Cl.[2] F16K *7/07*
U.S. Cl. 137—595 **7 Claims**

1. A control unit for controlling the flow of a pressurized fluid comprising: a base; a first resilient strip having one end affixed to said base and having a free end displaced from said base; an actuator mounted on the free end of said first resilient strip in position to move the free end of said first resilient strip between a first position and a second position; a first flexible tube for supplying pressurized fluid from a source to a utilization means positioned to be engaged by a portion of said first resilient strip to be pinched thereby to a closed condition when the free end of said first resilient strip is moved from said first position towards said second position; a second resilient strip mounted on said base adjacent to said first resilient strip and having one end affixed to said base and a free end displaced from said base; coupling means extending between the first and second resilient strips to cause the second resilient strip to be maintained in a second position when the first resilient strip is in its second position; and a second flexible tube for supplying pressurized fluid to the utilization means positioned to be engaged by a portion of said second strip to be pinched thereby



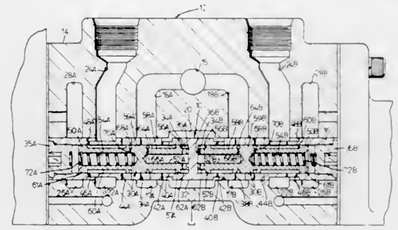
to a closed condition when said second strip is in its second position.

4,117,862

PRESSURE COMPENSATED CONTROL VALVE

Azam S. Qureshi, Racine, Wis., assignor to Tomco, Inc., Racine, Wis.

Filed Feb. 7, 1977, Ser. No. 765,877
Int. Cl.[2] F15B *13/04*
U.S. Cl. 137—596.13 **5 Claims**



1. A pressure compensating hydraulic flow control valve spool assembly for a hydraulic valve having a housing including a main bore, a fluid inlet passage, a tank passage,
a pair of cylinder passages and a pair of exhaust passages connected to said main bore, said valve spool assembly comprising a symmetrical valve spool slidably positioned in said main bore for movement in either direction from a neutral position to operative positions,
and valve means mounted within said spool for providing a pressure controlled flow of fluid between said fluid inlet passage and said tank passage when said spool is in the neutral position, said valve means controlling the flow rate between the fluid inlet passage and one of the cylinder passages when the spool is moved to one of the operative positions.

4,117,863

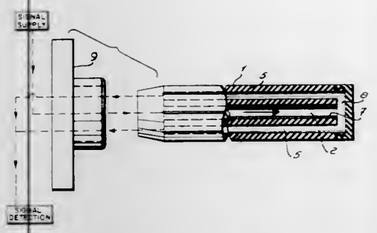
CONTROL DEVICE FOR OPERATION BY THE MOUTH OF A HANDICAPPED PERSON

Jean-Claude Gabus, Hauterive, Switzerland, assignor to Carba S.A., Berne, Switzerland

Filed Mar. 4, 1977, Ser. No. 774,498
Claims priority, application Switzerland, Mar. 26, 1976, 3804/76
Int. Cl.[2] B60K *26/00*; F16K *31/04*
U.S. Cl. 137—601 **4 Claims**

1. A selective signalling device for manipulation by the mouth of a handicapped person, said device comprising an

elongated member of resiliently deformable material having an elongated central passage which is non-deformable and at least one radially outer passage which is deformable under the selective squeezing pressure of the mouth of a user, said passages opening through said member at one end, the other end of said member being closed, the ends of said passages which are proximate to said closed end of said member communicating with each other at said closed end of said member, and means for delivering a continuous signal into said central passage from said one end of said member and for measuring the intensity of a return signal from said one end of said at least one radially outer passage, whereby selective deformation of said at least one radially outer passage under the pressure of the mouth of a user restricts said outer passage to change said return signal.

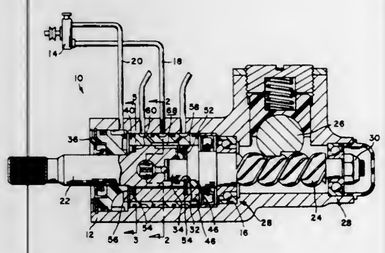


4,117,864

POWER STEERING CONTROL VALVE

Alistair Gordon Taig, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 15, 1977, Ser. No. 833,530
Int. Cl.[2] F15B *9/08*
U.S. Cl. 137—625.23 **14 Claims**



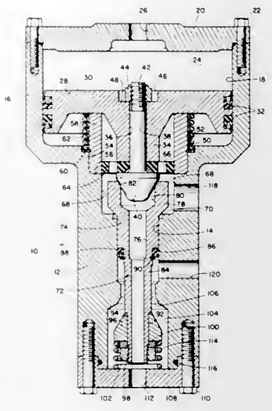
1. A control device comprising:
a housing having a bore therein;
a valve sleeve rotationally disposed within said housing bore and including a bore therethrough;
a rotatable input member extending into said valve sleeve bore;
a rotatable output member extending into said valve sleeve bore and opposing said rotatable input member; and
at least one projection disposed between said valve sleeve and said rotatble input and output members, said projection limiting the rotation between said valve sleeve and said rotatable input member and between said valve sleeve and said rotatable output member.

4,117,865

AIR OVER OIL HIGH PRESSURE MODULATING VALVE

Earl A. Beck, 1762 South Erie Pl., Tulsa, Okla. 74112

Filed Nov. 5, 1976, Ser. No. 739,069
Int. Cl.[2] F16K *11/14;* **F15B** *0/42*
U.S. Cl. 137—627.5 **6 Claims**



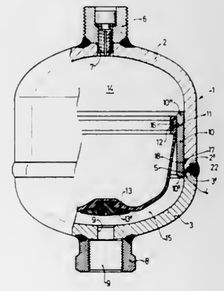
1. An air over oil high pressure modulating valve comprising housing means having a pneumatic pressure chamber in communication with a longitudinally extending bore, piston means slidably disposed within said chamber, first poppet valve means carried by the piston means and extending into the bore, second poppet valve means slidably disposed within the bore and engageable by said first poppet valve means, valve seat means provided on said second poppet valve means for providing alternate closed and open positions for the first poppet valve means, vent port means provided in the housing in the proximity of the first poppet valve means for venting fluid pressure during opening and closing of said first poppet valve means, valve seat means provided on the inner periphery of the bore for providing alternate open and closed positions for the second poppet valve means, fluid passageway means extending through said second poppet valve means, pneumatic pressure inlet port means provided in communication with said chamber for applying pneumatic pilot pressure to one side of the piston means for selectively controlling the movement thereof within said chamber, hydraulic fluid inlet port means provided in said housing means and in communication with the bore, hydraulic fluid return port means provided in said housing means in communication with the bore for recirculation of hydraulic fluid through the housing, fluid trapping sealing means carried by the second poppet valve means and in sealing engagement with the bore and interposed between the hydraulic fluid input port means and hydraulic fluid outlet port means, hydraulic fluid outlet port means for controlled discharge of hydraulic fluid, said piston means being responsive to the pilot pressure and to pressure differentials acting thereon for closing the first poppet valve in one position of the piston and to preclude return of fluid pressure through the fluid pressure return outlet and for closing the first poppet valve means and simultaneously opening the second poppet valve means in another position of the piston means for providing said controlled discharge of hydraulic fluid through the outlet port means and for simultaneously closing both the first and second poppet valve means in another position of the piston means for trapping controlled hydraulic fluid pressure at the discharge port means, said fluid trapping sealing means cooperating with the trapped fluid pressure for increasing the sealing efficiency of the second poppet valve means in the closed position thereof, and wherein said fluid trapping sealing means comprises an outwardly extending annular shoulder provided on the outer periphery of the second poppet valve means and interposed between the hydraulic fluid inlet port means and hydraulic fluid return port means, and an annular seal being disposed around the outer periphery of the second poppet valve means and in engagement with the shoulder whereby one face of the seal ring is open at the hydraulic pressure surrounding the poppet valve in the proximity thereof.

4,117,866

HOLLOW BODY AND METHOD OF MAKING THE SAME

Gerhard Böhm, Eibenweg 15, 7016 Gerlingen, and Rolf Mayer, Kastanienstr. 27, Winnenden-Schelmenholz, both of Germany

Continuation of Ser. No. 517,827, Oct. 24, 1974, abandoned. This application Jun. 1, 1976, Ser. No. 691,411
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1973, 2356796
Int. Cl.[2] F16L *55/04*
U.S. Cl. 138—30 **1 Claim**



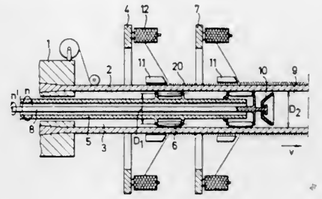
1. A hollow body, especially a pressure vessel, comprising, in combination, two hollow outer parts having annular end faces juxtaposed with one another; an inner tubular part extending to opposite sides of said end faces of said outer parts and having an outer surface closely adjacent to inner surfaces of said outer parts to align the latter with each other; means for fluid-tightly connecting said outer parts with each other including a substantially V-shaped groove formed by said end faces of said outer parts and ending at its apex short of the inner surface of said outer parts, and a fluid-tight weld seam filling said V-shaped groove and connecting said outer parts to each other; means for fluid-tightly connecting said inner tubular part with one of said outer parts including an annular groove provided at the inner surface of one of said outer parts, and a fusible material located in said annular groove between the outer surface of said inner tubular part and the inner surface of said one outer part and forming, after being melted and hardened, a further annular fluid-tight seam for connecting said inner tubular part to said one outer part, said fusible material being different from and of a lower melting point than the material of said weld seam, said annular groove and said fusible material being adjacent to and spaced from said weld seam at a distance sufficient for heat, applied during forming said weld seam, to penetrate into said fusible material so as to melt the same for forming said further seam; and an elastic separating membrane; means connecting said elastic separating membrane to said inner part to separate the interior of the hollow body into two chambers; and means for preventing the fusible material from penetrating to said weld seam during melting said fusible material which fusible material can otherwise detrimentally affect said weld seam, said preventing means including an annular projection provided at the end face of one of said outer parts and extending beyond the apex of said V-shaped groove, and a groove provided at the end face of the other outer part and receiving said projection therein.

4,117,867

HIGH PRESSURE HOSE COMPOSED OF ELASTOMERS AND EMBEDDED REINFORCEMENTS

Karl-Heinz Pahl, Dusseldorf-Lohausen, Fed. Rep. of Germany, assignor to Pahl'sche Gummi-und Asbest-Gesellchaft PAGUAG, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 492,558, Jul. 29, 1974, abandoned. This application Jun. 22, 1976, Ser. No. 698,564
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1973, 2338948
Int. Cl.[2] F16L *11/00*
U.S. Cl. 138—119 **7 Claims**



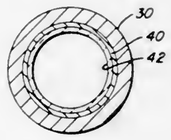
1. A high pressure hose for use in conveying fluids therein when said hose is under high hydrostatic pressure imposed by a body of water thereabove, said hose made of an elastomeric material and having reinforcing inserts therein, said hose having an inside diameter greater than 300 mm and a jointless length of at least 100 meters.

4,117,868

REFRACTORY LINED CYLINDRICAL ARTICLE

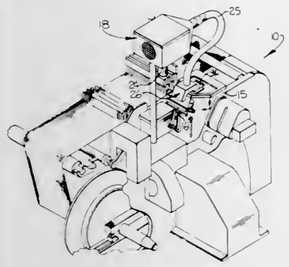
Arthur J. Pignocco, Franklin Township, Westmoreland County, and Robert H. Kachik, Washington Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 549,630, Feb. 13, 1975, Pat. No. 4,048,352, which is a continuation-in-part of Ser. No. 332,972, Feb. 15, 1973, abandoned. This application May 2, 1977, Ser. No. 793,021
Int. Cl.[2] F16L *9/14*
U.S. Cl. 138—146 **5 Claims**



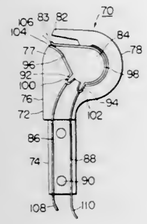
1. A refractory-lined cylinder comprising;
a metal outer shell,
a lining deposited in said shell consisting essentially of the reaction product of an exothermic reaction mixture comprising a powdered fuel metal and a reducible metal oxide, said lining consisting of a first layer consisting essentially of a reduced metal phase metallurgically bonded to said shell and
a second layer overlying said first layer and consisting essentially of an abrasion-resistant refractory metal oxide.

4,117,869
OIL MIST LUBRICATED TEXTILE MACHINE AND METHOD
Reginald Rushman, Lymm, England, assignor to Parks-Cramer (Great Britain) Ltd., London, England
Filed May 20, 1977, Ser. No. 798,935
Int. Cl.[2] D03J *1/00*
U.S. Cl. 139—1 R 15 Claims



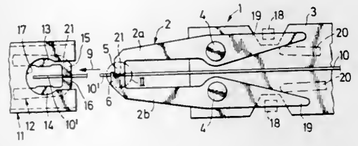
1. In a textile fabric weaving machine having weaving instrumentalities for interweaving textile strand materials into fabric, and means for lubricating the weaving instrumentalities with airborne fine particles of lubricant, the improvement comprising means mounted on said machine for inducing an airstream to flow adjacent said weaving instrumentalities and for entraining in the airstream airborne fine particles of the lubricant, and (electrostatic filter) means for removing from the airstream and collecting lubricant entrained therein including electrostatic means for precipitating the entrained fine particles of lubricant from the airstream, whereby contamination of areas ambient to the weaving machine by airborne fine particles of lubricant is controlled.

4,117,870
WEFT YARN SENSOR
Miyuki Gotoh, Tokorozawa, Japan, assignor to Nissan Motor Company, Limited, Japan
Filed Feb. 28, 1977, Ser. No. 772,565
Claims priority, application Japan, Mar. 4, 1976, 51/23455
Int. Cl.[2] D03D *51/34*
U.S. Cl. 139—370.2 9 Claims



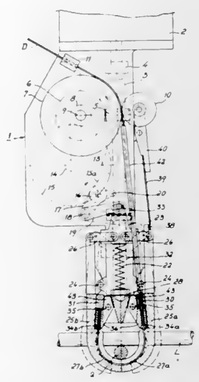
1. A weft yarn sensor for a weaving loom, comprising
a sensor body having an aperture and a gap which opens from said aperture externally of said aperture, said sensor body having in use a first position in which a weft yrn is inserted through said aperture and a second position in use in which the weft yarn located in said aperture is taken out from said aperture through said gap, and
first and second electric conductors electrically insulated from said sensor body and both secured to an internal wall surface of said sensor body which defines said aperture, said first and second electric conductors respectively having portions both located in said gap and normally engaged against each other and disengaged from each other when the weft yarn is taken out from said aperture through said gap.

4,117,871
YARN CLAMP FOR A WEAVING MACHINE
Franz Bürer, Kollbrunn, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed May 19, 1977, Ser. No. 798,352
Claims priority, application Switzerland, Jun. 3, 1976, 6993/70
Int. Cl.[2] D03J *5/06*
U.S. Cl. 139—429 8 Claims



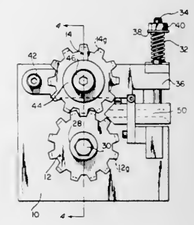
1. A yarn clamp for a weaving machine comprising
a pair of clamping jaws, each said jaw having a clamping surface opposite a clamping surface of the other jaw for registering with said opposite clamping surface to engage a yarn therebetween, at least one of said jaws being movable relative to the other of said jaws, and at least one of said jaws including a groove-like recess in said clamping surface thereof and a pair of flat portions of said clamping surface bounding said recess, said recess being disposed centrally of said one jaw and extending longitudinally of said jaws parallel to the yarn path and over a region in which said clamping surfaces register with each other to receive a yarn in said recess.

4,117,872
BINDING TOOL
Hans Gött; Josef Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs- u. Verwertungs-GmbH., Graz, Austria
Filed May 23, 1977, Ser. No. 799,522
Claims priority, application Austria, May 25, 1976, 3830/76
Int. Cl.[2] B21F *15/04*
U.S. Cl. 140—57 6 Claims



1. A tool for binding an assembly of elements, particularly of crossed reinforcing rods, at least by one binding wire section, comprising:
a support;
means for operatively advancing the binding wire section in a guide path around the assembly, including a pair of guides mounted on said support for movement toward and away from one another between an open and a closed position thereof, and having respective guide surfaces which together confine the binding wire section to said guide path in said closed position;
means for twisting the respective end portions of the binding wire section with one another, including a twisting head accomodated between said guides for rotation relative thereto and having a pair of twisting components, each of which is located adjacent one of said guides, has a passage for receiving one of the respective binding wire end portions, and has an end which opens onto a respective guide surface of said guides, in respective initial positions of said twisting components, and in said closed position of said guides, and
means for mounting said twisting components on said twisting head for pivoting relative thereto out of said initial positions during the rotation of said twisting head, for said ends of said passages to approach one another, as the twisting of the respective end portions of the binding wire progresses.

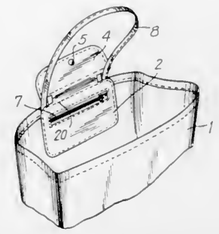
4,117,873
GROOVED-GEAR WIRE PULLER
George W. Crawford, 14 Commerce St., Chatham, N.J. 07928
Filed Apr. 25, 1977, Ser. No. 790,761
Int. Cl.[2] B21F *1/04*
U.S. Cl. 140—105 3 Claims



1. Wire pulling means comprising a pair of spur-type gears disposed one above the other, means for positively driving the lower gear of said pair thereof, means biasing the upper gear of said pair into substantially full tooth-meshing relationship with said lower gear, the teeth of both said gears being correspondingly grooved and the grooves thereof being disposed in mutually facing relationship thereby together defining an aperture for the acceptance of the wire to be pulled, means directing said wire in a substantially straight-line path into said aperture, the depth and configuration of said aperture and the degree of bias imparted to said upper gear being such that each pair of the intermeshing teeth first grip the entering wire between their opposite rotating side faces with a continuing high pull force and thereafter deform the gripped wire out of its entering stright-line path and in manner as to impart a succession of longitudinally spaced crimps to the wire exiting from between the intermeshing teeth, said gripping and deforming action being further such as to impart to the exiting wire a tendency to coil itself into a lower level receptacle positioned to receive same.

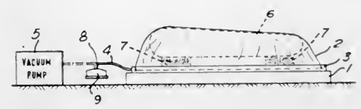
4,117,874
PORTABLE ARTICLE CARRIER
Antonio Subiros Berenguer, Calle Modolell, 6, Barcelona, Spain
Filed Mar. 22, 1977, Ser. No. 780,191
Claims priority, application Spain, May 6, 1976, 220.945[U]
Int. Cl.[2] B65D *31/00*
U.S. Cl. 150—1.7 5 Claims

1. A portable article carrier, suitable to be hand held for carrying goods, comprising a foldable bag having a wall terminating in an upper edge defining an open mouth, and a case smaller than the bag when the latter is in an unfolded condition, said case being secured to the bag adjacent the upper edge thereof, the case having a first compartment formed with an access aperture, the first compartment and its aperture being of such a size and so arranged that the bag when appropriately folded can be stowed therein, the case further having a second compartment adapted for the storage of small objects and



accessible both when the bag is unfolded and when the bag is stowed in the first compartment, said case having an upper edge secured to the bag at the upper edge of the latter and said case hanging down within the bag in the unfolded condition thereof, with said case when hanging down within the unfolded bag having said second compartment facing away from said wall of said bag toward the hollow interior of the bag so as to be freely accessible at the interior of the unfolded bag adjacent the open mouth thereof.

4,117,875
CONTAINERS OR CARRIERS FOR GOODS
Christopher Daniel Dowling Hickey, 5 Heathside, Hinchley Wood, Esher, Surrey, England
Filed Aug. 16, 1976, Ser. No. 714,656
Claims priority, application United Kingdom, Aug. 18, 1975, 34218/75
Int. Cl.[2] F24F *7/02*
U.S. Cl. 150—52 R 4 Claims



1. A container of the kind having an impermeable envelope or skin which is at least partly flexible and a vacuum suction means for sucking air out of the container wherein the suction means are adapted to be operated continuously, and wherein there is provided an adjustable bleed orifice open to the atmosphere to admit air into a pipe leading into the vacuum suction duct through which air is drawn from the container.

4,117,876
AWNING FOR A MOBILE HOME
J. Richard Bennett, Fullerton, Calif., assignor to A & E Plastik Pak Co. Inc., City of Industry, Calif.
Continuation of Ser. No. 580,614, May 27, 1975, abandoned.
This application May 20, 1977, Ser. No. 798,847
Int. Cl.[2] E04F *10/06*
U.S. Cl. 160—67 30 Claims

1. An awning assembly adapted to extend from a wall and comprising:
shelter means forming an awning;
main support means having a longitudinal configuration

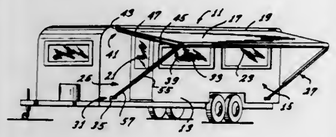
defined by a first end and a second end, the main support means including portions defining a channel extending longitudinally of the main support means;

first bracket means for pivotally attaching the first end of the main support means to the wall; rafter means having a longitudinal configuration defined by a first end and a second end;

second bracket means disposed on the wall for pivotally attaching the first end of the rafter means to the wall;

slide means coupled to the rafter means and slidable in the channel of the main support means for guiding the second end of the rafter means along the main support means toward the second end of the main support means during the operation of the awning from a contracted relationship to an extended relationship;

first locking means disposed on the wall for holding the main support means and the rafter means in a fixed relationship against the wall in the contracted relationship; and



second locking means disposed on the main support means and cooperative with the slide means for holding the main support means and the rafter means in a fixed relationship at the second end of the main support means in the extended relationships of the awning upon the operation of the awning from the contracted relationship to the extended relationship;

the second locking means being actuatable by the slide means to provide for a movement of the slide means in the channel of the main support means past the second locking means in the direction toward the second end of the main support means and thereafter to prevent the movement of the slide means in the channel toward the first end of the main support means, the second locking means extending outwardly from the main support means to an external position for manual actuation and being manually actuatable at the external position to provide for a movement of the slide means in the channel of the main support means past the second locking means toward the first end of the main support means.

4,117,877

METHOD OF MANUFACTURING LARGE-SIZED CENTRIFUGALLY CAST COMPOSITE ROLL AND DEVICE FOR DISPOSING LOWER SIDE POURING SPRUE RUNNER USED IN THE METHOD

Reizo Yokota, Osaka, Japan, assignor to Kabushiki Kaisha Yodogawaseikosho, Osaka, Japan

Filed Nov. 22, 1977, Ser. No. 853,846
Int. Cl.[2] B22D *19/08;* **B22C** *9/20*
U.S. Cl. 164—95 **5 Claims**

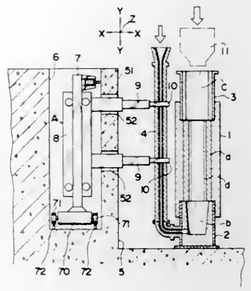
1. A method of manufacturing a large-sized centrifugally cast composite roll, said method being characterized in that it comprises:

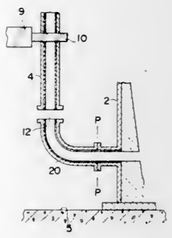
centrifugally casting a body shell by use of a body portion mold;

setting said body portion mold upright inside a casting pit after said body shell was hardened and assembling a shaft portion lower mold with the lower portion of said body portion mold;

positioning a lower pouring sprue runner and holding said runner unswingingly and substantially upright in said casting pit at a predetermined position adjacent said body portion mold but spaced a sufficient distance from said shaft portion lower mold to prevent the transmission of vibration from said shaft portion lower mold to said sprue runner;

quickly connecting said runner to said shaft portion low mold; and





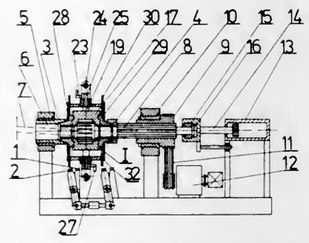
assembling a shaft portion upper mold with the upper portion of said body portion mold; and simultaneously pouring molten metal into said shaft portion upper mold and into said sprue runner into said shaft portion lower mold to integrally cast said body portion shell, said two shaft portions, and said body core portion.

4,117,878

UNIT FOR CENTRIFUGAL CASTING OF METALS IN SPLIT MOULDS

Zenon Najmowicz, Zabrze; Edward Dyrda, Gliwice, and Jan Zakrzewski, Cracow, all of Poland, assignors to Przedsiebiorstwo Projektowania i Wyosazania Zakladow Prezemysly Maszyn i Apartow Elektrycznych "Promel", Gliwice, Poland

Filed Nov. 19, 1976, Ser. No. 743,353
Claims priority, application Poland, Nov. 20, 1975, 184877
Int. Cl.[2] B22D *13/00, 12/00*
U.S. Cl. 164—292 **6 Claims**



1. Centrifugal casting apparatus comprising

a rotatable sleeve supported at a fixed axial location and having a conically tapered internal surface,

a driving sleeve axially spaced with respect to said rotatable sleeve and having a conically tapered internal surface opposed to the internal surface of said rotatable sleeve,

means for rotating said driving sleeve about an axis or rotation,

means for axially displacing said driving sleeve relative to said rotatable sleeve,

a split mold assembly disposed between said rotatable sleeve and driving sleeve and including a casing and a plurality of mold segments slidably supported by said casing,

means for moving said mold segments radially towards and away from the axis of rotation between a closed mold portion and an open mold position,

locking means for locking said mold segments in the open and closed positions,

core elements secured to said mold segments and cooperatively defining conical elements at respective ends of said mold assembly which face said conically tapered internal surfaces of said sleeves with the mold segments in closed position, said conical elements being of corresponding taper as and engageable in said conically tapered surfaces for driving said mold assembly in rotation,

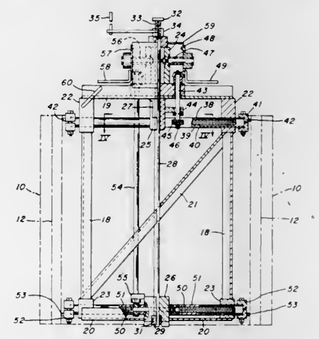
and means for introducing molten material into said mold assembly via said rotatable sleeve.

4,117,879

FIXTURE FOR USE IN POSITIONING THE WALLS OF AN ADJUSTABLE CONTINUOUS-CASTING MOLD

Kenneth S. Rutherford, Oil City, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 24, 1977, Ser. No. 800,134
Int. Cl.[2] B22D *45/00*
U.S. Cl. 164—412 **6 Claims**



1. A fixture for use in adjusting the positions of the end walls of a continuous-casting mold, said fixture comprising:

a frame adapted to be inserted in a mold;

means on said frame engageable with the mold side walls at their upper and lower edges for centering the frame with respect to the mold;

adjustable means carried by said frame at its opposite sides and adapted to abut the opposed adjustable end walls of the mold when the end walls are in the desired position of adjustment; and

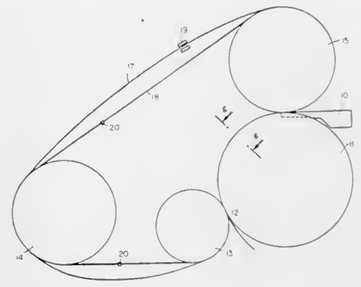
means carried by said frame for moving said adjustable means while maintaining the adjustable means at opposite sides of the frame equidistant from the center of the frame.

4,117,880

TENSIONLESS METALLIC BAND OF HIGH THERMAL CONDUCTIVITY IN A CONTINUOUS CASTING MACHINE

Louis Cimetiere, Meylan, and Richard Gonda, Gieres, both of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

Filed Jul. 19, 1977, Ser. No. 816,914
Claims priority, application France, Jul. 27, 1976, 76 23747
Int. Cl.[2] B22D *11/06*
U.S. Cl. 164—433 **4 Claims**



1. A rotary casting machine for casting semi-finished blanks of indefinite length of metal alloys, comprising:

(a) a rotatable casting wheel having a circumferential groove therein;

(b) endless band means adapted to travel at the same linear speed as the casting wheel circumference, and covering a portion of the wheel periphery so as to form with said groove an ingot mold for receiving molten metal;

(c) said band means including a main band formed of a metal having heat conducting properties greater than steel which contacts the casting wheel and a pair of parallel steel bands adapted to be placed under tension and bearing on the lateral sides of the main band on either side of said groove; and

(d) auxiliary wheel means about which said band means passes to place said steel bands under tension wherein said main band is subjected to little or no tensile stressing.

4,117,881

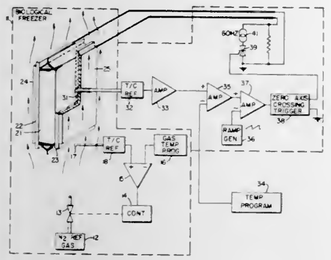
SYSTEM FOR AND METHOD OF FREEZING BIOLGGICAL TISSUE

Thomas E. Williams, Millersville, and Thomas A. Cygnarowicz, New Carrollton, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

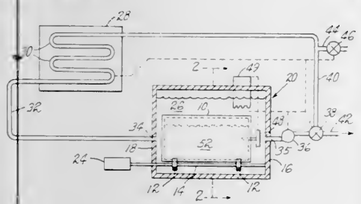
Filed Jun. 14, 1977, Ser. No. 806,440
Int. Cl.[2] F25B *13/00*
U.S. Cl. 165—2 **15 Claims**

1. A method of freezing blood cells, bone marrow, and other similar biological tissue located in a container against opposed walls of a pair of heaters, said container having a high thermal conductivity so that the tissue and container are at substantially the same temperature, comprising cooling the container with refrigerating fluid at a time programmed rate at least equal to the maximum cooling rate needed at any time during the freezing process, monitoring the temperature of a surface of the container to derive an indication of the tissue temperature, comparing the indication of the tissue temperature with a time programmed desired value for the tissue temperature to derive

an error indication, and activating the heaters in response to the error indication so that the temperature of the tissue follows the desired value for the time programmed tissue temperature.



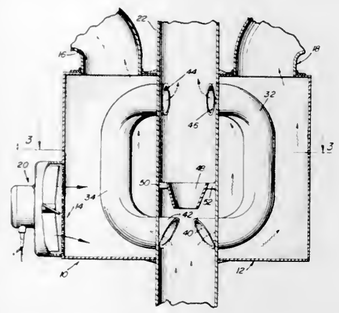
4,117,882
PROCESS AND APPARATUS FOR HEAT EXCHANGE
William A. Shurcliff, Cambridge, Mass., assignor to Broad Corporation, Boston, Mass.
Filed Oct. 26, 1976, Ser. No. 735,418
Int. Cl.[2] F28D *17/00*
U.S. Cl. 165—104 S **13 Claims**



1. Apparatus for storing thermal energy for subsequent use which comprises:
means for exposing a heat exchange liquid to a heat source,
means for passing the heated liquid into a first container which is in heat exchange relationship with a salt hydrate composition enclosed in at least one sealed container,
said salt hydrate having a heat fusion of at least about 50 BTU/lb,
the volume ratio of the heat exchange liquid in said first container to said salt hydrate being between about 1 to 20 and 2 to 1,
means for agitating each sealed container continually to minimize or prevent supercooling of said salt hydrate,
means for monitoring pressure within said sealed container,
and means for periodically passing said heat exchange liquid from heat exchange relationship with said salt hydrate to extract heat from said liquid.

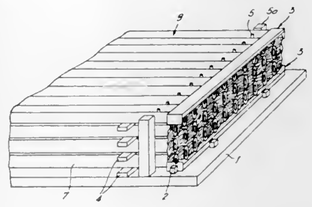
4,117,883
HEAT RETRIEVER
William F. Feldmann, R.R. #1, O'Fallon, Ill. 62269
Filed Aug. 30, 1976, Ser. No. 718,909
Int. Cl.[2] F28F *9/02;* **F24B** *7/00*
U.S. Cl. 165—174 **4 Claims**

1. A heat retriever, comprising, in combination:
(a) a shell provided with an inlet and an outlet for permitting a fluid to be heated to be passed through the shell;
(b) a vent pipe attachable to a flue pipe of a furnace and arranged extending through the shell; and
(c) a plurality of retriever pipes each connected to and arranged in parallel with the vent pipe and disposed entirely within the shell for forming a bypass around a portion of the vent pipe for combustion gases received from the associated furnace flue pipe and exposing the fluid to be heated to a larger heat transfer surface, and the vent pipe including restrictor means for diverting the combustion gases from the vent pipe to the retriever pipes, the restrictor means including opposed deflector fins terminating the retriever pipes at an entrance of the retriever pipes and being extensions thereof into the vent pipe and disposed



upstream of a flow of combustion gases through the vent pipe, the fins being downstream of the entrance to the retrieve pipes and extending into the vent pipe for diverting combustion gases into the retriever pipes, the retrictor means further including a hollow, frustum of a cone disposed within the vent pipe downstream from the entrance to the retriever pipes for providing a resistance to the flow of combustion gases and causing the combustion gases to flow into the retriever pipes as a path of less resistance.

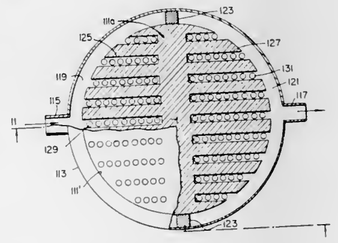
4,117,884
TUBULAR HEAT EXCHANGER AND PROCESS FOR ITS MANUFACTURE
Willi Frei, St. Gall, Switzerland, assignor to Air Fröhlich AG für Energie-Rückgewinnung, Teufen, Switzerland
Filed Mar. 19, 1976, Ser. No. 668,527
Claims priority, application Switzerland, Mar. 21, 1975, 1390/75; Feb. 5, 1976, 361/75
Int. Cl.[2] F28D *1/04;* **F28F** *9/04*
U.S. Cl. 165—175 **7 Claims**



1. A tubular heat exchanger comprising a plurality of heat exchange tubes placed in a stacked, spaced-apart relationship and disposed substantially parallel to each other in the vertical and horizontal direction, each of the opposing end portions of said plurality of tubes being adheringly embedded in a wall of a hardened, elastic material, disposed transverse to the longitudinal direction of said tubes, said wall at both end portions of said tubes sealably separating an inner zone defined by the space around said tubes from the end zones which communicate with the space within said tubes, metal profile bars sealably adhering to the wall of the elastic material at the uppermost and lowermost sides of said stack and at both opposing

end portions of said tubes, said plurality of stacked tubes being disposed on a base plate, said base plate containing a plurality of spacer elements which extend substantially vertically from said base plate for providing horizontal separation between adjacent rows of heat exchanger tubes and additional spacer elements disposed transverse to the longitudinal direction of the heat exchanger tubes for providing vertical separation between adjacent rows of heat exchanger tubes, said tubular heat exchanger being adapted to handle a first medium through the tubes themselves via said end zones and a second medium which flows around said tubes, transverse to said tubes through said inner zone.

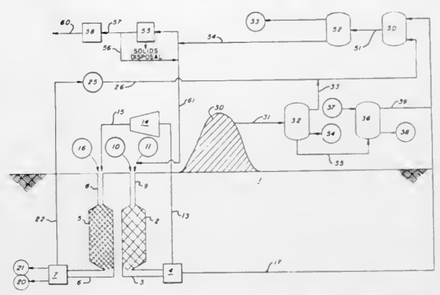
4,117,885
SLAB HEADER
James H. D. Nickerson, and Robert R. Steel, both of St. Catharines, Canada, assignors to Foster Wheeler Limited, St. Catharines, Canada
Continuation of Ser. No. 510,327, Sep. 30, 1974, abandoned. This application Aug. 11, 1975, Ser. No. 603,849
Int. Cl.[2] F28F *9/02;* **F28D** *7/06;* **F22B** *37/10*
U.S. Cl. 165—176 **8 Claims**



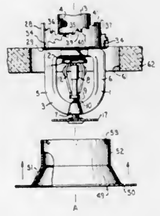
1. A heat exchanger comprising:
a vessel;
a tube sheet disposed within said vessel and having a first channel extending less than half way into said tube sheet from the periphery thereof and a second channel aligned with said first channel and extending less than half way into said tube sheet from the opposite periphery thereof;
a plurality of tubes perpendicular to said channels and connected to said tube sheet for communication with said channels, each of said tubes having a first leg connected with said first channel and a second leg connected with said second channel, said tube legs being received in said channels along the lengths of said channels;
a first peripheral chamber communicating with said first channel;
a second peripheral chamber communicating with said second channel;
means for introducing a heat exchange fluid into said first chamber, and
means for removing said heat exchange fluid from said second chamber.

4,117,886
OIL SHALE RETORTING AND OFF-GAS PURIFICATION
Donald E. Honaker, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Filed Sep. 19, 1977, Ser. No. 834,570
Int. Cl.[2] B01D *53/34;* **E21B** *43/00, 43/24*
U.S. Cl. 166—259 **4 Claims**

1. A process for removing acidic impurities from off-gases generated in the retorting of oil shale in the combustion of off-gases comprising:
contacting a rubblized mass of oil shale which has been substantially depleted in hydrocarbonaceous materials with water, so as to extract basic components from the mass; and
contacting off-gases, which were generated during the retorting of oil shale and which contain acidic impurities, with the water containing basic components so as to substantially remove said acidic impurities from said off-gases.



4,117,887
SPRINKLER HEAD FLANGE ASSEMBLY
James R. Anderson, Berwyn, Pa., assignor to Central Sprinkler Corporation, Landsdale, Pa.
Continuation-in-part of Ser. No. 724,736, Sep. 17, 1976, Pat. No. 4,066,129. This application Apr. 13, 1977, Ser. No. 787,001
Int. Cl.[2] A62C *37/12*
U.S. Cl. 169—37 **8 Claims**



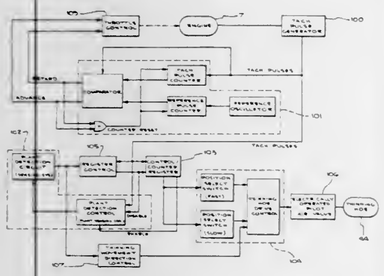
1. A sprinkler head assembly for mounting with respect to a surface comprising:
(a) a sprinkler head body having a nozzle therein;
(b) a bracket attached to said body and having a plate extending radially outwardly therefrom and a ring extending normally of said plate at the periphery thereof, said ring having at least one upwardly directed channel dividing said ring and open at opposite ends thereof, one of said channel ends corresponding with a notch in said plate, means on said ring forming at least one engageable shoulder circumferentially offset from said channel;
(c) an annular flange receiving said body thereinto and surrounding said bracket, said flange being telescopically movable over said bracket and having at least one boss thereon projecting inwardly thereof a distance greater than the radial thickness of said ring and blocking said movement in absence of alignment with said channel, said flange being supported on said bracket by circumferential alignment with axial movement of said boss through and beyond said notch and channel and rotation of said boss relative to said bracket into engagement with said shoulder; and
(d) a support member on said flange and adapted for engaging said surface.

4,117,888

NOVEL FIELD CROP-THINNING APPARATUS AND METHOD

Lawrence W. Fuller, 7655 Bradley Rd., Moorpark, Calif. 93021, and E. Dale Hawley, 7891 Camp Chaffee Rd., Ventura, Calif. 93001

Filed Nov. 28, 1975, Ser. No. 635,905
Int. Cl.[2] A01B *79/00*
U.S. Cl. 172—1 **1 Claim**



1. A method of accurately and rapidly thinning commercial plantings of field crops by a motor-driven apparatus including a plant-sensing system and associated thinning knives and provided with pneumatic means for moving thinning knives through cutting strokes and electrically operable valves for supplying the pneumatic means with pressure fluid, comprising:

converting the r.p.m. of the driving motor into timing pulses;

utilizing said pulses to maintain the apparatus at a virtually uniform rate of travel;

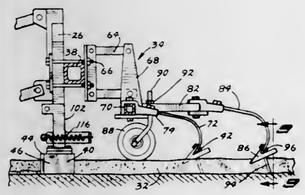
and utilizing said pulses to energize the plant-sensing system and said valves in desired preset sequence and intervals initiated by the plant-sensing system.

4,117,889

APPARATUS FOR GUIDING ROW CROP PROCESSING IMPLEMENTS

John C. Larson, Clements, Minn. 56224

Filed Jan. 21, 1977, Ser. No. 761,373
Int. Cl.[2] A01B *69/00*
U.S. Cl. 172—26 **4 Claims**



2. In combination with laterally movable implements for moving over the ground to establish the location of crop rows in a field and for processing crops in those rows, apparatus for establishing a guide trench in precise parallel relation to such crop rows and for guiding said row crop processing implements using said trenches, said apparatus including:

A. a plurality of vertical guide block support bars fixedly positioned with respect to each of said implements in spaced relation to each other in direction transverse to the moving direction of the implement to which they are fixedly positioned;

B. a plurality of vertical guide blocks, each firmly mounted with respect to a lower end of one of said support bars to have position beneath the surface of the ground on which the implement to which it is mounted is supported and to lie in a vertical plane in parallel relation to the direction of travel of that implement as it moves over the field;

C. each such block including a relatively short wedge-shaped leading edge portion and an elongated flat plate-like trailing portion; and

D. wherein said means for firmly mounting each guide block with respect to a lower end of one of said support bars includes:

(1) a guide block pivot plate pivotally mounted with respect to a lower end portion of said support bar;

(2) means for attaching said guide block to said guide block pivot plate, said means including a guide block attachment plate integral with a lower end of said pivot plate, a guide block plate integral with an upper edge of said guide block and removable fastening means to connect said guide block plate and said guide block attachment plate;

(3) resilient means for urging said pivot plate and said guide block to move forwardly in the direction of motion of said implement; and

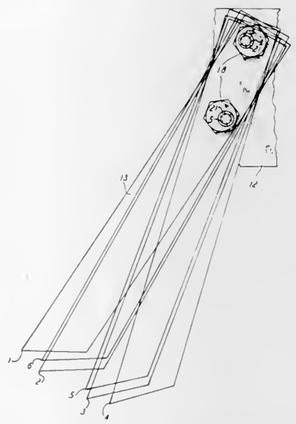
(4) stop means fixed with respect to said support bar and said pivot plate for limiting the forward motion of said guide block to position whereby said wedge-shaped leading edge portion of said block is in substantially perpendicular relationship with respect to the ground on which the implement is supported.

4,117,890

ADJUSTABLE MOUNTING FOR SUBTERRANEAN TOOL

Stephen Anthony Youngers, Clearwater, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 25, 1977, Ser. No. 844,576
Int. Cl.[2] A01B *13/08, 35/26*
U.S. Cl. 172—40 **9 Claims**



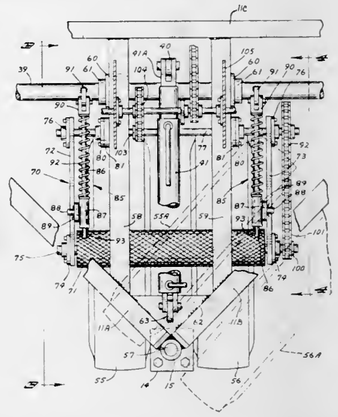
1. An adjustable mounting for a subterranean tool, comprising two spaced-apart mounting pins, a subterranean tool having two multi-sided openings spaced apart at the spacing of said pins to be respectively aligned with said pins and being respectively larger than the cross-section of said pins and each of said openings having an axis central with respect to all the sides of each of said openings, a multi-sided bushing snugly removably disposed in each of said openings and having an eccentric hole therein offset from said central axis of each of said openings and being of a cross-sectional size to respectively snugly receive each of said pins, said multi-sided openings and said multi-sided bushings being symmetrical and identically shaped for removal and rotation of said bushings about their respective central axes and for re-insertion snugly into said openings for re-positioning said eccentric holes relative to said tool, and with said eccentric holes being spaced apart a distance identical to the spacing between said pins in co-ordinated rotation and re-insertion of said bushings, for adjusting the angle of said tool relative to said pins.

4,117,891

GROUND DRIVE FOR GRAIN DRILLS

Chester G. Neukom, Jamestown, N. Dak., assignor to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed Mar. 21, 1977, Ser. No. 779,338
Int. Cl.[2] A01B *33/00*
U.S. Cl. 172—105 **12 Claims**



1. In an agricultural implement having a first shaft to be driven in relation to ground speed and including a frame, wheel means supporting said frame for movement over the ground including caster wheel means having dual wheels rotatable about a common generally horizontal axis and a support for said dual wheels pivotally mounted to said frame about an upright axis, said caster wheel means being free to pivot sufficiently to permit turning of said implement, a drive roller, means to support said drive roller relative to said frame adjacent said caster wheel means for rotation about an axis, said means to support including means to permit movement of said roller from a position spaced from said caster wheel means to position engaging said caster wheel means to rotationally drive said roller, means drivably connecting said roller to said first shaft, said drive roller having an axial length along its axis of rotation sufficient so said roller engages both of said dual wheels when the frame is moving in a normal direction of movement during working and continues to be driven as the caster wheel means caster during turning of the implement.

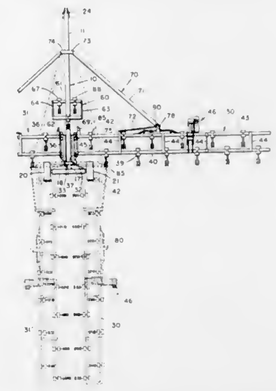
4,117,892

AGRICULTURAL FOLDING TOOL BAR WITH RIGID CROSS FRAME

William John Dietrich, Sr., Congerville, and Cary Leon Sizelove, Eureka, both of Ill., assignors to DMI, Inc., Goodfield, Ill.

Filed May 19, 1977, Ser. No. 798,632
Int. Cl.[2] A01B *73/00*
U.S. Cl. 172—311 **6 Claims**

1. In a folding tool bar system for agricultural use, including a main frame adapted to be pulled by a traction vehicle; support wheels on said main frame; first and second wings pivotally mounted to said main frame adjacent the center thereof for movement between a use position in which the inboard ends of said wings are side by side and said wings extend outwardly of said main frame and transverse of the direction of travel of said vehicle, and a road travel position in which said wings extend rearwardly of said main frame and parallel to the direction of travel of said vehicle; and a plurality of ground engaging implements carried on said wings at equal lateral spacing, the improvement comprising a rigid cross frame rigidly secured to said main frame at a position forward of said folding wings and forward of said support wheels, a plurality of said implements attached to said cross frame such that the lateral spacing of adjacent ones of said implements is uniform across the entire width of said system, the innermost sections of said wings being free of said implements, whereby said wings may be folded rearwardly without interference between said support



wheels and implements on said wings; first and second articulated link means for rigidly holding said wings alternatively in an extended use position or a folded road travel position, each of said link means including a first rigid link, a second rigid link pivotally connected to an associated wing, means for interconnecting said first and second links together while permitting articulation between them, and means for pivotally attaching said first link to said main frame at a position forward of said cross frame, and arranged such that said first link and said cross frame do not interfere when said wings are folded rearwardly in said road travel position.

4,117,893

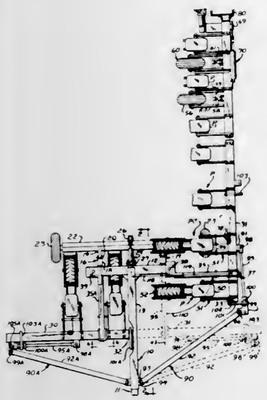
AGRICULTURAL TOOL BAR

Jon Eugene Kinzenbaw, P.O. Box 525, Williamsburg, Iowa 52361

Continuation of Ser. No. 644,547, Dec. 29, 1975, abandoned. This application Sep. 9, 1977, Ser. No. 831,744
Int. Cl.[2] A01B *73/00*
U.S. Cl. 172—311 **9 Claims**

1. An agricultural tool bar comprising: a main frame having a forwardly extending draft member adapted to be pulled by a traction vehicle, said frame further providing first and second pivotal mounting locations; first and second support beams; means for mounting said first and second support beams respectively to said first and second mounting locations for pivotal motion about respective vertical axes to permit each support beam to be rotated between a use position in which said beam extends outwardly and transverse of the direction of travel of said vehicle, and road travel positions in which said beam extends rearwardly and parallel to the direction of travel of said vehicle; first and second link means, each link means including first and second rigid links pivotally connected together, one of said links being pivotally connected to said draft member at a location forward of its associated beam in the use position, and the other link being pivotally connected to its associated beam at a location outboard of the vertical rotational axis for said beam, said first and second links of each link means cooperating with each other such that when the associated beam is in the use position, one of said links extends be-

tween said draft member and an outboard location on said beam to hold said beam extended in the use position, and when said beam is in the travel position, one of said links extend



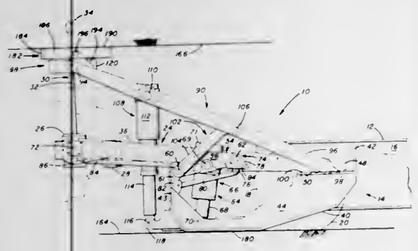
between a forward location on said draft member and a forward location on its associated beam to hold said beams rearward in the travel position.

4,117,894

DRILL STEEL GUIDE FOR A MINE DRILLING MACHINE

Daniel Saunders, Mount Clare, W. Va., assignor to Mining Equipment Division, a division of FMC Corporation, Fairmont, W. Va.

Filed May 4, 1977, Ser. No. 793,723
Int. Cl.² E21C *11/02*
U.S. Cl. 173—23 **9 Claims**



1. In a mine drilling machine, a drill steel guide comprising,

a support frame,

a drill boom assembly having a front end portion and a rear end portion, said drill boom assembly rear end portion pivotally connected to said support frame for vertical pivotal movement of said drill boom assembly front end portion relative to said support frame,

means for pivoting said drill boom assembly adjacent said rear end portion thereof relative to said support frame so that said front end portion moves in a vertical linear path,

a drill pot pivotally connected to said front end portion of said drill boom assembly and operable to carry an upwardly extending drill steel therefrom,

a separate drill guide boom assembly extending in parallel overlying relation with said drill boom assembly and having a front end portion and a rear end portion,

pivot means for connecting said drill guide boom assembly to said support frame for moving said drill guide boom assembly front end portion in a vertical linear path,

a drill guide carriage mounted on said drill guide boom assembly front end portion,

a pair of drill guide members pivotally secured to said drill guide carriage for movement toward and away from each other,

said drill guide members each having a guide portion,

actuator means linked to said drill guide members for pivoting said drill guide members to move said guide portions to a closed drill guide position surrounding the drill steel and an open position, and

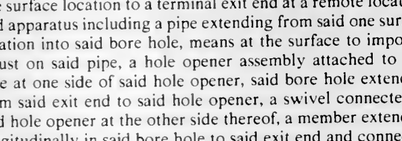
said drill guide carriage being supported by said drill guide boom assembly front end portion above said drill pot, said drill guide boom being movable upwardly to a location adjacent the mine roof to position said drill guide carriage adjacent said mine roof so that said drill guide members remain in a closed drill guide position surrounding the drill steel as said front end portion of said drill boom assembly with said drill pot mounted thereon moves upwardly from a location adjacent the mine floor in a vertical linear path.

4,117,895

APPARATUS AND METHOD FOR ENLARGING UNDERGROUND ARCUATE BORE HOLES

Howard Ward, Newport Beach, and John Tschirky, Long Beach, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Mar. 30, 1977, Ser. No. 782,847
Int. Cl.² E21B *3/12*
U.S. Cl. 175—53 **37 Claims**



1. An apparatus for enlarging a bore hole extending from one surface location to a terminal exit end at a remote location: said apparatus including a pipe extending from said one surface location into said bore hole, means at the surface to impose a thrust on said pipe, a hole opener assembly attached to said pipe at one side of said hole opener, said bore hole extending from said exit end to said hole opener, a swivel connected to said hole opener at the other side thereof, a member extending longitudinally in said bore hole to said exit end and connected to said swivel, and means positioned at the exit end to apply a pull to said member while said hole opener is rotated, means to rotate said hole opener.

35. The process of drilling a bore hole from one entry location to another exit location which comprises drilling a pilot hole between said locations by advancing a bit at the end of a drill string from said entry location to said exit location, providing thrusting means at said entry location and pulling means at said exit location, introducing a hole opener mounted on a pipe into said pilot hole at said one of said locations, circulating drilling fluid through said pipe and hole opener, and advancing said hole opener by pulling on said hole opener with said pulling means from said exit location and pushing on said pipe and hole opener with said thrusting means for said entry location while rotating said hole opener.

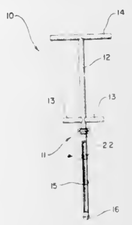
4,117,896

SOIL SAMPLER

Jerome B. Weber, 6300 Lewisand Ct., Raleigh, N.C. 27609

Filed Jul. 11, 1977, Ser. No. 814,446
Int. Cl.² G01N *1/00*
U.S. Cl. 175—84 **4 Claims**

1. A soil type sampling device comprising: a tubular like main shaft being open at one end and having a handle means attached adjacent the other end; an elongated, slot-like opening in said shaft adjacent said open end; and a soil sample surface removal means slidably mounted on said shaft adjacent said



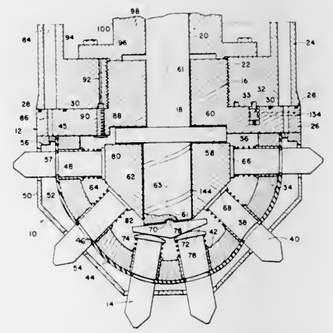
slot and including a shaft encircling bracket means pivotably mounting a bale like surface scrapper whereby surface soil of said soil sample which may become contaminated can be removed to expose the true sample core.

4,117,897

DRILL BIT

Donald E. Lloyd, 1622 N. Delaware Pl., Tulsa, Okla. 74110

Filed Jun. 13, 1977, Ser. No. 805,812
Int. Cl.² E21B *1/06*
U.S. Cl. 175—106 **9 Claims**



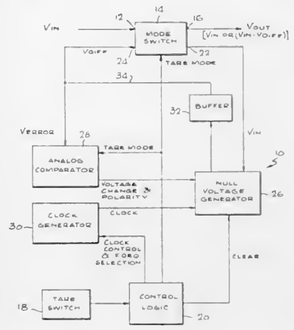
1. Drill bit means comprising rotatable eccentric cam means, non-rotatable bearing means disposed around said cam means, apertured inner housing means carried by said bearing means and surrounding a portion of said cam means, cutting tool means reciprocally disposed in each aperture of the inner housing means and having one end engagable with the cam means and the opposite end extending exteriorly of the inner housing means, lubrication chamber means provided in said inner housing means and around said cam means for lubrication of the cutting tool means, seal means provided for said inner housing means for precluding leakage of fluid therefrom, apertured outer housing means carried by said bearing means and substantially concentrically arranged with respect to said housing means, the apertures of said outer housing means being in substantial alignment with the apertures of the inner housing means for loosely receiving the cutting tool means therethrough, and fluid chamber means provided in said outer housing means for receiving fluid and discharging said fluid around the cutting tool means for facilitating the drilling operation.

4,117,898

ELECTRONIC TARE SYSTEM FOR ELECTRICAL BALANCE

Kenneth J. Moriyama, Placentia, Calif., assignor to Ventron Corporation, Beverly, Mass.

Filed Jul. 29, 1977, Ser. No. 820,114
Int. Cl.² G01G *23/14*
U.S. Cl. 177—165 **14 Claims**



1. An electronic tare system for use with a balance which generates an electrical weight signal representing a mass being weighed, comprising:

counter means capable of counting and storing a count therein;

means coupled to the counter means for providing an electrical counter signal representing a count in the counter means;

means responsive to a tare command for causing the counter means to count to a value at which the electrical counter signal is equivalent to the electrical weight signal; and

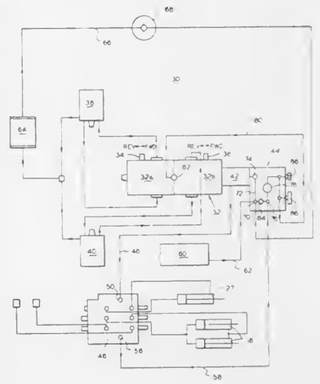
means for thereafter algebraically combining the electrical counter signal with the electrical weight signal.

4,117,899

HYDRAULIC SYSTEM FOR A SKID-STEER LOADER

Thomas M. Sagaser, Gwinner, and Joseph M. Mather, Lisbon, both of N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 10, 1977, Ser. No. 767,265
Int. Cl.² B62D *11/04*
U.S. Cl. 180—6.48 **2 Claims**



1. An improved port block for the hydraulic system of a skid-steer vehicle, the block including a first outlet port for

carrying fluid to a hydraulic control pump of the system, a first inlet port for receiving fluid directed from a hydraulic reservoir provided in the system, a second inlet port for receiving fluid directed from an implement operating means provided in the system, a second outlet port for directing fluid to an inlet port of a pair of hydrostatic drive pumps provided in the system, fluid passages provided in the port block and disposed between said inlet and outlet ports, fluid filtering means provided in a passage of the porting block, by-pass means provided in a passage of the porting block for directing the flow of fluid to the hydraulic pump in the event of the clogging of said filtering means and means for sensing fluid temperature and pressure conditions in the hydraulic system.

4,117,900

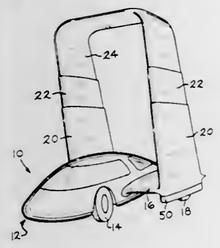
WIND-POWERED CAR

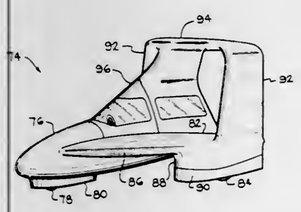
James L. Amick, 1464 Cedar Bend Dr., Ann Arbor, Mich. 48105

Continuation-in-part of Ser. No. 705,627, Jul. 15, 1976, abandoned, which is a continuation of Ser. No. 577,778, May 15, 1975, abandoned. This application Nov. 9, 1977, Ser. No. 849,888

Int. Cl.[2] B62D *57/04*

U.S. Cl. 180—7 R **16 Claims**





1. A wind- and motor-powered land vehicle with a fore-and-aft longitudinal axis comprising a body supported by wheels, at least one of said wheels fixed to rotate in a plane parallel to the fore-and-aft axis of said vehicle, an airfoil system comprised of at least one vertically extending airfoil rigidly mounted on said body and topped with a laterally extending airfoil in an arrangement having bilateral symmetry about a vertical plane through said fore-and-aft axis, said airfoil system providing a forward propelling force to said vehicle when the airfoil system is subjected to certain cross-wind conditions, said airfoil system including a retracting mechanism for raising and lowering said laterally extending airfoil when desired, and self-contained motor propulsion means on said vehicle for providing acceleration from a stationary position and for propelling the vehicle either independently or in combination with propelling forces generated by wind action on said airfoil system.

11. A land vehicle provided with both a wind-powered propulsion system and a self-contained propulsion system, said vehicle comprising a body having a fore-and-aft longitudinal axis with bilateral symmetry about a vertical plane through said fore-and-aft axis, front and rear wheels supporting said body, at least one of said wheels fixed to rotate in a plane parallel to said fore-and-aft axis, an airfoil system including at least one substantially vertical airfoil having a portion of its leading edge forward of the center of gravity of the vehicle thereby to counteract yawing moments produced by airfoil portions behind the center of gravity of the vehicle, said airfoil system being mounted in fixed relationship with respect to said longitudinal vehicle axis whereby to provide a forward propelling force of said vehicle when the airfoil system is subjected to certain wind conditions, and self-contained propulsion means on said vehicle for providing acceleration from a stationary position and for propelling the vehicle either independently or in combination with propelling forces generated by wind action on said airfoil system.

4,117,901

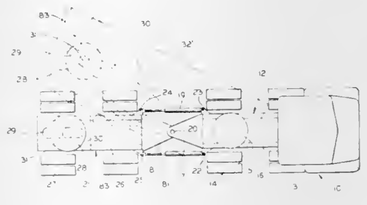
SELF-PROPELLED ARTICULATED VEHICLE

Lyle V. Mustered, Streator, Ill., assignor to Anthony Company, Streator, Ill.

Filed Nov. 22, 1976, Ser. No. 743,622

Int. Cl.[2] B60K *17/34*

U.S. Cl. 180—51 **13 Claims**



1. A self-propelled vehicle comprising:

first vehicle module means with a driver control portion located therein;

second vehicle module means pivotally attached at a first end to the proximate end of said first vehicle module means at a vehicle pivot means;

hydraulic articulated steering means operably connected between said first and second vehicle modules to actuate pivotal movement between said first and second vehicle modules at said vehicle pivot means;

container means extending between said first and second vehicle module means so as to be partially supported by each of said two vehicle modules,

said container means being pivotally attached to said first vehicle module at a first support pivot means between a second end and a first end of said first module,

said container means being pivotally attached to said second vehicle module at a second support pivot means between said first end and a second end of said module;

said container means having travel means proximate one of said two container support pivot means on said first and second vehicle modules through which said container travels when said first vehicle pivots relative to said second vehicle module at said vehicle pivot means; and

air operated container distribution means associated with one or more axles of said modules to alternatively raise or lower the position of said container relative to said axle to in turn enable selective weight distribution of a load in said container means;

each of said two vehicle modules having at least two vehicle axles apiece;

each of said two axles on each of said vehicle modules having at least two wheels emerging therefrom.

4,117,902

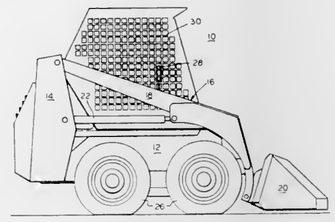
ENGINE COOLING SYSTEM FOR A SKID-STEER LOADER

John W. Henline; James J. Bauer, both of Lisbon, and James O. Morehouse, Havana, all of N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Feb. 7, 1977, Ser. No. 766,109

Int. Cl.[2] B60K *11/04*

U.S. Cl. 180—54 R **2 Claims**



1. A cooling system for a skid-steer vehicle, the vehicle having a body portion, uprights mounted on the body portion at the rear thereof and on opposite sides, a boom assembly carried on the uprights and extending forwardly downwardly on opposite sides of the vehicle, an engine compartment defined by the uprights, support means underlying the engine compartment, a rear closure having ventilating openings therein, a front panel and an upper structure, the cooling system providing, an engine mounted in the engine compartment at the rear of the skid-steer vehicle on the support means provided, a fan mounted in closely spaced relation at the rear of the engine and aligned therewith to provide a compact fan-engine combination, the fan adapted to provide negative pressure to draw circulating air into the engine compartment, and a radiator mounted at a forward upper end of the engine compartment and overlying the engine mounted therein whereby air is drawn through the openings in the rear closure compartment by the fan, circulates through the compartment, and exits through the radiator provided at the forward upper end of the compartment.

4,117,903

VEHICLE SPEED CONTROL SYSTEM

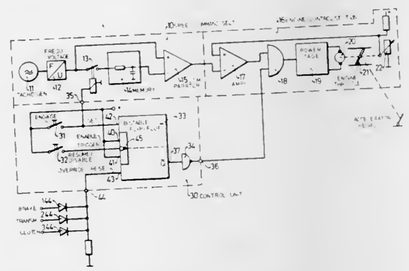
Helmut Fleischer, Schwieberdingen, and Erich Schneider, Kirchheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 22, 1977, Ser. No. 770,595

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2609867

Int. Cl.[2] B60K *31/00*

U.S. Cl. 180—105 E **10 Claims**



1. Vehicle speed control system having

a vehicle speed transducer (**11**, **12**) providing an actual vehicle speed signal;

a memory (**14**) to store a commanded vehicle speed providing a command vehicle speed signal;

operator means (**15**) comparing the commanded and actual speed signals and providing a control output signal;

means (**16**, **20**) providing a control positioning output to affect the speed of operation of the engine of the vehicle;

and a control unit (**30**) connected to the memory (**14**) and to the positioning means (**16**, **20**) including manually operable switch means (**31**, **32**; **31'**, **32'**; **31''**, **32''**) providing switching signals to, respectively, command enabling or disabling of the memory and enabling or disabling of the positioning means

wherein, in accordance with the invention

the control unit (**30**) comprises only two manual operable switch means and further comprises a bistable circuit (**33**), the operating state of the bistable circuit being controlled by at least one of the manually operable switch means and said bistable circuit (**33**) being connected to control enabling and disabling of the positioning means (**16**, **20**).

4,117,904

VEHICLE SPEED CONTROL SYSTEM

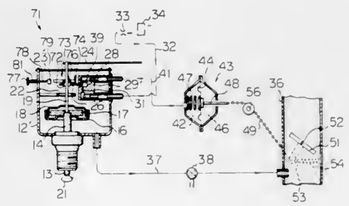
Hiroshi Matsubara, Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1977, Ser. No. 820,155

Claims priority, application Japan, Aug. 5, 1976, 51-104075[U]

Int. Cl.[2] B60K *31/00*

U.S. Cl. 180—108 **5 Claims**



1. A vehicle speed control system comprising:

actuator means for controlling a vehicle speed in accordance with applied fluid pressure;

vehicle speed sensing means having a shaft, an angular position of the shaft corresponding to vehicle speed; and

modulator means connected between a fluid pressure source and the actuator means for modulating fluid pressure in accordance with the angular position of the shaft, the modulator means comprising:

means for forming a fluid stream;

a fluid control plate rotatably supported by the shaft for variably blocking the fluid stream in accordance with an angular position of the plate;

a friction disc fixed to the shaft;

a bifurcated spring fixed at a closed end thereof to the plate and having bifurcations normally frictionally engaging in substantial diametric opposition with a periphery of the disc thereby connecting the plate to the disc for unitary rotation; and

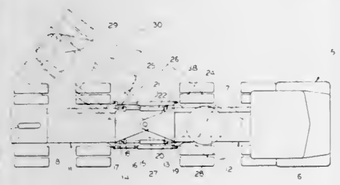
a cam movable into engagement with the spring at an open end thereof for moving the bifurcations away from each other and out of engagement with the disc to disconnect the plate from the disc, the cam moving the spring and disc to an angular center position.

4,117,905

STEERING SYSTEM FOR ARTICULATED VEHICLES

Lyle V. Mustered, Streator, Ill., assignor to Anthony Company, Streator, Ill.

Filed Nov. 22, 1976, Ser. No. 743,621
Int. Cl.² B62D *5/10*
U.S. Cl. 180—139 **21 Claims**



1. A steering system for articulated vehicles having two or more vehicle modules pivotally connected to one another at a pivot attachment, said steering system comprising:
steering actuation means;
a plurality of hydraulic telescoping steering means;
each of said plurality of hydraulic steering means pivotally connecting said two or more vehicle modules and pivotally positioned proximate to said pivot attachment respectively;
dual fluid control means operably connected to said steering actuation means to control and synchronize the operation of each of said plurality of hydraulic telescoping steering means; and
two or more hydraulic circuitry path means operably connected with said dual fluid control means,
a first of said two or more hydraulic circuitry path means powering at least one of said plurality of hydraulic steering means proximate to said pivot attachment, and a second of said two or more hydraulic circuitry path means powering at least a second of said plurality of hydraulic steering means proximate to said pivot attachment, thereby providing independent hydraulic power means among said hydraulic telescoping steering means which are synchronized through said dual fluid control means to cooperate with one another to in turn effectuate steering of said articulated vehicle,
said two or more hydraulic circuitry paths comprising a dual circuit fluid power system, each circuit of which is operably connected to one of said dual fluid control valves respectively so as to power said respective hydraulic telescoping steering means;
said plurality of hydraulic steering means comprising four hydraulic double-acting cylinders;
a first and second of said four double-acting cylinders positioned on first and second sides respectively of said pivot attachment and powered by said first hydraulic circuitry path means;
a third and fourth of said four hydraulic double-acting cylinders positioned on said first and second sides respectively of said pivot attachment and powered by said second hydraulic circuitry path means.

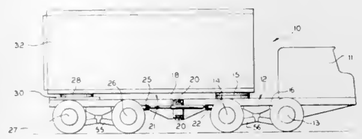
4,117,906

LINEAR TRAVEL DEVICE FOR SELF-PROPELLED ARTICULATED VEHICLE

Lyle V. Mustered, Streator, Ill., assignor to Anthony Company, Streator, Ill.

Continuation-in-part of Ser. No. 743,622, Nov. 22, 1976. This application Apr. 29, 1977, Ser. No. 792,269
Int. Cl.² B62D *5/06*
U.S. Cl. 180—139 **4 Claims**

1. A self-propelled articulated vehicle comprising:
first vehicle module means with a driver control portion located therein;
second vehicle module means pivotally attached at a first end to the proximate end of said first vehicle module means at a vehicle pivot means;
hydraulic articulated steering means operably connected between said first and second vehicle modules to actuate pivotal movement between said first and second vehicle modules at said vehicle pivot means;
container means extending between said first and second vehicle module means so as to be partially supported by each of said two vehicle modules,
said container means being pivotally attached to said first vehicle module at a first support pivot means between a second end and a first end of said first module,
said container means being pivotally attached to said second vehicle module at a second support pivot means between said first end and a second end of said module; and
said container means having travel means proximate one of said two container support pivot means on said first and second vehicle modules through which said container travels when said first vehicle module pivots relative to said second vehicle module at said vehicle pivot means,



said travel means comprising linear travel platform means affixed to one of said first and second vehicle module means so as to enable reciprocating movement of said platform means relative to said vehicle module,
said support pivot means affixed to said travel platform means to provide for rotation of said container means;
said linear travel platform means comprising an inverted substantially U-shaped platform member having inwardly returning flange arm members at its lower end,
said U-shaped member being separated from said vehicle module by one or more slide and rail means interposed between its upper end and said returning flange arm members at its lower end,
said U-shaped platform maintained in place about said vehicle module by said inwardly returning flange arm members which encompass a portion of said vehicle module thereby precluding separation of said platform means from about said slide and rail members and in turn said vehicle module;
said platform means having means for fixed attachment of said support pivot means.

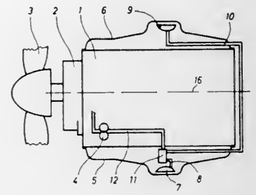
4,117,907

DEVICE FOR ASPIRATION OF LUBRICATING OIL FROM THE SUPPLY OF A COMBUSTION ENGINE

Rolf Lechler, Neckarsulm, Fed. Rep. of Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Dec. 20, 1976, Ser. No. 752,200
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2557888
Int. Cl.² F01M *11/00*
U.S. Cl. 184—6.2 **3 Claims**

1. A lubrication system for the bearings of a combustion engine moved on occasion from a normal position into a different position, comprising at least two oil supply tanks, one for the supply in the normal position and the at least one other for the supply in the different position, an oil pump having a delivering line for delivering oil to the engine bearings and a suction line connected via a gravity valve with said tanks, said gravity valve having a valve body with a first end position corresponding to said normal position, in which the connection with the tank associated with said normal position is opened and the connection with the other tank is shut off, and a second end position corresponding to said different position in which the connection with the tank associated with said different position



is opened and the connection with the other tank is shut off, whereby during the travel of said valve body from one end position to the other the connection with one tank is positively shut off as long as there is a connection with the other tank.

4,117,908

ELEVATOR HAVING ROPE GUIDE MEANS

Toshihiko Nara; Norihiko Mitsui, and Masayuki Shigeta, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 14, 1972, Ser. No. 306,457
Int. Cl.² B66B *11/04*
U.S. Cl. 187—20 **11 Claims**



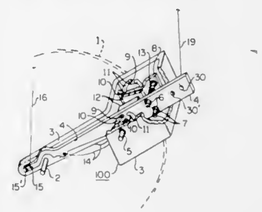
1. An elevator system comprising a winch provided on the floor of a machinery room, rope means adapted to be wound on said winch, an elevator cage and a balancing weight suspended by said rope means and adapted to be moved vertically by means of said winch through said rope means, and a rope vibration suppressing means fixedly secured at the floor of the machinery room for suppressing lateral vibration of said rope means independently of the positioning of said elevator cage along the path of movement thereof, said rope vibration suppressing means including two members disposed opposite one another, each of said members being arranged with a clearance with respect to said rope means and arranged to contact said rope means only when said rope means vibrates laterally so as to suppress the vibration thereof.

4,117,909

WHEEL TORQUE FEEDBACK CONTROLLED FRONT BRAKE

Yao T. Li, Lincoln, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 697,888, Jun. 21, 1976, abandoned, which is a continuation of Ser. No. 552,815, Feb. 25, 1975, abandoned. This application Jan. 24, 1977, Ser. No. 761,752
Int. Cl.² B60T *8/00;* **F16D** *55/08*
U.S. Cl. 188—2 A **2 Claims**



1. A braking-torque controlled brake apparatus for a vehicle having a frame and a wheel to be braked, said wheel having an axle, said brake apparatus comprising:
a first lever pivotally attached at one of its ends to the axle of said wheel,
a second lever pivotally attached between its ends to the other end of said first lever,
a brake disc attached to said wheel,
a brake pad attached to one of the levers and responsive to one direction of relative rotation between said first and second levers to apply a braking force to said wheel by causing said pad to press against said disc,
a pretensioned spring, a first cable,
a brake lever attached to one end of said second lever through the pretensioned spring and the first cable to provide said one direction of relative lever rotation in response to activation of said brake lever and to thereby apply a braking force to said wheel,
a second cable attached between said frame and to the other end of said second lever to provide a reaction force to said second lever to prevent the rotation of said second lever about the axle when a braking force is applied,
said brake pad being closer to the point of attachment of the second cable point on said second lever than to the point of attachment of said first cable on said second lever to cause said reaction force to be greater than said braking force,
said pretensioned spring limiting the maximum braking force in relation to the force required to elongate said pretensioned spring.

4,117,910

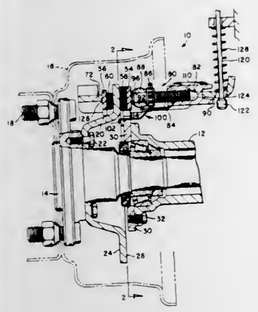
DISC BRAKE AND MOUNTING THEREFOR

Donald D. Johannesen, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 720,015, Sep. 2, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 828,012
Int. Cl.² F16D *65/56*
U.S. Cl. 188—71.9 **1 Claim**

1. A disc brake comprising a rotor, support means spaced from and adjacent to said rotor, a frame cooperating with said support means for sliding and pivoting relative to said support means, a pair of friction elements carried by said frame on opposite sides of said rotor, adjustment means disposed between one of said friction elements and said frame, said adjustment means comprising a nut engaging said frame to prevent rotation relative to the same, a push bar engaging said one friction element and a stem between the push bar and nut, said stem having a projection engaging the push bar, a threaded

section opposite the projection engaging the nut and a star wheel intermediate the projection and threaded section, said star wheel providing rotation of the stem to engage the threaded section with the nut thereby moving the push bar into



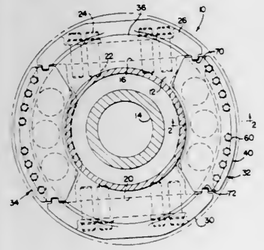
engagement with said one friction element to move the same closer to said rotor, and a spring member engaging and frame and support means to bias said frame to allow disengagement of said friction elements and rotor and cooperating with said star wheel to fix the rotation of the star wheel relative thereto.

4,117,911

TORQUE BARS FOR SLIDING CALIPER DISC BRAKE

Dusan M. Vacval, Cicero, and E. A. Domes, Carpentersville, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 1, 1977, Ser. No. 820,519
Int. Cl.[2] F16D *65/02*
U.S. Cl. 188—73.3 **9 Claims**



1. A floating caliper disc brake assembly comprising:

an axle housing having an axial center point, said axle housing having a pair of torque bar receiving pads provided thereon, each of said torque bar receiving pads being a flat surface having a plurality of threaded bores and formed on said axle housing, each of said torque bar receiving pads located on opposite sides of said axial center point of said axle housing such that said flat surfaces of said torque bar receiving pads are parallel to each other;

a pair of torque bars having flat mounting surfaces on the inboard side thereof, one of said pair of torque bars being mounted on one of said torque bar receiving pads and the other of said pair of torque bars being mounted on the other of said torque bar receiving pads, each of said torque bars having a plurality of apertures through said mounting surface, said mounting surface dimensions being similar to said flat surface of said torque bar receiving pad, each of said torque bars having first and second arcuate members on each end thereof connected by a vertical support, each arcuate member having a key at the extremity thereof, said keys projecting perpendicularly outward from said inboard side of said torque bar;

a pair of floating calipers located between said pair of torque bars, each floating caliper having a keyway at each end thereof dimensionally compatible with said keys in said torque bars, the keyways on one of said floating calipers respectively engaging the keys on the first arcuate member of each said torque bar and the keyways on the other of said floating calipers respectively engaging the keys on the second arcuate member of each said torque bar such that said floating calipers are maintained in position between said pair of torque bars and are free to move laterally relative to said keys of said torque bars;

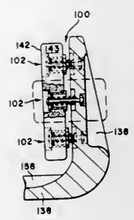
a plurality of threaded fasteners passing through said plurality of said apertures of said torque bars and into said plurality of threaded bores of said torque bar receiving pads to attach said torque bars to said torque bar receiving pads.

4,117,912

MEANS FOR REDUCING THE GAP BETWEEN ROTOR-BACKING PLATE INTERFACE DURING BRAKE DEPRESSURIZATION

Joseph P. Ruppe, Jr., South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 18, 1977, Ser. No. 816,242
Int. Cl.[2] F16D *55/48, 65/22*
U.S. Cl. 188—216 **10 Claims**



9. A wheel and brake assembly for an aircraft comprising:

a wheel member rotatably mounted on said aircraft;

torque-absorbing means mounted on said aircraft and carrying a backing plate member;

fastener means for attaching a first friction surface to said backing plate member;

brake application effecting means including a pressure plate member extending generally parallel to said backing plate member and slidably relative to said torque-absorbing means, said pressure plate member having a second friction surface;

rotor members and stator members located between the pressure plate member and the backing plate member, said rotor members and stator members being slidable on said wheel member and on said torque-absorbing means respectively, each of said rotor and stator members carrying third friction surfaces;

said brake application effecting means including means for moving said pressure plate member toward the backing plate member to urge said third friction surfaces into frictional engagement with one another in response to a brake signal and thereby effect a brake application; and

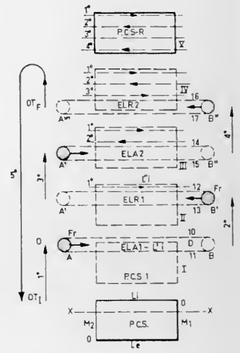
resilient means defining a yieldable connection between said backing plate member and said first friction surace for urging said first friction surface away from said backing plate member and toward said pressure plate member when said brake is released.

4,117,913

PROCESS AND MACHINE FOR SMOOTHING PRINTED WIRING-CIRCUIT PLATES

Julienne Lévy, Saint Louis, France, assignor to Telettra International, Luxembourg, Luxembourg

Filed Nov. 11, 1976, Ser. No. 740,820
Claims priority, application France, Nov. 24, 1976, 75 35787
Int. Cl.[2] B23C *3/13, 3/12;* **B23Q** *1/18*
U.S. Cl. 90—15.1 **1 Claim**



1. A machine for cutting off wires permanently secured to a printed circuit board and having free ends extending from one side of said board, said machine comprising at least one smoothing tool consisting of a milling-cutter revolving at high speed, and means for moving the printed-circuit board, said machine further comprising:

a multi-component device including a first screw-driven carriage for moving the board in a transverse direction in relation to a lengthwise axis of the board, and in the same plane as that of the board,

a device including a pneumatically controllable carriage for imparting a translational travelling movement to the smoothing tool along the lengthwise axis of the board to sever said wires, said cutter passing within a distance of less than 1.6 mm. of said one side of said board,

a control device coupled to the board-moving device, to control transverse movements of the board and initiate the lengthwise movement of the smoothing tool on completion of each transverse movement of the board,

reversing means responsive to completion of each lengthwise movement of the smoothing tool, for causing an incremental transverse movement of the board and a lengthwise movement of the smoothing tool on completion of the incremental transverse movement of the board, said lengthwise movement of the smoothing tool taking place in the direction opposite to that of the previous lengthwise movement,

means for disposing the board on the transverse-movement device, locking the board in position and initiating the first transverse movement of the board, said locking means comprising a pneumatic jack for holding the board on said first carriage, said locking device comprising a sloping surface and being coupled to said holding jack for immobilizing the board on the first carriage when the holding jack is operated to move the locking device in a predetermined direction,

means for causing the components forming the board-moving device to return to the original positions thereof on completion of a series of said transverse movements, and

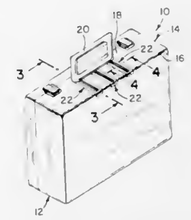
switch means for stopping the machine when a protective cover is removed, to prevent accidents.

4,117,914

SLIDABLE SUITCASE HANDLE

John M. Snyder, 186 Riverside Dr., New York, N.Y. 10024, assignor to John M. Snyder; Bernard J. Steinberg, both of New York, N.Y. and Edward Halle, Fort Lauderdale, Fla.

Filed Jun. 22, 1977, Ser. No. 809,060
Int. Cl.[2] A45C *13/26*
U.S. Cl. 190—58 R **9 Claims**



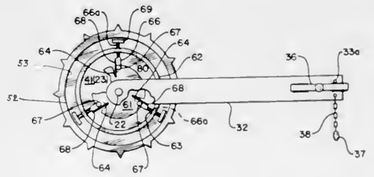
1. An item for carrying material comprising a main body portion, comprising a top portion, comprising at least one top edge and at least one central portion and a carrying handle characterized in that the carrying handle is slidably connected to the top portion of the item by means which selectively permit sliding movement of the carrying handle from the central top portion to the edge top portion of said item; in which the means to selectively permit sliding movement of the carrying handle comprises at least one slide holder secured on said edge portion and said central portion of said top portion to slidably recieve said handle.

4,117,915

RECIPROCATING LEVER FRICTION DRIVE MECHANISM FOR A BICYCLE OR OTHER OCCUPANT PROPELLED VEHICLE

Timothy Tung Jen Young, 788 Walnut St., Apt. 2, San Carlos, Calif. 94070

Continuation-in-part of Ser. No. 628,074, Nov. 3, 1975, Pat. No. 4,063,747. This application Nov. 5, 1976, Ser. No. 739,351
Int. Cl.[2] B62M *1/04;* **F16D** *13/08. 13/14;* **F16H** *7/06*
U.S. Cl. 280—255 **10 Claims**



1. In an occupant propelled vehicle including a frame, a ground engaging wheel mounted on said frame, a driven sprocket for rotating said wheel, a drive sprocket, a drive shaft freely journaled concentric to said drive sprocket, a first lever arm fixed to one end of said shaft, a second lever arm rotatable on the other end of said shaft; an attachment shaft journaled on said frame, a first cable having one end attached to the tip of one of said lever arms and the other end wound clockwise on said attachment shaft, and a second cable having one end attached to the tip of the other of said lever arm, and the other end wound counterclockwise on said attachment shaft, and a turn-buckle with right-and-left threaded screws fitted to each of said cable whereby the cable length may be adjusted, and a compression spring mounted on said turn-buckle for moving into stopping engagement with said attachment shaft to limit the travel of said cables, and a leverage adding weight suspended from the tip of each of said lever arms by a link chain;

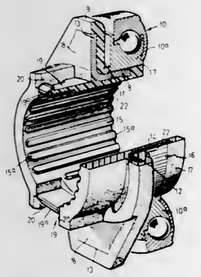
the improvement comprising a ratchet mechanism for driving said driving sprocket, said mechanism consists of: a first element having cylindrical engagement means, radially inward of the sprocket teeth and attached to the sprocket wheel so as to extend axially from both sides of the sprocket wheel; a pair of second elements coaxial with a adjacent either side of the first link members integrally connected to the said second elements; second link members with brakes surfaces on the radially outward ends extending from the first link members and adapted to frictionally engaged the brake surfaces with the cylindrical engagement means; the connection between the first and second link members adapted to flex or extend the brake surface into disengagement or engagement with the cylindrical driving engagement means of the first element;
the brake surface having a radius of arc substantially the same as the radius of the cylindrical drive engagement means;
a band attached to the second elements with radially symmetrical holes for the link members to flex and extend through;
a guardplate mounted as a buffer against reflex angles in the member connection in extension;
and where the flexion of the member connection results in the disengagement of the brake with the cylindrical engagement means, extension of the connection results in the friction drive engagement.

4,117,916

BEARING CARRIER FOR A CLUTCH RELEASE BEARING

Peter Frederick Baker, Conway, Great Britain, assignor to Quinton Hazell Limited, Colwyn Bay, England

Filed Oct. 18, 1976, Ser. No. 733,233
Claims priority, application United Kingdom, Oct. 24, 1975, 43742/75
Int. Cl.² F16C *35/06*; F16D *23/00*
U.S. Cl. 192—98 **8 Claims**



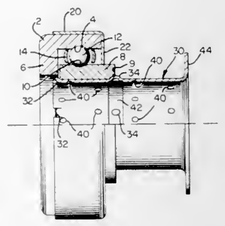
1. A clutch release bearing assembly comprising:
a clutch release bearing having inner and outer races with rolling elements therebetween; and
a bearing carrier which carries the inner race and which is adapted to be slidably mounted on a drive element of a clutch and to be engaged by a clutch operating member so that a clutch disengaging force applied to the inner race is transmitted thereform, by the rolling elements, to the outer race and hence to the clutch mechanism,
the bearing carrier including a metal insert and a synthetic plastics part,
the metal insert comprising a tubular portion and a flange portion,
said flange portion providing a transverse abutment surface adapted to be engaged by the clutch operating member,
said tubular portion having an external surface on which a bearing seating surface is located and defining a bore which provides an internal surface,
the inner race of the bearing directly engaging said seating surface and being retained on the carrier solely by metal-to-metal engagement with said seating surface,
the plastics part being fixedly moulded onto the insert so that relative movement between the insert and the plastics part is prevented,
the pastics part including a tubular portion extending within said insert bore and covering the internal surface of said insert tubular portion and defining a bearing surface for bearing engagement with the clutch drive element,
the plastics part also having means on the exterior thereof defining axially extending surfaces for engagement by the clutch operating member.

4,117,917

CLUTCH THROW-OUT BEARING IMPROVEMENT

Eli M. Ladin, Ann Arbor, and Mark P. Reynolds, Birmingham, both of Mich., assignors to Federal-Mogul Corporation, Detroit, Mich.

Filed Aug. 4, 1976, Ser. No. 711,753
Int. Cl.² F16D *23/14*
U.S. Cl. 192—98 **5 Claims**



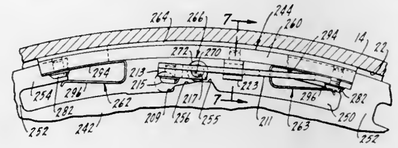
1. A clutch throw-out bearing assembly including an antifriction bearing with a first annular race member containing a first annular raceway and an annular face adapted to contact clutch release fingers during axial shifting movement of said bearing assembly, a second annular race member containing a second annular raceway and a plurality of antifriction elements constrained between said first and said second raceways, said antifriction bearing being mounted upon and securely affixed to an annular bearing carrier adapted to engage a clutch actuation means for effecting axial shifting of said bearing assembly the improvement comprising,
said bearing carrier formed from sheet metal and including a longitudinally extending seam defined by opposed abutting edges of said bearing carrier, and coacting means on said opposed edges disposed in interlockingly engaged relationship,
means including a radial flange at one end portion of said bearing carrier adapted for engagement with a clutch actuation means,
lubricant retention means on the inner circumferential surface of said bearing carrier for retention of lubricant and the distribution thereof during axial shifting of the bearing assembly, said lubricant retention means including a circumferentially extending groove of a depth less than (the thickness of said sheet metal) and extending in a plane perpendicular to the longitudinal axis of said bearing, and
bearing retention means for locating and securing said bearing on the carrier comprising at least one protrusion protruding from the outer circumferential surface of the carrier, said bearing being press fittingly mounted on the outer circumferential surface of said carrier and abutting against said at least one protrusion at one end of one of said race members, and said carrier being staked at the end therof opposite said radial flange into abutting engagement with the other end of said one of said race members.

4,117,918

WEDGING CENTRIFUGAL CLUTCH WITH TORQUE LIMITER

Russell Earl Silberschlag, Glen Ellyn, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 28, 1976, Ser. No. 754,935
Int. Cl.² F16D *43/14*
U.S. Cl. 192—103 B **5 Claims**



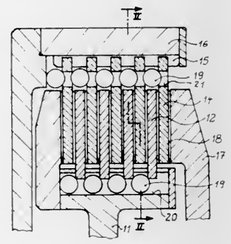
1. An engaging mechanism comprising, first and second relatively rotatable members, an annular disc fixed to said first member, a plurality of shoe assemblies mounted in said disc, cam means on said disc, said assemblies including means in engagement with said cam means, said assemblies having a frictional surface thereon, centrifugal force acting to urge said assemblies into engagement with said second member at a given speed of rotation, said assemblies moving along said cam means after initial engagement whereby said devices are wedged between said disc and said second member to self-energize and increase the torque capacity of the clutch, torque limiting means associated with said cam and assemblies operating to limit the torque capacity of the clutch developed by said self-energizing feature, said assemblies include roller mechanisms engaging the cam and said torque limiting means includes spring means mounting said rollers wherein said torque limiting means comprises a flexible arm on said shoe assembly mounting said roller mechanism, said arm flexing when the predetermined torque capacity is exceeded.

4,117,919

CENTRIFUGAL DISK SEPARATION DEVICE FOR A DISK CLUTCH

Ludwig Rupp, Ravensburg, and Hubert Mayer, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Jan. 11, 1977, Ser. No. 758,429
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1976, 2601507
Int. Cl.² F16D *13/69*
U.S. Cl. 192—103 A **12 Claims**



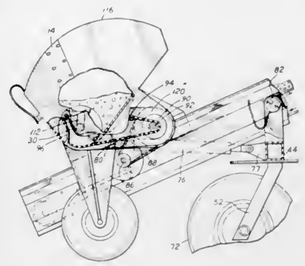
1. Apparatus for forcing and holding apart the disks of a disengaged disk clutch of the type having disk supports with disks rotatably fixed thereto and axially movable thereon, said apparatus comprising:
a plurality of separately movable axially spaced centrifugal weight means, at least two of said weight means disposed between adjacent like disks during both a clutch engaged position and a clutch disengaged position;
and means for guiding said weight means to move by centrifugal force acting thereon to force the like disks apart by a predetermined amount when said disks are in the clutch disengaged position.

4,117,920

AUGER HOPPER

Robert F. Oury, Elmhurst, Ill., assignor to Rotec Industries, Elmhurst, Ill.

Filed Mar. 2, 1977, Ser. No. 773,550
Int. Cl.² B65G *47/18*
U.S. Cl. 198—311 **10 Claims**



1. An auger hopper for delivering cementious material from a supply source to a conveyor, comprising, in combination:
an elongated hopper having an input portion and a discharge portion, the discharge portion being narrower than the input portion and including first and second end walls, said end walls having first and second channels defined therein;
a discharge opening defined in the delivery portion of the hopper and being substantially shorter than the elongate hopper;
an auger having a shaft with first and second end sections and a screw blade thereon locatable in the narrow discharge portion of the hopper with the first section of the auger shaft having a sprocketed wheel connected thereto and located outside of the hopper adjacent the first end wall;
a sprocketed drive shaft rotatably mounted on the hopper having an axis of rotation fixed with respect to translational movement in relation to the hopper side wall;
first and second arms disposed adjacent the outer portions of the first and second end walls respectively and pivotably connected to the hopper for rotation about the axis of rotation of the sprocketed drive shaft;
first and second bearing members on the first and second arms adapted to receive the first and second end sections of the auger shaft extending through the first and second longitudinal channels;
drive chain means drivably connecting the sprocketed wheel on the auger shaft with the sprocketed drive shaft;
whereby the auger may be rotated to drive cementious material toward the discharge opening and the auger may translate away from the narrow discharge portion of the hopper toward the wider input portion of the hopper when a hard lump tends to be lodged between the auger screw blade and the hopper to permit rotation of the hopper with a minimum of jamming and whereby the drive chain may be kept at a fixed tension and not pulled or loosened when the auger is translated during operation.

4,117,921

TRAY LOADING DEVICE IN CONTINUOUS CONVEYING AND PROCESSING SYSTEM

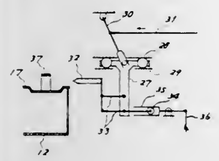
Yoshitaka Mikata, Himeji, Japan, assignor to Yamato Scale Company, Ltd., Japan

Filed Feb. 7, 1977, Ser. No. 766,529

Claims priority, application Japan, Feb. 10, 1976, 51/14224[U]

Int. Cl.[2] B65G *47/02, 47/34*

U.S. Cl. 198—482 2 Claims



1. A continuous processing system comprising a material treating device for treating materials carried in trays, an endless conveyor passing through said treating device and having a plurality of uniformly spaced tray receiving carriages, a horizontally disposed tray loading station at one position along said conveyor and a horizontally disposed tray unloading station at another position along said conveyor, each of said carriages having tray receiving means with an open side for reception of a tray or stack of interengaged trays and an elevatable cover having means positively interlocking said tray or stack of trays to retain them in position on the tray receiving means during movement by said endless conveyor, means for intermittently driving said conveyor and causing said carriages to pause at the loading and unloading stations, means at said loading station for raising said elevatable cover while maintaining it in a horizontal position, loading said tray or stack of trays onto said carriage and lowering said cover while maintaining in said horizontal positon to engage said tray or stack of trays during the pause in said motion and means at said unloading station for elevating said cover while maintaining it in a horizontal position and removing said trays.

4,117,922

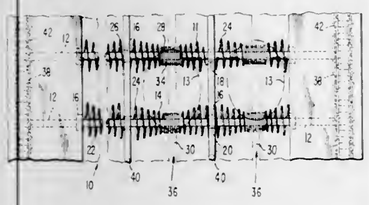
COILED SPRING CONVEYOR FOR EGGS

Thomas O. Niederer, Titusville, N.J., assignor to Otto Niederer Sons, Inc., Pennington, N.J.

Filed Mar. 7, 1977, Ser. No. 775,028

Int. Cl.[2] B65G *39/06, 39/20*

U.S. Cl. 198—652 7 Claims



1. An improved coiled spring conveyor for eggs comprising:

(a) a plurality of parallel rods extending transversely with respect to the direction of movement of the conveyor;

(b) a plurality of coiled springs positioned about said rods concentrically to define a plurality of egg receiving receses between pairs of said coiled springs positioned about adjacent rods, each of said coiled springs further including:

(1) a plurality of first spring sections having a generally cylindrical configuration, said first spring sections having an internal coil diameter slightly larger than the outside diameter of said rods to facilitate gripping of said rods by said coiled springs when positioned therearound; and

(2) a plurality of second spring sections having a coil diameter larger than the coil diameter of said first spring sections, said second spring sections having a generally cylindrical configuration with a slightly concave outer surface to cooperate with other second spring sections of adjacent coiled springs to define egg receiving recesses therebetween, said second spring sections including an opaque section in the approximate center thereof for preventing the passage of light therethrough during candling, said opaque section being formed by abutment between adjacent turns of said coiled spring within said second spring section, said opaque section having an internal diameter greater than the internal diameter of said first section and greater than the outside diameter of said rod.

4,117,923

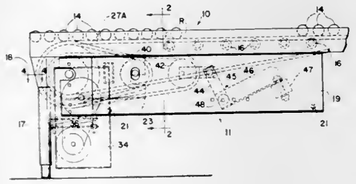
DRIVE MEANS FOR ROLLER CONVEYORS

Charles W. Werntz, Ferguson, Mo., assignor to Alvey Inc., St. Louis, Mo.

Filed May 31, 1977, Ser. No. 801,535

Int. Cl.[2] B65G *13/07*

U.S. Cl. 198—790 2 Claims



1. In an article conveying live roller conveyor having a frame with spaced rails defining a conveying path, a plurality of article supporting rollers operatively carried by said rails, snubbing roller means carried by said rails adjacent said article supporting rollers, an endless rope drive member supported by said snubbing roller means in position to engage and rotate said article supporting rollers, and power operated drive means for pulling said rope drive in a direction for rotating said article supporting rollers to transport articles supported thereon, said drive means returning said rope drive to the conveying path, the improvement of the drive means comprising a pair of shafts supported by said frame in positions with one shaft having its axis horizontally directed and the other shaft having its axis at an angle to the horizontal, said pair of shafts being otherwise in parallel spaced relation, a drum connected to said one shaft and having a cylindrical surface, at least two sheaves carried by said other shaft and free to rotate independently thereon, a further sheave independently rotatable on said one shaft adjacent said drum, a tension adjusting sheave movably carried by said frame, a counterweight connected to said tension adjusting sheave to exert a force thereon to move the same, said endless rope drive member being trained about said drum surface and said independently rotatable sheaves such that said rope drive member tracks on said drum surface in a plurality of adjacent wraps, said rope drive member finally leaving said drum surface engaging with said movable sheave for tension adjustment by said counterweight and engaging said further sheave before returning to rotate said article supporting rollers, said further sheave being engaged by said rope drive member for directing it in its returning direction to rotate said article supporting rollers.

4,117,924

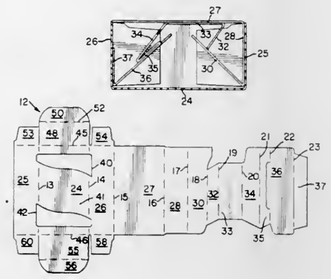
DISPLAY CARTON

Lawrence J. Growney, Pearl River, N.Y., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Jun. 20, 1977, Ser. No. 808,436

Int. Cl.[2] B65D *5/50*

U.S. Cl. 206—45.14 6 Claims



1. An elongate generally rectangular one piece carton blank of bendable sheet material which is divided by parallel, longitudinally spaced transverse score lines into a series of generally rectangular panels comprising a front wall forming panel having an opening of substantial size cut therein, adjoining sidewall forming panels, a back wall forming panel extending from one of said sidewall forming panels, and a partition and shadow forming panel structure extending from the transverse score line defining the side edge of said back wall forming panel which is remote from said front wall forming panel, which partition and shadow forming panel structure includes a sidewall reinforcing panel extending from said side edge score line of said back wall forming panel to a longitudinally spaced hinge forming score line separating said sidewall reinforcing panel from a first shadow forming panel, said reinforcing panel having a dimension in the direction longitudinally of the blank which is somewhat less than the corresponding dimension of the sidewall panel adjoining said back wall forming panel, said hinge forming score line defining one edge of a relatively narrow hinge forming panel, said hinge panel extending to a longitudinally spaced, transverse score line defining one edge of a back wall connecting panel having a dimension in the longitudinal direction of the blank which is substantially smaller than the corresponding dimension of said back wall panel, said back wall connecting panel extending to a longitudinally spaced transverse score line defining an opposite side edge of said back wall connecting panel, a shadow panel assembly extending to the end of the blank which is divided by spaced parallel hinge forming transverse score lines so as to provide a second shadow panel and a glue panel at the end margin of the blank, and said back wall connecting panel being subdivided by a hinge forming transverse score line to provide a relatively narrow strip adjoining said score line separating said back wall connecting panel from said hinge panel and spaced from the score line separating said back wall connecting panel from said last mentioned shadow panel assembly.

3. A collapsible carton formed of a one piece blank of bendable sheet material which is cut and creased to provide a plurality of hingedly connected panels which are folded and secured so that in set up condition and disposed on end said carton comprises a tubular body having a back wall, adjoining sidewalls hinged thereto, a front wall hingedly connected to forward edges of the sidewalls with one or more openings formed therein by cutting out a substantial area intermediate the top and bottom edges thereof, top and bottom closure flaps hinged to said sidewalls and to said back or front wall, and a partition and shadow panel structure disposed within said tubular body comprising a pair of shadow forming panels hingedly connected at opposite sides of a front wall opening on hinge axes substantially coinciding with the hinge axes of the connection of the front wall with the sidewalls, each of said shadow forming panels being disposed in a plane extending diagonally inwardly of the front wall opening and in the direction of the back wall and the opposite sidewall, at least a portion of the inner margin of one of said shadow forming panels being reversely folded so as to extend in the direction of the sidewall to which said shadow forming panel is connected and in the direction of the back wall, and a panel means hingedly connecting inner marginal portions of said inwardly directed shadow forming panels which panel means has a portion secured so as to lie in a fixed position against a portion of the inner face of the back wall, said panel portion being disposed intermediate the sidewalls and spaced therefrom so as to form with inner marginal portions of said shadow forming panels a forwardly open pocket of substantial width between said inner margin portions for retaining therein a generally tubular product with portions of said product visible through the front wall opening when placed in said pocket.

4,117,925

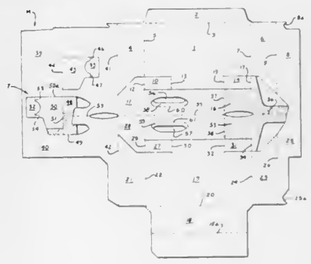
ARTICLE CARRIER AND BLANK THEREFOR

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 11, 1977, Ser. No. 823,588

Int. Cl.[2] B65D *5/48*

U.S. Cl. 206—186 3 Claims



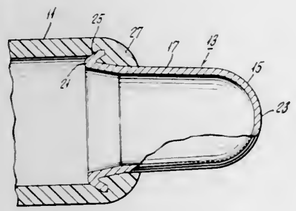
1. An article carrier comprising a bottom wall, side walls foldably joined respectively to the side edges of said bottom wall, end wall panels foldably joined respectively to the end edges of said side walls, a riser panel foldably joined respectively to the associated end wall panel at one end of the carrier and extending medially inward of the carrier, medial partition structure foldably joined to the end wall panels at the other end of the carrier and extending medially inward of the carrier, a multiple ply handle secured at one end thereof to the upwardly extending portion of said riser panel and secured at the other end thereof to the upwardly extending portion of said medial partition structure, a hand hole disposed in said handle, and transverse partition structure struck from said medial partition structure and including an anchoring tab secured to one of said side walls, a transverse partition strip foldably joined to said anchoring tab, and an inverted L-shaped medial tab having vertical and horizontal parts and with its vertical part foldably joined to said transverse partition strip remote from said anchoring tab and with its horizontal part foldably joined to said medial partition structure along a horizontal fold line, the fold line between said medial tab and said medial partition structure being substantially adjacent the lower edge

of said hand hole and being substantially coextensive therewith.

4,117,926
PROBE COVER

Robert Bruce Turner, Weymouth, Mass., and Glen Lee Weinberg, Berkley Heights, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 12, 1977, Ser. No. 758,893
Int. Cl.[2] G01K *1/16*
U.S. Cl. 206—306 **4 Claims**



1. An electronic thermometer probe cover apparatus, comprising:

an elongate sleeve member having surfaces defining a hollow interior along a longitudinal axis, said sleeve member being configured generally to receive an electronic thermometer probe;

a tip member attached to and closing one end of said sleeve member, in position for thermal engagement with said probe, said tip member being generally axially symmetric about said axis, generally cup shaped at an outermost terminus, thence extending away from said terminus along said axis toward said one end of said sleeve member, the interior surfaces of said extension away from said terminus and along said axis being in at least two successive integral segments, said first segment tapering away from said axis at a first angle and said segment tapering away from said axis at a second angle larger than said first angle, said tip member thence defining a protruding flange which engages and is surrounded by said sleeve member.

4,117,927
GAS TURBINE CONTAINER

Friedrich Gothsche, Munich, Fed. Rep. of Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Fed. Rep. of Germany

Filed Dec. 6, 1976, Ser. No. 747,929
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554685
Int. Cl.[2] B65D *85/68*
U.S. Cl. 206—319 **11 Claims**

1. A container for a gas turbine engine, comprising:

means for supporting the container;

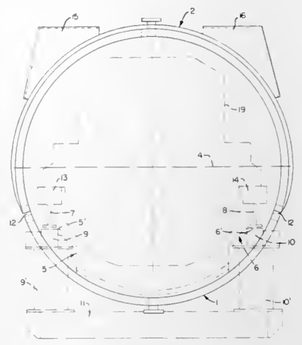
guide means arranged in the container for guidingly mounting the gas turbine engine therein;

damping means interposed between said guide means and said supporting means for damping vibration of the container;

a lower container member mounted on said damping means;

recess means arranged in the lower container member, said recess means supporting said guide means and being supported by said damping means so that all the force of the weight of the gas turbine engine is transmitted directly downward through the vertical axes of the guide means, the recess means, and the damping means, to be absorbed by the damping means; and

an upper container member joining said lower container member and having a wall arranged at least at one end thereof to define an entire end wall of the container, said upper container member being removable from the lower container member so that the gas turbine engine may be removed from the container either directly in a horizontal

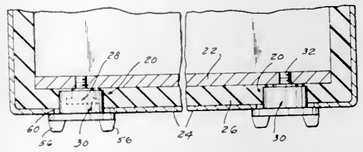


line along the central longitudinal axis of the container or directly upward along the central vertical axis of the container.

4,117,928
FASTENER FOR SHIPPING CONTAINER

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co. Inc., West Islip, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,280
Int. Cl.[2] B65D *85/00;* **A44B** *21/00*
U.S. Cl. 206—320 **7 Claims**

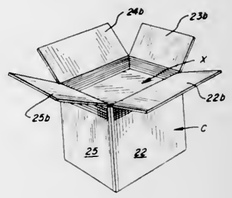


1. In a shipping container of the type having a surrounding peripheral wall and a hollow interior for retaining an article therein, resilient protective insulation in the container and located between the article and at least one adjacent portion of the inner surface of the peripheral wall of the container, the improvement comprising; a quick release fastener for mounting the article in the protective shipping container and including a stud having a base portion with means thereon for mounting the stud to the article being protected and a head portion extending from the base, a receptacle having a larger diameter flange thereon for interengagement with surfaces on the shipping container and a tubular housing with a recess therein for receipt of the head of the stud therein, one of the stud and receptacle having a spiral cam slot thereon and the other of the stud and receptacle having a cam follower thereon for interengagement therebetween when the stud is mounted to the article and the receptacle is positioned on the container, the resilient protective insulation being positioned between the container and the article at least at the location of the fastener and acting as spring means to permit relative movement between the article and container toward and away from one another as the resilient spring means is compressed and released and thus permitting the shifting of the stud and receptacle between the fastened and unfastened positions.

4,117,929
SHIPPING UNIT AND METHOD OF LOADING SAME

Donald M. VanderMey, Grand Rapids, Mich., assignor to Packaging Corporation of America, Evanston, Ill.

Continuation of Ser. No. 634,871, Nov. 24, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,408
Int. Cl.[2] B65D *81/02, 85/30, 25/10*
U.S. Cl. 206—326 **3 Claims**

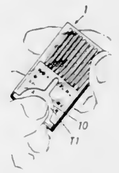


1. A shipping unit comprising an upright product having a substantially flat upper surface, the peripheral configuration of which may vary over a wide range; a container formed from a blank of sheet material accommodating the product therein, said container including a plurality of side walls having adjacent side walls connected by elongated upright foldlines, the upper portion of each side wall being provided with a plurality of vertically spaced foldlines extending across the entire width of said side wall and being disposed transversely of the upright foldlines, a bottom subtending the accommodated product, and top closure flaps connected to the side walls above the vertically spaced foldlines; and spacer means overlying the product upper surface, said spacer means including a multi-sided planar base member having a continuous, uninterrupted peripheral configuration conforming substantially to the area delimited by the container side walls and having the periphery of said base member in contact with the interior surface of said side walls, the peripheral configuration of said base member being larger than the range of peripheral configurations of the upper surface of the product accommodated within the container, and a plurality of stationary retainer elements affixed to and depending from the underside of the base member and snugly engaging peripheral segments of the product upper surface, the arrangement of said retainer elements effecting positioning, adjacent to and centrally of one side of said base member, at least a portion of each retainer element being positionable between a peripheral segment of the product upper surface and an adjacent container side wall, the upper side of the base member being in substantially coplanar relation with predetermined corresponding foldlines formed in the upper portions of said side walls and disposed beneath the connection between said top closure flaps and the side walls, the portions of the adjacent side walls disposed above the predetermined corresponding fold-lines being separated from one another by cuts aligned with the upright foldlines connecting the adjacent side walls and extending only downwardly from the top closure flap connections to the predetermined corresponding foldlines, whereby said top closure flaps and the associated cut portions of the side walls are folded about the predetermined corresponding foldlines and secured in overlying top closing relation with the upper side of the base member.

4,117,930
PACKING RECEPTACLE FOR SEWING MACHINE NEEDLES

Klaus Pavel, Eynatten, Belgium, assignor to Rhein-Nadel Maschinennadel GmbH, Aachen, Fed. Rep. of Germany

Filed Aug. 4, 1977, Ser. No. 821,775
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 7710391[U]
Int. Cl.[2] B65D *85/24*
U.S. Cl. 206—382 **10 Claims**



1. A packing receptacle for sewing machine needles, comprising

an upper part having the shape of a flat cap and having spaced apart wide side walls defining at one end thereof an opening therebetween and gripping recesses, respectively, adjacent said opening, said side walls being off-set in part relative to each other, one of said side walls has lateral opening-sided edges on opposite sides adjacent said opening, respectively,

a stay-shaped lower part being in the form of a platelet releasably positively clampingly insertable in said opening of said upper part between said wide side walls,

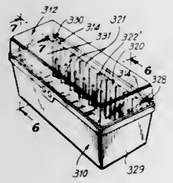
said lower part being adapted to carry sewing machine needles, the latter being inserted in said lower part in a row series and adjacent one another,

said stay-shaped lower part has a partial surface exposed by said gripping recesses, respectively, in an inserted position of said lower part in said upper part,

the other of said side walls of said upper part forms projections constituting narrow lateral tongues, a corresponding of said gripping recesses extends between the latter, said lateral tongues lying opposite to and projecting beyond said opening-sided edges of said one side wall, said one side wall being formed with a slot therein interrupting the surface of said one side wall therethrough, said slot extending to a corresponding of said gripping recesses, said other side wall having a wall section lying behind and opposite to said slot operatively constituting a central orientation abutment surface for the needles, said upper part including narrow side walls each extending perpendicularly to and connected to both of said wide side walls, said narrow side walls including lower side wall portions connected to and extending perpendicularly to said lateral tongues and said opening-sided edges, said opening-sided edges of said one side wall and said lower side wall portions forming a catch opening laterally communicating with and enlarging the corresponding of said gripping recess in said one side wall, said lateral tongues and said lower side wall portions facing said catch opening and operatively constituting lateral shoe-like orientation abutment surfaces on opposite lateral sides of the corresponding of said gripping recess for the needles.

4,117,931
CASE FOR DIFFERENTLY SIZED MAGNETIC TAPE ENCLOSURES

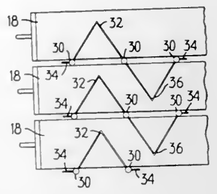
Joseph L. Berkman, 48 Country Rd., Mamaroneck, N.Y. 10543
Continuation-in-part of Ser. No. 561,315, Mar. 24, 1975, Pat. No. 4,003,468, and a continuation-in-part of Ser. No. 744,467, Nov. 24, 1976. This application Nov. 26, 1976, Ser. No. 745,248
The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.
Int. Cl.[2] B65D *85/30, 85/62*
U.S. Cl. 206—387 15 Claims



1. A case having side and end walls adapted for interchangeably receiving and storing two differently sized magnetic tape enclosures having generally rectangular configurations, the first enclosure having a smaller width and a greater thickness than the corresponding dimensions of the second enclosure, and having a height greater than the height of the second enclosure; said case having at least one row of tandem storage compartments, at least one of which is adapted to interchangeably receive a first or a second dimensioned magnetic tape enclosure, said compartment being generally rectangular in configuration and bounded on two sides by wall portions spaced from each other a first predetermined distance approximately equal to the width of the first enclosure to receive the same therebetween and a further wall portion substantially normal to said wall portions, said compartment being open on the side thereof opposite said further wall portion for receiving the enclosures; and guide means at least partially bounding said wall portions of said compartment to define a space having a thickness equal to a second predetermined distance approximately equal to the thickness of the first enclosure for guiding the first enclosure into said compartment and preventing the first enclosure from moving therein, wall means spaced from said wall portions and cooperating therewith to form an elongate rectangular recess which opens at said compartment open end and is spaced from said further wall portion so as to form a depth limiting shoulder or ledge adapted to maintain at least a portion of said second enclosure projecting above said wall portions upon full insertion of said second enclosure into said compartment, each recess forming retaining wall portions which define a space having a width greater than said first predetermined distance and a thickness smaller than said second predetermined distance suitable for securely receiving a second enclosure to thereby prevent movements of a second enclosure withm said compartment, whereby the manual gripping of any second enclosure is facilitated by said depth limiting shoulder, and whereby said compartment can interchangeably receive either a first or a second enclosure and maintain either enclosure securely therein by insertion through an associated compartment open end and respective cooperation with either said guide means or said retaining wall portions of said recess.

4,117,932
PLASTIC PACKAGING PRODUCT FOR SEPARATION OF COMPONENTS

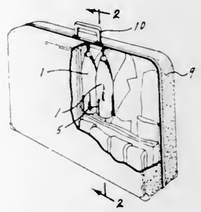
Ronald L. Larsen, Minneapolis, Minn., and Clifford W. Berry, Marlton, N.J., assignors to Conwed Corporation, St. Paul, Minn.
Continuation of Ser. No. 748,635, Dec. 8, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 862,181
Int. Cl.[2] B65D *85/42*
U.S. Cl. 206—419 6 Claims



1. An extended plastic packaging product for separation and cushioning of a plurality of components in horizontal and vertical directions, said packaging product comprising:
(a) a plurality of spaced, parallel longitudinal strands lying in a first plane;
(b) at least three linking transverse strands spaced along the length of said longitudinal strands and connecting said longitudinal strands, said linking strands having a portion between said longitudinal strands extending at least ¼ inch into a second plane;
(c) said longitudinal and linking strands being extruded as an integral plastic structure;
(d) said linking strands being or smaller cross-sectional dimension than said longitudinal strands and being flexible and said longitudinal strands being more rigid than said linking strands;
(e) the adjacent linking strands being spaced to accommodate only one of said components and separate it from adjacent components lying in the same horizontal plane; and
(f) the longitudinal strands being arranged to support one layer of said components in a first horizontal plane and to separate said first layer from an adjacent layer of said components in a parallel horizontal plane.

4,117,933
BOTTLE CARRIER

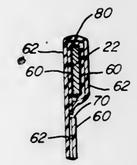
Gilles Lachance, 56 Place Montmorency, Laval, Canada (H7N 1T6)
Filed Aug. 30, 1977, Ser. No. 829,585
Int. Cl.[2] B65D *85/54*
U.S. Cl. 206—583 3 Claims



1. The combination of a bottle carrier with a suitcase, the latter having a generally rectangular or squared shape body portion defined by a bottom wall and pairs of substantially parallel first and second side walls, with said second side walls being substantially perpendicular to said first side walls, a cover hinged to said body portion along an edge of one of said first side walls, a carrying handle for said suitcase attached to the other of said first side walls, said bottle carrier comprising an elongated generally bottle-shaped wrapper sheath of a material having heat-insulating and shock-protecting properties and having an opening for removal and insertion of a bottle, means for closing said opening, and a shock-absorber resilient attaching means for said wrapper sheath including a helical spring attached at one end to an end of said wrapper sheath, and at the other end to said other one of said first side walls, and a cord attached to the other end of said wrapper sheath and to said one of said first side walls, said wrapper sheath, spring and cord extending along a substantially straight line within said suitcase and in a plane substantially parallel to said cover and bottom wall and extending through said handle, said cord maintained taut by said spring, whereby a bottle inserted in said wrapper sheath may be carried upright inside said suitcase when the latter is upright and said handle uppermost, and is further protected by garments and other items carried in said suitcase and filling the latter around said wrapper sheath and bottle.

4,117,934
RECLOSABLE BAG

John C. Mowli, 2032 W. Jarvis, Chicago, Ill. 60645, and Harry Bala, 2259 N. Kedzie, Chicago, Ill. 60647
Filed Feb. 22, 1977, Ser. No. 770,603
Int. Cl.[2] B65D *27/34, 33/30*
U.S. Cl. 206—610 1 Claim

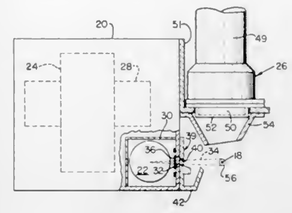


1. A plastic bag formed of heat sealable film-type material and including a front wall, a back wall and closed bottom and side edges, the improvement comprising, in combination: a stiffener strip capable of being bent manually and retaining the bent shape; the front wall and the back wall being folded over said stiffener strip and being heat sealed to the front wall whereby the stiffener strip is intermediate four plies formed from the front wall and the back wall; said heat sealed walls forming a pocket for said stiffener strip; and a bag mouth portion located intermediate said stiffener strip and said closed bottom, said bag mouth portion comprising a score line capable of being easily severed by manual manipulation.

4,117,935
APPARATUS FOR AND METHOD OF MEASURING PRODUCT MASS

Carl Richardson, Bedford; Hugh F. Stoddart, Groton, and Philip A. Wiley, Boxboro, all of Mass., assignors to Bedford Engineering Corp., Bedford, Mass.
Filed Jun. 9, 1976, Ser. No. 694,240
Int. Cl.[2] B07C *5/16, 5/344*
U.S. Cl. 209—586 24 Claims

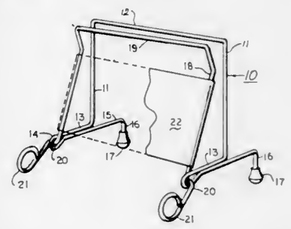
1. A system for classifying products according to their mass, said system comprising in combination;
means for conveying products along a predetermined path through an inspection station;
irradiating means for directing a beam of low energy penetrating radiation transversely to said path so that the entire bulk of each product conveyed through said station is substantially instantaneously exposed to said beam of radiation;
detector means for receiving radiation scattered by the entire bulk of each product irradiated by said beam and generating an electrical signal representative of the amount of scattered radiation received by said detector means; and



means coupled to said detector means for determining the mass of each product irradiated by said beam as a function of said electrical signal.

4,117,936
WIRE RACK

Robert L. Dawson, San Diego, Calif., assignor to Prima International, San Diego, Calif.
Filed Oct. 31, 1977, Ser. No. 847,078
Int. Cl.[2] A47F *7/00*
U.S. Cl. 211—50 7 Claims



1. A wire rack for supporting magazines, and the like comprising: a first wire-formed frame having an essentially U-shaped configuration and having lower article-carrying end portions extending forwardly of the plane of the frame and having a further lower end portion extending rearwardly of the plane of the frame to constitute rear legs for the rack; and a second wire-formed frame having an essentially U-shaped configuration hinged to the first frame in facing relationship therewith, said second wire-formed frame having lower end portions extending forwardly of the plane of the second frame to constitute front legs for the rack, whereby articles supported on the article-carrying portions of the first frame cause the first and second frames to turn angularly toward one another to exert a clamping action on such articles.

4,117,937
ASSEMBLY FOR HOUSING, CONVEYING AND BRINGING-FORTH TOOLS DURING THE OPERATION OF NUMERICALLY CONTROLLED MACHINES

Mario Ratti, Bresso (Milan), Italy, assignor to S.U.S.T.A. S.p.A., Milan, Italy
Filed Nov. 8, 1976, Ser. No. 740,241
Claims priority, application Italy, Nov. 10, 1975, 22639 A/75
Int. Cl.[2] A47F *7/00*
U.S. Cl. 211—60 T 7 Claims

1. An assembly for use in supporting and conveying a plurality of tools, said assembly comprising:
a conveyable dolly including a base and a pair of parallel spaced walls extending substantially vertically upwardly

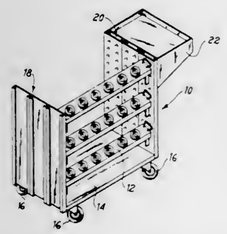
from said base, said walls extending vertically to define the height of said dolly and horizontally to define the depth of said dolly;

a plurality of tool supports dimensioned to extend between said pair of walls, each said support having fixed thereto a plurality of downwardly-tapered conically-shaped bushing means for supporting therein tools;

a plurality of pairs of brackets, one said pair of brackets being associated with a respective one of said supports and including a first bracket to be mounted on a first of said walls and a second bracket to be mounted on a second of said walls;

each said bracket including means for supporting an end of a respective said support such that each support is supported at opposite ends thereof by the respective pair of brackets at a fixed orientation to said respective pair of brackets; and

means for attaching each said pair of brackets to said walls at a selected fixed position of a plurality of positions varying horizontally and vertically with respect to said walls and



rotatively with respect to the orientation of said brackets and said supports, and for thereby mounting said respective supports to said dolly at a selected position with respect to the height and depth of said dolly and at a selected orientation such that said bushing means extend vertically or at a selected inclination to the vertical, said attaching and mounting means comprising:

a plurality of openings in each said wall, said openings in each said wall being spaced from each other both horizontally and vertically of said wall, the openings in said pair of walls being aligned:

a first hole in each said bracket, and a plurality of second holes in each said bracket, each of said second holes being spaced an equal distance from said first hole; and

first and second bolt means associated with each said bracket, said first bolt means extending through said first hole of said bracket and a first selected said opening of the respective wall, and said second bolt means extending through a selected of said second holes of said bracket and a second selected opening of said respective wall.

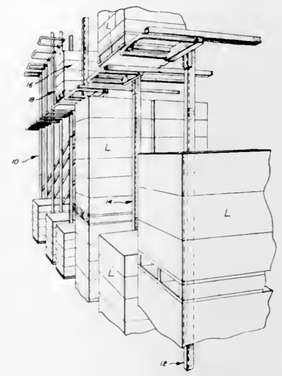
4,117,938

PROTECTOR ARM

Herbert H. Klein, Arlington Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Jul. 22, 1976, Ser. No. 707,686
Int. Cl.² A47F *5/00*
U.S. Cl. 211—191 **7 Claims**

1. A rack for use in storing loaded pallets which includes a plurality of vertical rack frames which are spaced apart so as to define a pallet-storage row between adjacent rack frames, each of said rack frames including a plurality of vertical posts, brace means interconnecting said posts, pallet-rail support means mounted to said posts, and a plurality of horizontal pallet-receiving rails supported by and mounted on said support means, said rails being constructed to receive and support loaded pallets wherein the improvement comprises: said rack frames having a front post positioned rearwardly of the front end of said pallet-rail so that a portion of said pallet-rail extends forwardly of the front post with the distance between the front post and forward end of said pallet rail being effective to permit stacking of loaded pallets on either side of said post and to extend forwardly of said front post and so as to protect said front post, and to provide a rack having the capability of providing greater turn-in clearance into a pallet row, and in



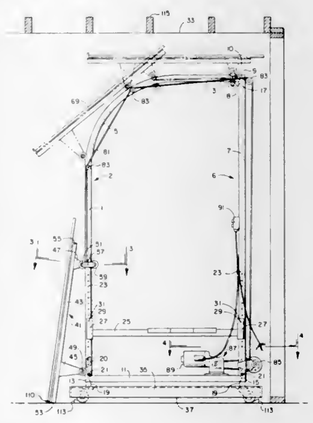
combination therewith, protector arm assembly means for mounting on the front post beneath and adjacent said forwardly-extending pallet-rail, said protector arm assembly means extending forwardly of said rail for providing protection and minimizing injuries due to the forwardly-extending portion of said pallet-rail.

4,117,939

MOVEABLE BUILDING BOARD HOIST

Elvin D. Haddock, Phoenix, Ariz., assignor to Yuma Desert Manufacturing, Inc., Yuma, Ariz.

Filed Jan. 2, 1975, Ser. No. 537,864
Int. Cl.² B66F *9/12*
U.S. Cl. 214—1 SW **7 Claims**



1. A moveable building board hoist comprising a track having a vertically disposed leg having a lower end, a horizontally disposed leg having an upper end, a curved knee connecting said legs, support means for supporting said track, means for adjusting the height of said track to working proximity, and motive means for moving and carrying building board from and between said ends comprising a truck having a receiver for the board which carries the board at an angle to the track, the

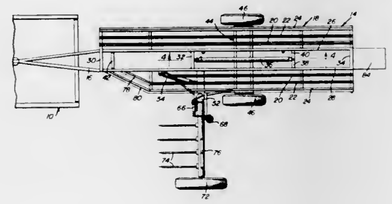
lower end of the board when in the vertically inclined position being more distant from the track than the upper end such that the board is substantially parallel to the plane in which the board is to be permanently affixed when the truck is moved to said horizontally disposed leg of said track, said motive means cooperating with the angle of inclination and height of said track to place said board in working proximity to a horizontally disposed structure to which the board is intended to be affixed when the board is raised to said horizontally disposed leg of said track.

4,117,940

SIDE LOADING-REAR DISCHARGING TRAILER FOR MULTIPLE ROUND BALES

Robert G. Adam, Okeene, Okla. 73763

Filed Mar. 29, 1977, Ser. No. 782,439
Int. Cl.² B60P *1/48*
U.S. Cl. 214—1 HH **12 Claims**



1. In combination, an elongated horizontal frame for receiving hay bundles thereon, said frame including ground engageable support structure for support of said frame from the ground and longitudinal advancement of said frame thereover, an elongated generally horizontal arm, support means supporting one end portion of said arm from said frame for horizontal swinging of the other end of said arm about an upstanding axis relative to said frame between a first position with said arm projecting outwardly from one side of said frame and a second position with said arm closely paralleling said frame with a first side of said arm opposing said frame, hay bundle engaging means supported from the other end portion of said arm and projecting outwardly from said first side thereof, at least the outer portion of said hay bundle engaging means being adapted to supportively engage a ground supported hay bundle toward which said one side of said arm is laterally advanced into close proximity with said hay bundle, elevating means supporting said hay bundle engaging means from said arm for up and down movement of at least the outer portion of said hay bale engaging means relative to said arm, said frame, at a point spaced along said one side thereof from said axis a distance substantially equal to the spacing of said hay bundle engaging means along said arm from said axis, being structured to receive thereon a hay bundle supported from said hay bundle engaging means outer portion when the latter is in an elevated position and said arm is swung from said first position to said second position.

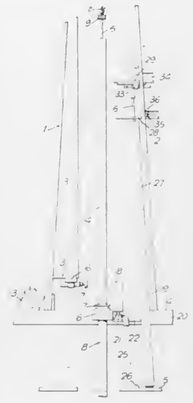
4,117,941

DEVICE FOR HANDLING AND RACKING RISER PIPES AND DRILL PIPES

Robert W. McCleskey, Jr.; Paul S. Putnam, and Arne Martin Boltad, all of Oslo, Norway, assignors to Golar-Nor Offshore A/S, Oslo, Norway

Filed Mar. 25, 1977, Ser. No. 781,482
Claims priority, application Norway, Apr. 1, 1976, 761124
Int. Cl.² E21B *19/14*
U.S. Cl. 214—2.5 **13 Claims**

1. Device for handling and racking riser pipes in a driling derrick on a platform for drilling and/or production of oil wells on the bottom of the sea, said platform/drilling derrick comprising a drill floor and a cellar deck, characterized in that said device comprises a set back platform on the cellar deck for vertical racking of riser pipe stands in the drilling derrick, a first manipulator for displacement of a riser pipe stand's lower end between a first position near the centre line of the drilling derrick and another position outside the center line, a second manipulator for displacement of a riser pipe stand's lower end between the aforementioned other position and a position above the set back position on the cellar deck, an elevator in



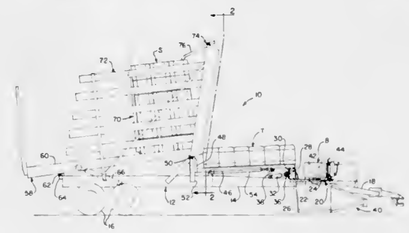
the drilling derrick for raising and lowering riser pipe stands, a finger-board in the drilling derrick intended for taking up handling subs on the riser pipe stands, locking members on the finger-board for securing the handling subs in the finger-board, a third manipulator for guiding and moving respectively a handling sub between a position near the centre line of the drilling derrick, in which position the handling sub can be coupled with the elevator, and a set back position in the finger-board.

4,117,942

MEANS FOR ADJUSTING THE SIDEBOARD

James A. Olsen, Fresno; Gene R. Butler, Kingsburg, both of Calif., and George L. Sesser, Walla Walla, Wash., assignors to Sperry Rand Corporation, New Holland, Pa.

Continuation of Ser. No. 717,413, Aug. 24, 1976. This application Nov. 2, 1977, Ser. No. 847,977
Int. Cl.² B65G *59/08*
U.S. Cl. 214—6 B **10 Claims**



1. In a bale wagon having a load bed being adapted to receive successive tiers of bales at one end thereof and accumulate said tiers to form a stack thereon and means for stabilizing said stack on said load bed, said stabilizing means including sideboard structure extending along each of the opposite sides of said load bed for laterally supporting said stack, upstanding members supporting said respective sideboard structures, lower means supporting said upstanding members adjacent the

lower ends thereof and mounting at least one of said upstanding members for transverse movement toward and away from said load bed and upper means extending between and supporting the upper ends of said upstanding members, said upper supporting means mounting at least said one of said upstanding members for transverse movement toward and away from said load bed, improved adjustment means for selectively moving at least said one of said upstanding members and thereby said sideboard structure supported thereon toward and away from said corresponding load bed side to change the spacing between said sideboard structures in order that the formation of stacks having different widths may be accommodated on said load bed, said improved adjustment means comprising:

actuating means interconnecting upper and lower portions of said one upstanding member with respective adjacent end portions of said upper and lower supporting means, said actuating means being operable for concurrently moving said upper and lower portions of said one upstanding member toward and away from said adjacent end portions of said upper and lower supporting means and thereby toward and away from said respective adjacent side of said load bed; and

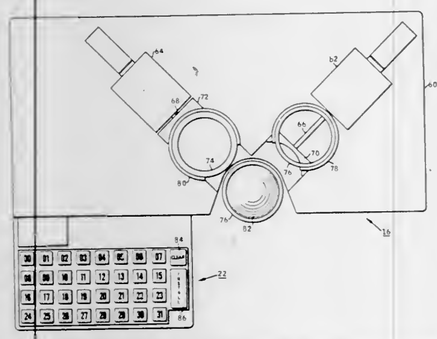
means for selectively operating said actuating means.

4,117,943

DEVICE FOR PRE-SETTING TOOLS FOR NUMERICAL CONTROLLED MACHINE

Charles L. Holland, Escondido, and John N. Coulson, Jr., El Cajon, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Oct. 4, 1976, Ser. No. 729,517
Int. Cl.[2] B65G *57/00, 59/00*
U.S. Cl. 214—6 D **1 Claim**



1. A system for selecting digital coding rings for installation of a machine tool holder which comprises:

means for supporting two stacks of rings in adjacent housings mounted on a platform adjacent to a lower, upstanding, generally conical member;

the rings in each stack having the same inside diameter, with the outside diameter of the rings in one stack being uniformly greater than the uniformly narrower outside diameter of the rings in the other stack;

keyboard means for entering a digital number corresponding to the order of wide and narrow rings in a desired stack;

electronic circuit means for converting said number to a sequence of electrical pulses; and

electrically actuated pusher means at the bottom of said stacks adapted to move the bottom rings from said stacks to said member in an order determined by the pulse sequence received at each pusher means;

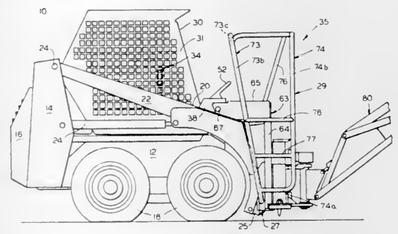
whereby a stack of rings is produced on said member having a pattern of wide and narrow rings corresponding to said number.

4,117,944

BACKHOE MOUNTING ASSEMBLY

Harold K. Beckstrom; James J. Bauer, both of Lisbon; James O. Morehouse, Havana, and Orlan J. Loraas, Lisbon, all of N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 22, 1977, Ser. No. 789,892
Int. Cl.[2] E02F *3/72*
U.S. Cl. 214—131 A **10 Claims**



1. For a tractor vehicle having lift arms pivoted on the vehicle and hydraulic cylinders connected between the vehicle and lift arms for raising and lowering the arms, an attachment mounting assembly including an implement mounting apparatus pivoted on the ends of the lift arms for carrying an attachment and a hydraulic cylinder connected between the lift arms and the implement carrying apparatus for pivoting the apparatus relative to the lift arms, the attachment mounting assembly comprising a mounting frame operatively connected to the vehicle at upper and lower mounting points at a rear end thereof and operatively connected to an implement at upper and lower mounting points at a front end thereof, the connection between the mounting frame and the vehicle comprising a mounting bracket including a member having a base portion and a step portion, the latter overlying a lateral outward projection of a front body portion of the vehicle, a pair of spaced leg portions mounted on the step portion and extending upwardly from the lateral projection of the body portion, the spaced leg portions of the mounting bracket being secured together by an upper and a lower mounting pin, the upper mounting pin pivotally receiving a locking member pivotally supported by the upper pin, and biasing means disposed between the lower pin and the locking member to bias the locking member to a lower or closed position, the mounting bracket mounted on a forward body portion of the vehicle and engaging the upper mounting point on the mounting frame and the implement carrying apparatus engaging the lower mounting point on the mounting frame to secure the mounting frame and the vehicle in operative relationship.

4,117,945

CHILD-RESISTANT SAFETY CLOSURE

George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 29, 1977, Ser. No. 811,411
Int. Cl.[2] B65D *55/02, 85/56;* **A61J** *1/00*
U.S. Cl. 215—216 **27 Claims**

1. A child-resistant safety closure adapted for threadable attachment on a container having a generally cylindrical hollow dispensing end including an exteriorly threaded neck portion, an annular rim defining a dispensing opening, and an interlocking member orientationally arranged to interlock said closure on said dispensing end when said closure is threadably advanced to a fully closed position on said neck portion, said closure comprising:

a closed endwall provided with sealing means on the underside surface thereof arranged to seal said dispensing opening in fluid-tight sealed relationship,

a pair of annular inner and outer sidewalls depending integrally from said closed endwall in radially interspaced relationship,

said outer sidewall having a distal end portion projecting axially beyond said inner sidewall and defining a generally circular cross-sectional configuration, said distal end portion being sufficiently flexible to deform from said generally circular cross-sectional configuration to a generally elliptical cross-sectional configuration in response to manual compression of diametrically opposite sides thereof and being sufficiently resilient to essentially resume said generally circular cross-sectional configuration promptly upon release of said manual compression,

said inner sidewall defining a threaded interior surface portion threadably engageable with the threaded neck portion of said container to accommodate threaded advancement of said closure on said neck portion to said fully closed position in which said sealing means is adapted to assume fluid-tight sealing relationship with said dispensing opening;

an interlocking member integrally formed on the outer sidewall of said closure and adapted to override interlocking engagement with the interlocking member on said container in response to normal threaded advancement of said closure on said neck portion, but to intercept the latter interlocking member in interlocking engagement in response to normal threaded retrogressive movement of said closure on said neck portion, and said interlocking engagement being releasable in response to manual compression and concurrent threaded retrogressive movement applied to said outer sidewall of said closure; and

said interlocking member on said closure being arranged to interlock with said interlocking member on said container at sequential interlocking locations orientationally related respectively to at least two separate threadably engaged positions of said closure on said neck portion, one of said interlocking locations being arranged to correspond to said fully closed position of said closure and another of said interlocking locations being disposed to substantially precede arrival of said closure in said fully closed position, whereby manual compression coupled with concurrent threaded retrogressive movement customarily must be repetitiously and premeditatively applied to said outer sidewall of said closure at peripheral locations straddling the interlocking locations in order to threadably remove said closure from said neck portion.

4,117,946

PLASTIC CAP FOR WIDEMOUTHED CONTAINERS

Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512

Filed Nov. 15, 1976, Ser. No. 742,128
Int. Cl.[2] B65D *41/18*
U.S. Cl. 215—321 **32 Claims**

1. A plastic cap for closing a container neck opening, comprising:

(a) a closure wall adapted to be positioned across a container neck opening;

(b) inner and outer formation means formed integrally with the closure wall and projecting from spaced portions thereof for respectively overlying inner and outer surface portions of the container neck when the cap is in place on the container neck with the closure wall positioned across the container neck opening;

(c) one of the inner and outer formation means having laterally extending projection means formed integrally therewith and projecting toward a selected container neck portion when the cap is in place on the container neck with the closure wall positioned across the container neck opening; and,

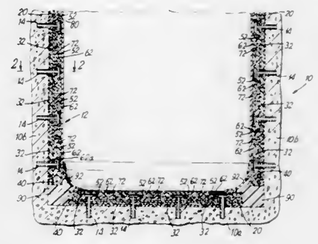
(d) the other of the inner and outer formations means including a plurality of individual formations configured to engage the container neck at distinct spaced locations around the periphery of the container neck opening and to bias the selected container neck portion toward and into firm engagement with the projection means when the cap is in place on the container neck with the closure wall positioned across the container neck opening, whereby the engagement established between the projection means and the selected container neck portion assists in firmly releasably retaining the cap on the container neck.

4,117,947

INTERNAL INSULATION FOR LIQUEFIED GAS TANK

John G. Androulakis, East Patchogue, N.Y., assignor to Frigitemp Corporation, New York, N.Y.

Filed Aug. 1, 1977, Ser. No. 820,853
Int. Cl.[2] B65D *25/18;* **B32B** *7/08;* **E04B** *1/98*
U.S. Cl. 220—435 **14 Claims**



6. In a cryogenic tank an interior insulation system comprising:

(i) a first barrier impervious to water vapor and cryogenic fluid joined to the inner surface of the wall of said tank;

(ii) a first layer of insulation in contact with said barrier;

(iii) a second and third layer of insulation, said second and third layers being bonded together;

(iv) a fiberglass blanket interposed between said first and second layers of insulation said fiberglass blanket permitting independent relative movement between said first and second layers;

(v) a second barrier impervious to water vapor and cryogenic fluid covering the free surface of said third layer; and

(vi) anchor means extending from said wall through said first and second layers for securing said system to the tank.

4,117,948

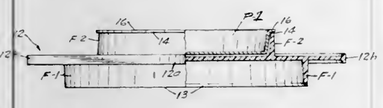
INSULATED SERVER WITH COOPERATING PANS

Harry F. Collins, Golden Valley, Minn., assignor to Service Ideas, Inc., Minneapolis, Minn.

Continuation of Ser. No. 733,186, Oct. 18, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,520

Int. Cl.[2] B65D *25/00;* **A47J** *41/00;* **B65D** *21/02*

U.S. Cl. 220—410 **2 Claims**



1. A cooking and serving assembly for alternatively cooking and serving two different quantities of food materials and for sustaining heat in the food materials while the same are being served and eaten, having in combination:

a tray body constructed of heat-insulation material in the form of an invertible, generally horizontal deck having a generally annular insulating and receiving flange protruding from one main surface of said deck and having a second, generally annular insulating flange protruding from the opposite surface of said deck, said second flange being of substantially larger area-dimension than said first flange and both of said flanges having their outward edges lying in planes disposed parallel with the common medial plane of said deck,

a pair of heat-transmissive metal cooking pans, each being complemental in shape to one of said flanges and of somewhat smaller external peripheral dimension than the related insulating flange for respectively nesting and supporting the respective pan in its associated flange,

and in use the flange which is not employed for nesting its related pan extending downward for support and insulation of said deck body from a horizontal surface.

4,117,949

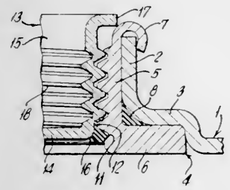
THREADED CLOSURE

Davis B. Dwinell, Warren, N.J., assignor to American Flange & Manufacturing Co. Inc., Linden, N.J.

Filed Dec. 22, 1975, Ser. No. 643,488

Int. Cl.[2] B65D *53/00*

U.S. Cl. 220—304 **1 Claim**



1. Container closure construction comprising a closure receiving member having a cylindrical neck defining a fluid passageway with a dispensing opening at the uppermost end thereof adapted to communicate with the exterior of a container, means formed at the upper end of said neck for securing said closure receiving member about a container wall opening, a first screw thread formation adjacent said means extending along the entire length of said neck, an unthreaded annular resilient sealing gasket formed in situ on the exposed surface of said neck thread in a relatively narrow zone, said gasket completely filling the thread portion located at said narrow zone and protruding radially inwardly of the thread crest and root of said thread portion into said fluid passageway, said narrow zone being located at a position on a lower portion of said neck remote from said dispensing opening, a closure member having an end wall surrounded by a cylindrical sidewall extending upwardly from said wall, said sidewall having a second screw thread formation in direct surface to surface threaded engagement with said neck, an annular gasket engaging surface on said closure member at the juncture of said end wall and said sidewall below said second screw thread formation in sealing contact with said sealing gasket so as to protect the threads of said sealing engagement located above said sealing gasket from exposure to the product to be stored in the container, and means at the upper end of said neck cooperating with means on said sidewall for limiting the axial extent of said threaded engagement at said point of sealing contact.

4,117,950

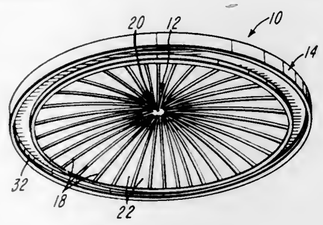
PLASTIC CLOSURE

David O. Allen, Wilmington, Ohio, assignor to Buckeye Molding Company, New Vienna, Ohio

Filed Oct. 19, 1977, Ser. No. 843,513

Int. Cl.[2] B65D *41/16*

U.S. Cl. 220—306 **6 Claims**



1. In a one piece molded plastic closure of the type having a center panel and a rim, the improvement wherein said center panel comprises a body having ribs projecting from a surface of said body and thin walled panel sections between said ribs, said ribs and said rim being formed from molten plastic flowing in the length direction of said ribs, and said panel sections being formed from plastic flowing from said ribs in directions other than said length directions.

4,117,951

AEROSOL DISPENSER LINER

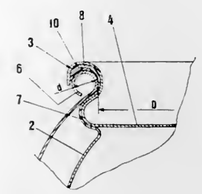
Richard Winckler, Ville D'Avray, France, assignor to Cebal, Paris, France

Division of Ser. No. 684,260, May 7, 1976, Pat. No. 4,045,860. This application Apr. 29, 1977, Ser. No. 792,197

Claims priority, application France, May 7, 1975, 75 14928; Feb. 20, 1976, 76 05316

Int. Cl.[2] B65D *25/14*

U.S. Cl. 220—461 **8 Claims**



1. An aerosol dispenser for pressurized fluids comprising a rigid casing including a shouldered dome portion extending angularly inwardly to define a casing mouth and a mouth encircling collar, a flexible bag positioned within said casing containing the fluid to be dispensed and including a body portion whose diameter is greater than the diameter of the mouth and collar of the casing, said bag further including a neck portion terminating in an outwardly radiating flange, said flange including upper and lower substantially parallel surfaces, said flange overlying at least a portion of said collar, a seal member disposed externally of said bag between said lower surface of said flange and said collar, said seal member being out of contact with said pressurized fluid within said bag, a cap member attached to said casing by crimping deformation of at least a portion of said cap, said seal and said flange into sealing engagement with said collar, and a supply of fluid under pressure within said casing and outside said flexible bag isolated from the contents of said bag.

4,117,952

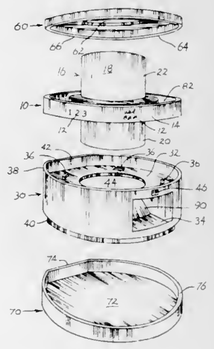
CAPSULE DISPENSER HAVING CHAMBERS ROTATABLE RELATIVE TO A DISPENSING OUTLET

Dustin Marshall Grimes, 721 N.E. 114 Street, Miami, Fla. 33161

Continuation-in-part of Ser. No. 712,004, Aug. 6, 1976, abandoned. This application Sep. 27, 1976, Ser. No. 727,165

Int. Cl.[2] B65D *83/04*

U.S. Cl. 221—5 **19 Claims**



1. A capsule dispenser comprising:

a first cartridge defining a plurality of annularly disposed bottomless and bottom discharging chambers, said chambers each sized to contain multiple and variously shaped capsules, and including a hollow concentric post having internal and external surfaces about the post's internal and external circumference permitting the internal surfaces on the first such cartridge to rotationally but removably engage at least one other cartridge;

a receptacle base supporting the cartridge and having a receiving tray, an annular surface providing a bottom to the cartridge chambers but with a perforation above the receiving tray, and a top and bottom design to facilitate removably stacking the receptacle base supporting said at least one other cartridge, and

means to rotate the first cartridge relative to the receptacle base and, when the first cartridge is rotationally but removably engaged to said at least one other cartridge, similarly situated chambers from each cartridge will simultaneously rotate over the perforation in each said receptacle base, whereby each said cartridge will discharge its contents into its corresponding receiving tray.

4,117,953

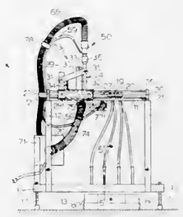
SEED PLANTING DEVICE

Harold Fredrick DeHart, Rte. 5, Box 190E, Durham, N.C. 27704

Continuation-in-part of Ser. No. 573,412, May 1, 1975, Pat. No. 3,986,638. This application Sep. 15, 1976, Ser. No. 723,545

Int. Cl.[2] B65H *3/08*

U.S. Cl. 221—211 **2 Claims**



1. In a seed planting device of the type having a pick-up head including seed pick-up apertures for picking up individual seeds from a bulk supply at one location and transferring such seeds to a second location for dispersal in a spaced array, improved air transfer apparatus for selectively providing a positive, negative or neutral pressure condition at said apertures, said apparatus comprising:

(a) a vacuum source having a suction port and an exhaust port;

(b) first tubular transfer means for connecting said suction port to the pick-up head;

(c) second tubular transfer means for connecting said exhaust port to the pick-up head; and

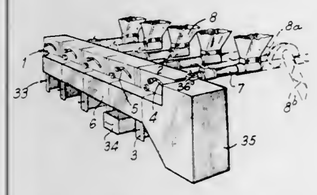
(d) valve means having a hollow body portion and connecting said first tubular transfer means to said pick-up head, said valve means including closure means movable within said hollow body portion from a first lower position enabling suction from said first tubular transfer means to be applied to the pick-up head to a second higher and vertically opposite position enabling such suction to be cut off from the pick-up head, means normally biasing said valve closure means to said first position, said valve means body portion having the discharge end of said second tubular transfer means terminating therein and controlled by said closure means, said discharge end being sealed off by said closure means when said valve is in said first position and being opened when said valve closure means is raised to said second position, manual closure operator means connected internally of said body portion to said valve closure means and having an operator portion slidably mounted in said body portion for vertical movement and engagable externally thereof against said biasing means to position said closure means, and manually operable exhaust control means on said second tubular transfer means for selectively connecting or disconnecting said vacuum source exhaust port to supply a flow of exhaust air at said discharge end, whereby with said vacuum source energized, said valve means when said closure means is placed in said first position provides a negative pressure condition at said apertures, when said closure means is moved to said second position provides a neutral pressure condition at said apertures and when said closure means is moved to said second position said manual exhaust control means enables said exhaust port to be operatively connected to said second tubular transfer means discharge end to provide a positive pressure condition at said apertures.

4,117,954

METERING DEVICE FOR BULK MATERIALS, MORE PARTICULARLY CONSTITUENTS OF ANIMAL FOODSTUFFS

René Charles Pelletier, Senlis, France, assignor to Secemia, France

Continuation of Ser. No. 508,532, Sep. 23, 1974, abandoned. This application May 5, 1976, Ser. No. 683,306
Claims priority, application France, Oct. 1, 1973, 73 34992
Int. Cl.[2] B65G *33/14*
U.S. Cl. 222—134 10 Claims



1. Apparatus for dispensing mixtures of more than one constituent of bulk material comprising a single elongate mixing and discharge conveyor, a plurality of metering conveyors each comprising a screw conveyor leading from a source of one of the constituents of each mixture and terminating at said mixing and discharge conveyor, a housing surrounding the terminus of each of said metering conveyors and the associated portion of said mixing and discharge conveyor, and means for simultaneously driving said mixing and discharge conveyor and each of said metering conveyors comprising a single motor located adjacent one of said housings and transmission means extending serially into each housing connecting said motor and an adjustable speed variator interposed between the terminus of each of said metering conveyors and said drive transmission means for driving the associated metering conveyor and for continuously and selectively varying, during operation of said mixing and discharge conveyor and the metering conveyors, the speed of said associated metering conveyors independently of the operation of the other metering conveyors, each of said housings supporting the transmission means and speed variator means associated with the respective metering conveyor and being arranged in abutment in line with each other, said discharge conveyor extending in line serially through each of said housings, said speed variator means comprising an adjustable linkage connected at one end to said transmission means and at the other end to a first uni-directional clutch member, said first uni-directional clutch member being secured between the shaft of said screw conveyor and a second uni-directional clutch member mounted on said housing, said adjustable linkage comprising a handle having a regulating crank arm pivotally mounted at one end extending through an arcuate slot in a wall of said housing opposite said screw conveyor, a crank pin movable by said transmission means, a coupling rod rotatably connected at one end to said crank pin, a spindle journalled at the other end of said coupling rod, and a tie rod adjoining said spindle and said regulating crank arm at the axis of said handle, and a connecting rod joining said spindle and said uni-directional clutch member.

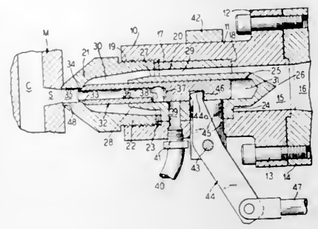
4,117,955

MULTI-PORT VALVED NOZZLE FOR CO-INJECTION MOLDING

Nickolas N. Sokolow, Cheshire, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 13, 1977, Ser. No. 787,301
Int. Cl.[2] B29D *9/00*; B29F *1/03*
U.S. Cl. 222—144.5 18 Claims

1. A nozzle assembly comprising a tubular head having a first passage for a first material, a second passage for a second material, a single outlet nozzle having an orifice for both said first and second passages, a single pin cooperating with said nozzle to close the nozzle orifice and to sequentially open the orifice to said first and second passages, said tubular head having a flange on one end thereof adapted to be bolted to a mounting, a port opened and closed by said pin for selectively



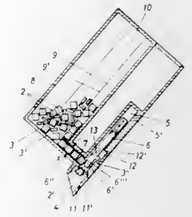
joining the second passage with the nozzle, and said nozzle being adjustable on said head toward and away from said port to vary the sequential opening of the nozzle to said first and second passages.

4,117,956

RECEPTACLE FOR THE PORTIONED DISPENSING OF THE CONTENTS THEREOF

Alfred von Schuckmann, Nordstrasse 32 a, 5657 Haan, Fed. Rep. of Germany

Filed Feb. 3, 1977, Ser. No. 765,247
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1976, 7603602[U]; Aug. 25, 1976, 2638164
Int. Cl.[2] G07F *11/00*
U.S. Cl. 221—288 12 Claims



1. A receptacle for the portioned dispensing of contents including for example tablets, pills or the like, comprising

a receptacle defining a storage space and a cover end and formed with an exit opening at the cover end, the receptacle having formed therein two channels operatively communicating with said exit opening,

walls completely surrounding and defining one of said channels, the latter being substantially complementary in cross-section to the size of the tablets and having a length equal to at least two tablets, said one channel communicating with and extending from said storage space in the receptacle and extending cross-wise to the exit opening,

the other of said two channels extending cross-wise relative to said one channel communicating therewith and extending in a longitudinal direction of said exit opening directly communicating with the latter, and

a deadweight division slider means for being disposed freely slidable in said other channel exclusively by gravity upon moving said receptacle into a tipping dispensing position with the exit opening pointing downwardly and into a neutral position with the exit opening pointing upwardly, respectively, blocking and unblocking communication between said channels, respectively,

said walls defining said one channel constituting means for forming and maintaining a direct tandem supply of tablets

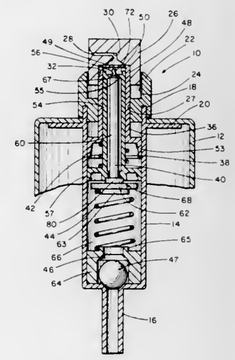
therein during the tipping dispensing position and as well as during the neutral position of the receptacle, respectively.

4,117,957

ATOMIZER VALVE ASSEMBLY

George Duffey, 720 Nolan, Glendale Heights, Ill. 60137

Filed Apr. 11, 1977, Ser. No. 786,418
Int. Cl.[2] G01F *11/38*
U.S. Cl. 222—321 18 Claims



1. An atomizer valve assembly comprising a cylinder, one-way valve means at the lower end of said cylinder, a piston having a lower skirt portion engaging the interior sidewall of said cylinder and an upper tubular portion which extends through an opening at the top of said cylinder and which has a passageway through the top thereof, an actuator mounted to said top of said piston and having a nozzle in a wall thereof and a passageway therein between said nozzle and said top of said piston, a plunger having a lower skirt portion engaging said interior sidewall of said cylinder beneath said skirt portion of said piston and an upper tubular portion which has a passageway through the top thereof and which is received within the interior of said piston tubular portion, a dispensing spring situated between said skirt portions, a valve member situated beneath said plunger and having a wide bottom portion, the area between said bottom portion and said lower end of said cylinder defining a metering chamber, a metering spring situated in said metering chamber between said lower end of said cylinder and said bottom portion of said valve member, and valve means between said valve member and said plunger for blocking flow of liquid from said metering chamber through said plunger tubular portion and said passageway at the upper end of said plunger tubular portion to said nozzle.

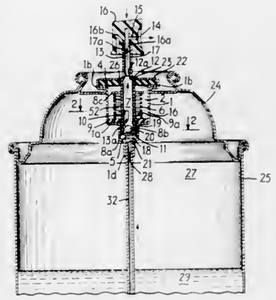
4,117,958

VAPOR TAP VALVE FOR AEROSOL CONTAINERS USED WITH FLAMMABLE PROPELLANTS

Joseph George Spitzer, 44 Coconut Row, Palm Beach, Fla. 33480; Marvin Small, 1100 Park Ave., New York, N.Y. 10021; Lloyd I. Osipow, 2 Fifth Ave., New York, N.Y. 10003, and Dorothea C. Marra, 107 Fernwood Rd., Summit, N.J. 07501

Continuation-in-part of Ser. No. 754,471, Dec. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 706,857, Jul. 19, 1976, abandoned. This application Jun. 7, 1977, Ser. No. 804,424
Int. Cl.[2] B65D *83/14*
U.S. Cl. 222—402.18 23 Claims

1. A vapor tap valve for aerosol containers for use with aerosol compositions containing liquefied flammable propellants, inhibiting delivery of flammable liquid propellant when the valve is opened in any orientation of the aerosol container, comprising, in combination, a delivery valve movable manually between open and closed positions and including a valve poppet having a passage for fluid flow therethrough, a valve stem having a valve stem passage for fluid flow therethrough, and a delivery port; bias means biasing the delivery valve poppet towards a closed position; a blending space having an open volume not exceeding about 0.2 cc for mixing propellant and aerosol composition in fluid flow communication with the valve stem passage via the valve poppet passage, the valve poppet passage when the valve poppet is in the open position communicating the blending space with the valve stem passage, and the valve poppet in the closed position preventing such communication; a liquid tap orifice in the blending space; a gas tap orifice in the blending space; and a shut-off valve disposed in association with the valve poppet and responsive to orientation of the valve to move automatically between positions opening and closing off flow of propellant to the delivery port via the valve stem passage, the shut-off valve moving into an open position in an orientation of the valve between a horizontal and an upright position, and moving into a closed position in an orientation of the valve between the horizontal and an inverted position.

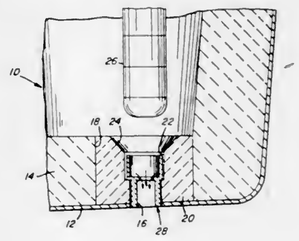


4,117,959

METHOD AND SINGLE PIECE ANNULAR NOZZLE TO PREVENT ALUMINA BUILDUP DURING CONTINUOUS CASTING OF AL-KILLED STEEL

Eugene A. Golas, Middle Township, Bucks County, and Shri N. Singh, Penn Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 715,603, Aug. 18, 1976, abandoned. This application May 5, 1977, Ser. No. 794,290
Int. Cl.[2] B22D *41/08*
U.S. Cl. 222—590 17 Claims



1. A method of preventing the accumulation of oxide inclusions on the flow surface of an orifice opening in a flow nozzle operably disposed in the pour passage of a teeming vessel for pouring a bath of aluminum-killed steels or the like comprising the steps of:

(a) forming said orifice opening of an axial length shorter

than that of the "vena contracta" of the molten metal stream flowing therethrough; and

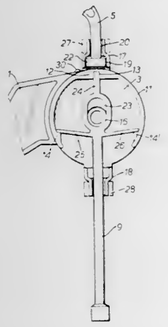
(b) providing a plenum about said orifice opening on the upstream side thereof defining a region in which the flow of molten metal is sufficiently stagnant to damp the vibrational effects imposed on the metal bath whereby the stream flowing through said orifice opening is stabilized.

4,117,960

FOLDING CLOTHES-HANGER

Peter Bengsch, Motzfeldtsgate 5, Oslo 1, Norway, and Steinar Bjørnstad, Oslo, Norway, assignors to Peter Bengsch, Oslo, Norway

Filed Jun. 7, 1977, Ser. No. 804,372
Int. Cl.[2] A47J *51/10*
U.S. Cl. 223—94 **19 Claims**



1. A folding clothes hanger comprising two arms pivoted for movement relative to each other about a common axis, both arms having each at one end a circular portion arranged coaxial with the common axis, spring means located within an enclosure comprising the said circular portions, a release member extending out from the enclosure, and a locking element, each of said circular portions having engagement means for engagement by the locking element which, when engaging both said engagement means at the same time with the arms extended, prevents relative rotation of the arms, the spring means urging the locking element into engagement with said engagement means, and the release member being operatively connected to the locking element and releasing the locking element from engagement with said engagement means when moved outwardly of the enclosure, the two arms thus being allowed to rotate towards each other.

4,117,961

DEVICE FOR OPENING OR CLOSING A ZIPPER

Billie J. Pickens, P.O. Box 68, Wilseyville, Calif. 95257

Filed Aug. 8, 1977, Ser. No. 822,393
Int. Cl.[2] A47J *51/06*
U.S. Cl. 223—111 **4 Claims**

1. A device of the type described comprising:

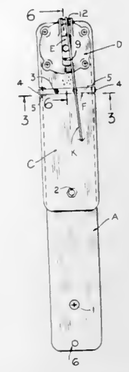
(a) a base adapted to be secured to a vertical surface;

(b) a swingable arm pivoted at one end to said base and swingable in a vertical plane parallel to the vertical surface from a position where the arm extends upwardly from its pivot into a position where it extends downward from its pivot;

(c) a spring-biased reel mounted adjacent the free end of said arm; and

(d) a cord wound on said reel and having its free end provided with a catch for removably engaging with the handle of a zipper body, said reel having a spring which is tensioned when the cord is unwound from the reel;

(e) whereby when the arm extends upwardly from the pivot, the cord can be unwound from the reel for winding the spring and the catch can be readily connected to the zipper handle on a garment being worn and the spring biased reel will pull the zipper for closing it and when the arm extends downwardly from the pivot, the cord can



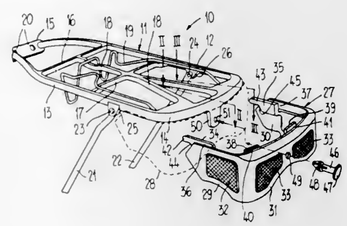
again be unwound from the reel for winding the spring and the catch can be readily connected to the zipper handle on the worn garment and the spring biased reel will pull the zipper for opening it.

4,117,962

BICYCLE LUGGAGE CARRIER EQUIPPED WITH RECOGNITION AND SAFETY DEVICE

Oskar Pletscher, Marthalen, Switzerland, assignor to Gebruder Pletscher, Marthalen, Switzerland

Filed Dec. 26, 1976, Ser. No. 754,406
Claims priority, application Austria, Jan. 16, 1976, 273/76
Int. Cl.[2] B62J *5/20*
U.S. Cl. 224—31 **7 Claims**



1. A bicycle luggage carrier equipped with a recognition and safety device, comprising:

a frame having a rear end portion;

a holder bracket;

means for hingedly connecting the holder bracket at the rear end portion of the frame;

a spring operatively associated with the hingedly connecting means for biasing the holder bracket against the frame;

skirt means mounted to the rear end portion of the frame and depending downwardly therefrom for mounting reflector means;

said skirt means including a support plate and a pair of spaced lateral flap members between which there is arranged the support plate;

said skirt means extending about the rear end portion of the frame and housing said spring to thereby provide a cover for the spring to protect a user from injury by the spring;

said frame including side struts and a rear strut each having undersides;

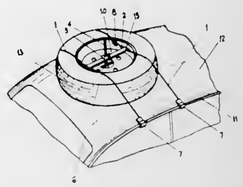
said skirt means having an inner surface provided with upwardly open channel means engaging said side struts and said rear strut of the frame from the undersides thereof.

4,117,963

SPARE WHEEL AND TIRE HOLDER

Kazimierz Luczynski, 2866 Keele St., Apt. 5, Downsview, Ontario, Canada (M3M 2G8)

Filed May 9, 1977, Ser. No. 795,356
Claims priority, application Canada, Jan. 18, 1977, 269942
Int. Cl.[2] B60R *9/04*
U.S. Cl. 224—42.1 B **7 Claims**



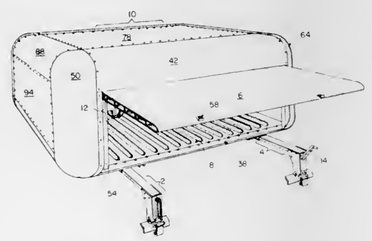
1. A fastening device for mounting a spare wheel and tire disposed directly on the roof of an automobile having roof gutters, comprising two cable means operative to dispose over said spare wheel and tire and extend transversely over said roof, catch means provided at the ends of said cable means for securement of said ends to said roof gutters, length adjusting means provided on said cable means and operative to vary the length of said cable means, a bar member slidably mounted on said cable means and engageable with said spare wheel and tire, securing and tensioning means provided on said bar means operative to engage with said spare wheel and tire and adjustable cooperative with said spare wheel and tire for increasing the tension in said cable means so as to draw said cable means bindingly and tightly against said spare wheel and tire to fasten the latter over said roof.

4,117,964

CAR TOP CARRIER ASSEMBLY

Howard M. Sage, Phoenix, and John C. Abromavage, Tempe, both of Ariz., assignors to U-Haul International, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 794,900, May 9, 1977. This application Jun. 30, 1977, Ser. No. 811,932
Int. Cl.[2] B60R *9/04*
U.S. Cl. 224—42.1 E **11 Claims**



1. A car top carrier assembly of a carrier container having a bottom surface operatively interconnected to the top surface of a horizontally disposed means for mounting said carrier container, and comprising

(A) a container characterized by an overall rectangular solid configuration, wherein the edges and corners are radiused between all intersections of planar surfaces otherwise defining said container configuration; wherein,

(B) said container has a frame comprised of a horizontal deck member, which defines the bottom surface of said container, vertical corner supports, which define the four vertical corners of said container, and horizontal edge supports, which define the four horizontal upper edges of said container; wherein, further,

(C) each of said corner supports and each of said edge supports includes a perimetrical flange, wherein opposite ends of the upper horizontal edge supports, and upper portions of said vertical corner supports, include mating flange portions that are flangedly interconnected to define load-bearing portions of said container, and wherein, further,

(D) planar members extend between exposed portions of the perimetrical flanges on said thusly interconnected frame to thereby define the top and at least one side of said container, and

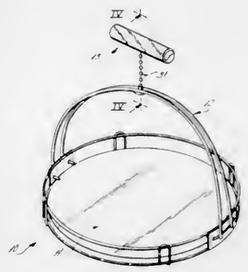
(E) at least one vertical side of said container includes an access door which is structurally supported by, and operably mounted upon, the horizontal edge support and vertical corner supports which define said at least one vertical side.

4,117,965

SELF-BALANCING TRAY

Donald D. Rienzo, Dix Hills, N.Y., assignor to Allan Tackle Manufacturing Co., Inc., Hicksville, N.Y.

Filed Aug. 4, 1977, Ser. No. 821,638
Int. Cl.[2] A47G *23/06*
U.S. Cl. 224—48 R **9 Claims**



1. A self-balancing tray for carrying open receptacles containing spillable contents, fragile items or items splattering when falling down, said tray comprising:

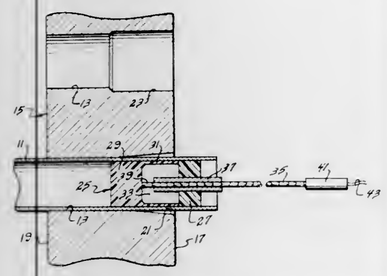
a disc of substantially rigid material; and an assemblage for mounting the disc and carrying the same in always substantially horizontal position, said assemblage comprising a frame shaped to encompass the rim of the disc with a loose fit, lugs inwardly protruding from the frame fixedly secured thereto and underlying the disc upon placement thereof into the frame, thereby supporting the disc; and a holder shaped to extend across the frame spaced apart therefrom to provide space for placing receptacles and other items upon the disc, mounting means for releasably attaching the holder to the frame and locking the disc within the frame, said mounting means including two pairs of receiving openings and disposed at opposite points of the frame and at each end of the holder a pair of spaced apart lugs insertable into the respective openings on the frame, said lugs on the holder being insertable into said openings at the frame and being dimensioned to overlie the disc thereby locking the disc in the frame; and a handle including a grip and a freely bendable connecting member secured at one end to the grip and at the other end to the holder at a point thereof coaxial with the center point of the disc.

4,117,966

EXPLOSIVE WELDING OF A TUBE INTO A TUBE SHEET

Sheryll C. Green, London, and Vonne D. Linse, Columbus, both of Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 13, 1977, Ser. No. 841,614
Int. Cl.[2] B23K *21/00*
U.S. Cl. 228—2.5 **6 Claims**



1. An assembly for the explosive welding of a metal tube within an opening of a metal tube sheet having a front face aligned near one end of said tube and a rear face towards the major portion of the tube length, said assembly comprising in combination with said tube positioned within said tube sheet opening:

a cartridge including a base, side walls and front wall, containing an explosive charge, said cartridge disposed within said tube in overlapping alignment with the front face of said tube sheet, the major portion of said charge being positioned in near alignment with the front face, but between said front and rear faces of said tube sheet, said cartridge base being of greater mass and greater thickness than the opposing front wall and being located between said charge and the rear face of said tube sheet to minimize explosive bulging of said tube beyond said rear tube sheet face;

a cord containing explosive material sufficient to transmit detonation to said explosive charge, said cord extending from outside said cartridge through said front wall and through said explosive charge to the rear portion of said charge adjacent to said cartridge base; and

a tubular shield encompassing said cord from a location outside said cartridge to a location within the rear portion of said explosvie charge but short of the end of said cord to expose said cord end to said explosive charge.

4,117,967

SOLDER EXTRACTOR APPARATUS

Ephraim Regelson, Kensington, Md.; Leonard G. Terral, China Lake, Calif.; Ronald J. Matusiak, El Cajon, Calif.; Jerry L. Trotter; William L. Rea, both of San Diego, Calif., and Edward L. Mangel, Poway, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1977, Ser. No. 800,972
Int. Cl.[2] B23K *3/00;* **F04B** *37/10, 39/12*
U.S. Cl. 228—20 **8 Claims**

1. Solder extractor apparatus for use with a hollow solder extractor iron comprising:

a chassis;

an electric motor and pump assembly for generating a vacuum input and a pressure input;

said inputs being available at a single common port on said chassis;

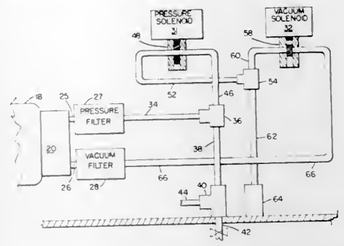
means for selectively connecting one of said inputs through the port ot said solder extractor iron;

a circuit for connecting said motor to a secure of power;

a holder for supporting said solder extractor iron;

a switch on said holder operable to a closed position by the absence of the solder extractor iron;

said switch being electrically connected in said circuit with said motor;



whereby removal of the extractor iron from its holder will close the switch and energize the motor and pump assembly making said selected input automatically available to the solder extractor iron upon the commencement of the solder extraction operation.

4,117,968

METHOD FOR SOLDERING METALS WITH SUPERHARD MAN-MADE MATERIALS

Jury Vladimirovich Naidich, ulitsa Vernadskogo, 85, kv. 48; Galina Alexeevna Kolesnichenko, ultisa Prazhskaya, 3, kv. 128; Nikolai Stepanovich Zjukin, ulitsa Kurskaya, 8a, kv. 59; Boris Dmitrievich Kostjuk, ulitsa Marshala Malinovskogo, 3a, kv. 206; Stanislava Stanislavovna Shaikevich, ulitsa Volodarskogo, 69, kv. 7; Yaroslav Feodosievich Motsak, ulitsa Dorogozhitskogo, 26, kv. 7, all of Kiev; Vitaly Pavlovich Fedulaev, stantsia Ukhtomskaya, ulitsa N.Tupik, 5, Moskovskaya oblast, Ljuberetsky raion; Nikolai Alexandrovich Kolchemanov, ulitsa Moskovskaya, 33; Valentin Mikhailovich Ugarov, Oktyabrsky prospekt, 263, kv. 3, both of Ljubertsy Moskovskoi oblasti; Viktor Vasilievich Losev, ulitsa Planernaya, 5, korpus 1, kv. 174, Moscow; Mark Simonovich Drui, ulitsa Chekhova, 4, kv. 93, Leningrad; Alla Alexandrovna Lavrinovich, ulitsa Shvernika, 16, kv. 51, Leningrad; Dmitry Fedorovich Shpotakovsky, ulitsa Shvernika, 16, kv. 50, Leningrad, and Stanislav Viktorovich Chizhov, prospekt Morisa Toreza, 13, kv. 28, Leningrad, all of U.S.S.R.

Filed Sep. 4, 1975, Ser. No. 610,225
Int. Cl.[2] B23K *1/20;* **C04B** *31/16, 41/38*
U.S. Cl. 228—124 **10 Claims**

1. A method for coating synthetic diamonds comprising coating said material with a metal melt comprising lead in an amount varying from 2 to 15% by weight, and a metal selected from the group consisting of chromium, molybdenum, tungsten, tantalum, and mixtures thereof; mixed with a metal selected from the group consisting of silver, or tin, and mixtures thereof.

2. A method for coating a material selected from the group consisting of boron nitride and synthetic diamonds, comprising:

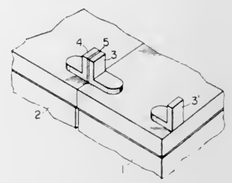
applying to the surface of said material a metallizing coating consisting essentially of a first layer of an adherent metal selected from the group consisting of chromium, molybdenum, tungsten, and tantalum; and a second layer of a metal of reduced oxidizability selected from the group consisting of silver, lead, and tin; wherein the adherent metal varies from 3 to 65 percent by weight of the metallizing coating.

4,117,969

METHOD FOR INTERCONNECTING ADJACENT ELECTRIC STORAGE BATTERIES

Kiyohide Fukuba, Uji, Japan, assignor to Japan Storage Battery Company Limited, Kyoto, Japan

Filed Oct. 20, 1976, Ser. No. 734,051
Claims priority, application Japan, Oct. 22, 1975, 50-127795; Oct. 22, 1975, 50-127796
Int. Cl.[2] H01M *2/26, 2/32;* **B23K** *3/06*
U.S. Cl. 228—140 **8 Claims**



1. A method of electrically and mechanically interconnecting adjacent electric storage batteries, comprising:

(a) inserting a foil sheet of alloy having a melting point in a range of from 40° C. to 180° C. between the planar surfaces of adjacent terminals of said batteries, said foil sheet having fusion-detecting lugs extending outward from the edges thereof, said planar surfaces forming a gap therebetween in the range of 0.02mm to 0.5mm, and

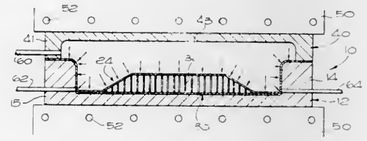
(b) heat-fusing said foil sheet of alloy.

4,117,970

METHOD FOR FABRICATION OF HONEYCOMB STRUCTURES

C. Howard Hamilton, Thousand Oaks, and Leonard A. Ascani, Jr., Palos Verdes Estates, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 16, 1976, Ser. No. 742,298
Int. Cl.[2] B23K *31/00*
U.S. Cl. 228—173 A **14 Claims**



1. A method for making a honeycomb metallic structure in a single operation comprising the steps of:

positioning a metal honeycomb core, a first metal blank, and a second metal blank within a hollow forming apparatus for the duration of the method, the first metal blank having superplastic characteristics, the first metal blank and the second metal blank each having opposed principal surfaces;

positioning the core between the first metal blank and the second metal blank;

bringing the first metal blank to within a temperature range suitable for superplastic forming of the first metal blank;

applying a pressure loading across the principal surfaces of the first metal blank causing the first metal blank to deform superplastically against, and into intimate contact with, the core and the second metal blank; and

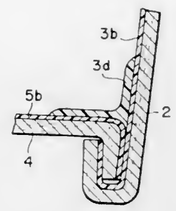
maintaining the first metal blank, the second metal blank, and the core under coordinated temperature-pressure-time duration conditions sufficient to produce metallurgical bonding of the first metal blank, the second metal blank, and the core to one another.

4,117,971

PAPER CUPS

Tsutomu Itoh, Tokyo, Japan, assignor to Onoda Cement Company, Ltd., Onoda, Japan

Filed Nov. 7, 1977, Ser. No. 848,950
Claims priority, application Japan, Nov. 18, 1976, 51-154709[U]
Int. Cl.[2] B65D *3/10*
U.S. Cl. 229—1.5 B **2 Claims**



1. In a cup suitable for holding and storing hot or cold liquids, said cup having a body of paper forming the sides thereof, a bottom of paper joined to said sides by a folded interlock, said sides at the top thereof being rolled into a lip; said sides having a seam formed of overlapping portions bonded together, the improvement comprising:

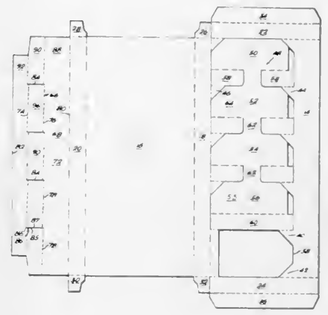
a continuous unitary liner of a film of liquid impervious, heat and cold resistant material formed on the assembled cup body and coating the inside surface of the sides and the bottom of said cup and extending around said rolled lip; said liner being securely bonded to said paper body.

4,117,972

MULTI-CELLED CARTON WITH SELF-LOCKING FEATURE

Thomas J. Sellors, Waukegan, Ill., assignor to Potlatch Corporation, San Francisco, Calif.

Filed Mar. 21, 1977, Ser. No. 779,356
Int. Cl.[2] B65D *5/48*
U.S. Cl. 229—28 R **7 Claims**



1. A catch-forming arrangement formed from a single piece of paperboard capable of forming at least one catch for retaining one edge of a panel of a carton,

said single piece of paperboard having first and second discontinuous fold lines and a plurality of parallel cut lines disposed in transverse relationship to said discontinuous fold lines,

said first and second discontinuous fold lines defining a parallelogram-shaped panel between said adjacent cut lines,

said first discontinuous fold line and one edge of said single

piece of paperboard defining therebetween a first attachment portion,

said second discontinuous line and the other edge of said single piece of paperboard defining therebetween a second attachment portion,

said first and second discontinuous fold lines defining therebetween a catch-forming wall portion,

said first attachment portion extending outwardly in one direction is substantially perpendicular relationship to said catch-forming wall portion and said second attachment portion extending outwardly in the opposite direction in substantially perpendicular relationship to said catch-forming wall portion, said catch-forming wall portion having a flat planar disposition when disposed in a knock-down disposition and forming at least one said catch when in a set-up disposition,

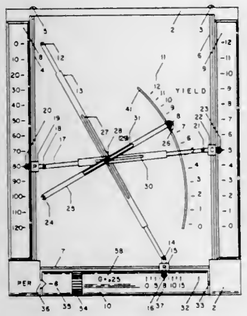
said catch cooperatively positioned in abutting relationship to said one edge of said panel to be retained when said catch-forming wall portion arrangement is in its set-up disposition.

4,117,973

CALCULATING DEVICES

Eugene W. Bold, 51 Saint Andrews Rd., Severna Park, Md. 21146

Filed Jul. 6, 1976, Ser. No. 702,711
Int. Cl.[2] G06G *1/14*
U.S. Cl. 235—61 B **3 Claims**



1. A calculating device for calculating bond factors and the like comprising:

a base;

two parallel scales on the base;

an extensible arm the ends of which are movable along said two parallel scales;

a third scale on the base between the said parallel scales;

an extensible arm one end of which is movable along said third scale and the other end pivotable about a point near the first parallel scale;

a fourth scale on the base near the second parallel scale;

an arm one end of which is movable along said fourth scale and the other end pivotable about a point near the first parallel scale;

means for interconnecting the three arms in a point; and

means for permitting free movement of the three arms;

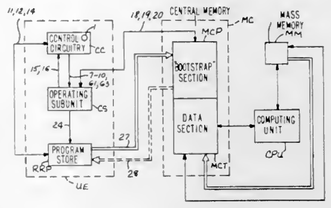
said calculating device being capable, through the process of matching values on the said third and fourth scales, of displaying answers in terms of one variable when all but one variable are given.

4,117,974

DEVICE FOR AUTOMATICALLY LOADING THE CENTRAL MEMORY OF ELECTRONIC PROCESSORS

Alberto Ciaramella, Rivoli (Turin), Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Dec. 23, 1976, Ser. No. 753,780
Claims priority, application Italy, Dec. 24, 1975, 70182 A/75
Int. Cl.[2] G06F *11/00;* **G11C** *29/00*
U.S. Cl. 235—304 **10 Claims**



1. In an electronic data-processing system including a central memory, computing means for executing a main program on data stored in said central memory, and a mass memory containing data to be selectively introduced into said central memory preparatorily to the execution of said main program,

the combination therewith of an external unit, independent of said computing means, comprising:

storage means containing an ancillary program to control the selective introduction of data from said mass memory into said central memory;

operating means connected to said storage means for carrying out a transfer of at least a part of said ancillary program to said central memory in response to a starting command; and

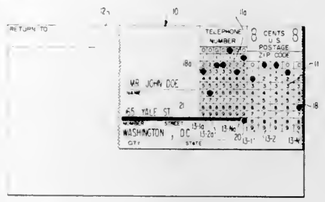
check means connected to said operating means for verifying the correct performance of said transfer and halting said transfer upon detecting a malfunction.

4,117,975

MAIL PREPARATION, SORTING APPARATUS AND METHOD

Damon M. Gunn, 4007 49th St., NW., Washington, D.C. 20016

Division of Ser. No. 158,187, Jun. 30, 1971, abandoned. This application Feb. 17, 1976, Ser. No. 658,799
Int. Cl.[2] G06K *19/08;* **B23K** *9/10;* **G06K** *7/14*
U.S. Cl. 235—494 **12 Claims**



2. An address label adapted to be placed on an article to facilitate automatic sorting and distribution of the article, said label comprising:

(a) a distinctive guide mark adapted to be recognized by an automatic reading device;

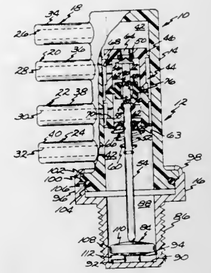
(b) a plurality of machine-readable code marks, the position of said code marks in relation to said guide mark representing a number that is distinctive of the particular address or addressee, said number being automatically convertible to street address information by means of a memory bank in which distinctive numbers are stored together with corresponding stress addresses.

4,117,976

MULTI-FUNCTION THERMOSTATIC VALVE

John Doherty, Jr., Assonet, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 17, 1976, Ser. No. 724,182
Int. Cl.[2] G05D *23/10*
U.S. Cl. 236—48 R **10 Claims**



1. A thermally responsive valve assembly comprising a valve body, said body having a central chamber with a first and a second passage therein which are sealingly separated one from another, two valve seats disposed in said body, the first positioned in said first passage and the second positioned in said second passage, and valve switching means including a bimetallic disc assembly and valve seat sealing means, said disc assembly having two bimetallic members which are movable in response to temperature change at respective, distinctly different temperatures to cause said valve seat sealing means to move into and out of engagement with said first and said second seats thereby providing communication in only the first passage, communication in only the second passage, and communication in both passages, said valve switch means further comprising a first and a second plug member to respectively seal said first and said second valve seats, motion transfer means positioned to be in contact with said bimetallic disc assembly and to be movable in response to movement of disc assembly and a sealing member sealingly and slidably engaging said motion transfer means thereby allowing free movement of said motion transfer means to cause said pair of plug seals to move into and out of engagement with said valve seats in response to movement of said bimetallic members while still providing for isolation of the first passage from said second passage.

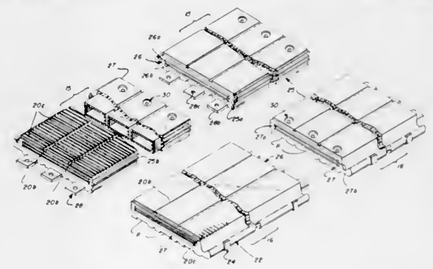
4. A thermally responsive valve assembly comprising a valve body having a first part at one end of said valve body and a second part at another end of said body, the first part of the body having a first, a second, a third, and a fourth port, said ports being adapted for connection to fluid lines, a central cavity into which all ports communicate, two passages defined in said body, said first passage connecting said first port and second port and said second passage connecting said third port and said fourth port, two valve seats disposed in said body, the first positioned in said first passage and the second positioned in said second passage and valve switching means movable into and out of engagement with said first and second seats thereby providing for communication in only the second passage, communication in both passages, and communication in only the first passage, said valve means comprising a first and a second plug member to respectively seal said first and second valve seats, a bimetallic assembly having two bimetallic members each responsive to temperature change, said members actuable at different temperatures thereby providing for the bimetallic assembly having a first, a second, and a third position, a motion transfer means causing said first and said second plug members to move from engagement with said first valve seat to engagement with neither of the two valve seats to engagement with said second valve seat when bimetallic assembly moves respectively from said first position to said second position to said third position, and a sealing member sealingly and slidably engaging said transfer means for isolating said first passage from said second passage and the second part of the body including a thermlly conductive portion adapted for heat-exchange with an object, such as an engine, for transferring heat to and from said bimetallic member to increase and decrease the temperature of the member in response to a corresponding increase and decrease in temperature of said object.

4,117,977

HIGHWAY-RAILWAY CROSSING

Jacob O. Whitlock, Springfield, Ill., assignor to Structural Rubber Products Company, Springfield, Ill.

Filed Oct. 14, 1976, Ser. No. 732,366
Int. Cl.[2] E01C *9/04*
U.S. Cl. 238—8 **15 Claims**



11. In a highway crossing for a railroad wherein each of a pair of rails has a base section and a head section interconnected by a web section and wherein a plurality of spaced substantially parallel ties extends transversely of the rails and is secured thereto in subtending supporting relation, the combination comprising: at least one pair of elongated laterally-resilient gage section units adapted to be arranged in side-by-side relation intermediatc the rails, said units having corresponding elongated resilient inner faces in abutting relation and the combined width of the adjacent units, prior to assembly, being slightly greater than the spacing between the web sections of said rails so as to provide a resilient compressive fit between said units which forms an elongated substantially moisture-proof joint therebetween, each unit having an elongated outer face adapted to be disposed adjacent the web section of a rail and in substantial engagement therewith, the abutting inner faces of said gage section units being provided with interfitting male and female segments respectively integral with said gage section units, each gage section unit including a resilient moisture-proof upper lamina, and reinforcing means affixed to said lamina, the exposed surface of said lamina intermediate the outer and inner surfaces of a unit defining a plane substantially coplanar with the upper surfaces of said rail head sections and being provided with means for effecting drainage of said exposed surface.

4,117,978

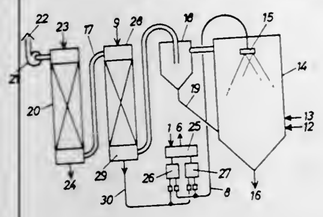
SYSTEM FOR FEEDING SOLUTIONS AND SUSPENSIONS

Heribert Fuchs, Vienna, Austria, assignor to Ruthner Industrieanlagen-Aktiengesellschaft, Vienna, Austria

Filed Feb. 1, 1977, Ser. No. 764,561
Claims priority, application Austria, Jan. 29, 1976, 621/76
Int. Cl.[2] B05B *15/02*
U.S. Cl. 239—112 **7 Claims**

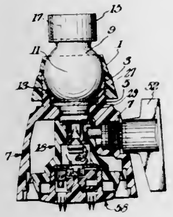
1. A system for feeding solutions and suspensions to nozzles for spraying the solution or suspension into a heated furnace chamber, comprising at least one blow case for feeding the solution or suspension to the nozzles under the action of a compressed displacing gas and means for measuring the volu-

metric flow rate and instantaneous pressure of the displacing gas, a plurality of blow cases operating with a phase displacement, displacing gas supply conduits for supplying compressed displacing gas to respective blow cases, and purge gas supply



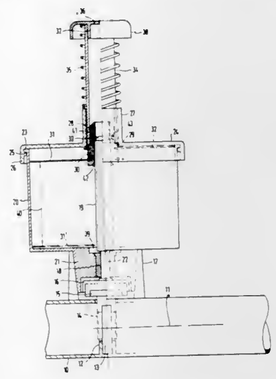
conduits which join respective displacing gas supply conduits and serve to supply a purge gas during non-feeding periods to prevent an ingress of corrosive gases into the pneumatic system.

4,117,979
SHOWERHEAD
Carmen J. Lagarelli, Clayton, and Charles J. Rudewick, Bear, both of Del., assignors to Speakman Company, Wilmington, Del.
Filed Apr. 15, 1977, Ser. No. 787,971
Int. Cl.[2] B05B *1/08*
U.S. Cl. 239—381 **10 Claims**



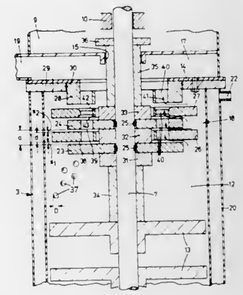
1. A showerhead which can be adjusted for delivering a continuous water spray or a pulsating water spray comprising a housing which is open at the bottom and has a passageway extending through the top, valve means which includes a plunger guide supported in the housing passageway and extending down into the housing interior and a hollow face plate open at both ends having an upper bore portion positioned around and supported by the plunger guide whereby an annular cavity is formed between the inner housing wall and the face plate wall, said face plate being capable of moving axially of the plunger guide, an opening in the top of said plunger guide through which water is received to be directed either through a face plate or the housing depending upon the axial position of the face plate, a seal supported by the upper portion of the guide, a seal supported by the lower portion of said guide, means for moving the face plate axially of said guide whereby when the face plate is raised to its uppermost position the upper end of the face plate seats against the upper guide seal to block off water flow passing through said annular cavity and to direct the flow downwardly through the bore section of the hollow face plate, and whereby when the face plate is lowered to its lowermost position the bore section of the face plate moves downwardly around the lower seal to block off water flow through the face plate whereby the water flow is directed through said annular cavity, a spray face member having slots attached to the bottom of the face plate for discharging water passing through the hollow face plate, a rotatable turbine wheel having blades positioned above and supported by the spray face member, a water diffuser plate positioned above the turbine wheel to direct water flow into said turbine wheel, said water diffuser plate having a central cage which fits within a cavity formed by the inner ends of the turbine wheel blades with ports in said cage through which water is discharged to the blades, and a sectoral blade integral with the turbine wheel spaced below said blades for intermittently offering resistance to water passing from the blades of the turbine wheel to the outlet slots in the spray face to deliver a pulsating water spray.

4,117,980
IMPLEMENT, IN PARTICULAR A HOUSEHOLD IMPLEMENT, FOR CHOPPING CUTTABLE MATERIAL, IN PARTICULAR MEAT, ONIONS OR THE LIKE
Horst Hartmann, Stuttgart, Germany, assignor to Zyliss Zysett AG, Switzerland
Filed Mar. 22, 1977, Ser. No. 780,097
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1976, 2614018
Int. Cl.[2] B02C *18/26*
U.S. Cl. 241—37.5 **22 Claims**



1. Apparatus for cutting foods comprising a cup-like container, a base supporting said container, drive means located in said base having a rotatable shaft the upper end of which extends into said container, a removable cover for said container, said cover having an integral sleeve extending upwardly therefrom, an elongated plunger located in said sleeve and having an inner end facing said container, said sleeve and said plunger having cooperative keying means permitting said plunger to move relatively axially but non-rotationally within said sleeve, cutting means comprising a head secured to the inner end of said plunger to be rotationally but not axially movable relative thereto, said head having at least one knife extending radially therefrom, and a central opening in said knife head adapted to fit over the upper end of said shaft, said central opening and said shaft, being cooperatively connected by keying means permitting relative axial movement and conjoint rotational movement of said cutting means with said shaft upon movement of said plunger a selected distance through said sleeve into said container, and spring means for normally biasing said plunger in an outward direction of said container by at least said selected distance, said cover, said plunger and said knife head being connected so that upon removal of said cover from said container said knife head is disengaged from said shaft and together with said plunger and cover is removed from said container.

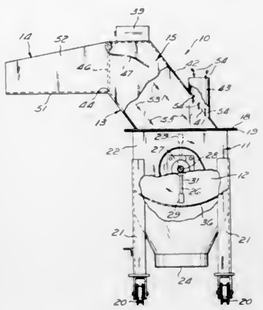
4,117,981
STIRRING MILL
Kaspar Engels, Mannheim, Germany, assignor to Draiswerke GmbH, Mannheim-Waldhof, Germany
Filed Jun. 29, 1977, Ser. No. 811,183
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631623
Int. Cl.[2] B02C *23/16*
U.S. Cl. 241—46.15 **16 Claims**



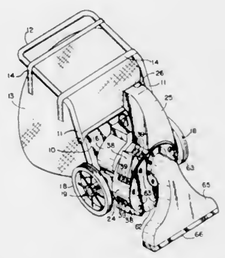
1. In a stirring mill with fine grinding and/or dispersal of flowable grinding stock, the mill including a grinding container provided with a mixing shaft rotatably drivable and fitted with mixing tools; grinding stock inlet means in the vicinity of one end; a ground stock outlet means in the vicinity of the other end; and a separating means disposed in front of the ground stock outlet means to hold back grinding medium located in the grinding container, said separating means being formed by rotatable annular disks defining spaces between them which extend radially outward with respect to said shaft, said annular disks being mounted concentrically on a shaft, and the width of the spaces being smaller than the diameter of the smallest particle of grinding medium to be used, the improvement wherein some of said annular disks are axially nondisplaceable, are fixed to said shaft and are rotatable therewith, a respective axially freely movable annular disk disposed about said shaft, between each two of said axially nondisplaceable annular disks and having apertures therein, those of said disks which are fixed to said shaft and also are between said axially movable disks also having apertures therein, and the sum of widths of two spaces delimited by said axially movable annular disk is smaller than the diameter of the smallest particle of grinding medium to be used.

4,117,982
ASBESTOS DELUMPER
Michael Slywka, Parma, Ohio, assignor to The Gibson-Homans Company, Cleveland, Ohio
Filed May 23, 1977, Ser. No. 799,471
Int. Cl.[2] B02C *23/26*
U.S. Cl. 241—51 **4 Claims**

1. Apparatus for disjoining compacted asbestos and like material, comprising a generally closed housing, an entrance at an upper portion of one face of the housing for passage of compacted material therethrough into the housing, an agitation zone within the housing communicating with the entrance, means in the agitation zone for mechanically disjoining compacted material, a discharge opening in the housing underlying the agitation zone for releasing material disjoined by said mechanical disjoining means from the housing, an air inlet in the housing overlying said agitation zone, said air inlet being generally between said material entrance and said agitation zone, whereby discharge of material and air through said discharge opening is adapted to induce air flow into said housing through said inlet and prevent escape of airborne particulate matter through said material entrance.



4,117,983
LEAF COLLECTOR AND COMMINUTOR
Paul E. Browning, 300 Station Ave., Langhorne, Pa. 19047
Filed Oct. 27, 1977, Ser. No. 846,119
Int. Cl.[2] B02C *13/04*
U.S. Cl. 241—55 **6 Claims**



1. A mobile leaf collector and comminutor comprising
a frame,
spaced wheels supporting said frame,
a collection receptacle carried by said frame rearwardly of said wheels,
a driving motor carried by said frame above said wheels and having a rotary drive shaft,
a blade housing disposed forwardly of said wheels and into which said drive shaft extends,
said blade housing having a portion communicating with the interior of said receptacle,
a blade hub mounted on said shaft for rotation therewith,
a plurality of blade members having cutting edge portions,
a leaf spring connecting a plurality of said blade members with said blade hub for yieldingly retaining said blade members in operating position,
a plurality of shear bars pivotally mounted on said housing and having a resilient member for yieldingly retaining said bars in operating position,
said shear bars being spaced for passage therebetween of said blade members for comminution of leaves in said housing,
a downwardly extending leaf pick up nozzle carried by and extending forwardly of said housing and having a horizontal opening for entry of leaves and delivery of leaves to the interior of said housing, and
said blade hub having an associated fan portion for drawing

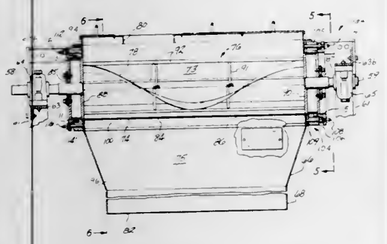
leaves into said housing and delivery of comminuted leaves into said receptacle.

4,117,984

GRANULATOR WITH BEATER BAR AND DEFLECTOR

Paul M. Waxelbaum, West Haven, Conn.; Fred A. Harris, and William J. Brown, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed May 16, 1977, Ser. No. 796,932
Int. Cl.[2] B02C *13/13*
U.S. Cl. 241—73 **5 Claims**



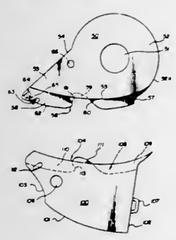
1. A granulator, comprising:
(a) housing means having an entrance and an outlet for defining a granulation zone therewithin;
(b) screen means, attached to said housing, for dividing said granulation zone into an inlet region above said screen means and an outlet region below said screen means;
(c) beater assembly means, including a rotatable cage having two coaxial spaced endplates; a plurality of beater bars attached to said endplates; each bar lying parallel to and equidistant from the common axis of said endplates, and drive means, attached to at least one of said endplates, for rotating said endplates and beater bars about said common axis, for repeatedly passing a beater bar within said inlet zone in close proximity to said screen so as to force a portion of any material between said beater bar means and said screen means through said screen means, and
(d) deflector means, attached to said beater bars and lying wholly toward said common axis from said beater bars, for applying a low impact horizontal force component to a portion of any material within said granulation zone to move said portion from a first location below and adjacent to said entrance toward a second location horizontally spaced from said first location to create a desired material flow distribution through said screen means.

4,117,985

SHREDDER HAMMER WITH REPLACEABLE TIP

Jack A. Lazareck, Box 26, Group 509, R.R. 5, Winnipeg, Manitoba, Canada (R2C 2Z2)

Filed Jun. 16, 1977, Ser. No. 807,221
Claims priority, application Canada, May 12, 1977, 278244
Int. Cl.[2] B02C *13/28*
U.S. Cl. 241—197 **10 Claims**



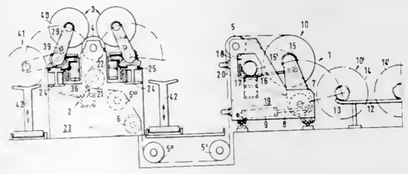
1. A hammer of the type used in shredding operations comprising: a shank member adapted to be secured on a supporting shaft; and a replaceable tip member which is subject to wear substantially along the leading and lower portions thereof; means for interconnecting said shank and said tip, said interconnecting means comprising a tongue and groove interrelationship for slidably interconnecting said shank and said tip along a common face, and a cooperating keyway pocket and hooked key on said shank and said tip, with a significant operative interengaging portion of such keyway pocket/hooked key being within said shank and being so interrelated as to tend to retain said tip on said shank during use; and locking means, separate and distinct from said interconnecting means, for locking said tip to said shank, said locking means comprising a slot passing through said shank and said tip adjacent the trailing edge thereof, said slot being disposed through a side of said tip which is perpendicular to said leading portion of said tip a wedge inserted into said slot; and means for retaining said wedge in said slot.

4,117,986

ROLLER CUTTING AND WINDING MACHINE

Armin Hutzenlaub, Wiehl, Germany, assignor to Firma Erwin Kampf Maschinenfabrik, Germany

Filed Jun. 9, 1977, Ser. No. 804,923
Int. Cl.[2] B65H *35/02*
U.S. Cl. 242—56.2 **12 Claims**



1. In a roller cutting and winding machine to cut a broad material band into a plurality of longitudinal strips and form the strips into individual coils, the combination therewith comprising:
(a) a pair of spaced apart shield plates;
(b) a deflecting and supporting roll mounted at its opposite ends between said shield plates;
(c) a pair of traverse members each having a profile rail thereon and being supported on said shield plates on opposite sides of said deflecting and supporting roll;
(d) a cutting device operatively associated with a counter cutting roll and supported between said shield plates to cut a broad material band into longitudinal strips;
(e) a plurality of winding-on stations mounted on said traverse members and operatively associated with said deflecting and supporting roll to form individual coils of the longitudinal strips upon said winding-on stations, said winding-on stations each comprising bracket means and a pair of swivel arms mounted adjacent one end thereof on shaft means journaled in said bracket means for swivelling movement of said swivel arms about a swivel axis defined by the longitudinal axis of said shaft means, clamping heads carried on said swivel arms adjacent the free ends thereof and adapted to carry a coil tube thereon, and a toothed wheel concentrically keyed to said shaft means said bracket means being supported on said traverse members and being longitudinally movable thereon to, and clampable in, a selected position thereon; and
(f) a powered tooth rack engaged with said toothed wheel whereby movement of said tooth rack swivels said swivel arms about their swivel axis between a coil winding-on position and a coil depositing position.

4,117,987

FILM CASSETTE FOR AN ENDOSCOPE

Takeshi Okada, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 703,606, Jul. 8, 1976, Pat. No. 4,038,977.
This application May 17, 1977, Ser. No. 797,689
Claims priority, application Japan, Jul. 11, 1975, 50-85077
Int. Cl.[2] G03B *1/04, 15/14;* **A61B** *1/06*
U.S. Cl. 242—71.2 **2 Claims**



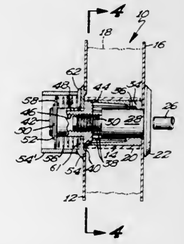
1. A film cassette for an endoscope comprising a cassette housing means with an exposure window and with a film received therein, a film take-up shaft rotatably supported by said cassette housing means, and a string frictionally engaging said film take-up shaft so as to wind up said film when said string is pulled, said film take-up shaft including a pulley around which one end portion of said string is wound, said cassette housing means being provided with a rib close to the outer periphery of said pulley and having at least one cut-out section from which said string is delivered, the remaining portion of said rib preventing said string from being disengaged from said pulley.

4,117,988

REEL ADAPTER FOR TIE MATERIAL AND METHOD OF USING THE SAME

Doyle A. Moore, R.R. 2, P.O. Box 207, Worthington, Minn. 56187, assignor to Bedford Industries, Inc., Worthington, Minn.

Filed Apr. 21, 1976, Ser. No. 678,923
Int. Cl.[2] B63H *75/18*
U.S. Cl. 242—71.9 **9 Claims**



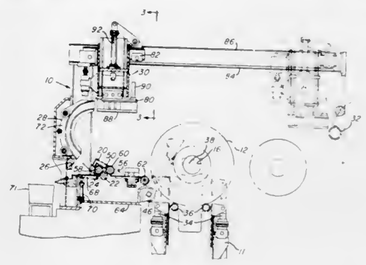
1. A reel adapter for supporting a coil of tie material, said adapter comprising a tubular body member generally in the form of a cylinder, a flange member located at each end of the tubular body member, the flange members being parallel and oriented normal to the axis of the tube, fastening means for removably securing at least one of the flanges on the tube so that the coil of tie material can be placed on the adapter and the removable flange replaced and said adapter having means thereon for engaging the wound coil of tie material to the adapter to prevent rotation of the tie material on the adapter, said tube comprising an expandable collet having a plurality of longitudinally extending circumferentially spaced segments with notches between them, the segments being free at one end and integrally connected at the other end and a collet expanding means operatively associated with the free ends of the segments to press the segments outward when the removable flange is moved in the direction of the other flange and the adapter includes a means for retaining the removable flange and collet expanding means thereupon.

4,117,989

METHOD AND APPARATUS FOR COIL HANDLING AT MILL ENTRY

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Aug. 31, 1977, Ser. No. 829,233
Int. Cl.[2] B21C *47/16*
U.S. Cl. 242—78.8 **15 Claims**



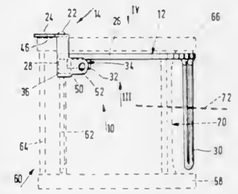
1. In a coil preparation apparatus for supporting and rotating a coil at a first location to pay out strip therefrom for strip preparation and subsequently guiding such strip and coil to a second location at a downstream mill pass line, the improvement comprising: first strip guide means spaced upstream from such a coil for the positive guiding of such strip throughout at least the major vertical portion of the travel thereof from the payout location of such strip from such a coil, which payout location is at a lower peripheral portion of such a coil, to on upper location spaced vertically upwardly from said payout location; said first strip guide means having upwardly extending vertical strip support and guiding portions which are selectively movable transversely of such strip to support and guide such strip at the first coil location and to thereafter release such strip from such support and guiding relationship when such strip is subsequently moved to such mill pass line; and second strip guide means adapted to receive and guide the head end of strip emerging from said first strip guide means at said upper location.

4,117,990

FISHING REEL

Bernard Peter Denny, Blue Hill Farm, Merridale, Natal, South Africa

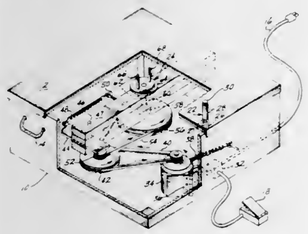
Filed Feb. 14, 1977, Ser. No. 768,411
Int. Cl.[2] A01K *89/02*
U.S. Cl. 242—84.52 A **6 Claims**



1. A fishing reel attachment for removable attachment to a fishing rod reel having a spool rotatably mounted between parallel spaced cheek plates, said cheek plates being connected together by a plurality of spaced removable cross bars, said attachment comprising:
(a) a control member having a bore therein for pivotably

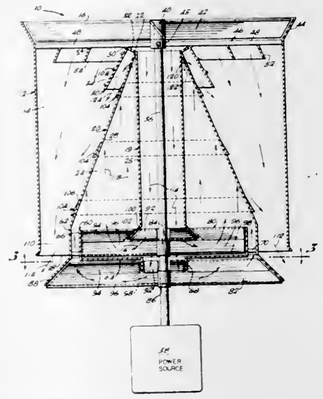
supporting the control member on one cross bar of the reel;
(b) a control arm connected to the control member and extending transversely from the bore in the control member, said control arm having a curvature corresponding to the curvature of the spool;
(c) a guide part, supported by the control arm and displaced from the bore, for guiding a fishing line wound on the spool;
(d) a brake element mounted on the control member;
(e) a bias support member adapted to be rigidly mounted on the cross bar of the reel on which the control member is supported and an adjacent parallel cross bar of the reel, said bias support member including a U-shaped part with two parallel legs and a central element, the U-shaped part being adapted to fit over one cheek plate and that part of the control member having the bore therein, one leg of the U-shaped part being connectable on the outside of a cheek plate to the two adjacent cross bars, and the other leg of the U-shaped part being connectable inside this cheek plate to the cross bar on which the control member is mounted so that the central element of the U-shaped part is disposed over the bore of the control member;
(f) a bias support arm connected to the bias support member and extending from the central element of the U-shaped part towards the guide part; and
(g) bias means, connected to the bias support arm, for acting between the bias support arm and the control member, said bias means for including a coil spring adapted to act towards the rotational axis of the spool so as to urge the control member to pivot about the cross bar on which the control member is mounted, thereby bringing the brake element into frictional contact with the spool to retard rotation of the spool, so that when the fishing line is taut and the line bears against the guide part, the control member, and thus the brake element, are pivoted about the first cross bar against the action of the bias means.

4,117,991
HOSE WINDING MECHANISM
Roy E. Johnson, 1605 S. 2nd St., Shelton, Wash. 98584
Filed Mar. 9, 1977, Ser. No. 775,910
Int. Cl.[2] B65H *75/40*
U.S. Cl. 242—86 **7 Claims**



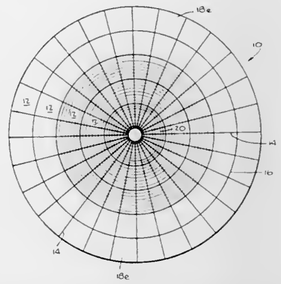
2. A mechanism for winding hose and the like comprising: a flat rolling table having a smooth outer surface; a hose guide means attached to and located near an edge of said table; a wind plate means, mounted for rotation in an opening near the center of said rolling table, comprising a plate mounted substantially flush with said smooth outer surface of said rolling table, a pair of spaced apart pins extending outwardly from said outer surface of said rolling table, and means for attachment of a hose end; electrical motor means for supplying power to rotate said wind plate means; manually operated control means for controlling said electrical motor means; and a pivotally mounted intermediate speed reduction means, operably connected between said electrical motor means and said wind plate means, for substantially reducing the speed of rotation of said wind plate means to a range suitable for winding of hose and the like, said intermediate speed reduction means comprising a rotatable mounting plate, large and small pulleys fixed together and connected to said mounting plate for free rotation with respect thereto, and spring biasing means, attached to said mounting plate, for urging said large and small pulleys away from each of said motor means and said winding plate means.

4,117,992
VERTICAL LIFT DEVICE
Charles K. Vrana, P.O. Box 686, La Belle, Fla. 33935
Filed Oct. 28, 1976, Ser. No. 736,444
Int. Cl.[2] B64C *29/02*
U.S. Cl. 244—23 C **9 Claims**



1. A vertical lift device comprising,
a main cylindrical housing defining a vertically extending tunnel having open top and bottom ends,
a tube, extending axially through the main control height of said tunnel and having upper and lower open ends,
an axially disposed main truncated hollow cone in said tunnel having a relatively small open upper end and an enlarged open lower end, said cone being disposed about said tube, defining an inner conical chamber between an inside wall surface of said cone and an outside wall surface of said tube, said cone and tube open upper ends being fixed relative to each other inwardly of said tunnel open top end,
means to fixedly support said tube and cone in said tunnel,
a drive shaft, extending axially upwardly through said tube,
a downdraft producing propeller disposed in said tunnel open top end and being fixed to said drive shaft above said tube open upper end,
fan means disposed in said enlarged open lower cone end and being fixed to said drive shaft,
a power source operably connected to an outwardly extended end of said drive shaft to operate said propeller and said fan means, said propeller thereby creating an air stream having a first air stream portion passing downwardly through said tunnel outwardly of said cone and out through said tunnel open bottom end, to create first lift forces and a second air stream portion passing downwardly through said tube.
said fan means having blade means positioned to intercept said second air stream portion at said tube open lower end and to divert it upwardly into said conical chamber to create second lift forces.

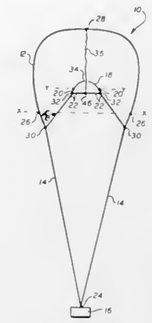
4,117,993
PARACHUTE CANOPY
Lorenz A. Palm, Ridgeway, and David B. Webb, Fort Erie, both of Canada, assignors to Irvin Industries Canada Ltd., Fort Erie, Canada
Filed Jul. 25, 1977, Ser. No. 818,418
Int. Cl.[2] B64D *17/12*
U.S. Cl. 244—145 **8 Claims**



1. A parachute having a canopy adapted to reduce opening forces at high speed without substantially increasing opening time at low speed, the canopy comprising:
a plurality of circumferential rings extending from the crown to the skirt,
a plurality of substantially trapezoidal panels arranged in each of said circumferential rings,
at least a portion of said panels being formed of woven stretch fabric, said fabric in said panels having stretch yarn in a circumferential direction and non-stretch yarn in a radial direction so that the stretch characteristic of said stretch fabric panels is developed solely in a circumferential direction,
said stretch fabric panels being located in at least two adjacent ones of the innermost ones of said rings.
each of said panels in the one of said circumferential rings at said skirt being formed of non stretch fabric, and
circumferentially extensible stitching means joining adjacent stretch fabric panels along their circumferential edges,
said stretch fabric panels having a characteristic curve of air permeability versus dynamic air pressure that is concave up over a predetermined range of dynamic air pressure.

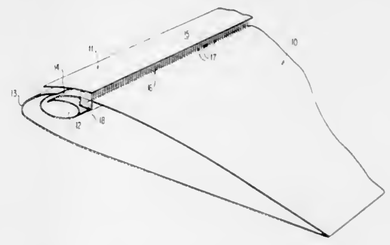
4,117,994
PARACHUTE WITH CANOPY OPENING ASSIST AND OPENING CONTROL
David B. Webb, Fort Erie, Canada, assignor to Irvin Industries Canada Ltd., Fort Erie, Canada
Filed Jun. 21, 1977, Ser. No. 808,605
Int. Cl.[2] B64D *17/08*
U.S. Cl. 244—152 **19 Claims**

1. A parachute having rapid initial opening and controlled opening shock comprising:
a main canopy having a skirt portion
a plurality of support lines connected to said main canopy, each of said support lines having an end connected to a common confluence point,
an auxiliary canopy positioned within said main canopy when the parachute is in a squidded state,
the skirt of said auxiliary canopy being positioned a substantial distance above said skirt of said main canopy in said squidded state, and
a plurality of reefing lines, each of said reefing lines being fixidly connected to a respective one of said support lines at a point remote from said confluence point and below said canopy skirt portion,
said auxiliary canopy being connected to said reefing lines, said point at which said reefing lines are connected to said support lines being sufficiently close to said skirt of said main canopy so that, during inflation, the force exerted by said auxiliary canopy on said reefing lines will provide



substantial reefing of said canopy and so that on initial opening, said reefing lines will control the shape and size of the mouth opening of said main canopy.

4,117,995
AIRCRAFT WING LIFT AUGMENTATION DEVICE
Thomas M. Runge, 2501 Galewood Pl., Austin, Tex. 78703
Filed Feb. 28, 1977, Ser. No. 772,669
Int. Cl.[2] B64C *21/04*
U.S. Cl. 244—207 **5 Claims**



5. In an aircraft wing, an internal duct extending longitudinally of the wing near and rearwardly of the wing leading edge and having an outlet slit opening through the top of the wing for directing air from the duct rearwardly across the top of the wing, said duct adapted to receive jet engine air diverted thereto, a slat adapted in a retracted position to cover said outlet slit and to lie flush on the wing, said slat when extended above the wing forming a passage between the slat and wing for the rearward flow of a high velocity stream of air discharging through said slit for augmenting wing lift, an air laminar flow inducing means on the bottom of said slat, said wing having a top recess adapted to receive said means when said slat is retracted, and means on said wing coupled with said first-named means and slat to retract them and allowing extension of the slat and first-named means above the wing upper surface under the influence of said high velocity air stream.

4,117,996

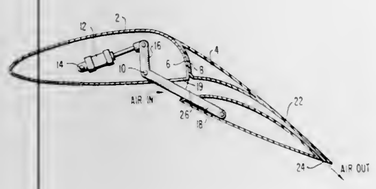
VARIABLE AERODYNAMIC COMPRESSION FLAPS

Irving R. Sherman, 8045 E. Douglas Ave., Apt. 205, Wichita, Kans. 67207

Continuation of Ser. No. 589,188, Jun. 23, 1975, abandoned. This application Apr. 15, 1977, Ser. No. 787,846

Int. Cl.[2] B64C *3/28*

U.S. Cl. 244—212 **4 Claims**



1. In an airplane

a wing having a lower surface which in horizontal flight of the airplane extends generally horizontally,

trailing edge unpowered geometric aerodynamic compression flap means pivoted on said wing, means in said flap means providing a rearwardly convergent channel of fixed geometry for geometrically compressing exterior air, defined on its upper and lower sides by upper and lower predominantly convergent surfaces extending therethrough for at least most of the entire width thereof from front to rear and having an intake adjacent the forward end of the flap means, and an always open exit of fixed depth in a rearward portion of the flap means wherein the compression ratio K of said channel is varied and determined according to the formula

$$K = to/tj$$

where

to = depth of intake

tj = depth of exit,

and means for varying K between substantially zero and maximum values by closing and opening the intake, including

means for pivoting said flap means about an axis which is fixed with respect to the wing between elevated and depressed conditions, said wing, flap means and channel being characterized by the fact that in the elevated position of the flap, said intake is disposed behind the trailing edge of the wing and the latter at least partly masks the intake, and being further characterized by the fact that the upper surface of the channel at the intake is substantially aligned with the lower surface of the wing in a depressed position of the flap means, so that air flowing along the lower surface of the wing enters the channel intake with no substantial angular change in direction at said entry,

and characterized further than in the depressed position of the flap means the exit is directed downwardly and rearwardly with respect to the lower surface of the wing.

4,117,997

MOTOR ISOLATION MOUNT FOR DISK DRIVES

Louis G. Gitzendanner, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

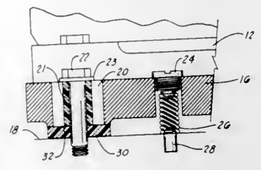
Continuation-in-part of Ser. No. 462,460, Apr. 19, 1974, abandoned. This application Jun. 26, 1975, Ser. No. 590,455

Int. Cl.[2] F16F *15/00*

U.S. Cl. 248—20 **7 Claims**

1. In a data storage apparatus having a linear magnetic motor assembly, a movable coil attached to the linear magnetic motor assembly, an elongated base plate assembly, and a motor mount secured to the base plate assembly by bolt means, the improvement comprising:

(a) means for allowing movement of the motor mount away from an equilibrium position on the base plate assembly when the movable coil is actuated limited to a direction parallel to the direction of travel of the movable coil; and



(b) biasing means secured to the motor mount and the base plate assembly for controlling the amount of friction between the motor mount and the base plate assembly during the movement of the motor mount, said biasing means providing a force for returning the motor mount to said equilibrium position.

4,117,998

RETAINING DEVICE FOR CORDS

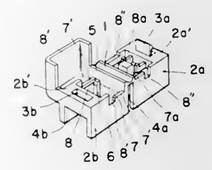
Yoshiaki Notoya, Zushi, Japan, assignor to Nifco, Inc., Tokyo, Japan

Filed Dec. 16, 1977, Ser. No. 861,158

Claims priority, application Japan, Jan. 26, 1977, 52/7273[U]

Int. Cl.[2] F16L *3/22, 5/00*

U.S. Cl. 248—56 **3 Claims**



1. A retaining device for cords, which device comprises a pair of retainer blocks formed integrally and connected to each other through the medium of a thin-walled hinge portion, one of said two retainer blocks being provided in the face continuing into said hinge portion with a plurality of paths for admitting cords of differing cross sections and the other retainer block being provided in the face continuing into said hinge portion with push pieces adapted to protrude into said paths and push down the cords to be laid through said paths, and wherein one of the two paths formed in one of the two retainer blocks is obstructed by one of said push pieces provided on the other retainer block and the other path is obstructed by a rib protruding in the direction of the width of the path, whereby a cord laid through either of the paths is forced to assume an arcuately bent shape.

4,117,999

FURNITURE LEG EXTENDERS

Robert U. Gessler, Wilton, Conn., assignor to Easy Riser, Inc., Wilton, Conn.

Filed Sep. 12, 1977, Ser. No. 832,647

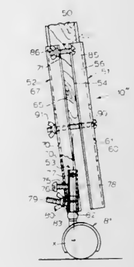
Int. Cl.[2] F16M *11/20*

U.S. Cl. 248—188.2 **1 Claim**

1. A device for extending the length of the leg on a conventional chair, bed, or other furniture without altering the leg exterior surfaces comprising, in combination:

(a) a first rigid metal integral elongated plate member having a pair of outer coplanar rectangular flat sections and therebetween a plurality of interconnecting rectangular flat sections in fixed angular relation adapted for vertical positioning to engage and partially surround with an inner side thereof lower outer surface portions of said leg, having a pair of upper bolt receiving holes formed in upper outer edge portions of said coplanar sections, and having a series of vertically spaced lower bolt receiving support holes formed along a vertical line centrally of said middle sections in a lower portion of said plate member;

(b) a second rigid metal integral elongated plate member having a pair of outer coplanar rectangular flat sections adapted to be disposed parallel to and opposite the outer coplanar sections of said first plate member, having a pair of upper bolt holes located for being mated with and disposed opposite to the upper pair of bolt holes of said first plate member, having a series of vertically spaced lower bolt receiving support holes located for being mated with and disposed opposite to the series of vertically spaced lower bolt receiving support holes of said first plate member, having a plurality of interconnecting middle rectangular flat sections in fixed angular relation between the said outer coplanar sections of said second plate member adapted for vertical positioning to engage and partially surround with an inner side thereof opposite lower outer surface portions of said leg;



(c) stem-receiving means mounted on an inner lower central portion of one of said plate members and adapted to receive the stem portion of a floor contacting device, said stem-receiving means comprising a generally vertically disposed stem-receiving tube member pivotally mounted within a said lower portion of a selected one of said plate members and including screw adjustment means in such selected plate member to fix and secure the angular relation of said tubular stem member with respect to the said selected plate member on which the same is mounted thereby enabling said device to adapt to an outwardly angled leg for providing vertically positioned stem support therefor;

(d) a pair of upper bolt members adapted to be mounted in said upper bolt receiving holes for clamping the upper outer coplanar sections of said plate members together to secure the upper inner portions of said plate middle sections against said leg;

(e) a single lower bolt member mounted in a selected set of said lower bolt receiving holes and being adapted to support the bottom of said leg thereon and clamp together the lower portions of said middle sections of of said plate members about said leg; and

(f) a floor-engaging device having a stem mounted in said stem-receiving means.

4,118,000

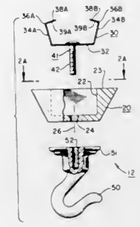
APPARATUS FOR SUPPORTING A MEMBER FROM A DROP-TILE CEILING

David Lester Campbell, Anchorage, Ak., assignor to George C. Ballas, Houston, Tex.

Filed Apr. 7, 1977, Ser. No. 785,444

Int. Cl.[2] A47B *96/06*

U.S. Cl. 248—228 **12 Claims**



1. Apparatus for supporting a member from a channel beam of a drop-tile ceiling comprising:

a decorative escutheon having a recess therein and having an opening therethrough communicating with said recess;

a resilient element for grasping the channel beam, said grasping element having a first and a second arm each bent at a joint toward the other to define an inwardly extending flange substantially perpendicular to its associated arm, said grasping element being moveable within said recess from a first, open, position to a second, grasping, position,

said grasping element having a dimension between the ends of the flanges such that, in said first position, said grasping element is sized to span the width dimension of the channel beam, said flanges of said grasping element being dimensioned such that, in said second position, the grasping element is in grasping engagement with the channel beam so that said joint in each of said arms is contracted against the edges of the channel beam; and,

closure means extending through said opening in said escutheon and connected to said grasping element for moving said grasping element from said first position to said second, grasping, position.

4,118,001

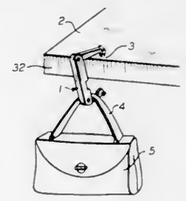
HANDBAG HOLDER

Alvin A. Serkez, 26 Tea Pl., Tappan, N.Y. 10983

Filed Apr. 10, 1978, Ser. No. 895,263

Int. Cl.[2] A47F *5/00*

U.S. Cl. 248—308 **9 Claims**



1. A handbag holder of the type having a support member connected to a hook member which is used by resting the support member near an edge of a substantially horizontal support surface, with the hook member extending over the edge where it may hold a hand strap associated with the article to be held thereby, wherein the improvement comprises a body in the shape of a long box with a first end and a second end, two side walls having a first pair of holes through said side walls and opposite one another within and adjacent said first end and a second pair of holes through said side walls and

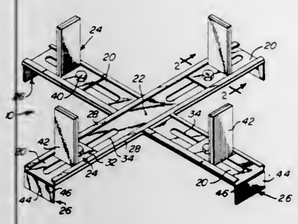
opposite one another within and adjacent said second end, and a back wall extending from said first end to said second end, defining a front opening; a first pivot pin mounted through said first pair of holes; a second pivot pin mounted through said second pair of holes; an upper support arm which is of a size of fit flush within the two side walls of the body and of a fixed length between one half and two thirds of the length of the body, said support arm having a first aperture through which said first pivot pin fits when said support arm is assembled within said body adjacent said first end, said support arm having a first shoulder which contacts said corresponding first end to prevent said support arm from being opened out from its closed position within said body more than a predetermined angular amount; and a lower hook arm which is of a size to fit flush within the two side walls of the body and of a length such that it fits within the space remaining in said body after said upper support arm has been assembled within said body, said hook arm having a second aperture through which said second pivot pin fits when said hook arm is assembled within said body adjacent said second end, said hook arm having a second shoulder which contacts said corresponding second end to prevent said hook arm from being opened out from its closed position within said body more than a predetermined angular amount, whereby the hook arms close flush into the side walls of said body to provide a compact, self-contained box-like configuration for carrying said handbag holder.

4,118,002

APPARATUS FOR CONNECTING A VACUUM CLEANER AND SOLUTION TANK AS A CLEANING SOLUTION-EXTRACTION CLEANER

Robert N. Bartlett, 2310 S. Holly St., Denver, Colo. 80222

Filed Jun. 6, 1977, Ser. No. 803,453
Int. Cl.[2] F16M *13/02*
U.S. Cl. 248—311.1 R **2 Claims**



1. In apparatus for connecting a wet dry vacuum cleaner in an essentially vertically-spaced relationship with a cleaning solution tank for combined use as a cleaning solution extraction-type cleaning apparatus, the wet-dry vacuum cleaner having a body with sidewalls and the solution tank having sidewalls and an open upper mouth, an improved connecting apparatus comprising:

at least four elongated arm members joined together at a common point and extending horizontally outward from the common point essentially in a single plane, each of said arm members extending longitudinally from the common point to an outer end thereof, each of said arm members being equally angularly spaced with respect to both of its adjoining arm members, each of said arm members including two transversely spaced apart and longitudinally extending U-shaped edges, each of the U-shaped edges extending longitudinally substantially along the total length of each arm member from the common point to the outer end thereof, the U-shaped edges opening toward one another on an upper vertical side of each arm member, each of said arm members further including means defining a slot extending substantially parallel to and intermediate of the U-shaped edges along said arm members;

one first bracket member operatively associated with each arm member, each first bracket member having a base portion and an upstanding projection portion, the upstanding projection portion extending substantially perpendicularly with respect to the base portion, the base portion of each first bracket member being operatively transversely received within the transversely spaced-apart width defined by the transversely spaced-apart U-shaped edges opening toward one another, the receipt of the base portion within the space between the U-shaped edges operatively allowing only longitudinal movement of said first bracket member along the longitudinal dimension of the arm member with which it is associated, the upstanding projection portion contacting the sidewalls of one of either of said vacuum cleaner body or said solution tank;

fastening means operatively connected to the base portion of each said first bracket member and extending into the slot defined in said arm member with which the first bracket member is associated, said fastening means being selectively operative to retain said base portion against longitudinal movement along said arm member; and

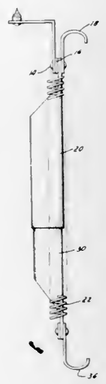
one second bracket member rigidly attached at the outer end of each arm member, each second bracket member having a projection portion extending essentially perpendicularly and vertically downward with respect to the longitudinal dimension of said arm member, the projection portion of said second bracket member contacting the sidewalls of the other one of either of said vacuum body or said solution tank.

4,118,003

RADIO ANTENNA MOUNTING DEVICE

Paul E. Dillow, 11290 Glennon Dr., Denver, Colo. 80226

Continuation of Ser. No. 753,239, Dec. 22, 1976, which is a continuation of Ser. No. 614,297, Sep. 17, 1975, which is a continuation of Ser. No. 507,157, Sep. 18, 1975, which is a continuation of Ser. No. 198,194, Nov. 12, 1971. This application Nov. 21, 1977, Ser. No. 853,969
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—539 **7 Claims**



1. Radio antenna mounting device which comprises:

a pair of longitudinally opposed telescoping members extending along a common longitudinal axis and having corresponding outer extremities longitudinally remote from each other and corresponding inner extremities operating one within the other for varying the overall longitudinal dimension thereof and the corresponding overall linear distance between such outer extremities along the longitudinal axis to accommodate wide range interchangeable attachment thereof between longitudinally spaced apart clampable support surfaces of differing longitudinal spaced apart dimensions;

a corresponding pair of longitudinally opposed clamp members of selective fixed longitudinal dimension extending along the longitudinal axis and having corresponding inner ends longitudinally adjacent to and stationarily fixed to the outer extremities of the telescoping members and corresponding outer ends longitudinally remote from each other and defining clamping surfaces extending crosswise of the longitudinal axis in opposed facing relation to each other, said outer ends being longitudinally remote from the corresponding outer extremities of the telescoping members and said clamp members operatively extending longitudinally outwardly beyond such extremities a selective fixed cumulative linear distance corresponding to the combined selective fixed longitudinal dimensions of such opposed clamp members for common clamping coaction of the clamping surfaces to such clampable support surfaces and thereby concomitantly increasing the range of such interchangeable attachment beyond that of the overall longitudinal clamping dimension of the telescoping members and the corresponding overall linear distance between such outer extremities to the extent that such selective cumulative linear distance exceeds such corresponding overall linear distance between such outer extremities, and

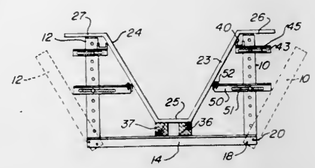
biasing means operatively interposed longitudinally inwardly of the clamping surfaces of the clamp members for biasing the clamp members longitudinally toward each other for such clamping coaction.

4,118,004

CONCRETE BEAM FORM

Samuel Clyde Scott, 2419 Walnut St., Denver, Colo. 80205

Filed May 16, 1977, Ser. No. 797,196
Int. Cl.[2] E04G *13/04*
U.S. Cl. 249—50 **5 Claims**



1. A light weight form for concrete beams comprising:

(a) a plurality of yokes each in the shape of a general U-shaped metal member, having upright legs and at least one horizontal member and said yokes spacedly arranged along the length of the form;

(b) an upper, adjustable metal arm extending generally horizontally inwardly on each leg of each yoke, arranged for adjustment inwardly and outwardly;

(c) a lower, adjustable metal arm extending generally horizontally inwardly on each leg of each yoke below the associated upper arm, and each lower arm arranged for adjustment inwardly and outwardly;

(d) a longitudinal stringer mounted on the inner ends of the upper arms providing opposed longitudinal braces;

(e) a longitudinal stringer mounted on the inner ends of the lower arms providing opposed longitudinal braces;

(f) at least two continuous, longitudinal braces resting and mounted on the horizontal members of said yokes; and

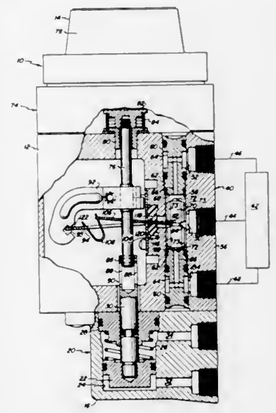
(g) a continuous beam forming sheet mounted in said yokes in upright position on each side with each sheet fastened to the respective stringers and a continuous generally horizontal beam forming sheet secured to the horizontal longitudinal braces with said side sheets forming a tight joint with said generally horizontal sheet.

4,118,005

TIMING DEVICE FOR FLUID VALVE

Charles P. O'Neil, Milwaukee, Wis.; Adam Smorzaniuk, West Millington, N.J., and James O. Young, Waukesha, Wis., assignors to Amerace Corporation, New York, N.Y.

Division of Ser. No. 658,773, Feb. 17, 1976, Pat. No. 4,068,682. This application Sep. 9, 1977, Ser. No. 831,834
Int. Cl.[2] F16K *1/163, 11/04*
U.S. Cl. 251—75 **7 Claims**



1. A fluid valve for use in a timing device in which the fluid valve is actuated upon the expiration of a prescribed timed interval following a given event, said fluid valve comprising:

a valve body having a chamber and a wall between the chamber and the exterior of the valve;

first and second passages communicating with the chamber;

a shuttle in the chamber movable between a first position, wherein the shuttle closes communication between one of said first and second passages and the chamber, and a second position wherein communication is open between both said first and second passages and the chamber;

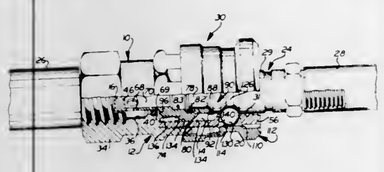
a snap-action mechanism isolated from the fluid valve by the wall between the chamber and the exterior of the fluid, said snap-action mechanism including a first lever extending through the wall, said first lever having a first end engaging the shuttle within the chamber, a second end outside the chamber and an intermediate portion through the wall; and

a member of resiliently flexible material in said wall engaging the intermediate portion of said first lever to enable swinging movement of the first lever relative to the wall, said member of resiliently flexible material maintaining a seal between the chamber and the exterior of the valve at the location where the intermediate portion passes through the wall whereby said snap-action mechanism is isolated from the fluid valve in a fluid-tight manner; and wherein the snap-action mechanism includes a second lever having first and second ends; pivotal means mounting the second lever adjacent the first end thereof for pivotal movement relative to the frame and relative to the first lever; a snap-action spring coupling the first and second levers adjacent the second ends thereof; and a trip means engaging the second end of the second lever, the trip means being adaptable for movement thereof to effect displacement of the second lever and the snap-action spring relative to the first lever, the displacement of the second lever and the snap-action spring causing a swinging movement of the first lever and movement of the shuttle between the first and second position in response to the swinging movement of the first lever.

4,118,006
SOCKET ASSEMBLY

James F. Norton, Berea, and Richard J. Silagy, Parma, both of Ohio, assignors to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Dec. 1, 1976, Ser. No. 746,393
Int. Cl.[2] F16L *37/28*
U.S. Cl. 251—149.6 38 Claims

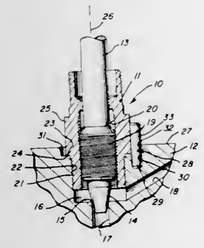


1. A socket assembly for receiving a plug element to connect a conduit associated with said socket assembly in fluid communication with a conduit associated with the plug element, said socket assembly comprising a socket body adapted to be connected with a conduit and defining a valve chamber having an outer end portion through which the plug element is inserted, a valve member disposed in said valve chamber and movable axially inwardly in said valve chamber from a closed position blocking fluid flow through said valve chamber to an open position enabling fluid to flow through said valve chamber, said valve member being movable axially outwardly in said valve chamber from the open position to the closed position, biasing means for applying an axially outwardly directed biasing force to said valve member urging said valve member toward the closed position, and locking means for engaging said valve member and holding it against axially inward movement under the influence of an axially inwardly directed force which is greater than said biasing force when said valve member is in the closed position and for engaging the plug element and holding it against axial movement when said valve member is in the open position.

4,118,007
VALVE STRUCTURE

John N. Scapes, Schaumburg, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 17, 1977, Ser. No. 778,370
Int. Cl.[2] F16K *31/44*
U.S. Cl. 251—223 11 Claims



1. In a valve having a body provided with a surface portion and a recess having a female thread and opening outwardly toward said surface portion, a bonnet having a male threaded inner end threaded to said female thread in said recess, and an outer tool engaging portion having a chordal flatted surface, and cooperating valve means carried by said body and bonnet for selectively controlling fluid flow through the valve, the improvement comprising:

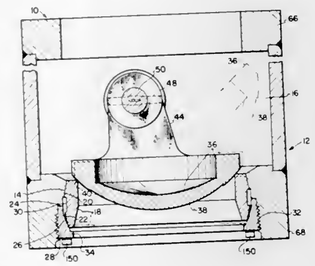
means defining an annular, radially enlarged outer end of said recess opening through said surface portion, at least a portion of said flatted surface of the bonnet being disposed within said outer end of the recess; and

a retainer installed in said enlarged outer end of the recess with said bonnet threadedly mounted to the body, said retainer being secured to said body and extending fully between said flatted surface and the body at the periphery of said annular outer end of the recess, whereby said body effectively backs up the retainer against radial displacement by the bonnet to effectively positively prevent further rotation of the bonnet in said recess thread thereby firmly locking the bonnet in the mounted disposition.

4,118,008
ROTARY VALVE

Edward B. Myers, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 549,041, Feb. 11, 1975, abandoned.
This application Oct. 22, 1976, Ser. No. 735,107
Int. Cl.[2] F16K *25/00, 5/06*
U.S. Cl. 251—298 6 Claims



4. A rotary fluid valve comprising

a body containing a valve chamber having a fluid port and having an annular inner wall surface spaced from said port,

a rigid sealing ring secured within said chamber between said inner wall surface and said port and having an inner annular seating surface which converges toward said port to form a stationary converging inner wall seating portion of said chamber,

a lug having a seating surface,

means for supporting said plug on the chamber side of said port for rotation about an axis which is radially offset with respect to the axis of said port and said sealing ring,

a moveable annular seat ring located in said chamber between said supporting means and said sealing ring, said seat ring having an outer annular arcuate seating surface engaging said converging seating surface of said sealing ring, having an inner annular seating surface facing said supporting means, and having a second outer annular arcuate surface engaging said inner wall surface of said chamber, and

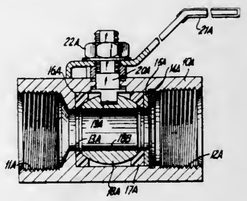
means for rotating said plug about its said axis to cause said seating surface of said plug to engage said inner seating surface of said seat ring and to move said seat ring into the position in which said inner seating surface of said seat ring is moved into sealing engagement with said seating surface of said plug, and said outer seating surface of said seat ring is simultaneously moved into sealing enagement with said seating surface of said sealing ring, said moving of said seat ring causing said second outer surface of said seat ring to move on

said inner wall surface of said chamber and said engaging second outer surface of said seat ring having shapes which cooperate to cause said inner wall surface to guide said movement of said seat ring and to limit the movement of said seat ring in the direction away from said sealing ring to prevent the displacement of said seat ring to an inoperative position.

4,118,009
SINTERED BALL VALVE

William J. Chmura, Southington, Conn., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 503,279, Sep. 5, 1974, Pat. No. 4,026,657.
This application Mar. 3, 1977, Ser. No. 774,024
Int. Cl.[2] B21D *53/10;* B21K *1/02;* F16C *11/06;* F16D *1/12*
U.S. Cl. 251—315 3 Claims



1. A ball valve comprising a cooperating element with a curved surface held substantially in contact with a spherically conforming truncated ball element formed from sintered powder metal blank to permit relative motion between said elements, said ball element having a porous structure and having a bore passing therethrough,

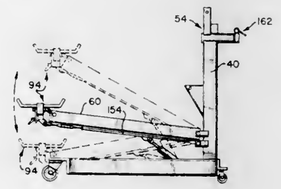
substantially the entire spherical surface of said ball element being characterized by a mechanically worked surface of high density of at least about 95% of the theoretical density of said metal with the pores at the surface thereof substantially closed,

the density of said spherical ball element in cross section decreasing inwardly from a highly dense zone adjacent said spherical surface to a porous zone of lower density below said dense zone and extending to the bore, the average density of said porous zone ranging from about 70% to less than 95% of the theoretical density of said metal.

4,118,010
MULTI-PURPOSE LIFTING AND MOUNTING ASSEMBLY

Russell C. Hanscom, 3027 Diss/ P.O. Box 1822, Santa Maria, Calif. 93454

Filed Jan. 9, 1978, Ser. No. 868,175
Int. Cl.[2] B66F *5/02*
U.S. Cl. 254—124 8 Claims



1. A lifting and mounting apparatus comprising:

a base frame;

an elongated upright member having a bottom portion connected to said frame;

first support means located on the base frame proximate said bottom portion;

second support means located on the upright member above said bottom portion and upper pivot connection means located about the top portion of said upright member;

a lifting beam having an attachment end portion and a pivot end portion adapted for connection to said upright member wherein said attachment end portion includes a cradle means adapted to be releasably connected thereto;

said cradle means comprising a

pivot rod extending beyond the end of the attachment end portion in a direction generally coextensive with the longitudinal axis of said lifting beam interconnecting said cradle with said attachment end portion;

a carriage member comprising an elongated beam extending transversely of said rod and mounted thereon for rotation about its normal axis, said rod freely extending through the carriage member to a terminal end having a first bracket immovably attached thereto;

second bracket means immovably attached to said carriage member in a manner coextensive with and offset from said first bracket means; and,

adjustable linkage means interconnecting said brackets for regulating the angularity of said carriage member about said normal axis;

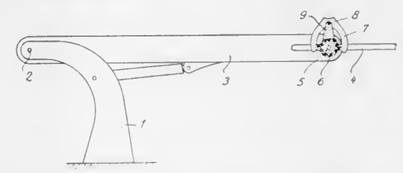
said lifting beam further including pivot connection means located intermediate of said end portions; and,

a jack unit adapted to be secured to said first or second support means and said pivot connection means for raising and lowering said beam.

4,118,011
LIFT MECHANISM WITH PLATFORM LOCKING DEVICE

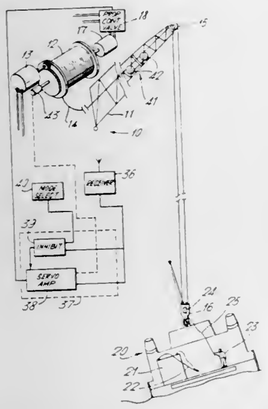
Henning Falck Schmidt, Rasmus Rask Alle 37, DK-5000 Odense, Denmark

Filed Apr. 5, 1977, Ser. No. 784,860
Claims priority, application Denmark, Apr. 5, 1976, 1618/76; Oct. 19, 1976, 4697/76
Int. Cl.[2] B66F *17/00*
U.S. Cl. 254—124 3 Claims



1. A lift mechanism comprising a lift arm, a platform pivoted to the lift arm whereby horizontality of said platform can be maintained irrespective of the position of said lift arm and a locking mechanism operative between said lift arm and said platform, said locking mechanism comprising first and second cooperative locking devices carried by the lift arm and the platform respectively, one of said locking devices including a freely pivoted member and the other of said locking devices including a fixed locking member complimentary to said pivoted member, said pivoted member being free from engagement with said fixed locking member when said platform is horizontal and being adapted to swinging into releasable locking engagement with said fixed locking member when said platform moves from a horizontal position to prevent further movement of said platform from the horizontal position.

4,118,012
LOAD TRANSFER
Andrew Guy Kerr, Edinburgh, Scotland, and Robert Arthur Morley, Southport, England, assignors to Ferranti Limited, Hollinwood, England
Filed Feb. 25, 1977, Ser. No. 772,253
Claims priority, application United Kingdom, Feb. 28, 1976, 07938/76
Int. Cl.[2] B66D *1/48*
U.S. Cl. 254—173 R 9 Claims

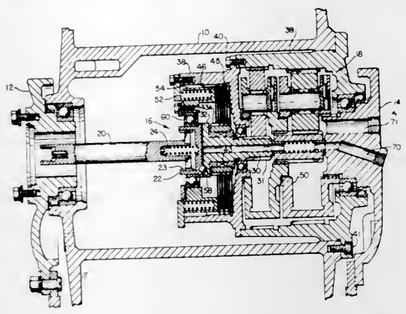


1. Control means for controlling the vertical motion of a hook assembly of a crane carried by the first of two relatively movable stations comprising transducer means carried by the hook assembly operable to generate a signal related to deviation from a desired vertical separation between the second station and the hook assembly, and servo means responsive to an error signal received from the transducer means to cause the hook assembly to be raised or lowered by the crane to restore the desired vertical separation, the transducer means including a control cord extending therefrom to the section station, the transducer being arranged to provide no error signal when the control cord has a predetermined value of tension therein and an error signal operative to cause raising of the hook assembly when the value of the tension is less than the predetermined value and an error signal operative to cause lowering of the hook assembly when the tension exceeds the predetermined value, the tension in the control cord being controllable both by the motion of the second station relative to the hook assembly and manually by an operator on the second station, and further including a transmitter operable to transmit signals produced in the transducer and a receiver on the station carrying the crane operable to apply to the servo means signals received from the transmitter.

4,118,013
SELF-ENERGIZING WINCH BRAKE AND DRIVE
Sommerville Grant Christison, Delta; John Edwin Magnuson, Surrey, and Wing Chong Tham, Nanaimo, all of Canada, assignors to PACCAR Of Canada, Ltd., Ste-Therese, Canada
Filed Mar. 14, 1977, Ser. No. 776,844
Int. Cl.[2] B66D *1/08*
U.S. Cl. 254—187.5 8 Claims

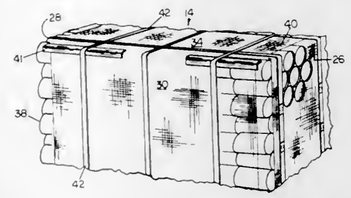
5. A self-regulating brake mechanism for a hoisting winch of the type having a drum for supporting a load, a reversible input shaft driven by a motor, an output drive coupled to the drum, and brake means for locking the drum against lowering when a load is raised and for controlling the speed of the drum when a load is lowered, including spring means for normally engaging said brake means with a set maximum braking force, the improvement comprising:

said output drive including an output shaft and a drive train, one-way clutch means in said drive train for providing free-running movement of the drum in a hoisting direction while the brake remains fully engaged by bypassing said brake means in response to rotation of the input shaft in said hoisting direction but locked to said brake means



when the output shaft is rotated in the opposite lowering direction, and brake release means operatively associated with said brake means and with said input shaft for releasing the brake means by withdrawing said spring means braking force in direct response to the torque of the input shaft in the opposite lowering direction.

4,118,014
VEHICULAR IMPACT ABSORPTION SYSTEM
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Albert C. Knoell, La Crescenta, and Abraham H. Wilson, Sherman Oaks, both of Calif.
Filed Aug. 19, 1977, Ser. No. 826,204
Int. Cl.[2] E01F *15/00*
U.S. Cl. 256—1 5 Claims



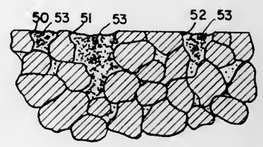
1. In an impact absorption system particularly suited for use in shielding a structure such as a highway abutment from impacting engagement with a moving mass, such as an automobile, the improvement comprising:

A. a modular crash cushion comprising one of a plurality of contiguous cushions adapted to be positioned within the path of a moving mass including a contiguous plurality of collapsible bodies of cylindrical configuration comprising voided beverage cans formed of an alloy consisting essentially of aluminum arranged in multiple tiers with the longitudinal axes thereof extended in substantial parallelism with the path of the moving mass, each of the bodies disposed internally of the cushion being nested in six-point contact with adjacent bodies, whereby maximum lateral stability is provided therefor;

B. a metal hardware cloth mesh enclosure defining an envelope for said cushion, and means for securing the enclosure in place relative to said plurality of bodies including a plurality of transversely related straps; and

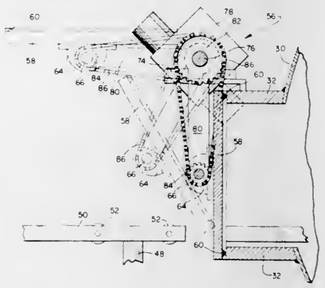
C. means for securing the crash cushion against substantial transverse displacement relative to said path.

4,118,015
DEVICE FOR SAMPLING MOLTEN METAL
William J. Collins, 7005 Madison St., Merrillville, Ind. 46410
Continuation of Ser. No. 639,468, Dec. 10, 1975, abandoned.
This application Apr. 11, 1977, Ser. No. 786,664
Int. Cl.[2] G01N *1/10*
U.S. Cl. 266—44 13 Claims



1. A method which comprises steam treating internal porous surfaces of a chamber constructed of molded powdered metal for receiving a sample of molten metal whereby to substantially cause filling of said pores to minimize sticking of a sample obtained in said chamber.

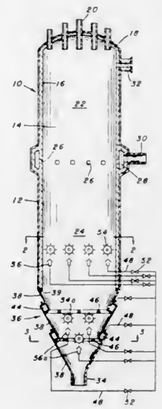
4,118,016
CONTINUOUS HEAT TREATING VACUUM FURNACE
Herbert W. Westeren, Barrington, and Ronald A. Harrison, Cranston, both of R.I., assignors to C.I. Hayes Inc., Cranston, R.I.
Filed Oct. 12, 1976, Ser. No. 731,504
Int. Cl.[2] C21D *1/74*
U.S. Cl. 266—130 18 Claims



1. A vacuum furnace for continuously introducing and processing work parts through a heating chamber of the furnace for the heat treatment thereof without breaking the vacuum in said heating chamber, comprising a housing in which said heating chamber is located, a loading station including a loading chamber located forwardly of said heating chamber for receiving work parts therein prior to transfer to said heating chamber, a cooling station located rearwardly of said heating chamber and communicating with a discharge station located at the rear of said housing, a first door assembly located at the forward end of said housing for sealing said loading chamber from atmosphere, a second door assembly located between said loading chamber and heating chamber for sealing communication therebetween, a third door assembly for sealing said cooling station from atmosphere, and a fourth door assembly sealing communication between said heating chamber and said cooling station, a series of tracks located in spaced relation at said loading station, heating chamber, cooling station and discharge station, a cart on which said work parts are carried for travel on said tracks, a first transfer means for moving said work cart from said loading station into said heating chamber at predetermined intervals, and a second transfer means operated independently of said first transfer means for removing said work cart from said heating chamber for transfer to said cooling station and for transfer to said discharge station, said first transfer means including an elongated flexible spring that is mounted independent of the door assembly located adjacent thereto and on the end of which a transfer element is secured, gear means engaging said spring for producing linear movement thereof, means for rotating said gear means, and means for urging said spring into intimate engagement with said gear means for effecting a positive drive therebetween.

14. A drive assembly for moving a work cart through the interior of a heat treating furnace, comprising an elongated flexible coil spring, a pulley having an annular groove formed therein in which teeth are disposed in pitched, spaced relation and generally parallel to the axis of said pulley for receiving the coils of said spring in driving relation, means for rotating said pulley for effecting a longitudinal movement of said spring, a pivotally mounted roller having an annular groove that snugly engages said spring for urging said spring into intimate contact with said pulley, and a push member joined to the outermost end of said spring and engaging said work cart for producing a movement thereof as said spring is moved longitudinally, the teeth as formed in the groove in said pulley being located at the lowermost portion thereof, wherein the spring is prevented from riding out of the groove during the longitudinal movement of the spring.

4,118,017
SHAFT FURNACE DESIGN
Luther G. Hendrickson, Churchill Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Jan. 2, 1976, Ser. No. 646,137
Int. Cl.[2] C21B *11/02*
U.S. Cl. 266—187 2 Claims



1. In a shaft furnace for the direct reduction of oxidic ore including an upstanding refractory lined, metallic shell defining a chamber in which ore is reduced by intimate contact with reducing gas, said shell having ore supply and discharge openings for passing ore by gravity from top to bottom through said chamber and a downwardly convergent transition section adjacent said ore discharge opening, high temperature reducing gas inlet means communicating with said chamber at an intermediate region thereof and effective to pass said high temperature gas in counterflow relation to the flow of ore therethrough, means for introducing cool reducing gas adjacent said ore discharge opening for flow in counterflow relation to said ore, improvement comprising means for regulatably passing said cool reducing gas through each of a plurality of concentrically spaced transverse sections of said shell, said means comprising a transition section including:

(a) a plurality of hollow, conical frustrums disposed in mu-

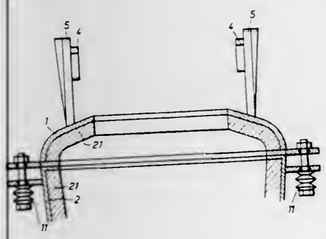
tual telescoping relation depending from the lower end of said shell;
(b) axially spaced, annular plates interconnecting said frustrums and cooperating therewith to form a plurality of axially spaced annular manifolds of progressively reduced diameter extending about the periphery of said transition section,
(c) circumferentially spaced openings in said plates establishing gas communication between said manifolds and said chamber;
(d) circumferentially spaced partition plates in said manifolds for dividing the same into separate compartments; and
(e) means for independently regulating the supply of cool reducing gas to each of said compartments.

4,118,018

COVER DEVICE FOR CASTING VESSELS, LADLES OR OTHER METALLURGICAL TREATMENT CONTAINERS

Hans Grüner; Klaus Terjung, both of Duisburg; Wolfgang Sachse, Düsseldorf, and Heinrich-Wilhelm Romerswinkel, Mülheim-Saarn, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 20, 1976, Ser. No. 734,130
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1975, 2548827; Nov. 4, 1975, 2549825
Int. Cl.² F27D *3/00*
U.S. Cl. 266—275 **5 Claims**



1. Cover device for a casting ladle or a metallurgical vessel comprising:
an annular inwardly curving edge portion extending partially over a top opening of the ladle or vessel;
spring biased bolt means for resiliently bolting said edge portion to said ladle or vessel;
a central portion corresponding to the opening of said edge portion and being positioned thereon, said central portion and said edge portions each having fire proof lining;
stop elements rigidly secured to said edge portion; and
a bridle tiltably mounted to said central portion, said bridle having lateral extensions, said lateral extensions being capable of engagement with said stop elements for locking the central portion to the edge portion and for releasing the central portion upon disengagement from the stop elements.

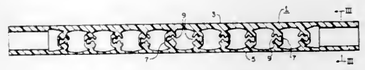
4,118,019

SHOCK ABSORBING PAD WITH KEYED STRUTS

David F. Weir, Sunnyvale, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 1, 1977, Ser. No. 820,675
Int. Cl.² F16F *1/36*
U.S. Cl. 267—153 **6 Claims**

1. A shock absorbing pad having an elongated longitudinal section and comprising a first platform and a second platform disposed generally parallel to said first platform and extending along the length of said section, and a plurality of struts longitudinally spaced connecting said platforms and extending transverse to the longitudinal axis of said section, each of said struts having a notch opening in a direction facing an axis transverse to the longitudinal axis of said section, each said notch having only a single tongue-and-groove portion spaced apart on opposing portions of each said notch, the tongue-and-



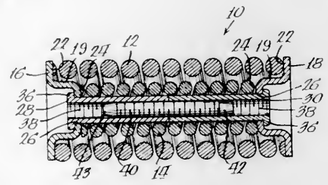
groove portions being disposed to mate when large shock loads are applied to one of said platforms to absorb said large shock loads without said platforms rotating with respect to one another.

4,118,020

SPRING ASSEMBLY AND METHOD OF ASSEMBLY THEREOF

Allen D. Myers, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 10, 1977, Ser. No. 823,302
Int. Cl.² F16F *1/10, 3/04*
U.S. Cl. 267—168 **8 Claims**



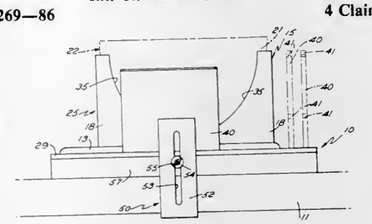
1. A spring assembly, comprising:
at least one helical spring;
two spaced retention caps, said spring engaging and extending longitudinally between said caps coaxially therewith;
two pins, each said pin retaining a respective cap and extending axially therefrom toward the other said cap into abutment with the other said pin, at least one said cap being reciprocably retained by one said pin, each said pin having a threaded axial bore, said bores being in axial alignment; and
a threaded stud received by the bore of each said pin and retaining said pins in abutting relation;
said pins, caps and stud being constructed and arranged with respect to each other so as to be effectively inaccessible to a tool or the like for application of a rotative force tending to disassemble said assembly.

4,118,021

SUPPORT FOR HOLDING SYRIAN BREAD

Donald A. DeLomba, 2 Canna St., Warwick, R.I. 02888

Filed Aug. 15, 1977, Ser. No. 824,277
Int. Cl.² B25B *1/20*
U.S. Cl. 269—86 **4 Claims**



1. A support for holding Syrian bread while being filled with food comprising a base, a pair of similar L-shaped members

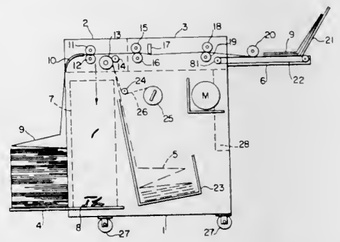
having foot and upstanding arm portions, said foot portions mounted on said base, said upstanding arms provided with recesses facing each other to receive the edge of the bread and said members being spaced to permit the opposite faces of the bread to bulge outwardly between said recesses for filling with food between said faces, plates at flaring angles to said base mounted on said base at either side of said members along the space between said recessed members to act as supports for the opposite faces of said bread as it spreads outwardly thru said spaces.

4,118,022

BURSTING APPARATUS FOR CONTINUOUS FORMS

Wilson Parker Rayfield, Pittsford; Ronald Worden Ferguson, Rochester, and George Mahue Brooks, Pittsford, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 8, 1977, Ser. No. 785,896
Int. Cl.² B65H *41/00*
U.S. Cl. 270—52.5 **24 Claims**



1. Bursting apparatus for continuous forms comprising:
a first pair of rotating rollers;
a second pair of rotating rollers mounted on a movable carriage and rotating at a velocity different from that of said first pair of rollers, said second pair of rollers being adjustably spaced from said first pair of rollers by a pair of threaded rods, each pair of rollers of said first and second roller pairs defining a nip for gripping and feeding said continuous forms, wherein said first and second pairs of rollers define a substantially horizontal plane of travel therebetween for said continuous forms and wherein said first and second pairs of rollers are disposed such that a plane passing through the axes of one of said pairs of rollers is angularly tilted from the vertical in an opposite rotational sense from a plane passing through the axes of the other pair of rollers such that each said pair of rollers has a nip plane tangent to each roller but skewed with respect to said plane of travel of said forms; and
a bursting blade mounted on said movable carriage for cooperating with preweakened zones on said forms.

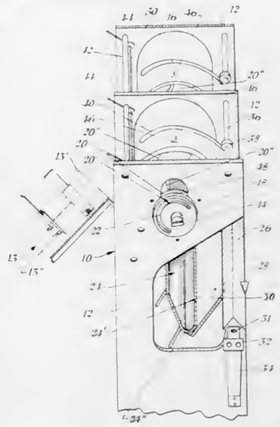
4,118,023

CALIPER STITCH AND TRIM MACHINE

Thomas F. Macke, 525 S. E. 26th Ave., Fort Lauderdale, Fla. 33301

Continuation-in-part of Ser. No. 299,819, Oct. 24, 1972, Pat. No. 3,938,799. This application Apr. 12, 1976, Ser. No. 676,057
Int. Cl.² B65H *39/02*
U.S. Cl. 270—54 **7 Claims**

1. A combination of a signature-arranging device and a caliper-stitch and trim machine comprising:
a signature-arranging device positioned at a first position,
a caliper-stitch and trim machine positioned at a second position, said caliper-stitch and trim machine including a caliper means for providing work test standards for measuring the thickness of the signatures positioned at a caliper station, a stitching means positioned at a stitching station downstream of said caliper means, and a trimming means positioned at a trimming station,
a common saddle means in said signature-arraning device to accumulate work from said signature-arranging device to form books and move the books through said caliper means, then through said stitching means, and into at least a portion of said trimming means, and



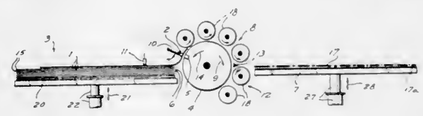
drive means connected to said caliper-stitch and trim machine to reciprocate said common saddle means to carry signatures through said signature-arranging device to and through at least a portion of said caliper-stitch and trim machine.

4,118,024

APPARATUS FOR HANDLING FACING SHEETS FOR THE PRODUCTION OF PRESSED BOARD AND OTHER LAMINATES

Klaus Gerhardt, Rheurdt, Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Germany

Filed Jun. 20, 1977, Ser. No. 808,373
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1976, 2627810
Int. Cl.² B65H *29/24, 29/54*
U.S. Cl. 271—5 **10 Claims**



1. A sheet-handling apparatus which comprises:
means for receiving a pile of sheets having a leading edge and a trailing edge;
a drum disposed adjacent said pile and reversibly rotatable about an axis, said drum being formed with a pickup engageable with a portion of a sheet adjacent the leading edge thereof;
a deflector disposed adjacent said drum for guiding a leading edge of a sheet entrained by said drum in one sense of rotation and a trailing edge of a sheet entrained by said drum in an opposite rotational sense away from the periphery of said drum;
an assemby table receiving said sheets from said deflector;
forward pressing means for urging a sheet against the periphery of said drum during displacement of said drum in said one sense; and
reverse pressing means for retaining a sheet against the periphery of said drum upon rotation of said drum in said

opposite sense, whereby said drum is adapted to dispose said sheets selectively in the same orientation and in reverse orientation upon said table.

4,118,025

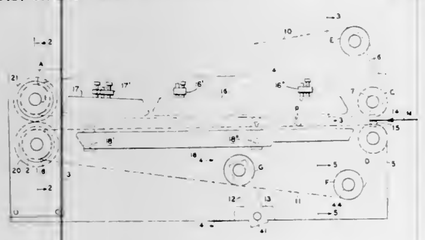
DOCUMENT CONVEYING MEANS

Clement R. Konars, Glen Cove; Frank J. Schlipf, North Merrick, and Emanuel Quinci, Dix Hills, all of N.Y., assignors to Halm Instrument Co., Inc., Glen Head, N.Y.

Continuation of Ser. No. 749,019, Dec. 9, 1976, abandoned. This application Dec. 15, 1977, Ser. No. 860,671

Int. Cl.[2] B65H *5/02, 29/12*

U.S. Cl. 271—273 **1 Claim**



1. Means for conveying documents without roller contact on the documents, comprising,

a first pair of upper and lower driven sprockets,

a second pair of upper and lower driven sprockets,

an upper chain mounted on the upper sprockets,

a lower chain mounted on the lower sprockets,

a plurality of equally spaced friction grip members fixedly mounted on said chains so that the upper and lower grip members contact each other in the absence of a document,

means to release the documents at points along the rails, comprising,

upper rail means adjustably mounted on the frame to guide the upper chain and lower rail means adjustably mounted on the frame to directly and positively guide the lower chain and means to adjust the rails directly and positively to provide proper gripping action by the grippers,

a separate upper rail means at the releasing end of the document travel being adjustably mounted so that said separate upper rail means is adjustably inclined away from the document path so as to release the document at a desired point,

and pusher means adapted to pus the documents when released,

whereby the leading ends of the documents are gripped by the upper and lower sets of grip members and the documents are conveyed by the chains without roller contact on the documents, to a desired point along the rails where the pusher means picks up the document.

4,118,026

GAME BOARD FOR CHILDREN

Masatoshi Todokoro, 2-33 Koganehara 2-chome, Matsudo, Chiba-Prefecture, Japan (270)

Filed Feb. 28, 1977, Ser. No. 772,775

Int. Cl.[2] A63F *9/00*

U.S. Cl. 273—1 R **2 Claims**

1. A game board comprising:

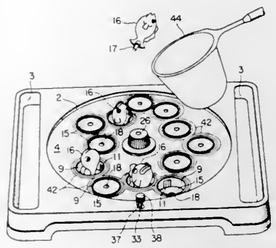
(a) a base board (**1**) defining a circular recession in its center with a bottom plate;

(b) a rotary disc (**4**) supported in said circular recession and a prime mover, said rotary disc being coupled thereto so as to be rotated by said prime mover;

(c) a plurality of irregularly arranged pits (**9**) in said rotary disc (**4**) set at random distances from the center of said rotary disc (**4**), side walls in said pits having a pair of vertical slots (**11, 12**) with upper and lower end parts each of which is provided with a lower engaging portion (**13, 14**) at the lower end part;

(d) a seat plate (**15**) with a spring (**22**) in each of said pits (**9**) and a popping plaything, said seat being so disposed therein as to support said plaything thereon such as a model fish, said plaything being vertically movable under the force of said pring (**22**);

(e) a pair of engaging lateral first protuberances (**19, 20**) extending outward from said seat plates (**15**) and disposed



for vertical movement in said slots (**11, 12**) and also engaging said lower engaging portions (**13, 14**) when the seat plate is lowered against the force of said spring (**22**); and,

(f) a plurality of second protuberances (**27**) on said bottom plate disposed on said bottom below said pits (**9**), said second protuberances (**27**) being arranged to hit against said engaging first protuberances (**19, 20**) when said first protuberances are in said lower engaging portions (**13, 14**) and moved with the rotation of the rotary disc (**4**), said first protuberances, when hit, move out of said lower engaging portions causing said seat plate (**15**) to shoot up under the force of said spring (**22**).

4,118,027

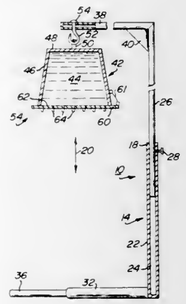
LIQUID GAME AMUSEMENT SYSTEM

William H. Cody, 1200 T-1 Westerly Pl., Baltimore, Md. 21228

Filed Sep. 12, 1977, Ser. No. 832,355

Int. Cl.[2] A63F *9/00*

U.S. Cl. 273—1 L **10 Claims**



1. A liquid game amusement system, comprising:

(a) a stand member adapted to be mounted on a base surface;

(b) container means releasably securable to said stand member, said container means forming a cavity adapted to contain a liquid inserted therein, and generally defining a substantially horizontal rim;

(c) cover means mounted to a rim portion of said container means in a manner such that said liquid is maintained within said container means by atmospheric pressure acting on a lower surface of said cover means, said cover means being positionally located in interfacing relation with said container means rim, and;

(d) weight means for applying a force to said cover means in an opposing direction to a force applied by said atmospheric pressure, said weight means being releasably securable to said cover means external said container means.

4,118,028

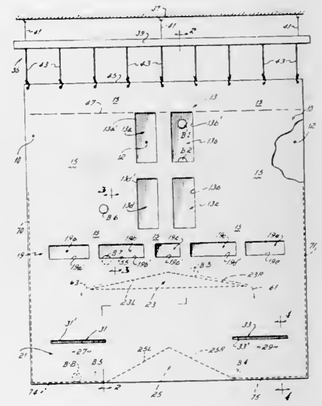
PITCHING TARGET WITH BALL COLLECTOR

Edward P. Larkin, 400 Stanton Ave., Cincinnati, Ohio 45174

Continuation-in-part of Ser. No. 785,767, Apr. 7, 1977, abandoned. This application May 9, 1977, Ser. No. 794,747

Int. Cl.[2] A63B *63/04*

U.S. Cl. 273—26 A **10 Claims**



1. A pitching target for collecting and storing pitched balls incident on strike and non-strike zones thereof, comprising:

a front sheet of lightweight highly flexible material adapted to substantially deform and deflect at localized areas of impact when incident with a pitched ball while suspended vertically from its upper edge whereby the forward motion of said incident ball is arrested and said ball falls downwardly under the force of gravity along a vertical path proximate said front sheet;

a rear sheet of lightweight highly flexible material adapted to substantially deform and deflect at localized areas of impact when incident with a pitched ball while suspended vertically from its upper edge whereby the forward motion of said incident ball is arrested and said ball falls downwardly under the force of gravity along a vertical path proximate said rear sheet;

suspension means for vertically suspending said front and rear sheets in superimposed face to face relationship, including a rigid elongated, horizontal support and a plurality of flexible elements interconnecting said support and said upper edges of said sheets at horizontally spaced points; the length of said elements and horizontal spacing being sufficient to permit substantial deflection of said front and rear sheets in the region of impact with a pitched ball;

said front sheet having a generally rectangular strike zone and at least one unapertured non-strike zone disposed horizontally, laterally on each side of said strike zone in juxtaposition therewith, said strike zone having at least one strike aperture therein, a pitched ball corresponding to a strike passing through said strike aperture to impact and locally deflect and deform said rear sheet in the region behind said strike aperture to horizontally space said sheets proximate said strike aperture and fall vertically downward between said sheets following arrest of said ball's forward motion by said rear sheet;

a ball collection aperture in said front sheet having vertically spaced upper and lower edges, said ball collection aperture being located below and in substantial vertical alignment with at least one of said non-strike zones, a pitched ball impacting anywhere within one of said non-strike zones of said front sheet above said ball collection aperture locally deflecting and deforming said front and rear sheets in the region of said impact to horizontally space said upper edge of said collection aperture rearwardly relative to said lower edge to open said collection aperture below said impact region such that the ball enters between the upper and lower edges of the collection aperture in order to collect said ball between said sheets as it falls downwardly after its forward motion has been arrested, by said front sheet; and

said front and rear sheets cooperating to define a ball storage zone underlying at least one of said strike and non-strike zones at a level below said ball collection aperture for storing balls collected by said strike and ball collection apertures which move downwardly between said sheets.

4,118,029

METHOD FOR MAKING A TENNIS, BADMINTON OR SIMILAR RACKET NET, NET OBTAINED BY THIS METHOD AND RACKET COMPRISING THIS NET

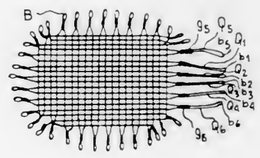
Jacqueline Septier, 8, rue Lentonnet, 75009 Paris, France

Filed Feb. 12, 1976, Ser. No. 657,636

Claims priority, application France, Feb. 13, 1975, 75 04514; Feb. 11, 1976, 76 03755

Int. Cl.[2] A63B *51/02, 51/14*

U.S. Cl. 273—73 D **10 Claims**



5. A tennis, badminton, or similar racket comprising:

a. a handle;

b. a frame containing a plurality of holes, and having a convex shape in the areas between said holes;

c. a net containing peripheral closed loops which extend through the holes in the frame;

d. a cable located along the periphery of the frame, and in a threaded relation with said closed loops; and

e. a means for applying tension to said cable so that the closed loops are pulled out as the portions of the cable overlying the holes approaches the level defined by the apices of adjacent convex areas of the frame.

4,118,030

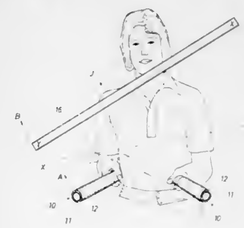
METHOD OF JUGGLING AND APPARATUS THEREFOR

Donald Gerard Randon, Gretna, La., assignor to Roberts Management, Inc., Houston, Tex.

Filed Sep. 20, 1976, Ser. No. 724,645

Int. Cl.[2] A63B *67/08*

U.S. Cl. 273—96 R **7 Claims**

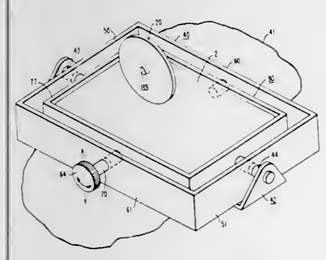


1. A method of juggling comprising:

grasping a first elongate member in one hand,

grasping a second elongate member in the other hand,
each of said first and second elongate members having a handle portion and a cushioning portion, said cushioning portion extending for the greater length of said elongate member and being comprised of a soft resilient covering over said elongate member and defining an outer friction gripping surface,
said first and second elongate members being held so as to extend outwardly from the holder in spaced relationship to one another and substantially horizontal,
disposing a third elongate member of substantially uniform transverse dimensions on and tranversely to said first and second elongate members, and
moving one of said first and second elongate members upwardly with a force sufficient to lift said third elongate member off of said first and second elongate members and impart rotational motion to said third elongate member, said rotational motion being around an axis generally transverse to the long axis of said third elongate member;
and catching said third elongate member on said first or second elongate member, said cushioning portion being such as to act as a shock absorber reducing the tendency of said third elongate member to bounce when said third member lands on said first or second member, while further reducing the tendency of said third member to slide on said first or second member.

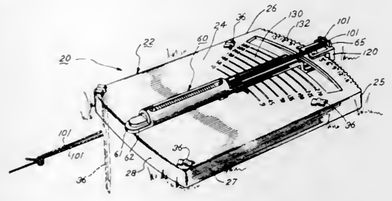
4,118,031
AMUSEMENT TOY OR GYRO DISC
Samuel T. Westbrook, 5650 Orly Ter., College Park, Ga. 30349
Filed Nov. 21, 1975, Ser. No. 634,183
Int. Cl.² A63F *9/00*
U.S. Cl. 273—110 **5 Claims**



1. An amusement toy comprising a conveyor-belt, manipulative and tiltable means supporting said conveyor-belt for longitudinal movement, means for effecting longitudinal movement of said conveyor belt, and a single sole playing disc adapted to be rotated and balanced by the longitudinal movement of said conveyor-belt and manipulative tilting of said supporting means.

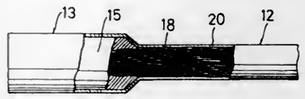
4,118,032
GOLF PRACTICE DEVICE
Jeffrey Koblick, Hopkins, Minn., assignor to K-tel International, Inc., Minnetonka, Minn.
Filed May 16, 1977, Ser. No. 797,522
Int. Cl.² A63B *69/36*
U.S. Cl. 273—185 C **3 Claims**

1. An improved portable golf practice device comprising, in combination:
a body including a substantially flat horizontal base which has an upper and lower surface, front, rear and side walls extending downwardly from said base, a post which projects upwardly through said upper surface of said base and downwardly through said lower surface of said base to a distance less than that of said walls of said body, said post disposed so that its central longitudinal axis is substantially equidistant from said side walls of said body and adjacent said rear wall of said body and substantially perpendicular to the planes of said surfaces of said base, said base having a plurality of apertures spaced about the periphery thereof adapted to receive pegs which are to be driven into the ground for securing said body to the ground;
a pivot pin having a cylindrical shank and a cap, said shank being sized to fit within the post of said body and having a length greater than that of said post, said cap being greater in diameter than said shank;
an indicator arm including a substantially horizontal collar at one end, an enclosure adjacent said collar being disposed so that its longitudinal axis is horizontal, two horizontally opposed slide rails adjacent said enclosure and parallel thereto, and a loop, said collar having an inner diameter less than the diameter of said cap of said pivot pin, said loop being disposed substantially in a vertical plane substantially perpendicular to the longitudinal axis of said enclosure of said indicator arm, said indicator arm being pivotally secured to said post of said body by said pivot pin;



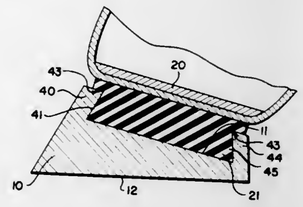
a slidable yoke having a central section, opposed side sections and flanges on each of said side sections, said flanges slidably securing said yoke between said slide rails of said indicator arm;
a helical spring having one end secured about said shank of said pivot pin between said cap of said pivot pin and said collar of said indicator arm and having another end secured to said yoke, said helical spring being adapted to fit within said enclosure of said indicator arm;
a distance indicator having a central portion, opposed side portions and vertically spaced flanges on each of said opposed side sections, said flanges securing said distance indicator between said slide rails of said indicator arm;
cord attached at one end to said yoke passing through said loop at the end of said indicator arm, said cord being a length great in comparison with the length of said indicator arm; and
a golf ball secured to said cord at its other end.

4,118,033
DEVICE FOR PRACTICING GOLF SWING
Toshiyuki Miyamoto, 33-101 Tamagawa 2-chome, Takatsuki City, Osaka, Japan
Filed Feb. 14, 1977, Ser. No. 768,372
Int. Cl.² A63B *69/36*
U.S. Cl. 273—186 A **7 Claims**



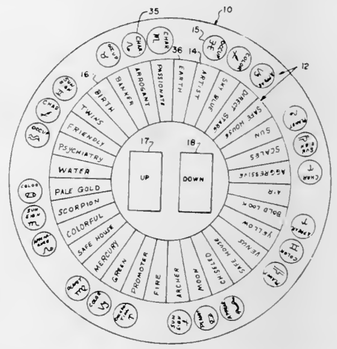
1. A golf-swing-practicing device embodying in combination an assembly of components comprising a shaft having a weight attached to one end of the shaft; said shaft being composed of a composite core member and a plurality of strands twisted around said core member; each of the strands being formed of a plurality of steel wires twisted together; and said composite core including a flexible core element and an adjacent non-flexible core element arranged substantially in end-to-end axial alignment with each other.

4,118,034
GOLFER'S STANCE BLOCK
John P. O'Brien, 175 E. Delaware Pl., Chicago, Ill. 60611
Continuation-in-part of Ser. No. 753,927, Dec. 23, 1976, Pat. No. 4,073,075, and a continuation-in-part of Ser. No. 735,761, Oct. 26, 1976, Pat. No. 4,081,918, and a continuation-in-part of Ser. No. 683,898, May 6, 1976, abandoned. This application Mar. 23, 1977, Ser. No. 780,271
Int. Cl.² A63B *57/00, 69/30*
U.S. Cl. 273—32 C **5 Claims**



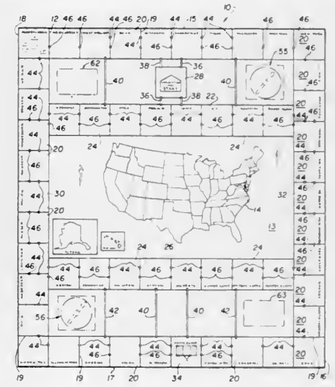
1. A wedge-shaped golf training device adapted to be removably affixed to a shoe, said training device comprising a wedge-shaped body having a lower, ground engaging surface, and an upper support surface, said upper support surface adapted to support the lower surface of a shoe, said wedge-shaped body including an upper extension and a lower extension, said extensions extending upwardly from said upper support surface, said extensions having inward surfaces inwardly inclined whereby an acute angle is formed by said inward surfaces and said upper support surface, said inward surfaces being adapted to engage the opposite outer edges of the sole of the shoe.

4,118,035
MATRIX GAME APPARATUS
Deborah Row, Box 301, Point Pleasant, Pa. 18950
Filed Nov. 29, 1976, Ser. No. 745,734
Int. Cl.² A63F *3/00*
U.S. Cl. 273—243 **14 Claims**



1. An apparatus for playing an educational and entertaining game, comprising:
means for displaying a plurality of predetermined designs to be used in playing the game;
game means for producing by chance determining means combinations of elements of a first type and elements of a second type, said game means including a deck of cards having combinations of one of a plurality of elements of a first type and one of a plurality of elements of a second type; and
score means for each player to form one of said plurality of predetermined designs in playing the game, said score means being comprised of a grid with areas located in the grid identified by said elements in the first type along one side and said elements of a second type along perpendicular side whereby particular areas may be allocated in response to the player obtaining particular combinations of elements of the first and second types by use of the game means whereby one of the particular designs may be formed on the score means.

4,118,036
PRESIDENT ELECTION GAME
Salvador Marse, 320 S. Harrison St., East Orange, N.J. 07018
Filed Apr. 20, 1977, Ser. No. 789,098
Int. Cl.² A63F *3/04*
U.S. Cl. 273—257 **30 Claims**



1. A presidential election game for one of the players to win and thus become "President", said game comprises in combination:
A. a game board having a playing surface,
B. a series of outer zones extending along each side of the periphery of said game board,
C. a first series of inner zone extending across said playing board and contiguous to said outer zones along spaced apart sides of said game board,
D. a second series of inner zones extending across said playing board in spaced apart relation to said first series of inner zones and contiguous to said outer zones along spaced apart sides of said game board,
E. said outer and inner zones comprising at least 51 voting areas comprised of the 50 States and the District of Columbia,
F. first numerical indicium contained on each of said zones, said first numerical indicium being designative of the number of popular and/or electoral college votes allocated to each of said areas,
G. second numerical indicium contained on each of said zones, said second numerical indicium being designative of the possible minimum number of popular votes needed to respectively win each of said areas, based upon a certain number of players of the game,
H. said zones being divided into different groups by color designation according to their population and/or electoral college votes representation,
I. pathways between adjoining zones on said game board,
J. a set of chance cards, each said chance card having indicia thereon representative of an advantage one player may

exercise over another player or a hazard that a player must suffer,

K. chance means operable by players of the game apparatus so as to produce a random number for determining the number of zones the player may advance,

L. posting means for indicating the number of popular and/or Electoral College votes posted by a player as the game progresses, and

M. a marker for each player that differs in color or configuration, said marker placed initially on one said zone by each said player and progressively moving from zone to zone by utilization of said chance means through said pathways and accumulating votes in order to win the election and become "President".

4,118,037

RECORD PLAYER

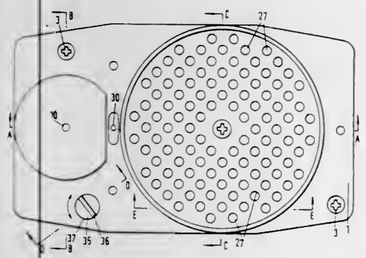
Mun-Hay Ngai, 3/Fl. Flat C, 130-132 Argyle St., Kowloon, Hong Kong

Filed Apr. 29, 1977, Ser. No. 792,417

Claims priority, application United Kingdom, Jan. 7, 1977, 591/77

Int. Cl.² G11B *3/00*

U.S. Cl. 274—1 A **11 Claims**



1. A record player comprising a container, a turntable rotatably mounted therein, a record on said turntable, said record containing a relatively deep circular groove at the end of the sound track, an electric motor for driving the turntable, a motor circuit and switch for enabling and disabling the motor, a speaker mounted in said container for movement toward the turntable, spring means for biasing the speaker toward the turntable, a tone arm having a stylus, movable with the speaker toward the turntable so as to hold the stylus engaged with the record on the turntable, said spring means being operable when the stylus reaches said circular groove to displace the tone arm downwardly to seat the stylus in the groove and means movable downwardly with the speaker and tone arm to disable the switch.

4,118,038

VIBRATION TRANSMISSION MECHANISM FOR A PHONOGRAPH

Katsumi Watanabe, Kawasaki, Japan, assignor to Yugen Kaisha Watanabe Kenkusho, Kawasaki, Japan

Filed Apr. 14, 1977, Ser. No. 787,445

Claims priority, application Japan, Aug. 21, 1976, 51-10003

Int. Cl.² G11B *3/28, 3/40*

U.S. Cl. 274—9 B **5 Claims**

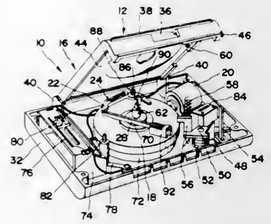
1. In a sound reproducing apparatus of the type wherein the mechanical vibrations set up in a reproducing stylus by the groove undulations of record means are transmitted directly to rotatable speaker means to cause the speaker means to generate audible sound, the improvement comprising:

(a) means rotatable with the speaker means relative to the record means,

(b) a tone arm pivotally supported at one end on said rotatable means,

(c) a stylus carried on the tone arm proximate its other end, and

(d) a vibration transmitter rod supported at least at one end on said rotatable means and held in contact with the speaker means at a point intermediate both ends thereof, the other end of said tone arm being held in contact with said vibration transmitter rod for sliding movement, during playback, between the outer end of said vibration transmitter rod and its point of contact with the speaker means such that the vibrations of the stylus are transmitted to the speaker means via said tone arm and said vibration transmitter rod, and



wherein said tone arm and said vibration transmitter rod are so constructed and arranged that, during playback, the distance between the stylus and the variable point of contact of said tone arm with said vibration transmitter rod changes substantially in proportion to the distance between said variable point and the fixed point of contact of said vibration transmitter rod with the speaker means such that the variations in amplitude of sound reproduction are minimized over the length of travel of the tone arm.

4,118,039

TONEARM POSITION SETTING APPARATUS

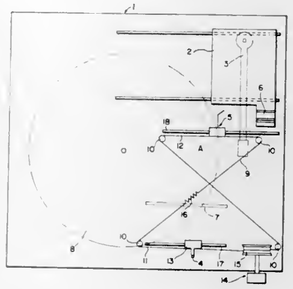
Junichi Kurata; Kazushige Ishikawa, and Nozomu Nagashima, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 7, 1977, Ser. No. 840,448

Claims priority, application Japan, Oct. 7, 1976, 51-120647

Int. Cl.² G11B *3/06*

U.S. Cl. 274—9 RA **5 Claims**



1. A tonearm position setting apparatus for automatically setting a tonearm in a predetermined position of a record disc comprising:

(a) a linearly movable tonearm base on which said tonearm is mounted at one end, a pick-up stylus being mounted on the other end of said tonearm,

(b) a light source movable substantially parallel to the movement direction of said tonearm base,

(c) a position setting means interlocked with said light source and adapted to be movable maintaining a constant positioning relationship with said light source,

(d) a position detecting means provided in said tonearm base for detecting the position of said position setting means, and

(e) a semi-transparent mirror provided in about an intermediate position between loci of said light source and said pick-up stylus, whereby said tonearm is moved to a position of the virtual image of said light source formed symmetrically with reference to said semi-transparent mirror by detecting the position of said position setting means.

4,118,040

CONTACTLESS SEAL

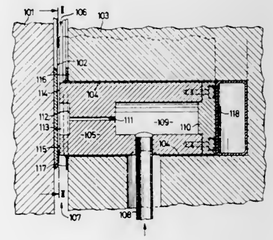
Alfred Christ; Helmut Lehmann, both of Zurich; Ludwig Kantor, Mutschellen, and Helmut Miller, Niederrohrdorf, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 26, 1976, Ser. No. 718,085

Claims priority, application Switzerland, Aug. 29, 1975, 11219/75

Int. Cl.² F16J *15/34*

U.S. Cl. 277—75 **19 Claims**



1. In combination with a stationary part and a rotatble part disposed to rotate about an axis of rotation and defining a space with said stationary part, a contactless seal for sealing the space between said parts; said seal including

a sealing member disposed about said axis of rotation and having at least two sealing surfaces concentric to said axis of rotation and spaced from said rotatable part to define gaps therebetween for the escape of barrier medium, said sealing member including a plurality of segments movably mounted in said stationary part for movement under a biasing force towards said rotatable part, each said segment having at least one pressure chamber between said sealing surfaces, said chamber being open towards said rotatable part and being connectable to a supply of barrier medium to receive a flow of barrier medium therefrom, said chambers of said segments being distributed peripherally of said sealing member;

a plurality of restrictors, each restrictor being disposed between a respective one of said chambers and the supply of barrier medium to throttle the flow of barrier medium to said respective chamber; and

means biasing each said segment toward said rotatable part.

4,118,041

SEAL STRUCTURE

Kazumasa Futamura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

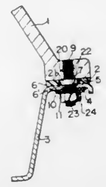
Filed Jun. 22, 1977, Ser. No. 809,020

Claims priority, application Japan, Mar. 1, 1977, 52/21777

Int. Cl.² F16J *15/02*

U.S. Cl. 277—180 **3 Claims**

1. A seal structure comprising first and second structural members having co-operating seal face portions, a seal element interposed between said co-operating seal face portions, stud bolts each having a central flange portion and first and second screw portions provided at opposite sides of said flange portion, said seal face portion of said first structural member having threaded openings in which are firmly screwed said first screw portions of said bolts, so that said bolts are firmly maintained in the screwed-in position by tight frictional engagement between said seal face portion of said first structural member and said flange portions of said bolts, said seal face portion of said second structural member having through



openings through which are passed said second screw portions of said bolts, and nuts mounted to said second screw portions of said bolts so as to clamp said face portion of said second structural member between said flanged portions of said bolts and said nuts, said seal element having through openings in which said flange portions of said bolts are positioned and being thicker than said flange portions of said bolts in its free condition and being compressed by said co-operating seal face portions to be of the same thickness as said flange portions.

4,118,042

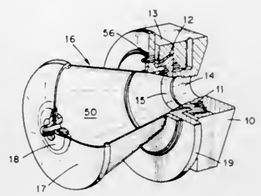
AIR BEARING VACUUM SEAL ASSEMBLY

Rex Booth, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 27, 1977, Ser. No. 837,252

Int. Cl.² F16J *15/40;* **G21G** *4/02*

U.S. Cl. 277—226 **11 Claims**



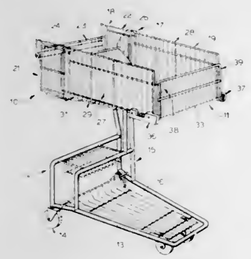
1. A rotating vacuum seal assembly comprising a stator, a rotor, and means for rotatably mounting said rotor adjacent said stator, said mounting means being constructed so as to provide a gap between said rotor and said stator and a gap between said rotor and said mounting means, each of said stator and said rotor having a centrally located opening therein adapted to be connected to vacuum, means for directing air under pressure through said gap between said rotor and said stator and between said rotor and said mounting means forming an air cushion therebetween, and means for producing differential pumping for maintaining a pressure gradient between said air cushion and said centrally located openings of said stator and said rotor for producing a leak rate of less than 1×10^{-4} Pa m^3/s.

4,118,043
SLED ROLLER DEVICE
Charles W. Brubaker, Beaver, Pa., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jun. 15, 1977, Ser. No. 806,951
Int. Cl.[2] B62B *13/18*
U.S. Cl. 280—8 **1 Claim**



1. A sled roller device for affixing a roller to a runner of a sled to permit use of the sled on a surface having a high coefficient of friction, said sled roller device comprising
- a bracket having a pair of symmetrical halves each having an upper part and a lower part with an indentation formed in the upper part for accommodating half the cross-sectional area of the runner of a sled, each of the halves having a transverse bore formed therethrough in the upper part thereof in alignment with the other spaced beneath the indentation thereof and one of the halves having a second transverse bore formed therethrough and opening into the indentation thereof, the lower parts of the halves being spaced from each other and having indentations formed therein in alignment facing each other;
- a set screw threadedly coupled in the second bore of the one of the halves for tightening the bracket in position;
- a roller rotatably mounted in the indentations of the lower parts of the halves; and
- a bolt accommodated in the aligned bores formed through the halves for affixing the halves to each other on opposite sides of the runner with the runner accommodated in the indentations of the upper parts of the halves.

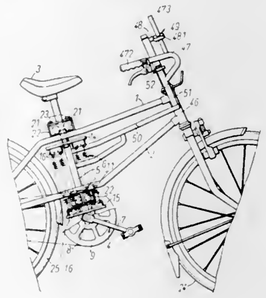
4,118,044
GATE MECHANISM FOR CART
Harry Celms, Battle Creek, Mich., assignor to Roblin Industries, Inc., Battle Creek, Mich.
Filed Apr. 15, 1977, Ser. No. 787,886
Int. Cl.[2] B62B *11/00*
U.S. Cl. 280—33.99 F **19 Claims**



1. In a shopping cart having an upwardly opening basket including spaced sidewalls upstanding from a bottom wall, the basket having an opening in one end thereof, and a gate movably supported on the basket for closing the opening, the improvement comprising:
- mounting means coacting between the gate and the basket for permitting movement of said gate between a first position wherein the gate projects upwardly from the bottom wall and closes said opening and a second position wherein the gate is disposed in an opened position located below and approximately parallel with said bottom wall;

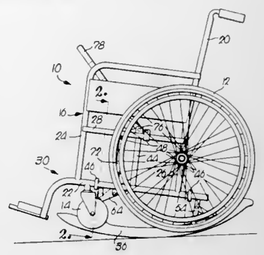
said mounting means including first means for permitting said gate to be swingably moved from said first position into an intermediate position wherein the gate extends at least partially outwardly away from the basket in a direction which is approximately parallel with the bottom wall, and second means for permitting the gate to be substantially slidably displaced as a unit from said intermediate position into said second position wherein at least a majority of the gate is disposed beneath the bottom wall.

4,118,045
BICYCLE
Kuniyoshi Kanazawa, 2-21-5 Nakamiya, Asahi-ku, Osaka-shi 535, Japan
Filed Dec. 27, 1976, Ser. No. 754,100
Claims priority, application Japan, Jan. 12, 1976, 51-1943[U]; Apr. 27, 1976, 51-53740[U]; Apr. 27, 1976, 51-53741[U]; Jun. 11, 1976, 51-76495[U]; Jun. 11, 1976, 51-76496[U]; Aug. 30, 1976, 51-115961[U]
Int. Cl.[2] B62K *19/04*
U.S. Cl. 280—283 **3 Claims**



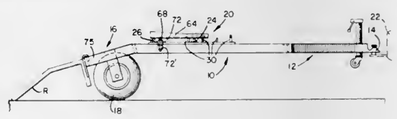
1. In a bicycle having an upper and lower frame; a saddle support having a saddle mounted on the upper end of said saddle support; means for elastically suspending said saddle support from said upper frame; drive crank means mounted to the lower end of said saddle support independently of said upper and lower frames; a front wheel control shaft; and a handle having handle means preventing transmission of vertical motion from said front wheel control shaft to said handle, said handle being connected to the saddle support independently of said front wheel control shaft, the improvement comprising:
- a longitudinal rod connected at one end to said saddle support and terminating at its other end into two forked portions each connected to a sleeve rotatably fitted over a lever, said levers being joined at their top portion by a connecting member having a slot in its center portion and rotatably and slidably fitted over said front wheel control shaft, said handle including a pair of curved upwardly extending handle levers each connected at its inner end to the upper portion of each of said sleeves, each of said handle levers having an upwardly extending connecting pin mounted on its upper surface; and
- a bilaterally extending sub-handle mounted at its center portion to the top of said front wheel control shaft and having a slot at each of its ends to slidably receive each of said upwardly extending connecting pins.

4,118,046
ROCKER ASSEMBLY FOR WHEELCHAIRS
Curtis T. Vaughan, 1925 Jackson, Joplin, Mo. 64801
Filed Jul. 14, 1977, Ser. No. 815,678
Int. Cl.[2] A47C *3/029*
U.S. Cl. 280—289 WC **10 Claims**



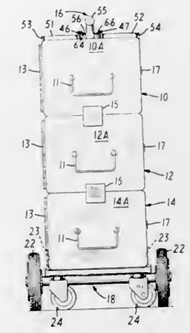
1. Rocker structure for mounting on a wheelchair and comprising:
- a frame assembly;
- means for removably mounting said frame assembly to said wheelchair;
- a rocker unit including an arcuate rocker adapted to engage a support surface, and means shiftably coupling said rocker to said frame assembly for movement of the rocker, when the frame assembly is mounted on the wheelchair, between a retracted storage position and a use position wherein the rocker is in engagement with said support surface for rockably supporting the wheelchair,
- said coupling means including a pair of spaced, generally parallel linkage arms, means pivotally connecting each of the arms between said rocker and frame assembly, and stabilizing means comprising a first rigid bracing leg secured to one of said arms for engaging the rocker when the latter is in said use position, a second leg for the other of said arms which includes a pair of pivotally interconnected sections, means pivotally securing one end of the second leg to the other of said arms, means pivotally securing the remaining end of said second leg to said frame assembly, and means for rigidifying said second leg when the rocker is in said use position; and an
- operating mechanism operatively connected to said rocker unit for selectively moving said rocker between said retracted and use positions.

4,118,047
VEHICLE TOWING TRAILER
Leo B. Neasham, Rte. 2, Box 605L, Highlands, N.C. 28741
Filed Sep. 28, 1977, Ser. No. 837,474
Int. Cl.[2] B62D *53/04*
U.S. Cl. 280—402 **5 Claims**



1. A motor vehicle towing trailer comprising a main carriage frame having a leading end provided with hitching means, a trailing end provided with ground engaging wheels on opposite sides thereof, and a support platform on which the front or rear wheels of a motor vehicle to be towed may be supported, said support platform comprising a leading support rod and a trailing support rod extending generally transversely of said carriage frame, and a swivel support plate extending beneath said support rods, said support rods being secured to said support plate in the assembled condition thereof with said support plate including means for selectively securing one of said support rods in a series of different positions from front to rear with respect to said support platform, each of said support rods being angle plates of inverted V-shape in cross section and including downwardly extending front and rear sides whereby the wheels of a vehicle to be towed may be disposed between the front side of said trailing support rod and the rear side of said leading support rod, and said means for securing said one of said support rods in a series of different positions comprising a plurality of rows of threaded studs extending upwardly from said support plate in locations from front to rear of said support platform, and wherein said one of said support rods may be selectively positioned between any desired position between successive studs in each of said rows of threaded studs.

4,118,048
WHEELED SAMPLE CASE
Douglas M. Spranger, Brooklyn; Malcolm J. Brookes, New York, both of N.Y., and Paul J. Mulhauser, Paramus, N.J., assignors to Seiko Time Corporation, New York, N.Y.
Filed Apr. 8, 1977, Ser. No. 785,935
Int. Cl. B62B *3/00*
U.S. Cl. 280—47.35 **9 Claims**



1. A sample display unit comprising
- a plurality of stackable display cases, each having front and rear compartments hingedly mounted for movement towards and away from each other between open and closed positions,
- cooperating means on each of said display cases for retaining adjacent display cases releasably in vertically stacked relation for pivotal movement of their front and rear compartments as units about a common vertical axis, and
- a wheeled dolly having substantially coplanar front and rear platform sections hingedly mounted for angular movement towards and away from one another, said dolly being secured to the bottom one of said display cases for integral movement of the display case front and rear compartments with the dolly front and rear sections, respectively, about said common vertical axis.

4,118,049
DEVICE FOR THE FIXING OF A BEAM TO THE CHASSIS OF A TOURING CARAVAN
Roger Tunesi, 12 Monte Beaumur, Vienne-Isere, France
Filed Sep. 16, 1976, Ser. No. 723,677
Claims priority, application France, Sep. 16, 1975, 75 28898
Int. Cl.[2] B60D *1/14*
U.S. Cl. 280—483 **12 Claims**

7. A tow bar arrangement for a caravan, said tow bar arrangement adapted to be connected to a caravan chassis, the tow bar arrangement comprising:
- a pair of U-shaped tow bar beams;
- a hitch coupling secured to a forward end of each of said

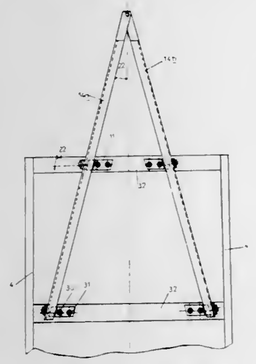
pair of tow bar beams, said hitch coupling being adapted to connect said forward end of each of said pair of tow bar beams to a towing vehicle;

first connecting means securing one of said pair of tow bar beams to said caravan chassis so as to extend forwardly from said caravan chassis;

second connecting means securing the other of said pair of tow bar beams to said caravan chassis so as to extend forwardly from said caravan chassis, said first and second connecting means securing said one and said other of said pair of tow bar beams respectively so as to converge into each other at a point forward of said caravan chassis at which said hitch is located;

said first and second connecting means each comprising:

a connecting component having one end mounted to said tow bar beam and another end mounted to said chassis;



fastener means directly securing said connecting component to said caravan chassis;

an insulating deformable material interposed said connecting component and said tow bar beam, said insulating deformable material further being nested within said U-shaped tow bar beam;

first means fixing said one of said U-shaped tow bar beams to said first connecting component with said insulating deformable material interposed, whereby said one of said tow bar beams is insulated from said caravan chassis; and

second means fixing said other of said U-shaped tow bar beams to said second connecting component with said insulating deformable material interposed, whereby said other of said tow bar beam is insulated from said caravan chassis.

4,118,050

SKI HAVING A THREE-DIMENSIONAL RUNNING SURFACE

Hermann Schnurrenberger, Straubing, Germany, assignor to Franz Volkl öHG, Strubing, Germany

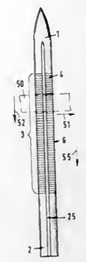
Filed Mar. 11, 1977, Ser. No. 776,682

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1976, 2610522; May 4, 1976, 2621490

Int. Cl.[2] A63C *5/04*

U.S. Cl. 280—604 **22 Claims**

1. An improvement in a ski having a tip and a rear end, a middle region, a running surface and a profiling transverse to the longitudinal axis of the ski in at least one region of the underside of the ski intermediate said tip and said rear end, a rifling of grooves extending transversely to the longitudinal axis of said ski in said region of the underside of the ski and constituting at least part of said transverse profiling, portions of said ski underside adjacent said region and up to said tip, on the one hand, and up to said rear end, on the other hand, are smooth, said transverse grooves are cut into the material constituting the underside of said ski, said running surface constituted of synthetic plastics material, said rifling of grooves located in said middle region and said transverse grooves



having partially fuzzy walls and edges resulting from rough chip removing treatment.

4,118,051

INJECTION MOLDED SKI AND METHOD FOR PRODUCING THE SAME

Yoshiharu Shima, Ueda, Japan, assignor to Nissei Plastics Industrial Co., Ltd., Japan

Filed Dec. 17, 1976, Ser. No. 751,755

Int. Cl.[2] A63C *15/00*

U.S. Cl. 280—610 **14 Claims**



1. A ski comprising, in combination:

a molded ski body having a pair of edge receiving portions extending longitudinally along the sides of the ski body on the bottom surface thereof;

each of said edge receiving portions being provided with a plurality of projections arrayed along the length thereof at regular intervals;

a pair of edge members each having a plurality of fixing pieces on one side thereof and adapted to be attached to the ski body by mating with the projections on the edge receiving portions of the ski body;

the height of each of said projections being slightly larger than the thickness of the fixing pieces of the edge members to be secured thereon;

the bottom surface of the ski body being irregular in shape; and

a sole plate integrally formed to mate with the irregular bottom surface of the ski body, whereby said sole plate covers the bottom surface of the ski body and, together with the projections formed on the edge receiving portions, firmly holds the steel edges between the sole plate and the edge receiving portions of the ski body.

4,118,052

COLLAPSIBLE STROLLER

Ramon Jané Cabagnero, 203 Cartagena St., Barcelona, Spain

Filed May 13, 1977, Ser. No. 796,704

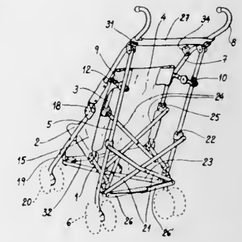
Claims priority, application Spain, May 26, 1976, 221.222[U]; Jul. 6, 1976, 222.387[U]; Oct. 22, 1977, 224.112[U]

Int. Cl.[2] B62B *11/00*

U.S. Cl. 280—642 **6 Claims**

1. A collapsible stroller comprising a bottom cross frame including interpivoted rigid arms, a back cross frame including interpivoted rigid arms, a pair of pivot means each for interconnecting an arm of said bottom cross frame to an arm of said back cross frame at one end of each of said respective arms so that said bottom and back cross frames are pivotable relative to each other and said arms of each cross frame are pivotable relative to each other,

a pair of front wheel foldable support struts, a pair of rear wheel rigid support struts, said front and said rear wheel struts each having wheel means rotatably supported on an end thereof respectively, a pair of strut pivot means each pivotably connecting a said front and a said rear wheel strut at the other ends thereof, the other ends of said arms of said back frame being each slidably connected to a rear wheel strut, the other ends of said arms of said bottom



cross frame being each pivotably linked to a said foldable front wheel strut at a point thereof adjacent said wheel means, a pair of seat support arms each having one end pivotably linked to a said front wheel strut and the other end thereof pivotably linked to a said rear wheel strut, a pair of back rest support arms each having one end pivotably linked to a said support arm at a point between said front and rear wheel struts, a pair of linking means each for linking the other end of a said back rest support arm to a said rear wheel support strut, said linking means being adjustable to vary the angular position of said back rest support arms relative to said seat support arms.

4,118,053

SAFETY BELT DEVICE WITH A WINDER/UNWINDER ESPECIALLY FOR AUTOMOBILES

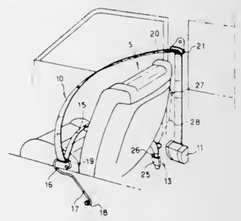
René Elie Neveux, Les Clayes-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, France

Filed May 3, 1977, Ser. No. 793,269

Claims priority, application France, May 5, 1976, 76 13259

Int. Cl.[2] B60R *21/02*

U.S. Cl. 280—747 **8 Claims**



1. A safety belt device with a winder/unwinder for vehicles, especially of the automobile type, comprising a continuous belt strap one end of which is fixed to an anchorage point on the vehicle structure and the other end of which is connected to a strap winder/unwinder, the structure of the vehicle being equipped in addition with an attachment means with which the said strap is adapted to cooperate by sliding to provide, under the condition of use of the device, a sub-abdominal portion and a cross-belt portion which come from the said winder/unwinder, the said anchorage point comprising a buckle component which is customary for safety belts, which is adapted to be activated directly or indirectly so as to provide separation of the strap end which is fixed to the anchorage point from the structure of the vehicle, this occurring without touching the strap.

4,118,054

HYDRAULIC DEVICE FOR A STABILIZING BEAM IN A MACHINE USED ON UNEVEN TERRAIN

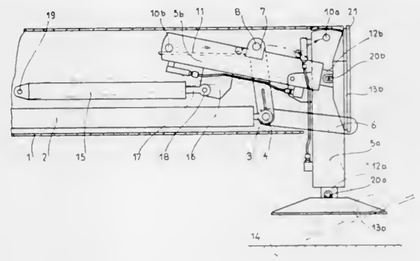
Robert Vigerie, Saint-Chamond, France, assignor to Creusot-Loire, Paris, France

Filed May 10, 1977, Ser. No. 795,541

Claims priority, application France, May 12, 1976, 76 14318

Int. Cl.[2] B60S *9/00*

U.S. Cl. 280—765 **7 Claims**



1. A hydraulic actuating device for use with a stabilising beam for a machine for use on uneven terrain, the stabilising beam providing a lateral extension of the chassis of the machine and having a support jack mounted on the end of the stabilising beam remote from the machine chassis such that the support jack is movable between an operating position in which the jack is vertical and bears on the ground through the intermediary of a sole plate attached to the end of the piston rod of the support jack and a position in which the jack is substantially horizontal and located within the stabilising beam, said device including a double-acting actuator jack arranged with its cylinder pivoted to the stabilising beam and its piston rod pivoted to the cylinder of the support jack, said actuator jack being connected to a hydraulic circuit which is also connected to said support jack and includes a first, a second and a third non-return valve and a first and a second conduit for supply and take-off of pressurised fluid, said first conduit being connected directly by branch conduits to a first one of the chambers of said support jack and the actuator jack on that side of the respective piston which is subjected to the action of the pressurised hydraulic fluid to retract the piston rods of said jacks, and said second conduit being connected directly by branch conduits to the second one of the chambers of said jacks, wherein said non-return valves are pressure-sensitive, and:

said first valve is connected in the conduit connected to said second chamber of said actuator jack and is normally open in the sense which admits fluid to that chamber, said first valve being opened in the opposite sense in response to a predetermined pressure in a conduit connected to said first chamber of said actuator jack,

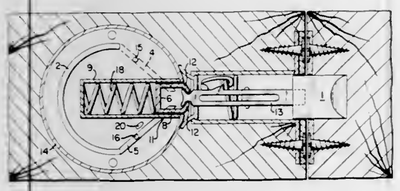
said second valve is connected in the conduit connected to said second chamber of said support jack and is normally open in the sense which admits fluid to that chamber, said second valve being opened in the opposite sense in response to a predetermined pressure in a conduit connected to the conduit connected to said first chamber of said actuator jack,

said third valve is connected in the conduit connected to said second chamber of said support jack between said second valve and said second fluid supply and take-off conduit

and is normally open in the sense which permits fluid to be exhausted via said second conduit, said third valve being opened in the opposite sense in response to a predetermined pressure in a conduit connected to a chamber inside said piston rod of said actuator jack which chamber opens into said first chamber of said actuator jack when said piston rod is retracted and opens into a conduit connected to said second chamber of said actuator jack when said piston rod is advanced, and said predetermined pressure at which said first valve is operated is higher than said predetermined pressure at which said second valve is operated.

4,118,055
TURNING MECHANISM
Robert F. Bischoff, Jr., 30 Fairmount Ave., Morristown, N.J. 07960

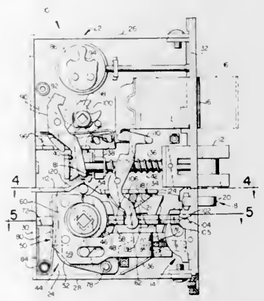
Filed Nov. 3, 1975, Ser. No. 628,138
Int. Cl.² E05C *1/12*
U.S. Cl. 292—165 **2 Claims**



1. An improvement in a turning mechanism of a lock, comprising in combination, a turning mechanism housing means, a spindle means, a lever means, a locking rod means, a retractor housing means, a retractor means, a spring means, and a latch bolt mechanism member means; with the turning mechanism housing means having handle means which turn in any direction and having a locking assembly means therein and therebetween said turning mechanism housing means containing therein a spindle means, which spindle means moves with the handle means, said spindle means to utilize in part an area proximate to the turning mechanism housing means and contained therein, said spindle means shaped to be arched in an inner large portion, said arched portion adjoined at its side edges with plates relatively perpendicular to it, which said plates are adjoined to other smaller arched portions relatively perpendicular to the said side edge plates, which said other arched portions engage with the handle means; a lever means moving on suitable means attached to the turning mechanism housing means, with the said movement located in the upper section of the lever means, said lever means of proper length for engagement with the retractor means, with activation of the lever means caused by rotation of the spindle means, whereby a rotation of the spindle means turns a lever means, and an opposite rotation of the spindle means turns another lever means, thereby the lever means not associated to the rotation of the spindle means turns from engagement with the retractor means; a locking rod means which is activated by the locking means within and between the handle means, said locking rod means having the general contour of the spindle means such that the rod has straight portions from the handle means and a U-shaped portion therebetween, thereby mating with the U-shaped portion of the spindle means; a retractor housing means and a retractor means, with said retractor means encased and moving back and forth in the retractor housing means, said movement occurring from lever means engagement with the retractor means within the retractor housing means, whereby when the spindle means activates the lever means, movement of the retractor means is inward, when the lever means is not activated, a spring means in the housing means behind the retractor means pushes the retractor means forward, with the said retractor housing means aligning the movement of the retractor means, with attachment of the retractor housing means to the turning mechanism housing means by fastening means, said retractor housing means having openings to correlate to the passage and the movement of the lever means with the retractor means, with the spring means positioned in the retractor housing means pushing the retractor forward; a latch bolt mechanism member means which passes through an opening in the turning mechanism housing means and into an open end of the retractor housing means to engagement with the retractor means; therefore, through the composition and the combination of these elements of the turning mechanism and the element of the latch bolt mechanism, said turning mechanism is able to allow a latch bolt great movement, because an ability of the retractor means attached to the latch bolt member means utilizes the central area of the turning mechanism housing means.

4,118,056
MORTISE LOCK
Gordon A. Alexander, Newington, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

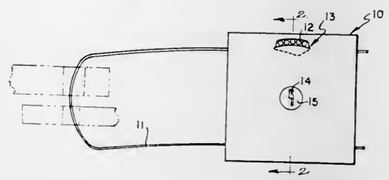
Filed Apr. 4, 1977, Ser. No. 784,060
Int. Cl.² E05C *1/16*
U.S. Cl. 292—169.17 **15 Claims**



1. In a mortise lock having a case including a front and inner and outer side walls, a spring projected latch bolt movable through the front between projected and retracted positions, a latch bolt retractor mechanism including inner and outer hubs journalled for independent rotation within the housing and having a latch bolt retractor supported in the case and operably connected to said latch bolt for retracting the latch bolt in response to rotation of either of the hubs, and a deadlocking mechanism including a deadlocking lever having a blocking surface and supported in the case to pivot between a deadlocking position wherein the blocking surface is disposed in blocking relation to the latch bolt in its projected position and an inactive position wherein the blocking surface is out of the path of movement of the latch bolt and having an auxiliary bolt for controlling movement of the deadlocking lever, the improvement comprising said deadlocking lever being formed from flat metal and having a profile of substantially uniform thickness, said profile including an inclined ramp portion formed on said deadlocking lever between its pivot and said blocking surface, and means for preventing transmission of force in a latch bolt retraction direction from said latch bolt to said ramp portion, said means for preventing transmission of force comprising opposing abutment surfaces on said case and said deadlocking lever.

4,118,057
REUSABLE, TAMPER-INDICATING SEAL
Michael J. Ryan, Plainfield, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

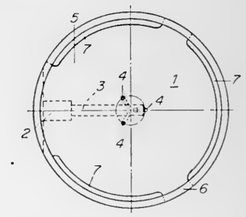
Filed Feb. 24, 1978, Ser. No. 880,924
Int. Cl.² E05C *19/18*; B65A *33/34*
U.S. Cl. 292—307 R **13 Claims**



1. A tamper-indicating seal comprising a large plurality of small colored balls of different colors confined therein, means for locking a wire loop in the seal, means for segregating a small plurality of said small colored balls in the seal in a location visible from outside the seal and maintaining them in position when the wire loop is locked within the seal and means for removing the balls from the segregated location when the seal is opened and for mixing the balls whereby a different pattern of balls appears in the segregated location the next time the seal is locked.

4,118,058
TOOL FOR THE CONTACT-FREE SUPPORT OF DISCS
Oskar Rahn, and Hermann Krause, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Mar. 2, 1977, Ser. No. 773,570
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 2609754
Int. Cl.² B66C *1/02*
U.S. Cl. 294—67 B **5 Claims**

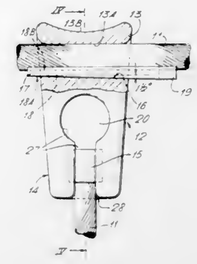


1. An improved holding tool for contact-free support of discs of the type including a body having a supporting face, at least one bore within the body for connection with an extraneous gas reservoir and nozzle means in said body opening onto said support face and coupled to said bore for discharging gas streams from said reservoir through said bore and outwardly from said support face at an acute angle thereto, the improvement comprising:

a gas escape ring mounted on the outer edge of said support face of said body, said ring having slot-shaped passages formed therethrough extending over 60 to 95% of its circumference, and said ring having at least one wall defining the more-distant boundary faces of the slotted passages with respect to the supporting face which is disposed at an acute angle with respect to said supporting face.

4,118,059
WIRE ROPE SLINGS
William Roy Mackintosh Lindsay, Lenzie, Scotland, assignor to Gyrac Engineering Products Limited, Glasgow, Scotland

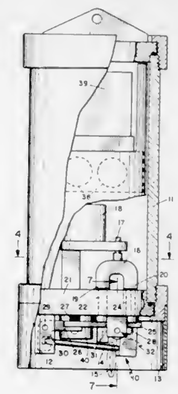
Filed Aug. 29, 1977, Ser. No. 828,967
Int. Cl.² B66C *1/12*
U.S. Cl. 294—74 **7 Claims**



1. A sling for use in lifting loads, comprising a wire rope, a choker having a sleeve through which the rope extends and having a first coupling formation adjacent to the sleeve, a second coupling formation on the rope at one end thereof and detachably engageable with the first coupling formation of the choker to form a tightenable noose of rope around the load, said sleeve having a generally keyhole-section bore whereof the wall is composed of a part-cylindrical portion in which the rope is a sliding fit so as to be locked against lateral displacement and a channel portion which opens from the part-cylindrical portion and into which a length of the rope projects laterally, and a pin which is a sliding fit in the channel portion and is insertible into the channel portion to clamp said length of the rope against the part-cylindrical portion of the bore wall and thereby prevent slackening of the noose tightened around the load.

4,118,060
UNDERWATER RELEASE MECHANISM
Daniel Maitland Brown, San Diego, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 14, 1977, Ser. No. 787,694
Int. Cl.² B66C *1/00*
U.S. Cl. 294—83 R **14 Claims**



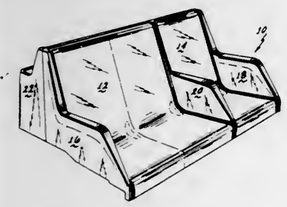
1. An underwater release mechanism, comprising

a watertight pressure housing;

releasable holding means attached to the outside of the

pressure housing for holding a load and operable for releasing said load;
a permanent magnet movably positioned inside the housing and having both poles adjacent a given wall of the housing for transmitting a magnetic force through the wall;
means inside the housing for moving the permanent magnet from a first position to a second position;
a keeper attached to the releasable holding means and held adjacent the given wall of the housing by said magnetic force transmitted through the wall when the permanent magnet is in said first position for preventing the releasable holding means from releasing said load, wherein the keeper is movable from the wall to enable the releasable holding means to release said load when the permanent magnet is moved to said second position; and
rods of magnetic material extending through the wall from the poles of the permanent magnet when the permanent magnet is in said first position for contacting the keeper and transmitting said magnetic force to the keeper when the keeper is adjacent the wall.

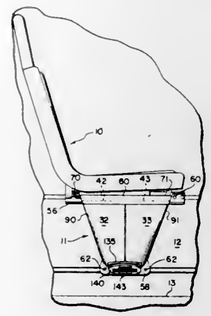
4,118,061
VEHICLE SEAT ASSEMBLY
Thomas Carl Atkinson, Chula Vista, Calif., and Clifford C. Fay, Uniondale, Pa., assignors to Rohr Industries, Inc., Chula Vista, Calif.
Filed Jul. 25, 1977, Ser. No. 818,939
Int. Cl.[2] A47C *7/02*
U.S. Cl. 296—63 **10 Claims**



1. A vehicle seat assembly having adaptability for use as both a side facing seat positioned along the side walls of various model vehicles and as front facing seat along the rear wall of various model vehicles comprising:
a plurality of seat modules, the combination being any six of the single occupant or double occupant variety, each of said seat modules having a shell-like structure with a back portion and seat portion, said seat modules having side flanges integrally formed along the edges of said seat and back portions;
a plurality of end arm members each having a panel section, first attaching means on the rear thereof and inwardly extending flange means for supportably contacting the side flanges of said seat modules, said flange means comprising a back portion support flange and a seat portion support flange; and
seat mounting adapter members attached to said vehicles, said adapter members having second attaching means on the front thereof for engaging said first attaching means.

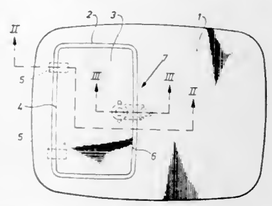
4,118,062
CANTILEVERED SEAT-SUPPORTING SHELL WITH BUILT-IN BLOWER
Arthur J. Harder, Jr., Franklin Park, and Norman J. Kehl, Elk Grove Village, both of Ill., assignors to Coach and Car Equipment Corporation, Elk Grove Village, Ill.
Filed May 31, 1977, Ser. No. 801,841
Int. Cl.[2] B60N *1/02*; A47C *7/02*
U.S. Cl. 296—63 **9 Claims**

1. Cantilevered supporting structure for a seat located in a temperature-controlled environment, said structure comprising:
frame means comprising an upper, horizontally disposed frame portion;
a trough-shaped, structural skin located primarily below said horizontally disposed frame portion and integral with said frame means to form a shell;
said shell having a bottom inclined upwardly from its rear to its front end, a pair of sides, an open top and an open rear end;
means at said open rear end of the shell for mounting said shell on a vertical wall;
said structural skin and said frame means comprising means



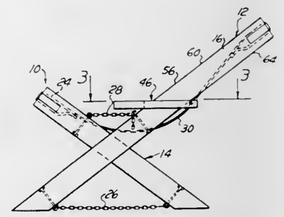
cooperating to support a seat in cantilevered relation to said vertical wall;
means for locating within said shell a blower having an inlet and an outlet for circulating air;
an opening in the bottom of said structural skin;
a deflector member on the outside of said opening;
said deflector member having an axis and a plurality of vane means disposed at an angle to said axis and comprising means for deflecting air blown outwardly through said opening;
and means mounting said deflector member on said structural skin for movement among a plurality of positions, to change the direction in which said vane means deflect the air blown through said opening.

4,118,063
VEHICLE TOP WITH PIVOTABLE COVER
Horst Bienert, Gauting, and Hans Jardin, Krailling, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany
Continuation of Ser. No. 622,175, Oct. 14, 1975, abandoned.
This application May 6, 1977, Ser. No. 794,344
Int. Cl. B60j *7/00*
U.S. Cl. 296—137 B **15 Claims**



1. A vehicle top with an opening having a front and a rear edge, an open frame surrounding said opening, a cover having a smooth fit in said frame and having a forward edge and a rear edge, a pivotal connection between the forward edge of said cover and said frame, near the front edge thereof, a multi-part expansible opening device adjacent the rear edge of said cover, means connecting a first part of said device to said cover for pivoting about a transverse axis, said first part including an internally threaded element, a second part of said device including an externally threaded element, a third tubular part having external and internal threads engaged respectively with the threads of said first and second parts and a support means mounting said second part, a first portion of said support means mounting said second part, a first portion of said support means being mounted to said frame near the rear edge of said opening.

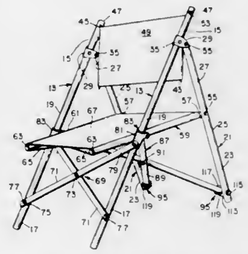
4,118,064
COLLAPSIBLE FOLDING ROCKING CHAIR
Terrence R. Robeson, 5662 Brace, Detroit, Mich. 48228
Filed Jun. 30, 1977, Ser. No. 811,576
Int. Cl.[2] A47C *4/00*
U.S. Cl. 297—18 **2 Claims**



1. A disassemblable folding seat, comprising
a three-sided rearwardly-inclined outer frame including spaced parallel outer side members and an outer cross member engaging said outer side members near the upper ends thereof,
a three-sided forwardly-inclined inner frame disposed within said outer frame and including spaced parallel inner side members and an inner cross member engaging said inner side members near the upper ends thereof,
a rectangular seat member of flexible sheet material having a forward end secured to said inner cross member and having a rearward end secured to said outer cross member,
elongated lower flexible connectors interconnecting the lower end portions of said outer and inner side members,
elongated upper flexible connectors interconnecting said outer and inner side members above and remote from said elongated lower flexible connectors, and separable interfitting means joining said cross members to their respective outer and inner side members,
said side members having wedge-shaped upper end portions and said cross members having end portions containing tapered grooves slidably and releasably receiving said upper end portions in mating engagement therewith,
each of said wedge-shaped upper end portions having a transverse slot therethrough, and each of said cross member end portions having a pair of said tapered grooves disposed in spaced parallel relationship with a tapered wall therebetween receivable within said transverse slot.

4,118,065
FOLDING PATIO CHAIR
Mervyn M. Watkins, 30241 Via Borica, Rancho Palos Verdes, Calif. 90274
Filed Aug. 29, 1977, Ser. No. 828,483
Int. Cl.[2] A47C *4/44*
U.S. Cl. 297—45 **16 Claims**

1. A folding patio chair for supporting a person in a sitting position, comprising:
a pair of parallel elongated frame tubes each having upper, lower and intermediate portions, said frame tubes defining a first plane therebetween;
a pair of parallel elongated rear support tubes each having upper, lower and intermediate portions, said upper portions of each of said support tubes being pivotally attached at a fixed position along said upper portion of a different one of said frame tubes, said support tubes defining a second plane therebetween intersecting said first plane along a line perpendicular to the longitudinal axes of said frame and support tubes;
a pair of parallel elongated seat tubes having front, rear and intermediate portions, said rear portions of each of said seat tubes being pivotally attached at a fixed position along said intermediate portion of a different one of said support tubes, said seat tubes defining a third plane there between intersecting said first plane along a movable line and intersecting said second plane along a line perpendicular to said longitudinal axis of said support tubes;
a rear x-brace having a pair of pivotally interconnected rear brace members defining a fourth plane therebetween, and rear brace members being foldable in said fourth plane, the

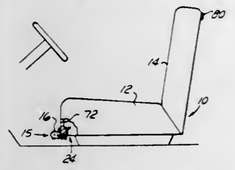


lower ends of each of said brace members being pivotally attached to a different one of said support tubes at said lower portions thereof;
a front x-brace having a pair of pivotally interconnected front brace members defining a fifth plane therebetween, said front brace members being foldable in said fifth plane and the lower end of each of which members being pivotally attached to a different one of said frame tubes along said lower portions thereof; and
folding means including an individual guide movably mounted along said intermediate portion of each of said frame tubes, each of said guides being pivotally attached to an associated one of said intermediate portions of said seat tubes to an upper end of one of said rear brace members, and to an upper end of one of said front brace members for simultaneously causing an upward movement of said movable line in said first plane, a lessening of the angle between said first and second planes, and a lessening of the distance between said frame tubes and between said seat tubes when said folding patio chair is moved from its open to closed configuration.

4,118,066
APPARATUS FOR SHADING THE SEATS OF A VEHICLE
Cyril T. Ricke, Englewood, Fla., assignor to Hex Fastener Corporation, Addison, Ill.
Filed Feb. 14, 1977, Ser. No. 768,221
Int. Cl.[2] A47C *7/00*
U.S. Cl. 297—184 **7 Claims**

5. A retractable shade for vehicle seat comprising a roller, a sheet of pliable material normally wound about said roller, a shaft extending longitudinally through said roller and rotatably supporting said roller, biasing means normally urging said roller in a direction winding said sheet of pliable material about said roller, a pair of end flanges fixedly supporting said shaft at each end thereof, means for adjustably attaching said end flanges to an interior portion of said vehicle and means for removably attaching the free end of said sheet of pliable material to another interior portion of said vehicle when

unwound from said roller with said sheet of pliable material being supported by the back of a seat away from the surface of the seat proper and seat back, wherein said means for adjustably attaching said end flanges to a portion of said vehicle comprises a pair of substantially U-shaped brackets each comprising a substantially L-shaped fixed member having a sidewall engaged with an exterior surface of a seat skirt and a bearing member slidably supporting a rod member extending substantially parallel to said roller and affixed at each end to one of said end flanges, whereby said rod member, end flanges and roller are laterally adjustable in position relative to said



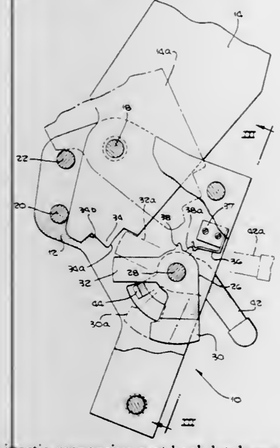
seat, a substantially L-shaped adjustable member having a sidewall engageable with the corresponding inner surface of said seat skirt, each of said fixed and adjustable members having a bottom wall portion in engagement with the bottom wall portion of the other member, means for fastening said bottom wall portions together with said skirt clamped between said sidewalls, and an integral flange section depending from at least one said sidewall and extending toward said surface of said seat skirt for resiliently concavely deforming said surface.

4,118,067

INERTIA-RESPONSIVE VEHICLE SEAT BACK LATCH MECHANISM

Akira Tanaka, Northridge, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.

Filed Dec. 13, 1976, Ser. No. 750,180
Int. Cl.[2] B60N *1/02*
U.S. Cl. 297—379 **13 Claims**



1. An inertia-responsive seat back latch mechanism adapted for operable connection to a vehicle seat assembly having a seat back pivotally supported for forwardly tilting movement, said latch mechanism having an inertia-responsive member which, responsive to a vehicle deceleration, is moved to a seat back locking position to prevent the seat back from tilting forward, wherein the improvement comprises:

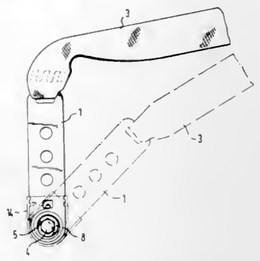
means adapted to be operably connected with the seat assembly for positively normally maintaining the inertia-responsive member in a continuously seat back locking position subsequent to the vehicle deceleration until manually unlocked.

4,118,068

SWINGING FITTING FOR SAFETY BELTS IN MOTOR VEHICLES

Artur Föhl, Schorndorf, Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Germany

Filed Sep. 16, 1977, Ser. No. 833,768
Int. Cl.[2] A62B *35/00*
U.S. Cl. 297—385 **7 Claims**



1. In a swinging fitting for safety belts in motor vehicles having a belt holder arm rotatable about a bearing pin and a tilting spring urging the return of the belt holder arm when tilted to a rest position and holding the belt holder arm in rest position when the belt is not in use, the improvement comprising

a. an intermediate member between the bearing pin and the tilting spring with

b. the intermediate member in locking engagement with the bearing pin and

c. with one end of the tilting spring engaged by the intermediate member and

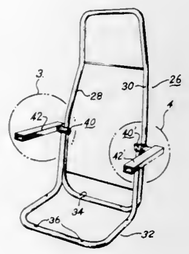
d. the other end of the tilting spring engaged by the holder arm.

4,118,069

FRAME ARM JOINT STRUCTURE FOR SEAT OR CHAIR STRUCTURE

George Taylor Hunter, Rte. 3, Box 250, Howe, Ind. 46764

Filed Oct. 7, 1976, Ser. No. 730,384
Int. Cl.[2] A47C *7/54*
U.S. Cl. 297—416 **10 Claims**



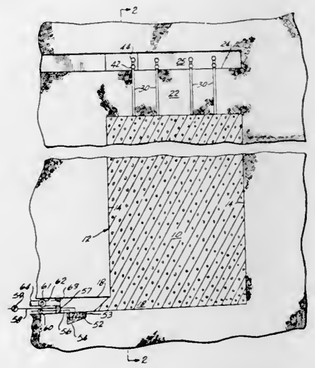
1. An arm joint structure for a seat or chair having a back, comprising an arm member, a laterally extending stem connected at one end to said member and projecting substantially at right angles therefrom, means defining an opening receiving said stem for connection to the seat or chair back, means in said stem defining a transverse slot extending approximately one fourth of the periphery of the stem and a longitudinal slot connecting said transverse slot to the other end of said stem, a pin attached to said means defining the opening and extending into said opening, said slots receiving said pin when said stem is inserted in said opening and cooperating therewith for locating said arm member in substantially horizontal and vertical positions.

4,118,070

SUBTERRANEAN IN SITU OIL SHALE RETORT AND METHOD FOR MAKING AND OPERATING SAME

Gordon B. French, and Richard D. Ridley, both of Bakersfield, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Sep. 27, 1977, Ser. No. 837,031
Int. Cl.[2] E21B *43/24, 43/26;* E21C *41/10*
U.S. Cl. 299—2 **23 Claims**



1. Means for recovering liquid and gaseous products from a subterranean formation containing oil shale comprising:

an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale;

an open base of operation in unfragmented formation at a level above a top boundary of the fragmented mass for providing access over substantially the entire horizontal cross section of the fragmented mass;

a plurality of bore holes extending through unfragmented formation between the base of operation and the top boundary of the fragmented mass, the bore holes opening into the base of operation and into an upper portion of the fragmented mass;

a separate casing sealed in each of a plurality of such bore holes, the upper end of each casing opening into the base of operation, the lower end of each casing opening into an upper portion of the fragmented mass;

valve means connected to each of such casings in the base of operation for separately controlling the flow of gas through such casings from the base of operation; and

means for introducing an oxygen-containing gas to the fragmented mass through a plurality of such casings for sustaining a combustion zone in the fragmented mass and for advancing the combustion zone through the fragmented mass.

15. A method of retorting oil shale in an in situ oil shale retort in a subterranean formation containing oil shale, such as in situ oil shale retort containing a fragmented permeable mass of particles containing oil shale, said fragmented mass having top, bottom and side boundaries, the method comprising the steps of:

excavating a first portion of formation to form an open base of operation at an elevation in the formation above the top boundary of the fragmented mass being formed;

excavating a second portion of formation for forming at least one void within the boundaries of the fragmented mass being formed;

drilling from the base of operation a plurality of bore holes in a third portion of the formation below the base of operation;

loading explosive into such blasting holes only up to an elevation lower than the bottom of the base of operation;

detonating such explosive to expand the third portion of formation toward such a void to form a fragmented permeable mass of particles containing oil shale and to leave a horizontal sill pillar of unfragmented formation between the top of the fragmented mass and the bottom of the base of operation;

sealing a separate casing in each of a plurality of such bore holes, the upper end of each casing opening into the base of operation, the lower end of such a casing opening into an upper portion of the fragmented mass;

connecting valve means to each of such casings in the base of operation for separately controlling the flow of gas through such casings from the base of operation;

establishing a combustion zone in an upper portion of the fragmented mass below the lower ends of such casings; and

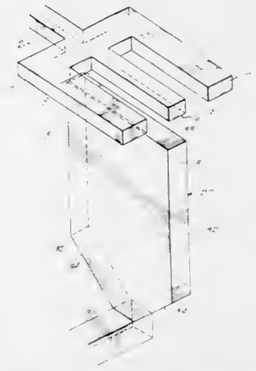
introducing an oxygen-containing gas to the fragmented mass through a plurality of such casings for sustaining the combustion zone in the fragmented mass and for advancing the combustion zone through the fragmented mass.

4,118,071

IN SITU OIL SHALE RETORT WITH A HORIZONTAL SILL PILLAR

Ned M. Hutchins, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Apr. 25, 1977, Ser. No. 790,350
Int. Cl.[2] E21B *43/24;* E21C *41/10*
U.S. Cl. 299—2 **38 Claims**



36. A method of forming, in a subterranean formation containing oil shale, an in situ oil shale retort containing a fragmented permeable mass of particles containing oil shale, said fragmented mass having top, bottom and side boundaries, comprising the steps of:

excavating a portion of the formation to form a base of operation at an upper elevation in the formation above the top boundary of the fragmented mass being formed, and leaving unfragmented formation extending from the floor of the base of operation to the roof of the base of operation as at least one roof supporting pillar within the boundaries of the base of operation, such a roof supporting pillar having adequate strength to withstand short term loads imposed by explosive expansion to form the fragmented mass in the retort; and

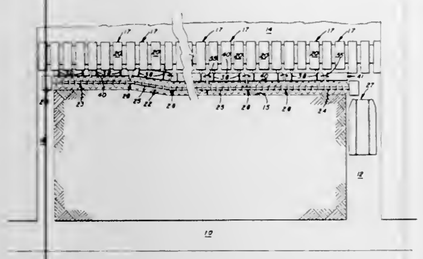
forming a fragmented permeable mass of formation particles with a top boundary at an elevation a sufficient distance below the base of operation to leave a horizontal sill pillar of unfragmented formation below the bottom of the base of operation and the top boundary of the fragmented mass for maintaining a safe base of operation, the fragmented mass having side boundaries located beneath the base of operation so as to provide effective access to essentially the entire horizontal cross section of the fragmented mass from the base of operation.

4,118,072

VARIABLE WALL MINING MACHINE

Jay Hilary Kelley, 4204 Chestnut Hill, Morgantown, W. Va. 26505, and Letcher T. White, 117 Wayne St., Manchester, Ky. 40962

Filed Jun. 6, 1977, Ser. No. 803,603
Int. Cl.² E21C *25/06, 25/68*
U.S. Cl. 299—43 **19 Claims**



1. A variable wall mining machine to release coal from a longwall mine face, comprising:
- a plurality of side-cutting auger sections to release and convey coal along a mine face,
- universal coupling means joining said auger sections together in an end-to-end relation to form an articulated auger assembly for extending along the longwall mine face,
- drive means coupled to at least one auger section to rotate said articulated auger assembly,
- actuator means for individual ones of said plurality of side-cutting auger sections to sump and shear cut the mine face,
- sequentially operative control means for said actuator means to advance the cutting auger sections sequentially into sumping cuts in the mine face, and
- scavenger plow means spaced outwardly in a partially surrounding relation with said articulated auger assembly at the side thereof opposite the mine face to facilitate transportation of released material by the cutting auger across the mine face.

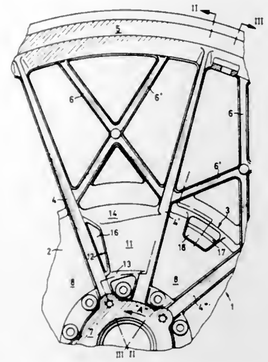
4,118,073

CAST SPOKE-WHEEL FOR MOTOR VEHICLES, ESPECIALLY MOTORCYCLES

Hans-Gunther v.d. Marwitz, Munich, Germany, assignor to Bayerische Motoren Werke AG, Germany

Filed Aug. 2, 1976, Ser. No. 710,395
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1975, 7524641
Int. Cl.² B60B *1/08*; B60T *5/00*
U.S. Cl. 301—6 CS **2 Claims**

1. A cast spoked wheel for motor vehicles which comprises a brake hub means connected with a wheel hub means by way of an end wall means and radially directed spoke means arranged extending over the end wall means to a rim, dividing the wheel into a plurality of sectors, characterized in that at least in one of the sectors an inclined blade means which projects with its respective forward edge pointing respectively in the direction of rotation of the spoked wheel, in the axial direction beyond the spoke means is connected by way of its respective rear edge with an adjacent spoke means and on the side of the wheel rim with a respective wall each extending from one spoke means to the adjacent spoke means and connected with the end wall means to form an air-collecting scoop case integrally with said spoke means and said end wall means and having a passage therethrough for supplying ventilating



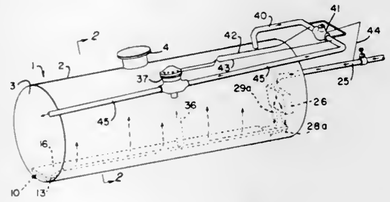
air through the end wall means to the interior of the brake hub means.

4,118,074

PULSED AIR ACTIVATED CONVEYOR AND SYSTEM

Paul E. Solt, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.

Continuation-in-part of Ser. No. 511,410, Oct. 2, 1974, abandoned. This application Mar. 15, 1976, Ser. No. 667,070
Int. Cl.² B65G *53/18*
U.S. Cl. 302—26 **5 Claims**



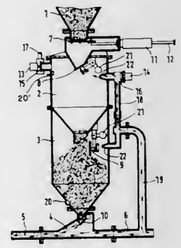
1. Apparatus for transporting solid bulk material comprising;
- channel means defined by gas impervious sidewalls, endwalls and a bottom and a substantially open top;
- a flexible fabric gas permeable member secured to and closing the top of said channel means for supporting solid bulk material to be transported;
- wall means mounted in said channel means parallel to said sidewalls extending substantially from said bottom to said gas permeable member and dividing said channel means into a pair of contiguous plenum chambers;
- means for supplying gaseous fluid at superatmospheric pressure to said channel means for passage through said gas permeable member for aerating the material supported by said gas permeable member;
- means for rapidly and continuously alternating the supply of gaseous fluid first to one of said plenum chambers then to the other of said plenum chambers whereby a pulse of gaseous fluid is transmitted through said gas permeable member to the material supported on the gas permeable member and the material is vibrated and aerated to produce a mass flow of material along said gas permeable member;
- said means for alternating the supply of gaseous fluid includes a diverting valve for rapidly and continuously alternating the supply of substantially all of the gaseous fluid supplied first to one of said plenum chambers and then to the other of said plenum chambers at a frequency of at least about one cycle per second.

4,118,075

BULK MATERIAL DELIVERY APPARATUS

Paul Lübbehusen, Ravensburg-Durnast, Fed. Rep. of Germany, assignor to Waeschle Maschinenfabrik GmbH, Ravensburg, Fed. Rep. of Germany

Filed Jun. 1, 1977, Ser. No. 802,430
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625263
Int. Cl.² B65G *53/40*
U.S. Cl. 302—53 **4 Claims**



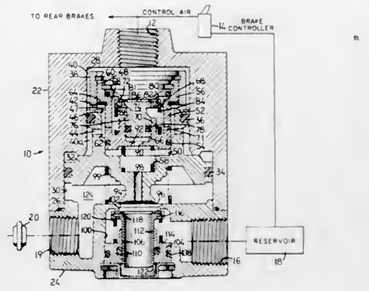
1. Apparatus for the delivery of bulk material into a pneumatic conveyor conduit, comprising a first chamber; an inlet into the first chamber for the introduction of bulk material thereinto; a first closure flap pivotal between a first position of closing the first chamber inlet and a second position of opening the first chamber inlet; a second chamber disposed below the first chamber; an outlet from the first chamber communicating with the second chamber for the transfer of bulk material from the first to the second chamber; a second closure flap pivotal between a first position of closing the first chamber outlet and a second position of opening the first chamber outlet, each said closure flap being counter-balanced whereby each closure flap when in a freely pivotal condition is at least substantially in its open position such that material flow is unimpeded by said closure flaps; an outlet from the second chamber for the discharge of bulk material therefrom into the conveyor conduit; a connecting conduit for a gas flow communication between the first and second chambers; shut-off valve means in the connecting conduit for preventing gas flow therefrom; a gas feed conduit connected to said connection conduit for introducing pressure gas thereinto; vent valve means communicating between said first chamber and free atmosphere; a nozzle disposed within each of said first and second chambers and in gas flow communication with said connecting conduit, each nozzle being positioned to direct a jet of pressure gas from said connecting conduit towards a respective said closure flap; level sensing means in the second chamber adjacent to said outlet from the second chamber; control means operatively connected to the shut-off valve means, the vent valve means and the level sensing means and operable, in response to a signal from the level sensing means that the material in the second chamber has fallen to a predetermined level, to actuate the shut-off valve means to an open position and said vent valve means to a closed position for filling the second chamber; and a flow shut-off member for preventing a flow of bulk material to said first chamber inlet when said first closure flap is closed to avoid said first closure flap having to close against the flow of bulk material; and wherein said control means actuates said shut-off member at least substantially in synchronization with said first closure flap.

4,118,076

CONTROL VALVE HAVING REDUCED CRACK-OPEN PRESSURE

William M. Mild, Maryland Heights, Mo., assignor to Wagner Electric Corporation, St. Louis, Mo.

Filed Mar. 28, 1977, Ser. No. 781,835
Int. Cl.² B60T *8/26*
U.S. Cl. 303—6 C **15 Claims**



1. A control valve comprising:
- (a) a housing;
- (b) said housing being adapted to receive control fluid pressure at a first inlet, fluid pressure at a second inlet and providing brake fluid pressure at an outlet thereof;
- (c) control valve means moveable in said housing for controlling the application therethrough of fluid pressure from said second inlet to said outlet upon receipt at said first inlet of control fluid pressure;
- (d) differential piston means within said housing, said differential piston means having larger and smaller piston areas in sealing contact with larger and smaller bores in said housing;
- (e) means for freely communicating control fluid pressure to said larger piston area at fluid pressures between atmospheric pressure and a first level of control fluid pressure greater than atmospheric pressure;
- (f) means for isolating said larger piston area from said control fluid pressure upon the occurrence of said first level of control fluid pressure, whereby a fixed value of fluid pressure equal to said first level is trapped between said larger and smaller piston areas;
- (g) means for providing brake fluid pressure in a first predetermined ratio to said control fluid pressure for control fluid pressure between said first and a second, higher level of control fluid pressure; and
- (h) means for admitting control fluid pressure in metered amounts between said larger and smaller piston areas at greater than said second level of control fluid pressure higher than said first level of control fluid pressure, whereby brake fluid pressure is provided in a second predetermined ratio higher than said first predetermined ratio.

4,118,077

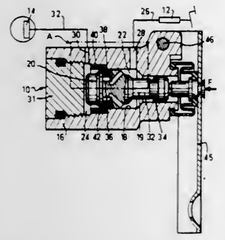
BRAKING CORRECTION DEVICE

Jean-Jacques Carré, Montreuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Continuation-in-part of Ser. No. 766,322, Feb. 7, 1977, Pat. No. 4,059,174. This application Aug. 12, 1977, Ser. No. 824,018
Int. Cl.² B60T *8/18*
U.S. Cl. 303—6 C **6 Claims**

1. Braking correction device having a housing with a bore therein, a stepped piston having a head slidably mounted in the bore of the housing and cooperating with the latter so as to define in said bore an inlet chamber adjoining the piston head face having the smallest effective cross section, and an outlet

chamber adjoining the piston head face having the larger effective cross section, said inlet chamber being adapted to be connected to a source of hydraulic fluid pressure and said outlet chamber being adapted to be connected to at least one brake actuator, said piston head having a peripheral groove in which a ring of elastomeric material is mounted with axial and radial clearance, said ring of elastomeric material cooperating with a portion of the inner surface of said bore to as to open communication between the inlet chamber and the outlet



chamber when the piston is in an idle position and so as to close communication between the inlet and outlet chambers when the piston is moved from its idle position, said portion of the inner surface of the bore comprising a first part defining a fluid tight side wall, and a second part formed of a sleeve of porous material, said second part being adjacent to the outlet chamber, an annular space being provided between the piston head and the sleeve of porous material so as to permit uninhibited fluid communication between the inlet and outlet chambers when the piston is in its idle position.

4,118,078

LINEAR BALL BEARING INCLUDING LONGITUDINAL SLOT IN THE SLEEVE WITH BALL-RETAINING CAGE

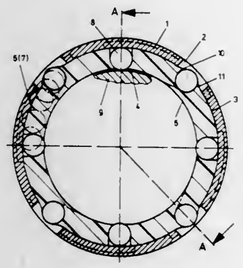
Horst Manfred Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 21, 1977, Ser. No. 779,693

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612935

Int. Cl.[2] F16C *29/06, 31/05*

U.S. Cl. 308—6 C **7 Claims**



1. In a linear ball bearing operable with a shaft for relative axial movement therewith, the bearing including an outer sleeve, a cylindrical ball-retaining cage situated within the sleeve, said cage having a plurality of continuous raceways, each of which includes (a) two parallel and axial races, one being a loaded zone wherein balls contact both the sleeve and the shaft, and the other being an unloaded return zone, and (b) two curved turn-around races connecting adjacent ends of said axial races, and a plurality of balls substantially filling said raceways, said unloaded return zone being defined by a slot extending axially in said sleeve and radially through said sleeve, the improvement in combination therewith, wherein said sleeve has a circumferential surface facing said cage, said surface comprising regions adjacent said loaded axial zone and said turn-around races of said cage, and in at least one of said regions said sleeve surface is recessed radially outward from said cage, thereby defining a space between said recessed region and the balls therein, and said cage comprises exclusive ball-restraining means for restraining said balls in said recessed region from contacting said recessed surface of the sleeve.

4,118,079

FLUID BEARINGS WITH CONFORMING SHELLS

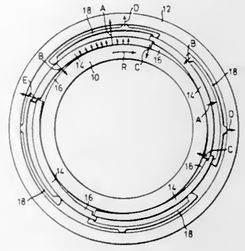
Paul Newman, and Raymond Fredrick Sargent, both of Bristol, England, assignors to Rolls-Royce Limited, Great Britain

Filed May 31, 1977, Ser. No. 801,791

Claims priority, application United Kingdom, Jun. 12, 1976, 24451/76

Int. Cl.[2] F16C *35/00*

U.S. Cl. 308—9 **15 Claims**



1. In a fluid bearing assembly including a pair of elements mounted for movement relative to each other on a fluid film formed between bearing surfaces formed on a plurality of resilient shells supported at points along their length between said elements and a bearing surface formed on one of said elements, the improvement comprising:

each of said resilient shells being of a thickness which, relative to its other dimensions is such as to prevent said shell from locally deflecting at unsupported positions thereof in response to increases in the pressure of said fluid film, and

means being provided operable in response to increases in pressure in said fluid film to bend each of said shells in the manner of a stiff beam in a controlled manner to modify the shapes of the shells so that the bearing surfaces on the shells conform more closely to the bearing surface of said one element in regions of minimum fluid film thickness.

4,118,080

SEALED ANTIFRICTION BEARING WITH SEALING ELEMENT

Helmuth Kregler, and Reinhard Hillmann, both of Schweinfurt, Germany, assignors to SKF Industries, Inc., King of Prussia, Pa.

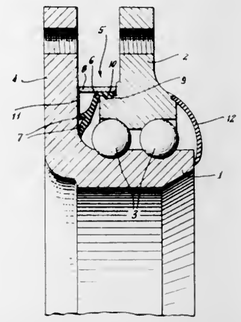
Filed Jul. 1, 1976, Ser. No. 701,642

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 7521787[U]

Int. Cl.[2] F16C *33/76*

U.S. Cl. 308—187.1 **9 Claims**

1. In an antifriction bearing including inner and outer races and corresponding raceways and rolling elements in said raceways, the improvement in combination therewith of sealing means to protect said rolling elements and raceways, wherein said inner race comprises a supporting flange extending generally radially outward, and said outer race has a fastening edge adjacent and axially spaced from said supporting flange, said sealing means comprises an annular resilient sealing element having a first end engaging said fastening edge and an opposite free end formed as at least one sealing lip which slidably engages said supporting flange of said inner race, and a generally rigid cylindrical casing having a first end overlying said first



end of the sealing element and securing same to said fastening edge and an opposite second end extending axially toward but not touching said supporting flange and defining therewith a narrow gap, said casing being radially outward of said sealing element for protecting same.

4,118,081

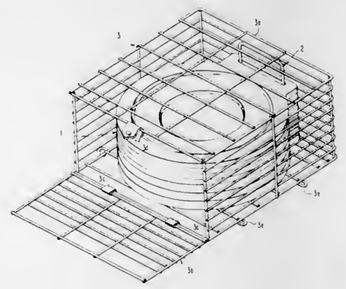
PLATE HOLDER

Christine Ann Barrientos, 996 Hamilton Ave., Seaside, Calif. 93955

Filed Mar. 9, 1977, Ser. No. 775,835

Int. Cl.[2] A47B *81/00*

U.S. Cl. 312—8 **7 Claims**



1. A plate holder for use in leisure time vehicles such as campers, trailers, and the like, comprising a housing, a vertically disposed post mounted in said housing, a plurality of carriers slidably mounted in stacked relationship on said post, each carrier having an aperture through which said post extends, each carrier adapted to support a respective plate, the plates being interleaved the carriers such that the bottom surface of each plate is supported by the top surface of a carrier and the top surface of each plate supports the bottom surface of the next adjacent carrier, whereby the stacked plates are protected against damage while the vehicle is moving; a side wall of the housing providing an access to the interior of the housing whereby a plate may be removed laterally from the stack while the post retains the carriers within the housing wherein the post being spaced inwardly from a wall of the housing and secured to the base thereof.

4,118,082

ADVERTISEMENT PILLAR

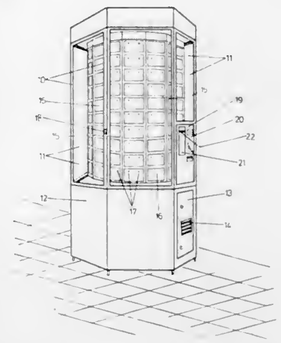
William J. Hoop, Eschen, Liechtenstein, assignor to Gamperdona Handels- und Finanz Aktiengesellschaft, Liechtenstein

Filed Sep. 13, 1976, Ser. No. 722,755

Claims priority, application Switzerland, Mar. 24, 1976, 3446/76; May 10, 1976, 5827/76

Int. Cl.[2] A47B *49/00*

U.S. Cl. 312—59 **7 Claims**



1. An advertising and information display column for publicly displaying on streets and in public squares a plurality of advertisements said display column comprising an outer housing having upper and lower portions, said upper portion including frame means for supporting a plurality of sidewalls a plurality of which are comprised of a transparent material, one of said plurality of sidewalls comprising a lockable door adapted to be opened outwardly, a card vending means attached to said door for vending a blank advertising card in response to a predetermined signal, said upper portion further including a card collection means for collecting the previously vended cards following the placement of advertising thereon so that the cards will be available in said display column for subsequent display therein, an inner card display member rotatably mounted to said lower portion and within said upper portion so that said display member is spaced inwardly of the sidewalls forming the upper portion of said outer housing, said inner card display member having a plurality of sides each side having a plurality of card holding means for holding the vended cards which had been collected in said card collection means so that the cards will be visible through the transparent sidewalls of the upper portion, electric drive means mounted within said lower portion and being drivingly connected to said inner card display member for rotating said member said lower portion having a lockable door to provide access to said electric drive means and drive control means positioned on the exterior of said outer housing for controlling the operation of said drive means and the rotation of said inner card display member.

4,118,083

CABINET BASE CONSTRUCTION FOR ROOF TOP AIR CONDITIONER

Robert S. Lackey, Pittsburgh; Robert R. Young, and John C. Kastovich, both of Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 23, 1977, Ser. No. 853,988

Int. Cl.[2] F25D *19/00;* **E04B** *7/18*

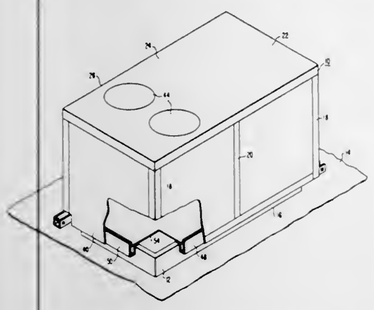
U.S. Cl. 312—100 **4 Claims**

1. A cabinet base construction for an air conditioning unit of the type adapted for a roof top or slab installation and having an outdoor air flow section and a separate indoor air flow section, comprising:

a substantially rectangular frame comprised of a base rail

along each opposite side and along each opposite end, each base rail having a shape in transverse cross section including an upwardly open channel formed of an outer leg, a web, and an inner leg, the outer leg having a height greater than said inner leg, and the inner leg having a horizontal flange projecting inwardly from along the top of the inner leg;

separate pan means forming the bottom wall for the separate outdoor air flow section and indoor air flow section, each pan means including a horizontal wall and an upturned flange along each edge, the pan means together being



dimensioned to nest in the perimetric area defined by the inner faces of said outer legs of the frame, with the upturned flanges along the outer edges of the pan means abutting that upper marginal portion of the frame outer legs projecting above the height of the top of the frame inner legs, and with the upturned flanges of said pan means which extend from side to side intermediate the ends of the frame being in abutting relation; and

said upturned flanges being spot-welded to the abutting members and the horizontal wall of said pan means being spot-welded to said horizontal inturned flanges of said inner legs.

4,118,084

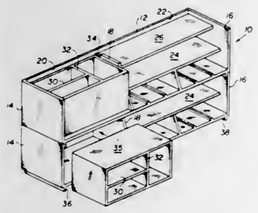
STACKABLE COMPARTMENTALIZED STRUCTURE FOR COSMETICS OR THE LIKE

Howard Sussman, c/o Crackerbarrel Marketing, E. Shore Rd., Huntington, N.Y. 11743

Continuation-in-part of Ser. No. 797,304, May 16, 1977, abandoned. This application Nov. 21, 1977, Ser. No. 853,249

Int. Cl.[2] A47B *87/00*

U.S. Cl. 312—107 **3 Claims**



1. A compartmentalized structure for storing cosmetics or the like having an improved construction permitting vertical stacking with structures similarly constructed, said structure comprising a vertically oriented rear wall, a cooperating arrangement of two opposite side walls and a medial wall connected to extend forwardly from said rear wall at locations adjacent the opposite sides thereof and at an intermediate location, first and second horizontally oriented top shelf panels positioned to extend in spanning relation from opposite sides of said medial wall to said side walls at a level slightly below the upper edges of said rear, opposite side, and medial walls so as to cooperate therewith in bounding an upper mounting recess for said structure, said upper edge of said medial wall in said mounting recess having a section removed therefrom adjacent said rear wall for forming a female mounting notch, and an inwardly located opposite side legs and a male mounting projection extending in depending relation from the bottom wall of said structure so as to project within said mounting recess of a cooperating similarly constructed structure in a supporting position beneath same, said opposite side legs being at locations to assume side-by-side positions with said upper edges of the walls bounding the opposite sides of said mounting recess and said male mounting projection being at a location to project within said female mounting notch, whereby said side legs minimize sidewise shifting in the superposed structures relative to each other and said interconnected male and female projection and notch minimize shifting in all remaining directions.

4,118,085

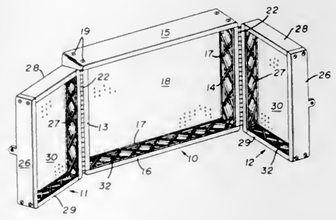
WALL MOUNTED TOOL CABINET

C. Kenneth Fibus, Youngstown, Ohio, assignor to The Steel City Corporation, Youngstown, Ohio

Filed Jun. 13, 1977, Ser. No. 805,827

Int. Cl.[2] A47F *5/08*

U.S. Cl. 312—245 **4 Claims**



1. A wall mounted tool cabinet comprising three units, said units each having a width dimension with the width of one of said units being double the width of the outer two, each unit having a frame, said frames each including top, bottom and side molded plastic members each of which members has a peripheral flange and a continuous channel therein adjacent one edge thereof, said frame members being arranged at right angles with respect to a wall, a flat rectangular panel positioned in each of said frames with its peripheral edges engaged in said continuous channels, each of said frames comprising four molded plastic frame members abutting one another at their ends, means securing said frame members to one another with said frame members being positioned about said flat rectangular panel so as to continuously engage and cage said panel in said continuous channel, integral hinge configurations on each of said units for mutual movable engagement and arranged so that said two of said units can move into covering relation with said one double width unit to form closures therefor, said bottom frame members each including a criss-cross molded integral reinforcing grid structure with the grids thereof defining a plurality of receptacles of each unit in which items, such as fasteners and the like, may be stored.

4,118,086

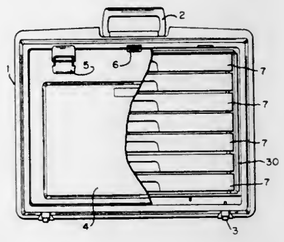
TACKLE BOX

Joseph William Kneier, Chesterland, Ohio, assignor to Flambeau Products Corporation, Baraboo, Wis.

Filed May 12, 1977, Ser. No. 796,422

Int. Cl.[2] A47B *51/00*

U.S. Cl. 312—270 **12 Claims**



1. A tackle box comprising:

a boxlike container having relatively rigid sides, top, bottom, and back;

means for access to the interior of said container at its front;

means for vertical support disposed on the interior of said container sides;

means for horizontal guide extension disposed on said means for vertical support and having an end facing said means for access;

drawer trays disposed in said means for horizontal guide extension whereby said drawers are supported and movable from a position substantially internal to said container for storage to a position substantially external to said container for selection of drawer contents; and

said means for horizontal guide extension being retained on said means for vertical support by a fixed stop at the back of the container and retainer bar means at the front of the container and extending in overlying relationship to said end of said means for horizontal guide extension, said retainer bar means including means on said container for permitting ready removal of said retainer bar means.

4,118,087

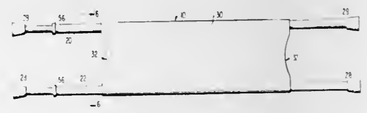
RECREATIONAL VEHICLE SHELF BARS

Helen A. Dorf, 5265 Home Gardens Dr., Reno, Nev. 89502

Filed Nov. 26, 1976, Ser. No. 745,412

Int. Cl.[2] A47B *81/00*

U.S. Cl. 312—291 **1 Claim**



1. A retainer for articles normally disposed within a vehicle storage enclosure having opposed, side walls, a back wall and at least one shelf member for supporting articles within said enclosure on said shelf member against relative movement thereof, said retainer comprising:

a pair of mutually spaced, biased telescoping rods, each of said rods mounting a skid resistent foot at either end thereof, each of said rods comprising an outer tube and an inner tube, an end portion of said outer tube receiving an end of said inner tube, and a coil spring extending through said outer tube, through the end portion of said inner tube received therewithin and into the central portion of said inner tube;

means carried by each of said rods for changing the length thereof so that said feet lie a predetermined distance apart, said means comprising a first crimp on said outer tube adjacent the foot mounted thereon, engaging an end of said spring, and a second crimp on said inner tube adjacent the end received within outer tube whereby rotation of said inner tube relative to said outer tube will alter the distance between said feet, said spring normally urging the ends thereof outwardly to dispose said feet at said predetermined distance whereby when said distance is greater than the distance between opposed faces of said sidewalls and said rods are disposed within said enclosure, said spring will urge the ends of said rods into said walls;

and at least one vertical spacer member rigidly connecting the outer tube of said rods and spacing the longitudinal axes of said rods in a parallel relationship, substantially close together one to the other, so that said retainer may be inserted into said enclosure above said shelf member and abutting the articles to be retained thereon to confine the articles with said enclosure back and side walls against relative movement thereof, said spacer member being a substantially rectangular plate mounted on the central portion of said rods and having opposed longitudinal edge portions wrapped, respectively, around the central portion of the adjacent rod outer tube and transverse edge portions between said rod folded toward the center thereof.

4,118,088

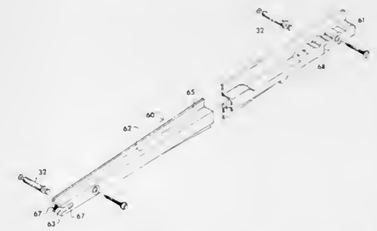
KNOCK-DOWN FURNITURE SYSTEM

John M. Dunning, III, Greensboro, N.C., assignor to Dunning, Ltd., Greensboro, N.C.

Filed Jun. 6, 1977, Ser. No. 803,988

Int. Cl.[2] A47B *88/04*

U.S. Cl. 312—350 **3 Claims**



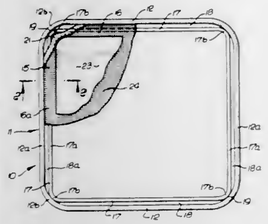
1. Improvements in a knock-down furniture system of the type in which a plurality of holes are arranged in a pair of horizontally spaced, vertical rows adjacent the front and rear edge of the side walls thereof and receive connecting pins having a head and reduced neck portion which extend outwardly from at least one surface of the side walls and onto which various hardware and connecting fixtures are attached, said improvements comprising:

(a) at least a pair of drawer slides each having a front and rear end and releasably attached to a laterally spaced pair of said pins;

(b) said drawer slide including an elongated body member having a longitudinally elongated slot opening toward the rear end thereof and a transversely extending elongated slot opening at the bottom of said body member adjacent the front end thereof;

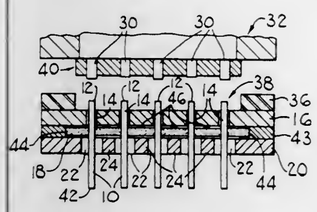
(c) whereby said drawer slide may be releasably secured to said side wall by moving the slide rearwardly while sliding said rear slot onto the pin at said rear, then pivoting said slide downwardly into locking engagement with the corresponding pin at said front side.

4,118,089
FURNITURE DRAWER
Jerry Lynn Johnson, Portrero, and Martin R. Liebhold, Los Angeles, both of Calif., assignors to Landes Manufacturing Co., Los Angeles, Calif.
Filed May 9, 1977, Ser. No. 794,950
Int. Cl.[2] A47B *88/00*
U.S. Cl. 312—351 **7 Claims**



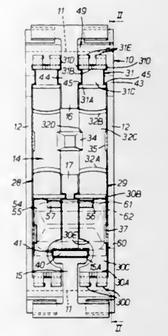
1. A drawer for use in furniture defining drawer support slides, comprising
(a) a frame defining generally parallel peripheral guide rails cooperating with said support slides whereby the drawer may be advanced and retracted, and
(b) a basket having flexible walls supported by and hanging from said frame, whereby the basket may be collapsed upwardly toward a plane defined by the frame,
(c) the frame including elongated members which are spaced from said guide rails to define elongated slots, there being loops on the basket wall portions received through said slots, and there being retainers removably received in said loops and cooperating therewith to block retraction of the loops through the slots, said walls extending over said elongated members,
(d) said slots included within at least three elongated slots defined by the frame.

4,118,090
ELECTRICAL CONTACT DEVICES
Luigi Giovanni Del Mei, 1178 Park St., Pretoria, South Africa
Filed Jul. 14, 1977, Ser. No. 815,498
Claims priority, application South Africa, May 23, 1977, 77/3036
Int. Cl.[2] H01R *11/30*
U.S. Cl. 339—12 R **12 Claims**



1. A device comprising:
a plurality of movable electrically conductive contact means;
at least one contact surface on each of said contact means, said contact means being movable independently by application of forces to said contact surfaces;
locating means defining guide paths receiving said contact means for guiding the contact means during movement resulting from application of forces to said contact surfaces;
elastomeric biassing means engaging said contact means for biassing said contact means to oppose forces applied to said contact surfaces, said biassing means comprising electrically insulating elastomeric material; and
means for restraining said contact means from leaving said guide paths comprising connections between said contact means and said elastomeric biassing means.

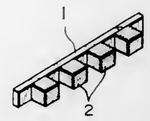
4,118,091
ELECTRICAL CONNECTION ASSEMBLIES
Reg Alan Frisby, Long Eaton, England, assignor to TRW Inc., Cleveland, Ohio
Filed Oct. 7, 1976, Ser. No. 730,668
Claims priority, application United Kingdom, Oct. 8, 1975, 41213/75
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 R **35 Claims**



1. An input connection assembly comprising a holder of an electrically insulating material; said holder having two ends and defining a well intermediate its ends, in which well are accommodated in a tandem manner an input terminal member disposed at one end of the holder, an output terminal member disposed at the opposite end of the holder, and between those two terminal members an intermediate connection member having oppositely-disposed contact-making parts which make electrical contact with opposing contact-making parts of the respective terminal members so as to provide a continuous current conducting path between the input and output terminal members, said contact-making parts comprising at least two separable elements which normally press resiliently against one another for so completing such path between said intermediate connection member and one of said terminal members, at least one of said elements being resiliently movable for deflection from the respective opposing element whereby an electrical test or interconnection jack plug may be inserted between said elements thereby separating them and providing electrical connection of such an inserted plug with at least one of said members.

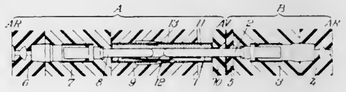
4,118,092
INTERCONNECTORS
Ryoichi Sado, Saitama, and Kazutoki Tahara, Omiya, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan
Filed Jun. 13, 1977, Ser. No. 806,057
Claims priority, application Japan, Jun. 14, 1976, 51-69557
Int. Cl.[2] H05K *1/04*
U.S. Cl. 339—59 M **5 Claims**

1. An interconnector comprising an elongated strip of an electrically insulating silicone rubber having a pair of oppositely directed lateral surfaces and a plurality of contacts each shaped as a parallelopipedon and formed of an electrically conductive silicone rubber, said contacts arranged in a row extending in the elongated direction of said strip and secured to and projecting laterally outwardly from one of the lateral surfaces of said strip, each of said contacts having a first surface parallel with and contacting the lateral surface of said strip, a second surface parallel with said first surface and spaced outwardly from said first surface, and side surfaces



extending between and interconnecting said first and second surfaces, the side surfaces of adjacent said contacts disposed in spaced relation, each of said second surfaces of said contacts having a straight groove formed therein with the groove extending between two opposed side surfaces of said contact.

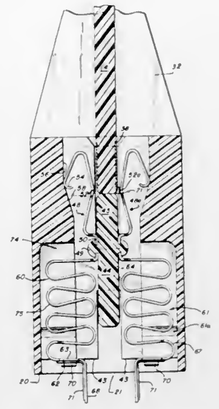
4,118,093
ELECTRICAL CONNECTORS
Albert Obéissart, Boulogne-Billancourt, France, assignor to Souriau & Cie, Boulogne-Billancourt, France
Filed Mar. 15, 1977, Ser. No. 777,643
Claims priority, application France, Mar. 17, 1976, 76 07753; Jun. 24, 1976, 76 19275; Oct. 6, 1976, 76 30111
Int. Cl.[2] H01R *7/06, 13/54*
U.S. Cl. 339—75 M **31 Claims**



1. In an electrical connector comprising first and second connector units, first and second insulating body means located in said first and second connector units respectively, a plurality of female contacts of socket type carried by said first insulating body means, and a plurality of corresponding male contacts of pin type carried by said second insulating body means, each female contact comprising an external casing and a longitudinal part, said longitudinal part being formed of a radially movable piece, control means acting on said movable piece so that said movable piece can be placed on the one hand in a deflected position for which the introduction or the withdrawal of the corresponding male contact is made with a weak or zero pressing-force and, on the other hand, in a gripped position for which said movable piece is pressed against said male contact, the pressure exerted by said movable piece being obtained at the end of the introduction of the male contacts into the female contacts, the improvement that said movable piece is provided, for cooperation with said control means, with a boss extending outwards and projecting from the external casing of the female contact, said casing being provided with an aperture for the passage of the projecting boss.

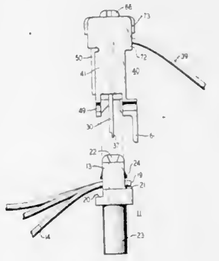
4,118,094
ZERO-ENTRY FORCE CONNECTOR
Edward H. Key, Wheaton, Ill., assignor to TRW Inc., Elk Grove Village, Ill.
Filed Mar. 31, 1977, Ser. No. 783,152
Int. Cl.[2] H01R *13/54;* **H05K** *1/07*
U.S. Cl. 339—75 MP **14 Claims**

1. A zero entry force connector including a connector housing, a reciprocable carrier disposed in said housing, a plurality of contact strips each having a first end portion thereof attached to said housing, an intermediate portion formed into a smooth, rounded contact portion laterally movable within said housing, and a second end portion coacting with said housing for moving said contact portion laterally to effect electrical contact with an inserted element as said carrier is moved inwardly of said housing, and each of said contact strips forming a compression spring between said first end portion and said



intermediate portion which is compressed as said carrier is so moved to thereupon urge said carrier outwardly of said housing.

4,118,095
WIRE CONNECTING BLOCK
Richard Newman Berglund, Bridgewater, and John Paul Pasternak, Whippany, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jul. 6, 1977, Ser. No. 813,306
Int. Cl.[2] H01R *13/38*
U.S. Cl. 339—99 R **20 Claims**



1. Apparatus for electrically interconnecting first conductors with associated second conductors comprising:
first and second mating connectors made of an electrically insulative material, said first connector having provision therein for individually receiving and indexing said first conductors, ends of which are exposed along one side of said first connector;
a plurality of slotted beam contacts;
means, integral with said second connector, for holding said slotted beam contacts in a predetermined spatial relationship wherein said slotted beam contacts are engageable with said first and second conductors, respectively; and
means, integral with said second connector, for encasing said exposed ends of said first conductors to electrically isolate them from one another, said encasing means comprising a generally L-shaped skirt integral with and projecting away from said second connector, said integral skirt being scalloped along the base of said generally L-shape, the

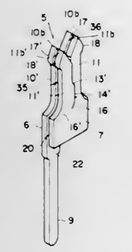
scallops engaging said first conductors and holding them in place between said first and second connectors.

4,118,096

CONNECTING MEANS FOR FLEXIBLE FLAT CABLE CONNECTOR

Toru Takahashi, Yokohama, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1977, Ser. No. 765,001
Claims priority, application Japan, Feb. 14, 1976, 51-14411
Int. Cl.[2] H01R *13/38*
U.S. Cl. 339—99 R **5 Claims**



1. A connecting means for use in an electrical connector for making electrical contact with a multiconductor flexible flat cable comprising:

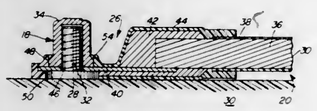
two pairs of contact tines, said tines in each pair joined at the lower ends thereof and separated by a U-shaped crotch adapted for accomodating one conductor of a multiconductor flexible flat cable and a narrow slit extending downwards from said U-shaped crotch and having a uniform width, the bottom of said slit being the bottom of the space between said tines, said U-shaped crotch having a bottom portion adapted for receiving one conductor of a multiconductor flexible flat cable and said slit having a width dimension less than that of the cable for preventing the conductor from entering into said narrow slit, each of said tines lying in different parallel planes offset in a direction perpendicular to the length of said tines whereby said two pairs of contact tines have a partially facing mutually staggered relationship.

4,118,097

BATTERY CABLE TERMINAL ASSEMBLY AND METHOD OF MANUFACTURE

Lawrence T. Budnick, St. Charles, Ill., assignor to Altek Systems, Inc., Aurora, Ill.

Filed Dec. 29, 1976, Ser. No. 755,500
Int. Cl.[2] H01R *11/06*
U.S. Cl. 339—232 **13 Claims**



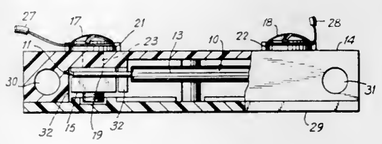
1. A cable terminal assembly for use in establishing a connection between a conductor cable and a battery terminal of the type comprising a metal base and a threaded stud projecting upwardly from the base, the improvement comprising, in combination, a conductive metal terminal plate arranged so that one end thereof underlies an exposed end of said conductor, an aperture formed in the opposite end of said terminal plate to receive said stud member, connecting means connecting said conductor and terminal plate to form both a mechanical and electrical connection therebetween, an insulator jacket substantially covering said connecting means and said terminal plate, said insulator jacket having openings formed therein above and below said aperture in said plate, said openings being larger than said plate aperture to expose a portion of said plate surrounding said aperture, and a raised wall member formed integral with said jacket and surrounding the opening above said plate aperture, said opening below said plate aperture being dimensioned to receive said wall member to permit a plurality of said cable assemblies to be stacked one above the other in closely interfitted relation.

4,118,098

CONNECTOR FOR REED SWITCHES

James L. Swift, Staten Island, N.Y., assignor to American District Telegraph Corporation, Jersey City, N.J.

Filed Jan. 14, 1977, Ser. No. 759,254
Int. Cl.[2] H01R *9/10*
U.S. Cl. 339—263 R **1 Claim**



1. A switch connector comprising:

a non-conducting connector base;

connective means for contacting each electrical lead of a switch and substantially preventing the deformation of said base local to said electrical lead, said connective means being of sufficient hardness to substantially resist deformation local tó said electrical leads and at least a portion of said connective means in contact with each said electrical lead being electrically conductive to provide a terminal for external circuit connection for said lead;

clamping means for engaging said base and connective means to mount said switch on said base and to maintain said connective means in contact with each said electrical lead, said clamping means comprising a pair of threaded members and threaded mates thereof, each of said threaded members extending through channels in said base, through said connective means for each lead and through said mates such that thread advance through said mate provides a clamping force to mount said switch on said base and to maintain said connective means in contact with each said lead;

shoulders formed in said non-conducting connector base and positioned to engage the threaded mates to prevent them from turning during thread advance of the threaded members through the respective mates thereof; and

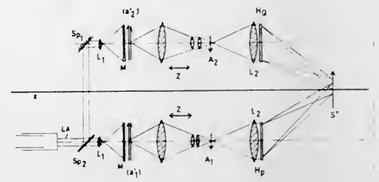
a cover affixable to said connector base for substantially enclosing and protecting the switch, said electrical leads of the switch, said threaded mates and a portion of said threaded members, said cover further acting in combination with said shoulders in the base to hold said threaded mates in alignment with said channels in said base when said threaded members are withdrawn, to facilitate reassembly of the connector.

4,118,099

IMAGE CODING AND DECODING USING COHERENT CODES

Hermann Weiss, Hamburg; Erhard Klotz, Halstenbek, and Ulf Tiemens, Pinneberg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 5, 1976, Ser. No. 711,712
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1975, 2535408; Nov. 29, 1975, 2553869
Int. Cl.[2] G02B *27/00*
U.S. Cl. 350—3.73 **6 Claims**



1. A method of imaging a three-dimensional object with the aid of coding and decoding using coherent point codes, comprising recording the object with a plurality of radiation sources of different orientations on a recording medium, recording the object again separately with a second plurality of differently oriented radiation sources, forming the negatives of the two recorded images, separately combining the positive of each recorded image with the negative of the other image, to form two combined images, multiplying the combined images by means of point holograms formed with the aid of a reference wave and a multiplicity of light sources whose co-ordinates correspond to those of the point images of the two source arrays recorded by a pinhole camera, superimposing the two multiplied images in one plane, and decoding the coded images by changing their scale with the aid of two synchronously controlled zoom lenses whereby the co-ordinates of the point image function of an image of an object layer in the coded images are adapted to the points stored in the two point holograms.

4,118,100

OPTICAL COUPLERS FOR LIGHT EMITTING DIODES AND DETECTORS

James E. Goell, Roanoke, Va., and H. David Brandt, Hamilton, Mass., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

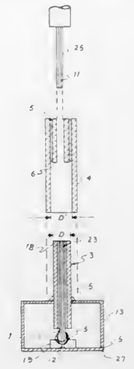
Filed Dec. 10, 1975, Ser. No. 639,544
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.20 **11 Claims**

1. A coupler for connecting an optical fiber to an electro-optical element in an optical communication system, comprising:

a first optical fiber having a first end fixedly coupled to said eléctro-optical element, and having a polished second end;

a first hollow tube for housing said first fiber, said hollow tube having an outer diameter; and

a second hollow tube having a first inner diameter at a first end thereof, said first inner diameter substantially equal to said outer diameter so that said second hollow tube may slidably engage and pass over said first hollow tube, said second hollow tube having a second smaller inner diameter at a second end thereof for slidably receiving said optical fiber and guiding the end of said optical fiber to the polished end of said first optical fiber.

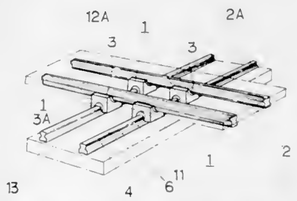


4,118,101

DOUBLE SLIDE WAY BEARING INCLUDING RECIRCULATING BALL BEARINGS

Hiroshi Teramachi, 2-34-9 Higashi-Tamogawa Setagaya-ku, Tokyo, Japan

Filed Sep. 30, 1977, Ser. No. 838,144
Claims priority, application Japan, Sep. 30, 1976, 51/116501
Int. Cl.[2] F16C *29/06*
U.S. Cl. 308—6 C **7 Claims**



1. A double slideway bearing assembly capable of resisting torsional forces incurred in predetermining positioning a relative heavy workpiece at a given point in a plane comprising at least one bearing block, said bearing block having opposed surface portions, a rail groove formed in each of said opposed surface portions, said rail grooves being disposed at an angle to one another, an elongated rail bed disposed in each of said rail grooves whereby said rail beds are disposed at an angle relative to each other, said rail grooves and its associated rail bed having complementary bearing surfaces to define at least a pair of oppositely disposed bearing races, a plurality of ball bearings disposed on each of said opposed bearing races, a retainer means disposed between the surface of said rail grooves and associated rail bed for retaining said ball bearings therebetween, said retaining means and respective rail groove having opposed complementary bearing portions to define a return raceway, said return raceway defining with said first mentioned bearing races a continuous endless raceway for said ball bearing whereby the ball bearing in said bearing races are loaded and the ball bearing in said return raceway are nonloaded whereby said rail beds are rendered respectively moveable relative to said bearing block and to each other.

4,118,102

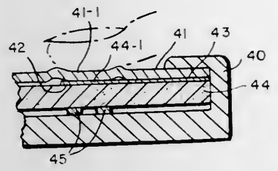
ISOLATED PATH COUPLING SYSTEM

Charles H. Kuist, Newburyport; Vincent Squitieri, Billerica, and Richard E. Seeger, Topsfield, all of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 479,668, Jun. 17, 1974, Pat. No. 4,065,197. This application Apr. 3, 1975, Ser. No. 564,710

Int. Cl.² H01R *13/00*

U.S. Cl. 339—17 F **3 Claims**



1. A coupling system comprising a sheet of plastic material having top and bottom surfaces and having electrically conductive particles homogeneously dispersed therethrough, said sheet having means for providing at least when uncompressed a low electrical through resistance between opposite aligned points on said top and bottom surfaces and a plurality of spaced apart electrically conductive material elements supported by and adhered to and in surface electrical contact with the same surface of said sheet, said conductive elements being spaced apart on said surface of said sheet at least a distance apart equal to about the thickness of the sheet so that they are electrically isolated from each other by an isolation resistance greater than about 1000 ohms and in which the volume percent of conductive particles is between about 20 volume percent to 0.05 volume percent.

4,118,103

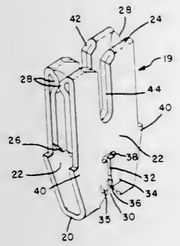
DOUBLE-ENDED CONNECTING DEVICE

James Albert Leidy, Harrisburg, and Gary Douglas Porta, Shiremanstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 15, 1977, Ser. No. 833,783

Int. Cl.² H01R *9/08*

U.S. Cl. 339—98 **9 Claims**



1. A double-ended electrical connecting device which is intended to receive a wire at each end thereof thereby to connect said wires to each other:

said connecting device having a U-shaped cross section comprising a web and sidewalls extending from said web, said sidewalls being reversely folded inwardly towards each other and towards said web whereby each of said sidewalls comprises inner and outer thickness of metal stock extending from the free ends of said sidewalls partially towards said web,

a first wire-receiving opening in said web and a first wire-receiving slot in each of said sidewalls extending from said opening partially into said sidewalls,

each of said sidewalls having a second wire-receiving slot extending inwardly from its free end in both of said metal thicknesses towards said web whereby,

said wires are electrically connected to each other upon relative movement of said wires laterally of their axes into said first and second wire-receiving slots.

4,118,104

SPLIT HOLOGRAM AND METHODS OF MAKING AND USING SAME

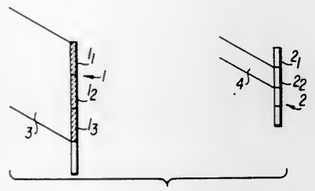
Yasuo Yamada, and Masao Seki, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1976, Ser. No. 659,971

Claims priority, application Japan, Apr. 17, 1975, 50/45813

Int. Cl.² G02B *27/00*

U.S. Cl. 350—3.6 **9 Claims**



1. A holographic recording method for making a split hologram of an illuminated object from a holographic sensitive recording member, said method comprising the steps of

segmenting the illuminated object into a plurality of single object segments,

segmenting the holographic sensitive recording member into a plurality of single recording segments respectively corresponding to said plurality of single object segments, said recording segments being successively disposed on said holographic sensitive recording member from a first one to a last one of said single recording segments,

recording a plurality of different adjacent object segments of said illuminated object onto successive single recording segments of said holographic sensitive recording member where each plurality of different adjacent object segments recorded onto one of said single recording segments, after the first plurality of different adjacent object segments are recorded on said first of said single recording segments, includes the unrecorded object segment adjacent the last recorded plurality of adjacent object segments

whereby said split hologram is formed, the split hologram having a plurality of portions respectively corresponding to said plurality of recording segments of the holographic sensitive recording member.

4,118,105

OPTICAL COUPLING

K. J. Voigt, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschft zur Forderung der Wissenschaften e.V., Fed. Rep. of Germany

Filed Jun. 18, 1976, Ser. No. 697,692

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1975, 7519901[U]

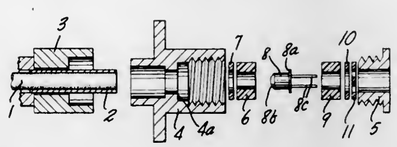
Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.20 **11 Claims**

1. In an optical coupling including a socket, in which an electro-optical element having a housing, a circumferential flange about the housing, a lens in one end of the housing and conductors protruding from the other end of the housing is mounted, the socket having an axial bore therethrough from one end to the other end, an internally threaded portion at one end of the socket and an internal shoulder extending into the bore between the ends of the socket; mounting means cooperating with the threaded portion of the socket for removeably

mounting the electro-optical element in the socket, whereby the electro-optical element may be replaced and optimum focusing and light-transmitting efficiency may be obtained; and a plug, in which a light-conducting element is fastened coaxially, mateably engaging the other end of the socket in such a manner that the electro-optical element and the light-conducting element are optically connected, the improvement comprising:

resilient means located in the bore of the socket between the internal shoulder and the mounting means and sandwiched between the socket and the electro-optical element for insulating and self-centering the electro-optical



element in the socket, the resilient means including a first insulating ring positioned in the bore of the socket at the one end thereof, one end of the first insulating ring abutting the internal shoulder of the socket and the other end of the first insulating ring abutting the side of the circumferential flange of the electro-optical element nearest the one end of the housing of the electro-optical element, and a second insulating ring positioned in the bore of the socket at the one end thereof, one end of the second insulating ring abutting the side of the circumferential flange of the electro-optical element nearest the other end of the housing of the electro-optical element.

4,118,106

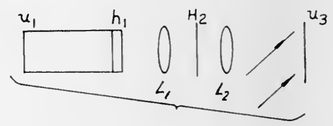
FIBER OPTIC PHASE CORRECTION USING HOLOGRAMS

Emmett N. Leith, Plymouth, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Aug. 2, 1976, Ser. No. 710,581

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.25 **5 Claims**



1. A phase corrected fiber optic bundle comprising:

a fiber optic bundle having an input face and an output face;

a fiber length holographic phase corrector plate positioned at said output face of said fiber optic bundle, said corrector plate consisting of a hologram produced by a recording of the interference pattern between a reference wave with the output from said fiber optic bundle produced by a plane wave input thereto;

a modal holographic phase corrector plate placed at a plane which displays the Fourier transform of a field at the output of said fiber optic bundle, said modal corrector plate comprised of a hologram formed with said fiber length corrector plate in place and consisting of a recording of the interference pattern between the Fourier transform of the output field generated by an input waveform which excites multi-modal propagation through said fiber optic bundle, and a reference wave, at a plane displaying said Fourier transform.

4,118,107

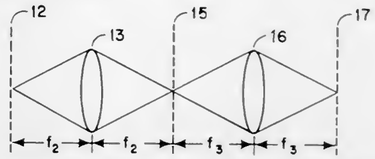
OPTICAL DETECTION OF GEOMETRIC CONFIGURATIONS

George B. Parrent, Jr., Carlisle, and John H. Ward, Billerica, both of Mass., assignors to Technical Operations, Incorporated, Boston, Mass.

Filed Jan. 19, 1966, Ser. No. 521,750

Int. Cl.² G02B *5/18*

U.S. Cl. 350—162 SF **9 Claims**



1. A spatial filter for detecting and locating a selected object configuration from background noise in a recorded image comprising:

(a) an amplitude filter that is a (photographic) negative of the Fourier transform of an object corresponding to said selected object configuration and

(b) a phase filter that provides π phase reversals for alternate amplitude waves of said Fourier transform.

4,118,108

ZOOM OBJECTIVE, ESPECIALLY FOR A PROJECTOR

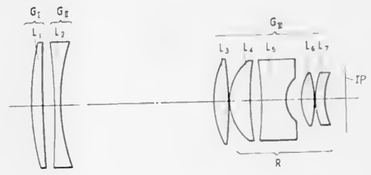
Trude Muszumanski, Vienna, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Aug. 10, 1976, Ser. No. 713,221

Claims priority, application Austria, Aug. 11, 1975, 6228/75

Int. Cl.² G02B *15/14*

U.S. Cl. 350—184 **9 Claims**



1. A varifocal objective consisting of an axially fixed positively refracting front component, an axially shiftable negatively refracting intermediate component, and an axially fixed positively refracting rear component constituted by an object-side first positive lens and an image-side positively refracting multilens group; said multilens group comprising a second positive lens, a third positive lens, and a negative lens between said second and third positive lenses; said front component L_1, said intermediate component L_2, said first positive lens L_3, said second positive lens L_4, said negative lens L_5 and said third positive lens L_6 having radii of curvature r_1–r_{12}, axial thicknesses d_1–d_6, separations s_1–s_5, refractive indices n_d and Abbe numbers ν_d substantially as given in the following table:

					n_d	ν_d
L_1	$r_1 = +3.24$		$d_1 = 0.19$		1.50	67
	$r_2 = +18.05$					
			$s_1 = \begin{cases} 0.14\ f_{min} \\ 2.00\ f_{max} \end{cases}$			
L_2	$r_3 = -12.19$		$d_2 = 0.09$		1.65	56
	$r_4 = +2.37$					
			$s_2 = \begin{cases} 2.22\ f_{min} \\ 0.35\ f_{max} \end{cases}$			
	$r_5 = +1.39$					

-continued

					n_d	ν_d
L_3	$r_6 =$	-6.61	$d_3 =$	0.22	1.60	61
			$s_3 =$	0.01		
L_4	$r_7 =$	$+0.76$	$d_4 =$	0.31	1.64	60
	$r_8 =$	$+3.66$	$s_4 =$	0.12		
L_5	$r_9 =$	-5.00	$d_5 =$	0.38	1.81	25
	$r_{10} =$	$+0.41$	$s_5 =$	0.18		
L_6	$r_{11} =$	$+0.72$	$d_6 =$	0.19	1.79	47
	$r_{12} =$	-1.67				

4,118,109

OPTICAL APPARATUS FOR CONTROLLING THE DIRECTION OF A BEAM OF OPTICAL RADIATION

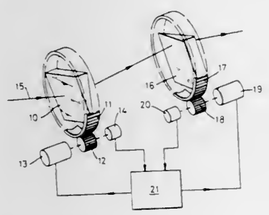
Ian Drummond Crawford, Edinburgh; Henry Bruce Marshall, West Linton, and Robert John Cormack, Edinburgh, all of Scotland, assignors to Ferranti Limited, Hollinwood, England

Filed Jan. 26, 1977, Ser. No. 762,928

Claims priority, application United Kingdom, Jan. 31, 1976, 03904/76

Int. Cl.² G02B *5/04*

U.S. Cl. 350—285 **4 Claims**



1. Optical apparatus for controlling the direction of a beam of optical radiation, which includes first and second prisms, each of small apex angle and mounted for rotation on a common axis in the planes bisecting their apex angles substantially parallel to one another and normal to said common axis, drive means operable to rotate each prism independently about said common axis, pick-off means operable to determine the angular position of each prism relative to a datum direction and to deliver outputs representing the sine and cosine of the angles between the datum direction and the orientation of each prism, and control means responsive to said outputs to derive the changes in said angles necessary to move the output beam to a position determined by azimuth and elevation demand inputs, the changes being defined by the expressions

$$d\alpha = \frac{-(dE\cos\beta + dA\sin\beta)}{\sin(\alpha - \beta)}$$

and

$$d\beta = \frac{(dE\cos\alpha + dA\sin\alpha)}{\sin(\alpha - \beta)}$$

where

α is the angular displacement between the first prism and the datum,

β is the angular displacement between the second prism and the datum, $d\alpha$ and $d\beta$ are the respective changes in the angles α and β,

$$dA = A'/k - (\sin\alpha + \sin\beta),$$

$$dE = E'/k - (\cos\alpha + \cos\beta),$$

A' is the azimuth demand input and E' is the elevation demand input,

and k is the deviation produced by each prism.

4,118,110

PASSIVE ELECTRO-OPTIC DISPLAY CELL AND METHOD FOR MANUFACTURING IT

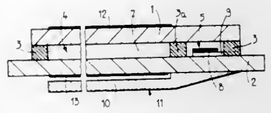
Eric Saurer, Bevaix, and Claude Laesser, La Chaux-de-Fonds, both of Switzerland, assignors to Ebauches S.A., Switzerland

Filed Feb. 7, 1977, Ser. No. 765,954

Claims priority, application Switzerland, Feb. 25, 1976, 2312/76

Int. Cl.² G02F *1/13*

U.S. Cl. 350—334 **10 Claims**



1. An electro-optic display cell comprising, a pair of transparent plates maintained in facing relationship at a distance one with respect to the other, electrodes deposited on the inner-facing faces of said plates, a display medium located between said electrodes, at least a portion of the inner-facing surface of at least one said plate forming the inner surface of a tightly sealed completely enclosed first compartment, an incandescent lamp contained within the first compartment for providing illumination to the cell, the completely enclosed first compartment forming the enclosure of said lamp.

4,118,111

ELECTRO-OPTIC PASSIVE DISPLAY DEVICE AND METHOD FOR ITS MANUFACTURE

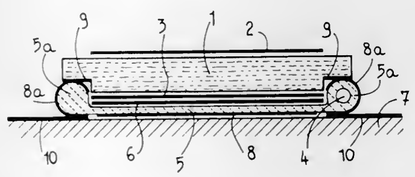
Claude Laesser, La Chaux-de-Fonds, Switzerland, assignor to Ebauches S.A., Switzerland

Filed Mar. 30, 1977, Ser. No. 782,627

Claims priority, application Switzerland, Apr. 2, 1976, 4123/76

Int. Cl.² G02F *1/13*

U.S. Cl. 350—334 **6 Claims**



1. An electro-optic display device comprising, a substrate with an electrically conductive track, a display cell with an electrically conductive track spaced from the substrate track, an electrical control circuit connected to the substrate track, a lighting device positioned behind the display cell, the lighting device including a generally plate-shaped light guiding member with two opposite edges and formed of transparent insulating material, each said opposite edge having a respective thickened portion, one of said thickened portions forming an enclosure for a light source, each said thickened portion being coated with a respective conductive track, said thickened portions being interposed between said cell and said substrate, the conductive tracks of said thickened portions being in electrical contact with the respective conductive tracks of the cell and the substrate to render the same electrically connected.

4,118,112

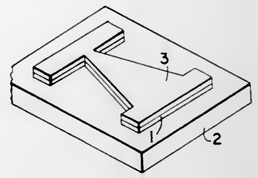
METHOD FOR REDUCING POWER DISSIPATION IN TAPERED RESISTOR DEVICES

David D. Thornburg, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1976, Ser. No. 747,124

Int. Cl.² G02F *1/13*

U.S. Cl. 350—351 **1 Claim**



1. An indicating device comprising:

an electrically resistive element having a varying cross-sectional area along its length; and

a heat sensitive material operativeiy associated with said resistive element, said heat sensitive material having the property that at least one of its physical characteristics can be changed upon heating beyond a threshold temperature, and

said resistive element being of a material having a negative temperature coefficient of resistivity.

4,118,113

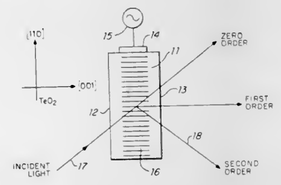
SECOND ORDER BIREFRINGENT ACOUSTO-OPTIC DEVICE

I-Cheng Chang, Sunnyvale, and David L. Hecht, Menlo Park, both of Calif., assignors to Itek Corporation, Lexington, Mass.

Filed Nov. 5, 1976, Ser. No. 739,230

Int. Cl.² G02F *1/33*

U.S. Cl. 350—358 **5 Claims**



1. A second order acousto-optic device comprising a birefringent medium, means for generating and propagating acoustic waves in the said medium for providing nearly degenerate phase matching for first and second diffraction orders over a total scanning frequency bandwidth Δf, and an acoustic transit time τ, across the optical aperture of said medium, means for directing a laser beam through said medium to be diffracted by said acoustic waves, means for selecting the mid-band acoustic frequency of the said acoustic waves to achieve degenerate phase matching for deflecting the said beam into the second order with high efficiency, and means for utilization of said second order beam to provide doubled resolution, $2\Delta f\tau$, while maintaining high diffraction efficiency.

4,118,114

LOW-GLARE OVERHEAD PROJECTOR

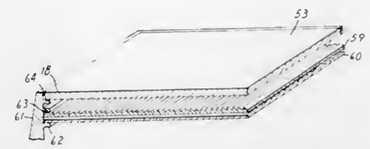
Raymond H. Anderson, Saint Mary's Point, and Gregory S. Lewer, New Scandia Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 499,138, Aug. 21, 1974, abandoned.

This application Jun. 21, 1976, Ser. No. 698,116

Int. Cl.² G03B *21/14*

U.S. Cl. 353—38 **12 Claims**



1. In an improved overhead projector comprising in alignment along an optical axis a source of illumination, a rectangular support for positioning a transparency to intercept the optical axis, an echelon lens structure located between the source and the support for focusing light from the source, and a projection lens for receiving focused light from the echelon lens structure and focusing a planar image of the transparency, the improvement wherein the echelon lens structure comprises a plurality of linear echelon lenses, each of which comprises a planar, optically transparent sheet having ridges and grooves in a first one of first and second major surfaces on opposite sides thereof; the ridges and grooves extending parallel to one another along a linear axis; the linear axes of the lenses being disposed at predetermined angles relative to one another and oriented with each linear axes positioned at an angle to a diagonal of said rectangular support such that uncontrolled light emanating from said echelon lens structure is confined to narrow bands substantially perpendicular to said linear axis and not radiated along said diagonal of said support so uncontrolled light will not emanate from a corner of said support; and at least the linear echelon lens nearest the light source having the first major surface thereof facing away from the source of illumination.

4,118,115

DEVELOPER ROLL DRIVE

Robert E. Hewitt, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 18, 1977, Ser. No. 778,906

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 DD **8 Claims**

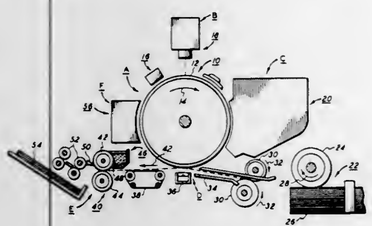
1. An apparatus for rendering visible a latent image arranged to be recorded on a surface with particles, including:

means for holding the particles;

means for securing releasably the particles to said holding means; and

means, having at least a portion thereof mounted internally

of said holding means, for moving said securing means to advance the particles into communication with the latent



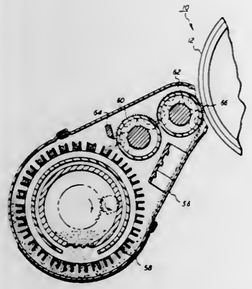
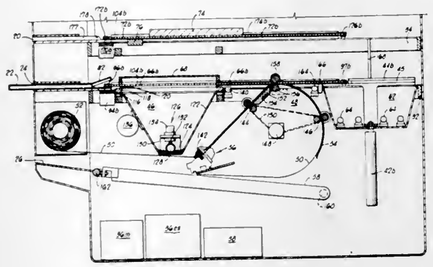


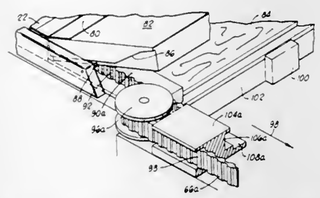
image recorded on the surface depositing at least a portion of the particles thereon.

4,118,116
X-RAY PROCESSING SYSTEM
Paul G. Koontz, Granada Hills; Richard L. Wright, and Robert J. Patterson, both of Canoga Park, all of Calif., assignors to Hipoint Research, Inc., Van Nuys, Calif.
Filed Jun. 20, 1977, Ser. No. 808,033
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—3 R **19 Claims**

1. A system for xeroradiographic processing of an irradiated plate carrying a latent image, comprising:
means receiving said plate for controlled displacement along a predetermined path, said means including first and second parallel conveyor belts having equi-spaced interlocking configurations for seizure of said plate;
means operative at a first position along said path to disperse charged toner particles into contact with said plate;
means supplying a print receiving medium;
means operative at a second position along said path to bring said medium into contact with said plate carrying said toner particles and to separate said medium bearing the image; and
means operative at a third position along said path to uniformly heat said plate and maintain the plate at temperature stabilization until such time as the plate is re-used to form a latent image in response to irradiation, said means including third and fourth parallel conveyor belts having equi-spaced interlocking configurations for seizure of said plate.

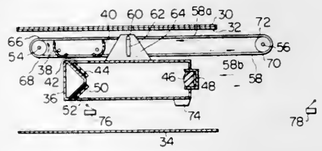
15. Apparatus for xeroradiographic exposure, comprising:
photoreceptor plate means of X-ray radiation responsive material for recording latent image indication, said plate means being of generally rectangular shape;
substrate means formed in juxtaposition to underlie said photoreceptor plate means in predetermined thickness to provide structural rigidity; and
first and second plate rail means each secured to an opposite side of said photoreceptor plate and substrate means, each of said plate rail means being formed along the outermost





surface with a plurality of equi-spaced, toothed formations.

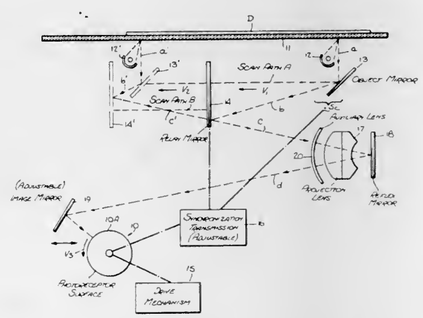
4,118,117
ELECTROPHOTOGRAPHIC OPTICAL SCANNING SYSTEM
Yutaka Koizumi, and Kenji Hashimoto, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 12, 1976, Ser. No. 675,847
Claims priority, application Japan, Apr. 15, 1975, 50-45555
Int. Cl.[2] G03G *15/28*
U.S. Cl. 355—8 **4 Claims**



1. An optical scanning system for electrophotographic copying apparatus having a photoconductive member comprising, in combination:
a fixed platen on which a document is placed for electrostatic reproduction;
optical scanning means having an exposure aperture for optimum image formation, said aperture being a slit which has a fixed predetermined size, said scanning means comprising a light source integral with an imaging means through which a light image is incident on the photoconductive member;
drive means operative to reciprocatingly move the scanning means relative to the fixed platen and the stationary photoconductive member in one direction for one scanning and in the opposite direction for a subsequent scanning, said slit extending in a direction perpendicular to said directions, said drive means comprising a drive motor, a drive pulley connected to the motor, a idler pulley, and a belt trained around the drive and idler pulleys and connected to the scanning meas;
the scanning means comprising a member formed with a slot

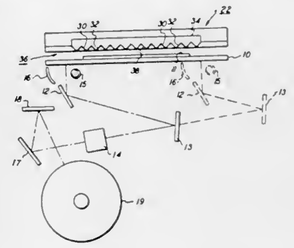
extending perpendicular to the runs of the belt, the scanning means further comprising a pin fixed to the belt and slidably engaging in the slot; and
control means for adjustably varying the speed of the drive motor and adjustably varying the speed of the reciprocative movement of the scanning means to thereby adjust the intensity of the light image incident on the photoconductive member depending on the characteristics of the document for electrostatic reproduction, the control means comprising switch means to initially energize the motor and de-energize the motor when the scanning means reaches first and second predetermined positions after movement in said one direction and said opposite direction, the first and second predetermined positions being such that the pin is just about to move around the drive and idler pulleys respectively.

4,118,118
ELECTROSTATIC COPIER MACHINE WITH SELECTABLE MAGNIFICATION RATIOS
Robert M. Barto, Jr., Wyckoff, N.J., assignor to Universal Photocopy, Inc., Mountainside, N.J.
Filed May 7, 1976, Ser. No. 684,407
Int. Cl.[2] G03G *15/28;* **G03B** *27/52, 27/34*
U.S. Cl. 355—8 **9 Claims**



1. A xerographic copying machine capable of producing copies of an original document in a selectable mangification ratio without shifting the position of the projection lens, the machine comprising:
(A) a scanning assembly constituted by an object mirror and a light source adapted to travel at a uniform velocity with respect to the document to be copied, said document being laid face down on a transparent platen under which said scanning assembly travels;
(B) a relay mirror operatively coupled to the scanning assembly and movable in the same direction but at one-half the velocity thereof, an illuminated image of the document being directed by the object mirror onto the relay mirror;
(C) a stationary projection lens behind which is a reflex mirror at a fixed position, the relay mirror being oriented to direct the image through said lens onto the reflex mirror;
(D) a rotating drum having a photoreceptor surface, said drum rotating at a given peripheral speed;
(E) an image mirror associated with the drum and the reflex mirrpr, whereby the image on said reflex mirror is directed through said projection lens onto said image mirror and the image is cast thereby on the photoreceptor surface, and means to shift the position of said image mirror to a point providing a focal length appropriate to the selected magnification ratio, whereby the optical distance in the folded path extending between the document and the fixed reflex mirror remains constant regardless of changes in magnification ratio, and to impart an angle to said image mirror at said point to cause the image cast thereby onto said photoreceptor surface to be along a path normal to said surface, whereas the optical distance in the folded path between the fixed reflex mirror and the photoreceptor surface changes with changes in magnification ratio;
(G) retractable means to cover said projection lens with at least one auxiliary lens to change the focal length of the optics without displacing the projection lens; and
(H) an adjustable synchronizing transmission coupling said drum to said scanning assembly to change the scanning velocity of the assembly relative to the peripheral velocity of the drum in accordance with the selected magnification ratio.

4,118,119
FACETTED EDGE FADEOUT REFLECTOR
Dominick J. Maiorano, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 2, 1976, Ser. No. 719,794
Int. Cl.[2] G03G *15/00;* **G03B** *27/54*
U.S. Cl. 355—11 **7 Claims**

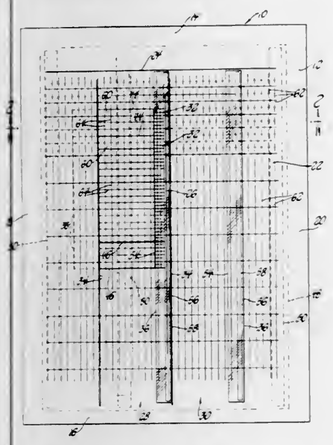


1. Exposure apparatus for directing a light pattern, reflected from a document retained in a stationary position by a transparent support, along a predetermined path terminating at the surface of a photoreceptor whereby the light pattern is effective to discharge a uniformly charged portion of the photoreceptor in accordance with the light pattern thereby leaving a latent electrostatic image thereon, said apparatus comprising:
a light source for illuminating said document, through said transparent support, and also illuminating portions of said support extending beyond said document; and
specular reflector means disposed adjacent the side of said document opposite said light source for reflecting the illumination from said light source extending beyond said document along said predetermined path whereby said photoreceptor is discharged in areas adjacent the area on said photoreceptor struck by said light pattern, said specular reflector means comprising pairs of planar reflecting surfaces each surface being disposed at a predetermined angle relative to said transparent support and one surface of one pair being parallel to each corresponding surface of the other pairs and the other surface of said one pair being parallel to each corresponding surface of said other pairs.

4,118,120
PAGE MODEL FOR PRINTING
Frederick G. Ruffner, 611 University Pl., Grosse Pointe, Mich. 48230, and Frank E. Bair, Livonia, Mich., assignors to Frederick G. Ruffner, Grosse Point, Mich.
Filed May 31, 1977, Ser. No. 802,208
Int. Cl.[2] G03B *27/62*
U.S. Cl. 355—75 **22 Claims**

1. A page model for use in printing comprising: a mounting sheet having front and back sides with at least one vertical column on the front side thereof; a plurality of rectangular cards having front sides for receiving printed matter thereon;

each card having opposite lateral edges; and first and second vertically extending card retainers spaced laterally from each other on the mounting sheet at opposite lateral sides of the



column so as to slidably support the opposite lateral card edges so each card can be positioned vertically just below the printed matter on the next higher card.

4,118,121

CONTINUOUS MICROFILM CAMERA

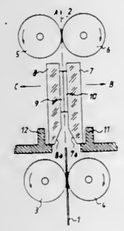
Traugott Liermann, Unterhaching; and Karl-Heinz Dietrich, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jul. 21, 1977, Ser. No. 817,729

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1976, 2632791

Int. Cl.² G03B *27/62*

U.S. Cl. 355—75 **8 Claims**



1. A continuous microfilm camera comprising:

(a) a transport path for feeding original sheets through a microfilming area;

(b) two parallel opposite guide plates operatively mounted within the microfilming area and forming a transit slit therebetween, said slit being disposed in the transport path and having variable width, and at least one plate being transparent and at least one plate being movable with respect to the other plate; and magnetic attraction means attached to at least one of the plates for providing an attractive force decreasing in strength with increasing distance and directed toward the other guide plate.

4,118,122

METHOD OF RENDERING OBJECTS UNCOPYABLE BY PHOTOCOPY PROCESSES

James D. Rees, Pittsford, and Richard F. Lehman, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 7, 1977, Ser. No. 766,465

Int. Cl.² G03B *27/32;* **B42D** *15/00*

U.S. Cl. 355—77 **6 Claims**

1. A method of masking at least a portion of an object document to render information thereon uncopyable by a photocopying system having a spectral response in a first color, by providing for said information a background of a second color complementary to said first color by the superimposition of a color film thus to eliminate object contrast and to black out said information at the image receptor of said photocopying system.

4,118,123

EDITORS FOR MICROFICHE CAMERAS

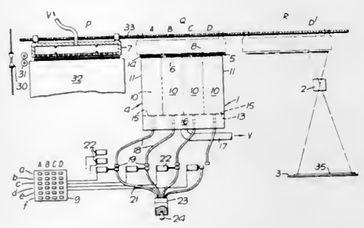
Harry Arthur Hele Spence-Bate, 1 Cheam Place, Morley, Australia (6062), and Michael Edwin Wilson, Perth, Australia, assignors to Harry Arthur Hele Spence-Bate, Morley, Australia

Filed Jun. 21, 1977, Ser. No. 808,543

Claims priority, application United Kingdom, Jun. 23, 1976, 26155/76; Australia, Jul. 2, 1976, 6518/76

Int. Cl.² G03B *27/00, 27/54, 27/62, 27/02*

U.S. Cl. 355—78 **10 Claims**



1. A microfiche editing device for copying images from one microfiche to another comprising a plurality of cells, each cell corresponding to a frame of a first microfiche to be held on the device and each having a rectilinear cross section substantially the same as each said frame, an array of illuminating means, one for each cell, means for holding the first microfiche on the device, means for holding and positioning a second, at least partly unexposed, microfiche in alignment with the first microfiche, light switching means associated with each of said illuminating means and a control means controlling each light switching means to project light through any one or more desired frames on the first microfiche onto an unexposed frame or frames on the second, microfiche, whereby images on several frames on the first microfiche can be simultaneously copied onto the second microfiche.

4,118,124

HOLOGRAPHIC SHEARING INTERFEROMETER

Kiyofumi Matsuda, Musashi-Murayama, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 23, 1976, Ser. No. 744,235

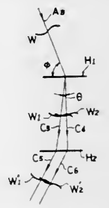
Claims priority, application Japan, Nov. 26, 1975, 50-141506

Int. Cl.² G01B *9/02*

U.S. Cl. 356—107 **8 Claims**

1. A method for the holographic shearing interferometry, which comprises producing a first hologram using an interference fringe formed between a first reference light beam and two light beams having slightly different angles of incidence, producing a second hologram using an interference fringe

formed between a second reference light beam and the light beams produced by an illuminating light beam projected on said first hologram from the direction of said first reference light beam, disposing the first hologram and the second hologram at a prescribed distance from each other, causing a light beam from an object to irradiate said first hologram from the



direction of said first reference light beam and projecting the light beams produced by said first hologram onto the second hologram for thereby causing the second hologram to reconstruct light beams in the direction of said second reference light beam, whereby the sheared interference fringe of the object is obtained in last reconstructed light beams.

4,118,125

POLARIMETERS

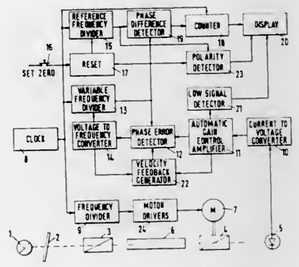
Rolf Karl Gundermann, London, England, assignor to Optical Activity Ltd., London, England

Filed Dec. 10, 1976, Ser. No. 749,475

Claims priority, application United Kingdom, Dec. 11, 1975, 50926/75

Int. Cl.² G01N *21/40, 4/04*

U.S. Cl. 356—116 **5 Claims**



1. In a polarimeter including:

a polariser having a fixed orientation; an analyser mounted for rotation about its axis; a motor for rotating said analyser; a clock for providing digital clock pulses at a predetermined frequency; means for driving said motor in synchronism with said digital clock pulses so that rotation of said analyser is synchronized with said clock pulses; a light detector responsive to the intensity of light transmitted through said polariser and said analyser and providing an output signal having a given frequency; and means for determining the phase of said light detector output signal with respect to the phase of a digital signal of said given frequency derived from said clock pulses, whereby the optical activity of a sample disposed between said polarimeter and said analyser is determined;

the improvement comprising:

said motor being a stepper motor, said driving means driving said stepper motor in synchronism with said digital clock pulses so that each step of said motor corresponds to a predetermined number of clock pulses; and said phase determining means comprising means for deriving a first digital signal of said given frequency from said clock pulses, means for maintaining said first digital signal in a fixed phase relationship with respect to said light detector output signal, means for deriving a second digital signal of said given frequency from said clock pulses, and means for comparing the phase of said first and second digital signals.

4,118,126

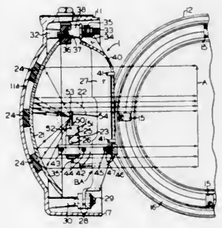
METHOD OF LOCATING A LIGHT AT THE FOCAL POINT OF A CONCAVE MIRROR OF A SIGNAL LAMP UNIT

Peter M. Noble, Valencia, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Feb. 22, 1977, Ser. No. 770,643

Int. Cl.² G01J *1/00*

U.S. Cl. 356—123 **10 Claims**



1. A method of setting the filament of a lamp at the focal point of a smooth concave reflector of a signal light comprising the steps of:

(a) placing a sighting device having a reticle into the socket of the lamp,

(b) positioning the socket and said sighting device until an image comes into focus on said reticle from the smooth surface reflector, and

(c) replacing said sighting device with a lamp.

4,118,127

METHOD OF DETECTING FAULTS IN MOVING WEBS OF MATERIALS

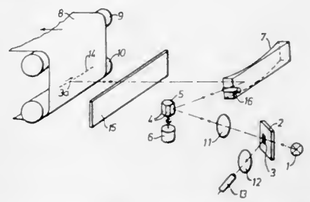
Hans-Joachim Klein, Wuppertal; Manfred Rupprecht; Heinz Wonneberg, both of Leverkusen; Julius Geiger, Odenthal-Globusch, and Günter Masa, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 14, 1977, Ser. No. 777,334

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1976, 2611539

Int. Cl.² G01N *21/32*

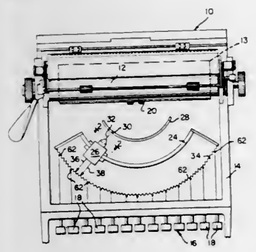
U.S. Cl. 356—200 **14 Claims**



1. A method for the detection, identification and localisation of longitudinally orientated faults in a moving web in which the web is optically scanned line by line transversely to its direction of movement by a stationary scanning device and read off in reflection, the length of scanning line of the scanning device being greater than or equal to the width of the said web, wherein at least one time mark is formed electronically within the scanning line, which mark, starting from one end of

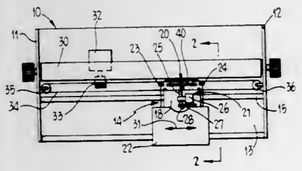
the scanning range, is shifted forwards equal steps with each scanning movement until the other end of the scanning range is reached, and the instantaneous value of reflected scanning signal appearing at the time mark is summed, over a scanning cycle consisting of a plurality of scanning movements and a fault is indicated only when there is a deviation from a predetermined value.

4,118,128
OPTICAL TYPEWRITER
Louis Van Den Essen, 131 E. Riviera Dr., Lindenhurst, N.Y. 11757
Filed Sep. 8, 1975, Ser. No. 611,494
Int. Cl.[2] B41J *3/20*
U.S. Cl. 400—118 **1 Claim**



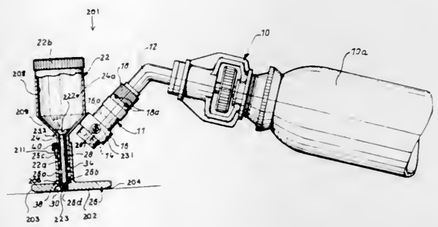
1. A writing machine comprising a translatable paper carriage for holding a light sensitive paper; a fixedly positioned sight alongside said carriage for defining a portion of said paper to be written on; an elongated track directed along a first arc swung about said sight; an elongated template lying along a second arc located between said sight and said track, said second arc also being swung about said sight; said template having a plurality of perforate indicia thereon; said indicia being spaced apart along the length of said template; a directional light source mounted for movement along said track; said light source being aimed toward said sight for directing light through a selected one of said indicia and onto said paper; there being a correspondence between the selected indicia and the position of said light source along said track; a keyboard for selecting which of said indicia is to be written on said paper; and motor means responsive to said keyboard for positioning said light source along said track.

4,118,129
ROTARY WHEEL PRINTING SYSTEM
Willy J. Grundherr, Sunnyvalle, Calif., assignor to Qume Corporation, Hayward, Calif.
Continuation of Ser. No. 485,055, Jul. 1, 1974, abandoned. This application Jun. 28, 1976, Ser. No. 700,654
Int. Cl.[2] B41J *1/30*
U.S. Cl. 400—144.2 **14 Claims**



1. For use in a rotary wheel printing system having a translatable carriage; means for translating said carriage along a print line, a rotary print wheel mounted on said carriage, said rotary print wheel having a plurality of individual print characters distributed about the radial center thereof; means for rotating said print wheel; means for impressing said print characters against a print member; first position indicating means for generating signals representative of the instantaneous position of said print wheel, said first position indicating means including an encoder disc mounted for rotation with said print wheel and having a plurality of alternately arranged opaque and translucent portions arranged in a substantially circular timing track about the radial center of said disc; and means responsive to said print wheel position signals for actuating said imprinting means; the improvement wherein said first position indicating means includes a first light source mounted adjacent a first surface of said disc, a plurality of light sensitive devices mounted adjacent the opposite surface of said disc and responsive to the angular displacement of said opaque and translucent timing track portions when said print wheel is rotated for generating a pair of position trains having a substantially constant phase difference, and first feedback means for maintaining the intensity of said light source substantially constant, said first feedback means including power means for applying electrical power to said light source; first light sensitive means disposed adjacent said opposite side of said disc at a position to continuously intercept light radiation emitted by said first light source for generating an electrical signal representative of the intensity of said light radiation adjacent said light sensitive devices; comparison means for comparing said intensity signal with a standard signal representative of a preestablished desired light intensity; means for generating a correction signal when said intensity signal differs from said standard signal; and means for coupling said correction signal to said power means to vary the magnitude of said light intensity to re-establish said desired light intensity.

4,118,130
UNITARY ARRANGEMENT FOR COATING SKIS AND OTHER PLANAR SURFACES
Dietmar Kasubke, and Wilhelm Trefz, both of Liepziger Str. 9, D-7157 Murrhardt, Fed. Rep. of Germany
Filed Feb. 22, 1977, Ser. No. 770,813
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 2607063
Int. Cl.[2] B05C *17/00*
U.S. Cl. 401—2 **10 Claims**

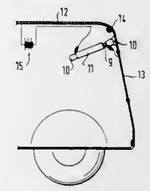


1. A portable arrangement for coating skis with a heat-plasticizable substance, the arrangement comprising, in combination,

application means including a container made out of heat-conductive material for storing the heat-plasticizable material, and a plasticizing member having an application plate with a substantially planar surface disposed underneath said plate, a conduit extending upwardly from said planar surface and said plate to said container, said planar surface having a first aperture in communication with said conduit and said plate, said conduit being made of heat-conducting material and being adapted to conduct heat-plasticizable material from said container to said first aperture; normally closed valve means operatively mounted in said conduit; and heating means operatively mounted on said container and having an outlet nozzle substantially directed toward said conduit and said plate for directing a flame to selectively plasticize said plasticizable material said plate extending laterally from said aperture and said planar surface of said plate being adapted to be passed over the underside of a ski, the improvement comprising,

that said plate and conduit forms a manual applicating and coating means which is adapted to be heated by said heating means to a temperature which is higher than the temperature to which said container is heated.

4,118,131
PNEUMATIC SPRING
Klaus Schnitzius, Rheinbrohl, Fed. Rep. of Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany
Filed Apr. 1, 1976, Ser. No. 672,654
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1975, 7511515[U]
Int. Cl.[2] F16C *11/06*
U.S. Cl. 403—24 **12 Claims**



8. In a pneumatic spring arrangement including a spring cylinder element having an axis and formed with a cavity therein; a piston assembly movably received in said cavity and including a spring piston rod element axially projecting from said cavity; and fastening means for fastening each of said spring elements to an associated supporting element, one of said fastening means including a ball-and-socket joint having a ball part and a socket part, one of said parts being attached to the associated spring element, the other part being adapted to be fastened to the associated supporting element, the improvement in said ball-and-socket joint which comprises:

(a) said socket part including a mounting portion and a body portion;

(b) said body portion being formed with a cavity and including barb means permitting insertion of said ball part into said cavity by applied pressure of predetermined magnitude,

(c) said barb means including a lug portion of said body portion flexibly movable inward and outward of said cavity;

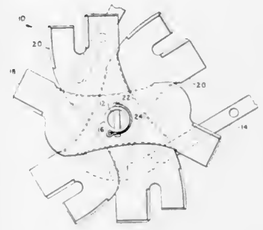
(d) said ball part having a spherically arcuate head portion releasably received in said cavity and a neck portion of reduced diameter partly received in said cavity and projecting from said head portion outward of said cavity,

(e) said socket part being formed with a recess contiguously adjacent to said lug portion and partly separating said mounting portion from said body portion;

(f) a backing member releasably received in said recess and holding said lug portion engaged with said neck portion; and

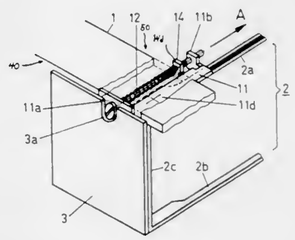
(g) attaching means on said mounting portion for attaching the amounting portion to one of said elements.

4,118,132
ROTARY TILLER TINE ASSEMBLY WIRE CLIP
Dale Rudolph Dobberpuhl, Horicon, Wis., assignor to Deere & Company, Moline, Ill.
Filed Feb. 21, 1978, Ser. No. 881,406
Int. Cl.[2] F16B *19/00*
U.S. Cl. 403—24 **2 Claims**



1. In a rotary tiller rotor including a shaft, a tine structure including a cylindrical hub received on the shaft, the hub having a hole extending transversely therethrough and aligned with a hole provided in the shaft, a cylindrical pin received in the aligned holes of the hub and shaft and a spring wire clip, operative for holding the pin in place, being received in a transverse hole in said pin adjacent an end thereof, the improvement comprising: said spring wire clip including an intermediate section disposed parallel to said shaft and received in the transverse hole in the pin; said intermediate section having a first end joined to an end section of the clip which extends perpendicular to the intermediate section and a second end joined to an arcuate section, which embraces the hub throughout an arc of at least 180°.

4,118,133
DEVICE FOR LOCKING ELECTRICAL UNITS
Theo Küpfer, Lupfig, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland
Filed Mar. 21, 1977, Ser. No. 779,789
Claims priority, application Switzerland, Apr. 28, 1976, 5315/76
Int. Cl.[2] F16B *3/06*
U.S. Cl. 403—24 **11 Claims**



1. A locking device arranged on an electrical unit slidably received in a predetermined direction of insertion in a receptacle of a rack incorporating at least one rack member, to retain the electrical unit in the rack, said locking device comprising:

two stop members spaced apart in the direction of insertion of the electrical unit;

said two stop members defining front and rear spaced stop members straddling the rack member when locking the electrical unit in the receptacle of the rack;

manually actuatable drive means cooperating with said two stop members for displacing said two stop members relative to one another;

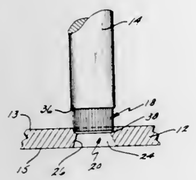
an adjusting member for adjusting said rear stop member between an insertion position within the free cross-section of the rack receptacle and a locking position in which a portion thereof extends beyond the free cross-section of the redeptacle to engage the rack member of the rack.

4,118,134

FASTENER JOINT AND METHOD THEREOF

Orin C. Mansel, Grand Rapids, Mich., assignor to Lescoa, Inc., Grand Rapids, Mich.

Filed Apr. 8, 1974, Ser. No. 458,990
Int. Cl.² F16B *11/00*
U.S. Cl. 403—282 **8 Claims**



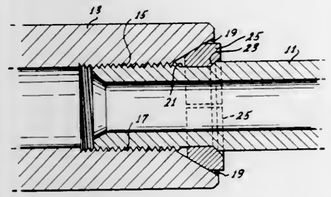
1. In a vehicular windshield wiper crank assembly including a crank means joined to one end of a pivot shaft, said crank means and said pivot shaft being formed of material of similar hardness, the improvement comprising: said crank means having an opening formed therethrough with a reduced diameter portion and an enlarged diameter portion, said one end of said pivot shaft having a knurled portion, the root diameter of said knurl corresponding generally to said reduced diameter portion of said opening formed through said crank means, said knurled portion being driven into said opening initially through said reduced diameter portion causing deformation of at least one of said knurled portion or the material surrounding said reduced diameter portion to cause material to flow into said enlarged diameter portion to form a positive joint.

4,118,135

PRE-STRESSED ROD JOINT

Roy F. Cooper, Downey, Calif., assignor to Sargent Industries, Huntington Park, Calif.

Continuation of Ser. No. 649,978, Jan. 19, 1976. This application May 2, 1977, Ser. No. 793,090
Int. Cl.² B25G *3/02*
U.S. Cl. 403—361 **16 Claims**



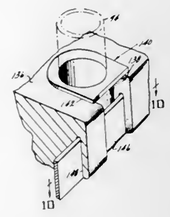
1. In combination in a rod joint pre-stressed to eliminate fatigue due to cyclic stress imposed upon the rod joint,
a first rod member having
an external surface and
a threaded bore and
a seating surface disposed at one end of said bore and extending outwardly from the threaded bore,
a second rod member having
a threaded external surface disposed in cooperative relationship with the threads in first rod member and having a second surface displaced from the threaded external surface and having external dimensions corresponding to those of the threaded external surface and having a seating surface disposed at one end of the second rod member between the threaded external surface and the second surface and in displaced relationship to the seating surface on the first rod member, the seating surface on the second rod member being depressd relative to the threads on the threaded external surface and relative to the second surface and being disposed between the threaded external surface and the second surface and extending to a level no greater than the threaded external surface, and
ring means seated between the seating surfaces on the first and second rod members and disposed relative to the seating surfaces to exert against the seating surfaces oppositely directed forces which pre-stress the threads of the first and second rod members with a force which is greater than the maximum cyclic stress imposed upon said rod members.

4,118,136

APPARATUS FOR ATTACHING TUBING TO A ROTATING DISK

Robert J. Corsmeier, and Richard N. Brown, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 3, 1977, Ser. No. 803,163
Int. Cl.² F01D *5/18*
U.S. Cl. 403—386 **9 Claims**



9. An attachment between a rotating member and a tube comprising:
a ring extending from said member and about the rotational axis thereof, said ring having a contoured slot extending from one edge thereof toward said member and a groove intersecting said contoured slot;
a wear collar placed about the tube, the collar characterized as being generally shaped to the contour of, and received by, said groove and having a pair of laterally extending lips receiving said ring therebetween; and
a locking ring inserted within said groove.

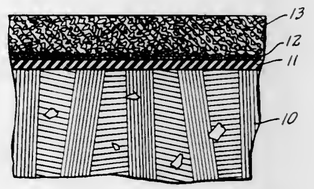
4,118,137

PAVEMENT AND PROCESS OF PROVIDING THE SAME

Bobby D. LaGrone, and Bobby J. Huff, both of Vicksburg, Miss., assignors to U.S. Rubber Reclaiming Co., Inc., Vicksburg, Miss.

Filed Dec. 6, 1976, Ser. No. 747,528
Int. Cl.² E01C *7/36*
U.S. Cl. 404—76 **8 Claims**

1. A process of surfacing a dirt roadway which comprises the steps of:
loosening the soil of the roadway and mixing it with portland cement and water and then compacting and setting the portland-cement-soil mixture to provide a portland-cement-stabilized soil roadbase,
mixing 3–30wt% of particulate rubber with molten asphalt at a temperature of 200° to 450° F and spreading the resulting reaction product in fluent form over said portland-cement-stabilized solid roadbase at a rate of 0.3–1.0 gal. per square yard to form in situ an elastic membrane-like layer overlying said roadbase, and having an elongation in excess of 100% at 40° F without breaking and a recovery in excess of 75% after elongation to 150% of its original length under tensile stress at 77° F,



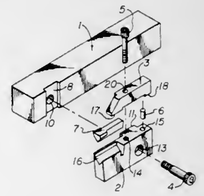
spreading crushed mineral aggregate over said rubber-asphalt layer and rolling to form a protective layer, and
applying over said protective layer an outer course of asphalt concrete having a thickness of at least 2 inches.

4,118,138

CUTTING TOOL

Victor C. Takacs, and Joseph E. Takacs, both of Houston, Tex., assignors to Triangle Grinding, Inc., Houston, Tex.

Filed Jun. 13, 1977, Ser. No. 806,146
Int. Cl.² B26D *1/12*
U.S. Cl. 407—112 **18 Claims**



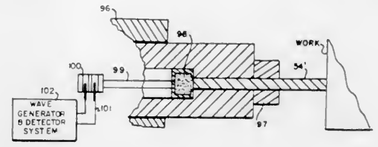
1. A cutting tool comprising:
an elongated bar member;
an anvil member removably fastened to one end of said bar member and having an elongated recess in which a cutting insert may be received; and
a clamp member removably fastened to said anvil member for rigidly clamping said cutting insert in said elongated recess;
said bar member being provided with a bottom threaded hole having a smooth counterbore of larger diameter, said anvil member being provided with a smooth bore hole of substantially the same diameter of said counterbore;
said anvil member being at least partially fastened to said bar member by a screw member having a threaded end for engagement with the threaded portion of said threaded hole and a smooth cylindrical portion for disposition within said smooth counterbore and said anvil member smooth bore hole.

4,118,139

MACHINE TOOL AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 479,515, Jun. 14, 1974, Pat. No. 3,963,364, which is a continuation-in-part of Ser. No. 182,501, Sep. 21, 1971, Pat. No. 3,817,647, which is a continuation-in-part of Ser. No. 775,433, Nov. 13, 1968, Pat. No. 3,605,909, which is a continuation-in-part of Ser. No. 518,616, Jan. 4, 1966, Pat. No. 3,476,481, which is a continuation-in-part of Ser. No. 294,076, Jul. 10, 1963, Pat. No. 3,226,833, which is a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned. This application Jun. 7, 1976, Ser. No. 693,416
Int. Cl.² B23B *39/04*
U.S. Cl. 408—12 **8 Claims**



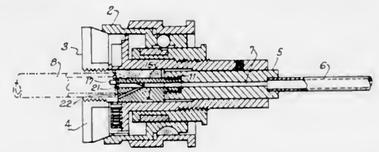
1. A machine tool comprising:
a tool support,
a tool head supported by said tool support,
rotary cutting tool means supported for rotation on said tool head,
power operated means for rotating said cutting tool means to permit said tool means to perform a cutting operation on work,
electromagnetic radiation generating means supported by said tool and operable to generate and direct radiation against work operated on by said cutting tool means as said cutting tool means operates to cooperate therewith in improving the cutting action of said cutting tool means.

4,118,140

COMBINATION DIE HEAD AND CHAMFERING TOOL

Eddie J. Hamilton, c/o A. M. S. Inc., 1246 Vernon Way, El Cajon, Calif. 92020

Filed Jul. 11, 1977, Ser. No. 814,526
Int. Cl.² B23B *27/10, 51/00;* B23G *1/26*
U.S. Cl. 408—59 **4 Claims**



1. In combination with a rotary collapsing die head wherein threading chasers can be withdrawn from their operating position to a non-threading position while the head continue its rotary motion , a device for chamfering the end of the part being worked upon which comprises:
a cylindrical block coaxially inserted in the hub of the die head;
a cutting edge associated with the outer face of the cylindrical block;
means for fastening the cylindrical block into the hub of the die head;
a rotating tubular shank connected to a source of pressurized fluid driving the die head; at least one channel within the cylindrical block between the drive shank and said outer face; and on said outer face, a helicoidal section ahead of the cutting edge and raising toward said cutting edge.

4,118,141

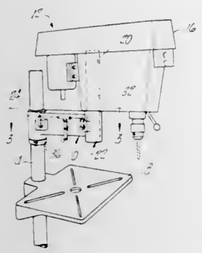
ATTACHMENT FOR A ROTARY DRIVE MACHINE

Daniel M. Spohn, Jr., 8451 Miller Rd., Swartz Creek, Mich. 48473

Continuation-in-part of Ser. No. 671,597, Mar. 29, 1976, abandoned. This application Nov. 24, 1976, Ser. No. 744,628

Int. Cl.[2] **B23B** *47/00, 39/12*

U.S. Cl. 408—90 **4 Claims**



1. An attachment for a rotary drive machine of the type having a cylindrical support columm, a work support member and first means for rotatably mounting said work support member to said support column at a point spaced downwardly from the upper end thereof, and a power tool means and a second means for rotatably mounting said power tool means to the upper end of the support column whereby said support column supports said power tool means above the work support member, said attachment comprising a horizontally elongated arm member, a first tubular portion secured at one longitudinal end of said arm member and a second tubular member being secured to the other longitudinal end of said arm member, each tubular member including an internal bore formed therein of the same diameter as the diameter of said support column, the axes of said internal bores being spaced and parallel to each other and substantially perpendicular to the longitudinal axis of said arm member, wherein said internal bore in said first tubular member is a throughbore adapted to be slidably received over said support column, and means for axially adjustably locking said first tubular member to said support column, a cylindrical member of substantially the same diameter as said support column and means for rotatably mounting said cylindrical member in the internal bore of the second tubular member so that said cylindrical member extends vertically upwardly from said second tubular member whereby the upwardly extending portion of the cylindrical member is adapted to supportingly engage and cooperate with either of said first and second rotatable mounting means so that the attachment can alternatively supportingly connect either the work support member or the power tool means to the support column.

4,118,142

DUAL-PUMP COUPLING

William A. Hahs, Hwy. 61, South, Sikeston, Mo. 63801

Filed Aug. 15, 1977, Ser. No. 824,824

Int. Cl.[2] **F04D** *25/16;* **F01D** *13/00*

U.S. Cl. 415—69 **8 Claims**

1. An adjustable drive coupling between a deep well propeller pump and a booster pump assembly, comprising

(a) a housing adapted to be carried on the exposed end of a well casing,

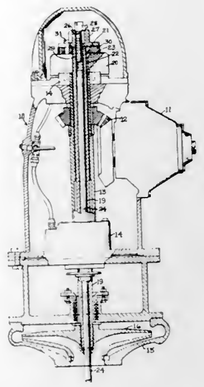
(b) a booster pump within said housing providing a hollow driven shaft having an impeller thereon within a volute casing having open communication with the well casing,

(c) a driving power source assembly within said housing,

(d) means connecting said driving power source to said hollow driven shaft for operating said booster pump,

(e) means for vertically adjusting said hollow drive shaft and said impeller of said booster pump within said housing and said volute casing relative to said driving power source assembly,

(f) a propeller pump shaft extending coaxially of said hollow drive shaft of said booster pump and projecting from said housing into the well casing,



(g) means connecting said propeller pump shaft to said hollow driven shaft of said booster pump, whereby said propeller pump is simultaneously operated therewith by said driving power source assembly, and

(h) means for independently vertically adjusting said propeller pump shaft coaxially of said hollow drive shaft of said booster pump.

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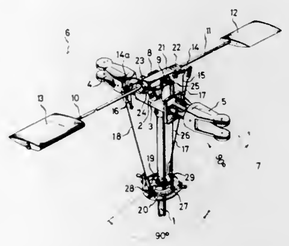
STABILIZING AND CONTROL DEVICE FOR TWO-BLADED HELICOPTER ROTORS

Franz Kavan, Lindenaststrasse 56, D-8500 Nuremberg, Germany

Filed Mar. 29, 1977, Ser. No. 782,337

Int. Cl.[2] **B64C** *27/36, 27/74*

U.S. Cl. 416—18 **5 Claims**



1. A stabilizing and control device in combination with a two-bladed helicopter rotor connected to and driven by a rotor shaft comprising;

a swashplate assembly connected around said rotor shaft;

a tiltable bar;

said rotor blades having an axis intersecting the axis of said rotor shaft at right angles;

means pivotally connecting said tiltable bar to said rotor shaft on a pivot axis that intersects the axis of said rotor shaft and is disposed parallel to the axis of said rotor blades;

a pair of winglets connected on the opposite ends of said tiltable bar;

said tiltable bar connected for rotation about its longitudinal axis relative to said means and at right angles to the axis of said rotor blades;

a pair of mixing lever bars connected to said means and extending outwardly in opposite directions on opposite sides of the axis of said rotor shaft and parallel to said tiltable bar;

first control linkage means connected between said pair of mixing lever bars and said swashplate assembly;

connecting portions mounting said rotor blades for pitch adjustment about the axis of said rotor blades;

second control linkage means connected between said pair of mixing lever bars and said connecting portions for adjusting the pitch of said rotor blades;

an arm connected to rotate said tiltable bar about its longitudinal axis, and having a connecting portion;

and control rod means connected between said connecting portion and said swashplate assembly for cyclical adjustment of the pitch of said winglets.

4,118,144

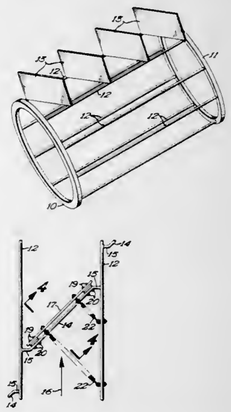
SUPPORT MEANS FOR A WINDMILL

Lawrence L. Kelley, 526 Lincoln Ave., Titusville, Fla. 32780

Filed Apr. 16, 1976, Ser. No. 677,812

Int. Cl.[2] **F01D** *7/00;* **F03D** *1/04, 7/04, 11/04*

U.S. Cl. 416—41 **22 Claims**



1. Apparatus for deriving a rotational motion from air currents which comprises:

first annular means;

second annular means spaced from said first annular means;

strut means extending between said first and second annular means;

blade assembly means supported by said strut means and comprising cross-beam means extending between adjacent ones of said strut means and impeller means secured to said cross-beam means;

first support means including means engaging said first annular means while allowing rotation thereof; and

second support means independent of said first support means and including means engaging said second annular means while allowing rotation thereof.

4,118,145

WATER-COOLED TURBINE BLADE

William F. Stahl, Media, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

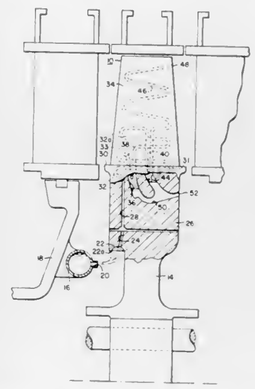
Filed Mar. 2, 1977, Ser. No. 773,461

Int. Cl.[2] **F01D** *5/18*

U.S. Cl. 416—96 R **5 Claims**

1. An improved fluid cooled gas turbine blade having a coolant delivery passage through the blade root in flow communication with coolant flow channels traversing the airfoil portion of the blade subjacent the surface thereof wherein the improvement comprises:

a plurality of enlarged chambers in the blade serially connected by coolant flow channels with each such chamber having at least one coolant channel discharging coolant thereinto and at least another coolant channel removing coolant therefrom, said chamber providing a coolant reservoir for separation of the coolant according to its density to permit vaporization therein of at least a portion of the coolant;



vapor exhaust path means extending from each chamber to a downstream facing blade surface for discharging the vapor generated in each chamber whereby said another coolant channel receives liquid coolant from said chamber substantially free of vapor to optimize heat transfer from the blade to the coolant therein; and,

final coolant passage connecting the last of said chambers in said series to an exhaust port generally adjacent the blade tip.

4,118,146

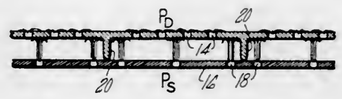
COOLABLE WALL

James Albert Dierberger, Hebron, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 11, 1976, Ser. No. 713,739

Int. Cl.[2] **F01D** *5/18*

U.S. Cl. 416—97 A **2 Claims**



1. In a coolable wall element of the type formed of:

a first plate member having a plurality of transpiration holes extending therethrough;

a second plate member spaced from said first plate member and having a plurality of impingement orifices extending therethrough; and

a plurality of ribs extending between said first and second plates to form a plurality of chambers therebetween wherein cooling air is flowable to each chamber through a plurality of said impingement orifices having a total area (A_I) and from each chamber through a plurality of said transpiration holes having a total area (A_T); and of the type wherein said wall element is adapted for combined impingement and transpiration cooling at a pressure ratio

$(P_S)/(P_D)$ across the wall element which differs substantially with physical position along the wall element, P_S being the supply pressure of cooling air to each chamber and P_D being the pressure to which cooling air is discharged from each chamber, the improvement comprising:

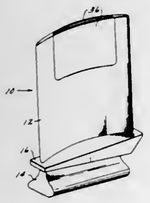
transpiration holes and impingement orifices sized such that the ratio (A_T/A_I) of the total area of the transpiration holes from each of said chambers to the total area of the impingement orifices to each of said chambers is related to the ratio (P_S/P_D) of the supply pressure to the discharge pressure across that chamber by the curve shown in FIG. 4.

4,118,147

COMPOSITE REINFORCEMENT OF METALLIC AIRFOILS

Delmar H. Ellis, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 22, 1976, Ser. No. 753,317
Int. Cl.[2] F01D *5/16*
U.S. Cl. 416—230 **13 Claims**



1. A method of fabricating a turbomachinery blade which avoids objectionable stripe mode resonance comprising the steps of:

fabricating a turbomachinery blade out of a metallic parent material, the blade having an airfoil portion and a root portion;

running the blade in the turbomachine;

measuring the stress levels within the blade over the operational range of turbomachinery rotational speeds;

selecting a speed which produces an objectionable stripe mode stress level;

determining the nodal pattern for the selected speed; and

substituting a filament composite material for the parent material at the airfoil tip wherein the chordwise extent of the composite material includes the nodal points for the selected speed and the composite filament orientation is substantially chordwise.

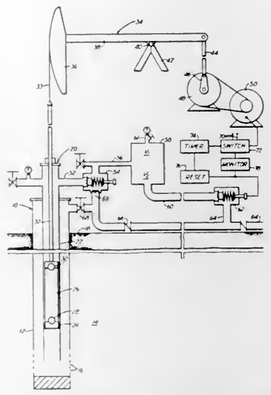
4,118,148

DOWNHOLE WELL PUMP CONTROL SYSTEM

Loy F. Allen, Odessa, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed May 11, 1976, Ser. No. 685,295
Int. Cl.[2] F04B *49/00*
U.S. Cl. 417—12 **11 Claims**

1. A control system for a well having a wellhead at the ground surface, a downhole reciprocating well pump landed in the well, a pumping unit operatively connected to the well pump and driven by a prime mover, tubing extending from the well pump upwardly through the well to the wellhead, and a delivery line from the well communicating with the upper end of the tubing, comprising a back pressure valve adapted to open at a predetermined pressure having an inlet communicating with the delivery line and an outlet, a displacement cell closed at its upper end to flow outward therefrom and having an outlet at the lower end thereof and an inlet, said displacement cell having a volume larger than the displacement volume of the pump, a transfer line connecting the outlet of the back pressure valve with the inlet of the displacement cell, a discharge line extending from the outlet of the displacement cell, a dump valve in the discharge line, said dump valve being constructed and arranged to open at a first preselected pressure not exceeding the predetermined pressure and close at a second preselected pressure lower than the first preselected pressure and to drain the displacement cell in a period less than the full cycle of the pump, an energizing circuit for the prime



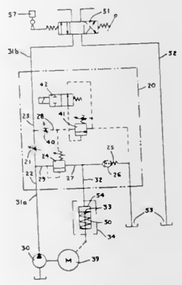
mover, normally closed switch means in the energizing circuit, a timer in the energizing circuit operatively connected to the switch means adapted to open the switch means after a preselected period longer than the time for a full cycle of the pump, and reset means operatively connected to the timer and the dump valve constructed and arranged to reset the timer to the starting position on opening of the dump valve to prevent shutting down the prime mover.

4,118,149

OUTPUT REGULATION IN HYDRAULIC AND HYDROPNEUMATIC SYSTEMS

Lars Hagberg, Borlänge, Sweden, assignor to Hytec AB, Borlange, Sweden

Filed Jan. 31, 1977, Ser. No. 764,472
Claims priority, application Sweden, Feb. 5, 1976, 7601234
Int. Cl.[2] F09B *49/08;* **F16D** *31/02*
U.S. Cl. 417—26 **15 Claims**



1. Apparatus for regulating the output of a system fed with a fluid medium irrespective of the instantaneous pressure in the system, said system having a primary line (**31** *a* and *b*), the apparatus comprising a regulating device (**20**) connected to said primary line and including a throttling (**21**), which can be adjusted, an inlet connection (**22**) to said throttling and an outlet connection (**23**) connected to said throttling, which connections are connected to said primary line (**31** *a* and *b*), a

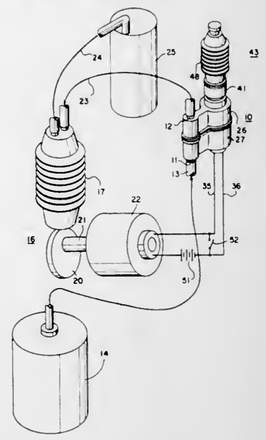
pre-set non-return valve (**24**), a spring-loaded non-return valve (**25**) fitted with a leakage connection (**26**), and further connections (**27, 28, 29**) for flow of medium between the connections and valves, a control line (**32**) connected with the connection (**27**) between the pre-set non-return valve (**24**) and the spring-loaded non-return valve (**25**), said pre-set non-return valve (**24**) sensing pressure drop at the throttling (**21**), and when this pressure drop reaches a certain value the non-return valve opens so that medium is transferred via the connection (**29**) to the connection (**27**), so that the pressure in the connection (**27**) and connected control line (**32**) increases, control device (**34**) for regulation of the quantity of flow to the primary line (**31** *a* and *b*), said control device (**34**) comprising a spring-loaded piston (**33**) activated by increased pressure in control line (**32**) such that on the basis of the output pressure in the control line, the flow of medium to the primary line (**31** *a* and *b*) is lower than said output pressure, when the pressure in the control line exceeds said output pressure, and is higher when the pressure in said control line is below said output pressure, whereby the pressure in the connection (**27**) and consequently the control line (**32**) will decrease continuously when the pre-set non-return valve (**24**) is closed, because the medium is pressed from the connection (**27**) through the leakage connection (**26**) in the spring-loaded non-return valve (**25**).

4,118,150

CONTROL APPARATUS RESPONSIVE TO LIQUID FLOW

Henry F. Hope, 2421 Wyandotte Rd., and Stephen F. Hope, both of Willow Grove, Pa. 19090

Filed Aug. 31, 1977, Ser. No. 829,288
Int. Cl.[2] F04B *49/02*
U.S. Cl. 417—40 **11 Claims**



1. Control apparatus responsive to liquid flow comprising

a liquid receptacle,

a pump connected to said receptacle for withdrawal of liquid therefrom for delivery, and

means interposed between said receptacle and said pump and having a portion movably responsive to liquid flow therethrough,

said means including electric contact members controlled by said movable portion, and

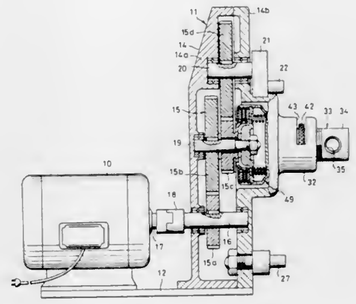
an expansible chamber member for positioning said movable portion under predetermined pressure conditions in said interposed means, and said pump is motor driven and said contct members control the operation of the motor driven pump.

4,118,151

PUMP DEVICE

Takao Murakami, Chigasaki; Yasuo Ishikawa, Yokohama, and Masahiro Ito, Tokyo, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 562,334, Mar. 26, 1975, abandoned. This application Oct. 22, 1976, Ser. No. 735,210
Claims priority, application Japan, Apr. 3, 1974, 49-36919
Int. Cl.[2] F16D *25/11, 25/00;* **F04B** *49/00*
U.S. Cl. 417—223 **1 Claim**



1. In a pump device having liquid pressure detecting means,

a pump for pumping a liquid from a liquid supply source through a liquid transfer path;

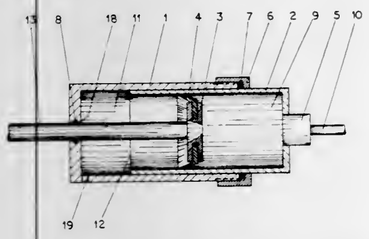
a power source for operating continuously;

power transmission means for transmitting driving power through a power transmission path to said pump for driving the pump;

cluch means in said power transmission path for coaction with said liquid pressure detecting means; said device comprising, in combination,

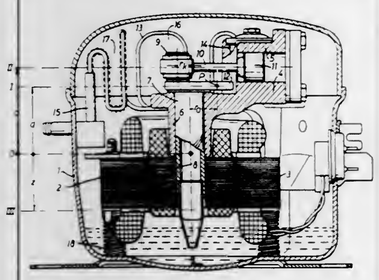
means for detecting the pressure of the liquid delivered by the pump, said means being defined by a liquid pressure detecting chamber provided in and constituting a part of said liquid transfer path, the liquid being transferred through said liquid transfer path thereby being introduced into and through said chamber, a displacement member subject to the pressure of the liquid within said liquid pressure, means for urging said displacement member in a direction opposite to that in which said member moves when subjected to said liquid pressure, and means for adjusting the distance between said displacement member and said control means for adjusting the setting of said predetermined displacement value; said clutch means being a first rotating structure responsive to rotational power transmitted thereto from said power source, a second rotating structure responsive to rotational power transmitted thereto from said first rotating structure and transmitting said rotation to said pump, clutch means interposed between said first and second rotating structures being operational upon being pressed therebetween with a clamping force to transmit rotational power in conformance with said clamping force, and control means spaced apart from said displacement member operable in response to displacement by said displacement member of a magnitude greater than a predetermined displacement value for controlling said clamping force of said first and second rotating structures as applied against said clutch structures.

4,118,152
PUMP FOR VARIABLE DOSING
Dan Bron, 36 Palmach St., Haifa 34 558, Israel
Filed May 23, 1977, Ser. No. 799,833
Claims priority, application Israel, Jun. 2, 1976, 49703
Int. Cl.[2] F04B *21/02, 21/08*
U.S. Cl. 417—254 **4 Claims**



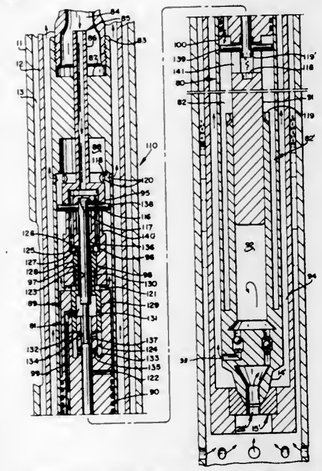
1. A variable dosing piston pump having a cylinder, a piston housed in said cylinder and a piston rod attached to said piston, the cylinder being made of two parts, namely a fixed part through which the piston rod extends and a movable part adapted to be inserted within said fixed part and means to fix said parts relative to each other, an outlet in said fixed part for the dosed liquid, an inlet controlled by a non-return valve in said movable part, the piston having a diameter corresponding to that of the movable part and said piston comprising a non-return valve.

4,118,153
ENCAPSULATED MOTOR COMPRESSOR FOR REFRIGERATORS
Jørgen Christian Stannow, Sonderborg; Kjeld Kjeldsen, Nordborg; Hans Jürgen Tankred, Sonderborg, and Per Johan Madsen, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Apr. 11, 1977, Ser. No. 786,424
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1976, 2617369
Int. Cl.[2] F16F *15/06;* **F04B** *39/00*
U.S. Cl. 417—363 **4 Claims**



1. An encapsulated motor compressor for refrigerators, comprising, an integrated motor and compressor unit with a lower motor part and an upper compressor part, said upper compressor part including a piston and a connecting rod, said unit having a center of gravity in a reference plane, said unit including a vertical motor crank shaft with a crank pin in a first plane at the upper end thereof, said crank pin being connected to said connecting rod, said crank pin and said connecting rod and piston having a mass M with a center of gravity spaced r_k from the axis of said shaft, at least one compensating weight on said shaft in a second plane on the same side of said reference plane as said compressor part, said compensating weight having a mass m_a with a center of gravity spaced r_a from the axis of said shaft, said second plane being spaced a distance a from said reference plane, helical springs for resiliently mounting said unit, said springs engaging said unit in a third plane on the opposite side of said reference plane relative to said compressor part, said third plane being spaced a distance Z from said reference plane, the product $m_a \cdot r_a$ being scaled so that said unit has its minimal radial deflection in said third plane.

4,118,154
HYDRAULICALLY ACTUATED PUMP ASSEMBLY
George K. Roeder, Box 4335, Odessa, Tex. 79760
Filed May 24, 1976, Ser. No. 689,576
Int. Cl.[2] F04B *17/00, 35/00;* **F01L** *15/12;* **F01B** *7/18*
U.S. Cl. 417—402 **6 Claims**



1. In a downhole, fluid actuated pump assembly having an engine and a production pump, with the production pump having a formation fluid inlet and a produced fluid outlet; and, with the engine having a power fluid inlet and a spent power fluid outlet; the improvement comprising:

said engine having a cylindrical bore, an engine piston reciprocatingly received within said cylindrical bore and dividing said cylindrical bore into upper and lower engine chambers; said piston having an axial bore; a control rod, a valve element, said control rod being reciprocatingly and concentrically received within said piston and within said valve element; said valve element being reciprocatingly received within said axial bore of said piston such that the valve element can move between alternate positions;

spaced abutment means positioned at opposed ends of said cylindrical bore, opposed ends of said control rod contact said spaced abutment means to shift said control rod respective to said piston between an upper and a lower position as said piston reciprocates within said cylindrical bore;

means forming a flow passageway from said lower engine chamber to said valve element, means forming a flow passageway from the power fluid inlet to said valve element, means forming a spent power fluid flow passageway from said valve element to the spent power fluid outlet;

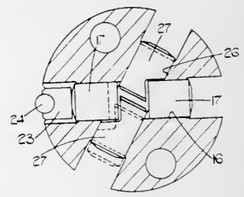
means by which said upper engine chamber is connected to a source of fluid for reciprocating said piston in a downward direction within said cylindrical bore;

means on said control rod and said valve element by which power fluid causes said valve element to shift from one to another of said alternate positions in response to said control rod being shifted from one to another of said upper and lower positions;

said production pump includes a production barrel, a production piston reciprocatingly received within said barrel and connected to said engine piston, said production piston dividing said barrel into upper and lower production chambers; means connecting said upper production chamber to said lower engine chamber; said upper engine chamber is directly connected to said production fluid outlet;

so that said lower engine chamber is alternately connected to said power fluid source and said production fluid outlet; to thereby cause the engine piston to reciprocate the production piston.

4,118,155
FUEL PUMPING APPARATUS
Dorian Farrar Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Apr. 14, 1977, Ser. No. 787,351
Claims priority, application United Kingdom, Apr. 20, 1976, 15897/76
Int. Cl.[2] F04B *19/02*
U.S. Cl. 417—462 **4 Claims**



1. A liquid fuel pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising a rotary distributor member located within a housing, a diametrically disposed bore formed in the distributor member, a pair of plungers slidable within the bore, inlet and outlet passages in the distributor member through which liquid fuel is conveyed to and from a space defined between the plungers, an annular cam ring surrounding the distributor member, cam lobes formed on the internal periphery of the cam ring, for imparting simultaneous inward movement to the plungers as the distributor member is rotated, a second diametrically disposed bore in the distributor member, said second bore having its longitudinal axis intersecting the longitudinal axis of the first mentioned bore at the axis of rotation of the distributor member, a further pair of plungers in said further bore, one of said pairs of plungers defining recesses into which the plungers of the other pair can move as the plungers are mored inwardly by the cam lobes whereby the plungers can be moved inwardly an additional amount without collision.

4,118,156
FUEL INJECTION PUMP HAVING CHOKE MEANS IN OVERFLOW LINE
Strahinja Ivosevic, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Dec. 1, 1976, Ser. No. 746,426
Int. Cl.[2] F04B *7/04, 39/10*
U.S. Cl. 417—494 **6 Claims**

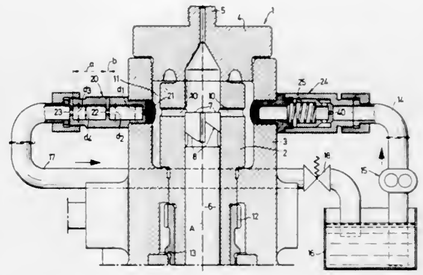
1. A fuel injection system for a diesel engine comprising

an injection pump having a cylinder, defining an injection chamber, a fuel collecting chamber surrounding said cylinder, a plurality of control ports in said cylinder to communicate said collecting chamber with said injection chamber, a piston reciprocally mounted in said cylinder, said piston having control edges cooperating with said control ports to control a start and an end of an injection process;

a feed pump for pumping fuel;

a feed line between said feed pump and said collecting chamber for delivering a flow of pumped fuel to said collecting chamber;

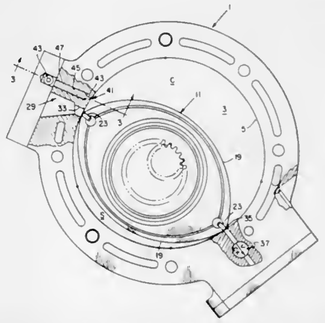
an overflow line for receiving an overflow of fuel from said injection pump;



a choke means having three choke points disposed in series and being located in an input of said overflow line, said choke points having respective flow apertures of increasing cross-sectional area in the flow direction; and

a shut-off means for preventing a pressure wave produced during overflow from entering said feed line.

4,118,157
ROTARY COMPRESSOR
Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Continuation of Ser. No. 541,021, Jan. 14, 1975, abandoned. This application Jan. 17, 1977, Ser. No. 759,690
Int. Cl.[2] F01C *1/02, 21/04, 21/12;* **F04C** *17/02*
U.S. Cl. 418—1 **10 Claims**



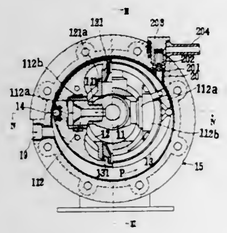
1. A method of compressing fluid using a rotary fluid compressor including a housing having an inlet port, an outlet port including a check valve, a rotor rotatable in a cavity defined within said housing, said rotor having a pair of opposed apexes engaging the wall of said cavity to divide the latter into a pair of chambers, said method comprising the steps of communicating one of the chambers with the inlet port and the other chamber with said outlet port, rotating said rotor to compress the fluid in said other chamber with said check valve open until the rotor attains a minimum volume position in which the volume of said other chamber is minimized, closing said check valve as said rotor rotates past said minimum volume position to trap a volume of fluid in said other chamber, continuing to rotate said rotor past said minimum volume position with said check valve closed to expand the volume of said other chamber to thereby reduce the pressure of the fluid trapped therein until one of the apexes thereof is opposite said outlet port and

the other of said apexes is opposite the inlet port, simultaneously communicating said inlet and outlet ports with both of said chambers when the apexes of the rotor are aligned with said ports, and closing communication between the one chamber and the inlet port and between the other chamber and the outlet port as the rotor is rotated past the position in which the apexes are aligned with the ports.

4,118,158
ROTARY PISTON COMPRESSOR

Toshio Osaki, 21-8, Momofune-cho, Nakagawa-ku, Nagoya-shi, Aichi-ken, Japan

Filed Dec. 21, 1976, Ser. No. 752,750
Claims priority, application Japan, Dec. 30, 1975, 50-156236
Int. Cl.² F04C 1/02
U.S. Cl. 418—54 **2 Claims**



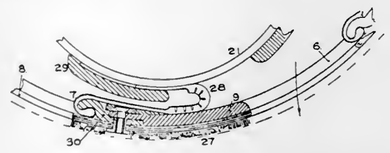
1. A rotary piston compressor comprising
(a) a cylinder;
(b) a drive shaft having a portion within said cylinder, both ends of said portion being supported on bearings;
(c) a rotary piston positioned within said cylinder;
(d) a correcting shaft surrounding a portion of said drive shaft both ends of said correcting shaft being supported by bearings;
(e) a pair of projection means positioned on opposite sides of the circumference of said drive shaft;
(f) a pair of first slide means each of said first slide means being positioned in one of said projection means;
(g) a pair of first slide acceptor means each first slide acceptor means slidably engaging one of said first slide means and secured to the interior circumferential surface of said rotary piston;
(h) a pair of second slide acceptor means, each second slide acceptor means being formed on said correcting shaft;
(i) a pair of second slide means, each second slide means being slidably engaged by one of said second slide acceptor means and secured to the interior circumferential surface of said rotary piston;
(j) seal means for forming fluid tight seals between said rotary piston and said cylinder;
(k) fluid intake means positioned on one side of the circumference of said cylinder; and
(l) fluid discharge means positioned on an opposite side of the circumference of said cylinder said discharge means including a discharge valve.

4,118,159
ROTARY PISTON MACHINE

John Allan, Skanor, West Hill, Bembridge, Isle of Wight, England

Filed Nov. 21, 1975, Ser. No. 634,065
Int. Cl.² F04C 5/00
U.S. Cl. 418—153 **21 Claims**

1. A rotary machine for selectively providing internal compression or expansion to a fluid and selectively connectable to a driving or driven shaft, said rotary machine comprising a cylinder rotatable about its axis, a piston within the cylinder rotatable synchronously with the cylinder about an axis parallel to but offset from the axis of rotation of the cylinder, cylinder end boundaries between said piston and said cylinder, a series of flexible vanes each constructed from elastomerically coated fibrous material spanning the gap between the inner surface of the cylinder and the outer surface of the piston and controlled in deflection by geometrical and pressure changes each of which is without recourse to liquid additives in sealable rubbing contact with said cylinder end boundaries and sealably connected to the surfaces of said cylinder and said piston, each vane sweeping the space between said cylinder and piston surfaces and said cylinder end boundaries, each pair of adjacent vanes defining with the said cylinder and piston surfaces a chamber for a fluid medium which during each revolution of

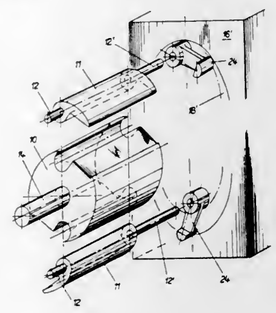


said cylinder varies in volume to selectively compress or expand fluid ingested and exhaust it from said rotary machine, each of said vanes having a concave surface and a convex surface, each of said vanes being provided with adjacent spaced projections formed on the concave surface of each vane so that as the vane folds or bends said adjacent projections butt one another and resist further bending of the vane and where an arch so formed bridges the minimum gap between the said cylinder and piston surfaces to form an abutment against fluid loads acting on the convex surface of said vane, and said vane having edges provided with a low friction dry rubbing surface at their contact with said cylinder end boundaries.

4,118,160
ROTARY MACHINE WITH CONTROLLED RETRACTABLE PIVOTED MEMBERS SUCH AS BLADES OR PISTONS

Lucien Baudin, Paris, France, assignor to Idram Engineering Company Est., Switzerland

Filed Sep. 6, 1977, Ser. No. 831,060
Claims priority, application Switzerland, Oct. 11, 1976, 12847/76
Int. Cl.² F04C 29/10
U.S. Cl. 418—260 **2 Claims**

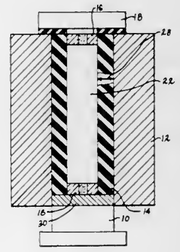


1. A rotary machine with controlled retractable blades or pistons, and comprising a rotor, the blades being pivotally mounted on the rotor, a stator inside which the rotor turns, with the blades or pistons cooperating with the inside cylindrical wall of the stator, and a mechanism controlling the angular position of the blades in relation to their pivoting axis on the rotor, wherein the mechanism controlling the angular position of the retractable members comprises at least one arm fastened to the corresponding retractable member and comprising a surface cooperating under the action of centrifugal force with a surface of revolution whose axis is eccentric in relation to the axis of the rotor.

4,118,161
HIGH TEMPERATURE, HIGH PRESSURE APPARATUS HAVING A DUCTILE DRIVER ELEMENT

George C. Kennedy, Los Angeles, Calif., assignor to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 586,415, Jun. 12, 1975, abandoned. This application May 20, 1977, Ser. No. 798,767
Int. Cl.² B30B 11/32
U.S. Cl. 425—77 **6 Claims**



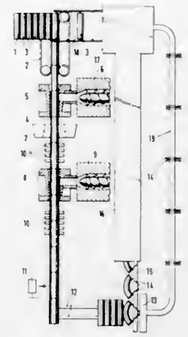
1. In a high pressure, high temperature pistoncylinder apparatus which includes a chamber open at the ends and having closure means for closing the ends of said chamber with at least one said closure means comprising a piston closely slidably fitted in said chamber, a sleeve having an opening therethrough and of electrical insulating material in said chamber extending from one closure toward the other thereof and adapted to receive a core of charge material therein, and means for heating a core of charge material in said sleeve, the improvement which comprises; an electrically conductive driver element confined in the chamber between one axial radial outward end of said sleeve and the adjacent closure means, said driver element being operable in response to the application of pressure thereto by advancing movement of the piston into the chamber to deform and flow into the adjacent end of said opening of said sleeve without substantial deformation of said sleeve.

4,118,162
APPARATUS FOR MANUFACTURING LENGTHS OF RUBBER HOSE OF CURVED SHAPE

Wilfried Baumgarten, Pattensen, Fed. Rep. of Germany, assignor to Paul Troester Maschinenfabrik, Fed. Rep. of Germany

Filed Oct. 6, 1976, Ser. No. 730,002
Int. Cl.² B29D 23/04
U.S. Cl. 425—113 **13 Claims**

1. Apparatus for manufacturing lengths of rubber hose of curved shape, comprising rubber extrusion apparatus, means operatively associated with said extrusion apparatus for feeding to and through said extrusion apparatus a sequence of flexible mandrels in end-to-end relation for extrusion onto said mandrels of a continuous rubber hose, means downstream of said extrusion apparatus for cutting said hose at locations between successive mandrels to form hose lengths each having a flexible mandrel therein, means downstream of said cutting means for bending successive mandrels with said hose lengths thereon into curved form and means for vulcanizing said hose lengths while held in curved form by said mandrels to form

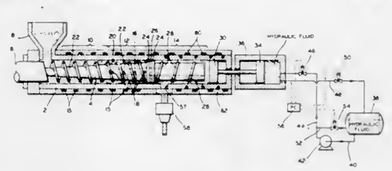


vulcanized rubber hose of curved shape, said mandrels being thereafter removed from said curved hose lengths.

4,118,163
PLASTIC EXTRUSION AND APPARATUS

Soo-Il Lee, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 11, 1977, Ser. No. 814,524
Int. Cl.² B29F 3/06
U.S. Cl. 425—146 **10 Claims**



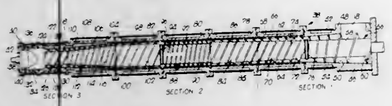
1. Screw extruder apparatus for plasticizing thermoplastic material and issuing said material from an orifice comprising an elongated hollow barrel having an axial bore therein adapted to receive raw thermoplastic material from a source thereof and containing an axially disposed, rotatable extruder screw for plasticizing, advancing and melting thermoplastic material, a passage communicating with said bore and operatively connecting an exit orifice with said bore, said barrel having a low pressure end where raw thermoplastic material is received and a high pressure end from which plasticized melted material is delivered to said passage, said screw containing an elongated hollow internal axial cavity, bored through the end of the screw that is positioned in the high pressure end of said barrel and extending part way toward said low pressure end, seal means intermediate the ends of the hollow portion of the screw which prevents passage of plastic material across said seal means between said barrel and said screw, lateral passageways through the shaft of said screw, leading into said axial cavity from near the pushing side of the flights of said screw that are adjacent said axial cavity and are on the low pressure side of said seal means, the flights of said screw between said low pressure end and said seal means being pitched to advance plastic toward said seal and the flights of said screw that are on the high pressure side of said seal means being oppositely pitched to advance toward said seal means the material that issues through the end of the screw from said cavity, said passage connecting said bore and said orifice being located in the sidewall of said barrel near the high pressure side of said seal means.

4,118,164

HIGH-OUTPUT APPARATUS FOR PRODUCING DENSE, UNIFORMLY LAYERED MEAT ANALOGUE PRODUCT

La Von Gene Wenger; Douglas S. Clark, and Bobbie W. Hauck, all of Sabetha, Kans., assignors to Wenger Manufacturing, Sabetha, Kans.

Filed Jul. 15, 1977, Ser. No. 816,005
Int. Cl.² A23P 1/00
U.S. Cl. 425—202 17 Claims



1. Extrusion apparatus for producing a meat analogue product from a mixture comprising a vegetable protein and moisture, said apparatus comprising:

an elongated, tubular barrel having a material inlet adjacent one end thereof and an extrusion die adjacent the remaining end thereof; and

an elongated, axially rotatable screw positioned within said barrel for moving said material from said inlet towards and through said die,

said screw including first, second and third longitudinally aligned sections,

said first screw section having first flight means for moving said material from said inlet along the length of said barrel towards said second screw section,

said second section having second flight means for compacting the material received from said first section, forming a first choke of the material within the barrel, said section also having additional flight means thereon which is cooperable, with the adjacent surrounding portion of said barrel, for subdivision of said material during travel thereof toward said third section, wherein said second section includes means to cut into the material and increase the residence time of said material in the region thereof.

said third section having third flight means for substantially recombining said subdivided material and forming a second choke of said material within the barrel.

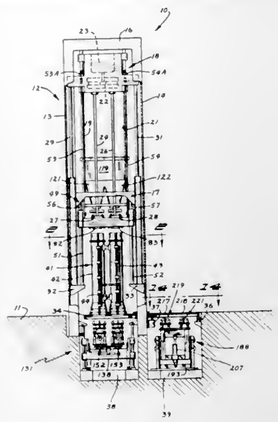
4,118,165

PACKERHEAD PIPE MAKING MACHINE

Alfred Christian, W. Woodstock, Canada, assignor to Hydrotile Canada Limited, Woodstock, Canada

Filed Dec. 22, 1976, Ser. No. 753,526
Int. Cl.² B28B 21/26
U.S. Cl. 425—262 46 Claims

1. An apparatus for simultaneously making two concrete pipes comprising: an upright frame, a turntable located adjacent the frame, a form assembly having a first upright jacket surrounding a first chamber and a second upright jacket surrounding a second chamber mounted on the turntable, a single cross head means movably mounted on the frame for movement in a vertical direction, a pair of rotatable shafts connected to said single cross head means and extended downwardly from the cross head means, packer heads connected to the lower ends of the shafts in laterally spaced relation, said turntable-carried first and second jackets having a like laterally spaced relation whereby when said turntable is rotated to position said jackets in respective vertical alignment with said packer heads, one packer head is positionable in the first chamber and the other packer head is positionable in the second chamber, said cross head means supporting drive means for rotating the shafts and packer heads, means located above the form assembly for delivering concrete to the chambers, and means connected to the cross head means and frame for selectively moving the cross head means in a downward direction to locate the packer heads in the lower ends of the jackets and an upward direction to move the packer heads upwardly relative to the jackets whereby the concrete delivered into the first



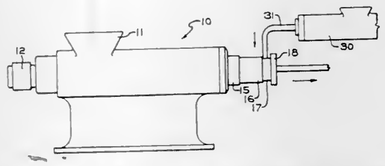
and second chambers is formed by the upwardly moving and rotating packer heads into concrete pipes.

4,118,166

EXTRUSION APPARATUS

David Edward Bartrum, Bay Village, Ohio, assignor to The BF Goodrich Company, Akron, Ohio

Filed Jul. 22, 1977, Ser. No. 818,175
Int. Cl.² B29F 3/04
U.S. Cl. 425—462 7 Claims



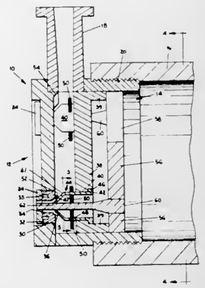
1. An extrusion die head having a neck block for connection to the outlet end of an extruder, said neck block having a cylindrical bore at one end thereof and an oblong bore at the other end thereof, said cylindrical bore tapering into said oblong bore, a shaping block secured to said neck block, said shaping block having an oblong bore at one end mating with said oblong bore of said neck block, said shaping block having a preformed laterally extending generally L-shaped thin passageway at the other end thereof, said oblong bore of said shaping block tapering laterally outwardly in both directions to merge smoothly with said L-shaped passageway, a thin width feed block mounted adjacent to said shaping block, said feed block having an L-shaped passageway identical in size and shape to said L-shaped passageway of said shaping block extending therethrough, a die block mounted adjacent to said feed block having an L-shaped passageway at one end thereof, said L-shaped passageway of said die block merging with said L-shaped passageway of said feed block, a thin L-shaped orifice at the other end of said die block for shaping extrudate therefrom, said L-shaped passageway of said die block tapering downwardly in thickness to form said thin orifice, said feedblock having a second passageway communicating with said L-shaped passageway therein, and said second passageway being in alignment with and communicating with said L-shaped passageway in said feed block for depositing a thin film of extrudate onto the extrudate passing through said L-shaped passageway in said feeder block.

4,118,167

COEXTRUSION DIE

Arnold S. Lund, and Thomas L. Stroh, both of Cadillac, Mich., assignors to Cadillac Rubber & Plastics, Inc., Cadillac, Mich.

Filed Jan. 28, 1976, Ser. No. 652,980
Int. Cl.² B29D 23/04
U.S. Cl. 425—463 19 Claims



1. A multiple-cavity extrusion die for simultaneously coextruding a plurality of tubular lengths of rubbery material, said extrusion die comprising:

a housing defining a common extrusion cavity, said housing including a front face defining a plurality of separate, laterally spaced openings therein;

means defining core mandrels extending at least into the openings of the front face of the housing;

first extrusion means having a first outer diameter orifice within the housing for extruding a first rubbery material onto each of the core mandrels to form a relatively thin tubular core shape of such material;

second extrusion means having a second outer diameter orifice greater than the first diameter within the housing at the outlet of the first extrusion means for extruding a relatively thicker layer of a second rubbery material onto each of the tubular core shapes as the core shapes are extruded to provide a relatively thicker tubular cover for each of the tubular core shapes; and

means within the housing for individually adjusting the speed of each of the composite tubular shapes without significantly affecting the thicknesses of the tubular cover and the tubular core shape so that each of the tubular composite shapes is extruded at a uniform rate despite variations in the pressure of the second rubbery material at the respective second extrusion means thereof.

4,118,168

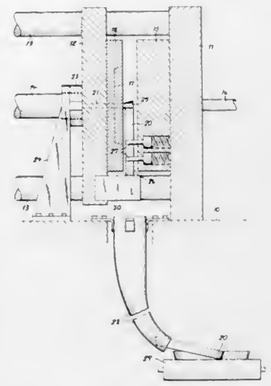
GUIDANCE SYSTEM FOR SHALLOW ARTICLES DISCHARGED FROM A MOLD CAVITY

Herbert Rees, Willowdale, and Robert Dietrich Schad, Schomberg, both of Canada, assignors to Husky Injection Molding Systems Limited, Bolton, Canada

Filed May 2, 1977, Ser. No. 792,997
Int. Cl.² B29F 1/14
U.S. Cl. 425—556 13 Claims

1. In an injection-molding machine including a mold with a first and a second mold portion having substantially vertical confronting surfaces, one of said surfaces being formed with at least one shallow cavity, reciprocable drive means coupled with said first mold portion for displacing same relatively to said second mold portion between a mold-open position and a mold-closed position, injection means connected to said second mold portion for filling said cavity in said mold-closed position with a flowable mass hardening into a molded article, and ejection means on the mold portion formed with said cavity for discharging the molded article therefrom,

the combination therewith of guide means on at least one of said mold portions projecting in said mold-open position toward the other of said mold portions on opposite sides of said cavity and at least in part below the level thereof to define with the confronting surfaces of the separated mold portions a substantially vertical channel for the controlled descent of the ejected article to a receiver therefor, said drive means having a stroke which limits the separation of said confronting surfaces in said mold-open position to a



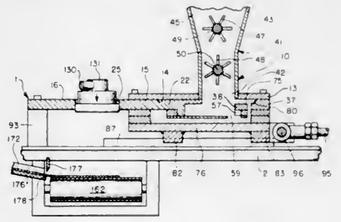
distance greater than the depth of said cavity perpendicular to said surfaces but less than the dimensions of said cavity parallel to said surfaces whereby the descending article is maintained substantially in its original upright orientation within said channel, said guide means including at least one pair of cavity-flanking elements retractable into said one of said mold portions in said mold-closed position.

4,118,169

MOLDING APPARATUS

Jerald R. Haluska, 14729 S. Clifton Park, Midlothian, Ill. 60445

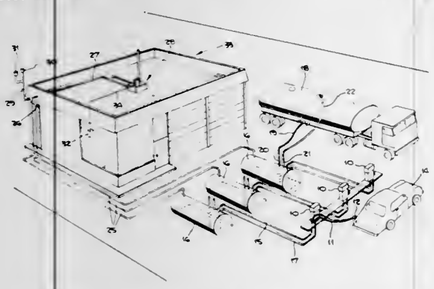
Filed Jan. 17, 1977, Ser. No. 764,900
Int. Cl.² A22C 7/00
U.S. Cl. 425—583 8 Claims



1. Molding apparatus comprising a support, a mold having a stationary section secured to the support and a movable section, means associated with the movable section for moving said movable section between product-receiving and mold filling positions, one of said sections having a mold cavity and the other of said sections having inlet means and passage means leading from the inlet means, supply means communicating with the inlet means for charging the same with a predetermined quantity of product, means associated with said one section operable for scavenging the product in said inlet means and compressing it into the passage means and having means operable for closing off of said supply means to said inlet means, means communicating said passage means into said mold cavity upon relative movement of said movable section

from product-receiving position to mold-filling position, and return means in said other section operable for recirculating excess product in said inlet means and passage means through said supply means, and means selectively throttling said return means for controlling compaction overflow of the product in the mold cavity.

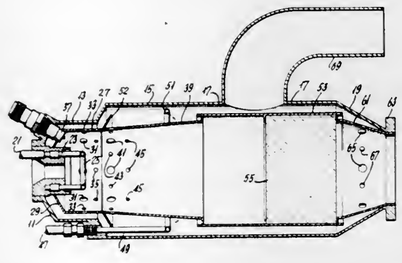
4,118,170
APPARATUS AND METHOD OF CONTROLLING GASOLINE VAPOR EMISSIONS
John H. Hirt, Monterey Park, Calif., assignor to Hirt Combustion Engineers, Montebello, Calif.
Continuation-in-part of Ser. No. 603,002, Aug. 8, 1975, Pat. No. 4,009,985. This application Feb. 24, 1977, Ser. No. 771,573
Int. Cl.[2] F23G *7/06*
U.S. Cl. 431—5 **11 Claims**



1. In a method of abatement of vapors emitted from a storage container during transfer of fluids including liquids and vapors to or from said container, said storage container having a vent means to atmosphere and wherein pressure of said vapors in said vent means is sensed to cause such vapors to be directed at a preselected pressure along a path to a burning means, a pressure air source providing combustion air which is directed to said burner means when said preselected vapor pressure is sensed, and igniting and burning a mixture of vapors and air at said burning means, including the steps of:
providing a valve means in the path of said vapors to said burning means for controlling flow of said vapors;
and actuating said valve means by pressure air from said air source only when such pressure air is available to pump said vapors to said burner means.

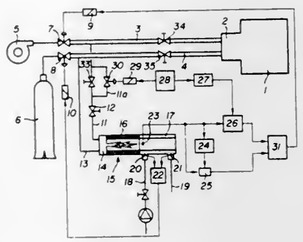
4,118,171
METHOD FOR EFFECTING SUSTAINED COMBUSTION OF CARBONACEOUS FUEL
Paul Flanagan, Princeton, N.J.; Eric Roy Norster, Lexington, Mass.; Robert V. Carrubba, Bridgewater, and Ronald M. Heck, Frenchtown, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.
Filed Dec. 22, 1976, Ser. No. 753,499
Int. Cl.[2] F23L *9/00*
U.S. Cl. 431—10 **12 Claims**

1. A method for effecting sustained combustion of a carbonaceous fuel at predetermined total rates of fuel demand, utilizing combustion apparatus including a thermal combustion zone and downstream thereof in succession a mixing zone and a catalyst zone, wherein for at least one of said total rates of fuel demand substantial portions of said fuel are burned in each of said thermal combustion zone and said catalyst zone, comprising:
supplying, during operation at said one fuel demand rate, a substantial portion of the fuel to said thermal combustion zone while simultaneously supplying air to said thermal combustion zone to effect substantially complete combustion therein of the fuel being supplied thereto with formation of a heated effluent;
adding to said heated effluent in an upstream portion of said mixing zone an additional amount of relatively cool air to obtain a cooled mixture;
adding to said cooled mixture passing through a downstream portion of said mixing zone a substantial additional portion of said fuel, making up the total needed for said one fuel demand rate, to provide an enriched fuel-air admixture;
passing said enriched fuel-air admixture through said mixing zone to the catalyst without substantial recirculation or stagnation; and
combusting said enriched fuel-air admixture in the presence of said catalyst to form an effluent of high thermal energy,



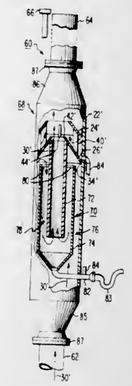
said additional amount of air being sufficient to maintain said cooled mixture and said enriched fuel-air admixture at temperatures within the range of about 500°–1200° F. in said mixing zone, thus avoiding any preignition or preburning of said additional fuel, and
the resulting fuel-air admixture having an adiabatic flame temperature such that, upon contact with said catalyst, the operating temperature of said catalyst is substantially above the instantaneous auto-ignition temperature of said fuel-air admixture but below a temperature that would result in any substantial formation of oxides of nitrogen.

4,118,172
METHOD AND APPARATUS FOR CONTROLLING BURNER STOICHIOMETRY
Dominique Noir, Nyon, Switzerland, and John Meier, San Diego, Calif., assignors to Battelle Development Corporation, Columbus, Ohio
Filed Oct. 20, 1976, Ser. No. 734,176
Int. Cl.[2] F23N *5/10*
U.S. Cl. 431—12 **3 Claims**



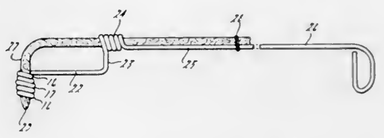
1. A method for continuously controlling a gaseous mixture comprising an oxidant and a fuel of variable composition or variable heating value to a predetermined stoichiometry in a main burner comprising,
(A) burning a quantity of the fuel and the oxidant in a control burner in parallel with said main burner,
(B) monitoring the change in magnitude of a property of the burning or the burned fuel and oxidant in the control burner, said property having a maximum value as a function of the fuel to oxidant ratio at about the stoichiometric ratio,
(C) adjusting the fuel to oxidant ratio to the control burner to substantially maximize the magnitude of the monitored property by the steps comprising
(a) periodically inducing a variation in the fuel to oxidant ratio in the control burner,
(b) measuring the direction of the change in the magnitude of the monitored property,
(c) comparing the direction of the change in the magnitude of the monitored property with the variation in fuel to oxidant ratio to the control burner whereby to determine whether the change in magnitude of the monitored property is characteristic of an excess of fuel or oxidant with respect to the stoichiometric ratio,
(d) varying the quantity of fuel or oxidant in the control burner to substantially eliminate the excess of fuel or oxidant with respect to the stoichiometric ratio, and
(D) simultaneously supplying said main burner with independent, preset multiples of the quantity of fuel and the quantity of oxidant in the control burner such that said predetermined stoichiometry to the main burner is maintained.

4,118,173
UNIDIRECTIONAL SEAL FOR FLOW PASSAGES
Hosein M. Shakiba, Philadelphia, Pa., assignor to Samuel Lebidine, Glassboro, N.J., a part interest
Filed Aug. 8, 1977, Ser. No. 822,948
Int. Cl.[2] F23D *13/20*
U.S. Cl. 431—202 **21 Claims**



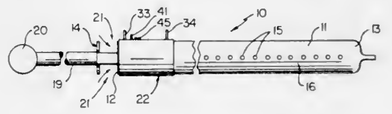
1. A flare system for exhaust gases comprising:
a tubular exhaust passage including a flare stack and tip having a burner at its exhaust end and a pilot for ignition of flare gas at said burner;
and a unidirectional seal in said exhaust passage including a plurality of inclined surfaces mounted in said passage to permit normal flare gas flow through said passage and past said inclined surfaces, and positioned to incline towards the axis of said passage in the direction of said normal flare gas flow,
upstream and downstream ones of said inclined surfaces being mounted adjacent each other,
said upstream inclined surface being in substantially sealed relation with an inner surface of said exhaust passage,
said downstream inclined surface being mounted in spaced relation to said inner passage surface and to said upstream inclired surface so as to direct counterflow of air between said downstream and inner surfaces and between said upstream and downstream inclined surfaces,
whereby counterflow of air through said flare stack is restricted.

4,118,174
WICK LIGHTER WITH WAX HOLDER
Michael Shirak, 5480 Springwells, Detroit, Mich. 48210
Filed Mar. 1, 1977, Ser. No. 773,207
Int. Cl.[2] F23D *13/16*
U.S. Cl. 431—289 **8 Claims**



1. In a lighter for igniting a candle and the like, a wire formed into a handle at one end, a coil wound from turns of said wire at the other end, said coil projecting at right angles to said wire, a wick supported in said coil, and wherein the central turns of said coils are of greater diameter than the end turns which engage and support the wick.

4,118,175
FUEL BURNER, ARRANGEMENT AND SLEEVE THEREFOR AND METHODS
Fred Riehl, Greensburg, Pa., assignor to Robertshaw Control Company, Richmond, Va.
Filed Dec. 27, 1976, Ser. No. 754,114
Int. Cl.[2] F23D *13/40*
U.S. Cl. 431—354 **20 Claims**



1. In a fuel burner arrangement having a tubular burner provided with opening means at one end thereof and a sleeve telescoped on said burner for sliding relative thereto to progressively cover and uncover said opening means and thereby provide an adjustable air shutter arrangement, said sleeve having opposed ends and a longitudinal slot splitting said sleeve from one of said ends to the other of said ends and thereby defining two adjacent longitudinal slot edges of said sleeve, said sleeve having a natural bias that causes said sleeve to grip said tubular burner and tend to move said longitudinal edges thereof together whereby said sleeve tends to frictionally remain in its telescoped position on said tubular burner by its natural gripping bias, said sleeve having tab means on said longitudinal edges for facilitating the spreading apart of said longitudinal edges and thereby permit easy sliding of said sleeve relative to said tubular burner, said tubular burner having a projection means extending therefrom and being received through said slot of said sleeve to guide longitudinal sliding movement of said sleeve relative to said burner, the improvement wherein said sleeve has opposed stop means for respectively engaging said projection means of said burner to limit longitudinal sliding movement of said sleeve in opposite directions on said tubular burner, said stop means comprising inward steps in said longitudinal edges of said sleeve.

4,118,176

HEAT TREATMENT FOR FINE-GRAINED MATERIALS

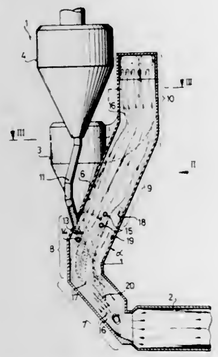
Hans Mollenkopf, Neubeckum; Horst Ritzmann, Enniger; Jürgen Wurr, Ennigerloh; Heinz-Herbert Schmits, Rheda; Otto Heinemann, Ennigerloh; Karl Krützner, öun., Neubeckum, and Werner Schossler, Ahlen, all of Fed. Rep. of Germany, assignors to Polysius AG, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,881

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1976, 2611239

Int. Cl.² F27B *15/00*

U.S. Cl. 432—14 18 Claims



13. A method for the further heat treatment of fine-grained material previously heated in a preheater and prior to firing said material in a furnace having an upwardly extending hot waste gas conduit, said method comprising discharging hot gas in a stream from said furnace at a predetermined velocity, deflecting said stream upwardly through said conduit to establish a relatively highly concentrated portion thereof adjacent one side of said conduit and a relatively lesser concentrated portion adjacent the opposite side of said conduit; supplying fine-grained material having a grain size such that a substantial portion of said material will be entrained by said gas stream; introducing said material downwardly into said conduit at said one side thereof and at a first level between its upper and lower ends so that said material will fall downwardly through said conduit prior to being entrained in said stream; combusting fuel in said conduit at a second level lower than said first level to provide a heating zone through which said material passes as it falls downwardly and through which said material passes again following its being entrained in said stream; and terminating said deflection of said stream in the region of said first level to deconcentrate said concentrated portion of said stream whereby a portion of the material entrained in said stream may fall again through said conduit adjacent the opposite side thereof and be reentrained in said stream at a level below that of said heating zone for further passage through said heating zone.

4,118,177

APPARATUS AND METHOD FOR CALCINING OR SINTERING FINE-GRAINED MATERIAL

Paul Weber, Oelde; Erich Lankes, Ennigerloh; Gerhard Butschko, Hamm; Horst Ritzmann, Enniger, and Peter Wolfgang Bohm, Oelde-Stromberg, all of Fed. Rep. of Germany, assignors to Polysius AG, Neubeckum, Fed. Rep. of Germany

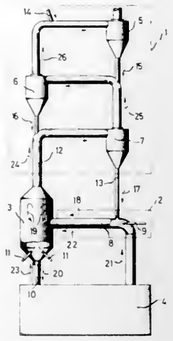
Filed Nov. 8, 1976, Ser. No. 739,543

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1975, 2550469; Nov. 10, 1975, 2550384; Nov. 10, 1975, 2550418

Int. Cl.² F27B *15/00*

U.S. Cl. 432—14 13 Claims

10. In a method of heat treating fine-grained materials such as alumina, lime, dolomite, magnesite, and the like, wherein said material is preheated, then subjected to hot gases heated to such temperature as to raise the temperature of the preheated material to a calcining or sintering temperature, and then separated from the hot gases and subsequently cooled, the improvement comprising heating said material for a second time to a calcining or sintering temperature prior to its separation from said hot gases, thereby subjecting said material to two consecutive heating stages.



4,118,178

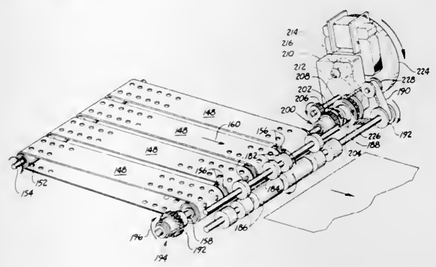
XEROGRAPHIC FUSING APPARATUS

Salvatore J. Calvi, Ridgefield, and John J. Stelben, Greenwich, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jul. 21, 1977, Ser. No. 817,713

Int. Cl.² H05B *3/00*; G01P *3/00*

U.S. Cl. 432—35 6 Claims



1. For use in a copying machine having an electrically operated drive system, fusing apparatus for fusing zerographic developing material to a sheet of support material to permanently affix the developing material thereto, said fusing apparatus comprising:

A. a frame,

B. heating means mounted on said frame and operable when energized to generate sufficient heat to cause the xerographic developing material to melt and become fused to the sheet of support material,

C. conveyor means mounted on said frame in operative association with said heating means for conveying a sheet of support material past said heating means for fusing the xerographic developing material thereto while the sheet of support material is moving past said heating means,

D. primary driving means connected to said conveyor means and operable to drive said conveyor means at a predetermined velocity when said primary driving means is operatively associated with the drive system of the copying machine,

E. secondary driving means connected to said conveyor means and being automatically operable to drive said conveyor means in the event of a failure in the electrically operated drive system of the copying machine for a period of time at least sufficient to convey the sheet of support material past said heating means to prevent combustion of the sheet of support material.

4,118,179

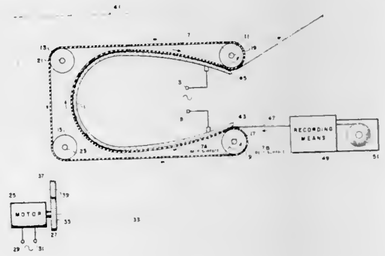
MATERIAL PROCESSOR WITH RELATIVE MOVEMENT BETWEEN MATERIAL AND ITS POSITIONER

Dale O. Ballinger, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 8, 1976, Ser. No. 748,667

Int. Cl.² F27B *9/28*

U.S. Cl. 432—59 12 Claims



1. Processing apparatus for sheet material, comprising processing means having a processing surface,

a belt having a driving surface arranged in driving contact with said material for conveying the latter over said processing surface when said belt is moved along a path adjacent to said processing surface, said belt tending to transfer the texture of said driving surface to said material when the latter is contacted by said driving surface, and

means for moving said belt along said path so that said belt leaves said processing surface at a higher speed than that at which said belt arrives at said processing surface, and thus elongates progressively as it moves along said path,

whereby said belt moves said material relative to said processing surface and simultaneously moves along said material to minimize the transfer of said texture of said driving surface to said material.

4,118,180

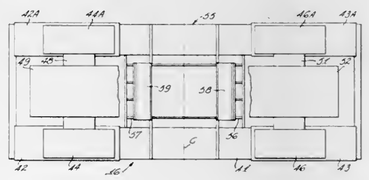
ROTARY KILN SERVICE STANDS

Robert M. Bliemeister, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 6, 1977, Ser. No. 794,476

Int. Cl.² F27B *7/22*

U.S. Cl. 432—103 7 Claims



1. In a supporting arrangement for a rotary kiln having an axis of rotation;

a base;

support roller means mounted for movement from a kiln supporting position to a retracted service position wherein said support roller means is not in engagement with the kiln; and,

stationary support means in position to receive and support the kiln when said support roller means are moved out of supporting engagement with the kiln,

said stationary supporting means includes a pedestal supported on said base in position to receive and support said kiln when said supporting roller means is retracted to a servicing position, said pedestal includes a pair of spaced apart upstanding members;

a pad block receiving surface formed on each of said upstanding members constructed and arranged to provide adequate operating clearance for the rotary kiln when said kiln is supported by said supporting roller means; and

pad block means insertable on each of the receiving surfaces formed on the upstanding members to provide supporting surfaces for the kiln which substantially increases the clearance distance between the pad block receiving surfaces and the kiln when said supporting roller means is in operating position.

4,118,181

BAKING APPARATUS

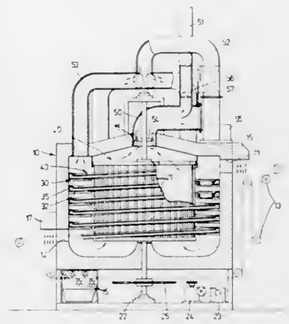
Hirosuke Onodera, No. 340, Mizuhai, Higashi-osaka-shi, Osaka-fu, Japan

Filed Feb. 22, 1977, Ser. No. 770,761

Claims priority, application Japan, Dec. 11, 1976, 51-167921[U]

Int. Cl.² F27B *9/00*

U.S. Cl. 432—121 7 Claims



1. A baking apparatus comprising:

a housing having an inlet and an outlet;

a rotary drum having a vertical axis positioned within said housing, said drum being rotatable about said vertical axis;

a plurality of equally spaced vertical rods affixed to and surrounding the circumference of said drum;

a spiral passage spiralling upward around the outside of said drum, said passage extending from said inlet to said outlet inside said housing;

drive means connected to said drum for rotating said drum;

a flexible endless conveyor on said spiral passage contacting said spaced vertical rods and movable along said passage from said inlet to said outlet during rotation of said drum;

guide roll means between said outlet and said inlet on the outside of said housing and engaging said conveyor for returning said conveyor from said outlet to said inlet; and

heating means along said spiral passage inside said housing for heating the inside thereof.

4,118,182

SOLUTIONS OF AZO DYES DERIVED FROM 4-4-DIAMINO-2,2-STILBENEDISULFONIC ACID

Sanford Byrom Smith, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

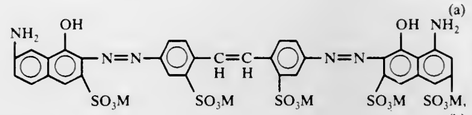
Continuation-in-part of Ser. No. 628,368, Nov. 3, 1975, abandoned, which is a division of Ser. No. 330,319, Feb. 7, 1973, abandoned. This application Aug. 24, 1977, Ser. No. 827,233

Int. Cl.[2] **D06P** *3/32, 3/60;* **D21H** *1/46*

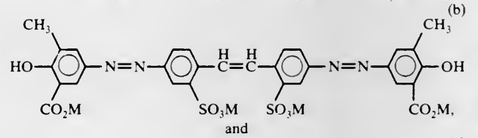
U.S. Cl. 8—7 **10 Claims**

1. The aqueous dye solution consisting essentially of the following components by weight:

(i) 10% to 25% of at least one dye selected from the group

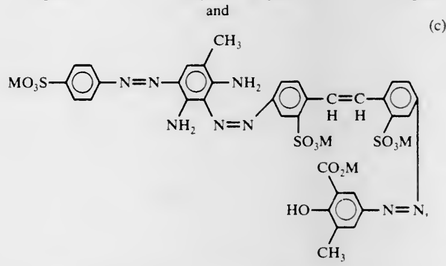


(a)



(b)

and



(c)

wherein M is a water-solubilizing cation;

(ii) 5% to 20% of urea; and

(iii) 55% to 85% of water.

4,118,183

PROCESS FOR THE TREATMENT OF WARP YARNS

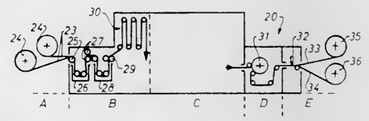
Eckhardt Godau, Hofheim, Fed. Rep. of Germany, and Max Schneider, Glarus, Switzerland, assignors to Quikoton AG, Glarus, Switzerland

Filed Mar. 31, 1977, Ser. No. 783,482

Claims priority, application Switzerland, Apr. 9, 1976, 4494/76

Int. Cl.[2] **D06P** *5/00, 7/00;* **D06B** *1/00*

U.S. Cl. 8—18 R **10 Claims**



1. A continuous process for the treatment of warp yarns, wherein a row of substantially parallel, unbundled warp yarns is impregnated with an excess of a treating liquor, said excess is then removed from the impregnated yarns in a liquor removal zone, the yarns are dried and finally wound up on a loom beam, the process which comprises, at least in said liquor removal zone, the linear thread density of the warp yarn row, expressed by the relation $Q = F \times D$ wherein Q is the linear thread density, F is the thread count in cm^{-1}, and D is the mean diameter of each thread in cm, is brought to a value of at least 2, said value of at least 2 defining at least two complete superimposed sheets of warp yarns, with adjacent warp yarns contacting one another and being constant over the entire width of said yarn row and being substantially the same at any width increment, and the finally dried warp yarns are wound up on at least one loom beam, said increased linear thread density of at least 2 being reduced to the nominal thread count for weaving of each loom beam before the treated warp yarns are wound up on said beam.

4,118,184

STABLE LIQUID AQUEOUS COMPOSITION OF A WATER-SOLUBLE FIBER-REACTIVE AZO DYESTUFF, CONTAINING A BUFFER SUBSTANCE, THE DYESTUFF HAVING BEEN PREPARED BY DIAZOTIZATION WITH A NITRITE AND COUPLING IN THE ABSENCE OF ACID

Konrad Opitz, Liederbach, Taunus; Josef Landler, Hofheim, Taunus, and Erhard Worfel, Hattersheim, Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 653,128, Jan. 28, 1976, abandoned. This application Jun. 17, 1977, Ser. No. 807,740

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1975, 2529657

Int. Cl.[2] **D06P** *1/38, 1/382, 1/384*

U.S. Cl. 8—26 **5 Claims**

1. A stable, liquid aqueous composition of fiber-reactive dye consisting essentially of 5 to 45% by weight of 1, 2, 3, or 4 dyestuffs which in the free acid form have the formula

$$(HO_3S)_m\text{-}F\text{-}Z_n$$

in which F is the chromophoric radical of a monoazo dyestuff, Z is a fiber-reactive group selected from the group consisting of vinyl sulfonyl, β-chloroethyl-sulfonyl, β-acetoxyethyl-sulfonyl, β-(3-sulfobenzoyloxy)-ethyl-sulfonyl, β-sulfatoethyl-sulfonyl, β-thiosulfatoethyl-sulfonyl, β-phosphatoethyl-sulfonyl, β-sulfatoethylsulfonyl-methylamino and vinylsulfonyl-methylamino, m is an integer of from 1 to 8 and n is an integer of from 1 to 3, water and 1, 2, 3, or 4 buffer substances selected from the group consisting of sodium acetate, potassium acetate, sodium oxalate, potassium oxalate, an acid sodium salt of phosphoric acid, and acid potassium salt of phosphoric acid, a mixture of the sodium or potassium salts of phosphoric acid and sodium borate, said composition having a pH-value of from 3 to 7 and being characterized by said dyestuff having been prepared in an aqueous, aqueous organic or organic medium by reacting a stoichiometric amount of an aromatic amine and of a coupling component, the amine or the coupling component or both having a free acid sulfo group, with a stoichiometric amount of an alkali metal nitrite and without addition of an acid.

4,118,185

PROCESS FOR DYEING AND PRINTING NICKEL-CONTAINING POLYOLEFINS

Reinhard Mohr, Offenbach am Main, and Kurt Hohmann, Neu-Isenburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

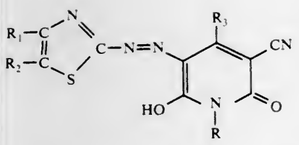
Filed Sep. 29, 1976, Ser. No. 727,649

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1975, 2544247

Int. Cl.[2] **C09B** *45/00;* **D06P** *3/79*

U.S. Cl. 8—42 D **13 Claims**

1. A process for the dyeing and printing of nickel-containing polyolefin fiber which comprises bringing said material into contact with a dyestuff of the formula



wherein R is hydrogen, lower alkyl, phenyl-(lower alkylene), phenyl-(lower-alkylene) substituted in the benzene nucleus by 1 to 2 substituents of the group consisting of chlorine, cyano, hydroxy, carbalkoxy having 2 to 5 carbon atoms and carboxylic acid amide, or R is phenyl or phenyl substituted by 1 or 2 substituents of the group consisting of chlorine, lower alkyl, lower alkoxy, cyano, carbonamide and sulfonamide, R_1 is hydrogen, lower alkyl, lower alkyl substituted by 1 or 2 substituents of the group consisting of carbalkoxy of 2 to 5 carbon atoms and carboxylic acid amide, or is phenyl or phenyl substituted by 1 or 2 substituents of the group consisting of chlorine, lower alkyl, lower alkoxy, cyano, carboxylic acid amide and sulfonic acid amide, R_2 is hydrogen, lower alkyl, lower alkyl substituted by 1 or 2 substituents of the group consisting of carbalkoxy having 2 to 5 carbon atoms and carboxylic acid amide, or is phenyl or phenyl substituted by 1 or 2 substituents of the group consisting of chlorine, lower alkyl, lower alkoxy, cyano, carboxylic acid amide and sulfonic acid amide, or is halogen, nitro, cyano, thiocyanate, carbalkoxy having 2 to 5 carbon atoms, alkylcarbonyl having 2 to 5 carbon atoms, carbamoyl, carbamoyl mono- or disubstituted by 1 or 2 alkyl having 1 to 4 carbon atoms or by 1 alkyl of 1 to 4 carbon atoms and one phenyl or by phenyl, and R_3 is alkyl having 1 to 4 carbon atoms.

4,118,186

PROCESS FOR THE FIXATION OF ORGANIC DYESTUFFS ON MATERIALS HAVING A FIBROUS STRUCTURE

Erich Feess, Hofheim am Taunus; Hartmut Springer, Konigstein, Taunus, and Willy Gronen, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

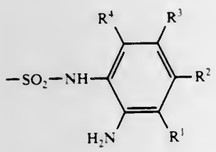
Filed May 11, 1977, Ser. No. 796,039

Claims priority, application Fed. Rep. of Germany, May 13, 1976, 2621274

Int. Cl.[2] C09B *27/00;* **C07D** *249/00;* **D06M** *13/38*

U.S. Cl. 8—49 **5 Claims**

1. A process for the fixation of an organic dyestuff on materials having a fibrous structure, which comprises applying an organic dyestuff containing one or several groups of the formula (1)



(1)

in which R^1, R^2, R^3 and R^4 each represent a non-ionic, anionic or cationic substituent, with the exception of a primary or secondary amino group or the salts thereof, in dissolved form onto said materials and subsequently subjecting it to the action of nitrous acid.

4,118,187

FABRIC DYE STRIPPING, SEPARATION AND RECOVERY OF POLYESTER

Norman C. Sidebotham, Gulf Breeze; Paul D. Shoemaker, and Clarence W. Young, III, both of Pensacola, all of Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 578,592, May 19, 1975, Pat. No. 4,003,880. This application Dec. 9, 1976, Ser. No. 749,149

The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.

Int. Cl.[2] D06L *3/14;* **C08G** *63/76;* **C08J** *3/08*

U.S. Cl. 8—102 **22 Claims**

1. A process for separation, recovery and reuse in production, of polyester polymer from a collection of materials comprising a first polyester component comprising dyed polyester fibers and a second component comprising materials other than polyester fibers, said process comprising:

(1) stripping the dye from said dyed polyester fibers by contacting the collection with a dye-stripping solvent at a temperature below which the polyester dissolves and above which the crystalline lattice of the polyester fiber swells so as to release the dye;

(2) removing the excess of the dye-containing dye-stripping solvent which is not absorbed by the collection;

(3) contacting the residual dye-containing dye-stripping solvent-laden fibers with sufficient addition of a primary dissolution solvent which is not a solvent for the second component to dissolve the polyester component under selective dissolution conditions for the polyester component;

(4) separating the dissolved polyester component from the undissolved second component; and

(5) separating the residual dye-stripping solvent and the primary dissolution solvent from the polyester component by evaporation of the solvent without precipitating the polyester component from solution.

4,118,188

PROCESS FOR IMPROVING THE BULKINESS OR TEXTURATION OF SYNTHETIC MULTIFILAMENT TEXTILE MATERIALS

Hans-Ole Larsen, Hvidovre, Denmark, assignor to Ultrasona AG, Zurich, Switzerland

Continuation of Ser. No. 488,227, Jul. 12, 1974, abandoned, which is a continuation of Ser. No. 134,072, Apr. 14, 1971, abandoned. This application Mar. 29, 1976, Ser. No. 671,108

Claims priority, application United Kingdom, Apr. 14, 1970, 17786/70

Int. Cl.[2] D06M *1/14, 5/18*

U.S. Cl. 8—130.1 **6 Claims**

1. In a process for improving the bulkiness or texturation or both of synthetic multifilament textile materials, the steps of:

preparing an aqueous shrinking bath containing a swelling agent selected from the group consisting of phenol and cresols,

increasing the ability of the swelling agent, at a given concentration of the latter in the bath, to migrate into the internal structure of the individual fibers of a textile material by reducing the solubility of the swelling agent in the bath by incorporating into the latter a solubility reducing quantity of a water-soluble driving-off agent selected from the group consisting of NaCl, Na_2SO_4, $Al_2(SO_4)_3$, NaH_2PO_4, NH_4Cl, $(NH_4)_2CO_3$, $HCOONH_4$ and $(NH_4)_2HPO_4$, the concentration of said driving-off agent being at least 10% by weight based on the weight of said bath, and

introducing the synthetic multifilament textile material into the shrinking bath for a period of less than one minute.

4,118,189

METHOD OF WASHING TEXTILES

Elmar Reinwald, Dusseldorf-Holthausen, and Milan Johann Schwuger, Haan, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jun. 29, 1976, Ser. No. 700,864

Claims priority, application Austria, Jul. 2, 1975, 5088/75

Int. Cl.[2] B08B *3/00*

U.S. Cl. 8—137 **10 Claims**

1. A method for the washing of textiles comprising (1) contacting soiled textiles with a foamed detergent solution, said detergent solution being maintained at a temperature of from 30° C. to 70° C. and containing from 10 to 50 gm per liter of a cleaning composition and being employed in a liquor ratio of from 1:1 to 1:5, wherein said cleaning composition comprises (a) from 5% to 100% by weight of foamable surface-active compounds selected from the group consisting of anionic surface-active compounds of the sulfonate and sulfate types, alkali metal soaps of fatty acids and polyglycol ether non-ionic surface active compounds, where from 50% to 100% by weight of the foamable surface-active compounds are said polyglycol ether non-ionic surface-active compounds and (b) from 0 to 95% by weight of builder salts and cleansing composition additives, said detergent solution being foamed by air to a liter weight of 5 to 30 gm before contacting said soiled textiles, (2) agitating said soiled textiles in the presence of said foamed detergent solution for at least 30 seconds, (3) separating said foamed detergent solution from said textiles under sufficient force whereby the foam is broken and the detergent solution is recovered as a liquor, (4) foaming said recovered detergent solution with air, (5) repeating steps (1) to (4) from five to 50 times, (6) then rinsing said textiles, and (7) recovering cleansed textiles.

4,118,190

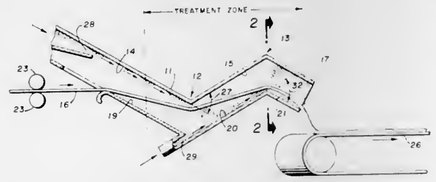
METHOD FOR ANNEALING ACRYLONITRILE-CONTAINING FILAMENTS

Thomas M. Veazey, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 3, 1977, Ser. No. 821,264

Int. Cl.[2] D06B *5/06*

U.S. Cl. 8—149.3 **7 Claims**



1. The method of annealing a tow of acrylonitrile-containing filaments, comprising:

a. advancing the tow along a path through a housing under a tension less than the shrinking tension of the tow, said path having at least two bends, said bends having inside and outside corners and being in opposite directions to each other, and

b. passing a heated annealing fluid along the walls of the housing leading to the inside corners of the bends, said fluid having a velocity such that said fluid clings in a layer to the walls of the housing to said inside corners, the angles of the bends of said inside corners being sufficiently great that said fluid separates from said walls and passes through the tow for moving the tow out of contact with said inside corners and forwarding the tow along the path.

4,118,191

GAS STERILIZATION APPARATUS

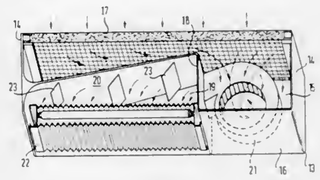
Franz Böhnensieker, Vom-Stein-Strasse 22, D-4834 Harsewinkel, Germany

Filed Apr. 22, 1977, Ser. No. 790,102

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1976, 2618127

Int. Cl.[2] A61L *3/00, 9/00;* **F24F** *3/16*

U.S. Cl. 55—279 **6 Claims**



1. An apparatus for carrying out the sterilization of gaseous media in which germs, bacteria and the like are contained, which comprises a housing, said housing holding therewithin (a) at least one layer of a filter-like material selected from the group consisting of quartz wool, quartz paper and sintered quartz dust, said material being non-absorbent of UV-radiation, whereby any incident UV-radiation passes substantially through said material, the said layer having such a labyrinth-like structure that the passage of germs through the layer is not substantially prevented, but is only substantially delayed, (b) at least one UV-emitter arranged to impinge UV-radiation upon the layer, and (c) a pressure blower for forcing through the layer the medium to be sterilized.

4,118,192

METHOD AND APPARATUS FOR THE MEASUREMENT OF ANTIGENS AND ANTIBODIES

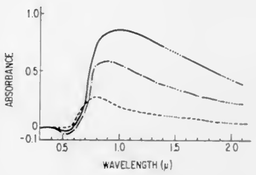
Masanobu Sawai, Yamato; Tadamitsu Sudo, Sagamihara, and Shogo Enomoto, Tokorozawa, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Aug. 16, 1977, Ser. No. 825,160

Claims priority, application Japan, Aug. 16, 1976, 51-97158

Int. Cl.[2] G01N *21/24, 33/16*

U.S. Cl. 424—12 **33 Claims**



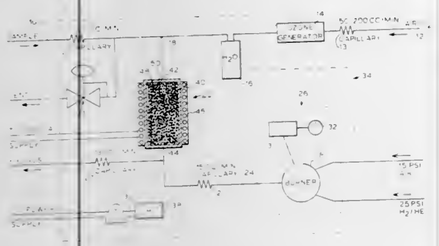
1. An absorbance method of measuring antigens and antibodies comprising supporting an antibody or an antigen on insoluble carrier particles with an average diameter of not greater than 1.6 microns to sensitize the insoluble carrier particles, reacting the supported antibody and/or antigen with a corresponding antigen or antibody or a mixture thereof in a liquid medium, irradiating the reaction mixture with light having a wavelength in the range of 0.6 to 2.4 microns and longer than the average diameter of said carrier particles by a factor of at least 1.5 and measuring the absorbance of the reaction mixture.

4,118,193

CATALYTIC REACTOR SYSTEMS METHOD AND APPARATUS

Radhakrishna Murty Neti, Brea, and Kenneth Bruno Sawa, Yorba Linda, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 29, 1977, Ser. No. 820,481
Int. Cl.² G01N *31/12*
U.S. Cl. 422—94 **2 Claims**



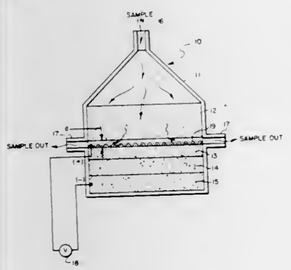
1. An improved methane analyzer comprising:
(a) a source of ozone;
(b) mixing means for mixing a sample containing methane and other hydrocarbons with ozone, said mixing means having a pair of inlets and an outlet, one of said inlets adapted to receive a sample to be analyzed, the other of said pair of inlets being connected to said source of ozone;
(c) a catalytic reactor for removing hydrocarbons other than methane and having an inlet and an outlet, said inlet being connected to said outlet of said mixing means;
(d) means for humidifying connected to cause water vapor to be included in the sample/ozone mixture input to said reactor;
(e) means for detecting and displaying the quantity of methane in a sample having an inlet and an outlet, said inlet being connected to said outlet of said reactor to receive humidified, ozonized and reacted sample therefrom;
(f) an enclosure having at least said mixing means, said humidifying means, and said reactor disposed therein; and,
(g) heating means for maintaining said enclosure at an internal temperature of 70° to 75° C.

4,118,194

SENSOR FOR FLUID COMPONENTS

Douglas O. Raleigh, Encino, and Leo E. Topol, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 8, 1977, Ser. No. 785,988
Int. Cl.² G01N *27/26, 27/40*; H01M *4/00*
U.S. Cl. 422—98 **11 Claims**



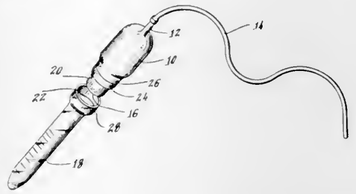
1. A device for sensing at least one component of a fluid substance comprising:
(a) first means including a composition reactive with at least one component of said fluid to liberate elemental chlorine, bromine, fluorine or iodine upon exposure to said component;
(b) a porous matrix electrode comprising a particulate layer of vitreous carbon having a median particle size of less than about 500 microns and in cooperative relation to said first means forming a first electrode through which said liberated chlorine, bromine, fluorine or iodine passes; and
(c) a solid electrolyte cell with a voltage measuring means across its electrodes including said porous matrix electrode, said measuring means operatively associated with said matrix and responsive to said liberated chlorine, bromine, fluorine or iodine for measuring a voltage which is indicative of the concentration of said chlorine, bromine, fluorine or iodine, said concentration being a known fraction or multiple of the concentration of said component in said fluid.

4,118,195

MEDICAL APPARATUS FOR TRANSPORTING FLUIDS

Janet Beach, P.O. Box 904, Camden, Me. 04843

Filed Jul. 30, 1976, Ser. No. 710,129
Int. Cl.² G01N *1/14*
U.S. Cl. 222—215 **9 Claims**



1. A device for moving fluids and fluidizable materials from one location to another comprising
a main body portion having an internal chamber described by a surrounding wall made from resilient material which is collapsible by the application of pressure from the exterior thereof so as to cause the volume of said chamber to decrease, and is normally biased against being collapsed,
conduit means communicating with said chamber and providing a continuous, valveless flow path thereto from outside of said main body,
said main body having an access opening therein extending through said wall and into said chamber at a location other than that at which the flow path provided by said conduit means passes through said wall into said chamber,
said main body being adapted for attaining substantially pressure tight removeable interconnection between a portion of the outer surface thereof and an access opening in an associated container, which portion includes within it all of said access opening into said body.

4,118,196

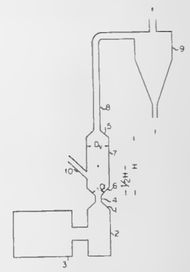
APPARATUS FOR CALCINING WET POWDERY GYPSUM

Yoshiharu Fukuda; Kazumasa Ohtani, both of Tokyo; Tossio R. Onissi, Koshigaya, and Akitoshi Takeuchi, Funabashi, all of Japan, assignors to Onoda Cement Company, Limited, Japan

Filed Jun. 13, 1973, Ser. No. 369,570
Int. Cl.² B01J *6/00*; F27B *15/00*
U.S. Cl. 422—232 **3 Claims**

1. An apparatus for calcining wet powdery gypsum having a moisture content of about 5 to about 30% which comprises:
(a) a furnace which generates a hot gas having a temperature higher than about 900° C;
(b) a straight cylindrical hot gas supply pipe connected with the gas outlet of said furnace and having a tapered upper portion;

(c) a straight cylindrical high stream velocity pipe connected with the tapered portion of said hot gas supply pipe and dimensioned to develop a gas velocity in said high stream velocity pipe within the range of from about 60 m/sec to about 150 m/sec;
(d) a substantially vertical vortex chamber connected with the upper part of said high stream velocity pipe and which chamber has a diameter at a middle cylindrical portion greater than that of said high stream velocity pipe and a maximum diameter determined so that the gas velocity at the portion of maximum diameter is within the range of from about 10 m/sec to 30 m/sec when no gypsum is supplied thereto, and which has conically tapered portions both at the top and bottom of said cylindrical portion, the bottom tapered portion converging downwardly toward and connected with the upper part of said high stream velocity pipe and having an angle of convergence within the range of about 50° to 150°, the top tapered portion comprising the vortex chamber gas outlet, and the length of said vortex chamber being more than 1.2 times longer than said maximum diameter;



(e) a wet powdery gypsum supply pipe connected with the side wall of said vortex chamber, said gypsum supply pipe being connected in such a way that a projected extension of the lower edge of said gypsum supply pipe, following the same angle as that pipe, would intersect the center axis of said vortex chamber at a point higher than the bottom of said vortex chamber and lower than one half the distance from the bottom to the top of said vortex chamber, and said gypsum supply pipe being oriented to introduce gypsum into said vortex chamber toward said bottom portion thereof and counter to the flow of gases therethrough;
(f) a heat transmission pipe connected with the gas outlet of said vortex chamber for flowing therethrough gas and calcinated gypsum with sufficiently low heat loss, and being of sufficient length, to effect substantially complete secondary dehydration of the calcinated gypsum while the calcinated gypsum is transported through the heat transmission pipe by the gas; and
(g) a gypsum collector connected with said heat transmission pipe.

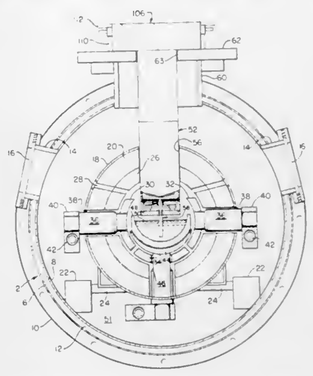
4,118,197

CARTRIDGE AND FURNACE FOR CRYSTAL GROWTH

Brian H. Mackintosh, West Roxbury, and David N. Jewett, Harvard, both of Mass., assignors to Mobil Tyco Solar Energy Corp., Waltham, Mass.

Filed Jan. 24, 1977, Ser. No. 761,941
Int. Cl.² B01J *17/18*
U.S. Cl. 422—246 **28 Claims**

1. Apparatus for growing a silicon ribbon-type crystal from a melt comprising:
a furnace having (1) a chamber with a top aperture leading to the interior of said chamber, (2) means within said chamber for supporting therein a crucible containing a melt from which a crystal is to be grown so that the melt in the crucible will be in line with the aperture, and (3) means for heating a crucible supported within said chamber by said supporting means; and
at least one cartridge which is arranged to be moved into and out of said furnace through said top aperture, said cartridge being a unitary assembly comprising (1) a capillary die adapted to be used to provide a growth pool of melt from which a crystal can be pulled, (2) solid vertically elongate heat-conducting means disposed above said die and arranged so as to extend on opposite sides of and control the thermal gradient lengthwise in a ribbon-type crystal which is pulled from said growth pool of melt and



(3) means holding said heat-conducting means in a fixed relation to said die;
means for moving the cartridge vertically into and out of said chamber via said aperture and for positioning the cartridge within said chamber so as to place said die in communicating relation with a melt contained by said crucible, said means for moving the cartridge including guide means for guiding said cartridge during its vertical movement into and out of said chamber; and
a pulling mechanism disposed above the furnace for pulling a crystal from said growth pool of melt past said heat-conducting means and out of said furnace via said aperture.

4,118,198

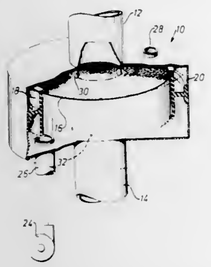
CATALYTIC PURIFIER UNIT

Per G. Norback, Lidingo, Sweden, assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden

Division of Ser. No. 481,211, Jun. 20, 1974, Pat. No. 3,951,865.
This application Jan. 21, 1976, Ser. No. 651,059
Claims priority, application Sweden, Jun. 25, 1973, 7308909
Int. Cl.² F01N *3/15*
U.S. Cl. 422—173 **7 Claims**

1. A catalytic purifier unit for purifying hot exhaust gases comprising:
a skeletal body formed of layers, at least some of which are corrugated, bearing against one another and defining a large number of open-ended narrow axially aligned passageways through which the exhaust gases flow from one end to the other thereof,
a casing for enclosing said body,
said body comprising a first centrally located catalytically treated zone and a second insulating zone surrounding said first zone,
said casing having inlet means and outlet means in axial alignment and communicating with at least a portion of the passageways of said catalytically treated zone for directing the hot gases through said catalytically treated zone,
said second zone having elastic means of organic material resiliently supporting said body.

said insulating zone being effective for maintaining said organic supporting member at a lower temperature than the temperature of the first catalytically treated zone



because of the separation of said supporting member from said first zone by said insulating zone therebetween, thereby increasing the useful life and durability of said supporting member.

4,118,199

MONOLITHIC CARRIER CATALYST AND ARRANGEMENTS OF SUCH A CATALYST FOR THE PURIFICATION OF EXHAUST GASES FROM AN INTERNAL COMBUSTION ENGINE

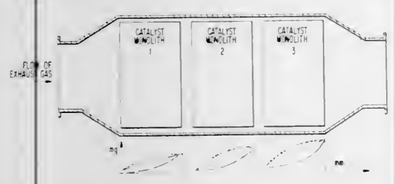
Herbert Völker, Hanau; Edgar Koberstein, Alzenau, and Jörg Hensel, Hanau, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Sep. 17, 1976, Ser. No. 724,428

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1975, 2542282; Dec. 3, 1975, 2554359

Int. Cl.[2] **B01J** *8/00;* **F01N** *3/15*

U.S. Cl. 422—171 **9 Claims**



1. In a monolithic carrier catalyst containing a catalytically active substance for the purification of a stream of exhaust gases from an internal combustion engine whereby said stream flows through said monolith, said monolith carrier being contained in a container for said carrier, said exhaust gases being directed by said container to flow through said monolith carrier in one direction and in the desired orientation with regard to the carrier, the improvement which comprises having the catalytically active component deposited on said monolith carrier in a manner to create a positive gradient of the catalytically active substance with respect to the carrier and increasing in the direction of the flow of exhaust gases through said monolith carrier and being about 6×10^{-4} to about 3×10^{-2}% per mm, expressed as the increase in weight percent of catalytically active substance per unit of length of said carrier over the entire length of said carrier.

4,118,200

PROCESS FOR DESULFURIZING COAL

Paul R. Kruesi, Golden, Colo., assignor to Cato Research Corporation, Wheatridge, Colo.

Filed Jul. 8, 1977, Ser. No. 813,801

Int. Cl.[2] **C10L** *9/10;* **C10B** *57/00*

U.S. Cl. 44—1 R **15 Claims**

1. A process for desulfurizing coal which comprises:
(a) forming a liquid fused salt bath melting below the decomposition temperature of coal comprised of chlorides selected from the group consisting of chlorides of alkali metals, alkaline earth metals, ammonia, ferric iron, and zinc;
(b) introducing the coal into said liquid fused salt bath;
(c) introducing into said fused salt bath chlorine from a source selected from the group consisting of elemental chlorine, and a chlorine donor selected from the group consisting of sulfur chloride, ferric chloride and cupric chloride to react the sulfur-containing components of the coal with chlorine to form elemental sulfur and chlorides; and
(d) recovering the desulfurized coal from the liquid fused salt bath.

4,118,201

PRODUCTION OF LOW SULFUR FUELS FROM COAL

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 705,198, Jul. 14, 1976, abandoned. This application Jul. 8, 1977, Ser. No. 813,914

Int. Cl.[2] **C10L** *9/10;* **C10G** *1/00;* **C10B** *57/00*

U.S. Cl. 44—1 R **5 Claims**

1. A process for desulfurizing sulfur-containing solid carbonaceous fuel in the form of pulverized coal in a multi-stage fluidized reaction system comprising a gas generating zone, a desulfurization zone and a gas-solids separating zone, the generating and desulfurization zones having operating conditions dependent upon one another, to produce a maximum amount of solid, low-sulfur carbonaceous fuel which is useful as a direct supply of fuel for power plants or industrial boilers which utilize low B.T.U. fuel comprising the steps:
(a) reacting an oxygen-containing gas, steam, and auxiliary carbonaceous fuel in a fluidized state at a temperature of 1800° to 3000° F. in a gas generating zone to form synthesis gas comprising hydrogen and carbon monoxide;
(b) continuously passing heated synthesis gas upwardly into a desulfurization zone and introducing into said zone fresh pulverized coal solids;
(c) maintaining the coal solids in said zone in a fluidized state at a temperature in the range of 1100° F. to 1700° F. under a pressure of about 100 to 1000 psig for a period of time sufficient to form hydrogen sulfide and thereby reduce the sulfur content of the coal to below about 1 percent by weight, and
(d) disengaging sulfur-containing gases from the desulfurization zone and recovering a solid fuel product of reduced sulfur content.

4,118,202

PRE-PRIMED FUEL AND METHOD AND APPARATUS FOR ITS MANUFACTURE

Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Oct. 17, 1977, Ser. No. 842,731

Int. Cl.[2] **C10L** *9/00, 5/22*

U.S. Cl. 44—6 **22 Claims**

12. Apparatus to coat fuel with a normally non-fluid primer comprising
a structure forming a deposition chamber in its interior having entrance and exit openings and forming on its exterior stations for loading the apparatus with fuel to be coated and for unloading coated fuel, said deposition chamber including a container at its lower portion for liquefied primer;
an unobstructing conveyor supported by said structure so that the conveyor can be driven through the loading station, the deposition chamber, the unloading station, and the container;
a heater in the lower container portion of the structure to liquefy and maintain the primer in a liquid state;
means to break the liquefied primer into particles and a system to deliver the liquefied primer from the lower container portion of the structure to said means; and
means within the structure to deposit the primer spray on the charred wood from above and below the conveyor.

19. Pre-primed charred wood comprising a piece of broken wood which has been charred and is several inches in length, and on the order of an inch or less in those dimensions transverse to its length, having applied to its exterior a non-fluid combustible primer material by the steps of electrostatically charging and depositing particles of the non-fluid primer.

4,118,203

WAX COMPOSITION

James W. Beardmore, and Daniel Goehring, both of Houston, assignors to Shell Oil Company, Houston, Tex.

Filed May 18, 1977, Ser. No. 798,229

Int. Cl.[2] **C08L** *91/08;* **C10L** *5/00;* **C11C** *5/00*

U.S. Cl. 44—7.5 **19 Claims**

1. A wax composition having improved mold release properties comprising candle wax and from about 0.01 to about 10 percent by weight of mold release additive selected from the group consisting of dimethyl, diethyl and methyl-ethyl esters of aliphatic dicarboxylic acids having two to four carbon atoms and mixtures thereof.

4,118,204

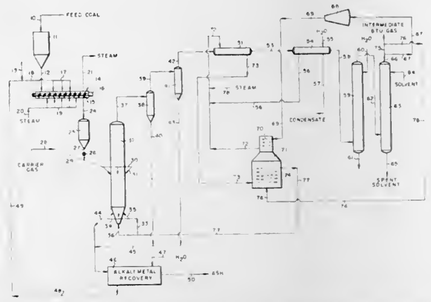
PROCESS FOR THE PRODUCTION OF AN INTERMEDIATE BTU GAS

James M. Eakman, Houston, Tex.; Nicholas C. Nahas, Morris Plains, N.J., and Charles A. Euker, Jr., Houston, Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Feb. 25, 1977, Ser. No. 771,504

Int. Cl.[2] **C01J** *3/54*

U.S. Cl. 48—197 R **13 Claims**



1. A process for the production of an intermediate Btu gas from a carbonaceous feed material and steam which comprises:
(a) reacting said steam with said carbonaceous feed material in a reaction zone at a reaction temperature between about 1000° F. and about 1500° F. and at a reaction pressure in excess of about 100 psia, in the presence of a carbon-alkali metal catalyst and sufficient added hydrogen and carbon monoxide to provide substantially equilibrium quantities of hydrogen and carbon monoxide in said reaction zone at said reaction temperature and said reaction pressure;
(b) withdrawing from said reaction zone a raw product gas containing substantially equilibrium quantities, at said reaction temperature and pressure of methane, carbon dioxide, steam, hydrogen and carbon monoxide;
(c) treating said raw product gas for the removal of acid gases;
(d) recovering a portion of the treated gas as said intermediate Btu product gas;
(e) contacting the remainder of said treated gas with steam in a steam reforming zone under conditions such that the methane in said treated gas reacts with said steam to produce additional hydrogen and carbon monoxide; and
(f) passing the effluent containing hydrogen, carbon monoxide and unreacted steam without substantial cooling from said steam reforming zone into said reaction zone, thereby supplying said added hydrogen and carbon monoxide required in said reaction zone and wherein said reforming zone is operated at conditions such that the heat content of said effluent from said reforming zone is sufficient to supply substantially all of the sensible heat needed to preheat said carbonaceous feed material to said reaction temperature.

4,118,205

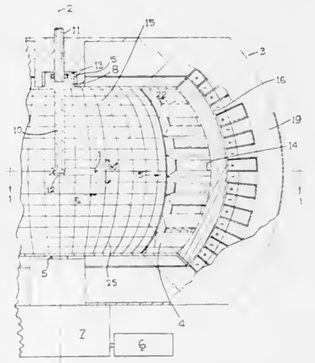
SEPARATION OF GASES

Chia-Gee Wang, P.O. Box 211, Millwood, N.Y. 10546

Filed Nov. 29, 1976, Ser. No. 745,565

Int. Cl.[2] **B01D** *45/12*

U.S. Cl. 55—17 **9 Claims**



1. A process for separating gaseous mixtures of molecules of different mass comprising the steps of:
causing a rotating means to eject a contiguous plurality of successive groups of molecules into an evacuated space to form a continuous stream of said mixture;
allowing the molecules of each said group of molecules to move in accordance with their thermal velocities for a predetermined period of time following ejection, thereby to allow each said group of molecules to form a generally spherical configuration the leading portion of which will be enriched, in molecules of lighter mass, relative to lesser radii,
using a deflector means co-rotating with said rotating means to deflect molecules, which have been allowed to move for said predetermined period of time in accordance with their thermal velocities, from at least one desired portion of said stream, and
using a stationary collector means to collect said deflected molecules.

4,118,206

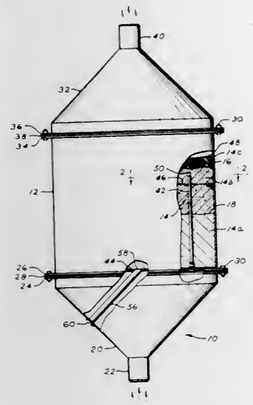
OIL MIST FILTERING APPARATUS AND METHOD

Willem Jacob Hagendoorn, Louisville, Ky., assignor to Fisher-Klosterman, Inc., Louisville, Ky.

Continuation of Ser. No. 506,442, Sep. 16, 1974, abandoned. This application Dec. 7, 1976, Ser. No. 748,322

Int. Cl.[2] B01D *23/16, 53/04*

U.S. Cl. 55—74 7 Claims



1. A filtering device for a turbine crankcase comprising a hollow casing having a lower-end entrance means for receiving gaseous effluent flow from the crankcase, an upper end exhaust means for delivering cleansed gaseous flow to the atmosphere, a particulate filtering media disposed in the casing between the entrance means and the exhaust means for separating and retaining oil mist from the flow, a floor plate extending transversely across the inside of the casing beneath the filtering media and adjacent the entrance means, a plurality of spaced-apart parallel tubes projecting upwardly into the filtering media from the floor plate, the lower end of each of the tubes being in sealed communication with a corresponding opening through the floor plate whereby the imcoming effluent flow will move upwardly past the floor plate solely by means of the tubes, the tubes permitting the effluent flow to progress therethrough and into the filtering media, drain means comprising at least a conduit extending generally downwardly from the floor plate and having its upper end in flow communication with the filtering media to receive and drain away liquid oil gravitating down through the filtering media and toward the floor plate, the conduit having a lower end extending to a drain discharge opening outside the casing such that liquid oil drained from the filtering media does not intermix with the incoming effluent flow from the crankcase.

5. A method of filtering oil particles from the vaporous flow emitted by a turbine crankcase comprising steps of:

establishing a filtering bed of vertically successive layers of packed particulate solids,

providing flow entrance means for directing the emitted vaporous flow generally upwardly through the bed,

providing dispersal means for generally dispersing the flow whereby oil particles from the flow will coalesce throughout the bed,

providing gravity flow means for draining collected oil away from the bed, including conduit means separate from the flow entrance means and dispersing means whereby intermixing of the emitted vaporous flow with collected oil is avoided,

providing means at a point above the bed for exhausting the cleansed vaporous flow away from the bed and to the ambient atmosphere,

utilizing a plurality of flow tubes disposed generally parallel in a spaced-apart relation in the bed to disperse the vaporous flow throughout the bed, and

constructing the tubes from tubular material having microporous walls to provide improved flow dispersion throughout the bed.

4,118,207

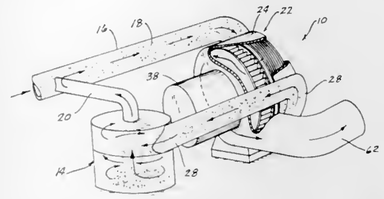
ROTATING DISC PARTICULATE SEPARATOR

Thomas K. Wilhelm, Cedar Falls, Iowa, assignor to United States Steel Corporation, Pittsburg, Pa.

Filed Dec. 6, 1976, Ser. No. 747,879

Int. Cl.[2] B01D *45/00*

U.S. Cl. 55—338 5 Claims



1. A separator for separating particulate material from fluid or gas systems comprising,

intake means adapted to be in communication with a medium in which a particular material is suspended;

a separating chamber having a housing including a circular sidewall and an inner end wall, said housing having an intake opening in communication with said intake means and a discharge opening;

said inner end wall having an opening therein providing communication between the interior and exterior of said chamber;

a plurality of first discs and at least two second discs axially aligned in close spaced relationship within said separating chamber;

said second discs being located between said first disc and said inner end wall and in close spaced relationship to said inner end wall;

said first and second discs having hollow portions adjacent the centers thereof;

means for supporting and rotating said first and second discs within said chamber;

said first discs being of substantially the same size;

said second discs being of substantially the same size and being larger than said first discs, the peripheries of said second discs being closely adjacent and spaced from said circular wall of said housing so as to provide a backflush seal between the outer periphery of said second discs and said circular wall during rotation of said discs;

fan means in communication with said separating chamber through said opening in said inner end wall for drawing said medium from said intake means thence radially through the spaces between said first discs, thence axially through the hollow portions of said first and second discs and through said opening in said inner end wall,

whereupon rotation of said first and second discs causes a radially inward pressure flow in the spaces between said first discs and a radially outward pressure flow in the spaces between said second discs, the rotation of said first and second discs causing the particulate material in said medium to move adjacent the peripheries of said first and second discs; and

particulate collector means in communication with said separating chamber through said discharge opening adjacent the peripheries of said first and second discs and adapted to receive a portion of the medium therein along with particulate materials suspended in said separator

chamber adjacent the peripheries of said first and second discs.

4,118,208

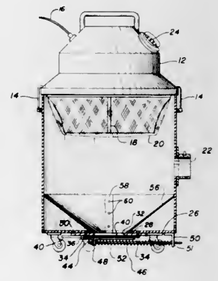
DISCHARGE MEANS FOR CANISTER VACUUM CLEANER

George Lewis Klinedinst, 964 N. George St., York, Pa. 17404

Filed Apr. 25, 1977, Ser. No. 790,542

Int. Cl.[2] B01D *35/16*

U.S. Cl. 55—433 3 Claims



1. Discharge means for use with a canister type vacuum cleaner having a canister which detachably supports a suction head at the upper end thereof and having a bottom at the lower end of said canister in which a circular opening is formed, said discharge means comprising in combination, a mounting plate having a central circular opening similar in size to said opening in the bottom of said canister and positioned coaxially therewith, means adapted to secure said plate firmly to the lower surface of said bottom with said openings in registry, a pair of parallel guide channels connected to the surface of said plate opposite the surface mounted against said bottom of said canister and each guide channel respectively positioned adjacent opposite sides of said central opening, a cut-off closure slide supported between said guide channels for close sliding engagement with the surface of said plate to which said channels are connected and having one end which moves toward and from said opening in said mounting plate, an actuating rod, connecting means on said one end of said slide to which one end of said rod is connected and the other end of said rod comprising an outer end extending beyond the periphery of the bottom of said canister for manual engagement, a spring mounted upon said rod, a bracket adapted to be fixed to said bottom of said canister adjacent the outer edge thereof and having a leg depending therefrom and provided with an aperture through which the outer end of said actuating rod extends, said spring on said rod extending between said leg and said connecting means on said one end of said slide and operable to move said slide from open to closing position over said opening in said plate, and the edge of said slide which moves toward and from said opening in said plate being in the form of a concave arc similar to a segment of the circumference of the circular opening in said mounting plate and said arcuate edge of said slide being bevelled to constitute a sharpened shearing edge cooperable with the perimeter of said central opening in said plate to remove any accumulated material extending through said opening.

4,118,209

CLIMATE-CONTROL UNIT PARTICULARLY FOR INCORPORATION IN A CONTAINER

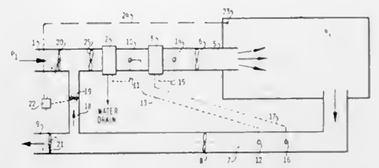
Petrus André Theodorus Exler, Zoetermeer, and Johannes Lobbe, Krimpen A/D IJssel, both of Netherlands, assignors to Pakhoed-Rotterdam B.V., Rotterdam, Netherlands

Filed Jul. 19, 1976, Ser. No. 706,603

Claims priority, application Netherlands, Jul. 18, 1975, 7508644

Int. Cl.[2] F25D *17/08*

U.S. Cl. 62—176 D 12 Claims



1. A climate-control unit particularly for incorporation in a container for transporting perishable goods, for example, agricultural produce and other edible commodities or moisture-sensitive goods such as steel products, electronic apparatus and the like, comprising a device for controlling air contained in the loading space and/or fresh air to be introduced therein within predeterminable temperature and humidity limits, and means for uniformly conveying air in and out of the useful loading space; said means comprising a fresh air inlet, an air outlet, and a return duct communicating said inlet and said outlet, blower means in said inlet downstream of the connection of said return duct with said air inlet, and a valve in each said inlet, said outlet and said return duct; said valves being controlled by a wet-bulb thermostat to be mounted in the loading space.

4,118,210

METHOD AND APPARATUS FOR MANUFACTURING GLASS FIBERS USING DEFLECTABLE AIR CURTAIN

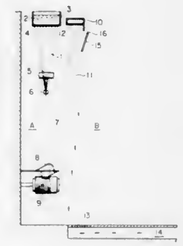
Takeshi Watanabe; Kazuo Nishimaki; Kazuo Shimanuki; Katuo Mita, and Satoru Konno, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Aug. 29, 1977, Ser. No. 828,690

Claims priority, application Japan, Aug. 31, 1976, 51-103901

Int. Cl.[2] C03B *37/02*

U.S. Cl. 65—2 7 Claims



1. In a method for draw forming glass filaments wherein molten glass flows through holes in an orifice plate on the bottom of an elevated melt furnace to form a plurality of individual filaments which are collected and drawn downwardly by winding means, and wherein a heat shielding air curtain is established between an air flow supply duct adjacent the furnace and a floor exhaust duct to protect the operator, the improvements comprising the steps of: deflecting the air flow

from said supply duct across the bottom of the orifice plate at least during the initial start-up period of the filament forming operation, to thereby cool the molten glass cones formed at the orifice plate hole exits and increase their viscosity to prevent adjacent cones and filaments from converging together, and forming said heat shielding air curtain from said air flow when forming and winding conditions are stabilized.

4,118,211

METHOD OF MAINTAINING THE STRENGTH OF OPTICAL FIBERS

Thomas R. Au Coin, Ocean; Sam Di Vita, West Long Branch, and Melvin J. Wade, Howell, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 22, 1977, Ser. No. 808,927
Int. Cl.[2] G02B *1/10, 5/14*
U.S. Cl. 65—3 R **7 Claims**

1. Method of maintaining the mechanical strength of optical fibers after the fibers have been drawn from a melt, said method comprising hermetically sealing said fibers with a coating of silicon nitride that is impervious to both moisture and chemically corrosive environments immediately after the optical fiber has been drawn from the melt.

2. Method of maintaining the mechanical strength of optical fibers after the fibers have been drawn from a melt, said method comprising hermetically sealing said fibers with a coating of boron nitride that is impervious to both moisture and chemically corrosive environments immediately after the optical fiber has been drawn from the melt.

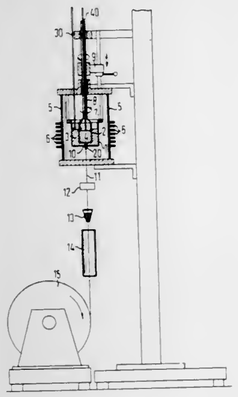
3. Method of maintaining the mechanical strength of optical fibers after the fibers have been drawn from a melt, said method comprising hermetically sealing said fibers with a coating of titanium dioxide that is impervious to both moisture and chemically corrosive environments immediately after the optical fiber has been drawn from the melt.

4,118,212

DOUBLE CRUCIBLE SYSTEM FOR THE PRODUCTION OF LIGHT CONDUCTING FIBERS

Hubert Aulich, Munich, and Josef Grabmaier, Kempfenhausen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 17, 1977, Ser. No. 852,236
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1976, 2654308
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—3 A **19 Claims**



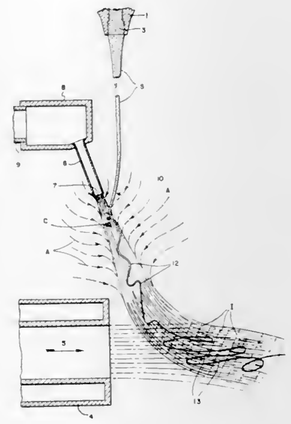
1. A double crucible system having two concentric melting crucibles for the production of a light conducting fiber, comprising: an inner crucible means for accommodating a melt for a core of the light conducting fiber, an outer crucible means surrounding the inner crucible means for accommodating a melt for a casing of the light conducting fiber, the inner and outer crucible means having concentric nozzle means for drawing off a light conducting fiber, the inner crucible means being arranged so that the distance between the concentric nozzles is variable, the inner crucible means being arranged to be rotatable and means to rotate said inner crucible means.

4,118,213

METHOD AND APPARATUS FOR FIBERIZING ATTENUABLE MATERIALS AND PRODUCT THEREOF

Marcel Levecque, Saint-Gratien; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, all of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 557,282, Mar. 11, 1975, Pat. No. 4,015,964, which is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1973, Pat. No. 3,885,940. This application Apr. 14, 1976, Ser. No. 676,755
Claims priority, application France, Feb. 9, 1976, 76 03416
Int. Cl.[2] C03B *37/04*
U.S. Cl. 65—5 **31 Claims**



1. A process for converting attenuable material into a fiber comprising generating a gaseous blast and a gaseous jet, the direction and the kinetic energy per unit of volume of the jet being such that the jet penetrates into the blast, thereby forming a zone of interaction in proximity of the path of penetration of the carrier jet into the blast, and delivering a stream of the attenuable material to the boundary of the blast so as to enter the zone of interaction, the source of the carrier jet being spaced from the blast and the said stream of material being first introduced into currents of ambient gas induced by the carrier jet to subject the stream to an initial or partial attenuation and form a continuous filament before reaching the boundary of the blast, the partially attenuated stream being thereafter drawn into a fiber by a second attenuation in the zone of interaction.

4,118,214

TREATING POLYCHROMATIC GLASS IN REDUCING ATMOSPHERES

Brent M. Wedding, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 22, 1977, Ser. No. 808,863
Int. Cl.[2] C03C *15/00;* **C03B** *32/00;* **C03C** *3/04*
U.S. Cl. 65—30 R **21 Claims**

1. A method for making a polychromatic glass article wherein at least a portion thereof is integrally colored by silver which consists of the steps:

(a) melting a batch for a glass containing the constituents of alkali fluoride, the constituents of at least one silver halide selected from the group consisting of AgCl, AgBr, and AgI, and 0–0.2% CeO_2;

(b) forming said melt into a glass article;

(c) exposing at least a portion of said article to high energy or actinic radiation selected from the group consisting of high velocity electrons, X-radiations, and ultra-violet radiations to develop a transparent latent image;

(d) heating at least said exposed portion of said article to a temperature between about the transformation range of the glass and the softening point thereof for a sufficient length of time to cause nucleation and growth of microcrystals of alkali fluoride containing at least one silver halide selected from the group consisting of AgCl, AgBr, and AgI;

(e) subjecting at least said exposed portion of said article to a gaseous reducing atmosphere at a temperature of at least 350° C., but less than about the strain point of the glass, for a sufficient length of time to cause metallic silver to be deposited as discrete colloidal particles less than 200A in the smallest dimension, and/or deposited within said microcrystals, the silver-containing part of the microcrystal being less than about 200A in the smallest dimension, and/or deposited upon the surface of said microcrystals, the portion of the microcrystal coated with silver being less than about 200A in the smallest dimension, said microcrystals having a concentration of at least 0.005% by volume, whereby color is produced in said exposed portion of said article; and then

(f) cooling said article to ambient temperature.

11. A method for making a monochromatic glass article wherein at least a portion thereof is integrally colored by silver which consists of the steps:

(a) melting a batch for a glass containing the constituents of alkali fluoride, the constituents of at least one silver halide selected from the group consisting of AgCl, AgBr, and AgI, a thermoreducing agent, and 0–0.2% CeO_2;

(b) forming said melt into a glass article;

(c) heating at least a portion of said article to a temperature between about the transformation range of the glass and the softening point thereof for a sufficient length of time to cause nucleation and growth of microcrystals of alkali fluoride containing at least one silver halide selected from the group consisting of AgCl, AgBr, and AgI;

(d) subjecting at least said heated portion of said article to a gaseous reducing atmosphere at a temperature of at least 350° C., but less than about the strain point of the glass, for a sufficient length of time to cause metallic silver to be deposited as discrete colloidal particles less than 200A in the smallest dimension, and/or deposited within said microcrystals, the silver-containing part of the microcrystal being less than about 200A in the smallest dimension, and/or deposited upon the surface of said microcrystals, the portion of the microcrystal coated with silver being less than about 200A in the smallest dimension, said microcrystals having a concentration of at least 0.005% by volume, whereby a single color is produced in said heated portion of said article; and then

(e) cooling said article to ambient temperature.

4,118,215

METHOD AND APPARATUS FOR HEATING GLASS IN A FOREHEARTH

Jean Albert Brax, Chalon sur Saone, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Sep. 16, 1977, Ser. No. 833,965
Claims priority, application France, Sep. 21, 1976, 76 28322
Int. Cl.[2] C03B *5/22*
U.S. Cl. 65—134 **11 Claims**

1. A method for heating molten glass in a relatively large forehearth communicating with a plurality of relatively small feeder conduits, the method comprising:

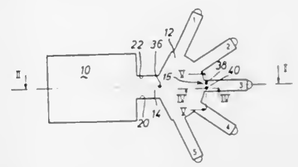
(a) directing a stream of molten glass from an inlet of the forehearth to an inlet of at least one feeder conduit;

(b) passing a centrally disposed electric heating current along said stream between the inlet of the forehearth and the inlet of a feeder conduit providing a source of glass;

(c) whereby said heating is effected by adding a quantity of thermal energy to the molten glass; and

(d) whereby molten glass in the forehearth is maintained at a desired operating temperature.

3. An apparatus for conveying molten glass from a glass furnace which comprises:



(a) a relatively large forehearth for receiving molten glass from the glass furnace, said forehearth having an inlet connecting it to the glass furnace;

(b) a plurality of relatively small feeder conduits having inlets connecting them to the forehearth;

(c) a first electrode centrally inserted in the molten glass adjacent the inlet to the forehearth;

(d) a second electrode inserted in the molten glass adjacent the inlet of at least one feeder conduit; and

(e) means for energizing said first and second electrodes to produce electric current flow along the molten glass between said electrodes and heat the molten glass passing from the forehearth to said feeder conduit.

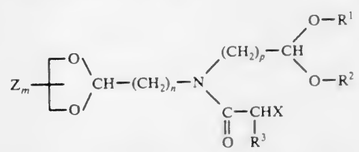
4,118,216

N-DIALKOXYALKYL-N-DIOXOLANALKYLENE-α-HALOALKANAMIDES

Roger D. Hotz, Evanston; Leonard J. Stach, Riverside, both of Ill., and Sidney B. Richter, Barberton, Ohio, assignors to Velsicol Chemical Company, Chicago, Ill.

Filed Apr. 25, 1977, Ser. No. 790,360
Int. Cl.[2] A01N *9/24;* **C07D** *317/30;* **A01N** *9/20*
U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula



wherein Z is lower alkyl; *m* is an integer from 0 to 4; *n* and *p* are each integers from 1 to 2; R^1 and R^2 are each lower alkyl; R^3 is hydrogen or lower alkyl; and X is halogen.

10. A method of controlling weeds which comprises contacting said weeds with an effective amount of a herbicidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to weeds, a compound of claim **1**.

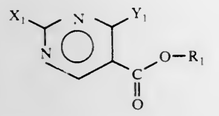
4,118,217

HERBICIDALLY ACTIVE SUBSTITUTED PYRIMIDINE COMPOUNDS AND METHOD OF USING SAME

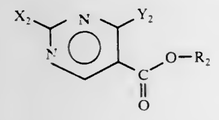
Stephen L. Oestreicher, Mission, Kans., and David P. Hardin, North Kansas City, Mo., assignors to Farmland Industries, Incorporated, Kansas City, Mo.

Filed Jan. 6, 1977, Ser. No. 757,481
Int. Cl.[2] A01N *9/22*
U.S. Cl. 71—92 **9 Claims**

1. A method of inhibiting or stopping the growth of emergent weeds which comprise the steps of applying to the weed habitat from about ½ to 10 pounds per acre of a compound selected from the group consisting of (A) compounds of the formula



wherein X_1 represents chlorine or bromine, Y_1 is selected from the group consisting of the chlorine, bromine, alkylamino groups having from 1 to 6 carbon atoms, inclusive, hydroxyalkylamino groups having from 2 to 6 carbon atoms, inclusive, and alkoxy groups having from 1 to 6 carbon atoms, inclusive, and R_1 is selected from the group consisting of alkyl groups having from 1 to 18 carbon atoms, inclusive, benzyl groups, chlorophenyl groups, chlorobenzyl groups, trichloromethylalkyl groups having from 1 to 6 carbon atoms, inclusive, alkylphenyl, the alkyl groups having from 1 to 6 carbon atoms, inclusive, and alkenyl groups having from 3 to 6 carbon atoms, inclusive, and (B) compounds of the formula



wherein X_2 is selected from the group consisting of alkoxy groups having from 1 to 6 carbon atoms, inclusive, alkylthio groups having from 1 to 6 carbon atoms, inclusive, and mercapto groups, Y_2 represents chlorine or bromine, and R_2 is selected from the group consisting of alkyl groups having from 1 to 18 carbon atoms, inclusive, benzyl groups, chlorophenyl groups, chlorobenzyl groups, trichloromethylalkyl groups having from 1 to 6 carbon atoms, inclusive, alkylphenyl, the alkyl groups having from 1 to 6 carbon atoms, inclusive, and alkenyl groups having from 3 to 6 carbon atoms, inclusive.

4,118,218

FORMULATION PROCESS

Nigel Wyndham Drewe, Maidstone; Peter Robin Hodson, and Clive Gilroy Robson, both of Tonbridge, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 14, 1976, Ser. No. 695,414
Int. Cl.[2] A01N *9/22*
U.S. Cl. 71—92 **8 Claims**

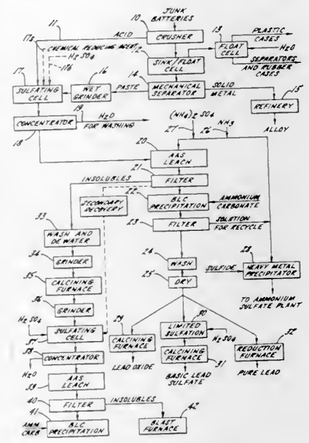
1. A process of preparing a solid granular herbicidal composition containing a herbicidal bipyridylium diquaternary salt in association with an inert, water-soluble, solid diluent therefor, which comprises introducing an aqueous solution of a herbicidal bipyridylium diquaternary salt into a gaseous fluidised bed of particles of the solid, water-soluble, diluent maintained at an elevated temperature such that the solution of the bipyridylium salt rapidly evaporates to deposit the bipyridylium salt as a coating on the particles of the solid diluent without dissolving the diluent particles, and collecting the solid granular herbicidal composition so prepared, the concentration of herbicidal bipyridylium diquaternary salt in the aqueous solution introduced into the fluidised bed being at least 200 grams per liter, and the collected composition containing at least 10% by weight of bipyridylium cation.

4,118,219

PROCESS FOR RECYCLING JUNK LEAD-ACID BATTERIES

Marion Edward Elmore, Mendota Heights, and James Kenneth Klang, St. Paul Park, both of Minn., assignors to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 659,277, Feb. 19, 1976, abandoned. This application Jul. 1, 1977, Ser. No. 812,437
Int. Cl.[2] C22B *13/04*
U.S. Cl. 75—103 **30 Claims**



1. A process for recycling the paste and electrolyte of junk lead-acid batteries, said process comprising the steps of
(a) separating the paste and electrolyte from the junk batteries,
(b) reacting the paste and electrolyte to increase the lead sulfate content of the paste and reduce the acid content of the electrolyte,
(c) mixing the resulting paste with an aqueous ammoniacal ammonium sulfae solution to dissolve a substantial portion of the lead sulfate from the paste,
(d) separating the resulting pregnant lead solution from any solid materials therein,
(e) and precipitating lead carbonate from the pregnant lead solution.

30. Lead oxide produced by reacting the paste from junk batteries with sulfuric acid to convert lead oxide therein to lead sulfate, mixing the resulting paste wiith an aqueous ammoniacal ammonium sulfate solution to dissolve a substantial portion of the land sulfate from the paste, separating the resulting pregnant lead solution from any solid materials remaining therein, precipitating lead carbonate from the pregnant lead solution and removing the precipitate from the solution, and converting the lead carbonate to lead oxide by the removal of carbon dioxide from the carbonate.

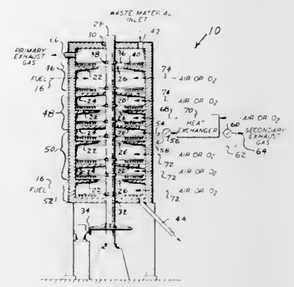
4,118,220

METHOD FOR TREATING WASTE MATERIAL

Charles F. von Dreusche, Jr., Ramsey, and Louis T. Barry, Skillman, both of N.J., assignors to Nichols Engineering & Research Corp., Belle Mead, N.J.

Filed Jul. 19, 1976, Ser. No. 706,615
Int. Cl.[2] C22B *31/00*
U.S. Cl. 75—69 **4 Claims**

1. A method of treating waste material containing heavy metals and carbonaceous material comprising the steps of continuously introducing waste material to be processed through a waste material inlet into a primary furnace while simultaneously adding air to said furnace, heating said waste material in said furnace until it is in a charred state and thence discharging said material from the furnace and passing it to a secondary treatment device while simultaneously discharging



exhaust gas from said furnace, recovering or removing by chemically leaching said heavy metals from said waste material in said secondary treatment device, thereafter passing the remainder of the waste material in the secondary treatment device to a secondary furnace to burn said carbonaceous material remaining in the waste material and separately discharging ash and exhaust gas from said secondary furnace.

4,118,221

COPPER RECOVERY FROM SULFATE SOLUTIONS CONTAINING NICKEL AND COBALT

Victor Alexander Ettel, and Eric August Pierre Devuyst, both of Mississauga, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 7, 1977, Ser. No. 849,074
Claims priority, application Canada, Feb. 28, 1977, 272785
Int. Cl.[2] C22B *15/12, 23/04*
U.S. Cl. 75—108 **6 Claims**

1. A method of recovering copper and nickel separately from an acidic sulfate solution thereof comprising the following steps:
I. Treating the solution with a base selected from the group consisting of hydroxides and carbonates of alkali and alkaline earth metals to precipitate substantially all of the copper present and some of the nickel as basic compounds thereof;
II. separating said basic compounds obtained in Step I from an essentially copper-free nickel liquor;
III. reducing the copper present in said basic compounds to elemental copper through formation of cuprous sulfite and thermal dissociation thereof under pressure;
IV. separating said elemental copper produced in Step III from spent solution;
V. reclycling said spent solution obtained in Step IV to perform Step I thereon; and
VI. recovering nickel from said essentially copper-free nickel liquor obtained in Step II.

4,118,222

GLASSY HAFNIUM-BERYLLIUM ALLOYS

Lee E. Tanner, Summit, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 2, 1977, Ser. No. 802,743
Int. Cl.[2] C22C *27/00*
U.S. Cl. 75—134 V **4 Claims**

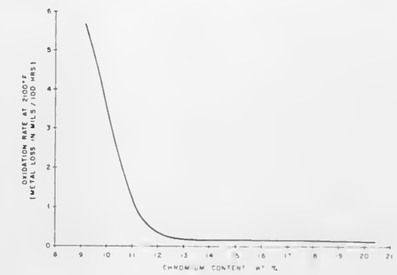
1. A hafnium-base metal alloy which is primarily glassy consisting essentially of about 40 to 60 atom percent beryllium and the balance hafnium plus incidental impurities.

4,118,223

THERMALLY STABLE HIGH-TEMPERATURE NICKEL-BASE ALLOYS

Dennis S. Acuncius; Robert Blanchard Herchenroeder, both of Kokomo; Russell W. Kirchner, Greentown, and William L. Silence, Kokomo, all of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Continuation of Ser. No. 179,922, Sep. 13, 1971, abandoned. This application Feb. 25, 1977, Ser. No. 772,321
The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.
Int. Cl.[2] C22C *19/05*
U.S. Cl. 75—171 **9 Claims**



1. A thermally stable, high-temperature oxidation-resistant, nickel-base alloy containing more than 50% by weight of nickel and consisting essentially by weight
from about 12 to about 18% chromium from about 8 to about 18% molybdenum and a small but effective amount to impart high temperature oxidation resistance of lanthanum not exceeding about 0.25% of the alloy, said alloy also containing by weight any of the following non-essential elements within the ranges indicated provided that the average N_v number as defined herein does not substantially exceed about 2.5:
tungsten: 0 - 15%
cobalt and iron: 0 - 10%
zirconium and titanium: <0.5%
carbon: <0.2%
aluminium: <0.5%
boron: <0.03%
silicon: <1% and
manganese: <2%
with the balance of the alloy being nickel and incidental impurities, and characterized by controlled thermal stability, a low coefficient or expansion and oxidation resistance at temperatures of about 1600° F. and above.

4,118,224

NICKEL-CHROMIUM HEATING ELEMENT ALLOY HAVING IMPROVED OPERATING LIFE

Teh Po Wang, North Caldwell, and Carrol Dean Starr, Whippany, both of N.J., assignors to Wilbur B. Driver Company, Newark, N.J.

Filed Dec. 6, 1976, Ser. No. 747,777
Int. Cl.[2] C22C *19/05*
U.S. Cl. 75—171 **5 Claims**

1. A nickel-chromium heating element alloy consisting essentially of a base composition in weight percent within the range of: 18 to 22 percent chromium, 1.0 to 1.6 weight percent silicon, balance essentially nickel, characterized in that the alloy contains from about 0.1 to 0.75 weight percent hafnium, whereby the operating life of the alloy as a resistance heating element is improved.

4,118,225

METHOD FOR PRODUCING FIBROUS STEEL MATTS

Emerick J. Dobo, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 28, 1975, Ser. No. 626,155

Int. Cl.[2] B22F *3/00*

U.S. Cl. 75—207 **10 Claims**

1. A method for producing a fibrous steel matt from particles of iron oxide with the aid of a fiber-forming acrylic polymer, said method comprising the following steps in sequence:

(A) providing a spinning dope wherein particles of iron oxide having an average diameter of about 5 microns or less are uniformly dispersed in a solution of acrylic polymer with the weight ratio of iron oxide to acrylic polymer being within the range of from about 3:1 to 7:1, respectively;

(B) forming a plurality of continuous filaments by extruding said dope through a spinnerette and into a coagulation bath;

(C) forming a non-woven precursor matt from said filaments; and

(D) converting said precursor matt to a fibrous steel matt by subjecting the precursor to a temperature in the range of from 900° C. to 1150° C. for a period of from about 3 to 8 minutes while being exposed to a gaseous atmosphere consisting of from about 80 to 94 percent by volume of hydrogen, from about 2 to 15 percent of carbon monoxide and from 0 to 10 percent by volume of a gaseous hydrocarbon.

7. A precursor matt which is convertible to a fibrous steel matt when exposed to a reducing environment at a temperature in the range of from about 900° C. to 1150° C. for a period of from about 3 to 8 minutes, said precursor matt being composed of fibers which contain a mixture of iron oxide particles and an acrylic polymer in a weight ratio of from about 3:1 to 7:1, respectively.

9. A method for producing a fibrous steel alloy matt from a mixture of metal oxide particles consisting of iron oxide and one or more other metal oxides capable of being reduced and sintered at conditions effective for accomplishing a reduction and sintering of iron oxide, said method comprising the following steps in sequence:

(A) providing a spinning dope wherein said mixture of metal oxide particles having an average diameter of about 5 microns or less are uniformly dispersed within a solution of acrylic polymer with the weight ratio of iron oxide to acrylic polymer being within the range of from about 3:1 to 7:1, respectively;

(B) forming a plurality of filaments by extruding said dope through a spinnerette and into a coagulation bath;

(C) converting said precursor matt to a fibrous steel alloy matt by exposing said precursor to a gaseous atmosphere consisting of from about 80 to 94 percent by volume of hydrogen, from about 2 to 15 percent by volume of carbon monoxide, and from 0 to 10 percent by volume of a gaseous hydrocarbon at a temperature in the range of from about 900° C. to 1150° C. for a period of from about 3 to 8 minutes.

4,118,226

COMBINATION AIR FILTER AND AIR TREATING DEVICE

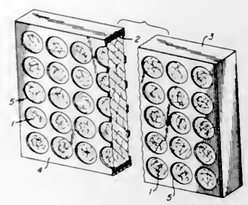
Richard Lawrence Bourassa, 3406 Lisa Cir., Waldorph, Md. 20601

Filed Mar. 22, 1977, Ser. No. 780,095

Int. Cl.[2] B01D *50/00*

U.S. Cl. 55—279 **7 Claims**

1. An integral disposable combination air filter and air freshener device for a forced air ventilation system comprising; a filtering element having opposed surfaces, opposed top and bottom edges, and opposed side edges; at least one of said opposed edges having in integral contact therewith a solid medium of concentrated air freshening aromatics and being adapted to slowly discharge into the ventilation system air freshener aromatics; and disposable container means enclosing said filtering element and solid medium having respective and corresponding surface portions, top and bottom portions, and



side portions, said container means having perforations therein for allowing unrestricted air flow through the air filtering element.

4,118,227

PROCESS FOR PRODUCING DICALCIUM SILICATE POWER

Tomoo Shiohara, Kyoto; Minoru Miyamoto, Suita, and Nobuo Tamaki, Kyoto, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Japan

Filed May 20, 1977, Ser. No. 799,131

Claims priority, application Japan, May 24, 1976, 51-60407; Mar. 23, 1977, 52-32589; Mar. 23, 1977, 52-32590

Int. Cl.[2] C09C *1/02*

U.S. Cl. 106—306 **25 Claims**

1. A process for producing a fine powdery γ-dicalcium silicate which comprises mixing a calcium oxide componenet, a silicon dioxide component, and at least one compound selected from the group consisting of titanium oxide, zinc oxide, alkali metal chlorides and alkaline earth metal chlorides; burning the mixture; and recovering the resulting fine powdery γ-dicalcium silicate.

4,118,228

PHOTOGRAPHIC MATERIALS SUITED FOR THE PRODUCTION OF COLOR SEPARATIONS

Hans Josephus Corluy, Berchem, Belgium; Franz Moll, Leverkusen-Steinbuchel, Fed. Rep. of Germany; Herbert Müller, Leverkusen, Fed. Rep. of Germany, and Marie Hase, Schildgen-Berg. Gladbach, Fed. Rep. of Germany, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

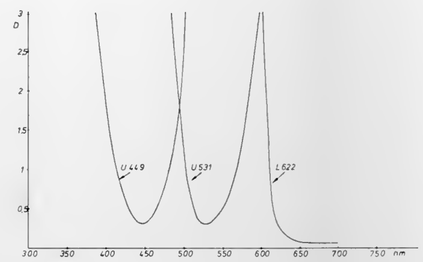
Filed Jul. 22, 1976, Ser. No. 707,882

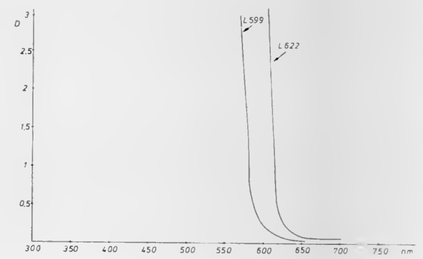
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1975, 2533602

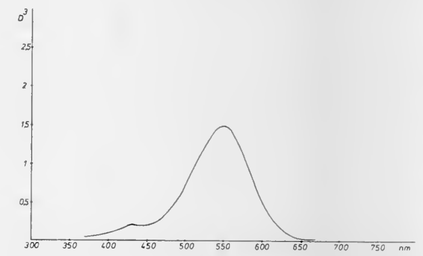
Int. Cl.[2] G03C *7/16, 1/76*

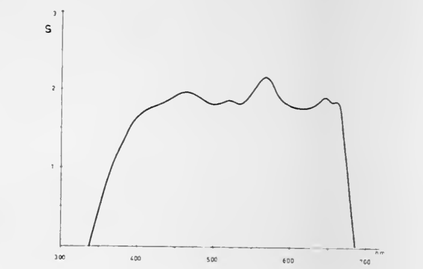
U.S. Cl. 96—17 **14 Claims**

1. In a photographic panchromatic black-and-white silver halide recording material having two silver halide emulsion layers wherein a first layer has a panchromatic sensitivity, and a second layer has a blue sensitivity which as determined by the Relative Sensitivity Test as defined in the specification is at least 0.6 log I.t units higher than each of its green and red sensitivities, and both said first and second layers have substantially the same threshold sensitivity to blue light; the improvement whereby at least said first layer is spectrally sensitized so that the spectral sensitivity of the photographic material measured at density 1.0, is at least 0.8 powers of ten lower at 650 nm than at 620 nm, and decreases further beyond 650 nm.









4,118,229

HIGH ENERGY RECORDING ON AN ACETYL ACETONATE

Ilse-Dore Stromberger-D'Alton-Rauch; Karl Klose, both of Hamburg; Udo Bergmann, Schwarzenbek; Alfred Glattli, Hamburg, all of Fed. Rep. of Germany, and Claus-Peter Hodum, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,266

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1975, 2542680

Int. Cl.[2] G03C *5/04*

U.S. Cl. 96—27 H **8 Claims**

1. A method for recording irreversible data which become visible immediately and without after-treatment, in which a light absorbing layer is exposed to light of a high intensity and short duration with an image pattern, characterized in that the layer contains an acetyl acetonate which is dissolved or finely dispersed in a polymer, that the light has a wave length, at which the light-absorbing layer shows high absorption, and an energy density and an intensity whose values are sufficiently high to cause a print-out reaction with the acetyl acetonate containing layer used resulting immediately after exposure in the formation of black dots at the areas of exposure on a transparent light background and that the polymer and acetyl acetonate are mixed in a ratio in which the layer has a transmission which amounts to 0.1 to 90% for the wave length chosen.

4,118,230

PROCESS FOR ADJUSTING EXPOSURE MASKS RELATIVE TO A SUBSTRATE WAFER

Hans Binder, Unterpfaffenhofen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sep. 22, 1977, Ser. No. 835,746

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1976, 2642634

Int. Cl.[2] G03C *5/04, 5/00*

U.S. Cl. 96—27 R **6 Claims**

1. In a method for adjusting individual exposure masks relative to a substrate during consecutively performed photolithographic processes wherein the substrate is provided with an adjustment structure by means of a photolithographic step employing a first mask and the method includes at least two additional photolithographic processes being consecutively performed on the substrate with each process including adjusting an exposure mask on the substrate by aligning adjustment structure on the mask to coincide with the adjustment structure of the substrate, said process causing the dimension of the adjustment structure of the mask to be reproduced on the adjustment structure of the substrate, the improvements comprising providing an adjustment structure for the substrate having a separate pair of adjustment marks for each of the exposure masks so that the number of pairs at least equals the number of exposure masks, providing each of the exposure masks with a single pair of adjustment marks comprising a first and second mark, said pair on one exposure mask being spatially arranged with respect to the pairs on the other exposure masks so that when each of the exposure masks are aligned on the substrate, the pair of adjustment marks of each mask is aligned to coincide with a different pair of marks on the substrate.

4,118,231

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS CONTAINING ANTISTATIC AGENTS

Masayoshi Mayama; Sadatugu Terada; Toshio Muramatsu, all of Hachioji; Masayuki Kimura, Hino; Masao Ishibara, Hino, and Tohru Kobayashi, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd. and Hokuetsu Paper Mills Ltd., both of Tokyo, Japan

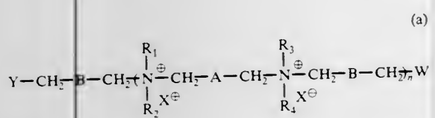
Continuation of Ser. No. 582,426, May 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 339,004, Mar. 7, 1973, abandoned. This application Mar. 18, 1977, Ser. No. 779,229

Claims priority, application Japan, Mar. 8, 1972, 47-23141; Mar. 15, 1972, 47-25755

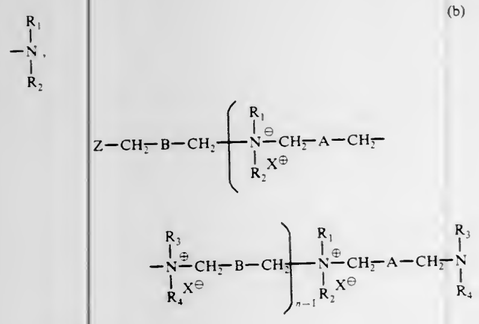
Int. Cl.² G03C *1/78, 1/72, 5/28*

U.S. Cl. 96—87 A **3 Claims**

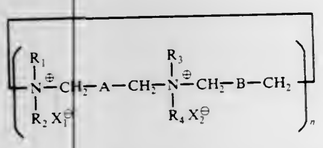
1. A light-sensitive silver halide photographic material comprising a support, a silver halide emulsion layer and a layer consisting essentially of a polymer of the formula

(a) 

wherein Y and W are individually Cl, Br, I or

(b) 

wherein **Z** is Cl, Br or I, or

(c) 

and wherein R_1, R_2, R_3, and R_4 are individually an alkyl or hydroxyalkyl group having 1 to 4 carbon atoms, a hydroxymethylene group, a phenylene group or a mere bond; $X_1^{\ominus}$ and $X_1^{\ominus}$ are individually an anion; and *n* is an integer of 10 to 30.

4,118,232

PHOTOGRAPHIC MATERIAL CONTAINING SULPHONIC ACID GROUP CONTAINING DISAZO DYESTUFFS

Bernhard Piller; John Lenoir, both of Marly-le-Petit; Alfred Froehlich; Thomas Stauner, both of Marly-le-Grand, and Paul Tschopp, Marly, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

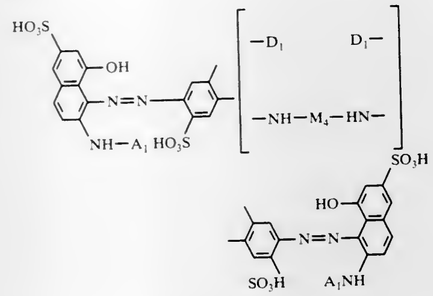
Division of Ser. No. 606,395, Aug. 21, 1975, Pat. No. 4,051,123, which is a continuation of Ser. No. 238,944, Mar. 28, 1972, abandoned. This application Mar. 15, 1977, Ser. No. 777,867

Claims priority, application Switzerland, Apr. 7, 1971, 5058/71; May 14, 1971, 7208/71; Sep. 16, 1971, 13605/71

Int. Cl.² G03C *1/10*

U.S. Cl. 96—99 **28 Claims**

1. Photographic material, characterized in that it contains, on a carrier, a layer with a symmetrical azo dyestuff of the formula



wherein

A_1 denotes hydrogen, methyl, hydroxyethyl, phenyl, lower alkyl phenyl, trifluoromethyl phenyl lower alkoxy phenyl, fluoro-, chloro- or bromophenyl, sulphophenyl, carboxyphenyl, lower alkyl sulphophenyl or lower alkyl carbonylphenyl,

$-M_4-$ denotes carbonyl, isophthaloyl, nitroisophthaloyl, benzoylamino-isophthaloyl, terephthaloyl, nitroterephthaloyl, chloroterephthaloyl, naphthalenedicarbonyl, —OC-phenylene-methylene-phenylene-CO—, —OC-phenylene-carbonyl-phenylene-CO—, —OC-phenylene-sulphonyl-phenylene-CO—, —OC-phenylene-azo-phenylene-CO—, —OC-phenylene-ureylene-phenylene-CO—, —OC-phenylene-ethylenedioxy-phenylene-CO— —CO-phenylene-pentylenedioxy-phenylene-CO—, —OC-phenylene-CO-HN-phenylene-CO- or —OC-phenylene-CO-HN-$(CH_2)_p$-HN-OC-phenylene-CO—, p being 2, 3 or 4, and

D_1 denotes fluorine, chlorine or bromine, methyl, ethyl, methoxy, ethoxy, methylmercapto, ethylmercapto, hydroxyethylmercapto, trifluoromethyl, acetylamino or benzoylamino.

4,118,233

PHOTOSENSITIVE COMPOSITION FOR PRINTING SCREENS

Takahiro Tsunoda, and Tsuguo Yamaoka, both of Funabashi, Japan, assignors to Murakami Screen Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1976, Ser. No. 729,610

Claims priority, application Japan, Oct. 7, 1975, 50-121045

Int. Cl.² G03C *1/68*

U.S. Cl. 96—115 P **12 Claims**

1. A photosensitive composition in solution for printing screens comprising:

(a) a liquid medium selected from the group consisting of water-miscible organic solvents and solvent mixtures of said organic solvents and water;

(b) a polymer soluble in both said organic solvents and water selected from the group consisting of partially saponified polyvinyl acetate and partially saponified copolymers of vinyl acetate and crotonic acid;

(c) a sensitizer soluble in said organic solvents selected from the group consisting of pentaerythritol triacrylate and pentaerythritol tetraacrylate and their prepolymers having an average degree of polymerization of not greater than 5; and

(d) an initiator soluble in said organic solvents and capable of generating a radical upon exposure to light,

wherein said liquid medium is present in the range of 150 to 800 parts by weight and the sensitizer is present in the range of 20 to 400 parts by weight, respectively, with respect to 100 parts by weight of the polymer.

4,118,234

ELECTROLESS COPPER PLATING BATH

Johannes M. Jans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 13, 1976, Ser. No. 714,111

Claims priority, application Netherlands, Aug. 19, 1975, 7509824

Int. Cl.² C23C *3/02*

U.S. Cl. 106—1.23 **2 Claims**

1. An aqueous alkaline copper plating bath for the electroless deposition of copper layers, said bath containing cuprous ions, a compound which forms complexes with cuprous ions, alkali for adjusting the ph of said bath to about 12 to 13, formaldehyde or a compound which yields formaldehyde and in addition, as a stabilizer, a nitro benzene compound ring substituted with at least one moiety selected from the group consisting of aldehyde, methyl, sulfonic acid and nitro, said stabilizer being present in an amount sufficient to stabilize said bath.

4,118,235

MOLD RELEASE AGENT

Norio Horiuchi; Shin-ichi-ro Kai, both of Ibaragi, and Masayoshi Shinjo, Settu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 15, 1976, Ser. No. 723,639

Claims priority, application Japan, Sep. 18, 1975, 50-113440; Sep. 25, 1975, 50-116228; Sep. 30, 1975, 50-118583

Int. Cl.² B28B *7/36*

U.S. Cl. 106—38.22 **11 Claims**

1. A mold release composition comprising

a. a perfluoroalkyl group-containing phosphoric acid ester represented by the formula:

$$(R_fYC_qH_{2q}O)_n\,PO(OH)_{3-n}$$

wherein: R_f represents a perfluoroalkyl having 4 to 20 carbon atoms;

Y is $CH_2CH(Z)$ where Z is H, CH_3, C_2H_5, Cl or OR where R is H, CH_3, C_2H_5, $COCH_3$, COC_2H_5 or CH_2COOH or a salt of CH_2COOH, or $SO_2N(R')$ where R' is an alkyl group having 1 to 4 carbon atoms;

q is an integer of 0 to 4 when Y is $CH_2CH(Z)$ or 1 tO 4 when Y is $SO_2N(R')$; and

n is an integer of 1 to 3, or a salt thereof;

b. an additive selected from the group consisting of non-curable polysiloxanes and highly fluorinated organic compounds, said additives being a liquid or solid at room temperature and having a boiling point not lower than 100° C. and a melting point not higher than 150° C.; and

c. a liquid carrier.

4,118,236

CLAY COMPOSITIONS

Clive Arnold Erskine, Forestville, Australia, assignor to ACI Technical Centre Pty Ltd., Waterloo, Australia

Filed Mar. 9, 1977, Ser. No. 775,869

Claims priority, application Australia, Mar. 15, 1976, PC5218

Int. Cl.² C04B *35/00*

U.S. Cl. 106—71 **26 Claims**

1. A method of producing reinforced thin sectioned clay based articles, such as sheets, pipes or the like, having a modulus of rupture of at least 10 MPa and a modulus of elasticity no greater than 16 GPa, including the steps of forming a shaped mixture comprising the following ingredients in substantially the proportions specified by percentage weight of the total solids in the composition:

Fibrous reinforcement selected from the group consisting of glass fibre, carbon fibre, mineral wool, ceramic fibre, asbestos or mixtures of two or more thereof — 1% to 30%

Clay selected from the group consisting of montmorillonitic clay, kaolinitic clay, illitic clay, or mixtures of two or more thereof — 5% to 95%

Fillers — 0% to 90%

Water — 20% to 100%

drying the shaped mixture, and firing the dried shapes at a temperature in the range of 500° C. to 800° C. for a time sufficient to produce substantial stabilisation against redispersion in water of the clay in the composition without forming a ceramic article therefrom.

4,118,237

GLASS-CERAMICS DISPLAYING INHERENT LUBRICITY

George H. Beall, Big Flats; Kenneth Chyung, Painted Post, and Syed N. Hoda, Horseheads, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 4, 1977, Ser. No. 821,692

Int. Cl.² C03B *32/00;* **C03C** *3/22*

U.S. Cl. 106—39.6 **4 Claims**

1. A method for making a glass-ceramic article exhibiting the properties of lubricity and excellent resistance to wear and having a crystal content in excess of 50% by volume wherein norbergite constitutes the predominant crystal phase, which consists in the steps of:

(a) melting a batch for a glass consisting essentially, by weight on the oxide basis, of about 12–40% MgO, 3–15% Al_2O_3, 35–55% SiO_2, and 5–15% F, the sum of those four components constituting at least 75% by weight of the total composition;

(b) simultaneously cooling said melt to a temperature at least below the transformation range and shaping a glass article therefrom; and then

(c) heating said glass article to a temperature between about 850°–1150° C. to cause the growth in situ of crystals.

4. A glass-ceramic article made in accordance with the method of claim 1.

4,118,238

OPTICAL GLASS

Kazufumi Ishibashi, Sagamihara; Shizuo Matsumaru, Yokohama, and Takeo Ichimura, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 22, 1976, Ser. No. 707,649

Claims priority, application Japan, Jul. 28, 1975, 50-91161

Int. Cl.² C03C *3/14*

U.S. Cl. 106—47 Q **5 Claims**

1. Thorium-free optical glass having a refractive index of 1.71 to 1.85 and Abbe number of 40 to 57 containing oxygen ions and fluorine ions as anions, in which cations in the glass calculated as oxides are present in the following ranges of percentage by weight:

B_2O_3	12–26,

-continued

La_2O_3	41–48,
Y_2O_3	8–11,
ZrO_2	1–8,
Ta_2O_5	6–14,
Gd_2O_3	0–12,
Nb_2O_5	0–19,
RO	0–4,
PbO	0–10,
TiO_2	0–8, and
GeO_2	6–23,

where RO is an ingredient or a combination of two or more ingredients of MgO, CaO, SrO, BaO and ZnO, and part of the oxygen ions is substituted for 0.6 to 1.5% by weight of fluorine ions relative to the glass.

4,118,239

ALKALI-RESISTANT GLASS FIBER COMPOSITION

Lawrence Vincent Gagin, Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Sep. 6, 1977, Ser. No. 830,549
Int. Cl.² C03C *13/00, 3/04;* **C04B** *31/06*
U.S. Cl. 106—50 **7 Claims**

1. An alkali-resistant glass composition capable of being fiberized, which consists of, in a total of 100 parts by weight.

SiO_2	50–62 parts
Al_2O_3	1–11 parts
ZrO_2	4–10 parts
ZnO	0.5–7 parts
Group IA metal oxide	10–19 parts
Group IIA metal oxide	3–15 parts

Fluorine calculated as calcium fluoride 1–4 parts.

4,118,240

ALUMINUM TITANATE COMPOSITION BEING STABLE AT HIGH TEMPERATURE

Mitsuo Takabatake, Yokohama, Japan, assignor to Asahi Glass Company Ltd., Tokyo, Japan

Filed Aug. 11, 1977, Ser. No. 823,740
Claims priority, application Japan, Sep. 14, 1976, 51-109421
Int. Cl.² C04B *35/02, 35/44, 35/46, 35/50*
U.S. Cl. 106—73.33 **6 Claims**

1. An aluminum titanate composition having a low coefficient of thermal expansion (20° to 1000° C.) and which is stable at high temperatures and essentially unaffected by reducing atmospheres at high temperatures which consists essentially of 1.5 to 10 wt. % of SnO_2, 2–13 wt. % of SiO_2 and aluminum titanate.

4,118,241

MORTAR COMPOSITIONS AND METHOD OF MAKING SAME

Frank E. Bernett, Yardley, Pa., assignor to Tile Council of America, Inc., Princeton, N.J.

Continuation of Ser. No. 525,054, Nov. 19, 1974, abandoned.
This application Jul. 27, 1976, Ser. No. 709,176
Int. Cl.² C04B *7/02*
U.S. Cl. 106—90 **46 Claims**

1. A dry composition capable of being mixed with water to form a mortar, said dry composition comprising in percentages by weight of the dry composition

40 to 70 percent of an inert filler,

0.2 to 1.0 percent of a water soluble cellulose ether having a viscosity of 4,000 cps to 30,000 cps in 2 percent solution,

an antifoam component present in an amount from 0.05 to 1.0 percent based upon the weight of the composition wherein said antifoam component enables the dry composition to be mixed with water by machine to form a mortar having an air content of between 5 and 20 percent based upon the volume of the mixed mortar, and

a hydraulic cement in an amount to balance.

4,118,242

PROCESS FOR MANUFACTURING CONCRETE OF HIGH CORROSION RESISTANCE

Olav Kjöhl, Heistad, and Paul Henrik Olstad, Brevik, both of Norway, assignors to Aksjeselskapet NORCEM, Oslo, Norway

Filed Jul. 13, 1977, Ser. No. 815,418
Claims priority, application Norway, Jul. 9, 1976, 762401
Int. Cl.² C04B *7/02*
U.S. Cl. 106—98 **13 Claims**

1. In a method of manufacturing concrete having resistance to corrosion, which comprises mixing cement, sand, water, reactive silica and, optionally, conventional concrete additives, the improvement wherein the cement has a low aluminate content, and at least 10 weight percent of finely divided, non-pozzolanic, reactive silica, based on the weight of the cement, is incorporated in and distributed uniformly throughout the concrete.

4,118,243

PROCESS FOR DISPOSAL OF ARSENIC SALTS

Mahendra D. Sandesara, South Holland, Ill., assignor to Waste Management of Illinois, Inc., Palos Heights, Ill.

Filed Sep. 2, 1977, Ser. No. 830,237
Int. Cl.² C04B *11/10*
U.S. Cl. 106—109 **20 Claims**

1. A process for converting a waste material containing water-soluble arsenic salts to a waste material containing water-insoluble arsenic salts which comprises mixing an aqueous system comprising said water-soluble arsenic salts, sulfuric acid and calcium hydroxide in the presence of sufficient ferrous ions to ensure proper curing of the aqueous system to solid form, and sufficient iron in the aqueous system, either in ferrous and/or ferric form, to react with arsenic derived from the water-soluble arsenic salts present, whereby the aqueous system is formed into a slurry, the slurry being contacted with an oxygen containing gas to oxidize the slurry due to contact of the slurry with the oxygen, thus causing the entire slurry to cure to solid form.

15. The process of claim 1 which further comprises disposing of said solid form in a secure landfill.

4,118,244

PARAFFIN WAX COMPOSITION

Charles M. Selwitz, Monroeville, and Helen I. Thayer, Oakmont, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 17, 1977, Ser. No. 807,370
Int. Cl.² C08L *91/06*
U.S. Cl. 106—270 **5 Claims**

1. A paraffin wax composition of improved hardness comprising paraffin wax and an alkenyl succinic compound selected from the group consisting of an alkenyl succinic anhydride and the corresponding alkenyl succinic acid wherein the alkenyl portion thereof contains from about 30 to about 60 carbon atoms, said alkenyl succinic anhydride having been obtained by reacting maleic anhydride with an olefinic fraction having from 30 to 60 carbon atoms, said olefinic fraction having been obtained by the ploymerization of ethylene.

4,118,245

METHOD FOR PRODUCING CLAY SLURRIES

Herbert R. Hamill, Iselin, and David E. Potts, Millington, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Sep. 16, 1977, Ser. No. 833,861
Int. Cl.² C09C *1/42*
U.S. Cl. 106—288 B **3 Claims**

1. A method for producing a concentrated stable fluid slurry of a calcined kaolin clay pigment which comprises providing a fluid dispersed suspension of said pigment in water, said suspension containing from about 45 to 60% solids, pumping said suspension upwardly through a bed of spherical particulate zircon grinding medium in a vertical agitator mill to an agitated tank and continuously recirculating said slurry through said mill and said tank until the viscosity of said suspension is reduced, said grinding medium being retained in said mill while the slurry is being recirculated, adding dry calcined clay in increments to the suspension in said tank while continuing to recirculate said suspension through said mill and said tank until sufficient dry clay is added to produce a fluid slurry containing at least 65% clay solids.

4,118,246

PROCESS FOR PRODUCING CLAY SLURRIES

John P. Horzepa, Edison, and David E. Potts, Millington, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Sep. 22, 1977, Ser. No. 835,510
Int. Cl.² C09C *1/42*
U.S. Cl. 106—288 B **10 Claims**

1. A method for producing a concentrated fluid aqueous slurry of finely divided particles of calcined kaolin clay which comprises charging said clay particles with water and a dispersant sufficient to form a fluid slurry of about 60 to 70% solids content to one end of a horizontal continuous rotor and stator unit with helical ridges on both stator shell and rotor to provide intense axial shearing action with controlled feedthrough and back mixing, said rotor operating at high speed, said clay particles and water being added in relative proportions such that the admixture discharged from the other end of the mill has a smooth consistency and is a fluid when no agitation is applied but is converted to a viscous dilatant mass when subjected to high shear mixing, discharging the resulting smooth dilatant makedown slurry from the other end of said unit, and recirculating said makedown slurry through said unit a multiplicity of times at a higher throughput rate than used to produce said smooth dilatant slurry, thereby producing a fluid concentrated slurry product having reduced dilatancy.

4,118,247

SUSPENSIONS OF REACTIVE ACIDIC CLAY PIGMENTS

Francis R. Marchetti, Skillman; William E. Zentz, Iselin, and Richard R. Berube, Keyport, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Oct. 3, 1977, Ser. No. 838,567
Int. Cl.² C09C *1/42*
U.S. Cl. 106—308 N **12 Claims**

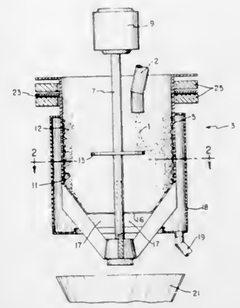
1. An aqueous slurry of acid-treated montmorillonite pigment adapted for use in carbonless copying paper containing a dispersant-effective amount of a sodium condensed phosphate salt and from about 0.5 to 5% by weight of said pigment of an alkanolamine selected from the group consisting of 2-amino-2-methyl-1-propanol, tris(hydroxymethyl)-aminomethane and 2-amino-2-ethyl-1,3 propanediol.

4,118,248

AUTOMATIC DISCHARGE CENTRIFUGE AND METHOD

Jorge Halder Lacher, Apartado 285, Alajuela, Costa Rica

Filed Mar. 17, 1977, Ser. No. 778,353
Int. Cl.² C13F *1/10;* **B04B** *3/00*
U.S. Cl. 127—19 **7 Claims**



1. A method for separating sugar crystals from fluid matter containing sugar crystals, said method comprising:

rotating said matter at a speed greater than 1200 r.p.m. to subject it to a centrifugal force;

restraining said crystals, urged by said force, from movement beyond a predetermined point defined by a screen means fixedly mounted to the inside surface of a rotatably mounted drum;

passing undesired portions of said matter away from said crystals and through said screen means simultaneously with restraining step;

applying a braking force to bring the drum to substantial rest in less than approximately one second, said crystals being caused to disengage from said screen means and continue rotation by the resulting inertial force; and

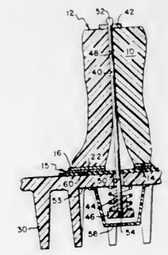
collecting said crystals.

4,118,249

MODULAR ASSEMBLY OF A PHOTOVOLTAIC SOLAR ENERGY RECEIVER

Robert M. Graven, Downers Grove; Anthony J. Gorski, Lemont; William W. Schertz, Batavia, and Johan E. A. Graae, Elmhurst, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 30, 1977, Ser. No. 829,122
Int. Cl.² H01L *31/04*
U.S. Cl. 136—89 PC **8 Claims**



1. A modular assembly of a photovoltaic solar energy receiver, comprising:

a concentrator element, a solar cell package which when subjected to large temperature differences over time will

expand and contract, a first heat sink having a surface larger than said solar cell package positioned with said solar cell package between and in contact with both said concentrator element and said heat sink, and biasing means for exerting force holding said surface of said first heat sink against said cell package thereby allowing for differential heat expansion between said solar cell package, said concentrator element and said heat sink.

4,118,250

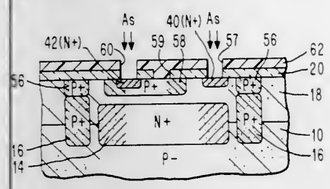
PROCESS FOR PRODUCING INTEGRATED CIRCUIT DEVICES BY ION IMPLANTATION

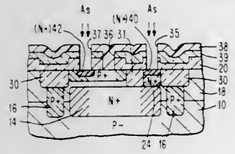
Cheng Tzong Horng, Fishkill; Alwin Earl Michel, Ossining; Hans Stephan Rupprecht, Yorktown Heights, and Robert Otto Schwenker, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 865,805

Int. Cl.[2] H01L *21/265, 21/223*

U.S. Cl. 148—1.5 **11 Claims**





1. An improved process for making an integrated circuit semiconductor device in a monocrystalline semiconductor substrate comprising:

forming a subcollector region of a first conductivity type in a monocrystalline semiconductor substrate of a second opposite conductivity type,

depositing an epitaxial layer of semiconductor material on said substrate,

oxidizing the surface of said epitaxial layer to form a layer of thermally grown SiO_2 having a thickness in the range of 500 to 2500 A,

forming an annular shaped isolation means that at least encompasses the region of said epitaxial layer overlying said subcollector region,

depositing a first layer of photoresist over the layer of SiO_2,

exposing, developing and removing a portion of said first layer of photoresist to define a window for a base region overlying in part said subcollector,

ion implanting an impurity of a second conductivity through the window to form a base region,

removing said first layer of photoresist,

depositing a second layer of photoresist over the layer of SiO_2,

exposing, developing and removing portions of said second layer of photoresist to define windows for the collector contact, the base contact, and the emitter contact,

removing the exposed areas of said layer of SiO_2 to define the collector contact, the base contact and the emitter contact,

removing said second layer of photoresist,

depositing a third layer of photoresist,

exposing, developing and removing portions of said third layer of photoresist to redefine the collector contact and the emitter contact,

ion implanting an impurity of a first conductivity to form the collector contact region and the emitter region,

removing said third layer of photoresist,

heating the resultant device at a temperature in the range of 900° to 1100° C. to activate the implanted first and second type impurities, and to drive in the ion implanted first impurity in said emitter region,

deposit the metallurgy system.

4,118,251

PROCESS FOR THE PRODUCTION OF A LOCALLY HIGH, INVERSE, CURRENT AMPLIFICATION IN A PLANAR TRANSISTOR

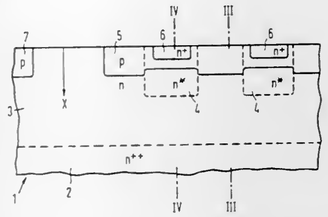
Helmuth Murrmann, Ottobrunn, and Ernst Wittenzellner, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 8, 1976, Ser. No. 739,730

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1975, 2554426

Int. Cl.[2] H01L *21/265, 21/26*

U.S. Cl. 148—1.5 **6 Claims**



5. A process for the production of a locally high, inverse current amplification in a preferably double-diffused or implanted, inversely operated planar transistor, which is provided in a semiconductor body with an integrated circuit, which comprises forming an epitaxial layer of one conductivity type on a high doped semiconductor substrate of the same conductivity type, implanting ions of said one conductivity type into said semiconductor body to form an emitter region with high doping beneath the zone provided for the collector, forming a base region by diffusion or ion implantation of the opposite conductivity type in said epitaxial layer above said emitter region to thereby form an emitter-base junction, said base region extending laterally beyond a projection of said emitter region, and forming a collector region in said epitaxial layer above said emitter region with a portion of the base region lying therebetween, and subjecting said substrate to temperature treatment, thereby causing ions to diffuse out into the adjoining zones.

4,118,252

PROCESS FOR ALBEDO CONTROL OF MOLYBDENUM ARTICLES

Terry L. VanderWert, S. St. Paul, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed May 9, 1977, Ser. No. 794,736

Int. Cl.[2] G02B *1/10*

U.S. Cl. 148—6.3 **2 Claims**

1. The process of obtaining the proper albedo on the surface of a molybdenum article comprising:

A. cleaning the molybdenum article to remove impurities on the surface of the article;

B. heating the molybdenum article in an air atmosphere to a temperature in excess of 400° F. but less than 1100° F. for about 25 minutes to about 35 minutes until the surface of the article has been oxidized; and

C. allowing the molybdenum article to cool.

4,118,253

NON-FLAMMABLE SOLVENT PHOSPHATIZING COMPOSITIONS YIELDING NON WATER SOLUBLE COATINGS

Edward A. Rowe, Jr., Mentor, and William H. Cawley, Painesville, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 560,377, Mar. 20, 1975, Pat. No. 4,029,523. This application Dec. 30, 1976, Ser. No. 755,680

The portion of the term of this patent subsequent to Jun. 14, 1994, has been disclaimed.

Int. Cl.[2] C23F *7/10*

U.S. Cl. 148—6.15 R **8 Claims**

1. A non-flammable organic phosphatizing composition having a continuous and homogeneous liquid phase suitable for phosphatizing metal with a coating of at least substantial water insolubility, with said liquid phase containing water in minor amount, which composition comprises:

(A) halogenated organic solvent providing liquid phase homogeneity with an organic solubilizing liquid while being a non-solvent for a phosphatizing proportion of phosphoric acid in said composition, said halogenated organic solvent being unreactive with phosphoric acid in said composition, and having halogens selected from the group consisting of chlorine, fluorine and mixtures thereof;

(B) solubilizing liquid capable of solubilizing phosphoric acid in said composition while retaining liquid phase composition homogeneity, said solubilizing liquid being unreactive with phosphoric acid in said composition and having a boiling point greater than the boiling point of said halogenated organic solvent or forming an azeotrope with said halogenated organic solvent, wherein said azeotrope boils at a point below the boiling point of said solubilizing liquid and contains above about 80 mole percent of said halogenated organic solvent;

(C) a phosphatizing proportion of phosphoric acid; and,

(D) water in an amount exceeding said proportion of phosphoric acid while being sufficient for said composition to provide a phosphatized coating of substantial water insolubility on a ferrous metal substrate in phosphatizing contact with said composition, and while retaining liquid phase homogeneity.

4,118,254

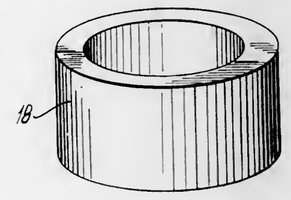
WEAR AND CORROSION RESISTANT NICKEL-BASE ALLOY

Otto Knotek, Aachen, Fed. Rep. of Germany; Erich Lugscheider, Vaals, Netherlands, and Wolfgang Wichert, Aachen, Fed. Rep. of Germany, assignors to Eutectic Corporation, Flushing, N.Y.

Filed Apr. 4, 1977, Ser. No. 784,376

Int. Cl.[2] C22C *19/05*

U.S. Cl. 148—32 **12 Claims**



1. A nickel-base wear and corrosion resistant composition consisting essentially by weight about 20% to 35% Cr, about 1% to 8% Si, about 1.7% to 3.5% C., 0 to 15% W and the balance essentially at least about 50% nickel,

the amount of carbon present in said composition being stoichiometrically related to the chromium content to provide carbides based on the formula M_7C_3,

wherein M comprises essentially chromium, the amount of chromium in said M_7C_3 compound ranging from about 65% to less than about 100% of the total chromium in said composition,

the melting point of said composition being less than about 1350° C.

4,118,255

PROCESS FOR THE PRODUCTION OF A SILICON STEEL STRIP WITH HIGH MAGNETIC CHARACTERISTICS

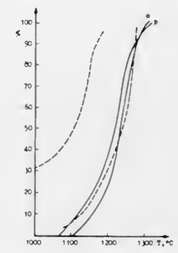
Mario Barisoni, Albano Laziale; Massimo Barteri, Rome; Roberto Ricci-Bitti, Lanuvio; Edmondo G. A. Marianeschi; Sandro C. Basevi, both of Terni; Carlo Borgianni, and Carlo Santafe, both of Rome, all of Italy, assignors to Centro Sperimentale Metallurgico S.p.A and Terni Societa per l'Industria e'Elettricita S.p.A., both of Rome, Italy

Filed Jul. 28, 1976, Ser. No. 709,535

Claims priority, application Italy, Aug. 1, 1975, 50784/75

Int. Cl.[2] H01F *1/04*

U.S. Cl. 148—111 **8 Claims**



1. A process for inhibiting grain growth in the production of a single oriented continuously cast silicon steel strip with high magnetic characteristics, comprising in sequence:

continuously casting a silicon steel strip;

solubilizing iron sulfide in said silicon steel strip by uniformly heating said silicon steel strip to a temperature between 1050° and 1250° C;

slowly cooling said silicon steel strip to a temperature below 500° C to precipitate dissolved sulphur as manganese sulfide; and

hot-rolling said continuously cast silicon steel strip at a temperature over 1300° C to a thickness of 2 to 3 mm.

4,118,256

PROCESS FOR THE PRODUCTION OF OXYGEN-FREE COPPER CASTING AND MOLDINGS

Karlheinz G. Schmitt-Thomas, Ismaning; Alfred Lipp, Bad Wörishofen, both of Fed. Rep. of Germany, and Karl Schwetz, Sulzberg, Austria, assignors to Electroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 4, 1976, Ser. No. 738,819

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620831

Int. Cl.[2] C22F *1/08*

U.S. Cl. 148—160 **5 Claims**

1. A process for the production of oxygen-free copper castings and moldings, which contain 0.05 to 0.2% by weight of boron as a micro-alloy element, the steps consisting essentially of:

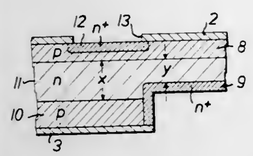
melting oxygen-containing electrolytic copper in a crucible to produce a melt;
covering the exposed surface of the melt with a protective layer;
immersing an additive consisting essentially of 0.3–1% of a CaB_n, calculated on the weight of said melt, and between 3 and 12.5% of carbon, calculated on the weight of said CaB_n, in said melt, said additive being in the form of a powder having a mean grain size of 300 μm, said step resulting in the production of an oxygen-free, copper-boron binary alloy, which contains 0.5 to 0.2% by weight of boron as the micro-alloy element;
cooling the melt;
molding the cooled melt to yield a solid casting;
solution annealing the casting for a time between about 30 to 600 minutes at a temperature in the range of about 800° C to 950° C; and
aging the quenched annealed casting for an extended time between about 60 to 300 hours at a temperature in the range of about 200° C to 500° C.

4,118,257

METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE HAVING MONOLITHICALLY INTEGRATED UNITS IN A SEMICONDUCTOR BODY

Theodor Oberreuter; Rigobert Schimmer, and Wilhelm Seifert, all of Warstein, Fed. Rep. of Germany, assignors to LICENTIA Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 15, 1977, Ser. No. 777,698
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1976, 2610942
Int. Cl.² H01L *21/22*
U.S. Cl. 148—187 **12 Claims**



1. In a process for producing a semiconductor device having elemental semiconductor units monolithically integrated in a semiconductor body, with said units having a common or a plurality of common zones of one conductivity type with locally reduced thickness and pn-junctions between zones of different conductivity types, and process including the steps of forming a diffusion masking layer on both major surfaces of a semiconductor body of a first conductivity type, removing the portion of said diffusion masking layer on one of said major surfaces which is over the region of said semiconductor body which is to contain the zone of locally reduced thickness in the finished device and, producing the zone structures of the elemental units by diffusing doping substances into the semiconductor body from one and/or both major surfaces in time stages utilizing said masking layers; the improvement comprising, prior to said diffusing step, etching the portion of one of said major surfaces which is over the region of said semiconductor body which is to contain the zone of locally reduced thickness in the finished device to form a groove of desired depth in said semiconductor body with said depth being determined by the intended local reduction in the thickness of the common zone of the elemental semiconductor units in the finished device; and wherein said diffusing step includes subjecting said semiconductor body to a diffusion process for the simultaneous diffusion of a donor and an acceptor doping substance, with one of said doping substances being of the type for which the material of said masking layer is not an effective diffusion mask and being of a concentration sufficiently lower than that of the other doping substance, to cause said one doping substance to diffuse into the portions of both major surfaces of said semiconductor body covered by said masking layers to form zones of one conductivity type and said other doping substance to diffuse into any unmasked portions of said major surfaces to form zones of the opposite conductivity type.

4,118,258

VIBRATION DAMPING THROUGH ADHERENCE TO A LAYER COMPRISING POLYISOPRENE AND THE DAMPED STRUCTURE RESULTING

Bernard Jacques Graveron, Lyon, and Alain Jacques Essel, Caluire, both of France, assignors to Jean Gole, France

Division of Ser. No. 531,326, Dec. 10, 1974, Pat. No. 4,075,288.
This application Apr. 11, 1977, Ser. No. 786,457
Claims priority, application France, Dec. 20, 1973, 73 45839
Int. Cl.² B29C *27/30;* **B32B** *15/06, 25/04, 31/06;* **F16F** *15/04*
U.S. Cl. 156—60 **7 Claims**

1. A method of damping vibrations which consists of attaching to the element which causes vibrations a layer of vibration-damping material which comprises polyisoprene in which the total percentage of 1,2- and 3,4-vinyl structures is at least 60%.

6. A support having a layer of a material which comprises polyisoprene containing at least 60% of 1,2- and 3,4-structures.

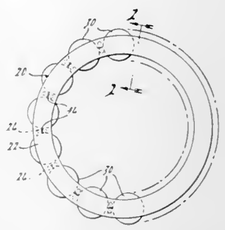
7. A sandwich structure which comprises two support plates and sandwiched therebetween a material which comprises polyisoprene containing at least 60% of 1,2- and 3-4-structures.

4,118,259

WELDED PLASTIC BEARING CAGE AND METHOD OF MAKING SAME

Gerald L. Bingle, St. Clair Shores, Mich., and Melvin L. Earsley, Lubbock, Tex., assignors to Federal-Mogul Corporation, Detroit, Mich.

Division of Ser. No. 501,515, Aug. 29, 1974, Pat. No. 3,944,307.
This application Jan. 2, 1976, Ser. No. 645,968
Int. Cl.² B32B *31/20*
U.S. Cl. 156—73.1 **4 Claims**



1. The method of making a bearing retainer which comprises the steps of providing a pair of molded thermoplastic annular side rails having a plurality of circumferentially spaced axially extending ribs affixed at one of their ends to one of the side rails, providing the exposed end of each rib and the opposed surface of the adjacent side rail with a cooperating aperture and projection adapted to be disposed in axial aligned relationship, forming said aperture with a first portion to slidably receive an end portion of said projection and a second inward portion of reduced cross sectional area forming a shoulder at its intersection with said first portion, preliminarily assembling said rails by positioning said projections in partial telescopic relationship within said apertures with the peripheral end portion of said projection disposed in abutting relationship against said shoulder, ultrasonically vibrating the assembly and applying an axial force in a direction urging the side rails together, continuing the vibration of the assembly and maintaining said axial force for a period of time sufficient to effect a heat softening of the material adjacent to the abutting surfaces of said projections and said apertures to permit a deformation and flow of the material and a further telescopic movement of the projections into the apertures until the side rails move together to the desired spaced substantially parallel relationship, venting the interior of said apertures to the atmosphere to enable escape of entrapped gases from the interior thereof during the telescopic movement of the projections into the apertures, and thereafter discontinuing the vibration and permitting the heat softened material to cool and harden into a welded connection forming an integral bearing retainer.

4,118,260

HEAT RECOVERABLE ARTICLE

Bodo Boettcher, Putzbrunner Str. 86, 8012 Ottobrunn, Fed. Rep. of Germany

Filed Apr. 26, 1976, Ser. No. 680,478
Claims priority, application United Kingdom, Apr. 25, 1975, 17362/75; Apr. 29, 1975, 17773/75
Int. Cl.² B29C *27/00, 17/04*
U.S. Cl. 156—85 **11 Claims**



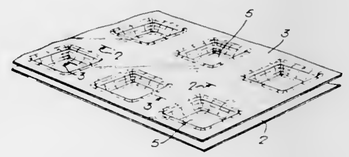
1. A method of protecting a junction containing branched substrates which comprises:
a. depositing a bonding material in at least two strips generally on a portion of the interior of a heat-recoverable sleeve;
b. bonding said strips to form at least one auxiliary conduit;
c. wrapping said sleeve about said junction;
d. heating said sleeve while it is positioned about the junction to an extent sufficient to cause said sleeve to recover.

4,118,261

METHOD FOR REINFORCING SHEET MATERIAL

Keith Pedler, 172 Bettington Rd., Carlingford, New South Wales, Australia

Filed Dec. 27, 1976, Ser. No. 754,674
Claims priority, application Australia, Jan. 6, 1976, PC4458
Int. Cl.² B32B *3/10, 1/00*
U.S. Cl. 156—145 **5 Claims**



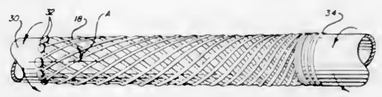
1. A method of reinforcing fibreglass sheet material comprising the steps of:
placing against the surface of said sheet material an inflatable envelope defined by a bi-laminate sheet comprising two layers of pliant thermoplastic material, one overlaying the other and both provided with a plurality of mutually registering perforations, the marginal edge portions of said layers defining the perforations in a registering pair thereof being sealed together, substantially the entire outer periphery of each of said two layers being sealed to or integral with the adjacent outer periphery of the overlying layer;
applying a wet layer of settable reinforcing fibreglass material over said envelope and onto that part of said sheet material which is exposed through said perforations;
inflating said envelope so as to cause said wet layer to assume a cratered form;
allowing said wet layer to solidify thereby to form a reinforcing structure on said sheet material.

4,118,262

LONGITUDINAL LOAD CARRYING METHOD FOR FIBER REINFORCED FILAMENT WOUND STRUCTURES

Harry Thomas Abbott, Lincoln, Nebr., assignor to Brunswick Corporation, Skokie, Ill.

Filed May 21, 1976, Ser. No. 688,746
Int. Cl.² B65H *81/00*
U.S. Cl. 156—175 **6 Claims**



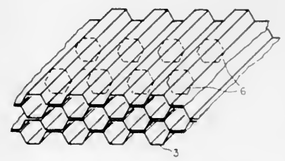
1. In a method of manufacturing a lightweight filament wound casing having connector openings at one end comprising the steps of:
(1) preparing a cylindrical mandrel by inserting a predetermined number of radially projecting, spaced-apart pegs near one end portion thereof,
(2) rotating said mandrel as it is moved longitudially in one direction,
(3) feeding a continuous resin impregnated filament to the surface of said mandrel to lay the filament up in a helical form,
(4) controlling the speed of the longitudinal movement so as to decrease the angle the filament makes with respect to the longitudinal axis of the mandrel as the fiber approaches the area of the pegs and increase the angle as the filament leaves the area of the pegs, said filament being passed around one of said pegs as the direction of longitudinal movement is reversed, the filament being laid up along a helical path around the mandrel back to a starting point, each layer of filaments including at least one pass around each peg in said mandrel;
(5) curing the wound casing,
(6) removing the pegs from the mandrel; and,
(7) removing the casing from the mandrel.

4,118,263

METHOD OF MANUFACTURING STRUCTURAL HONEYCOMB WITH INTEGRAL HEAT RADIATION SHIELDS, AND THE RESULTING PRODUCT THEREOF

William H. Cook, Jr., 875 SE. Shoreland Dr., Bellevue, Wash. 98004

Filed Dec. 30, 1976, Ser. No. 755,819
Int. Cl.² B31D *3/02*
U.S. Cl. 156—197 **7 Claims**



1. A method of manufacturing honeycomb having integral heat radiation shielding materials arranged within cells of the honeycomb during its continuous manufacture, using the expansion process, creating at least one heat radiation shield in

each cell of a honeycomb, wherein the radiation shields are formed of expandable pleated ribbons of thin highly reflective shielding material, comprising the steps of:

(a) the conventional step of withdrawing a sheet of honeycomb material from either a roll or a stack;

(b) the conventional step of determining lines, strips, or stripes on this sheet of honeycomb material where bonding of adjacent honeycomb materials is to occur, and when the honeycomb materials need an additional bonding agent, in so doing, providing adhesive lines, strips or stripes where so determined, and when the honeycomb materials are capable of being bonded together with pressure, heat, and/or catalysts, then, in so doing, providing masking materials adjacent the determined lines, strips, or stripes;

(c) the new step of extending across the sheet of honeycomb material spaced compressed pleated strips of heat radiation shielding materials, covered top and bottom, when necessary, with adhesive, in a direction substantially at right angles to the direction of the determined lines, strips, or stripes on the sheet of honeycomb material where bonding of adjacent honeycomb materials is to occur;

(d) the conventional step of stacking adjacent sheets of honeycomb material so their determined lines, strips, or stripes, where bonding is to occur, are offset from sheet to sheet of honeycomb material, the offsetting preferably occurring during the determining of the lines, strips, or stripes on respective adjacent sheets of honeycomb, with this stacking including the pleated strips of heat radiation shielding materials;

(e) the conventional step of pressing together the stacked sheets of honeycomb, utilizing heat when necessary in respect to the bonding specifications, with this pressing including the pleated strips of heat radiation shielding materials; and

(f) the conventional step of pulling apart the then reforming former sheets of honeycomb material transforming them from a non expanded block into an expanded honeycomb material, with this pulling apart including the pleated strips of heat radiation shielding materials.

4,118,264

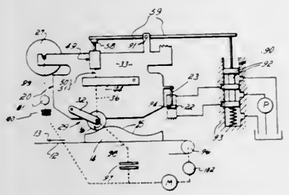
METHOD FOR DRY PRINTING ON CONTOURED WORKPIECES

Carl E. Boettcher, Evansville, Ind., assignor to Automatic Industrial Machines, Inc., Evansville, Ind.

Continuation of Ser. No. 675,908, Apr. 12, 1976, abandoned, which is a division of Ser. No. 576,890, May 12, 1975, Pat. No. 3,975,226. This application Jan. 31, 1977, Ser. No. 764,003

Int. Cl.[2] **B44C** *1/16;* **B32B** *1/10*

U.S. Cl. 156—238 **7 Claims**



1. In the process of dry printing onto a workpiece surface which is contoured in the direction of workpiece movement, wherein the workpiece is advanced past a heated applicator roll which rolls a dry printing foil against said surface, said roll being mounted to a carriage which is movable in the direction perpendicular to the direction of workpiece movement, the improvement comprising,

engaging said applicator roll with said foil to roll the foil onto the surface of said workpiece,

applying a predetermined biasing force to said roll by a biasing means connected between said carriage and said roll, said biasing force urging the roll to press the foil against said surface,

advancing the workpiece past the roll while the roll rolls over the countoured surface of the workpiece, the contour of the surface moving the roll relative to the carriage in the direction perpendicular to the direction of workpiece movement, thereby tending to change the force exerted by said biasing means,

sensing such perpendicular movement of the roll relative to the carriage,

and applying the sensed relative roll movement to shift the carriage in the same direction as the sensed movement, by an amount sufficient to restore substantially the same predetermined biasing force on the roll to press said foil against said surface.

4,118,265

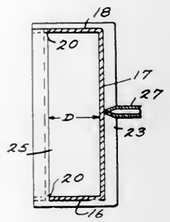
METHOD OF MAKING A BATTERY JAR

James S. Hardigg, Conway, Mass. 01341

Filed Jan. 13, 1976, Ser. No. 648,738

Int. Cl.[2] **B29C** *5/00;* **B29F** *1/00*

U.S. Cl. 156—242 **5 Claims**



1. A method of making an elongated battery jar comprising the steps of forming a first open-sided end section member, said end section member being open at the top thereof and having an elongated open side, the distance from said open side to its opposed closed side being at least several times smaller than the distance from top to bottom thereof, said forming step including the step of injecting a plastic material into a mold, said mold defining a plastic material receiving cavity having the shape of said first open-sided end section member and having at least one injection orifice for the ingress of plastic material to said cavity, said at least one injection orifice being positioned along the portion of said cavity defining the opposed closed side of said member, and being substantially symmetrical in a horizontal plane therethrough, forming a second open-sided end section member, heating the surface of said end section members which define the open side thereof, and joining said end section members at their respective heated surfaces to form a battery jar, said jar having a substantially uniform wall thickness from top to bottom thereof.

4,118,266

METHOD FOR FORMING AN IMPROVED INSULATED METAL FRAME

Jack B. Kerr, 1300 Carlisle Pl., Deerfield, Ill. 60015

Filed May 9, 1977, Ser. No. 794,981

Int. Cl.[2] **E04B** *1/64;* **E06B** *1/32*

U.S. Cl. 156—293 **3 Claims**

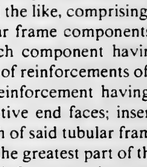
1. The method of forming a metal frame for windows, doors and the like to provide a thermal break between the interior surfaces and the exterior surfaces of said metal frame, said method comprising the steps of:

forming an exterior metal strip and an interior metal strip, each of said metal strips terminating in an interconnectable joint portion;

placing a fabric over the joint portions of one of said exterior metal strip or said interior metal strip to completely cover said joint portion;

joining said exterior metal strip to said interior metal strip by interconnecting said joint portions, thereby forming a spacing between said joint portions;

retaining said fabric intermediate said exterior joint portion and said interior joint portion in said spacing;



filling said spacing with resin, and impregnating said fabric with said resin, and

curing said resin to provide for a metal frame joint which positively spaces said interior metal strip from said exterior metal strip to restrict the conduction of heat in said frame.

4,118,267

SYNTHETIC RESIN FRAMES AND A PROCESS FOR THEIR PRODUCTION

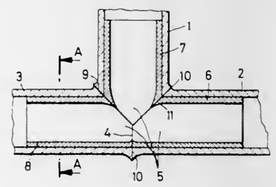
Karl Heinz Vogel, Höhfröschen, Fed. Rep. of Germany, assignor to Gebrüder Kömmerling Kunststoffwerke G.m.b.H., Pirmasens, Fed. Rep. of Germany

Filed Mar. 25, 1977, Ser. No. 781,449

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1976, 2613402

Int. Cl.[2] **B29C** *27/02;* **E04C** *2/38*

U.S. Cl. 156—293 **6 Claims**



1. A process for the production of a reinforced frame for doors, windows and the like, comprising the steps of providing a plurality of tubular frame components of synthetic thermoplastic material, each component having an inner boundary face, and a plurality of reinforcements of synthetic thermoplastic material, each reinforcement having outer boundary face portions and respective end faces; inserting one of said reinforcements into each of said tubular frame components; unitarily bonding at least the greatest part of the outer boundary face portions of each reinforcement into a surface-to-surface engagement with the inner boundary face of each respective frame component so as to prevent potential slippage of said reinforcements and to substantially reinforce each of said tubular frame components; welding the ends of adjacent areas of said tubular frame components together at a first interface; and welding the respective end faces of said reinforcements together at a second interface located in the plane of the first interface.

4,118,268

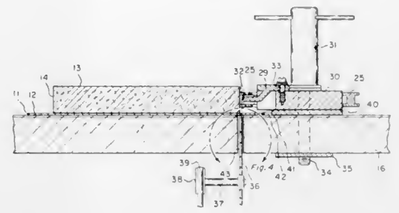
SURFACE AND EDGE LAMINATING APPARATUS

Edwin Price, 9 E. Frambes Ave., Pleasantville, N.J. 08232

Filed Mar. 15, 1977, Ser. No. 777,640

Int. Cl.[2] **B26D** *3/08*

U.S. Cl. 156—510 **8 Claims**



1. An apparatus for scoring the front surface of a surfacing sheet, that is fully coated on its back surface with contact adhesive, that has a substrate panel permanently adhered to the back surface of the sheet, that at least one edge of the substrate panel is covered with contact adhesive, and that the area of the surfacing sheet extends beyond that coated edge of the substrate panel with extension area being at least as large as the coated edge of the panel, comprising:

(a) a structure defining a supporting surface for the surfacing sheet on top of which the substrate panel is adhered,

(b) a fence means positioned at a height over the supporting surface to abut the coated edge of the substrate panel when the surfacing sheet onto which the panel is adhered is placed on the supporting surface,

(c) wherein said fence means extends over the supporting surface providing sufficient space for the surfacing sheet extension under the fence means,

(d) a non-adhering surface face means on the fence means against which the contact adhesive coated edge of the substrate panel slides,

(e) an aperture in the supporting surface,

(f) a scoring means extending upwardly through the aperture under the surface face means capable of cutting a groove at the point under the fence face means in the surfacing sheet as it is moved laterally across the scoring means.

4,118,269

LABELING STATION

Rudolf Zodrow, Düsseldorf, and Egon Höveler, Haan, both of Germany, assignors to Jagenberg-Werke AG, Düsseldorf, Germany

Filed Oct. 17, 1977, Ser. No. 843,097

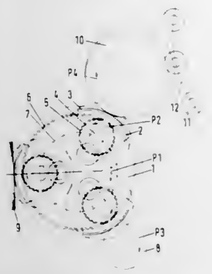
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1976, 2646942

Int. Cl.[2] **B32B** *31/00;* **B65C** *9/08*

U.S. Cl. 156—560 **3 Claims**

1. In a labeling station for applying labels one above the other onto objects, having at least one pickup element mounted eccentrically on a rotatable carrier for movement about an axis, wherein the improvement comprises a gripper cylinder comprising a rotating carrier having eccentrically disposed gripping and pressing elements for the upper and lower labels, which elements are tangent to the circulation path of the pickup elements approximately in synchronism, the labels being transferred by the gripping and pressing elements to objects moved along a transport path, whose areas to be labeled are at different distances from the gripper cylinder axis, wherein the carrier of the gripping and pressing elements comprises two parts disposed one over the other and eccentrically to one another which carry upper and lower gripping and pressing elements at different radii and revolve at equal angu-

lar velocity and wherein circulation paths for the upper and lower gripping and pressing elements have, in the labeling



range, a distance from one another which corresponds to the difference between the areas to be labeled on the objects.

4,118,270

MICRO LENS FORMATION AT OPTICAL FIBER ENDS

Jing Jong Pan; Milton Phillip Arnold, both of Melbourne, and James Castle Barton, Indialantic, all of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Feb. 18, 1976, Ser. No. 658,880
Int. Cl.[2] C03C *25/06, 25/02;* **G02B** *5/14*
U.S. Cl. 156—659 **6 Claims**

1. The method of forming a lens onto the end of an optical fiber through chemical etching, said optical fiber end having a general contour which is different then the desired lens shape, comprising the steps of:

immersing said fiber end into an etching solution to such an extent that the entire said fiber end is immersed in said etching solution and so that the entire cross-sectional surface of said fiber end is etched by said etching solution,

timing said immersion for an interval being long enough to allow removal of enough of said fiber end by the action of said etching solution alone so that only the desired lens shape remains, and

removing said fiber end from said etching solution at the conclusion of said interval.

6. A method of forming a lens on an optical fiber end comprised of the steps of immersing a selected amount of said fiber end into an optically transparent liquid, withdrawing said fiber end from said liquid so that only a drop of said liquid remains on said fiber end and the surface tension of said drop draws said liquid into the desired lens shape, and hardening said liquid so as to form a solid lens permanently affixed to said fiber end, wherein the resultant lens shape is dependent upon the amount of said fiber immersed in said liquid and wherein said method further comprises the additional step of controlling said selected amount in accordance with the lens shape desired.

4,118,271

METHOD FOR THE PREPARATION OF A PULP

Kyoichi Oku, and Hiroshi Matsuura, both of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 343,452, Mar. 21, 1976, abandoned. This application Aug. 10, 1976, Ser. No. 713,120
Claims priority, application Japan, Mar. 25, 1972, 47-30184; Mar. 25, 1972, Japan 47-30185
Int. Cl.[2] D21C *11/12*
U.S. Cl. 162—31 **7 Claims**

1. A process for the preparation of pulp comprising:

i. mechanically milling a vegetable fibrous material at 50°-250° C. to soften its tissue;

ii. delignifying the milled material by treatment in separate stages with a chlorine-containing compound and ammonia or ammonium hydroxide thereby forming a waste water containing (a) the chlorine-containing compound and (b) ammonia, ammonium hydroxide or an ammonium salt;

iii. separating the delignified fibrous material from said waste liquor;

iv. adding magnesium hydroxide to said waste liquor for reaction with said chlorine-containing compound to form magnesium chloride and to release ammonia for recovery; then

v. burning said waste liquor to decompose said magnesium chloride to hydrogen chloride and magnesium oxide;

vi. absorbing said hydrogen chloride in an aqueous medium for conversion to hydrochloric acid;

vii. converting said hydrochloric acid into said chlorine-containing compound; and

viii. recirculating the ammonia and chlorine-containing compounds recovered in steps iv and vii to the delignifying step ii.

4,118,272

CONTINUOUS WET-LAID PROCESS FOR MAKING HIGH-STRENGTH GLASS FIBER MATS

Bertram Randall Ziegler, Freehold, N.J., and Edward J. Matteson, Hudson Falls, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Mar. 3, 1977, Ser. No. 773,818
Int. Cl.[2] D21F *11/00*
U.S. Cl. 162—156 **7 Claims**

1. A continuous wet-laid process for making high-strength glass fiber mats consisting essentially of:

a. continuously feeding a known quantity of dry glass fibers of about ¼ inch to 3 inches in length, that is without prior mixing of said fibers in water in tanks, or agitation thereof, directly into an inlet conduit carrying a flowing water stream to form a continuously flowing fiber slurry having a fiber consistency of 0.005 to 0.05% by weight of said fibers in water,

b. continuously pumping said slurry turbulently to form a uniform dispersion said fibers,

c. continuously conveying said dispersion onto a mat-forming screen, said fibers being kept in said water stream enroute to said screen for a minimal period only in order to prevent excessive entangling of said fibers within said stream,

d. continuously forming said mat on said screen from fibers of said dispersion while removing water therefrom, and,

e. continuously recirculating the water thus-removed into said stream of step a).

4,118,273

MANUFACTURE OF PERLITE INSULATING BOARD ON A CYLINDER MACHINE

Gilbert Godin, Lebanon, and Fred C. Norgard, Somerville, both of N.J., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 259,703, Jun. 5, 1972, abandoned. This application Sep. 20, 1974, Ser. No. 507,640
Int. Cl.[2] D21D *3/00*
U.S. Cl. 162—171 **8 Claims**

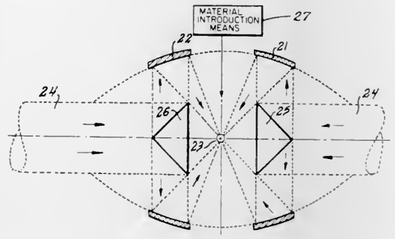
1. An improvement in a process for producing perlite insulating board on a cylinder machine in which an aqueous slurry containing perlite, fiber, and binder is deposited on a rotating cylindrical screen, the improvement comprising: controlling the rate of stock deposition from the slurry by incorporating fine expanded perlite particles having a density of from 4.5-10. lb./cu. ft. in the slurry, with at least about 90% of the perlite particles being able to pass through a 100 mesh screen prior to their expansion, at least 50% by weight of the perlite particles being able to pass a 200 mesh screen prior to their expansion and at least about 20 to 30% by weight of said perlite particles being able to pass a 325 mesh screen after their expansion.

4,118,274

SYSTEM FOR THE PRODUCTION OF PLASMA

George S. Bakken, Ann Arbor, Mich., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 29, 1975, Ser. No. 581,608
Int. Cl.[2] G21B *1/00*
U.S. Cl. 176—1 **11 Claims**



1. A system for the production of a plasma comprising:

(a) a light-focusing member comprising a parabolic axicon with a coaxial conical mirror, the apex of said conical mirror facing away from the focus of said parabolic axicon, said conical mirror being such as to produce a virtual line source along the axis of the cone;

(b) means for introducing a plasma-forming material at the focus of said light-focusing member; and

(c) laser means disposed so as to irradiate such light-focusing member along the axis toward the apex of said conical mirror such that the laser irradiation is concentrated at the focus of the parabolic axicon of the focusing member and impinges upon said plasma-forming material so as to produce a plasma.

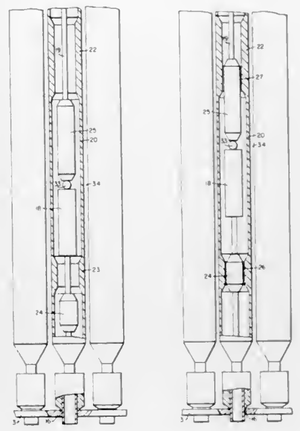
4,118,275

VARIABLE FLOW CONTROL FOR A NUCLEAR REACTOR CONTROL ROD

Richard D. Carleton, Pittsburgh, Pa., and Ajay Bhattacharyya, Vasteras, Sweden, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 283,260, Aug. 23, 1972. This application Dec. 12, 1974, Ser. No. 532,285
Int. Cl.[2] G21C *7/08*
U.S. Cl. 176—36 R **7 Claims**

1. In a nuclear reactor, said reactor comprising a nuclear core having openings therein, a plurality of control rod assemblies, each control rod assembly being positioned and movable into and out a respective opening in said nuclear core, said control rod assembly comprising a control rod containing neutron absorbing material, a drive shaft attached thereto for driving said control rod into and out of said opening in said nuclear core, said reactor further comprising a plurality of housings, each being respectively positioned in said opening and enclosing said control rod assembly therein, means for circulating a reactor coolant through said housings to remove heat generated within said control rods, and means for varying said reactor coolant flow rate through said housings in accordance with the position of said control rods relative to said nuclear core comprising means forming at least one flow restriction located within each of said housings, said flow restrictions having a resistance which varies in relation to said control rod motion.

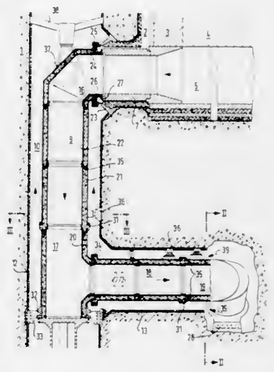


4,118,276

CONDUIT SYSTEM FOR GASES OF HIGH TEMPERATURE AND HIGH PRESSURE

Alija Hodzic; Dirk Haferkamp, both of Mannheim; Heinrich Stach, Ilvesheim, and Eike Päetz, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 605,000, Aug. 15, 1975, abandoned. This application Jun. 10, 1977, Ser. No. 805,510
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1974, 2439224
Int. Cl.[2] G21C *3/56*
U.S. Cl. 176—60 **11 Claims**



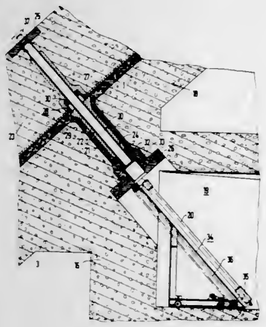
1. In a high temperature power plant construction including a plurality of plant components comprising at least one gas-cooled nuclear reactor, contained in a pre-stressed concrete pressure vessel surrounding the reactor core, and a transport system for gas of high temperature and high pressure, connecting said plant components and being contained in said pre-stressed concrete pressure vessel, the improvement which comprises said gas transport system comprising a plurality of internally insulated hot gas transport conduits formed from a plurality of separate sections, means for flow connecting said

conduits, a pressure jacket surrounding each of said hot gas transport conduits, a corresponding plurality of closed channels comprising bores contained within the wall of said prestressed concrete vessel and lined with steel or concrete, said closed channels being formed for transporting a cool gas stream, and means for removably mounting said hot gas transport conduits coaxially inside of said cool gas transport channels whereby said hot gas transport conduits are removably mounted at a plurality of intervals within said channels.

4,118,277
STEEL CONTAINMENT FOR NUCLEAR REACTOR INSTALLATIONS

Hans-Peter Schabert; Hans Bremer, both of Erlangen, and Erich Strickroth, Buckenhof, all of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Germany

Filed Nov. 16, 1976, Ser. No. 742,196
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1975, 2551595
Int. Cl.[2] G21C *13/02*
U.S. Cl. 176—87 **15 Claims**



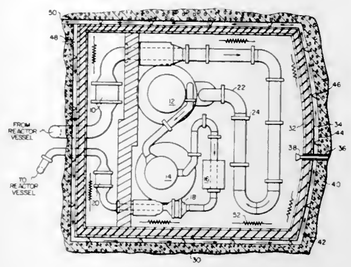
1. In an assembly of a closed steel containment vessel and a concrete foundation, the containment vessel being partly seated on the concrete foundation and partly free-standing, built-in structures being received in the containment vessel and pipelines extending through the containment vessel, a multiplicity of linearly distributed elongated threaded clamping members connecting the built-in structures with the concrete foundation, said threaded clamping members being oriented perpendicularly to the surface of the containment vessel, and resilient packing spacing at least part of said threaded clamping members from the concrete foundation, said resilient packing having a length shorter than the length of said threaded clamping members.

4,118,278
NUCLEAR REACTOR INSULATION AND PREHEAT SYSTEM

Nevin C. Wampole, Latrobe, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 27, 1976, Ser. No. 727,081
Int. Cl.[2] G21C *13/10*
U.S. Cl. 176—87 **7 Claims**

1. In a nuclear reactor having components for circulating a liquid coolant, an insulation and preheat system comprising:
(a) a fluid tight compartment of thermal insulation surrounding preselected portions of said components and spaced therefrom an extended distance so as to facilitate visual inspection;
(b) a supplemental heating device disposed within said compartment for heating the internal atmosphere of said compartment so that said preselected components are substantially evenly heated; and



(c) means for cooling an outer surface of said insulated compartment.

4,118,279
STABILIZING AGENT FOR ENZYMES

Helmut Determann, Starnberg; Erich Bernt, Munich; Werner Dollacker, Weilheim, all of Germany; Ingeborg Gutmann, deceased, late of Bad Heilbrunn, Germany (by Siegfried Gutmann, administrator), and by Gudrun Engelhardt, administrator, Saarbruecken, Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

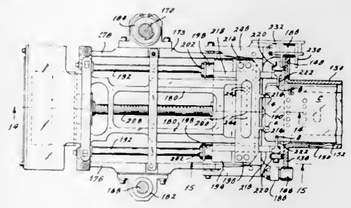
Filed Oct. 18, 1977, Ser. No. 843,298
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648759
Int. Cl.[2] C07G *7/02*
U.S. Cl. 195—63 **4 Claims**

1. An enzyme preparation containing oxypolygelatine as a stabilizing agent.

4,118,280
AUTOMATED MICROBIAL ANALYZER

Ronald A. Charles, St. Louis County; Paul W. Jones, St. Charles; John L. Staples, Florissant, and Joseph R. Wiegner, Ballwin, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 3, 1976, Ser. No. 682,664
Int. Cl.[2] C12K *1/04*
U.S. Cl. 195—127 **40 Claims**

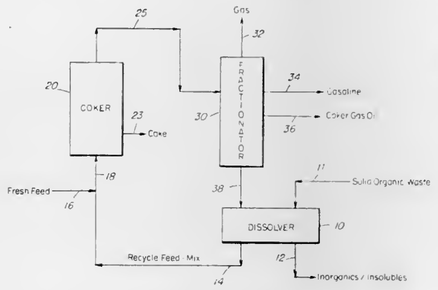


1. A machine for examining cards which are normally stored in a card holder and have viewing wells therein; said machine comprising: a mounting element; a card holder positioned adjacent to the mounting element, said card holder being capable of holding a plurality of cards therein with the cards being presented to the mounting element; extracting means on the mounting element aligned with the card holder for gripping the cards individually and withdrawing them from the card holder; light emitting means on the mounting element for projecting light through the wells when the cards are withdrawn from the card holder; light detecting means on the mounting element for determining the intensity of light passing through the wells; and means for aligning the wells in the cards in registry with the light emitting means and with the light detecting means.

4,118,281
CONVERSION OF SOLID WASTES TO FUEL COKE AND GASOLINE/LIGHT OIL

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 15, 1977, Ser. No. 788,063
Int. Cl.[2] C10B *57/04;* C10G *1/04*
U.S. Cl. 201—2.5 **15 Claims**

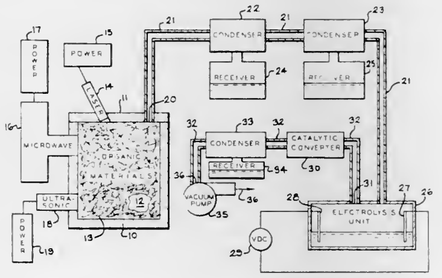


1. A conversion process for the disposal of solid organic wastes which comprises:
a. slurrying solid organic wastes in coker feed selected from the group consisting of coker petroleum feed stocks, coker recycle feed, and combinations thereof, wherein the weight ratio of solid organic waste to coker feed is within the range from 0.1 to 0.5;
b. heating the slurry at a temperature within the range from about 300° to 1000° F. for a period of time sufficient to convert the slurry into a pitch-like composition;
c. coking the pitch-like composition at a temperature within the range from about 800° to 1000° F.; and
d. recovering gas, oil, and coke products.

4,118,282
PROCESS AND APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF HIGH MOLECULAR WEIGHT ORGANIC MATERIALS

Floyd D. Wallace, Leslie, Mich., assignor to Wallace Energy Conversion, Inc., Charlotte, Mich.

Filed Aug. 15, 1977, Ser. No. 824,559
Int. Cl.[2] C10J *3/00;* C10B *7/08;* C07C *15/10;* C10B *57/02*
U.S. Cl. 201—2.5 **22 Claims**



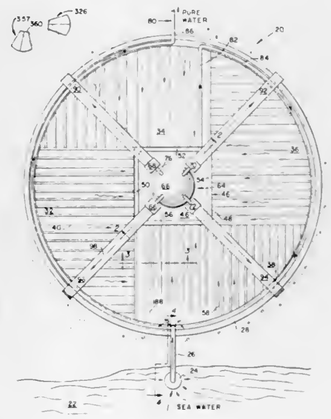
1. The process for the destructive distillation of high molecular weight organic materials to produce volatilization products which comprises:
(a) providing high molecular weight organic materials in a confined space irradiatable by multiple wave energy sources including microwave and ultrasonic generators as the wave energy sources and with a conduit connected to an outlet from the confined space for removal of volatilization products;
(b) irradiating the organic materials simultaneously with the multiple wave energy sources including microwave and ultrasonic radiation in the presence of separated elemental carbon in the organic materials in an amount sufficient to produce an electrical discharge between the separated carbon in the confined space so as to produce volatilization products including carbon soot by destructive distillation of the organic materials; and
(c) recovering the volatilization products from the conduit and a carbonized residue from the confined space.

14. An apparatus useful for the destructive distillation of high molecular weight organic materials into gaseous volatilization products which comprises:
(a) a chamber defining a confined space including a cover for introducing and then sealing the organic materials in the confined space;
(b) an outlet from the chamber for attachment of a conduit for removal of the volatilization products from the confined space, said conduit being provided with condensers for recovering some of the volatilization products as liquids, with means for removing carbon soot and with means for removal and recovery of gaseous volatilization products which are uncondensed;
(c) means located at an outlet from said conduit for reducing the pressure in the confined space; and
(d) generating means in association with the chamber for providing wave energy in the confined space including ultrasonic and microwave generators, wherein the simultaneously produced combined wave energy of the ultrasonic and microwave generators is sufficient to produce destructive distillation of the organic materials in the presence of separated elemental carbon in the organic materials in an amount sufficient to produce an electrical discharge between the separated carbon and to produce volatilization products including carbon soot.

4,118,283
APPARATUS FOR DESALINATING WATER

Richard E. Diggs, 12A Rd., Carthage, Mo. 64836

Filed Oct. 28, 1975, Ser. No. 625,850
Int. Cl.[2] B01D *3/00*
U.S. Cl. 202—160 **14 Claims**



1. A distillation device comprising:

a first water transfer means for withdrawing contaminated water from a body of water having solid contaminants dissolved therein;

a grid connected to said first water transfer means so that contaminated water received from said body of water flows across said grid, said grid having an outer peripheral edge and an inner peripheral edge and comprising a header located on said grid outer peripheral edge and fluidly connected to said first water transfer means so that contaminated water flows into said header from the body of water, said header being fluidly attached to said grid so that contaminated water flows from said header onto said grid whereby contaminated water flows from the body of water to said grid via said header, and a trough located on said grid inner peripheral edge and fluidly attached to said grid so that contaminated water flows into said trough from said grid, and means for transferring solar energy to said water flowing across said grid;

a water storage means having a side wall attached to said grid trough so that contaminated water flowing on said grid flows into said water storage means via said trough;

second water transfer means connected with said water storage means for removing contaminated water from said storage means;

a third water transfer means located in said trough and connected to said water storage means for transferring water from said trough to said water storage means and temperature control means connected to said third water transfer means for actuating said third water transfer means when the temperature of said water in said trough reaches or exceeds said predetermined temperature so that only water having a temperature which equals or exceeds said predetermined temperature is transferred to said water storage means;

a heat exchange structure connected to said water storage means;

a recirculation apparatus mounted in said trough and connected to said header for recirculating said water from said trough back to said header prior to transferring water from said trough into said water storage means and temperature control means connected to said recirculation apparatus for actuating said apparatus when the temperature of said water in said trough falls below a predetermined temperature;

an evaporator means connected to said heat exchange structure for separating said water from said solid contaminants dissolved therein, said evaporator means having a solar heater means for transferring solar energy to said contaminated water flowing from said heat exchange structure into said evaporator means;

vacuum producing means for producing a vacuum in said evaporator means so that said contaminated water is vaporized under vacuum conditions to form water vapor and thereby separate said water from said solid contaminants, and solid removing means connected to said evaporator means for removing said solid contaminants from said evaporator means;

water vapor transfer means connected to said evaporator means for removing said water vapor from said evaporator means;

condenser means connected to said water vapor transfer means for condensing said water vapor to form distilled water which is free of solid contaminants; and

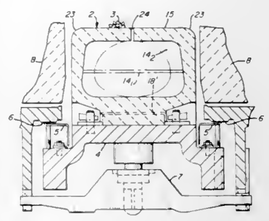
distillate transfer means connected to said condenser means for withdrawing condensed water from said condenser means.

4,118,284

PLUG-TYPE COKE OVEN DOOR

Walter A. Bowman, Pleasant Hills Borough, and Richard L. Wessel, Plum Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1977, Ser. No. 847,198
Int. Cl.[2] C10B *25/06*
U.S. Cl. 202—248 **4 Claims**



1. In a plug-type coke oven door which includes an outer door element and an inner plug element, said plug having (i) a front wall and (ii) left and (iii) right side walls connected to said outer door element, the interior region defined by the three walls having a duct therein permitting the passage of gases to the top portion of the plug,

the improvement for significantly decreasing carbon accumulation within said duct and on the exterior surfaces of the left and right side walls, in which (a) essentially the entire cross-sectional thickness of said three walls is less than three inches, and are sufficiently thin to provide a thermal conductivity of at least 0.3 Btu/(hour) (sq.ft.) (°F/ft.) and (b) the left and right side walls have a width of at least 8 inches, said width being more than one half the depth of the plug,

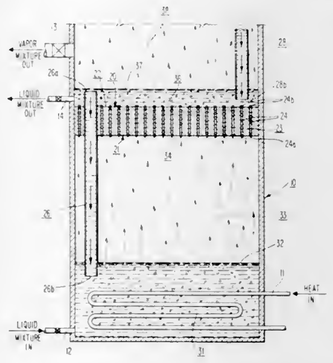
the interior of said duct being substantially unobstructed, in order that heat entering therein, primarily through the exterior face of said front wall, may readily be transferred to the interior faces of said left and right side walls and, in turn, to the outer faces thereof.

4,118,285

SEPARATION OF LIQUID MIXTURES

George Chiayou Yeh, Newtown Sq., Pa., assignor to Villanova University, Villanova, Pa.

Filed Apr. 29, 1975, Ser. No. 572,881
Int. Cl.[2] B01D *3/14*
U.S. Cl. 203—81 **13 Claims**



1. Method for separating a mixture of at least two liquids of differing volatilities, said method comprising:

A. Boiling said liquid mixture to form a vapor mixture comprising a more volatile component and a less volatile component;

B. Subjecting said vapor mixture to contact under condensing conditions with a first side of a porous structure having passages extending between openings on said first side and openings on a second side of said structure, said passages being adapted to permit said vapor mixture in condensed liquid state to flow therethrough substantially by capillary suction flow, whereby said vapor mixture is condensed at least in part and substantially in and adjacent to the openings on said first side and is caused to flow in condensed liquid state and substantially in the absence of vapor from the openings on said first side to the openings on said second side;

C. Maintaining conditions of temperature and pressure adjacent said second side of said porous structure, whereby the liquid condensate of said vapor mixture in and adjacent to the openings of said passages on said second side is caused to boil and additional said liquid condensate is transferred substantially by capillary suction flow through said passages from the openings on said first side to the openings on said second side;

D. Removing from adjacent said second side a vapor mixture containing a higher concentration of said more volatile component relative to said less volatile component than in the vapor mixture contacting said first side; and

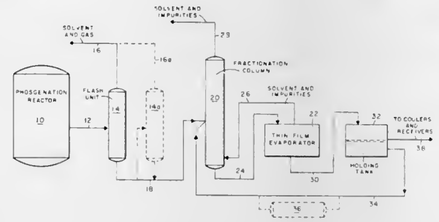
E. Removing from adjacent said second side a liquid mixture containing a lower concentration of said more volatile component relative to said less volatile component than in the vapor mixture contacting said first side.

4,118,286

PROCESS FOR REDUCING THE ACIDITY OF ORGANIC POLYMERIC ISOCYANATES

Simon Pierce Burns, and John Monte Walton, both of Austin, Tex., assignors to Texaco Development Corp., New York, N.Y.

Filed Sep. 25, 1974, Ser. No. 508,984
Int. Cl.[2] B01D *3/00*
U.S. Cl. 203—89 **4 Claims**



1. In a process for purifying and reducing the acidity of a polymethylene polyphenylpolyisocyanate mixture comprising distilling, in a distillation step, a crude polymethylene polyphenylpolyisocyanate mixture resulting from the phosgenation of a corresponding polymethylene polyphenylpolyamine mixture in a solvent to remove the solvent and impurities therefrom, said distillation step being conducted by passing a flowing feed stream of the crude polymethylene polyphenylpolyisocyanate mixture through a distillation column having a thin film evaporator means mounted therewith for heating said mixture to a temperature of from about 190° C. to about 250° C., taking excess solvent and impurities overhead from the column, and then allowing the resulting polymethylene polyphenylpolyisocyanate distillation residue from the column and evaporator means to cool, the improvement which comprises:

maintaining the polymethylene polyphenylpolyisocyanate residue from the column and evaporator means at a temperature of from about 190° C. to about 250° C. for about 1 to about 60 minutes; and

recirculating continuously a portion of said residue being maintained at said temperature for said time to said distillation column for admixture with said flowing feed stream of crude polymethylene polyphenylpolyisocyanate mixture, whereby the acidity content of the polymethylene polyphenylpolyisocyanate mixture is substantially reduced.

4,118,287

METHOD FOR MAKING A METAL MASTER FOR PRODUCING A GRAMOPHONE RECORD

Léon Dewallens, Louvain, Belgium, assignor to Fabrication Belge de Disques "Fabeldis", Molenbeek-Saint-Jean, Belgium

Filed May 2, 1977, Ser. No. 792,989
Claims priority, application Belgium, Jul. 8, 1976, 168739
Int. Cl.[2] B29C *24/00, 25/00*
U.S. Cl. 204—6 **6 Claims**

1. A method of making a metal molding die for producing in a pressure press gramophone records of plastic material provided with visual information in the center thereof, comprising the steps of:

providing a non-conductive support adapted to have grooves containing audio information in the annular portion thereof;

etching labeling information in a separate film layer;

fastening said film bearing said labeling information onto the central circular portion of said non-conductive support; and

galvanically plating metal on said non-conductive support and said film and stripping said metal to produce an integral and unitary molding die having a negative configuration to said non-conductive support at both the central portion bearing labeling information and the annular portion bearing audio information.

4,118,288

METHOD OF PRODUCING A PERFORATED METAL FOIL, ESPECIALLY FOR SCREEN PRINTING

Siegfried Rückl, Kufstein, Austria, assignor to Schablonentechnik Kufstein GmbH, Kufstein, Austria

Filed Mar. 24, 1977, Ser. No. 781,063
Claims priority, application Austria, Mar. 29, 1976, 2283/76
Int. Cl.[2] C25D *1/08, 1/20*
U.S. Cl. 204—11 **15 Claims**



1. A process for producing a coherent perforated metal foil which comprises the steps of:

applying a photosensitive layer to a metallic substrate;

selectively exposing said photosensitive layer to luminous energy through an optical mask;

developing the exposed photosensitive layer to leave isolated portions of photosensitive material, corresponding to the perforation to be formed in said foil, on said substrate;

increasing the porosity of said isolated portions;

swelling said isolated portions by contacting same with moisture to reduce the intervening interstices;

galvanically depositing metal on said substrate in said interstices; and

separating the resulting metallic structure from said substrate and from said isolated portions.

4,118,289

TIN/LEAD PLATING BATH AND METHOD

Grace F. Hsu, Somers, Conn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 374,643, Jun. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 83,229, Oct. 22, 1970, Pat. No. 3,785,939. This application Jan. 3, 1978, Ser. No. 866,537

Int. Cl.² C25D *3/56, 3/60*

U.S. Cl. 204—43 S **18 Claims**

1. An aqueous acid plating bath for electrodeposition of tin/lead alloys comprising about 5.0 to 80.0 grams per liter of stannous ion; about 85.0 to 10.0 grams per liter of lead ion; at least about 100.0 grams per liter of a radical selected from the group consisting of fluoborate, fluosilicate and sulfamate; and, as a brightener system, at least about 5.0 grams per liter of a nonionic polyoxyalkylated surfactant, at least about 4.0 grams per liter of a lower aliphatic aldehyde containing 1 to 4 carbon atoms, at least about 2.0 grams per liter of an amine, at least about 0.3 grams per liter of a polyhalogenated benzene compound and at least about 0.25 gram per liter of a brightener selected from the group consisting of heterocyclic carboxaldehydes, aromatic ketones and aromatic carboxylic acids and mixtures thereof, said bath having a pH of less than about 3.0.

14. An aqueous acid plating bath for electrodeposition of tin/lead alloys comprising about 5.0 to 80.0 grams per liter of stannous ion; about 85.0 to 10.0 grams per liter of lead ion; at least about 100.0 grams per liter of a radical selected from the group consisting of fluoborate, fluosilicate and sulfamate; and, as a brightener system, at least about 5.0 grams per liter of a nonionic polyoxyalkylated surfactant, at least about 4.0 grams per liter of a lower aliphatic aldehyde containing 1 to 4 carbon atoms, at least about 2.0 grams per liter of at least one aliphatic amine and at least about 0.25 gram per liter of a brightener selected from the group consisting of heterocyclic carboxaldehydes, aromatic ketones and mixtures thereof, said bath having a pH of less than about 3.0.

4,118,290

PROCESS FOR THE PREPARATION OF PERFLUOROETHYL IODIDE

Hans-Joachim Semmler, Hochheim, Main, and Bernd Felix, Burghausen, Salzach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 9, 1977, Ser. No. 775,847

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610148

Int. Cl.² C25B *3/08;* **C07C** *17/10*

U.S. Cl. 204—59 F **6 Claims**

1. Process for the preparation of perfluoroethyl iodide from tetrafluoro-diiodoethane and hydrogen fluoride, which comprises electrolyzing a mixture of anhydrous hydrofluoric acid and tetrafluoro-diiodoethane at a temperature of from −15° C to +19° C at a voltage of from 3 to 8.5 using a nickel anode and recovering the formed perfluoroethyl iodide.

4,118,291

METHOD OF ELECTROWINNING TITANIUM

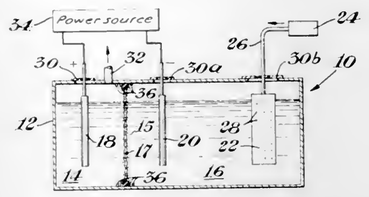
Paul R. Juckniess, and David R. Johnson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 517,569, Oct. 24, 1974, abandoned. This application Sep. 13, 1976, Ser. No. 722,850

Int. Cl.² C25C *3/28, 7/04*

U.S. Cl. 204—64 T **37 Claims**

1. A method to produce metallic titanium in an electrolytic cell having an anode, a cathode and a feed means comprising: inserting a foraminous diaphragm coated with a metal resistant to the environment within the cell into the cell to space apart an anode compartment from a cathode compartment, the diaphragm having a diaphragm coefficient of greater than zero to about 0.5 and a flow coefficient within the range of from about 0.1 to about 25; introducing an ionizable titanium compound into a molten salt bath contained in the cathode compartment;



and impressing an electromotive force between the anode and the cathode to form a gas at the anode and to deposit metallic titanium on the cathode.

4,118,292

PACKED BED ELECTROREFINING AND ELECTROLYSIS

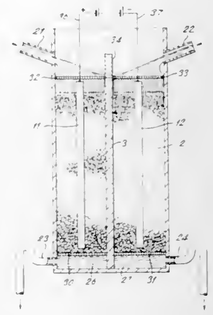
Derek John Fray, Trumpington, and James Henry Cleland, Cambridge, both of England, assignors to National Research Development Corporation, London, England

Filed Jun. 8, 1977, Ser. No. 804,807

Claims priority, application United Kingdom, Jun. 9, 1976, 23894/76; Nov. 5, 1976, 46171/76

Int. Cl.² C25C *3/00, 3/34, 3/06*

U.S. Cl. 204—67 **9 Claims**



1. A method of refining a molten metal comprising the steps of:

providing an anode assembly comprising a bed of conductive particles in a salt which is in a molten condition,

separating the anode assembly from a cathode assembly by a diaphragm pervious to the salt and impervious to the molten metal,

providing the cathode assembly, which comprises a bed of conductive particles in a salt which is in a molten condition,

passing a stream of the molten metal to be refined into the anode assembly,

applying a voltage between the bed of the anode assembly and the bed of the cathode assembly, and

withdrawing refined molten metal from a sump region of the cathode assembly.

4,118,293

PROCESS FOR PRODUCING TIN (II) SULFATE

Erich Ruf, and Hans Loges, both of Essen, Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed Jan. 14, 1977, Ser. No. 759,396

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1976, 2602031

Int. Cl.² C25B *1/00*

U.S. Cl. 204—93 **3 Claims**

1. In an electrolytic process for producing tin(II) sulfate by dissolving tin anodically in a sulfuric acid solution in which the anode space is separated from the cathode space by a diaphragm or by a space limited by diaphragms, the improvement which comprises said diaphragm being a sintered diaphragm composed of inorganic, ceramic materials which have been sintered at above 1000° C., said diaphragms having wall thicknesses in excess of 5 mm, pore widths smaller than 2 μm and a pore volume greater than 45%.

4,118,294

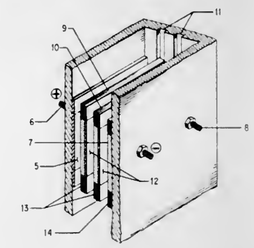
NOVEL CATHODE AND BIPOLAR ELECTRODE INCORPORATING THE SAME

Alberto Pellegri, Luino (Va), Italy, assignor to Diamond Shamrock Technologies S. A., Geneva, Switzerland

Filed Sep. 19, 1977, Ser. No. 834,418

Int. Cl.² C25B *1/02, 11/04, 11/08*

U.S. Cl. 204—129 **20 Claims**



1. A hydrogen-evolution cathode for electrochemical reactions, comprising a body which is substantially impervious to the diffusion therethrough of atomic hydrogen, said body being formed of an aggregate of powdered electrically conductive material embedded in electrically conducting relationship in a cured thermosetting resin and having a cathodically active surface enriched with a powder of a hydrogen evolution catalyst.

4,118,295

REGENERATION OF PLASTIC ETCHANTS

Theodore Frank Korenowski, Zelienople, and Leslie Emery Lancy, Ellwood City, both of Pa., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Apr. 20, 1976, Ser. No. 676,941

Int. Cl.² C02C *5/12*

U.S. Cl. 204—151 **10 Claims**

1. In a plastic etching process wherein plastic workpieces are subjected to etching by a chromic acid-sulfuric acid etchant solution in an etch zone and then rinsed with water in a rinse zone, and wherein during the course of the process the etchant solution and the rinse water become spent, the spent etchant being depleted in hexavalent chromium, enriched in trivalent chromium and contaminated with plastic organic breakdown products, the spent rinse water being enriched with such spent etchant, the method of at least partially removing such organic breakdown products from the spent etchant, while regenerating etchant for reuse within the plastic etching process, which method comprises:

withdrawing spent etchant from the etch zone and spent rinse water from the rinse zone;

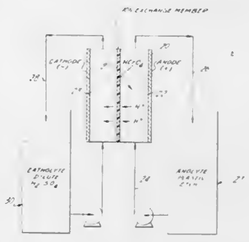
diluting spent etchant with spent rinse water;

heating the diluted spent etchant to at least about 60° C.;

passing said heated diluted etchant solution into the anode chamber of an electrolytic cell, which contains a permselective ion exchange membrane which divides the cell into said anode chamber and a cathode chamber;

maintaining an aqueous sulfuric acid solution in the cathode chamber;

electrically energizing the solutions in the anode and cathode chambers by cooperating anode and cathode means;



oxidizing plastic organic breakdown products in said anode chamber at a temperature of at least 60° C. while preventing transfer of anions to the cathode chamber;

withdrawing a chromic acid-sulfuric acid solution, which is depleted in organic content and enriched in hexavalent chromium, from the anode chamber into an evaporation zone;

increasing the temperature of said chromic acid-sulfur acid solution in the evaporation zone to remove additional quantities of organic breakdown products, to evaporate water from said solution and to recover a reconcentrated regenerated chromic acid-sulfuric acid solution, and passing said concentrated solution to the etch zone.

4,118,296

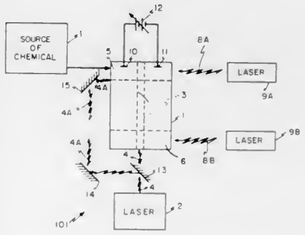
METHOD FOR MASS SEPARATION OF A GASEOUS MIXTURE

Fritz S. Klein, Rehovot, Israel, and John Ross, Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 7, 1976, Ser. No. 730,550

Int. Cl.² B01J *1/10;* **B01D** *59/16, 59/34*

U.S. Cl. 204—157.1 R **7 Claims**



1. A method of separation of mixed isotopic gas species of different masses by enriching the concentration of at least one said isotopic species in a static fluid mixture, which comprises:

(a) placing the fluid mixture in a chamber;

(b) subjecting the mixture to a macroscopic process in which a laser beam is directed therethrough to effect an initial enriched concentration of said one isotopic species by

thermal diffusion wherein concentration and separation is thus effected by respective differences in temperature produced in the mixture by laser irradiation;
(c) permitting the said one thus enriched species to collect in a given region of said chamber;
(d) acting upon said one species to change its nature rendering it responsive to removal from said chamber;
(e) removing said one species from the chamber.

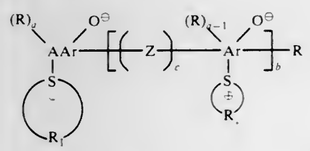
4,118,297

FUSED POLY-NUCLEAR AROMATIC CYCLIC SULFONIUM ZWITTERIONS AND POLYMERS THEREOF

William E. Broxterman; Demetrius Urchick; Donald L. Schmidt, and Clayton W. Hoornstra, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 8, 1976, Ser. No. 664,791
Int. Cl.² C08G *65/44*
U.S. Cl. 204—159.11 **18 Claims**

1. A polymerizable ar-cyclic sulfonium, fused polynuclear areneoxide represented by the formula:



wherein AAr is a fused cyclic polynuclear aromatic polyyl, each Ar is independently a cyclic aromatic polyyl, each R is independently a suitably inert monovalent radical capable of existing as a ring substituent on AAr or Ar, each R_1 is independently a suitably inert divalent organic radical capable of forming a heterocyclic ring containing sulfur, each Z is independently a suitably inert divalent radical bridging AAr and Ar, each *a* is independently a positive number corresponding to the number of remaining available ring positions on AAr or Ar, *b* is 0 or a positive number and *c* is 0 or 1, said polynuclear areneoxide capable of polymerizing upon exposure to radiative energy at a rate faster than the rate of polymerization of a similar mononuclear areneoxide having only mononuclear aromatic polyyl(s).

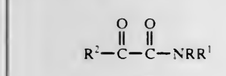
4,118,298

PHOTOPOLYMERIZABLE ARYL AND HETEROCYCLIC GLYOXYLAMIDE COMPOSITIONS

Francis A. Via, Yorktown Heights, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

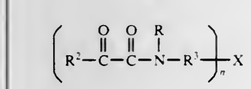
Filed Apr. 15, 1977, Ser. No. 787,827
Int. Cl.² C08F *2/46, 4/00*
U.S. Cl. 204—159.23 **30 Claims**

1. A photopolymerizable composition comprising an ethylenically unsaturated compound and a photoinitiating amount of a glyoxylamide of the formula:



I

or



II

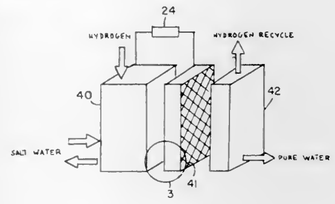
wherein R and R^1 are individually selected hydrogen or hydrocarbon of from 1 to 10 carbon atoms; R^2 is a heterocyclic radical, aryl of from 6 to 14 carbon atoms or mono-, di- or polysubstituted phenyl with substituents selected from the group consisting of alkyl, alkoxy, aryloxy, alkylthio, arylthio and halogen; R^3 is phenyl or $-(CH_2)_z$ where z is an integer from 2 to 6; X is zero, oxygen, sulfur, —NH—, phosphorus or silicon; and *n* is an integer from 1 to 4.

4,118,299

ELECTROCHEMICAL WATER DESALINATION PROCESS

Henri Jean Robert Maget, 80 Arbuelo Way, Los Altos, Calif. 94022

Filed Jul. 14, 1977, Ser. No. 815,663
Int. Cl.² B01D *13/02*
U.S. Cl. 204—180 P **5 Claims**



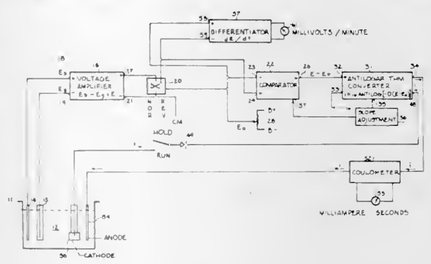
1. A process for removing water from an aqueous solution which comprises: treating the aqueous solution stream with hydrogen to cause hydrogen mixing with the aqueous solution, electrochemically treating the aqueous solution-hydrogen mixture in an electro-osmotic cell contaning a cation exchange membrane or porous diaphragm to preclude short circuits and reaction product mixing therein, a hydrogen anode and a hydrogen cathode, applying a direct current potential across said cell causing hydrogen to undergo an oxido-reduction process while entraining water from the aqueous solution stream to the cathode, recovering water from hydrogen released at said cathode through electrochemical hydrogen compression means, allowing hydrogen to be recycled and recovering the water.

4,118,300

COULOMETRIC TITRATOR

Joe M. Victor, and James Dougherty, both of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jun. 28, 1977, Ser. No. 810,834
Int. Cl.² G01N *27/44*
U.S. Cl. 204—195 T **9 Claims**



1. A coulometric titrator for determining the amount of a specific ion in a sample solution by the reaction with a reactive ion comprising:
(a) a cell for containing said sample solution and including electrodes for immersion in said solution, said electrodes including a reference electrode providing a first signal voltage and a specific ion sensing electrode providing a second signal voltage representing the logarithm of the concentration of the specific ion in said sample solution;
(b) differential input amplifier means having as inputs said first and second signal voltages from said reference and specific ion sensing electrodes and said differential input amplifier having as its output an error signal voltage representing the difference between said first and second signal voltages;
(c) reversing switch means receiving as input said error signal voltage and providing as output said error signal voltage in either the positive or negative sense depending on the position of said switch;
(d) reference means providing a reference voltage for the specific ion in the solution indicative of a particular rate of change of the second signal voltage while said rate of change of the second signal voltage is constant;
(e) comparator means receiving as inputs the signal voltage from said reversing switch and said reference voltage and providing as its output a sensor signal voltage representing the difference between said error signal and reference voltages;
(f) antilogarithm converter means receiving said sensor signal voltage and having an output signal that is a function of the antilogarithm of said sensor signal voltage, said function being represented by the equation:

$$i = i_o \text{antilog } [[-D(E-E_o)]] \; (-D(E-E_o)),$$

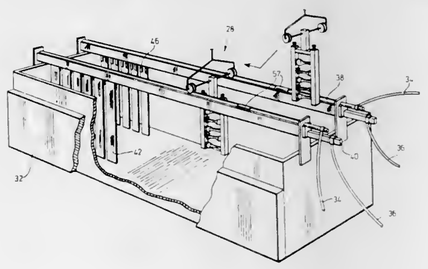
where
i = output signal current
i_o = referencing current
$E-E_o$ = sensor signal voltage
D = slope of the function plotted on semi-logarithmic paper;
(g) means for adjusting said slope D, said means adapted to give slopes ranging from 0.020 to 0.059; and
(h) reactive ion source means in the sample solution receiving said output signal and associated with a current source providing an unidirectional current flow between an anode and a cathode immersed in the sample solution and said reactive ion source means is either the anode or the cathode with the other being inert and with the quantum rate of reactive ion introduction into the sample solution being proportional to said output signal, whereby said second signal voltage changes at a constant rate with time and said reactive ion addition changes in a logarithmically decreasing amount with time in the sample solution until the stoichiometric end point is approached.

4,118,301

APPARATUS FOR ELECTROCHEMICAL FINISHING OF STAINLESS STEEL

Peter Mayer, Burlington; Robert W. Blair, Perth, and Mohammed Zamin, Mississauga, all of Canada, assignors to Heritage Silversmiths Limited, Perth, Canada

Filed Jul. 8, 1977, Ser. No. 814,271
Claims priority, application United Kingdom, Jul. 20, 1976, 30223/76
Int. Cl.² C25D *17/06, 17/08*
U.S. Cl. 204—202 **7 Claims**



1. An electropolishing apparatus, comprising an elongate electropolishing tank having an open top and adapted to hold a bath of electrolyte,
a plurality of generally planar upright rack means adapted to support a plurality of stainless steel items to be polished and suspended in generally planar alignment from overhead track means extending longitudinally of the tank,
said track means including a downwardly-sloping portion at the inlet end of said tank for immersion of said plurality of rack means successively into said tank, a generally-horizontal portion between the inlet end and outlet end of said tank for conveying said successively-immersed racks through said tank and an upwardly-sloping portion at the outlet end of said tank for removal of said plurality of rack means successively from said tank,
anode means operatively electrically connected through said rack means to said stainless steel items to render the same anodic during said electropolishing, and
cathode means arranged to be operatively electrically connected to said electrolyte bath for the passage of electricity through said electrolyte bath between said anodic stainless steel items and said cathode means,
said anode means comprising first and second horizontally-spaced electrically-conducting rod means each mounted in an upper surface of corresponding first and second electrically-insulating blocks extending above the tank from one end thereof to the other,
said anode means further comprising first and second electrically-conducting roller means rotatably mounted on opposite ends of an electrically-conducting rod extending transversely of said tank, said roller means being adapted to roll one on each said rod means, said transverse rod being joined to hanger and frame means suspending the same from said track means, the remainder of said rack means being suspended from said transverse rod,
each of said anode rod means having a portion thereof electrically insulated adjacent said downwardly-sloping portion of said track means for engagement with said roller means of each successive rack means as said rack means enters said tank to electrically insulate each said anode rod from the respective roller means during initial contact of said roller means and rod means and thereby inhibit arcing,
said cathode means comprising first and second horizontally-spaced electrically-conducting bar means each mounted in a lower surface of the corresponding first and second electrically-insulating blocks,
said cathode means further comprising a plurality of closely-spaced rectangular cathode plates suspended from and in electrical contact with said bar means and extending vertically downwardly into said electrolyte bath to a depth at least equal to that of the lower end of each of said rack means.

4,118,302

CATHODE STRUCTURE FOR USE IN ELECTROLYTIC PROCESS

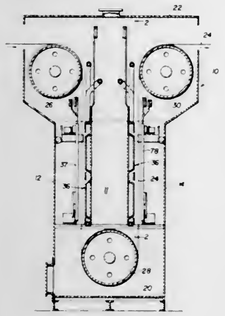
Robert R. Gobert, Michigan City, Ind., assignor to National Steel Corporation

Filed Aug. 10, 1977, Ser. No. 823,441
Int. Cl.² C25B *9/00, 17/00*
U.S. Cl. 204—206 **20 Claims**

1. A cathode structure for use in an apparatus for electrolytic treatment of an elongated strip of metal in a tank containing a bath of a first electrolyte solution by drawing the strip longitudinally through the bath between a substantially flat, positively-charged anode submerged in the bath and a negatively-charged cathode, the cathode structure comprising,
metal plate means having a front surface defining a generally rectangular substantially flat cathode surface and a back surface,
a thin generally rectangular electrolyte chamber enclosing the metal plate means, the electrolyte chamber including spaced side walls and spaced end walls joined together to

define a generally rectangular frame extending around the peripheral edges of the metal plate means and front and back wall panels mounted on the frame and extending in generally parallel spaced relation to the front and back surfaces respectively of the metal plate means, the front wall panel including a portion defined by an ion-permeable membrane extending in closely-spaced relation to the cathode surface to define a thin fluid channel extending between the membrane and the cathode surface and extending over the entire cathode surface,

inlet means in the electrolyte chamber adjacent one wall of the chamber and including connector means for connection with a source of a second electrolyte solution under pressure,



outlet means in the electrolyte chamber adjacent the wall opposite the inlet for permitting the second electrolyte solution to flow through the electrolyte chamber from the inlet through the outlet,

flow divider means within the electrolyte chamber for dividing electrolyte solution flowing between the inlet and outlet means and directing a portion of the second electrolyte solution through the thin fluid channel and the remaining portion through the space between the back wall panel and the back surface of the metal plate means, means adjacent the outlet recombining the portions of the second electrolyte solution before the solution flows from the outlet, and

means for mounting the electrolyte chamber in the first electrolyte solution within the tank.

4,118,303

APPARATUS FOR CHEMICALLY TREATING A SINGLE SIDE OF A WORKPIECE

Stephen R. Gibbs, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 718,897, Aug. 30, 1976. This application May 19, 1977, Ser. No. 798,384

Int. Cl.[2] C25D *17/00*

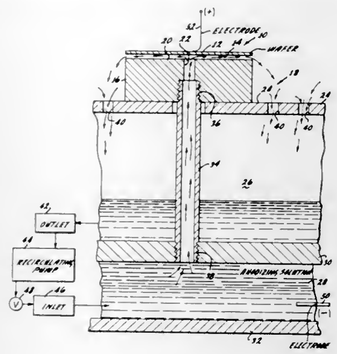
U.S. Cl. 204—224 R **6 Claims**

1. An apparatus for chemically treating one side only of a workpiece comprising:

means defining a work surface which is relatively flat and relatively horizontal;

aperture means generally centrally of said work surface and connected to a source of liquid chemical for chemically treating an entire area of said workpiece placed on said work surface; and

means for introducing said liquid chemical through said aperture in an upward direction so as to flow over this work surface and over said entire area and return to the source of liquid chemical while at the same time lifting and spacing said workpiece and chemically treating a workpiece placed on said work surface, said liquid chemical being the sole means for orienting the workpiece on work surface during said chemical treatment.



4,118,304

ELECTROLYTIC ALUMINA REDUCTION CELL WITH HEAT RADIATION REDUCING MEANS

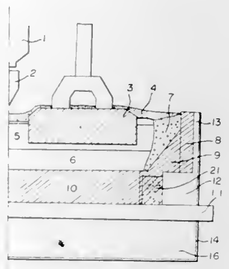
Youji Arita, Yokohhama, Japan, assignor to Mitsubishi Light Metal Industries Limited, Tokyo, Japan

Filed Aug. 16, 1977, Ser. No. 825,070

Claims priority, application Japan, Sep. 7, 1976, 51-107012

Int. Cl.[2] C25C *3/08*

U.S. Cl. 204—243 R **5 Claims**



1. In an alumina reduction cell having side walls and a bottom, arranged for containing a mass of electrolyte, and having one or more anodes each presenting a surface through which current flows, a bottom cathode formed of carbon blocks and presenting a surface through which current flows, said side walls being formed of a carbon substrate, the improvement comprising:

A body of heat insulating material being interposed at the boundary between said bottom cathode and said side walls sufficient to substantially diminish heat transfer from said bottom cathode to said side walls, wherein said heat insulating material reaches from the bottom of said boundary to at least 80% of the height of said bottom cathode.

4,118,305

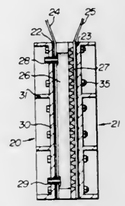
APPARATUS FOR ELECTROCHEMICAL REACTIONS

Colin William Oloman, and Alan Paul Watkinson, both of Vancouver, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 540,533, Jan. 13, 1975, Pat. No. 3,969,201. This application Jul. 12, 1976, Ser. No. 704,688

Int. Cl.[2] C25B *1/30, 9/00*

U.S. Cl. 204—265 **9 Claims**



1. An apparatus for carrying out electrochemical reactions involving gaseous reactants comprising an undivided electrochemical cell having a pair of spaced apart electrodes, at least one of said electrodes being in the form of a fluid permeable conductive mass and being separated from the counter electrode by a porous insulating layer which is compressed between the conductive mass and the counter electrode thereby defining a flow path which permits free flow of gas and liquid between the electrodes and which providing electrical insulation between the conductive mass and the counter electrode, inlet means for feeding a liquid electrolyte and a gas into said fluid permeable conductive mass and outlet means for removing solutions containing reaction products from said conductive mass, said inlet and outlet being arranged whereby the electrolyte and gas move co-currently through the conductive mass in a direction normal to the flow of electric current between the electrodes.

4,118,306

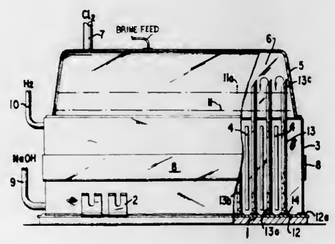
ANODE CONSTRUCTIONS FOR ELECTROLYSIS CELLS

Vittorio De Nora, Nassau, The Bahamas, and Oronzio De Nora, Milan, Italy, assignors to Diamond Shamrock Technologies S. A., Geneva, Switzerland

Division of Ser. No. 654,396, Feb. 2, 1976, Pat. No. 4,064,021, which is a division of Ser. No. 485,844, Jul. 5, 1974, Pat. No. 3,956,097. This application Feb. 28, 1977, Ser. No. 773,069

Int. Cl.[2] C25B *1/10, 1/46, 11/10, 11/03*

U.S. Cl. 204—284 **4 Claims**



1. An anode structure for electrolysis cells comprising a planar, electrically conductive blanket to be supported on the cell base and a plurality of vertical hollow, dimensionally stable anodes electrically connected to the blanket provided with an electrocatalytic coating, the said hollow anodes being provided with a plurality of perforations from near the bottom to some distance from the top and an upper imperforate section near the open-ended top thereof.

4,118,307

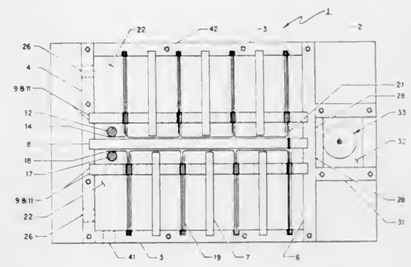
BATCH SODIUM HYPOCHLORITE GENERATOR

Ronald L. LaBarre, Euclid, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Feb. 14, 1977, Ser. No. 768,538

Int. Cl.[2] C25B *1/34, 11/10*

U.S. Cl. 204—268 **12 Claims**



1. A sodium hypochlorite generator-storage unit comprising:

an enclosed substantially rectangular cell made up of a cell baseplate, cell endwalls, cell sidewalls and a removable cell top plate;

means for charging said cell with brine;

means for electrolyzing said charged brine in said cell so as to form a sodium hypochlorite solution; said electrolyzing means comprising substantially rectangular vertically-arranged plate like electrodes consisting of at least one anode and one cathode, said anode being approximately twice the size of said cathode and being U-shaped so as to be parallel to and essentially enclose the related cathode, said cathode having a valve metal surface and the inner surface of said U-shaped anode having thereon an electroconductive, catalytically active dimensionally stable coating thereon;

means to vent the hydrogen formed during the electrolysis from said cell;

means to discharge the sodium hypochlorite solution formed by electrolysis in said cell when desired; and control means which, when activated, effects the discharge of a precise amount of sodium hypochlorite solution, discontinues such a discharge, refills said cell with brine, electrolyzes the brine to obtain the desired hypochlorite concentration, and then awaits reactivation.

4,118,308

METHOD OF RENEWING A POROUS DIAPHRAGM HAVING REDUCED PERMEABILITY TO ALKALI METAL CHLORIDE BRINES

Steven J. Specht, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

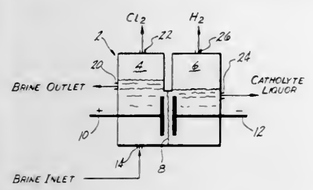
Filed Dec. 20, 1977, Ser. No. 862,308

Int. Cl.[2] C25B *13/08, 13/04, 15/00*

U.S. Cl. 204—296 **13 Claims**

1. A method of renewing a porous diaphragm comprised of a synthetic fluorocarbon resin having cation exchange properties, said porous diaphragm having reduced permeability to alkali metal chloride brines in an electrolytic cell having an anode compartment and a cathode compartment, said porous diaphragm separating said anode compartment from said cathode compartment, said method which comprises feeding an alkaline solution of an alkali metal chloride having a pH of from about 9 to about 12 to said anode compartment, circulating said alkaline solution in said anode compartment such that

a first portion of said alkaline solution passes through said porous diaphragm and a second portion of said alkaline solution contacts said porous diaphragm and is then removed from said anode compartment.

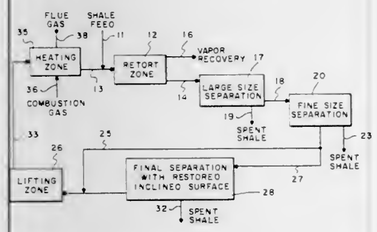


4,118,309

SEPARATION AND RECOVERY OF HEAT CARRIERS IN AN OIL SHALE RETORTING PROCESS

Gary A. Myers; Yahia A. K. Abdul-Rahman, both of Plano, and James L. Skinner, Richardson, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 10, 1976, Ser. No. 749,505
Int. Cl.[2] C10G *1/02*; C10B *53/06*
U.S. Cl. 208—11 R **33 Claims**



1. In a method for retorting crushed oil shale containing carbonaceous organic matter and mineral matter wherein oil shale is retorted by contacting said oil shale with hot heat-carrying spherically-shaped solids in a retort zone to produce gas and oil products and a mixture of said spherically-shaped solids and irregularly-shaped particulate spent shale, and wherein at least eighty percent by weight of said spherically-shaped solids are reheated and recycled to said retort zone and at least 75 percent by weight of the spent shale is separated from said mixture and disposed, the improvement comprising:

a. feeding a mixture of spherically-shaped solids and spent shale at a first point having a first side and a second side onto an initial impingement area of an inclined surface whereon most of said spherically-shaped solids fed onto said inclined surface roll from said inclined surface while most of said spent shale fed onto said inclined surface remains on said inclined surface;

b. moving the portion of said inclined surface with spent shale thereon during the time that step (a) is taking place in a direction such that said impingement area of said inclined surface is constantly changing and said portion moves away from said first side of said first point and returns to said second side of said first point before said portion returns to said first side of said first point;

c. collecting the spherically-shaped solids which have rolled from said inclined surface, and

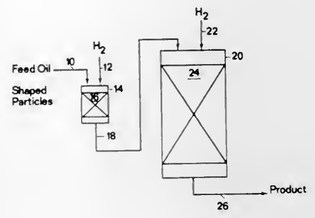
d. removing spent shale from said inclined surface at a second point located away from said first point where said spherically-shaped solids and spent shale are fed onto said inclined surface in step (a).

4,118,310

HYDRODESULFURIZATION PROCESS EMPLOYING A GUARD REACTOR

James Albert Frayer, Pittsburgh; Henri K. Lese, Monroeville; Joel Drexler McKinney, Pittsburgh; Kirk J. Metzer, Pittsburgh, and John Angelo Paraskos, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 28, 1977, Ser. No. 810,858
Int. Cl.[2] C10G *23/02*
U.S. Cl. 208—210 **14 Claims**



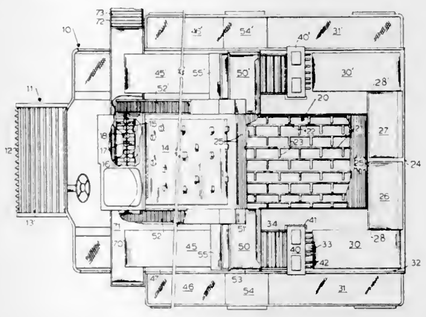
1. In a process for the hydrodesulfurization of an asphaltene-containing oil containing sulfur and metals at a hydrogen pressure between 1,000 and 5,000 psi and a temperature between 600° and 900° F. wherein said oil and hydrogen are passed downwardly in trickle flow through upstream and downstream reactors in series and wherein the catalyst in both reactors comprises Group VI and Group VIII metals on a non-cracking support, the invention comprising the particles of said catalyst in said upstream reactor comprising elongated extrudates which show in cross-section at least one groove defining protrusions and an average concavity index between about 1.01 and 1.35, the shortest distance between the depth of said at least one groove and the center in said cross-section being between 1/30 and 1/120 inch, and employing a higher liquid mass velocity in said upstream reactor than in said downstream reactor, said higher liquid mass velocity permitting a given amount of desulfurization in said upstream reactor at a lower temperature than the temperature required at the liquid mass velocity of the downstream reactor.

4,118,311

TOMATO HARVESTING SORTING SYSTEM

William C. Friedel, Jr., Los Banos, and Charles F. Dietz, Rio Vista, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 18, 1976, Ser. No. 733,157
Int. Cl.[2] B07C *5/12*; A01D *46/00*
U.S. Cl. 209—75 **9 Claims**



1. A tomato harvester sorting system wherein tomatoes after detachment from the vines are collected and moved rearwardly to a rear cross-conveyor, said harvester also having means for separating dirt clods and loose tomatoes from the vines before said detachment and depositing the clods and loose tomatoes on a clod conveyor system, comprising:

a horizontal forwardly-moving pre-sorting conveyor on which fall the tomatoes from said rear cross-conveyor, having an adjacent platform segment for workers to stand on and remove vegetative trash, the tomatoes falling off the forward end of said pre-sorting conveyor.

an elevating forwardly-moving conveyor having a lower end for catching tomatoes falling from said pre-sorting conveyor and a flighted member for moving them to an upper end, from which the elevated tomatoes fall,

cull disposal means to the rear of said elevating conveyor,

a electromechanical sorter having means for judging the redness or greenness of tomatoes falling from said forward end of said pre-sorting conveyor and mechanical means for impelling green tomatoes into said cull disposal means while not interfering with the fall of red tomatoes into said elevating conveyor,

an after-sorting conveyor receiving the red tomatoes falling from the upper end of said elevating conveyor and carrying them forward and generally horizontally to an output end and having an adjacent platform segment for workers to stand on to remove blemished and overripe fruit therefrom, and

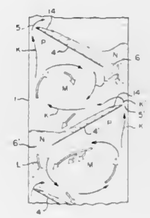
an outwardly-moving lateral clod-conveyor, being the terminal portion of said clod conveyor system, for carrying clods and loose tomatoes outwardly, having a cull chute at the outer end thereof into which the material on said clod conveyor falls, said clod conveyor being perpendicular to and positioned directly over said elevating conveyor and forward of said electromechanical sorter and having a platform segment adjacent its outer end for receiving a worker for removing good tomatoes from said clod conveyor for placing them in the main sorting stream with the red tomatoes.

4,118,313

PROCESS AND APPARATUS FOR MASS TRANSFER BETWEEN HETEROGENEOUS SYSTEMS

Eugen Hadamovsky; Wolfgang Hoppe; Hans-Walter Overhausen, all of Witten; Bernhard Piotrowski, Bochum; Wehrhart Schmid, Karlsruhe; Georg Schreiber, Cologne-Rodenkirchen, and Heinz Schroeder, Witten, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Continuation of Ser. No. 520,864, Nov. 4, 1974, abandoned. This application Jul. 14, 1976, Ser. No. 705,243
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1973, 2355106
Int. Cl.[2] B01D *11/04*
U.S. Cl. 560—78 **21 Claims**



1. A process for mass transfer between heterogeneous systems or phases in a vertical exchange column having a plurality of plates, a heavier stream of matter being introduced above the plates and, a lighter stream of matter being introduced countercurrently thereto from the bottom of the plates, characterized in that:

(a) a first heavier stream of matter fed from the top is angularly deflected, above one plate, into a first mixing zone wherein the heavier stream undergoes vertical rotary movement in one sense of direction and a lighter stream of matter passing from below through a first passageway of said one plate is introduced into the mixing zone and is caused to also undergo vertical rotary movement together with the heavier stream in the same sense of direction whereby mixing of the streams is effected;

(b) a heavier phase, suspension, or the like fluid-like mass is formed in the mixing zone during the mass transfer therein and is accumulated in an enrichment zone below the mixing zone and superajcent to a second passageway of said one plate;

(c) a lighter phase or like fluid-like mass is also formed in the mixing zone during the mass transfer therein and is directed upwardly above the mixing zone to provide another enrichment zone, said mixing zone extending between the enrichment zones; and

(d) after a sufficient pressure gradient has been built up between the accumulated mass above the second passageway and a lighter stream below the first passageway, the accumulated mass flows as another heavier stream through the second passageway into a space underneath said one plate and is at this location angularly deflected into a second mixing zone wherein the another heavier stream undergoes vertical rotary movement, having a sense of direction of rotation opposite to that in the first mixing zone above said one plate, and is mixed with another lighter stream of matter fed from below in the same manner as mixing occurs in the first mixing zone, said second mixing zone also extending between two enrichment zones.

4,118,312

PROCESS FOR THE CONCENTRATION BY FLOTATION OF FINE MESH SIZE OR OXIDIZED ORES OF COPPER, LEAD, ZINC

Gilles Barbery, and Jean-Luc Cecile, both of Orleans, France, assignors to Bureau de Recherches Geologiques et Minieres, Paris, France

Filed Dec. 13, 1976, Ser. No. 750,302
Claims priority, application France, Dec. 15, 1975, 75 38393
Int. Cl.[2] B03D *1/14*
U.S. Cl. 209—166 **6 Claims**

1. In the concentration by flotation of an oxidized ore having a mean mesh size below about 160μm, comprising suspending the ore in an aqueous solution of a flotation reagent, agitating and aerating the suspension whereupon at least a portion of the ore particles floats to the top of the suspension and recovering the floating particles, the improvement which comprises employing as said flotation reagent a beta-diketone selected from the group consisting of acetylacetone, 2,2,6,6-tetramethyl-3,5-heptadione, 6-methyl-2,4-heptadione and 2-methyl-4,6-dodecadione, the pH of the aqueous beta-diketone solution being from about 5 to 9, and said oxidized ore comprising at least one of lead oxide, copper oxide and zinc oxide and at least one of a carbonate and silicate gangue.

4,118,314

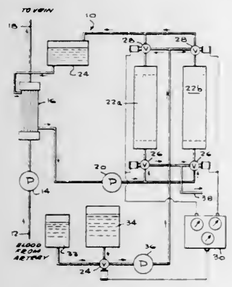
APPARATUS FOR TREATMENT OF ARTIFICIAL KIDNEY DIALYZING FLUID

Fumitake Yoshida, Kyoto, Japan, assignor to Seisan Kaihatsu Kagaku Kenkyusho, Kyoto, Japan

Continuation of Ser. No. 432,092, Jan. 9, 1974, abandoned. This application May 19, 1975, Ser. No. 578,939

Int. Cl.[2] B01D *13/00, 15/06*

U.S. Cl. 210—22 C **6 Claims**



1. In an artificial kidney apparatus having a hemodialyzer for treating a recirculating dialyzing fluid, an adsorbent bed for receiving said dialyzing fluid for removal of contained toxins, and a desorbing fluid for desorbing said adsorbent bed of said toxins, the improvement comprising:

a plurality of adsorbent beds for treating said dialyzing fluid,

first flow control means for repeatedly and alternately selecting one and then another of said adsorbent beds for receiving said dialyzing fluid,

second flow control means for repeatedly and alternately selecting one of said adsorbent beds for receiving water as a desorbing liquid after said adsorbent bed received said dialyzing fluid, whereby one of said adsorbent beds will repeatedly and alternately receive the dialyzing fluid to remove toxins therefrom and thereafter water as the desorbing fluid to desorb said toxins and reactivate the adsorbent bed while another of said adsorbent beds passes through a reverse cycle,

third flow control means for repeatedly and alternately selecting one of said adsorbent beds for receiving fresh dialyzing fluid to displace said water remaining in said adsorbent bed and to effect further desorption of said toxins in said adsorbent bed after said adsorbent bed received said water as a desorbing liquid.

4,118,315

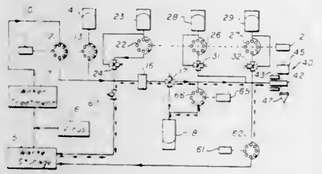
WATER SYSTEM VIRUS DETECTION

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Alan S. Fraser, Whittier; Arthur F. Wells, Upland, and Harold J. Tenoso, Burbank, all of Calif.

Filed Apr. 28, 1977, Ser. No. 792,068

Int. Cl.[2] B01D *13/00, 31/00*

U.S. Cl. 210—23 F **16 Claims**



1. A process for monitoring the performance of a water recovery purification system in removing pathogenic viruses, said process comprising the steps of:

introducing a non-pathogenic bacteriophage marker virus at a predetermined concentration upstream of said water recovery system;

collecting a sample of effluent from said water recovery system;

concentrating any marker virus present in said effluent sample by mixing said sample with a solution containing a trivalent cation formed from a solution containing $AlCl_3$ to obtain a resulting mixture with a pH of 2.5–3.5,

passing said resulting mixture through a cellulose acetate filter to adsorb any of said marker virus onto said filter, and thereafter

desorbing any of said marker virus from said filter by passing a selected quantity of a buffer solution through said filter to form a solution containing an increased concentration of said virus; and

testing said concentrated sample for said marker virus to monitor said water recovery purification system.

4,118,316

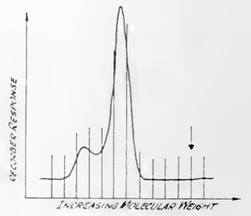
QUATERNIZED SILICEOUS SUPPORTS FOR GEL PERMEATION CHROMATOGRAPHY

Charles P. Talley, Prosperity, Pa.; Guy M. Bradley, Chesterfield, Mo., and Ronald T. Guliana, Monroe, Mich., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1976, Ser. No. 731,969

Int. Cl.[2] B01D *15/08*

U.S. Cl. 210—31 C **17 Claims**



3. A gel permeation chromatographic method for the separation of molecular weight fractions of a cationic polymer which comprises passing a solution of said polymer through a porous chromatography bed of a rigid, non-swellable, controlled porosity glass support having a porosity of from about 50 to about 25,000 Angstroms, said support having a quaternized siliceous surface which is prepared by treating the siliceous surface with a silane compound and a quaternizing agent.

4,118,317

METHOD OF PURIFYING ION EXCHANGER RESINS SPENT IN THE OPERATION OF A NUCLEAR REACTOR

Karl-Heinz Neeb, Erlangen, and Heinrich Richter, Fürth, both of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mühlheim (Ruhr), Germany

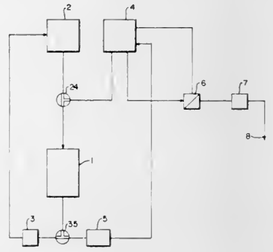
Filed Feb. 22, 1977, Ser. No. 770,289

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1976, 2607292

Int. Cl.[2] B01D *15/06*

U.S. Cl. 210—32 **7 Claims**

1. In a method of treating liquid coolant from a coolant loop of a nuclear reactor and containing radioactive fission and corrosion products and chemical substances for conditioning the coolant by pasing said liquid coolant in contact with mixed-bed ion exchanger resins to remove radioactive fission and corrosion products which are radionuclides mechanically and chemically bound as radioactive cations and anions to the ion exchanger resins, the ion exchanger resins also removing conditioning substances, the combination therewith comprising the sequential steps of freeing from radioactive fission and corrosion products and from conditioning substances the ion exchanger resins spent in the operation of removal of said products and said substances by thoroughly rinsing the resin with demineralized water so as to release said mechanically bound suspended radioactive substances from the resins, separating the released suspended radioactive substances contained in the demineralized water in a mechanical filter, rinsing with diluted mineral water in a mechanical filter, rinsing with di-



luted mineral acid the resin previously rinsed with demineralized water so as to release radioactive cations and anions therefrom and produce a mineral acid containing radionuclides of said radioactive cations and anions together with the conditioning substances, selectively adsorbing radionuclides of the cations and anions in an adsorber substance which is a reactant for the radionuclides fixed on an inorganic carrier, separating the conditioning substances from the mineral acid with which the resins have been rinsed and coverting the separated conditioning substances into a form of chemical compounds used in said liquid coolant for reuse in liquid coolant.

4,118,318

GAS SCRUBBER SCALE AND DEPOSIT CONTROL

Gerald Elvin Welder, Hudson; Edward Russell Lang, Lakewood, both of Ohio, and Charles Wilmer Slagle, Wexford, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

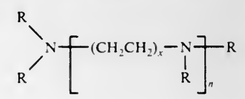
Continuation-in-part of Ser. No. 733,723, Oct. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 647,253, Jan. 7, 1976, abandoned. This application Sep. 22, 1977, Ser. No. 835,625

Int. Cl.[2] C02B *5/06*

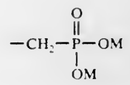
U.S. Cl. 210—58 **19 Claims**

1. A composition useful for controlling deposit build-up in gas scrubbers consisting essentially of a scale inhibitor selected from the group consisting of:

a. phosphonates of the general formula:

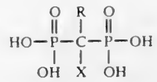


wherein R is



M is H, NH_4, alkali metal or combinations thereof;
N is 0 to 6; and
x is 1 to 6;

b. phosphonates of the general formula:



wherein X is — OH or — NH_2 and R is an alkyl group of from 1 to 5 carbon atoms; and

c. sodium polyphosphates and phosphate esters of the formula:

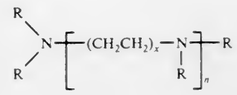
$$N[ROPO_3M_2]_3$$

wherein M may be — H, — NH_2 or a monovalent metal ion and R is an alkylene group having from 1 to 18 carbon atoms;

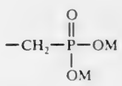
and at least one water-soluble polymer selected from the group consisting of polyacrylamides, poly(2-acrylamido methyl propane sulfonic acid) and sulfonated polystyrenes, said polymer having a molecular weight of at least 25,000 wherein the ratio of scale inhibitor to polymer is from about 1:10 to about 10:1 by weight.

11. A method of controlling deposit build-up in gas scrubbers which comprises maintaining in the aqueous scrubbing medium at least 0.01 ppm of a composition consisting essentially of a scale inhibitor selected from the group consisting of:

a. phosphonates of the general formula:

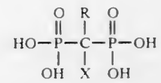


wherein R is



M is H, NH_4, alkali metal or combinations thereof;
n is 0 to 6; and
x is 1 to 6;

b. phosphonates of the general formula:



wherein X is — OH or — NH_2 and R is an alkyl group of from 1 to 5 carbon atoms; and

c. sodium polyphosphates and phosphate esters of the formula:

$$N[ROPO_3M_2]_3$$

wherein M may be — H, — NH_2 or a monovalent metal ion and R is an alkylene group having from 1 to 18 carbon atoms; and at least one water-soluble polymer selected from the group consisting of polyacrylamides, poly(2-acrylamido methyl propane sulfonic acid) and sulfonated polystyrenes, said polymer having a molecular weight of at least 250,000, wherein the ratio of scale inhibitor to polymer is from about 1:10 to about 10:1 by weight.

4,118,319

TREATMENT OF SLUDGE

Isao Miyanohara; Hiroshi Miyazaki, and Hideo Kawamura, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Mar. 3, 1977, Ser. No. 774,051

Claims priority, application Japan, Mar. 11, 1976, 51-25526; Apr. 14, 1976, 51-41201; May 18, 1976, 51-56114

Int. Cl.² C02B *1/20*; C02C *3/00*

U.S. Cl. 210—51 **9 Claims**

1. A treatment of a sludge containing biological aggregate or polyvalent metal hydroxide aggregate, which consists of adding light burned magnesia to said sludge, adjusting the pH of said sludge to the range of from 9 to 12 and filtering said sludge.

4,118,320

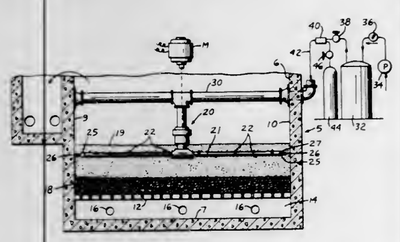
METHOD AND APPARATUS FOR AGITATING AND SCRUBBING FILTER BED

Fred E. Stuart, 1157 Bel Aire Dr., Daytona Beach, Fla. 32020

Filed Jul. 20, 1977, Ser. No. 817,234

Int. Cl.² B01D *23/24*

U.S. Cl. 210—80 **1 Claim**



1. An agitator mechanism for washing and cleaning the filter medium of a filter bed comprising:

a tubular agitator arm horizontally disposed near but beneath the top of the filter bed and rotatable on a vertical axis near the longitudinally central region of the arm,

nozzle means distributed along said arm including nozzles directed to respective sides of the arm on respective sides of said axis,

means for supplying air under pressure to said arm and therethrough to said nozzle means to scrub the filter bed medium in the region of said arm by the air jets emerging from said nozzle means,

means for supplying oxygen to the air flowing to said nozzle means so as to enrich the air with added oxygen,

motor means for rotating said arm independently of the air jets emerging from said nozzle means, and

means for supplying wash water to the filter bed at the bottom for upward flow through the filter bed.

4,118,321

DEVICE FOR TANKS OF CIRCULAR TYPE SUCH AS, FOR EXAMPLE, THICKENERS, SLUDGE TANKS, MIXING TANKS AND THE LIKE

Jan O. Bogen, Sala, Sweden, assignor to Sala International AB, Sala, Sweden

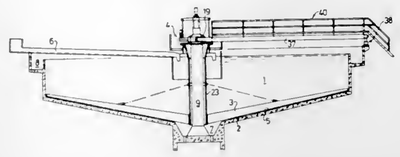
Filed Nov. 29, 1976, Ser. No. 745,535

Claims priority, application Sweden, Nov. 28, 1975, 7513429

Int. Cl.² B01D *21/18*

U.S. Cl. 210—91 **5 Claims**

1. In a circular tank having at least one arm extending radially outwardly over the bottom thereof, a central pillar coaxial with the tank, means supporting said arm on said pillar for vertical movement relative to said pillar, and means for swinging said arm about said axis; the improvement comprising a rigid element that extends generally radially outwardly of said support means and that is secured adjacent its outer end to a fixed point on the periphery of said tank, and means acting between said supporting means and said element to permit



vertical movement of said support means relative to said outer end of said element and to transmit torque from said support means to said element.

4,118,322

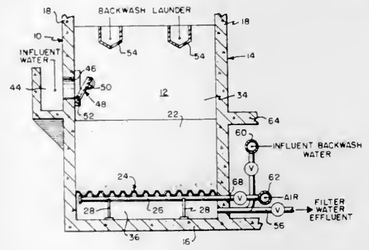
FILTERING APPARATUS FOR LIQUIDS

Guillermo A. San Roman, Hempstead, N.Y., assignor to Hydrotechnic Corporation, New York, N.Y.

Filed May 17, 1976, Ser. No. 687,365

Int. Cl.² B01D *23/18, 23/24*

U.S. Cl. 210—136 **9 Claims**



9. A filter for cleaning a flow of liquid, said filter comprising:

a filter tank having upper and lower chambers;

a fluid inlet assembly communicating with said lower tank chamber,

means within said tank for supporting a filter material bed, said means dividing said tank into upper and lower chambers;

means extending through said filter bed supporting means for providing fluid communication between said upper and lower tank chambers;

a bed of filter material within said upper tank chamber having a bottom surface defined and supported by said filter bed supporting means;

a normally open influent filter liquid inlet assembly communicating with said tank upper chamber, said inlet assembly including an inlet passage and means including a pivotally mounted, buoyant valve member for automatically closing said passage upon said upper tank chamber being filled to a predetermined level with backwash fluid;

an effluent filter liquid outlet communicating with said tank lower chamber; and

an effluent backwash liquid outlet communicating with said tank upper chamber and located at a level within said tank which is higher than said predetermined level and the level of said influent liquid inlet passage for providing a substantially vertical flow of said backwash liquid from the bed upper surface throughout said tank.

4,118,323

STRAINER

Masaaki Sugiyama, Fuji; Takuo Yuda, Sagamihara, and Akira Mizusawa, Fujisawa, all of Japan, assignors to Yamakawa Industry Co. Ltd. and Nifco, Inc., Tokyo, both of, Japan

Continuation of Ser. No. 771,592, Feb. 24, 1977, abandoned, which is a continuation of Ser. No. 584,234, Jun. 5, 1975, abandoned. This application Oct. 26, 1977, Ser. No. 845,522

Claims priority, application Japan, Jun. 11, 1974, 49-67054

Int. Cl.² C02C *1/14*

U.S. Cl. 210—439 **2 Claims**



1. A plastic strainer in combination with a suction pipe having an annular projection spaced a predetermined distance from the free end of said pipe, said strainer including a strainer body member having a tubular top frame, imperforated bottom board, a plurality of axially extending circumferentially spaced support elements with each support element integrally attached at opposite ends to said top frame and said bottom board, a plurality of resilient arms extending axially between the free end of said top frame, said arms including shoulder means intermediate their length, a tubular filtration net integrally attached to and embedded in and extending between the opposed surfaces of said top frame and of said bottom board, said net extending throughout the axial extent of said support elements and embedded and integrally connected and supported therein along a line intermediate the radial extent of said elements, a centrally appertured cover member removably attached to said strainer body, said cover member including a plurality of circumferentially spaced complementary openings equal in number to said arms for telescopingly accepting said arms within shouldered portion of said arms engaging the outer surface of said cover when said cover is seated against said top frame, an open ended tubular connector element molded integrally with the cover top and communicating with said central apperature to provide a continuous bore through said connector element and said cover, said bore in said tubular connector element being tapered from its free end to an annular groove circumferentially disposed therein and adapted to accept said annular projection on said suction pipe in complementary relation when the suction pipe is telescoped through the tubular connector element end cover whereby said suction pipe free end is maintained in spaced relation to said bottom board being spaced a greater distance from said cover element the said predetermined distance.

4,118,324

FABRIC SOFTENERS

Willi Steckelberg, Hofheim am Taunus; Hans Ludwig Panke, Frankfurt am Main; Adolf May, Hofheim am Taunus, and Hans-Walter Bücking, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

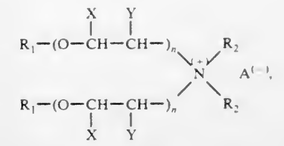
Filed Jun. 17, 1977, Ser. No. 807,402

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651898

Int. Cl.² D06M *13/46*

U.S. Cl. 252—8.9 **3 Claims**

1. Fabric softeners in the form of aqueous solutions or dispersions, which contain an active ingredient one or several compounds of the formula



in which R_1 represents identical or different aliphatic radicals having 8 to 30 carbon atoms, cyclohexyl groups or aryl groups optionally substituted by alkyl groups, X and Y stand for a hydrogen atom or a methyl group, however, X and Y not being methyl at the same time, *n* is an integer of 1 to 20, R_2 represents alkyl groups having 1 to 4 carbon atoms or benzyl groups, and A is a methosulfate, chloride, bromide or methophosphate ion.

4,118,325

FIREPROOFING COMPOSITION

Donald E. Becker; Gary D. Achenbach, both of Ponca City, and George W. Stuever, Kildare, all of Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Dec. 27, 1976, Ser. No. 754,793

Int. Cl.² C09K *3/28*

U.S. Cl. 252—8.1 **4 Claims**

1. A fireproofing composition comprising a low density foamed alkali metal silicate matrix having incorporated therein, on a dry weight basis, from 5 to 35 weight percent of an unexpanded particulate mineral material selected from the group consisting of unexpanded vermiculite and unexpanded perlite, said material having a particle size range of from 6 to 200 mesh and being capable of expanding to from 5 to 20 times its unexpanded volume upon exposure to heat.

4,118,326

SPIN-FINISH LUBRICATING METHOD

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 521,691, Nov. 7, 1974, abandoned. This application Feb. 9, 1976, Ser. No. 656,460

Int. Cl.² D06M *13/30, 5/10, 13/00*

U.S. Cl. 252—8.6 **6 Claims**

1. In a process of spin-finishing a synthetic textile fiber in which the fiber passes over and in contact with a heating plate maintained at a temperature of 150° to 300° Centigrade, the improvement which comprises applying to said fiber before its passage over said heating plate an amount effective to promote the handling properties of said fiber of a textile-lubricant composition, said composition consisting essentially of and effectively oxidation-reducing and stability-promoting amount up to 2 weight percent of a salt of a metal selected from the group consisting of the alkali and alkaline-earth metals with a saturated carboxylic acid containing up to 18 carbon atoms and the balance being a liquid polyalkoxylate nonionic surfactant material.

4,118,327

FABRIC SOFTENER AND ANTI-STATIC COMPOSITIONS

Monique Seugnet, Colombes, France, assignor to Colgate Palmolive Company, New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 777,994

Int. Cl.² D06M *13/44*

U.S. Cl. 252—8.8 **14 Claims**

1. A fabric softening and anti-static composition consisting essentially of:

(1) from about 0.1% to about 5% by weight of the total composition of at least one phosphoric acid ester or a salt thereof selected from the group consisting of

$R^1O(CH_2CH_2O)_mPO(OM)_2$ I

$[R^1O(CH_2CH_2O)_m]_2$ POOM II

$R^2OPO(OM)_2$ and III

$(R^2O)_2POOM$ IV

wherein R^1 is a higher alkyl of 14 to 20 carbon atoms, *m* is from 1 to 10, M is a hydrogen, alkali metal or ammonium and R^2 is an alkyl of 6 to 10 carbon atoms, and (2) from about 0.1 to about 10% by weight of the total composition of at least one cationic fabric softening agent.

4,118,328

AMINE PHOSPHATE SALTS

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 8, 1977, Ser. No. 858,585

Int. Cl.[2] **C10M** *1/44, 3/38;* **C07F** *9/08, 9/16*

U.S. Cl. 252—32.5 **9 Claims**

1. A process for preparing a phosphate salt which comprises heating a triaryl phosphate and a primary or secondary aliphatic amine in the molar ratio of 1:1-20 respectively at a temperature of 100°-200° C. for 0.5-30 hours in the presence of a catalytic amount of boric acid to yield said phosphate salt.

5. The product prepared by the process of claim **1**.

4,118,329

AMINE PHOSPHATE SALTS AND PHOSPHORAMIDES

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 8, 1977, Ser. No. 858,586

Int. Cl.[2] **C10M** *1/44, 3/38, 5/24, 7/24*

U.S. Cl. 252—32.5 **9 Claims**

1. A process comprising heating a triaryl phosphate and a primary or secondary aliphatic amine in the molar ratio of 1:1-20 respectively, at a temperature of 100°-200° C. for 0.5 to 30 hours in the presence of a catalytic amount of a trialkyl borate wherein the alkyl portion contains from 2 to 6 carbon atoms, to yield a mixture comprising a minor proportion of phosphoramide and a major proportion of phosphate salt.

5. The product prepared by the process of claim **1**.

4,118,330

AMINE PHOSPHATE SALTS AND PHOSPHORAMIDES

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 8, 1977, Ser. No. 858,587

Int. Cl.[2] **C10M** *1/44, 3/38, 5/24, 7/24*

U.S. Cl. 252—32.5 **9 Claims**

1. A process comprising heating a triaryl phosphate and a primary or secondary aliphatic amine in the molar ratio of 1:1-20 respectively, at a temperature of 100°-200° C. for 0.5 to 30 hours in the presence of a catalytic amount of boron trifluoride to yield a mixture comprising a major proportion of phosphoramide and a minor proportion of phosphate salt.

5. The product prepared by the process of claim **1**.

4,118,331

METHOD FOR WORKING METAL AND LUBRICANTS FOR USE THEREIN

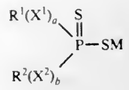
Richard William Jahnke, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 574,675, May 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 439,656, Feb. 4, 1974, abandoned, and Ser. No. 504,414, Sep. 9, 1974, abandoned. This application Jan. 11, 1977, Ser. No. 758,525

Int. Cl.[2] **C10M** *1/48, 3/42, 5/24;* **B21B** *45/02*

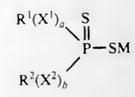
U.S. Cl. 252—32.7 E **44 Claims**

1. A method for lubricating metal during working thereof which comprises applying to said metal a composition free from elemental sulfur and triaryl phosphates and comprising (A) an oil of lubricating viscosity, (B) at least one substituted succinic acid in which the substituent is a hydrocarbon-based substituent containing 6-75 carbon atoms of an anhydride or lithium salt thereof, and (C) at least one phosphorus acid salt having the formula



wherein M is a Group I metal, a Group II metal, aluminum, tin, cobalt, lead, molybdenum, manganese, nickel or ammonium; each of R^1 and R^2 is a hydrocarbon-based radical; each of X^1 and X^2 is oxygen or sulfur; and each of *a* and *b* is 0 or 1; components B and C comprising about 3-30% by weight of said composition and about 0.5-5.0 parts by weight of component B being present per part of component C.

26. A metal workpiece having on its surface a film of a composition free from elemental sulfur and triaryl phosphates and comprising (A) an oil of lubricating viscosity, (B) at least one substituted succinic acid in which the substituent is a hydrocarbon-based substituent containing 6-75 carbon atoms or an anhydride or lithium salt thereof, and (C) at least one phosphorus acid salt having the formula



wherein M is a Group I metal, a Group II metal, aluminum, tin, cobalt, lead, molybdenum, manganese, nickel or ammonium; each of R^1 and R^2 is a hydrocarbon-based radical; each of X^1 and X^2 is oxygen or sulfur; and each of *a* and *b* is 0 or 1; components B and C comprising about 3-30% by weight of said composition and about 0.5-5.0 parts by weight of component B being present per part of component C.

4,118,332

SYNERGISTIC ANTIBACTERIAL COMPOSITION CONTAINING MIXTURES OF CERTAIN HALOGENATED DIPHENYL ETHERS AND TRICHLOROCARBANILIDES

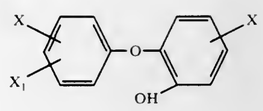
George Nikolas Apostolatos, New York, N.Y.; James Calvin Bohrer, East Brunswick, and Jack Thomas Inamorato, Westfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 502,577, Oct. 22, 1965. This application Mar. 1, 1968, Ser. No. 709,799

Int. Cl.[2] **C11D** *3/48, 9/50*

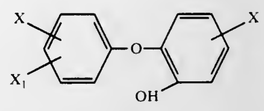
U.S. Cl. 252—107 **18 Claims**

1. An antibacterial composition effective against both gram-positive and gram-negative bacteria comprising in combination (1) a diphenyl ether compound having the formula



wherein X is a halogen and X_1 is a member selected from the group consisting of hydrogen and halogen; and (1) at least one compound selected from the group consisting of 3,4,4'-trichlorocarbanilide - and 3,3'4-trichlorocarbanilides the ratio of (1) to (2) being about 1:3 to 3:1.

9. An antibacterial detergent composition effective against both gram-negative and gram-positive baterial comprising a detergent selected from the group consisting of soaps and non-soap synthetic anionic, nonionic, cationic and amphoteric detergents and from about 0.01% to about 5% by weight of a mixture of (1) of diphenyl ether compound having the formula



wherein X is a halogen and X_1 is a member selected from the group consisting of hydrogen and halogen; and (2) at least one compound selected from the group consisting of 3,4,4' trichlorocarbanilide - and 3,3'4-trichlorocarbanilide the ratio of (1) to (2) being about 1:3 to 3:1.

4,118,333

MANUFACTURE OF PARTICULATE DETERGENTS

Bernard Baron Dugan, Bryanston, and Jacobus Cornelius Welgemoed, Edenvale, both of South Africa, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 18, 1976, Ser. No. 733,561

Claims priority, application South Africa, Oct. 20, 1975, 75/6587; Jan. 21, 1976, 76/0345

Int. Cl.[2] **C11D** *11/00, 7/16, 3/04*

U.S. Cl. 252—135 **11 Claims**

1. A method of making a detergent composition in particulate, cellular form comprising the steps of forming an aqueous slurry of detergent components selected from the group consisting of water-soluble anionic or nonionic detergent salt, detergent builder salts, detergent adjuvants, and mixtures thereof, said slurry containing between 30 to 60% by weight of water and having a temperature of 20° C. to 100° C.; heating a layer of said aqueous slurry by means of microwave radiant energy in a microwave heating zone for a period sufficient to vaporize an amount of the water sufficient to effect intumescence and setting of said slurry into the form of a cellular mass; and fragmenting said cellular mass to form a particulate detergent composition having the bulk density of a spray dried detergent composition.

4,118,334

PRIMARY ELECTROCHEMICAL CELL

Franz Goebel, Ashland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

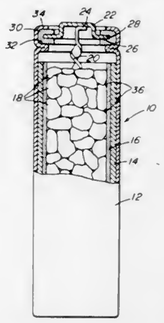
Division of Ser. No. 614,467, Sep. 18, 1975, Pat. No. 4,060,668, which is a continuation-in-part of Ser. No. 539,749, Jan. 9, 1975, abandoned. This application Jun. 3, 1977, Ser. No. 803,127

Int. Cl.[2] **H01M** *4/00*

U.S. Cl. 252—182.1 **9 Claims**

1. A method for forming a cathode material for a primary electrochemical cell, which material is an aggregate of porous globules of superior density, said material being formed essentially from carbon black, a binder, and a suitable liquid, said method comprising the steps of

mixing a quantity of said carbon black with a quantity of said binder which is inert in the primary electrochemical cell and an amount of said suitable liquid, the quantity of said binder being at least **1** percent by weight of the resulting



cathode material, the amount of liquid being at least an amount effective to cause the mix to form small, generally spherical masses, and

curing the mix for a time sufficient to stabilize said binder.

4,118,335

LIQUID CRYSTALLINE MATERIALS OF REDUCED VISCOSITY

Joachim Krause; Ralf Streinstrasser; Ludwig Pohl; Fernando Del Pino, and Georg Weber, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Germany

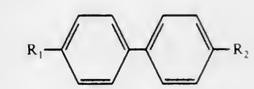
Filed Oct. 8, 1976, Ser. No. 730,953

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1975, 2548360

Int. Cl.[2] **G09K** *3/34;* **C02F** *1/13*

U.S. Cl. 252—299 **14 Claims**

1. A nematic or nematic-cholesteric liquid crystalline composition comprising a mixture of (a) at least one nematic or nematic-cholesteric liquid crystalline material and (b) an amount effective to lower the viscosity of (a) of a biphenyl compound of the formula



wherein R_1 and R_2 each are straight-chain alkyl of 2-12 carbon atoms and collectively contain at least 5 carbon atoms.

4,118,336

NOVEL CELLULOSE MICROCAPSULES AND PREPARATION THEREOF

Masataka Morishita, Shizuoka; Yasuo Yokokawa, Tokyo; Tokio Nishikawa, Hikone; Masahiro Mishiro; Shigeyasu Ohashi, both of Moriyama; Mitsuru Fukushima, Shizuoka; Yoshihito Inaba, Shizuoka, and Tetsuo Matsuda, Shizuoka, all of Japan, assignors to Toyo Jozo Company, Ltd. and Asahi Kasei Kogyo Kabushiki Kaisha, both of, Japan

Continuation-in-part of Ser. No. 560,937, Mar. 21, 1975, abandoned. This application Dec. 15, 1976, Ser. No. 750,588

Claims priority, application Japan, Mar. 25, 1974, 49-32686

Int. Cl.[2] **B01J** *13/02*

U.S. Cl. 252—316 **20 Claims**

1. An adsorbing cellulose microcapsule having selective adsorbing capacity and an outer diameter from 100 to 5000 microns, consisting of an outer semipermeable barrier layer of cellulose from about 0.5 to 5 microns in thickness having mi-

cropores from 10 to 80 angstroms in diameter and adsorbent powders which are dispersed within cellulose gel matrix innerside of said barrier layer and having a void volume equal to at least 25% of the total volume thereof.

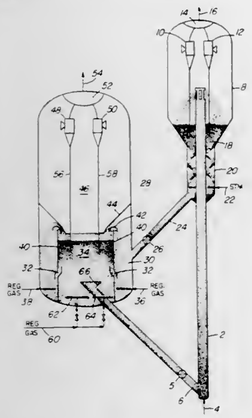
2. A process for producing an adsorbing cellulose microcapsule as claimed in claim 1, which comprises hydrolyzing ester groups of a cellulose ester derivative microcapsule, consisting of an outer barrier layer of cellulose ester derivative having micropores and adsorbent powders which are dispersed within cellulose ester derivative gel matrix innerside of said barrier layer.

4,118,337

METHOD FOR REGENERATING FLUIDIZABLE SOLID PARTICLES EMPLOYED IN HYDROCARBON CONVERSION

Benjamin Gross, Cherry Hill, and Klaus Wilhelm Schatz, Paulsboro, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 20, 1977, Ser. No. 807,776
Int. Cl.[2] B01J *29/38, 21/20;* **C10G** *11/18, 11/04*
U.S. Cl. 252—417 **10 Claims**



1. In a fluid catalyst operation comprising conversion of hydrocarbons to lower and higher boiling products and regeneration of catalyst employed in said hydrocarbon conversion, the method for regenerating catalyst particles comprising carbonaceous material deposits which comprises

passing spent catalyst into an annular catalyst regeneration zone about the periphery of an inner concentric catalyst regeneration zone,

admixing hot freshly regenerated catalyst particles obtained from said concentric zone with said spent catalyst in said annular zone in an amount sufficient to raise the temperature of said spent catalyst to a temperature promoting the combustion of carbonaceous material in the presence of oxygen containing regeneration gas,

causing said mixture of spent and regenerated catalyst to flow as a suspension in combustion supporting gases generally upwardly through vertical sections of said annular zone during combustion of carbonaceous material with controlled amounts of introduced combustion supporting gas, discharging the suspension from the top of said annular zone through an annular passageway into a dispersed phase of catalyst above said concentric catalyst regeneration zone for flow generally downwardly therethrough as a dense flowing bed of catalyst and countercurrent to rising regeneration gas,

introducing combustion supporting regeneration gas to a bottom portion of said concentric downwardly flowing bed of catalyst beneath the inlet of a regeneration catalyst withdrawal zone,

passing regenerated catalyst from a lower portion of said concentric bed through said withdrawal zone to a hydrocarbon conversion zone,

separating particles of catalyst from combustion gases in said dispersed phase above said concentric bed of catalyst, withdrawing said combustion gases and

passing catalyst separated in said dispersed phase into said concentric bed.

6. The method of claim 1 wherein the spent catalyst is introduced tangentially to said annular zone.

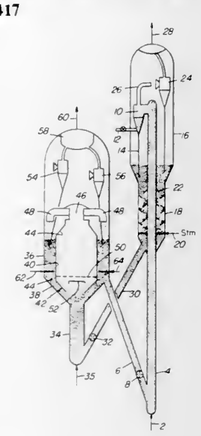
7. The method of claim 1 wherein regeneration of the catalyst is accomplished under conditions promoting the combustion of CO.

4,118,338

METHOD FOR REGENERATING A FLUID CRACKING CATALYST

Benjamin Gross, Cherry Hill, and Klaus Wilhelm Schatz, Wenonah, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 1, 1977, Ser. No. 829,845
Int. Cl.[2] B01J *29/38, 21/20;* **C10G** *11/18, 11/04*
U.S. Cl. 252—417 **8 Claims**



1. In a hydrocarbon conversion-catalyst regeneration operation employing fluidized catalyst particles comprising a crystalline zeolite wherein catalyst particles comprising carbonaceous deposits are recovered from hydrocarbon conversion and passed to a catalyst regeneration operation to remove carbonaceous deposits by burning thereby heating the catalyst particles to an elevated temperature within the range of 1200° F. to 1500° F. and catalyst particles thus heated are returned to the hydrocarbon conversion operation, the improved method for regenerating the catalyst particles which comprises,

forming a suspension of spent catalyst particles comprising carbonaceous deposits in upflowing gaseous material passing upwardly through a first riser zone communicating with the bottom open end of a larger diameter cylindrical combustion zone for burning carbonaceous material,

recovering regenerated catalyst in an annular zone about said cylindrical zone, passing regenerated catalyst from the bottom of said annular zone in admixture with said catalyst suspension adjacent the upper end of said first riser zone and before passage into the bottom open end of said larger diameter cylindrical combustion zone,

passing a mass of regenerated catalyst particles in admixture with spent catalyst upwardly through said combustion zone under conditions supporting combustion of carbon containing material thereby heating said catalyst particles to a temperature above 1200° F.,

separating catalyst particles thus regenerated from gaseous combustion products following upward flow through said larger diameter combustion zone, recovering hot regenerated catalyst thus separated in said annular zone, and

maintaining a catalyst head of pressure between said annular zone and said cylindrical zone to maintain a flow of hot regenerated catalyst from said annular zone into the bottom open end of said larger diameter cylindrical zone to form a mix temperature with carbon containing catalyst particles suspended in oxygen containing gas sufficient to particularly promote the combustion of carbon material in the presence of oxygen containing regeneration gas.

6. The method of claim 1 wherein regenerated catalyst is mixed with catalyst containing carbonaceous deposits passed to said first riser zone.

8. The method of claim 1 wherein a suspension of hot combustion products and regenerated catalyst particles is discharged from the upper end of said combustion zone generally downward into said annular zone.

4,118,339

USE OF NOBLE METAL SOLUTIONS IN CATALYST REGENERATION ZONES

Edwin J. Latos, Chicago, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 737,355, Nov. 1, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,670
Int. Cl.[2] B01J *21/20, 29/38;* **C10G** *11/04*
U.S. Cl. 252—417 **12 Claims**

1. A method for regenerating coke-contaminated fluidized catalytic cracking catalyst which has become spent as a result of its use in a hydrocarbon cracking reactor containing from about 0.5 to about 1.5 wt. % coke with simultaneous carefully-controlled oxidation of CO to CO_2 which comprises the steps of:

(a) introducing said coke-contaminated cracking catalyst into a fluidized catalytic cracking catalyst regeneration zone;

(b) passing into said regeneration zone, independently of said coke-contaminated cracking catalyst and free of the reactor feed stock, a CO oxidation promoter solution, to promote oxidation of CO to CO_2, in an amount equivalent to from about 0.1 to about 30 ppm of the circulating catalyst inventory on an elemental metal basis, said solution comprising a noble metal compound dissolved in a solvent selected from the group consisting of saturated aliphatic alcohols having from 2 to 8 carbon atoms per molecule and possessing a freezing point of 32° F. or less;

(c) passing into said regeneration zone an oxygen-containing regeneration gas in an amount selected to burn coke from said coke-contaminated cracking catalyst and to provide sufficient excess oxygen to effect the desired amount of CO oxidation;

(d) reacting a first portion of said oxygen-containing regeneration gas with said coke-contaminated cracking catalyst in said regeneration zone at oxidation conditions including a temperature within the range of from about 1100° F. to about 1450° F. and a pressure within the range of from about atmospheric to about 50 psig selected to remove coke from said coke-contaminated catalyst and to produce a flue gas containing CO and sufficient to cause combination of CO and CO_2 in the presence of said oxidation promoter, thereby producing regenerated catalyst and flue gas; and,

(e) simultaneously contacting said flue gas and a second portion of said oxygen-containing regeneration gas with said CO oxidation promoter in said regeneration zone in the presence of said regenerated catalyst at a temperature within the range of from about 1100° F. to 1450° F. and a pressure within the range of from about atmospheric to about 50 psig to effect a controlled quantity of exothermic heat of reaction and to decrease the amount of CO in said flue gas.

9. A method of regeneration as set forth in claim 1 wherein the concentration of said noble metal in said promoter solution is equivalent to from about 0.01 to about 10 wt. % elemental metal.

4,118,340

NOVEL POLYMERIZATION CATALYST

Louis J. Rekers, Wyoming, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jun. 7, 1976, Ser. No. 693,803
Int. Cl.[2] C08F *4/78, 4/22, 4/24*
U.S. Cl. 252—428 **21 Claims**

1. An olefin polymerization catalyst composition comprising a solid inorganic support material having deposited thereon a preformed organoborate-chromium product obtainable by the reaction of chromium trioxide and a trihydrocarbyl borate, said composition having been heated in a dry non-reducing atmosphere at a temperature above about 400° F. and below the temperature at which the structure of the support is impaired, and for a period of time sufficient to promote the polymerization activity of said catalyst composition for the polymerization of 1-olefins.

4,118,341

ACTIVATED CARBON

Katsuji Ishibashi, Sapporo; Shigeo Mitsui, Ebetsu, and Rikio Kobayashi, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation-in-part of Ser. No. 562,248, Mar. 26, 1975, abandoned. This application Apr. 5, 1977, Ser. No. 784,947
Claims priority, application Japan, May 27, 1974, 49-59065
Int. Cl.[2] B01J *27/20, 27/24, 21/18*
U.S. Cl. 252—438 **6 Claims**

1. A method of manufacturing activated carbon which comprises:

(a) thermally condensing a polymer of acrylonitrile at a temperature between 150° and 500° C. for 3 hours to 2 minutes in an oxidizing atmosphere until a black condensation product is formed;

(b) heating said product at 550° to 950° C. in an atmosphere consisting essentially of at least one member of the group consisting of steam and carbon dioxide until an activated carbon capable of absorbing butyl mercaptan in an amount of more than 100% of the weight of said activated carbon is formed; and

(c) recovering said activated carbon.

4,118,342

PROCESS FOR PRODUCING CATALYSTS

Henri R. Debus, Meise, and Raymond M. Cahen, Brussels, both of Belgium, assignors to Labofina S. A., Brussels, Belgium

Filed Jun. 21, 1977, Ser. No. 808,624
Int. Cl.[2] B01J *27/02;* **C11C** *3/12*
U.S. Cl. 252—439 **17 Claims**

1. A process for producing a partially sulfurized nickel hydrogenation catalyst adapted for selective hydrogenation of unsaturated higher fatty acid compounds with reduction of the content of polyenic compounds, limitation of the formation of saturated compounds and of conjugated dienic compounds and with isomerization to trans-isomers, which comprises the step of treating a pre-reduced nickel catalyst comprising nickel, having a crystallite size of between about 10 and about 200 A with at least one organic sulfur compound selected from the group consisting of thiophene, alkylthiophenes, mono- and disulfides and mercaptans at a temperature of between about 75° C. and about 200° C. at a hydrogen pressure sufficient and for a period of time sufficient to produce a partially sulfurized

nickel hydrogenation catalyst containing from about 1.5 to about 8 parts by weight of sulfur per 100 parts by weight of nickel.

4,118,343

TRICYCLO[6.2.1.0^{2,7}]UNDEC-9-EN-3-ONE PERFUME COMPOSITION

Werner Skorianetz, Dardagny, Geneva, and Günther Ohloff, Bernex, Geneva, both of Switzerland, assignors to Firmenich, S.A., Geneva, Switzerland

Filed Aug. 15, 1977, Ser. No. 824,905

Claims priority, application Switzerland, Aug. 20, 1976, 10606/76

Int. Cl.^{2} C11B *9/00*

U.S. Cl. 252—522 **3 Claims**

1. A perfume composition containing as an active ingredient tricyclo [6.2.1.0^{2,7}]undec-9-en-3-one in combination with a diluent.

4,118,344

DRYCLEANING DETERGENT SOLUTION

Harold D. DeShon, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 688,803, May 21, 1976, abandoned. This application Jun. 23, 1977, Ser. No. 809,502

Int. Cl.^{2} C11D *1/83, 7/30, 7/50*

U.S. Cl. 252—559 **7 Claims**

1. A composition consisting essentially of a drycleaning solvent having dissolved therein about 0.1–4 percent by weight of an alkali metal petroleum sulfonate and about 0.01–0.4 percent by weight of a polyoxyalkylene glycol having an average molecular weight of from about 10,000 to about 100,000 and wherein the polyoxyalkylene glycol contains about 95–5 mole percent oxyethylene units and about 5–95 mole percent oxypropylene units.

4,118,345

RECOVERY OF POLYACETAL RESINS

Michael A. Hanley; Lawrence A. Miller, both of Reading, and Irvin H. Kinsey, Saegertown, all of Pa., assignors to The Polymer Corporation, Reading, Pa.

Filed Jan. 18, 1977, Ser. No. 760,319

Int. Cl.^{2} C08J *11/04;* **C08L** *59/02*

U.S. Cl. 260—2.3 **5 Claims**

1. In a method for the recovery of polyacetal scrap material in which extraneous dirt, if any, is removed from the scrap, the scrap is coarsely ground to a size convenient to feed to a screw extruder, the scrap is melted in the extruder, strands are extruded from the extruder, and the strands are chopped to form a molding powder, the improvement comprising melt mixing with the polyacetal scrap material in the extruder between about 1 to about 10 weight percent of a polysiloxane fluid.

4,118,346

PHENOLIC RESIN RECOVERY PROCESS

Robert Milton Summers, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 27, 1977, Ser. No. 864,350

Int. Cl.^{2} B29H *19/00;* **C08J** *11/04*

U.S. Cl. 260—2.3 **10 Claims**

1. A process for recovering a resin type material from an infusible phenolic plastic, comprising the steps of:

placing a quantity of said infusible phenolic plastic in a container;

adding an alkali solution to said infusible phenolic plastic to create a mixture;

heating said mixture to a temperature between 260°–340° C causing at least a portion of said infusible phenolic plastic to dissolve into said alkali solution to create a liquor;

filtering said liquor from said mixture to remove any undissolved infusible phenolic plastic and other insoluble materials therefrom; and

acidifying said liquor by adding an acid solution thereto causing a phenolic type resin material therein to precipitate therefrom as a solid.

4,118,347

FILLER FOR LIQUID CHROMATOGRAPHY

Susumu Ishiguro; Masuhiro Komuro, and Shigeru Nakamura, all of Yokohama, Japan, assignors to Showa Denko K.K., Japan

Filed Jun. 15, 1977, Ser. No. 806,842

Claims priority, application Japan, Jun. 25, 1976, 51-74401

Int. Cl.^{2} C08J *9/16, 9/20, 9/36*

U.S. Cl. 521—53 **12 Claims**

1. A granular filler for liquid chromatography consisting essentially of a porous copolymer of (A) a glycidyl monovinyl ester or a glycidyl monovinyl ether and (B) an alkylene glycol divinyl ester with component (A) being crosslinked by component (B) to form a gel copolymer, the mole ratio of component (A) to component (B) being 10:90 to 90:10, said copolymer containing in its molecule modified groups resulting from the ring-opening reaction of the epoxy groups ascribable to component (A) with a modifying compound selected from the group consisting of water, alkylene glycol, polyalkylene glycol and a triol.

4,118,348

METHOD FOR PREPARING BLENDS OF RUBBER, A POLYPHENYLENE ETHER RESIN AND AN ALKENYL AROMATIC ADDITION POLYMER

James G. Bennett, Menands; Glenn D. Cooper, and Arthur Katchman, both of Delmar, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 1, 1973, Ser. No. 401,994

Int. Cl.^{2} C08L *7/00*

U.S. Cl. 260—4 AR **1 Claim**

1. A process for preparing a composition comprising:

(1) from 1–25 parts by weight of a rubber and from 5 to 95 parts by weight of alkenyl aromatic addition polymer component and

(2) from 10 to 90 parts by weight of a polyphenylene ether resin component, said process comprising:

a. providing a first mixture which consists essentially of a phenol, capable of oxidatively coupling to form said polyphenylene ether resin component and an alkenyl aromatic monomer capable of forming an addition polymer;

b. polymerizing said phenol by oxidative coupling in said first mixture in the presence of oxygen to produce a second mixture of said polyphenylene ether resin and said alkenyl aromatic monomer;

c. providing in said section mixture a quantity of a rubber to form a third mixture of said polyphenylene ether resin, said alkenyl aromatic monomer and said rubber; and

d. polymerizing said rubber and alkenyl aromatic monomer in said third mixture to form said composition of a rubber, an alkenyl aromatic addition polymer and a polyphenylene ether resin.

4,118,349

PROCESS FOR THE MANUFACTURE OF POLYSTYRENE LATEX COMPOUNDS

Ludwig Bonacker, Marbach near Marburg, Lahn, and Josef Stark, Marburg, Lahn, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Lahn, Fed. Rep. of Germany

Continuation of Ser. No. 546,904, Feb. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 252,028, May 10, 1972, abandoned. This application Jun. 30, 1977, Ser. No. 811,853

Claims priority, application Fed. Rep. of Germany, May 12, 1971, 212348

Int. Cl.^{2} C08L *89/00*

U.S. Cl. 260—8 **22 Claims**

1. In a process for chemically bonding a protein or peptide to a polymeric carrier which is a styrene homopolymer or a copolymer of styrene with less than 50 percent by weight of acrylic acid or methacrylic acid by contacting (1) a homogeneous aqueous latex suspension of said polymeric carrier, (2) said protein or peptide, and (3) an aromatic diazonium compound at a weakly alkaline pH, the improvements which comprise contacting (1), (2) and (3) at a temperature below room temperature and subsequently adding albumin to the mixture to give an albumin concentration between 0.5 and 1.5 percent in the mixture.

4,118,350

CELLULOSE ACETATE SOLUTIONS CONTAINING METHYLOLATED POLYMERS

Albin F. Turbak, Convent Station; John P. Thelman, Kenvil, and Andrew B. Auerbach, Livingston, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 14, 1977, Ser. No. 833,077

Int. Cl.^{2} C08L *1/12*

U.S. Cl. 260—15 **10 Claims**

1. A process for inhibiting the gelation of a cellulose acetate solution containing a methylolated polymer soluble in said solution and selected from the group consisting of melamine and guanamine polymers, comprising adding to said solution an amine oxide of the formula R_3NO wherein R is a hydrocarbon radical, the amount of amine oxide being at least about 0.5% by weight of the methylolated polymer.

4,118,351

TERPOLYAMIDE HOT MELT ADHESIVE

Christopher Linley Murray, Oldbury, and Corwyn Philip Vale, Brierley Hill, both of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed Mar. 29, 1977, Ser. No. 782,409

Claims priority, application United Kingdom, Mar. 30, 1976, 12671/76

Int. Cl.^{2} C08G *69/14*

U.S. Cl. 260—18 N **14 Claims**

10. A polyamide terpolymer suitable for use as a hot melt adhesive and having a melting point within the range 95° C. to 135° C. and consisting essentially of units of the following materials, the amounts being expressed as percentage by weight of the terpolymer:

(i) from 45% to 50% by weight of ϵ-caprolactam or ϵ-aminocaproic acid

(ii) from 30% to 35% by weight of equimolar quantities of hexamethylene diamine and isophthalic acid

(iii) 20% by weight of equimolar quantities of hexamethylene diamine and adipic acid and

(iv) from 0.5 to 4.0% by weight of a chain terminator as a viscosity stabilizer.

4,118,352

ORGANIC PHOSPHITES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS STABILIZERS

Härald Haberlein; Herbert Nies, and Franz Scheidl, all of Gersthofen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

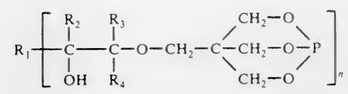
Filed May 12, 1977, Ser. No. 796,199

Claims priority, application Fed. Rep. of Germany, May 13, 1976, 2621323

Int. Cl.^{2} C07F *9/15;* **C08K** *5/52*

U.S. Cl. 260—23 XA **5 Claims**

1. Phosphites of the formula



wherein n is 1 or 2, and where n is 1, R_1–R_4 are identical or different and are

(a) 0–3 hydrogens

(b) phenyl or naphthyl, or cycloalkyl of 5–12 carbons or said radicals substituted by alkyl of 1–9 carbons or by 1–4 chlorines,

(c) linear or branched alkyl of 1–60 carbons or

(d) R_2 and R_3 are identical and are links of a saturated or unsaturated alkyl- or aryl substituted alkylene chain, the alkylene chain having 3–10 carbons,

and the sum of all carbons of R_1–R_4 being 4–60; and where n is 2, R_2, R_3 and R_4 are as defined above and R_1 is a bivalent organic radical which is

(a′) an alkylene chain of 1–10 carbons unsubstituted or substituted by methyl or ethyl,

(b′) a group of the formula

$$-CH_2-O-A-O-CH_2-$$

wherein A is

(α) phenylene or naphthylene unsubstituted or substituted by 1–2 alkyls of 1–4 carbons or by 1–2 halogens,

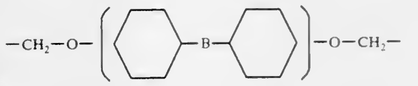
(β) a alkylene chain of 2–12 carbons unsubstituted or substituted by methyl or ethyl.

(γ) 1,3 or 1,4-dimethylene cyclohexane,

(δ)$\alpha\omega$-diacylalkylene of 3–12 carbons unsubstituted or substituted by methyl or ethyl, or

(ϵ) diacylphenylene or diacylnaphthylene,

(c′) a group of the formula

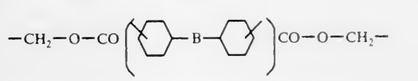


wherein B is —O—, —S—, —CO—, —SO_2— or



wherein D and E are identical or different and are hydrogen, alkyl of 1–6 carbons, or common members of an alkylene chain of 4–6 carbons, or

(d′) a group of the formula



wherein B is as defined in (c′) above; and the sum of all carbons in R_1–R_4 is 4–60.

3. A plastic molding composition consisting essentially of an

organic polymer selected from the group consisting of chloropolyethylene, polyvinylchloride, polyvinylidene chloride, polyvinylchloroacetate, vinylchloride-α-olefin copolymers, and polymers or copolymers of olefins free from halogen, and as stabilizer a phosphite of claim 1 in an amount of 0.1–10 parts by weight relative to 100 parts by weight of polymer.

4,118,353

ELASTOMERIC COMPOSITIONS

Henry S. Makowski, Scotch Plains, and Charles P. O'Farrell, Clark, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 29, 1977, Ser. No. 855,545
Int. Cl.² C08L *91/00*
U.S. Cl. 260—28.5 B **23 Claims**

1. An elastomeric composition having a viscosity at 0.73 sec^{-1} at 200° C. of about less than about 10^5 poise, said composition formable into an elastomeric article which comprises:
(a) 100 parts by weight of a neutralized sulfonated elastomeric polymer having about 10 to about 50 meq. metal neutralized sulfonate groups per 100 grams of said sulfonated elastomeric polymer, a metal counterion of said metal sulfonated groups being selected from the group consisting essentially of antimony, iron, aluminum, lead, Groups I-A, II-A, I-B, II-B of the Periodic Table of Elements and mixtures thereof;
(b) about 25 to about 150 parts per hundred of a non-polar process oil;
(c) about 25 to about 200 parts per hundred of a filler; and
(d) about 2 to about 50 parts per hundred of a hydroxyl alkyl carboxylate ester.

4,118,354

POLYURETHANE HYDROGEL AND METHOD FOR THE PRODUCTION OF THE SAME

Hideo Harada, Nagaokakyo, and Nobuaki Matsushita, Kyoto, both of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 418,181, Nov. 23, 1973, abandoned. This application Aug. 17, 1976, Ser. No. 715,056
Claims priority, application Japan, Nov. 24, 1972, 47-118321
Int. Cl.² B01D *53/02;* **C08G** *18/32;* **C08J** *3/06*
U.S. Cl. 260—29.2 TN **20 Claims**

1. A polyurethane hydrogel obtained by dispersing:
(a) a reaction product obtained by the reaction of polyisocyanate having at least two isocyanate groups with a polyether into
(b) an aqueous liquid phase;
wherein the amounts of said (a) and (b) are such that the hydrogel product has a water content of 70 to 95% by weight and wherein said polyether is produced from a plurality of alkylene oxides, 75 to 85% by weight of which is ethylene oxide, added at random to a polyalcohol having at least two terminal hydroxyl groups in an amount to produce an average molecular weight of 2000 to 3000 per said terminal hydroxyl group of said polyalcohol.

4,118,355

METHOD AND COMPOSITION OF A POLYMER IN CONVENIENT LIQUID FORM

Norman Vorchheimer, Buckingham, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 791,742, Apr. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 695,510, Jun. 11, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 896,949
Int. Cl.² C08L *33/26*
U.S. Cl. 260—29.6 PT **32 Claims**

1. A method of increasing the concentration of a polymer in a first solvent in which it is soluble comprising forming a solution of the polymer with the first solvent and a second solvent which is cosoluble with the first solvent and in which the polymer is not soluble, wherein the solution is formed by forming an initial solution of the first and second solvents and adding the polymer thereto.

4,118,356

COPOLYMERS OF ETHYLENE AND VINYL ACETATE OF INCREASED INSOLUBILITY

James E. Devona, Hoffman Estates, and Abdullah M. Rokadia, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 18, 1973, Ser. No. 426,285
Int. Cl.² C08L *31/04, 23/08, 27/06*
U.S. Cl. 260—29.6 RB **8 Claims**

1. A method of copolymerizing ethylene and vinyl acetate to produce a copolymer containing 5–40% ethylene exhibiting increased insolubility in acetone and aqueous caustic comprising copolymerizing ethylene and vinyl acetate monomers in an aqueous emulsion further containing at least 10% by weight of emulsified particles of a copolymer of at least 50% by weight of copolymerized vinyl acetate and 5–40% by weight of copolymerized ethylene, said vinyl acetate and ethylene monomers being present in the emulsion in an amount of at least 10% by weight of unreacted monomers in the emulsion, and said emulsion also containing redox catalysts to cause the unreacted monomers to copolymerize in a vigorous exothermic reaction.

4,118,357

ADHESIVE AQUEOUS DISPERSIONS OF POLYVINYL ALCOHOL GRAFT POLYMERS WITH ACIDIC HARDENERS AND PROCESS OF PRODUCTION

Hartmut Brabetz; Christof Kemenater; Franz Six, and Wilhelm Kaiser, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed May 2, 1977, Ser. No. 792,682
Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620 738
Int. Cl.² C09J *3/14*
U.S. Cl. 260—29.6 WA **15 Claims**

1. An aqueous copolymer dispersion useful for adhesives of increased waterproofness when hardened with an acid hardener selected from the group consisting of water-soluble acids with pKs of under 0 and salts of monobasic acids having pKs of under 0 with heavy metals selected from the group consisting of Cr^{III}, Al^{III}, and Fe^{III}, and zirconyl salts of monobasic acids having pKs of under 0, and mixtures thereof consisting essentially of aqueous dispersions of pre-crosslinked polyvinyl esters grafted onto polyvinyl alcohol wherein said grafted polymer contains from 2% to 14% by weight of said polymer of a polyvinyl alcohol with a degree of hydrolysis of between 74 and 97 mol % having grafted thereon (1) at least 70% by weight of said polymer of a vinyl ester selected from the group consisting of vinyl esters of alkanoic acids having from 1 to 12 carbon atoms and mixtures thereof, (2) from 0 to 10% by weight of said polymer of at least one monoethylenically-unsaturated compound copolymerizable with said vinyl ester and (3) from 0.01% to 5% by weight of at least one compound having at least two ethylenically-unsaturated bonds and being copolymerizable with said vinyl ester, said aqueous dispersion having a solids content of from 40% to 60% by weight.

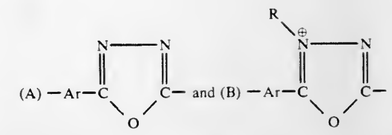
4,118,358

PREPARATION OF OXADIAZOLE COPOLYMER SOLUTION FROM SCRAP COPOLYMER

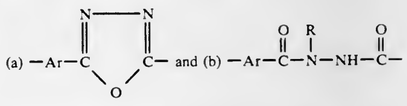
Frank M. Silver, and Hartwig C. Bach, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 10, 1977, Ser. No. 776,335
Int. Cl.² C08K *5/41*
U.S. Cl. 260—30.8 R **10 Claims**

1. A process for preparing a sulfuric acid solution of a copolymer consisting essentially of recurring structural units of the formulas



in a mole ratio in the range of 20:80 to 95:5, respectively, where Ar is a divalent aromatic radical and R is a C_1 to C_4 alkyl, comprising, degrading in oleum scrap copolymer consisting essentially of recurring structural units of the formulas



in a mole ratio in the range of 20:80 to 95:5, respectively, where Ar and R are as previously defined, with stirring until a solution is obtained and then heating said solution at a temperature between about 100° and 160° C. with stirring for a period of time sufficient to provide a fiber forming polymer solution.

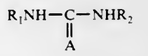
4,118,359

PLASTICIZATION OF NEUTRALIZED SULFONATED ELASTOMERIC POLYMER

Douglas Brenner, Livingston, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 29, 1977, Ser. No. 855,693
Int. Cl.² C08K *5/36*
U.S. Cl. 260—30.8 R **10 Claims**

1. An elastomeric composition including:
(a) 100 parts by weight of a neutralized sulfonated elastomeric polymer having at least about 15 meq. neutralized sulfonate groups per 100 grams of said sulfonated elastomeric polymer, said neutralized sulfonate groups being neutralized with metal cations, ammonium ion or amine; and
(b) at least about 5 parts by weight of an organic urea or thiourea having the formula



based on 100 parts of said neutralized sulfonated elastomeric polymer, wherein A is selected from the group consisting of oxygen and sulfur and R_1 and R_2 are independently selected from the group consisting of alkyl groups, aralkyl groups, and aryl groups, and wherein if R_1 and R_2 are alkyl groups, then at least one of them must be a C_{12} to C_{22} alkyl.

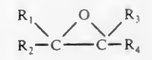
4,118,360

OIL EXTENDED ELASTOMERIC COMPOSITIONS

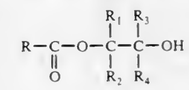
Henry S. Makowski, Scotch Plains, and Charles P. O'Farrell, Clark, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 29, 1977, Ser. No. 855,555
Int. Cl.² C08K *5/10*
U.S. Cl. 260—31.2 R **33 Claims**

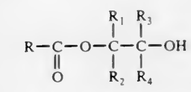
1. A process for the manufacture of a sulfonated elastomeric blend, which comprises the following steps:
(a) dissolving an elastomeric polymer in a solvent to form a cement;
(b) sulfonating with a sulfonating agent said elastomeric polymer in said cement to form an acid form of a sulfonated elastomeric polymer;
(c) reacting said acid form of said sulfonated elastomeric polymer with an oxirane to form a hydroxyalkylated sulfonated polymer, said oxirane having the general formula:



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting essentially of hydrogen and C_1 to C_{18} straight and branched chain acyclic, alicyclic, aryl, alkylaryl, arylalkyl radicals and their functional derivatives;
(d) recovering said hydroxyalkyl sulfonated polymer from said cement;
(e) adding about 5 to about 200 parts per hundred by weight of a non-polar process oil to 100 parts of said hydroxyalkylated sulfonated polymer to form a blend of said oil and said hydroxyalkyl sulfonated polymer; and
(f) reacting said blend of said oil and said hydroxyalkyl sulfonated polymer with a metal containing base to form a neutralized sulfonated elastomeric polymer and a hydroxyalkyl carboxylate ester having the formula:



21. A solid, gel-free elastomeric blend composition consisting essentially of:
(a) 100 parts by weight of a neutralized sulfonated elastomeric polymer having about 10 to about 50 meq. of sulfonate groups per 100 grams of said polymer, at least 90 percent of said sulfonate groups being neutralized with a metal counterion;
(b) about 2 to about 50 parts per hundred of a hydroxyalkyl carboxylate ester having the formula:



wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, C_1 to C_{18} straight and branched chain acyclic, alicyclic, aryl, alkylaryl, and arylalkyl groups and functional derivatives thereof and mixtures thereof; and
(c) about 5 to about 200 parts per hundred of a process oil.

4,118,361

METHOD FOR CONTROLLING VISCOSITY OF ORGANIC LIQUIDS

Robert D. Lundberg, Somerville, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 470,806, May 17, 1974, Pat. No. 3,931,021. This application Nov. 17, 1975, Ser. No. 632,454 The portion of the term of this patent subsequent to Jan. 6, 1993, has been disclaimed.
Int. Cl.² C08K *5/04, 5/16;* **F17D** *1/16, 1/17*
U.S. Cl. 260—31.8 G **15 Claims**

1. A method for controlling the viscosity of organic liquids having a viscosity measured at 100° F. of less than 35 SUS, said organic liquid being selected from the group consisting of aliphatic, aromatic and chlorinated hydrocarbons, alcohols, ketones, organic ethers, organic esters, or nitroderivatives of aliphatic hydrocarbons, and said organic liquid having a solubility parameter of from about 6.0 to about 10.5, which comprises incorporating in said organic liquid a minor amount of a multiphase ionomeric polymer and a polar cosolvent having a solubility parameter of from about 10 to about 20, said polar cosolvent being soluble or miscible with said organic liquid, the solubility parameter of said polar cosolvent being at least

1.0 unit higher than the solubility parameter of said organic liquid, said ionomeric polymer having from about 0.1 to about 25 mole % pendant ionomeric groups, said ionomeric groups being selected from the group consisting of carboxylate, phosphonate and sulfonate, said ionomeric groups being neutralized with a basic material from about 50 to about 500 mole %, said basic material being selected from the group consisting of lead, tin, antimony, Groups IA, IIA, IB or IIB of the Periodic Table of Elements, of polymeric backbone of said ionomeric polymer which is substantially soluble in said organic liquid, said backbone having a solubility parameter of less than about 10.5 and a crystallinity of less than about 25%, said ionomeric polymer being incorporated into said organic liquid at a level of from about 0.1 to about 20 weight % based on said organic liquid, said ionomeric polymer having a number average molecular weight from about 1,000 to about 10,000,000, said polar cosolvent comprising from about 0.1 to about 40 weight % of the total mixture of said organic liquid, said ionomeric polymer, and said polar cosolvent, said polar cosolvent having a boiling point of at least 50° C., said polar cosolvent being present in said mixture at about 10 to about 600 moles per mole of ionomeric groups.

9. A composition of matter comprising a major amount of an organic liquid having a viscosity measured at 100° F. of less than about 35 SUS, said organic liquid being selected from the group consisting of aliphatic, aromatic, and chlorinated hydrocarbons, alcohols, ketones, organic ethers, organic esters, or nitroderivatives of aliphatic hydrocarbons, and a minor amount of an ionomeric polymer and a polar cosolvent having a solubility parameter of from about 10 to about 20, the solubility parameter of said polar solvent being at least 1.0 unit higher than the solubility parameter of said organic liquid, said organic liquid having a solubility parameter of from about 6.0 to about 10.5, said ionomeric polymer having from about 0.1 to about 25 mole % pendant ionomeric groups, said ionomeric groups being selected from the group consisting of carboxylate, phosphonate, and sulfonate, said ionomeric groups being neutralized with a basic material from about 50 to about 500 mole %, said basic material being selected from the group consisting of lead, tin, antimony, Groups IA, IIA, IB or IIB of the Periodic Table of Elements, a polymeric backbone of said ionomeric polymer having a solubility parameter of less than about 10.5 and a crystallinity of less than about 25%, said ionomeric polymer being incorporated into said organic liquid at a level of from about 0.1 to about 20 weight % based on said organic liquid, said ionomeric polymer having a number average molecular weight from about 1,000 to about 10,000,000, said polar solvent comprising from about 0.1 to about 40 weight % of the total mixture of said organic liquid, said ionomeric polymer and said polar cosolvent, said polar solvent having a boiling point of at least 50° C.

4,118,362

PLASTICIZATION OF NEUTRALIZED SULFONATED ELASTOMERIC POLYMER

Henry S. Makowski, Scotch Plains, and Douglas Brenner, Livingston, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Nov. 29, 1977, Ser. No. 855,554

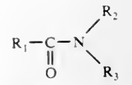
Int. Cl.[2] C08K *5/20*

U.S. Cl. 260—32.6 A **18 Claims**

1. An elastomeric composition including:

(a) 100 parts by weight of a neutralized sulfonated elastomeric polymer having at least about 15 meq neutralized sulfonate groups per 100 grams of said sulfonated elastomeric polymer, said neutralized sulfonate groups being neutralized with metal cations, ammonium ion or amine; and

(b) at least about 8 parts by weight of an organic amide having the formula



based on 100 parts of said neutralized sulfonated elastomeric polymer, wherein R_1 is an aliphatic radical and R_2 and R_3 are independently selected from the group consisting of H, alkyl, aryl or aralkyl wherein at least one of R_1, R_2 or R_3 has at least about 10 carbon atoms.

4,118,363

HALOGENATED DIPHENYL ETHER SOLVENTS FOR CRYSTALLINE POLYMERS

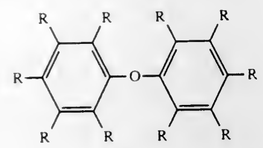
Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 16, 1977, Ser. No. 851,909

Int. Cl.[2] C08K *5/06*

U.S. Cl. 260—33.2 R **9 Claims**

1. A liquid solution comprising a crystalline polymer having a solubility parameter in the range from about 7 to about 12.5 in a diphenyl ether solvent having the formula



wherein each R is independently at least one member selected from the group consisting of hydrogen, halogen, and alkyl radicals, said alkyl radicals having up to 4 carbon atoms per radical and the total number of carbon atoms in all of said alkyl radicals being within the range from 0 to 8, and at least one of said R substituents is a halogen radical.

4,118,364

REINFORCED POLYHEXAMETHYLENE ISOPHTHALAMIDE

Werner Nielinger; Bert Brassat, and Hugo Vernaleken, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jul. 22, 1977, Ser. No. 818,093

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647310

Int. Cl.[2] C08L *77/06*

U.S. Cl. 260—37 N **7 Claims**

1. Polyhexamethylene isophthalamides containing from 5 to 50%, based on the mixture of polyamide and reinforcing material, by weight of a reinforcing material.

4,118,365

MOULDING THERMOSETTING COMPOSITIONS

Harold James, Hanbury, and Martin Buggy, Stourbridge, both of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed Mar. 4, 1977, Ser. No. 774,494

Claims priority, application United Kingdom, Mar. 10, 1976, 09646/76

Int. Cl.[2] C08J *5/02*

U.S. Cl. 260—39 R **12 Claims**

1. A method of producing moulded synthetic plastics artefacts by a continuous moulding sequence which comprises the successive steps of:

(a) providing in an injection moulding machine including a reciprocating rotary screw in a barrel, a blend of materials comprising a filler, and the solid precursors of a synthetic amino-formaldehyde thermosetting material and optionally a condensation catalyst;

(b) intimately mixing said materials, reacting said precursors and compounding with said filler in the barrel of the machine,

(c) injecting the resultant material directly into a heated mould, and

(d) curing the material in the mould.

4,118,366

COMPOSITIONS FOR THE PRODUCTION OF OPAQUE COATINGS BY RADIATION

Horst Brose; Karl Dieter Depping, both of Hiltrup; Dietrich Hentschel, Wolbeck; Bernard Kostevc, Münster, and Klaus Schmidt, Hiltrup, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Münster, Fed. Rep. of Germany

Division of Ser. No. 423,745, Dec. 11, 1973, Pat. No. 3,984,584. This application Jun. 7, 1976, Ser. No. 693,964

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1972, 2263459

Int. Cl.[2] C08L *67/00*

U.S. Cl. 260—40 R **4 Claims**

1. A transparent coating composition which becomes opaque upon application to a substrate followed by exposure to radiation comprising:

A. about 14 to 20 parts by weight of an unsaturated polyester resin having a double bond value of about 0.180 to 0.450;

B. about 55 to 75 parts by weight of filler materials having refractive indices not exceeding 1.70;

C. about 0.5 to 10 parts by weight of resins selected from the group consisting of film forming cellulose derivatives or copolymers of vinyl chloride with other monomers compatible with component A; and

D. about 8 to 30 parts by weight of non-reactive solvents for the resins A and C.

4,118,367

REINFORCED RUBBER

Keith Dawes, and Roger James Rowley, both of London, England, assignors to The Malaysian Rubber Producers Research Association, England

Filed Jan. 27, 1977, Ser. No. 763,117

Claims priority, application United Kingdom, Feb. 6, 1976, 4802/76

Int. Cl.[2] C08K *5/54*

U.S. Cl. 260—42.37 **15 Claims**

1. A method of compounding rubber with silica which comprises including in the rubber a compound of the formula:

$$Y - X - CO - N = N - CO - X^1 - Z$$

where X and X^1 are the same or different and each is an imino group, an oxygen atom or a substituted or unsubstituted methylene group;

Y is a substituted or unsubstituted alkyl aryl or aralkyl group, or is the same as Z; and

Z is an alkyl, aryl or aralkyl group which has as substituent at least one silane group of the formula:

$-Si(OR)_3$ or $-OSi(OR_3)$ in which R is a straight or branched chain alkyl group.

4,118,368

SYNTHETIC POLYMER STABILIZERS

Nobuo Soma; Syoji Morimura; Takao Yoshioka, and Tomoyuki Kurumada, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

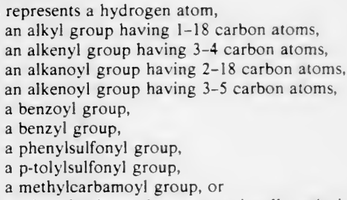
Filed Nov. 5, 1976, Ser. No. 739,055

Claims priority, application Japan, Nov. 11, 1975, 50-135516

Int. Cl.[2] C07D *211/00, 401/12;* **C08K** *5/34*

U.S. Cl. 260—45.8 N **9 Claims**

1. A synthetic polymer composition stabilized against photo- and thermal- deterioration, wherein there is incorporated, in an amount sufficient to prevent said deterioration, a piperidine derivative having the formula



(I)

and the acid-addition salts thereof, wherein:

R represents a hydrogen atom, or an alkyl group having 1–3 carbon atoms;

X represents a hydrogen atom,
an oxyl radical,
an alkyl group having 1–18 carbon atoms,
an alkenyl group having 3–6 carbon atoms,
a 2-propynyl group,
an alkoxyalkyl group having 1–3 carbon atoms in the alkyl moiety and 1–18 carbon atoms in the alkoxy moiety,
a cyanoalkyl group having 2–3 carbon atoms,
an 2,3-epoxypropyl group,
an aliphatic acyl group having 1–12 carbon atoms,
benzyl,
a group of the formula $-CH_2CH(R^1)OR^2$ (wherein R^1 represents a hydrogen atom, a methyl group or a phenyl group, and R^2 represents a hydrogen atom, or an aliphatic, aromatic, araliphatic or alicyclic acyl group having up to 18 carbon atoms),
a group of the formula $-CH_2COOR^3$ (wherein R^3 represents an alkyl group having 1–18 carbon atoms, an alkenyl group having 3–6 carbon atoms, a phenyl group, an aralkyl group having 7–8 carbon atoms, or a cyclohexyl group), or
a group of the formula $-COOR^4$ (wherein R^4 represents an alkyl group having 1–8 carbon atoms, a benzyl group, or a phenyl group);

Y represents an alkyl group having 1–18 carbon atoms,
an alkenyl group having 3–6 carbon atoms,
benzyl, or
an alkoxyalkyl group having a total of 2–4 carbon atoms;

$n = 1, 2$ or 3; and

when $n = 1$:

Z represents a hydrogen atom,
an alkyl group having 1–18 carbon atoms,
an alkenyl group having 3–4 carbon atoms,
an alkanoyl group having 2–18 carbon atoms,
an alkenoyl group having 3–5 carbon atoms,
a benzoyl group,
a benzyl group,
a phenylsulfonyl group,
a p-tolylsulfonyl group,
a methylcarbamoyl group, or
a phenylcarbamoyl group optionally substituted in its phenyl moiety with a chlorine atom or with an alkyl group having 1–4 carbon atoms,
a cinnamoyl group,
a 3-(3,5-di-t-butyl-4-hydroxyphenyl)propionyl group,
a phenylacetyl group,
a phenoxyacetyl group,
a cyclohexanecarbonyl group,
a group of formula $-CH_2CH_2OR^5$ (wherein R^5 represents a hydrogen atom, or an aliphatic, aromatic, araliphatic or alicyclic acyl group having up to 18 carbon atoms),
a group of the formula $-SO_2R^6$ (wherein R^6 represents an alkyl group having 1–3 carbon atoms, a phenyl group or a tolyl group),
a group of the formula $-COOR^7$ (wherein R^7 represents an alkyl group having 1–8 carbon atoms or a benzyl group),

a group of the formula —$CONR^8R^9$ (wherein R^8 represents a hydrogen atom or an alkyl group having 1–4 carbon atoms, and R^9 represents a hydrogen atom, an alkyl group having 1–18 carbon atoms, a phenyl group which may optionally be substituted, a naphthyl group, a benzyl group or a cyclohexyl group; or R^8 and R^9 jointly represent an alkylene group having 4–6 carbon atoms), or

a group of the formula —$CSNHR^{10}$ (wherein R^{10} represents an alkyl group having 1–4 carbon atoms or a phenyl group);

when $n = 2$:

Z represents an alkylene group having 1–10 carbon atoms,

a 2-butenylene group,

an m- or p- xylylene group,

a carbonyl group

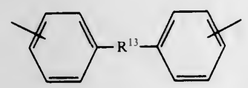
a sulfinyl group,

a sulfonyl group,

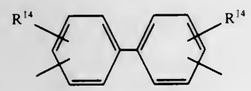
an oxalyl group,

a group of the formula —CO—R^{11}—CO— (wherein R^{11} represents an alkylene group having 1–10 carbon atoms which may optionally be interrupted by a sulfur atom; an alkenylene group having 2–4 carbon atoms; an arylene group having 6 or 10 carbon atoms in its aryl moiety; or a cyclohexylene group), or

a group of the formula —CONH—R^{12}—NHCO— [wherein R^{12} represents an alkylene group having 2–8 carbon atoms; a phenylene group; a tolylene group; a naphthylene group; a xylylene group; a group of the formula



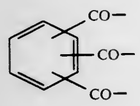
(wherein R^{13} represents an oxygen atom or a methylene group), or a group of the formula



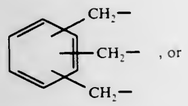
(wherein R^{14} represents a hydrogen atom or a methyl group)];

when $n = 3$:

Z represents a group of formula



a group of the formula



a group of the formula

4,118,369

2,2,6,6-TETRASUBSTITUTED-4-PIPERIDYL CARBOXY HETEROCYCLIC COMPOUNDS AS STABILIZERS FOR SYNTHETIC POLYMERS

Motonobu Minagawa, Kosigaya; Naohiro Kubota, Urawa, and Toshihiro Shibata, Tsuji Urawa, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jul. 28, 1976, Ser. No. 709,561

Int. Cl.[2] C08K *5/34;* C07D *401/00, 251/00*

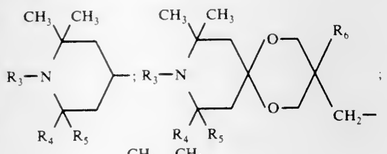
U.S. Cl. 260—45.8 N 30 Claims

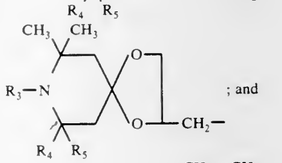
1. A 2,2,6,6-tetrasubstituted-4-piperidyl carboxy heterocyclic compound having the general formula:

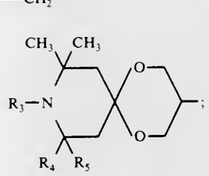


wherein:

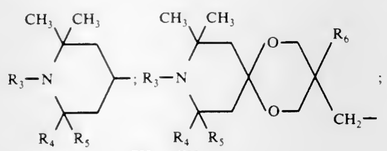
R_1 is selected from the group consisting of

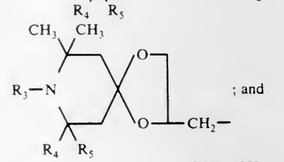


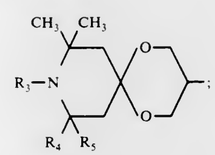




R_2 is selected from the group consisting of hydrogen; alkyl; alkenyl; alkynyl; aralkyl; aryl;

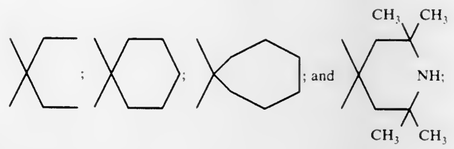






R_3 is selected from the group consisting of hydrogen; oxo; halogen; alkyl; alkenyl; alkynyl; aralkyl and aryl;

R_4 and R_5 are selected from the group consisting of alkyl and R_4 and R_5 taken together to form



R_6 is lower alkyl;

a is selected from the group consisting of 1, 2 and 3;

b is selected from the group consisting of 0, 1 and 2;

Z represents a heterocyclic ring having from three to six ring atoms of which one to three aee nitrogen, any remaining ring atoms being carbon atoms;

m is selected from the group consisting of 1, 2 and 3;

Y_1 and Y_2 are bivalent linking groups selected from the group consisting of alkylene and alkyleneoxyarylene, the alkylene having from one to four carbon atoms; and

n_1 and n_2 are 0 or 1.

21. A polyvinyl chloride resin composition having improved resistance to deterioration when heated at 350° F, comprising a polyvinyl chloride resin formed at least in part of the recurring group



and having a chlorine content in excess of 40 percent, where X is either hydrogen or chlorine; and an amount to improve resistance to deterioration of the resin of a compound in accordance with claim 1.

4,118,370

COLOR-STABILIZED HALOBISPHENOL ETHYLENE POLYCARBONATES

Keith N. Sannes, Schenectady, and Arnold Factor, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

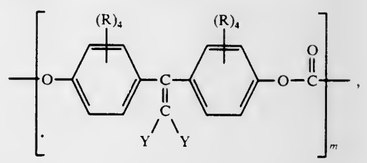
Filed Mar. 22, 1976, Ser. No. 668,858

Int. Cl.[2] C08K *5/34, 5/10*

U.S. Cl. 260—45.75 W 9 Claims

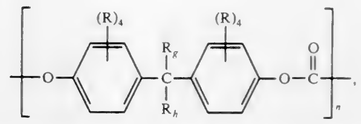
1. A thermally stable, color-stabilized halobisphenolethylene polycarbonate comprising:

(I) from (a) about 1–100 parts by weight of polycarbonate halobis(phenyl)ethylene units of formula (A):



(A)

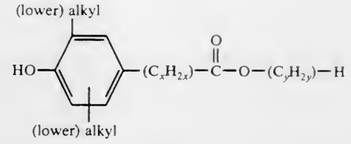
where independently each R is hydrogen, chlorine, bromine or a C_{1-30} monovalent hydrocarbon or hydrocarbonoxy group, each Y is hydrogen, chlorine or bromine, subject to the proviso that at least one Y is chlorine or bromine, and *m* is an integer of at least 2, to (b) about 99–0 parts by weight of a polycarbonate containing units of formula (B):



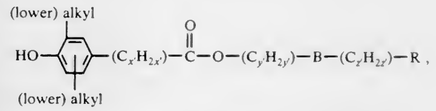
(B)

where independently each R is as defined hereinbefore, and independently R_g and R_h are hydrogen or a C_{1-30} monovalent hydrocarbon group, *n* is an integer of at least 2, and

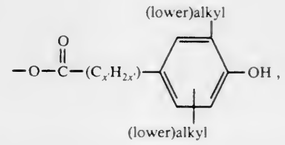
(II) an effective amount of a stabilizing component comprising an esterified hindered phenol of the formulas:



in which *x* has a value of from 0 to 6, inclusively, and *y* has a value of from 6 to 30, inclusively;



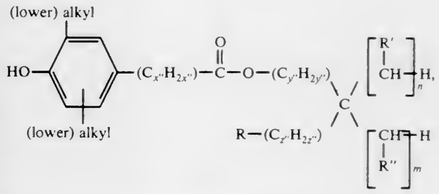
wherein-*x'* has a value of from 0 to 6, inclusively, each of *y'* and *z'* has a value of from 2 to 20, inclusively, R is a member consisting of hydrogen, alkanoyloxy or



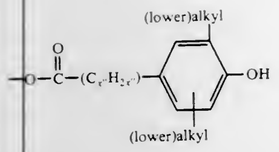
B is a member consisting of a divalent oxygen atom or the group



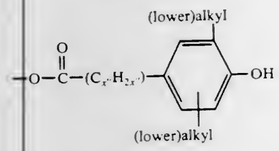
in which A is alkyl or alkanoyl; and



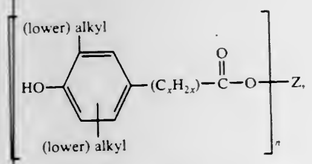
in which R is hydrogen, alkanoyloxy, or



each of R′ and R″ is alkanoyloxy or



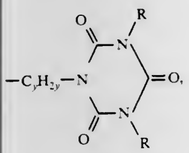
x'' has a value of from 1 to 6, inclusively, wherein each of y'', z'', n and m independently has a value of from 0 to 6, inclusively, at least one of y'', z'', n and m having a value other than 0 and the sum of n and m being no greater than 6 and being at least 1 when R is hydrogen and the sum of y'' and z'' being at least 1 when R is other than hydrogen, and



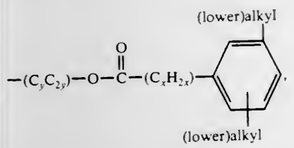
wherein x has a value of from 1 to 6, n has a value of from 2 to 6, Z is an aliphatic hydrocarbon of the formula:

C_yH_{2y+2-N}

in which y has a value of from 2 to 18 when n is 2 and a value of 3 to 6 when n is greater than 2, the value of y in all cases being equal to or greater than that of n, or Z is a heterocyclic of the formula:



in which y has a value of from 1 to 6, R is a member consisting of alkyl or



in which x has a value of from 1 to 6 and y has a value of from 1 to 6.

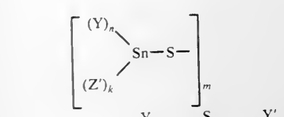
4,118,371

ORGANOTIN MERCAPTOALKANOL ESTER SULFIDE STABILIZERS FOR PVC RESINS

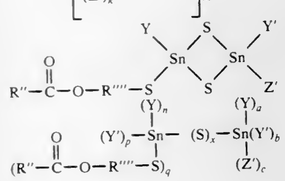
Thomas Gordon Kugele, Cincinnati, Ohio, assignor to Cincinnati Milacron Chemicals Inc., Reading, Ohio

Filed Apr. 29, 1977, Ser. No. 792,257
Int. Cl.^{2} C08K *5/58*; C07F *7/22*
U.S. Cl. 260—45.75 S **43 Claims**

1. A composition comprising a halogen containing vinyl or vinylidene polymer and a stabilizingly effective amount of an organotin mercaptoalkanol ester sulfide or polysulfide having at least one sulfide or polysulfide bridged tin to tin group, at least one mercaptoalkanol ester group bonded to a sulfide or polysulfide bridged tin atom through the sulfur atom of the mercaptoalkanol moiety and at least one oxygen containing organic group bonded to a sulfide or polysulfide bridged tin atom through carbon said oxygen containing organic group being an organic group having a carbon oxygen bond, wherein the organotin mercaptoalkanol ester sulfide or polysulfide has the following formula



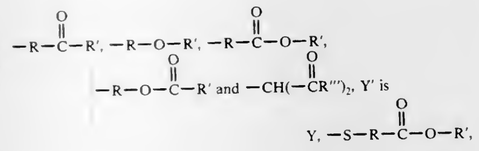
(I)



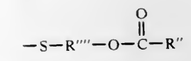
(II) and

(III)

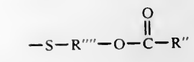
wherein a is 0 to 2, b is 0 to 2, c is 1 or 2, $a+b+c$ is 3, k is 1 or 2, m is 3, n is 1 or 2, p is 0 or 1, q is 1 or 2, $n+p+g$ is 3, x is 1 or 2, $n+k$ is 2 or 3, Y is a member selected from the group consisting of



halogen of atomic weight 35 to 127, or alkyl of 1 to 18 carbon atoms, Z′ is



or Y′, R is a bivalent hydrocarbon radical having 1 to 4 carbon atoms, R′ is hydrogen or a monovalent hydrocarbon radical having 1 to 20 carbon atoms, R″ is saturated or olefinically unsaturated alkyl of 1 to 20 carbon atoms, R‴ is alkyl of 1 to 20 carbon atoms or alkoxy of 1 to 20 carbon atoms and R‴′ is a bivalent hydrocarbon radical having two to four carbon atoms, with the proviso that in formula (I) at least one Z′ is



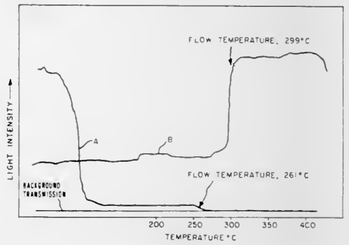
and the tin is tetravalent.

4,118,372

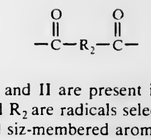
AROMATIC COPOLYESTER CAPABLE OF FORMING AN OPTICALLY ANISOTROPIC MELT

John Raymond Schaefgen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 468,697, May 10, 1974, abandoned. This application Jul. 16, 1975, Ser. No. 596,237
Int. Cl.^{2} C08G *63/18*
U.S. Cl. 528—190 **20 Claims**



1. A fiber-forming, melt spinnable (co) polyester capable of forming an optically anisotropic melt and consisting essentially of recurring units selected from the group consisting of



wherein units I and II are present in substantially equimolar amounts; R_1 and R_2 are radicals selected from the group of 1) single and fused siz-membered aromatic carbocyclic ring systems wherein the chain extending bonds of the ring system, if attached to the same ring, are positioned 1,4- to each other, and if attached to different rings, are in positions parallel and oppositely directed, and 2) multiple six-membered aromatic carbocyclic ring systems in which the individual rings are joined by a chemical bond or a trans-vinylene group, and in which the chain extending bonds of each ring are in the 1,4-positions; and with the proviso that R_2 is unsubstituted in homopolymers of units I and II, said (co)polyester having a flow temperature in the range of 200° C to 375° C.

4,118,373

PREPARATION OF URETHANE ELASTOMERS FROM EPOXY RESIN, POLYOLS AND POLYISOCYANATES USING A CATALYST COMPOSITION OF AN ORGANOMETAL SALT WITH EITHER NITROGEN OR PHOSPHORUS COMPOUNDS

Jon A. Orvik, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 4, 1977, Ser. No. 793,569
Int. Cl.^{2} C08G *18/18*
U.S. Cl. 528—73 **3 Claims**

1. Urethane elastomers modified with an epoxy resin which results from the curing of a mixture of components comprising

(A) from about 3 to about 30 percent by weight of a liquid epoxy resin having an average of more than one vicinal epoxy group;

(B) from about 35 to about 60 percent by weight of of a polyol composition containing

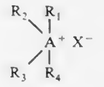
(1) a liquid polyether polyol or mixture of such polyols having an average functionality of from about 2 to about 3 and an average hydroxyl equivalent weight of from about 500 to about 2000, and

(2) a liquid low molecular weight diol having an average equivalent weight of from about 30 to about 90 wherein components (1) and (2) are present in quantities such that the ratio of hydroxyl equivalents of (1) to (2) is from about 0.05:1 to about 0.2:1;

(C) an organic polyisocyanate in a quantity so as to provide an NCO:OH equivalent ratio of from about 0.85:1 to about 1.2:1; and

(D) a catalytic quantity of a catalyst composition consisting of

(1) from about 20 to about 95 percent by weight of a catalyst represented by the formula



wherein each R_1, R_2, R_3 and R_4 are independently selected from an aliphatic hydrocarbon, aromatic hydrocarbon, substituted aliphatic hydrocarbon, substituted aromatic hydrocarbon groups having from 1 to about 8 carbon atoms; X is the anion portion of an inorganic acid or an acid, ester or acid ester of the element carbon and A is nitrogen or phosphorus; and

(2) from about 5 to about 80 percent by weight of an organometal salt catalyst of the metal tin or lead.

4,118,374

PRODUCTION OF AROMATIC POLYAMIDES FROM DICARBOXYLIC ACID AND DIAMINE

Noboru Yamazaki, and Fukuji Higashi, both of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 609,740, Sep. 2, 1975, Pat. No. 4,045,417. This application May 27, 1977, Ser. No. 801,243
Claims priority, application Japan, Sep. 9, 1974, 49-104247
Int. Cl.^{2} C08G *69/28*
U.S. Cl. 528—337 **6 Claims**

1. In a process for producing a fiber forming aromatic polyamide by polycondensing a dicarboxylic acid of the formula,

$$HOOC - R^2 - COOH \quad \text{(II)}$$

wherein R^2 is a straight chain, branched chain or alicylic hydrocarbon radical, an aryl group with or without at least one substituent selected from the group consisting of an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a phenyl group, a halogen atom, a nitro group and a cyano group, or a radical in which two or more radicals selected from the group consisting of the above-mentioned radicals are bonded through an alkylene group having 1 to 4 carbon atoms, an alkylidene group having 2 to 4 carbon atoms, —CONH— or —SO_2NH—, with an aromatic diamine of the formula,

$$H_2N - R^3 - NH_2 \quad \text{(III)}$$

wherein R^3 is an aromatic hydrocarbon radical which may contain one or more substituents on the aromatic nuclei, said substituent being an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a phenyl group, a halogen atom, a nitro group or a cyano group, and which may contain two or more aromatic hydrocarbon radicals bonded through an alkylene group having 1 to 4 carbon atoms, an alkylidene group having 2 to 4 carbon atoms, —O—, —SO_2—, —S—, —NH—, —NR″— wherein R″ is an alkyl group having 1 to 4 carbon atoms, —CONH—, —CO— or —SO_2NH—, in the presence of a phosphorus compound of the formula,

$$R^4 - P(OR^5)_2 \quad \text{(IV)}$$

wherein R^4 is OR^5, a hydroxyl group, an alkyl group having 1 to 6 carbon atoms or an aryl group with or without at least one substituent selected from the group consisting of an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to

6 carbon atoms, a phenyl group, a halogen atom, a nitro group and a cyano group; and R^5 is an aryl group with or without at least one substituent selected from the group consisting of an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a phenyl group, a halogen atom, a nitro group and a cyano group,

and a tertiary amine in the liquid phase, wherein the tertiary amine is used in an amount of 1 mole or more per mole of the phosphorus compound and the phosphorus compound is used in an amount of 2 moles or more per mole of the dicarboxylic acid or diamine,

the improvement which comprises carrying out the polycondensation using a solvent selected from the group consisting of N-methylpyrrolidone and dimethylacetamide as the reaction medium and a metal halide selected from the group consisting of a lithium halide and a calcium halide wherein the metal halide is used in an amount of 1 to 15% by weight based on the weight of the mixture of the tertiary amine and the solvent.

3. A process according to claim 1, wherein the aromatic diamine is p-phenylenediamine, m-xylylenediamine, p-xylylenediamine, bis-(4-aminophenyl)-methane, di-(4-aminophenyl) ether or 2,2-bis-[4-(4-aminophenoxy)phenyl]-propane.

4,118,375

CROSSLINKABLE POLYACRYLONITRILE COPOLYMERS

Christian Lindner, Cologne; Carlhans Suling, Odenthal; Gunter Arend, Dormagen; Dieter Brokmeier, Dormagen, and Gunther Nischk, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 8, 1977, Ser. No. 804,857

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1976, 2626172

Int. Cl.² C08G *2/00, 4/00*

U.S. Cl. 526—240 **6 Claims**

1. An addition copolymer, comprising (1) at least 40% by weight of acrylonitrile; (2) from 0.5 to 40% by weight of at least one acetoacetate of a monoacrylate or a monomethacrylate of an aliphatic diol containing from 2 to 8 carbon atoms; and (3) 0–10% by weight of a acrylic acid or a methacrylic acid alkyl ester; 0–3% by weight of methallyl sulfonic acid, vinyl sulfonic acid, styrene sulfonic acid, or their alkali metal salts; or 0% or 10–30% by weight of vinyl chloride or vinylidene chloride.

4,118,376

HYDROCURABLE OXAZOLIDINE ISOCYANATE PREPOLYMER COMPOSITIONS

Josef Pedain; Wolfgang Wellner, both of Cologne; Hermann Gruber, and Manfred Dietrich, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 18, 1977, Ser. No. 817,083

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632513

Int. Cl.² C08G *18/00*

U.S. Cl. 528—59 **10 Claims**

1. Mixture capable of being hardened by water, containing an oxazolidine component and a polyisocyanate component, characterized in that the mixture contains, as polyisocyanate component, an isocyanate prepolymer which has free isocyanate groups and is the reaction product of excess quantities organic polyisocyanates with dispersions of polymerization, polycondensation or polyaddition products in organic polyhydroxyl compounds.

4,118,377

POLYMERIZING BIS-MALEIMIDES

Gaetano F. D'Alelio, South Bend, Ind., assignor to University of Notre Dame du Lac, Notre Dame, Ind.

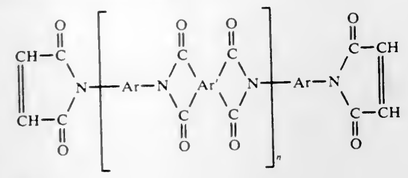
Continuation-in-part of Ser. No. 363,799, May 25, 1973, Pat. No. 3,890,272. This application Aug. 14, 1974, Ser. No. 497,490

Disclosure was published under second Trial Voluntary Protest Program on Mar. 23, 1976

Int. Cl.² C08G *73/12*

U.S. Cl. 526—236 **15 Claims**

1. A process of increasing the molecular weight of a bis-maleimide of the formula:



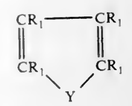
wherein

Ar is a divalent aromatic organic radical,

Ar' is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms and in the Ar' radical, and

n is 0 or a positive integer of 1 to 20,

comprising: reacting at a temperature in the range of about 5°–100° C. one mole of the bis-maleimide with from 1 to 2 moles of a cyclic diene of the formula:



wherein

Y is —O—, —S—, or



and

each R_1 is hydrogen or an aliphatic hydrocarbon of 1 to 4 carbon atoms with the proviso that the sum of the R_1's is no greater than 4 carbon atoms,

and thereafter thermally eliminating substantially all the cyclic diene at a temperature in the range of about 30°–120° C. to extend the bis-maleimide in molecular weight to at least a dimer of the bis-maleimide.

4,118,378

NON-BLOOMING ACCELERATOR AND PROCESS FOR VULCANIZATION OF EPDM ELASTOMERS

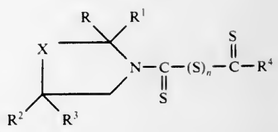
Ivan Christoff Popoff, Ambler; Everett A. Mailey, Norristown, and Paul Gordon Haines, Lafayette Hill, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 695,274, Jun. 11, 1976. This application Sep. 30, 1977, Ser. No. 838,183

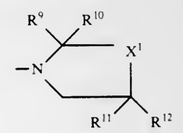
Int. Cl.² C08F *28/00, 28/02*

U.S. Cl. 526—36 **25 Claims**

1. In a method of curing ethylene-propylenediene elastomers wherein the elastomer composition has sulfur and/or sulfur donor vulcanization accelerator and other rubber compound ingredients admixed therewith, and said elastomer composition is cured at elevated temperature, the improvement which comprises using as the vulcanization accelerator a compound having the following general structure:



wherein R, R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen, alkyl, and chloroalkyl radicals each having from 1 to 17 carbon atoms, alkenyl radicals having from 2 to 17 carbon atoms, phenyl naphthyl, substituted phenyl and substituted naphthyl radicals each having substituents selected from the group consisting of Cl, —OH, OR^5 and $—NR^5R^6$ wherein R^5 and R^6 are alkyl radicals having 1 to 8 carbon atoms, and n is an integer of from 1 to 4; R^4 is selected from the group consisting of a) $—NR^7R^8$ wherein R^7 and R^8 are independently selected from alkyl radicals having from 1 to 18 carbon atoms and together having a total of at least 5 carbon atoms, b) -NZ wherein N is the ring nitrogen atom of a cyclic amine and Z represents that portion of the cyclic amine ring having at least 5 ring carbon atoms one of which can be replaced by oxygen or sulfur, and c)



wherein R^9, R^{10}, R^{11} and R^{12} are independently selected from the same group from which R is selected and at least one of R^9, R^{10}, R^{11} and R^{12} is other than hydrogen; and X and X^1 are independently selected from oxygen and sulfur atoms.

4,118,379

AMIDATED IMMUNE GLOBULINS AND PROCESS FOR PREPARING THEM

Rudolf Schmidtberger, Marburg-Marbach, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Continuation of Ser. No. 610,458, Sep. 4, 1975, abandoned. This application Feb. 18, 1977, Ser. No. 770,181

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1974, 2442655

Int. Cl.² A23J *1/06*

U.S. Cl. 260—112 B **17 Claims**

1. The method of making water-soluble amidated immune globulins which comprises reacting immune globulins with a molar excess of a water-soluble primary monoamine and a water-soluble carbodiimide or a salt thereof in a slightly acidic to neutral aqueous solution.

4,118,380

DECAPEPTIDE ANALOGS OF SOMATOSTATIN

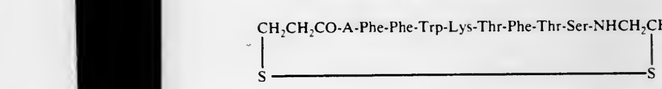
Hans U. Immer, Mount Royal, and Nedumparambil A. Abraham, Dollard des Ormeaux, both of Canada, assignors to Ayerst, McKenna & Harrison Limited, Montreal, Canada

Filed Jul. 25, 1977, Ser. No. 818,500

Int. Cl.² C07C *103/52*

U.S. Cl. 260—112.5 S **10 Claims**

1. A compound of the formula 1



in which A is Gly-Asn or a therapeutically acceptable salt thereof.

4,118,381

1:2 COBALT COMPLEX PHENOL-ACETOACETANILIDE BENZENE DISAZO DYESTUFFS

Hermann Fuchs, Kelkheim, Taunus, and Klaus Filzinger, Hofheim, Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

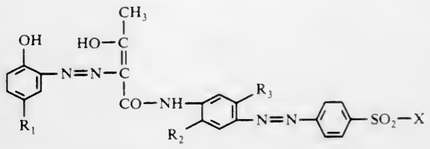
Filed Feb. 2, 1977, Ser. No. 765,003

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1976, 2604220

Int. Cl.² C09B *45/20*

U.S. Cl. 260—148 **1 Claim**

1. A 1:2-cobalt complex disazo dyestuff of a disazo compound of the general formula



(1)

wherein R_1 is hydrogen, halogen, nitro, lower alkyl or lower alkoxy, R_2 is hydrogen, lower alkyl or lower alkoxy, R_3 is hydrogen, lower alkyl or lower alkoxy and X is hydroxy or β-sulfoethyl or a group of the formula



wherein R_4 is hydrogen or lower alkyl.

4,118,382

REACTIVE MONO-AZO DYESTUFFS HAVING A 4-AMINO-3,5(OR-6)-DISULFOACETIC ACID COUPLING COMPONENT AND A REACTIVE GROUP ATTACHED TO THE DIAZO COMPONENT

Horst Jäger, Leverkusen, and Georg Dehmel, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

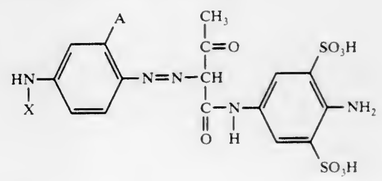
Continuation of Ser. No. 235,856, Mar. 17, 1972, abandoned. This application May 25, 1977, Ser. No. 800,573

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1971, 2113298

Int. Cl.² C09B *29/36, 62/08, 62/24, 62/40*

U.S. Cl. 260—154 **3 Claims**

1. Reactive dyestuff of the formula



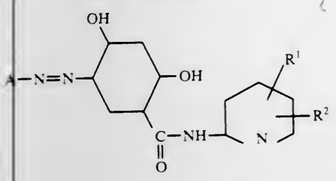
in which

A is hydrogen, carboxy or sulfo; and

X is a fiber reactive group containing at least one removable substituent bonded to the carbon atom of a —C=N— group in a pyrimidine, sym. triazine or quinoxaline ring and which is capable of forming a covalent bond with amino, amide or hydroxyl groups of natural or synthetic fiber materials under dyeing or printing conditions.

4,118,383
AZO DYES CONTAINING AN N-2-PYRIDINE-2,4-DIHYDROXYBENZAMIDE COUPLER COMPONENT
Raouf Botros, Beech Creek, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.
Filed Jun. 4, 1976, Ser. No. 692,933
Int. Cl.² C09B *29/22, 29/36*
U.S. Cl. 260—156 **11 Claims**

1. An azo compound of the formula:



wherein

A is phenyl, phenyl substituted by up to three substituents, naphthyl or naphthyl substituted by up to two substituents, the substituents being independently selected from the group consisting of alkyl of 1–4 carbon atoms; alkoxy of 1–4 carbon atoms; nitro; cyano; fluoro; chloro; bromo; trifluoromethyl; hydroxy; RCOO—, where R is alkyl of 1–4 carbon atoms; carboxy; ROOC—, where R is alkyl of 1–4 carbon atoms; RCO—, where R is alkyl of 1–4 carbon atoms; benzoyl; RCONH—, where R is alkyl of 1–4 carbon atoms; ArCONH—, where Ar is phenyl; and carbamyl, the nitrogen of which is unsubstituted or singly or doubly substituted with alkyl of 1–4 carbon atoms; and

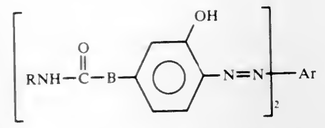
R^1 and R^2 are independently selected from the group consisting of hydrogen; alkyl of 1–4 carbon atoms; alkoxy of 1–4 carbon atoms; nitro; chloro and bromo.

4,118,384
PROCESS FOR PREPARATION OF AZO DYESTUFFS BY COUPLING IN PRESENCE OF AROMATIC SULPHONIC ACID-FORMALDEHYDE REACTION PRODUCT
Hans-Heinz Mölls; Willy Schiwy, both of Leverkusen; Reinhold Hörnle, Cologne, and Reinhard Nebeling, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 17, 1977, Ser. No. 769,727
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 2607122
Int. Cl.² C09B *29/08, 29/26, 29/36, 29/38*
U.S. Cl. 260—163 **5 Claims**

1. In the process of preparing an azo dyestuff by diazotizing an amine and thereafter coupling the diazo component formed with a coupling component, the improvement comprising preparing a low salt or salt free azo dye composition without a step of salt separation by carrying out the diazotization in the presence of a free dispersing agent acid which comprises the reaction product of formaldehyde and an aromatic sulphonic acid, and then conducting the coupling reaction after adding no base or by adding only an amount of base which would give the resulting composition of a pH of no more than 3.

4,118,385
DISAZO COMPOUNDS
Howard A. Harris, New York, N.Y., assignor to Shell Oil Company, Houston, Tex.
Division of Ser. No. 663,426, Mar. 3, 1976, Pat. No. 4,022,700. This application Feb. 14, 1977, Ser. No. 768,123
Int. Cl.² C07C *107/04*
U.S. Cl. 260—175 **7 Claims**

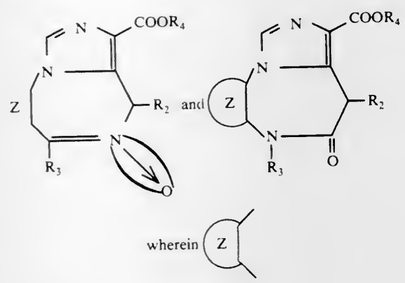
1. An azoaryl compound defined by the formula:



wherein R is an aliphatic hydrocarbyl radical of 16 to 22 carbon atoms, B is —NH— or oxygen, and Ar is an arylene radical selected from the class consisting of phenylene, naphthylene and diphenylene, said arylene radical being either unsubstituted or substituted on each aromatic ring with an aliphatic hydrocarbyl radical of 1 to 4 carbon atoms.

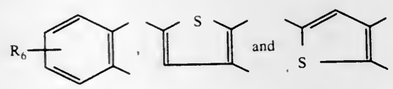
4,118,386
SYNTHESIS OF IMIDAZO[1,5-a]DIAZEPINE-3-CARBOXYLATES
Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Apr. 4, 1977, Ser. No. 784,187
Int. Cl.² C07D *210/00, 211/02, 487/04*
U.S. Cl. 260—239.3 T **3 Claims**

1. A process to produce diazepine-3-carboxylates of the formula

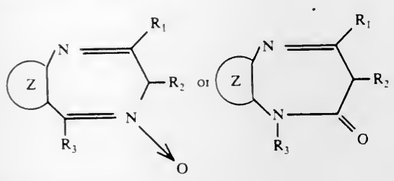


wherein Z

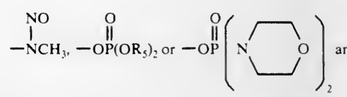
is selected from the group consisting of



R_6 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluormethyl, lower alkyl, and lower alkanoyl; R_4 is lower alkyl; R_3 is selected from the group consisting of phenyl, halo or nitro mono-substituted phenyl, halo or nitro disubstituted phenyl, pyridyl and halo or nitro mono-substituted pyridyl; and R_2 is hydrogen or lower alkyl which comprises a compound of the formula



wherein R_1 is of the formula



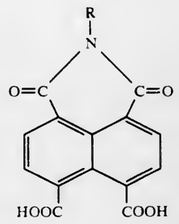
and R_5 is lower alkyl with a compound of the formula

$$N{\equiv}C-CH_2-COOR_4$$

in the presence of a base sufficiently strong to generate the anion of the isocyanoacetate.

4,118,387
NAPHTHALIMIDE-4,5-DICARBOXYLIC ACIDS
Otto Fuchs, Frankfurt am Main, and Adolf Kroh, Münster, Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 505,624, Sep. 13, 1974, Pat. No. 4,007,192, which is a division of Ser. No. 398,410, Sep. 18, 1973, abandoned. This application Nov. 5, 1976, Ser. No. 739,277
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1972, 2246111
Int. Cl.² C07D *221/14*
U.S. Cl. 260—281 A **5 Claims**

1. A compound of the formula



or the anhydride thereof, wherein R is alkoxyalkyl having 1 to 6 carbon atoms in each of the alkyl and alkoxy portions.

4,118,388
PROCESS FOR PRODUCING PYRIDINE
Takushi Yokoyama; Hidetaka Kojima; Masaharu Uragami, and Kathuyoshi Miwa, all of Ooi, Japan, assignors to Daicel, Ltd., Sakai, Japan
Filed Aug. 10, 1977, Ser. No. 823,477
Claims priority, application Japan, Aug. 11, 1976, 51/96249
Int. Cl.² C07D *213/16*
U.S. Cl. 260—290 R **10 Claims**

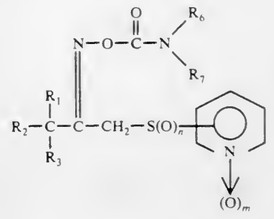
1. A process for producing pyridine which comprises oxidatively dealkylating an alkylpyridine, an alkenylpyridine, the alkyl or alkenyl groups of which have one to seven carbon atoms, or a mixture thereof in the gaseous phase with molecular oxygen and steam in the presence of a catalyst comprising active components with a general composition of the formula

$$V_aX_bAg_cO_d$$

wherein *a, c* and *d* respectively represent the atomic proportions of vanadium, silver and oxygen; X respresents at least one element selected from the group consisting of chromium, molybdenum and tungsten; *b* represents the atomic proportion of X; and when *a* is 1, *b* is about 0.1 to about 1.5, *c* is about 0.005 to about 1.0, and *d* represents the atomic proportion of oxygen, is a value determined by the atomic valences of the individual V, X and Ag elements and is about 2.6 to about 7.5; and separating pyridine from the reaction product.

4,118,389
KETOXIME CARBAMATES
Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 553,648, Feb. 27, 1975, Pat. No. 4,028,413, which is a continuation-in-part of Ser. No. 229,207, Feb. 24, 1972, Pat. No. 3,875,232, which is a continuation-in-part of Ser. No. 132,584, Apr. 8, 1971, abandoned. This application May 31, 1977, Ser. No. 801,585
Int. Cl.² C07D *213/70, 213/89*
U.S. Cl. 260—294.8 R **5 Claims**

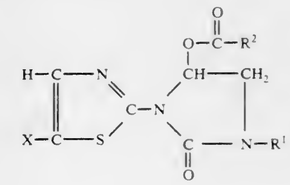
1. A composition of matter having the formula:



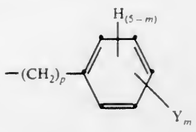
wherein R_1 is hydrogen or lower alkyl; R_2–R_3 are lower alkyl with the proviso that R_2 and R_3 may be connected to form a cycloalkyl ring of not more than 6 carbon atoms; R_6–R_7 are hydrogen, lower alkyl, or lower alkenyl; *n* is 0, 1 or 2; and *m* is 0 or 1.

4,118,390
1-THIAZOLYL-5-ACYLOXYIMIDAZOLIDINONES
Chin Ching Wu, Libertyville, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Company, Chicago, Ill.
Filed Jun. 1, 1976, Ser. No. 691,949
Int. Cl.² C07D *277/28*
U.S. Cl. 260—306.8 R **9 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of chlorine, bromine, fluorine and lower alkylsulfonyl; R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower haloalkyl and propargyl; and R^2 is selected from the group consisting of alkyl of up to 18 carbon atoms, lower alkenyl, lower haloalkyl, propargyl, lower alkoxyalkyl, cycloalkyl of from 3 to 7 carbon atoms and



wherein *p* is an integer from 0 to 2; Y is selected from the group consisting of lower alkyl, lower alkenyl, chlorine bromine, fluorine, lower haloalkyl, lower alkoxy, lower alkylthio, nitro and cyano; and *m* is an integer from 0 to 3.

4,118,391

PROCESS FOR THE PREPARATION OF COPPER PHTHALOLCYANINE

Heinz-Ewald Baurecht; Reinhold Hörnle, and Gerd Müller, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 16, 1977, Ser. No. 778,154

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1976, 2611546

Int. Cl.² C09B *47/04*

U.S. Cl. 260—314.5 **6 Claims**

1. In the process for the preparation of copper phthalocyanine by the baking process from

(a) phthalic acid anhydride, diammonium phthalate, phthalimide, phthalic acid diamide, aminio-imino-isoindolenine or 1-amino-3-oxo-isoindolenine or said compounds substituted by chlorine, bromine, C_1-C_4-alkyl, phenyl, C_1-C_4-alkoxy or sulpho,

(b) urea,

(c) a catalyst and

(d) a copper salt

at temperatures of 150°-350° C. the improvement which comprises reacting ingredients (a) and (b) at 130°-300° C., to form an intermediate, and subsequently reacting said intermediate with ingredient (d); ingredient (c) being added during either of the two above-described reaction steps.

4,118,392

DICARBOXYLIC COMPOUNDS AND POLYESTERS DERIVED THEREFROM

Robert Salle, and Bernard Sillion, both of Grenoble, France, assignors to Institut Francais du Petrole, France

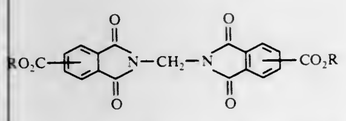
Filed Mar. 9, 1976, Ser. No. 665,170

Claims priority, application France, Mar. 14, 1975, 75 08320; Dec. 24, 1975, 75 39918

Int. Cl.² C07D *209/34*

U.S. Cl. 260—326 N **4 Claims**

1. A dicarboxylic compound of the general formula :



where R is a hydrogen atom or an alkyl, cycloalkyl or aryl group of 1-10 carbon atoms.

4,118,393

PHENYL AZABICYCLOHEXANONES

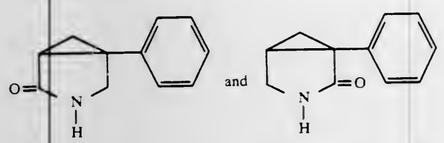
William Joseph Fanshawe, Pearl River, N.Y.; Sidney Robert Safir, River Edge, N.J., and Lantz Stephen Crawley, Spring Valley, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 23, 1977, Ser. No. 809,341

Int. Cl.² C07D *209/52, 471/08*

U.S. Cl. 260—326.5 B **12 Claims**

1. An optically active compound of the formulae:



and

wherein the phenyl moiety is unsubstituted, mono- or di-substituted from the group consisting of halogen, straight chain C_1-C_6 alkyl, C_1-C_6 alkoxy, nitro, amino, trifluoromethyl, acetamido and hydroxy; and the racemic mixture thereof.

4,118,394

PYRANO- AND THIOPYRANOINDOLE DERIVATIVES

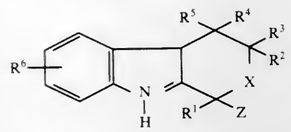
Christopher A. Demerson, St. Laurent; Leslie G. Humber, Dollard des Ormeaux; Andre A. Asselin, Lemoyne; Ivo Jirkovsky, Montreal, and Thomas A. Dobson, Dollard des Ormeaux, all of Canada, assignors to Ayerst, McKenna & Harrison Limited, Montreal, Canada

Division of Ser. No. 733,834, Oct. 18, 1976, Pat. No. 4,056,538, which is a division of Ser. No. 507,085, Sep. 18, 1974, abandoned, which is a division of Ser. No. 217,627, Jan. 13, 1972, Pat. No. 3,852,285. This application Aug. 8, 1977, Ser. No. 822,456

Int. Cl.² C07D *491/04, 513/04*

U.S. Cl. 260—326.28 **7 Claims**

1. A compound of the formula



in which R^1 is lower alkyl or lower cycloalkyl; R^2, R^3, R^4 and R^5 are the same or different selected from the group consisting of hydrogen and lower alkyl; R^6 is hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, nitro or halo; X is oxy or thio; and Z is Alk-NR^8COR^{21} in which Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}$, $CR^{10}R^{11}CR_{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}$ $CR^{14}R^{15}$ and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ in which R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower alkyl, R^8 is hydrogen or lower alkyl and R^{21} is hydrogen or lower alkyl consisting of one to five carbon atoms.

4,118,395

METHOD FOR THE PRODUCTION OF INDOLYL LACTONES

Werner J. Frantsits, Boltzmanngasse 9a-11, Vienna 9, Austria

Filed Jun. 20, 1977, Ser. No. 808,272

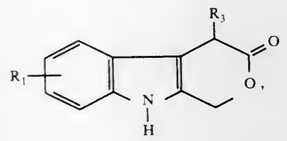
Claims priority, application Austria, Jun. 28, 1976, 54719/76

Int. Cl.² C07D *491/04*

U.S. Cl. 260—326.29 **7 Claims**

1. A method for the production of indolyl lactones of the formula

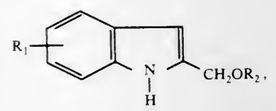
(I)



wherein R_1 is a member of the group consisting of hydrogen, halogen and an alkoxy group having 1 to 4 C atoms and R_3 is hydrogen, comprising the steps of

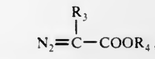
reacting a 2-hydroxymethylindole of the formula

(II)



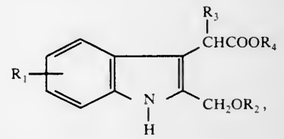
wherein R_1 has the above named meaning and R_2 is a member of the group consiting of an alkanoyl group and a phenyl alkanoyl group, with an α-diazoester of the formula

(III)



wherein R_3 has the above named meaning and R_4 is an alkyl group having 1 to 4 carbon atoms or a benzyl group, to a 3-indolyl acetic acid ester of the formula

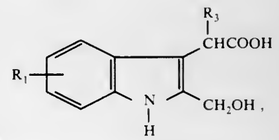
(IV)



wherein R_1, R_2, R_3 and R_4 have the above named meanings,

saponifying the thus obtained 3-indolyl acetic acid ester of the formula (IV) to the 3-indolyl acetic acid of the formula

(V)



wherein R_1 and R_3 have the above named meaning, and dehydrating the latter to indolyl lactone of the formula (I).

4,118,396

PYRROLIDINE DERIVATIVES

Giorgio Pifferi, Milan, and Mario Pinza, Corsico (Milan), both of Italy, assignors to I.S.F. S.p.A., Milan, Italy

Filed Aug. 12, 1976, Ser. No. 713,901

Claims priority, application Italy, Aug. 13, 1975, 26326 A/75

Int. Cl.² C07D *207/28*

U.S. Cl. 260—326.43 **7 Claims**

1. 2-(4-Hydroxypyrrolidin-2-on-1-yl) acetamide.

3. 2-(4-Methoxypyrrolidin-2-on-1-yl) acetamide.

4. 2-(4-Allyloxpyrrolidin-2-on-1-yl) acetamide.

4,118,397

DERIVATIVES OF 5-AMINOBENZOIC ACID HAVING A HETEROCYCLIC SUBSTITUENT IN THE 3-POSITION

Dieter Bormann, Kelkheim; Wulf Merkel, Neuenhain, and Roman Muschaweck, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellshcaft, Frankfurt am Main, Fed. Rep. of Germany

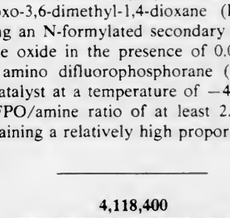
Division of Ser. No. 570,649, Apr. 23, 1975, Pat. No. 4,010,273. This application Dec. 6, 1976, Ser. No. 747,479

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1974, 2419970

Int. Cl.² C07D *207/04, 207/18*

U.S. Cl. 260—326.41 **2 Claims**

1. A compound of the formula



wherein

R^3 is hydrogen or alkyl having 1 to 4 carbon atoms,

A is $—CH_2—CH_2—$ or $—CH=CH—$,

X is $—OR^4$, $—SR^4$, $—NHR^4$, or benzyl; and

R^4 is phenyl.

4,118,398

PERFLUORINATED ETHERS

Thomas Martini, Neuenhain, Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 704,689, Jul. 12, 1976, Pat. No. 4,052,277. This application Apr. 28, 1977, Ser. No. 791,997

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1975, 2531511

Int. Cl.² C07D *319/10*

U.S. Cl. 260—340.6 **2 Claims**

1. The compound perfluoro-2,3-bis-(3',6'-dimethyl-1',4'-dioxane-2'-yloxy)-butane.

2. The compound perfluoro-2,9-bis-(3',6'-dimethyl-1',4'-dioxane-2-yl-oxy)-5,6-dimethyl-4,7-dioxadecane.

4,118,399

PROCESS FOR PREPARING PERFLUORO-α-(3,6-DIMETHYL-1,4-DIOXANYL-2-OXY)-PROPIONIC ACID FLUORIDE

Thomas Martini, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 19, 1977, Ser. No. 798,311

Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623090

Int. Cl.² C07D *319/12*

U.S. Cl. 260—340.2 **2 Claims**

1. A process for preparing a mixture of perfluoroalpha-(3,6-di-methyl-1,4-dioxanyl-2-oxy)-propionic acid fluoride (II) and perfluoro-2-oxo-3,6-dimethyl-1,4-dioxane (III) which comprises reacting an N-formylated secondary amine with hexafluoropropene oxide in the presence of 0.01 to 0.5 mols of trisdimethyl amino difluorophosphorane (IV) per mole of amine as a catalyst at a temperature of −40° to +5° C. and using an HFPO/amine ratio of at least 2.5:1 to produce a mixture containing a relatively high proportion of compound (II).

4,118,400

PROCESS FOR PREPARING 2,3-DIHYDRO-7-BENZOFURANOLS AND BENZODIOXOLE INTERMEDIATE THEREFOR

William James Michaely, Princeton Junction, N.J., assignor to FMC Corporation, Philadephia, Pa.

Filed Sep. 22, 1977, Ser. No. 835,630

Int. Cl.² C07D *317/46, 307/86*

U.S. Cl. 260—340.5 **4 Claims**

1. A process for preparing 2,3-dihydro-2,2-dimethyl-7-benzofuranol which comprises thermally rearranging 2-isopropyl-1,3-benzodioxole at a temperature above about 135° C. in the presence of a catalytic amount of a catalyst selected from the group consisting of (1) an acid clay having an acid value of 1

mg to 16 mg potassium hydroxide per gram of clay and (2) a Lewis acid.

4. The compound 2-isopropyl-1,3-benzodioxole.

4,118,401

PREPARATION OF 6,11-DIHYDRO-11-OXODIBENZ[B,E]OXEPIN-2-ACETIC ACID AND PRECURSORS THEREFOR

Arthur R. McFadden, East Brunswick; Richard C. Allen, Flemington, and Thomas B. K. Lee, Whitehouse Station, all of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Oct. 19, 1977, Ser. No. 843,482
Int. Cl.² C07D *313/12*
U.S. Cl. 260—333 **1 Claim**

1. A method of preparing 6,11-dihydro-11-oxodibenz[b,e]oxepin-2-acetic acid which comprises reacting 5-acetylsalicylic acid with sulfur and morpholine according to the conditions of the Willgerodt Reaction to yield 3-carboxy-4-hydroxyphenylthioacetmorpholide; reacting said 3-carboxy-4-hydroxyphenylthioacetmorpholide with a benzylhalide in the presence of a mild base under reflux conditions to form 4-benzyloxy-3-(benzyloxycarbonyl)phenylacetmorpholide; refuxing said 4-benzyloxy-3-(benzyloxycarbonyl)phenylacetmorpholide with aqueous potassium hydroxide to form 4-benzyloxy-3-carboxyphenylacetic acid; and cyclizing said 4-benzyloxy-3-carboxyphenylacetic acid.

4,118,402

PREPARATION OF MALEIC ANHYDRIDE

Hideo Suzuki; Takahisa Sato; Tatsuo Kubota; Shigemi Osaka, and Shigeru Komatsu, all of Himeji, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

Division of Ser. No. 636,756, Dec. 1, 1975, Pat. No. 4,036,780. This application Apr. 28, 1977, Ser. No. 791,947
Claims priority, application Japan, Dec. 2, 1974, 49-136995
Int. Cl.² C07D *307/60*
U.S. Cl. 260—346.75 **7 Claims**

1. A process for the preparation of maleic anhydride comprising catalytically oxidizing benzene at a temperature of 330° to 450° C with a molecular oxygen containing gas in the presence of a catalyst comprising a porous inert support of an alkali metal content, calculated as oxide, of at most 0.3% by weight, an apparent porosity of 20 to 70%, BET surface area of 0.01 to 1 m^2/g and the total volume of pores of diameters of at least one micron amounts to at least 80% of the total volume of pores of diameters not exceeding 100 microns, and supported thereon a catalytically active substance of constituent composition comprising (a) 1 mole of vanadium pentoxide, (b) 0.3 to 1.2 moles of molybdenum trioxide, (c) 0.005 to 0.05 moles of phosphorus pentoxide, (d) 0.03 to 0.2 moles of sodium oxide and (e) 0 to 0.05 moles of potassium oxide.

4,118,403

RECOVERY OF MALEIC ANHYDRIDE

James E. White, Coshocton, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 18, 1976, Ser. No. 742,936
Int. Cl.² C07D *307/60*
U.S. Cl. 260—346.76 **8 Claims**

1. In a process for the recovery of maleic anhydride from a gaseous reaction mixture wherein the gaseous reaction mixture containing the maleic anhydride is contacted with a solvent to remove the maleic anhydride from the gaseous reaction mixture, and the solvent is stripped of the maleic anhydride at a temperature between about 200° C. and about 250° C. at a pressure less than 760 torr, the temperature being below the thermal decomposition point of the solvent at the existing pressure, the improvement which comprises contacting the gaseous reaction mixture with a solvent comprising a dialkyl phthalate having 2 to 8 carbon atoms in each alkyl chain and from about 0.5 to about 10 weight percent phthalic anhydride.

4,118,404

PROCESS FOR PREPARING ALKANOL AMIDE COMPOSITIONS

Gunner E. Nelson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 17, 1973, Ser. No. 397,672
Int. Cl.² C07C *103/38*
U.S. Cl. 260—404 **29 Claims**

1. A process for producing alkanol amide mixtures which comprises:

reacting a di lower alkanol amide with a mixture of lower alkyl esters of aliphatic monocarboxylic acids whose acyl groups contain from about 8 to about 20 carbon atoms, said mixture being characterized in that from about 2 to about 20 mol percent of said ester mixture is branched ester in which the acyl groups carry in the α position an alkyl substituent at least two carbon atoms in length, said branched ester being substantially unreactive with said amine, the amount of said amine employed being sufficient to convert at least 10 mol percent of the ester mixture into di lower alkanol amide; and then

reacting the product from the preceding reaction with a mono lower alkanol amine to convert unreacted ester into mono lower alkanol amide, both said reactions being carried out in the presence of a base catalyst.

4,118,405

METHOD OF PRODUCING AN ACYLATED DERIVATIVE OF AN EPOXY FATTY ACID ESTER OR EPOXY NATURAL OIL

Leonard Edward Hodakowski, Saint Albans, and Lawrence George Hess, Charleston, both of W. Va., assignors to Union Carbide Corporation, NewYork, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,465
Int. Cl.² C09F *5/00*; C11C *3/00*
U.S. Cl. 260—405 **14 Claims**

1. In a method of producing an acylated derivative of an epoxy fatty acid ester or epoxy natural oil having aliphatic chains of 10 to 24 carbon atoms and including at least one oxirane segment per molecule, by reacting said epoxy fatty acid ester or epoxy natural oil with a vinyl aliphatic monocarboxylic acid in contact with 0.10 to 5.0 parts of an acylation catalyst, per 100 parts of reaction mixture, a polymerization inhibitor and gaseous oxygen, the improvement which comprises:

(A) the addition of said monocarboxylic acid to a reaction mixture comprising the epoxy fatty acid ester or epoxy natural oil, acylation catalyst, polymerization inhibitor and gaseous oxygen; or

(B) the addition of said acylation catalyst to a reaction mixture comprising the epoxy fatty acid ester or epoxy natural oil, said monocarboxylic acid, polymerization inhibitor and gaseous oxygen; or

(C) the addition of a mixture of said monocarboxylic acid and said acylation catalyst to a reaction mixture comprising the epoxy fatty acid ester or epoxy natural oil, polymerization inhibitor and gaseous oxygen,

said addition being made at a temperature of from about 100° C. to about 125° C., and maintaining the reaction temperature from about 105° C. to about 130° C. for a period of time sufficient to complete the acylation reaction.

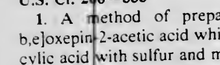
4,118,406

PROCESS FOR PREPARING CIS-OLEFINS

Hans Jürgen Bestmann, Erlangen; Werner Theo Stransky, and Otto Vostrowsky, both of Uttenreuth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 671,417, Mar. 29, 1976, Pat. No. 4,057,593, which is a continuation of Ser. No. 521,170, Nov. 5, 1974, abandoned. This application Aug. 8, 1977, Ser. No. 823,102
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1973, 2355534
Int. Cl.² C11C *3/02*; C07C *29/00, 1/00*
U.S. Cl. 260—410.9 R **14 Claims**

1. An improved process for preparing a cis-olefin of the formula



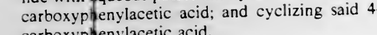
III

wherein

R is straight-chain or branched (C_1-C_{15}) alkyl or (C_2-C_{15}) alkenyl and

R^1 is a straight-chain or branched (C_1-C_{20}) alkyl or (C_2-C_{20}) alkenyl group further substituted in the 3-position or in a position more remote from the aldehyde group in Formula II by hydroxy, lower carbalkoxy or (C_1-C_3) acyloxy,

which comprises dissolving sodium or potassium in a hexaalkylphosphoric acid triamide, adding to the solution obtained a phosphonium salt of the formula



I

adding to the reaction mixture obtained an aldehyde of the formula



II

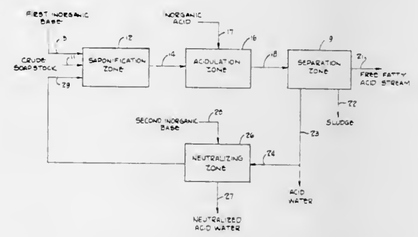
and isolating the product obtained.

4,118,407

FATTY ACID RECOVERY FROM SOAPSTOCK

Jerry F. P. Red, Cleveland, Ohio, and Juan B. Ilagan, Jr., Fullerton, Calif., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 757,380, Jan. 6, 1977, abandoned. This application Jun. 27, 1977, Ser. No. 810,518
Int. Cl.² C11B *13/00*; C11C *1/04*
U.S. Cl. 260—412.5 **10 Claims**



1. A process for recovering free fatty acid from aqueous crude soapstock containing saponifiable fatty material comprising a glyceride oil; which comprises:

(a) admitting said soapstock, a first inorganic base, and a recycle of inorganic salt-containing neutralized acid water from a later step of the process into a saponification zone held at a temperature of between about 80° and about 95° C.;

(b) passing the resulting saponified soapstock into an acidulation zone along with inorganic acid and therein springing free fatty acid from said soapstock;

(c) passing the resulting acidulated soapstock into a separation zone and withdrawing therefrom product free fatty acid stream and byproduct acid water;

(d) passing at least a portion of said acid water into a neutralizing zone along with a flow of a second inorganic base sufficient to at least neutralize said acid water with inorganic salt being formed thereby; and

(e) recycling at least a portion of said inorganic salt-containing neutralized acid water to said saponification step of the process, the proportion of inorganic base fed to the saponification zone being sufficient to virtually completely saponify said saponifiable fatty material in said soapstock admitted to the process.

4,118,408

ORGANOPHOSPHORUS NICKEL COMPLEXES AND PREPARATION THEREOF

Darryl R. Fahey, and John E. Mahan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 7, 1976, Ser. No. 684,350
Int. Cl.² C07F *15/04*
U.S. Cl. 260—439 R **9 Claims**

1. Bis(μ-diphenylphosphido)tris(triethylphosphine)dinickel.

2. A process of preparing bis(μ-diphenylphosphido)tris(triethylphosphine)dinickel, a dinickel complex comprising placing tris(triethylphosphine)(triphenylphosphine)nickel(O) in a suitable diluent to form a mixture under an inert atmosphere at a pressure such that the diluent is maintained essentially in the liquid phase while said mixture is maintained at a temperature sufficient to yield said dinickel complex.

4,118,409

PROCESS FOR THE SIMULTANEOUS PRODUCTION OF TRIMETHYLALUMINUM AND ALKYLALUMINUM HALIDES

Scott H. Eidt, Seabrook; Spencer C. Watson, and George Charles Heilig, both of La Porte, all of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Filed Mar. 27, 1974, Ser. No. 455,448
Int. Cl.² C07F *5/06*
U.S. Cl. 260—448 A **13 Claims**

1. A Redistribution Process for the production of trimethylaluminum and alkylaluminum bromides or iodides comprising forming a mixture of methylaluminum halides selected from the group consisting of dimethylaluminum bromide, dimethylaluminum iodide, methylaluminum dibromide, methylaluminum diiodide, methylaluminum sesquibromide, methylaluminum sesquiiodide, a mixture of dimethylaluminum bromide, methylaluminum dibromide and methylaluminum sesquibromide and a mixture of dimethylaluminum iodide, methylaluminum diiodide and methylaluminum sesquiiodide and an aluminum trialkyl wherein the alkyl radicals contain from 2 to about 16 carbon atoms and distilling said mixture in an efficient distillation column to effect separation of said mixture into a first fraction consisting essentially of trimethylaluminum and a residue of alkylaluminum bromides or iodides.

4,118,410
POLYPHENYL-POLYMETHYLENE-POLYISOCYANATE MIXTURES

Franz Lutz Friedel, Oppenwehe; Armin Schone, Heede, and Franz Gottfried Reuter, Lemfoerde, all of Germany, assignors to Gottfried Reuter GmbH i.L., Lemforde, Germany

Continuation of Ser. No. 221,030, Jan. 26, 1972, abandoned. This application Nov. 1, 1976, Ser. No. 737,693

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1971, 2105193

Int. Cl.[2] C07C *119/048*

U.S. Cl. 260—453 AM 2 Claims

1. Organic higher functional polyisocyanates obtained by a process of separating a mixture which contains isomers of diphenylmethane diisocyanate and higher functional polyisocyanates having more than two benzene rings, said process comprising distilling said mixture under vacuum at a pressure of between 10^{-3} and 10^{-1} mm/Hg. under conditions which avoid chemical change in the organic polyisocyanates contained in the mixture and thereby separating the polyisocyanates into two fractions with a desired first fraction containing said higher functional polyisocyanates with only a trace of said isomers and having a viscosity of 15,000 to 130,000 cp/25° C., and a second fraction consisting essentially of said isomers.

4,118,411
LOW-TEMPERATURE STORAGE STABLE LIQUID DIPHENYLMETHANE DIISOCYANATES

Helmut F. Reiff, and Richard S. Pantone, both of New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1977, Ser. No. 766,997

Int. Cl.[2] C07C *119/048*

U.S. Cl. 260—453 SP 22 Claims

1. A diisocyanate compound which is both stable and liquid at −5° C. for at least 48 hours, comprising the reaction product of:

(a) a diphenylmethane diisocyanate containing from about 15 to about 70 percent by weight of the 2,4′-isomer, and

(b) a material selected from the group consisting of propylene glycol and poly-1,2-propylene ether glycols.

4,118,412
PREPARATION CYANO SUBSTITUTED CYCLOPROPANE

Peter John Vernon Cleare, Ascot; Albert Edward Kaye, Greater Manchester, and David John Milner, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England

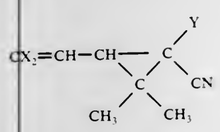
Filed Jul. 7, 1977, Ser. No. 813,669

Claims priority, application United Kingdom, Jul. 7, 1976, 28240/76

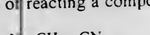
Int. Cl.[2] C07C *121/48*

U.S. Cl. 260—464 18 Claims

1. A process for the preparation of a compound of formula:



wherein X is chlorine or bromine and Y is cyano, alkoxycarbonyl containing up to four carbon atoms in the alkoxy moiety, benzyloxycarbonyl, phenoxybenzyloxycarbonyl or 2,2-dichlorovinyloxybenzyloxycarbonyl, which comprises the step of reacting a compound of formula:



with a diene of formula:

in the presence of at least one reducible copper salt.

4,118,413
PREPARATION OF PHENOXYBENZYL ESTERS

Derek A. Wood, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

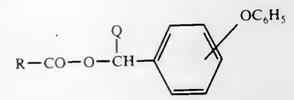
Division of Ser. No. 737,312, Nov. 1, 1976, Pat. No. 4,061,664. This application Aug. 15, 1977, Ser. No. 824,459

Claims priority, application United Kingdom, Nov. 12, 1975, 46700/75

Int. Cl.[2] C07C *69/74, 69/76, 121/75*

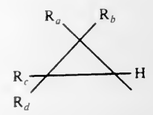
U.S. Cl. 260—465 D 11 Claims

1. A process for the preparation of a phenoxybenzyl ester of formula (I)



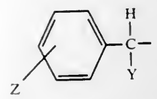
wherein Q is a hydrogen atom or a cyano group and R is

a. a cyclopropyl group of the formula

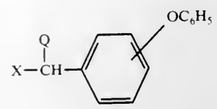


in which R_a and R_b each is an alkyl group containing from 1 to 6 carbon atoms, or a halogen atom having an atomic number of from 9 to 35, inclusive, or when R_a is a hydrogen atom then R_b is an alkenyl group containing from 2 to 6 carbon atoms optionally substituted by from 1 to 3 chlorine or bromine atoms, R_c and R_d each is an alkyl group containing from 1 to 6 carbon atoms, or when R_c is hydrogen then R_d is an alkenyl group having from 2 to 6 carbon atoms optionally substituted by from 1 to 3 chlorine or bromine atoms or either of R_a and R_b or R_c and R_d when taken together is an alkylene group containing from 2 to 6 carbon atoms; or

b. a benzyl group of the fromula



in which Z is a halogen atom having an atomic number of from 9 to 35, inclusive, or an alkoxy group containing from 1 to 4 carbon atoms and Y is an alkyl group containing from 1 to 6 carbon atoms, in which process an acid of the formula R—COOH in which R is as defined above is neutralized with a water-soluble base, and then contacted with a solution in a water-immiscible organic solvent of a benzyl halide of formula II



in which X is a halogen atom; and Q is as defined above in the presence of a phase-transfer catalyst comprising a tetrahydrocarbyl ammonium or phosphonium halide in which the hydrocarbyl groups are selected from aromatic, aliphatic, cycloaliphatic or unsaturated groups, said groups together containing a total number of carbon atoms of from 12 to 70.

4,118,414
DIFLUORAMINO COMPOUNDS AND PERFLUOROGUANIDINE-PENTAERYTHRITYL NITRATES

Melvin Goldstein, Cranford, and William E. Tyler, III, New Providence, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

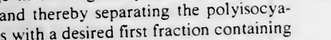
Filed Mar. 28, 1966, Ser. No. 540,140

Int. Cl.[2] C07C *77/02*

U.S. Cl. 260—467 5 Claims

1. Compounds which are perfluoroguanidine adducts of pentaerythrityl nitrates having residual hydroxyl groups.

2. The compound tris(difluoramino)methoxy pentaerythrityl trinitrate, having the formula:



4,118,415
INTER-OXA-13,14-DIHYDRO-9β-PGD$_1$ COMPOUNDS

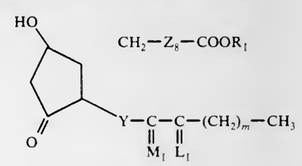
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 756,105

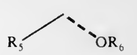
Int. Cl.[2] C07C *177/00*

U.S. Cl. 562—503 33 Claims

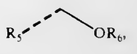
1. A prostaglandin analog of the formula



wherein Y is cis—CH=CH— or trans—CH=CH—; wherein m is one to 5, inclusive; wherein M_1 is

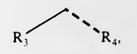


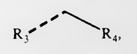
or



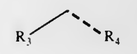
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is

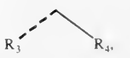




or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_8 is

(1) $—CH_2—O—CH_2—(CH_2)_g—CH_2—$,

(2) $—(CH_2)_2—O—(CH_2)_g—CH_2—$, or

(3) $—(CH_2)_3—O—(CH_2)_g—$,

wherein g is one, 2, or 3.

4,118,416
5-OXA-13,14-DIDEHYDRO-PGF$_1$ COMPOUNDS

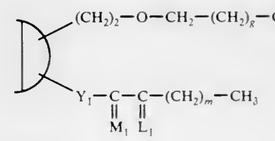
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,739, Feb. 13, 1976, Pat. No. 4,029,681. This application Mar. 7, 1977, Ser. No. 776,554

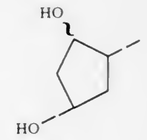
Int. Cl.[2] C07C *177/00*

U.S. Cl. 562—503 53 Claims

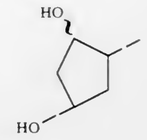
1. A prostaglandin analog of the formula:



wherein D is



or

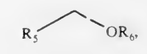


wherein Y_1 is —C≡C—;

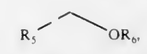
wherein *g* is 1, 2, or 3;

wherein *m* is 1 to 5, inclusive;

wherein M_1 is

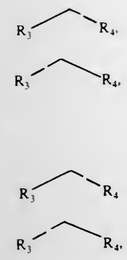


or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,118,417

PROCESS FOR RESOLVING CIS-1-SUBSTITUTED PHENYL-1,2-CYCLOPROPANEDICARBOXYLIC ACIDS

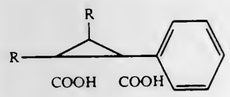
Joseph William Epstein, Monroe, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 23, 1977, Ser. No. 809,340

Int. Cl.[2] **C07C** *63/00;* **C07D** *207/00*

U.S. Cl. 562—401 **3 Claims**

1. A method for resolving a compound of the formula:



wherein R is selected from the group consisting of hydrogen and C_1-C_6 alkyl; and the phenyl moiety is unsubstituted, mono- or di-substituted from the group consisting of hydrogen, halogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, trifluoromethyl, nitro, amino, acetamido and hydroxy; into their (+) and (−) isomers which comprises reacting said compound with either (+) or (−)-α-(1-naphthyl)-ethylamine, in tetrahydrofuran, to produce a solid; collecting said solid, slurring in water, basifying, extracting with ether, and acidifying.

4,118,418

5-PHENENYLTRIS (UREYLENE) TRIISOPHTHALIC ACID SALTS

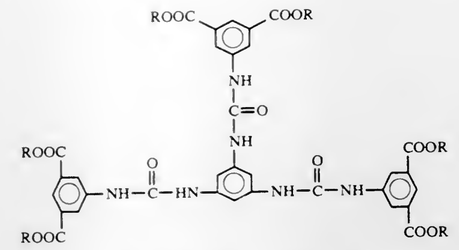
Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 29, 1977, Ser. No. 811,099

Int. Cl.[2] **C07C** *63/32, 69/76*

U.S. Cl. 562—439 **2 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of alkali metal; and the pharmaceutically acceptable salts thereof.

4,118,419

CATALYTIC PROCESS FOR THE PREPARATION OF AN UNSATURATED CARBOXYLIC ACID

Kazuhiro Ishii; Hideo Matsuzawa; Masao Kobayashi, and Hiromichi Ishii, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Nov. 26, 1976, Ser. No. 745,406

Claims priority, application Japan, Dec. 3, 1975, 50-144133; Dec. 12, 1975, 50-148860; Apr. 6, 1976, 51-38517

Int. Cl.[2] **C07C** *51/32*

U.S. Cl. 562—534 **7 Claims**

1. A process for the preparation of an unsaturated carboxylic acid, which comprises:

catalytically oxidizing acrolein, methacrolein or mixtures thereof in the gas phase at a temperature of 240° to 450° C with molecular oxygen to the corresponding unsaturated carboxylic acid in the presence of a catalyst of the formula:

$$P_aMo_bBi_cSb_dX_eY_fO_g$$

wherein Mo is molybdenum, P is phosphorus, Bi is bismuth, Sb is antimony, O is oxygen, X is at least one element selected from the group consisting of potassium, rubidium, cesium and thallium, and Y is at least one element selected from the group consisting of cobalt, zinc, niobium, chromium, nickel, iron, silicon, tantalum, cadmium, uranium, manganese, copper, thorium, selenium, aluminum, titanium, tungsten and cerium, and wherein *a, b, c, d, e, f,* and *g* represent the atomic ratio of each component such that *a* is 0.5 to 6; *b* is 12; *c* is 0.01 to 6; *d* is 0.01 to 12; *e* is 0.2 to 6; *f* is 0.01 to 6, and *g* is a value determined by the valencies of the elements present in the catalyst.

4,118,420

CHEMICAL COMPOUNDS

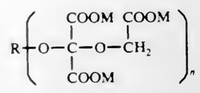
Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 471,088, May 17, 1974, abandoned. This application Mar. 25, 1976, Ser. No. 670,336

Int. Cl.[2] **C07C** *59/12*

U.S. Cl. 562—583 **10 Claims**

1. A compound corresponding to the following formula



wherein M is alkali metal or ammonium and acids and esters thereof, and wherein *n* is a number from 1 through 3, and wherein R is selected from an alkyl radical having from 1 to 20 carbon atoms, an alkenyl radical having from 1 to 20 carbon atoms, an alkynyl radical having from 1 to 20 carbon atoms, an alkanol radical having from 2 to 20 carbon atoms, and an ether radical having at least 3 carbon atoms.

4,118,421

PROCESS FOR THE MANUFACTURE OF PERFLUORO-ALKOXY-PROPIONIC ACID FLUORIDES

Thomas Martini, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

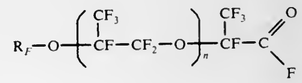
Filed Jun. 21, 1977, Ser. No. 808,537

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2627986

Int. Cl.[2] **C07C** *51/58*

U.S. Cl. 260—544 F **6 Claims**

1. A process for the manufacture of perfluoro-alkoxy-propionic acid fluorides of the formula



(I)

wherein R_F is a perfluoro-alkyl radical having from 1 to 8 carbon atoms, and *n* is 0, 1 or 2, by catalytic addition of hexafluoropropene epoxide to perfluorocarboxylic acid fluorides of the formula



(II)

wherein R_F is fluorine or a perfluorinated hydrocarbon radical having from 1 to 7 carbon atoms, which comprises carrying out the addition in an aprotic polar solvent at temperatures of from −50° to +20° C in the presence of a N,N,N′,N′-tetra-alkyl-substituted diaminodifluoromethane as catalyst.

4,118,422

POLYOLS FROM 2,3-MORPHOLINEDIONES

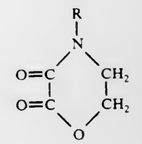
Howard P. Klein, Houston, Tex., assignor to Texaco Development Corp., Houston, Tex.

Continuation-in-part of Ser. No. 716,610, Aug. 23, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 830,724

Int. Cl.[2] **C07C** *29/00, 103/127, 103/38;* **C08G** *71/04*

U.S. Cl. 260—561 A **9 Claims**

1. A polyol comprising the reaction product of a 2,3-morpholinedione and a polyoxypropylene polyamine, said morpholinedione reactant having the following structural formula:



where R is selected from the group consisting of alkyl, cyanoalkyl, alkanol, phenyl and substituted phenyl.

4,118,423

AMINATED γ-DIALDEHYDE; METHODS FOR PREPARING THE SAME AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Guy Vanlerberghe, Montjay-la-Tour par Claye-Souilly, and Georges Rosenbaum, Asnieres, both of France, assignors to L'Oreal, Paris, France

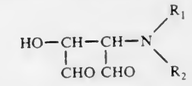
Division of Ser. No. 463,808, Apr. 24, 1974, Pat. No. 4,014,990, which is a division of Ser. No. 210,217, Dec. 20, 1971, Pat. No. 3,812,246. This application Dec. 14, 1976, Ser. No. 750,518

Claims priority, application Luxembourg, Dec. 24, 1970, 62317

Int. Cl.[2] **C07C** *95/02, 95/06, 95/08*

U.S. Cl. 260—584 A **3 Claims**

1. Aminated γ-dialdehyde having the formula



wherein R_1 and R_2 each independently are selected from the group consisting of hydrogen, alkyl having 1-6 carbon atoms, hydroxyalkyl wherein the alkyl moiety has 1-6 carbon atoms and cycloalkyl having 3-6 carbon atoms.

4,118,424

BIODEGRADABLE INSECTICIDES

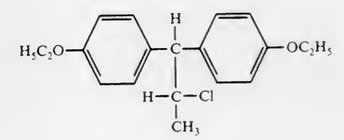
Robert L. Metcalf, and Joel R. Coats, both of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Division of Ser. No. 520,370, Nov. 4, 1974, Pat. No. 4,003,950. This application Jun. 9, 1976, Ser. No. 694,458

Int. Cl.[2] **C07C** *43/20*

U.S. Cl. 260—613 R **2 Claims**

1. A biodegradable insecticide having the formula,



4,118,425

METHOD FOR PREPARATION OF ETHERS

Sheldon Herbstman, Spring Valley, N.Y., assignor to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 584,323, Jun. 6, 1975, abandoned. This application Apr. 29, 1977, Ser. No. 792,285

Int. Cl.[2] **C07C** *41/06, 41/10*

U.S. Cl. 260—614 A **9 Claims**

1. The method of preparing ether from an alkane hydrocarbon charge containing normal butane which comprises

a. isomerizing said alkane hydrocarbon charge at isomerizing conditions including temperature of 300° F.-400° F. and pressure of 100-1000 psig in the presence of an isomerization catalyst and in the presence of 0.1-5 moles of added hydrogen per mole of hydrocarbon charge, wherein the space velocity (LHSV) of the total charge is 0.5-8;

b. withdrawing from said isomerization an isomate containing isobutane and n-butane in weight ratio of 1.0-2.0:1;

c. dehydrogenating said isomate at 900° F.-1100° F. and 0-1000 psig thereby forming a dehydrogenate containing isobutene and n-butane in weight ratio of 1-3:1;

d. reacting said dehydrogenate with at least one water-soluble aliphatic C_1 to C_6 alcohol in the presence of etherification catalyst at etherification reaction conditions including temperature of 100° F.-300° F. and 50-750 psig thereby

forming reaction mixture containing product ether, water-soluble alcohol, and n-butane;

e. contacting said reaction mixture with water thereby forming (i) aqueous extract containing water-soluble alcohol and (ii) raffinate containing said normal butane and said product ether substantially free of said water-soluble alcohol;

f. recovering said raffinate from said contacting operation; and

g. recovering said product ether from said raffinate.

4,118,426

PRODUCTION OF HYDROXY ETHERS

Norman L. Holy, Bowling Green, Ky., and Theodore E. Nalesnik, Yonkers, N.Y., assignors to Western Kentucky University, Bowling Green, Ky.

Filed May 10, 1977, Ser. No. 795,602
Int. Cl.² C07C *41/02*
U.S. Cl. 260—615 B **19 Claims**

1. A process for the preparation of a hydroxy ether which comprises reacting an epoxide compound having not more than four carbon atoms in the ring with an organic hydroxy compound containing alcoholic or phenolic hydroxy groups in the liquid phase, in a molecular oxygen gaseous atmosphere, and in the presence of a catalytic amount of a catalyst consisting essentially of a palladium salt and a copper salt, at least a portion of the anion of said palladium or copper salt being a chloride ion.

4,118,427

CURABLE LIQUID HYDROCARBON PREPOLYMERS CONTAINING HYDROXYL GROUPS AND PROCESS FOR PRODUCING SAME

Robert A. Rhein, and John D. Ingham, both of La Canada, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 332,123, Feb. 13, 1973, abandoned. This application Jun. 28, 1973, Ser. No. 374,810
Int. Cl.² C07C *29/00*
U.S. Cl. 568—852 **18 Claims**

1. A process for producing a low molecular weight curable hydroxyl-containing liquid saturated hydrocarbon prepolymer from a high molecular weight saturated hydrocarbon parent polymer, comprising subjecting said saturated parent hydrocarbon polymer to ozonolysis by passing ozone into a solution of said parent polymer in an organic solvent which readily dissolves said saturated parent hydrocarbon polymer but which is inert and does not react readily with ozone, and which is selected from the group consisting of halogenated hydrocarbons and hydrocarbons, and degrading said polymer to produce a degraded ozonized polymer of reduced molecular weight, reducing said ozonized polymer in a hydrocarbon solvent for said ozonized polymer, and converting said ozonized polymer to said hydroxyl-containing liquid prepolymer

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4,118,428

PREPARATION OF ALKYL CHLORIDES

Annie H. Joustra; Teunis P. La Haye, and Fernand H. Kesselaar, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 2, 1977, Ser. No. 764,835
Claims priority, application United Kingdom, Feb. 19, 1976, 6604/76
Int. Cl.² C07C *17/08*
U.S. Cl. 260—663 **9 Claims**

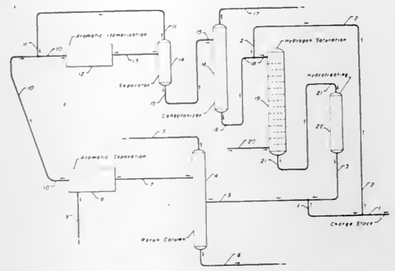
1. A process for the preparation of 2-chloroalkanes which comprises reacting a C_7 to C_{30} alpha olefin or mixture of such olefins with hydrogen chloride in the presence of a metal chloride supported on a carrier having an average pore diameter of at least 30 mμ.

4,118,429

PRODUCTION AND RECOVERY OF PARA-XYLENE

Thomas R. Fritsch, Lombard, and Mark C. Anderson, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Sep. 26, 1977, Ser. No. 836,273
Int. Cl.² C07C *7/13, 5/22*
U.S. Cl. 260—674 SA **10 Claims**



1. A process for the production and recovery of para-xylene from a mixture of C_8-aromatic hydrocarbons, which process comprises the sequential steps of:

(a) contacting said mixture with a crystalline aluminosilicate adsorbent, in an adsorption-separation zone, at conditions selected to effect the selective retention therein of para-xylene;

(b) withdrawing a para-xylene deficient C_8-aromatic raffinate stream from said adsorption-separation zone and contacting said adsorbent with a desorbent to effect removal and recovery of para-xylene therefrom;

(c) introducing said raffinate stream into an aromatic isomerization reaction zone maintained at isomerization conditions which convert C_8-aromatic hydrocarbons into para-xylene and which effect the production of olefinic hydrocarbons;

(d) hydrotreating the resulting isomerization reaction zone effluent, in a hydrotreating zone, at hydrotreating conditions selected to (i) provide a liquid-phase operation and (ii) saturate said olefinic hydrocarbons without substantial saturation of C_8-aromatic hydrocarbons; and,

(e) introducing at least a portion of the resulting olefin-free reaction zone effluent into said adsorption-separation zone to recover additional para-xylene.

4,118,430

PROCESS FOR THE ISOMERIZATION OF HYDROCARBONS

John Mooi, Homewood, Ill., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 29, 1976, Ser. No. 681,375
Int. Cl.² C07C *15/08*
U.S. Cl. 260—668 A **9 Claims**

1. In a catalytic process for isomerizing aromatic hydrocarbon compounds containing 8 to 18 carbon atoms in the absence of added free molecular hydrogen wherein the catalyst is periodically regenerated with an oxygen-containing gas stream to remove carbonaceous deposits by converting said deposits to a carbon monoxide-containing gas mixture, the improvement comprising using as the catalyst a mixture consisting of

(1) about 80 to 99% by weight of a first component consisting of a particulate amorphous silica-alumina composition, and

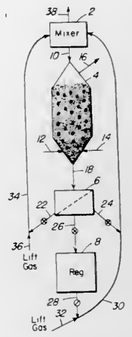
(2) about 1 to 20% by weight of a second component consisting of a particulate amorphous silica-alumina composition and 0.05 ppm to 10% by weight of at least one metal or compound of a metal selected from rhenium, ruthenium, osmium, rhodium, iridium, palladium, platinum and mixtures of these.

4,118,431

CONVERSION OF OXYGENATED COMPOUNDS

Nai Yuen Chen, Titusville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 21, 1976, Ser. No. 734,481
Int. Cl.² C07C *5/00*
U.S. Cl. 260—668 R **9 Claims**



1. In a process for effecting exothermic vapor phase chemical reactions of reactants comprising methanol, companion low boiling alcohols and derivatives thereof to form gasoline boiling hydrocarbons with a crystalline zeolite catalyst characterized by a pore opening of at least 5 Angstroms, a silica-alumina ratio of at least 12, and a constraint index within the range of 1 to 12 wherein in a fixed catalyst bed operation, the catalyst downstream of the reaction front becomes deactivated by a reaction product component, thereby substantially reducing utilization of the catalyst mass at its introduced activity to effect said exothermic reactions, the improvement to particularly limit undesired exposure of the catalyst downstream of the reaction front to deactivation by a reaction product which comprises,

passing the chemical reactants in vapor phase with said zeolite catalyst through a reaction zone containing a mixture of active catalyst particles and inert solid particle diluent thermophore material, the mass of active catalyst particles admixed with solid inert diluent thermophore material in a reaction zone being proportioned with respect to one another for any given and selected catalyst alpha activity in the range of 20 to 1000 alpha to more effectively utilize the particular alpha activity of the catalyst as the desired reaction front and catalyst pass through the reaction zone and effecting the reaction in the absence of significant undesired exposure of the active catalyst particles downstream of the reaction front to deactivating product of reaction before separation of catalyst from reaction products.

4,118,432

METHOD FOR DIMERIZATION OF OLEFINS

Viktor Alexandrovich Kabanov, Lomonosovsky prospekt, 14, kv. 108; Marina Alexandrovna Martynova, ulitsa Stasovoi, 4, kv. 34; Stanislav Konstantinovich Pluzhnov, pereulok Yazykovsky, 5, kv. 104, and Vladimir Ivanovich Smetanjuk, ulitsa Stasovoi, 4, kv. 34, all of Moscow, U.S.S.R.

Filed Mar. 18, 1977, Ser. No. 779,263
Int. Cl.² C07C *3/10*
U.S. Cl. 260—683.15 D **3 Claims**

1. A method for dimerization of olefins containing 2 to 4 carbon atoms, comprising mixing at least one of said olefins in a medium of solvents selected from the group consisting of hydrocarbon and halogenated hydrocarbon solvents at a temperature within the range of from 0° to 100° C. under a pressure of from 1 to 40 atm with a two-component catalyst consisting of

(1) a complex of a nickel salt with a compound selected from the group consisting of tertiary phosphines and tertiary phosphites, and

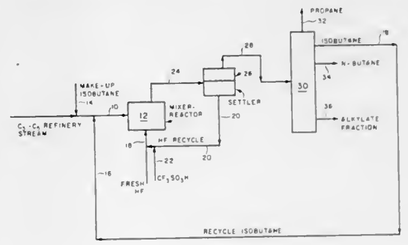
(2) an organoaluminum compound comprising a rubber swellable in said solvents and selected from the group consisting of natural and synthetic carbo-chain rubber with a content of 2 to 50 mol% of AlRX units, where R is an alkyl with at most 8 carbon atoms, X is a halogen; the atomic ratio of Al/Ni being varied within the range of from 1:1 to 100:1.

4,118,433

ISOPARAFFIN-OLEFIN HF ALKYLATION PROMOTED WITH TRIFLUOROMETHANESULFONIC ACID

Robert A. Innes, Wilkins Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 362,425, May 21, 1973, abandoned. This application Aug. 29, 1974, Ser. No. 501,664
Int. Cl.² C07C *3/54*
U.S. Cl. 260—683.51 **8 Claims**



4. In a process for the alkylation of isobutane with an olefinic hydrocarbon charge stock comprising at least one monoolefin selected from the group consisting of propylene, butene-1, pentene-1 and hexene-1 and wherein said alkylation is conducted in the presence of a catalyst comprising HF under reaction conditions including a reaction temperature from −20° C. to 30° C. and a pressure sufficient to maintain the HF in the liquid phase, the improvement which comprises conducting said alkylation process in the added presence of from 0.1 to 30 weight percent of trifluoromethanesulfonic acid based on the total weight of said catalyst and said trifluoromethanesulfonic acid.

4,118,434

HYDROALKYLATION USING MULTIMETALLIC ZEOLITE CATALYST

Timothy P. Murtha, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 5, 1976, Ser. No. 739,152
Int. Cl.² C07C *15/00*
U.S. Cl. 260—668 R **11 Claims**

1. A process for producing monocyclic alkyl aromatic hydrocarbons and alkyl substituted monocyclic alkyl aromatic hydrocarbon which comprises: contacting a monocyclic aromatic hydrocarbon or an alkyl substituted monocyclic aromatic hydrocarbon under hydroalkylation conditions and in the presence of hydrogen with a catalyst consisting essentially of a calcined, acidic, nickel and rare earth-treated crystalline zeolite selected from the group consisting of Type X and Type Y zeolite support impregnated with at least one ruthenium compound subsequent to calcination.

4,118,435
CATALYZED PRODUCTION OF PHOSPHOROUS AND PHOSPHONOUS ACID ESTER CHLORIDES

Roland Kleinstück, and Hans-Dieter Block, both of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 27, 1977, Ser. No. 819,535
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1976, 2636270
Int. Cl.[2] C07F *9/146*
U.S. Cl. 260—972 **5 Claims**

1. In the production of phosphorous acid ester chlorides or phosphonous acid ester chlorides of the formula

$$R_m(R'O)_nPCl_{3-m-n}$$

wherein

R represents an alkyl radical containing 1 to 5 C-atoms, which may optionally be substituted by halogen or alkoxy groups, or it represents an aryl radical having up to 8 C-atoms,

R' represents an alkyl radical having 1 to 15 C-atoms, optionally substituted by halogen, alkoxy groups or aryl groups, or it represents an optionally substituted aryl radical containing up to 8 C-atoms,

m represents 0 or 1, and

n represents 1 or 2, and wherein $m + n = 1$ or 2,

by reacting a trialkylphosphite, a triarylphosphite, a dialkylchlorophosphite or a diarylchlorophosphite with phosphorustrichloride, phosphorus acid alkyl ester dichloride, phosphorous acid aryl ester dichloride, dialkylphosphonite plus dichloro-phosphonite or diarylphosphonite plus dichlorophosphonite at a temperature between about −10° C. and 120° C., the improvement which comprises effecting the reaction in the presence of a catalytic quantity of at least one compound selected from the group consisting of a phosphine, a phosphine oxide, a phosphine sulfide, a halogen-phosphorane, phosphoric acid-tris-amide and a phosphoric acid-tris-alkyl-amide.

4,118,436
ADHESIVE COMPOSITION

James M. Craven, 716 Westcliff Rd., Wilmington, Del. 19803

Filed Jun. 30, 1976, Ser. No. 701,747
Int. Cl.[2] C08L *23/34, 61/20*
U.S. Cl. 260—826 **1 Claim**

1. An improved adhesive composition of:

(a) a chlorosulfonated polyethylene;

(b) methacrylic acid;

(c) an acrylic monomer selected from the group of butyl methacrylate, methyl methacrylate, 1,3 butylene dimethacrylate, or mixtures of these;

(d) the reaction product of butyraldehyde and aniline;

(e) cumene hydroperoxide; and

(f) 10–200 parts by weight of copper per million parts by weight of adhesive; the improvement used therewith comprises: 0.1–10 parts by weight, per 100 parts by weight of the reaction product, of a silane of the formula

$$NH_2(CH_2)_3—Si(OC_2H_5)_3$$

or

$$NH_2(CH_2)_2—NH—(CH_2)_3—Si(OCH_3)_3.$$

4,118,437
CROSS LINKABLE POWDER COATING COMPOSITIONS

Girish Girdhar Parekh, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 8, 1976, Ser. No. 674,797
Int. Cl.[2] C08L *63/00, 61/24, 61/20*
U.S. Cl. 260—834 **10 Claims**

1. A polymeric finely-divided powder coating composition comprising a homogeneous blend of from about 70% to about 95%,by weight, of (A) a solid polymeric material having a molecular weight of from about 1,000 to about 100,000 and containing from about 1% to about 20%, by weight, of a carboxyl group and/or an alcoholic hydroxy group and/or an amide group, based on the total weight of said polymeric material and, correspondingly, from about 30% to about 5%, by weight of (B) tetrakismethoxymethylglycoluril, wherein said coating composition has a softening point above about 55° C., wherein the total combined weight of (A) and (B) is 100%.

4,118,438
TRANSPARENT NON-BLOCKING POLYPROPYLENE FILM AND ITS PREPARATION

Takeshi Matsui, and Kunihiko Arakawa, both of Inuyama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 629,249, Nov. 6, 1975, abandoned, and a continuation-in-part of Ser. No. 535,594, Dec. 23, 1974, which is a continuation of Ser. No. 287,152, Sep. 7, 1972. This application Mar. 21, 1977, Ser. No. 779,625
Int. Cl.[2] C08L *77/00, 23/00*
U.S. Cl. 260—857 L **7 Claims**

1. A transparent polypropylene film exhibiting good slip and non-blocking properties prepared by a process including the steps of:

admixing polypropylene with a thermoplastic resin in the melt state, the thermoplastic resin having a melting point higher than but no more than 100° C. higher than the melting point of the polypropylene and being substantially incompatible with the polypropylene under the mixation conditions, to produce a polypropylene composition wherein the thermoplastic resin is dispersed in the form of fine particles of 0.1 to 10μ in average particle size and the amount of the dispersing thermoplastic resin is from 0.01 to 1% by weight of the polypropylene,

extruding the polypropylene composition in the melt state into a film, and

stretching the film at a draw ratio of 4 or more times in at least one direction.

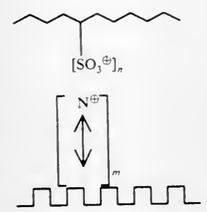
4,118,439
POLYELECTROLYTES

Xavier Marze, Lyons, France, assignor to Rhone-Poulenc S.A., Paris, France

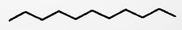
Continuation of Ser. No. 268,066, Jun. 30, 1972. This application Jan. 31, 1977, Ser. No. 764,176
Claims priority, application France, Jul. 2, 1971, 71.24235
Int. Cl.[2] C08L *33/20*
U.S. Cl. 260—858 **31 Claims**

1. An ionically cross-linked, shaped or unshaped, polymer, which is insoluble in water, but soluble in a liquid organic medium without the presence of an ionic shielding solvent which contains less than one hydrophilic group per 12 carbon atoms and which corresponds to the formula:

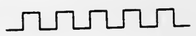
(I)



in which: the symbol $N^{\oplus}$ represents a quaternary nitrogen-containing group; the symbol



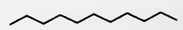
represents a macromolecular chain carrying groups which are capable of being linked, via a covalent bond, to $-SO_3^{\ominus}$ groups, the symbol



represents a macromolecular chain carrying groups which can give rise to the formation of $N^{\oplus}$ groups, the symbol



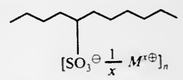
indicating that the $N^{\oplus}$ groups are linked to the macromolecular chain by at least one covalent bond, and the chains



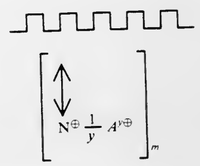
and



considered together, do not contain oppositely charged groups which are capable of forming inter-chain covalent bonds, the ratio n/m is between 0.1 and 10; and the nature of the units forming the macromolecular chains and the values of *n* and *m* being such that a polymer of the formula (I_1)



in which M represents a hydrogen ion or an alkali metal or alkaline earth metal ion and x is 1 or 2, and a polymer of formula (I_2)



in which A represents a hydroxyl radical or the anion of an inorganic or organic acid of formula: AH_y, y being equal to 1, 2 or 3, said polymers of formulae (I_1) and (I_2) both insoluble in water, but soluble in a common liquid organic medium without the presence of an ionic shielding solvent and wherein the macromolecular chain which is linked via a covalent bond to $-SO_3^{\ominus}$ groups and the macromolecular chain which is liked via a covalent bond to $N^{\oplus}$ groups both possess a specific viscosity of greater than 0.01 measured at 25° C. on a 2 g/liter solution in dimethylformamide.

4,118,440
CROSSLINKED VINYL HALIDE POLYMERS AS FLAME RETARDANT ADDITIVES FOR THERMOPLASTIC POLYESTER

Jung Il Jin, Irvington, and Paul Kraft, Spring Valley, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 512,773, Oct. 7, 1974, Pat. No. 4,022,849, which is a division of Ser. No. 395,684, Sep. 10, 1973, abandoned. This application Nov. 15, 1976, Ser. No. 741,650
Int. Cl.[2] C08L *67/02;* **G08L** *67/06*
U.S. Cl. 260—873 **6 Claims**

1. A fire retardant polyblend of at least on polyester resin, formed by the condensation of a dicarboxylic acid and a dihydric alcohol, in intimate admixture with an effective flame retarding concentration of at least one crosslinked copolymer consisting of:

(1) from about 50% to about 99%, by weight of the crosslinked copolymer, of at least one vinyl halide selected from the group consisting of vinyl chloride, vinyl bromide, and vinyl fluoride;

(2) from about 1% to 50%, by weight of the crosslinked copolymer, of at least one polyfunctional ethylenically unsaturated monomer; and

(3) from about 0% to 49%, by weight of the crosslinked copolymer, of a comonomer selected from the group consisting of the vinylidene halides, and the vinyl and allyl phosphonates.

4,118,441
BENEFICIATING AGENT COMPOSITION

John R. Le Blanc, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 250,619, May 5, 1972, Pat. No. 3,816,308. This application May 15, 1974, Ser. No. 470,252
Int. Cl.[2] C08L *33/02;* **C08K** *7/00*
U.S. Cl. 260—874 **5 Claims**

1. A water-soluble composition of matter to improve the yield of a clay drilling mud, consisting essentially of a mixture of (A) from 95 to 20% by weight of a polymer of at least one carboxylic acid monomer selected from the group consisting of acrylic acid, methacrylic acid, maleic anhydride, maleic acid, crotonic acid, itaconic acid, mesaconic acid, and citraconic acid, and (B) from 5 to 80% by weight of at least one water soluble sulfate, nitrate, chloride or aliphatic monocarboxylic acid salt of a metal selected from the group consisting of lead and metals from Groups IB, IIB, VIB, VIIB, and VIII of the Periodic Table; wherein the carboxylic acid polymer is characterized as having a carboxylic acid monomer content in the range of from 20 to 100 mol percent, a number average molecular weight of at least 5,000 and a solubility in water at a pH of less than 7 of at least 1% by weight at 25° C.; wherein the salt has a water solubility of at least 1% by weight at a pH less than 7; and wherein said aliphatic monocarboxylic acid contains 1 to 4 carbon atoms.

5. A composition of claim **1** which further includes a polyacrylamide flocculating atent.

4,118,442
ANAEROBIC PRESSURE SENSITIVE ADHESIVE COMPOSITION

Maurice Douek, Beverly Hills; Gustav A. Schmidt, South Pasadena, both of Calif.; Bernard M. Malofsky, Bloomfield, and Martin Hauser, West Hartford, both of Conn., assignors to Avery Products Corporation, San Marino, Calif. and Loctite Corporation, Newington, Conn., part interest to each

Division of Ser. No. 443,223, Feb. 19, 1974, Pat. No. 3,996,308. This application Sep. 17, 1976, Ser. No. 724,148
Int. Cl.[2] C08L *33/08*
U.S. Cl. 260—885 **12 Claims**

1. A curable, essentially solvent free anaerobic pressure sensitive adhesive composition comprising a mixture of:

(a) about 35 to about 99 percent by weight of an anaerobic resin system which is stable in the presence of oxygen and which contains at least one anaerobically curable resin having at least one polymerizable acrylate ester moiety;

(b) about one to about 65 percent by weight of a thermoplastic polymer system containing at least one high molecular weight acrylic-based polymer, capable of combining a substantial quantity of said anaerobic resin system;

(c) about 0.5 to about 20 percent, based on the total weight of (a) and (b), of a catalyst system for said anaerobic resin system, said catalyst system comprising a peroxy compound, an organic compound for accelerating cure of said anaerobic resin system and a stabilizer for said anaerobic

resin system, said anaerobic pressure sensitive adhesive, when in an essentially solvent-free state, being permanently tacky at room temperature and having a static shear strength of at least about two minutes at a 250 gram load per 0.25 square inch and a 180° peel value of at least about 0.5 lb. per inch, and curable upon substantial exclusion of oxygen.

4,118,443

PRODUCTION OF ACID PHOSPHORIC ACID ESTER SALTS

Werner Klose, Erfstadt, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 21, 1977, Ser. No. 761,054

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1976, 2602289

Int. Cl.² C07F 9/09

U.S. Cl. 260—980 **5 Claims**

1. In a process for making a product, which consists essentially of an acid orthophosphoric acid ester salt and contains at most about 1 weight % of water, and of which the inert ester group R (inert with respect to the reactants) being an alkyl, cycloalkyl, polyalkoxyalkyl, aryl, polyalkoxyaryl, alkaryl or aralkyl group contains 1 to 50 carbon atoms, whereby the carbon chain or ring of the ester group R and the salt-forming cation M is a mono- or bivalent metal ion or an ammonium ion, the improvement which comprises: reacting, at temperatures of about 0° to 150° C., with thorough agitation, molar proportions of P_2O_5 and of a compound of the general formulae M_2O, M_2CO_3, MO or MCO_3 with $2/m$ mol of an at least partially liquid or molten organic hydroxyl compound of the general formula $R(OH)_m$, in which formulae the substituents M and R have the meanings given above and m is a number of 1 to 4; terminating the reaction, cooling the resulting reaction product and pulverizing it, if desired.

4,118,444

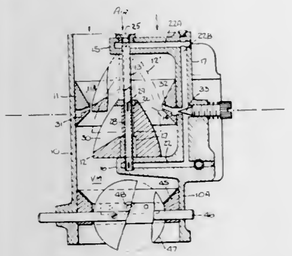
VARIABLE VENTURI CARBURETION SYSTEM

Harold G. Abbey, 11 Goldsmith Dr., Holmdel, N.J. 07733

Filed Oct. 8, 1976, Ser. No. 730,956

Int. Cl.² F02M 9/14

U.S. Cl. 261—44 A **2 Claims**



1. A carburetion system for supplying a fuel-air mixture to an internal combustion engine in a manner maintaining a desired ratio of fuel-to-air under varying conditions of engine demand to improve fuel economy and minimize the emission of pollutants, said system comprising:

A. a carburetor having a variable-Venturi structure mounted within a tubular casing and having a converging inlet to a throat and a diverging outlet therefrom, all having a circular cross-sectional area, control means to mechanically adjust the effective area of the throat of the Venturi without introducing discontinuities in the converging inlet to the throat and in the diverging outlet therefrom which leads into a mixing chamber, a fuel feed means including a metering device concurrently operated by said control means to introduce fuel into the throat of said structure to be intermixed in said chamber with air passing through said Venturi structure to produce said fuel-air mixture; said variable-Venturi structure including a fixed ring mounted on said casing and having a triangular cross-section with a flattened apex, a plug axially movable within said casing relative to said ring, said plug having a truncated conical shape whose base has a diameter slightly smaller than the diameter of said ring measured across said apex to provide a constricted throat when said base in in line with said apex, said plug having a head whose diameter is small with respect to said apex diameter to provide an enlarged throat when said head is in line with said apex, a guide post coaxially mounted in said casing and cantilevered upper and lower arms extending from a vertical column to support said post, said post passing through a central bore in said plug whereby said plug is slidable on said post between the limits of said arms, said post and said arms being hollow to provide ducts for supplying fuel thereto, said post having jet openings in line with said apex to eject fuel into said throat through slots in said plug;

B. means sensing the rate of air flowing through said Venturi structure as a function of engine demand to produce a control signal dependent thereon;

C. a motor operating said control means; and

D. means responsive to said control signal to govern said motor to adjust said control means in a direction and to an extent maintaining the desired fuel-to-air ratio under varying conditions of engine demand.

4,118,445

SLIDING THROTTLE VALVE TYPE CARBURETOR

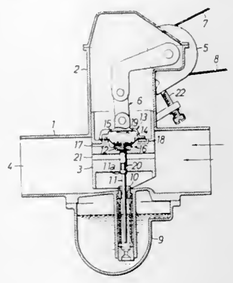
Toshimasa Shishido, Tokyo, and Mitsuaki Ninomiya, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Keihinseiki Seisakusho, Kawasaki and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Dec. 22, 1976, Ser. No. 753,379

Claims priority, application Japan, Mar. 18, 1976, 51-32620[U]

Int. Cl.² F02M 9/06

U.S. Cl. 261—44 B **4 Claims**



1. A carburetor for internal combustion engines of a sliding throttle valve type, comprising: an air intake barrel having an air-intake passage therein, a main nozzle arranged to open into said air-intake passage, a guide cylinder arranged at one side of said air-intake barrel in opposite relation with said main nozzle, a throttle valve slidably fitted in said guide barrel and operable to open and close said air-intake passage, a movable element mounted in said throttle valve for vertical sliding movement relative thereto and operable to control mixture supply from said main nozzle to said air-intake passage, and means for controlling vertical movement of said movable element relative to said throttle valve for displacing said movable element, in response to a negative pressure of a predetermined value and

above in said air-intake passage downstream of said throttle valve generated due to deceleration of an engine associated with said carburetor, relative to said throttle valve in a direction away from said main nozzle so as to increase the amount of mixture fed from said main nozzle to said air-intake passage, said movable element comprising a jet needle having an upper portion slidably fitted in said throttle valve and a tapered lower portion inserted into said main nozzle, said means for controlling vertical movement of said movable element comprising a negative pressure responsive device operatively connected with said jet needle, said throttle valve having a secondary air passage formed therethrough for communication between the upstream side and the downstream side of said air-intake passage, said secondary passage being normally closed and being opened in accordance with upward movement of said jet needle relative to said throttle valve, said jet needle including a cylindrical upper portion slidably fitted in said throttle valve, said cylindrical portion being provided at its periphery with an annular groove which is normally out of register with said secondary air passage, said annular groove being placed into register with said secondary air passage to open the latter when said jet needle has been moved upwardly to a predetermined extent relative to said throttle valve.

4,118,446

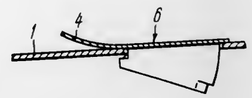
VALVE TRAY FOR MASS-EXCHANGE APPARATUS

Viktor Leontievich Burin, ulitsa Derevyanko, 21a, kv. 26; Anatoly Borisovich Tjutjunnikov, ulitsa Frunze, 17, kv. 34; Viktor Nikolaevich Golosov, ulitsa Sverdlova, 190/9, kv. 53; Evgeny Konstantinovich Tarynin, ulitsa Otakara Yarosha, 41, kv. 17, all of Kharkov; Nikolai Pavlovich Pogorely, Kharkovskoi oblasti, pereulok Merefyansky, 41, Merefa, and Vladimir Matveevich Lukyanenko, ulitsa Levanevskogo, 8, kv. 39, Sumy, all of U.S.S.R.

Filed Aug. 30, 1974, Ser. No. 502,231

Int. Cl.² B01D 3/18

U.S. Cl. 261—114 VT **9 Claims**



1. In a valve tray for a mass-exchange apparatus, a baseplate formed with a plurality of holes through which an upwardly moving fluid is adapted to pass in countercurrent to a downwardly flowing liquid, said baseplate having at each hole opposed upwardly directed surface portions extending along each hole, and a plurality of valves resting on said baseplate respectively over said holes thereof with each valve having on one side an elongated opening-and-closing edge region engaging along its entire length one of said upwardly directed surface portions at each hole of said baseplate when each valve is in its closed position, and each valve having opposite from its opening-and-closing edge region an elongated rocking region engaging along its entire length an upwardly directed surface portion of the baseplate opposite from the surface portion thereof at each hole which is engaged by the opening-and-closing edge region of each valve, each valve having a center of gravity situated over the hole which is closed by each valve when the latter is in its closed position, and said rocking region providing for each valve a turning axis situated at a given distance from the center of gravity of each valve when the latter is in its closed position, said rocking region of each valve having a downwardly directed convexly curved surface which in a plane normal to said turning axis is of a substantially cylindrical configuration and which displaces said turning axis away from said center of gravity to an increasing extent as each valve moves at said opening-and-closing edge region thereof upwardly away from said baseplate during continued opening movement of each valve in response to pressure of upwardly flowing fluid, whereby the moment arm with which the center of gravity of each valve acts to urge each valve back toward its closed position continuously increases with increased opening of each valve so that increased fluid pressures which open said valves to increasing degrees are accompanied by increasing closing moments tending to return the valves to their closed positions.

4,118,447

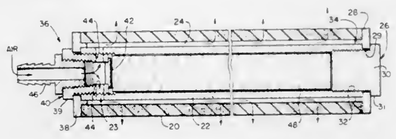
AERATOR CONTAINING A BALLAST CHARGE

Rolf Richter, East Greenwich, R.I., assignor to Xodar Corporation, Greenville, R.I.

Filed Jun. 20, 1977, Ser. No. 807,873

Int. Cl.² B01F 3/04

U.S. Cl. 261—122 **10 Claims**



1. An aeration diffuser, comprising in combination: an elongate, substantially tubular and stiff outer member formed of a gas permeable material, and a tubular inner member containing a ballast charge for holding the diffuser submerged in a pool of water, said inner member being disposed within said outer member and spaced from the surrounding wall of said outer member;

a first end cap closing one end of said outer member and mechanically supporting one end of said inner member in spaced relation with said outer member; and

a combination second end cap and inlet assembly closing the other end of said outer member and mechanically supporting the other end of said inner member in spaced relation with said outer member; said end cap and inlet assembly being adapted for connection to a source of compressed air.

4,118,448

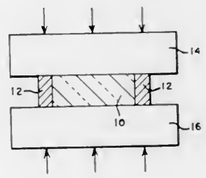
PREPARATION OF HIGH STRENGTH HALIDE BODIES

Rogers H. Anderson, Long Lake, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 634,394, Nov. 24, 1975, abandoned, which is a continuation of Ser. No. 445,371, Feb. 25, 1974, abandoned. This application May 26, 1977, Ser. No. 800,675

Int. Cl.² C04B 35/64

U.S. Cl. 264—1 **13 Claims**



1. A method of forming a fine-grained halide optical element, the method comprising:

heating an essentially single crystal alkali halide body to a temperature at which essentially generalized flow can occur but not so high that substantial grain growth occurs during processing;

applying compressive force to the halide body to reduce the dimension of the halide body along a first axis and producing a corresponding expansion of the halide body in direc-

tions other than along the first axis thereby producing a fine-grained structure in the halide body; and,

constraining the halide body in directions other than along the first axis, during the heating and applying force steps from the commencement of applying compressive force, to inhibit crack formation in the halide body.

4,118,449

METHOD OF MAKING A CELLULOSE ACETATE LOW DENSITY MICROCELLULAR FOAM

James A. Rinde, Livermore, Calif., assignor to The United States of America as presprented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 609,641, Sep. 2, 1975, Pat. No. 4,012,265. This application Dec. 9, 1976, Ser. No. 749,205

Int. Cl.² B29D *27/00*

U.S. Cl. 264—28 **9 Claims**

1. A method for making a cellulose acetate foam having a density in the range of 0.065 to 0.6 $\times$ 10^3 kg/m^3 and a cell size in the range of 0.3 to 2μm comprising the steps of: forming a polymer solution by dissolving a cellulose acetate polymer in a solution consisting of anhydrous magnesium perchlorate anhydrous constituting a swelling agent, water constituting a non-solvent, and ethyl lactate and acetone constituting solvents such that the cellulose acetate is in the range of from 3% to not greater than 22%; shaping the solution; gelling the thus shaped polymer solution by directing same into a water bath maintained at a temperature of 0°–10° C.; soaking the shaped gel in a water bath having a temperature of about 0°–30° C. for sufficient time to substantially diffuse out solvents and swelling agents; freezing the thus soaked gel; and freeze-drying the shaped gel wherein water and solvents sublime and the gel structure solidifies into foam having a cell size ranging from 0.3 to 2μm and a density in the range of 0.065 to 0.6 $\times$ 10^3 kg/m^3.

4,118,450

METHOD FOR PRODUCING INORGANIC POROUS SHAPED MATERIAL

Ryuji Nakamura, Mino, and Hideo Motogi, Ibaragi, both of Japan, assignors to Shikoky Kaken Kogyo Kabushiki Kaisha, Ibaragi, Japan

Continuation-in-part of Ser. No. 469,871, May 14, 1974, abandoned. This application Oct. 27, 1976, Ser. No. 736,233

Int. Cl.² C04B *35/64*

U.S. Cl. 264—43 **7 Claims**

1. A method for producing an inorganic porous shaped product comprising the steps of mixing silica dust with water, shaping the mixture, drying the shaped product to adjust the water content thereof to 1 to 10 weight percent and thereafter firing the shaped product at a temperature of 1000° to 1450° C., said silica dust being:

(i) a by-product from the process of producing ferrosilicon by electrothermal metallurgy, and

(ii) 0.1 to 1.0μ in particle size, 10 to 50 m^2/g in specific surface area and about 0.1 to about 0.3 g/cm^3 in bulk density,

and comprising 85 to 98 weight percent of amorphous silica, 0.2 to 2.0 weight percent of FeO, 0.2 to 5.0 weight percent of Al_2O_3, 0.5 to 2.0 weight percent of MnO, 0 to 0.1 weight percent of CaO, 0.5 to 5.0 weight percent of MgO and 0.1 to 1.5 weight percent of others.

4,118,451

METHOD OF CONTROLLING FOAMING OF CABINET INSULATION

John Joseph Schaus, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

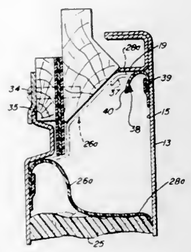
Filed May 2, 1977, Ser. No. 793,074

Int. Cl.² B29D *27/04*

U.S. Cl. 264—46.5 **15 Claims**

1. The method of controlling the forming of a foamed-in-place insulation in a cabinet structure having an inner liner and an outer shell, said liner having an outer surface and said shell having an inner surface in outwardly spaced confronting relationship to said outer surface to define an insulating space therebetween having a front opening, said method comprising the steps of:

securing a first portion of a deflectible sheet to one of said surfaces adjacent said opening with the remainder of the sheet being free for movement, said sheet having a stiffness preselected to cause said remainder of the sheet to project away from said one surface;



inserting said liner into said shell to define said insulation space therebetween; and

introducing expandable foam insulating material into said insulation space to foam therein so as to substantially fill said insulation space and concurrently deflect said remainder of the sheet toward said front opening and into engagement with the other of said surfaces, said sheet extending between said liner and shell surfaces to define an outer boundary of the foamed insulation fully across said opening.

4,118,452

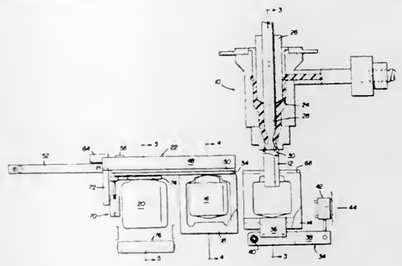
TWO-STAGE PROCESS FOR INDUSTRIAL BLOW MOLDING

Robert A. Myers, Sylvania, and Albert R. Uhlig, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 558,952, Mar. 17, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,196

Int. Cl.² B29C *17/07*

U.S. Cl. 264—89 **3 Claims**



1. In a method of blow molding, the steps of:

(1) extruding a pendant tubular parison from an orifice located above and in vertical alignment with a pre-form blow mold,

(2) interposing a transfer mechanism between the orifice and the pre-form blow mold, the transfer mechanism being movable in a horizontal plane relative to said pre-form blow mold and said orifice;

(3) substantially simultaneously (a) engaging the parison intermediate the orifice and the pre-form blow mold with the transfer mechanism, and (b) closing the pre-form blow mold on that portion of said parison beneath said transfer mechanism,

(4) severing the parison at the orifice and blowing the parison to a blown pre-form interiorly of said preform blow mold;

(5) opening the pre-form blow mold to expose the blown preform still engaged by the transfer mechanism and freely pendant therefrom,

(6) horizontally moving the transfer mechanism and the blown pre-form from alignment with the pre-form blow mold and into alignment with an open final blow mold,

(7) closing the final blow mold onto the blown pre-form still engaged by and still pendant from said transfer mechanism,

(8) releasing the pre-form form the transfer mechanism after the performance of Step (7),

(9) again interposing the transfer mechanism between the orifice and the pre-form blow mold, for engagement with a subsequently extruded parison, and

(10) blowing the blown pre-form interiorly of said final blow mold.

4,118,453

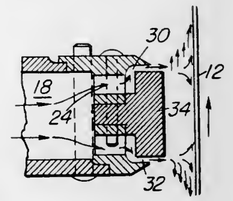
METHOD AND APPARATUS FOR THE EXTRUSION OF TUBULAR THERMOPLASTIC FILM

F. John Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 30, 1976, Ser. No. 718,692

Int. Cl.² B29D *23/04*

U.S. Cl. 264—89 **4 Claims**



1. In a process for the production of thermoplastic film by melting a thermoplastic material, extruding the molten thermoplastic material through an annular die to form an extruded tube of molten material, cooling the extruded tube while drawing the tube so cooled, expanding the tube to attenuate the walls thereof by introducing a gas to the interior of the tube, and flowing a cooling gas in contact with the outer surface of said tube from a plurality of circular pairs of annular zones about said extruded tube spaced along the axis thereof and being of increasing diameter in the direction away from the point of extrusion as aforesaid; the improvement whereby flutter of the expanding film tube is reduced during expanded cooling thereof which comprises directing separate pairs of cooling gas confined streams against said film on each side of a shape restricting surface which extends beyond the discharge boundaries of the discharged confined streams, said cooling gas passed in contact with the outer surface of said film tube at each of said shape restricting surfaces to produce a positive gas pressure zone between said surface and said film material and withdrawing said cooling gas from such contact between each pair of adjacent cooling gas inlets.

3. In apparatus for the production of blow plastic material comprising an annular die, means to supply molten thermoplastic material to said die under pressure to force said material through said die and thereby generate a moving tube of said material, means to introduce a gas under pressure within said moving tube to expand said tube to a bubble of film and attenuate the walls thereof, a series of cooling and shape imposing ring surfaces about said bubble of film concentric therewith and of increasing diameter in the direction of movement of said tube of material from adjacent said die to adjacent a downstream point of said expanded bubble at which said material has cooled to a film state of substantial dimensional stability; the improvement which comprises providing cooling gas annular outlet slots each side of said rings formed to present a flat annular restricting surface for the expanding bubble of film, walls defining a plenum chamber about said annular restricting surface for supplying cooling gas to said annular outlet slots, said flat ring surface extending slightly beyond the discharge boundary of said annular slots, flowing cooling gas through said annular slots each side of said flat restricting surface sufficient to maintain a zone of cooling gas between said flat surface and said film under positive pressure conditions and collecting and withdrawing cooling gas so introduced between rings arranged as above provided.

4,118,454

METHOD FOR PRODUCING TRANSPARENT PLASTIC MOLDED ARTICLES

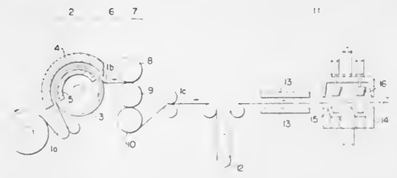
Kyosuke Miki, Yokohama, and Masahiro Takeuchi, Yamato, both of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Aug. 27, 1976, Ser. No. 718,325

Claims priority, application Japan, Sep. 2, 1975, 50-105614; Sep. 2, 1975, 50-105615

Int. Cl.² B29C *17/04*

U.S. Cl. 264—93 **9 Claims**



1. A method for producing a transparent polypropylene molded article comprising heating a polypropylene sheet to a temperature not lower than the melting point of the sheet, stretching the sheet at said temperature at a stretching ratio of at least 5%, rapidly cooling it to a temperature of not more than 120° C., and then subjecting the thus treated sheet to thermoforming including reheating to and forming at a temperature below the melting point of the sheet.

4,118,455

SOFT RUBBER STEERING WHEEL, COMPOSITION AND METHOD OF MANUFACTURE

James H. Byrn, Portland, Ind., assignor to Sheller-Globe Corporation, Toledo, Ohio

Filed Feb. 24, 1977, Ser. No. 771,791

Int. Cl.² B29H *3/08, 19/00;* **B62D** *1/04*

U.S. Cl. 264—129 **5 Claims**

1. A method of forming a cover on a steering wheel of the type having a hub, spokes and an annular metal core, comprising the steps of furnishing a compound having the following ingredients:

Ingredient	Preferred Range (Parts by Weight)
[SBR] cold type oil-extended styrene butadiene rubber	100–135
[SBR] cold type styrene butadiene rubber	10–25
Whole Tire Reclaim	5–25
(Non-staining)	10–40
[Dixie Clay] kaolin	20–80
[FEF Black] carbon black	3–6
Sulfur	1–10
Zinc Oxide	0.1–2.0
[Altax] benzothiazyl disulfide	

-continued

Ingredient	Preferred Range (Parts by Weight)
[Cumate] copper dimethyl dithiocarbamate	0.1–2.0
[Circosol 450 Oil] naphthenic oil	20–60

and injection molding said compound around said core to form a rim section cover on the steering wheel.

3. A soft rubber composition for use in the manufacture of steering wheel rim covers comprising the following:

Ingredient	Preferred Range (Parts by Weight)
[SBR] cold type oil-extended styrene butadiene rubber	100–135
[SBR] cold type styrene butadiene rubber	10–25
Whole Tire Reclaim (Non-staining)	5–25
[Dixie Clay] kaolin	10–40
[FEF Black] carbon black	20–80
Sulfur	3–6
Zinc Oxide	1–10
[Altax] benzothiazyl disulfide	0.1–2.0
[Cumate] copper dimethyl dithiocarbamate	0.1–2.0
[Circosol 450 Oil] naphthenic oil	20–60

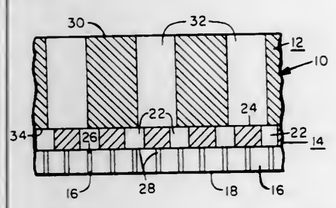
4. A steering wheel having a hub, spokes radiating from said hub, an annular metal core secured to the outer ends of said spokes, and a cover on said core having the following composition:

Ingredient	Preferred Range (Parts by Weight)
[SBR] cold type oil-extended styrene butadiene rubber	100–135
[SBR] cold type styrene butadiene rubber	10–25
Whole Tire Reclaim (Non-staining)	5–25
[Dixie Clay] kaolin	10–40
[FEF Black] carbon black	20–80
Sulfur	3–6
Zinc Oxide	1–10
[Altax] benzothiazyl disulfide	0.1–2.0
[Cumate] copper dimethyl dithiocarbamate	0.1–2.0
[Circosol 450 Oil] naphthenic oil	20–60

4,118,456
EXTRUSION DIE

Wendell S. Blanding, Painted Post, and Robert V. Van Dewoestine, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 20, 1977, Ser. No. 808,153
Int. Cl.² B29F 3/00
U.S. Cl. 264—177 R **9 Claims**



1. An extrusion die for forming honeycomb structures comprising, a first body member having an inlet face and an outlet face, a plurality of interconnected discharge slots formed in said first body member and communicating with said outlet face, a plurality of relatively short feed holes of limited diameter formed in said body member and communicating between selected intersecting portions of said interconnected discharge slots and said inlet face, a second body member having an entrance face and an exit face, a plurality of relatively long, individual, spaced-apart feed passageways extending through said second body member between said entrance face and said exit face of a diameter larger than the diameter of said relatively short feed holes formed in said first body member, said first and second body members being joined together with the exit face of said second body member adjacent the inlet face of said first body member to form an integral extrusion die, and each of said individual feed passageways formed through said second body member directly communicating with a plurality of said feed holes formed in said first body member which in turn communicate with selected intersecting portions of said interconnected discharge slots.

6. A method of extruding a honeycomb structure having thin wall portions not exceeding about 0.05" which comprises, providing extrudable batch material to the inlet end of a plurality of relatively long, individual, spaced-apart feed passageways having relatively large diameters, longitudinally flowing for a relatively long distance such batch material through said relatively large diameter feed passageways, flowing such batch material from each of said relatively large individual feed passageways directly into a plurality of relatively short and relatively small diameter feed holes, continuing the longitudinal flow of such batch material for a relatively short distance through said relatively small diameter feed holes to the intersections of a plurality of interconnected discharge slots, simultaneously flowing such batch material transversely between the intersections of such slots to form a coalesced gridwork-like mass of such material and longitudinally of such slots before discharging said gridwork-like mass from said slots, and discharging such mass from said slots to form a cellular honeycomb structure.

4,118,457
REDOX URANIUM ISOTOPE SEPARATION USING ANION EXCHANGERS

Maomi Seko; Tetsuya Miyake, both of Tokyo; Kunihiko Takeda, Yokohama; Akihiko Ikeda, Yokohama, and Kazuo Imamura, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1976, Ser. No. 687,844
Claims priority, application Japan, Jun. 3, 1975, 50-66884
Int. Cl.² B01D 59/30
U.S. Cl. 423—7 **9 Claims**

1. In a process for separation of uranium isotopes by displacing at least one redox boundary formed between an adsorption zone of uranium isotope mixture and a reducing agent or an oxidizing agent through a system of anion exchanger while conducting a redox reaction at said boundary thereby to concentrate at least one isotope in the region near said boundary, the improvement which comprises using as anion exchange an anion exchanger particle with a size of 1 mm or less in diameter compris- a three-dimensionally crosslinked polymer containing functional groups having anion exchange capacity of 0.2 milliequivalents or more per gram of dry resin and having a self-diffusion coefficient of uranyl ion of at least 1×10^{-7} cm²/sec.

4,118,458
SEPARATING MAGNESIUM AND CALCIUM FROM MINERAL MIXTURES CONTAINING ZINC SULPHIDES

Murry C. Robinson, 178 Brookbanks Dr., Don Mills, Ontario, Canada

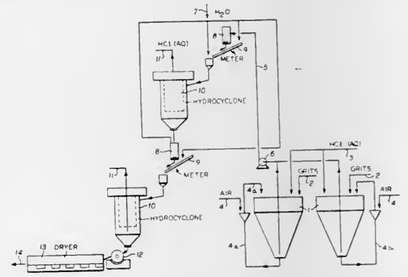
Continuation of Ser. No. 359,322, May 11, 1973, abandoned. This application Sep. 19, 1977, Ser. No. 834,744
Claims priority, application United Kingdom, May 12, 1972, 22521/72
Int. Cl.² C01G 9/08
U.S. Cl. 423—109 **7 Claims**

1. The process for treating a mineral mixture containing zinc sulphides and at least one of magnesium and calcium in the form of carbonates, oxides or hydroxides to effect separation of at least a part of said magnesium and calcium constituents from said zinc sulphides which comprises leaching said mineral mixture with an aqueous sulphur dioxide bearing solution at a temperature below 100° C. to put magnesium and calcium into solution as bisulphites, continuously adding sulphur dioxide to said solution during said leaching at a rate sufficient to maintain the pH thereof at a level within the range of about 1.7 to about 2.5, maintaining the total sulphur dioxide content of the leach slurry at a level to dissolve magnesium and calcium at a preferential rate as compared to the rate of dissolution of zinc in said zinc sulphides, said total sulphur dioxide content level being between about 90 and about 45 g/l when the pH is about 1.7 and between about 20 g/l when the pH is about 2.5, and containing said leaching with said sulphur dioxide addition to produce a solution containing dissolved magnesium and calcium bisulphites and a residue containing the major portion of said zinc sulphides in concentrated form and recovering said solution and residue as separate products.

4,118,459
CHEMICALLY REMOVING IRON FROM GRITS

Wilhelm Falkenhain, Niederkassel-Ranzel, and Ernst Feder, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bez. Koeln, Germany

Continuation of Ser. No. 492,810, Jul. 29, 1974, abandoned. This application Feb. 7, 1977, Ser. No. 766,420
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1973, 2338937
Int. Cl.² C01G 49/02, 53/10
U.S. Cl. 423—142 **13 Claims**



1. In a process of removing iron from grits of brown or white corundum, silicon carbide, zirconium corundum or garnet having a Mohs hardness of 7 to 9, with hydrochloric acid wherein:

(a) a mixture of the grits and aqueous hydrochloric acid is agitated for removal of the iron from the grits and the provision of a first suspension of the grits in an aqueous hydrochloric acid medium in which the iron is dissolved, and the aqueous hydrochloric acid medium is removed from the grits, the improvement which comprises passing the grits serially through at least two hydrocyclones having no moving parts, adding water to the feed to each hydrocyclone, and in each hydrocyclone separating aqueous hydrochloric acid and forming a specifically heavier fraction containing the grits,

(b) for the first hydrocyclone separation, adding water to said first suspension to form a second suspension and feeding the second suspension tangentially into the first hydrocyclone for centrifuging the second suspension in the first hydrocyclone and thereby separating therefrom a specifically lighter fraction rich in the hydrochloric acid and a first specifically heavier fraction rich in grits, the first specifically heavier fraction being removed from the bottom of the hydrocyclone,

(c) for the second hydrocyclone treatment, adding water to said first specifically heavier fraction to form a third suspension and feeding the third suspension tangentially into a second hydrocyclone for centrifuging the third suspension in the second hydrocyclone and thereby separating the third suspension into a second specifically lighter fraction rich in hydrochloric acid and a second specifically heavier acid-free fraction rich in grits, the second specifically heavier acid-free fraction being removed from the bottom of the second hydrocyclone, and

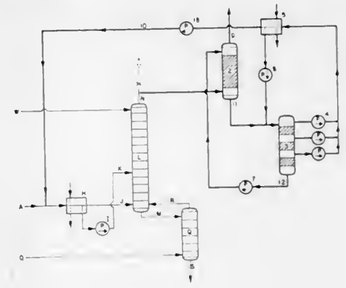
(d) the specifically heavier fraction produced in last hydrocyclone is filtered for preliminary dewatering to provide a filter cake containing the grits and the filter cake is dried to provide dried grits substantially free of iron,

(e) said first suspension is continuously supplied to step (b) and the subsequent steps are performed continuously.

4,118,460
REMOVAL OF NITROGEN OXIDES FROM INDUSTRIAL GASES BY USE OF OXIDIZING SOLUTIONS IN WHICH NITRATES ARE THE OXIDANTS

Donald W. Bolme, c/o Donald W. Bolme & Associates, 10655 NE. 4th St., Bellevue, Wash. 98004

Division of Ser. No. 548,104, Feb. 7, 1975, Pat. No. 4,053,555, and a continuation-in-part of Ser. No. 259,402, Jun. 5, 1972, abandoned. This application Aug. 22, 1977, Ser. No. 826,638
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.
Int. Cl.² B01D 53/34
U.S. Cl. 423—235 **21 Claims**



1. A method of removing the sparingly soluble compound nitric oxide from industrial gases comprising an admixture of said nitric oxide and at least one other gas and recovering said nitric oxide in concentrated form, said process including the steps of: oxidizing the nitric oxide to the soluble trivalent state by so contacting it with an aqueous, nitrate ion containing solution as to effect the reaction

$$2NO + NO_3^- + H_2O \rightarrow 3NO_2^- + 2H^+;$$

dissolving the trivalent material in the water present in said solution to thereby separate the trivalent material from said gases; and stripping the dissolved trivalent nitrogen material from the aqueous solution, the concentration of nitrate ion in said solution being maintained in the range of 1–11.5 normal during the aforesaid steps to inhibit the decomposition of the dissolved trivalent material and the oxidation of the nitric oxide past the trivalent state, thereby maximizing the separation of the nitric oxide from the admixture.

4,118,461

1-SUBSTITUTED ARALKYL IMIDAZOLES

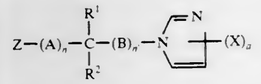
George A. Miller, Maple Glen, and Hak-Foon Chan, Doylestown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 642,041, Dec. 8, 1975, which is a continuation-in-part of Ser. No. 547,291, Feb. 5, 1975, abandoned. This application Nov. 12, 1976, Ser. No. 741,441

Int. Cl.[2] A61K *31/415;* C07D *233/58*

U.S. Cl. 424—273 R 5 Claims

1. A compound of the formula



wherein Z is [(C_5-C_{14})aryl or (C_5-C_{14})aryl] phenyl, naphthyl, biphenyl, acenaphthenyl, indanyl, furyl or thienyl or phenyl substituted with up to three substituents selected from the group consisting of chloro, fluoro, bromo, iodo, methyl, ethyl, methoxy, ethoxy, nitro, amino, methylthio and trihalomethyl; R^1 and R^2 taken together with the carbon atom to which they are attached form (C_3-C_8) cycloalkyl; A and B are divalent (C_1-C_5)alkylene groups; X is (C_1-C_4) alkyl, halogen or nitro; *a* is 0 to 3; *n* is 0 or 1; *n'* is 0 or 1; and *n* plus *n'* is 1 or 2 and the agronomically acceptable acid addition salts thereof.

2. A method for controlling phytopathogenic fungi which comprises applying to a plant, to plant seeds or to the plant habitat an effective amount of a compound of claim 1.

4,118,462

PROCESS FOR THE PREPARATION OF PURIFIED PHOSPHORIC SOLUTIONS FROM PHOSPHORIC ACID

Pierre Desire, Les Roches de Condrieu, and Jacques Helgorsky, Frepillon, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 549,470, Feb. 13, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,626

Claims priority, application France, Feb. 1, 1974, 74 03399

Int. Cl.[2] C01B *25/16, 15/16, 25/26*

U.S. Cl. 423—321 S 15 Claims

1. A process for the preparation of pure phosphoric acid solutions from impure wet process phosphoric acid with a recovery of at least 95% of the phosphoric acid containing a small amount of sulphuric acid comprising the steps of subjecting the impure phosphoric acid containing water and sulphuric acid to liquid-liquid contact with a substantially water immiscible aliphatic C_4-C_8 alcohol which extracts most of the phosphoric acid and some of the sulphuric acid and separates from the aqueous phase as a solvent phase, separating the organic solvent phase from the aqueous phase, subjecting the separated organic solvent phase to liquid-liquid contact with an aqueous solution containing phosphate ions and calcium ions to precipitate out $SO_4^=$ as calcium sulphate, subjecting the organic solvent phase which still contains the phosphoric acid in solution to liquid-liquid contact with an aqueous phase whereby the purified phosphoric acid transfers from the organic solvent phase to the aqueous phase, and separating the aqueous phase containing the purified phosphoric acid from the organic solvent phase.

4,118,463

PREPARATION OF HIGHLY ALKALINE SILICATES

Frank J. Lazet, Media, Pa.; D. John Meador, Utica, and Richard G. Webster, Peiu, both of Ill., assignors to PQ Corporation, Valley Forge, Pa.

Filed Jun. 7, 1977, Ser. No. 804,485

Int. Cl.[2] C01B *33/32*

U.S. Cl. 423—334 9 Claims

1. A process for producing highly alkaline alkali metal silicate having 0.75 to 1.5 moles of SiO_2 per mole of M_2O wherein M stands for sodium or potassium said process comprising the steps of:

(a) forming a bed of said alkali metal silicate within the bed area of an open hearth furnace, said bed being equipped with bubbling means positioned around the periphery of the bed area extending a distance above the floor of said furnace, sufficient amounts of said alkali metal silicate being used so that the level of the silicate is within 2 inches of the level of the bubbling means;

(b) raising the temperature within the furnace to 2000° F. or higher;

(c) supplying a gas under pressure to said bubbling means thereby activating them;

(d) charging raw materials in the proper proportion to the central portion of said furnace bed through an insulated chute, said raw materials consisting of a source of silica and a source of alkali metal;

(e) maintaining the temperature within the furnace at 2000° F. or higher thereby melting the raw materials and forming a molten pool upon the silicate bed with gas bubbles eminating from said activated bubbling means breaking the surface;

(f) continuing to charge the said raw materials to the central part of the furnace through said insulated chute, said raw materials floating on said pool of molten silicate until they melt and react, said unmelted raw materials being confined to the central portion of the furnace bed by said gas bubbles breaking the surface of the molten silicate; and

(g) drawing the molten silicate from the furnace to recover the product.

4,118,464

PROCESS FOR SEPARATING SILICA FROM SILICATE-BEARING MATERIALS

Ivan B. Cutler, Centerville, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Feb. 7, 1977, Ser. No. 766,157

Int. Cl.[2] C01B *31/36*

U.S. Cl. 423—346 11 Claims



1. A process for treating a silicate-bearing material to remove therefrom at least a portion of the silicon comprising the steps of:

obtaining a quantity of silicate-bearing material;

analyzing the silicate-bearing material to determine the silica content of the silicate-bearing material as a basis for calculating the amount of carbon necessary to reduce at least a portion of the silica to silicon monoxide without forming silicon carbide;

admixing a predetermined first quantity of carbon with the silicate-bearing material to form a first solid phase, the first carbon being present in the first solid phase in an amount sufficient to reduce at least said portion of silica to silicon monoxide, said first carbon being less than a stoichiometric amount to form silicon carbide upon reaction between the first carbon and said portion of the silica in the silicate-bearing material as indicated by the analyzing step;

dispersing the first solid phase in a second solid phase comprising a second carbon by pelletizing the first solid phase thereby forming a solids reaction mixture;

heating the solids reaction mixture under a nonreactive atmosphere to a temperature above about 1200° C thereby reducing said portion of the silica to silicon monoxide with the first carbon in the first solid phase;

diffusing the silicon monoxide as a gaseous phase from the first solid phase into the second solid phase; and

reacting the gaseous silicon monoxide with the second carbon in the second solid phase to form silicon carbide, the silicon carbide thereby becoming part of the second solid phase.

4,118,465

PROCESS FOR THE PREPARATION OF SODIUM PERCARBONATE AS REGULAR RHOMBOHEDRAL CRYSTALS

Jean Malafosse, Sassenage, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 23, 1977, Ser. No. 780,347

Claims priority, application France, Mar. 29, 1976, 76 08989

Int. Cl.[2] C01B *15/10*

U.S. Cl. 423—415 P 15 Claims

2. A process for the preparation of the sodium percarbonate in the form of regular rhombohedral crystals by reaction of concentrated hydrogen peroxide and a suspension of sodium carbonte decahydrate at least partly in the rhombohedral form, comprising

preparing the decahydrate suspension by dissolving solid anhydrous carbonate in residual liquor obtained from an earlier batch crystallization of the percarbonate and bringing the decahydrate suspension to a temperature of at least 37° C. by utilizing the dissolution heat of the anhydrous carbonate,

cooling the decahydrate suspension and initiating the crystallization of the decahydrated carbonate at a temperature lower than or equal to 32° C., said decahydrate suspension further comprising sulfate ion $SO_4^=$ and a crystallization modifier polymer having a large number of carboxyl groups selected from the group consisting of polycarboxylic polymers and copolymers of maleic anhydride, maleic acid and fumaric acid, adding the hydrogen peroxide and lowering the temperature down to a level such that the solid phase present represents from 15 to 40% of the two-phase mixture.

4,118,466

PROCESS FOR THE PRODUCTION OF COMPACT, COARSE SODIUM PERCARBONATE

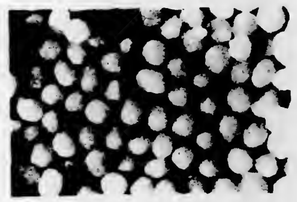
Hans Klebe, Rheinfelden; Gerd Knippschild, Wehr, and Hubert Schuster, Karsau-Beuggen, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Sep. 27, 1977, Ser. No. 837,220

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644147

Int. Cl.[2] C01B *15/10*

U.S. Cl. 423—415 P 8 Claims



1. A process for preparing compact, coarse abrasion resistant sodium percarbonate comprising employing a solution saturated in sodium percarbonate and also containing (1) sufficient sodium carbonate that there is present sodium carbonate decahydrate as a solid phase, (2) sodium chloride in an amount of 100 to 200 grams per liter, (3) an active oxygen stabilizer and (4) sodium hexametaphosphate in an amount of 0.1 to 1.9 grams per liter, adding hydrogen peroxide in an amount about equivalent to the sodium carbonate to thereby form a solution supersaturated in sodium percarbonate, breaking down the supersaturation during the addition of the hydrogen peroxide and for a period of time up to 60 minutes thereafter, the entire process being carried out at a substantially constant temperature between 10° and 20° C and thereafter separating the sodium percarbonate precipitated from the supersaturated solution and drying the separated sodium percarbonate.

4,118,467

TREATMENT OF GAS CONTAINING HYDROGEN SULFIDE

Masaru Sano, Tokyo, and Koji Kashima, Yokohama, both of Japan, assignors to Nittetu Chemical Engineering Ltd. and Toa Oil Co., Ltd., both of Tokyo, Japan

Filed Mar. 16, 1978, Ser. No. 887,364

Claims priority, application Japan, Mar. 24, 1977, 52-31498

Int. Cl.[2] C01B *17/04*

U.S. Cl. 423—573 R 7 Claims

1. In a process for treating a hydrogen sulfide-containing gas, in which said gas is washed with an alkali wash solution to absorb said hydrogen sulfide as hydrosulfide, the solution containing hydrosulfide being oxidized using an oxidizer-anthraquinone disulfonate system to convert said hydrosulfide into elemental sulfur, said elemental sulfur being removed therefrom to obtain a salt solution comprising sulfur compounds and the disulfonate, the improvement comprising:

a first stage wherein at least a portion of said salt solution is concentrated so as to form a concentrate having a sodium ion concentration of at least about 9 g.mol/Kg H_2O, the disulfonate being allowed to precipitate from said concentrate at a temperature of about 25° to 90° C. to form a first mixture, said first mixture being separated into a first solids rich phase containing said precipitated disulfonate and a first mother liquid phase; and

a second stage wherein said first liquid phase is cooled to a temperature not higher than 10° C. to allow the sulfur compounds to precipitate to form a second mixture, said second mixture being separated into a second solids rich phase containing said precipitated sulfur compounds and a second liquid phase.

4,118,468

TECHNETIUM-99M-LABELLED DIAGNOSTIC AGENT FOR KIDNEY SCANNING AND PROCESS FOR ITS MANUFACTURE

Helmut Strecker, Seeheim; Reinhard Käsmarker, Hofheim, and Gerhard Kloss, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 12, 1976, Ser. No. 741,397

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1975, 2551480

Int. Cl.[2] A61K *29/00, 43/00*

U.S. Cl. 424—1 10 Claims

1. A method for making a diagnostic agent for visualization of the kidneys, which method comprises mixing a buffer solution of pyrrolidinomethyl-tetracycline, said solution having an initial pH between 5.0 and 6.5, with a tin (II)-salt in a molar ratio of 10 to 100 mols of pyrrolidinomethyl-tetracycline per gram atom of tin (II) to give a first mixture, and then combining said first mixture with technetium-99m pertechnate in physiological sodium chloride solution to yield a second mixture having a final pH from 4 to 8.

4,118,469

ANTIGEN FOR TRACHOMA LYMPHOGRANULOMA VENEREUM (LGV) AND NON-GONOCOCCAL URETHRITIS (NGU)

Harlan D. Caldwell; Cho-Chou Kuo, and George E. Kenny, all of Seattle, Wash., assignors to Research Corporation, New York, N.Y.

Filed Apr. 27, 1976, Ser. No. 680,927
Int. Cl.[2] G01N *33/16;* **A61K** *43/00*
U.S. Cl. 424—1 **18 Claims**

1. *Chlamydia trachomatis* specific antigen useful for the serological diagnosis of lymphogranuloma venereum, said antigen having a molecular weight of about 160,000, being stable to ribonuclease and deoxyribonuclease and at a pH in the range 2.2–10.6 but whose antigenicity is destroyed by protease treatment and heating at a temperature of 56° C. for about 30 minutes.

4,118,470

NORMALLY-SOLID, BIOABSORBABLE, HYDROLYZABLE, POLYMERIC REACTION PRODUCT

Donald James Casey, Ridgefield, and Martin Epstein, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 691,749, Jun. 1, 1976, Pat. No. 4,048,256. This application May 5, 1977, Ser. No. 793,986
Int. Cl.[2] A61L *15/03, 17/00;* **A61K** *31/74*
U.S. Cl. 424—19 **2 Claims**

1. A device for the controlled continuous administration of a predetermined dosage of a drug to a living animal comprising the polymeric reaction product of (A) a polyglycolic acid composition and (B) a polyester of diglycolic acid and an unhindered glycol; wherein the amount of (B) used is between about 2% and 50%, by weight, based on the total weight of (A) and (B); wherein (A), before reaction with (B), has a molecular weight of at least 30,000 and (B), before reaction with (A), has a molecular weight sufficiently high so as to provide a polymeric material possessing self-supporting film-forming properties, which has dispersed uniformly throughout said polymeric reaction product, a drug formulation.

4,118,471

STABLE DENTIFRICE

Philip Pensak, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 9, 1977, Ser. No. 804,958
Int. Cl.[2] A61K *7/18;* **B65D** *81/24, 81/26, 85/14*
U.S. Cl. 424—52 **5 Claims**

1. A packaged dentifrice comprising an aluminum tube having no inner lining on the aluminum surface and a dentifrice in said tube comprising an aqueous liquid and solids proportioned to an extrudible creamy mass and dispersed therein a polishing agent of alpha-alumina trihydrate, a fluorine-containing compound in amount to provide about 0.01–1% by weight of fluorine-containing ions and an acidifying agent consisting essentially of saccharin acid, wherein said dentifrice has a pH of about 6.5–8.0.

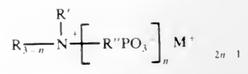
4,118,472

ANTIBACTERIAL ORAL COMPOSITION

Abdul Gaffar, Somerset, and Hollandra P. Niles, Newark, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,714
Int. Cl.[2] A61K *7/22, 7/16*
U.S. Cl. 424—54 **15 Claims**

1. An oral composition comprising an oral vehicle, at least one nitrogen containing antibacterial antiplaque agent selected from the group consisting of cationic bis-guanido and quaternary ammonium antibacterial antiplaque agents and a water soluble quaternary aminoalkylene phosphonic compound of the formula:



wherein R is alkyl, alkenyl, cycloalkyl, or aralkyl, each of up to 20 carbon atoms; R^1 is alkyl or alkenyl, each of up to 20 carbon atoms; R^{11} is alkylene or alkenylene each of up to 6 carbon atoms; *n* is an interger from 1 to 3; and M is an orally acceptable cation.

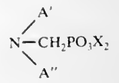
4,118,473

ANTIBACTERIAL ORAL COMPOSITION

Abdul Gaffar, Somerset, and Hollandra P. Niles, Newark, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,716
Int. Cl.[2] A61K *7/22, 7/16*
U.S. Cl. 424—54 **15 Claims**

1. An oral composition comprising an oral vehicle, at least one nitrogen containing antibacterial antiplaque agent selected from the group consisting of cationic bis-guanido and quaternary ammonium antibacterial antiplaque agents and a water soluble N-methylene phosphonate compound of the formula:



wherein A′ is $-CH_2CH_2OH$, $-CH_2COOX$ or $-CH_2PO_3X_2$; A″ is $-CH_2CH_2OH$ or $-CH_2COOX$; A′ equals A″ when A′ is not $-CH_2PO_3X_2$; and X is an orally acceptable cation.

4,118,474

ANTIBACTERIAL ORAL COMPOSITION

Abdul Gaffar, Somerset, and Hollandra P. Niles, Newark, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,717
Int. Cl.[2] A61K *7/22, 7/16*
U.S. Cl. 424—54 **14 Claims**

1. An oral composition comprising an oral vehicle, at least one nitrogen containing antibacterial antiplaque agent selected from the group consisting of cationic bis-guanido and quaternary ammonium antibacterial antiplaque agents and phosphonoacetic acid or an orally acceptable salt thereof.

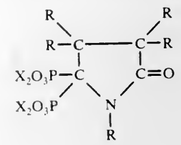
4,118,475

ANTIBACTERIAL ORAL COMPOSITION

Abdul Gaffar, Somerset, and Hollandra P. Niles, Newark, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,715
Int. Cl.[2] A61K *7/22, 7/16*
U.S. Cl. 424—54 **15 Claims**

1. An oral composition comprising an oral vehicle, at least one nitrogen containing antibacterial antiplaque agent selected from the group consisting of cationic bis-guanido and quaternary ammonium antibacterial antiplaque agents and a water soluble diphosphono pyrrolidone compound of the formula:



wherein the R's are independently hydrogen, C_1 to C_6 alkyl or C_2 to C_6 hydroxyalkyl, and X is an orally acceptable cation.

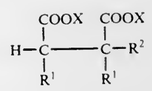
4,118,476

ANTIBACTERIAL ORAL COMPOSITION

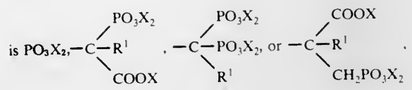
Abdul Gaffar, Somerset, and Hollandra P. Niles, Newark, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,719
Int. Cl.[2] A61K *7/22, 7/16*
U.S. Cl. 424—54 **15 Claims**

1. An oral composition comprising an oral vehicle, at least one nitrogen containing antibacterial antiplaque agent selected from the group consisting of cationic bis-guanido and quaternary ammonium antibacterial antiplaque agents and at least one water soluble phosphoncarboxylate compound of the formula:



wherein R^1 is hydrogen, C_1 to C_4 alkyl or $(CH_2)_{1\text{-}2}COOX$; and R^2



and X is an orally acceptable cation.

4,118,477

HEPATITIS B ANTIGEN

William J. McAleer, Ambler, and Edward H. Wasmuth, Telford, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 768,236, Feb. 14, 1977, abandoned, which is a division of Ser. No. 587,707, Jun. 16, 1975, Pat. No. 4,024,243. This application Sep. 2, 1977, Ser. No. 830,291
Int. Cl.[2] A61K *39/12*
U.S. Cl. 424—89 **5 Claims**

1. A process for multiple loading a density gradient comprising subjecting human biological fluid containing HB_sAg to partial isopycnic banding in a density gradient under conditions effective to pass substantially all of the HB_sAg from the fluid into the density gradient but ineffective to achieve equilibrium, removing the spent fluid and repeating the first step with a fresh sample of fluid at least once.

4,118,478

VACCINE MANUFACTURE FOR ACTIVE IMMUNIZATION CONTAINING HEPATITIS B SURFACE ANTIGEN AND ASSOCIATED ANTIGEN

Alfred M. Prince, Stamford, Conn.; John Vnek, Bronx; Robert A. Neurath, New York, both of N.Y., and Christian Trepo, Bron, France, assignors to The New York Blood Center, Inc., New York, N.Y.

Division of Ser. No. 631,961, Nov. 17, 1975. This application Feb. 24, 1977, Ser. No. 771,728
Claims priority, application France, Mar. 14, 1975, 75 08046
Int. Cl.[2] A61K *39/12;* **C12K** *7/00*
U.S. Cl. 424—89 **3 Claims**

1. A method of manufacturing a vaccine against hepatitis which comprises:

A. Obtaining the blood serum of a chronic carrier of hepatitis BsAg which blood serum contains HBsAg associated particles of a size of 16 to 50 nm of which at least some are in the range of 30–50 nm and is substantially free of anti-HBs and contains e-antigen and abundant Dane particles and which has no dectectable anti-e antibody, at least 1 percent of said particles being characterized by the presence of free, uncombined and unprecipitated e-antigen;

B. Removing other proteinaceous matter from said serum such that the serum contains less that 10% of proteinaceous matter other than that associated with HBsAg or e-antigen;

C. Inactivating any virus in the serum; and

D. Diluting the antigen containing serum with a physiologically acceptable medium.

4,118,479

VACCINE FOR ACTIVE IMMUNIZATION CONTAINING HEPATITIS B SURFACE ANTIGEN AND ASSOCIATED ANTIGEN

Alfred M. Prince, Stamford, Conn.; John Vnek, Bronx; Robert A. Neurath, New York, both of N.Y., and Christian Trepo, Bron, France, assignors to The New York Blood Center, Inc., New York, N.Y.

Filed Nov. 17, 1975, Ser. No. 631,961
Claims priority, application France, Mar. 14, 1975, 75 08046
Int. Cl.[2] A61K *39/12*
U.S. Cl. 424—89 **15 Claims**

1. An antigenic composition against viral hepatitis comprising:

A. Antigenic particles having a particle size in the range of 30 to 50 nm, said antigenic particles containing unprecipitated free hepatitis B surface antigens,

B. Said antigenic composition having less than 10 units of antibodies of heptatitis B surface antigens per 1,000 units of heptatitis B surface antigen,

C. At least 5% of the particles of said antigenic composition in the size range of 30 to 50 nm containing unprecipitated e-antigen,

D. Said HBsAg and said e-antigen being present in said antigenic composition in an amount sufficient to produce antibodies when introduced into a host animal, the balance being a medium which is physiologically acceptable.

4,118,480

PHARMACEUTICAL PREPARATION FOR TREATING HEMORRHOIDS AND ANAL FISSURES

Glenn L. Williams, Lafayette Hill, Pa., assignor to Charles V. Stoelker, Philadelphia, Pa.

Continuation-in-part of Ser. No. 331,081, Feb. 9, 1973, abandoned. This application Aug. 9, 1974, Ser. No. 496,276
Int. Cl.[2] A61K *33/24, 31/47, 31/245, 31/05*
U.S. Cl. 424—131 **2 Claims**

1. A pharmaceutical preparation of treating hemorrhoids and anal fissures, comprising as ingredients in the proportions by weight of about 1.4 to 0.36 parts phenol, 0.7 to 0.18 parts menthol, 10 parts bismuth subnitrate, 10 parts pulverized starch, and 50 parts of 1% dibucaine or 20% benzocaine in an ointment base, the ratio of phenol to menthol being about 2 to 1, said menthol being sufficient in amount to neutralize the unwanted astringent properties of the phenol and less than the amount to cause crystallization of the menthol, the ingredients include and are in the proportions by weight of 0.6 gr phenol, 0.3 gr menthol, 10 gr bismuth subnitrate, 10 gr pulverized starch, and 50 gr of 1% by weight of dibucaine in an ointment base of lanolin and petrolatum.

4,118,481

DEAMINO DERIVATIVES OF THE KALLIKREIN-TRYPSIN INHIBITOR

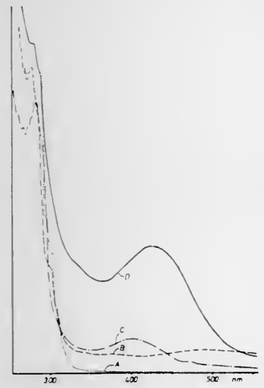
Eugen Schnabel; Horst Dieter Schlumberger; Gerd Reinhardt; Ernst Truscheit, all of Wuppertal, and Harald Tschesche, Groebenzell, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 29, 1977, Ser. No. 792,296

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619246

Int. Cl.[2] A61K *37/00;* **C07C** *103/52;* **C07G** *7/00*

U.S. Cl. 424—177 **14 Claims**



9. A pharmaceutical composition useful in the treatment of diseases caused by overproduction of proteases, comprising a therapeutically or prophylactically effective amount of the deamino kallikrein-trypsin inhibitor obtained from cattle organs having elastace inhibition activity, characterized by

(a) 0 to 3 lysine residues and/or 3 to 6 arginine residues and/or 1 to 4 tyrosine residues; and

(b) the 10- and/or 21-tyrosine residues being unsubstituted or substituted by at least one nitro, nitroso or amino in the ortho position relative to the phenolic hydroxy group, in combination with a pharmaceutically acceptable solid or liquid inert carrier or diluent therefor.

12. A method of treating diseases caused by overproduction of proteases, which comprises administering to the host in need thereof a therapeutically or prophylactically effective amount of the deamino kallikrein-trypsin inhibitor obtained from cattle organs having elastace inhibition activity, characterized by

(a) 0 to 3 lysine residues and/or 3 to 6 arginine residues and/or 1 to 4 tyrosine residues; and

(b) the 10- and/or 21-tyrosine residues being unsubstituted or substituted by at least one nitro, nitroso or amino in the ortho position relative to the phenolic hydroxy group.

4,118,482

PROCESS FOR TREATING NEOPLASTIC DISEASE WITH AZETOMICINS

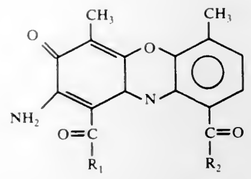
Martin A. Apple, Daly City, Calif., and Joseph V. Formica, Richmond, Va., assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 605,425, Aug. 18, 1975, Pat. No. 4,053,460. This application Jul. 22, 1977, Ser. No. 818,062

Int. Cl.[2] A61K *37/02;* **C07C** *103/52*

U.S. Cl. 424—177 **4 Claims**

1. A method for treating neoplastic disease in mammals comprising administering to a host subject an effective amount of a compound having the formula:



wherein R_1 and R_2 are five membered peptide lactones with the first peptide member counting from the multiple-ringed structure derived from threonine and the fifth peptide member derived from methyl-valine or methyl-isoleucine and with the lactone linkage extending from the first to the fifth member of each said peptide and wherein the third member of at least one of said peptides is selected from the group consisting of an azetidine-2-carbonyl moiety, and pharmacologically suitable and biologically active derivatives of said compound.

4,118,483

PEPTIDES HAVING GONADOLIBERIN ACTIVITY AND PROCESS FOR THEIR MANUFACTURE

Wolfgang König, Hofheim, Rolf Geiger, Frankfurt am Main, and Jürgen Sandow, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 20, 1977, Ser. No. 789,253

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1976, 2617646

Int. Cl.[2] A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **6 Claims**

1.



wherein X is cyclohexyl, adamantyl, or 4,4'-dimethoxybenzhydryl.

4,118,484

METHOD OF TREATING RHEUMATOID ARTHRITIS

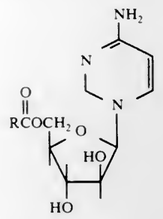
William J. Wechter, Kalamazoo, and Carter D. Brooks, Texas Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 29, 1976, Ser. No. 671,289

Int. Cl.[2] A61K *31/70;* **C07H** *19/08*

U.S. Cl. 424—180 **30 Claims**

1. A method of controlling the inflammatory process in a rheumatoid joint of a mammal which comprises the intra-articular administration to said joint of an effective amount for controlling the inflammatory process of a 5'-O-acyl-ara-cytidine, characterized by having the formula:



wherein R is a radical selected from the group consisting of a straight or branched chain aliphatic radical of from 1 through 20 carbon atoms, an aromatic radical of from 6 through 10 carbon atoms, a monocyclic aliphatic radical of from 4 through 10 carbon atoms, an araliphatic radical of from 7 through 12 carbon atoms, a cage-type hydrocarbon radical containing from 7 through 20 carbon atoms, and including such radicals substituted by halogen, hydroxyl, carboxyl, nitro, alkoxy or mercapto substituent groups, and R when taken together with



is the acyl radical of an aliphatic dicarboxylic acid of from 3 through 8 carbon atom; and being further characterized by having:

(a) an enzymatic hydrolysis rate in human rheumatoid synovial fluid equal to or greater than the enzymatic hydrolysis rate of 5'-O-1-adamantoyl-ara-cytidine, and

(b) an aqueous solubility of less than about 300 μg./ml; or a pharmaceutically acceptable acid addition salt thereof.

4,118,485

NON-THROMBOGENIC MEDICAL ARTICLE AND A METHOD FOR ITS PREPARATION

Jan-Christer Eriksson, Djursholm; Rolf Larsson, Ekero; Åke Rosengren, Enskede, and Maj-Britt Hjelte, Huddinge, all of Sweden, assignors to Aminkemi Aktiebolag, Broma, Sweden

Filed Mar. 15, 1976, Ser. No. 666,943

Claims priority, application Sweden, Mar. 20, 1975, 75/032409

Int. Cl.[2] A61K *31/725;* **C07G** *11/00*

U.S. Cl. 424—183 **25 Claims**

1. A medical article for use in contact with blood having a surface coating containing heparin to prevent thrombosis upon contact with blood, said surface coating also containing Schiff's bases with low solubility formed by the reaction of a dialdehyde and a primary amine, the molecules of said Schiff's bases being interspersed between the heparin molecules having partially blocked anionic groups in said surface coating to prevent substantial release of heparin from said surface coating upon contact with blood.

4,118,486

COMBATING ARTHROPODS WITH O-METHYL-O-N-PROPYL-O-(2-CARBALKOXY-2-ALKOXY-VINYL)-THIONOPHOSPHORIC ACID ESTERS

Fritz Maurer; Hans-Jochem Riebel, both of Wuppertal; Wolfgang Behrenz, Untergruendemich, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

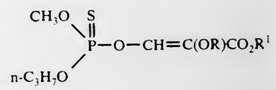
Filed Jul. 28, 1977, Ser. No. 820,061

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1976, 2637008

Int. Cl.[2] A01N *9/36;* **C07F** *9/165*

U.S. Cl. 424—212 **9 Claims**

1. An O-methyl-O-n-propyl-O-(2-carbalkoxy-2-alkoxy-vinyl)-thionophosphoric acid ester of the formula



in which

R and R^1 each independently is alkyl with 1 to 6 carbon atoms.

2. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim **1**.

4,118,487

SUBSTITUTED AZOL-1-YLMETHANES

Erik Regel; Wilfried Draber; Karl Heinz Büchel, and Manfred Plempel, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

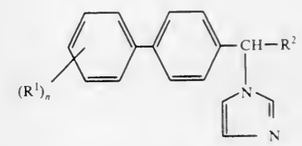
Filed Dec. 5, 1975, Ser. No. 638,274

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1974, 2461406

Int. Cl.[2] A61K *31/41;* **C07D** *233/56, 233/58, 233/60*

U.S. Cl. 424—232 **53 Claims**

1. A compound selected from the group consisting of an imidazole of the formula:



and the pharmaceutically acceptable nontoxic salts thereof, wherein

R^1 is hydrogen, halo, lower alkyl; lower alkoxy, halo(lower alkyl); or phenyl(lower alkyl);

R^2 is lower alkyl, phenyl or phenyl substituted with one or two substituents independently selected from the group consisting of lower alkyl, halo and halo(lower alkyl); and

n is 1, 2 or 3.

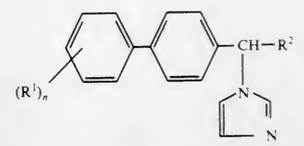
19. The compound according to claim **1** wherein

R^1 is hydrogen;

n is 1; and

R^2 is 2,5-dichlorophenyl.

37. A method of treating mycoses and bacterial infections in humans and animals which comprises administering to a human or animal in need thereof an effective amount of a pharmaceutical composition which comprises an antimycotically effective amount or an antibacterially effective amount of a compound selected from the group consisting of an imidazole of the formula:



and the pharmaceutically acceptable, nontoxic salts thereof, wherein

R^1 is hydrogen; halo; lower alkyl; lower alkoxy; halo(lower alkyl); or phenyl(lower alkyl);

R^2 is lower alkyl; phenyl; or phenyl substituted by one or two substituents independently selected from the group consisting of lower alkyl, halo, and halo(lower alkyl);

n has a value of from 1 to 3,

in combination with a pharmaceutically acceptable, nontoxic, inert diluent or carrier.

4,118,488

4-ANDROSTEN-3-ONES AND PROCESS FOR THE PREPARATION THEREOF

Rainer Philippson, Bergkamen; Bernhard Krieger, Unna; Jorge Casals-Stenzel, Berlin; Ulrich Kerb, Berlin; Wolfgang Losert, Berlin; Klaus Prezewowsky, Berlin; Rudolf Wiechert, Berlin, and Dieter Bittler, Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

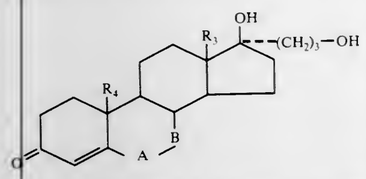
Filed Mar. 3, 1977, Ser. No. 773,982

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1976, 2609694; Mar. 5, 1976, 2609695; Jun. 16, 1976, 2627187; Jun. 16, 1976, 2627186; Sep. 30, 1976, 2644427; Oct. 8, 1976, 2646043

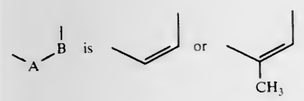
Int. Cl.[2] **C07J** *9/00;* **A61K** *31/56*

U.S. Cl. 424—238 **74 Claims**

60. A pharmaceutical composition comprising, in unit dosage form, and in admixture with a pharmaceutically acceptable carrier, a diuretically effective amount per unit dosage of a 4,6-androstadiene-3-one of the formula



wherein R_3 is methyl or ethyl, R_4 is hydrogen or methyl,



or a physiologically acceptable (a) 17β-hydroxy mono ester thereof, or (b) 17α-(3-hydroxypropyl) mono ester thereof or mono ether thereof, (c) 17β-hydroxy mono ester, 17α-(3-hydroxypropyl) mono ether thereof, or (d) 17β-hydroxy-17α-(3-hydroxypropyl) diester thereof.

4,118,489

INSECTICIDAL 2-(1-(HALOBENZOYL)-1-HYDROXYIMINOMETHYL)-5,6-DIHYDRO-4H-1,3-THIAZINES

Martin Anderson, Whitstable, and Antony G. Brinnand, Sittingbourne, both of England, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 779,646, Mar. 21, 1977, abandoned. This application Dec. 2, 1977, Ser. No. 856,701

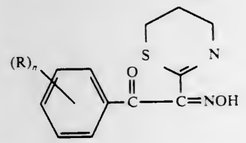
Claims priority, application United Kingdom, Mar. 30, 1976, 12745/76

Int. Cl.[2] **C07D** *279/06;* **A01N** *9/12*

U.S. Cl. 424—246 **3 Claims**

1. An oxime of the formula:

(I)



wherein n is 1, 2 or 3, and R is chlorine or bromine, with the provisos that, relative to the carbon atom of the phenyl ring that is bonded to the carbonyl moiety, when n = 1, the moiety, R, is bonded at a carbon atom at the 3- or 4- position in the ring; when n = 2, the moieties, R, are bonded at the carbon atoms at the 2- and 4- or the 3- and 4- positions in the ring; when n = 3, the moieties, R, are bonded at the carbon atoms at the 2-, 3- and 4- positions in the ring.

2. A method for killing insects of the genus *Spodoptera*, which comprises contacting said insects with an effective amount of a compound of claim **1**.

4,118,490

7-ACYL-3-(SULFONIC ACID AND SULFAMOYL SUBSTITUTED TETRAZOLYL THIOMETHYL)CEPHALOSPORINS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

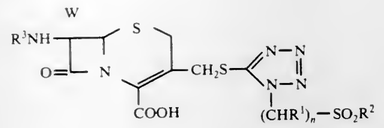
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 687,792, May 19, 1976, Pat. No. 4,048,311, which is a continuation-in-part of Ser. No. 647,394, Jan. 8, 1976, abandoned, which is a continuation-in-part of Ser. No. 559,609, Mar. 18, 1975, abandoned. This application May 11, 1977, Ser. No. 796,052

Int. Cl.[2] **A61K** *31/545;* **C07D** *501/50, 257/04*

U.S. Cl. 424—246 **34 Claims**

1. A compound of the formula:



in which:

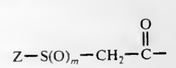
W is hydrogen or methoxy;

each individual R^1 is hydrogen or lower alkyl;

n is 1 to 10;

R^2 is hydroxy, amino, lower alkylamino or di(lower)alkylamino; and

R^3 is an acyl group of the formula:



where:

Z is methyl, trifluoromethyl, trifluoroethyl, cyanomethyl or pyridyl; and

m is 0 to 2, or a non-toxic pharmaceutically acceptable salt.

17. An antibacterial pharmaceutical composition comprising a compound as claimed in claim **1** and a pharmaceutically acceptable carrier therefor.

27. A method of treating bacterial infections comprising administering internally by injection to an infected or susceptible warm-blooded animal an anti-bacterially effective but non-toxic dose of a compound as claimed in claim **1**.

4,118,491

7-ACYL-3-(SULFAMINOALKYL SUBSTITUTED TETRAZOLYLTHIOMETHYL)CEPHALOSPORINS, ANTIBACTERIAL COMPOSITIONS CONTAINING THEM AND METHODS OF TREATING BACTERIAL INFECTIONS WITH THEM

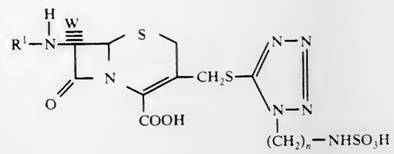
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 665,837, Mar. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 627,164, Oct. 30, 1975, abandoned. This application Jul. 12, 1976, Ser. No. 704,142

Int. Cl.[2] **A61K** *31/545;* **C07D** *501/54, 501/56*

U.S. Cl. 424—246 **22 Claims**

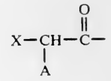
1. A compound of the formula:



in which:

W is hydrogen or methoxy;

R^1 is an acyl group of the formula:



where:

X is thienyl, dihydrophenyl, phenyl or phenyl monosubstituted with hydroxy, hydroxymethyl, formamido, ureido or carboxymethylamino;

A is NH_2, OH, COOH or SO_3H; or formyloxy when X is phenyl; and

n is two to five, or a non-toxic pharmaceutically acceptable salt thereof.

12. An antibacterial pharmaceutical composition comprising a compound as claimed in claim **1** and a pharmaceutically acceptable carrier therefor.

14. A method of treating bacterial infections comprising administering internally by injection to an infected or susceptible warm-blooded animal an antibacterially effective but non-toxic dose of a compound as claimed in claim **1**.

4,118,492

DIURETIC PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE CONTAINING THE SULFURIC ACID HALF-ESTER OF 2,4,7-TRIAMINO-6P-HYDROXYPHENYL PTERIDINE

Karl-Dieter Voelger, Darmstadt; Christian Rietzel, Heidelberg, and Klaus Lehmann, Rossdorf, all of Fed. Rep. of Germany, assignors to Rohm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Mar. 31, 1977, Ser. No. 783,386

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614738

Int. Cl.[2] **A61K** *31/505*

U.S. Cl. 424—251 **3 Claims**

1. The method of inducing diuresis in a patient requiring the same, which method comprises orally, parenterally, or intravenously administering to said patient a diuretically effective amount of the sulfuric acid half ester of 2,4,7-triamino-6-p-hydroxyphenyl pteridine or of a physiologically tolerable salt thereof.

4,118,493

METHOD OF TREATING HYPERCHLORHYDRIA AND/OR ASSOCIATED CONDITIONS WITH 1,3-DIOXO-1H-BENZ(DE)ISOQUINOLINE-2-(3H)-ACETIC ACID

Wilbur Lippmann, Montreal, Canada, assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 25, 1977, Ser. No. 818,378

Int. Cl.[2] **A61K** *31/47*

U.S. Cl. 424—258 **4 Claims**

1. A method for preventing the secretion of excessive amounts of hydrochloric acid in the stomach of humans, which comprises: administering to a human suffering from hyperchlorhydria an effective amount of 1,3-dioxo-1H-benz-[de]isoquinoline-2(3H)-acetic acid, or a therapeutically acceptable salt thereof.

4,118,494

SUBSTITUTED 3,4-DIHYDRO-2H-ISOQUINOLIN-1-THIONES

Rudolf Kunstmann, Breckenheim, and Joachim Kaiser, Bad Soden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 649,498, Jan. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 604,011, Aug. 12, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,168

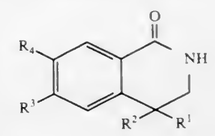
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1974, 2438966

The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.

Int. Cl.[2] **A61K** *31/47;* **C07D** *217/24*

U.S. Cl. 424—258 **5 Claims**

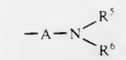
1. A 3,4-dihydroisoquinoline of the formula



or a pharmaceutically acceptable salt thereof, wherein

R^1 is methyl, ethyl, or phenyl;

R^2 is



wherein A is straight-chain or branched alkylene having 2 or 3 carbon atoms and R^5 and R^6 are the same alkyl having 1 to 4 carbon atoms; and

R^3 and R^4 are the same or different and are hydrogen or lower alkoxy having 1 to 4 carbon atoms.

4. A pharmaceutical composition for treating arrhythmia which comprises a pharmaceutical carrier and an anti-arrhythmically effective amount of a compound as claimed in claim **1**.

5. The method of treating disturbances of the cardiac rhythm in a patient suffering therefrom which comprises internally administering to said patient a therapeutically effective amount of a compound as claimed in claim **1**.

4,118,495

METHOD OF TREATING HYPERGLUCAGONEMIA WITH 1,3-DIOXO-1H-BENZ[DE]-ISOQUINOLINE-2(3H)-ACETIC ACID

Wilbur Lippmann, Montreal, Canada, assignor to Ayerst, McKenna & Harrison Limited, Montreal, Canada

Filed Jul. 25, 1977, Ser. No. 818,379

Int. Cl.[2] **A61K** *31/47*

U.S. Cl. 424—258 **4 Claims**

1. A method for preventing or decreasing the secretion or availability of excessive amounts of glucagon in humans, which comprises: administering to a human suffering from hyperglucagonemia an effective amount of 1,3-dioxo-1H-benz-[de]isoquinoline-2(3H)-acetic acid, or a therapeutically acceptable salt thereof.

4,118,496

HETEROCYCLIC-METHYLTHIOALKYL-AMIDINES

Graham John Durant; Charon Robin Ganellin, both of Welwyn Garden City, and Rodney Christopher Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

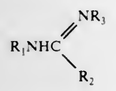
Division of Ser. No. 551,220, Feb. 19, 1975, Pat. No. 4,036,971. This application May 5, 1977, Ser. No. 794,177

Claims priority, application United Kingdom, Mar. 12, 1974, 10869/74

Int. Cl.[2] **A61K** *31/44;* **C07D** *213/58*

U.S. Cl. 424—263 **7 Claims**

1. A compound of the formula:



wherein R_1 represents a grouping of the structure

$$Het - CH_2 - S - (CH_2)_n -$$

wherein Het is a nitrogen containing 5 or 6 membered heterocyclic ring selected from pyridine, thiazole or isothiazole which is optionally substituted by lower alkyl, hydroxyl, halogen or amino; *n* is 2 or 3; R_2 is lower alkyl or phenyl optionally substituted by hydroxy or mercapto; and R_3 is hydrogen, lower alkyl or R_1, or a pharmaceutically acceptable acid addition salt thereof.

7. A method of blocking histamine H_2-receptor, said histamine H_2-receptors being those histamine receptors which are not blocked by mepyramine but are blocked by burimamide, which comprises administering to an animal in need of blocking of said histamine H_2-receptors in an effective amount to block said histamine H_2-receptors a compound of claim 1.

4,118,497

ANTIDEPRESSANTLY ACTIVE 5-(4-AMINOPHENYL)-HEXAHYDRO-1H-INDENO-(1,2-B)PYRIDINE

Rudolf Kunstmann, Breckenheim; Ulrich Lerch, and Hermann Gerhards, both of Hofheim, Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 16, 1976, Ser. No. 649,638

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1975, 2501930

Int. Cl.[2] **C07D** *221/16;* **A61K** *31/445*

U.S. Cl. 424—267 **3 Claims**

1. 4a(S,R); 5(R,S); 9b(S,R) 5-(4-aminophenyl)-2,3,4,4a,5,9b-hexahydro-1H-indeno[1,2-b]pyridine.

3. The method of treating depression in a patient suffering therefrom which comprises an anti-depressively effective amount of administering to said patient an anti-depressively effective amount of a compound as in claim 1.

4,118,498

2,6-BIS(1-PIPERIDINOALKYLIDENEAMINO)ANTHRAQUINONES AND METHOD OF TREATING CECAL AND HEPATIC AMEBIC INFECTIONS THEREWITH

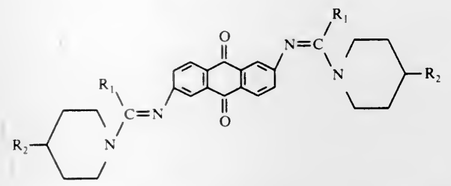
Stanley Albert Lang, Jr., Stoney Point; Paul Frank Fabio, Pearl River; Yang-I Lin, Nanuet; Keith Chadwick Murdock, Pearl River, N.Y., and Thomas Lynn Fields, Pearl River, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 772,038, Feb. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 699,816, Jun. 24, 1976, abandoned, which is a division of Ser. No. 606,805, Aug. 22, 1975, abandoned. This application Nov. 15, 1977, Ser. No. 851,662

Int. Cl.[2] **C07D** *21/10;* **A61K** *31/445;* **C07D** *295/12*

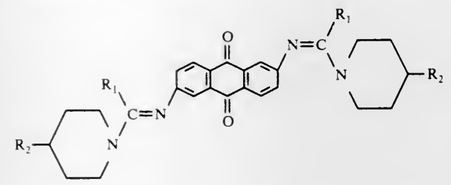
U.S. Cl. 424—267 **10 Claims**

1. A compound of the formula:



wherein R_1 is selected from the group consistng of hydrogen and lower alkyl (C_1-C_2) and R_2 is selected from the group consisting of hydrogen and lower alkyl (C_1-C_2) and pharmaceutically acceptable salts thereof.

6. A method of treating cecal and hepatic amebic infections in warm-blooded animals which comprises administering to said animals an amount effective against said infections of a compound of the formula:



wherein R_1 is selected from the group consisting of hydrogen and lower alkyl (C_1-C_2) and R_2 is selected from the group consisting of hydrogen and lower alkyl (C_1-C_2) and pharmaceutically acceptable salts thereof.

4,118,499

ANTI-ANXIETY AND ANTI-PARKINSONIAN 1-AMINOALKYL-2-ENDO-CHLORO-7,7-DIMETHYL-NORBORNANES

Leslie Stephenson, London, and Colin Smith, New Malden, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

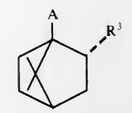
Filed Oct. 8, 1976, Ser. No. 730,980

Claims priority, application United Kingdom, Oct. 15, 1975, 42280/75; Oct. 15, 1975, 42278/75

Int. Cl.[2] **A61K** *31/445;* **C07D** *211/14*

U.S. Cl. 424—267 **17 Claims**

1. 7,7-Dimethyl-[2.2.1]-bicycloheptane of the formula:



I

wherein

A is $-(CH_2)_nNR^1R^2$ wherein n is 2, 3 or 4;

R^1 and R^2, which may be the same or different, are hydrogen atoms or C_{1-6} alkyl or C_{2-6} alkenyl groups or, together with the intervening nitrogen atom, represent a 4–7 membered saturated heterocylic ring which is unsubstituted or substituted by a C_{1-6} alkyl group; and

R^3 is a chlorine atom in the endo configuration; which compounds may optionally be substituted by a C_{1-4} alkyl group at any position on the alkylene chain of A, or by an oxo or hydroxy group at the β-position of the alkylene chain of A relative to the nitrogen atom;

or the physiologically acceptable acid addition salts thereof.

15. A method of treating Parkinson's disease which comprises administering to a patient or animal in need of such treatment an effective anti-Parkinsonism amount of a compound as claimed in claim 1.

4,118,500

FUNGICIDAL ALKOXY MONO- AND DIALKOXY N-SUBSTITUTED CYCLIC AMINES

Michael Mitzlaff, Bad Homburg, Taunus; Klaus Warning, Liederbach, Taunus, and Harald Jensen, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 3, 1976, Ser. No. 720,384

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1975, 2539777; Dec. 22, 1975, 2557790; Jul. 29, 1976, 2634049

Int. Cl.[2] **C07D** *211/42;* **A61K** *31/445*

U.S. Cl. 424—267 **7 Claims**

1. A compound of the formula

(I)

wherein

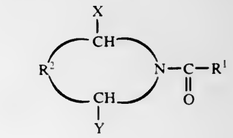
R^1 is hydrogen, an alkyl group having from 1 to 8 carbon atoms, an aryl group having from 6 to 10 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, benzyloxy or phenoxy,

R^2 is a linear or branched alkylene group having from 1 to 4 carbon atoms in the chain,

X is OR^3, where R^3 represents an alkyl group having from 1 to 4 carbon atoms,

Y is hydrogen, (C_1-C_4)-alkyl, (C_1-C_4)-O-alkoxy, provided that in the case where R^1 is an alkoxy group having from 1 to 4 carbon atoms, Y is not H.

5. A fungicidal composition comprising an inert carrier and containing as an essential active ingredient a fungicidally effective amount of a compound of the formula



wherein

R^1 is hydrogen, an alkyl group having from 1 to 8 carbon atoms, an aryl group having from 6 to 10 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, benzyloxy or phenoxy,

R^2 is a linear or branched alkylene group having from 1 to 4 carbon atoms in the chain,

X is OR^3, where R^3 represents an alkyl group having from 1 to 4 carbon atoms, and

Y is hydrogen, (C_1-C_4)-alkyl, or (C_1-C_4)-O-alkoxy, provided that in the case where R^1 is an alkoxy group having from 1 to 4 carbon atoms, Y is not H.

4,118,501

THIAZOLIDINE DERIVATIVES

Hans-Jochen Lang, Altenhain, Taunus, and Roman Muschaweck, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

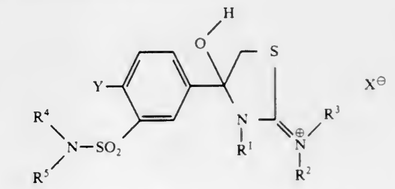
Filed Jan. 14, 1977, Ser. No. 759,546

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601598

Int. Cl.[2] **A61K** *31/425;* **C07D** *277/14, 277/18*

U.S. Cl. 424—270 **11 Claims**

1. Thiazolidine of the formula



in which R^1 represents alkyl or alkenyl of up to 4 carbon atoms or cycloalkyl of 3 to 6 carbon atoms, R^2 and R^3 are identical or different and represent alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkenyl of 3 to 4 carbon atoms, phenylalkyl of 1 to 3 carbon atoms in the alkyl moiety, piperonyl or phenyl, Y represents hydrogen, bromine or chlorine, R^4 stands for hydrogen or an alkyl of 1 to 4 carbon atoms, R^5 is hydrogen, alkyl of 1 to 4 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, benzyl, hexahydrobenzyl, chlorobenzyl, methylbenzyl or phenylethyl, and X represents the anion of a pharmacologically tolerated acid.

6. A method of treatment which comprises administering to a patient in need of salidiuretic treatment an effective amount of a compound as defined in claim 1.

4,118,502

AMIDINOFORMIC AND AMIDINO-SULPHINIC ACID DERIVATIVES

Graham John Durant; Charon Robin Ganellin, both of Welwyn Garden City, and Rodney Christopher Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

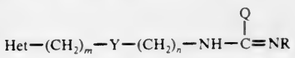
Filed Mar. 2, 1977, Ser. No. 773,590

Claims priority, application United Kingdom, Mar. 11, 1976, 09750/76

Int. Cl.[2] **A61K** *31/415;* **C07D** *233/64*

U.S. Cl. 424—273 R **14 Claims**

1. A compound of the formula



wherein Het is an imidazole ring, which ring is attached at a ring carbon and which ring is optionally substituted by lower alkyl, halogen, lower alkoxy, trifluoromethyl or hydroxymethyl; *m* is 0, 1 or 2 and *n* is 2 or 3 provided that the sum of

m and *n* is 3 or 4; Y is sulphur, methylene or oxygen; *R* is hydrogen, lower alkyl or Het—$(CH_2)_m$— Y—$(CH_2)_n$— where Het, *m*, *n* and Y are as defined above; Q is —CO_2H or —SO_2H; or a pharmaceutically acceptable acid addition salt thereof.

13. A method of blocking histamine H_2—receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

4,118,503

PYRROLIDONECARBOXYLIC ACID THERAPEUTIC AGENTS

Albin J. Nelson, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

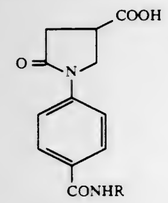
Division of Ser. No. 647,132, Jan. 7, 1976, Pat. No. 4,064,264. This application Oct. 3, 1977, Ser. No. 838,855

The portion of the term of this patent subsequent to Dec. 20, 1994, has been disclaimed.

Int. Cl.² A61K *31/40*

U.S. Cl. 424—274 **7 Claims**

1. A pharmaceutical composition suitable for oral administration comprising a pharmaceutically acceptable carrier and a therapeutically-effective amount of an anti-ulcer agent selected from the group consisting of an N-(p-benzamido)-2-pyrrolidone-4-carboxylic acid of the formula:



and the lower alkyl esters and the unsubstituted amide derivative thereof, and the base salts of said acid with pharmacologically acceptable cations, wherein R is a member selected from the group consisting of alkyl having from seven to eighteen carbon atoms arranged in a straight chain, benzyl and β-phenylethyl.

4,118,504

ISOINDOLINE DERIVATIVES FOR TREATING PAIN

PierNicola Giraldi, Milan; Giuliano Nannini, Bresso (Milan); Willy Logemann, Milan; Raffaele Tommasini, Milan; Ada Buttinoni, Milan, and Giovanni Biasoli, Gavirate (Varese), all of Italy, assignors to Carlo Erba, Milan, Italy

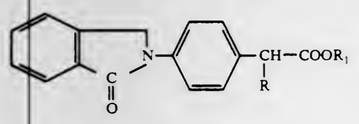
Division of Ser. No. 535,793, Dec. 23, 1974, which is a division of Ser. No. 432,490, Jan. 11, 1974, abandoned, which is a division of Ser. No. 194,500, Nov. 1, 1971, abandoned. This application Jan. 28, 1977, Ser. No. 763,522

Claims priority, application Italy, Nov. 5, 1970, 31334 A/70; Nov. 10, 1970, 31514 A/70

Int. Cl.² A61K *31/40*

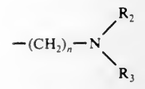
U.S. Cl. 424—274 **2 Claims**

1. The treatment of pains, said treatment comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula:

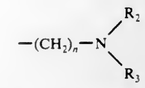


(I)

wherein R is a member selected from the group consisting of hydrogen and lower alkyl of 1 to 4 carbon atoms, and R_1 is a member selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbon atoms and a group of general formula



wherein *n* is 1 or 2 and R_2 and R_3 are independently selected from the group consisting of hydrogen and lower alkyl of 1 to 4 carbon atoms; a salt of a compound of general formula (I), wherein R_1 is hydrogen, with a physiologically acceptable base or a salt of a compound of general formula (I), wherein R_1 is the group



with a physiologically acceptable acid.

4,118,505

NOVEL CYCLOPROPANECARBOXYLATES

Shigeyoshi Kitamura, Saitama; Nobushige Itaya, Nishinomiya; Yoshitoshi Okuno; Nobuo Ohno, both of Toyonaka; Takashi Matsuo, Nishinomiya; Masachika Hirano; Toshio Mizutani, both of Toyonaka, and Hisami Takeda, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

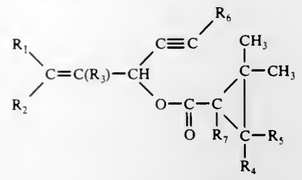
Continuation-in-part of Ser. No. 461,029, Apr. 15, 1974, Pat. No. 4,003,945. This application Dec. 2, 1975, Ser. No. 636,981

Claims priority, application Japan, Apr. 20, 1973, 48-45915; May 27, 1973, 48-58830; Jun. 4, 1973, 48-63118

Int. Cl.² C07C *69/74*; A01N *9/24*

U.S. Cl. 424—275 **13 Claims**

1. Alkynyl esters of cyclopropanecarboxylic acid represented by the formula (I),



wherein R_1 represents hydrogen, lower alkyl having 1 - 4 carbon atoms, lower alkenyl having 2 - 4 carbon atoms, lower alkynyl having 2 - 4 carbon atoms, C_1-C_2 alkoxy-C_1-C_4 alkyl, C_1-C_2 alkylthio-C_1-C_4 alkyl, furyl, thienyl, furfuryl, thenyl, cyclo-C_3-C_6-alkyl, cyclo-C_5 alkyl containing an oxygen atom in the ring, cyclo-C_5-C_6 alkenyl, cyclo-C_4-C_5 alkenyl containing an oxygen atom in the ring or



in which X is halogen, nitro, cyano, methylenedioxy, C_1-C_3 alkyl, C_1-C_2 alkoxy, dimethylamino, *n* is 0, 1 or 2 and each X may be different when *n* is 2; R_2 and R_3 individually represent hydrogen, halogen (except R_2), phenyl, benzyl, lower alkyl having 1 - 3 carbon atoms, lower alkenyl having 1 - 3 carbon atoms, lower alkenyl having 2 - 3 carbon atoms or may form a carbon-carbon bond or are bonded to each other at the ends to form C_3-C_4 polymethylene chain or R_1 and R_2 are bonded to each other at the ends to form C_5 polymethylene chain; R_4 represents hydrogen or methyl; R_5 represents hydrogen, methyl, vinyl, 1-propenyl, 2-methyl-1-propenyl, 2-methoxymethyl-1-propenyl, 2-methoxycarbonyl-1-propenyl, or cyclopentylidenemethyl when R_4 is hydrogen, and R_5 represents methyl when R_4 is methyl; and R_6 and R_7 represent hydrogen or methyl.

4,118,506

PHARMACEUTICAL COMPOSITIONS CONTAINING 1,3-DITHIOL-2-YLIDENE MALONATE DERIVATIVES

Kuniaki Taninaka, Ibaragi; Hitoshi Kurono, Amagasaki, and Tsutomu Kasai, Sakai, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

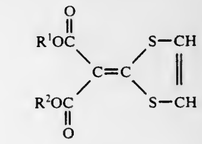
Continuation-in-part of Ser. No. 584,412, Jun. 6, 1975, abandoned. This application May 20, 1977, Ser. No. 799,027

Claims priority, application South Africa, May 24, 1976, 76/3077

Int. Cl.² A61K *31/385*

U.S. Cl. 424—277 **31 Claims**

1. A pharmaceutical composition for preventing liver necrosis, for preventing and curing hepatitis or fatty liver, for curing hepatocirrhosis, and for formation and excretion of bile flow or biliary salt, containing an effective amount sufficient for said purpose of a compound having the general formula,



wherein R^1 and R^2, which may be same or different, represent individually a C_1-C_4 alkyl group, and a pharmaceutically acceptable diluent.

4,118,507

BENZODIOXINCARBOXAMIDE LIPOGENESIS INHIBITORS

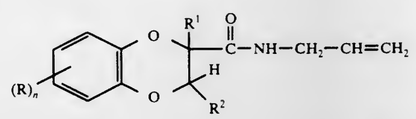
John B. Carr, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 17, 1977, Ser. No. 778,535

Int. Cl.² A61K *31/335*

U.S. Cl. 424—278 **2 Claims**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally an effective amount of a compound of the formula:



wherein *n* is zero or one, R is halogen; nitro; amino; methylsulfonylamino; trifluoromethyl; alkyl or alkoxy of from one to six carbon atoms; cycloalkyl or cycloalkyloxy of from three to six carbon atoms; phenyl or phenoxy, or either of these substituted by one or two of one or more of alkyl of from one to six carbon atoms, halogen and nitro, and R^1 and R^2 each is hydrogen or alkyl of from one to four carbon atoms, at least one being hydrogen.

4,118,508

PHARMACOLOGICALLY EFFECTIVE SUBSTANCE FROM PLANTS BELONGING TO THE FAMILY OF LABIATAE

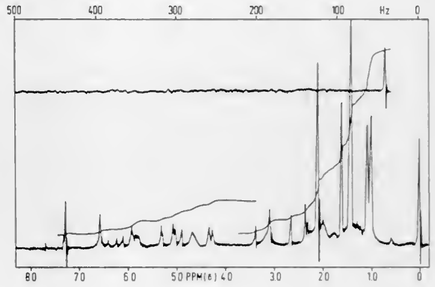
Sujata Vasudev Bhat, Thana; Noel John de Souza, Bombay; Horst Dornauer, Bombay; Bani Kanta Bhattacharya, Bombay, and Alihussein Nomanbhai Dohadwalla, Bombay, all of India, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 26, 1977, Ser. No. 791,020

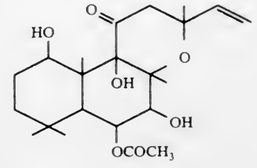
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1976, 2640275

Int. Cl.² A61K *31/35*; C07D *311/02*

U.S. Cl. 424—283 **3 Claims**



1. A compound, in purified and isolated form, having a melting point from 208° C. to 211° C., the molecular formula $C_{22}H_{34}O_7$, and the structural formula



4,118,509

3,5,5-TRIMETHYLHEXANOYL FERROCENE

Rudolf Lattrell; Heinrich Kief, both of Konigstein, and Hermann Bähr, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

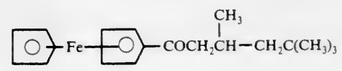
Filed May 24, 1977, Ser. No. 799,973

Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623486

Int. Cl.² C07F *15/02*

U.S. Cl. 424—295 **3 Claims**

1. 3,5,5-Trimethylhexanoyl-ferrocene of the formula



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4,118,510

DISPIROCYCLOPROPANE CARBOXYLATE PESTICIDES

Royston H. Davis, and Robert J. G. Searle, both of Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.

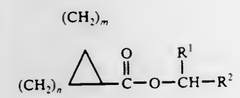
Division of Ser. No. 771,236, Feb. 23, 1977, Pat. No. 4,100,298. This application Mar. 30, 1978, Ser. No. 891,573

Claims priority, application United Kingdom, Mar. 22, 1976, 11440/76

Int. Cl.[2] A01N *9/24;* **C07C** *61/28*

U.S. Cl. 424—305 **8 Claims**

1. A dispirocyclopropane carboxylate derivative of the formula



wherein *m* and *n* each independently represents an integer of from 2 to 5; R^1 represents a hydrogen atom, or an alkynyl group of from 2 to 4 carbon atoms; and R^2 represents a phenyl group substituted by phenoxy or benzyl.

7. A method of combating insect or arachnid pests at a locus which comprises applying to the locus an insecticidally or acaracidally effective amount of a dispirocyclopropane carboxylate derivative according to claim 1 or a composition thereof.

4,118,511

ARYLOXY AMINOBUTANOLS FOR ALLEVIATING SYMPTOMS OF DEPRESSION

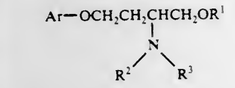
Jean-Marie Ferland, St. Laurent; Réal Laliberté, Chomedey; Wilbur Lippmann, Montreal, and Thomas A. Pugsley, Kirkland, all of Canada, assignors to Ayerst, McKenna & Harrison Limited, Montreal, Canada

Division of Ser. No. 687,852, May 19, 1976, Pat. No. 4,071,552. This application Nov. 18, 1977, Ser. No. 852,657

Int. Cl.[2] A61K *31/135*

U.S. Cl. 424—330 **4 Claims**

1. A method for alleviating symptoms of depression in a mammal comprising administering to said mammal an antidepressant effective amount of a compound of the formula,



in which Ar is phenyl or 1-naphthyl; R^1 is hydrogen or lower alkyl; and R^2 and R^3 are either the same or different selected from the group consisting of hydrogen or lower alkyl having 1-2 carbons; with the proviso that when Ar is 1-naphthyl then



is selected from the group consisting of amino, ethylamino and dimethylamino; and with the proviso that when Ar is phenyl then



is methylamino; and with the further proviso that when R^1 is lower alkyl then R^2 is the same lower alkyl; or a therapeutically acceptable acid addition salt thereof.

4,118,512

YEAST HYDROLYZATE ORAL INGESTA FOR ANIMALS

Robert J. Eichelburg, Woodland Rd., Pound Ridge, N.Y. 10576

Continuation-in-part of Ser. No. 448,208, Mar. 5, 1974, Pat. No. 3,997,675, Ser. No. 463,314, Apr. 23, 1974, Pat. No. 4,000,319, and Ser. No. 473,347, May 28, 1974, abandoned. This application Jul. 25, 1975, Ser. No. 598,993

Claims priority, application Canada, Feb. 14, 1975, 220133; France, Mar. 5, 1975, 75 06832; United Kingdom, Feb. 17, 1975, 06622/75

The portion of the term of this patent subsequent to Dec. 14, 1993, has been disclaimed.

Int. Cl.[2] A23L *1/28;* **A61K** *35/72*

U.S. Cl. 424—359 **9 Claims**

1. A method for improving the palatability of oral ingesta for cats selected from a member of the group consisting of cat food and cat medicaments comprising combining said ingesta with yeast hydrolyzates in an amount sufficient to impart improved palatability to said ingesta, said yeast hydrolyzates being selected from a member of the group consisting of hydrolyzates of ascomycetous yeasts and asporogenous yeasts and feeding to said cat said oral ingesta combined with said yeast hydrolyzate.

4,118,513

METHOD OF FORMULATING DAIRY CATTLE RATIONS

Darwin G. Braund, Fayetteville; Kendall L. Dolge, Manlius; Richard L. Goings, Fabius, and Robert L. Steele, Syracuse, all of N.Y., assignors to Agway, Inc., Dewitt, N.Y.

Filed Aug. 2, 1976, Ser. No. 711,095

Int. Cl.[2] A23K *1/00*

U.S. Cl. 426—2 **5 Claims**

1. A method of formulating dairy cattle rations for optimized milk production comprising the steps of:

(a) establishing the total protein requirements for specified lactating dairy cow(s);

(b) determining the amount and proportion of soluble and insoluble protein in each of the components of the total ration to be fed to said cow(s); and

(c) adjusting the proportion and composition of at least one of said components to provide said total protein requirements and to adjust the proportion of soluble and insoluble protein to a level wherein at least 15% but not more than 25% of said total protein is soluble in the rumen of said cow(s).

4,118,514

NONFAT DRY MILK SUBSTITUTE FOR YEAST-LEAVENED BAKED PRODUCTS

Russell C. Hoseney, Manhattan, Kans., and Rujira Srisuthep Ling, Toronto, Canada, assignors to Kansas State University Research Foundation, Manhattan, Kans.

Continuation-in-part of Ser. No. 641,293, Dec. 16, 1975, Pat. No. 4,044,155. This application Jul. 7, 1977, Ser. No. 813,475

The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.

Int. Cl.[2] A21D *2/02*

U.S. Cl. 426—62 **8 Claims**

1. A functional substitute for nonfat dry milk in yeast-leavened dough, said substitute comprising from about 30 to 75% by weight of deproteinized whey and an amount of a substance which serves as a source of ammonium ion in said dough, said substance being present at a level to provide from about 1 to 10% by weight of ammonium ion on a calculated basis in said substitute.

4,118,515

PREPARATION OF A STABLIZED PAPAIN SOLUTION

Günter Römmele, Riehen, and Ruth Hagemann, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 15, 1976, Ser. No. 750,785

Claims priority, application Switzerland, Dec. 23, 1975, 16703/75

Int. Cl.[2] C12H *1/12;* **C07G** *7/02*

U.S. Cl. 426—63 **3 Claims**

1. A process for preparing an aqueous papain solution comprising from 20 to 60% by weight of sucrose, from 1.5 to 3% by weight of sodium metabisulphite and from 1 to 35% by weight of papain, which process comprises the steps of (1) dissolving sodium metabisulphite in water and adjusting the pH to about 4.85 by addition of sodium hydroxide, (2) adding papain to obtain a turbid solution, (3) clarifying the turbid solution by filtration or centrifugation and (4) adding sucrose while stirring.

4,118,516

USE OF CARAMEL COLOR FOR AUGMENTING OR ENHANCING OR INTENSIFYING THE COLOR OF NATURAL RED DYESTUFFS

Michel Van Praag, Tilburg, and Gerrit Duijf, Koog aan de Zaan, both of Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 26, 1977, Ser. No. 800,885

Int. Cl.[2] A23L *1/27, 1/275*

U.S. Cl. 426—96 **4 Claims**

1. A composition having an enhanced red color without a blue or violet sheen comprising caramel color and a betalaine dye which is a red beet dye and, in addition, a stabilizing quantity of ascorbic acid, the said composition being an aqueous solution, said caramel color being in an amount of from 2.5 to 15% by weight of said solution.

4,118,517

METHOD OF PREPARING FISH MEAT POWDER HAVING KAMABOKO-FORMING PROPERTY

Hiroshi Niki; Eiki Deya; Toru Doi, all of Sapporo; Seiichiro Igarashi, Tokorozawa, and Hiromichi Hayashi, Sapporo, all of Japan, assignors to Snow Brand Milk Products Co. Ltd., Sapporo, Japan

Continuation of Ser. No. 557,997, Mar. 13, 1975, abandoned. This application Jun. 24, 1977, Ser. No. 809,919

Claims priority, application Japan, Aug. 2, 1974, 49-88776

Int. Cl.[2] A22C *25/00*

U.S. Cl. 426—271 **5 Claims**

1. A method of preparing fish meat powder capable of forming KAMABOKO comprising:

forming a fish meat slurry in a buffer solution containing (1) divalent metal ions and (2) sodium carbonate and citric acid or sodium citrate and citric acid, said buffer solution having an approximately neutral pH; the anions of said buffer solution being present in an amount sufficient to sequester said divalent metal ions but do not form an insoluble substance during preparation of the slurry; and subsequently

spray-drying said fish meat slurry wherein the sequestered divalent metal ions form a sparingly soluble divalent metal salt during the spray drying.

4,118,518

METHOD OF PRODUCING CONCENTRATED SAUCE PRODUCT

E. Firth Perryman, Webster, N.Y., assignor to The R.T. French Company, Rochester, N.Y.

Filed Apr. 27, 1977, Ser. No. 791,234

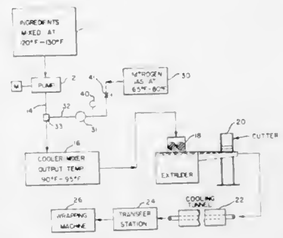
Int. Cl.[2] A23P *1/00*

U.S. Cl. 426—516 **7 Claims**

1. In a method of producing a concentrated food product, wherein the ingredients of an edible food concentrate are mixed, pumped in fluid form to and through a heat exchanger, pumped to an extruder having a discharge at atmospheric pressure, extruded, and then cut into small pieces, the improvement comprising

feeding a gas under pressure above atmospheric into the concentrate as it is being pumped to said exchanger,

controlling the rate of flow of said concentrate through the heat exchanger so that the temperature and pressure of the



concentrate are lowered as it passes through the exchanger, with the drop in temperature of the concentrate in the exchanger being controlled to offset the tendency of said gas in the concentrate to expand, whereby the volume of the gas added to the concentrate remains substantially constant until the concentrate is discharged from the exchanger, and

allowing the volume of said gas to expand during passage of the concentrate through the extruder.

4,118,519

METHOD OF PRODUCING SMOKE FLAVORING FOR FOODS

Hyunil Juhn, and Hugo E. Wistreich, both of Chicago, Ill., assignors to B. Heller & Company, Chicago, Ill.

Filed Aug. 11, 1976, Ser. No. 713,390

Int. Cl.[2] A23L *1/232*

U.S. Cl. 426—533 **4 Claims**

1. A method for producing a smoke flavoring composition for foods comprising providing an aqueous liquid smoke containing smoke flavoring ingredients extracted from smoke vapors, contacting the aqueous liquid smoke with an edible oil having dissolved therein a mono and/or diglyceride of a fat forming fatty acid having an HLB below 7 by liquid-liquid extraction in an amount to constitute 1-20% by weight of the composition, whereby smoke flavoring ingredients are extracted by the edible oil from the aqueous liquid smoke, and then separating the aqueous phase from the oily phase containing smoke flavoring ingredients extracted from the aqueous liquid smoke.

4,118,520

PROTEIN FIBRES

Johannes Visser, Maassluis; Raoul Henricus Josephus Oosthoek, Rotterdam; Jan Willem Groeneweg, Dordrecht, and Hendrik Dijkstra, Vlaardingen, all of Netherlands, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Mar. 9, 1977, Ser. No. 775,772

Claims priority, application United Kingdom, Mar. 26, 1976, 12223/76

Int. Cl.[2] A23J *3/02, 3/00*

U.S. Cl. 426—574 **13 Claims**

1. A process for producing casein-containing mixed protein fibers, which comprises:

(1) preparing an aqueous mixture having a pH from 5.0 to 6.6, which contains:

(a) at least 30% protein based on total mixture weight, which protein consists of casein in a proportion varying

from 90 to 30% and at least one heat-settable protein in a proportion varying from 10 to 70%, based on the total weight of the protein;

(b) at least 0.1 mM calcium ions per gram of casein; and

(c) at least 0.04 mM orthophosphate ions per gram of casein,

(2) spinning such mixture, at a temperature ranging from room temperature up to a temperature just below the mixture's gelling point, through the orifices of a spinneret into a gaseous medium, to obtain fibers, and,

(3) drying the fibers to a moisture content of less than 11%.

13. Fibers prepared by the process described in claim 1.

4,118,521

ISOLATION OF AN AROMATIC FRACTION OF COFFEE

Paul Cazenave, Dieppe, France, assignor to Societe d'Assistance Technique pour Produits Nestle, S.A., Lausanne, Switzerland

Continuation of Ser. No. 623,055, Oct. 16, 1975, abandoned. This application Jul. 9, 1976, Ser. No. 703,980

Claims priority, application Switzerland, Nov. 11, 1974, 15042/74

Int. Cl.[2] **A23F** *3/00, 5/00*

U.S. Cl. 426—651 **9 Claims**

1. A process for isolating an aromatic coffee fraction from an aqueous medium containing said fraction which comprises contacting the aqueous medium with an organic solvent which is an azeotrope mixture having a boiling point below about 50° C and which is selected from the group consisting of

pentane/methylene chloride and pentane/freon 113 (trichloro-trifluorethane)	68 -32% 94 -6%

and recovering a solvent phase containing the aromatic fraction which is then concentrated by distillation.

4,118,522

METHOD AND DEVICE FOR THE COATING OF TABLETS

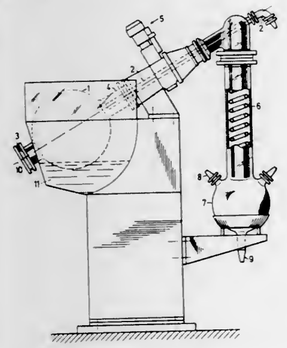
Bruno Stellmach, Schillerstrasse, 52, 3052 Bad Nenndorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 461,052, Apr. 15, 1974, abandoned. This application Feb. 10, 1977, Ser. No. 767,414

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1973, 2319960

Int. Cl.[2] **B05D** *7/00*

U.S. Cl. 427—3 **1 Claim**



1. A method of coating medicinal tablets comprising the steps of:

introducing the tablets into a rotatable evaporating vessel;

Evacuating said vessel to establish a vacuum therein of about 1 mmHg;

rotating said vessel; and

spraying a suspension comprising a solvent and a sugar-containing solid coating material onto said tablets, while said vessel is rotated and subject to said vaccum, to effect successive application of a plurality of thin, sugar-containing films on said tablets, and

recovering said solvent for reuse as part of the coating suspension.

4,118,523

PRODUCTION OF SEMICONDUCTOR DEVICES

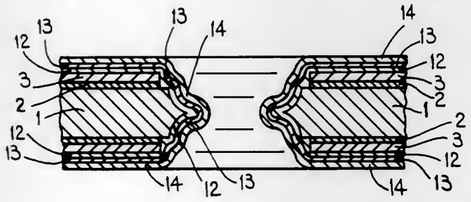
Kenneth Charles Arthur Bingham, Macclesfield; Alan George Albert Gillingham, Disley, and Colin Baldwin, Altringham, all of England, assignors to International Computers Limited, London, England

Continuation of Ser. No. 730,947, Oct. 8, 1976, abandoned. This application Nov. 17, 1977, Ser. No. 852,392

Claims priority, application United Kingdom, Oct. 22, 1975, 43289/75

Int. Cl.[2] **B05D** *5/12;* **H05K** *3/00*

U.S. Cl. 427—97 **1 Claim**



1. A method of electrically interconnecting conductors formed by first and second metal layers respectively on opposing faces of a polyimide substrate by a third electrically conductive layer within a bore extending through the substrate at a desired position, including the steps of:

(a) forming a hole in the first and second layers to expose underlying areas of the substrate, the holes in the said layers corresponding and being positioned opposite to one another at said desired position of the bore;

(b) applying simultaneously to both faces an etchant to act upon the said underlying areas of substrate to etch out the desired bore, the position of which is defined by the masking action of the remaining part of the first and second layers, but the effect of the etchant being such as to remove more substrate material adjacent to said layers than in the central part of the bore so as to produce an overhanging region of each such layer around the bore;

(c) then etching away further portions of the first and second layers to an extent sufficient to remove all of said overhanging regions and to expose the faces of the substrate immediately adjacent to the ends of the bore;

(d) and thereafter depositing the third conductive metal layer in the bore to form an electrically conductive connection between the first and second layers.

4,118,524

GRANULAR CALCIUM HYPOCHLORITE BY SPRAY GRAINING

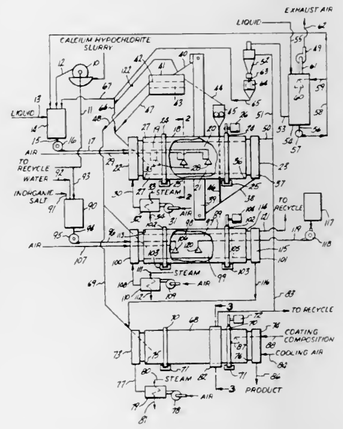
Walter C. Saeman, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 521,417, Nov. 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 276,615, Jul. 31, 1972, abandoned. This application Oct. 26, 1976, Ser. No. 735,575

The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.

Int. Cl.[2] **C01B** *11/06*

U.S. Cl. 427—213 **12 Claims**



1. A method for preparing particulate solid calcium hypochlorite having a smooth rounded surface from a pumpable and sprayable aqueous slurry of calcium hypochlorite which comprises:

(a) maintaining in a rotary spray grainer a moving bed of particulate solid calcium hypochlorite containing from about 5 to about 30 percent by weight of water in the lower part of a distributing zone having an upper part and a lower part,

(b) maintaining a temperature in said distributing zone in the range from about 40° to about 70° C.,

(c) lifting a portion of said moving bed to said upper part and releasing said particles to separately fall through said distributing zone to said bed,

(d) spraying on said falling particles a pumpable and sprayable aqueous slurry of calcium hypochlorite containing from about 45 to about 90 percent by weight of water,

(e) simultaneously evaporating and removing water from said slurry on said falling particles whereby said particles are coated with a layer of solid calcium hypochlorite, and the water content is from about 5 to about 30 percent by weight, and

(f) removing at least a portion of the resulting coated rounded solid calcium hypochlorite particles from said distributing zone.

4,118,525

ARTICLE AND METHOD FOR FABRIC SOFTENING AND STATIC CONTROL

Kenneth L. Jones, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 25, 1977, Ser. No. 781,399

Int. Cl.[2] **B05D** *3/12;* **D06M** *13/12*

U.S. Cl. 427—242 **14 Claims**

1. A laundry article, providing fabric softening and static control benefits in a laundry dryer, for use in both the washer and the dryer, consisting essentially of a water-insoluble substrate, carrying an effective amount of an intimate mixture, having a maximum solubility in water of 50 ppm at 25° C., and a softening point of from 100° to 200° F., consisting essentially of

(a) from about 10 to 90% by weight of quaternary ammonium fabric conditioning compounds having the formula $[R_1R_2R_3R_4N]^+Y^-$, wherein at least one, and not more than two, of the R_1, R_2, R_3, or R_4 groups is an organic radical containing a group selected from a C_{12} to C_{22} aliphatic radical, or an alkyl phenyl or alkyl benzyl radical having 10 to 16 carbon atoms in the alkyl chain, the remaining group or groups being selected from C_1 to C_4 alkyl, C_2 to C_4 hydroxy alkyl, and cyclic structures in which the nitrogen atom forms part of the ring, Y constitutes an anionic radical selected from the group consisting of hydroxide, halide, sulfate, methyl sulfate, and phosphate ions; and

(b) from about 10 to 90% by weight of a dispersion inhibitor mixture, being a solid organic material having a maximum solubility in water of 50 ppm at 25° C. and a softening point in the range of 100° F. to 200° F., said mixture consisting of a material selected from the group consisting of paraffinic waxes, cyclic and acyclic mono- and polyhydric alcohols, substituted and unsubstituted aliphatic carboxylic acids, condensates of C_2 to C_4 alkylene oxide with any of the foregoing types of materials wheter or not said materials themselves meet the above solubility and softening point limits, and mixtures thereof, together with a material selected from the group consisting of esters of cyclic and acyclic mono- and polyhydric alcohols and acids, and mixtures thereof.

6. A method of providing fabric softening and static control benefits to fabrics, comprising the steps of:

(a) agitating said fabrics in an aqueous laundry washing solution to which has been added a laundry article consisting essentially of a water-insoluble substrate, carrying an intimate mixture in an amount effective to yield said fabric softening and static control benefits while being tumbled in a laundry dryer with said fabrics in subsequent step (b), said mixture having a maximum solubility of 50 ppm at 25° C., a softening point of from 100° to 200° F., and consisting essentially of:

(i) from about 10 to 90% by weight of a quaternary ammonium fabric conditioning compound having the formula $[R_1R_2R_3R_4N]^+Y^-$, wherein at least one, and not more than two, of the R_1, R_2, Rhd 3, and R_4 groups is an organic radical containing a group selected from a C_{12} to C_{22} aliphatic radical; or an alkyl phenyl or alkyl benzyl radical having 10 to 16 carbon atoms in the alkyl chain, the remaining group or groups being selected from C_1 to C_4 alkyl, C_2 to C_4 hydroxy alkyl, and cyclic structures in which the nitrogen atom forms at least part of the ring, and Y constitutes an anionic radical selected from the group consisting of hydroxide, halide, sulfate, methyl sulfate, and phosphate ions; and

(ii) from about 10 to 90% by weight of a dispersion inhibitor, being a solid organic material having a maximum solubility in water of 50 ppm at 25° C. and a softening point in the range of 100° F. to 200° F., said material being selected from the group consisting of paraffinic waxes, cyclic and acyclic mono- and polyhydric alcohols, substituted and unsubstituted aliphatic carboxylic acids, esters of cyclic and acyclic mono- and polyhydric alcohols and acids, condensates of C_2 to C_4 alkylene oxide with any of the foregoing types of materials whether or not said materials themselves meet the above solubility and softening point limits, and mixtures thereof, whereby said intimate mixture remains substantially intact on said substrates; and

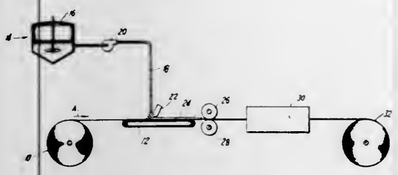
(b) tumbling said fabrics, under heat, in a laundry dryer together with said laundry article whereby said intimate mixture softens under the dryer heat and is disposed onto said fabrics.

4,118,526

METHOD FOR TREATING FABRICS

Razmic S. Gregorian, Aiken, and Chettoor G. Namboodri, North Augusta, both of S.C., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Jun. 6, 1975, Ser. No. 584,389
Int. Cl.[2] B41M *1/10;* **D06M** *1/00, 13/34*
U.S. Cl. 427—350 **11 Claims**



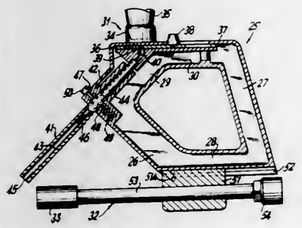
1. In a method for treating a fabric with a finishing agent wherein the finishing agent in a liquid medium is applied to the fabric and the fabric is then subjected to drying and a fixation or curing step, the improvement which comprises using a treating composition which is stable and will substantially retain its physical properties until such time as pressure is applied thereto composed of a fabric finishing agent in an amount effective to impart the properties of the finishing agent to the fabric, and about 0.5 to 8 weight percent of a foam stabilizer, the remainder of the composition being a liquid diluent and conventional additives, foaming the treating composition into a foam having a blow ratio in the range from about 2:1 to 20:1 and a foam density in the range from about 0.5 gm/cc to 0.05 gm/cc, applying a bank of the foam directly on to a fabric, reducing the thickness of the foam in contact with the fabric with the foam substantially retaining its physical properties, collapsing the foam and forcing the foam into the coated fabric by applying pressure and then subjecting the fabric to said drying and curing or fixation steps.

4,118,527

METALIFEROUS FLAME SPRAY MATERIAL FOR PRODUCING MACHINABLE COATINGS

Mahesh S. Patel, Albertson, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Division of Ser. No. 706,136, Jul. 19, 1976, Pat. No. 4,039,318. This application Apr. 6, 1977, Ser. No. 785,224
Int. Cl.[2] B05D *1/08*
U.S. Cl. 427—423 **12 Claims**



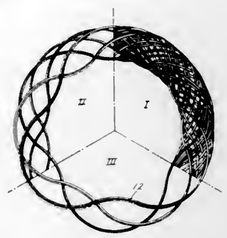
1. A method of producing an adherent bond coat on a metal substrate which comprises:
flame spraying onto said metal substrate a metaliferous flame spray material comprising a plurality of ingredients physically combined together with each other,
said plurality of ingredients comprising by weight about 3% to 15% aluminum, about 2% to 15% refractory metal silicide and the balance essentially a metal selected from the group consisting of nickel-base, cobalt-base, iron-base and copper-base metals,
and continuing said spraying to form an adherent bond coat on said substrate characterized by improved machinability, improved bonding strength and improved resistance to wear.

4,118,528

GLASS FIBER FRICTION FACING

Blaine E. Lowry, Manheim, Pa., assignor to Raybestos Manhattan, Inc., Trumbull, Conn.

Filed Jul. 28, 1977, Ser. No. 819,760
Int. Cl.[2] B32B *5/08;* **B22B** *5/26*
U.S. Cl. 428—65 **19 Claims**



1. A disc-shaped friction facing having an inner diameter and an outer diameter, said facing comprising
a tape impregnated with a heat-curable cement system and disposed in an undulating annular fashion and having been subjected to heat and pressure to compress said tape to form a disc-shaped facing and to cure said cement, said tape comprising
a plurality of rovings of substantially continuous glass filaments having been impregnated with a pre-coat composition and then impregnated with a heat-curable cement system, each impregnation having been accomplished by passing said rovings through aqueous dispersions of the respective pre-coat composition and cement system, said dispersions containing from about 0.25 to about 1.25 percent, by weight of solids, of a surfactant or dispersant, and the surfaces of said filaments prior to said impregnations having been treated with an anchoring agent capable of providing a strong bond between said filament surfaces and said pre-coat composition, said pre-coat compositions comprising from about 40 to about 50 percent of a vulcanizable carboxy nitrile rubber, from about 40 to about 50 percent of a watersoluble, low molecular weight, one-step phenol formaldehyde resin and from about 16 to about 20 percent furnace black having a particle size in the range of about 65 to about 85 mμ, said percentages being by weight based on the combined weight of said pre-coat constituents, and said cement system comprising from about 6 to about 12 percent of said vulcanizable rubber, from about 12 to about 16 percent of said phenol formaldehyde resin, and about 72 to 82 percent particulate friction modifiers, said percentages being by weight, based on the combined weight of said constituents forming said cement system.

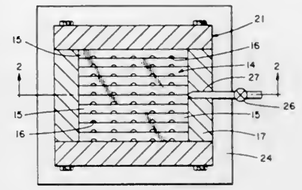
10. The method of forming an annular friction facing for a clutch or the like comprising the steps of:
(A) impregnating plurality of rovings formed of substantially continuous glass filaments with a pre-coat composition comprising about 40 to about 50 percent of a vulcanizable carboxy nitrile rubber, about 40 to about 50 percent of a water soluble, low molecular weight, one-step thermosetting phenol formaldehyde resin, and about 10 to about 20 percent of furnace black having a particle size in the range of about 65 to about 85 mμ, said percentages being by weight, based on the combined weight of said components, by passing said rovings through a low solids aqueous dispersion of said pre-coat composition containing from about 0.25 to about 1.25 percent, based on weight of pre-coat solids, of a surfactant or dispersant, the surfaces of said filaments of said rovings having been treated with an anchoring agent capable of providing a strong bond between said filaments and said pre-caot composition;
(B) drying said pre-coat impregnated rovings to a moisture content in the range of about 2 to about 4 percent, by weight of said coated rovings;
(C) further impregnating said pre-coat impregnated rovings with a heat-curable cement system comprising from about 6 to about 12 percent of a vulcanizable carboxy nitrile rubber, from about 12 to about 16 percent of a water-soluble, low molecular weight one-step, thermosetting phenol formaldehyde resin, and from about 72 to about 82 percent of particulate friction modifiers, said percentages being by weight, based on the combined weight of said components of said cement system, by passing said rovings through a high solids aqueous dispersion of said cement system containing from about 0.25 to about 1.25 percent, based on weight of cement system solids, of a surfactant or dispersant;
(D) drying said rovings impregnated with said heat-curable cement system to a moisture content of about 2 to about 4 percent, by weight of said impregnated rovings;
(E) combining a plurality of said impregnated rovings to form a tape;
(F) winding said tape in undulating fashion to form a disc-shaped friction facing preform; and
(G) subjecting said preform to heat and pressure to densify said preform and cure said cement.

4,118,530

PILE PRODUCT MOLDED OF ETHYLENE/VINYL ACETATE COPOLYMER

Joseph C. Benedyk, Highland Park, Ill., and Richard O. Stratton, DeLand, Fla., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 733,691, Oct. 19, 1976, abandoned, which is a division of Ser. No. 531,190, Dec. 9, 1974, abandoned. This application Feb. 10, 1978, Ser. No. 876,750
Int. Cl.[2] B32B *33/00*
U.S. Cl. 428—92 **10 Claims**



1. A molded pile product comprising:
(a) a base and a plurality of pile fibers extending upright from said base;
(b) the fibers and base being formed from an irradiated polymer mixture comprising at least 90% by weight a copolymer of ethylene and vinyl acetate having a melt index of from 1 to 3 and not more than 1% by weight of a mold release agent;
(c) the fibers having an average diameter in the range of approximately 4 to 10 mils, an average length in the range of approximately 200 to 700 mils, an aspect ratio in the range of approximately 50 to 100, and a fiber density in the range of approximately 10 to 50%; and
(d) the pile product having been molded by heat and pressure in cavities corresponding to the fibers of the pile product and removed from the cavities at a temperature of 140°–170° F., the fibers exhibiting substantially no elongation or breakage in spite of removal from high aspect cavities at said elevated removal temperature.

4,118,529

SUEDE WOVEN FABRIC AND A PROCESS OF MANUFACTURING THE SAME

Junyo Nakagawa; Takao Akagi, and Koji Hiramatsu, all of Kurashiki, Japan, assignors to Kuraray Company, Limited, Japan

Continuation-in-part of Ser. No. 705,265, Jul. 14, 1976, abandoned. This application Jun. 3, 1977, Ser. No. 803,265
Claims priority, application Japan, Jul. 14, 1975, 50-85984; Apr. 2, 1976, 51-37586
Int. Cl.[2] D02G *3/00*
U.S. Cl. 428—91 **18 Claims**

1. A suede woven fabric having a pile surface produced by a pile raising operation comprising a warp yarn selected from the group consisting of polyester textured yarn, polyester filament yarn and polyester spun yarn, and a weft yarn of a composite filament yarn of substantially randomly distributed super fine polyester island filaments of differing thickness whose mean thicknesses in denier are within the range from 0.05 to 0.50 and whose degree of variation of thickness is 15 to 60% from the mean; wherein a portion of said island filaments on at least one surface of the fabric is raised to form piles of individual island monofilaments whose mean lengths are from 0.5 to 4.0 mm, wherein the number of floating points on said weft yarn, whose number of floats is within the range of 3 to 11, is 100 to 500/cm^2 of woven fabric; and wherein the relation between the shear stiffness $G_{0.5}$ at a shear angle of 0.5° and the stiffness G_5 at a shear angle of 5°, represented by $G_5/G_{0.5}$, is 1.5 to 15.

4,118,531

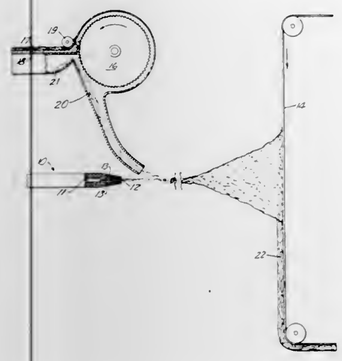
WEB OF BLENDED MICROFIBERS AND CRIMPED BULKING FIBERS

Edward R. Hauser, Saint Joseph Township, Saint Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 710,612, Aug. 2, 1976, abandoned. This application Nov. 4, 1977, Ser. No. 848,488
Int. Cl.[2] D03D *3/00;* **D02G** *3/00*
U.S. Cl. 428—224 **11 Claims**

1. A fibrous web comprising microfibers that average less than about 10 micrometers in diameter and crimped bulking fibers that have a percent crimp of at least about 15 percent, the microfibers and crimped bulking fibers being present in a

weight ratio between about 9:1 and 1:9 and being randomly and thoroughly intermixed and intertangled with one another



to form a resiliently compressible fiber structure that has a loft of at least 30 cubic centimeters/gram.

4,118,532

IMPLANTABLE MATERIAL AND METHOD OF PREPARING SAME

Charles A. Homsy, 11526 Raintree Cir., Houston, Tex. 77024

Continuation-in-part of Ser. No. 300,246, Oct. 24, 1972, abandoned. This application Jan. 11, 1977, Ser. No. 758,499
Int. Cl.[2] A61F *1/24*
U.S. Cl. 428—294 **13 Claims**

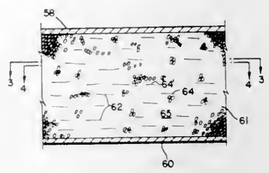
1. A composition of matter comprising,
a filler element,
a perfluorinated high polymer resin sintered with said filler element to retain said filler element,
said perfluorinated high polymer resin being selected from the group consisting of polytetrafluoroethylene, polyhexafluropropylene, and a copolymer of hexafluoropropylene and tetrafluroethylene,
said filler element being distributed throughout said material, being selected from the group consisting of, fluorinated carbon particles, fluorinated carbon fibers, surface-fluorinated polyimide fibers, surface-fluorinated polyimide particles surface-fluorinated hydrocarbon particles, surface-fluorinated hydrocarbon fibers, polytetrafluoroethylene fibers, and combinations thereof, the fibers of said filler element being oriented substantially parallel to the surface of the material so that the fibers whose ends lie on or near the surface do not have a tendency to break off,
said filler element being approximately 15 to 65 volume percent of said composition,
the critical surface tension of the filler element closely approximately the critical surface tension of the perfluorinated high polymer resin and
said sintered resin and filler element being suitable for in vivo implantation as a wear material.

4,118,533

STRUCTURAL LAMINATE AND METHOD FOR MAKING SAME

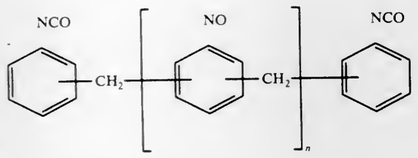
Donald E. Hipchen, Seminole; Michael J. Skowronski, and Joseph R. Hagan, both of Clearwater, all of Fla., assignors to Celotex, Tampa, Fla.

Filed Jan. 19, 1976, Ser. No. 649,976
The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.
Int. Cl.[2] B32B *5/20*
U.S. Cl. 428—297 **48 Claims**



48. A structural laminate comprising:
A. two planar facing sheets wherein:
I. each facing sheet is a metal foil between 0.010 and 0.001 inches thick,
II. the surface of one facing sheet observe to that attached to the rigid foam is decoratively embossed;
B. a rigid foam integrally attached upon formation of the foam to one surface of each facing sheet, the rigid foam formed from a foam-forming mixture comprising:
I. a mixture of polymethyl polyphenyl isocyanates, of Formula a:

(a)



wherein *n* is an integer from 0 to 8 and the polyisocyanates have an equivalent weight of 120 to 180 and a functionality of 2.5 to 3.8 and the mixture has a vecosity of 250 to 2500 centipoises;
II. diethylene glycol, wherein the equivalent ratio of I:II is between 3.0:1 and 5.0:1;
III. a catalyst composition in an amount and of a type sufficient to give the foam-forming mixture a cream time between 15 and 20 seconds and a firm time between 25 and 60 seconds;
IV. fluorotrichloromethane in an amount from 5 to 20 weight percent based on the weight of the foam-forming mixture;
V. a surfactant in an amount from 0.1 to 2.0 weight percent based on the weight of the foam-forming mixture.
C. a mat of glass fibers wherein:
I. the glass fibers of the mat are distributed substantially evenly throughout the rigid foam,
II. the glass fibers are non-crimped,
III. the glass fibers have an average length that exceeds five feet,
IV. the glass fibers of the mat are arranged in layers,
V. each layer of glass fibers is substantially parallel to the facing sheet,
VI. the glass fibers within each layer are substantially parallel,
VII. the glass fibers in each layer are at an angle of less than 60° to the glass fibers in each next adjacent layer, and

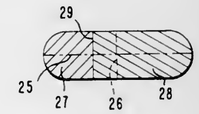
VIII. the foam-forming mixture completely fills the interstices between the fibers of the mat, the fibers being held in fixed relationship to each other solely by the rigid foam,
IX. the mat of glass fibers being included in the amount of 6–20 gms. per board-foot of structural laminate.

4,118,534

CRIMPED BICOMPONENT-FILAMENT YARN WITH RANDOMLY REVERSING HELICAL FILAMENT TWIST

Harry Eugene Stanley, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 11, 1977, Ser. No. 795,915
Int. Cl.[2] D02G *3/00*
U.S. Cl. 428—370 **6 Claims**



1. A crimped bicomponent-filament yarn comprising filaments having a polyhexamethyleneadipamide component and a copolyester component adhered together in a side-by-side composite filament of oblong cross section along the length of the filament wherein the length of the major axis of the cross section is between 2.5 and 4.5 times the length of the minor axis, the polyhexamethyleneadipamide component occupies an area at one side of the cross section that extends along said major axis for a distance about equal to the length of said minor axis and is between 20 and 35 percent of the total cross-sectional area; said copolyester component consisting essentially of poly[ethylene terephthalate/5-(sodium sulfo)isophthalate] containing 0.5 to 3 mole percent of the 5-(sodium sulfo)isophthalate units; the bicomponent filaments having a randomly reversing filament twist with an average of 60 to 120 crimps per inch of filament and having the property of splitting into polyhexamethyleneadipamide filaments and copolyester filaments when heated at about 100° C. in 1 percent aqueous caustic solution.

4,118,535

NOVEL POLYETHERAMIDE-IMIDE EPOXY RESIN BLENDS

Eugene G. Banucci, Scotia, and Edith M. Boldebuck, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

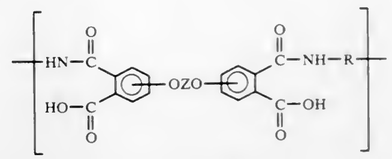
Filed Nov. 3, 1975, Ser. No. 628,331
Int. Cl.[2] C08L *63/00*
U.S. Cl. 428—383 **17 Claims**

1. A polyetheramide-imide epoxy resin blend of the formula:

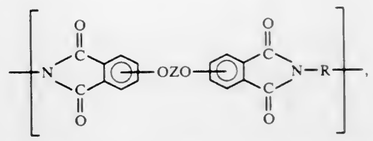
$$([A]_m[B]_{1-m})_a \qquad ([C])_b ,$$

polyetheramide-imide resin epoxy resin

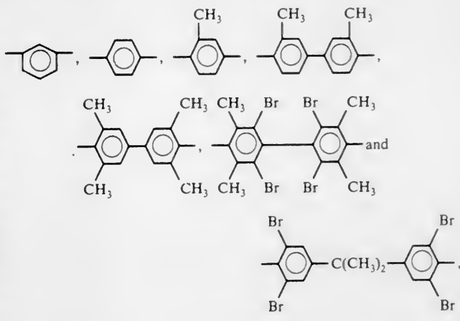
wherein A represents a polyamide unit and B represents a polyimide unit of a polyetheramide-imide resin, *m* represents a mole fraction number greater than or equal to zero, C represents a polyepoxy resin, *a* represents a resin blend proprotion number greater than zero and less than 1, the sum of a plus *b* equals 1.0, further wherein said polyamide units is of the formula:



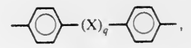
and said polyimide unit is of the formula:



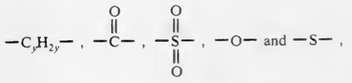
wherein the O—Z—O units of said polyamide or said polyimide units are in the 3 or 3′ or 4 or 4′ positions and Z is a member of the class consisting of (1)



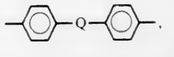
and (2) divalent organic radicals of the general formula



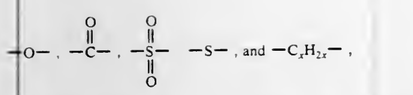
where X is a member selected from the class consisting of divalent radicals of the formulas



where *q* is 0 or 1, *y* is a whole number from 1 to 5, the divalent bonds of the —O—Z—O— radical are situated on the phthalic anhydride-derived units, e.g., in the 3,3′-, 3,4′-, 4,3′- or the 4,4′-positions, and R is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (c) divalent radicals included by the formula



where Q is a member selected from the class consisting of



and x is a whole number from 1 to 5 inclusive and further wherein said epoxy resin is a polyepoxy compound possessing at least two 1,2-epoxide groups.

4,118,536

SILANE-TERMINATED POLYCARBODIIMIDE PRIMERS AND COMPOSITE COATINGS THEREFROM

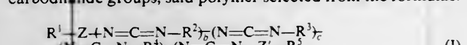
James L. Beardsley, St. Paul, and J. Lamar Zollinger, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 730,810, Oct. 8, 1976, abandoned. This application Aug. 25, 1977, Ser. No. 827,784

Int. Cl.[2] **B32B** *27/38;* **C08G** *18/00;* **C07F** *7/10, 7/18*

U.S. Cl. 428—413 **11 Claims**

1. An aromatic polymer containing at least 1% by weight of carbodiimide groups, said polymer selected from the formulae:



(I)

wherein

R^1 and R^5 are independently selected from $-Si(OR^6)_3$ wherein R^6 is independently selected from alkyl or phenyl and has no more than 10 carbon atoms,

Z and Z' are independently aliphatic, aromatic, or mixed hydrocarbon which may have no more than one O or S atom in the backbone for 2 carbon atoms and having fewer than 20 carbon atoms

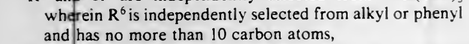
R^2 and R^4 are independently divalent aromatic groups bonded to the adjacent N atom of the exterior carbodiimide directly from an aromatic ring, said aromatic group being free of isocyanate reactive groups and having fewer than 20 carbon atoms

R^3 is a divalent aliphatic, aromatic, or mixed hydrocarbon group free of isocyanate reactive groups, having fewer than 20 carbon atoms

b is > 0

c is 0 or 1

d is 0 or a whole integer and $b+c+d$ is at least 1 and no more than 50,



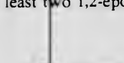
II.

wherein

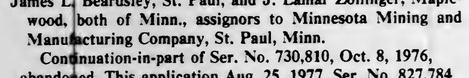
R^1, R^2, R^4, R^5, Z, Z', and b are as defined above

$b+e$ = at least 2 and no more than 50

R^7 is the hydrogen free residue of a di-(active hydrogen) terminated compound, said residue having no isocyanate reactive groups and wherein R^2 and R^4 are also directly attached to the nitrogen atom of the adjacent



group from an aromatic ring,

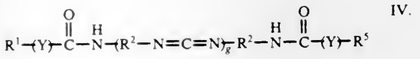


III.

wherein

R^1, R^2, R^5, Z and Z' are as defined above, and

f is at least 2 and no more than 50, and



IV.

wherein

R^1, R^2, R^5, Z and Z' are as defined above, and g is at least 2 and no more than 50, and

Y is the residue of a primary amine terminated hydrocarbon formed by the removal of a hydrogen from the amine group, with the hydrogen free residue portion of Y forming a bond with the adjacent group



9. A substrate, a primer layer bonded to the substrate and a synthetic polymer layer bonded to the primer wherein said primer comprises the polymer of claim **1**.

10. The substrate, primer, and synthetic polymer coating of claim **9** wherein the synthetic polymer is an abrasion resistant coating obtained by curing an epoxy-terminated silane.

4,118,537

FLUOROCARBON POLYMER COATINGS

Eva M. Vary, Wynnewood, Pa., and Eustathios Vassiliou, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 636,845, Dec. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 525,672, Nov. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 405,799, Oct. 12, 1973, abandoned. This application Apr. 7, 1977, Ser. No. 785,450

Int. Cl.[2] **B32B** *27/00*

U.S. Cl. 428—422 **17 Claims**

1. An article having a lubricious surface, comprising

(A) a primer coat obtained by curing a composition selected from the group

(i) a composition consisting essentially of

(a) from about 50% through about 90%, by weight of the total of (a) and (b) solids, of particulate polymer of hydrocarbon monomers completely substituted with fluorine atoms or a combination of fluorine atoms and chlorine atoms;

(b) from about 10% through about 50%, by weight of the total of (a) and (b) solids, of an ammonia stabilized colloidal silica sol containing about 30% solids and having a pH of 9.6, and

(c) a liquid carrier.

(ii) a. 20–90%, by weight of total solids, a particulate fluorocarbon polymer;

b. 10–80%, by weight of total solids, colloidal silica having a pH of 8.4–9.9 at 25° C., whose particles have a size of 5–100 millimicrons and specific surface area of 125–420 square meters per gram;

c. 1–10%, by weight of total composition, alkyl benzene;

d. 1–10%, by weight of total composition, alcohol containing 4 or more carbon atoms, said alcohol being miscible with water;

e. 0.3–10%, by weight of total composition, fatty acid containing 8 or more carbon atoms;

f. 1–15%, by weight of total composition, amine having the formula



wherein R_1 contains 1 to 6 carbon atoms and may contain other functional groups, and R_2 and R_3 contain one to six carbon atoms or hydrogen; and

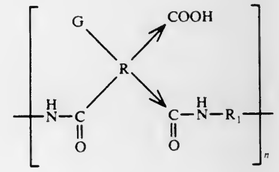
g. a liquid carrier or

(iii) a. about 10%–90%, by weight of the total of (a) and (b) solids, of a particulate polymer of monoethylenically unsaturated hydrocarbon monomers completely substituted with fluorine atoms or a cominbation of fluorine atoms and chlorine atoms, the polymer having a number average molecular weight of at least 20,000;

b. about 10%–90%, by weight of the total of (a) and (b) solids, of a binder which comprises

1. about 5–95%, by weight of the total of (1) and (2) solids, of a colloidal silica which air-dries to form a continuous film when laid down by itself, and

2. about 5–95%, by weight of the total of (1) and (2) solids, of a salt of a polyamide acid represented by the structure



where

G is hydrogen or a carboxyl group; → denotes isomerism;

R is a tetravalent organic radical containing at least two carbon atoms, no more than two carbonyl groups of each polyamide acid unit being attached to any one carbon atom of each tetravalent radical;

R_1 is a divalent radical containing at least two carbon atoms, the amide groups of adjacent polyamide acid units each being attached to separate atoms of said divalent radical; and

n is a number large enough to give the polyamide acid an inherent viscosity of at least 0.1, measured as a 0.5% solution in N,N-dimethylacetamide at 30° C.; neutralized with a stoichiometric amount of a tertiary amine;

c. about 10–90%, by weight of the polyamide acid amide salt, of N-methyl pyrrolidone, dimethyl formamide, dimethylacetamide, dimethylsulfoxide, cresylic acid, sulfolane or formamide; and

d. a liquid carrier or

(iv) a composition comprising particulate fluorocarbon polymer, colloidal silica stabilized with sodium ions, and a liquid carrier; overlaid with

(B) a topcoat obtained by curing a composition comprising

(1) about 25–95%, by weight of the total of (1) and (2) solids, of a particulate fluorocarbon polymer of hydrocarbon monomers completely substituted with fluorine atoms or a combination of fluorine atoms and chlorine atoms,

(2) about 5–75%, by weight of the total of (1) and (2) solids, of a polymer of monoethylenically unsaturated monomers, which polymer depolymerizes, and whose depolymerization products vaporize, in the temperature range of from about 150° C. below the fusion temperature of the fluorocarbon polymer used to about the fluorocarbon polymer's decomposition temperature wherein said polymer contains one or more monoethylenically unsaturated acid units optionally esterified with glycidyl esters of 4–14 carbon atoms (total) and

(3) a liquid carrier, at a temperature at which (B)(2) is depolymerized and at which the depolymerization products vaporize.

4,118,538

FABRIC-PRINTING OR DYEING PROCESS USING THERMOSENSITIZER FOR LATEX BINDER

Jean Balland, Chateaurenault, France, assignor to Manufacture de Produits Chimiques Protex, Societe Anonyme, Paris, France

Filed Jul. 25, 1977, Ser. No. 818,676

Int. Cl.[2] **C08L** *7/02;* **C08G** *51/24, 51/66*

U.S. Cl. 428—425 **5 Claims**

1. A process for the coloring of textiles which comprises the step of:

treating the textile with a pigment dyestuff in a binding agent in the form of a latex and including a thermosensitizing agent constituted by an alkylene-urethane copolymer, the proportion of the alkylene-urethane copolymer with respect to the quantity of latex being between 2 and 80% by weight; and

heating the treated textile to a temperature sufficient to activate said latex and bond said pigmentary colorant to said fabric.

5. Textile articles made by the process defined in claim **1**.

4,118,539

SUPER HARD-HIGHLY PURE SILICON NITRIDES HAVING A PREFERRED CRYSTAL FACE ORIENTATION

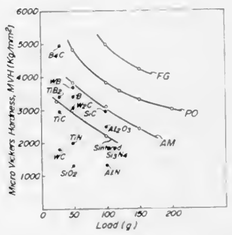
Toshio Hirai, and Koichi Niihara, both of Sendai, Japan, assignors to The Research Institute for Iron, Steel and Other Metals of the Tohoku University, Sendai, Japan

Filed Jan. 3, 1977, Ser. No. 756,282

Claims priority, application Japan, Jan. 13, 1976, 51-2468

Int. Cl.[2] **C01B** *21/06;* **B01J** *17/32*

U.S. Cl. 428—446 **4 Claims**



1. A super hard, highly pure silicon nitride having a crystal orientation wherein the crystal face (h k o) in a hexagonal system is oriented in parallel to the substrate upon which the silicon nitride was deposited, a grain size of not more than 50 μm and a micro Vickers hardness of more than 3,000 Kg/mm^2 under a load of 100 g.

4,118,540

USE OF SILANES HAVING CAPPED FUNCTIONAL GROUPS AS ADHESIVIZING AGENTS

Jürgen Amort, Troisdorf-Sieglar, and Heinz Nestler, Troisdorf-Eschmar, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bez. Cologne, Germany

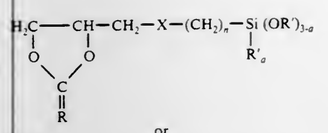
Filed Dec. 30, 1976, Ser. No. 755,876

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1975, 2559259

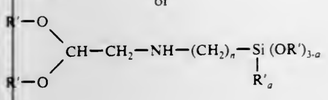
Int. Cl.[2] **B32B** *15/08*

U.S. Cl. 428—447 **13 Claims**

1. A process for protecting the surface of an inorganic oxidic or metallic surface against corrosion or for improving its adhesion to an organic polymeric material which comprises contacting said surface an aqueous solution of a silane having a capped functional group, said silane being one of those having the following formulas:



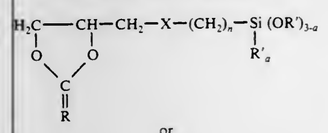
or



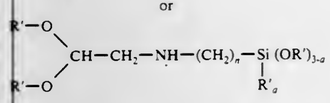
wherein
n = 1 to 8,
a can be equal to 0 or 1,
X represents oxygen or sulfur, and
R′ represents identical or different alkyl moieties which can be interrupted in the chain by an oxygen atom,

the silane being applied in the form of a 0.05 to 5.0 weight percent solution and thereafter removing the aqueous solvent.

5. A laminate comprising an inorganic oxidic or metallic surface and a polymer, said laminate having in the region of the interface between the inorganic oxidic or metallic surface and the polymer a silane having a capped functional group said silane being one having the following formulas:



or



wherein n = 1 to 8, a is equal to 0 or 1, R represents an oxygen moiety or 2 hydrogen atoms, X represents oxygen or sulfur and R′ represents identical or different alkyl moieties which can be interrupted by an oxygen atom.

4,118,541

RELEASE SHEET OF A COATED CELLULOSE PAPER

George Edward Power, and Donald Louis Bolling, both of Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

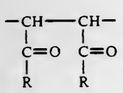
Filed Nov. 3, 1976, Ser. No. 738,505
Int. Cl.² B32B *9/06*
U.S. Cl. 428—452 **13 Claims**

1. A release sheet for use in the production of laminates comprising

(1) a cellulosic paper sheet coated with a first coating comprising

(A) an oil-modified alkyd resin cross-linked with from about 30 to about 70%, by weight, based on the total weight of (A), of a polyalkylether of a polymethylol melamine and a second coating, atop said (A), comprising

(B) a copolymer containing from about 15 to about 85 mole percent of recurring units having the formula



wherein each R is, individually, OR^1, R^1 being hydrogen or C_1-C_{22} alkyl, or the two R groups taken together form an oxa group, and the remaining units are recurring units of the formula

wherein R^2 is hydrogen or methyl, R^3 is a C_9-C_{30} alkyl radical and X is O or CH_2.

4,118,542

CONTROLLED ATMOSPHERE AND VACUUM PROCESSES

Peter Frank Walter, Swansea, Wales, assignor to Wall Colmonoy Corporation, Detroit, Mich.

Filed Jan. 17, 1977, Ser. No. 764,222
Int. Cl.² B22F *3/00*
U.S. Cl. 428—553 **21 Claims**

1. A getter unit for controlled atmosphere and vacuum high temperature processes comprising a temperature resistant rigid support and a layer of a metallic substance thereon having an affinity for oxygen which is adapted to be at least in partially molten liquid state at the elevated operating temperature of the process.

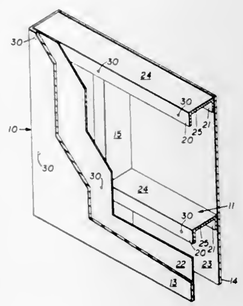
21. A vacuum brazing furnace defining a chamber and a getter unit in said chamber comprising a temperature resistant rigid support and a layer of a metallic substance thereon having an affinity for oxygen which is adapted to be at least in partially molten liquid state at the elevated operating temperature of the furnace.

4,118,543

REFLECTANT FOIL INSULATED STEEL DOORS

Henry Patrick Donohue, Fairview, Pa., assignor to Fenestra, Erie, Pa.

Filed Nov. 16, 1976, Ser. No. 742,088
Int. Cl.² E04C *2/34*
U.S. Cl. 428—615 **2 Claims**



1. A door comprising,

a frame, face skins and a metallic aluminum foil sheet having a melting point substantially lower than the melting point of steel,

said frame comprising vertical members and horizontal members including a peripheral frame comprising a top member, a bottom member, a lock side member and a hinge side member,

said face skins comprising generally flat sheets of suitable material thickness generally covering the said frame on each side,

said metallic foil sheet being disposed between the said frame and one of said face skins,

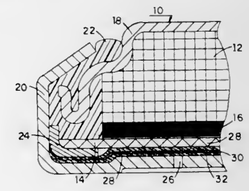
and weld means extending through said metallic foil welding said face skins to said frame.

4,118,544

METAL-AIR DEPOLARIZED CELL HAVING RESTRICTED GAS PASSAGEWAY

Franciszek J. Przybyla, and Michael J. Smith, both of Mississauga, Canada, assignors to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Sep. 28, 1977, Ser. No. 837,477
Int. Cl.² H01M *12/06*
U.S. Cl. 429—27 **10 Claims**



1. In a gas-depolarizable galvanic cell having an anode, a gas-depolarizable cathode, an electrolyte carrying separator therebetween, and a container for said cell having negative and positive terminals electrically insulated from each other and electrically associated with said anode and cathode, respectively, and where there is at least one opening in said container for gas communication from the exterior of the cell to said gas-depolarizable cathode, the improvement wherein:

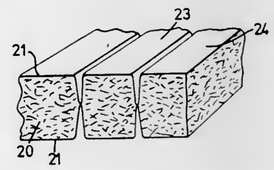
there is placed in the path of said gas communication to said cathode, a non-porous barrier having gas passageway comprising at least one aperture therethrough from one side to the other thereof; and where the total crosssectional area perpendicular to the direction of gas flow of said gas passageway is not greater than the total projected area of the gas passageway through the thickness of said non-porous barrier.

4,118,545

SODIUM SULPHUR CELLS

Ivor Wynn Jones, and Graham Robinson, both of Chester, England, assignors to Chloride Silent Power Limited, London, England

Filed Feb. 15, 1977, Ser. No. 768,929
Claims priority, application United Kingdom, Feb. 18, 1976, 6377/76
Int. Cl.² H01M *10/00*
U.S. Cl. 429—104 **15 Claims**



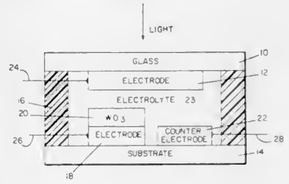
1. In a sodium sulphur cell having a cathodic region between a solid electrolyte and a cathode current collector containing a porous packing to form an electronic conductor; the improvement wherein the packing comprises a first material formed of graphite or carbon or of a material coated with graphite or carbon, intimately mixed with a second material which is chemically inert to sulphur/polysulphides forming the cathodic reactant but which at the operating temperature of the cell is more easily wetted by the polysulphides than is the carbon fibre material.

4,118,546

TRIPLE ELECTRODE PHOTOGALVANIC CELL WITH ENERGY STORAGE CAPABILITY

Horst Witzke, Princeton; Schoen-nan Chen, North Brunswick; Satyendra K. Deb, East Brunswick, all of N.J., and Michael A. Russak, Farmingdale, N.Y., assignors to Optel Corporation, Princeton, N.J. and Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 27, 1977, Ser. No. 763,071
Int. Cl.² H01M *6/30, 6/36*
U.S. Cl. 429—111 **11 Claims**



1. In a photogalvanic cell having an electrolyte contained between separated first electrode and counterelectrode members, the improvement comprising:

a photoactive material contacting the first electrode to form a photoactive site;

charge storage means located in spaced relation to the site in a manner permitting irradiating light to pass to the photoactive site without prior light filtering by the charge storage means;

a second electrode connected to the charge storage means for conducting electrical charge therefrom; and

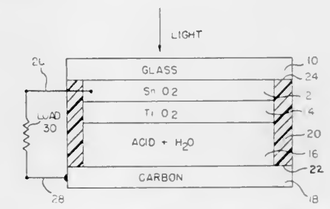
means connected to the electrodes and counterelectrode for drawing converted electrical energy from the cell during irradiation by a light source and stored electrical energy after irradiation terminates.

4,118,547

THIN FILM PHOTOGALVANIC CELL

Horst Witzke, Princeton; Schoen-nan Chen, North Brunswick; Satyendra K. Deb, East Brunswick, all of N.J.; Steven Robert Jost, Huntington, N.Y.; Joseph Reichman, Great Neck, N.Y., and Michael A. Russak, Farmingdale, N.Y., assignors to Optel Corporation, Princeton, N.J. and Grumman Aerospace Corporation, Bethpage, N.Y., part interest to each

Filed Jan. 27, 1977, Ser. No. 763,073
Int. Cl.² H01M *6/30, 6/36*
U.S. Cl. 429—111 **10 Claims**



1. A photogalvanic cell comprising: light transmissive means:

a fluid electrolyte sealed within the cell;

a first electrode positioned in contact with the electrolyte;

a second electrode insulated from the first electrode and spaced therefrom;

means connected to the electrodes for conducting electricity generated by said cell from the cell;

at least one of said electrodes being associated with means enclosing said cell; and

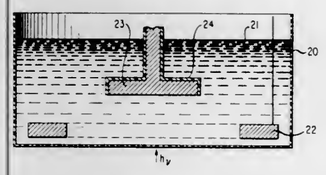
a thin film of TiO_2 contacting the second electrode at a first surface of the thin film, the opposite surface contacting the electrolyte to form a photoactive interface capable of converting light energy to electrical energy.

4,118,548

METHOD OF OPERATING A LIQUID-SEMICONDUCTOR JUNCTION PHOTOCELL

Kuang-Chou Chang, North Plainfield; Adam Heller, Bridgewater, and Barry Miller, Murray Hill, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 18, 1977, Ser. No. 769,950
Int. Cl.[2] H01M *6/30, 6/36*
U.S. Cl. 429—111 **5 Claims**



1. A method of operating a photocell containing a photovoltaic junction between the surface of a semiconductor material and a liquid electrolyte containing a redox couple characterized in that said method comprises:

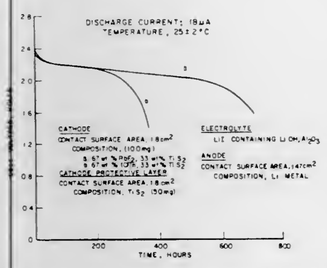
controllably removing said surface of said semiconductor material at a rate of at least 300 Angstroms per day yet maintaining the characteristics of said junction.

4,118,549

SOLID STATE CELL WITH CONDUCTIVE LAYER BETWEEN ELECTRODE AND ELECTROLYTE

Charles Chi Liang, Clarence, N.Y., and AshokVenimadhav Joshi, Levittown, Pa., assignors to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Dec. 6, 1976, Ser. No. 747,678
Int. Cl.[2] H01M *6/18*
U.S. Cl. 429—191 **11 Claims**



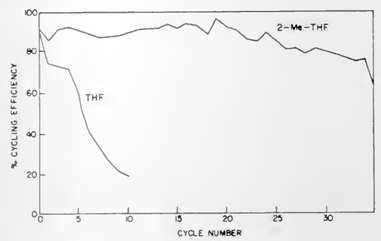
1. A solid electrochemical cell comprising a solid anode and a solid cathode as electrodes, a solid electrolyte chemically reactive with at least one of said electrodes, and a solid layer positioned between said solid electrolyte and said electrode chemically reactive therewith, said solid layer being chemically unreactive with both said solid electrolyte and said electrode which is chemically reactive with said electrolyte, and said layer having an ionic conductivity in excess of 1×10^{-9} ohm^{-1} cm^{-1} at room temperature.

4,118,550

APROTIC SOLVENT ELECTROLYTES AND BATTERIES USING SAME

Victor R. Koch, Framingham, Mass., assignor to EIC Corporation, Newton, Mass.

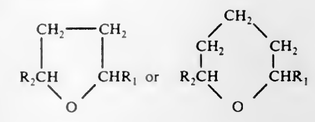
Filed Sep. 26, 1977, Ser. No. 836,731
Int. Cl.[2] H01M *6/14*
U.S. Cl. 429—194 **20 Claims**



2. A rechargeable electrochemical cell comprising:

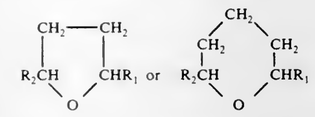
positive and negative electrodes with said negative electrode consisting essentially of lithium as the active electrode materal; and

an electrolyte providing an ionically conductive path between said electrodes, said electrolyte comprising an ionically dissociable lithium salt and a solvent for said salt which is primarily one or more compounds represented by the formula



where R_1 and R_2 are both alkyl groups or one of them is an alkyl group and the other is hydrogen, said alkyl group being a methyl, ethyl, propyl, isopropyl, butyl, isobutyl or tertiary butyl group.

9. An electrolyte for use in an electrochemical cell having a lithium negative electrode, said electrolyte comprising an ionically dissociable solute in the form of a lithium salt and a solvent for said salt which comprises predominantly one or more members from the class consisting of compounds conforming to the formula



where R_1 and R_2 are both alkyl groups or one of them is an alkyl group and the other is hydrogen, said alkyl group being a methyl, ethyl, propyl, isopropyl, butyl, isobutyl or tertiary butyl group.

4,118,551

MERCURY-FREE ZINC ELECTRODE

Roland F. Chireau, Quaker Hill, Conn., and Ronald G. Gunther, Troy, Mich., assignors to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Oct. 31, 1977, Ser. No. 847,357
Int. Cl.[2] H01M *4/24, 10/24*
U.S. Cl. 429—207 **9 Claims**

1. An improved zinc electrode consisting of mercury-free material, said material comprising a substantially homogeneous admixture of

(1) zinc active electrode material;

(2) water-soluble salt which is selected from the group consisting of lead acetate, cadmium acetate and mixtures thereof, said salt being present in an amount sufficient to substantially reduce the evolution of hydrogen gas at said zinc electrode; and,

(3) water-soluble non-ionic binder which is hydroxy alkyl cellulose, said binder being present in an effective amount to provide a cohesive zinc electrode and to retain said zinc electrode material and acetate substantially homogeneously dispersed in said zinc electrode.

4,118,552

SELF-SUPPORTING ELECTRODE AND METHOD OF MAKING SAME

Roland F. Chireau, Quaker Hill, Conn., and Aldo S. Berchielli, Westerly, R.I., assignors to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Jan. 5, 1978, Ser. No. 867,056
Int. Cl.[2] H01M *4/04, 4/58*
U.S. Cl. 429—219 **15 Claims**

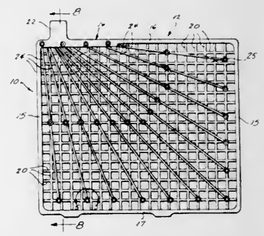
1. An improved self-supporting electrode, said electrode comprising a substantially uniform cast, solidified mixture of a major proportion by weight of cuprous chloride and a minor proportion by weight silver chloride.

4,118,553

COMPOSITE BATTERY PLATE GRID AND METHOD OF MANUFACTURING

Paul J. Buckethal, Villa Hills, Ky.; Jerome J. Groff, Wauwatosa, Wis.; Vincent M. Halsall, River Hills, Wis., and Roy E. Hennen, Mequon, Wis., assignors to Globe-Union, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 687,166, May 17, 1976, abandoned. This application Jun. 15, 1977, Ser. No. 806,927
Int. Cl.[2] H01M *4/72*
U.S. Cl. 429—234 **36 Claims**



1. The method of forming a composite battery grid having an electrically conductive member and a plastic support, said conductive member comprising a terminal lug having a plurality of divergent conductive runners extending therefrom and said plastic support comprising a generally rectangular boundary within which is a plurality of interconnected spaced runners forming a grid-like structure, comprising the steps of:

providing a first mold half having a pattern formed therein, said first mold half including retractable means placed within one or more portions of said pattern, said retractable means being movable between an extended position and a retracted position, said pattern being in the shape of at least part of a first structure, said first structure being one of said conductive member and said plastic support;

providing a second mold half having a pattern formed therein, said pattern being in the shape of the remainder of said first structure;

placing said first and second mold halves together with said retractable means in an extended position;

introducing a first material in a liquid state into said first and second mold half patterns and allowing said first material to at least partially solidify and form said first structure, said first material being metal if said first structure is said conductive member and being plastic if said first structure is said plastic support;

removing said second mold half while retaining said first material in said first mold half;

placing a third mold half adjacent said first mold half, said third mold half having a pattern which overlies portions of said first mold half pattern including said retractable means, said third mold half pattern being in the shape of a second structure, said second structure being the other of said conductive member and said plastic support;

moving said retractable means to a retracted position to form vacated portions in said first mold half pattern and in communication with said third mold half pattern;

injecting a second flowable material into said third mold half pattern to cause said second material to liquify and flow into said vacated portions to form a mechanical joint between said first and second materials, said second material being plastic if said second structure is said plastic support and being metal if said second structure is said conductive material;

allowing said second material to solidify and form said second structure; and

removing the resulting molded battery grid from said first and third mold halves.

4,118,554

AGGREGATED POLYELECTROLYTES

Joseph E. Fields, Balwin, and Robert J. Slocombe, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 25, 1977, Ser. No. 818,919
Int. Cl.[2] C08F *6/00, 8/32*
U.S. Cl. 526—15 **10 Claims**

1. A method of improving the filterability, drying characteristics and physical form of polymers used in making water-insoluble, cross-linked polyelectrolytes containing amine-imide functional groups without substantially diminishing the protein adsorption capacity of said polyelectrolytes comprising heating said polymer in an inert organic solvent or solvent mixture at a temperature ranging from about 115° C. to about 160° C. but lower than the softening point of said polymer for at least about 15 minutes and until said polymer is substantially aggregated, said polymer comprising a copolymer of (a) unsaturated monomer having from 2 to about 18 carbon atoms and (b) a monomer selected from the group consisting of unsaturated polycarboxylic acids or anhydrides having from 4 to about 12 carbon atoms, and said polymer being thus aggregated prior to the cross-linking and substitution with the major portion of said amine-imide functional groups.

6. An aggregated, water-insoluble, cross-linked polyelectrolyte containing amine-imide functional groups comprising a copolymer of (a) unsaturated monomer having from 2 to about 18 carbon atoms and (b) a monomer providing reactive sites and selected from the group consisting of unsaturated polycarboxylic acid or anhydride having from 4 to about 12 carbon atoms, and in which from about 2 to 100% of the reactive sites in said copolymer are substituted with amine-imide functional groups, said polyelectrolyte being thus aggregated prior to cross-linking and substitution with the major portion of said amine-imide functional groups, the major portion of said aggregated polyelectrolyte copolymer having a particle size ranging from about 50 to about 200 microns, said major portion in both instances being defined to mean more than 50% of the entire portion.

4,118,555

PROCESS FOR THE PREPARATION OF PETROLEUM RESINS

Silvio Vargiu, Casatenovo (Como); Edoardo Carpaneti, Sovico (Milan); Giancarlo Crespolini, Vedano Al Lambro (Milan), and Mario Pitzalis, Arcore (Milan), all of Italy, assignors to Euteco, S.p.A., Milan, Italy

Filed Aug. 5, 1977, Ser. No. 822,172

Claims priority, application Italy, Aug. 5, 1976, 26047 A/76

Int. Cl.[2] C08F *240/00*

U.S. Cl. 526—76 **13 Claims**

1. A process for the preparation of petroleum resins of good solubility in n-hexane, which comprises:

(a) subjecting a hydrocarbon fraction containing olefins and diolefins, having a boiling range of from 30° to 300° C., to prepolymerization at a temperature of from 10° to 60° C. for a period of from 1 to 60 minutes in the presence of from 2 to 10 parts by weight of activated clays for each 100 parts by weight of said hydrocarbon fraction, thereby to transform a portion of said fraction of from 1 to 20% by weight into pre-polymers having a boiling point above 250° C.;

(b) removing said activated clays from the prepolymerization medium;

(c) subjecting the resulting hydrocarbon solution of prepolymers to distillation in such a way as to recover as distillate a selected hydrocarbon fraction having a maximum boiling point of 250° C.;

(d) adding to the said selected hydrocarbon fraction from 0.05 to 1 part by weight of a C_5 hydrocarbon fraction for each part by weight of said selected hydrocarbon fraction, said C_5 hydrocarbon fraction being obtained by steam-cracking of petroleum fractions, having a bromine value of from 90 to 130 and containing unsaturated hydrocarbons with five carbon atoms or a mixture of unsaturated hydrocarbons with an average of five carbon atoms per molecule, and having a boiling range of from 25° to 130° C., and subjecting the resulting mixture to polymerization in the presence of a Friedel-Crafts catalyst with conversion into a petroleum resin of a quantity of from 15 to 50% by weight with respect to said mixture; and

(e) recovering the petroleum resin of step (d) from the resulting polymerization products.

4,118,556

PROCESS FOR THE PRODUCTION OF ACRYLONITRILE-VINYL-CHLORIDE COPOLYMERS WITH IMPROVED WHITENESS

Joachim König, Schildgen, and Carlhans Süling, Odenthal-Hahnenberg, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 606,583, Aug. 21, 1975, abandoned. This application Dec. 13, 1976, Ser. No. 749,779

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1974, 2440259

Int. Cl.[2] C08F *220/44, 4/40*

U.S. Cl. 526—229 **1 Claim**

1. A process for the improvement of the whiteness and thermal stability of highly chemically uniform copolymers consisting essentially of acrylonitrile and vinyl chloride having an acrylonitrile content of from 25 to 60% by weight and a vinyl chloride content of from 40 to 75% by weight consisting essentially of copolymerizing acrylonitrile and vinyl chloride by emulsion polymerization with a redox catalyst of persulphate and compounds of sulphurous acid wherein the polymerization is conducted at a pH of from 2.5 to 4 and the ratio be weight of reducing to oxidizing component is maintained at at least 4:1 to provide an acrylonitrile/vinyl chloride copolymer having an acrylonitrile content of from 25 to 60% by weight and a vinyl chloride content of from 40 to 75% by weight.

4,118,557

CYCLIC ALKYLIDENYL N-(LOWER-ALKYL)-3-(PYRIDINYL)ANILINOMETHYLENEMALONATES

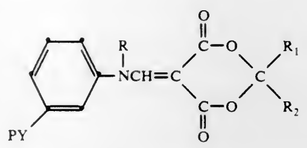
George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 675,607, Apr. 9, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,693

Int. Cl.[2] C07D *405/12, 319/06*

U.S. Cl. 542—420 **4 Claims**

1. Cyclic alkylidenyl N-(lower-alkyl)-3-PY-anilinomethylenemalonate having the formula



where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, R is lower-alkyl, and R_1 and R_2 are each lower-alkyl.

4,118,558

2-ARYL-6-ARYLIDENE-1-(SUBSTITUTED AMINOALKOXY)-1-CYCLOHEXENES

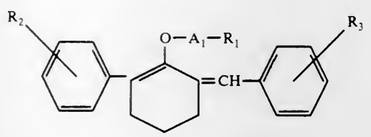
Chester F. Turk, Kendall Park, and John Krapcho, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 771,867, Feb. 25, 1977, Pat. No. 4,085,142. This application Jan. 25, 1978, Ser. No. 872,122

Int. Cl.[2] C09B *23/00*

U.S. Cl. 542—429 **9 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein

R_1 is 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, 4-alkyl-1-piperazinyl;

R_2 and R_3 are the same or different and are hydrogen, chloro, fluoro, alkyl, alkoxy or trifluoromethyl; and

A_1 is alkylene having 2 to 5 carbon atoms; wherein the terms alkyl and alkoxy refer to groups having 1 to 8 carbon atoms.

4,118,559

9-HYDROXYHEXAHYDRODIBENZO[o,d]PYRANS, 1-SUBSTITUTED-9-HYDROXYHEXAHYDRODIBENZO[b,d]PYRANS AND INTERMEDIATES THEREFOR

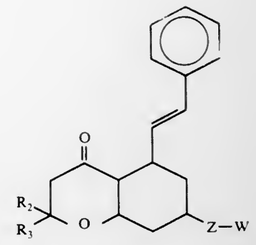
Michael Ross Johnson, and Lawrence Sherman Melvin, Jr., both of Gales Ferry, Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 7, 1977, Ser. No. 804,306

Int. Cl.[2] C07D *311/22, 405/06*

U.S. Cl. 542—432 **11 Claims**

1. A compound having the formula



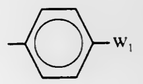
wherein each of R_2 and R_3 is selected from the group consisting of hydrogen and methyl;

Z is selected from the group consisting of

(a) alkylene having from one to 10 carbon atoms;

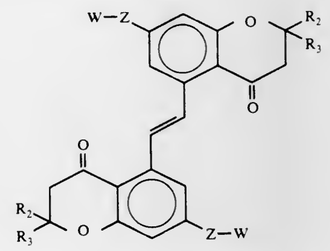
(b) $-(alk_1)_m-O-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from one to 10 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 10; each of *m* and *n* is 0 or 1; and

W is selected from the group consisting of hydrogen, pyridyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro.

2. A compound having the formula



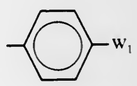
wherein each of R_2 and R_3 is selected from the group consisting of hydrogen and methyl;

Z is selected from the group consisting of

(a) alkylene having from one to 10 carbon atoms;

(b) $-(alk_1)_m-O-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from one to 10 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 10; each of *m* and *n* is 0 or 1; and

W is selected from the group consisting of hydrogen, pyridyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro.

4,118,560

SUBSTITUTED 1,4-BIS-STYRYLBENZENE AND 4,4'-BIS STYRYLBIPHENYL AND THEIR USE AS OPTICAL BRIGHTNERS

Kurt Weber, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

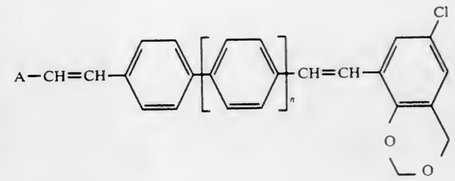
Filed Nov. 11, 1976, Ser. No. 740,706

Claims priority, application Switzerland, Nov. 24, 1975, 15198/75

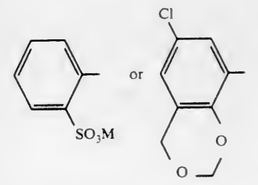
Int. Cl.[2] C07D *319/08*

U.S. Cl. 542—447 **10 Claims**

1. Distyryl compounds of the formula

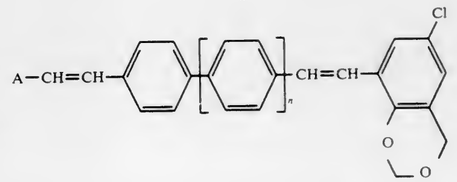


wherein A represents a radical of the formula

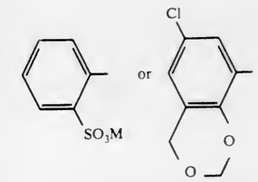


and *n* is 0 or 1, whilst M represents a hydrogen atom or a salt-forming cation.

7. A process for optically brightening organic materials, which comprises incorporating in or applying to these materials an effective amount of a compound of the formula



wherein A represents a radical of the formula



and *n* is 0 or 1, whilst M represents a hydrogen atom or a salt-forming cation.

4,118,561

7-(SUBSTITUTED)-7H-PYRROLO[3,2-F]QUINAZOLINE-1,3-DIAMINES

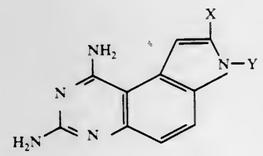
Kurt W. Ledig, Philadelphia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 784,987, Apr. 6, 1977, which is a continuation-in-part of Ser. No. 704,001, Jul. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 704,002, Jul. 9, 1976, abandoned. This application Jun. 27, 1977, Ser. No. 810,659

Int. Cl.[2] C07D *239/95, 487/04*

U.S. Cl. 542—470 **110 Claims**

1. A compound of the general formula:



or a non-toxic acid addition salt thereof, wherein:

(a) X is hydrogen and Y is $-CH_2R$ or $-R^1$ wherein:

R is hydrogen; methyl; ethyl; n-propyl; i-propyl; n-butyl; i-butyl; n-pentyl; n-hexyl; 2-methyl-1-propenyl; cyclobutyl; cyclopentyl; cyclohexyl; 2-phenylethyl; 2-phenylvinyl; phenyl; phenyl monosubstituted in the 2-, 3-, or 4-position by chlorine, bromine, iodine, fluorine, trifluoromethyl, methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, t-butyl, methoxy, ethoxy, n-propoxy, trifluoromethoxy, cyano, methylsulfonyl, acetyl, propionyl, methylthio, ethylthio, carbethoxy, carboxyl, sodium carboxy, or potassium carboxy; phenyl monosubstituted in the 3-position by amino or nitro; phenyl disubstituted in the 2,3-, 2,4-, 2,5-, 2,6-, 3,4-, or 3,5-positions by methyl, ethyl, n-propyl, methoxy, ethoxy, n-propoxy, chlorine, bromine, iodine, or fluorine; phenyl trisubstituted in the 2,4,6- or 3,4,5-positions by methyl, ethyl, methoxy, or ethoxy; 2,3,5,6-tetramethylphenyl; 3,4-(methylene dioxy)phenyl; 1-naphthalenyl; 2-naphthalenyl; 2-methyl-1-naphthalenyl; 1-bromo-2-naphthalenyl; 2-pyridinyl; 3-pyridinyl; 4-pyridinyl; 2-quinolinyl; 8-quinolinyl; 2-thienyl; 3-thienyl; 4-thiazolyl; 3,5-dimethyl-4-isoxazolyl; tetrahydro-2-furanyl; or benzo[b]thien-3-yl; and

R^1 is hydrogen; phenyl monosubstituted in the 2- or 4-position by amino, nitro, cyano, acetyl, propionyl, methylsulfonyl, trifluoromethyl, or carbethoxy; 2,4-dinitrophenyl; 2,4-diaminophenyl; 2-cyano-4-nitrophenyl; 2-cyano-4-aminophenyl; 3-methyl-4-nitrophenyl; 3-methyl-4-aminophenyl; 2-trifluoromethyl-4-nitrophenyl; 2-trifluoromethyl-4-aminophenyl; 2-thiazolyl; 2-pyridinyl; 5-nitro-2-pyridinyl; 2-pyrimidinyl; 2-pyrazinyl; 2-quinolinyl; 4-quinolinyl; 4-methyl-2-quinolinyl; 7-chloro-4-quinolinyl; 7-trifluoromethyl-4-quinolinyl; 2-methyl-4-quinolinyl; 3-methyl-2-quinoxalinyl; 2-phenyl-4-quinolinyl; or 2-benzothiazolyl; and

(b) X is methyl, phenyl, or chlorine; and Y is hydrogen, methyl, benzyl, 3-cyanobenzyl, 4-cyanobenzyl, or 2,5-dimethylbenzyl; provided that when X is phenyl, Y may only be hydrogen or methyl, and when X is chlorine, Y may only be benzyl.

4,118,562

AZIDOMETHYLARYL-SUBSTITUTED CEPHALOSPORIN DERIVATIVES

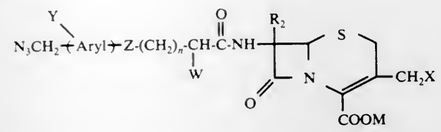
Fortuna Haviv, Montreal, Canada, and Abraham Patchornik, Ness-Ziona, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Division of Ser. No. 625,558, Oct. 24, 1975, Pat. No. 4,045,438. This application Jan. 14, 1977, Ser. No. 759,470

Int. Cl.[2] C07D *501/36*

U.S. Cl. 544—26 **36 Claims**

1. A compound selected from a base of the formula:



wherein Aryl is selected from phenyl and 2-thienyl; Y is selected from hydrogen, chlorine, bromine, a straight or branched lower alkyl group of from 1 to 4 carbon atoms and a lower alkoxy group of from 1 to 4 carbon atoms with the proviso that when Aryl is 2-thienyl, Y is hydrogen; Z is selected from a bond, oxygen, sulfur and imino with the proviso that when Aryl is 2-thienyl, Z is a bond; W is selected from hydrogen, methyl, amino, hydroxy, SO_3H and $COOR_1$ wherein R_1 is selected from hydrogen and 5-indanyl; *n* is zero, 1 or 2 with the proviso that when W is other than hydrogen or methyl and Z is other than a bond, *n* is not zero; R_2 is selected from hydrogen, and methoxy; M is selected from hydrogen; a pharmaceutically acceptable non-toxic cation; alkanoyloxymethyl wherein the alkanoyl moiety contains from 1 to 5 carbon atoms and may be straight or branched; alkanoylaminomethyl wherein the alkanoyl moiety contains from 1 to 5 carbon atoms and may be straight or branched and wherein the amino nitrogen atom may be substituted with an alkyl group of from 1 to 4 carbon atoms; alkoxycarbonylaminomethyl wherein the alkoxy moiety contains from 1 to 4 carbon atoms and may be straight or branched and wherein the amino nitrogen atom may be substituted with an alkyl group of from 1 to 4 carbon atoms; *p*-(alkanoyloxy)benzyl wherein the alkanoyl moiety contains from 1 to 5 carbon atoms and may be straight or branched; and aminoalkanoyloxymethyl wherein the alkanoyl moiety contains from 2 to 15 carbon atoms and the amino nitrogen may be mono- or di-substituted with a lower alkyl group of from 1 to 4 carbon atoms; X is selected from 1,3,4-thiadiazol-5-ylthio, 3-methyl-1,2,4-thiadiazol-5-ylthio, tetrazol-5-ylthio, 1-methyltetrazol-5-ylthio, 2-methyl-1,3,4-oxadiazol-5-ylthio, 2-methyl-1,3,4-thiadiazol-5-ylthio and 1,2,3-triazol-5-ylthio; and pharmaceutically acceptable salts thereof.

4,118,563

PRODUCTION OF 7-(2-AMINOMETHYLPHENYLACETAMIDO-3-(1-CARBOXYMETHYLTETRAZOL-5-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

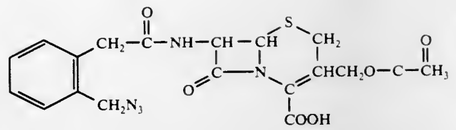
Gary M. F. Lim, Candiac, and Yvon G. Perron, St-Lambert, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,457

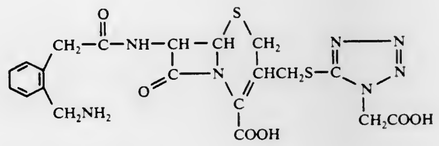
Int. Cl.[2] C07D *501/36*

U.S. Cl. 544—26 **4 Claims**

1. The acid having the formula

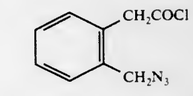


3. In the process for the production of the final cephalosporin having the formula

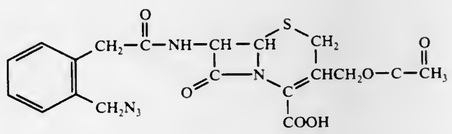


the consecutive steps of

(a) mixing 7-aminocephalosporanic acid or a salt thereof with the acid chloride having the formula

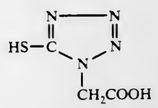


to produce the acid having the formula

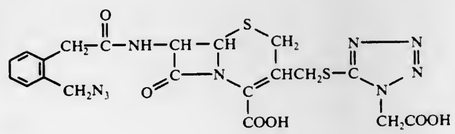


and then

(b) mixing said acid with the thiol having the formula



as the disodium salt thereof to produce the compound of the formula



and then

(c) shaking a solution of said compound with hydrogen under pressure in the presence of Raney nickel to produce the final cephalosporin.

4,118,564

3-6 BIS(MORPHOLINOALKYLTHIO)-PYRIDAZINES

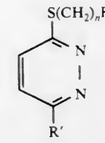
Joseph E. Dunbar, and Louis E. Begin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 684,224, May 7, 1976, Pat. No. 4,058,520. This application Jul. 22, 1977, Ser. No. 817,935

Int. Cl.[2] C07D *413/14*

U.S. Cl. 544—82 **2 Claims**

1. A compound corresponding to the formula



or the pharmaceutically acceptable acid addition salts thereof wherein R is morpholinyl; R' is

$-S(CH_2)_nR;$

where *n* is an integer of from 1 to 5 and R is as defined hereinbefore.

4,118,565

ACETALS OF GLYOXAL AND TEREPHTHALDEHYDE

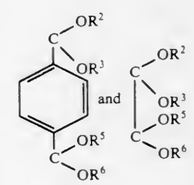
Gerhard Wolfgang Helmut Scherf, Dundas, Canada, assignor to Canadian D. A. Stuart Oil Co. Limited, Scarborough, Canada

Division of Ser. No. 640,273, Dec. 12, 1975, abandoned. This application Jan. 13, 1977, Ser. No. 759,189

Int. Cl.[2] C07D *295/08;* **C07C** *43/30*

U.S. Cl. 544—87 **4 Claims**

1. A surface active compound selected from the group consisting of



wherein at least one of R^2, R^3, R_5 and R^6 is a lipophilic straight or branched chain hydrocarbon group having from 8 to 24 carbon atoms and at least one of R^2, R^3, R^5 and R^6 is a hydrophilic oxyalkylated group having from 1 to 24 oxyalkylene groups and having a terminal alkyl group of from 1 to 4 carbon atoms or a morpholine group and wherein R^2, R^3, R^5 and R^6 are selected from the group consisting of said lipophilic group and said hydrophilic oxyalkylated group.

4,118,566

$\Delta^{2,3}$-1,4-MORPHOLINE-2-CARBOXYLIC ACID DERIVATIVES AS ANTIBACTERIAL AGENTS

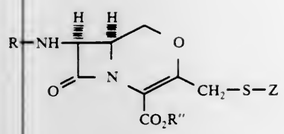
Donald E. Horning, Candiac; Leeson R. Morris, Calgary, and James L. Douglas, Montreal, all of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 598,461, Jul. 23, 1975, Pat. No. 4,013,648. This application Jan. 27, 1977, Ser. No. 763,454

Int. Cl.[2] C07D *265/36, 498/02;* **A01N** *9/00, 9/22*

U.S. Cl. 544—105 **59 Claims**

1. A compound having the formula



wherein R is an acyl group of the formula

$R^aC_nH_{2n}CO-$ (i)

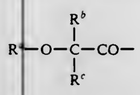
wherein R^a is (a) aryl selected from the group consisting of phenyl, 2-thienyl, 3-thienyl, furyl, 4-isoxazolyl, pyridyl, tetrazolyl, sydnone-3 or -4, imidazolyl, naphthoyl, quinoxalinyl, triazolyl, isothiazolyl, thiadiazolyl, thiazolyl, oxazolyl, oxadiazolyl, pyrazolyl, furazan, pyrazinyl, pyrimidinyl, pyridazinyl and triazinyl; (b) substituted aryl in which the aryl groups defined above under (a) are substituted by one or more chloro, bromo, iodo, fluoro, nitro, amino, cyano, (lower)alkanoyloxy, (lower)alkanoyl, (lower)alkoxyamino, (lower)alkoxy, (lower)alkyl, (lower)alkylamino, hydroxy, guanidino, (lower)alkylthio, carboxy, phenyl, halophenyl, trifluoromethyl, di(lower)alkylamino, sulfamyl, (lower)alkanoylamino, phenyl(lower)alkylamido, cycloalkylamino, allylamido, morpholinocarbonyl, pyrrolidinocarbonyl, piperidinocarbonyl, tetrahydropyridino, furfurylamido or N-alkyl-N-anilino radicals; (c) C_3-C_{12} cycloalkyl; (d) substituted C_3-C_{12} cycloalkyl in which the substitutents are one or more chloro, bromo, fluoro, iodo, nitro, trifluoromethyl, C_1-C_4 alkyl, C_1-C_4 alkylamino, C_1-C_2 alkoxy or amino radicals; (e) C_3-C_{12} cycloalkenyl, said cycloalkenyl group having 1 or 2 double bonds; or (f) substituted C_3-C_{12} cycloalkenyl, said cycloalkenyl group having 1 or 2 double bonds and being substituted by one or more chloro, bromo, fluoro, iodo, nitro, trifluoromethyl, C_1-C_4 alkyl, C_1-C_4 alkylamino, C_1-C_2 alkoxy or amino radicals; and n is an integer from 1–4;

$C_nH_{2n+1}CO-$ (ii)

wherein n is an integer from 1–7, the alkyl portion of said acyl group being straight or branched and optionally interrupted by an oxygen or sulfur atom;

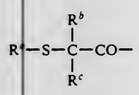
$C_nH_{2n-1}CO-$ (iii)

wherein n is an integer from 2–7, the alkenyl portion of said acyl group being straight or branched and optionally interrupted by an oxygen or sulfur atom;



(iv)

wherein R^a is as defined above under (i) and in addition may be benzyl, C_1-C_6 alkyl or (lower)alkoxy carbonyl and R^b and R^c which may be the same or different each represent hydrogen, phenyl, benzyl, phenethyl or C_1-C_6 alkyl;



(v)

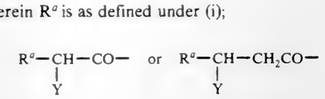
wherein R^a is as defined above under (i) and in addition may be benzyl or C_1-C_6 alkyl and R^b and R^c are as defined under (iv);

$R^aX(CH_2)_mCO-$ (vi)

wherein R^a is as defined under (i) and in addition may be benzyl; X is oxygen or sulfur; and m is an integer of 2–5;

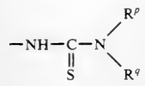
R^aCO- (vii)

wherein R^a is as defined under (i);

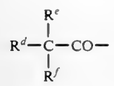


(viii)

wherein R^a is as defined under (i) and Y is hydrazino, guanidino, ureido; substituted ureido of the formula

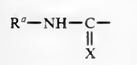


in which R^p is hydrogen or C_1-C_8 alkyl and R^q is hydrogen, C_1-C_8 alkyl, C_2-C_8 alkenyl, phenyl, benzoyl, C_1-C_8 alkoxy-C_1-C_8 alkyl or (carbo-C_1-C_8 alkoxy)C_1-C_8 alkyl; allophanamido; 3-guanyl-1-ureido; 3-(2-furoyl)ureido; 3-(benzoyl-)ureido; cyano; cyanamino; azido; amino; a group obtained by reacting the amino group Y with acetone, formaldehyde, acetaldehyde, butyraldehyde, acetylacetone, methyl acetoacetate, benzaldehyde, salicylaldehyde, methyl ethyl ketone or ethyl acetoacetate; hydroxy; (lower)alkoxy; carboxy; 5-indanyloxycarbonyl; triazolyl; tetrazolyl; halogeno; formyloxy; (lower-)alkanoyloxy; sulfo; or sulfoamino;



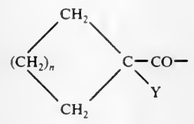
(ix)

wherein R^d, R^e and R^f which may be the same or different may each represent C_1-C_6 alkyl, phenyl or phenyl substituted by one or more chloro, bromo, iodo, fluoro, trifluoromethyl, nitro, amino, cyano, (lower)alkanoyloxy, (lower)alkanoyl, (lower)alkoxyamino, (lower)alkoxy, (lower)alkyl, (lower)alkylamino, hydroxy, (lower)alkylthio, carboxy, di(lower)alkylamino or sulfamyl radicals;



(x)

wherein R^a is as defined under (i) and in addition may be hydrogen, C_1-C_6 alkyl, halogen-substituted C_1-C_6 alkyl, phenethyl, phenoxymethyl, benzyl or R^a—CO— and X is oxygen or sulfur;



(xi)

wherein Y is as defined under (viii) and n is an integer of 1–4;

$R^gCH(NH_2)(CH_2)_nCO-$ (xii)

wherein n is an integer of 1–10, or

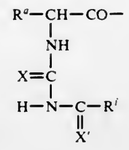
$H_2N-C_nH_{2n}Ar(CH_2)_mCO-$

wherein m is 0 or an integer from 1–10, and n is 0, 1 or 2; R^g is hydrogen, (lower)alkyl, phenyl, benzyl or carboxy and Ar is p-phenylene or 1,4-naphthylene;

$R^hCO.CO-$ (xiii)

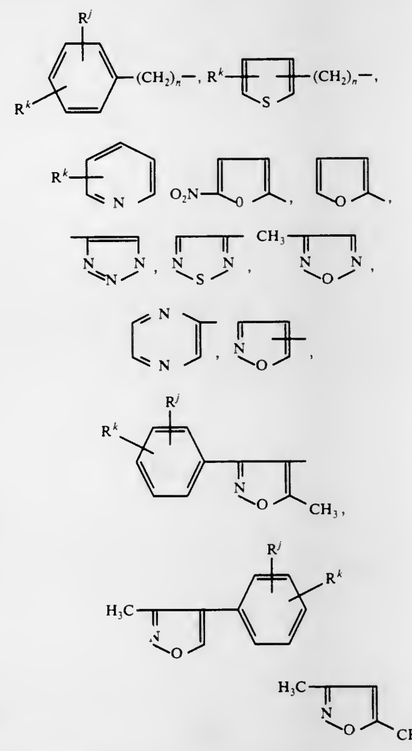
wherein R^h is 2-thienyl; 3-thienyl; α-naphthyl; 2-phenanthryl or a mono-, di- or tri-substituted phenyl group, the substituents

being chloro, bromo, iodo, fluoro, amino, di(lower)alkylamino, (lower)alkyl, (lower)alkoxy, nitro or (lower)alkanoylamino;

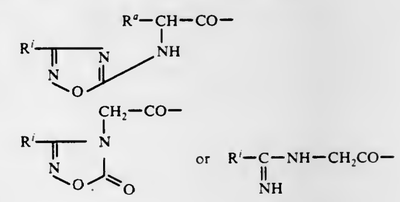


(xiv)

wherein R^a is as defined under (i); X is oxygen or sulfur; X′ is oxygen or imino; and R^i is (lower)alkyl, cycloalkyl having 4, 5, 6 or 7 carbon atoms, monohalo (lower)alkyl, dichloromethyl, trichloromethyl, (lower)alkenyl of 2–6 carbon atoms,

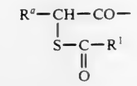


n is an integer from 0 to 3 inclusive and each of R^k and R^j is hydrogen, nitro, di(lower)alkylamino, (lower)alkanoylamino, (lower)alkanoyloxy, C_1-C_6 alkyl, C_1-C_6 alkoxy, sulfamyl, chloro, iodo, bromo, fluoro, or trifluoromethyl;



(xv)

wherein R^a is as defined under (i) and R^l is as defined under (xiv); or



(xvi)

wherein R^a is as defined under (i) and R^l is (lower)alkyl, cycloalkyl of 3–12 carbon atoms, phenyl, a monocyclic heterocyclic radical having 5 or 6 atoms exclusive of hydrogen which are C, S, N or O, no more than 2 atoms being other than C, or a substituted monocyclic heterocyclic radical as defined above having one or more halo, (lower)alkyl, (lower)alkoxy or phenyl substituents, Z represents a 5- or 6-membered heterocyclic ring containing N, O or S, said heterocyclic ring being optionally substituted by halo, C_1-C_4 alkyl, C_1-C_4 alkoxy, cyano, carboxyl, amino, nitro, C_3-C_4 cycloalkyl, C_2-C_4 alkenyl, trifluoromethyl, hydroxy, hydroxymethyl, C_1-C_4 alkylthio, C_1-C_4 alkylamino, di(C_1-C_4 alkyl)amino, mercapto, phenyl, benzyl, alkoxyalkyl of up to 4 carbons or $-(CH_2)_nCOOH$ in which n is an integer of 1 to 4 and R″ is hydrogen or an easily cleavable ester selected from the group consisting of benzhydryl, benzyl, p-nitrobenzyl, p-methoxybenzyl, trichloroethyl, trimethylsilyl, phenacyl, acetonyl, (lower)alkyl, triphenylmethyl, methoxymethyl, indanyl, phthalidyl, pivaloyloxymethyl and acetoxymethyl, or a pharmaceutically acceptable salt thereof.

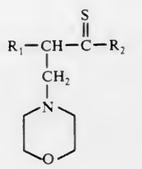
4,118,567

3-MORPHOLINO-2-HETEROCYCLIC-THIOPROPANAMIDES

L. Martin Brenner, Upper Darby, and Bernard Loev, Broomall, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Jun. 23, 1972, Ser. No. 265,941
Int. Cl.[2] **C07D** *413/06*
U.S. Cl. 544—131 **4 Claims**

1. A compound of the formula:



in which:
R_1 is 2-pyridyl;
R_2 is



or $NH-(CH_2)_n$—cycloalkyl, said cycloalkyl having 3 to 6 carbon atoms;
R_3 and R_4 are hydrogen or lower alkyl and
n is 0 or 1
or a pharmaceutically acceptable acid addition salt thereof.

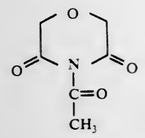
4,118,568

N-ACETYL DIGLYCOLIMIDE

John N. Rapko, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 2, 1977, Ser. No. 830,250
Int. Cl.² C07D *265/32*
U.S. Cl. 544—173 **1 Claim**

1. The compound of the formula:



4,118,569

CHLOROISOCYANURATE COMPOUNDS

Sidney Berkowitz, Highland Park, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jul. 19, 1976, Ser. No. 706,275
Int. Cl.² C07D *251/36*
U.S. Cl. 544—190 **14 Claims**

1. A process for preparing a crystalline, potassium-containing chloroisocyanurate complex compound selected from the group consisting of {(mono-trichloro,) tetra-(monopotassium dichloro,)} penta-isocyanurate tetrahydrate, hydrated (monotrichloro,) (monopotassium dichloro,) di-isocyanurate, said di-isocyanurate having from about 0.1 to about 1.0 moles of water of hydration, and mixtures thereof, which comprises bringing together and reacting in a substantially dry state, trichloroisocyanuric acid and potassium dichloroisocyanurate monohydrate, in amounts such that the molar ratio of said acid to said monohydrate is in the range of 1:0.5 to 1:5.

4,118,570

PROCESS FOR PRODUCING SODIUM DICHLOROISOCYANURATE

James P. Brennan, Wallingford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 31, 1977, Ser. No. 783,241
Int. Cl.² C07D *251/32, 251/36*
U.S. Cl. 544—190 **12 Claims**

1. In a process for the production of sodium dichloroisocyanurate wherein trichloroisocyanurate, cyanuric acid and sodium hydroxide are reacted together in an aqueous solution to form an aqueous reaction mixture containing sodium dichloroisocyanurate and the by-product nitrogen trichloride and a gaseous phase containing the by-product nitrogen trichloride vapor; the improvement which comprises:

purging said nitrogen trichloride vapor from said gaseous phase by passing an inert gas through said gaseous phase during said reaction.

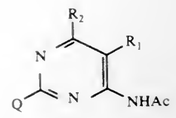
4,118,571

4-ACYLAMINO-2-(PYRIDINYL)PYRIMIDINE DERIVATIVES

George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 765,234, Feb. 3, 1977, which is a division of Ser. No. 708,195, Jul. 23, 1976, Pat. No. 4,032,523, which is a division of Ser. No. 555,067, Mar. 3, 1975, Pat. No. 4,018,770. This application Nov. 30, 1977, Ser. No. 856,123
Int. Cl.² C07D *401/04*
U.S. Cl. 544—319 **1 Claim**

1. A compound of the formula



where Q is 4- or 3- or 2-pyridinyl or 4- or 3- or 2-pyridinyl having one or two lower-alkyl substituents or N-oxide thereof, R_1 is hydrogen, lower-alkyl or cyano, R_2 is hydrogen, lower-alkyl, hydroxy or halo, and Ac is lower-alkanoyl or lower-carbalkoxy.

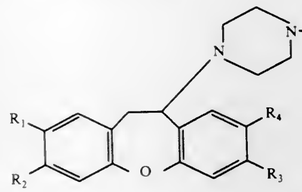
4,118,572

DIBENZ(B,F)OXEPIN DERIVATIVES

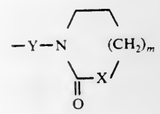
Max Gerecke; Emilio Kyburz, both of Reinach, Switzerland, and Jean-Pierre Kaplan, Le Plessis Robinson, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 534,033, Dec. 18, 1974, Pat. No. 4,032,525. This application Mar. 18, 1977, Ser. No. 779,198
Claims priority, application Switzerland, Jan. 4, 1974, 62/74; Nov. 20, 1974, 15369/74
Int. Cl.² C07D *405/14, 413/14;* A61K *31/495*
U.S. Cl. 544—369 **7 Claims**

1. A compound of the formula



wherein R is a group of the formula



wherein X is oxygen, lower alkylimino or methylene, Y is ethylene or propylene; m is zero; one of R_1 and R_2 is hydrogen and the other is halogen, lower alkyl, or lower alkoxy; and one of R_3 and R_4 is hydrogen and the other is hydrogen, halogen, lower alkyl, or lower alkylthio,

or a pharmaceutically acceptable acid addition salt thereof.

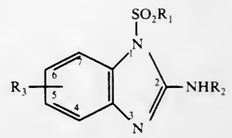
4,118,573

SUBSTITUTED 1-SULFONYLBENZIMIDAZOLES

Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 634,942, Nov. 24, 1975, Pat. No. 4,018,790, which is a continuation-in-part of Ser. No. 574,202, May 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 484,841, Jul. 1, 1974, abandoned. This application Jan. 19, 1977, Ser. No. 760,803
Int. Cl.² C07D *235/30*
U.S. Cl. 548—306 **15 Claims**

1. A compound of the formula



wherein R_1 is C_1–C_5 alkyl, C_3–C_7 cycloalkyl, phenyl, furyl, or thienyl;

R_2 is hydrogen, formyl, acetyl or propionyl;

R_3 is C_1–C_8 alkoxycarbonyl, allyloxycarbonyl, propargyloxycarbonyl, (C_3–C_7 cycloalkyl)oxycarbonyl, (C_3–C_7 cycloalkyl)methyloxycarbonyl, 1-(C_3–C_7 cycloalkyl)ethyloxycarbonyl, benzyloxycarbonyl, α-methylbenzyloxycarbonyl, phenoxycarbonyl, hydrazinocarbonyl, carboxy, carboxamido, N-(C_1–C_4 alkyl)carboxamido, N-(C_1–C_4alkoxy)carboxamido, or cyano; and R_3 is at the 5 or 6 position.

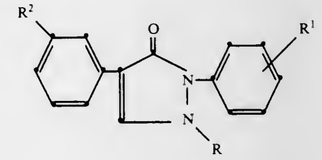
4,118,574

HERBICIDAL 1,4-DIPHENYL-3-PYRAZOLIN-5-ONES

James Richard Beck, and Robert Peter Gajewski, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 724,502, Sep. 20, 1976, Pat. No. 4,075,033, which is a continuation-in-part of Ser. No. 639,744, Dec. 11, 1975, abandoned. This application Nov. 10, 1977, Ser. No. 850,323
Int. Cl.² C07D *231/22*
U.S. Cl. 548—363 **11 Claims**

1. A compound of the formula



wherein

R represents C_1–C_3 alkyl;

R^1 and R^2 independently represent hydrogen, chloro, fluoro, bromo, methyl or trifluoromethyl, provided that R^1 and R^2 do not simultaneously represent hydrogen; and provided that R^1 may not be bromo or chloro in the 4-position.

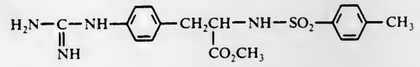
4,118,575

DERIVATIVES OF PARA-GUANIDINO-L-PHENYLALANINE AND METHODS OF PREPARING THEM

Meir Rigbi; Yakir Klausner, both of Jerusalem, Israel; Pierre Lefrancier, and Edgar Sache, both of Bures s, Yvette, France, assignors to Choay S.A., Paris, France

Filed Sep. 5, 1975, Ser. No. 610,671
Claims priority, application France, Sep. 9, 1974, 74 30509
Int. Cl.² C07C *149/40;* C12K *1/04*
U.S. Cl. 560—13 **3 Claims**

1. The tosyl-paraguanidino-L-phenylalanine methyl ester having the formula:



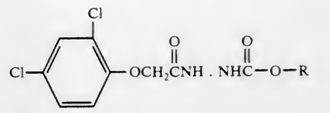
4,118,576

2,4-DICHLOROPHENOXYACETYL CARBAMATE HYDRAZIDES USEFUL AS HERBICIDES

Llewellyn Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 682,923, May 4, 1976, abandoned, which is a division of Ser. No. 639,314, Dec. 10, 1975, Pat. No. 3,975,419. This application Sep. 8, 1977, Ser. No. 831,584
Int. Cl.² C07C *125/06;* A01N *9/24*
U.S. Cl. 560—29 **9 Claims**

1. A compound having the general structural formula



wherein R is selected from the group consisting of alkyl containing 1 through 8 carbon atoms, halosubstituted alkyl containing 1 through 8 carbon atoms, phenyl, benzyl and halosubstituted phenyl.

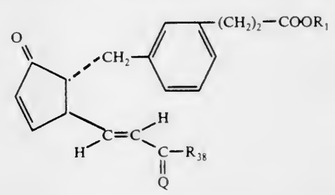
4,118,577

4,5,6-TRINOR-3,7-INTER-M-PHENYLENE PROSTAGLANDIN A_1 ANALOGS

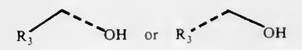
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 677,874, Apr. 19, 1976, abandoned, which is a division of Ser. No. 604,158, Aug. 13, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 764,359
Int. Cl.² C07C *177/00*
U.S. Cl. 560—53 **26 Claims**

1. An optically-active compound of the formula

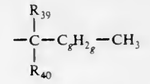


or a mixture comprising that compound and the enantiomer thereof, wherein Q is



wherein R_3 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; including the pharmacologically acceptable salts thereof when R_1 is hydrogen; wherein R_{38} is



wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_{39}R_{40}-$ and terminal methyl, wherein R_{39} and R_{40} are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro,

being the same or different, with the proviso that one of R_{39} and R_{40} is fluoro only when the other is hydrogen or fluoro.

4,118,578

5-OXA-11-DEOXY-CIS-13-PGE$_1$, COMPOUNDS

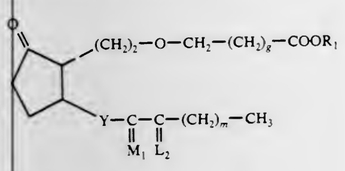
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,079

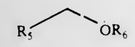
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 560—121 **22 Claims**

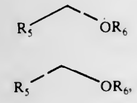
1. A compound of the formula



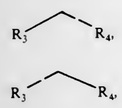
wherein g is 2, 3, or 4;
wherein Y is cis—CH=CH—;
wherein M_1 is



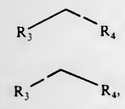
or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_2 is



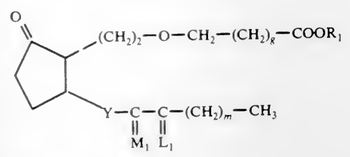
or a mixture of



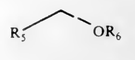
and

wherein one of R_3 and R_4 is fluoro and the other is hydrogen or fluoro;
wherein m is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

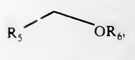
12. A compound of the formula



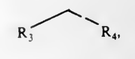
wherein g is 2, 3, or 4;
wherein Y is cis-CH=CH—;
wherein M_1 is



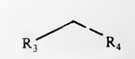
or



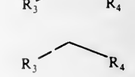
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



and



wherein one of R_3 and R_4 is methyl and the other is hydrogen or methyl;
wherein m is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,118,579

5-OXA-11-DEOXY-CIS-13-PGF$_{1\alpha}$ COMPOUNDS

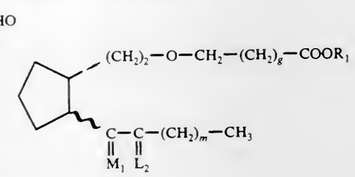
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,080

Int. Cl.^{2} C07C *177/00*

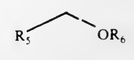
U.S. Cl. 560—121 **21 Claims**

1. A compound of the formula

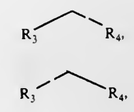


wherein g is 2, 3, or 4;

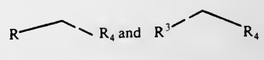
wherein Y is cis—CH=CH—;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_2 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that at least one of R_3 and R_4 is methyl or fluoro and that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein m is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,118,580

5-OXA-CIS-13-PGA, COMPOUNDS

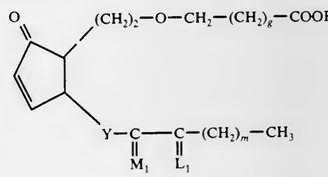
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,081

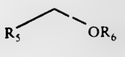
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 560—121 **25 Claims**

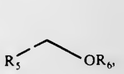
1. A compound of the formula



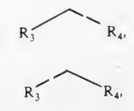
wherein g is 2, 3, or 4;
wherein Y is cis—CH=CH—;
wherein M_1 is



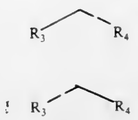
or



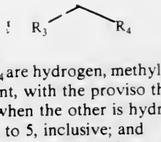
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,118,581

5-OXA-CIS-13-PGE$_1$ COMPOUNDS

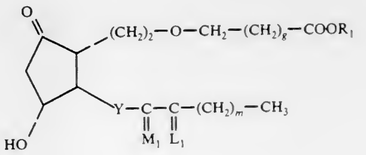
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,083

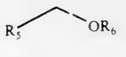
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 560—121 **25 Claims**

1. A compound of the formula



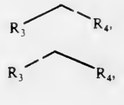
wherein g is 2, 3, or 4;
wherein Y is cis—CH=CH—;
wherein M_1 is



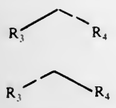
or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein m is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,118,582

PURIFICATION OF SPENT ETHYLENE GLYCOL

Charles Carey Walker, Circleville, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 626,027, Oct. 28, 1975, abandoned. This application Jan. 17, 1977, Ser. No. 764,901
Int. Cl.[2] C07C *69/76, 29/24*
U.S. Cl. 560—96 **12 Claims**

1. In a process for the recovery of ethylene glycol from spent glycol formed in the manufacture of polyethylene terephthalate wherein terephthalic acid or a lower alkyl ester thereof and ethylene glycol are reacted to form dihydroxyethyl terephthalate, said dihydroxyethyl terephthalate is polymerized in the presence of an antimony oxide catalyst to form said polyethylene terephthalate and spent glycol containing antimony catalyst residues, and ethylene glycol is recovered by distillation from the spent glycol, the improvement comprising:
(a) adjusting the pH of the spent glycol to about 2 to 7;
(b) adding an alkali metal borohydride in an excess of about 20 to 200 mole percent to the spent glycol in the absence of oxygen at a temperature not greater than about 60° C. and with intimate mixing, to form a metallic antimony precipitate;
(c) separating the metallic antimony precipitate from the spent glycol in the absence of oxygen; and
(d) distilling ethylene glycol from the spent glycol.

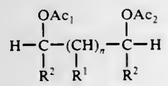
4,118,583

MIXED ESTERS OF POLYOLS

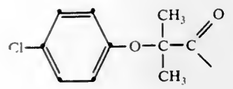
Pierre Baudet, Genéva; Jean-Paul Ricard, and Adrian Schulthess, both of Vaud, all of Switzerland, assignors to Laboratories om Societe Anonyme, Geneva, Switzerland

Filed Dec. 6, 1976, Ser. No. 747,567
Claims priority, application Switzerland, Jan. 8, 1976, 173/76; Jul. 30, 1976, 9790/76
Int. Cl.[2] C07C *69/76*
U.S. Cl. 560—63 **7 Claims**

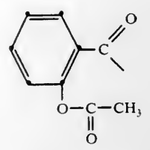
1. Therapeutically active compounds of the general formula:



wherein n is 0, 1, 2, 3 or 4;
Ac_1 is the 2-p-chloro-phenoxy-2-methylpropionyl or clofibril group of the formula:



Ac_2 is the 2-acetylsalicyl group of the formula:



R_1 is hydrogen, $-OAc_1$, $-OAc_2$ or $-OSO_3H$, and
R_2 is hydrogen or both R^2 together form a single bond.

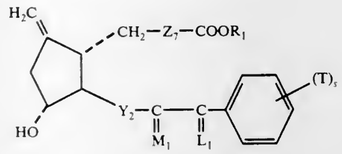
4,118,584

9-DEOXY-9-METHYLENE-16-PHENYL-PGF COMPOUNDS

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 11, 1977, Ser. No. 786,249
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—55 **131 Claims**

1. A prostaglandin analog of the formula



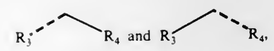
wherein Y_2 is trans—CH=CH— or $—CH_2CH_2—$; wherein M_1 is



wherein R_5 is hydrogen or methyl; wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein Z_7 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
wherein g is one, 2, or 3;
wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the provisio that not more than two T's are other than alkyl;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation, and the 1,11- or 1,15-lactones thereof.

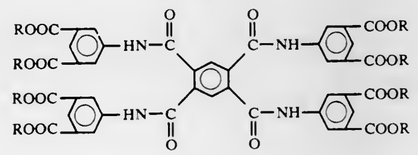
4,118,585

ANIONIC BENZENE TETRAKIS CARBONYLIMINO ISOPHTHALIC ACID SALTS

Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 1, 1977, Ser. No. 812,193
Int. Cl.[2] C07C *63/32, 69/76*
U.S. Cl. 560—44 **3 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of alkali metal; and the pharmaceutically acceptable salts thereof.

4,118,586

PROCESS FOR PREPARING DIHYDROXYTOLUENE

Stephen L. Goldstein, Cheshire, and John S. Babiec, Jr., Orange, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 12, 1977, Ser. No. 832,306
Int. Cl.[2] C07C *37/10*
U.S. Cl. 568—767 **10 Claims**

1. A process for preparing dihydroxytoluene from the distillation residue obtained from the distillation of the product of phosgenating toluene diamine to form the corresponding diisocyanate, which process comprises heating said distillation residue to a temperature of about 180°-270° C. in the presence of an aqueous solution of phosphoric acid in which the concentration of said acid ranges from about 5 to about 50% by weight, said aqueous solution being employed in such a proportion as to provide the equivalent of about 0.001 to about 0.3 gram-moles of phosphoric acid per gram of said residue.

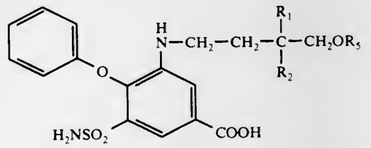
4,118,587

NOVEL 4-PHENOXY-5-SULFAMYLBENZOIC ACID DERIVATIVES

David Llewellyn Coffen, Glen Ridge, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 668,758, Mar. 22, 1976, abandoned. This application Nov. 1, 1976, Ser. No. 737,630
Int. Cl.[2] C07C *143/80*
U.S. Cl. 560—251 **4 Claims**

1. A compound of the formula



wherein R_1 is individually hydrogen, R_2 is individually hydroxy or taken together with R_1 is oxo, R_5 is hydrogen or lower alkanoyl, or pharmaceutically acceptable salts thereof.

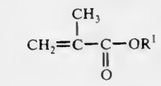
4,118,588

MANUFACTURE OF METHACRYLIC ACID AND METHYL METHACRYLATE

Gerd Fouquet, Ludwigshafen; Franz Merger, Frankenthal; Rolf Platz, Mannheim, and Karl Baer, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

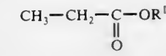
Filed Mar. 25, 1977, Ser. No. 781,149
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615887; Feb. 12, 1977, 2706076
Int. Cl.[2] C07C *69/52*
U.S. Cl. 560—210 **12 Claims**

1. A process for the manufacture of methacrylic compounds of the formula



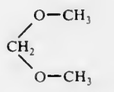
I

where R^1 is a substituent chosen from H and CH_3 which comprises reacting a carboxyl compound of the formula



II

where R^1 has the above meaning, with dimethoxymethane of the formula



III

in the presence of catalysts containing one or more salts selected from the group consisting of phosphates and silicates of magnesium, calcium, aluminum, zirconium, thorium and titanium, the reaction time being from 0.1 to 100 seconds and the reaction being carried out in the presence of from 0 to 0.5 mole of water per mole of starting material III.

4,118,589

PROCESS FOR PREPARING OXALIC ACID AND ESTERS OF SAME

Luigi Cassar, Novara, and Andrea Gardano, Trino Vercellese (Vercelli), both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jan. 15, 1976, Ser. No. 649,235
Claims priority, application Italy, Jan. 17, 1975, 19339 A/75
Int. Cl.[2] C07C *51/00, 55/06, 69/36*
U.S. Cl. 560—204 **9 Claims**

1. A process for the preparation of oxalic acid and alkyl esters of oxalic acid by the oxidation, in the liquid phase, of carbon monoxide and a liquid selected from the group consisting of water and monofunctional alkyl alcohols with a gas selected from the group consisting of oxygen and oxygen-containing gases, in the presence of a catalyst system of the redox type consisting essentially of palladium salts of Pd (II) or of metallic Pd (zero valent) and of soluble salts of a metal more electropositive than palladium selected from the group consisting of Cu, Co, Fe and Ni, having at least two oxidation states, being further characterized in that the reaction is conducted at a temperature ranging from 20° to about 100° C. and a pressure ranging from 10 to about 150 atm. abs. in the presence of an effective amount of a co-catalyst consisting essentially of ammonia, the concentration of the palladium salt being between 0.0001 mole per liter and 1 mole per liter, the concentration of

the salt of the metal more electropositive than palladium being between 0.01 and 1 mole per liter and the molar ratios of the salt of the metal more electropositive than palladium to ammonia ranging from 1:1 to 1:5.

4,118,590

PHOSPHORBETAINES AND PROCESS FOR MAKING THEM

Hartfrid Vollmer, Erftstadt Liblar, and Klaus Hestermann, Erftstadt Bliesheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

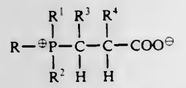
Continuation-in-part of Ser. No. 721,087, Sep. 7, 1976, abandoned. This application Oct. 27, 1976, Ser. No. 736,092

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1975, 2540260

Int. Cl.[2] C07F *9/54*

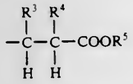
U.S. Cl. 560—190 **15 Claims**

1. Phosphobetaines of the formula I



I

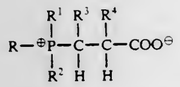
in which R^1 is methyl and R^2 has the meaning of R^1 or of R, R being a radical of the formula II



II

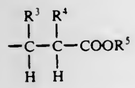
in which R^3 is hydrogen and R^4 is methyl or hydrogen, and R^5 is alkyl of 1–4 carbons.

4. A process for making phosphobetaines of the formula



I

in which R^1 is methyl and R^2 has the meaning of R^1 or of R, R being a radical of the formula II



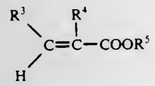
II

in which R^3 is hydrogen and R^4 is methyl or hydrogen, and R^5 is alkyl of 1–4 carbons, which process comprises reacting phosphines of the formula III



III

in which R^1 and R^4 have the meanings given above, with an α,β-unsaturated carboxylic acid of the formula IV



IV

in which R^3, R^4 and R^5 have the meanings given above, the reaction being effected in a single stage in the presence of water or a solvent/water-mixture, and separating the resulting phosphobetaines from the reaction product obtained.

4,118,591

3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-PGD$_1$ COMPOUNDS

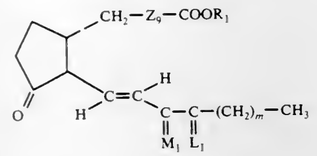
David C. Peterson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,244, Sep. 17, 1975. This application Jun. 23, 1977, Ser. No. 809,254

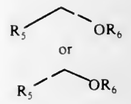
Int. Cl.[2] C07C *69/76, 177/00*

U.S. Cl. 560—53 **25 Claims**

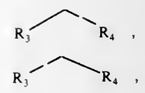
1. A prostaglandin analog of the formula



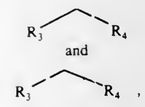
wherein m is one to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is

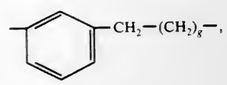


or a mixture of



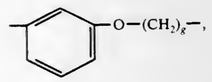
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the provisio that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_9 is

(1)



or

(2)



wherein g is one, 2, or 3.

4,118,592

CARBON ELECTRODE AND OTHER SHAPED CARBON BODIES

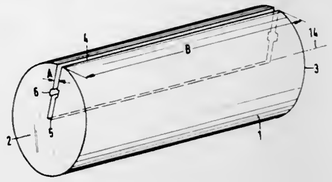
Franz Schieber, Röthenbach, Fed. Rep. of Germany, assignor to C. Conradty Nurnberg GmbH & Co. KG, Gruntal, Fed. Rep. of Germany

Filed Oct. 19, 1976, Ser. No. 734,006

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1975, 2554606

Int. Cl.[2] H05B *7/07*

U.S. Cl. 13—18 R **21 Claims**



1. A shaped body of carbon, in particular a carbon electrode, having a largely round cross section:
(a) said body being provided in its surface with at least one slot extending in longitudinal direction and to the inside of the body;
(b) said body being provided with at least one depression extending inwardly from the surface of said slot; and
(c) a refractory filler material substantially filling said slot and said depression;
and wherein said filler material shields said surface of said slot against oxidation, allows for variations of the slot width when a temperature gradient develops within the electrode cross section, and wherein the filler material in said depression anchors the filler material in said slot.

4,118,593

PROCESS FOR MANUFACTURING MULTI-CORE ELECTRIC POWER CABLES AND CABLES SO-PRODUCED

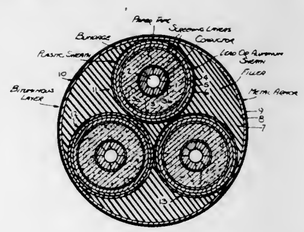
Andrea Borroni, Carimate (Como), Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Nov. 24, 1976, Ser. No. 744,609

Claims priority, application Italy, Dec. 5, 1975, 30001 A/75

Int. Cl.[2] H01B *9/06*

U.S. Cl. 174—26 R **16 Claims**



12. A long-length, multiple core, fluid-filled, high tension electric cable comprising a plurality of core units, each core unit comprising a conductor having a fluid passageway therein, a layer of insulating fluid impregnated insulation around said conductor, a fluid impermeable metal sheath around said layer of insulation and a mechanical re-enforcing layer around said metal sheath, and said cable also comprising an armoring layer around said plurality of core units, said core units being in side-by-side relation within said armoring layer and being separately filled with said insulating fluid and said metal sheath preventing fluid flow from the inside to the outside of each core unit.

4,118,594

LONG DISTANCE COAXIAL CABLE WITH OPTICAL FIBRES

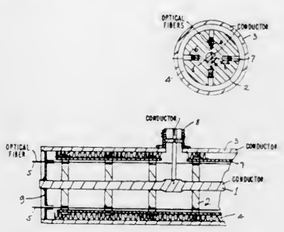
Maurice Arnaud, Paris, France, assignor to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Dec. 27, 1976, Ser. No. 754,609

Claims priority, application France, Dec. 30, 1975, 75 40056

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.23 **6 Claims**



1. A disc insulated coaxial cable for wideband long distance communication comprising:
an inner conductor;
disc shaped spacers on said conductor;
an outer transversally corrugated dielectric ribbon wrapped around said discs;
an outer conductor surrounding said dielectric ribbon;
means defining notches in the periphery of said discs;
optical fibers disposed in said notches paralleling said inner conductor; and
keeper means retaining said fibers in said notches.

4,118,595

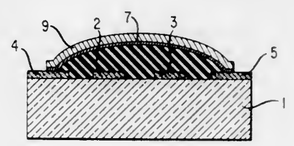
CROSSOVERS AND METHOD OF FABRICATION

Arnold Pfahnl, Allentown, Pa., and Joris Maarten Schuller, Fort Worth, Tex., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 6, 1977, Ser. No. 803,802

Int. Cl.[2] H05K *1/00*

U.S. Cl. 174—68.5 **12 Claims**



1. In a microelectronic circuit comprising a pair of conductive elements and a conductor therebetween on an insulating substrate, a structure which provides an electrical connection between said pair of conductive elements comprising an insulating layer formed over the conductor between said pair, said insulating layer comprising 50–90% by weight SiO_2 with a particle size of 3 μm or less and including 0.5–5% by weight of fumed silica and 10–40% by weight of an organic dielectric, and a crossover conductor formed on said insulating layer making electrical contact between said pair of conductive elements.

4,118,596

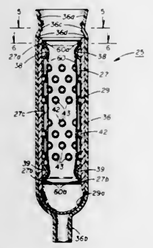
CONNECTOR WITH PERFORABLE INSULATIVE LINER AND METHODS OF FABRICATING SAME

Henry C. Bassett, Addison; Charles A. From, Jr., Elmhurst, both of Ill.; John F. Parker, Dubuque, Iowa, and Ansel A. Worley, Lombard, Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 597,742, Jul. 21, 1975, Pat. No. 4,019,250. This application Dec. 16, 1976, Ser. No. 751,249

Int. Cl.[2] H01R *5/10*

U.S. Cl. 174—87 **10 Claims**



1. A deformable connector for insulated electrical conductors, which comprises at least one metallic sleeve having a plurality of inwardly projecting insulation-piercing tangs, and an outer insulative jacket, wherein the improvement comprises:

a thin, perforable film of plastic material positioned to overlie the distal ends of the tangs, and to extend in both the circumferential and longitudinal directions, with no overlapped regions, and with no discontinuities, as a continuous single-wall liner over at least the area thereof that is coextensive with the underlying area of said sleeve within which said plurality of tangs are are formed, said plastic film being readily pierced by the tangs upon deformation of at least said one sleeve.

4,118,597

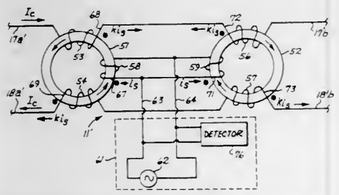
METHOD AND APPARATUS FOR DETECTING DIRECT CURRENTS IN A TRANSMISSION LINE

Darryl F. Proctor, Redmond; Peter T. Skelly, Issaquah, and Darrell D. Cole, Seattle, all of Wash., assignors to Proctor & Associates Company, Redmond, Wash.

Filed Jun. 23, 1975, Ser. No. 589,191

Int. Cl.[2] H04M *3/22;* **H02H** *1/02*

U.S. Cl. 179—18 FA **2 Claims**



1. An apparatus for detecting dc loop current flow, while rejecting longitudinal current flow, in a pair of conductors of a telephone transmission line which transmits voice signals between a central office and a subscriber's station, comprising:

first and second, substantially identical, magnetic cores, and first and second pairs of drive windings, one winding of each of said first and second pairs of drive windings being connected in series with a separate one of said conductors of said telephone transmission line and said first and second pairs of windings being so associated with said first and second cores, respectively, so that longitudinal current flow in said conductors induces mutually opposed, self-cancelling flux components in each of said first and second cores, and so that dc current flow in said conductors induces additive flux components in each of said first and second cores that drive each of said cores toward magnetic saturation;

first and second sense windings associated with said first and second cores, respectively;

sensing circuit means connected to said first and second sense windings, said sensing circuit means including an ac signal source means for applying an ac sensing signal to said first and second sense windings, and an electrical detector means connected to said first and second sense windings for detecting variations in the impedance of said first and second sense windings to said ac sensing signal as a function of variation in the saturation of said first and second cores; and

said first and second sense windings being so associated with said first and second magnetic cores, respectively, so that electromagnetic coupling between said first sense winding and said first pair of drive windings on said first core is in phase opposition to electromagnetic coupling between said second sense winding and said second pair of drive windings on said second core, whereby ac signals that are electromagnetically coupled between said first sense winding and said first pair of drive windings are electrically cancelled by equal and opposite phase signals which are electromagnetically coupled between said second sense winding and said second pair of drive windings.

4,118,598

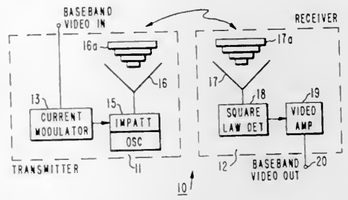
AMPLITUDE MODULATED IMPATT DIODE OSCILLATOR AND A LOW COST COMMUNICATION SYSTEM USING SAME

John Joseph Risko, Cranbury, and Louis Sebastian Napoli, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 25, 1975, Ser. No. 616,887

Int. Cl.[2] H03D *1/10;* **H04B** *1/22*

U.S. Cl. 325—26 **9 Claims**



1. A microwave communications system for broadcasting and receiving video signals, comprising:

an IMPATT diode oscillator for generating RF carrier frequency signals, said oscillator including an IMPATT diode and means for biasing said IMPATT diode into the avalanche region where the output power of the RF signal is linearly proportional to current,

current modulator means coupled to said IMPATT diode and responsive to said video signals for changing the current through said IMPATT diode to provide an RF power output proportional to the voltage level of said video signals and an envelope amplitude proportional to the square root of the video signal,

means coupled to said oscillator for radiating the varying power level signals from said oscillator,

means remotely located from said radiating means for receiving said radiated varying power level RF signals, and

means including only a square law detector coupled to said receiving means and responsive to said varying power level RF signals for providing voltage variable signals proportional to the square of the input voltage which constitute the reconstructed video signal compensated for the compression of the signal in the modulator to thereby provide an overall linear system.

4,118,599

STEREOPHONIC SOUND REPRODUCTION SYSTEM

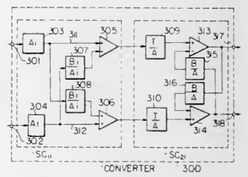
Makoto Iwahara, and Toshinori Mori, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Feb. 25, 1977, Ser. No. 772,149

Claims priority, application Japan, Feb. 27, 1976, 51-20098; Mar. 14, 1976, 51-27313; Mar. 14, 1976, 51-27314

Int. Cl.[2] H04R *5/00*

U.S. Cl. 179—1 G **13 Claims**



1. Apparatus for deriving signals to be applied to a multichannel sterophony using loudspeakers in spaced relation with respect to a listener, comprising;

binaural localization circuit means receptive of signals from a first signal source for developing a binaural representation of said first signal, said binaural representation consisting of first and second binaurally correlated signals which localize a binaural sonic image at a desired location; and

crosstalk cancellation circuit means receptive of said first and second binaurally correlated signals for developing third and fourth binaurally correlated signals for application to said loudspeakers without producing the effect of acoustic crosstalk which might be preceptible by said listener if said first and second binaurally correlated signals were supplied directly to said loudspeakers.

4,118,600

LOUDSPEAKER LOWER BASS RESPONSE USING NEGATIVE RESISTANCE AND IMPEDANCE LOADING

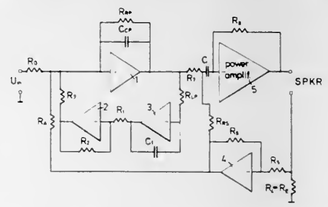
Karl Erik Ståhl, Haggviksvagen 14, Sollentuna, Sweden

Filed Mar. 23, 1977, Ser. No. 780,454

Claims priority, application Sweden, Mar. 24, 1976, 7603585

Int. Cl.[2] H04R *3/00, 3/08*

U.S. Cl. 179—1 D **32 Claims**



1. An apparatus for improving the bass response of an electrodynamic loudspeaker comprising:

means including an electrical network for applying electrical energy corresponding to the sound to be reproduced to a voice-coil in said loudspeaker, said means having an effective output impedance substantially equivalent to a negative resistance in series with a plurality of impedances disposed in a parallel circuit;

said negative resistance being substantially equal in magnitude to the resistance of said voice-coil; and

said impedances in said parallel circuit having such values that the reactance of said parallel circuit has a significant influence on the bass response of said loudspeaker.

4,118,601

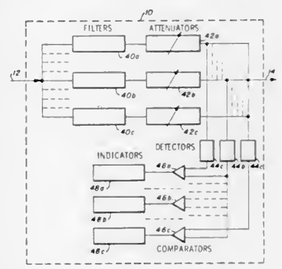
SYSTEM AND A METHOD FOR EQUALIZING AN AUDIO SOUND TRANSDUCER SYSTEM

Arthur K. C. Yeap, San Francisco, Calif., assignor to Audio Developments International, Palo Alto, Calif.

Filed Nov. 24, 1976, Ser. No. 744,635

Int. Cl.[2] H03J *5/24*

U.S. Cl. 179—1 D **4 Claims**



1. A system for equalizing a sound transducer system, including a source of program signals and a speaker, with an environment which is to receive the sound generated by the sound transducer system, comprising:

a plurality of contiguous, narrow, band filters substantially covering the band of spectral frequencies of the sound generated by the sound transducer system for filtering an applied signal into a plurality of filtered signals;

means connected to the output of each filter for controlling the amplitude of each filtered signal and for providing a plurality of amplitude controlled signals;

means responsive at all times to each individual amplitude controlled signal for detecting each amplitude controlled signal and for simultaneously providing a plurality of detected signals;

means responsive at all times to each of said detected signals and a reference signal and operative to provide a plurality of comparison signals continuously, each being commensurate with the difference between one of said detected signals and said reference signal, whereby said comparison signals are produced when said system is passing program signals; and

means for combining all of said amplitude controlled signals and for forming an equalized signal.

4,118,602

TELEPHONE ANSWERING DEVICE HAVING SIMPLIFIED MECHANICAL CONTROLS

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Filed Feb. 9, 1977, Ser. No. 766,898

Int. Cl.[2] H04M *1/64*

U.S. Cl. 179—6 R **7 Claims**

1. In a telephone answering device of the type having a magnetic tape loop on which an outgoing announcement is recorded for transmission during an outgoing message portion of the answering cycle, a magnetic tape on which messages incoming from the telephone line are recording during an incoming message portion of the answering cycle, a motor and drive mechanism for said magnetic tape, and a ring detector connected to said telephone line and operative to connect a source of power to said motor and other device circuitry in

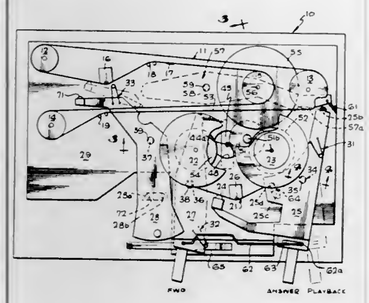
response to detection of a ring signal, the improvement comprising:

a chassis,

a forward-rewind control arm mounted to said chassis so as to pivot between a forward position wherein said drive mechanism is conditioned to drive said magnetic tape onto a takeup reel, and a rewind position in which said drive mechanism is conditioned to rewind said magnetic tape onto a source reel,

an answer-playback control arm mounted to said chassis so as to pivot between an answer position and a playback position,

(a) an erase magnet mounted on said answer-playback control arm so as to be brought into operative contact with said magnetic tape when said control arm is pivoted to the answer position, and to be removed from such operative contact when said control arm is set to the playback position,



(b) said tape loop being rim-driven from said takeup reel, said answer-playback control arm having a lever portion that disengages the tape loop rim drive so as to immobilize said tape loop when said answer-playback control arm is in the playback position, and

(c) a switch actuated by pivoting said answer-playback control arm into said playback position, said switch, when actuated, connecting said source of voltage to said motor, and

a lost motion linkage between said control arms for moving said answer-playback control arm into the playback position when said forward-rewind control arm is pivoted to the rewind position, and for moving said forward-rewind control arm to the forward position when said answer-playback control arm is moved back to the answer position.

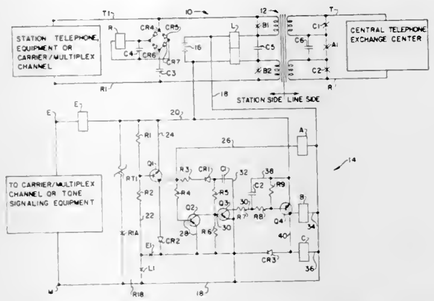
4,118,603

DC SIGNALING CIRCUIT FOR USE IN CONJUNCTION WITH ISOLATION TRANSFORMERS

Elmer B. Kumhyr, Raleigh, N.C., assignor to Noramco, Inc., Raleigh, N.C.

Filed May 31, 1977, Ser. No. 801,733
Int. Cl.[2] H04M *3/18, 1/18*
U.S. Cl. 179—16 E **12 Claims**

1. In a telecommunication system including a wire pair connected to a central telephone switching exchange and leading to a station telephone located at a power substation or generating plant, and wherein a high voltage protection barrier is provided by an isolation transformer interposed between the station telephone and the telephone switching exchange for providing protection against fault conditions that could apply hazardous voltages endangering life and property to said wire pair leading from the site of the station telephone, the improvement comprising a DC signaling circuit electrically connected to the station side wire pair and responsive to the actuation of a DC detection circuit electrically connected to the station side wire pair for effectively transferring DC signals, supervisory functions, or DC pulse logic across said isolation transformer and the high voltage protection barrier created thereby to the wire pair leading from the isolation transformer to the telephone switching exchange, said DC signaling circuit comprising: first relay means and first relay contact means operatively associated with said wire pair on a line side of said isolation transformer that leads to said telephone switching exchange, said first relay means being responsive to a given DC signal in said DC signaling circuit for actuating said first relay contact means which causes a DC signal corresponding to said given DC signal to be communicated by said wire pair on said line side of said isolation transformer to said telephone switching exchange; second relay means and said second relay contact means operatively connected in said DC signaling circuit with said second relay contact means being operatively connected



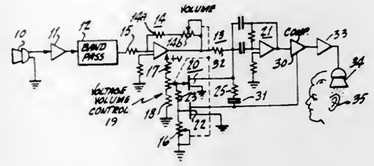
on each side of said isolation transformer and effective upon actuation to completely shunt all windings of said isolation transformer, and wherein said second relay means is responsive to certain DC pulse signals generated by said station telephone for actuating said second relay contact means and consequently causing all windings of said isolation transformer to be shunted so as to effectively remove the inductance from the station and line side wire pairs and thereby generally prevent distortion of the logic content of any DC signal or signals being communicated by said wire pair; and means operatively associated with said second relay means for maintaining said second relay means in an operative actuating state for a time interval after each pulse generated by said station telephone; and a power source operatively connected to said DC signaling circuit for supplying the same with current to actuate said first and second relay means, and other components thereof.

4,118,604

LOUDNESS CONTOUR COMPENSATED HEARING AID HAVING GANGED VOLUME, BANDPASS FILTER, AND COMPRESSOR CONTROL

Paul Yanick, 673 Wood Ave., Edison, N.J. 08817

Filed Sep. 6, 1977, Ser. No. 830,769
Int. Cl.[2] H04R *25/00*
U.S. Cl. 179—107 FD **10 Claims**



1. In a hearing aid apparatus for the handicapped, said apparatus employing an amplifier having a gain controlled by a handicapped user in varying a gain control associated with said apparatus, in combination therewith, comprising:

(a) a frequency selective circuit having a controllable frequency bandpass characteristic is adapted to receive audio signals at an input for propogating a given frequency range of said signals according to said bandpass and an input control terminal for varying said bandpass according to the magnitude of a signal applied thereto,

(b) control means responsive to the variation of said gain control for providing a control signal according to said variation, said control means coupled to said input terminal of said selective circuit for varying said bandpass according to said gain as controlled by said user, wherein said control signal is operative to control the slope of said frequency selective circuit according to said gain as selected by said user,

(c) compressor means having an input coupled to said frequency selective circuit for limiting said controlled slope signal at an ouput according to a selectable compression ratio, and

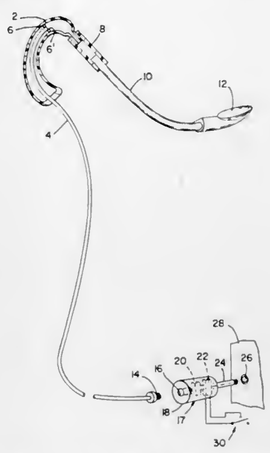
(d) means coupled to said compressor means and responsive to said control signal for selecting said compression ratio according to said control signal and therefore according to said gain control variation.

4,118,606

ACOUSTICAL VOICE TRANSMITTING HEADSET

Wallace Keith Larkin, 360 Hidden Valley Rd., Soquel, Calif. 95073

Continuation-in-part of Ser. No. 561,473, Mar. 24, 1975, Pat. No. 3,933,879, and Ser. No. 667,981, Mar. 18, 1976. This application Nov. 19, 1976, Ser. No. 743,307
The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.
Int. Cl.[2] H04M *1/05;* **G10K** *11/12*
U.S. Cl. 179—156 A **12 Claims**



1. A non-electrical, acoustical, voice transmit-only headset comprising

means for mounting the headset on the head of the user;

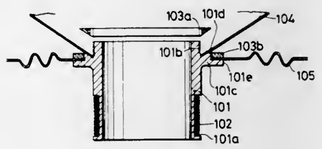
a flexible transmitter tube supported by the mounting means and having one end adapted for adjustably positioning near the mouth of the user for conducting sound therefrom, and the other end terminating in a coupling adapted to releasably connect to electronic communications equipment remote from the user's head, whereby voice transmissions may be conducted from the user to the communications equipment.

4,118,605

COIL MOUNT STRUCTURE

Fumio Kobayashi, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Jan. 9, 1978, Ser. No. 867,917
Claims priority, application Japan, Jan. 19, 1977, 52-4761
Int. Cl.[2] H04R *9/04*
U.S. Cl. 179—115.5 VC **15 Claims**



1. A coil bobbin assembly for use in a loudspeaker of moving coil type comprising,

a generally cylindrical member having one peripheral thread at one end thereof;

an annular member disposed around said peripheral thread to form a collar of said cylindrical member, said annular member having a first surface adapted to receive a neck portion of a cone-shaped diaphragm and a second surface adapted to receive an inner circumferential edge portion of a damper;

a first member to be engaged with said peripheral thread to fix said neck portion of said diaphragm between said first surface and said member;

a second member for fixing said inner circumferential edge portion of said damper to said second surface of said annular member; and

a coil mounting means associated with said cylindrical member.

4,118,607

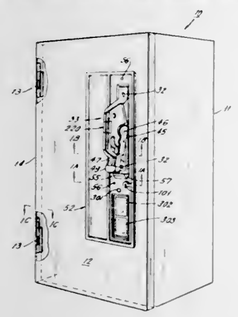
INTERLOCK MEANS FOR SWITCH ENCLOSURE

Howard R. Shaffer, Westminster, Md., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Dec. 2, 1976, Ser. No. 746,834
Int. Cl.[2] H01H *9/22*
U.S. Cl. 200—50 A **9 Claims**

1. Enclosed electric switch apparatus including an enclosure having a front opening, a cover hingedly connected along a first of its edges to said enclosure for closing said opening, switch means inside said enclosure including a contact operating mechanism, switch operating means mounted to said enclosure forward of said contact operating mechanism, said operating means including platform means comprising a hollow narrow housing, a U-shaped manual operating handle having first and second arms positioned adjacent opposite sides of said housing and having an end portion thereof keyed to pivot means extending transversely of said housing, linkage means keyed to said pivot means and connected to said operating mechanism for operation of the latter by operation of said handle, said cover including means defining aperture means through which said housing extends when said cover is closed, said aperture means disposed adjacent a second edge of said cover opposite said first edge thereof, cover catch means on said platform means for holding said cover closed, defeatable cover interlock means on said platform means to prevent oper-

ation of said catch means to release said cover when said handle is in switch closed position, and defeatable switch interlock means on said platform means to prevent operation of said handle to switch closed position when said cover is open, said cover interlock including a first member interposed between said catch and the first arm of said handle whereby operation



of said handle to switch closed position moves said first member to an active position blocking operation of said catch to a position for releasing said cover, said switch interlock including a second member biased to engage the second arm of the handle to hold the handle in switch open position when the cover is open.

4,118,608

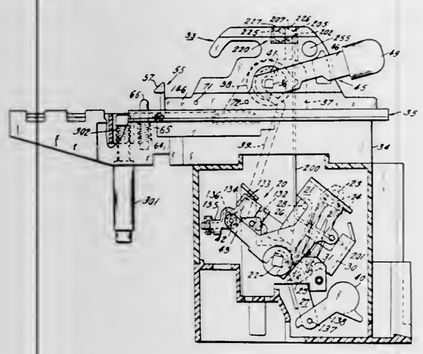
TRIP INDICATOR

Frank W. Kussy, Randallstown, and Howard R. Shaffer, Westminster, both of Md., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Dec. 2, 1976, Ser. No. 746,835

Int. Cl.[2] H01H *9/22, 9/16*

U.S. Cl. 200—56 R **7 Claims**



1. Enclosed electric switch apparatus including an enclosure having a front opening, a cover hingedly connected along a first of its edges to said enclosure for closing said opening, switch means inside said enclosure including a contact operating mechanism, switch operating means mounted to said enclosure forward of said contact operating mechanism, said operating means including platform means comprising a hollow narrow housing, a manual operating handle having an end portion thereof keyed to pivot means extending transversely of said housing, first linkage means keyed to said pivot means and connected to said operating mechanism for operation of the latter by operation of said handle, said cover including means defining aperture means through which said housing extends when said cover is closed, said aperture means disposed adjacent a second edge of said cover opposite said one edge thereof, cover catch means on said platform means for holding the cover closed, defeatable cover interlock means on said platform means to prevent operation of said catch means to release said cover when said handle is in switch closed position, and defeatable switch interlock means on said platform means to prevent operation of said handle to switch closed position when said cover is open, said housing having a front cavity, a trip indicator movably mounted within said cavity between a concealed and an indicating position relative to a transparent cover for said cavity, said contact operating mechanism including a cradle latchable in a latch position and automatically movable to a tripped position when unlatched as a result of predetermined fault current conditions in said switch means, and a second linkage connecting said indicator to said cradle whereby movement of said cradle to said tripped position is observable at said transparent cover in that said indicator has moved to said indicating position wherein a trip indicating portion is viewable through said transparent cover.

4,118,609

ELECTRICAL SNAP-ACTION SWITCH

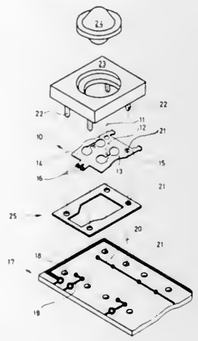
Rudolf Schadow, and Klaus Hinze, both of Berlin, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,395

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1975, 2537905

Int. Cl.[2] H01H *5/18*

U.S. Cl. 200—67 DA **10 Claims**



1. An electrical snap-action switch comprising a sheetmetal member divided into a plurality of strips connected at the end portions thereof by a web, which member is warped by reducing the length of at least one strip thereof, with at least one such reduced strip being connected at both ends with a non-reduced strip, serving as a bridge contact for establishing or interrupting an electrical connection between fixed contacts lying in a plane parallel to the sheetmetal member, wherein the contacts of the sheetmetal member are provided on at least one strip of the sheetmetal member which is extended in the direction of the strips beyond the web connecting the strips, so that extensions with contact-making points are formed, and means supporting said sheetmetal member for swiveling the extensions which carry the contact-making points of said member about an axis which is within the area of the connecting web extended by the extensions.

4,118,610

SNAP ACTION SWITCH BLADES

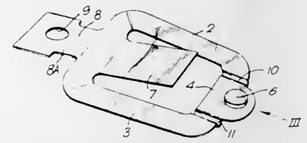
Robert F. Purssell, Plymouth; Avtar S. Bhabra, Saltash, both of England, and Guglielmo Rossi, Stutensee-Friedrichstal, Fed. Rep. of Germany, assignors to Ranco Incorporated, Columbus, Ohio

Continuation-in-part of Ser. No. 632,006, Nov. 14, 1975, abandoned. This application Mar. 18, 1976, Ser. No. 668,289

Claims priority, application United Kingdom, Nov. 16, 1974, 49726/74; Mar. 27, 1975, 12857/75

Int. Cl.[2] H01H *13/38*

U.S. Cl. 200—67 DA **11 Claims**



1. A snap action switch element comprising a dished blade of resilient sheet material having a base portion, two arms projecting from said base portion, a resiliently flexible internal tongue integral with the base portion and disposed between the arms, a resiliently flexible external tongue integral with the base portion and extending from the latter in the opposite directon to the internal tongue, and a bridge portion drawing together the ends of the two arms remote from the base portion of the blade, the bridge portion prestressing the blade and predisposing it for snap movement between two different configurations upon displacement relative to the arms of the end of one of said tongues, the other of said tongues having an end section constructed for anchoring to a support, at least one of said internal and external tongues resiliently deflecting upon displacement of said end of said one tongue and predetermining the force to be applied to said one tongue to effect said snap movement.

4,118,611

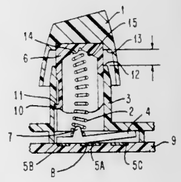
BUCKLING SPRING TORSIONAL SNAP ACTUATOR

Richard Hunter Harris, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1977, Ser. No. 829,039

Int. Cl.[2] H01H *13/28*

U.S. Cl. 200—67 A **4 Claims**



1. In an electrical key actuating mechanism having a key top, a housing having means for slidably receiving said key top for vertical motion thereof, a pivoting rocker type electrical actuating means in said housing opposite said key top, electrical means for actuation by said electrical actuating means, and also having a buckling compression spring means under precompression and mounted between said key top and said pivoting rocker type electrical actuating means, the improvements comprising:

lateral deflection offset spring mounting means within said housing bearing against said buckling compression spring and displacing the central portion thereof relative to its ends in a first chosen direction for promoting buckling of said buckling compression spring in said first chosen direction;

mounting means on said key top for pivotally mounting the proximal end of said buckling compression spring; and

mounting means on said rocker for mounting the distal end of said buckling compression spring with an edge of said spring colinear with said pivot of said rocker.

4,118,612

ACTUATING DEVICE FOR AN INVALID OF PLURAL ELECTRICAL CONTROL CIRCUITS

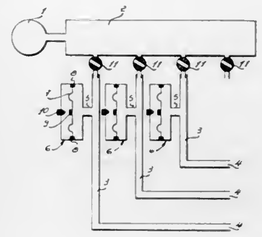
Jean-Claude Gabus, Hauterive, Switzerland, assignor to Carba S.A., Berne, Switzerland

Filed Apr. 15, 1977, Ser. No. 787,921

Claims priority, application Switzerland, May 7, 1976, 5729/76

Int. Cl.[2] H01H *35/34*

U.S. Cl. 200—81.9 R **4 Claims**



1. An actuating device for an invalid of plural electrical control circuits, comprising a source of air under pressure, a buffer reservoir that receives and stores said air from said source, a plurality of conduits separately and directly communicating with said reservoir, each said conduit having an open end, said open ends of said conduits being spaced apart and said conduits providing normally open passageways for the continuous flow of air from said reservoir through said conduits and out said open ends along a plurality of separate paths, a separate membrane for each said conduit, said membrane being exposed on one side to the air in its associated said conduit between its open end and said reservoir, and separate electrical contact means associated with each said membrane for opening or closing an electrical control circuit upon movement of said membrane when the pressure of the air on said one said of said membrane increases as a result of an invalid closing said open end of the associated said conduit, whereby an invalid can select a said circuit to open or close by selecting a said open end to close.

4,118,613

HYDRAULICALLY-ACTUATED OPERATING SYSTEM FOR AN ELECTRIC CIRCUIT BREAKER

Philip Barkan, Media, and Imdad Imam, Secane, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Jun. 27, 1977, Ser. No. 810,663

Int. Cl.[2] H01H *35/38*

U.S. Cl. 200—82 B **18 Claims**

1. In a hydraulically-actuated operating system for an electric circuit breaker,

(a) a fluid motor comprising a cylinder and a movable piston adapted to move in an opening direction within said cylinder to open said circuit breaker and in a reverse direction within said cylinder during closing of said circuit breaker,

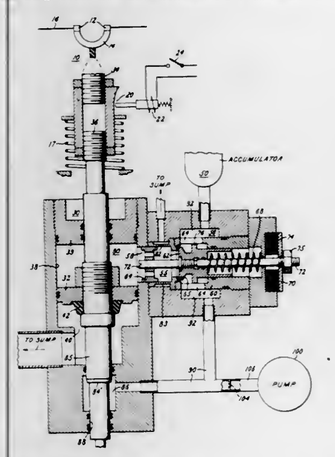
(b) an accummulator for supplying pressurized liquid to a piston-actuating space within said cylinder,

(c) a normally-closed valve located hydraulically between said accumulator and said actuating space and openable to establish communication between said accumulator and

said actuating space so that pressurized liquid from said accumulator can flow through said valve to said actuating space to drive said piston in an opening direction, said valve comprising a movable valve member that is movable from a valve-closed to a valve-open position to open said valve and is returnable to said valve-closed position to close said valve,

(d) a vent located hydraulically downstream of said valve with respect to said accumulator for affording communication between said actuating space and a low pressure region,

(e) flow control means for restricting leakage through said vent to a rate that prevents said leakage from substantially detracting from the development of pressure within said



actuating space during the period from initial opening of said valve to the time when said piston has moved through a substantial portion of its opening stroke, said flow control means acting following such period and while said valve is still open to allow effective leakage through said vent,

(f) said accumulator having a limited capacity that results in the pressure within said actuating space decaying promptly to a low value as a result of effective leakage through said vent shortly after said piston has moved through a circuit-breaker opening stroke and while said movable valve member is in its valve-open position, and

(g) means for restoring said movable valve member to its closed position in response to said pressure decay in said actuating space.

4,118,614

MULTIPLE-FUNCTION, HAND-ACTUATED SWITCH UNIT, PARTICULARLY FOR ELECTRICAL HAND TOOLS OR APPLIANCES AND THE LIKE

Gottfried Leibundgut, Solothurn, Switzerland, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 2, 1977, Ser. No. 802,712

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629722

Int. Cl.[2] **H01H** *13/08*

U.S. Cl. 200—157 **8 Claims**

1. Selectively multiple-function, hand-actuating switch unit structure system, particularly for electrical hand tools, appliances or the like, to provide the function

(a) ON-OFF and, selectively, at least two of the functions of

(b) speed control; (c) overload protection; (d) forward-reverse rotation; (e) radio frequency (RF) interference suppression;

said switch unit system comprising

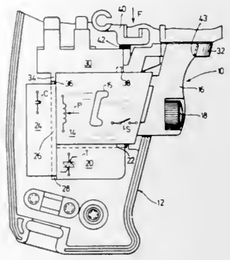
a plurality of functional circuit structure units, each located in a separate respective enclosure, and providing at least two of said functions (b) to (e),

and each formed with at least one attachment surface;

a switch housing (**14**) forming a switch enclosure and having a plurality of attachment surfaces for selective attachment thereto of selected ones of said circuit structure units;

an ON-OFF switch (**S**) in said switch housing (**14**) and a switch operating handle (**16**) therefor, which is manually accessible, protruding from the housing;

a first one of said circuit structure units forming an operating control circuit (**20**) electrically connectable to said switch unit, and a first control element (**18**) therefor, which is manually accessible, protruding from the switch housing



(**14**), an additional (**30**) of said circuit structure units forming an additional operating control circuit, electrically connectable to said switch unit (**14**), said additional operating control circuit including a further manually accessible control element (**32**);

and mutually interengaging separable projection-and-recess means formed on said attachment surfaces of said switch enclosure and on the enclosures of said first and second functional circuit structure units to removably and selectively attach together the switch housing forming the switch enclosure and, selectively, said two selected ones of said operating control circuits (**20, 30**) in their respectively separate enclosures.

4,118,615

HAND-ACTUATED, MULTIPLE-FUNCTION SWITCH UNIT, PARTICULARLY FOR ELECTRICAL HAND TOLLS, APPLIANCES AND THE LIKE

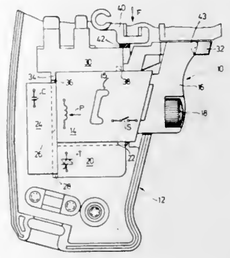
Gottfried Leibundgut, Solothurn, Switzerland, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 2, 1977, Ser. No. 802,651

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629723

Int. Cl.[2] **H01H** *13/08, 21/04, 15/04, 9/02*

U.S. Cl. 200—157 **23 Claims**



1. Multiple function, selectively combinable hand-actuated switching unit structure system, particularly for electrical hand tools, appliances and the like, to provide the functions of

(a) ON-OFF, and, selectively, at least two of the functions of

(b) speed control;

(c) overload protection;

(d) forward and reverse rotation;

(e) radio interference (RF) interference supression,

said switching unit comprising

a plurality of functional circuit structure units (**20, 24, 30**), respectively providing said function (b) to (e);

a separate enclosure for each respective circuit structure unit, each enclosure being formed with at least one attachment surface;

a switch housing unit (**14**) having an integrated enclosure of, in plan view, essentially rectangular shape and formed with a plurality of attachment surfaces at the sides thereof for selective attachment thereto of selected ones of said structure units;

an ON-OFF switch (**S**) in said housing unit (**14**);

and relatively engageable and separable interengaging projection-and-recess means formed on the attachment surfaces at said sides of said switch housing unit and on the attachment surfaces of said functional circuit structure units to assemble and secure a selected one of said functional circuit structure units to the switch housing unit by matching engagment of said respective attachment surfaces and interengagement of said separable projection-and-recess means.

4,118,616

CASSETTE, PARTICULARLY A CASSETTE FOR A REEL OF WIDE RECORDING TAPE

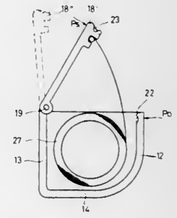
Heinrich Wittkamp, Mannheim, and Manfred Gehrung, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 12, 1977, Ser. No. 796,155

Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621723

Int. Cl.[2] **B65D** *85/612*

U.S. Cl. 206—387 **7 Claims**



1. A cassette, in particular a cassette for a wide recording tape, consisting of a housing in the form of an approximately rectangular hollow body having two flat broad sides forming two long walls and two parallel short sides facing each other forming two narrow walls, and a closable lid pivotally mounted between the said narrow walls, at least a portion of at least one of the long walls being elastically deformable for opening the cassette, and the edge of the lid having at least one beveled surface which associates with a beveled surface on the edge of said wall portion of the housing, and disengageable snap latch means in the form of cams and grooves on the walls and lid being provided to keep the cassette closed, wherein the housing and the lid are made of different plastic materials and wherein the snap latch means interact between the long side of the lid and the long wall of the housing opposite the pivotal axis of the lid, each of the cams and grooves being arranged at a distance from the narrow sides of the housing, and the cams and grooves at the edge of the said long wall and the cams and grooves at the edge of the long side of the lid, when engaged having an S-shaped or sawtooth-shaped cross section, so that, when the cassette is opened by deformation of the elastically deformable portion of said long wall, a closing force is initially produced to counteract the opening force, which closing force presses the cams into the grooves to make opening of the cassette more difficult.

4,118,617

PROCESS AND APPARATUS FOR CONTINUOUS HEAT TREATMENT OF METALLIC WIRES AND BANDS

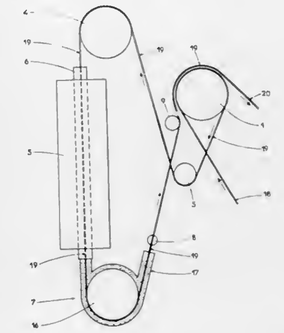
Marc Moreau, Asnieres, France, assignor to Trefimetaux, Paris, France

Filed Oct. 15, 1975, Ser. No. 622,704

Claims priority, application France, Oct. 18, 1974, 74 40560

Int. Cl.[2] **H05B** *5/08*

U.S. Cl. 219—10.61 R **4 Claims**



3. Apparatus for the continuous heat treatment of thin metallic wire and band members by induction heating in a closed loop established between the untreated and heat treated members comprising induction means for heating the members to be treated, a first pulley member having a deep groove in the periphery thereof, said deep groove defining a circular base, a return pulley, cooling means, and means for guiding the metallic wire and band members to be treated successively over said circular base of said first pulley, through said induction means, through said cooling means, over said return pulley and again over said deep groove of said first pulley in superposed relation with the untreated product without relative sliding of the treated and untreated wire and band members.

4,118,618

DEVICE FOR WELDING OPTICAL FIBRES END TO END

Francis Gauthier, Oullins, and Georges Mignien, Meyzieu, both of France, assignors to Les Cables de Lyon, Lyon, France

Filed Apr. 12, 1977, Ser. No. 786,950

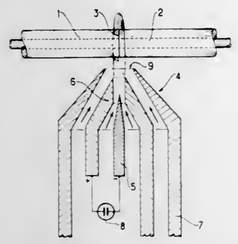
Claims priority, application France, Apr. 14, 1976, 76 10971

Int. Cl.[2] **B23K** *9/00*

U.S. Cl. 219—121 P **2 Claims**

1. An apparatus for end to end welding of a plurality of optical fibres disposed in a layer, each fibre being formed of a bared part and a covered part supported by a positioning block, the bared part of the fibre being disposed in a positioning groove and the covered part of the fibre being clamped in a support, the ends of the bared parts of the fibres being adjacent to each other for welding, wherein: said device comprises means for moving a microplasma blow torch for welding said fibres, said blow torch having its vertical axis above said ends of the layer of fibres to be welded and being perpendicular to said fibres; said positioning block being formed of a plurality of said parallel positioning grooves being in parallel relation with respect to one another and having rounded side surfaces, each groove having a bottom communicating with a small diameter bore running parallel to said groove, and a slot formed below the weld line intersecting each of said positioning grooves in its

middle, said slot communicating with a void for receiving plasma gas, and said support having two multiple clamps on either side of said weld line in the axis of the fibres which are capable of moving with said covered parts and being adapted to preposition the fibres in relation to said grooves and position the ends of said bared parts adjacent to one another each of



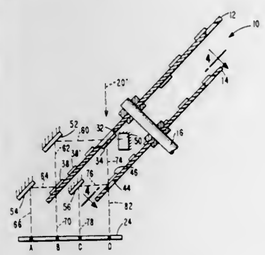
said multiple clamps being defined by a plurality of support plates containing a groove suitable for the insertion of said covered fibre; a plurality of spring plates suitable for locking said covered fibres, said spring plates being integral with a support plate and controlled by a push-button and a tared spring.

4,118,619

ROTARY BEAM CHOPPER AND SCANNING SYSTEM

Colin Shaw McArthur, and Douglas Copeland Clark, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 2, 1977, Ser. No. 821,103
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 L **20 Claims**



1. A rotary optical shutter and scanner for dividing a substantially continuous beam of light into a plurality of discrete light impulses and for repetitively scanning the impulses across a series of target areas, comprising:

a plurality of coaxial rotatable discs;

at least one annular shutter ring on each said disc, each shutter ring including at least one group of segments, said rings having corresponding, angularly aligned groups, the segments of each group being arranged in complementary coded sequences of reflective surfaces and through apertures to define multiple light paths between a light source and a target;

means for directing a substantially continuous beam of light toward at least one of said shutter rings for reflection from a reflective surface or passage through an aperture thereof and for subsequent direction toward a first target area or toward a second shutter ring for reflection from a reflective surface thereon or passage through an aperture thereof for direction toward a second target area; and

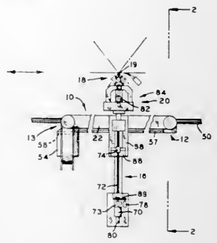
means for rotating said discs to move said segments of said annular rings into successive alignment with said beam of light whereby said beam is directed successively along said multiple light paths to each of said target areas, continued rotation causing said beam to repetitively traverse said target areas in a scanning motion.

4,118,620

COMPUTERIZED SYSTEM FOR TRANSLATING A TORCH HEAD

Alan M. Lovelace, Acting Administrator of the National Aeronautics and Space Administration, with respect to an invention of William A. Wall, Jr.; Robert E. Ives; Miles Melvin Bruce, Jr.; Peter Paul Pryor, Jr., and Leslie H. Gard, all of Huntsville, Ala.

Filed May 20, 1977, Ser. No. 799,023
Int. Cl.[2] B23K *9/12*
U.S. Cl. 219—124.32 **6 Claims**



1. A computerized system for translating a torch head at a constant travel rate along an elongated track of a noncritical configuration adjacently related to a workpiece of a configuration generally conforming to the shape of the track comprising:

A. an elongated track of an arbitrary configuration extended in spaced juxtapositional relation with the surface of the workpiece;

B. a skate including a pair of trucks having mounted thereon a carriage bed, said trucks being supported for independent pivotal motion relative to the carriage bed, and are arranged in mutually spaced leading and trailing relation along said track and supported thereby for translation therealong;

C. a working assembly mounted on said skate including a torch head manipulator arm extended perpendicularly from the midportion of said carriage bed, a torch head mounted at the extended end of the arm and supported thereby for translation in a spatial relationship with said working surface, and means for imparting axial motion to said arm for maintaining constant the spatial relationship of tip to workpiece;

D. drive means mounted on said skate at one end thereof engaged with said track and having a variable drive speed for advancing said skate at a variable rate along said track; and

E. drive control means including an equation solving circuit connected to said drive means for varying the drive speed in a manner such that the torch head is advanced along said working surface at a constant travel speed, comprising:

first sensing means for continuously sensing the angular relation of each end of said carriage with instantaneous tangents to the track for providing a pair of varying computer input signals, second sensing means for sensing the spatial relationship of said torch head with a geometrically fixed skate reference line, third sensing means for continuously sensing the rate of axial motion imparted to said manipulator arm necessary for providing another varying computer input signal indicative of the rate of positional change, further sensing means for manually pre-setting a constant speed of the torch head as it translates along said work surface, and a computer

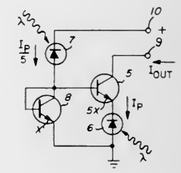
circuit connected with said first, second, third and fourth sensing means for detecting variations in said input signals and providing a speed control output signal to said drive means for varying the output thereof substantially simultaneously with variations in said computer input signals, whereby real-time control over said drive means is achieved.

4,118,621

PHOTO ELECTRIC BIASED PHOTO DIODE OPERATIONAL AMPLIFIER

Dennis M. Monticelli, Fremont, and Robert S. Sleeth, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 19, 1977, Ser. No. 798,728
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705308
Int. Cl.[2] H01J *39/12*
U.S. Cl. 250—214 A **10 Claims**



1. A circuit for replicating the photo current of an illumination responsive element which generates a photo current when exposed to illumination, said circuit comprising:

a first photo diode adapted for exposure to said illumination to generate a current proportional to said illumination;

amplifying means coupled to said first photo diode, said amplifying means including means to force the potential across said first photo diode to substantially zero volts thereby to provide linearity between said illumination and said photo current; and

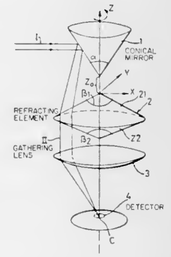
means for biasing said amplifying means substantially in proportion to said illumination, said means for biasing including a second photo diode adapted for exposure to said illumination and coupled to said amplifying means to provide illumination dependent bias thereto.

4,118,622

CONE OPTICAL SYSTEM

Karl-Heinz David, Den Haag, Netherlands, assignor to Organisation Européenne de Recherches Spatiales, Paris, France

Filed Nov. 18, 1976, Ser. No. 742,866
Claims priority, application Belgium, Nov. 11, 1975, 162028
Int. Cl.[2] H01J *3/14*
U.S. Cl. 250—216 **7 Claims**



7. A cone optical system as claimed in claim 1, and photoe-

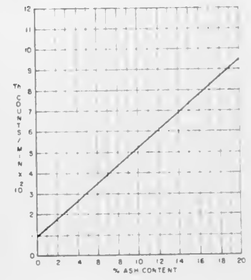
lectric detecting means (4) located at said image point and having a sensitive element that is located in a plane (X-Y) perpendicular to said symmetry axis.

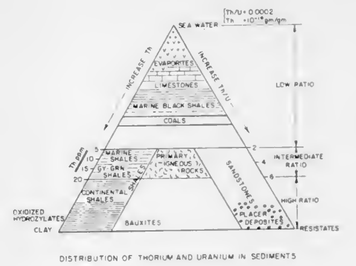
4,118,623

CONTINUOUS QUALITY CONTROL OF MINED HARD AND SOFT COALS

Walter H. Fertl, Houston, Tex., and Preston L. Gant, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 31, 1977, Ser. No. 783,092
Int. Cl.[2] G01V *5/00;* **E21B** *47/00*
U.S. Cl. 250—253 **7 Claims**





DISTRIBUTION OF THORIUM AND URANIUM IN SEDIMENTS

1. A method for the rapid determination of ash content of coal comprising a) determining the ratio of thorium to shale based on background gamma emissions; b) determining the ratio of shale to ash content using standard methods of ash determination; c) correlating (a) and (b) to provide a relationship of background gamma emission to ash content; and (d) thereafter determining ash content by means of surface gamma ray spectroanalysis of thorium content.

4,118,624

FRAME FOR THE SUPPORT OF ARTICLES WHICH ARE TO BE TREATED

Johannes Luckan; Jan Elwart, both of Cologne, and Martin Herter, Geyen, all of Germany, assignors to Ionit Anstalt Bernhad Berghaus, Vaduz, Liechtenstein

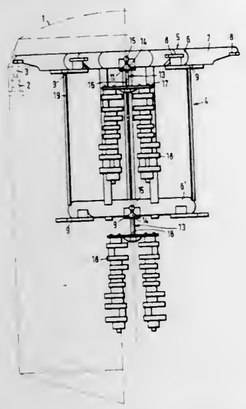
Filed Apr. 25, 1977, Ser. No. 790,834
Claims priority, application Fed. Rep. of Germany, May 5, 1976, 2619814
Int. Cl.[2] H01T *19/04*
U.S. Cl. 250—326 **13 Claims**

1. Supporting means for articles to be treated in a glow discharge receptacle connected to a source of electrical power, comprising:

a support frame in said receptacle and having upwardly

open spherical seats, each having a laterally open entrance slot;

article suspension devices each having means for attaching an article thereto, neck portions in said entrance slots, spherical plugs on said neck portions and removably seated in said spherical seats, and transport plugs extending above said spherical plugs;



said suspension devices being electrically insulated from said receptacle; and

conductor means for connecting said suspension devices to said source of electrical power whereby a glow discharge is produced between said receptacle and said article on said suspension device.

4,118,625

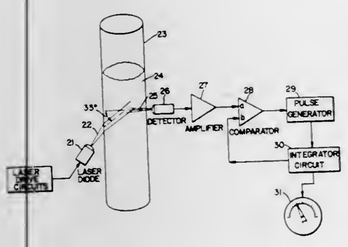
NEPHELOMETER HAVING PULSED ENERGY SOURCE

Willie Bruce Underwood, Brandywine, Md., assignor to Dynatech Laboratories Incorporated, Alexandria, Va.

Filed May 2, 1977, Ser. No. 792,915

Int. Cl.² G01N *21/26*

U.S. Cl. 250—343 **7 Claims**



1. A nephelometer system for measuring the concentration of bacteria or other similar particulate material suspended in a liquid, said system comprising an infrared injection laser diode means for providing a pulsed beam of electromagnetic energy that is substantially monochromatic, said beam containing uniform repetitive energy pulses each having a short duration of between 20 and 200 nanoseconds, means for directing said beam through a liquid medium confined in a transparent vessel and containing a dispersion of the particles, means for detecting individual pulses of energy as foward scattered by said particles at an acute angle to said beam, and means for accurately measuring the peak amplitude of said detected pulses, said means of accurate measurement being capable of such measurement when the duration of said pulses is as short as 20 nanoseconds, and said short duration of pulses essentially enabling the system to perform its function in the presence of ambient light conditions such as daylight and artificial room lighting without the necessity of protecting the sample under test from said light.

4,118,626

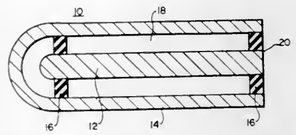
GAMMA FLUX RESPONSIVE SELF-POWERED RADIATION DETECTOR

Norman P. Goldstein, Delmont, Pa., and William H. Todt, Elmira Heights, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 23, 1977, Ser. No. 771,144

Int. Cl.² G01T *1/22*

U.S. Cl. 250—370 **6 Claims**



1. A gamma flux responsive self-powered radiation detector comprising a gamma flux sensitive, high density, conductive elongated central emitter, a low gamma responsive conductive tubular collector sheath spaced from and disposed about the central emitter, and low density insulating means between the emitter and the collector, wherein the insulating means density is less than about 3 grams per cubic centimeter.

4,118,627

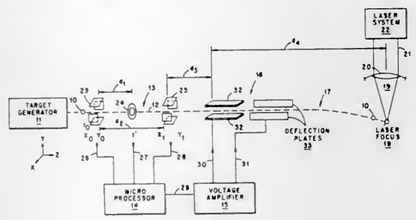
GUIDANCE SYSTEM FOR LASER TARGETS

Gary D. Porter, Livermore, and Anatoly Bogdanoff, Danville, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1976, Ser. No. 698,553

Int. Cl.² G01K *1/08*

U.S. Cl. 250—397 **4 Claims**



1. A guidance system for targets comprising; electrostatic sensing means for generating signals responsive to x and y coordinates and time of travel of an associated target over a predetermined distance along an initial trajectory, micro processing means for receiving said signals from said sensing means for real time calculation of position, velocity, and direction of such an associated target and for producing calculated course correction output signals, electrostatic deflecting means positioned in alignment with said sensing means and responsive to said calculated course correction output signals from said micro processing means for correcting the trajectory of such an associated target, and amplifier means operatively connected between said micro processing means and said deflecting means for amplifying said calculated course correction output signals.

4,118,628

RADIOGRAPHIC APPARATUS WITH CORRECTION FOR RADIATION HARDNESS VARIATIONS

Godfrey Newbold Hounsfield, Winthorpe, England, assignor to EMI Limited, Hayes, England

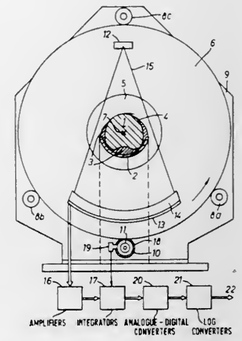
Continuation of Ser. No. 668,045, Mar. 18, 1976, Pat. No. 4,044,260. This application May 3, 1977, Ser. No. 793,387

Claims priority, application United Kingdom, Mar. 18, 1975, 11131/75

The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.

Int. Cl.² A61B *6/02*

U.S. Cl. 250—445 T **4 Claims**



1. Medical radiographic apparatus, for examining cross-sectional slices of patients' bodies, comprising means defining a patient position, a source of a fan-shaped distribution of penetrating radiation, comprising a plurality of divergent rays of said radiation, disposed outside said patient position, scanning means for moving said source angularly around said patient position to project said radiation through a predetermined region of said patient position along a plurality of divergent beam paths from each of a series of locations distributed angularly around said patient position, detector means for detecting radiation emergent from said patient position along each of said beam paths to provide electrical output signals indicative of the amounts of radiation so emergent along said paths, processing circuit means for changing the amplitudes of the output signals corresponding to different ones of said divergent rays, from each of said locations, caused by variation of the energy spectrum of radiation propagating at different angles within the distribution and means for combining the changed output signals for a succession of said pluralities of beam paths to form an image of a body slice disposed in said region, said image comprising a pattern of image elements representing absorption coefficients of corresponding notional elements in said body slice for said radiation.

4,118,629

RADIOLOGY

Godfrey Newbold Hounsfield, Winthorpe, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 584,172, Jun. 5, 1975, Pat. No. 4,028,554. This application Mar. 11, 1977, Ser. No. 776,661

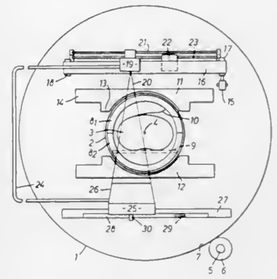
Claims priority, application United Kingdom, Jun. 7, 1974, 25361/74

The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.

Int. Cl.² G01N *23/00*

U.S. Cl. 250—445 T **12 Claims**

1. Medical diagnostic radiographic apparatus, including a source of X-radiation, detector means spaced from said source and responsive to said radiation and adapted to receive the radiation after it has traversed the space from said source to said detector means, a member having an opening for receiving a patient to be examined so that said radiation traverses said patient, scanning means for moving at least said source to scan part of the body of said patient, said detector means providing output signals influenced by the variation in absorption suffered by said radiation as its traverses different paths through the scanned part of the body, processing means adapted to process said output signals to produce a representation of a



characteristic of the scanned part of the said body related to the absorption of said radiation, and means for compensating for anticipated changes in the length of the path for the radiation within the body, said compensating means including means for producing corrections in the representation which would otherwise be produced, to allow for variations in said output signals due to changes in the frequency spectrum of the X-radiation related to changes in said path length.

4,118,630

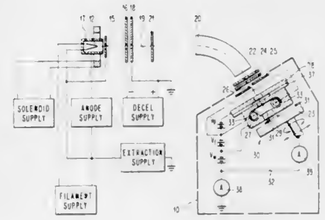
ION IMPLANTATION APPARATUS WITH A COOLED STRUCTURE CONTROLLING THE SURFACE POTENTIAL OF A TARGET SURFACE

Charles M. McKenna, Fishkill, and Wolfgang F. Mueller, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1977, Ser. No. 794,275

Int. Cl.² H01J *37/00*

U.S. Cl. 250—492 A **9 Claims**



1. In apparatus for bombarding a target with a beam of ions, a structure for controlling the surface charge of the target comprising

an electron source adjacent to the ion beam for providing electrons to said beam for providing netulralizing space charge to said beam,

means between said target and said electron source for inhibiting direct rectilinear radiations between said source and said target, and

means for maintaining said inhibiting means at a lower temperature than said target.

4,118,631

RADIOGRAPHIC APPARATUS

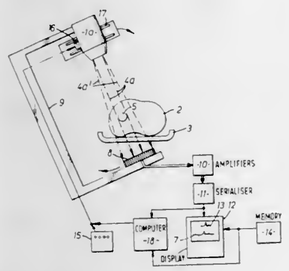
Robert Justin Froggatt, Southall, England, assignor to EMI Limited, Hayes, England

Filed Mar. 25, 1977, Ser. No. 781,409

Claims priority, application United Kingdom, Mar. 30, 1976, 12679/76

Int. Cl.[2] A61B *6/00*; **A61N** *5/00*

U.S. Cl. 250—492 R **11 Claims**



1. A therapeutic radiographic apparatus including a source of pentrating radiation, means for directing the radiation along a path through a predetermined region of the body of a patient, means disposed to receive radiation after passage through said body to provide a representation of the part of the body traversed by the radiation, means for comparing the said representation with a previously derived representation on which a feature of interest has been identified, and adjustment means for changing the path of the radiation to correlate the features of interest in the two representations.

4,118,632

NUCLEAR MEDICINE DIAGNOSTIC INSTRUMENT FOR THE DETERMINATION OF THE DISTRIBUTION PATTERN OF A RADIOACTIVE RADIATION SOURCE

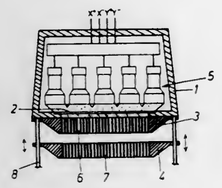
Heribert Luig, Helmoltstr 7, 34 Güttingen, Fed. Rep. of Germany

Filed Oct. 26, 1976, Ser. No. 735,787

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1975, 2547981

Int. Cl.[2] G21F *5/04*

U.S. Cl. 250—513 **5 Claims**



1. A nuclear medicine diagnostic instrument for the determination of the distribution pattern of gamma ray emission of radioactive substances serving as a gamma ray source inserted into a body and emitting gamma quanta, said instrument consisting essentially of:

the combination of a detector and an adjustable collimator means, said collimator means consisting of a plurality of multichannel collimator elements placed between the source and said detector to thereby form a distribution pattern for localizing said gamma quanta from said source in the body;

said collimator elements being formed of perforated plates and further comprising at least one moveable collimator element, said elements lying on the source side of the collimator means and being axially shiftable;

each of said plurality of collimator elements having its respective channels in mutual alignment and coaxial alignment with a neighboring channel in another collimator element to provide at least a pair of coaxially aligned collimator elements in the array; and

adjustment means including limiting means for maximum adjustment to axially shift one of the said collimator elements relative to the neighboring collimator element and to maintain alignment of the elements whereby improvement in definition and sensitivity is achieved in the pattern of radiation.

4,118,633

OPTO-ELECTRONIC DEVICE HAVING COUPLED EMITTER AND RECEIVER

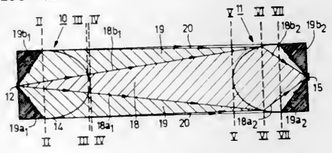
Lionel Guilleman, Massy, and Jacques Claude Thillays, Herouville St Clair, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 30, 1975, Ser. No. 618,213

Claims priority, application France, Oct. 1, 1974, 74 33049

Int. Cl.[2] G02B *27/00*

U.S. Cl. 250—551 **8 Claims**



1. An opto-electric device comprising light emitter means for converting electrical circuit into light; light receiving means for converting light from the light emitter means into electrical current; a transparent emitter optical body of revolution having a convex structure and being provided with an emitter base plane proximate said light emitter means; a transparent receiver optical body having a generally convex structure and being provided with a receiver base plane; said emitter optical body comprising a cylindrical portion on said emitter base plane, a portion having focussing properties with respect to said receiver optical body on said cylindrical portion, and a spherical cap on said portion having said focussing properties and centered on said light emitter means; said receiver optical body comprising a cylindrical portion on said receiver base plane, an exponentially varying portion on said cylindrical portion and a portion having focussing properties relative to the light receiving means on said exponentially varying portion.

4,118,634

DEVELOPER SOLUTION LEVEL DETECTOR

Joseph R. Carvalko, Bethel, and Robert J. Tolmie, Jr., Fairfield, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 3, 1977, Ser. No. 756,512

Int. Cl.[2] G01N *21/26*

U.S. Cl. 250—577 **19 Claims**

1. In a photocopying apparatus which utilizes a liquid developer solution that is stored in a removable tank for developing photocopies; a device for indicating when the amount of developer solution in the tank falls to a predetermined level so that a predetermined amount of developer solution may be added to said tank, said device comprising:

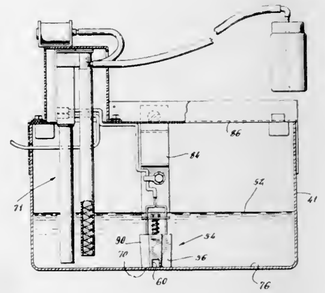
A. a source of light;

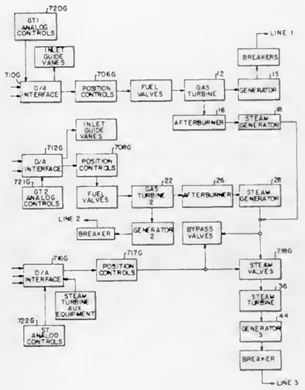
B. photosensor means, on which said light source is focused, for generating a light intensity signal only when developer solution is not between said light source and photosensor;

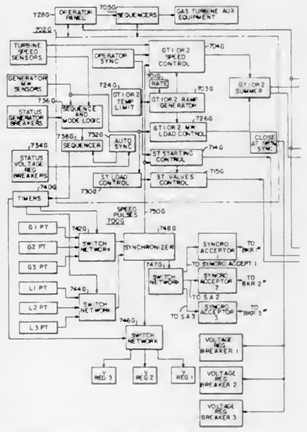
C. first means for mounting said light source and said photosensor means at a fixed distance from the bottom of the tank when they are properly located in the photocopying apparatus, the fixed distance being substantially equal to the predetermined level; and

D. second means for automatically repositioning said first means at said fixed distance from the bottom of the tank each time that the removable tank is reinserted in the photocopying apparatus whereby the light source and photosensor are recalibrated to consistently sense substantially the same predetermined level, and

E. means responsive to said light intensity signal for indicating when developer solution is not between said light source and photosensor means to thereby indicate when the amount of solution has fallen below the predetermined level.







4,118,635

SYNCHRONIZATION SYSTEM FOR A COMBINED CYCLE ELECTRIC POWER PLANT

Joseph F. Barrett, and Roy W. Kiscaden, both of Springfield, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,728

Int. Cl.[2] H02J *3/00*

U.S. Cl. 290—40 R **26 Claims**

1. A combined cycle electric power plant comprising at least one gas turbine, means for generating steam in response to heat energy from said gas turbine, a steam turbine driven by steam supplied to it from said steam generating means, an electric generator driven by each of said turbines, means for controlling the operation of said turbines and steam generating means, said controlling means including a speed control for said gas turbine and a speed control for said steam turbine, means for regulating the field voltage of each of said generators, a circuit breaker means for connecting each of said generators to a power system line, means for generating signals representing each generator voltage and each line voltage, means for responding to the generator and line voltage signals to generate voltage change and turbine speed change outputs needed for synchronization and to generate a breaker close signal when line and generator matching occurs, and means for selectively coupling said responding means to the generator and line voltage signals and the speed control and voltage regulator and breaker means associated with one of said turbines at a time.

4,118,636

THERMAL AIR POWERED ELECTRIC GENERATOR SYSTEM

Merlin B. Christian, 1000 Northwood Dr. Apt. 142, Baytown, Tex. 77521

Filed Nov. 26, 1976, Ser. No. 745,129

Int. Cl.[2] H02K *7/18*

U.S. Cl. 290—52 **7 Claims**

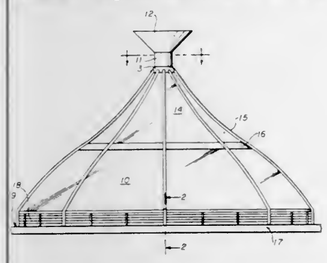
1. A thermal air powered alternating current electric generator system comprising, in combination,

(a) a generally conical structure for collecting air having an upper and lower end, said structure having a covering through which a maximum amount of radiant heat may pass from the exterior to the interior thereof,

(b) means at the lower end of said structure for the passage of air from the outside of said structure to the inside thereof,

(c) mounted on the upper end of said structure, an alternating current (Ac) producing turbine-generator whose main axis extends vertically from said structure and which comprises a shaftless turbine forming the center portion of the generator and having attached circumferentially

thereto a rotor, which when powered, rotates as an integral part of the turbine to which it is attached, and a stator surrounding the rotor and attached at the inner wall of a housing which surrounds and encloses the entire turbine-generator, the turbine-generator having means at either end thereof for ingress and egress of air which passes



upwardly through the collector, thence through the turbine-generator to produce an alternating current.

(d) said turbine further having a plurality of blades, the blades being sequentially stacked from top to bottom of the turbine, each blade being arranged across the diameter of the turbine and being at essentially a 45° angle from the preceding blade.

4,118,637

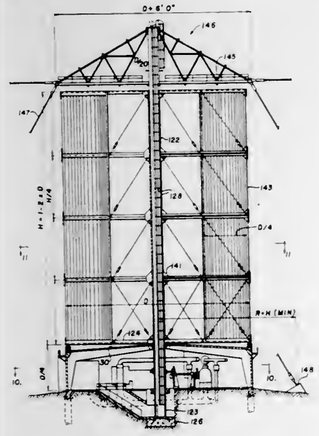
INTEGRATED ENERGY SYSTEM

Louis Eugene Tackett, Grandview, Tex., assignor to UNEP3 Energy Systems Inc., Grandview, Tex.

Continuation-in-part of Ser. No. 579,131, May 20, 1975, abandoned. This application Sep. 30, 1976, Ser. No. 728,064

Int. Cl.[2] H02P *9/04*

U.S. Cl. 290—55 **21 Claims**



1. A system for collecting, storing and distributing energy comprising a transmission-storage pipe system including an interconnected network of large diameter high pressure conduit for storage and transmission of large volumes of compressed air throughout a predetermined wide geographical area, a plurality of energy collector-converters including air compressor means operatively connected to said pipe system and utilizing available energy to compress air and deliver the compressed air to said pipe system, said air compressor means including a plurality of separate compressor stages, pressure responsive control means operatively interconnecting said compressor stages for automatically delivering low, intermediate or high pressure air at inversely varying flow rates to the pipe system in response to the pressure in the system, at least one air-actuated generator station, conduit means operatively connecting said at least one generator station to said pipe system for withdrawing compressed air therefrom for operating said at least one generator station, said at least one generator station including air motor means operably connected to said conduit means and operated by the compressed connected to said conduit means and operated by the compressed air for driving an electric generator, and air pressure and air volume control means connected in said conduit means and operable simultaneously to control operations of said air motor means, said air pressure and air volume control means being capable of varying the work output of said air motor means in accordance with a demand signal to thereby accurately control the rate of rotation of said air motor means to drive an electric generator at its optimum speed.

4,118,638

SYSTEM OF DISTRIBUTING PILOT SIGNALS

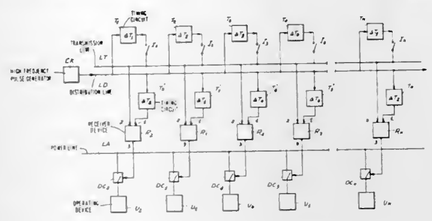
Franco Huwyler, Milan, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Filed Dec. 14, 1976, Ser. No. 750,502

Claims priority, application Italy, Dec. 19, 1975, 30490 A/75

Int. Cl.[2] H02J *4/00*

U.S. Cl. 307—11 **15 Claims**



1. A system for generating a plurality of pilot signals comprising:

means for generating a succession of time period initiation pulses, each of said time period initiation pulses defining a different system time period;

a first set of timing circuits comprising a plurality of timing circuits, each timing circuit in said first set of timing circuits having a characteristic time interval associated therewith, the characteristic time interval associated with each timing circuit in said first of timing circuits being different than the characteristic time interval of at least one other timing circuit in said first set of timing circuits, each said timing circuit in said first set of timing circuits adapted to generate a gating pulse at its output responsive to the generation of each of said time period initiation pulses and after a time delay equal to the characteristic time interval associated therewith;

a second set of timing circuits comprising a plurality of timing circuits, each timing circuit in said second set of timing circuits having a characteristic time interval associated therewith, the characteristic time interval associated with each timing circuit in said second set of timing circuits being identical to the characteristic time interval of at least one timing circuit in said first set of timing circuits whereby operative couplings between said timing circuits of said first and second sets of timing circuits are provided, each said timing circuit in said second set of timing circuits adapted to generate a gating pulse at its output responsive to the generation of each of said time period initiation pulses and after a time delay equal to the characteristic time interval associated therewith;

a pulse distribution line connected to an output of said time period initiating pulse generating means and receiving said time period initiation pulses;

means for coupling each of said timing circuits in said first and second set of timing circuits to said pulse distribution line;

a plurality of receiver devices each having first and second inputs and an output, each of said receiver devices adapted to generate a pilot signal at its output when gating signals are simultaneously applied to both its inputs, each said receiver device associated with a different timing circuit in said second set of timing circuits and thereby associated with the characteristic time interval of its associated timing circuit;

a transmission line;

means for coupling the output of each of said timing circuits in said second set of timing circuits to said first input of the receiver device with which it is associated;

a plurality of normally opened switches equal in number to the number of said timing circuits in said first set of timing circuits, each of said normally open switches associated with a different one of said timing circuits in said first set of timing circuits and thereby associated with the characteristic time interval of its associated timing circuit, each of said switches for applying a gating signal generated by its associated timing circuit to said transmission line when its associated switch is selectively closed by an operator of said system; and

means for coupling said transmission line to said second input of each of said receiver devices whereby a pilot signal is generated at the output of any receiver device whose associated characteristic time interval is identical to the characteristic time interval associated with a normally open switch which has been selectively closed by an operator of said system.

4,118,639

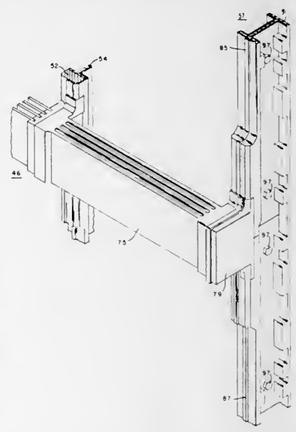
ELECTRICAL SWITCHBOARD APPARATUS INCLUDING BUS SYSTEM WITH INDIVIDUAL PHASE ISOLATION

Richard Rosey, Plum Borough; George N. Kovatch, Monroeville, both of Pa., and Ned H. Simon, Queeny Township, St. Louis County, Mo., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1976, Ser. No. 755,540

Int. Cl.[2] H01B *7/28*

U.S. Cl. 307—147 **21 Claims**



1. Electrical power distribution switchboard apparatus, comprising:

a cabinet;

a multiphase horizontal main bus mounted within said cabinet and being connected to a source of electrical power, said main bus comprising a plurality of spaced parallel individual horizontal phase conductors;

a multiphase vertical riser bus mounted within said cabinet and connected to an electrical load, said vertical riser bus comprising a plurality of individual vertical phase conductors;

means connecting said horizontal main bus and said vertical riser bus; and

a plurality of molded protective members, each individual horizontal and vertical phase conductor having a plurality of said protective members mounted thereon and cooperating to separately cover major surfaces of each of said individual phase conductors, whereby said individual phase conductors are electrically isolated from each other.

4,118,640

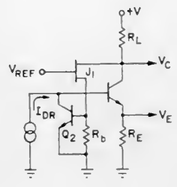
JFET BASE JUNCTION TRANSISTOR CLAMP

Sam S. Ochi, San Jose; Adib R. Hamade, Cupertino, and Daniel D. Culmer, Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 22, 1976, Ser. No. 735,879

Int. Cl.[2] H03K *5/08*

U.S. Cl. 307—237 **1 Claim**



1. A base junction transistor clamp comprising:

a first base-junction transistor to be clamped fabricated into a semiconductor substrate and having its emitter coupled to said substrate;

a second-base juncton transistor having its collector connected to the base of said first base-junction transistor, its emitter connected to said substrate, and a base; and

a field-effect transistor having its source connected to the collector of said first base-junction transistor, its drain connected to said base of said second base-junction transistor and its gate connected to a source of reference potential, thereby causing the potential at the collector of said first base-junction transistor to be clamped at a level established by said reference potential.

4,118,641

CHOPPER INCLUDING TRANSISTOR SWITCHES

Roger Lannuzel, Saint-Denis, France, assignor to Compagnie Industrielle des Telecommunications S.A., Paris, France

Filed Mar. 8, 1977, Ser. No. 775,685

Claims priority, application France, Mar. 11, 1976, 76 06976

Int. Cl.[2] H03K *17/00*

U.S. Cl. 307—240 **2 Claims**

1. A chopper comprising:

transistor switches, said switches being four in number and each comprising an input terminal and an output terminal and being short-circuited by a diode whose anode is connected to the output terminal and whose cathode is connected to the input terminal;

a DC supply whose first terminal is connected to the input terminals of a first switch and of a second switch and whose second terminal is connected to the output terminals of the third switch and of the fourth switch, the output terminal of the first switch being connected to the

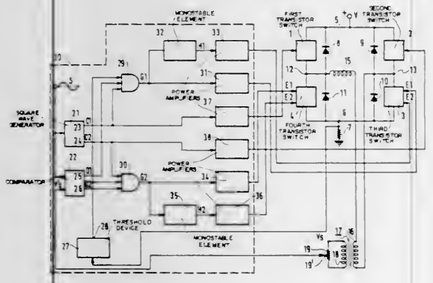
input terminal of the fourth switch, the output terminal of the second switch being connected to the input terminal of the third switch;

an output transformer comprising a primary winding and a secondary winding, said primary winding being connected in series with an inductance and thus constituting a circuit connected at one end with the output terminal of the first switch and at the other end with the output terminal of the second switch;

means for controlling the switches comprising a Schmitt trigger comparator connected to receive on a first input a first input signal constituted by an AC reference signal with a period T and on a second input a second input signal equal to a fraction of the output signal obtained on the secondary winding of the transformer, this fraction being chosen so that the second input signal will have an RMS value equal to that of the first input signal;

said comparator changing state each time the difference between the first input signal and the second input signal reaches a certain level Δv equal to a fraction of the maximum amplitude of the reference signal;

said comparator supplying a first square wave signal which is positive when the error signal obtained by the difference



between the two input signals of the comparator increases and zero when said error signal decreases and a second square wave signal in phase opposition with said first square wave signal; wherein said control means comprises means generating square wave signals with a period T from the reference signal which in combination with said first and second square wave signals coming from the comparator supply signals controlling a first group of switches comprising the first switch and the third switch and a second group of switches comprising the second switch and the fourth switch so that during each period T of the reference signal the switches of the second group will be open during the first half-period T/2;

the switches of the first group will be open during the second half-period T/2;

one of the switches of the first group during the first half-period T/2 will be commutated in phase with the second square wave signal while the other switch of the first group during the same first half-period is closed and one of the switches of the second group during the second half-period T/2 will be commutated in phase with the first square wave signal whereas the other switch of the second group during the same half-period is closed.

4,118,642

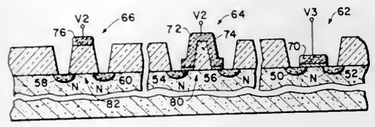
HIGHER DENSITY INSULATED GATE FIELD EFFECT CIRCUIT

William Stanley Richardson, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 590,533, Jun. 26, 1975, abandoned. This application Feb. 4, 1977, Ser. No. 765,494

Int. Cl.[2] **H03K** *5/00;* **H01L** *29/78, 27/02, 29/04*

U.S. Cl. 307—238 **6 Claims**



6. An integrated circuit comprising:

(a) a semiconductor body of a first conductivity type including first and second pairs of distinct separated regions each pair being of opposite conductivity type to said first conductivity type and being disposed in said semiconductor body, a first surface portion of said semiconductor body located between said first pair of separated regions conducting current in response to a first surface electric field intensity applied to said first surface portion and a second surface portion of said semiconductor body being located between said second pair of separated regions;

(b) a patterned layer of insulative material disposed over said semiconductor body;

(c) a first conductor means located over said first surface portion and over said second surface portion and including means for coupling to a voltage supply of a first predetermined value, said second surface portion constituting a part of a parasitic device;

(d) said first conductor means being spaced and separated from said first surface portion of said semiconductor body by a first portion of said patterned layer of insulative material, and said first conductor means being separated and spaced from said second surface portion of semiconductor body by a second portion of said patterned layer of insulative material, said first and second portions of said patterned layer of insulative material having substantially an identical thickness, said first portion of said patterned layer of insulative material including upper and side surfaces; said first conductor means including regions disposed over said upper and side surfaces of said first portion of said pattern layer of insulative material for diminishing the effective spacing between said first portion;

(e) said first conductor means, said first portion of said patterned layer of insulative material, said semiconductor body and said means for coupling to a voltage supply of a first predetermined value being cooperatively responsive for generating said first surface electric field intensity at said first surface portion; said first conductor means, said second portion of said patterned layer of insulative material, such semiconductor body and said means for coupling to a voltage supply of a first predetermined value being cooperatively responsive for generating a second surface electric field intensity at said second surface portion, said second surface electric field intensity being lower than said first surface electric field intensity for minimizing the possibility of turning on the parasitic device.

4,118,643

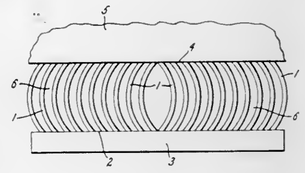
COMPLIANT MHD ELECTRODE STRUCTURE

Anthony Patrick Coppa, and Bert Zauderer, both of Merion, Pa., assignors to General Electric Company, Fairfield, Conn.

Filed Feb. 14, 1977, Ser. No. 768,641

Int. Cl.[2] **H02K** *45/00*

U.S. Cl. 310—11 **2 Claims**



1. A ceramic structure for use with a magnetohydrodynamic generator employing hot ionized gas as the working fluid, comprising:

a ceramic member having an obverse face for exposure to the said gas, and a reverse;

a thermally conductive compliance member having at least two faces, one of which faces is conductively fixed to the reverse of the ceramic member, the other of which faces is conductively fixed to

a cooling block,

said thermally conductive compliance member comprising a plurality of curved metal strips substantially parallel to one another, one edge of each said strip comprising one face, and the other edge of each said strip comprising the other face of the compliance member.

4,118,644

ELECTRICAL MACHINERY

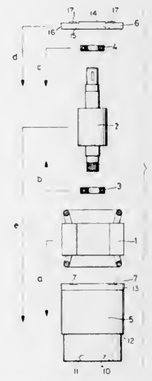
Siegfried Schulte, Gevelndorf, and Wilhelm Schmitt, Ringenberg, both of Fed. Rep. of Germany, assignors to Firma Schulte Elektrotechnik KG, Luedenscheid, Fed. Rep. of Germany

Division of Ser. No. 619,794, Oct. 6, 1975, Pat. No. 4,017,964. This application Dec. 15, 1976, Ser. No. 750,666

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1974, 2448699; May 28, 1975, 2523604

Int. Cl.[2] **H02K** *15/00*

U.S. Cl. 310—42 **2 Claims**



1. An electrical machinery assembly including a rotor comprising a rotor shaft and bearing means preassembled on said rotor shaft, a stator having an inner bore of given diameter, a deep drawn sheet metal housing, said bearing means on said rotor shaft having an outer diameter smaller than said given stator bore diameter, said bearing means supporting said rotor in said housing which comprises two separate deep drawn housing members of sheet metal, each of said housing members having a respective bearing seating surface produced by said deep drawing, at least one of the housing members having a stator supporting shoulder also produced by said deep drawing, whereby the stator rests against said shoulder, and wherein said housing member with the shoulder comprises at its open end a deep drawn outwardly flaring conical rim, said other housing member without the shoulder having a matching conical rim fitting into said outwardly flaring conical rim, whereby, due to said conical rims, the two housing members and with the housing members the entire assembly is automatically centered by the housing members axially pressed together.

4,118,645

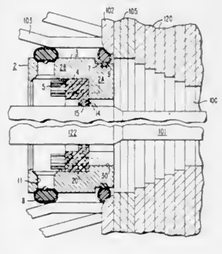
DUAL POSITION AIR GAP BAFFLE ASSEMBLY FOR A DYNAMOELECTRIC MACHINE

Raymond M. Calfo, Pittsburgh; George F. Dailey, Plum Borough; Gerald R. Alkire, New Alexandria, and Arthur Mulach, Penn Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1977, Ser. No. 785,979

Int. Cl.[2] **H02K** *9/00*

U.S. Cl. 310—53 **13 Claims**



1. A dynamoelectric machine with a dual position air gap baffle comprising:

a generally tubular shaped stator assembly with a plurality of stator windings disposed therein;

a generally cylindroid rotor assembly axially and rotatably mounted within said stator with an air gap space between the outer circumference of said rotor and the inner circumference of said stator;

a dual position air gap baffle assembly rotatably mounted over said air gap on one end of said stator and for regulating air flow in said air gap in one position and the other allowing for access to said rotor assembly;

means for sealing said air gap baffle to one end of said stator.

4,118,646

ELECTROMAGNETIC MACHINES

Francis William Fleming, and Raymond John Pethick, both of Glasgow, Great Britain, assignors to Markon Engineering Company Limited, Nottingham, Great Britain

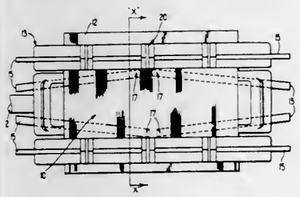
Continuation of Ser. No. 600,198, Jul. 29, 1975, abandoned. This application Jun. 17, 1977, Ser. No. 807,882

Int. Cl.[2] **H02K** *9/00*

U.S. Cl. 310—58 **4 Claims**

1. An electromagnetic machine comprising a salient pole rotor, impellor means for directing a flow of coolant gas through the machine, an electrically-conductive winding carried on each salient pole of the rotor and formed by superimposed winding layers having a plurality of turns wound around the pertaining pole and containing conductors extending parallel to the rotor axis, and a heat pipe structure carried by each

pole, said heat pipe structure having an evaporator end embedded in said winding, a condenser end projecting into the path of flow of said coolant gas and a portion of said heat pipe structure between said ends extending laterally across a plural-



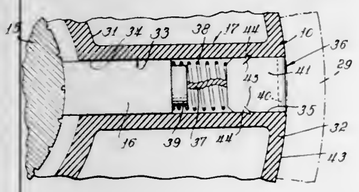
ity of said conductors with said evaporator end more remote than said condensor end from the axis of rotation of the rotor thereby permitting centrifugal force to transfer condensed fluid in the heat pipe from the condenser end to the evaporator end.

4,118,647

PREASSEMBLEABLE BRUSH ASSEMBLY

Robert A. Brenner, St. Joseph; Victor W. Cuthbert, Sodus, and Albert T. Braga, Stevensville, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 24, 1977, Ser. No. 781,011
Int. Cl.[2] H02K *13/00*
U.S. Cl. 310—239 **9 Claims**



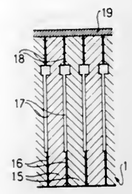
1. In an electrical device having a wall spaced from a current-carrying element, improved means for providing an electrical connection to the current-carrying element comprising:
a brush holder carried by said wall and having a first portion, an opposite second portion, and a through channel opening at one end through said first portion and at the other end through said second portion;
a terminal having a base portion facially overlying said second portion, and a turned end received in said other end of the channel;
a pair of tangs one each on opposite sides of said terminal turned end defining resilient means for free insertion of said turned end into said channel and for biting into said brush holder as an incident of the inserted turned end being urged outwardly relative to said brush holder channel for locking said terminal end to said brush holder against displacement outwardly from said other channel end, said tangs being resiliently deformed inwardly during insertion of the turned end into said brush holder for free insertion thereof;
an electrically conductive brush movable carried in said one end of the channel and having an end portion projecting from said brush holder first portion; and
spring means between said terminal and brush urging said brush outwardly from said one end of the channel into engagement with said current-carrying element, said brush being electrically conductively connected to said terminal, said pair of tangs preventing said outward displacement of the terminal notwithstanding the outward biasing action of said spring means, said assembly of said brush holder, brush, terminal, and spring means being inserted between said wall and current-carrying element with said brush urged against the current-carrying element by said spring means.

4,118,648

SALIENT POLE OF A SYNCHRONOUS ELECTRIC MACHINE

Roger Gillet, and Jean Allégre, both of Belfort, France, assignors to Societe Generale de Constructions Electriques et Mecaniques Alsthom, Paris, France

Continuation of Ser. No. 581,994, May 29, 1975, abandoned.
This application Oct. 28, 1976, Ser. No. 736,604
Claims priority, application France, Jun. 13, 1974, 74 20591
Int. Cl.[2] H02K *1/24*
U.S. Cl. 310—269 **8 Claims**



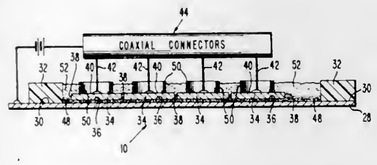
1. In a salient pole of a synchronous electric machine, said salient pole comprising: a radially internal polar body and a radially external polar shoe in the form of a single block, said block being formed of an axial stack of metal sheets, each sheet having integrally, a radially internal portion and a radially external portion, clamping means for axially clamping the metal sheets together, the radially external portion of said metal sheets being metal welded together to form an electrically conductive pole shoe, the improvement wherein said clamping means are disposed at the radially internal portion of said sheets with said sheets being unclamped between said radially internal and radially external portions and the portion of said sheets between said radially internal and radially external portions being of reduced axial thickness to form a shallow hollowed out portion extending between said radially internal portion and said pole shoe.

4,118,649

TRANSDUCER ASSEMBLY FOR MEGASONIC CLEANING

Stanley Shwartzman, Somerville, and Alfred Mayer, Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 25, 1977, Ser. No. 800,276
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—337 **10 Claims**



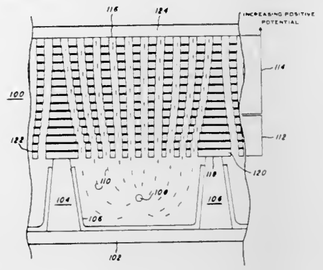
1. A transducer assembly adapted to oscillate at a megasonic frequency for propagating a beam of ultrasonic energy into a fluid adjacent thereto comprising:
a metallic foil having a back surface, said foil having a thickness between about 5 and about 50 micrometers,
at least one transducer having one face thereof mounted adjacent to said back surface by a conductor-loaded epoxy disposed therebetween, and
insulating means disposed in the area adjacent to said back surface and surrounding the edges of said transducer for supporting said foil and transducer in relatively fixed relationship while allowing electrical connection to the opposite face of said transducer.

4,118,650

INTERNALLY SUPPORTED FLAT TUBE DISPLAY

Warner Curtis Scott, Dallas County, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 14, 1977, Ser. No. 787,393
Int. Cl.[2] H01J *29/46, 29/82*
U.S. Cl. 313—422 **7 Claims**



1. An electron beam scanning system comprising;
a gas evacuated sealed envelope;
an electron source mounted within said envelope;
a target member having a dot matrix thereon mounted within said envelope opposite said electron source;
a control stack comprising a plurality of control plates sandwiched between said electron source and said target member for controlling the flow of electrons therebetween, said control plates having a plurality of apertures formed therein, corresponding apertures of said control plates being aligned to form electron channels between said electron source and said target member;
said apertures arranged in a plurality of aperture matrixes such that the first plate of said control stack contains a matrix of apertures compressed to provide a flat portion free of aperture between adjacent sets of apertures matrixes, the remaining plates having aperture matrixes expanded such that the aperture matrix of the last plate of said control stack corresponds to said dot matrix; and
means for supporting said control stack mounted between the back plate of said envelope and said first control plate, said supporting means in contact with said flat portion.

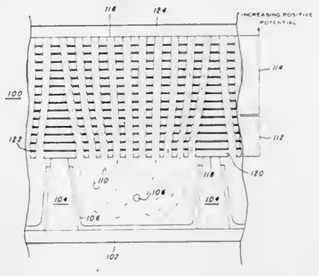
4,118,651

INTERNALLY SUPPORTED FLAT TUBE DISPLAY

Warner Curtis Scott, Dallas County, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 14, 1977, Ser. No. 787,395
Int. Cl.[2] H01J *29/02, 29/46, 29/82*
U.S. Cl. 313—422 **11 Claims**

1. An electron beam scanning system comprising;
a gas evacuated sealed envelope;
an electron source mounted within said envelope;
a target member having a dot matrix thereon mounted within said envelope opposite said electron source;
a control stack comprising a plurality of control plates sandwiched between said electron source and said target member for controlling the flow of electrons therebetween, said control plates having a plurality of apertures formed therein, corresponding apertures of said control plates being aligned to form electron channels between said electron source and said target member;
said apertures of at least one of said control plates adjacent said electron source having a large dimension along the direction that said emitted electrons have a finite transverse velocity such that a wide acceptance angle is provided thereby increasing electron transmission between said electron source and said target, said apertures having said large dimension further having a small dimension along the direction that said emitted electrons have negligible transverse velocity defining apertures having a low aspect ratio;
said apertures arranged in a plurality of aperture matrixes



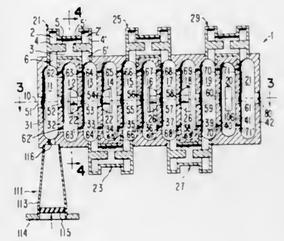
such that the first plate of said control stack contains a matrix of apertures compressed to provide a flat portion free of aperture between adjacent sets of apertures matrixes, the remaining plates having aperture matrixes expanded such that the aperture matrix of the last plate of said control stack corresponds to said dot matrix; and
means for supporting said control stack mounted between the back plate of said envelope and said first control plate, said supporting means in contact with said flat portion.

4,118,652

LINEAR ACCELERATOR HAVING A SIDE CAVITY COUPLED TO TWO DIFFERENT DIAMETER CAVITIES

Victor A. Vaguine, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 546,379, Feb. 3, 1975, Pat. No. 4,024,426, which is a continuation of Ser. No. 420,754, Nov. 30, 1973, abandoned. This application Mar. 14, 1977, Ser. No. 777,364
Int. Cl.[2] H01J *25/10*
U.S. Cl. 315—5.41 **4 Claims**



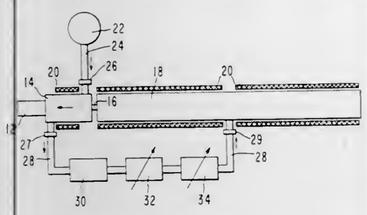
1. An accelerator for charged particle beams comprising wall means forming a plurality of resonant accelerating cavities, beam-passage apertures formed in said wall means between adjacent accelerating cavities, a resonant coupling cavity external to and interconnecting two of said accelerating cavities, one of said two accelerating cavities having a coupling iris in a region of its wall remote from said beam-passage aperture, said coupling iris connecting to a transmission means for injecting electromagnetic wave energy into said one accelerating cavity, said one of said two accelerating cavities having a smaller diameter than the other accelerating cavity, a first

coupling passage from said coupling cavity to said one accelerating cavity, and a second coupling passage from said coupling cavity to said other accelerating cavity.

4,118,653
VARIABLE ENERGY HIGHLY EFFICIENT LINEAR ACCELERATOR

Victor Alexsey Vaguine, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 22, 1976, Ser. No. 752,936
Int. Cl.[2] H01J *25/10*
U.S. Cl. 315—5.41 **13 Claims**

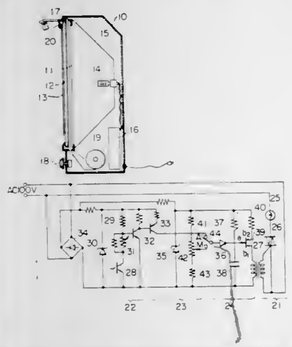


1. In a linear accelerator for charged particles:
a substantially linear first extended acceleration circuit comprising a passageway for transmitting a beam of charged particles through said circuit in energy exchanging relation with an electromagnetic wave on said circuit traveling generally parallel to said beam,
a second acceleration circuit comprising a passage for transmitting said beam after emergence from said first circuit in energy exchanging relation with a standing electromagnetic wave on said second circuit, and
first coupling means for coupling electromagnetic wave energy into one end of said first circuit and second coupling means for coupling electromagnetic energy out from the other end of said first circuit into said second circuit.

4,118,654
AUTOMATIC LIGHT INTENSITY CONTROL FOR X-RAY FILM VIEWER

Takahiro Ohta, and Akira Muramatsu, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami ashigara, Japan

Filed Nov. 29, 1976, Ser. No. 745,754
Claims priority, application Japan, Dec. 4, 1975, 50-144831
Int. Cl.[2] H05B *37/02*
U.S. Cl. 40—361 **7 Claims**

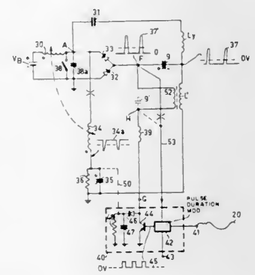


1. In a photographic film viewer including a light diffuser screen, means for positioning a film adjacent one side of the screen, a housing surrounding the other side of the screen, and a light source disposed within the housing for projecting light through the screen and film, automatic light intensity control means comprising:
a. photo-detector means spaced from the screen on said one side thereof opposite the housing and oriented with respect to the plane of the film to detect only the intensity of light penetrating through the vicinity of the center portion of the screen and film and to shield ambient light therefrom, and
b. electrical circuit means for automatically controlling the brightness of the light source in response to an output signal from the photo-detector means, whereby the brightness of the light source is increased when the light penetrating through the screen and film decreases, and vice versa.

4,118,655
LINE SAWTOOTH DEFLECTION CURRENT GENERATOR

Jörg Wölber, Pinneberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1977, Ser. No. 799,961
Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623599
Int. Cl.[2] H01J *29/56*
U.S. Cl. 315—371 **3 Claims**

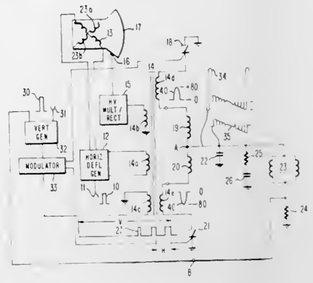


1. A circuit arrangement for generating from a supply voltage source a sawtooth deflection current through a line deflection coil, said circuit comprising a line deflection circuit including switching means operating at line frequency for periodically applying a voltage to said line deflection coil for the production of said deflection current, and modulating means adapted to be coupled to said deflection coil circuit for modulating the magnitude of the voltage across the deflection coil during the line scan period thereby modulating the amplitude of the deflection current, said modulating means including a stage operating in the switching mode, and a switch controlled by periodic pulses for alternately driving said switch into conduction and cutting it off and adjusting the duration of the controlling pulses depending on the voltage present at the modulating means output terminals; a scan capacitor, said supply voltage source being adapted to be coupled to said scan capacitor for supplying a part of the voltage applied to the line deflection coil, said modulating means providing a pulse-shaped current switched between two values to the scan capacitor an inductance means coupled to said modulations means for smoothing the switching frequency, and a winding coupled to the scan capacitor, said winding being magnetically coupled to the line deflection circuit.

4,118,656
NORTH-SOUTH PINCUSHION DISTORTION CORRECTION CIRCUIT

Wolfgang Friedrich Wilhelm Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,499
Int. Cl.[2] H01J *29/56*
U.S. Cl. 315—371 **5 Claims**



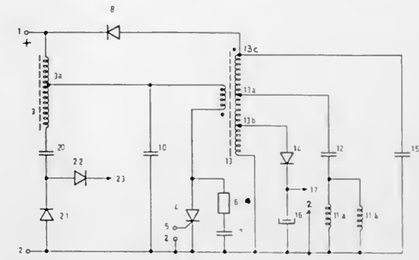
1. A north-south pincushion distortion correction circuit, comprising:
a first capacitance coupled in parallel with a vertical deflection winding;
a charging circuit coupled to said first capacitance for charging said first capacitance with respective decreasing and increasing amounts of horizontal deflection rate energy during respective first and second portions of each vertical trace interval, the charging of said first capacitance developing a generally sawtooth shaped horizontal rate voltage at a junction of said first capacitance and said winding, and the discharging of said first capacitance providing a sawtooth shaped vertical rate scanning current in said winding;
a second capacitance and impedance means coupled in circuit with said first capacitance and in parallel with said vertical deflection winding for altering the shape of said sawtooth shaped horizontal rate voltage at said junction by boosting the sawtooth voltage during the first half of each horizontal trace interval for producing on said vertical rate sawtooth current a substantially symmetrical horizontal rate parabolic current component during each horizontal trace interval for effecting north-south pincushion distortion correction.

4,118,657
CIRCUIT ARRANGEMENT FOR PROVIDING A SAW-TOOTH CURRENT IN A COIL

Attilio Farina, Via Ventimiglia 162, 10100 Torino, Italy

Filed Feb. 18, 1977, Ser. No. 770,115
Claims priority, application Italy, Apr. 7, 1976, 67804 A/76
Int. Cl.[2] H01J *29/70, 29/76*
U.S. Cl. 315—408 **3 Claims**

1. A circuit arrangement for providing a periodic saw-tooth current in a coil, such as a kinescope deflector coil (11*a*, 11*b*) comprising:
a one-way conducting device (8) having one end immediately coupled to a pole (1) of a voltage source (1, 2) and the other end coupled to the coil;
a thyristor (4) having one terminal connected to the other pole (2) of said voltage source and having a control electrode (5) which may be coupled to an extraneous periodic pilot-pulse source which makes said thyristor conductive at the end of the trace interval of the saw-tooth cycle;
an autotransformer (3) having one end connected to said one pole (1) of the said voltage source (1.2), an intermediate tap (3*a*) connected to the other terminal of said thyristor (4), and the other end connected to a rectifier (22) to provide a high D.C. voltage output for the acceleration electrode of the kinescope;
a capacitor (10) having one end connected to said intermediate tap (3*a*) of said autotransformer (3) and to said other terminal of said thyristor, and the other end connected to said other pole (2) of said voltage source (1.2);
a transformer (13) having a primary winding, connecting said intermediate tap (3*a*) of said autotransformer (3) to said other terminal of said thyristor (4), and a secondary

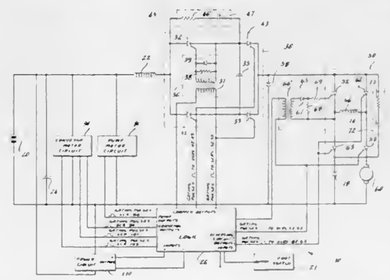


winding connecting said other end of said one-way conductive device (8) to said other pole (2) of said voltage source (1.2);
wherein said transformer is sized to have a primary inductance with the secondary short-circuited which, together with said capacitor (10) forms a time constant sufficiently great to keep the thyristor conductive throughout all the retrace interval and for the first part of the trace interval of the saw-tooth cycle.

4,118,658
CONTROL CIRCUIT FOR SHUTTLE CAR

John P. Salva, Shelton; Gregory M. Mudzinski, Stamford; John A. Mills, Norwalk, all of Conn., and Shashi B. Dewan, Toronto, Canada, assignors to Firing Circuits Inc., Norwalk, Conn.

Filed Apr. 25, 1977, Ser. No. 790,304
Int. Cl.[2] H02M *7/68*
U.S. Cl. 318—257 **19 Claims**



1. A control circuit for a mine shuttle car comprising:
A. a power supply;
B. a chopper circuit in series with said power supply, said chopper circuit being comprised of a first SCR connected in series with a second SCR, and a third SCR and a fourth SCR which are also series connected, said first and second SCRs being connected in parallel with said third SCR and a fourth SCR, so that said first SCR and said third SCR are connected to said power supply, a commutation capacitor being connected from between said first SCR and said second SCR to between said third SCR and said fourth SCR so that a pair of alternate current paths are

provided, one path being from said first SCR through said commutation capacitor and through said fourth SCR, and the other path being from said third SCR through said commutation capacitor and through said second SCR;

C. a gating means for producing a number of separate series of gating pulses one series of which simultaneously gates either said first SCR and said fourth SCR or said third SCR and said second SCR, each of said SCRs becoming conductive when gated, the frequency of said series of pulses to said SCRs being selectively variable;

D. a traction motor in series with said chopper circuit and said power supply, said traction motor operating to drive said shuttle car, and the speed of said traction motor being directly related to the magnitude of the voltage across said motor,

and when said control circuit is in operation, said gating means gates said first SCR and said fourth SCR, said commutation capacitor discharges through said gated fourth SCR thereby placing voltage across said traction motor while at the same time current flows from said power supply through said gated first SCR to recharge said commutation capacitor in the opposite polarity, said gating means then gates said third SCR and said second SCR, said commutation capacitor discharges through said gated second SCR thereby placing voltage across said traction motor while at the same time current flows through said gated third SCR recharging said commutation capacitor in its original polarity, this sequence being repeated with the frequency of said gating means' gating pulses being directly proportional to the magnitude of voltage across said traction motor.

4,118,659

ELECTRIC MOTOR FOR PHOTOGRAPHIC CAMERAS

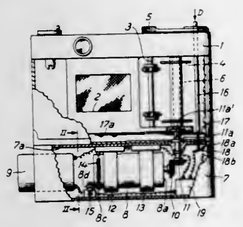
Reinhart Klemm, Zurich, Switzerland, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jan. 31, 1977, Ser. No. 763,989

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1976, 2606677

Int. Cl.² G03B *1/18*

U.S. Cl. 318—560 **7 Claims**



1. In an electric motor attachable to a photographic camera having a main shaft for shutter rewind and film transport, said motor having an output shaft acting on said main shaft of the camera and lacking any further operational connection with the camera shutter, the improvement comprising:

said electric motor (**8**) having a housing (**7**), a rotor, a stator, and a motor circuit and rotatably supported in said housing, means for rotating said stator oppositely to the direction of rotation of the rotor when said rotor is located into position at the end of the shutter rewind and film transport, and means for switching said motor circuit actuated by backward movement of said stator.

4,118,660

AUTOMATIC MACHINING SYSTEM

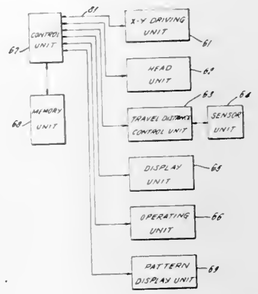
Nobuo Ohtsuki; Toshio Hayashi; Akio Imai; Yoshio Takahashi, and Noboru Hashimoto, all of Tokyo, Japan, assignors to Nippon Electric Company Ltd., Tokyo, Japan

Filed Jan. 5, 1977, Ser. No. 756,855

Claims priority, application Japan, Jan. 7, 1976, 51-1731

Int. Cl.² G05B *19/24*

U.S. Cl. 318—571 **2 Claims**



1. An automatic machining system comprising: a head unit having a combined scribing/punching tool or drill chuck, means for positioning said tool or drill chuck in the direction of the Z axis and a driving unit for rotating said chuck in drilling a workpiece; a sensor which, when subjected to pressure from the tool or drill mounted in said chuck according to the back component of force which said tool or drill receives from said workpiece when the tip of said tool or drill comes into contact with said workpiece, generates an electric signal to detect said contact and senses the variation thereof; a travel distance control unit responsive to a detection signal from said sensor for controling the travel distance of the tool or drill of said head unit in the Z axis direction in accordance with the requirement of the scribing, punching or drilling operation; an X-Y driving unit for moving and positioning said head unit in the respective directions of the X and Y axes to vary the machining position of the head unit; means for securely fixing said workpiece on a work table; a memory unit for memorizing various data; an operating unit which selects one out of the scribing, punching and drilling functions for said head unit, chooses a working pattern and feeds said memory unit with machining data including the X and Y coordinates for moving said head unit and the external dimensions and drilling depth of the workpiece; a display unit on whose screen the picture varies with the working condition of said operating unit and the machining data fed from said operating unit to said memory unit as well as the operating instruction and the kinds of data such as said X and Y coordinates and the radius to be next given as input to said operating unit are indicated; a pattern display unit on which the respective working patterns corresponding to the modes of said scribing, punching and drilling, and all the symbols in which the machining data to be fed from the operating unit to said memory unit are to be indicated are displayed in advance and the working pattern selected by the operating unit is separately indicated as express instruction to an operator; and a control unit for controlling each of the above-mentioned means in accordance with said machining data input from the operating unit to the memory unit.

4,118,661

ELECTRICAL CIRCUIT ARRANGEMENTS PARTICULARLY THOUGH NOT EXCLUSIVELY FOR ELECTRICAL BATTERY CHARGING SYSTEMS

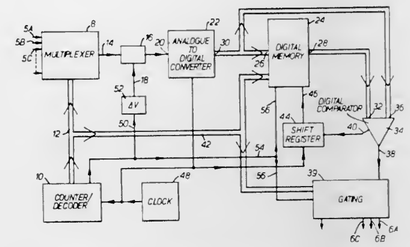
Wladyslaw Siekierski, and Richard A. Crane, both of London, England, assignors to British Communications Corporation Limited, England

Filed Mar. 24, 1977, Ser. No. 780,957

Claims priority, application United Kingdom, Mar. 24, 1976, 11744/76

Int. Cl.² H02J *7/04;* **H03K** *5/00*

U.S. Cl. 320—40 **9 Claims**



1. A system for controlling the charging of an electrical battery, comprising

sampling means connected to the battery for periodically sampling the voltage of the battery, as it is charged,

means connected to convert each sampled voltage into digital form,

means for storing the successive sampled voltages after conversion into digital form,

comparing means for comparing each sampled voltage after conversion into digital form with a previously stored said sampled voltage whereby to detect when the sampled voltage is less than the previously stored sampled voltage and thereby to detect when the voltage of the battery begins to fall,

means connected to the comparing means and responsive to detection of such a fall to abruptly curtail the charging, and

means to obviate the effect of jitter in the analogue to digital conversion comprising means for changing the value of at least one of each sampled voltage and the previously stored sampled voltage with which it is to be compared by a predetermined reference increment having such a polarity as to increase the later of the two sampled voltages relative to the earlier one thereof.

4,118,662

APPARATUS INCLUDING BIFREQUENCY ELECTROMAGNETIC WAVE GENERATION MEANS FOR SYMPATHETIC EXCITATION OF DETACHED CONDUCTIVE STRUCTURES

Harold James Weber, 20 Whitney Dr., Sherborn, Mass. 01770, assignor to Harold James Weber, Sherborn, Mass.

Filed Jun. 24, 1977, Ser. No. 809,689

Int. Cl.² G01V *3/10*

U.S. Cl. 324—3 **14 Claims**

1. Apparatus for bifrequency electromagnetic excitation of a conductive structure in a manner so as to produce nearly equal signal magnitudes throughout the structure at each of several inherently stable frequencies, wherein said apparatus includes in operative combination;

a. Generating means for generating a first radio frequency signal;

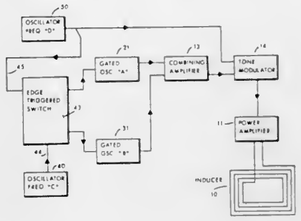
b. Generating means for generating a second radio frequency signal the frequency of which is higher than, but somewhat less than twice, the said first frequency;

c. Generating means for generating a fourth frequency signal the frequency of which is substantially lower than the said first frequency;

d. circuit coupling means having an output terminal means;

e. Switching means cooperatively connected to said circuit coupling means and said first, second, and fourth signal generating means wherein said switch is responsive to said fourth signal so as to cause the said switching means to alternatively select, in a repetative manner, between the said first and the said second signal generating means thereby producing a third signal comprising either said first or said second signal at the output terminal means of said circuit coupling means;

f. Radio frequency amplifying means the signal input means of which is operatively connected to said third signal output terminal means so as to amplify the said alternative first and second radio frequency signals produced by said switching means;



g. Generating means for generating a fifth frequency signal operatively connected so as to modulate in amplitude the said radio frequency amplifier output;

h. Inducer means operatively connected to said radio frequency amplifier means so as to provide an effective amplified third signal output coupling means wherein said inducer means is, at least, operative for emanating electromagnetic field lines at both said first and said second frequencies; and,

i. Portable direct current source of power operatively connected to the plural generating and amplifying means comprising the excitation apparatus.

4,118,663

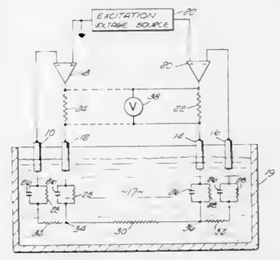
FOUR ELECTRODE CONDUCTIVITY SENSOR

Theodore R. Barben, II, Carson City, Nev., assignor to Thomas-Barben Instruments, Carson City, Nev.

Filed Oct. 11, 1977, Ser. No. 841,254

Int. Cl.² G01N *27/42*

U.S. Cl. 324—30 R **10 Claims**



1. In a four electrode conductivity sensor having opposing pairs of potential and current electrodes, the control and measuring system comprising:

first and second operational amplifiers each having inverting and noninverting inputs and an output coupled to a respective one of said current electrodes;

grounding means for applying a common reference potential to the noninverting input of said first operational amplifier;

voltage source means for applying a regulated excitation potential to the noninverting input of said second operational amplifier;

first and second feedback means coupling the associated potential electrode of each opposing pair directly to the inverting input of the respective first and second operational amplifiers;

means for immersing the opposing pairs of potential and current electrodes in fixed relative positions within a solution having its conductivity measured whereby the impedance in the feedback path to the inverting input of both operational amplifiers from said potential electrode greatly exceeds the impedance within the solution between electrodes; and,

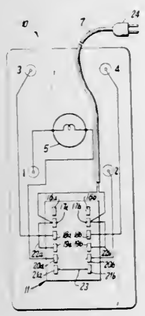
output circuit means including an output resistance element coupled in series with the output of one of said operational amplifiers to produce an output voltage proportional to the current flow between said current electrodes directly proportional to the conductivity of the solution between said electrodes.

4,118,664

ELECTRICAL TROUBLE FINDING APPARATUS

Paul Fields, 191 Palisade Ave., Yonkers, N.Y. 10703

Filed Apr. 6, 1976, Ser. No. 674,232
Int. Cl.² G01R *31/02*
U.S. Cl. 324—51 **5 Claims**



1. An electrical trouble finding apparatus for testing a variety of units comprising:

a case,

a manually actuated four pole double throw switch controlling the trouble finding operation of the apparatus,

a first pair of spaced binding posts coupled to the switch and protruding upwardly from the case at one end thereof,

a second pair of spaced binding posts coupled to said switch and protruding upwardly from the case at an intermediate portion thereof,

indicating means connected to the second pair of posts for indicating trouble in a unit,

a power supply, and,

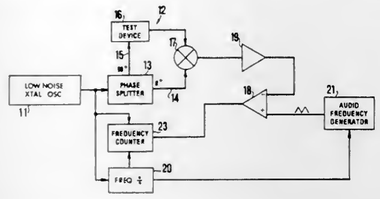
a control lever mounted on the case and coupled to the switch whereby the first pair of binding posts may be coupled to the power supply through the switch to provide power to a unit under test connected between said first pair of binding posts, and the second pair of binding posts are simultaneously in a de-energized condition so that live units may be coupled therebetween for testing.

4,118,665

TIME DOMAIN PHASE MEASURING APPARATUS

Victor S. Reinhardt, Gaithersburg, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 8, 1977, Ser. No. 858,764
Int. Cl.² G01R *27/00*
U.S. Cl. 324—57 R **16 Claims**



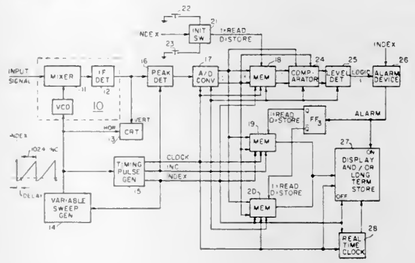
1. Apparatus for deriving time domain measures of phase and/or period stability of a device being tested comprising means responsive to a test signal applied to the device for deriving a DC signal component having an amplitude indicative of the phase shift introduced by the device, means responsive to the DC signal component for converting the amplitude of the DC signal component into a time interval indication, said converting means including means for combining the amplitude of the DC signal with the amplitude of a ramp waveform.

4,118,666

AUTOMATIC COMMUNICATION SIGNAL MONITORING SYSTEM

Albert J. Bernstein, Covina, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 4, 1977, Ser. No. 774,384
Int. Cl.² G01R *23/16*
U.S. Cl. 324—77 C **9 Claims**



1. A system for monitoring an RF or IF communication signal as to its power level and spectral quality throughout a selected frequency band comprising

means for periodically sweeping the spectrum of said selected frequency band,

means for detecting the peak amplitude of evenly spaced increments of said spectrum,

means for converting the peak amplitude of each increment of a sweep cycle into digital form to provide digital band sweep data,

reference memory means for storing digital band sweep data of a selected sweep cycle for use as a reference,

means for comparing digital band sweep data of subsequent sweep cycles with said reference to determine the presence of any deviation,

level detecting means for determining when any deviation detected exceeds preset tolerance levels,

temporary storage means for temporarily storing digital band sweep data of each of said subsequent sweep cycles while being processed through said comparing means and level detecting means, and

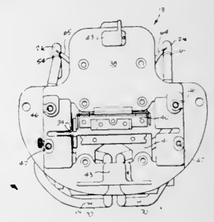
long-term store means responsive to said level detecting means for storing band sweep data from said temporary storage means when any deviation of band sweep data of a subsequent sweep cycle exceeds said tolerance levels.

4,118,667

METHOD FOR MAKING A HEAT SENSITIVE FAULT DETECTING AND INDICATING DEVICE FOR WATTHOUR METER

James W. Milligan, West Lafayette, Ind., assignor to Duncan Electric Co., Inc., Lafayette, Ind.

Division of Ser. No. 585,110, Jun. 9, 1975, Pat. No. 4,017,795.
This application Jan. 21, 1977, Ser. No. 761,467
Int. Cl.² G01R *1/36*
U.S. Cl. 324—110 **3 Claims**



1. A method for detecting and indicating possible faults in a watthour meter having a current stator which includes a current core and a current coil, said method comprising:

directly applying a low melting point metallic coating to the current coil of the current stator of said watthour meter; and

providing a non-conductive covering for said metallic coating that has a reduced thickness portion whereby said metallic coating penetrates said non-conductive coating at said reduced thickness portion when a current surge is received by said current coil sufficient to melt said low melting point metallic coating so that a visual indication of a possible fault is thereafter presented at said covering, said non-conductive coating being a sheath surrounding that portion of said current coil having said metallic coating applied thereto.

4,118,668

R.F. NETWORK ANTENNA ANALYZER EMPLOYING SAMPLING TECHNIQUES AND HAVING REMOTELY LOCATED SAMPLING PROBES

Roy E. Strayer, Jr., Manassas Park, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 12, 1977, Ser. No. 832,494
Int. Cl.² H04B *17/00*
U.S. Cl. 325—67 **10 Claims**

1. A dual channel network analyzer for testing an antenna in comparison with a reference antenna, the analyzer comprising:

first sampling means associated with each channel for respectively sampling, at a preselected rate, either first or second r.f. signals from the tested antenna and reference antenna resulting in the conversion of said signals to intermediate frequency;

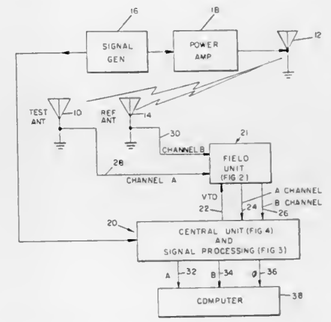
signal generating means having a first output connected in circuit with a transmission antenna which transmits signals to the tested antenna and reference antenna simultaneously;

second sampling means for sampling, at the preselected rate, a second output of the signal generating means;

phase lock loop means having an input connected to the output of the second sampling means;

voltage tuned oscillating means connected to the output of the phase lock loop means for generating a signal which establishes the preselected rate;

phase metering means having inputs respectively connected to the first and second converted signals for producing a



phase measurement of the first signal relative to the second;

first analog-digital conventing means for converting the phase measurement to a digital signal;

second and third analog-digital converting means for converting the first and second signals to digital signals representing the respective amplitudes of the signals derived from the test and reference antennas; and

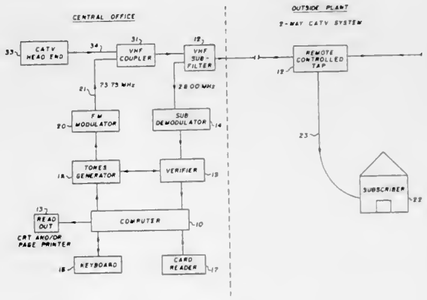
means respectively connected to the outputs of the analog-digital converting means for allowing connection of the digital phase and amplitude signals to a computer.

4,118,669

REMOTE DISCONNECT-RECONNECT TAP FOR CABLE TELEVISION SYSTEMS

Paul J. Fung, San Mateo, Calif., assignor to Premier Cablevision, Limited, Vancouver and National Cablevision, Limited, Quebec, both of, Canada

Filed Oct. 15, 1976, Ser. No. 732,571
The portion of the term of this patent subsequent to Oct. 19, 1993, has been disclaimed.
Int. Cl.² H04B *3/04*
U.S. Cl. 325—309 **5 Claims**



1. A remotely controlled disconnect-connect system for a

cable television distribution system having a head end feeding a cable distribution system, the disconnect-connect system including a plurality of taps disposed at diverse locations along the cable distribution system and connected to a plurality of television receivers, said taps being remote from said television receivers, each tap comprising means for receiving and detecting a time sequence of digit representing signals forming a multi-digit identification code number, each of said digit-representing signals comprising at least one tone modulated on a carrier and sent over the cable distribution system from the head end, means solely responsive to the receipt of the particular sequence of said digit-representing signals forming a predetermined multi-digit identification code associate with said tap for developing an internal control signal, and bistable switch means to connect the cable distribution system and a subscriber's television.

4,118,670

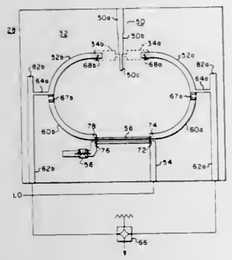
IMAGE PHASED AND IDLER FREQUENCY CONTROLLED MIXER FORMED ON AN INTEGRATED CIRCUIT DIELECTRIC SUBSTRATE

Lawrence E. Dickens, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 575,901, May 8, 1975, abandoned. This application Jun. 23, 1976, Ser. No. 699,296

Int. Cl.[2] H04B *1/26*

U.S. Cl. 325—446 **59 Claims**



1. In a mixer system, of the type employing the heterodyne principle of operation by which the combination of an RF input signal and an LO signal generates modulation products including a desired IF signal and an undesired image signal, the combination comprising:

(a) a dielectric substrate having a layer of conductor material affixed to one face thereof,

(b) a slot transmission line having a predetermined length formed in said layer of conductor material,

(c) first and second coplanar strip transmission lines formed in said layer of conductor material and disposed respectively adjacent one and the other end of said slot line and in longitudinally aligned relationship therewith, said first and second coplanar lines each comprising a center strip of conductor material and one and another longitudinal gaps to one and the other sides of said center strip,

(d) said one and another longitudinal gaps of said first coplanar line at their ends adjacent the slot line being electrically connected to each other and to the slot line to form a first coplanar line-slot line hybrid junction,

(e) said one and the other longitudinal gaps of said second coplanar line at their ends adjacent said slot line being electrically connected to each other and to the slot line to form a second coplanar line-slot line hybrid junction,

(f) means for coupling the RF input signal into said slot line in such manner that the signal propagates in first and second equal signal components in opposite longitudinal directions along said slot line toward the first and second hybrid junctions respectively,

(g) first and second heterodyne circuit means operatively associated with the first and second hybrid junctions respectively,

(h) first and second coupling means operatively associated with said first and second coplanar lines, respectively, said first and second coupling means each including a means for coupling the LO input signal into the corresponding coplanar line and including a means for coupling the IF signal out from the corresponding coplanar line,

(i) said predetermined length of the slot line being so chosen that upon respective injection into the first and second coplanar lines of one and another LO signals which are phase displaced by 90° and upon the resultant respective generation by the first and second heterodyne circuit means of one and another image signals which are phase displaced by 180°, said slot line will intercouple the first and second heterodyne circuit means in a manner which will effectively short circuit the combination of the one and another image signals.

4,118,671

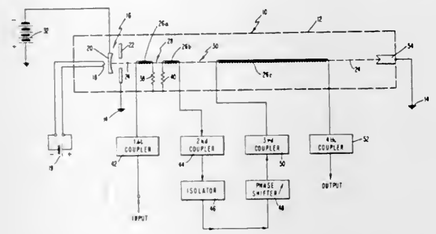
TRAVELING WAVE TUBE CIRCUIT

Denis J. Connolly, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 15, 1977, Ser. No. 768,795

Int. Cl.[2] H03F *3/58*

U.S. Cl. 330—43 **4 Claims**



1. The combination of a traveling wave tube having a severed slow wave structure and an external signal path connecting adjacent several sections, said external signal path comprising an isolator, and a phase shifter, said external signal path having a phase vs. frequency relationship which provides a phase shift such that traveling wave tube efficiency is substantially maximized over a predetermined band of frequencies, the components in the external signal path being selected to absorb all waves passing in one direction while transmitting with minimal attenuation those waves, with frequencies within a desired operating band passing in the opposite direction.

4,118,672

ATTENUATION EQUALIZER HAVING CONSTANT RESISTANCE

Tsutomu Noguchi, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

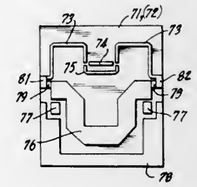
Filed Jul. 26, 1977, Ser. No. 819,066

Claims priority, application Japan, Jul. 28, 1976, 51/90077; Jul. 28, 1976, 51/90078

Int. Cl.[2] H03F *3/60*

U.S. Cl. 330—286 **24 Claims**

1. An attenuation equalizer having constant resistance comprising, a pair of input and output terminals, a first distributed constant line having a characteristic impedance Z_1 and an electrical length θ_1 connected to said input and output terminals of said equalizer at both of its opposite ends respectively, a first resistor having resistance R connected to said input terminal at its one side, a second resistance R connected to said output terminal at its one side, and a second distributed constant line having a characteristic impedance Z_2 and an electrical length θ_2 connected solely to the other side of said first resistor and the other side of said second resistor at both of its opposite ends respectively.



4,118,673

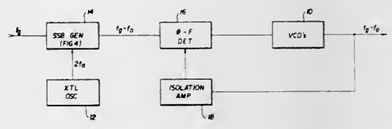
PHASE LOCK LOOP CONTROLLED OFFSET LOCAL OSCILLATOR SYSTEM

Erich Hafner, Tinton Falls, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 10, 1978, Ser. No. 876,771

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—2 **9 Claims**



1. A local oscillator providing an output signal having a frequency which is offset by a constant increment f_o from the frequency f_g of an input signal which is variable over a relatively wide frequency range, comprising in combination:

means for receiving said input signal;

an offset reference frequency source providing a signal having a frequency related to f_o by a predetermined fixed factor;

single sideband generator circuit means coupled to said receiving means and said reference frequency source and being responsive to respective signals provided thereby to provide a lower sideband signal f_g-f_o;

a selected one of a plurality of signal controlled variable frequency oscillators being operable to generate an f_g-f_o output signal, said plurality of oscillators each being operable over predetermined portions of said relatively wide frequency range; and

a phase lock loop for said selected one oscillator including, means coupled to said selected one oscillator for sampling a portion of said output signal, detector circuit means coupled to said single sideband generator circuit means and said signal sampling means coupled to said one oscillator and being responsive to the relative phase of said single sideband signal and the sample portion of said output signal to provide a frequency control signal for said one signal controlled variable oscillator, and means coupling said frequency control signal to said one signal controlled variable oscillator.

4,118,674

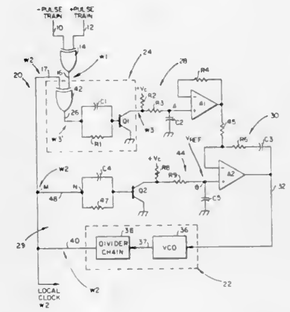
PHASE LOCKED LOOP INCLUDING ACTIVE LOWPASS FILTER

Edward R. Ball, Auburn, Wash., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Nov. 25, 1977, Ser. No. 854,853

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—17 **19 Claims**



1. A phase locked loop for producing a digital square wave output clock signal which is phase locked to a digital input signal that is a series of time slots, each of which may contain a pulse whose timing is initially controlled by a timing signal, comprising:

first means which is an oscillator means operative for producing the square wave output clock signal, said oscillator means being responsive to a control voltage for varying the frequency and phase of the clock signal;

second means which is a phase detector means producing a digital error signal which is a function of the difference between the phases of pulses in the input and output signals;

third means which is a means for integrating the digital error signal for producing an error voltage;

fourth means which is means for producing a symmetrical time-varying cyclical signal having a time-averaged value other than zero;

fifth means responsive to the cyclical signal for producing a reference voltage that is relatively constant as a function of time; and

sixth means for comparing the error voltage and the reference voltage for producing the control voltage which causes the operation and frequency of the oscillator means to vary to make the frequency of the clock signal more nearly equal to an integral multiple of the frequency at which the time slots occur and the phases of pulses in the input and output signals have more nearly a fixed relationship.

4,118,675

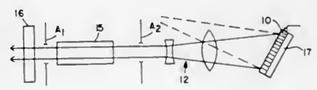
LASER TUNING WITH AN ACOUSTO-OPTIC LENS

John P. Rahn, and Marion L. Scott, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1977, Ser. No. 783,100

Int. Cl.[2] H01S *3/10*

U.S. Cl. 331—94.5 C **10 Claims**



1. A method for tuning a pulsed laser beam in a laser having

a laser gain medium between an output element and a back reflector comprising the steps of:

passing said laser beam through substantially the entire length of an acousto-optic cell disposed between said laser medium and said back reflector;

focusing said laser beam by propagating a chirped acoustic pulse through said acoustic-optic cell;

providing spectral resolution of said laser beam into wavelength components by propagating a chirped acoustic pulse through said acousto-optic cell;

blocking all but one of said wavelength components with an aperture; and

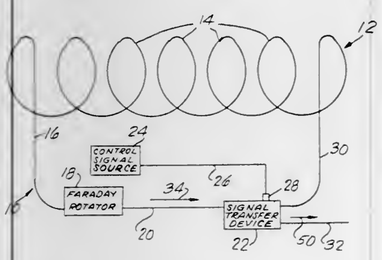
reflecting one wavelength component with said back reflector through the acousto-optic cell, the laser gain medium and the output element.

4,118,676

METHOD AND APPARATUS FOR DRIVING AN OPTICAL WAVEGUIDE WITH CONHERENT RADIATION

Charles M. Redman, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 22, 1976, Ser. No. 734,924
Int. Cl.² G02B *1/14*
U.S. Cl. 332—7.51 **13 Claims**



1. Apparatus, which comprises:

means for generating a carrier signal of continuous wave coherent radiation within a first optical fiber waveguide, wherein said carrier signal generating means comprises a multi-turn fiber waveguide laser the respective ends of which are connected to said first optical fiber waveguide;

output transmission line means comprising a second optical fiber waveguide; and

means for scattering said carrier signal from said first waveguide to said second waveguide, wherein the second waveguide is aligned with respect to the scattered carrier signal so that the signal will be intercepted and travel along the optical axis of the waveguide.

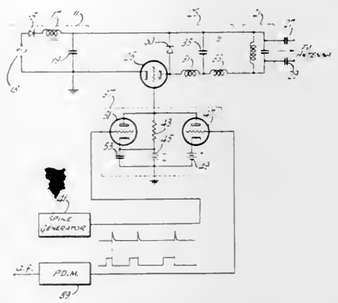
4,118,677

PULSE WIDTH MODULATING CIRCUIT

James O. Weldon, Dallas, Tex., assignor to Continental Electronics Manufacturing Company, Dallas, Tex.

Filed Dec. 5, 1974, Ser. No. 529,774
Int. Cl.² H03K *7/08*
U.S. Cl. 332—9 R **5 Claims**

1. In a modulating circuit of the type having an electron control device with a control electrode and connected to a constant voltage power supply means by way of a resonant output tank circuit, a source of constant amplitude rectangular pulse signals of pulse repetition rate substantially equal to the output carrier frequency of said tank circuit is connected to actuate said electron control device, and an output circuit is coupled to said tank circuit, whereby modulated subcarrier pulse signals are applied to said tank circuit without a separate radio frequency source, the improvement comprising means for clamping said control device to specified voltage levels during the occurrence of selected portions of said subcarrier pulse signals, wherein said modulated subcarrier pulse signals and said modulated rectangular pulse signals being pulse duration modulated signals and wherein the electron control device is a vacuum tube having a cathode, grid and anode electrically responsive control means, said cathode being connected to a first side of said power supply, said modulating circuit being further characterized in that said clamping means includes a low pass filter connected so as to couple said output tank circuit to the anode of said vacuum tube and to a second side of said power supply, said filter having an input series inductor with one end connected directly to said anode and a shunt capacitor connected between the other end of said series inductor and said second side of the power supply whereby high



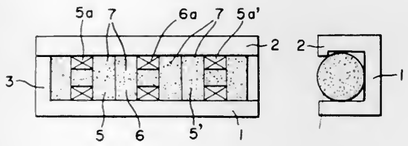
frequency components of said subcarrier pulses pass through said shunt capacitor to clamp the anode to the voltage level of said second side of the power supply, said grid being actuated from said source of modulated rectangular pulse signals, and wherein said clamping means further includes means to force said grid to a cut-off bias level at the termination of each of said modulated rectangular pulses and said modulating circuit further comprising a source of grid bias voltage having a magnitude sufficient to drive said vacuum tube to cut-off, said modulating circuit further being characterized in that said means to force the grid to a cut-off bias level includes means for generating a voltage spike in response to the trailing edge of each modulated rectangular pulse and means responsive to each voltage spike for momentarily coupling the grid through a relatively low resistance to said source of grid bias voltage.

4,118,678

COIL RETAINING CASE

Yoshio Goshima, and Hisashi Osada, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 24, 1977, Ser. No. 799,998
Claims priority, application Japan, Dec. 22, 1976, 51-172069[U]
Int. Cl.² H03H *1/00;* **H01F** *27/02, 27/30;* **H05K** *5/00*
U.S. Cl. 333—70 S **2 Claims**



1. An electronic part comprising:

a plastic core holder having a rectangular bottom wall, a pair of side walls appending at right angles from opposite lengthwise edges of said bottom wall, one of said side walls having a core retaining wall appending therefrom and extending toward the other of said side walls, and an end blocking wall appending at a right angle from a widthwise edge of said bottom wall, wherein said bottom wall, said side walls, said core retaining wall and said blocking wall are formed integrally of a plastic material and define an end access opening opposite said end blocking wall, and a side access opening between said other of said side walls and said retaining wall; and

a plurality of drum cores, each having top and bottom flanges separated by a cylindrical body section, and windings wrapped around said body section, said drum cores disposed in said core holder through said end access opening with said flanges of adjacent cores contacting each other and said bottom wall, said side walls, and said retaining wall such that said drum cores are maintained in precise position within said holder, and said entire body section and said windings of said cores are completely visible and accessible through said side access opening, said drum cores bonded and sealed in said core holder at said end opening after disposition therein such that said drum cores are securely retained in said holder;

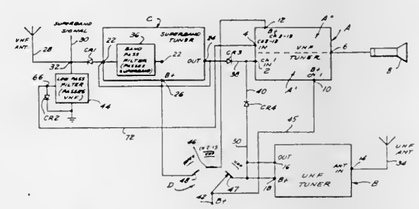
whereby the electrical coupling of adjacent cores are controlled as a result of the precise positioning of said cores within said holder, and electrical connection is made to said windings completely visible and accessible through said side access opening.

4,118,679

VHF, UHF AND SUPERBAND TUNER WITH AUTOMATIC SWITCHING

David R. Hiday, Ludlow, and Charles G. Larsen, Springfield, both of Mass., assignors to General Instrument Corporation, Clifton, N.J.

Filed May 23, 1977, Ser. No. 799,349
Int. Cl.² H03J *5/26*
U.S. Cl. 334—1 **25 Claims**



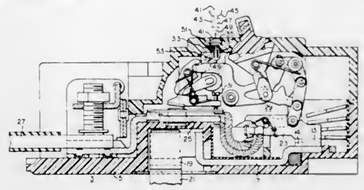
1. In a communication system for first and second signal bands and comprising first and second tuner assemblies for said first and second bands respectively and a third tuner assembly cooperable with said second tuner assembly to render the latter operative, first and second means for receiving signals for said first and second bands respectively, and means for selectively energizing (a) said first tuning assembly; and (b) said second and third tuning assemblies; the automatic switching arrangement comprising means connecting said first signal receiving means and said second signal receiving means to a node, first voltage sensitive switching means operatively connected between said node and said second tuner assembly, second voltage sensitive switching means operatively connected between said node and said first tuner assembly, third voltage sensitive switching means operatively connected between said second tuner assembly and said third tuner assembly, and means operatively connecting said selective energizing means and said first through third voltage sensitive switching means and effective (a) when said first tuner is energized to actuate said first and third voltage sensitive switching means to disconnect and to actuate said second voltage sensitive switching means to connect; and (b) when said second tuner is energized to actuate said second voltage sensitive switching means to disconnect and to actuate said first and third voltage sensitive switching means to connect.

4,118,680

CIRCUIT INTERRUPTER

Russell T. Borona, Bridgeport, Conn., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 7, 1977, Ser. No. 766,476
Int. Cl.² H01H *9/00*
U.S. Cl. 335—176 **2 Claims**



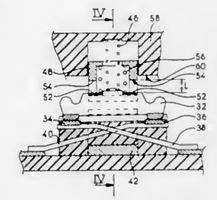
1. A circuit interrupter comprising an insulating housing, a circuit interrupter mechanism within the housing and comprising a pair of contacts operable to open and close an electric circuit, calibration means operatively connected to the mechanism for adjusting operation of the contacts, the housing having a hole aligned with the calibration means, and a plug in the hole and having a diameter slightly greater than that of the hole, whereby an inner end portion of the plug extends beyond the inner end of the hole and is expanded to its unrestrained diameter.

4,118,681

HIGH-SPEED CURRENT-LIMITING DEVICE HAVING A CONTACT RECLOSING RETARDING MEMBER

Jean-Pierre Nebon, St. Martin-le-Vinoux, and Robert Morel, Eybens, both of France, assignors to Merlin Gerin, Grenoble, France

Filed May 6, 1977, Ser. No. 794,343
Claims priority, application France, May 12, 1976, 76 14360; May 12, 1976, 76 14361
Int. Cl.² H01H *75/10*
U.S. Cl. 335—195 **8 Claims**



1. A current limiting device comprising a movable contact urged in the circuit closing position, electromagnetic means imparting under predetermined fault current conditions motion to the movable contact towards the circuit opening position and becoming inactive at the disappearance of said fault current conditions to allow self reclosing of the movable contact, a retarding member guided for translatory motion and of a predetermined mass, mechanically linked to said movable contact so as to permit a lost motion and an impact of the movable contact after this lost motion to move the retarding member and prevent a contact reclosing before said retarding member comes back to its original position.

4,118,682

DEVICE TO HOUSE A SURGE DIVERTER

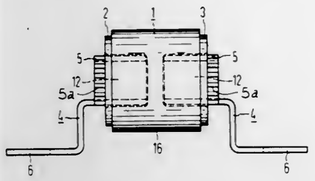
Gerhard Lange, and Günter Schilling, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 1, 1977, Ser. No. 783,782

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1976, 2618991

Int. Cl.² H01H *37/04*

U.S. Cl. 337—34 **9 Claims**



1. A device for housing a surge voltage diverter having electrodes which form cup-shaped recesses on the outside of the diverter, comprising angled metal strips each having at one end a cylindrical rolled section means for engaging one of the cup-shaped recesses in a form-locking manner.

4,118,683

RESETTABLE THERMAL SAFETY SWITCH

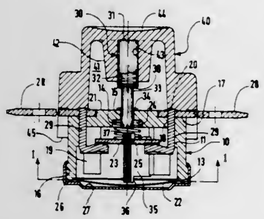
Gerhard Schwarz, Pforzheim, Fed. Rep. of Germany, assignor to Firma Microtherm GmbH, Pforzheim, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,789

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629380

Int. Cl.² H01H *61/00*

U.S. Cl. 337—91 **10 Claims**



1. A resettable thermal safety switch comprising in combination:

two separate stationary connector members over which a circuit can be laid on the switch;

a movable contact element guided for displacement between a normal position in which the element is in contact with both connector members, thereby closing said circuit, and a switched position in which the element is removed from at least one of the connector members, thereby opening said circuit;

a curved bimetallic temperature-responsive switching element which is statically bistable over a certain temperature range and which, upon reaching a predetermined temperature outside said range, pops from its normal curved shape into an oppositely curved shape, the bimetallic switching element being operatively connected to the contact element, so as to move the latter from its normal position to its switched position, when the bimetallic switching element pops from its state of normal curvature into said state of opposite curvature; and

means for manually resetting the bimetallic switching element from its popped state to its normal state, the resetting means including: a manually accessible outer member whose resetting mobility is limited by an abutment, and an inner member which is guided to advance in the direction opposite to the direction in which the bimetallic switching element is poppable; and wherein

said switching element resetting means includes means for transmitting a resetting force of limited maximum value from said outer member to said inner member, by yielding until the outer member reaches its abutment, when a higher than said limited force is required to effect resetting of the popped bimetallic switching element, said force transmitting means thereby allowing the bimetallic switching member to execute a popping movement, even when the outer member is held against its abutment.

4,118,684

ONE PIECE FUSIBLE CONDUCTOR FOR LOW VOLTAGE FUSES

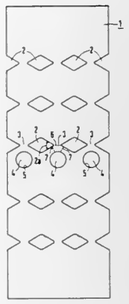
Klaus Möllenhoff, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 8, 1977, Ser. No. 775,439

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610262

Int. Cl.² H01H *85/10*

U.S. Cl. 337—296 **2 Claims**



1. In a one piece fusible conductor for use in a low voltage fuse having cutouts of substantially equal cross section for narrowing the path of the current and forming current carrying isthmuses, with a hole containing a solder deposit in the vicinity of each current carrying isthmus, the improvement comprising at least one isthums located between two diamond shaped cutouts, each cutout enclosing an angle at the isthmus which is less than 70°, with the horizontal dimension of the cross section of the isthmus between cutouts being less than or equal to 1 mm, the holes and solder deposits therein being disposed adjacent said isthmus such as to leave equal current carrying cross sections standing between said holes and adjacent diamond shaped cutouts forming an isthums, the cross sections between said holes and said diamond shaped cutouts having a horizontal dimension which is smaller than or equal to 0.5 mm, the horizontal dimensions of said cross sections having approximately the relationship $2.5 \geqq E/D \geqq 0.5$ where E is the horizontal dimension of the cross section between said hole and one of said cutouts and D the horizontal dimension of the cross section between said cutouts.

4,118,685

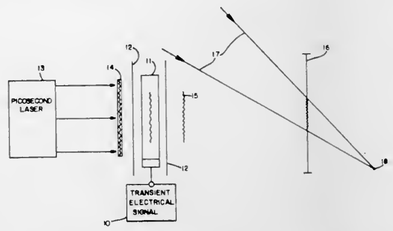
HOLOGRAPHIC SIGNATURE PROCESSOR

Homer L. Simpson, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1976, Ser. No. 718,250

Int. Cl.² G06K *9/00*

U.S. Cl. 340—146.3 P **7 Claims**



1. A holographic signal processor comprising:

an optical wavefront modulator for receiving a transient signature to be processed;

a continuous wave coherent source for illuminating said optical wavefront modulator to produce a modulated optical wavefront representative of said transient signature;

a holographic signature library for receiving said wavefront and having prerecorded thereon a plurality of signatures, each of said signatures being recorded in a discrete location;

a diffuser interposed between said modulator and said signature library whereby each recorded signature will be illuminated by portions of the optical wavefront representative of the entire signature being processed;

means for reconstructing the original reference wave when the signature being processed corresponds to a recorded signature; and

means to detect and identify the reconstructed reference wave as a recorded signature.

4,118,686

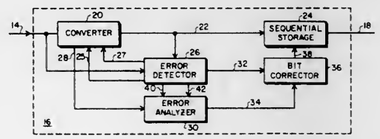
ERROR CORRECTION FOR SIGNALS EMPLOYING THE MODIFIED DUOBINARY CODE

Adam Lender, Palo Alto, Calif., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Sep. 6, 1977, Ser. No. 830,954

Int. Cl.² G08C *25/00*

U.S. Cl. 340—146.1 AB **18 Claims**



1. Apparatus for correcting single errors in digital transmission systems employing a modified duobinary code signal comprising:

conversion means having at an input the modified duobinary code signal, said conversion means providing at a first output a binary representation of the input code signal and at a second output the error differential for each bit;

error detection means having an input connected to receive the modified duobinary code, said detection means providing an error output indication at a first output and providing top extreme level and bottom extreme level indications at second and third outputs, respectively, successive extreme level occurrences establishing an error correction interval;

sequential storage means having an input connected to the first output of said conversion means, said storage means temporarily storing a limiting number of bits, said limited number being sufficiently large so as to encompass all expected error correction intervals;

error analyzing means for determining which bit in an error correction interval is most likely to be in error, said error analyzing means having as a first input the second output of said conversion means and having second and third inputs, respectively, connected to the second and third outputs of said error detection means, and having an output; and

means responsive to the output from said error detection means and to the output from said error analyzing means for complementing the bit in said sequential storage having the most likelihood of error for the error correction interval for which an error is detected.

4,118,687

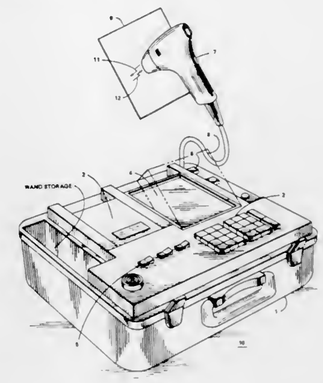
PORTABLE OCR SYSTEM

Lynn D. McWaters, Garland, and Hersh B. Parekh, Plano, both of Tex., assignors to Recognition Equipment Incorporated, Dallas, Tex.

Filed Oct. 4, 1976, Ser. No. 729,530

Int. Cl.² G06K *5/00*

U.S. Cl. 340—146.3 ED **11 Claims**



1. A system for optically reading and recording alphanumeric data comprising; means for reading multiple line alphanumeric data in successive scans and generating a signal representative thereof, means for editing such signal and accepting the data from each successive scan represented thereby only if the data is read in a predetermined line to line sequence, and storage means for retaining information related to the sequence of the data previously read during intervals in which data is not being read and processed in the system.

4,118,688

CONFIDENCE CHECK CIRCUIT FOR BUILT-IN TEST SYSTEMS

Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 8, 1977, Ser. No. 813,998

Int. Cl.² G08B *29/00*

U.S. Cl. 340—516 **25 Claims**

1. A confidence check circuit for use with a built-in test system or the like having a plurality of condition sensors, test logic circuitry and a plurality of failure indication means, comprising:

a sequential check signal generator, operatively connected to the condition sensors, for sequentially applying a check signal to the condition sensors;

failure verification means, operatively connected to the sequential check signal generator and the failure indication means, for generating a reset signal when each of said check signals results in the activation of a predetermined failure indicator; and

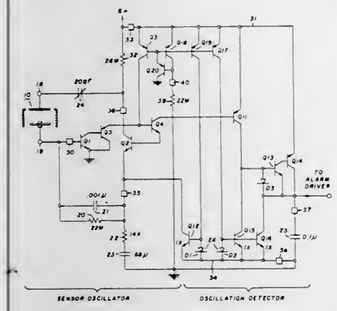
incrementing means, responsive to said reset signal, for incrementing said sequential check signal generator.

4,118,689

SMOKE DETECTOR

William Feil, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 1, 1976, Ser. No. 746,293
Int. Cl.² G08B *17/10*
U.S. Cl. 340—629 **19 Claims**



1. In a smoke detector network, the combination comprising:

(a) a common network terminal,

(b) an ionization smoke detector chamber having a first and a second terminal between which a high impedance exists, said impedance rising when airborne combustion products are present,

(c) a sensing circuit for sensing a change in chamber impedance by measurement of the short circuit current through the chamber comprising:

(1) an ac voltage source having one terminal connected to said first chamber terminal and the second terminal connected to said network common terminal,

(2) a current amplifier having an input, an output and a common terminal, said amplifier exhibiting an input impedance which is negligibly small in respect to said chamber impedance, said amplifier input terminal being coupled to said second chamber terminal, said amplifier common terminal being coupled to said network common terminal, and having an amplifier load coupled between said amplifier output terminal and said amplifier common terminal in which an amplified ac current appears as an ac voltage whose magnitude is dependent on chamber impedance and in turn on the density of airborne combustion products present, and

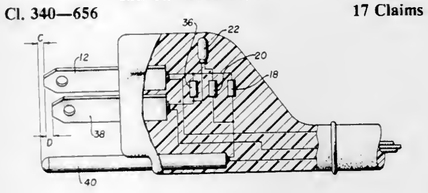
(3) voltage responsive means coupled to said amplifier output terminal for sensing said density.

4,118,690

ELECTRICAL HAZARD INDICATOR

William C. Paynton, 100 Towne St., Attleboro Falls, Mass. 02763

Filed Feb. 20, 1976, Ser. No. 659,816
Int. Cl.² G08B *21/00*
U.S. Cl. 340—656 **17 Claims**



1. In a plug having a positive prong, a neutral prong, and a ground prong, a first fixed resistive path between said positive and said ground prongs, and an indicator means including a glow discharge indicator connected between said neutral and said ground prongs, the improvement comprising:

a second fixed resistive path between said positive and said neutral prongs; and

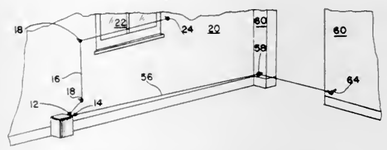
said neutral prong extending exterior of said plug a shorter distance then said positive and ground prongs whereby said indicator means is momentarily activated when said plug is inserted into a correctly wired electrical receptacle.

4,118,691

SECURITY SYSTEM FOR A BUILDING

Ruth E. Sims, 17811 NW. 14th Pl., Miami, Fla. 33169

Filed Feb. 17, 1977, Ser. No. 769,658
Int. Cl.² G08B *13/08*
U.S. Cl. 222—3 **1 Claim**



1. A security system for a building, comprising:

a hammer;

a first movable pin adapted for connection to a first trip wire;

a gas dispensing cannister that dispenses a gas in response to the presence of a force upon a dispensing button thereof;

a spring connected to urge said hammer against said first pin when said first pin is in a set position and to bias said hammer against said dispensing button when said first pin is pulled away from said set position by the displacement of the position of said first trip wire;

a second movable pin adapted for connection to a second trip wire; and

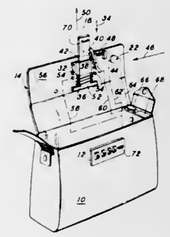
means for emitting sound in response to said second pin being pulled from another set position by the displacement of the position of said second trip wire, wherein said means for emitting sound includes a voltage source for emitting sound in response to the application of voltage from said source, and a spring loaded switch connected to said second pin to apply said voltage to said sound emitting means in response to said second pin being moved from said set position, whereby said first pin and said second pin may be selectively independently and concurrently displaced from said set position and said another set position respectively.

4,118,692

BAG ALARM DEVICE

Arthur B. Fitchett, 2944 Willie Mays Pkwy., Orlando, Fla. 32805

Filed Mar. 29, 1977, Ser. No. 782,503
Int. Cl.² G08B *21/00*
U.S. Cl. 340—542 **7 Claims**



1. A bag alarm device comprising means mounted on said bag to provide a source of direct current, alarm means mounted on said bag and electrically connected to said direct current means, pull responsive switch means mounted on a closure flap of said bag, said pull responsive switch means having an elongated external component having a logitudinal axis, said component extending outwardly from said closure flap, a portion of said external component releasably locked with a lock secured to a surface portion of the outside surface of said bag when said closure flap is overlying said surface portion thereby maintaining said bag in a closed condition, a set of contacts being maintained in an open circuited condition when said portion is locked with said lock, said set of contacts being disposed in a closed circuited condition upon the application of a pulling force applied to said closure flap in a direction of the longitudinal axis of said component tending to dispose said portion of said component further outwardly from said closure flap whilst said portion of said component is maintained locked with said lock, means to releasably maintain said set of contacts in said closed circuited condition following said application of said force, means to unlock said lock, releasing said portion therefrom without disposing said set of contacts into said closed circuited condition, said set of contacts connected to said alarm means.

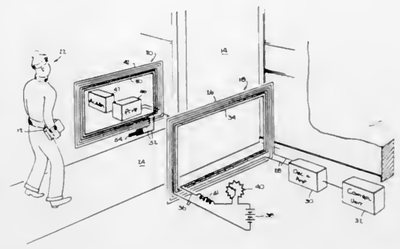
4,118,693

METHOD AND APPARATUS FOR PRODUCING UNIFORM ELECTROMAGNETIC FIELDS IN AN ARTICLE DETECTION SYSTEM

Eugene B. Novikoff, Woodbury, N.Y., assignor to Knogo Corporation, Hicksville, N.Y.

Filed May 9, 1977, Ser. No. 795,132
Int. Cl.² G08B *13/24*
U.S. Cl. 340—572 **21 Claims**

1. A system for detecting the unauthorized passage of specially targeted articles through an interrogation zone, said system comprising an interrogation antenna coil positioned in the vicinity of said interrogation zone, electrical oscillator means connected to said interrogation antenna for energizing same to generate electromagnetic waves in said interrogation zone, a receiver antenna coil also positioned in the vicinity of said interrogation zone, receiver means connected to said receiver antenna coil, said receiver means being operable to produce an alarm signal in response to predetermined electromagnetic disturbances caused by the interaction of a target on a protected article with the electromagnetic waves generated by said interrogation antenna coil, and a parasitic antenna



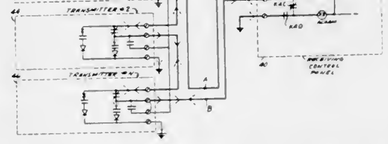
circuit comprising a parasitic antenna coil also positioned in the vicinity of said interrogation zone at a location displaced from said interrogation antenna coil, and capacitor means connected to said parasitic antenna coil to form a resonant circuit therewith, said resonant circuit having a resonant frequency substantially the same as the frequency generated by said electrical oscillator.

4,118,694

BASE LOOP CODE TRANSMITTER

Robert W. Right, Huntington, Conn., assignor to General Signal Corporation, Rochester, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,154
Int. Cl.² G08B *25/00*
U.S. Cl. 340—293 **8 Claims**



1. In a code transmission system which includes a central station, having a battery supply, and a plurality of station transmitters all of which are connected in a McCulloh loop circuit, having two lines, according to which an alarm may be received even though there may be a fault in the loop by using the remaining good leg of the circuit and ground return, the improvement which comprises:

at least one code relay forming a part of each of the station transmitters, said relay having three contacts, the first and second of which are in a series connection to ground from one of the lines forming said loop, the third contact of said relay being in shunt with the first and second contacts and also being connected to ground, the three contacts being so arranged that a normally closed loop is defined by the two lines when intact such that the battery supply is fed by way of the first line through said first contact, which is normally closed, and thence to said second line as a return line to the battery;

the second of said relay contacts being normally open and being operable to define a normally open loop when a fault occurs in said first line such that the positive battery supply is then connected to said second line and thence to ground; and

said third contact being normally open and being operable to likewise define a normally open loop when a fault occurs in said second line such that the positive battery supply is then connected to said first line and thence to ground;

a diode in series connection with the first and second contacts of said one relay, and another diode in series connection with the third contact of the same relay.

4,118,695

DATA PROCESSING SYSTEM

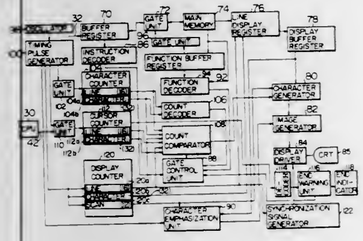
Toshiya Ogawa; Akio Niki; Kazuo Uchimura, and Koichi Tsuruoka, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 5, 1974, Ser. No. 530,003

Claims priority, application Japan, Dec. 5, 1973, 48-135318

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 AD **12 Claims**



1. In a data processing system having display means including an electronic graphic display device to display input data representing a predetermined number of characters, input means to enter data into the display device and output means to output the data, the improvement comprising:

memory means connected between the display means and the output means;

control means operatively connected to control the display means;

memory means and output means to selectively transfer data from the display means to the memory means and store the data therein and transfer the data from the memory means to the output means; whereby

data stored in the memory means may be transferred to the output means while new data is being entered into the display means;

in which the input data may comprise a field mark or character to divide the predetermined number of characters into two fields of characters, the display means comprising field mark detection means to detect the field mark;

in which the input data may comprise an instruction to insert a character at a designated location in the data between the beginning of the data and the field mark, the display means comprising data insertion means to enter the designated character into the display at the designated location and shift the following characters toward the end of the data, the field mark detection means being operative to sense the input data and inhibit the insertion means if the field mark detection means detects the field mark proceded by a character; and

in which the input data may further comprise an instruction to delete a character at a designated location in the data between the beginning of the data and the field mark, the display means comprising deletion means to delete the character at the designated location and shift the following characters toward the beginning of the data to fill in the blank spaces produced by the deletion, the field mark detection means being operative to sense the input data and inhibit the deletion means if the field mark detection means detects the field mark from shifting characters following the field mark in the data.

4,118,696

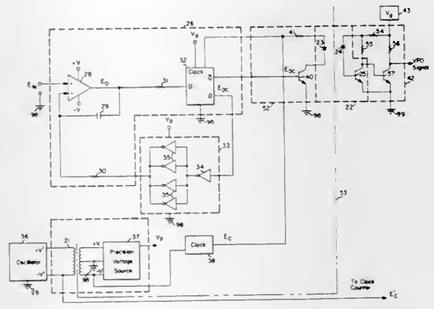
PRECISION VOLTAGE TO FREQUENCY CONVERTER FOR USE IN A/D CONVERTER

Donald Paul Warther, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 24, 1976, Ser. No. 745,036

Int. Cl.² H03K *13/20*

U.S. Cl. 340—347 NT **18 Claims**



1. A voltage-to-frequency conversion circuit adapted to receive an analog signal which varies within a range between two precision voltage levels wherein said circuit comprises:

power source means to power said circuit and to supply said two precision voltage levels;

clocking means for supplying periodic clock pulses;

analog-to-duty cycle conversion means synchronized with said clocking means for converting the analog signal to a duty-cycle signal having an UP-time to DOWN-time ratio equal to the ratio between the analog signal voltage and the range between said precision voltage levels;

voltage-to-frequency pulse enable means for receiving said duty-cycle signal and coupled to said analog-to-duty cycle conversion means and to said clocking means whereby said clock pulses are enabled at the output of said voltage-to-frequency pulse enable means to form a VFO signal output during the UP-time of the duty cycle signal;

signal isolation means for electrically isolating an analog input signal from the VFO signal output, comprising:

a light emitting diode coupled between said clocking means and the collector of a switching transistor for emitting modulated light in accordance with the UP-DOWN voltage sequence at the collector of said switching transistor; and

light reception means coupled to receive the modulated light for generating a modulated electrical signal, said light reception means comprising;

a light sensor; and

a signal buffer comprising a digital power source for supplying power to said buffer means, a first transistor having its base coupled to one terminal of said light sensor and its emitter at ground potential, a first resistor coupled between said digital power source and the second terminal of said light sensor, a second resistor coupled between the collector of said first transistor and said first resistor, a second transistor having its base coupled to the collector of said first transistor and having its emitter at ground potential, and a third resistor coupled between said digital power source and the collector of said second transistor whereby said VFO signal pulse train appears at the collector of said second transistor.

4,118,697

SWITCHING ARRANGEMENT FOR CONVERTING ANALOG SIGNALS INTO DIGITAL SIGNALS AND DIGITAL SIGNALS INTO ANALOG SIGNALS

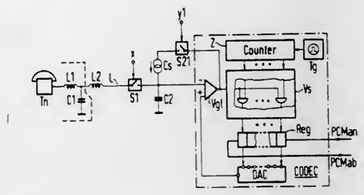
Max Schlichte, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 20, 1976, Ser. No. 751,980

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1976, 2603608

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 C **5 Claims**



1. Apparatus for converting in accordance with the iterative method analog signals into digital signals and for converting digital signals into analog signals comprising:

analog comparator means comprised of a differential amplifier having a first input to which is connected a storage capacitor which receives and stores the analog signal to be converted into a digital signal or the analog signal converted from a digital signal,

first switch means for connecting a two-wire circuit to said first input of said analog comparator means said first switch means being closed for a first predetermined period for connecting said storage capacitor to said two-wire circuit for receiving the analog signal to be converted and/or delivering the analog signal converted from a digital signal, wherein during said first predetermined period said storage capacitor is charged by the analog signal to be converted and, concurrently, said storage capacitor is discharged by delivering the analog signal converted from a digital signal,

digital-to-analog converter means having an output connected to a second input of said analog comparator means,

binary register means connected to receive a reference pulse chain during conversion of the analog signal or the digital signal to be converted,

logic circuit means operable responsive to the output from said analog comparator means for controlling the coupling of the contents of said binary register means to said digital-to-analog converter means,

constant current source,

second switch means for connecting said constant current source between said first input of said analog comparator means and the output thereof, said second switch being closed after reception in said binary register of the digital signal to be converted for changing said storage capacitor to a voltage corresponding to the voltage output of said digital-to-analog converter means.

4,118,698

ANALOG-TO-DIGITAL CONVERTER RECALIBRATION METHOD AND APPARATUS

Manfred Becker, Waldstrasse 22, 6301 Rabenau, Fed. Rep. of Germany

Filed Jun. 10, 1977, Ser. No. 805,306

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626899

Int. Cl.² H03K *13/20*

U.S. Cl. 340—347 CC **6 Claims**

1. The method of recalibrating and testing the accuracy of an analog-to-digital converter of the type having

(1) a signal generator for producing a linearly changing ramp reference signal whose slope can be changed,

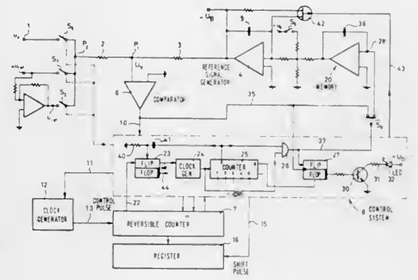
(2) an oscillator for generating clock pulses,

(3) a counter for counting clock pulses during a measuring phase of the converter,

(4) a comparator for providing an output signal when the ramp reference signal magnitude reaches the level of the analog input signal, and

(5) means establishing a voltage datum,

the method comprising the steps of



(a) allowing the linearly changing ramp reference signal to continue to be generated beyond the end of the measuring phase of the converter,

(b) at the end of the measuring phase connecting the voltage datum in opposition to the ramp reference signal as inputs to the comparator,

(c) generating a control pulse of fixed duration after the end of the measuring phase, and

(d) ascertaining whether the reference signal becomes equal in magnitude to the voltage datum within the duration of the control pulse.

4,118,699

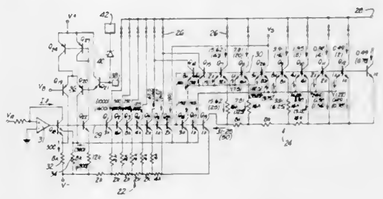
DIGITAL TO ANALOG CONVERTER WITH BINARY AND BINARY CODED DECIMAL MODES

Donald T. Comer, Los Gatos, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Feb. 14, 1977, Ser. No. 768,326

Int. Cl.² H03K *13/05*

U.S. Cl. 340—347 DA **27 Claims**



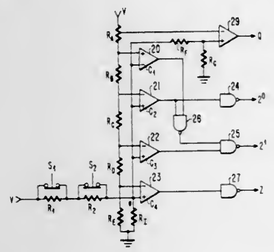
1. A digital to analog converter (DAC) adapted to receive digital input signals and to produce an output analog signal corresponding to the digital input, said converter comprising a plurality of bit circuits arranged in progressive binary order, bias circuitry for said bit circuits, and means for converting from a binary to a BCD input mode, said converting means comprising, for each of a plurality of selected bit circuits, a selectable area-scaled transistor means internal to said DAC for increasing to a BCD level the individual output current of said selected bit circuits.

4,118,700

SINGLE WIRE TRANSMISSION OF MULTIPLE SWITCH OPERATIONS

Thomas Francis Lenihan, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 31, 1977, Ser. No. 801,660
Int. Cl.[2] G08B *25/00*
U.S. Cl. 340—524 **10 Claims**



1. The combination comprising:

first and second reference voltage source means for supplying first and second reference voltage levels;

termination impedance means having first and second terminal means, said second terminal means coupled to said second reference voltage source means, for providing termination impedance;

a plurality of impedance means coupled in series between said first reference voltage source means and the first terminal means of said termination impedance means for causing a voltage drop across said termination impedance means;

a plurality of selectively operable switching means, each coupled across a separate one of said plurality of impedance means for selectively bypassing individual ones of said plurality of impedance means; and

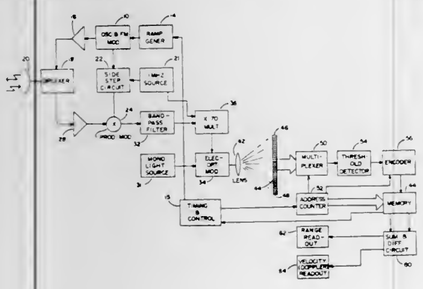
analog-to-digital converter means coupled across said termination impedance means for supplying digital signals representative of the voltage drop across said termination impedance means.

4,118,701

FM/CW RADAR SYSTEM

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Hans Brey, Cookville, Tenn., and Philip E. Geise, Jr., Huntsville, Ala.

Filed Oct. 8, 1976, Ser. No. 730,778
Int. Cl.[2] G01S *9/44*
U.S. Cl. 343—6 R **1 Claim**



1. In an FM/CW radar system including means for generating and transmitting a radio frequency signal which is varied between an upper and lower frequency at a selected rate, the improvement comprising:

reference signal means for generating a radio frequency reference signal;

side step circuit means responsive to said transmitted signal and a signal from said reference signal means for providing a signal sample, a signal differing in frequency from said transmitted signal by the quantity of said frequency of said reference signal means;

receiving means for receiving a reflection of the transmitted signal from a target and multiplying the received signal by said sample signal to provide an intelligence signal;

frequency multiplication means responsive to the output of said receiving means for multiplying by a selected multiple the frequency of said intelligence signal, whereby the difference between upper and lower frequencies present are increased, and being additionally responsive to said radio frequency reference signal for multiplying it by the same multiple;

light source means providing a beam of monochromatic light;

light deflection means responsive to said beam of monochromatic light and the output of said multiplication means for providing, as an output, a light beam which varies in angle of departure as a function of the signal frequency of output of said multiplication means responsive to said intelligence signal and providing a reference angular output responsive to said reference signal;

lens means for magnifying the angle of the angularly modulated light output of said light deflection means; and

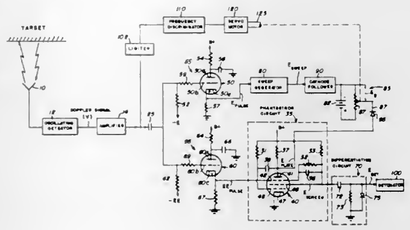
light angle detection means comprising a plurality of side-by-side frequency indicative photodetectors, each positioned to sense a discrete angular position of the light output from said lens means, and thereby the output of each is indicative of an input frequency to said light deflection means, and whereby highest and lowest frequency signals are indicated by the maximum spaced photodetectors receiving signals, and said reference angular output being identified by the photodetector receiving an output responsive to said reference signal.

4,118,702

DOPPLER DISTANCE MEASURING SYSTEM

Jacob Rabinow, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 22, 1959, Ser. No. 808,277
Int. Cl.[2] G01S *7/42, 9/46*
U.S. Cl. 343—7 PF **5 Claims**



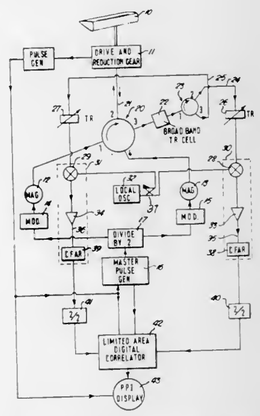
1. A system for mesuring the distance to a target comprising: means for transmitting a signal to said target and for receiving a return signal from said target, means for mixing said transmitted signal and said return signal to produce a doppler signal, means connected to said mixing means and responsive to said doppler signal for initiating a first voltage timing function, means having a signal input connected to said mixing means and responsive to said doppler signal and a gating input responsive to said first timing function for initiating a second voltage timing function when said dopper signal reaches a predetermined value, and means connected to said means for initiating a second voltage timing function and responsive to said second timing function for producing a signal when said target is at a predetermined distance from said transmitting and receiving means.

4,118,703

PULSE RADAR APPARATUS

Philip David Lane Williams, Banstead, England, assignor to Decca Limited, London, England

Filed May 12, 1977, Ser. No. 796,438
Claims priority, application United Kingdom, May 18, 1976, 20484/76
Int. Cl.[2] G01S *7/30*
U.S. Cl. 343—17.2 R **13 Claims**



1. Pulse radar apparatus comprising a dispersive aerial arranged to give a directional beam, the direction of the beam with respect to the aerial in azimuth depending on the frequency of the transmitted and received signals, means for continuously rotating the aerial in the azimuth plane, transmitting means coupled to the aerial to produce pulses sequentially at a plurality of different frequencies, receiver means coupled to said aerial for receiving the radar return signals of the transmitted frequency after each transmitted pulse and separating the different frequencies to provide separate signals corresponding to the radar returns for each frequency, and display means correlating radar returns received as different frequency signals on separate channels from targets in the same azimuthal direction so that, for each target, in each aerial rotation, the different frequency transmissions provide separate signals angularly displaced by the aerial dispersion but which are correlated in the display means.

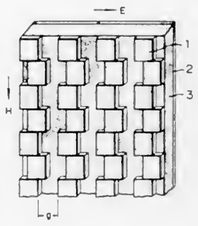
4,118,704

ELECTROMAGNETIC WAVE-ABSORBING WALL

Ken Ishino, Nagareyama; Hiroshi Yamashita, Ichikawa; Nobuyuki Ono, Chiba, and Yasuo Hashimoto, Ichikawa, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1977, Ser. No. 782,779
Claims priority, application Japan, Apr. 7, 1976, 51-39070; Jul. 20, 1976, 51-86241; Jul. 21, 1976, 51-97104[U]
Int. Cl.[2] G01S *7/36;* E04B *1/82;* B32B *3/14*
U.S. Cl. 343—18 A **9 Claims**

1. An electromagnetic wave-absorbing wall comprising an array of ferrimagnetic plates affixed by one face to the surface of an electroconductive substrate arranged at spaced-apart intervals in the direction of the electric field of the electromagnetic wave and closely in the direction of the magnetic field thereof, in which the rate of interval and the thickness of ferrimagnetic plates are arranged according to the following relationship:



Rate of Interval $(\frac{g}{l+g} \times 100\%)$	Thickness of ferrimagnetic plate (d)
<20%	$0.5d_o \sim 1.5d_o$
20% ~ 40%	$0.7d_o \sim 2.0d_o$
40% ~ 60%	$1.0d_o \sim 2.5d_o$
60% ~ 80%	$1.5d_o \sim 4.5d_o$

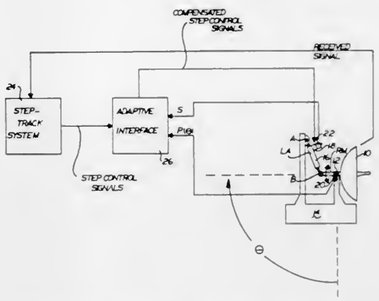
wherein "l" is the width of the ferrimagnetic plate, "g" is the interval between the ferrimagnetic plates, "d_o" is the thickness of ferrimagnetic plate which would result in maximum attenuation at no interval between plates, and "d" is the thickness of the ferrimagnetic plate at said interval.

4,118,705

ADAPTIVE INTERFACE FOR ROTATIONAL POSITIONING DEVICE UTILIZING LINEAR ACTUATORS

Robert Fred Varley, Indialantic, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Aug. 19, 1977, Ser. No. 825,936
Int. Cl.[2] G01S *3/44;* G05B *19/40;* H01Q *3/00*
U.S. Cl. 343—100 AD **4 Claims**



1. Apparatus for providing rotational positioning of a rotatable member in response to rotation control signals supplied by a rotation control system, comprising a rotational controller including at least one linear actuator mechanically coupled to said rotatable member for controlling the rotational position thereof by adjusting the linear extension of said actuator, said linear actuator being responsive to an actuator control signal for altering the extension of said linear actuator so as to thereby control said rotational position of said rotatable member, wherein the change in rotational position produced by said actuator control signal is dependent upon the position of said rotable member; position indicator means for providing an indication of the position of said rotatable member; and interface means responsive to said indication of the position of said

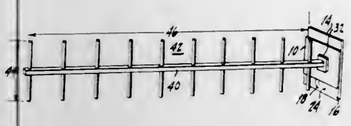
rotatable member and to said rotation control signals for providing modified rotation control signals serving as said actuator control signals, said interface means operating to modify said rotation control signals in accordance with the position of said rotatable member so that the change in rotational position produced by said rotation control signals is not dependent upon the position of said rotatable member.

4,118,706

MICROSTRIP-FED PARASITIC ARRAY

John L. Kerr, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1977, Ser. No. 838,045
Int. Cl.[2] H01Q *1/38, 19/00, 1/48*
U.S. Cl. 343—700 MS **4 Claims**



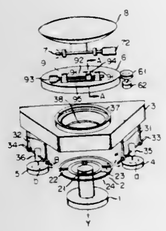
1. In an antenna, the combination comprising:
a circuit board of dielectric material having a metallic ground plane on one side thereof;
a radiating element in the form of a patch of metal etched on the opposite side of said board, said patch being continuous thereacross except for the removal of a portion in the central region thereof;
a multi-director parasitic array affixed to said circuit board at said central region;
and means for supplying an input signal to said radiating element for energizing said parasitic array.

4,118,707

GYRO STABILIZED PLATFORM FOR SCANNING ANTENNA

Takashi Yoshida, and Kenzo Kobayashi, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 29, 1977, Ser. No. 792,224
Claims priority, application Japan, Apr. 30, 1976, 51-48436
Int. Cl.[2] H01Q *1/18*
U.S. Cl. 343—765 **5 Claims**



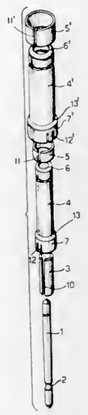
1. An antenna apparatus comprising a stationary stand, a gimbals having an inner rotary frame connected to the stationary stand to be rotated about a first horizontal axis and an outer rotary frame connected to the inner rotary frame to be rotated about a second horizontal axis normal to the first horizontal axis, an antenna supporting means attached to the gimbals to rock with the rotation thereof, an antenna mounted on the antenna supporting means, a plurality of flywheels attached to the antenna supporting means for stabilizing the antenna supporting means applying the principle of precession of gyro, a first driving mechanism for rocking the antenna in the elevational direction, a second driving mechanism for rocking the antenna in the azimuthal direction, and a third driving mechanism for shifting the center of gravity on the gimbals in a direction across the direction of the rotation of the first driving mechanism.

4,118,708

TELESCOPIC AERIAL WITH FRICTION RETAINING SLEEVES

Giorgio Lozar, and Renato Favale, both of Turin, Italy, assignors to Indesit Industria Elettrodomestici Italiana S.p.A., Rivalta (Turin), Italy

Filed May 31, 1977, Ser. No. 801,979
Claims priority, application Italy, Jun. 9, 1976, 68397 A/76
Int. Cl.[2] H01Q *1/10*
U.S. Cl. 343—901 **1 Claim**



1. In a telescopic aerial comprising:
a central cylindrical stem,
a plurality of cylindrical tubular elements of successively larger diameters coaxially surrounding said stem, and positioned such that one end of said central stem and one end of each of said tubular elements is slidably located within the immediately surrounding tubular element with the other and projecting at least partly therefrom,
a longitudinally split resilient sleeve carried at or adjacent said one end of said central stem and located between said central stem and the immediately surrounding tubular element,
a plurality of further split resilient sleeves each interposed between a respective tubular element and the tubular element which surrounds it, each of said further split sleeves frictionally engaging the two tubular elements between which it is located,
an annular radially inwardly directed lip on said other end of each tubular element, each said annular radially inwardly directed lip forming an abutment stop against which engages the split sleeve located between said tubular element and the adjacent element within it when said adjacent element is extended to its maximum extent, the improvement wherein:
each said tubular element has at its said one end, a part of greater diameter than the main part of said tubular element, said end part having at least one tab which is of one-piece with said end part projecting radially inwardly to form an abutment stop, said one end of the adjacent element within said tubular element abutting against said at least one tab when the said adjacent element is retracted fully into said tubular element.
an annular shoulder joining said end part of greater diameter to said main part of said tubular element, and

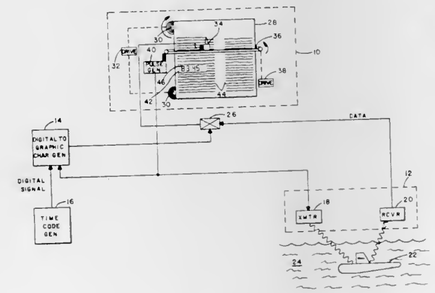
each split sleeve interposed between two tubular elements being freely slidable with respect to each of said two tubular elements between which it is interposed whereby, when each said tubular element of the aerial has been extended to its maximum extent it is prevented from further extension by the abutment of its annular shoulder against one end of the split sleeve which surrounds it and the abutment of this split sleeve against said inwardly directed lip of the adjacent surrounding tubular element.

4,118,709

DIGITAL TO GRAPHIC CHARACTER GENERATOR

Gordon R. Cooke, and Kevin T. Franklin, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1977, Ser. No. 771,594
Int. Cl.[2] G01D *9/00;* **G01S** *7/60*
U.S. Cl. 346—33 R **10 Claims**



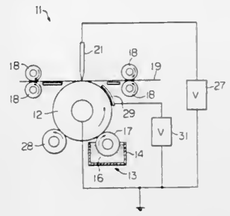
1. An apparatus for graphically representing one or more characters encoded in a digital signal, wherein each of said characters may be graphically represented by combining selected discrete segments included in a group of segments, wherein each of the segments of said group is required to represent at least one of said encoded characters, said apparatus comprising:
a recording means comprising a writing element and a recording medium wherein said writing element is adapted to sweep across said recording medium at selected intervals;
a timing means associated with said recording means to enable said writing element to selectively mark said recording medium during a selected series of sweeps;
means receiving said digital signal for recognizing each of the discrete segments which in combination are required to form a given one of said encoded characters, and for providing a plurality of segment pulses, each of said segment pulses identifying a different one of said recognized discrete segments;
a network of logic elements coupled to said timing means and to said segment recognition means for providing a character record signal which is coupled to said writing element to cause said writing element to selectively mark said recording medium during said series of sweeps, whereby the segments for representing each of said characters is formed.

4,118,710

ELECTROSTATIC PRINTING APPARATUS COMPRISING IMPROVED PRINTING ELECTRODE HEAD

Satoru Tomita; Tamio Ohori; Shuichi Karasawa, and Wasaburo Ohta, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,361
Claims priority, application Japan, Dec. 23, 1975, 50-154323; Dec. 23, 1975, 50-154325
Int. Cl.[2] G03G *15/08*
U.S. Cl. 346—153 **14 Claims**



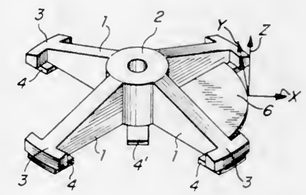
1. An electrostatic printing apparatus comprising in combination:
a base electrode;
means for applying a developing substance including charged particles onto the base electrode;
means for positioning a recording sheet in contact with the base electrode;
a printing head including at least one shaping electrode and at least one bias electrode disposed closely adjacent to the base electrode with the recording sheet disposed between the base electrode and the printing head;
means for applying a first voltage between the base electrode and the bias electrode to urge the charged particles against the base electrode; and
means for selectively applying a second voltage to the shaping electrode to overcome the first voltage and attract only those charged particles in an area of the base electrode adjacent to the shaping electrode to the recording sheet for printing.

4,118,711

FONT SUPPORT ASSEMBLY FOR A PHOTOTYPESETTING MACHINE

Peter R. Ebner, South Nashua, and Louis E. Griffith, Hampstead, both of N.H., assignors to Itek Corporation, Lexington, Mass.

Continuation of Ser. No. 619,104, Oct. 2, 1975, abandoned. This application Dec. 6, 1976, Ser. No. 747,761
Int. Cl.[2] G03B *17/6, 17/10, 17/18*
U.S. Cl. 354—15 **29 Claims**



1. A font support device for supporting flat font segments having indicia referencing edge portions transverse to the

major surfaces thereof for a phototype-setting machine comprising:

a. a hub member rotatable about a vertical axis;

b. outwardly and radially extending font segment support members coupled to said hub member for horizontally supporting said flat font segments; and

c. alignment reference shoulder portions formed upon inwardly facing surfaces of said font support members for radially referencing said edge portions of said font segments upon rotation of said hub in a direction transverse to said vertical axis of said hub member.

4,118,712

DIGITAL LIGHT METER SYSTEM FOR A CAMERA

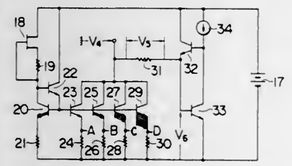
Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1976, Ser. No. 738,264

Claims priority, application Japan, Nov. 4, 1975, 50-132238

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—23 D **4 Claims**



1. In a digital light meter system for a camera including an oscillator, a counter for registering the pulses produced by said oscillator, a D/A convertor for converting the digital values registered in said counter into an analog value, and a comparator for comparing the output of said D/A convertor with an output from a light measuring and computing circuit, which latter output has a temperature coefficient K and is proportional to the sensed brightness of an object as a function of preset values of film sensitivity and either aperture opening or exposure time, the improvements characterized by said D/A convertor comprising:

(a) a constant voltage source providing a voltage having said temperature coefficient K,

(b) first, second, third, and fourth constant current sources connected in parallel, having a common output terminal, and providing output currents having ratios of 1:2:4:8, respectively,

(c) a fifth constant current source drivingly coupled to said first, second, third and fourth constant current sources and supplying a current I having said temperature coefficient K, said fifth constant current source comprising a self-biased field effect transistor, a first transistor having its base coupled to the gate of said field effect transistor and a second transistor having its base and collector coupled to the emitter and base, respectively, of said first transistor,

(d) a resistor connected between the constant voltage source and said common output terminal, and

(e) means individually connecting outputs of said counter to said first, second, third and fourth constant current sources for controlling the conductions thereof, whereby the voltage drop across said resistor is proportional to the analog equivalent of the digital value registered by said counter.

4,118,713

TOTALLY OPENED F. VALUE INFORMATION INPUT SYSTEM OF LENS FOR A CAMERA WITH INTERCHANGEABLE LENSES

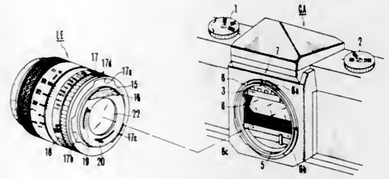
Hiroyashu Murakami, Tokyo; Tadashi Ito, Yokohama; Fumio Ito, Yokohama; Nobuaki Sakurada, Yokohama; Masaharu Kawamura, Hino, and Nobuhiko Shinoda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 621,126, Oct. 9, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,770

Claims priority, application Japan, Oct. 16, 1974, 49-118952

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—23 D **10 Claims**



1. In a camera system comprising a camera body and an interchangeable photo-taking lens assembly, said camera body having a lens mount portion for mounting said taking lens assembly and lens mounting means adapted here for fixedly securing taking lens assembly to the camera body, and said taking lens assembly having a non-rotatable portion for being coupled with said lens mount portion of the camera body, a clamping means rotatable with respect to said non-rotatable portion, said clamping means being engageable with said lens mounting means to secure the taking lens assembly fixedly to the camera body, and said taking lens assembly being fixedly attachable to the camera body by rotating said clamping means with respect to said non-rotatable portion and engaging the same with said lens mounting means of the camera body at a state wherein the non-rotatable portion is coupled with said lens mount portion of the camera body by a linear operation substantially parallel to an optical axis of the lens assembly with no rotational motion; a system for providing a full open F value information of the taking lens assembly to the camera body as a coded electrical digital information of n bits, said system comprising:

means for receiving a coded mechanical digital information of said n bits corresponding to the full open F value of the taking lens assembly and for converting said mechanical digital information into the coded electrical digital information of said n bits, said receiving and converting means being fixedly disposed at said lens mount portion of the camera body and having n switch members so as to provide the full open F value information of the taking lens assembly as the coded electrical digital information of said n bits when actuated by mechanical means for providing said full open F value information as the coded mechanical digital information of said n bits; and

mechanical means for providing the full open F value information of the taking lens assembly to said receiving and converting means as the coded mechanical digital information of said n bits, said mechanical providing means being fixedly disposed on said non-rotatable portion of the taking lens assembly and having K mechanical signal members, wherein K represents an integer from 0 to n, to determine the ON-OFF condition of each of said n switch members on the camera body side according to said full open F value of the taking lens assembly, said mechanical signal members having n setting positions each respectively corresponding to each of said n switch members on the camera body side and being able to provide 2^n different mechanical digital information by combination of said respective number (K) of the signal members being disposed and their positions, and being adapted to actuate said switch members according to the full open F value of the taking lens assembly when the taking lens assembly is attached to the camera body;

whereby the full open F value information of the taking lens assembly is provided to the camera body as coded electrical digital information of n bits through the actuation of said receiving and converting means on the camera body side by said providing means on the taking lens assembly side at the time of attaching of the taking lens assembly to the camera body.

4,118,714

LIGHT METERING SYSTEM FOR A PHOTOGRAPHIC CAMERA

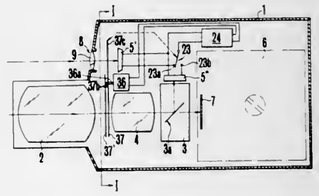
Hidekazu Okajima, and Hideto Iwama, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 596,291, Jul. 16, 1975, abandoned. This application Jan. 27, 1977, Ser. No. 763,078

Claims priority, application Japan, Jul. 18, 1974, 49/82980

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—31 **45 Claims**



1. For a camera having a housing and an objective lens, an exposure control system, comprising optical means in the housing for passing light into the housing, light sensing means in the housing for responding to light incident thereon and for producing an output corresponding to the level of light incident thereon, electrically variable diaphragm means coupled to said sensing means and responsive to said sensing means for establishing an aperture at the objective in response to the output of said sensing means, and setting means coupled to said sensing means and said diaphragm means for setting said sensing means into a first mode in which the output of the sensing means responds only to light from the objective lens when the diaphragm opening is within a first range, and for setting said sensing means into a second mode in which the output of the sensing means responds only to light through said optical means when the size of the aperture is within a second range.

4,118,715

ELECTRONIC PHOTOFLASH HAVING A TERMINAL BOARD

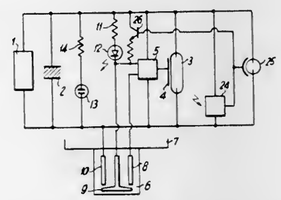
Yuzo Tsuruta, Tokyo, Japan, assignor to Sunpak Corporation, Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,120

Claims priority, application Japan, Sep. 6, 1976, 51-118864[U]

Int. Cl.[2] G03B *15/05*

U.S. Cl. 354—33 **5 Claims**



1. In an electronic photo flash for use in cameras having a flash socket, said flash socket having a plurality of receiver terminals of which at least two are normally in a short-circuited condition, and which emits light by discharging with a flash tube the electric charge of a storage capacitor which is charged from a power source, said electronic photo flash having a control circuit which measures the brightness of an object being photographed issuing a stop signal to stop the discharge of said flash tube when said brightness has reached an optimum level for taking the photograph, wherein the improvement comprises a terminal board plugged into the flash socket of said camera, terminals mounted on said terminal board and brought into contact with the receiver terminals in the flash socket of said camera, indicator means connected to a terminal of said terminal board which is shorted to another terminal of said terminal board when the terminal board is plugged into the flash socket of said camera by the two normally shorted receiver terminals in the flash socket, said indicator means emitting a light upon such terminal shorting, and a switching element connected in parallel with said indicator means and conducting temporarily said stop signal from the control circuit whereby said indicator means is temporarily turned off.

4,118,716

PHOTOGRAPHIC MODE SELECTION DEVICE FOR A CAMERA

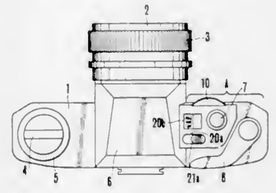
Masayuki Suzuki, Tokyo; Nobuaki Sakurada; Tadashi Ito, both of Yokohama; Masayoshi Yamamichi, Kawasaki, and Hiroyashu Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1977, Ser. No. 781,347

Claims priority, application Japan, Mar. 31, 1976, 51-35738

Int. Cl.[2] G03B *7/08, 17/00;* **G01D** *13/00*

U.S. Cl. 354—38 **9 Claims**



1. A photographing mode change-over device for a double priority mode camera which is equipped with a shutter release button and which is capable of controlling the degree of exposure either in a shutter speed priority automatic exposure mode or in a diaphragm priority automatic exposure mode as desired by the photographer, said device comprising:

a photographing mode change-over means which is provided on said camera for shifting from one of said photographing modes to the other and is disposed at a position which enables the photographer to operate the change-over means with a finger while he is pressing a shutter release button with another finger of the same hand.

4,118,717

AUTOMATIC FILM-EXPOSURE CONTROL SYSTEM AND ELECTRICAL POWER SUPPLY MEANS FOR A PHOTOGRAPHIC CAMERA

William E. Shoupp, Pittsburgh; Walter V. Bratkowski, McKeesport, and Dirk J. Boomgaard, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 380,178, Jul. 17, 1973, abandoned. This application Jun. 10, 1977, Ser. No. 806,118

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—43 **9 Claims**

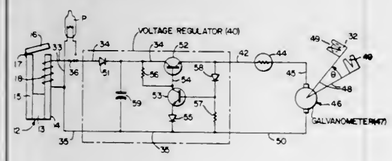
1. In combination with a photographic camera having an aperture and a shutter that is moved from an aperture-closed position to an aperture-open position by a shutter-actuating

mechanism to expose film within the camera, a system for controlling the film exposure under various ambient light conditions and means for energizing and operating said exposure-control system comprising:

a mechanically actuable electric generator having (a) means which defines a magnetic circuit, (b) a component that is movable along a predetermined path which produces a concomitant change in the field strength of said magnetic circuit, and (c) conductor means disposed in inductive relationship with the field of said magnetic circuit and adapted, in response to the actuation of said electric generator and the movement of said component along said path, to produce a group of voltage pulses of varying magnitudes and durations with the initial voltage pulse being of the longest duration and having a peak value greater than any of the other voltage pulses,

means for mechanically actuating said electric generator and the movable component thereof,

electric circuit means operable to convert the voltage pulses produced by the actuated electric generator into a voltage which is of smaller magnitude than said initial voltage pulse and is substantially maintained at a predetermined value for a period of time longer than the duration of said initial voltage pulse,



conductor means connecting the electric generator with said voltage-conversion circuit means,

means for controllably constricting the camera aperture, when the shutter is in its aperture-open position, comprising a light-sensitive electrical component and a galvanometer device that is electrically coupled to said light-sensitive component and has a movable elongated member which swings toward the camera aperture when the galvanometer device is energized and swings away from the camera aperture to a rest position when the galvanometer device is de-energized, said movable elongated member constituting an integral part of and being directly actuated by the galvanometer device,

conductor means electrically connecting the voltage-conversion circuit means to said light-sensitive component and galvanometer device,

said light-sensitive component being disposed at a location such that it is exposed to and senses ambient light and is operable thereby to control the amount of electric current flow through the galvanometer device and regulate the displacement of the movable elongated member, when the galvanometer device is energized, and thus the size of the aperture opening and the resulting film exposure.

4,118,718

MEASURING AND CONTROL SYSTEM FOR SINGLE LENS REFLEX

Werner Hahn, and Heinz Schulze, both of Dresden, German Democratic Rep., assignors to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden German Democratic Rep.

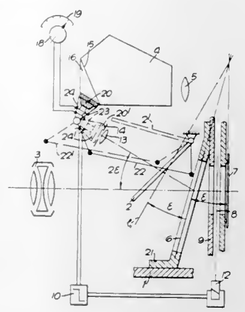
Filed Jun. 21, 1977, Ser. No. 809,050
Int. Cl.[2] G03B *17/20*
U.S. Cl. 354—55 **2 Claims**

1. An exposure measuring and control system for a single-lens reflex camera having an optical path for light to pass therethrough for defining an image at a film gate and a reflex mirror pivotable between a viewing position and position out of the optical path during exposure, comprising:

(a) a partly translucent mirror arranged in the optical path,

(b) a photo electric cell mounted for movement into a first position for receiving light reflected by said reflex mirror with the latter in the viewing position and into a second position for receiving light reflected from said partly translucent mirror,

(c) a change-over switch which switches to a first position when said photo electric cell is in its first position and to a second position when said photo electric cell is in its second position,



(d) a measuring circuit including an indicator for exposure times, connected by said change-over switch to said photo electric cell when said change-over switch is in its first position, and

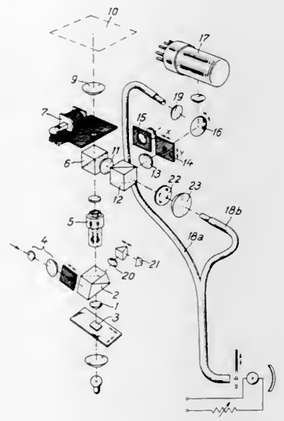
(e) a control circuit for determining the exposure time of the camera, connected by said change-over switch to said photo electric cell when said change-over switch is in its second position.

4,118,719

MICROSCOPE ATTACHMENT CAMERA

Herbert Leiter, Wetzlar, and Günter Reinheimer, Biebertal, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,852
Claims priority, application Fed. Rep. of Germany, May 5, 1976, 2619853
Int. Cl.[2] G03B *17/48;* **G02B** *21/00*
U.S. Cl. 354—79 **10 Claims**



1. In a microscope-attachment camera having an observation beam with a system for measuring the brightness of an object detail and with markings for indicating at least the detail meter-

ing-field and the image-field of the camera in said observation beam, the improvement:

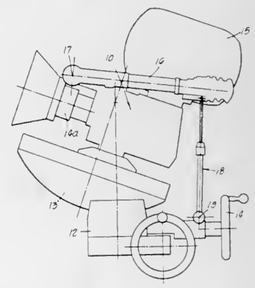
a metering field-marking (**14**) positioned on a first plate and an image field-marking (**22**) positioned on a second plate, said first plate defined by a metering field-stop (**14**), said metering field-marking and said image field-marking differing in shape and size (**14, 22**) and being simultaneously reflected into said observation beam.

4,118,720

VIEWFINDER EYEPIECE LEVELING DEVICE

Robert E. Gottschalk, Los Angeles, Calif., assignor to Panavision, Incorporated, Tarzana, Calif.

Filed Jan. 3, 1977, Ser. No. 756,191
Int. Cl.[2] G03B *29/00*
U.S. Cl. 354—81 **4 Claims**



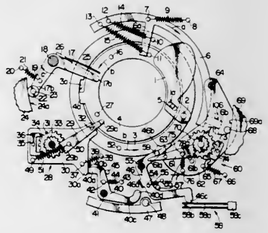
1. In combination, a camera having a viewfinder eyepiece device mounted thereon to pivot adjacent its forward end about a horizontal axis, a camera support mechanism having a base and a tilting support member, means mounting said tilting support member on said base for movement about an axis parallel to said horizontal axis, means for securing said camera to said tilting supporting member, means for moving said tilting support relative to said base, and a link pivotally connected at one end adjacent the rear end portion of said viewfinder eyepiece device and pivotally connected at the other end to said base whereby movement of said rear end of the viewfinder eyepiece device is minimized during tilting movement of said support member and camera.

4,118,721

X-CONTACT DEVICE FOR BLADED SHUTTER

Akihiko Hashimoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1977, Ser. No. 768,080
Claims priority, application Japan, Feb. 16, 1976, 51/15592
Int. Cl.[2] G03B *15/03*
U.S. Cl. 354—147 **3 Claims**



1. A shutter assembly comprising concentric opening and closing rings and a plurality of blades pivotally coupled to both rings;

charging means for biasing both said rings in a first direction;

diaphragm means for engaging a projection on said opening ring to set a desired shutter opening;

means for restraining a projection on the closing ring when the diaphragm is in the full open setting;

adjustable governor means for releasing the restraining means after a settable predetermined time interval;

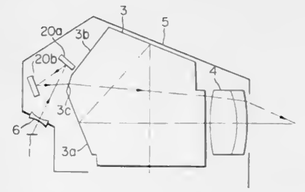
an X-switch contact and means responsive to the end of said time interval for actuating the X-switch to enable initiation of a flash operation during the time that the bladed shutter begins to close.

4,118,722

OPTICAL SYSTEM FOR INDICATION IN THE VIEWFINDER OF SINGLE-LENS REFLEX CAMERA

Sei Matsui, Chiba, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 20, 1976, Ser. No. 734,246
Claims priority, application Japan, Oct. 28, 1975, 50-146053
Int. Cl.[2] G03B *19/12*
U.S. Cl. 354—155 **1 Claim**



1. An optical system built in the viewfinder of a single-lens reflex camera for directing an information carrying light beam from an indication element provided on the object side of the body of said viewfinder to an eyepiece, comprising:

(a) a pentagonal Dach-prism having a light transmitting portion provided on a surface between the third reflective surface of said prism, where a light beam from an objective mounted on the camera undergoes its third reflection following the reflection by the Dach-surface, and the non-reflection surface adjacent to and lying above said third reflection surface;

(b) a first reflective member positioned in the vicinity of said light transmitting portion, and on the non-reflection surface side thereof, so as to reflect the information carrying light beam of said indication element in a direction away from said pentagonal Dach-prism;

(c) a second reflective member provided in a position spaced further from said prism than that of the light path between said indication element and said first reflective member, to reflect the information carrying light beam reflected by said first reflective member to intersect the beam segment incident upon the first reflective member and then to said eyepiece after passing through said light transmitting portion,

said first reflective member and said second reflective member being separated from each other and air intervening therebetween; and

(d) a negative lens member provided in the light path extending from said indication element to said first reflective member and being integral with the body of the viewfinder, thereby to seal the interior of the viewfinder from its exterior, said indication element being located exterior of said viewfinder.

4,118,723

CAMERA INDICATING MEANS

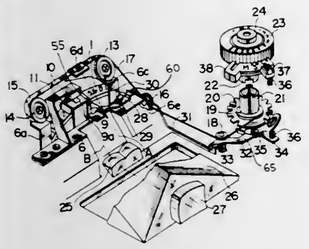
Keiji Yamazaki, Sakai, and Mamoru Katsuragi, Izumi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Nov. 28, 1977, Ser. No. 855,084

Claims priority, application Japan, Nov. 29, 1976, 51-160360[U]

Int. Cl.² G03B *17/20, 19/12*

U.S. Cl. 354—155 **11 Claims**



1. Indicating means for an exchangeable lens type camera which is selectively settable to operate in either a diaphragm priority automatic shutter speed control mode or a shutter speed priority automatic diaphragm control mode and which includes structure to enable indication of an *f*-number representative of the automatically controlled diaphragm aperture when the maximum *f*-number of an exchangeable lens mounted on said camera has been preset in the camera operating mechanism, said indicating means comprising:

a view-finder;

a first optical arrangement for directing light to introduce visible information relating to a selected shutter speed into the view field of said view-finder;

a second optical arrangement for directing light to introduce visible information relating to a set *f*-number into the view field of said view-finder;

a manually operable exposure mode selector for selectively setting said camera for operation in said diaphragm priority automatic shutter speed control mode and in said shutter speed priority automatic diaphragm control mode; and

a shutter element movable between a first position in blocking relationship to the light of said first optical arrangement to prevent information relating to a preselected shutter speed from being introduced into the view field of said view-finder and a second position out of said blocking relationship to permit introduction of said information relating to a preselected shutter speed into said view field,

said shutter element being coupled to said exposure mode selector for movement thereby into said first position when said exposure mode selector is operated to set said camera in said diaphragm priority automatic shutter speed control mode and into said second position when said selector is operated to set said camera in said shutter speed priority automatic diaphragm control mode.

4,118,724

CAMERA WITH SELECTOR FOR EITHER ELECTROMAGNETIC RELEASE OR MECHANICAL RELEASE

Hiroshi Ueda, Nara; Takayoshi Miyamoto, and Masatake Niwa, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchimachi, Japan

Filed Sep. 28, 1977, Ser. No. 837,139

Int. Cl.² G03B *17/38, 17/42*

U.S. Cl. 354—266 **11 Claims**

1. In a camera including:

a shutter mechanism;

a manually operable release member;

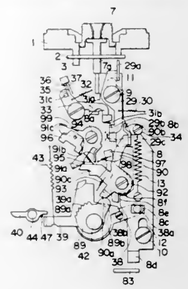
a mechanical release device for releasing said shutter mechanism for an exposure in response to the depression of said release member;

an electromagnetic release device for releasing said shutter mechanism for an exposure in response to the depression of said release member;

manually operable release modes setting means; and a release modes selecting device coupled with said setting means and said release devices for selectively enabling either one of said release devices in accordance with the setting of said setting means, the improvement comprising:

electromagnetic release initiating means movable from a first to a second position in response to the depression of said release member, for operating said electromagnetic release device;

mechanical release initiating means movable along a predetermined path in response to the depression of said release member for operating said mechanical release device;



first locking means for locking said electromagnetic release initiating means when said modes setting means is set for mechanical release mode; and

stroke restricting means for restricting the stroke of the movement of said mechanical release initiating means when said modes setting means is set for electromagnetic release mode, said mechanical release device being coupled with said mechanical release initiating means so as to be operated for release of said shutter mechanism only when said mechanical release initiating means is moved beyond the restricted stroke, and the stroke of said electromagnetic release initiating means from the first to the second position being such that said electromagnet release initiating means reaches the second position in response to the depression of said release member before said movement of said mechanical release initiating means is restricted by said stroke restricting means.

4,118,725

SHUTTER SPEED DISPLAY FOR VIEWFINDER OF FIXED POINT EXPOSURE METER CAMERA

Hiroshi Kurei, and Tetsuji Shono, both of Kawagoe, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1977, Ser. No. 763,748

Claims priority, application Japan, Jan. 30, 1976, 51-9458[U]

Int. Cl.² G03B *17/20*

U.S. Cl. 354—289 **1 Claim**

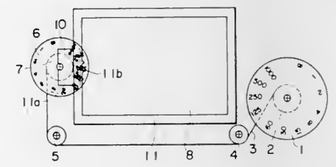
1. A combined shutter speed display and fixed point exposure meter for a camera viewfinder comprising:

a rotatable shutter speed setting dial;

a plurality of aligned indicator elements positioned along a side of the viewfinder picture frame;

a rotatable shutter speed display dial operatively coupled to the setting dial for rotation therewith, the peripheral edge of the display dial bearing appropriate shutter speed markings and extending into the viewfinder picture frame adjacent said indicator elements, the rotational direction of said display dial and translation direction of said indicator elements as seen through said viewfinder being the same as the rotational direction of said setting dial; and

a mask surrounding said viewfinder, said mask having a



plurality of aligned holes through which said indicator elements are visible and a pair of spaced tabs extending inwardly from said side of said picture frame opposite a center one of said holes for bracketing the set shutter speed marking on the display dial.

4,118,726

EXCHANGEABLE LENSES FOR USE IN INTERNAL LIGHT MEASURING TYPE SINGLE LENS REFLEX CAMERAS

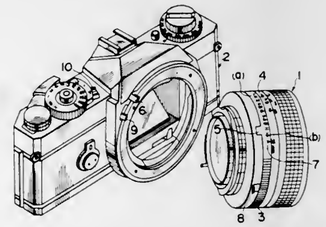
Yoshio Kuramoto, Toyonaka; Hiroshi Ueda, Nara, and Kyozo Uesugi, Izumi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 17, 1977, Ser. No. 769,832

Claims priority, application Japan, Feb. 19, 1976, 51-17564; Dec. 12, 1976, 51-141500

Int. Cl.² G03B *17/00, 9/02, 7/00*

U.S. Cl. 354—289 **17 Claims**



1. A series of exchangeable lenses for use in a single lens reflex camera, each of said exchangeable lenses comprising:

a lens barrel including at least one lens and a diaphragm;

a fixed index on the outer surface of said lens barrel;

a diaphragm setting ring including *f*-number graduations ranging from a maximum *f*-number to a minimum *f*-number of said exchangeable lens, said ring being rotatable to a plurality of positions for aligning any one of said *f*-number graduations with said index to be set to a desired *f*-number;

first means projecting from said ring and spaced a predetermined first distance, common to each exchangeable lens of said series, from said minimum *f*-number graduation in the rotational direction of said ring such that the amount of the rotation of said first means with said ring set to a desired *f*-number from the minimum *f*-number corresponds to the step difference between the minimum and the desired *f*-number; and

second means projecting from said ring and spaced a predetermined second distance from said maximum *f*-number graduation in said rotational direction, said second distance being dependent on the value of the maximum *f*-number of each exchangeable lenses of said series such that said second means is at a position dependent on the value of the maximum *f*-number of said exchangeable lens with said ring set to the maximum *f*-number.

4,118,727

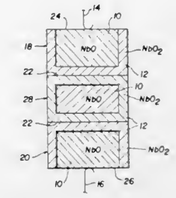
MOX MULTI-LAYER SWITCHING DEVICE COMPRISING NIOBIUM OXIDE

Paul R. Laplante, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 9, 1977, Ser. No. 831,849

Int. Cl.² H01L *29/12*

U.S. Cl. 357—10 **6 Claims**



1. An electrical threshold switching device comprising in combination:

a first and second metal oxide device, each consisting of a single crystal metal oxide substrate having a layer of polycrystalline oxide material formed on the outer surface thereof and having an exposed substrate region devoid of said polycrystalline oxide material, contiguously placed together to define an active interface of polycrystalline material wherein switching occurs during operation while providing a pair of exposed substrate regions, one on each device wherein said single crystal substrate is comprised of niobium oxide and said polycrystalline material comprises niobium dioxide and

electrical contact means applied to said pair of exposed substrate regions.

4,118,728

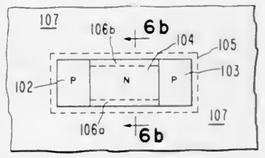
INTEGRATED CIRCUIT STRUCTURES UTILIZING CONDUCTIVE BURIED REGIONS

Robert Berry, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sep. 3, 1976, Ser. No. 720,467

Int. Cl.² H01L *29/80*

U.S. Cl. 357—22 **9 Claims**



1. A junction field effect transistor formed in a pocket of semiconductor material comprising:

the pocket of semiconductor material being a region of semiconductor material electrically isolated from underlying semiconductor material by a laterally extending PN junction, and electrically isolated from adjacent semiconductor material by insulating material, said PN junction defining the bottom of the pocket and said insulating material defining at least part of the walls of the pocket,

a source region of first conductivity type formed in the pocket adjacent a first portion of the walls of the pocket,

a drain region of first conductivity type formed in the pocket

adjacent a second portion of the walls of the pocket, said second portion being nowhere adjacent to said first portion,

a gate region of opposite conductivity type formed in the pocket between the source region and the drain region and separating the source region from the drain region,

a conductive buried region of first conductivity type disposed between the gate region and a portion of the walls of the pocket, said conductive buried region extending along the walls of the pocket from the source region to the drain region,

means for applying electrical signals to the gate region to thereby vary the conductivity of the conductive buried region,

means for applying electrical signals to the source region, and

means for applying electrical signals to the drain region.

4,118,729

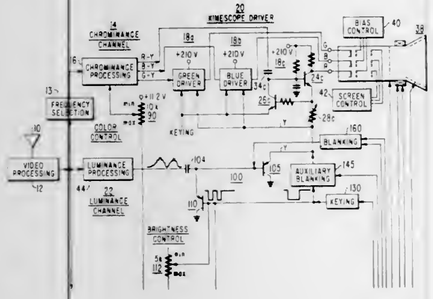
SET-UP ARRANGEMENT FOR A COLOR TELEVISION RECEIVER

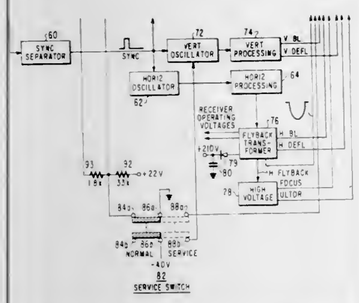
Robert Loren Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 31, 1977, Ser. No. 764,065

Int. Cl.² H04N *9/62*

U.S. Cl. 358—10 **12 Claims**





1. In a color television receiver for processing a composite color video signal containing luminance, chrominance and synchronizing signal components, said receiver including a luminance channel for processing said luminance component; a chrominance channel for processing said chrominance component; **a plurality of amplifier stages responsive to luminance and** chrominance components processed by said luminance and chrominance channels; a color image reproducing device having a plurality of electron beam intensity control electrodes responsive to said luminance and chrominance components and direct current coupled to respective outputs of said amplifier stages; deflection means associated with said electron beam apparatus for providing horizontal and vertical scanning of said device, said deflection means including means for providing a periodic signal having time intervals representative of image trace and retrace intervals and a frequency synchronized by a synchronizing signal input thereto; means for deriving from said periodic signal a receiver operating supply voltage of a magnitude dependent upon the frequency of said periodic signal; and means for applying said supply voltage to said amplifier stages and thereby applying a proportional voltage at said direct coupled intensity control electrodes; control apparatus comprising:

switching means coupled to a direct voltage control terminal of each of said luminance and chrominance channels and said deflection means via a direct current connection for providing selective direct current control of said luminance and chrominance channels and said deflection means, said switching means having

a first position for selectively rendering said luninance and chrominance channels and said deflection means normally operative in a normal mode of operation of said receiver; and

a second position for selectively rendering said luminance and chrominance channels inoperative to couple said luminance and chrominance components, and for rendering said deflection means inoperative to provide scanning of said device in one direction, to permit adjustment of said device in a service mode of operation of said receiver;

means responsive to said composite color video signal and operative independent of said luminance and chrominance channels for separating said synchronizing signal component; and

means coupled to said separating means for supplying the separated synchronizing signal component to said periodic signal providing means as said synchronizing signal input independent of the position of said switching means, whereby said derived receiver operating supply voltage and said proportional voltage applied to said intensity control electrodes exhibit substantially the same respective magnitudes during both said normal and service modes independent of the position of said switching means.

4,118,730

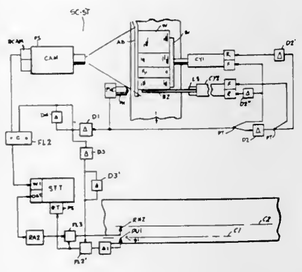
SCANNING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08841

Continuation-in-part of Ser. No. 267,377, Mar. 11, 1963, abandoned, which is a continuation-in-part of Ser. No. 626,211, Dec. 4, 1956, Pat. No. 3,081,379, and Ser. No. 477,467, Dec. 24, 1954, abandoned. This application May 18, 1972, Ser. No. 254,710

Int. Cl.² H04N *7/18*

U.S. Cl. 358—93 **23 Claims**



1. An automatic inspection apparatus for determining the location of a selected image in an image field whereby said selected image is optically differentiatable from the surrounding area of the image field, said apparatus comprising:

(a) a beam device,

(b) means for moving the beam of said device for line scanning said image field,

(c) means for generating an output signal on said line scanning means,

(d) means for modulating said output signal in accordance with variations in the image field scanned by the beam of said beam device,

(e) means for causing the beam of said beam device to scan said selected image and to be modulated in response to radiation from said selected image,

(f) means for providing an inflection in said outputs signal when said beam scans across said selected image, and

(g) an analyzing circuit operable to receive said output signal,

(h) said analyzing circuit including means for generating a code responsive to said inflection in said output signal,

(i) said generated code being indicative of said selected image in the image field scanned.

4,118,731

VIDEO AMPLIFIER WITH SUPPRESSED RADIO FREQUENCY RADIATION

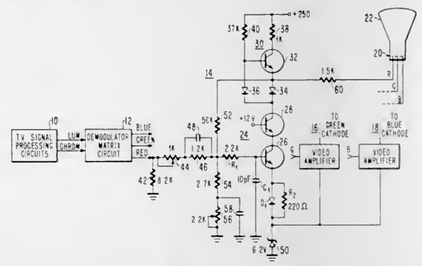
Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1977, Ser. No. 760,864

Claims priority, application United Kingdom, Jul. 19, 1976, 30005/76

Int. Cl.² H04N *9/18, 5/68, 5/14;* **H03K** *5/00*

U.S. Cl. 358—65 **23 Claims**



1. A video amplifier for driving an image reproducing device having an intensity control electrode, comprising:

a semiconductor amplifier responsive to video signals including a range of signal amplitudes, said range including a first portion capable of causing said amplifier to operate within a region of low current conduction and a remaining portion capable of causing said amplifier to operate within a region of relatively higher current conduction, said amplifier having a nonlinear conduction characteristic in said region of low current conduction and having associated input and output circuits;

means for coupling said output circuit to said intensity control electrode;

a degenerative feedback network coupled from said output circuit to said input circuit;

means for providing degenerative feedback for said amplifier; and wherein said feedback means comprises

an impedance common to said input and output circuits, said impedance comprising a semiconductor device having a nonlinear conduction characteristic in a region of low current conduction for providing degenerative feedback for said amplifier, when operating in said region of low current conduction in response to said first video signal amplitude portion, in an amount sufficient to impede cut-off of said amplifier; and for providing degenerative feedback of a lesser amount for said amplifier when operating within said region of relatively higher current conduction in response to said remaining video signal amplitude portion.

4,118,732

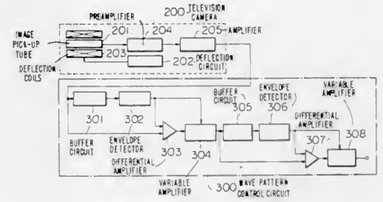
APPARATUS FOR DETECTING A SURFACE FLAW OF A MATERIAL AT HIGH TEMPERATURE

Isamu Ichijima, Kisarazu; Seiichi Watanabe, Kimitsu, and Kazuo Miyagawa, Kisarazu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 15, 1977, Ser. No. 768,822

Int. Cl.² H04N *7/18*

U.S. Cl. 358—101 **5 Claims**



1. An apparatus for detecting a surface flaw in a moving material to be measured wherein the radiation energy from the surface of said material at high temperature is detected by means of photoelectric detector so as to detect the surface flaw of said material, which comprises:

(**1**) a television camera having an image pick-up tube for detecting the radiation energy from the surface of said material;

(**2**) a shutter means provided before said image pick up tube of said television camera to obtain the rest image of the moving material by said television camera;

(**3**) a shading control circuit receiving the output of said television camera for correcting the output fluctuations within an image pick up plane of said image pick up tube of said television camera; and

(**4**) a defect recognizing means receiving the output of said shading control circuit for recognizing defects in the material.

4,118,733

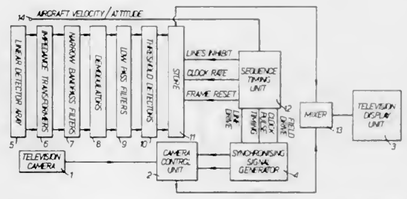
SURVEILLANCE ARRANGEMENT INCLUDING A TELEVISION SYSTEM AND INFRARED DETECTOR MEANS

Alan Elmer Sarson, and William James Rowley Clark, both of Great Baddow, England, assignors to Elliott Brothers (London) Limited, London, England

Filed Mar. 30, 1976, Ser. No. 671,449

Int. Cl.² H04N *7/18, 5/33;* **H01J** *31/49*

U.S. Cl. 358—109 **11 Claims**



1. An airborne surveillance arrangement comprising an aircraft carrying a television system including television camera means for viewing a target area of the surface over which the aircraft is to fly lying ahead of said aircraft and a television display arrangement coupled to said television camera means for displaying the target area viewed by said television camera

means, and an array of individual infra-red detectors imaged into space to view part of said target area to provide brighten-up signals for said display to highlight heat emitting targets in said display target area, said infra-red detector array being imaged into space with a directivity which is fixed in the direction of the flight path of said aircraft.

4,118,734
OPTICAL VIDEODISC WITH VARIABLE WIDTH TRACKS

Gijsbertus Bouwhuis; Josephus Johannes Maria Braat, and Bernardus Antonius Johannus Jacobs, all of Eindboven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 442,397, Feb. 14, 1974, abandoned. This application Oct. 29, 1976, Ser. No. 737,321
Int. Cl.[2] H04N *5/76*
U.S. Cl. 358—128 **2 Claims**

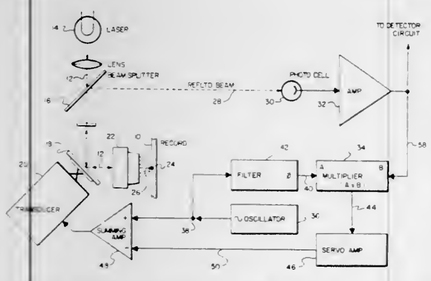


1. A record carrier of the type on which information is recorded in the form of an optical structure on substantially concentric tracks in the form of regions and intermediate areas, said regions having different optical properties than the intermediate areas and the lands between the tracks, the improvement wherein the width of the tracks increases as the radial positions of the tracks decrease.

4,118,735
SYNCHRONOUS DETECTION TRACKING OF VIDEO DISC

Richard L. Wilkinson, Torrance, Calif., assignor to MCA DiscoVision, Inc., Los Angeles, Calif.

Continuation of Ser. No. 510,163, Sep. 30, 1974, abandoned. This application Feb. 9, 1977, Ser. No. 766,928
Int. Cl.[2] H04N *5/76*
U.S. Cl. 358—128 **2 Claims**



1. Circuit means for generating a tracking error signal for biasing the scanning motion of a beam of light in a servo system of the type wherein the beam of light is focused to a spot and the spot of light is used to optically track and simultaneously read a channel of information stored on a video disc, the video disc having a sequence of bumps alternating with the planar surface portion of the video disc for causing a reflective-scattering sequence of the spot as it runs along the track, the system having means for rapidly scanning the spot of light across the information channel and having means for collecting and detecting the light reflected from the video disc, said circuit means comprising:

an oscillator for generating a driving signal to the means for scanning to produce an oscillatory scan pattern;

a phase filter coupled to said oscillator for shifting by a fixed amount the phase of the driving signal generated by said oscillator to substantially match the phase of the oscillatory scan pattern;

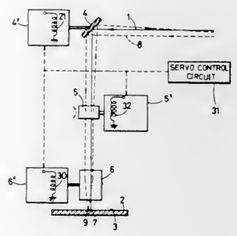
multiplier means for combining the phase-shifted oscillator signal with the output of the means for detecting to effect a linear multiplication of the two applied signals and thereby produce a multiplier output signal whose polarity represents the direction of the deviation of said scan pattern relative to the information channel and whose average magnitude is proportional to the magnitude of the displacement of said scan pattern from the center of the information track, the minimum magnitude occurring when the spot is centered in the tracks; and

a summing amplifier in which the driving signal generated by said oscillator is combined with the output of said multiplier means for driving the means for scanning.

4,118,736
METHOD OF AND APPARATUS FOR CONTROLLING THE OPTICAL READING OF RECORDED INFORMATION

Hitoshi Okada, Yotsukaido, and Yohsuke Naruse, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 28, 1977, Ser. No. 837,465
Claims priority, application Japan, Oct. 1, 1976, 51-120607
Int. Cl.[2] G11B *7/00*
U.S. Cl. 358—128 **14 Claims**

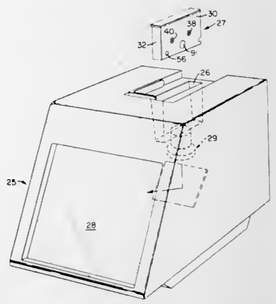


1. In a process for optically reading information from a record medium wherein a main beam of radiant energy is transmitted to impinge upon and scan said record medium whereat said main beam is modulated with said information while scanning said record medium and an additional beam of radiant energy is transmitted to impinge upon said record medium, both said main beam and said additional beam passing through a common objective lens for focussing of said beams, said process including detecting said main beam after said main beam is modulated with said information, adjusting the transmission path of at least said main beam in response to the detection of said main beam, detecting said additional beam after said additional beam impinges upon said record medium, and adjusting the focussing of said main and additional beams by moving said objective lens relative to said record medium in accordance with the detection of said additional beam, the method of minimizing defocussing of said main beam in the event of a transmission path adjustment thereof comprising further adjusting the focussing of said main and additional beams by further moving said objective lens as a function of the adjustment of said transmission path of said main beam in response to said detection of said main beam.

4,118,737
AUTOMATIC SYSTEM FOR HANDLING AND PROCESSING PHOTOGRAPHIC FILM STRIPS

Melvin T. Chambers, Arlington, and Herbert L. Hardy, Sudbury, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1977, Ser. No. 756,426
Int. Cl.[2] G03C *11/00*
U.S. Cl. 352—130 **5 Claims**



1. Apparatus for use with a film handling system comprising a supply spool and a take-up spool, the spools being operable to wind a film strip from the supply spool onto the take-up spool and rewind the film strip from the take-up spool onto said supply spool upon the spools being driven, said apparatus including an electric motor, a friction clutch, drive means operable to drive the spools from said motor through said friction clutch to wind or rewind the film strip, a programming member having a plurality of program positions including a first program position and a second program position, means responsive to said programming member being in said first program position to cause motor and drive means to wind the film strip from the supply spool onto the take-up spool and responsive to said programming member being in said second program position to rewind the film strip from the take-up spool onto the supply spool, program advancing means to cause said programming member to advance between said program positions in succession, and torque responsive means for sensing an electrical characteristic of said electric motor and for causing said advancing means to advance said programming member from at least one of said first or second program positions to the next successive program position in response to said electrical characteristic maintaining a predetermined level for a predetermined time interval, said predetermined level of said electrical characteristic corresponding to slippage of said friction clutch.

4,118,738
TIME BASE ERROR CORRECTOR

Walter Arnstein, San Jose, Calif., assignor to American Videonetics, Sunnyvale, Calif.

Continuation of Ser. No. 618,624, Oct. 1, 1975, abandoned. This application Jun. 8, 1977, Ser. No. 804,725
Int. Cl.[2] H04N *5/04, 5/76, 7/00, 5/78*
U.S. Cl. 358—148 **20 Claims**

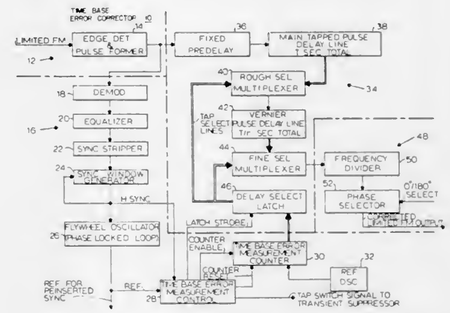
11. A method of correcting time base errors occurring in recurrent impulse trains carrying information on the leading edges of the impulses thereof and wherein each said train has a detectable beginning, said method comprising the steps of:

detecting the actual time of arrival of the beginning of each said impulse train;

generating as a time base an average expected time of arrival of beginning by averaging over multiple recurrent trains;

passing a said train through a digital delay line having a plurality which periodically regenerates each passing pulse;

digitally counting the difference in time between actual time of arrival and expected time of arrival of the beginning of each said train, the count thus reached being a measure of



the time base error wherein each count unit corresponds to a tap of said delay line;

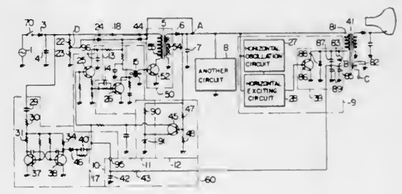
for each said train, selecting a tap of said delay line with said digit count; and

outputting said train from said delay line via said selected tap to thereby correct any time base error.

4,118,739
SWITCHING REGULATOR FOR TELEVISION RECEIVER FOR GENERATING A STABILIZED D.C. SUPPLY VOLTAGE FOR OPERATING THE VARIOUS TV CIRCUITS

Kunio Umehara, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 17, 1977, Ser. No. 769,834
Claims priority, application Japan, Feb. 20, 1976, 51-17065; Feb. 20, 1976, 51-17067
Int. Cl.[2] H04N *5/44*
U.S. Cl. 358—190 **9 Claims**



1. A switching regulator for use in a television receiver, comprising:

(a) a d.c. power source for generating a non-stabilized d.c. voltage;

(b) chopper means including a switching element, said chopper means being operatively turned on and off alternately for periodically interrupting said non-stabilized d.c. voltage in accordance with the turn-on and turn-off of said switching element to produce an interrupted voltage;

(c) rectifying means for converting the interrupted voltage from said chopper means into a d.c. output voltage;

(d) a horizontal deflection circuit supplied as an operating voltage therefor with said d.c. output voltage for operatively generating a horizontal flyback pulse;

(e) first control means supplied with said horizontal flyback pulse for generating a first control signal corresponding to the horizontal deflection frequency of said horizontal flyback pulse, and for preventing said first control signal

from being generated when the supply of said horizontal flyback pulse is stopped; and

(f) second control means for rendering said switching element on and off at said horizontal deflection frequency of said first control signal during the supply of said first control signal thereto and for holding said switching element inoperative during the stop of said first signal, said second control means including means supplied with said d.c. output voltage for generating a second control signal for operatively increasing or decreasing the on period of said switching element in accordance with the decrease or increase in level of said d.c. output voltage.

4,118,740

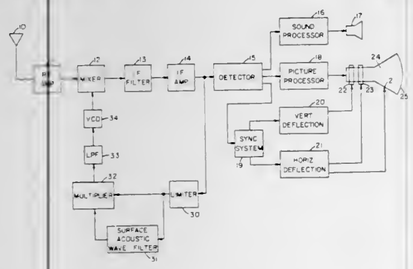
SURFACE WAVE AFC DISCRIMINATOR WITH TWO ZERO CROSSINGS

Jouke N. Rypkema, Lombard, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 21, 1977, Ser. No. 817,653

Int. Cl.[2] H04N *5/50*

U.S. Cl. 358—195 **7 Claims**



1. In a television tuning system, for receiving a broadcast signal having frequency-spaced sound and picture carriers, said tuning system having a voltage controlled oscillator producing a heterodyning signal, a frequency converter responsive to said received broadcast signal and said heterodyning signal translating said broadcast signal to an intermediate frequency signal having frequency-spaced intermediate frequency picture and sound carriers, and an intermediate frequency filter; automatic frequency control means producing a first control effect due to said intermediate frequency picture carrier and a second control effect due to said intermediate frequency sound carrier, said automatic frequency control means comprising:

a surface acoustic wave filter having a frequency-dependent phase characteristic such that a quadrature phase shift is imposed upon signals at said intermediate frequency picture carrier frequency and signals of a predetermined frequency between said intermediate frequency picture and sound carriers;

multiplier means having first and second input channels, producing an error signal having a zero value when said input signals are in quadrature and opposite polarity maxima when said input signals are in-phase and counter-phase;

first coupling means coupling said intermediate frequency filter to the input of said surface acoustic wave filter and to said first input channel of said multiplier means;

second coupling means coupling the output of said surface acoustic wave filter to said second input channel; and

third coupling means coupling said multiplier means error signal to said voltage controlled oscillator.

4,118,741

HUE ADJUSTING CIRCUITS

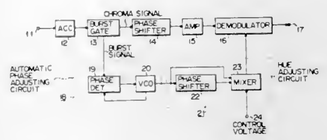
Hiroshi Gomi, and Shinichiro Taguchi, both of Fukaya, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 17, 1977, Ser. No. 769,784

Claims priority, application Japan, Feb. 18, 1976, 51-15838; Mar. 9, 1976, 51-24648

Int. Cl.[2] H04N *9/50, 9/535*

U.S. Cl. 358—28 **8 Claims**



1. A signal processing circuit for use in a color television receiver comprising:

demodulator circuit means connected to receive a chroma signal and a subcarrier reference signal for recovering color information from the chroma signal;

first phase shifting means connected to the input side of said demodulator circuit means for phase shifting the chroma signal to be applied to said demodulator circuit means;

subcarrier reference signal generating means responsive to a burst signal derived from a color composite signal including the chroma and burst signals for producing a subcarrier reference signal;

hue adjusting circuit means connected to the output of said subcarrier reference signal generating means and including a second phase shifting means for phase shifting the subcarrier reference signal and mixing means connected to receive and mix the phase-shifted subcarrier reference signal from said second phase shifting means and the subcarrier reference signal from said subcarrier reference signal generating means, said mixing means being arranged to vary the relative amplitude ratio between the subcarrier reference signal from said subcarrier reference signal generating means and the phase-shifted subcarrier sreference signal from said second phase shifting means in response to a control voltage; and

means for coupling the output of said mixing means to said demodulation means to recover the color information from the chroma signal;

at least said first and second phase shifting means being formed on the same integrated circuit semiconductor substrate.

4,118,742

CARBONYL-SUBSTITUTED 1-SULFONYLBENZIMIDAZOLES

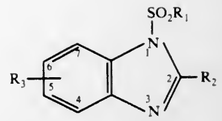
Charles J. Paget; James W. Chamberlin, both of Indianapolis, and James H. Wikel, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 608,415, Aug. 28, 1975, abandoned. This application Dec. 15, 1976, Ser. No. 750,991

Int. Cl.[2] C07D *235/30*

U.S. Cl. 548—306 **40 Claims**

1. A compound of the formula



(I)

wherein R_1 is C_1–C_5 alkyl, C_3–C_7 cycloalkyl, phenyl, furyl, thienyl, or R_4R_5N-, wherein R_4 and R_5 are independently C_1–C_3 alkyl or R_4 and R_5, when taken together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino, or morpholino;

R_2 is amino, formamido, acetamido, propionamido or butyramido;

R_3 is C_2–C_8 alkanoyloxy, phenylacetoxy, or benzoyloxy;

wherein R_6 is hydrogen, C_1–C_7 alkyl, C_3–C_7 cycloalkyl, (C_3–C_7 cycloalkyl)methyl, 1-(C_3–C_7 cycloalkyl)ethyl, benzyl, phenyl or phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, chloro, bromo, iodo, nitro or trifluoromethyl; or

Z=C(R_6)-, wherein Z is hydroxyimino, C_1–C_4 alkoxyimino, C_1–C_4 acyloxyimino, benzyloxyimino, benzoyloxyimino, hydrazono, thiocarbamylhydrazono, carboxymethoxyimino, methoxycarbonylhydrazono, ethoxycarbonylhydrazono, carbamylhydrazono, C_1–C_4 alkoxycarbonylethylcarbonyloxyimino, benzyloxycarbonylaminomethylcarbonyloxyimino, p-nitrobenzyloxycarbonylethylcarbonyloxyimino, or phthalimidomethylcarbonyloxyimino; and

R_3 is at the 5 or 6 position.

4,118,743

CASSETTE TAPE RECORDER WITH MEMORY CONTROLLED SELECTIVE BY-PASS

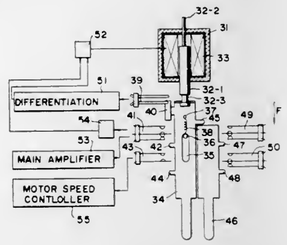
Itsuki Ban, 829, Higashioizumimachi, Nerima-ku, Tokyo; Shohei Iizuka, 363-4, Imajukunishimachi, Asahi-ku, Yokohamashi, Kanagawa-ken, and Hisashi Funakoshi, 1-10-4, Nakamachi, Meguro-ku, Tokyo, all of Japan

Filed May 27, 1977, Ser. No. 801,257

Claims priority, application Japan, May 31, 1976, 51-62372

Int. Cl.[2] G11B *15/44, 15/18*

U.S. Cl. 360—73 **7 Claims**



1. In a magnetic recording/reproducing apparatus for cassette magnetic-tapes, which apparatus has a non-reproduction mode including a fast forward operation and a rewind operation, comprising a movable plate mounted on a deck for reciprocating movement between reproduction and non-reproduction positions, the plate being spring biased toward the reproduction position, a magnetic head mounted on the movable plate at a position where the magnetic head, when the movable plate is at the reproduction position, is in sliding contact with a magnetic tape, a pinch roller movably connected to the movable plate by a pinch roller mounting means, the pinch roller movable between a reproduction position in which the pinch roller is in contact with a capstan and a remote non-reproduction position in which the pinch roller is out of contact with the capstan, the pinch roller being spring biased to the reproduction position, tape drive means for driving the tape at a play speed with the pinch roller in its reproduction position and a fast speed with the pinch roller in the remote non-reproduction position, means supplying electric current to the tape drive means, the improvement comprising:

manually actuatable slides for selecting respectively, the fast forward and the rewind operation, said slides mounted on the deck for reciprocating movement between reproduction and non-reproduction mode positions, said slides resiliently biased toward the reproduction mode position and manually actuatable to the non-reproduction mode position;

first switch means opened and closed by each manual actuation of each of said slides to a position intermediate the slide reproduction and non-reproduction mode positions;

a magnetic actuator engaged by said slide for reciprocating movement with said slides, said magnetic actuator positioned with respect to the pinch roller to push the pinch roller away from the capstan when either one of said slides has been actuated to its non-reproduction mode position;

an electromagnetic coil surrounding said magnetic actuator for holding said magnetic actuator in its nonreproduction position by electromagnetic force when supplied with an electric current;

circuit means including a memory circuit for storing electrical signals corresponding to the number of opening and closings of said first switch means and an excitation circuit for supplying said electric current to said coil when one or more of said electrical signals are stored in said memory circuit;

detection circuit means connected to said magnetic head for detecting blank zones on the magnetic tape; and

means for erasing one of said stored signals for each detected blank zone on the magnetic tape and causing said excitation circuit to remove said holding electric current from said coil when all of said stored signals are erased from said memory circuit thereby permitting said actuator and said slide to return to the reproduction position.

4,118,744

TAPE END DETECTION RELEASE DEVICE FOR TAPE RECORDER

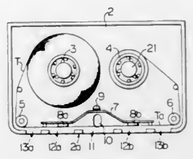
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1977, Ser. No. 762,742

Claims priority, application Japan, Mar. 31, 1976, 51/36313; Apr. 15, 1976, 51/42735

Int. Cl.[2] G11B *15/06, 23/08, 15/10, 23/32*

U.S. Cl. 360—74 **5 Claims**



1. A tape end detection apparatus for a tape recorder having a swingably mounted member including a shaft for supporting a tape hub having a tape secured thereto and wound thereabout, said shaft causing said member to swing in a predetermined direction when the tape is substantially completely unwound from said tape hub;

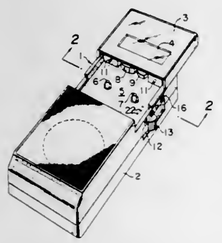
normally open switch means and means responsive to move-

ment of said member in said predetermined direction for closing said switch means;
release means movable between a first position which prevents and a second position which permits said switch closing means to engage and thereby close said switch means when a tape end condition occurs;
a magnetic head means and tape drive means mounted upon a common movable member;
means for placing said movable member in an operating position wherein said magnetic head and tape drive means engage said tape; and
said movable member including means for placing said release means in said second position when said movable member is moved either into or out of said operating position.

4,118,745
SINGLE LEVER OPERATED CASSETTE TAPE RECORDER

Haruo Matsuura, Shimizu, and Kiyoshi Kawahara, Shizuoka, both of Japan, assignors to Star Seimitsu Kabushiki Kaisha, Japan

Filed Apr. 15, 1977, Ser. No. 787,963
Claims priority, application Japan, Apr. 17, 1976, 51-47358[U]
Int. Cl.[2] G11B *15/02, 15/18*
U.S. Cl. 360—96 **9 Claims**

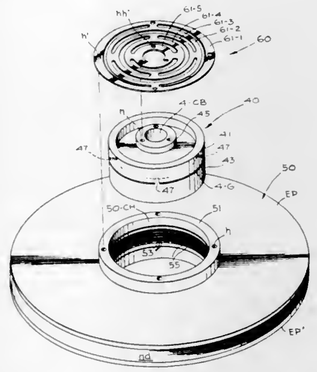


1. A cassette tape recorder comprising an enclosure including a tape cassette receiving housing, a baseplate fixedly mounted within the enclosure, a takeup shaft and a rewind shaft rotatably mounted in the baseplate and each having one end projecting into the housing, an operation lever pivotally supported on the baseplate for angular movement and carrying a knob which projects externally of the enclosure and which may be manually operated to position the operation lever to one of predetermined record, stop, playback and rewind positions, a control lever pivotally mounted on the baseplate, a drive source, a relay wheel rotatably mounted on the control lever and including a rotary shaft connected with the drive source, and means for controlling the control lever in a manner such that when the operation lever is in either record or playback position, the control lever is moved to a first operational position in which the rotary shaft is effective to drive the take-up shaft in a given direction, when the operation lever is in its rewind position, the control lever is moved to a second operational position in which the relay is effective to drive the rewind shaft in the opposite direction from the given direction, and when the operation lever is in its stop position, the control lever assumes a neutral position in which neither the rotary shaft nor the relay wheel is effective to drive the take-up and the rewind shaft, respectively, said means for controlling the control lever comprising a notch cam formed on the operation lever, a pin on the control lever engaging the notch cam, and a spring normally urging the control lever in a direction to cause the relay wheel to be operatively connected with the take-up shaft, the notch cam cooperating with the spring to control the position of the control lever through the pin.

4,118,746
HIGH PERFORMANCE FLOPPY PACK AND ASSOCIATED SYSTEM

Ko Ko Gyi, and Herbert Underwood Ragle, both of Thousand Oaks, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 4, 1977, Ser. No. 774,312
Int. Cl.[2] G11B *5/012, 25/04, 21/08*
U.S. Cl. 360—99 **2 Claims**



1. In combination, a pneumatically partitionable "floppy pack" and pneumatic partition means:
said pack comprising a plurality of flexible recording disks and intermediate radially-vented, rigid separator means, both being arranged to form a co-rotatable stack with a center-bore of prescribed length and diameter;
the separator means serving to separate the disks from one another a prescribed uniform distance;
the pack so-formed being adapted for disk separation and partition by said partition means disposed in the center-bore, each partition means being arranged and adapted to direct at least one pressurized jet stream between selected disk surfaces, through the associated separator means therebetween, so as to deflect flanking disks and thus partition the stack;
said partition means also being flexibly coupled to said pack for precisely-aligned, adjustably-centered reciprocation up and down said bore whereby to precisely control the partition-selection.

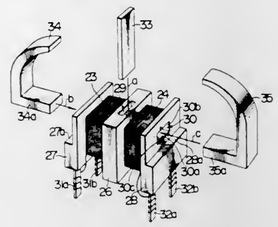
4,118,747
COMPOSITE MAGNETIC HEAD

Naohiro Hanaoka, Hachioji, and Misao Shimoda, Hamura, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1977, Ser. No. 774,402
Claims priority, application Japan, Mar. 10, 1976, 51-29084[U]
Int. Cl.[2] G11B *5/20, 5/28*
U.S. Cl. 360—121 **4 Claims**

1. A composite magnetic head including a record/playback gap and an erase gap, comprising:
a straight, central core;
a pair of lateral cores disposed in mutually opposite relationship with a front end and a rear end of the central core so as to hold the ends of the central core therebetween, each of the lateral cores having a rear portion which extends in a direction perpendicular to the length of the central core to provide a bobbin carrying portion;
a bobbin having a central flange and a pair of end flanges, the central flange being formed with an opening for receiving the central core and the bobbin being formed with a slot

extending through the length thereof including both end flanges in a direction perpendicular to the opening;
a pair of coils respectively disposed between the central flange and each of the end flanges;



the central core being disposed in the opening and the bobbin carrying portions of the lateral cores being disposed in the slot in such a manner that a record/playback gap and an erase gap are defined between the opposite sides of the front end of the central core and each front end of the both lateral cores.

4,118,748
MEMBER FOR LIMITING AIR DOOR MOVEMENT IN A DISK CARTRIDGE

Arlin B. Doering, South St. Paul, and Kenneth H. Volness, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

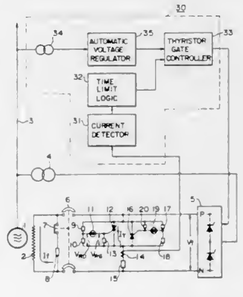
Filed Jul. 21, 1976, Ser. No. 707,712
Int. Cl.[2] G11B *5/82, 17/26, 23/04*
U.S. Cl. 360—133 **4 Claims**

1. In a disk cartridge comprising a housing having an air inlet port through which air may be introduced into the housing; a disk having a magnetizable surface layer within the housing; and an air door assembly comprising a spring steel plate having a generally U-shaped slot closely spaced from the periphery of the plate on three sides to define portions of the plate including an air door shaped to extend across said air inlet port on the inner surface of said housing and a U-shaped biasing strip extending around the air door on three sides, said biasing strip including a central length fixedly attached to said housing and side lengths between said central length and said air door extending generally radially outwardly of said cartridge, said side lengths being sinuously flexible to afford movement of said air door away from the inner surface of said housing to an open position in an attitude which may or may not be parallel thereto and providing means for biasing the air door to its closed position, and means for limiting movement of the edge portion of the door adjacent the central length of said biasing strip at a full open position; said disk cartridge being removably mountable on a disk drive unit adapted to engage and rotate the disk within the housing, which drive unit may include means for opening the air door and for injecting air into the disk cartridge upon mounting of the disk cartridge on the disk drive; the improvement wherein said means for limiting movement comprises a unitary polymeric member comprising:
a first anchor portion attached to the central length of said biasing strip;
a second anchor portion attached to said edge portion of said air door;
first and second rigid link portions of about equal length; and
first, second and third thin flexible hinge portions, said first flexible hinge portion attaching one end of said first link portion to said first anchor member, said third flexible hinge portion attaching one end of said second link portion to said second anchor portion, and said second flexible hinge portion attaching together the ends of said links opposite said anchor members.

4,118,749
FIELD OVERVOLTAGE PROTECTING APPARATUS FOR SYNCHRONOUS MACHINE

Takeshi Matuzaki; Masuo Goto, both of Hitachi, and Yasushi Momochi, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 30, 1977, Ser. No. 782,745
Claims priority, application Japan, Apr. 2, 1976, 51-35969
Int. Cl.[2] H02H *7/09*
U.S. Cl. 361—33 **22 Claims**



1. A field overvoltage-protecting apparatus for a synchronous machine having an armature and a field winding, said apparatus comprising field excitation control means impressed with an armature voltage of said synchronous machine to form a DC power supply, a DC output of which is applied to the field winding of said synchronous machine to excite it, first discharge means for discharging energy stored in said field winding under a predetermined condition, and second discharge means for reducing the field voltage by allowing field current to pass therethrough in response to generation of an overvoltage across said field winding whose absolute value is higher than a predetermined value across said field winding, said second discharge means having a resistance larger than said first discharge means.

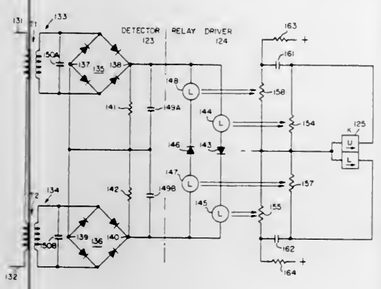
4,118,750
VITAL RELAY OPERATING CIRCUIT

John H. Auer, Jr., Fairport, and Henry C. Sibley, Adams Basin, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 606,695, Aug. 21, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,304
Int. Cl.[2] H01H *47/22*
U.S. Cl. 361—182 **18 Claims**

9. A circuit for actuating a vital relay in response to an a.c. signal being alternately modulated to signals of first and second frequencies and comprising in combination:
(a) first and second rectification means responsive to said first and second frequencies for producing first and second d.c. output potentials, respectively;
(b) said first and second d.c. output potentials coupled in series opposition across a terminal pair for producing an output potential having the polarity of the dominant one of said first and second d.c. output potentials;

(c) first and second polarity responsive control means bridged in parallel across said terminal pair for producing first and second signals and second and first signals, respectively, when the potential across said terminal pair is of the polarity of said first and second d.c. output potentials, respectively;



(d) first and second switching means coupled to said first and second polarity responsive control means, respectively, and responsive to said first signals for rendering said first and second switching means conducting; and responsive to said second signals for rendering said first and second switching means relatively nonconducting; and wherein

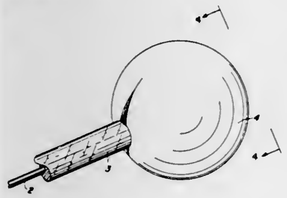
(e) said first and second switching means control the flow of current to the vital relay.

4,118,751

CORONODE CONNECTION ARRANGEMENT

Fred F. Hubble, III, Rochester, and John B. Tasseff, II, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 31, 1977, Ser. No. 802,163
Int. Cl.[2] H05F *3/00*; H01T *19/00*
U.S. Cl. 361—220 **5 Claims**



1. A corona discharge device comprising a coronode, said coronode including an inner wire coated with a frangible dielectric and a conductive member carried on at least one end of said coronode, said member fracturing said dielectric material to contact said inner wire.

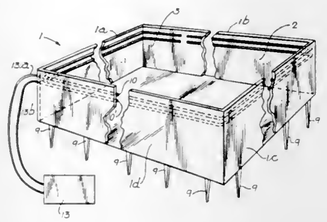
4,118,752

APPARATUS FOR INFLICTING ELECTRIC INJURY UPON LAND SHELLFISH SUCH AS SNAILS AND THE LIKE

Shozo Iguchi, 1-6, Roppongi 5-chome, Minato-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 654,177, Feb. 2, 1976, abandoned. This application Apr. 29, 1977, Ser. No. 792,268
Int. Cl.[2] H05C *1/04*
U.S. Cl. 361—232 **4 Claims**

1. An apparatus for collecting shellfish, comprising: a shellfish collection enclosure to enclose a collection area, said enclosure comprising insulating wall means of a height to be scaled by the shellfish, said wall means having exposed on only the inner surface thereof a pair of exposed vertically spaced conductors spaced less than the length of the shellfish and horizontally extending over the length of the wall means so as to be in the advancing path of the shellfish scaling the wall means from inside the enclosure, and means for applying intermittent voltage pulses of a value which are not hazardous to humans continuously to said conductors which pulses are spaced apart a time interval less than the time required for the shellfish to traverse the space therebetween.

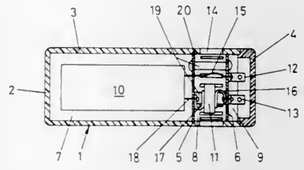


4,118,753

STARTING DEVICE FOR AN ASYNCHRONOUS MOTOR

Holger Vilhelm Vind, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed May 18, 1977, Ser. No. 798,175
Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623119
Int. Cl.[2] H05K *7/20*
U.S. Cl. 361—331 **1 Claim**



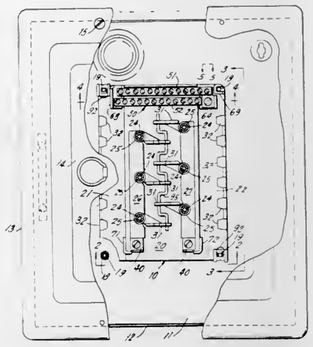
1. A starting device for an asynchronous motor, comprising, first and second disk shaped wall elements, means connecting said wall elements and maintaining them in spaced apart parallel relation, first and second plug connectors attached to the outer side of said first wall element, first and second U-shaped springs attached respectively to the inner sides of said first and second wall elements in axial alignment with said first plug connector, means extending through said first wall element electrically connecting said first plug connector and said first spring, a disk shaped PTC resistor disposed between and held in place by said springs, an electrolytic capacitor having leads at one end thereof attached to the outer side of said second wall element, one of said capacitor leads extending through said second wall element into electrical contact with said second U-shaped spring, the other of said capacitor leads extending through both of said wall elements into electrical contact with said second plug connector, said above elements constituting a unified chassis, a cylindrically shaped housing for said chassis having open and closed ends, an annular groove in said housing adjacent to and in spaced relation to said open end thereof, said chassis being mountable insaid housing with said capacitor adjacent said closed end thereof and said second wall element being snapped into said groove, and ventilation openings in said housing between said first and second chassis walls.

4,118,754

ELECTRICAL PANEL HAVING MOLDED BASE PAN

J. E. Duggan, Atlanta, Ga., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Feb. 28, 1977, Ser. No. 772,442
Int. Cl.[2] H02B *1/20*
U.S. Cl. 361—355 **10 Claims**



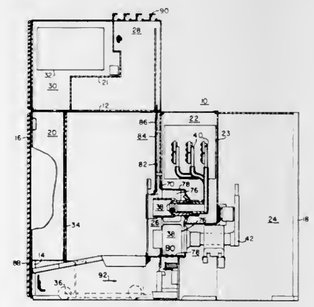
1. An electrical panel assembly including a single member defining an insulating base; first and second main buses supported on said base in front thereof on a first set of formations formed integrally with said base; circuit breaker engageable stab means extending from said buses and disposed in general alignment between said buses and in front of said base; a second set of formations formed integrally with said base for mechanically holding circuit breakers in engagement with said stab means; a neutral bus supported on said base in front thereof on a third set of formations formed integrally with said base.

4,118,755

SELF-COOLED METAL-CLAD SWITCHGEAR

Norman Davies, Trafford, Pa.; Morley P. Langley, Boksburg, Transvaal, South Africa, and Howard C. Peppel, deceased, late of Murrysville, Pa. (by Virginia L. Peppel, administrator), assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 675,013, Apr. 8, 1976. This application Oct. 5, 1977, Ser. No. 839,531
Int. Cl.[2] H02B *1/18*
U.S. Cl. 361—379 **8 Claims**



1. A self-cooled switchgear structure comprising, in combination:

a housing having a plurality of compartments therein including a contact and current transformer compartment and an exhaust compartment;

a circuit breaker removably disposed in one of said compartments;

a plurality of primary disconnecting contacts for said circuit breaker disposed in said contact and current transformer compartment;

an individual bushing surrounding each disconnecting contact;

a current transformer surrounding each disconnecting contact and the bushing associated therewith;

apertured support means for supporting said current transformers, said support means surrounding said current transformers and forming said contact and current transformer compartment;

entrance means disposed in said housing, vertically lower than said support means, for inserting a cooling fluid into said housing, said entrance means being in fluid communication with said current transformer through said apertured support means, said cooling fluid flowing adjacent said current transformers and said bushings to provide cooling thereof;

exhaust means disposed in said housing, vertically higher than said current transformers and extending into said exhaust compartment, for exhausting fluid from within said exhaust compartment; and

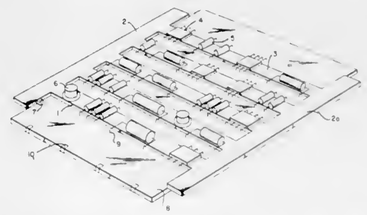
duct means disposed within said housing for transferring cooling fluid from said contact and current transformer compartment to said exhaust compartment, said duct means terminating, at one end thereof, within said exhaust compartment, and, at the other end thereof, in said contact and current transformer compartment and in fluid communication with the cooling fluid flowing adjacent to said current transformers and said bushings.

4,118,756

HEAT PIPE THERMAL MOUNTING PLATE FOR COOLING ELECTRONIC CIRCUIT CARDS

Lloyd A. Nelson, Villa Parks, and Kalwant S. Sekhon, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 559,353, Mar. 17, 1975, abandoned. This application Apr. 14, 1977, Ser. No. 787,246
Int. Cl.[2] H01L *23/46*
U.S. Cl. 361—385 **10 Claims**



6. An electronic module with an integral heat pipe thermal mounting plate comprising in combination:

means for defining at least one electronic circuit card;

means for defining heat dissipating electronic components electrically coupled to said circuit card means;

means for defining an electric connector coupled to said circuit card means in electrical connection with said electronic components means;

first heat pipe means with condenser wicking configured as a thermal joint area for connection to an external heat sink; and

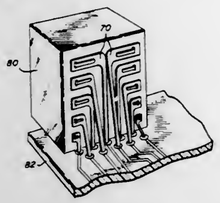
second heat pipe means with evaporator wicking configured as at least one conduction bar which extends from said thermal joint area and which is provided with means for mounting said heat dissipating electronic components means in heat transfer connection therewith.

4,118,757

PIN EXTENDER STRIP FOR VERTICALLY MOUNTING MULTI-PIN ELECTRONIC DEVICES

Kenneth D. Rinaldo, Santa Clara, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Division of Ser. No. 627,443, Oct. 30, 1975, abandoned. This application May 4, 1977, Ser. No. 793,705
Int. Cl.[2] H05K *1/04*
U.S. Cl. 361—404 **3 Claims**



1. In combination, an electronic display device having contact pins accessible on one side thereof, a printed circuit board having conductive leads formed thereon, and a plurality of elongated pin extender elements connected between individual ones of said contact pins and points of contact on associated ones of said conductive leads, each of said extender elements having pin receiving means for receiving said pins and being oriented at an off-orthogonal angle with respect to said printed circuit board, so that said display device is mounted orthogonal to said printed circuit board with said extender elements extending at an angle from said display device to said printed circuit board and forming a triangulated structural support for said display device.

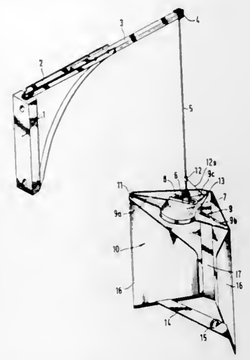
4,118,758

PHOTOFLASH LAMP ARRAY HAVING HIGH VOLTAGE SHORTING TYPE FLASH LAMPS AND RADIATION SENSITIVE SWITCHING ELEMENTS

Dominic A. Cusano, Schenectady, and Harold F. Webster, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 8, 1977, Ser. No. 822,449
Int. Cl.[2] F21V *33/00;* **A47B** *97/04*
U.S. Cl. 362—98 **9 Claims**

1. A book support for maintaining a book in a suspended position for reading, comprising:
a book holder having front and rear portions, and adapted to support an open book therein;
a lamp shade for carrying said book holder, and including a central element having three arms extending therefrom, two of said arms extending along a common, substantially horizontal axis, and the third of said arms being substantially orthogonal to said horizontal axis, said front portions of said book holder being mountable on the free ends



of said first two arms, and the rear portion of said book holder being mountable on the free end of said third arm;
a suspension member, said lamp shade being mounted on said suspension member;
means for adjusting said third arm in a substantially vertical plane, so as to pivot said lamp shade and the book holder mounted thereon about said horizontal axis; and
a light source located in said central element of said lamp shade.

4,118,759

BOOK SUPPORT

Jean Hauville, Le Crot du Lac, Montillot, France (89660)

Filed Jan. 24, 1977, Ser. No. 761,770
Claims priority, application France, Feb. 9, 1976, 76 03471; Jan. 7, 1977, 77 00313
Int. Cl.[2] F21V *33/00;* **A47B** *97/04*
U.S. Cl. 362—98 **9 Claims**

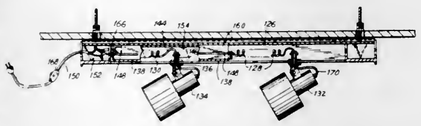
1. A book support for maintaining a book in a suspended position for reading, comprising:

4,118,760

ADJUSTABLE HANGER FOR ELECTRIC LIGHTS

Bertram J. Cohon, 317 Summit Ave., Hackensack, N.J. 07601

Filed Jan. 7, 1977, Ser. No. 757,686
Int. Cl.[2] F21V *21/00;* **F21S** *1/12, 3/10*
U.S. Cl. 362—239 **47 Claims**



1. A track hanger for adjustably mounting an electric lamp, said hanger comprising an elongated tubular housing having one side adapted to be placed against a wall of a room, a pair of opposed laterally extending spaced longitudinal rails on the opposite side of said housing, said rails defining between them a longitudinal slot over said opposite side of said housing, an electric lamp socket, a bracket, said bracket having two opposed arms, each of said arms having an inner groove slidably engaging a different one of said rails, means mounting said lamp socket on said bracket, a resiliently extensible helical electrical cord, said helical cord being disposed in said housing with the central axis of the helix extending longitudinally of the housing, said helical cord in relaxed position having a diameter greater than the width of said slot, a cord guide tube, said cord guide tube extending from said bracket through said slot, one end of said cord passing through said cord guide tube and being physically and electrically connected to said lamp socket by means of said cord guide tube, means to supply

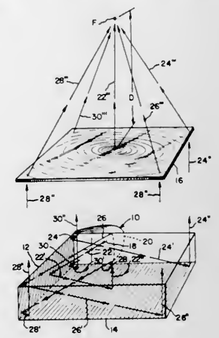
electricity to the other end of said cord so that an electric lamp when in said lamp socket may be lit, and means to attach said one side of said housing to a surface.

4,118,761

LIGHT CONDENSING ILLUMINATOR

Thomas W. Dey, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,887
Int. Cl.[2] F21V *7/00, 5/00;* **G02B** *5/08;* **G03B** *21/08*
U.S. Cl. 362—297 **12 Claims**



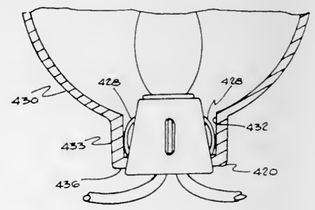
1. An illumination device for condensing light along a given axis toward a defined illumination area, comprising:
a light source for transmitting substantially collimated light;
first reflector means defining a first mirrored planar grating having a grooved area for directly receiving the collimated light transmitted from the light source and disposed to reflect the substantially collimated light to uniformly distribute the light over an area substantially larger than the area of the first mirrored grating;
second reflector means defining a second mirrored grating having reflective grooves of differing pitch for optical power disposed parallel to the plane of the first grating to define an area larger than the area of the first mirrored grating to receive the light reflected by the first reflector means to direct the light by reflection in a condensing pattern about the given axis toward the defined illumination area.

4,118,762

ORNAMENTAL LIGHT ARRANGEMENT

John C. Fennell, Rte. 4, Harmon Dr., Swainsboro, Ga. 30401

Filed Apr. 5, 1976, Ser. No. 673,648
Int. Cl.[2] F21V *3/00, 5/00*
U.S. Cl. 362—311 **5 Claims**



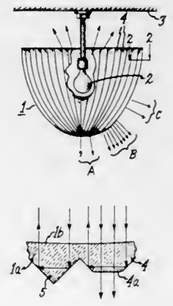
1. An ornamental light arrangement comprising:
(a) a light receiving element, said element having a base, said base receiving a light socket in one end thereof to hold a light bulb therein, said base also having an electrical conductor, said conductor being electrically connected to said socket, said base having a forward surface taper in the direction of said light socket and having at least one spring member secured thereto along said forward tapered surface; and
(b) a globe receivable over a light bulb located in said socket, said globe having an opening therein with an inwardly protruding lip therearound that is receivable over at least a portion of said forward tapered surfaces and deforms said at least one spring member during placement thereover with said spring member returning to its original configuration inside said globe to secure said globe to said base.

4,118,763

VARIABLE TRANSMISSION PRISMATIC REFRACTORS

Mitchell M. Osteen, Zirconia, N.C., assignor to General Electric Company, N.Y.

Filed Apr. 12, 1976, Ser. No. 675,839
Int. Cl.[2] F21V *5/02*
U.S. Cl. 362—339 **1 Claim**



1. A luminaire comprising, in combination, a bowl-shaped globe of light transmitting material having an open top and inner and outer surfaces, a light source arranged within said globe so that light rays therefrom are incident on the inner surface of said globe, the outer surface of said globe being formed with a plurality of elongated prisms extending between the top and bottom of said globe, each said prism having a reflecting portion for reflecting a predetermined amount of said incident light back through said inner surface and having a transmitting portion for transmitting the remainder of said incident light outwardly from said globe, at least certain of said elongated prisms having reflecting portions and transmitting portions of different relative areas along the prism length.

4,118,764

LAMP ASSEMBLY

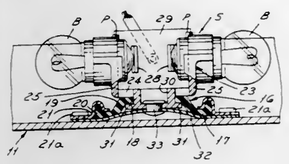
Arthur F. Bleiweiss, Toronto; Kenneth J. Crompton, Willowdale, and Karel Urbanek, Weston, all of Canada, assignors to Dominion Auto Accessories Limited, Toronto, Canada

Filed Dec. 15, 1976, Ser. No. 750,605
Int. Cl.[2] B60Q *1/32;* **F21V** *17/00, 15/04*
U.S. Cl. 362—369 **21 Claims**

1. In a lamp assembly, the combination comprising
a housing assembly including a bottom wall,
a mounting member,
means for fastening said mounting member on said bottom wall,
said mounting member having a central resilient portion spaced from said base,
said central portion having a centrally located opening therein,
a socket base,
said base having a centrally located projection,
said projection extending through said opening,

a ground strap of electrically conductive material,

means for fastening said ground strap to said projection of said socket base,



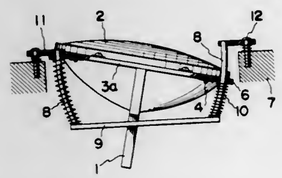
said strap having portions thereof extending beneath said resilient mounting member and contacting the upper surface of said bottom wall of said housing.

4,118,765

AUTOMOBILE HEADLIGHTS

Toru Atsuchi, 3-15-1, Morisaki, Yokosuka-City Kanagawa-Ken, Japan

Filed Feb. 4, 1977, Ser. No. 765,802
Claims priority, application Japan, Feb. 23, 1976, 51-18620
Int. Cl.[2] B60Q *1/12*
U.S. Cl. 362—384 **13 Claims**



1. A headlight arrangement comprising a rear support; a front support spaced from the rear support; two spaced rails each extending between and being fixed to the supports; a headlight; slidable mounting means for slidably mounting the headlight on each of the rails; and two springs each surrounding a respective one of the rails and each having one end pressing against the rear support and another end pressing against the mounting means to thereby bias the mounting means to a position against the front support, whereby the headlight responds to centrifugal force by sliding on one of the rails and in the direction of the rear support to thereby compress the respective spring which subsequently presses the mounting means back to the position against the front support when the centrifugal force diminishes while the headlight remains substantially stationary on the other rail with the front support preventing a corresponding expansion of the other spring and thereby at least substantially preventing an aftereffect of swinging when centrifugal force is diminished.

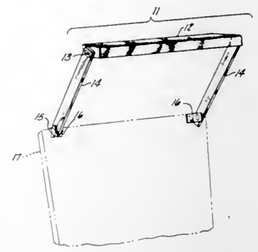
4,118,766

FLUORESCENT LIGHT FIXTURE

Theodore A. Kredo, Torrance, Calif., assignor to California Precision, Torrance, Calif.

Filed Jul. 15, 1976, Ser. No. 705,754
Int. Cl.[2] A47F *5/00;* **H05B** *33/02*
U.S. Cl. 362—427 **10 Claims**

1. An improved fluorescent lamp fixture having a hood assembly comprised of at least one fluorescent light element and a means for holding said element in a space relationship to a reflective means formed on the inner surface of said assembly where said assembly is connected to at least two spaced means each having a first and second end for maintaining said assembly in a spaced relationship with respect to a surface and a connecting means for connecting said spaced means to said surface, the improvement comprising the disposition of a ballast within said hood assembly, a pretensioned pivot joint system rotatably connecting said hood assembly to first end of



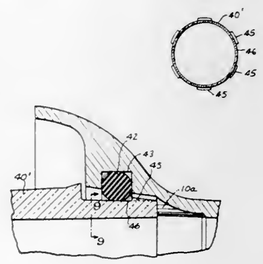
said spaced means and multiple disc pivot joint tensioning systems rotatably connecting said second end of said spaced means to said connecting means.

4,118,767

MARKER LAMP LENS AND MOUNTING THEREFOR

Karel Urbanek, Weston, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Calif.X

Filed Sep. 20, 1976, Ser. No. 724,522
Int. Cl.[2] F21V *17/00*
U.S. Cl. 362—455 **4 Claims**



1. In a marker lamp,

a lens,

a housing having an opening into which said lens extends,

said housing having a circumferentially extending groove in the opening thereof,

a resilient sealing ring in said groove,

said lens having an outer cylindrical surface extending into said opening,

said sealing ring engaging said cylindrical surface,

said cylindrical surface having a length in the direction of the axis thereof which is greater than the width of said groove,

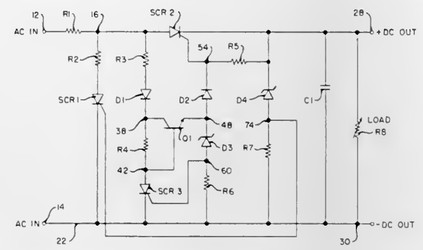
said cylindrical surface having circumferentially spaced radially extending projections thereon on a portion of said lens extending axially within the opening of said housing beyond said groove.

4,118,768

DEMAND CONTROLLED PREREGULATING RECTIFIER CIRCUIT FOR POWER SUPPLIES

Denney L. Wilson, Sr., Georgetown, Del., assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 21, 1977, Ser. No. 779,654
Int. Cl.[2] H02M *7/155*
U.S. Cl. 363—85 **16 Claims**



1. A power supply circuit comprising:

input means for connection to a source of alternating potential;

output means;

rectifying means operatively connected between said input and output means, and having gating means associated therewith;

utilization means operatively connected to said output means;

first control means having an input operatively connected to said input means and having an output operatively connected to said gating means for controlling said rectifying means to allow said rectifying means to supply a rectified voltage to said output means;

second control means operatively connected to said first control means and including voltage detecting means responsive to said output of said first control means to enable said second control means to disable both said first control means and said voltage detecting means whenever a predetermined voltage level is reached at said output of said first control means whereby the power dissipation in said first control means and said voltage detecting means is minimized.

4,118,769

FULL WAVE DEMAND CONTROLLED PREREGULATING SUPPLY

Denney Lee Wilson, Sr., Georgetown, Del., assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 20, 1977, Ser. No. 808,213
Int. Cl.[2] H02M *7/155*
U.S. Cl. 363—54 **11 Claims**

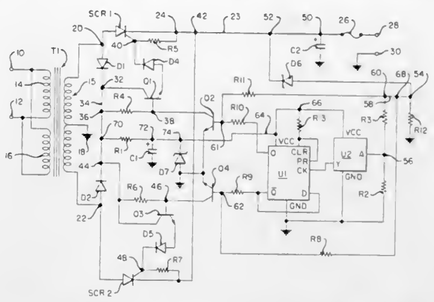
1. A circuit comprising:

input means;

output means including a storage capacitor;

first and second rectifier means operatively coupled between said input means and said output means for supplying a rectified voltage to said output means; and

control means operatively coupled between said output means and said first and second rectifier means for insuring that said first and second rectifier means will alternately supply said rectified voltage to said storage capacitor when a load connected to said output means draws



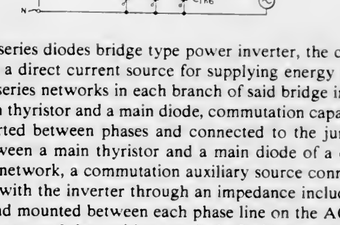
current at a charging frequency of one of said first and second rectifier means.

4,118,770

INVERTER APPARATUS COMMUTATED BY AN AUXILIARY SOURCE

Sachirou Sugimoto, and Kanji Katsuki, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1977, Ser. No. 773,458
Claims priority, application Japan, Mar. 24, 1976, 51-32267
Int. Cl.[2] H02M *7/515*
U.S. Cl. 363—138 **1 Claim**



1. In a series diodes bridge type power inverter, the combination of: a direct current source for supplying energy to the inverter; series networks in each branch of said bridge including a main thyristor and a main diode, commutation capacitors each inserted between phases and connected to the junction point between a main thyristor and a main diode of a corresponding network, a commutation auxiliary source connected in circuit with the inverter through an impedance including a resistor and mounted between each phase line on the AC side of the inverter and the positive terminal of said direct current source, and between each phase line on the AC side and the negative terminal of the direct current source.

4,118,771

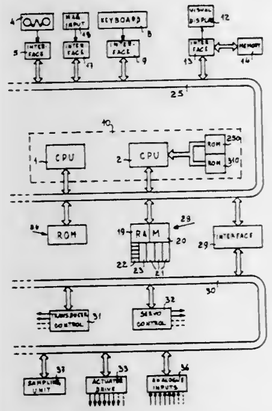
NUMERICAL CONTROL SYSTEM FOR MACHINE TOOLS

Piero Pomella, and Luciano Lauro, both of Ivrea (Turin), Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Torin), Italy

Filed Mar. 28, 1977, Ser. No. 782,172
Claims priority, application Italy, Mar. 29, 1976, 67725 A/76
Int. Cl.[2] G06F *15/46, 15/16*
U.S. Cl. 364—101 **13 Claims**

1. In a machining centre or similar working machines, a numerical control system for controlling the relative movement of a tool and a workpiece to be machined in accordance with a predetermined machining program, comprising a program reading unit, an operating memory, at least one periph-

eral unit for measuring or controlling the movement of said tool and said workpiece, at least a pair of processors, a common signal bus means interconnecting said processors, said program reading unit, said operating memory and said peripheral unit for causing said processors to operate simultaneously, and sharing control means controlled by a program recorded



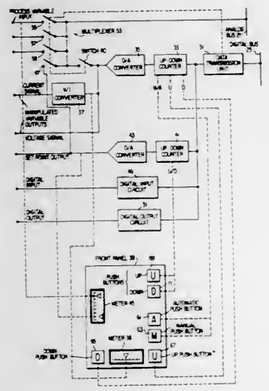
in a program memory common to said two processors for causing a first one of said processors to control said peripheral unit and the second of said processors to execute the computations relating to the interpolation of the path of said tool with respect to said workpiece, said two processors automatically sharing access to said memories and said peripheral unit.

4,118,772

DIGITAL CONTROLLER SYSTEM

Keisuke Takada, Hinoshi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jun. 14, 1976, Ser. No. 695,563
Claims priority, application Japan, Jun. 16, 1975, 50-72025
Int. Cl.[2] G05B *13/00;* **G06B** *15/00*
U.S. Cl. 364—119 **4 Claims**



1. A digital controller system for controlling the process variables of a plurality of processes comprising:

a plurality of detectors, each detector for detecting the values of the process variables of a corresponding one of the plurality of processes;

a plurality of actuators, each actuator for adjusting the values of the process variables of a corresponding one of the plurality of processes;

a digital bus for transmitting digital signals from one location to another;

an analog bus for transmitting analog signals from one location to another;

a plurality of direct digital loop station means, each of said direct digital loop station means for respectively receiving from one of said plurality of detectors analog information signals representative of the values of the process variables of one of the plurality of processes and for transmitting the analog information signals onto said analog bus, for receiving from said digital bus digital control signals to adjust the values of the process variables of the one of the plurality of processes and for transmitting corresponding analog control signals to one of said plurality of actuators to adjust the values of the process variables of the one of the plurality of processes, each said direct digital loop station means further comprising a manual control mode of operation for transmitting operator generated analog control signals to the one of said plurality of actuators to adjust the values of the process variables of the one of the plurality of processes, and including means for setting set point variables for comparison with the values of the process variables when each said direct digital loop station means is operated in the manual control mode of operation; and

first central processor means for transmitting the digital control signals to said digital bus and for receiving the analog information signals from said analog bus, said first central processor means having an input and an output and including a first digital computer having an input and an output, a first analog-to-digital converter connected between the input of said first central processor means and the input of said digital computer, and a first data transmission means connected between the output of said digital computer and the output of said first central processor means,

whereby the function of the first central processor means is backed up by each of said direct digital loop station means by operating said direct digital loop station means in the manual control mode in the event said first central processor means fails.

4,118,773

MICROPROGRAM MEMORY BANK ADDRESSING SYSTEM

Michel M. Raguin, Medford, and Thomas F. Joyce, Burlington, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

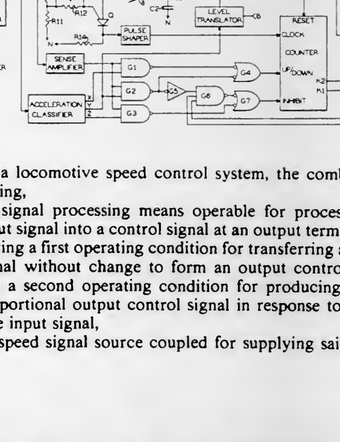
Filed Apr. 1, 1977, Ser. No. 783,532
Int. Cl.[2] G06F *9/12, 13/00*
U.S. Cl. 364—200 **7 Claims**

1. In a data processing system having a plurality of registers for storing electronic signals and a read only memory (ROM) system, said ROM system having at least one read only memory (ROM) having a plurality of banks of memory, each bank for storing a plurality of microprograms, each microprogram comprised of a plurality of microwords, each microword comprised of a plurality of bits, any of said microwords, stored in said ROM, being addressed by a predetermined number of bits stored in a ROM address register (RSAR) coupled to said ROM, said RSAR being one of said plurality of registers, said ROM system further comprised of a ROM local register (RSLR) also coupled to said ROM for storing any of said microwords read from said ROM during a current cycle, any of said microwords addressed by said predetermined number of bits stored in said RSAR during a previous cycle, an apparatus for increasing the capacity and speed of access of said ROM system comprising:

(a) first means, in said ROM system, for storing first coded signals for addressing any one of said plurality of registers;

(b) second means, in said first means, for storing second coded signals of a predetermined first constant indicating a predetermined one of said plurality of registers, said predetermined one of said plurality of registers being said RSAR;

(c) third means, in said first means, for storing third coded signals of a predetermined second constant indicating a predetermined one of said plurality of banks; and



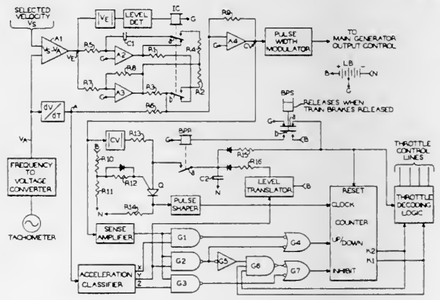
(d) fourth means, coupled to said RSLR and to said RSAR and to said third means for transferring said third coded signals to said RSAR during said current cycle, whereby said predetermined one of said plurality of banks can be selected for reading in a next cycle by executing a predetermined one of said microwords during said current cycle.

4,118,774

LOCOMOTIVE SPEED CONTROL APPARATUS

Raymond C. Franke, Shaler Township, Allegheny County, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed May 16, 1977, Ser. No. 797,088
Int. Cl.[2] B60L *3/08;* **G05D** *13/62*
U.S. Cl. 364—431 **12 Claims**



1. In a locomotive speed control system, the combination comprising,

(a) a signal processing means operable for processing an input signal into a control signal at an output terminal and having a first operating condition for transferring an input signal without change to form an output control signal and a second operating condition for producing a non-proportional output control signal in response to a variable input signal,

(b) a speed signal source coupled for supplying said speed signal, representing the difference between a selected locomotive speed and the actual locomotive speed, as an input signal to said processing means,

(c) a level detection means responsive to the absolute value of said speed signal and coupled for shifting said processing means between its first and second conditions as said speed signal is greater than or less than, respectively, a predetermined percentage of said selected speed,

(d) a first speed control means coupled to receive said output control signal from said processing means and operable in response thereto for varying the locomotive speed in small adjustment steps to drive said difference speed signal to zero, and

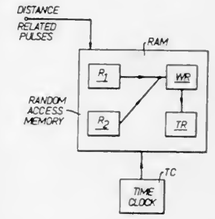
(e) a second speed control means coupled to receive said output control signal from said processing means and operable in response thereto for varying the locomotive speed in large adjustment steps to quickly effect speed changes.

4,118,775

TAXIMETER FARE COMPUTING DEVICES

Peter Howard Boyce, Swindon, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Mar. 18, 1977, Ser. No. 778,972
Claims priority, application United Kingdom, Mar. 18, 1976, 10859/76
Int. Cl.[2] G07B *13/00*
U.S. Cl. 364—467 **7 Claims**



1. In a charge indicating system, a computing device for computing a fare to be charged comprising first register means for accommodating and storing information relating to distance related pulses received by said system, second register means for storing information relating to the number of distance related pulses that correspond to a predetermined threshold speed that would be received in a predetermined time period, third register means for storing information relating to an accumulating total, and working register means operable in conjunction with said first and second register means for comparing the information in said first and second register means and for adding the information of one or the other thereof to the information of the third register means dependent upon their relative values.

4,118,776

NUMERICALLY CONTROLLED MACHINE COMPRISING A MICROPROGRAMMABLE COMPUTER OPERABLE WITH MICROPROGRAMS FOR MACROINSTRUCTIONS AND FOR INHERENT FUNCTIONS OF THE MACHINE

Masayoshi Isomura, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

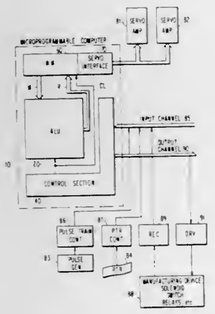
Continuation-in-part of Ser. No. 706,044, Jul. 16, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,684
Claims priority, application Japan, Jul. 17, 1975, 50/87711
Int. Cl.[2] G05B *19/18;* **G06F** *9/16*
U.S. Cl. 364—474 **7 Claims**

1. A numerically controlled machine to be put into operation

by command data stored in a command store, said machine comprising a machine section, reading means for reading said command store to derive command signals representative of said command data, and a numerical control device responsive to said command data for putting said machine section into operation, said numerical control device comprising a microprogrammable computer which comprises:

memory means comprising, in turn, first memory means for storing therein said command data, second memory means for storing therein first results of calculation, and third memory means for storing therein a macroprogram composed of a sequence of macroinstructions;

a control memory for storing a first microprogram composed of a sequence of first microinstructions and a second microprogram composed of a sequence of a second microinstructions;



control means coupled to said reading means, said first through third memory means, and said control memory for storing in response to said command signals said command data in said first memory means, for executing at a first rate said macroinstructions in response to said first microinstructions to successively derive said first results of calculation from the command data stored in said first memory means and to store the successively calculaed first results of calculation in said second memory means, and for executing at a second rate faster than said first rate said second microinstructions to derive second results of calculation from the successively calculated and stored first results of calculation; and

operation means responsive to said second results of calculation for putting said machine section into operation.

4,118,777

COMPUTER DIRECTED PRIMAL CUT INDICATING DEVICE

Charles H. Wallace, Carrollton, Va., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 16, 1976, Ser. No. 714,875

Int. Cl.[2] A22C *17/00;* **G01G** *19/40;* **G06F** *15/46*

U.S. Cl. 364—475 **9 Claims**

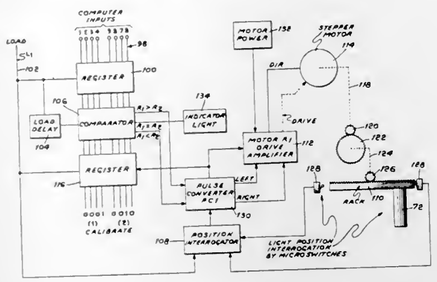
1. Cut position reference indicating means for directing the cutting of primal cuts from carcasses, comprising:

cutting means;

line creating means;

means for positioning said line creating means relative to said cutting means; and

computer directed control means for operating said positioning means to indicate the relative spacing between said



cutting means and said line creating means so as to optimize the value of the cuts being formed from said carcass.

4,118,778

METHOD OF AND AN APPARATUS FOR CONTROLLING THE QUANTITY OF FILTER AID FED TO A SEDIMENTATION FILTER IN A GIVEN UNIT OF TIME DURING FILTRATION

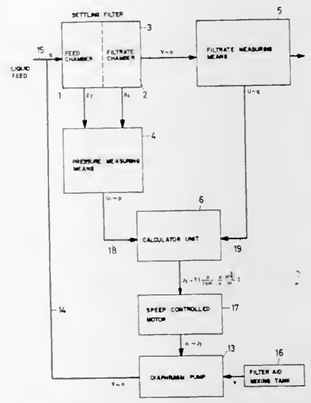
Fritz Strub, St. Gallen, Switzerland, assignor to Filtrox Maschinenbau A.G., St. Gallen, Switzerland

Filed Jul. 13, 1977, Ser. No. 815,285

Claims priority, application Switzerland, Jul. 16, 1976, 9134/76

Int. Cl.[2] G06G *7/58;* **B01D** *37/02*

U.S. Cl. 364—502 **49 Claims**



1. A method of controlling the quantity of filter aid fed to a settling filter during filtration per unit of time by admixture with the unfiltered feed comprising forming a first magnitude which is a linear function of the pressure drop across the settling filter, forming a second magnitude which is dependent on the quantity of liquid flowing through the settling filter per unit of time, and adjusting the quantity of filter aid fed to the unfiltered feed per unit of time in proportion to a third magnitude which is dependent on the ratio of said first magnitude to said second magnitude and/or on variations in this ratio with respect to time.

4,118,779

APPARATUS AND PROCESS FOR DETERMINATION OF OIL CONTENT IN DEBALLASTING WATER AND WASH WATER DISCHARGED FROM A TANKER

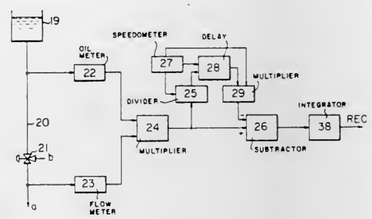
Fumio Tanei, Takatsuki, and Toshiaki Ikeda, Otsu, both of Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Aug. 12, 1976, Ser. No. 713,686

Claims priority, application Japan, Sep. 8, 1975, 50-109289; Sep. 8, 1975, 50-109290

Int. Cl.[2] G01N *7/06, 15/00*

U.S. Cl. 364—509 **11 Claims**



1. An apparatus for determining the amount of oil in deballasting water and tank cleaning water that has been discharged from a travelling tanker during the navigation of a distance extending from a point of navigation at a time t_1 to another point of navigation at a time t_2 within a given distance backward of said another point of navigation, said apparatus comprising:

an oil meter for measuring the concentration of oil in said water at a first time t_1 and a second time t_2, said oil meter providing a signal indicative of said concentrations;

a flow meter for measuring the flow rate of said water at said first time t_1 and said second time t_2, said flow meter providing a signal indicative of said flow rates;

a first multiplier for multiplying said concentration signal from said oil meter by said flow rate signal from said flow meter at said times, said first multiplier providing an output signal indicative of the instantaneous rate of discharge of oil at said time t_1 and at said time t_2;

a first divider for dividing said output signal at said time t_1 from said first multiplier by a navigating velocity at said time t_1 of said tanker at said time t_1 of determining said flow rate and said oil concentration so as to obtain an analog signal indicative of an incremental quantity of discharged oil at said time t_1, said first divider providing said analog signal indicative of said incremental quantity;

a delay for delaying said analog signal that indicates said incremental quantity of discharged oil at said time t_1 for a period of time $(t_1 - t_2)$ required for said tanker to travel a predetermined distance;

a second multiplier for multiplying the delayed analog signal indicative of said incremental quantity of discharged oil at said time t_1 by another navigating velocity at said time t_2 to correct said delayed signal indicative of said incremental quantity at said time t_1 to a signal indicative of the instantaneous rate of discharge of oil at said time t_1 at said another velocity at said time t_2;

a subtractor for providing an output signal indicative of subtracting said signal indicative of said instantaneous rate of discharge of oil at said time t_1 at said another velocity at said time t_2 obtained by said correction from said first multiplier output signal indicative of said instantaneous rate of discharge of oil at said time t_2 said subtracting occuring when said output signals from said first and second multipliers are obtained by said subtractor; and

an integrator for integrating said output signal from said subtractor to obtain the quantity of oil discharged from the travelling tanker within said predetermined distance within said time period $(t_1 - t_2)$.

4,118,780

TECHNIQUE FOR MONITORING FLOW RATE DIFFERENCES IN WATER COOLING CONDUIT

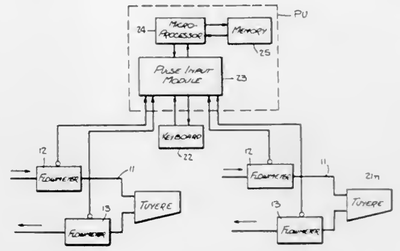
Toru Hirano, Yokohama, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Jan. 21, 1977, Ser. No. 761,242

Claims priority, application Japan, Jan. 29, 1976, 51-8915

Int. Cl.[2] G01F *1/08;* **G06F** *15/20*

U.S. Cl. 364—510 **4 Claims**



1. A system for detecting leakage from a flow conduit having an input line and an output line through which line water is supplied to a device, said system comprising:

A. a pair of flowmeters interposed, respectively, in said input and output lines, each of said flowmeters producing an output signal whose frequency is a function of flow rate, said flowmeters being subject to instrument error whereby the same amount of test water flowing through both flowmeters results in flowmeter output signals f_1 and f_2 which differ slightly in frequency, the ratio of f_1 to f_2 representing the instrument error constant;

B. a microprocessor;

C. a memory associated with said microprocessor, said memory having stored therein said instrument error constant; and

D. an input module coupling said flowmeters to said microprocessor to apply as input data thereto the frequencies of the output signals resulting from the flow of line water in said input and output lines, said microprocessor determining the frequency difference between said signals and consulting said memory to effect a correction in said frequency difference in accordance with said instrument error constant to provide an output that is indicative of leakage and is independent of said instrument error.

4,118,781

VALLEY SENSOR FOR AN ELECTROPHORETIC ANALYZER

Donald P. Brezinski, Corning, N.Y., and William E. Powell, Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed May 24, 1977, Ser. No. 800,005

Int. Cl.[2] G01D *9/28*

U.S. Cl. 364—525 **6 Claims**

1. An analyzer for electrophoretic samples comprising:

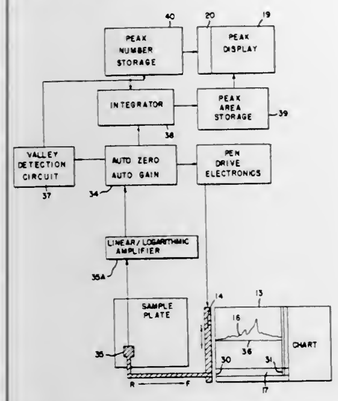
a source of analysis energy,

a sample stage movable linearly with respect to said source of analysis energy to scan a sample across said source,

a detector of analysis energy producing an output representing the optical characteristics across said sample including extremities in said characteristics,

a nonlinear differentiator, the output of said detector being applied to said nonlinear differentiator to produce an output signal having a magnitude at said extremities which

is substantially independent of the magnitude of the output of said detector, and



pulse shaping circuitry, the output of said nonlinear differentiator being applied to said circuitry to produce an output marking said extremities in the output of said detector.

4,118,782

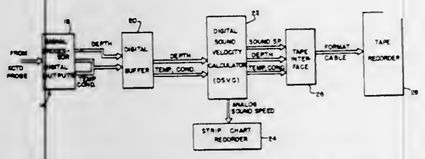
DIGITAL SOUND VELOCITY CALCULATOR

Royce H. Allen, Centerville, Utah; Jerry L. Sutton; Dan M. Griffin; Hal W. Frye, and Joseph G. Colborn, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 24, 1977, Ser. No. 780,750

Int. Cl.[2] G01H *5/00*; G01P *3/00*

U.S. Cl. 364—565 **7 Claims**



1. Apparatus for providing a profile of the velocity of sound in a liquid media comprising:

means for passively sensing the variables temperature, conductivity and depth at different levels in said media;

means for representing each of said sensed variables in the form of digital numbers;

digital calculating means receiving said variables in their respective digital forms for providing digital outputs which represent the sound velocity in said liquid media at each of said levels;

storage means included in said digital calculating means for storing a plurality of predetermined coefficients and a plurality of predetermined constants;

multiplication means included in said digital calculating means for sequentially forming a plurality of terms, each of said terms including the product of one of said received variables and one of said coefficients;

addition means included in said digital calculating means for adding one of said terms and one of said constants, and for forming one of said digital outputs by adding all of said terms and at least one of said constants and;

recording means coupled to said digital calculating means for making a real-time record of the sound velocity and depth at each of said levels.

4,118,783

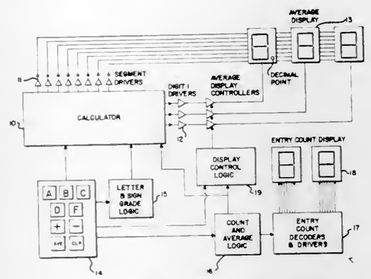
DIGITAL GRADE AVERAGER

William L. Collins, 422 Forest St., Marion, Ohio 43302

Filed Feb. 7, 1977, Ser. No. 766,371

Int. Cl.[2] G06F *15/02, 15/20*

U.S. Cl. 364—734 **9 Claims**



1. Apparatus for adding the averaging grades selected from a series of letters of descending grade value separated from each other and augmented or decreased by plus and minus signs comprising binary coded means for converting each letter into a digit in a consecutive series of descending values, means for converting plus and minus signs into a decimal fraction less than half of the difference between successive digits, binary coded means connected to the output of said letter converting means and to the output of said sign converting means for adding those digits corresponding to the selected grades and for adding algebraically thereto the fractions corresponding to the plus and minus signs associated with the selected grades, binary coded means connected to the input of said adding means for counting the number of selected grades added, decoding means connected to the output of said counting means for converting the binary coded grade count to decimal digits, means connected to the output of said decoding means for displaying those digits, and means connected to the output of said adding means and to the output of said counting means for averaging the selected grades by dividing the binary coded sum of the selected grades by the binary coded count of grades added.

4,118,784

DIFFERENTIAL DFT DIGITAL FILTERING DEVICE

Henri J. Nussbaumer, LaGaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 26, 1977, Ser. No. 762,695

Claims priority, application France, Feb. 26, 1976, 76 05938

Int. Cl.[2] G06F *7/38*

U.S. Cl. 364—724 **8 Claims**

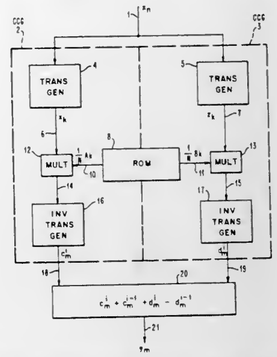
1. A filtering device for filtering a signal $x(t)$ which is represented in the form of digitally expressed samples x_n, said device performing a filtering function defined by a set of digital coefficients $[a_n]$, and characterized in that it includes:

a. an input means to which said samples x_n are applied,

b. splitting means connected to said input means and separating the stream of said samples x_n into blocks of predetermined length,

c. at least two circular convolution function generators, each receiving said blocks of samples and signals representing said set of coefficients and performing circular convolutions between each of said blocks and said set of coefficients, making use of one function generator operating according to the so-called normal discrete Fourier transform and the other one or more function generators operating according to modified discrete Fourier transform functions, and

d. combination means responsive to all said function generators for combining the outputs of said generators to gener-



ate signals representing samples of the desired filtered signal.

4,118,785

METHOD AND APPARATUS FOR DIGITAL ATTENUATION BY PATTERN SHIFTING

Kazuto Izumi, and Kazuo Izumi, both of Yokohama, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

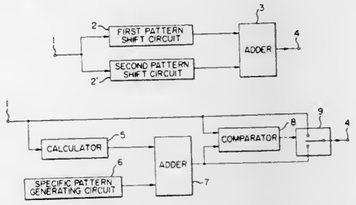
Continuation of Ser. No. 507,812, Sep. 20, 1974, Pat. No. 4,004,140. This application Jul. 1, 1976, Ser. No. 701,574

Claims priority, application Japan, Oct. 8, 1973, 48-113109

The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.

Int. Cl.[2] G06F *7/39*

U.S. Cl. 364—754 **1 Claim**



1. A digital attenuator comprising a plurality of pattern shift circuits, means for applying an input PCM signal to said plurality of pattern shift circuits for shifting said input PCM signal to the lower digit side, a specific pattern generating circuit for generating an integer pattern, an adder connected to said specific pattern generating circuit and to said pattern shift circuits, a comparator connected to compare the output of said adder with said input PCM signal, and a selector responsive to the output of said comparator for selecting the lower value signal of either of said input PCM signal or the output of said adder.

4,118,786

INTEGRATED BINARY-BCD LOOK-AHEAD ADDER

Samuel R. Levine, Poughkeepsie; Shanker Singh, Fishkill, and Arnold Weinberger, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1977, Ser. No. 758,378

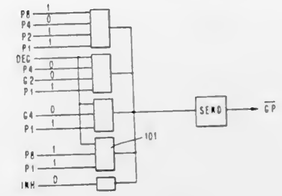
Int. Cl.[2] G06F *7/50*

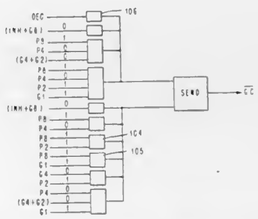
U.S. Cl. 364—783 **4 Claims**

1. A logic system for performing addition of two numbers, in one of a plurality of number bases, each number consisting of binary-coded representation of at least one digit, comprising:

signalling means for indicating the number base being utilized;

first logic means for signalling a carry C into said one digit; and





second logic means responsive to said signalling means and to said first logic means for implementing sum bits Si by logically solving the equation $Si = Xi\,C + Yi\,C$ or its logical equivalent, where Xi and Yi are predetermined logical combinations of the output of said signalling means and of Ai and Bi, where Ai and Bi are respective bits of arithmetic weight i of said digits.

4,118,787

ANALOG MULTIPLIER ERROR CORRECTOR, NOTABLY FOR PRECISION WATTMETERS

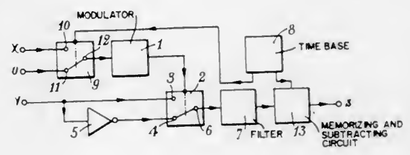
Daniel Arnoux, Saint Germain en Laye, France, assignor to Societe Chauvin Arnoux, Paris, France

Filed Feb. 7, 1977, Ser. No. 766,481

Claims priority, application France, Feb. 11, 1976, 76 03766

Int. Cl.[2] G06G *7/161*; G01R *11/32*

U.S. Cl. 364—842 **9 Claims**



1. Error correcting device for an analog multiplier utilizing the time-division multiplication method and comprising a modulator, a first switch and a low-pass filter, said modulator being adapted to generate a high-frequency square wave signal of which the cyclic ratio is proportional to a first analog input signal when said first input signal is fed to the input of said modulator, said first switch being responsive to said cyclic ratio and receiving on a first input a second analog input signal and on a second input said second input signal but having its sign changed, said filter being coupled to the output of said switch and delivering a continuous output signal substantially

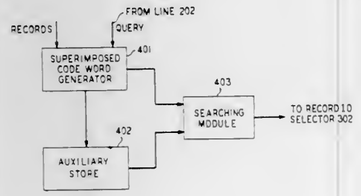
equal to the average value of the instantaneous scalar product of said first and second input signals, wherein a low-frequency time-base is provided for delivering pulses to the control terminal of a second switch in order to switch during a first time period a first input receiving the first input signal, and in a second time period a second input receiving a zero reference signal, the output of said switch being coupled to the input of said modulator, means being provided for memorizing the output signals delivered by said filter at the end of said first and second time periods and calculating the difference between said two output signals.

4,118,788

ASSOCIATIVE INFORMATION RETRIEVAL

Charles Sheldon Roberts, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 7, 1977, Ser. No. 775,114
Int. Cl.[2] G06F *15/40;* **G11C** *15/00*
U.S. Cl. 364—900 **24 Claims**



1. Apparatus for generating a binary superimposed code word representative of a record containing units of information from which one or more attribute values may be derived, comprising:

means for assigning a unique intermediate code to each of said attribute values;

means for converting each of said intermediate codes to a corresponding binary code word having a total of *b* bits of which exactly K bits are ONES; and

means for combining said binary code words to form said superimposed code word,

wherein said converting means includes:

(a) means for mapping said intermediate code word into an integer value lying within a predefined range;

(b) means for generating a particular sequence of pseudo-random numbers in response to said integer value;

(c) means for scaling each of said pseudo-random numbers in said sequence to a value between 0 and b-1; and

(d) means responsive to the value of said scaled numbers for determining the positions of said K bits within said binary code word.

4,118,789

PROGRAM PROTECTION MODULE FOR PROGRAMMABLE CONTROLLER

Walter V. Casto, Solon; Lawrence W. DeLong, Stow; Theodore J. Markley, Mentor, and Odo J. Struger, Chagrin Falls, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

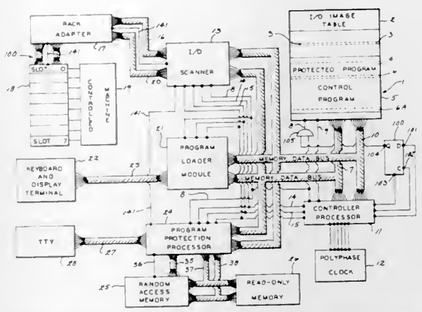
Filed Jun. 6, 1977, Ser. No. 804,146
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—900 **9 Claims**

1. In a programmable controller having a memory which stores a control program, a processor which operates in a run mode to read out the control program instructions and execute them, and I/O interface means coupled to said memory and said processor for connecting the programmable controller to sensing devices and operating devices on a machine to be controlled, the improvement therein of a program protection module which comprises:

means for storing a standard control program which comprises a plurality of control program instructions;

means for reading control program instructions from said programmable controller memory and from said standard control program storing means;

means for comparing each control program instruction read from said standard control program storing means with a corresponding control program instruction read from said programmable controller memory;



means coupled to said comparing means for indicating that a control program instruction read from said programmable controller memory is not identical to its corresponding control program instruction read from said standard control program storing means; and

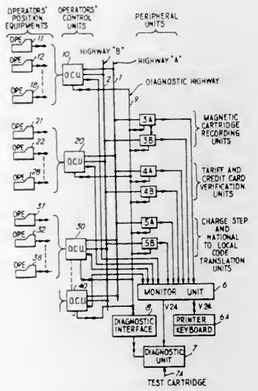
a status register coupled to said comparing means for storing a status bit which indicates that all control program instructions in said standard control program storing means are identical to their corresponding control program instructions in said programmable controller memory.

4,118,790

DATA PROCESSING EQUIPMENT

Stewart Graham Cockett, Worplesdown, Nr. Guildford; Jeffrey Philip Taylor, London; Peter Craven, Welwyn Garden City, and Alan Charles Farmer, Woodford Green, all of England, assignors to Post Office, London, England

Filed Mar. 1, 1977, Ser. No. 773,264
Claims priority, application United Kingdom, Mar. 4, 1976, 8672/76
Int. Cl.[2] G06F *7/02*
U.S. Cl. 364—900 **9 Claims**



1. Data processing equipment having a plurality of on-line stations, the equipment including a data entry means and data

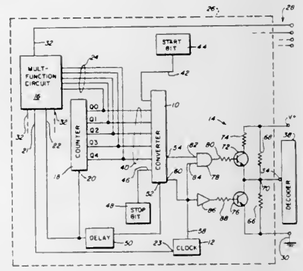
utilisation means at each station, a plurality of data handling units, a main data storage unit, and a plurality of control units each including means for recording in response to the data entry means details of a required data processing operation, each control unit including means for generating in response to the recorded details interrogation signals for the data handling units, means for receiving data from the data handling units in response to the interrogation signals and recording the data, means for applying signals from the means for receiving data to the data utilisation means, and means for generating signals representing the data processing operation and applying them to the main data storage unit, wherein the main data storage unit includes two independent recording means each including a buffer store connected to receive signals from the control units, a data recorder, and a recorder control means for controlling the recording by the recorder of the signals stored in the buffer stores, and the means for generating signals representing the data processing operation is arranged to generate two separate signals which are respectively applied to the two independent recording means, the control means of each independent recording means including comparison and testing means arranged to compare the signals representing the data processing operation and stored in the buffer stores of the two recording means and to perform a test of the validity of the signals stored in the buffer stores, the control means being arranged to permit the recording of the signals stored in the buffer stores by the data recorder, if they are the same in both of the recording means.

4,118,791

MULTI-LEVEL ENCODING SYSTEM

Richard Slaughter Swain, Des Plaines, Ill., assignor to Norlin Music, Inc., Lincolnwood, Ill.

Filed Apr. 25, 1977, Ser. No. 790,293
Int. Cl.[2] G06F *13/00, 3/00*
U.S. Cl. 364—900 **16 Claims**



1. In a circuit having a binary memory with a plurality of stages each of which may be in a first or a second logic state and an output terminal available for providing thereon an indication of the binary data stored in said memory, a frequency independent encoder, comprising:

means for generating a succession of clock pulses;

means coupled to said memory and responsive to said clock pulses for developing a stream of binary data comprising a series of first and second state signals respectively corresponding to the first and second logic states of said memory stages, each of said series of first and second state signals being associated with a respective one of said clock pulses; and

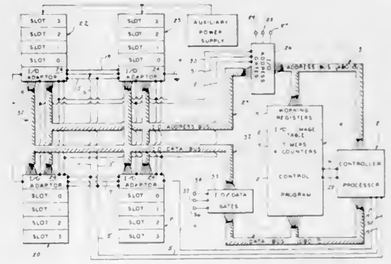
means responsive to said clock pulses and to said stream of binary data for providing a digital, composite output signal to the output terminal representative of the stored data and the clock pulses, said composite providing means generating first, second and third data signals respectively in response to clock pulses associated with said first state signals, clock pulses associated with said second state signals, and the periods between clock pulses, said first, second and third data signals being discernibly different from one another and being provided regardless of the frequency of said clock pulses.

4,118,792

MALFUNCTION DETECTION SYSTEM FOR A MICROPROCESSOR BASED PROGRAMMABLE CONTROLLER

Odo J. Struger, Chagrin Falls; Timothy E. McAdams, Willowick, and Ernst Dummermuth, Chesterland, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Apr. 25, 1977, Ser. No. 790,590
Int. Cl.[2] G06F *9/06, 11/00*
U.S. Cl. 364—900 **8 Claims**



1. In a programmable controller having a controller processor which connects to a plurality of separate I/O interface racks through an I/O address bus and an I/O data bus, the improvement therein comprising:

means at each of said I/O interface racks for detecting a malfunction condition thereat and generating a fault indicating logic signal when such a malfunction condition is detected;

a logic gate at each of said I/O interface racks having one input connected to receive said fault indicating logic signal, a second input and an output;

an I/O fault line which connects in daisy chain fashion between said I/O interface racks and to said controller processor, said I/O fault line connecting the output of the logic gate in each of said I/O interface racks with the second input of the logic gate in the next I/O interface rack in the daisy chain and connecting the output of the logic gate in the last I/O interface rack in the daisy chain to the controller processor; and

means at said controller processor for receiving said fault indicating logic signal on said I/O fault line and indicating the presence of a malfunction.

4,118,793

GRADIENTLESS PROPULSION OF MAGNETIC BUBBLE DOMAINS USING MODULATED IN-PLANE FIELDS

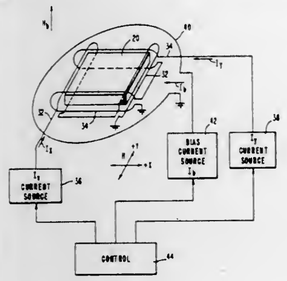
Bernell Edwin Argyle, Putnam Valley, N.Y.; Pieter Dekker, Kortenhoef, Netherlands, and John Casimir Slonczewski, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1977, Ser. No. 758,887
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—30 **25 Claims**

1. An apparatus for moving magnetic bubble domains in a

magnetic medium in the absence of magnetic field gradients acting on said bubbles, including:

means for applying a first magnetic field in the plane of said medium,



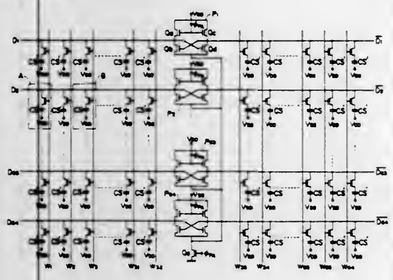
means for applying a second magnetic field in the plane of said magnetic medium, said second magnetic field being spatially uniform and time varying, said second magnetic field changing sufficiently rapidly and having sufficient magnitude to move said bubbles in said magnetic medium.

4,118,794

MEMORY ARRAY WITH LARGER MEMORY CAPACITORS AT ROW ENDS

Fumio Mizuno, Kodaira, and Masamichi Ishihara, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 15, 1977, Ser. No. 851,691
Claims priority, application Japan, Nov. 19, 1976, 51/138340
Int. Cl.² G11C *11/24*
U.S. Cl. 365—149 **3 Claims**



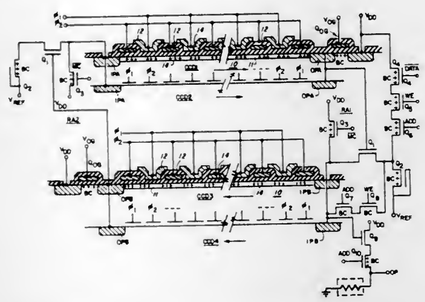
1. A dynamic storage device comprising a memory cell array constructed of a plurality of memory cells arrayed on a semiconductor substrate, said each memory cell including a capacitor which is made up of a semiconductor region in a surface of said semiconductor substrate and a conductor layer formed on said semiconductor region through an insulating film and an insulated gate field-effect transistor whose source region or drain region is connected to said semiconductor region, the capacitors of the memory cells at an end portion of said memory cell array having capacitances larger than those of the capacitors of the memory cells at an inner portion of said memory cell array.

4,118,795

TWO-PHASE CCD REGENERATOR - I/O CIRCUITS

Robert Charles Frye, Brighton, Mass.; Alan Harry Katz, New Orleans, La., and Charles Robert Hewes, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1976, Ser. No. 718,243
Int. Cl.² G11C *21/00, 7/00, 11/34*
U.S. Cl. 365—222 **15 Claims**



1. In a charge coupled device memory including a pair of charge coupled device shift register structures each having a data input region and a data output region, and phased clock pulse means coupled to said shift register structures for shifting binary data charge packets in said shift register structures;

first and second insulated gate field effect transistor charge regenerator amplifier means respectively cross coupling said output regions with said input regions, each of said regenerator amplifier means being operable to sense the level of binary data charge packets from the output region of one of said shift register structures and in response thereto to apply a regenerated and inverted binary data charge packet to the input region of the other of said shift register structures; one of said regenerator amplifier means further including data input insulated gate field effect transistor means operable in response to data and address inputs for providing a conductive path bypassing said regenerator amplifier means to connect the input region associated with said regenerator amplifier means alternatively to one of two reference potentials for entering a predetermined binary data charge level into said input region according to said data input; and data output insulated gate field effect transistor means operably responsive to an address input to nondestructively sense the binary data charge level present at one of said input and output regions associated with said regenerator amplifier means to generate a corresponding binary data output signal.

4,118,796

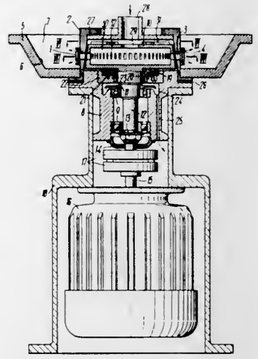
DEVICE FOR PRODUCING ACOUSTIC VIBRATION IN FLOWING LIQUID OR GASEOUS MEDIUM

Vladimir Matveevich Varlamov, ulitsa 50 let Oktyabrya, 1, kv. 16, Zlatoust Chelyabinskoi oblasti, U.S.S.R.

Filed Jun. 29, 1977, Ser. No. 811,313
Int. Cl.² B01F *11/02*
U.S. Cl. 366—124 **3 Claims**

1. A device for producing acoustic vibration in a flowing liquid or gaseous medium, comprising: a housing; a stator secured in said housing; a rotor arranged coaxially with said stator in the medium; a side surface of said rotor; at least one row of holes provided on said side surface of said rotor; a side surface of said stator; rows of holes in a number corresponding to that of said rows of holes of said rotor, provided on said side surface of said stator; the number of said holes in each row of holes of said rotor being less than the number of holes in each row of holes of said stator; end faces of said rotor; an opening

provided in one of said end faces of said rotor; a closed cavity of said rotor; a gap between said rotor and said stator; a pump to continuously circulate said medium through said opening provided in said end face of said rotor, said closed cavity of said rotor, said rows of holes of said rotor, said gap between said rotor and said stator, and said rows of holes of said stator; an electromotor to rotate said rotor so as to produce local



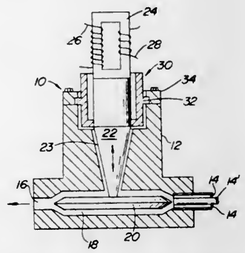
compression of said medium of said holes of said stator as a result of periodic alignment of said rows of holes of said rotor with those of said stator; an oscillator of an elastically deformable material, encompassing said stator, arranged in immediate proximity to said side surface of said stator, opposite said rows of holes, and intended to convert said local compression of said medium into mechanical oscillation to interact with said medium, whereby acoustic vibration is produced.

4,118,797

ULTRASONIC EMULSIFIER AND METHOD

William B. Tarpley, Jr., West Chester, Pa., assignor to Energy and Minerals Research Co., Kennett Square, Pa.

Filed Oct. 25, 1977, Ser. No. 845,177
Int. Cl.² B01F *11/02*
U.S. Cl. 366—127 **11 Claims**



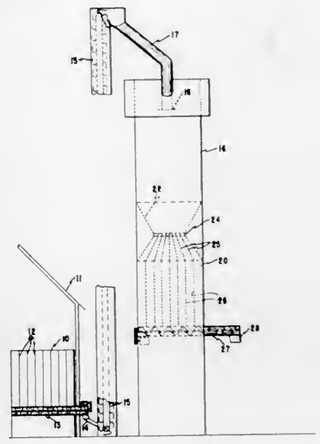
1. A method of emulsifying flowable immiscible materials comprising simultaneously directing the materials to be emulsified through a chamber, emulsifying said materials by inducing cavitation in the materials while said materials are moving through said chamber by contacting said materials with an active region of at least one resonant vibration-transmitting member, positioning said member in said chamber so that there are no inactive regions of vibratory energy through which the materials can flow and so that the materials enter said chamber adjacent said active region, inhibiting the formation of a standing wave in at least a major portion of the flowable materials flowing through said chamber, supporting said member and a source of vibratory energy connected thereby by a mount which minimizes loss of vibratory energy to the support.

4,118,798

METHOD OF MIXING FERTILIZER

Clayton S. Ellsworth, 203 S. 17th St., Norfolk, Nebr. 68701

Division of Ser. No. 631,894, Nov. 14, 1975, abandoned. This application Aug. 25, 1977, Ser. No. 827,838
Int. Cl.² B01F *7/00*
U.S. Cl. 366—156 **2 Claims**



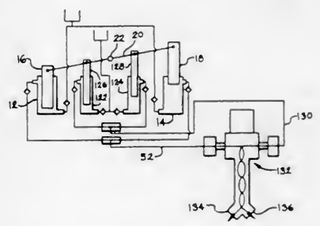
1. Method of mixing a fertilizer or the like composed of a plurality of ingredients which comprises serially delivering said ingredients to a compartmented bin, successively placing each ingredient into all the bins whereby layers of said ingredients are formed, discharging said ingredients from said compartments into a mixing auger running beneath said compartments in consecutive order whereby said ingredients are partially mixed, delivering said partially mixed ingredients from said auger to a discharge means, mixing said ingredients a second time by discharging the ingredients over a diffuser means and mixing the ingredients a third time by running said ingredients through a discharge auger.

4,118,799

APPARATUS FOR TRANSFERRING METERED QUANTITIES OF MATERIAL FROM ONE LOCATION TO ANOTHER

Wallace F. Krueger, 4401 Merriweather Rd., Toledo, Ohio 43623

Continuation of Ser. No. 670,137, Mar. 25, 1976, abandoned. This application Jul. 14, 1977, Ser. No. 815,527
Int. Cl.² G05D *11/00*
U.S. Cl. 366—161 **15 Claims**



1. Apparatus for metering viscous material comprising means for establishing a source of material at positive pressure above atmospheric pressure, an outlet where the material is at a higher pressure, a first cylinder having a first ram reciproca-

ble therein, first inlet means connecting said source of positive pressure material with said first cylinder, said first inlet means having a first ball check valve enabling flow of the material only toward said first cylinder, first outlet means connecting said first cylinder with said outlet, said first outlet means having a second ball check valve enabling flow of the material only away from said first cylinder, a second cylinder having a second ram reciprocable therein, second inlet means connecting said source of positive pressure material with said second cylinder, said second inlet means having a third ball check valve enabling flow of the material only toward said second cylinder, second outlet means connecting said second cylinder with said outlet, said second outlet means having a fourth ball check valve enabling flow of material only away from said second cylinder, back-pressure means through which material must flow for establishing back pressure of the material at said outlet, and means for reciprocating said first and second rams in said first and second cylinders.

4,118,800

DEVICE FOR USE IN BEATING OR REFINING MACHINES

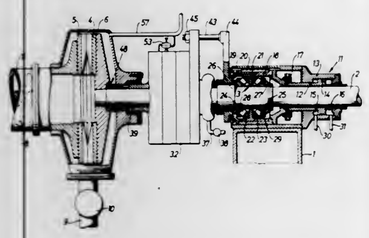
Rolf Bertil Reinhall, 834 171st. Pl. NE., Bellevue, Wash. 98008

Filed Jan. 24, 1977, Ser. No. 762,180

Claims priority, application Sweden, Jan. 30, 1976, 76010180

Int. Cl.[2] B01F *7/00*

U.S. Cl. 366—341 **9 Claims**



1. Sealing device for use in defibrating apparatus and the like for fibrous and/or organic materials, including a defibrator housing (**6**) which is maintained at a pressure greater than atmospheric and encloses two grinding discs (**4, 5**) mounted to rotate with respect to one another, at least one (**4**) of the discs being supported by a drive shaft (**2**) which passes through an opening in the housing, characterized by a pump enclosed within a housing (**32**), preferably of the multi-stage type, having its impellers (**33–35**) fixed on the shaft (**2**) and enclosed in said pump housing (**32**) having a flange (**39**) which surrounds the shaft (**2**) at a spaced distance therefrom so as to define a gap (**49**) extending into the interior of the housing, so that the fluid raised by the pump (**32**) to a pressure greater than that prevailing within the defibrator housing (**6**) is propelled through the gap (**49**) between said flange and the shaft and into the defibrator housing, thus preventing any leakage from the opening in the defibrator housing through which the shaft passes.

4,118,801

RACK FOR VESSELS AND MEANS FOR AGITATING THE VESSELS IN THE RACK

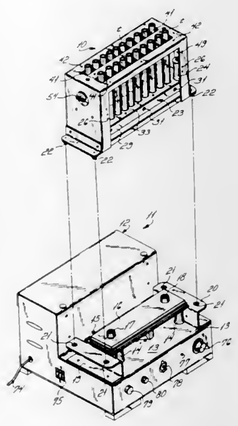
Jack A. Kraft, 119 Elm La., New Hyde Park, N.Y. 11040, and Harold D. Kraft, 147-14 70th Ave., Flushing, N.Y. 11367

Filed Nov. 5, 1976, Ser. No. 739,242

Int. Cl.[2] B01F *11/00*

U.S. Cl. 366—111 **12 Claims**

1. A rack for holding at least one vessel for agitation of the vessel, said rack comprising: resilient clamping means comprising resilient members formed of resilient material for holding said vessel to said rack, positive-action movable means attached to said clamping means for moving said resilient members against the vessel at a position remote from the bottom thereof to resiliently hold the vessel vertically in place, laterally movable agitating means for engaging the vessel near the bottom thereof for imparting a lateral movement to the bottom of said vessel, said clamping means clamping said vessel to said rack and defining a null point while said lateral movement is imparted to said vessel, said rack further comprising a frame, said clamping means comprising three clamping members, a first of the clamping members being arranged in the frame between the second and third clamping members, the first clamping member having a respective resilient edge at each of two opposite sides thereof, the second clamping member having a resilient edge facing one of the resilient edges of the first clamping member and the third clamping member having a resilient edge facing the other resilient edge of the first clamping member and lateral shifting means comprising means for laterally shifting the second and third clamping members between positions sufficiently spaced from the third clamping member so that a vessel received between the first and the second clamping members or between the first and the third



clamping members is not clamped therebetween and positions in which the clamping members are sufficiently close to each other that a vessel received between the first and second clamping members or between the first and the third clamping members is clamped therebetween, said clamping means further comprising a shaft, handle means rigidly mounted on the shaft for facilitating manual rotation of the shaft, a cross bar rigidly mounted on the shaft, first and second lever arms each pivotally connected near one end to the cross bar at a point near a respective end of the cross bar and each pivotally connected near the other end to a respective one of the first and second clamping members, one of the lever arms extending upwardly from the cross bar and the other lever arm extending downwardly from the cross bar, whereby a vessel received between the first and the second clamping members or between the first and the third clamping members is clamped therebetween when the shaft is rotated sufficiently that a line connecting the points of pivotal connection of the lever arms to the cross bar has rotated from an orientation non-parallel in a first rotational sense to a plane common to the resilient edges of the second and third clamping members to an orientation non-parallel in a second rotational sense to said common plane.

DESIGN PATENTS

GRANTED OCT. 3, 1978

ERRATA

For CLASS	See PATENT NO.
D24–023	249,802

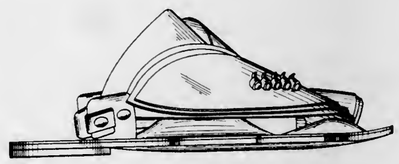
DESIGNS

OCTOBER 3, 1978

249,746
NOVELTY BEANIE
Robert F. Wildman, R.D. #1, Box 88, Troy, N.Y. 12180
Filed Dec. 1, 1976, Ser. No. 746,593
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—250



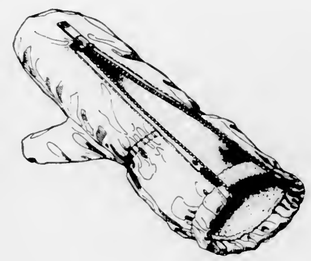
249,747
SANDAL
Darryl M. Galen, 3826 Faversham Rd., University Heights, Ohio 44118
Filed Nov. 4, 1976, Ser. No. 738,882
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270



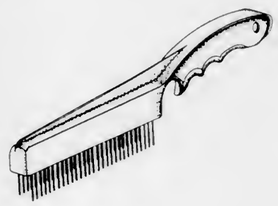
249,748
ATHLETIC SHOE
Hideki Kitamura, Scarborough, N.Y., assignor to C. Itoh & Co. (America) Inc., New York, N.Y.
Filed Jun. 30, 1976, Ser. No. 701,146
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



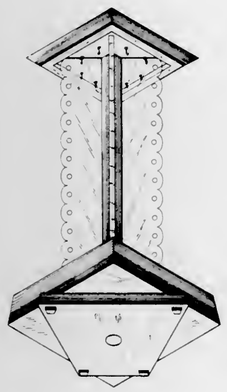
249,749
DOUBLE-LINED MITTEN
Charles C. Wanous, 4001 Overlook Dr., Minneapolis, Minn. 55437
Filed Jan. 22, 1976, Ser. No. 651,604
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—365



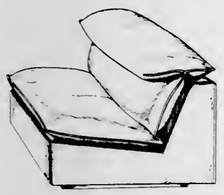
249,750
HAND-HELD CARPET GROOMER
Bernard A. Erickson, Rockford, Ill., assignor to Groom Industries, Inc.
Filed Mar. 3, 1977, Ser. No. 774,011
Term of patent 14 years
Int. Cl. D4—*01, 02;* D7—*05*
U.S. Cl. D4—12



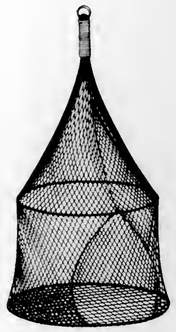
249,751
DISPLAY STAND FOR JEWELRY
Kurt Greenewald, Utica, N.Y., assignor to Mele Manufacturing Co., Inc.
Filed Dec. 15, 1976, Ser. No. 750,711
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—20



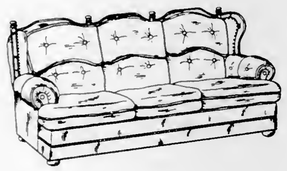
249,752
SEAT OR SIMILAR ARTICLE
Jens Juul Eilersen, 5485 Skamby, Fyn, Denmark
Filed Oct. 14, 1976, Ser. No. 732,433
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 7611963
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



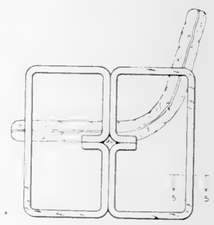
249,753
HANGING CHAIR
Julius A. Pratt, 507 Maple Ave., Greeneville, Tenn. 37743
Filed Dec. 23, 1976, Ser. No. 753,942
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—54



249,754
CHAIR OR SIMILAR ARTICLE
Stanley P. Nash, Johnson Creek, Wis., and David P. G. Williams, Englewood, N.J., assignors to Schweiger Industries, Inc., Jefferson, Wis.
Filed Nov. 17, 1976, Ser. No. 742,654
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62



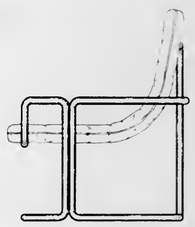
249,755
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,616
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



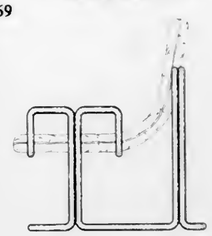
249,756
CHAIR
Mike T. Claman, Scarsdale, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Dec. 2, 1976, Ser. No. 746,991
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,757
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,614
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



249,758
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,613
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



249,759
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,904
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



249,760
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,906
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



249,761
CHAIR
Earl H. Koepke, Youngstown, Ohio, assignor to GF Business Equipment, Inc., Youngstown, Ohio
Filed Feb. 7, 1977, Ser. No. 766,492
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



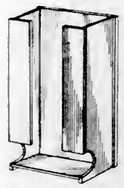
249,762
CHAIR
Earl H. Koepke, Youngstown, Ohio, assignor to GF Business Equipment, Inc., Youngstown, Ohio
Filed Feb. 7, 1977, Ser. No. 766,493
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—78



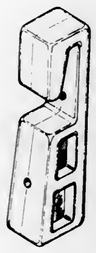
249,763
CHAIR
Hilton A. Gill, 2809 S. 11th St., Sheboygan, Wis. 53081
Filed Feb. 14, 1977, Ser. No. 768,045
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—78



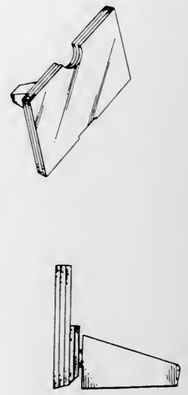
249,764
CIGARETTE PACKAGE DISPENSER
Margery Burklacich, 18840 Colt Springs Dr., Reno, Nev. 89506
Filed Jul. 11, 1977, Ser. No. 814,324
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



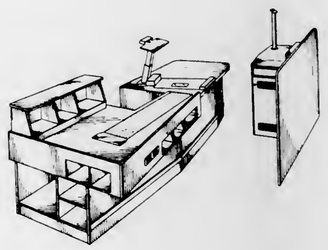
249,765
WALL MOUNTED BRACKET FOR HOLDING A FLOWER POT
John B. Wilson, Hall Court, Banner Elk, N.C. 28604
Continuation-in-part of Ser. No. 748,138, Dec. 6, 1976, abandoned. This application Feb. 16, 1977, Ser. No. 769,060
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—137



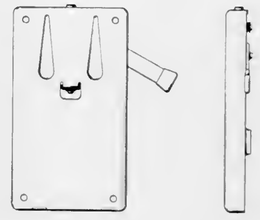
249,766
ADJUSTABLE CARD HOLDER
C. Johnny Munn, 69 S. Taft Hill Rd., Fort Collins, Colo. 80521
Filed Dec. 30, 1976, Ser. No. 755,511
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D6—140



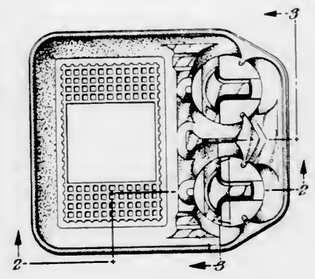
249,767
COMBINED CHECKSTAND AND CONTROL CABINET ASSEMBLY
David Duke, Azusa, Calif., assignor to Zephyr System, Inc., El Monte, Calif.
Filed Sep. 20, 1977, Ser. No. 835,178
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—143



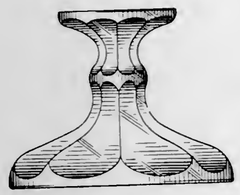
249,768
LEVER-MODEL LOW-SILHOUETTE CHAIR-TILTING CONTROL
Lon W. Pinaire, Prospect, Ky., and Robert H. Godwin, Evansville, Ind., assignors to Bliss & Laughlin Industries, Incorporated
Division of Ser. No. 582,643, Jun. 2, 1975. This application Sep. 15, 1976, Ser. No. 723,579
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



249,769
COMBINED FOOD AND BEVERAGE TRAY
Henry R. Vigue, Waterville, Me., assignor to Keyes Fibre Company
Filed Dec. 27, 1976, Ser. No. 754,258
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



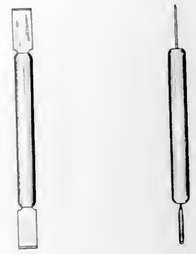
249,770
BASE FOR A BOWL
Frank J. Benes, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 544,913,, Jan. 29, 1975, which is a division of Ser. No. 397,069, Sep. 13, 1973, Pat. No. Des. 238,541. This application Jun. 18, 1976, Ser. No. 697,409
Term of patent 14 years
Int. Cl. D7—*01*; D26—*01*
U.S. Cl. D7—39



249,771
ELECTRIC GRASS TRIMMER HOUSING
Edward A. Irelan, Columbia, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Nov. 1, 1976, Ser. No. 737,436
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



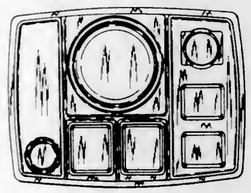
249,772
SCULPTURING TOOL
Anne T. Amiot, 2177 Simone, Dearborn Heights, Mich. 48127
Filed Jul. 23, 1976, Ser. No. 708,194
The portion of the term of this patent subsequent to Oct. 12, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. 8—14



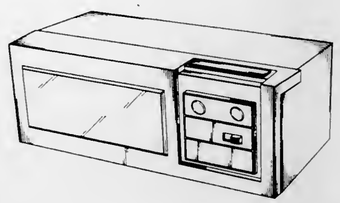
249,773
DECANTER
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Jul. 31, 1975, Ser. No. 600,708
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—64



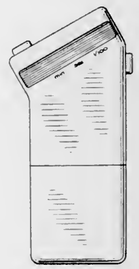
249,774
INSULATED TRAY
Richard H. Seager, Manchester, Conn., assignor to King-Seeley Thermos Co.
Filed Oct. 18, 1976, Ser. No. 733,039
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



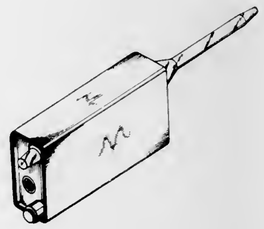
249,775
DIGITAL CLOCK
Nobuyoshi Hirosawa, Chofu, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Shinosuwa, Japan
Filed Dec. 8, 1976, Ser. No. 748,440
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



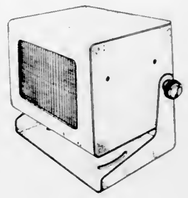
249,776
HAND-HELD STOPWATCH
Emanuel Almosnino, and David B. Chaney, both of Providence, R.I., assignors to Jon Lee, New York, N.Y.
Filed Nov. 22, 1976, Ser. No. 743,842
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—40



249,777
RADAR DETECTOR
Donald L. Roettele, and William E. Yohpe, both of Dayton, Ohio, assignors to Com General Corporation, Dayton, Ohio
Filed Dec. 20, 1976, Ser. No. 752,451
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—104



249,778
COMBINED INTRUSION DETECTOR AND ALARM
Toru Kobayakawa, Osaka, Japan, assignor to Hokuyo Automatic Co., Ltd., Osaka, Japan
Filed Apr. 15, 1977, Ser. No. 788,051
Term of patent 7 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



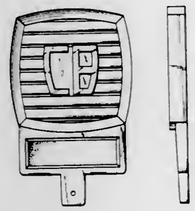
249,779
WRIST BAND FOR JEWELRY OR THE LIKE
Samuel M. Bobrick, 445 Monaco, Denver, Colo. 80220
Filed Sep. 10, 1976, Ser. No. 722,328
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—12



249,780
PYRAMID RING
Noel Gonzalez, 6110 N. Bernard, Chicago, Ill. 60659
Filed Oct. 22, 1976, Ser. No. 734,746
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—30



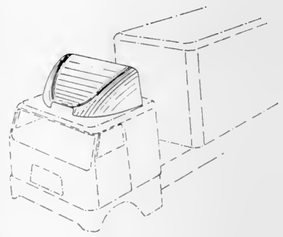
249,781
CHARM OR THE LIKE
Douglas A. Richardson, 27 Canterbury La., and William A. Richardson, 608 Snyder Ave., both of Berkeley Heights, N.J. 07922
Filed Jun. 8, 1976, Ser. No. 693,899
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81



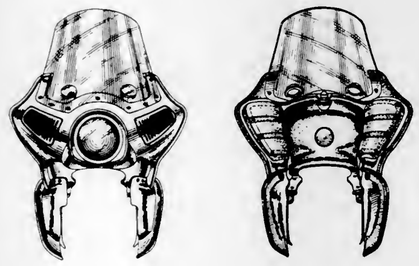
249,782
PORTABLE SIGNAL FLAG
Herbert Marcus, 635 Redding Rd., West Redding, Conn. 06896
Filed Aug. 23, 1976, Ser. No. 716,575
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—166



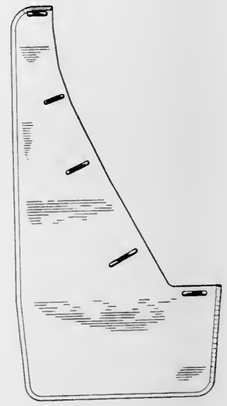
249,783
TRUCK WIND DEFLECTOR
Donald R. Herpel, 29466 Candlewood, Southfield, Mich. 48076
Filed Jul. 16, 1976, Ser. No. 705,901
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



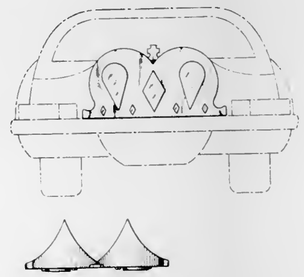
249,784
COMBINED MOTORCYCLE FAIRING WITH LOWER ATTACHMENTS
Craig W. Vetter, Rantoul, Ill., assignor to Vetter Fairing Company, San Luis Obispo, Calif.
Filed May 31, 1977, Ser. No. 802,238
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—182



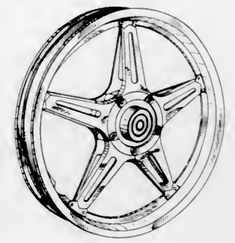
249,785
AUTOMOBILE FENDER SPLASH GUARD
Frederick Hurd, Don Mills, Canada, assignor to National Rubber Company Limited, Toronto, Canada
Filed Mar. 29, 1977, Ser. No. 782,557
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—185



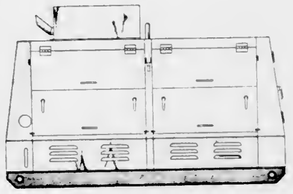
249,786
ATTACHMENT FOR THE REAR DECK OF AN AUTOMOBILE
Gene Howard, 5116 W. Monroe St., Chicago, Ill. 60644
Filed Jul. 12, 1976, Ser. No. 704,317
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—196



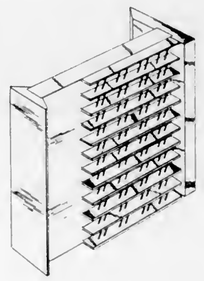
249,787
WHEEL FOR TWO-WHEELED VEHICLE
Norio Tanaka, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 23, 1977, Ser. No. 780,359
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



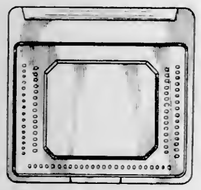
249,788
POWER GENERATOR
Shigenobu Nanjo, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jan. 4, 1977, Ser. No. 756,721
Term of patent 7 years
Int. Cl. D13—*01*
U.S. Cl. D13—3



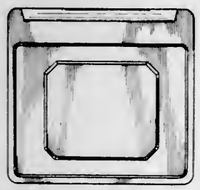
249,789
TELEPHONE CONNECTOR BLOCK
Paul V. DeLuca, Syosset, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.
Filed Mar. 31, 1977, Ser. No. 783,264
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



249,790
CASING FOR ELECTRONIC COMPONENTS OR THE LIKE
Geoffrey R. Ainscow, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 20, 1976, Ser. No. 734,058
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—41



249,791
CASING FOR ELECTRONIC COMPONENTS OR THE LIKE
Geoffrey R. Ainscow, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 20, 1976, Ser. No. 734,059
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—41

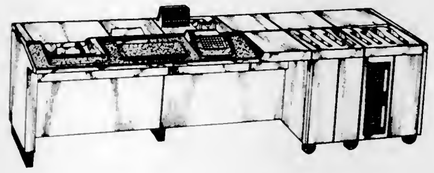


249,792
LOUDSPEAKER
Dieter Rams, Kronberg, Fed. Rep. of Germany, assignor to Braun A G, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 26, 1976, Ser. No. 661,639
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33





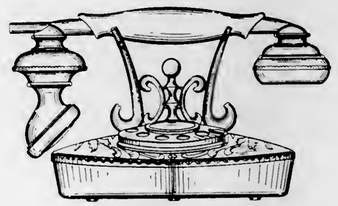
249,793
MODULAR DOCUMENT PROCESSING ENCODER
Richard G. Clayton, Detroit, and Robert C. Schade, Farmington Hills, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 574,722, May 5, 1975, abandoned. This application Jun. 24, 1976, Ser. No. 699,431
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—44

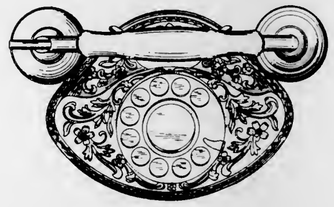


249,794
BANK-TELLER TERMINAL
Jack Howe, London, England, assignor to Chubb Integrated Systems Limited, London, England
Filed Feb. 22, 1977, Ser. No. 770,544
Claims priority, application United Kingdom, Sep. 9, 1976, 977075/76
Term of patent 14 years
Int. Cl. D14—*02*; D18—*01*
U.S. Cl. D14—45

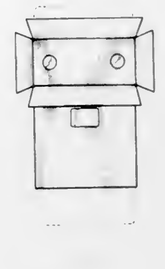


249,795
TELEPHONE OR SIMILAR ARTICLE
Paul R. Brown, 20 East 35th St., New York, N.Y. 10016, assignor to MB Royal Group, Inc., New York, N.Y.
Filed Apr. 30, 1976, Ser. No. 681,880
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—53





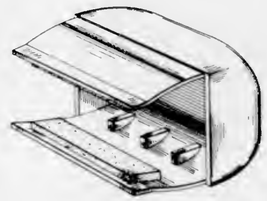
249,796
STEREOSCOPIC VIEWER AND SLIDE HOLDER
James J. Curtin, Maumee, Ohio, assignor to Penton/IPC, Inc., Toledo, Ohio
Filed Jan. 10, 1977, Ser. No. 758,178
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—12



249,797
COPYING MACHINE
John J. Van Acker, Chesterland, Ohio; Terry G. Seelenbinder, Elk Grove Village, Ill.; Richard W. Jackson, Barrington, Ill.; Eugene P. Oddo, Mt. Prospect, Ill., and Walter A. Hudson, Fox River Grove, Ill., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio
Filed Oct. 22, 1977, Ser. No. 734,852
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



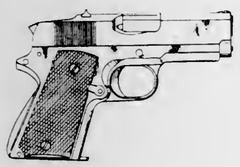
249,798
FLASH DIFFUSER
Al Tureck, Skokie, Ill., and Edward R. Farber, Delafield, Wis., assignors to Sima Products Corporation, Skokie, Ill.
Filed Sep. 13, 1976, Ser. No. 722,657
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—38



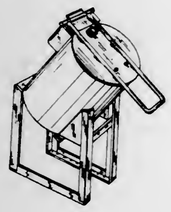
249,799
TOOL FOR REMOVING A HYDRATED HYDROPHILIC CONTACT LENS FROM A STORAGE SOLUTION
Thomas J. Zoltner, 11 Sun Valley Way, Morris Plains, N.J. 07950
Filed Jun. 7, 1976, Ser. No. 693,590
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—83



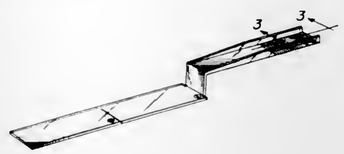
249,800
SEMI-AUTOMATIC FIREARM
Patrick Yates, 33B Ashworth, China Lake, Calif. 93555; Sidney H. Woodcock, Penthouse Seattle Tower, Seattle, Wash. 98101, and Jeffrey R. Beals, 11216 Phinney Ave. North, Seattle, Wash. 98133
Filed Jun. 3, 1976, Ser. No. 692,568
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1



249,801
APPARATUS FOR DRAINING AND FLUSHING A LIQUID CHEMICAL FROM A CONTAINER
W. Dewell Hollingsworth, Industrial Park Road, Boone, Iowa 50036
Filed Feb. 14, 1977, Ser. No. 768,440
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—03



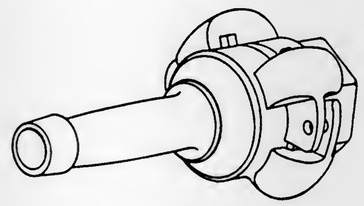
249,802
TISSUE CULTURE PLATE
George F. Lyman, Weston, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed Aug. 11, 1976, Ser. No. 713,421
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—23



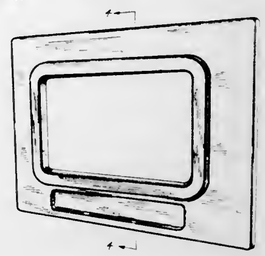
249,803
VALVE HANDLE
Aruo Okano, Tokyo, Japan, assignor to Toyo Valve Co., Ltd., Tokyo, Japan
Filed Oct. 27, 1976, Ser. No. 736,153
Claims priority, application Japan, Apr. 28, 1976, 51-15721
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—30



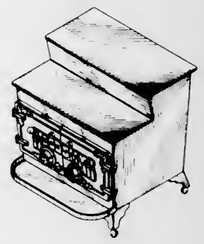
249,804
COUPLING UNIT
Howard Archibald Treloar, 52 Maitland St., Mitcham, South Australia, Australia (5062)
Division of Ser. No. 672,834, Apr. 1, 1976, Pat. No. Des. 246,855. This application Sep. 21, 1977, Ser. No. 835,292
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



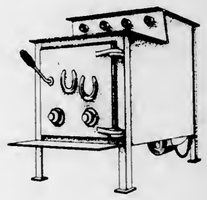
249,805
FRONT FOR BATHING CHAMBER
Donald W. Doman, Janesville, Wis., assignor to Kohler Co.
Filed Dec. 6, 1976, Ser. No. 747,918
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



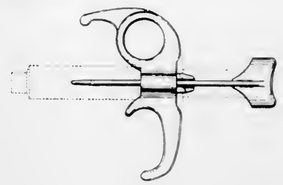
249,806
STOVE
William C. Walker, 3675 S. 2300 East, Salt Lake City, Utah 84109, and William D. Atkinson, 12245 S. 2240 West, Riverton, Utah 84065
Filed Jan. 10, 1977, Ser. No. 757,845
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



249,807
WOOD BURNING STOVE
Robert S. England, 359-A Pine Acre Dr., Madison Heights, Va. 24572
Filed Dec. 16, 1977, Ser. No. 861,429
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



249,808
SYRINGE PUMPING HANDLE
William G. Bloom, Santa Monica, and Gerald W. Schmidt, Northridge, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Dec. 6, 1976, Ser. No. 748,123
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—25



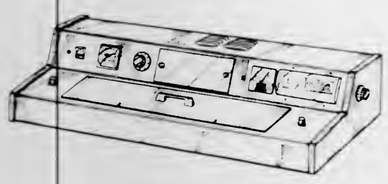


249,809
SYRINGE HANDLE GRIP
William G. Bloom, Northridge, and Gerald W. Schmidt, Santa Monica, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Dec. 6, 1976, Ser. No. 748,045
Term of patent 14 years
Int. Cl. 24—*02*
U.S. Cl. 24—25

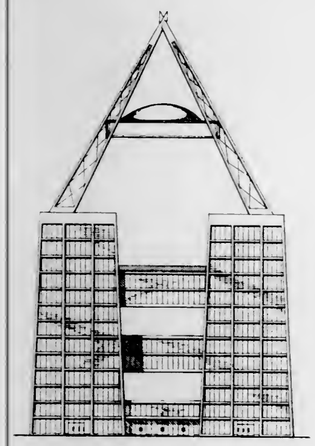




249,810
EPILATION APPARATUS
George Holleley, Merseyside, England, assignor to Slimmaster Beauty Equipment (Sales) Limited
Filed Jun. 14, 1976, Ser. No. 695,343
Claims priority, application United Kingdom, Dec. 17, 1975, 973680/75
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—8



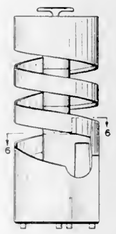
249,811
BUILDING
Billy J. Tucker, 6321 Bucknell Cir., Virginia Beach, Va. 23462
Filed Dec. 17, 1976, Ser. No. 751,903
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—5



249,812
CIGARETTE LIGHTER
Kenjiro Goto, Urawa, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi, Japan
Filed Jun. 14, 1976, Ser. No. 695,774
Term of patent 07 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



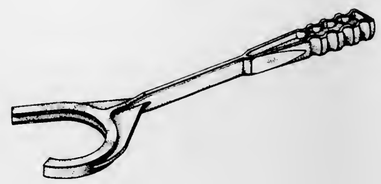
249,813
BALL THROWER
Ray A. Young, and Craig A. Young, both of Geneva, N.Y., assignors to Omnitec Products Corporation, Chagrin Falls, Ohio
Filed Feb. 23, 1976, Ser. No. 660,046
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 R



249,814
GOLF GREEN REPAIR TOOL
Murphy Dennis Cudahy, III, South Bend, Ind., assignor to Murphy Products Incorporated, South Bend, Ill.
Filed Jan. 14, 1977, Ser. No. 759,771
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



249,815
HAND LAUNCHER FOR CLAY PIGEONS
Urban A. Huelskamp, Dayton, Ohio, assignor to MTM Molded Products Company
Filed Apr. 29, 1976, Ser. No. 681,439
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CP

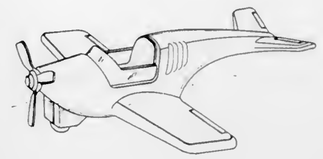


249,816
SKI HOLDER
John R. Zelle, Fairfield, Conn. 06430
Filed Jun. 17, 1975, Ser. No. 587,689
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D34—14 D

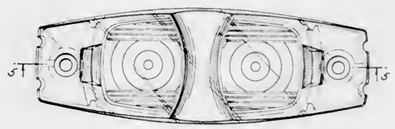




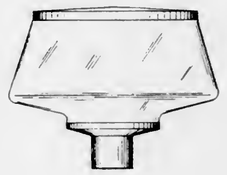
249,817
TOY AIRPLANE
Jeffrey T. Samson, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 29, 1975, Ser. No. 644,427
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



249,818
MARKER LENS
Richard Ball, Toronto, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Canada
Filed Feb. 23, 1977, Ser. No. 771,837
Claims priority, application Canada, Oct. 26, 1976, 0610762
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 A



249,819
ENCLOSURE FOR A LUMINAIRE
James Tatsuo Asaki, Fair Haven, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 2, 1976, Ser. No. 710,599
Term of patent 14 years
Int. Cl. D26—*03, 05*
U.S. Cl. D48—35



249,820
MUSICAL DRUM BEATER
Forrest W. Clark, Fountain Valley, Calif., assignor to CBS Inc., New York, N.Y.
Filed Aug. 30, 1976, Ser. No. 718,932
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D56—1 E



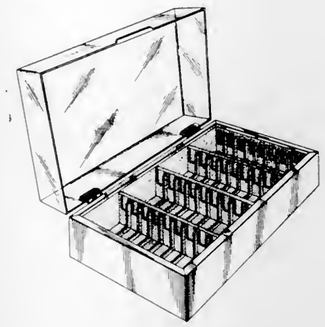
249,821
HOLDER FOR PAINT APPLICATION PAD
Donald R. Cooke, Minneapolis, and Robert I. Janssen, St. Paul, both of Minn., assignors to Padco, Inc., Minneapolis, Minn.
Filed Mar. 21, 1977, Ser. No. 779,813
Term of patent 14 years
Int. Cl. D8—*05*; D7—*05*
U.S. Cl. D64—18



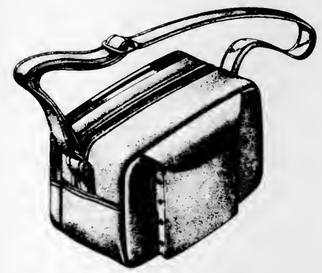
249,822
COMBINED ELECTRONIC CALCULATOR AND CLOCK
Yoshihisa Ohie, and Masafumi Yamagami, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 31, 1977, Ser. No. 847,311
Claims priority, application Japan, May 12, 1977, 52-18250
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B



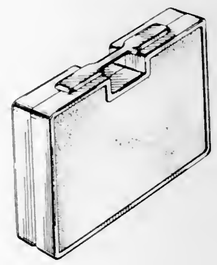
249,823
CASE FOR TAPE CARTRIDGES AND CASSETTES
Joseph L. Berkman, 48 Country Rd., Mamaroneck, N.Y. 10543
Filed Feb. 15, 1974, Ser. No. 442,777
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



249,824
CAMERA BAG
George Koszegi, 1129 Cambridge Dr., South Bend, Ind. 46614
Filed Feb. 17, 1977, Ser. No. 769,669
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 E



249,825
BRIEFCASE
Joseph Hasulak, 2932 N. 2nd St., Phoenix, Ariz. 85012
Filed Mar. 28, 1977, Ser. No. 781,634
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & E Plastik Pak Co. Inc.: *See—*
Bennett, J. Richard, 4,117,876, Cl. 160-67.000.
Abbey, Harold G. Variable venturi carburetion system. 4,118,444, Cl. 261-44.00A.
Abbott, Harry Thomas, to Brunswick Corporation. Longitudinal load carrying method for fiber reinforced filament wound structures. 4,118,262, Cl. 156-175.000.
Abdul-Rahman, Yahia A. K.: *See—*
Myers, Gary A.; Abdul-Rahman, Yahia A. K.; and Skinner, James L., 4,118,309, Cl. 208-11.00R.
Abraham, Nedumparambil A.: *See—*
Immer, Hans U.; and Abraham, Nedumparambil A., 4,118,380, Cl. 260-112.50S.
Abromavage, John C.: *See—*
Sage, Howard M.; and Abromavage, John C., 4,117,964, Cl. 224-42.10E.
Achenbach, Gary D.: *See—*
Becker, Donald E.; Achenbach, Gary D.; and Stuever, George W., 4,118,325, Cl. 252-8.100.
ACI Technical Centre Pty Ltd.: *See—*
Erskine, Clive Arnold, 4,118,236, Cl. 106-71.000.
Acuncius, Dennis S.; Herchenroeder, Robert Blanchard; Kirchner, Russell W.; and Silence, William L., to Cabot Corporation. Thermally stable high-temperature nickel-base alloys. 4,118,223, Cl. 75-171.000.
Adam, Robert G. Side loading-rear discharging trailer for multiple round bales. 4,117,940, Cl. 214-1.0HH.
Affouard, Robert. Hydraulic rotary devices. 4,117,768, Cl. 91-499.000.
Agency of Industrial Science & Technology: *See—*
Ishibashi, Katsuji; Mitsui, Shigeo; and Kobayashi, Rikio, 4,118,341, Cl. 252-438.000.
Matsuda, Kiyofumi, 4,118,124, Cl. 356-107.000.
AGFA-Gevaert AG: *See—*
Liermann, Traugott; and Dietrich, Karl-Heinz, 4,118,121, Cl. 355-75.000.
AGFA-Gevaert Aktiengesellschaft: *See—*
Klein, Hans-Joachim; Rupprecht, Manfred; Wonneberg, Heinz; Geiger, Julius; and Masa, Gunter, 4,118,127, Cl. 356-200.000.
Agfa-Gevaert N.V.: *See—*
Corluy, Hans Josephus; Moll, Franz; Muller, Herbert; and Hase, Marie, 4,118,228, Cl. 96-17.000.
Aguilar, Henry. Quick reset timer. 4,117,666, Cl. 58-144.000.
Agway, Inc.: *See—*
Braund, Darwin G.; Dolge, Kendall L.; Goings, Richard L.; and Steele, Robert L., 4,118,513, Cl. 426-2.000.
Air Frohlich AG fur Energie-Ruckgewinnung: *See—*
Frei, Willi, 4,117,884, Cl. 165-175.000.
Aisan Industry Co., Ltd.: *See—*
Minoura, Mikio, 4,117,816, Cl. 123-119.00A.
Aisin Seiki Kabushiki Kaisha: *See—*
Murakami, Noboru; and Furusawa, Choji, 4,117,677, Cl. 60-345.000.
Akagi, Takao: *See—*
Nakagawa, Junyo; Akagi, Takao; and Hiramatsu, Koji, 4,118,529, Cl. 428-91.000.
Akamatu, Keiji, to Roland Corporation. Rectangular waveform signal reproducing circuit for electronic musical instruments. 4,117,757, Cl. 84-1.010.
Akiyama, Chuji: *See—*
Suzuki, Kazuie; Torimaru, Takashi; and Akiyama, Chuji, 4,117,721, Cl. 73-194.0EM.
Aksjeselskapet NORCEM: *See—*
Kjohl, Olav; and Olstad, Paul Henrik, 4,118,242, Cl. 106-98.000.
Aktiebolaget Carl Munters: *See—*
Norback, Per G., 4,118,198, Cl. 422-173.000.
Alexander, Gordon A., to Emhart Industries, Inc. Mortise lock. 4,118,056, Cl. 292-169.170.
Alkire, Gerald R.: *See—*
Calfo, Raymond M.; Dailey, George F.; Alkire, Gerald R.; and Mulach, Arthur, 4,118,645, Cl. 310-53.000.
Allan, John. Rotary piston machine. 4,118,159, Cl. 418-153.000.
Allan Tackle Manufacturing Co., Inc.: *See—*
Rienzo, Donald D., 4,117,965, Cl. 224-48.00R.
Allegre, Jean: *See—*
Gillet, Roger; and Allegre, Jean, 4,118,648, Cl. 310-269.000.
Allen-Bradley Company: *See—*
Casto, Walter V.; DeLong, Lawrence W.; Markley, Theodore J.; and Struger, Odo J., 4,118,789, Cl. 364-900.000.
Struger, Odo J.; McAdams, Timothy E.; and Dummermuth, Ernst, 4,118,792, Cl. 364-900.000.
Allen, David O., to Buckeye Molding Company. Plastic closure. 4,117,950, Cl. 220-306.000.
Allen & Hanburys Limited: *See—*
James, Michael, 4,117,844, Cl. 128-266.000.
Allen, Loy F., to Gulf Oil Corporation. Downhole well pump control system. 4,118,148, Cl. 417-12.000.
Allen, Richard C.: *See—*
McFadden, Arthur R.; Allen, Richard C.; and Lee, Thomas B. K., 4,118,401, Cl. 260-333.000.
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Allied Chemical Corporation: *See—*
Tanner, Lee E., 4,118,222, Cl. 75-134.00V.
Allis-Chalmers Corporation: *See—*
Bliemeister, Robert M., 4,118,180, Cl. 432-103.000.
Altek Systems, Inc.: *See—*
Budnick, Lawrence T., 4,118,097, Cl. 339-232.000.
Alvey Inc.: *See—*
Werntz, Charles W., 4,117,923, Cl. 198-790.000.
Amerace Corporation: *See—*
O'Neil, Charles P.; Smorzaniuk, Adam; and Young, James O., 4,118,005, Cl. 251-75.000.
American Color & Chemical Corporation: *See—*
Botros, Raouf, 4,118,383, Cl. 260-156.000.
American Cyanamid Company: *See—*
Casey, Donald James; and Epstein, Martin, 4,118,470, Cl. 424-19.000.
Conrow, Ransom Brown; and Bernstein, Seymour, 4,118,418, Cl. 562-439.000.
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Epstein, Joseph William, 4,118,417, Cl. 562-401.000.
Fanshawe, William Joseph; Safir, Sidney Robert; and Crawley, Lantz Stephen, 4,118,393, Cl. 260-326.50B.
Lang, Stanley Albert, Jr.; Fabio, Paul Frank; Lin, Yang-I; Murdock, Keith Chadwick; and Fields, Thomas Lynn, 4,118,498, Cl. 424-267.000.
Parekh, Girish Girdhar, 4,118,437, Cl. 260-834.000.
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Swift, James L., 4,118,098, Cl. 339-263.00R.
American Flange & Manufacturing Co. Inc.: *See—*
Dwinell, Davis B., 4,117,949, Cl. 220-304.000.
American Hoechst Corporation: *See—*
McFadden, Arthur R.; Allen, Richard C.; and Lee, Thomas B. K., 4,118,401, Cl. 260-333.000.
American Home Products Corporation: *See—*
Ledig, Kurt W., 4,118,561, Cl. 542-470.000.
Lippmann, Wilbur, 4,118,493, Cl. 424-258.000.
American Optical Corporation: *See—*
Naylor, Thomas Kipling, 4,117,848, Cl. 128-419.0PT.
American Safety Equipment Corporation: *See—*
Tanaka, Akira, 4,118,067, Cl. 297-379.000.
American Videonetics: *See—*
Arnstein, Walter, 4,118,738, Cl. 358-148.000.
Amick, James L. Wind-powered car. 4,117,900, Cl. 180-7.00R.
Aminkemi Aktiebolag: *See—*
Eriksson, Jan-Christer; Larsson, Rolf; Rosengren, Ake; and Hjelte, Maj-Britt, 4,118,485, Cl. 424-183.000.
Amort, Jurgen; and Nestler, Heinz, to Dynamit Nobel Aktiengesellschaft. Use of silanes having capped functional groups as adhesivizing agents. 4,118,540, Cl. 428-447.000.
AMP Incorporated: *See—*
Leidy, James Albert; and Porta, Gary Douglas, 4,118,103, Cl. 339-98.000.
Andersen, Lars Q.: *See—*
Neal, Brian; and Andersen, Lars Q., 4,117,671, Cl. 60-262.000.
Anderson, James R., to Central Sprinkler Corporation. Sprinkler head flange assembly. 4,117,887, Cl. 169-37.000.
Anderson, Mark C.: *See—*
Fritsch, Thomas R.; and Anderson, Mark C., 4,118,429, Cl. 260-674.0SA.
Anderson, Martin; and Brinnand, Antony G., to Shell Oil Company. Insecticidal 2-(1-(halobenzoyl)-1-hydroxyiminomethyl)-5,6-dihydro-4H-1,3-thiazines. 4,118,489, Cl. 424-246.000.
Anderson, Raymond H.; and Lewer, Gregory S., to Minnesota Mining and Manufacturing Company. Low-glare overhead projector. 4,118,114, Cl. 353-38.000.
Anderson, Rogers H., to Honeywell Inc. Preparation of high strength halide bodies. 4,118,448, Cl. 264-1.000.
Andonov, Blagoy Alexandrov: *See—*
Petrov, Georgi Mitev; Andonov, Blagoy Alexandrov; Trayanov, Svetozar Paissiev; and Georgiev, Georgi Dimitrov, 4,117,654, Cl. 57-19.000.

Androulakis, John G., to Frigitemp Corporation. Internal insulation for liquefied gas tank. 4,117,947, Cl. 220-435.000.

Anno, James N.: *See—*
Fawcett, Sherwood L.; and Anno, James N., 4,117,696, Cl. 62-115.000.

Anthony Company: *See—*
Mustered, Lyle V., 4,117,901, Cl. 180-51.000.
Mustered, Lyle V., 4,117,905, Cl. 180-139.000.
Mustered, Lyle V., 4,117,906, Cl. 180-139.000.

Apostolatos, George Nikolas; Bohrer, James Calvin; and Inamorato, Jack Thomas, to Colgate-Palmolive Company. Synergistic antibacterial composition containing mixtures of certain halogenated diphenyl ethers and trichlorocarbanilides. 4,118,332, Cl. 252-107.000.

Apple, Martin A.; and Formica, Joseph V., to University of California, The Regents of the. Process for treating neoplastic disease with azetomicins. 4,118,482, Cl. 424-177.000.

Arakawa, Kunihiko: *See—*
Matsui, Takeshi; and Arakawa, Kunihiko, 4,118,438, Cl. 260-857.00L.

Arbuckle, James A., to Textron Inc. Guide bar mount for chain saw. 4,117,594, Cl. 30-381.000.

Arend, Gunter: *See—*
Lindner, Christian; Suling, Carlhans; Arend, Gunter; Brokmeier, Dieter; and Nischk, Gunther, 4,118,375, Cl. 526-240.000.

Argus Chemical Corporation: *See—*
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,118,369, Cl. 260-45.80N.

Argyle, Bernell Edwin; Dekker, Pieter; and Slonczewski, John Casimir, to International Business Machines Corporation. Gradientless propulsion of magnetic bubble domains using modulated in-plane fields. 4,118,793, Cl. 365-30.000.

Arita, Youji, to Mitsubishi Light Metal Industries Limited. Electrolytic alumina reduction cell with heat radiation reducing means. 4,118,304, Cl. 204-243.00R.

Armstrong Cork Company: *See—*
Eckert, Lewis W.; Nikolaus, Harold W.; and Ollinger, James C., 4,117,642, Cl. 52-486.000.
Hager, Nathaniel E., Jr., 4,117,712, Cl. 73-15.00A.

Arnaud, Maurice, to Societe Lignes Telegraphiques et Telephoniques. Long distance coaxial cable with optical fibres. 4,118,594, Cl. 350-96.23D.

Arnold, Milton Phillip: *See—*
Pan, Jing Jong; Arnold, Milton Phillip; and Barton, James Castle, 4,118,270, Cl. 156-659.000.

Arnoux, Daniel, to Societe Chauvin Arnoux. Analog multiplier error corrector, notably for precision wattmeters. 4,118,787, Cl. 364-842.000.

Arnstein, Walter, to American Videonetics. Time base error corrector. 4,118,738, Cl. 358-148.000.

Asada, Chiaki; Kusaka, Katsushi; and Kajima, Hisashi, to Foundation: The Research Institute For Special Inorganic Materials, The. Chromium base alloy composite materials reinforced with continuous silicon carbide fibers and a method for producing the same. 4,117,565, Cl. 75-204.000.

Asahi Glass Company Ltd.: *See—*
Takabatake, Mitsuo, 4,118,240, Cl. 106-73.330.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, 4,118,336, Cl. 252-316.000.
Seko, Maomi; Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Imamura, Kazuo, 4,118,457, Cl. 423-7.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawasaki, Masahiro, 4,118,712, Cl. 354-23.00D.
Kurei, Hiroshi; and Shono, Tetsuji, 4,118,725, Cl. 354-289.000.

Ascani, Leonard A., Jr.: *See—*
Hamilton, C. Howard; and Ascani, Leonard A., Jr., 4,117,970, Cl. 228-173.00A.

Ashida, Itaru: *See—*
Suzuki, Tetsuro; Oishi, Masaaki; and Ashida, Itaru, 4,117,743, Cl. 74-577.00M.

Asko, Inc.: *See—*
Dempsey, Martin J., 4,117,705, Cl. 72-237.000.

Asselin, Andre A.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,118,394, Cl. 260-326.280.

Atencio, Francisco Jose Gutierrez. Incorporable hydromotive assembly. 4,117,676, Cl. 60-327.000.

Atkinson, Thomas Carl; and Fay, Clifford C., to Rohr Industries, Inc. Vehicle seat assembly. 4,118,061, Cl. 296-63.000.

Atlanta Metal Products, Inc.: *See—*
Kidd, James M., Jr.; and Woods, Jay G., 4,117,638, Cl. 52-200.000.

Atlantic Richfield Company: *See—*
Mock, John, 4,118,430, Cl. 260-668.00A.
Myers, Gary A.; Abdul-Rahman, Yahia A. K.; and Skinner, James L., 4,118,309, Cl. 208-11.00R.

Atsuchi, Toru. Automobile headlights. 4,118,765, Cl. 362-384.000.

Au Coin, Thomas R.; Di Vita, Sam; and Wade, Melvin J., to United States of America, Army. Method of maintaining the strength of optical fibers. 4,118,211, Cl. 65-3.00R.

Audi Nsu Auto Union Aktiengesellschaft: *See—*
Lechler, Rolf, 4,117,907, Cl. 184-6.200.

Audio Developments International: *See—*
Yeap, Arthur K. C., 4,118,601, Cl. 179-1.00D.

Auer, John H., Jr.; and Sibley, Henry C., to General Signal Corporation. Vital relay operating circuit. 4,118,750, Cl. 361-182.000.

Auerbach, Andrew B.: *See—*
Turbak, Albin F.; Thelman, John P.; and Auerbach, Andrew B., 4,118,350, Cl. 260-15.000.

Aulich, Hubert; and Grabmaier, Josef, to Siemens Aktiengesellschaft. Double crucible system for the production of light conducting fibers. 4,118,212, Cl. 65-3.00A.

Austin, Robert R.; and Moen, A. M. D., to International Telephone and Telegraph Corporation. Fluid sampling system. 4,117,725, Cl. 73-421.50R.

Automatech Industries, Inc.: *See—*
Rovin, Herman; Levine, Lawrence J.; Opuszenski, Theodore; Pellicano, Joseph; and Swenson, Alan F., 4,117,789, Cl. 112-181.000.

Automatic Industrial Machines, Inc.: *See—*
Boettcher, Carl E., 4,118,264, Cl. 156-238.000.

Automotive Products Limited: *See—*
Windsor, Harry Mellows, 4,117,747, Cl. 74-866.000.

Avery Products Corporation: *See—*
Douek, Maurice; Schmidt, Gustav A.; Malofsky, Bernard M.; and Hauser, Martin, 4,118,442, Cl. 260-885.000.

Ayerst, McKenna & Harrison Limited: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,118,394, Cl. 260-326.280.
Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., 4,118,511, Cl. 424-330.000.
Immer, Hans U.; and Abraham, Nedumparambil A., 4,118,380, Cl. 260-112.50S.
Lippmann, Wilbur, 4,118,495, Cl. 424-258.000.

B. Heller & Company: *See—*
Juhn, Hyunil; and Wistreich, Hugo E., 4,118,519, Cl. 426-533.000.

Babiec, John S., Jr.: *See—*
Goldstein, Stephen L.; and Babiec, John S., Jr., 4,118,586, Cl. 568-767.000.

Bach, Hartwig C.: *See—*
Silver, Frank M.; and Bach, Hartwig C., 4,118,358, Cl. 260-30.80R.

Baer, Karl: *See—*
Fouquet, Gerd; Merger, Franz; Platz, Rolf; and Baer, Karl, 4,118,588, Cl. 560-210.000.

Bahr, Hermann: *See—*
Lattrell, Rudolf; Kief, Heinrich; and Bahr, Hermann, 4,118,509, Cl. 424-295.000.

Bair, Frank E.: *See—*
Ruffner, Frederick G.; and Bair, Frank E., 4,118,120, Cl. 355-75.000.

Baker, Peter Frederick, to Quinton Hazell Limited. Bearing carrier for a clutch release bearing. 4,117,916, Cl. 192-98.000.

Bakken, George S., to United States of America, Energy. System for the production of plasma. 4,118,274, Cl. 176-1.000.

Bala, Harry: *See—*
Mowli, John C.; and Bala, Harry, 4,117,934, Cl. 206-610.000.

Baldwin, Colin: *See—*
Bingham, Kenneth Charles Arthur; Gillingham, Alan George Albert; and Baldwin, Colin, 4,118,523, Cl. 427-97.000.

Ball Corporation: *See—*
Scholes, Addison B., 4,118,202, Cl. 44-6.000.

Ball, Edward R., to GTE Automatic Electric Laboratories, Incorporated. Phase locked loop including active lowpass filter. 4,118,674, Cl. 331-17.000.

Ball, Kenneth, to Vickers-Intertek Limited. Apparatus for working under water. 4,117,688, Cl. 405-188.000.

Balland, Jean, to Manufacture de Produits Chimiques Protex, Societe Anonyme. Fabric-printing or dyeing process using thermosensitizer for latex binder. 4,118,538, Cl. 428-425.000.

Ballas, George C.: *See—*
Campbell, David Lester, 4,118,000, Cl. 248-228.000.

Ballinger, Dale O., to Honeywell Inc. Material processor with relative movement between material and its positioner. 4,118,179, Cl. 432-59.000.

Ban, Itsuki; Iizuka, Shohei; and Funakoshi, Hisashi. Cassette tape recorder with memory controlled selective by-pass. 4,118,743, Cl. 360-73.000.

Banko, Anton, to Surgical Design Corp. Surgical operating system with upper pressure limit. 4,117,843, Cl. 128-230.000.

Bansal, Jag M.; and Kumar, Anil. Gangable radiant energy collector. 4,117,830, Cl. 126-271.000.

Bansal, Jag M.; and Kumar, Anil, to Bansal, Manju. Energy collector for collecting solar energy and the like. 4,117,831, Cl. 126-271.000.

Bansal, Manju: *See—*
Bansal, Jag M.; and Kumar, Anil, 4,117,831, Cl. 126-271.000.

Banucci, Eugene G.; and Boldebuck, Edith M., to General Electric Company. Novel polyetheramide-imide epoxy resin blends. 4,118,535, Cl. 428-383.000.

Barben, Theodore R., II, to Thomas-Barben Instruments. Four electrode conductivity sensor. 4,118,663, Cl. 324-30.00R.

Barbery, Gilles; and Cecile, Jean-Luc, to Bureau de Recherches Geologiques et Minieres. Process for the concentration by flotation of fine mesh size or oxidized ores of copper, lead, zinc. 4,118,312, Cl. 209-166.000.

Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, to Centro Sperimentale Metallurgico S.p.A; and Terni Societa per l'Industria e'Elettricita S.p.A. Process for the production of a

silicon steel strip with high magnetic characteristics. 4,118,255, Cl. 148-111.000.

Barkan, Philip; and Imam, Imdad, to General Electric Company. Hydraulically-actuated operating system for an electric circuit breaker. 4,118,613, Cl. 200-82.00B.

Barnard, Daniel D., to Bendix Corporation, The. Fuel injection cut off means for over temperature protection of exhaust treatment device. 4,117,807, Cl. 123-32.0EE.

Barrett, Joseph F.; and Kiscaden, Roy W., to Westinghouse Electric Corp. Synchronization system for a combined cycle electric power plant. 4,118,635, Cl. 290-40.00R.

Barrientos, Christine Ann. Plate holder. 4,118,081, Cl. 312-8.000.

Barry, Louis T.: *See—*
von Dreusche, Charles F., Jr.; and Barry, Louis T., 4,118,220, Cl. 75-69.000.

Barteri, Massimo: *See—*
Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, 4,118,255, Cl. 148-111.000.

Bartlett, Robert N. Apparatus for connecting a vacuum cleaner and solution tank as a cleaning solution-extraction cleaner. 4,118,002, Cl. 248-311.10R.

Barto, Robert M., Jr., to Universal Photocopy, Inc. Electrostatic copier machine with selectable magnification ratios. 4,118,118, Cl. 355-8.000.

Barton, James Castle: *See—*
Pan, Jing Jong; Arnold, Milton Phillip; and Barton, James Castle, 4,118,270, Cl. 156-659.000.

Bartrum, David Edward, to BF Goodrich Company, The. Extrusion apparatus. 4,118,166, Cl. 425-462.000.

Basevi, Sandro C.: *See—*
Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, 4,118,255, Cl. 148-111.000.

BASF Aktiengesellschaft: *See—*
Fouquet, Gerd; Merger, Franz; Platz, Rolf; and Baer, Karl, 4,118,588, Cl. 560-210.000.
Wittkamp, Heinrich; and Gehrung, Manfred, 4,118,616, Cl. 206-387.000.

BASF Farben & Fasern AG: *See—*
Brose, Horst; Depping, Karl Dieter; Hentschel, Dietrich; Kostevc, Bernard; and Schmidt, Klaus, 4,118,366, Cl. 260-40.00R.

BASF Wyandotte Corporation: *See—*
Login, Robert B., 4,118,326, Cl. 252-8.600.

Bassett, Henry C.; From, Charles A., Jr.; Parker, John F.; and Worley, Ansel A., to Western Electric Company, Inc. Connector with perforable insulative liner and methods of fabricating same. 4,118,596, Cl. 174-87.000.

Battelle Development Corporation: *See—*
Fawcett, Sherwood L.; and Anno, James N., 4,117,696, Cl. 62-115.000.
Gross, Daniel; and Genequand, Pierre, 4,117,829, Cl. 126-270.000.
Noir, Dominique; and Meier, John, 4,118,172, Cl. 431-12.000.

Battigelli, Jean A.: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,118,213, Cl. 65-5.000.

Baudet, Pierre; Ricard, Jean-Paul; and Schulthess, Adrian, to Laboratories om Societe Anonyme. Mixed esters of polyols. 4,118,583, Cl. 560-63.000.

Baudin, Lucien, to Idram Engineering Company Est. Rotary machine with controlled retractable pivoted members such as blades or pistons. 4,118,160, Cl. 418-260.000.

Bauer, James J.: *See—*
Beckstrom, Harold K.; Bauer, James J.; Morehouse, James O.; and Loraas, Orlan J., 4,117,944, Cl. 214-131.00A.
Henline, John W.; Bauer, James J.; and Morehouse, James O., 4,117,902, Cl. 180-54.00R.

Baumgarten, Wilfried, to Paul Troester Maschinenfabrik. Apparatus for manufacturing lengths of rubber hose of curved shape. 4,118,162, Cl. 425-113.000.

Baumgartner, Erich Rudolf; and Doehler, Peter. Smoothing or pressing iron. 4,117,612, Cl. 38-91.000.

Baurecht, Heinz-Ewald; Hornle, Reinhold; and Muller, Gerd, to Bayer Aktiengesellschaft. Process for the preparation of copper phthalocyanine. 4,118,391, Cl. 260-314.500.

Bausch & Lomb Incorporated: *See—*
Dey, Thomas W., 4,118,761, Cl. 362-297.000.

Bay, William P. Helmet shield and visor apparatus. 4,117,553, Cl. 2-10.000.

Bayer Aktiengesellschaft: *See—*
Baurecht, Heinz-Ewald; Hornle, Reinhold; and Muller, Gerd, 4,118,391, Cl. 260-314.500.
Jager, Horst; and Dehmel, Georg, 4,118,382, Cl. 260-154.000.
Kleinstuck, Roland; and Block, Hans-Dieter, 4,118,435, Cl. 260-972.000.
Konig, Joachim; and Suling, Carlhans, 4,118,556, Cl. 526-229.000.
Lindner, Christian; Suling, Carlhans; Arend, Gunter; Brokmeier, Dieter; and Nischk, Gunther, 4,118,375, Cl. 526-240.000.
Maurer, Fritz; Riebel, Hans-Jochem; Behrenz, Wolfgang; and Hammann, Ingeborg, 4,118,486, Cl. 424-212.000.
Molls, Hans-Heinz; Schiwy, Willy; Hornle, Reinhold; and Nebeling, Reinhard, 4,118,384, Cl. 260-163.000.
Nielinger, Werner; Brassat, Bert; and Vernaleken, Hugo, 4,118,364, Cl. 260-37.00N.
Pedain, Josef; Wellner, Wolfgang; Gruber, Hermann; and Dietrich, Manfred, 4,118,376, Cl. 528-59.000.
Regel, Erik; Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, 4,118,487, Cl. 424-232.000.
Schnabel, Eugen; Schlumberger, Horst Dieter; Reinhardt, Gerd; Truscheit, Ernst; and Tschesche, Harald, 4,118,481, Cl. 424-177.000.

Bayerische Motoren Werke AG: *See—*
Marwitz, Hans-Gunther v.d., 4,118,073, Cl. 301-6.0CS.

BBC Brown, Boveri & Company Limited: *See—*
Kupfer, Theo, 4,118,133, Cl. 403-24.000.

Beach, Janet. Medical apparatus for transporting fluids. 4,118,195, Cl. 222-215.000.

Beall, George H.; Chyung, Kenneth; and Hoda, Syed N., to Corning Glass Works. Glass-ceramics displaying inherent lubricity. 4,118,237, Cl. 106-39.600.

Beardmore, James W.; and Goehring, Daniel, to Shell Oil Company. Wax composition. 4,118,203, Cl. 44-7.500.

Beardsley, James L.; and Zollinger, J. Lamar, to Minnesota Mining and Manufacturing Company. Silane-terminated polycarbodiimide primers and composite coatings therefrom. 4,118,536, Cl. 428-413.000.

Beck, Earl A. Air over oil high pressure modulating valve. 4,117,865, Cl. 137-627.500.

Beck, James Richard; and Gajewski, Robert Peter, to Eli Lilly and Company. Herbicidal 1,4-diphenyl-3-pyrazolin-5-ones. 4,118,574, Cl. 548-363.000.

Becker, Donald E.; Achenbach, Gary D.; and Stuever, George W., to Continental Oil Company. Fireproofing composition. 4,118,325, Cl. 252-8.100.

Becker, Manfred. Analog-to-digital converter recalibration method and apparatus. 4,118,698, Cl. 340-347.0CC.

Beckman Instruments, Inc.: *See—*
Neti, Radhakrishna Murty; and Sawa, Kenneth Bruno, 4,118,193, Cl. 422-94.000.

Beckstrom, Harold K.; Bauer, James J.; Morehouse, James O.; and Loraas, Orlan J., to Clark Equipment Company. Backhoe mounting assembly. 4,117,944, Cl. 214-131.00A.

Bedford Engineering Corp.: *See—*
Richardson, Carl; Stoddart, Hugh F.; and Wiley, Philip A., 4,117,935, Cl. 209-586.000.

Bedford Industries, Inc.: *See—*
Moore, Doyle A., 4,117,988, Cl. 242-71.900.

Begin, Louis E.: *See—*
Dunbar, Joseph E.; and Begin, Louis E., 4,118,564, Cl. 544-82.000.

Behrenz, Wolfgang: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Behrenz, Wolfgang; and Hammann, Ingeborg, 4,118,486, Cl. 424-212.000.

Behringwerke Aktiengesellschaft: *See—*
Bonacker, Ludwig; and Stark, Josef, 4,118,349, Cl. 260-8.000.
Schmidtberger, Rudolf, 4,118,379, Cl. 260-112.00B.

Belden Corporation: *See—*
Medcraft, Wayne R., 4,117,711, Cl. 72-413.000.

Bell Telephone Laboratories, Incorporated: *See—*
Berglund, Richard Newman; and Pasternak, John Paul, 4,118,095, Cl. 339-99.00R.
Chang, Kuang-Chou; Heller, Adam; and Miller, Barry, 4,118,548, Cl. 429-111.000.
Dombkowsi, Walter Stephen; and Rosin, Erwin August, 4,117,670, Cl. 60-39.28T.
Pfahnl, Arnold; and Schuller, Joris Maarten, 4,118,595, Cl. 174-68.500.
Roberts, Charles Sheldon, 4,118,788, Cl. 364-900.000.
Smith, Arnold Ray, 4,117,585, Cl. 29-566.300.

Belmore, Richard J. Rotatable refrigerated valve. 4,117,694, Cl. 62-55.500.

Beloit Corporation: *See—*
Sokolow, Nickolas N., 4,117,955, Cl. 222-144.500.

Bendix Corporation, The: *See—*
Barnard, Daniel D., 4,117,807, Cl. 123-32.0EE.
Carre, Jean-Jacques; and Levrai, Roland, 4,117,769, Cl. 91-170.00R.
Johannesen, Donald D., 4,117,910, Cl. 188-71.900.
Mayer, Endre A., 4,118,157, Cl. 418-1.000.
Ruppe, Joseph P., Jr., 4,117,912, Cl. 188-216.000.
Summers, Robert Milton, 4,118,346, Cl. 260-2.300.
Taig, Alistair Gordon, 4,117,864, Cl. 137-625.230.

Benedyk, Joseph C.; and Stratton, Richard O., to Brunswick Corporation. Pile product molded of ethylene/vinyl acetate copolymer. 4,118,530, Cl. 428-92.000.

Bengsch, Peter; and Bjornstad, Steinar, to Bengsch, Peter. Folding clothes-hanger. 4,117,960, Cl. 223-94.000.

Bennett, J. Richard, to A & E Plastik Pak Co. Inc. Awning for a mobile home. 4,117,876, Cl. 160-67.000.

Bennett, James G.; Cooper, Glenn D.; and Katchman, Arthur, to General Electric Company. Method for preparing blends of rubber, a polyphenylene ether resin and an alkenyl aromatic addition polymer. 4,118,348, Cl. 260-4.0AR.

Benthos Incorporated: *See—*
Hayward, Gary G., 4,117,718, Cl. 73-52.000.

Berchielli, Aldo S.: *See—*
Chireau, Roland F.; and Berchielli, Aldo S., 4,118,552, Cl. 429-219.000.

Berenguer, Antonio Subiros. Portable article carrier. 4,117,874, Cl. 150-1.700.

Berges, David A., to SmithKline Corporation. 7-Acyl-3-(sulfonic acid and sulfamoyl substituted tetrazolyl thiomethyl)cephalosporins and pharmaceutical compositions containing them. 4,118,490, Cl. 424-246.000.

Berges, David A., to SmithKline Corporation. 7-Acyl-3-(sulfaminoal-

kyl substituted tetrazolylthiomethyl)cephalosporins, antibacterial compositions containing them and methods of treating bacterial infections with them. 4,118,491, Cl. 424-246.000.

Berglund, Richard Newman; and Pasternak, John Paul, to Bell Telephone Laboratories, Incorporated. Wire connecting block. 4,118,095, Cl. 339-99.00R.

Bergmann, Udo: *See—*
Stromberger-D'Alton-Rauch, Ilse-Dore; Klose, Karl; Bergmann, Udo; Glattli, Alfred; and Hodum, Claus-Peter, 4,118,229, Cl. 96-27.00H.

Berkman, Joseph L. Case for differently sized magnetic tape enclosures. 4,117,931, Cl. 206-387.000.

Berkowitz, Sidney, to FMC Corporation. Chloroisocyanurate compounds. 4,118,569, Cl. 544-190.000.

Bernett, Frank E., to Tile Council of America, Inc. Mortar compositions and method of making same. 4,118,241, Cl. 106-90.000.

Bernstein, Albert J., to United States of America, National Aeronautics and Space Administration. Automatic communication signal monitoring system. 4,118,666, Cl. 324-77.00C.

Bernstein, Seymour: *See—*
Conrow, Ransom Brown; and Bernstein, Seymour, 4,118,418, Cl. 562-439.000.
Conrow, Ransom Brown; and Bernstein, Seymour, 4,118,585, Cl. 560-44.000.

Bernt, Erich: *See—*
Determann, Helmut; Bernt, Erich; Dollacker, Werner; Gutmann, Ingeborg, deceased; and Engelhardt, Gudrun, administrator, 4,118,279, Cl. 195-63.000.

Berry, Clifford W.: *See—*
Larsen, Ronald L.; and Berry, Clifford W., 4,117,932, Cl. 206-419.000.

Berry, Robert, to Fairchild Camera and Instrument Corporation. Integrated circuit structures utilizing conductive buried regions. 4,118,721, Cl. 357-22.000.

Berube, Richard R.: *See—*
Marchetti, Francis R.; Zentz, William E.; and Berube, Richard R., 4,118,247, Cl. 106-308.00N.

Besse, Celestine Paul, to Chevron Research Company. Compliant offshore structure. 4,117,690, Cl. 405-227.000.

Bestmann, Hans Jurgen; Stransky, Werner Theo; and Vostrowsky, Otto, to Hoechst Aktiengesellschaft. Process for preparing cis-olefins. 4,118,406, Cl. 260-410.90R.

Bette, Joseph A. Wood burning stove. 4,117,826, Cl. 126-65.000.

Betush, Frank A., to Progressive Machine Products, Inc. Control and selector unit for dental handpieces. 4,117,861, Cl. 137-595.000.

Betz Laboratories, Inc.: *See—*
Vorchheimer, Norman, 4,118,355, Cl. 260-29.6PT.

BF Goodrich Company, The: *See—*
Bartrum, David Edward, 4,118,166, Cl. 425-462.000.

Bhabra, Avtar S.: *See—*
Pursell, Robert F.; Bhabra, Avtar S.; and Rossi, Guglielmo, 4,118,610, Cl. 200-67.0DA.

Bhat, Sujata Vasudev; de Souza, Noel John; Dornauer, Horst; Bhattacharya, Bani Kanta; and Dohadwalla, Alihussein Nomanbhai, to Hoechst Aktiengesellschaft. Pharmacologically effective substance from plants belonging to the family of Labiatae. 4,118,508, Cl. 424-283.000.

Bhattacharya, Bani Kanta: *See—*
Bhat, Sujata Vasudev; de Souza, Noel John; Dornauer, Horst; Bhattacharya, Bani Kanta; and Dohadwalla, Alihussein Nomanbhai, 4,118,508, Cl. 424-283.000.

Bhattacharyya, Ajay: *See—*
Carleton, Richard D.; and Bhattacharyya, Ajay, 4,118,275, Cl. 176-36.00R.

Biasoli, Giovanni: *See—*
Giraldi, PierNicola; Nannini, Giuliano; Logemann, Willy; Tommasini, Raffaele; Buttinoni, Ada; and Biasoli, Giovanni, 4,118,504, Cl. 424-274.000.

Bickford, Edgar, to Raymond Lee Organization, Inc., The. Adjustable picture frames. 4,117,614, Cl. 40-155.000.

Bielomatik Leuze & Co.: *See—*
Maus, Dieter; and Buck, Hermann, 4,117,800, Cl. 118-7.000.

Bienert, Horst; and Jardin, Hans, to Webasto-Werk W. Baier GmbH & Co. Vehicle top with pivotable cover. 4,118,063, Cl. 296-137.00B.

Billmeyer, Thomas F., to Preway Inc. Fireplace construction. 4,117,827, Cl. 126-121.000.

Binder, Hans, to Siemens Aktiengesellschaft. Process for adjusting exposure masks relative to a substrate wafer. 4,118,230, Cl. 96-27.00R.

Bingham, Kenneth Charles Arthur; Gillingham, Alan George Albert; and Baldwin, Colin, to International Computers Limited. Production of semiconductor devices. 4,118,523, Cl. 427-97.000.

Bingle, Gerald L.; and Earsley, Melvin L., to Federal-Mogul Corporation. Welded plastic bearing cage and method of making same. 4,118,259, Cl. 156-73.100.

Bischoff, Robert F., Jr. Turning mechanism. 4,118,055, Cl. 292-165.000.

Bittler, Dieter: *See—*
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, 4,118,488, Cl. 424-238.000.

Bjornstad, Steinar: *See—*
Bengsch, Peter; and Bjornstad, Steinar, 4,117,960, Cl. 223-94.000.

Blair, Robert W.: *See—*
Mayer, Peter; Blair, Robert W.; and Zamin, Mohammed, 4,118,301, Cl. 204-202.000.

Blanding, Wendell S.; and Van Dewoestine, Robert V., to Corning Glass Works. Extrusion die. 4,118,456, Cl. 264-177.00R.

Bleiweiss, Arthur F.; Crompton, Kenneth J.; and Urbanek, Karel, to Dominion Auto Accessories Limited. Lamp assembly. 4,118,764, Cl. 362-369.000.

Bliemeister, Robert M., to Allis-Chalmers Corporation. Rotary kiln service stands. 4,118,180, Cl. 432-103.000.

Block, Hans-Dieter: *See—*
Kleinstuck, Roland; and Block, Hans-Dieter, 4,118,435, Cl. 260-972.000.

Bodig, Bernd; Schmied, Helmut; and Hohne, Gerd, to Robert Bosch GmbH. Ignition system for internal combustion engines with tapped ignition coil. 4,117,818, Cl. 123-148.00E.

Boehringer Mannheim GmbH: *See—*
Determann, Helmut; Bernt, Erich; Dollacker, Werner; Gutmann, Ingeborg, deceased; and Engelhardt, Gudrun, administrator, 4,118,279, Cl. 195-63.000.

Boeing Company, The: *See—*
Foster, Gene B., 4,117,702, Cl. 72-7.000.
Neal, Brian; and Andersen, Lars Q., 4,117,671, Cl. 60-262.000.

Boettcher, Bodo. Heat recoverable article. 4,118,260, Cl. 156-85.000.

Boettcher, Carl E., to Automatic Industrial Machines, Inc. Method for dry printing on contoured workpieces. 4,118,264, Cl. 156-238.000.

Bogdanoff, Anatoly: *See—*
Porter, Gary D.; and Bogdanoff, Anatoly, 4,118,627, Cl. 250-397.000.

Bogen, Jan O., to Sala International AB. Device for tanks of circular type such as, for example, thickeners, sludge tanks, mixing tanks and the like. 4,118,321, Cl. 210-91.000.

Bohm, Gerhard; and Mayer, Rolf. Hollow body and method of making the same. 4,117,866, Cl. 138-30.000.

Bohm, Peter Wolfgang: *See—*
Weber, Paul; Lankes, Erich; Butschko, Gerhard; Ritzmann, Horst; and Bohm, Peter Wolfgang, 4,118,177, Cl. 432-14.000.

Bohnensieker, Franz. Gas sterilization apparatus. 4,118,191, Cl. 55-279.000.

Bohrer, James Calvin: *See—*
Apostolatos, George Nikolas; Bohrer, James Calvin; and Inamorato, Jack Thomas, 4,118,332, Cl. 252-107.000.

Bold, Eugene W. Calculating devices. 4,117,973, Cl. 235-61.00B.

Boldebuck, Edith M.: *See—*
Banucci, Eugene G.; and Boldebuck, Edith M., 4,118,535, Cl. 428-383.000.

Bolling, Donald Louis: *See—*
Power, George Edward; and Bolling, Donald Louis, 4,118,541, Cl. 428-452.000.

Bolme, Donald W. Removal of nitrogen oxides from industrial gases by use of oxidizing solutions in which nitrates are the oxidants. 4,118,460, Cl. 423-235.000.

Boltad, Arne Martin: *See—*
McCleskey, Robert W., Jr.; Putnam, Paul S.; and Boltad, Arne Martin, 4,117,941, Cl. 214-2.500.

Bonacker, Ludwig; and Stark, Josef, to Behringwerke Aktiengesellschaft. Process for the manufacture of polystyrene latex compounds. 4,118,349, Cl. 260-8.000.

Boomgaard, Dirk J.: *See—*
Shoupp, William E.; Bratkowski, Walter V.; and Boomgaard, Dirk J., 4,118,717, Cl. 354-43.000.

Booth, Rex, to United States of America, Energy. Air bearing vacuum seal assembly. 4,118,042, Cl. 277-226.000.

Borelly, Wolfgang. Apparatus for producing parallel wire strands for bridges and the like by winding and unwinding strand of large cross-section and for simultaneously applying corrosion protection thereto. 4,117,582, Cl. 29-419.00R.

Borg-Warner Corporation: *See—*
Silberschlag, Russell Earl, 4,117,918, Cl. 192-103.00B.

Borgianni, Carlo: *See—*
Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, 4,118,255, Cl. 148-111.000.

Bormann, Dieter; Merkel, Wulf; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. Derivatives of 5-aminobenzoic acid having a heterocyclic substituent in the 3-position. 4,118,397, Cl. 260-326.410.

Borona, Russell T., to Westinghouse Electric Corp. Circuit interrupter. 4,118,680, Cl. 335-176.000.

Borroni, Andrea, to Industrie Pirelli Societa per Azioni. Process for manufacturing multi-core electric power cables and cables so-produced. 4,118,593, Cl. 174-26.00R.

Botros, Raouf, to American Color & Chemical Corporation. Azo dyes containing an N-2-pyridine-2,4-dihydroxybenzamide coupler component. 4,118,383, Cl. 260-156.000.

Bouchet-Lassale S.A.: *See—*
Mathys, Pierre, 4,117,664, Cl. 58-86.000.

Bourassa, Richard Lawrence. Combination air filter and air treating device. 4,118,226, Cl. 55-279.000.

Bouwhuis, Gijsbertus; Braat, Josephus Johannes Maria; and Jacobs, Bernardus Antonius Johannus, to U.S. Philips Corporation. Optical videodisc with variable width tracks. 4,118,734, Cl. 358-128.000.

Bowman, Walter A.; and Wessel, Richard L., to United States Steel Corporation. Plug-type coke oven door. 4,118,284, Cl. 202-248.000.

Boyce, Peter Howard, to Plessey Handel und Investments A.G. Taximeter fare computing devices. 4,118,775, Cl. 364-467.000.

Boyle, Delbert D. Bathroom deodorizer and odorizer devices and methods of making and using the same. 4,117,559, Cl. 4-209.00R.

Braat, Josephus Johannes Maria: *See—*
Bouwhuis, Gijsbertus; Braat, Josephus Johannes Maria; and Jacobs, Bernardus Antonius Johannus, 4,118,734, Cl. 358-128.000.

Brabetz, Hartmut; Kemenater, Christof; Six, Franz; and Kaiser, Wilhelm, to Wacker-Chemie GmbH. Adhesive aqueous dispersions of

polyvinyl alcohol graft polymers with acidic hardeners and process of production. 4,118,357, Cl. 260-29.6WA.

Bradley, Guy M.: *See—*
Talley, Charles P.; Bradley, Guy M.; and Guliana, Ronald T., 4,118,316, Cl. 210-31.00C.

Braga, Albert T.: *See—*
Brenner, Robert A.; Cuthbert, Victor W.; and Braga, Albert T., 4,118,647, Cl. 310-239.000.

Brandenstein, Manfred: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,118,078, Cl. 308-6.00C.

Brandt, H. David: *See—*
Goell, James E.; and Brandt, H. David, 4,118,100, Cl. 350-96.200.

Brassat, Bert: *See—*
Nielinger, Werner; Brassat, Bert; and Vernaleken, Hugo, 4,118,364, Cl. 260-37.00N.

Bratkowski, Walter V.: *See—*
Shoupp, William E.; Bratkowski, Walter V.; and Boomgaard, Dirk J., 4,118,717, Cl. 354-43.000.

Braund, Darwin G.; Dolge, Kendall L.; Goings, Richard L.; and Steele, Robert L., to Agway, Inc. Method of formulating dairy cattle rations. 4,118,513, Cl. 426-2.000.

Brax, Jean Albert, to Saint-Gobain Industries. Method and apparatus for heating glass in a forehearth. 4,118,215, Cl. 65-134.000.

Brazhnikov, Nikolai Ivanovich. Method for checking thickness of sheet materials by using acoustic oscillation and device for effecting same. 4,117,732, Cl. 73-599.000.

Bremer, Hans: *See—*
Schabert, Hans-Peter; Bremer, Hans; and Strickroth, Erich, 4,118,277, Cl. 176-87.000.

Brennan, James P., to Olin Corporation. Process for producing sodium dichloroisocyanurate. 4,118,570, Cl. 544-190.000.

Brenner, Douglas, to Exxon Research & Engineering Co. Plasticization of neutralized sulfonated elastomeric polymer. 4,118,359, Cl. 260-30.80R.

Brenner, Douglas: *See—*
Makowski, Henry S.; and Brenner, Douglas, 4,118,362, Cl. 260-32.60A.

Brenner, L. Martin; and Loev, Bernard, to SmithKline Corporation. 3-Morpholino-2-heterocyclic-thiopropanamides. 4,118,567, Cl. 544-131.000.

Brenner, Robert A.; Cuthbert, Victor W.; and Braga, Albert T., to Whirlpool Corporation. Preassembleable brush assembly. 4,118,647, Cl. 310-239.000.

Brey, Hans: *See—*
United States of America, National Aeronautics and Space Administration; Brey, Hans; and Geise, Philip E., Jr., 4,118,701, Cl. 343-6.00R.

Brezinski, Donald P.; and Powell, William E., to Corning Glass Works. Valley sensor for an electrophoretic analyzer. 4,118,781, Cl. 364-525.000.

Brinkmeier, Friedhelm, to Windmoller & Holscher. Apparatus for forming bundles of flattened bags. 4,117,771, Cl. 93-93.0HT.

Brinnand, Antony G.: *See—*
Anderson, Martin; and Brinnand, Antony G., 4,118,489, Cl. 424-246.000.

Bristol-Myers Company: *See—*
Horning, Donald E.; Morris, Leeson R.; and Douglas, James L., 4,118,566, Cl. 544-105.000.
Lim, Gary M. F.; and Perron, Yvon G., 4,118,563, Cl. 544-26.000.

British Communications Corporation Limited: *See—*
Siekierski, Wladyslaw; and Crane, Richard A., 4,118,661, Cl. 320-40.000.

British Industrial Plastics Limited: *See—*
James, Harold; and Buggy, Martin, 4,118,365, Cl. 260-39.00R.
Murray, Christopher Linley; and Vale, Corwyn Philip, 4,118,351, Cl. 260-18.00N.

Broad Corporation: *See—*
Shurcliff, William A., 4,117,882, Cl. 165-104.00S.

Brodie, Michael. Multi-purpose puller. 4,117,581, Cl. 29-261.000.

Brokmeier, Dieter: *See—*
Lindner, Christian; Suling, Carlhans; Arend, Gunter; Brokmeier, Dieter; and Nischk, Gunther, 4,118,375, Cl. 526-240.000.

Bron, Dan. Pump for variable dosing. 4,118,152, Cl. 417-254.000.

Brookes, Malcolm J.: *See—*
Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 4,118,048, Cl. 280-47.350.

Brooks, Carter D.: *See—*
Wechter, William J.; and Brooks, Carter D., 4,118,484, Cl. 424-180.000.

Brooks, George Mahue: *See—*
Rayfield, Wilson Parker; Ferguson, Ronald Worden; and Brooks, George Mahue, 4,118,022, Cl. 270-52.500.

Brooks, Julius E.: *See—*
Johnson, James H.; Fowler, Arnold L.; Brooks, Julius E.; and Friend, Harvey H., 4,117,761, Cl. 89-129.00B.

Brose, Harlan F., to United Technologies Corporation. Inlet air preheating for pyrolysis system. 4,117,786, Cl. 110-229.000.

Brose, Horst; Depping, Karl Dieter; Hentschel, Dietrich; Kostevc, Bernard; and Schmidt, Klaus, to BASF Farben & Fasern AG. Compositions for the production of opaque coatings by radiation. 4,118,366, Cl. 260-40.00R.

Brown, Daniel Maitland, to University of California, The Regents of the. Underwater release mechanism. 4,118,060, Cl. 294-83.00R.

Brown, Esther S. Bed urinal apparatus. 4,117,845, Cl. 128-295.000.

Brown, Richard N.: *See—*
Corsmeier, Robert J.; and Brown, Richard N., 4,118,136, Cl. 403-386.000.

Brown, William J.: *See—*
Waxelbaum, Paul M.; Harris, Fred A.; and Brown, William J., 4,117,984, Cl. 241-73.000.

Brownfield, Jerry A. Solar collector. 4,117,828, Cl. 126-270.000.

Browning, Paul E. Leaf collector and comminutor. 4,117,983, Cl. 241-55.000.

Broxterman, William E.; Urchick, Demetrius; Schmidt, Donald L.; and Hoornstra, Clayton W., to Dow Chemical Company, The. Fused poly-nuclear aromatic cyclic sulfonium zwitterions and polymers thereof. 4,118,297, Cl. 204-159.110.

Brubaker, Charles W., to Raymond Lee Organization, Inc., The, a part interest. Sled roller device. 4,118,043, Cl. 280-8.000.

Bruce, Miles Melvin, Jr.: *See—*
United States of America, National Aeronautics and Space Administration; Wall, William A., Jr.; Ives, Robert E.; Bruce, Miles Melvin, Jr.; Pryor, Peter Paul, Jr.; and Gard, Leslie H., 4,118,620, Cl. 219-124.320.

Brunswick Corporation: *See—*
Abbott, Harry Thomas, 4,118,262, Cl. 156-175.000.
Benedyk, Joseph C.; and Stratton, Richard O., 4,118,530, Cl. 428-92.000.

Bryant, Ellis H., Jr. Precision automatic local time decoding apparatus. 4,117,661, Cl. 58-24.00R.

Buchel, Karl Heinz: *See—*
Regel, Erik; Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, 4,118,487, Cl. 424-232.000.

Buck, Hermann: *See—*
Maus, Dieter; and Buck, Hermann, 4,117,800, Cl. 118-7.000.

Buckbee-Mears Company: *See—*
VanderWert, Terry L., 4,118,252, Cl. 148-6.300.

Buckethal, Paul J.; Groff, Jerome J.; Halsall, Vincent M.; and Hennen, Roy E., to Globe-Union, Inc. Composite battery plate grid and method of manufacturing. 4,118,553, Cl. 429-234.000.

Buckeye Molding Company: *See—*
Allen, David O., 4,117,950, Cl. 220-306.000.

Bucking, Hans-Walter: *See—*
Steckelberg, Willi; Panke, Hans Ludwig; May, Adolf; and Bucking, Hans-Walter, 4,118,324, Cl. 252-8.900.

Bucknell, Ernest H.; and Rauh, Jack K., to TRE Corporation. Flapper type spout assembly. 4,117,858, Cl. 137-119.000.

Budnick, Lawrence T., to Altek Systems, Inc. Battery cable terminal assembly and method of manufacture. 4,118,097, Cl. 339-232.000.

Buggy, Martin: *See—*
James, Harold; and Buggy, Martin, 4,118,365, Cl. 260-39.00R.

Bullock, Paul, to Robin Products Company. Crank handle for window regulator shaft. 4,117,568, Cl. 16-110.00R.

Bulova Watch Company, Inc.: *See—*
Mosimann, Peter Hubert; and Sutter, Hans Rudolf, 4,117,663, Cl. 58-85.500.
Walker, Erich, 4,117,660, Cl. 58-23.00R.

Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9-methylene-16-phenyl-PGF compounds. 4,118,584, Cl. 560-55.000.

Bureau de Recherches Geologiques et Minieres: *See—*
Barbery, Gilles; and Cecile, Jean-Luc, 4,118,312, Cl. 209-166.000.

Burer, Franz, to Sulzer Brothers Limited. Yarn clamp for a weaving machine. 4,117,871, Cl. 139-429.000.

Burg, John S.; Davidson, Donald M.; McClure, Marvin K.; and Sannel, Benjamin H., to Pako Corporation. Dryer for photographic processors. 4,117,604, Cl. 34-70.000.

Burin, Viktor Leontievich; Tjutjunnikov, Anatoly Borisovich; Golosov, Viktor Nikolaevich; Tarynin, Evgeny Konstantinovich; Pogorely, Nikolai Pavlovich; and Lukyanenko, Vladimir Matveevich. Valve tray for mass-exchange apparatus. 4,118,446, Cl. 261-114.0VT.

Burns, Simon Pierce; and Walton, John Monte, to Texaco Development Corp. Process for reducing the acidity of organic polymeric isocyanates. 4,118,286, Cl. 203-89.000.

Burroughs Corporation: *See—*
Gibbs, Stephen R., 4,118,303, Cl. 204-224.00R.
Gyi, Ko Ko; and Ragle, Herbert Underwood, 4,118,746, Cl. 360-99.000.
Rayfield, Wilson Parker; Ferguson, Ronald Worden; and Brooks, George Mahue, 4,118,022, Cl. 270-52.500.

Butculescu, Michael, to Deere & Company. Transmission for crawler tractors. 4,117,744, Cl. 74-665.00G.

Butler, Gene R.: *See—*
Olsen, James A.; Butler, Gene R.; and Sesser, George L., 4,117,942, Cl. 214-6.00B.

Butler Manufacturing Company: *See—*
Steenson, Thomas William; and Paton, W. Donald, 4,117,639, Cl. 52-223.00R.

Butschko, Gerhard: *See—*
Weber, Paul; Lankes, Erich; Butschko, Gerhard; Ritzmann, Horst; and Bohm, Peter Wolfgang, 4,118,177, Cl. 432-14.000.

Buttinoni, Ada: *See—*
Giraldi, PierNicola; Nannini, Giuliano; Logemann, Willy; Tommasini, Raffaele; Buttinoni, Ada; and Biasoli, Giovanni, 4,118,504, Cl. 424-274.000.

Byrn, James H., to Sheller-Globe Corporation. Soft rubber steering wheel, composition and method of manufacture. 4,118,455, Cl. 264-129.000.

C. Conradty Nurnberg GmbH & Co. KG: *See—*
Schieber, Franz, 4,118,592, Cl. 13-18.00R.

C.I. Hayes Inc.: *See—*
Westeren, Herbert W.; and Harrison, Ronald A., 4,118,016, Cl. 266-130.000.

Cabagnero, Ramon Jane. Collapsible stroller. 4,118,052, Cl. 280-642.000.

Cabot Corporation: *See—*
Acuncius, Dennis S.; Herchenroeder, Robert Blanchard; Kirchner, Russell W.; and Silence, William L., 4,118,223, Cl. 75-171.000.

Cadillac Rubber & Plastics, Inc.: *See—*
Lund, Arnold S.; and Stroh, Thomas L., 4,118,167, Cl. 425-463.000.

Cahen, Raymond M.: *See—*
Debus, Henri R.; and Cahen, Raymond M., 4,118,342, Cl. 252-439.000.

Cahill, Richard C. Guard for preventing human injuries on impact with furnishings. 4,117,782, Cl. 108-27.000.

Caldwell, Harlan D.; Kuo, Cho-Chou; and Kenny, George E., to Research Corporation. Antigen for trachoma lymphogranuloma venereum (LGV) and non-gonococcal urethritis (NGU). 4,118,469, Cl. 424-1.000.

Calfo, Raymond M.; Dailey, George F.; Alkire, Gerald R.; and Mulach, Arthur, to Westinghouse Electric Corp. Dual position air gap baffle assembly for a dynamoelectric machine. 4,118,645, Cl. 310-53.000.

Calgon Corporation: *See—*
Talley, Charles P.; Bradley, Guy M.; and Guliana, Ronald T., 4,118,316, Cl. 210-31.00C.
Welder, Gerald Elvin; Lang, Edward Russell; and Slagle, Charles Wilmer, 4,118,318, Cl. 210-58.000.

California Institute of Technology: *See—*
Rhein, Robert A.; and Ingham, John D., 4,118,427, Cl. 568-852.000.

California Metal Enameling Company: *See—*
Penton, Hugh V., 4,117,616, Cl. 40-550.000.

California Precision: *See—*
Kredo, Theodore A., 4,118,766, Cl. 362-427.000.

Calvi, Salvatore J.; and Stelben, John J., to Pitney-Bowes, Inc. Xerographic fusing apparatus. 4,118,178, Cl. 432-35.000.

Campbell, David Lester, to Ballas, George C. Apparatus for supporting a member from a drop-tile ceiling. 4,118,000, Cl. 248-228.000.

Canadian D. A. Stuart Oil Co. Limited: *See—*
Scherf, Gerhard Wolfgang Helmut, 4,118,565, Cl. 544-87.000.

Canadian Patents and Development Limited: *See—*
Oloman, Colin William; and Watkinson, Alan Paul, 4,118,305, Cl. 204-265.000.

Canon Kabushiki Kaisha: *See—*
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,118,713, Cl. 354-23.00D.
Okajima, Hidekazu; and Iwama, Hideto, 4,118,714, Cl. 354-31.000.
Suzuki, Masayuki; Sakurada, Nobuaki; Ito, Tadashi; Yamamichi, Masayoshi; and Murakami, Hiroyashu, 4,118,716, Cl. 354-38.000.

Carba S.A.: *See—*
Gabus, Jean-Claude, 4,117,863, Cl. 137-601.000.
Gabus, Jean-Claude, 4,118,612, Cl. 200-81.90R.

Carleton, Richard D.; and Bhattacharyya, Ajay, to United States of America, Energy. Variable flow control for a nuclear reactor control rod. 4,118,275, Cl. 176-36.00R.

Carlin, Jack M. Pressure differential flow retardant valve. 4,117,860, Cl. 137-513.500.

Carlson, Donald E., to Mark Controls Corporation. Frostproof backflow preventer. 4,117,856, Cl. 137-62.000.

Carlson, Gerald L.: *See—*
Phillips, David C.; Hickam, William M.; and Carlson, Gerald L., 4,117,713, Cl. 73-17.00R.

Carpaneti, Edoardo: *See—*
Vargiu, Silvio; Carpaneti, Edoardo; Crespolini, Giancarlo; and Pitzalis, Mario, 4,118,555, Cl. 526-76.000.

Carr, John B., to Shell Oil Company. Benzodioxincarboxamide lipogenesis inhibitors. 4,118,507, Cl. 424-278.000.

Carre, Jean-Jacques; and Levrai, Roland, to Bendix Corporation, The. Vacuum booster. 4,117,769, Cl. 91-170.00R.

Carre, Jean-Jacques, to Societe Anonyme D.B.A. Braking correction device. 4,118,077, Cl. 303-6.00C.

Carrubba, Robert V.: *See—*
Flanagan, Paul; Norster, Eric Roy; Carrubba, Robert V.; and Heck, Ronald M., 4,118,171, Cl. 431-10.000.

Carvalko, Joseph R.; and Tolmie, Robert J., Jr., to Pitney-Bowes, Inc. Developer solution level detector. 4,118,634, Cl. 250-577.000.

Casals-Stenzel, Jorge: *See—*
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, 4,118,488, Cl. 424-238.000.

Case, Cecil L.: *See—*
White, Allen A.; Yatcilla, George; and Case, Cecil L., 4,117,775, Cl. 100-19.00R.

Casey, Donald James; and Epstein, Martin, to American Cyanamid Company. Normally-solid, bioabsorbable, hydrolyzable, polymeric reaction product. 4,118,470, Cl. 424-19.000.

Cassar, Luigi; and Gardano, Andrea, to Montedison S.p.A. Process for preparing oxalic acid and esters of same. 4,118,589, Cl. 560-204.000.

Casto, Walter V.; DeLong, Lawrence W.; Markley, Theodore J.; and Struger, Odo J., to Allen-Bradley Company. Program protection module for programmable controller. 4,118,789, Cl. 364-900.000.

Caterpillar Tractor Co.: *See—*
Myers, Allen D., 4,118,020, Cl. 267-168.000.

Cato Research Corporation: *See—*
Kruesi, Paul R., 4,118,200, Cl. 44-1.00R.

Cawley, William H.: *See—*
Rowe, Edward A., Jr.; and Cawley, William H., 4,118,253, Cl. 148-6.15R.

Cazenave, Paul, to Societe d'Assistance Technique pour Produits Nestle, S.A. Isolation of an aromatic fraction of coffee. 4,118,521, Cl. 426-651.000.

Cebal: *See—*
Winckler, Richard, 4,117,951, Cl. 220-461.000.

Cecile, Jean-Luc: *See—*
Barbery, Gilles; and Cecile, Jean-Luc, 4,118,312, Cl. 209-166.000.

Celms, Harry, to Roblin Industries, Inc. Gate mechanism for cart. 4,118,044, Cl. 280-33.99F.

Celotex: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,118,533, Cl. 428-297.000.

Central Sprinkler Corporation: *See—*
Anderson, James R., 4,117,887, Cl. 169-37.000.

Centro Sperimentale Metallurgico S.p.A: *See—*
Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, 4,118,255, Cl. 148-111.000.

Chamberlin, James W.: *See—*
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,118,742, Cl. 548-306.000.

Chambers, Melvin T.; and Hardy, Herbert L., to Polaroid Corporation. Automatic system for handling and processing photographic film strips. 4,118,737, Cl. 352-130.000.

Chan, Hak-Foon: *See—*
Miller, George A.; and Chan, Hak-Foon, 4,118,461, Cl. 424-273.00R.

Chang, I-Cheng; and Hecht, David L., to Itek Corporation. Second order birefringent acousto-optic device. 4,118,113, Cl. 350-358.000.

Chang, Kuang-Chou; Heller, Adam; and Miller, Barry, to Bell Telephone Laboratories, Incorporated. Method of operating a liquid-semiconductor junction photocell. 4,118,548, Cl. 429-111.000.

Charles, Ronald A.; Jones, Paul W.; Staples, John L.; and Wiegner, Joseph R., to McDonnell Douglas Corporation. Automated microbial analyzer. 4,118,280, Cl. 195-127.000.

Cheary, Walter Graham: *See—*
Preece, Kenneth; and Cheary, Walter Graham, 4,117,793, Cl. 113-116.00D.

Chen, Nai Yuen, to Mobil Oil Corporation. Conversion of oxygenated compounds. 4,118,431, Cl. 260-668.00R.

Chen, Schoen-nan: *See—*
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; and Russak, Michael A., 4,118,546, Cl. 429-111.000.
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; Jost, Steven Robert; Reichman, Joseph; and Russak, Michael A., 4,118,547, Cl. 429-111.000.

Chevron Research Company: *See—*
Besse, Celestine Paul, 4,117,690, Cl. 405-227.000.
Hotten, Bruce W., 4,118,328, Cl. 252-32.500.
Hotten, Bruce W., 4,118,329, Cl. 252-32.500.
Hotten, Bruce W., 4,118,330, Cl. 252-32.500.

Chireau, Roland F.; and Gunther, Ronald G., to Yardney Electric Corporation. Mercury-free zinc electrode. 4,118,551, Cl. 429-207.000.

Chireau, Roland F.; and Berchielli, Aldo S., to Yardney Electric Corporation. Self-supporting electrode and method of making same. 4,118,552, Cl. 429-219.000.

Chizhov, Stanislav Viktorovich: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Chloride Silent Power Limited: *See—*
Jones, Ivor Wynn; and Robinson, Graham, 4,118,545, Cl. 429-104.000.

Chmura, William J., to Textron Inc. Sintered ball valve. 4,118,009, Cl. 251-315.000.

Choay S.A.: *See—*
Rigbi, Meir; Klausner, Yakir; Lefrancier, Pierre; and Sache, Edgar, 4,118,575, Cl. 560-13.000.

Chomerics, Inc.: *See—*
Kuist, Charles H.; Squitieri, Vincent; and Seeger, Richard E., 4,118,102, Cl. 339-17.00F.

Christ, Alfred; Lehmann, Helmut; Kantor, Ludwig; and Miller, Helmut, to Sulzer Brothers Limited. Contactless seal. 4,118,040, Cl. 277-75.000.

Christian, Alfred, to Hydrotile Canada Limited. Packerhead pipe making machine. 4,118,165, Cl. 425-262.000.

Christian, Merlin B. Thermal air powered electric generator system. 4,118,636, Cl. 290-52.000.

Christison, Sommerville Grant; Magnuson, John Edwin; and Tham, Wing Chong, to PACCAR Of Canada, Ltd. Self-energizing winch brake and drive. 4,118,013, Cl. 254-187.500.

Chyung, Kenneth: *See—*
Beall, George H.; Chyung, Kenneth; and Hoda, Syed N., 4,118,237, Cl. 106-39.600.

Ciaramella, Alberto, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Device for automatically loading the central memory of electronic processors. 4,117,974, Cl. 235-304.000.

Ciba-Geigy AG: *See—*
Piller, Bernhard; Lenoir, John; Froehlich, Alfred; Stauner, Thomas; and Tschopp, Paul, 4,118,232, Cl. 96-99.000.

Ciba-Geigy Corporation: *See—*
Rommele, Gunter; and Hagemann, Ruth, 4,118,515, Cl. 426-63.000.
Weber, Kurt, 4,118,560, Cl. 542-447.000.

Cimetiere, Louis; and Gonda, Richard, to Societe de Vente de l'Aluminium Pechiney. Tensionless metallic band of high thermal conductivity in a continuous casting machine. 4,117,880, Cl. 164-433.000.

Cincinnati Milacron Chemicals Inc.: *See—*
Kugele, Thomas Gordon, 4,118,371, Cl. 260-45.75S.

Clark, Douglas Copeland: *See—*
McArthur, Colin Shaw; and Clark, Douglas Copeland, 4,118,619, Cl. 219-121.00L.

Clark, Douglas S.: *See—*
Wenger, La Von Gene; Clark, Douglas S.; and Hauck, Bobbie W., 4,118,164, Cl. 425-202.000.

Clark Equipment Company: *See—*
Beckstrom, Harold K.; Bauer, James J.; Morehouse, James O.; and Loraas, Orlan J., 4,117,944, Cl. 214-131.00A.
Henline, John W.; Bauer, James J.; and Morehouse, James O., 4,117,902, Cl. 180-54.00R.
Sagaser, Thomas M.; and Mather, Joseph M., 4,117,899, Cl. 180-6.480.

Clark, William James Rowley: *See—*
Sarson, Alan Elmer; and Clark, William James Rowley, 4,118,733, Cl. 358-109.000.

Clayton, Ralph S. Colon catheter. 4,117,847, Cl. 128-348.000.

Cleare, Peter John Vernon; Kaye, Albert Edward; and Milner, David John, to Imperial Chemical Industries Limited. Preparation cyano substituted cyclopropane. 4,118,412, Cl. 260-464.000.

Cleland, James Henry: *See—*
Fray, Derek John; and Cleland, James Henry, 4,118,292, Cl. 204-67.000.

Cline, Devin R.: *See—*
Jones, Ronald N.; and Cline, Devin R., 4,117,652, Cl. 56-11.800.

Coach and Car Equipment Corporation: *See—*
Harder, Arthur J., Jr.; and Kehl, Norman J., 4,118,062, Cl. 296-63.000.

Coats, Joel R.: *See—*
Metcalf, Robert L.; and Coats, Joel R., 4,118,424, Cl. 260-613.00R.

Cockett, Stewart Graham; Taylor, Jeffrey Philip; Craven, Peter; and Farmer, Alan Charles, to Post Office. Data processing equipment. 4,118,790, Cl. 364-900.000.

Cody, William H. Liquid game amusement system. 4,118,027, Cl. 273-1.00L.

Coffen, David Llewellyn, to Hoffmann-La Roche Inc. Novel 4-phenoxy-5-sulfamylbenzoic acid derivatives. 4,118,587, Cl. 560-251.000.

Coffman, William M., Jr.: *See—*
Moore, Ray G.; and Coffman, William M., Jr., 4,117,804, Cl. 119-1.000.

Cohon, Bertram J. Adjustable hanger for electric lights. 4,118,760, Cl. 362-239.000.

Colborn, Joseph G.: *See—*
Allen, Royce H.; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,118,782, Cl. 364-565.000.

Cole, Darrell D.: *See—*
Proctor, Darryl F.; Skelly, Peter T.; and Cole, Darrell D., 4,118,597, Cl. 179-18.0FA.

Colgate-Palmolive Company: *See—*
Apostolatos, George Nikolas; Bohrer, James Calvin; and Inamorato, Jack Thomas, 4,118,332, Cl. 252-107.000.
Dugan, Bernard Baron; and Welgemoed, Jacobus Cornelius, 4,118,333, Cl. 252-135.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,472, Cl. 424-54.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,473, Cl. 424-54.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,474, Cl. 424-54.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,475, Cl. 424-54.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,476, Cl. 424-54.000.
Pensak, Philip, 4,118,471, Cl. 424-52.000.
Seugnet, Monique, 4,118,327, Cl. 252-8.800.

Collins, Harry F., to Service Ideas, Inc. Insulated server with cooperating pans. 4,117,948, Cl. 220-410.000.

Collins, William J. Device for sampling molten metal. 4,118,015, Cl. 266-44.000.

Collins, William L. Digital grade averager. 4,118,783, Cl. 364-734.000.

Combustion Engineering, Inc.: *See—*
Manning, William P., 4,117,806, Cl. 122-33.000.

Comer, Donald T., to Precision Monolithics, Inc. Digital to analog converter with binary and binary coded decimal modes. 4,118,699, Cl. 340-347.0DA.

Compagnie Generale d'Electricite: *See—*
Le Sergent, Christian; and Liegois, Michel, 4,117,802, Cl. 118-48.000.

Compagnie Industrielle des Telecommunications S.A.: *See—*
Lannuzel, Roger, 4,118,641, Cl. 307-240.000.

Compudrive Corporation: *See—*
Pierrat, Michel A., 4,117,746, Cl. 74-805.000.

Conibear, Frank R., to Woodstream Corporation. Modified jaws for animal trap. 4,117,623, Cl. 43-90.000.

Connolly, Denis J., to United States of America, National Aeronautics and Space Administration. Traveling wave tube circuit. 4,118,671, Cl. 330-43.000.

Conrow, Ransom Brown; and Bernstein, Seymour, to American Cyanamid Company. 5-Phenenyltris (ureylene) triisophthalic acid salts. 4,118,418, Cl. 562-439.000.

Conrow, Ransom Brown; and Bernstein, Seymour, to American Cyanamid Company. Anionic benzene tetrakis carbonylimino isophthalic acid salts. 4,118,585, Cl. 560-44.000.

Consolidated Medical Equipment: *See—*
Williams, Frank R., 4,117,846, Cl. 128-303.130.

Continental Electronics Manufacturing Company: *See—*
Weldon, James O., 4,118,677, Cl. 332-9.00R.

Continental Oil Company: *See—*
Becker, Donald E.; Achenbach, Gary D.; and Stuever, George W., 4,118,325, Cl. 252-8.100.
Fertl, Walter H.; and Gant, Preston L., 4,118,623, Cl. 250-253.000.

Conwed Corporation: *See—*
Larsen, Ronald L.; and Berry, Clifford W., 4,117,932, Cl. 206-419.000.

Cook, John E., to Fram Corporation. Ambient pressure sensor. 4,117,724, Cl. 73-386.000.

Cook, William H., Jr. Method of manufacturing structural honeycomb with integral heat radiation shields, and the resulting product thereof. 4,118,263, Cl. 156-197.000.

Cooke, Gordon R.; and Franklin, Kevin T., to United States of America, Navy. Digital to graphic character generator. 4,118,709, Cl. 346-33.00R.

Cooper, Glenn D.: *See—*
Bennett, James G.; Cooper, Glenn D.; and Katchman, Arthur, 4,118,348, Cl. 260-4.0AR.

Cooper, Roy F., to Sargent Industries. Pre-stressed rod joint. 4,118,135, Cl. 403-361.000.

Coppa, Anthony Patrick; and Zauderer, Bert, to General Electric Company. Compliant MHD electrode structure. 4,118,643, Cl. 310-11.000.

Corluy, Hans Josephus; Moll, Franz; Muller, Herbert; and Hase, Marie, to Agfa-Gevaert N.V. Photographic materials suited for the production of color separations. 4,118,228, Cl. 96-17.000.

Cormack, Robert John: *See—*
Crawford, Ian Drummond; Marshall, Henry Bruce; and Cormack, Robert John, 4,118,109, Cl. 350-285.000.

Cornelius, James W.; and Mallon, Robert T., to Eagle-Picher Industries, Inc. Apparatus for treating edge-bead formation. 4,117,798, Cl. 118-4.000.

Corning Glass Works: *See—*
Beall, George H.; Chyung, Kenneth; and Hoda, Syed N., 4,118,237, Cl. 106-39.600.
Blanding, Wendell S.; and Van Dewoestine, Robert V., 4,118,456, Cl. 264-177.00R.
Brezinski, Donald P.; and Powell, William E., 4,118,781, Cl. 364-525.000.
Wedding, Brent M., 4,118,214, Cl. 65-30.00R.

Corsmeier, Robert J.; and Brown, Richard N., to General Electric Company. Apparatus for attaching tubing to a rotating disk. 4,118,136, Cl. 403-386.000.

Coulson, John N., Jr.: *See—*
Holland, Charles L.; and Coulson, John N., Jr., 4,117,943, Cl. 214-6.00D.

Crane Air Trac Incorporated: *See—*
Johnson, William George, 4,117,773, Cl. 98-115.0VM.

Crane, Richard A.: *See—*
Siekierski, Wladyslaw; and Crane, Richard A., 4,118,661, Cl. 320-40.000.

Craven, James M. Adhesive composition. 4,118,436, Cl. 260-826.000.

Craven, Peter: *See—*
Cockett, Stewart Graham; Taylor, Jeffrey Philip; Craven, Peter; and Farmer, Alan Charles, 4,118,790, Cl. 364-900.000.

Crawford, George W. Grooved-gear wire puller. 4,117,873, Cl. 140-105.000.

Crawford, Ian Drummond; Marshall, Henry Bruce; and Cormack, Robert John, to Ferranti Limited. Optical apparatus for controlling the direction of a beam of optical radiation. 4,118,109, Cl. 350-285.000.

Crawley, Lantz Stephen: *See—*
Fanshawe, William Joseph; Safir, Sidney Robert; and Crawley, Lantz Stephen, 4,118,393, Cl. 260-326.50B.

Crespolini, Giancarlo: *See—*
Vargiu, Silvio; Carpaneti, Edoardo; Crespolini, Giancarlo; and Pitzalis, Mario, 4,118,555, Cl. 526-76.000.

Creusot-Loire: *See—*
Vigerie, Robert, 4,118,054, Cl. 280-765.000.

Cristiani, Athos. Tobacco rod forming apparatus in cigarette makers. 4,117,851, Cl. 131-84.00B.

Crompton, Kenneth J.: *See—*
Bleiweiss, Arthur F.; Crompton, Kenneth J.; and Urbanek, Karel, 4,118,764, Cl. 362-369.000.

Crosby, James B., Jr.: *See—*
Trist, Nicolas P.; Guffin, Robert E.; Franklin, Walter M.; Crosby, James B., Jr.; Hallaway, Glen N.; and Tellier, James G., 4,117,597, Cl. 32-27.000.

Cross, Ronald H.: *See—*
Olcott, Richard J.; and Cross, Ronald H., 4,117,855, Cl. 134-141.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Ciaramella, Alberto, 4,117,974, Cl. 235-304.000.

Culmer, Daniel D.: *See—*
Ochi, Sam S.; Hamade, Adib R.; and Culmer, Daniel D., 4,118,640, Cl. 307-237.000.

Current, Wayne A.; Genge, Bruce I.; Hurme, Herbert J.; and Zocher,

Josef, to Singer Company, The. Dual color coded sewing machine needles. 4,117,791, Cl. 112-222.000.

Cusano, Dominic A.; and Webster, Harold F., to General Electric Company. Photoflash lamp array having high voltage shorting type flash lamps and radiation sensitive switching elements. 4,118,758, Cl. 362-6.000.

Cuthbert, Victor W.: *See—*
Brenner, Robert A.; Cuthbert, Victor W.; and Braga, Albert T., 4,118,647, Cl. 310-239.000.

Cutler, Ivan B., to University of Utah. Process for separating silica from silicate-bearing materials. 4,118,464, Cl. 423-346.000.

Cygnarowicz, Thomas A.: *See—*
Williams, Thomas E.; and Cygnarowicz, Thomas A., 4,117,881, Cl. 165-2.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Harada, Hideo; and Matsushita, Nobuaki, 4,118,354, Cl. 260-29.2TN.

Daicel, Ltd.: *See—*
Yokoyama, Takushi; Kojima, Hidetaka; Uragami, Masaharu; and Miwa, Kathuyoshi, 4,118,388, Cl. 260-290.00R.

Daikin Kogyo Co., Ltd.: *See—*
Horiuchi, Norio; Kai, Shin-ichi-ro; and Shinjo, Masayoshi, 4,118,235, Cl. 106-38.220.

Dailey, George F.: *See—*
Calfo, Raymond M.; Dailey, George F.; Alkire, Gerald R.; and Mulach, Arthur, 4,118,645, Cl. 310-53.000.

D'Alelio, Gaetano F., to University of Notre Dame du Lac. Polymerizing bis-maleimides. 4,118,377, Cl. 526-236.000.

Danfoss A/S: *See—*
Stannow, Jorgen Christian; Kjeldsen, Kjeld; Tankred, Hans Jurgen; and Madsen, Per Johan, 4,118,153, Cl. 417-363.000.
Vind, Holger Vilhelm, 4,118,753, Cl. 361-331.000.

Dannelly, Clarence C.; and Leonard, Charles R., to Eastman Kodak Company. Apparatus for spray coating discrete particles. 4,117,801, Cl. 118-20.000.

Dart Industries Inc.: *See—*
Koremowski, Theodore Frank; and Lancy, Leslie Emery, 4,118,295, Cl. 204-151.000.

David, Karl-Heinz, to Organisation Europeenne de Recherches Spatiales. Cone optical system. 4,118,622, Cl. 250-216.000.

Davidson, Donald M.: *See—*
Burg, John S.; Davidson, Donald M.; McClure, Marvin K.; and Sannel, Benjamin H., 4,117,604, Cl. 34-70.000.

Davies, Norman; Langley, Morley P.; and Peppel, Howard C., deceased (by Peppel, Virginia L., administrator), to Westinghouse Electric Corp. Self-cooled metal-clad switchgear. 4,118,755, Cl. 361-379.000.

Davis, Royston H.; and Searle, Robert J. G., to Shell Oil Company. Dispirocyclopropane carboxylate pesticides. 4,118,510, Cl. 424-305.000.

Dawes, Keith; and Rowley, Roger James, to Malaysian Rubber Producers Research Association, The. Reinforced rubber. 4,118,367, Cl. 260-42.370.

Dawson, Robert L., to Prima International. Wire rack. 4,117,936, Cl. 211-50.000.

Deb, Satyendra K.: *See—*
Wittke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; and Russak, Michael A., 4,118,546, Cl. 429-111.000.
Wittke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; Jost, Steven Robert; Reichman, Joseph; and Russak, Michael A., 4,118,547, Cl. 429-111.000.

Debus, Henri R.; and Cahen, Raymond M., to Labofina S. A. Process for producing catalysts. 4,118,342, Cl. 252-439.000.

Decca Limited: *See—*
Williams, Philip David Lane, 4,118,703, Cl. 343-17.20R.

Deere & Company: *See—*
Buticulescu, Michael, 4,117,744, Cl. 74-665.00G.
Dobberpuhl, Dale Rudolph, 4,118,132, Cl. 403-24.000.

DeHart, Harold Fredrick. Seed planting device. 4,117,953, Cl. 221-211.000.

Dehmel, Georg: *See—*
Jager, Horst; and Dehmel, Georg, 4,118,382, Cl. 260-154.000.

Dekker, Pieter: *See—*
Argyle, Bernell Edwin; Dekker, Pieter; and Slonczewski, John Casimir, 4,118,793, Cl. 365-30.000.

Del Mei, Luigi Giovanni. Electro-thermal lock. 4,117,701, Cl. 70-150.000.

Del Mei, Luigi Giovanni. Electrical contact devices. 4,118,090, Cl. 339-12.00R.

DeLomba, Donald A. Support for holding Syrian bread. 4,118,021, Cl. 269-86.000.

DeLong, Lawrence W.: *See—*
Casto, Walter V.; DeLong, Lawrence W.; Markley, Theodore J.; and Struger, Odo J., 4,118,789, Cl. 364-900.000.

Del Pino, Fernando: *See—*
Krause, Joachim; Streinstrasser, Ralf; Pohl, Ludwig; Del Pino, Fernando; and Weber, Georg, 4,118,335, Cl. 252-299.000.

Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., to Ayerst, McKenna & Harrison Limited. Pyrano- and thiopyranoindole derivatives. 4,118,394, Cl. 260-326.280.

Dempsey, Martin J., to Asko, Inc. Work reducing and pressure applying. 4,117,705, Cl. 72-237.000.

Den-Mat, Inc.: *See—*
Ilsen, Robert L.; and Glace, William Richard, 4,117,595, Cl. 32-8.000.

Dennis, Bethel E. Canine toilet. 4,117,555, Cl. 4-1.000.

Denny, Bernard Peter. Fishing reel. 4,117,990, Cl. 242-84.52A.

Denoor, Gaston: *See—*
Lagarde, Pierre; and Denoor, Gaston, 4,117,584, Cl. 29-452.000.

De Nora, Oronzio: *See—*
De Nora, Vittorio; and De Nora, Oronzio, 4,118,306, Cl. 204-284.000.

De Nora, Vittorio; and De Nora, Oronzio, to Diamond Shamrock Technologies S. A. Anode constructions for electrolysis cells. 4,118,306, Cl. 204-284.000.

Depping, Karl Dieter: *See—*
Brose, Horst; Depping, Karl Dieter; Hentschel, Dietrich; Kostevc, Bernard; and Schmidt, Klaus, 4,118,366, Cl. 260-40.00R.

DeShon, Harold D., to Dow Chemical Company, The. Drycleaning detergent solution. 4,118,344, Cl. 252-559.000.

Design West Incorporated: *See—*
Eckel, Leonard B.; Sullivan, James P.; and Quintana, Elias D., 4,117,783, Cl. 108-91.000.

Desire, Pierre; and Helgorsky, Jacques, to Rhone-Poulenc Industries. Process for the preparation of purified phosphoric solutions from phosphoric acid. 4,118,462, Cl. 423-321.00S.

DeSoto, Inc.: *See—*
Devona, James E.; and Rokadia, Abdullah M., 4,118,356, Cl. 260-29.6RB.

de Souza, Noel John: *See—*
Bhat, Sujata Vasudev; de Souza, Noel John; Dornauer, Horst; Bhattacharya, Bani Kanta; and Dohadwalla, Alihussein Nomanbhai, 4,118,508, Cl. 424-283.000.

Determann, Helmut; Bernt, Erich; Dollacker, Werner; Gutmann, Ingeborg, deceased (by Gutmann, Siegfried, administrator); and by Engelhardt, Gudrun, administrator, to Boehringer Mannheim GmbH. Stabilizing agent for enzymes. 4,118,279, Cl. 195-63.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,118,466, Cl. 423-415.00P.
Volker, Herbert; Koberstein, Edgar; and Hensel, Jorg, 4,118,199, Cl. 422-171.000.

Devona, James E.; and Rokadia, Abdullah M., to DeSoto, Inc. Copolymers of ethylene and vinyl acetate of increased insolubility. 4,118,356, Cl. 260-29.6RB.

Devuyst, Eric August Pierre: *See—*
Ettel, Victor Alexander; and Devuyst, Eric August Pierre, 4,118,221, Cl. 75-108.000.

Dewallens, Leon, to Fabrication Belge de Disques "Fabeldis". Method for making a metal master for producing a gramophone record. 4,118,287, Cl. 204-6.000.

Dewan, Shashi B.: *See—*
Salva, John P.; Mudzinski, Gregory M.; Mills, John A.; and Dewan, Shashi B., 4,118,658, Cl. 318-257.000.

Dey, Thomas W., to Bausch & Lomb Incorporated. Light condensing illuminator. 4,118,761, Cl. 362-297.000.

Deya, Eiki: *See—*
Niki, Hiroshi; Deya, Eiki; Doi, Toru; Igarashi, Seiichiro; and Hayashi, Hiromichi, 4,118,517, Cl. 426-271.000.

Diamond Shamrock Corporation: *See—*
Kidon, William E.; and Stillman, Neil W., 4,117,560, Cl. 4-321.000.
LaBarre, Ronald L., 4,118,307, Cl. 204-268.000.
Magee, Thomas A., 4,118,389, Cl. 260-294.80R.
Rowe, Edward A., Jr.; and Cawley, William H., 4,118,253, Cl. 148-6.15R.

Diamond Shamrock Technologies S. A.: *See—*
De Nora, Vittorio; and De Nora, Oronzio, 4,118,306, Cl. 204-284.000.
Pellegri, Alberto, 4,118,294, Cl. 204-129.000.

Dickens, Lawrence E., to Westinghouse Electric Corp. Image phased and idler frequency controlled mixer formed on an integrated circuit dielectric substrate. 4,118,670, Cl. 325-446.000.

Diener, Fred L.: *See—*
Turner, John L.; and Diener, Fred L., 4,117,678, Cl. 60-369.000.

Dierberger, James Albert, to United Technologies Corporation. Coolable wall. 4,118,146, Cl. 416-97.00A.

Diesel Kiki Co., Ltd.: *See—*
Matsubara, Hiroshi, 4,117,904, Cl. 180-108.000.

Dietrich, Karl-Heinz: *See—*
Liermann, Traugott; and Dietrich, Karl-Heinz, 4,118,121, Cl. 355-75.000.

Dietrich, Manfred: *See—*
Pedain, Josef; Wellner, Wolfgang; Gruber, Hermann; and Dietrich, Manfred, 4,118,376, Cl. 528-59.000.

Dietrich, William John, Sr.; and Sizelove, Cary Leon, to DMI, Inc. Agricultural folding tool bar with rigid cross frame. 4,117,892, Cl. 172-311.000.

Dietz, Charles F.: *See—*
Friedel, William C., Jr.; and Dietz, Charles F., 4,118,311, Cl. 209-75.000.

Dietz, Wolfgang Friedrich Wilhelm, to RCA Corporation. North-south pincushion distortion correction circuit. 4,118,656, Cl. 315-371.000.

Diggs, Richard E. Apparatus for desalinating water. 4,118,283, Cl. 202-160.000.

Dijkstra, Hendrik: *See—*
Visser, Johannes; Oosthoek, Raoul Henricus Josephus; Groeneweg, Jan Willem; and Dijkstra, Hendrik, 4,118,520, Cl. 426-574.000.

Dillow, Paul E. Radio antenna mounting device. 4,118,003, Cl. 248-539.000.

Di Vita, Sam: *See—*
Au Coin, Thomas R.; Di Vita, Sam; and Wade, Melvin J., 4,118,211, Cl. 65-3.00R.

DMI, Inc.: *See—*
Dietrich, William John, Sr.; and Sizelove, Cary Leon, 4,117,892, Cl. 172-311.000.

Dobberpuhl, Dale Rudolph, to Deere & Company. Rotary tiller tine assembly wire clip. 4,118,132, Cl. 403-24.000.

Dobo, Emerick J., to Monsanto Company. Method for producing fibrous steel matts. 4,118,225, Cl. 75-207.000.

Dobson, Thomas A.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,118,394, Cl. 260-326.280.

Dr. Johannes Heidenhain GmbH., Firma: *See—*
Kober, Hans-Rudolf; and Ernst, Alfons, 4,117,601, Cl. 33-172.00E.

Doehler, Peter: *See—*
Baumgartner, Erich Rudolf; and Doehler, Peter, 4,117,612, Cl. 38-91.000.

Doering, Arlin B.; and Volness, Kenneth H., to Minnesota Mining and Manufacturing Company. Member for limiting air door movement in a disk cartridge. 4,118,748, Cl. 360-133.000.

Dohadwalla, Alihussein Nomanbhai: *See—*
Bhat, Sujata Vasudev; de Souza, Noel John; Dornauer, Horst; Bhattacharya, Bani Kanta; and Dohadwalla, Alihussein Nomanbhai, 4,118,508, Cl. 424-283.000.

Doherty, John, Jr., to Texas Instruments Incorporated. Multi-function thermostatic valve. 4,117,976, Cl. 236-48.00R.

Doi, Toru: *See—*
Niki, Hiroshi; Deya, Eiki; Doi, Toru; Igarashi, Seiichiro; and Hayashi, Hiromichi, 4,118,517, Cl. 426-271.000.

Dolge, Kendall L.: *See—*
Braund, Darwin G.; Dolge, Kendall L.; Goings, Richard L.; and Steele, Robert L., 4,118,513, Cl. 426-2.000.

Dollacker, Werner: *See—*
Determann, Helmut; Bernt, Erich; Dollacker, Werner; Gutmann, Ingeborg, deceased; and Engelhardt, Gudrun, administrator, 4,118,279, Cl. 195-63.000.

Dombkowsi, Walter Stephen; and Rosin, Erwin August, to Bell Telephone Laboratories Incorporated. Dual slope temperature differential shutdown control for gas turbines. 4,117,670, Cl. 60-39.28T.

Domes, E. A.: *See—*
Vacval, Dusan M.; and Domes, E. A., 4,117,911, Cl. 188-73.300.

Dominion Auto Accessories Limited: *See—*
Bleiweiss, Arthur F.; Crompton, Kenneth J.; and Urbanek, Karel, 4,118,764, Cl. 362-369.000.
Urbanek, Karel, 4,118,767, Cl. 362-455.000.

Donohue, Henry Patrick, to Fenestra. Reflectant foil insulated steel doors. 4,118,543, Cl. 428-615.000.

Dorf, Helen A. Recreational vehicle shelf bars. 4,118,087, Cl. 312-291.000.

Dornauer, Horst: *See—*
Bhat, Sujata Vasudev; de Souza, Noel John; Dornauer, Horst; Bhattacharya, Bani Kanta; and Dohadwalla, Alihussein Nomanbhai, 4,118,508, Cl. 424-283.000.

Douek, Maurice; Schmidt, Gustav A.; Malofsky, Bernard M.; and Hauser, Martin, to Avery Products Corporation; and Loctite Corporation, part interest to each. Anaerobic pressure sensitive adhesive composition. 4,118,442, Cl. 260-885.000.

Dougherty, James: *See—*
Victor, Joe M.; and Dougherty, James, 4,118,300, Cl. 204-195.00T.

Douglas, James L.: *See—*
Horning, Donald E.; Morris, Leeson R.; and Douglas, James L., 4,118,566, Cl. 544-105.000.

Dow Chemical Company, The: *See—*
Broxterman, William E.; Urchick, Demetrius; Schmidt, Donald L.; and Hoornstra, Clayton W., 4,118,297, Cl. 204-159.110.
DeShon, Harold D., 4,118,344, Cl. 252-559.000.
Dunbar, Joseph E.; and Begin, Louis E., 4,118,564, Cl. 544-82.000.
Juckniess, Paul R.; and Johnson, David R., 4,118,291, Cl. 204-64.00T.
Orvik, Jon A., 4,118,373, Cl. 528-73.000.
Smith, Harry A., 4,118,363, Cl. 260-33.20R.

Draber, Wilfried: *See—*
Regel, Erik; Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, 4,118,487, Cl. 424-232.000.

Draiswerke GmbH: *See—*
Engels, Kaspar, 4,117,981, Cl. 241-46.150.

Drescher, Erwin, to Melsunger Metall-Werk, Erwin Drescher. Safe with recessed dial. 4,117,785, Cl. 109-59.00T.

Drewe, Nigel Wyndham; Hodson, Peter Robin; and Robson, Clive Gilroy, to Imperial Chemical Industries Limited. Formulation process. 4,118,218, Cl. 71-92.000.

Drui, Mark Simonovich: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Dubinenko, Askold Fedorovich: *See—*
Kopelev, Fridrikh Lvovich; Kossek, Valentin Vladimirovich; Dubinenko, Askold Fedorovich; and Sherstinsky, Semen Markovich, 4,117,750, Cl. 82-30.000.

Duffey, George. Atomizer valve assembly. 4,117,957, Cl. 222-321.000.

Dugan, Bernard Baron; and Welgemoed, Jacobus Cornelius, to Colgate-Palmolive Company. Manufacture of particulate detergents. 4,118,333, Cl. 252-135.000.

Duggan, J. E., to Gould Inc. Electrical panel having molded base pan. 4,118,754, Cl. 361-355.000.

Duijf, Gerrit: *See—*
Van Praag, Michel; and Duijf, Gerrit, 4,118,516, Cl. 426-96.000.

Dummermuth, Ernst: *See—*
Struger, Odo J.; McAdams, Timothy E.; and Dummermuth, Ernst, 4,118,792, Cl. 364-900.000.

Dunbar, Joseph E.; and Begin, Louis E., to Dow Chemical Company, The. 3-6 Bis(morpholinoalkylthio)-pyridazines. 4,118,564, Cl. 544-82.000.

Duncan Electric Co., Inc.: *See—*
Milligan, James W., 4,118,667, Cl. 324-110.000.

Dunning, John M., III, to Dunning, Ltd. Knock-down furniture system. 4,118,088, Cl. 312-350.000.

Dunning, Ltd.: *See—*
Dunning, John M., III, 4,118,088, Cl. 312-350.000.

Du Pont de Nemours, E. I., and Company: *See—*
Forsten, Herman Hans, 4,117,578, Cl. 28-112.000.
Schaefgen, John Raymond, 4,118,372, Cl. 528-190.000.
Smith, Sanford Byrom, 4,118,182, Cl. 8-7.000.
Stanley, Harry Eugene, 4,118,534, Cl. 428-370.000.
Vary, Eva M.; and Vassiliou, Eustathios, 4,118,537, Cl. 428-422.000.
Walker, Charles Carey, 4,118,582, Cl. 560-96.000.

Durant, Graham John; Ganellin, Charon Robin; and Young, Rodney Christopher, to Smith Kline & French Laboratories Limited. Heterocyclic-methylthioalkyl-amidines. 4,118,496, Cl. 424-263.000.

Durant, Graham John; Ganellin, Charon Robin; and Young, Rodney Christopher, to Smith Kline & French Laboratories Limited. Amidinoformic and amidino-sulphinic acid derivatives. 4,118,502, Cl. 424-273.00R.

Dwinell, Davis B., to American Flange & Manufacturing Co. Inc. Threaded closure. 4,117,949, Cl. 220-304.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Amort, Jurgen; and Nestler, Heinz, 4,118,540, Cl. 428-447.000.
Falkenhain, Wilhelm; and Feder, Ernst, 4,118,459, Cl. 423-142.000.
Hadamovsky, Eugen; Hoppe, Wolfgang; Overhausen, Hans-Walter; Piotrowski, Bernhard; Schmid, Wehrhart; Schreiber, Georg; and Schroeder, Heinz, 4,118,313, Cl. 560-78.000.

Dynatech Laboratories Incorporated: *See—*
Underwood, Willie Bruce, 4,118,625, Cl. 250-343.000.

Dyrda, Edward: *See—*
Najmowicz, Zenon; Dyrda, Edward; and Zakrzewski, Jan, 4,117,878, Cl. 164-292.000.

Dzus Fastener Co. Inc.: *See—*
Schenk, Peter, 4,117,928, Cl. 206-320.000.

E. R. Squibb & Sons, Inc.: *See—*
Turk, Chester F.; and Krapcho, John, 4,118,558, Cl. 542-429.000.

Eagle-Picher Industries, Inc.: *See—*
Cornelius, James W.; and Mallon, Robert T., 4,117,798, Cl. 118-4.000.

Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., to Exxon Research & Engineering Co. Process for the production of an intermediate Btu gas. 4,118,204, Cl. 48-197.00R.

Earsley, Melvin L.: *See—*
Bingle, Gerald L.; and Earsley, Melvin L., 4,118,259, Cl. 156-73.100.

Eastman Kodak Company: *See—*
Dannelly, Clarence C.; and Leonard, Charles R., 4,117,801, Cl. 118-20.000.

Easy Riser, Inc.: *See—*
Gessler, Robert U., 4,117,999, Cl. 248-188.200.

Ebauches S.A.: *See—*
Laesser, Claude, 4,118,111, Cl. 350-334.000.
Saurer, Eric; and Laesser, Claude, 4,118,110, Cl. 350-334.000.

Ebner, Peter R.; and Griffith, Louis E., to Itek Corporation. Font support assembly for a phototypesetting machine. 4,118,711, Cl. 354-15.000.

Eckel, Leonard B.; Sullivan, James P.; and Quintana, Elias D., to Design West Incorporated. Modular storage unit. 4,117,783, Cl. 108-91.000.

Eckert, Lewis W.; Nikolaus, Harold W.; and Ollinger, James C., to Armstrong Cork Company. Ceiling panel attachment clip. 4,117,642, Cl. 52-486.000.

Economu, Merle A., to United States of America, National Aeronautics and Space Administration. Wire stripper. 4,117,749, Cl. 81-9.50R.

Edstrom, Kjell: *See—*
Nilsson, Goran Alfred; Edstrom, Kjell; and Wiklund, Henry, 4,117,764, Cl. 91-50.000.

Egli, Alwin, to Sig Schweizerische Industrie-Gesellschaft. System for forming, filling and closing bags. 4,117,649, Cl. 53-558.000.

EIC Corporation: *See—*
Koch, Victor R., 4,118,550, Cl. 429-194.000.

Eichelburg, Robert J. Yeast hydrolyzate oral ingesta for animals. 4,118,512, Cl. 424-359.000.

Eidt, Scott H.; Watson, Spencer C.; and Heilig, George Charles, to Texas Alkyls, Inc. Process for the simultaneous production of trimethylaluminum and alkylaluminum halides. 4,118,409, Cl. 260-448.00A.

Ekdahl, Paul. Pot holding arm support. 4,117,629, Cl. 47-67.000.

Electroschmelzwerk Kempten GmbH: *See—*
Schmitt-Thomas, Karlheinz G.; Lipp, Alfred; and Schwetz, Karl, 4,118,256, Cl. 148-160.000.

Eli Lilly and Company: *See—*
Beck, James Richard; and Gajewski, Robert Peter, 4,118,574, Cl. 548-363.000.
Paget, Charles J.; and Wikel, James H., 4,118,573, Cl. 548-306.000.
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,118,742, Cl. 548-306.000.

Elliesen, Wolfgang, to Joh. Friedrich Behrens Aktiengesellschaft. Compressed air-operated fastener driver. 4,117,767, Cl. 91-461.000.

Elliott Brothers (London) Limited: *See—*
Sarson, Alan Elmer; and Clark, William James Rowley, 4,118,733, Cl. 358-109.000.

Ellis, Delmar H., to General Electric Company. Composite reinforcement of metallic airfoils. 4,118,147, Cl. 416-230.000.

Ellsworth, Clayton S. Method of mixing fertilizer. 4,118,798, Cl. 366-156.000.

Elmore, Marion Edward; and Klang, James Kenneth, to Gould Inc. Process for recycling junk lead-acid batteries. 4,118,219, Cl. 75-103.000.

Elsaesser, Fred L.; and Hall, Joseph H., to United Technologies Corporation. Stall detector for gas turbine engine. 4,117,668, Cl. 60-39.030.

Elwart, Jan: *See—*
Luckan, Johannes; Elwart, Jan; and Herter, Martin, 4,118,624, Cl. 250-326.000.

Emhart Industries, Inc.: *See—*
Alexander, Gordon A., 4,118,056, Cl. 292-169.170.

EMI Limited: *See—*
Froggatt, Robert Justin, 4,118,631, Cl. 250-492.00R.
Hounsfield, Godfrey Newbold, 4,118,628, Cl. 250-445.00T.
Hounsfield, Godfrey Newbold, 4,118,629, Cl. 250-445.00T.

Energy and Minerals Research Co.: *See—*
Tarpley, William B., Jr., 4,118,797, Cl. 366-127.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Flanagan, Paul; Norster, Eric Roy; Carrubba, Robert V.; and Heck, Ronald M., 4,118,171, Cl. 431-10.000.
Hamill, Herbert R.; and Potts, David E., 4,118,245, Cl. 106-288.00B.
Horzepa, John P.; and Potts, David E., 4,118,246, Cl. 106-288.00B.
Marchetti, Francis R.; Zentz, William E.; and Berube, Richard R., 4,118,247, Cl. 106-308.00N.

Engelhardt, Gudrun, administrator: *See—*
Determann, Helmut; Bernt, Erich; Dollacker, Werner; Gutmann, Ingeborg, deceased; and Engelhardt, Gudrun, administrator, 4,118,279, Cl. 195-63.000.

Engels, Kaspar, to Draiswerke GmbH. Stirring mill. 4,117,981, Cl. 241-46.150.

Engels, Walter, to Milliken Research Corporation. Selvedge detector and guide. 4,117,576, Cl. 26-9.000.

Engels, Walter: *See—*
Gilpatrick, Michael William; and Engels, Walter, 4,117,577, Cl. 26-9.000.

Enomoto, Shogo: *See—*
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,118,192, Cl. 424-12.000.

Environmental Research Institute of Michigan: *See—*
Leith, Emmett N., 4,118,106, Cl. 350-96.250.

Epstein, Joseph William, to American Cyanamid Company. Process for resolving cis-1-substituted phenyl-1,2-cyclopropanedicarboxylic acids. 4,118,417, Cl. 562-401.000.

Epstein, Martin: *See—*
Casey, Donald James; and Epstein, Martin, 4,118,470, Cl. 424-19.000.

Erba, Carlo: *See—*
Giraldi, PierNicola; Nannini, Giuliano; Logemann, Willy; Tommasini, Raffaele; Buttinoni, Ada; and Biasoli, Giovanni, 4,118,504, Cl. 424-274.000.

Erikson, Uno Eugen, to Siemens-Elema AB. Catheter for selective coronary arteriography of the left coronary artery. 4,117,836, Cl. 128-2.05R.

Eriksson, Jan-Christer; Larsson, Rolf; Rosengren, Åke; and Hjelte, Maj-Britt, to Aminkemi Aktiebolag. Non-thrombogenic medical article and a method for its preparation. 4,118,485, Cl. 424-183.000.

Ernst, Alfons: *See—*
Kober, Hans-Rudolf; and Ernst, Alfons, 4,117,601, Cl. 33-172.00E.

Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Linear ball bearing including longitudinal slot in the sleeve with ball-retaining cage. 4,118,078, Cl. 308-6.00C.

Ernst Leitz Wetzlar GmbH: *See—*
Klemm, Reinhart, 4,118,659, Cl. 318-560.000.
Leiter, Herbert; and Reinheimer, Gunter, 4,118,719, Cl. 354-79.000.

Erskine, Clive Arnold, to ACI Technical Centre Pty Ltd. Clay compositions. 4,118,236, Cl. 106-71.000.

Erwin Kampf Maschinenfabrik, Firma: *See—*
Hutzenlaub, Armin, 4,117,986, Cl. 242-56.200.

Essel, Alain Jacques: *See—*
Graveron, Bernard Jacques; and Essel, Alain Jacques, 4,118,258, Cl. 156-60.000.

Ethyl Corporation: *See—*
Nelson, Gunner E., 4,118,404, Cl. 260-404.000.

Ettel, Victor Alexander; and Devuyst, Eric August Pierre, to International Nickel Company, Inc., The. Copper recovery from sulfate solutions containing nickel and cobalt. 4,118,221, Cl. 75-108.000.

Euker, Charles A., Jr.: *See—*
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,118,204, Cl. 48-197.00R.

Euteco, S.p.A.: *See—*
Vargiu, Silvio; Carpaneti, Edoardo; Crespolini, Giancarlo; and Pitzalis, Mario, 4,118,555, Cl. 526-76.000.

Eutectic Corporation: *See—*
Knotek, Otto; Lugscheider, Erich; and Wichert, Wolfgang, 4,118,254, Cl. 148-32.000.
Patel, Mahesh S., 4,118,527, Cl. 427-423.000.

EVG Entwicklungs- u. Verwertungs-GmbH.: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,117,872, Cl. 140-57.000.

Exler, Petrus Andre Theodorus; and Lobbe, Johannes, to Pakhoed-Rotterdam B.V. Climate-control unit particularly for incorporation in a container. 4,118,209, Cl. 62-176.00D.

Exxon Research & Engineering Co.: *See—*
Brenner, Douglas, 4,118,359, Cl. 260-30.80R.
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,118,204, Cl. 48-197.00R.
Goldstein, Melvin; and Tyler, William E., III, 4,118,414, Cl. 260-467.000.
Lundberg, Robert D., 4,118,361, Cl. 260-31.80G.
Makowski, Henry S.; and O'Farrell, Charles P., 4,118,353, Cl. 260-28.50B.
Makowski, Henry S.; and O'Farrell, Charles P., 4,118,360, Cl. 260-31.20R.
Makowski, Henry S.; and Brenner, Douglas, 4,118,362, Cl. 260-32.60A.

Fabbrica Italiana Magneti Marelli S.p.A.: *See—*
Huwyler, Franco, 4,118,638, Cl. 307-11.000.

Fabio, Paul Frank: *See—*
Lang, Stanley Albert, Jr.; Fabio, Paul Frank; Lin, Yang-I; Murdock, Keith Chadwick; and Fields, Thomas Lynn, 4,118,498, Cl. 424-267.000.

Fabrication Belge de Disques "Fabeldis": *See—*
Dewallens, Leon, 4,118,287, Cl. 204-6.000.

Factor, Arnold: *See—*
Sannes, Keith N.; and Factor, Arnold, 4,118,370, Cl. 260-45.75W.

Fahey, Darryl R.; and Mahan, John E., to Phillips Petroleum Company. Organophosphorus nickel complexes and preparation thereof. 4,118,408, Cl. 260-439.00R.

Fairchild Camera and Instrument Corporation: *See—*
Berry, Robert, 4,118,728, Cl. 357-22.000.
Rinaldo, Kenneth D., 4,118,757, Cl. 361-404.000.

Falk, Edward J., to Wagner Electric Corporation. Tandem master cylinder with integral proportioning valve. 4,117,681, Cl. 60-562.000.

Falkenhain, Wilhelm; and Feder, Ernst, to Dynamit Nobel Aktiengesellschaft. Chemically removing iron from grits. 4,118,459, Cl. 423-142.000.

Fancher, Llewellyn, to Stauffer Chemical Company. 2,4-Dichlorophenoxyacetyl carbamate hydrazides useful as herbicides. 4,118,576, Cl. 560-29.000.

Fanshawe, William Joseph; Safir, Sidney Robert; and Crawley, Lantz Stephen, to American Cyanamid Company. Phenyl azabicyclohexanones. 4,118,393, Cl. 260-326.50B.

Farina, Attilio. Circuit arrangement for providing a saw-tooth current in a coil. 4,118,657, Cl. 315-408.000.

Farmer, Alan Charles: *See—*
Cockett, Stewart Graham; Taylor, Jeffrey Philip; Craven, Peter; and Farmer, Alan Charles, 4,118,790, Cl. 364-900.000.

Farmland Industries, Incorporated: *See—*
Oestreicher, Stephen L.; and Hardin, David P., 4,118,217, Cl. 71-92.000.

Favale, Renato: *See—*
Lozar, Giorgio; and Favale, Renato, 4,118,708, Cl. 343-901.000.

Fawcett, Sherwood L.; and Anno, James N., to Battelle Development Corporation. Heat pump. 4,117,696, Cl. 62-115.000.

Fay, Clifford C.: *See—*
Atkinson, Thomas Carl; and Fay, Clifford C., 4,118,061, Cl. 296-63.000.

Feder, Ernst: *See—*
Falkenhain, Wilhelm; and Feder, Ernst, 4,118,459, Cl. 423-142.000.

Federal-Mogul Corporation: *See—*
Bingle, Gerald L.; and Earsley, Melvin L., 4,118,259, Cl. 156-73.100.
Ladin, Eli M.; and Reynolds, Mark P., 4,117,917, Cl. 192-98.000.

Federal Paper Board Co., Inc.: *See—*
Growney, Lawrence J., 4,117,924, Cl. 206-45.140.

Fedulaev, Vitaly Pavlovich: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Druï, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Feess, Erich; Springer, Hartmut; and Gronen, Willy, to Hoechst Aktiengesellschaft. Process for the fixation of organic dyestuffs on materials having a fibrous structure. 4,118,186, Cl. 8-49.000.

Feldmann, William F. Heat retriever. 4,117,883, Cl. 165-174.000.

Felix, Bernd: *See—*
Semmler, Hans-Joachim; and Felix, Bernd, 4,118,290, Cl. 204-59.00F.

Fenestra: *See—*
Donohue, Henry Patrick, 4,118,543, Cl. 428-615.000.

Fennell, John C. Ornamental light arrangement. 4,118,762, Cl. 362-311.000.

Ferguson, Ronald Worden: *See—*
Rayfield, Wilson Parker; Ferguson, Ronald Worden; and Brooks, George Mahue, 4,118,022, Cl. 270-52.500.

Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., to Ayerst, McKenna & Harrison Limited. Aryloxy aminobutanols for alleviating symptoms of depression. 4,118,511, Cl. 424-330.000.

Ferranti Limited: *See—*
Crawford, Ian Drummond; Marshall, Henry Bruce; and Cormack, Robert John, 4,118,109, Cl. 350-285.000.
Kerr, Andrew Guy; and Morley, Robert Arthur, 4,118,012, Cl. 254-173.00R.

Fertl, Walter H.; and Gant, Preston L., to Continental Oil Company. Continuous quality control of mined hard and soft coals. 4,118,623, Cl. 250-253.000.

Fibus, C. Kenneth, to Steel City Corporation, The. Wall mounted tool cabinet. 4,118,085, Cl. 312-245.000.

Fields, Joseph E.; and Slocombe, Robert J., to Monsanto Company. Aggregated polyelectrolytes. 4,118,554, Cl. 526-15.000.

Fields, Paul. Electrical trouble finding apparatus. 4,118,664, Cl. 324-51.000.

Fields, Thomas Lynn: *See—*
Lang, Stanley Albert, Jr.; Fabio, Paul Frank; Lin, Yang-I; Murdock, Keith Chadwick; and Fields, Thomas Lynn, 4,118,498, Cl. 424-267.000.

Filtrox Maschinenbau A.G.: *See—*
Strub, Fritz, 4,118,778, Cl. 364-502.000.

Filzinger, Klaus: *See—*
Fuchs, Hermann; and Filzinger, Klaus, 4,118,381, Cl. 260-148.000.

Firing Circuits Inc.: *See—*
Salva, John P.; Mudzinski, Gregory M.; Mills, John A.; and Dewan, Shashi B., 4,118,658, Cl. 318-257.000.

Firmenich, S.A.: *See—*
Skorianetz, Werner; and Ohloff, Gunther, 4,118,343, Cl. 252-522.000.

Fisher, Denys. Drawing instrument or apparatus. 4,117,598, Cl. 33-27.00L.

Fisher-Klosterman, Inc.: *See—*
Hagendoorn, Willem Jacob, 4,118,206, Cl. 55-74.000.

Fitchett, Arthur B. Bag alarm device. 4,118,692, Cl. 340-542.000.

Flambeau Products Corporation: *See—*
Kneier, Joseph William, 4,118,086, Cl. 312-270.000.

Flanagan, Paul; Norster, Eric Roy; Carrubba, Robert V.; and Heck, Ronald M., to Engelhard Minerals & Chemicals Corporation. Method for effecting sustained combustion of carbonaceous fuel. 4,118,171, Cl. 431-10.000.

Fleischer, Helmut; and Schneider, Erich, to Robert Bosch GmbH. Vehicle speed control system. 4,117,903, Cl. 180-105.00E.

Fleming, Francis William; and Pethick, Raymond John, to Markon Engineering Company Limited. Electromagnetic machines. 4,118,646, Cl. 310-58.000.

Fletcher Sutcliffe Wild Limited: *See—*
Scarfe, Arthur; and Smith, John Cambridge, 4,117,687, Cl. 405-292.000.

Fluester, James, to Spiralux Limited. Blind riveting tools. 4,117,710, Cl. 72-391.000.

FMC Corporation: *See—*
Berkowitz, Sidney, 4,118,569, Cl. 544-190.000.
McKeon, John F., 4,117,738, Cl. 74-250.00R.
Michaely, William James, 4,118,400, Cl. 260-340.500.

Fohl, Artur, to REPA Feinstanzwerk GmbH. Swinging fitting for safety belts in motor vehicles. 4,118,068, Cl. 297-385.000.

Formica Corporation: *See—*
Power, George Edward; and Bolling, Donald Louis, 4,118,541, Cl. 428-452.000.

Formica, Joseph V.: *See—*
Apple, Martin A.; and Formica, Joseph V., 4,118,482, Cl. 424-177.000.

Forsten, Herman Hans, to Du Pont de Nemours, E. I., and Company. Process for heat treating a needled batt. 4,117,578, Cl. 28-112.000.

Foster, F. Gordon: *See—*
Mc Partland, Richard J.; Foster, F. Gordon; and Kupfer, David J., 4,117,834, Cl. 128-2.00S.

Foster, Gene B., to Boeing Company, The. Rolling machines for contouring tapered structural members. 4,117,702, Cl. 72-7.000.

Foster Wheeler Limited: *See—*
Nickerson, James H. D.; and Steel, Robert R., 4,117,885, Cl. 165-176.000.

Foundation: The Research Institute For Special Inorganic Materials, The: *See—*
Asada, Chiaki; Kusaka, Katsushi; and Kajima, Hisashi, 4,117,565, Cl. 75-204.000.

Fouquet, Gerd; Merger, Franz; Platz, Rolf; and Baer, Karl, to BASF Aktiengesellschaft. Manufacture of methacrylic acid and methyl methacrylate. 4,118,588, Cl. 560-210.000.

Fournie, Rene, to Societe Nationale Elf Aquitaine (Production). Placing conduits on the sea floor by hauling and controlled immersion. 4,117,693, Cl. 405-171.000.

Fowler, Arnold L.: *See—*
Johnson, James H.; Fowler, Arnold L.; Brooks, Julius E.; and Friend, Harvey H., 4,117,761, Cl. 89-129.00B.

Fram Corporation: *See—*
Cook, John E., 4,117,724, Cl. 73-386.000.

Francis, Gaylord Lee; and Morelli, Amedeo John, to North American Philips Corporation. Method of manufacturing a hermetically sealed electronic component. 4,117,589, Cl. 29-619.000.

Franke, Raymond C., to Westinghouse Air Brake Company. Locomotive speed control apparatus. 4,118,774, Cl. 364-431.000.

Franklin, Kevin T.: *See—*
Cooke, Gordon R.; and Franklin, Kevin T., 4,118,709, Cl. 346-33.00R.

Franklin, Walter M.: *See—*
Trist, Nicolas P.; Guffin, Robert E.; Franklin, Walter M.; Crosby, James B., Jr.; Hallaway, Glen N.; and Tellier, James G., 4,117,597, Cl. 32-27.000.

Frantsits, Werner J. Method for the production of indolyl lactones. 4,118,395, Cl. 260-326.290.

Franz Volkl oHG: *See—*
Schnurrenberger, Hermann, 4,118,050, Cl. 280-604.000.

Fraser, Alan S.: *See—*
United States of America, National Aeronautics and Space Administration; Fraser, Alan S.; Wells, Arthur F.; and Tenoso, Harold J., 4,118,315, Cl. 210-23.00F.

Fray, Derek John; and Cleland, James Henry, to National Research Development Corporation. Packed bed electrorefining and electrolysis. 4,118,292, Cl. 204-67.000.

Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzer, Kirk J.; and Paraskos, John Angelo, to Gulf Research & Development Company. Hydrodesulfurization process employing a guard reactor. 4,118,310, Cl. 208-210.000.

Fredd, John V., to Otis Engineering Corporation. Thread chaser tool for contiguous straight and tapered thread runs. 4,117,563, Cl. 10-101.00R.

Freeman, Michael J.: *See—*
Kurland, Lawrence G.; and Freeman, Michael J., 4,117,605, Cl. 35-9.00A.

Frei, Willi, to Air Frohlich AG fur Energie-Ruckgewinnung. Tubular heat exchanger and process for its manufacture. 4,117,884, Cl. 165-175.000.

French, Gordon B.; and Ridley, Richard D., to Occidental Oil Shale, Inc. Subterranean in situ oil shale retort and method for making and operating same. 4,118,070, Cl. 299-2.000.

French Oil Mill Machinery Company, The: *See—*
Hunt, Arthur J., 4,117,776, Cl. 100-117.000.

Friddle, William D., Jr.: *See—*
Friddle, William D., Sr.; Friddle, William D., Jr.; and O'Steen, Wilbourne D., 4,117,753, Cl. 83-143.000.

Friddle, William D., Sr.; Friddle, William D., Jr.; and O'Steen, Wilbourne D. Sheet cutting apparatus. 4,117,753, Cl. 83-143.000.

Friedel, Franz Lutz; Schone, Armin; and Reuter, Franz Gottfried, to Gottfried Reuter GmbH i.L. Polyphenyl-polymethylene-polyisocyanate mixtures. 4,118,410, Cl. 260-453.0AM.

Friedel, William C., Jr.; and Dietz, Charles F., to University of California, The Regents of the. Tomato harvesting sorting system. 4,118,311, Cl. 209-75.000.

Friend, Harvey H.: *See—*
Johnson, James H.; Fowler, Arnold L.; Brooks, Julius E.; and Friend, Harvey H., 4,117,761, Cl. 89-129.00B.

Frigitemp Corporation: *See—*
Androulakis, John G., 4,117,947, Cl. 220-435.000.

Frisby, Reg Alan, to TRW Inc. Electrical connection assemblies. 4,118,091, Cl. 339-14.00R.

Friswell, David R.; and Hutchins, Burleigh M. Bubble sensor and method. 4,117,727, Cl. 73-422.0GC.

Fritsch, Thomas R.; and Anderson, Mark C., to UOP Inc. Production and recovery of para-xylene. 4,118,429, Cl. 260-674.0SA.

Froehlich, Alfred: *See—*
Piller, Bernhard; Lenoir, John; Froehlich, Alfred; Stauner, Thomas; and Tschopp, Paul, 4,118,232, Cl. 96-99.000.

Froggatt, Robert Justin, to EMI Limited. Radiographic apparatus. 4,118,631, Cl. 250-492.00R.

From, Charles A., Jr.: *See—*
Bassett, Henry C.; From, Charles A., Jr.; Parker, John F.; and Worley, Ansel A., 4,118,596, Cl. 174-87.000.

Frye, Hal W.: *See—*
Allen, Royce H.; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,118,782, Cl. 364-565.000.

Frye, Robert Charles; Katz, Alan Harry; and Hewes, Charles Robert, to Texas Instruments Incorporated. Two-phase CCD regenerator - I/O circuits. 4,118,795, Cl. 365-222.000.

Fuchs, Heribert, to Ruthner Industrieanlagen-Aktiengesellschaft. System for feeding solutions and suspensions. 4,117,978, Cl. 239-112.000.

Fuchs, Hermann; and Filzinger, Klaus, to Hoechst Aktiengesellschaft. 1:2 Cobalt complex phenol-acetoacetanilide benzene disazo dyestuffs. 4,118,381, Cl. 260-148.000.

Fuchs, Otto; and Kroh, Adolf, to Hoechst Aktiengesellschaft. Naphthalimide-4,5-dicarboxylic acids. 4,118,387, Cl. 260-281.00A.

Fuji Photo Film Co., Ltd.: *See—*
Ohta, Takahiro; and Muramatsu, Akira, 4,118,654, Cl. 40-361.000.

Fuji Xerox Co., Ltd.: *See—*
Yamada, Yasuo; and Seki, Masao, 4,118,104, Cl. 350-3.600.

Fujimori, Yoshiaki: *See—*
Miyasaka, Tsutomu; Fujimori, Yoshiaki; Matsui, Shigeru; and Komaki, Tetsuo, 4,117,658, Cl. 58-90.00R.

Fukuba, Kiyohide, to Japan Storage Battery Company Limited. Method for interconnecting adjacent electric storage batteries. 4,117,969, Cl. 228-140.000.

Fukuda, Yoshiharu; Ohtani, Kazumasa; Onissi, Tossio R.; and Takeuchi, Akitoshi, to Onoda Cement Company, Limited. Apparatus for calcining wet powdery gypsum. 4,118,196, Cl. 422-232.000.

Fukushima, Mitsuru: *See—*
Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, 4,118,336, Cl. 252-316.000.

Fuller Company: *See—*
Solt, Paul E., 4,118,074, Cl. 302-26.000.

Fuller, Lawrence W.; and Hawley, E. Dale. Novel field crop-thinning apparatus and method. 4,117,888, Cl. 172-1.000.

Funabashi, Katsunori; and Kohyama, Mikihiro, to Honda Giken Kogyo Kabushiki Kaisha. Air sucking device for engines. 4,117,823, Cl. 123-198.00E.

Funakoshi, Hisashi: *See—*
Ban, Itsuki; Iizuka, Shohei; and Funakoshi, Hisashi, 4,118,743, Cl. 360-73.000.

Fung, Paul J., to Premier Cablevision, Limited; and National Cablevision, Limited. Remote disconnect-reconnect tap for cable television systems. 4,118,669, Cl. 325-309.000.

Furusawa, Choji: *See—*
Murakami, Noboru; and Furusawa, Choji, 4,117,677, Cl. 60-345.000.

Fusaroli, Goffredo, to S.A.M.P.R.E. S.p.A. Drawing frame with a belt control system, for spinning frames. 4,117,572, Cl. 19-244.000.

Futamura, Kazumasa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seal structure. 4,118,041, Cl. 277-180.000.

G. Siempelkamp GmbH & Co.: *See—*
Gerhardt, Klaus, 4,118,024, Cl. 271-5.000.

Gabus, Jean-Claude, to Carba S.A. Control device for operation by the mouth of a handicapped person. 4,117,863, Cl. 137-601.000.

Gabus, Jean-Claude, to Carba S.A. Actuating device for an invalid of plural electrical control circuits. 4,118,612, Cl. 200-81.90R.

GAF Corporation: *See—*
Ziegler, Bertram Randall; and Matteson, Edward J., 4,118,272, Cl. 162-156.000.

Gaffar, Abdul; and Niles, Hollandra P., to Colgate-Palmolive Company. Antibacterial oral composition. 4,118,472, Cl. 424-54.000.

Gaffar, Abdul; and Niles, Hollandra P., to Colgate-Palmolive Company. Antibacterial oral composition. 4,118,473, Cl. 424-54.000.

Gaffar, Abdul; and Niles, Hollandra P., to Colgate-Palmolive Company. Antibacterial oral composition. 4,118,474, Cl. 424-54.000.

Gaffar, Abdul; and Niles, Hollandra P., to Colgate-Palmolive Company. Antibacterial oral composition. 4,118,475, Cl. 424-54.000.

Gaffar, Abdul; and Niles, Hollandra P., to Colgate-Palmolive Company. Antibacterial oral composition. 4,118,476, Cl. 424-54.000.

Gagin, Lawrence Vincent, to Johns-Manville Corporation. Alkali-resistant glass fiber composition. 4,118,239, Cl. 106-50.000.

Gajewski, Robert Peter: *See—*
Beck, James Richard; and Gajewski, Robert Peter, 4,118,574, Cl. 548-363.000.

Gamperdona Handels- und Finanz Aktiengesellschaft: *See—*
Hoop, William J., 4,118,082, Cl. 312-59.000.

Ganellin, Charon Robin: *See—*
Durant, Graham John; Ganellin, Charon Robin; and Young, Rodney Christopher, 4,118,496, Cl. 424-263.000.
Durant, Graham John; Ganellin, Charon Robin; and Young, Rodney Christopher, 4,118,502, Cl. 424-273.00R.

Gant, Preston L.: *See—*
Fertl, Walter H.; and Gant, Preston L., 4,118,623, Cl. 250-253.000.

Gard, Leslie H.: *See—*
United States of America, National Aeronautics and Space Administration; Wall, William A., Jr.; Ives, Robert E.; Bruce, Miles Melvin, Jr.; Pryor, Peter Paul, Jr.; and Gard, Leslie H., 4,118,620, Cl. 219-124.320.

Gardano, Andrea: *See—*
Cassar, Luigi; and Gardano, Andrea, 4,118,589, Cl. 560-204.000.

Gauthier, Francis; and Mignien, Georges, to Les Cables de Lyon. Device for welding optical fibres end to end. 4,118,618, Cl. 219-121.00P.

Gebruder Kommerling Kunststoffwerke G.m.b.H.: *See—*
Vogel, Karl Heinz, 4,118,267, Cl. 156-293.000.

Gehrung, Manfred: *See—*
Wittkamp, Heinrich; and Gehrung, Manfred, 4,118,616, Cl. 206-387.000.

Geiger, Julius: *See—*
Klein, Hans-Joachim; Rupprecht, Manfred; Wonneberg, Heinz; Geiger, Julius; and Masa, Gunter, 4,118,127, Cl. 356-200.000.

Geiger, Rolf: *See—*
Konig, Wolfgang; Geiger, Rolf; and Sandow, Jurgen, 4,118,483, Cl. 424-177.000.

Geise, Philip E., Jr.: *See—*
United States of America, National Aeronautics and Space Administration; Brey, Hans; and Geise, Philip E., Jr., 4,118,701, Cl. 343-6.00R.

Genequand, Pierre: *See—*
Gross, Daniel; and Genequand, Pierre, 4,117,829, Cl. 126-270.000.

General Dynamics Corporation: *See—*
Holland, Charles L.; and Coulson, John N., Jr., 4,117,943, Cl. 214-6.00D.

General Electric Company: *See—*
Banucci, Eugene G.; and Boldebuck, Edith M., 4,118,535, Cl. 428-383.000.
Barkan, Philip; and Imam, Imdad, 4,118,613, Cl. 200-82.00B.
Bennett, James G.; Cooper, Glenn D.; and Katchman, Arthur, 4,118,348, Cl. 260-4.0AR.
Coppa, Anthony Patrick; and Zauderer, Bert, 4,118,643, Cl. 310-11.000.
Corsmeier, Robert J.; and Brown, Richard N., 4,118,136, Cl. 403-386.000.
Cusano, Dominic A.; and Webster, Harold F., 4,118,758, Cl. 362-6.000.
Ellis, Delmar H., 4,118,147, Cl. 416-230.000.
Osteen, Mitchell M., 4,118,763, Cl. 362-339.000.
Peil, William, 4,118,689, Cl. 340-629.000.
Sannes, Keith N.; and Factor, Arnold, 4,118,370, Cl. 260-45.75W.
Shaw, David G.; and Shedigian, Vandos, 4,117,579, Cl. 29-25.420.

General Instrument Corporation: *See—*
Hiday, David R.; and Larsen, Charles G., 4,118,679, Cl. 334-1.000.

General Signal Corporation: *See—*
Auer, John H., Jr.; and Sibley, Henry C., 4,118,750, Cl. 361-182.000.
Right, Robert W., 4,118,694, Cl. 340-293.000.

Genge, Bruce I.: *See—*
Current, Wayne A.; Genge, Bruce I.; Hurme, Herbert J.; and Zocher, Josef, 4,117,791, Cl. 112-222.000.

Georgiev, Georgi Dimitrov: *See—*
Petrov, Georgi Mitev; Andonov, Blagoy Alexandrov; Trayanov, Svetozar Paissiev; and Georgiev, Georgi Dimitrov, 4,117,654, Cl. 57-19.000.

Gerecke, Max; Kyburz, Emilio; and Kaplan, Jean-Pierre, to Hoffmann-La Roche Inc. Dibenz(b,f)oxepin derivatives. 4,118,572, Cl. 544-369.000.

Gerhards, Hermann: *See—*
Kunstmann, Rudolf; Lerch, Ulrich; and Gerhards, Hermann, 4,118,497, Cl. 424-267.000.

Gerhardt, Klaus, to G. Siempelkamp GmbH & Co. Apparatus for handling facing sheets for the production of pressed board and other laminates. 4,118,024, Cl. 271-5.000.

Gessler, Robert U., to Easy Riser, Inc. Furniture leg extenders. 4,117,999, Cl. 248-188.200.

Gibbs, Stephen R., to Burroughs Corporation. Apparatus for chemically treating a single side of a workpiece. 4,118,303, Cl. 204-224.00R.

Gibson, Bruce Douglas: *See—*
Simonsen, John; Gibson, Bruce Douglas; and Gruner, Heinz Walter, 4,117,720, Cl. 73-194.0EM.

Gibson-Homans Company, The: *See—*
Slywka, Michael, 4,117,982, Cl. 241-51.000.

Gill, Gary. Mathematics teaching system. 4,117,607, Cl. 35-31.00R.

Gillet, Roger; and Allegre, Jean, to Societe Generale de Constructions Electriques et Mecaniques Alsthom. Salient pole of a synchronous electric machine. 4,118,648, Cl. 310-269.000.

Gillingham, Alan George Albert: *See—*
Bingham, Kenneth Charles Arthur; Gillingham, Alan George Albert; and Baldwin, Colin, 4,118,523, Cl. 427-97.000.

Gilpatrick, Michael William; and Engels, Walter, to Milliken Research Corporation. Method to protect fabric selvedge on loop pile cutting machine. 4,117,577, Cl. 26-9.000.

Giraldi, PierNicola; Nannini, Giuliano; Logemann, Willy; Tommasini, Raffaele; Buttinoni, Ada; and Biasoli, Giovanni, to Erba, Carlo. Isoindoline derivatives for treating pain. 4,118,504, Cl. 424-274.000.

Gitzendanner, Louis G., to Honeywell Information Systems Inc. Motor isolation mount for disk drives. 4,117,997, Cl. 248-20.000.

Glace, William Richard: *See—*
Ibsen, Robert L.; and Glace, William Richard, 4,117,595, Cl. 32-8.000.

Glattli, Alfred: *See—*
Stromberger-D'Alton-Rauch, Ilse-Dore; Klose, Karl; Bergmann, Udo; Glattli, Alfred; and Hodum, Claus-Peter, 4,118,229, Cl. 96-27.00H.

Glaxo Laboratories Limited: *See—*
Stephenson, Leslie; and Smith, Colin, 4,118,499, Cl. 424-267.000.

Glennon, Timothy F., to Sundstrand Corporation. Confidence check circuit for built-in test systems. 4,118,688, Cl. 340-516.000.

Global Marine, Inc.: *See—*
Sjogren, Charles Norman, 4,117,794, Cl. 114-40.000.

Globe-Union, Inc.: *See—*
Buckethal, Paul J.; Groff, Jerome J.; Halsall, Vincent M.; and Hennen, Roy E., 4,118,553, Cl. 429-234.000.

Gnadig, Gerhard; and Seufert, Wilhelm, to Werner & Pfleiderer. Method of providing a wear-resistant lining in the work chamber of a screw extruder. 4,117,583, Cl. 29-447.000.

Gobert, Robert R., to National Steel Corporation. Cathode structure for use in electrolytic process. 4,118,302, Cl. 204-206.000.

Godau, Eckhardt; and Schneider, Max, to Quikoton AG. Process for the treatment of warp yarns. 4,118,183, Cl. 8-18.00R.

Godin, Gilbert; and Norgard, Fred C., to Johns-Manville Corporation. Manufacture of perlite insulating board on a cylinder machine. 4,118,273, Cl. 162-171.000.

Goebel, Franz, to GTE Laboratories Incorporated. Primary electrochemical cell. 4,118,334, Cl. 252-182.100.

Goehring, Daniel: *See—*
Beardmore, James W.; and Goehring, Daniel, 4,118,203, Cl. 44-7.500.

Goell, James E.; and Brandt, H. David, to International Telephone and Telegraph Corporation. Optical couplers for light emitting diodes and detectors. 4,118,100, Cl. 350-96.200.

Goings, Richard L.: *See—*
Braund, Darwin G.; Dolge, Kendall L.; Goings, Richard L.; and Steele, Robert L., 4,118,513, Cl. 426-2.000.

Golar-Nor Offshore A/S: *See—*
McCleskey, Robert W., Jr.; Putnam, Paul S.; and Boltad, Arne Martin, 4,117,941, Cl. 214-2.500.

Golas, Eugene A.; and Singh, Shri N., to United States Steel Corporation. Method and single piece annular nozzle to prevent alumina buildup during continuous casting of al-killed steel. 4,117,959, Cl. 222-590.000.

Goldstein, Melvin; and Tyler, William E., III, to Exxon Research & Engineering Co. Difluoramino compounds and perfluoroguanidine-pentaerythrityl nitrates. 4,118,414, Cl. 260-467.000.

Goldstein, Norman P.; and Todt, William H., to Westinghouse Electric Corp. Gamma flux responsive self-powered radiation detector. 4,118,626, Cl. 250-370.000.

Goldstein, Stephen L.; and Babiec, John S., Jr., to Olin Corporation. Process for preparing dihydroxytoluene. 4,118,586, Cl. 568-767.000.

Gole, Jean: *See—*
Graveron, Bernard Jacques; and Essel, Alain Jacques, 4,118,258, Cl. 156-60.000.

Golosov, Viktor Nikolaevich: *See—*
Burin, Viktor Leontievich; Tjutjunnikov, Anatoly Borisovich; Golosov, Viktor Nikolaevich; Tarynin, Evgeny Konstantinovich; Pogorely, Nikolai Pavlovich; and Lukyanenko, Vladimir Matveevich, 4,118,446, Cl. 261-114.0VT.

Gomi, Hiroshi; and Taguchi, Shinichiro, to Tokyo Shibaura Electric Co., Ltd. Hue adjusting circuits. 4,118,741, Cl. 358-28.000.

Gomolak, Theodore M., to Johnstons & Associates, Inc. Viewing panel for producing multiple images of a design. 4,117,615, Cl. 40-363.000.

Gonda, Richard: *See—*
Cimetiere, Louis; and Gonda, Richard, 4,117,880, Cl. 164-433.000.

Goodman, James A. Automatic collator. 4,117,648, Cl. 53-537.000.

Goodson, Louis H.; and Jacobs, William B., to Midwest Research Institute. Method and apparatus for continuously extracting trace contaminants from air and monitoring the contaminant content thereof. 4,117,714, Cl. 73-23.000.

Gordon, Lee: *See—*
Ward, Nazareen, 4,117,805, Cl. 119-5.000.

Gorski, Anthony J.: *See—*
Graven, Robert M.; Gorski, Anthony J.; Schertz, William W.; and Graae, Johan E. A., 4,118,249, Cl. 136-89.0PC.

Goshima, Yoshio; and Osada, Hisashi, to TDK Electronics Co., Ltd. Coil retaining case. 4,118,678, Cl. 333-70.00S.

Gothsche, Friedrich, to Motoren- und Turbinen-Union Munchen GmbH. Gas turbine container. 4,117,927, Cl. 206-319.000.

Goto, Masuo: *See—*
Matuzaki, Takeshi; Goto, Masuo; and Momochi, Yasushi, 4,118,749, Cl. 361-33.000.

Gotoh, Miyuki, to Nissan Motor Company, Limited. Weft yarn sensor. 4,117,870, Cl. 139-370.200.

Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwicklungs- u. Verwertungs-GmbH. Binding tool. 4,117,872, Cl. 140-57.000.

Gottfried Reuter GmbH i.L.: *See—*
Friedel, Franz Lutz; Schone, Armin; and Reuter, Franz Gottfried, 4,118,410, Cl. 260-453.0AM.

Gottschalk, Robert E., to Panavision, Incorporated. Viewfinder eyepiece leveling device. 4,118,720, Cl. 354-81.000.

Gould Inc.: *See—*
Duggan, J. E., 4,118,754, Cl. 361-355.000.
Elmore, Marion Edward; and Klang, James Kenneth, 4,118,219, Cl. 75-103.000.
Scapes, John N., 4,118,007, Cl. 251-223.000.

Graae, Johan E. A.: *See—*
Graven, Robert M.; Gorski, Anthony J.; Schertz, William W.; and Graae, Johan E. A., 4,118,249, Cl. 136-89.0PC.

Grabmaier, Josef: *See—*
Aulich, Hubert; and Grabmaier, Josef, 4,118,212, Cl. 65-3.00A.

Grahn, Per Goran, to Kommanditbolaget United Stirling (Sweden) AB & Co. Hot gas engine heater head. 4,117,679, Cl. 60-525.000.

Graven, Robert M.; Gorski, Anthony J.; Schertz, William W.; and Graae, Johan E. A., to United States of America, Energy. Modular assembly of a photovoltaic solar energy receiver. 4,118,249, Cl. 136-89.0PC.

Graveron, Bernard Jacques; and Essel, Alain Jacques, to Gole, Jean. Vibration damping through adherence to a layer comprising polyisoprene and the damped structure resulting. 4,118,258, Cl. 156-60.000.

Green, Sheryll C.; and Linse, Vonne D., to United States of America, Energy. Explosive welding of a tube into a tube sheet. 4,117,966, Cl. 228-2.500.

Gregorian, Razmic S.; and Namboodri, Chettoor G., to United Merchants and Manufacturers, Inc. Method for treating fabrics. 4,118,526, Cl. 427-350.000.

Greppmaier, Paul: *See—*
Meier, Heinz; Zurawski, Egon; and Greppmaier, Paul, 4,117,739, Cl. 74-404.000.

Griffin, Dan M.: *See—*
Allen, Royce H.; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,118,782, Cl. 364-565.000.

Griffith, Louis E.: *See—*
Ebner, Peter R.; and Griffith, Louis E., 4,118,711, Cl. 354-15.000.

Grimes, Dustin Marshall. Capsule dispenser having chambers rotatable relative to a dispensing outlet. 4,117,952, Cl. 221-5.000.

Groeneweg, Jan Willem: *See—*
Visser, Johannes; Oosthoek, Raoul Henricus Josephus; Groeneweg, Jan Willem; and Dijkstra, Hendrik, 4,118,520, Cl. 426-574.000.

Groff, Jerome J.: *See—*
Buckethal, Paul J.; Groff, Jerome J.; Halsall, Vincent M.; and Hennen, Roy E., 4,118,553, Cl. 429-234.000.

Gronen, Willy: *See—*
Feess, Erich; Springer, Hartmut; and Gronen, Willy, 4,118,186, Cl. 8-49.000.

Gross, Benjamin; and Schatz, Klaus Wilhelm, to Mobil Oil Corporation. Method for regenerating fluidizable solid particles employed in hydrocarbon conversion. 4,118,337, Cl. 252-417.000.

Gross, Benjamin; and Schatz, Klaus Wilhelm, to Mobil Oil Corporation. Method for regenerating a fluid cracking catalyst. 4,118,338, Cl. 252-417.000.

Gross, Daniel; and Genequand, Pierre, to Battelle Development Corporation. Fur-like photothermal converter surface. 4,117,829, Cl. 126-270.000.

Growney, Lawrence J., to Federal Paper Board Co., Inc. Display carton. 4,117,924, Cl. 206-45.140.

Gruber, Hermann: *See—*
Pedain, Josef; Wellner, Wolfgang; Gruber, Hermann; and Dietrich, Manfred, 4,118,376, Cl. 528-59.000.

Grumman Aerospace Corporation: *See—*
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; and Russak, Michael A., 4,118,546, Cl. 429-111.000.
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; Jost, Steven Robert; Reichman, Joseph; and Russak, Michael A., 4,118,547, Cl. 429-111.000.

Grundherr, Willy J., to Qume Corporation. Rotary wheel printing system. 4,118,129, Cl. 400-144.200.

Gruner, Hans; Terjung, Klaus; Sachse, Wolfgang; and Romerswinkel, Heinrich-Wilhelm, to Mannesmann Aktiengesellschaft. Cover device for casting vessels, ladles or other metallurgical treatment containers. 4,118,018, Cl. 266-275.000.

Gruner, Heinz Walter: *See—*
Simonsen, John; Gibson, Bruce Douglas; and Gruner, Heinz Walter, 4,117,720, Cl. 73-194.0EM.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Ball, Edward R., 4,118,674, Cl. 331-17.000.
Lender, Adam, 4,118,686, Cl. 340-146.1AB.

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Goebel, Franz, 4,118,334, Cl. 252-182.100.

Guffin, Robert E.: *See—*
Trist, Nicolas P.; Guffin, Robert E.; Franklin, Walter M.; Crosby, James B., Jr.; Hallaway, Glen N.; and Tellier, James G., 4,117,597, Cl. 32-27.000.

Gugel, Georg, to Kraftwerk Union Aktiengesellschaft. Test system carrier for ultrasonic testing of nozzle seams, pipe connection seams and nozzle corners in pressure vessels, particularly reactor pressure vessels of nuclear power plants. 4,117,733, Cl. 73-634.000.

Guignard, Jean; and Lorre, Jean-Marie, to Schlumberger Technology Corporation. Method and apparatus for providing repeatable wireline depth measurements. 4,117,600, Cl. 33-133.000.

Guilleman, Lionel; and Thillays, Jacques Claude, to U.S. Philips Corporation. Opto-electronic device having coupled emitter and receiver. 4,118,633, Cl. 250-551.000.

Gulf Oil Corporation: *See—*
Allen, Loy F., 4,118,148, Cl. 417-12.000.

Gulf Research & Development Company: *See—*
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzer, Kirk J.; and Paraskos, John Angelo, 4,118,310, Cl. 208-210.000.
Innes, Robert A., 4,118,433, Cl. 260-683.510.
Selwitz, Charles M.; and Thayer, Helen I., 4,118,244, Cl. 106-270.000.

Guliana, Ronald T.: *See—*
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Gullfiber AB: *See—*
Johansson, Jan-Olof; Korpela, Heikki; and Spacek, Karel, 4,117,754, Cl. 83-307.200.

Gundermann, Rolf Karl, to Optical Activity Ltd. Polarimeters. 4,118,125, Cl. 356-116.000.

Gunn, Damon M. Mail preparation, sorting apparatus and method. 4,117,975, Cl. 235-494.000.

Gunther, Ronald G.: *See—*
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Gutmann, Ingeborg, deceased: *See—*
Determann, Helmut; Bernt, Erich; Dollacker, Werner; Gutmann, Ingeborg, deceased; and Engelhardt, Gudrun, administrator, 4,118,279, Cl. 195-63.000.

Gutmann, Siegfried, administrator: *See—*
Determann, Helmut; Bernt, Erich; Dollacker, Werner; Gutmann, Ingeborg, deceased; and Engelhardt, Gudrun, administrator, 4,118,279, Cl. 195-63.000.

Gyi, Ko Ko; and Ragle, Herbert Underwood, to Burroughs Corporation. High performance floppy pack and associated system. 4,118,746, Cl. 360-99.000.

Gyrac Engineering Products Limited: *See—*
Lindsay, William Roy Mackintosh, 4,118,059, Cl. 294-74.000.

Haberlein, Harald; Nies, Herbert; and Scheidl, Franz, to Hoechst Aktiengesellschaft. Organic phosphites, process for their manufacture and their use as stabilizers. 4,118,352, Cl. 260-23.0XA.

Hadamovsky, Eugen; Hoppe, Wolfgang; Overhausen, Hans-Walter; Piotrowski, Bernhard; Schmid, Wehrhart; Schreiber, Georg; and Schroeder, Heinz, to Dynamit Nobel Aktiengesellschaft. Process and

apparatus for mass transfer between heterogeneous systems. 4,118,313, Cl. 560-78.000.
Haddock, Elvin D., to Yuma Desert Manufacturing, Inc. Moveable building board hoist. 4,117,939, Cl. 214-1.0SW.
Haferkamp, Dirk: *See—*
Hodzic, Alija; Haferkamp, Dirk; Stach, Heinrich; and Paetz, Eike, 4,118,276, Cl. 176-60.000.
Hafner, Erich, to United States of America, Army. Phase lock loop controlled offset local oscillator system. 4,118,673, Cl. 331-2.000.
Hagan, Joseph R.: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,118,533, Cl. 428-297.000.
Hagberg, Lars, to Hytec AB. Output regulation in hydraulic and hydropneumatic systems. 4,118,149, Cl. 417-26.000.
Hagemann, Ruth: *See—*
Rommele, Gunter; and Hagemann, Ruth, 4,118,515, Cl. 426-63.000.
Hagendoorn, Willem Jacob, to Fisher-Klosterman, Inc. Oil mist filtering apparatus and method. 4,118,206, Cl. 55-74.000.
Hager, Nathaniel E., Jr., to Armstrong Cork Company. Emissimeter and method of measuring emissivity. 4,117,712, Cl. 73-15.00A.
Hahn, Werner; and Schulze, Heinz, to VEB Pentacon Dresden Kamera-und Kinowerke. Measuring and control system for single lens reflex. 4,118,718, Cl. 354-55.000.
Hahs, William A. Dual-pump coupling. 4,118,142, Cl. 415-69.000.
Haines, Paul Gordon: *See—*
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Hall, Joseph H.: *See—*
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Halm Instrument Co., Inc.: *See—*
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Halsall, Vincent M.: *See—*
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Haluska, Jerald R. Molding apparatus. 4,118,169, Cl. 425-583.000.
Hamade, Adib R.: *See—*
Ochi, Sam S.; Hamade, Adib R.; and Culmer, Daniel D., 4,118,640, Cl. 307-237.000.
Hamill, Herbert R.; and Potts, David E., to Engelhard Minerals & Chemicals Corporation. Method for producing clay slurries. 4,118,245, Cl. 106-288.00B.
Hamilton, C. Howard; and Ascani, Leonard A., Jr., to Rockwell International Corporation. Method for fabrication of honeycomb structures. 4,117,970, Cl. 228-173.00A.
Hamilton, Eddie J. Combination die head and chamfering tool. 4,118,140, Cl. 408-59.000.
Hammann, Ingeborg: *See—*
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Hanaoka, Naohiro; and Shimoda, Misao, to Olympus Optical Co., Ltd. Composite magnetic head. 4,118,747, Cl. 360-121.000.
Hanley, Michael A.; Miller, Lawrence A.; and Kinsey, Irvin H., to Polymer Corporation, The. Recovery of polyacetal resins. 4,118,345, Cl. 260-2.300.
Hanscom, Russell C. Multi-purpose lifting and mounting assembly. 4,118,010, Cl. 254-124.000.
Hansen Manufacturing Company, The: *See—*
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Harada, Hideo; and Matsushita, Nobuaki, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Polyurethane hydrogel and method for the production of the same. 4,118,354, Cl. 260-29.2TN.
Harder, Arthur J., Jr.; and Kehl, Norman J., to Coach and Car Equipment Corporation. Cantilevered seat-supporting shell with built-in blower. 4,118,062, Cl. 296-63.000.
Hardigg, James S. Method of making a battery jar. 4,118,265, Cl. 156-242.000.
Hardin, David P.: *See—*
Oestreicher, Stephen L.; and Hardin, David P., 4,118,217, Cl. 71-92.000.
Hardy, Herbert L.: *See—*
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Hargreaves, Clifford McDonald, to U.S. Philips Corporation. Thermodynamic method and device for carrying out the method. 4,117,695, Cl. 62-86.000.
Harris Corporation: *See—*
Pan, Jing Jong; Arnold, Milton Phillip; and Barton, James Castle, 4,118,270, Cl. 156-659.000.
Varley, Robert Fred, 4,118,705, Cl. 343-100.0AD.
Harris, Fred A.: *See—*
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Harris, Gerald R. Vertical band saw and feed table. 4,117,756, Cl. 83-801.000.
Harris, Howard A., to Shell Oil Company. Disazo compounds. 4,118,385, Cl. 260-175.000.
Harris, Richard Hunter, to International Business Machines Corporation. Buckling spring torsional snap actuator. 4,118,611, Cl. 200-67.00A.
Harrison, Ronald A.: *See—*
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Hartmann, Horst, to Zyliss Zysett AG. Implement, in particular a household implement, for chopping cuttable material, in particular meat, onions or the like. 4,117,980, Cl. 241-37.500.
Hase, Marie: *See—*
Corluy, Hans Josephus; Moll, Franz; Muller, Herbert; and Hase, Marie, 4,118,228, Cl. 96-17.000.
Hasegawa, Taiji: *See—*
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Hasegawa, Yoshio; Hiroyama, Koji; Shimada, Minoru; and Kawasaki, Haruhiko, to Kayaba Industry Co., Ltd. Automatic sewing machine. 4,117,790, Cl. 112-205.000.
Hasenwinkle, Earl Dean; and Wislocker, Frank, to Weyerhaeuser Company. Log transport and sawing system. 4,117,755, Cl. 83-435.100.
Hashimoto, Akihiko, to Olympus Optical Co., Ltd. X-contact device for bladed shutter. 4,118,721, Cl. 354-147.000.
Hashimoto, Kenji: *See—*
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Hashimoto, Noboru: *See—*
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Hattori, Kinya: *See—*
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Hauck, Bobbie W.: *See—*
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Hauser, Raimund: *See—*
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Haviv, Fortuna; and Patchornik, Abraham, to Yeda Research and Development Co. Ltd. Azidomethylaryl-substituted cephalosporin derivatives. 4,118,562, Cl. 544-26.000.
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James, Robert C.; Wilson, David A.; and Horsman, Dennis P., 4,117,646, Cl. 53-488.000.
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Heck, Friedrich. Manufacture of bearings. 4,117,580, Cl. 29-149.500.
Heck, Ronald M.: *See—*
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Heller, Jack A., to United States of America, National Aeronautics and Space Administration. Apparatus and method for reducing thermal stress in a turbine rotor. 4,117,669, Cl. 60-39.140.
Helmstetter, Paul M., to Honeywell Inc. Measuring apparatus providing separate analog and digital outputs. 4,117,722, Cl. 73-362.0AR.
Helt, Raymond E., to Rass, Inc. Rip cord safety device for waders. 4,117,609, Cl. 36-4.000.
Hemphill, Charles Wayne. Digging teeth for an excavating bucket. 4,117,611, Cl. 37-142.00R.

Henaut, Eugene: *See—*
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Heyman, Joseph S., to United States of America, National Aeronautics and Space Administration. Pseudo continuous wave instrument. 4,117,731, Cl. 73-579.000.
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Hickey, Christopher Daniel Dowling. Containers or carriers for goods. 4,117,875, Cl. 150-52.00R.
Hiday, David R.; and Larsen, Charles G., to General Instrument Corporation. VHF, UHF and superband tuner with automatic switching. 4,118,679, Cl. 334-1.000.
Higashi, Fukuji: *See—*
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Steckelberg, Willi; Panke, Hans Ludwig; May, Adolf; and Bucking, Hans-Walter, 4,118,324, Cl. 252-8.900.
Strecker, Helmut; Kasmarker, Reinhard; and Kloss, Gerhard, 4,118,468, Cl. 424-1.000.

Vollmer, Hartfrid; and Hestermann, Klaus, 4,118,590, Cl. 560-190.000.

Hoenig, Stuart A., to Ransburg Corporation. Apparatus for measuring charge on, and density of, airborne particulates. 4,117,715, Cl. 73-28.000.

Hoffmann-La Roche Inc.: *See—*
Coffen, David Llewellyn, 4,118,587, Cl. 560-251.000.
Gerecke, Max; Kyburz, Emilio; and Kaplan, Jean-Pierre, 4,118,572, Cl. 544-369.000.
Walser, Armin, 4,118,386, Cl. 260-239.30T.

Hohmann, Kurt: *See—*
Mohr, Reinhard; and Hohmann, Kurt, 4,118,185, Cl. 8-42.00D.

Hohne, Gerd: *See—*
Bodig, Bernd; Schmied, Helmut; and Hohne, Gerd, 4,117,818, Cl. 123-148.00E.

Hokuetsu Paper Mills Ltd.: *See—*
Mayama, Masayoshi; Terada, Sadatugu; Muramatsu, Toshio; Kimura, Masayuki; Ishibara, Masao; and Kobayashi, Tohru, 4,118,231, Cl. 96-87.00A.

Hokushin Electric Works, Ltd.: *See—*
Hirano, Toru, 4,118,780, Cl. 364-510.000.
Suzuki, Kazuie; Torimaru, Takashi; and Akiyama, Chuji, 4,117,721, Cl. 73-194.0EM.

Holland, Charles L.; and Coulson, John N., Jr., to General Dynamics Corporation. Device for pre-setting tools for numerical controlled machine. 4,117,943, Cl. 214-6.00D.

Holy, Norman L.; and Nalesnik, Theodore E., to Western Kentucky University. Production of hydroxy ethers. 4,118,426, Cl. 260-615.00B.

Homsy, Charles A. Implantable material and method of preparing same. 4,118,532, Cl. 428-294.000.

Honaker, Donald E., to Standard Oil Company (Indiana). Oil shale retorting and off-gas purification. 4,117,886, Cl. 166-259.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Funabashi, Katsunori; and Kohyama, Mikihiro, 4,117,823, Cl. 123-198.00E.
Sato, Naohiko; and Osawa, Keiichi, 4,117,812, Cl. 123-117.00A.
Shishido, Toshimasa; and Ninomiya, Mitsuaki, 4,118,445, Cl. 261-44.00B.
Tanaka, Minoru; Kajitani, Ikuo; and Nagase, Hidenobu, 4,117,675, Cl. 60-302.000.
Yamazaki, Shuichi; Kajitani, Ikuo; and Kosato, Yasuo, 4,117,672, Cl. 60-282.000.
Yamazaki, Shuichi; and Kajitani, Ikuo, 4,117,673, Cl. 60-282.000.
Yazane, Shigeru; and Mogami, Youetsu, 4,117,741, Cl. 74-492.000.

Honeywell Inc.: *See—*
Anderson, Rogers H., 4,118,448, Cl. 264-1.000.
Ballinger, Dale O., 4,118,179, Cl. 432-59.000.
Helmstetter, Paul M., 4,117,722, Cl. 73-362.0AR.
Myers, Edward B., 4,118,008, Cl. 251-298.000.
Simon, Frank N., 4,117,716, Cl. 73-32.00A.

Honeywell Information Systems Inc.: *See—*
Gitzendanner, Louis G., 4,117,997, Cl. 248-20.000.
Raguin, Michel M.; and Joyce, Thomas F., 4,118,773, Cl. 364-200.000.

Hoop, William J., to Gamperdona Handels- und Finanz Aktiengesellschaft. Advertisement pillar. 4,118,082, Cl. 312-59.000.

Hoornstra, Clayton W.: *See—*
Broxterman, William E.; Urchick, Demetrius; Schmidt, Donald L.; and Hoornstra, Clayton W., 4,118,297, Cl. 204-159.110.

Hope, Henry F.; and Hope, Stephen F. Control apparatus responsive to liquid flow. 4,118,150, Cl. 417-40.000.

Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 4,118,150, Cl. 417-40.000.

Hoppe, Wolfgang: *See—*
Hadamovsky, Eugen; Hoppe, Wolfgang; Overhausen, Hans-Walter; Piotrowski, Bernhard; Schmid, Wehrhart; Schreiber, Georg; and Schroeder, Heinz, 4,118,313, Cl. 560-78.000.

Horiba, Ltd.: *See—*
Tanei, Fumio; and Ikeda, Toshiaki, 4,118,779, Cl. 364-509.000.

Horiuchi, Norio; Kai, Shin-ichi-ro; and Shinjo, Masayoshi, to Daikin Kogyo Co., Ltd. Mold release agent. 4,118,235, Cl. 106-38.220.

Horng, Cheng Tzong; Michel, Alwin Earl; Rupprecht, Hans Stephan; and Schwenker, Robert Otto, to International Business Machines Corporation. Process for producing integrated circuit devices by ion implantation. 4,118,250, Cl. 148-1.500.

Horning, Donald E.; Morris, Leeson R.; and Douglas, James L., to Bristol-Myers Company. $\Delta^{2,3}$-1,4-Morpholine-2-carboxylic acid derivatives as antibacterial agents. 4,118,566, Cl. 544-105.000.

Hornle, Reinhold: *See—*
Baurecht, Heinz-Ewald; Hornle, Reinhold; and Muller, Gerd, 4,118,391, Cl. 260-314.500.
Molls, Hans-Heinz; Schiwy, Willy; Hornle, Reinhold; and Nebeling, Reinhard, 4,118,384, Cl. 260-163.000.

Horsman, Dennis P.: *See—*
James, Robert C.; Wilson, David A.; and Horsman, Dennis P., 4,117,646, Cl. 53-488.000.

Hortepa, John P.; and Potts, David E., to Engelhard Minerals & Chemicals Corporation. Process for producing clay slurries. 4,118,246, Cl. 106-288.00B.

Hoseney, Russell C.; and Ling, Rujira Srisuthep, to Kansas State University Research Foundation. Nonfat dry milk substitute for yeast-leavened baked products. 4,118,514, Cl. 426-62.000.

Hosker, Thomas M. Picture display assembly. 4,117,613, Cl. 40-152.100.

Hotten, Bruce W., to Chevron Research Company. Amine phosphate salts. 4,118,328, Cl. 252-32.500.

Hotten, Bruce W., to Chevron Research Company. Amine phosphate salts and phosphoramides. 4,118,329, Cl. 252-32.500.

Hotten, Bruce W., to Chevron Research Company. Amine phosphate salts and phosphoramides. 4,118,330, Cl. 252-32.500.

Hotz, Roger D.; Stach, Leonard J.; and Richter, Sidney B., to Velsicol Chemical Company. N-dialkoxyalkyl-N-dioxolanalkylene-α-haloalkanamides. 4,118,216, Cl. 71-88.000.

Hounsfield, Godfrey Newbold, to EMI Limited. Radiographic apparatus with correction for radiation hardness variations. 4,118,628, Cl. 250-445.00T.

Hounsfield, Godfrey Newbold, to EMI Limited. Radiology. 4,118,629, Cl. 250-445.00T.

Hoveler, Egon: *See—*
Zodrow, Rudolf; and Hoveler, Egon, 4,118,269, Cl. 156-560.000.

Howland, Leland L., to Thermo King Corporation. Multi-stroke throttle linkage mechanism. 4,117,740, Cl. 74-469.000.

Hsu, Grace F., to Minnesota Mining and Manufacturing Company. Tin/lead plating bath and method. 4,118,289, Cl. 204-43.00S.

Hubble, Fred F., III; and Tasseff, John B., II, to Xerox Corporation. Coronode connection arrangement. 4,118,751, Cl. 361-220.000.

Huff, Bobby J.: *See—*
LaGrone, Bobby D.; and Huff, Bobby J., 4,118,137, Cl. 404-76.000.

Hughes Aircraft Company: *See—*
Nelson, Lloyd A.; and Sekhon, Kalwant S., 4,118,756, Cl. 361-385.000.
Warther, Donald Paul, 4,118,696, Cl. 340-347.0NT.

Humber, Leslie G.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,118,394, Cl. 260-326.280.

Hunt, Arthur J., to French Oil Mill Machinery Company, The. Screw press apparatus. 4,117,776, Cl. 100-117.000.

Hunter, George Taylor. Frame arm joint structure for seat or chair structure. 4,118,069, Cl. 297-416.000.

Hurme, Herbert J.: *See—*
Current, Wayne A.; Genge, Bruce I.; Hurme, Herbert J.; and Zocher, Josef, 4,117,791, Cl. 112-222.000.

Husky Injection Molding Systems Limited: *See—*
Rees, Herbert; and Schad, Robert Dietrich, 4,118,168, Cl. 425-556.000.

Hutchins, Burleigh M.: *See—*
Friswell, David R.; and Hutchins, Burleigh M., 4,117,727, Cl. 73-422.0GC.

Hutchins, Frank. Treatment of conjunctivitis with powdered aluminum and eye protector/applicator. 4,117,842, Cl. 128-163.000.

Hutchins, Ned M., to Occidental Oil Shale, Inc. In situ oil shale retort with a horizontal sill pillar. 4,118,071, Cl. 299-2.000.

Hutzenlaub, Armin, to Erwin Kampf Maschinenfabrik, Firma. Roller cutting and winding machine. 4,117,986, Cl. 242-56.200.

Huwyler, Franco, to Fabbrica Italiana Magneti Marelli S.p.A. System of distributing pilot signals. 4,118,638, Cl. 307-11.000.

Hydrotechnic Corporation: *See—*
San Roman, Guillermo A., 4,118,322, Cl. 210-136.000.

Hydrotile Canada Limited: *See—*
Christian, Alfred, 4,118,165, Cl. 425-262.000.

Hytec AB: *See—*
Hagberg, Lars, 4,118,149, Cl. 417-26.000.

I.S.F. S.p.A.: *See—*
Pifferi, Giorgio; and Pinza, Mario, 4,118,396, Cl. 260-326.430.

I-T-E Imperial Corporation: *See—*
Kussy, Frank W.; and Shaffer, Howard R., 4,118,608, Cl. 200-56.00R.
Shaffer, Howard R., 4,118,607, Cl. 200-50.00A.

Ibsen, Robert L.; and Glace, William Richard, to Den-Mat, Inc. Method for repair of porcelain dental prostheses. 4,117,595, Cl. 32-8.000.

Ichijima, Isamu; Watanabe, Seiichi; and Miyagawa, Kazuo, to Nippon Steel Corporation. Apparatus for detecting a surface flaw of a material at high temperature. 4,118,732, Cl. 358-101.000.

Ichimura, Takeo: *See—*
Ishibashi, Kazufumi; Matsumaru, Shizuo; and Ichimura, Takeo, 4,118,238, Cl. 106-47.00Q.

Idemitsu Lion Co., Ltd.: *See—*
Nakamura, Minoru, 4,117,573, Cl. 24-74.00A.

Idram Engineering Company Est.: *See—*
Baudin, Lucien, 4,118,160, Cl. 418-260.000.

Igarashi, Seiichiro: *See—*
Niki, Hiroshi; Deya, Eiki; Doi, Toru; Igarashi, Seiichiro; and Hayashi, Hiromichi, 4,118,517, Cl. 426-271.000.

Iguchi, Shozo. Apparatus for inflicting electric injury upon land shellfish such as snails and the like. 4,118,752, Cl. 361-232.000.

Iguchi, Shozo: *See—*
Takahashi, Toshiro; Nagano, Toshihiro; Iguchi, Shozo; Kikuchi, Masaru; Nakamura, Katsuhiko; and Mochizuki, Atsushi, 4,117,703, Cl. 72-38.000.

Iizuka, Shohei: *See—*
Ban, Itsuki; Iizuka, Shohei; and Funakoshi, Hisashi, 4,118,743, Cl. 360-73.000.

Ikeda, Akihiko: *See—*
Seko, Maomi; Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Imamura, Kazuo, 4,118,457, Cl. 423-7.000.

Ikeda, Toshiaki: *See—*
Tanei, Fumio; and Ikeda, Toshiaki, 4,118,779, Cl. 364-509.000.

Ikehata, Yukio: *See—*
Nakao, Hideyuki; Kasai, Yasuhiro; Ikehata, Yukio; Masuda, Shigeyuki; Obara, Nobuo; and Nishida, Isamu, 4,117,665, Cl. 58-106.500.

Ikeura, Kenji, to Nissan Motor Company, Limited. Closed-loop mixture control system for internal combustion engine using error-corrected exhaust composition sensors. 4,117,815, Cl. 123-119.0EC.

Ilagan, Juan B., Jr.: *See—*
Red, Jerry F. P.; and Ilagan, Juan B., Jr., 4,118,407, Cl. 260-412.500.

Illy, Alois, to Klein, Schanzlin & Becker Aktiengesellschaft. Valve. 4,117,859, Cl. 137-219.000.

Imai, Akio: *See—*
Ohtsuki, Nobuo; Hayashi, Toshio; Imai, Akio; Takahashi, Yoshio; and Hashimoto, Noboru, 4,118,660, Cl. 318-571.000.

Imai, Susumu: *See—*
Uchida, Yoshiro; Mizuno, Toshihiko; Higuchi, Isao; Imai, Susumu; and Usui, Shyoichiro, 4,117,586, Cl. 29-568.000.

Imam, Imdad: *See—*
Barkan, Philip; and Imam, Imdad, 4,118,613, Cl. 200-82.00B.

Imamura, Kazuo: *See—*
Seko, Maomi; Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Imamura, Kazuo, 4,118,457, Cl. 423-7.000.

Immer, Hans U.; and Abraham, Nedumparambil A., to Ayerst, McKenna & Harrison Limited. Decapeptide analogs of somatostatin. 4,118,380, Cl. 260-112.50S.

Imperial Chemical Industries Limited: *See—*
Cleare, Peter John Vernon; Kaye, Albert Edward; and Milner, David John, 4,118,412, Cl. 260-464.000.
Drewe, Nigel Wyndham; Hodson, Peter Robin; and Robson, Clive Gilroy, 4,118,218, Cl. 71-92.000.
Wood, William Malcolm Logan, 4,117,850, Cl. 131-2.000.

Inaba, Yoshihito: *See—*
Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, 4,118,336, Cl. 252-316.000.

Inamorato, Jack Thomas: *See—*
Apostolatos, George Nikolas; Bohrer, James Calvin; and Inamorato, Jack Thomas, 4,118,332, Cl. 252-107.000.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Lozar, Giorgio; and Favale, Renato, 4,118,708, Cl. 343-901.000.

Industrie Pirelli Societa per Azioni: *See—*
Borroni, Andrea, 4,118,593, Cl. 174-26.00R.

Ing. C. Olivetti & C., S.p.A.: *See—*
Pomella, Piero; and Lauro, Luciano, 4,118,771, Cl. 364-101.000.

Ingham, John D.: *See—*
Rhein, Robert A.; and Ingham, John D., 4,118,427, Cl. 568-852.000.

Ingham, Robert M., Jr., to Milliken Research Corporation. Handling yarn in a combination false twist and co-mingling jet apparatus. 4,117,656, Cl. 57-157.0TS.

Innes, Robert A., to Gulf Research & Development Company. Isoparaffin-olefin HF alkylation promoted with trifluoromethanesulfonic acid. 4,118,433, Cl. 260-683.510.

Inoue, Yoshio. Apparatus for incising on a film the precise contour of a required image. 4,117,751, Cl. 83-868.000.

Institut Francais du Petrole: *See—*
Salle, Robert; and Sillion, Bernard, 4,118,392, Cl. 260-326.00N.

Institute Po Obleklo I Textil: *See—*
Petrov, Georgi Mitev; Andonov, Blagoy Alexandrov; Trayanov, Svetozar Paissiev; and Georgiev, Georgi Dimitrov, 4,117,654, Cl. 57-19.000.

International Business Machines Corporation: *See—*
Argyle, Bernell Edwin; Dekker, Pieter; and Slonczewski, John Casimir, 4,118,793, Cl. 365-30.000.
Harris, Richard Hunter, 4,118,611, Cl. 200-67.00A.
Horng, Cheng Tzong; Michel, Alwin Earl; Rupprecht, Hans Stephan; and Schwenker, Robert Otto, 4,118,250, Cl. 148-1.500.
Levine, Samuel R.; Singh, Shanker; and Weinberger, Arnold, 4,118,786, Cl. 364-783.000.
McKenna, Charles M.; and Mueller, Wolfgang F., 4,118,630, Cl. 250-492.00A.
Mulholland, Patrick John; and Thomas, Colin Arthur, 4,117,737, Cl. 74-242.000.
Nussbaumer, Henri J., 4,118,784, Cl. 364-724.000.

International Computers Limited: *See—*
Bingham, Kenneth Charles Arthur; Gillingham, Alan George Albert; and Baldwin, Colin, 4,118,523, Cl. 427-97.000.

International Flavors & Fragrances Inc.: *See—*
Van Praag, Michel; and Duijf, Gerrit, 4,118,516, Cl. 426-96.000.

International Harvester Company: *See—*
Vacval, Dusan M.; and Domes, E. A., 4,117,911, Cl. 188-73.300.

International Nickel Company, Inc., The: *See—*
Ettel, Victor Alexander; and Devuyst, Eric August Pierre, 4,118,221, Cl. 75-108.000.

International Telephone and Telegraph Corporation: *See—*
Austin, Robert R.; and Moen, A. M. D., 4,117,725, Cl. 73-421.50R.
Goell, James E.; and Brandt, H. David, 4,118,100, Cl. 350-96.200.
Specht, Paul B., 4,117,772, Cl. 98-2.000.
Turbak, Albin F.; Thelman, John P.; and Auerbach, Andrew B., 4,118,350, Cl. 260-15.000.
Wallace, Charles H., 4,118,777, Cl. 364-475.000.

Ionit Anstalt Bernhad Berghaus: *See—*
Luckan, Johannes; Elwart, Jan; and Herter, Martin, 4,118,624, Cl. 250-326.000.

Irvin Industries Canada Ltd.: *See—*
Palm, Lorenz A.; and Webb, David B., 4,117,993, Cl. 244-145.000.
Webb, David B., 4,117,994, Cl. 244-152.000.

Irving, Frank: *See—*
Ward, Nazareen, 4,117,805, Cl. 119-5.000.

Ishibara, Masao: *See—*
Mayama, Masayoshi; Terada, Sadatugu; Muramatsu, Toshio; Kimura, Masayuki; Ishibara, Masao; and Kobayashi, Tohru, 4,118,231, Cl. 96-87.00A.

Ishibashi, Katsuji; Mitsui, Shigeo; and Kobayashi, Rikio, to Agency of Industrial Science & Technology. Activated carbon. 4,118,341, Cl. 252-438.000.

Ishibashi, Kazufumi; Matsumaru, Shizuo; and Ichimura, Takeo, to Nippon Kogaku K.K. Optical glass. 4,118,238, Cl. 106-47.00Q.

Ishiguro, Susumu; Komuro, Masuhiro; and Nakamura, Shigeru, to Showa Denko K.K. Filler for liquid chromatography. 4,118,347, Cl. 521-53.000.

Ishihara, Masamichi: *See—*
Mizuno, Fumio; and Ishihara, Masamichi, 4,118,794, Cl. 365-149.000.

Ishii, Hiromichi: *See—*
Ishii, Kazuhiro; Matsuzawa, Hideo; Kobayashi, Masao; and Ishii, Hiromichi, 4,118,419, Cl. 562-534.000.

Ishii, Kazuhiro; Matsuzawa, Hideo; Kobayashi, Masao; and Ishii, Hiromichi, to Mitsubishi Rayon Company, Ltd. Catalytic process for the preparation of an unsaturated carboxylic acid. 4,118,419, Cl. 562-534.000.

Ishikawa, Kazushige: *See—*
Kurata, Junichi; Ishikawa, Kazushige; and Nagashima, Nozomu, 4,118,039, Cl. 274-9.0RA.

Ishikawa, Yasuo: *See—*
Murakami, Takao; Ishikawa, Yasuo; and Ito, Masahiro, 4,118,151, Cl. 417-223.000.

Ishino, Ken; Yamashita, Hiroshi; Ono, Nobuyuki; and Hashimoto, Yasuo, to TDK Electronics Co., Ltd. Electromagnetic wave-absorbing wall. 4,118,704, Cl. 343-18.00A.

Isley, Walter F., to Teledyne Industries, Inc. Solid impurity detector. 4,117,717, Cl. 73-38.000.

Isomura, Masayoshi, to Nippon Electric Company, Ltd. Numerically controlled machine comprising a microprogrammable computer operable with microprograms for macroinstructions and for inherent functions of the machine. 4,118,776, Cl. 364-474.000.

Itaya, Nobushige: *See—*
Kitamura, Shigeyoshi; Itaya, Nobushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,118,505, Cl. 424-275.000.

Itek Corporation: *See—*
Chang, I-Cheng; and Hecht, David L., 4,118,113, Cl. 350-358.000.
Ebner, Peter R.; and Griffith, Louis E., 4,118,711, Cl. 354-15.000.

Ito, Fumio: *See—*
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,118,713, Cl. 354-23.00D.

Ito, Masahiro: *See—*
Murakami, Takao; Ishikawa, Yasuo; and Ito, Masahiro, 4,118,151, Cl. 417-223.000.

Ito, Tadashi: *See—*
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,118,713, Cl. 354-23.00D.
Suzuki, Masayuki; Sakurada, Nobuaki; Ito, Tadashi; Yamamichi, Masayoshi; and Murakami, Hiroyashu, 4,118,716, Cl. 354-38.000.

Ito, Yukio; and Morishima, Susumu, to Hitachi Denshi Engineering Kabushiki Kaisha; and Musashi Kabushiki Kaisha. Tape winding arrangement for paper bundle binding apparatus. 4,117,650, Cl. 53-587.000.

Itoh, Tsutomu, to Onoda Cement Company, Ltd. Paper cups. 4,117,971, Cl. 229-1.50B.

ITT Industries, Inc.: *See—*
Schadow, Rudolf; and Hinze, Klaus, 4,118,609, Cl. 200-67.0DA.

Ives, Robert E.: *See—*
United States of America, National Aeronautics and Space Administration; Wall, William A., Jr.; Ives, Robert E.; Bruce, Miles Melvin, Jr.; Pryor, Peter Paul, Jr.; and Gard, Leslie H., 4,118,620, Cl. 219-124.320.

Ivosevic, Strahinja, to Sulzer Brothers Limited. Fuel injection pump having choke means in overflow line. 4,118,156, Cl. 417-494.000.

Iwahara, Makoto; and Mori, Toshinori, to Victor Company of Japan, Limited. Stereophonic sound reproduction system. 4,118,599, Cl. 179-1.00G.

Iwama, Hideto: *See—*
Okajima, Hidekazu; and Iwama, Hideto, 4,118,714, Cl. 354-31.000.

Iwasa, Hitoo: *See—*
Kano, Gota; and Iwasa, Hitoo, 4,117,587, Cl. 29-571.000.

Izumi, Kazuo: *See—*
Izumi, Kazuto; and Izumi, Kazuo, 4,118,785, Cl. 364-754.000.

Izumi, Kazuto; and Izumi, Kazuo, to Nippon Telegraph and Telephone Public Corporation. Method and apparatus for digital attenuation by pattern shifting. 4,118,785, Cl. 364-754.000.

J. B. Foote Foundry Co., The: *See—*
Jones, Ronald N.; and Cline, Devin R., 4,117,652, Cl. 56-11.800.

J. I. Case Company: *See—*
Youngers, Stephen Anthony, 4,117,890, Cl. 172-40.000.

Jackson, Edwin C. Camber adjusting tool. 4,117,709, Cl. 72-386.000.

Jacobs, Bernardus Antonius Johannus: *See—*
Bouwhuis, Gijsbertus; Braat, Josephus Johannes Maria; and Jacobs, Bernardus Antonius Johannus, 4,118,734, Cl. 358-128.000.

Jacobs, William B.: *See*—
Goodson, Louis H.; and Jacobs, William B., 4,117,714, Cl. 73-21.000.

Jacobson, Sava. Telephone answering device having simplified mechanical controls. 4,118,602, Cl. 179-6.00R.

Jagenberg-Werke AG: *See*—
Zodrow, Rudolf; and Hoveler, Egon, 4,118,269, Cl. 156-560.000.

Jager, Horst; and Dehmel, Georg, to Bayer Aktiengesellschaft. Reactive mono-azo dyestuffs having a 4-amino-3,5(or-6)-disulfoacetic acid coupling component and a reactive group attached to the diazo component. 4,118,382, Cl. 260-154.000.

Jahnke, Richard William, to Lubrizol Corporation, The. Method for working metal and lubricants for use therein. 4,118,331, Cl. 252-32.70E.

James, Harold; and Buggy, Martin, to British Industrial Plastics Limited. Moulding thermosetting compositions. 4,118,365, Cl. 260-39.00R.

James, Michael, to Allen & Hanburys Limited. Device for dispensing medicaments. 4,117,844, Cl. 128-266.000.

James, Robert C.; Wilson, David A.; and Horsman, Dennis P., to Hayssen Manufacturing Company. Method of applying a lid to a case. 4,117,646, Cl. 53-488.000.

Jans, Johannes M., to U.S. Philips Corporation. Electroless copper plating bath. 4,118,234, Cl. 106-1.230.

Japan Storage Battery Company Limited: *See*—
Fukuba, Kiyohide, 4,117,969, Cl. 228-140.000.

Jardin, Hans: *See*—
Bienert, Horst; and Jardin, Hans, 4,118,063, Cl. 296-137.00B.

Jarrett, Robert B.; and Zobel, Don W., to Motorola, Inc. Threshold circuit suitable for use in electronic ignition systems. 4,117,819, Cl. 123-148.00E.

Jensen, Harald: *See*—
Mitzlaff, Michael; Warning, Klaus; and Jensen, Harald, 4,118,500, Cl. 424-267.000.

Jewett, David N.: *See*—
Mackintosh, Brian H.; and Jewett, David N., 4,118,197, Cl. 422-246.000.

Jin, Jung Il; and Kraft, Paul, to Stauffer Chemical Company. Cross-linked vinyl halide polymers as flame retardant additives for thermoplastic polyester. 4,118,440, Cl. 260-873.000.

Jirkovsky, Ivo: *See*—
Demerson, Christopher A.; Humber, Leslie G.; Asselin, Andre A.; Jirkovsky, Ivo; and Dobson, Thomas A., 4,118,394, Cl. 260-326.280.

Joh. Friedrich Behrens Aktiengesellschaft: *See*—
Elliesen, Wolfgang, 4,117,767, Cl. 91-461.000.

Johannesen, Donald D., to Bendix Corporation, The. Disc brake and mounting therefor. 4,117,910, Cl. 188-71.900.

Johansson, Jan-Olof; Korpela, Heikki; and Spacek, Karel, to Gullfiber AB. Transverse cutter. 4,117,754, Cl. 83-307.200.

John, Veit, to Hoechst Aktiengesellschaft. Process for device for preparing ignitable fuel mixtures. 4,117,810, Cl. 123-1.00R.

John Zink Company: *See*—
Reed, Robert D., 4,117,734, Cl. 73-756.000.

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Gagin, Lawrence Vincent, 4,118,239, Cl. 106-50.000.
Godin, Gilbert; and Norgard, Fred C., 4,118,273, Cl. 162-171.000.
Wells, David Lee, 4,117,641, Cl. 52-404.000.

Johnson, David R.: *See*—
Juckniess, Paul R.; and Johnson, David R., 4,118,291, Cl. 204-64.00T.

Johnson, James H.; Fowler, Arnold L.; Brooks, Julius E.; and Friend, Harvey H., to Olin Corporation. Fire control mechanism. 4,117,761, Cl. 89-129.00B.

Johnson, Jerry Lynn; and Liebhold, Martin R., to Landes Manufacturing Co. Furniture drawer. 4,118,089, Cl. 312-351.000.

Johnson & Johnson: *See*—
Turner, Robert Bruce; and Weinberg, Glen Lee, 4,117,926, Cl. 206-306.000.

Johnson, Leighton Clifford, to Miles Laboratories, Inc. Pipette. 4,117,728, Cl. 73-425.600.

Johnson, Leopold J., to United States of America, Navy. Method of manufacturing three dimensional integrated circuits. 4,117,588, Cl. 29-608.000.

Johnson, Michael Ross; and Melvin, Lawrence Sherman, Jr., to Pfizer Inc. 9-Hydroxyhexahydrodibenzo[O,d]pyrans, 1-substituted-9-hydroxyhexahydrodibenzo[b,d]pyrans and intermediates therefor. 4,118,559, Cl. 542-432.000.

Johnson, Roy E. Hose winding mechanism. 4,117,991, Cl. 242-86.000.

Johnson, William George, to Crane Air Trac Incorporated. Ventilation system for the supply of air or exhaustion of fumes. 4,117,773, Cl. 98-115.0VM.

Johnstons & Associates, Inc.: *See*—
Gomolak, Theodore M., 4,117,615, Cl. 40-363.000.

Jones, Ivor Wynn; and Robinson, Graham, to Chloride Silent Power Limited. Sodium sulphur cells. 4,118,545, Cl. 429-104.000.

Jones, Kenneth L., to Procter & Gamble Company, The. Article and method for fabric softening and static control. 4,118,525, Cl. 427-242.000.

Jones & Laughlin Steel Corporation: *See*—
Lani, Richard A., 4,117,706, Cl. 72-245.000.

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Charles, Ronald A.; Jones, Paul W.; Staples, John L.; and Wiegner, Joseph R., 4,118,280, Cl. 195-127.000.

Jones, Ronald N.; and Cline, Devin R., to J. B. Foote Foundry Co., The. Transmission for self-propelled, walking lawn mowers. 4,117,652, Cl. 56-11.800.

Joshi, AshokVenimadhav: *See*—
Liang, Charles Chi; and Joshi, AshokVenimadhav, 4,118,549, Cl. 429-191.000.

Jost, Steven Robert: *See*—
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; Jost, Steven Robert; Reichman, Joseph; and Russak, Michael A., 4,118,547, Cl. 429-111.000.

Joustra, Annie H.; La Haye, Teunis P.; and Kesselaar, Fernand H., to Shell Oil Company. Preparation of alkyl chlorides. 4,118,428, Cl. 260-663.000.

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Raguin, Michel M.; and Joyce, Thomas F., 4,118,773, Cl. 364-200.000.

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Juhn, Hyunil; and Wistreich, Hugo E., to B. Heller & Company. Method of producing smoke flavoring for foods. 4,118,519, Cl. 426-533.000.

Jujo Paper Co., Ltd.: *See*—
Oku, Kyoichi; and Matsuura, Hiroshi, 4,118,271, Cl. 162-31.000.

K-tel International, Inc.: *See*—
Koblick, Jeffrey, 4,118,032, Cl. 273-185.00C.

Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich. Method for dimerization of olefins. 4,118,432, Cl. 260-683.15D.

Kabushiki Kaisha Daini Seikosha: *See*—
Nakao, Hideyuki; Kasai, Yasuhiro; Ikehata, Yukio; Masuda, Shigeyuki; Obara, Nobuo; and Nishida, Isamu, 4,117,665, Cl. 58-106.500.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kato, Hiroshi, 4,117,759, Cl. 84-1.030.

Kabushiki Kaisha Keihinseiki Seisakusho: *See*—
Shishido, Toshimasa; and Ninomiya, Mitsuaki, 4,118,445, Cl. 261-44.00B.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Yokoyama, Akinori; and Komatsu, Mitsuaki, 4,117,745, Cl. 74-688.000.

Kabushiki Kaisha Seikosha: *See*—
Suzuki, Tetsuro; Oishi, Masaaki; and Ashida, Itaru, 4,117,743, Cl. 74-577.00M.

Kabushiki Kaisha Suwa Seikosha: *See*—
Miyasaka, Tsutomu; Fujimori, Yoshiaki; Matsui, Shigeru; and Komaki, Tetsuo, 4,117,658, Cl. 58-90.00R.
Shimizu, Eisaku, 4,117,657, Cl. 58-4 00A.
Takeshita, Hiroshi, 4,117,659, Cl. 58-23.00R.

Kabushiki Kaisha Yodogawaseikosho: *See*—
Yokota, Reizo, 4,117,877, Cl. 164-95.000.

Kachik, Robert H.: *See*—
Pignocco, Arthur J.; and Kachik, Robert H., 4,117,868, Cl. 138-146.000.

Kai, Shin-ichi-ro: *See*—
Horiuchi, Norio; Kai, Shin-ichi-ro; and Shinjo, Masayoshi, 4,118,235, Cl. 106-38.220.

Kaiser, Joachim: *See*—
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Kaiser, Wilhelm: *See*—
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Kajima, Hisashi: *See*—
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Kajitani, Ikuo: *See*—
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Yamazaki, Shuichi; Kajitani, Ikuo; and Kosato, Yasuo, 4,117,672, Cl. 60-282.000.
Yamazaki, Shuichi; and Kajitani, Ikuo, 4,117,673, Cl. 60-282.000.

Kalas, Barbara A. Revolving planter. 4,117,630, Cl. 47-67.000.

Kanazawa, Kuniyoshi. Bicycle. 4,118,045, Cl. 280-283.000.

Kano, Gota; and Iwasa, Hitoo, to Matsushita Electronics Corporation. Negative-resistance semiconductor device. 4,117,587, Cl. 29-571.000.

Kansas State University Research Foundation: *See*—
Hoseney, Russell C.; and Ling, Rujira Srisuthep, 4,118,514, Cl. 426-62.000.

Kantor, Ludwig: *See*—
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Karl Lautenschlager KG: *See*—
Lautenschlager, Karl, Jr.; and Lautenschlager, Reinhard, 4,117,569, Cl. 16-139.000.

Kasai, Tsutomu: *See*—
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Kasai, Yasuhiro: *See*—
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Kashima, Koji: *See*—
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Kashiwazaki, Seiichi; and Hasegawa, Taiji, to Hitachi, Ltd. Ignition circuit. 4,117,820, Cl. 123-148.00E.

Kasmarker, Reinhard: *See*—
Strecker, Helmut; Kasmarker, Reinhard; and Kloss, Gerhard, 4,118,468, Cl. 424-1.000.

Kastovich, John C.: *See*—
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Kasubke, Dietmar; and Trefz, Wilhelm. Unitary arrangement for coating skis and other planar surfaces. 4,118,130, Cl. 401-2.000.

Katchman, Arthur: *See*—
Bennett, James G.; Cooper, Glenn D.; and Katchman, Arthur, 4,118,348, Cl. 260-4.0AR.

Kato, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Apparatus for forming chord signal. 4,117,759, Cl. 84-1.030.

Katsuki, Kanji: *See*—
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Katsuragi, Mamoru: *See*—
Yamazaki, Keiji; and Katsuragi, Mamoru, 4,118,723, Cl. 354-155.000.

Katz, Alan Harry: *See*—
Frye, Robert Charles; Katz, Alan Harry; and Hewes, Charles Robert, 4,118,795, Cl. 365-222.000.

Kavan, Franz. Stabilizing and control device for two-bladed helicopter rotors. 4,118,143, Cl. 416-18.000.

Kawahara, Kiyoshi: *See*—
Matsuura, Haruo; and Kawahara, Kiyoshi, 4,118,745, Cl. 360-96.000.

Kawai, Michio, to Nissan Motor Company, Limited. Engine starting system. 4,117,821, Cl. 123-179.00L.

Kawamura, Hideo: *See*—
Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, 4,118,319, Cl. 210-51.000.

Kawamura, Masaharu: *See*—
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Kawasaki, Haruhiko: *See*—
Hasegawa, Yoshio; Hiroyama, Koji; Shimada, Minoru; and Kawasaki, Haruhiko, 4,117,790, Cl. 112-205.000.

Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Digital light meter system for a camera. 4,118,712, Cl. 354-23.00D.

Kayaba Industry Co., Ltd.: *See*—
Hasegawa, Yoshio; Hiroyama, Koji; Shimada, Minoru; and Kawasaki, Haruhiko, 4,117,790, Cl. 112-205.000.

Kaye, Albert Edward: *See*—
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Kehl, Norman J.: *See*—
Harder, Arthur J., Jr.; and Kehl, Norman J., 4,118,062, Cl. 296-63.000.

Kelley, Jay Hilary; and White, Letcher T. Variable wall mining machine. 4,118,072, Cl. 299-43.000.

Kelley, Lawrence L. Support means for a windmill. 4,118,144, Cl. 416-41.000.

Kelly, Bruce A.: *See*—
Kelly, Hartleigh; Kelly, Bruce A.; and Kelly, Ross A., 4,117,797, Cl. 114-91.000.

Kelly, Hartleigh; Kelly, Bruce A.; and Kelly, Ross A. Mast and keel movement for sailing vessels. 4,117,797, Cl. 114-91.000.

Kelly, Ross A.: *See*—
Kelly, Hartleigh; Kelly, Bruce A.; and Kelly, Ross A., 4,117,797, Cl. 114-91.000.

Kemenater, Christof: *See*—
Brabetz, Hartmut; Kemenater, Christof; Six, Franz; and Kaiser, Wilhelm, 4,118,357, Cl. 260-29.6WA.

Kemper, Yves Jean; and Pouliot, Harvey N., to Vadetec Corporation. Variable stroke expansible energy conversion machine having static control means. 4,117,736, Cl. 74-60.000.

Kennametal Inc.: *See*—
Kennedy, George C., 4,118,161, Cl. 425-77.000.

Kennedy, George C., to Kennametal Inc. High temperature, high pressure apparatus having a ductile driver element. 4,118,161, Cl. 425-77.000.

Kennedy, Tom E.: *See*—
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Kenny, George E.: *See*—
Caldwell, Harlan D.; Kuo, Cho-Chou; and Kenny, George E., 4,118,469, Cl. 424-1.000.

Kerb, Ulrich: *See*—
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, 4,118,488, Cl. 424-238.000.

Kerr, Andrew Guy; and Morley, Robert Arthur, to Ferranti Limited. Load transfer. 4,118,012, Cl. 254-173.00R.

Kerr, Jack B. Method for forming an improved insulated metal frame. 4,118,266, Cl. 156-293.000.

Kerr, John L., to United States of America, Army. Microstrip-fed parasitic array. 4,118,706, Cl. 343-700.0MS.

Kervagoret, Gilbert, to Societe Anonyme D.B.A. Hydraulic booster. 4,117,766, Cl. 91-457.000.

Kesselaar, Fernand H.: *See*—
Joustra, Annie H.; La Haye, Teunis P.; and Kesselaar, Fernand H., 4,118,428, Cl. 260-663.000.

Kessler, Milton. Plastic cap for widemouthed containers. 4,117,946, Cl. 215-321.000.

Kettner, Erich O.: *See*—
Newman, Thomas A.; and Kettner, Erich O., 4,117,852, Cl. 131-96.000.

Key, Edward H., to TRW Inc. Zero-entry force connector. 4,118,094, Cl. 339-75.0MP.

Kidd, James M., Jr.; and Woods, Jay G., to Atlanta Metal Products, Inc. Skylight for standing rib metal roofs. 4,117,638, Cl. 52-200.000.

Kidon, William E.; and Stillman, Neil W., to Diamond Shamrock Corporation. Apparatus for treating fluids and treating tablets therefor. 4,117,560, Cl. 4-321.000.

Kief, Heinrich: *See*—
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Kifferstein, Harry P.; and Kifferstein, Warren M. Sound-emitting toy flying saucer. 4,117,626, Cl. 46-74.00D.

Kifferstein, Warren M.: *See*—
Kifferstein, Harry P.; and Kifferstein, Warren M., 4,117,626, Cl. 46-74.00D.

Kikuchi, Masaru: *See*—
Takahashi, Toshiro; Nagano, Toshihiro; Iguchi, Shozo; Kikuchi, Masaru; Nakamura, Katsuhiko; and Mochizuki, Atsushi, 4,117,703, Cl. 72-38.000.

Kimball International, Inc.: *See*—
Osburn, James Patrick; and Robinson, John William, 4,117,758, Cl. 84-1.010.

Kimura, Masayuki: *See*—
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Kinsey, Irvin H.: *See*—
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Kiscaden, Roy W.: *See*—
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Kitamura, Shigeyoshi; Itaya, Nobushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, to Sumitomo Chemical Company, Limited. Novel cyclopropanecarboxylates. 4,118,505, Cl. 424-275.000.

Kito, Hidetoshi, to Rank Xerox, Ltd. Developer flow regulator for a magnetic brush developing device. 4,117,803, Cl. 118-658.000.

Kittler, Milton J. Resilient throttle stop means. 4,117,809, Cl. 123-98.000.

Kjeldsen, Kjeld: *See*—
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Kjohl, Olav; and Olstad, Paul Henrik, to Aksjeselskapet NORCEM. Process for manufacturing concrete of high corrosion resistance. 4,118,242, Cl. 106-98.000.

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Klausner, Yakir: *See*—
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Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of compact, coarse sodium percarbonate. 4,118,466, Cl. 423-415.00P.

Klein, Fritz S.; and Ross, John, to Massachusetts Institute of Technology. Method for mass separation of a gaseous mixture. 4,118,296, Cl. 204-157.10R.

Klein, Hans-Joachim; Rupprecht, Manfred; Wonneberg, Heinz; Geiger, Julius; and Masa, Gunter, to AGFA-Gevaert Aktiengesellschaft. Method of detecting faults in moving webs of materials. 4,118,127, Cl. 356-200.000.

Klein, Herbert H., to Unarco Industries, Inc. Protector arm. 4,117,938, Cl. 211-191.000.

Klein, Howard P., to Texaco Development Corp. Polyols from 2,3-morpholinediones. 4,118,422, Cl. 260-561.00A.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
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Kleinstuck, Roland; and Block, Hans-Dieter, to Bayer Aktiengesellschaft. Catalyzed production of phosphorous and phosphonous acid ester chlorides. 4,118,435, Cl. 260-972.000.

Klemm, Reinhart, to Ernst Leitz Wetzlar GmbH. Electric motor for photographic cameras. 4,118,659, Cl. 318-560.000.

Klinedinst, George Lewis. Discharge means for canister vacuum cleaner. 4,118,208, Cl. 55-433.000.

Klose, Karl: *See*—
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Klose, Werner, to Hoechst Aktiengesellschaft. Production of acid phosphoric acid ester salts. 4,118,443, Cl. 260-980.000.

Kloss, Gerhard: *See—*
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Klotz, Erhard: *See—*
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Kneier, Joseph William, to Flambeau Products Corporation. Tackle box. 4,118,086, Cl. 312-270.000.

Knippschild, Gerd: *See—*
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Knoell, Albert C.: *See—*
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Knogo Corporation: *See—*
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Knotek, Otto; Lugscheider, Erich; and Wichert, Wolfgang, to Eutectic Corporation. Wear and corrosion resistant nickel-base alloy. 4,118,254, Cl. 148-32.000.

Kobayashi, Fumio, to Sansui Electric Co., Ltd. Coil mount structure. 4,118,605, Cl. 179-115.5VC.

Kobayashi, Kenzo: *See—*
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Kobayashi, Masao: *See—*
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Kobayashi, Rikio: *See—*
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Kobayashi, Tohru: *See—*
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Kober, Hans-Rudolf; and Ernst, Alfons, to Dr. Johannes Heidenhain GmbH., Firma. Longitudinal measuring instrument. 4,117,601, Cl. 33-172.00E.

Koberstein, Edgar: *See—*
Volker, Herbert; Koberstein, Edgar; and Hensel, Jorg, 4,118,199, Cl. 422-171.000.

Koblick, Jeffrey, to K-tel International, Inc. Golf practice device. 4,118,032, Cl. 273-185.00C.

Koch, Victor R., to EIC Corporation. Aprotic solvent electrolytes and batteries using same. 4,118,550, Cl. 429-194.000.

Kohyama, Mikihiro: *See—*
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Koizumi, Yutaka; and Hashimoto, Kenji, to Ricoh Company, Ltd. Electrophotographic optical scanning system. 4,118,117, Cl. 355-8.000.

Kojima, Hidetaka: *See—*
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Kolesar, Mark; and Rettger, Harry C., to Westinghouse Electric Corp. Apparatus for shaping electrical coils for dynamoelectric machines. 4,117,707, Cl. 72-306.000.

Kolesnichenko, Galina Alexeevna: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

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Komatsu, Mitsuaki: *See—*
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Komatsu, Shigeru: *See—*
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Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*
Grahn, Per Goran, 4,117,679, Cl. 60-525.000.

Komuro, Masuhiro: *See—*
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Konars, Clement R.; Schlipf, Frank J.; and Quinci, Emanuel, to Halm Instrument Co., Inc. Document conveying means. 4,118,025, Cl. 271-273.000.

Konig, Joachim; and Suling, Carlhans, to Bayer Aktiengesellschaft. Process for the production of acrylonitrile-vinyl-chloride copolymers with improved whiteness. 4,118,556, Cl. 526-229.000.

Konig, Wolfgang; Geiger, Rolf; and Sandow, Jurgen, to Hoechst Aktiengesellschaft. Peptides having gonadoliberin activity and process for their manufacture. 4,118,483, Cl. 424-177.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Mayama, Masayoshi; Terada, Sadatugu; Muramatsu, Toshio; Kimura, Masayuki; Ishibara, Masao; and Kobayashi, Tohru, 4,118,231, Cl. 96-87.00A.

Konno, Satoru: *See—*
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Koontz, Paul G.; Wright, Richard L.; and Patterson, Robert J., to Hipoint Research, Inc. X-ray processing system. 4,118,116, Cl. 355-3.00R.

Kopelev, Fridrikh Lvovich; Kossek, Valentin Vladimirovich; Dubinenko, Askold Fedorovich; and Sherstinsky, Semen Markovich. Spindle assembly for a precision machine tool. 4,117,750, Cl. 82-30.000.

Kopinski, Martin W.: *See—*
Linde, John P.; Kopinski, Martin W.; and Lewis, Donald R., 4,117,617, Cl. 42-1.00S.

Korenowski, Theodore Frank; and Lancy, Leslie Emery, to Dart Industries Inc. Regeneration of plastic etchants. 4,118,295, Cl. 204-151.000.

Korpela, Heikki: *See—*
Johansson, Jan-Olof; Korpela, Heikki; and Spacek, Karel, 4,117,754, Cl. 83-307.200.

Kosato, Yasuo: *See—*
Yamazaki, Shuichi; Kajitani, Ikuo; and Kosato, Yasuo, 4,117,672, Cl. 60-282.000.

Koshelenko, Gennady Petrovich; Pasynkov, Rafail Moiseevich; Sin, Mikhail Alexandrovich; and Shemper, Leonid Isaakovich. Axial-piston hydraulic machine. 4,117,770, Cl. 92-57.000.

Kossek, Valentin Vladimirovich: *See—*
Kopelev, Fridrikh Lvovich; Kossek, Valentin Vladimirovich; Dubinenko, Askold Fedorovich; and Sherstinsky, Semen Markovich, 4,117,750, Cl. 82-30.000.

Kostevc, Bernard: *See—*
Brose, Horst; Depping, Karl Dieter; Hentschel, Dietrich; Kostevc, Bernard; and Schmidt, Klaus, 4,118,366, Cl. 260-40.00R.

Kostjuk, Boris Dmitrievich: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Koula, Zdenek; Nirk, Peter; and Wullschleger, Hans, to Stots & Co. AG. Apparatus for coating blanks or the like formed of textile material, especially clothing inserts. 4,117,799, Cl. 118-6.000.

Kovatch, George N.: *See—*
Rosey, Richard; Kovatch, George N.; and Simon, Ned H., 4,118,639, Cl. 307-147.000.

Kraft, Harold D.: *See—*
Kraft, Jack A.; and Kraft, Harold D., 4,118,801, Cl. 366-111.000.

Kraft, Jack A.; and Kraft, Harold D. Rack for vessels and means for agitating the vessels in the rack. 4,118,801, Cl. 366-111.000.

Kraft, Paul: *See—*
Jin, Jung Il; and Kraft, Paul, 4,118,440, Cl. 260-873.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Gugel, Georg, 4,117,733, Cl. 73-634.000.
Neeb, Karl-Heinz; and Richter, Heinrich, 4,118,317, Cl. 210-32.000.
Schabert, Hans-Peter; Bremer, Hans; and Strickroth, Erich, 4,118,277, Cl. 176-87.000.

Krapcho, John: *See—*
Turk, Chester F.; and Krapcho, John, 4,118,558, Cl. 542-429.000.

Krause, Hermann: *See—*
Rahn, Oskar; and Krause, Hermann, 4,118,058, Cl. 294-67.00B.

Krause, Joachim; Streinstrasser, Ralf; Pohl, Ludwig; Del Pino, Fernando; and Weber, Georg, to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid crystalline materials of reduced viscosity. 4,118,335, Cl. 252-299.000.

Kredo, Theodore A., to California Precision. Fluorescent light fixture. 4,118,766, Cl. 362-427.000.

Kregler, Helmuth; and Hillmann, Reinhard, to SKF Industries, Inc. Sealed antifriction bearing with sealing element. 4,118,080, Cl. 308-187.100.

Krenzer, John: *See—*
Wu, Chin Ching; and Krenzer, John, 4,118,390, Cl. 260-306.80R.

Krieger, Bernhard: *See—*
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, 4,118,488, Cl. 424-238.000.

Kroh, Adolf: *See—*
Fuchs, Otto; and Kroh, Adolf, 4,118,387, Cl. 260-281.00A.

Kroke, Hermann: *See—*
Reese, Gunter; Kroke, Hermann; and Scheuermann, Fanny, 4,117,853, Cl. 132-7.000.

Krueger, Wallace F. Apparatus for transferring metered quantities of material from one location to another. 4,118,799, Cl. 366-161.000.

Kruesi, Paul R., to Cato Research Corporation. Process for desulfurizing coal. 4,118,200, Cl. 44-1.00R.

Krutzner, Karl, jun.: *See—*
Mollenkopf, Hans; Ritzmann, Horst; Wurr, Jurgen; Schmits, Heinz-Berbert; Heinemann, Otto; Krutzner, Karl, jun.; and Schossler, Werner, 4,118,176, Cl. 432-14.000.

Kubota, Ltd.: *See—*
Nishida, Tsuyeshi, 4,117,817, Cl. 123-136.000.

Kubota, Naohiro: *See—*
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,118,369, Cl. 260-45.80N.

Kubota, Tatsuo: *See—*
Suzuki, Hideo; Sato, Takahisa; Kubota, Tatsuo; Osaka, Shigemi; and Komatsu, Shigeru, 4,118,402, Cl. 260-346.750.

Kugele, Thomas Gordon, to Cincinnati Milacron Chemicals Inc. Organotin mercaptoalkanol ester sulfide stabilizers for PVC resins. 4,118,371, Cl. 260-45.75S.

Kuist, Charles H.; Squitieri, Vincent; and Seeger, Richard E., to Chomerics, Inc. Isolated path coupling system. 4,118,102, Cl. 339-17.00F.

Kumar, Anil: *See—*
Bansal, Jag M.; and Kumar, Anil, 4,117,830, Cl. 126-271.000.
Bansal, Jag M.; and Kumar, Anil, 4,117,831, Cl. 126-271.000.

Kumhyr, Elmer B., to Noramco, Inc. DC signaling circuit for use in conjunction with isolation transformers. 4,118,603, Cl. 179-16.00E.

Kunstmann, Rudolf; and Kaiser, Joachim, to Hoechst Aktiengesellschaft. Substituted 3,4-dihydro-2H-isoquinolin-1-thiones. 4,118,494, Cl. 424-258.000.

Kunstmann, Rudolf; Lerch, Ulrich; and Gerhards, Hermann, to Hoechst Aktiengesellschaft. Antidepressantly active 5-(4-aminophenyl)-hexahydro-1H-indeno-(1,2-b)pyridine. 4,118,497, Cl. 424-267.000.

Kuo, Cho-Chou: *See—*
Caldwell, Harlan D.; Kuo, Cho-Chou; and Kenny, George E., 4,118,469, Cl. 424-1.000.

Kupfer, David J.: *See—*
Mc Partland, Richard J.; Foster, F. Gordon; and Kupfer, David J., 4,117,834, Cl. 128-2.00S.

Kupfer, Theo, to BBC Brown, Boveri & Company Limited. Device for locking electrical units. 4,118,133, Cl. 403-24.000.

Kuramoto, Yoshio; Ueda, Hiroshi; and Uesugi, Kyozo, to Minolta Camera Kabushiki Kaisha. Exchangeable lenses for use in internal light measuring type single lens reflex cameras. 4,118,726, Cl. 354-289.000.

Kuraray Company, Limited: *See—*
Nakagawa, Junyo; Akagi, Takao; and Hiramatsu, Koji, 4,118,529, Cl. 428-91.000.

Kurata, Junichi; Ishikawa, Kazushige; and Nagashima, Nozomu, to Pioneer Electronic Corporation. Tonearm position setting apparatus. 4,118,039, Cl. 274-9.0RA.

Kurei, Hiroshi; and Shono, Tetsuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Shutter speed display for viewfinder of fixed point exposure meter camera. 4,118,725, Cl. 354-289.000.

Kurland, Lawrence G.; and Freeman, Michael J., to Freeman, Michael J. Real time conversational toy having secure playback response. 4,117,605, Cl. 35-9.00A.

Kurono, Hitoshi: *See—*
Taninaka, Kuniaki; Kurono, Hitoshi; and Kasai, Tsutomu, 4,118,506, Cl. 424-277.000.

Kurumada, Tomoyuki: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,118,368, Cl. 260-45.80N.

Kusaka, Katsushi: *See—*
Asada, Chiaki; Kusaka, Katsushi; and Kajima, Hisashi, 4,117,565, Cl. 75-204.000.

Kussy, Frank W.; and Shaffer, Howard R., to I-T-E Imperial Corporation. Trip indicator. 4,118,608, Cl. 200-56.00R.

Kyburz, Emilio: *See—*
Gerecke, Max; Kyburz, Emilio; and Kaplan, Jean-Pierre, 4,118,572, Cl. 544-369.000.

Kysor Industrial Corporation: *See—*
Vogel, Robert E., 4,117,698, Cl. 62-256.000.

L.A. Dreyfus Company: *See—*
Phillips, Michael, 4,117,645, Cl. 53-431.000.

L.A. Gauge Co. Inc.: *See—*
Trist, Nicolas P.; Guffin, Robert E.; Franklin, Walter M.; Crosby, James B., Jr.; Hallaway, Glen N.; and Tellier, James G., 4,117,597, Cl. 32-27.000.

LaBarre, Ronald L., to Diamond Shamrock Corporation. Batch sodium hypochlorite generator. 4,118,307, Cl. 204-268.000.

Labofina S. A.: *See—*
Debus, Henri R.; and Cahen, Raymond M., 4,118,342, Cl. 252-439.000.

Laboratories om Societe Anonyme: *See—*
Baudet, Pierre; Ricard, Jean-Paul; and Schulthess, Adrian, 4,118,583, Cl. 560-63.000.

Lachance, Gilles. Bottle carrier. 4,117,933, Cl. 206-583.000.

Lacher, Jorge Halder. Automatic discharge centrifuge and method. 4,118,248, Cl. 127-19.000.

Lackey, Robert S.; Young, Robert R.; and Kastovich, John C., to Westinghouse Electric Corp. Cabinet base construction for roof top air conditioner. 4,118,083, Cl. 312-100.000.

Ladin, Eli M.; and Reynolds, Mark P., to Federal-Mogul Corporation. Clutch throw-out bearing improvement. 4,117,917, Cl. 192-98.000.

Laesser, Claude, to Ebauches S.A. Electro-optic passive display device and method for its manufacture. 4,118,111, Cl. 350-334.000.

Laesser, Claude: *See—*
Saurer, Eric; and Laesser, Claude, 4,118,110, Cl. 350-334.000.

Lagarde, Pierre; and Denoor, Gaston, to Metalimphy & B.V.S. Method of manufacturing an improved conduit for conveyance of hot fluid. 4,117,584, Cl. 29-452.000.

Lagarelli, Carmen J.; and Rudewick, Charles J., to Speakman Company. Showerhead. 4,117,979, Cl. 239-381.000.

LaGrone, Bobby D.; and Huff, Bobby J., to U.S. Rubber Reclaiming Co., Inc. Pavement and process of providing the same. 4,118,137, Cl. 404-76.000.

La Haye, Teunis P.: *See—*
Joustra, Annie H.; La Haye, Teunis P.; and Kesselaar, Fernand H., 4,118,428, Cl. 260-663.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Malafosse, Jean, 4,118,465, Cl. 423-415.00P.

Laitram Corporation, The: *See—*
Lapeyre, James M., 4,117,602, Cl. 33-352.000.

Laliberte, Real: *See—*
Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., 4,118,511, Cl. 424-330.000.

Lami, Richard A., to Jones & Laughlin Steel Corporation. Remotely adjustable hydraulic pressure regulator. 4,117,706, Cl. 72-245.000.

Lamothe, Surguies M. Anchor bolt thread protector and sleeve system. 4,117,643, Cl. 52-699.000.

Lancy, Leslie Emery: *See—*
Korenowski, Theodore Frank; and Lancy, Leslie Emery, 4,118,295, Cl. 204-151.000.

Landes Manufacturing Co.: *See—*
Johnson, Jerry Lynn; and Liebhold, Martin R., 4,118,089, Cl. 312-351.000.

Landler, Josef: *See—*
Opitz, Konrad; Landler, Josef; and Worfel, Erhard, 4,118,184, Cl. 8-26.000.

Lang, Edward Russell: *See—*
Welder, Gerald Elvin; Lang, Edward Russell; and Slagle, Charles Wilmer, 4,118,318, Cl. 210-58.000.

Lang, Hans-Jochen; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. Thiazolidine derivatives. 4,118,501, Cl. 424-270.000.

Lang, Stanley Albert, Jr.; Fabio, Paul Frank; Lin, Yang-I; Murdock, Keith Chadwick; and Fields, Thomas Lynn, to American Cyanamid Company. 2,6-Bis(1-piperidinoalkylideneamino)anthraquinones and method of treating cecal and hepatic amebic infections therewith. 4,118,498, Cl. 424-267.000.

Lange, Gerhard; and Schilling, Gunter, to Siemens Aktiengesellschaft. Device to house a surge diverter. 4,118,682, Cl. 337-34.000.

Langley, Morley P.: *See—*
Davies, Norman; Langley, Morley P.; and Peppel, Howard C., deceased, 4,118,755, Cl. 361-379.000.

Lankes, Erich: *See—*
Weber, Paul; Lankes, Erich; Butschko, Gerhard; Ritzmann, Horst; and Bohm, Peter Wolfgang, 4,118,177, Cl. 432-14.000.

Lannert, Kent P., to Monsanto Company. Chemical compounds. 4,118,420, Cl. 562-583.000.

Lannuzel, Roger, to Compagnie Industrielle des Telecommunications S.A. Chopper including transistor switches. 4,118,641, Cl. 307-240.000.

Lapeyre, James M., to Laitram Corporation, The. Electromagnetic compass. 4,117,602, Cl. 33-352.000.

Laplante, Paul R., to United States of America, Army. MOX multilayer switching device comprising niobium oxide. 4,118,727, Cl. 357-10.000.

Larkin, Edward P. Pitching target with ball collector. 4,118,028, Cl. 273-26.00A.

Larkin, Wallace Keith. Acoustical voice transmitting headset. 4,118,606, Cl. 179-156.00A.

Larsen, Charles G.: *See—*
Hiday, David R.; and Larsen, Charles G., 4,118,679, Cl. 334-1.000.

Larsen, Hans-Ole, to Ultrasona AG. Process for improving the bulkiness or texturation of synthetic multifilament textile materials. 4,118,188, Cl. 8-130.100.

Larsen, Ronald L.; and Berry, Clifford W., to Conwed Corporation. Plastic packaging product for separation of components. 4,117,932, Cl. 206-419.000.

Larson, John C. Apparatus for guiding row crop processing implements. 4,117,889, Cl. 172-26.000.

Larsson, Rolf: *See—*
Eriksson, Jan-Christer; Larsson, Rolf; Rosengren, Ake; and Hjelte, Maj-Britt, 4,118,485, Cl. 424-183.000.

Latos, Edwin J., to UOP Inc. Use of noble metal solutions in catalyst regeneration zones. 4,118,339, Cl. 252-417.000.

Lattrell, Rudolf; Kief, Heinrich; and Bahr, Hermann, to Hoechst Aktiengesellschaft. 3,5,5-Trimethylhexanoyl ferrocene. 4,118,509, Cl. 424-295.000.

Lauro, Luciano: *See—*
Pomella, Piero; and Lauro, Luciano, 4,118,771, Cl. 364-101.000.

Lautenschlager, Karl, Jr.; and Lautenschlager, Reinhard, to Karl Lautenschlager KG. Over-center knuckle-joint hinge. 4,117,569, Cl. 16-139.000.

Lautenschlager, Reinhard: *See—*
Lautenschlager, Karl, Jr.; and Lautenschlager, Reinhard, 4,117,569, Cl. 16-139.000.

LaVene, Leon F., to Schmelzer Corporation. Method of making housing cover and tube. 4,117,708, Cl. 72-324.000.

Lavrinovich, Alla Alexandrovna: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Niko-

lai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Lawler, Matusky & Skelly Engineers: *See—*
McGroddy, Peter M., 4,117,726, Cl. 73-421.00R.

Lazareck, Jack A. Shredder hammer with replaceable tip. 4,117,985, Cl. 241-197.000.

Lazet, Frank J.; Meador, D. John; and Webster, Richard G., to PQ Corporation. Preparation of highly alkaline silicates. 4,118,463, Cl. 423-334.000.

Lebidine, Samuel: *See—*
Shakiba, Hosein M., 4,118,173, Cl. 431-202.000.

Le Blanc, John R., to Monsanto Company. Beneficiating agent composition. 4,118,441, Cl. 260-874.000.

Lechler, Rolf, to Audi Nsu Auto Union Aktiengesellschaft. Device for aspiration of lubricating oil from the supply of a combustion engine. 4,117,907, Cl. 184-6.200.

Ledig, Kurt W., to American Home Products Corporation. 7-(Substituted)-7H-pyrrolo[3,2-f]quinazoline-1,3-diamines. 4,118,561, Cl. 542-470.000.

Lee, Soo-Il, to Owens-Illinois, Inc. Plastic extrusion and apparatus. 4,118,163, Cl. 425-146.000.

Lee, Thomas B. K.: *See—*
McFadden, Arthur R.; Allen, Richard C.; and Lee, Thomas B. K., 4,118,401, Cl. 260-333.000.

Lefrancier, Pierre: *See—*
Rigbi, Meir; Klausner, Yakir; Lefrancier, Pierre; and Sache, Edgar, 4,118,575, Cl. 560-13.000.

Lehman, Richard F.: *See—*
Rees, James D.; and Lehman, Richard F., 4,118,122, Cl. 355-77.000.

Lehmann, Helmut: *See—*
Christ, Alfred; Lehmann, Helmut; Kantor, Ludwig; and Miller, Helmut, 4,118,040, Cl. 277-75.000.

Lehmann, Klaus: *See—*
Voelger, Karl-Dieter; Rietzel, Christian; and Lehmann, Klaus, 4,118,492, Cl. 424-251.000.

Leibundgut, Gottfried, to Robert Bosch GmbH. Multiple-function, hand-actuated switch unit, particularly for electrical hand tools or appliances and the like. 4,118,614, Cl. 200-157.000.

Leibundgut, Gottfried, to Robert Bosch GmbH. Hand-actuated, multiple-function switch unit, particularly for electrical hand tolls, appliances and the like. 4,118,615, Cl. 200-157.000.

Leidy, James Albert; and Porta, Gary Douglas, to AMP Incorporated. Double-ended connecting device. 4,118,103, Cl. 339-98.000.

Leiter, Herbert; and Reinheimer, Gunter, to Ernst Leitz Wetzlar GmbH. Microscope attachment camera. 4,118,719, Cl. 354-79.000.

Leith, Emmett N., to Environmental Research Institute of Michigan. Fiber optic phase correction using holograms. 4,118,106, Cl. 350-96.250.

Lemaire & Cie: *See—*
Renaut, Henry, 4,117,699, Cl. 68-5.00D.

Lemelson, Jerome H. Machine tool and method. 4,118,139, Cl. 408-12.000.

Lemelson, Jerome H. Scanning apparatus and method. 4,118,730, Cl. 358-93.000.

Lender, Adam, to GTE Automatic Electric Laboratories, Incorporated. Error correction for signals employing the modified duobinary code. 4,118,686, Cl. 340-146.1AB.

Lenihan, Thomas Francis, to RCA Corporation. Single wire transmission of multiple switch operations. 4,118,700, Cl. 340-524.000.

Lenoir, John: *See—*
Piller, Bernhard; Lenoir, John; Froehlich, Alfred; Stauner, Thomas; and Tschopp, Paul, 4,118,232, Cl. 96-99.000.

Leonard, Charles R.: *See—*
Dannelly, Clarence C.; and Leonard, Charles R., 4,117,801, Cl. 118-20.000.

Lequeux, Christian: *See—*
Nakache, Robert; and Lequeux, Christian, 4,117,704, Cl. 72-83.000.

Lerch, Ulrich: *See—*
Kunstmann, Rudolf; Lerch, Ulrich; and Gerhards, Hermann, 4,118,497, Cl. 424-267.000.

Les Cables de Lyon: *See—*
Gauthier, Francis; and Mignien, Georges, 4,118,618, Cl. 219-121.00P.

Lescoa, Inc.: *See—*
Mansel, Orin C., 4,118,134, Cl. 403-282.000.

Lese, Henri K.: *See—*
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzer, Kirk J.; and Paraskos, John Angelo, 4,118,310, Cl. 208-210.000.

Le Sergent, Christian; and Liegois, Michel, to Compagnie Generale d'Electricite. Method and device for depositing a layer of glass on the inner wall of a tube. 4,117,802, Cl. 118-48.000.

Lesher, George Y., to Sterling Drug Inc. Cyclic alkylidenyl N-(lower-alkyl)-3-(pyridinyl)anilinomethylenemalonates. 4,118,557, Cl. 542-420.000.

Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. 4-Acylamino-2-(pyridinyl)pyrimidine derivatives. 4,118,571, Cl. 544-319.000.

Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, to Saint-Gobain Industries. Method and apparatus for fiberizing attenuable materials and product thereof. 4,118,213, Cl. 65-5.000.

Levine, Lawrence J.: *See—*
Rovin, Herman; Levine, Lawrence J.; Opuszenski, Theodore; Pellicano, Joseph; and Swenson, Alan F., 4,117,789, Cl. 112-181.000.

Levine, Samuel R.; Singh, Shanker; and Weinberger, Arnold, to International Business Machines Corporation. Integrated binary-BCD look-ahead adder. 4,118,786, Cl. 364-783.000.

Levrai, Roland: *See—*
Carre, Jean-Jacques; and Levrai, Roland, 4,117,769, Cl. 91-170.00R.

Levy, Julienne, to Telettra International. Process and machine for smoothing printed wiring-circuit plates. 4,117,913, Cl. 90-15.100.

Lewer, Gregory S.: *See—*
Anderson, Raymond H.; and Lewer, Gregory S., 4,118,114, Cl. 353-38.000.

Lewis, Donald R.: *See—*
Linde, John P.; Kopinski, Martin W.; and Lewis, Donald R., 4,117,617, Cl. 42-1.00S.

Li, Yao T., to Massachusetts Institute of Technology. Wheel torque feedback controlled front brake. 4,117,909, Cl. 188-2.00A.

Liang, Charles Chi; and Joshi, AshokVenimadhav, to P.R. Mallory & Co. Inc. Solid state cell with conductive layer between electrode and electrolyte. 4,118,549, Cl. 429-191.000.

LICENTIA Patent-Verwaltungs-GmbH: *See—*
Oberreuter, Theodor; Schimmer, Rigobert; and Seifert, Wilhelm, 4,118,257, Cl. 148-187.000.

Liebhold, Martin R.: *See—*
Johnson, Jerry Lynn; and Liebhold, Martin R., 4,118,089, Cl. 312-351.000.

Liegois, Michel: *See—*
Le Sergent, Christian; and Liegois, Michel, 4,117,802, Cl. 118-48.000.

Liermann, Traugott; and Dietrich, Karl-Heinz, to AGFA-Gevaert AG. Continuous microfilm camera. 4,118,121, Cl. 355-75.000.

Lim, Gary M. F.; and Perron, Yvon G., to Bristol-Myers Company. Production of 7-(2-aminomethylphenylacetamido-3-(1-carboxymethyltetrazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid. 4,118,563, Cl. 544-26.000.

Lin, Yang-I: *See—*
Lang, Stanley Albert, Jr.; Fabio, Paul Frank; Lin, Yang-I; Murdock, Keith Chadwick; and Fields, Thomas Lynn, 4,118,498, Cl. 424-267.000.

Linde, John P.; Kopinski, Martin W.; and Lewis, Donald R., to Remington Arms Company, Inc. Adjustable sighting rib. 4,117,617, Cl. 42-1.00S.

Lindner, Christian; Suling, Carlhans; Arend, Gunter; Brokmeier, Dieter; and Nischk, Gunther, to Bayer Aktiengesellschaft. Crosslinkable polyacrylonitrile copolymers. 4,118,375, Cl. 526-240.000.

Lindsay, William Roy Mackintosh, to Gyrac Engineering Products Limited. Wire rope slings. 4,118,059, Cl. 294-74.000.

Ling, Rujira Srisuthep: *See—*
Hoseney, Russell C.; and Ling, Rujira Srisuthep, 4,118,514, Cl. 426-62.000.

Linse, Vonne D.: *See—*
Green, Sheryll C.; and Linse, Vonne D., 4,117,966, Cl. 228-2.500.

Lipp, Alfred: *See—*
Schmitt-Thomas, Karlheinz G.; Lipp, Alfred; and Schwetz, Karl, 4,118,256, Cl. 148-160.000.

Lippmann, Wilbur, to American Home Products Corporation. Method of treating hyperchlorhydria and/or associated conditions with 1,3-dioxo-1H-benz(de)isoquinoline-2-(3H)-acetic acid. 4,118,493, Cl. 424-258.000.

Lippmann, Wilbur, to Ayerst, McKenna & Harrison Limited. Method of treating hyperglucagonemia with 1,3-dioxo-1H-benz[de]-isoquinoline-2(3H)-acetic acid. 4,118,495, Cl. 424-258.000.

Lippmann, Wilbur: *See—*
Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., 4,118,511, Cl. 424-330.000.

Lloyd, Donald E. Drill bit. 4,117,897, Cl. 175-106.000.

Lobbe, Johannes: *See—*
Exler, Petrus Andre Theodorus; and Lobbe, Johannes, 4,118,209, Cl. 62-176.00D.

Loctite Corporation: *See—*
Douek, Maurice; Schmidt, Gustav A.; Malofsky, Bernard M.; and Hauser, Martin, 4,118,442, Cl. 260-885.000.

Loeffler, Herbert H., to Woodstream Corporation. Animal trap including spring-engaging inertial snubber to reduce initial jaw impact. 4,117,621, Cl. 43-88.000.

Loeffler, Herbert H., to Woodstream Corporation. Low impact animal trap. 4,117,622, Cl. 43-88.000.

Loev, Bernard: *See—*
Brenner, L. Martin; and Loev, Bernard, 4,118,567, Cl. 544-131.000.

Logemann, Willy: *See—*
Giraldi, PierNicola; Nannini, Giuliano; Logemann, Willy; Tommasini, Raffaele; Buttinoni, Ada; and Biasoli, Giovanni, 4,118,504, Cl. 424-274.000.

Loges, Hans: *See—*
Ruf, Erich; and Loges, Hans, 4,118,293, Cl. 204-93.000.

Login, Robert B., to BASF Wyandotte Corporation. Spin-finish lubricating method. 4,118,326, Cl. 252-8.600.

Loraas, Orlan J.: *See—*
Beckstrom, Harold K.; Bauer, James J.; Morehouse, James O.; and Loraas, Orlan J., 4,117,944, Cl. 214-131.00A.

L'Oreal: *See—*
Vanlerberghe, Guy; and Rosenbaum, Georges, 4,118,423, Cl. 260-584.00A.

Lorre, Jean-Marie: *See—*
Guignard, Jean; and Lorre, Jean-Marie, 4,117,600, Cl. 33-133.000.

Losert, Wolfgang: *See—*
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, 4,118,488, Cl. 424-238.000.

Losev, Viktor Vasilievich: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Lowry, Blaine E., to Raybestos Manhattan, Inc. Glass fiber friction facing. 4,118,528, Cl. 428-65.000.

Lozar, Giorgio; and Favale, Renato, to Indesit Industria Elettrodomestici Italiana S.p.A. Telescopic aerial with friction retaining sleeves. 4,118,708, Cl. 343-901.000.

Lubbehusen, Paul, to Waeschle Maschinenfabrik GmbH. Bulk material delivery apparatus. 4,118,075, Cl. 302-53.000.

Lubrizol Corporation, The: *See—*
Jahnke, Richard William, 4,118,331, Cl. 252-32.70E.

Lucas Industries Limited: *See—*
Mowbray, Dorian Farrar, 4,118,155, Cl. 417-462.000.
Preece, Kenneth; and Cheary, Walter Graham, 4,117,793, Cl. 113-116.00D.

Luckan, Johannes; Elwart, Jan; and Herter, Martin, to Ionit Anstalt Bernhad Berghaus. Frame for the support of articles which are to be treated. 4,118,624, Cl. 250-326.000.

Luczynski, Kazimierz. Spare wheel and tire holder. 4,117,963, Cl. 224-42.10B.

Lugscheider, Erich: *See—*
Knotek, Otto; Lugscheider, Erich; and Wichert, Wolfgang, 4,118,254, Cl. 148-32.000.

Luig, Heribert. Nuclear medicine diagnostic instrument for the determination of the distribution pattern of a radioactive radiation source. 4,118,632, Cl. 250-513.000.

Lukyanenko, Vladimir Matveevich: *See—*
Burin, Viktor Leontievich; Tjutjunnikov, Anatoly Borisovich; Golosov, Viktor Nikolaevich; Tarynin, Evgeny Konstantinovich; Pogorely, Nikolai Pavlovich; and Lukyanenko, Vladimir Matveevich, 4,118,446, Cl. 261-114.0VT.

Lund, Arnold S.; and Stroh, Thomas L., to Cadillac Rubber & Plastics, Inc. Coextrusion die. 4,118,167, Cl. 425-463.000.

Lundberg, Robert D., to Exxon Research & Engineering Co. Method for controlling viscosity of organic liquids. 4,118,361, Cl. 260-31.80G.

Lupkas, Raymond R. Solar energy collector. 4,117,832, Cl. 126-271.000.

Macke, Thomas F. Caliper stitch and trim machine. 4,118,023, Cl. 270-54.000.

Mackintosh, Brian H.; and Jewett, David N., to Mobil Tyco Solar Energy Corp. Cartridge and furnace for crystal growth. 4,118,197, Cl. 422-246.000.

Madsen, Per Johan: *See—*
Stannow, Jorgen Christian; Kjeldsen, Kjeld; Tankred, Hans Jurgen; and Madsen, Per Johan, 4,118,153, Cl. 417-363.000.

Magee, Thomas A., to Diamond Shamrock Corporation. Ketoxime carbamates. 4,118,389, Cl. 260-294.80R.

Maget, Henri Jean Robert. Electrochemical water desalination process. 4,118,299, Cl. 204-180.00P.

Magnuson, John Edwin: *See—*
Christison, Sommerville Grant; Magnuson, John Edwin; and Tham, Wing Chong, 4,118,013, Cl. 254-187.500.

Mahan, John E.: *See—*
Fahey, Darryl R.; and Mahan, John E., 4,118,408, Cl. 260-439.00R.

Mailey, Everett A.: *See—*
Popoff, Ivan Christoff; Mailey, Everett A.; and Haines, Paul Gordon, 4,118,378, Cl. 526-36.000.

Maiorano, Dominick J., to Xerox Corporation. Facetted edge fadeout reflector. 4,118,119, Cl. 355-11.000.

Makowski, Henry S.; and O'Farrell, Charles P., to Exxon Research & Engineering Co. Elastomeric compositions. 4,118,353, Cl. 260-28.50B.

Makowski, Henry S.; and O'Farrell, Charles P., to Exxon Research & Engineering Co. Oil extended elastomeric compositions. 4,118,360, Cl. 260-31.20R.

Makowski, Henry S.; and Brenner, Douglas, to Exxon Research & Engineering Co. Plasticization of neutralized sulfonated elastomeric polymer. 4,118,362, Cl. 260-32.60A.

Malafosse, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for the preparation of sodium percarbonate as regular rhombohedral crystals. 4,118,465, Cl. 423-415.00P.

Malaysian Rubber Producers Research Association, The: *See—*
Dawes, Keith; and Rowley, Roger James, 4,118,367, Cl. 260-42.370.

Mallon, Robert T.: *See—*
Cornelius, James W.; and Mallon, Robert T., 4,117,798, Cl. 118-4.000.

Malofsky, Bernard M.: *See—*
Douek, Maurice; Schmidt, Gustav A.; Malofsky, Bernard M.; and Hauser, Martin, 4,118,442, Cl. 260-885.000.

Mangel, Edward L.: *See—*
Regelson, Ephraim; Terral, Leonard G.; Matusiak, Ronald J.; Trotter, Jerry L.; Rea, William L.; and Mangel, Edward L., 4,117,967, Cl. 228-20.000.

Mannesmann Aktiengesellschaft: *See—*
Gruner, Hans; Terjung, Klaus; Sachse, Wolfgang; and Romerswinkel, Heinrich-Wilhelm, 4,118,018, Cl. 266-275.000.

Manning, William P., to Combustion Engineering, Inc. Convection baffles. 4,117,806, Cl. 122-33.000.

Mansel, Orin C., to Lescoa, Inc. Fastener joint and method thereof. 4,118,134, Cl. 403-282.000.

Manufacture de Produits Chimiques Protex, Societe Anonyme: *See—*
Balland, Jean, 4,118,538, Cl. 428-425.000.

Maravich, Rudolph. Electronic thermometer. 4,117,723, Cl. 73-362.0AR.

Marchetti, Francis R.; Zentz, William E.; and Berube, Richard R., to Engelhard Minerals & Chemicals Corporation. Suspensions of reactive acidic clay pigments. 4,118,247, Cl. 106-308.00N.

Marianeschi, Edmondo G. A.: *See—*
Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, 4,118,255, Cl. 148-111.000.

Mark Controls Corporation: *See—*
Carlson, Donald E., 4,117,856, Cl. 137-62.000.

Markley, Theodore J.: *See—*
Casto, Walter V.; DeLong, Lawrence W.; Markley, Theodore J.; and Struger, Odo J., 4,118,789, Cl. 364-900.000.

Markon Engineering Company Limited: *See—*
Fleming, Francis William; and Pethick, Raymond John, 4,118,646, Cl. 310-58.000.

Marra, Dorothea C.: *See—*
Spitzer, Joseph George; Small, Marvin; Osipow, Lloyd I.; and Marra, Dorothea C., 4,117,958, Cl. 222-402.180.

Marse, Salvador. President election game. 4,118,036, Cl. 273-257.000.

Marshall, Henry Bruce: *See—*
Crawford, Ian Drummond; Marshall, Henry Bruce; and Cormack, Robert John, 4,118,109, Cl. 350-285.000.

Martin, Charles Francis. Submarine pipe trenching apparatus. 4,117,689, Cl. 405-163.000.

Martin, Herman H., Jr., to Outboard Marine Corporation. Lawn mower with cutter blade interlock. 4,117,651, Cl. 56-10.500.

Martini, Thomas, to Hoechst Aktiengesellschaft. Perfluorinated ethers. 4,118,398, Cl. 260-340.600.

Martini, Thomas, to Hoechst Aktiengesellschaft. Process for preparing perfluoro-α-(3,6-dimethyl-1,4-dioxanyl-2-oxy)-propionic acid fluoride. 4,118,399, Cl. 260-340.200.

Martini, Thomas, to Hoechst Aktiengesellschaft. Process for the manufacture of perfluoro-alkoxy-propionic acid fluorides. 4,118,421, Cl. 260-544.00F.

Martynova, Marina Alexandrovna: *See—*
Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,118,432, Cl. 260-683.15D.

Marwitz, Hans-Gunther v.d., to Bayerische Motoren Werke AG. Cast spoke-wheel for motor vehicles, especially motorcycles. 4,118,073, Cl. 301-6.0CS.

Marze, Xavier, to Rhone-Poulenc S.A. Polyelectrolytes. 4,118,439, Cl. 260-858.000.

Masa, Gunter: *See—*
Klein, Hans-Joachim; Rupprecht, Manfred; Wonneberg, Heinz; Geiger, Julius; and Masa, Gunter, 4,118,127, Cl. 356-200.000.

Massachusetts Institute of Technology: *See—*
Klein, Fritz S.; and Ross, John, 4,118,296, Cl. 204-157.10R.
Li, Yao T., 4,117,909, Cl. 188-2.00A.

Masso Remiro, Jose Maria, to Turbo, S.A. Monopiece face mask for beauty treatment. 4,117,837, Cl. 128-76.00B.

Masuda, Shigeyuki: *See—*
Nakao, Hideyuki; Kasai, Yasuhiro; Ikehata, Yukio; Masuda, Shigeyuki; Obara, Nobuo; and Nishida, Isamu, 4,117,665, Cl. 58-106.500.

Mather, Joseph M.: *See—*
Sagaser, Thomas M.; and Mather, Joseph M., 4,117,899, Cl. 180-6.480.

Mathys, Pierre, to Bouchet-Lassale S.A. Pivoting device for a watch barrel. 4,117,664, Cl. 58-86.000.

Matsubara, Hiroshi, to Diesel Kiki Co., Ltd. Vehicle speed control system. 4,117,904, Cl. 180-108.000.

Matsuda, Kiyofumi, to Agency of Industrial Science & Technology. Holographic shearing interferometer. 4,118,124, Cl. 356-107.000.

Matsuda, Tetsuo: *See—*
Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, 4,118,336, Cl. 252-316.000.

Matsui, Sei, to Nippon Kogaku K.K. Optical system for indication in the viewfinder of single-lens reflex camera. 4,118,722, Cl. 354-155.000.

Matsui, Shigeru: *See—*
Miyasaka, Tsutomu; Fujimori, Yoshiaki; Matsui, Shigeru; and Komaki, Tetsuo, 4,117,658, Cl. 58-90.00R.

Matsui, Takeshi; and Arakawa, Kunihiko, to Toyo Boseki Kabushiki Kaisha. Transparent non-blocking polypropylene film and its preparation. 4,118,438, Cl. 260-857.00L.

Matsumaru, Shizuo: *See—*
Ishibashi, Kazufumi; Matsumaru, Shizuo; and Ichimura, Takeo, 4,118,238, Cl. 106-47.00Q.

Matsumoto, Hiromitsu: *See—*
Yamashita, Ryuichi; and Matsumoto, Hiromitsu, 4,117,813, Cl. 123-119.00R.

Matsuo, Takashi: *See—*
Kitamura, Shigeyoshi; Itaya, Nobushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,118,505, Cl. 424-275.000.

Matsushita Electronics Corporation: *See—*
Kano, Gota; and Iwasa, Hitoo, 4,117,587, Cl. 29-571.000.

Matsushita, Nobuaki: *See—*
Harada, Hideo; and Matsushita, Nobuaki, 4,118,354, Cl. 260-29.2TN.

Matsuura, Haruo; and Kawahara, Kiyoshi, to Star Seimitsu Kabushiki Kaisha. Single lever operated cassette tape recorder. 4,118,745, Cl. 360-96.000.

Matsuura, Hiroshi: *See—*
Oku, Kyoichi; and Matsuura, Hiroshi, 4,118,271, Cl. 162-31.000.

Matsuzawa, Hideo: *See—*
Ishii, Kazuhiro; Matsuzawa, Hideo; Kobayashi, Masao; and Ishii, Hiromichi, 4,118,419, Cl. 562-534.000.

Matteson, Edward J.: *See—*
Ziegler, Bertram Randall; and Matteson, Edward J., 4,118,272, Cl. 162-156.000.

Matusiak, Ronald J.: *See—*
Regelson, Ephraim; Terral, Leonard G.; Matusiak, Ronald J.; Trotter, Jerry L.; Rea, William L.; and Mangel, Edward L., 4,117,967, Cl. 228-20.000.

Matuzaki, Takeshi; Goto, Masuo; and Momochi, Yasushi, to Hitachi, Ltd. Field overvoltage protecting apparatus for synchronous machine. 4,118,749, Cl. 361-33.000.

Maurer, Fritz; Riebel, Hans-Jochem; Behrenz, Wolfgang; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating arthropods with O-methyl-O-n-propyl-O-(2-carbalkoxy-2-alkoxy-vinyl)-thionophosphoric acid esters. 4,118,486, Cl. 424-212.000.

Maus, Dieter; and Buck, Hermann, to Bielomatik Leuze & Co. Device for spreading glue. 4,117,800, Cl. 118-7.000.

Max-Planck-Gesellschft zur Forderung der Wissenschaften e.V.: *See—*
Voigt, K. J., 4,118,105, Cl. 350-96.200.

May, Adolf: *See—*
Steckelberg, Willi; Panke, Hans Ludwig; May, Adolf; and Bucking, Hans-Walter, 4,118,324, Cl. 252-8.900.

Mayama, Masayoshi; Terada, Sadatugu; Muramatsu, Toshio; Kimura, Masayuki; Ishibara, Masao; and Kobayashi, Tohru, to Konishiroku Photo Industry Co., Ltd.; and Hokuetsu Paper Mills Ltd. Light-sensitive silver halide photographic materials containing antistatic agents. 4,118,231, Cl. 96-87.00A.

Mayer, Alfred: *See—*
Shwartzman, Stanley; and Mayer, Alfred, 4,118,649, Cl. 310-337.000.

Mayer, Endre A., to Bendix Corporation, The. Rotary compressor. 4,118,157, Cl. 418-1.000.

Mayer, Hubert: *See—*
Rupp, Ludwig; and Mayer, Hubert, 4,117,919, Cl. 192-103.00A.

Mayer, Peter; Blair, Robert W.; and Zamin, Mohammed, to Heritage Silversmiths Limited. Apparatus for electrochemical finishing of stainless steel. 4,118,301, Cl. 204-202.000.

Mayer, Rolf: *See—*
Bohm, Gerhard; and Mayer, Rolf, 4,117,866, Cl. 138-30.000.

MCA Disco-Vision, Inc.: *See—*
Wilkinson, Richard L., 4,118,735, Cl. 358-128.000.

McAdams, Timothy E.: *See—*
Strager, Odo J.; McAdams, Timothy E.; and Dummermuth, Ernst, 4,118,792, Cl. 364-900.000.

McAleer, William J.; and Wasmuth, Edward H., to Merck & Co., Inc. Hepatitis B antigen. 4,118,477, Cl. 424-89.000.

McArthur, Colin Shaw; and Clark, Douglas Copeland, to R. J. Reynolds Tobacco Company. Rotary beam chopper and scanning system. 4,118,619, Cl. 219-121.00L.

McCleskey, Robert W., Jr.; Putnam, Paul S.; and Boltad, Arne Martin, to Golar-Nor Offshore A/S. Device for handling and racking riser pipes and drill pipes. 4,117,941, Cl. 214-2.500.

McClure, Marvin K.: *See—*
Burg, John S.; Davidson, Donald M.; McClure, Marvin K.; and Sannel, Benjamin H., 4,117,604, Cl. 34-70.000.

McDonnell Douglas Corporation: *See—*
Charles, Ronald A.; Jones, Paul W.; Staples, John L.; and Wiegner, Joseph R., 4,118,280, Cl. 195-127.000.

McFadden, Arthur R.; Allen, Richard C.; and Lee, Thomas B. K., to American Hoechst Corporation. Preparation of 6,11-dihydro-11-oxodibenz[b,e]oxepin-2-acetic acid and precursors therefor. 4,118,401, Cl. 260-333.000.

McGroddy, Peter M., to Lawler, Matusky & Skelly Engineers. Apparatus and method for sampling water for fish larvae and other trophic levels. 4,117,726, Cl. 73-421.00R.

McIntire, John E.: *See—*
McIntire, Kendrick H.; and McIntire, John E., 4,117,824, Cl. 126-15.00R.

McIntire, Kendrick H.; and McIntire, John E. Automatic wood burning heating stove. 4,117,824, Cl. 126-15.00R.

McKenna, Charles M.; and Mueller, Wolfgang F., to International Business Machines Corporation. Ion implantation apparatus with a cooled structure controlling the surface potential of a target surface. 4,118,630, Cl. 250-492.00A.

McKeon, John F., to FMC Corporation. Chain for engagement with double sprocket. 4,117,738, Cl. 74-250.00R.

McKinney, Joel Drexler: *See—*
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzer, Kirk J.; and Paraskos, John Angelo, 4,118,310, Cl. 208-210.000.

Mc Partland, Richard J.; Foster, F. Gordon; and Kupfer, David J. Physiological motor activity monitoring apparatus. 4,117,834, Cl. 128-2.00S.

McPeak, Walter G.; and Myhand, James K. Horizontally adjustable curtain rods for bathroom stalls. 4,117,557, Cl. 4-149.000.

McWaters, Lynn D.; and Parekh, Hersh B., to Recognition Equipment Incorporated. Portable OCR system. 4,118,687, Cl. 340-146.3ED.

Mead Corporation, The: *See—*
Wood, Prentice J., 4,117,925, Cl. 206-186.000.

Meador, D. John: *See—*
Lazet, Frank J.; Meador, D. John; and Webster, Richard G., 4,118,463, Cl. 423-334.000.

Medcraft, Wayne R., to Belden Corporation. Combination cutting and crimping tool. 4,117,711, Cl. 72-413.000.

Meier, Heinz; Zurawski, Egon; and Greppmaier, Paul, to Triumph Werke Nurnberg A.G. Gear drives with direction of rotation reversal. 4,117,739, Cl. 74-404.000.

Meier, John: *See—*
Noir, Dominique; and Meier, John, 4,118,172, Cl. 431-12.000.

Melsunger Metall-Werk, Erwin Drescher: *See—*
Drescher, Erwin, 4,117,785, Cl. 109-59.00T.

Melvin, Lawrence Sherman, Jr.: *See—*
Johnson, Michael Ross; and Melvin, Lawrence Sherman, Jr., 4,118,559, Cl. 542-432.000.

Merck & Co., Inc.: *See—*
McAleer, William J.; and Wasmuth, Edward H., 4,118,477, Cl. 424-89.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Krause, Joachim; Streinstrasser, Ralf; Pohl, Ludwig; Del Pino, Fernando; and Weber, Georg, 4,118,335, Cl. 252-299.000.

Merger, Franz: *See—*
Fouquet, Gerd; Merger, Franz; Platz, Rolf; and Baer, Karl, 4,118,588, Cl. 560-210.000.

Merkel, Wulf: *See—*
Bormann, Dieter; Merkel, Wulf; and Muschaweck, Roman, 4,118,397, Cl. 260-326.410.

Merlin Gerin: *See—*
Nebon, Jean-Pierre; and Morel, Robert, 4,118,681, Cl. 335-195.000.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Spies, Johann; and Wohrl, Alfons, 4,117,730, Cl. 73-517.00R.

Mesta Machine Company: *See—*
Petros, Andrew J., 4,117,989, Cl. 242-78.800.

Metalimphy & B.V.S.: *See—*
Lagarde, Pierre; and Denoor, Gaston, 4,117,584, Cl. 29-452.000.

Metcalf, Robert L.; and Coats, Joel R., to University of Illinois Foundation. Biodegradable insecticides. 4,118,424, Cl. 260-613.00R.

Metzer, Kirk J.: *See—*
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzer, Kirk J.; and Paraskos, John Angelo, 4,118,310, Cl. 208-210.000.

Meyn, Pieter. Apparatus for cutting out the vent of a fowl. 4,117,570, Cl. 17-11.000.

Michaely, William James, to FMC Corporation. Process for preparing 2,3-dihydro-7-benzofuranols and benzodioxole intermediate therefor. 4,118,400, Cl. 260-340.500.

Michel, Alwin Earl: *See—*
Horng, Cheng Tzong; Michel, Alwin Earl; Rupprecht, Hans Stephan; and Schwenker, Robert Otto, 4,118,250, Cl. 148-1.500.

Microtherm GmbH, Firma: *See—*
Schwarz, Gerhard, 4,118,683, Cl. 337-91.000.

Middleton, Charles A.; and Middleton, Trudy B., to TCM Corporation. Utility desk. 4,117,781, Cl. 108-11.000.

Middleton, Trudy B.: *See—*
Middleton, Charles A.; and Middleton, Trudy B., 4,117,781, Cl. 108-11.000.

Midwest Research Institute: *See—*
Goodson, Louis H.; and Jacobs, William B., 4,117,714, Cl. 73-23.000.

Mignien, Georges: *See—*
Gauthier, Francis; and Mignien, Georges, 4,118,618, Cl. 219-121.00P.

Mikata, Yoshitaka, to Yamato Scale Company, Ltd. Tray loading device in continuous conveying and processing system. 4,117,921, Cl. 198-482.000.

Miki, Kyosuke; and Takeuchi, Masahiro, to Sumitomo Bakelite Company Limited. Method for producing transparent plastic molded articles. 4,118,454, Cl. 264-93.000.

Mild, William M., to Wagner Electric Corporation. Control valve having reduced crack-open pressure. 4,118,076, Cl. 303-6.00C.

Miles Laboratories, Inc.: *See—*
Johnson, Leighton Clifford, 4,117,728, Cl. 73-425.600.

Miller, Barry: *See—*
Chang, Kuang-Chou; Heller, Adam; and Miller, Barry, 4,118,548, Cl. 429-111.000.

Miller, George A.; and Chan, Hak-Foon, to Rohm and Haas Company. 1-Substituted aralkyl imidazoles. 4,118,461, Cl. 424-273.00R.

Miller, Helmut: *See—*
Christ, Alfred; Lehmann, Helmut; Kantor, Ludwig; and Miller, Helmut, 4,118,040, Cl. 277-75.000.

Miller, Lawrence A.: *See—*
Hanley, Michael A.; Miller, Lawrence A.; and Kinsey, Irvin H., 4,118,345, Cl. 260-2.300.

Milligan, James W., to Duncan Electric Co., Inc. Method for making a heat sensitive fault detecting and indicating device for watthour meter. 4,118,667, Cl. 324-110.000.

Milliken Research Corporation: *See—*
Engels, Walter, 4,117,576, Cl. 26-9.000.
Gilpatrick, Michael William; and Engels, Walter, 4,117,577, Cl. 26-9.000.
Ingham, Robert M., Jr., 4,117,656, Cl. 57-157.0TS.

Mills, J. T., to Sentinel Distributors, Inc. Engine protective device with restricted manual override. 4,117,822, Cl. 123-198.0DB.

Mills, John A.: *See—*
Salva, John P.; Mudzinski, Gregory M.; Mills, John A.; and Dewan, Shashi B., 4,118,658, Cl. 318-257.000.

Milner, David John: *See—*
Cleare, Peter John Vernon; Kaye, Albert Edward; and Milner, David John, 4,118,412, Cl. 260-464.000.

Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, to Argus Chemical Corporation. 2,2,6,6-Tetrasubstituted-4-piperidyl carboxy heterocyclic compounds as stabilizers for synthetic polymers. 4,118,369, Cl. 260-45.80N.

Mining Equipment Division, a division of FMC Corporation: *See—*
Saunders, Daniel, 4,117,894, Cl. 173-23.000.

Minnesota Mining and Manufacturing Company: *See—*
Anderson, Raymond H.; and Lewer, Gregory S., 4,118,114, Cl. 353-38.000.
Beardsley, James L.; and Zollinger, J. Lamar, 4,118,536, Cl. 428-413.000.
Doering, Arlin B.; and Volness, Kenneth H., 4,118,748, Cl. 360-133.000.
Hauser, Edward R., 4,118,531, Cl. 428-224.000.
Hsu, Grace F., 4,118,289, Cl. 204-43.00S.

Minolta Camera Kabushiki Kaisha: *See—*
Kuramoto, Yoshio; Ueda, Hiroshi; and Uesugi, Kyozo, 4,118,726, Cl. 354-289.000.
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,118,724, Cl. 354-266.000.
Yamazaki, Keiji; and Katsuragi, Mamoru, 4,118,723, Cl. 354-155.000.

Minoura, Mikio, to Aisan Industry Co., Ltd. Exhaust gas recirculating system for use in internal combustion engine. 4,117,816, Cl. 123-119.00A.

Mishiro, Masahiro: *See—*
Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, 4,118,336, Cl. 252-316.000.

Mita, Katuo: *See—*
Watanabe, Takeshi; Nishimaki, Kazuo; Shimanuki, Kazuo; Mita, Katuo; and Konno, Satoru, 4,118,210, Cl. 65-2.000.

Mitsubishi Chemical Industries Limited: *See—*
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,118,192, Cl. 424-12.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Sugimoto, Sachirou; and Katsuki, Kanji, 4,118,770, Cl. 363-138.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Takahashi, Akira, 4,117,814, Cl. 123-119.00A.
Takamiya, Bonnosuke, 4,117,808, Cl. 123-75.00B.

Mitsubishi Light Metal Industries Limited: *See—*
Arita, Youji, 4,118,304, Cl. 204-243.00R.

Mitsubishi Rayon Company, Ltd.: *See—*
Ishii, Kazuhiro; Matsuzawa, Hideo; Kobayashi, Masao; and Ishii, Hiromichi, 4,118,419, Cl. 562-534.000.

Mitsui, Norihiko: *See—*
Nara, Toshihiko; Mitsui, Norihiko; and Shigeta, Masayuki, 4,117,908, Cl. 187-20.000.

Mitsui, Shigeo: *See—*
Ishibashi, Katsuji; Mitsui, Shigeo; and Kobayashi, Rikio, 4,118,341, Cl. 252-438.000.

Mitzlaff, Michael; Warning, Klaus; and Jensen, Harald, to Hoechst Aktiengesellschaft. Fungicidal alkoxy mono- and dialkoxy N-substituted cyclic amines. 4,118,500, Cl. 424-267.000.

Miwa, Kathuyoshi: *See—*
Yokoyama, Takushi; Kojima, Hidetaka; Uragami, Masaharu; and Miwa, Kathuyoshi, 4,118,388, Cl. 260-290.00R.

Miyagawa, Kazuo: *See—*
Ichijima, Isamu; Watanabe, Seiichi; and Miyagawa, Kazuo, 4,118,732, Cl. 358-101.000.

Miyake, Tetsuya: *See—*
Seko, Maomi; Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Imamura, Kazuo, 4,118,457, Cl. 423-7.000.

Miyamoto, Minoru: *See—*
Shiohara, Tomoo; Miyamoto, Minoru; and Tamaki, Nobuo, 4,118,227, Cl. 106-306.000.

Miyamoto, Takayoshi: *See—*
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,118,724, Cl. 354-266.000.

Miyamoto, Toshiyuki. Device for practicing golf swing. 4,118,033, Cl. 273-186.00A.

Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, to Toyo Soda Manufacturing Co., Ltd. Treatment of sludge. 4,118,319, Cl. 210-51.000.

Miyasaka, Tsutomu; Fujimori, Yoshiaki; Matsui, Shigeru; and Komaki, Tetsuo, to Kabushiki Kaisha Suwa Seikosha. Waterproof watch case. 4,117,658, Cl. 58-90.00R.

Miyazaki, Hiroshi: *See—*
Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, 4,118,319, Cl. 210-51.000.

Mizuno, Fumio; and Ishihara, Masamichi, to Hitachi, Ltd. Memory array with larger memory capacitors at row ends. 4,118,794, Cl. 365-149.000.

Mizuno, Toshihiko: *See—*
Uchida, Yoshiro; Mizuno, Toshihiko; Higuchi, Isao; Imai, Susumu; and Usui, Shyoichiro, 4,117,586, Cl. 29-568.000.

Mizusawa, Akira: *See—*
Sugiyama, Masaaki; Yuda, Takuo; and Mizusawa, Akira, 4,118,323, Cl. 210-439.000.

Mizutani, Toshio: *See—*
Kitamura, Shigeyoshi; Itaya, Nobushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,118,505, Cl. 424-275.000.

Mobay Chemical Corporation: *See—*
Reiff, Helmut F.; and Pantone, Richard S., 4,118,411, Cl. 260-453.0SP.

Mobil Oil Corporation: *See—*
Chen, Nai Yuen, 4,118,431, Cl. 260-668.00R.
Gross, Benjamin; and Schatz, Klaus Wilhelm, 4,118,337, Cl. 252-417.000.
Gross, Benjamin; and Schatz, Klaus Wilhelm, 4,118,338, Cl. 252-417.000.
Herrington, F. John, 4,118,453, Cl. 264-89.000.
Yan, Tsoung-Yuan, 4,118,201, Cl. 44-1.00R.
Yan, Tsoung-Yuan, 4,118,281, Cl. 201-2.500.

Mobil Tyco Solar Energy Corp.: *See—*
Mackintosh, Brian H.; and Jewett, David N., 4,118,197, Cl. 422-246.000.

Mochizuki, Atsushi: *See—*
Takahashi, Toshiro; Nagano, Toshihiro; Iguchi, Shozo; Kikuchi, Masaru; Nakamura, Katsuhiko; and Mochizuki, Atsushi, 4,117,703, Cl. 72-38.000.

Moen, A. M. D.: *See—*
Austin, Robert R.; and Moen, A. M. D., 4,117,725, Cl. 73-421.50R.

Mogami, Youetsu: *See—*
Yazane, Shigeru; and Mogami, Youetsu, 4,117,741, Cl. 74-492.000.

Mohr, Reinhard; and Hohmann, Kurt, to Hoechst Aktiengesellschaft. Process for dyeing and printing nickel-containing polyolefins. 4,118,185, Cl. 8-42.00D.

Moll, Franz: *See—*
Corluy, Hans Josephus; Moll, Franz; Muller, Herbert; and Hase, Marie, 4,118,228, Cl. 96-17.000.

Mollenhoff, Klaus, to Siemens Aktiengesellschaft. One piece fusible conductor for low voltage fuses. 4,118,684, Cl. 337-296.000.

Mollenkopf, Hans; Ritzmann, Horst; Wurr, Jurgen; Schmits, Heinz-Berbert; Heinemann, Otto; Krutzner, Karl, jun.; and Schossler, Werner, to Polysius AG. Heat treatment for fine-grained materials. 4,118,176, Cl. 432-14.000.

Mollere, John C., to Western Geophysical Co. of America. Linear ejection underwater charge launcher. 4,117,780, Cl. 102-22.00R.

Molls, Hans-Heinz; Schiwy, Willy; Hornle, Reinhold; and Nebeling, Reinhard, to Bayer Aktiengesellschaft. Process for preparation of azo dyestuffs by coupling in presence of aromatic sulphonic acid-formaldehyde reaction product. 4,118,384, Cl. 260-163.000.

Momochi, Yasushi: *See—*
Matuzaki, Takeshi; Goto, Masuo; and Momochi, Yasushi, 4,118,749, Cl. 361-33.000.

Monsanto Company: *See—*
Dobo, Emerick J., 4,118,225, Cl. 75-207.000.
Fields, Joseph E.; and Slocombe, Robert J., 4,118,554, Cl. 526-15.000.
Lannert, Kent P., 4,118,420, Cl. 562-583.000.
Le Blanc, John R., 4,118,441, Cl. 260-874.000.
Rapko, John N., 4,118,568, Cl. 544-173.000.
Sidebotham, Norman C.; Shoemaker, Paul D.; and Young, Clarence W., III, 4,118,187, Cl. 8-102.000.
Silver, Frank M.; and Bach, Hartwig C., 4,118,358, Cl. 260-30.80R.
Veazey, Thomas M., 4,118,190, Cl. 8-149.300.
White, James E., 4,118,403, Cl. 260-346.760.

Montedison S.p.A.: *See—*
Cassar, Luigi; and Gardano, Andrea, 4,118,589, Cl. 560-204.000.

Monticelli, Dennis M.; and Sleeth, Robert S., to National Semiconductor Corporation. Photo electric biased photo diode operational amplifier. 4,118,621, Cl. 250-214.00A.

Mooi, John, to Atlantic Richfield Company. Process for the isomerization of hydrocarbons. 4,118,430, Cl. 260-668.00A.

Moore, Doyle A., to Bedford Industries, Inc. Reel adapter for tie material and method of using the same. 4,117,988, Cl. 242-71.900.

Moore, Ray G.; and Coffman, William M., Jr., to Pope, Ivan, a part interest. Self-deodorizing litter box. 4,117,804, Cl. 119-1.000.

Moreau, Marc, to Trefimetaux. Process and apparatus for continuous heat treatment of metallic wires and bands. 4,118,617, Cl. 219-10.61R.

Morehouse, James O.: *See—*
Beckstrom, Harold K.; Bauer, James J.; Morehouse, James O.; and Loraas, Orlan J., 4,117,944, Cl. 214-131.00A.
Henline, John W.; Bauer, James J.; and Morehouse, James O., 4,117,902, Cl. 180-54.00R.

Morel, Robert: *See—*
Nebon, Jean-Pierre; and Morel, Robert, 4,118,681, Cl. 335-195.000.

Morelli, Amedeo John: *See—*
Francis, Gaylord Lee; and Morelli, Amedeo John, 4,117,589, Cl. 29-619.000.

Mori, Eizo; and Mori, Takao. Garden shears. 4,117,592, Cl. 30-135.000.

Mori, Takao: *See—*
Mori, Eizo; and Mori, Takao, 4,117,592, Cl. 30-135.000.

Mori, Toshinori: *See—*
Iwahara, Makoto; and Mori, Toshinori, 4,118,599, Cl. 179-1.00G.

Morimura, Syoji: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,118,368, Cl. 260-45.80N.

Morishima, Susumu: *See—*
Ito, Yukio; and Morishima, Susumu, 4,117,650, Cl. 53-587.000.

Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, to Toyo Jozo Company, Ltd.; and Asahi Kasei Kogyo Kabushiki Kaisha. Novel cellulose microcapsules and preparation thereof. 4,118,336, Cl. 252-316.000.

Moriyama, Kenneth J., to Ventron Corporation. Electronic tare system for electrical balance. 4,117,898, Cl. 177-165.000.

Morley, Robert Arthur: *See—*
Kerr, Andrew Guy; and Morley, Robert Arthur, 4,118,012, Cl. 254-173.00R.

Morris, John McLean. Intrauterine device. 4,117,839, Cl. 128-130.000.

Morris, Leeson R.: *See—*
Hornig, Donald E.; Morris, Leeson R.; and Douglas, James L., 4,118,566, Cl. 544-105.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. Inter-oxa-13,14-dihydro-9β-PGD_1 compounds. 4,118,415, Cl. 562-503.000.

Mosimann, Peter Hubert; and Sutter, Hans Rudolf, to Bulova Watch Company, Inc. Electronic watch with time correction system. 4,117,663, Cl. 58-85.500.

Motogi, Hideo: *See—*
Nakamura, Ryuji; and Motogi, Hideo, 4,118,450, Cl. 264-43.000.

Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
Rupp, Ludwig; and Mayer, Hubert, 4,117,919, Cl. 192-103.00A.

Motoren- und Turbinen-Union Munchen GmbH: *See—*
Gothsche, Friedrich, 4,117,927, Cl. 206-319.000.

Motorola, Inc.: *See—*
Jarrett, Robert B.; and Zobel, Don W., 4,117,819, Cl. 123-148.00E.
Richardson, William Stanley, 4,118,642, Cl. 307-238.000.

Motsak, Yaroslav Feodosievich: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Mowbray, Dorian Farrar, to Lucas Industries Limited. Fuel pumping apparatus. 4,118,155, Cl. 417-462.000.

Mowli, John C.; and Bala, Harry. Reclosable bag. 4,117,934, Cl. 206-610.000.

Mudzinski, Gregory M.: *See—*
Salva, John P.; Mudzinski, Gregory M.; Mills, John A.; and Dewan, Shashi B., 4,118,658, Cl. 318-257.000.

Mueller, Robert H. Exhaust hood with adjustable air injection nozzle. 4,117,833, Cl. 126-299.00D.

Mueller, Wolfgang F.: *See—*
McKenna, Charles M.; and Mueller, Wolfgang F., 4,118,630, Cl. 250-492.00A.

Mulach, Arthur: *See—*
Calfo, Raymond M.; Dailey, George F.; Alkire, Gerald R.; and Mulach, Arthur, 4,118,645, Cl. 310-53.000.

Mulhauser, Paul J.: *See—*
Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 4,118,048, Cl. 280-47.350.

Mulholland, Patrick John; and Thomas, Colin Arthur, to International Business Machines Corporation. Drive belt loading system. 4,117,737, Cl. 74-242.000.

Muller, Gerd: *See—*
Baurecht, Heinz-Ewald; Hornle, Reinhold; and Muller, Gerd, 4,118,391, Cl. 260-314.500.

Muller, Herbert: *See—*
Corluy, Hans Josephus; Moll, Franz; Muller, Herbert; and Hase, Marie, 4,118,228, Cl. 96-17.000.

Muller, Johann: *See—*
Wagner, Paul-Heinz; Hirtsiefer, Richard; and Muller, Johann, 4,117,735, Cl. 74-47.000.

Mumford, George V., to Owens-Illinois, Inc. Child-resistant safety closure. 4,117,945, Cl. 215-216.000.

Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. Totally opened F. value information input system of lens for a camera with interchangeable lenses. 4,118,713, Cl. 354-23.00D.

Murakami, Hiroyashu: *See—*
Suzuki, Masayuki; Sakurada, Nobuaki; Ito, Tadashi; Yamamichi, Masayoshi; and Murakami, Hiroyashu, 4,118,716, Cl. 354-38.000.

Murakami, Noboru; and Furusawa, Choji, to Aisin Seiki Kabushiki Kaisha. Stator for a torque converter. 4,117,677, Cl. 60-345.000.

Murakami Screen Kabushiki Kaisha: *See—*
Tsunoda, Takahiro; and Yamaoka, Tsuguo, 4,118,233, Cl. 96-115.00P.

Murakami, Takao; Ishikawa, Yasuo; and Ito, Masahiro, to Tokico Ltd. Pump device. 4,118,151, Cl. 417-223.000.

Muramatsu, Akira: *See—*
Ohta, Takahiro; and Muramatsu, Akira, 4,118,654, Cl. 40-361.000.

Muramatsu, Toshio: *See—*
Mayama, Masayoshi; Terada, Sadatugu; Muramatsu, Toshio; Kimura, Masayuki; Ishibara, Masao; and Kobayashi, Tohru, 4,118,231, Cl. 96-87.00A.

Murdock, Keith Chadwick: *See—*
Lang, Stanley Albert, Jr.; Fabio, Paul Frank; Lin, Yang-I; Murdock, Keith Chadwick; and Fields, Thomas Lynn, 4,118,498, Cl. 424-267.000.

Murray, Christopher Linley; and Vale, Corwyn Philip, to British Industrial Plastics Limited. Terpolyamide hot melt adhesive. 4,118,351, Cl. 260-18.00N.

Murrmann, Helmuth; and Wittenzellner, Ernst, to Siemens Aktiengesellschaft. Process for the production of a locally high, inverse, current amplification in a planar transistor. 4,118,251, Cl. 148-1.500.

Murtha, Timothy P.; and Zuech, Ernest A., to Phillips Petroleum Company. Hydroalkylation using multimetallic zeolite catalyst. 4,118,434, Cl. 260-668.00R.

Musashi Kabushiki Kaisha: *See—*
Ito, Yukio; and Morishima, Susumu, 4,117,650, Cl. 53-587.000.

Muschaweck, Roman: *See—*
Bormann, Dieter; Merkel, Wulf; and Muschaweck, Roman, 4,118,397, Cl. 260-326.410.
Lang, Hans-Jochen; and Muschaweck, Roman, 4,118,501, Cl. 424-270.000.

Mustered, Lyle V., to Anthony Company. Self-propelled articulated vehicle. 4,117,901, Cl. 180-51.000.

Mustered, Lyle V., to Anthony Company. Steering system for articulated vehicles. 4,117,905, Cl. 180-139.000.

Mustered, Lyle V., to Anthony Company. Linear travel device for self-propelled articulated vehicle. 4,117,906, Cl. 180-139.000.

Muszumanski, Trude, to Vockenhuber, Karl; and Hauser, Raimund. Zoom objective, especially for a projector. 4,118,108, Cl. 350-184.000.

Myers, Allen D., to Caterpillar Tractor Co. Spring assembly and method of assembly thereof. 4,118,020, Cl. 267-168.000.

Myers, Edward B., to Honeywell Inc. Rotary valve. 4,118,008, Cl. 251-298.000.

Myers, Gary A.; Abdul-Rahman, Yahia A. K.; and Skinner, James L., to Atlantic Richfield Company. Separation and recovery of heat carriers in an oil shale retorting process. 4,118,309, Cl. 208-11.00R.

Myers, James E.; and Kennedy, Tom E., to Tyler Refrigeration Corporation. Roll-in open-front frozen food refrigeration case. 4,117,697, Cl. 62-256.000.

Myers, Robert A.; and Uhlig, Albert R., to Owens-Illinois, Inc. Two-stage process for industrial blow molding. 4,118,452, Cl. 264-89.000.

Myhand, James K.: *See—*
McPeak, Walter G.; and Myhand, James K., 4,117,557, Cl. 4-149.000.

Nagano, Toshihiro: *See—*
Takahashi, Toshiro; Nagano, Toshihiro; Iguchi, Shozo; Kikuchi, Masaru; Nakamura, Katsuhiko; and Mochizuki, Atsushi, 4,117,703, Cl. 72-38.000.

Nagase, Hidenobu: *See—*
Tanaka, Minoru; Kajitani, Ikuo; and Nagase, Hidenobu, 4,117,675, Cl. 60-302.000.

Nagashima, Nozomu: *See—*
Kurata, Junichi; Ishikawa, Kazushige; and Nagashima, Nozomu, 4,118,039, Cl. 274-9.0RA.

Nahas, Nicholas C.: *See—*
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,118,204, Cl. 48-197.00R.

Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich. Method for soldering metals with superhard man-made materials. 4,117,968, Cl. 228-124.000.

Najmowicz, Zenon; Dyrda, Edward; and Zakrzewski, Jan, to Przedsiebiorstwo Projektowania i Wyosazania Zakladow Przemysly Maszyn i Apartow Elektrycznych "Promel". Unit for centrifugal casting of metals in split moulds. 4,117,878, Cl. 164-292.000.

Nakache, Robert; and Lequeux, Christian, to Societe Coil Protection Service. Method and apparatus for producing a bent angle piece from a sheet-metal. 4,117,704, Cl. 72-83.000.

Nakagawa, Junyo; Akagi, Takao; and Hiramatsu, Koji, to Kuraray Company, Limited. Suede woven fabric and a process of manufacturing the same. 4,118,529, Cl. 428-91.000.

Nakamura, Katsuhiko: *See—*
Takahashi, Toshiro; Nagano, Toshihiro; Iguchi, Shozo; Kikuchi, Masaru; Nakamura, Katsuhiko; and Mochizuki, Atsushi, 4,117,703, Cl. 72-38.000.

Nakamura, Minoru, to Idemitsu Lion Co., Ltd. Packing band tightening device. 4,117,573, Cl. 24-74.00A.

Nakamura, Ryuji; and Motogi, Hideo, to Shikoky Kaken Kogyo Kabushiki Kaisha. Method for producing inorganic porous shaped material. 4,118,450, Cl. 264-43.000.

Nakamura, Shigeru: *See—*
Ishiguro, Susumu; Komuro, Masuhiro; and Nakamura, Shigeru, 4,118,347, Cl. 521-53.000.

Nakao, Hideyuki; Kasai, Yasuhiro; Ikehata, Yukio; Masuda, Shigeyuki; Obara, Nobuo; and Nishida, Isamu, to Kabushiki Kaisha Daini Seikosha. Magnetic shield plate mounting structure for an electronic timepiece. 4,117,665, Cl. 58-106.500.

Nalesnik, Theodore E.: *See—*
Holy, Norman L.; and Nalesnik, Theodore E., 4,118,426, Cl. 260-615.00B.

Namboodri, Chettoor G.: *See—*
Gregorian, Razmic S.; and Namboodri, Chettoor G., 4,118,526, Cl. 427-350.000.

Nannini, Giuliano: *See—*
Giraldi, PierNicola; Nannini, Giuliano; Logemann, Willy; Tommasini, Raffaele; Buttinoni, Ada; and Biasoli, Giovanni, 4,118,504, Cl. 424-274.000.

Napoli, Louis Sebastian: *See—*
Risko, John Joseph; and Napoli, Louis Sebastian, 4,118,598, Cl. 325-26.000.

Nara, Toshihiko; Mitsui, Norihiko; and Shigeta, Masayuki, to Hitachi, Ltd. Elevator having rope guide means. 4,117,908, Cl. 187-20.000.

Naruse, Yohsuke: *See—*
Okada, Hitoshi; and Naruse, Yohsuke, 4,118,736, Cl. 358-128.000.

National Cablevision, Limited: *See—*
Fung, Paul J., 4,118,669, Cl. 325-309.000.

National Distillers and Chemical Corporation: *See—*
Rekers, Louis J., 4,118,340, Cl. 252-428.000.

National Research Development Corporation: *See—*
Fray, Derek John; and Cleland, James Henry, 4,118,292, Cl. 204-67.000.

National Semiconductor Corporation: *See—*
Monticelli, Dennis M.; and Sleeth, Robert S., 4,118,621, Cl. 250-214.00A.
Ochi, Sam S.; Hamade, Adib R.; and Culmer, Daniel D., 4,118,640, Cl. 307-237.000.

National Steel Corporation: *See—*
Gobert, Robert R., 4,118,302, Cl. 204-206.000.

Navlyt, Gerald S., to Union Special Corporation. Overedge stitch formation. 4,117,792, Cl. 112-433.000.

Naylor, Thomas Kipling, to American Optical Corporation. Cardiac instrumentation apparatus with pacer diagnostics. 4,117,848, Cl. 128-419.0PT.

NCR Corporation: *See—*
Wilson, Denney L., Sr., 4,118,768, Cl. 363-85.000.
Wilson, Denney Lee, Sr., 4,118,769, Cl. 363-54.000.

Neal, Brian; and Andersen, Lars Q., to Boeing Company, The. Noise suppressing exhaust mixer assembly for ducted-fan, turbojet engine. 4,117,671, Cl. 60-262.000.

Neasham, Leo B. Vehicle towing trailer. 4,118,047, Cl. 280-402.000.

Nebeling, Reinhard: *See—*
Molls, Hans-Heinz; Schiwy, Willy; Hornle, Reinhold; and Nebeling, Reinhard, 4,118,384, Cl. 260-163.000.

Nebon, Jean-Pierre; and Morel, Robert, to Merlin Gerin. High-speed current-limiting device having a contact reclosing retarding member. 4,118,681, Cl. 335-195.000.

Neeb, Karl-Heinz; and Richter, Heinrich, to Kraftwerk Union Aktiengesellschaft. Method of purifying ion exchanger resins spent in the operation of a nuclear reactor. 4,118,317, Cl. 210-32.000.

Nelson, Albin J., to Pfizer Inc. Pyrrolidonecarboxylic acid therapeutic agents. 4,118,503, Cl. 424-274.000.

Nelson, Gunner E., to Ethyl Corporation. Process for preparing alkanol amide compositions. 4,118,404, Cl. 260-404.000.

Nelson, Lloyd A.; and Sekhon, Kalwant S., to Hughes Aircraft Company. Heat pipe thermal mounting plate for cooling electronic circuit cards. 4,118,756, Cl. 361-385.000.

Nelson, Norman A., to Upjohn Company, The. 4,5,6-Trinor-3,7-inter-m-phenylene prostaglandin A_1 analogs. 4,118,577, Cl. 560-53.000.

Nelson, Vernon L. Easy clean eave trough. 4,117,635, Cl. 52-11.000.

Nestler, Heinz: *See—*
Amort, Jurgen; and Nestler, Heinz, 4,118,540, Cl. 428-447.000.

Neti, Radhakrishna Murty; and Sawa, Kenneth Bruno, to Beckman Instruments, Inc. Catalytic reactor systems method and apparatus. 4,118,193, Cl. 422-94.000.

Neukom, Chester G., to Haybuster Manufacturing, Inc. Ground drive for grain drills. 4,117,891, Cl. 172-105.000.

Neurath, Robert A.: *See—*
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, 4,118,478, Cl. 424-89.000.
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, 4,118,479, Cl. 424-89.000.

Neveux, Rene Elie, to Societe Anonyme Francaise du Ferodo. Safety belt device with a winder/unwinder especially for automobiles. 4,118,053, Cl. 280-747.000.

New York Blood Center, Inc., The: *See—*
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, 4,118,478, Cl. 424-89.000.
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, 4,118,479, Cl. 424-89.000.

Newman, Paul; and Sargent, Raymond Fredrick, to Rolls-Royce Limited. Fluid bearings with conforming shells. 4,118,079, Cl. 308-9.000.

Newman, Thomas A.; and Kettner, Erich O., to Philip Morris Incorporated. Method and apparatus for reclaiming tobacco from cigarettes. 4,117,852, Cl. 131-96.000.

Ngai, Mun-Hay. Record player. 4,118,037, Cl. 274-1.00A.

Nichols Engineering & Research Corp.: *See—*
von Dreusche, Charles F., Jr.; and Barry, Louis T., 4,118,220, Cl. 75-69.000.

Nickerson, James H. D.; and Steel, Robert R., to Foster Wheeler Limited. Slab header. 4,117,885, Cl. 165-176.000.

Niederer, Thomas O., to Otto Niederer Sons, Inc. Coiled spring conveyor for eggs. 4,117,922, Cl. 198-652.000.

Nielinger, Werner; Brassat, Bert; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Reinforced polyhexamethylene isophthalamide. 4,118,364, Cl. 260-37.00N.

Nies, Herbert: *See—*
Haberlein, Harald; Nies, Herbert; and Scheidl, Franz, 4,118,352, Cl. 260-23.0XA.

Nifco, Inc.: *See—*
Notoya, Yoshiaki, 4,117,998, Cl. 248-56.000.
Sugiyama, Masaaki; Yuda, Takuo; and Mizusawa, Akira, 4,118,323, Cl. 210-439.000.

Nihon Nohyaku Co., Ltd.: *See—*
Taninaka, Kuniaki; Kurono, Hitoshi; and Kasai, Tsutomu, 4,118,506, Cl. 424-277.000.

Niihara, Koichi: *See—*
Hirai, Toshio; and Niihara, Koichi, 4,118,539, Cl. 428-446.000.

Niki, Akio: *See—*
Ogawa, Toshiya; Niki, Akio; Uchimura, Kazuo; and Tsuruoka, Koichi, 4,118,695, Cl. 340-324.0AD.

Niki, Hiroshi; Deya, Eiki; Doi, Toru; Igarashi, Seiichiro; and Hayashi, Hiromichi, to Snow Brand Milk Products Co. Ltd. Method of preparing fish meat powder having kamaboko-forming property. 4,118,517, Cl. 426-271.000.

Nikkey Co., Ltd.: *See—*
Shimizu, Toyoaki, 4,117,567, Cl. 16-50.000.

Nikolaus, Harold W.: *See—*
Eckert, Lewis W.; Nikolaus, Harold W.; and Ollinger, James C., 4,117,642, Cl. 52-486.000.

Niles, Hollandra P.: *See—*
Gaffar, Abdul; and Niles, Hollandra P., 4,118,472, Cl. 424-54.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,473, Cl. 424-54.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,474, Cl. 424-54.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,475, Cl. 424-54.000.
Gaffar, Abdul; and Niles, Hollandra P., 4,118,476, Cl. 424-54.000.

Nilsson, Goran Alfred; Edstrom, Kjell; and Wiklund, Henry. Vibration attenuating device. 4,117,764, Cl. 91-50.000.

Ninomiya, Mitsuaki: *See—*
Shishido, Toshimasa; and Ninomiya, Mitsuaki, 4,118,445, Cl. 261-44.00B.

Nippon Electric Company, Ltd.: *See—*
Isomura, Masayoshi, 4,118,776, Cl. 364-474.000.
Noguchi, Tsutomu, 4,118,672, Cl. 330-286.000.
Ohtsuki, Nobuo; Hayashi, Toshio; Imai, Akio; Takahashi, Yoshio; and Hashimoto, Noboru, 4,118,660, Cl. 318-571.000.

Nippon Kogaku K.K.: *See—*
Ishibashi, Kazufumi; Matsumaru, Shizuo; and Ichimura, Takeo, 4,118,238, Cl. 106-47.00Q.
Matsui, Sei, 4,118,722, Cl. 354-155.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
Suzuki, Hideo; Sato, Takahisa; Kubota, Tatsuo; Osaka, Shigemi; and Komatsu, Shigeru, 4,118,402, Cl. 260-346.750.

Nippon Steel Corporation: *See—*
Ichijima, Isamu; Watanabe, Seiichi; and Miyagawa, Kazuo, 4,118,732, Cl. 358-101.000.

Nippon Telegraph and Telephone Public Corporation: *See—*
Izumi, Kazuto; and Izumi, Kazuo, 4,118,785, Cl. 364-754.000.

Nirk, Peter: *See—*
Koula, Zdenek; Nirk, Peter; and Wullschleger, Hans, 4,117,799, Cl. 118-6.000.

Nischk, Gunther: *See—*
Lindner, Christian; Suling, Carlhans; Arend, Gunter; Brokmeier, Dieter; and Nischk, Gunther, 4,118,375, Cl. 526-240.000.

Nishida, Isamu: *See—*
Nakao, Hideyuki; Kasai, Yasuhiro; Ikehata, Yukio; Masuda, Shigeyuki; Obara, Nobuo; and Nishida, Isamu, 4,117,665, Cl. 58-106.500.

Nishida, Tsuyeshi, to Kubota, Ltd. System for draining air from an engine fuel filter. 4,117,817, Cl. 123-136.000.

Nishikawa, Tokio: *See—*
Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, 4,118,336, Cl. 252-316.000.

Nishimaki, Kazuo: *See—*
Watanabe, Takeshi; Nishimaki, Kazuo; Shimanuki, Kazuo; Mita, Katuo; and Konno, Satoru, 4,118,210, Cl. 65-2.000.

Nissan Motor Company, Limited: *See—*
Gotoh, Miyuki, 4,117,870, Cl. 139-370.200.
Ikeura, Kenji, 4,117,815, Cl. 123-119.0EC.
Kawai, Michio, 4,117,821, Cl. 123-179.00L.

Nissei Plastics Industrial Co., Ltd.: *See—*
Shima, Yoshiharu, 4,118,051, Cl. 280-610.000.

Nittetu Chemical Engineering Ltd.: *See—*
Sano, Masaru; and Kashima, Koji, 4,118,467, Cl. 423-573.00R.

Nitto Boseki Co., Ltd.: *See—*
Watanabe, Takeshi; Nishimaki, Kazuo; Shimanuki, Kazuo; Mita, Katuo; and Konno, Satoru, 4,118,210, Cl. 65-2.000.

Niwa, Masatake: *See—*
Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, 4,118,724, Cl. 354-266.000.

Noble, Peter M., to Westinghouse Air Brake Company. Method of locating a light at the focal point of a concave mirror of a signal lamp unit. 4,118,126, Cl. 356-123.000.

Noguchi, Matsusaburo: *See—*
Watanabe, Akinori; Tanoshima, Katsuhide; Noguchi, Matsusaburo; and Hattori, Kinya, 4,117,778, Cl. 101-1.000.

Noguchi, Tsutomu, to Nippon Electric Company, Ltd. Attenuation equalizer having constant resistance. 4,118,672, Cl. 330-286.000.

Noir, Dominique; and Meier, John, to Battelle Development Corpora-

tion. Method and apparatus for controlling burner stoichiometry. 4,118,172, Cl. 431-12.000.
Noramco, Inc.: *See*—
Kumhyr, Elmer B., 4,118,603, Cl. 179-16.00E.
Norback, Per G., to Aktiebolaget Carl Munters. Catalytic purifier unit. 4,118,198, Cl. 422-173.000.
Norgard, Fred C.: *See*—
Godin, Gilbert; and Norgard, Fred C., 4,118,273, Cl. 162-171.000.
Norlin Music, Inc.: *See*—
Swain, Richard Slaughter, 4,118,791, Cl. 364-900.000.
Norster, Eric Roy: *See*—
Flanagan, Paul; Norster, Eric Roy; Carrubba, Robert V.; and Heck, Ronald M., 4,118,171, Cl. 431-10.000.
North American Philips Corporation: *See*—
Francis, Gaylord Lee; and Morelli, Amedeo John, 4,117,589, Cl. 29-619.000.
Norton, James F.; and Silagy, Richard J., to Hansen Manufacturing Company, The. Socket assembly. 4,118,006, Cl. 251-149.600.
Notoya, Yoshiaki, to Nifco, Inc. Retaining device for cords. 4,117,998, Cl. 248-56.000.
Novikoff, Eugene B., to Knogo Corporation. Method and apparatus for producing uniform electromagnetic fields in an article detection system. 4,118,693, Cl. 340-572.000.
Nussbaumer, Henri J., to International Business Machines Corporation. Differential DFT digital filtering device. 4,118,784, Cl. 364-724.000.
Obara, Nobuo: *See*—
Nakao, Hideyuki; Kasai, Yasuhiro; Ikehata, Yukio; Masuda, Shigeyuki; Obara, Nobuo; and Nishida, Isamu, 4,117,665, Cl. 58-106.500.
Obeissart, Albert, to Souriau & Cie. Electrical connectors. 4,118,093, Cl. 339-75.00M.
Oberg, Karl Erik. Method and a system for producing and laying oil or gas pipelines on the sea bottom. 4,117,692, Cl. 405-166.000.
Oberreuter, Theodor; Schimmer, Rigobert; and Seifert, Wilhelm, to LICENTIA Patent-Verwaltungs-GmbH. Method for producing a semiconductor device having monolithically integrated units in a semiconductor body. 4,118,257, Cl. 148-187.000.
O'Brien, John P. Golfer's stance block. 4,118,034, Cl. 273-32.00C.
Occidental Oil Shale, Inc.: *See*—
French, Gordon B.; and Ridley, Richard D., 4,118,070, Cl. 299-2.000.
Hutchins, Ned M., 4,118,071, Cl. 299-2.000.
Ochi, Sam S.; Hamade, Adib R.; and Culmer, Daniel D., to National Semiconductor Corporation. JFET base junction transistor clamp. 4,118,640, Cl. 307-237.000.
Oestreicher, Stephen L.; and Hardin, David P., to Farmland Industries, Incorporated. Herbicidally active substituted pyrimidine compounds and method of using same. 4,118,217, Cl. 71-92.000.
O'Farrell, Charles P.: *See*—
Makowski, Henry S.; and O'Farrell, Charles P., 4,118,353, Cl. 260-28.50B.
Makowski, Henry S.; and O'Farrell, Charles P., 4,118,360, Cl. 260-31.20R.
Ogawa, Toshiya; Niki, Akio; Uchimura, Kazuo; and Tsuruoka, Koichi, to Ricoh Company, Ltd. Data processing system. 4,118,695, Cl. 340-324.0AD.
Ohashi, Shigeyasu: *See*—
Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, 4,118,336, Cl. 252-316.000.
Ohloff, Gunther: *See*—
Skoranetz, Werner; and Ohloff, Gunther, 4,118,343, Cl. 252-522.000.
Ohno, Nobuo: *See*—
Kitamura, Shigeyoshi; Itaya, Nobushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,118,505, Cl. 424-275.000.
Ohori, Tamio: *See*—
Tomita, Satoru; Ohori, Tamio; Karasawa, Shuichi; and Ohta, Wasaburo, 4,118,710, Cl. 346-153.000.
Ohta, Takahiro; and Muramatsu, Akira, to Fuji Photo Film Co., Ltd. Automatic light intensity control for x-ray film viewer. 4,118,654, Cl. 40-361.000.
Ohta, Wasaburo: *See*—
Tomita, Satoru; Ohori, Tamio; Karasawa, Shuichi; and Ohta, Wasaburo, 4,118,710, Cl. 346-153.000.
Ohtani, Kazumasa: *See*—
Fukuda, Yoshiharu; Ohtani, Kazumasa; Onissi, Tossio R.; and Takeuchi, Akitoshi, 4,118,196, Cl. 422-232.000.
Ohtsuki, Nobuo; Hayashi, Toshio; Imai, Akio; Takahashi, Yoshio; and Hashimoto, Noboru, to Nippon Electric Company Ltd. Automatic machining system. 4,118,660, Cl. 318-571.000.
Oishi, Masaaki: *See*—
Suzuki, Tetsuro; Oishi, Masaaki; and Ashida, Itaru, 4,117,743, Cl. 74-577.00M.
Okada, Hitoshi; and Naruse, Yohsuke, to Sony Corporation. Method of and apparatus for controlling the optical reading of recorded information. 4,118,736, Cl. 358-128.000.
Okada, Takeshi, to Olympus Optical Co., Ltd. Film cassette for an endoscope. 4,117,987, Cl. 242-71.200.
Okajima, Hidekazu; and Iwama, Hideto, to Canon Kabushiki Kaisha. Light metering system for a photographic camera. 4,118,714, Cl. 354-31.000.
Oki Electric Industry Co., Ltd.: *See*—
Watanabe, Akinori; Tanoshima, Katsuhide; Noguchi, Matsusaburo; and Hattori, Kinya, 4,117,778, Cl. 101-1.000.
Oku, Kyoichi; and Matsuura, Hiroshi, to Jujo Paper Co., Ltd. Method for the preparation of a pulp. 4,118,271, Cl. 162-31.000.
Okuno, Yoshitoshi: *See*—
Kitamura, Shigeyoshi; Itaya, Nobushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,118,505, Cl. 424-275.000.
Olcott, Richard J.; and Cross, Ronald H. Washing machine for industrial parts. 4,117,855, Cl. 134-141.000.
Olin Corporation: *See*—
Brennan, James P., 4,118,570, Cl. 544-190.000.
Goldstein, Stephen L.; and Babiec, John S., Jr., 4,118,586, Cl. 568-767.000.
Johnson, James H.; Fowler, Arnold L.; Brooks, Julius E.; and Friend, Harvey H., 4,117,761, Cl. 89-129.00B.
Saeman, Walter C., 4,118,524, Cl. 427-213.000.
Specht, Steven J., 4,118,308, Cl. 204-296.000.
Waxelbaum, Paul M.; Harris, Fred A.; and Brown, William J., 4,117,984, Cl. 241-73.000.
Ollinger, James C.: *See*—
Eckert, Lewis W.; Nikolaus, Harold W.; and Ollinger, James C., 4,117,642, Cl. 52-486.000.
Oloman, Colin William; and Watkinson, Alan Paul, to Canadian Patents and Development Limited. Apparatus for electrochemical reactions. 4,118,305, Cl. 204-265.000.
Olschewski, Armin: *See*—
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,118,078, Cl. 308-6.00C.
Olsen, James A.; Butler, Gene R.; and Sesser, George L., to Sperry Rand Corporation. Means for adjusting the sideboard. 4,117,942, Cl. 214-6.00B.
Olstad, Paul Henrik: *See*—
Kjohl, Olav; and Olstad, Paul Henrik, 4,118,242, Cl. 106-98.000.
Olympus Optical Co., Ltd.: *See*—
Hanaoka, Naohiro; and Shimoda, Misao, 4,118,747, Cl. 360-121.000.
Hashimoto, Akihiko, 4,118,721, Cl. 354-147.000.
Okada, Takeshi, 4,117,987, Cl. 242-71.200.
Sato, Masaaki, 4,118,744, Cl. 360-74.000.
O'Neil, Charles P.; Smorzaniuk, Adam; and Young, James O., to Amerace Corporation. Timing device for fluid valve. 4,118,005, Cl. 251-75.000.
O'Neil, James R. Rope spinning toy. 4,117,625, Cl. 46-51.000.
Onissi, Tossio R.: *See*—
Fukuda, Yoshiharu; Ohtani, Kazumasa; Onissi, Tossio R.; and Takeuchi, Akitoshi, 4,118,196, Cl. 422-232.000.
Ono, Nobuyuki: *See*—
Ishino, Ken; Yamashita, Hiroshi; Ono, Nobuyuki; and Hashimoto, Yasuo, 4,118,704, Cl. 343-18.00A.
Onoda Cement Company, Limited: *See*—
Fukuda, Yoshiharu; Ohtani, Kazumasa; Onissi, Tossio R.; and Takeuchi, Akitoshi, 4,118,196, Cl. 422-232.000.
Itoh, Tsutomu, 4,117,971, Cl. 229-1.50B.
Onodera, Hirosuke. Baking apparatus. 4,118,181, Cl. 432-121.000.
Oosthoek, Raoul Henricus Josephus: *See*—
Visser, Johannes; Oosthoek, Raoul Henricus Josephus; Groeneweg, Jan Willem; and Dijkstra, Hendrik, 4,118,520, Cl. 426-574.000.
Opitz, Konrad; Landler, Josef; and Worfel, Erhard, to Hoechst Aktiengesellschaft. Stable liquid aqueous composition of a water-soluble fiber-reactive azo dyestuff, containing a buffer substance, the dyestuff having been prepared by diazotization with a nitrite and coupling in the absence of acid. 4,118,184, Cl. 8-26.000.
Optel Corporation: *See*—
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; and Russak, Michael A., 4,118,546, Cl. 429-111.000.
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; Jost, Steven Robert; Reichman, Joseph; and Russak, Michael A., 4,118,547, Cl. 429-111.000.
Optical Activity Ltd.: *See*—
Gundermann, Rolf Karl, 4,118,125, Cl. 356-116.000.
Optilon W. Erich Heilmann GmbH: *See*—
Heimberger, Helmut, 4,117,575, Cl. 24-205.13D.
Opuszenski, Theodore: *See*—
Rovin, Herman; Levine, Lawrence J.; Opuszenski, Theodore; Pellicano, Joseph; and Swenson, Alan F., 4,117,789, Cl. 112-181.000.
Organisation Europeenne de Recherches Spatiales: *See*—
David, Karl-Heinz, 4,118,622, Cl. 250-216.000.
Orvik, Jon A., to Dow Chemical Company, The. Preparation of urethane elastomers from epoxy resin, polyols and polyisocyanates using a catalyst composition of an organometal salt with either nitrogen or phosphorus compounds. 4,118,373, Cl. 528-73.000.
Osada, Hisashi: *See*—
Goshima, Yoshio; and Osada, Hisashi, 4,118,678, Cl. 333-70.00S.
Osaka, Shigemi: *See*—
Suzuki, Hideo; Sato, Takahisa; Kubota, Tatsuo; Osaka, Shigemi; and Komatsu, Shigeru, 4,118,402, Cl. 260-346.750.
Osaki, Toshio. Rotary piston compressor. 4,118,158, Cl. 418-54.000.
Osawa, Keiichi: *See*—
Sato, Naohiko; and Osawa, Keiichi, 4,117,812, Cl. 123-117.00A.
Osburn, James Patrick; and Robinson, John William, to Kimball International, Inc. Binary word debouncer. 4,117,758, Cl. 84-1.010.
Osipow, Lloyd I.: *See*—
Spitzer, Joseph George; Small, Marvin; Osipow, Lloyd I.; and Marra, Dorothea C., 4,117,958, Cl. 222-402.180.
Osteen, Mitchell M., to General Electric Company. Variable transmission prismatic refractors. 4,118,763, Cl. 362-339.000.

O'Steen, Wilbourne D.: *See*—
Friddle, William D., Sr.; Friddle, William D., Jr.; and O'Steen, Wilbourne D., 4,117,753, Cl. 83-143.000.
Otis Engineering Corporation: *See*—
Fredd, John V., 4,117,563, Cl. 10-101.00R.
Otto Niederer Sons, Inc.: *See*—
Niederer, Thomas O., 4,117,922, Cl. 198-652.000.
Oury, Robert F., to Rotec Industries. Auger hopper. 4,117,920, Cl. 198-311.000.
Outboard Marine Corporation: *See*—
Martin, Herman H., Jr., 4,117,651, Cl. 56-10.500.
Overhausen, Hans-Walter: *See*—
Hadamovsky, Eugen; Hoppe, Wolfgang; Overhausen, Hans-Walter; Piotrowski, Bernhard; Schmid, Wehrhart; Schreiber, Georg; and Schroeder, Heinz, 4,118,313, Cl. 560-78.000.
Owens-Illinois, Inc.: *See*—
Lee, Soo-Il, 4,118,163, Cl. 425-146.000.
Mumford, George V., 4,117,945, Cl. 215-216.000.
Myers, Robert A.; and Uhlig, Albert R., 4,118,452, Cl. 264-89.000.
P.R. Mallory & Co. Inc.: *See*—
Liang, Charles Chi; and Joshi, AshokVenimadhav, 4,118,549, Cl. 429-191.000.
Przybyla, Franciszek J.; and Smith, Michael J., 4,118,544, Cl. 429-27.000.
PACCAR Of Canada, Ltd.: *See*—
Christison, Sommerville Grant; Magnuson, John Edwin; and Tham, Wing Chong, 4,118,013, Cl. 254-187.500.
Packaging Corporation of America: *See*—
VanderMey, Donald M., 4,117,929, Cl. 206-326.000.
Paduch, Stanley R.; and Smith, Lawrence S., to United Technologies Corporation. Power servo control. 4,117,765, Cl. 91-361.000.
Paetz, Eike: *See*—
Hodzic, Alija; Haferkamp, Dirk; Stach, Heinrich; and Paetz, Eike, 4,118,276, Cl. 176-60.000.
Paget, Charles J.; and Wikel, James H., to Eli Lilly and Company. Substituted 1-sulfonylbenzimidazoles. 4,118,573, Cl. 548-306.000.
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., to Eli Lilly and Company. Carbonyl-substituted 1-sulfonylbenzimidazoles. 4,118,742, Cl. 548-306.000.
Pahl, Karl-Heinz, to Pahl'sche Gummi-und Asbest-Gesellchaft PAGUAG. High pressure hose composed of elastomers and embedded reinforcements. 4,117,867, Cl. 138-119.000.
Pahl'sche Gummi-und Asbest-Gesellchaft PAGUAG: *See*—
Pahl, Karl-Heinz, 4,117,867, Cl. 138-119.000.
Pakhoed-Rotterdam B.V.: *See*—
Exler, Petrus Andre Theodorus; and Lobbe, Johannes, 4,118,209, Cl. 62-176.00D.
Pako Corporation: *See*—
Burg, John S.; Davidson, Donald M.; McClure, Marvin K.; and Sannel, Benjamin H., 4,117,604, Cl. 34-70.000.
Pakosh, Daniel, to Versatile Manufacturing Ltd. Rotary combine. 4,117,849, Cl. 130-27.00Q.
Palm, Lorenz A.; and Webb, David B., to Irvin Industries Canada Ltd. Parachute canopy. 4,117,993, Cl. 244-145.000.
Palumbo, Julius T., to Planchard, Arthur J., a part interest. Protective hard hat and welder's hood. 4,117,554, Cl. 2-418.000.
Pan, Jing Jong; Arnold, Milton Phillip; and Barton, James Castle, to Harris Corporation. Micro lens formation at optical fiber ends. 4,118,270, Cl. 156-659.000.
Panavision, Incorporated: *See*—
Gottschalk, Robert E., 4,118,720, Cl. 354-81.000.
Panke, Hans Ludwig: *See*—
Steckelberg, Willi; Panke, Hans Ludwig; May, Adolf; and Bucking, Hans-Walter, 4,118,324, Cl. 252-8.900.
Pantone, Richard S.: *See*—
Reiff, Helmut F.; and Pantone, Richard S., 4,118,411, Cl. 260-453.0SP.
Paraskos, John Angelo: *See*—
Frayer, James Albert; Lese, Henri K.; McKinney, Joel Drexler; Metzer, Kirk J.; and Paraskos, John Angelo, 4,118,310, Cl. 208-210.000.
Parekh, Girish Girdhar, to American Cyanamid Company. Cross linkable powder coating compositions. 4,118,437, Cl. 260-834.000.
Parekh, Hersh B.: *See*—
McWaters, Lynn D.; and Parekh, Hersh B., 4,118,687, Cl. 340-146.3ED.
Parker, John F.: *See*—
Bassett, Henry C.; From, Charles A., Jr.; Parker, John F.; and Worley, Ansel A., 4,118,596, Cl. 174-87.000.
Parks-Cramer (Great Britain) Ltd.: *See*—
Rushman, Reginald, 4,117,869, Cl. 139-1.00R.
Parrent, George B., Jr.; and Ward, John H., to Technical Operations, Incorporated. Optical detection of geometric configurations. 4,118,107, Cl. 350-162.0SF.
Pasternak, John Paul: *See*—
Berglund, Richard Newman; and Pasternak, John Paul, 4,118,095, Cl. 339-99.00R.
Pasynkov, Rafail Moiseevich: *See*—
Koshelenko, Gennady Petrovich; Pasynkov, Rafail Moiseevich; Sin, Mikhail Alexandrovich; and Shemper, Leonid Isaakovich, 4,117,770, Cl. 92-57.000.
Patchornik, Abraham: *See*—
Haviv, Fortuna; and Patchornik, Abraham, 4,118,562, Cl. 544-26.000.
Patel, Mahesh S., to Eutectic Corporation. Metaliferous flame spray material for producing machinable coatings. 4,118,527, Cl. 427-423.000.
Paton, W. Donald: *See*—
Steenson, Thomas William; and Paton, W. Donald, 4,117,639, Cl. 52-223.00R.
Patterson, Robert J.: *See*—
Koontz, Paul G.; Wright, Richard L.; and Patterson, Robert J., 4,118,116, Cl. 355-3.00R.
Paul-Heinz Wagner Maschinenfabrikation: *See*—
Wagner, Paul-Heinz; Hirtsiefer, Richard; and Muller, Johann, 4,117,735, Cl. 74-47.000.
Paul Troester Maschinenfabrik: *See*—
Baumgarten, Wilfried, 4,118,162, Cl. 425-113.000.
Pavan, Jean-Paul. Machine for performing cultivation under plastics. 4,117,787, Cl. 111-2.000.
Pavel, Klaus, to Rhein-Nadel Maschinennadel GmbH. Packing receptacle for sewing machine needles. 4,117,930, Cl. 206-382.000.
Paynton, William C. Electrical hazard indicator. 4,118,690, Cl. 340-656.000.
Pearce, Woodrow W. Plant watering device. 4,117,632, Cl. 47-81.000.
Pedain, Josef; Wellner, Wolfgang; Gruber, Hermann; and Dietrich, Manfred, to Bayer Aktiengesellschaft. Hydrocurable oxazolidine isocyanate prepolymer compositions. 4,118,376, Cl. 528-59.000.
Pedler, Keith. Method for reinforcing sheet material. 4,118,261, Cl. 156-145.000.
Peil, William, to General Electric Company. Smoke detector. 4,118,689, Cl. 340-629.000.
Pellegri, Alberto, to Diamond Shamrock Technologies S. A. Novel cathode and bipolar electrode incorporating the same. 4,118,294, Cl. 204-129.000.
Pelletier, Rene Charles, to Secemia. Metering device for bulk materials, more particularly constituents of animal foodstuffs. 4,117,954, Cl. 222-134.000.
Pellicano, Joseph: *See*—
Rovin, Herman; Levine, Lawrence J.; Opuszenski, Theodore; Pellicano, Joseph; and Swenson, Alan F., 4,117,789, Cl. 112-181.000.
Pennwalt Corporation: *See*—
Popoff, Ivan Christoff; Mailey, Everett A.; and Haines, Paul Gordon, 4,118,378, Cl. 526-36.000.
Pensak, Philip, to Colgate-Palmolive Company. Stable dentifrice. 4,118,471, Cl. 424-52.000.
Penton, Hugh V., to California Metal Enameling Company. Reflectorized symbol sign and method of fabricating and assembling. 4,117,616, Cl. 40-550.000.
Peppel, Howard C., deceased: *See*—
Davies, Norman; Langley, Morley P.; and Peppel, Howard C., deceased, 4,118,755, Cl. 361-379.000.
Peppel, Virginia L., administrator: *See*—
Davies, Norman; Langley, Morley P.; and Peppel, Howard C., deceased, 4,118,755, Cl. 361-379.000.
Perron, Yvon G.: *See*—
Lim, Gary M. F.; and Perron, Yvon G., 4,118,563, Cl. 544-26.000.
Perrotta, Anthony; and Rollo, Charles. Medicated bandage pocket. 4,117,841, Cl. 128-155.000.
Perryman, E. Firth, to R.T. French Company, The. Method of producing concentrated sauce product. 4,118,518, Cl. 426-516.000.
Pestolite, Inc.: *See*—
Phillips, Dennis G., 4,117,624, Cl. 43-113.000.
Peterson, David C., to Upjohn Company, The; and Upjohn Company, The. 3,7-Inter-m-phenylene-4,5,6-trinor-PGD$_1$ compounds. 4,118,591, Cl. 560-53.000.
Pethick, Raymond John: *See*—
Fleming, Francis William; and Pethick, Raymond John, 4,118,646, Cl. 310-58.000.
Petrolite Corporation: *See*—
Victor, Joe M.; and Dougherty, James, 4,118,300, Cl. 204-195.00T.
Petros, Andrew J., to Mesta Machine Company. Method and apparatus for coil handling at mill entry. 4,117,989, Cl. 242-78.800.
Petrov, Georgi Mitev; Andonov, Blagoy Alexandrov; Trayanov, Svetozar Paissiev; and Georgiev, Georgi Dimitrov, to Institute Po Obleklo I Textil. Method of and apparatus for the control of composite effect yarns. 4,117,654, Cl. 57-19.000.
Pfahnl, Arnold; and Schuller, Joris Maarten, to Bell Telephone Laboratories, Incorporated. Crossovers and method of fabrication. 4,118,595, Cl. 174-68.500.
Pfizer Inc.: *See*—
Johnson, Michael Ross; and Melvin, Lawrence Sherman, Jr., 4,118,559, Cl. 542-432.000.
Nelson, Albin J., 4,118,503, Cl. 424-274.000.
Philip Morris Incorporated: *See*—
Newman, Thomas A.; and Kettner, Erich O., 4,117,852, Cl. 131-96.000.
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, to Schering Aktiengesellschaft. 4-Androsten-3-ones and process for the preparation thereof. 4,118,488, Cl. 424-238.000.
Phillips, David C.; Hickam, William M.; and Carlson, Gerald L., to Westinghouse Electric Corp. Particulography as an on-line technique for detection and location of faults within a gas-cooled dynamoelectric machine caused by overheating. 4,117,713, Cl. 73-17.00R.
Phillips, Dennis G., to Pestolite, Inc. Insect trap. 4,117,624, Cl. 43-113.000.
Phillips, Michael, to L.A. Dreyfus Company. Method for handling and transporting thermoplastic materials. 4,117,645, Cl. 53-431.000.

Phillips Petroleum Company: *See—*
Fahey, Darryl R.; and Mahan, John E., 4,118,408, Cl. 260-439.00R.
Hendrix, Hurshel V., 4,117,684, Cl. 405-54.000.
Murtha, Timothy P.; and Zuech, Ernest A., 4,118,434, Cl. 260-668.00R.
Smith, Kenneth E., 4,117,655, Cl. 57-58.830.

Pickens, Billie J. Device for opening or closing a zipper. 4,117,961, Cl. 223-111.000.

Pierrat, Michel A., to Compudrive Corporation. Orbital drive mechanism. 4,117,746, Cl. 74-805.000.

Pifferi, Giorgio; and Pinza, Mario, to I.S.F. S.p.A. Pyrrolidine derivatives. 4,118,396, Cl. 260-326.430.

Pignocco, Arthur J.; and Kachik, Robert H., to United States Steel Corporation. Refractory lined cylindrical article. 4,117,868, Cl. 138-146.000.

Piligrino, Dimi. Knife. 4,117,593, Cl. 30-314.000.

Piller, Bernhard; Lenoir, John; Froehlich, Alfred; Stauner, Thomas; and Tschopp, Paul, to Ciba-Geigy AG. Photographic material containing sulphonic acid group containing disazo dyestuffs. 4,118,232, Cl. 96-99.000.

Pinza, Mario: *See—*
Pifferi, Giorgio; and Pinza, Mario, 4,118,396, Cl. 260-326.430.

Pioneer Electronic Corporation: *See—*
Kurata, Junichi; Ishikawa, Kazushige; and Nagashima, Nozomu, 4,118,039, Cl. 274-9.0RA.

Piotrowski, Bernhard: *See—*
Hadamovsky, Eugen; Hoppe, Wolfgang; Overhausen, Hans-Walter; Piotrowski, Bernhard; Schmid, Wehrhart; Schreiber, Georg; and Schroeder, Heinz, 4,118,313, Cl. 560-78.000.

Piretti, Giancarlo, to Societa Anonima Castelli s.a.s. Di C. Castelli & C. Disassemblable table. 4,117,784, Cl. 108-150.000.

Pitney-Bowes, Inc.: *See—*
Calvi, Salvatore J.; and Stelben, John J., 4,118,178, Cl. 432-35.000.
Carvalko, Joseph R.; and Tolmie, Robert J., Jr., 4,118,634, Cl. 250-577.000.

Pitzalis, Mario: *See—*
Vargiu, Silvio; Carpaneti, Edoardo; Crespolini, Giancarlo; and Pitzalis, Mario, 4,118,555, Cl. 526-76.000.

Planchard, Arthur J.: *See—*
Palumbo, Julius T., 4,117,554, Cl. 2-418.000.

Plantard, Dominique: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,118,213, Cl. 65-5.000.

Platz, Rolf: *See—*
Fouquet, Gerd; Merger, Franz; Platz, Rolf; and Baer, Karl, 4,118,588, Cl. 560-210.000.

Plempel, Manfred: *See—*
Regel, Erik; Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, 4,118,487, Cl. 424-232.000.

Plessey Handel und Investments A.G.: *See—*
Boyce, Peter Howard, 4,118,775, Cl. 364-467.000.

Pletscher, Gebruder: *See—*
Pletscher, Oskar, 4,117,962, Cl. 224-31.000.

Pletscher, Oskar, to Pletscher, Gebruder. Bicycle luggage carrier equipped with recognition and safety device. 4,117,962, Cl. 224-31.000.

Pluzhnov, Stanislav Konstantinovich: *See—*
Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,118,432, Cl. 260-683.15D.

Pogorely, Nikolai Pavlovich: *See—*
Burin, Viktor Leontievich; Tjutjunnikov, Anatoly Borisovich; Golosov, Viktor Nikolaevich; Tarynin, Evgeny Konstantinovich; Pogorely, Nikolai Pavlovich; and Lukyanenko, Vladimir Matveevich, 4,118,446, Cl. 261-114.0VT.

Pohl, Ludwig: *See—*
Krause, Joachim; Streinstrasser, Ralf; Pohl, Ludwig; Del Pino, Fernando; and Weber, Georg, 4,118,335, Cl. 252-299.000.

Polaroid Corporation: *See—*
Chambers, Melvin T.; and Hardy, Herbert L., 4,118,737, Cl. 352-130.000.

Polymer Corporation, The: *See—*
Hanley, Michael A.; Miller, Lawrence A.; and Kinsey, Irvin H., 4,118,345, Cl. 260-2.300.

Polysius AG: *See—*
Mollenkopf, Hans; Ritzmann, Horst; Wurr, Jurgen; Schmits, Heinz-Berbert; Heinemann, Otto; Krutzner, Karl, jun.; and Schossler, Werner, 4,118,176, Cl. 432-14.000.
Weber, Paul; Lankes, Erich; Butschko, Gerhard; Ritzmann, Horst; and Bohm, Peter Wolfgang, 4,118,177, Cl. 432-14.000.

Pomella, Piero; and Lauro, Luciano, to Ing. C. Olivetti & C., S.p.A. Numerical control system for machine tools. 4,118,771, Cl. 364-101.000.

Pope, Ivan: *See—*
Moore, Ray G.; and Coffman, William M., Jr., 4,117,804, Cl. 119-1.000.

Popoff, Ivan Christoff; Mailey, Everett A.; and Haines, Paul Gordon, to Pennwalt Corporation. Non-blooming accelerator and process for vulcanization of EPDM elastomers. 4,118,378, Cl. 526-36.000.

Porta, Gary Douglas: *See—*
Leidy, James Albert; and Porta, Gary Douglas, 4,118,103, Cl. 339-98.000.

Porter, Gary D.; and Bogdanoff, Anatoly, to United States of America, Energy. Guidance system for laser targets. 4,118,627, Cl. 250-397.000.

Post Office: *See—*
Cockett, Stewart Graham; Taylor, Jeffrey Philip; Craven, Peter; and Farmer, Alan Charles, 4,118,790, Cl. 364-900.000.

Poth, Robert. Collapsible tub insert. 4,117,558, Cl. 4-173.00R.

Potlatch Corporation: *See—*
Sellors, Thomas J., 4,117,972, Cl. 229-28.00R.

Potts, David E.: *See—*
Hamill, Herbert R.; and Potts, David E., 4,118,245, Cl. 106-288.00B.
Horzepa, John P.; and Potts, David E., 4,118,246, Cl. 106-288.00B.

Pouliot, Harvey N.: *See—*
Kemper, Yves Jean; and Pouliot, Harvey N., 4,117,736, Cl. 74-60.000.

Powell, William E.: *See—*
Brezinski, Donald P.; and Powell, William E., 4,118,781, Cl. 364-525.000.

Power, George Edward; and Bolling, Donald Louis, to Formica Corporation. Release sheet of a coated cellulose paper. 4,118,541, Cl. 428-452.000.

PQ Corporation: *See—*
Lazet, Frank J.; Meador, D. John; and Webster, Richard G., 4,118,463, Cl. 423-334.000.

Prather, Jimmy F. Method of feeding cotton to a gin. 4,117,571, Cl. 19-64.500.

Precision Monolithics, Inc.: *See—*
Comer, Donald T., 4,118,699, Cl. 340-347.0DA.

Preece, Kenneth; and Cheary, Walter Graham, to Lucas Industries Limited. Pole claw member for a dynamo electric machine rotor. 4,117,793, Cl. 113-116.00D.

Premier Cablevision, Limited: *See—*
Fung, Paul J., 4,118,669, Cl. 325-309.000.

Preway Inc.: *See—*
Billmeyer, Thomas F., 4,117,827, Cl. 126-121.000.

Prezewowsky, Klaus: *See—*
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, 4,118,488, Cl. 424-238.000.

Price, Edwin. Surface and edge laminating apparatus. 4,118,268, Cl. 156-510.000.

Prima International: *See—*
Dawson, Robert L., 4,117,936, Cl. 211-50.000.

Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, to New York Blood Center, Inc., The. Vaccine manufacture for active immunization containing hepatitis B surface antigen and associated antigen. 4,118,478, Cl. 424-89.000.

Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, to New York Blood Center, Inc., The. Vaccine for active immunization containing hepatitis B surface antigen and associated antigen. 4,118,479, Cl. 424-89.000.

Procter & Gamble Company, The: *See—*
Jones, Kenneth L., 4,118,525, Cl. 427-242.000.

Proctor & Associates Company: *See—*
Proctor, Darryl F.; Skelly, Peter T.; and Cole, Darrell D., 4,118,597, Cl. 179-18.0FA.

Proctor, Darryl F.; Skelly, Peter T.; and Cole, Darrell D., to Proctor & Associates Company. Method and apparatus for detecting direct currents in a transmission line. 4,118,597, Cl. 179-18.0FA.

Progressive Machine Products, Inc.: *See—*
Betush, Frank A., 4,117,861, Cl. 137-595.000.

Pryor, Peter Paul, Jr.: *See—*
United States of America, National Aeronautics and Space Administration; Wall, William A., Jr.; Ives, Robert E.; Bruce, Miles Melvin, Jr.; Pryor, Peter Paul, Jr.; and Gard, Leslie H., 4,118,620, Cl. 219-124.320.

Przedsiebiorstwo Projektowania i Wyosazania Zakladow Przemysly Maszyn i Apartow Elektrycznych "Promel": *See—*
Najmowicz, Zenon; Dyrda, Edward; and Zakrzewski, Jan, 4,117,878, Cl. 164-292.000.

Przybyla, Franciszek J.; and Smith, Michael J., to P.R. Mallory & Co. Inc. Metal-air depolarized cell having restricted gas passageway. 4,118,544, Cl. 429-27.000.

Pugsley, Thomas A.: *See—*
Ferland, Jean-Marie; Laliberte, Real; Lippmann, Wilbur; and Pugsley, Thomas A., 4,118,511, Cl. 424-330.000.

Pundt, Richard A. Method and means of sequentially observing player positions in predetermined game plays. 4,117,606, Cl. 35-29.00R.

Purssell, Robert F.; Bhabra, Avtar S.; and Rossi, Guglielmo, to Ranco Incorporated. Snap action switch blades. 4,118,610, Cl. 200-67.0DA.

Putnam, Paul S.: *See—*
McCleskey, Robert W., Jr.; Putnam, Paul S.; and Boltad, Arne Martin, 4,117,941, Cl. 214-2.500.

Quikoton AG: *See—*
Godau, Eckhardt; and Schneider, Max, 4,118,183, Cl. 8-18.00R.

Quinci, Emanuel: *See—*
Konars, Clement R.; Schlipf, Frank J.; and Quinci, Emanuel, 4,118,025, Cl. 271-273.000.

Quintana, Elias D.: *See—*
Eckel, Leonard B.; Sullivan, James P.; and Quintana, Elias D., 4,117,783, Cl. 108-91.000.

Quinton Hazell Limited: *See—*
Baker, Peter Frederick, 4,117,916, Cl. 192-98.000.

Qume Corporation: *See—*
Grundherr, Willy J., 4,118,129, Cl. 400-144.200.

Qureshi, Azam S., to Tomco, Inc. Pressure compensated control valve. 4,117,862, Cl. 137-596.130.

R. J. Reynolds Tobacco Company: *See—*
McArthur, Colin Shaw; and Clark, Douglas Copeland, 4,118,619, Cl. 219-121.00L.

R.T. French Company, The: *See—*
Perryman, E. Firth, 4,118,518, Cl. 426-516.000.

Rabinow, Jacob, to United States of America, Army. Doppler distance measuring system. 4,118,702, Cl. 343-7.0PF.

Ragle, Herbert Underwood: *See—*
Gyi, Ko Ko; and Ragle, Herbert Underwood, 4,118,746, Cl. 360-99.000.

Raguin, Michel M.; and Joyce, Thomas F., to Honeywell Information Systems Inc. Microprogram memory bank addressing system. 4,118,773, Cl. 364-200.000.

Rahn, John P.; and Scott, Marion L., to United States of America, Navy. Laser tuning with an acousto-optic lens. 4,118,675, Cl. 331-94.50C.

Rahn, Oskar; and Krause, Hermann, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Tool for the contact-free support of discs. 4,118,058, Cl. 294-67.00B.

Raleigh, Douglas O.; and Topol, Leo E., to Rockwell International Corporation. Sensor for fluid components. 4,118,194, Cl. 422-98.000.

Ranco Incorporated: *See—*
Purssell, Robert F.; Bhabra, Avtar S.; and Rossi, Guglielmo, 4,118,610, Cl. 200-67.0DA.

Randon, Donald Gerard, to Roberts Management, Inc. Method of juggling and apparatus therefor. 4,118,030, Cl. 273-96.00R.

Rank Xerox, Ltd.: *See—*
Kito, Hidetoshi, 4,117,803, Cl. 118-658.000.

Ransburg Corporation: *See—*
Hoenig, Stuart A., 4,117,715, Cl. 73-28.000.

Rapko, John N., to Monsanto Company. N-acetyl diglycolimide. 4,118,568, Cl. 544-173.000.

Rapp, Willard Emanuel, to Western Electric Company, Inc. Wire lead and solder removal tool. 4,117,590, Cl. 29-764.000.

Rasmussen, Ross H. System and method for cooling hot water from industrial plant cooling use. 4,117,683, Cl. 405-61.000.

Rass, Inc.: *See—*
Helt, Raymond E., 4,117,609, Cl. 36-4.000.

Rasure, Rebecca Ann. Pediatric restraint garment. 4,117,840, Cl. 128-134.000.

Ratti, Mario, to S.U.S.T.A. S.p.A. Assembly for housing, conveying and bringing-forth tools during the operation of numerically controlled machines. 4,117,937, Cl. 211-60.00T.

Rauh, Jack K.: *See—*
Bucknell, Ernest H.; and Rauh, Jack K., 4,117,858, Cl. 137-119.000.

Raybestos Manhattan, Inc.: *See—*
Lowry, Blaine E., 4,118,528, Cl. 428-65.000.

Rayfield, Wilson Parker; Ferguson, Ronald Worden; and Brooks, George Mahue, to Burroughs Corporation. Bursting apparatus for continuous forms. 4,118,022, Cl. 270-52.500.

Raymond Lee Organization, Inc., The: *See—*
Bickford, Edgar, 4,117,614, Cl. 40-155.000.
Brubaker, Charles W., 4,118,043, Cl. 280-8.000.
Ward, Timothy J., 4,117,566, Cl. 15-244.00R.

RCA Corporation: *See—*
Dietz, Wolfgang Friedrich Wilhelm, 4,118,656, Cl. 315-371.000.
Hinn, Werner, 4,118,731, Cl. 358-65.000.
Lenihan, Thomas Francis, 4,118,700, Cl. 340-524.000.
Risko, John Joseph; and Napoli, Louis Sebastian, 4,118,598, Cl. 325-26.000.
Shanley, Robert Loren, II, 4,118,729, Cl. 358-10.000.
Shwartzman, Stanley; and Mayer, Alfred, 4,118,649, Cl. 310-337.000.

Rea, William L.: *See—*
Regelson, Ephraim; Terral, Leonard G.; Matusiak, Ronald J.; Trotter, Jerry L.; Rea, William L.; and Mangel, Edward L., 4,117,967, Cl. 228-20.000.

Recognition Equipment Incorporated: *See—*
McWaters, Lynn D.; and Parekh, Hersh B., 4,118,687, Cl. 340-146.3ED.

Red, Jerry F. P.; and Ilagan, Juan B., Jr., to SCM Corporation. Fatty acid recovery from soapstock. 4,118,407, Cl. 260-412.500.

Redman, Charles M., to United States of America, Army. Method and apparatus for driving an optical waveguide with conherent radiation. 4,118,676, Cl. 332-7.510.

Reed, Robert D., to John Zink Company. Apparatus for indicating true furnace draft. 4,117,734, Cl. 73-756.000.

Rees, Herbert; and Schad, Robert Dietrich, to Husky Injection Molding Systems Limited. Guidance system for shallow articles discharged from a mold cavity. 4,118,168, Cl. 425-556.000.

Rees, James D.; and Lehman, Richard F., to Xerox Corporation. Method of rendering objects uncopyable by photocopy processes. 4,118,122, Cl. 355-77.000.

Reese, Gunter; Kroke, Hermann; and Scheuermann, Fanny, to Henkel Kommanditgesellschaft auf Aktien. Film-forming vinyl acetate copolymerizates in an improved process for setting hair and as hair setting agents. 4,117,853, Cl. 132-7.000.

Regel, Erik; Draber, Wilfried; Buchel, Karl Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. Substituted azol-1-ylmethanes. 4,118,487, Cl. 424-232.000.

Regelson, Ephraim; Terral, Leonard G.; Matusiak, Ronald J.; Trotter, Jerry L.; Rea, William L.; and Mangel, Edward L., to United States of America, Navy. Solder extractor apparatus. 4,117,967, Cl. 228-20.000.

Reichman, Joseph: *See—*
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; Jost, Steven Robert; Reichman, Joseph; and Russak, Michael A., 4,118,547, Cl. 429-111.000.

Reiff, Helmut F.; and Pantone, Richard S., to Mobay Chemical Corporation. Low-temperature storage stable liquid diphenylmethane diisocyanates. 4,118,411, Cl. 260-453.0SP.

Reinhall, Rolf Bertil. Device for use in beating or refining machines. 4,118,800, Cl. 366-341.000.

Reinhardt, Gerd: *See—*
Schnabel, Eugen; Schlumberger, Horst Dieter; Reinhardt, Gerd; Truscheit, Ernst; and Tschesche, Harald, 4,118,481, Cl. 424-177.000.

Reinhardt, Victor S., to United States of America, National Aeronautics and Space Administration. Time domain phase measuring apparatus. 4,118,665, Cl. 324-57.00R.

Reinheimer, Gunter: *See—*
Leiter, Herbert; and Reinheimer, Gunter, 4,118,719, Cl. 354-79.000.

Reinwald, Elmar; and Schwuger, Milan Johann, to Henkel Kommanditgesellschaft auf Aktien. Method of washing textiles. 4,118,189, Cl. 8-137.000.

Rekers, Louis J., to National Distillers and Chemical Corporation. Novel polymerization catalyst. 4,118,340, Cl. 252-428.000.

Remington Arms Company, Inc.: *See—*
Linde, John P.; Kopinski, Martin W.; and Lewis, Donald R., 4,117,617, Cl. 42-1.00S.

Renaut, Henry, to Lemaire & Cie. Calenders for the thermal treatment of laminar material. 4,117,699, Cl. 68-5.00D.

REPA Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,118,068, Cl. 297-385.000.

Research Corporation: *See—*
Caldwell, Harlan D.; Kuo, Cho-Chou; and Kenny, George E., 4,118,469, Cl. 424-1.000.

Research Institute for Iron, Steel and Other Metals of the Tohoku University, The: *See—*
Hirai, Toshio; and Niihara, Koichi, 4,118,539, Cl. 428-446.000.

Rettger, Harry C.: *See—*
Kolesar, Mark; and Rettger, Harry C., 4,117,707, Cl. 72-306.000.

Reuter, Franz Gottfried: *See—*
Friedel, Franz Lutz; Schone, Armin; and Reuter, Franz Gottfried, 4,118,410, Cl. 260-453.0AM.

Reynolds, Mark P.: *See—*
Ladin, Eli M.; and Reynolds, Mark P., 4,117,917, Cl. 192-98.000.

Rhein-Nadel Maschinennadel GmbH: *See—*
Pavel, Klaus, 4,117,930, Cl. 206-382.000.

Rhein, Robert A.; and Ingham, John D., to California Institute of Technology. Curable liquid hydrocarbon prepolymers containing hydroxyl groups and process for producing same. 4,118,427, Cl. 568-852.000.

Rhone-Poulenc Industries: *See—*
Desire, Pierre; and Helgorsky, Jacques, 4,118,462, Cl. 423-321.00S.

Rhone-Poulenc S.A.: *See—*
Marze, Xavier, 4,118,439, Cl. 260-858.000.

Ricard, Jean-Paul: *See—*
Baudet, Pierre; Ricard, Jean-Paul; and Schulthess, Adrian, 4,118,583, Cl. 560-63.000.

Ricci-Bitti, Roberto: *See—*
Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, 4,118,255, Cl. 148-111.000.

Richardson, Carl; Stoddart, Hugh F.; and Wiley, Philip A., to Bedford Engineering Corp. Apparatus for and method of measuring product mass. 4,117,935, Cl. 209-586.000.

Richardson, William Stanley, to Motorola, Inc. Higher density insulated gate field effect circuit. 4,118,642, Cl. 307-238.000.

Richter, Heinrich: *See—*
Neeb, Karl-Heinz; and Richter, Heinrich, 4,118,317, Cl. 210-32.000.

Richter, Rolf, to Xodar Corporation. Aerator containing a ballast charge. 4,118,447, Cl. 261-122.000.

Richter, Sidney B.: *See—*
Hotz, Roger D.; Stach, Leonard J.; and Richter, Sidney B., 4,118,216, Cl. 71-88.000.

Ricke, Cyril T., to Hex Fastener Corporation. Apparatus for shading the seats of a vehicle. 4,118,066, Cl. 297-184.000.

Ricoh Company, Ltd.: *See—*
Koizumi, Yutaka; and Hashimoto, Kenji, 4,118,117, Cl. 355-8.000.
Ogawa, Toshiya; Niki, Akio; Uchimura, Kazuo; and Tsuruoka, Koichi, 4,118,695, Cl. 340-324.0AD.
Tomita, Satoru; Ohori, Tamio; Karasawa, Shuichi; and Ohta, Wasaburo, 4,118,710, Cl. 346-153.000.

Ridley, Richard D.: *See—*
French, Gordon B.; and Ridley, Richard D., 4,118,070, Cl. 299-2.000.

Riebel, Hans-Jochem: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Behrenz, Wolfgang; and Hammann, Ingeborg, 4,118,486, Cl. 424-212.000.

Riehl, Fred, to Robertshaw Control Company. Fuel burner, arrangement and sleeve therefor and methods. 4,118,175, Cl. 431-354.000.

Rienzo, Donald D., to Allan Tackle Manufacturing Co., Inc. Self-balancing tray. 4,117,965, Cl. 224-48.00R.

Rietzel, Christian: *See—*
Voelger, Karl-Dieter; Rietzel, Christian; and Lehmann, Klaus, 4,118,492, Cl. 424-251.000.

Rigbi, Meir; Klausner, Yakir; Lefrancier, Pierre; and Sache, Edgar, to Choay S.A. Derivatives of para-guanidino-L-phenylalanine and methods of preparing them. 4,118,575, Cl. 560-13.000.

Right, Robert W., to General Signal Corporation. Base loop code transmitter. 4,118,694, Cl. 340-293.000.

Riken Keikinzoku Kogyo Kabushiki Kaisha: *See—*
Takahashi, Toshiro; Nagano, Toshihiro; Iguchi, Shozo; Kikuchi, Masaru; Nakamura, Katsuhiko; and Mochizuki, Atsushi, 4,117,703, Cl. 72-38.000.

Rinaldo, Kenneth D., to Fairchild Camera and Instrument Corporation. Pin extender strip for vertically mounting multi-pin electronic devices. 4,118,757, Cl. 361-404.000.

Rinde, James A., to United States of America, Energy. Method of making a cellulose acetate low density microcellular foam. 4,118,449, Cl. 264-28.000.

Risko, John Joseph; and Napoli, Louis Sebastian, to RCA Corporation. Amplitude modulated impatt diode oscillator and a low cost communication system using same. 4,118,598, Cl. 325-26.000.

Ritter, Gerhard: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,117,872, Cl. 140-57.000.

Ritter, Josef: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,117,872, Cl. 140-57.000.

Ritter, Klaus: *See—*
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,117,872, Cl. 140-57.000.

Ritzmann, Horst: *See—*
Mollenkopf, Hans; Ritzmann, Horst; Wurr, Jurgen; Schmits, Heinz-Berbert; Heinemann, Otto; Krutzner, Karl, jun.; and Schossler, Werner, 4,118,176, Cl. 432-14.000.
Weber, Paul; Lankes, Erich; Butschko, Gerhard; Ritzmann, Horst; and Bohm, Peter Wolfgang, 4,118,177, Cl. 432-14.000.

Robert Bosch GmbH: *See—*
Bodig, Bernd; Schmied, Helmut; and Hohne, Gerd, 4,117,818, Cl. 123-148.00E.
Fleischer, Helmut; and Schneider, Erich, 4,117,903, Cl. 180-105.00E.
Leibundgut, Gottfried, 4,118,614, Cl. 200-157.000.
Leibundgut, Gottfried, 4,118,615, Cl. 200-157.000.

Roberts, Charles Sheldon, to Bell Telephone Laboratories, Incorporated. Associative information retrieval. 4,118,788, Cl. 364-900.000.

Roberts Management, Inc.: *See—*
Randon, Donald Gerard, 4,118,030, Cl. 273-96.00R.

Robertshaw Control Company: *See—*
Riehl, Fred, 4,118,175, Cl. 431-354.000.

Robertson, Thomas Alexander. Cooking stand. 4,117,825, Cl. 126-29.000.

Robeson, Terrence R. Collapsible folding rocking chair. 4,118,064, Cl. 297-18.000.

Robin Products Company: *See—*
Bullock, Paul, 4,117,568, Cl. 16-110.00R.

Robinson, Graham: *See—*
Jones, Ivor Wynn; and Robinson, Graham, 4,118,545, Cl. 429-104.000.

Robinson, John William: *See—*
Osburn, James Patrick; and Robinson, John William, 4,117,758, Cl. 84-1.010.

Robinson, Murry C. Separating magnesium and calcium from mineral mixtures containing zinc sulphides. 4,118,458, Cl. 423-109.000.

Robinson, William Henry. Cyclic shear energy absorber. 4,117,637, Cl. 52-167.000.

Roblin Industries, Inc.: *See—*
Celms, Harry, 4,118,044, Cl. 280-33.99F.

Robson, Clive Gilroy: *See—*
Dreve, Nigel Wyndham; Hodson, Peter Robin; and Robson, Clive Gilroy, 4,118,218, Cl. 71-92.000.

Rockwell International Corporation: *See—*
Hamilton, C. Howard; and Ascani, Leonard A., Jr., 4,117,970, Cl. 218-173.00A.
Raleigh, Douglas O.; and Topol, Leo E., 4,118,194, Cl. 422-98.000.

Roeder, George K. Hydraulically actuated pump assembly. 4,118,154, Cl. 417-402.000.

Rohm GmbH: *See—*
Voelger, Karl-Dieter; Rietzel, Christian; and Lehmann, Klaus, 4,118,492, Cl. 424-251.000.

Rohm and Haas Company: *See—*
Miller, George A.; and Chan, Hak-Foon, 4,118,461, Cl. 424-273.00R.

Rohr Industries, Inc.: *See—*
Atkinson, Thomas Carl; and Fay, Clifford C., 4,118,061, Cl. 296-63.000.

Rokadia, Abdullah M.: *See—*
Devona, James E.; and Rokadia, Abdullah M., 4,118,356, Cl. 260-29.6RB.

Roland Corporation: *See—*
Akamatu, Keiji, 4,117,757, Cl. 84-1.010.

Rollo, Charles: *See—*
Perrotta, Anthony; and Rollo, Charles, 4,117,841, Cl. 128-155.000.

Rolls-Royce Limited: *See—*
Newman, Paul; and Sargent, Raymond Fredrick, 4,118,079, Cl. 308-9.000.

Romerswinkel, Heinrich-Wilhelm: *See—*
Gruner, Hans; Terjung, Klaus; Sachse, Wolfgang; and Romerswinkel, Heinrich-Wilhelm, 4,118,018, Cl. 266-275.000.

Rommele, Gunter; and Hagemann, Ruth, to Ciba-Geigy Corporation. Preparation of a stablized papain solution. 4,118,515, Cl. 426-63.000.

Rosenbaum, Georges: *See—*
Vanlerberghe, Guy; and Rosenbaum, Georges, 4,118,423, Cl. 260-584.00A.

Rosenbloom, William J. Electric manicure. 4,117,854, Cl. 132-75.800.

Rosengren, Ake: *See—*
Eriksson, Jan-Christer; Larsson, Rolf; Rosengren, Ake; and Hjelte, Maj-Britt, 4,118,485, Cl. 424-183.000.

Rosey, Richard; Kovatch, George N.; and Simon, Ned H., to Westinghouse Electric Corp. Electrical switchboard apparatus including bus system with individual phase isolation. 4,118,639, Cl. 307-147.000.

Rosin, Erwin August: *See—*
Dombkowsi, Walter Stephen; and Rosin, Erwin August, 4,117,670, Cl. 60-39.28T.

Ross, John: *See—*
Klein, Fritz S.; and Ross, John, 4,118,296, Cl. 204-157.10R.

Rossi, Alfred F. Flexible pouch, forming, filling and sealing machine. 4,117,647, Cl. 53-502.000.

Rossi, Guglielmo: *See—*
Purssell, Robert F.; Bhabra, Avtar S.; and Rossi, Guglielmo, 4,118,610, Cl. 200-67.0DA.

Rotec Industries: *See—*
Oury, Robert F., 4,117,920, Cl. 198-311.000.

Rovin, Herman; Levine, Lawrence J.; Opuszenski, Theodore; Pellicano, Joseph; and Swenson, Alan F., to Automatech Industries, Inc. Automatic, in situ bobbin spool loading. 4,117,789, Cl. 112-181.000.

Row, Deborah. Matrix game apparatus. 4,118,035, Cl. 273-243.000.

Rowe, Edward A., Jr.; and Cawley, William H., to Diamond Shamrock Corporation. Non-flammable solvent phosphatizing compositions yielding non water soluble coatings. 4,118,253, Cl. 148-6.15R.

Rowley, Roger James: *See—*
Dawes, Keith; and Rowley, Roger James, 4,118,367, Cl. 260-42.370.

Ruckl, Siegfried, to Schablonentechnik Kufstein GmbH. Method of producing a perforated metal foil, especially for screen printing. 4,118,288, Cl. 204-11.000.

Rudewick, Charles J.: *See—*
Lagarelli, Carmen J.; and Rudewick, Charles J., 4,117,979, Cl. 239-381.000.

Ruf, Erich; and Loges, Hans, to Th. Goldschmidt AG. Process for producing tin (II) sulfate. 4,118,293, Cl. 204-93.000.

Ruffner, Frederick G.; and Bair, Frank E., to Ruffner, Frederick G. Page model for printing. 4,118,120, Cl. 355-75.000.

Ruiz, Carlos Santiago. Multi-hull self rescuing system. 4,117,795, Cl. 114-68.000.

Runge, Thomas M. Aircraft wing lift augmentation device. 4,117,995, Cl. 244-207.000.

Rupp, Ludwig; and Mayer, Hubert, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Centrifugal disk separation device for a disk clutch. 4,117,919, Cl. 192-103.00A.

Ruppe, Joseph P., Jr., to Bendix Corporation, The. Means for reducing the gap between rotor-backing plate interface during brake depressurization. 4,117,912, Cl. 188-216.000.

Rupprecht, Hans Stephan: *See—*
Horng, Cheng Tzong; Michel, Alwin Earl; Rupprecht, Hans Stephan; and Schwenker, Robert Otto, 4,118,250, Cl. 148-1.500.

Rupprecht, Manfred: *See—*
Klein, Hans-Joachim; Rupprecht, Manfred; Wonneberg, Heinz; Geiger, Julius; and Masa, Gunter, 4,118,127, Cl. 356-200.000.

Rushman, Reginald, to Parks-Cramer (Great Britain) Ltd. Oil mist lubricated textile machine and method. 4,117,869, Cl. 139-1.00R.

Russak, Michael A.: *See—*
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; and Russak, Michael A., 4,118,546, Cl. 429-111.000.
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; Jost, Steven Robert; Reichman, Joseph; and Russak, Michael A., 4,118,547, Cl. 429-111.000.

Russo, Alberto. Oil tank cleaning apparatus. 4,117,564, Cl. 15-1.700.

Rutherford, Kenneth S., to United States Steel Corporation. Fixture for use in positioning the walls of an adjustable continuous-casting mold. 4,117,879, Cl. 164-412.000.

Ruthner Industrieanlagen-Aktiengesellschaft: *See—*
Fuchs, Heribert, 4,117,978, Cl. 239-112.000.

Ryan, Michael J., to United States of America, Energy. Reusable, tamper-indicating seal. 4,118,057, Cl. 292-307.00R.

Rypkema, Jouke N., to Zenith Radio Corporation. Surface wave AFC discriminator with two zero crossings. 4,118,740, Cl. 358-195.000.

S.A.M.P.R.E. S.p.A.: *See—*
Fusaroli, Goffredo, 4,117,572, Cl. 19-244.000.

S.U.S.T.A. S.p.A.: *See—*
Ratti, Mario, 4,117,937, Cl. 211-60.00T.

Sache, Edgar: *See—*
Rigbi, Meir; Klausner, Yakir; Lefrancier, Pierre; and Sache, Edgar, 4,118,575, Cl. 560-13.000.

Sachot, Michel E., to Societe Hure S.A. Machine tools with sliding tool-holding ram. 4,117,762, Cl. 90-11.00F.

Sachse, Wolfgang: *See—*
Gruner, Hans; Terjung, Klaus; Sachse, Wolfgang; and Romerswinkel, Heinrich-Wilhelm, 4,118,018, Cl. 266-275.000.

Sado, Ryoichi; and Tahara, Kazutoki, to Shin-Etsu Polymer Co., Ltd. Interconnectors. 4,118,092, Cl. 339-59.00M.

Saeman, Walter C., to Olin Corporation. Granular calcium hypochlorite by spray graining. 4,118,524, Cl. 427-213.000.

Safir, Sidney Robert: *See—*
Fanshawe, William Joseph; Safir, Sidney Robert; and Crawley, Lantz Stephen, 4,118,393, Cl. 260-326.50B.

Sagaser, Thomas M.; and Mather, Joseph M., to Clark Equipment Company. Hydraulic system for a skid-steer loader. 4,117,899, Cl. 180-6.480.

Sage, Howard M.; and Abromavage, John C., to U-Haul International, Inc. Car top carrier assembly. 4,117,964, Cl. 224-42.10E.

Saint-Gobain Industries: *See—*
Brax, Jean Albert, 4,118,215, Cl. 65-134.000.
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,118,213, Cl. 65-5.000.

Sakurada, Nobuaki: *See—*
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,118,713, Cl. 354-23.00D.
Suzuki, Masayuki; Sakurada, Nobuaki; Ito, Tadashi; Yamamichi, Masayoshi; and Murakami, Hiroyashu, 4,118,716, Cl. 354-38.000.

Sala International AB: *See—*
Bogen, Jan O., 4,118,321, Cl. 210-91.000.

Salle, Robert; and Sillion, Bernard, to Institut Francais du Petrole. Dicarboxylic compounds and polyesters derived therefrom. 4,118,392, Cl. 260-326.00N.

Salva, John P.; Mudzinski, Gregory M.; Mills, John A.; and Dewan, Shashi B., to Firing Circuits Inc. Control circuit for shuttle car. 4,118,658, Cl. 318-257.000.

Sanders Associates, Inc.: *See—*
Topliffe, Roger O., 4,117,729, Cl. 73-516.0LM.

Sandesara, Mahendra D., to Waste Management of Illinois, Inc. Process for disposal of arsenic salts. 4,118,243, Cl. 106-109.000.

Sandow, Jurgen: *See—*
Konig, Wolfgang; Geiger, Rolf; and Sandow, Jurgen, 4,118,483, Cl. 424-177.000.

Sankyo Company Limited: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,118,368, Cl. 260-45.80N.

Sannel, Benjamin H.: *See—*
Burg, John S.; Davidson, Donald M.; McClure, Marvin K.; and Sannel, Benjamin H., 4,117,604, Cl. 34-70.000.

Sannes, Keith N.; and Factor, Arnold, to General Electric Company. Color-stabilized halobisphenol ethylene polycarbonates. 4,118,370, Cl. 260-45.75W.

Sano, Masaru; and Kashima, Koji, to Nittetu Chemical Engineering Ltd.; and Toa Oil Co., Ltd. Treatment of gas containing hydrogen sulfide. 4,118,467, Cl. 423-573.00R.

San Roman, Guillermo A., to Hydrotechnic Corporation. Filtering apparatus for liquids. 4,118,322, Cl. 210-136.000.

Sansui Electric Co., Ltd.: *See—*
Kobayashi, Fumio, 4,118,605, Cl. 179-115.5VC.

Santafe, Carlo: *See—*
Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, 4,118,255, Cl. 148-111.000.

Sargent Industries: *See—*
Cooper, Roy F., 4,118,135, Cl. 403-361.000.

Sargent, Raymond Fredrick: *See—*
Newman, Paul; and Sargent, Raymond Fredrick, 4,118,079, Cl. 308-9.000.

Sarson, Alan Elmer; and Clark, William James Rowley, to Elliott Brothers (London) Limited. Surveillance arrangement including a television system and infrared detector means. 4,118,733, Cl. 358-109.000.

Sato, Masaaki, to Olympus Optical Co., Ltd. Tape end detection release device for tape recorder. 4,118,744, Cl. 360-74.000.

Sato, Naohiko; and Osawa, Keiichi, to Honda Giken Kogyo Kabushiki Kaisha. Auxiliary fuel feed and timing control system for internal combustion engines. 4,117,812, Cl. 123-117.00A.

Sato, Takahisa: *See—*
Suzuki, Hideo; Sato, Takahisa; Kubota, Tatsuo; Osaka, Shigemi; and Komatsu, Shigeru, 4,118,402, Cl. 260-346.750.

Saunders, Charlie H. Locking arrangement for radios or the like. 4,117,700, Cl. 70-58.000.

Saunders, Daniel, to Mining Equipment Division, a division of FMC Corporation. Drill steel guide for a mine drilling machine. 4,117,894, Cl. 173-23.000.

Saurer, Eric; and Laesser, Claude, to Ebauches S.A. Passive electro-optic display cell and method for manufacturing it. 4,118,110, Cl. 350-334.000.

Sawa, Kenneth Bruno: *See—*
Neti, Radhakrishna Murty; and Sawa, Kenneth Bruno, 4,118,193, Cl. 422-94.000.

Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, to Mitsubishi Chemical Industries Limited. Method and apparatus for the measurement of antigens and antibodies. 4,118,192, Cl. 424-12.000.

Scapes, John N., to Gould Inc. Valve structure. 4,118,007, Cl. 251-223.000.

Scarfe, Arthur; and Smith, John Cambridge, to Fletcher Sutcliffe Wild Limited. Mine roof supports. 4,117,687, Cl. 405-292.000.

Schabert, Hans-Peter; Bremer, Hans; and Strickroth, Erich, to Kraftwerk Union Aktiengesellschaft. Steel containment for nuclear reactor installations. 4,118,277, Cl. 176-87.000.

Schablonentechnik Kufstein GmbH: *See—*
Ruckl, Siegfried, 4,118,288, Cl. 204-11.000.

Schad, Robert Dietrich: *See—*
Rees, Herbert; and Schad, Robert Dietrich, 4,118,168, Cl. 425-556.000.

Schadow, Rudolf; and Hinze, Klaus, to ITT Industries, Inc. Electrical snap-action switch. 4,118,609, Cl. 200-67.0DA.

Schaefgen, John Raymond, to Du Pont de Nemours, E. I., and Company. Aromatic copolyester capable of forming an optically anisotropic melt. 4,118,372, Cl. 528-190.000.

Schatz, Klaus Wilhelm: *See—*
Gross, Benjamin; and Schatz, Klaus Wilhelm, 4,118,337, Cl. 252-417.000.
Gross, Benjamin; and Schatz, Klaus Wilhelm, 4,118,338, Cl. 252-417.000.

Schaumann, Peter H. Water walker. 4,117,562, Cl. 9-310.00D.

Schaus, John Joseph, to Whirlpool Corporation. Method of controlling foaming of cabinet insulation. 4,118,451, Cl. 264-46.500.

Scheidl, Franz: *See—*
Haberlein, Harald; Nies, Herbert; and Scheidl, Franz, 4,118,352, Cl. 260-23.0XA.

Schenk, Peter, to Dzus Fastener Co. Inc. Fastener for shipping container. 4,117,928, Cl. 206-320.000.

Scherf, Gerhard Wolfgang Helmut, to Canadian D. A. Stuart Oil Co. Limited. Acetals of glyoxal and terephthaldehyde. 4,118,565, Cl. 544-87.000.

Schering Aktiengesellschaft: *See—*
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, 4,118,488, Cl. 424-238.000.

Schertz, Charles J.; and Wilson, Dennis L., to United States of America, Army. Feed pawl antibounce device. 4,117,760, Cl. 89-33.00C.

Schertz, William W.: *See—*
Graven, Robert M.; Gorski, Anthony J.; Schertz, William W.; and Graae, Johan E. A., 4,118,249, Cl. 136-89.0PC.

Scheuermann, Fanny: *See—*
Reese, Gunter; Kroke, Hermann; and Scheuermann, Fanny, 4,117,853, Cl. 132-7.000.

Schieber, Franz, to C. Conradty Nurnberg GmbH & Co. KG. Carbon electrode and other shaped carbon bodies. 4,118,592, Cl. 13-18.00R.

Schilling, Gunter: *See—*
Lange, Gerhard; and Schilling, Gunter, 4,118,682, Cl. 337-34.000.

Schimmer, Rigobert: *See—*
Oberreuter, Theodor; Schimmer, Rigobert; and Seifert, Wilhelm, 4,118,257, Cl. 148-187.000.

Schipman, Jean-Marie. Refuse container, and refuse compacting and discharging device therefor. 4,117,777, Cl. 100-215.000.

Schiwy, Willy: *See—*
Molls, Hans-Heinz; Schiwy, Willy; Hornle, Reinhold; and Nebeling, Reinhard, 4,118,384, Cl. 260-163.000.

Schlichte, Max, to Siemens Aktiengesellschaft. Switching arrangement for converting analog signals into digital signals and digital signals into analog signals. 4,118,697, Cl. 340-347.00C.

Schlipf, Frank J.: *See—*
Konars, Clement R.; Schlipf, Frank J.; and Quinci, Emanuel, 4,118,025, Cl. 271-273.000.

Schlumberger, Horst Dieter: *See—*
Schnabel, Eugen; Schlumberger, Horst Dieter; Reinhardt, Gerd; Truscheit, Ernst; and Tschesche, Harald, 4,118,481, Cl. 424-177.000.

Schlumberger Technology Corporation: *See—*
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Schmelzer Corporation: *See—*
LaVene, Leon F., 4,117,708, Cl. 72-324.000.

Schmid, Wehrhart: *See—*
Hadamovsky, Eugen; Hoppe, Wolfgang; Overhausen, Hans-Walter; Piotrowski, Bernhard; Schmid, Wehrhart; Schreiber, Georg; and Schroeder, Heinz, 4,118,313, Cl. 560-78.000.

Schmidt, Donald L.: *See—*
Broxterman, William E.; Urchick, Demetrius; Schmidt, Donald L.; and Hoornstra, Clayton W., 4,118,297, Cl. 204-159.110.

Schmidt, Gustav A.: *See—*
Douek, Maurice; Schmidt, Gustav A.; Malofsky, Bernard M.; and Hauser, Martin, 4,118,442, Cl. 260-885.000.

Schmidt, Henning Falck. Lift mechanism with platform locking device. 4,118,011, Cl. 254-124.000.

Schmidt, Klaus: *See—*
Brose, Horst; Depping, Karl Dieter; Hentschel, Dietrich; Kostevc, Bernard; and Schmidt, Klaus, 4,118,366, Cl. 260-40.00R.

Schmidtberger, Rudolf, to Behringwerke Aktiengesellschaft. Amidated immune globulins and process for preparing them. 4,118,379, Cl. 260-112.00B.

Schmied, Helmut: *See—*
Bodig, Bernd; Schmied, Helmut; and Hohne, Gerd, 4,117,818, Cl. 123-148.00E.

Schmits, Heinz-Berbert: *See—*
Mollenkopf, Hans; Ritzmann, Horst; Wurr, Jurgen; Schmits, Heinz-Berbert; Heinemann, Otto; Krutzner, Karl, jun.; and Schossler, Werner, 4,118,176, Cl. 432-14.000.

Schmitt-Thomas, Karlheinz G.; Lipp, Alfred; and Schwetz, Karl, to Electroschmelzwerk Kempten GmbH. Process for the production of oxygen-free copper casting and moldings. 4,118,256, Cl. 148-160.000.

Schmitt, Wilhelm: *See—*
Schulte, Siegfried; and Schmitt, Wilhelm, 4,118,644, Cl. 310-42.000.

Schnabel, Eugen; Schlumberger, Horst Dieter; Reinhardt, Gerd; Truscheit, Ernst; and Tschesche, Harald, to Bayer Aktiengesellschaft. Deamino derivatives of the kallikrein-trypsin inhibitor. 4,118,481, Cl. 424-177.000.

Schneider, Erich: *See—*
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Schneider, Max: *See—*
Godau, Eckhardt; and Schneider, Max, 4,118,183, Cl. 8-18.00R.

Schnitzius, Klaus, to Stabilus GmbH. Pneumatic spring. 4,118,131, Cl. 403-24.000.

Schnurrenberger, Hermann, to Franz Volkl oHG. Ski having a three-dimensional running surface. 4,118,050, Cl. 280-604.000.

Scholes, Addison B., to Ball Corporation. Pre-primed fuel and method and apparatus for its manufacture. 4,118,202, Cl. 44-6.000.

Schone, Armin: *See—*
Friedel, Franz Lutz; Schone, Armin; and Reuter, Franz Gottfried, 4,118,410, Cl. 260-453.0AM.

Schossler, Werner: *See—*
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Schreiber, Georg: *See—*
Hadamovsky, Eugen; Hoppe, Wolfgang; Overhausen, Hans-Walter; Piotrowski, Bernhard; Schmid, Wehrhart; Schreiber, Georg; and Schroeder, Heinz, 4,118,313, Cl. 560-78.000.

Schroeder, Heinz: *See—*
Hadamovsky, Eugen; Hoppe, Wolfgang; Overhausen, Hans-Walter; Piotrowski, Bernhard; Schmid, Wehrhart; Schreiber, Georg; and Schroeder, Heinz, 4,118,313, Cl. 560-78.000.

Schuller, Joris Maarten: *See—*
Pfahnl, Arnold; and Schuller, Joris Maarten, 4,118,595, Cl. 174-68.500.

Schulte Elektrotechnik KG, Firma: *See—*
Schulte, Siegfried; and Schmitt, Wilhelm, 4,118,644, Cl. 310-42.000.

Schulte, Siegfried; and Schmitt, Wilhelm, to Schulte Elektrotechnik KG, Firma. Electrical machinery. 4,118,644, Cl. 310-42.000.

Schulthess, Adrian: *See—*
Baudet, Pierre; Ricard, Jean-Paul; and Schulthess, Adrian, 4,118,583, Cl. 560-63.000.

Schulze, Heinz: *See—*
Hahn, Werner; and Schulze, Heinz, 4,118,718, Cl. 354-55.000.

Schuster, Hubert: *See—*
Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,118,466, Cl. 423-415.00P.

Schutz, Karl Heinz, to SKF Kugellagerfabriken GmbH. Measuring friction bearings. 4,117,719, Cl. 73-141.00A.

Schwarz, Gerhard, to Microtherm GmbH, Firma. Resettable thermal safety switch. 4,118,683, Cl. 337-91.000.

Schwenker, Robert Otto: *See—*
Horng, Cheng Tzong; Michel, Alwin Earl; Rupprecht, Hans Stephan; and Schwenker, Robert Otto, 4,118,250, Cl. 148-1.500.

Schwetz, Karl: *See—*
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Schwuger, Milan Johann: *See—*
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SCM Corporation: *See—*
Red, Jerry F. P.; and Ilagan, Juan B., Jr., 4,118,407, Cl. 260-412.500.

Scott, Marion L.: *See—*
Rahn, John P.; and Scott, Marion L., 4,118,675, Cl. 331-94.50C.

Scott, Samuel Clyde. Concrete beam form. 4,118,004, Cl. 249-50.000.

Scott, Warner Curtis, to Texas Instruments Incorporated. Internally supported flat tube display. 4,118,650, Cl. 313-422.000.

Scott, Warner Curtis, to Texas Instruments Incorporated. Internally supported flat tube display. 4,118,651, Cl. 313-422.000.

Searle, Robert J. G.: *See—*
Davis, Royston H.; and Searle, Robert J. G., 4,118,510, Cl. 424-305.000.

Secemia: *See—*
Pelletier, Rene Charles, 4,117,954, Cl. 222-134.000.

Seeger, Richard E.: *See—*
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Seifert, Wilhelm: *See—*
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Seiko Seiki Kabushiki Kaisha: *See—*
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Seiko Time Corporation: *See—*
Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., 4,118,048, Cl. 280-47.350.

Seisan Kaihatsu Kagaku Kenkyusho: *See—*
Yoshida, Fumitake, 4,118,314, Cl. 210-22.00C.

Sekhon, Kalwant S.: *See—*
Nelson, Lloyd A.; and Sekhon, Kalwant S., 4,118,756, Cl. 361-385.000.

Seki, Masao: *See—*
Yamada, Yasuo; and Seki, Masao, 4,118,104, Cl. 350-3.600.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Shiohara, Tomoo; Miyamoto, Minoru; and Tamaki, Nobuo, 4,118,227, Cl. 106-306.000.

Seko, Naomi; Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Imamura, Kazuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Redox uranium isotope separation using anion exchangers. 4,118,457, Cl. 423-7.000.

Sellors, Thomas J., to Potlatch Corporation. Multi-celled carton with self-locking feature. 4,117,972, Cl. 229-28.00R.

Selwitz, Charles M.; and Thayer, Helen I., to Gulf Research & Development Company. Paraffin wax composition. 4,118,244, Cl. 106-270.000.

Semler, Eleonore Josephine: *See—*
Semler, Oskar A., 4,117,556, Cl. 4-325.000.

Semler, Oskar A., to Semler, Eleonore Josephine. Flush water conserver. 4,117,556, Cl. 4-325.000.

Semmler, Hans-Joachim; and Felix, Bernd, to Hoechst Aktiengesellschaft. Process for the preparation of perfluoroethyl iodide. 4,118,290, Cl. 204-59.00F.

Sentinel Distributors, Inc.: *See—*
Mills, J. T., 4,117,822, Cl. 123-198.0DB.

Septier, Jacqueline. Method for making a tennis, badminton or similar racket net, net obtained by this method and racket comprising this net. 4,118,029, Cl. 273-73.00D.

Serkez, Alvin A. Handbag holder. 4,118,001, Cl. 248-308.000.

Service Ideas, Inc.: *See—*
Collins, Harry F., 4,117,948, Cl. 220-410.000.

Sesser, George L.: *See—*
Olsen, James A.; Butler, Gene R.; and Sesser, George L., 4,117,942, Cl. 214-6.00B.

Seufert, Wilhelm: *See—*
Gnadig, Gerhard; and Seufert, Wilhelm, 4,117,583, Cl. 29-447.000.

Seugnet, Monique, to Colgate Palmolive Company. Fabric softener and anti-static compositions. 4,118,327, Cl. 252-8.800.

Shaffer, Howard R., to I-T-E Imperial Corporation. Interlock means for switch enclosure. 4,118,607, Cl. 200-50.00A.

Shaffer, Howard R.: *See—*
Kussy, Frank W.; and Shaffer, Howard R., 4,118,608, Cl. 200-56.00R.

Shaikevich, Stanislava Stanislavovna: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Shakiba, Hosein M., to Lebidine, Samuel, a part interest. Unidirectional seal for flow passages. 4,118,173, Cl. 431-202.000.

Shanley, Robert Loren, II, to RCA Corporation. Set-up arrangement for a color television receiver. 4,118,729, Cl. 358-10.000.

Shaw, David G.; and Shedigian, Vandos, to General Electric Company. Method of impregnating a capacitor. 4,117,579, Cl. 29-25.420.

Shedigian, Vandos: *See—*
Shaw, David G.; and Shedigian, Vandos, 4,117,579, Cl. 29-25.420.

Shell Oil Company: *See—*
Anderson, Martin; and Brinnand, Antony G., 4,118,489, Cl. 424-246.000.
Beardmore, James W.; and Goehring, Daniel, 4,118,203, Cl. 44-7.500.
Carr, John B., 4,118,507, Cl. 424-278.000.
Davis, Royston H.; and Searle, Robert J. G., 4,118,510, Cl. 424-305.000.
Harris, Howard A., 4,118,385, Cl. 260-175.000.
Joustra, Annie H.; La Haye, Teunis P.; and Kesselaar, Fernand H., 4,118,428, Cl. 260-663.000.
Wood, Derek A., 4,118,413, Cl. 260-465.00D.

Sheller-Globe Corporation: *See—*
Byrn, James H., 4,118,455, Cl. 264-129.000.

Shemper, Leonid Isaakovich: *See—*
Koshelenko, Gennady Petrovich; Pasynkov, Rafail Moiseevich; Sin, Mikhail Alexandrovich; and Shemper, Leonid Isaakovich, 4,117,770, Cl. 92-57.000.

Sherman, Irving R. Variable aerodynamic compression flaps. 4,117,996, Cl. 244-212.000.

Sherstinsky, Semen Markovich: *See—*
Kopelev, Fridrikh Lvovich; Kossek, Valentin Vladimirovich; Dubinenko, Askold Fedorovich; and Sherstinsky, Semen Markovich, 4,117,750, Cl. 82-30.000.

Shibata, Toshihiro: *See—*
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,118,369, Cl. 260-45.80N.

Shigeta, Masayuki: *See—*
Nara, Toshihiko; Mitsui, Norihiko; and Shigeta, Masayuki, 4,117,908, Cl. 187-20.000.

Shikoky Kaken Kogyo Kabushiki Kaisha: *See—*
Nakamura, Ryuji; and Motogi, Hideo, 4,118,450, Cl. 264-43.000.

Shima, Yoshiharu, to Nissei Plastics Industrial Co., Ltd. Injection molded ski and method for producing the same. 4,118,051, Cl. 280-610.000.

Shimada, Minoru: *See—*
Hasegawa, Yoshio; Hiroyama, Koji; Shimada, Minoru; and Kawasaki, Haruhiko, 4,117,790, Cl. 112-205.000.

Shimanuki, Kazuo: *See—*
Watanabe, Takeshi; Nishimaki, Kazuo; Shimanuki, Kazuo; Mita, Katuo; and Konno, Satoru, 4,118,210, Cl. 65-2.000.

Shimizu, Eisaku, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece calendar circuit. 4,117,657, Cl. 58-4.00A.

Shimizu, Toyoaki, to Nikkey Co., Ltd. Door closer. 4,117,567, Cl. 16-50.000.

Shimoda, Misao: *See—*
Hanaoka, Naohiro; and Shimoda, Misao, 4,118,747, Cl. 360-121.000.

Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi; and Tahara, Kazutoki, 4,118,092, Cl. 339-59.00M.

Shinjo, Masayoshi: *See—*
Horiuchi, Norio; Kai, Shin-ichi-ro; and Shinjo, Masayoshi, 4,118,235, Cl. 106-38.220.

Shinoda, Nobuhiko: *See—*
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,118,713, Cl. 354-23.00D.

Shiohara, Tomoo; Miyamoto, Minoru; and Tamaki, Nobuo, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process for producing dicalcium silicate power. 4,118,227, Cl. 106-306.000.

Shirak, Michael. Wick lighter with wax holder. 4,118,174, Cl. 431-289.000.

Shishido, Toshimasa; and Ninomiya, Mitsuaki, to Kabushiki Kaisha Keihinseiki Seisakusho; and Honda Giken Kogyo Kabushiki Kaisha. Sliding throttle valve type carburetor. 4,118,445, Cl. 261-44.00B.

Shoemaker, Paul D.: *See—*
Sidebotham, Norman C.; Shoemaker, Paul D.; and Young, Clarence W., III, 4,118,187, Cl. 8-102.000.

Shono, Tetsuji: *See—*
Kurei, Hiroshi; and Shono, Tetsuji, 4,118,725, Cl. 354-289.000.

Shoupp, William E.; Bratkowski, Walter V.; and Boomgaard, Dirk J., to Westinghouse Electric Corp. Automatic film-exposure control system and electrical power supply means for a photographic camera. 4,118,717, Cl. 354-43.000.

Showa Denko K.K.: *See—*
Ishiguro, Susumu; Komuro, Masuhiro; and Nakamura, Shigeru, 4,118,347, Cl. 521-53.000.

Shpotakovsky, Dmitry Fedorovich: *See—*
Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Shurcliff, William A., to Broad Corporation. Process and apparatus for heat exchange. 4,117,882, Cl. 165-104.00S.

Shwartzman, Stanley; and Mayer, Alfred, to RCA Corporation. Transducer assembly for megasonic cleaning. 4,118,649, Cl. 310-337.000.

Sibley, Henry C.: *See—*
Auer, John H., Jr.; and Sibley, Henry C., 4,118,750, Cl. 361-182.000.

Sidebotham, Norman C.; Shoemaker, Paul D.; and Young, Clarence W., III, to Monsanto Company. Fabric dye stripping, separation and recovery of polyester. 4,118,187, Cl. 8-102.000.

Siekierski, Wladyslaw; and Crane, Richard A., to British Communications Corporation Limited. Electrical circuit arrangements particularly though not exclusively for electrical battery charging systems. 4,118,661, Cl. 320-40.000.

Siemens Aktiengesellschaft: *See—*
Aulich, Hubert; and Grabmaier, Josef, 4,118,212, Cl. 65-3.00A.
Binder, Hans, 4,118,230, Cl. 96-27.00R.
Lange, Gerhard; and Schilling, Gunter, 4,118,682, Cl. 337-34.000.
Mollenhoff, Klaus, 4,118,684, Cl. 337-296.000.
Murrmann, Helmuth; and Wittenzellner, Ernst, 4,118,251, Cl. 148-1.500.
Schlichte, Max, 4,118,697, Cl. 340-347.00C.

Siemens-Elema AB: *See—*
Erikson, Uno Eugen, 4,117,836, Cl. 128-2.05R.

Sig Schweizerische Industrie-Gesellschaft: *See—*
Egli, Alwin, 4,117,649, Cl. 53-558.000.

Silagy, Richard J.: *See—*
Norton, James F.; and Silagy, Richard J., 4,118,006, Cl. 251-149.600.

Silberschlag, Russell Earl, to Borg-Warner Corporation. Wedging centrifugal clutch with torque limiter. 4,117,918, Cl. 192-103.00B.

Silence, William L.: *See—*
Acuncius, Dennis S.; Herchenroeder, Robert Blanchard; Kirchner, Russell W.; and Silence, William L., 4,118,223, Cl. 75-171.000.

Sillion, Bernard: *See—*
Salle, Robert; and Sillion, Bernard, 4,118,392, Cl. 260-326.00N.

Silver, Frank M.; and Bach, Hartwig C., to Monsanto Company. Preparation of oxadiazole copolymer solution from scrap copolymer. 4,118,358, Cl. 260-30.80R.

Simon, Frank N., to Honeywell Inc. Densitometer apparatus. 4,117,716, Cl. 73-32.00A.

Simon, Ned H.: *See—*
Rosey, Richard; Kovatch, George N.; and Simon, Ned H., 4,118,639, Cl. 307-147.000.

Simonsen, John; Gibson, Bruce Douglas; and Gruner, Heinz Walter, to Sybron Corporation. Electric measuring device having a small-bore liquid container with improved electrode sealing means. 4,117,720, Cl. 73-194.0EM.

Simpson, Homer L., to United States of America, Navy. Holographic signature processor. 4,118,685, Cl. 340-146.30P.

Simpson, Robert Emmerson, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Protective clothing. 4,117,552, Cl. 2-2.10A.

Sims, Ruth E. Security system for a building. 4,118,691, Cl. 222-3.000.

Sin, Mikhail Alexandrovich: *See—*
Koshelenko, Gennady Petrovich; Pasynkov, Rafail Moiseevich; Sin, Mikhail Alexandrovich; and Shemper, Leonid Isaakovich, 4,117,770, Cl. 92-57.000.

Singer Company, The: *See—*
Current, Wayne A.; Genge, Bruce I.; Hurme, Herbert J.; and Zocher, Josef, 4,117,791, Cl. 112-222.000.

Singh, Baldev: *See—*
Lesher, George Y.; and Singh, Baldev, 4,118,571, Cl. 544-319.000.

Singh, Shanker: *See—*
Levine, Samuel R.; Singh, Shanker; and Weinberger, Arnold, 4,118,786, Cl. 364-783.000.

Singh, Shri N.: *See—*
Golas, Eugene A.; and Singh, Shri N., 4,117,959, Cl. 222-590.000.

Six, Franz: *See—*
Brabetz, Hartmut; Kemenater, Christof; Six, Franz; and Kaiser, Wilhelm, 4,118,357, Cl. 260-29.6WA.

Sizelove, Cary Leon: *See—*
Dietrich, William John, Sr.; and Sizelove, Cary Leon, 4,117,892, Cl. 172-311.000.

Sjogren, Charles Norman, to Global Marine, Inc. Ice melting system and method. 4,117,794, Cl. 114-40.000.

Skaife, Margaret R.: *See—*
Skaife, William, 4,117,685, Cl. 405-36.000.

Skaife, William, to Skaife, Margaret R. Method and means for irrigating soil and growing plants having varying water requirements. 4,117,685, Cl. 405-36.000.

Skelly, Peter T.: *See—*
Proctor, Darryl F.; Skelly, Peter T.; and Cole, Darrell D., 4,118,597, Cl. 179-18.0FA.

SKF Industries, Inc.: *See—*
Kregler, Helmuth; and Hillmann, Reinhard, 4,118,080, Cl. 308-187.100.

SKF Kugellagerfabriken GmbH: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,118,078, Cl. 308-6.00C.
Schutz, Karl Heinz, 4,117,719, Cl. 73-141.00A.

Skinner, James L.: *See—*
Myers, Gary A.; Abdul-Rahman, Yahia A. K.; and Skinner, James L., 4,118,309, Cl. 208-11.00R.

Skorianetz, Werner; and Ohloff, Gunther, to Firmenich, S.A. Tricyclo[6.2.1.$0^{2,7}$]undec-9-en-3-one perfume composition. 4,118,343, Cl. 252-522.000.

Skowronski, Michael J.: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,118,533, Cl. 428-297.000.

Slagle, Charles Wilmer: *See—*
Welder, Gerald Elvin; Lang, Edward Russell; and Slagle, Charles Wilmer, 4,118,318, Cl. 210-58.000.

Sleeth, Robert S.: *See—*
Monticelli, Dennis M.; and Sleeth, Robert S., 4,118,621, Cl. 250-214.00A.

Slingerland, Henry H., Jr. Rotatable stand. 4,117,627, Cl. 47-39.000.

Slocombe, Robert J.: *See—*
Fields, Joseph E.; and Slocombe, Robert J., 4,118,554, Cl. 526-15.000.

Slonczewski, John Casimir: *See—*
Argyle, Bernell Edwin; Dekker, Pieter; and Slonczewski, John Casimir, 4,118,793, Cl. 365-30.000.

Slywka, Michael, to Gibson-Homans Company, The. Asbestos delumper. 4,117,982, Cl. 241-51.000.

Small, Marvin: *See—*
Spitzer, Joseph George; Small, Marvin; Osipow, Lloyd I.; and Marra, Dorothea C., 4,117,958, Cl. 222-402.180.

Smetanjuk, Vladimir Ivanovich: *See—*
Kabanov, Viktor Alexandrovich; Martynova, Marina Alexandrovna; Pluzhnov, Stanislav Konstantinovich; and Smetanjuk, Vladimir Ivanovich, 4,118,432, Cl. 260-683.15D.

Smith, Arnold Ray, to Bell Telephone Laboratories, Incorporated. Apparatus for wiring electrical cabinets. 4,117,585, Cl. 29-566.300.

Smith, Colin: *See—*
Stephenson, Leslie; and Smith, Colin, 4,118,499, Cl. 424-267.000.

Smith, Harry A., to Dow Chemical Company, The. Halogenated diphenyl ether solvents for crystalline polymers. 4,118,363, Cl. 260-33.20R.

Smith, Herman W., to Upjohn Company, The. 5-Oxa-13,14-didehydro-PGF, compounds. 4,118,416, Cl. 562-503.000.

Smith International, Inc.: *See—*
Ward, Howard; and Tschirky, John, 4,117,895, Cl. 175-53.000.

Smith, John Cambridge: *See—*
Scarfe, Arthur; and Smith, John Cambridge, 4,117,687, Cl. 405-292.000.

Smith, Kenneth E., to Phillips Petroleum Company. 2-For-1 twister equipped with antiwrapping members. 4,117,655, Cl. 57-58.830.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham John; Ganellin, Charon Robin; and Young, Rodney Christopher, 4,118,496, Cl. 424-263.000.
Durant, Graham John; Ganellin, Charon Robin; and Young, Rodney Christopher, 4,118,502, Cl. 424-273.00R.

Smith, Lawrence S.: *See—*
Paduch, Stanley R.; and Smith, Lawrence S., 4,117,765, Cl. 91-361.000.

Smith, Michael J.: *See—*
Przybyla, Franciszek J.; and Smith, Michael J., 4,118,544, Cl. 429-27.000.

Smith, Otto J. M. Solar collector system. 4,117,682, Cl. 60-641.000.

Smith, Richard W., to X. S. Smith, Inc. Plastic covered gutter connected greenhouse building structure. 4,117,636, Cl. 52-13.000.

Smith, Robert C. Culture and growth system for epiphytic plants. 4,117,628, Cl. 47-59.000.

Smith, Ronald H., to Solergy, Inc. Continuous loop shape memory effect heat engine. 4,117,680, Cl. 60-527.000.

Smith, Sanford Byrom, to Du Pont de Nemours, E. I., and Company.

Solutions of azo dyes derived from 4-4-diamino-2,2-stilbenedisulfonic acid. 4,118,182, Cl. 8-7.000.
Smith, Walton J. High vacuum freeze-drying. 4,117,603, Cl. 34-5.000.
SmithKline Corporation: *See—*
Berges, David A., 4,118,490, Cl. 424-246.000.
Berges, David A., 4,118,491, Cl. 424-246.000.
Brenner, L. Martin; and Loev, Bernard, 4,118,567, Cl. 544-131.000.
Smorzaniuk, Adam: *See—*
O'Neil, Charles P.; Smorzaniuk, Adam; and Young, James O., 4,118,005, Cl. 251-75.000.
Snow Brand Milk Products Co. Ltd.: *See—*
Niki, Hiroshi; Deya, Eiki; Doi, Toru; Igarashi, Seiichiro; and Hayashi, Hiromichi, 4,118,517, Cl. 426-271.000.
Snyder, John M., to Snyder, John M.; Steinberg, Bernard J.; and Halle, Edward. Slidable suitcase handle. 4,117,914, Cl. 190-58.00R.
Societa Anonima Castelli s.a.s. Di C. Castelli & C.: *See—*
Piretti, Giancarlo, 4,117,784, Cl. 108-150.000.
Societe Anonyme D.B.A.: *See—*
Carre, Jean-Jacques, 4,118,077, Cl. 303-6.00C.
Kervagoret, Gilbert, 4,117,766, Cl. 91-457.000.
Societe Anonyme Francaise du Ferodo: *See—*
Neveux, Rene Elie, 4,118,053, Cl. 280-747.000.
Societe Chauvin Arnoux: *See—*
Arnoux, Daniel, 4,118,787, Cl. 364-842.000.
Societe Coil Protection Service: *See—*
Nakache, Robert; and Lequeux, Christian, 4,117,704, Cl. 72-83.000.
Societe d'Assistance Technique pour Produits Nestle, S.A.: *See—*
Cazenave, Paul, 4,118,521, Cl. 426-651.000.
Societe de Recherches et de Promotion d'Activities Nouvelles Acno: *See—*
Tavernier, Jean; and Henaut, Eugene, 4,117,599, Cl. 33-77.000.
Societe de Vente de l'Aluminium Pechiney: *See—*
Cimetiere, Louis; and Gonda, Richard, 4,117,880, Cl. 164-433.000.
Societe Generale de Constructions Electriques et Mecaniques Alsthom: *See—*
Gillet, Roger; and Allegre, Jean, 4,118,648, Cl. 310-269.000.
Societe Hure S.A.: *See—*
Sachot, Michel E., 4,117,762, Cl. 90-11.00F.
Societe Lignes Telegraphiques et Telephoniques: *See—*
Arnaud, Maurice, 4,118,594, Cl. 350-96.230.
Societe Nationale Elf Aquitaine (Production): *See—*
Fournie, Rene, 4,117,693, Cl. 405-171.000.
Sokolow, Nickolas N., to Beloit Corporation. Multi-port valved nozzle for co-injection molding. 4,117,955, Cl. 222-144.500.
Solergy, Inc.: *See—*
Smith, Ronald H., 4,117,680, Cl. 60-527.000.
Solt, Paul E., to Fuller Company. Pulsed air activated conveyor and system. 4,118,074, Cl. 302-26.000.
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, to Sankyo Company Limited. Synthetic polymer stabilizers. 4,118,368, Cl. 260-45.80N.
Sony Corporation: *See—*
Okada, Hitoshi; and Naruse, Yohsuke, 4,118,736, Cl. 358-128.000.
Sorter, James A.: *See—*
Wilburn, Everett R.; and Sorter, James A., 4,117,774, Cl. 99-568.000.
Souriau & Cie: *See—*
Obeissart, Albert, 4,118,093, Cl. 339-75.00M.
Spacek, Karel: *See—*
Johansson, Jan-Olof; Korpela, Heikki; and Spacek, Karel, 4,117,754, Cl. 83-307.200.
Speakman Company: *See—*
Lagarelli, Carmen J.; and Rudewick, Charles J., 4,117,979, Cl. 239-381.000.
Specht, Paul B., to International Telephone and Telegraph Corporation. Vented window assembly for automotive vehicles. 4,117,772, Cl. 98-2.000.
Specht, Steven J., to Olin Corporation. Method of renewing a porous diaphragm having reduced permeability to alkali metal chloride brines. 4,118,308, Cl. 204-296.000.
Spence-Bate, Harry Arthur Hele; and Wilson, Michael Edwin, to Spence-Bate, Harry Arthur Hele. Editors for microfiche cameras. 4,118,123, Cl. 355-78.000.
Sperry Rand Corporation: *See—*
Olsen, James A.; Butler, Gene R.; and Sesser, George L., 4,117,942, Cl. 214-6.00B.
Spies, Johann; and Wohrl, Alfons, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Sensor system for releasing passive safety apparatus in car crashes. 4,117,730, Cl. 73-517.00R.
Spiralux Limited: *See—*
Forester, James, 4,117,710, Cl. 72-391.000.
Spitzer, Joseph George; Small, Marvin; Osipow, Lloyd I.; and Marra, Dorothea C. Vapor tap valve for aerosol containers used with flammable propellants. 4,117,958, Cl. 222-402.180.
Spohn, Daniel M., Jr. Attachment for a rotary drive machine. 4,118,141, Cl. 408-90.000.
Spranger, Douglas M.; Brookes, Malcolm J.; and Mulhauser, Paul J., to Seiko Time Corporation. Wheeled sample case. 4,118,048, Cl. 280-47.350.
Spray, Claude. Floating offshore drilling platform. 4,117,691, Cl. 405-205.000.
Springer, Hartmut: *See—*
Feess, Erich; Springer, Hartmut; and Gronen, Willy, 4,118,186, Cl. 8-49.000.
Squitieri, Vincent: *See—*
Kuist, Charles H.; Squitieri, Vincent; and Seeger, Richard E., 4,118,102, Cl. 339-17.00F.
Stabilus GmbH: *See—*
Schnitzius, Klaus, 4,118,131, Cl. 403-24.000.
Stach, Heinrich: *See—*
Hodzic, Alija; Haferkamp, Dirk; Stach, Heinrich; and Paetz, Eike, 4,118,276, Cl. 176-60.000.
Stach, Leonard J.: *See—*
Hotz, Roger D.; Stach, Leonard J.; and Richter, Sidney B., 4,118,216, Cl. 71-88.000.
Stahl, Karl Erik. Loudspeaker lower bass response using negative resistance and impedance loading. 4,118,600, Cl. 179-1.00D.
Stahl, William F., to Westinghouse Electric Corp. Water-cooled turbine blade. 4,118,145, Cl. 416-96.00R.
Standard Oil Company (Indiana): *See—*
Honaker, Donald E., 4,117,886, Cl. 166-259.000.
Stanley, Harry Eugene, to Du Pont de Nemours, E. I., and Company. Crimped bicomponent-filament yarn with randomly reversing helical filament twist. 4,118,534, Cl. 428-370.000.
Stannow, Jorgen Christian; Kjeldsen, Kjeld; Tankred, Hans Jurgen; and Madsen, Per Johan, to Danfoss A/S. Encapsulated motor compressor for refrigerators. 4,118,153, Cl. 417-363.000.
Staples, John L.: *See—*
Charles, Ronald A.; Jones, Paul W.; Staples, John L.; and Wiegner, Joseph R., 4,118,280, Cl. 195-127.000.
Star Seimitsu Kabushiki Kaisha: *See—*
Matsuura, Haruo; and Kawahara, Kiyoshi, 4,118,745, Cl. 360-96.000.
Stark, Josef: *See—*
Bonacker, Ludwig; and Stark, Josef, 4,118,349, Cl. 260-8.000.
Starr, Carrol Dean: *See—*
Wang, Teh Po; and Starr, Carrol Dean, 4,118,224, Cl. 75-171.000.
Stauffer Chemical Company: *See—*
Fancher, Llewellyn, 4,118,576, Cl. 560-29.000.
Jin, Jung Il; and Kraft, Paul, 4,118,440, Cl. 260-873.000.
Via, Francis A., 4,118,298, Cl. 204-159.230.
Stauffer, Eric. Release device fo deadfall traps. 4,117,620, Cl. 43-77.000.
Stauner, Thomas: *See—*
Piller, Bernhard; Lenoir, John; Froehlich, Alfred; Stauner, Thomas; and Tschopp, Paul, 4,118,232, Cl. 96-99.000.
Steckelberg, Willi; Panke, Hans Ludwig; May, Adolf; and Bucking, Hans-Walter, to Hoechst Aktiengesellschaft. Fabric softeners. 4,118,324, Cl. 252-8.900.
Steel City Corporation, The: *See—*
Fibus, C. Kenneth, 4,118,085, Cl. 312-245.000.
Steel, Robert R.: *See—*
Nickerson, James H. D.; and Steel, Robert R., 4,117,885, Cl. 165-176.000.
Steele, Robert L.: *See—*
Braund, Darwin G.; Dolge, Kendall L.; Goings, Richard L.; and Steele, Robert L., 4,118,513, Cl. 426-2.000.
Steenson, Thomas William; and Paton, W. Donald, to Butler Manufacturing Company. Reinforced insulated concrete building panel. 4,117,639, Cl. 52-223.00R.
Stein, Philip C. Permanent automatic rotor balancer for shafts operating above critical speed. 4,117,742, Cl. 74-573.00R.
Steinberg, Bernard J.: *See—*
Snyder, John M., 4,117,914, Cl. 190-58.00R.
Stelben, John J.: *See—*
Calvi, Salvatore J.; and Stelben, John J., 4,118,178, Cl. 432-35.000.
Stellmach, Bruno. Method and device for the coating of tablets. 4,118,522, Cl. 427-3.000.
Stephenson, Leslie; and Smith, Colin, to Glaxo Laboratories Limited. Anti-anxiety and anti-parkinsonian 1-aminoalkyl-2-endo-chloro-7,7-dimethylnorbornanes. 4,118,499, Cl. 424-267.000.
Sterling Drug Inc.: *See—*
Lesher, George Y., 4,118,557, Cl. 542-420.000.
Lesher, George Y.; and Singh, Baldev, 4,118,571, Cl. 544-319.000.
Stevenson, Curtis A. Spring tie fishing sinker. 4,117,619, Cl. 43-43.100.
Stillman, Neil W.: *See—*
Kidon, William E.; and Stillman, Neil W., 4,117,560, Cl. 4-321.000.
Stoddart, Hugh F.: *See—*
Richardson, Carl; Stoddart, Hugh F.; and Wiley, Philip A., 4,117,935, Cl. 209-586.000.
Stoelker, Charles V.: *See—*
Williams, Glenn L., 4,118,480, Cl. 424-131.000.
Stork Brabant B.V.: *See—*
Vertegaal, Jacobus Gerardus, 4,117,779, Cl. 101-120.000.
Stots & Co. AG: *See—*
Koula, Zdenek; Nirk, Peter; and Wullschleger, Hans, 4,117,799, Cl. 118-6.000.
Strain, Patrick J. Double sectioned tank. 4,117,796, Cl. 114-74.00R.
Stransky, Werner Theo: *See—*
Bestmann, Hans Jurgen; Stransky, Werner Theo; and Vostrowsky, Otto, 4,118,406, Cl. 260-410.90R.
Stratton, Richard O.: *See—*
Benedyk, Joseph C.; and Stratton, Richard O., 4,118,530, Cl. 428-92.000.
Strayer, Roy E., Jr., to United States of America, Army. r.f. Network antenna analyzer employing sampling techniques and having remotely located sampling probes. 4,118,668, Cl. 325-67.000.
Strecker, Helmut; Kasmarker, Reinhard; and Kloss, Gerhard, to Hoechst Aktiengesellschaft. Technetium-99m-labelled diagnostic agent for kidney scanning and process for its manufacture. 4,118,468, Cl. 424-1.000.

Streinstrasser, Ralf: *See—*
Krause, Joachim; Streinstrasser, Ralf; Pohl, Ludwig; Del Pino, Fernando; and Weber, Georg, 4,118,335, Cl. 252-299.000.
Strickroth, Erich: *See—*
Schabert, Hans-Peter; Bremer, Hans; and Strickroth, Erich, 4,118,277, Cl. 176-87.000.
Stroh, Thomas L.: *See—*
Lund, Arnold S.; and Stroh, Thomas L., 4,118,167, Cl. 425-463.000.
Stromberger-D'Alton-Rauch, Ilse-Dore; Klose, Karl; Bergmann, Udo; Glattli, Alfred; and Hodum, Claus-Peter, to U.S. Philips Corporation. High energy recording on an acetyl acetonate. 4,118,229, Cl. 96-27.00H.
Strub, Fritz, to Filtrox Maschinenbau A.G. Method of and an apparatus for controlling the quantity of filter aid fed to a sedimentation filter in a given unit of time during filtration. 4,118,778, Cl. 364-502.000.
Structural Rubber Products Company: *See—*
Whitlock, Jacob O., 4,117,977, Cl. 238-8.000.
Struger, Odo J.; McAdams, Timothy E.; and Dummermuth, Ernst, to Allen-Bradley Company. Malfunction detection system for a microprocessor based programmable controller. 4,118,792, Cl. 364-900.000.
Struger, Odo J.: *See—*
Casto, Walter V.; DeLong, Lawrence W.; Markley, Theodore J.; and Struger, Odo J., 4,118,789, Cl. 364-900.000.
Stuart, Fred E. Method and apparatus for agitating and scrubbing filter bed. 4,118,320, Cl. 210-80.000.
Stuever, George W.: *See—*
Becker, Donald E.; Achenbach, Gary D.; and Stuever, George W., 4,118,325, Cl. 252-8.100.
Sudo, Tadamitsu: *See—*
Sawai, Masanobu; Sudo, Tadamitsu; and Enomoto, Shogo, 4,118,192, Cl. 424-12.000.
Sugimoto, Sachirou; and Katsuki, Kanji, to Mitsubishi Denki Kabushiki Kaisha. Inverter apparatus commutated by an auxiliary source. 4,118,770, Cl. 363-138.000.
Sugita, Terumitsu; and Tateishi, Yasuo, to Seiko Seiki Kabushiki Kaisha. Controlling method for a grinding machine. 4,117,634, Cl. 51-281.00R.
Sugiyama, Masaaki; Yuda, Takuo; and Mizusawa, Akira, to Yamakawa Industry Co. Ltd.; and Nifco, Inc. Strainer. 4,118,323, Cl. 210-439.000.
Suling, Carlhans: *See—*
Konig, Joachim; and Suling, Carlhans, 4,118,556, Cl. 526-229.000.
Lindner, Christian; Suling, Carlhans; Arend, Gunter; Brokmeier, Dieter; and Nischk, Gunther, 4,118,375, Cl. 526-240.000.
Sullivan, James P.: *See—*
Eckel, Leonard B.; Sullivan, James P.; and Quintana, Elias D., 4,117,783, Cl. 108-91.000.
Sulzer Brothers Limited: *See—*
Burer, Franz, 4,117,871, Cl. 139-429.000.
Christ, Alfred; Lehmann, Helmut; Kantor, Ludwig; and Miller, Helmut, 4,118,040, Cl. 277-75.000.
Ivosevic, Strahinja, 4,118,156, Cl. 417-494.000.
Sumitomo Bakelite Company Limited: *See—*
Miki, Kyosuke; and Takeuchi, Masahiro, 4,118,454, Cl. 264-93.000.
Sumitomo Chemical Company, Limited: *See—*
Kitamura, Shigeyoshi; Itaya, Nobushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,118,505, Cl. 424-275.000.
Yamazaki, Noboru; and Higashi, Fukuji, 4,118,374, Cl. 528-337.000.
Summers, Robert Milton, to Bendix Corporation, The. Phenolic resin recovery process. 4,118,346, Cl. 260-2.300.
Sundstrand Corporation: *See—*
Glennon, Timothy F., 4,118,688, Cl. 340-516.000.
Sunpak Corporation: *See—*
Tsuruta, Yuzo, 4,118,715, Cl. 354-33.000.
Surgical Design Corp.: *See—*
Banko, Anton, 4,117,843, Cl. 128-230.000.
Sussman, Howard. Stackable compartmentalized structure for cosmetics or the like. 4,118,084, Cl. 312-107.000.
Sutter, Hans Rudolf: *See—*
Mosimann, Peter Hubert; and Sutter, Hans Rudolf, 4,117,663, Cl. 58-85.500.
Sutton, Jerry L.: *See—*
Allen, Royce H.; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,118,782, Cl. 364-565.000.
Suzuki, Hideo; Sato, Takahisa; Kubota, Tatsuo; Osaka, Shigemi; and Komatsu, Shigeru, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Preparation of maleic anhydride. 4,118,402, Cl. 260-346.750.
Suzuki, Kazuie; Torimaru, Takashi; and Akiyama, Chuji, to Hokushin Electric Works, Ltd. Magnetic flowmeter. 4,117,721, Cl. 73-194.0EM.
Suzuki, Masayuki; Sakurada, Nobuaki; Ito, Tadashi; Yamamichi, Masayoshi; and Murakami, Hiroyashu, to Canon Kabushiki Kaisha. Photographic mode selection device for a camera. 4,118,716, Cl. 354-38.000.
Suzuki, Tetsuro; Oishi, Masaaki; and Ashida, Itaru, to Kabushiki Kaisha Seikosha. Device for retaining two alternate positions. 4,117,743, Cl. 74-577.00M.
Swain, Richard Slaughter, to Norlin Music, Inc. Multi-level encoding system. 4,118,791, Cl. 364-900.000.
Swenson, Alan F.: *See—*
Rovin, Herman; Levine, Lawrence J.; Opuszenski, Theodore; Pellicano, Joseph; and Swenson, Alan F., 4,117,789, Cl. 112-181.000.
Swift, James L., to American District Telegraph Corporation. Connector for reed switches. 4,118,098, Cl. 339-263.00R.
Sybron Corporation: *See—*
Simonsen, John; Gibson, Bruce Douglas; and Gruner, Heinz Walter, 4,117,720, Cl. 73-194.0EM.
Tackett, Louis Eugene, to UNEP3 Energy Systems Inc. Integrated energy system. 4,118,637, Cl. 290-55.000.
Tadokoro, Tomoo, to Toyo Kogyo Co., Ltd. Engine and reactor connection system. 4,117,674, Cl. 60-282.000.
Taguchi, Shinichiro: *See—*
Gomi, Hiroshi; and Taguchi, Shinichiro, 4,118,741, Cl. 358-28.000.
Tahara, Kazutoki: *See—*
Sado, Ryoichi; and Tahara, Kazutoki, 4,118,092, Cl. 339-59.00M.
Taig, Alistair Gordon, to Bendix Corporation, The. Power steering control valve. 4,117,864, Cl. 137-625.230.
Takabatake, Mitsuo, to Asahi Glass Company Ltd. Aluminum titanate composition being stable at high temperature. 4,118,240, Cl. 106-73.330.
Takacs, Joseph E.: *See—*
Takacs, Victor C.; and Takacs, Joseph E., 4,118,138, Cl. 407-112.000.
Takacs, Victor C.; and Takacs, Joseph E., to Triangle Grinding, Inc. Cutting tool. 4,118,138, Cl. 407-112.000.
Takada, Keisuke, to Tokyo Shibaura Electric Co., Ltd. Digital controller system. 4,118,772, Cl. 364-119.000.
Takahashi, Akira, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Intake regulator for internal combustion engine. 4,117,814, Cl. 123-119.00A.
Takahashi, Toru, to Yamaichi Electric Mfg. Co., Ltd. Connecting means for flexible flat cable connector. 4,118,096, Cl. 339-99.00R.
Takahashi, Toshiro; Nagano, Toshihiro; Iguchi, Shozo; Kikuchi, Masaru; Nakamura, Katsuhiko; and Mochizuki, Atsushi, to Riken Keikinzoku Kogyo Kabushiki Kaisha. Apparatus for manufacturing extruded structural profiles from aluminum based metal scraps. 4,117,703, Cl. 72-38.000.
Takahashi, Yoshio: *See—*
Ohtsuki, Nobuo; Hayashi, Toshio; Imai, Akio; Takahashi, Yoshio; and Hashimoto, Noboru, 4,118,660, Cl. 318-571.000.
Takamiya, Bonnosuke, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Gas injection system for internal combustion engine. 4,117,808, Cl. 123-75.00B.
Takeda, Hisami: *See—*
Kitamura, Shigeyoshi; Itaya, Nobushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,118,505, Cl. 424-275.000.
Takeda, Kunihiko: *See—*
Seko, Maomi; Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Imamura, Kazuo, 4,118,457, Cl. 423-7.000.
Takeshita, Hiroshi, to Kabushiki Kaisha Suwa Seikosha. Display cell. 4,117,659, Cl. 58-23.00R.
Takeuchi, Akitoshi: *See—*
Fukuda, Yoshiharu; Ohtani, Kazumasa; Onissi, Tossio R.; and Takeuchi, Akitoshi, 4,118,196, Cl. 422-232.000.
Takeuchi, Masahiro: *See—*
Miki, Kyosuke; and Takeuchi, Masahiro, 4,118,454, Cl. 264-93.000.
Talley, Charles P.; Bradley, Guy M.; and Guliana, Ronald T., to Calgon Corporation. Quaternized siliceous supports for gel permeation chromatography. 4,118,316, Cl. 210-31.00C.
Tamaki, Nobuo: *See—*
Shiohara, Tomoo; Miyamoto, Minoru; and Tamaki, Nobuo, 4,118,227, Cl. 106-306.000.
Tanaka, Akira, to American Safety Equipment Corporation. Inertia-responsive vehicle seat back latch mechanism. 4,118,067, Cl. 297-379.000.
Tanaka, Minoru; Kajitani, Ikuo; and Nagase, Hidenobu, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust purifying system for internal combustion engines. 4,117,675, Cl. 60-302.000.
Tanei, Fumio; and Ikeda, Toshiaki, to Horiba, Ltd. Apparatus and process for determination of oil content in deballasting water and wash water discharged from a tanker. 4,118,779, Cl. 364-509.000.
Taninaka, Kuniaki; Kurono, Hitoshi; and Kasai, Tsutomu, to Nihon Nohyaku Co., Ltd. Pharmaceutical compositions containing 1,3-dithiol-2-ylidene malonate derivatives. 4,118,506, Cl. 424-277.000.
Tankred, Hans Jurgen: *See—*
Stannow, Jorgen Christian; Kjeldsen, Kjeld; Tankred, Hans Jurgen; and Madsen, Per Johan, 4,118,153, Cl. 417-363.000.
Tanner, Lee E., to Allied Chemical Corporation. Glassy hafnium-beryllium alloys. 4,118,222, Cl. 75-134.00V.
Tanner, Willi. Segmented band. 4,117,667, Cl. 59-80.000.
Tanoshima, Katsuhide: *See—*
Watanabe, Akinori; Tanoshima, Katsuhide; Noguchi, Matsusaburo; and Hattori, Kinya, 4,117,778, Cl. 101-1.000.
Tarpley, William B., Jr., to Energy and Minerals Research Co. Ultrasonic emulsifier and method. 4,118,797, Cl. 366-127.000.
Tarver, Samuel Allen, Jr. Spreading device for drum mowers. 4,117,653, Cl. 56-13.600.
Tarynin, Evgeny Konstantinovich: *See—*
Burin, Viktor Leontievich; Tjutjunnikov, Anatoly Borisovich; Golosov, Viktor Nikolaevich; Tarynin, Evgeny Konstantinovich; Pogorely, Nikolai Pavlovich; and Lukyanenko, Vladimir Matveevich, 4,118,446, Cl. 261-114.0VT.
Tasseff, John B., II: *See—*
Hubble, Fred F., III; and Tasseff, John B., II, 4,118,751, Cl. 361-220.000.
Tateishi, Yasuo: *See—*
Sugita, Terumitsu; and Tateishi, Yasuo, 4,117,634, Cl. 51-281.00R.
Tavernier, Jean; and Henaut, Eugene, to Societe de Recherches et de

Promotion d'Activities Nouvelles Acno. Apparatus for drafting inaccurate conic perspective. 4,117,599, Cl. 33-77.000.

Taylor, Jeffrey Philip: *See—*
Cockett, Stewart Graham; Taylor, Jeffrey Philip; Craven, Peter; and Farmer, Alan Charles, 4,118,790, Cl. 364-900.000.

TCM Corporation: *See—*
Middleton, Charles A.; and Middleton, Trudy B., 4,117,781, Cl. 108-11.000.

TDK Electronics Co., Ltd.: *See—*
Goshima, Yoshio; and Osada, Hisashi, 4,118,678, Cl. 333-70.00S.
Ishino, Ken; Yamashita, Hiroshi; Ono, Nobuyuki; and Hashimoto, Yasuo, 4,118,704, Cl. 343-18.00A.

Technical Operations, Incorporated: *See—*
Parrent, George B., Jr.; and Ward, John H., 4,118,107, Cl. 350-162.0SF.

Teledyne Industries, Inc.: *See—*
Isley, Walter F., 4,117,717, Cl. 73-38.000.

Telettra International: *See—*
Levy, Julienne, 4,117,913, Cl. 90-15.100.

Tellier, James G.: *See—*
Trist, Nicolas P.; Guffin, Robert E.; Franklin, Walter M.; Crosby, James B., Jr.; Hallaway, Glen N.; and Tellier, James G., 4,117,597, Cl. 32-27.000.

Tenoso, Harold J.: *See—*
United States of America, National Aeronautics and Space Administration; Fraser, Alan S.; Wells, Arthur F.; and Tenoso, Harold J., 4,118,315, Cl. 210-23.00F.

Terada, Sadatugu: *See—*
Mayama, Masayoshi; Terada, Sadatugu; Muramatsu, Toshio; Kimura, Masayuki; Ishibara, Masao; and Kobayashi, Tohru, 4,118,231, Cl. 96-87.00A.

Teramachi, Hiroshi. Double slide way bearing including recirculating ball bearings. 4,118,101, Cl. 308-6.00C.

Terjung, Klaus: *See—*
Gruner, Hans; Terjung, Klaus; Sachse, Wolfgang; and Romerswinkel, Heinrich-Wilhelm, 4,118,018, Cl. 266-275.000.

Terni Societa per l'Industria e'Elettricita S.p.A.: *See—*
Barisoni, Mario; Barteri, Massimo; Ricci-Bitti, Roberto; Marianeschi, Edmondo G. A.; Basevi, Sandro C.; Borgianni, Carlo; and Santafe, Carlo, 4,118,255, Cl. 148-111.000.

Terral, Leonard G.: *See—*
Regelson, Ephraim; Terral, Leonard G.; Matusiak, Ronald J.; Trotter, Jerry L.; Rea, William L.; and Mangel, Edward L., 4,117,967, Cl. 228-20.000.

Terry, Catherine S. Nail clipper with trim retaining clamp. 4,117,591, Cl. 30-124.000.

Texaco Development Corp.: *See—*
Burns, Simon Pierce; and Walton, John Monte, 4,118,286, Cl. 201-89.000.
Klein, Howard P., 4,118,422, Cl. 260-561.00A.

Texaco Inc.: *See—*
Hertstman, Sheldon, 4,118,425, Cl. 260-614.00A.

Texas Alkyls, Inc.: *See—*
Eidt, Scott H.; Watson, Spencer C.; and Heilig, George Charles, 4,118,409, Cl. 260-448.00A.

Texas Instruments Incorporated: *See—*
Doherty, John, Jr., 4,117,976, Cl. 236-48.00R.
Frye, Robert Charles; Katz, Alan Harry; and Hewes, Charles Robert, 4,118,795, Cl. 365-222.000.
Scott, Warner Curtis, 4,118,650, Cl. 313-422.000.
Scott, Warner Curtis, 4,118,651, Cl. 313-422.000.

Textron Inc.: *See—*
Arbuckle, James A., 4,117,594, Cl. 30-381.000.
Chmura, William J., 4,118,009, Cl. 251-315.000.

Th. Goldschmidt AG: *See—*
Ruf, Erich; and Loges, Hans, 4,118,293, Cl. 204-93.000.

Tham, Wing Chong: *See—*
Christison, Sommerville Grant; Magnuson, John Edwin; and Tham, Wing Chong, 4,118,013, Cl. 254-187.500.

Thayer, Helen I.: *See—*
Selwitz, Charles M.; and Thayer, Helen I., 4,118,244, Cl. 106-270.000.

Thelman, John P.: *See—*
Turbak, Albin F.; Thelman, John P.; and Auerbach, Andrew B., 4,118,350, Cl. 260-15.000.

Thermo King Corporation: *See—*
Howland, Leland L., 4,117,740, Cl. 74-469.000.

Thillays, Jacques Claude: *See—*
Guilleman, Lionel; and Thillays, Jacques Claude, 4,118,633, Cl. 250-551.000.

Thomas-Barben Instruments: *See—*
Barben, Theodore R., II, 4,118,663, Cl. 324-30.00R.

Thomas, Colin Arthur: *See—*
Melholland, Patrick John; and Thomas, Colin Arthur, 4,117,737, Cl. 74-242.000.

Thomas J. Lipton, Inc.: *See—*
Visser, Johannes; Oosthoek, Raoul Henricus Josephus; Groeneweg, Jan Willem; and Dijkstra, Hendrik, 4,118,520, Cl. 426-574.000.

Thornburg, David D., to Xerox Corporation. Method for reducing power dissipation in tapered resistor devices. 4,118,112, Cl. 350-351.000.

Tiemens, Ulf: *See—*
Weiss, Hermann; Klotz, Erhard; and Tiemens, Ulf, 4,118,099, Cl. 350-3.730.

Tile Council of America, Inc.: *See—*
Bernett, Frank E., 4,118,241, Cl. 106-90.000.

Tjutjunnikov, Anatoly Borisovich: *See—*
Burin, Viktor Leontievich; Tjutjunnikov, Anatoly Borisovich; Golosov, Viktor Nikolaevich; Tarynin, Evgeny Konstantinovich; Pogorely, Nikolai Pavlovich; and Lukyanenko, Vladimir Matveevich, 4,118,446, Cl. 261-114.0VT.

Toa Oil Co., Ltd.: *See—*
Sano, Masaru; and Kashima, Koji, 4,118,467, Cl. 423-573.00R.

Todokoro, Masatoshi. Game board for children. 4,118,026, Cl. 273-1.00R.

Todt, William H.: *See—*
Goldstein, Norman P.; and Todt, William H., 4,118,626, Cl. 250-370.000.

Tokico Ltd.: *See—*
Murakami, Takao; Ishikawa, Yasuo; and Ito, Masahiro, 4,118,151, Cl. 417-223.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Gomi, Hiroshi; and Taguchi, Shinichiro, 4,118,741, Cl. 358-28.000.
Takada, Keisuke, 4,118,772, Cl. 364-119.000.
Yoshida, Takashi; and Kobayashi, Kenzo, 4,118,707, Cl. 343-765.000.

Tolley, William K., to UOP Inc. Production of titanium metal values, 4,119,696, Cl. 423-53.

Tolmie, Robert J., Jr.: *See—*
Carvalko, Joseph R.; and Tolmie, Robert J., Jr., 4,118,634, Cl. 250-577.000.

Tomco, Inc.: *See—*
Qureshi, Azam S., 4,117,862, Cl. 137-596.130.

Tomita, Satoru; Ohori, Tamio; Karasawa, Shuichi; and Ohta, Wasaburo, to Ricoh Company, Ltd. Electrostatic printing apparatus comprising improved printing electrode head. 4,118,710, Cl. 346-153.000.

Tommasini, Raffaele: *See—*
Giraldi, PierNicola; Nannini, Giuliano; Logemann, Willy; Tommasini, Raffaele; Buttinoni, Ada; and Biasoli, Giovanni, 4,118,504, Cl. 424-274.000.

Topliffe, Roger O., to Sanders Associates, Inc. Inertial measurement device. 4,117,729, Cl. 73-516.0LM.

Topol, Leo E.: *See—*
Raleigh, Douglas O.; and Topol, Leo E., 4,118,194, Cl. 422-98.000.

Torimaru, Takashi: *See—*
Suzuki, Kazuie; Torimaru, Takashi; and Akiyama, Chuji, 4,117,721, Cl. 73-194.0EM.

Toyo Boseki Kabushiki Kaisha: *See—*
Matsui, Takeshi; and Arakawa, Kunihiko, 4,118,438, Cl. 260-857.00L.

Toyo Jozo Company, Ltd.: *See—*
Morishita, Masataka; Yokokawa, Yasuo; Nishikawa, Tokio; Mishiro, Masahiro; Ohashi, Shigeyasu; Fukushima, Mitsuru; Inaba, Yoshihito; and Matsuda, Tetsuo, 4,118,336, Cl. 252-316.000.

Toyo Kogyo Co., Ltd.: *See—*
Tadokoro, Tomoo, 4,117,674, Cl. 60-282.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, 4,118,319, Cl. 210-51.000.

Toyota Jidosha Kogyo K.K.: *See—*
Yoshida, Toshiro, 4,117,811, Cl. 123-103.00R.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Futamura, Kazumasa, 4,118,041, Cl. 277-180.000.

Trayanov, Svetozar Paissiev: *See—*
Petrov, Georgi Mitev; Andonov, Blagoy Alexandrov; Trayanov, Svetozar Paissiev; and Georgiev, Georgi Dimitrov, 4,117,654, Cl. 57-19.000.

TRE Corporation: *See—*
Bucknell, Ernest H.; and Rauh, Jack K., 4,117,858, Cl. 137-119.000.

Trefimetaux: *See—*
Moreau, Marc, 4,118,617, Cl. 219-10.61R.

Trefz, Wilhelm: *See—*
Kasubke, Dietmar; and Trefz, Wilhelm, 4,118,130, Cl. 401-2.000.

Trenkle, Eckhart. Astrological device. 4,117,608, Cl. 35-44.000.

Trepo, Christian: *See—*
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, 4,118,478, Cl. 424-89.000.
Prince, Alfred M.; Vnek, John; Neurath, Robert A.; and Trepo, Christian, 4,118,479, Cl. 424-89.000.

Triangle Grinding, Inc.: *See—*
Takacs, Victor C.; and Takacs, Joseph E., 4,118,138, Cl. 407-112.000.

Tribble, John: *See—*
Ward, Nazareen, 4,117,805, Cl. 119-5.000.

Trist, Nicolas P.; Guffin, Robert E.; Franklin, Walter M.; Crosby, James B., Jr.; Hallaway, Glen N.; and Tellier, James G., to L.A. Gauge Co. Inc. Dental drill. 4,117,597, Cl. 32-27.000.

Triumph Werke Nurnberg A.G.: *See—*
Meier, Heinz; Zurawski, Egon; and Greppmaier, Paul, 4,117,739, Cl. 74-404.000.

Trotter, Jerry L.: *See—*
Regelson, Ephraim; Terral, Leonard G.; Matusiak, Ronald J.; Trotter, Jerry L.; Rea, William L.; and Mangel, Edward L., 4,117,967, Cl. 228-20.000.

Truscheit, Ernst: *See—*
Schnabel, Eugen; Schlumberger, Horst Dieter; Reinhardt, Gerd; Truscheit, Ernst; and Tschesche, Harald, 4,118,481, Cl. 424-177.000.

TRW Inc.: *See—*
Frisby, Reg Alan, 4,118,091, Cl. 339-14.00R.
Key, Edward H., 4,118,094, Cl. 339-75.0MP.

Tschesche, Harald: *See—*
Schnabel, Eugen; Schlumberger, Horst Dieter; Reinhardt, Gerd; Truscheit, Ernst; and Tschesche, Harald, 4,118,481, Cl. 424-177.000.

Tschirky, John: *See—*
Ward, Howard; and Tschirky, John, 4,117,895, Cl. 175-53.000.

Tschopp, Paul: *See—*
Piller, Bernhard; Lenoir, John; Froehlich, Alfred; Stauner, Thomas; and Tschopp, Paul, 4,118,232, Cl. 96-99.000.

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Ogawa, Toshiya; Niki, Akio; Uchimura, Kazuo; and Tsuruoka, Koichi, 4,118,695, Cl. 340-324.0AD.

Tsuruta, Yuzo, to Sunpak Corporation. Electronic photoflash having a terminal board. 4,118,715, Cl. 354-33.000.

Tull, Steven L. Potted plant watering means. 4,117,631, Cl. 47-81.000.

Tunesi, Roger. Device for the fixing of a beam to the chassis of a touring caravan. 4,118,049, Cl. 280-483.000.

Turbak, Albin F.; Thelman, John P.; and Auerbach, Andrew B., to International Telephone and Telegraph Corporation. Cellulose acetate solutions containing methylolated polymers. 4,118,350, Cl. 260-15.000.

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Masso Remiro, Jose Maria, 4,117,837, Cl. 128-76.00B.

Turk, Chester F.; and Krapcho, John, to E. R. Squibb & Sons, Inc. 2-Aryl-6-arylidene-1-(substituted aminoalkoxy)-1-cyclohexenes. 4,118,558, Cl. 542-429.000.

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Turner, John L.; and Diener, Fred L., 4,117,678, Cl. 60-369.000.

Turner, John L.; and Diener, Fred L., to Turner Electric Corporation. Self-contained hydraulic switch operator. 4,117,678, Cl. 60-369.000.

Turner, Robert Bruce; and Weinberg, Glen Lee, to Johnson & Johnson. Probe cover. 4,117,926, Cl. 206-306.000.

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Myers, James E.; and Kennedy, Tom E., 4,117,697, Cl. 62-256.000.

Tyler, William E., III: *See—*
Goldstein, Melvin; and Tyler, William E., III, 4,118,414, Cl. 260-467.000.

U-Haul International, Inc.: *See—*
Sage, Howard M.; and Abromavage, John C., 4,117,964, Cl. 224-42.10E.

Uchida, Yoshiro; Mizuno, Toshihiko; Higuchi, Isao; Imai, Susumu; and Usui, Shyoichiro, to Hitachi Seiki Co., Ltd. Machine tool with automatic tool changer. 4,117,586, Cl. 29-568.000.

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Ueda, Hiroshi; Miyamoto, Takayoshi; and Niwa, Masatake, to Minolta Camera Kabushiki Kaisha. Camera with selector for either electromagnetic release or mechanical release. 4,118,724, Cl. 354-266.000.

Ueda, Hiroshi: *See—*
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Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.

Uhlig, Albert R.: *See—*
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Klein, Herbert H., 4,117,938, Cl. 211-191.000.

Underwood, Willie Bruce, to Dynatech Laboratories Incorporated. Nephelometer having pulsed energy source. 4,118,625, Cl. 250-343.000.

UNEP3 Energy Systems Inc.: *See—*
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Navlyt, Gerald S., 4,117,792, Cl. 112-433.000.

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Simpson, Robert Emmerson, 4,117,552, Cl. 2-2.10A.

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Gregorian, Razmic S.; and Namboodri, Chettoor G., 4,118,526, Cl. 427-350.000.

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Army: *See—*
Au Coin, Thomas R.; Di Vita, Sam; and Wade, Melvin J., 4,118,211, Cl. 65-3.00R.
Hafner, Erich, 4,118,673, Cl. 331-2.000.
Kerr, John L., 4,118,706, Cl. 343-700.0MS.
Laplante, Paul R., 4,118,727, Cl. 357-10.000.
Rabinow, Jacob, 4,118,702, Cl. 343-7.0PF.
Redman, Charles M., 4,118,676, Cl. 332-7.510.
Schertz, Charles J.; and Wilson, Dennis L., 4,117,760, Cl. 89-33.00C.
Strayer, Roy E., Jr., 4,118,668, Cl. 325-67.000.

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Bakken, George S., 4,118,274, Cl. 176-1.000.
Booth, Rex, 4,118,042, Cl. 277-226.000.
Carleton, Richard D.; and Bhattacharyya, Ajay, 4,118,275, Cl. 176-36.00R.
Graven, Robert M.; Gorski, Anthony J.; Schertz, William W.; and Graae, Johan E. A., 4,118,249, Cl. 136-89.0PC.
Green, Sheryll C.; and Linse, Vonne D., 4,117,966, Cl. 228-2.500.
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Rinde, James A., 4,118,449, Cl. 264-28.000.
Ryan, Michael J., 4,118,057, Cl. 292-307.00R.
Wampole, Nevin C., 4,118,278, Cl. 176-87.000.

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Wall, William A., Jr.; Ives, Robert E.; Bruce, Miles Melvin, Jr.; Pryor, Peter Paul, Jr.; and Gard, Leslie H. Computerized system for translating a torch head. 4,118,620, Cl. 219-124.320.

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Brey, Hans; and Geise, Philip E., Jr. FM/CW radar system. 4,118,701, Cl. 343-6.00R.
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Economu, Merle A., 4,117,749, Cl. 81-9.50R.
Heller, Jack A., 4,117,669, Cl. 60-39.140.
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Reinhardt, Victor S., 4,118,665, Cl. 324-57.00R.
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Cooke, Gordon R.; and Franklin, Kevin T., 4,118,709, Cl. 346-33.00R.
Johnson, Leopold J., 4,117,588, Cl. 29-608.000.
Rahn, John P.; and Scott, Marion L., 4,118,675, Cl. 331-94.50C.
Regelson, Ephraim; Terral, Leonard G.; Matusiak, Ronald J.; Trotter, Jerry L.; Rea, William L.; and Mangel, Edward L., 4,117,967, Cl. 228-20.000.
Simpson, Homer L., 4,118,685, Cl. 340-146.30P.

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Bouwhuis, Gijsbertus; Braat, Josephus Johannes Maria; and Jacobs, Bernardus Antonius Johannus, 4,118,734, Cl. 358-128.000.
Guilleman, Lionel; and Thillays, Jacques Claude, 4,118,633, Cl. 250-551.000.
Hargreaves, Clifford McDonald, 4,117,695, Cl. 62-86.000.
Jans, Johannes M., 4,118,234, Cl. 106-1.230.
Stromberger-D'Alton-Rauch, Ilse-Dore; Klose, Karl; Bergmann, Udo; Glattli, Alfred; and Hodum, Claus-Peter, 4,118,229, Cl. 96-27.00H.
Weiss, Hermann; Klotz, Erhard; and Tiemens, Ulf, 4,118,099, Cl. 350-3.730.
Wolber, Jorg, 4,118,655, Cl. 315-371.000.

U.S. Rubber Reclaiming Co., Inc.: *See—*
LaGrone, Bobby D.; and Huff, Bobby J., 4,118,137, Cl. 404-76.000.

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Bowman, Walter A.; and Wessel, Richard L., 4,118,284, Cl. 202-248.000.
Golas, Eugene A.; and Singh, Shri N., 4,117,959, Cl. 222-590.000.
Hendrickson, Luther G., 4,118,017, Cl. 266-187.000.
Pignocco, Arthur J.; and Kachik, Robert H., 4,117,868, Cl. 138-146.000.
Rutherford, Kenneth S., 4,117,879, Cl. 164-412.000.
Wilhelm, Thomas K., 4,118,207, Cl. 55-338.000.

United Technologies Corporation: *See—*
Brose, Harlan F., 4,117,786, Cl. 110-229.000.
Dierberger, James Albert, 4,118,146, Cl. 416-97.00A.
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University of California, The Regents of the: *See—*
Apple, Martin A.; and Formica, Joseph V., 4,118,482, Cl. 424-177.000.
Brown, Daniel Maitland, 4,118,060, Cl. 294-83.00R.
Friedel, William C., Jr.; and Dietz, Charles F., 4,118,311, Cl. 209-75.000.

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Metcalf, Robert L.; and Coats, Joel R., 4,118,424, Cl. 260-613.00R.

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D'Alelio, Gaetano F., 4,118,377, Cl. 526-236.000.
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Cutler, Ivan B., 4,118,464, Cl. 423-346.000.
UOP Inc.: *See—*
Fritsch, Thomas R.; and Anderson, Mark C., 4,118,429, Cl. 260-674.05A.
Latos, Edwin J., 4,118,339, Cl. 252-417.000.
Tolley, William K., 4,119,696, Cl. 423-53.
Upjohn Company, The: *See—*
Bundy, Gordon L., 4,118,584, Cl. 560-55.000.
Morton, Douglas Ross, Jr., 4,118,415, Cl. 562-503.000.
Nelson, Norman A., 4,118,577, Cl. 560-53.000.
Peterson, David C., 4,118,591, Cl. 560-53.000.
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Smith, Herman W., 4,118,416, Cl. 562-503.000.
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Usui, Shyoichiro: *See—*
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Utsler, Charles S. Fishing pole with spaced illuminating means. 4,117,618, Cl. 43-17.500.
Uyeda, Tim M. Key decoding and duplicating apparatus and method. 4,117,763, Cl. 90-13.050.
Vacval, Dusan M.; and Domes, E. A., to International Harvester Company. Torque bars for sliding caliper disc brake. 4,117,911, Cl. 188-73.300.
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Kemper, Yves Jean; and Pouliot, Harvey N., 4,117,736, Cl. 74-50.000.
Vaguine, Victor A., to Varian Associates, Inc. Linear accelerator having a side cavity coupled to two different diameter cavities. 4,118,652, Cl. 315-5.410.
Vaguine, Victor Aleksey, to Varian Associates, Inc. Variable energy highly efficient linear accelerator. 4,118,653, Cl. 315-5.410.
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Murray, Christopher Linley; and Vale, Corwyn Philip, 4,118,351, Cl. 260-18.00N.
Van De Mark, Garin M., to Woodward Governor Company. Fuel control system for a prime mover. 4,117,857, Cl. 137-117.000.
Van Den Essen, Louis. Optical typewriter. 4,118,128, Cl. 400-118.000.
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VanderMey, Donald M., to Packaging Corporation of America. Shipping unit and method of loading same. 4,117,929, Cl. 206-326.000.
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VanderWert, Terry L., to Buckbee-Mears Company. Process for albedo control of molybdenum articles. 4,118,252, Cl. 148-6.300.
Van Dewoestine, Robert V.: *See—*
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Vanlerberghe, Guy; and Rosenbaum, Georges, to L'Oreal. Aminated γ-dialdehyde; methods for preparing the same and cosmetic compositions containing the same. 4,118,423, Cl. 260-584.00A.
Van Praag, Michel; and Duijf, Gerrit, to International Flavors & Fragrances Inc. Use of caramel color for augmenting or enhancing or intensifying the color of natural red dyestuffs. 4,118,516, Cl. 426-96.000.
Vargiu, Silvio; Carpaneti, Edoardo; Crespolini, Giancarlo; and Pitzalis, Mario, to Euteco, S.p.A. Process for the preparation of petroleum resins. 4,118,555, Cl. 526-76.000.
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Vaguine, Victor Aleksey, 4,118,653, Cl. 315-5.410.
Varlamov, Vladimir Matveevich. Device for producing acoustic vibration in flowing liquid or gaseous medium. 4,118,796, Cl. 366-124.000.
Varley, Robert Fred, to Harris Corporation. Adaptive interface for rotational positioning device utilizing linear actuators. 4,118,705, Cl. 343-100.0AD.
Vary, Eva M.; and Vassiliou, Eustathios, to Du Pont de Nemours, E. I., and Company. Fluorocarbon polymer coatings. 4,118,537, Cl. 428-422.000.
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Veazey, Thomas M., to Monsanto Company. Method for annealing acrylonitrile-containing filaments. 4,118,190, Cl. 8-149.300.
VEB Pentacon Dresden Kamera-und Kinowerke: *See—*
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Ventron Corporation: *See—*
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Versatile Manufacturing Ltd.: *See—*
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Vertegaal, Jacobus Gerardus, to Stork Brabant B.V. Means to provide uniform lengthwise squeegee angle of attack. 4,117,779, Cl. 101-120.000.
Via, Francis A., to Stauffer Chemical Company. Photopolymerizable aryl and heterocyclic glyoxylamide compositions. 4,118,298, Cl. 204-159.230.
Vickers-Intertek Limited: *See—*
Ball, Kenneth, 4,117,688, Cl. 405-188.000.
Victor Company of Japan, Limited: *See—*
Iwahara, Makoto; and Mori, Toshinori, 4,118,599, Cl. 179-1.00G.
Victor, Joe M.; and Dougherty, James, to Petrolite Corporation. Coulometric titrator. 4,118,300, Cl. 204-195.00T.
Vigerie, Robert, to Creusot-Loire. Hydraulic device for a stabilizing beam in a machine used on uneven terrain. 4,118,054, Cl. 280-765.000.
Villanova University: *See—*
Yeh, George Chiayou, 4,118,285, Cl. 203-81.000.
Vind, Holger Vilhelm, to Danfoss A/S. Starting device for an asynchronous motor. 4,118,753, Cl. 361-331.000.
Visser, Johannes; Oosthoek, Raoul Henricus Josephus; Groeneweg, Jan Willem; and Dijkstra, Hendrik, to Thomas J. Lipton, Inc. Protein fibres. 4,118,520, Cl. 426-574.000.
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Voelger, Karl-Dieter; Rietzel, Christian; and Lehmann, Klaus, to Rohm GmbH. Diuretic pharmaceutical compositions and method of use containing the sulfuric acid half-ester of 2,4,7-triamino-6p-hydroxyphenyl pteridine. 4,118,492, Cl. 424-251.000.
Vogel, Karl Heinz, to Gebruder Kommerling Kunststoffwerke G.m.b.H. Synthetic resin frames and a process for their production. 4,118,267, Cl. 156-293.000.
Vogel, Robert E., to Kysor Industrial Corporation. Refrigerated display. 4,117,698, Cl. 62-256.000.
Voigt, K. J., to Max-Planck-Gesellschft zur Forderung der Wissenschaften e.V. Optical coupling. 4,118,105, Cl. 350-96.200.
Volker, Herbert; Koberstein, Edgar; and Hensel, Jorg, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Monolithic carrier catalyst and arrangements of such a catalyst for the purification of exhaust gases from an internal combustion engine. 4,118,199, Cl. 422-171.000.
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von Dreusche, Charles F., Jr.; and Barry, Louis T., to Nichols Engineering & Research Corp. Method for treating waste material. 4,118,220, Cl. 75-69.000.
von Schuckmann, Alfred. Receptacle for the portioned dispensing of the contents thereof. 4,117,956, Cl. 221-288.000.
Vorchheimer, Norman, to Betz Laboratories, Inc. Method and composition of a polymer in convenient liquid form. 4,118,355, Cl. 260-29.6PT.
Vostrowsky, Otto: *See—*
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Vrana, Charles K. Vertical lift device. 4,117,992, Cl. 244-23.00C.
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Mild, William M., 4,118,076, Cl. 303-6.00C.
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Walker, Erich, to Bulova Watch Company, Inc. Casing ring for watch movement. 4,117,660, Cl. 58-23.00R.
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Wallace, Charles H., to International Telephone and Telegraph Corporation. Computer directed primal cut indicating device. 4,118,777, Cl. 364-475.000.
Wallace Energy Conversion, Inc.: *See—*
Wallace, Floyd D., 4,118,282, Cl. 201-2.500.
Wallace, Floyd D., to Wallace Energy Conversion, Inc. Process and apparatus for the destructive distillation of high molecular weight organic materials. 4,118,282, Cl. 201-2.500.
Wallshein, Melvin. Apparatus and method for mounting orthodontic appliances to teeth. 4,117,596, Cl. 32-14.00R.
Walser, Armin, to Hoffmann-La Roche Inc. Synthesis of imidazo[1,5-a]diazepine-3-carboxylates. 4,118,386, Cl. 260-239.30T.
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Walter, Peter Frank, to Wall Colmonoy Corporation. Controlled atmosphere and vacuum processes. 4,118,542, Cl. 428-553.000.
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Wampole, Nevin C., to United States of America, Energy. Nuclear reactor insulation and preheat system. 4,118,278, Cl. 176-87.000.
Wang, Chia-Gee. Separation of gases. 4,118,205, Cl. 55-17.000.
Wang, Teh Po; and Starr, Carrol Dean, to Wilbur B. Driver Company. Nickel-chromium heating element alloy having improved operating life. 4,118,224, Cl. 75-171.000.
Ward, Elizabeth: *See—*
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Ward, Howard; and Tschirky, John, to Smith International, Inc. Apparatus and method for enlarging underground arcuate bore holes. 4,117,895, Cl. 175-53.000.
Ward, John H.: *See—*
Parrent, George B., Jr.; and Ward, John H., 4,118,107, Cl. 350-162.0SF.
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Ward, Timothy J., to Raymond Lee Organization, Inc., The. Vehicular lug nut cleaning device. 4,117,566, Cl. 15-244.00R.
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Warther, Donald Paul, to Hughes Aircraft Company. Precision voltage to frequency converter for use in A/D converter. 4,118,696, Cl. 340-347.0NT.
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Sandesara, Mahendra D., 4,118,243, Cl. 106-109.000.
Watanabe, Akinori; Tanoshima, Katsuhide; Noguchi, Matsusaburo; and Hattori, Kinya, to Oki Electric Industry Co., Ltd. High speed printer with arc preventing fluorocarbon gas. 4,117,778, Cl. 101-1.000.
Watanabe, Katsumi, to Yugen Kaisha Watanabe Kenkusho. Vibration transmission mechanism for a phonograph. 4,118,038, Cl. 274-9.00B.
Watanabe, Seiichi: *See—*
Ichijima, Isamu; Watanabe, Seiichi; and Miyagawa, Kazuo, 4,118,732, Cl. 358-101.000.
Watanabe, Takeshi; Nishimaki, Kazuo; Shimanuki, Kazuo; Mita, Katuo; and Konno, Satoru, to Nitto Boseki Co., Ltd. Method and apparatus for manufacturing glass fibers using deflectable air curtain. 4,118,210, Cl. 65-2.000.
Watkins, Mervyn M. Folding patio chair. 4,118,065, Cl. 297-45.000.
Watkinson, Alan Paul: *See—*
Oloman, Colin William; and Watkinson, Alan Paul, 4,118,305, Cl. 204-265.000.
Watson, Spencer C.: *See—*
Eidt, Scott H.; Watson, Spencer C.; and Heilig, George Charles, 4,118,409, Cl. 260-448.00A.
Watts, Keith Ernest, to Wiltshire Cutlery Company Proprietary Limited. Knife scabbard and sharpening device. 4,117,748, Cl. 76-86.000.
Waxelbaum, Paul M.; Harris, Fred A.; and Brown, William J., to Olin Corporation. Granulator with beater bar and deflector. 4,117,984, Cl. 241-73.000.
Webasto-Werk W. Baier GmbH & Co.: *See—*
Bienert, Horst; and Jardin, Hans, 4,118,063, Cl. 296-137.00B.
Webb, David B., to Irvin Industries Canada Ltd. Parachute with canopy opening assist and opening control. 4,117,994, Cl. 244-152.000.
Webb, David B.: *See—*
Palm, Lorenz A.; and Webb, David B., 4,117,993, Cl. 244-145.000.
Weber, Georg: *See—*
Krause, Joachim; Streinstrasser, Ralf; Pohl, Ludwig; Del Pino, Fernando; and Weber, Georg, 4,118,335, Cl. 252-299.000.
Weber, Harold James, to Weber, Harold James. Apparatus including bifrequency electromagnetic wave generation means for sympathetic excitation of detached conductive structures. 4,118,662, Cl. 324-3.000.
Weber, Jerome B. Soil sampler. 4,117,896, Cl. 175-84.000.
Weber, Kurt, to Ciba-Geigy Corporation. Substituted 1,4-bis-styrylbenzene and 4,4'-bis styrylbiphenyl and their use as optical brightners. 4,118,560, Cl. 542-447.000.
Weber, Paul; Lankes, Erich; Butschko, Gerhard; Ritzmann, Horst; and Bohm, Peter Wolfgang, to Polysius AG. Apparatus and method for calcining or sintering fine-grained material. 4,118,177, Cl. 432-14.000.
Webster, Harold F.: *See—*
Cusano, Dominic A.; and Webster, Harold F., 4,118,758, Cl. 362-6.000.
Webster, Richard G.: *See—*
Lazet, Frank J.; Meador, D. John; and Webster, Richard G., 4,118,463, Cl. 423-334.000.
Wechter, William J.; and Brooks, Carter D., to Upjohn Company, The. Method of treating rheumatoid arthritis. 4,118,484, Cl. 424-180.000.
Wedding, Brent M., to Corning Glass Works. Treating polychromatic glass in reducing atmospheres. 4,118,214, Cl. 65-30.00R.
Weinar, Roger Neil. Wallboard fastener. 4,117,644, Cl. 52-714.000.
Weinberg, Glen Lee: *See—*
Turner, Robert Bruce; and Weinberg, Glen Lee, 4,117,926, Cl. 206-306.000.
Weinberger, Arnold: *See—*
Levine, Samuel R.; Singh, Shanker; and Weinberger, Arnold, 4,118,786, Cl. 364-783.000.
Weir, David F., to Westinghouse Electric Corp. Shock absorbing pad with keyed struts. 4,118,019, Cl. 267-153.000.
Weisman & Allen: *See—*
Williams, William J., 4,117,835, Cl. 128-2.05M.
Weiss, Hermann; Klotz, Erhard; and Tiemens, Ulf, to U.S. Philips Corporation. Image coding and decoding using coherent codes. 4,118,099, Cl. 350-3.730.
Welder, Gerald Elvin; Lang, Edward Russell; and Slagle, Charles Wilmer, to Calgon Corporation. Gas scrubber scale and deposit control. 4,118,318, Cl. 210-58.000.
Weldon, James O., to Continental Electronics Manufacturing Company. Pulse width modulating circuit. 4,118,677, Cl. 332-9.00R.
Welgemoed, Jacobus Cornelius: *See—*
Dugan, Bernard Baron; and Welgemoed, Jacobus Cornelius, 4,118,333, Cl. 252-135.000.
Wellner, Wolfgang: *See—*
Pedain, Josef; Wellner, Wolfgang; Gruber, Hermann; and Dietrich, Manfred, 4,118,376, Cl. 528-59.000.
Wells, Arthur F.: *See—*
United States of America, National Aeronautics and Space Administration; Fraser, Alan S.; Wells, Arthur F.; and Tenoso, Harold J., 4,118,315, Cl. 210-23.00F.
Wells, David Lee, to Johns-Manville Corporation. Insulation system for building structures. 4,117,641, Cl. 52-404.000.
Wenger, La Von Gene; Clark, Douglas S.; and Hauck, Bobbie W., to Wenger Manufacturing. High-output apparatus for producing dense, uniformly layered meat analogue product. 4,118,164, Cl. 425-202.000.
Wenger Manufacturing: *See—*
Wenger, La Von Gene; Clark, Douglas S.; and Hauck, Bobbie W., 4,118,164, Cl. 425-202.000.
Werner & Pfleiderer: *See—*
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Werntz, Charles W., to Alvey Inc. Drive means for roller conveyors. 4,117,923, Cl. 198-790.000.
Wessel, Richard L.: *See—*
Bowman, Walter A.; and Wessel, Richard L., 4,118,284, Cl. 202-248.000.
Westbrook, Samuel T. Amusement toy or gyro disc. 4,118,031, Cl. 273-110.000.
Westeren, Herbert W.; and Harrison, Ronald A., to C.I. Hayes Inc. Continuous heat treating vacuum furnace. 4,118,016, Cl. 266-130.000.
Western Electric Company, Inc.: *See—*
Bassett, Henry C.; From, Charles A., Jr.; Parker, John F.; and Worley, Ansel A., 4,118,596, Cl. 174-87.000.
Rapp, Willard Emanuel, 4,117,590, Cl. 29-764.000.
Western Geophysical Co. of America: *See—*
Mollere, John C., 4,117,780, Cl. 102-22.00R.
Western Kentucky University: *See—*
Holy, Norman L.; and Nalesnik, Theodore E., 4,118,426, Cl. 260-615.00B.
Westinghouse Air Brake Company: *See—*
Franke, Raymond C., 4,118,774, Cl. 364-431.000.
Noble, Peter M., 4,118,126, Cl. 356-123.000.
Westinghouse Electric Corp.: *See—*
Barrett, Joseph F.; and Kiscaden, Roy W., 4,118,635, Cl. 290-40.00R.
Borona, Russell T., 4,118,680, Cl. 335-176.000.
Calfo, Raymond M.; Dailey, George F.; Alkire, Gerald R.; and Mulach, Arthur, 4,118,645, Cl. 310-53.000.
Davies, Norman; Langley, Morley P.; and Peppel, Howard C., deceased, 4,118,755, Cl. 361-379.000.
Dickens, Lawrence E., 4,118,670, Cl. 325-446.000.
Goldstein, Norman P.; and Todt, William H., 4,118,626, Cl. 250-370.000.
Kolesar, Mark; and Rettger, Harry C., 4,117,707, Cl. 72-306.000.
Lackey, Robert S.; Young, Robert R.; and Kastovich, John C., 4,118,083, Cl. 312-100.000.
Phillips, David C.; Hickam, William M.; and Carlson, Gerald L., 4,117,713, Cl. 73-17.00R.
Rosey, Richard; Kovatch, George N.; and Simon, Ned H., 4,118,639, Cl. 307-147.000.
Shoupp, William E.; Bratkowski, Walter V.; and Boomgaard, Dirk J., 4,118,717, Cl. 354-43.000.
Stahl, William F., 4,118,145, Cl. 416-96.00R.
Weir, David F., 4,118,019, Cl. 267-153.000.

Weyerhaeuser Company: *See—*
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Whirlpool Corporation: *See—*
Brenner, Robert A.; Cuthbert, Victor W.; and Braga, Albert T., 4,118,647, Cl. 310-239.000.
Schaus, John Joseph, 4,118,451, Cl. 264-46.500.
White, Allen A.; Yatcilla, George; and Case, Cecil L., to Hesston Corporation. Tying needle safety control for crop balers. 4,117,775, Cl. 100-19.00R.
White, James E., to Monsanto Company. Recovery of maleic anhydride. 4,118,403, Cl. 260-346.760.
White, Letcher T.: *See—*
Kelley, Jay Hilary; and White, Letcher T., 4,118,072, Cl. 299-43.000.
Whitehead, Edward. Seed drill including discs driven by ground wheel drive. 4,117,788, Cl. 111-52.000.
Whitlock, Jacob O., to Structural Rubber Products Company. Highway-railway crossing. 4,117,977, Cl. 238-8.000.
Wichert, Wolfgang: *See—*
Knotek, Otto; Lugscheider, Erich; and Wichert, Wolfgang, 4,118,254, Cl. 148-32.000.
Wiechert, Rudolf: *See—*
Philippson, Rainer; Krieger, Bernhard; Casals-Stenzel, Jorge; Kerb, Ulrich; Losert, Wolfgang; Prezewowsky, Klaus; Wiechert, Rudolf; and Bittler, Dieter, 4,118,488, Cl. 424-238.000.
Wiegner, Joseph R.: *See—*
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Wikel, James H.: *See—*
Paget, Charles J.; and Wikel, James H., 4,118,573, Cl. 548-306.000.
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,118,742, Cl. 548-306.000.
Wiklund, Henry: *See—*
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Wilbur B. Driver Company: *See—*
Wang, Teh Po; and Starr, Carrol Dean, 4,118,224, Cl. 75-171.000.
Wilburn, Everett R.; and Sorter, James A. Egg sheller. 4,117,774, Cl. 99-568.000.
Wiley, Philip A.: *See—*
Richardson, Carl; Stoddart, Hugh F.; and Wiley, Philip A., 4,117,935, Cl. 209-586.000.
Wilhelm, Thomas K., to United States Steel Corporation. Rotating disc particulate separator. 4,118,207, Cl. 55-338.000.
Wilkinson, Richard L., to MCA Disco-Vision, Inc. Synchronous detection tracking of video disc. 4,118,735, Cl. 358-128.000.
Williams, Frank R., to Consolidated Medical Equipment. Skin conducting electrode and electrode assembly. 4,117,846, Cl. 128-303.130.
Williams, Glenn L., to Stoelker, Charles V. Pharmaceutical preparation for treating hemorrhoids and anal fissures. 4,118,480, Cl. 424-131.000.
Williams, Philip David Lane, to Decca Limited. Pulse radar apparatus. 4,118,708, Cl. 343-17.20R.
Williams, Thomas E.; and Cygnarowicz, Thomas A., to United States of America, National Aeronautics and Space Administration. System for and method of freezing biological tissue. 4,117,881, Cl. 165-2.000.
Williams, William J., to Weisman & Allen. Method and apparatus for blood pressure measurements. 4,117,835, Cl. 128-2.05M.
Wilson, Abraham H.: *See—*
United States of America, National Aeronautics and Space Administration; Knoell, Albert C.; and Wilson, Abraham H., 4,118,014, Cl. 256-1.000.
Wilson, David A.: *See—*
James, Robert C.; Wilson, David A.; and Horsman, Dennis P., 4,117,646, Cl. 53-488.000.
Wilson, Denney L., Sr., to NCR Corporation. Demand controlled preregulating rectifier circuit for power supplies. 4,118,768, Cl. 363-85.000.
Wilson, Denney Lee, Sr., to NCR Corporation. Full wave demand controlled preregulating supply. 4,118,769, Cl. 363-54.000.
Wilson, Dennis L.: *See—*
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Wilson, Michael Edwin: *See—*
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Wiltshire Cutlery Company Proprietary Limited: *See—*
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Winckler, Richard, to Cebal. Aerosol dispenser liner. 4,117,951, Cl. 220-461.000.
Windmoller & Holscher: *See—*
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Windsor, Harry Mellows, to Automotive Products Limited. Electronic control system for automatic gearboxes. 4,117,747, Cl. 74-866.000.
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Wistreich, Hugo E.: *See—*
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Wittenzellner, Ernst: *See—*
Murrmann, Helmuth; and Wittenzellner, Ernst, 4,118,251, Cl. 148-1.500.
Wittkamp, Heinrich; and Gehrung, Manfred, to BASF Aktiengesellschaft. Cassette, particularly a cassette for a reel of wide recording tape. 4,118,616, Cl. 206-387.000.
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; and Russak, Michael A., to Optel Corporation; and Grumman Aerospace Corporation. Triple electrode photogalvanic cell with energy storage capability. 4,118,546, Cl. 429-111.000.
Witzke, Horst; Chen, Schoen-nan; Deb, Satyendra K.; Jost, Steven Robert; Reichman, Joseph; and Russak, Michael A., to Optel Corporation; and Grumman Aerospace Corporation, part interest to each. Thin film photogalvanic cell. 4,118,547, Cl. 429-111.000.
Wohrl, Alfons: *See—*
Spies, Johann; and Wohrl, Alfons, 4,117,730, Cl. 73-517.00R.
Wolber, Jorg, to U.S. Philips Corporation. Line sawtooth deflection current generator. 4,118,655, Cl. 315-371.000.
Wonneberg, Heinz: *See—*
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Wood, Derek A., to Shell Oil Company. Preparation of phenoxybenzyl esters. 4,118,413, Cl. 260-465.00D.
Wood, Prentice J., to Mead Corporation, The. Article carrier and blank therefor. 4,117,925, Cl. 206-186.000.
Wood, William Malcolm Logan, to Imperial Chemical Industries Limited. Smoking mixtures. 4,117,850, Cl. 131-2.000.
Woods, Jay G.: *See—*
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Woodstream Corporation: *See—*
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Loeffler, Herbert H., 4,117,621, Cl. 43-88.000.
Loeffler, Herbert H., 4,117,622, Cl. 43-88.000.
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Van De Mark, Garin M., 4,117,857, Cl. 137-117.000.
Worfel, Erhard: *See—*
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Worley, Ansel A.: *See—*
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Wu, Chin Ching; and Krenzer, John, to Velsicol Chemical Company. 1-Thiazolyl-5-acyloxyimidazolidinones. 4,118,390, Cl. 260-306.80R.
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Maiorano, Dominick J., 4,118,119, Cl. 355-11.000.
Rees, James D.; and Lehman, Richard F., 4,118,122, Cl. 355-77.000.
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Yamada, Yasuo; and Seki, Masao, to Fuji Xerox Co., Ltd. Split hologram and methods of making and using same. 4,118,104, Cl. 350-3.600.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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Yamaichi Electric Mfg. Co., Ltd.: *See—*
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Yamakawa Industry Co. Ltd.: *See—*
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Yamamichi, Masayoshi: *See—*
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Yamashita, Ryuichi; and Matsumoto, Hiromitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Internal combustion engine and method of operating it. 4,117,813, Cl. 123-119.00R.
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Yamazaki, Keiji; and Katsuragi, Mamoru, to Minolta Camera Kabushiki Kaisha. Camera indicating means. 4,118,723, Cl. 354-155.000.
Yamazaki, Noboru; and Higashi, Fukuji, to Sumitomo Chemical Company, Limited. Production of aromatic polyamides from dicarboxylic acid and diamine. 4,118,374, Cl. 528-337.000.
Yamazaki, Shuichi; Kajitani, Ikuo; and Kosato, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust reaction chamber system of engine. 4,117,672, Cl. 60-282.000.
Yamazaki, Shuichi; and Kajitani, Ikuo, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust reaction assembly for internal combustion engine. 4,117,673, Cl. 60-282.000.
Yan, Tsoung-Yuan, to Mobil Oil Corporation. Production of low sulfur fuels from coal. 4,118,201, Cl. 44-1.00R.
Yan, Tsoung-Yuan, to Mobil Oil Corporation. Conversion of solid wastes to fuel coke and gasoline/light oil. 4,118,281, Cl. 201-2.500.

Yanick, Paul. Loudness contour compensated hearing aid having ganged volume, bandpass filter, and compressor control. 4,118,604, Cl. 179-107.0FD.
Yankee, Ernest W., to Upjohn Company, The. 5-Oxa-11-deoxy-cis-13-PGE_1, compounds. 4,118,578, Cl. 560-121.000.
Yankee, Ernest W., to Upjohn Company, The. 5-Oxa-11-deoxy-cis-13-$PGF_{\alpha 1}$ compounds. 4,118,579, Cl. 560-121.000.
Yankee, Ernest W., to Upjohn Company, The. 5-Oxa-cis-13-PGA, compounds. 4,118,580, Cl. 560-121.000.
Yankee, Ernest W., to Upjohn Company, The. 5-Oxa-cis-13-PGE_1 compounds. 4,118,581, Cl. 560-121.000.
Yardney Electric Corporation: *See—*
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Chireau, Roland F.; and Berchielli, Aldo S., 4,118,552, Cl. 429-219.000.
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Yates, George A. Combination bulldozer blade and bucket assembly for earth working equipment. 4,117,610, Cl. 37-117.500.
Yazane, Shigeru; and Mogami, Youetsu, to Honda Giken Kogyo Kabushiki Kaisha. Collapsible steering column. 4,117,741, Cl. 74-492.000.
Yeap, Arthur K. C., to Audio Developments International. System and a method for equalizing an audio sound transducer system. 4,118,601, Cl. 179-1.00D.
Yeda Research and Development Co. Ltd.: *See—*
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Yeh, George Chiayou, to Villanova University. Separation of liquid mixtures. 4,118,285, Cl. 203-81.000.
Yokokawa, Yasuo: *See—*
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Yokota, Reizo, to Kabushiki Kaisha Yodogawaseikosho. Method of manufacturing large-sized centrifugally cast composite roll and device for disposing lower side pouring sprue runner used in the method. 4,117,877, Cl. 164-95.000.
Yokoyama, Akinori; and Komatsu, Mitsuaki, to Kabushiki Kaisha Komatsu Seisakusho. Torque converter and planetary gear set therefor. 4,117,745, Cl. 74-688.000.
Yokoyama, Takushi; Kojima, Hidetaka; Uragami, Masaharu; and Miwa, Kathuyoshi, to Daicel, Ltd. Process for producing pyridine. 4,118,388, Cl. 260-290.00R.
Yoneda, Kichi. Emergency system for stopping a band blade of a cutting apparatus. 4,117,752, Cl. 83-58.000.
Yoshida, Fumitake, to Seisan Kaihatsu Kagaku Kenkyusho. Apparatus for treatment of artificial kidney dialyzing fluid. 4,118,314, Cl. 210-22.00C.
Yoshida, Takashi; and Kobayashi, Kenzo, to Tokyo Shibaura Electric Co., Ltd. Gyro stabilized platform for scanning antenna. 4,118,707, Cl. 343-765.000.
Yoshida, Toshiro, to Toyota Jidosha Kogyo K.K. Throttle valve positioner. 4,117,811, Cl. 123-103.00R.
Yoshida, William Goro. Knotless fish line connector. 4,117,574, Cl. 24-129.00R.
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Young, Robert R.: *See—*
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Durant, Graham John; Ganellin, Charon Robin; and Young, Rodney Christopher, 4,118,502, Cl. 424-273.00R.
Young, Timothy Tung Jen. Reciprocating lever friction drive mechanism for a bicycle or other occupant propelled vehicle. 4,117,915, Cl. 280-255.000.
Youngers, Stephen Anthony, to J. I. Case Company. Adjustable mounting for subterranean tool. 4,117,890, Cl. 172-40.000.
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Zamotin, Rodvinon I. Patient lift device. 4,117,561, Cl. 5-83.000.
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Ziegler, Bertram Randall; and Matteson, Edward J., to GAF Corporation. Continuous wet-laid process for making high-strength glass fiber mats. 4,118,272, Cl. 162-156.000.
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Naidich, Jury Vladimirovich; Kolesnichenko, Galina Alexeevna; Zjukin, Nikolai Stepanovich; Kostjuk, Boris Dmitrievich; Shaikevich, Stanislava Stanislavovna; Motsak, Yaroslav Feodosievich; Fedulaev, Vitaly Pavlovich; Kolchemanov, Nikolai Alexandrovich; Ugarov, Valentin Mikhailovich; Losev, Viktor Vasilievich; Drui, Mark Simonovich; Lavrinovich, Alla Alexandrovna; Shpotakovsky, Dmitry Fedorovich; and Chizhov, Stanislav Viktorovich, 4,117,968, Cl. 228-124.000.
Zobel, Don W.: *See—*
Jarrett, Robert B.; and Zobel, Don W., 4,117,819, Cl. 123-148.00E.
Zocher, Josef: *See—*
Current, Wayne A.; Genge, Bruce I.; Hurme, Herbert J.; and Zocher, Josef, 4,117,791, Cl. 112-222.000.
Zodrow, Rudolf; and Hoveler, Egon, to Jagenberg-Werke AG. Labeling station. 4,118,269, Cl. 156-560.000.
Zollinger, J. Lamar: *See—*
Beardsley, James L.; and Zollinger, J. Lamar, 4,118,536, Cl. 428-413.000.
Zuech, Ernest A.: *See—*
Murtha, Timothy P.; and Zuech, Ernest A., 4,118,434, Cl. 260-668.00R.
Zurawski, Egon: *See—*
Meier, Heinz; Zurawski, Egon; and Greppmaier, Paul, 4,117,739, Cl. 74-404.000.
Zyliss Zysett AG: *See—*
Hartmann, Horst, 4,117,980, Cl. 241-37.500.

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 48,560	4,002,772	Mar. 30, 1976	Jan. 11, 1977
B 54,859	4,000,101	Feb. 17, 1976	Dec. 28, 1976
B 59,512	3,999,216	Mar. 16, 1976	Dec. 21, 1976
B 66,272	4,014,978	Feb. 24, 1976	Mar. 29, 1977
B 71,613	4,008,393	Mar. 16, 1976	Feb. 15, 1977
B 73,017	4,001,879	Mar. 9, 1976	Jan. 4, 1977
B 78,315	3,982,192	Feb. 10, 1976	Sep. 21, 1976
B 79,099	3,982,177	Jan. 13, 1976	Sep. 21, 1976
B 97,259	3,999,614	Mar. 9, 1976	Dec. 28, 1976
B 105,006	4,007,074	Mar. 23, 1976	Feb. 8, 1977
B 111,130	4,001,380	Mar. 16, 1976	Jan. 4, 1977
B 141,968	4,013,442	Mar. 30, 1976	Mar. 22, 1977
B 150,142	3,981,767	Jan. 27, 1976	Sep. 21, 1976
B 159,570	4,036,870	Mar. 23, 1976	July 19, 1977
B 160,045	3,983,446	Jan. 13, 1976	Sep. 28, 1976
B 160,099	3,987,221	Jan. 13, 1976	Oct. 19, 1976
B 163,463	3,981,659	Jan. 27, 1976	Sep. 21, 1976
B 167,470	4,001,101	Mar. 2, 1976	Jan. 4, 1977
B 181,208	4,001,391	Mar. 9, 1976	Jan. 4, 1977
B 200,759	3,986,872	Feb. 3, 1976	Oct. 19, 1976
B 208,916	3,987,106	Jan. 13, 1976	Oct. 19, 1976
B 214,925	3,997,648	Mar. 9, 1976	Dec. 14, 1976
B 231,416	4,000,054	Mar. 30, 1976	Dec. 28, 1976
B 236,266	4,013,624	Mar. 23, 1976	Mar. 22, 1977
B 236,342	4,001,182	Feb. 10, 1976	Jan. 4, 1977
B 248,240	3,983,556	Jan. 13, 1976	Sep. 28, 1976
B 257,143	4,000,111	Mar. 16, 1976	Dec. 28, 1976
B 270,274	3,982,223	Feb. 17, 1976	Sep. 21, 1976
B 270,351	3,997,893	Mar. 30, 1976	Dec. 14, 1976
B 271,743	4,001,195	Mar. 16, 1976	Jan. 4, 1977
B 276,026	3,992,405	Feb. 3, 1976	Nov. 16, 1976
B 279,415	4,000,697	Mar. 16, 1976	Jan. 4, 1977
B 279,969	3,986,073	Jan. 13, 1976	Oct. 12, 1976
B 281,162	4,009,481	Mar. 23, 1976	Feb. 22, 1977
B 283,941	3,995,313	Feb. 3, 1976	Nov. 30, 1976
B 288,757	4,001,072	Mar. 30, 1976	Jan. 4, 1977
B 301,143	3,991,107	Jan. 27, 1976	Nov. 9, 1976
B 302,160	3,985,774	Feb. 3, 1976	Oct. 12, 1976
B 306,668	3,985,713	Feb. 3, 1976	Oct. 12, 1976
B 307,698	3,993,763	Feb. 3, 1976	Nov. 23, 1976
B 308,659	3,981,947	Jan. 27, 1976	Sep. 21, 1976
B 311,450	3,988,976	Mar. 9, 1976	Nov. 2, 1976
B 311,779	4,013,481	Feb. 10, 1976	Mar. 22, 1977
B 313,280	4,003,591	Apr. 6, 1976	Jan. 18, 1977
B 326,211	3,988,272	Mar. 23, 1976	Oct. 26, 1976
B 328,065	4,014,752	Mar. 30, 1976	Mar. 29, 1977
B 328,077	4,014,860	Apr. 13, 1976	Mar. 29, 1977
B 328,116	4,000,774	Mar. 9, 1976	Jan. 4, 1977
B 330,719	4,001,121	Mar. 16, 1976	Jan. 4, 1977
B 330,736	3,996,299	Feb. 3, 1976	Dec. 7, 1976
B 332,442	4,001,231	Mar. 30, 1976	Jan. 4, 1977
B 333,110	3,989,867	Mar. 16, 1976	Nov. 2, 1976
B 333,247	4,001,201	Mar. 16, 1976	Jan. 4, 1977
B 333,838	4,006,263	Mar. 23, 1976	Feb. 1, 1977
B 335,783	4,013,744	Mar. 30, 1976	Mar. 22, 1977
B 336,754	3,989,805	Mar. 16, 1976	Nov. 2, 1976
B 337,023	4,013,188	Mar. 30, 1976	Mar. 22, 1977
B 337,823	4,002,746	Mar. 23, 1976	Jan. 11, 1977
B 339,194	3,982,215	Feb. 3, 1976	Sep. 21, 1976
B 339,446	4,001,067	Feb. 24, 1976	Jan. 4, 1977
B 340,170	4,000,444	Mar. 30, 1976	Dec. 28, 1976
B 344,669	4,013,655	Mar. 16, 1976	Mar. 22, 1977
B 347,661	3,999,218	Mar. 16, 1976	Dec. 21, 1976
B 348,433	3,984,405	Feb. 3, 1976	Oct. 5, 1976
B 349,370	3,989,684	Jan. 27, 1976	Nov. 2, 1976
B 351,455	4,001,309	Feb. 24, 1976	Jan. 4, 1977
B 354,222	4,012,305	Mar. 23, 1976	Mar. 15, 1977
B 354,959	3,995,996	Feb. 17, 1976	Dec. 7, 1976
B 356,187	3,981,222	Jan. 20, 1976	Sep. 21, 1976
B 356,470	4,014,789	Mar. 23, 1976	Mar. 29, 1977
B 357,526	4,001,319	Mar. 23, 1976	Jan. 4, 1977
B 358,260	3,989,661	Mar. 30, 1976	Nov. 2, 1976
B 358,427	3,989,896	Feb. 3, 1976	Nov. 2, 1976
B 359,768	4,013,684	Mar. 30, 1976	Mar. 22, 1977
B 359,901	3,981,729	Jan. 13, 1976	Sep. 21, 1976
B 361,954	4,014,753	Apr. 6, 1976	Mar. 29, 1977
B 363,565	4,004,821	Mar. 30, 1976	Jan. 25, 1977
B 364,797	3,996,131	Feb. 17, 1976	Dec. 7, 1976
B 367,092	4,014,920	Apr. 13, 1976	Mar. 29, 1977
B 367,305	3,998,640	Mar. 2, 1976	Dec. 21, 1976
B 367,621	3,989,589	Feb. 3, 1976	Nov. 2, 1976
B 369,221	3,985,834	Feb. 24, 1976	Oct. 12, 1976
B 369,373	4,013,683	Mar. 23, 1976	Mar. 22, 1977
B 369,379	4,013,754	Mar. 30, 1976	Mar. 22, 1977
B 370,309	3,989,640	Jan. 20, 1976	Nov. 2, 1976
B 371,095	4,005,074	Mar. 23, 1976	Jan. 25, 1977
B 371,635	4,010,290	Mar. 23, 1976	Mar. 1, 1977
B 371,912	3,995,738	Mar. 2, 1976	Dec. 7, 1976
B 372,016	3,989,685	Mar. 9, 1976	Nov. 2, 1976
B 372,232	4,000,967	Mar. 16, 1976	Jan. 4, 1977
B 372,722	3,998,925	Mar. 9, 1976	Dec. 21, 1976
B 373,344	4,053,067	Feb. 3, 1976	Oct. 11, 1977
B 373,354	3,989,870	Jan. 27, 1976	Nov. 2, 1976
B 374,553	4,008,394	Mar. 30, 1976	Feb. 15, 1977
B 374,588	3,985,899	Jan. 27, 1976	Oct. 12, 1976
B 376,749	4,014,856	Mar. 30, 1976	Mar. 29, 1977
B 378,513	3,981,750	Jan. 27, 1976	Sep. 21, 1976
B 378,760	4,001,477	Mar. 9, 1976	Jan. 4, 1977
B 379,177	3,981,976	Jan. 27, 1976	Sep. 21, 1976
B 380,137	4,014,802	Mar. 23, 1976	Mar. 29, 1977
B 381,006	4,009,447	Apr. 6, 1976	Feb. 22, 1977
B 381,709	3,984,587	Jan. 13, 1976	Oct. 5, 1976
B 381,985	3,990,775	Feb. 3, 1976	Nov. 9, 1976
B 382,120	4,013,639	Mar. 23, 1976	Mar. 22, 1977
B 383,697	4,008,211	Feb. 17, 1976	Feb. 15, 1977
B 384,225	3,998,523	Mar. 16, 1976	Dec. 21, 1976
B 384,330	3,985,613	Jan. 27, 1976	Oct. 12, 1976
B 384,654	3,992,681	Feb. 24, 1976	Nov. 16, 1976
B 385,024	3,994,911	Feb. 10, 1976	Nov. 30, 1976
B 385,483	3,993,684	Feb. 17, 1976	Nov. 23, 1976
B 385,631	3,982,924	Jan. 27, 1976	Sep. 28, 1976
B 386,257	3,981,915	Feb. 3, 1976	Sep. 21, 1976
B 386,673	3,993,717	Feb. 3, 1976	Nov. 23, 1976
B 386,828	3,992,440	Feb. 3, 1976	Nov. 16, 1976
B 387,337	D 243,157	Mar. 16, 1976	Jan. 25, 1977
B 388,675	4,012,459	Mar. 30, 1976	Mar. 15, 1977
B 389,155	4,000,970	Mar. 30, 1976	Jan. 4, 1977
B 389,304	3,986,829	Jan. 27, 1976	Oct. 19, 1976
B 390,031	3,985,799	Jan. 13, 1976	Oct. 12, 1976
B 390,408	3,992,426	Feb. 3, 1976	Nov. 16, 1976
B 390,979	4,003,850	Mar. 23, 1976	Jan. 18, 1977
B 391,473	3,988,370	Mar. 2, 1976	Oct. 26, 1976
B 391,797	3,988,046	Mar. 9, 1976	Oct. 26, 1976
B 391,828	4,014,933	Apr. 6, 1976	Mar. 29, 1977
B 391,844	3,999,165	Mar. 16, 1976	Dec. 21, 1976
B 392,798	3,996,249	Mar. 30, 1976	Dec. 7, 1976
B 394,248	3,989,764	Jan. 27, 1976	Nov. 2, 1976
B 394,350	3,982,200	Jan. 13, 1976	Sep. 21, 1976
B 394,742	4,009,285	Apr. 13, 1976	Feb. 22, 1977
B 395,554	3,998,156	Mar. 9, 1976	Dec. 21, 1976
B 395,975	4,001,085	Mar. 2, 1976	Jan. 4, 1977
B 396,164	3,989,590	Feb. 3, 1976	Nov. 2, 1976
B 396,377	D 243,148	Apr. 6, 1976	Jan. 25, 1977
B 397,674	3,998,438	Mar. 16, 1976	Dec. 21, 1976
B 398,084	3,996,239	Feb. 3, 1976	Dec. 7, 1976
B 398,220	3,990,834	Feb. 3, 1976	Nov. 9, 1976
B 398,488	3,987,991	Feb. 24, 1976	Oct. 26, 1976
B 399,098	3,997,665	Feb. 24, 1976	Dec. 14, 1976
B 399,632	4,001,046	Mar. 9, 1976	Jan. 4, 1977
B 399,908	3,983,323	Jan. 13, 1976	Sep. 28, 1976
B 400,871	3,988,893	Feb. 17, 1976	Nov. 2, 1976
B 401,042	D 242,197	Mar. 16, 1976	Nov. 9, 1976
B 401,221	4,014,791	Apr. 6, 1976	Mar. 29, 1977
B 402,162	3,994,902	Mar. 2, 1976	Nov. 30, 1976
B 402,328	3,995,545	Apr. 6, 1976	Dec. 7, 1976
B 402,553	3,983,219	Feb. 17, 1976	Sep. 28, 1976
B 402,657	4,013,665	Apr. 6, 1976	Mar. 22, 1977
B 402,929	3,991,251	Feb. 3, 1976	Nov. 9, 1976
B 403,076	4,014,917	Apr. 20, 1976	Mar. 29, 1977
B 403,243	3,996,232	Mar. 30, 1976	Dec. 7, 1976
B 403,326	4,001,212	Mar. 23, 1976	Jan. 4, 1977
B 403,477	3,995,315	Feb. 3, 1976	Nov. 30, 1976
B 403,507	3,982,095	Feb. 10, 1976	Sep. 21, 1976
B 403,766	3,994,834	Feb. 10, 1976	Nov. 30, 1976
B 403,883	4,001,481	Mar. 23, 1976	Jan. 4, 1977
B 405,726	3,981,241	Jan. 13, 1976	Sep. 21, 1976
B 405,899	4,097,710	Mar. 23, 1976	Mar. 21, 1978
B 406,546	D 242,966	Mar. 16, 1976	Jan. 11, 1977
B 407,205	4,000,966	Mar. 16, 1976	Jan. 4, 1977
B 407,737	3,992,546	Feb. 3, 1976	Nov. 16, 1976
B 407,812	4,010,006	Mar. 23, 1976	Mar. 1, 1977
B 408,123	4,014,887	Apr. 13, 1976	Mar. 29, 1977
B 409,848	3,983,270	Jan. 27, 1976	Sep. 28, 1976
B 410,074	4,001,303	Feb. 24, 1976	Jan. 4, 1977
B 410,694	3,995,530	Mar. 23, 1976	Dec. 7, 1976
B 411,471	3,982,933	Feb. 17, 1976	Sep. 28, 1976
B 411,624	4,001,205	Mar. 16, 1976	Jan. 4, 1977
B 411,765	3,993,428	Feb. 24, 1976	Nov. 23, 1976
B 412,068	3,981,244	Jan. 13, 1976	Sep. 21, 1976
B 412,124	4,007,000	Mar. 23, 1976	Feb. 8, 1977
B 413,379	4,001,325	Mar. 9, 1976	Jan. 4, 1977
B 414,028	3,993,738	Feb. 17, 1976	Nov. 23, 1976
B 414,266	3,993,614	Feb. 10, 1976	Nov. 23, 1976
B 414,481	3,982,979	Jan. 20, 1976	Sep. 28, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 414,971	D 242,208	Feb. 10, 1976	Nov. 9, 1976
B 415,021	3,994,173	Mar. 2, 1976	Nov. 30, 1976
B 415,122	3,997,503	Feb. 10, 1976	Dec. 14, 1976
B 415,590	4,009,317	Mar. 23, 1976	Feb. 22, 1977
B 416,257	4,001,335	Mar. 16, 1976	Jan. 4, 1977
B 416,589	3,990,363	Jan. 27, 1976	Nov. 9, 1976
B 417,014	3,981,851	Jan. 13, 1976	Sep. 21, 1976
B 417,164	4,001,360	Mar. 2, 1976	Jan. 4, 1977
B 417,349	3,985,076	Mar. 9, 1976	Oct. 12, 1976
B 417,498	4,013,471	Mar. 23, 1976	Mar. 22, 1977
B 418,489	3,989,592	Jan. 13, 1976	Nov. 2, 1976
B 419,173	3,999,728	Mar. 9, 1976	Dec. 28, 1976
B 419,582	3,989,681	Mar. 2, 1976	Nov. 2, 1976
B 420,176	4,001,017	Mar. 16, 1976	Jan. 4, 1977
B 420,321	3,990,645	Mar. 30, 1976	Nov. 9, 1976
B 420,472	3,993,934	Feb. 24, 1976	Nov. 23, 1976
B 421,373	4,001,326	Mar. 23, 1976	Jan. 4, 1977
B 421,608	4,013,806	Mar. 23, 1976	Mar. 22, 1977
B 421,975	3,994,693	Mar. 2, 1976	Nov. 30, 1976
B 422,063	3,994,835	Feb. 3, 1976	Nov. 30, 1976
B 422,156	4,010,401	Mar. 23, 1976	Mar. 1, 1977
B 423,365	3,996,186	Feb. 17, 1976	Dec. 7, 1976
B 423,404	3,990,958	Mar. 2, 1976	Nov. 9, 1976
B 423,441	3,997,137	Feb. 17, 1976	Dec. 14, 1976
B 423,867	3,990,844	Feb. 3, 1976	Nov. 9, 1976
B 423,883	3,986,871	Jan. 27, 1976	Oct. 19, 1976
B 424,354	D 242,416	Feb. 10, 1976	Nov. 23, 1976
B 424,410	4,021,196	Mar. 30, 1976	May 3, 1977
B 424,989	3,990,569	Feb. 3, 1976	Nov. 9, 1976
B 425,193	4,002,107	Mar. 23, 1976	Jan. 11, 1977
B 425,285	4,014,676	Apr. 13, 1976	Mar. 29, 1977
B 425,462	3,998,396	Mar. 9, 1976	Dec. 21, 1976
B 425,588	3,985,111	Jan. 13, 1976	Oct. 12, 1976
B 426,157	4,013,714	Mar. 23, 1976	Mar. 22, 1977
B 426,227	3,999,028	Mar. 2, 1976	Dec. 21, 1976
B 426,266	3,998,839	Mar. 2, 1976	Dec. 21, 1976
B 426,274	4,014,949	Jan. 20, 1976	Mar. 29, 1977
B 426,424	3,993,742	Feb. 3, 1976	Nov. 23, 1976
B 426,639	3,992,539	Feb. 3, 1976	Nov. 16, 1976
B 426,819	3,995,868	Feb. 17, 1976	Dec. 7, 1976
B 427,483	3,982,277	Jan. 20, 1976	Sep. 21, 1976
B 427,946	4,006,161	Mar. 23, 1976	Feb. 1, 1977
B 428,103	4,000,211	Feb. 10, 1976	Dec. 28, 1976
B 428,271	3,987,415	Mar. 23, 1976	Oct. 19, 1976
B 428,408	3,995,252	Mar. 2, 1976	Nov. 30, 1976
B 428,877	3,984,649	Jan. 27, 1976	Oct. 5, 1976
B 429,018	3,990,061	Feb. 10, 1976	Nov. 2, 1976
B 429,027	4,001,260	Mar. 23, 1976	Jan. 4, 1977
B 429,157	3,990,628	Jan. 27, 1976	Nov. 9, 1976
B 429,434	3,989,223	Feb. 17, 1976	Nov. 2, 1976
B 430,157	3,992,465	Feb. 17, 1976	Nov. 16, 1976
B 430,172	3,982,563	Jan. 13, 1976	Sep. 28, 1976
B 430,213	4,013,514	Mar. 30, 1976	Mar. 22, 1977
B 430,276	3,982,171	Jan. 20, 1976	Sep. 21, 1976
B 430,287	D 242,489	Feb. 10, 1976	Nov. 23, 1976
B 430,326	4,003,581	Mar. 23, 1976	Jan. 18, 1977
B 430,334	3,981,677	Jan. 27, 1976	Sep. 21, 1976
B 431,072	3,985,610	Jan. 20, 1976	Oct. 12, 1976
B 431,334	3,988,095	Mar. 16, 1976	Oct. 26, 1976
B 431,713	4,000,167	Feb. 10, 1976	Dec. 28, 1976
B 431,785	3,999,950	Feb. 24, 1976	Dec. 28, 1976
B 431,797	4,007,290	Mar. 30, 1976	Feb. 8, 1977
B 432,049	3,995,123	Mar. 23, 1976	Nov. 30, 1976
B 432,140	3,999,163	Mar. 23, 1976	Dec. 21, 1976
B 432,265	4,013,480	Mar. 23, 1976	Mar. 22, 1977
B 432,594	4,003,404	Mar. 30, 1976	Jan. 18, 1977
B 432,969	3,997,017	Mar. 2, 1976	Dec. 14, 1976
B 432,991	3,991,669	Mar. 2, 1976	Nov. 16, 1976
B 433,094	3,987,768	Jan. 27, 1976	Oct. 26, 1976
B 433,707	4,013,594	Mar. 23, 1976	Mar. 22, 1977
B 433,892	4,016,061	Apr. 6, 1976	Apr. 5, 1977
B 433,930	4,012,324	Mar. 23, 1976	Mar. 15, 1977
B 434,206	3,994,610	Feb. 3, 1976	Nov. 30, 1976
B 434,441	D 242,849	Mar. 16, 1976	Dec. 28, 1976
B 435,481	4,000,892	Mar. 9, 1976	Jan. 4, 1977
B 435,570	4,000,908	Mar. 16, 1976	Jan. 4, 1977
B 435,617	4,001,234	Mar. 16, 1976	Jan. 4, 1977
B 436,724	3,991,856	Feb. 24, 1976	Nov. 16, 1976
B 437,209	4,001,193	Feb. 3, 1976	Jan. 4, 1977
B 437,559	3,993,287	Feb. 3, 1976	Nov. 23, 1976
B 437,596	3,985,638	Jan. 27, 1976	Oct. 12, 1976
B 437,894	4,001,015	Mar. 2, 1976	Jan. 4, 1977
B 437,986	4,011,399	Apr. 20, 1976	Mar. 8, 1977
B 438,048	4,001,394	Mar. 23, 1976	Jan. 4, 1977
B 438,484	3,992,451	Feb. 17, 1976	Nov. 16, 1976
B 438,882	3,983,719	Feb. 24, 1976	Oct. 5, 1976
B 438,916	3,983,050	Jan. 13, 1976	Sep. 28, 1976
B 439,542	3,982,199	Jan. 27, 1976	Sep. 21, 1976
B 439,778	4,001,455	Feb. 3, 1976	Jan. 4, 1977
B 440,548	4,001,271	Mar. 16, 1976	Jan. 4, 1977
B 440,632	4,014,955	Apr. 13, 1976	Mar. 29, 1977
B 440,633	4,000,116	Feb. 10, 1976	Dec. 28, 1976
B 440,858	3,993,670	Feb. 3, 1976	Nov. 23, 1976
B 441,543	4,014,755	Mar. 23, 1976	Mar. 29, 1977
B 441,605	4,026,862	Feb. 3, 1976	May 31, 1977
B 441,723	3,988,249	Mar. 16, 1976	Oct. 26, 1976
B 441,789	4,001,449	Mar. 30, 1976	Jan. 4, 1977
B 442,163	D 242,192	Mar. 16, 1976	Nov. 9, 1976
B 442,295	4,000,477	Mar. 16, 1976	Dec. 28, 1976
B 442,431	4,011,260	Mar. 23, 1976	Mar. 8, 1977
B 442,810	3,997,533	Feb. 24, 1976	Dec. 14, 1976
B 442,866	3,982,351	Feb. 24, 1976	Sep. 28, 1976
B 442,953	4,002,657	Mar. 23, 1976	Jan. 11, 1977
B 442,970	3,989,890	Feb. 3, 1976	Nov. 2, 1976
B 443,163	3,981,242	Feb. 3, 1976	Sep. 21, 1976
B 443,446	D 242,494	Apr. 6, 1976	Nov. 23, 1976
B 443,563	3,996,204	Feb. 24, 1976	Dec. 7, 1976
B 443,647	3,990,737	Feb. 17, 1976	Nov. 9, 1976
B 443,712	3,982,233	Jan. 27, 1976	Sep. 21, 1976
B 444,078	4,014,854	Mar. 23, 1976	Mar. 29, 1977
B 444,294	4,013,634	Mar. 30, 1976	Mar. 22, 1977
B 444,437	3,995,171	Mar. 9, 1976	Nov. 30, 1976
B 445,166	4,001,252	Mar. 2, 1976	Jan. 4, 1977
B 445,459	3,988,889	Feb. 3, 1976	Nov. 2, 1976
B 445,493	3,994,903	Mar. 2, 1976	Nov. 30, 1976
B 445,690	3,999,584	Feb. 3, 1976	Dec. 28, 1976
B 446,107	4,001,276	Mar. 9, 1976	Jan. 4, 1977
B 446,956	4,014,765	Apr. 13, 1976	Mar. 29, 1977
B 447,000	3,984,419	Feb. 3, 1976	Oct. 5, 1976
B 447,440	3,991,724	Feb. 17, 1976	Nov. 16, 1976
B 449,892	3,997,919	Mar. 23, 1976	Dec. 14, 1976
B 449,988	4,014,794	Mar. 30, 1976	Mar. 29, 1977
B 449,989	4,061,572	Mar. 30, 1976	Dec. 6, 1977
B 450,196	3,997,701	Feb. 10, 1976	Dec. 14, 1976
B 450,413	4,007,463	Mar. 23, 1976	Feb. 8, 1977
B 450,521	3,982,838	Feb. 17, 1976	Sep. 28, 1976
B 450,701	3,991,084	Mar. 16, 1976	Nov. 9, 1976
B 450,708	3,989,724	Mar. 9, 1976	Nov. 2, 1976
B 450,870	3,998,951	Mar. 16, 1976	Dec. 21, 1976
B 450,967	3,983,055	Jan. 13, 1976	Sep. 28, 1976
B 451,248	3,997,758	Mar. 2, 1976	Dec. 14, 1976
B 451,308	3,991,037	Feb. 17, 1976	Nov. 9, 1976
B 451,396	4,000,450	Apr. 13, 1976	Dec. 28, 1976
B 451,438	Re. 29,066	Mar. 2, 1976	Dec. 7, 1976
B 451,534	3,986,033	Jan. 13, 1976	Oct. 12, 1976
B 452,034	4,002,367	Mar. 23, 1976	Jan. 11, 1977
B 452,138	4,004,278	Mar. 23, 1976	Jan. 18, 1977
B 452,293	4,014,726	Mar. 30, 1976	Mar. 29, 1977
B 452,501	4,001,111	Mar. 16, 1976	Jan. 4, 1977
B 452,672	3,981,602	Jan. 13, 1976	Sep. 21, 1976
B 452,879	4,001,089	Mar. 16, 1976	Jan. 4, 1977
B 452,883	3,981,735	Jan. 27, 1976	Sep. 21, 1976
B 452,915	4,013,933	Mar. 30, 1976	Mar. 22, 1977
B 452,938	3,994,719	Feb. 17, 1976	Nov. 30, 1976
B 452,944	4,009,773	Mar. 30, 1976	Mar. 1, 1977
B 453,031	3,998,678	Mar. 16, 1976	Dec. 21, 1976
B 453,067	4,005,394	Mar. 23, 1976	Jan. 25, 1977
B 453,238	3,997,063	Mar. 2, 1976	Dec. 14, 1976
B 453,432	4,000,514	Mar. 16, 1976	Dec. 28, 1976
B 453,533	3,997,744	Feb. 17, 1976	Dec. 14, 1976
B 453,616	3,987,376	Jan. 27, 1976	Oct. 19, 1976
B 453,759	3,989,790	Jan. 27, 1976	Nov. 2, 1976
B 453,960	4,014,701	Apr. 13, 1976	Mar. 29, 1977
B 454,283	3,995,153	Feb. 3, 1976	Nov. 30, 1976
B 454,833	4,008,733	Mar. 30, 1976	Feb. 22, 1977
B 455,425	3,990,060	Feb. 3, 1976	Nov. 2, 1976
B 455,481	3,991,092	Feb. 24, 1976	Nov. 9, 1976
B 455,486	4,001,353	Mar. 16, 1976	Jan. 4, 1977
B 455,686	4,001,156	Mar. 2, 1976	Jan. 4, 1977
B 455,759	3,984,242	Feb. 24, 1976	Oct. 5, 1976
B 455,806	3,998,919	Mar. 23, 1976	Dec. 21, 1976
B 456,069	3,998,991	Mar. 9, 1976	Dec. 21, 1976
B 456,148	3,984,269	Jan. 13, 1976	Oct. 5, 1976
B 456,153	3,997,992	Mar. 9, 1976	Dec. 21, 1976
B 456,384	4,014,859	Apr. 6, 1976	Mar. 29, 1977
B 456,579	3,993,715	Feb. 10, 1976	Nov. 23, 1976
B 456,869	4,001,277	Mar. 9, 1976	Jan. 4, 1977
B 456,900	3,996,262	Feb. 3, 1976	Dec. 7, 1976
B 456,905	4,013,431	Mar. 23, 1976	Mar. 22, 1977
B 457,547	3,996,397	Feb. 17, 1976	Dec. 7, 1976
B 457,850	3,993,586	Feb. 10, 1976	Nov. 23, 1976
B 457,862	3,987,195	Jan. 27, 1976	Oct. 19, 1976
B 457,886	3,988,498	Jan. 13, 1976	Oct. 26, 1976
B 457,931	4,001,229	Mar. 16, 1976	Jan. 4, 1977

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 458,500	3,997,805	Feb. 24, 1976	Dec. 14, 1976
B 458,617	3,984,422	Feb. 3, 1976	Oct. 5, 1976
B 458,964	3,996,615	Mar. 2, 1976	Dec. 7, 1976
B 459,190	4,010,786	Mar. 30, 1976	Mar. 8, 1977
B 459,381	4,000,017	Mar. 9, 1976	Dec. 28, 1976
B 459,408	4,018,890	Mar. 23, 1976	Apr. 19, 1977
B 459,597	3,996,711	Feb. 17, 1976	Dec. 14, 1976
B 459,811	3,982,173	Jan. 20, 1976	Sep. 21, 1976
B 459,821	4,005,954	Mar. 30, 1976	Feb. 1, 1977
B 460,388	3,989,448	Jan. 27, 1976	Nov. 2, 1976
B 460,441	3,981,828	Jan. 13, 1976	Sep. 21, 1976
B 460,846	3,985,817	Feb. 24, 1976	Oct. 12, 1976
B 461,184	3,992,482	Feb. 17, 1976	Nov. 16, 1976
B 461,250	4,000,768	Mar. 16, 1976	Jan. 4, 1977
B 461,257	4,078,715	Jan. 13, 1976	Mar. 14, 1978
B 461,336	3,982,231	Feb. 3, 1976	Sep. 21, 1976
B 461,352	3,981,681	Jan. 13, 1976	Sep. 21, 1976
B 461,685	4,013,661	Mar. 30, 1976	Mar. 22, 1977
B 461,752	4,016,541	Apr. 20, 1976	Apr. 5, 1977
B 461,874	3,982,276	Jan. 27, 1976	Sep. 21, 1976
B 462,030	4,009,342	Mar. 23, 1976	Feb. 22, 1977
B 462,386	3,988,188	Jan. 13, 1976	Oct. 26, 1976
B 462,424	3,989,602	Feb. 24, 1976	Nov. 2, 1976
B 462,828	3,998,395	Mar. 9, 1976	Dec. 21, 1976
B 462,893	3,984,253	Feb. 24, 1976	Oct. 5, 1976
B 463,322	3,989,982	Jan. 20, 1976	Nov. 2, 1976
B 463,388	3,992,605	Feb. 10, 1976	Nov. 16, 1976
B 463,473	4,002,068	Mar. 23, 1976	Jan. 11, 1977
B 463,591	4,015,051	Mar. 30, 1976	Mar. 29, 1977
B 463,671	3,985,385	Jan. 13, 1976	Oct. 12, 1976
B 464,027	3,999,390	Mar. 16, 1976	Dec. 28, 1976
B 464,290	3,990,307	Feb. 3, 1976	Nov. 9, 1976
B 464,491	4,015,612	Mar. 30, 1976	Apr. 5, 1977
B 464,587	3,991,091	Feb. 3, 1976	Nov. 9, 1976
B 464,593	3,997,659	Mar. 9, 1976	Dec. 14, 1976
B 465,145	3,981,148	Jan. 27, 1976	Sep. 21, 1976
B 465,202	3,989,757	Feb. 24, 1976	Nov. 2, 1976
B 465,393	3,987,390	Jan. 27, 1976	Oct. 19, 1976
B 465,688	3,989,770	Jan. 27, 1976	Nov. 2, 1976
B 465,955	3,997,502	Feb. 3, 1976	Dec. 14, 1976
B 466,304	4,007,095	Mar. 23, 1976	Feb. 8, 1977
B 466,318	3,999,115	Mar. 9, 1976	Dec. 21, 1976
B 466,390	3,983,349	Feb. 24, 1976	Sep. 28, 1976
B 466,419	4,011,087	Mar. 23, 1976	Mar. 8, 1977
B 466,444	3,986,039	Jan. 20, 1976	Oct. 12, 1976
B 466,906	3,993,037	Mar. 16, 1976	Nov. 23, 1976
B 466,929	3,991,195	Jan. 27, 1976	Nov. 9, 1976
B 467,250	3,997,428	Feb. 3, 1976	Dec. 14, 1976
B 467,328	3,997,599	Mar. 9, 1976	Dec. 14, 1976
B 467,412	3,981,265	Jan. 13, 1976	Sep. 21, 1976
B 467,486	3,991,725	Mar. 16, 1976	Nov. 16, 1976
B 467,971	3,983,453	Jan. 13, 1976	Sep. 28, 1976
B 468,052	3,988,335	Feb. 10, 1976	Oct. 26, 1976
B 468,100	3,995,107	Mar. 9, 1976	Nov. 30, 1976
B 468,330	4,001,475	Mar. 16, 1976	Jan. 4, 1977
B 468,350	3,981,922	Jan. 13, 1976	Sep. 21, 1976
B 468,421	4,014,739	Mar. 30, 1976	Mar. 29, 1977
B 468,603	4,003,839	Mar. 23, 1976	Jan. 18, 1977
B 469,036	4,005,926	Mar. 16, 1976	Feb. 1, 1977
B 469,228	4,052,954	Feb. 17, 1976	Oct. 11, 1977
B 469,468	4,000,220	Mar. 16, 1976	Dec. 28, 1976
B 469,947	3,984,153	Jan. 20, 1976	Oct. 5, 1976
B 470,170	3,986,410	Jan. 13, 1976	Oct. 19, 1976
B 470,305	4,014,043	Apr. 6, 1976	Mar. 22, 1977
B 470,348	3,981,929	Jan. 13, 1976	Sep. 21, 1976
B 470,576	3,997,507	Feb. 24, 1976	Dec. 14, 1976
B 470,601	3,985,655	Mar. 9, 1976	Oct. 12, 1976
B 470,798	3,987,480	Jan. 20, 1976	Oct. 19, 1976
B 470,853	4,002,101	Mar. 23, 1976	Jan. 11, 1977
B 470,899	3,996,441	Mar. 2, 1976	Dec. 7, 1976
B 470,900	4,001,213	Mar. 2, 1976	Jan. 4, 1977
B 470,945	4,014,848	Apr. 13, 1976	Mar. 29, 1977
B 471,116	4,001,318	Feb. 17, 1976	Jan. 4, 1977
B 471,221	3,981,974	Jan. 13, 1976	Sep. 21, 1976
B 471,405	3,993,576	Feb. 10, 1976	Nov. 23, 1976
B 471,494	3,993,660	Mar. 16, 1976	Nov. 23, 1976
B 471,579	3,985,689	Jan. 13, 1976	Oct. 12, 1976
B 471,617	3,994,871	Feb. 10, 1976	Nov. 30, 1976
B 471,681	4,012,844	Apr. 13, 1976	Mar. 22, 1977
B 471,706	4,076,275	Mar. 16, 1976	Feb. 28, 1978
B 471,735	3,989,408	Feb. 3, 1976	Nov. 2, 1976
B 471,836	4,000,150	Feb. 24, 1976	Dec. 28, 1976
B 472,241	3,992,453	Feb. 17, 1976	Nov. 16, 1976
B 472,256	3,985,789	Jan. 13, 1976	Oct. 12, 1976
B 472,284	3,982,078	Jan. 13, 1976	Sep. 21, 1976
B 472,591	4,013,029	Apr. 6, 1976	Mar. 22, 1977
B 472,760	4,001,330	Apr. 13, 1976	Jan. 4, 1977
B 473,039	3,985,747	Feb. 10, 1976	Oct. 12, 1976
B 473,040	3,985,738	Feb. 10, 1976	Oct. 12, 1976
B 473,813	3,989,071	Mar. 9, 1976	Nov. 2, 1976
B 473,972	3,984,043	Jan. 13, 1976	Oct. 5, 1976
B 474,573	3,988,375	Jan. 20, 1976	Oct. 26, 1976
B 474,747	3,997,704	Feb. 24, 1976	Dec. 14, 1976
B 475,236	3,989,990	Feb. 3, 1976	Nov. 2, 1976
B 475,385	4,001,071	Mar. 9, 1976	Jan. 4, 1977
B 475,681	3,983,332	Jan. 20, 1976	Sep. 28, 1976
B 475,801	4,056,759	Mar. 30, 1976	Nov. 1, 1977
B 476,267	4,005,068	Apr. 6, 1976	Jan. 25, 1977
B 476,372	3,985,771	Feb. 24, 1976	Oct. 12, 1976
B 476,542	4,013,549	Mar. 30, 1976	Mar. 22, 1977
B 476,568	3,999,456	Mar. 16, 1976	Dec. 28, 1976
B 476,577	3,982,070	Jan. 20, 1976	Sep. 21, 1976
B 476,681	3,986,181	Jan. 13, 1976	Oct. 12, 1976
B 476,776	3,998,715	Mar. 23, 1976	Dec. 21, 1976
B 476,967	3,995,206	Mar. 9, 1976	Nov. 30, 1976
B 477,252	3,985,759	Jan. 13, 1976	Oct. 12, 1976
B 477,481	3,991,076	Feb. 3, 1976	Nov. 9, 1976
B 477,584	D 242,855	Apr. 6, 1976	Dec. 28, 1976
B 477,597	3,993,912	Feb. 17, 1976	Nov. 23, 1976
B 477,892	4,010,355	Mar. 30, 1976	Mar. 1, 1977
B 478,234	4,010,421	Mar. 30, 1976	Mar. 1, 1977
B 478,739	3,992,253	Feb. 17, 1976	Nov. 16, 1976
B 478,759	4,055,681	Mar. 16, 1976	Oct. 25, 1977
B 479,175	3,985,700	Feb. 17, 1976	Oct. 12, 1976
B 479,242	3,983,074	Feb. 17, 1976	Sep. 28, 1976
B 479,502	3,999,030	Mar. 16, 1976	Dec. 21, 1976
B 479,681	D 242,672	Mar. 16, 1976	Dec. 14, 1976
B 479,969	4,001,132	Mar. 9, 1976	Jan. 4, 1977
B 480,114	4,001,327	Mar. 2, 1976	Jan. 4, 1977
B 480,251	4,008,700	Mar. 23, 1976	Feb. 22, 1977
B 480,287	4,006,029	Mar. 30, 1976	Feb. 1, 1977
B 480,292	3,994,011	Mar. 16, 1976	Nov. 23, 1976
B 480,350	3,994,164	Feb. 10, 1976	Nov. 30, 1976
B 480,384	3,999,737	Mar. 23, 1976	Dec. 28, 1976
B 480,452	3,994,923	Feb. 10, 1976	Nov. 30, 1976
B 480,473	3,995,608	Mar. 2, 1976	Dec. 7, 1976
B 480,604	3,985,251	Jan. 13, 1976	Oct. 12, 1976
B 480,625	3,996,227	Feb. 24, 1976	Dec. 7, 1976
B 480,662	3,988,382	Mar. 2, 1976	Oct. 26, 1976
B 480,740	3,996,431	Mar. 2, 1976	Dec. 7, 1976
B 480,749	3,999,207	Mar. 9, 1976	Dec. 21, 1976
B 480,987	4,001,459	Mar. 30, 1976	Jan. 4, 1977
B 481,048	3,998,542	Mar. 16, 1976	Dec. 21, 1976
B 481,190	4,013,468	Mar. 30, 1976	Mar. 22, 1977
B 481,600	3,981,235	Jan. 27, 1976	Sep. 21, 1976
B 481,737	3,982,057	Jan. 13, 1976	Sep. 21, 1976
B 481,778	4,001,385	Mar. 30, 1976	Jan. 4, 1977
B 481,930	3,992,717	Feb. 24, 1976	Nov. 16, 1976
B 481,989	4,008,337	Mar. 23, 1976	Feb. 15, 1977
B 482,058	4,001,398	Mar. 2, 1976	Jan. 4, 1977
B 482,660	3,995,026	Feb. 10, 1976	Nov. 30, 1976
B 482,709	3,985,733	Feb. 24, 1976	Oct. 12, 1976
B 482,907	3,984,811	Jan. 20, 1976	Oct. 5, 1976
B 483,247	4,001,889	Apr. 13, 1976	Jan. 4, 1977
B 483,256	3,981,723	Feb. 10, 1976	Sep. 21, 1976
B 483,268	3,995,215	Mar. 9, 1976	Nov. 30, 1976
B 483,606	3,986,990	Jan. 27, 1976	Oct. 19, 1976
B 483,615	3,988,637	Jan. 27, 1976	Oct. 26, 1976
B 483,746	4,014,923	Mar. 23, 1976	Mar. 29, 1977
B 483,762	3,993,608	Feb. 10, 1976	Nov. 23, 1976
B 483,865	3,985,693	Jan. 13, 1976	Oct. 12, 1976
B 484,029	3,983,558	Feb. 10, 1976	Sep. 28, 1976
B 484,067	3,992,374	Feb. 17, 1976	Nov. 16, 1976
B 484,068	3,994,937	Mar. 2, 1976	Nov. 30, 1976
B 484,121	3,997,770	Mar. 16, 1976	Dec. 14, 1976
B 484,269	4,000,159	Feb. 10, 1976	Dec. 28, 1976
B 484,332	3,986,540	Mar. 2, 1976	Oct. 19, 1976
B 484,365	3,983,578	Jan. 27, 1976	Sep. 28, 1976
B 484,419	4,001,292	Mar. 9, 1976	Jan. 4, 1977
B 484,437	4,013,740	Mar. 30, 1976	Mar. 22, 1977
B 484,482	3,994,017	Mar. 23, 1976	Nov. 23, 1976
B 484,769	3,999,498	Mar. 16, 1976	Dec. 28, 1976
B 485,051	3,992,418	Feb. 17, 1976	Nov. 16, 1976
B 485,060	3,983,067	Feb. 17, 1976	Sep. 28, 1976
B 485,169	3,989,791	Mar. 16, 1976	Nov. 2, 1976
B 485,188	4,001,170	Mar. 16, 1976	Jan. 4, 1977
B 485,401	3,985,859	Jan. 27, 1976	Oct. 12, 1976
B 485,575	3,996,565	Feb. 24, 1976	Dec. 7, 1976
B 485,926	4,006,357	Mar. 23, 1976	Feb. 1, 1977
B 485,972	4,017,472	Mar. 23, 1976	Apr. 12, 1977
B 486,280	3,983,130	Feb. 3, 1976	Sep. 28, 1976
B 486,614	3,995,835	Feb. 17, 1976	Dec. 7, 1976
B 486,678	4,001,273	Mar. 2, 1976	Jan. 4, 1977
B 486,828	3,989,651	Mar. 2, 1976	Nov. 2, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 487,062	D 241,256	Feb. 10, 1976	Nov. 9, 1976
B 487,078	4,012,895	Mar. 30, 1976	Mar. 22, 1977
B 487,133	3,989,826	Jan. 27, 1976	Nov. 2, 1976
B 487,260	3,990,610	Jan. 27, 1976	Nov. 9, 1976
B 487,411	3,983,579	Feb. 24, 1976	Sep. 28, 1976
B 487,423	3,998,810	Mar. 2, 1976	Dec. 21, 1976
B 487,427	3,995,788	Mar. 2, 1976	Dec. 7, 1976
B 487,467	4,014,847	Apr. 13, 1976	Mar. 29, 1977
B 487,529	4,022,750	Mar. 30, 1976	May 10, 1977
B 488,111	3,985,765	Jan. 13, 1976	Oct. 12, 1976
B 488,395	3,982,245	Jan. 27, 1976	Sep. 21, 1976
B 488,634	3,982,158	Jan. 20, 1976	Sep. 21, 1976
B 488,756	3,991,810	Mar. 16, 1976	Nov. 16, 1976
B 488,836	4,013,121	Mar. 30, 1976	Mar. 22, 1977
B 489,290	3,998,081	Feb. 17, 1976	Dec. 21, 1976
B 489,328	3,990,088	Jan. 20, 1976	Nov. 2, 1976
B 489,331	3,996,175	Feb. 17, 1976	Dec. 7, 1976
B 489,485	D 243,266	Apr. 13, 1976	Feb. 1, 1977
B 489,550	4,000,710	Mar. 16, 1976	Jan. 4, 1977
B 489,685	3,984,085	Feb. 24, 1976	Oct. 5, 1976
B 490,067	3,986,600	Jan. 27, 1976	Oct. 19, 1976
B 490,547	3,999,439	Feb. 24, 1976	Dec. 28, 1976
B 490,551	D 243,168	Apr. 6, 1976	Jan. 25, 1977
B 490,589	3,990,680	Feb. 3, 1976	Nov. 9, 1976
B 490,623	3,996,964	Mar. 2, 1976	Dec. 14, 1976
B 490,647	3,985,196	Feb. 24, 1976	Oct. 12, 1976
B 490,806	3,989,486	Feb. 3, 1976	Nov. 2, 1976
B 490,812	3,998,842	Mar. 30, 1976	Dec. 21, 1976
B 490,946	3,993,652	Feb. 17, 1976	Nov. 23, 1976
B 490,995	3,995,031	Feb. 3, 1976	Nov. 30, 1976
B 491,032	3,981,892	Feb. 10, 1976	Sep. 21, 1976
B 491,052	3,985,790	Mar. 2, 1976	Oct. 12, 1976
B 491,111	3,997,916	Feb. 17, 1976	Dec. 14, 1976
B 491,455	3,991,167	Feb. 3, 1976	Nov. 9, 1976
B 491,501	3,984,914	Jan. 13, 1976	Oct. 12, 1976
B 491,618	4,007,950	Mar. 16, 1976	Feb. 15, 1977
B 491,630	3,999,044	Mar. 9, 1976	Dec. 21, 1976
B 491,673	3,994,770	Feb. 17, 1976	Nov. 30, 1976
B 491,711	4,053,467	Mar. 23, 1976	Oct. 11, 1977
B 491,776	3,986,298	Mar. 16, 1976	Oct. 19, 1976
B 491,883	3,984,412	Feb. 3, 1976	Oct. 5, 1976
B 491,906	D 242,223	Feb. 10, 1976	Nov. 9, 1976
B 492,089	3,997,541	Feb. 24, 1976	Dec. 14, 1976
B 492,093	4,003,658	Mar. 23, 1976	Jan. 18, 1977
B 492,120	3,995,692	Feb. 24, 1976	Dec. 7, 1976
B 492,301	3,981,073	Jan. 13, 1976	Sep. 21, 1976
B 492,373	4,010,908	Mar. 30, 1976	Mar. 8, 1977
B 492,688	3,983,415	Jan. 20, 1976	Sep. 28, 1976
B 492,716	3,998,739	Mar. 2, 1976	Dec. 21, 1976
B 492,774	4,001,843	Mar. 9, 1976	Jan. 4, 1977
B 492,902	3,993,859	Feb. 24, 1976	Nov. 23, 1976
B 492,946	3,991,303	Jan. 27, 1976	Nov. 9, 1976
B 493,254	D 243,267	Apr. 13, 1976	Feb. 1, 1977
B 493,370	3,984,792	Mar. 16, 1976	Oct. 5, 1976
B 493,463	4,013,510	Mar. 23, 1976	Mar. 22, 1977
B 493,474	4,013,565	Mar. 23, 1976	Mar. 22, 1977
B 493,501	3,988,061	Feb. 3, 1976	Oct. 26, 1976
B 493,686	4,008,338	Mar. 23, 1976	Feb. 15, 1977
B 493,955	3,989,830	Mar. 9, 1976	Nov. 2, 1976
B 493,981	3,990,165	Mar. 9, 1976	Nov. 9, 1976
B 494,138	4,034,002	Mar. 23, 1976	July 5, 1977
B 494,234	3,983,808	Feb. 10, 1976	Oct. 5, 1976
B 494,339	4,001,255	Mar. 16, 1976	Jan. 4, 1977
B 494,383	3,991,289	Feb. 3, 1976	Nov. 9, 1976
B 494,439	4,057,521	Apr. 13, 1976	Nov. 8, 1977
B 494,440	4,056,502	Feb. 17, 1976	Nov. 1, 1977
B 494,450	4,079,029	Feb. 17, 1976	Mar. 14, 1978
B 494,569	3,991,104	Feb. 3, 1976	Nov. 9, 1976
B 494,691	3,987,457	Mar. 16, 1976	Oct. 19, 1976
B 494,806	3,989,210	Feb. 3, 1976	Nov. 2, 1976
B 494,944	3,992,469	Feb. 17, 1976	Nov. 16, 1976
B 495,124	4,060,968	Mar. 9, 1976	Dec. 6, 1977
B 495,185	3,999,166	Mar. 9, 1976	Dec. 21, 1976
B 495,331	4,000,456	Mar. 16, 1976	Dec. 28, 1976
B 495,402	3,983,988	Feb. 17, 1976	Oct. 5, 1976
B 495,408	4,000,222	Feb. 3, 1976	Dec. 28, 1976
B 495,489	3,984,571	Feb. 3, 1976	Oct. 5, 1976
B 495,550	3,993,666	Feb. 3, 1976	Nov. 23, 1976
B 495,554	3,993,665	Feb. 3, 1976	Nov. 23, 1976
B 495,759	3,989,998	Feb. 3, 1976	Nov. 2, 1976
B 495,781	4,013,699	Mar. 23, 1976	Mar. 22, 1977
B 495,903	3,995,997	Feb. 17, 1976	Dec. 7, 1976
B 496,430	3,991,140	Feb. 10, 1976	Nov. 9, 1976
B 496,431	3,985,894	Jan. 13, 1976	Oct. 12, 1976
B 496,487	3,982,261	Jan. 20, 1976	Sep. 21, 1976
B 496,500	3,985,962	Feb. 3, 1976	Oct. 12, 1976
B 496,502	3,987,444	Jan. 20, 1976	Oct. 19, 1976
B 496,792	3,999,959	Feb. 17, 1976	Dec. 28, 1976
B 496,964	3,999,219	Apr. 20, 1976	Dec. 21, 1976
B 496,999	3,983,804	Jan. 27, 1976	Oct. 5, 1976
B 497,021	3,985,039	Jan. 13, 1976	Oct. 12, 1976
B 497,194	3,988,267	Feb. 3, 1976	Oct. 26, 1976
B 497,292	3,994,052	Feb. 3, 1976	Nov. 30, 1976
B 497,293	4,011,412	Mar. 30, 1976	Mar. 8, 1977
B 497,473	3,990,839	Feb. 3, 1976	Nov. 9, 1976
B 497,490	4,118,377	Mar. 23, 1976	Oct. 3, 1978
B 497,571	4,009,997	Mar. 23, 1976	Mar. 1, 1977
B 497,584	3,988,184	Feb. 24, 1976	Oct. 26, 1976
B 497,702	3,996,589	Mar. 2, 1976	Dec. 7, 1976
B 497,780	3,997,500	Feb. 24, 1976	Dec. 14, 1976
B 497,853	3,987,934	Feb. 17, 1976	Oct. 26, 1976
B 497,896	D 243,091	Apr. 6, 1976	Jan. 18, 1977
B 497,960	3,991,325	Jan. 20, 1976	Nov. 9, 1976
B 498,208	4,001,480	Apr. 13, 1976	Jan. 4, 1977
B 498,288	4,013,657	Mar. 23, 1976	Mar. 22, 1977
B 498,775	3,993,868	Mar. 2, 1976	Nov. 23, 1976
B 498,205	3,989,611	Feb. 10, 1976	Nov. 2, 1976
B 498,500	3,982,241	Jan. 20, 1976	Sep. 21, 1976
B 498,775	3,993,868	Mar. 2, 1976	Nov. 23, 1976
B 498,820	3,996,670	Mar. 9, 1976	Dec. 14, 1976
B 498,951	3,996,907	Mar. 2, 1976	Dec. 14, 1976
B 499,171	3,985,192	Jan. 27, 1976	Oct. 12, 1976
B 499,209	3,995,907	Feb. 24, 1976	Dec. 7, 1976
B 499,227	3,981,344	Jan. 27, 1976	Sep. 21, 1976
B 499,324	4,001,375	Mar. 16, 1976	Jan. 4, 1977
B 499,352	3,981,391	Jan. 27, 1976	Sep. 21, 1976
B 499,370	4,013,544	Mar. 30, 1976	Mar. 22, 1977
B 499,718	3,990,058	Jan. 27, 1976	Nov. 2, 1976
B 499,786	4,000,663	Mar. 16, 1976	Jan. 4, 1977
B 500,171	3,997,262	Mar. 30, 1976	Dec. 14, 1976
B 500,176	3,995,316	Feb. 3, 1976	Nov. 30, 1976
B 500,408	D 242,721	Mar. 16, 1976	Dec. 14, 1976
B 500,945	3,996,817	Feb. 24, 1976	Dec. 14, 1976
B 500,959	4,014,853	Apr. 13, 1976	Mar. 29, 1977
B 500,981	3,984,681	Jan. 27, 1976	Oct. 5, 1976
B 501,122	3,981,385	Feb. 17, 1976	Sep. 21, 1976
B 501,128	4,072,723	Feb. 24, 1976	Feb. 7, 1978
B 501,181	3,984,761	Feb. 10, 1976	Oct. 5, 1976
B 501,253	3,994,015	Feb. 3, 1976	Nov. 23, 1976
B 501,317	3,985,643	Jan. 13, 1976	Oct. 12, 1976
B 501,379	4,013,696	Mar. 30, 1976	Mar. 22, 1977
B 501,415	3,982,051	Jan. 13, 1976	Sep. 21, 1976
B 501,482	4,012,650	Jan. 13, 1976	Mar. 15, 1977
B 501,503	4,001,640	Mar. 2, 1976	Jan. 4, 1977
B 501,540	3,985,694	Jan. 13, 1976	Oct. 12, 1976
B 501,975	3,998,466	Mar. 2, 1976	Dec. 21, 1976
B 501,993	3,981,606	Jan. 13, 1976	Sep. 21, 1976
B 502,151	3,998,614	Mar. 23, 1976	Dec. 21, 1976
B 502,161	4,000,500	Mar. 2, 1976	Dec. 28, 1976
B 502,289	3,982,274	Jan. 13, 1976	Sep. 21, 1976
B 502,381	D 242,231	Mar. 16, 1976	Nov. 9, 1976
B 502,540	3,983,698	Jan. 13, 1976	Oct. 5, 1976
B 502,571	D 242,433	Apr. 6, 1976	Nov. 23, 1976
B 502,589	3,989,652	Jan. 27, 1976	Nov. 2, 1976
B 502,652	3,989,186	Feb. 24, 1976	Nov. 2, 1976
B 502,667	3,991,431	Feb. 24, 1976	Nov. 16, 1976
B 502,973	3,982,161	Jan. 27, 1976	Sep. 21, 1976
B 502,993	3,992,489	Feb. 17, 1976	Nov. 16, 1976
B 503,029	3,986,879	Jan. 27, 1976	Oct. 19, 1976
B 503,345	4,001,235	Feb. 24, 1976	Jan. 4, 1977
B 503,371	4,009,401	Mar. 30, 1976	Feb. 22, 1977
B 503,436	3,988,819	Feb. 24, 1976	Nov. 2, 1976
B 503,456	4,007,702	Mar. 23, 1976	Feb. 15, 1977
B 503,521	3,999,646	Mar. 16, 1976	Dec. 28, 1976
B 503,579	3,989,680	Feb. 10, 1976	Nov. 2, 1976
B 503,618	3,997,782	Mar. 9, 1976	Dec. 14, 1976
B 503,742	3,989,756	Feb. 17, 1976	Nov. 2, 1976
B 503,776	4,016,000	Mar. 23, 1976	Apr. 5, 1977
B 503,780	3,990,055	Mar. 16, 1976	Nov. 2, 1976
B 503,817	3,988,307	Jan. 13, 1976	Oct. 26, 1976
B 504,056	3,993,923	Feb. 24, 1976	Nov. 23, 1976
B 504,061	3,987,534	Mar. 16, 1976	Oct. 26, 1976
B 504,156	3,999,048	Mar. 23, 1976	Dec. 21, 1976
B 504,169	3,981,219	Jan. 13, 1976	Sep. 21, 1976
B 504,404	3,996,499	Feb. 24, 1976	Dec. 7, 1976
B 504,405	4,007,401	Apr. 13, 1976	Feb. 8, 1977
B 504,439	3,999,398	Mar. 16, 1976	Dec. 28, 1976
B 504,503	3,999,210	Mar. 9, 1976	Dec. 21, 1976
B 504,582	4,005,138	Mar. 30, 1976	Jan. 25, 1977
B 504,778	3,986,650	Feb. 24, 1976	Oct. 19, 1976
B 504,877	3,997,564	Feb. 24, 1976	Dec. 14, 1976
B 504,899	3,991,273	Mar. 9, 1976	Nov 9, 1976
B 505,126	3,981,745	Feb. 10, 1976	Sep. 21, 1976
B 505,221	4,013,627	Mar. 30, 1976	Mar. 22, 1977

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 505,582	4,001,659	Mar. 23, 1976	Jan. 4, 1977
B 505,689	3,987,631	Mar. 2, 1976	Oct. 26, 1976
B 505,813	3,985,175	Jan. 13, 1976	Oct. 12, 1976
B 506,144	3,991,147	Feb. 10, 1976	Nov. 9, 1976
B 506,148	3,988,319	Feb. 3, 1976	Oct. 26, 1976
B 506,167	3,990,652	Feb. 10, 1976	Nov. 9, 1976
B 506,286	3,982,085	Jan. 20, 1976	Sep. 21, 1976
B 506,461	3,987,348	Jan. 20, 1976	Oct. 19, 1976
B 506,566	3,985,402	Jan. 20, 1976	Oct. 12, 1976
B 506,624	3,999,695	Mar. 9, 1976	Dec. 28, 1976
B 506,648	3,994,857	Feb. 3, 1976	Nov. 30, 1976
B 506,744	3,981,176	Jan. 13, 1976	Sep. 21, 1976
B 506,760	4,012,835	Apr. 13, 1976	Mar. 22, 1977
B 506,839	4,005,389	Mar. 23, 1976	Jan. 25, 1977
B 506,840	4,002,928	Mar. 23, 1976	Jan. 11, 1977
B 506,916	3,986,140	Feb. 3, 1976	Oct. 12, 1976
B 506,926	3,993,232	Feb. 17, 1976	Nov. 23, 1976
B 507,087	3,991,389	Feb. 17, 1976	Nov. 9, 1976
B 507,131	4,000,499	Mar. 2, 1976	Dec. 28, 1976
B 507,166	4,014,738	Apr. 13, 1976	Mar. 29, 1977
B 507,396	3,995,167	Feb. 10, 1976	Nov. 30, 1976
B 507,456	4,080,349	Mar. 9, 1976	Mar. 21, 1978
B 507,476	3,994,680	Feb. 10, 1976	Nov. 30, 1976
B 507,647	3,982,240	Jan. 27, 1976	Sep. 21, 1976
B 508,118	3,992,283	Feb. 17, 1976	Nov. 16, 1976
B 508,119	3,992,285	Feb. 17, 1976	Nov. 16, 1976
B 508,369	3,985,847	Jan. 13, 1976	Oct. 12, 1976
B 508,639	4,004,194	Mar. 23, 1976	Jan. 18, 1977
B 508,817	3,989,891	Feb. 3, 1976	Nov. 2, 1976
B 508,878	3,994,117	Feb. 3, 1976	Nov. 30, 1976
B 508,940	3,981,321	Feb. 17, 1976	Sep. 21, 1976
B 508,961	3,987,477	Feb. 3, 1976	Oct. 19, 1976
B 509,043	3,996,767	Feb. 24, 1976	Dec. 14, 1976
B 509,165	3,999,155	Mar. 2, 1976	Dec. 21, 1976
B 509,185	3,989,996	Feb. 3, 1976	Nov. 2, 1976
B 509,238	3,982,399	Feb. 24, 1976	Sep. 28, 1976
B 509,474	3,997,260	Feb. 17, 1976	Dec. 14, 1976
B 509,586	4,006,645	Feb. 3, 1976	Feb. 8, 1977
B 509,606	3,989,986	Feb. 3, 1976	Nov. 2, 1976
B 509,772	3,999,004	Mar. 16, 1976	Dec. 21, 1976
B 509,819	4,014,712	Apr. 13, 1976	Mar. 29, 1977
B 510,026	4,016,763	Apr. 13, 1976	Apr. 12, 1977
B 510,184	D 242,784	Apr. 6, 1976	Dec. 21, 1976
B 510,278	4,008,972	Mar. 30, 1976	Feb. 22, 1977
B 510,281	3,993,215	Mar. 9, 1976	Nov. 23, 1976
B 510,346	D 242,207	Feb. 10, 1976	Nov. 9, 1976
B 510,458	4,000,221	Feb. 10, 1976	Dec. 28, 1976
B 510,521	3,990,656	Mar. 2, 1976	Nov. 9, 1976
B 510,588	3,981,539	Jan. 27, 1976	Sep. 21, 1976
B 510,677	3,989,541	Feb. 24, 1976	Nov. 2, 1976
B 510,682	4,000,978	Mar. 30, 1976	Jan. 4, 1977
B 510,836	4,013,795	Mar. 23, 1976	Mar. 22, 1977
B 510,850	3,989,841	Feb. 3, 1976	Nov. 2, 1976
B 510,855	3,981,059	Jan. 27, 1976	Sep. 21, 1976
B 511,907	3,999,622	Mar. 30, 1976	Dec. 28, 1976
B 510,998	3,992,336	Feb. 10, 1976	Nov. 16, 1976
B 511,002	3,998,717	Mar. 2, 1976	Dec. 21, 1976
B 511,099	3,990,162	Feb. 3, 1976	Nov. 9, 1976
B 511,156	3,981,364	Jan. 27, 1976	Sep. 21, 1976
B 511,346	3,984,072	Jan. 27, 1976	Oct. 5, 1976
B 511,407	3,981,485	Feb. 10, 1976	Sep. 21, 1976
B 511,454	3,982,333	Feb. 24, 1976	Sep. 28, 1976
B 511,665	4,001,037	Mar. 2, 1976	Jan. 4, 1977
B 511,885	3,981,346	Jan. 27, 1976	Sep. 21, 1976
B 511,886	3,989,991	Feb. 3, 1976	Nov. 2, 1976
B 511,909	3,981,183	Feb. 17, 1976	Sep. 21, 1976
B 512,324	3,985,084	Feb. 17, 1976	Oct. 12, 1976
B 512,547	3,984,193	Jan. 13, 1976	Oct. 5, 1976
B 512,745	3,981,294	Jan. 13, 1976	Sep. 21, 1976
B 512,779	4,014,897	Apr. 13, 1976	Mar. 29, 1977
B 512,818	3,997,363	Apr. 6, 1976	Dec. 14, 1976
B 512,849	3,982,141	Feb. 3, 1976	Sep. 21, 1976
B 512,964	3,995,279	Feb. 10, 1976	Nov. 30, 1976
B 513,014	3,991,113	Feb. 10, 1976	Nov. 9, 1976
B 513,027	3,995,143	Feb. 17, 1976	Nov. 30, 1976
B 513,134	4,006,764	Mar. 23, 1976	Feb. 8, 1977
B 513,280	3,988,211	Jan. 20, 1976	Oct. 26, 1976
B 513,368	3,982,138	Feb. 3, 1976	Sep. 21, 1976
B 513,706	3,986,064	Jan. 13, 1976	Oct. 12, 1976
B 513,756	3,993,869	Feb. 3, 1976	Nov. 23, 1976
B 513,781	4,001,324	Feb. 24, 1976	Jan. 4, 1977
B 513,789	3,981,599	Feb. 3, 1976	Sep. 21, 1976
B 513,791	4,008,608	Mar. 30, 1976	Feb. 22, 1977
B 514,259	4,013,649	Mar. 23, 1976	Mar. 22, 1977
B 514,687	3,986,522	Jan. 27, 1976	Oct. 19, 1976
B 514,839	4,033,816	Mar. 2, 1976	July 5, 1977
B 515,135	3,990,085	Feb. 17, 1976	Nov. 2, 1976
B 515,216	4,076,261	Feb. 17, 1976	Feb. 28, 1978
B 515,303	3,987,939	Jan. 20, 1976	Oct. 26, 1976
B 515,368	4,014,733	Apr. 6, 1976	Mar. 29, 1977
B 515,452	3,995,243	Feb. 10, 1976	Nov. 30, 1976
B 515,455	3,982,149	Jan. 27, 1976	Sep. 21, 1976
B 515,642	4,001,258	Feb. 24, 1976	Jan. 4, 1977
B 515,908	3,984,676	Jan. 20, 1976	Oct. 5, 1976
B 516,002	3,988,638	Jan. 13, 1976	Oct. 26, 1976
B 516,032	3,986,634	Jan. 27, 1976	Oct. 19, 1976
B 516,047	3,985,741	Feb. 10, 1976	Oct. 12, 1976
B 516,060	3,983,572	Feb. 17, 1976	Sep. 28, 1976
B 516,069	3,986,208	Mar. 16, 1976	Oct. 12, 1976
B 516,296	3,984,404	Feb. 3, 1976	Oct. 5, 1976
B 516,537	3,996,784	Feb. 17, 1976	Dec. 14, 1976
B 516,564	3,993,931	Feb. 17, 1976	Nov. 23, 1976
B 516,609	3,994,486	Feb. 24, 1976	Nov. 30, 1976
B 516,625	4,013,542	Mar. 30, 1976	Mar. 22, 1977
B 516,804	3,991,209	Mar. 23, 1976	Nov. 9, 1976
B 516,825	3,988,885	Feb. 3, 1976	Nov. 2, 1976
B 517,273	D 242,798	Mar. 16, 1976	Dec. 21, 1976
B 517,504	3,999,855	Mar. 9, 1976	Dec. 28, 1976
B 517,668	4,013,423	Apr. 6, 1976	Mar. 22, 1977
B 517,762	3,986,065	Mar. 16, 1976	Oct. 12, 1976
B 517,858	4,000,999	Feb. 17, 1976	Jan. 4, 1977
B 517,956	D 243,088	Apr. 6, 1976	Jan. 18, 1977
B 517,957	D 243,089	Apr. 6, 1976	Jan. 18, 1977
B 518,076	4,014,914	Mar. 30, 1976	Mar. 29, 1977
B 518,226	3,993,509	Feb. 10, 1976	Nov. 23, 1976
B 518,326	4,008,282	Mar. 23, 1976	Feb. 15, 1977
B 518,656	3,989,732	Feb. 17, 1976	Nov. 2, 1976
B 518,859	3,989,971	Feb. 3, 1976	Nov. 2, 1976
B 518,999	3,990,323	Feb. 3, 1976	Nov. 9, 1976
B 519,095	3,993,621	Feb. 24, 1976	Nov. 23, 1976
B 519,355	4,014,829	Apr. 13, 1976	Mar. 29, 1977
B 519,377	3,987,223	Jan. 27, 1976	Oct. 19, 1976
B 519,446	3,985,815	Feb. 24, 1976	Oct. 12, 1976
B 519,485	3,991,134	Feb. 10, 1976	Nov. 9, 1976
B 519,486	3,992,481	Feb. 17, 1976	Nov. 16, 1976
B 519,487	3,992,337	Feb. 17, 1976	Nov. 16, 1976
B 519,599	3,995,350	Feb. 17, 1976	Dec. 7, 1976
B 519,623	4,012,049	Apr. 6, 1976	Mar. 15, 1977
B 519,680	4,014,660	Mar. 30, 1976	Mar. 29, 1977
B 519,932	3,988,618	Feb. 3, 1976	Oct. 26, 1976
B 519,979	3,982,067	Feb. 3, 1976	Sep. 21, 1976
B 520,063	3,989,934	Mar. 2, 1976	Nov. 2, 1976
B 520,075	3,989,935	Feb. 24, 1976	Nov. 2, 1976
B 520,076	3,989,936	Mar. 2, 1976	Nov. 2, 1976
B 520,082	3,989,937	Mar. 23, 1976	Nov. 2, 1976
B 520,115	4,003,072	Mar. 23, 1976	Jan. 11, 1977
B 520,227	4,002,823	Mar. 30, 1976	Jan. 11, 1977
B 520,256	3,985,730	Jan. 13, 1976	Oct. 12, 1976
B 520,277	3,995,635	Feb. 17, 1976	Dec. 7, 1976
B 520,341	3,992,028	Mar. 16, 1976	Nov. 16, 1976
B 520,384	3,986,592	Jan. 27, 1976	Oct. 19, 1976
B 520,514	3,988,308	Mar. 9, 1976	Oct. 26, 1976
B 520,534	3,997,119	Feb. 17, 1976	Dec. 14, 1976
B 520,543	3,986,768	Jan. 27, 1976	Oct. 19, 1976
B 520,546	4,001,133	Mar. 2, 1976	Jan. 4, 1977
B 520,613	3,991,341	Mar. 16, 1976	Nov. 9, 1976
B 520,658	3,998,778	Mar. 9, 1976	Dec. 21, 1976
B 520,878	4,014,849	Apr. 6, 1976	Mar. 29, 1977
B 520,884	4,000,433	Mar. 16, 1976	Dec. 28, 1976
B 520,924	3,982,113	Jan. 27, 1976	Sep. 21, 1976
B 520,928	3,983,617	Jan. 13, 1976	Oct. 5, 1976
B 520,952	4,000,876	Mar. 16, 1976	Jan. 4, 1977
B 520,995	4,009,996	Mar. 23, 1976	Mar. 1, 1977
B 521,025	3,998,838	Mar. 23, 1976	Dec. 21, 1976
B 521,044	3,983,435	Feb. 24, 1976	Sep. 28, 1976
B 521,045	3,983,433	Feb. 24, 1976	Sep. 28, 1976
B 521,046	3,983,434	Feb. 24, 1976	Sep. 28, 1976
B 521,125	3,994,865	Feb. 10, 1976	Nov. 30, 1976
B 521,126	3,997,510	Feb. 10, 1976	Dec. 14, 1976
B 521,127	3,996,201	Feb. 17, 1976	Dec. 7, 1976
B 521,128	3,997,511	Feb. 10, 1976	Dec. 14, 1976
B 521,324	3,983,143	Jan. 27, 1976	Sep. 28, 1976
B 521,480	3,982,665	Jan. 13, 1976	Sep. 28, 1976
B 521,600	3,981,458	Jan. 27, 1976	Sep. 21, 1976
B 521,612	4,000,251	Mar. 9, 1976	Dec. 28, 1976
B 521,620	3,983,749	Jan. 27, 1976	Oct. 5, 1976
B 521,643	3,997,567	Mar. 2, 1976	Dec. 14, 1976
B 521,711	3,989,835	Feb. 10, 1976	Nov. 2, 1976
B 521,793	3,996,981	Feb. 24, 1976	Dec. 14, 1976
B 521,984	3,983,220	Feb. 17, 1976	Sep. 28, 1976
B 521,985	4,012,404	Mar. 23, 1976	Mar. 15, 1977
B 521,986	3,981,607	Feb. 3, 1976	Sep. 21, 1976
B 522,009	3,995,444	Feb. 17, 1976	Dec. 7, 1976
B 522,038	3,993,119	Feb. 3, 1976	Nov. 23, 1976

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 522,227	3,992,904	Mar. 30, 1976	Nov. 23, 1976
B 522,309	3,991,603	Feb. 3, 1976	Nov. 16, 1976
B 522,354	3,984,959	Jan. 20, 1976	Oct. 12, 1976
B 522,446	4,001,194	Mar. 30, 1976	Jan. 4, 1977
B 522,537	3,999,587	Mar. 30, 1976	Dec. 28, 1976
B 522,567	3,996,238	Feb. 17, 1976	Dec. 7, 1976
B 522,568	D 242,785	Apr. 6, 1976	Dec. 21, 1976
B 522,577	3,982,123	Jan. 27, 1976	Sep. 21, 1976
B 522,629	4,001,155	Mar. 16, 1976	Jan. 4, 1977
B 523,226	4,006,367	Mar. 23, 1976	Feb. 1, 1977
B 523,696	3,986,071	Jan. 13, 1976	Oct. 12, 1976
B 523,885	3,981,040	Feb. 17, 1976	Sep. 21, 1976
B 523,952	3,988,707	Mar. 23, 1976	Oct. 26, 1976
B 524,026	3,992,206	Feb. 10, 1976	Nov. 16, 1976
B 524,121	3,982,536	Feb. 3, 1976	Sep. 28, 1976
B 524,179	3,985,872	Jan. 13, 1976	Oct. 12, 1976
B 524,464	3,985,580	Feb. 10, 1976	Oct. 12, 1976
B 524,806	4,000,065	Mar. 2, 1976	Dec. 28, 1976
B 524,849	4,014,938	Mar. 23, 1976	Mar. 29, 1977
B 525,133	3,996,481	Mar. 23, 1976	Dec. 7, 1976
B 525,204	4,001,109	Mar. 16, 1976	Jan. 4, 1977
B 525,809	3,985,040	Feb. 24, 1976	Oct. 12, 1976
B 525,961	3,985,557	Jan. 13, 1976	Oct. 12, 1976
B 526,106	3,990,073	Jan. 27, 1976	Nov. 2, 1976
B 526,190	3,982,129	Feb. 17, 1976	Sep. 21, 1976
B 526,279	4,013,138	Apr. 13, 1976	Mar. 22, 1977
B 526,289	3,992,641	Feb. 24, 1976	Nov. 16, 1976
B 526,388	3,992,017	Feb. 3, 1976	Nov. 16, 1976
B 526,445	3,984,978	Jan. 20, 1976	Oct. 12, 1976
B 526,447	4,000,052	Feb. 24, 1976	Dec. 28, 1976
B 526,510	3,989,708	Jan. 20, 1976	Nov. 2, 1976
B 526,654	4,011,534	Mar. 23, 1976	Mar. 8, 1977
B 526,942	4,013,700	Mar. 30, 1976	Mar. 22, 1977
B 526,997	3,985,695	Jan. 13, 1976	Oct. 12, 1976
B 527,040	4,013,515	Mar. 23, 1976	Mar. 22, 1977
B 527,054	3,981,559	Feb. 17, 1976	Sep. 21, 1976
B 527,171	3,998,248	Mar. 9, 1976	Dec. 21, 1976
B 527,187	3,995,202	Feb. 17, 1976	Nov. 30, 1976
B 527,333	3,999,732	Mar. 23, 1976	Dec. 28, 1976
B 527,669	3,982,206	Jan. 13, 1976	Sep. 21, 1976
B 527,693	3,995,233	Feb. 3, 1976	Nov. 30, 1976
B 527,788	D 242,337	Feb. 10, 1976	Nov. 16, 1976
B 527,972	4,000,016	Mar. 9, 1976	Dec. 28, 1976
B 527,999	3,981,682	Feb. 3, 1976	Sep. 21, 1976
B 528,297	4,001,138	Mar. 16, 1976	Jan. 4, 1977
B 528,303	3,991,023	Feb. 10, 1976	Nov. 9, 1976
B 528,401	3,991,619	Feb. 3, 1976	Nov. 16, 1976
B 528,756	3,990,476	Feb. 3, 1976	Nov. 9, 1976
B 528,761	3,982,221	Feb. 10, 1976	Sep. 21, 1976
B 528,962	3,989,666	Feb. 24, 1976	Nov. 2, 1976
B 528,966	3,989,667	Feb. 24, 1976	Nov. 2, 1976
B 529,156	3,989,158	Jan. 13, 1976	Nov. 2, 1976
B 529,194	4,000,776	Mar. 23, 1976	Jan. 4, 1977
B 529,214	4,013,004	Apr. 20, 1976	Mar. 22, 1977
B 529,659	3,996,875	Feb. 24, 1976	Dec. 14, 1976
B 529,836	3,994,345	Feb. 3, 1976	Nov. 30, 1976
B 529,925	4,014,003	Mar. 30, 1976	Mar. 22, 1977
B 529,974	3,987,098	Feb. 17, 1976	Oct. 19, 1976
B 530,174	3,993,635	Feb. 24, 1976	Nov. 23, 1976
B 530,255	3,996,103	Mar. 2, 1976	Dec. 7, 1976
B 530,263	4,009,736	Mar. 30, 1976	Mar. 1, 1977
B 530,285	4,013,903	Apr. 6, 1976	Mar. 22, 1977
B 530,303	4,006,029	Mar. 23, 1976	Feb. 1, 1977
B 530,318	3,985,752	Jan. 13, 1976	Oct. 12, 1976
B 530,437	4,014,857	Apr. 13, 1976	Mar. 29, 1977
B 530,569	3,999,865	Mar. 16, 1976	Dec. 28, 1976
B 530,580	4,001,151	Mar. 2, 1976	Jan. 4, 1977
B 530,605	3,989,064	Feb. 3, 1976	Nov. 2, 1976
B 530,709	4,012,944	Apr. 6, 1976	Mar. 22, 1977
B 530,813	3,986,131	Feb. 17, 1976	Oct. 12, 1976
B 530,873	4,001,016	Feb. 17, 1976	Jan. 4, 1977
B 530,925	3,983,161	Feb. 24, 1976	Sep. 28, 1976
B 531,096	3,984,415	Feb. 10, 1976	Oct. 5, 1976
B 531,267	3,997,040	Feb. 24, 1976	Dec. 14, 1976
B 531,425	3,992,595	Feb. 3, 1976	Nov. 16, 1976
B 531,566	3,997,820	Mar. 16, 1976	Dec. 14, 1976
B 531,686	3,990,017	Mar. 23, 1976	Nov. 2, 1976
B 531,753	3,988,843	Mar. 2, 1976	Nov. 2, 1976
B 531,929	3,986,067	Jan. 20, 1976	Oct. 12, 1976
B 532,005	3,992,397	Feb. 24, 1976	Nov. 16, 1976
B 532,140	4,001,299	Mar. 2, 1976	Jan. 4, 1977
B 532,319	3,990,292	Feb. 3, 1976	Nov. 9, 1976
B 532,326	3,993,959	Mar. 23, 1976	Nov. 23, 1976
B 532,424	D 242,292	Feb. 10, 1976	Nov. 9, 1976
B 532,476	3,992,756	Feb. 3, 1976	Nov. 23, 1976
B 532,477	4,014,895	Apr. 13, 1976	Mar. 29, 1977
B 532,679	4,010,706	Apr. 6, 1976	Mar. 8, 1977
B 532,901	3,984,318	Jan. 13, 1976	Oct. 5, 1976
B 532,969	3,981,706	Jan. 13, 1976	Sep. 21, 1976
B 532,976	4,000,837	Mar. 23, 1976	Jan. 4, 1977
B 533,056	3,983,969	Jan. 13, 1976	Oct. 5, 1976
B 533,259	3,999,556	Feb. 24, 1976	Dec. 28, 1976
B 533,454	3,996,566	Mar. 2, 1976	Dec. 7, 1976
B 533,580	3,982,255	Feb. 3, 1976	Sep. 21, 1976
B 533,652	4,000,196	Mar. 23, 1976	Dec. 28, 1976
B 533,734	3,984,799	Jan. 27, 1976	Oct. 5, 1976
B 533,968	3,986,576	Jan. 27, 1976	Oct. 19, 1976
B 534,016	3,983,381	Feb. 3, 1976	Sep. 28, 1976
B 534,313	3,981,675	Jan. 27, 1976	Sep. 21, 1976
B 534,314	3,981,786	Feb. 10, 1976	Sep. 21, 1976
B 534,333	3,981,480	Feb. 17, 1976	Sep. 21, 1976
B 534,334	D 242,722	Mar. 16, 1976	Dec. 14, 1976
B 534,443	3,989,970	Jan. 27, 1976	Nov. 2, 1976
B 534,574	3,995,624	Feb. 24, 1976	Dec. 7, 1976
B 534,591	3,991,141	Feb. 17, 1976	Nov. 9, 1976
B 534,680	4,014,904	Apr. 20, 1976	Mar. 29, 1977
B 534,767	3,982,180	Feb. 3, 1976	Sep. 21, 1976
B 534,915	4,012,668	Mar. 23, 1976	Mar. 15, 1977
B 534,991	3,983,517	Jan. 27, 1976	Sep. 28, 1976
B 535,076	3,981,718	Jan. 20, 1976	Sep. 21, 1976
B 535,209	4,001,873	Mar. 16, 1976	Jan. 4, 1977
B 535,256	3,999,150	Mar. 23, 1976	Dec. 21, 1976
B 535,268	3,999,045	Mar. 30, 1976	Dec. 21, 1976
B 535,386	3,981,150	Jan. 13, 1976	Sep. 21, 1976
B 535,391	3,981,386	Jan. 27, 1976	Sep. 21, 1976
B 535,411	3,990,543	Feb. 24, 1976	Nov. 9, 1976
B 535,437	3,997,555	Feb. 24, 1976	Dec. 14, 1976
B 535,448	3,997,123	Mar. 16, 1976	Dec. 14, 1976
B 535,466	3,981,309	Jan. 27, 1976	Sep. 21, 1976
B 535,813	3,981,819	Jan. 27, 1976	Sep. 21, 1976
B 535,928	3,981,466	Jan. 13, 1976	Sep. 21, 1976
B 536,009	3,982,112	Jan. 27, 1976	Sep. 21, 1976
B 536,082	3,997,783	Mar. 16, 1976	Dec. 14, 1976
B 536,322	4,001,272	Mar. 23, 1976	Jan. 4, 1977
B 536,403	3,998,341	Mar. 23, 1976	Dec. 21, 1976
B 536,511	3,995,989	Mar. 9, 1976	Dec. 7, 1976
B 536,675	3,985,773	Jan. 20, 1976	Oct. 12, 1976
B 536,923	4,007,828	Mar. 30, 1976	Feb. 15, 1977
B 536,935	3,985,729	Jan. 13, 1976	Oct. 12, 1976
B 537,058	4,000,969	Mar. 23, 1976	Jan. 4, 1977
B 537,102	3,981,829	Jan. 13, 1976	Sep. 21, 1976
B 537,709	3,981,368	Jan. 13, 1976	Sep. 21, 1976
B 537,711	3,985,748	Jan. 13, 1976	Oct. 12, 1976
B 537,722	3,985,423	Feb. 3, 1976	Oct. 12, 1976
B 537,903	3,986,492	Jan. 20, 1976	Oct. 19, 1976
B 537,990	4,057,651	Jan. 13, 1976	Nov. 8, 1977
B 538,472	3,992,884	Feb. 3, 1976	Nov. 23, 1976
B 538,491	3,982,928	Feb. 17, 1976	Sep. 28, 1976
B 538,686	3,982,199	Jan. 13, 1976	Sep. 21, 1976
B 538,753	3,993,642	Feb. 10, 1976	Nov. 23, 1976
B 539,374	3,996,229	Mar. 9, 1976	Dec. 7, 1976
B 539,746	3,983,423	Feb. 17, 1976	Sep. 28, 1976
B 540,078	3,984,701	Jan. 13, 1976	Oct. 5, 1976
B 540,218	3,986,108	Feb. 10, 1976	Oct. 12, 1976
B 540,632	3,981,600	Jan. 13, 1976	Sep. 21, 1976
B 540,703	4,013,206	Apr. 13, 1976	Mar. 22, 1977
B 540,767	3,986,010	Mar. 16, 1976	Oct. 12, 1976
B 540,872	3,982,135	Jan. 20, 1976	Sep. 21, 1976
B 540,888	4,005,528	Mar. 30, 1976	Feb. 1, 1977
B 541,015	3,993,208	Jan. 27, 1976	Nov. 23, 1976
B 541,376	3,981,690	Feb. 17, 1976	Sep. 21, 1976
B 541,415	3,982,080	Feb. 3, 1976	Sep. 21, 1976
B 541,464	3,995,424	Feb. 17, 1976	Dec. 7, 1976
B 541,496	3,982,232	Jan. 27, 1976	Sep. 21, 1976
B 541,501	4,005,826	Apr. 13, 1976	Feb. 1, 1977
B 541,517	3,986,156	Jan. 13, 1976	Oct. 12, 1976
B 541,710	3,994,472	Feb. 24, 1976	Nov. 30, 1976
B 542,135	3,986,939	Feb. 10, 1976	Oct. 19, 1976
B 542,158	3,981,886	Jan. 13, 1976	Sep. 21, 1976
B 542,226	3,993,748	Feb. 24, 1976	Nov. 23, 1976
B 542,258	4,013,536	Mar. 23, 1976	Mar. 22, 1977
B 543,078	3,995,687	Feb. 17, 1976	Dec. 7, 1976
B 543,941	3,985,528	Jan. 13, 1976	Oct. 12, 1976
B 544,034	3,997,175	Feb. 17, 1976	Dec. 14, 1976
B 544,476	3,993,585	Feb. 24, 1976	Nov. 23, 1976
B 544,899	3,994,962	Feb. 17, 1976	Nov. 30, 1976
B 544,961	3,983,492	Jan. 13, 1976	Sep. 28, 1976
B 545,050	3,982,073	Jan. 20, 1976	Sep. 21, 1976
B 545,265	D 243,090	Apr. 13, 1976	Jan. 18, 1977
B 545,299	4,001,259	Feb. 24, 1976	Jan. 4, 1977
B 545,344	4,012,746	Mar. 30, 1976	Mar. 15, 1977
B 545,464	3,992,387	Feb. 10, 1976	Nov. 16, 1976
B 545,630	3,981,337	Jan. 27, 1976	Sep. 21, 1976
B 545,777	4,004,906	Jan. 27, 1976	Jan. 25, 1977

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 545,856	4,006,939	Mar. 30, 1976	Feb. 8, 1977
B 545,935	3,990,337	Jan. 27, 1976	Nov. 9, 1976
B 545,945	3,995,260	Jan. 27, 1976	Nov. 30, 1976
B 546,097	3,999,309	Mar. 23, 1976	Dec. 28, 1976
B 546,295	3,987,070	Jan. 20, 1976	Oct. 19, 1976
B 546,426	3,982,063	Jan. 27, 1976	Sep. 21, 1976
B 546,631	3,983,729	Feb. 3, 1976	Oct. 5, 1976
B 546,665	3,990,062	Jan. 20, 1976	Nov. 2, 1976
B 546,677	4,015,654	Apr. 6, 1976	Apr. 5, 1977
B 546,911	3,981,058	Jan. 13, 1976	Sep. 21, 1976
B 546,922	3,987,742	Mar. 16, 1976	Oct. 26, 1976
B 547,016	3,999,741	Mar. 23, 1976	Dec. 28, 1976
B 547,208	4,001,218	Feb. 24, 1976	Jan. 4, 1977
B 547,547	3,997,670	Feb. 24, 1976	Dec. 14, 1976
B 547,994	3,990,081	Jan. 20, 1976	Nov. 2, 1976
B 548,028	3,991,517	Feb. 3, 1976	Nov. 16, 1976
B 548,058	3,983,050	Feb. 17, 1976	Sep. 28, 1976
B 548,155	3,981,477	Jan. 13, 1976	Sep. 21, 1976
B 548,440	3,993,401	Feb. 3, 1976	Nov. 23, 1976
B 548,302	3,983,414	Feb. 17, 1976	Sep. 28, 1976
B 548,440	3,993,401	Feb. 3, 1976	Nov. 23, 1976
B 548,462	D 242,283	Feb. 10, 1976	Nov. 9, 1976
B 548,688	3,995,984	Mar. 9, 1976	Dec. 7, 1976
B 548,719	3,990,553	Feb. 17, 1976	Nov. 9, 1976
B 548,978	3,998,139	Mar. 9, 1976	Dec. 21, 1976
B 549,198	3,981,975	Jan. 13, 1976	Sep. 21, 1976
B 549,244	3,981,125	Jan. 27, 1976	Sep. 21, 1976
B 549,394	3,981,611	Jan. 27, 1976	Sep. 21, 1976
B 549,931	3,986,141	Jan. 20, 1976	Oct. 12, 1976
B 549,964	3,995,899	Feb. 24, 1976	Dec. 7, 1976
B 550,693	3,982,194	Jan. 20, 1976	Sep. 21, 1976
B 550,744	3,993,550	Feb. 17, 1976	Nov. 23, 1976
B 550,810	4,000,910	Mar. 23, 1976	Jan. 4, 1977
B 551,133	3,996,740	Mar. 2, 1976	Dec. 14, 1976
B 551,463	3,996,254	Feb. 17, 1976	Dec. 7, 1976
B 551,527	3,982,599	Jan. 13, 1976	Sep. 28, 1976
B 551,809	3,996,743	Feb. 24, 1976	Dec. 14, 1976
B 551,952	Re. 29,059	Mar. 2, 1976	Dec. 7, 1976
B 552,006	3,992,129	Feb. 3, 1976	Nov. 16, 1976
B 552,489	3,994,864	Feb. 10, 1976	Nov. 30, 1976
B 552,498	3,983,139	Jan. 13, 1976	Sep. 28, 1976
B 552,508	4,001,250	Mar. 16, 1976	Jan. 4, 1977
B 552,629	3,994,773	Mar. 23, 1976	Nov. 30, 1976
B 552,709	4,001,467	Mar. 23, 1976	Jan. 4, 1977
B 552,932	3,989,292	Feb. 3, 1976	Nov. 2, 1976
B 553,421	4,001,146	Mar. 23, 1976	Jan. 4, 1977
B 553,460	3,990,019	Feb. 3, 1976	Nov. 2, 1976
B 553,584	3,992,456	Feb. 17, 1976	Nov. 16, 1976
B 553,629	3,999,242	Feb. 24, 1976	Dec. 28, 1976
B 554,039	3,999,944	Feb. 24, 1976	Dec. 28, 1976
B 554,164	4,001,465	Mar. 9, 1976	Jan. 4, 1977
B 554,283	3,981,152	Jan. 27, 1976	Sep. 21, 1976
B 554,291	4,001,209	Mar. 9, 1976	Jan. 4, 1977
B 554,380	4,001,147	Mar. 9, 1976	Jan. 4, 1977
B 554,594	3,985,960	Jan. 20, 1976	Oct. 12, 1976
B 554,655	4,015,048	Feb. 24, 1976	Mar. 29, 1977
B 554,848	4,001,265	Feb. 24, 1976	Jan. 4, 1977
B 554,939	3,994,013	Feb. 10, 1976	Nov. 23, 1976
B 555,146	4,007,636	Apr. 20, 1976	Feb. 15, 1977
B 555,437	3,991,152	Feb. 3, 1976	Nov. 9, 1976
B 555,456	3,993,423	Mar. 30, 1976	Nov. 23, 1976
B 555,772	3,982,641	Jan. 13, 1976	Sep. 28, 1976
B 556,057	3,985,349	Jan. 13, 1976	Oct. 12, 1976
B 556,496	3,990,244	Mar. 16, 1976	Nov. 9, 1976
B 556,897	3,992,972	Feb. 3, 1976	Nov. 23, 1976
B 557,153	3,991,603	Feb. 3, 1976	Nov. 16, 1976
B 557,274	4,016,375	Mar. 23, 1976	Apr. 5, 1977
B 557,299	3,990,357	Feb. 3, 1976	Nov. 9, 1976
B 557,621	3,990,800	Feb. 3, 1976	Nov. 9, 1976
B 557,721	4,013,435	Mar. 23, 1976	Mar. 22, 1977
B 557,856	3,991,019	Feb. 10, 1976	Nov. 9, 1976
B 558,220	3,990,009	Jan. 27, 1976	Nov. 2, 1976
B 558,251	3,981,289	Jan. 13, 1976	Sep. 21, 1976
B 558,813	3,989,188	Feb. 3, 1976	Nov. 2, 1976
B 558,818	3,983,762	Jan. 13, 1976	Oct. 5, 1976
B 558,819	3,990,160	Feb. 3, 1976	Nov. 9, 1976
B 558,973	3,981,126	Feb. 10, 1976	Sep. 21, 1976
B 559,111	3,984,854	Feb. 24, 1976	Oct. 5, 1976
B 559,142	4,001,124	Mar. 2, 1976	Jan. 4, 1977
B 559,394	4,016,094	Apr. 20, 1976	Apr. 5, 1977
B 559,441	4,013,609	Mar. 23, 1976	Mar. 22, 1977
B 559,631	4,011,406	Mar. 23, 1976	Mar. 8, 1977
B 559,697	3,995,770	Mar. 16, 1976	Dec. 7, 1976
B 559,700	4,001,189	Mar. 23, 1976	Jan. 4, 1977
B 559,701	4,001,190	Mar. 23, 1976	Jan. 4, 1977
B 559,737	3,984,668	Jan. 20, 1976	Oct. 5, 1976
B 559,954	3,982,673	Feb. 3, 1976	Sep. 28, 1976
B 560,261	3,987,493	Mar. 16, 1976	Oct. 19, 1976
B 560,488	3,989,940	Mar. 16, 1976	Nov. 2, 1976
B 560,717	3,982,034	Feb. 10, 1976	Sep. 21, 1976
B 560,765	3,983,389	Feb. 3, 1976	Sep. 28, 1976
B 561,062	D 242,248	Feb. 10, 1976	Nov. 9, 1976
B 561,165	4,013,002	Mar. 30, 1976	Mar. 22, 1977
B 561,166	4,011,809	Mar. 30, 1976	Mar. 15, 1977
B 561,365	4,005,078	Apr. 13, 1976	Jan. 25, 1977
B 561,387	3,985,706	Feb. 10, 1976	Oct. 12, 1976
B 561,405	4,003,770	Mar. 30, 1976	Jan. 18, 1977
B 561,712	3,992,126	Feb. 17, 1976	Nov. 16, 1976
B 561,732	3,991,460	Feb. 3, 1976	Nov. 16, 1976
B 561,764	3,984,634	Jan. 27, 1976	Oct. 5, 1976
B 561,770	4,000,366	Mar. 16, 1976	Dec. 28, 1976
B 561,784	3,984,710	Jan. 27, 1976	Oct. 5, 1976
B 562,413	4,000,930	Mar. 16, 1976	Jan. 4, 1977
B 562,462	3,985,836	Jan. 13, 1976	Oct. 12, 1976
B 562,519	4,013,125	Mar. 30, 1976	Mar. 22, 1977
B 562,601	3,998,360	Mar. 16, 1976	Dec. 21, 1976
B 562,698	3,983,972	Jan. 13, 1976	Oct. 5, 1976
B 562,813	3,985,491	Feb. 3, 1976	Oct. 12, 1976
B 563,070	3,996,230	Mar. 9, 1976	Dec. 7, 1976
B 563,165	4,000,977	Mar. 9, 1976	Jan. 4, 1977
B 563,244	3,983,562	Jan. 27, 1976	Sep. 28, 1976
B 563,301	3,995,589	Feb. 17, 1976	Dec. 7, 1976
B 563,412	3,992,127	Feb. 24, 1976	Nov. 16, 1976
B 563,419	3,999,051	Mar. 23, 1976	Dec. 21, 1976
B 563,722	3,990,925	Jan. 13, 1976	Nov. 9, 1976
B 563,780	3,987,769	Feb. 3, 1976	Oct. 26, 1976
B 563,932	4,000,638	Mar. 23, 1976	Jan. 4, 1977
B 564,252	4,001,293	Mar. 2, 1976	Jan. 4, 1977
B 564,255	4,015,996	Mar. 30, 1976	Apr. 5, 1977
B 564,314	3,984,996	Jan. 20, 1976	Oct. 12, 1976
B 564,902	4,001,351	Mar. 23, 1976	Jan. 4, 1977
B 565,180	3,981,685	Jan. 27, 1976	Sep. 21, 1976
B 565,275	3,990,299	Apr. 6, 1976	Nov. 9, 1976
B 565,717	3,999,138	Apr. 13, 1976	Dec. 21, 1976
B 565,754	4,011,626	Mar. 30, 1976	Mar. 15, 1977
B 566,464	3,996,367	Feb. 3, 1976	Dec. 7, 1976
B 566,556	3,998,511	Mar. 23, 1976	Dec. 21, 1976
B 566,572	3,988,590	Mar. 16, 1976	Oct. 26, 1976
B 566,585	4,001,083	Mar. 2, 1976	Jan. 4, 1977
B 567,058	3,985,188	Jan. 13, 1976	Oct. 12, 1976
B 567,076	4,011,187	Mar. 23, 1976	Mar. 8, 1977
B 567,158	3,988,073	Mar. 23, 1976	Oct. 26, 1976
B 567,207	3,991,689	Apr. 13, 1976	Nov. 16, 1976
B 567,435	3,995,724	Feb. 3, 1976	Dec. 7, 1976
B 567,854	3,985,038	Feb. 3, 1976	Oct. 12, 1976
B 567,892	4,000,855	Mar. 16, 1976	Jan. 4, 1977
B 568,226	3,992,698	Feb. 24, 1976	Nov. 16, 1976
B 568,770	3,982,213	Feb. 10, 1976	Sep. 21, 1976
B 569,125	3,986,980	Feb. 24, 1976	Oct. 19, 1976
B 569,293	4,004,149	Mar. 30, 1976	Jan. 18, 1977
B 569,501	3,999,250	Mar. 9, 1976	Dec. 28, 1976
B 569,519	3,993,133	Feb. 3, 1976	Nov. 23, 1976
B 569,646	3,985,222	Jan. 13, 1976	Oct. 12, 1976
B 569,859	3,994,160	Mar. 9, 1976	Nov. 30, 1976
B 570,172	3,987,763	Feb. 3, 1976	Oct. 26, 1976
B 570,615	3,998,570	Mar. 23, 1976	Dec. 21, 1976
B 570,862	3,991,639	Feb. 24, 1976	Nov. 16, 1976
B 570,925	4,040,802	Mar. 23, 1976	Aug. 9, 1977
B 571,219	3,991,388	Feb. 24, 1976	Nov. 9, 1976
B 571,638	4,001,244	Mar. 9, 1976	Jan. 4, 1977
B 571,659	3,995,186	Apr. 13, 1976	Nov. 30, 1976
B 572,642	3,990,715	Feb. 10, 1976	Nov. 9, 1976
B 572,726	4,015,020	Mar. 23, 1976	Mar. 29, 1977
B 573,033	3,995,224	Mar. 23, 1976	Nov. 30, 1976
B 573,114	4,014,843	Apr. 6, 1976	Mar. 29, 1977
B 573,991	4,013,704	Mar. 30, 1976	Mar. 22, 1977
B 573,994	4,000,641	Mar. 23, 1976	Jan. 4, 1977
B 574,128	3,982,961	Feb. 17, 1976	Sep. 28, 1976
B 574,616	4,000,424	Mar. 2, 1976	Dec. 28, 1976
B 574,996	3,989,718	Feb. 17, 1976	Nov. 2, 1976
B 575,583	4,000,928	Mar. 16, 1976	Jan. 4, 1977
B 575,757	3,981,170	Jan. 27, 1976	Sep. 21, 1976
B 575,761	4,013,123	Apr. 13, 1976	Mar. 22, 1977
B 575,776	4,013,124	Apr. 20, 1976	Mar. 22, 1977
B 575,851	3,985,826	Feb. 10, 1976	Oct. 12, 1976
B 576,385	4,009,498	Mar. 30, 1976	Mar. 1, 1977
B 576,859	3,991,526	Feb. 24, 1976	Nov. 16, 1976
B 576,903	3,995,032	Feb. 3, 1976	Nov. 30, 1976
B 578,447	3,982,658	Jan. 20, 1976	Sep. 28, 1976
B 579,104	3,982,081	Jan. 27, 1976	Sep. 21, 1976
B 579,116	3,986,227	Feb. 3, 1976	Oct. 19, 1976
B 579,153	4,013,745	Mar. 30, 1976	Mar. 22, 1977
B 579,806	3,995,318	Feb. 3, 1976	Nov. 30, 1976
B 580,379	4,000,796	Apr. 6, 1976	Jan. 4, 1977

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 580,826	3,988,391	Feb. 17, 1976	Oct. 26, 1976	B 589,966	3,985,828	Feb. 17, 1976	Oct. 12, 1976
B 580,921	3,984,054	Jan. 13, 1976	Oct. 5, 1976	B 590,158	3,985,163	Feb. 10, 1976	Oct. 12, 1976
B 581,564	4,036,653	Mar. 23, 1976	July 19, 1977	B 590,159	3,985,164	Feb. 3, 1976	Oct. 12, 1976
B 581,843	4,000,562	Mar. 16, 1976	Jan. 4, 1977	B 590,502	4,001,171	Mar. 23, 1976	Jan. 4, 1977
B 583,051	3,990,714	Feb. 3, 1976	Nov. 9, 1976	B 591,141	4,013,631	Mar. 23, 1976	Mar. 22, 1977
B 583,089	3,982,174	Jan. 27, 1976	Sep. 21, 1976	B 592,143	3,984,713	Jan. 27, 1976	Oct. 5, 1976
B 583,712	3,995,064	Feb. 10, 1976	Nov. 30, 1976	B 592,146	4,001,084	Mar. 2, 1976	Jan. 4, 1977
B 584,530	3,981,149	Jan. 27, 1976	Sep. 21, 1976	B 592,658	4,001,164	Mar. 23, 1976	Jan. 4, 1977
B 584,997	4,000,030	Mar. 9, 1976	Dec. 28, 1976	B 593,781	4,015,953	Mar. 16, 1976	Apr. 5, 1977
B 585,247	3,989,914	Feb. 3, 1976	Nov. 2, 1976	B 594,871	3,999,245	Mar. 16, 1976	Dec. 28, 1976
B 585,731	3,993,603	Feb. 3, 1976	Nov. 23, 1976	B 596,692	3,992,349	Feb. 17, 1976	Nov. 16, 1976
B 586,215	3,985,302	Jan. 20, 1976	Oct. 12, 1976	B 597,410	4,000,925	Mar. 30, 1976	Jan. 4, 1977
B 586,380	3,983,885	Mar. 2, 1976	Oct. 5, 1976	B 632,416	4,076,698	Mar. 9, 1976	Feb. 28, 1978
B 586,387	3,981,311	Feb. 3, 1976	Sep. 21, 1976	B 657,438	3,985,701	Jan. 20, 1976	Oct. 12, 1976
B 586,663	3,992,080	Feb. 3, 1976	Nov. 16, 1976	B 747,785	3,981,899	Feb. 10, 1976	Sep. 21, 1976
B 587,118	Re. 29,067	Mar. 2, 1976	Dec. 7, 1976	B 750,679	4,007,049	Mar. 23, 1976	Feb. 8, 1977
B 587,786	3,991,204	Feb. 17, 1976	Nov. 9, 1976	B 843,038	3,981,785	Feb. 3, 1976	Sep. 21, 1976
B 587,936	3,999,052	Mar. 23, 1976	Dec. 21, 1976	B 845,044	4,001,338	Mar. 30, 1976	Jan. 4, 1977
B 589,179	4,001,102	Mar. 23, 1976	Jan. 4, 1977	B 848,336	3,993,752	Mar. 30, 1976	Nov. 23, 1976
B 589,687	3,995,349	Mar. 23, 1976	Dec. 7, 1976				

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 3RD DAY OF OCTOBER, 1978

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Coker, George T., Jr.: *See*—
Hansen, David R.; and Coker, George T., Jr., T975,004, Cl. 260-829.000.

Coney, Charles H.: *See*—
Leonard, Don R.; and Coney, Charles H., T975,003, Cl. 427-407.00R.

FMC Corporation: *See*—
Linda, Frederick William, T975,002, Cl. 210-62.000.

Griffin, Anselm C., Jr.: *See*—
Mangialardi, Gino J., Jr.; and Griffin, Anselm C., Jr., T975,001, Cl. 19-66.0CC.

Hansen, David R.; and Coker, George T., Jr., to Shell Oil Company. Oil-free, pressure sensitive adhesive. T975,004, 10-3-78, Cl. 260-829.000.

Leonard, Don R.; and Coney, Charles H. Primer coating compositions comprising polyalkyleneimine and cellulose-acetate propionate. T975,003, 10-3-78, Cl. 427-407.00R.

Linda, Frederick William, to FMC Corporation. Method for controlling biofouling in drip irrigation system emitter orifices. T975,002, 10-3-78, Cl. 210-62.000.

Mangialardi, Gino J., Jr.; and Griffin, Anselm C., Jr., to United States of America, Agriculture. Apparatus for conditioning seed cotton. T975,001, 10-3-78, Cl. 19-66.0CC.

Shell Oil Company: *See*—
Hansen, David R.; and Coker, George T., Jr., T975,004, Cl. 260-829.000.

Agriculture: *See*—
Mangialardi, Gino J., Jr.; and Griffin, Anselm C., Jr., T975,001, Cl. 19-66.0CC.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF OCTOBER, 1978

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ames, Ira R., Jr.: *See*—
Morse, Walter H.; and Ames, Ira R., Jr., Re. 29,791, Cl. 188-181.00A.

Fulk, James B., to Paper Converting Machine Company. Method of producing web units. Re. 29,794, Cl. 270-52.500.

Jacobs Manufacturing Company, The: *See*—
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Ainscow, Geoffrey R., to Hewlett-Packard Company. Casing for electronic components or the like. 249,791, 10-3-78, Cl. D13-41.000.

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Howard, Gene. Attachment for the rear deck of an automobile. 249,786, 10-3-78, Cl. D12-196.000.

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Walker, William C.; and Atkinson, William D. Stove. 249,806, 10-3-78, Cl. D23-97.000.

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Zoltner, Thomas J. Tool for removing a hydrated hydrophilic contact lens from a storage solution. 249,799, 10-3-78, Cl. D16-83.000.

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422 GC	4,117,727
425.6	4,117,728
516 LM	4,117,729
517 R	4,117,730
579	4,117,731
599	4,117,732
634	4,117,733
756	4,117,734

CLASS 74

47	4,117,735
60	4,117,736
242	4,117,737
250 R	4,117,738
404	4,117,739
469	4,117,740
492	4,117,741
573 R	4,117,742
577 M	4,117,743
665 G	4,117,744
688	4,117,745
805	4,117,746
866	4,117,747

CLASS 75

69	4,118,220
103	4,118,219
108	4,118,221
134 V	4,118,222
171	4,118,223
	4,118,224
204	4,117,565
207	4,118,225

CLASS 76

86	4,117,748

CLASS 81

9.5 R	4,117,749

CLASS 82

30	4,117,750

CLASS 83

58	4,117,752
143	4,117,753
307.2	4,117,754
435.1	4,117,755
801	4,117,756
868	4,117,751

CLASS 84

1.01	4,117,757
	4,117,758
1.03	4,117,759

CLASS 89

33 C	4,117,760
129 B	4,117,761

CLASS 90

11 F	4,117,762
13.05	4,117,763
15.1	4,117,913

CLASS 91

50	4,117,764
170 R	4,117,769
361	4,117,765
457	4,117,766
461	4,117,767
499	4,117,768

CLASS 92

57	4,117,770

CLASS 93

93 HT	4,117,771

CLASS 96

17	4,118,228
27 H	4,118,229
27 R	4,118,230
87 A	4,118,231
99	4,118,232
115 P	4,118,233

CLASS 98

2	4,117,772
115 VM	4,117,773

CLASS 99

568	4,117,774

CLASS 100

19 R	4,117,775
117	4,117,776
215	4,117,777

CLASS 101

1	4,117,778
120	4,117,779

CLASS 102

22 R	4,117,780

CLASS 106

1.23	4,118,234
38.22	4,118,235
39.6	4,118,237
47 Q	4,118,238
50	4,118,239
71	4,118,236
73.33	4,118,240
90	4,118,241
98	4,118,242
109	4,118,243
270	4,118,244
288 B	4,118,245
	4,118,246
306	4,118,227
308 N	4,118,247

CLASS 108

11	4,117,781
27	4,117,782
91	4,117,783
150	4,117,784

CLASS 109

59 T	4,117,785

CLASS 110

229	4,117,786

CLASS 111

2	4,117,787
52	4,117,788

CLASS 112

181	4,117,789
205	4,117,790
222	4,117,791
433	4,117,792

CLASS 113

116 D	4,117,793

CLASS 114

40	4,117,794
68	4,117,795
74 R	4,117,796
91	4,117,797

CLASS 118

4	4,117,798
6	4,117,799
7	4,117,800
20	4,117,801
48	4,117,802
658	4,117,803

CLASS 119

1	4,117,804
5	4,117,805

CLASS 122

33	4,117,806

CLASS 123

1 R	4,117,810
32 EE	4,117,807
75 B	4,117,808
98	4,117,809
103 R	4,117,811
117 A	4,117,812
119 A	4,117,814
	4,117,816
119 EC	4,117,815
119 R	4,117,813
136	4,117,817
148 E	4,117,818
	4,117,819
	4,117,820
179 L	4,117,821
198 DB	4,117,822
198 E	4,117,823

CLASS 126

15 R	4,117,824
29	4,117,825
65	4,117,826
121	4,117,827
270	4,117,828
	4,117,829
271	4,117,830
	4,117,831
	4,117,832
299 D	4,117,833

CLASS 127

19	4,118,248

CLASS 128

2 S	4,117,834
2.05 M	4,117,835
2.05 R	4,117,836
76 B	4,117,837
130	4,117,838
	4,117,839
134	4,117,840
155	4,117,841
163	4,117,842
230	4,117,843
266	4,117,844
284	Re.29,789
295	4,117,845
303.13	4,117,846
348	4,117,847
419 PT	4,117,848

CLASS 130

27 Q	4,117,849

CLASS 131

2	4,117,850
84 B	4,117,851
96	4,117,852

CLASS 132

7	4,117,853
75.8	4,117,854

CLASS 134

141	4,117,855

CLASS 136

89 PC	4,118,249

CLASS 137

62	4,117,856
117	4,117,857
119	4,117,858
219	4,117,859
513.5	4,117,860
595	4,117,861
596.13	4,117,862
601	4,117,863
625.23	4,117,864
627.5	4,117,865

CLASS 138

30	4,117,866
119	4,117,867
146	4,117,868

CLASS 139

1 R	4,117,869
370.2	4,117,870
429	4,117,871

CLASS 140

57	4,117,872
105	4,117,873

CLASS 148

1.5	4,118,250
	4,118,251
6.15 R	4,118,253
6.3	4,118,252
32	4,118,254
111	4,118,255
160	4,118,256
187	4,118,257

CLASS 150

1.7	4,117,874
52 R	4,117,875

CLASS 156

60	4,118,258
73.1	4,118,259

85 4,118,260
145 4,118,261
175 4,118,262
197 4,118,263
238 4,118,264
242 4,118,265
293 4,118,266
4,118,267
510 4,118,268
560 4,118,269
659 4,118,270

CLASS 160

67 4,117,876

CLASS 162

31 4,118,271
156 4,118,272
171 4,118,273

CLASS 164

95 4,117,877
292 4,117,878
412 4,117,879
433 4,117,880

CLASS 165

1 Re.29,790
2 4,117,881
104 S 4,117,882
174 4,117,883
175 4,117,884
176 4,117,885

CLASS 166

259 4,117,886

CLASS 169

37 4,117,887

CLASS 172

1 4,117,888
26 4,117,889
40 4,117,890
105 4,117,891
311 4,117,892
4,117,893

CLASS 173

23 4,117,894

CLASS 174

26 R 4,118,593
68.5 4,118,595
87 4,118,596

CLASS 175

53 4,117,895
84 4,117,896
106 4,117,897

CLASS 176

1 4,118,274
36 R 4,118,275
60 4,118,276
87 4,118,277
4,118,278

CLASS 177

165 4,117,898

CLASS 179

1 D 4,118,600
4,118,601
1 G 4,118,599
6 R 4,118,602
16 E 4,118,603
18 FA 4,118,597
107 FD 4,118,604
115.5 VC 4,118,605
156 A 4,118,606

CLASS 180

6.48 4,117,899
7 R 4,117,900
51 4,117,901
54 R 4,117,902
105 E 4,117,903
108 4,117,904
139 4,117,905
4,117,906

CLASS 184

6.2 4,117,907

CLASS 187

20 4,117,908

CLASS 188

2 A 4,117,909
71.9 4,117,910
73.3 4,117,911
181 A Re.29,791
216 4,117,912

CLASS 190

58 R 4,117,914

CLASS 192

98 4,117,916
4,117,917
103 A 4,117,919
103 B 4,117,918

CLASS 195

63 4,118,279
127 4,118,280

CLASS 198

311 4,117,920
482 4,117,921
652 4,117,922
790 4,117,923

CLASS 200

50 A 4,118,607
56 R 4,118,608
67 A 4,118,611
67 DA 4,118,609
4,118,610
81.9 R 4,118,612
82 B 4,118,613
157 4,118,614
4,118,615

CLASS 201

2.5 4,118,281
4,118,282

CLASS 202

160 4,118,283
248 4,118,284

CLASS 203

81 4,118,285
89 4,118,286

CLASS 204

6 4,118,287
11 4,118,288
43 S 4,118,289
59 F 4,118,290
64 T 4,118,291
67 4,118,292
93 4,118,293
129 4,118,294
151 4,118,295
157.1 R 4,118,296
159.11 4,118,297
159.23 4,118,298
180 P 4,118,299
195 T 4,118,300
202 4,118,301
206 4,118,302
224 R 4,118,303
243 R 4,118,304
265 4,118,305
268 4,118,307
284 4,118,306
296 4,118,308

CLASS 206

45.14 4,117,924
186 4,117,925
306 4,117,926
319 4,117,927
320 4,117,928
326 4,117,929
382 4,117,930
387 4,117,931
4,118,616
419 4,117,932
583 4,117,933
610 4,117,934

CLASS 208

11 R 4,118,309
210 4,118,310

CLASS 209

75 4,118,311
166 4,118,312
583 Re.29,792
586 4,117,935

CLASS 210

22 C 4,118,314
23 F 4,118,315
31 C 4,118,316
32 4,118,317
51 4,118,319
58 4,118,318
80 4,118,320
91 4,118,321
136 4,118,322
439 4,118,323

CLASS 211

50 4,117,936
60 T 4,117,937
191 4,117,938

CLASS 214

1 HH 4,117,940
1 SW 4,117,939
2.5 4,117,941
6 B 4,117,942
6 D 4,117,943
131 A 4,117,944

CLASS 215

216 4,117,945
321 4,117,946

CLASS 219

10.61 R 4,118,617
121 L 4,118,619
121 P 4,118,618
124.32 4,118,620

CLASS 220

304 4,117,949
306 4,117,950
410 4,117,948
435 4,117,947
461 4,117,951

CLASS 221

5 4,117,952
211 4,117,953
288 4,117,956

CLASS 222

3 4,118,691
134 4,117,954
144.5 4,117,955
153 Re.29,793
215 4,118,195
321 4,117,957
402.18 4,117,958
590 4,117,959

CLASS 223

94 4,117,960
111 4,117,961

CLASS 224

31 4,117,962
42.1 B 4,117,963
42.1 E 4,117,964
48 R 4,117,965

CLASS 228

2.5 4,117,966
20 4,117,967
124 4,117,968
140 4,117,969
173 A 4,117,970

CLASS 229

1.5 B 4,117,971
28 R 4,117,972

CLASS 235

61 B 4,117,973
304 4,117,974
494 4,117,975

CLASS 236

48 R 4,117,976

CLASS 238

8 4,117,977

CLASS 239

112 4,117,978
381 4,117,979

CLASS 241

37.5 4,117,980
46.15 4,117,981
51 4,117,982
55 4,117,983
73 4,117,984
197 4,117,985

CLASS 242

56.2 4,117,986
71.2 4,117,987
71.9 4,117,988
78.8 4,117,989
84.52 A 4,117,990
86 4,117,991

CLASS 244

23 C 4,117,992
145 4,117,993
152 4,117,994
207 4,117,995
212 4,117,996

CLASS 248

20 4,117,997
56 4,117,998
188.2 4,117,999
228 4,118,000
308 4,118,001
311.1 R 4,118,002
539 4,118,003

CLASS 249

50 4,118,004

CLASS 250

214 A 4,118,621
216 4,118,622
253 4,118,623
326 4,118,624
343 4,118,625
370 4,118,626
397 4,118,627
445 T 4,118,628
4,118,629
492 A 4,118,630
492 R 4,118,631
513 4,118,632
551 4,118,633
577 4,118,634

CLASS 251

75 4,118,005
149.6 4,118,006
223 4,118,007
298 4,118,008
315 4,118,009

CLASS 252

8.1 4,118,325
8.6 4,118,326
8.8 4,118,327
8.9 4,118,324
32.5 4,118,328
4,118,329
4,118,330
32.7 E 4,118,331
107 4,118,332
135 4,118,333
182.1 4,118,334
299 4,118,335
316 4,118,336
417 4,118,337
4,118,338
4,118,339
428 4,118,340
438 4,118,341
439 4,118,342
522 4,118,343
559 4,118,344

CLASS 254

124 4,118,010
4,118,011
173 R 4,118,012
187.5 4,118,013

CLASS 256

1 4,118,014

CLASS 260

2.3 4,118,345
4,118,346
4 AR 4,118,348
8 4,118,349
15 4,118,350
18 N 4,118,351
23 XA 4,118,352
28.5 B 4,118,353
29.2 TN 4,118,354
29.6 PT 4,118,355
29.6 RB 4,118,356
29.6 WA 4,118,357
30.8 R 4,118,358
4,118,359
31.2 R 4,118,360
31.8 G 4,118,361
32.6 A 4,118,362
33.2 R 4,118,363
37 N 4,118,364
39 R 4,118,365
40 R 4,118,366
42.37 4,118,367
45.75 S 4,118,371
45.75 W 4,118,370
45.8 N 4,118,368
4,118,369
112 B 4,118,379
112.5 S 4,118,380
148 4,118,381
154 4,118,382
156 4,118,383
163 4,118,384
175 4,118,385
239.3 T 4,118,386
281 A 4,118,387
290 R 4,118,388
294.8 R 4,118,389
306.8 R 4,118,390
314.5 4,118,391
326 N 4,118,392
326.28 4,118,394
326.29 4,118,395
326.41 4,118,397
326.43 4,118,396
326.5 B 4,118,393
333 4,118,401
340.2 4,118,399
340.5 4,118,400
340.6 4,118,398
346.75 4,118,402
346.76 4,118,403
404 4,118,404
405 4,118,405
410.9 R 4,118,406
412.5 4,118,407
439 R 4,118,408
448 A 4,118,409
453 AM 4,118,410
453 SP 4,118,411
464 4,118,412
465 D 4,118,413
467 4,118,414
544 F 4,118,421
561 A 4,118,422
584 A 4,118,423
613 R 4,118,424
614 A 4,118,425
615 B 4,118,426
663 4,118,428
668 A 4,118,430
668 R 4,118,431
4,118,434
674 SA 4,118,429
683.15 D 4,118,432
683.51 4,118,433
826 4,118,436
834 4,118,437
857 L 4,118,438
858 4,118,439
873 4,118,440
874 4,118,441
885 4,118,442
972 4,118,435
980 4,118,443

CLASS 261

44 A 4,118,444
44 B 4,118,445
114 VT 4,118,446
122 4,118,447

CLASS 264

1 4,118,448
28 4,118,449
43 4,118,450
46.5 4,118,451
89 4,118,452
4,118,453
93 4,118,454
129 4,118,455
177 R 4,118,456

CLASS 266

44 4,118,015
130 4,118,016
187 4,118,017
275 4,118,018

CLASS 267

153 4,118,019
168 4,118,020

CLASS 269

86 4,118,021

CLASS 270

52.5 Re.29,794
4,118,022
54 4,118,023

CLASS 271

5 4,118,024
273 4,118,025

CLASS 273

1 L 4,118,027
1 R 4,118,026
26 A 4,118,028
32 C 4,118,034
73 D 4,118,029
96 R 4,118,030
110 4,118,031
185 C 4,118,032
186 A 4,118,033
243 4,118,035
257 4,118,036

CLASS 274

1 A 4,118,037
9 B 4,118,038
9 RA 4,118,039

CLASS 277

75 4,118,040
180 4,118,041
226 4,118,042

CLASS 280

8 4,118,043
33.99 F 4,118,044
47.35 4,118,048
255 4,117,915
283 4,118,045
289 WC 4,118,046
402 4,118,047
483 4,118,049
604 4,118,050
610 4,118,051
642 4,118,052
747 4,118,053
765 4,118,054

CLASS 290

40 R 4,118,635
52 4,118,636
55 4,118,637

CLASS 292

165 4,118,055
169.17 4,118,056
307 R 4,118,057

CLASS 294

67 B 4,118,058
74 4,118,059
83 R 4,118,060

CLASS 296

63 4,118,061
4,118,062
137 B 4,118,063

CLASS 297

18 4,118,064
45 4,118,065
184 4,118,066
379 4,118,067
385 4,118,068
416 4,118,069

CLASS 299

2 4,118,070
4,118,071
43 4,118,072

CLASS 301

6 CS 4,118,073

CLASS 302

26 4,118,074
53 4,118,075

CLASS 303

6 C 4,118,076
4,118,077

CLASS 307

11 4,118,638
147 4,118,639
237 4,118,640
238 4,118,642
240 4,118,641

CLASS 308

6 C 4,118,078
4,118,101
9 4,118,079
187.1 4,118,080

CLASS 310

11 4,118,643
42 4,118,644
53 4,118,645
58 4,118,646
239 4,118,647
269 4,118,648
337 4,118,649

CLASS 312

8 4,118,081
59 4,118,082
100 4,118,083
107 4,118,084
245 4,118,085
270 4,118,086
291 4,118,087
350 4,118,088
351 4,118,089

CLASS 313

422 4,118,650
4,118,651

CLASS 315

5.41 4,118,652
4,118,653
371 4,118,655
4,118,656
408 4,118,657

CLASS 318

257 4,118,658
560 4,118,659
571 4,118,660

CLASS 320

40 4,118,661

CLASS 324

3 4,118,662
30 R 4,118,663
51 4,118,664
57 R 4,118,665
77 C 4,118,666
110 4,118,667

CLASS 325

26 4,118,598
67 4,118,668
309 4,118,669

446 4,118,670

CLASS 330

43 4,118,671
286 4,118,672

CLASS 331

2 4,118,673
17 4,118,674
94.5 C 4,118,675

CLASS 332

7.51 4,118,676
9 R 4,118,677

CLASS 333

70 S 4,118,678

CLASS 334

1 4,118,679

CLASS 335

176 4,118,680
195 4,118,681

CLASS 337

34 4,118,682
91 4,118,683
296 4,118,684

CLASS 339

12 R 4,118,090
14 R 4,118,091
17 F 4,118,102
59 M 4,118,092
75 M 4,118,093
75 MP 4,118,094
98 4,118,103
99 R 4,118,095
4,118,096
232 4,118,097
263 R 4,118,098

CLASS 340

146.1 AB 4,118,686
146.3 ED 4,118,687
146.3 P 4,118,685
293 4,118,694
324 AD 4,118,695
347 C 4,118,697
347 CC 4,118,698
347 DA 4,118,699
347 NT 4,118,696
516 4,118,688
524 4,118,700
542 4,118,692
572 4,118,693
629 4,118,689
656 4,118,690

CLASS 343

6 R 4,118,701
7 PF 4,118,702
17.2 R 4,118,703
18 A 4,118,704
100 AD 4,118,705
700 MS 4,118,706
765 4,118,707
901 4,118,708

CLASS 346

33 R 4,118,709
153 4,118,710

CLASS 350

3.6 4,118,104
3.73 4,118,099
96.20 4,118,100
4,118,105
96.23 4,118,594
96.25 4,118,106
162 SF 4,118,107
184 4,118,108
285 4,118,109
334 4,118,110
4,118,111
351 4,118,112
358 4,118,113

CLASS 352

130 4,118,737

CLASS 353

38 4,118,114

CLASS 354

15 4,118,711
23 D 4,118,712
4,118,713
31 4,118,714
33 4,118,715
38 4,118,716
43 4,118,717
55 4,118,718
79 4,118,719
81 4,118,720
147 4,118,721
155 4,118,722
4,118,723
266 4,118,724
289 4,118,725
4,118,726

CLASS 355

3 DD 4,118,115
3 R 4,118,116
8 4,118,117
4,118,118
11 4,118,119
75 4,118,120
4,118,121
77 4,118,122
78 4,118,123

CLASS 356

107 4,118,124
116 4,118,125
123 4,118,126
200 4,118,127

CLASS 357

10 4,118,727
22 4,118,728

CLASS 358

10 4,118,729
28 4,118,741
65 4,118,731
93 4,118,730
101 4,118,732
109 4,118,733
128 4,118,734
4,118,735
4,118,736
148 4,118,738
190 4,118,739
195 4,118,740

CLASS 360

73 4,118,743
74 4,118,744
96 4,118,745
99 4,118,746
121 4,118,747
133 4,118,748

CLASS 361

33 4,118,749
182 4,118,750
220 4,118,751
232 4,118,752
331 4,118,753
355 4,118,754
379 4,118,755
385 4,118,756
404 4,118,757

CLASS 362

6 4,118,758
98 4,118,759
239 4,118,760
297 4,118,761
311 4,118,762
339 4,118,763
369 4,118,764
384 4,118,765
427 4,118,766
455 4,118,767

CLASS 363

54 4,118,769
85 4,118,768
138 4,118,770

CLASS 364

101 4,118,771
119 4,118,772
200 4,118,773
431 4,118,774
467 4,118,775
474 4,118,776
475 4,118,777
502 4,118,778
509 4,118,779
510 4,118,780
525 4,118,781
565 4,118,782
724 4,118,784
734 4,118,783
754 4,118,785
783 4,118,786
842 4,118,787
900 4,118,788
4,118,789
4,118,790
4,118,791
4,118,792

CLASS 365

30 4,118,793
149 4,118,794
222 4,118,795

CLASS 366

111 4,118,801
124 4,118,796
127 4,118,797
156 4,118,798
161 4,118,799
341 4,118,800

CLASS 400

118 4,118,128
144.2 4,118,129

CLASS 401

2 4,118,130

CLASS 403

24 4,118,131
4,118,132
4,118,133
282 4,118,134
361 4,118,135
386 4,118,136

CLASS 404

76 4,118,137

CLASS 405

36 4,117,685
54 4,117,684
61 4,117,683
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19— 66 CC T975,001
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[Notice of Dec. 16, 1969, 869 O.G. 6877]

28 : T975,001 34 : T975,002 47 : T975,003 48 : T975,004

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF SEPTEMBER, 1978

The List of Patentees published in the September 12, 1978 Official Gazette erroneously listed Application Serial Numbers preceded by the letter "B" instead of Patent Numbers. The corrected List of Patentees to whom patents were issued on the 12th day of September, 1978 is reprinted here in its entirety.

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See—*
Sundman, Frey Viking, 4,112,587, Cl. 34-12.000.

A. E. Staley Manufacturing Company: *See—*
Hurst, Thomas L., 4,113,565, Cl. 195-31.00F.

A. L. Lee Corporation: *See—*
Lee, Arthur L.; and Coval, Arthur B., 4,113,076, Cl. 192-4.00A.

A.M. Liaaen A/S: *See—*
Liaaen, Anders Marius, 4,112,866, Cl. 115-34.00R.

A. O. Smith Corporation: *See—*
Cook, Robert E., 4,113,600, Cl. 204-197.000.

A. Schild S.A.: *See—*
Gilomen, Beat, 4,112,673, Cl. 58-85.500.

Aaltonen, Olavi August; and Juusela, Jyrki Tapani, to Outokumpu Oy. Process for suspension smelting of finely-divided sulfidic and/or oxidic ores or concentrates. 4,113,470, Cl. 75-74.000.

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Abair, Raymond L.; and Kulish, Stanley J., Jr., to Champion Spark Plug Company. Hand held ultrasonic nebulizer. 4,113,809, Cl. 261-81.000.

Abbott, Joseph L. Tamper proof container assembly. 4,113,136, Cl. 220-276.000.

Abe, Hideo: *See—*
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, 4,113,608, Cl. 209-1.000.

Abe, Kazunobu; Rikimaru, Hiroaki; Yamazaki, Iwao; and Hasegawa, Hiroshi, to Sakai Chemical Industry Co., Ltd. Production of shaped catalysts or carriers comprising titanium oxides. 4,113,660, Cl. 252-455.00R.

Abe, Shoichi: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.

Abex Corporation: *See—*
Frank, Earl E.; and Yee, Bing S., 4,113,621, Cl. 210-167.000.

Abrarov, Vakif Barievich: *See—*
Latypov, Anvar Latypovich; and Abrarov, Vakif Barievich, 4,112,935, Cl. 128-69.000.

Abts, Leigh Roy, to Rhode Island Hospital. Ultrasonic particulate sensing. 4,112,773, Cl. 73-642.000.

ACF Industries, Incorporated: *See—*
Bond, John A., 4,113,233, Cl. 251-328.000.
Reinhardt, James R.; and Scott, Mark P., 4,113,113, Cl. 213-43.000.

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Holders for tape cassettes. 4,113,091, Cl. 206-387.000.

Acme Resin Corporation: *See—*
Craig, Robert Simpson, 4,113,916, Cl. 428-404.000.

Acricite Company, Inc.: *See—*
Barbaresi, Charlotte, 4,112,991, Cl. 150-28.00A.

Adams, Elvin E.; Wells, Tom J.; Wentzek, Horst F.; Zapletal, Henry; and Zugel, Marty J., to Leggett & Platt, Incorporated. Method and apparatus for forming a row of spring coils from a continuous length of wire. 4,112,726, Cl. 72-137.000.

Adams, Robbie J. Therapeutic assembly. 4,112,943, Cl. 128-24.100.

Adcock, James L.: *See—*
Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., 4,113,435, Cl. 422-191.000.

Advanced Drainage Systems, Inc.: *See—*
Dreibelbis, Logan L., 4,112,810, Cl. 83-490.000.

Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, to Robert Bosch GmbH. Method for measuring the blood pressure of a patient. 4,112,929, Cl. 128-2.05M.

Agari, Yujiro: *See—*
Tsuji, Sadahiko; and Agari, Yujiro, 4,113,355, Cl. 350-184.000.

Agency of Industrial Science and Technology: *See—*
Chikamori, Kunio, 4,113,587, Cl. 204-129.100.
Juichi, Imamura; Masahiko, Takehara; and Kazuhiro, Kizawa, 4,113,782, Cl. 260-600.00R.
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, 4,113,608, Cl. 209-1.000.
Suzuki, Hiroshige; Horie, Eizi; and Nagashima, Hideo, 4,112,648, Cl. 52-508.000.

Agfa-Gevaert AG: *See—*
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, 4,113,373, Cl. 355-8.000.
Huber, Leonhard; Kirschner, Helmut; and Muller, Herbert, 4,114,175, Cl. 354-252.000.
Walter, Karl, 4,113,380, Cl. 355-75.000.

Agfa-Gevaert, N.V.: *See—*
Smets, Georges Joseph; and Vandensavel, Jean Marie, 4,113,734, Cl. 260-308.00D.

Agro-Drip, Incorporated: *See—*
Drossbach, Hubert, 4,113,818, Cl. 264-154.000.

Ahmed, Adel Abdel Aziz, to RCA Corporation. Ground fault detecting apparatus including current-responsive threshold detection circuitry. 4,114,089, Cl. 324-51.000.

Aikoh Co., Ltd.: *See—*
Yanagioka, Seiichi, 4,113,248, Cl. 273-72.00A.

Air Logistics Corporation: *See—*
Stiles, Kenneth M., 4,113,349, Cl. 350-96.230.

Air Preheater Company, Inc., The: *See—*
Richmond, Donald Louis, 4,113,455, Cl. 55-378.000.

Airco, Inc.: *See—*
Timin, Mitchell E., 4,113,082, Cl. 198-339.000.

Aizawa, Hiroshi: *See—*
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, 4,114,173, Cl. 354-238.000.

Ajinomoto Co., Inc.: *See—*
Gomi, Teruo; Hisa, Yuji; and Soeda, Takahiko, 4,113,716, Cl. 260-123.500.

Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, to Nippondenso Co., Ltd. Temperature responsive device for internal combustion engines. 4,112,896, Cl. 123-122.00D.

Akashi, Hiromitsu: *See—*
Itoh, Hiroyuki; Mitsuhashi, Kenhachi; and Akashi, Hiromitsu, 4,112,746, Cl. 73-95.000.

Akiyama, Shinichi; and Yamamoto, Haruhisa, to Nippon Zeon Co. Ltd. Process for preparing unsaturated carboxylic acids. 4,113,770, Cl. 562-532.000.

Akiyama, Tomojiro: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, 4,112,885, Cl. 123-98.000.

Aktiebolaget Atomenergi: *See—*
Margen, Peter Heinrich Erwin; and Naslund, Rolf Paul, 4,112,569, Cl. 29-157.30R.

Aladdin Industries, Incorporated: *See—*
Frazier, Albert A.; and Phillips, Howard W., 4,113,147, Cl. 222-131.000.

Albaric, Jacques E., to Westinghouse Electric Corp. Seal arrangement for a discharge chamber for water cooled turbine generator rotor. 4,114,058, Cl. 310-54.000.

Albaric, Jacques E.; Curtis, Little P.; and Dailey, George F., to Westinghouse Electric Corp. Grooved visco seal for stationary discharge chamber of water-cooled turbine generator. 4,114,059, Cl. 310-54.000.

Albert Handtmann, Firma: *See—*
Muller, Johann, 4,112,546, Cl. 17-49.000.

Albright & Wilson Ltd.: *See—*
Collins, John D.; and Jones, Trevor E., 4,113,758, Cl. 260-429.700.

Alco Standard Corporation: *See—*
Rogers, Ronald D., 4,113,426, Cl. 432-25.000.

Alcon Laboratories, Inc.: *See—*
Helixon, Michael L.; and Ward, Barry S., 4,112,945, Cl. 128-218.00D.

Alden Research Foundation: *See—*
Bliudnikas, Kestutis E., 4,114,165, Cl. 346-139.00C.

Aldridge, Trevor John; Lock, Alan Howard; and Bell, Robert Martin Alistair, to Rolls-Royce Limited. Real-time recording of fatigue damage. 4,112,747, Cl. 73-116.000.

Alegranti, Constance Wright, to Du Pont de Nemours, E. I., and Company. Asymmetric polyimide membranes. 4,113,628, Cl. 210-500.00M.

Alexander, Robert: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 4,113,848, Cl. 423-512.00A.

Alexander, Robert H.: *See—*
Thackston, Clyde David; and Alexander, Robert H., 4,113,080, Cl. 192-150.000.

Alexandrovich, George, to Pickering & Company, Inc. Playback stylus for phonograph record stamper. 4,113,266, Cl. 274-37.000.

Alfa-Laval Company Limited: *See—*
Denne, Phillip Raymond Michael; Davies, David Evan Naunton; and McEwen, Colin Dougal, 4,114,151, Cl. 343-6.8LC.

All Sunpower, Inc.: *See—*
Skinner, Leon S.; and Taylor, Norman C., 4,112,922, Cl. 126-271.000.

Allen, John D. Fiberglass tank and method for making the same. 4,112,644, Cl. 52-245.000.
Allen, Richard J.: *See—*
DuBosque, Clayton, Jr.; Rudd, Wallace C.; and Allen, Richard J., 4,112,566, Cl. 29-157.30C.
Allied Chemical Corporation: *See—*
Kramer, John B., 4,112,899, Cl. 123-139.0AW.
Pieters, Wim J. M.; and Carlson, Emery J., 4,113,655, Cl. 252-438.000.
Russell, William Norman; Bruton, James Isaac; and Twilley, Ian Charles, 4,113,821, Cl. 264-210.00F.
Tanner, Lee E.; and Ray, Ranjan, 4,113,478, Cl. 75-177.000.
Allis-Chalmers Corporation: *See—*
Williams, Douglas W.; and Kaiser, George E., 4,113,044, Cl. 180-51.000.
Allsop, Ivor J. Shoe retaining and carrying device. 4,113,159, Cl. 224-45.00S.
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, to Montedison S.p.A. Process for the preparation of anhydrous solutions of alkaline phenates in organic solvents. 4,113,973, Cl. 568-716.000.
Alpern, Marvin: *See—*
Rosenthal, Arthur Lee; Alpern, Marvin; and Meisch, Charles Edward, 4,112,949, Cl. 128-278.000.
Alproco, Inc.: *See—*
Pease, William Thomas, 4,112,585, Cl. 33-388.000.
Altman, Eston: *See—*
Altman, James E.; and Altman, Eston, 4,112,837, Cl. 99-537.000.
Altman, James E.; and Altman, Eston, 4,112,838, Cl. 99-546.000.
Altman, James E.; and Altman, Eston. Holder for fruit and the like. 4,112,817, Cl. 99-537.000.
Altman, James E.; and Altman, Eston. Halving and calyx removing apparatus for pears and the like. 4,112,838, Cl. 99-546.000.
Altman, Richard M., to Vivitar Corporation. Reflex camera with internal zoom lens. 4,114,171, Cl. 354-152.000.
Amagami, Keizo: *See—*
Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, 4,114,009, Cl. 219-10.49R.
AMAX Inc.: *See—*
Buker, Donald O., 4,113,479, Cl. 75-211.000.
Amemiya, Akira: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,113,652, Cl. 252-428.000.
American Can Company: *See—*
Meyers, George Leroy, 4,113,104, Cl. 206-626.000.
Mueller, David Charles, 4,113,102, Cl. 206-611.000.
Schlesinger, Sheldon I., 4,113,497, Cl. 96-115.00P.
Watt, William R.; Astolfi, Edmund G.; and Laufer, Jay K., 4,113,895, Cl. 427-44.000.
American Cyanamid Company: *See—*
Panzer, Hans Peter; O'Connor, Michael Niall Desmond; and Baccei, Louis J., 4,113,934, Cl. 526-258.000.
Weiss, Martin Joseph, 4,113,967, Cl. 560-121.000.
American Home Products Corporation: *See—*
Garsky, Victor M.; and McGregor, William H., 4,113,714, Cl. 260-112.50S.
American Optical Corporation: *See—*
Shoemaker, Arthur H., 4,113,344, Cl. 350-87.000.
American Safety Equipment Corporation: *See—*
Tanaka, Akira, 4,113,200, Cl. 242-107.000.
Ziv, Avraham, 4,113,201, Cl. 242-107.000.
American Seating Company: *See—*
Barecki, Chester J., 4,113,270, Cl. 280-179.00R.
Ameron, Inc.: *See—*
Law, Gabriel H.; and Gysegem, Albert Peter, 4,113,665, Cl. 260-37.0SB.
Ames Rubber Corporation: *See—*
Hill, Robert W.; Onnen, William G.; and Ryder, Lyle C., 4,113,825, Cl. 264-262.000.
AMI Industries, Inc.: *See—*
Reida, William D., 4,113,311, Cl. 297-433.000.
Amin, Sanjay I.: *See—*
Modell, Michael; Reid, Robert C.; and Amin, Sanjay I., 4,113,446, Cl. 48-202.000.
AMP Incorporated: *See—*
Hughes, Donald Wayne Kent, 4,113,341, Cl. 339-147.00R.
Andena, Paolo: *See—*
Lecce, Giovanni; and Andena, Paolo, 4,112,530, Cl. 7-146.000.
Anderberg, Nils-Eric, to Fabriksmontering i Trelleborg AB. Canopy device. 4,112,958, Cl. 135-5.00A.
Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Apparatus for producing tubes by helically winding sheets. 4,113,546, Cl. 156-431.000.
Andersen, John N.: *See—*
Bell, Norman; Andersen, John N.; and Lam, Hung-Kei H., 4,113,832, Cl. 423-119.000.
Anderson, Leroy E.; Charlson, David V.; and Vierkant, Mark A., to Manufacturers Systems, Inc. Light gauge sheet metal forming machine. 4,112,731, Cl. 72-320.000.
Anderson, Lloyd R., to C-Line Products, Inc. Adjustable book holding device. 4,113,108, Cl. 211-43.000.
Anderson, Lowell M.; and Simmons, William D. Soil compaction system. 4,112,692, Cl. 405-271.000.
Anderson, Michael Denny, to Versapak International Limited. Envelope. 4,112,990, Cl. 150-3.000.
Andersson, Otto Birger: *See—*
Pupp, Herwig; and Andersson, Otto Birger, 4,113,101, Cl. 206-606.000.
Ando, Sumio, to Otsuka Nutrition Research Institute Inc. Liquid-sealed type vacuum pump. 4,113,410, Cl. 417-502.000.
Andoh, Shizuo: *See—*
Yamaguchi, Hisashi; Sato, Seii; Iemori, Toshiaki; and Andoh, Shizuo, 4,114,069, Cl. 315-169.0TV.
Andrascheck, Hans-Joachim; and Mucke, Rainer, to Hoechst Aktiengesellschaft. Antistatic thermoplastic molding compositions and shaped articles made therefrom. 4,113,679, Cl. 260-28.50D.
Andre Rubber Company Limited: *See—*
Torr, Ralph Percival; and Beauchamp, Miles Albert, 4,113,979, Cl. 174-42.000.
Andreaggi, Joseph R., to Sangamo Weston, Inc. Conductor arrangement and assembly method. 4,113,342, Cl. 339-176.0MP.
Andrews, Jeffrey F.; Mullin, Therese A.; and Senkus, Raymond, to Minnesota Mining and Manufacturing Company. Prophylactic treatment of mastitis. 4,113,854, Cl. 424-81.000.
Andrews, Peter: *See—*
Seubert, Jurgen; Thomas, Herbert; and Andrews, Peter, 4,113,867, Cl. 424-250.000.
Annenberg, Ernest Alexandrovich: *See—*
Vasiliev, Vladimir Sergeevich; Annenberg, Ernest Alexandrovich; Livshits, Abram Lazarevich; Polotsky, Vadim Evgenievich; and Lakhtjukhov, Valery Mikhailovich, 4,114,015, Cl. 219-69.00W.
Anumin Pty. Limited: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 4,113,848, Cl. 423-512.00A.
Anzai, Makoto, to Nissan Motor Company, Limited. Air/fuel ratio control system for internal combustion engine having high input impedance circuit. 4,112,893, Cl. 123-119.0EC.
Aoki, Kiyoshi: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, 4,113,416, Cl. 431-1.000.
Applequist, Michael D.: *See—*
White, James F.; and Applequist, Michael D., 4,113,768, Cl. 562-535.000.
Appollo Chemical Corporation: *See—*
Bennett, Robert P.; and Kober, Alfred E., 4,113,447, Cl. 55-5.000.
Aquila, Werner; Hoffmann, Werner; Himmele, Walter; and Siegel, Hardo, to BASF Aktiengesellschaft. Phenylpropanals. 4,113,781, Cl. 260-599.000.
Arai, Atsuaki: *See—*
Shishido, Tadao; Hara, Hiroshi; and Arai, Atsuaki, 4,113,495, Cl. 96-100.00R.
Yamada, Minoru; Shishido, Tadao; and Arai, Atsuaki, 4,113,488, Cl. 96-56.000.
Arai, Hiroshi; and Mori, Mamoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seat belt device for use in vehicle. 4,113,280, Cl. 280-747.000.
Arakawa, Tatsumi: *See—*
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; and Kobayashi, Hidehiko, 4,113,496, Cl. 96-114.100.
Araki, Kenzi: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, 4,113,517, Cl. 148-2.000.
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, 4,113,523, Cl. 148-12.300.
Araki, Kunio: *See—*
Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, 4,113,595, Cl. 204-159.170.
Arco Polymers, Inc.: *See—*
Pillar, Walter O., 4,113,672, Cl. 521-60.000.
Aren, Avgust Karlovich; Berzinya, Irma Arnoldovna; and Lentsbergs, Ivars Petrovich. 1-Amino-1-phthalidyl alkanes and a method for producing same. 4,113,948, Cl. 544-152.000.
Argus Chemical Corporation: *See—*
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Arizona Chemical Company: *See—*
Ruckel, Erwin Richard; and Wang, Long Shyong, 4,113,653, Cl. 252-429.00B.
Armstrong Cork Company: *See—*
Dieck, Ronald L.; Magnusson, Alan B.; and Quinn, Edwin J., 4,113,670, Cl. 521-95.000.
Kauffman, William J., 4,113,945, Cl. 544-67.000.
Armstrong, Donald D.: *See—*
Maier, Alfred E.; Armstrong, Donald D.; and Farley, James R., 4,114,005, Cl. 200-153.00G.
Armstrong, Donald E.; Shaffer, John W.; Marecek, Paul M.; and Audesse, Emery G., to GTE Sylvania Incorporated. Multilamp photoflash unit with static grounding system. 4,113,424, Cl. 431-95.00A.
Arnold, Hanfried, to Schering Aktiengesellschaft. Stabilizer for estrogens. 4,113,751, Cl. 260-397.400.
Arpino, Roberto. Vehicle fuel economy indicator. 4,113,046, Cl. 180-105.00E.
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, to Snam Progetti, S.p.A. Process for producing stabilized olefin terpolymers and stabilized olefin terpolymers produced according to said process. 4,113,694, Cl. 260-875.000.
Arrington Co., Inc.: *See—*
Arrington, James R., 4,113,619, Cl. 210-96.00R.
Arrington, James R., to Arrington Co., Inc. Waste fluid treatment system. 4,113,619, Cl. 210-96.00R.

Arthur, Hugh MacDonald: *See—*
Harrington, Timothy Cardell; and Arthur, Hugh MacDonald, 4,113,197, Cl. 242-58.100.
Asahi-Dow Limited: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, 4,113,795, Cl. 260-874.000.
Asahi Glass Company, Ltd.: *See—*
Nomaki, Koji; and Saoyama, Yoshihito, 4,112,868, Cl. 118-429.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; and Kobayashi, Hidehiko, 4,113,496, Cl. 96-114.100.
Tanabe, Masanori; Ikeda, Masanori; and Tamura, Nobuhiro, 4,113,970, Cl. 560-244.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ebihara, Masatomi; Inoue, Masahide; and Hidaka, Tsuneo, 4,113,500, Cl. 106-39.500.
Kawasaki, Masahiro, 4,114,176, Cl. 354-289.000.
Yamamori, Eiji, 4,114,169, Cl. 354-106.000.
Asakawa, Takeki: *See—*
Koike, Hiroshi; Suzuki, Shoji; and Asakawa, Takeki, 4,113,359, Cl. 350-269.000.
Asano, Masaharu; and Kadowaki, Shunichi, to Nissan Motor Company, Limited. Method of and mixture control system for varying the mixture control point relative to a fixed reference. 4,112,880, Cl. 123-32.0EE.
Asari, Akira; and Tsuzuki, Hidehiro, to Kobe Steel, Ltd. Hydrostatic extrusion apparatus. 4,112,723, Cl. 72-60.000.
Asars, Juris A., to Westinghouse Electric Corp. Display panel with simplified thin film interconnect system. 4,114,070, Cl. 315-169.0TV.
Ascani, Leonard A.: *See—*
Hamilton, C. Howard; and Ascani, Leonard A., 4,113,522, Cl. 148-11.50R.
ASEA Aktiebolag: *See—*
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Ashcraft, William R. Protected glassy phosphate detergent additive. 4,113,644, Cl. 252-91.000.
Ashdown, Glynn R.; McCartney, Thomas; and Holmes, Bruce, to Teradyne, Inc. Testing electrically conductive lines to determine electrical characteristics thereof. 4,113,998, Cl. 179-175.30R.
Ashida, Akira: *See—*
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,113,369, Cl. 352-194.000.
Aso, Toshio: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.
Aspen Laboratories: *See—*
Pike, Harold L., 4,112,950, Cl. 128-303.140.
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, to Robert Bosch GmbH. Process for the regulation of the optimum operational behavior of an internal combustion engine. 4,112,879, Cl. 123-32.0EA.
Astolfi, Edmund G.: *See—*
Watt, William R.; Astolfi, Edmund G.; and Laufer, Jay K., 4,113,895, Cl. 427-44.000.
Ateliers Reunis Societe Anonyme: *See—*
Joseph, Raymond, 4,113,131, Cl. 220-19.000.
Atlantic Richfield Company: *See—*
Taylor, Robert Coleman, 4,113,638, Cl. 252-61.000.
Atlas Copco Aktiebolag: *See—*
Goransson, Lars Roland; van Oorschot, Gosewinus Franciscus; and Pittoors, Jan Gustaaf, 4,113,450, Cl. 55-97.000.
Lindblad, Lars Alfred, 4,113,033, Cl. 173-1.000.
Atomic Energy Board: *See—*
Haarhoff, Pierre Cloete; and Schumann, Werner Adolf, 4,113,448, Cl. 55-17.000.
Atwood, Gilbert Richard, to Union Carbide Corporation. Recovering sulfur from gas streams containing hydrogen sulfide. 4,113,849, Cl. 423-574.00R.
Audesse, Emery G.: *See—*
Armstrong, Donald E.; Shaffer, John W.; Marecek, Paul M.; and Audesse, Emery G., 4,113,424, Cl. 431-95.00A.
Auel, Theodor: *See—*
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, 4,113,841, Cl. 423-265.000.
August Lepper, Maschinen- und Apparatebau GmbH: *See—*
Muller, Franz, 4,112,590, Cl. 34-75.000.
August Stemmann OHG: *See—*
Stemmann, Karl; and Holtmeier, Gerhard, 4,113,074, Cl. 191-67.000.
Aurora Equipment Company: *See—*
Mittag, Douglas C., 4,113,110, Cl. 211-191.000.
Aurora Products Corporation: *See—*
Sims, Anson; and Jones, Lawrence T., 4,113,261, Cl. 273-249.000.
aus der Funten, Helmut; and Vogt, Wilhelm, to Dynamit Nobel Aktiengesellschaft. Method of preparing phthalide. 4,113,741, Cl. 260-343.30R.
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for producing large-size substrate-based semiconductor material utilizing vapor-phase deposition and subsequent resolidification. 4,113,532, Cl. 148-174.000.
Automobiles M. Berliet: *See—*
Nikly, Jean, 4,112,907, Cl. 123-193.0CH.
Automotive Products Limited: *See—*
Maycock, Ian Commander, 4,113,078, Cl. 192-107.00C.
Autotronic Controls, Corp.: *See—*
Chapin, Leonard Lee; and Merrick, James Walter, 4,112,901, Cl. 123-139.00E.
Avco Corporation: *See—*
Kasmarik, Joseph R., 4,112,677, Cl. 60-226.00R.
Aya, Masayoshi; and Hiya, Kohji, to Matsushita Electric Industrial Co., Ltd. Convergence apparatus with variably magnetized magnets. 4,114,124, Cl. 335-212.000.
Ayers, Robert Lee; and Hamaker, Raymond Weaver, to International Business Machines Corporation. Technique for preventing forward biased epi-isolation degradation. 4,113,512, Cl. 148-1.500.
AZO-Maschinenfabrik Adolf Zimmermann: *See—*
Zimmermann, Adolf, 4,112,639, Cl. 52-174.000.
B. F. Goodrich Company, The: *See—*
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Baccei, Louis J.: *See—*
Panzer, Hans Peter; O'Connor, Michael Niall Desmond; and Baccei, Louis J., 4,113,934, Cl. 526-258.000.
Bachl, Robert: *See—*
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, 4,113,933, Cl. 526-124.000.
Bader, Hartmann, to Sulzer Brothers Limited. Loom harness. 4,112,980, Cl. 139-92.000.
Badran, Nasri W., to Badran, Nasri W. Microcrystalline 3-(alpha-acetonylbenzyl)-4-hydroxycoumarin (warfarin) and methods of making. 4,113,744, Cl. 260-343.440.
Baggaley, Keith Howard, to Beecham Group Limited. 2-Substituted benzisothiazolones. 4,113,728, Cl. 260-283.00S.
Bagnall, Robert David, to Imperial Chemical Industries Limited. Anaesthetic compositions. 4,113,883, Cl. 424-342.000.
Baio, Alfred R.; and Genovese, David L., to Sealectro Corporation. Optical punched card reader. 4,114,028, Cl. 235-458.000.
Baker Aktiengesellshaft: *See—*
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,113,872, Cl. 424-273.00P.
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Balco, Inc.: *See—*
Balzer, Claude P., 4,112,641, Cl. 52-179.000.
Balinte, Joe; and Verhaeghe, Michael. Plant puller. 4,113,022, Cl. 171-61.000.
Ball, Kenneth, to Vickers-Intertek Limited. Sealing arrangements for use under water. 4,113,085, Cl. 277-9.000.
Ballas, George C.; and Mitchell, Albert W., to Weed Eater, Inc. Lawn mower and method. 4,112,653, Cl. 56-12.700.
Ballentine, Earle W. Gas broiler. 4,112,912, Cl. 126-41.00R.
Balme, Maurice; and Gruffaz, Max, to Rhone-Poulenc S.A. Polyamines with imide groups. 4,113,737, Cl. 260-326.260.
Balukin, Richard F., to Westinghouse Air Brake Company. Brake valve device. 4,113,320, Cl. 303-54.000.
Balzer, Claude P., to Balco, Inc. Stair nosing structure. 4,112,641, Cl. 52-179.000.
Banks, Benjamin W. Liquid proportioner for pressure feed line. 4,112,964, Cl. 137-205.500.
Banyaszati Kutato Intezet: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.
Barbaresi, Charlotte, to Acricite Company, Inc. Convertible handbag. 4,112,991, Cl. 150-28.00A.
Bardenhagen, Dietrich; and Schubert, Bernhard, to Hauni-Werke Korber & Co. KG. Method and machine for the production of hinged-lid packs for groups of cigarettes or the like. 4,112,651, Cl. 53-449.000.
Barecki, Chester J., to American Seating Company. Wheelchair retainer mechanism. 4,113,270, Cl. 280-179.00R.
Barlow, Harold Everard Monteagle, to National Research Development Corporation. Apparatus and methods for launching and screening electromagnetic waves in the dipole mode. 4,114,121, Cl. 333-95.00R.
Barmag Barmer Maschinenfabrik AG: *See—*
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Barrington, Burchus Q.; and Williamson, Jim R., to Halliburton Company. Oil well testing safety valve. 4,113,018, Cl. 166-334.000.
Barth, Wayne E., to Pfizer Inc. 4-(Tetrazol-5-yl)-Δ^3-cephem compounds. 4,113,942, Cl. 544-23.000.
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Barzynski, Helmut; and Heil, Guenter, to BASF Aktiengesellschaft. Benzophenone-containing photopolymerizable binders for printing inks and coating compositions. 4,113,593, Cl. 204-159.150.

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Dehnert, Johannes; and Dunkelmann, Guenter, 4,113,720, Cl. 260-154.000.
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, 4,113,764, Cl. 260-465.50A.
Fischer, Adolf, deceased; and Hamprecht, Gerhard, 4,113,939, Cl. 544-11.000.
Kummer, Rudolf; Schneider, Heinz-Walter; and Schwirten, Kurt, 4,113,754, Cl. 260-429.00R.
Opgenorth, Hans-Joachim; and Scheuermann, Horst, 4,113,732, Cl. 260-305.000.
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, 4,113,933, Cl. 526-124.000.
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Baskett, Theodore N. Multiple shaft, ground-raking attachment for bucket-equipped tractors. 4,113,023, Cl. 171-63.000.
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Bassous, Ernest; and Liu, Cheng-Yih, to International Business Machines Corporation. Polycrystalline silicon etching with tetramethylammonium hydroxide. 4,113,551, Cl. 156-662.000.
Bates, Jack A. Carpet cleaning machine. 4,112,538, Cl. 15-321.000.
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Battiston, Giancarlo: *See—*
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Bauch, Helmut; Mohrmann, Karl Heinz; and Koppehele, Frithjof, to Siemens Aktiengesellschaft. Remotely fed intermediate amplifier for communication lines. 4,114,107, Cl. 330-56.000.
Bauer, William V., to Lummus Company, The. Two-stage hydrotreating of pyrolysis gasoline to remove mercaptan sulfur and dienes. 4,113,603, Cl. 208-89.000.
Baugh, Benton F. Rotational speed reduction and reversing mechanisms. 4,112,781, Cl. 74-198.000.
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, to Merck Patent Gesellschaft mit beschrankter Haftung. Prostenoic acid derivatives. 4,113,863, Cl. 424-205.000.
Baur, Guenter; and Greubel, Waldemar, to Siemens Aktiengesellschaft. Indicating device for illustrating symbols of all kinds. 4,113,360, Cl. 350-285.000.
Bausch & Lomb Incorporated: *See—*
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Baxley, James Russell, to Peanut Research & Testing Laboratories, Inc. Process for making hydrated peanut products and products made thereby. 4,113,889, Cl. 426-509.000.
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Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, 4,113,796, Cl. 260-876.00R.
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Fiege, Helmut; Haydn, Josef; Renner, Johann; and Wedemeyer, Karlfried, 4,113,975, Cl. 568-756.000.
Hugl, Herbert; Schundehutte, Karl Heinz; Trautner, Kersten; and Wolfrum, Gerhard, 4,113,428, Cl. 8-41.00R.
Huper, Fritz; and Oberheiden, Helmut, 4,113,941, Cl. 544-20.000.
Kubens, Rolf; and Gebauer, Herbert, 4,113,014, Cl. 166-295.000.
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Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,113,860, Cl. 424-200.000.
Metz, Walter, 4,113,767, Cl. 562-577.000.
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,113,957, Cl. 548-377.000.
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,113,747, Cl. 260-348.250.
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Hanway, John E., Jr.; and Mumford, Richard G., 4,113,840, Cl. 423-242.000.
Beasley, Donald R., to Norfield Corporation. Method for forming expanded panels from thermoformable material and the resultant product. 4,113,909, Cl. 428-116.000.
Beatenbough, Paul K.: *See—*
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Beckerman, Arthur. Wood carving kit. 4,113,099, Cl. 206-575.000.
Beckershoff, Wolfgang, to BBC Brown Boveri & Company Limited. Apparatus for positioning coaxial arranged machine parts. 4,112,582, Cl. 33-181.00R.
Becton, Dickinson and Company: *See—*
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Clark, Judith Ann, 4,113,972, Cl. 560-250.000.
Cole, Martin; Hood, John Dick; and Butterworth, Dennis, 4,113,856, Cl. 424-117.000.
Gardner, Derek Victor, 4,113,869, Cl. 424-258.000.
Beery, Peter W., to Golf Resources, Ltd. Golf club and manufacture thereof. 4,113,249, Cl. 273-78.000.
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Bell, Mace, to United Technologies Corporation. Vehicle diagnostic hand control. 4,113,980, Cl. 174-52.00R.
Bell, Norman; Andersen, John N.; and Lam, Hung-Kei H., to Kaiser Aluminum & Chemical Corporation. Process for the utilization of waste materials from electrolytic aluminum reduction systems. 4,113,832, Cl. 423-119.000.
Bell, Robert Martin Alistair: *See—*
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Katz, Lewis Emanuel; and Paulnack, Carl Lewis, 4,113,547, Cl. 156-612.000.
King, William Clifton, 4,114,177, Cl. 357-19.000.
Sanderson, Richard Barton, 4,113,996, Cl. 179-170.0NC.
Bella, Frank, Jr.; and Bennett, Richard C., to Whiting Corporation. Elutriation leg and method. 4,113,552, Cl. 159-27.00A.
Bellanca, Nicolo; and Furia, Thomas Edward, to Dynapol. Zoned coloration. 4,113,505, Cl. 106-137.000.
Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., to Bristol-Myers Company. $\Delta^{2,3}$-1,4-Morpholine-2-carboxylic acid derivatives as antibacterial agents. 4,113,946, Cl. 544-105.000.
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Benac, Bernard Henri Jean; Benac, Jacques Marie Lucien; and Benac, Henri. Beater for a grape harvesting machine, as well as grape harvesting machines provided with such a beater. 4,112,657, Cl. 56-330.000.
Benac, Henri: *See—*
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Benac, Jacques Marie Lucien: *See—*
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Benes, Ivan, to Solco Basel AG. Composition for the diagnostic visualization of neoplastic tissues. 4,113,850, Cl. 424-1.000.
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., to United States of America, Navy. Battery thermal runaway monitor. 4,114,083, Cl. 320-39.000.
Benkoe, Elizabeth: *See—*
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Bennett, Robert P.; and Kober, Alfred E., to Appollo Chemical Corporation. Method of conditioning flue gas. 4,113,447, Cl. 55-5.000.
Bereskin, Fred Phillip; and Borowczyk, Joseph Jerome. Grease separator. 4,113,617, Cl. 210-72.000.
Bergman, Gunnar B., to Seatek Corporation. Heave stabilization of semi-submersible platforms. 4,112,864, Cl. 114-265.000.
Bergwerksverband GmbH: *See—*
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Berry, Lawrence James; and Hall, Stanley Darwin, to W. R. Grace & Co. Sealed taped bags and sealed tape bag dispenser. 4,113,139, Cl. 221-1.000.
Berthet, Andre, to Cebal. Rolled edge in cans. 4,113,133, Cl. 220-74.000.
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Bess, Leon. Controlled pulse turbine engine. 4,112,683, Cl. 60-595.000.
Bessinger, Max E. Portable support. 4,113,057, Cl. 182-187.000.
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Bierman, Francis Andrew. Anti-theft clip. 4,113,294, Cl. 292-346.000.
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Kemper, Yves Jean; and Bigot, Lucien, 4,112,780, Cl. 74-191.000.
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Binkhorst, Richard D. Sterile package. 4,113,088, Cl. 206-210.000.
Biricz, Stefan, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Starter bar head arrangement. 4,113,003, Cl. 164-446.000.
Birkeholm, Mogens. Method and tractor for towing aircraft. 4,113,041, Cl. 180-14.00C.
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Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, to Bayer Aktiengesellschaft. Process for working up dispersions of elastic-thermoplastic or thermoplastic plastics. 4,113,796, Cl. 260-876.00R.
Bissinger, Wilma. Storage bin. 4,112,634, Cl. 52-67.000.
Biven, Earl U. Sun-shield for backpackers. 4,112,957, Cl. 135-5.00C.
Blachly, Paul H. Bite block assembly adapted for adjustable mounting and holding of oral airways and method of using same. 4,112,936, Cl. 128-136.000.
Black Clawson Company, The: *See—*
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Bleckmann, Hans W., to ITT Industries, Inc. Anti-skid electronic control system having an error detecting circuit. 4,113,321, Cl. 303-92.000.
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Blount, David H. Process for the production of acrylic compounds and resinous products. 4,113,693, Cl. 528-271.000.
Blumenfeld, Georg; and Vollkommer, Norbert, to Dynamit Nobel Aktiengesellschaft. Unsaturated polyesters derived from chloroxylylene diols. 4,113,703, Cl. 528-299.000.
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Bochan, John, to General Electric Company. Clothes dryer variable speed drive system. 4,112,767, Cl. 74-217.00R.
Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, to Bayer Aktiengesellschaft. Triisocyanates useful for the production of polyurethane resins. 4,113,705, Cl. 260-859.00R.
Bodolay, William A. Hot wire packaging machine. 4,112,652, Cl. 53-211.000.
Boehm, Hans W.; Herrington, Richard A.; and Oelke, Waldemar W., to Libbey-Owens-Ford Company. Method of and apparatus for thermally severing glass. 4,113,162, Cl. 225-2.000.
Boehringer Ingelheim GmbH: *See—*
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Bolkow Gesellschaft mit beschrankter Haftung: *See—*
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Bom, Cornelis Johannes Gerardus: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 4,113,024, Cl. 172-59.000.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 4,113,026, Cl. 172-59.000.
Bonazoli, Robert P.; and Morgan, William H., Jr., to GTE Sylvania Incorporated. Flashlamp assembly with tapered housing. 4,113,420, Cl. 431-93.000.
Bond, John A., to ACF Industries, Incorporated. Seat structure for gate valves. 4,113,233, Cl. 251-328.000.
Bonnemay, Maurice Gabriel Ernst: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,113,596, Cl. 204-180.00R.
Booty, Donald J., to Feldmar Products, Inc. Mechanical channel selector device. 4,114,098, Cl. 325-390.000.
Borchert, Werner: *See—*
Treplin, Friedrich-Wilhelm; and Borchert, Werner, 4,113,008, Cl. 165-95.000.

Boretos, John W.: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.

Borg-Warner Corporation: *See—*
Hechenbleikner, Ingenuin; and Enlow, William Palmer, 4,113,807, Cl. 260-969.000.
Kountz, Kenneth John, 4,112,703, Cl. 62-211.000.

Borowczyk, Joseph Jerome: *See—*
Bereskin, Fred Phillip; and Borowczyk, Joseph Jerome, 4,113,617, Cl. 210-72.000.

Borowick, John Joseph, to United States of America, Army. L-Band radar antenna array. 4,114,163, Cl. 343-815.000.

Bos, Frans, to Saab-Scania AB. Wind deflector. 4,113,302, Cl. 296-137.001.

Bosies, Elmar: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, 4,113,871, Cl. 424-272.000.

Bost, Pierre-Etienne; and Lartigau, Guy, to Rhone-Poulenc S.A. Preparation of ketones. 4,113,779, Cl. 260-592.000.

Bottaccio, Giorgio: *See—*
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, 4,113,973, Cl. 568-716.000.

Boucard, Michel Jean, to Societe Industrielle et Financiere le Profil. Cold profiling machine. 4,112,722, Cl. 72-181.000.

Bouquet, Jean-Claude, to Societe d'Etudes de Machines Thermiques. Internal combustion engine fit-up device. 4,112,883, Cl. 123-52.00M.

Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., to Delalande S. A. Aminoalkoxybenzofurans. 4,113,951, Cl. 544-360.000.

Bourlet, Maurice V., to Fabrique Nationale Herstal S.A. en abrege FN. Supply device for a portable firearm by means of cartridge belts or by means of rifle magazines using the same ammunition. 4,112,817, Cl. 89-33.00B.

Bourns, Inc.: *See—*
DeRouen, Joseph Rodolph; and Kucharski, Lawrence, Jr., 4,114,132, Cl. 338-174.000.
Stephens, Donald Harrison, 4,114,133, Cl. 338-174.000.

Bowen, David J.: *See—*
Grenfell, Hugh W.; Bowen, David J.; and Baker, Robert, 4,113,469, Cl. 75-60.000.

Bower, Barton Keeley, to Hercules Incorporated. Tetra (bicycloheptyl) transition metal compounds. 4,113,753, Cl. 260-429.500.

Bowker, Donald R.; Klein, Donald J.; and Rados, Stephen E., to Philips Industries Inc. Method of forming a bell end on thermoplastic pipe. 4,113,029, Cl. 264-295.000.

Bowman, Frank L.: *See—*
Driscoll, Michael J.; and Bowman, Frank L., 4,113,560, Cl. 176-38.000.

Boyd, William Weller; Grafe, Robert Joseph; and Pingry, Carl Oscar, III, to International Business Machines Corporation. Security controlled information exchange system. 4,114,139, Cl. 340-147.00R.

Bradley, Edmund G., to Marden Manufacturing Company, Inc. Spot planter. 4,112,857, Cl. 111-3.000.

Bradley, Terrag W., to Supra Products, Inc. Key box. 4,112,717, Cl. 70-63.000.

Brager, Douglas R. Interior-exterior truck body wash. 4,112,533, Cl. 15-53.00A.

Brago, Reacelyn A. Multi-fluid wash system. 4,113,182, Cl. 239-304.000.

Brainard, Edward C., II: *See—*
Kerfoot, William B.; and Brainard, Edward C., II, 4,112,741, Cl. 70-53.000.

Brana, George; and Russell, John J., to Pitney-Bowes, Inc. Carrier particles having the surface thereof treated with perfluoro sulfonic acid and method of making the same. 4,113,641, Cl. 252-62.10P.

Brandestini, Marco, to Contraves AG. Method and apparatus for determining a change of the flow state of flowable substances from its static state to its flowing state or vice verse. 4,112,740, Cl. 73-53.000.

Brandt, David W.: *See—*
Brandt, Paul W., 4,113,116, Cl. 214-1.0HA.

Brandt, Paul W., to Brandt, David W. Device for towing rolled bales of hay. 4,113,116, Cl. 214-1.0HA.

Brandwein, Arthur. Tape splicing device and dispenser therefor. 4,113,906, Cl. 428-42.000.

Braulke, Herbert A., III. Combined hot air and steam hair dryer. 4,114,022, Cl. 219-362.000.

Brechbuhl, Heinz, to Maschinenfabrik Kern AG Konolfingen. Cutter apparatus for dividing a form band or the like into individual forms. 4,112,796, Cl. 83-141.000.

Breckenridge, George J.: *See—*
Kalnin, Ilmar L.; and Breckenridge, George J., 4,113,683, Cl. 260-857.0TW.

Breedis, John F.: *See—*
Fister, Julius C., Jr.; Breedis, John F.; and Pryor, Michael J., 4,113,472, Cl. 75-142.000.

Bregeon, Genevieve C.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., 4,113,951, Cl. 544-360.000.

Breitzke, Willi: *See—*
Koch, Karlheinz; and Breitzke, Willi, 4,113,642, Cl. 252-56.00S.

Brentford Electric Limited: *See—*
Fry, Michael George Joseph, 4,114,087, Cl. 324-0.50E.

Bretone, John, Jr. Method of installing plumbing. 4,112,567, Cl. 29-157.00R.

Brettschneider, Johannes: *See—*
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, 4,112,879, Cl. 123-32.0EA.

Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, 4,113,943, Cl. 544-26.000.

Brewster, Franklin Crawford, to Motorola, Inc. Alternator bearing retainer plate. 4,113,326, Cl. 308-26.000.

Bridgestone Tire Company Limited: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, 4,113,053, Cl. 181-284.000.

Brimm, Daniel J., to Chem-tronics, Inc. Chemical milling process. 4,113,549, Cl. 156-639.000.

Brister, Beryle D. Apparatus for freezing a slug of liquid in a section of a large diameter fluid transmission line. 4,112,706, Cl. 62-514.00R.

Bristol-Myers Company: *See—*
Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., 4,113,946, Cl. 544-105.000.

British Gas Corporation: *See—*
Smith, Trevor, 4,113,050, Cl. 181-230.000.

British Petroleum Company Limited, The: *See—*
Webb, Michael Guthrie, 4,112,689, Cl. 405-63.000.

British Steel Corporation: *See—*
Grenfell, Hugh W.; Bowen, David J.; and Baker, Robert, 4,113,469, Cl. 75-60.000.

Brito, Teodoro Guzman. Key ring holder. 4,113,156, Cl. 224-5.00R.

Britool Limited: *See—*
Smyth, Norman Linfoot, 4,112,749, Cl. 73-139.000.

Brobeck, William M., to Electric Power Research Institute, Inc. Ring assembly for inertial energy storage rotor. 4,112,785, Cl. 74-572.000.

Brockway, Charles E., to Sybron Corporation. Headrest for dental chair. 4,113,309, Cl. 297-408.000.

Brooks, Burton; and Brooks, Richard J., to Chemithon Corporation, The. Sulfonating apparatus. 4,113,438, Cl. 422-193.000.

Brooks, Richard J.: *See—*
Brooks, Burton; and Brooks, Richard J., 4,113,438, Cl. 422-193.000.

Brosow, Jorgen; and Furugard, Erik, to Dasy Inter S.A. Documents having fibers which are coated with a magnetic or magnetizable material embedded therein and an apparatus for checking the authenticity of the documents. 4,114,032, Cl. 235-493.000.

Brouillette, Rudolph G.: *See—*
Huly, William; and Brouillette, Rudolph G., 4,112,862, Cl. 114-221.00R.

Brovedan, Antonio: *See—*
Ferrentino, Antonio; and Brovedan, Antonio, 4,112,660, Cl. 57-59.000.

Brown Boveri Corporation: *See—*
Hochstrasser, Otto; and Ruby, William S., 4,113,977, Cl. 13-2.00R.

Brown, Francis Barton; and Erickson, John W., to Kobe, Inc. Gas/liquid separator. 4,113,452, Cl. 55-203.000.

Brown, Jack E., Jr., to Goodyear Tire & Rubber Company, The. Reduction of lateral force variations of a tire effective in both forward and rearward senses of rotation. 4,112,630, Cl. 51-281.00R.

Brown, Marshall B. Method and apparatus for making pipe flanges. 4,112,727, Cl. 72-142.000.

Brown, Rex M. Combined fireplace hood and heating unit. 4,112,914, Cl. 126-121.000.

Brown, Robert M.; and Karliner, Rudolf R., to Valley Hydro-Luft, Inc. Dispensing gun. 4,113,151, Cl. 222-324.000.

Brown & Root, Inc.: *See—*
Lammert, Wayne F.; Simpson, Dayton M.; and Desai, Ardeshir R., 4,112,698, Cl. 405-167.000.

Brown, William L.; and Reagan, Larry L., to SI Handling Systems, Inc. Apparatus for loading articles onto vertically spaced horizontally disposed shelves. 4,113,119, Cl. 214-16.40A.

Brownawell, Darrell W.: *See—*
Lonstrup, Thorkild F.; Brownawell, Darrell W.; Goletz, Edward, Jr.; and Numair, Solomon J., 4,113,639, Cl. 252-51.50A.

Brubaker, John M. Siphon tube starter. 4,112,963, Cl. 137-148.000.

Bruns, Klaus: *See—*
Conrad, Jens; and Bruns, Klaus, 4,113,664, Cl. 252-522.000.

Bruton, James Isaac: *See—*
Russell, William Norman; Bruton, James Isaac; and Twilley, Ian Charles, 4,113,821, Cl. 264-210.00F.

Buchwald, Holger: *See—*
Schafer, Werner; Buchwald, Holger; and Bischoff, Dieter, 4,113,537, Cl. 428-220.000.

Buck, David Lyndon: *See—*
Mills, Anthony Mark; and Buck, David Lyndon, 4,112,994, Cl. 152-354.00R.

Buckeye Cellulose Corporation, The: *See—*
LaFitte, Larry L.; and Camden, James B., 4,113,911, Cl. 428-284.000.

Bucksch, Gunter: *See—*
Spengler, Hans; Bucksch, Gunter; and Morgenstern, Manfred, 4,113,931, Cl. 526-64.000.

Budzich, Tadeusz. Load responsive fluid control valves. 4,112,679, Cl. 60-445.000.

Bugge, Hans Jorgen; Strandly, Ingvald; and Swanberg, Carl Olof, to Nordiska Maskinfilt Aktiebolaget. Forming wire for use in papermaking, cellulose and similar machines. 4,112,982, Cl. 139-425.00A.

Buitelaar, Arnold A.: *See—*
Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., 4,113,442, Cl. 44-66.000.

Buker, Donald O., to AMAX Inc. Vacuum smelting process for producing ferrotungsten. 4,113,479, Cl. 75-211.000.

Bunce, Roger Abraham: *See—*
Duff, Ian David; Kennedy, John Hamilton; and Bunce, Roger Abraham, 4,113,437, Cl. 422-63.000.

Bundy, Richard P., to Standard Havens, Inc. Baghouse cleaning method. 4,113,449, Cl. 55-96.000.

Bunker Ramo Corporation: *See—*
Spaulding, Tedford Hollace, 4,113,338, Cl. 339-97.00R.

Bunting, Pamela M.; and Deffner, John F., to Gulf Research & Development Co. Microbicide for use with hydrocarbon fuels. 4,113,444, Cl. 44-72.000.

Burns, Donald Arthur; and Fontanilles, Henry, to Technicon Instruments Corporation. Method and apparatus for solute transfer. 4,113,383, Cl. 356-36.000.

Burns, Henry L., to Cavitron Corporation. Tidal volume display. 4,112,931, Cl. 128-2.080.

Burr Oak Tool & Gauge Company: *See—*
Franks, Lawrence A.; Stroup, Steven L.; and Perry, James E., 4,112,794, Cl. 82-64.000.

Burroughs Corporation: *See—*
Maloney, Thomas C.; and Cola, Rudolph A., 4,114,148, Cl. 340-343.000.

Burroughs, Joe D.: *See—*
Manda, John G.; Burroughs, Joe D.; and Cairns, Donald F., 4,113,572, Cl. 202-227.000.

Burroughs Wellcome Co.: *See—*
Wood, Hamish Christopher Swan; and Paterson, Thomas, 4,113,859, Cl. 424-180.000.

Burton, Parsons and Company, Inc.: *See—*
Holcombe, Frank O., Jr., 4,113,686, Cl. 260-29.6TA.

Burtov, Oleg Antonovich: *See—*
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.

Bush, Austin R.; and Ferrarese, Frank L., to Worthington Pump, Inc. Support fixtures for preassembled unit or cartridge for multi-stage barrel type centrifugal pumps. 4,113,089, Cl. 206-319.000.

Bush, Robert F.; and Mitchell, Joseph W., to International Business Machines Corporation. Process for producing magnetic particles by vacuum evaporation of iron with collection on a magnetized surface. 4,113,521, Cl. 148-6.350.

Bushman, Willard T.; and Snyder, Robert C., to Documation Incorporated. Data card reader employing synchronization and resynchronization means. 4,114,031, Cl. 235-474.000.

Butterworth, Dennis: *See—*
Cole, Martin; Hood, John Dick; and Butterworth, Dennis, 4,113,856, Cl. 424-117.000.

Buttner, Hans Hugo. Apparatus for connecting the tying means ends on tying machines. 4,112,839, Cl. 100-33.0PB.

Butwell, Kenneth Francis: *See—*
Kendall, John Edward; and Butwell, Kenneth Francis, 4,113,837, Cl. 423-226.000.

C. A. Weidmuller KG: *See—*
Wiener, Hans, 4,112,791, Cl. 81-9.50A.

C. H. Heist Corporation: *See—*
Wild, Robert W.; and Keeney, Joseph G., 4,112,535, Cl. 15-98.000.

C. L. Frost & Son, Inc.: *See—*
Vander Meulen, Douglas J., 4,113,328, Cl. 308-187.100.

C-Line Products, Inc.: *See—*
Anderson, Lloyd R., 4,113,108, Cl. 211-43.000.

C. van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 4,113,024, Cl. 172-59.000.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 4,113,026, Cl. 172-59.000.

Cabot Corporation: *See—*
Rivers, Ronald D., 4,113,480, Cl. 75-214.000.

Cade, Phillip J., to Electronics Corporation of America. Burner control apparatus. 4,113,419, Cl. 431-78.000.

Cairns, Donald F.: *See—*
Manda, John G.; Burroughs, Joe D.; and Cairns, Donald F., 4,113,572, Cl. 202-227.000.

Caknis, Nicholas. Air-conditioning. 4,113,176, Cl. 236-49.000.

Caldwell, Joseph M., to Jennings Compound Bow, Inc. Compound bow. 4,112,909, Cl. 124-23.00R.

California Institute Research Foundation: *See—*
Jones, John Leslie, 4,112,849, Cl. 102-103.000.

California Microwave, Inc.: *See—*
Minnis, Thomas R., 4,114,115, Cl. 333-14.000.

Call, David B. Meteorological measuring apparatus. 4,112,753, Cl. 73-170.00R.

Calmac Manufacturing Corporation: *See—*
MacCracken, Calvin Dodd, 4,112,921, Cl. 126-271.000.

Caloric Gesellschaft Fuer Apparatebau m.b.H: *See—*
von Linde, Robert; von Linde, Joachim; and Kurz, German. 4,113,425, Cl. 431-352.000.

Cambio, Orlando D., Jr., to Respiratory Care, Inc. Container for sterile liquids. 4,113,129, Cl. 215-1.00C.

Camden, James B.: *See—*
LaFitte, Larry L.; and Camden, James B., 4,113,911, Cl. 428-284.000.

Cameron, Frank L., to Westinghouse Electric Corp. Composite sectionalized protective indicating-type fuse. 4,114,128, Cl. 337-162.000.

Cameron, Gordon, to McGraw-Edison Company. Security locking system. 4,113,291, Cl. 292-40.000.

Campbell, John A.: *See—*
Wagner, Wayne M.; and Campbell, John A., 4,113,289, Cl. 285-322.000.

Campioni, Armando, to Indesit Industria Elettrodomestici Italiana S.p.A. Amplifying circuit. 4,114,109, Cl. 330-267.000.

Campolmi, Stefano: *See—*
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, 4,113,973, Cl. 568-716.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Laviolette, Maurice A., 4,112,843, Cl. 102-7.600.

Canadian Patents and Development Limited: *See—*
Clarke, Michael R.; and Dolenko, Allan J., 4,113,675, Cl. 260-17.500.
MacLennan, P. H. Barry; Ireland, Graham A.; and Werba, William J., 4,112,756, Cl. 73-181.000.

Canon Kabushiki Kaisha: *See—*
Sone, Yoshiaki; Sawada, Takamasa; and Shirai, Masanari, 4,113,377, Cl. 355-45.000.
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,113,369, Cl. 352-194.000.
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, 4,114,173, Cl. 354-238.000.
Tsuji, Sadahiko; and Agari, Yujiro, 4,113,355, Cl. 350-184.000.
Tsunekawa, Tokuichi; and Taguchi, Tetsuya, 4,114,036, Cl. 250-214.00R.

Cantrell, Clifford J., Jr., to John Zink Company. Waste heat boiler temperature control system. 4,113,005, Cl. 165-40.000.

Carl Freudenberg, Firma: *See—*
Schafer, Werner; Buchwald, Holger; and Bischoff, Dieter, 4,113,537, Cl. 428-220.000.

Carlisle, Richard S. Series filled containers. 4,113,169, Cl. 229-53.000.

Carlson, David H. J., to UOP Inc. Process for treating a sour petroleum distillate with anion exchange resin and with metal phthalocyanine catalyst. 4,113,604, Cl. 208-206.000.

Carlson, David L., to Renco Corporation. Ultrasonic detector with audible indication signal. 4,112,927, Cl. 128-2.00V.

Carlson, Donald E., to Mark Controls Corporation. Ejector purge hydrant. 4,112,966, Cl. 137-282.000.

Carlson, Emery J.: *See—*
Pieters, Wim J. M.; and Carlson, Emery J., 4,113,655, Cl. 252-438.000.

Carlson, Roger L., to Raygo, Inc. Uniaxial variable vibratory force generator. 4,113,034, Cl. 173-49.000.

Carlsson, Lars Christer, to Tetra Pak International AB. Opening arrangement for packing containers. 4,113,103, Cl. 206-611.000.

Carn, Patrick. Navigation harnesses. 4,112,865, Cl. 114-270.000.

Carol, John A., Jr.; and McAlindon, Harold P., to General Motors Corporation. Mileage indicator. 4,114,025, Cl. 235-96.000.

Carrera, John P.: *See—*
Fidler, Gary L.; Hill, Richard A.; and Carrera, John P., 4,113,561, Cl. 176-38.000.

Carrier Corporation: *See—*
Liberman, Harvey W.; and Whitehead, James Stephen, 4,112,823, Cl. 91-36.000.

Carson, John C., Jr.; Robbins, Clarence R.; and Kenkare, Divaker B., to Colgate-Palmolive Company. Applicator. 4,112,536, Cl. 15-104.940.

Carstens, Dennis L., to Becton, Dickinson and Company. Medical instrument package. 4,113,090, Cl. 206-365.000.

Carter, Ian T. Chord locater for stringed musical instruments. 4,112,805, Cl. 84-317.000.

Carter, Michael Charles; and Steer, Philip James, to National Research Development Corporation. Apparatus for indicating uterine activity in labor. 4,114,188, Cl. 364-415.000.

Casalis, Jean-Arnaud; Teil, Yves; and Motte, Raymond, to Societe Miniere et Metallurgique de Penarroya. Flotation apparatus with mechanical agitation. 4,113,624, Cl. 210-219.000.

Casio Computer Co., Ltd.: *See—*
Nakano, Harumi, 4,113,361, Cl. 350-332.000.

Cassar, Luigi: *See—*
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, 4,113,973, Cl. 568-716.000.

Castelnuovo, Lucio: *See—*
Modena, Mario; Massardo, Pietro; and Castelnuovo, Lucio, 4,113,689, Cl. 260-31.8HA.

Castilla, Antonio Jose. Gun lead sight. 4,112,583, Cl. 33-261.000.

Cataldo, Roy S., to General Motors Corporation. Variable displacement reciprocating piston machine. 4,112,826, Cl. 92-13.100.

Catallo, Frank. Method of padding and extracting a continuously advancing circular knit fabric tube. 4,112,532, Cl. 8-151.000.

Caterpillar Tractor Co.: *See—*
Bianchetta, Donald Louis, 4,112,821, Cl. 91-6.000.
Cole, Carroll Richard, 4,113,032, Cl. 172-781.000.
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., 4,113,920, Cl. 428-565.000.
Logsdon, John S.; and Meiner, George H., III, 4,112,718, Cl. 70-159.000.
Muntjanoff, John R., 4,113,124, Cl. 214-147.00G.
Richardson, Warner G.; and Wilson, Eugene M., 4,113,269, Cl. 280-154.50R.

Cavalier, Jean-Claude: *See—*
Chornet, Esteban; and Cavalier, Jean-Claude, 4,113,651, Cl. 252-422.000.

Cavalleri, Bruno; and Volpe, Giancarlo, to Gruppo Lepetit S.p.A. 2-Nitroimidazole derivatives. 4,113,953, Cl. 548-339.000.
Cavitron Corporation: *See—*
Burns, Henry L., 4,112,931, Cl. 128-2.080.
Cebal: *See—*
Berthet, Andre, 4,113,133, Cl. 220-74.000.
Cecchini, Jack. Stringed musical instrument. 4,112,804, Cl. 84-173.000.
Celanese Corporation: *See—*
Kamin, Ilmar L.; and Breckenridge, George J., 4,113,683, Cl. 260-857.0TW.
Patella, Ralph F.; and Kuzma, Edward J., 4,113,540, Cl. 156-327.000.
Rybny, Charles B.; Trebellas, John C.; and Sargent, Donald E., 4,113,592, Cl. 204-159.160.
Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See—*
Pirlet, Robert Alfred, 4,112,763, Cl. 73-355.00R.
Cesca, Sebastiano; Priola, Aldo; and Ferraris, Giuseppe, to Snam Progetti, S.p.A. Process for the preparation of linear alpha-olefin oligomers, subsequent hydrogenation thereof and saturated products thus obtained. 4,113,790, Cl. 260-683.15B.
Cesca, Sebastiano: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 4,113,694, Cl. 260-875.000.
CF Industries, Inc.: *See—*
Loughrie, Gregory D., 4,113,184, Cl. 241-15.000.
Chadwick-Helmuth Company, Inc.: *See—*
Chadwick, James R., 4,112,774, Cl. 73-455.000.
Chadwick, James R., to Chadwick-Helmuth Company, Inc. Aircraft rotor out-of-track correction method and apparatus. 4,112,774, Cl. 73-455.000.
Chambers, Norman T.: *See—*
Glaudel, Stephen P.; and Chambers, Norman T., 4,114,084, Cl. 322-38.000.
Chambley, Phillip W.: *See—*
Norris, Alan H.; and Chambley, Phillip W., 4,112,561, Cl. 28-243.000.
Champion International Corporation: *See—*
Hartman, Seymour, 4,113,919, Cl. 428-529.000.
Norris, Alan H.; and Chambley, Phillip W., 4,112,561, Cl. 28-243.000.
Wright, John T., 4,113,079, Cl. 192-129.00B.
Champion Spark Plug Company: *See—*
Abair, Raymond L.; and Kulish, Stanley J., Jr., 4,113,809, Cl. 261-81.000.
Champlin, Harry C., Jr.: *See—*
Simmons, Kenneth C.; Champlin, Harry C., Jr.; Livorsi, Carl F.; and Wucik, Joseph A., Jr., 4,113,268, Cl. 277-168.000.
Chandley, George D., to Hitchiner Manufacturing Co., Inc. Metal casting. 4,112,997, Cl. 164-119.000.
Chang, Nuke Ming; Remkes, Elmer R.; and Cook, William, Jr., to Santa Fe International Corp. Sea sled for entrenching pipe. 4,112,695, Cl. 405-163.000.
Chapin, Leonard Lee; and Merrick, James Walter, to Autotronic Controls Corp. Fuel system with metering pump for internal combustion engines. 4,112,901, Cl. 123-139.00E.
Chapman, Richard D.; Holmer, Donald A.; and Mortimer, George A., to Monsanto Company. Melt preparation of 6TA/6IA polymers with phosphorus compound to reduce ammonia formation. 4,113,708, Cl. 528-313.000.
Charlson, David V.: *See—*
Anderson, Leroy E.; Charlson, David V.; and Vierkant, Mark A., 4,112,731, Cl. 72-320.000.
Chateau, Louis Jean, to Ducellier et Co. Automatic spark timing device. 4,112,887, Cl. 123-117.00D.
Chatterjee, Pallab K.: *See—*
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,112,575, Cl. 29-577.00C.
Chem-tronics, Inc.: *See—*
Brimm, Daniel J., 4,113,549, Cl. 156-639.000.
Chemische Fabrik Stockhausen & Cie: *See—*
Hubner, Wolfgang; Barthell, Eduard; and Dahmen, Kurt, 4,113,685, Cl. 260-29.4UA.
Chemithon Corporation, The: *See—*
Brooks, Burton; and Brooks, Richard J., 4,113,438, Cl. 422-193.000.
ChemPar Corporation: *See—*
Kang, Pierson S., 4,112,827, Cl. 93-58.300.
Chen, Kon S.; and Majewski, Helmut W., to Stauffer Chemical Company. Disposal of heavy metal containing sludge wastes. 4,113,504, Cl. 106-97.000.
Cheron, Jacques, to Institut Francais du Petrole. Fuel cell including at least one improved element. 4,113,923, Cl. 429-36.000.
Chevron Research Company: *See—*
Kurkov, Victor P., 4,113,735, Cl. 260-326.5FL.
Miller, Stephen J., 4,113,607, Cl. 208-254.00R.
Mulaskey, Bernard F., 4,113,606, Cl. 208-244.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., 4,113,525, Cl. 148-23.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., 4,113,526, Cl. 148-23.000.
Tamm, Paul Whitfield, 4,113,661, Cl. 252-465.000.
Wall, Robert G., 4,113,662, Cl. 252-473.000.
Chiaramonte, Gasper, Jr. Dynamically illuminated footwear. 4,112,601, Cl. 36-137.000.
Chicago Fire Brick Company: *See—*
Rechter, Harold L., 4,113,502, Cl. 106-67.000.
Chikamori, Kunio, to Agency of Industrial Science and Technology. Method for electrochemical machining. 4,113,587, Cl. 204-129.100.
Childers, Aubrey C.: *See—*
Malinski, Richard F.; and Childers, Aubrey C., 4,114,078, Cl. 318-475.000.
Children's Memorial Hospital, The: *See—*
Schulman, Jerome L.; and Kaplan, Jay, 4,112,926, Cl. 128-2.00S.
Chinery, Jack Joseph, to RCA Corporation. Method of testing semiconductor devices. 4,114,096, Cl. 324-158.00D.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, 4,113,868, Cl. 424-251.000.
Chiulli, Robert D. Laparoscopic cannula. 4,112,932, Cl. 128-3.000.
Chiulli, Robert D. Radiographic cassette adapter. 4,114,044, Cl. 250-468.000.
Chloride Group Limited: *See—*
McBrien, Roderick Julian, 4,113,926, Cl. 429-99.000.
Choay S.A.: *See—*
Estevenel, Yvette Fr. M. J.; Thely, Maurice H.; and Coulon, Wladimir A., 4,113,816, Cl. 264-113.000.
Choinski, Edward J., to Polaroid Corporation. Method of multilayer coating. 4,113,903, Cl. 427-420.000.
Chornet, Esteban; and Cavalier, Jean-Claude, to Universite de Sherbrooke. Manufacture of a metal impregnated carbon from peat material. 4,113,651, Cl. 252-422.000.
Chow, Philip Y., to Lin Offshore Engineering, Inc. Method of producing and installing offshore structures. 4,112,697, Cl. 405-209.000.
Christian, Donald K. Fabric bulking process. 4,112,558, Cl. 26-18.500.
Christy, Mark H.; and Spencer, Lloyd. Flush-drip irrigation emitter. 4,113,180, Cl. 239-109.000.
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, to Vyzkumny ustav bavlnarsky. Method of and apparatus for cooling spinning units of open-end spinning machines. 4,112,663, Cl. 57-58.890.
Chulkova, Anna Davydovna: *See—*
Ivanov, Valentin Nikolaevich; and Chulkova, Anna Davydovna, 4,113,499, Cl. 106-38.350.
Ciba-Geigy Corporation: *See—*
Deiner, Hans; Mosch, Franz; and Bernheim, Willy, 4,113,947, Cl. 544-196.000.
Loew, Peter; and Koller, Stefan, 4,113,718, Cl. 260-147.000.
Siegrist, Adolf Emil; and Pauchard, Jean-Paul, 4,113,937, Cl. 542-463.000.
Siegrist, Adolf Emil; and de Sousa, Bernardo, 4,113,938, Cl. 542-464.000.
Zondler, Helmut; Saladin, Emil; and Kirchmayr, Rudolf, 4,113,669, Cl. 521-108.000.
Cigliano, Irving Louis, to Marine Moisture Control Co., Inc. Cam lock with vertical plunger. 4,113,227, Cl. 151-54.000.
Cimarusti, Christopher M.: *See—*
Varma, Ravi K.; and Cimarusti, Christopher M., 4,113,722, Cl. 260-239.55R.
Cimarusti, Christopher Michael: *See—*
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Cincinnati Electronics Corporation: *See—*
Raab, Frederick Herbert, 4,114,155, Cl. 343-105.00R.
Cincinnati Milacron-Heald Corp.: *See—*
Uhtenwoldt, Herbert R.; and Humes, Norman S., 4,112,624, Cl. 51-5.00D.
Citizen Watch Co., Ltd.: *See—*
Kato, Yoshiaki; and Motoki, Jinro, 4,112,671, Cl. 58-23.00D.
Claesson, Harry; and Hellgren, Keijo, to ASEA Aktiebolag. Transportation units for supporting and moving plate-formed attachment member into and out of a press stand of hydraulic press. 4,112,724, Cl. 72-63.000.
Clairol, Inc.: *See—*
Walter, Henry J., 4,114,194, Cl. 366-111.000.
Clapp, Porter B. Two-piece tube plug for repairing tubes in heat exchangers and the like. 4,113,006, Cl. 165-76.000.
Clark, Arthur E.: *See—*
Hudson, George Elbert, III; and Clark, Arthur E., 4,112,699, Cl. 62-3.000.
Clark, George M. Drilling jar. 4,113,038, Cl. 175-300.000.
Clark, James A.; Livesey, Donald V.; and Wrue, Richard J., to Bausch & Lomb Incorporated. Apparatus for forming optical lenses. 4,113,224, Cl. 249-105.000.
Clark, John A.: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.
Clark, Judith Ann, to Beecham Group Limited. Esters of derivatives of 1,1-diphenyl-3-amino-propan-2-ol. 4,113,972, Cl. 560-250.000.
Clark, Steven D.: *See—*
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., 4,114,083, Cl. 320-39.000.
Clarke, Michael R.; and Dolenko, Allan J., to Canadian Patents and Development Limited. Methylolated kraft lignin polymer resin. 4,113,675, Cl. 260-17.500.
Clelland, John J. Pre-cast insulated wall structure. 4,112,646, Cl. 52-372.000.
Clemens, George Selden: *See—*
Hulka, Jaroslav Fabian; and Clemens, George Selden, 4,112,951, Cl. 128-346.000.

Clement, Clyde H. Vehicle top loading mechanism. 4,113,127, Cl. 214-450.000.
Clement, George Frederick; and Sniegowski, Bruno Raymond, to Bell Telephone Laboratories, Incorporated; and Western Electric Company. Telephone controlled lock release arrangement. 4,113,986, Cl. 179-2.00A.
Climet Instruments Company: *See—*
Lepper, James M., Jr., 4,113,386, Cl. 356-103.000.
Clokey, Arthur C. Reinforced articles of elastomeric material. 4,112,614, Cl. 46-151.000.
Cluett, Peabody & Co., Inc.: *See—*
Troope, Walter S.; and Lawrence, Jackson, 4,112,559, Cl. 26-18.600.
Coates, David; Gray, George William; and McDonnell, Damien Gerard, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystalline materials. 4,113,647, Cl. 252-299.000.
Cohen, Choua; and Sillion, Bernard, to Institut Francais du Petrole. Alkyl-guanidino-heterocyclic compounds, their manufacture and use as additives for fuels and lubricants. 4,113,637, Cl. 252-51.50A.
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, to Hoffmann-La Roche Inc. 1-(2-Aminoethyl)-3-(2,6-dihalophenyl)guanidines. 4,113,776, Cl. 260-565.000.
Cohen, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Synthesis of optically active vitamin E. 4,113,740, Cl. 260-340.90R.
Cohu, Inc.: *See—*
Wind, Walter Jamison, 4,113,137, Cl. 220-319.000.
Cola, Rudolph A.: *See—*
Maloney, Thomas C.; and Cola, Rudolph A., 4,114,148, Cl. 340-343.000.
Colburn, John W., Jr.: *See—*
Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, 4,113,315, Cl. 299-13.000.
Colby, Donald B., to Scott Paper Company. Foldable furniture unit. 4,112,855, Cl. 108-159.000.
Cole, Carroll Richard, to Caterpillar Tractor Co. Motor grader with draw bar and circle support structure. 4,113,032, Cl. 172-781.000.
Cole, Lawrence S.; Cole, Ruth J.; and Facchini, Rigo. Apparatus for successively dispensing from a can of a jellied product slices of a cross sectional area less than that of the can. 4,112,800, Cl. 83-411.00A.
Cole, Martin; Hood, John Dick; and Butterworth, Dennis, to Beecham Group Limited. Antibiotic mm 13902. 4,113,856, Cl. 424-117.000.
Cole, Ruth J.: *See—*
Cole, Lawrence S.; Cole, Ruth J.; and Facchini, Rigo, 4,112,800, Cl. 83-411.00A.
Colgate-Palmolive Company: *See—*
Carson, John C., Jr.; Robbins, Clarence R.; and Kenkare, Divaker B., 4,112,536, Cl. 15-104.940.
Kenkare, Divaker B.; and Shumway, Durland K., 4,113,852, Cl. 424-46.000.
Colglazier, Donald Francis; Fallon, John Leslie; Kollar, Ernest Paul; and Mares, Fred Ralph, to International Business Machines Corporation. Combing wheel feed nip with second sheet restraint. 4,113,245, Cl. 271-10.000.
Collignon, Herbert E.: *See—*
Godwin, Robert H.; and Collignon, Herbert E., 4,113,220, Cl. 248-400.000.
Collin, Alvaro L.; and Patel, Gordhan M., to Kaiser Steel Corporation. Mine roof support plate. 4,112,693, Cl. 405-132.000.
Collin, Herbert S. Container for cut flowers. 4,113,094, Cl. 206-423.000.
Collins, David John: *See—*
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, 4,113,465, Cl. 71-92.000.
Collins, Donald L.; and Downing, Harold A., to Collins Industries, Inc. Pin release device for a wheelchair lift. 4,113,121, Cl. 214-75.00R.
Collins Industries, Inc.: *See—*
Collins, Donald L.; and Downing, Harold A., 4,113,121, Cl. 214-75.00R.
Collins, John D.; and Jones, Trevor E., to Albright & Wilson Ltd. Process for preparing organotin halides. 4,113,758, Cl. 260-429.700.
Collins, Joseph C.: *See—*
Surrey, Alexander R.; and Collins, Joseph C., 4,113,774, Cl. 260-558.00D.
Collins, Michael H., to Shell Internationale Research Maatschappij, B.V. Method of applying a layer of polyurethane foam onto a cut or ground surface of polyurethane foam. 4,113,901, Cl. 427-236.000.
Collins, Walter; and Blankumsee, Howard. Composite railroad cross tie with rail support blocks. 4,113,177, Cl. 238-72.000.
Combette, Marc; and Ollivier, Jean. Loading device for a power actuated tool. 4,112,685, Cl. 60-634.000.
Combette, Marc; Dorgnon, Roger; Luthringer, Jean; and Ollivier, Jean. Fastening tool using caseless munition. 4,113,163, Cl. 227-10.000.
Commissariat a l'Energie Atomique: *See—*
Melnick, Igor, 4,113,978, Cl. 13-22.000.
Commonwealth Scientific and Industrial Research Organization: *See—*
Wild, John Paul, 4,114,162, Cl. 343-754.000.
Communications Satellite, Corporation: *See—*
Horna, Otakar Anthony, 4,113,997, Cl. 179-170.200.
Con-Spec Devices Inc.: *See—*
Walski, Stanley, 4,113,226, Cl. 249-216.000.
Condon, Michael Edward: *See—*
Ondetti, Miguel Angel; and Condon, Michael Edward, 4,113,715, Cl. 260-112.50R.
Conger, William H.; and Gehringer, Ronald F., to Nordica International, Inc., a part interest. Tamper-proof axial tumbler type lock. 4,112,820, Cl. 70-363.000.
Conrad, Jens; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. 2,4-Dioxa-spiro(5,5)undec-8-ene perfume compositions. 4,113,664, Cl. 252-522.000.
Construction Specialties, Inc.: *See—*
Reifsnyder, Howard B., 4,112,640, Cl. 52-177.000.
Contraves AG: *See—*
Brandestini, Marco, 4,112,740, Cl. 73-53.000.
Conway, Terry T.: *See—*
Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., 4,113,946, Cl. 544-105.000.
Cook, Edward H., Jr.: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., 4,113,922, Cl. 429-33.000.
Cook, Glenn; and Larson, Paul, to Kennecott Copper Corporation. Method and apparatus for the electrolytic recovery of metal employing electrolyte convection. 4,113,586, Cl. 204-105.00R.
Cook, John Gerald; and Shaw, Julian David, to Solartron Electronic Group Ltd., The. Long scale display. 4,114,094, Cl. 324-115.000.
Cook, Robert E., to A. O. Smith Corporation. Flue pipe anode ring for water heater. 4,113,600, Cl. 204-197.000.
Cook, William, Jr.: *See—*
Chang, Nuke Ming; Remkes, Elmer R.; and Cook, William, Jr., 4,112,695, Cl. 405-163.000.
Cooke, Charles M.: *See—*
Mazdiyasni, Khodabakhsh S.; and Cooke, Charles M., 4,113,830, Cl. 264-101.000.
Coons, Robert R.; Hennessey, Richard G.; and Woffenden, John, to International Harvester Company. Cooling fluid circulation in an annular disc brake. 4,113,067, Cl. 188-71.600.
Corfield, John Courtney, to Unimax Switch Limited. Electrical switch having interlock between door and switch. 4,114,001, Cl. 200-50.00A.
Coriden, Paul. Collapsible electronic calculator stand. 4,113,212, Cl. 248-13.000.
Corning Glass Works: *See—*
Sullivan, Kevin J., 4,112,925, Cl. 128-2.00F.
Corse, Kenneth J. Open end baking pan. 4,113,225, Cl. 249-169.000.
Cosack, Claus: *See—*
Hein, Wolfgang; Grundmann, Peter; and Cosack, Claus, 4,113,144, Cl. 222-396.000.
Cosh, Harry Jose. Apparatus for producing motion of a workpiece. 4,112,784, Cl. 74-501.50R.
Costales, Manuel; and Hakki, Moustafa I. Compensating drive for revolving rings. 4,112,666, Cl. 57-105.000.
Cotten, Roger C.; Young, David W.; and Kandanian, Aram Y., to Southern Chemical Company. Compositions comprising polybutene EPDM and polyolefin. 4,113,804, Cl. 260-897.00A.
Coulon, Wladimir A.: *See—*
Estevenel, Yvette Fr. M. J.; Thely, Maurice H.; and Coulon, Wladimir A., 4,113,816, Cl. 264-113.000.
Coutant, Ralph W., to Litton Systems, Inc. Keeper for idler rolls. 4,112,571, Cl. 29-243.500.
Coval, Arthur B.: *See—*
Lee, Arthur L.; and Coval, Arthur B., 4,113,076, Cl. 192-4.00A.
Covington, Wayne L.; and Green, Glen R., to Ore-Ida Foods, Inc. Method and apparatus for forming torn, random size pieces of sausage meat. 4,112,545, Cl. 17-45.000.
Covini, Romano: *See—*
Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, 4,113,769, Cl. 562-534.000.
Cowley, Brian Richard: *See—*
Laundon, Brian; Cowley, Brian Richard; and Humber, David Cedric, 4,113,591, Cl. 204-158.0HA.
Cox, Donald E., to Coxwells, Incorporated. Swivel coupling. 4,113,288, Cl. 285-174.000.
Coxwells, Incorporated: *See—*
Cox, Donald E., 4,113,288, Cl. 285-174.000.
CPC International Inc.: *See—*
Leach, Harry Woods; Hebeda, Ronald Emil; and Holik, Dennis John, 4,113,509, Cl. 127-29.000.
Craft, Jacob A.; and Hauser, Hans. Small transmission with brake. 4,113,069, Cl. 188-72.700.
Cragoe, Edward J., Jr.: *See—*
Smith, Robert L.; Stokker, Gerald E.; and Cragoe, Edward J., Jr., 4,113,877, Cl. 424-303.000.
Craig, Robert Simpson, to Acme Resin Corporation. Shell sand with improved thermal shock resistance. 4,113,916, Cl. 428-404.000.
Cramer Industries, Inc.: *See—*
Wehner, Norvin J., deceased, 4,113,221, Cl. 248-408.000.
Creager, John E.: *See—*
Sutton, Stephen J.; Holen, J. Robert; and Creager, John E., 4,114,130, Cl. 338-33.000.
Crosby, Thomas C.: *See—*
Robinson, John William; Crosby, Thomas C.; and Howell, Stephen Louis, 4,112,802, Cl. 84-1.010.
Cross, Raymond Peter, to Pilkington Brothers Limited. Thermal treatment of glass in a fluidized bed. 4,113,458, Cl. 65-114.000.
Csanady, Michael, Jr., to Westinghouse Electric Corp. Valving apparatus. 4,112,975, Cl. 137-625.290.
Csanady, Michael, Jr., to Westinghouse Electric Corp. Dual strainer gate arrangement for turbine oil systems. 4,113,622, Cl. 210-167.000.
Culbertson, Harry M., to Monsanto Company. Process for preparing high ortho novolac resins. 4,113,700, Cl. 528-138.000.
Curfman, Brainerd, Harris, Bell, Weigans and Depew: *See—*
Sanford, Dale J., 4,112,578, Cl. 29-700.000.

Curtice, Walter Richard, to RCA Corporation. Triggered burst generator. 4,114,051, Cl. 307-260.000.

Curtis, Little P.: *See—*
Albaric, Jacques E.; Curtis, Little P.; and Dailey, George F., 4,114,059, Cl. 310-54.000.

Curtis, William M.; and Hermanson, Dean E., to Youngstown Sheet and Tube Company. Pipe coupler for various size flanges. 4,113,283, Cl. 285-12.000.

Custom Plastics, Inc.: *See—*
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,112,853, Cl. 108-111.000.

Cutler, Ivan B.: *See—*
Virkar, Anil V.; Miller, Mark L.; Cutler, Ivan B.; and Gordon, Ronald S., 4,113,928, Cl. 429-193.000.

Cvacho, Daniel S., to Belgium Tool & Die Co. Coating filter, separator and collector system. 4,113,454, Cl. 55-319.000.

Cycle-Kamp Inc.: *See—*
Olmstead, William Dean, 4,113,301, Cl. 296-23.00H.

Cyphelly, Ivan Jaroslav. Valve arrangement for limiting torque of a hydraulic motor of a centrifuge. 4,113,171, Cl. 233-7.000.

Czerwon, Dieter: *See—*
Schippers, Heinz; Hensen, Friedhelm; Koslowski, Gerhard; and Czerwon, Dieter, 4,113,935, Cl. 526-351.000.

D. G. Beyer, Inc.: *See—*
Derrwaldt, Philip A., 4,113,237, Cl. 254-175.700.

Dadurian, Aram; and Rehder, Gunther. Knee-joint prosthesis. 4,112,522, Cl. 3-1.910.

Daenen, Bernardus, to Van der Molen Machinefabriek B.V. Cutting apparatus. 4,112,799, Cl. 83-409.000.

D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corp.; and RAI Research Corporation. Trifluorostyrene sulfonic acid membranes. 4,113,922, Cl. 429-33.000.

Dahmen, Kurt: *See—*
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Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
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Dai Nippon Toryo Co., Ltd.: *See—*
Tuzukuni, Hideyoshi; and Kano, Masafumi, 4,113,917, Cl. 428-407.000.

Daido Tokushuko Kabushiki Kaisha: *See—*
Watanabe, Kazuo; Endo, Toshio; and Kojima, Katsuhiro, 4,112,626, Cl. 51-35.000.

Daihatsu Diesel Manufacturing Co., Ltd.: *See—*
Kagiyama, Yasuo; and Miyazaki, Nobumasa, 4,113,174, Cl. 236-12.00A.

Dailey, George F.: *See—*
Albaric, Jacques E.; Curtis, Little P.; and Dailey, George F., 4,114,059, Cl. 310-54.000.

Daimler-Benz Aktiengesellschaft: *See—*
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Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,113,925, Cl. 429-78.000.

Dairy Systems, Inc.: *See—*
Heidecker, Robert F., 4,112,758, Cl. 73-218.000.

D'Albora, John M., to United States of America, Navy. Determination of variations of wave characteristics. 4,114,136, Cl. 340-3.00R.

Dale, Glenn H., to Phillips Petroleum Company. Separation of acetone from n-butane by distillation. 4,113,575, Cl. 203-62.000.

Dale, John R.: *See—*
Mason, Russell I.; and Dale, John R., 4,114,137, Cl. 340-85.000.

Dalziel, David G. Airborne rescue device. 4,113,207, Cl. 244-137.00P.

D'Amato, Ralph James, to RCA Corporation. Process of fabricating a cathode ray tube. 4,112,562, Cl. 29-25.140.

Dany, Franz-Josef: *See—*
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, 4,113,841, Cl. 423-265.000.

D'Aragon, Paul. Insulating installation for a window frame. 4,112,642, Cl. 52-202.000.

Darby, Ronald L. Rebounding ball game. 4,113,252, Cl. 273-95.00R.

Dare Pafco, Inc.: *See—*
Thurman, Paul G., 4,113,329, Cl. 312-111.000.

d'Arras, Philippe, to Societe Coupax. Tenderizer for butcher's meat. 4,112,544, Cl. 17-25.000.

Das, Suryya K.: *See—*
Jozwiak, Edward L., Jr.; and Das, Suryya K., 4,113,598, Cl. 204-181.00R.

Dasy Inter S.A.: *See—*
Brosow, Jorgen; and Furugard, Erik, 4,114,032, Cl. 235-493.000.

Datrix Corporation: *See—*
Travis, Brian A., 4,114,141, Cl. 340-151.000.

David, Gerard Andre: *See—*
Salles, Yvon; Leger, Pierre; and David, Gerard Andre, 4,113,543, Cl. 156-345.000.

Davies, David Evan Naunton: *See—*
Denne, Phillip Raymond Michael; Davies, David Evan Naunton; and McEwen, Colin Dougal, 4,114,151, Cl. 343-6.8LC.

Davis, Edward B. Motorized inverting exerciser with body guard permitting selection of desired stress. 4,113,250, Cl. 272-93.000.

Davis, Edwin J. Window solar heating unit. 4,112,919, Cl. 126-270.000.

Davis, Gerald L.; and Scott, Timothy C., to Sundstrand Corporation. Reversing valve. 4,112,974, Cl. 137-625.290.

Davis, Harry Robert: *See—*
Stuart, Linden, Jr.; and Davis, Harry Robert, 4,113,545, Cl. 156-392.000.

Davis, Pauls: *See—*
Helfert, Herbert; Davis, Pauls; and Langdon, William Keith, 4,113,785, Cl. 260-615.00B.

Davis, Robert H., to United States of America, Navy. Digital signal synthesis system. 4,114,189, Cl. 364-718.000.

Davoli, Velmore: *See—*
Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, 4,113,654, Cl. 252-429.00C.

Day, Frederick L. Travel insert chair and method of transporting the physically handicapped. 4,113,307, Cl. 297-232.000.

Day, Paul B., to Gai-Tronics Corporation. Mine dial and page phone system. 4,113,985, Cl. 179-2.00R.

Dayet, Jacques; Martin, Joseph; and Nicola, Charles, to Delle-Alsthom S.A. Gas-blast electric cut-out device. 4,114,004, Cl. 200-148.00A.

De Dietrich (USA), Inc.: *See—*
Schlosberg, Seymour; and Lerman, Michael J., 4,112,572, Cl. 29-401.00R.

De Alberti, Giordano: *See—*
Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, 4,113,769, Cl. 562-534.000.

Debat, Jacques, to Institut de Recherches Chimiques et Biologiques Appliquees. Compositions for the treatment of disorders of the prostate gland. 4,113,875, Cl. 424-278.000.

DeBoer, Clarence; Dolak, Lester A.; and Peterson, Durey H., to Upjohn Company, The. Composition of matter and process. 4,113,855, Cl. 424-117.000.

deBrebisson, Michel, to U.S. Philips Corporation. Method of manufacturing a semiconductor device by non-selectively implanting a zone of pre-determined low resistivity. 4,113,513, Cl. 148-1.500.

De Castro Basto, Arthur Jose. Apparatus for teaching or practising bridge. 4,112,592, Cl. 35-8.00B.

Decca Limited: *See—*
Ilieve, Peter John, 4,114,179, Cl. 358-34.000.

Deck, Howard C.: *See—*
Feltz, Albert J.; and Deck, Howard C., 4,113,368, Cl. 352-159.000.

Decker, Lloyd Burr, to Harter Corporation. Snub assembly for securing covering material to a wall panel module. 4,112,643, Cl. 52-222.000.

Deckers, Albert T.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.

de Cointet de Fillain, Paul: *See—*
Pigerol, Charles; de Cointet de Fillain, Paul; and Nanthavong, Souli, 4,113,736, Cl. 260-326.160.

DeCorso, Serafino M., to Westinghouse Electric Corp. Hybrid combustor with staged injection of pre-mixed fuel. 4,112,676, Cl. 60-39.710.

DeCorso, Serafino M.: *See—*
Pillsbury, Paul W.; and DeCorso, Serafino M., 4,112,675, Cl. 60-39.060.

Deffner, John F.: *See—*
Bunting, Pamela M.; and Deffner, John F., 4,113,444, Cl. 44-72.000.

Degremont: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,113,596, Cl. 204-180.00R.

Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Color photographic developing composition. 4,113,491, Cl. 96-66.00R.

DeHart, John R.; Nelson, Larry L.; and Krehl, William H., to Docutronix, Inc. Device for checking envelopes for enclosed documents. 4,113,105, Cl. 209-549.000.

Dehnert, Johannes; and Dunkelmann, Guenter, to BASF Aktiengesellschaft. Disperse azo dye with diaminopyrimidine coupling component. 4,113,720, Cl. 260-154.000.

Deiner, Hans; Mosch, Franz; and Bernheim, Willy, to Ciba-Geigy Corporation. Addition products of an N-allylamino-s-triazine and an organopolysiloxane. 4,113,947, Cl. 544-196.000.

de Kanter, Hendrik, to DKA, Inc. Glass cylinder subdividing apparatus and method. 4,112,627, Cl. 51-79.000.

Deknatel, Inc.: *See—*
Kurtz, Leonard D.; and Bidwell, Robert E., 4,112,948, Cl. 128-276.000.

Delalande S. A.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., 4,113,951, Cl. 544-360.000.

Deli, Jack M., to International Harvester Company. Torsielastic thrust bushing for track chains. 4,112,574, Cl. 29-527.100.

Delle-Alsthom S.A.: *See—*
Dayet, Jacques; Martin, Joseph; and Nicola, Charles, 4,114,004, Cl. 200-148.00A.

Del Monte, Louis A., to Honeywell Inc. Microcircuit device metallization. 4,113,578, Cl. 204-15.000.

DeLorenzo, Mario M. Foldable saw horse. 4,113,056, Cl. 182-153.000.

Demag, A.G.: *See—*
Gudenau, H. W.; Konig, Horst; Rath, Gero; and Roth, Haye, 4,113,468, Cl. 75-12.000.

Demers, Robert Augustus, to Bell Telephone Laboratories, Incorporated. Selective calling circuit. 4,114,138, Cl. 340-147.00R.

Denk, Joseph P.: *See—*
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., 4,114,183, Cl. 360-99.000.

Denne, Phillip Raymond Michael; Davies, David Evan Naunton; and McEwen, Colin Dougal, to Alfa-Laval Company Limited. Passive transponder apparatus for use in an interrogator-responder system. 4,114,151, Cl. 343-6.8LC.

Denzene, Quentin S., to E. F. Johnson Company. Radio channel skip system. 4,114,102, Cl. 325-470.000.

Denzene, Quentin S., to E. F. Johnson Company. Channel skip memory system for radio receiver. 4,114,104, Cl. 325-470.000.

Denzer, Max; and Smith, Joseph A., to Sandoz, Inc. Process for the preparation of substituted isoxazolo[4,5-c]pyridin-4-(5H)-ones. 4,113,727, Cl. 544-362.000.

de Putter, Warner Jan, to Wavin B.V. Process for perforating plastics tubes. 4,112,795, Cl. 83-15.000.

Derdzinski, Terrence Edmund; and Karlin, James Hilliard, to Motorola, Inc. Modular console enclosure with writing surface. 4,113,331, Cl. 312-198.000.

DeRouen, Joseph Rodolph; and Kucharski, Lawrence, Jr., to Bourns, Inc. Worm gear potentiometer ratchet system. 4,114,132, Cl. 338-174.000.

Derrwaldt, Philip A., to D. G. Beyer, Inc. Cable tension control. 4,113,237, Cl. 254-175.700.

Deruelle, Jean, to Stein Industrie. Combustion of hot gases of low calorific power. 4,113,417, Cl. 431-5.000.

Desai, Ardeshir R.: *See—*
Lammert, Wayne F.; Simpson, Dayton M.; and Desai, Ardeshir R., 4,112,698, Cl. 405-167.000.

Deshpande, Narayan V., to Xerox Corporation. Resilient lithographic masters for direct printing. 4,112,841, Cl. 101-141.000.

Desiderio, Angelo C., to Oak Industries, Incorporated. Low level relay contact blades. 4,114,007, Cl. 200-246.000.

DeSimone, Robert Santora, to Polak's Frutal Works, Inc. Bleach compositions containing perfume oils. 4,113,645, Cl. 252-187.00H.

DeSoto, Inc.: *See—*
Rabi, Rafat T.; Murphy, Edward J.; and Basoms, John A., 4,113,597, Cl. 204-181.00C.
Sekmakas, Kazys, 4,113,793, Cl. 260-850.000.

de Sousa, Bernardo: *See—*
Siegrist, Adolf Emil; and de Sousa, Bernardo, 4,113,938, Cl. 542-464.000.

DeStephanis, Ralph, to RCA Corporation. Record support and alignment apparatus for a video disc player. 4,113,262, Cl. 274-9.00B.

Detcher, Theodore E., to Black Clawson Company, The. Dewatering screen. 4,113,626, Cl. 210-409.000.

Deutsch, Ralph, to Deutsch Research Laboratories, Ltd. Ensemble and anharmonic generation in a polyphonic tone synthesizer. 4,112,803, Cl. 84-1.240.

Deutsch Research Laboratories, Ltd.: *See—*
Deutsch, Ralph, 4,112,803, Cl. 84-1.240.

Deutsche Babcock Aktiengesellschaft: *See—*
Noack, Rolf; Schuster, Joachim; and Lohse, Udo, 4,112,728, Cl. 72-154.000.

Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, 4,113,773, Cl. 260-545.00R.
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,113,747, Cl. 260-348.250.

Deutsche Texaco Aktiengesellschaft: *See—*
Strehlke, Gunter; and Osterburg, Gunther, 4,113,780, Cl. 260-593.00F.

De Vito, Vincent P.: *See—*
Moen, George E.; and De Vito, Vincent P., 4,114,012, Cl. 219-10.55R.

DeWitt, James S.: *See—*
DeWitt, Stuart; and DeWitt, James S., 4,112,550, Cl. 24-73.0BP.

DeWitt, Stuart; and DeWitt, James S. Suspended ceiling hook. 4,112,550, Cl. 24-73.0BP.

Dey, Ervin J., to SPS Technologies, Inc. Grommet assembly. 4,112,993, Cl. 151-41.740.

Diagnostic Isotopes Incorporated: *See—*
Finn, James J., 4,113,097, Cl. 206-528.000.

Diamalt Aktiengesellschaft: *See—*
Rambacher, Paul; and Make, Siegfried, 4,113,950, Cl. 544-314.000.

Dickert, Yancey J.: *See—*
Miller, Stephen L.; and Dickert, Yancey J., 4,113,674, Cl. 260-9.000.

Dickey-john Corporation: *See—*
Knepler, John T., 4,112,777, Cl. 73-728.000.

Diebold Incorporated: *See—*
Graef, Harry T.; Richardson, Jack M.; and Wolfarth, Robert P., 4,113,140, Cl. 221-6.000.

Dieck, Ronald L.; Magnusson, Alan B.; and Quinn, Edwin J., to Armstrong Cork Company. Curable aryloxyphosphazene polymers. 4,113,670, Cl. 521-95.000.

Diehl, Harry Weldon. Method of treating rheumatoid arthritis. 4,113,881, Cl. 424-312.000.

Dielectric Laboratories, Inc.: *See—*
Lupfer, David A., 4,114,120, Cl. 333-84.00M.

Diesch, Robert E., to Pako Corporation. Knife assembly for photographic strip cutter. 4,112,801, Cl. 83-586.000.

Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., to Van Dorn Company. Tray-type processed food containers. 4,113,095, Cl. 206-508.000.

Dillinger, Lester L. Apparatus for drilling or reaming. 4,113,405, Cl. 408-226.000.

DiMola, Nunzio: *See—*
Winters, Giorgio; and DiMola, Nunzio, 4,113,731, Cl. 260-288.0CF.

Dipsol Chemical Company, Ltd.: *See—*
Oshima, Kathuhide; Takasaki, Haruyuki; and Takahashi, Akio, 4,113,583, Cl. 204-55.00Y.

Director-General Agency of Industrial Science and Technology: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.

Dirksing, Robert S.; and Todd, Estel R., to Procter & Gamble Company, The. Fluid injector. 4,114,195, Cl. 366-167.000.

Discojet Corporation: *See—*
Moller, Paul S., 4,113,051, Cl. 181-231.000.

Distillers Company (Carbon Dioxide) Ltd., The: *See—*
Wheldon, Alfred G.; and Harris, Ernest D., 4,112,736, Cl. 73-23.000.

Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, to BASF Aktiengesellschaft. Manufacture of N-substituted glycinonitriles. 4,113,764, Cl. 260-465.50A.

Dittmer, William H.: *See—*
Wycoff, Keith H.; and Dittmer, William H., 4,114,142, Cl. 340-164.00R.

Dixon, William Paul. Power source for subsea oil wells. 4,112,687, Cl. 60-641.000.

DKA, Inc.: *See—*
de Kanter, Hendrik, 4,112,627, Cl. 51-79.000.

Dobson Park Industries Limited: *See—*
Jeffrey, Ian Campbell, 4,113,123, Cl. 214-141.000.
Phillips, Reginald Andrew; Hamilton, Terence; and Thompson, Arthur David, 4,113,316, Cl. 299-31.000.

Dr. C. Otto & Comp. G.m.b.H.: *See—*
Pries, Erich, 4,113,570, Cl. 202-139.000.

Dr. Carl Hahn G.m.b.H.: *See—*
Friese, Axel; and Simon, Stefan, 4,113,083, Cl. 198-480.000.

Documation Incorporated: *See—*
Bushman, Willard T.; and Snyder, Robert C., 4,114,031, Cl. 235-474.000.

Docutronix, Inc.: *See—*
DeHart, John R.; Nelson, Larry L.; and Krehl, William H., 4,113,105, Cl. 209-549.000.

Doerman, Eryk Stefan: *See—*
Preston, Edward George; and Doerman, Eryk Stefan, 4,112,954, Cl. 131-21.00R.

Doggett, Neil: *See—*
Lappage, James; Doggett, Neil; and Yates, Stephen William, 4,112,662, Cl. 57-34.0AT.

Doi, Kaname, to Sumitomo Electric Industries, Ltd. Load-responsive pressure proportioning reducing valve assembly for vehicle hydraulic brake system. 4,113,318, Cl. 303-24.00F.

Dolak, Lester A.: *See—*
DeBoer, Clarence; Dolak, Lester A.; and Peterson, Durey H., 4,113,855, Cl. 424-117.000.

Dolenko, Allan J.: *See—*
Clarke, Michael R.; and Dolenko, Allan J., 4,113,675, Cl. 260-17.500.

Dolidze, Vladimir Romanovich: *See—*
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich, 4,113,976, Cl. 568-789.000.

Dominguez, Richard Lee. Lighting fixture. 4,114,186, Cl. 362-35.000.

Donaldson Company, Inc.: *See—*
Wagner, Wayne M.; and Campbell, John A., 4,113,289, Cl. 285-322.000.

Dondi, Gilberto; and Zanotti, Arnaldo, to Bayer Italia Societa per Azioni. Fruit juice-sugar granules. 4,113,865, Cl. 424-230.000.

Donn Products, Inc.: *See—*
Mieyal, David F., 4,113,219, Cl. 248-354.00R.

Donnelli, Joseph W.; and Barnes, Richard D., to Southern Imperial, Inc. Merchandising system for use with perforated panels or the like. 4,113,109, Cl. 211-49.00R.

Donner-Hanna Coke Corporation: *See—*
Mahar, Kevin D., 4,113,569, Cl. 201-39.000.

Donner, Joseph E., to Unitek Corporation. Feedback-controlled radiant furnace for firing ceramic material and the like. 4,114,024, Cl. 219-489.000.

Dooley, Richard A. Apparatus for producing cams. 4,112,819, Cl. 90-13.900.

Dore, James E., to Swiss Aluminium Ltd. Apparatus for the filtration of molten metal in a crucible type furnace. 4,113,241, Cl. 266-227.000.

Dorgnon, Roger: *See—*
Combette, Marc; Dorgnon, Roger; Luthringer, Jean; and Ollivier, Jean, 4,113,163, Cl. 227-10.000.

Dorogochinsky, Akivy Zinovievich: *See—*
Mirsky, Yakov Volfovich; Dorogochinsky, Akivy Zinovievich; Meged, Nelli Fillipovna; and Kosolapova, Antonina Pavlovna, 4,113,843, Cl. 423-329.000.

Dorsey, Geoffrey A., Jr., to Kaiser Aluminum & Chemical Corporation. Method of forming an aluminum oxide coating. 4,113,520, Cl. 148-6.270.

Doss, Richard C., to Phillips Petroleum Company. Process for applying sealant composition. 4,113,914, Cl. 428-355.000.

Doss, Richard C.: *See—*
Louthan, Rector P.; and Doss, Richard C., 4,113,707, Cl. 528-279.000.

Douglas, Paul S.; Patellis, Anargiros Pete; and Vredenburgh, Walter A., to Hercules Incorporated. Copolymers of alpha-methylstyrene and styrene and uses thereof. 4,113,801, Cl. 260-876.00B.

Douglas, Waymon Joe; and Douglas, Wilburn Cleatus. Article handling apparatus. 4,113,117, Cl. 214-8.50C.
Douglas, Wilburn Cleatus: *See*—
Douglas, Waymon Joe; and Douglas, Wilburn Cleatus, 4,113,117, Cl. 214-8.50C.
Dovzhko, Fedor Evdokimovich: *See*—
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.
Dow Chemical Company, The: *See*—
Johnson, David R., 4,113,584, Cl. 204-64.00R.
Langhorst, Martin A.; Sinka, Gerard C.; and Mossner, Elmer H., 4,113,471, Cl. 75-101.00R.
Miller, Stephen L.; and Dickert, Yancey J., 4,113,674, Cl. 260-9.000.
Pickelman, Dale M., Sr.; and Wessling, Ritchie A., 4,113,710, Cl. 526-30.000.
Strojny, Edwin J.; Friedli, Hans R.; and Wing, Milton S., 4,113,745, Cl. 260-346.750.
Thompson, James L., 4,113,631, Cl. 252-8.55C.
Trucks, Roger O.; and Steiner, Edwin C., 4,113,739, Cl. 260-338.000.
Dowa Co., Ltd.: *See*—
Miyahara, Kingo, 4,113,421, Cl. 431-122.000
Dowa Mining Co., Ltd.: *See*—
Obihata, Shiro; Hashimoto, Shigeru; and Sahara, Takeshi, 4,113,106, Cl. 209-167.000.
Downing, Harold A.: *See*—
Collins, Donald L.; and Downing, Harold A., 4,113,121, Cl. 214-75.00R
Downing, James H., Jr. All-electric A.C. tractor. 4,113,045, Cl. 180-65.000E.
Doyle, Terrence W.: *See*—
Belleau, Bernard R.; Doyle, Terrence W.; Luh, Bing Yu; and Conway, Terry T., 4,113,946, Cl. 544-105.000.
Dragerwerk Aktiengesellschaft. *See*—
Jeretin, Stojan, 4,112,938, Cl. 128-142.00R.
Dravo Corporation: *See*—
Pietrusza, Arthur Jacob; and Kent, Harry James, 4,113,413, Cl. 455-222.000.
Dreibelbis, Logan L., to Advanced Drainage Systems, Inc. Tube slotter. 4,112,810, Cl. 83-490.000
Driscoll, John J.; and Wareham, Richard R., to Polaroid Corporation. Self-developing camera and viewer. 4,114,166, Cl. 354-76.000.
Driscoll, Michael J.; and Bowman, Frank L., to Massachusetts Institute of Technology. Core catcher for nuclear reactor core meltdown containment. 4,113,560, Cl. 176-38.000.
Drossbach, Hubert, to Agro-Drip, Incorporated. Drain pipe method. 4,113,818, Cl. 264-154.000.
Drucker, Gerhard: *See*—
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,113,925, Cl. 429-78.000.
Dubois, Leo Francis. Trash can transporter. 4,113,214, Cl. 248-146.000.
DuBosque, Clayton, Jr.; Rudd, Wallace C.; and Allen, Richard J., to Thermatool Corp. Method of manufacturing heat exchange panels. 4,112,566, Cl. 29-157.30C.
Ducellier et Cie: *See*—
Hubert, Roger, 4,112,895, Cl. 123-117.00R.
Ducellier et Co.: *See*—
Chateau, Louis Jean, 4,112,887, Cl. 123-117.00D.
Duff, Ian David; Kennedy, John Hamilton; and Bunce, Roger Abraham, to Secretary of State for Social Services, The. Liquid storage device. 4,113,437, Cl. 422-63.000.
Dufour, Raymond J.: *See*—
Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., 4,113,004, Cl. 165-3.000.
Duncan, Herbert Alan, to Motorola, Inc. Noise blanker circuit. 4,114,105, Cl. 325-480.000.
Dunkelmann, Guenter: *See*—
Dehnert, Johannes; and Dunkelmann, Guenter, 4,113,720, Cl. 260-154.000.
Dunlop Limited: *See*—
Mills, Anthony Mark; and Buck, David Lyndon, 4,112,994, Cl. 152-354.00R.
Dunn, Paul E.: *See*—
Slater, Charles E.; Dunn, Paul E.; and Mustain, Lewis B., 4,114,027, Cl. 235-419.000.
Du Pont de Nemours, E. I., and Company: *See*—
Allegranti, Constance Wright, 4,113,628, Cl. 210-500.00M.
Harmuth, Charles Moore, 4,113,681, Cl. 260-28.50D.
Portnoy, Robert Charles, 4,113,724, Cl. 544-408.000.
Resnick, Paul Raphael; and Grot, Walther Gustav, 4,113,585, Cl. 204-98.000.
Durbin, John Alan, to Xerox Corporation. Optical system for alternatively projecting adjacent images of adjacent objects or double images of a single object. 4,113,370, Cl. 353-122.000.
Dussich, Manlio V. Sunglass method and apparatus. 4,113,364, Cl. 351-49.000.
Dyckerhoff & Widmann Aktiengesellschaft: *See*—
Herbst, Thomas, 4,112,637, Cl. 52-155.000.
Dynamit Nobel Aktiengesellschaft: *See*—
aus der Funten, Helmut; and Vogt, Wilhelm, 4,113,741, Cl. 260-343.30R.
Blumenfeld, Georg; and Vollkommer, Norbert, 4,113,703, Cl. 528-299.000.
Haage, Karl; and Scharff, Dieter, 4,113,907, Cl. 428-111.000.
Helfgen, Werner; Lindner, Gerhard; Lingens, Paul; and Kaufmann, Helmut, 4,113,811, Cl. 264-3.00R.
Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, 4,113,761, Cl. 260-448.80A.
Psencik, Erich, 4,113,702, Cl. 528-75.000.
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Bellanca, Nicolo; and Furia, Thomas Edward, 4,113,505, Cl. 106-137.000.
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Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.
E. F. Johnson Company: *See*—
Denzene, Quentin S., 4,114,102, Cl. 325-470.000.
Denzene, Quentin S., 4,114,104, Cl. 325-470.000.
E M I Limited: *See*—
Lee, Cyril Arthur, 4,114,029, Cl. 235-449.000.
E. R. Squibb & Sons, Inc.: *See*—
Hauck, Frederic Peter; and Cimarusti, Christopher Michael, 4,113,726, Cl. 544-380.000.
Ondetti, Miguel Angel; and Condon, Michael Edward, 4,113,715, Cl. 260-112.50R.
Treuner, Uwe D.; and Breuer, Hermann, 4,113,943, Cl. 544-26.000.
Varma, Ravi K.; and Cimarusti, Christopher M., 4,113,722, Cl. 260-239.55R.
Eastman Kodak Company: *See*—
Lelental, Mark; and Light, William Andrew, 4,113,484, Cl. 96-1.00R.
Sandhu, Mohammad Akram; and Tinglet, Kenneth Lloyd, 4,113,493, Cl. 96-67.000.
Ebeling, Martti Olavi Aladar; and Lunden, Risto Waldemar, to Kontekla Oy. Rain water roof outlet or similar for a building. 4,112,691, Cl. 405-119.000.
Ebihara, Masatomi; Inoue, Masahide; and Hidaka, Tsuneo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Sintered apatite body. 4,113,500, Cl. 106-39.500.
Ecsery, Zoltan: *See*—
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, 4,113,868, Cl. 424-251.000.
Edamoto, Yoshito. Temporary sealant of a nozzle opening of sliding nozzle. 4,113,501, Cl. 106-56.000.
Eguchi, Tadashi: *See*—
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, 4,113,434, Cl. 23-232.00R.
Ehrhart, Leonard M.; Pratte, John R.; and Mazik, Paul E., Jr., to Pullman Incorporated. Adjustable thickness vent door assembly for cargo bodies. 4,112,621, Cl. 49-400.000.
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, to Hercules Incorporated. Iron blue pigment composition and process for its production. 4,113,508, Cl. 106-304.000.
Eisai Co., Ltd.: *See*—
Igarashi, Toshiji; and Nakajima, Yoshikage, 4,113,870, Cl. 424-266.000.
Electric Machinery Mfg. Company: *See*—
Sandor, Leslie W., 4,114,019, Cl. 219-137.00R.
Electric Power Research Institute, Inc.: *See*—
Brobeck, William M., 4,112,785, Cl. 74-572.000.
Holman, Robert R.; and Turkall, Daniel N., 4,113,242, Cl. 277-1.000.
Sisk, Francis J.; and Veyo, Stephen E., 4,112,705, Cl. 62-238.000.
Electro-Sound, Inc.: *See*—
Rehklau, George D., 4,113,196, Cl. 242-56.00R.
Electronics Corporation of America: *See*—
Cade, Phillip J., 4,113,419, Cl. 431-78.000.
Electronics for Medicine, Inc.: *See*—
Feldman, Charles L.; and Hubelbank, Mark, 4,112,930, Cl. 128-2.06R.
Eley, Edgar R., to Westinghouse Electric Corp. Load break bushing. 4,113,339, Cl. 339-111.000.
Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., to Oxford Industries, Inc. Method of fabricating shirt cuffs. 4,112,860, Cl. 112-262.000.
Ellis, James Arthur: *See*—
Wright, Glenn Lamont; and Ellis, James Arthur, 4,112,540, Cl. 16-99.000.
Eltra Corporation: *See*—
Hayes, Clyde M., 4,114,061, Cl. 310-241.000.
Lang, Roger J.; and Lang, Gary E., 4,113,335, Cl. 339-29.00R.
Emerson Electric Co.: *See*—
Henderson, David L., 4,113,518, Cl. 148-6.15Z.
EMI Limited: *See*—
Hounsfield, Godfrey Newbold, 4,114,040, Cl 250-445.00T.
LeMay, Christopher Archibald Gordon, 4,114,042, Cl. 250-445.00T.
Oliver, Colin Charles, 4,114,041, Cl. 250-445.00T.
Emmons, Marvin L. Convertible hat blocking structure. 4,113,154, Cl. 223-24.000.
Empire Metal Products Corp.: *See*—
Stewart, David E., 4,112,622, Cl. 49-421.000.

Emura, Tomoyuki: *See*—
Sekihara, Takeshi; Emura, Tomoyuki; and Murashige, Masayuki, 4,113,932, Cl. 526-74.000.
Enami, Shiroh: *See*—
Mukaemachi, Takuji; Takeshita, Tetsuo; and Enami, Shiroh, 4,113,988, Cl. 179-18.0ES.
Endo, Takaya: *See*—
Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, 4,113,491, Cl. 96-66.00R.
Endo, Toshio: *See*—
Watanabe, Kazuo; Endo, Toshio; and Kojima, Katsuhiro, 4,112,626, Cl. 51-35.000.
Enenkel, Hans-Joachim: *See*—
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,113,863, Cl. 424-205.000.
Energy Conversion Devices, Inc.: *See*—
Hallman, Robert W., 4,113,494, Cl. 96-75.000.
Energy Research Inc.: *See*—
Harpman, Webster B., 4,112,889, Cl. 123-25.00B.
Engel, Lawrence J.; and Gardiner, John B., to Exxon Research & Engineering Co. Aminated polymeric additives for fuels and lubricants. 4,113,636, Cl. 252-51.50R.
Engelhardt, Bernard H.; and Mintz, Marcus. Liquid level measuring apparatus. 4,112,761, Cl. 73-312.000.
Engineered Systems, Inc.: *See*—
Kubina, John, 4,114,140, Cl. 340-149.00A.
Englund, Gosta Roland, to Svenska Dataregister Aktiebolag. Driving device for a print head. 4,112,840, Cl. 101-93.150.
Enlow, William Palmer: *See*—
Hechenbleikner, Ingenuin; and Enlow, William Palmer, 4,113,807, Cl. 260-969.000.
Entoleter, Inc.: *See*—
Wattles, Gurdon B.; and Vecsey, Louis R., 4,113,191, Cl. 241-188.00A.
Environmental Devices Corporation: *See*—
Kerfoot, William B.; and Brainard, Edward C., II, 4,112,741, Cl. 73-53.000.
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, to Agfa-Gevaert AG. Copying apparatus. 4,113,373, Cl. 355-8.000.
Epstein, James Stephen, to Hewlett-Packard Company. Surveying instrument and method. 4,113,381, Cl. 356-5.000.
Epstein, Max; Marhic, Michel E.; and Schacham, Samuel E., to Northwestern University. Apparatus and method for efficient synthesis of laser light. 4,114,112, Cl. 331-94.50C.
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich. Process for the production of alumina from the mineral component of solid fuels. 4,113,833, Cl. 423-131.0G0.
Erickson, John W.: *See*—
Brown, Francis Barton; and Erickson, John W., 4,113,452, Cl. 55-203.000.
Eriksson, Lennart: *See*—
Schibbye, Hjalmar; and Eriksson, Lennart, 4,112,701, Cl. 62-84.000.
Erkens, Leonardus Johannes Hubertus: *See*—
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, 4,113,508, Cl. 106-304.000.
Ernst, Ludwig. Disperser head for seed and fertilizer drill machines. 4,113,148, Cl. 222-139.000.
Ernsthausen, Roger E., to Owens-Illinois, Inc. Multiple gaseous discharge display/memory panel having improved voltage characteristics. 4,114,064, Cl. 313-188.000.
ESB Incorporated: *See*—
Margalit, Nehemiah, 4,113,929, Cl. 429-194.000.
Escher Wyss Limited: *See*—
Miller, Helmut, 4,113,325, Cl. 308-9.000.
ESGE-MARBY GmbH & Co.: *See*—
Niemann, Heinz, 4,113,158, Cl. 224-39.000.
Etablissement Valvin: *See*—
Poinsard, Elisabeth Michele; and Poinsard, Robert Gaston, 4,112,829, Cl. 99-277.000.
Estapa, Don E.: *See*—
Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., 4,112,860, Cl. 112-262.000.
Esters, Ernie B. Dynamoelectric machine with inner and outer stators. 4,114,057, Cl. 310-46.000.
Estes, John H.: *See*—
Herbstman, Sheldon; Webb, Allen N.; and Estes, John H., 4,113,657, Cl. 252-442.000.
Rao, Babu Y.; Nolan, John T., Jr.; and Estes, John H., 4,113,789, Cl. 260-683.680.
Estes, Robert T.: *See*—
MacLean, Donald L.; and Estes, Robert T., 4,113,704, Cl. 528-289.000.
Estevenel, Yvette Fr. M. J.; Thely, Maurice H.; and Coulon, Wladimir A., to Choay S.A. Process for the manufacture of layered tablets incorporating controlled-release microcapsules. 4,113,816, Cl. 264-113.000.
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Mazuir, Maurice, 4,114,190, Cl. 364-900.000.
Ethyl Corporation: *See*—
Lawrence, Walter W., Jr.; McKay, Tom W.; and Wiegand, Karl E., 4,113,771, Cl. 562-568.000.
Evans, David H.; and Greenwald, Richard B., to Polaroid Corporation. Conversion of N-tosylsulfoximides to sulfoximines. 4,113,738, Cl. 260-327.00M.
Evans Products Company: *See*—
Johnson, Peter E.; and Rowland, Bob G., 4,113,927, Cl. 429-143.000.
Evans, Robert T.; and Farley, David L., to Halliburton Company. Reclosable circulation valve for use in oil well testing. 4,113,012, Cl. 166-264.000.
Everett/Charles, Inc.: *See*—
Long, Lewis Frank, 4,114,093, Cl. 324-73.0AT.
Exner, Lawrence J.: *See*—
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., 4,112,714, Cl. 68-206.000.
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., to Oce-van der Grinten N.V. Apparatus for developing electrostatic charge images. 4,112,870, Cl. 118-657.000.
Exxon Research & Engineering Co.: *See*—
Engel, Lawrence J.; and Gardiner, John B., 4,113,636, Cl. 252-51.50R.
Gorbaty, Martin L.; Tao, Frank F.; and Maa, Peter S., 4,113,602, Cl. 208-8.000.
Gorbaty, Martin L., 4,113,615, Cl. 210-40.000.
Kantner, Edward, 4,113,924, Cl. 429-50.000.
Lonstrup, Thorkild F.; Brownawell, Darrell W.; Goletz, Edward, Jr.; and Numair, Solomon J., 4,113,639, Cl. 252-51.50A.
Palkes, Mark, 4,112,918, Cl. 126-270.000.
Riley, Kenneth L.; and Pine, Lloyd A., 4,113,656, Cl. 252-439.000.
Watson, Albert T.; and Hull, Robert L., 4,113,806, Cl. 260-897.00A.
Fabriksmontering i Trelleborg AB: *See*—
Anderberg, Nils-Eric, 4,112,958, Cl. 135-5.00A.
Fabrique Nationale Herstal S.A. en abrege FN: *See*—
Bourlet, Maurice V., 4,112,817, Cl. 89-33.00B.
Facchini, Rigo: *See*—
Cole, Lawrence S.; Cole, Ruth J.; and Facchini, Rigo, 4,112,800, Cl. 83-411.00A.
Fahlen, Theodore S.: *See*—
Pressley, Robert J.; and Fahlen, Theodore S., 4,114,114, Cl. 331-94.5PE.
Fairchild Camera and Instrument Corporation: *See*—
Kendall, Larry J., 4,114,149, Cl. 340-347.0AD.
Falk Corporation, The: *See*—
Phinney, John M., 4,113,077, Cl. 192-.098.
Falk, Mervin L.: *See*—
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., 4,114,183, Cl. 360-99.000.
Falk, Richard A. Molten metal dip sampler. 4,112,769, Cl. 73-425.40R.
Fallon, John Leslie: *See*—
Colglazier, Donald Francis; Fallon, John Leslie; Kollar, Ernest Paul; and Mares, Fred Ralph, 4,113,245, Cl. 271-10.000.
Farley, David L.: *See*—
Evans, Robert T.; and Farley, David L., 4,113,012, Cl. 166-264.000.
Farley, James R.: *See*—
Maier, Alfred E.; Armstrong, Donald D.; and Farley, James R., 4,114,005, Cl. 200-153.00G.
Farr, Glyn Phillip Reginald, to Girling Limited. Brake pressure reducing control valve. 4,113,317, Cl. 303-6.00C.
Farr, Glyn Phillip Reginald, to Girling Limited. Dual hydraulic braking system for vehicles. 4,114,145, Cl. 340-626.000.
Fasbender, Heinz: *See*—
Hoppen, Heinz; and Fasbender, Heinz, 4,113,187, Cl. 241-24.000.
Faulkenberry, Wayne J.; and Riviere, Henry W., to General Electric Company. Overdrive protection circuit. 4,114,108, Cl. 330-207.00P.
Featherstone, Harry Edwin; and Sniff, Walter Grant, Jr., to Orrville Products, Inc. Method of joining two sheet metal parts. 4,114,020, Cl. 219-137.00R.
Feder, Alvin, to Motorola, Inc. Multi-position switch with single sliding actuator cam, reciprocable cam follower and compressive conductive elastomer. 4,114,000, Cl. 200-16.00R.
Feldman, Charles L.; and Hubelbank, Mark, to Electronics for Medicine, Inc. Apparatus and method for ECG baseline shift detecting. 4,112,930, Cl. 128-2.06R.
Feldmar Products, Inc.: *See*—
Booty, Donald J., 4,114,098, Cl. 325-390.000.
Felix, Rolf: *See*—
Fleisch, Herbert A.; and Felix, Rolf, 4,113,861, Cl. 424-204.000.
Fleisch, Herbert A.; and Felix, Rolf, 4,113,862, Cl. 424-204.000.
Fellows, Ronald John: *See*—
Palfrey, Lesley Francis; and Fellows, Ronald John, 4,112,589, Cl. 34-48.000.
Feltz, Albert J.; and Deck, Howard C., to Singer Company, The. Automatic lower loop restorer mechanism. 4,113,368, Cl. 352-159.000.
Fernandez, Maria del Carmen: *See*—
Fernandez, Santiago Julio; and Fernandez, Maria del Carmen, 4,112,595, Cl. 35-35.00E.
Fernandez, Santiago Julio; and Fernandez, Maria del Carmen. Teaching devices. 4,112,595, Cl. 35-35.00E.
Ferrara, Louis Thomas; and Roccisano, Janet. Blood collection valve. 4,112,924, Cl. 128-2.00F.

Ferrarese, Frank L.: *See—*
Bush, Austin R.; and Ferrarese, Frank L., 4,113,089, Cl. 206-319.000.

Ferraris, Giuseppe: *See—*
Cesca, Sebastiano; Priola, Aldo; and Ferraris, Giuseppe, 4,113,790, Cl. 260-683.15B.

Ferrentino, Antonio; and Brovedan, Antonio, to Industrie Pirelli Societa per Azioni. Apparatus for laying-up together a plurality of fragile filaments. 4,112,660, Cl. 57-59.000.

Ferri, John L.; Mathers, James E.; and Yale, Ramon L., to GTE Sylvania Incorporated. Terbium-activated rare earth oxysulfide phosphors with controlled decay. 4,113,648, Cl. 252-301.40S.

Fesquet, Amedee. Machinery for the mass production of pronged members or of continuous strips of pronged members. 4,112,674, Cl. 59-72.000.

Fibre Containers Company: *See—*
Scott, Donald M., 4,113,096, Cl. 206-523.000.

Fidler, Gary L.; Hill, Richard A.; and Carrera, John P., to Westinghouse Electric Corp. Valve arrangement for a nuclear plant residual heat removal system. 4,113,561, Cl. 176-38.000.

Fiedler, Howard C., to General Electric Company. Method of producing silicon-iron sheet material with copper as a partial substitute for sulfur, and product. 4,113,529, Cl. 148-111.000.

Fiege, Helmut; Haydn, Josef; Renner, Johann; and Wedemeyer, Karl-fried, to Bayer Aktiengesellschaft. Process for purifying alkylphenolz. 4,113,975, Cl. 568-756.000.

Fields, Ernest E.; and Reineck, Lester W., to Outboard Marine Corporation. Liquid tank cap having a vent. 4,113,138, Cl. 220-367.000.

Filianovich, Jevgeny Grigorievich: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.

Filmon Process Corp.: *See—*
Ploeger, Walter, Jr., 4,113,392, Cl. 400-240.100.

Filtertek, Inc.: *See—*
Leason, Hayden L., 4,113,627, Cl. 210-446.000.

Filzinger, Klaus: *See—*
Fuchs, Hermann; and Filzinger, Klaus, 4,113,719, Cl. 260-149.000.

Finike Italiana Marposs Soc. in Accomandita Semplice di Mario Possati & C.: *See—*
Possati, Mario, 4,112,629, Cl. 51-165.930.

Finn, James J., to Diagnostic Isotopes Incorporated. Ampule capable of being autoclaved. 4,113,097, Cl. 206-528.000.

Fiorenza, Giorgio, to Ing. C. Olivetti & C., S.p.A. Electronic desk-top accounting machine and calculator. 4,114,026, Cl. 235-375.000.

Firmenich & Cie: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 4,113,891, Cl. 426-536.000.

Fischer, Adolf, deceased (by Fischer, Caecilia Emma, heiress-at-law); and Hamprecht, Gerhard, to BASF Aktiengesellschaft. N',N'-disubstituted 2,1,3-benzothiadiazin-(4)-one-2,2-dioxides. 4,113,939, Cl. 544-11.000.

Fischer, Caecilia Emma, heiress-at-law: *See—*
Fischer, Adolf, deceased; and Hamprecht, Gerhard, 4,113,939, Cl. 544-11.000.

Fischer & Porter Company: *See—*
Hermanns, Henry M., 4,112,960, Cl. 137-85.000.

Fischer, Robert Bowlby: *See—*
Larson, John Arden; and Fischer, Robert Bowlby, 4,113,527, Cl. 148-36.000.

Fister, Julius C., Jr.; Breedis, John F.; and Pryor, Michael J., to Swiss Aluminium Ltd. High strength aluminum extrusion alloy. 4,113,472, Cl. 75-142.000.

Fitzmayer, Louis H.: *See—*
Simon, Donald J.; and Fitzmayer, Louis H., 4,114,013, Cl. 219-10.55D.

Fitzsimmons, William A.; and Lawler, James E., to Fitzsimmons, William A. Device for determining angles. 4,112,580, Cl. 33-174.00S.

Flament, Ivon: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 4,113,891, Cl. 426-536.000.

Flanagan, Joseph E.: *See—*
Grant, Louis R.; and Flanagan, Joseph E., 4,113,775, Cl. 260-564.00G.

Flaum, Dennis Michael; and Fleishman, Herman Lawrence. Zipper construction. 4,112,556, Cl. 24-205.10R.

Fleisch, Herbert A.; and Felix, Rolf, to Procter & Gamble Company, The. Phosphonate pharmaceutical composition. 4,113,861, Cl. 424-204.000.

Fleisch, Herbert A.; and Felix, Rolf, to Procter & Gamble Company, The. Carboxy phosphonate pharmaceutical composition. 4,113,862, Cl. 424-204.000.

Fleischer, Henry. Clamping device. 4,113,285, Cl. 285-45.000.

Fleishman, Herman Lawrence: *See—*
Flaum, Dennis Michael; and Fleishman, Herman Lawrence, 4,112,556, Cl. 24-205.10R.

Fletcher, Samuel G.; and McCutcheon, Martin J. Pseudo palate useful for diagnosis and treatment of speech impairment. 4,112,596, Cl. 35-35.00R.

Flodman, Leif A.: *See—*
Nyren, Jan O.; Nordin, Soren B.; and Flodman, Leif A., 4,113,555, Cl. 162-127.000.

Flower, Robert J.; Snedeker, Clarke R.; and Beatenbough, Paul K., to General Motors Corporation. Recuperator. 4,113,007, Cl. 165-81.000.

FMC Corporation: *See—*
Gerow, Gordon P., 4,113,573, Cl. 203-2.000.

Fohl, Artur, to Repa Feinstanzwerk GmbH. Safety device for arresting unrolling of roller blinds. 4,112,996, Cl. 160-296.000.

Fono, Andrew; and Patton, Ray F., to Royce Chemical Company. Process for dyeing cellulosic textiles with vat and sulfur dyes. 4,113,427, Cl. 8-34.000.

Fontanilles, Henry: *See—*
Burns, Donald Arthur; and Fontanilles, Henry, 4,113,383, Cl. 356-36.000.

Food Automation-Service Techniques, Inc.: *See—*
Koether, Bernard G.; and Shaughnessy, William J., 4,113,623, Cl. 210-167.000.

Forbes, Hampton E., Jr., to Westvaco Corporation. End loaded carton with automatic header. 4,113,086, Cl. 206-45.140.

Ford, John Charles, to Girling Limited. Hydraulically operated disc brakes. 4,113,068, Cl. 188-72.500.

Ford, Michael Alan; Mould, Henry Manifold; and Kolb, Dieter. Transient suppressor network for spectrophotometers and the like. 4,113,385, Cl. 356-96.000.

Ford, Michael Alan. Tunable electrical filter network. 4,114,117, Cl. 333-70.0CR.

Forg, Wolfgang, to Linde Aktiengesellschaft. Liquefaction of natural gas. 4,112,700, Cl. 62-28.000.

Forlini, Matthew: *See—*
Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, 4,113,362, Cl. 350-362.000.

Forrest, William J. Livestock transport apparatus. 4,112,874, Cl. 119-158.000.

Forward, Cleve H.; and Higgins, Jerry G. Alkyl vinyl copolymer. 4,113,668, Cl. 521-60.000.

Foss, Richard W., to Jos. Dyson & Sons, Inc. Lift fork construction. 4,113,128, Cl. 214-750.000.

Fox, Richard C.: *See—*
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., 4,113,525, Cl. 148-23.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., 4,113,526, Cl. 148-23.000.

Fraas, Lewis M.: *See—*
Zanio, Kenneth W.; and Fraas, Lewis M., 4,113,531, Cl. 148-174.000.

Frank, Earl E.; and Yee, Bing S., to Abex Corporation. Hydraulic apparatus. 4,113,621, Cl. 210-167.000.

Franks, Lawrence A.; Stroup, Steven L.; and Perry, James E., to Burr Oak Tool & Gauge Company. Tube cutter with phase changer. 4,112,794, Cl. 82-64.000.

Franson, David C.: *See—*
Hoffman, Robert K.; and Franson, David C., 4,112,968, Cl. 137-427.000.

Frantz, Virgil L., to Graham-White Sales Corp. Compressed gas filter assembly. 4,113,451, Cl. 55-162.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H.: *See—*
Theurer, Josef; Praschl, Wilhelm; and Riessberger, Klaus, 4,113,111, Cl. 212-28.000.

Fraser, Lawrence J.; and Liebman, Alan, to Xerox Corporation. Color development system. 4,113,371, Cl. 355-4.000.

Frazier, Albert A.; and Phillips, Howard W., to Aladdin Industries, Incorporated. Vacuum bottle with air pump to pressurized bottle to effect dispensing. 4,113,147, Cl. 222-131.000.

Freisler, Erhard, to Ruti Machinery Works Ltd. Device for feeding pile warp yarns for pile fabric looms. 4,112,981, Cl. 139-102.000.

Freudenschuss, Otto, to Vockenhuber, Karl; and Hauser, Raimund. Method of and system for measuring distances. 4,113,382, Cl. 356-5.000.

Frey, Hans-Helmut; and Klug, Helmut, to Hoechst Aktiengesellschaft. Thermoplastic compositions comprising PVC and chlorinated polyethylene. 4,113,805, Cl. 260-897.00C.

Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, to Wacker-Chemie GmbH. Preparation of organopolysiloxane polymers. 4,113,760, Cl. 260-448.20E.

Friedell, Morley V. Oscillation damping pressure relief valve. 4,112,970, Cl. 137-489.500.

Friedli, Hans R.: *See—*
Strojny, Edwin J.; Friedli, Hans R.; and Wing, Milton S., 4,113,745, Cl. 260-346.750.

Frielingsdorf, Hans: *See—*
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, 4,113,933, Cl. 526-124.000.

Friese, Axel; and Simon, Stefan, to Dr. Carl Hahn G.m.b.H. Apparatus for transferring a deformable cylindrical work piece from one work station to another. 4,113,083, Cl. 198-480.000.

Frink, Russell E.; and Milianowicz, Stanislaw A., to Westinghouse Electric Corp. Quick-acting movable operating-column tripping device. 4,114,003, Cl. 200-144.00R.

Frinzel, Jerry C. Intravenous pole. 4,113,222, Cl. 248-412.000.

Fritsch, Robert A.; Gattu, Narahari; and Vaerk, Lembit, to Harnischfeger Corporation. Boom section for telescopic crane boom. 4,112,649, Cl. 52-731.000.

Frituz, Bela: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.

Fritzler, Ulrich M., to Fritzler, Ulrich M. Roof reflective polygon scanning apparatus. 4,113,367, Cl. 352-105.000.

Fritzsche, Gunther: *See—*
Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, 4,112,929, Cl. 128-2.05M.

Fry, James H., Jr. Power circuit identifier which produces a voltage pulse in response to interruption of power. 4,114,092, Cl. 324-66.000.

Fry, Michael George Joseph, to Brentford Electric Limited. Magnetic or electric measuring devices. 4,114,087, Cl. 324-0.50E.

Frye, James A. Rotary plug valve. 4,113,228, Cl. 251-159.000.

Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., to Texas Instruments Incorporated. Fabrication methods for the high capacity ram cell. 4,112,575, Cl. 29-577.00C.

Fuchs, Hermann; and Filzinger, Klaus, to Hoechst Aktiengesellschaft. 1:2-Cobalt-complex azo dyestuffs having an acetoacetylamino diphenylamino coupler. 4,113,719, Cl. 260-149.000.

Fudman, Israel. Device for shaving ice. 4,113,190, Cl. 241-92.000.

Fuhrman, Gunther Georg; Krogmann, Uwe Jonny; and Schroth, Gerhard Wolfgang. Ash removal equipment arranged on a lifting mechanism for pulverized-coal furnaces of large-capacity steam generators. 4,112,856, Cl. 110-165.00R.

Fuji Photo Film Co., Ltd.: *See—*
Sato, Masamichi, 4,113,486, Cl. 96-36.000.
Sato, Masamichi; and Fujii, Itsuo, 4,113,492, Cl. 96-67.000.
Shishido, Tadao; Hara, Hiroshi; and Arai, Atsuaki, 4,113,495, Cl. 96-100.00R.
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, 4,113,489, Cl. 96-60.00R.
Yamada, Minoru; Shishido, Tadao; and Arai, Atsuaki, 4,113,488, Cl. 96-56.000.

Fuji Telecasting Co., Ltd.: *See—*
Itoh, Hiroyuki; Mitsuhashi, Kenhachi; and Akashi, Hiromitsu, 4,112,746, Cl. 73-95.000.

Fujii, Itsuo: *See—*
Sato, Masamichi; and Fujii, Itsuo, 4,113,492, Cl. 96-67.000.

Fujimoto, Keimei: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.

Fujimura, Syunichi: *See—*
Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, 4,113,595, Cl. 204-159.170.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,113,940, Cl. 544-16.000.

Fujita, Masanori; and Suzuki, Sukenori, to Kabushiki Kaisha Seikosha. Electrically conductive adhesive connecting arrays of conductors. 4,113,981, Cl. 174-88.00R.

Fujita, Takeshi: *See—*
Mori, Shigeo; and Fujita, Takeshi, 4,113,667, Cl. 521-163.000.

Fujita, Tsuguto: *See—*
Harada, Masaaki; and Fujita, Tsuguto, 4,113,379, Cl. 355-71.000.

Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, to Mitsubishi Chemical Industries, Ltd.; and Seikagaku Kogyo Co., Ltd. Process for the renewal of an insolubilized glucose isomerase. 4,113,568, Cl. 195-68.000.

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Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, 4,113,990, Cl. 179-84.00R.
Yamaguchi, Hisashi; Sato, Seii; Iemori, Toshiaki; and Andoh, Shizuo, 4,114,069, Cl. 315-169.0TV.

Fujiwa Kika Kabushiki Kaisha: *See—*
Sato, Jiro, 4,112,998, Cl. 164-136.000.

Fujiwara, Katsuji. Spherical valve assembly. 4,113,229, Cl. 251-174.000.

Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, to Konishiroku Photo Industry Co., Ltd. Method for processing light-sensitive silver halide photographic materials. 4,113,490, Cl. 96-60.00R.

Fukuda, Kazumasa: *See—*
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Fukuda, Mataharu, to Nippon Cable Systems Inc. Flexible drive cable. 4,112,708, Cl. 64-2.00R.

Fukunaka, Shiro: *See—*
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, 4,113,523, Cl. 148-12.300.

Fukushima, Keitaro; Kusunose, Takamaro; and Nosaka, Yoshinori, to Japan Exlan Company Limited. Process for producing carbon fibers. 4,113,847, Cl. 423-447.400.

Fukuta, Shigemi; Izaki, Hiroshi; and Yoshino, Shoichi, to Kubota, Ltd. Chill preventing arrangement for use in centrifugal casting and method for preventing chill thereby. 4,113,002, Cl. 164-286.000.

Funakoshi, Satoshi, to Green Cross Corporation, The. HBsAG Particle composed of single polypeptide subunits and the preparation procedure. 4,113,712, Cl. 260-112.00R.

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Fundom, Danny L.: *See—*
Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., 4,113,095, Cl. 206-508.000.

Funk, Clarence J., to United States of America, Navy. Acoustic device. 4,114,135, Cl. 340-2.000.

Furia, Arnold. Folding attachment for bicycles. 4,113,271, Cl. 280-287.000.

Furia, Thomas Edward: *See—*
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Furugard, Erik: *See—*
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Furukawa, Akio, to Ricoh Company, Ltd. Flash mechanism for camera. 4,114,170, Cl. 354-149.000.

Furukawa Electric Company Limited, The: *See—*
Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, 4,113,595, Cl. 204-159.170.

Furuya, Nobuo: *See—*
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Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, to Osaka Prefectural Office. Apparatus for hanging a board. 4,113,216, Cl. 248-204.000.

G. D. Searle & Co.: *See—*
Schlatter, James M.; and Goodmonson, Owen, 4,113,713, Cl. 260-112.50R.

G. Duesterloh GmbH: *See—*
Klie, Jurgen, 4,112,973, Cl. 137-625.210.

Gabler, Josef: *See—*
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, 4,112,663, Cl. 57-58.890.

Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, to Rohm GmbH. Method of making carbonic acid esters. 4,113,762, Cl. 260-463.000.

Gaertner, Waldemar, to Siemens Aktiengesellschaft. Arrangement for directional radiation of light in symbol-indicator systems. 4,113,347, Cl. 350-96.240.

Gaessler, Henri Pierre: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,113,596, Cl. 204-180.00R.

GAF Corporation: *See—*
Tracy, David J.; and Hoffstadt, Walter F., 4,113,954, Cl. 548-365.000.

Gai-Tronics Corporation: *See—*
Day, Paul B., 4,113,985, Cl. 179-2.00R.

Gale, Preston L.: *See—*
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., 4,113,920, Cl. 428-565.000.

Gallagher Electronics Limited: *See—*
Gallagher, William Murray, 4,114,185, Cl. 361-232.000.

Gallagher, William Murray, to Gallagher Electronics Limited. Electric fence controllers. 4,114,185, Cl. 361-232.000.

Gambro AG: *See—*
Riede, Gerhard, 4,113,625, Cl. 210-321.00B.

Games Research Associates: *See—*
Sain, Paul E., 4,113,260, Cl. 273-245.000.

Gansfried, Myles Stephen, to U.S. Philips Corporation. Cable-supporting arrangement for X-ray tomographic scanner. 4,114,043, Cl. 250-445.00T.

Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., to Insurance Technology Company. Recording system with gas supported record medium. 4,114,183, Cl. 360-99.000.

Ganzke, Joachim: *See—*
Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, 4,112,929, Cl. 128-2.05M.

Gardiner, John B.: *See—*
Engel, Lawrence J.; and Gardiner, John B., 4,113,636, Cl. 252-51.50R.

Gardner, Derek Victor, to Beecham Group Limited. Tetrahydroisoquinoline basic ethers and pharmaceutical compositions and methods employing them. 4,113,869, Cl. 424-258.000.

Gardziella, Arno; and Jellinek, Karl, to Rutgerswerke Aktiengesellschaft. Method of applying powder coatings of unsaturated branched hydroxyester resins. 4,113,898, Cl. 427-195.000.

Garehime, Jacob W., Jr. Surveillance and weapon system. 4,112,818, Cl. 89-41.0TV.

Garin, John; and Belsick, James C., to United States of America, Energy. Core disruptive accident margin seal. 4,113,564, Cl. 176-87.000.

Garin, Torunn Atteraas: *See—*
Kramer, Franklin; Henig, Yair Steve; Garin, Torunn Atteraas; and Vogel, Gerald James, 4,113,887, Cl. 426-422.000.

Garsky, Victor M.; and McGregor, William H., to American Home Products Corporation. [Des-Ala^1, Gly^2-desamino-Cys^3]somatostatin. 4,113,714, Cl. 260-112.50S.

Gartner, Klaus W.: *See—*
Uyeda, Tim M., 4,112,715, Cl. 70-38.00A.

Gas Developments Corporation: *See—*
Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., 4,113,004, Cl. 165-3.000.

Gasper, Stephen A., to Roberts Corporation. Conveyor control system. 4,112,999, Cl. 164-154.000.

Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, to National Research Development Corporation. Optical apparatus for determining relative positioning of two members. 4,113,388, Cl. 356-110.000.

Gates, Michael. Multiple implement folding hitch. 4,113,273, Cl. 280-415.000.
Gattu, Narahari: *See—*
Fritsch, Robert A.; Gattu, Narahari; and Vaerk, Lembit, 4,112,649, Cl. 52-731.000.
Gaudiani, Vincent A.: *See—*
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Gauron, Richard F.; and Laconte, Susana S., to Marketing Masters. Latch. 4,113,292, Cl. 292-165.000.
Gautschi, Fritz: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 4,113,891, Cl. 426-536.000.
Gauvry, Robert; and Portalier, Robert, to Societe de Vente de l'Aluminium Pechiney. Process for obtaining novel blanks for extrusion by impact. 4,113,473, Cl. 75-148.000.
Gay, Guy R.; and Gay, Neil. Mail box support. 4,113,213, Cl. 248-178.000.
Gay, Neil: *See—*
Gay, Guy R.; and Gay, Neil, 4,113,213, Cl. 248-128.000.
GD Anker Gebirgs-Dubel-Anker GmbH & Co. KG: *See—*
Gruber, Rudolf, 4,112,694, Cl. 405-150.000.
Gebauer, Herbert: *See—*
Kuhens, Rolf; and Gebauer, Herbert, 4,113,014, Cl. 166-295.000.
Gehringer, Ronald F.: *See—*
Conger, William H.; and Gehringer, Ronald F., 4,112,820, Cl. 70-363.000.
Geis, David G.; and Hodne, Ingard B., to Teletype Corporation. System for mounting an armature. 4,114,126, Cl. 335-270.000.
Gemp, Robert S.: *See—*
Hull, Robert E.; and Gemp, Robert S., 4,114,048, Cl. 307-53.000.
General Battery Corporation: *See—*
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Nees, John; and Pike, Kenneth, 4,113,477, Cl. 75-166.00C.
General Binding Corporation: *See—*
Giulie, Joe D., 4,112,603, Cl. 40-2.00R.
General Electric: *See—*
Lee, Gim Fun, Jr., 4,113,800, Cl. 260-876.00B.
General Electric Company: *See—*
Bochan, John, 4,112,767, Cl. 74-217.00R.
Faulkenberry, Wayne J.; and Riviere, Henry W., 4,114,108, Cl. 330-207.00P.
Fiedler, Howard C., 4,113,529, Cl. 148-111.000.
Horvay, Julius B., 4,114,065, Cl. 312-214.000.
Lee, Gim Fun, Jr., 4,113,797, Cl. 260-876.00B.
Mark, Victor, 4,113,695, Cl. 260-45.80N.
Mark, Victor; and Hedges, Charles Vernon, 4,113,974, Cl. 568-750.000.
Simon, Donald J.; and Fitzmayer, Louis H., 4,114,013, Cl. 219-10.55D.
Wambach, Allen Dale, 4,113,692, Cl. 260-40.00R.
General Foods Corporation: *See—*
Henig, Yair Steve; and Purohit, Kailash S., 4,113,888, Cl. 426-422.000.
Katz, Saul Norman, 4,113,886, Cl. 426-422.000.
Kramer, Franklin; Henig, Yair Steve; Garin, Torunn Atteraas; and Vogel, Gerald James, 4,113,887, Cl. 426-422.000.
General Kinetics, Incorporated: *See—*
King, Charles A.; and Gutterman, Robert P., 4,113,609, Cl. 209-609.000.
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Carol, John A., Jr.; and McAlindon, Harold P., 4,114,025, Cl. 235-96.000.
Cataldo, Roy S., 4,112,826, Cl. 92-13.100.
Flower, Robert J.; Snedeker, Clarke R.; and Beatenbough, Paul K., 4,113,007, Cl. 165-81.000.
Gilbert, William F.; and Lucas, Larry D., 4,113,984, Cl. 179-1.0GQ.
Kapanka, Harley L., 4,113,310, Cl. 297-408.000.
Kibler, Roland G., 4,112,886, Cl. 123-103.00R.
Kirsch, Norbert, 4,113,296, Cl. 293-96.000.
Lusa, George; and Mathues, Thomas P., 4,113,073, Cl. 188-364.000.
Mann, Gamdur S., 4,112,577, Cl. 29-611.000.
Smith, Stanley E., 4,113,396, Cl. 403-138.000.
Spaulding, James R., 4,112,891, Cl. 123-117.00A.
Sutton, Stephen J.; Holen, J. Robert; and Creager, John E., 4,114,130, Cl. 338-33.000.
Walker, Frank H., 4,113,075, Cl. 192-3.310.
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Georg Fischer Aktiengesellschaft: *See—*
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George Koch Sons, Inc.: *See—*
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Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, 4,113,868, Cl. 424-251.000.
Gerber Garment Technology, Inc.: *See—*
Pearl, David R., 4,112,797, Cl. 83-177.000.
Gerndt, Christian, to Siemens Aktiengesellschaft. Branching arrangement for communication transmission links having optical glass fibers. 4,113,345, Cl. 350-96.150.
Gerow, Gordon P., to FMC Corporation. Method of and apparatus for steam stripping immiscible materials. 4,113,573, Cl. 203-2.000.
Gerteert, Hans; Jeck, Arnulf; and Werner, Dietmar, to Texaco Development Corporation. Process for the partial oxidation of liquid hydrocarbonaceous fuels. 4,113,445, Cl. 48-197.00R.
Geus, John W., to Stamicarbon, N.V. Process for homogeneous deposition precipitation of metal compounds on support or carrier materials. 4,113,658, Cl. 252-454.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Grisebach, Hans Theodor, 4,112,680, Cl. 60-538.000.
Temme, Helmut, 4,113,084, Cl. 198-731.000.
Ghetti, Giuseppe: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 4,113,694, Cl. 260-875.000.
Gibbons, Paul J. Penetrating oil composition. 4,113,633, Cl. 252-11.000.
Gibbs, David James. Exercising apparatus. 4,113,246, Cl. 272-69.000.
Gibby, Mabel K. Needle. 4,113,155, Cl. 223-102.000.
Gilbert, Henry L.; and Van Ordstrand, Cayrl W., to Martin Marietta Aluminum Inc. Armor-piercing incendiary projectile. 4,112,846, Cl. 102-52.000.
Gilbert, William F.; and Lucas, Larry D., to General Motors Corporation. Voltage translating circuit for volume and balance control of a four-channel audio system. 4,113,984, Cl. 179-1.0GQ.
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Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 4,113,848, Cl. 423-512.00A.
Gillery, F. Howard, to PPG Industries, Inc. Sputtering technique for the deposition of indium oxide. 4,113,599, Cl. 204-192.00P.
Gilomen, Beat, to A. Schild S.A. Operating mechanism for mechanical watch movement. 4,112,673, Cl. 58-85.500.
Ginefra, Anthony, Sr. Clock display device. 4,112,672, Cl. 58-53.000.
Girling Limited: *See—*
Farr, Glyn Phillip Reginald, 4,113,317, Cl. 303-6.00C.
Farr, Glyn Phillip Reginald, 4,114,145, Cl. 340-626.000.
Ford, John Charles, 4,113,068, Cl. 188-72.500.
Harries, David Anthony, 4,112,682, Cl. 60-548.000.
Giubilo, Lauro B. Temporary stopper for outlets of toilet bowls. 4,112,527, Cl. 4-295.000.
Giulie, Joe D., to General Binding Corporation. Luggage tag. 4,112,603, Cl. 40-2.00R.
Giulie, Joe D., to Minnesota Mining and Manufacturing Company. Removable binding device. 4,113,394, Cl. 402-46.000.
Givaudan Corporation: *See—*
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Glaesel, Gottfried, to Hego Electric GmbH. Means for mounting on channel-section supporting rails. 4,113,982, Cl. 174-158.00R.
Glaudel, Stephen P.; and Chambers, Norman T., to Westinghouse Electric Corp. Turbine-generator protection system with electronic sampling filter. 4,114,084, Cl. 322-38.000.
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Laundon, Brian; Cowley, Brian Richard; and Humber, David Cedric, 4,113,591, Cl. 204-158.0HA.
Glazar, Arthur J., to Servo Corporation of America. Hot box detector bearing discriminator circuit. 4,113,211, Cl. 246-169.00A.
Gleockler, Frederick M.; and Gleockler, Robert G. Tree ladder. 4,113,055, Cl. 182-63.000.
Gleockler, Robert G.: *See—*
Gleockler, Frederick M.; and Gleockler, Robert G., 4,113,055, Cl. 182-63.000.
Glover, Ernest. Film projection system. 4,113,366, Cl. 352-8.000.
Glueck, Robert D. Lift for dragged implement. 4,113,028, Cl. 172-178.000.
Glumac, Nick P., to Toter-Tee, Inc. Loading arrangement. 4,113,118, Cl. 214-10.50R.
Glushkov, Alexandr Ivanovich; Krutov, Sergei Vasilievich; Semenov, Vladimir Ivanovich; and Gusev, Anatoly Fedorovich. Automatically adjustable cutting apparatus for purposes such as filleting fish. 4,112,547, Cl. 17-57.000.
Godwin, Robert H.; and Collignon, Herbert E., to Bliss & Laughlin Industries Incorporated. Adjustable gas cylinder chair control. 4,113,220, Cl. 248-400.000.
Gohm, William G., to Westinghouse Electric Corp. Magnetic pipe cleaner. 4,113,611, Cl. 209-215.000.
Goldfarb, Adolph E.; Benkoe, Erwin, deceased (by Benkoe, Elizabeth, executrix); and Robinson, Don, to Goldfarb, Adolph E.; and Benkoe, Elizabeth, executrix for the estate of Erwin Benkoe. Toy game for moving an object up an inclined surface. 4,113,255, Cl. 273-108.000.
Goldman, Irving M.: *See—*
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Goldsborough, Robert R.; Spencer, David R.; and West, Samuel F., to United States of America, Army. Frequency shift rate detector. 4,114,156, Cl. 343-112.00S.
Goldstein, Jonathan R.; and Klein, Yitzhak. Secondary cells. 4,113,921, Cl. 429-27.000.
Golembeck, Gerald A.; and Horwitz, Thomas L., to United States Bedding Company, The. Foundation unit for bedding. 4,112,529, Cl. 5-354.000.
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Gomi, Teruo; Hisa, Yuji; and Soeda, Takahiko, to Ajinomoto Co., Inc. Process for preparing improved soy protein materials. 4,113,716, Cl. 260-123.500.

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Goransson, Lars Roland; van Oorschot, Gosewinus Franciscus; and Pittoors, Jan Gustaaf, to Atlas Copco Aktiebolag. Method and device relating to separation of liquid from liquid-containing compressed gas. 4,113,450, Cl. 55-97.000.
Gorbaty, Martin L.; Tao, Frank F.; and Maa, Peter S., to Exxon Research & Engineering Co. Integrated process for the production of hydrocarbons from coal or the like in which fines from gasifier are coked with heavy hydrocarbon oil. 4,113,602, Cl. 208-8.000.
Gorbaty, Martin L., to Exxon Research & Engineering Co. Method for obtaining substantially complete removal of phenols from waste water. 4,113,615, Cl. 210-40.000.
Gordon, Ronald S.: *See—*
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Gorham, Michael L.; and Norian, Roger F., to Xerox Corporation. Automatic dialer having a selective retry capability. 4,113,991, Cl. 179-90.00B.
Gorham, Michael L.; Heckman, Raymond F.; and Yole, Charles S., to Xerox Corporation. Automatic dialer for facsimile terminals and the like. 4,113,992, Cl. 179-90.00B.
Goryachev, Vladimir Ilich; Kotelnikov, Grigory Vladimirovich; and Makurin, Pavel Semenovich. Differential scanning microcalorimeter. 4,112,734, Cl. 73-15.00B.
Gosselin, Yvon. Hydraulic log splitter implement. 4,112,985, Cl. 144-193.00A.
Goto, Kenji; and Niwa, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,112,877, Cl. 123-32.0ST.
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Gram, Donald J., to University of California, The Regents of the. Method for resolving amino and ammonium compounds. 4,113,959, Cl. 560-38.000.
Gramling, William Dwight. Casing stop for well tools and an insertion device therefore. 4,113,010, Cl. 166-213.000.
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Green, Leonard O. Bicycle lock assembly. 4,112,720, Cl. 70-233.000.
Green, Russell W. Method of and means for mounting labels. 4,113,538, Cl. 156-247.000.
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Greenfield, Frederick Dale. Porthole arrangement. 4,112,645, Cl. 52-304.000.
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Greenwood, Quentin E. Explosion simulating device. 4,114,080, Cl. 320-1.000.
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Gregoire, Clyde G.; Hartman, James A.; and Gregoire, Joseph M., to Gregg Engineering Corp. Combination web tucker and knife with web grippers and anvil. 4,113,243, Cl. 270-21.000.
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Greiser, John W., to Transco Products, Inc. Broadband spiral antenna. 4,114,164, Cl. 343-895.000.
Grenfell, Hugh W.; Bowen, David J.; and Baker, Robert, to British Steel Corporation. Refining molten metal. 4,113,469, Cl. 75-60.000.
Grenier, Aime J., to Texas Instruments Incorporated. Circuit breaker. 4,114,122, Cl. 335-8.000.
Grenier, Aime J., to Texas Instruments Incorporated. Circuit breaker. 4,114,123, Cl. 335-42.000.
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Greven, Johann; and Mostert, Johann, to Schumag Schumacher Metallwerke Gesellschaft mit beschrankter Haftung. Carriage drawing machine for uniformly drawing elongated material to be drawn. 4,112,730, Cl. 72-290.000.
Griesshammer, Rudolf: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,113,532, Cl. 148-174.000.
Griffin, David: *See—*
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Grisebach, Hans Theodor, to Gewerkschaft Eisenhutte Westfalia. Control systems and arrangements for mineral mining installations. 4,112,680, Cl. 60-538.000.
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Grzina, Anthony, to Warman International Limited. High pressure internally lined pump casing. 4,113,407, Cl. 415-170.00R.
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Hale, Robert L., to United States of America, Energy. Method of fabricating a flow device. 4,112,568, Cl. 29-157.00C.
Hall, Charles M.; and Wright, John B., to Upjohn Company, The. 2'-Hydroxy-3'-carboxy-5'-nitrooxanilate compounds, compositions, and methods of use. 4,113,880, Cl. 424-309.000.
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Haney, James Richard, to Goodyear Aerospace Corporation. Anti-skid power valve. 4,113,323, Cl. 303-115.000.
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Harpman, Webster B., to Energy Research Inc. Fuel system and vaporizer for internal combustion engines. 4,112,889, Cl. 123-25.00B.
Harries, David Anthony, to Girling Limited. Master cylinder assemblies. 4,112,682, Cl. 60-548.000.
Harrington, Douglas S. Process for recovering gold. 4,113,467, Cl. 75-0.50A.
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Heitland, Herbert; and Renger, Udo, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine with a main combustion chamber and an auxiliary combustion chamber. 4,112,878, Cl. 123-32.0ST.
Held, Manfred; and Spies, Hans, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Releasing device with preset response sensitivity for electrical fuzes for use with mines. 4,112,844, Cl. 102-19.200.
Helfert, Herbert; Davis, Pauls; and Langdon, William Keith, to BASF Wyandotte Corporation. Polyether polyols and method of preparing same. 4,113,785, Cl. 260-615.00B.
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Herbst, Thomas, to Dyckerhoff & Widmann Aktiengesellschaft. Removable press anchor with destructible anchor body. 4,112,637, Cl. 52-155.000.
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Hess, Hans-Jurgen E., to Pfizer Inc. Oxaprostaglandins. 4,113,766, Cl. 562-503.000.
Hesse, Karl-Heinz: *See—*
Ruhnau, Gerhard; Gudat, Wolfgang; Liermann, Peter; and Hesse, Karl-Heinz, 4,113,322, Cl. 303-105.000.
Heuck, Roger W., to M. E. Heuck Company. Grill scraper. 4,112,537, Cl. 15-105.000.
Hewlett-Packard Company: *See—*
Epstein, James Stephen, 4,113,381, Cl. 356-5.000.

Heyman, Duane A., to Sherwin-Williams Company, The. Process for preparing 2-benzimidazolones. 4,113,952, Cl. 548-305.000.

Hi-Shear Corporation: *See*—
Wing, George S., 4,112,992, Cl. 151-29.000.

Hibbard, Earl R.: *See*—
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., 4,114,183, Cl. 360-99.000.

Hidaka, Tsuneo: *See*—
Ebihara, Masatomi; Inoue, Masahide; and Hidaka, Tsuneo, 4,113,500, Cl. 106-39.500.

Higgins, Jerry G.: *See*—
Forward, Cleve H.; and Higgins, Jerry G., 4,113,668, Cl. 521-60.000.

Higgins, Larry, to Leggett & Platt, Incorporated. Box spring assembly and small diameter single cone coil spring for use in that assembly. 4,112,528, Cl. 5-248.000.

Hijikata, Setsuo: *See*—
Ozaki, Tsutomu; and Hijikata, Setsuo, 4,113,039, Cl. 177-25.000.

Hile, John R. Code combination property alarm system. 4,114,147, Cl. 340-528.000.

Hill, David Arthur; and Lomnitzer, Abraham. Apparatus for the use in the construction of electric circuits. 4,112,593, Cl. 35-19.00A.

Hill, Richard A.: *See*—
Fidler, Gary L.; Hill, Richard A.; and Carrera, John P., 4,113,561, Cl. 176-38.000.

Hill, Robert W.; Onnen, William G.; and Ryder, Lyle C., to Ames Rubber Corporation. Method of sealing the ends of an elastomeric roll. 4,113,825, Cl. 264-262.000.

Hillman, Edwin K. Solar liquid/air heater. 4,112,920, Cl. 126-271.000.

Hilti Aktiengesellschaft: *See*—
Kuhlmann, Wolf; and Rumpp, Gerhard, 4,112,813, Cl. 85-74.000.
Lippacher, Wolfgang; and Teger, Gerhard, 4,113,404, Cl. 408-241.00S.

Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, to Tanabe Seiyaku Co. Ltd. 8-Azaprostanoic acid derivatives. 4,113,873, Cl. 424-274.000.

Himmele, Walter: *See*—
Aquila, Werner; Hoffmann, Werner; Himmele, Walter; and Siegel, Hardo, 4,113,781, Cl. 260-599.000.

Hino, Isao: *See*—
Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, 4,113,216, Cl. 248-204.000.

Hioki, Katsuhiko: *See*—
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, 4,113,749, Cl. 260-351.000.

Hiraishi, Yoshinobu: *See*—
Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, 4,113,844, Cl. 423-336.000.

Hirata, Toshikiyo, to Toyo Ysushinki Kabushiki Kaisha. Bearing detection system. 4,114,157, Cl. 343-119.000.

Hirota, Nobuyoshi; and Shibata, Akio, to Mitsubishi Jukogyo Kabushiki Kaisha. Coating composition for leak detection in air test. 4,113,673, Cl. 260-8.000.

Hisa, Yuji: *See*—
Gomi, Teruo; Hisa, Yuji; and Soeda, Takahiko, 4,113,716, Cl. 260-123.500.

Hishida, Tadashi: *See*—
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,113,568, Cl. 195-68.000.

Hitachi, Ltd.: *See*—
Koseki, Yasuo; Takahashi, Sankichi; and Nakaoka, Azuma, 4,113,618, Cl. 210-82.000.
Mukaemachi, Takuji; Takeshita, Tetsuo; and Enami, Shiroh, 4,113,988, Cl. 179-18.0ES.
Saiki, Atsushi; Okubo, Toshio; and Harada, Seiki, 4,113,550, Cl. 156-656.000.
Sakanaka, Takao, 4,112,729, Cl. 72-236.000.
Shigeta, Masayuki; and Shibata, Tadashi, 4,113,064, Cl. 187-1.00R.
Shiina, Fumio, 4,114,045, Cl. 250-569.000.
Sugiura, Noboru; and Suda, Seiji, 4,112,903, Cl. 123-148.00E.
Terasawa, Yoshio; and Kimura, Shin, 4,114,178, Cl. 357-38.000.
Yoneda, Kenji; Nakazato, Masao; and Yuminaka, Takeo, 4,113,066, Cl. 187-29.00R.

Hitachi Medical Corporation: *See*—
Tomita, Chuji, 4,114,039, Cl. 250-439.00R.

Hitchiner Manufacturing Co., Inc.: *See*—
Chandley, George D., 4,112,997, Cl. 164-119.000.

Hitzman, Donald O., to Phillips Petroleum Company. Hot effluent from partial oxidation of natural gas injected in oil recovery process. 4,113,017, Cl. 166-303.000.

Hiya, Kohji: *See*—
Ayu, Masayoshi; and Hiya, Kohji, 4,114,124, Cl. 335-212.000.

Hoch, Helmut: *See*—
Rones, Josef; Moller, Siegfried; and Hoch, Helmut, 4,113,498, Cl. 106-14.130.

Hochgesang, Gerhard, to Preh-Elektrofeinmechanische Werke-Jakob Preh Nachf. Electric switch. 4,114,002, Cl. 200-67.00C.

Hochiki Corporation: *See*—
Yamazaki, Shunji; and Masuda, Hajime, 4,114,150, Cl. 340-531.000.

Hochstrasser, Otto; and Ruby, William S., to Brown Boveri Corporation. Preheating system with gas recirculation. 4,113,977, Cl. 13-2.00R.

Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen: *See*—
Schweiger, Fritz, 4,113,559, Cl. 176-38.000.

Hodges, Robert J.: *See*—
Jackson, Thomas M.; and Hodges, Robert J., 4,113,346, Cl. 350-96.200.

Hodne, Ingard B.: *See*—
Geis, David G.; and Hodne, Ingard B., 4,114,126, Cl. 335-270.000.

Hoechst Aktiengesellschaft: *See*—
Andrascheck, Hans-Joachim; and Mucke, Rainer, 4,113,679, Cl. 260-28.50D.
Frey, Hans-Helmut; and Klug, Helmut, 4,113,805, Cl. 260-897.00C.
Fuchs, Hermann; and Filzinger, Klaus, 4,113,719, Cl. 260-149.000.
Kruse, Hubert; and Opitz, Konrad, 4,113,429, Cl. 8-90.000.
Linkies, Adolf; Reuschling, Dieter-Bernd; Kuhlein, Klaus; Beck, Gerhard; and Musil, Josef, 4,113,874, Cl. 424-274.000.
Papenfuhs, Theodor; and Volk, Heinrich, 4,113,759, Cl. 260-439.00R.
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, 4,113,841, Cl. 423-265.000.

Hoesch Werke Aktiengesellschaft: *See*—
Steinfeld, Horst E.; and Mathes, Dieter, 4,113,178, Cl. 238-349.000.

Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., to Shell Oil Company. Middle distillate fuel compositions. 4,113,442, Cl. 44-66.000.

Hoffman, Robert K.; and Franson, David C., to Parker-Hannifin Corporation. Automatic drain valve for a compressed air system. 4,112,968, Cl. 137-427.000.

Hoffmann-La Roche Inc.: *See*—
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, 4,113,776, Cl. 260-565.000.
Cohen, Noal; and Saucy, Gabriel, 4,113,740, Cl. 260-340.90R.
Mohacsi, Ernest, 4,113,729, Cl. 260-285.000.

Hoffmann, Werner: *See*—
Aquila, Werner; Hoffmann, Werner; Himmele, Walter; and Siegel, Hardo, 4,113,781, Cl. 260-599.000.

Hoffstadt, Walter F.: *See*—
Tracy, David J.; and Hoffstadt, Walter F., 4,113,954, Cl. 548-365.000.

Hofmann, Franz; and Szatmari, Franz, to Georg Fischer Aktiengesellschaft. Drum mixer. 4,113,238, Cl. 366-56.000.

Hohne, Gerd: *See*—
Manger, Hansjorg; Sohner, Gerhard; and Hohne, Gerd, 4,112,890, Cl. 123-117.00R.

Holcomb, Norman L.: *See*—
Wardwell, Charles H.; and Holcomb, Norman L., 4,112,812, Cl. 85-46.000.

Holcombe, Frank O., Jr., to Burton, Parsons and Company, Inc. Hydrophilic contact lenses and lens polymer. 4,113,686, Cl. 260-29.6TA.

Holcroft & Company: *See*—
Meyer, Robert W.; and Hall, George A., III, 4,113,009, Cl. 165-154.000.

Holen, J. Robert: *See*—
Sutton, Stephen J.; Holen, J. Robert; and Creager, John E., 4,114,130, Cl. 338-33.000.

Holik, Dennis John: *See*—
Leach, Harry Woods; Hebeda, Ronald Emil; and Holik, Dennis John, 4,113,509, Cl. 127-29.000.

Holland, Johannes; and Wagemans, Hubertus Franciscus Marie, to U.S. Philips Corporation. Device for taking a liquid sample. 4,112,768, Cl. 73-422.00R.

Hollander, Harry. Ultrasonic television remote control system. 4,114,099, Cl. 325-392.000.

Hollingsworth, Richard James, to RCA Corporation. Unbalanced sense circuit. 4,114,055, Cl. 307-362.000.

Holloway, Thomas C.: *See*—
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,112,575, Cl. 29-577.00C.

Hollweck, Walter, to Inter Control Hermann Kohler Elektrik GmbH & Co. KG. Expansion diaphragm-type temperature sensor. 4,112,765, Cl. 73-368.300.

Holly, Harry H., to Hollymatic Corporation. Molding apparatus. 4,113,415, Cl. 425-542.000.

Hollymatic Corporation: *See*—
Holly, Harry H., 4,113,415, Cl. 425-542.000.

Holm, LeRoy W.: *See*—
Bernard, George G.; and Holm, LeRoy W., 4,113,011, Cl. 166-273.000.

Holman, Robert R.; and Turkall, Daniel N., to Electric Power Research Institute, Inc. Releasable, high-pressure seal and method of forming same. 4,113,242, Cl. 277-1.000.

Holmer, Donald A.: *See*—
Chapman, Richard D.; Holmer, Donald A.; and Mortimer, George A., 4,113,708, Cl. 528-313.000.

Holmes, Bruce: *See*—
Ashdown, Glynn R.; McCartney, Thomas; and Holmes, Bruce, 4,113,998, Cl. 179-175.30R.

Holt, David: *See*—
McLean, Graham Wilson; and Holt, David, 4,114,060, Cl. 310-163.000.

Holtmeier, Gerhard: *See*—
Stemmann, Karl; and Holtmeier, Gerhard, 4,113,074, Cl. 191-67.000.

Holtschmidt, Ulrich: *See*—
Laqua, Arnold; and Holtschmidt, Ulrich, 4,113,701, Cl. 260-29.40R.

Holzforster, Hans-Erich: *See*—
Hausenblas, Helmut; and Holzforster, Hans-Erich, 4,113,279, Cl. 280-705.000.

Homeyer, Bernhard: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,113,860, Cl. 424-200.000.
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,113,876, Cl. 424-278.000.

Hon Man, Luk. Safety electric receptacle and the plug. 4,113,336, Cl. 339-75.00P.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,112,732, Cl. 72-334.000.

Honeywell Inc.: *See*—
Del Monte, Louis A., 4,113,578, Cl. 204-15.000.

Honig, Hans-Ludwig: *See*—
Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, 4,113,506, Cl. 106-238.000.

Hood, John Dick: *See*—
Cole, Martin; Hood, John Dick; and Butterworth, Dennis, 4,113,856, Cl. 424-117.000.

Hoofs, Joseph Wilhelmus Jacobus: *See*—
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, 4,113,508, Cl. 106-304.000.

Hooker Chemicals & Plastics Corp.: *See*—
D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., 4,113,922, Cl. 429-33.000.

Hoppen, Heinz; and Fasbender, Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for drying and grinding. 4,113,187, Cl. 241-24.000.

Horie, Eizi: *See*—
Suzuki, Hiroshige; Horie, Eizi; and Nagashima, Hideo, 4,112,648, Cl. 52-508.000.

Horna, Otakar Anthony, to Communications Satellite, Corporation. Analog to digital signal of logarithmic format converter and analog to pseudo-rms value converter and echo canceller utilizing same. 4,113,997, Cl. 179-170.200.

Hornsby, Isaac W. Micrometer jig. 4,112,581, Cl. 33-174.00R.

Horowitz, Charles, to Sloan Valve Company. Tractor protection valve. 4,112,961, Cl. 137-102.000.

Horowitz, Charles, to Sloan Valve Company. Electrical connector receptacle. 4,113,333, Cl. 339-14.00P.

Horstmann, Harald: *See*—
Moller, Eike; Meng, Karl, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,113,872, Cl. 424-273.00P.
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,113,957, Cl. 548-377.000.

Horvay, Julius B., to General Electric Company. Refrigerator cabinet and method of constructing. 4,114,065, Cl. 312-214.000.

Horwitz, Thomas L.: *See*—
Golembeck, Gerald A.; and Horwitz, Thomas L., 4,112,529, Cl. 5-354.000.

Hosoya, Katsumi: *See*—
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, 4,113,489, Cl. 96-60.00R.

Hosoya, Kazuo; and Kubota, Munetaka, to Kajima Kensetsu Kabushiki Kaisha. Method and construction of underground tank well. 4,112,690, Cl. 405-57.000.

Hotta, Hisashi; and Mori, Fumio, to Toyo Seikan Kaisha Ltd. Olefin resin-metal bonded structure. 4,113,539, Cl. 156-306.000.

Hotz, Roger D.: *See*—
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., 4,113,464, Cl. 71-88.000.

Hounsfield, Godfrey Newbold, to EMI Limited. Radiography. 4,114,040, Cl. 250-445.00T.

Hovengen, Oyvind. Washer for nyloprint printing blocks or the like. 4,112,534, Cl. 15-77.000.

Howard, Charles S. Pill-dispensing and storage container. 4,113,098, Cl. 206-540.000.

Howard, James Lynn, to Phifer, Earl Cooper, a part interest. Apparatus for matching wires in multiple wire conductors and attendant method. 4,114,091, Cl. 324-66.000.

Howard, Robert N., to Minnesota Mining and Manufacturing Company. Encapsulated abrasive grains and articles made therefrom. 4,112,631, Cl. 51-295.000.

Howell, Stephen Louis: *See*—
Robinson, John William; Crosby, Thomas C.; and Howell, Stephen Louis, 4,112,802, Cl. 84-1.010.

Howmedica Inc.: *See*—
Rosenthal, Arthur Lee; Alpern, Marvin; and Meisch, Charles Edward, 4,112,949, Cl. 128-278.000.

Hoyer, Rudolf: *See*—
Stiltz, Erwin; Hoyer, Rudolf; and Lindenmayer, Heinz, 4,113,035, Cl. 173-116.000.

HP Kolinska Ljubljana Prehrambena Industrija (n.sol.o.): *See*—
Krasovec, Branko; Mihelic, Eli; and Reutlinger, Suzana, 4,113,884, Cl. 426-56.000.

Hubelbank, Mark: *See*—
Feldman, Charles L.; and Hubelbank, Mark, 4,112,930, Cl. 128-2.06R.

Huber, Leonhard; Kirschner, Helmut; and Muller, Herbert, to Agfa-Gevaert AG. Shutter mechanism. 4,114,175, Cl. 354-252.000.

Huber, Wolfgang: *See*—
Tippmann, Heinrich; and Huber, Wolfgang, 4,112,787, Cl. 74-798.000.

Hubner, Wolfgang; Barthell, Eduard; and Dahmen, Kurt, to Chemische Fabrik Stockhausen & Cie. Flocculating agent comprising water-in-oil emulsion of stabilizer plus NH-active polymer carrying formaldehyde and amine radicals. 4,113,685, Cl. 260-29.4UA.

Hudelmaier, Gerhard. Device for the control of concrete manufacture in truck concrete mixers. 4,114,193, Cl. 366-2.000.

Hudson, George Elbert, III; and Clark, Arthur E., to United States of America, Navy. Heat transfer system using thermally-operated, heat-conducting valves. 4,112,699, Cl. 62-3.000.

Hufendiek, Ernst-Wilhelm, to Daimler-Benz Aktiengesellschaft. Rotational speed governor for an injection pump in air-compressing injection internal combustion engines. 4,112,897, Cl. 123-139.0ST.

Huff, Peter C. Integrated pneumatic logic module. 4,112,962, Cl. 137-119.000.

Huffman, Hubert L.: *See*—
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., 4,114,083, Cl. 320-39.000.

Hughes Aircraft Company: *See*—
Zanio, Kenneth W.; and Fraas, Lewis M., 4,113,531, Cl. 148-174.000.

Hughes, Donald Wayne Kent, to AMP Incorporated. Electrical connector having provision for circuit components. 4,113,341, Cl. 339-147.00R.

Hugl, Herbert; Schundehutte, Karl Heinz; Trautner, Kersten; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. Process for dyeing fibre materials. 4,113,428, Cl. 8-41.00R.

Hulka, Jaroslav Fabian; and Clemens, George Selden, to Research Corporation. Surgical clip. 4,112,951, Cl. 128-346.000.

Hull, Robert E.; and Gemp, Robert S., to Westinghouse Electric Corp. Load balancing system for ups rectifiers. 4,114,048, Cl. 307-53.000.

Hull, Robert L.: *See*—
Watson, Albert T.; and Hull, Robert L., 4,113,806, Cl. 260-897.00A.

Huly, William; and Brouillette, Rudolph G., to United Technologies Corporation. Apparatus and means for permanently marking a buoyant mine which has been severed from its mooring wire during mine sweeping operations. 4,112,862, Cl. 114-221.00R.

Humber, David Cedric: *See*—
Laundon, Brian; Cowley, Brian Richard; and Humber, David Cedric, 4,113,591, Cl. 204-158.0HA.

Humes, Norman S.: *See*—
Uhtenwoldt, Herbert R.; and Humes, Norman S., 4,112,624, Cl. 51-5.00D.

Humlong, Robert F.: *See*—
Pawsat, Carlton P.; and Humlong, Robert F., 4,113,395, Cl. 403-22.000.

Humphrey Instruments, Inc.: *See*—
Humphrey, William E., 4,113,363, Cl. 351-17.000.

Humphrey, William E., to Humphrey Instruments, Inc. Process and apparatus for astigmatic and spherical subjective testing of the eye. 4,113,363, Cl. 351-17.000.

Hunka, George William, to RCA Corporation. Optical cursor tracking correction system. 4,114,034, Cl. 250-202.000.

Hunsicker, Monroe T. Rural mailbox delivery signal. 4,113,170, Cl. 232-35.000.

Hunts, Ronald M.: *See*—
Strange, Delbert D.; and Hunts, Ronald M., 4,112,986, Cl. 144-323.000.

Huper, Fritz; and Oberheiden, Helmut, to Bayer Aktiengesellschaft. Process for purifying products obtained from enzymatic cleavage of beta-lactam antibiotics. 4,113,941, Cl. 544-20.000.

Hurst, Thomas L., to A. E. Staley Manufacturing Company. Glucose isomerization with iron ion-thiol activator ion-glucose isomerase systems. 4,113,565, Cl. 195-31.00F.

Huston, Henry H., to Weird Products Ltd. Amusement device requiring concentration and coordination. 4,113,253, Cl. 273-96.00R.

Hutchings, David Roy. Dual nature puzzle pieces. 4,113,256, Cl. 273-160.000.

Hutkin, Irving J. Method of making a thin-copper foil-carrier composite. 4,113,576, Cl. 204-13.000.

Huyck Corporation: *See*—
Lefkowitz, Leonard R.; and Krohn, W. Henrik, 4,113,535, Cl. 156-148.000.

Hyman, Oscar E., to Imed Corporation. Automatic air-in-line fluid detector. 4,114,144, Cl. 340-632.000.

Ichida, Toshio: *See*—
Shimanaka, Hiroshi; Ichida, Toshio; and Kobayashi, Shigeru, 4,113,530, Cl. 148-113.000.

Idel, Vladimir Viktorovich. Machine for working saw teeth. 4,112,789, Cl. 76-58.000.

Ideue, Kazuo: *See*—
Mizuno, Michitaka; Ideue, Kazuo; and Oya, Masashi, 4,112,759, Cl. 73-295.000.

IDN Inventions and Development of Novelties AG: *See*—
Ackeret, Peter, 4,113,091, Cl. 206-387.000.

Iemori, Toshiaki: *See*—
Yamaguchi, Hisashi; Sato, Seii; Iemori, Toshiaki; and Andoh, Shizuo, 4,114,069, Cl. 315-169.0TV.

Igarashi, Toshiji; and Nakajima, Yoshikage, to Eisai Co., Ltd. Method for treatment of hypertension. 4,113,870, Cl. 424-266.000.

Ignatyev, Alexandr Dmitrievich: *See*—
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury

Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.

Iida, Hideo, to Nippon Hume Pipe Company Limited. Method of manufacturing prestressed concrete pipe. 4,113,823, Cl. 264-228.000.

Iida, Kazuyoshi: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, 4,113,053, Cl. 181-284.000.

Iijima, Yoo: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, 4,113,489, Cl. 96-60.00R.

Ikawa, Reiji, to Tokyo Special Wire Netting Co., Ltd. Distillation column packing. 4,113,810, Cl. 261-98.000.

Ikeda, Masanori: *See—*
Tanabe, Masanori; Ikeda, Masanori; and Tamura, Nobuhiro, 4,113,970, Cl. 560-244.000.

Ikegai Tekko Kabushiki Kaisha: *See—*
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Ikeguchi, Takashi: *See—*
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, 4,113,608, Cl. 209-1.000.

Ilieve, Peter John, to Decca Limited. Clamping circuits for television signals. 4,114,179, Cl. 358-34.000.

Illinois Tool Works Inc.: *See—*
Rapata, George M., 4,113,340, Cl. 339-113.00R.

Imai, Nobuo: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,113,568, Cl. 195-68.000.

Imai, Toshihiro: *See—*
Yamasita, Nobuo; and Imai, Toshihiro, 4,113,354, Cl. 350-172.000.

IMASCO Limited: *See—*
Poskitt, Walter Edward, 4,114,090, Cl. 324-61.0QS.

Imed Corporation: *See—*
Hyman, Oscar E., 4,114,144, Cl. 340-632.000.

Imes, Jack, Jr., to RB Toy Development Co. Target game. 4,113,251, Cl. 273-95.00R.

Impastato, Leona R. Color coordinating implement. 4,112,594, Cl. 35-28.300.

Imperial Chemical Industries Limited: *See—*
Bagnall, Robert David, 4,113,883, Cl. 424-342.000.
Jones, Geraint; and Thomson, David Summers, 4,113,879, Cl. 424-304.000.
Parton, Brian, 4,113,717, Cl. 260-146.00R.
Price, Brian George, 4,113,803, Cl. 260-885.000.
Rose, John Brewster; and Staniland, Philip Anthony, 4,113,699, Cl. 528-126.000.
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, 4,113,465, Cl. 71-92.000.
Staniland, Philip Anthony, 4,113,698, Cl. 528-481.000.

In Situ Technology, Inc.: *See—*
Terry, Ruel Carlton, 4,113,313, Cl. 299-4.000.

Inagaki, Syotaro: *See—*
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, 4,113,374, Cl. 355-14.000.

Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
Campioni, Armando, 4,114,109, Cl. 330-267.000.

Industrie Pirelli Societa per Azioni: *See—*
Ferrentino, Antonio; and Brovedan, Antonio, 4,112,660, Cl. 57-59.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Fiorenza, Giorgio, 4,114,026, Cl. 235-375.000.

Ingersoll-Rand Company: *See—*
Larson, John Arden; and Fischer, Robert Bowlby, 4,113,527, Cl. 148-36.000.

Inoue, Haruo: *See—*
Sano, Takezo; Kobayashi, Akira; and Inoue, Haruo, 4,113,666, Cl. 521-29.000.

Inoue, Hiromitsu; Ohashi, Hiroshi; and Katayama, Susumu, to Matsushita Electric Works, Ltd. Ultrasonic wave watching device of moving object detecting type. 4,114,146, Cl. 340-558.000.

Inoue, Kashirou: *See—*
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, 4,113,434, Cl. 23-232.00R.

Inoue, Masahide: *See—*
Ebihara, Masatomi; Inoue, Masahide; and Hidaka, Tsuneo, 4,113,500, Cl. 106-39.500.

Inoue, Shoji: *See—*
Lagow, Richard J.; and Inoue, Shoji, 4,113,772, Cl. 562-583.000.

Inoue, Yoshiaki: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,113,652, Cl. 252-428.000.

Institut de Recherches Chimiques et Biologiques Appliquees: *See—*
Debat, Jacques, 4,113,875, Cl. 424-278.000.

Institut Francais du Petrole: *See—*
Cheron, Jacques, 4,113,923, Cl. 429-36.000.
Cohen, Choua; and Sillion, Bernard, 4,113,637, Cl. 252-51.50A.

Institutul National Pentru Creatie Stiintifica Si Tehnica - Increst: *See—*
Teodorescu, Constantin, 4,113,048, Cl. 181-220.000.

Instone, John C., to SGL Industries, Inc. Electrical outlet strip. 4,113,334, Cl. 339-22.00R.

Insurance Technology Company: *See—*
Ganske, Kingston; Hibbard, Earl R.; Falk, Mervin L.; and Denk, Joseph P., 4,114,183, Cl. 360-99.000.

Inter Control Hermann Kohler Elektrik GmbH & Co. KG: *See—*
Hollweck, Walter, 4,112,765, Cl. 73-368.300.

International Business Machines Corporation: *See—*
Ayers, Robert Lee; and Hamaker, Raymond Weaver, 4,113,512, Cl. 148-1.500.
Bassous, Ernest; and Liu, Cheng-Yih, 4,113,551, Cl. 156-662.000.
Boyd, William Weller; Grafe, Robert Joseph; and Pingry, Carl Oscar, III, 4,114,139, Cl. 340-147.00R.
Bush, Robert F.; and Mitchell, Joseph W., 4,113,521, Cl. 148-6.350.
Colglazier, Donald Francis; Fallon, John Leslie; Kollar, Ernest Paul; and Mares, Fred Ralph, 4,113,245, Cl. 271-10.000.
Karnaugh, Maurice, 4,114,143, Cl. 340-166.00R.
Pole, Robert Vladimir; and Werlich, Harald Willy, 4,113,343, Cl. 350-3.710.
Rollo, Anita Hand; and Stearns, David Burrell, 4,113,614, Cl. 210-22.00A.

International Harvester Company: *See—*
Coons, Robert R.; Hennessey, Richard G.; and Woffenden, John, 4,113,067, Cl. 188-71.600.
Deli, Jack M., 4,112,574, Cl. 29-527.100.
Picha, Donald A., 4,112,654, Cl. 56-98.000.

International Paper Company: *See—*
Nehring, John R., 4,112,947, Cl. 128-278.000.

International Standard Electric Corporation: *See—*
Jackson, Thomas M.; and Hodges, Robert J., 4,113,346, Cl. 350-96.200.

Inui, Tsuneo: *See—*
Tsutsui, Nobuyuki; Inui, Tsuneo; and Kawamura, Hiroaki, 4,113,580, Cl. 204-37.00T.

Ioffe, Benyamin Alexandrovich: *See—*
Ryzhov, Vladimir Dmitrievich; Litvinenko, Semen Kirillovich; Leikin, Roman Samuilovich; Kulberg, Anton Yanovich; Ioffe, Benyamin Alexandrovich; and Kalnin, Robert Karlovich, 4,113,142, Cl. 221-171.000.

Iowa State University Research Foundation: *See—*
Larock, Richard C., 4,113,755, Cl. 260-429.00L.

Ireland, Graham A.: *See—*
MacLennan, P. H. Barry; Ireland, Graham A.; and Werba, William J., 4,112,756, Cl. 73-181.000.

Irma Ungerer Geb. Dollinger: *See—*
Rodach, Alexander, 4,113,198, Cl. 242-78.300.

Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,112,713, Cl. 68-5.00E.

Ishiguro, Shoji: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, 4,113,489, Cl. 96-60.00R.

Ishikawa, Kikuichi: *See—*
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,113,463, Cl. 71-76.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, 4,113,416, Cl. 431-1.000.
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, 4,113,239, Cl. 266-137.000.
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, 4,112,798, Cl. 83-344.000.

Ishimoto, Zenichi, to Nikko Co., Ltd. Remote control system for a movable toy vehicle. 4,112,615, Cl. 46-254.000.

Ishiwata, Samford P., to Texaco Inc. Liquid level measuring device. 4,112,760, Cl. 73-299.000.

Ishizawa, Hideo: *See—*
Matsunaga, Kazuo; Ishizawa, Hideo; and Kurata, Kenichi, 4,113,487, Cl. 96-38.100.

Isobe, Minoru, to Oki Electric Industry Co., Ltd. Pack for endless ink ribbon cartridge. 4,113,750, Cl. 206-388.000.

Isozaki, Hiroshi: *See—*
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, 4,112,798, Cl. 83-344.000.

Itani, Takashi: *See—*
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,113,369, Cl. 352-194.000.

Itaya, Yoshiro: *See—*
Shimizu, Junichi; Hara, Takashi; Iwakura, Tatsuya; and Itaya, Yoshiro, 4,113,892, Cl. 426-602.000.

Itek Corporation: *See—*
Wirtz, John Stanley, 4,113,378, Cl. 355-55.000.

Itoh, Hatuhide: *See—*
Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, 4,113,746, Cl. 260-348.220.

Itoh, Hiroyuki; Mitsuhashi, Kenhachi; and Akashi, Hiromitsu, to Yokohama Rubber Co., Ltd., The; and Fuji Telecasting Co., Ltd. Optoelectronic tensile testing system. 4,112,746, Cl. 73-95.000.

Itoh, Tadanao, to Ricoh Company, Ltd.; and Ricoh Educational Equipment Co., Ltd. Recording reproducer for magnetic cards. 4,114,181, Cl. 360-2.000.

Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, to Onoda Cement Co., Ltd. Apparatus for forming a powder layer on the surface of a metallic squeeze-out tube. 4,112,869, Cl. 118-623.000.

Itoi, Kazuo: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, 4,113,968, Cl. 560-124.000.

ITT Industries, Inc.: *See—*
Bleckmann, Hans W., 4,113,321, Cl. 303-92.000.
Tippmann, Heinrich; and Huber, Wolfgang, 4,112,787, Cl. 74-798.000.

ITW-Ateco G.m.b.H.: *See—*
Schenk, Bernd, 4,113,300, Cl. 296-1.00C.

Iura, Yukio: *See—*
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, 4,114,173, Cl. 354-238.000.

Ivanov, Valentin Nikolaevich; and Chulkova, Anna Davydovna. Suspension for making molds in disposable pattern casting. 4,113,499, Cl. 106-38.350.

Iwakura, Tatsuya: *See—*
Shimizu, Junichi; Hara, Takashi; Iwakura, Tatsuya; and Itaya, Yoshiro, 4,113,892, Cl. 426-602.000.

Iwano, Haruhiko: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, 4,113,489, Cl. 96-60.00R.

Iwase, Kozi: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, 4,113,517, Cl. 148-2.000.

Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Throttle valve control system for an internal combustion engine. 4,112,885, Cl. 123-98.000.

Iyeta, Motoi, to Nippon Gakki Seizo Kabushiki Kaisha. Tone pickup arm device keeping excellent dynamic lateral balance and damping effect. 4,113,265, Cl. 274-23.00R.

Izaki, Hiroshi: *See—*
Fukuta, Shigemi; Izaki, Hiroshi; and Yoshino, Shoichi, 4,113,002, Cl. 164-286.000.

Izawa, Junji: *See—*
Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, 4,113,844, Cl. 423-336.000.

Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, to Asahi-Dow Limited; and Sanko Kaihatsu Kagaku Kenkyusho. Flame-retardant polyphenylene ether resin composition. 4,113,795, Cl. 260-874.000.

Izon Corporation: *See—*
Yevick, George J., 4,113,348, Cl. 350-96.250.
Yevick, George J., 4,114,168, Cl. 354-102.000.

J. G. Sylvester Associates, Inc.: *See—*
Sylvester, Bruce J.; and Sylvester, Roger P., 4,112,775, Cl. 73-627.000.

J. I. Case Company: *See—*
Venable, Phillip G., 4,113,031, Cl. 172-667.000.

Jackson, Thomas M.; and Hodges, Robert J., to International Standard Electric Corporation. Method of making optical fiber terminations. 4,113,346, Cl. 350-96.200.

Jaeger, Dennis A. Machine gun rack. 4,113,107, Cl. 211-4.000.

Jaekel, Gunter R. Adjustable check valve. 4,112,959, Cl. 137-504.000.

Janome Sewing Machine Co., Ltd.: *See—*
Kakinuma, Toshihide; Kume, Toshiaki; Takenoya, Hideaki; Makabe, Hachiro; and Watanabe, Kazuo, 4,112,858, Cl. 112-158.00E.

Janvari, Erzsebet, nee Kanyo: *See—*
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, 4,113,868, Cl. 424-251.000.

Japan Atomic Energy Research Institute: *See—*
Hagiwara, Miyuki; Araki, Kunio; Matsuoka, Shingo; and Fujimura, Syunichi, 4,113,595, Cl. 204-159.170.

Japan Exlan Company Limited: *See—*
Fukushima, Keitaro; Kusunose, Takamaro; and Nosaka, Yoshinori, 4,113,847, Cl. 423-447.400.

Jeck, Arnulf: *See—*
Gettert, Hans; Jeck, Arnulf; and Werner, Dietmar, 4,113,445, Cl. 48-197.00R.

Jeffrey, Ian Campbell, to Dobson Park Industries Limited. Vehicle or carriage mounted materials transporting machine. 4,113,123, Cl. 214-141.000.

Jellinek, Karl: *See—*
Gardziella, Arno; and Jellinek, Karl, 4,113,898, Cl. 427-195.000.

Jenaer Glaswerk Schott & Gen.: *See—*
Kiefer, Werner, 4,113,904, Cl. 428-34.000.

Jennings Compound Bow, Inc.: *See—*
Caldwell, Joseph M., 4,112,909, Cl. 124-23.00R.

Jeretin, Stojan, to Dragerwerk Aktiengesellschaft. Device for controlling the respiration in respirators. 4,112,938, Cl. 128-142.00R.

Jeschke, Willi, to Heidelberger Druckmaschinen Aktiengesellschaft. Drive for sheet-fed rotary printing presses with at least two tandem-mounted printing units. 4,112,842, Cl. 101-183.000.

Johansson, Hans A. Shower-bath tub. 4,112,524, Cl. 4-148.000.

Johansson, Ingvar, to Svenska Traforskningsinstitutet. Method of joining wood products. 4,113,542, Cl. 156-335.000.

John, Peter: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, 4,113,760, Cl. 260-448.20E.

John Zink Company: *See—*
Cantrell, Clifford J., Jr., 4,113,005, Cl. 165-40.000.

Johnson, David R., to Dow Chemical Company, The. Method to produce multivalent metals from fused bath and metal electrowinning feed cathode apparatus. 4,113,584, Cl. 204-64.00R.

Johnson, David W.; and Johnson, Gary C. Rotating magnus tubes. 4,113,299, Cl. 296-1.00S.

Johnson, Gary C.: *See—*
Johnson, David W.; and Johnson, Gary C., 4,113,299, Cl. 296-1.00S.

Johnson & Johnson: *See—*
Turner, Robert B., 4,112,764, Cl. 73-362.0AR.
Turner, Robert B., 4,114,053, Cl. 307-310.000.
Turner, Robert Bruce; Menzin, Marvin; Robinson, Hugh A.; and Williams, Thomas S., 4,112,762, Cl. 73-343.00R.

Johnson, Michael R.: *See—*
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,113,723, Cl. 260-347.300.

Johnson, Peter E.; and Rowland, Bob G., to Evans Products Company. Battery separator having coated ribs. 4,113,927, Cl. 429-143.000.

Johnson, Richard A., to Halcon International, Inc. Conversion of mono-valent thallium to tri-valent thallium. 4,113,756, Cl. 260-429.00R.

Jones, Alan Philip, to Saunders Valve Company Limited. Fluid flow control valves. 4,113,826, Cl. 264-269.000.

Jones, Geraint; and Thomson, David Summers, to Imperial Chemical Industries Limited. Pharmaceutical compositions and method of use. 4,113,879, Cl. 424-304.000.

Jones, John Leslie, to California Institute Research Foundation. Smokeless slow burning cast propellant. 4,112,849, Cl. 102-103.000.

Jones, Lawrence T.: *See—*
Sims, Anson; and Jones, Lawrence T., 4,113,261, Cl. 273-249.000.

Jones, Robert D., to United States of America, Energy. Apparatus for controlling coolant level in a liquid-metal-cooled nuclear reactor. 4,113,562, Cl. 176-40.000.

Jones, Thornton K.: *See—*
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., 4,113,525, Cl. 148-23.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., 4,113,526, Cl. 148-23.000.

Jones, Trevor E.: *See—*
Collins, John D.; and Jones, Trevor E., 4,113,758, Cl. 260-429.700.

Jordan, Edgar R. Reinforced aperture in molded plastic article. 4,113,398, Cl. 403-267.000.

Joseph, Adrian: *See—*
Severdia, Anton; and Joseph, Adrian, 4,112,832, Cl. 99-421.0HH.

Jos. Dyson & Sons, Inc.: *See—*
Foss, Richard W., 4,113,128, Cl. 214-750.000.

Joseph, Raymond, to Ateliers Reunis Societe Anonyme. Wire-netting baskets, basket heightening devices and the like. 4,113,131, Cl. 220-19.000.

Joseph, Robert. Jewelry article with radiometer therein. 4,112,707, Cl. 63-31.000.

Joyce, Patrick J.: *See—*
Leveen, Harry H.; and Joyce, Patrick J., 4,113,851, Cl. 424-28.000.

Jozwiak, Edward L., Jr.; and Das, Suryya K., to PPG Industries, Inc. Method for electrodeposition. 4,113,598, Cl. 204-181.00R.

Juichi, Imamura; Masahiko, Takehara; and Kazuhiro, Kizawa, to Agency of Industrial Science and Technology. Process for the preparation of formylated phenoxy compounds. 4,113,782, Cl. 260-600.00R.

Julius Blum Gesellschaft M.B.H.: *See—*
Rock, Erich; and Mages, Bernhard, 4,112,543, Cl. 16-164.000.

Jurovsky, Abram Zinovievich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, 4,113,833, Cl. 423-131.000.

Jutte, Hans; and Weber, Helmut. Drive shield. 4,112,696, Cl. 405-145.000.

Juusela, Jyrki Tapani: *See—*
Aaltonen, Olavi August; and Juusela, Jyrki Tapani, 4,113,470, Cl. 75-74.000.

Kabs, Klaus: *See—*
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, 4,113,762, Cl. 260-463.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kaneko, Noboru, 4,112,669, Cl. 58-4.00A.

Kabushiki Kaisha Saginomiya Seisakusho: *See—*
Kaneko, Moriwo, 4,112,704, Cl. 62-217.000.

Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,113,544, Cl. 156-384.000.

Kabushiki Kaisha Seikosha: *See—*
Fujita, Masanori; and Suzuki, Sukenori, 4,113,981, Cl. 174-88.00R.

Kabushiki Kaisha Suwa Seikosha: *See—*
Minowa, Masahiro, 4,113,391, Cl. 400-120.000.
Morozumi, Shinji, 4,112,670, Cl. 58-23.00A.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, 4,112,661, Cl. 57-34.00R.

Kabushiki Kaisha Yachiyo Kogyo Kenkyusho: *See—*
Yoshio, Hashimoto, 4,113,115, Cl. 214-1.0BB.

Kadoma, Masaaki: *See—*
Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, 4,113,746, Cl. 260-348.220.

Kadowaki, Shunichi: *See—*
Asano, Masaharu; and Kadowaki, Shunichi, 4,112,880, Cl. 123-32.0EE.

Kaeding, Warren W.; and Young, Lewis Brewster, to Mobil Oil Corporation. Selective production of para-xylene. 4,113,788, Cl. 260-673.000.

Kaes, Richard W. Fish manure removal method. 4,113,616, Cl. 210-67.000.

Kageyama, Minoru: *See—*
Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio, 4,113,819, Cl. 264-173.000.

Kagiyama, Yasuo; and Miyazaki, Nobumasa, to Daihatsu Diesel Manufacturing Co., Ltd. Temperature controlled valve assembly. 4,113,174, Cl. 236-12.00A.

Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, to Meiji Seika Kaisha, Ltd. Cephalosporin-type antibiotics and process for producing the same. 4,113,944, Cl. 544-27.000.

Kaimori, Kenichiro: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, 4,113,264, Cl. 274-15.00R.

Kaiser Aluminum & Chemical Corporation: *See—*
Bell, Norman; Andersen, John N.; and Lam, Hung-Kei H., 4,113,832, Cl. 423-119.000.
Dorsey, Geoffrey A., Jr., 4,113,520, Cl. 148-6.270.

Kaiser, George E.: *See—*
Williams, Douglas W.; and Kaiser, George E., 4,113,044, Cl. 180-51.000.

Kaiser Steel Corporation: *See—*
Collin, Alvaro L.; and Patel, Gordhan M., 4,112,693, Cl. 405-132.000.

Kajima Kensetsu Kabushiki Kaisha: *See—*
Hosoya, Kazuo; and Kubota, Munetaka, 4,112,690, Cl. 405-57.000.

Kajiura, Masaru: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.

Kakinuma, Toshihide; Kume, Toshiaki; Takenoya, Hideaki; Makabe, Hachiro; and Watanabe, Kazuo, to Janome Sewing Machine Co., Ltd. Sewing machine with a pattern generating device. 4,112,858, Cl. 112-158.00E.

Kakizaki, Yukio, to Nippon Kogaku K. K. Cross-movable carriage. 4,113,223, Cl. 248-430.000.

Kalchgruber, Gerhard: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, 4,113,760, Cl. 260-448.20E.

Kalnin, Ilmar L.; and Breckenridge, George J., to Celanese Corporation. Production of high temperature resistant polymer compositions capable of forming superior fiber reinforced composite articles. 4,113,683, Cl. 260-857.0TW.

Kalnin, Robert Karlovich: *See—*
Ryzhov, Vladimir Dmitrievich; Litvinenko, Semen Kirillovich; Lelkin, Roman Samuilovich; Kulberg, Anton Yanovich; Ioffe, Benyamin Alexandrovich; and Kalnin, Robert Karlovich, 4,113,142, Cl. 221-171.000.

Kaluzhsky, Nikolai Andreevich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, 4,113,833, Cl. 423-131.000.

Kamano, Yoshiaki; Michishita, Kazuhiko; Seki, Teruya; and Tanaka, Ichiro, to Taisho Pharmaceutical Co., Ltd. Method for preparing 17 α-ester-21-halo pregnanes. 4,113,680, Cl. 260-397.450.

Kamata, Akira: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,113,568, Cl. 195-68.000.

Kamimura, Yoshiharu: *See—*
Sakurai, Toshio; Shimada, Shoji; and Kamimura, Yoshiharu, 4,113,635, Cl. 252-49.600.

Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, to Fujisawa Pharmaceutical Co., Ltd. 7-Amino 2-lower alkyl-2 or 3-cephem-4-carboxylic acid derivatives and processes for preparation thereof. 4,113,940, Cl. 544-16.000.

Kanbe, Masaru: *See—*
Kogure, Motoo; Komiya, Mamoru; Oishi, Masaharu; and Kanbe, Masaru, 4,113,918, Cl. 428-412.000.

Kandanian, Aram Y.: *See—*
Cotten, Roger C.; Young, David W.; and Kandanian, Aram Y., 4,113,804, Cl. 260-897.00A.

Kandler, Joachim: *See—*
Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, 4,113,841, Cl. 423-265.000.

Kaneko, Moriwo, to Kabushiki Kaisha Saginomiya Seisakusho. Pilot valve-type evaporating pressure-regulating valve used in refrigerators. 4,112,704, Cl. 62-217.000.

Kaneko, Noboru, to Kabushiki Kaisha Daini Seikosha. Digital electronic timepiece. 4,112,669, Cl. 58-4.00A.

Kaneko, Yasunori: *See—*
Maki, Masao; Kaneko, Yasunori; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,113,839, Cl. 423-239.000.

Kaneko, Yutaka: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, 4,113,490, Cl. 96-60.00R.

Kang, Pierson S., to ChemPar Corporation. Method of making cutting, scoring and embossing die set. 4,112,827, Cl. 93-58.300.

Kankaanpaa, Matti, to Valmet Oy. Paper machine with twin-wire former. 4,113,556, Cl. 162-272.000.

Kankaanpaa, Matti, to Valmet Oy. Paper manufacturing structure particularly for detaching a web from a wire. 4,113,557, Cl. 162-301.000.

Kano, Masafumi: *See—*
Tugukuni, Hideyoshi; and Kano, Masafumi, 4,113,917, Cl. 428-407.000.

Kantner, Edward, to Exxon Research & Engineering Co. Zinc-halogen compound electrochemical cell having an auxiliary electrode and method. 4,113,924, Cl. 429-50.000.

Kanzaki, Hisao: *See—*
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, 4,113,990, Cl. 179-84.00R.

Kapanka, Harley L., to General Motors Corporation. Headrest for vehicles. 4,113,310, Cl. 297-408.000.

Kaplan, Jay: *See—*
Schulman, Jerome L.; and Kaplan, Jay, 4,112,926, Cl. 128-2.00S.

Karlin, James Hilliard: *See—*
Derdzinski, Terrence Edmund; and Karlin, James Hilliard, 4,113,331, Cl. 312-198.000.

Karliner, Rudolf R.: *See—*
Brown, Robert M.; and Karliner, Rudolf R., 4,113,151, Cl. 222-324.000.

Karnaugh, Maurice, to International Business Machines Corporation. Modular switching system. 4,114,143, Cl. 340-166.00R.

Kasai, Kazumi, to Yoshida Kogyo K.K. Separable slide fastener with an automatically locking slider. 4,112,554, Cl. 24-205.11R.

Kasmarik, Joseph R., to Avco Corporation. Thrust spoiler for turbofan engine. 4,112,677, Cl. 60-226.00R.

Kasparek, Karel: *See—*
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, 4,112,663, Cl. 57-58.890.

Katano, Takeshi: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, 4,114,097, Cl. 325-320.000.

Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Rotary burner. 4,113,416, Cl. 431-1.000.

Katayama, Susumu: *See—*
Inoue, Hiromitsu; Ohashi, Hiroshi; and Katayama, Susumu, 4,114,146, Cl. 340-558.000.

Kato, Hisao; and Sakamoto, Yohei. Apparatus for collecting shellfish and the like. 4,112,602, Cl. 37-55.000.

Kato, Yoshiaki; and Motoki, Jinro, to Citizen Watch Co., Ltd. Pulse motor driving system for use in a timepiece. 4,112,671, Cl. 58-23.00D.

Katz, George, to RCA Corporation. Method of assembling components on printed circuit boards. 4,113,524, Cl. 148-23.000.

Katz, Lewis Emanuel; and Paulnack, Carl Lewis, to Bell Telephone Laboratories, Incorporated. Formation of epitaxial layers on substrate wafers utilizing an inert heat radiation ring to promote uniform heating. 4,113,547, Cl. 156-612.000.

Katz, Saul Norman, to General Foods Corporation. Membrane decaffeination. 4,113,886, Cl. 426-422.000.

Kauffman, Robert N.: *See—*
Smith, James D. B.; and Kauffman, Robert N., 4,113,791, Cl. 260-830.0TW.

Kauffman, William J., to Armstrong Cork Company. Novel catalyst system for trimerization of organic isocyanates. 4,113,945, Cl. 544-67.000.

Kaufman, Aleksander Arkadi, to Scintrex Limited. Inductive source method of induced polarization prospecting. 4,114,086, Cl. 324-1.000.

Kaufmann, Helmut: *See—*
Helfgen, Werner; Lindner, Gerhard; Lingens, Paul; and Kaufmann, Helmut, 4,113,811, Cl. 264-3.00R.

Kaveloski, Robert J. Prefabricated disposable fly trap blank. 4,112,609, Cl. 43-118.000.

Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, to Osaka Soda Co., Ltd. Process for continuous production of epichlorohydrin. 4,113,746, Cl. 260-348.220.

Kawada, Hiroitsu: *See—*
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, 4,113,882, Cl. 424-317.000.

Kawaguchi, Kazumasa: *See—*
Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, 4,113,844, Cl. 423-336.000.

Kawahara, Shigemi: *See—*
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Kawakami, Isao: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,113,568, Cl. 195-68.000.

Kawamura, Hiroaki: *See—*
Tsutsui, Nobuyuki; Inui, Tsuneo; and Kawamura, Hiroaki, 4,113,580, Cl. 204-37.00T.

Kawamura, Yuzo. Method for manufacturing composition including fine particles dispersed therein. 4,113,815, Cl. 264-101.000.

Kawasaki Kasei Chemicals Ltd.: *See—*
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, 4,113,749, Cl. 260-351.000.

Kawasaki, Kazuhiko: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, 4,113,264, Cl. 274-15.00R.

Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Weak camera battery warning circuit. 4,114,176, Cl. 354-289.000.

Kawasaki, Mikio: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kawasaki, Mikio; and Kaneko, Yutaka, 4,113,490, Cl. 96-60.00R.

Kawasaki Steel Corporation: *See—*
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Kawasaki, Toyoaki: *See—*
Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, 4,113,944, Cl. 544-27.000.

Kay, Peter Dunlop, to Tioxide Group Limited. Titanium compounds. 4,113,757, Cl. 260-429.500.

Kaya, Hisao: *See—*
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, 4,113,416, Cl. 431-1.000.

Kayabakogyokabushikikaisha: *See—*
Murata, Hikaru, 4,112,822, Cl. 91-29.000.
Murata, Hikaru, 4,112,825, Cl. 91-447.000.

Kayanuma, Kanji, to Victor Company of Japan, Limited. Closed loop laser noise elimination for optoelectronic recording. 4,114,180, Cl. 358-128.000.

Kaye, Morton. Opto-mechanical measuring system. 4,112,579, Cl. 33-174.00L.

Kaye, Morton. Optical measurement system. 4,113,389, Cl. 356-164.000.

Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, to Agency of Industrial Science and Technology. Apparatus for separating non-magnetic materials of different densities. 4,113,608, Cl. 209-1.000.

Kazuhiro, Kizawa: *See—*
Juichi, Imamura; Masahiko, Takehara; and Kazuhiro, Kizawa, 4,113,782, Cl. 260-600.00R.

Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, to Boehringer Ingelheim GmbH. 2- or 4-Hydroxy-3,5-dihalo-benzylamines and salts thereof. 4,113,777, Cl. 260-570.900.

Keeney, Joseph G.: *See—*
Wild, Robert W.; and Keeney, Joseph G., 4,112,535, Cl. 15-98.000.

Keiner, Hildegard; Schmid, Emil; and Richly, Walter, to Licentia Patent-Verwaltungs-G.m.b.H. Method of manufacturing an electrically conductive contact layer. 4,113,896, Cl. 427-108.000.

Keiper K. G.: *See—*
Werner, Paul; Wirtz, Egon; and Lehmann, Gerhard, 4,113,308, Cl. 297-362.000.

Keiper Trainingsysteme GmbH & Co.: *See—*
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Kemper, Yves Jean; and Bigot, Lucien, to Vadetec Corporation. Variable speed transmission device. 4,112,779, Cl. 74-191.000.

Kemper, Yves Jean; and Bigot, Lucien, to Vadetec Corporation. Variable speed transmission device. 4,112,780, Cl. 74-191.000.

Kendall, John Edward; and Butwell, Kenneth Francis, to Union Carbide Corporation. Process for separating polymeric contaminants from aqueous absorbent solutions used to treat organic gas-containing gas streams. 4,113,837, Cl. 423-226.000.

Kendall, Larry J., to Fairchild Camera and Instrument Corporation. Current comparator for an improved analog-to-digital converter method and apparatus. 4,114,149, Cl. 340-347.0AD.

Kenji, Usui: *See—*
Shogo, Iizuka; Mitsuo, Endo; Mitsugu, Watanabe; Toshio, Iizuka; and Kenji, Usui, 4,114,014, Cl. 219-56.000.

Kenkare, Divaker B.; and Shumway, Durland K., to Colgate-Palmolive Company. Antiperspirant composition. 4,113,852, Cl. 424-46.000.

Kenkare, Divaker B.: *See—*
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Kennecott Copper Corporation: *See—*
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Smith, Richard D., 4,113,475, Cl. 75-159.000.

Kennedy, Harold, Jr., to United States Pipe and Foundry Company. Hanger for pipe. 4,113,286, Cl. 285-61.000.

Kennedy, John Hamilton: *See—*
Duff, Ian David; Kennedy, John Hamilton; and Bunce, Roger Abraham, 4,113,437, Cl. 422-63.000.

KeNova AB: *See—*
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Kent, Harry James: *See—*
Pietrusza, Arthur Jacob; and Kent, Harry James, 4,113,413, Cl. 435-222.000.

Kerfoot, William B.; and Brainard, Edward C., II, to Environmental Devices Corporation. Scanning apparatus for septic effluents. 4,112,741, Cl. 73-53.000.

Kernell, Samuel H. Twirling toy device. 4,112,611, Cl. 46-47.000.

Kessler, Gerald. D.I.G. Foam spacer. 4,113,905, Cl. 428-34.000.

Ketterer, Richard J. Device for cleaning and revitalizing wound strings for musical instruments. 4,112,808, Cl. 84-453.000.

Keuffel & Esser Company: *See—*
Kooi, J. Peter E.; and Vagyoczky, Stephen, 4,112,584, Cl. 33-292.000.

Khare, Gyaneshwar Prasad. Radioimmunoassay of hormones and metabolites in blood serum and plasma. 4,113,433, Cl. 23-230.600.

Kibler, Roland G., to General Motors Corporation. Engine speed governor. 4,112,886, Cl. 123-103.00R.

Kidde Consumer Durables Corp.: *See—*
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Kiefer, Udo; von Loeben, Wolf; and Schulz, Friedrich Wilhelm, to Siemens Aktiengesellschaft. Apparatus for measuring caster and camber in motor vehicles. 4,113,393, Cl. 356-155.000.

Kiefer, Werner, to Jenaer Glaswerk Schott & Gen. Fire resistant windows. 4,113,904, Cl. 428-34.000.

Kierstead, Richard Wightman: *See—*
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, 4,113,776, Cl. 260-565.000.

Kiess, Ulrich: *See—*
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Kikuchi, Shoji: *See—*
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Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,582, Cl. 204-39.000.

Kimball International, Inc.: *See—*
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Kimura, Akio: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.

Kimura, Katsuhiko; and Nishikawa, Masaji, to Olympus Optical Co., Ltd. Photosensitive screen drum for electrographic apparatuses. 4,113,372, Cl. 355-3.0SC.

Kimura, Shin: *See—*
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King, Charles A.; and Gutterman, Robert P., to General Kinetics, Incorporated. Magnetic can sorter. 4,113,609, Cl. 209-609.000.

King, John Olmsted. Self-dimpling fastener pin. 4,112,811, Cl. 85-7.000.

King, William Clifton, to Bell Telephone Laboratories, Incorporated. Optically coupled device with diffusely reflecting enclosure. 4,114,177, Cl. 357-19.000.

Kirchmayr, Rudolf: *See—*
Zondler, Helmut; Saladin, Emil; and Kirchmayr, Rudolf, 4,113,669, Cl. 521-108.000.

Kirsch, Bernhard. Ski binding automatically releasable by overstress. 4,113,276, Cl. 280-616.000.

Kirsch, Norbert, to General Motors Corporation. Bumpers on motor vehicles. 4,113,296, Cl. 293-96.000.

Kirschner, Helmut: *See—*
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Kitamura, Masanao: *See—*
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Kitrell, John V. Safety reflector device for bicycles or the like. 4,113,351, Cl. 350-99.000.

Kitzig, Werner: *See—*
Kocher, Heinz; Kitzig, Werner; and Witteveen, Piet Jozef, 4,113,203, Cl. 244-3.110.

Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, to Matsushita Electric Industrial Co., Ltd.; and Kyokuto Electric Company, Limited. Switching and heat control mechanism for induction heating cooking apparatus having a plurality of work coils. 4,114,009, Cl. 219-10.49R.

Kiuru, Erkki Sakari: *See—*
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Klaasen, Dirk, to Stamicarbon, B.V. Apparatus for producing polymers having a wide molecular weight distribution. 4,113,440, Cl. 422-132.000.

Klank, Otto, to Licentia Patent-Verwaltungs-G.m.b.H. Rapid tuning circuit for high frequency receivers. 4,114,100, Cl. 325-453.000.

Kleiman, Moisha Gershovich: *See—*
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.

Klein, Donald J.: *See—*
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Klein, Gerhart P., to P. R. Mallory & Co. Inc. Continuous open-ended sintering furnace system. 4,113,240, Cl. 266-252.000.

Klein, Yitzhak: *See—*
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Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, to Deutsche Gold- und Silber-

Scheideanstalt Vormals Roessler. Process for the production of benzoyl cyanide (I). 4,113,773, Cl. 260-545.00R.
Kley, Victor B. Potentiometer. 4,114,134, Cl. 338-231.000.
Klie, Jurgen, to G. Duesterloh GmbH. Control arrangement for a hydrostatic axial or radial piston machine. 4,112,973, Cl. 137-625.210.
Klinger AG: *See*—
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
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Knapp, Heinrich: *See*—
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Knepler, John T., to Dickey-john Corporation. Air pressure monitor. 4,112,777, Cl. 73-728.000.
Kobayashi, Akira: *See*—
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Kobosh, Harry J. Portable seat for hunters. 4,113,058, Cl. 182-187.000.
Koch, Hans W., to Roller Bearing Company of America. Combination seal and thrust washer for anti-friction bearings. 4,113,327, Cl. 308-187.100.
Koch, Karlheinz; and Breitzke, Willi, to Henkel Kommanditgesellschaft auf Aktien. High viscosity neutral polyester lubricants. 4,113,642, Cl. 252-56.00S.
Koch, Robert L., II, to George Koch Sons, Inc. Radiation curable coating process. 4,113,894, Cl. 427-44.000.
Kocher, Heinz; Kitzig, Werner; and Witteveen, Piet Jozef, to Bolkow Gesellschaft mit beschrankter Haftung. Method and apparatus for thrust vector control of spin stabilized flying bodies by means of a single jet rudder. 4,113,203, Cl. 244-3.110.
Koether, Bernard G.; and Shaughnessy, William J., to Food Automation-Service Techniques, Inc. Filter apparatus. 4,113,623, Cl. 210-167.000.
Kogure, Motoo; Komiya, Mamoru; Oishi, Masaharu; and Kanbe, Masaru, to Konishiroku Photo Industry Co., Ltd. Undercoat-applied plastic films. 4,113,918, Cl. 428-412.000.
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, to Daimler-Benz Aktiengesellschaft. Battery filling and venting structure. 4,113,925, Cl. 429-78.000.
Kohlhepp, Dean H.: *See*—
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Koike, Hiroshi; Suzuki, Shoji; and Asakawa, Takeki. Automatic diaphragm assembly. 4,113,359, Cl. 350-269.000.
Koike, Sakae; Matsunami, Shoichi; Goto, Yorinobu; and Tanabe, Yoshio, to Mitsubishi Chemical Industries, Ltd. Method of treating combustion exhaust gas containing nitrogen oxides. 4,113,838, Cl. 423-215.000.
Kojima, Katsuhiro: *See*—
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Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, to Sumitomo Chemical Company, Limited. Method for producing special pipes having longitudinally extending diaphragm partitions. 4,113,814, Cl. 264-89.000.
Koketsu, Sotoichi. Spectacles' frame with vertically adjustable nose pads. 4,113,365, Cl. 351-128.000.
Kolb, Dieter: *See*—
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Komatsu, Saburo, to O.P.O. Giken Kabushiki Kaisha. Plunger type solenoid. 4,114,125, Cl. 335-258.000.
Komatsu, Toshio: *See*—
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Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust system means for automobiles. 4,113,167, Cl. 228-176.000.
Kondo, Katsumi: *See*—
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Kooi, Else; and vanLierop, Joseph Gijsbertus, to U.S. Philips Corporation. Semiconductor manufacturing method using buried nitride formed by a nitridation treatment in the presence of active nitrogen. 4,113,515, Cl. 148-1.500.
Kooi, J. Peter E.; and Vagyoczky, Stephen, to Keuffel & Esser Company. Telescope level adjusting means. 4,112,584, Cl. 33-292.000.
Kopp, Valentine T., to Merrill Brothers. Lifting clamp and spring therefor. 4,113,298, Cl. 294-104.000.
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Koppl, Franz: *See*—
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Koranda, Clarence J. Railway hopper car labyrinth gate seal. 4,112,852, Cl. 105-282.00A.
Korbuly, Jozsef: *See*—
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.
Kores S.p.A.: *See*—
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Kornis, Gabriel: *See*—
Moon, Malcolm W.; and Kornis, Gabriel, 4,113,955, Cl. 548-374.000.
Moon, Malcolm W.; and Kornis, Gabriel, 4,113,956, Cl. 548-374.000.
Korosue, Akira. Variable speed power transmission. 4,112,778, Cl. 74-117.000.
Koseki, Yasuo; Takahashi, Sankichi; and Nakaoka, Azuma, to Hitachi, Ltd. Method of and apparatus for solid-liquid separation. 4,113,618, Cl. 210-82.000.
Koslowski, Gerhard: *See*—
Schippers, Heinz; Hensen, Friedhelm; Koslowski, Gerhard; and Czerwon, Dieter, 4,113,935, Cl. 526-351.000.
Kosolapova, Antonina Pavlovna: *See*—
Mirsky, Yakov Volfovich; Dorogochinsky, Akivy Zinovievich; Meged, Nelli Fillipovna; and Kosolapova, Antonina Pavlovna, 4,113,843, Cl. 423-329.000.

Kostin, Vladimir Nikolaevich: *See*—
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Kotelnikov, Grigory Vladimirovich: *See*—
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Kountz, Kenneth John, to Borg-Warner Corporation. Refrigeration control system. 4,112,703, Cl. 62-211.000.
Koutroulos, Jean: *See*—
Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, 4,113,483, Cl. 96-1.0PC.
Kowitz, Friedrich: *See*—
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Koyo Seiko Company Limited: *See*—
Okuda, Hiroji; and Harada, Shigenori, 4,112,710, Cl. 64-23.000.
Kozljuk, Anatoly Ivanovich: *See*—
Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich, 4,113,019, Cl. 169-12.000.
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Rohr, Karl, 4,113,324, Cl. 308-9.000.
Kramer, Franklin; Henig, Yair Steve; Garin, Torunn Atteraas; and Vogel, Gerald James, to General Foods Corporation. Adsorption process. 4,113,887, Cl. 426-422.000.
Kramer, John B., to Allied Chemical Corporation. Pressurizing fuel ram air charger. 4,112,899, Cl. 123-139.0AW.
Kramer, Vance M., Jr.: *See*—
Kramer, Vance M., Sr.; and Kramer, Vance M., Jr., 4,113,828, Cl. 264-294.000.
Kramer, Vance M., Sr.; and Kramer, Vance M., Jr. Method for making flexible corrugated rubber tubing and tubing produced thereby. 4,113,828, Cl. 264-294.000.
Krasovec, Branko; Mihelic, Eli; and Reutlinger, Suzana, to HP Kolinska Ljubljana Prehrambena Industrija (n.sol.o.). Process for the preparation of a concentrate from waste chicken-broth and product therefrom. 4,113,884, Cl. 426-56.000.
Krause, Alois, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Double-hydraulic actuator. 4,112,824, Cl. 91-413.000.
Krauss, Guenter, to Siemens Aktiengesellschaft. Electromechanical filter having encapsulated input and terminal circuit capacitors. 4,114,118, Cl. 333-71.000.
Krawza, Walter G.: *See*—
Savanick, George A.; and Krawza, Walter G., 4,113,314, Cl. 299-4.000.
Krehl, William H.: *See*—
DeHart, John R.; Nelson, Larry L.; and Krehl, William H., 4,113,105, Cl. 209-549.000.
Kreiger, John W., to Bethlehem Steel Corporation. Green balls formed by agglomerating wet-collected fume produced in metallurgical furnaces. 4,113,481, Cl. 75-256.000.
Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, to Dynamit Nobel Aktiengesellschaft. Method of preparing orthosilicic acid alkyl esters. 4,113,761, Cl. 260-448.80A.
Krippelz, Jacob. Method of cushioning and ventilating a foot, and footwear including disposable slippers and insoles for practicing such method. 4,112,599, Cl. 36-11.500.
Kroger, Carl; Romey, Ingo; and Kolling, Georg, to Bergwerksverband GmbH. Coal-containing shaped bodies and process for making the same. 4,113,817, Cl. 264-120.000.
Krogmann, Uwe Jonny: *See*—
Fuhrman, Gunther Georg; Krogmann, Uwe Jonny; and Schroth, Gerhard Wolfgang, 4,112,856, Cl. 110-165.00R.
Krohn, W. Henrik: *See*—
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Kronfeld, Mervin B., to Nortronics Company, Inc. Dispenser package for magnetic tape splicing tabs. 4,113,141, Cl. 221-70.000.
Krude, Werner, to Uni-Cardan AG. Double universal joint. 4,112,709, Cl. 64-21.000.
Kruger, Gerd: *See*—
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Kruger, Hans, to Schering AG. Process for making 5-amino-1,2,3-thiadiazoles. 4,113,733, Cl. 260-306.80D.
Kruschik, Julius, to Klinger AG. Shutoff element. 4,112,965, Cl. 137-219.000.
Kruse, Hubert; and Opitz, Konrad, to Hoechst Aktiengesellschaft. Preparation of a disperse dyestuff containing a phosphoric acid ester, having improved safety properties and higher dyestuff yield when dyed on synthetic materials. 4,113,429, Cl. 8-90.000.
Krutov, Sergei Vasilievich: *See*—
Glushkov, Alexandr Ivanovich; Krutov, Sergei Vasilievich; Semenov, Vladimir Ivanovich; and Gusev, Anatoly Fedorovich, 4,112,547, Cl. 17-57.000.
Kubens, Rolf; and Gebauer, Herbert, to Bayer Aktiengesellschaft. Process for reinforcing geological formations. 4,113,014, Cl. 166-295.000.
Kubina, John, to Engineered Systems, Inc. Verification checking system. 4,114,140, Cl. 340-149.00A.
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, to Nippon Telegraph and Telephone Public Corp.; and Matsushita Electric Industrial Co., Ltd. Frequency shift signal receiver. 4,114,097, Cl. 325-320.000.
Kubota, Ltd.: *See*—
Fukuta, Shigemi; Izaki, Hiroshi; and Yoshino, Shoichi, 4,113,002, Cl. 164-286.000.
Ozaki, Tsutomu; and Hijikata, Setsuo, 4,113,039, Cl. 177-25.000.
Kubota, Masayoshi: *See*—
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, 4,113,608, Cl. 209-1.000.
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Kucharski, Lawrence, Jr.: *See*—
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Kuhle, Engelbert: *See*—
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Kuhlein, Klaus: *See*—
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Kuhlmann, Wolf; and Rumpp, Gerhard, to Hilti Aktiengesellschaft. Expansion anchor assembly including a yielding member. 4,112,813, Cl. 85-74.000.
Kuhn, Hans Heinrich: *See*—
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Kuhnle, Hans-Frieder: *See*—
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, 4,113,871, Cl. 424-272.000.
Kuhnlein, Dieter: *See*—
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Kuitunen, Robert. Fuel system modification. 4,112,908, Cl. 123-198.00F.
Kukhno, Viktor Ivanovich: *See*—
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Kumamoto, Yoshito: *See*—
Kataoka, Rikio; Yano, Shigeru; Kumamoto, Yoshito; Watanabe, Haruo; Kaya, Hisao; Aoki, Kiyoshi; and Kitamura, Masanao, 4,113,416, Cl. 431-1.000.
Kumar, Atul: *See*—
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Kume, Toshiaki: *See*—
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Kummer, Rudolf; Schneider, Heinz-Walter; and Schwirten, Kurt, to BASF Aktiengesellschaft. Isolation and regeneration of rhodium-containing catalysts from distillation residues of hydroformylation reactions. 4,113,754, Cl. 260-429.00R.
Kuno, Masaya: *See*—
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.
Kurandt, Hans-Friedrich; and Schliephake, Dietrich, to Veba-Chemie Aktiengesellschaft. Process for preparing pure synthetic calcium sulfate semihydrate. 4,113,835, Cl. 423-170.000.

Kuraray Co., Ltd.: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, 4,113,968, Cl. 560-124.000.

Kurata, Kenichi: *See—*
Matsunaga, Kazuo; Ishizawa, Hideo; and Kurata, Kenichi, 4,113,487, Cl. 96-38.100.

Kurihara, Takao: *See—*
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Kuriyama, Masao: *See—*
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Kurkov, Victor P., to Chevron Research Company. Process for the production of N-acetyl-2-pyrrolidone. 4,113,735, Cl. 260-326.5FL.

Kurtz, Leonard D.; and Bidwell, Robert E., to Deknatel, Inc. Surgical drainage system with pressure indicator and enclosed source of liquid. 4,112,948, Cl. 128-276.000.

Kurz, German: *See—*
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Kusunose, Takamaro: *See—*
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Kyokuto Electric Company, Limited: *See—*
Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, 4,114,009, Cl. 219-10.49R.

La Nationale S.A.: *See—*
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Labogiken Co., Ltd.: *See—*
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Laconte, Susana S.: *See—*
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Lacour, Alain P.: *See—*
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Laenen, Rene Johannes: *See—*
Einerhand, Johan Jozef; Erkens, Leonardus Johannes Hubertus; Laenen, Rene Johannes; and Hoofs, Joseph Wilhelmus Jacobus, 4,113,508, Cl. 106-304.000.

LaFitte, Larry L.; and Camden, James B., to Buckeye Cellulose Corporation, The. Quiet, strong cloth-like tissue laminate. 4,113,911, Cl. 428-284.000.

Lagow, Richard J.; Adcock, James L.; and Maraschin, Norma J., to Massachusetts Institute of Technology. Cryogenically controlled direct fluorination apparatus. 4,113,435, Cl. 422-191.000.

Lagow, Richard J.; and Inoue, Shoji. Method for producing perfluoroether oligomers having terminal carboxylic acid groups. 4,113,772, Cl. 562-583.000.

Lajeuness, John B. Waste water reclamation apparatus. 4,112,972, Cl. 137-597.000.

Lakhtjukhov, Valery Mikhailovich: *See—*
Vasiliev, Vladimir Sergeevich; Annenberg, Ernest Alexandrovich; Livshits, Abram Lazarevich; Polotsky, Vadim Evgenievich; and Lakhtjukhov, Valery Mikhailovich, 4,114,015, Cl. 219-69.00W.

Lallinger, Georg, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Warhead construction. 4,112,848, Cl. 102-69.000.

Lam, Hung-Kei H.: *See—*
Bell, Norman; Andersen, John N.; and Lam, Hung-Kei H., 4,113,832, Cl. 423-119.000.

Lammert, Wayne F.; Simpson, Dayton M.; and Desai, Ardeshir R., to Brown & Root, Inc. Articulated stinger. 4,112,698, Cl. 405-167.000.

Lampert, Murray Alfred: *See—*
Pankove, Jacques Isaac; and Lampert, Murray Alfred, 4,113,514, Cl. 148-1.500.

Lang, Gary E.: *See—*
Lang, Roger J.; and Lang, Gary E., 4,113,335, Cl. 339-29.00R.

Lang, Karl: *See—*
Werder, Roger Daniel; Meier, Linus; and Lang, Karl, 4,113,436, Cl. 422-65.000.

Lang, Roger. Solar-ray heating apparatus. 4,112,917, Cl. 126-270.000.

Lang, Roger J.; and Lang, Gary E., to Eltra Corporation. Re-formable multi-conductor flat cable. 4,113,335, Cl. 339-29.00R.

Lang, Winfried: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,113,532, Cl. 148-174.000.

Langdon, William Keith: *See—*
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Lange, Daniel J., to P. D. George Company, The. Aromatic imino acids and resins derived therefrom. 4,113,706, Cl. 528-289.000.

Langhorst, Martin A.; Sinke, Gerard C.; and Mossner, Elmer H., to Dow Chemical Company, The. Extraction of non-ferrous metal values from dolomitic oxide ores. 4,113,471, Cl. 75-101.00R.

Lanier Business Products, Inc.: *See—*
Bolick, Fred C., Jr.; and Titus IV, Theodore, 4,113,994, Cl. 179-100.1DR.

Lantzsch, Reinhard, to Bayer Aktiengesellschaft. Preparation of 2,2-dimethyl-3-(2,2-dihalogenovinyl)-cyclopropane-1-carboxylic acid esters. 4,113,969, Cl. 560-124.000.

Lappage, James; Doggett, Neil; and Yates, Stephen William, to Platt Saco Lowell Limited. Winding machines. 4,112,662, Cl. 57-34.0AT.

Laqua, Arnold; and Holtschmidt, Ulrich, to Th. Goldschmidt AG. Method for the preparation of hardenable urea formaldehyde resins. 4,113,701, Cl. 260-29.40R.

Larcen, Donald W. Rotary burner control. 4,113,418, Cl. 431-12.000.

Larimore, Frank C., to Minnesota Mining and Manufacturing Company. Electrode and magnetic connector assembly. 4,112,941, Cl. 128-2.06E.

Larock, Richard C., to Iowa State University Research Foundation. Synthesis of prostaglandin precursors. 4,113,755, Cl. 260-429.00L.

Larson, John Arden; and Fischer, Robert Bowlby, to Ingersoll-Rand Company. Chrome steel casting. 4,113,527, Cl. 148-36.000.

Larson, Paul: *See—*
Cook, Glenn; and Larson, Paul, 4,113,586, Cl. 204-105.00R.

Lartigau, Guy: *See—*
Bost, Pierre-Etienne; and Lartigau, Guy, 4,113,779, Cl. 260-592.000.

Lasag AG: *See—*
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Latsch, Reinhard: *See—*
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, 4,112,879, Cl. 123-32.0EA.

Latypov, Anvar Latypovich; and Abrarov, Vakif Barievich. Apparatus for surgical treatment of scoliosis. 4,112,935, Cl. 128-69.000.

Lauer, James L.; and Peterkin, Melvin E., to Suntech, Inc. Viscosity measuring system. 4,113,384, Cl. 356-70.000.

Laufer, Jay K.: *See—*
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Laumann, Eugene A.: *See—*
United States of America, National Aeronautics and Space Administration; Laumann, Eugene A.; and Reynolds, Rollin K., 4,112,875, Cl. 123-1.00A.

Laundon, Brian; Cowley, Brian Richard; and Humber, David Cedric, to Glaxo Laboratories Limited. Preparation of cephalosporin compounds. 4,113,591, Cl. 204-158.0HA.

Laviolette, Maurice A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Modular practice bomb. 4,112,843, Cl. 102-7.600.

Law, Gabriel H.; and Gysegem, Albert Peter, to Ameron, Inc. Coatings prepared from trialkoxysilanes. 4,113,665, Cl. 260-37.0SB.

Lawler, James E.: *See—*
Fitzsimmons, William A.; and Lawler, James E., 4,112,580, Cl. 33-174.00S.

Lawrence, Jackson: *See—*
Troope, Walter S.; and Lawrence, Jackson, 4,112,559, Cl. 26-18.600.

Lawrence, Walter W., Jr.; McKay, Tom W.; and Wiegand, Karl E., to Ethyl Corporation. Process for the purification of citric acid. 4,113,771, Cl. 562-568.000.

Laws, Cecil Alfred: *See—*
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Laws, Christopher Malcolm, to Laws, Cecil Alfred. Atmospheric ion density measurement. 4,114,088, Cl. 324-33.000.

Lawton, William R. Curl-resistant adhesive-coated paper. 4,113,900, Cl. 427-207.00R.

Lazenby, Webber W.; and Pulliam, Daniel N., to McDonnell Douglas Corporation. Joint for a nestable cargo carrier. 4,113,130, Cl. 220-5.00A.

Leach, Harry Woods; Hebeda, Ronald Emil; and Holik, Dennis John, to CPC International Inc. Enzymatically produced maltose-maltotriose starch hydrolysate. 4,113,509, Cl. 127-29.000.

Leach, Sam L. High intensity energy transfer technique. 4,113,589, Cl. 204-157.10R.

Leason, Hayden L., to Filtertek, Inc. Process for making hermetically sealed filter units and filters made thereby. 4,113,627, Cl. 210-446.000.

Lecce, Giovanni; and Andena, Paolo, to Leyan S.r.l. Camping tool, in particular for driving and extracting from the ground anchorage pegs of camping tents. 4,112,530, Cl. 7-146.000.

Leccese, Antonio: *See—*
Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, 4,113,654, Cl. 252-429.00C.

Lecolier, Serge L.; and Biehler, Jean-Marie J., to Societe Nationale des Poudres et Explosifs. Carbamate-phosphonates as flame-proofing agents in polyurethane foam. 4,113,671, Cl. 521-108.000.

Lednicer, Daniel, to Upjohn Company, The. Analgetic compounds, compositions and process of treatment. 4,113,866, Cl. 424-248.560.

Ledoux, Will A.; Schoen, William; and Kumar, Atul, to Texaco Inc. Asphaltenes as sacrificial agents in oil recovery processes. 4,113,013, Cl. 166-275.000.

Lee, Arthur L.; and Coval, Arthur B., to A. L. Lee Corporation. Interrelated controls for vehicle brakes, transmission and motor. 4,113,076, Cl. 192-4.00A.

Lee, Cyril Arthur, to E M I Limited. Magnetic recording. 4,114,029, Cl. 235-449.000.

Lee, Gim Fun, Jr., to General Electric Company. Thermoplastic molding compositions of rubber modified copolymers of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride. 4,113,797, Cl. 260-876.00B.

Lee, Gim Fun, Jr., to General Electric. High impact polyphenylene ether resin compositions that include A-B-A block copolymers. 4,113,800, Cl. 260-876.00B.

Lee, Haeng Yong. Three-way slide fastener. 4,112,552, Cl. 24-205.00R.

Lee, Joseph Y.: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., 4,113,922, Cl. 429-33.000.

Lee, Richard M.; and Szema, Li C., to Westinghouse Electric Corp. Cooling system for a gas turbine engine. 4,113,406, Cl. 415-115.000.

Leek, Stanley, to Hawker Siddeley Dynamics Limited. Auxiliary control of vehicle direction. 4,113,204, Cl. 244-3.210.

Lefkowitz, Leonard R.; and Krohn, W. Henrik, to Huyck Corporation. High temperature filter fabrics. 4,113,535, Cl. 156-148.000.

Leger, Pierre: *See—*
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Mathes, Dieter: *See—*
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Matsubara, Masaki, to Olympus Optical Co., Ltd. Zoom lens system with high zooming ratio. 4,113,356, Cl. 350-186.000.

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Matsumoto, Akiyoshi: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,113,568, Cl. 195-68.000.

Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, to Bridgestone Tire Company Limited. Sound absorbing body. 4,113,053, Cl. 181-284.000.

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Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,113,463, Cl. 71-76.000.

Matsunaga, Kazuo; Ishizawa, Hideo; and Kurata, Kenichi, to Toppan Printing Co., Ltd. Method for manufacture of expanded articles having an embossed surface. 4,113,487, Cl. 96-38.100.

Matsunami, Shoichi: *See—*
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Matsuo, Syunji: *See—*
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Matsuoka, Shingo: *See—*
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Matsushita, Akira. Information processing optical device. 4,113,353, Cl. 350-171.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Aya, Masayoshi; and Hiya, Kohji, 4,114,124, Cl. 335-212.000.
Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, 4,114,009, Cl. 219-10.49R.
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, 4,114,097, Cl. 325-320.000.
Maki, Masao; Kaneko, Yasunori; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,113,839, Cl. 423-239.000.
Minakuchi, Hiroshi, 4,114,075, Cl. 318-341.000.
Ookubo, Toshio; Nishino, Atsushi; and Suzuki, Tadashi, 4,113,439, Cl. 422-177.000.

Matsushita Electric Works, Ltd.: *See—*
Inoue, Hiromitsu; Ohashi, Hiroshi; and Katayama, Susumu, 4,114,146, Cl. 340-558.000.

Matsushita Electronics Corporation: *See—*
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Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, to Kawasaki Kasei Chemicals Ltd. Process for producing anthrone. 4,113,749, Cl. 260-351.000.

Matteoli, Mario; and Luciani, Luciano, to Montedison S.p.A. Process for preparing polypropylene compositions having high impact strength at low temperatures. 4,113,802, Cl. 260-878.00B.

Mattmuller, Rene, to Saint-Gobain Industries. Method and apparatus for melting mineral materials. 4,113,459, Cl. 65-135.000.

Mattuschka, Werner, to Siemens Aktiengesellschaft. Thickness shear resonator for use as an over-tone quartz crystal. 4,114,062, Cl. 310-326.000.

Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. O-alkyl-O-[4-alkylpyrimidin(2)yl]-(thiono)-(thiol) phosphoric (phosphonic) acid esters and insecticidal, acaricidal and nematocidal compositions containing them. 4,113,860, Cl. 424-200.000.

Maycock, Ian Commander, to Automotive Products Limited. Driven plates for friction clutches. 4,113,078, Cl. 192-107.00C.

Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, to Montecatini Edison S.p.A. Catalysts for the polymerization of olefins. 4,113,654, Cl. 252-429.00C.

Mazdiyasni, Khodabakhsh S.; and Cooke, Charles M., to United States of America, Air Force. Method of fabricating silicon nitride bodies. 4,113,830, Cl. 264-101.000.

Mazik, Paul E., Jr.: *See—*
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Mazuir, Maurice, to Etablissements Carpano & Pons. Electronic programmer having automatic program selection. 4,114,190, Cl. 364-900.000.

McAlindon, Harold P.: *See—*
Carol, John A., Jr.; and McAlindon, Harold P., 4,114,025, Cl. 235-96.000.

McBrien, Roderick Julian, to Chloride Group Limited. Cell racks. 4,113,926, Cl. 429-99.000.

McCabe, Barkman C.; and Zajac, Edward, to Magna Energy, Inc. High temperature geothermal energy system. 4,112,745, Cl. 60-641.000.

McCabe, Francis J. Rotating blade fire damper. 4,113,230, Cl. 251-305.000.

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McCartney, Thomas: *See—*
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McCool, John B., 3rd: *See—*
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McCullough, John F.; Phillips, John F., Jr.; and Tate, Leslie R., to Tennessee Valley Authority. Preparation of dicalcium phosphate from phosphate rock by the use of sulfur dioxide, water, and carbonyl compounds. 4,113,842, Cl. 423-308.000.

McCutcheon, Martin J.: *See—*
Fletcher, Samuel G.; and McCutcheon, Martin J., 4,112,596, Cl. 35-35.00R.

McDevitt, Robert F. Molten metal sampler. 4,112,770, Cl. 73-425.40R.

McDevitt, Robert F. Device for receiving a sample of molten metal. 4,112,771, Cl. 73-425.40R.

McDevitt, Robert F. Device and method for obtaining a sample of liquid. 4,112,772, Cl. 73-425.40R.

McDonald, Charles H. Method of pavement repair. 4,113,401, Cl. 404-75.000.
McDonnell, Damien Gerard: *See—*
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McElroy, John O., Jr., to Berkmont Industries. Unitary elastic muffler assembly for a pneumatic device. 4,113,052, Cl. 181-230.000.
McEwen, Colin Dougal: *See—*
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McGahee, Welbourne D. Method and apparatus for fabricating fishing lures etc. 4,112,608, Cl. 43-42.090.
McGarry, Francis J.; Greene, Donald; and Otto, Jeffrey B., to Rogers Corporation. Method of manufacturing insulating board. 4,113,554, Cl. 162-123.000.
McGraw-Edison Company: *See—*
Cameron, Gordon, 4,113,291, Cl. 292-40.000.
McGregor, William H.: *See—*
Garsky, Victor M.; and McGregor, William H., 4,113,714, Cl. 260-112.50S.
McHenry, Donald L.; and Bechtel, Charles H., to PPG Industries, Inc. Method of preparing a solution for making electroconductive tin oxide films. 4,113,507, Cl. 106-287.180.
McKay, Tom W.: *See—*
Lawrence, Walter W., Jr.; McKay, Tom W.; and Wiegand, Karl E., 4,113,771, Cl. 562-568.000.
McKee, Harry A. Miniaturized model kitchen having coordinated interchangeable and integratable modules. 4,114,167, Cl. 354-81.000.
McKee, William H., to TRW Inc. Connector constructions and attaching means therefor. 4,113,179, Cl. 339-91.00R.
McKee, William H., to TRW Inc. Connector constructions and mounting means and hoods therefor. 4,113,337, Cl. 339-91.00R.
McKinney, Lynn B.: *See—*
Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., 4,113,095, Cl. 206-508.000.
McKnight, James Alan, to United Kingdom Atomic Energy Authority. Detection of bubbles in a liquid. 4,112,735, Cl. 73-19.000.
McLean, Graham Wilson; and Holt, David, to Strathearn Audio Limited. Electric motor. 4,114,060, Cl. 310-163.000.
McMaster, James David. Secret compartment case. 4,113,332, Cl. 312-204.000.
McPherson, Neil Soden. Meeting rail for sliding windows. 4,112,623, Cl. 49-488.000.
Mead Corporation, The: *See—*
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Medcor, Inc.: *See—*
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Meged, Nelli Fillipovna: *See—*
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Meiji Seika Kaisha, Ltd.: *See—*
Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, 4,113,944, Cl. 544-27.000.
Meijs, Franciscus H., to Shell Oil Company. Process for treating wells with viscous epoxy-resin-forming solutions. 4,113,015, Cl. 166-295.000.
Meiner, George H., III: *See—*
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Melnick, Igor, to Commissariat a l'Energie Atomique. Evaporation source for vacuum deposition. 4,113,978, Cl. 13-22.000.
Melocik, Grant C., to Towmotor Corporation. Control apparatus. 4,114,047, Cl. 307-9.000.
Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, to Southwest Research Institute. Combustion apparatus for generating repetitive explosions. 4,113,315, Cl. 299-13.000.
Meng, Ilse Heide Frieda, heir: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,113,957, Cl. 548-377.000.
Meng, Ilse Heide Frieda, heiress: *See—*
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Mentschel, Hellmuth, to Siemens Aktiengesellschaft. Method and apparatus for starting up a gas generator for converting hydrocarbons into a fuel gas, and an internal combustion engine to be supplied with the fuel gas. 4,112,876, Cl. 123-3.000.
Menzi, Ulrich, to Hermes Precisa International S.A. Mechanism for actuating a member of a typewriter. 4,113,081, Cl. 400-333.000.
Menzin, Marvin: *See—*
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Merz, Walter, to Bayer Aktiengesellschaft. Process for the preparation of alkali metal salts of 3,3-dimethyl-2-oxo-butyric acid. 4,113,767, Cl. 562-577.000.
Meshberg, Philip. Dispensing unit for liquid and method of dispensing. 4,113,145, Cl. 222-1.000.
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Held, Manfred; and Spies, Hans, 4,112,844, Cl. 102-19.200.
Krause, Alois, 4,112,824, Cl. 91-413.000.
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Meyer, Robert W.; and Hall, George A., III, to Holcroft & Company. Heat exchanger core for recuperator. 4,113,009, Cl. 165-154.000.
Meyers, George Leroy, to American Can Company. Tamperproof reclosable carton. 4,113,104, Cl. 206-626.000.
Michalko, Edward, to UOP Inc. Catalytic composite and method of manufacture. 4,113,659, Cl. 252-455.00Z.
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Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich. Method of preparing 2,6-di-tert.butylphenol. 4,113,976, Cl. 568-789.000.
Mickelson, Grant A., to Union Oil Company of California. Catalytic hydrofining process. 4,113,605, Cl. 208-216.000.
Midana, Fiorenzo. Golfer's club swing and stance training device. 4,113,258, Cl. 273-186.00C.
Mieyal, David F., to Donn Products, Inc. Adjustable pedestal for elevated floors. 4,113,219, Cl. 248-354.00R.
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Miller, Stephen J., to Chevron Research Company. Denitrification process for hydrogenated distillate oils. 4,113,607, Cl. 208-254.00R.
Miller, Stephen L.; and Dickert, Yancey J., to Dow Chemical Company, The. Poly-2-alkyl-2-oxazoline modified regenerated cellulosics. 4,113,674, Cl. 260-9.000.
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Otto, Wolfgang K. F., 4,113,432, Cl. 8-125.000.
Willbanks, Charles E., 4,112,560, Cl. 28-160.000.
Mills, Anthony Mark; and Buck, David Lyndon, to Dunlop Limited. Pneumatic tires having low aspect ratio. 4,112,994, Cl. 152-354.00R.
Min, Tony C.; and Hergert, Richard E., to Beloit Corporation. Apparatus for deflocculating fibrous wad and uniformly distributing the disintegrated fibrous material on a dry fiber layer forming surface. 4,112,549, Cl. 19-304.000.
Minagawa, Motonobu; Ohzeki, Toshio; and Sekiguchi, Tetsuo, to Argus Chemical Corporation. Tin sulfide stabilizer for styrene polymer. 4,113,678, Cl. 260-23.70M.
Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Rotation control system. 4,114,075, Cl. 318-341.000.
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Andrews, Jeffrey F.; Mullin, Therese A.; and Senkus, Raymond, 4,113,854, Cl. 424-81.000.
Giulie, Joe D., 4,113,394, Cl. 402-46.000.
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Howard, Robert N., 4,112,631, Cl. 51-295.000.
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Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, 4,113,374, Cl. 355-14.000.
Minowa, Masahiro, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Method for controlling voltage and providing temperature compensation in a thermal printer. 4,113,391, Cl. 400-120.000.
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Mischutin, Vladimir, to White Chemical Corporation. Flame retardants for natural and synthetic materials. 4,113,902, Cl. 427-390.00D.
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Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. System for introducing secondary air into an internal combustion engine. 4,112,678, Cl. 60-276.000.
Miyahara, Kingo, to Dowa Co., Ltd. Gasified liquid fuel burner. 4,113,421, Cl. 431-122.000.
Miyakita, Hiroshi, to Miyakita, Ichiro. Rotary cutter drive control with electric motor. 4,114,079, Cl. 318-601.000.
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Modell, Michael; Reid, Robert C.; and Amin, Sanjay I., to Massachusetts Institute of Technology. Gasification process. 4,113,446, Cl. 48-202.000.
Modena, Mario; Massardo, Pietro; and Castelnuovo, Lucio, to Montedison S.p.A. Halogenated esters of polycarboxylic acids and plasticizers for chloro-vinyl polymers based on said esters. 4,113,689, Cl. 260-31.8HA.
Moen, George E.; and De Vito, Vincent P. Microwave furnace. 4,114,012, Cl. 219-10.55R.
Moen, Lowell J.: *See—*
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., 4,113,920, Cl. 428-565.000.
Moertel, George B., to Textron Inc. Slide fastener. 4,112,555, Cl. 24-205.13C.
Moffatt, Clinton D. Golf practice device. 4,113,257, Cl. 273-185.00C.
Mohacsi, Ernest, to Hoffmann-La Roche Inc. 3-Phenoxymorphinans and derivatives thereof. 4,113,729, Cl. 260-285.000.
Mohrmann, Karl Heinz: *See—*
Bauch, Helmut; Mohrmann, Karl Heinz; and Koppehele, Frithjof, 4,114,107, Cl. 330-56.000.
Mojonnier Bros. Co.: *See—*
Mojonnier, Harry G.; and Skoli, Sigmund P., 4,112,828, Cl. 99-275.000.
Mojonnier, Harry G.; and Skoli, Sigmund P., to Mojonnier Bros. Co. Reflux deaeration system. 4,112,828, Cl. 99-275.000.
Moles, Jacques Claude Antoine: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,113,596, Cl. 204-180.00R.
Molins Limited: *See—*
Harrington, Timothy Cardell; and Arthur, Hugh MacDonald, 4,113,197, Cl. 242-58.100.
Preston, Edward George; and Doerman, Eryk Stefan, 4,112,954, Cl. 131-21.00R.
Moller, Eike; Meng, Karl, deceased (by Meng, Ilse Heide Frieda, heiress); Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, to Baker Aktiengesellshaft. 4-Substituted pyrazoles. 4,113,872, Cl. 424-273.00P.
Moller, Eike; Meng, Karl-August, deceased (by Meng, Ilse Heide Frieda, heir); Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, to Bayer Aktiengesellschaft. 1-Substituted pyrazoles. 4,113,957, Cl. 548-377.000.
Moller, Paul S., to Discojet Corporation. Engine muffler and spark arrester. 4,113,051, Cl. 181-231.000.
Moller, Siegfried: *See—*
Rones, Josef; Moller, Siegfried; and Hoch, Helmut, 4,113,498, Cl. 106-14.130.
Mongiello, Angelo. Cheese processing system. 4,112,835, Cl. 99-455.000.
Monroe Auto Equipment Company: *See—*
Palmer, Dale A., 4,113,072, Cl. 188-282.000.
Monsanto Company: *See—*
Chapman, Richard D.; Holmer, Donald A.; and Mortimer, George A., 4,113,708, Cl. 528-313.000.
Culbertson, Harry M., 4,113,700, Cl. 528-138.000.
MacLean, Donald L.; and Estes, Robert T., 4,113,704, Cl. 528-289.000.
Moran, James R., 4,113,798, Cl. 260-876.00R.
Schumacher, Ignatius; and White, James E., 4,113,574, Cl. 203-8.000.
Monsanto Company, St. Louis, Missouri: *See—*
Spiller, Herbert A., 4,112,668, Cl. 57-157.00S.
Montecatini Edison S.p.A.: *See—*
Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, 4,113,654, Cl. 252-429.00C.
Montedison S.p.A.: *See—*
Alneri, Enzo; Bottaccio, Giorgio; Campolmi, Stefano; and Cassar, Luigi, 4,113,973, Cl. 568-716.000.
Matteoli, Mario; and Luciani, Luciano, 4,113,802, Cl. 260-878.00B.
Modena, Mario; Massardo, Pietro; and Castelnuovo, Lucio, 4,113,689, Cl. 260-31.8HA.
Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, 4,113,769, Cl. 562-534.000.
Moon, Malcolm W.; and Kornis, Gabriel, to Upjohn Company, The. Furyl pyrazole amides. 4,113,955, Cl. 548-374.000.

Moon, Malcolm W.; and Kornis, Gabriel, to Upjohn Company, The. Thienyl pyrazole amides. 4,113,956, Cl. 548-374.000.
Moore Business Forms, Inc.: *See*—
Halse, Per Weien, 4,113,281, Cl. 282-11.50A.
Moran, James R., to Monsanto Company. Transparent ABS polyblends. 4,113,798, Cl. 260-876.00R.
Morcom, Paul J. Plastic collapsible article carrier. 4,113,087, Cl. 206-174.000.
Morgan, James E., to Morgan Schaffer Corporation. Transformer fault detection. 4,112,737, Cl. 73-23.000.
Morgan Schaffer Corporation: *See*—
Morgan, James E., 4,112,737, Cl. 73-23.000.
Morgan, William H., Jr.: *See*—
Bonazoli, Robert P.; and Morgan, William H., Jr., 4,113,420, Cl. 431-93.000.
Morgenstern, Manfred: *See*—
Spengler, Hans; Bucksch, Gunter; and Morgenstern, Manfred, 4,113,931, Cl. 526-64.000.
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, to Kuraray Co., Ltd. Process for preparation of substituted cyclopropane carboxylic acids and esters thereof and intermediates of said acids and esters. 4,113,968, Cl. 560-124.000.
Mori, Fumio: *See*—
Hotta, Hisashi; and Mori, Fumio, 4,113,539, Cl. 156-306.000.
Mori, Kouichi: *See*—
Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, 4,112,885, Cl. 123-98.000.
Mori, Mamoru: *See*—
Arai, Hiroshi; and Mori, Mamoru, 4,113,280, Cl. 280-747.000.
Mori, Shigeo; and Fujita, Takeshi, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Flame resistant polyurethane foam and process for producing the same. 4,113,667, Cl. 521-163.000.
Mori, Toshio: *See*—
Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, 4,113,814, Cl. 264-89.000.
Morihashi, Toshihumi, to Murata Kikai Kabushiki Kaisha. Spinning apparatus for spun yarn. 4,112,658, Cl. 57-51.000.
Morikawa, Michio: *See*—
Hayashi, Torahiko; Kageyama, Minoru; and Morikawa, Michio, 4,113,819, Cl. 264-173.000.
Morozumi, Shinji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 4,112,670, Cl. 58-23.00A.
Morsani, Rosemary; and Nelson, Edwin G. Grow-pot. 4,112,619, Cl. 47-66.000.
Mortimer, George A.: *See*—
Chapman, Richard D.; Holmer, Donald A.; and Mortimer, George A., 4,113,708, Cl. 528-313.000.
Morton-Norwich Products, Inc.: *See*—
Schwan, Thomas J., 4,113,743, Cl. 260-345.500.
Mosch, Franz: *See*—
Deiner, Hans; Mosch, Franz; and Bernheim, Willy, 4,113,947, Cl. 544-196.000.
Moses, John A. Laryngoscope of the straight blade type. 4,112,933, Cl. 128-11.000.
Mosler Safe Company, The: *See*—
Slater, Charles E.; Dunn, Paul E.; and Mustain, Lewis B., 4,114,027, Cl. 235-419.000.
Mossner, Elmer H.: *See*—
Langhorst, Martin A.; Sinke, Gerard C.; and Mossner, Elmer H., 4,113,471, Cl. 75-101.00R.
Mostert, Johann: *See*—
Greven, Johann; and Mostert, Johann, 4,112,730, Cl. 72-290.000.
Motoki, Jinro: *See*—
Kato, Yoshiaki; and Motoki, Jinro, 4,112,671, Cl. 58-23.00D.
Motorola, Inc.: *See*—
Brewster, Franklin Crawford, 4,113,326, Cl. 308-26.000.
Derdzinski, Terrence Edmund; and Karlin, James Hilliard, 4,113,331, Cl. 312-198.000.
Duncan, Herbert Alan, 4,114,105, Cl. 325-480.000.
Feiler, Alvin, 4,114,000, Cl. 200-16.00R.
Schafft, Hugo Willy, 4,113,352, Cl. 350-150.000.
Motte, Raymond: *See*—
Casalis, Jean-Arnaud; Teil, Yves; and Motte, Raymond, 4,113,624, Cl. 210-219.000.
Mould, Henry Manifold: *See*—
Ford, Michael Alan; Mould, Henry Manifold; and Kolb, Dieter, 4,113,385, Cl. 356-96.000.
Mowery, Richard A., Jr., to Phillips Petroleum Company. Step-wise gradient carrier for liquid chromatography. 4,112,743, Cl. 73-61.10C.
Moye, Helen Ione. Method of forming an animal-figure decoration. 4,112,573, Cl. 29-428.000.
Mucke, Rainer: *See*—
Andrascheck, Hans-Joachim; and Mucke, Rainer, 4,113,679, Cl. 260-28.50D.
Mueller, David Charles, to American Can Company. Score line configuration for ice cream cartons and the like. 4,113,102, Cl. 206-611.000.
Mueller, Loren H. Agricultural sorting and packing apparatus. 4,113,610, Cl. 209-705.000.
Mueller, Robert C.: *See*—
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., 4,113,920, Cl. 428-565.000.
Mueller-Tamm, Heinz: *See*—
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, 4,113,933, Cl. 526-124.000.
Muhlegg, Kurt, to Heberlein Maschinenfabrik AG. Friction false-twist device. 4,112,664, Cl. 57-77.400.
Muir, David Michael: *See*—
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 4,113,848, Cl. 423-512.00A.
Mukaemachi, Takuji; Takeshita, Tetsuo; and Enami, Shiroh, to Hitachi, Ltd. Speech path packaging unit including controller containing shift register. 4,113,988, Cl. 179-18.0ES.
Mukai, Kiyohisa: *See*—
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.
Mukai, Kunio: *See*—
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.
Mulaskey, Bernard F., to Chevron Research Company. Method of removing sulfur-containing impurities from hydrocarbons. 4,113,606, Cl. 208-244.000.
Muller, Franz, to August Lepper, Maschinen- und Apparatebau GmbH. Combined drum washer and drying arrangement. 4,112,590, Cl. 34-75.000.
Muller, Friedhelm: *See*—
Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, 4,113,506, Cl. 106-238.000.
Muller, Hans; and Hanke, Georg, to Volkswagenwerk Aktiengesellschaft. Stay. 4,113,071, Cl. 188-282.000.
Muller, Herbert: *See*—
Huber, Leonhard; Kirschner, Helmut; and Muller, Herbert, 4,114,175, Cl. 354-252.000.
Muller, Johann, to Albert Handtmann, Firma. Method of and apparatus for making link sausages. 4,112,546, Cl. 17-49.000.
Muller, Lothar: *See*—
Raasch, Hans; and Muller, Lothar, 4,113,193, Cl. 242-18.00R.
Muller, Wolf-Rudiger: *See*—
Sekoulov, Ivan; and Muller, Wolf-Rudiger, 4,113,612, Cl. 210-17.000.
Sekoulov, Ivan; and Muller, Wolf-Rudiger, 4,113,613, Cl. 210-17.000.
Mullin, Therese A.: *See*—
Andrews, Jeffrey F.; Mullin, Therese A.; and Senkus, Raymond, 4,113,854, Cl. 424-81.000.
Mullins, Max. Compatible gear system. 4,112,782, Cl. 74-462.000.
Mullritter, Ludwig: *See*—
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, 4,113,373, Cl. 355-8.000.
Mumford, Richard G.: *See*—
Hanway, John E., Jr.; and Mumford, Richard G., 4,113,840, Cl. 423-242.000.
Muntjanoff, John R., to Caterpillar Tractor Co. Movable arch structure for skidder vehicle. 4,113,124, Cl. 214-147.00G.
Murakami, Kazuyoshi: *See*—
Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, 4,113,746, Cl. 260-348.220.
Murakami, Masuo: *See*—
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, 4,113,882, Cl. 424-317.000.
Murakami, Ryoichi: *See*—
Oka, Shoji; Murakami, Ryoichi; and Sueyoshi, Akiko, 4,113,519, Cl. 148-6.15R.
Murakami, Sakae, to Nippon Hoist Co., Ltd. Hook device. 4,112,750, Cl. 73-141.0AB.
Muramori, Kiyoshi: *See*—
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, 4,113,608, Cl. 209-1.000.
Murashige, Masayuki: *See*—
Sekihara, Takeshi; Emura, Tomoyuki; and Murashige, Masayuki, 4,113,932, Cl. 526-74.000.
Murata, Hikaru, to Kayabakogyokabushikikaisha. Pressure responsive sequencing device. 4,112,822, Cl. 91-29.000.
Murata, Hikaru, to Kayabakogyokabushikikaisha. Pressure-reducing device. 4,112,825, Cl. 91-447.000.
Murata Kikai Kabushiki Kaisha: *See*—
Morihashi, Toshihumi, 4,112,658, Cl. 57-51.000.
Murata Manufacturing Co., Ltd.: *See*—
Nakatsu, Yoshiyuki; and Nishizawa, Hideo, 4,114,131, Cl. 338-162.000.
Murata, Tomoji; and Shibazaki, Kenji, to Minolta Camera Kabushiki Kaisha. Power regulating device for controlling exposing means and fixing means in electrophotographic copying apparatus. 4,113,375, Cl. 355-14.000.
Murata, Tomoji: *See*—
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, 4,113,374, Cl. 355-14.000.
Murphy, Edward J.: *See*—
Rabi, Rafat T.; Murphy, Edward J.; and Basoms, John A., 4,113,597, Cl. 204-181.00C.

Musikindustriell Forskning MIFO AB: *See*—
Sjostrand, Gunnar; and Sjostrand, Staffan, 4,112,809, Cl. 84-465.000.
Musil, Josef: *See*—
Linkies, Adolf; Reuschling, Dieter-Bernd; Kuhlein, Klaus; Beck, Gerhard; and Musil, Josef, 4,113,874, Cl. 424-274.000.
Muskus, Meryl L., to Raymond Lee Organization, Inc., The, a part interest. Method of making a cord hammock. 4,112,816, Cl. 87-12.000.
Mustain, Lewis B.: *See*—
Slater, Charles E.; Dunn, Paul E.; and Mustain, Lewis B., 4,114,027, Cl. 235-419.000.
Muthenthaller, Gustav, to Kores S.p.A. Stapler. 4,113,164, Cl. 227-124.000.
Mutt, Viktor: *See*—
Said, Sami I.; and Mutt, Viktor, 4,113,711, Cl. 260-112.00R.
Myers, Lester L., to Mobile Aerial Towers, Inc. Fluid control system for mobile aerial towers. 4,113,054, Cl. 182-2.000.
Nagaoka, Kazuya: *See*—
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, 4,113,749, Cl. 260-351.000.
Nagaoka, Masaaki: *See*—
Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, 4,113,167, Cl. 228-176.000.
Nagashima, Hideo: *See*—
Suzuki, Hiroshige; Horie, Eizi; and Nagashima, Hideo, 4,112,648, Cl. 52-508.000.
Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Coating composition containing resin having tertiary aliphatic group and reactive hydroxyl group, process for its preparation and article coated with the composition. 4,113,682, Cl. 260-29.4UA.
Nagy, Sandor: *See*—
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Sumitomo Metal Industries, Ltd. Apparatus for cooling slag. 4,113,239, Cl. 266-137.000.
Nakagawa, Jihei, to Olympus Optical Co., Ltd. Retrofocus type wide-angle photographic lens system. 4,113,358, Cl. 350-216.000.
Nakagawa, Tadashi: *See*—
Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, 4,114,174, Cl. 354-249.000.
Nakaguti, Osamu: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,113,940, Cl. 544-16.000.
Nakaji, Hideki: *See*—
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,112,732, Cl. 72-334.000.
Nakajima, Yoshikage: *See*—
Igarashi, Toshiji; and Nakajima, Yoshikage, 4,113,870, Cl. 424-266.000.
Nakamura, Kantaro: *See*—
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.
Nakamura, Soichi, to Nippon Kogaku K. K. Telephoto lens system. 4,113,357, Cl. 350-212.000.
Nakamura, Yoshihiro; Shibazaki, Kenji; Kono, Tateomi; Inagaki, Syotaro; and Murata, Tomoji, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus. 4,113,374, Cl. 355-14.000.
Nakanishi, Atsuo: *See*—
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, 4,113,795, Cl. 260-874.000.
Nakano, Harumi, to Casio Computer Co., Ltd. Liquid crystal display device. 4,113,361, Cl. 350-332.000.
Nakaoka, Azuma: *See*—
Koseki, Yasuo; Takahashi, Sankichi; and Nakaoka, Azuma, 4,113,618, Cl. 210-82.000.
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, to Nippon Kokan Kabushiki Kaisha. Method of making cold-reduced Al-killed steel strip for press-forming by continuous casting and continuous annealing process. 4,113,517, Cl. 148-2.000.
Nakashima, Toshihiko: *See*—
Teranishi, Takanori; and Nakashima, Toshihiko, 4,114,076, Cl. 318-421.000.
Nakatani, Shuichi: *See*—
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; and Hioki, Katsuhiko, 4,113,749, Cl. 260-351.000.
Nakatsu, Yoshiyuki; and Nishizawa, Hideo, to Murata Manufacturing Co., Ltd. Variable resistor. 4,114,131, Cl. 338-162.000.
Nakazato, Masao: *See*—
Yoneda, Kenji; Nakazato, Masao; and Yuminaka, Takeo, 4,113,066, Cl. 187-29.00R.
Nanthavong, Souli: *See*—
Pigerol, Charles; de Cointet de Fillain, Paul; and Nanthavong, Souli, 4,113,736, Cl. 260-326.160.
Narita, Hirosi: *See*—
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, 4,113,523, Cl. 148-12.300.
Naslund, Rolf Paul: *See*—
Margen, Peter Heinrich Erwin; and Naslund, Rolf Paul, 4,112,569, Cl. 29-157.30R.
National Fluoride and Chemical Corporation: *See*—
Orth, George Otto, Jr.; and Orth, Richard D., 4,113,831, Cl. 423-119.000.
National Gypsum Company: *See*—
O'Connor, Francis J., 4,113,836, Cl. 423-171.000.
National Research Development Corporation: *See*—
Barlow, Harold Everard Monteagle, 4,114,121, Cl. 333-95.00R.
Carter, Michael Charles; and Steer, Philip James, 4,114,188, Cl. 364-415.000.
Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, 4,113,388, Cl. 356-110.000.
National Semiconductor Corporation: *See*—
Ross, John P.; and Bernardi, Carl E., 4,113,577, Cl. 204-15.000.
National Starch and Chemical Corporation: *See*—
Pastor, Stephen D.; and Grover, Martin M., 4,113,792, Cl. 260-834.000.
National Steel Corporation: *See*—
Manda, John G.; Burroughs, Joe D.; and Cairns, Donald F., 4,113,572, Cl. 202-227.000.
Naylor Brothers (Clayware) Limited: *See*—
Widdicombe, Derek Gordon, 4,112,979, Cl. 138-89.000.
Nees, John; and Pike, Kenneth, to General Battery Corporation. Method of treating low antimony alloy battery grid material with phosphorus. 4,113,476, Cl. 75-166.00C.
Nees, John; and Pike, Kenneth, to General Battery Corporation. Method of treating low antimony alloy battery grid material with phosphorus. 4,113,477, Cl. 75-166.00C.
Negishi, Masaaki: *See*—
Watanabe, Haruo; and Negishi, Masaaki, 4,113,752, Cl. 260-424.000.
Nehring, John R., to International Paper Company. Combined irrigator and evacuator for closed wounds. 4,112,947, Cl. 128-278.000.
Neidell, Norman S. Echo location systems. 4,114,153, Cl. 343-9.000.
Neinast, Gary S., to Suntech, Inc. Pulling tool apparatus. 4,113,236, Cl. 254-134.500.
Nelkin, Arthur; Skinner, Dale D.; Wilson, Donald G.; and Palmer, Harold D., to Westinghouse Electric Corp. Piezoelectric sediment particle transport detector. 4,114,063, Cl. 310-334.000.
Nelson, Christian E. Barge-supported crane with hydraulically actuated ram corner lift means. 4,112,863, Cl. 114-264.000.
Nelson, Edwin G.: *See*—
Morsani, Rosemary; and Nelson, Edwin G., 4,112,619, Cl. 47-66.000.
Nelson, Karl L. Fastener holding attachment for a tool. 4,112,988, Cl. 145-50.00D.
Nelson, Larry L.: *See*—
DeHart, John R.; Nelson, Larry L.; and Krehl, William H., 4,113,105, Cl. 209-549.000.
Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxy-methyl-ω-phenoxy-PGE analogs. 4,113,778, Cl. 260-590.00C.
Nemoto, Ichiro: *See*—
Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, 4,114,174, Cl. 354-249.000.
Neste Oy: *See*—
Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, 4,113,483, Cl. 96-1.0PC.
New Concepts, Inc.: *See*—
Still, Robert C., 4,112,969, Cl. 137-454.200.
New Rochelle Manufacturing Co., Inc.: *See*—
Newman, Philip, 4,112,871, Cl. 119-18.000.
Newman, Philip, to New Rochelle Manufacturing Co., Inc. Bird cage feeder. 4,112,871, Cl. 119-18.000.
NHK Spring Co., Ltd.: *See*—
Takase, Hirobumi; and Utsunomiya, Yutaka, 4,112,721, Cl. 72-12.000.
Nicola, Charles: *See*—
Dayet, Jacques; Martin, Joseph; and Nicola, Charles, 4,114,004, Cl. 200-148.00A.
Niederst, Kenneth W., to PPG Industries, Inc. Aqueous dispersions of esters stabilized with carbodiimides. 4,113,676, Cl. 260-22.00T.
Niemann, Heinz, to ESGE-MARBY GmbH & Co. Luggage carrier for two-wheel vehicles, such as bicycles. 4,113,158, Cl. 224-39.000.
Nifco Inc.: *See*—
Tanaka, Toshie, 4,112,815, Cl. 85-80.000.
Nikko Co., Ltd.: *See*—
Ishimoto, Zenichi, 4,112,615, Cl. 46-254.000.
Nikly, Jean, to Automobiles M. Berliet. Method and device for ensuring the tightness of a cylinderhead on the cylinder block of a thermal engine, in particular, a diesel engine. 4,112,907, Cl. 123-193.0CH.
Niksa, Gregory J.: *See*—
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., 4,112,714, Cl. 68-206.000.
Nilson, Billy N., to KeNova AB. Safety valve. 4,112,971, Cl. 137-508.000.
Nimura, Takayasu, to Nippondenso Co., Ltd. Rotor for alternating current generator. 4,114,056, Cl. 310-42.000.
Nippon Cable Systems Inc.: *See*—
Fukuda, Mataharu, 4,112,708, Cl. 64-2.00R.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Iyeta, Motoi, 4,113,265, Cl. 274-23.00R.

Nippon Horst Co., Ltd.: *See—*
Murakami, Sakae, 4,112,750, Cl. 73-141.0AB.
Nippon Hume Pipe Company Limited: *See—*
Iida, Hideo, 4,113,823, Cl. 264-228.000.
Nippon Kogaku K. K.: *See—*
Kakizaki, Yukio, 4,113,223, Cl. 248-430.000.
Nakamura, Soichi, 4,113,357, Cl. 350-212.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, 4,113,517, Cl. 148-2.000.
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, 4,113,523, Cl. 148-12.300.
Nippon Oil Company Ltd.: *See—*
Shinomura, Toshihiko, 4,113,908, Cl. 428-113.000.
Nippon Paint Co., Ltd.: *See—*
Nagata, Nobuyoshi; and Mizuguchi, Ryuzo, 4,113,682, Cl. 260-29.4UA.
Oka, Shoji; Murakami, Ryoichi; and Sueyoshi, Akiko, 4,113,519, Cl. 148-6.15R.
Nippon Soken, Inc.: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, 4,112,885, Cl. 123-98.000.
Nippon Steel Corporation: *See—*
Sakurai, Toshio; Shimada, Shoji; and Kamimura, Yoshiharu, 4,113,635, Cl. 252-49.600.
Nippon Telegraph and Telephone Public Corp.: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hashihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, 4,114,097, Cl. 325-320.000.
Nippon Zeon Co. Ltd.: *See—*
Akiyama, Shinichi; and Yamamoto, Haruhisa, 4,113,770, Cl. 562-532.000.
Nippondenso Co., Ltd.: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.
Nimura, Takayasu, 4,114,056, Cl. 310-42.000.
Nojiri, Tadao; Sugiura, Akio; and Nomura, Masahiro, 4,114,030, Cl. 235-464.000.
Okamoto, Atutoshi; Nojiri, Tadao; and Nomura, Masahiro, 4,114,033, Cl. 235-494.000.
Terauishi, Takanori; and Nakashima, Toshihiko, 4,114,076, Cl. 318-421.000.
Uno, Eiichi; and Hachiga, Takasi, 4,112,904, Cl. 123-148.00E.
Nishida, Takashi: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, 4,113,968, Cl. 560-124.000.
Nishide, Hiroo; and Uehara, Yasuhiro, to Rank Xerox, Ltd. Heat roll fixing device for electrophotographic copying machine. 4,114,021, Cl. 219-216.000.
Nishikawa, Masaji: *See—*
Kimura, Katsuhiko; and Nishikawa, Masaji, 4,113,372, Cl. 355-3.0SC.
Nishimoto, Akihiko: *See—*
Nakaoka, Kazuhide; Araki, Kenzi; Nishimoto, Akihiko; Iwase, Kozi; and Kubotera, Haruo, 4,113,517, Cl. 148-2.000.
Nishimura, Sanji: *See—*
Watanabe, Morio; and Nishimura, Sanji, 4,113,588, Cl. 204-151.000.
Nishino, Atsushi: *See—*
Ookubo, Toshio; Nishino, Atsushi; and Suzuki, Tadashi, 4,113,439, Cl. 422-177.000.
Nishizawa, Hideo: *See—*
Nakatsu, Yoshiyuki; and Nishizawa, Hideo, 4,114,131, Cl. 338-162.000.
Nissan Motor Company, Limited: *See—*
Anzai, Makoto, 4,112,893, Cl. 123-119.0EC.
Asano, Masaharu; and Kadowaki, Shunichi, 4,112,880, Cl. 123-32.0EE.
Niwa, Takao: *See—*
Goto, Kenji; and Niwa, Takao, 4,112,877, Cl. 123-32.0ST.
Nnadi, John C.; and Heilweil, Israel J., to Mobil Oil Corporation. Multifunctional additives. 4,113,725, Cl. 544-296.000.
Noack, Rolf; Schuster, Joachim; and Lohse, Udo, to Deutsche Babcock Aktiengesellschaft. Device for bending pipes. 4,112,728, Cl. 72-154.000.
Nogita, Shunsuke: *See—*
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, 4,113,608, Cl. 209-1.000.
Noguchi, Katsuyuki: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, 4,113,873, Cl. 424-274.000.
Nohira, Hidetaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for recirculating exhaust gases. 4,112,894, Cl. 123-119.00A.
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, to Fujitsu Limited. Signal sending control system. 4,113,990, Cl. 179-84.00R.
Nojiri, Tadao; Sugiura, Akio; and Nomura, Masahiro, to Nippondenso Co., Ltd. Method and apparatus to optically recognize recorded information. 4,114,030, Cl. 235-464.000.
Nojiri, Tadao: *See—*
Okamoto, Atutoshi; Nojiri, Tadao; and Nomura, Masahiro, 4,114,033, Cl. 235-494.000.
Nolan, John T., Jr.: *See—*
Rao, Babu Y.; Nolan, John T., Jr.; and Estes, John H., 4,113,789, Cl. 260-683.680.
Noll, Klaus-Reinhold: *See—*
Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, 4,113,777, Cl. 260-570.900.
Nomaki, Koji; and Saoyama, Yoshihito, to Asahi Glass Company, Ltd. Soldering apparatus. 4,112,868, Cl. 118-429.000.
Nomura, Masahiro: *See—*
Nojiri, Tadao; Sugiura, Akio; and Nomura, Masahiro, 4,114,030, Cl. 235-464.000.
Okamoto, Atutoshi; Nojiri, Tadao; and Nomura, Masahiro, 4,114,033, Cl. 235-494.000.
Nonoyama, Takao: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.
Noo, Kunio: *See—*
Matsui, Takashi; Sugimura, Sadao; and Noo, Kunio, 4,113,824, Cl. 264-230.000.
Nordica International, Inc.: *See—*
Conger, William H.; and Gehringer, Ronald F., 4,112,820, Cl. 70-363.000.
Nordin, Soren B.: *See—*
Nyren, Jan O.; Nordin, Soren B.; and Flodman, Leif A., 4,113,555, Cl. 162-127.000.
Nordiska Maskinfilt Aktiebolaget: *See—*
Bugge, Hans Jorgen; Strandly, Ingvald; and Swanberg, Carl Olof, 4,112,982, Cl. 139-425.00A.
Norfield Corporation: *See—*
Beasley, Donald R., 4,113,909, Cl. 428-116.000.
Norian, Roger F.: *See—*
Gorham, Michael L.; and Norian, Roger F., 4,113,991, Cl. 179-90.00B.
Norris, Alan H.; and Chambley, Phillip W., to Champion International Corporation. Apparatus for manufacturing filaments of varying denier and actuating means therefor. 4,112,561, Cl. 28-243.000.
Nortec Inc.: *See—*
Sherwin, William Claude, 4,113,275, Cl. 280-615.000.
North, Bernard: *See—*
Lumby, Roland John; North, Bernard; and Taylor, Alfred James, 4,113,503, Cl. 106-73.400.
Northern Telecom Limited: *See—*
Pound, Thomas Charles; and Gouldson, Eric John, 4,113,534, Cl. 156-56.000.
Westwood, William Dickson, 4,114,037, Cl. 250-216.000.
Northwestern University: *See—*
Epstein, Max; Marhic, Michel E.; and Schacham, Samuel E., 4,114,112, Cl. 331-94.50C.
Norton, Richard V., to Suntech, Inc. Process for cyanohydrin esters. 4,113,763, Cl. 260-465.00D.
Nortronics Company, Inc.: *See—*
Kronfeld, Mervin B., 4,113,141, Cl. 221-70.000.
Nosaka, Yoshinori: *See—*
Fukushima, Keitaro; Kusunose, Takamaro; and Nosaka, Yoshinori, 4,113,847, Cl. 423-447.400.
Nosker, Richard William, to RCA Corporation. Smooth groove formation method employing spin coating of negative replica of inscribed disc. 4,113,897, Cl. 427-140.000.
Nossen, Edward J., to United States of America, Army. Frequency synthesizer. 4,114,110, Cl. 331-2.000.
Numair, Solomon J.: *See—*
Lonstrup, Thorkild F.; Brownawell, Darrell W.; Goletz, Edward, Jr.; and Numair, Solomon J., 4,113,639, Cl. 252-51.50A.
Nyberg, David Dolph, to Raychem Corporation. Poly(tetramethyleneterephthalate) crosslinked by irradiation. 4,113,594, Cl. 204-159.150.
Nygards, Nils. Water distiller of boiler-condenser type. 4,113,571, Cl. 202-176.000.
Nyren, Jan O.; Nordin, Soren B.; and Flodman, Leif A., to Svenska Traforskningsinstitutet. Hard board or medium density board, process for production thereof and means for practicizing the process. 4,113,555, Cl. 162-127.000.
O.P.O. Giken Kabushiki Kaisha: *See—*
Komatsu, Saburo, 4,114,125, Cl. 335-258.000.
Oak Industries, Incorporated: *See—*
Desiderio, Angelo C., 4,114,007, Cl. 200-246.000.
Oates, Robert M.; and Mackenzie, Raymond W., to Westinghouse Electric Corp. Rotor overtemperature protection for electric motors. 4,114,077, Cl. 318-473.000.
Oberheiden, Helmut: *See—*
Huper, Fritz; and Oberheiden, Helmut, 4,113,941, Cl. 544-20.000.
Obinata, Shiro; Hashimoto, Shigeru; and Sahara, Takeshi, to Dowa Mining Co., Ltd. Process of tin flotation. 4,113,106, Cl. 209-167.000.
Oce-van der Grinten N.V.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.
Ochii, Kiyofumi: *See—*
Suzuki, Yasoji; and Ochii, Kiyofumi, 4,114,192, Cl. 365-189.000.
Ockers, Gerhardus: *See—*
Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., 4,113,442, Cl. 44-66.000.
O'Connell, Joseph J., to Scientific Dimensions, Inc. Apparatus for removably mounting equipment to a vehicle. 4,113,217, Cl. 248-221.300.
O'Connor, Francis J., to National Gypsum Company. Continuous gypsum calcination process and kettle therefor. 4,113,836, Cl. 423-171.000.
O'Connor, Michael Niall Desmond: *See—*
Panzer, Hans Peter; O'Connor, Michael Niall Desmond; and Baccei, Louis J., 4,113,934, Cl. 526-258.000.
Oda, Lorraine K.: *See—*
Oda, Roy N.; and Oda, Lorraine K., 4,112,833, Cl. 99-425.000.
Oda, Roy N.; and Oda, Lorraine K. Microwave cooking device. 4,112,833, Cl. 99-425.000.
Oderbolz, Fredy; and Bebie, Paul, to Ruti Machinery Works Ltd. Picking bands and drive arrangement for gripper weaving machine. 4,112,983, Cl. 139-446.000.
Oelke, Waldemar W.: *See—*
Boehm, Hans W.; Herrington, Richard A.; and Oelke, Waldemar W., 4,113,162, Cl. 225-2.000.
Offermanns, Heribert: *See—*
Klenk, Herbert; Lussling, Theodor; Maierhofer, Alfred; Offermanns, Heribert; and Wagner, Hans, 4,113,773, Cl. 260-545.00R.
Ogawa, Kenichi: *See—*
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, 4,113,990, Cl. 179-84.00R.
Ogawa, Taizo: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.
Ogisu, Kenji: *See—*
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,581, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,582, Cl. 204-39.000.
Ohashi, Hiroshi: *See—*
Inoue, Hiromitsu; Ohashi, Hiroshi; and Katayama, Susumu, 4,114,146, Cl. 340-558.000.
Ohuchi, Kenji: *See—*
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,112,869, Cl. 118-623.000.
Ohzeki, Toshio: *See—*
Minagawa, Motonobu; Ohzeki, Toshio; and Sekiguchi, Tetsuo, 4,113,678, Cl. 260-23.70M.
Oishi, Masaharu: *See—*
Kogure, Motoo; Komiya, Mamoru; Oishi, Masaharu; and Kanbe, Masaru, 4,113,918, Cl. 428-412.000.
Oka, Shohei: *See—*
Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, 4,113,216, Cl. 248-204.000.
Oka, Shoji; Murakami, Ryoichi; and Sueyoshi, Akiko, to Nippon Paint Co., Ltd. Phosphating of metallic substrate with electrolytic reduction of nitrate ions. 4,113,519, Cl. 148-6.15R.
Okabayashi, Keiichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing controller for a gasoline engine. 4,112,888, Cl. 123-117.00A.
Okamoto, Atutoshi; Nojiri, Tadao; and Nomura, Masahiro, to Nippondenso Co., Ltd. Bar code information card. 4,114,033, Cl. 235-494.000.
Okano, Masao, to Toyo Valve Company, Ltd. Copper alloys of excellent corrosion resistance, moldability and workability. 4,113,474, Cl. 75-156.500.
Okazaki, Hiroshi: *See—*
Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, 4,113,533, Cl. 148-187.000.
Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, to Yamanouchi Pharmaceutical Co., Ltd. Stabilized oral prostaglandin formulation and the process for the preparation thereof. 4,113,882, Cl. 424-317.000.
Oki Electric Industry Co., Ltd.: *See—*
Isobe, Minoru, 4,113,750, Cl. 206-388.000.
Okita, Koichi, to Sumitomo Electric Industries, Ltd. Hydrophilic porous structures and process for production thereof. 4,113,912, Cl. 428-290.000.
Oku, Teruo: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,113,940, Cl. 544-16.000.
Okubo, Hiroyuki: *See—*
Yoshizawa, Isamu; Okubo, Hiroyuki; Isozaki, Hiroshi; Hara, Tsutomu; and Masuda, Bunpei, 4,112,798, Cl. 83-344.000.
Okubo, Toshio: *See—*
Saiki, Atsushi; Okubo, Toshio; and Harada, Seiki, 4,113,550, Cl. 156-656.000.
Okuda, Hiroji; and Harada, Shigenori, to Koyo Seiko Company Limited. Drive shaft for rolling mills and the like. 4,112,710, Cl. 64-23.000.
Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, to Matsushita Electronics Corporation. Method of making a MOS device. 4,113,533, Cl. 148-187.000.
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for shaping integrally-shaped type brake disks for cars. 4,112,732, Cl. 72-334.000.
Okuno, Yositosi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.
Okutsu, Eiichi: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, 4,113,489, Cl. 96-60.00R.
Olbrich, Gottfried; and Weigert, Wilhelm, to Robert Bosch GmbH. Valve for an opening of a pressure vessel. 4,112,978, Cl. 138-30.000.
Olin Corporation: *See—*
Turley, Richard J.; and Ozolins, Alexandre, 4,113,541, Cl. 156-330.000.
Oliver, Colin Charles, to EMI Limited. Radiography. 4,114,041, Cl. 250-445.00T.
Ollivier, Jean: *See—*
Combette, Marc; and Ollivier, Jean, 4,112,685, Cl. 60-634.000.
Combette, Marc; Dorgnon, Roger; Luthringer, Jean; and Ollivier, Jean, 4,113,163, Cl. 227-10.000.
Olmstead, John Aaron: *See—*
Ponczak, Samuel; and Olmstead, John Aaron, 4,113,516, Cl. 148-1.500.
Olmstead, William Dean, to Cycle-Kamp Inc. Compact tent-type camping trailer. 4,113,301, Cl. 296-23.00H.
Olsson, Erik A. Method of and apparatus for converting molten metal into solidified products. 4,113,166, Cl. 228-170.000.
Olympus Optical Co., Ltd.: *See—*
Kimura, Katsuhiko; and Nishikawa, Masaji, 4,113,372, Cl. 355-3.0SC.
Matsubara, Masaki, 4,113,356, Cl. 350-186.000.
Nakagawa, Jihei, 4,113,358, Cl. 350-216.000.
Yamasita, Nobuo; and Imai, Toshihiro, 4,113,354, Cl. 350-172.000.
Omura, Yoshiaki: *See—*
Mori, Fumio; Omura, Yoshiaki; Nishida, Takashi; and Itoi, Kazuo, 4,113,968, Cl. 560-124.000.
Onda, Eiichi; Watanabe, Masanori; Nakagawa, Tadashi; Nemoto, Ichiro; and Koyama, Mitsuo, to Seiko Koki Kabushiki Kaisha. Shutter opening and closing mechanism for cameras. 4,114,174, Cl. 354-249.000.
Ondetti, Miguel Angel; and Condon, Michael Edward, to E. R. Squibb & Sons, Inc. Amino acid derivatives. 4,113,715, Cl. 260-112.50R.
Onnen, William G.: *See—*
Hill, Robert W.; Onnen, William G.; and Ryder, Lyle C., 4,113,825, Cl. 264-262.000.
Onoda Cement Co., Ltd.: *See—*
Itoh, Tsutomu; Furuya, Nobuo; and Ohuchi, Kenji, 4,112,869, Cl. 118-623.000.
Ooishi, Tadashi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.
Ookubo, Toshio; Nishino, Atsushi; and Suzuki, Tadashi, to Matsushita Electric Industrial Co., Ltd. Cooking apparatus employing a purging device. 4,113,439, Cl. 422-177.000.
Oomura, Takao: *See—*
Funakoshi, Satoshi; and Oomura, Takao, 4,113,853, Cl. 424-78.000.
Ootsubo, Suminobu: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.
Opgenorth, Hans-Joachim; and Scheuermann, Horst, to BASF Aktiengesellschaft. Manufacture of benzothiazoles. 4,113,732, Cl. 260-305.000.
Opitz, Konrad: *See—*
Kruse, Hubert; and Opitz, Konrad, 4,113,429, Cl. 8-90.000.
Ore-Ida Foods, Inc.: *See—*
Covington, Wayne L.; and Green, Glen R., 4,112,545, Cl. 17-45.000.
Orrville Products, Inc.: *See—*
Featherstone, Harry Edwin; and Sniff, Walter Grant, Jr., 4,114,020, Cl. 219-137.00R.
Orth, Dieter: *See—*
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,113,863, Cl. 424-205.000.
Orth, George Otto, Jr.; and Orth, Richard D., to National Fluoride and Chemical Corporation. Recovery of sodium fluoride and other chemicals from spent carbon liners. 4,113,831, Cl. 423-119.000.
Orth, Richard D.: *See—*
Orth, George Otto, Jr.; and Orth, Richard D., 4,113,831, Cl. 423-119.000.
Orzales, Henri-Ange, to Societe Civile de Recherches et d'Etudes Nouvelles. 3-(4'-Alkoxy-benzoyl)-1,2,2-trimethyl-cyclopentane-carboxylic acids, their optical isomers and drugs containing such compounds. 4,113,960, Cl. 560-52.000.
Osaka Prefectural Office: *See—*
Fuse, Takeshi; Yajima, Toshio; Hino, Isao; and Oka, Shohei, 4,113,216, Cl. 248-204.000.
Osaka Soda Co., Ltd.: *See—*
Kawabe, Takamasa; Kadoma, Masaaki; Murakami, Kazuyoshi; and Itoh, Hatuhide, 4,113,746, Cl. 260-348.220.
Osanai, Shinichi, to Labogiken Co., Ltd. Apparatus for withdrawing the tongue of a film incorporated in a cartridge. 4,113,192, Cl. 242-1.000.
Osawa, Mitsuo: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, 4,113,264, Cl. 274-15.00R.
Oshima, Kathuhide; Takasaki, Haruyuki; and Takahashi, Akio, to

Dipsol Chemical Company, Ltd. Method for brightening the electrodeposits of zinc from alkaline zinc electroplating baths. 4,113,583, Cl. 204-55.00Y.

Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, to Sumitomo Chemical Company, Limited. Method for controlling the growth of plants. 4,113,463, Cl. 71-76.000.

Osterburg, Gunther: *See—*
Strehlke, Gunter; and Osterburg, Gunther, 4,113,780, Cl. 260-593.00P.

Ostergaard, Steen. Dispenser for ground coffee and other powdered products. 4,113,150, Cl. 222-243.000.

O'Toole, Jerome M.; and Paquette, Edmund T., to Wright Line Inc. Holder for documentation cartridge. 4,113,330, Cl. 312-184.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*
Shimizu, Junichi; Hara, Takashi; Iwakura, Tatsuya; and Itaya, Yoshiro, 4,113,892, Cl. 426-602.000.

Otsuka Nutrition Research Institute Inc.: *See—*
Ando, Sumio, 4,113,410, Cl. 417-502.000.

Ott, Hans, to Meteor AG. Soldering apparatus. 4,113,165, Cl. 228-36.000.

Ott, Karl-Heinz: *See—*
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, 4,113,796, Cl. 260-876.00R.

Ott, Robert B.; and Heringer, Lawrence R., to Hennegan Company, The. Display panel assembly. 4,112,604, Cl. 40-610.000.

Otto, Jeffrey B.: *See—*
McGarry, Francis J.; Greene, Donald; and Otto, Jeffrey B., 4,113,554, Cl. 162-123.000.

Otto, Wolfgang K. F., to Milliken Research Corporation. Method for modifying fibers of a fabric and the products so produced. 4,113,430, Cl. 8-115.500.

Otto, Wolfgang K. F., to Milliken Research Corporation. Method for modifying fibers of a fabric and the products so produced. 4,113,432, Cl. 8-125.000.

Oude Alink, Bernardus A., to Petrolite Corporation. Preparation of octahydrophenanthridines. 4,113,730, Cl. 260-286.00A.

Ouellette, Joseph Fernand; and Poeling, David L., to Quellette Machinery Systems, Inc. Earthquake simulator. 4,112,776, Cl. 73-665.000.

Outboard Marine Corporation: *See—*
Fields, Ernest E.; and Reineck, Lester W., 4,113,138, Cl. 220-367.000.
Hackbarth, Eugene R.; and Van Rens, Russell J., 4,113,808, Cl. 261-52.000.

Outokumpu Oy: *See—*
Aaltonen, Olavi August; and Juusela, Jyrki Tapani, 4,113,470, Cl. 75-74.000.

Outokumpu Oy, Ab.: *See—*
Leinonen, Erkki Ilmari; and Kiuru, Erkki Sakari, 4,114,085, Cl. 323-17.000.

Owen, Wickersham & Erickson: *See—*
Lindberg, John E., 4,112,892, Cl. 123-119.00A.

Owens-Corning Fiberglas Corporation: *See—*
Stalego, Charles J., 4,113,457, Cl. 65-11.00R.

Owens-Illinois, Inc.: *See—*
Ernsthausen, Roger E., 4,114,064, Cl. 313-188.000.

Oxford Industries, Inc.: *See—*
Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., 4,112,860, Cl. 112-262.000.

Oxy Metal Industries Corporation: *See—*
Rones, Josef; Moller, Siegfried; and Hoch, Helmut, 4,113,498, Cl. 104-14.130.

Oy. Tampella AB: *See—*
Lehtinen, Jukka A., 4,112,586, Cl. 34-9.000.

Oya, Masashi: *See—*
Mizuno, Michitaka; Ideue, Kazuo; and Oya, Masashi, 4,112,759, Cl. 73-295.000.

Ozaki, Masaru: *See—*
Shiga, Tetsuo; Ozaki, Masaru; Arakawa, Tatsumi; and Kobayashi, Hidehiko, 4,113,496, Cl. 96-114.100.

Ozaki, Toshiaki: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.

Ozaki, Tsutomu; and Hijikata, Setsuo, to Kubota, Ltd. Body weight measuring apparatus. 4,113,039, Cl. 177-25.000.

Ozolins, Alexandre: *See—*
Turley, Richard J.; and Ozolins, Alexandre, 4,113,541, Cl. 156-330.000.

P. D. George Company, The: *See—*
Lange, Daniel J., 4,113,706, Cl. 528-289.000.

P. R. Mallory & Co. Inc.: *See—*
Klein, Gerhart P., 4,113,240, Cl. 266-252.000.

Pachnik, Ben E. Radius router guide. 4,112,987, Cl. 144-323.000.

Padovan, Mario; De Alberti, Giordano; Battiston, Giancarlo; and Covini, Romano, to Montedison S.p.A. Process for preparing unsaturated carboxylic acids by gas phase catalytic oxidation of the corresponding aldehydes. 4,113,769, Cl. 562-534.000.

Paginton, Philip Norman, to Westinghouse Brake & Signal Co. Ltd. Brake actuator. 4,113,070, Cl. 188-196.00F.

Pako Corporation: *See—*
Diesch, Robert E., 4,112,801, Cl. 83-586.000.

Palfrey, Lesley Francis; and Fellows, Ronald John, to Thorn Domestic Appliances (Electrical) Ltd. Control system for drier. 4,112,589, Cl. 34-48.000.

Palkes, Mark, to Exxon Research & Engineering Co. Solar energy collector. 4,112,918, Cl. 126-270.000.

Palmer, Dale A., to Monroe Auto Equipment Company. Piston valve assembly for a shock absorber. 4,113,072, Cl. 188-282.000.

Palmer, Harold D.: *See—*
Nelkin, Arthur; Skinner, Dale D.; Wilson, Donald G.; and Palmer, Harold D., 4,114,063, Cl. 310-334.000.

Palmer, Jack P. Apparatus for driving wheeled vehicles. 4,113,043, Cl. 180-33.00A.

Panetta, Anthony. Fire safety Christmas ornament. 4,113,020, Cl. 169-26.000.

Panin, Vladlen Iosifovich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, 4,113,833, Cl. 423-131.000.

Pankove, Jacques Isaac; and Lampert, Murray Alfred, to RCA Corporation. Method of passivating a semiconductor device by treatment with atomic hydrogen. 4,113,514, Cl. 148-1.500.

Pankove, Jacques Isaac; and Marlowe, Frank Jerome, to RCA Corporation. Solid state oscilloscope. 4,114,095, Cl. 324-121.00R.

Pantukh, Boris Izrailevich: *See—*
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich, 4,113,976, Cl. 568-789.000.

Panzer, Hans Peter; O'Connor, Michael Niall Desmond; and Baccei, Louis J., to American Cyanamid Company. Unsaturated imidazolines. 4,113,934, Cl. 526-258.000.

Pap, Zsolt: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.

Papenfuhs, Theodor; and Volk, Heinrich, to Hoechst Aktiengesellschaft. Metal-containing disazomethine compounds, process for preparing them and their use as colorants. 4,113,759, Cl. 260-439.00R.

Paquette, Edmund T.: *See—*
O'Toole, Jerome M.; and Paquette, Edmund T., 4,113,330, Cl. 312-184.000.

Paquette, Rolland. Adjustable door latch striker. 4,113,293, Cl. 292-341.180.

Park-Ohio Industries, Inc.: *See—*
Lewis, John C., 4,114,010, Cl. 219-10.410.

Parker, Adrian Roger, to Partech (Electronics) Limited. Photoelectric sensing head with wiping means. 4,114,038, Cl. 250-239.000.

Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, to Anumin Pty. Limited. Method of producing solutions containing cuprous ions. 4,113,848, Cl. 423-512.00A.

Parker-Hannifin Corporation: *See—*
Hoffman, Robert K.; and Franson, David C., 4,112,968, Cl. 137-427.000.

Parkes, Alvin E., to Raymond Lee Organization, Inc., The, a part interest. Scavenging valve device. 4,112,940, Cl. 128-188.000.

Parkhitko, Vladimir Mikhailovich: *See—*
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.

Parks-Cramer Company: *See—*
Werst, Lyman L., 4,112,665, Cl. 57-81.000.

Parsons, Bruce B.; and Wolfe, Denis G., to Robertshaw Controls Company. Thermally responsive actuator. 4,114,129, Cl. 337-387.000.

Partech (Electronics) Limited: *See—*
Parker, Adrian Roger, 4,114,038, Cl. 250-239.000.

Parton, Brian, to Imperial Chemical Industries Limited. Quaternized azo dyestuffs. 4,113,717, Cl. 260-146.00R.

Pasinski, Ralph R. Multiple operation traverse apparatus and methods of constructing and utilizing same. 4,112,995, Cl. 160-126.000.

Pastor, Stephen D.; and Grover, Martin M., to National Starch and Chemical Corporation. Pressure sensitive adhesive compositions. 4,113,792, Cl. 260-834.000.

Patel, Gordhan M.: *See—*
Collin, Alvaro L.; and Patel, Gordhan M., 4,112,693, Cl. 405-132.000.

Patella, Ralph F.; and Kuzma, Edward J., to Celanese Corporation. Use of multifunctional monomers in the preparations of emulsions to be used in adhesives. 4,113,540, Cl. 156-327.000.

Patellis, Anargiros Pete: *See—*
Douglas, Paul S.; Patellis, Anargiros Pete; and Vredenburgh, Walter A., 4,113,801, Cl. 260-876.00B.

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen m.b.H.: *See—*
Wiedenmann, Hans, 4,114,066, Cl. 313-315.000.

Paterson, Thomas: *See—*
Wood, Hamish Christopher Swan; and Paterson, Thomas, 4,113,859, Cl. 424-180.000.

Patterson, George: *See—*
Putman, Edgar N.; Patterson, George; Wimer, Scotty; and McCool, John B., 3rd, 4,113,650, Cl. 252-363.500.

Patterson, James A. Water level controller for swimming pool gutter. 4,112,526, Cl. 4-172.170.

Patton, Ray F.: *See—*
Fono, Andrew; and Patton, Ray F., 4,113,427, Cl. 8-34.000.

Pauchard, Jean-Paul: *See—*
Siegrist, Adolf Emil; and Pauchard, Jean-Paul, 4,113,937, Cl. 542-463.000.

Paulnack, Carl Lewis: *See—*
Katz, Lewis Emanuel; and Paulnack, Carl Lewis, 4,113,547, Cl. 156-612.000.

Pautsch, Gunthard; and Kohlstette, Werner, to Westfalia Separator Aktiengesellschaft. Centrifuge whose drum casing is continuously cooled by a coolant circulated within an insert disposed in the solids chamber. 4,113,172, Cl. 233-11.000.

Pawsat, Carlton P.; and Humlong, Robert F., to Wald Manufacturing Company, Inc. Bicycle stem and fork tube assembly. 4,113,395, Cl. 403-22.000.

PCR, Inc.: *See—*
Schuman, Paul D.; Tarrant, Paul; Warner, Dale A.; and Westmoreland, Geraldine, 4,113,949, Cl. 544-303.000.

Peanut Research & Testing Laboratories, Inc.: *See—*
Baxley, James Russell, 4,113,889, Cl. 426-509.000.

Pearl, David R., to Gerber Garment Technology, Inc. Fluid jet cutting apparatus. 4,112,797, Cl. 83-177.000.

Pearson, Stephen C., to Hercules Incorporated. Process for rapidly dissolving gels of water-soluble polymers by extrusion, cutting and then slurrying under high shearing forces. 4,113,688, Cl. 260-29.6PM.

Pease, William Thomas, to Alproco, Inc. Level indicating instrument. 4,112,585, Cl. 33-388.000.

Peaster, Bertram Anthony, to Lockheed Corporation. Automatic lubricator. 4,113,061, Cl. 184-41.000.

Pedain, Josef: *See—*
Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, 4,113,705, Cl. 260-859.00R.

Pejouhy, Radi, to Texas Instruments Incorporated. Current interrupting apparatus. 4,114,127, Cl. 337-97.000.

Penberthy, H. Larry. Molten glass homogenizer. 4,113,460, Cl. 65-178.000.

Pennwalt Corporation: *See—*
Hager, Robert Bonner; Toukan, Sameeh Said; and Walter, Gerald Joseph, 4,113,748, Cl. 260-348.430.

Percy, Donald W., to Prelube Corporation. Pre-lube device. 4,112,910, Cl. 123-196.00S.

Perry, James E.: *See—*
Franks, Lawrence A.; Stroup, Steven L.; and Perry, James E., 4,112,794, Cl. 82-64.000.

Peterkin, Melvin E.: *See—*
Lauer, James L.; and Peterkin, Melvin E., 4,113,384, Cl. 356-70.000.

Peters, Klaus-Jurgen: *See—*
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, 4,112,900, Cl. 123-139.0AW.

Peterson, Durey H.: *See—*
DeBoer, Clarence; Dolak, Lester A.; and Peterson, Durey H., 4,113,855, Cl. 424-117.000.

Petrellis, Nicolas C.: *See—*
Sabol, Albert R.; and Petrellis, Nicolas C., 4,113,634, Cl. 252-32.70E.

Petrick, Paul J., Sr., to Shooting Star Tennis. Ball collector and projector apparatus. 4,112,911, Cl. 124-56.000.

Petrie, Edward M., to Westinghouse Electric Corp. Low temperature cure epoxy-amine adhesive compositions. 4,113,684, Cl. 260-29.2EP.

Petrolite Corporation: *See—*
Oude Alink, Bernardus A., 4,113,730, Cl. 260-286.00A.
Quinlan, Patrick M., 4,113,709, Cl. 424-78.000.

Pfaff Industriemaschinen GmbH: *See—*
Willenbacher, Erich, 4,112,859, Cl. 112-217.100.

PFD/Penn Color, Inc.: *See—*
Putman, Edgar N.; Patterson, George; Wimer, Scotty; and McCool, John B., 3rd, 4,113,650, Cl. 252-363.500.

Pfister, Frieder: *See—*
Hafner, Hans Wilhelm; and Pfister, Frieder, 4,112,752, Cl. 73-147.000.

Pfister Waagen GmbH: *See—*
Hafner, Hans Wilhelm; and Pfister, Frieder, 4,112,752, Cl. 73-147.000.

Pfizer Inc.: *See—*
Barth, Wayne E., 4,113,942, Cl. 544-23.000.
Hamsher, James J.; and Lozanov, Merrill, 4,113,566, Cl. 195-36.00P.
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,113,723, Cl. 260-347.300.
Hess, Hans-Jurgen E., 4,113,766, Cl. 562-503.000.

Pflasterer, Peter W., to Masco Corporation of Indiana. Crystalless scanning radio receiver. 4,114,103, Cl. 325-470.000.

Phifer, Earl Cooper: *See—*
Howard, James Lynn, 4,114,091, Cl. 324-66.000.

Philips Industries Inc.: *See—*
Bowker, Donald R.; Klein, Donald J.; and Rados, Stephen E., 4,113,829, Cl. 264-295.000.

Phillips, Edwin R., to Sperry Rand Corporation. Edge vacuum guide for flexible members. 4,113,247, Cl. 271-264.000.

Phillips, Howard W.: *See—*
Frazier, Albert A.; and Phillips, Howard W., 4,113,147, Cl. 222-131.000.

Phillips, John F., Jr.: *See—*
McCullough, John F.; Phillips, John F., Jr.; and Tate, Leslie R., 4,113,842, Cl. 423-308.000.

Phillips Petroleum Company: *See—*
Billings, William G., 4,113,784, Cl. 260-607.0AR.
Dale, Glenn H., 4,113,575, Cl. 203-62.000.
Doss, Richard C., 4,113,914, Cl. 428-355.000.
Hatcher, Charles S.; and Smith, Kenneth E., 4,112,667, Cl. 57-157.00S.
Hitzman, Donald O., 4,113,017, Cl. 166-303.000.
Louthan, Rector P.; and Doss, Richard C., 4,113,707, Cl. 528-279.000.
Moczygemba, George A., 4,113,930, Cl. 526-25.000.
Mowery, Richard A., Jr., 4,112,743, Cl. 73-61.10C.
Ragains, Wilbur G., 4,112,766, Cl. 73-422.0GC.
Stapp, Paul R., 4,113,971, Cl. 560-246.000.
Stoller, Frederick L., 4,113,827, Cl. 264-280.000.

Phillips, Reginald Andrew; Hamilton, Terence; and Thompson, Arthur David, to Dobson Park Industries Limited. Funneling machine with inclined advancing rams. 4,113,316, Cl. 299-31.000.

Phinney, John M., to Falk Corporation, The. Marine propulsion control system with engine idle boost. 4,113,077, Cl. 192-.098.

Picha, Donald A., to International Harvester Company. Rotary knife adjuster assembly. 4,112,654, Cl. 56-98.000.

Pickelman, Dale M., Sr.; and Wessling, Ritchie A., to Dow Chemical Company, The. Process for preparing substantially linear water-soluble interpolymeric interfacially spreading polyelectrolytes. 4,113,710, Cl. 526-30.000.

Pickering & Company, Inc.: *See—*
Alexandrovich, George, 4,113,266, Cl. 274-37.000.
Wittenberg, Roland C., 4,113,267, Cl. 274-37.000.

Pickrell, John W. Container handling and transporting apparatus. 4,113,120, Cl. 214-38.00D.

Pielkenrood, Jacob, to Pielkenrood-Vinitex B.V. Separation device provided with a coalescence apparatus. 4,113,629, Cl. 210-522.000.

Pielkenrood-Vinitex B.V.: *See—*
Pielkenrood, Jacob, 4,113,629, Cl. 210-522.000.

Pieper, Helmut: *See—*
Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, 4,113,777, Cl. 260-570.900.

Pierce, Donald, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Flexible aerofoils. 4,113,210, Cl. 244-219.000.

Pierce, Donald Cameron. Device for cutting ovals in mats or glass sheets. 4,112,793, Cl. 82-1.300.

Pierce, Walker L., Jr.: *See—*
Helton, Eugene L.; Gale, Preston L.; Moen, Lowell J.; Mueller, Robert C.; Pierce, Walker L., Jr.; and Vermillion, Henry J., Jr., 4,113,920, Cl. 428-565.000.

Pierre, Michel: *See—*
Lesas, Claude H.; and Pierre, Michel, 4,113,936, Cl. 536-56.000.

Pieters, Wim J. M.; and Carlson, Emery J., to Allied Chemical Corporation. Catalyst of chlorination and combined chlorination/fluorination based on copper/calcium/fluoride. 4,113,655, Cl. 252-438.000.

Pietrusza, Arthur Jacob; and Kent, Harry James, to Dravo Corporation. Rotary scraper in a rotary drum assembly. 4,113,413, Cl. 435-222.000.

Pigerol, Charles; de Cointet de Fillain, Paul; and Nanthavong, Souli, to S. A. Labaz. 2-Phenyl-indole derivatives. 4,113,736, Cl. 260-326.160.

Pike, Harold L., to Aspen Laboratories. Medical electronic apparatus and components. 4,112,950, Cl. 128-303.140.

Pike, Kenneth: *See—*
Nees, John; and Pike, Kenneth, 4,113,476, Cl. 75-166.00C.
Nees, John; and Pike, Kenneth, 4,113,477, Cl. 75-166.00C.

Pilkington Brothers Limited: *See—*
Cross, Raymond Peter, 4,113,458, Cl. 65-114.000.

Pillar, Walter O., to Arco Polymers, Inc. Molding expandable styrene polymer particles. 4,113,672, Cl. 521-60.000.

Pillsbury, Paul W.; and DeCorso, Serafino M., to Westinghouse Electric Corp. Apparatus and method for starting a large gas turbine having a catalytic combustor. 4,112,675, Cl. 60-39.060.

Pine, Lloyd A.: *See—*
Riley, Kenneth L.; and Pine, Lloyd A., 4,113,656, Cl. 252-439.000.

Pingry, Carl Oscar, III: *See—*
Boyd, William Weller; Grafe, Robert Joseph; and Pingry, Carl Oscar, III, 4,114,139, Cl. 340-147.00R.

Pirlet, Robert Alfred, to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie. Inspecting the interior of an enclosure. 4,112,763, Cl. 73-355.00R.

Pitchford, Peter R. Metal pallet. 4,112,854, Cl. 108-56.100.

Pitfield, Adrian: *See—*
Thompson, John; and Pitfield, Adrian, 4,113,643, Cl. 252-90.000.

Pitney-Bowes, Inc.: *See—*
Brana, George; and Russell, John J., 4,113,641, Cl. 252-62.10P.
Storace, Anthony, 4,113,040, Cl. 177-211.000.

Pittoors, Jan Gustaaf: *See—*
Goransson, Lars Roland; van Oorschot, Gosewinus Franciscus; and Pittoors, Jan Gustaaf, 4,113,450, Cl. 55-97.000.

Plantard, Dominique: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,113,456, Cl. 65-5.000.

Plasteco, Inc.: *See—*
Sandow, Kiyoshi, 4,112,620, Cl. 49-8.000.

Platt Saco Lowell Limited: *See—*
Lappage, James; Doggett, Neil; and Yates, Stephen William, 4,112,662, Cl. 57-34.0AT.

Plattner, Werner, executor: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, 4,113,871, Cl. 424-272.000.

Ploeger, Walter, Jr., to Filmon Process Corp. Printing ribbon. 4,113,392, Cl. 400-240.100.

Poeling, David L.: *See—*
Ouellette, Joseph Fernand; and Poeling, David L., 4,112,776, Cl. 73-665.000.

Poinsard, Elisabeth Michele; and Poinsard, Robert Gaston, to Establissement Valvin. Apparatus for purifying carbon dioxide vapors of fermenting liquids. 4,112,829, Cl. 99-277.000.

Poinsard, Robert Gaston: *See—*
Poinsard, Elisabeth Michele; and Poinsard, Robert Gaston, 4,112,829, Cl. 99-277.000.

Poisson, Bernard, to Regie Nationale des Usines Renault. Self-cleaning ejector-filter. 4,113,000, Cl. 164-227.000.

Polak's Frutal Works, Inc.: *See—*
DeSimone, Robert Santora, 4,113,645, Cl. 252-187.00H.

Polaroid Corporation: *See—*
Choinski, Edward J., 4,113,903, Cl. 427-420.000.
Driscoll, John J.; and Wareham, Richard R., 4,114,166, Cl. 354-76.000.
Evans, David H.; and Greenwald, Richard B., 4,113,738, Cl. 260-327.00M.

Pole, Robert Vladimir; and Werlich, Harald Willy, to International Business Machines Corporation. Holographic opaque document scanner. 4,113,343, Cl. 350-3.710.

Polotsky, Vadim Evgenievich: *See—*
Vasiliev, Vladimir Sergeevich; Annenberg, Ernest Alexandrovich; Livshits, Abram Lazarevich; Polotsky, Vadim Evgenievich; and Lakhtjukhov, Valery Mikhailovich, 4,114,015, Cl. 219-69.00W.

Ponczak, Samuel; and Olmstead, John Aaron, to RCA Corporation. Method of forming a curved implanted region in a semiconductor body. 4,113,516, Cl. 148-1.500.

Ponomarenko, Jury Filippovich: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.

Portalier, Robert: *See—*
Gauvry, Robert; and Portalier, Robert, 4,113,473, Cl. 75-148.000.

Portnoy, Robert Charles, to Du Pont de Nemours, E. I., and Company. Arylthiodicyanopyrazines as plant disease control agents. 4,113,724, Cl. 544-408.000.

Posi-Seal International, Inc.: *See—*
Simmons, Kenneth C.; Champlin, Harry C., Jr.; Livorsi, Carl F.; and Wucik, Joseph A., Jr., 4,113,268, Cl. 277-168.000.

Poskitt, Walter Edward, to IMASCO Limited. Electronic moisture meter. 4,114,090, Cl. 324-61.0QS.

Possati, Mario, to Finike Italiana Marposs Soc. in Accomandita Semplice di Mario Possati & C. Measuring and control apparatus for internal grinding machines. 4,112,629, Cl. 51-165.930.

Pound, Thomas Charles; and Gouldson, Eric John, to Northern Telecom Limited. Paper pulp insulated cable and method of manufacture. 4,113,584, Cl. 156-56.000.

Pounds, William J. Method and apparatus for railroad car shunting. 4,113,114, Cl. 213-75.00R.

Pourrias, Bernard M.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Bregeon, Genevieve C., 4,113,951, Cl. 544-360.000.

PPG Industries, Inc.: *See—*
Gillery, F. Howard, 4,113,599, Cl. 204-192.00P.
Hahn, Ernest A., 4,113,893, Cl. 427-44.000.
Hardies, Donald E.; and Rinehart, Jay K., 4,113,878, Cl. 434-301.000.
Jozwiak, Edward L., Jr.; and Das, Suryya K., 4,113,598, Cl. 204-181.00R.
McHenry, Donald L.; and Bechtel, Charles H., 4,113,507, Cl. 106-287.180.
Niederst, Kenneth W., 4,113,676, Cl. 260-22.00T.

Praschl, Wilhelm: *See—*
Theurer, Josef; Praschl, Wilhelm; and Riessberger, Klaus, 4,113,111, Cl. 212-28.000.

Pratte, John R.: *See—*
Ehrhart, Leonard M.; Pratte, John R.; and Mazik, Paul E., Jr., 4,112,621, Cl. 49-400.000.

Preh-Elektrofeinmechanische Werke-Jakob Preh Nachf: *See—*
Hochgesang, Gerhard, 4,114,002, Cl. 200-67.00C.

Prelube Corporation: *See—*
Percy, Donald W., 4,112,910, Cl. 123-196.00S.

Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft; and Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Process for the preparation of propylene oxide. 4,113,747, Cl. 260-348.250.

Pressley, Robert J.; and Fahlen, Theodore S., to GTE Sylvania Incorporated. Apparatus and method for initiating electrical discharge in a laser. 4,114,114, Cl. 331-94.5PE.

Preston, Edward George; and Doerman, Eryk Stefan, to Molins Limited. Testing of cigarettes. 4,112,954, Cl. 131-21.00R.

Price, Brian George, to Imperial Chemical Industries Limited. Acrylic sheet having improved thermoshaping properties. 4,113,803, Cl. 260-885.000.

Pries, Erich, to Dr. C. Otto & Comp. G.m.b.H. Rich-gas burner arrangement in heating flues for coke oven chambers. 4,113,570, Cl. 202-139.000.

Priola, Aldo: *See—*
Cesca, Sebastiano; Priola, Aldo; and Ferraris, Giuseppe, 4,113,790, Cl. 260-683.15B.

Procter & Gamble Company, The: *See—*
Dirksing, Robert S.; and Todd, Estel R., 4,114,195, Cl. 366-167.000.
Fleisch, Herbert A.; and Felix, Rolf, 4,113,861, Cl. 424-204.000.
Fleisch, Herbert A.; and Felix, Rolf, 4,113,862, Cl. 424-204.000.
Hagner, Clifford K.; and Wissel, Richard B., 4,113,630, Cl. 252-8.600.

Protective Treatments, Inc.: *See—*
Wenrick, Brian A., 4,113,295, Cl. 293-71.00R.

Pryor, Michael J.: *See—*
Fister, Julius C., Jr.; Breedis, John F.; and Pryor, Michael J., 4,113,472, Cl. 75-142.000.

Psencik, Erich, to Dynamit Nobel Aktiengesellschaft. Method of preparing polyester varnish resins of low viscosity. 4,113,702, Cl. 528-75.000.

Pulliam, Daniel N.: *See—*
Lazenby, Webber W.; and Pulliam, Daniel N., 4,113,130, Cl. 220-5.00A.

Pullman Incorporated: *See—*
Ehrhart, Leonard M.; Pratte, John R.; and Mazik, Paul E., Jr., 4,112,621, Cl. 49-400.000.
Rousseau, George L.; and Snyder, Richard C., 4,112,851, Cl. 105-199.00C.

Pupp, Herwig; and Andersson, Otto Birger, to AB Ziristor. Opening arrangement for packing containers. 4,113,101, Cl. 206-606.000.

Purdue Frederick Company, The: *See—*
Shetty, Bola Vithal, 4,113,857, Cl. 424-150.000.

Purohit, Kailash S.: *See—*
Henig, Yair Steve; and Purohit, Kailash S., 4,113,888, Cl. 426-422.000.

Purviance, Billy Joe. Device for injecting a liquid into the trunk of a tree. 4,112,617, Cl. 47-57.500.

Puschmann, Sigfrid: *See—*
Keck, Johannes; Puschmann, Sigfrid; Kruger, Gerd; Noll, Klaus-Reinhold; Leitold, Matyas; and Pieper, Helmut, 4,113,777, Cl. 260-570.900.

Putman, Edgar N.; Patterson, George; Wimer, Scotty; and McCool, John B., 3rd, to PFD/Penn Color, Inc. Producing dispersant compositions compatible with many resin systems. 4,113,650, Cl. 252-363.500.

Putsch, Peter Ulrich, to Keiper Trainingsysteme GmbH & Co. Ergometer. 4,112,928, Cl. 128-2.05R.

Quellette Machinery Systems, Inc.: *See—*
Ouellette, Joseph Fernand; and Poeling, David L., 4,112,776, Cl. 73-665.000.

Quibell, Peter R., to Raymond Lee Organization, Inc., The, a part interest. Conga drum set. 4,112,807, Cl. 84-411.00R.

Quinlan, Patrick M., to Petrolite Corporation. Polyquaternary polythiazines. 4,113,709, Cl. 424-78.000.

Quinn, Edwin J.: *See—*
Dieck, Ronald L.; Magnusson, Alan B.; and Quinn, Edwin J., 4,113,670, Cl. 521-95.000.

Quinn, Jack Edward. Device for inserting and removing contact lens. 4,113,297, Cl. 294-1.0CA.

Raab, Frederick Herbert, to Cincinnati Electronics Corporation. Position determining apparatus and method. 4,114,155, Cl. 343-105.00R.

Raasch, Hans; and Muller, Lothar, to W. Schlafhorst & Co. Method and apparatus for winding conical coils or cheeses at constant thread-feeding velocity. 4,113,193, Cl. 242-18.00R.

Rabet, Farroch: *See—*
Lehmkuhl, Herbert; and Rabet, Farroch, 4,113,649, Cl. 252-363.500.

Rabi, Rafat T.; Murphy, Edward J.; and Basoms, John A., to DeSoto, Inc. Cathodic electrodeposition of polyamine resins using carbonic acid neutralization. 4,113,597, Cl. 204-181.00C.

Rados, Stephen E.: *See—*
Bowker, Donald R.; Klein, Donald J.; and Rados, Stephen E., 4,113,829, Cl. 264-295.000.

Radunz, Hans-Eckart: *See—*
Baumgarth, Manfred; Radunz, Hans-Eckart; Orth, Dieter; Lissner, Reinhard; Enenkel, Hans-Joachim; and Zeelen, Filippus Johannes, 4,113,863, Cl. 424-205.000.

Ragains, Wilbur G., to Phillips Petroleum Company. Fluid actuated valve. 4,112,766, Cl. 73-422.0GC.

RAI Research Corporation: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Cook, Edward H., Jr., 4,113,922, Cl. 429-33.000.

Rambacher, Paul; and Make, Siegfried, to Diamalt Aktiengesellschaft. Process for preparing orotic acid and thioorotic acid. 4,113,950, Cl. 544-314.000.

Ramsower, Vernon. Quick latch for farm tool bar. 4,113,029, Cl. 172-272.000.

Randall, John J., Jr.; and Bernard, Walter J., to Sprague Electric Company. Process for producing an aluminum electrolytic capacitor having a stable oxide film. 4,113,579, Cl. 204-33.000.

Randall, Virginia G.: *See—*
Masri, Merle S.; Randall, Virginia G.; and Stanley, William L., 4,113,567, Cl. 195-63.000.

Rank Xerox, Ltd.: *See—*
Harada, Masaaki; and Fujita, Tsuguto, 4,113,379, Cl. 355-71.000.
Nishide, Hiroo; and Uehara, Yasuhiro, 4,114,021, Cl. 219-216.000.

Ranko, Frederick E.: *See—*
Ranko, Jerry; and Ranko, Frederick E., 4,112,656, Cl. 56-320.100.

Ranko, Jerry; and Ranko, Frederick E. Lawn mowing brush cutter. 4,112,656, Cl. 56-320.100.

Rao, Babu Y.; Nolan, John T., Jr.; and Estes, John H., to Texaco Inc. Hydroisomerization of normal paraffin with a catalyst of noble metal, alumina support and chlorine. 4,113,789, Cl. 260-683.680.

Rapata, George M., to Illinois Tool Works Inc. Protective electrical device. 4,113,340, Cl. 339-113.00R.

Rath, Gero: *See—*
Gudenau, H. W.; Konig, Horst; Rath, Gero; and Roth, Haye, 4,113,468, Cl. 75-12.000.

Rath, Heinz-Jorg: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,113,532, Cl. 148-174.000.

Rau, G.: *See—*
Stockel, Dieter; and Schneider, Friedrich, 4,112,905, Cl. 123-169.0EL.

Raupach, Gerhard: *See—*
Affeldt, Karl-Heinz; Fritzsche, Gunther; Ganzke, Joachim; and Raupach, Gerhard, 4,112,929, Cl. 128-2.05M.

Ray, Louis F. Constant balance crane. 4,113,112, Cl. 212-71.000.

Ray, Ranjan: *See—*
Tanner, Lee E.; and Ray, Ranjan, 4,113,478, Cl. 75-177.000.

Raychem Corporation: *See—*
Nyberg, David Dolph, 4,113,594, Cl. 204-159.150.

Raygo, Inc.: *See—*
Carlson, Roger L., 4,113,034, Cl. 173-49.000.

Raymond Lee Organization, Inc., The: *See—*
Muskus, Meryl L., 4,112,816, Cl. 87-12.000.
Parkes, Alvin E., 4,112,940, Cl. 128-188.000.
Quibell, Peter R., 4,112,807, Cl. 84-411.00R.

Raytheon Company: *See—*
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Razuvaev, Nikolai Ivanovich: *See—*
Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich, 4,112,702, Cl. 62-123.000.

RB Toy Development Co.: *See—*
Imes, Jack, Jr., 4,113,251, Cl. 273-95.00R.

RCA Corporation: *See—*
Ahmed, Adel Abdel Aziz, 4,114,089, Cl. 324-51.000.
Chinery, Jack Joseph, 4,114,096, Cl. 324-158.00D.
Curtice, Walter Richard, 4,114,051, Cl. 307-260.000.
D'Amato, Ralph James, 4,112,562, Cl. 29-25.140.
DeStephanis, Ralph, 4,113,262, Cl. 274-9.00B.
Herzog, Gerald Bernard, 4,114,035, Cl. 250-211.00K.
Hollingsworth, Richard James, 4,114,055, Cl. 307-362.000.
Hunka, George William, 4,114,034, Cl. 250-202.000.
Katz, George, 4,113,524, Cl. 148-23.000.
Nosker, Richard William, 4,113,897, Cl. 427-140.000.
Pankove, Jacques Isaac; and Lampert, Murray Alfred, 4,113,514, Cl. 148-1.500.
Pankove, Jacques Isaac; and Marlowe, Frank Jerome, 4,114,095, Cl. 324-121.00R.
Ponczak, Samuel; and Olmstead, John Aaron, 4,113,516, Cl. 148-1.500.
Willis, Donald Henry, 4,114,072, Cl. 315-411.000.

Reagan, Larry L.: *See—*
Brown, William L.; and Reagan, Larry L., 4,113,119, Cl. 214-16.40A.

Rechter, Harold L., to Chicago Fire Brick Company. Aluminous refractory composition. 4,113,502, Cl. 106-67.000.

Reckitt & Colman Products Limited: *See—*
Scaife, Colin, 4,112,942, Cl. 128-225.000.

Rector, Charles B. Anti-pollution device for industrial stacks. 4,113,453, Cl. 55-263.000.

Reeder, Thomas M., to United Technologies Corporation. Two-dimensional surface acoustic wave signal processor. 4,114,116, Cl. 333-30.00R.

Regie Nationale des Usines Renault: *See—*
Poisson, Bernard, 4,113,000, Cl. 164-227.000.

Rehder, Gunther: *See—*
Dadurian, Aram; and Rehder, Gunther, 4,112,522, Cl. 3-1.910.

Rehklau, George D., to Electro-Sound, Inc. Magnetic tape cartridge loading apparatus. 4,113,196, Cl. 242-56.00R.

Reibetanz, Wilbert: *See—*
Wanner, Karl; and Reibetanz, Wilbert, 4,113,037, Cl. 175-207.000.

Reid, Robert C.: *See—*
Modell, Michael; Reid, Robert C.; and Amin, Sanjay I., 4,113,446, Cl. 48-202.000.

Reida, William D., to AMI Industries, Inc. Single pivot connection for a legrest. 4,113,311, Cl. 297-433.000.

Reifsnyder, Howard B., to Construction Specialties, Inc. Foot grille. 4,112,640, Cl. 52-177.000.

Reineck, Lester W.: *See—*
Fields, Ernest E.; and Reineck, Lester W., 4,113,138, Cl. 220-367.000.

Reinhardt, James R.; and Scott, Mark P., to ACF Industries, Incorporated. Valve closure for railway car cushioning device. 4,113,113, Cl. 213-43.000.

Remkes, Elmer R.: *See—*
Chang, Nuke Ming; Remkes, Elmer R.; and Cook, William, Jr., 4,112,695, Cl. 405-163.000.

Renco Corporation: *See—*
Carlson, David L., 4,112,927, Cl. 128-2.00V.

Renger, Udo: *See—*
Heitland, Herbert; and Renger, Udo, 4,112,878, Cl. 123-32.0ST.

Renner, Johann: *See—*
Fiege, Helmut; Haydn, Josef; Renner, Johann; and Wedemeyer, Karlfried, 4,113,975, Cl. 568-756.000.

Repa Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,112,996, Cl. 160-296.000.

Research Corporation: *See—*
Hulka, Jaroslav Fabian; and Clemens, George Selden, 4,112,951, Cl. 128-346.000.

Research Engineering & Manufacturing, Inc.: *See—*
Wardwell, Charles H.; and Holcomb, Norman L., 4,112,812, Cl. 85-46.000.

Research Frontiers Incorporated: *See—*
Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, 4,113,362, Cl. 350-362.000.

Research Machine & Development, Inc.: *See—*
Wippich, Joachim, 4,112,716, Cl. 70-38.00C.

Resnick, Paul Raphael; and Grot, Walther Gustav, to Du Pont de Nemours, E. I., and Company. Method and apparatus for electrolysis of alkali or alkaline earth metal halide. 4,113,585, Cl. 204-98.000.

Respiratory Care, Inc.: *See—*
Cambio, Orlando D., Jr., 4,113,129, Cl. 215-1.00C.

Reuschling, Dieter-Bernd: *See—*
Linkies, Adolf; Reuschling, Dieter-Bernd; Kuhlein, Klaus; Beck, Gerhard; and Musil, Josef, 4,113,874, Cl. 424-274.000.

Reutlinger, Suzana: *See—*
Krasovec, Branko; Mihelic, Eli; and Reutlinger, Suzana, 4,113,884, Cl. 426-56.000.

Reynolds Metals Company: *See—*
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Reynolds, Rollin K.: *See—*
United States of America, National Aeronautics and Space Administration; Laumann, Eugene A.; and Reynolds, Rollin K., 4,112,875, Cl. 123-1.00A.

Rhode Island Hospital: *See—*
Abts, Leigh Roy, 4,112,773, Cl. 73-642.000.

Rhone-Poulenc S.A.: *See—*
Balme, Maurice; and Gruffaz, Max, 4,113,737, Cl. 260-326.260.
Bost, Pierre-Etienne; and Lartigau, Guy, 4,113,779, Cl. 260-592.000.

Richard, Gerard Yves, to Societe d'Applications de Procedes Industriels et Chimiques S.A.P.I.C. Process for regenerating foundry sand. 4,113,510, Cl. 134-2.000.

Richard, Yves Robert: *See—*
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, 4,113,596, Cl. 204-180.00R.

Richardson, Eugene E.; and Sidorowicz, Frank, to Standard Oil Company (Indiana). Continuous process for sulfonating alkyl aromatics. 4,113,765, Cl. 260-505.00S.

Richardson, Jack M.: *See—*
Graef, Harry T.; Richardson, Jack M.; and Wolfarth, Robert P., 4,113,140, Cl. 221-6.000.

Richardson, Warner G.; and Wilson, Eugene M., to Caterpillar Tractor Co. Fender. 4,113,269, Cl. 280-154.50R.

Richly, Walter: *See—*
Keiner, Hildegard; Schmid, Emil; and Richly, Walter, 4,113,896, Cl. 427-108.000.

Richmond, Donald Louis, to Air Preheater Company, Inc., The. Bag tensioning arrangement. 4,113,455, Cl. 55-378.000.

Richter, Sidney B.: *See—*
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., 4,113,464, Cl. 71-88.000.

Ricoh Company, Ltd.: *See—*
Furukawa, Akio, 4,114,170, Cl. 354-149.000.
Itoh, Tadanao, 4,114,181, Cl. 360-2.000.
Suzuki, Koichi; Suzuki, Shigeru; and Suzuki, Minoru, 4,112,867, Cl. 118-7.000.

Ricoh Educational Equipment Co., Ltd.: *See—*
Itoh, Tadanao, 4,114,181, Cl. 360-2.000.

Riebel, Hans-Jochem: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,113,860, Cl. 424-200.000.

Riede, Gerhard, to Gambro AG. Diffusion device. 4,113,625, Cl. 210-321.00B.

Riedle, Rudolf: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, 4,113,760, Cl. 260-448.20E.

Riel, Klaus: *See—*
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, 4,112,900, Cl. 123-139.0AW.

Riessberger, Klaus: *See—*
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Rikimaru, Hiroaki: *See—*
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Riley, Kenneth L.; and Pine, Lloyd A., to Exxon Research & Engineering Co. Hydrotreating catalyst and process utilizing the same. 4,113,656, Cl. 252-439.000.

Rinehart, Jay K.: *See—*
Hardies, Donald E.; and Rinehart, Jay K., 4,113,878, Cl. 424-301.000.

Rissberger, C. Glen. Accessory kit and method for providing supplemental anti-sway control for automotive vehicles. 4,113,278, Cl. 280-689.000.

Rivers, Ronald D., to Cabot Corporation. Method of injection molding powder metal parts. 4,113,480, Cl. 75-214.000.

Riviere, Henry W.: *See—*
Faulkenberry, Wayne J.; and Riviere, Henry W., 4,114,108, Cl. 330-207.00P.

Rizk, Samy F. Combination alveolar ridge protector and anesthetic administration aid. 4,112,934, Cl. 128-12.000.

Robbins, Clarence R.: *See—*
Carson, John C., Jr.; Robbins, Clarence R.; and Kenkare, Divaker B., 4,112,536, Cl. 15-104.940.

Robbins & Myers, Inc.: *See—*
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Robert Bosch GmbH: *See—*
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Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, 4,112,879, Cl. 123-32.0EA.
Manger, Hansjorg; Sohner, Gerhard; and Hohne, Gerd, 4,112,890, Cl. 123-117.00R.
Olbrich, Gottfried; and Weigert, Wilhelm, 4,112,978, Cl. 138-30.000.
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, 4,112,900, Cl. 123-139.0AW.
Wanner, Karl; and Reibetanz, Wilbert, 4,113,037, Cl. 175-207.000.

Roberts Corporation: *See—*
Gasper, Stephen A., 4,112,999, Cl. 164-154.000.

Roberts, Jack C. Drying rack assembly for bathing compartments. 4,112,525, Cl. 4-154.000.

Robertshaw Controls Company: *See—*
Parsons, Bruce B.; and Wolfe, Denis G., 4,114,129, Cl. 337-387.000.

Robinson, Don: *See—*
Goldfarb, Adolph E.; Benkoe, Erwin, deceased; and Robinson, Don, 4,113,255, Cl. 273-108.000.

Robinson, Hugh A.: *See—*
Turner, Robert Bruce; Menzin, Marvin; Robinson, Hugh A.; and Williams, Thomas S., 4,112,762, Cl. 73-343.00R.

Robinson, John William; Crosby, Thomas C.; and Howell, Stephen Louis, to Kimball International, Inc. Organ circuitry for providing fill notes and method of operating the organ. 4,112,802, Cl. 84-1.010.

Roccisano, Janet: *See—*
Ferrara, Louis Thomas; and Roccisano, Janet, 4,112,924, Cl. 128-2.00F.

Roces, Rafael Tuti. Hydraulic coupling and speed multiplying mechanism. 4,112,681, Cl. 60-539.000.

Rock, Erich; and Mages, Bernhard, to Julius Blum Gesellschaft M.B.H. Furniture hinge. 4,112,543, Cl. 16-164.000.

Rocket Research Corp.: *See—*
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Rockwell International Corporation: *See—*
Grant, Louis R.; and Flanagan, Joseph E., 4,113,775, Cl. 260-564.00G.
Hamilton, C. Howard; and Ascani, Leonard A., 4,113,522, Cl. 148-11.50R.
Loyd, Morris S., 4,113,910, Cl. 428-162.000.
Shutt, Sidney G., 4,113,387, Cl. 356-106.0LR.
Thackston, Clyde David; and Alexander, Robert H., 4,113,080, Cl. 192-150.000.

Rodach, Alexander, to Irma Ungerer Geb. Dollinger. Reel for coiling strip. 4,113,198, Cl. 242-78.300.

Rodda, John C., to Xerox Corporation. Cleaning apparatus for reproducing machine. 4,113,376, Cl. 355-15.000.

Rodgers, Lewis. Rotating kite. 4,113,209, Cl. 244-153.00A.

Rogers Corporation: *See—*
McGarry, Francis J.; Greene, Donald; and Otto, Jeffrey B., 4,113,554, Cl. 162-123.000.

Rogers, Ronald D., to Alco Standard Corporation. Method for circulating a heat treating gas. 4,113,426, Cl. 432-25.000.

Rogler, Walter: *See—*
Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, 4,113,761, Cl. 260-448.80A.

Rohm GmbH: *See—*
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Rohm and Haas Company: *See—*
Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., 4,112,714, Cl. 68-206.000.
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Rohr, Harry: *See—*
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, 4,113,796, Cl. 260-876.00R.

Rohr, Karl, to Kraftwerk Union Aktiengesellschaft. Auxiliary bearing for determining radial and axial play of turbine shafts. 4,113,324, Cl. 308-9.000.

Roller Bearing Company of America: *See—*
Koch, Hans W., 4,113,327, Cl. 308-187.100.

Rollo, Anita Hand; and Stearns, David Burrell, to International Business Machines Corporation. Automated hemodialysis treatment systems. 4,113,614, Cl. 210-22.00A.

Rolls-Royce Limited: *See—*
Aldridge, Trevor John; Lock, Alan Howard; and Bell, Robert Martin Alistair, 4,112,747, Cl. 73-116.000.

Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, to Neste Oy. Photosensitive material containing di-iodopropyl cellulose, process for its manufacture and the use of this material. 4,113,483, Cl. 96-1.0PC.

Romey, Ingo: *See—*
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Rones, Josef; Moller, Siegfried; and Hoch, Helmut, to Oxy Metal Industries Corporation. Corrosion inhibitor for metal surfaces. 4,113,498, Cl. 106-14.130.

Rose, John Brewster; and Staniland, Philip Anthony, to Imperial Chemical Industries Limited. Production of aromatic polymers. 4,113,699, Cl. 528-126.000.

Rosenthal, Arthur Lee; Alpern, Marvin; and Meisch, Charles Edward, to Howmedica Inc. Apparatus for collecting body fluid. 4,112,949, Cl. 128-278.000.

Rosenthal, Isadore; Exner, Lawrence J.; Niksa, Gregory J.; Weiss, Warren I.; and Young, Maurice G., to Rohm and Haas Company. Asymmetric skein dyeing. 4,112,714, Cl. 68-206.000.

Ross, Ian Norman: *See—*
Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, 4,113,388, Cl. 356-110.000.

Ross, John P.; and Bernardi, Carl E., to National Semiconductor Corporation. Method for plating semiconductor chip headers. 4,113,577, Cl. 204-15.000.

Rossmanith, Otto, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Hose pump with friction drive of hollow, resilient roller means. 4,113,409, Cl. 417-477.000.

Roth, Haye: *See—*
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Rousseau, George L.; and Snyder, Richard C., to Pullman Incorporated. Resilient constant contact center bearing assembly. 4,112,851, Cl. 105-199.00C.

Rowland, Bob G.: *See—*
Johnson, Peter E.; and Rowland, Bob G., 4,113,927, Cl. 429-143.000.

Royce Chemical Company: *See—*
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Royon, Jean Paul: *See—*
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Ruby, William S.: *See—*
Hochstrasser, Otto; and Ruby, William S., 4,113,977, Cl. 13-2.00R.

Ruckel, Erwin Richard; and Wang, Long Shyong, to Arizona Chemical Company. Polymerization of α-pinene. 4,113,653, Cl. 252-429.00B.

Rudd, Wallace C.: *See—*
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Ruenzi, Kurt. Apparatus for automatically feeding individual sheets from a stack through an office machine. 4,113,244, Cl. 271-4.000.

Ruhnau, Gerhard; Gudat, Wolfgang; Liermann, Peter; and Hesse, Karl-Heinz, to WABCO Westinghouse GmbH. Digital control circuit for producing acceleration and deceleration control signals in an antiskid control system. 4,113,322, Cl. 303-105.000.

Rumpp, Gerhard: *See—*
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Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., to Gas Developments Corporation. Air conditioning process. 4,113,004, Cl. 165-3.000.

Russell, John J.: *See—*
Brana, George; and Russell, John J., 4,113,641, Cl. 252-62.10P.

Russell, William Norman; Bruton, James Isaac; and Twilley, Ian Charles, to Allied Chemical Corporation. Process for preparing high strength polyamide and polyester filamentary yarn. 4,113,821, Cl. 264-210.00F.

Rutgerswerke Aktiengesellschaft: *See—*
Gardziella, Arno; and Jellinek, Karl, 4,113,898, Cl. 427-195.000.
Spengler, Hans; Bucksch, Gunter; and Morgenstern, Manfred, 4,113,931, Cl. 526-64.000.

Ruti Machinery Works Ltd.: *See—*
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Ruti Machinery Works Ltd: *See—*
Oderbolz, Fredy; and Bebie, Paul, 4,112,983, Cl. 139-446.000.

Rutman, Grigory Iosifovich: *See—*
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich, 4,113,976, Cl. 568-789.000.

Rybny, Charles B.; Trebellas, John C.; and Sargent, Donald E., to Celanese Corporation. Trihalogenated hydrocarbons as cophotoinitiators. 4,113,592, Cl. 204-159.160.

Ryder, Lyle C.: *See—*
Hill, Robert W.; Onnen, William G.; and Ryder, Lyle C., 4,113,825, Cl. 264-262.000.

Rylander, DeMaris C. Child's playhouse type collapsible structure. 4,112,635, Cl. 52-69.000.

Ryzhov, Vladimir Dmitrievich; Litvinenko, Semen Kirillovich; Leikin, Roman Samuilovich; Kulberg, Anton Yanovich; Ioffe, Benyamin Alexandrovich; and Kalnin, Robert Karlovich. Device for contactless separation of individual ferromagnetic components from a flow of components. 4,113,142, Cl. 221-171.000.

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Lesas, Claude H.; and Pierre, Michel, 4,113,936, Cl. 536-56.000.

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Pigerol, Charles; de Cointet de Fillain, Paul; and Nanthavong, Souli, 4,113,736, Cl. 260-326.160.

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Bos, Frans, 4,113,302, Cl. 296-137.00J.

Sabol, Albert R.; and Petrellis, Nicolas C., to Standard Oil Company (Indiana). Metal aryl dithiophosphates and their manufacture. 4,113,634, Cl. 252-32.70E.

Sachetto, Jean-Pierre: *See—*
Roman, Alain; Sachetto, Jean-Pierre; Wust, Manfred; and Koutroulos, Jean, 4,113,483, Cl. 96-1.0PC.

Sackmann, Gunter; Hendricks, Udo-Winfried; Honig, Hans-Ludwig; Kolb, Gunter; and Muller, Friedhelm, to Bayer Aktiengesellschaft. Emulsions of resinic acid isocyanates as sizing agents for paper. 4,113,506, Cl. 106-238.000.

Saegusa, Shigeharu: *See—*
Kiuchi, Mitsuyuki; Amagami, Keizo; Maeda, Shigeru; and Saegusa, Shigeharu, 4,114,009, Cl. 219-10.49R.

Sahara, Takeshi: *See—*
Obinata, Shiro; Hashimoto, Shigeru; and Sahara, Takeshi, 4,113,106, Cl. 209-167.000.

Said, Sami I.; and Mutt, Viktor. Vasoactive lung polypeptides. 4,113,711, Cl. 260-112.00R.

Saijo, Shigeyoshi: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, 4,113,873, Cl. 424-274.000.

Saiki, Atsushi; Okubo, Toshio; and Harada, Seiki, to Hitachi, Ltd. Method for fabricating semiconductor device and etchant for polymer resin. 4,113,550, Cl. 156-656.000.

Sailas, Vaino, to Valmet Oy. Method of making strip-covered roll. 4,112,565, Cl. 29-148.40D.

Sain, Paul E., to Games Research Associates. Simulated golf game and materials therefor. 4,113,260, Cl. 273-245.000.

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Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,113,456, Cl. 65-5.000.
Mattmuller, Rene, 4,113,459, Cl. 65-135.000.

St. Luke's Hospital: *See—*
Hashim, George A., 4,113,858, Cl. 424-177.000.

Saito, Isamu. Extracting black tea and coffee and closed extractor therefor. 4,112,830, Cl. 99-300.000.

Saito, Toranosuke: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, 4,113,795, Cl. 260-874.000.

Saito, Toshinori: *See—*
Kai, Fumio; Saito, Toshinori; Seki, Shigeo; and Kawasaki, Toyoaki, 4,113,944, Cl. 544-27.000.

Sakai Chemical Industry Co., Ltd.: *See—*
Abe, Kazunobu; Rikimaru, Hiroaki; Yamazaki, Iwao; and Hasegawa, Hiroshi, 4,113,660, Cl. 252-455.00R.

Sakai, Masaaki: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, 4,113,264, Cl. 274-15.00R.

Sakamoto, Yohei: *See—*
Kato, Hisao; and Sakamoto, Yohei, 4,112,602, Cl. 37-55.000.

Sakanaka, Takao, to Hitachi, Ltd. Coupling device of oil feeding pipe for rolling mill. 4,112,729, Cl. 72-236.000.

Sakurai, Toshio; Shimada, Shoji; and Kamimura, Yoshiharu, to Nippon Steel Corporation. Rust-proof lubricant compositions. 4,113,635, Cl. 252-49.600.

Sala, Angelo, to Massey-Ferguson Services N.V. Improvements in or relating to controls for hydraulic valves. 4,112,976, Cl. 137-636.200.

Saladin, Emil: *See—*
Zondler, Helmut; Saladin, Emil; and Kirchmayr, Rudolf, 4,113,669, Cl. 521-108.000.

Sales, Buenaventura Z. Draw strings puller and fastener. 4,112,551, Cl. 24-117.000.

Salles, Yvon; Leger, Pierre; and David, Gerard Andre, to U.S. Philips Corporation. Apparatus for etching the edges of semiconductor plates. 4,113,543, Cl. 156-345.000.

Salomon, Georges Pierre Joseph, to S.A. des Etablissements Francois Salomon & Fils. Devices for fastening ski boots. 4,112,557, Cl. 24-69.0SK.

Samuelson, Hans Olof, to Mo Och Domsjo Aktiebolag. Sodium sulfide pulping with hydrogen sulfide generation. 4,113,553, Cl. 162-34.000.

Samuelsson, Kurt Anders, to Telefonaktiebolaget L M Ericsson. Method for improvement of crosstalk attenuation between adjacent channels in a time division multiplex system. 4,113,987, Cl. 179-15.0AN.

Sanderson, Richard Barton, to Bell Telephone Laboratories, Incorporated. Voltage controlled current sources for active hybrid circuit. 4,113,996, Cl. 179-170.0NC.

Sandhu, Mohammad Akram; and Tingler, Kenneth Lloyd, to Eastman Kodak Company. Amorphous polyester adhesives for photographic materials. 4,113,493, Cl. 96-67.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,112,713, Cl. 68-5.00E.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Selvage curling prevention apparatus for a knitted cloth. 4,112,713, Cl. 68-5.00E.

Sandor, Leslie W., to Electric Machinery Mfg. Company. Welding of laminations of core-plated silicon steel. 4,114,019, Cl. 219-137.00R.

Sandow, Kiyoshi, to Plasteco, Inc. Smoke and heat vent. 4,112,620, Cl. 49-8.000.

Sandoz, Inc.: *See—*
Denzer, Max; and Smith, Joseph A., 4,113,727, Cl. 544-362.000.

Sands, Terry Michael. Board game apparatus with water ejecting device. 4,113,259, Cl. 273-241.000.

Sandy, Frank; and Schulz, Manfred B., to Raytheon Company. Wide band low loss acoustic wave device. 4,114,119, Cl. 333-72.000.

Sanford, Dale J., to Curfman, Brainerd, Harris, Bell, Weigans and Depew. Apparatus for disassembling pallets. 4,112,578, Cl. 29-700.000.

Sangamo Weston, Inc.: *See—*
Andreaggi, Joseph R., 4,113,342, Cl. 339-176.0MP.

Sanko Kaihatsu Kagaku Kenkyusho: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, 4,113,795, Cl. 260-874.000.

Sano, Hiroshi, to Tomy Kogyo Co., Inc. Toy garage. 4,112,610, Cl. 46-12.000.

Sano, Takezo; Kobayashi, Akira; and Inoue, Haruo, to Sumitomo Chemical Company, Limited. Method for producing strong-acid cation exchange fiber by treating fibrous polyethylene with gaseous sulfur trioxide. 4,113,666, Cl. 521-29.000.

Santa Fe International Corp.: *See—*
Chang, Nuke Ming; Remkes, Elmer R.; and Cook, William, Jr., 4,112,695, Cl. 405-163.000.

Sanyo-Kokusaku Pulp Co., Ltd.: *See—*
Shirakawa, Kiyoshi, 4,113,168, Cl. 229-37.00R.

Saoyama, Yoshihito: *See—*
Nomaki, Koji; and Saoyama, Yoshihito, 4,112,868, Cl. 118-429.000.

Sarfati, Pierre, to Thomson-CSF. Arrangement enabling the contrast to be improved between the main echo video-frequency signal and a secondary echo video-frequency signal received by a pulse compression radar. 4,114,154, Cl. 343-17.2PC.

Sargent, Donald E.: *See—*
Rybny, Charles B.; Trebellas, John C.; and Sargent, Donald E., 4,113,592, Cl. 204-159.160.

Satake, Yasuo: *See—*
Nojiri, Shoji; Kanzaki, Hisao; Yasoshima, Nobuyuki; Satake, Yasuo; and Ogawa, Kenichi, 4,113,990, Cl. 179-84.00R.

Sato, Hideaki: *See—*
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,112,732, Cl. 72-334.000.

Sato, Jiro, to Fujiwa Kika Kabushiki Kaisha. Pouring method and apparatus therefor. 4,112,998, Cl. 164-136.000.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Method for producing a photomask. 4,113,486, Cl. 96-36.000.

Sato, Masamichi; and Fujii, Itsuo, to Fuji Photo Film Co., Ltd. Spin coating process. 4,113,492, Cl. 96-67.000.

Sato, Seii: *See—*
Yamaguchi, Hisashi; Sato, Seii; Iemori, Toshiaki; and Andoh, Shizuo, 4,114,069, Cl. 315-169.0TV.

Sato, Takami: *See—*
Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, 4,113,814, Cl. 264-89.000.

Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, to Sony Corporation. Phonograph record player. 4,113,264, Cl. 274-15.00R.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Portable label printing and applying machine. 4,113,544, Cl. 156-384.000.

Satoh, Isao: *See—*
Kazama, Saburo; Abe, Hideo; Satoh, Isao; Ikeguchi, Takashi; Nogita, Shunsuke; Kubota, Masayoshi; and Muramori, Kiyoshi, 4,113,608, Cl. 209-1.000.

Satoh, Shui: *See—*
Deguchi, Hidetaka; Kikuchi, Shoji; Wada, Hajime; Satoh, Shui; and Endo, Takaya, 4,113,491, Cl. 96-66.00R.

Satou, Kouichirou: *See—*
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Saucy, Gabriel: *See—*
Cohen, Noal; and Saucy, Gabriel, 4,113,740, Cl. 260-340.90R.

Saunders Valve Company Limited: *See—*
Jones, Alan Philip, 4,113,826, Cl. 264-269.000.

Sauvage, Joseph. Drafting machine. 4,112,548, Cl. 19-243.000.

Savage, Bobbie O. Method and apparatus for selectively preventing or permitting sap flow to control bud formation. 4,112,616, Cl. 47-1.00R.

Savage, Bobbie O. Method and apparatus for selectively preventing or permitting systemic sap flow to control bud formation. 4,112,618, Cl. 47-58.000.

Savanick, George A.; and Krawza, Walter G., to United States of

America, Interior. Well perforating method for solution well mining. 4,113,314, Cl. 299-4.000.
Savitt, Jacob, to United States of America, Navy. Apparatus for detonating across a gap. 4,112,845, Cl. 102-27.00R.
Sawada, Takamasa: *See—*
Sone, Yoshiaki; Sawada, Takamasa; and Shirai, Masanari, 4,113,377, Cl. 355-45.000.
Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, to Research Frontiers Incorporated. Light valve, light valve suspension materials and suspension therefor. 4,113,362, Cl. 350-362.000.
Scaife, Colin, to Reckitt & Colman Products Limited. Method of preparing and administering a foam enema. 4,112,942, Cl. 128-225.000.
Schaaf, Thomas K.: *See—*
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,113,723, Cl. 260-347.300.
Schacham, Samuel E.: *See—*
Epstein, Max; Marhic, Michel E.; and Schacham, Samuel E., 4,114,112, Cl. 331-94.50C.
Schafer, Werner; Buchwald, Holger; and Bischoff, Dieter, to Carl Freudenberg, Firma. Heat resistant nonwoven fabric and method of manufacturing same. 4,113,537, Cl. 428-220.000.
Schafers, Heinrich Bernhard. Dowels and process for anchoring dowels. 4,112,814, Cl. 85-75.000.
Schafft, Hugo Willy, to Motorola, Inc. Electro-optic matrix display. 4,113,352, Cl. 350-150.000.
Scharff, Dieter: *See—*
Haage, Karl; and Scharff, Dieter, 4,113,907, Cl. 428-111.000.
Scheid, Lloyd J. Movable partition wall system. 4,112,647, Cl. 52-481.000.
Scheidler, Ralph E. Dual voltage battery system and electronic switch therefor. 4,114,082, Cl. 320-7.000.
Schenk, Bernd, to ITW-Ateco G.m.b.H. Filler connection for vehicles driven by internal combustion engines. 4,113,300, Cl. 296-1.00C.
Schenk, Hanspeter, to Givaudan Corporation. 2-Ethyl-6,6-dimethyl-2-cyclohexene-1-carboxylic acid ethyl ester perfume compositions. 4,113,663, Cl. 252-522.000.
Scher, Bernard B. Fishing pole holding apparatus. 4,112,607, Cl. 43-17.000.
Scherenberg, Dieter: *See—*
Assenheimer, Jurgen; Bianchi, Valerio; Brettschneider, Johannes; Latsch, Reinhard; and Scherenberg, Dieter, 4,112,879, Cl. 123-32.0EA.
Schering AG: *See—*
Kruger, Hans, 4,113,733, Cl. 260-306.80D.
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Arnold, Hanfried, 4,113,751, Cl. 260-397.400.
Scheuermann, Horst: *See—*
Opgenorth, Hans-Joachim; and Scheuermann, Horst, 4,113,732, Cl. 260-305.000.
Schibbye, Hjalmar; and Eriksson, Lennart, to Svenska Rotor Maskiner Aktiebolag. Method and means for cooling the oil in a system including a compressor with oil supply, as well as such systems. 4,112,701, Cl. 62-84.000.
Schiller, Rolf. Refuse collecting system and a vehicle and container for use therein. 4,113,125, Cl. 214-302.000.
Schillinger, John D. Precision grader. 4,113,402, Cl. 404-91.000.
Schippers, Heinz; Hensen, Friedhelm; Koslowski, Gerhard; and Czerwon, Dieter, to Barmag Barmer Maschinenfabrik AG. Process for producing low shrinkage film bands. 4,113,935, Cl. 526-351.000.
Schlatter, James M.; and Goodmonson, Owen, to G. D. Searle & Co. Method for cleaving the peptide-resin bond in solid phase peptide synthesis by hydrogenolysis. 4,113,713, Cl. 260-112.50R.
Schlecht, Helmut: *See—*
Distler, Harry; Schlecht, Helmut; and Hartert, Erwin, 4,113,764, Cl. 260-465.50A.
Schlesinger, Sheldon I., to American Can Company. Compositions with organohalogen compound and diazonium salts as photoinitiators of epoxy compounds in photo-polymerization. 4,113,497, Cl. 96-115.00P.
Schliephake, Dietrich: *See—*
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Schlosberg, Seymour; and Lerman, Michael J., to De Dietrich (USA), Inc. Method for repairing protectively lined reactor vessels. 4,112,572, Cl. 29-401.00R.
Schmid, Emil: *See—*
Keiner, Hildegard; Schmid, Emil; and Richly, Walter, 4,113,896, Cl. 427-108.000.
Schmidt, Erich, to Maschinenfabrik Zuckermann Komm. Ges. Duplicating grinding machine. 4,112,628, Cl. 51-140.000.
Schmidt, Felix Helmut: *See—*
Stach, Kurt, deceased; Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, 4,113,871, Cl. 424-272.000.
Schmidt, Robert W. Adhesive dispensing device. 4,113,152, Cl. 222-485.000.
Schnall, Gunther: *See—*
Eppe, Rudolf; Schnall, Gunther; Mullritter, Ludwig; Beck, Johann; and Hartwig, Karl, 4,113,373, Cl. 355-8.000.
Schneider, Carl Michael, to Siemens Aktiengesellschaft. Electronic telephone system featuring switching networks having thyristors for single-wire switching. 4,113,989, Cl. 179-18.0GF.
Schneider, Friedrich: *See—*
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Schneider, Heinz-Walter: *See—*
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Schoen, William: *See—*
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Schott, Charles W. Glass bead product. 4,113,915, Cl. 428-402.000.
Schrauzer, Gerhard N.; and Guth, Ted D., to University of California, The Regents of the. Photoreduction of nitrogen. 4,113,590, Cl. 204-157.10R.
Schreyer, Gerd: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,113,747, Cl. 260-348.250.
Schroeder, Guenter: *See—*
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Schroth, Gerhard Wolfgang: *See—*
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Schubert, Bernhard: *See—*
Bardenhagen, Dietrich; and Schubert, Bernhard, 4,112,651, Cl. 53-449.000.
Schulman, Jerome L.; and Kaplan, Jay, to Children's Memorial Hospital, The. Method and apparatus for measuring and treating hyperactivity in human beings. 4,112,926, Cl. 128-2.00S.
Schulz, Friedrich Wilhelm: *See—*
Kiefer, Udo; von Loeben, Wolf; and Schulz, Friedrich Wilhelm, 4,113,393, Cl. 356-155.000.
Schulz, Manfred B.: *See—*
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Schulze, Heinz; and Waddill, Harold G., to Texaco Development Corporation. Polyether diamide epoxy additives. 4,113,697, Cl. 528-94.000.
Schumacher, Ignatius; and White, James E., to Monsanto Company. Acrylic polymerization inhibition. 4,113,574, Cl. 203-8.000.
SCHUMAG Schumacher Metallwerke Gesellschaft mit beschankter Haftung: *See—*
Wetzels, Walter, 4,112,625, Cl. 51-33.00W.
Schumag Schumacher Metallwerke Gesellschaft mit beschrankter Haftung: *See—*
Greven, Johann; and Mostert, Johann, 4,112,730, Cl. 72-290.000.
Schuman, Paul D.; Tarrant, Paul; Warner, Dale A.; and Westmoreland, Geraldine, to PCR, Inc. 5-Fluorouracil derivatives. 4,113,949, Cl. 544-303.000.
Schumann, Werner Adolf: *See—*
Haarhoff, Pierre Cloete; and Schumann, Werner Adolf, 4,113,448, Cl. 55-17.000.
Schundehutte, Karl Heinz: *See—*
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Schuster, Herbert: *See—*
Bischoff, Jurgen; Kowitz, Friedrich; Ott, Karl-Heinz; Schuster, Herbert; Rohr, Harry; and Weitzel, Hans, 4,113,796, Cl. 260-876.00R.
Schuster, Joachim: *See—*
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Schwan, Thomas J., to Morton-Norwich Products. Inc. 2-[[6-Methoxy-(3,4-dihydro-2H-1-benzopyranyl)]amino]-1-phenylpropanol hydrochloride. 4,113,743, Cl. 260-345.500.
Schwartz, Reinhard; Knapp, Heinrich; Riel, Klaus; and Peters, Klaus-Jurgen, to Robert Bosch GmbH. Fuel injection system. 4,112,900, Cl. 123-139.0AW.
Schweier, Gunther; Kolk, Erich; Mueller-Tamm, Heinz; Frielingsdorf, Hans; Bachl, Robert; and Gruber, Wolfgang, to BASF Aktiengesellschaft. Manufacture of homopolymers and copolymers of α-monoolefins. 4,113,933, Cl. 526-124.000.
Schweiger, Fritz, to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen. Method of removing the decay heat of radioactive fission products. 4,113,559, Cl. 176-38.000.
Schwerdtel, Wulf: *See—*
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Schwirten, Kurt: *See—*
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Schwob, Hans Peter: *See—*
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Scientific Dimensions, Inc.: *See—*
O'Connell, Joseph J., 4,113,217, Cl. 248-221.300.
Scintrex Limited: *See—*
Kaufman, Aleksander Arkadi, 4,114,086, Cl. 324-1.000.
Scott, Donald M., to Fibre Containers Company. Packing box for china. 4,113,096, Cl. 206-523.000.
Scott, Herman B. Coffee blenders. 4,112,831, Cl. 99-306.000.
Scott, Mark P.: *See—*
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Scott Paper Company: *See—*
Colby, Donald B., 4,112,855, Cl. 108-159.000.
Scott, Timothy C.: *See—*
Davis, Gerald L.; and Scott, Timothy C., 4,112,974, Cl. 137-625.290.

Sealectro Corporation: *See—*
Baio, Alfred R.; and Genovese, David L., 4,114,028, Cl. 235-458.000.
Seatek Corporation: *See—*
Bergman, Gunnar B., 4,112,864, Cl. 114-265.000.
Seaver, William H. Apparatus for enabling the motion of a scriber to be reproduced. 4,112,597, Cl. 35-36.000.
Sebby, Carl M. Tow bar with towed vehicle suspension feature. 4,113,272, Cl. 280-402.000.
Seco Tools Aktiebolag: *See—*
Loqvist, Kaj-Ragnar, 4,112,564, Cl. 29-148.40D.
Secretary of State for Social Services, The: *See—*
Duff, Ian David; Kennedy, John Hamilton; and Bunce, Roger Abraham, 4,113,437, Cl. 422-63.000.
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Seikagaku Kogyo Co., Ltd.: *See—*
Fujita, Yoshimasa; Matsumoto, Akiyoshi; Miyachi, Isao; Imai, Nobuo; Kawakami, Isao; Hishida, Tadashi; and Kamata, Akira, 4,113,568, Cl. 195-68.000.
Seiko Koki Kabushiki Kaisha: *See—*
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Sekiguchi, Tadao, to Trio Kabushiki Kaisha. Digital frequency display device. 4,114,101, Cl. 325-455.000.
Sekiguchi, Tetsuo: *See—*
Minagawa, Motonobu; Ohzeki, Toshio; and Sekiguchi, Tetsuo, 4,113,678, Cl. 260-23.70M.
Sekihara, Takeshi; Emura, Tomoyuki; and Murashige, Masayuki, to Sumitomo Chemical Company, Limited. Process for polymerizing vinyl chloride monomer. 4,113,932, Cl. 526-74.000.
Sekino, Jun: *See—*
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Sekisui Kaseikin Kogyo Kabushiki Kaisha: *See—*
Matsui, Takashi; Sugimura, Sadao; and Noo, Kunio, 4,113,824, Cl. 264-230.000.
Sekmakas, Kazys, to DeSoto, Inc. Rapid curing high solids thermosetting coatings. 4,113,793, Cl. 260-850.000.
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Instone, John C., 4,113,334, Cl. 339-22.00R.
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Spatz, Sydney Martin; and Shackle, Dale Richard, 4,113,282, Cl. 282-27.500.
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Stewart, Alan; and Majefski, Richard Lee, 4,114,074, Cl. 318-257.000.
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Koether, Bernard G.; and Shaughnessy, William J., 4,113,623, Cl. 210-167.000.
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Sheets, Kerney T. High rise sprinklers. 4,113,181, Cl. 239-206.000.
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Shell Internationale Research Maatschappij, B.V.: *See—*
Collins, Michael H., 4,113,901, Cl. 427-236.000.
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Heyman, Duane A., 4,113,952, Cl. 548-305.000.
Shetty, Bola Vithal, to Purdue Frederick Company, The. Process for the preparation of iodophor compounds and methods for stabilizing iodophor pharmaceutical compositions containing the same. 4,113,857, Cl. 424-150.000.
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Hirota, Nobuyoshi; and Shibata, Akio, 4,113,673, Cl. 260-8.000.
Shibata, Tadashi: *See—*
Shigeta, Masayuki; and Shibata, Tadashi, 4,113,064, Cl. 187-1.00R.
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Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, 4,113,431, Cl. 8-120.000.
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Okazaki, Kiyoshi; Murakami, Masuo; Kawada, Hiroitsu; Sekino, Jun; Shimizu, Hidemi; and Kawahara, Shigemi, 4,113,882, Cl. 424-317.000.
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Shimizu, Makoto: *See—*
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, 4,113,239, Cl. 266-137.000.
Shimizu, Masami: *See—*
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Sone, Yoshiaki; Sawada, Takamasa; and Shirai, Masanari, 4,113,377, Cl. 355-45.000.

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Yamada, Minoru; Shishido, Tadao; and Arai, Atsuaki, 4,113,488, Cl. 96-56.000.

Shmorgunenko, Nikolai Stepanovich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, 4,113,833, Cl. 423-131.000.

Shoemaker, Arthur H., to American Optical Corporation. Microscope illuminator for both transmitted and vertical microscopy. 4,113,344, Cl. 350-87.000.

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Petrick, Paul J., Sr., 4,112,911, Cl. 124-56.000.

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Show, Roger; and Webb, Robert. Process for converting waste deadburned magnesium oxide-containing material into useful product. 4,113,834, Cl. 423-155.000.

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Watanabe, Haruo; and Negishi, Masaaki, 4,113,752, Cl. 260-424.000.

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Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, 4,113,833, Cl. 423-131.000.

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Kenkare, Divaker B.; and Shumway, Durland K., 4,113,852, Cl. 424-46.000.

Shutt, Sidney G., to Rockwell International Corporation. Dual mode laser optics control for ring laser gyro. 4,113,387, Cl. 356-106.0LR.

SI Handling Systems, Inc.: *See—*
Brown, William L.; and Reagan, Larry L., 4,113,119, Cl. 214-16.4DA.

Sidhu, Baldip Singh: *See—*
Syred, Nicholas; Grant, John; and Sidhu, Baldip Singh, 4,112,977, Cl. 137-812.000.

Sidley, Manfred: *See—*
Theunissen, Eos Lee, 4,113,195, Cl. 242-55.300.

Sidorowicz, Frank: *See—*
Richardson, Eugene E.; and Sidorowicz, Frank, 4,113,765, Cl. 260-505.00S.

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Aquila, Werner; Hoffmann, Werner; Himmele, Walter; and Siegel, Hardo, 4,113,781, Cl. 260-599.000.

Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Sulfonic acid-N-methylamido-N-sulfenyl-N-methyl-carbamic acid esters. 4,113,876, Cl. 424-278.000.

Siegrist, Adolf Emil; and Pauchard, Jean-Paul, to Ciba-Geigy Corporation. Stilbene compounds. 4,113,937, Cl. 542-463.000.

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Bauch, Helmut; Mohrmann, Karl Heinz; and Koppehele, Frithjof, 4,114,107, Cl. 330-56.000.
Baur, Guenter; and Greubel, Waldemar, 4,113,360, Cl. 350-285.000.
Gaertner, Waldemar, 4,113,347, Cl. 350-96.240.
Gerndt, Christian, 4,113,345, Cl. 350-96.150.
Kiefer, Udo; von Loeben, Wolf; and Schulz, Friedrich Wilhelm, 4,113,393, Cl. 356-155.000.
Krauss, Guenter, 4,114,118, Cl. 333-71.000.
Mattuschka, Werner, 4,114,062, Cl. 310-326.000.
Mentschel, Hellmuth, 4,112,876, Cl. 123-3.000.
Schneider, Carl Michael, 4,113,989, Cl. 179-18.0GF.
Wiedemann, Kurt; and Seiferth, Reinhard, 4,114,152, Cl. 343-7.700.

Sigel-Gfeller, Alwin. Conveyor apparatus for the interior of pipelines. 4,112,850, Cl. 104-138.00G.

Sigmund, Hermann. Process for the production of silicon layers. 4,113,548, Cl. 156-622.000.

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Sigurdsson, Per Arne, 4,113,846, Cl. 423-446.000.

Sikli, Bert J., to Staines, Robert. Scissors lift. 4,113,065, Cl. 187-18.000.

Sillion, Bernard: *See—*
Cohen, Choua; and Sillion, Bernard, 4,113,637, Cl. 252-51.50A.

Simmons, Kenneth C.; Champlin, Harry C., Jr.; Livorsi, Carl F.; and Wucik, Joseph A., Jr., to Posi-Seal International, Inc. Extended temperature range valve seal. 4,113,268, Cl. 277-168.000.

Simmons, William D.: *See—*
Anderson, Lowell M.; and Simmons, William D., 4,112,692, Cl. 405-271.000.

Simon, Donald J.; and Fitzmayer, Louis H., to General Electric Company. Choke for combined microwave and self-cleaning oven. 4,114,013, Cl. 219-10.55D.

Simon, Pierre, to Union Chimique Continentale-U.C.C. Process for the preparation of alpha-pyrones. 4,113,742, Cl. 260-343.500.

Simon, Stefan: *See—*
Friese, Axel; and Simon, Stefan, 4,113,083, Cl. 198-480.000.

Simpson, Dayton M.: *See—*
Lammert, Wayne F.; Simpson, Dayton M.; and Desai, Ardeshir R., 4,112,698, Cl. 405-167.000.

Simpson, Harold G., to Star Manufacturing Company of Oklahoma. Prefabricated watertight structural system. 4,112,632, Cl. 52-11.000.

Sims, Anson; and Jones, Lawrence T., to Aurora Products Corporation. Jaw breaker game. 4,113,261, Cl. 273-249.000.

Singer Company, The: *See—*
Feltz, Albert J.; and Deck, Howard C., 4,113,368, Cl. 352-159.000.

Sinke, Gerard C.: *See—*
Langhorst, Martin A.; Sinke, Gerard C.; and Mossner, Elmer H., 4,113,471, Cl. 75-101.00R.

Sintef: *See—*
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Sirtl, Erhard: *See—*
Authier, Bernhard; Griesshammer, Rudolf; Koppl, Franz; Lang, Winfried; Sirtl, Erhard; and Rath, Heinz-Jorg, 4,113,532, Cl. 148-174.000.

Sisk, Francis J.; and Veyo, Stephen E., to Electric Power Research Institute, Inc. Fuel fired supplementary heater for heat pump. 4,112,705, Cl. 62-238.000.

Sjostrand, Gunnar; and Sjostrand, Staffan, to Musikindustriell Forskning MIFO AB. Stringed instrument for play training. 4,112,809, Cl. 84-465.000.

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Sjostrand, Gunnar; and Sjostrand, Staffan, 4,112,809, Cl. 84-465.000.

Skalka, Gerald P., to Victor Stanley, Inc. Bench. 4,113,312, Cl. 297-454.000.

Skinner, Dale D.: *See—*
Nelkin, Arthur; Skinner, Dale D.; Wilson, Donald G.; and Palmer, Harold D., 4,114,063, Cl. 310-334.000.

Skinner, Leon S.; and Taylor, Norman C., to All Sunpower, Inc. Solar energy collector. 4,112,922, Cl. 126-271.000.

Skoli, Sigmund P.: *See—*
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Slater, Charles E.; Dunn, Paul E.; and Mustain, Lewis B., to Mosler Safe Company, The. On-line/off-line automated banking system. 4,114,027, Cl. 235-419.000.

Slavik, John W. Fireplace enclosure with heat exchanger. 4,112,915, Cl. 126-121.000.

Sloan Valve Company: *See—*
Horowitz, Charles, 4,112,961, Cl. 137-102.000.
Horowitz, Charles, 4,113,333, Cl. 339-14.00P.

Small, William H. Shelter construction and method of assembling same. 4,112,956, Cl. 135-1.00D.

Smeets, Lambertus R. J. M.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.

Smets, Georges Joseph; and Vandensavel, Jean Marie, to Agfa-Gevaert, N.V. Masked isocyanates. 4,113,734, Cl. 260-308.00D.

Smiley, Leonard H., to Rohm and Haas Company. Foamed cementitious material and composite. 4,113,913, Cl. 428-310.000.

Smirnov, Leonard Fedorovich; Parkhitko, Vladimir Mikhailovich; Zverkhovsky, Valentin Ivanovich; Burtov, Oleg Antonovich; Razuvaev, Nikolai Ivanovich; Dovzhko, Fedor Evdokimovich; Kleiman, Moisha Gershovich; and Dzyan, Valentin Ivanovich. Freeze desalination and concentration apparatus. 4,112,702, Cl. 62-123.000.

Smith, Adrian P. Corrosion-resistant light-weight spot welding gun. 4,114,017, Cl. 219-90.000.

Smith, George William, to USM Corporation. Tire grinding system. 4,113,186, Cl. 241-24.000.

Smith, Herman W., to Upjohn Company, The. 3,7-Inter-m-phenylene-3-oxa-4,5,6-trinor-13,14-didehydro-11-deoxy-PGE_1 compounds. 4,113,961, Cl. 560-53.000.

Smith, Herman W., to Upjohn Company, The. 5-Oxa-13,14-didehydro-11-deoxy-17-phenyl-18,19,20 trinor-PGE_1 compounds. 4,113,962, Cl. 560-53.000.

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Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Fluid solventless epoxy-anhydride compositions containing metal acetylacetonate accelerators and organic carboxylic acid co-accelerators. 4,113,791, Cl. 260-830.0TW.

Smith, Joseph A.: *See—*
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Smith, Kenneth E.: *See—*
Hatcher, Charles S.; and Smith, Kenneth E., 4,112,667, Cl. 57-157.00S.

Smith, Richard D., to Kennecott Copper Corporation. Tarnish resistant copper alloy. 4,113,475, Cl. 75-159.000.

Smith, Robert L.; Stokker, Gerald E.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. Substituted 2-aminomethylphenyl sulfamates. 4,113,877, Cl. 424-303.000.

Smith, Rodney I. Impact resistant tongue-and-groove coupling for highway traffic barricades. 4,113,400, Cl. 404-6.000.

Smith, Roy B. Drive shaft "U" joint lubricator. 4,113,060, Cl. 184-6.000.

Smith, Stanley E., to General Motors Corporation. Ball joint with slotted spring biased stud. 4,113,396, Cl. 403-138.000.

Smith, Trevor, to British Gas Corporation. Fluid-flow noise reduction systems. 4,113,050, Cl. 181-230.000.

Smyth, Norman Linfoot, to Britool Limited. Wrenches and other hand tools. 4,112,749, Cl. 73-139.000.

Snam Progetti, S.p.A.: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 4,113,694, Cl. 260-875.000.
Cesca, Sebastiano; Priola, Aldo; and Ferraris, Giuseppe, 4,113,790, Cl. 260-683.15B.

Snedeker, Clarke R.: *See—*
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Sniegowski, Bruno Raymond: *See—*
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Sniff, Walter Grant, Jr.: *See—*
Featherstone, Harry Edwin; and Sniff, Walter Grant, Jr., 4,114,020, Cl. 219-137.00R.

Snyder, Francis H. Pinless resilient coupling. 4,113,397, Cl. 403-154.000.

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Rousseau, George L.; and Snyder, Richard C., 4,112,851, Cl. 105-199.00C.

Snyder, Robert C.: *See—*
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Sobolev, Valerian Mikhailovich: *See—*
Michurov, Jury Ivanovich; Pantukh, Boris Izrailevich; Sobolev, Valerian Mikhailovich; Rutman, Grigory Iosifovich; Logutov, Igor Jurievich; and Dolidze, Vladimir Romanovich, 4,113,976, Cl. 568-789.000.

S.A. des Etablissements Francois Salomon & Fils: *See—*
Salomon, Georges Pierre Joseph, 4,112,557, Cl. 24-69.0SK.

Societe Civile de Recherches et d'Etudes Nouvelles: *See—*
Orzales, Henri-Ange, 4,113,960, Cl. 560-52.000.

Societe Coupax: *See—*
d'Arras, Philippe, 4,112,544, Cl. 17-25.000.

Societe d'Applications de Procedes Industriels et Chimiques S.A.P.I.C.: *See—*
Richard, Gerard Yves, 4,113,510, Cl. 134-2.000.

Societe de Vente de l'Aluminium Pechiney: *See—*
Gauvry, Robert; and Portalier, Robert, 4,113,473, Cl. 75-148.000.

Societe d'Etudes de Machines Thermiques: *See—*
Bouquet, Jean-Claude, 4,112,883, Cl. 123-52.00M.

Societe Industrielle et Financiere le Profil: *See—*
Boucard, Michel Jean, 4,112,722, Cl. 72-181.000.

Societe Miniere et Metallurgique de Penarroya: *See—*
Casalis, Jean-Arnaud; Teil, Yves; and Motte, Raymond, 4,113,624, Cl. 210-219.000.

Societe Nationale des Poudres et Explosifs: *See—*
Lecolier, Serge L.; and Biehler, Jean-Marie J., 4,113,671, Cl. 521-108.000.

Soeda, Takahiko: *See—*
Gomi, Teruo; Hisa, Yuji; and Soeda, Takahiko, 4,113,716, Cl. 260-123.500.

Sohner, Gerhard: *See—*
Manger, Hansjorg; Sohner, Gerhard; and Hohne, Gerd, 4,112,890, Cl. 123-117.00R.

Soja, Lawrence M.; Stokes, Daniel F.; and Beile, Richard W., to Stone Container Corporation. Display carton. 4,113,100, Cl. 206-602.000.

Solartron Electronic Group Ltd., The: *See—*
Cook, John Gerald; and Shaw, Julian David, 4,114,094, Cl. 324-115.000.

Solco Basel AG: *See—*
Benes, Ivan, 4,113,850, Cl. 424-1.000.

Solex Research Corporation of Japan: *See—*
Watanabe, Morio; and Nishimura, Sanji, 4,113,588, Cl. 204-151.000.

Sone, Yoshiaki; Sawada, Takamasa; and Shirai, Masanari, to Canon Kabushiki Kaisha. Reader-printer. 4,113,377, Cl. 355-45.000.

Sony Corporation: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, 4,113,264, Cl. 274-15.00R.
Takizawa, Kazuyuki, 4,113,263, Cl. 274-15.00R.
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,581, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,582, Cl. 204-39.000.
Uzuka, Mitsuo, 4,114,073, Cl. 318-138.000.

South African Inventions Development Corporation, The: *See—*
Hasson, Victor Haim; and von Bergmann, Hubertus Michael, 4,114,113, Cl. 331-94.50G.

Southern Chemical Company: *See—*
Cotten, Roger C.; Young, David W.; and Kandanian, Aram Y., 4,113,804, Cl. 260-897.00A.

Southern Imperial, Inc.: *See—*
Donnelli, Joseph W.; and Barnes, Richard D., 4,113,109, Cl. 211-49.00R.

Southwest Research Institute: *See—*
Melton, Rosser B., Jr.; Colburn, John W., Jr.; and Wood, Charles D., III, 4,113,315, Cl. 299-13.000.

Soxil S.p.A.: *See—*
Visconti, Matteo, 4,112,939, Cl. 128-186.000.

Spagnola, Raymond J., Jr. Bingo chip dispenser. 4,113,143, Cl. 221-267.000.

Spatz, Sydney Martin; and Shackle, Dale Richard, to Mead Corporation, The. Pressure-sensitive carbonless copy system and transfer sheet for use therein. 4,113,282, Cl. 282-27.500.

Spaulding, James R., to General Motors Corporation. Temperature compensated internal combustion engine ignition spark vacuum advance system. 4,112,891, Cl. 123-117.00A.

Spaulding, Tedford Hollace, to Bunker Ramo Corporation. Insulation-piercing contact. 4,113,338, Cl. 339-97.00R.

Spence, J. Ronald, to Standard Oil Company (Indiana). Antistatic additives. 4,113,443, Cl. 44-72.000.

Spencer, Boyd La Russell, to Spencer Heads, Inc. Firing deck insert for internal combustion engines. 4,112,906, Cl. 123-191.00A.

Spencer, David R.: *See—*
Goldsborough, Robert R.; Spencer, David R.; and West, Samuel F., 4,114,156, Cl. 343-112.00S.

Spencer Heads, Inc.: *See—*
Spencer, Boyd La Russell, 4,112,906, Cl. 123-191.00A.

Spencer, Lloyd: *See—*
Christy, Mark H.; and Spencer, Lloyd, 4,113,180, Cl. 239-109.000.

Spengler, Hans; Bucksch, Gunter; and Morgenstern, Manfred, to Rutgerswerke Aktiengesellschaft. Process for the continuous production of indene resins. 4,113,931, Cl. 526-64.000.

Sperry Rand Corporation: *See—*
Lund, Roger Edward, 4,114,191, Cl. 365-2.000.
Phillips, Edwin R., 4,113,247, Cl. 271-264.000.

Spiers, Dennis D. Sheet sling. 4,113,160, Cl. 224-45.00R.

Spies, Hans: *See—*
Held, Manfred; and Spies, Hans, 4,112,844, Cl. 102-19.200.

Spiller, Herbert A., to Monsanto Company, St. Louis, Missouri. Method for treating polyester filaments. 4,112,668, Cl. 57-157.00S.

Spirig, Ernst. Water decomposing apparatus. 4,113,601, Cl. 204-230.000.

Spork, Helmut: *See—*
Frey, Volker; Riedle, Rudolf; John, Peter; Kalchgruber, Gerhard; Spork, Helmut; and Leser, Robert, 4,113,760, Cl. 260-448.20E.

Sprague Electric Company: *See—*
Randall, John J., Jr.; and Bernard, Walter J., 4,113,579, Cl. 204-33.000.

SPS Technologies, Inc.: *See—*
Dey, Ervin J., 4,112,993, Cl. 151-41.740.

Stach, Kurt, deceased (by Plattner, Werner, executor); Bosies, Elmar; Heerdt, Ruth; Kuhnle, Hans-Frieder; and Schmidt, Felix Helmut, to Boehringer Mannheim GmbH. Hypoglycemically and hypolipidemically active derivatives of phenyl-alkane-carboxylic acids. 4,113,871, Cl. 424-272.000.

Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., to Velsicol Chemical Company. Dioxolane substituted amides. 4,113,464, Cl. 71-88.000.

Staendeke, Horst; Dany, Franz-Josef; Kandler, Joachim; Auel, Theodor; and Kloss, Werner, to Hoechst Aktiengesellschaft. Stabilized red phosphorus and process for making it. 4,113,841, Cl. 423-265.000.

Stahlecker, Fritz; and Stahlecker, Hans. Open end spinning unit with a braking device. 4,112,659, Cl. 57-58.890.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 4,112,659, Cl. 57-58.890.

Staines, Robert: *See—*
Sikli, Bert J., 4,113,065, Cl. 187-18.000.

Stalego, Charles J., to Owens-Corning Fiberglas Corporation. Apparatus for supplying glass bodies to glass melters. 4,113,457, Cl. 65-11.00R.

Stamicarbon, B.V.: *See—*
Klaasen, Dirk, 4,113,440, Cl. 422-132.000.

Stamicarbon, N.V.: *See—*
Geus, John W., 4,113,658, Cl. 252-454.000.
Stampfli, Harald, to Lucifer S.A. Control system for an electromagnet. 4,114,184, Cl. 361-154.000.
Standard Havens, Inc.: *See—*
Bundy, Richard P., 4,113,449, Cl. 55-96.000.
Standard Oil Company, The: *See—*
White, James F.; and Applequist, Michael D., 4,113,768, Cl. 562-535.000.
Standard Oil Company (Indiana): *See—*
Richardson, Eugene E.; and Sidorowicz, Frank, 4,113,765, Cl. 260-505.00S.
Sabol, Albert R.; and Petrellis, Nicolas C., 4,113,634, Cl. 252-32.70E.
Spence, J. Ronald, 4,113,443, Cl. 44-72.000.
Stang, Peter L.: *See—*
Van Ornum, Joel V.; and Stang, Peter L., 4,113,799, Cl. 260-876.00B.
Staniland, Philip Anthony, to Imperial Chemical Industries Limited. Aromatic polymer production. 4,113,698, Cl. 528-481.000.
Staniland, Philip Anthony: *See—*
Rose, John Brewster; and Staniland, Philip Anthony, 4,113,699, Cl. 528-126.000.
Stanley, William L.: *See—*
Masri, Merle S.; Randall, Virginia G.; and Stanley, William L., 4,113,567, Cl. 195-63.000.
Stapleton, Harold Reginald, to W. Vinten Limited. Tilt mounting heads. 4,113,215, Cl. 248-183.000.
Stapp, Paul R., to Phillips Petroleum Company. Process for preparing diacyloxy olefins. 4,113,971, Cl. 560-246.000.
Star Manufacturing Company of Oklahoma: *See—*
Simpson, Harold G., 4,112,632, Cl. 52-11.000.
Staub, John W. Gun recoil reducer. 4,112,605, Cl. 42-1.00V.
Stauffer Chemical Company: *See—*
Chen, Kon S.; and Majewski, Helmut W., 4,113,504, Cl. 106-97.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., to Chevron Research Company. Carboxylic acid-containing wax fluxes. 4,113,525, Cl. 148-23.000.
Stayner, Robert A.; Fox, Richard C.; and Jones, Thornton K., to Chevron Research Company. Wax flux compositions. 4,113,526, Cl. 148-23.000.
Stearns, David Burrell: *See—*
Rollo, Anita Hand; and Stearns, David Burrell, 4,113,614, Cl. 210-22.00A.
Stearns, Richard S.: *See—*
Thompson, Robert M.; and Stearns, Richard S., 4,113,794, Cl. 260-857.0TW.
Steel, Paul Franklin, to Teledyne Acoustic Research. Input filtering apparatus for loudspeakers. 4,113,983, Cl. 179-1.0VL.
Steer, Philip James: *See—*
Carter, Michael Charles; and Steer, Philip James, 4,114,188, Cl. 364-415.000.
Stein Industrie: *See—*
Deruelle, Jean, 4,113,417, Cl. 431-5.000.
Steinberg, Bernard J.: *See—*
Snyder, John M., 4,112,542, Cl. 16-114.00R.
Steiner, Edwin C.: *See—*
Trucks, Roger O.; and Steiner, Edwin C., 4,113,739, Cl. 260-338.000.
Steiner, H. Karl. Torch igniter. 4,113,423, Cl. 431-128.000.
Steiner, John E., to United States Steel Corporation. Wire-wrapped cylindrical prestressed structures. 4,113,132, Cl. 220-71.000.
Steinfeld, Horst E.; and Mathes, Dieter, to Hoesch Werke Aktiengesellschaft. Resilient rail connection. 4,113,178, Cl. 238-349.000.
Stemmann, Karl; and Holtmeier, Gerhard, to August Stemmann OHG. Method of and apparatus for regulating the brush contact pressure of pantograph assemblies. 4,113,074, Cl. 191-67.000.
Stendel, Wilhelm: *See—*
Mauter, Fritz; Riebel, Hans-Jochem; Homeyer, Bernhard; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,113,860, Cl. 424-200.000.
Stephens, Donald Harrison, to Bourns, Inc. Worm gear drive and ratchet system. 4,114,133, Cl. 338-174.000.
Sterling Drug Inc.: *See—*
Surrey, Alexander R.; and Collins, Joseph C., 4,113,774, Cl. 260-558.00D.
Stevens, Richard Frederick: *See—*
Gates, John William Charles; Hall, Roy Geoffrey Noel; Ross, Ian Norman; and Stevens, Richard Frederick, 4,113,388, Cl. 356-110.000.
Stewart, Alan; and Majefski, Richard Lee, to Shakespeare of Arkansas, Inc. Device for electronic direction control of trolling motors. 4,114,074, Cl. 318-257.000.
Stewart, David E., to Empire Metal Products Corp. Roller assembly for sliding screen door, and the like. 4,112,622, Cl. 49-421.000.
Stiles, Kenneth M., to Air Logistics Corporation. Fiber reinforced optical fiber cable. 4,113,349, Cl. 350-96.230.
Still, Robert C., to New Concepts, Inc. Replaceable one piece liner for a gate valve. 4,112,969, Cl. 137-454.200.
Stiltz, Erwin; Hoyer, Rudolf; and Lindenmayer, Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Hammer drill with drive and percussion elements accommodated in a cylinder. 4,113,035, Cl. 173-116.000.
Stockel, Dieter; and Schneider, Friedrich, to Rau, G. Spark plugs for internal combustion engines. 4,112,905, Cl. 123-169.0EL.
Stokes, Daniel F.: *See—*
Soja, Lawrence M.; Stokes, Daniel F.; and Beile, Richard W., 4,113,100, Cl. 206-602.000.
Stokker, Gerald E.: *See—*
Smith, Robert L.; Stokker, Gerald E.; and Cragoe, Edward J., Jr., 4,113,877, Cl. 424-303.000.
Stoll, Max: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 4,113,891, Cl. 426-536.000.
Stoller, Frederick L., to Phillips Petroleum Company. Method and apparatus useful in control of edge uniformity in nonwoven fabrics. 4,113,827, Cl. 264-280.000.
Stone, Alan J.: *See—*
Tertinek, Christian T.; and Stone, Alan J., 4,113,403, Cl. 404-113.000.
Stone Construction Equipment Inc.: *See—*
Tertinek, Christian T.; and Stone, Alan J., 4,113,403, Cl. 404-113.000.
Stone Container Corporation: *See—*
Soja, Lawrence M.; Stokes, Daniel F.; and Beile, Richard W., 4,113,100, Cl. 206-602.000.
Stoneberg, William A.: *See—*
Maass, Edward A.; and Stoneberg, William A., 4,112,598, Cl. 35-53.000.
Storace, Anthony, to Pitney-Bowes, Inc. Null transducer for an analytical balance. 4,113,040, Cl. 177-211.000.
Stork Amsterdam B.V.: *See—*
Witte, Johan Frederik, 4,112,836, Cl. 99-483.000.
Stotz, Manfred: *See—*
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,113,925, Cl. 429-78.000.
Stournas, Stamoulis; and Heiba, El Ahmadi I., to Mobil Oil Corporation. Oil recovery by surfactant waterflooding. 4,113,632, Cl. 252-8.55D.
Stout, Daniel W. Laser drilling method and system of fossil fuel recovery. 4,113,036, Cl. 175-11.000.
Stovall, Ronald J.: *See—*
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., 4,114,083, Cl. 320-39.000.
Strandly, Ingvald: *See—*
Bugge, Hans Jorgen; Strandly, Ingvald; and Swanberg, Carl Olof, 4,112,982, Cl. 139-425.00A.
Strange, Delbert D.; and Hunts, Ronald M., to Manufacturing Approaches & Total Concepts, Inc. Automatic dadoing machine. 4,112,986, Cl. 144-323.000.
Strathearn Audio Limited: *See—*
McLean, Graham Wilson; and Holt, David, 4,114,060, Cl. 310-163.000.
Strehlke, Gunter; and Osterburg, Gunther, to Deutsche Texaco Aktiengesellschaft. Extractive distillation of acetone. 4,113,780, Cl. 260-593.00P.
Strojny, Edwin J.; Friedli, Hans R.; and Wing, Milton S., to Dow Chemical Company, The. Catalyst for and method of producing maleic anhydride. 4,113,745, Cl. 260-346.750.
Stroup, Steven L.: *See—*
Franks, Lawrence A.; Stroup, Steven L.; and Perry, James E., 4,112,794, Cl. 82-64.000.
Stuart, Fred E., Sr. Nozzle for rotary filter pipe. 4,113,183, Cl. 239-533.130.
Stuart, Linden, Jr.; and Davis, Harry Robert, to Stuart Steel Protection Corporation. Pipe joint wrapping machine. 4,113,545, Cl. 156-392.000.
Stuart Steel Protection Corporation: *See—*
Stuart, Linden, Jr.; and Davis, Harry Robert, 4,113,545, Cl. 156-392.000.
Stubbs, Elmer L., to Thermatron, Inc. Microwave heating method and apparatus. 4,114,011, Cl. 219-10.55M.
Studiengesellschaft Kohle mbH: *See—*
Lehmkuhl, Herbert; and Rabet, Farroch, 4,113,649, Cl. 252-363.500.
Sturm, Michael R. Hood for glass furnace gathering hole. 4,113,461, Cl. 65-324.000.
Sturm, Warren A.: *See—*
Swinehart, Frank, 4,113,999, Cl. 179-179.000.
Suda, Seiji: *See—*
Sugiura, Noboru; and Suda, Seiji, 4,112,903, Cl. 123-148.00E.
Sueyoshi, Akiko: *See—*
Oka, Shoji; Murakami, Ryoichi; and Sueyoshi, Akiko, 4,113,519, Cl. 148-6.15R.
Suga, Shigeru. Electrode operating mechanism for carbon arc lamp. 4,114,067, Cl. 314-134.000.
Sugavanam, Balsubramanyan: *See—*
Shephard, Margaret Claire; Sugavanam, Balsubramanyan; Worthington, Paul Anthony; Collins, David John; and Griffin, David, 4,113,465, Cl. 71-92.000.
Sugimura, Sadao: *See—*
Matsui, Takashi; Sugimura, Sadao; and Noo, Kunio, 4,113,824, Cl. 264-230.000.
Sugiura, Akio: *See—*
Nojiri, Tadao; Sugiura, Akio; and Nomura, Masahiro, 4,114,030, Cl. 235-464.000.
Sugiura, Katuaki: *See—*
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, 4,112,661, Cl. 57-34.00R.
Sugiura, Noboru; and Suda, Seiji, to Hitachi, Ltd. Ignition system for an internal combustion engine. 4,112,903, Cl. 123-148.00E.

Sugiyama, Jun: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, 4,113,795, Cl. 260-874.000.
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, to Fuji Photo Film Co., Ltd. Method of forming photographic line and half-tone images. 4,113,489, Cl. 96-60.00R.
Sugiyama, Nobuo: *See—*
Sugiyama, Mitsunori; Ishiguro, Shoji; Sugiyama, Nobuo; Iijima, Yoo; Okutsu, Eiichi; Iwano, Haruhiko; Hosoya, Katsumi; and Hara, Hikoharu, 4,113,489, Cl. 96-60.00R.
Sullivan, Gerald Leslie. "Strapdown" induction compass transmitter with means to compensate for heading errors during turns and during dives and climbs due to the vertical component of the Earth's magnetic field and due to two cycle error. 4,112,755, Cl. 73-178.00R.
Sullivan, Kevin J., to Corning Glass Works. Blood sample container having an anticoagulant coating of polyvinyl pyrrolidone and a salt of ethylene diamine tetracetate. 4,112,925, Cl. 128-2.00F.
Sullivan, Thomas A. Roller-colloid mill. 4,113,189, Cl. 241-43.000.
Sulzer Brothers Limited: *See—*
Bader, Hartmann, 4,112,980, Cl. 139-92.000.
Sekoulov, Ivan; and Muller, Wolf-Rudiger, 4,113,612, Cl. 210-17.000.
Sekoulov, Ivan; and Muller, Wolf-Rudiger, 4,113,613, Cl. 210-17.000.
Suminsby, John. Pendulous induction compass transmitter including means external to the transmitter to compensate for heading errors in turns due to the vertical component of the Earth's magnetic field and due to two cycle error. 4,112,754, Cl. 73-178.00R.
Sumitomo Chemical Company, Limited: *See—*
Kojimoto, Susumu; Sato, Takami; and Mori, Toshio, 4,113,814, Cl. 264-89.000.
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shiunzi; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,113,463, Cl. 71-76.000.
Sano, Takezo; Kobayashi, Akira; and Inoue, Haruo, 4,113,666, Cl. 521-29.000.
Sekihara, Takeshi; Emura, Tomoyuki; and Murashige, Masayuki, 4,113,932, Cl. 526-74.000.
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.
Sumitomo Electric Industries, Ltd.: *See—*
Doi, Kaname, 4,113,318, Cl. 303-24.00F.
Okita, Koichi, 4,113,912, Cl. 428-290.000.
Shibano, Yoshizo, 4,114,161, Cl. 343-741.000.
Yamaguchi, Yasuo, 4,112,725, Cl. 72-128.000.
Sumitomo Metal Industries, Ltd.: *See—*
Nakada, Tetsuro; Shimizu, Makoto; and Yoshinaga, Mayumi, 4,113,239, Cl. 266-137.000.
Summers, Ernest Moreland: *See—*
Henry, Russell Alger; and Summers, Ernest Moreland, 4,113,899, Cl. 427-290.000.
Sun Ventures, Inc.: *See—*
Thompson, Robert M.; and Stearns, Richard S., 4,113,794, Cl. 260-857.0TW.
Sundman, Frey Viking, to A. Ahlstrom Osakeyhtio. Method and means for drying a fibre material containing cellulose. 4,112,587, Cl. 34-12.000.
Sundstrand Corporation: *See—*
Davis, Gerald L.; and Scott, Timothy C., 4,112,974, Cl. 137-625.290.
Suntech, Inc.: *See—*
Lauer, James L.; and Peterkin, Melvin E., 4,113,384, Cl. 356-70.000.
Neinast, Gary S., 4,113,236, Cl. 254-134.500.
Norton, Richard V., 4,113,763, Cl. 260-465.00D.
Supra Products, Inc.: *See—*
Bradley, Terrag W., 4,112,717, Cl. 70-63.000.
Surrey, Alexander R.; and Collins, Joseph C., to Sterling Drug Inc. N-(Dichloroacetyl) diamine compounds and process of preparing same. 4,113,774, Cl. 260-558.00D.
Susa, Ermanno: *See—*
Mayr, Adolfo; Davoli, Velmore; Leccese, Antonio; and Susa, Ermanno, 4,113,654, Cl. 252-429.00C.
Sutherland, George K.: *See—*
Zelinka, Richard J.; and Sutherland, George K., 4,114,023, Cl. 219-471.000.
Sutton, James Alton, Jr. Ventilation system for poultry or livestock house. 4,113,175, Cl. 236-46.00A.
Sutton, Stephen J.; Holen, J. Robert; and Creager, John E., to General Motors Corporation. Fuel level sender with molded plastic case. 4,114,130, Cl. 338-33.000.
Suwa, Hiroyuki: *See—*
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,112,732, Cl. 72-334.000.
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Motion picture projector. 4,113,369, Cl. 352-194.000.
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, to Director-General Agency of Industrial Science and Technology. Steam reforming reactor. 4,113,441, Cl. 422-197.000.
Suzuki, Hiroshige; Horie, Eizi; and Nagashima, Hideo, to Agency of Industrial Science and Technology, The President of the. Wall structure of hot fluid chamber. 4,112,648, Cl. 52-508.000.
Suzuki, Koichi; Suzuki, Shigeru; and Suzuki, Minoru, to Ricoh Company, Ltd. Apparatus for controlling the toner concentration of a developer used in a dry type developing system. 4,112,867, Cl. 118-7.000.
Suzuki, Minoru: *See—*
Suzuki, Koichi; Suzuki, Shigeru; and Suzuki, Minoru, 4,112,867, Cl. 118-7.000.
Suzuki, Osamu: *See—*
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, 4,112,661, Cl. 57-34.00R.
Suzuki, Shigeru: *See—*
Suzuki, Koichi; Suzuki, Shigeru; and Suzuki, Minoru, 4,112,867, Cl. 118-7.000.
Suzuki, Shoji: *See—*
Koike, Hiroshi; Suzuki, Shoji; and Asakawa, Takeki, 4,113,359, Cl. 350-269.000.
Suzuki, Shosuke: *See—*
Matsumoto, Masayasu; Iida, Kazuyoshi; Kondo, Yoshikazu; and Suzuki, Shosuke, 4,113,053, Cl. 181-284.000.
Suzuki, Sukenori: *See—*
Fujita, Masanori; and Suzuki, Sukenori, 4,113,981, Cl. 174-88.00R.
Suzuki, Tadashi: *See—*
Ookubo, Toshio; Nishino, Atsushi; and Suzuki, Tadashi, 4,113,439, Cl. 422-177.000.
Suzuki, Toshihisa: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.
Suzuki, Yasoji, to Tokyo Shibaura Electric Co., Ltd. Counter provided with complementary field effect transistor inverters. 4,114,049, Cl. 307-225.00C.
Suzuki, Yasoji; and Ochii, Kiyofumi, to Tokyo Shibaura Electric Co., Ltd. Semiconductor memory device to reduce parasitic output capacitance. 4,114,192, Cl. 365-189.000.
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Open-end spinning machine and a method of stopping the same. 4,112,661, Cl. 57-34.00R.
Svedas, Stanley; and Shah, Champak C., to Turtle Wax, Inc. Polished composition containing microcrystalline wax. 4,113,677, Cl. 260-23.00R.
Svenska Dataregister Aktiebolag: *See—*
Englund, Gosta Roland, 4,112,840, Cl. 101-93.150.
Svenska Rotor Maskiner Aktiebolag: *See—*
Schibbye, Hjalmar; and Eriksson, Lennart, 4,112,701, Cl. 62-84.000.
Svenska Traforskningsinstitutet: *See—*
Johansson, Ingvar, 4,113,542, Cl. 156-335.000.
Nyren, Jan O.; Nordin, Soren B.; and Flodman, Leif A., 4,113,555, Cl. 162-127.000.
Svensson, Einar Gustav-Vilhelm, to Wallbergs Fabriks AB. Apparatus for forming a joint for wire cloth. 4,112,570, Cl. 29-241.000.
Swanberg, Carl Olof: *See—*
Bugge, Hans Jorgen; Strandly, Ingvald; and Swanberg, Carl Olof, 4,112,982, Cl. 139-425.00A.
Swinehart, Frank, to Sturm, Warren A. Hand held communications microphone. 4,113,999, Cl. 179-179.000.
Swiss Aluminium Ltd.: *See—*
Dore, James E., 4,113,241, Cl. 266-227.000.
Fister, Julius C., Jr.; Breedis, John F.; and Pryor, Michael J., 4,113,472, Cl. 75-142.000.
Swodenk, Wolfgang: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolfgang, 4,113,747, Cl. 260-348.250.
SWS Silicones Corporation: *See—*
Lewis, Richard Newton, 4,113,690, Cl. 260-37.0SB.
Sybron Corporation: *See—*
Brockway, Charles E., 4,113,309, Cl. 297-408.000.
Sylvester, Bruce J.; and Sylvester, Roger P., to J. G. Sylvester Associates, Inc. Fillet weld inspection system. 4,112,775, Cl. 73-627.000.
Sylvester, Roger P.: *See—*
Sylvester, Bruce J.; and Sylvester, Roger P., 4,112,775, Cl. 73-627.000.
Syracuse, Donald C.: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.
Syred, Nicholas; Grant, John; and Sidhu, Baldip Singh. Vortex diodes. 4,112,977, Cl. 137-812.000.
Sys-Tec, Inc.: *See—*
Zelinka, Richard J.; and Sutherland, George K., 4,114,023, Cl. 219-471.000.
Systems, Science and Software: *See—*
Turner, Philip L., 4,112,738, Cl. 73-32.00R.
Szatmari, Franz: *See—*
Hofmann, Franz; and Szatmari, Franz, 4,113,238, Cl. 366-56.000.
Szema, Li C.: *See—*
Lee, Richard M.; and Szema, Li C., 4,113,406, Cl. 415-115.000.
Szentivanyi, Matyas: *See—*
Bernath, Gabor; Gera, Lajos; Gondos, Gyorgy; Ecsery, Zoltan; Hermann nee Voros, Judit; Szentivanyi, Matyas; and Janvari, Erzsebet, nee Kanyo, 4,113,868, Cl. 424-251.000.

Tager, Semen Alexandrovich: *See—*
Eremin, Nikolai Ivanovich; Tager, Semen Alexandrovich; Kostin, Vladimir Nikolaevich; Bobkov, Lev Nikolaevich; Zaitsev, Mikhail Ivanovich; Kaluzhsky, Nikolai Andreevich; Shmorgunenko, Nikolai Stepanovich; Jurovsky, Abram Zinovievich; Kozlov, Viktor Mikhailovich; Yakhilevich, Fritiof Meerovich; Shpirt, Mikhail Yakovlevich; and Panin, Vladlen Iosifovich, 4,113,833, Cl. 423-131.000.

Taguchi, Tetsuya: *See—*
Tsunekawa, Tokuichi; and Taguchi, Tetsuya, 4,114,036, Cl. 250-214.00R.

Taisho Pharmaceutical Co., Ltd.: *See—*
Kamano, Yoshiaki; Michishita, Kazuhiko; Seki, Teruya; and Tanaka, Ichiro, 4,113,680, Cl. 260-397.450.

Takahashi, Akio: *See—*
Oshima, Kathuhide; Takasaki, Haruyuki; and Takahashi, Akio, 4,113,583, Cl. 204-55.00Y.

Takahashi, Kiyoshi: *See—*
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,113,369, Cl. 352-194.000.

Takahashi, Sankichi: *See—*
Koseki, Yasuo; Takahashi, Sankichi; and Nakaoka, Azuma, 4,113,618, Cl. 210-82.000.

Takaiti, Osasi: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, 4,113,873, Cl. 424-274.000.

Takasaki, Haruyuki: *See—*
Oshima, Kathuhide; Takasaki, Haruyuki; and Takahashi, Akio, 4,113,583, Cl. 204-55.00Y.

Takase, Hirobumi; and Utsunomiya, Yutaka, to NHK Spring Co., Ltd. NC Coil spring manufacturing apparatus. 4,112,721, Cl. 72-12.000.

Takemura, Katsuaki: *See—*
Suzuki, Akira; Nakamura, Kantaro; Maejima, Tetsuo; Kajiura, Masaru; Aso, Toshio; Abe, Shoichi; Suzuki, Toshihisa; Takemura, Katsuaki; Kuno, Masaya; Yoshida, Kazumichi; Yokokawa, Junji; Miyasugi, Takeshi; Yagi, Hiroshi; and Mukai, Kiyohisa, 4,113,441, Cl. 422-197.000.

Takenoya, Hideaki: *See—*
Kakinuma, Toshihide; Kume, Toshiaki; Takenoya, Hideaki; Makabe, Hachiro; and Watanabe, Kazuo, 4,112,858, Cl. 112-158.00E.

Takeshita, Tetsuo: *See—*
Mukaemachi, Takuji; Takeshita, Tetsuo; and Enami, Shiroh, 4,113,988, Cl. 179-18.0ES.

Takimoto, Hiroyuki: *See—*
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,113,369, Cl. 352-194.000.

Takimoto, Masatami; and Mizutani, Koichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with charcoal canister. 4,112,898, Cl. 123-136.000.

Takiura, Mamoru; and Hayashizaki, Yoshihiro, to Ikegai Tekko Kabushiki Kaisha. Method of dispersing inorganic additives within extruder. 4,113,822, Cl. 264-349.000.

Takizawa, Kazuyuki, to Sony Corporation. Phonograph record player. 4,113,261, Cl. 274-15.00R.

Talbott, John W.; and Logan, James D., to Washington State University Research Foundation. Method of forming a composite mat of directionally oriented lignocellulosic fibrous material. 4,113,812, Cl. 264-24.000.

Talleres Diesel, S.A.: *See—*
Torralba, Jose Esteban, 4,112,902, Cl. 123-140.0FG.

Tamborini, Ariberto; and Tamborini, Giancarlo. Process of the making of extruded thermoplastic bodies and device for the carrying out of the said process. 4,113,820, Cl. 264-173.000.

Tamborini, Giancarlo: *See—*
Tamborini, Ariberto; and Tamborini, Giancarlo, 4,113,820, Cl. 264-173.000.

Tamm, Paul Whitfield, to Chevron Research Company. Method for preparing a hydrodesulfurization catalyst. 4,113,661, Cl. 252-465.000.

Tamura, Nobuhiro: *See—*
Tanabe, Masanori; Ikeda, Masanori; and Tamura, Nobuhiro, 4,113,970, Cl. 560-244.000.

Tanabe, Masanori; Ikeda, Masanori; and Tamura, Nobuhiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing 1,4-diacyloxybutene-2. 4,113,970, Cl. 560-244.000.

Tanabe Seiyaku Co. Ltd.: *See—*
Himizu, Junichi; Harigaya, Shoichi; Saijo, Shigeyoshi; Wada, Masao; Noguchi, Katsuyuki; and Takaiti, Osasi, 4,113,873, Cl. 424-274.000.

Tanabe, Yoshio: *See—*
Koike, Sakae; Matsunami, Shoichi; Goto, Yorinobu; and Tanabe, Yoshio, 4,113,838, Cl. 423-235.000.

Tanaka, Akira, to American Safety Equipment Corporation. Safety belt retractor with conjugate return spring means. 4,113,200, Cl. 242-107.000.

Tanaka, Eiji: *See—*
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,581, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,582, Cl. 204-39.000.

Tanaka, Ichiro: *See—*
Kamano, Yoshiaki; Michishita, Kazuhiko; Seki, Teruya; and Tanaka, Ichiro, 4,113,680, Cl. 260-397.450.

Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, to Yanagimoto Seisakusho Co., Ltd. Method and apparatus for collectively sampling a plurality of gaseous phases in desired proportions for gas analysis or other purposes. 4,113,434, Cl. 23-232.00R.

Tanaka, Toshie, to Nifco Inc. Plastic fixing device. 4,112,815, Cl. 85-80.000.

Tanaka, Tsutomu: *See—*
Izawa, Shinichi; Sugiyama, Jun; Tanaka, Tsutomu; Nakanishi, Atsuo; and Saito, Toranosuke, 4,113,795, Cl. 260-874.000.

Tanner, Lee E.; and Ray, Ranjan, to Allied Chemical Corporation. Zirconium alloys containing transition metal elements. 4,113,478, Cl. 75-177.000.

Tao, Frank F.: *See—*
Gorbaty, Martin L.; Tao, Frank F.; and Maa, Peter S., 4,113,602, Cl. 208-8.000.

Tarrant, Paul: *See—*
Schuman, Paul D.; Tarrant, Paul; Warner, Dale A.; and Westmoreland, Geraldine, 4,113,949, Cl. 544-303.000.

Tasch, Al F., Jr.: *See—*
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,112,575, Cl. 29-577.00C.

Tashiro, Ichiro: *See—*
Suzuki, Yoshihisa; Sugiura, Katuaki; Suzuki, Osamu; and Tashiro, Ichiro, 4,112,661, Cl. 57-34.00R.

Tassano, Peter Francis, to Lucas Industries Limited. Apparatus for detecting water in oil. 4,112,744, Cl. 73-61.10R.

Tate, Leslie R.: *See—*
McCullough, John F.; Phillips, John F., Jr.; and Tate, Leslie R., 4,113,842, Cl. 423-308.000.

Tatsuzawa, Yoshinobu: *See—*
Kubo, Noriyoshi; Katano, Takeshi; Tatsuzawa, Yoshinobu; Hagihira, Tadatoshi; Yamamoto, Masahiko; and Wasai, Hiromi, 4,114,097, Cl. 325-320.000.

Taurus Gumiipari Vallalat: *See—*
Bogatirev, Nikolai Tikhonovich; Filianovich, Jevgeny Grigorievich; Ignatyev, Alexandr Dmitrievich; Merkulov, Alexandr Nikolaevich; Ponomarenko, Jury Filippovich; Shein, Jury Gheorghievich; Baso, Jozsef; Frituz, Bela; Korbuly, Jozsef; Nagy, Sandor; Mikes, Sandor; and Pap, Zsolt, 4,113,287, Cl. 285-137.00R.

Taya, Hiroshi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, 4,113,864, Cl. 424-225.000.

Taylor, Alfred James: *See—*
Lumby, Roland John; North, Bernard; and Taylor, Alfred James, 4,113,503, Cl. 106-73.400.

Taylor, Norman C.: *See—*
Skinner, Leon S.; and Taylor, Norman C., 4,112,922, Cl. 126-271.000.

Taylor, Robert Coleman, to Atlantic Richfield Company. Frothing composition for gypsum dispersions. 4,113,638, Cl. 252-61.000.

Taylor-Winfield Corporation, The: *See—*
Toma, Charles A.; and Haessly, Walter F., 4,114,016, Cl. 219-97.000.

TDK Electronics Co., Ltd.: *See—*
Tokuoka, Yasumichi; and Fukuda, Kazumasa, 4,113,528, Cl. 148-105.000.

Technical Plastics Corporation: *See—*
Hanson, Paul D., Sr., 4,112,638, Cl. 52-169.120.

Technicon Instruments Corporation: *See—*
Burns, Donald Arthur; and Fontanilles, Henry, 4,113,383, Cl. 356-36.000.

Tedeschi, Anthony, to Western Electric Co., Inc. Mercury-wetted sealed contact switch. 4,114,006, Cl. 200-234.000.

Teger, Gerhard: *See—*
Lippacher, Wolfgang; and Teger, Gerhard, 4,113,404, Cl. 408-241.00S.

Teil, Yves: *See—*
Casalis, Jean-Arnaud; Teil, Yves; and Motte, Raymond, 4,113,624, Cl. 210-219.000.

Teledyne Acoustic Research: *See—*
Steel, Paul Franklin, 4,113,983, Cl. 179-1.0VL.

Telefonaktiebolaget L M Ericsson: *See—*
Martensson, Folke Lennart, 4,114,106, Cl. 328-111.000.
Samuelsson, Kurt Anders, 4,113,987, Cl. 179-15.0AN.

Telephone Cables Limited: *See—*
Haines, Ernest Martin, 4,113,350, Cl. 350-96.290.

Teletype Corporation: *See—*
Geis, David G.; and Hodne, Ingard B., 4,114,126, Cl. 335-270.000.

TelTec, Incorporated: *See—*
Luetzow, Edwin J., 4,114,008, Cl. 29-630.00B.

Temme, Helmut, to Gewerkschaft Eisenhutte Westfalia. Scraper chain assemblies. 4,113,084, Cl. 198-731.000.

Tennessee Valley Authority: *See—*
McCullough, John F.; Phillips, John F., Jr.; and Tate, Leslie R., 4,113,842, Cl. 423-308.000.

Teodorescu, Constantin, to Institutul National Pentru Creatie Stiintifica Si Tehnica - Increst. Method of and device for attenuating the noise radiated by gas jets. 4,113,048, Cl. 181-220.000.

Terada, Yasuhiko; Yasuda, Jun; and Kuriyama, Masao, to Shikibo Limited. Method for dyeing cellulose fibers by disperse dyes. 4,113,431, Cl. 8-120.000.

Teradyne, Inc.: *See—*
Ashdown, Glynn R.; McCartney, Thomas; and Holmes, Bruce, 4,113,998, Cl. 179-175.30R.

Teraji, Tsutomu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Hashimoto, Masashi; Nakaguti, Osamu; and Oku, Teruo, 4,113,940, Cl. 544-16.000.

Teranishi, Takanori; and Nakashima, Toshihiko, to Nippondenso Co., Ltd. Control system for a motor having a shunt field winding. 4,114,076, Cl. 318-421.000.

Terasawa, Yoshio; and Kimura, Shin, to Hitachi, Ltd. Semiconductor controlled rectifier having an auxiliary region with localized low resistance paths to the control gate. 4,114,178, Cl. 357-38.000.

Terragni, Marco. Extruder and sizer apparatus for hollow plastic sections. 4,113,411, Cl. 425-325.000.

Terry, Ruel Carlton, to In Situ Technology, Inc. Recovering uranium from coal in situ. 4,113,313, Cl. 299-4.000.

Tertinek, Christian T.; and Stone, Alan J., to Stone Construction Equipment Inc. Plate type compactor. 4,113,403, Cl. 404-113.000.

Tetra Pak International AB: *See—*
Carlsson, Lars Christer, 4,113,103, Cl. 206-611.000.

Tetradis, Constantinos. Handle for bags particularly of net or plastic material. 4,112,541, Cl. 16-114.00R.

Tews, Jan Henryk. Two-cycle engine and piston. 4,112,882, Cl. 123-47.00A.

Texaco Development Corporation: *See—*
Gettert, Hans; Jeck, Arnulf; and Werner, Dietmar, 4,113,445, Cl. 48-197.00R.
Schulze, Heinz; and Waddill, Harold G., 4,113,697, Cl. 528-94.000.

Texaco Inc.: *See—*
Herbstman, Sheldon; Webb, Allen N.; and Estes, John H., 4,113,657, Cl. 252-442.000.
Ishiwata, Samford P., 4,112,760, Cl. 73-299.000.
Ledoux, Will A.; Schoen, William; and Kumar, Atul, 4,113,013, Cl. 166-275.000.
Rao, Babu Y.; Nolan, John T., Jr.; and Estes, John H., 4,113,789, Cl. 260-683.680.

Texas Alkyls, Inc.: *See—*
Malpass, Dennis B.; and Yeargin, G. Scott, 4,113,783, Cl. 260-606.50P.

Texas Instruments Incorporated: *See—*
Fu, Horng-sen; Holloway, Thomas C.; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,112,575, Cl. 29-577.00C.
Grenier, Aime J., 4,114,122, Cl. 335-8.000.
Grenier, Aime J., 4,114,123, Cl. 335-42.000.
Pejouhy, Radi, 4,114,127, Cl. 337-97.000.

Textron Inc.: *See—*
Moertel, George B., 4,112,555, Cl. 24-205.13C.

Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Photographic camera with an operation mode display device. 4,114,173, Cl. 354-238.000.

Th. Goldschmidt AG: *See—*
Laqua, Arnold; and Holtschmidt, Ulrich, 4,113,701, Cl. 260-29.40R.

Thackston, Clyde David; and Alexander, Robert H., to Rockwell International Corporation. Torque wrench air shut-off. 4,113,080, Cl. 192-150.000.

Thayer, Orla E. Axial flow valve. 4,112,806, Cl. 84-390.000.

Thely, Maurice H.: *See—*
Estevenel, Yvette Fr. M. J.; Thely, Maurice H.; and Coulon, Wladimir A., 4,113,816, Cl. 264-113.000.

Thermatool Corp.: *See—*
DuBosque, Clayton, Jr.; Rudd, Wallace C.; and Allen, Richard J., 4,112,566, Cl. 29-157.30C.

Thermatron, Inc.: *See—*
Stubbs, Elmer L., 4,114,011, Cl. 219-10.55M.

Theunissen, Eos Lee, to Sidley, Manfred. Dispensing device for web material in roll form. 4,113,195, Cl. 242-55.300.

Theurer, Josef; Praschl, Wilhelm; and Riessberger, Klaus, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H. Load handling vehicle with hydraulic torsion transmitting devices. 4,113,111, Cl. 212-28.000.

Thiry, Geza A. Food processing apparatus. 4,112,834, Cl. 99-450.100.

Tholen, Paul, to Klockner-Humboldt-Deutz Aktiengesellschaft. Multiple working chamber forming combustion machine with exhaust turbo charger. 4,112,684, Cl. 60-606.000.

Thomanek, Franz Rudolf, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Warhead with a disintegrating jacket to house several projectiles. 4,112,847, Cl. 102-67.000.

Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., to United States of America, Health, Education and Welfare. Electrode for artificial pacemaker. 4,112,952, Cl. 128-418.000.

Thomas, Herbert: *See—*
Seubert, Jurgen; Thomas, Herbert; and Andrews, Peter, 4,113,867, Cl. 424-250.000.

Thomas, Richard J., to Robbins & Myers, Inc. Boltless housing for gear heads and the like. 4,112,786, Cl. 74-606.00R.

Thompson, Arthur David: *See—*
Phillips, Reginald Andrew; Hamilton, Terence; and Thompson, Arthur David, 4,113,316, Cl. 299-31.000.

Thompson, James L., to Dow Chemical Company, The. Foaming and silt suspending agent. 4,113,631, Cl. 252-8.55C.

Thompson, John; and Pitfield, Adrian, to Wilkinson Sword Limited. Aerosol foams. 4,113,643, Cl. 252-90.000.

Thompson, Robert I.: *See—*
Saxe, Robert L.; Thompson, Robert I.; and Forlini, Matthew, 4,113,362, Cl. 350-362.000.

Thompson, Robert M.; and Stearns, Richard S., to Sun Ventures, Inc. Copolymer of blocks of random poly(dioxa-amide) and polyamide. 4,113,794, Cl. 260-857.0TW.

Thomsen, Eigild S. Pulp press having a planar dewatering disc below an annular press chamber. 4,113,620, Cl. 210-152.000.

Thomson-CSF: *See—*
Sarfati, Pierre, 4,114,154, Cl. 343-17.2PC.

Thomson, David Summers: *See—*
Jones, Geraint; and Thomson, David Summers, 4,113,879, Cl. 424-304.000.

Thorn Domestic Appliances (Electrical) Ltd.: *See—*
Palfrey, Lesley Francis; and Fellows, Ronald John, 4,112,589, Cl. 34-48.000.

Thrower, Herbert T., Jr.; and Wasness, Donald S., to Thrower, Herbert T., Jr. Light modulator system. 4,114,071, Cl. 315-226.000.

Thurman, Paul G., to Dare Pafco, Inc. Multi-tray basket. 4,113,329, Cl. 312-111.000.

Thyssen Industrie Aktiengesellschaft: *See—*
Hausenblas, Helmut; and Holzforster, Hans-Erich, 4,113,279, Cl. 280-705.000.

Tilley, Jefferson Wright: *See—*
Cohen, Michael Robert; Kierstead, Richard Wightman; and Tilley, Jefferson Wright, 4,113,776, Cl. 260-565.000.

Timin, Mitchell E., to Airco, Inc. Apparatus and method for storing and transporting substrates in a batch-type vacuum process. 4,113,082, Cl. 198-339.000.

Tingler, Kenneth Lloyd: *See—*
Sandhu, Mohammad Akram; and Tingler, Kenneth Lloyd, 4,113,493, Cl. 96-67.000.

Tioxide Group Limited: *See—*
Kay, Peter Dunlop, 4,113,757, Cl. 260-429.500.

Tippmann, Heinrich; and Huber, Wolfgang, to ITT Industries, Inc. Epicyclic friction transmission with torque-dependent pressure-exerting device. 4,112,787, Cl. 74-798.000.

Tisbo, Cosmo N.; and Tisbo, Thomas A., to Custom Plastics, Inc. Shelving apparatus. 4,112,853, Cl. 108-111.000.

Tisbo, Thomas A.: *See—*
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,112,853, Cl. 108-111.000.

Titus IV, Theodore: *See—*
Bolick, Fred C., Jr.; and Titus IV, Theodore, 4,113,994, Cl. 179-100.1DR.

Tobin, Joseph M., to Westinghouse Electric Corp. Fuel arrangement for high temperature gas cooled reactor. 4,113,563, Cl. 176-84.000.

Todd, Estel R.: *See—*
Dirksing, Robert S.; and Todd, Estel R., 4,114,195, Cl. 366-167.000.

Tokimoto, Tadashi; Kawaguchi, Kazumasa; Izawa, Junji; and Hiraishi, Yoshinobu, to Komatsu Electronci Metals, Co., Ltd. Method of producing high-purity transparent vitreous silica body. 4,113,844, Cl. 423-336.000.

Tokumitsu, Shunji: *See—*
Sato, Toru; Tokumitsu, Shunji; Sakai, Masaaki; Kawasaki, Kazuhiko; Kaimori, Kenichiro; and Osawa, Mitsuo, 4,113,264, Cl. 274-15.00R.

Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, to Sony Corporation. Electrodeposition process. 4,113,581, Cl. 204-39.000.

Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, to Sony Corporation. Method of adjusting a fused salt electrolytic bath. 4,113,582, Cl. 204-39.000.

Tokuoka, Yasumichi; and Fukuda, Kazumasa, to TDK Electronics Co., Ltd. Method of preventing deterioration of characteristics of ferromagnetic metal or alloy particles. 4,113,528, Cl. 148-105.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Manabe, Kenshi; and Satou, Kouichirou, 4,114,052, Cl. 307-279.000.
Suzuki, Yasoji, 4,114,049, Cl. 307-225.00C.
Suzuki, Yasoji; and Ochii, Kiyofumi, 4,114,192, Cl. 365-189.000.

Tokyo Special Wire Netting Co., Ltd.: *See—*
Ikawa, Reiji, 4,113,810, Cl. 261-98.000.

Toma, Charles A.; and Haessly, Walter F., to Taylor-Winfield Corporation, The. Welding machine auxiliary transfer clamp. 4,114,016, Cl. 219-97.000.

Tomecek, Jerry J. Antonomic transcutaneous affect device. 4,112,923, Cl. 128-1.300.

Tominaga, Akira, to Toyota Jidosha Kogyo Kabushiki Kaisha. Valve lifter for internal combustion engine. 4,112,884, Cl. 123-90.480.

Tomita, Chuji, to Hitachi Medical Corporation. X-ray apparatus. 4,114,039, Cl. 250-439.00R.

Tomy Kogyo Co., Inc.: *See—*
Sano, Hiroshi, 4,112,610, Cl. 46-12.000.

Toplak, Steve. Spinning toy. 4,112,613, Cl. 46-83.000.

Toppan Printing Co., Ltd.: *See—*
Matsunaga, Kazuo; Ishizawa, Hideo; and Kurata, Kenichi, 4,113,487, Cl. 96-38.100.

Torpie, John D.: *See—*
Heckman, Raymond F.; and Torpie, John D., 4,113,993, Cl. 179-90.00B.

Torr, Ralph Percival; and Beauchamp, Miles Albert, to Andre Rubber Company Limited. Spacing devices for overhead transmission lines. 4,113,979, Cl. 174-42.000.

Torralba, Jose Esteban, to Talleres Diesel, S.A. Hydraulic speed con-

trol systems for internal combustion engines. 4,112,902, Cl. 123-140.0FG.
Toshio, Iizuka: *See—*
Shogo, Iizuka; Mitsuo, Endo; Mitsugu, Watanabe; Toshio, Iizuka; and Kenji, Usui, 4,114,014, Cl. 219-56.000.
Toter-Tee, Inc.: *See—*
Glumac, Nick P., 4,113,118, Cl. 214-10.50R.
Totten, George Edward: *See—*
Williams, Thomas Charles; and Totten, George Edward, 4,113,696, Cl. 260-448.20B.
Toukan, Sameeh Said: *See—*
Hager, Robert Bonner; Toukan, Sameeh Said; and Walter, Gerald Joseph, 4,113,748, Cl. 260-348.430.
Towmotor Corporation: *See—*
Melocik, Grant C., 4,114,047, Cl. 307-9.000.
Townsend Engineering Company: *See—*
Townsend, Ray T., 4,112,881, Cl. 123-32.00B.
Townsend, Ray T., to Townsend Engineering Company. Rotary internal combustion engine employing compression ignition. 4,112,881, Cl. 123-32.00B.
Toyo Kohan Co., Ltd.: *See—*
Tsutsui, Nobuyuki; Inui, Tsuneo; and Kawamura, Hiroaki, 4,113,580, Cl. 204-37.00T.
Toyo Seikan Kaisha Ltd.: *See—*
Hetta, Hisashi; and Mori, Fumio, 4,113,539, Cl. 156-306.000.
Toyo Valve Company, Ltd.: *See—*
Otano, Masao, 4,113,474, Cl. 75-156.500.
Toyo Yushinki Kabushiki Kaisha: *See—*
Hirata, Toshikiyo, 4,114,157, Cl. 343-119.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Arai, Hiroshi; and Mori, Mamoru, 4,113,280, Cl. 280-747.000.
Goto, Kenji; and Niwa, Takao, 4,112,877, Cl. 123-32.0ST.
Iwata, Toshiharu; Hattori, Tadashi; Mori, Kouichi; and Akiyama, Tomojiro, 4,112,885, Cl. 123-98.000.
Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, 4,113,167, Cl. 228-176.000.
Miyagi, Hideo, 4,112,678, Cl. 60-276.000.
Nohira, Hidetaka, 4,112,894, Cl. 123-119.00A.
Okabayashi, Keiichi, 4,112,888, Cl. 123-117.00A.
Takimoto, Masatami; and Mizutani, Koichi, 4,112,898, Cl. 123-136.000.
Tominaga, Akira, 4,112,884, Cl. 123-90.480.
Tracy, David J.; and Hoffstadt, Walter F., to GAF Corporation. Process for the preparation of 3-anilino-5-pyrazolones. 4,113,954, Cl. 548-365.000.
Transco Products, Inc.: *See—*
Greiser, John W., 4,114,164, Cl. 343-895.000.
Trautner, Kersten: *See—*
Hugl, Herbert; Schundehutte, Karl Heinz; Trautner, Kersten; and Wolfrum, Gerhard, 4,113,428, Cl. 8-41.00R.
Travis, Brian A., to Datrix Corporation. Digital communication system for transmitting digital information between a central station and a number of remote stations. 4,114,141, Cl. 340-151.000.
Trebellas, John C.: *See—*
Rybny, Charles B.; Trebellas, John C.; and Sargent, Donald E., 4,113,592, Cl. 204-159.160.
Treille, Pierre Albert Eugene; Moles, Jacques Claude Antoine; Bonnemay, Maurice Gabriel Ernst; Royon, Jean Paul; Levart, Michel Marc; Gaessler, Henri Pierre; and Richard, Yves Robert, to Degremont. Method of measuring the mobility of colloids in an electrical field. 4,113,596, Cl. 204-180.00R.
Treplin, Friedrich-Wilhelm; and Borchert, Werner, to Ludwig Taprogge, Reinigungsanlagen fur Rohren-Warmeaustauscher. Apparatus for separating cleaning elements from a fluid. 4,113,008, Cl. 165-95.000.
Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. 7β-[(2-Amino-1,2-dioxoethyl)amino]acyl cephalosporins. 4,113,943, Cl. 544-26.000.
Trio Kabushiki Kaisha: *See—*
Sekiguchi, Tadao, 4,114,101, Cl. 325-455.000.
Tripp, Luther W. Direct-from-skein yarn feeder. 4,112,711, Cl. 66-1.00A.
Troope, Walter S.; and Lawrence, Jackson, to Cluett, Peabody & Co., Inc. Apparatus for compressively shrinking textile fabrics at high speed. 4,112,559, Cl. 26-18.600.
Trott, Donald E. Casing perforation method and apparatus. 4,113,016, Cl. 166-297.000.
Trotta, Robert. Method and apparatus for harnessing the power of moving water. 4,112,686, Cl. 60-639.000.
Troy, M. Frank, to Vapor Corporation. Mechanical stored energy positioning actuator. 4,113,063, Cl. 185-40.00R.
Trucks, Roger O.; and Steiner, Edwin C., to Dow Chemical Company, The. Process for preparation of (poly)cyclic polyethers. 4,113,739, Cl. 260-338.000.
TRW Inc.: *See—*
McKee, William H., 4,113,179, Cl. 339-91.00R.
McKee, William H., 4,113,337, Cl. 339-91.00R.
Tryciecky, Teodozij: *See—*
Shanker, Irvin Paul; and Tryciecky, Teodozij, 4,112,953, Cl. 128-419.00P.
Tsao, Utah, to Lummus Company, The. Hydrogen chloride recovery. 4,113,786, Cl. 260-659.00A.
Tsubamoto, Shinichi: *See—*
Tanaka, Shinzo; Tsubamoto, Shinichi; Yamashita, Koichi; Eguchi, Tadashi; and Inoue, Kashirou, 4,113,434, Cl. 23-232.00R.
Tsuchitani, Akira: *See—*
Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, 4,113,533, Cl. 148-187.000.
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Taya, Hiroshi; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Ogawa, Taizo; Ooishi, Tadashi; and Okuno, Yositosi, to Sumitomo Chemical Company, Limited. Phosphorothiolate pesticidal composition. 4,113,864, Cl. 424-225.000.
Tsuji, Sadahiko; and Agari, Yujiro, to Canon Kabushiki Kaisha. Macro zoom lens. 4,113,355, Cl. 350-184.000.
Tsukamoto Seiki Co., Ltd.: *See—*
Miida, Eishiro, 4,113,290, Cl. 285-334.000.
Tsumori, Toshiro: *See—*
Tokumoto, Shin-Ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,581, Cl. 204-39.000.
Tokumoto, Shin-ichi; Tanaka, Eiji; Kikuchi, Tatsuo; Ogisu, Kenji; and Tsumori, Toshiro, 4,113,582, Cl. 204-39.000.
Tsunekawa, Tokuichi; and Taguchi, Tetsuya, to Canon Kabushiki Kaisha. A leak current suppressing printed circuit board. 4,114,036, Cl. 250-214.00R.
Tsuruda, Kunihiro: *See—*
Maki, Masao; Kaneko, Yasunori; Tsuruda, Kunihiro; and Kobayashi, Ikuo, 4,113,839, Cl. 423-239.000.
Tsutsui, Nobuyuki; Inui, Tsuneo; and Kawamura, Hiroaki, to Toyo Kohan Co., Ltd. Steel sheet useful in forming foodstuff and beverage cans. 4,113,580, Cl. 204-37.00T.
Tsuzuki, Hidehiro: *See—*
Asari, Akira; and Tsuzuki, Hidehiro, 4,112,723, Cl. 72-60.000.
Tucker, Harold A., to B. F. Goodrich Company, The. Ethylenically unsaturated blocked aromatic diisocyanates. 4,113,958, Cl. 560-32.000.
Tucker, Hubert J. Method of preventing contamination of beverage containers. 4,112,650, Cl. 53-412.000.
Tugukuni, Hideyoshi; and Kano, Masafumi, to Dai Nippon Toryo Co., Ltd. Powdery coating composition and process for preparing the same. 4,113,917, Cl. 428-407.000.
Tuma, Frantisek: *See—*
Chrtek, Milan; Gabler, Josef; Tuma, Frantisek; Kasparek, Karel; and Blasko, Jan, 4,112,663, Cl. 57-58.890.
Turkall, Daniel N.: *See—*
Holman, Robert R.; and Turkall, Daniel N., 4,113,242, Cl. 277-1.000.
Turley, Richard J.; and Ozolins, Alexandre, to Olin Corporation. Method of bonding using an improved epoxy composition containing chlorine containing polyols. 4,113,541, Cl. 156-330.000.
Turner, Albert W. Lever assemblies for augmenting prime mover power. 4,113,047, Cl. 180-65.00D.
Turner, Philip L., to Systems, Science and Software. Method and apparatus for determining the volume of a condensed material sample. 4,112,738, Cl. 73-32.00R.
Turner, Robert B., to Johnson & Johnson. Automatic on/off digitally timed electronic switch. 4,112,764, Cl. 73-362.0AR.
Turner, Robert B., to Johnson & Johnson. Zero temperature coefficient reference circuit. 4,114,053, Cl. 307-310.000.
Turner, Robert Bruce; Menzin, Marvin; Robinson, Hugh A.; and Williams, Thomas S., to Johnson & Johnson. Probe cover grip and release device. 4,112,762, Cl. 73-343.00R.
Turtle Wax, Inc.: *See—*
Svedas, Stanley; and Shah, Champak C., 4,113,677, Cl. 260-23.00R.
Twilley, Ian Charles: *See—*
Russell, William Norman; Bruton, James Isaac; and Twilley, Ian Charles, 4,113,821, Cl. 264-210.00F.
Tylka, Etler-Peter. Spark plug with combustion pressure switches. 4,114,068, Cl. 315-51.000.
Uchida, Kuniki; Araki, Kenzi; Narita, Hirosi; Fukunaka, Shiro; and Kurihara, Takao, to Nippon Kokan Kabushiki Kaisha. Process of making high tension cold-reduced Al-killed steel excellent in accelerated aging property. 4,113,523, Cl. 148-12.300.
Uchida, Tsuneo: *See—*
Komiyama, Yoshiro; Kondo, Katsumi; Koyama, Mototsugu; Nagaoka, Masaaki; and Uchida, Tsuneo, 4,113,167, Cl. 228-176.000.
Uchida, Yoshiro: *See—*
Akado, Hajime; Uchida, Yoshiro; Yamaguchi, Akihide; Nonoyama, Takao; Ootsubo, Suminobu; and Harada, Toshiro, 4,112,896, Cl. 123-122.00D.
Uchidoi, Masanori: *See—*
Tezuka, Nobuo; Uchidoi, Masanori; Iura, Yukio; Shimizu, Masami; Yoshikawa, Ryoichi; and Aizawa, Hiroshi, 4,114,173, Cl. 354-238.000.
Ueda, Seiji: *See—*
Okumura, Tomisaburo; Okazaki, Hiroshi; Tsuchitani, Akira; and Ueda, Seiji, 4,113,533, Cl. 148-187.000.
Uehara, Yasuhiro: *See—*
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Uenishi, Akio: *See—*
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Ueno, Eijiro, to Ueno Kohgyo Limited. Air-borne transportation system conveying truck. 4,113,202, Cl. 243-33.000.
Ueno Kohgyo Limited: *See—*
Ueno, Eijiro, 4,113,202, Cl. 243-33.000.
Uerdingen, Walter: *See—*
Bock, Manfred; Pedain, Josef; and Uerdingen, Walter, 4,113,705, Cl. 260-859.00R.
Ugelstad, John, to Sintef. Process for preparing latex. 4,113,687, Cl. 260-29.6XA.

Uhtenwoldt, Herbert R.; and Humes, Norman S., to Cincinnati Milacron-Heald Corp. Grinding machine. 4,112,624, Cl. 51-5.00D.
Uke, Alan K. Quick adjust strap for diver's face mask. 4,112,521, Cl. 2-452.000.
Uke, Alan Kurt. Diver's flashlight. 4,114,187, Cl. 362-158.000.
Uni-Cardan AG: *See—*
Krude, Werner, 4,112,709, Cl. 64-21.000.
Unimax Switch Limited: *See—*
Corfield, John Courtney, 4,114,001, Cl. 200-50.00A.
Union Carbide Corporation: *See—*
Atwood, Gilbert Richard, 4,113,849, Cl. 423-574.00R.
Kendall, John Edward; and Butwell, Kenneth Francis, 4,113,837, Cl. 423-226.000.
Litteral, Carl J., 4,113,845, Cl. 423-342.000.
Ward, Robert James, 4,113,691, Cl. 260-37.0EP.
Williams, Thomas Charles; and Totten, George Edward, 4,113,696, Cl. 260-448.20B.
Union Chimique Continentale-U.C.C.: *See—*
Simon, Pierre, 4,113,742, Cl. 260-343.500.
Union Oil Company of California: *See—*
Bernard, George G.; and Holm, LeRoy W., 4,113,011, Cl. 166-273.000.
Mickelson, Grant A., 4,113,605, Cl. 208-216.000.
United Kingdom Atomic Energy Authority: *See—*
McKnight, James Alan, 4,112,735, Cl. 73-19.000.
Williams, Raymond, 4,113,092, Cl. 206-408.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Coates, David; Gray, George William; and McDonnell, Damien Gerard, 4,113,647, Cl. 252-299.000.
Pierce, Donald, 4,113,210, Cl. 244-219.000.
Shaw, Harry, 4,113,205, Cl. 244-20.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See—*
Hayward, Alan Thomas Joseph, 4,112,757, Cl. 73-207.000.
United States Bedding Company, The: *See—*
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Van Huis, Robert L., 4,112,872, Cl. 119-22.000.
United States of America
Agriculture: *See—*
Masri, Merle S.; Randall, Virginia G.; and Stanley, William L., 4,113,567, Cl. 195-63.000.
Air Force: *See—*
Mazdiyasni, Khodabakhsh S.; and Cooke, Charles M., 4,113,830, Cl. 264-101.000.
Army: *See—*
Borowick, John Joseph, 4,114,163, Cl. 343-815.000.
Goldsborough, Robert R.; Spencer, David R.; and West, Samuel F., 4,114,156, Cl. 343-112.00S.
Nossen, Edward J., 4,114,110, Cl. 331-2.000.
Energy: *See—*
Garin, John; and Belsick, James C., 4,113,564, Cl. 176-87.000.
Hale, Robert L., 4,112,568, Cl. 29-157.00C.
Jones, Robert D., 4,113,562, Cl. 176-40.000.
Health, Education and Welfare: *See—*
Thomas, George M.; Boretos, John W.; Syracuse, Donald C.; Clark, John A.; Vita, Anthony J.; and Gaudiani, Vincent A., 4,112,952, Cl. 128-418.000.
Interior: *See—*
Savanick, George A.; and Krawza, Walter G., 4,113,314, Cl. 299-4.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Laumann, Eugene A.; and Reynolds, Rollin K. Hydrogen-fueled engine. 4,112,875, Cl. 123-1.00A.
Navy: *See—*
Benham, Harold L.; Clark, Steven D.; Huffman, Hubert L.; and Stovall, Ronald J., 4,114,083, Cl. 320-39.000.
D'Albora, John M., 4,114,136, Cl. 340-3.00R.
Davis, Robert H., 4,114,189, Cl. 364-718.000.
Funk, Clarence J., 4,114,135, Cl. 340-2.000.
Gustafson, Paul R., 4,113,646, Cl. 252-184.000.
Hudson, George Elbert, III; and Clark, Arthur E., 4,112,699, Cl. 62-3.000.
Mason, Russell I.; and Dale, John R., 4,114,137, Cl. 340-85.000.
Savitt, Jacob, 4,112,845, Cl. 102-27.00R.
U.S. Philips Corporation: *See—*
deBrebisson, Michel, 4,113,513, Cl. 148-1.500.
Gansfried, Myles Stephen, 4,114,043, Cl. 250-445.00T.
Holland, Johannes; and Wagemans, Hubertus Franciscus Marie, 4,112,768, Cl. 73-422.00R.
Kooi, Else; and vanLierop, Joseph Gijsbertus, 4,113,515, Cl. 148-1.500.
Salles, Yvon; Leger, Pierre; and David, Gerard Andre, 4,113,543, Cl. 156-345.000.
Van Esdonk, Johannes, 4,112,563, Cl. 29-25.140.
United States Pipe and Foundry Company: *See—*
Kennedy, Harold, Jr., 4,113,286, Cl. 285-61.000.
United States Steel Corporation: *See—*
Steiner, John E., 4,113,132, Cl. 220-71.000.
United Technologies Corporation: *See—*
Bell, Mace, 4,113,980, Cl. 174-52.00R.
Huly, William; and Brouillette, Rudolph G., 4,112,862, Cl. 114-221.00R.
Reeder, Thomas M., 4,114,116, Cl. 333-30.00R.
Unitek Corporation: *See—*
Donner, Joseph E., 4,114,024, Cl. 219-489.000.
Universite de Sherbrooke: *See—*
Chornet, Esteban; and Cavalier, Jean-Claude, 4,113,651, Cl. 252-422.000.
University of California, The Regents of the: *See—*
Gram, Donald J., 4,113,959, Cl. 560-38.000.
Schrauzer, Gerhard N.; and Guth, Ted D., 4,113,590, Cl. 204-157.10R.
University of Utah: *See—*
Virkar, Anil V.; Miller, Mark L.; Cutler, Ivan B.; and Gordon, Ronald S., 4,113,928, Cl. 429-193.000.
Uno, Eiichi; and Hachiga, Takasi, to Nippondenso Co., Ltd. Electromagnetic type contactless ignition apparatus for internal combustion engine. 4,112,904, Cl. 123-148.00E.
UOP Inc.: *See—*
Carlson, David H. J., 4,113,604, Cl. 208-206.000.
Michalko, Edward, 4,113,659, Cl. 252-455.00Z.
Ward, Dennis J., 4,113,787, Cl. 260-669.00R.
Upjohn Company, The: *See—*
DeBoer, Clarence; Dolak, Lester A.; and Peterson, Durey H., 4,113,855, Cl. 424-117.000.
Hall, Charles M.; and Wright, John B., 4,113,880, Cl. 424-309.000.
Lednicer, Daniel, 4,113,866, Cl. 424-248.560.
Moon, Malcolm W.; and Kornis, Gabriel, 4,113,955, Cl. 548-374.000.
Moon, Malcolm W.; and Kornis, Gabriel, 4,113,956, Cl. 548-374.000.
Nelson, Norman A., 4,113,778, Cl. 260-590.00C.
Smith, Herman W., 4,113,961, Cl. 560-53.000.
Smith, Herman W., 4,113,962, Cl. 560-53.000.
Smith, Herman W., 4,113,963, Cl. 560-53.000.
Smith, Herman W., 4,113,964, Cl. 560-55.000.
Smith, Herman W., 4,113,965, Cl. 560-61.000.
Smith, Herman W., 4,113,966, Cl. 560-61.000.
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Smith, George William, 4,113,186, Cl. 241-24.000.
Utsunomiya, Yutaka: *See—*
Takase, Hirobumi; and Utsunomiya, Yutaka, 4,112,721, Cl. 72-12.000.
Uyeda, Tim M., to Gartner, Klaus W. Padlock. 4,112,715, Cl. 70-38.00A.
Uzuka, Mitsuo, to Sony Corporation. Brushless motor driving circuit. 4,114,073, Cl. 318-138.000.
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Kemper, Yves Jean; and Bigot, Lucien, 4,112,780, Cl. 74-191.000.
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Vagyoczky, Stephen: *See—*
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Vahrenkamp, Oscar Oswald. Pneumatic lift for single axle trailer. 4,113,274, Cl. 280-475.000.
Vaill, Ronald E., to Westinghouse Electric Corp. Manual control handle for electric vehicle. 4,113,042, Cl. 180-19.00H.
Vajna, Eugenio: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 4,113,694, Cl. 260-875.000.
Valley Hydro-Luft, Inc.: *See—*
Brown, Robert M.; and Karliner, Rudolf R., 4,113,151, Cl. 222-324.000.
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Kankaanpaa, Matti, 4,113,556, Cl. 162-272.000.
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Sailas, Vaino, 4,112,565, Cl. 29-148.40D.
Van der Molen Machinefabriek B.V.: *See—*
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Van Dorn Company: *See—*
Dietz, Raymond A. F.; Fundom, Danny L.; Henning, George J.; and McKinney, Lynn B., 4,113,095, Cl. 206-508.000.
Van Bavel, Adrianus W. M.: *See—*
Extra, Piet M. J.; Smeets, Lambertus R. J. M.; Van Bavel, Adrianus W. M.; Van Lieshout, Jacobus J.; and Deckers, Albert T., 4,112,870, Cl. 118-657.000.
Van De Kraats, Eduard J.: *See—*
Hoff, Siebe; Ockers, Gerhardus; Buitelaar, Arnold A.; and Van De Kraats, Eduard J., 4,113,442, Cl. 44-66.000.
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van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, to C. van der Lely N.V. Soil cultivating implements. 4,113,024, Cl. 172-59.000.
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Vander Meulen, Douglas J., to C. L. Frost & Son, Inc. Wheel bearing assembly with plastic bearing seals. 4,113,328, Cl. 308-187.100.

Van Esdonk, Johannes, to U.S. Philips Corporation. Color display tube and method of manufacturing same. 4,112,563, Cl. 29-25.140.
Van Huis, Robert L., to U.S. Industries, Inc. Poultry cage system with poultry removal. 4,112,872, Cl. 119-22.000.
vanLierop, Joseph Gijsbertus: *See—*
Kooi, Else; and vanLierop, Joseph Gijsbertus, 4,113,515, Cl. 148-1.500.
Van Lieshout, Jacobus J.: *See—*
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Goransson, Lars Roland; van Oorschot, Gosewinus Franciscus; and Pittoors, Jan Gustaaf, 4,113,450, Cl. 55-97.000.
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Van Ornum, Joel V.; and Stang, Peter L., to Rocket Research Corp. Elastomeric sealant composition. 4,113,799, Cl. 260-876.00B.
Van Rens, Russell J.: *See—*
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Van Zandt, Robert D. Animal climbing structure kit. 4,112,873, Cl. 119-29.000.
Vapor Corporation: *See—*
Troy, M. Frank, 4,113,063, Cl. 185-40.00R.
Varian Mat GmbH: *See—*
Lerche, Heinz, 4,114,050, Cl. 307-229.000.
Varma, Ravi K.; and Cimarusti, Christopher M., to E. R. Squibb & Sons, Inc. Steroidal[16α,17-b]benzodioxins. 4,113,722, Cl. 260-239.55R.
Vasilenko, Valentin Vasilievich: *See—*
Sobolev, Georgy Georgievich; Kozljuk, Anatoly Ivanovich; Kolyshenko, Mikhail Vasilievich; Makarenko, Valery Leonidovich; Vasilenko, Valentin Vasilievich; Vishnevsky, Leonid Denisovich; and Kukhno, Viktor Ivanovich, 4,113,019, Cl. 169-12.000.
Vasiliev, Vladimir Sergeevich; Annenberg, Ernest Alexandrovich; Livshits, Abram Lazarevich; Polotsky, Vadim Evgenievich; and Lakhtjukhov, Valery Mikhailovich. Electric discharge machine with a program copier and a tool support head carried by a longitudinally and transversely driven carriage. 4,114,015, Cl. 219-69.00W.
Veba-Chemie Aktiengesellschaft: *See—*
Kurandt, Hans-Friedrich; and Schliephake, Dietrich, 4,113,835, Cl. 423-170.000.
Vecsey, Louis R.: *See—*
Wattles, Gurdon B.; and Vecsey, Louis R., 4,113,191, Cl. 241-188.00A.
Velsicol Chemical Company: *See—*
Stach, Leonard J.; Hotz, Roger D.; and Richter, Sidney B., 4,113,464, Cl. 71-88.000.
Venable, Phillip G., to J. I. Case Company. Power shift mechanism for earth working implements. 4,113,031, Cl. 172-667.000.
Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Biricz, Stefan, 4,113,003, Cl. 164-446.000.
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Verini, Anthony J. Mount assembly for antennas with male-female securing means. 4,114,158, Cl. 343-715.000.
Verini, Anthony J. Dual pivot mount assembly for an automobile antenna. 4,114,159, Cl. 343-715.000.
Verini, Anthony J. Automobile antenna mounting bracket apparatus. 4,114,160, Cl. 343-715.000.
Vermillion, Henry J., Jr.: *See—*
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Versapak International Limited: *See—*
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Vickers-Intertek Limited: *See—*
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Victor Company of Japan, Limited: *See—*
Kayanuma, Kanji, 4,114,180, Cl. 358-128.000.
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Stalka, Gerald P., 4,113,312, Cl. 297-454.000.
Vierkant, Mark A.: *See—*
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Virkar, Anil V.; Miller, Mark L.; Cutler, Ivan B.; and Gordon, Ronald S., to University of Utah. Method of preparing dense, high strength, and electrically conductive ceramics containing β''-alumina. 4,113,928, Cl. 429-193.000.
Visconti, Matteo, to Soxil S.p.A. Evaporating mixer for volatile anaesthetics. 4,112,939, Cl. 128-186.000.
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Kiefer, Udo; von Loeben, Wolf; and Schulz, Friedrich Wilhelm, 4,113,393, Cl. 356-155.000.
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Wagner, Romeo Barrick, to Hercules Incorporated. Promotion of plant growth with compositions containing a dithiocarbamic acid derivative. 4,113,462, Cl. 71-7.000.
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Waldmann, Helmut: *See—*
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Walker, Frank H., to General Motors Corporation. Centrifugal lock-up clutch and torque converter. 4,113,075, Cl. 192-3.310.
Walker, Harold G. Two-way scraper for ground tillage discs. 4,113,030, Cl. 172-566.000.
Wall, Robert G., to Chevron Research Company. Catalyst for ester hydrogenation. 4,113,662, Cl. 252-473.000.
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Csanady, Michael, Jr., 4,113,622, Cl. 210-167.000.
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Wetzels, Walter, to SCHUMAG Schumacher Metallwerke Gesellschaft mit beschankter Haftung. Device for grinding elongated cylindrical workpieces. 4,112,625, Cl. 51-33.00W.

Wheeler, David C. Lighter-than-air apparatus and method of utilizing same. 4,113,206, Cl. 244-31.000.

Wheldon, Alfred G.; and Harris, Ernest D., to Distillers Company (Carbon Dioxide) Ltd., The. Gas detector. 4,112,736, Cl. 73-23.000.

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Wiedemann, Kurt; and Seiferth, Reinhard, to Siemens Aktiengesellschaft. Pulse radar apparatus with integration device. 4,114,152, Cl. 343-7.700.

Wiedenmann, Hans, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen m.b.H. Subminiature incandescent lamp. 4,114,066, Cl. 313-315.000.

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Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Auxiliary sewing machine support table for use with a sewing machine table. 4,112,859, Cl. 112-217.100.

Williams, Douglas W.; and Kaiser, George E., to Allis-Chalmers Corporation. Articulated steering differential lock release. 4,113,044, Cl. 180-51.000.

Williams, Gayland M. Tube clamp and piercing device. 4,112,944, Cl. 128-214.00R.

Williams, Geoffrey N. Sanitary disposal unit. 4,112,523, Cl. 4-111.300.

Williams, Raymond, to United Kingdom Atomic Energy Authority. Packaging. 4,113,092, Cl. 206-408.000.

Williams, Thomas Charles; and Totten, George Edward, to Union Carbide Corporation. Polysulfide silicon compounds. 4,113,696, Cl. 260-448.20B.

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Williamson, Robert R., to Better Agricultural Goals Corporation. Disposable container for bulk materials. 4,113,146, Cl. 222-105.000.

Willis, Donald Henry, to RCA Corporation. High voltage protection circuit having predictable firing point. 4,114,072, Cl. 315-411.000.

Wilson, Clyde E., to Wilson-Tek Corporation. Method of preparing and belling thermoplastic pipe with thickened walls. 4,113,813, Cl. 264-25.000.

Wilson, Donald G.: *See*—
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Winters, Giorgio; and DiMola, Nunzio, to Gruppo Lepetit S.p.A. Fused isoquinoline derivatives. 4,113,731, Cl. 260-288.0CF.

Winters, Paul N. Constant phase delay network having a coherent reference. 4,114,111, Cl. 331-23.000.

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Wittenberg, Roland C., to Pickering & Company, Inc. Double stylus assembly for phonograph record stamper playback. 4,113,267, Cl. 274-37.000.

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Ziv, Avraham, to American Safety Equipment Corporation. Extended low tension range dual tension safety belt retractor. 4,113,201, Cl. 242-107.000.

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Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
May 2, 1978. *Acting Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of August 1978

Affirmed	227
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Reversed	77
Total	331

United States Patent and Trademark Office Before the Commissioner of Patents and Trademarks

IN RE ANTHONY J. CASTORINA, RESPONDENT
PROCEEDING UNDER 35 U.S.C. § 32 and 37 CFR § 1.348

Final Order

On June 20, 1978, the Solicitor filed charges against respondent. The charges were served upon respondent by mail at his addresses of record with the Committee on Enrollment. The time for filing a response to the charges has expired and no response has been received. Accordingly, it is hereby ordered that Anthony J. Castorina, of Arlington, Virginia, whose registration number is 21,118, is excluded from further practice before the U.S. Patent and Trademark Office.

This action is taken under 35 U.S.C. § 32, 37 CFR § 1.348, and 37 CFR § 2.16.

DONALD W. BANNER,
Dated: August 2, 1978. *Commissioner of Patents and Trademarks.*

April-June 1978 Classification Orders

The reclassifications covered by the following classification changes became effective between March and June 1978.

	Class	Subclasses
Classification Order 625, effective April 3, 1978:		
Abolished	156	244.
Established	156	244.11-244.19; 244.21-244.27.
Classification Order 626, effective April 5, 1978:		
Abolished	60	39.61.
	123	8.01-8.49.
Established	123	200-249.
Classification Order 627, effective April 7, 1978:		
Abolished	4	118; 131.
	110	1; 3; 3.5; 5-81; 4; 82-100.
Established	4	111.1-111.6.
	110	185-349.
Classification Order 628, effective April 11, 1978:		
Abolished	106	14.
Established	106	14.05; 14.11-14.18; 14.21-14.29; 14.31; 14.33-14.39; 14.41-14.45.
Classification Order 629, effective April 25, 1978:		
Abolished	220	9-17; 63-65.
	229	14.
Established	220	18.1; 70.1; 72.1; 400-470. Cross reference art collection. 900 and 901.
Classification Order 630, effective May 11, 1978:		
Abolished	260	617-643.
Established	(New) 568	700-923.
Classification Order 631, effective May 30, 1978:		
Abolished	260	250-268.
Established	544	224-410.
Classification Order 632, effective May 31, 1978:		
Abolished	197	ALL.
Established	(New) 400	1-719. Cross reference art collection. 900-904.
Classification Order 633, effective June 19, 1978:		
Abolished	102	70-80.5.
Established	102	200-281.
Classification Order 634, effective June 19, 1978:		
Abolished	280	106; 106.5.
Established	280	781-800.
Classification Order 635, effective June 28, 1978:		
Abolished	23	Digest 1-28.
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ALFRED C. MARMOR,
Administrator for Documentation, July 27, 1978.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,097,331, J. Miller, TWO SPEED MOTOR, **filed** Apr. 18, 1978, D.C. Ariz. (Phoenix), Doc. C78-322-PhX, *J. Vance Miller et al.* v. *Goettl Bros. Metal Products, Inc.*

3,134,718, A. Nobile, PREGNA-1,4-DIENES AND COMPOSITIONS CONTAINING SAME, **filed** Mar. 15, 1978, D.C. Md. (Baltimore), Doc. Y-78-434, *Schering Corporation* v. *D-M Pharmaceuticals, Inc.* Voluntary dismissal, May 2, 1978.

3,234,436, J. J. Bieger, ROTARY ELECTRO MAGNETIC ACTUATOR, **filed** Apr. 26, 1978, D.C.N.J. (Newark), Doc. C-78-880, *Alois Stauber, doing business as DACO Instrument Co.* v. *William Henninger, doing business as Aero Design & Development Co.*

3,486,495, H. W. Allen, ARCHERY BOW WITH DRAW FORCE MULTIPLYING ATTACHMENT, **filed** Jan. 26, 1978, D.C., N.D. Okla. (Tulsa), Doc. 78-C-43, *Allen Archery, Inc.* v. *Brunswick Corporation.* Plaintiff's complaint in this action is merged into this consent judgment and decree, Apr. 25, 1978.

3,540,684, C. G. McGee, SLIDE CALCULATOR FOR DIRECT ADDITION AND/OR SUBTRACTION OF INTEGER QUALITIES IN TWO NUMBER SYSTEMS, **3,866,862,** Stephen L. Snyder, RISER CONTROLS FOR GLIDING PARACHUTES, **filed** Aug. 31, 1977, D.C.N.J. (Camden), Doc. C-77-1812, *Stephen L. Synder* v. *North American Aerodynamics, Inc. and John P. Higgins.* Order of dismissal without prejudice, Apr. 28, 1978.

3,587,177, Overly and Pagel, AIRFOIL NOZZLE, **3,629,952,** same, AIRFOIL WEB DRYER, **filed** Mar. 25, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75-162, *Overly, Inc.* v. *Tec Systems, Inc.* Stipulated judgment dismissing action with prejudice, Oct. 11, 1977.

3,596,954, B. A. Hull, UNIVERSAL SLIDING DOOR HANDLE AND LATCH ASSEMBLY, **filed** Mar. 24, 1978, D.C., C.D. Calif. (Los Angeles), Doc. CV78-1132 MML, *W & F Mfg., Inc.* v. *Reflectolite Products, Inc.*

3,620,448, C. L. Nelson, CLOCK THERMOSTAT SYSTEM, **filed** Apr. 4, 1978, D.C. Minn. (Minneapolis), Doc. 4-78-C-141, *Honeywell Inc.* v. *Robertshaw Controls Company.*

3,623,353, D. Dinerman, VEHICLE FRAME STRAIGHTENING INSTALLATION, **filed** Apr. 4, 1978, D.C., S.D. Ga. (Savannah), Doc. CV478-65, *Dinerman Equipment Mfg.* v. *Grainger Auto Parts.*

3,629,952. (See 3,587,177.)

3,638,459, J. A. Gartlan, ABSORBENT FOR PURIFYING DRY-CLEANING SOLVENTS, **filed** Apr. 13, 1978, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 78-1248, *Pursol Chemical Corp.* v. *Kleen-Rite Inc., doing business as Kleen-Rite/Arundale Corp.*

3,661,144, Jensen and Jensen, SUCTION APPARATUS FOR BODY CAVITIES, **filed** Feb. 23, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78-0409-CFP, *A/S Ferrosan* v. *Berkeley Bio-Medical Inc.*

3,667,170, J. H. MacKay, FINISHING ARTICLE AND SUPPORT MEMBER THEREFOR, **filed** Apr. 21, 1978, D.C., N.D. Ohio (Cleveland), Doc. C-78-474, *Standard Abrasives, Inc.* v. *Merit Abrasive Products, Inc.*

3,679,512, F. W. Macone, LAMINATED CARD ENVELOPES, **filed** Aug. 3, 1977, D.C. Mass. (Boston), Doc. 77-1349, *Avant Incorporated,* v. *Polaroid Corporation.* The judgment of the District Court is affirmed, 3-21-78.

3,711,871, M. H. Sherin, SANITARY LIQUID SPECIMEN COLLECTOR; D. 227,413, same, FUNNEL FOR A SANITARY SPECIMEN COLLECTOR, **filed** Apr. 21, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1549, *Sage Products, Inc.* v. *Premium Plastics, Inc.*

3,757,087, R. F. Fleming, RECORDER INDEXING APPARATUS WITH A CUMULATIVE INDICATION OF THE AMOUNT OF TAPE WITHDRAWN FROM THE SUPPLY REEL, **filed** Mar. 30, 1978, D.C.N.J. (Newark), Doc. 78-647, *Interdynamics, Inc. et al.* v. *Firma Wolf et al.*

3,780,226, S. W. Jacobson, TELEPHONE ANSWERING APPARATUS; **3,909,537,** same, **filed** Apr. 20, 1978, D.C. Mass. (Boston), Doc. CA78-0886-S, *Tandy Corporation, doing business as Radio Shack and Sava Jacobson* v. *Lafayette Radio Electronics Corporation.*

3,866,862. (See 3,540,684.)

3,869,608, S. A. Scherbatskoy, NUCLEAR WELL LOGGING, **filed** Feb. 8, 1978, D.C., W.D. Okla. (Oklahoma City), Doc. 78-0104-T, *James D. Fellers of Fellers, Snider Blankenship and Bailey* v. *Gearhart-Owen Industries, Inc.* Action dismissed by plaintiff, Apr. 19, 1978.

3,894,530, Drdik and Dardik, METHOD FOR REPAIRING, AUGMENTING, OR REPLACING A BODY CONDUIT OR ORGAN; **3,974,526,** same, VASCULAR PROSTHESES AND PROCESS FOR PRODUCING THE SAME; **3,988,782,** same, NON-ANTIGENIC, NON-THROMBOGENIC INFECTION-RESISTANT GRAFTS FROM UMBILICAL CORD VESSELS AND PROCESS FOR PREPARING AND USING SAME, **filed** Apr. 18, 1978, DC.N.J. (Newark), Doc. 78-804, *Israel Schechter and Yeda Research Development Co., Ltd.* v. *Irving Dardik, Herbert Dardik, and Meadox Medicals, Inc.*

3,897,879, L. Bubik, VEHICLE TOWING APPARATUS, **filed** Apr. 20, 1978, D.C., C.D. Calif. (Los Angeles), Doc. C78-1543-LTL, *Vulcan Equipment Company* v. *Aubry Nowell.*

3,906,630, S. G. Megna, SCISSORS, PARTICULARLY HAIRDRESSER'S SCISSORS, **filed** Sept. 8, 1977, D.C., M.D.N.C. (Greensboro), Doc. C-77-423-WS, *Diane Products, Inc.* v. *Jeffco Inc.* Stipulation and order dismissing this action on Apr. 28, 1978.

3,908,904, Kerner, Mahler and Peters, ULTRASONIC ATOMIZER FOR WASTE SULFURIC ACID AND USE THERE IN ACID CRACKING FURNACES, **filed** Oct. 14, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3444, *Penntube Plastics Co.* v. *Sweetheart Cup Co.* Stipulation, motion to dismiss case without prejudice, Sept. 14, 1977.

3,909,537. (See 3,780,226.)

3,966,178, Stevens and Stevens, COMBINATION GRAIN MILL AND DOUGH MIXER; **4,037,797,** same, GRINDING MILL, **filed** Apr. 17, 1978, D.C. Utah (Salt Lake City), Doc. C-78-0133, *Mill & Mill, Inc.* v. *Stonemill & Mixer, Inc. and Burke G. Stone, Sr.*

3,972,207, J. Vinas, SELECTION DEVICE FOR THE NEEDLES OF A KNITTING MACHINE, **filed** May 18, 1977, D.C., S.D.N.Y., Doc. 77-C-2154, *Vinatex Knitting Systems, Inc.* v. *Jumberca (U.S.A.) Inc. et al.*

3,974,526. (See 3,894,530.)

3,988,782. (See 3,894,530.)

3,999,748, W. H. Huggins, EPILATOR, **filed** Oct. 11, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3754, *Glovemakers, Inc.* v. *Harben Company.*

4,037,418, J. I. Hannan, LOAD SUPPORTING BEARING PLATE, **filed** May 1, 1978, D.C., N.D. W. Va. (Elkins), Doc. 78-0078-E, *Phillips Stamping Co., Inc.* v. *Jenmar Corporation.*

4,037,797. (See 3,966,178.)

4,074,311, Tanner and Rist, TELEVISION SECURITY SYSTEM, **filed** Apr. 24, 1978, D.C., N.D. Tex. (Dallas), Doc. CA3-78-478-D, *Tanner Electronic Systems Technology* v. *Tocom, Inc.*

4,082,193, J. Teague, PIPE HANDLING APPARATUS, **filed** Apr. 4, 1978, D.C., W.D. La. (Shreveport), Doc. 780383, *Leroy SaSalle and A. C. Company* v. *Carlton's Lay Down Service, Inc.*

Re. 27,357, F. G. Merser, TAG ATTACHING OR BUNDLE FASTENING DEVICE, **filed** July 11, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2484, *Dennison Manufacturing Co.* v. *Tamp Corporation.* Enter agreed order that defendant is restrained from making, using or selling any and all products, 9-19-77.

D. 227,413. (See 3,711,871.)

D. 240,819, W. Macowski, DESK CADDY, **filed** Apr. 25, 1978, D.C., S.D.N.Y., Doc. 78-C-1885 (JMC), *Ketcham & McDougall, Inc.* v. *E. Mishan & Sons.* **Same, filed** Apr. 25, 1978, D.C., S.D.N.Y., Doc. 78-C-1886 (JMC), *Ketcham & McDougall, Inc.* v. *Davor Products Importers.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,411,256, Re. S.N. 930,439, Filed Aug. 2, 1978, Cl. 52/408, ROOF CONSTRUCTION AND METHOD THEREOF, John S. Best (deceased), Owner of Record: *The Dow Chemical Company, Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 354

3,451,785, Re. S.N. 932,985, Filed Aug. 11, 1978, Cl. 23/285, PRESSURE RELIEF SYSTEM FOR PRESSURE VESSELS, Raymond G. Rohlfing, et al., Owner of Record: *Phillips Petroleum Company, Bartlesville, Okla.,* Attorney or Agent: Donald J. Quigg, et al., Ex. Gp.: 171

3,469,160, Re. S.N. 935,085, Filed Aug. 18, 1978, Cl. 361/296, ADJUSTABLE LOW-PASS CAPACITOR, John E. Johanson, Owner of Record: *Johanson Manufacturing Corporation, Boonton, N.J.,* Attorney or Agent: James J. Cannon, et al., Ex. Gp.: 212

3,588,449, Re. S.N. 934,085, Filed Aug. 14, 1978, Cl. 235/61.7 B, ELECTRONIC CHECK-CASHING SYSTEM, Thomas Glynn Paterson, Owner of Record: *RCA Corporation, Princeton, N.J.,* Attorney or Agent: Harold Christoffersen, Ex. Gp.: 211

3,763,614, Re. S.N. 931,720, Filed Aug. 3, 1978, Cl. 52/309, ROOF CONSTRUCTION, Mike Arthur Hyde, et al., Owner of Record: *The Dow Chemical Company, Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 354

3,787,092, Re. S.N. 932,048, Filed Aug. 8, 1978, Cl. 301/63 R, WHEEL WITH DROP-BASE RIM, Lorenz Weegen, et al., Owner of Record: *Kronprinz Aktiengesellschaft, Solingen-Ohligs, Germany,* Attorney or Agent: Ralf H. Siegemund, Ex. Gp.: 311

3,915,053, Re. S.N. 934,880, Filed Aug. 17, 1978, Cl. 85/7, FASTENER WITH PROPORTIONED STRENGTH LOCK GROOVES, John Howland Ruhl, Owner of Record: *Huck Manufacturing Company, Detroit, Mich.,* Attorney or Agent: Paul F. Seibold, et al., Ex. Gp.: 355

3,919,407, Re. S.N. 934,790, Filed Aug. 18, 1978, Cl. 424/12, METHOD FOR QUANTITATIVE DETERMINATION OF RENIN ACTIVITY IN BLOOD, Aurora L. Fernandez de Castro, Owner of Record: *Inventor,* Attorney or Agent: Abraham A. Saffitz, Ex. Gp.: 125

3,922,787, Re. S.N. 928,284, Filed Jul. 26, 1978, Cl. 32/14 A, PLASTIC ORTHODONTIC BRACKET, Kenneth J. Fischer, et al., Owner of Record: *Lee Pharmaceuticals, South El Monte, Calif.,* Attorney or Agent: Edward S. Irons, et al., Ex. Gp.: 333

3,948,314, Re. S.N. 922,691, Filed Jul. 7, 1978, Cl. 165/48, THERMODYNAMICALLY INTEGRALED BUILDINGS, William E. Creswick, et al., Owner of Record: *Isothermic Systems Limited, Ontario, Canada,* Attorney or Agent: Joseph A. DeGrandi, Ex. Gp.: 342

3,990,643, Re. S.N. 923,925, Filed Jul. 11, 1978, Cl. 241/24, METHOD OF PULPING AND GRADING WASTE PAPER, Walter Neitzel, Owner of Record: *J. M. Voith, G.m.b.H., Heidenheim, Germany,* Attorney or Agent: Peter K. Kontler, Ex. Gp.: 325

4,013,741, Re. S.N. 935,522, Filed Aug. 21, 1978, Cl. 261/44 R, CARBURETOR, William H. Edmonston, Owner of Record: *Lectron Fuel Systems, Inc., Troy, Mich.,* Attorney or Agent: Paul F. Serhold, et al., Ex. Gp.: 177

4,018,518, Re. S.N. 933,721, Filed Aug. 14, 1978, Cl. 352/78 R, LARGE CAPACITY FILM CASSETTE, Joseph H. Wright, Owner of Record: *Polaroid Corporation, Cambridge, Mass.,* Attorney or Agent: David R. Thornton, Ex. Gp.: 211

4,026,525, Re. S.N. 933,968, Filed Aug. 15, 1978, Cl. 254/150 R, SELF-TAILING WINCH, Maurice G. DeClercq, Owner of Record: *Inventor,* Attorney or Agent: James L. Bean, Ex. Gp.: 315

4,034,622, Re. S.N. 932,249, Filed Aug. 9, 1978, Cl. 74/501 R, INFINITELY ADJUSTABLE CABLE CONTROLLED APPARATUS AND METHOD, James R. Deck, Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.,* Ex. Gp.: 345

4,043,827, Re. S.N. 933,790, Filed Aug. 15, 1978, Cl. 106/92, SAG-RESISTANT DRY-SET MORTAR COMPOSITION, Frank E. Bernett, Owner of Record: *Tile Council of America, Inc., Princeton, N.J.,* Attorney or Agent: George B. Finnegan Jr., et al., Ex. Gp.: 113

4,047,545, Re. S.N. 935,207, Filed Aug. 21, 1978, Cl. 140/123.6, INSTALLATION TOOL, Joseph R. Paradis, Owner of Record: *Dennison Manufacturing Company, Framingham, Mass.,* Attorney or Agent: George E. Kersey, Ex. Gp.: 321

4,049,753, Re. S.N. 935,202, Filed Aug. 21, 1978, Cl. 260/880 B, COUPLING OF ALKALI METAL-TERMINATED POLYMERS, George A. Moczygemba, Owner of Record: *Phillips Petroleum Company, Bartlesville, Okla.,* Attorney or Agent: Donald J. Quigg, et al., Ex. Gp.: 142

4,068,879, Re. S.N. 935,513, Filed Aug. 21, 1978, Cl. 294/89, CONCRETE SLAB HOISTING APPARATUS, Philip A. Torbet, et al., Owner of Record: *The Burke Company, San Mateo, Calif.,* Attorney or Agent: Frank A. Neal, Ex. Gp.: 313

4,071,577, Re. S.N. 935,447, Filed Aug. 21, 1978, Cl. 260/827, TOUGHENED MERCAPTOSILOXANE MODIFIED EMULSION POLYMERIZED VINYLIC POLYMERS, James R. Falender, et al., Owner of Record: *Dow Corning Corporation, Midland, Mich.,* Attorney or Agent: Robert F. Fleming, Jr., et al., Ex. Gp.: 142

4,077,796, Re. S.N. 923,820, Filed Jul. 12, 1978, Cl. 71/78, TOBACCO SUCKER CONTROL AGENT AND METHOD, Calman J. Kish, Owner of Record: *Fairmount Chemical Company, Inc., Newark, N.J.,* Attorney or Agent: Morris Relson, et al., Ex. Gp.: 124

4,081,094, Re. S.N. 931,504, Filed Aug. 7, 1978, Cl. 214/355, CONVEYOR-TRAILER FOR TRANSPORTING AN AGRICULTURAL COMMODITY, Ernest G. Pereira, et al., Owner of Record: *Cotton Machinery Company, Inc., Livermore, Calif.,* Attorney or Agent: Jack M. Wiseman, Ex. Gp.: 314

4,092,573, Re. S.N. 934,101, Filed Aug. 15, 1978, Cl. 318/221, MOTOR STARTING AND PROTECTING APPARATUS, John R. D'Entremont, Owner of Record: *Texas Instruments Incorporated, Dallas, Tex.,* Attorney or Agent: John A. Haug, et al., Ex. Gp.: 217

PATENT NOTICES

Certificates of Correction for the Week of Oct. 10, 1978

Re. 28,064	4,066,633	4,081,593	4,087,431
Re. 29,632	4,066,757	4,081,607	4,087,445
3,219,623	4,067,617	4,081,826	4,087,453
3,666,770	4,067,789	4,082,491	4,087,511
3,745,025	4,067,896	4,082,758	4,087,536
3,801,071	4,067,973	4,082,987	4,087,556
3,801,786	4,069,505	4,083,115	4,087,557
3,879,841	4,069,614	4,083,228	4,087,565
3,935,867	4,070,585	4,083,488	4,087,599
3,937,631	4,070,836	4,084,189	4,087,605
3,963,484	4,072,568	4,084,395	4,087,627
3,963,572	4,072,574	4,085,086	4,087,753
3,981,265	4,072,654	4,085,090	4,087,838
3,992,172	4,072,738	4,085,094	4,088,083
3,998,589	4,073,372	4,085,127	4,088,541
4,000,720	4,074,049	4,085,199	4,088,596
4,001,300	4,074,313	4,085,230	4,088,953
4,016,419	4,074,448	4,085,278	4,089,108
4,024,679	4,075,205	4,085,279	4,089,528
4,026,742	4,075,726	4,085,281	4,089,642
4,035,590	4,077,000	4,085,373	4,089,686
4,036,578	4,077,560	4,085,403	4,089,749
4,037,190	4,077,671	4,085,619	4,089,770
4,039,895	4,077,898	4,086,159	4,090,139
4,040,635	4,078,062	4,086,233	4,090,153
4,041,653	4,078,084	4,086,320	4,090,516
4,060,702	4,078,163	4,086,328	4,090,840
4,062,995	4,078,480	4,086,344	4,091,201
4,064,706	4,079,130	4,086,650	4,091,238
4,064,883	4,079,355	4,086,834	4,091,273
4,065,551	4,080,491	4,086,895	4,091,617
4,066,217	4,080,497	4,086,953	4,092,190
4,066,514	4,081,301	4,087,278	4,106,679

Errata

All reference to Patent No. 4,107,853 to Peter Henry Cook and Joseph Arthur Henry Holmes of England for EDUCATIONAL TOYS appearing in the OFFICIAL GAZETTE of August 22, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,111,286 to William John Williams of Michigan for BRAKE ASSEMBLY appearing in the OFFICIAL GAZETTE of September 5, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,111,508 to Richard G. Haworth, Charles J. Saylor and Harold R. Wilson of Michigan for WALL PANEL WITH PREWIRED POWER SYSTEM appearing in the OFFICIAL GAZETTE of September 5, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,112,719 to Reginald R. Gallant of Connecticut for SECURITY LOCK appearing in the OFFICIAL GAZETTE of September 12, 1978 should be deleted since no patent was granted.

Patents Available for Licensing or Sale

4,025,699. MANGANESE STORAGE BATTERY. Lou Silva, 118½ Bell St., B, Reno, Nevada, 89503.

4,040,657. VARIABLE-DENSITY VEHICLE GLARE SHIELD. Joyce P. Penzes, Route 116, Purdys, N.Y. 10578.

4,046,400. BALL SKI BINDING. Felix A. Viletto, 116 Ford City Road, Freeport, Pa. 16229.

4,056,897. PLANTER DESIGN AND CONSTRUCTION. Communicate with E. Barron Batchelder, Sixbey, Friedman & Leedom, P.C., Suite 206, 2001 Jefferson Davis Highway, Arlington, Va. 22202.

4,099,286. CLEANERS FOR CHALK ERASERS. Soji Ishikawa. Correspond with: Bernhard Kreten, Blair, Brown, & Kreten, 4637 Eastern Ave. NE., Washington, D.C. 20018.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for licenses may be addressed to the General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind. 46804.

3,942,055. HERMETIC MOTOR STATOR.

3,967,172. CONTROL CIRCUIT, REFRIGERATION SYSTEM, AND METHOD OF CONTROLLING SPEED OF AN ALTERNATING CURRENT MOTOR.

3,968,468. ELECTRICAL SWITCH AND METHOD OF CALIBRATING.

3,968,469. DETECTOR FOR RADIANT HEAT.

3,971,907. ELECTRICAL ASSEMBLY, ELECTRICAL CONTACT AND METHOD OF MOUNTING AN ELECTRICAL CONTACT.

3,979,708. THERMOSTAT AND ANTICIPATOR THEREFOR.

4,052,624. RAMP AND PEDESTAL CONTROL CIRCUIT.

4,070,144. CONTROL SYSTEM.

4,079,347. CONTROL DEVICE.

4,082,412. MALE AND FEMALE TERMINAL COMBINATION.

4,087,232. METHOD OF ACTUATING MEANS FOR DETECTING RADIANT HEAT AND SYSTEM.

4,093,899. CIRCUIT AND METHOD FOR CONTROLLING SPEED OF AN ALTERNATING CURRENT MOTOR.

Application for license may be addressed to the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,562,066. DIE STRUCTURE FOR HOT STAMPING MACHINE.

3,882,797. EXPANSION GRATE FOR INCINERATOR.

3,891,086. COMPOSITE PACKAGE.

3,941,339. MOUNTING ARRANGEMENT FOR FAN MOTOR.

3,952,369. HINGE STRUCTURE.

3,964,272. AIR CONDITIONING MOUNTING SYSTEM FOR A MOBILE HOME.

4,067,256. FASTENER ANCHOR FORMED IN THERMOPLASTIC SHEET.

4,067,628. FOAM-INSULATED SIDE-BY-SIDE REFRIGERATOR.

4,070,728. VERTICAL ADJUSTABLE DOOR HINGE ASSEMBLY.

4,072,374. SIDE FASTENER CLIP FOR A PLATE-LIKE MEMBER.

4,074,987. DEFROST SENSING SYSTEM FOR FREEZER COMPARTMENT.

4,075,864. AIR CONDITIONING FAN CONTROL.

4,081,997. CLOTHES DRYER AIR BLOW TEST DEVICE AND METHOD.

4,086,053. CLOTHES DRYER GAS HEATER.

4,087,987. DEFROST PRESSURE CONTROL SYSTEM.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE ARMY

Office of Judge Advocate General, Patent Division-Room 2C–455, Pentagon, Washington, D.C. 20310

Patent 3,941,999. Automatic Focus Pulse Gated System. Filed Apr. 1, 1975. Patented Mar. 2, 1976.

Patent 3,944,950. Quasi-Optical Integrated Circuits. Filed Sept. 30, 1974. Patented Mar. 16, 1976.

Patent 3,949,246. Piezoelectric Bimorph Controlled Variable Capacitor. Filed Dec. 23, 1974. Patented Apr. 6, 1976.

Patent 3,952,378. Mechanical Closure Device. Filed Feb. 4, 1975. Patented Apr. 27, 1976.

Patent 3,952,576. Laminar Jet Fluid Property Sensor. Filed Apr. 10, 1975. Patented Apr. 27, 1976.

Patent 3,953,129. Testing and Inspecting Lens by Holograph Means. Filed Jan. 9, 1975. Patented Apr. 27, 1976.

Patent 3,953,850. Radar Test Facility Communication System. Filed Oct. 8, 1974. Patented Apr. 27, 1976.

Patent 3,958,121. Infrared Image Storage Plate. Filed Sept. 10, 1975. Patented May 18, 1976.

Patent 3,958,602. Flueric Laminar Digital Amplifier. Filed Mar. 12, 1975. Patented May 25, 1976.

Patent 3,960,022. Null Adjustable Vortex Rate Sensor. Filed May 9, 1973. Patented June 1, 1976.

Patent 3,962,591. Voltage Doublar Circuit. Filed Dec. 23, 1974. Patented June 8, 1976.

Patent 3,962,657. Broadband Data Modulation System. Filed Oct. 22, 1974. Patented June 8, 1976.

Patent 3,967,218. Edge-Guided Wave Directional Combiner. Filed Sept. 26, 1975. Patented June 29, 1976.

DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent 3,970,007. Salvage Switch. Filed Jan. 20, 1971. Patented July 20, 1976.

Patent 3,975,210. Metal-Gas Battery With Axial Reactant Gas Storage Cavity. Filed Mar. 27, 1975. Patented Aug. 17, 1976.

Patent 3,975,416. Preparation of Yttrium and Lanthanide Hexafluoroisopropoxide Diammoniates. Filed Sept. 6, 1973. Patented Aug. 17, 1976.

Patent 3,975,444. Ethynyl-Substituted Aromatic Ortho Diamines and Method of Synthesis. Filed May 19, 1975. Patented Aug. 17, 1976.

Patent 3,975,748. Multispectral Laser Camera Device. Filed May 22, 1970. Patented Aug. 17, 1976.

Patent 3,975,955. Edgetone Suppression Device for Wind Tunnel Walls. Filed June 27, 1975. Patented Aug. 24, 1976.

Patent 3,975,981. Separation Spring Actuator. Filed May 12, 1975. Patented Aug. 24, 1976.

Patent 3,976,268. Tethered Balloon Mooring Means. Filed Apr. 8, 1975. Patented Aug. 24, 1976.

Patent 3,976,394. Interstage Bleed Assembly. Filed July 18, 1975. Patented Aug. 24, 1976.

Patent 3,976,521. Method of Coating Boron Particles With Ammonium Perchlorate. Filed Nov. 20, 1974. Patented Aug. 24, 1976.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20545

Patent 3,910,714. Liquid Metal Pump for Nuclear Reactors. Filed Dec. 11, 1974. Patented Oct. 7, 1975.

Patent 3,912,582. Hydraulic Balancing of a Control Component Within a Nuclear Reactor. Filed Aug. 16, 1974. Patented Oct. 14, 1975.

Patent 3,912,584. LMFBR With Booster Pump in Pumping Loop. Filed Jan. 9, 1974. Patented Oct. 14, 1975.

Patent 3,912,908. Electric Cartridge-Type Heater for Producing a Given Non-Uniform Axial Power Distribution. Filed Nov. 12, 1974. Patented Oct. 14, 1975.

Patent 3,914,371. Method for Preparing Boron-Carbide Articles. Filed Dec. 27, 1973. Patented Oct. 21, 1975.

Patent 3,914,612. Neutron Source. Filed Aug. 26, 1974. Patented Oct. 21, 1975.

Patent 3,915,499. Acid Pre-Treatment Method for In Situ Ore Leaching. Filed July 23, 1974. Patented Oct. 28, 1975.

Patent 3,917,509. Thermionic Nuclear Reactor With Internal Heat Distribution and Multiple Duct Cooling. Filed Apr. 16, 1974. Patented Nov. 4, 1975.

Patent 3,919,406. Thermochemical Production of Hydrogen. Filed July 10, 1974. Patented Nov. 11, 1975.

Patent 3,919,580. Relativistic Electron Beam Generator. Filed Sept. 11, 1974. Patented Nov. 11, 1975.

Patent 3,923,496. Nickel Powder and a Process for Producing it. Filed Apr. 26, 1945. Patented Dec. 2, 1975.

Patent 3,923,612. Electroplating a Gold-Platinum Alloy and Electrolyte Therefor. Filed Feb. 25, 1974. Patented Dec. 2, 1975.

Patent 3,924,106. Background Compensation for a Radiation Level Monitor. Filed Oct. 31, 1974. Patented Dec. 2, 1975.

Patent 3,925,536. Method of Recovering Uranium Hexafluoride. Filed June 19, 1974. Patented Dec. 9, 1975.

Patent 3,926,344. Volumetric Dispenser for Small Particles From Plural Sources. Filed June 20, 1974. Patented Dec. 16, 1975.

Patent 3,927,192. Chemical Cycle for Thermochemical Production of Hydrogen From Water. Filed Jan. 29, 1975. Patented Dec. 16, 1975.

Patent 3,927,325. Tissue Irradiator. Filed July 10, 1974. Patented Dec. 16, 1975.

Patent 3,928,126. Fuel or Irradiation Subassembly. Filed July 9, 1974. Patented Dec. 23, 1975.

Patent 3,928,549. Thermochemical Production of Hydrogen. Filed June 20, 1974. Patented Dec. 23, 1975.

Patent 3,928,700. Method of Producing Thin Cellulose Nitrate Film. Filed May 30, 1974. Patented Dec. 23, 1975.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Chief, Patent Branch Westwood Building, Bethesda, Md. 20014

Patent 3,976,072. Blink-Operated Extracorporeal Tear Duct. Filed Sept. 3, 1975. Patented Aug. 24, 1976.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Md. 22217

Patent 3,549,591. Polyfluoroepoxides and Epoxy Resins Containing Fluorine on the Aromatic Carbon Structure and Process. Filed July 30, 1968. Patented Dec. 22, 1970.

Patent 3,898,662. Radar Target Simulator Using No Electrical Connection to Radar. Filed Aug. 16, 1968. Patented Aug. 5, 1975.

Patent 3,936,954. Electronic Bearing Selector for Omni-Directional Signals. Filed May 27, 1964. Patented Feb. 10, 1976.

Patent 3,936,958. Sonar Reverberation Simulation. Filed June 18, 1968. Patented Feb. 10, 1976.

Patent 3,964,155. Method of Planar Mounting of Silicon Solar Cells. Filed June 8, 1973. Patented June 22, 1976.

Patent 3,965,343. Modular System for Performing the Discrete Fourier Transform Via the Chirp-Z Transform. Filed Mar. 3, 1975. Patented June 22, 1976.

Patent 3,965,729. Load Crack Testing Device. Filed Oct. 1, 1975. Patented June 29, 1976.

Patent 3,967,633. Gas Vent System for Operation in Any Arbitrary Spatial Orientation. Filed May 22, 1975. Patented July 6, 1976.

Patent 3,968,491. Radar Rangemeter. Filed Nov. 25, 1974. Patented July 6, 1976.

Patent 3,971,110. Method for Fabricating an Electron-Emission Cathode. Filed Sept. 11, 1975. Patented July 27, 1976.

Patent 3,971,927. Modular Discrete Cosine Transform System. Filed Nov. 3, 1975. Patented July 27, 1976.

Patent 3,972,554. Ring Type Recovery Tool. Filed Jan. 12, 1976. Patented Aug. 3, 1976.

Patent 3,972,555. Tong Type Recovery Tool. Filed Jan. 2, 1976. Patented Aug. 3, 1976.

Patent 3,972,730. Pyrotechnically Activated Lithium-Chlorine Cell. Filed June 25, 1976. Patented Aug. 3, 1976.

Patent 3,972,814. Fluidic Oil-Water Separator. Filed Feb. 12, 1975. Patented Aug. 3, 1976.

Patent 3,973,501. Fuze With Dual Safe Positions and Armed-Safe Indicator. Filed Sept. 17, 1974. Patented Aug. 10, 1976.

Patent 3,978,487. Coupled Fed Electric Microstrip Dipole Antenna. Filed Apr. 24, 1975. Patented Aug. 31, 1976.

Patent 3,979,746. High Speed Manchester Code Demodulator. Filed Apr. 29, 1975. Patented Sept. 7, 1976.

TENNESSEE VALLEY AUTHORITY

Division of Law, Muscle Shoals, Ala. 35660

Patent 3,969,483. Removal of Carbonaceous Matter From Ammonium Polyphosphate Liquids. Filed June 5, 1975. Patented July 13, 1976.

U.S. DEPARTMENT OF THE ARMY

Office of Judge Advocate General, Patent Div., RM 2C–455 Pentagon, Washington, D.C. 20314

Patent 4,037,821. Telescoping Retractor. Filed Aug. 10, 1976. Patented July 26, 1977. Not available NTIS.

Patent 4,038,660. Microwave Absorbers. Filed Aug. 5, 1975. Patented July 26, 1977. Not available NTIS.

Patent 4,042,938. Analog and Digital Data Recorder. Filed Jan. 8, 1976. Patented Aug. 16, 1977. Not available NTIS.

Patent 4,046,976. Pressure Actuated Sensor Switch With Bobbin, Trip Cord and Breakwire. Filed Jan. 16, 1976. Patented Sept. 6, 1977. Not available NTIS.

Patent 4,049,131. Freight Container Unloading System. Filed July 11, 1975. Patented Sept. 20, 1977. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch, General Service Division, Federal Building, Agricultural Research Service Hyattsville, Md. 20782

Patent application 725,225. Improved Emulsion Systems for Imparting Durable Press Properties to Cotton and Cotton-Polyester Blended Textiles. Filed Sept. 22, 1976.

Patent application 725,226. Hydrophobic Quaternary Ammonium Cottons Prepared in Non-Aqueous Media. Filed Sept. 22, 1976.

Patent application 766,156. Dyebath Application of Direct, Acid, and Base Dyestuffs and Combinations Thereof to Cotton Textiles. Filed Feb. 2, 1977.

Patent application 768,806. New Antimicrobial Esters of Aliphatic Diols. Filed Feb. 15, 1977.

Patent application 787,177. Antibacterial Textile Finishes Utilizing Zirconyl Acetate Complexes of Inorganic Peroxides. Filed Apr. 12, 1977.

Patent application 794,594. Improved Emulsion Systems for Imparting Durable Flame Retardancy to Cotton-Polyester Blended Textiles. Filed May 6, 1977.

Patent application 794,595. Process for Imparting Wrinkle Recovery to Cotton Fabrics With Vapors From Glycidol. Filed May 6, 1977.

Patent application 809,356. High Performance Durable-Press Cotton Fabrics. Filed June 23, 1977.

Patent application 833,882. Sulfur-Containing Antimicrobial Ester Amides. Filed Sept. 16, 1977.

Patent application 837,490. A Process for Producing a Powdered Flavoring Material. Filed Sept. 28, 1977.

Patent application 846,478. Apparatus for Conditioning Seed Cotton. Filed Oct. 28, 1977.

Patent application 866,078. Improved Formulations for Imparting Flame Retardance to Cellulosic Fabrics Via Transfer Techniques. Filed Dec. 30, 1977.

Patent application 879,999. Purification of Sucrose Esters of Fatty Acids by a Method of Ultrafiltration. Filed Feb. 22, 1978.

Patent application 900,373. A Substituted Benzodioxan Sweetening Compound. Filed Apr. 26, 1978.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20545

Patent application 734,839. Solar Energy Collector. Filed Oct. 22, 1976.

Patent 4,029,519. Solar Collector Having a Solid Transmission Medium. Filed Mar. 19, 1976. Patented June 14, 1977. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Chief, Patent Branch Westwood Building, Bethesda, Md. 20014

Patent 4,070,621. Antenna With Electro-Optical Modulator. Filed July 23, 1976. Patented Jan. 24, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent 4,077,678. Energy Storage Apparatus. Filed July 30, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,077,788. Atomic Hydrogen Storage Method and Apparatus. Filed Apr. 13, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,077,818. Process for Utilizing Low-Cost Graphite Substrates for Polycrystalline Solar Cells. Filed June 4, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,079,268. Thin Conformal Antenna Array for Microwave Power Conversions. Filed Oct. 6, 1976. Patented Mar. 14, 1978. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 26, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-1-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-25-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-3-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-30-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-22-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	11-29-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-6-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-13-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-15-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

REISSUES

OCTOBER 10, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

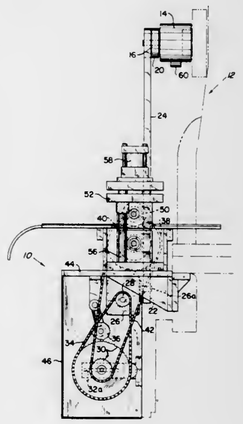
Re. 29,795
SELF-CONTAINED FEED ROLL FOR POWER PUNCH PRESSES

Harry Eyberger, Pittsburgh, Pa., assignor to Vamco Machine and Tool, Inc., Pittsburgh, Pa.

Original No. 3,483,782, dated Dec. 16, 1969, Ser. No. 651,295, Jul. 5, 1967. Application for reissue Dec. 16, 1977, Ser. No. 861,190

Int. Cl.[2] B26D *5/20*

U.S. Cl. 83—245 **9 Claims**



1. A self-contained feed roll unit for a power punch press having a crankshaft rotating in timed relation to the pressing portion of the operating cycle of said punch press, said feed roll unit comprising:

(a) a power driven feed roll;

(b) an idler feed roll rotatably supported on a movable frame and normally urged toward said power driven feed roll, said idler feed roll being periodically moved away from said power driven feed roll by feed roll release means to free stock being fed to said power pass during the pressing portion of said power press operating cycle;

(c) an index drive having an input shaft to receive continuous, uniform rotary motion and an output shaft transmitting non-continuous, incremental rotary motion;

(d) first positive drive means drivingly connecting said index drive input shaft to said power press crankshaft; and

(e) second positive drive means [drivingly connecting] *including a first drive member connected to said index drive output shaft, a driven member connected to said power driven feed roll, an idler member drivingly connected to said first drive member and said driven member to thereby drivingly connect* said index drive output shaft to said power driven feed roll, said second positive drive means being adjustable to vary the ratio of the angular velocity of said index drive output shaft relative to said power driven feed roll.

Re. 29,796
AUTOMATIC CREDIT LOAN MACHINE

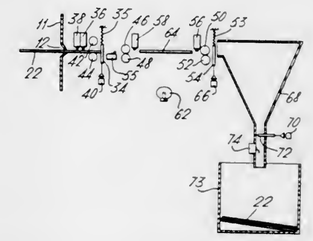
Mititaka Yamamoto; Yukio Mizuta; Toshio Tanaka, and Takeo Asada, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Original No. 3,443,675, dated May 13, 1969, Ser. No. 649,666, Jun. 28, 1967. Application for reissue May 10, 1971, Ser. No. 141,856

Claims priority, application Japan, Jul. 1, 1966, 41-42799

Int. Cl.[2] G07F *7/08*

U.S. Cl. 194—4 C **12 Claims**



1. An automatic credit loan machine operable in response to credit cards introduced thereinto, each said card having its own identification number and at least one element by which to recognize its genuineness, comprising in combination: detection means for detecting said element on a credit card introduced into said machine to test its genuineness; card reading means coupled with said detection means and operable in response to said detection means for reading said identification number of said card; validity testing means for testing the validity of said identification number that has been read; recording means; means for controlling said recording means to record said identification number only when said number is valid; card storage means for storing genuine cards introduced into said machine; card conveyor means for moving cards from said detection means to said reading means and then to said storage means; cash storage means for storing cash; and control means coupled with said cash storage means and with said validity testing means for dispensing a loan of cash when said identification number is valid.

Re. 29,797
MATERIAL HANDLING APPARATUS HAVING GRIPPING MEANS FOR MOVING ARTICLES IN SEVERAL DIRECTIONS

George Mink, 13130 Geoffrey, Warren, Mich. 48092

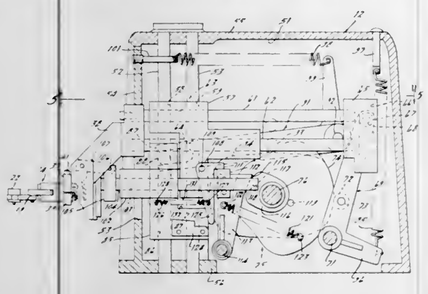
Original No. 4,002,245, dated Jan. 11, 1977, Ser. No. 583,099, Jun. 2, 1975. Continuation-in-part of Ser. No. 506,113, Sep. 16, 1974, Pat. No. 3,972,422. Application for reissue Oct. 3, 1977, Ser. No. 839,128

Int. Cl.[2] B65G *47/08*

U.S. Cl. 214—1 BD **8 Claims**

20. A material handling apparatus for moving workpieces or the like between a first location and a second location, gripping means, supporting means supporting said gripping means for movement between a gripping position in which a workpiece is gripped and a released position, said supporting means being movable to position said gripping means in said first location and in said second location, first motion transfer means for moving said supporting means in a first direction between a first extreme position and a second extreme position, second motion transfer means for moving said supporting means in a

second direction between a first extreme position and a second extreme position, said second direction being angularly related to said first direction, single drive means including an element movable between a first position and a second position, timing means for operating said motion transfer means so that said supporting means is moved in sequence by said motion transfer means from its first location to its second location, said timing means including a lost motion connection operably connecting said drive means element to at least one of said motion transfer means, said lost motion connection being effective to permit movement of said drive means element from a position inter-



mediate its first position and its second position to its first position when said gripping means remains in its first location, actuating means responsive to the movement of said drive means element from its intermediate position to its first position relative to said gripping means for moving said gripping means from one of its positions to the other of its positions, locking means for retaining said gripping means in its other position upon movement of said gripping means from its first location to its second location, and means responsive to the movement of said gripping means to its second location for releasing said locking means and permitting said actuating means to move said gripping means from its other position to its one position.

Re. 29,798

IMPACT CRUSHER

Louis W. Johnson, Eugene, Oreg., assignor to El-Jay, Inc., Eugene, Oreg.

Original No. 3,873,047, dated Mar. 25, 1975, Ser. No. 343,635, Mar. 22, 1973. Application for reissue Mar. 16, 1977, Ser. No. 778,058

Int. Cl.[2] B02C *13/09*

U.S. Cl. 241—275 **16 Claims**

1. In an impact crusher:

base means,

a rotary impeller mounted on the base means for rotation on a vertical axis,

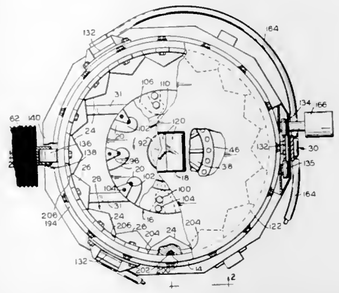
drive means for rotating the impeller to centrifugally throw material to be crushed through a predetermined annular zone around the impeller,

annular breaker bar means,

mounting means mounting the breaker bar means [adjustably] *movably* on the base means in positions surrounding said annular zone,

said breaker bar means presenting flat impact surfaces parallel to the vertical axis and normal to the path of thrown material to achieve maximum impact,

and [adjustment] *drive* means for moving the breaker bar means *during rotation of the impeller and as the breaker bar*



means is being worn [relative to the base means], *said drive means including motor means for driving the breaker bar means, and control means automatically effecting reversal of the motor means at periodic intervals to cause reciprocation of the breaker bars so that the breaker bars are progressively moved* to vary the portion of the breaker bar means impacted by the thrown material to distribute wear *evenly* over a large area of the breaker bar means *so that the breaker bar means continues to present to thrown material impact surfaces that are substantially flat for maximum impact efficiency.*

Re. 29,799

TRIAMCINOLONE ACETONIDE DERIVATIVE

Agustin Agusti, Barcelona, Spain, assignor to J. Uriach & Cia S.A., Barcelona, Spain

Original No. 3,899,581, dated Aug. 12, 1975, Ser. No. 511,075, Oct. 1, 1974. Division of Ser. No. 452,322, Mar. 18, 1974, Pat. No. 4,107,161. Application for reissue Aug. 8, 1977, Ser. No. 822,695

Int. Cl.[2] C07J *5/00;* **A61K** *31/58*

U.S. Cl. 424—241 **6 Claims**

1. A pharmaceutical preparation comprising as active ingredients [triamcinolone acetonide] *bis(triamcinolone acetonide)*4,4'-methylene-bis(3-methoxy-2-naphthoate); and a pharmaceutically acceptable carrier.

PLANT PATENTS

GRANTED OCTOBER 10, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,311

CHRYSANTHEMUM PLANT NAMED AMBER CONCORD

Kerry S. Petusky, West Chicago, Ill., assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 9, 1977, Ser. No. 795,309

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant, substantially as herein shown and described, characterized by the light yellow to bronze color variation of its relatively small, composite flowers due to its susceptibility to changes of blossom color under variations of light and temperature conditions.

4,312

CHRYSANTHEMUM NAMED WOLVERINE

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 16, 1977, Ser. No. 797,491

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. The new and distinct chrysanthemum cultivar substantially as herein shown and described, characterized by the burnt orange and yellow coloring of its medium sized blooms which appear singly on strong stems in an open spray formation, by its uniform 7-week photoperiodic flowering response for greenhouse pot plant culture, and by its excellent performance as a spring, summer and fall potted plant and as a natural season garden chrysanthemum.

4,313

CHRYSANTHEMUM NAMED WILDCAT

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 16, 1977, Ser. No. 797,492

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—80 **1 Claim**

1. The new and distinctive chrysanthemum cultivar substantially as herein shown and described, characterized by its medium pink blooms of medium size and decorative flower form, its uniform 7-week photoperiodic flowering response and good performance when grown as a spring, summer and fall potted plant, its good performance when grown as a natural season garden chrysanthemum, and its relatively vigorous upright growth habit with good stem strength and abundant, medium sized foliage.

4,314

NECTARINE TREE (48-G-140)

Frederic W. Anderson, Merced, Calif., assignor to The Burchell Nursery, Inc., Modesto, Calif.

Filed Jan. 6, 1978, Ser. No. 867,372

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by fruit having general resemblance to the clingstone fruit of the Le Grand nectarine, but bearing freestone fruit, and ripening a few days later.

4,315

PEAR TREE

David B. Lowry, Talent, Oreg., assignor to Highcroft Orchards, Talent, Oreg.

Filed Jan. 16, 1978, Ser. No. 869,942

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree, substantially as illustrated and described, which is large, vigorous, upright, tall, vase-formed, rapid growing, hardy, foliated with large, obovate, abruptly pointed leaves having a crenate, coarsely serrate margin and a medium length petiole, blooms with pink-white, fertile flowers, and a regular and very productive bearer of large to medium size, uniform, obovate, symmetrical fruit —of excellent dessert quality—having a thick, smooth, waxen, glossy skin; the skin having a yellow ground color substantially overspread, in maturity of ripening, with a Burgundy red, and the flesh being distinctly white; and the fruit, in comparison to the Bartlett, being shorter and pyriform with a slightly flattened base, the red of the skin being more uniform about the fruit, and the distinctly white flesh being subacid whereas the flesh of the Bartlett is yellowish-white and sweet.

PATENTS

GRANTED OCT. 10, 1978

ERRATA

For CLASS	See PATENT NO.
043-004	4,118,807
073-766	4,118,933
405-030	4,118,937
405-145	4,118,938
405-174	4,118,940
405-204	4,118,941
405-204	4,118,942
366-189	4,119,304
308-009	4,119,375
312-198	4,119,376
312-344	4,119,377
316-019	4,119,378
073-800	4,119,380
422-298	4,119,400
422-056	4,119,405
422-081	4,119,406
422-058	4,119,407
422-169	4,119,408
075-005 R	4,119,453
075-012	4,119,454
075-025	4,119,455
075-122	4,119,456
075-134 N	4,119,457
075-170	4,119,458
075-243	4,119,459
096-001 PC	4,119,460
096-001.8	4,119,461
096-066.3	4,119,462
096-067	4,119,463
096-068	4,119,464
096-075	4,119,465
096-115 R	4,119,466
106-100	4,119,467
106-038.22	4,119,468
106-040 R	4,119,469
106-045	4,119,470
106-047 Q	4,119,471
106-057	4,119,472
106-058	4,119,473
106-065	4,119,474
106-073.5	4,119,475
106-087	4,119,476
106-099	4,119,477
106-288 Q	4,119,478
560-198	4,119,553
526-270	4,119,579

ERRATA—Continued

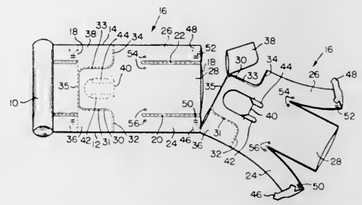
521–028	4,119,580
521–027	4,119,581
521–112	4,119,582
521–103	4,119,583
521–127	4,119,584
521–128	4,119,585
521–137	4,119,586
528–188	4,119,608
528–099	4,119,609
526–292	4,119,610
528–139	4,119,611
528–232	4,119,612
526–064	4,119,613
528–283	4,119,614
528–343	4,119,615
526–031	4,119,616
528–360	4,119,617
542–441	4,119,776
340–407	4,119,811
354–044	4,119,998
362–333	4,120,018
365–002	4,120,042

PATENTS

GRANTED OCTOBER 10, 1978

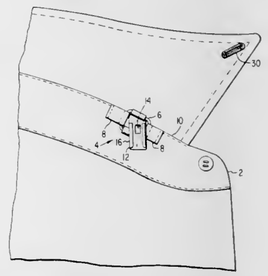
GENERAL AND MECHANICAL

4,118,802
DISPOSABLE HOODED GARMENT
Morton A. Polster, 221 Charing Rd., Rochester, N.Y. 14617
Filed May 2, 1977, Ser. No. 792,996
Int. Cl.[2] A41D *9/00*
U.S. Cl. 2—84 **18 Claims**



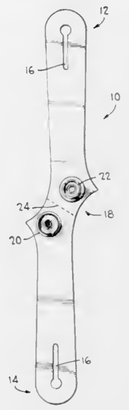
1. A garment-forming blank comprising a shell of two layers of fabric sealed along two opposite outside edges, said layers also being sealed along at least one side of a scored and rendable line which intersects both said sealed outside edges and includes (a) two oppositely disposed shoulder segments, each extending inwardly from a respective one of said sealed outside edges, and (b) two head segments extending, respectively, from the inner ends of said shoulder segments and generally transverse thereto in a direction away from the sealed side of said scored line, said head segments joining in a crown so that the scored and sealed line forms a head-receiving hood portion and a lower portion for receiving and covering another part of the body of a wearer, and further comprising one other rendable line scored in only a first one of said layers and separable to form a face-opening in said hood portion.

4,118,803
COLLAR STAY SYSTEM
Harry Blau, 1431 Ocean Ave., Apt. 1412, Santa Monica, Calif. 90401
Filed Sep. 12, 1977, Ser. No. 832,113
Int. Cl.[2] A41B *3/08*
U.S. Cl. 2—132 **5 Claims**



1. An improved collar stay system comprising:
a collar stay which engages with a tip of a collar of a shirt at one end of said collar stay; and
a hinge member formed of a rotatable ring coupled to said shirt and an elongated receiving member rotatably coupled to said ring, said receiving member having side edges configured to slidably engage and frictionally hold the other end of said collar stay.

4,118,804
SUSPENDER ENDS
Courtland F. H. Freese, Pittsfield, N.H., assignor to Globe Manufacturing Company, Pittsfield, N.H.
Filed May 16, 1977, Ser. No. 796,892
Int. Cl.[2] A41F *3/02*
U.S. Cl. 2—340 **6 Claims**



1. A suspender end adapted for use in a suspender set comprising an elongated strip of flexible material having a middle portion and two end portions, each end portion of the strip including a fastening means, and a releasable fastening means of two members affixed to the middle portion of the strip, the two members of the releasable fastening means being spaced from one another such that when the strip is folded on a bias over on itself, the two members of the releasable fastening means are able to engage each other and securely lock.

4,118,805
ARTIFICIAL SPHINCTER
Harry G. Reimels, Braintree, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Feb. 28, 1977, Ser. No. 773,085
Int. Cl.[2] A61F *1/00;* **A61B** *17/00*
U.S. Cl. 3—1 **9 Claims**



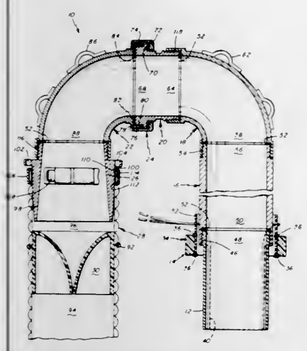
1. In a non-inflatable artificial mechanical sphincter of the type for implantation within a human body, said sphincter having means for occluding a duct; adjustable spring means associated with said occlusion means for increasing an occlusive force around said duct; means associated with said spring means to mechanically control said increase of occlusive force;

and means responsive to an urging movement for releasing occlusion of said duct, wherein the improvement comprises: means for preventing increase of said spring means beyond a predetermined tightening position to protect said duct from excessive or damaging occlusion.

4,118,806
PROSTHETIC BLOOD VESSEL

Victor L. Poirier, Chelmsford, and William F. Bernhard, Framingham, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Continuation of Ser. No. 655,194, Feb. 4, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 854,951
Int. Cl.[2] A61F *1/24, 1/00*
U.S. Cl. 3—1.4 **8 Claims**

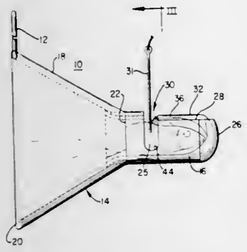


8. A blood conducting implantable prosthesis comprising:
a rigid tube having one end section for insertion through the heart wall to form an open passage into a heart ventricle, the other end of said rigid tube having means for attachment to a flexible prosthetic blood conduit enclosing a prosthetic heart valve between its ends, and means forming an extension of said other end of said rigid tube for insertion into such flexible prosthetic blood conduit approximately to said prosthetic heart valve to support said prosthetic blood conduit.

4,118,807
MINNOW DIPPER

Kenneth G. McCauley, 1162 Carbona Dr., Dallas, Tex. 75217

Filed Sep. 6, 1977, Ser. No. 830,407
Int. Cl.[2] A01K *97/04*
U.S. Cl. 43—4 **3 Claims**

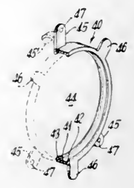


1. A minnow dipper comprising, in combination:
a funnel portion characterized by a tapered sidewall section converging from a relatively large diameter open end to a relatively small diameter open end;
a handle attached to the funnel portion near the relatively large diameter open end;
a tubular member defining a minnow receiving chamber having an open end portion attached to the funnel portion substantially in concentric relation with the small diameter open end, a terminal end portion projecting axially with respect to the funnel portion, and an axially extending side opening formed in the tubular member intermediate the open and terminal end portions, the side opening defining a hooking zone which is sufficiently deep to permit hooking access to a minnow disposed in the receiving chamber; and,
a flexible sheath covering substantially all of the side opening exclusive of the hooking zone for restraining a minnow disposed in the receiving chamber, the flexible sheath having a slit opening extending along the length of the sheath to permit manual withdrawal of the minnow from the receiving chamber.

4,118,808
INTRA-OCULAR LENS

Stanley Poler, 78 E. Second St., New York, N.Y. 10003

Division of Ser. No. 691,033, May 28, 1976, Pat. No. 4,073,014. This application Dec. 19, 1977, Ser. No. 862,027
Int. Cl.[2] A61F *1/16, 1/24*
U.S. Cl. 3—13 **7 Claims**



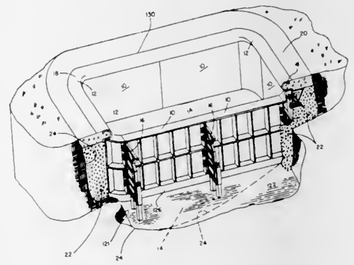
2. As an article of manufacture, a single-piece unitary plastic mounting adapter for iris-stabilized mounting of an intra-ocular lens element, comprising a circumferentially continuous ring body of peripheral contour generally conforming to and adapted to surround the peripheral contour of the lens element, plural axially spaced lens-retaining formations integral, with said ring body and extending directly inwardly from said body for axially limiting retaining engagement with both axial sides of the periphery of the lens element, and first and second pluralities of lens-positioning feet integral with said ring body and radially outwardly extending therefrom in angularly spaced and interlaced relation, the feet of one plurality being in axially offset relation to the feet of the other plurality, whereby at least one foot of said one plurality of feet may be resiliently stressed and inwardly deformed at reduced radial offset from the ring-body axis in the course of insertion via an iris opening, and further whereby such a deformed foot may thereafter be released for compliant restoration of its unstressed radially outward orientation behind the iris opening.

4,118,809
SWIMMING POOL STRUCTURE AND METHOD OF ERECTING THE SAME

Lyle E. Bertsch, 8207 Seiler Rd., New Haven, Ind. 46774

Filed Aug. 10, 1976, Ser. No. 713,255
Int. Cl.[2] E04H *3/16, 3/18*
U.S. Cl. 4—172.19 **15 Claims**

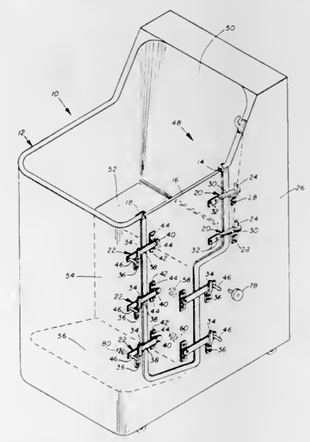
1. A swimming pool comprising a plurality of wall sections, a plurality of braces, said wall sections having an upwardly facing surface, means for fastening said braces to said wall sections, each of said braces including at least two spaced-apart stake guides, one of said stake guides being adjacent to said wall sections, the other of said stake guides being remote therefrom, a plurality of stakes, one of said stakes being adapted to be positioned in each of said stake guides, means for securing said stakes when positioned in said stake guides to said braces independently of each other, said wall sections being supported by said stakes, whereby said wall sections may be positioned, adjusted in both altitude and attitude so as to position said wall section surfaces in a common plane, and held in position.



4,118,810
PORTABLE CHAIR TUB

Preston E. Brickhouse, 2800 Maywood Dr., San Bruno, Calif. 94066, and Clinton B. Dunlap, 8954 E. Marshall Pl., Tulsa, Okla. 74115

Filed Apr. 25, 1977, Ser. No. 790,458
Int. Cl.[2] A47K *3/00, 33/02, 3/22*
U.S. Cl. 4—173 R **6 Claims**

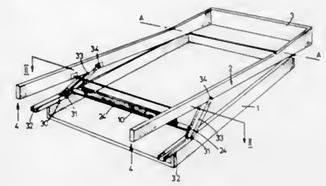


1. A portable bathing device, comprising:
a body compartment having four sides and a bottom, and having an L-shaped door opening in a side which door opening has a wider portion at its top than at its bottom,
a door removably hinged to the body compartment in a manner to close the door opening,
sealing means positionable between the door and the body compartment to form a water-tight seal when the door is closed,
an L-shaped seat formed in the body compartment against a rear wall of said body compartment and extending contiguously between two opposite sides,
the L-shaped door opening conforming substantially to the position of the seat,
means for introducing water into the body compartment, and
means for draining water from the body compartment.

4,118,811
DEVICE FOR INCLINING THE SUPPORTING SURFACE OF A RECLINING FURNITURE

Hugo Degen, Seltisberg, Switzerland, assignor to Inpaver AG, Zug, Switzerland

Filed Nov. 14, 1977, Ser. No. 851,286
Claims priority, application Switzerland, Nov. 23, 1976, 14715/76
Int. Cl.[2] A61G *7/10*
U.S. Cl. 5—62 **7 Claims**



1. A piece of furniture adapted to support a person in a reclining position comprising:
(a) a base;
(b) a support defining the inclination of a horizontally extending support surface for said person,
(1) said support having two portions spaced in a horizontal direction,
(2) one of said portions being superposed on said base for tilting movement about a first, horizontally extending axis transverse to said direction,
(3) the other portion moving toward and away from said base during said tilting movement;
(c) spacer means on said other portion for limiting movement of said other portion toward said base in a plurality of alternative positions, said spacer means including
(1) a hanger member secured to said other portion for pivotal movement about a second, horizontally extending axis, said hanger member having a free end portion downwardly spaced from said second axis in at least one of said alternative positions,
(2) a spacer member secured to said free end portion for angular movement about a third, horizontally extending axis,
(3) stop means keeping the center of gravity of said spacer member above said third axis and limiting said angular movement, and
(4) friction means interposed between said members for preventing said angular movement of said spacer member in response to gravity acting on said spacer member,
(i) said spacer member having an abutment face downwardly directed in a position of said spacer member in which said center of gravity is vertically aligned with said second axis; and
(d) abutment means on said base engaging said abutment face and thereby causing said angular movement of the spacer member when said spacer member is in said position thereof during movement of said other portion toward said base.

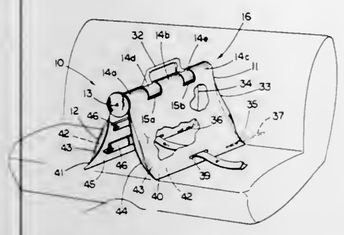
4,118,812
CHILD SEPARATING AND SUPPORT DEVICE

William H. Pangburn, 446 Stuart Dr., Brownsburg, Ind. 46112

Filed Nov. 7, 1977, Ser. No. 848,784
Int. Cl.[2] A47C *21/00*
U.S. Cl. 5—92 **20 Claims**

1. A child separating and support device for a seat of a vehicle which comprises:
a first side support member;

a second side support member rigidly joined to said first side support member along a common top edge, said first and second side support members each including a bottom edge and each diverging from said common top edge toward their corresponding bottom edge; and



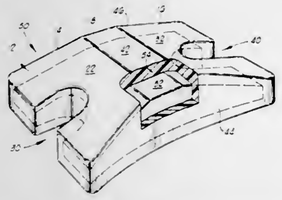
a least one shelf member joined to and extending between said first and second side support members and being disposed between said common top edge and said bottom edges.

4,118,813

SLEEP TRAINING PILLOW FOR THE PREVENTION OF SNORING

Nolen L. Armstrong, 3131 NW. Expressway, Oklahoma City, Okla. 73112

Filed Nov. 10, 1976, Ser. No. 740,419
Int. Cl.[2] A47G *9/00*
U.S. Cl. 5—337 **6 Claims**



1. A sleep training pillow for positioning a person's head along a predetermined incline with the face angled downwardly, the pillow characterized as having a pillow support surface and comprising:

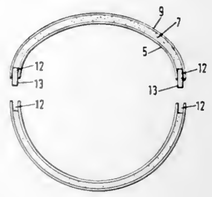
a first end member having a planar first face support surface, the first face support surface disposed to have a first angle of incline relative to the pillow support surface between 15° and 25°, and the first face support surface characterized as extending a sufficient distance to support the person's head positioned thereon such that the face of the person will be angled downwardly at approximately an angle corresponding to the value of the first angle of incline, and a second end member having a planar second face support surface, the second face support surface disposed to have a second angle of incline relative to the pillow support surface between 15° and 25°, and the second face support surface characterized as extending a sufficient distance to support the person's head positioned thereon such that the face of the person will be angled downwardly at approximately an angle corresponding to the value of the second angle of incline, the second angle of incline being reverse sloped relative to the first face support surface.

4,118,814

MANUFACTURE OF BOAT HULLS AND OTHER HOLLOW ARTICLES

Gerald Herbert Holtom, 5 Hillside St., Hythe, Kent, England

Continuation-in-part of Ser. No. 632,634, Nov. 17, 1975, abandoned. This application May 18, 1976, Ser. No. 687,450
Int. Cl.[2] B63B *5/24;* **B29D** *23/10;* **B29G** *7/02*
U.S. Cl. 9—6 P **12 Claims**



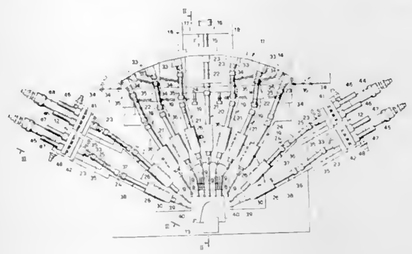
1. A method of constructing hollow articles comprising providing a male mould, coating the mould with a release agent, covering the release agent on the mould with at least a first layer of resin impregnated fibre, then with a winding of at least one layer of synthetic foam about the fibre, winding at least a further layer of fibre impregnated with resin about the foam with sufficient resin and under sufficient tension so that resin is forced into the joints between adjacent winds of foam to form a sandwich of foam between the layers of fibre and to form resin bridges connecting the first and further layers of fibre at the joints between adjacent winds of foam, removing the mould by cutting the sandwich into at least two parts, and rejoining the two parts with forming a tongue-and-groove interconnection in the foam layer.

4,118,815

AUTOMATIC TOE FORMING MACHINE FOR SHOES, IN PARTICULAR DANCING AND GYMNASTICS SHOES

Renato Crimella, Viale Famagosta, 28 - Milan, Italy

Filed May 9, 1977, Ser. No. 795,373
Claims priority, application Italy, Jun. 25, 1976, 24785A/76
Int. Cl.[2] A43D *15/00*
U.S. Cl. 12—7.9 **11 Claims**



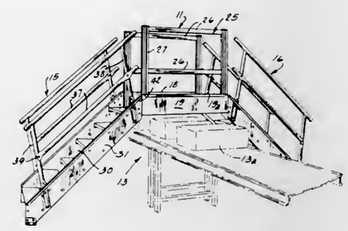
1. An automatic toe forming machine for shoes, in particular dancing and gymnastics shoes, comprising, in combination, a last holding assembly, a first assembly of mechanical fingers movable between a non-working position and a working position in which they rest against the toe of a shoe on a last contained is said last holding assembly, a second assembly of mechanical fingers also movable between a non-working position and a working position in which they are disposed between the fingers of the first assembly so as to make the vamp covering the last assume a pattern in the form of folds, its path passing under the fingers of one assembly and over the fingers of the other, and a third and a fourth assembly of mechanical fingers to the sides of the second assembly mobile backwards and forwards laterally to the first mechanical finger assembly and cooperate with said second mechanical finger assembly.

4,118,816

CROSSOVER OR BRIDGE

Douglas C. Mittag, Bolingbrook, Ill., assignor to Aurora Equipment Company, Aurora, Ill.

Filed Oct. 6, 1977, Ser. No. 839,840
Int. Cl.[2] E01D *1/00*
U.S. Cl. 14—69.5 **17 Claims**



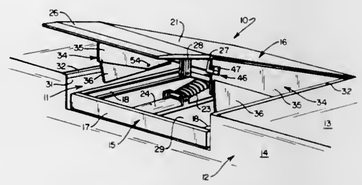
13. In combination, a crossover comprising a bridge section and a pair of angled stairways for connection with opposite ends of said bridge section and with the bridge section disposed in an elevated position relative to bottom ends of said angled stairways when assembled therewith, a pair of transversely spaced main crossover channels positioned at opposite sides of said bridge section, railing structure having lower ends secured at lower end areas to said main crossover channels of said bridge section, a riser panel end section positioned at each end of said channel and comprising a supported side rail of at least one of said stairways, a shelf structure mounted on each riser panel end section supporting said main crossover channels at one of its ends, fasteners joining the opposite ends of each main crossover channel to the associated riser panel end sections securing the main crossover channels in separated relation with the upper ends of said stairways, each opposite end of each main crossover channel being disposed in lapped secured assembly with the associated riser panel end section, crossover means positioned between said main crossover channels, and means securing said crossover means in supported assembly with said crossover channels.

4,118,817

TELESCOPIC TOW GUARD FOR A DOCK BOARD

Peter B. Burnham, Columbus, Ohio, assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Oct. 14, 1977, Ser. No. 842,082
Int. Cl.[2] E01D *1/00*
U.S. Cl. 14—71.3 **11 Claims**



2. In combination with a dockboard incluidng a ramp having longitudinal sides and mounted on a pivot for swinging movement about an axis transverse to the sides in a vertical direction from a generally horizontal position to relatively elevated and a relatively depressed position; a toe guard comprising

a first elongated plate disposed in a vertical plane closely adjacent to and extending substantially the length of the side of the ramp, said first plate mounted at one end on a pivot disposed adjacent the ramp pivot for relative swinging movement in a generally vertical plane,

mechanical coupling means carried by said ramp and said first plate in relatively remote relationship to the respective pivot axis thereof, said coupling means operative on pivoting of the ramp to an elevated position to interconnect said first plate with said ramp for upward swinging thereof in conjunction with the ramp and to disconnect therefrom upon pivoting of the ramp to a relatively depressed position,

a second elongated plate disposed in coplanar relationship to said first plate and mounted on a pivot carried by said first plate for relative pivoting movement of said second plate in coplanar relationship to said first plate between a relatively telescoped position and an expanded position,

second mechanical coupling means carried by said first and second elongated plates for limiting relative rotational movement toward an expanded position, said second coupling means operative on pivoting of said first and second plates to said expanded position to interconnect said plates and to pivot said second plate in conjunction with said first plate, and

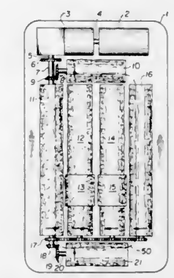
support means engageable with said first and second plates on downward swinging movement thereof to support said first plate in a predetermined position and to pivot said second plate into telescoped relationship thereto wherein said first plate, at the end opposite its pivot, has a vertical dimension substantially equal to the height of the dockboard and said second plate is pivoted to said first plate and adjacent a bottom edge thereof.

4,118,818

APPARATUS FOR CLEANING THE LOWER PORTION OF SHOES

Eileen M. Holleran, 188 Old Field Rd., Setauket, N.Y. 11733

Filed Apr. 8, 1977, Ser. No. 786,034
Int. Cl.[2] A47L *23/02*
U.S. Cl. 15—36 **8 Claims**



1. Apparatus for cleaning the lower portion of a shoe comprising:

(a) a frame,

(b) a generally cylindrically shaped first brush with a length longer than that of the shoe to be cleaned and a brushing surface that substantially encompasses the round surface of the brush, said brushing surface including a raised portion that conforms to the instep of the shoe,

(c) means for mounting said first brush in a horizontal position in said frame for rotation of said brush about its longitudinal axis,

(d) a first power means for rotating said first brush,

(e) a support plate on which to rest the shoe while it is being cleaned, said plate having a plurality of openings to pass the soil from the shoe and an opening corresponding generally to the longitudinal cross section of said first brush, and

(f) means for mounting said plate in said frame in the hori-

zontal plane above the longitudinal axis of the first brush in a position to align the opening corresponding to the brush cross section with the brush and placing the plate at a level at which the upper surface of the brush is above the upper surface of the plate, whereby the brushing surface of the brush is exposed above the plate to clean the underside of a shoe while the shoe is protected by the plate from the power means for rotating said first brush.

4,118,819

FLOOR TREATING MACHINES

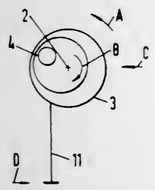
Sidney Gordon, Stanmore; John Thomas Wilkins, Bushey Heath, and Haydn Frank Mayo, Hazlemere, all of England, assignors to R. G. Dixon & Company Limited, Wimley, England

Filed Feb. 10, 1977, Ser. No. 767,572

Claims priority, application United Kingdom, Feb. 11, 1976, 5442/76; Feb. 11, 1976, 5443/76

Int. Cl.[2] A47L *11/162*

U.S. Cl. 15—49 R **6 Claims**



1. A floor treating machine of a single rotary brush type, comprising a frame disposed substantially horizontally to the floor and having a lower surface and an upper surface; at least two wheels rotatably mounted on said frame; a brush rotatably mounted on said lower surface of said frame and rotatable about a vertical axis; a motor fixedly mounted on said upper surface of said frame and operative to rotate said brush about said axis, said brush during rotation being subjected to a reaction couple with the floor; a handle for an operator and attached to said frame at an end thereof and extending angularly upward and away from said frame, so that an operator can apply forces to said handle to counteract the reaction couple on said brush and thereby create a tilting couple, said handle and said motor being laterally offset on said frame from said axis of rotation of the brush in a direction so as to impart a tilting couple opposed to that arising from operator forces applied to the handle to thereby counteract the reaction couple acting on said brush from the floor.

4,118,820

CAR WASHING APPARATUS WITH LONG SHALLOW ANGLE SIDE BRUSH

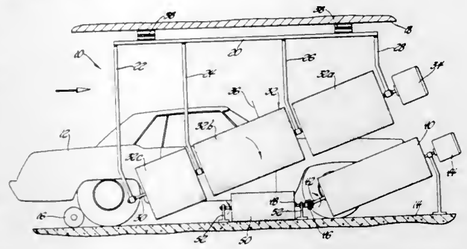
David J. Bivens, Danville, Va., assignor to Bivens Winchester Corporation, Danville, Va.

Continuation of Ser. No. 334,807, Feb. 22, 1973, abandoned. This application Sep. 23, 1976, Ser. No. 725,884

Int. Cl.[2] B60S *3/06*

U.S. Cl. 15—53 AB **13 Claims**

1. Vehicle washing apparatus including means defining a wash lane for a vehicle to be washed; brush support means adjacent said wash lane; a substantially cylindrical side brush carried by said support means for washing a side surface of a vehicle in said lane; said brush being disposed in an attitude of between about 10° and 45° from horizontal and of such length as to instantaneously contact the vehicle over at least about 50% of its overall length; and, means for rotating the brush about the longitudinal axis thereof to effect a scrubbing action on said side surface, said side brush comprising a plurality of axially spaced segments, said support means including a frame having depending arms secured to said brush between said segments, the lower segments of said brush comprising bristles



of a material which is stiffer and more abrasive than the bristles of the upper segments of said side brush.

4,118,821

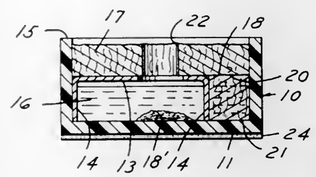
DEVICE FOR CLEANING SOLDERING IRON TIPS

Robert A. Kuhn, Grosse Pointe Park, Mich., assignor to American Electrical Heater Company, Detroit, Mich.

Filed May 13, 1977, Ser. No. 796,837

Int. Cl.[2] B05C *11/105;* B23K *37/00*

U.S. Cl. 15—104.92 **4 Claims**



1. A device for cleaning the outside surface of a solid pointed soldering iron tip comprising a case closed at the bottom and sides and open at the top forming a water reservoir, a shelf intermediate the bottom and top, a flat sponge pad supported by said shelf above the water level and a wick sponge contacting the underside of said flat sponge and extending into said water level, said shelf provided with a hole therethrough and said flat sponge pad having a central hole aligned with said shelf hole but of smaller size, and extending completely through the thickness thereof forming a cylindrical inner rubbing surface for receiving and engaging longitudinal tapering outer surfaces of said tip whereby the contaminants adhering to said outer tip surfaces can be removed by rubbing action to fall by gravity through the holes in sponge and shelf into the bottom of said water reservoir.

4,118,822

LOUVERED WINDOW CLEANER

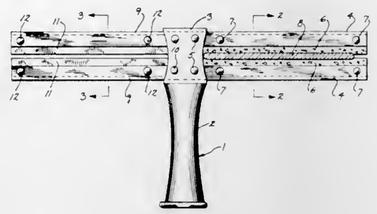
John E. Gitter, 3258 N. 84th St., Milwaukee, Wis. 53222

Filed Jun. 23, 1977, Ser. No. 809,281

Int. Cl.[2] A47L *1/08, 1/12*

U.S. Cl. 15—121 **4 Claims**

1. A device for cleaning louvered windows, comprising a handle, a first pair of generally parallel holders extending laterally in spaced relation from the handle substantially in the plane thereof, an absorbent strip adapted to hold cleaning liquid secured to each of said first holders with said pads being spaced apart to define a first slot to receive the window section to be cleaned, drawing said device across the window section acting to clean opposite surfaces of said window section, a second pair of generally parallel holders extending laterally in spaced relation and in the opposite direction from said handle, and a flexible squeegee blade member secured to each of said second holders, said squeegee members being spaced apart to define a second slot to receive said window section, movement



of said squeegee members across the window section serving to simultaneously remove the cleaning liquid from opposite surfaces of said window section.

4,118,823

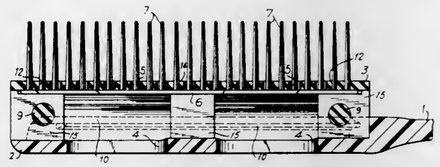
HAIR BRUSH

Jerome Axelrod, New York, N.Y., assignor to Jerome Alexander Cosmetics, Inc., New York, N.Y.

Filed Mar. 18, 1977, Ser. No. 779,184

Int. Cl.[2] A46B *7/00, 9/02*

U.S. Cl. 15—176 **9 Claims**



1. A hair brush comprising a handle and a base, said base being connected to said handle, an elastomeric cushion releasably secured to said base and having a brush face, at least one long narrow track within said cushion and having thereon a plurality of upstanding bristles substantially parallel to each other, said track being fixed relative to said base and said cushion and resiliently supported by said cushion, a plurality of openings through said cushion, each of said openings having only one of said bristles extending therethrough past said face, at least one vent through said base, said vent in communication with said openings, each of said openings being larger in cross section than each of said bristles and the width of said track whereby said track and bristles permit air to flow through said vent and said openings.

4,118,824

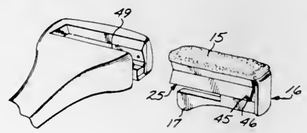
APPLICATOR HAVING INSERTABLE SPONGE CARTRIDGE

Paul Santas Clement, Jr., 5940 Wentworth St., Long Beach, Calif. 90815

Filed Jun. 24, 1977, Ser. No. 809,754

Int. Cl.[2] A47K *7/02*

U.S. Cl. 15—244 R **3 Claims**



1. An applicator comprising:

a handle having a lower segment conformed for manual grasping and an upper segment conformed as an enlarged head, said upper segment including a lateral slot partly extending thereacross;

a mount conformed for telescopic insertion into said lateral slot;

a sponge cartridge including an elongate strip of sponge material attached to a thin-walled support conformed for interposed fit between said slot and said mount;

said slot including convolved interior surfaces and said mount including exterior surfaces conforming to the convolutions of said interior surfaces in said slot, said support being convolved in section for interspaced receipt between said interior and exterior surfaces; and

said interior and exterior surfaces each being convolved to include opposing V-shaped walls, said interior surfaces having the apex of the V conformed for sliding receipt in said mount.

4,118,825

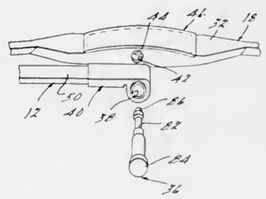
CONNECTOR ASSEMBLY FOR WINDSHIELD WIPERS

Albert J. G. Hoebrechts, Mechelen Bovelingen, and Alex H. A. M. van Eekelen, Hasselt, both of Belgium, assignors to Monroe Auto Equipment Company, Monroe, Mich.

Filed Mar. 28, 1977, Ser. No. 782,096

Int. Cl.[2] B60S *1/40*

U.S. Cl. 15—250.32 **19 Claims**



1. A connector assembly for operatively connecting a windshield wiper arm to the superstructure of an associated wiper blade having a yoke member comprising a central portion of generally inverted U-shaped cross section defining a pair of spaced apart generally parallel side sections and an upper transversely extending intermediate web section,

said assembly comprising an opening formed in the web section and a pair of laterally aligned apertures formed in the side sections,

means on the terminal end of said wiper arm defining an opening adapted to be aligned with said aligned apertures when said terminal end of said wiper arm is juxtapositioned along the outer side of one of said side sections of said yoke,

a removably mounted connector pin extending coaxially of said apertures for connecting said yoke member to said arm, and

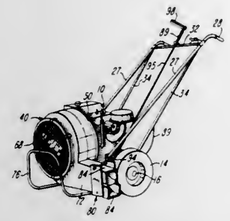
an insert member having a longitudinally disposed upper portion arranged to cover said opening and a pair of cooperative downwardly projecting retaining fingers located between said side sections of said yoke and on the longitudinally opposite sides of said aligned apertures, said fingers being clampingly securable to diametrically opposite sides of the portion of said pin disposed between said side sections of said yoke to prevent axial withdrawal of said pin and inadvertent disassembly of said arm from said wiper blade.

4,118,826

MOBILE BLOWER UNIT FOR LEAVES AND OTHER DEBRIS

Arthur L. Kaeser, Springfield, Ohio, assignor to Parker Sweeper Company, Springfield, Ohio

Filed May 3, 1976, Ser. No. 682,385
Int. Cl.[2] A47L *5/14*
U.S. Cl. 15—328 **8 Claims**



1. A mobile blower unit adapted for clearing leaves and other debris from a surface, comprising a frame, a set of wheels supporting said frame for ground traversing movement, an engine mounted on said frame and having a substantially horizontal engine shaft, a handle assembly extending rearwardly and upwardly from said frame for guiding said unit along a selected path, a blower impeller driven by said engine shaft, a blower housing surrounding said impeller and having an inlet and an outlet, means supporting said housing for rotation on generally the horizontal axis of said engine shaft and relative to said engine for selectively moving said outlet in a substantially vertical plane between a high position on one side of said unit and a low position on the opposite side of said unit relative to said frame and said wheels, means for positively securing said housing with said outlet in either said high position or said low position, an adjustable air deflector member positioned adjacent said outlet of said blower housing, means supporting said air deflector member for pivotal movement between a first position directing air downwardly from said outlet and a second position directing air upwardly from said outlet, an elongated control member extending from said handle assembly to said air deflector member, said control member being movable over the top of said engine when said housing is rotated on said horizontal axis to move said outlet in said vertical plane between said high and low positions, said handle assembly including means supporting said control member to provide for said movement over the top of said engine, and means connecting said control member to said deflector member and providing for remotely adjusting the position of said air deflector member between said first and second positions from said handle assembly when said outlet is located in said high and low positions on opposite sides of said engine.

4,118,827

DOOR HINGE ATTACHMENT DEVICE

Yukio Yamamoto, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

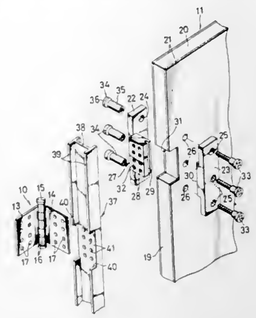
Filed Apr. 22, 1977, Ser. No. 790,083
Claims priority, application Japan, Apr. 30, 1976, 51-55394[U]
Int. Cl.[2] E05D *11/00*; E06B *3/00*
U.S. Cl. 16—137 **9 Claims**

1. A device for connecting the movable one of the leaves of a vertical axis butt hinge to a door having a recess in a vertical edge thereof, the movable hinge leaf having a first set of holes, said device comprising in combination:

(a) a pair of gripping jaws adapted to be disposed on the opposite sides of the door in spanning relationship to the recess in the vertical edge thereof, each of said gripping jaws having a second set of holes remote from the recess;

(b) fastener means adapted to extend through said second sets of holes in the jaws and through the door for rigidly connecting said pair of gripping jaws to the door by extending between and coupling the jaws together with the door clamped therebetween;

(c) a mounting plate coupled with said pair of gripping jaws so as to be disposed in the recess in the vertical edge of the



door, said mounting plate having a third set of threaded holes; and

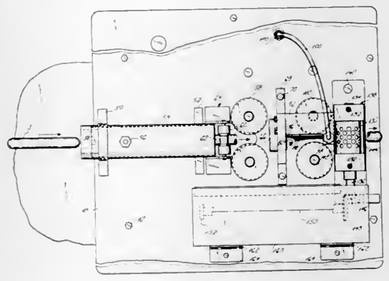
(d) a plurality of threaded fasteners adapted to pass through the first set of holes in the movable hinge leaf and threaded into said third set of threaded holes in said mounting plate.

4,118,828

APPARATUS FOR PEELING SAUSAGES

Leslie B. Melanson, Manasquan, N.J., assignor to Linker Machines, Inc., Newark, N.J.

Filed Dec. 10, 1976, Ser. No. 749,492
Int. Cl.[2] A22C *11/00*
U.S. Cl. 17—1 F **3 Claims**



1. Apparatus for peeling casings from a string of sausages comprising drive means for engaging the string of sausages and driving that string along a peeling path, said drive means comprising two spaced apart sets of two drive wheels, the wheels of each set being disposed on opposite sides of said peeling path, a knife assembly disposed adjacent said path to slit the casings of the sausages longitudinally, said knife assembly being located close to a downstream one of said sets of drive wheels, a hollow, perforated wheel disposed downstream of said knife assembly, housing means disposed about said wheel, a portion of said wheel closest to said path projecting from said housing whereby sausages, the casing of which are slit, pass over said portion of said wheel along said path, means applying suction to the interior of the wheel causing said casings to be removed from said sausages and adhere to said wheel and allowing sausages from which said casing is removed to continue along said path, guide means in said path for determining the position of said string of sausages relative to said knife

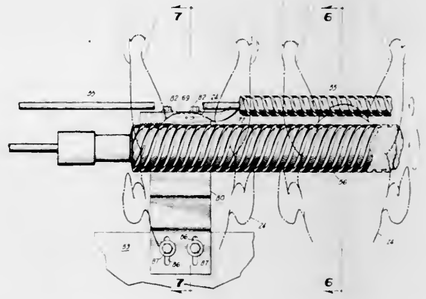
assembly and support means, said guide means being releasably mounted in said support means, said support means comprising a bracket disposed between said sets of drive wheels and having a through opening, said peeling path extending through said opening, said guide means comprising a plurality of guide elements dimensioned for different sizes of sausage, a selected one of said plurality being mounted in said support means and the remaining guide elements being available for replacement of said selected one of said guide elements, each guide element comprising a ring shaped member having an external annular shoulder separating a first portion of said member of a diameter equal to said through opening of said bracket and received in that through opening, from a portion of larger diameter than said through opening whereby said shoulder of said selected one of said guide elements abuts said bracket adjacent said through opening and on an upstream side of said bracket, said shoulder and said first portion of said ring shaped member constituting the sole means supporting said guide element in said bracket whereby said guide element is easily removed for replacement and for cleaning.

4,118,829

OPENING CUT MACHINE

Grover S. Harben, Jr., Gainesville, Ga., assignor to Stork-Gamco, Inc., Gainesville, Ga.

Continuation of Ser. No. 638,961, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 459,476, Apr. 10, 1974, abandoned. This application Jan. 28, 1977, Ser. No. 763,669
Int. Cl.[2] A22C *21/00*
U.S. Cl. 17—11 **5 Claims**



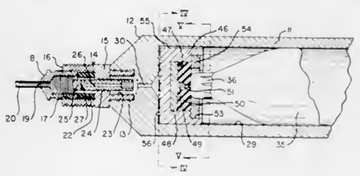
1. A machine for making an opening cut in poultry for evisceration comprising an overhead horizontal conveyor for depending shackles from which birds are suspended head downwardly by their hocks and with their tails facing in one direction laterally of the path of movement of the birds along said conveyor, a relatively stationary opening cut machine below said conveyor including upper and lower parallel horizontal axis counter-rotating tail gripping and advancing rollers each having a helical thread element thereon, the upper roller being smaller in diameter than the lower roller and having its rotational axis offset laterally from the axis of the lower roller so that a plane tangent to the peripheries of said rollers adjacent the tail sides of the birds is substantially vertical, the lower roller having a conically tapered upstream end portion spaced from the helical thread element of the upper roller for initial guidance of the tails of birds between said gripping and advancing rollers, the peripheries of the upper and lower rollers defined by said helical thread elements being spaced to form a tail receiving passage between said rollers, the helical thread element of the upper roller terminating upstream from the corresponding terminal of the helical thread element of the lower roller and the upper roller having a reduced diameter extension thereon downstream from the terminal of the helical thread element of the upper roller, and a stationary knife having a cutting edge extending into said tail receiving passage between the upper and lower rollers from the sides of the rollers away from advancing birds, said cutting edge extending longitudinally of the path of movement of the birds and longitudinally of the axes of said rollers, said cutting edge of said knife projecting laterally beyond the rotational axes of both rollers toward the tail sides of the birds and terminating in closely spaced relation to the tail sides and said tangent vertical plane, said knife and cutting edge arranged adjacent to said reduced diameter extension of the upper roller and having an upturned end portion at its upstream end to force the tails of birds downwardly into engagement with the helical thread element of the lower roller in the region thereof opposite to the reduced diameter extension of the upper roller, the arrangement being such that the helical thread elements of the upper and lower rollers constantly pull and stretch the tails of birds laterally into said tail receiving passage and toward the cutting edge of said knife while simultaneously advancing the tails longitudinally of the counter-rotating rollers thereby causing the knife to produce an opening cut precisely in each bird in the lower abdomen thereof between the tail and anus.

4,118,830

DEVICE FOR SKINNING ANIMALS AND FOWL

Richard J. Weiland, 217 Wahl Ave., Evans City, Pa. 16033

Filed Apr. 13, 1977, Ser. No. 787,229
Int. Cl.[2] A22B *5/16*
U.S. Cl. 17—21 **5 Claims**



1. A self-contained animal skinning device for communicating pressurized gas between the hide and flesh of animals and fowl, said device comprising a tubular container, a cartridge in which pressurized gas is sealed, carried within the container, means carried by said container operating to release pressurized gas from said cartridge to the interior of said container, and a hollow needle carried at one end of the said container, and communicating with the interior of said container, said needle having an exit port insertable between the hide and flesh of the animal and fowl for communicating pressurized gas thereto, said tubular container having a relatively small bore at the end thereof communicating with the interior of said tubular container, a sleeve fitting screw-threadedly engaged in said relatively small bore at one end thereof and having the said hollow needle in screw-threaded relation at its opposite end, said sleeve fitting having a diametric partition intermediate of its ends with a threaded hole therein, and a set screw adjustably screwed in said threaded hole, said set screw having a restricted longitudinal passage for restrictedly controlling the rate of flow of pressurized gas from the interior of said tubular container to said needle.

4,118,831

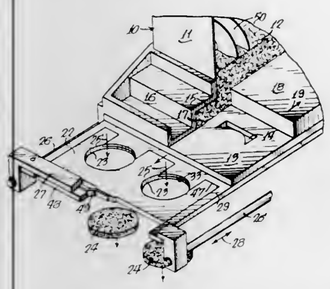
MOLDING DEVICE

James A. Holly, Richton Park, Ill., and Harry H. Holly, Boca Raton, Fla., assignors to Hollymatic Corporation, Park Forest, Ill.

Filed Aug. 1, 1977, Ser. No. 822,222
Int. Cl.[2] A22C *7/00*
U.S. Cl. 17—32 **12 Claims**

1. A device for molding food articles of raw finely divided beef and similar tissue containing food material that is normally subject to uneven shrinkade during cooking, comprising: supply means for said material; a mold having a mold opening

including a peripheral edge; a supply passage means for supplying pressurized said material to said mold opening when said mold is in a mold filling position to form said articles, said passage having an exit at one edge of said mold opening of substantial width and a thickness that is a fraction of the thickness of said mold opening at said edge to project a thin ribbon



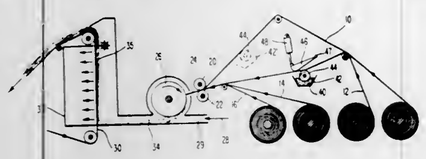
of said food material into the mold opening for filling said opening with said pressurized material; a closure for said exit having a width substantially equal to the width of said exit at the mold opening; and means for movably mounting said closure on said mold plate for movement between a forward position defining a portion only of said mold opening and a retracted position defining said exit.

4,118,832

METHOD FOR MINIMIZING THE ACCUMULATION OF STATIC CHARGES ON FIBERS RESULTING FROM FIBERIZATION OF PULP LAP SHEETS

Tralance O. Addy, Media, and David P. Gutman, Glen Riddle, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Sep. 13, 1976, Ser. No. 722,478
Int. Cl.[2] D04H *1/00*
U.S. Cl. 19—304 **17 Claims**



1. A method for minimizing excessive accumulation of static charges on fibers resulting from separating the fibers from pulp lap sheets in a dry-forming operation, said method comprising the steps of:

a. directing a plurality of pulp lap sheets into a stacked condition;

b. directing the stack of sheets in a downstream direction to a fiberizing device for separating fibers from the stack; and

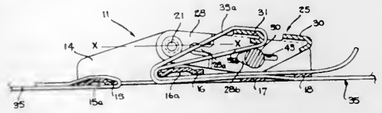
c. applying an antistatic chemical directly to a single surface of only one pulp lap sheet by directing a moving surface, with the chemical thereon, into engagement with said single surface as said sheet is being directed toward the fiberizing device, said single surface being disposed in the interior of the stack.

4,118,833

BUCKLE ASSEMBLY WITH STRAP TIGHTENING MECHANISM

Howard T. Knox, Simi, and Ernest Prete, Jr., Woodland Hills, both of Calif., assignors to Ancra Corporation, El Segundo, Calif.

Filed Jun. 9, 1977, Ser. No. 805,004
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—68 CD **2 Claims**



1. In a buckle for tightening a strap having a generally U-shaped main frame member with a pair of opposing side walls joined together by a plurality of cross-bars forming a bottom, one of which is centrally located and another of which is at one end of said frame member, and a handle member pivotally supported between the sides of said frame member and having a pair of side arms joined together by an inner and outer cross-bar, one end of the strap being looped around the inner cross-bar of the handle with the two legs of the loop being drawn under the centrally located cross bar of the frame member and out from the buckle, the other end of the strap being attached to the cross bar at said one end of said frame member, the improvement comprising:

means for stopping the downward travel of said handle and latching said handle at a predetermined position spaced from the bottom of said frame member comprising a projection formed in one of the side walls of said frame member and extending inwardly therefrom, a projection on one of said handle side arms and a projection on the other of said frame member side walls whereby in the latched position the bottom edge of the other of said handle side arms abuts against said frame member side wall projection with the projection on the other of said handle said arms abutting against the under side of the projection on the other of said frame member side walls,

similar apertures formed in each of the side walls of the main frame member and the side arms of said handle member, said apertures being aligned with each other with the handle in said predetermined latched position, and

security means for locking said handle in the latched position including a bar fitted through said apertures.

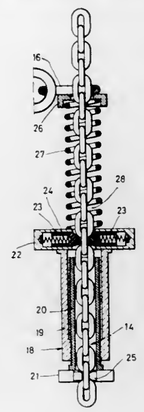
4,118,834

STRETCHING DEVICE

Erhard Alfred Weidler, Jahnstr. 32, 7080 Aalen-Unterkochen, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,623
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1976, 2631967
Int. Cl.[2] B60C *27/10*
U.S. Cl. 24—68 TT **18 Claims**

1. A stretching device for the stretching of a tire chain, used in conjunction with a stretching chain connected to said stretching device, said stretching device comprising a stretching spring, a stretching aggregate for stretching said spring, at least one stretching element, one end of said aggregate acting



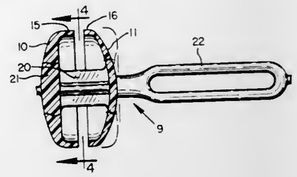
on said stretching element for holding said stretching chain stretched when said stretching spring is stretched.

4,118,835

ELASTIC FASTENER

Richard D. Harris, Albany; Franklin G. Smith, and Jerome F. Moshofsky, both of Portland, all of Oreg., assignors to R. D. Bussard & Son, Inc., Albany, Oreg.

Filed Apr. 20, 1977, Ser. No. 789,024
Int. Cl.[2] A44B *1/18*
U.S. Cl. 24—73 MC **5 Claims**



1. An elastic fastener for fastening together layers of material, comprising

a pair of elastic flange means adapted to fit on opposite sides of a plurality of layers of material and retain the same in face-to-face juxtaposition; and

an elastic shank means joining said flange means and adapted to pass through an opening in said layers of material,

one of said flange means having a base thickness enabling it to be flexed to facilitate pulling said one flange means through said opening, the other of said flange means having a thicker base than said one flange means so as to resist flexing and passage through said opening,

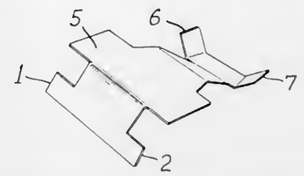
said flange and shank means being made of elastomeric material having a durometer of between about 65 and 75.

4,118,836

DEVICE FOR FIXING THE ELECTRODES OF ELECTROSTATIC DUST PRECIPITATOR FILTERS

Jean Duboc, Maurepas, and Bernard Poitier, Paris, both of France, assignors to Ceca S.A., France

Filed Jun. 14, 1977, Ser. No. 806,500
Claims priority, application France, Jun. 17, 1976, 76 18455
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—73 SA **4 Claims**



4. A metal device for fixing discharge electrodes on cross-pieces of a frame in such a manner as to constitute electrostatic dust removers, the cross-pieces being constituted by a bar of C-shaped cross section and having an opening of given width, the device consisting of a metal member having:

a flat portion provided with lugs (**1**) and (**2**) adapted to be inserted within the bar of C-shaped cross section,

a narrow portion, the width of which is smaller than the opening of given width of the bar,

an upper portion (**5**) which is to press firmly the electrode against an external portion of the opening of given width of the bar,

another narrow portion, having a width which is smaller than the opening of given width, and

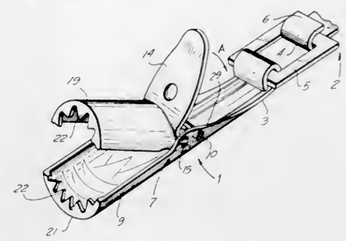
an end portion provided with lugs which can be introduced by elastic deformation inside the bar of C-shaped cross section and which, when released, are fitted inside the bar, whereby the device makes it possible, because of the insertion of two extremities provided with lugs inside the bar of C-shaped cross section to press firmly the electrode against an external part of the opening of given width.

4,118,837

BUCKLE FOR A BELT AND THE LIKE

Fritz Hoch, Pforzheim, Fed. Rep. of Germany, assignor to Gutos Metallschliessenfabrik Bader & Hoch KG, Pforzheim, Fed. Rep. of Germany

Filed Jun. 20, 1977, Ser. No. 808,144
Int. Cl.[2] A44B *11/25*
U.S. Cl. 24—75 **24 Claims**



1. A buckle for a belt and the like, comprising two elongated buckle members each adapted to retain a respective end portion of the belt, each of said buckle members including a first portion detachably connectable with the corresponding first portion of the other buckle member, and a second portion spaced from the respective first portion in the direction of elongation of the buckle member and adapted to confine the end portion of the belt therein, said second portion having at least two sections one of which is movable relative to another

between a first position in which the end portion of the belt is firmly retained between said two sections and a second position in which the end portion of the belt is released so as to be removable from said buckle member, each respective buckle member further including means for urging said one section into and arresting it in said first position, said means including an arresting element movable between an operative position in which said arresting element urges said one section into and arrests it in said first position thereof so as to retain the end portion of the belt, and a release position in which said arresting element releases said one section so that the latter is movable into said second position thereof to thereby release the end portion of the belt.

4,118,838

PIPE CLAMP

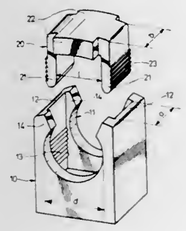
Erwin Schäefer, and Heinz Bisping, both of Munich, Germany, assignors to Hilti Aktiengeseilschaft, Schaan, Liechtenstein

Filed Apr. 12, 1977, Ser. No. 786,800

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616568

Int. Cl.² F16G *11/00*; A44B *21/00*

U.S. Cl. 24—115 R **6 Claims**



1. Pipe claim such as used for retaining pipe, cable and the like, comprising a U-shaped base part having a bottom surface, a top surface and sides extending between said bottom and top surfaces, said base part forming an opening therethrough between opposite sides thereof, a fastening clip engageable with said base part for securing pipe or the like in the opening through the base part, first engagement means located on said fastening clip, second engagement means located on said base part and engageable with said first engagement means for securing said fastening clip to said base part, wherein the improvement comprises that said sides of said base part comprise a first pair of opposite sides and a second pair of opposite sides with each of said sides having an inwardly facing surface and an outwardly facing surface and the inwardly facing surfaces of said sides defining an open space within said base part with the open space being open through the top surface of said base part and the open space forming a portion of the opening through said base part, said fastening clip is releasably insertable downwardly through the top surface of said base part into the open space therein so that at least a part of said fastening clip is wholly laterally enclosed by said sides of said base part, said fastening clip has outwardly facing surfaces directed away from one another and inwardly facing surfaces directed toward one another, said fastening clip is U-shaped and includes a pair of laterally spaced legs each having one of the outwardly facing surfaces and one of the inwardly facing surfaces of said clip, and a section extending transversely of and interconnecting one end of each of said legs, said fastening clip being insertable into the open space in said base part legs first, said second pair of opposite sides of said base part each having a U-shaped opening therein with the U-shaped openings extending to and through said top surface of said base part, the U-shaped openings communicating directly with the open space within said base part and in combination with the open space forming the opening through said base part, a major portion of the U-shaped openings including a major portion of the opposing sides thereof being arcuately shaped, the maximum diameter between the opposing arcuately shaped sides of the U-shaped openings through said second pair of opposite sides which diameter extends substantially parallel to the bottom surface of said base part is greater than the dimension between the inwardly facing surfaces on said legs of said fastening clip and is less than the dimension between the inwardly facing surfaces of said first pair of opposite sides, said first engagement means located on said outwardly facing surfaces of said fastening clip, and said second engagement means located on the inwardly facing surfaces of the sides of said base part.

4,118,839

RETAINING DEVICE FOR CONCEALED SLIDE FASTENER

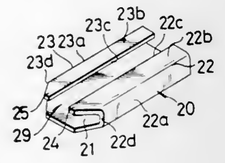
Akiyoshi Kando, Uozu, and Kiyoo Yoneya, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Japan

Filed Apr. 19, 1977, Ser. No. 788,918

Claims priority, application Japan, Apr. 23, 1976, 51/51678[U]

Int. Cl.² A44B *19/26, 19/34*

U.S. Cl. 24—205.1 R **4 Claims**



1. A retaining device for a concealed type slide fastener in which a pair of stringer tapes are each folded along a respective confronting longitudinal edge to define a fastener element-carrying portion of the stringer tape with a fold connection to the remainder of the stringer tape and disposed in overlying relation thereto, and a pair of rows of interengageable fastener elements are supported each row by a respective fastener element-carrying portion, which device comprises a base and a pair of opposed inwardly directed flanges connected to said base to define therewith a generally straight channel for receiving therethrough a lengthwise section of interengaged fastener elements and their associated fastener element-carrying portions of stringer tape, said flanges having respective first wall portions positioned each between a corresponding fastener element-carrying portion of stringer tape and the remainder of said stringer tape, said flanges having respective second wall portions connecting said first wall portions to said base and laterally confining said section of interengaged fastener elements, said first wall portions extending beyond said second wall portions to positions of engagement with said fold connections to restrain said interengaged fastener elements against separation by lateral forces applied to the stringer tapes.

4,118,840

FASTENING HOOK

Gerd Fengels, Hagen, Germany, assignor to Brüggemann & Brand KG, Wetter, Ruhr, Germany

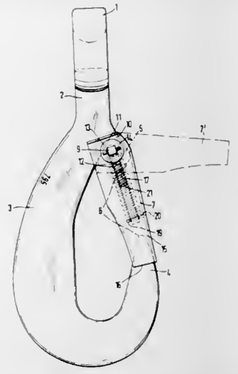
Filed Mar. 30, 1977, Ser. No. 782,775

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614961

Int. Cl.² A44B *13/02*

U.S. Cl. 24—239 **10 Claims**

1. A fastening hook, particularly for high loads, said hook having an upper end comprising a loop, a hook portion, and a shank connecting said loop and said hook portion, said hook portion comprising a projection at its upper end having two limbs in spaced relationship, and a hook tip, and defining a gap between said projection and said hook tip, a closure member having an upper end and a free end adapted to engage said hook tip, and means on said projection for mounting said closure member at its upper end for angular and translational movement from an open position to a closed position in which said closure member closes said gap, said mounting means comprising a pivot pin rotatably mounted on said projection and located against axial movement, said pin extending through said two limbs and having an exposed central portion, and wherein a spring having two ends is provided within said



closure member to bias said closure member into the closed position in engagement with said hook tip, one of said ends of said spring acting on said central portion of said pivot pin and the other of said ends acting on a shoulder fixed in the interior of said closure member and spaced from said free end, whereby said free end of said closure member can be moved linearly into said closed position in which it engages said hook tip, and can be moved linearly out of engagement with said hook tip and then rotated about said pivot pin to an open position.

4,118,841

APPARATUS FOR COMPACTING WOVEN GAUZE BANDAGES

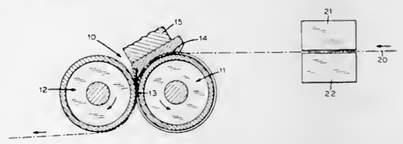
Edmund A. Diggle, Jr., Ho-Ho-Kus, N.J., assignor to Compax Corp., Woodside, N.Y.

Division of Ser. No. 730,313, Oct. 7, 1976, Pat. No. 4,041,581.

This application Mar. 3, 1977, Ser. No. 774,062

Int. Cl.² D06C *21/00*

U.S. Cl. 26—18.6 **2 Claims**



1. In a mechanical compacting apparatus for longitudinally compressively treating lightweight, woven gauze bandage material, of the type comprising

(a) a generally cylindrical feeding roller for engaging and forwardly advancing the gauze,

(b) a generally cylindrical retarding roller monted in opposed relation to said feeding roller and forming therewith a roller nip,

(c) an arcuate confining shoe closely embracing the surface of said feeding roller over a substantial arc,

(d) said confining shoe having a discharge edge located close to said nip and defining therewith a compacting zone,

(e) means for driving said feeding and retarding rollers such that the feeding roller has a higher surface speed than that of the retarding roller; the improvement characterized by

(f) said retarding roller being of metal construction and being formed with a diamond pattern surface knurl of about 40 pitch over its effective working surface area,

(g) said feeding roller being of metal construction and being formed with a straight pattern surface knurl of about 80 pitch over its entire working surface area;

(h) said straight knurl being so formed that the knurl pattern extends generally parallel to the axis of said feeding roller,

(i) said feeding roller having circumferentially extending surface-forming means at each end thereof and projecting radially beyond the working surface of the feeding roller,

(j) said surface-forming means providing a limit stop for positioning of said confining shoe in a predetermined minimum spaced relation to the working surface of the feeding roller,

(k) said roller nip being of smaller dimensions than the space between said feeding roller and said shoe, and

(l) said retarding roller being recessed in the areas opposite to said surface-forming means.

2. In a mechanical compacting apparatus for longitudinal compressively treating lightweight, woven gauze bandage material, of the type comprising

(a) a generally cylindrical feeding roller for engaging and forwardly advancing the gauze,

(b) a generally cylindrical retarding roller mounted in opposed relation to said feeding roller and forming therewith a roller nip,

(c) an arcuate confining shoe closely embracing the surface of said feeding roller over a substantial arc,

(d) said confining shioe having a discharge edge located close to said nip and defining therewith a compacting zone,

(e) means for driving said feeding and retarding rollers such that the feeding roller has a higher surface speed than that of the retarding roller; the improvement characterized by

(f) said retarding roller being of metal construction and being formed with a diamond pattern surface knurl of about 40 pitch over its effective working surface area,

(g) said feeding roller being of metal construction and being formed with a straight pattern surface knurl of about 80 pitch over its entire working surface area,

(h) said straight knurl being so formed that the knurl pattern extends generally parallel to the axis of said feeding roller,

(i) said feeding roller having bearing rings at each end projecting radially beyond the working surface of the feeding roller,

(j) said bearing rings forming a limit stop for positioning of said confining shoe in relation to said feeding roller,

(k) said roller nip being of smaller dimensions than the space between said feeding roller and said shoe, and

(l) said retarding roller being recessed opposite to said bearing rings.

4,118,842

WEAVE-DE-WEAVE PROCESS

Alan H. Norris, and Phillip W. Chambley, both of Rome, Ga., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 8, 1977, Ser. No. 813,871

Int. Cl.² D02G *1/00*; D02H *9/00*

U.S. Cl. 28—218 **7 Claims**

1. In a weave-de-weave process in which weft is inserted in a direction normal to a plurality of warp yarns to stabilize the warp by forming a composite tape, and then after treatment of the yarns on the tape, the weft is removed to deweave the tape and the warp is packaged, the improvement comprising the steps of:

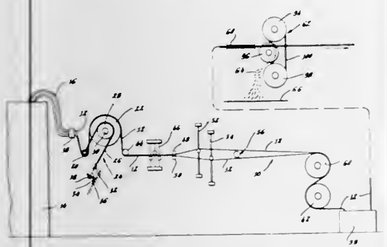
fluidly injecting said weft between said warp yarns alternately from opposite sides of said warp in continuous, spaced loops;

laterally splitting the interior of said tape generally parallel to said warp yarns into a plurality of tapes, exposing the looped ends of said weft intermediate the tapes and

stripping the weft continuously from said warp to deweave said tapes by

successively gripping the exposed looped ends of said weft and pulling said weft from between said warp.

7. In a weave-de-weave process in which weft is inserted in a direction normal to a plurality of warp yarns alternately from opposite sides of the warps yarns in continuous spaced loops to stabilize the warp by forming a composite tape, and then after treatment of the yarns on the tape, the weft is removed to



deweave the tape and the warp is packaged, the improvement comprising the steps of:

laterally splitting the interior of said tape generally parallel to said warp yarns into a plurality of tapes exposing interior looped portions of said weft intermediate the tapes, and

stripping the weft continuously from said warp to deweave said tapes by

successively gripping the exposed interior looped portions of said weft and pulling said weft from between said warp.

4,118,843

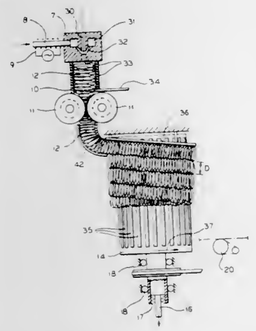
PROCESSES AND APPARATUS FOR THERMAL TREATMENT OF FILAMENTS

Heinz Schippers; Peter Dammann, and Karl Bauer, all of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Germany

Filed Jul. 13, 1977, Ser. No. 815,228

Int. Cl.² D02G *1/12, 1/16, 1/20*

U.S. Cl. 28—255 **27 Claims**



1. A process for the thermal texturizing treatment of multifile filaments of thermoplastic synthetic polymers which comprises feeding at least one multifile filament into a stuffing chamber and herein forming a closely packed, coherent filamentary body, conveying said tightly packed, coherent filamentary body from said chamber substantially tangentially onto the surface of a gas-permeable, rotating drum at the entrant zone thereof by rotating means engaging the exterior of said body and providing a positive axial thrust to said filamentary body between said stuffing chamber and said entrant zone of said drum, imparting a thrust to said body in the axial direction of said drum as it moves onto the drum surface, forming spiral convolutions of said filamentary body about the gas-permeable drum whereby rotation of said drum moves said spiral convolutions axially from the entrant zone on said drum to an exit zone thereon, passing a gas through the spirally convoluted, filamentary body and the gas permeable surface of said drum, and withdrawing the multifile filament from said exit zone at a speed sufficient to dissolve the coherently packed filamentary body.

4,118,844

MACHINE TOOL

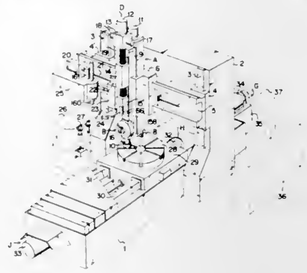
Hiroshi Matsuzaki, Kanazawa, and Yoshihiro Tsukiji, Komatsu, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 30, 1977, Ser. No. 829,193

Claims priority, application Japan, Aug. 30, 1976, 51-102691; Aug. 30, 1976, 51-102692; Aug. 30, 1976, 51-102693

Int. Cl.² B23Q *3/155, 3/157*

U.S. Cl. 29—27 C **10 Claims**



1. A complex machine tool comprising a bed; a table mounted on the bed so as to be slidably moved in the direction of longitudinal axis thereof; rotating means mounted on said bed to rotate said table; transfer means mounted on said bed so as to transfer said table in the direction of longitudinal axis of the bed; rotary indexing means adapted to index said table; a pair of columns installed vertically on either side of said bed; a cross rail transversely supported on said columns; ram means attached to said cross rail and adapted to be moved at right angles to the face of said table; a tool post mounted on to the lower end face of said ram means and having a turning tool fixedly secured thereto; a turret head mounted on one face of said ram means, said turret having a rotating main spindle for mounting a rotary machining tool; and a turret head rotating means adapted to rotate said turret head.

4,118,845

APPARATUS FOR PRODUCING FINE METAL FILAMENTS

August J. Schildbach, Concord, Mass., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 811,780, Apr. 1, 1969, Pat. No. 3,977,070. This application Jun. 11, 1976, Ser. No. 695,079

Int. Cl.² B21B *15/00;* B23P *17/00*

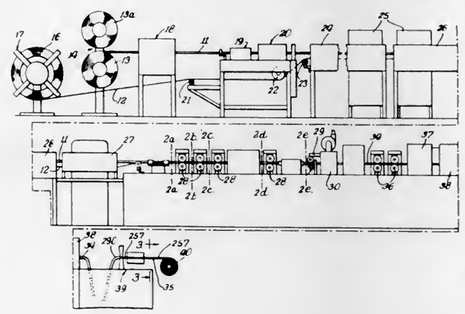
U.S. Cl. 29—33 K **5 Claims**

1. A machine combination used in producing a tow of fine metal filaments from a composite, each of said filaments initially comprising a metallic wire filament forming material surrounded by a constrictable sheathing material to prevent filament-to-filament contact until said sheathing material has been removed, said machine combination comprising:

(1) means for gathering a plurality of sheathed metal wires in a preselected array to form a compact bundle;

(2) means for forming a sheathing strip around said compact bundle, said strip having longitudinal edges;

(3) means for securing the edges of said strip to form and define a compact sheathed bundle wherein the sheathed metal wires are free from contact by said securing means



and said sheathing strip being capable of removal from said bundle by means substantially unaffecting said wire filament material; and

(4) means for reducing the diameter of said sheathed bundle to form the desired filament size in said composite.

4,118,846

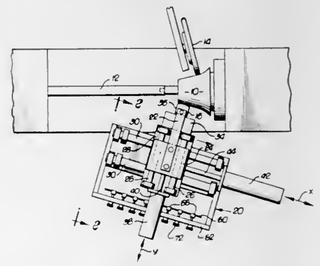
BURNISHING ATTACHMENT

Helmut Gerhard Korte, San Pedro, Calif., assignor to Autospin, Inc., Carson, Calif.

Continuation of Ser. No. 639,902, Dec. 11, 1975, abandoned. This application Apr. 8, 1977, Ser. No. 785,913

Int. Cl.² B24B *39/00*

U.S. Cl. 29—90 R **9 Claims**



1. In apparatus for burnishing a workpiece turning in a lathe:

(a) a carriage;

(b) means mounting the carriage for traversing movement in a path extending along the said workpiece;

(c) motor means for moving said carriage along its said path;

(d) a burnishing tool;

(e) means mounting said burnishing tool on said carriage for movement transverse to said path;

(f) motor means for urging said burnishing tool into engagement with said workpiece; and

(g) means for determining the force exerted by said motor means as a function of traverse position whereby the burnishing force varies to conform to the surface characteristics of said workpiece.

8. In apparatus for burnishing in a lathe:

(a) a carriage;

(b) means mounting the carriage for traversing movement in a path extending along the turning axis of said workpiece;

(c) motor means for moving said carriage along its said path;

(d) a cross head;

(e) means mounting the cross head on the carriage for movement transverse to said path towards and away from said turning axis;

(f) a non-rotary burnishing tool;

(g) means pivotally mounting said burnishing tool on said cross head on an axis substantially skew to the axis of the lathe;

(h) said tool having a burnishing surface located between the skew axis and said workpiece and generated about the pivot axis of the tool on a radius of curvature larger than the distance of said surface from said pivot axis whereby said tool stabilizes itself in a normal position to said workpiece; and

(i) means yieldingly urging said cross head toward said workpiece axis to cause said tool to engage said workpiece.

4,118,847

METHOD OF ASSEMBLING A TURBO-MACHINE, APPARATUS FOR USE IN THE METHOD, AND TURBO MACHINE CONSTRUCTED ACCORDING TO SAID METHOD

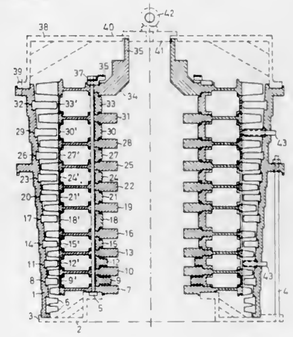
Martin Mansson, and Ragnar Torstenfelt, both of Finspong, Sweden, assignors to Stal-Laval Turbin AB, Finspong, Sweden

Filed Aug. 4, 1976, Ser. No. 711,667

Claims priority, application Sweden, Aug. 19, 1975, 7509230

Int. Cl.² B23P *15/00, 19/04*

U.S. Cl. 29—156.8 R **5 Claims**



1. A method for assembling a turbo-machine of the type comprising a stator housing supporting guide vanes and a rotor having blade discs comprising the steps of:

placing the stator housing with its axis vertical upon a base member which supports said housing both in the vertical and horizontal direction,

alternately positioning guide vanes and blade discs in said housing with the guide vanes being secured to the interior of the hosing and with the blade discs being supported in stacked relationship with interleaved spacing rings on said base member,

securing together the stack of blade discs,

adjustably centering the rotor comprising the assembled blade discs and spacing rings relative to the stator housing,

interconnecting the uppermost ends of the stator housing and rotor,

lifting the interconnected stator housing and rotor from the base member and moving them to a horizontal position,

removing said base member, and

coupling the rotor of said assembled and horizontally aligned turbo-machine to a rotor of a further horizontally aligned rotary machine by passing a plurality of rotor coupling bolts through aligned apertures in the blade discs and spacing rings of said turbo-machine rotor and also through apertures in a part of the rotor of said further machine.

4,118,848

METHOD OF MAKING GEAR AND SHAFT OR HUB ASSEMBLIES

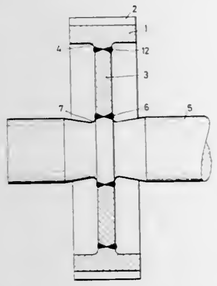
Rolf Goldschmidt, Witten,Annen; Klaus Hansgen, Witten, and Heinz M. Hiersig, Dusseldorf, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 7, 1977, Ser. No. 766,078

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2606245

Int. Cl.² B23K *31/02*; B23P *15/14*

U.S. Cl. 29—159.2 **1 Claim**



1. Method of making gears on a shaft or hub, comprising the steps of:

providing an annular rim element, at least one apertured disc or wheel element, and a shaft or hub element;

welding the annular rim element to the disc or wheel element and cutting teeth into the rim element, the welding and cutting steps being carried out in any sequence;

tempering the welded elements for hardening after the cutting of teeth;

assembling the welded and tempered elements with the shaft element and welding them together in a second welding step;

and polishing or grinding the teeth.

4,118,849

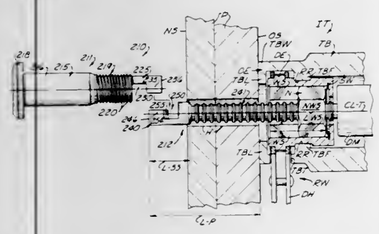
FASTENER WITH REMOVABLE PINTAIL AND LOCKING COLLET

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga. 30342

Division of Ser. No. 654,756, Feb. 3, 1976, Pat. No. 4,077,299, which is a continuation-in-part of Ser. No. 542,077, Jan. 17, 1975, abandoned, and Ser. No. 542,076, Jan. 17, 1975, Pat. No. 3,962,775, and Ser. No. 542,074, Jan. 17, 1975, Pat. No. 3,965,792, and Ser. No. 554,762, Mar. 3, 1975, Pat. No. 4,012,885. This application Aug. 30, 1977, Ser. No. 829,246

Int. Cl.² B23P *19/04*

U.S. Cl. 29—240 **4 Claims**



1. An installation tool construction for installing an elongate fastener having a bearing surface to be inserted through aligned holes in work pieces and a pintail connector on the leading end of the fastener adapted to be engaged to pull the bearing surface into the holes, said tool construction comprising:

a pintail member having a trailing end removably connectable to the pintail connector on the fastener to pull the bearing surface of the fastener into the holes through the work pieces;

a driving member operatively connected to said pintail member to move said pintail member therewith;

a housing member reciprocally mounting said driving member therein for reciprocal movement of said driving member and said pintail member along a central axis, said housing defining an operating face thereon generally normal to said central axis adapted to engage one side of the work pieces about the holes and through which the trailing end of said pintail member can be selectively extended as said driving member is reciprocated;

first driving means for selectively urging said pintail member in a first direction into said housing member with a first prescribed force to urge said pintail member toward retraction into said housing member;

second driving means for selectively urging said pintail member in a second direction opposite said first direction to selectively extend the trailing end of said pintail member from said housing member for connection of said pintail member to said pintail connector on said fastener; and,

third driving means for selectively urging said pintail member in said first direction with a third prescribed force greater than said first prescribed force sufficient to force the bearing surface into the holes through the work pieces when the fastener is connected to said pintail member.

4,118,850

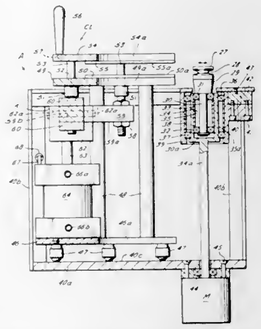
GASKET FORMING APPARATUS

A. B. Owen; Bruce M. Gifford; Horst H. Bahl, and Lewis F. Akins, all of Houston, Tex., assignors to Lamons Metal Gasket Company, Houston, Tex.

Filed Jun. 7, 1976, Ser. No. 693,327

Int. Cl.² B21D *7/00*

U.S. Cl. 29—243.52 **17 Claims**



1. A metal forming apparatus for closing the metal shell at a corner of a double jacketed gasket assembly, comprising:

rotatable roller hammer means having a notch which is substantially U-shaped in cross-section for engaging a portion of the gasket shell to be closed; and

power means operably connected with the rotatable roller hammer means for reciprocating the rotatable roller hammer means relative to said metal shell for bending the metal shell without tearing it.

4,118,851

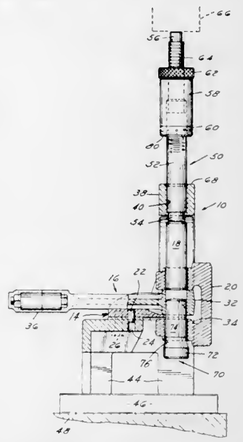
UNIVERSAL PISTON PIN REMOVER AND INSTALLER

David L. De Martelaere, 4176 Ramblewood, Troy, Mich. 48089

Filed Jul. 7, 1977, Ser. No. 813,540

Int. Cl.² B23Q *1/00*

U.S. Cl. 29—283 **7 Claims**



1. An automotive engine fixture for removing and installing piston pins including, in combination:

a support structure having a mounting surface shaped to receive and support a connecting rod and piston assembly of an automobile engine from or into which the piston pin is to be removed or installed respectively;

a piston pin driver member for advancing the piston pin in the bores of the piston and the connecting rod;

said support structure having a part thereof exhibiting an arched formation and provided with a vertical bore therethrough for slidably guiding the piston pin driver member in its advancements of the piston pin in the bores of the piston and connecting rod; and

a presetting device for controlling the extent of movement of the piston pin as advanced by the driver member including a sleeve carried by the driver member which is longitudinally adjustable therealong and is oversize the vertical bore of the arched part; the upper rim of the vertical bore forming an abuttable stop against which the sleeve abuts and stops further advance of the driver member and piston pin; and

said sleeve and said driver member having cooperating graduations marked thereon for signifying different settings of the sleeve to stop each size of piston pin at its centered position within the bores of the connecting rod and piston.

4,118,852

PISTON PIN REMOVER AND INSTALLER

Peter F. Schneider, 5540 Elmgrove, Warren, Mich. 48092

Filed Jun. 3, 1977, Ser. No. 803,155

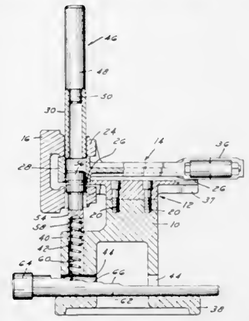
Int. Cl.² B23Q *1/00*

U.S. Cl. 29—283 **1 Claim**

1. An automotive engine tool for removing and installing piston pins including, in combination;

a base member having a support block occupying the upper part thereof and providing a mounting surface for the connecting rod and piston assembly of an automobile engine from which the piston pin is to be removed or installed, said support block being forked shaped at one end to enter the skirt of the piston and partially surround in load bearing relationship the boss of the connecting rod through which the piston pin bore extends,

a piston pin driver member of cylindrical shape having a larger diameter section substantially equal to the outer diameter of the pin and a smaller diameter section forming a reduced co-axial extension of the larger section, said reduced extension of the driver member having a diameter substantially equal to the inner diameter of the piston pin and forming at its juncture with the larger section an abrupt shoulder for first abuting the end of the piston pin into which the smaller section of the driver member is extended and then for driving the piston pin along the bore of said connecting rod boss, and



a gauge member disposed in alignment with the travel of the piston pin for terminating further advancements of the piston pin by the piston pin driver, said gauge member being adjustably mounted in the base member for varying its positional settings to accommodate piston pins of different sizes, said gauge member being provided for such purpose with a stepped contour serving as a series of blocking surfaces each of which is presentable opposite to the bore into which a piston pin is being installed in order to stop further advance of the piston pin when it is centered within the connecting rod bore.

4,118,853

METHOD OF MAKING AN OPHTHALMIC LENS OF PROGRESSIVELY VARIABLE FOCAL POWER

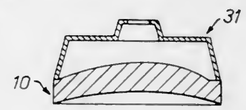
Bernard Mignen, Saint-Maur, France, assignor to Essilor International, Cie Generale d'Optique, Joinville-le-Pont, France

Filed Oct. 19, 1976, Ser. No. 733,700

Claims priority, application France, Oct. 30, 1975, 75 33143

Int. Cl.² B29D *11/00*

U.S. Cl. 29—424 **7 Claims**



1. A method of producing an ophthalmic lens of progressively variable focal power, in which a semi-finished blank is first obtained by casting an organic material between two casting dies, at least one of the faces of the blank having an active zone of progressively variable radius of curvature on at least one side of at least one central line, a gripper block for holding the blank is mounted on the said face of the blank by casting a material of low melting point between the said face and a bell-shaped mold which is open towards the said face, and the face of the blank lying opposite to that on which said gripper block is mounted is machined to the desired profile, the gripper block being subsequently removed by melting, wherein the improvement resides in forming at the periphery of the active zone of the said face of the blank, when the blank

is cast an edge facet which extends continuously and circularly around the whole of the active zone to form a supporting face, providing the mould with a continuous free edge, and applying the free edge of the mold directly to the lens blank supportive face to form a tight seal therebetween.

4,118,854

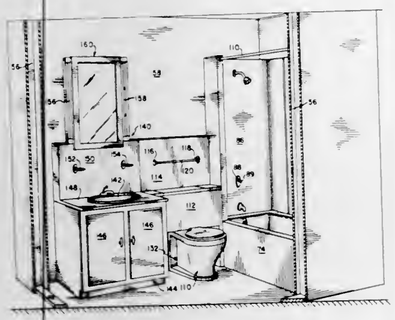
POWDER ROOM AND BATHROOM SYSTEM AND METHOD OF ASSEMBLING SAME

Kurt Kraft, Prospect, Ky., assignor to Systems Design & Development, Prospect, Ky.

Division of Ser. No. 514,807, Oct. 15, 1974, Pat. No. 3,978,529. This application Aug. 31, 1976, Ser. No. 719,270

Int. Cl.[2] A47K *4/00*

U.S. Cl. 29—428 **4 Claims**



1. A method of assembling a plurality of pre-dimensioned and pre-engineered modular units to form at least a powder room within a room section of a building structure, said room section having a wet wall having pressure water lines directed thereto and having a drain-waste-vent pipe unit positioned substantially vertically therein and connected to the drain-waste-vent system of the building structure, said building structure having an electrical power supply, comprising:

(a) pre-dimensioning a plurality of structural members;

(b) selectively assembling said structural members to form a template-like interface frame having at least two sections, one section defining a toilet position, the other section defining a lavatory position;

(c) selectively assembling a drain-waste-vent pipe system and pressure water system for said interface frame for said powder room;

(d) installing said drain-waste-vent pipe system and pressure water system within said interface frame to form a drain-waste-vent pipe and pressure water interface system for said interface frame and said powder room;

(e) mounting said interface frame against the wet wall of the room section;

(f) connecting said interface drain-waste-vent pipe system to said drain-waste-vent pipe unit positioned within the wet wall;

(g) securing a pre-dimensioned shroud member to said interface frame at the toilet position thereof, said shroud member defining a finished wall portion and having means to receive and accumulate water therein and control means to selectively release flush water through an opening defined by a lower portion of the water accumulating means;

(h) installing against said shroud member, a modular pre-dimensioned toilet bowl having a rear flush water inlet opening and a rear flush water outlet opening while substantially simultaneously connecting said water inlet opening of said modular toilet bowl to the water outlet opening of said shroud member in sealed relation therewith, and the flush water outlet opening of said modular toilet bowl to the drain opening of said drain-waste-vent system in sealed relation therewith;

(i) installing a modular pre-dimensioned cabinet against said interface frame adjacent the lavatory section of said interface frame;

(j) installing a modular wash bowl on said cabinet, said wash bowl having water fixtures connected thereto;

(k) connecting the pressure water system of said wet wall to said water inlet means of said shroud member;

(l) installing a modular pre-dimensioned medicine cabinet on said interface frame at the lavatory position thereof, said cabinet having lighting means attached thereto;

(m) providing electrical power from the power supply of said building to said lighting means; and

(n) providing water connections to said water fixtures of said modular wash bowl by connecting water supply conduits from the water pipes of said interface frame to said fixtures and connecting the waste pipe system of said interface frame to said modular wash bowl thereby completing the connections between the building structure and the powder room.

4,118,855

METHOD OF INTERCONNECTING TWO MEMBERS

Christian Lequeux, Metz, France, assignor to Union Financiere et Industrielle S.A., Liege, Belgium

Filed Jun. 22, 1976, Ser. No. 698,645

Claims priority, application France, Jun. 23, 1975, 75 19585

Int. Cl.[2] B23P *11/02*

U.S. Cl. 29—447 **5 Claims**

3. A method of interconnecting two members each having a planar part, which method comprises,

placing assembly tubes, each of which tubes has a first external right-angled flange at one end thereof, vertically on a support on the flange, engaging a first member having circular apertures on the assembly tubes such that the edge of the apertures of the first member is borne by the first flanges of the assembly tubes, positioning an unflanged bracing tube over each assembly tube above the first member so as to apply the bottom edge of each bracing tube to the edge of each aperture in the first member, positioning a second member having circular apertures over the assembly tubes and above the bracing tubes so as to apply the edge of the apertures in the second member to the top end of the bracing tubes, and bending the second projecting end of the assembly tubes outwardly at right-angles while the assembly tube is in a heated condition to form a second flange in contact with the periphery of the apertures in the second member, whereby an assembly is obtained in which planar parts of the members are in parallel spaced apart relationship with respect to each other.

4,118,856

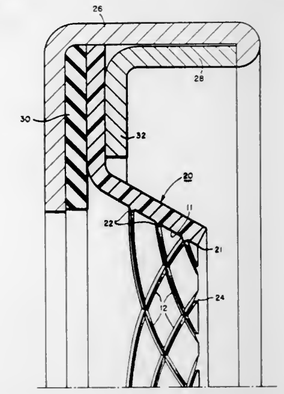
BI-DIRECTIONAL HYDRODYNAMIC SHAFT SEAL METHOD

Dean R. Bainard, Clover, S.C., and Dennis N. Denton, Bessemer City, N.C., assignors to Garlock Inc, Rochester, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,809

Int. Cl.[2] B21D *39/06;* **B29C** *17/02;* **F16J** *15/54*

U.S. Cl. 29—511 **15 Claims**



1. A method for making a sealing element having a sealing lip and having a plurality of pumping elements on a shaft contacting surface thereof for feeding back to said sealing lip any fluid leaking past said sealing lip, said method comprising forming a series of pumping elements in the shape of non-concentric circles on said surface of said element while said element is substantially flat, and then forming at least a portion of said flat element into a conical lip type seal with a sealing lip such that said pumping elements become helical or elliptically shaped pumping elements.

4,118,857

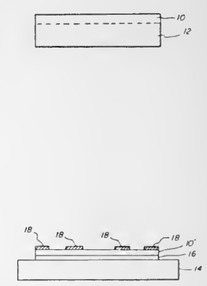
FLIPPED METHOD FOR CHARACTERIZATION OF EPITAXIAL LAYERS

Theodore T. S. Wong, Maynard, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 12, 1977, Ser. No. 758,609

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—574 **1 Claim**



1. A method of characterizing an epitaxial layer of semiconductive material on a first substrate, the epitaxial layer having a first surface, the method comprising:

attaching a second substrate to the first surface;

removing the first substrate to expose a second surface of the epitaxial layer;

reducing the thickness of said epitaxial layer by lapping material from said second surface while leaving a remaining epitaxial layer of defined thickness and including said first surface;

attaching electrical contacts to the exposed surface of said remaining epitaxial layer;

performing Hall effect measurements on the remaining epitaxial layer for characterizing said layer;

and wherein the semiconductive material is preferably selected from semiconductor alloys such as indium arsenide antimonide, lead tin telluride, gallium arsenide phosphide, and mercury cadmium telluride.

4,118,858

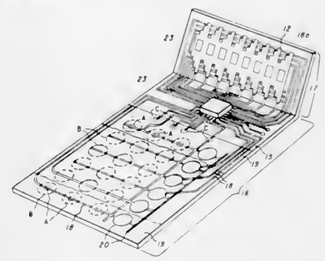
METHOD OF MAKING AN ELECTRONIC CALCULATOR

James B. Taylor, Jr., and Keith M. Cobb, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 678,102, Apr. 19, 1976, abandoned. This application Mar. 11, 1977, Ser. No. 777,282

Int. Cl.[2] H01H *13/26*

U.S. Cl. 29—622 **10 Claims**



1. A method of manufacturing electronic calculator comprising the steps of:

(a) forming a pattern of conductors on an insulative substrate;

(b) forming a keyboard on said substrate;

(c) attaching the leads from a semiconductive logic device to selected conductors formed on said substrate; and

(d) attaching the leads from at least one tape-mounted display device to selected conductors formed on said substrate, said tape-mounted display device having leads supported by the tape mounting said display device to at least two different distances from an axis of said display device.

4,118,859

PACKAGING AND ASSEMBLY OF SHEET METAL PARTS

Willard Leroy Busler, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 1, 1976, Ser. No. 746,272

Int. Cl.[2] H01H *11/00*

U.S. Cl. 29—622 **10 Claims**

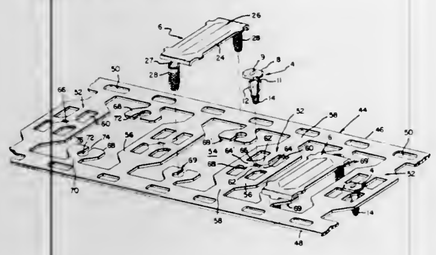
1. A continuous strip containing a plurality of first switch parts and a plurality of second switch parts, said first and second switch parts being intended for assembly to circuit board means to form a circuit board switch, said strip comprising:

a continuous carrier strip having parallel side edges, said carrier strip being of a thin easily deformed material,

a plurality of first openings in said strip and a plurality of second openings in said strip, said openings being spaced-apart along the length of said strip with said openings in alternating order so that a first opening is between adjacent second openings, said openings having internal edge

portions which are between said parallel side edges and which define said openings, said strip having flexible internal integral cantilever arm means extending from said internal edge portions,

each of said first switch parts being in one of said first openings and each of said second switch parts being in one of said second openings, said first and second switch parts each having supported portions which extend over surface portions of said cantilever arm means and are supported by said cantilever arm means whereby,



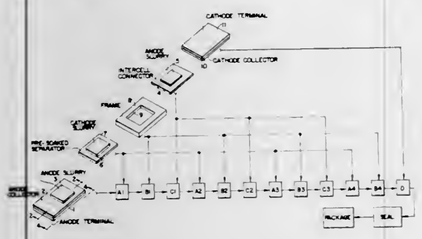
said first and second parts can be assembled to circuit board means by feeding said strip to an assembly station so that the leading first switch part on said strip is at said station, locating said circuit board means adjacent to said strip, pushing said leading first switch part from said carrier strip towards said board means to assemble said leading first switch part to said board means, indexing said strip to locate the leading second switch part therein at said assembly station, pushing said leading second switch part to said board means to assemble said leading second switch part to said board means, and repeating said steps to assemble all of said first and second switch parts in said strip to said circuit board means.

4,118,860

METHOD OF MAKING A FLAT BATTERY

Sheldon A. Buckler, Lincoln; Fredric S. Cohen, Waltham, and David P. Kennedy, Cambridge, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 27, 1977, Ser. No. 763,058
Int. Cl.² H01M *6/00*
U.S. Cl. 29—623.5 **31 Claims**



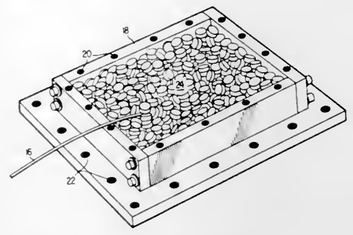
1. The method of making a zinc slurry anode, comprising the steps of dispersing from 80 to 90 parts of zinc powder in from 10 to 20 parts of water to form a zinc dispersion, coating said zinc dispersion on a thermoplastic substrate filled with carbon, and contacting said coated zinc dispersion with an aqueous solution of electrolyte to permeate said zinc dispersion with electrolyte by diffusion.

4,118,861

REMOVABLE ENCAPSULANT FOR PROTECTION OF ELECTRONIC EQUIPMENT

Rocco Richard Palmisano, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 6, 1976, Ser. No. 656,050
Int. Cl.² H01B *19/00*
U.S. Cl. 29—631 **3 Claims**



1. A new use for silicone rubber, formed from the reaction of a prepolymer comprising a silane and silanol in the presence of a catalyst, as a removable encapsulent for electronic equipment comprising the steps of:

dividing a body formed of said silicone rubber into pellets;

pouring said pellets of silicone rubber material into a housing containing electrical equipment so as to fill the voids between said housing and said electrical equipment; and,

enclosing said housing to prevent said silicone rubber pellets from falling out of said housing; thereby,

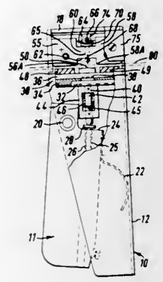
surrounding said electronic equipment with said pellets so as to substantially reduce the sensitivity of said electronic equipment to shock and vibration without significantly increasing the total weight of said equipment.

4,118,862

DIELECTRIC OPTICAL WAVEGUIDE SEVERING APPARATUS

Paul Christopher Hensel, Woodbridge, England, assignor to The Post Office, London, England

Filed Jul. 14, 1977, Ser. No. 815,508
Claims priority, application United Kingdom, Aug. 13, 1976, 33832/76
Int. Cl.² B26B *17/02*
U.S. Cl. 30—124 **10 Claims**



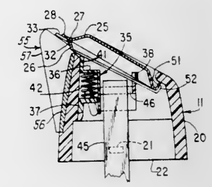
1. A device for severing a dielectric optical waveguide comprising knife means, means for clamping dielectric optical waveguide in closely spaced relationship with said knife means, an anvil which is movable towards said knife means, the anvil being so arranged and constructed that, in use, as it moves towards the knife means, it engages a dielectric optical waveguide clamped by said clamping means and urges it towards the knife means, the surface of the anvil which contacts said waveguide being curved and the arrangement being such that as the waveguide comes into contact with the knife means, it is under a given stress and has a predetermined configuration, and means for effecting movement of the anvil.

4,118,863

HAIR TRIMMING HEAD

Julius W. Sandy, Sycamore, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.

Filed Jul. 8, 1977, Ser. No. 813,881
Int. Cl.² B26B *19/22*
U.S. Cl. 30—195 **10 Claims**



1. A hair trimming head, comprising:

a support;

a stationary blade mounted rigidly on said support, said stationary blade having an exposed forward edge containing cutting teeth, said cutting teeth having an effective cutting length of the order of one or two times the diameter of human hair;

a movable blade having an exposed forward edge containing cutting teeth several times the length of the cutting teeth of said stationary blade;

means mounting said movable blade for reciprocating lateral movement at a frequency significantly greater than manual frequency with respect to said support;

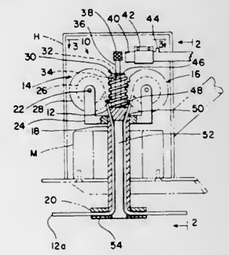
said stationary and movable blades being mounted in effective cutting relation with the teeth of said movable blade projecting beyond the ends of the teeth of said stationary blade, whereby hair first engages the teeth of said movable blade and is agitated and fed in controlled manner between said teeth into engagement with the teeth of said stationary blade for cutting at a rate such that overcutting is avoided.

4,118,864

INCREMENTAL FEED MEANS AND METHOD FOR FILAMENT-TRIMMER FILAMENTS

Charles B. Pittinger, Sr., P.O. Box 68, Rte. 1, Weatherford, Tex. 76086, and Charles B. Pittinger, Jr., 320 Cockeys Mill Rd., Reisterstown, Md. 21136

Filed Feb. 24, 1977, Ser. No. 771,426
Int. Cl.² A01D *55/18*; B26B *27/00*
U.S. Cl. 30—276 **26 Claims**



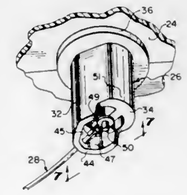
1. In an incremental filament-feed for a rotating shaft filament trimmer employing cutting length adapted to produce filament pulling force during cutting operations, the improvement comprising: spooling means for storing filament in wound condition; means for unwinding said filament from the spooling means in pulses for feeding filament during cutting operations in response to said filament pulling force, including: means holding the spooling means on the shaft for rotation therewith, a worm, the spooling means having a portion engaging the worm for rotational constraint by the worm, and means for causing the worm to move axially along the shaft and rotatably about the shaft for releasing the spooling means to feed an increment of filament.

4,118,865

ASSEMBLY FOR REMOVABLY ATTACHING FLEXIBLE CUTTING LINE ELEMENT IN GRASS TRIMMER

Anthony Jacyno, Columbia, Mo., and Richard T. Smith, St. Charles, Ill., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 14, 1977, Ser. No. 759,424
Int. Cl.² B26B *27/00*; A01G *3/06*
U.S. Cl. 30—276 **28 Claims**



1. In a grass trimmer having rotatable drive means and a cutting element comprising a relatively short length of non-metallic, flexible cutting line, a connector having an aperture of a predetermined shape defined therein provided at a first end of said cutting line, an assembly for removably attaching the length of cutting line to said rotatable drive means for spinning said line, said assembly comprising: a hub member coupled to said drive means for rotation thereby, said hub member including a post extending outwardly from the free end thereof, said post being shaped complementarily to the shape of said aperture in said connector and dimensioned for receipt in said connector aperture, with limited play between said post and connector, and rim means extending outwardly from and along at least a portion of the free end of said hub member and being spaced from said post, said rim means defining an aperture extending substantially radially with respect to the axis of rotation of said hub member, the end of said length of cutting line opposite said connector being receivable in said radial aperture with the last-mentioned end extending radially outwardly from said rim means and said post being receivable in the aperture of said connector for removably attaching said length of cutting line to said hub member, the free end of said post extending outwardly from said hub member beyond the point at which the radially extending aperture in said rim means is defined to ensure that said length of cutting line remains secured to said hub member.

4,118,866

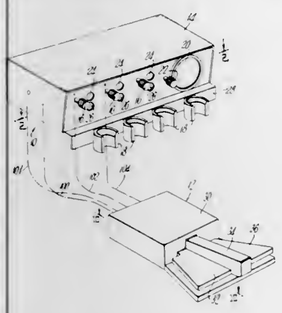
DENTAL HANDPIECE CONTROL APPARATUS

Robert G. Ross, E. Northport, N.Y., and Mark M. McCracken, Richardson, Tex., assignors to Parkell Products, Inc., Farmingdale, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,943
Int. Cl.² A61C *19/02*
U.S. Cl. 32—22 **8 Claims**

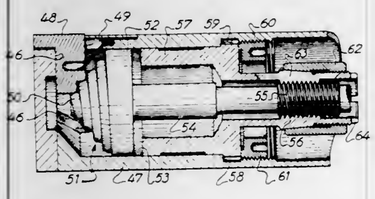
5. A dental air-water handpiece control system for use with a source of water and a source of air and for operating a plural-

ity of handpieces and an air-water syringe, comprising a pedal control unit including a plurality of pedals, each for separately controlling operation of a particular handpiece, a plurality of separable and replaceable control modules, each for controlling air and water flow for a particular handpiece and a laminated base plate defining channels for enabling water and air



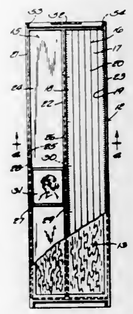
flow, said base plate receiving air from said source of air and for distributing air to said pedal control unit for control by said pedals and said base plate receiving water from said source of water and for distributing said water through said modules in response to action of said pedals, all adapted and arranged to operate one handpiece by use of one module and one pedal, without regard to operability of other modules and pedals.

4,118,867
MICROMETER HEAD FOR INTERNAL MEASUREMENT INSTRUMENT
Georges Lendi, Crissier; Nicolae Voinescu, Lausanne, and Rene De Trey, Bussigny, all of Switzerland, assignors to Tesa S.A., Vaud, Switzerland
Filed Jun. 21, 1977, Ser. No. 808,550
Claims priority, application Switzerland, Jun. 23, 1976, 8006/76; Jun. 2, 1977, 6751/77
Int. Cl.[2] G01B *5/08*
U.S. Cl. 33—164 C **10 Claims**



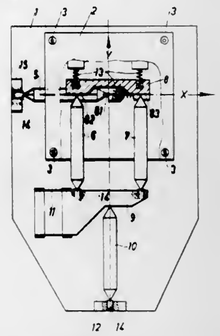
1. A micrometer head for an instrument for measuring internal dimensions, comprising:
(a) a casing having at least a radial slot formed therein;
(b) at least one radial measuring key, said measuring key slidably mounted within said radial slot;
(c) a threaded member connected to said casing;
(d) a spindle having a coaxial measuring micrometer screw connected thereto, said micrometer screw engaged in said threaded member;
(e) a cone means coaxial to said spindle, said cone means at least angularly connected to said spindle;
(f) a stepped inclined base means on said measuring key for contact thereof with said cone means, said inclined base means comprising at least one contact zone inclined at an angle (α) less than the angle (β) of the generitricies of said cone means with respect to the rotation axis thereof;
(g) a tapered spiral ramp on said cone means providing a path of contact for said contact zone, said tapered spiral ramp path of contact constituted by the base of a groove having a cross-section which forms an acute-angled triangle with the generitricies of said cone means; and
(h) return means for maintaining said contact zone of said measuring key in contact with said groove base path of contact of said cone means, such that high sensitivity and low contact pressure exist between said cone and said measuring key.

4,118,868
CHILD HEIGHT GAUGE
Dennis Elmer Johnson, Grafton, Wis., assignor to Densen Common, Incorporated, Grafton, Wis.
Filed Mar. 23, 1977, Ser. No. 780,628
Int. Cl.[2] G01B *3/06*
U.S. Cl. 33—169 R **5 Claims**



1. A device for obtaining and recording data relative to a person and for holding photographs of a person in proximity with pertinent data comprising:
a series of rigid panels for being disposed vertically adjacent each other in end to end relationship, said panels each having a front and a rear face,
hinge means for joining adjacent panels in articulated fashion,
each front face having laterally spaced apart parallel longitudinally extending ribs defining a pair of adjacent channels,
a corresponding channel on each of said panels having a portion of a scale for measuring the height of a person and providing an area for recording data,
two of said ribs defining one channel having longitudinally extending grooves for receiving the longitudinally extending edges of said photographs, said grooves being open toward each other such that a photograph may be inserted by forming it into a curve and allowing it to expand for said edges to engage in said grooves, respectively,
a plurality of stop means disposed in a groove, said stop means being spaced apart longitudinally for consecutive pairs of said stop means to define the boundaries between adjacent photographs and to prevent said photographs from shifting longitudinally, and
said hinge means being constructed and arranged for enabling said panels to be folded into parallel and flat contact relationship with each other and with front faces of adjacent panels in said series facing each other so that said data and photographs will not be exposed when said device is folded.

4,118,869
DEVICE FOR POSITIONING AN OBJECT
Stephan Hartung, and Erhard Jaksch, both of Dresden, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.
Filed Mar. 2, 1977, Ser. No. 773,635
Int. Cl.[2] G01B *5/25*
U.S. Cl. 33—174 TA **4 Claims**



1. Device for positioning an object comprising
a reference plate,
an object mount for supporting said object seated on said reference plate,
said object mount being displaceable in a first direction, in the *x*-coordinate, of an *x*, *y*-coordinate system and in a second direction, in the *y*-coordinate being at right angles to said first direction, and being rotatable in a plane defined by said *x*, *y*-coordinate system,
a bearing means,
said bearing means being secured to the object mount face being in opposition to said object, said bearing means being provided with a first, a second, and a third contact face,
said first contact face being in the intersection of said *x*, *y*-coordinates,
said first and said third contact face being arranged along the *x*-coordinate,
a first, a second, and a third displacement member for displacing said object,
a first, a second and a third seating,
said seatings being mounted on said reference plate, said first member being for displacement of said object in *x*-direction,
and being arranged between said first contact face and said first seating,
said second and said third displacement member for displacing said object in *y*-direction and for angular displacements,
said second and said third displacement member being arranged in parallel to the *y*-coordinate between said second and said third contact face and said second and third seating.

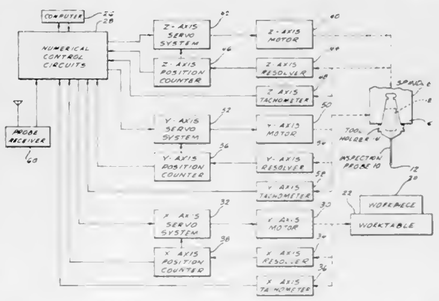
4,118,870
EYEBROW CONTOUR GUIDE
Evelyna Chelsey Dyson, Tenafly, N.J., assignor to Revlon, Inc., New York, N.Y.
Filed Jun. 27, 1977, Ser. No. 810,066
Int. Cl.[2] G01B *3/14*
U.S. Cl. 33—174 D **3 Claims**

1. An eyebrow contour guide comprising a scaled alignment member which is placed on the nose, a movable scaled arcuate member having therein an arcuate slot, which is placed over the eyebrow, one end of said arcuate member being pivotally secured to the top end of the alignment member, a sliding member adapted for movement along the length of the alignment member, and a movable pointer one end of which is



pivotally attached to the sliding member and whose other end moves arcuately on the scale of the arcuate member.

4,118,871
BINARY INSPECTION PROBE FOR NUMERICALLY CONTROLLED MACHINE TOOLS
Edward E. Kirkham, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Filed Jun. 13, 1978, Ser. No. 805,914
Int. Cl.[2] G01B *7/00, 7/28*
U.S. Cl. 33—174 PC **3 Claims**



1. A method of measuring a dimension of a workpiece in a numerically controlled machine tool, said machine tool including a workpiece holder for holding said workpiece;
means including a detachably mounted toolholder for holding a tool in a position to perform work on said workpiece;
numerical control means for varying the relative position of said workpiece holder and toolholder means in response to digital input signals; and
position feedback means indicating the position of said workpiece holder and toolholder means with respect to a machine reference point, said method comprising the steps of:
(1) mounting a toolholder including an inspection probe in said toolholder means;
(2) causing relative motion between said toolholder means and said workpiece holder in the direction of decreasing the distance between said workpiece and inspection probe;
(3) stopping relative movement of said toolholder means and workpiece holder after said inspection probe makes contact with said workpiece;
(4) causing relative motion between said toolholder means

and said workpiece holder in the direction of separating said workpiece and inspection probe; and

(5) recording the position of said workpiece and toolholder means as indicated by the output of said position feedback means at the instant said inspection probe breaks contact with said workpiece.

2. Apparatus for measuring a dimension of a workpiece in a numerically controlled machine tool including means for detachably mounting a toolholder, said measuring apparatus comprising:

a workpiece holder for holding said workpiece;

means including a measuring toolholder mounted in said mounting means for holding a tool including a probe element in a position to perform measurements on said workpiece;

numerical control means for varying the relative position of said workpiece holder and toolholder means in response to digital input signals;

position feedback means for indicating the position of said workpiece and toolholder means with respect to a machine reference point;

a radio transmitter mounted within said toolholder and being operatively connected to said probe element for producing an electromagnetic output, said output changing in response to said probe element contacting said workpiece;

means for radiating the electromagnetic output of said radio transmitter;

a radio receiver for receiving the electromagnetic radiation from said probe element, the output of said radio receiver being coupled to said numerical control means; and

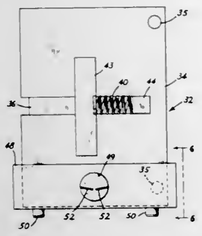
means in said numerical control means for recording the position of said workpiece and toolholder means as indicated by the output of said position feedback means at the instant said probe element makes contact with said workpiece, the recorded positions of said workpiece and toolholder means being a measure of a corresponding dimension of said workpiece.

4,118,872

PUSHER LUG ALIGNING DEVICES

Harold R. Ziegelmeyer, 5010 Griffin Creek Rd., Medford, Oreg. 97501

Filed Aug. 12, 1977, Ser. No. 824,243
Int. Cl.² G01B 5/24
U.S. Cl. 33—181 R **4 Claims**



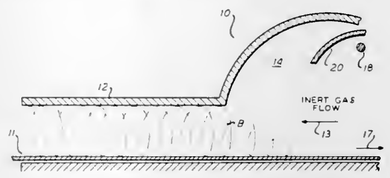
1. A device for use in testing and adjusting the squareness of setting of conveyor carried, work piece pusher members, of a machine designed evenly to slot the ends of work pieces preparatory to end to end finger joining of the slotted work pieces, said device comprising a plate, clamping means carried by the plate for firmly but detachably securing the plate in a fixed predetermined orientation relative to the conveyor, and an indicator device affixed to said plate, said device including forwardly projecting feeler fingers mounted and positioned to be yieldingly engageable with work pusher members of the conveyor, and indicator means responsive to the respective feeler fingers for indicating at a common read-out point the relative positions thereof with respect to a plane perpendicular to the conveyor path whereby it is indicated to the operator whether, and in what manner, the work pusher members on the conveyor must be adjusted forward or backward in order to square the pusher members relative to one another.

4,118,873

METHOD AND APPARATUS FOR INERTING THE ATMOSPHERE ABOVE A MOVING PRODUCT SURFACE

Ronald D. Rothchild, South Orange, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Dec. 13, 1976, Ser. No. 749,951
Int. Cl.² B01K 5/00
U.S. Cl. 34—36 **7 Claims**



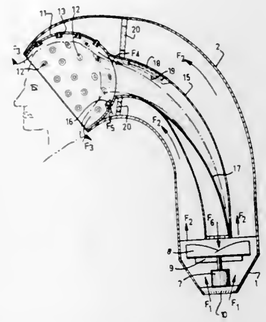
1. A method of inerting the atmosphere adjacent a surface of a product including translating the product into and through a tunnel thereby dragging air into the tunnel in a boundary layer extending away from said surface and introducing an inert gas flow into said tunnel, the improvement comprising introducing said inert gas (1) at a flow rate sufficient to limit the oxygen concentration immediately inside the inlet of said tunnel to less than 20.8% and (2) with a magnitude and direction of momentum sufficient to substantially balance drag forces between said inert gas flow and said translated product and between said inert gas flow and tunnel walls to reduce the loss of inert gas from said tunnel; and establishing a relative velocity between said inert gas flow and said translated product surface sufficient to render said boundary layer essentially turbulent such that atmospheric oxygen dragged into said tunnel by said translated product is rapidly diffused away from said product surface into said boundary layer.

4,118,874

HAIR DRYER, ESPECIALLY FOR LONG HAIR

Bruno Morane, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 15, 1976, Ser. No. 677,403
Claims priority, application France, Apr. 17, 1975, 75 11986
Int. Cl.² A45D 20/24
U.S. Cl. 34—101 **9 Claims**



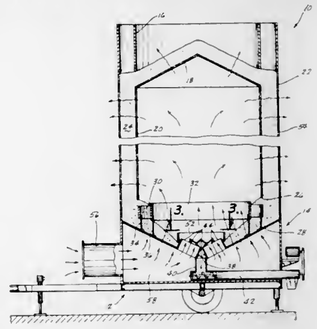
1. In an improved hair dryer especially adapted to dry long hair, which dryer comprises an elongated first duct, a fan at one end of said duct for blowing air through said duct, said fan having a suction zone, and an elongated second duct terminating at one end in alignment with the suction zone of said fan, and at its other end near the other end of said first duct, the improvement according to which said second duct is positioned inside said first duct, means closing the end of said first duct remote from said fan and comprising a hood perforated by a plurality of orifices, the end of said second duct remote from said fan opening into said hood, said second duct being of a length sufficient and communicating with said hood through an opening large enough to accommodate fully extended long hair of the user introduced into said second duct, while said dryer is in place on the head of said user, grille means within said second duct comprising a grille extending the length of and obliquely across said second duct for supporting said fully extended long hair in said second duct, said fan comprising means for flowing drying air through said second duct and grille only in a direction toward said fan, means for supporting said dryer with said fan below said hood during use of the dryer, and resistance heating means in said second duct near said hood for heating air drawn from said hood into said second duct.

4,118,875

METHOD AND MEANS OF DRYING PARTICULATE MATERIAL

Vernon H. Sietmann, Laurel, Iowa 50141, and Kenneth V. Rohrs, 1154 Clarmar, Fremont, Nebr. 68025

Filed Feb. 3, 1977, Ser. No. 765,264
Int. Cl.² F26B 17/12
U.S. Cl. 34—174 **10 Claims**



1. A grain dryer comprising,

a cylindrical housing having upper and lower ends, said housing having a perforated wall portion intermediate its upper and lower ends,

a perforated cylindrical wall means positioned within said housing and being spaced therefrom to define a first grain passageway therebetween, said cylindrical wall means having a conical-shaped perforated upper floor extending over its upper end,

a perforated, inverted conical-shaped lower floor in said housing above the lower end thereof, said lower floor extending inwardly from said cylindrical housing, said lower floor having a grain discharge opening formed at its center,

an air blower means in communication with the interior of said housing below said lower floor for supplying heated air thereto,

a grain conveyor means in communication with the interior of said housing below the center of said lower floor for conveying grain from said grain discharge opening outwardly from said housing,

a plurality of upstanding air passageway members positioned around said grain discharge opening and having open upper and lower ends, said lower ends of said air passageway members being in communication with the housing area below said lower floor, the upper ends of said air passageway members being in operative communication with the lower central area of said cylindrical wall means,

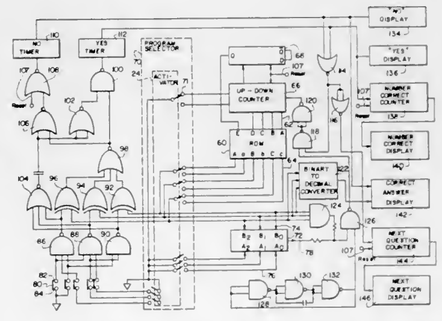
the lower end of said cylindrical wall means being spaced above said lower floor to permit grain to flow from the lower end of said first grain passageway onto said lower floor whereby a portion of the heated air will be forced upwardly through the grain on said lower floor and whereby a portion of the heated air will pass upwardly through said air passageway members and thence outwardly through the grain in said first grain passageway and the grain on said upper floor.

4,118,876

PROGRAMMABLE QUESTION AND ANSWER DEVICE

Antony A. Brilakis, 300 Franklin St., Haworth, N.J. 07641

Filed Oct. 4, 1976, Ser. No. 729,591
Int. Cl.² G09B 7/06
U.S. Cl. 35—9 A **6 Claims**



1. A programmable question and answer device having combined testing and teaching modes with multiple answer set programs, said device comprising in combination:

a housing;

a plurality of indexed answer keys mounted on said housing;

control logic means connected to said answer keys, said control logic means having parallel address means;

non-volatile read out memory means electrically connected to said control logic means, said memory means having a plurality of stored binary words output in parallel by said parallel address means;

program selector means selectively connected to said read only memory means, said control logic means and said answer keys in order to program an operational sequence for a selected answer set; and,

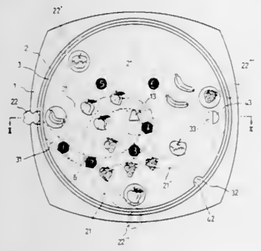
a plurality of electrically activated display means selectively connected to said control logic means for indicating question and answer data;

said control logic means comprises, sequencing logic means connected to said display means and said read only memory means for advancing binary data during an answer program sequence, comparison logic means connected to said program selector means to check validity of permissible answers and student answers in each answer set and display timing means connected to said comparison logic means and said display means to limit viewing time of displays showing correctness of a student's answer;

said sequencing logic means comprises, a first binary counter connected to said display means for accumulating the number of correctly answered questions for each answer set, a second binary counter connected to said display means to indicate the number of the next question within an answer set, and a third binary counter connected by parallel lines to said read only memory means for address-

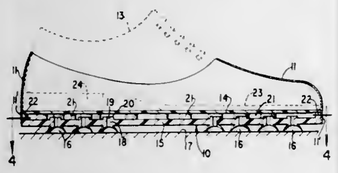
ing said read only means in order to output a selected binary word.

4,118,877
EDUCATIONAL TOY
Hsing Ching Liu, and Lan-dih Liu, both of 3F, No. 213, Chung Ching N. Rd., Sec. 4, Taipei, Taiwan
Filed Jun. 2, 1977, Ser. No. 802,949
Int. Cl.[2] G09B *3/00*
U.S. Cl. 35—9 R **9 Claims**



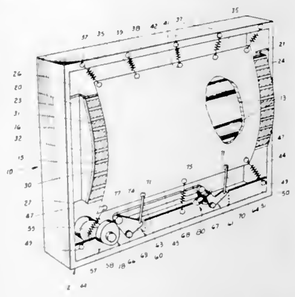
1. An educational toy comprising:
a base provided with a spindle at about the center thereof, the spindle consisting of a cylindrical stem portion and a non-circular cross-section head portion;
a pair of boards superimposed over said base by inserting through a hole at the center of each board said spindle and retained at said stem portion thereof, wherein the lower board is formed on the top surface thereof with an upwardly opened groove curved in one horizontal direction, while the upper board similarly is formed on the bottom surface thereof with a downwardly opened groove curved in another horizontal direction, in such a way a crossover is formed by said two grooves, and a magnet free-movably buried in said crossover;
a series of replaceable quiz-and-answer plates selectively mountable over said upper board, each plate being provided with a corresponding non-circular cross-section hole at the center thereof for snapping on said head portion of said spindle, the plate having well designed representation thereon for selecting answers to reach the educational purposes; and
a movable indicator displaceable over said plate and containing a magnet, thereby utilizing the attraction between said magnet and the magnet buried inside said crossover to indicate whether the answer selected is correct or wrong.

4,118,878
ARTICLE OF FOOTWEAR
William P. Semon, 27 Norgate Rd., Glen Head, N.Y. 11545
Filed Sep. 27, 1977, Ser. No. 836,952
Int. Cl.[2] A43B *23/28*
U.S. Cl. 36—59 C **10 Claims**



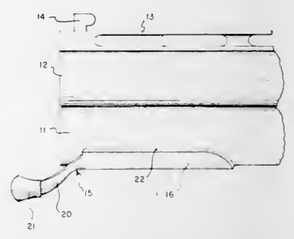
1. In an article of footwear that comprises a sole and readily engageable and disengageable holding means for holding said sole underneath the sole of a human foot or of a shoe worn on the foot of a human, said sole presenting a plurality of suction cups depending from the bottom of said sole for improving the non-slip traction of said sole with respect to a surface against which said suction cups may be pressed, the improvement in that said sole of said footwear comprises an outer sheet of flexible elastic material, a plurality of flexible resilient suction cups secured to said sheet with said cups depending from the undersurface of said sheet, each of said cups comprising a neck that extends through said outer sheet so as to protrude substantially above the upper surface of said outer sheet and has a hollow passage extending therethrough, an inner sheet of flexible elastic material above said outer sheet, a plurality of spacer bodies which normally maintain the undersurface of said inner sheet in secured spaced relation with respect to the upper surface of said outer sheet and with the surfaces of said necks presented at their upper extremities in proximate opposed spaced relation to areas of the undersurface of said inner sheet that are in opposed relation to said necks, said spacer bodies being sufficiently compressible to permit bringing said areas of the undersurface of said inner sheet into pressure contact with said surfaces presented by said necks when said bodies are subjected to pressure imposed by the wearer of the footwear and likewise being sufficiently resilient in relation to the resistance to flexure of said sheets to cause said areas of said undersurface presented by said inner sheet to become separated from said surfaces presented by said necks when said pressure is relieved, said surfaces presented by said necks and said areas of the undersurface of the inner sheet being effective to form a substantially airtight seal therebetween when brought into pressure contact relation by the wearer of the footwear imposing pressure on the upper surface of said inner sheet as he brings said suction cups into pressure contact with an underlying surface, said spacer bodies being localized at spaced intervals adapted to receive the weight of the wearer distributed among them and being sufficiently spaced from each other to readily permit substantial manual stretching and flexure of said sole in the portions of said inner and outer sheets that bridge the spaces between said spacer bodies and so to provide an air space between the undersurface of said inner sheet and upper surface of said outer sheet of sufficient size to receive air from said suction cups when said cups are pressed against an underlying surface prior to the moment when said seal is formed between said areas of said undersurface of said inner sheet and said surface presented by said necks and to permit an immediate inrush of air from said space as soon as said seal is broken.

4,118,879
ANIMATED DISPLAY DEVICE HAVING A CURVED PLATEN AND A MOVABLE FILM
Virgil S. Simon, Glenview, Ill., assignor to Thomas A. Schutz Co., Inc., Morton Grove, Ill.
Filed Feb. 10, 1977, Ser. No. 767,492
Int. Cl.[2] G09F *13/34, 19/14*
U.S. Cl. 40—437 **7 Claims**



1. In an illuminated animated display having a housing, illuminating means within said housing for projecting substantially uniformly diffused light forwardly toward a viewer, a rigid platen between the illuminating means and the viewer, the platen having sections of transparent and opaque character with light from the illuminating means passing through the transparent sections of the platen, a flexible sheet of film having translucent images thereon with only those portions of the images which register with the transparent sections of the platen being illuminated and projected, and tensioning means acting at opposite edges of the film for tensioning it over and in full surface contact with the platen, means for shifting the film and the platen relative to one another, comprising;
a motor;
a single cam rotatively driven by the motor;
similar cranks pivotally mounted in spaced relation adjacent one of said opposite edges of the film;
a link member connecting corresponding portions of said cranks for parallel movement of the cranks;
drive links connecting corresponding portions of said cranks to said one of said opposite edges of the film; and
a cam follower on one of said cranks and riding on said cam whereby rotation of said cam pivots said cranks to effect reciprocation of the film thereby extending and relaxing the tensioning means at the other of said opposite edges of the film so as to vary the alignment of the film images with the transparent and opaque sections and intermittently change the projected visual image.

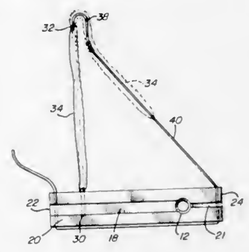
4,118,880
MUZZLE REST
Charles K. Vickers, and Patricia A. Vickers, both of 605 Clare Dr., Washington, Pa. 15301
Filed Aug. 15, 1977, Ser. No. 824,274
Int. Cl.[2] F41C *29/00*
U.S. Cl. 42—94 **4 Claims**



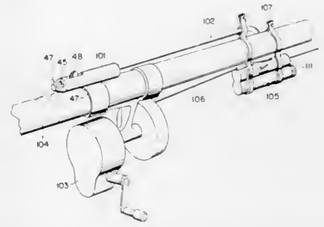
1. A muzzle rest adapted to be attached to a gun barrel so as to support the muzzle above ground when the gun is positioned vertically with barrel down, comprising an elongated mounting plate curved transversely so as to conform to the gun barrel, a foot projecting therefrom at one end, and offset therefrom, and means affixed to the concave surface of the mounting plate for attaching the mounting plate to a gun barrel.

4,118,881
METHOD AND APPARATUS FOR THREADING WORMS ON FISHHOOKS
Douglas A. McFarlane, 140 S. Dolliver-#121, Pismo Beach, Calif. 93449
Filed Mar. 7, 1977, Ser. No. 775,059
Int. Cl.[2] A01K *97/00*
U.S. Cl. 43—4 **7 Claims**

1. Apparatus for threading worms on fishhooks, comprising, in combination:
(a) a body member provided with a through hole arranged for receiving a worm, and also provided with a recess; and
(b) a longitudinally extending element selectively insertable into the worm received in the hole provided in the body member, and removably insertable into the recess provided in the body member, the body member having a longitudinal extent, the body member being further provided with a groove extending along the longitudinal extent of the body member for receiving the worm during insertion of the longitudinally extending element into the worm, with the hole communicating with the groove, the body member having longitudinally spaced end surfaces, with the body member still further provided at the longitudinally spaced end surfaces thereof with slots arranged for receiving a length of fishing line, the slots being disposed substantially parallel to one another and to the grooves, but extending laterally of the groove, with the recess being substantially parallel to and coplanar with the slots, and the body member being further provided with a trough extending from the hole and away from the groove and coplanar therewith for matingly receiving the longitudinally extending element and facilitating insertion of the longitudinally extending element into the worm.



4,118,882
FISH BITE INDICATOR
Peter Gorsky, Prosperity, W. Va., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Apr. 19, 1977, Ser. No. 788,744
Int. Cl.[2] A01K *97/12*
U.S. Cl. 43—17 **3 Claims**



1. An assembly attachable to a fishing rod for indicating the pull of a fish, caught on the fishing line of the rod comprising,
a clamp unit fitted with straps for attachment to a fishing rod, said clamp unit formed of a clamp pin slidably mounted in the bore of an inner hollow member which said inner hollow member is mounted in the bore of an outer hollow member with
first spring means to bias the pin in the forward direction relative to the said inner member, and
second spring means to bias the said inner member in the rearward direction relative to the said outer member, with
a first set of openings located in the sides of both members and a second set of openings located within the forward walls of both members of a size to permit a fishing line to pass through the interior of the inner member from said first set of openings and to exit through the said second set of opening between the forward end of the clamp pin and the opening in the forward wall of the inner member, together with

signal indicating means fixed to said inner member located to indicate when said inner member is pulled forward relative to said outer member against the bias of said second spring means.

4,118,883

FISHHOOK AND RELEASING TOOL THEREFOR

Bernard Watkins, P.O. Box 223, Culver Lake, Branchville, N.J. 07826

Filed Aug. 24, 1977, Ser. No. 827,362
Int. Cl.² A01K *97/00*
U.S. Cl. 43—43.16 **10 Claims**



1. In combination,
a releasable fishhook comprising:
a hook-carrying member having a fish-engaging hook at one end thereof, an elongated shank at its opposite end and joining means intermediately positioned therebetween and a line-carrying member having finger gripping means at one end thereof and fulcrum means at its opposite end for engagement with said joining means and about which said joining means fulcrums to engage the free movement of said hook-carrying member relative to said line-carrying member; and
a fishhook extracting handle to function as a lever so as to provide a mechanical advantage, said handle having means thereon for engaging said shank to enable the use of said handle to manipulate said hook-carrying member through an arcuate traverse at said joining means to release a fish from engagement with said hook, whereby during said manipulation said finger-gripping means is held to maintain said line-carrying member in a relatively vertical position.

4,118,884

Patent Not Issued For This Number

4,118,885

ANIMAL TRAP HOLDER

Ray L. Carter, Star Rt. C Box 293, Palmer, Ak. 99645

Filed Mar. 7, 1977, Ser. No. 775,370
Int. Cl.² A01M *23/28*
U.S. Cl. 43—97 **1 Claim**



1. An animal trap holder for a trap including plural jaw members and a securing chain comprising: an elongated strap member having at a central portion thereof a raised portion forming two shorter strap members in a plane parallel to the elongated strap member whereby two slots are formed between the elongated strap member and the shorter strap members, said slots being open at their ends to receive the jaw members of an animal trap therein, said elongated strap member also including a plurality of holes therein for application and attachment to the chain of said animal trap.

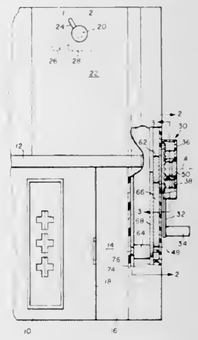
4,118,886

TOY ELEVATOR SAFETY OVERRIDE DRIVE MECHANISM

George O. Bartoo, West Falls, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 1, 1977, Ser. No. 764,568
Int. Cl.² A63H *33/30*
U.S. Cl. 46—1 R **2 Claims**

1. A toy elevator safety override drive mechanism for preventing damage to the drive mechanism comprising:
first means including a rotatable drive member having a first axis and a drive surface having end portions lying in a first plane substantially perpendicular to a radius of said drive member extending through a midpoint of said drive surface, said midpoint being radially spaced a first distance from said first axis, and said end portions being radially spaced a second distance greater than said first distance from said first axis;
second means including a rotatable member driven by said drive member and coupled to an elevator mechanism, said driven member having a second axis coincident with said first axis and comprising a resilient flexible loop having a resilient leaf spring portion which in its normal unflexed condition lies in a second plane substantially perpendicular to a radius of said driven member extending through a center of said leaf spring portion, said center being radially spaced from said second axis a distance substantially



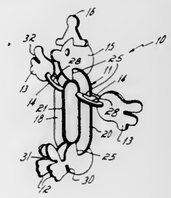
equal to said first distance whereupon said drive surface when arranged contiguous to said leaf spring portion is substantially parallel thereto and engages and drives said leaf spring portion and elevator mechanism upon rotation of said drive member, said end portions of said drive member further adapted when said elevator mechanism is jammed or blocked to flex said leaf spring portion radially outwardly from its normal condition a distance substantially equal to said second distance to allow said end portions to override said driven surface whereby damage to said drive mechanism is prevented.

4,118,887

TAKE-APART FIGURE TOY

Donald T. Appleman, 878 Wismar Dr., Cincinnati, Ohio 45230

Filed Dec. 3, 1976, Ser. No. 747,200
Int. Cl.² A63H *33/04*
U.S. Cl. 46—22 **13 Claims**



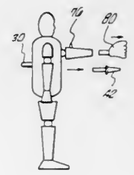
1. A toy comprising:
a universal body having two opposite flat sides terminating in a thin portion adjacent an edge of said body,
an elonated groove on each of said sides, said grooves uniformly spaced from said edge,
appendage means for connection to said body, said appendage means having a thin portion adjacent an edge of said appendage means, said latter thin portion having a body receiving slot therein extending inwardly from an edge of said appendage means and including projection means extending into said slot from said side thereof to engage said grooves when said body is received in said slot,
said projection means disposed adjacent the outer end of said slot and engging in respective ones of said grooves on each side of said body when said body is received in said slot,
said slot having a length longer than the distance between the grooves and the body edge wherein the connection between said body and appendage means is such as to permit said appendage means to pivot about said projection means without disengagement of said projection means from said grooves, and said grooves extending along said sides a predetermined distance to permit said appendage means to move along said body edge without removing said projection means from said grooves.

4,118,888

ARTICULATED MAGNETIC DOLL

Iwakichi Ogawa, Chiba, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1976, Ser. No. 725,941
Int. Cl.² A63H *33/26, 13/16*
U.S. Cl. 46—22 **16 Claims**



1. An articulated toy having removable appendages comprising;
a hollow housing having at least front and rear shell members;
a magnet having an aperture operatively positioned within the hollow housing;
a pair of armature plates operatively connected to said magnet, at least one joint portion being formed between the armature plates to receive a complimentarily shaped joint on an appendage; and
means for securing said housing shell members and aligning said magnet and armature plate, said means extending through the magnet aperture to interconnect said shell members.

12. The invention of claim 11 wherein the second means for discharging projectile includes a spring loaded removable appendage simulating an arm.

4,118,889

WEARABLE SEEDLING CONTAINER

Stewart Lamlee, 55 W. 86th St., New York, N.Y. 10024

Filed Oct. 15, 1976, Ser. No. 732,983
Int. Cl.² A01G *9/02*
U.S. Cl. 47—14 **2 Claims**

1. A seedling sprouter comprising in combination:
a generally elongated body of transparent material having one curved side, one flat side, a bottom, and an open top;
a removable cap means for substantially closing said open top, said cap having a curved side and a flat side;
means on said cap for suspending said cap;
moisture holding material within said body; and

means on said cap for the snap fit engagement of said cap and said body, whereby said cap and body may both be suspended by said suspension means and worn as an article of jewelry.



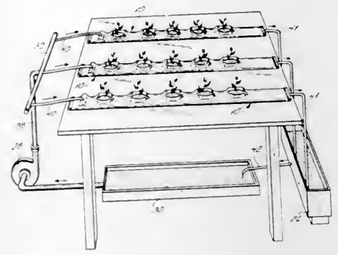
4,118,890
PLANT PACKAGE
William S. Shore, 28126 Gates Mills, Pepper Pike, Chio 44124
Filed Feb. 16, 1977, Ser. No. 768,976
Int. Cl.[2] A01G *9/02*; A47G *7/08*
U.S. Cl. 47—28 R **23 Claims**



1. A packaged plant unit for containing a live plant having roots and a stem which comprises:
soil supporting the plant roots;
a soil receptacle means containing the soil and the plant roots, said receptacle means being closed around the plant stem to retain soil therein and having means for transmitting moisture through the receptacle means to the soil and plant roots; and
a container enclosing the entire plant, soil, and receptacle means, said container being light-transmissive, flexible, inflated, and hermetically sealed, the container having generally rectangular side panels connected by upright supporting seams, the material of the container containing therein a surfactant for the prevention of large water droplet formation.

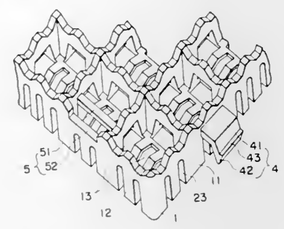
4,118,891
SYSTEM FOR GROWING PLANTS
Donald K. Kehl, 2915 Kings Dr., and Eugene A. Crist, 2338 Pretty Bayou Island Dr., both of Panama City, Fla. 32401
Continuation-in-part of Ser. No. 618,816, Oct. 2, 1975. This application Sep. 28, 1976, Ser. No. 727,577
Int. Cl.[2] A01G *31/00*
U.S. Cl. 47—59 **12 Claims**

1. A conduit for use with a recirculating water-nutrient solution plant supply system of a type for growing a plurality of plants with respective roots of each plant supported in a respective plant medium located in a conduit, said conduit placed on a sloped surface so that gravity carries the water-nutrient solution to the plants in the conduit from one end to the other and a pump to recirculate the unused water-nutrient solution to the upper end of the conduit, the conduit comprising a continuous plant tube constituted of a thin, pliant plastic foil, the tube having the property of collapsing when empty, slotted openings formed in the top of the tube, said slotted openings being formed at intervals in said tube, each of said slotted openings being of a size sufficient to receive said plant medium, said tube portion forming said slotted openings being spread apart to open said slotted openings permitting said plant medium to be inserted in said tube, said tube comprising said



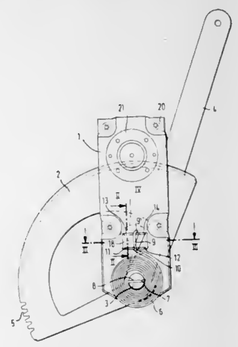
upper end with means provided between said upper end and the first slotted opening for introduction of said solution and an open end through which the unused portion of the solution drains from said tube, the bottom portion of said tube being closed between said ends to comprise a continuous impervious channel unobstructed except by said plant medium for said water-nutrient solution to flow between said ends with all of said unused solution leaving said tube exiting at said open end, said plants being in fluid communication with each other, the tube generally conforming to the shape defined by said plant and plant medium by draping on said medium to form said channel.

4,118,892
CONNECTABLE NURSERY BOX STRUCTURES HAVING COMPARTMENTALIZING GRIDS
Tsugio Nakamura, Funabashi; Seigo Aizaki, Koshigaya, and Kosei Hayashi, Hitachi, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka and Kabushiki Kaisha Hayashi Zoen, Hitachi, both of, Japan
Filed Feb. 4, 1977, Ser. No. 765,479
Claims priority, application Japan, Feb. 6, 1976, 51-13531[U]; May 28, 1976, 51-69141[U]; Aug. 20, 1976, 51-112377[U]
Int. Cl.[2] A01G *9/02, 9/12*
U.S. Cl. 47—66 **7 Claims**



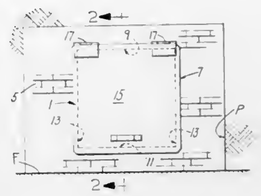
1. A plant nursery box for permanently planting lawn grasses or the like and for protecting the plants from trampling due to people walking thereon comprising a base housing defined by four side walls and an apertured bottom plate, said apertured bottom plate having a wavy configuration, said sidewalls having interlocking means for selectively securing together a plurality of said nursery boxes, a grid member integrally formed with said base housing, said grid member comprising a plurality of intersecting wall members disposed within the base housing and defining a plurality of rectangular compartments therein with the maximum wave height of said bottom plate being midway between two of the parallel walls defining a compartment, each of said wall members defining each compartment having at least one elongated, vertical slot in the bottom edge thereof and notches in the upper edge thereof at each compartment site, whereby plant root structures below the soil and plant growth above the soil in each compartment may communicate between adjacent compartments, said compartments being sufficiently small to prevent a person's foot from entering thereinto and said integrally formed grid member and base housing having sufficient mechanical strength to support a person's weight.

4,118,893
WINDOW LIFTING MECHANISM
Herbert Becker, Coburg, Fed. Rep. of Germany, assignor to Metallwerk Max Brose & Co., Coburg, Fed. Rep. of Germany
Filed Apr. 1, 1977, Ser. No. 783,664
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1976, 7613594[U]
Int. Cl.[2] E05F *11/44*
U.S. Cl. 49—348 **8 Claims**



1. A window lifting mechanism for a window comprising:
(a) a support including a carrier member;
(b) an operating member mounted on said support for angular movement about an axis,
(1) one of said members essentially consisting of a unitary piece of material having a face transverse to said axis,
(2) two pairs of integral lug portions of said piece being angularly offset from said face, the lug portions of each pair defining a gap therebetween;
(c) an elongated spiral spring having two longitudinal end portions and an intermediate portion connecting said end portions and extending about said axis,
(1) one of said end portions having two longitudinally spaced parts respectively secured in said gaps in abutting engagement with the lug portions defining the respective gaps;
(2) said spring being formed with two bends,
(3) each of said bends being contiguously adjacent an associated one of said gaps and longitudinally offset from the associated gap in a direction away from the other gap; and
(d) fastening means fastening the other end portion of said spring to the other one of said members in a position for biasing said operating member to move angularly about said axis under the resiliency of said spring.

4,118,894
DOOR FRAME AND DOOR ASSEMBLY FOR A MINE STOPPING
John M. Kennedy, and William R. Kennedy, both of P.O. Box 38, Taylorville, Ill. 62568
Filed May 27, 1977, Ser. No. 798,770
Int. Cl.[2] E05D *7/00*
U.S. Cl. 49—402 **7 Claims**



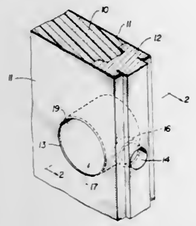
1. A door frame and door assembly for installation in a man-door opening in a mine stopping, said assembly comprising a rectangular frame having a top, bottom and sides and a door hinged to the top of the frame and adapted to swing down for closing and to swing up for opening, the frame being adapted to be mounted in a man-door opening in a mine stopping with the bottom of the frame bearing on the stopping at the bottom of the man-door opening, the sides of the frame extending up at opposite sides of the man-door opening and the top of the frame forming a lintel at the top of the man-door opening, the top, bottom and sides of the frame each having a face engageable by the door when the door swings down, each said face constituting a forward face, the bottom of the frame extending forward beyond the vertical plane of the forward face of the top of the frame so that the forward face of the bottom is forward of the forward face of the top, the sides also extending forward beyond the vertical plane of the forward face of the top of the frame and the forward faces of the sides being inclined outwardly in downward direction from the ends of the forward face of the top of the frame to the ends of the forward face of the bottom of the frame, the door having sealing surfaces at the top, bottom and sides thereof engageable in face-to-face relation with the said forward faces of the top, bottom and sides of the frame when the door swings down to seal the opening in the frame, gravity and air pressure on the forward face of the door being adapted to hold the door closed with its said sealing surfaces in face-to-face engagement with said forward faces of the frame, the top of the frame having an upwardly extending forward flange, the bottom having a downwardly extending forward flange, and the sides having laterally outwardly extending forward flanges which are inclined forward in downward direction from the ends of the forward flange of the top to the ends of the forward flange of the bottom, the forward faces of said top, bottom and sides being constituted by the forward faces of the said forward flanges of said top, bottom and sides, the said sealing surfaces of the door being engageable generally flatwise in face-to-face engagement with the forward faces of said forward flanges so that the sealing surfaces may slide relative to said forward faces on distortion of the frame out of rectangular shape, e.g., to distort to a non-rectangular parallelogrammatic shape, to avoid jamming of the door, the door being free of any engagement around the outer edges of the said forward flanges so that the sealing surfaces may slide relative to the said forward faces.

4,118,895

LINER FOR INTERSECTING CROSS BORE AND EDGE BORE OF FOAM-FILLED METAL SKINNED DOOR

Bernard C. Governale, Duluth, Ga., assignor to Peachtree Doors, Inc., Norcross, Ga.

Filed Dec. 23, 1977, Ser. No. 863,909
Int. Cl.[2] E06B *3/00*
U.S. Cl. 49—503 **7 Claims**



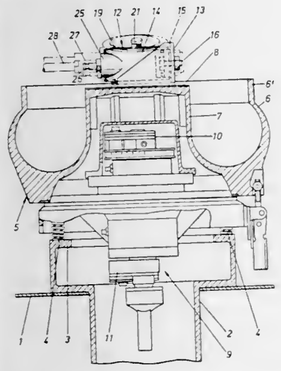
1. In a foam-filled door having opposite side metal skins and a swinging edge stile connected with the skins, said skins having axially aligned cross bore openings spaced a precise distance from the outer edge face of said stile and said stile having an edge bore intersecting the common axis of said cross bore openings at right angles, a one-piece liner and dam having a relatively large diameter cross bore sleeve portion mounted between said skins with its bore in registration with said cross bore openings of the skins and having a smaller diameter edge bore sleeve projecting radially of the cross bore sleeve portion and engaged snugly within the edge bore of the stile, the opposite end faces of the cross bore sleeve portion of said liner engaging the interior faces of said metal skins, the installed liner blocking the passage of foam into said cross bore and edge bore.

4,118,896

APPARATUS FOR SURFACE TREATMENT OF PARTS WITH A VIBRATORY CONTAINER

Carl Kurt Walther, Wuppertal; Henning D. Walther, Haan; Hubert P. Hageluecken, Dusseldorf, and Karl Temme, Wuppertal, all of Fed. Rep. of Germany, assignors to Wheelabrator-Frye Inc., Hampton, N.H.

Filed Mar. 18, 1976, Ser. No. 668,134
Int. Cl.[2] B24B *31/06*
U.S. Cl. 51—163.2 **5 Claims**



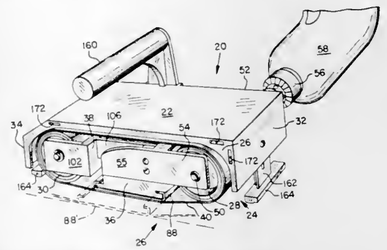
1. An apparatus for the surface treatment of parts with media comprising a horizontally disposed annular vessel in which said parts and media are received, means resiliently mounting said annular vessel for multi-directional movement, eccentric means connected to the annular vessel for imparting basic vibrations to said annular vessel comprising one or more eccentrics mounted for rotational movement about the vertical axis of the annular vessel, and a supplementary vibration generator means mounted on the annular vessel separate and apart from but in axial alignment with the eccentric means for inducing vibrations independently of the basic vibrations, and means for angular adjustment of said supplmentary vibration generator means for varying the plane of vibration between the horizontal to the vertical of the container.

4,118,897

BELT-TYPE SANDER ACCESSORY

Ronald Martin, 5225 SW. Lakeview Blvd., Lake Oswego, Oreg. 97034

Continuation-in-part of Ser. No. 634,192, Nov. 21, 1975, Pat. No. 3,983,664. This application Sep. 13, 1976, Ser. No. 722,537
Int. Cl.[2] B24B *23/06*
U.S. Cl. 51—170 EB **6 Claims**



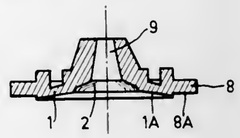
1. A belt-type sanding device comprising:
(a) an elongate body member having an open bottom, a closed side, an open side and two longitudinally opposed ends;
(b) a substantially cylindrical drive roller mounted proximate one end of said body member so as to extend laterally across said open bottom thereof, said drive roller being rotatable on its axis;
(c) drive means coupled to said drive roller for imparting rotational motion thereto about said axis;
(d) a bearing plate assembly including upper and lower plate members arranged in spaced substantially parallel relationship to one another and attached to said closed side of said body member extending across said open bottom thereof toward said open side, said lower plate member including a substantially planar bearing surface directed outwardly from said open bottom of said body member;
(e) a yoke member having an elongate shank portion having first and second sections extending longitudinally in said body member, said shank portion including means for coupling said yoke member to said upper plate member and for preventing substantial vertical displacement of said yoke member relative to said bearing plate assembly including engaging means associated with each of said first and second sections for engaging said upper plate member of said bearing plate assembly and bias means connected between each of said sections and said plate assembly for maintaining said sections intercoupled;
(f) a substantially cylindrical idler roller mounted on said yoke assembly proximate the other end of said body member so as to extend laterally across said open bottom thereof, said idler roller being rotatable about its axis; and
(g) said drive roller, bearing plate assembly and idler roller being oriented in said body member such that an endless belt of sandpaper may be looped therearound with a portion of said belt in contact with said bearing surface and such that rotation of said drive roller causes movement of said belt across said surface.

4,118,898

MOUNTING BLOCK FOR MOUNTING A LENS IN A LENS TRIMMING AND BEVELLING MACHINE

Jean Marie Godot, Brunoy, France, assignor to Essilor International, Joinville Le Pont, France

Filed May 11, 1977, Ser. No. 796,006
Claims priority, application France, May 18, 1976, 76 14905
Int. Cl.[2] B24B *41/06*
U.S. Cl. 51—216 LP **4 Claims**



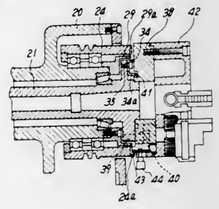
1. A mounting block for mounting an optical lens on one end of the spindle of a trimming and bevelling machine, said block being made of a flexible plastic material and adaped to be fixed only to one of the major surfaces of said lens by means of a thin film of adhesive material, said block comprising orienting and driving means adapted to cooperate with complementary means provided on said spindle, said block further comprising a flexible circular web portion defining a lens holding surface of generally conical shape, coated with a layer of said adhesive material and adapted to engage a central portion of one major surface of said lens, a central recess being provided adjacent the apex of said generally conical lens-holding surface, the periphery of said web portion having at least one outwardly extending gripping tab with a surface facing said lens surface and offset with respect to said lens holding surface of said web portion by a shoulder part of said bock, so as to define a space between said lens surface and said gripping tab when said lens is affixed to said mounting block.

4,118,899

HEAD STOCK FOR GRINDING MACHINE

Akiyoshi Kobayashi, Kariya, Japan, assignor to Toyoda-Koki Kabushiki-Kaisha, Japan

Filed May 10, 1977, Ser. No. 795,448
Claims priority, application Japan, Jun. 10, 1976, 51-68154
Int. Cl.[2] B24B *41/04*
U.S. Cl. 51—237 R **5 Claims**



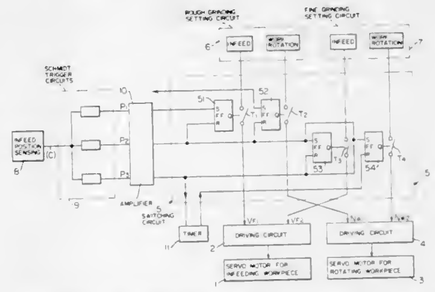
1. A head stock for a grinding machine comprising:
a housing;
a spindle rotatably mounted within said housing and provided at one end thereof with a radially recessed groove;
a pulley rotatably mounted on said housing in coaxial relation with said spindle and provided at one end thereof with an engaging recess;
a first engaging member secured at one end thereof to said housing between said pulley and said spindle, and provided at the other end thereof with a notch;
a second engaging member slidably received in the groove of said spindle and being engageable at one end thereof with the notch of said first engaging member;
the other end of said second engaging member being projected beyond said spindle;
a first face plate detachably secured to said pulley and provided with an annular groove and an engaging portion engageable with the other end of said second engaging member;
means for selectively positioning said second engaging member at a first position, where the one end of said second engaging member is engaged with the notch of said first engaging member and the other end thereof is disengaged from the engaging portion of said first face plate secured to said pulley and received in the annular groove of said first face plate, and at a second position, where the one end of said second engaging member is disengaged from the notch of said first engaging member and the other end thereof is engaged with the engaging portion of said first face plate secured to said pulley;
a second face plate detachably secured to said spindle and provided with an annular groove capable of receiving the other end of said second engaging member only when the second engaging member is disengaged from the notch of said first engaging member;
an engaging pin slidably received in said second face plate to be engageable with the engaging recess of said pulley;
means connected to said engaging pin for selectively engaging said engaging pin with the engaging recess of said pulley;
a chuck secured to said second face plate; and
said first and second face plates being selectively secured to said pulley and said spindle, respectively.

4,118,900

METHOD FOR CONTROLLING GRINDING PROCESS

Sadao Moritomo; Youji Tatsumi, and Terumitsu Sugita, all of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan

Filed Mar. 22, 1977, Ser. No. 779,999
Claims priority, application Japan, Mar. 29, 1976, 51-34804; Mar. 29, 1976, 51-34805
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—281 R **4 Claims**



1. A method for controlling the grinding of a rotating workpiece by a grinding machine having a driven work spindle and a grinding wheel which comprises:
mounting said workpiece on said work spindle and starting the grinding machine,
effecting a rapid infeed of the grinding wheel to the workpiece,
rotating the workpiece and the grinding wheel at first preset speeds while infeeding the grinding wheel to the workpiece at a preset rate per workpiece revolution to effect a predetermined rough grinding of the workpiece, and thereafter
rotating the workpiece and the grinding wheel at second separately preset speeds different from said first present speeds while infeeding the grinding wheel to the work-

piece at a preset lower rate per workpiece revolution to effect a predetermined fine grinding of the workpiece.

4,118,901

STRUCTURE FOR RELOCATABLE BUILDING WITH FOLDING PLATE ROOF AND FOLDING END WALLS

Delp W. Johnson, 240 Oakview Dr., San Carlos, Calif. 94070

Filed Jul. 1, 1977, Ser. No. 812,161
Int. Cl.[2] E04B *1/344*
U.S. Cl. 52—18 **3 Claims**



1. A building structure comprising a folding plate roof having:

a. at least four generally trapazoidal plates, each plate being hingedly connected to the plates adjacent thereto in zig-zag fashion to provide alternate ridges and valleys at the hinges, and to permit the roof to be expanded and collapsed; and

b. two side walls each having upper and lower edges and lateral ends, said side walls being hingedly connected to a lower edge of one of the outer plates of said roof; and

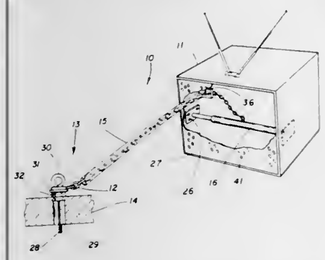
c. two end walls, each of which is hingedly connected to and between the ends of said side walls, said end walls having an even number of panels equal in number to said trapazoidal plates; each of said wall panels being hingedly connected to the wall panel adjacent thereto; and top ends of alternate hinged joints of said end walls having a pivotal point of connection to a valley joint of said folding roof, said pivotal connection being of the type which allows pivotal movement in both vertical and horizontal directions, whereby, said roof plates and side walls, and said end wall panels are movable from a collapsed to expanded condition and vice versa.

4,118,902

ANCHOR FOR FURNITURE INCLUDING TELEVISION SETS WITH TELESCOPIC INSERT ROD

Olivia Saxton, 2709 N. Keystone, Indianapolis, Ind. 46218

Filed Feb. 24, 1977, Ser. No. 771,455
Int. Cl.[2] E05B *73/00*
U.S. Cl. 52—27 **9 Claims**



1. A retainer for an article of furniture comprising:

an anchor fixedly secured to a portion of a building;

a chain having a first end and a second end with said first end fastened to said anchor;

a rod with opposite ends and having said second end of said chain fixedly fastened thereto intermediate said opposite ends; and,

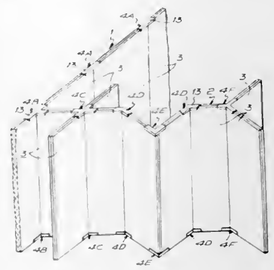
a pair of plates fixedly secured to said article of furniture with said plates fixedly mounted respectively to said opposite ends of said rod.

4,118,903

PARTITIONS AND SCREENS

James Albert Coulthard, Sheffield, England, assignor to Baytzner-Coulthard Dokumentations und Werbefilm GmbH, Sheffield, England

Filed Aug. 24, 1977, Ser. No. 827,360
Int. Cl.[2] A47B *5/00*; **E04B** *2/74, 2/82*
U.S. Cl. 52—36 **22 Claims**



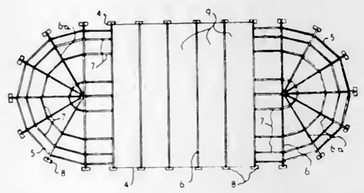
1. An assembly for forming a partition or screen comprising a plurality of panels edged with an attachment material having a multiplicity of loops, and a plurality of connectors comprising channel-section members within the bases of which is provided attachment material having a multiplicity of hooks for engagement with the loops of the attachment material on the edges of the panels, whereby two or more panels can be readily secured together by two or more connectors and as readily disconnected.

4,118,904

BUILDING STRUCTURE

Philip D. Sprung, 1001-10th Ave., SW., Calgary, Alberta, Canada

Filed Jun. 28, 1977, Ser. No. 810,901
Int. Cl.[2] E04B *1/32*
U.S. Cl. 52—63 **17 Claims**



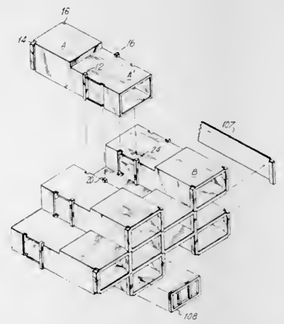
1. A building structure comprising at least two spaced arch-like frame members provided with fabric capturing means for holding a fabric strip, a fabric strip having a thickened edge retained by said fabric capturing means, said fabric strip extending between spaced arch-like frame members, said arch-like frame members each including a beam structure having a web connected to and extending from a transverse exterior crosshead which extends across one end of said web to form lateral extensions on either side thereof, said exterior crosshead forming a unitary structure with said web and having an outer face remote from said web with an upstanding edge extending substantially parallel to said web adjacent each end of said outer face, said fabric capturing means including an elongate plate formed to provide a pair of upstanding edges spaced for a distance substantially equal to the distance between the upstanding edges on said exterior crosshead and mounting means to removably mount said elongate plate on the outer face of said exterior crosshead in spaced relationship thereto, said mounting means operating to secure the central portion of said elongate plate to the central portion of said crosshead with the upstanding edges of said elongate plate extending downwardly toward and in spaced relationship to the upstanding edges on said exterior crosshead to form therewith constricted gaps sufficient to loosely pass the fabric strip but restricted sufficiently to prevent passage of the thickened edge of said fabric strip, the space between the outer face of said crosshead and said elongate plate being ample to accommodate and permit movement of the thickened edge of said fabric strip.

4,118,905

MODULAR BUILDING CONSTRUCTION SYSTEM

Shelley W. Shelley, P.H. No. 1, Castillo Del-Mar Condominium Isla-Verde, Carolina, P.R. 00913

Filed Jul. 21, 1977, Ser. No. 817,869
Int. Cl.[2] E04H *1/12*
U.S. Cl. 52—79.2 **18 Claims**



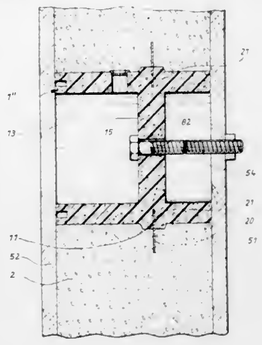
1. A modular construction system for a plural-level building, comprising a plurality of box-like modular units, each having side walls, a roof member including a ceiling, and a floor to form a monolithic module; each said modular unit having a cantilevered portion; said units being stacked to form a building structure wherein said units are arranged in a first row in staggered configuration with alternate units in said first row extending in a frontward direction and remaining units in said first row extending in a rearward direction, the cantilevered portions of said frontward extending units overlapping with the cantilevered portions of said rearward extending units; and wherein said units are arranged in a second row overlying said first row, said units in said second row being in staggered configuration such that alternate units in said second row extend in a frontward direction and remaining units in said second row extend in a rearward direction, one of said units in said second row being supported by a pair of units in said first row, and at least a part of said cantilevered portion of said one unit in said second row being supported at least in part by an adjacent modular unit.

4,118,906

CONCRETE VESSEL HAVING WALL APERTURES LINED WITH TUBULAR INSERTS

Manfred Preuninger, Ilsfeld-Schozach; Gottfried Hollender, Brackenheim, and Herbert Schaber, Heilbronn, all of Fed. Rep. of Germany, assignors to Cillichemie Ernst Vogelmann, Heilbronn, Fed. Rep. of Germany

Filed Feb. 25, 1977, Ser. No. 771,963
Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623388
Int. Cl.[2] E04B *1/40*
U.S. Cl. 52—100 **11 Claims**



1. A vessel comprising:

(a) a wall of cast concrete formed with an aperture extending therethrough in a predetermined direction;

(b) a tubular insert received in said aperture in sealing, conforming engagement with said concrete,

(1) the length of said insert in said direction being not greater than the corresponding length of said aperture,

(2) said insert essentially consisting of a solid mixture of a particulate, rigid, inorganic material and a more resilient, synthetic organic resin binder,

(3) said insert including means for fastening said insert in the interior of a form while said wall is being built by pouring fluid concrete mixture into said form; and

(c) a substantially flat disc of sheet steel partly embedded in said insert and transversely projecting from the same into said concrete, the wall thickness of one longitudinal portion of said insert having said disc inserted therein being greater than the wall thicknesses of two longitudinal portions of said insert longitudinally juxtaposed to said one portion in respective, opposite, longitudinal directions.

4,118,907

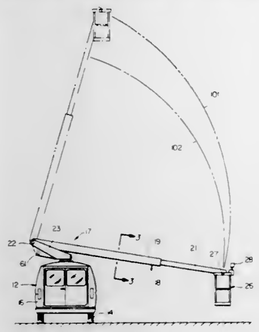
LIFTING EQUIPMENT HAVING TELESCOPIC BOOM WITH AUTOMATIC EXTENSION LIMITING

Robert F. Small, San Jose, and Joel B. Meredith, San Carlos, both of Calif., assignors to General Cable Corporation, San Carlos, Calif.

Filed Oct. 27, 1977, Ser. No. 846,195
Int. Cl.[2] E04H *12/34*
U.S. Cl. 52—115 **7 Claims**

1. In a mobile lifting equipment, a wheeled vehicle having a frame, a boom structure mounted on the frame for rotation about a vertical axis, raising and lowering about a horizontal axis and extension and retraction with respect to the vehicle, said boom structure including an outer boom and inner boom mounted for telescoping movement in the outer boom, first and second extension cylinder assemblies carried by the outer boom for extending and retracting the inner boom with respect to the outer boom, an elevation cylinder assembly connected to the boom structure, each of the cylinder assemblies including a cylinder, a piston slidably mounted in the cylinder and a

piston rod connected to the piston, each of the cylinders having openings at opposite ends thereof on opposite sides of the piston in the cylinder, means connecting one of the openings of the elevation cylinder to one of the openings of one of the first extension cylinder so that hydraulic fluid can be transferred between the elevation cylinder and the first extension cylinder, a drain tank, sump means connected to the drain tank for supplying hydraulic fluid to the other of the openings of the elevation cylinder for causing movement of the piston in the elevation cylinder, means connecting the other of the openings



of said first extension cylinder to the drain tank so that as the boom structure is elevated, the inner boom section is moved relative to the outer boom section so that the extension of said first extension cylinder assembly is controlled directly by the amount of hydraulic fluid supplied to the elevation cylinder assembly, means connecting the pump means to one of the openings of the second extension cylinder and means connecting the other opening of the second extension assembly to the drain tank so that the inner boom structure can be extended and retracted independent of the action of the elevation cylinder assembly.

4,118,908

SPIRAL STAIRCASE

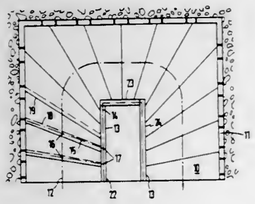
Adolf Bucher, Obere Raumuhle 1, D-7035 Waldenbuch, Germany

Filed Dec. 6, 1976, Ser. No. 747,813

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2555041

Int. Cl.[2] E04F *11/02, 11/18*

U.S. Cl. 52—185 **6 Claims**



1. In a spiral staircase having at least one spiral section between two consecutive floor levels comprising a plurality of steps each having a leading edge and a rear edge and each being supported at its outer end at a wall adjacent said staircase, a handrail formed of rectangularly related sections, when viewed from above, and including support posts at the upper and lower ends of said staircase for supporting said handrail on the respective floor levels, a plurality of spokes for suspending the inner ends of said steps from said handrail, said spokes being arranged so that there is provided one spoke for each step, and each spoke suspending one step adjacent its leading edge and the next deeper step adjacent its rear edge, the improvement comprising

said plurality of steps being splayed such, that the distance between the midpoints of adjacent leading edges, when viewed from above, being equal along said staircase and that the distances between successive vertical lines connecting one of said leading edges and the center line of said handrail, being substantially equal along said staircase,

said spokes being equally spaced along the staircase,

said handrail between said upper and lower support posts having a constant slope and continuing over the rectangularly connected handrail sections such that the vertical distances between the handrail and the leading edges of said plurality of steps remains equal along said staircase.

4,118,909

SILO DOOR CONSTRUCTION

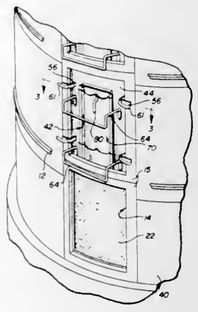
James B. Rutten; Peter T. Rutten, both of Plainfield; Gordon G. Therrien, Oswego, and Richard S. Gaylord, Plainfield, all of Ill., assignors to Railoc Company, Inc., Plainfield, Ill.

Division of Ser. No. 582,135, May 30, 1975, Pat. No. 4,043,465.

This application Feb. 24, 1977, Ser. No. 771,772

Int. Cl.[2] E04H *7/00*

U.S. Cl. 52—196 **6 Claims**



1. A selectively positionable door system adapted for use with silos having a plurality of existing, previously formed, vertically disposed spaced openings in the wall thereof wherein the door system may be employed to overlie and close said openings, while still providing a discharge opening, said system including a plurality of separate frame panels for removable attachment to said silo in overlying relation to the inner edges of the silo wall openings, each said frame panel including a discharge aperture formed therein, bounded by upper, lower and side panel sections which aperture is adapted to be closed by a removable door member; clamping means for affixing each of the frame panels in position relative to the inner edges of said silo wall openings, such that said panels may be placed in superposed relation to each other to provide a substantially continuous inner frame structure, said clamping means comprising a plurality of clamp members carried by said panels and adapted to extend through said existing openings and being engageable with an exterior wall portion of said silo for drawing said frame panels into engagement with an interior silo wall portion of said silo.

4,118,910

ANCHORABLE TUBULAR DEVICE

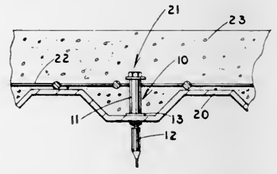
Thomas McSherry, 404 Terrace Rd., Bayport, N.Y. 11705, and Edward J. Gormley, 63 Guy St., Harrington Park, N.J. 07640

Continuation of Ser. No. 690,213, May 26, 1976, abandoned.

This application Aug. 15, 1977, Ser. No. 824,584

Int. Cl.[2] E04B *1/41*

U.S. Cl. 52—699 **8 Claims**



1. A device for anchoring to a building deck atop which concrete is poured and for providing conduit means for a separate fastener or the like through the concrete and through a bore in the deck and for providing temporary anchorage for the device or for the fastener or the like, while the concrete is poured and hardening, said device comprising a tubular sleeve having resilient legs formed on the bottom end thereof and an annular flange separating said legs from the upper portion of the sleeve, said upper portion of said sleeve extending a substantial distance from said flange to the top end, said device further comprising an elongated actuating member received in the sleeve, said legs of said sleeve being adapted to closely pass through the bore in the deck, said actuating member comprising means, when urged into engagement with said legs, for spreading said legs to cause the deck to be gripped between said legs and said annular flange as long as the actuating member or other elongated member is maintained in engagement with the legs, said actuating member having a top portion constituting means for being driven and for completely passing through said sleeve from said top end through said bottom end thereof, said sleeve constituting the conduit means through the concrete and through the bore for the fastener or the like.

4,118,911

GLAZING TOOL

Richard R. Lewchuk, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 24, 1977, Ser. No. 771,597

Int. Cl.[2] B30B *1/12;* **E04F** *21/00*

U.S. Cl. 52—749 **3 Claims**

1. A tool for installing an add-on pane to an existing glazing, comprising:

a plate member having a first surface and a second opposite surface;

a pin mounted on the second surface of the plate;

a threaded shaft mounted on the second surface of said plate member;

a platform pivotally mounted to an end of said threaded shaft;

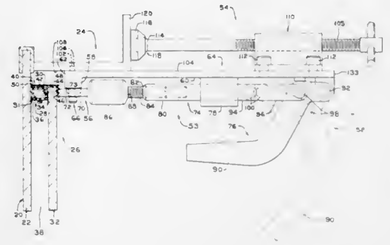
said pin, said threaded shaft and said platform coact to mount said plate member to frame of the existing glazing;

a plunger slideably mounted on the first surface of said plate member;

force dampening means mounted on an end of said plunger;

a rigid elongated member slideably mounted on the first surface of said plate member adjacent a side of said plate member; and

lever means acting on said plunger for urging said plunger toward said elongated member to move said force dampening means into engagement with said rigid elongated member.



4,118,912

METHOD OF SECURING A COMMODITY IN A PLASTIC BAG

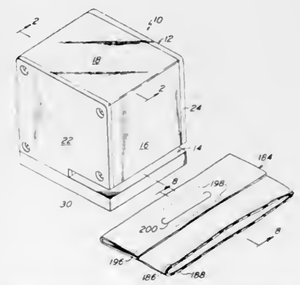
Henry Verbeke, Tannersbrook Rd., Chester, N.J. 07930

Division of Ser. No. 572,363, Apr. 28, 1975, Pat. No. 4,031,815.

This application Feb. 16, 1977, Ser. No. 769,076

Int. Cl.[2] B31B *1/86*

U.S. Cl. 53—469 **8 Claims**



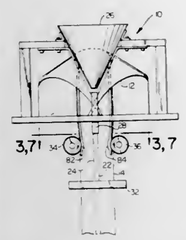
1. A method of packaging a vended commodity in a preformed plastic bag, said plastic bag being formed from a thermoplastic material, said bag comprising a front wall, a rear wall and a closed bottom, comprising placing the vended commodity in said bag, and forming an opening in the top of said bag after said vended commodity has been placed therein, said opening being formed by heat cutting said opening, said heat cutting removing a portion of said front wall and said rear wall, and heat sealing said front wall to said rear wall at said opening.

4,118,913

SHORT PRODUCT DROP VERTICAL FORM, FILL AND SEAL PACKAGING MACHINE

Roger L. Putnam, Jr., East Longmeadow, and Edward F. O'Brien, Northampton, both of Mass., assignors to Package Machinery Company, East Longmeadow, Mass.

Filed Apr. 6, 1977, Ser. No. 785,123
Int. Cl.[2] B65B 9/10
U.S. Cl. 53—551 24 Claims



1. In a vertical form, fill and seal packaging machine having a source of flexible packaging material in the form of an elongated thin flat strip comprising successive package blanks as integral contiguous sections thereof, a tube former adapted to receive said strip material and progressively form the same to a depending and upwardly open tubular configuration, opposite longitudinal edge portions of the material being progressively juxtaposed by said former in parallel vertically extending relationship, product dispensing means associated with said former and operable for the gravity discharge of measured quantities of product to the tube interior spaced through its upwardly open end, at least two feed rolls disposed beneath and closely adjacent the former and arranged on spaced horizontal axes and in parallel relationship so as to peripherally engage opposite sides of the tube, each of the rolls having a plurality of small peripheral openings along at least that portion of its length engageable with the tube, and said rolls arranged to engage the tube on opposite sides thereof, each at an area spaced approximately 90° around the tube from its said vertical edges, end sealing means disposed beneath and closely adjacent said feed rolls to provide longitudinally spaced horizontal end seals across the tube, vertically stationary side sealing means of the continuous sealing type between the feed rolls adjacent the tube edges to seal the same in movement therepast, said side sealing means terminating at its lower end above said end sealing means, vacuum generating means in communication with the roll openings to cause the rolls to grip the tube at their peripheral surface, and means for turning the rolls in opposite directions and at equal peripheral speeds whereby to draw the tube downwardly through the former and successively to present integral blanks in tubular form therebeneath for filling, sealing and package formation.

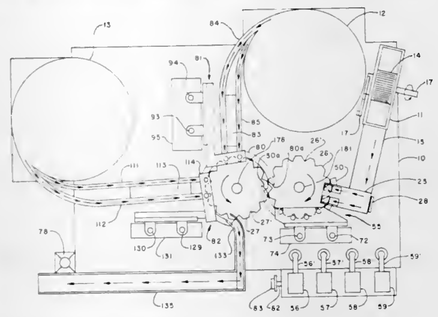
4,118,914

VIAL ASSEMBLER

Walter A. Shields, 181-41 Henley Rd., Jamaica, N.Y., N.Y. 11432

Filed Oct. 25, 1977, Ser. No. 845,006
Int. Cl.[2] B65B 3/00, 23/22
U.S. Cl. 53—282 7 Claims

1. Apparatus for partially filling with a liquid a cylindrical vial having one open end, inserting a plug into the open end and fitting a cap onto the open end, comprising first and second turrets, a plurality of notches provided in the periphery of each of the turrets, the notches each being sized and shaped for receiving a respective one of the vials in an upright orientation with the open end thereof directed upwardly, means for feeding respective vials into respective notches of the first turret so that each vial is received in a respective notch in an upright orientation with the open end thereof directed upwardly, located adjacent said first turret a filling station for partially filling vials in notches of the first turret with a liquid, means for rotationally indexing the turrets in opposite directions, the turrets abutting each other thereby defining a zone of closest mutual proximity of the turrets to facilitate transfer of vials from the first turret to the second turret, means for guiding transfer of the vials in said zone from the first turret to the second turret, said zone being rotationally spaced from the filling station in the direction of rotation of the first turret so that the partial filling of the vials is effected before they are



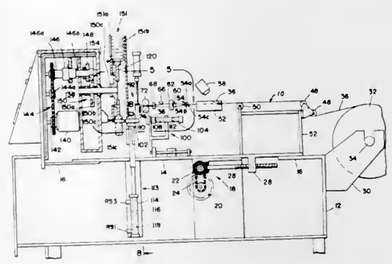
transferred to the second turret, adjacent said second turret a plugging station for inserting plugs into the vials in notches of the second turret at a location rotationally spaced from said zone in the direction of rotation of the second turret, a capping station for fitting caps onto the vials in notches of the second turret at a location rotationally spaced from said plugging station in the direction of rotation of the second turret and means for discharging the partially filled, plugged and capped vials from the second turret at a location rotationally spaced from the capping station in the direction of rotation of the second turret.

4,118,915

APPARATUS FOR AUTOMATICALLY APPLYING TUBING AROUND AN OBJECT

Harold R. Swenson, Walnut Creek, Calif., assignor to Systematic Packaging, Inc., Pleasant Hill, Calif.

Filed Feb. 24, 1977, Ser. No. 771,619
Int. Cl.[2] B29D 3/00; B65B 7/28
U.S. Cl. 53—291 37 Claims



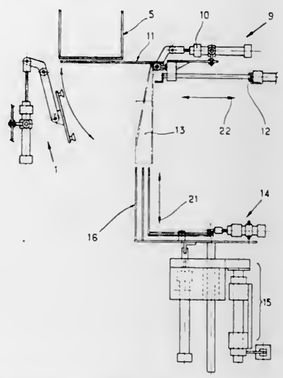
1. Apparatus for placing tubing of predetermined length around an object, comprising:
(a) means for supplying continuous tubing;
(b) means for cutting the continuous tubing into tubing of a predetermined length;
(c) means for holding externally a tubing of predetermined length; and
(d) means for moving the cut tubing around the object, said holding means holding the tubing of predetermined length from the time the tubing is being cut to the time the cut tubing is moved around the object.

4,118,916

THERMOPLASTIC WRAPPING MACHINE

Jacques Fresnel, Paris, France, assignor to Sleever, Morangis, France

Filed Feb. 15, 1977, Ser. No. 768,748
Claims priority, application France, Feb. 24, 1976, 76 05033
Int. Cl.[2] B65B 21/24
U.S. Cl. 53—292 8 Claims



1. An automatic thermoplastic machine for wrapping thermoplastic sections of sheathing or sleeves around containers, from a feed hopper, where the sleeves, or appropriate size, are stacked flat, up to a continuous device for shrinking these sleeves, the machine comprising:
opening means enabling the sleeves to be taken one by one from the hopper, at the same time slightly opening them;
conveying means for opening each sleeve substantially to a semicircle, then conveying it to a vertical plane above a conveyor of containers to be wrapped, said conveying means comprising extracting claws, two piston-and-cylinder units, one of which enables said extracting claws to be introduced into the small opening of the sleeve while the other serves subsequently to pivot the sleeve through 90° to a vertical position and a conveyor device provided with fingers the spacing between which enables a semicircular shape to be placed upon the sleeve; and
wrapping means also situated in said vertical plane enabling the sleeve to achieve its final circular shape and then be gradually wrapped around the container to be packaged;
wherein wrapping is coordinated such that successive opening, conveying, and sleeve-wrapping fit timewise between positioning of two adjacent containers traveling on said conveyor.

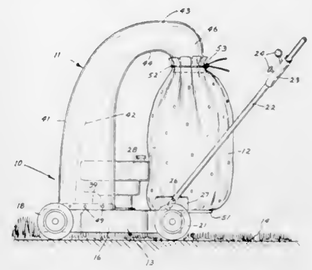
4,118,917

METHOD OF CUTTING AND BAGGING GRASS

Victor Leader, 21324 Lake George Dr. NW., Cedar, Minn. 55011

Division of Ser. No. 653,264, Jan. 28, 1976, Pat. No. 4,030,273. This application May 31, 1977, Ser. No. 801,528
Int. Cl.[2] A01D 91/00
U.S. Cl. 56—1 8 Claims

1. A method of cutting grass and bagging the cut portions of the grass with a lawn mower having a housing enclosing a chamber, said housing including a top wall having front and rear portions and a continuous downwardly directed imperforate side wall extending entirely around the periphery of said top wall, motor means mounted generally centrally of said top wall, cutter blade means drivably connected to the motor means and located in the chamber below the top wall for rotation about a vertical axis, said cutter blade means having lift portions for causing air and cut grass to move vertically upwardly, said front portion of the top wall having an arcuate material discharge opening and a bagging chute for carrying the material from the opening upwardly and rearwardly over the motor means, to a material collection bag comprising: moving the lawn mower in a direction to locate grass in the front area of the chamber, behind the side wall, erecting the grass in the front area of the chamber by moving air upwardly



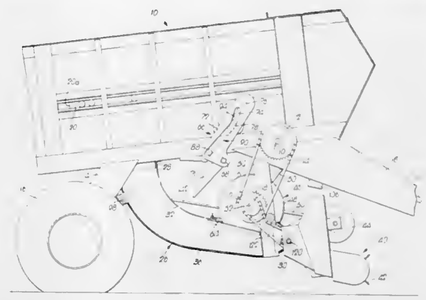
through the grass in the front area of the chamber, by rotating the cutter blade means about a vertical axis whereby the lift portions cause air to move under the side wall and vertically upwardly through the arcuate material discharge chute, cutting off top portions of the erected grass with the rotating cutter blade means, moving the cut portions of the grass vertically upwardly through the discharge opening, with the moving air caused by rotating the cutter blade means and delivering the cut portions of the grass through the bagging chute from the discharge opening upwardly and rearwardly over the motor means to the bag.

4,118,918

BALER APPARATUS

Allen Andrew White, Peabody, Kans., assignor to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 675,529, Apr. 9, 1976. This application Mar. 16, 1977, Ser. No. 778,245
Int. Cl.[2] A01D 39/00
U.S. Cl. 56—341 26 Claims



1. In a baler:
a hollow bale case defining a baling chamber;
a plunger reciprocable within said chamber, said case having an inlet for admitting a charge of material to the chamber for compaction by the plunger during its reciprocation;
a loading duct leading to said inlet;
apparatus for continuously feeding material into said duct to accumulate a charge of predetermined characteristics;
a loader for cyclically stuffing the charge from said duct into

the chamber in timed relationship to reciprocation of the plunger; and

mechanism for temporarily deactivating the loader between cycles if a charge having said predetermined characteristics fails to accumulate in said duct during the preceding stuffing cycle.

4,118,919

YARN TAKE-UP AND SUPPLY MECHANISM FOR USE WITH TEXTILE MACHINES

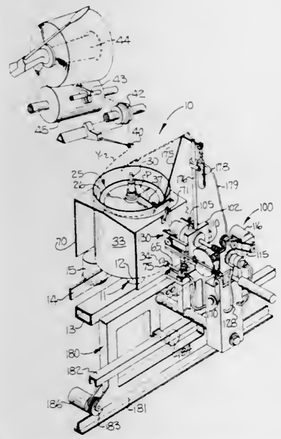
Lothar Marbacher, Krefeld, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany

Filed Oct. 17, 1977, Ser. No. 842,894

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646873

Int. Cl.² D01H *15/00, 1/10*

U.S. Cl. 57—34 R **33 Claims**



1. A yarn take-up and supply mechanism for selected intermittent use with textile machines processing yarn, such as during a threading-up operation of the machine, characterized by a construction for receiving a free end of yarn, coiling a given length of the yarn into a single-layer winding to produce a yarn storage and completely releasing the free end and stored yarn to the textile machine in a substantially tension-free condition for processing by the textile machine without passing through said mechanism during processing, said mechanism comprising:

frame means;

selectively-rotatable elongate drum means operatively mounted at one end on said frame and defining an outwardly-extending overhanging free other end for winding of a given length of the yarn on the outside surface thereof;

selectively-operable clamping means mounted on and positioned generally at the free end of said drum means for receiving a free end of the yarn and for clamping the free end of the yarn during winding of the yarn on said drum means and for releasing the free end of the yarn after winding to supply the free end and the stored yarn to the textile machine from the surface of said drum means by unwinding; and

selectively-movable yarn guide means mounted on said frame for slidably receiving the clamped yarn therethrough, for movement from the free end of said drum means rearwardly along said drum means while guiding the yarn onto the outside surface of said drum means so that said drum means winds the yarn into a coiled single layer permitting subsequent unwiding in a substantially tension-free condition, and for releasing the yarn and returning to its starting position after winding.

4,118,920

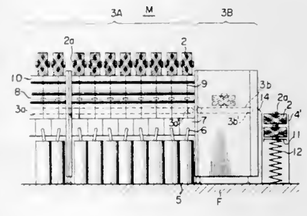
SYSTEM FOR TRANSPORTING CHEESES PRODUCED BY SPINNING MACHINERY

Tsutomu Miyazaki, Kariya; Takashi Kato, Toyota; Yoshihisa Suzuki, Nagoya, and Shozo Ueda, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 16, 1977, Ser. No. 778,323

Int. Cl.² D01H *9/18*

U.S. Cl. 57—34 R **3 Claims**



1. In a spinning machinery which has:

a plurality of longitudinally aligned spinning unit means for producing yarn to be wound on a take-up bobbin to produce a cylindrical yarn cheese;

head stocks at each end of said longitudinally aligned spinning unit means, a first head stock at one end and a second head stock at the other end;

open ended container means with an inside diameter slightly larger than said yarn cheese located adjacent said second head stock for containing said yarn cheeses; and

a single, horizontal conveyor means running horizontally between said head stocks above said spinning unit means for transporting said yarn cheeses at a uniform speed from said spinning unit means to said container means;

an improvement comprising:

two horizontal conveyor means above said spinning unit means for transporting said yarn cheeses from said spinning unit means to said container means at varying speeds, said two horizontal conveyor unit means being comprised of:

a first horizontal conveyor means positioned above said spinning unit means between said first and second head stocks for transporting said yarn cheeses from said spinning unit means to said second head stock at a uniform speed, and

a second horizontal conveyor means horizontally aligned with said first horizontal conveyor means and operating at a uniform speed higher than that of said first conveyor means, said second conveyor means being mounted on said second head stock between said first conveyor means and said container means for receiving said yarn cheeses from said first conveyor means and carrying said yarn cheeses to said container means at a speed faster than said first conveyor means.

4,118,921

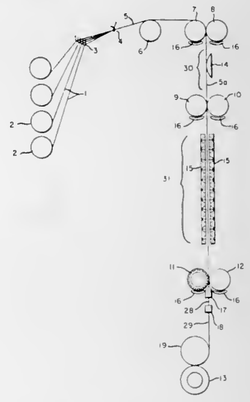
YARN OF ENTANGLED FIBERS

Dustin Stetson Adams; Frederick C. Field, Jr., both of Wilmington, Del., and James Ronald Layton, Goodlettsville, Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 730,023, Oct. 6, 1976, Pat. No. 4,080,778, which is a continuation of Ser. No. 564,217, Apr. 1, 1975, abandoned. This application Oct. 19, 1977, Ser. No. 844,106

Int. Cl.² D02G *3/00, 3/24*

U.S. Cl. 57—140 R **4 Claims**



1. An entangled yarn of closely adjacent, synthetic organic fibers which are randomly intermingled along the length of the yarn to maintain the unity of the yarn by frictional constraint between the fibers; the yarn having an entanglement pin count of 3 to 50 millimeters and the fibers having a number average fiber length of 18 to 60 centimeters with a distribution of fiber lengths such that at least 5 percent of the fibers are no longer than 12.7 centimeters, 50 percent to 93.5 percent of the fibers are longer than 12.7 cm. and no longer than 76 centimeters, and at least 1.5 percent of the fibers are longer than 76 centimeters.

4,118,922

ELECTRONIC WATCH OR CLOCK AND ACCESSORY DEVICES THEREFOR

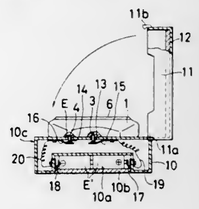
Toshikazu Ichiyanagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1976, Ser. No. 753,016

Claims priority, application Japan, Dec. 27, 1975, 50/156677

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 BA **10 Claims**



1. An electronic watch or clock comprising:

(A) a casing having a display window for time display;

(B) pulse generating means for producing timing pulses at a predetermined frequency;

(C) timing means for performing the timing based on said timing pulses produced from said pulse generating means, said timing means being incorporated within said casing and being electrically connected to said pulse generating means;

(D) display means for displaying the time, said display means being arranged in said casing to permit the display state to be viewed from said display window and being driven by said timing means in order to display the time;

(E) a chargeable electrical power source battery for supplying electrical power to said pulse generating means and to said timing means, said battery being incorporated within said casing and being connected to said pulse generating means and said timing means, said pulse generating means and said timing means being rendered operative with the electrical power supply from said battery; and

(F) electrical external connecting means for making it possible to selectively perform either of the charging of said electrical power source battery and the electrical correction of the time displayed by said display means from the outside of said casing;

said connecting means being electrically connected to said battery and said timing means to supply an external electrical power to said battery and being arranged to cut off the supply of the timing pulses from said pulse generating means to said timing means and also to supply a pulse signal to said timing means with timing different from said timing pulses;

the electrical external connecting means thus being arranged not only to permit supply of the electrical power therethrough to the electrical power source battery for charging the battery but also to permit connection of a gaining or losing error of the time displayed by the display means by cutting off the supply of the timing pulses to the timing means or by supplying said pulse signal at the timing differing from said timing pulses.

4,118,923

PUSH-BUTTON ASSEMBLY AND MANUFACTURING METHOD

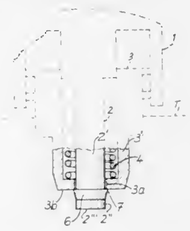
Pierre Bourquard, Boecourt, Switzerland, assignor to Pibor S.A., Switzerland

Filed Oct. 15, 1976, Ser. No. 732,665

Claims priority, application Switzerland, Oct. 20, 1975, 75/13551; Feb. 24, 1976, 76/2241

Int. Cl.² G04B *37/00*

U.S. Cl. 58—88 B **5 Claims**



1. A method of manufacturing a push-button assembly of the type having a guide tube receiving a stem of the push-button and a spring biasing the push-button and stem axially to a rest position defined by abutment of a part on said stem adjacent an operative end thereof externally with an abutment-forming end of the tube, said part of the stem being wider than the inner diameter of a bore in said abutment-forming end of the tube, comprising the steps of providing a push-button with a stem of which said part adjacent its operative end is a shoulder defined by an elastically-deformable generally frusto-conical part tapering, from a shoulder-forming end of maximum diameter, towards said operative end, said frusto-conical part having a maximum outer diameter greater than the inner diameter of said bore but being elastically deformable to pass through said bore, inserting the stem through the spring and tube, and forc-

ing said frusto-conical part fully through said bore with elastic deformation of said frusto-conical part by coaction with said bore of the tube until said shoulder-forming end of maximum diameter reassumes its original dimensions and abuts against said end of the tube.

2. A push-button assembly, comprising;

a push-button;

a stem rigid therewith, extending axially from a central part of the push-button to an operative end of the stem; and having a flat, continuous surface at the operative end;

a guide tube receiving the stem for axial movements of the stem along the guide tube, the guide tube having an abutment end remote from the push-button and having a bore in the abutment end;

a generally frusto-conical member integral with the stem adjacent the operative end, tapering toward that end, and having a shoulder end, of diameter greater than the bore of the guide tube, the frusto-conical member being elastically deformable, in a coaction thereof with the bore of the tube, by axially moving the pushbutton and stem in the original assembling of the assembly to force the frusto-conical member through the bore; and

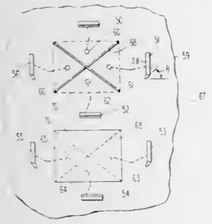
a spring in the guide tube, biasing the push button and stem axially to a rest position defined by abutment of the shoulder and of said member of the stem on the abutment end of the tube, for normally maintaining the rest position in the use of the assembly, subject to an axial movement of the push-button and stem, against the spring, in which movement the shoulder end becomes spaced from the abutment end, being thereafter resiliently returned by the spring to the abutment end.

4,118,924

DISPLAY SYSTEM FOR WATCHES AND THE LIKE

Donald M. Foellner, 201 Swarthmore Ave., Folsom, Pa. 19033

Filed Apr. 18, 1977, Ser. No. 788,695
Int. Cl.² G04B *19/30*; G08B *23/00*; G04B *11/06*
U.S. Cl. 58—127 R **5 Claims**



1. A display system for an electric watch or the like, comprising:

a generally planar substrate having a reflective upper surface;

a group of seven generally rectangular display elements formed of light-transmitting plastic and arranged upon said substrate so as to define a pair of contiguous rectangles;

a group of seven miniature incandescent lamps upstanding from said substrate and in close proximity to ones of said display elements;

a generally X-shaped partition of an opaque material upstanding from said substrate to substantially prevent light from all but one of said miniature incandescent lamps from striking ones of said display elements;

said display elements each having a first, generally vertical face confronting the nearest one of said incandescent lamps; and

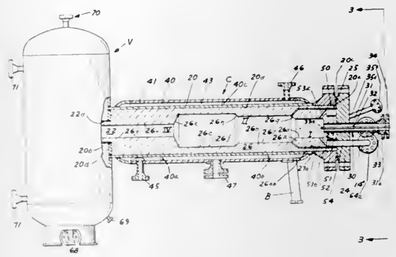
an opposed face disposed at some angle θ to the plane of said substrate, θ being less than 90°.

4,118,925

COMBUSTION CHAMBER AND THERMAL VAPOR STREAM PRODUCING APPARATUS AND METHOD

John S. Sperry, Houston; Richard W. Krajicek, Sugar Land, and Robert R. Cradeur, Spring, all of Tex., assignors to Carmel Energy, Inc., Houston, Tex.

Filed Feb. 24, 1977, Ser. No. 771,558
Int. Cl.² F02G *3/00*
U.S. Cl. 60—39.05 **22 Claims**



1. An apparatus for producing a high pressure thermal vapor stream of steam and combustion products substantially free of oxidizing gases by burning a fuel in about stoichiometric amounts of air comprising:

casing means having plural, substantially cylindrical, refractory lined combustion zones of varying diameters forming a multiple zone combustion chamber extending along the longitudinal axis of the casing means;

said casing means having means sealing one end thereof and connecting means on an opposite end thereof for connection with a vapor producing vessel means;

a first zone of said plural refractory lined combustion zones having first a predetermined inner diameter for flowing gases therethrough;

first injection means for introducing predetermined volumes of air and fuel into said first zone and igniting the air and fuel therein;

second air injection means for injecting a second predetermined volume of air into said first zone adjacent said first injection means to cause turbulence and intermixing of the air and fuel in said first zone to facilitate complete combustion;

a second zone of the plural refractory lined combustion zones for receiving the flow of gases from said first zone and having a greater inner diameter than said first zone to provide maximum turbulence as the combustion products rapidly expand therein to provide substantially complete combustion of the mixture forming a hot gas stream substantially free of oxidizing gases;

a third zone of the plural, substantially cylindrical, refractory lined combustion zones for receiving the flow of gases from said first and second zones and having a greater inner diameter than said second zone for rapidly expanding the combustion gases to maintain maximum turbulence as the combustion products expand to facilitate complete combustion; and

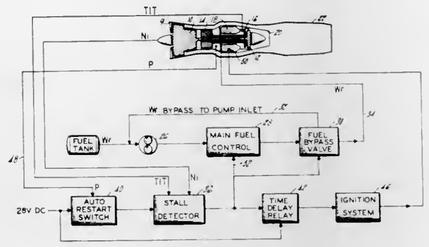
vapor producing vessel means for receiving the combustion gases to form a product stream of steam and combustion products through direct contact between the combustion gases and water.

4,118,926

AUTOMATIC STALL RECOVERY SYSTEM

Salvatore J. Curvino, Palm Beach Gardens, and Albert E. Warner, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1977, Ser. No. 773,099
Int. Cl.² F02C *7/22*
U.S. Cl. 60—39.06 **5 Claims**



5. The method of automatically restarting a gas turbine engine after shutdown upon a stall condition, said engine having a compressor and burner and fuel flow means including a fuel metering valve feeding fuel to said burner and a turbine driving said compressor comprising the steps of:

sensing an engine operation parameter to detect a stall condition,

activating the stall detectors upon said parameter reaching a predetermined condition in the step of sensing,

disconnecting the fuel flow from said fuel metering valve to said burner by said stall detector,

igniting a spark igniter in said burner,

sensing a compressor discharge pressure,

deactivating the stall detector and simultaneously connecting the fuel metering means to the engine and deactivating the spark igniter ignited in the step of igniting when the compressor discharge pressure obtained in the step of sensing reaches a predetermined value and,

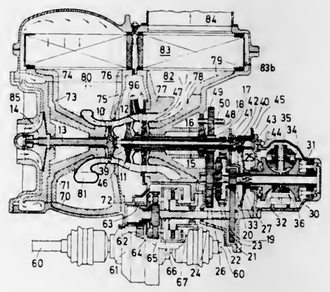
holding said spark igniter in the ignition condition for a finite period of time after the step of deactivating.

4,118,927

GAS TURBINE POWER PLANT

Sven-Olof Kronogard, Lomma, Sweden, assignor to United Turbine AB & Co. Kommanditbolag, Malmo, Sweden

Filed Nov. 24, 1976, Ser. No. 744,928
Claims priority, application Sweden, Dec. 5, 1975, 75137158
Int. Cl.² F02C *3/10, 7/02*
U.S. Cl. 60—39.16 R **5 Claims**



1. A gas turbine power plant having conventional internal auxiliaries and including three axially aligned turbine rotors arranged in series downstream of a combustor, said gas turbine power plant comprising:

(A) a compressor delivering air to said combustor and being drivingly connected to a first rotor of said series to form a rotor-spool, said first mentioned turbine rotor being dimensioned with insufficient capacity to drive said compressor at full load of the plant;

(B) means mounting said two other turbine rotors upon concentric shafts and gearing means located at the end of the concentric shafts mounting said second and third turbine rotors remote from said compressor/first turbine rotor spool to drivingly interconnect said concentric shafts at an output shaft;

(C) first means, including a third shaft extending centrally through the innermost of said concentric shafts, for transferring power from the output end of said gearing means to said spool, said first means being adapted to permit said third shaft to rotate at supercritical speed also when the power plant is idling; and

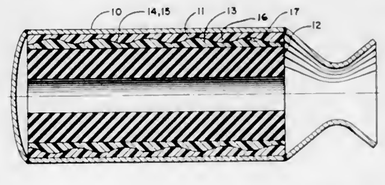
(D) second means for transferring power from said gearing means to said internal auxiliaries at the input from one of said other two rotors to said gearing means.

4,118,928

MEANS FOR MOUNTING SOLID PROPELLANT IN A ROCKET MOTOR

Bobby J. Lyles, Yardley, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Filed Jul. 12, 1973, Ser. No. 378,739
Int. Cl.² F02K *9/04*
U.S. Cl. 60—255 **6 Claims**



1. In a rocket motor containing a solid propellant, a thrust chamber case having an annular inner wall, an annular first sleeve having an outer wall bonded to the inner wall of the case and an inner wall having at least one convolution, an annular second sleeve having an inner wall bonded to the solid propellant and an outer wall having at least one convolution which matches that of the first sleeve with the convolutions of each meshed but unattached throughout the propellant's length and spaced therefrom by a clearance gap, and the material of the second sleeve being polyisoprene.

4,118,929

IMPACTION AUGMENTED JET ENGINE

Thomas H. Sharpe, 502 Dorr Ave., Belvedere, S.C. 29841

Continuation-in-part of Ser. No. 739,943, Nov. 9, 1976, and Ser. No. 700,488, Jun. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 557,992, Mar. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 379,843, Jul. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 191,627, Oct. 22, 1971, Pat. No. 3,750,400, said Ser. No. 739,943, is a continuation of said Ser. No. 557,992. This application Mar. 17, 1977, Ser. No. 778,424
Int. Cl.² F02K *7/10*
U.S. Cl. 60—262 **5 Claims**

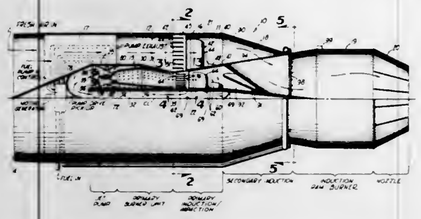
1. An impaction/induction engine comprising:

a burner unit defining a combustion chamber therein, a burner inlet to said combustion chamber and an exhaust outlet from said combustion chamber;

an exhaust separator unit connected to said burner chamber at said exhaust outlet for separating a portion of the ex-

haust gases in said combustion chamber, said exhaust separator unit defining the exhaust venturi throat therein through which the separated portion of the exhaust gases pass to generate a pressure drop therein;

a jet pump unit connecting said exhaust venturi throat in said exhaust separator unit to said burner inlet to force the separated portion of the exhaust gases into said combustion chamber through said burner inlet, said jet pump unit defining a pumping venturi throat therein through which the separated portion of the exhaust gases passes and including a fuel injector assembly for injecting fuel into said combustion chamber through said pumping venturi throat to pressurize said combustion chamber;



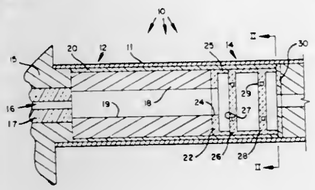
a fresh air separator unit defining a fresh air passage therein open to the atmosphere at its forward end and including a plurality of air impaction vanes in said fresh air passage, each of said air impaction vanes defining a vane passage therein, an air impaction inlet opening to said vane passage facing the forward end of said fresh air passage so that a portion of the fresh air flowing through said fresh air passage will impact into said vane passage through said air impaction inlet opening, said vane passage connected to said exhaust venturi throat in said exhaust separator unit so that the separated portion of the exhaust gases flowing through said exhaust venturi throat induces the fresh air separated by said impaction vanes into the exhaust gases flowing into said combustion chamber through said jet pump unit.

4,118,930

FILTER-COOLER

Michael D. Jacobson, Ridgecrest, and G. Franklin Grouwinkel, Monterey Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1974, Ser. No. 480,189
Int. Cl.² F02K *11/00*
U.S. Cl. 60—266 **9 Claims**



1. For use in conditioning gases bled from a rocket chamber, a filter cooler comprising:

a housing;

a hollow block of solid material in said housing acting as a conduit for said gases and endothermically reacting therewith;

a plurality of filter elements successively mounted in said housing collectively providing a tortuous path for conduit of said gases after a passage through said hollow block;

each said filter element having a plurality of ports passing angularly therethrough causing said gases to form a vortex upon leaving said element;

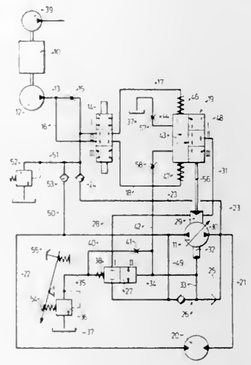
said ports in each said filter element being angled in a direction opposite that of said ports in each said successive filter element, whereby said gases are forced to sharply reverse direction upon entering each successive filter element.

4,118,931

CONTROL ARRANGEMENT FOR A HYDROSTATIC DRIVE

Gerhard Nonnenmacher, Korntal; Walter Robeller, Böblingen, and Karl Veil, Uhlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 845,451
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648094
Int. Cl.² F16H *39/46*
U.S. Cl. 60—444 **9 Claims**



1. A control arrangement for a hydrostatic drive comprising a gear pump; a fluid motor; first conduit means connecting said gear pump with said fluid motor; a feed pump having an outlet; second conduit means connecting said outlet with said first conduit means; a throttle in said second conduit means; a combustion engine driving said gear pump and said feed pump; pressure proportional adjusting means in circuit with said second conduit means downstream of said throttle and operatively connected to said gear pump for adjusting the amount of fluid delivered per time unit by the latter in dependence on the pressure difference at opposite sides of said throttle; a pressure-relief valve in circuit with said first conduit means and adjusting the gear pump upon reaching a predetermined maximum pressure in said first conduit means in a direction reducing the amount of fluid delivered per time unit by said gear pump; and means operable at the will of an operator for adjusting the pressure of response of said pressure relief valve.

4,118,932

ENERGY CONVERSION SYSTEMS

Alistair David Sivill, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 10, 1977, Ser. No. 795,387
Claims priority, application United Kingdom, May 25, 1976, 21600/76
Int. Cl.² F03B *13/12*; E02B *9/08*
U.S. Cl. 60—500 **7 Claims**

1. A system for converting wave energy from the sea into electrical energy, comprising a floatable assembly which, in use, is moored at sea and which is capable of internal movement in response to the action of waves, said assembly including a hollow body mounted on a shaft and reciprocable angularly about the axis of the shaft in response to said internal movement, said body and said shaft defining respective parts of a pump which also comprises a pair of spaced, opposed annular cam tracks extending around said axis and rigidly connected to one of the pump parts defined by the body and the shaft, and at least one piston and cylinder arrangement disposed between the cam tracks and rigidly secured to the other of said pump parts so as to extend substantially parallel with said axis, the cam tracks and the piston and cylinder arrangement thereby



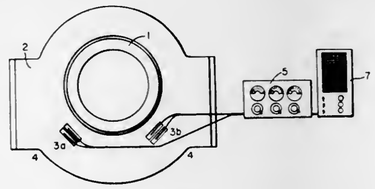
undergoing relative angular movement about said axis in response to wave-induced internal movement of said assembly, each of said cam tracks engaging an axially movable operating piston of said arrangement and being shaped so as to move said piston within said cylinder to displace fluid received in the cylinder in response to said relative angular movement, the system further comprising an electricity generator which can be driven in response to displacement of the fluid in the cylinder.

4,118,933

BEARING LOAD INDICATOR

William H. Coleman, Marple, and Francis S. Maszk, Westtown Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 7, 1977, Ser. No. 804,428
Int. Cl.² G01M *13/04*
U.S. Cl. 73—766 **6 Claims**



1. A bearing load indicator for determining the load on a bearing utilizing the strain on a predetermined portion of a bearing support yoke, said bearing load indicator comprising a plurality of strain gauges disposed on one side of the bearing support yoke, a plurality of strain gauges disposed on the other side of the bearing support yoke, the plurality of strain gauges on one side of the bearing being generally disposed in a plane transverse to the rotational axis of said bearing and generally coplanar with the plurality of strain gauges on the other side of the bearing, and means for comparing the change in resistance of said strain gauges and for producing a signal indicative of the reactive load on the bearing and eliminating the effect of frictional torque on the bearing.

4,118,934

PROCESS AND APPARATUS FOR TRANSFORMING HEAT AT A RELATIVELY LOW TEMPERATURE INTO POWER OR ENERGY

Gabriel Brola, Nogent-sur-Marne, France, assignor to Enterprise Industrielle de Chaudronnerie, France

Filed Mar. 19, 1976, Ser. No. 668,671
Claims priority, application France, Mar. 21, 1975, 75 08893
Int. Cl.² F01K *25/06*
U.S. Cl. 60—647 **6 Claims**



1. An apparatus for transforming relatively low temperature heat contained in a first fluid into power or energy by exchanging the relatively low temperature of heat of said first fluid with a cooler second fluid comprising:

means for compressing said second fluid to a critical pressure to produce a liquid compressed second fluid,

means for heating said liquid compressed second fluid by a heat exchange to produce a preheated liquid second fluid,

means for superheating said preheated liquid second fluid by a heat exchange with said relative low temperature first fluid to produce a superheated liquid second fluid at said critical pressure,

means for expanding said superheated liquid second fluid to produce power or energy and to produce a first vaporized fluid,

means for cooling said first vaporized fluid by a heat exchange with said liquid compressed second fluid to produce a cooled first vaporized fluid,

means for condensing said cooled first vaporized fluid by a heat exchange with a gaseous third fluid to produce said second fluid, and

means for mixing said gaseous third fluid with said relative low temperature first fluid; said means for superheating and means for mixing comprising:

a casing through which said relatively low temperature heated first fluid passes,

a jacket surrounding said casing including an inlet for said gaseous third fluid, first ports located at a first extremity of said casing for coupling said jacket with the inside of said casing, second ports located at a second extremity of said casing, a tubular exchanger inside said casing for carrying said preheated liquid second fluid, and a convergent nozzle directing said first fluid through the said tubular exchanger, said convergent nozzle having a larger outer section facing said second ports to thereby channel said gaseous third fluid through and around said tubular exchanger.

4,118,935

REGULATION SYSTEM FOR A STEAM TURBINE INSTALLATION

Göran Andersson, Lund, Sweden, assignor to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 9, 1976, Ser. No. 749,095
Claims priority, application Sweden, Dec. 19, 1975, 7514421
Int. Cl.² F01K *7/06*
U.S. Cl. 60—662 **6 Claims**

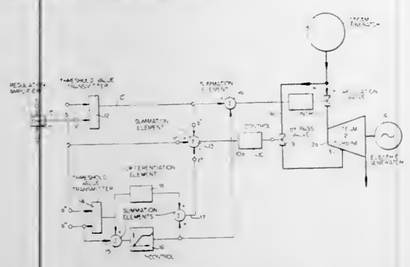
1. A regulation system for regulating a predetermined mag-

nitude of a steam turbine installation having a steam generator and a multi-stage turbine including a high-pressure stage having an entrance to said high-pressure stage, said regulation system comprising, in combination:

a regulation valve arranged between the steam generator and the entrance to the high-pressure stage of the turbine;

a by-pass valve arranged between the steam generator and the high-pressure stage in parallel to said regulation valve and connected with a location of the high-pressure stage disposed downstream of said entrance to said high-pressure stage;

a first control circuit including a first control device provided for the regulation valve;



a second control circuit including a second control device provided for the by-pass valve;

said first control circuit for the regulation valve delivering a signal which influences said second control device for said by-pass valve such that when the opening of the regulation valve exceeds a predetermined magnitude said second control device for the by-pass valve opens the by-pass valve to a predetermined magnitude; and

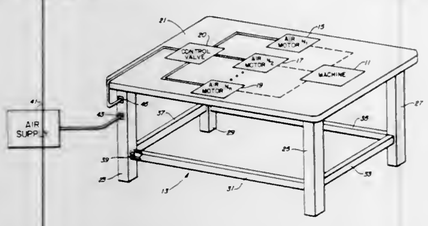
a differentiation element connected in parallel with the second control circuit for the by-pass valve for influencing the magnitude of opening of the by-pass valve as a function of variations in the signal received from the first control circuit of the regulation valve.

4,118,936

SURGE TANK FOR PNEUMATICALLY OPERATED MOTORS

Robert A. Leclair, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Mar. 31, 1977, Ser. No. 783,088
Int. Cl.² F01B *21/00*
U.S. Cl. 60—720 **6 Claims**



1. A support apparatus providing both a support surface for a pneumatically operated machine and a surge tank for storing pneumatic fluid under pressure, comprising:

a support adapted to provide a suitable surface for supporting a pneumatically operated machine and pneumatically operated motors operatively coupled to the machine for imparting operative motion to the machine;

a support frame for supporting said support at a predetermined configuration, said support frame including a plurality of hollow support members which are in fluid communication with each other in an essentially air tight manner;

first conduit means leading into the hollow portions of said support frame, said first conduit means adapted to couple a source of pneumatic fluid to the hollow portions of said support frame in an essentially air tight manner; and

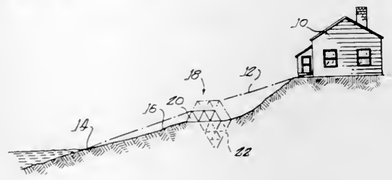
second conduit means adapted to provide fluid communication between the hollow portions of said support frame and the pneumatically operated motors, such that said support frame not only provides mechanical support for the pneumatically operated motors and machine on said support but also provides surge tank means for the pneumatically operated motors.

4,118,937

METHOD AND MEANS FOR BEACH RESTORATION

David Joel Mansen, 1312 Livingston St., Evanston, Ill. 60201

Filed Aug. 3, 1977, Ser. No. 821,438
Int. Cl.² E02B *3/04*
U.S. Cl. 405—30 **6 Claims**



1. An elongate truss structure for use as a breakwater and for wave and wind activated formation of a new dune on an eroded beach, said structure having a front side and a rear side and comprising

a. at least two parallel and laterally connected rows of interconnected frame units, each consisting of six lightweight tubular struts of substantially equal lengths which are joined together three and three at their ends to form an opensided tetrahedron with a substantially horizontal triangular base and a vertex thereabove,

b. means connecting a base strut in one of said tetrahedrons of each row with a substantially aligned base strut in a neighboring tetrahedron of the same row so as to place the top joints of each triangular base in said rows forwardly of its base strut,

c. means connecting each of said top joints in the rearwardly row of tetrahedrons with one of the joints between said aligned base struts of the front row of tetrahedrons to thus offset the rearwardly row of tetrahedrons longitudinally by substantially one half strut length in relation to the front row of tetrahedrons,

d. lightweight tubular struts interconnecting the vertexes of said tetrahedrons in the front and rearwardly rows separately, and

e. screens attached to said struts and at least partly covering the inclined sides of the tetrahedrons extending rearwardly from said top joints of the triangular bases.

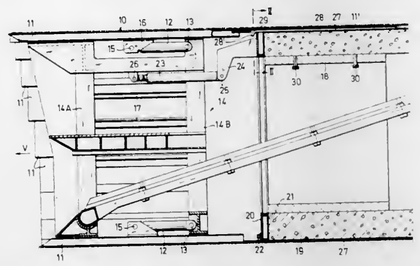
4,118,938

APPARATUS FOR AND METHOD OF DRIVING TUNNELS

Eberhard Unger, Lünen, and Wolf-Rüdiger Von Schenk, Borstel bei Winsen, Luhe, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,419
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2550050
Int. Cl.² E21D *11/10*
U.S. Cl. 405—145 **12 Claims**

1. Apparatus for use in driving tunnels; said apparatus comprising a drive shield composed of a plurality of elongate drive members arranged side-by-side in parallel relationship, a frame supporting the members for individual longitudinal displacement, rams connected between the frame and the drive members for alternately advancing the drive members and the frame, means defining a fluid-concrete reception space for producing a concrete lining supporting the tunnel wall rearwardly of the advancing direction, said defining means at least including a body provided with filter means for contacting the fluid concrete in the reception space to permit withdrawal of water by suction, further rams connecting said body to the



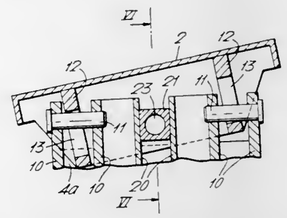
frame of the drive shield and permitting the fluid concrete to be compressed, at least some of the plurality of drive members having rear extensions which project rearwardly beyond the frame and over the concrete reception space, each of said rear extensions provided with pipe means which extend to the rear of its extension such that when the associated drive member is advanced a space is formed by the advance of said extension, and filling material can be injected through said pipe means, wherein the space formed by the advance of said extension is gradually filled with filling material starting at the rear of said space and working toward the front of said space.

4,118,939

MINE ROOF SUPPORT

Graham John Saunders, Newcastle Upon Tyne, England, assignor to Huwood Limited, Gateshead on Tyne, England

Filed Aug. 30, 1977, Ser. No. 829,200
Claims priority, application United Kingdom, Sep. 3, 1976, 36517/76
Int. Cl.² E21D *15/44*
U.S. Cl. 61—45 D **7 Claims**



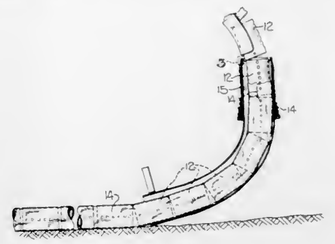
1. A mine roof support having a base and a roof engaging cover, adjustment means mounted on the base by which the cover can be moved towards and away from the base, and a framework movable with the adjustment means and to which the cover is connected so that it can tilt in all directions relatively to the framework, the connection between the components that are the cover and the framework including means forming an axle fixed relatively to one of the components and about which the cover can tilt relatively to the framework both about the axis of the axle and longitudinally of the axle, means limiting the angle through which the cover can tilt longitudinally of the axle, and means by which the axis about which the cover can tilt longitudinally of the axis is restricted to an upright plane, the means including a rod fixed to one of the components and journalled in a follower that co-operates with guide means fixed to the other of the components, the co-operation between the guide means and the follower being such to permit and confine movement of the axis of the rod in and to the upright plane.

4,118,940

DRAIN LINE AND METHOD OF INSTALLING

Frank T. Beane, Rte. 7, Hwy. 49, Concord, N.C. 28025

Filed Aug. 23, 1977, Ser. No. 826,974
Int. Cl.² F16L *1/04*
U.S. Cl. 405—174 **5 Claims**



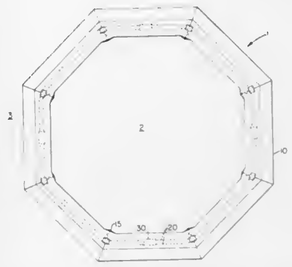
1. In a method of installing drain lines in a field by excavating a trench, placing in the trench a plurality of drain tiles each of determinate length, and backfilling the trench, an improvement which more positively aligns the drain tiles and maintains such alignment against shifting soil and comprising the steps of enclosing the drain tiles being placed in the trench with an elastic, permeable, tubular knit fabric sleeve having a length substantially greater than the combined length of a plurality of the drain tiles, and forcibly aligning adjacent drain tiles in the trench and thereafter maintaining such drain tiles in alignment by means of the elasticity of the enclosing sleeve.

4,118,941

STRESSED CAISSON RETAINED ISLAND

John C. Bruce, Thornhill; John F. Davies; Jacobus J. A. de Jong, both of Calgary; Kalju Pullerits, Western Toronto, and Richard H. B. Sangster, Calgary, all of Canada, assignors to Exxon Production Research Company, Houston, Tex.

Filed May 16, 1977, Ser. No. 796,927
Int. Cl.² E02B *27/30*
U.S. Cl. 405—204 **9 Claims**



1. Apparatus for constructing an island in a body of water comprising:

a plurality of caissons adapted to be set upon the bottom of the body of water; and

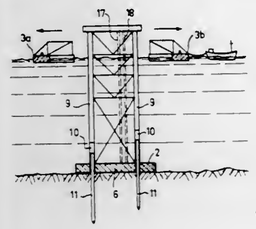
flexible means for connecting the caissons together to form a ring of connected caissons which is capable of containing an amount of fill material sufficient to construct an island in the body of water, said connecting means being sufficiently flexible so as to permit relative movement between said plurality of caissons in any direction and having controlled flexibility.

4,118,942

MARINE PLATFORM FOR OFFSHORE DRILLING OPERATIONS AND THE LIKE

Jean Liautaud, 49 Avenue de Segur, Paris 75007, France

Filed Oct. 15, 1976, Ser. No. 732,812
Claims priority, application France, Nov. 17, 1975, 75 34950
Int. Cl.[2] E02B *17/00*
U.S. Cl. 405—204 **5 Claims**



1. A marine platform structure adapted to be towed towards a desired offshore site in an upright position, comprising:

a horizontal caisson until enclosing tubular elements and adapted to be placed onto the submarine ground at said offshore site;

means for selectively introducing into and evacuating from said tubular elements a fluid selected from the group consisting of air, water ballasting material and petroleum extracted from the submarine soil;

a substantially tubular tower-like structure having a plurality of parallel columns extending vertically upward from the upper side of said caisson unit, the lower end of said columns being rigidly fixed to said caisson unit;

a horizontal deck unit rigidly fixed to the upper ends of said columns;

a float unit comprising at least two detachably assembled float unit elements surrounding said tower-like structure, said float unit being vertically movable along said tower-like structure between a lowermost position wherein said float unit is located adjacent to said caisson unit and an uppermost position wherein said float unit is located in the vicinity of the underside of said deck unit, the buoyancy of said float unit being such that the latter always floats substantially on the surface of the sea, irrespective of the position of said float unit relative to said tower-like structure;

gripping means provided on said float unit for the prevention of any substantial lateral displacement of said float unit relative to said columns and for guiding said float unit during vertical displacement thereof along said columns by cooperation of said gripping means with said columns; and

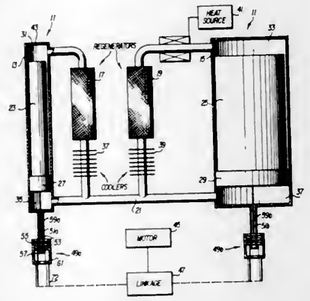
constant tension winches actuated by computer controlled electronic actuating means and mounted on said deck unit for respectively winding and unwinding said cables, the free ends of the latter being attached to said float unit for allowing said tower-like structure to move vertically with respect to said float unit while maintaining said cables under a constant predetermined tension when air or ballasting material is introduced into said hollow elements in said caisson unit for varying the buoyancy of said caisson unit.

4,118,943

REFRIGERATION SYSTEM WITH MAGNETIC LINKAGE

Fred Freeman Chellis, Concord, Mass., assignor to Cryogenic Technology, Inc., Waltham, Mass.

Filed Mar. 17, 1976, Ser. No. 665,848
Int. Cl.[2] F25B *9/00*
U.S. Cl. 62—6 **15 Claims**



1. In a refrigeration apparatus including a displacer mounted for reciprocating sliding movement in a sealed elongated working vessel between first and second positions to alternately effect compression and expansion in said working vessel;

an auxiliary vessel attached to an end of said working vessel and being sealed therewith;

a rod coupled to said displacer and extending into said auxiliary vessel;

a magnetic-material follower attached to said rod in said auxiliary vessel; and

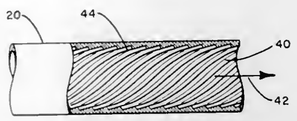
a magnetic-material driving means mounted outside said auxiliary vessel but being moveable therealong for magnetically attracting said magnetic-material follower and thereby moving said magnetic-material follower along said auxiliary vessel and said attached displacer along said working vessel.

4,118,944

HIGH PERFORMANCE HEAT EXCHANGER

Richard G. Lord, Liverpool; Rudy C. Bussjager, Minoa, and David F. Geary, E. Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,211
Int. Cl.[2] F25D *17/02*; F28F *1/40*; F15D *1/06*
U.S. Cl. 62—98 **15 Claims**



1. A method of operating a cooler having a fluid which is cooled by a refrigerant which comprises:

passing the refrigerant through an internal integrally finned tube;

directing the fluid to be cooled in heat exchange relationship with the tube having the refrigerant flowing therethrough; and

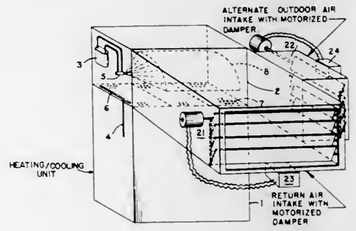
circuiting the refrigerant so that under full load conditions the temperature drop of the refrigerant within the tude does not exceed 5° F.

4,118,945

ENTHALPY CONTROL FOR AN ENVIRONMENTAL HUMIDIFICATION AND COOLING SYSTEM

Evelyn Boochever, and Michael Munk, both of 28 Dorchester Dr., Port Chester, N.Y. 10573

Continuation-in-part of Ser. No. 625,923, Oct. 28, 1975, Pat. No. 4,042,016. This application Aug. 25, 1976, Ser. No. 717,586
Int. Cl.[2] F25D *17/04*; F24H *3/02*; B05B *3/14*
U.S. Cl. 62—176 C **7 Claims**



1. In an evaporative cooling air conditioning system for an enclosure receptive of return air from the enclosure or outdoor air:

controllable damping means for selecting the most favorable air to be conditioned including means for sensing the temperature/enthalpy of the outdoor and return air to effect comparison thereof to control the damping means to allow the optimal air into the system to achieve maximum cooling prior to the further cooling thereof in the system;

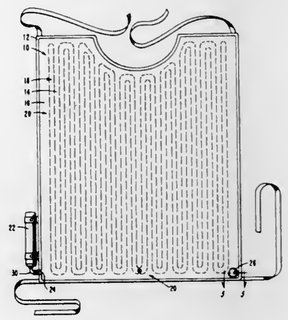
a cooling unit receptive of the optimized air for cooling same; and means for controlling the enthalpy of the system during the cooling of the optimum air comprising actuatable ultrasonic spray means receptive of a supply of water during use for atomizing the water and spraying same into the return air and means for actuating and deactuating the ultrasonic spray means to control the level of humidification in the return air.

4,118,946

PERSONNEL COOLER

Eddie Sam Tubin, 4419 Fulton, Sherman Oaks, Calif. 91403

Filed Nov. 23, 1976, Ser. No. 744,318
Int. Cl.[2] F25B *19/00*
U.S. Cl. 62—514 R **7 Claims**



1. A flexible panel to be worn adjacent a portion of the human body for cooling, which comprises:

two flexible plastic sheets which are joined to form two tortuous, adjacent, generally co-extensive, non-communicating fluid paths, one of said fluid paths being substantially and permanently filled with a viscous liquid heat transfer media and the other of said fluid paths being in communication with a reservoir of pressurized gas;

means between said reservoir and said other fluid path for regulating the flow of pressurized gas through said other fluid path and a pressure relief means in said other fluid path and positioned at a point remote from said reservoir to limit the gas pressure and gas flow rate in said other fluid path; and

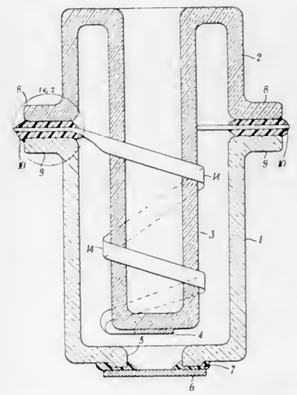
means for holding said sheet in place adjacent a portion of the human body.

4,118,947

LOW THERMAL LOSS CRYOGENIC CONTAINERS FOR INFRARED RADIATION DETECTING DEVICES, WITH INTEGRATED FEED-THROUGH CONNECTIONS

Karl Heinz Diedrich; Carlo Misiano; Enrico Simonetti, and Marco Fazi, all of Rome, Italy, assignors to Selenia-Industrie Elettroniche Associate S.p.A., Italy

Filed May 19, 1977, Ser. No. 798,276
Int. Cl.[2] F25B *19/00*
U.S. Cl. 62—514 R **4 Claims**



1. A cryogenic container, with low thermal losses, for infrared detecting devices, with integrated feed-through connections, comprising a first container element provided with an outer wall having an edge with an edge surface; a second container element provided with an outer wall having an edge with an edge surface facing said first container element edge surface to define an annular zone; a substrate within the annular zone; a plurality of conductors formed on said substrate by micro-circuitry techniques, said conductors extending through said annular zone and projecting both inwardly and outwardly of said container; a flexible element within said container and consisting of a layer of plastic material and a plurality of conductive tracks on said plastic material, said conductive tracks having one end connected to said conductors and another end adapted for connection to an active element inside said container.

4,118,948

TWO PIECE FINGER RING

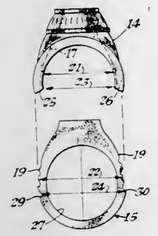
Sidney Gralnik, 4712 Cleveland St., Hollywood, Fla. 33021

Filed Mar. 16, 1977, Ser. No. 778,162
Int. Cl.[2] A44C *9/00*
U.S. Cl. 63—15 **6 Claims**

1. A finger ring comprising:

a preformed ring base, said base being a molded, closed circular band of metal having an upper portion with an exterior surface of a particular contour; and

a preformed ring cap, said cap being a molded, arcuate segment of metal having an interior surface closely fitting



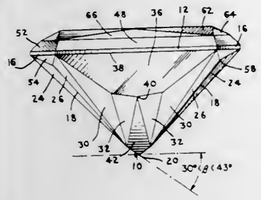
said contour of said exterior surface, said base and cap molded to interlock with each other.

4,118,949

BRILLIANTIZED STEP CUT STONE

Henry Grossbard, 552 Beach 132nd St., Belle Harbor, N.Y. 11694

Continuation-in-part of Ser. No. 690,401, May 27, 1976, Pat. No. 4,020,649. This application Dec. 27, 1976, Ser. No. 754,110
The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.
Int. Cl.[2] A44C *17/00*
U.S. Cl. 63—32 **5 Claims**



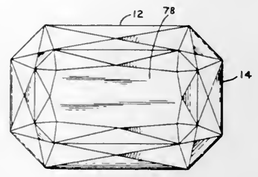
1. A brilliantized step cut diamond comprising: a straight edged polygonal shaped girdle with a plurality of side facets and corner facets; a crown, said crown having a girdle break, a table break and a table, said table break being cut with triangular shaped facets and said girdle break being cut with quadrilaterally shaped facets; and a pyramidal base, said pyramidal base having a girdle break, a culet break, a point culet and a plurality of ridges, each of said ridges extending from said culet toward a corner of said girdle, a fan of at least three pairs of triangular halves symmetrically disposed about each ridge of the pyramidal base, a kite shaped facet on each side of the base on the culet break and disposed between a pair of adjacent fans, and a shield shaped facet on each side of the base in the girdle break, each shield shaped facet having a base line parallel to the girdle and an apex in contact with a point of the associated kite shaped facet, and a triangular facet at each corner of the base, each of said triangular facets having an edge colinear with the edge of the adjacent corner facet of the girdle and an apex at said ridge.

4,118,950

BRILLIANTIZED STEP CUT STONE WITH FACETED CROWN

Henry Grossbard, 552 Beach 132nd St., Belle Harbor, N.Y. 11694

Continuation-in-part of Ser. No. 690,401, May 27, 1976, Pat. No. 4,020,649. This application Feb. 4, 1977, Ser. No. 765,834
The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.
Int. Cl.[2] A44C *17/00*
U.S. Cl. 63—32 **7 Claims**



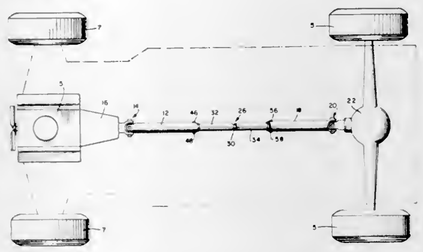
1. A brilliantized step cut diamond comprising: a straight edged polygonal shaped girdle with a plurality of side facets and corner facets; a crown, said crown having a girdle break, a table break and a table, said table break and said girdle break being cut with triangular shaped facets; and a pyramidal base, said pyramidal base having a girdle break, a culet break, a point culet and a plurality of ridges, each of said ridges extending from said culet toward a corner, a fan of at least three pairs of triangular halves symmetrically disposed about each ridge of said pyramidal base, a kite shaped facet on each side of the base on the culet break and disposed between a pair of adjacent fans, and a shield shaped facet on each side of the base in the girdle break, each shield shaped facet having a base line parallel to the girdle and an apex in contact with a point of the associated kite shaped facet.

4,118,951

DRIVE UNIT FOR SELECTIVELY EFFECTING DRIVING OR FREE-WHEELING CONDITION OF PROPELLER SHAFTING

Leo B. Neasham, Rte. 2, Box 605L, Highlands, N.C. 28741

Filed Jul. 28, 1977, Ser. No. 820,069
Int. Cl.[2] F16C *1/06, 1/26*
U.S. Cl. 64—4 **10 Claims**



1. A propeller shaft arrangement for an automobile comprising:
(a) an input portion in driving relationship with a change-spaced transmission;
(b) an output portion spaced-apart from said input portion but in axial alignment therewith and in driving relationship with a differential transmission;
(c) and an intermediate unit or portion extending in axial alignment with said input portion and said output portion;
(d) said intermediate portion including an elongate first member extending for at least the full distance between adjacent ends of said input portion and said output portion so that opposite ends of said first member are each partly coextensive with one of said input and output portions;
(e) said intermediate portion also including a second member and a third member wherein said second member is a bearing sleeve normally rigidly secured to said input portion and rotatable therewith, said third member is a bearing sleeve normally rigidly secured to said output portion, and rotatable therewith and said second and third members are structurally independent of each other;
(f) first means for selectively locking and unlocking said first member to and from said input portion and said second member;
(g) second means for selectively locking and unlocking said first member to and from said output portion and said third member whereby driving relationship is established between said input and output portions when said first and said second locking means are conditioned to lock said first member to both input portion and said output portion;
(h) bearing means in supporting relationship between said first and second members and between said first and third members to maintain proper alignment and to effect free-wheeling relationship between said input and output portions when one of said first and second means is conditioned to unlock said input portion or said output portion from said first member.

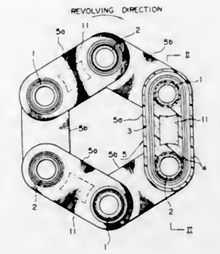
4,118,952

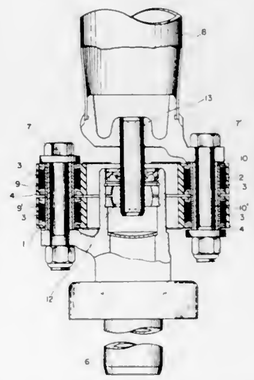
FLEXIBLE JOINT FOR A POWER TRANSMISSION

Katsuyuki Kobayashi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jun. 4, 1976, Ser. No. 692,754
Claims priority, application Japan, Jun. 4, 1975, 50/67399
Int. Cl.[2] F16D *3/52, 3/60*
U.S. Cl. 64—12 **9 Claims**

1. A flexible joint of interconnected elements for a power transmission, which comprises:
a plurality of first joint element means;
a plurality of second joint element means, each alternately arranged with respect to each of said first joint element means and interconnecting said first joint element means, each of said first joint element means and said second joint element means including adjacent bolt metal collars having elastic means wrapped thereabout and rubber or synthetic resin means disposed interiorly and exteriorly thereof;
bolt-hole metal sleeves disposed within said collars; and
means for increasing the compressive rigidity of said first joint element means embedded only within said rubber or synthetic resin means of said first joint element means so as





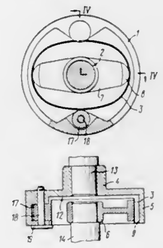
to effectively resist a compressive force acting thereon under acceleration conditions.

4,118,953

CENTRIFUGAL ELASTIC COUPLING

Antanas-Pyatras Kazimero Kavolelis; Bronislavas Prano Spruogis; Oleg Borisovich Turenko; Vladimir Vladimirovich Krupich; Valerienas Antano Sakalauskas, and Arunas Romualdo Yakshtas, all of Vilnjus, U.S.S.R., assignors to Vilnjussky Inzhenerno-Stroitelny Institut, Vilnjus, U.S.S.R.

Filed Dec. 29, 1976, Ser. No. 755,255
Int. Cl.[2] F16D *3/58, 3/14*
U.S. Cl. 64—12 **7 Claims**



1. A centrifugal elastic coupling formed of two members having facing ends interconnectable with each other, the members having a limited degree of movement therebetween, the coupling comprising:

a first of said two members having a hub-shaped facing end with a rim having an interior surface with two inwardly protruding portions, the rim defining an interior space within the first member;

first supporting means operatively associated with said inwardly protruding portions of the interior surface of said rim;

a second of said two members having a hub-shaped facing end with outwardly extending arms, said arms having ends positionable within portions of the interior space of said first member in such manner that said ends are radially spaced from said inwardly protruding portions so that a limited degree of movement is possible between said two members and that rotational movement of one of said two members in excess of said limited degree rotates the other of said two members;

second supporting means operatively associated with said ends of said extending arms; and

an elastic ring positioned within the interior space of said first member and surrounding said second member, the elastic ring being supported by said first and said second, supporting means.

4,118,954

MOTION COMPENSATOR

Charles J. Jenkins, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Aug. 24, 1976, Ser. No. 717,441

Int. Cl.[2] F16D *3/06;* **E21B** *17/00*

U.S. Cl. 64—23 **17 Claims**

1. A motion compensator comprising:

telescoping mandrel means including interconnected concentric outer tubular housing means and inner sleeve means;

tubular mandrel means disposed between said housing means and said sleeve means;

a pressure balancing seal system including:

first seal means between said tubular mandrel means and said sleeve means, and

second seal means between said tubular mandrel means and said housing means;

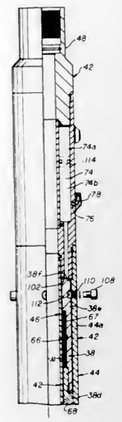
said first and second seal means in conjunction with said telescoping mandrel means and said tubular mandrel means defining a chamber;

an environmental seal system spaced from said pressure balancing seal system including two closely spaced seal means between said tubular mandrel means and said housing means;

said second seal means and said environmental seal system in conjunction with said housing means and said tubular mandrel means defining an annular cavity;

first port means through said housing means opening between said two spaced seal means of said environmental seal system permitting lubricant to be injected to said environmental seal system;

second port means through said housing means to said chamber permitting lubricant to be injected to said pressure balancing seal system; and



communicating means between said annular cavity and the bore of said sleeve means.

4,118,955

YARN FEED ARRANGEMENTS FOR KNITTING MACHINES

Hans Schieber, Bopfingen, and Winfried Lutz, Bopfingen-Flochberg, both of Germany, assignors to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Westhausen, Germany

Filed Oct. 18, 1977, Ser. No. 843,306

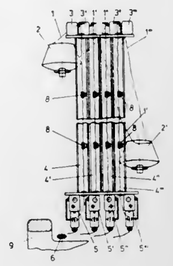
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1976, 2647187

Int. Cl.[2] D04B *35/12*

U.S. Cl. 66—158 **6 Claims**

1. A knitting machine comprising rotary carriage means, bobbin carrier means adapted to rotatably support a plurality of yarn bobbins and a yarn feed means for feeding yarns from bobbins rotatably supported on said carrier means to said carriage means, said yarn feed means comprising a plurality of

shields each adapted to extend only partially around a respective one of said yarns to protect said yarns from one another



and from air resistance, said shields comprising channels open in the direction of travel of said carriage means.

4,118,956

FABRIC PRINTING MACHINE

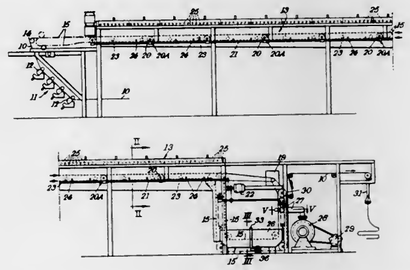
Nigel John William Stoyel, Longridge, near Preston, England, assignor to Stalwart Dyeing Company Limited, Clitheroe, England

Filed Aug. 30, 1977, Ser. No. 829,252

Claims priority, application United Kingdom, Sep. 6, 1976, 36882/76

Int. Cl.[2] D06B *21/00, 23/00*

U.S. Cl. 68—5 D **2 Claims**



1. A fabric printing machine, comprising a printing head, a steamer disposed beyond the printing head, a washer disposed beyond the steamer, said washer including a wash tank and a suction slot disposed beyond said wash tank, a pair of stenter chains operative to engage the edges of fabric advancing from the printing head and to drive it positively through said steamer, through said wash tank and past said suction slot, mountings for said stenter chains, means for adjusting said mountings to suit the lateral spacing of the stenter chains to the width of the fabric, means for injecting steam into the steamer, and means in the wash tank for circulating water through the fabric, said wash tank including a pipe for discharging water downwardly on to the fabric, a channel disposed beneath the path of travel of the fabric and having suction holes, a pump for circulating water between the pipe and the channel, a sealing strip for blanking off the suction holes in said channel outside the fabric, and guides for the sealing strip supported on said mountings and operative to displace the sealing strip, upon adjustment of the lateral spacing of the stenter chains so as to expose only the suction holes located between the stenter chains.

4,118,957

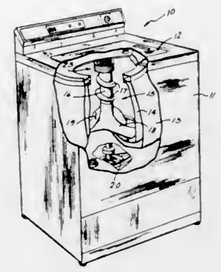
CENTRIFUGAL DISPENSER FOR WASHING MACHINE AGITATOR

Henry Marcussen, Fremont, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 4, 1977, Ser. No. 774,702

Int. Cl.[2] D06F *39/02*

U.S. Cl. 68—17 A **4 Claims**



1. An agitator-mounted dispenser for liquid agent for a non-reciprocating vertical-axis washing machine, the dispenser comprising:

a cup means for containing the liquid agent prior to a spin cycle of said machine and having,

an upwardly-sloping peripheral wall means, and

an apertured annular baffle means spaced radially inwardly adjacent said wall means to limit splashing of said liquid agent during an agitation cycle;

a discharge chamber means for accepting and holding liquid agent driven centrifugally over said wall means of said cup means during said spin cycle and having a plurality of drain apertures in a radially inward portion thereof for passing said liquid agent gravitationally to a washing zone of said machine at the end of said spin cycle, and

said discharge chamber means further comprising impeller vanes in a lower and radially-inward portion thereof and adjacent said drain apertures for directing said liquid agent during an early stage of said spin cycle away from said drain apertures.

4,118,958

WASHING MACHINES AND RINSING MACHINES

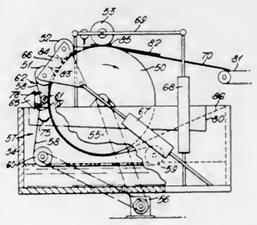
Maurice Charles Lemon, Leigh, and John Francis Spear, Holmbury St. Mary, both of England, assignors to Universal Towel Company, Sussex, England

Division of Ser. No. 677,436, Apr. 15, 1976, Pat. No. 4,083,206. This application Dec. 29, 1977, Ser. No. 865,442

Claims priority, application United Kingdom, Apr. 17, 1975, 15898/75

Int. Cl.[2] D06B *1/04*

U.S. Cl. 68—22 R **9 Claims**



1. A rinsing machine suitable for rinsing a washable dust mat comprising in succession first squeeze means, pressure means

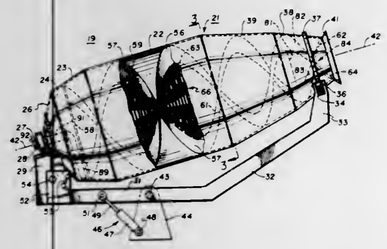
following the first squeeze means and at least one intermediate squeeze means between the first squeeze means and the pressure means, each successive squeeze means and pressure means extending transversely of the direction of movement of the mat and being spaced apart from each other longitudinally of the direction of movement of the mat, means for applying rinsing water onto the mat between the pressure means and the intermediate squeeze means, and central guide means of arcuate shape for feeding the mat along an arcuate path through the first squeeze means, intermediate squeeze means and pressure means in succession, there being provided means entirely within the transverse extent of said squeeze means for allowing part of the rinsing water to pass from the intermediate squeeze means successively in the direction contrary to the direction of movement of the mat whereby the mat is rinsed within each squeeze means by water of which a part is removed by the next succeeding squeeze means and finally the pressure means, which means for allowing part of the rinsing water to pass from the intermediate squeeze means in a direction contrary to the direction of movement of the mat is disposed at least partially within the width of said central guide means.

4,118,959

HIDE PROCESSING MACHINE AND METHOD

Richard G. Waite, Red Wing, Minn., assignor to S. B. Foot Tanning Company, Red Wing, Minn.

Filed Jun. 23, 1977, Ser. No. 809,099
Int. Cl.[2] C14C *15/00*
U.S. Cl. 69—30 **20 Claims**



1. In a hide processing machine having a hide-treating drum with a generally cylindrical body portion, a closed end and an open end, means supporting the drum for rotation about the central longitudinal axis of said body portion with said axis inclined to the horizontal to retain and tumble hides and treating fluid at the closed end of the drum, the improvement comprising helical partition means extending across the interior of the drum and spirally along the drum axis from said closed end toward the open end and effectively partitioning the drum into at least two longitudinally-extending spiral compartments, and said partition means having fluid-transmitting openings for free movement of treating fluid between such spiral compartments.

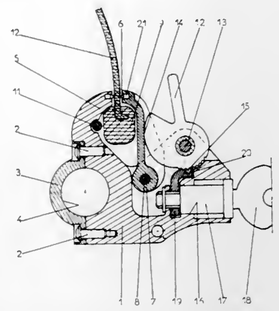
4,118,960

ADJUSTABLE LOCKING DEVICE IMMOBILIZED BY A SAFETY LOCK

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Jul. 8, 1977, Ser. No. 813,851
Claims priority, application France, Jul. 22, 1976, 76 22314
Int. Cl.[2] E05B *69/00*
U.S. Cl. 70—59 **5 Claims**

1. An adjustable locking device comprising:
(a) a housing,
(b) a safety lock mounted thereon,
(c) a movable part of said lock having a first toothed element,
(d) a second toothed element, to be immobilized by said lock, mounted on said housing, the teeth of said two toothed elements being in engagement when the lock is in its locking position, and



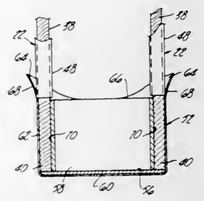
(e) a clamping element to be locked carried by the housing, wherein the second element comprises a pivoting lever provided with a cam profile interacting with the clamping element.

4,118,961

PROTECTIVE GUARD FOR AN IGNITION SWITCH ON A STEERING COLUMN OF A MOTOR VEHICLE

James D. Lee, 5360 Kensington Rd., Brighton, Mich. 48116

Filed Apr. 18, 1977, Ser. No. 788,319
Int. Cl.[2] E05B *17/14*
U.S. Cl. 70—237 **18 Claims**



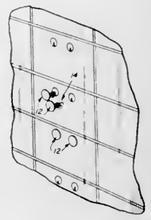
1. A protective guard for an ignition switch on a steering column of a motor vehicle comprising, a metallic one-piece generally cup shaped housing member having an end wall and a side wall and constructed and arranged to overlie and surround the ignition switch when the protective guard is mounted on the steering column, a metallic ring received in said cup shaped member and constructed and arranged to reinforce said side wall of said cup shaped member, and first and second loops of flexible metallic cable each having both of its ends received in said cup shaped housing member and secured to said ring and its bite constructed and arranged to provide an eye for receiving the shackle of a padlock therethrough, said flexible loops being constructed and arranged to extend in generally opposite directions around the steering column closely adjacent thereto when said housing member overlies and encircles the ignition switch and to receive the shackle of a padlock through said eyes of said loops such that when the padlock is locked the protective guard prevents unauthorized access to the ignition switch.

4,118,962

OBTURATOR FOR SAFE DEPOSIT BOXES AND THE LIKE

Mitchell L. Block, Highland Park, and Angelo Pane, Chicago, both of Ill., assignors to Block and Company, Inc., Wheeling, Ill.

Filed Aug. 17, 1977, Ser. No. 825,261
Int. Cl.[2] E05B *17/14*
U.S. Cl. 70—455 **4 Claims**



1. An obturator for safe deposit boxes and the like including substantially flat head means and elongated rail means cantilevered generally perpendicularly from one side of said head means, the improvement comprising in combination:
the rail means and the head means being integrally formed of a flexible material;
the rail means including a head end member and a distal end member;
the rail means comprising a plurality of elongated arms joined at said head end member and said distal end member;
the portion of at least one of said arms intermediate the ends being resiliently bent such that the arms lie in a common plane only at said head end member and said distal end member, whereby as the obturator is inserted into a keyhole of a safe deposit box or the like, the resiliently bent arms exert pressure against the sides of the keyhole channel and frictionally resist accidental withdrawal;
and said rail means consisting of three arms:
(a) a straight, centrally positioned arm;
(b) an upper arm resiliently bent to extend laterally beyond one side of the longitudinal plane of said first arm; and
(c) a lower arm resiliently bent to extend laterally beyond the second side of the longitudinal plane of the first arm, the upper and lower arms being longer than the central arm, whereby the bent, intermediate portions of the longer arms exert oppositely directed lateral pressure within the keyhole.

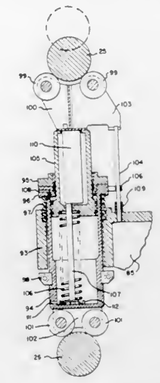
4,118,963

CLOSED LOOP INTEGRATED GAUGE AND CROWN CONTROL FOR ROLLING MILLS

Werner E. Eibe, McCandless Township, Allegheny County, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.

Division of Ser. No. 746,848, Dec. 2, 1976, Pat. No. 4,054,043.
This application Jun. 22, 1977, Ser. No. 808,797
Int. Cl.[2] B21B *37/08*
U.S. Cl. 72—21 **6 Claims**

1. A transducer mounting comprising an upright housing open at top and bottom, a closed bottom casing slidably mounted within the housing, means positioned between the casing and housing urging axial separating movement therebetween, a transducer case slidably mounted within the casing, means positioned between the transduced case and the casing urging separating axial movement therebetween, said latter means comprising means for introducing a fluid under pressure therebetween, and also a compression coil spring disposed within the case, means affixed to the bottom of the casing and extending therebelow to contact a roll neck and means affixed



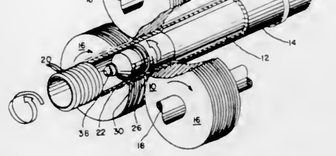
to the top of the transducer case and extending thereabove to contact a roll neck.

4,118,964

LUBRICATED MANDREL FOR A FINNING MACHINE

Robert A. Fusco, Portland, Me., assignor to General Electric Company, Schenectady, N.Y.

Filed May 18, 1977, Ser. No. 798,091
Int. Cl.[2] B21B *19/12;* **B21D** *37/18*
U.S. Cl. 72—43 **4 Claims**



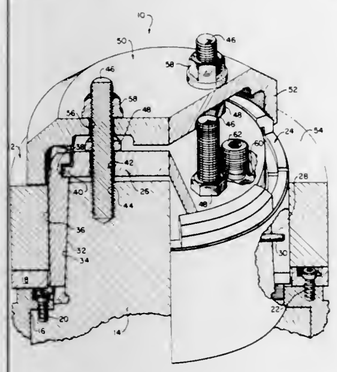
1. For use with finning apparatus for rolling fins on a tubular member, said apparatus including spaced rotatable dies which cause rotation of a tubular member during finning operation and a stationary arbor which positions and aligns a tubular member being finned centrally with rotatable dies, a mandrel for rotatably supporting a tubular member being finned, said mandrel comprising:
(a) a stationary mandrel body axially mounted to a fixed arbor;
(b) a cylindrical bushing rotatably mounted on said mandrel body, longitudinally positionable in alignment with said dies, and having an outer diameter larger than the rest of said mandrel and substantially corresponding to the inner diameter of a tubular member being finned; and
(c) means for providing lubrication between the contact surfaces of said bushing and said mandrel body to reduce rotational friction losses during rotation of said bushing;
(d) said bushing and said lubricating means facilitating rotation of the tubular member relative to said mandrel body during tube-finning operation without the generation of excessive heat or wear and with the expenditure of a minimum amount of mechanical work.

4,118,965

DIE MOUNTING ASSEMBLY FOR A PLANETARY WORK FORMING MACHINE

Edward Gregory Grohoski, Litchfield, Conn., assignor to The Hartford Special Machinery Company, Simsbury, Conn.

Filed Jul. 21, 1977, Ser. No. 817,668
Int. Cl.[2] B21B *31/02*
U.S. Cl. 72—102 **8 Claims**



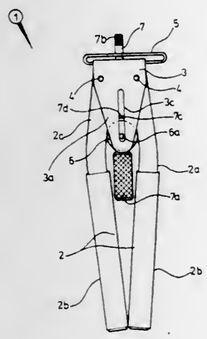
1. For quick and easy removable mounting of a circular die in precise concentric coaxial surrounding relation to a machine spindle, a die mounting assembly comprising a one-piece sleeve movable toward and away from an operating position in concentrically interposed wedged engagement between the spindle and the surrounding circular die for removing clearances therebetween, and selectively operable bi-directional displacement means including a jack plate and a releasable tongue and groove bayonet-type direct driving coupling between the sleeve and the jack plate, the jack plate being in overlying relation to the spindle for moving the sleeve as a unit in opposite axial directions toward and away from its operating position.

4,118,966

TOOL FOR WALL ANCHORS

Ewart William Jackson, Southall, England, assignor to Futters (London) Limited, London, England

Filed Jun. 17, 1977, Ser. No. 807,684
Claims priority, application United Kingdom, Jun. 17, 1976, 25233/76
Int. Cl.[2] B21J *15/34*
U.S. Cl. 72—114 **17 Claims**



1. A tool which comprises:

a head;

a pair of elongate handles extending from the head, at least one of said handles being pivoted to the head and each handle having an elongate follower-abutting surface;

a profile follower for said surfaces, which follower moves linearly relative to the head in response to the handles being pressed together to sandwich the follower between their respective follower-abutting surfaces; and

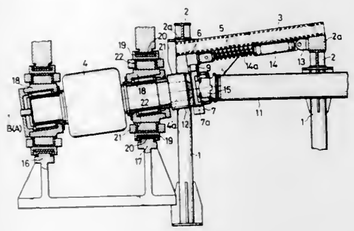
an operating member movable with said follower.

4,118,967

APPARATUS FOR RELEASING DRIVE ASSEMBLY FROM ROLL NECK AND CONNECTING SAME THERETO

Hiroji Okuda, Nara, Japan, assignor to Koyo Seiko Company Limited, Osaka, Japan

Filed Jul. 25, 1977, Ser. No. 818,957
Int. Cl.[2] B21B *31/08*
U.S. Cl. 72—239 **3 Claims**



1. An apparatus for releasing drive assemblies from the necks of two working rolls which are arranged with their axes inclined and intersecting each other and connecting the drive assemblies to the roll necks, comprising:

two pairs of rails secured to posts and extending in parallel to the axes of the working rolls and having the same inclination angle as that of the axes of the working rolls in vertical direction, the rails of each pair facing each other,

two support members each slidably supported on each pair of the rails and each integral with a member for holding a coupling of the corresponding drive assembly in contact with the outer periphery of the coupling,

two holders each mounted on each of the support members and opposed to the coupling holding member, the holder being engageable with the outer periphery of the coupling to hold the coupling between the holding member, and the holder in pressing engagement therewith,

two means each mounted on each of the support members for operating the holder to cause the holder to hold the coupling in pressing engagement therewith, and

two means for slidingly moving each of the support members on the rails, including a cylinder secured at its one end to the upper member by a fixing member and having a piston rod connected at its forward end to each of the support members.

4,118,968

SELF CLEANING PROGRESSIVE FIN DIE WITH IMPROVED STRIPPING MEANS

Ward A. Ames, Danville, Ill., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Division of Ser. No. 623,101, Oct. 16, 1975, Pat. No. 3,995,469.
This application Jun. 18, 1976, Ser. No. 697,351
Int. Cl.[2] B21D *45/00*
U.S. Cl. 72—328 **1 Claim**

1. The combination of a stripper device with a die for forming a hole in a workpiece comprising:

a frame including a surface for supporting a workpiece and a ram movable to and from said surface;

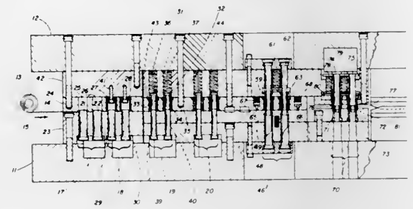
a hollow bushing fixedly mounted to said frame;

a punch fixedly mounted to said frame and sized to force a portion of said workpiece in said bushing when said ram moves toward said surface;

a stripper rod mounted to said frame and being positioned within said bushing;

spring means engaged with said frame and said rod being operable to urge said rod through said bushing to force said portion of said workpiece therefrom as said ram moves away from said surface but being yieldable to allow said rod to withdraw within said bushing as said portion of said workpiece is forced into said bushing by said punch;

a plurality of punches mounted to said frame in a row with said punches arranged with decreasing diameters in said row;



a plurality of bushings mounted to said frame in a row opposite said punches with said bushings arranged with decreasing internal diameters to cooperatively with said punches form a bonnet in said workpiece of decreasing diamater as said bonnet is moved along said row and engaged successively by some of said punches and bushings;

a hollow pierce bushing mounted to said frame;

a pierce punch mounted to said frame being extendable through said workpiece and into said pierce bushing;

a stripper bushing slidably disposed around and encircling said pierce punch;

spring means engaged with said frame and said stripper bushing being operable to force said workpiece from said pierce punch as said pierce punch is withdrawn from said workpiece.

4,118,969

DOUBLE ACTION FASTENER INSTALLATION TOOL FOR BLIND RIVETS AND THE LIKE

Robert John Corbett, Saugerties, N.Y., assignor to Huck Manufacturing Company, Detroit, Mich.

Filed Jul. 27, 1977, Ser. No. 819,495
Int. Cl.[2] B21J *15/34*
U.S. Cl. 72—391 **2 Claims**

1. A fastener installation tool of the fluid actuated pull gun type comprising in combination,

a head assembly including a pull piston and a shift piston,

a handle and piston assembly including a hydraulic piston and an air piston directly connected thereto and trigger means for actuating a fluid circuit,

a cylinder assembly including an air cylinder for receiving said air piston and shift valve means,

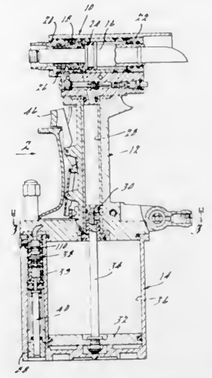
said fluid circuit being constructed and arranged for the supply of fluid under pressure upon actuation of said trigger to first said pull piston to cause pulling of a fastener and upon a predetermined pressure build up cause said shift piston to move forward to set the fastener,

said shift valve being constructed and arranged in said circuit to be operable upon said predetermined pressure build up to cause said shift piston movement,

said fluid circuit including a trapped fluid circuit between the forward face of said shift piston and said shift valve,

and said shift valve including a ball valve held against a valve seat until said predetermined pressure is reached and arranged in said circuit to prevent shifting of said shift piston until unseated by said predetermined pressure,

said trapped fluid circuit pressure responding to said pressure build up to unseat said ball valve and thereby relieve the trapped fluid pressure forward of said shift piston to permit said shift piston to move forward to set the fastener.

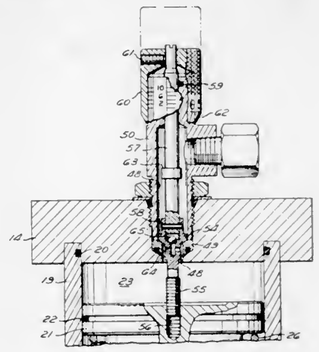


4,118,970

CRIMPING DIAMETER ADJUSTING VALVE

Hiralal V. Patel, Euclid, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Jul. 7, 1977, Ser. No. 813,534
Int. Cl.[2] B21J *9/12*
U.S. Cl. 72—402 **8 Claims**



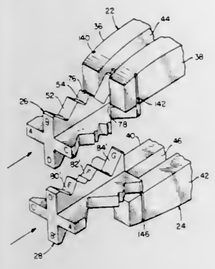
1. A crimping machine comprising a socket, a crimping die movable axially into and out of said socket, a cylinder, a piston axially movable in said cylinder for effecting said axial movement of said crimping die relative to said socket, said cylinder and said piston cooperatively defining a fluid pressure chamber, a pump, a passage hydraulically connecting said pump and said chamber, a valve member movable relative to said passage to close and open said passage, connecting means including a pin extending between said valve member and said piston maintaining a constant predetermined distance between said valve member and said piston, said connecting means connecting said valve member for axial movement with said piston, and adjusting means for altering said constant predetermined distance including a threaded connection between said pin and said piston.

4,118,971

CRIMPING APPARATUS

Hyman Izraeli, West Caldwell, N.J., assignor to David Teschner, Elizabeth, N.J.

Filed Sep. 27, 1977, Ser. No. 837,006
Int. Cl.[2] B21D *37/02*
U.S. Cl. 72—410 **19 Claims**



1. Apparatus for crimping ferrules of various sizes onto a conductor comprising: tool means having a pair of opposingly disposed jaw members joined to one another at a fulcrum, each jaw member being defined by spaced parallel sidewalls defining an elongate slotted opening therebetween, said jaw members being movable towards and away from one another; a pair of elongate die nest members, one for each of said jaw members, each of said die nest members comprising four arms extending radially outwardly from the central longitudinal axis of said die nest member along mutually perpendicular planes in cruciform relationship, each of said arms carrying at least one die nest, a first one of said arms of each of said die members being removably located in a respective one of said slotted openings in said jaw members, the arm opposite said first arm of one of said die nest members being arranged in coplanar opposed mating relationship with a similarly disposed arm of the other of said die nest members in the other of said jaw members; and locking means engageable with each of said jaw members for removably locking each of said die nest members to a respective one of said jaw members.

4,118,972

APPARATUS FOR DETECTING LEAKS IN COMPOSITE PACKAGES

Ronald R. Goeppner, St. Louis; William M. Kuehne, Chesterfield, and Timothy D. Russell, St. Louis, all of Mo., assignors to Container Corporation of America, Chicago, Ill.

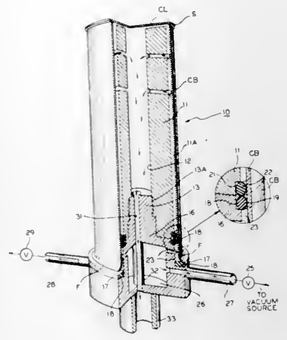
Filed Aug. 31, 1977, Ser. No. 829,567
Int. Cl.[2] G01M *3/32*
U.S. Cl. 73—40 **3 Claims**

1. In apparatus for testing leakage of a composite package:

(a) a hollow arbor for supporting a composite package including means for connecting the interior of said arbor to the interior of said composite package;

(b) a support for said arbor including a passageway therein connecting the interior of said arbor to means for placing pressure less than ambient on the interior of said composite package;

(c) said support being provided with a gasket sealing the open end of said composite package and with sealing means disposed axially of said gasket to define a chamber connected to a pressure less than ambient to enable the remainder of the interior of said package to be subjected to pressure less than ambient;



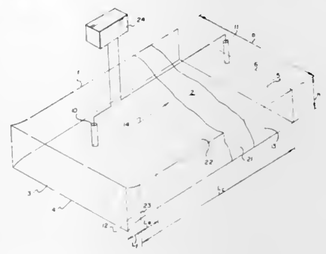
(d) means for connecting the interior of said hollow arbor and said composite package to means for measuring leakage in said composite package.

4,118,973

APPARATUS FOR MEASURING THE FLOW RATE AND/OR VISCOSITY OF A FLUID

Helen G. Tucker, Orleans; John W. Tanney, and William F. Hayes, both of Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 6, 1977, Ser. No. 831,087
Claims priority, application United Kingdom, Sep. 6, 1976, 36828/76
Int. Cl.[2] G01N *11/04;* **G01F** *1/36*
U.S. Cl. 73—55 **11 Claims**



1. An apparatus for measuring the flow rate and/or viscosity of a fluid comprising:

a. a casing having a fluid passage, which is elongated in cross-section normal to the mean direction for fluid flow therein with two parallel, opposed major boundary surface portions which are parallel in a plane normal to the mean direction for fluid flow therebetween, the fluid passage comprising a flared entry portion and a portion having, in the mean direction for fluid flow therein, continuous boundary surface and a substantially constant cross-section, the flared entry portion being flared to decrease in width, without increasing in breadth, in the mean direction for fluid flow therein and forming an unobstructed flow path to the portion having, in the mean direction for fluid flow therein, a continuous boundary surface and a substantially constant cross-section, a fluid inlet to the casing and forming a substantially unobstructed flow path for fluid to the whole of an inlet area to the flared entry portion of the fluid passage, said inlet area being normal to the mean direction for flow of fluid at an inlet end of the flared entry portion, and fluid outlet from the casing and forming a substantially unobstructed flow path for fluid from the whole area of an outlet end of the fluid passage said outlet area being normal to the mean direction for flow of fluid at the outlet end of the fluid passage, and wherein

b. the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein has a magnitude of mean breadth which is at least as large as that given by a mean breadth to mean width ratio of 1.5 to 1, and an area in any plane normal to the mean direction for fluid flow therein which does not vary more than in the region of 2% from the mean area calculated in this manner for substantially the whole length of the said portion having continuous boundary surface and a substantially constant cross-section, and wherein

c. the geometry of the flared entry portion of the fluid passage is such that, with laminar flow being maintained in the whole of the fluid passage, using substantially pure water at 70° F. as a standard, the flared entry portion has a "figure of merit", M which is calculated using consistent units from the relationship:

$$M = 1 - \frac{K_2 G_2}{\Delta E_2}$$

where,

G_2 = the mass flow rate of the substantially pure water through the fluid passage when the Reynolds number, R_e, is at least 2000 in the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein, and

the Reynolds number, R_e, in the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section is defined in consistent units by the relationship:

$$R_e = \frac{h\bar{U}\rho}{\mu}, \text{ where}$$

h = the width separating the parallel opposed major boundary surface portions, of the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein,

U = the mean velocity of the substantially pure water through the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein,

ρ = the density of the substantially pure water,

μ = the absolute viscosity of the substantially pure water,

ΔE_2 = a static pressure differential between the substantially pure water at or upstream of the fluid inlet to the casing and the substantially pure water within the fluid passage at a position within the portion having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein and where the flow rate is G_2 as previously defined immediately above and which is downstream of an outlet end of the flared entry portion by at least an amount L_e and is determined in consistent units by the relationship:

$L_e = 0.04\, R_e h$ when the Reynolds number, R_e, is that where the flow rate is G_2 as previously defined immediately above in the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein,

K_2 is a constant and is defined in consistent units by

$$K_2 = \frac{\Delta E_1 - \Delta E_2\left(\frac{G_1}{G_2}\right)^2}{G_1 - \frac{(G_1)^2}{G_2}}, \text{ where}$$

G_1 = the mass flow rate of the substantially pure water through the fluid passage when the Reynolds number R_e is less than G_2 and is at least 1000 in the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein, and

ΔE_1 = a static pressure differential between the substantially pure water at or upstream of the fluid inlet to the casing and the substantially pure water within the fluid passage at a position within the portion having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein and where the flow rate is G_1 as previously defined immediately above and which is downstream of the outlet end of the flared entry portion by at least an amount L_e as previously defined,

and where the flared entry portion "figure of merit", M, is within the limits determined by the relationship in consistent units:

$$M < 1.36\,\frac{h}{d_h},$$

where

d_h = the hydraulic diameter of the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for the flow of fluid therein, and is defined in consistent units by,

$$d_h = \frac{4A}{C},$$

where

A = cross-sectional area of the portion of the fluid passage having continuous boundary surface, and a substantially constant cross-section, normal to the mean direction for fluid flow therein,

C = wetted perimeter of the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section, in a plane normal to the mean direction for fluid flow therein, and where

h is as previously defined, and

d. fluid pressure detecting means in the casing for detecting a fluid pressure differential in the fluid passage, between spaced positions in the mean direction for fluid flow therein, at least one of the positions being in the portion having continuous boundary surface and a substantially cross-section, whereby

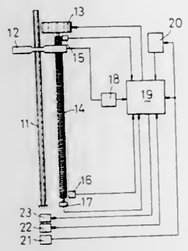
e. at least one fluid characteristic to be measured, selected from the group consisting of flow rate and viscosity, is related to the pressure differential indicated by the fluid pressure detecting means and is deducible therefrom in a consistent manner for any given fluid when laminar flow is maintained in the whole of the fluid passage.

4,118,974

METHOD AND APPARATUS FOR MEASURING ERYTHROCYTE SEDIMENTATION RATE

Hiromi Nozaki, and Haruo Hara, both of Hachiohzi, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1977, Ser. No. 766,248
Claims priority, application Japan, Feb. 17, 1976, 51/16626
Int. Cl.² G01N *15/04, 33/16*
U.S. Cl. 73—61.4 **6 Claims**



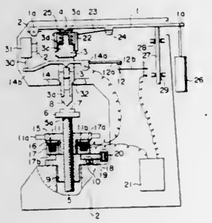
1. In a method of measuring a erythrocyte sedimentation rate of the type wherein the upper level of a blood sample contained in a vertical test tube is detected by a photoelectric detection unit, the red blood corpuscles in the blood sample are caused to sedimentate for a predetermined interval, and the upper level of the sedimentated red blood corpuscles is detected by descending said photoelectric detection unit along said test tube thereby determining the rate of the sedimentation of the red blood corpuscles, the improvement which comprises the steps of stopping said photoelectric detection unit a definite time after detection of the upper level of said blood sample, descending said photoelectric detection unit after said predetermined interval, detecting the interface between the blood serum and the sedimentated red blood corpuscles, measuring the rate of the sedimentation of the red blood corpuscles in terms of the difference between the position at which said photoelectric detection unit has stopped and the position of said photoelectric indicating detection of said interface.

4,118,975

LOADING SHAFT POSITIONING APPARATUS FOR HARDNESS TESTER

Shozo Iwasaki, Ebina, Japan, assignor to Kabushiki Kaisha Akashi Seisakusho, Japan

Filed Aug. 15, 1977, Ser. No. 824,701
Claims priority, application Japan, Dec. 16, 1976, 51/151159; Apr. 4, 1977, 52/38266
Int. Cl.² G01N *3/44*
U.S. Cl. 73—81 **4 Claims**



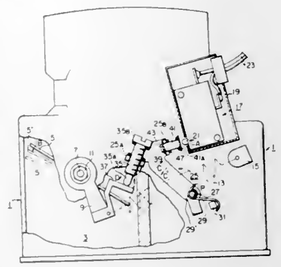
1. Semi-automatic loading shaft positioning apparatus for a hardness tester, comprising;
a frame;
a specimen supporting screw longitudinally movably fitted to the frame to longitudinally move, in use, a loading shaft by the supported specimen in one longitudinal direction for engaging the shaft with a loading lever swingably pivoted to the frame;
a manually rotatable nut threadedly connected with the screw for effecting the screw's and specimen's and thereby the shaft's longitudinal moving toward the shaft's engagement with the loading lever;
a detector for detecting the shaft's arrival at a given position in said longitudinal moving before said engagement; and
an electromagnetic unit mounted on the frame opposite the nut, having an electric circuit for energizing the unit when the detector detects said position, having a magnetic circuit which includes an armature connected with the nut to normally move therewith and, upon the energizing of the unit to stop movement thereof relative to the frame, thereby semiautomatically fixing the given position of the shaft, and having an electromagnet mounted on the frame for limited movement along the screw to effect the stopping in the given position of the shaft but to avoid applying a vertical magnetic force to the shaft when the shaft has been moved into contact with the specimen by the loading lever.

4,118,976

SWITCH DEVICE FOR DETECTING A POSITION OF A THROTTLE VALVE OF AN INTERNAL COMBUSTION ENGINE

Tadao Mitsuda, Susono; Takeru Yasuda, Nagoya, and Sigeru Okuda, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 12, 1977, Ser. No. 859,564
Claims priority, application Japan, Jun. 23, 1977, 52/073886
Int. Cl.² G01M *15/00*
U.S. Cl. 73—118 **3 Claims**



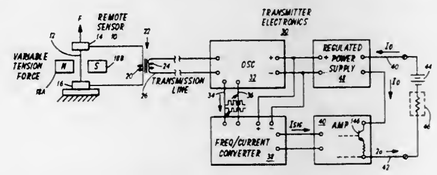
1. A switch device adapted for attaching to an air horn of a carburetor of an internal combustion engine for detecting a position of a throttle valve arranged in an intake air passageway formed in said air horn, said throttle valve having a pivot axis which is rotatably supported by said horn, said throttle valve being urged by a spring means so that said throttle valve can normally close off said intake air passageway, said switch device comprising:
a limit switch mounted on said air horn, said limit switch comprising an operating member displaceable for operating said limit switch, when an external force is applied to said operating member;
a first pusher member integrally secured to one end of said pivot axis of said throttle valve, said axis extending out of said air horn, so that said first pusher member is moved together with the movement of said throttle valve;
a lever member which is, on one end thereof, rotatably mounted to said air horn;
an abutment member mounted on a free end of said lever member remote from said one end, said lever member being urged by a spring so that said abutment member is always in contact with said first pusher member to cause said lever member to be moved together with said throttle valve;
a second pusher member mounted on said free end of said lever member near to the abutment member, said second pusher member cooperable with said operating member of said limit switch in such a manner that said second pusher member is in contact with said operating member to cause said limit switch to be in operation when said lever member is rotated so that said second pusher member is moved toward said operating member due to the rotation of said throttle valve, and;
means for effecting the adjustment of a predetermined position of said throttle valve, said second pusher member being in touch with the operating member at said predetermined position to operate said limit switch.

4,118,977

ELECTRIC SIGNAL TRANSMITTER FOR VIBRATING-WIRE SENSOR

Everett O. Olsen, Wrentham; Donald C. Simpson, Norton, and David A. Richardson, Sheldonville, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Oct. 13, 1976, Ser. No. 732,129
Int. Cl.² G01L *1/10*
U.S. Cl. 73—141 R **32 Claims**



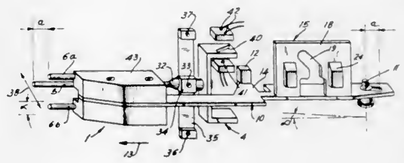
1. Transmitter apparatus for use in an industrial process instrumentation system to produce a d-c measurement signal responsive to the vibration frequency of a vibrating-wire force-sensor the wire of which is tensioned in accordance with an unknown force; and wherein said d-c signal is connected through a two-wire line to a signal responsive load and a d-c source which furnishes over said two-wire line all of the power for said transmitter apparatus; said transmitter apparatus comprising:
a first pair of terminals to receive respective leads coupled to said vibrating wire;
a second pair of terminals connected respectively to the leads of said two-wire line to receive power from said d-c source and to carry the d-c measurement signal;
power supply means coupled to said second pair of terminals to develop at least one supply voltage;
electronic circuit means coupled to said first pair of terminals to produce vibratory movement of said wire at a frequency in accordance with the tension thereof and to develop an alternating signal corresponding to that frequency;
function-generating means responsive to said alternating signal and operable to produce a control signal which corresponds to a multiple function of the frequency of said alternating signal;
amplifier means having input and output circuits;
means coupling said control signal to said amplifier means input circuit;
means coupling said amplifier means output circuit to said second pair of terminals to control the d-c current flowing through those two terminals in accordance with the control signal applied to said input circuit;
a feedback signal coupling said output circuit of said amplifier means to said input circuit to establish correspondence between said control signal and the d-c current flowing in said two-wire output circuit; and
means coupling said power supply means to said electronic circuit means, to said function-generating means, an to said amplifier means, to furnish operating supply voltages thereto.

4,118,978

THREAD TENSION GAGE

Konrad Löwenheck, Basel, Switzerland, assignor to N. Civy & Cie, SA, Oberwil, Switzerland

Filed Aug. 22, 1977, Ser. No. 826,558
Claims priority, application Switzerland, Sep. 3, 1976, 11218/76
Int. Cl.² G01L *5/06*
U.S. Cl. 73—144 **10 Claims**



1. A thread tension gage comprising:
(a) a support;
(b) a sensing head on said support including a sensing member and two guide members, said sensing and guide members having respective thread-engaging portions spaced from each other;
(c) manually operable moving means on said support for moving said portions of said guide members relative to said portion of the sensing member from a first position to a second position in a first direction and thereafter from said second position to a third position in a second direction;
(1) said portions of said sensing and guide members extending in a common plane is said second and third positions,
(2) said portions of said guide members defining a straight line therebetween when in said common plane, and said portion of said sensing member intersecting said line in said third position,
(3) said first direction being transverse to said plane,
(4) said portion of the sensing member being offset in said second direction from said straight line in said second position; and
(d) signal generating means on said support for generating a sensible signal indicative of a force exerted on said portion of said sensing member in said common plane transverse to said straight line.

4,118,979

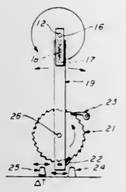
THERMAL ENERGY METER

Mitchell D. Brody, 77 Gibbs St., Brookline, Mass. 02146

Filed May 31, 1977, Ser. No. 801,922
Int. Cl.² G01K *17/14*
U.S. Cl. 73—193 R **8 Claims**

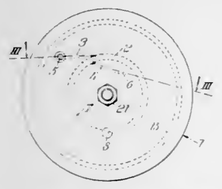
1. A system for measuring and registering an indication of the accumulated flow of thermal energy passing in a fluid line between a heat source and a heat sink, said system having a fluid flow responsive means which rotates a first shaft in proportion to volumetric fluid flow, and arm means responsive to said first shaft rotation, the improvement comprising a differential temperature sensing and responsive means for modifying the motion of said arm means in proportion to the sensed temperature differential, and accumulating and indicating the modified shaft rotation, said differential temperature sensing and responsive means comprising;
first and second temperature-deformable coils which are each independently in thermal equilibrium with the fluid

at different temperatures and each of which has an inner and outer end,
a common shaft,
means for holding the outer end of the first coil fixed,
means for spacedly supporting the inner ends of both coils to the common shaft,



the outer end of said second coil being free to rotate in proportion to the temperature differential,
and means responsive to second coil rotation to motify arm means motion.

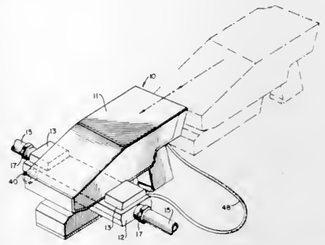
4,118,980
FLOWMETERS-VOLUMETERS
Alain Debeaux, Chatenay, France, assignor to Souriau et Cie, Boulogne-Billancourt, France
Filed Aug. 1, 1977, Ser. No. 820,745
Int. Cl.[2] G01F *3/08*
U.S. Cl. 73—194 C **7 Claims**



1. A flowmeter-volumeter of the type which counts the revolutions of a mobile ball in an annular channel into which a fluid inlet passage and a fluid exhaust passage open, comprising a first flange grooved with a revolution groove which comprises a first portion of said annular channel and grooved with one of said passages, a second flange grooved with a revolution groove which comprises a second portion of said annular channel and grooved with the other one of said passages, the opening of the exhaust passage being positioned above, in the direction of the ball displacement, the opening of the inlet passage and the gap between the closest edges of said openings being less than one diameter of the ball, and fastening means connecting the flanges together and constructed and arranged for allowing a rotation displacement relative to each other, in order to be able to adjust with precision the distance between the openings through which both passages open into the channel.

4,118,981
FLOWMETER
Ellis K. Cave, Garland, Tex., assignor to Arcadia Refining Company, Tyler, Tex.
Filed Jun. 24, 1977, Ser. No. 809,920
Int. Cl.[2] G01F *1/58*
U.S. Cl. 73—194 EM **6 Claims**

6. A method of measuring the rate of fluid flow comprising positioning a pair of electrical probes in said fluid flow sapced along a line extending transversely to the direction of said fluid flow, moving a magnetic field generating means from a position remote from said probes to a predetermined position proximate to said probes in which the magnetic field produced by said magnetic field generating means is applied to said fluid flow at the position of said probes transversely to the direction of said fluid flow and to the direction of said line, measuring

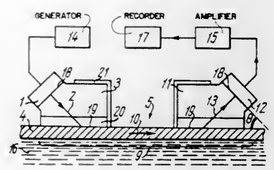


the voltage produced across said probes immediately prior to arrival of said magnetic field at said predetermined position and measuring the voltage produced across said probes immediately after the arrival of said magnetic field at said predetermined position.

4,118,982
FLOW MEASUREMENT
Steve Elia Souwand, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada
Filed Nov. 15, 1977, Ser. No. 851,707
Int. Cl.[2] G01F *1/70*
U.S. Cl. 73—194 R **6 Claims**

1. A method of measuring the rate of flow of fluid material passing up a flare stack of known internal volume for combustion at the uppermost end thereof, wherein an aqueous solution is injected in fine particle form into the fluid material at a point near the base of said flare stack, said aqueous solution containing an inorganic salt which generates a characteristic color in the flame when excited by the heat of combustion of the fluid material, the elapsed time is measured from the time of injection of said aqueous solution to the time of initial generation of said characteristic color in the flame at the uppermost end of the flare stack, and the rate of flow is calculated from the known internal volume of the flare stack and the measured elapsed time.

4,118,983
METHOD OF AND DEVICE FOR CONTROLLING GAS-LIQUID OR LIQUID-LIQUID INTERFACE IN MONOLAYER RESERVOIRS
Nikolai Ivanovich Brazhnikov, I ulitsa Bebelya, 3, korpus 11, kv. 48, Moscow, U.S.S.R.
Filed Jul. 29, 1976, Ser. No. 709,805
Claims priority, application U.S.S.R., Aug. 4, 1975, 2160657; Aug. 4, 1975, 2162829; Aug. 11, 1975, 2161351; Aug. 11, 1975, 2165624
Int. Cl.[2] G01F *23/28*
U.S. Cl. 73—290 V **35 Claims**

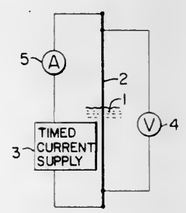


14. A device for controlling gas-liquid or liquid-liquid interface in monolayer reservoirs, comprising: an emitter of a wave of acoustic vibrations mounted outside said monolayer reservoir on a section of its wall thereof; a receiver of an acoustic wave also mounted outside said monolayer reservoir on said section of said wall and spaced from said emitter and in the path of said wave of acoustic vibrations from said emitter, said emitter and receiver having effective areas; two sound conductors for respectively mounting said emitter of a wave of acoustic vibrations and said receiver of an acoustic wave on said section of said wall of said monolayer reservoir, said sound conductors having effective areas rigidly connected within the corresponding effective areas of said emitter and receiver of an acoustic wave, said sound conductors having contact areas contacting said wall within said section and making angles θ with said effective areas of said sound conductors, said angles θ being determined from the relationship:

$$\theta = \arcsin (C_3/C),$$

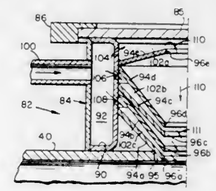
where C_3 is the velocity of propagation of said acoustic waves in said sound conductors, and
C is the velocity of propagation of mechanical vibrations, excited by said wave of acoustic vibrations, along said wall of said monolayer reservoir, said sound conductors being made of a material wherein the velocity C_3 of propagation of said acoustic waves is less than the velocity C of propagation of said mechanical vibrations along said wall of said monolayer reservoir, said wall section and sound conductors being generally disposed in a desired region relative to the position of the interface to be monitored or controlled; a generator of electric oscillations having an output coupled to said emitter of said wave of acoustic vibrations; an amplifier of electric signals having an input coupled to said receiver of an acoustic wave and having an output; a recorder of the amplitude of electric signals coupled electrically to said output of said amplifier of electric signals, this amplitude being used for ascertaining said gas-liquid or liquid-liquid interface.

4,118,984
LIQUID LEVEL INDICATOR FOR AN EXTREMELY LOW TEMPERATURE-LIQUEFIED GAS EMPLOYING A SUPERCONDUCTOR WIRE
Yasuo Kuraoka; Astushi Kurosawa; Tetsuo Shirai, and Katsuro Saito, all of Sapporo, Japan, assignors to Hoxan Co., Ltd., Sapporo, Japan
Filed Aug. 29, 1977, Ser. No. 828,678
Int. Cl.[2] G01F *23/24*
U.S. Cl. 73—295 **4 Claims**



1. A liquid level indicator for an extremely low temperature-liquefied gas, comprising:
a superconductor wire which has terminals and which is immersed in the extremely low temperature-liquefied gas,
a voltmeter which is connected to the terminals of said superconductor wire so as to measure a voltage across said terminals, and
a current supply portion which is connected to said superconductor wire and which, at first, increases a current to be fed to said superconductor wire up to a plateau region in a current — voltage hysteresis curve of said superconductor wire, and thereafter, decreases it down to a return-path rectilinear region in the curve departing from the plateau region, a liquid level of said liquefied gas being gauged on the basis of the measured value of the terminal voltage of said superconductor wire as obtained by the use of the decreased current.

4,118,985
RADIATION PYROMETERS
William A. Compton, San Diego, Calif., assignor to International Harvester Company, Chicago, Ill.
Division of Ser. No. 501,988, Aug. 30, 1974, Pat. No. 4,037,473, which is a continuation of Ser. No. 181,157, Sep. 16, 1971, abandoned. This application Nov. 30, 1976, Ser. No. 746,243
Int. Cl.[2] G01J *5/04*
U.S. Cl. 73—346 **2 Claims**



1. Temperature measuring apparatus comprising detector means for generating an electrical signal having a magnitude proportional to the intensity of radiant energy impinging thereon; means for conducting radiant energy from a body subjected to temperature measurement to said detector means including an optical component adapted to lie in the optical path between said body and said detector means, said component being capable of transmitting radiant energy impinging thereon; and means adapted to be interposed between the optical component and the body subjected to temperature measurement for keeping foreign material from collecting on said component, said last-mentioned means comprising a housing surrounding said optical component; interface means in said housing adjacent said optical component for keeping foreign material from reaching said component; means in said housing on the opposite side of said last-mentioned means from said optical component providing an annular plenum; means providing an inlet to said housing and to said plenum; means providing outlets through which fluid can flow from said plenum into said housing; a first baffle means in said housing for directing fluid exiting through said outlets across said interface means to keep foreign material from collecting thereon, said first baffle means having an aperture through which radiant energy can pass to said interface means; means providing a fluid outlet from said housing along the optical path through which energy emitted from the body subjected to temperature measurement can pass; and a second baffle means in said housing for directing fluid exiting from said plenum first into entraining relationship with the fluid directed across said interface means and then through the outlet from the housing, said second baffle means also being apertured so that radiant energy can pass therethrough to said interface means.

4,118,986

TEMPERATURE MEASURING DEVICE FOR ROTARY KILNS

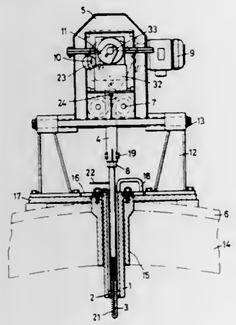
Dietrich Werner, Messel; Konrad Schymura, Oberursel; Hans Georgi, Bad Homburg; Walter Pech, Wiesbaden, and Wilhelm Lange, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 8, 1977, Ser. No. 804,836

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626938

Int. Cl.² G01K *13/02, 13/08*

U.S. Cl. 73—351 **5 Claims**



1. A temperature measuring device for rotary kilns, comprising: a sleeve rigidly mounted in a bore in the shell of the rotary kiln and having one end portion extending into the rotary kiln, a ceramic ring mounted at said one end portion and having an inner opening having a diameter smaller than that of the sleeve, a protective tube received in the sleeve and closely received through the opening in the ceramic ring for sliding movement, wherein the tube is guided to avoid contact with the sleeve, a thermocouple disposed in the protective tube at one end portion thereof corresponding to said one end portion of the sleeve, means mounted on the outside of the shell and disposed directly above the opening in the ceramic ring and the sleeve for lifting and lowering the protective tube to effect the cleaning thereof comprising a rod secured to the other end portion of the protective tube, means coaxially guiding the tube in the lifting and lowering means with respect to the opening of the ceramic ring, and means controlling the lowering and lifting means to first lower the rod so that the protective tube can knock off dirt on the ceramic ring, to then lift the rod so that the one end portion of the protective tube is retracted until the end thereof is disposed in the ceramic ring and lastly lower the rod to such an extent that the one end portion of the protective tube protrudes from the ceramic ring to effect measurement.

4,118,987

DEVICE FOR TAKING LIQUID SAMPLES

Horst Zeh, Karlsruhe, Fed. Rep. of Germany, assignor to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen mbH, Eggenstein-Leopoldshafen, Fed. Rep. of Germany

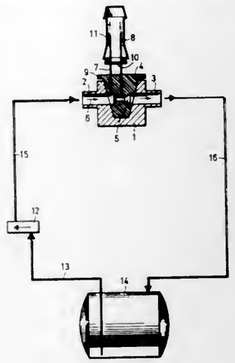
Filed Apr. 6, 1977, Ser. No. 785,182

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614787

Int. Cl.² G01N *1/20*

U.S. Cl. 73—422 R **6 Claims**

1. In a device for taking liquid samples from a liquid circuit, including a needle head housing provided with a throughgoing flow passage having inlet and outlet ports and arranged to be inserted in the liquid circuit to provide liquid flow through the flow passage; pressure reducing means arranged between the passage inlet and the passage outlet for generating a pressure drop of the liquid in the passage; and two spaced hollow needles supported in the needle head housing; each needle having a first and a second end; the first needle ends communicating with the passage at locations where different fluid pressures prevail during operation; the second needle ends being insertable into a sampling vessel; the improvement wherein said needle head housing is formed of an outer component containing one part of said passage including said inlet and said outlet ports and an inner component including means for releasably attaching said inner component to said outer component; said inner component containing the other part of said passage, said pressure reducing means and said hollow needles.



4,118,988

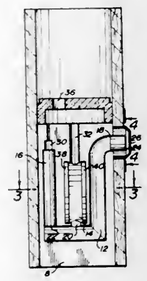
BOTTOM FILL SAMPLING APPARATUS

Joseph J. Boron, Medina, Ohio, assignor to Rossborough Manufacturing Co., Cleveland, Ohio

Filed Aug. 19, 1977, Ser. No. 826,186

Int. Cl.² G01N *1/12*

U.S. Cl. 73—425.4 R **1 Claim**



1. An apparatus for taking a sample of molten metal comprising:

a housing adapted to be releasably secured to a lance;

a body within the housing defining a mold cavity;

said body and housing defining a molten metal flow path having an entrance and an exit, said body further defining a waste receptacle in communication with said cavity;

a protective member over the entrance of said flow path, said member being comprised of material substantially similar in chemical analysis to that of the desired final analysis of the molten metal being sampled;

said flow path entering said body and housing from the side and communicating with said mold cavity at the lower end thereof when said apparatus is oriented in its position of use.

4,118,989

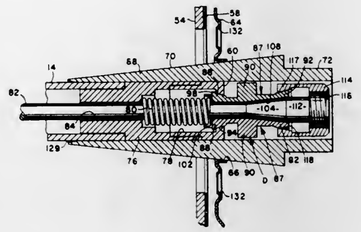
LOCKING MECHANISM

Ralph R. Wood, Florissant, Mo., assignor to Wyle Laboratories, El Segundo, Calif.

Filed Feb. 22, 1977, Ser. No. 770,916

Int. Cl.² G01M *1/02*

U.S. Cl. 73—487 **17 Claims**



1. A locking mechanism comprising: a hollow shaft having a terminal end; expandable means carried by said shaft axially outwardly of said terminal end for movement relative to said shaft radially and axially; and, expanding means carried by said shaft for axial movement relative to said shaft and said expandable means independently of movement of said shaft, said expanding means being movable axially in one direction relative to said shaft and expandable means while said shaft is stationary for outwardly expanding said expandable means, and said expanding means and expand able means being movable in unison in said one direction relative to said shaft while said shaft is stationary for locating a device held by said expandable means in a desired axial position relative to said shaft.

4,118,990

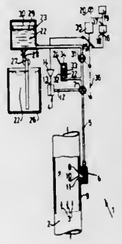
METHOD AND DEVICE FOR MEASURING A PRESSURE IN A SUSPENSION CONDUIT

Gerrit Hendrik van Zeggelaar, Utrecht, Netherlands, assignor to Bagger en Grond (Amsterdam Ballast Dredging) Ballast-Nedam Groep N. V. and Amsterdamse Ballast B.V., Amstelveen, Netherlands

Filed Apr. 12, 1977, Ser. No. 786,958

Int. Cl.² G01L *7/00*

U.S. Cl. 73—714 **24 Claims**



1. In a suspension conveying system including a suspension conduit having a pressure sensing chamber formed in a wall portion thereof, the combination of:

a nozzle passage opening into said pressure sensing chamber and a duct connected to said passage;

rinsing means for supplying liquid under sufficient pressure to overcome the pressure in said conduit;

pressure-sensing means for sensing pressure in said conduit through said duct;

recording and/or indicating means connected to said pressure-sensing means for recording and/or indicating the pressure sensed by said pressure-sensing means; and

control means for periodically connecting said rinsing means to said nozzle passage through said duct for time durations each of which is small in comparison with the control period.

4,118,991

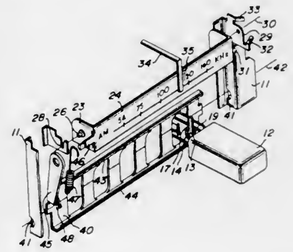
TUNING DISPLAY MECHANISM FOR MULTIBAND PUSHBUTTON TUNABLE RECEIVER

Louis Albert Bevacqua, Des Plaines, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 30, 1976, Ser. No. 755,702

Int. Cl.² F16H *35/18*

U.S. Cl. 74—10.33 **17 Claims**



1. A tuning display mechanism for a mutliband pushbutton tunable receiver, including in combination:

a receiver with a chassis;

a plurality of manually slidably actuatable pushbutton tuning assemblies each coupled to said chassis for tuning said receiver to predetermined frequencies in any of a plurality of frequency wavebands upon manual actuation;

cam means, mounted to each of said puchbutton tuning assemblies for slidable movement therewith during actuation, for predesignating each of said pushbutton tuning assemblies for tuning said receiver to the frequencies in one of said plurality of different frequency wavebands; and

tuning display means coupled to said chassis and capable of selectively displaying longitudinal extending scales corresponding to each of said plurality of frequency wavebands, each of said predesignating cam means positioned for selectively engaging a portion of said tuning display means upon manual sliding actuation of the one of said pushbutton assemblies carrying said cam means to select and display the longitudinally extending scale corresponding to the waveband to which said manually actuated pushbutton assembly has been predesignated to.

4,118,992

CLUTCH MECHANISM FOR PUSH-BUTTON TUNER

Hiroaki Yamagishi, Ueda, Japan, assignor to Ono Seiko Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1977, Ser. No. 786,943

Claims priority, application Japan, Apr. 17, 1977, 51-43978

Int. Cl.² F16H *35/18;* **F16D** *13/50*

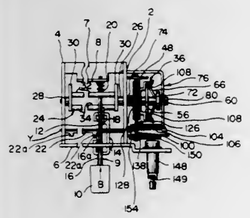
U.S. Cl. 74—10.33 **6 Claims**

1. In a push-button type tuner of the type including plural push buttons operatively supported in a frame, wherein cores are shiftable with respect to core bodies to achieve a variation in inductance, and wherein the varied position of a core may be maintained, the improvement of a clutch mechanism comprising:

a lever plate having a first end tiltably secured to a side plate of said frame and a second end having a cam edge, said lever plate having an opening therein;

a treadle bar assembly mounted within said frame and hav-

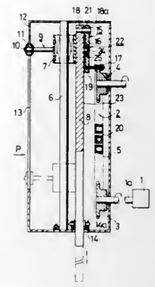
ing a first shaft extending through said side plate toward said lever plate;
a gear wheel rotatably fitted about said first shaft;
a clutch lever support fixedly connected to said gear wheel to be rotatable about said first shaft;
a manual tuning mechanism including a worm gear shaft having a worm gear meshing with said gear wheel for rotating said gear wheel and thus said clutch lever support;
a second shaft having a first end extending through said opening in said lever plate and a second end secured to said first shaft;
a disc fixedly positioned between said first shaft and said second end of said second shaft;
plural clutch levers having first ends retained in said clutch lever support and second ends embracing said second shaft, said clutch levers having apex portions contacting said disc;



a collar slidably positioned on said second shaft in contact with said second ends of said clutch levers;
spring means, connected between said side plate and said second end of said lever plate, for urging said second end of said lever plate to tilt about said first end thereof toward said side plate and to press against said collar, for thereby pressing said collar against said clutch levers, for thereby pressing said clutch levers against said disc, and for thereby pressing said disc against said clutch lever support, thus providing a clutching operation; and
a rotary member pivotally supported in said frame, said rotary member having an L-shaped projection on an end thereof adjacent said cam edge of said second end of said lever plate, such that depression of one of said push buttons pivots said rotary member such that said L-shaped projection pushes against said cam edge and pivots said lever plate away from said side plate against the biasing force of said spring means, thus providing a declutching operation.

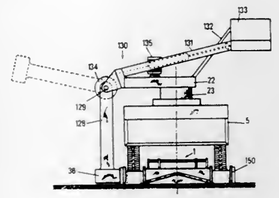
4,118,993
MECHANISM FOR CONVERTING ROTARY MOTION INTO LINEAR RECIPROCATING MOTION
Noriomi Miyoshi, and Michihiko Tsuruoka, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Mar. 17, 1977, Ser. No. 778,540
Int. Cl.² F16H *19/06*
U.S. Cl. 74—37 **7 Claims**

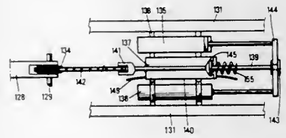
1. In a mechanism for converting rotary motion into linear reciprocating motion including a drive sprocket, a driven sprocket spaced therefrom, an endless chain coupled between said drive and driven sprockets, a rotary power source operatively coupled to said drive sprocket, a guide bar disposed parallel to the linear runs of said chain, a slide member slidably engaged with said guide bar, and means for coupling said chain member with said slide member, the improvement characterized by:
(a) said guide bar being spaced from the plane of said chain,
(b) an elongated output rod secured to said slide member,
(c) said coupling means comprising an elongated connecting rod, first means pivotally coupling one end of said connecting rod to said chain, second means pivotally coupling the other end of said connecting rod to said output rod, roller means spaced from said second means on said connecting rod for providing a rolling contact between said connecting rod and said output rod, and



(d) means for preventing the rotation of said slide member about said guide bar.

4,118,994
MOVABLE DEVICE FOR GENERATING ACOUSTIC SHEAR WAVES IN THE EARTH
Pierre-Claude Layotte, Les Mathes, and Jacques Cholet, L'Etang-la-Ville, both of France, assignors to Institut Francais de Petrole, France
Continuation-in-part of Ser. No. 724,383, Sep. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 589,676, Jun. 24, 1975, Pat. No. 4,050,540. This application Apr. 15, 1977, Ser. No. 787,879
Claims priority, application France, Sep. 23, 1975, 75 29470; Jun. 27, 1974, 74 22569
Int. Cl.² F16H *33/00*
U.S. Cl. 74—61 **9 Claims**

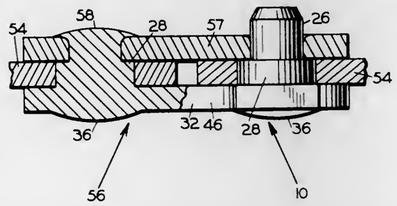




1. A device for generating shear waves in the earth comprising a target-member having a surface of contact with the earth, a mass for striking the target-member and means for imparting to said mass a speed having a component parallel to said contact surface, including movable actuating members, orientable with respect to the target-member, for maintaining the mass in a plane containing the target-member and control means for lifting the mass above the target-member and orienting its fall towards the target-member, and wherein the means for moving the mass by pivoting an elongate rigid member with respect to the support member comprises a toothed wheel

solid with the elongate rigid member and pivotable with respect to said support member, a chain in mesh with said toothed wheel and actuated by driving means solid with the support member, said support member being provided with a counterweight on the side opposite to the elongate rigid member.

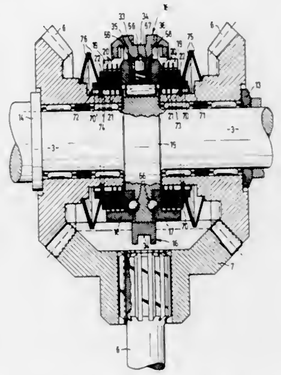
4,118,995
INTEGRAL TIE STRAP AND RIVET ASSEMBLIES FOR SAW CHAINS
Donald D. Lanz, and Ronald E. Hencye, both of Oregon City, Oreg., assignors to Omark Industries, Inc., Portland, Oreg.
Division of Ser. No. 733,258, Oct. 18, 1976, Pat. No. 4,037,403, which is a continuation-in-part of Ser. No. 613,168, Sep. 15, 1975, abandoned. This application Apr. 11, 1977, Ser. No. 786,095
Int. Cl.² F16G *13/04*
U.S. Cl. 74—245 S **1 Claim**



1. A saw chain assembly comprising: a repetitive sequence of a center link pivotally connected to a pair of side links, a solid cylindrical postlike protrusion having inner and outer end cylindrical portions extended from one of said side links and extended through the center link and then the other side link, said cylindrical postlike protrusion being extruded metal formed from the side link material to provide integral attachment thereto, said cylindrical postlike protrusion having its inner cylindrical portion forming a cylindrical being surface normal to the side link and being relatively larger in diameter than the outer cylindrical end portion, said inner cylindrical bearing portion nested within and extended through the aligned opening of the center link and providing the bearing surface on which the center link is pivoted, and the outer cylindrical end portion forming a shoulder with said inner cylindrical bearing portion and protruded through the aligned opening on the other side link with the protruded end headed to prevent removal, said opening of the other side link being smaller in diameter than the diameter of the cylindrical inner bearing portion of the protrusion and the other side link being abuted against the shoulder so that the length of said inner bearing portion establishes a spacing between the pair of side links, the length of the inner bearing portion being greater than the center link thickness and said spacing and said inner bearing surface normal to the side link thereby providing free pivoting of the center link relative to the side links.

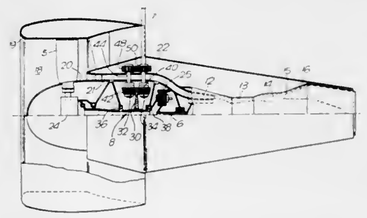
4,118,996
REVERSING GEAR IN PARTICULAR FOR A Z-DRIVE FOR WATERCRAFTS
Johann Eichinger, Putzbrunn, Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany
Filed Mar. 16, 1977, Ser. No. 778,152
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614845
Int. Cl.² F16H *57/00;* B63B *35/30;* F16D *11/06, 21/02*
U.S. Cl. 74—404 **2 Claims**

1. A reversing gear arrangement, comprising:
an input shaft;
axially spaced first and second bevel gears relatively rotatably mounted on said input shaft and with respect to each other and means for preventing a relative axial movement between said first and second bevel gears, said first and second bevel gears each having a common first cone center coincident with the axis of rotation of said input shaft;
a third bevel gear drivingly coupled to both of said first and second bevel gears, said third bevel gear having a second cone center coincident with said first cone center so that said first, second and third bevel gears define a U-shaped arrangement;



double clutch means positioned within said U-shaped arrangement defined by said first, second and third bevel gears for selectively drivingly coupling either one of said first and second bevel gears to said input shaft;
an output shaft fixedly secured to said third bevel gear; and
torque limiting means on said double clutch means and positioned within said U-shaped arrangement for limiting the magnitude of torque transmitted between the driven one of said first and second bevel gears and said third bevel gear.

4,118,997
BEVEL GEARING
Clifford Stanley Woodward, Bristol, and David Roberts McMurtry, Wotton-under-Edge, both of England, assignors to Rolls-Royce Limited, England
Filed Aug. 15, 1977, Ser. No. 824,617
Claims priority, application United Kingdom, Aug. 14, 1976, 33910/76
Int. Cl.² F16H *1/14, 37/06*
U.S. Cl. 74—417 **6 Claims**



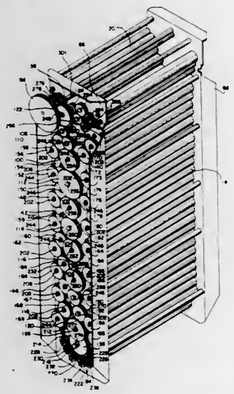
1. A bevel gearing assembly comprising a first shaft, a main bevel gear connected to the first shaft and having two circumferentially extending rows of teeth facing in opposite axial directions, and two secondary bevel gears meshing respectively with the two rows of teeth on the main bevel gear, the two secondary bevel gears being coupled to drive a second

shaft the axis of which lies at an angle to the axis of the first shaft.

4,118,998
TRANSPORT ROLLER RACK

Henry F. Hope, 3192 Huntingdon Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2548 Wyandotte Rd., Willow Grove, Pa. 19090

Continuation-in-part of Ser. No. 780,922, Mar. 24, 1977, which is a continuation-in-part of Ser. No. 737,199, Oct. 29, 1976, which is a continuation-in-part of Ser. No. 555,961, Mar. 10, 1975, Pat. No. 3,989,176, which is a continuation-in-part of Ser. No. 457,829, Apr. 4, 1974, abandoned, and Ser. No. 513,244, Oct. 9, 1974, Pat. No. 3,952,610. This application Jul. 26, 1977, Ser. No. 819,126
Int. Cl.² F16H *1/12*
U.S. Cl. 74—421 R **21 Claims**



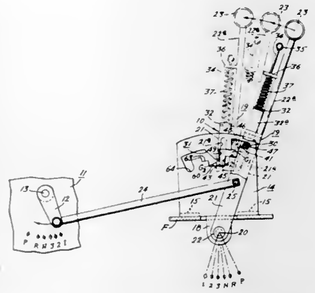
1. A transport roller rack for transporting webs, such as photographic films, comprising:
- a plurality of transport rollers positioned in a staggered pattern without forming nips, each roller having a roller driving gear at its end, and alternate pairs of adjacent rollers rotating in the same direction having their driving gears at opposite sides of the rack and in mesh with each other,
- a plurality of intermediate power gears of larger pitch diameter than the roller driving gears driving each other by meshing, selected ones of the intermediate power gears coaxially rotating selected ones of the roller driving gears in different pairs, and
- a plurality of main power gears driving each other through meshing, selected ones of said main power gears coaxially rotating main cluster drive gears of smaller pitch diameter which in turn rotate intermediate power gears through meshing.

4,118,999
AUTOMATIC TRANSMISSION SHIFTER

William J. Bieber, 21901 Adler Dr., California City, Calif. 93505

Filed Oct. 15, 1976, Ser. No. 732,881
Int. Cl.² G05G *7/08*
U.S. Cl. 74—475 **18 Claims**

1. A shifter for an automatic transmission having at least first, second and third speed ranges, said shifter comprising:
- a frame means adapted to be mounted in a vehicle;
- a handle mounted to said frame means for pivotal movement about an axis between first, second and third positions corresponding to said first, second and third speed ranges;
- selector pin means moveable about said axis in response to pivotal movement of said handle;
- locator surface means on said frame means at said handle positions engageable by said selector pin means to dispose said handle in said positions, said locator surface means including a first surface at one level for said first position, a second surface at a different level for said second position;
- forward abutment surface means extending on said frame means transversely to each of said first and second position locator surfaces and depending below the level of said first and second locator surfaces so as to be disposed in the path of movement of said selector pin means for engaging said selector pin means after it leaves the first and second locator surfaces at the completion of rapid upshifts to arrest forward motion of the handle;

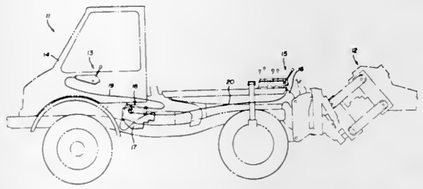


- rearward abutment surface means on said frame means cooperating with said forward abutment and locator surface means to define gates affording passage of said selector pin means in the reverse direction;
- biasing means acting on said selector pin means to urge said selector pin means into engagement with said locator surfaces and operable at the completion of an upshift to displace said pin means positively through said gates; and
- trigger means carried by said handle for displacing said selector pin means against its bias to afford placement of said handle in selected ones of its shift positions.

4,119,000
REMOTE CONTROL ASSEMBLY

Phillip G. Venable, Orion, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed May 12, 1977, Ser. No. 796,091
Int. Cl.² G05G *11/00*
U.S. Cl. 74—479 **22 Claims**



1. In a tractor-like vehicle having a hydrostatic pump for operating one or more tractor attachments, said hydrostatic pump having a pump control element whose rotation controls pump operation, and including a first remote pump control device disposed in a first predetermined area of the tractor vehicle and a second remote pump control device disposed in a second and different predetermined area of the tractor vehicle, each of the pump control devices having a manually-operable control lever positionable to a locked neutral position, a forward position and a reverse position, an improved remotely operable hydrostatic pump control assembly comprising:

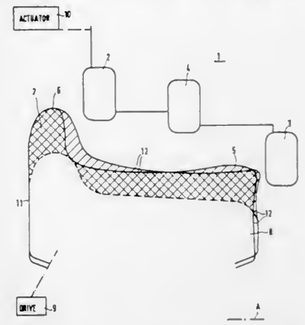
- a pivot means;
- a control arm having a first portion secured to said pump control element for rotating same in a first direction for forward operation and in a second and opposite direction for reverse operation and a second portion spaced from said first portion for operatively carrying said pivot means;
- a pivot member having an intermediate portion adapted to be pivotally attached to said pivot means for rotation with respect to said control arm;
- first control cable means including a cable having one end operatively coupled to said first remote pump control device and the control end operatively connected to one end portion of said pivot member for defining a first fixed pivot axis through the point of connection whenever said control lever of said first remote pump control device is locked in said neutral position; and
- second control cable means including a cable having one end operatively coupled to said second remote pump control device and the control end operatively connected to the opposite end portion of said pivot member for defining a second fixed pivot axis through said point of connection whenever said control lever of said second remote pump control device is locked in said neutral position, said first control cable means being responsive to the control lever of said first remote pump control device being moved to said forward position for rotating said pivot member in said first direction about said second pivot axis such that said pivot means rotates said control arm in said first direction and responsive to the control lever of said first remote pump control device being moved to said reverse position for rotating said pivot member in said second direction about said second pivot axis such that said pivot means rotates said control arm in said second direction, said second control cable means being responsive to the control lever of said second remote pump control device being moved to said forward position for rotating said pivot member in said second direction about said first pivot axis such that said pivot means rotates said control arm in said first direction and responsive to the control lever of said second remote pump control device being moved to said reverse position for rotating said pivot member in said first direction about said first pivot axis such that said pivot means rotates said control arm in said second direction.

4,119,001
METHOD OF AND MACHINE FOR REPROFILING A RAILROAD-CAR WHEEL

Helmut Wittkopp, and Achim Lison, both of Erkelenz, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt GmbH, Erkelenz, Fed. Rep. of Germany

Filed May 3, 1977, Ser. No. 793,276
Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620393
Int. Cl.² B23B *1/00, 5/28, 3/28*
U.S. Cl. 82—1 C **11 Claims**

1. A method of reprofiling the outer periphery of a railroad car wheel by a turning operation with a single tool having several cutting portions arranged in fixed position relative to each other, said method comprising the steps of simultaneously premachining said periphery at two opposite axial end portions in a first pass with two cutting portions of said tool; and thereafter machining the entire periphery with at least one of said two cutting portions in a single finish cutting pass, the fixed

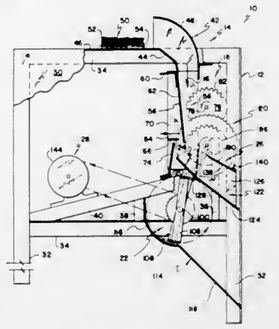


position of said cutting portions relative to each other being maintained during the whole machining operation.

4,119,002
SOD CUTTER

Ronnie Hamilton Coldiron, Portland, Tex., assignor to Turf-Tech Inc., Corpus Christi, Tex.

Filed Apr. 15, 1977, Ser. No. 787,910
Int. Cl.² B26D *7/06, 4/06*
U.S. Cl. 83—120 **8 Claims**

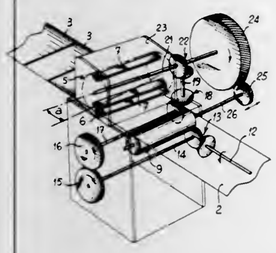


1. A machine for alternatively cutting large sod pieces into small sod blocks or sod strips, comprising
- means for receiving the large sod pieces and directing the same in a path of sod movement;
- a first cutting mechanism in the path of sod movement for severing the large sod pieces into sod strips including a plurality of blades parallel to the path of movement and means for rotating the blades;
- a second cutting mechanism disposed to receive the strips from the first cutting mechanism for severing the strips into small sod blocks;
- means providing a discharge chute; and
- a diverter comprising a plurality of finger members mounted for movement between a non-diverting position interdigitating with the blades for directing the sod strips toward the second cutting mechanism and a diverting position for directing the sod strips to the discharge chute.

4,119,003
APPARATUS FOR TRANSVERSELY CUTTING A WEB OF MATERIAL

Louis Gaston Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon, Orleans, France

Filed Apr. 13, 1977, Ser. No. 786,982
Claims priority, application France, Apr. 13, 1976, 76 10765
Int. Cl.[2] B26D *1/56;* B23D *25/02*
U.S. Cl. 83—341 8 Claims

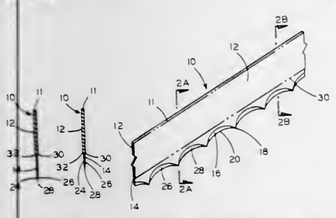


1. Apparatus for transversely cutting up a web, the apparatus comprising a cutting head having a transverse shaft, a cutting cylinder firmly mounted on said transverse shaft, at least one blade being provided on the periphery of the cutting cylinder, means for causing said transverse shaft and the cutting cylinder to rotate about the axis of said transverse shaft, a counter-blade extending below the cutting cylinder, a frame carrying the cutting cylinder and the counter-blade and mounted to pivot about a vertical and lateral axis so as to adjust the angle of the cutting head in relation to the web in dependence upon the rate of feed of the web, a first infeed element disposed below the web upstream of the cutting head, a second infeed element disposed above the web upstream of the cutting head, the first and the second infeed elements being pressed against each other, a first pinion having helical teeth and firmly mounted on the shaft of the cutting cylinder, and a second pinion having helical teeth and associated with the first infeed element, the helical teeth of the first and second pinions directly engaging each other.

4,119,004
CUTTING BLADE

Clarence H. Ludwig, 816 W. Cherry St., Bluffton, Ind. 46714

Filed Jul. 25, 1977, Ser. No. 818,396
Int. Cl.[2] B26D *1/46*
U.S. Cl. 83—661 8 Claims

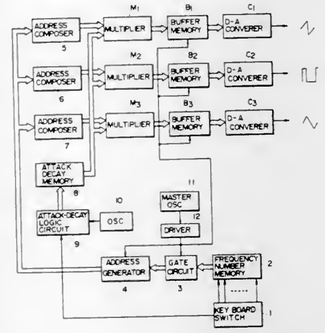


1. A slicing blade comprising a band having a flexible base section and a cutting section integrally related thereto and consisting of a series of regularly constructed scallops forming a cutting edge with regularly spaced cutting peaks and intermediate cutting valleys, inclined side faces of said scallops which intersect at the cutting edge which extends continuously between successive crests and valleys, and a reduced cross section untapered shank interconnecting the inclined side faces and said base and of substantially constant cross section throughout the length of the blade and of narrower dimension than said base to provide a continuous relief for the material being sliced by said cutting edge and providing substantially frictionless movement of the blade through the material being cut.

4,119,005
SYSTEM FOR GENERATING TONE SOURCE WAVESHAPES

Michio Kondo; Akira Nakada; Masanobu Chibana; Tsuyoshi Futamase, and Akiyoshi Ohya, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 619,557, Oct. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 448,573, Mar. 6, 1974, abandoned. This application Apr. 4, 1977, Ser. No. 784,317
Claims priority, application Japan, Mar. 10, 1973, 48/28159
Int. Cl.[2] G10H *1/02, 5/10*
U.S. Cl. 84—1.01 8 Claims



1. A system for generating tone source waveshapes comprising a pre-loaded frequency number memory device which stores in digital representation a plurality of frequency numbers corresponding respectively to the fundamental frequencies of the notes of said waveshapes; a keyboard switch circuit having a key-actuated switch for each of said notes for reading out a frequency number respectively corresponding thereto from said frequency memory device; an address generator responsive to the frequency number read out from said frequency memory device for producing a given number of successive address signals periodically, each address signal consisting of a plurality of bits; at least one address composer connected to receive said successive address signals from said address generator directly and responsive to a predetermined number of said plurality of bits of each address signal in the range from one bit to *n* bits, where *n* is more than one and less than the bit plurality, for digitally composing a tone waveshape having a fundamental frequency corresponding to said read out frequency number with an amplitude versus time characteristic determined by the digital word value of each predetermined number of address signal bits to which said one address composer responds; and means for converting the digitally composed tone waveshape into an analog equivalent thereof.

4,119,006
CONTINUOUSLY VARIABLE ATTACK AND DECAY DELAY FOR AN ELECTRONIC MUSICAL INSTRUMENT

John Thomas Whitefield, Harleysville, Pa., assignor to Allen Organ Company, Macungie, Pa.

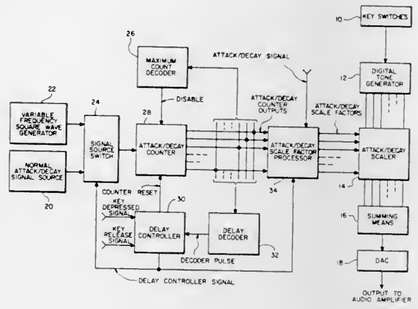
Filed Feb. 24, 1977, Ser. No. 771,617
Int. Cl.[2] G10H *3/00*
U.S. Cl. 84—1.13 8 Claims

1. In a digital electronic musical instrument having switches selectively actuable to cause the production of sounds corresponding to respective notes of the musical scale and an attack and decay signal whose logic states distinguish between an attack mode and a decay mode, an apparatus for delaying the audible attack and/or decay period comprising:

a digital up counter for counting through the "*n*" states of a selected period at a rate determined by the frequency of a signal source,

a first signal source means for advancing said digital up counter,

a second signal source means for advancing said digital up counter,



a switching means for selecting between said first and second signal source,

a delay decoder means for generating a pulse upon detection of a predetermined "*n*" state of said digital up counter,

a delay controller means for indicating the delay mode and resetting said digital up counter,

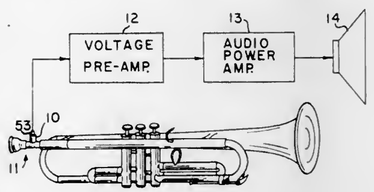
a maximum count decoder means for terminating the advance of said digital up counter upon detection of some predetermined "*n*" state of said digital up counter, and

a processor means responsive to said attack and decay signal and said delay controller signal for modifying said digital up counter output.

4,119,007
PRESSURE TRANSDUCER FOR MUSICAL INSTRUMENTS

John J. Criglar, 111 York Dr., Piedmont, Calif. 94611, and Arnold Lazarus, 39 Seward St. #3, San Francisco, Calif. 94114

Filed Feb. 2, 1976, Ser. No. 654,159
Int. Cl.[2] G10H *3/00;* H04M *1/00;* H01L *1/22, 10/10*
U.S. Cl. 84—1.14 7 Claims

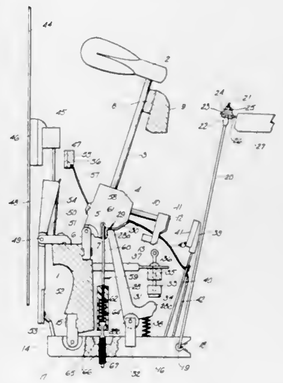


1. In a musical instrument having an air column through which pressure variations pass in producing musical sounds, and which may have a key hole used for altering the tone of musical sounds out of said instrument while in use, a pizzoresistive pressure transducer with said air column ahead of any key hole that may be present in the instrument for producing electrical signals linearly proportional to said pressure variations of musical sounds in said column produced by a musician operating the instrument, and means AC coupled to said transducer for applifying said signals, said transducer being comprised of piezoresistive elements in a Wheatstone bridge diffused on a stift diaphragm subject to direct pressure variations in said air column, and said signal amplifying means including a noiseless voltage amplifier stage coupling said transducer to a power amplifier stage comprised of a shielded transformer having primary winding connected across opposite ends of the bridge proper of said Wheatstone bridge.

4,119,008
MEANS FOR IMPROVING THE REPETITION CHARACTERISTICS OF AN UPRIGHT PIANO ACTION

Thomas E. Kimble, Covington, Ky., assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Feb. 9, 1977, Ser. No. 766,881
Int. Cl.[2] G10C *3/18*
U.S. Cl. 84—242 7 Claims



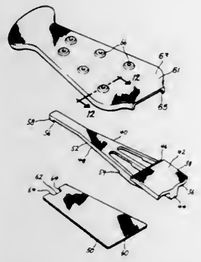
1. In an upright piano action of the type having a hammer for each key, each hammer having a pivotally mounted hammer butt so that the hammer is shiftable between an at-rest position and a string striking position, a pivotally mounted wippon operatively connected to the key, a jack pivotally mounted on the wippen and movable by the action of the key and wippen from an operative position beneath the hammer butt to a position out from under the hammer butt to propel the hammer from its at-rest position toward its string striking position upon depression of the key, and a back check to hold said hammer in a rebound position after striking said string and while said key is fully depressed, the improvement comprising an adjustable spring and linkage assembly attached at its ends to said wippen and said hammer butt, said spring and linkage assembly being so adjusted that said spring is essentially unloaded when said jack is beneath said hammer butt and upon depression of the key during movement of said hammer, wippen and jack to the point where said jack escapes from under said hammer butt, and so loaded by the relative movement of the wippen and the hammer butt after the jack has shifted out from under the hammer butt and said hammer has struck said string as to hold said hammer in an intermediate position upon partial release of said key and release of said hammer by said back check, permitting said jack to regain its operative position beneath said hammer butt without full key release.

4,119,009

STRINGED INSTRUMENT NECK WITH PEGHEAD

Charles William Kaman, II, East Killingly, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Nov. 29, 1977, Ser. No. 855,798
Int. Cl.[2] G10D *3/14, 1/08*
U.S. Cl. 84—293 **8 Claims**



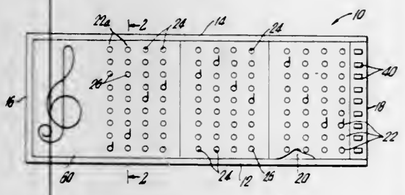
1. A neck for a stringed musical instrument, said neck comprising: a one-piece metallic neck frame having an elongated fingerboard section with upper and lower ends and a peghead section extending generally upwardly from said upper end of said fingerboard section and having two generally upwardly extending sides, a mounting plate located behind said peghead frame section, said mounting plate being engaged with said peghead frame section and having two wing portions respectively extending laterally beyond said two sides of said peghead frame section, a mass of structural foamed plastic surrounding said peghead frame section and said mounting plate, a plurality of machine heads each having a spindle extending through said mass of structural foamed plastic and one of said wing portion of said mounting plate, each of said machine heads further having at least one mounting flange, and a mounting screw associated with each of said mounting flanges, said mounting screw passing through said flange and through part of said mass of structural foamed plastic and being threadably engaged with an associated one of said wing portions of said mounting plate.

4,119,010

MUSIC TRAINING DEVICE

Anthony G. Holley, 265 Hicks St., Brooklyn, N.Y. 11201

Filed Aug. 23, 1976, Ser. No. 716,678
Int. Cl.[2] G09B *15/00*
U.S. Cl. 84—470 R **4 Claims**



1. In a music training aid device of the class described comprising, in combination,

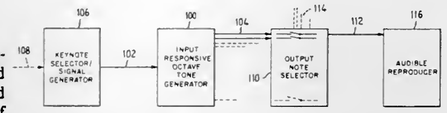
a. a housing having plural aligned vertical rows of equally spaced apertures in the face thereof;
b. each of said apertures being located on a line or space of a simulated music staff;
c. manually operable pegs associated with each aperture;
d. normally inactive plural sound producing means;
e. each of said plural sound producing means being related to the series of apertures and pegs in a horizontal line representative of the line or space in the music staff;
f. and means to activate said normally inactive sound producing means when a manually operable peg is manually operated to produce a sound representative of the musical pitch of an operated peg of series of pegs in a horizontal line in its related line or space of the music staff and to sustain said sound producing means to produce sound as long as said is operated.

4,119,011

MUSICAL INFORMATION APPARATUS PROVIDING VISUAL AND AUDIBLE OUTPUT

George Pandapas, Jr., 322 W. 72nd St., New York, N.Y. 10003

Filed Mar. 21, 1977, Ser. No. 779,366
The portion of the term of this patent subsequent to Jul. 20, 1993, has been disclaimed.
Int. Cl.[2] G09B *15/04*
U.S. Cl. 84—470 R **15 Claims**



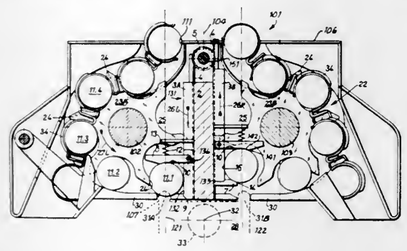
1. A musical information display device comprising first and second members supported for movement relative to one another, said first member bearing spaced musical note indicia, said second member having viewing apertures registrable with said indicia, a plurality of closure members each movable independently of movement of the remaining of said closure members to provide selective visual display of said indicia through said apertures, and circuit means responsive to such movement of said closure members to produce audible output signals indicative of the tonal character of such visually displayed indicia.

4,119,012

DOUBLE-FEED SPROCKET ARRANGEMENT FOR MUNITION CHANGING

Guenter Frye, Dusseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 733,339, Oct. 18, 1976, abandoned.
This application Dec. 6, 1977, Ser. No. 857,995
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1975, 2546843
Int. Cl.[2] F41D *9/02*
U.S. Cl. 89—33 SF **7 Claims**



1. In a double-feed arrangement for introducing munitions shells into an elongated breech of an automatic weapon having a breech block movable along a first axis through the feed arrangement for serially receiving shells therefrom, the breech block having first and second shell-engaging regions disposed on opposite sides of the first axis and extending upwardly in

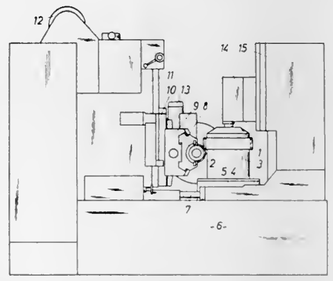
first and second planes, the feed arrangement comprising, in combination, first and second feed sprockets individually supported for rotation around second and third axes on opposite sides of and closely adjacent to the first axis thereof with the breech block being movable through the space between the feed sprockets, the feed sprockets respectively having a plurality of circumferentially spaced shell-receiving pockets therein for successively conveying shells along individual first and second paths extending through the first and second planes as the feed sprockets are rotated, first and second receptacle means for receiving shells from the respective feed sprockets to be selectively transferred to one of the shell-engaging regions of the breech block, means supporting the first and second receptacle means for reciprocal movement along the first and second planes, respectively, between aligned lower positions disposed in the path of movement of the first and second shell-engaging regions of the breech block and aligned upper positions spaced from said path of movement, and reversible control means coupled jointly to the first and second receptacle means for simultaneously moving the receptacle means vertically in mutually opposite directions along the respective first and second planes into selected positions between and including the upper and lower positions, when in said between position either receptacle means keeping a respective shell outside the respective shell-engaging region of the breech.

4,119,013

HYDRAULIC CHUCKING DEVICE IN A HOBBING MACHINE

Max Seitz, Munich, Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed Jan. 26, 1977, Ser. No. 762,752
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1976, 2604010
Int. Cl.[2] B23B *31/30;* **B23G** *23/06*
U.S. Cl. 90—1 **6 Claims**



1. In a chucking device mounted on a rotatably supported workpiece spindle of a gear hobbing machine, said chucking device having a chucking piston which is reciprocally movable in a chucking cylinder supported for rotation with said workpiece spindle, first fluid pressure supply means for selectively supplying pressurized fluid to said chucking cylinder and opposite sides of said chucking piston and second fluid pressure supply means for supplying pressurized fluid to said first fluid pressure supply means, the improvement comprising:

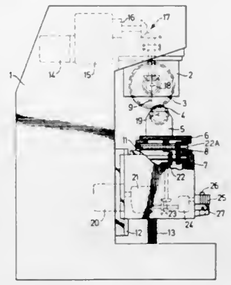
a. a face plate secured to said workpiece spindle and having a mounting surface thereon, said chucking cylinder being secured to said face plate, said chucking cylinder having an end plate sealing off one end of said chucking cylinder and forming a coplanar surface with said mounting surface on said face plate; and
b. means preventing a relative axial movement between said first and second fluid pressure supply means and first connecting means connecting said first fluid pressure supply means to said workpiece spindle for rotation therewith and with respect to said second fluid pressure supply means.

4,119,014

METHOD FOR PRECISION WORKING, PARTICULARLY SHAVING, OF GEARS

Herbert Loos, Dorfen; Manfred Heckmaier, Unterpfaffenhofen, and Gerhard Reichert, Puchheim, all of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed Feb. 9, 1977, Ser. No. 767,153
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615718
Int. Cl.[2] B23F *19/06*
U.S. Cl. 90—1.6 R **7 Claims**



1. In a method for the precision working of gear-shaped workpieces utilizing a gear-shaped tool, wherein crossed axes exist between said tool and said workpiece, wherein said tool and said workpiece are moved relative to each other in one single selectable plane which extends at a right angle to a common normal line at the smallest distance between the axes of said workpiece and said tool, the improvement comprising the steps of driving one of said tool and said workpiece for rotation in a first direction of rotation and simultaneously moving said tool and said workpiece toward each other in said single selectable plane to effect an initial engagement of the teeth on said tool and said workpiece at a first location in the path of said relative movement and the beginning of removal of material from said workpiece, reversing the driving direction of rotation of said one of said tool and said workpiece to a second direction of rotation at a second location in the path of said relative movement that is intermediate said first location and a third location defining the smallest distance between the axes of said tool and said workpiece, said second location being between more than half the distance between said first and third locations and less than total distance between said first and third locations.

4,119,015

BILLET MILLING EQUIPMENT

Goro Tuda, Kobe; Yoshihisa Sawada, Nishinomiya, and Yasuhiro Mugitani, Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

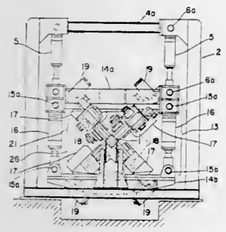
Filed Dec. 2, 1976, Ser. No. 746,894
Claims priority, application Japan, Dec. 5, 1975, 50-145664; Jul. 14, 1976, 51-84357
Int. Cl.[2] B23C *1/12, 1/00;* **B24B** *7/00*
U.S. Cl. 90—17 **10 Claims**

1. Billet milling equipment for cutting and removing a flaw by rotating a milling cutter in pressed contact with a surface to-be-cut of a billet, which comprises:

first frames forming a traveling path through which said billet passes,
a pair of upper and lower clamping frames which are move-

able so as to follow up a deformation of said billet and which are installed on said first frames,

a first and second milling cutter unit, which normally follow up the surface to-be-cut of said billet in correspondence with the deformation of said billet, installed on said upper and lower clamping frames, respectively, means for automatically advancing and retreating said first and second



milling cutter unit relative to said surface to-be-cut wherein driving means for bestowing feed of said billet are installed on one of said clamping frames, and driven means pairing with and operably connected to said driving means is disposed on the other of said clamping frames and wherein said clamping frames are installed on said first frames by cylinder members.

4,119,016

HYDRAULIC CONTROL DEVICE

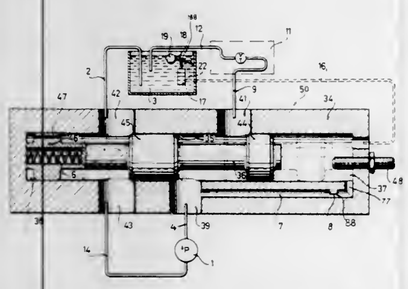
Christian Pfeil, Neuss, Rhein, and Hans Breidenbach, Delrath, both of Fed. Rep. of Germany, assignors to International Harvester Company, Chicago, Ill.

Filed Jul. 1, 1976, Ser. No. 701,475

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1975, 2533164

Int. Cl.² F15B *11/08, 13/042*

U.S. Cl. 91—449 **1 Claim**



1. A hydraulic power system of the type comprising a hydraulic power consumer unit, a hydraulic power source having fluid delivery and suction sides, a fluid reservoir including fluid therein at a predetermined system operational level, a float valve positioned in the reservoir and having a plunger valve linked by a lever arm to a float member, the plunger valve having a closed position when the fluid in the reservoir is at the system operational level and an open position when the fluid in the reservoir drops below the system operational level, a suction conduit having an open end positioned in the fluid in the reservoir below the operational level thereof and an opposite end connected to the suction side of the source, CHARACTERIZED BY:

a two position fluid flow diverter valve having a fluid inlet line connected to the fluid delivery side of the source and a fluid feed line connected to the unit and a fluid short circuit means connected to the suction side of the source, the diverter valve having an axially moveable valve spool means acted upon at one side by a spring and acted upon at an opposite side by fluid pressure in a chamber in the diverter valve whereby when the fluid pressure in the chamber exceeds the force of the spring it shifts the valve spool means to the first position of the diverter valve against the force of the spring and connects the inlet line to the fluid feed line and when the force of the spring exceeds the pressure of the fluid in the chamber it shifts the valve spool means to the second position of the diverter valve and connects the inlet line to the fluid short circuit means;

an axially adjustable stop means in the diverter valve chamber for limiting the axial displacement of the valve spool means in the second position of the diverter valve thereby controlling the rate of fluid flow from the inlet line to the short circuit means in said second position of the diverter valve;

a first control line including fluid flow restriction means therein restrictively connecting the delivery side of the source to the diverter valve chamber; and

a second control line connecting the diverter valve chamber to a float valve chamber; the plunger valve closing the float valve chamber from communication with the reservoir in the closed position of the float valve and opening communication in the open position thereof whereby the diverter valve chamber is depressurized and the valve spool means is shifted by the spring to the second position of the diverter valve;

the valve spool means having three control surfaces arranged at axially spaced-apart intervals to each other, one control surface arranged on the spring side of the diverter valve and having an opening therethrough connecting the spring side to the suction side of the source, a second control surface arranged on the chamber side of the diverter valve and interacting with the stop means, and the third control surface arranged between the other two control surfaces controlling fluid flow at the delivery and suction sides of the source.

4,119,017

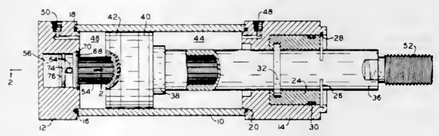
NON-ROTATABLE FLUID POWER CYLINDER

Kay T. Nusbaumer, and Peter W. Boyer, both of Fort Wayne, Ind., assignors to PHD, Inc., Fort Wayne, Ind.

Filed Mar. 23, 1977, Ser. No. 780,666

Int. Cl.² F01B *31/00*

U.S. Cl. 92—108 **17 Claims**



1. A fluid power cylinder comprising:

a cylinder barrel,

an end cap enclosing one end of said cylinder barrel,

a guide rod received within said cylinder barrel,

a piston slidably received within said cylinder barrel over said guide rod for rectilinear movement,

a piston rod connected to said piston,

means for slidably keying said piston to said guide rod whereby said piston is locked against rotation with respect to said guide rod about the longitudinal axis of said guide rod,

a guide rod holder rotatably received in said end cap for rotation coaxially with said piston and said guide rod,

means for movably connecting said guide rod and guide rod holder so that said guide rod is locked against rotation relative to said guide rod holder but permitting said guide rod and holder to tilt relative to each other, and

lock means associated with said end cap for releasably clamping said guide rod holder against rotation.

4,119,018

BENDING UNIT FOR A BENDING-GLUEING MACHINE

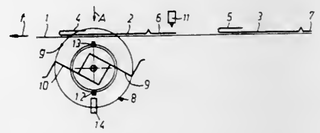
Giorgio Furtunato Nava, Milan, Italy, assignor to Vega S.p.A., Paderno Dugnano, Italy

Filed Feb. 25, 1977, Ser. No. 771,996

Claims priority, application Italy, May 28, 1976, 23727 A/76

Int. Cl.² B31B *1/54*

U.S. Cl. 93—49 AC **7 Claims**



1. The combination with conveying means for successively presenting a workpiece having a foldable rearward end for bending into the direction of travel of said conveying means, said workpiece projecting laterally beyond said conveying means, means for effecting continual travel of said conveying means, of a device for bending said foldable rearward end portion comprising a main shaft disposed beneath said conveying means in axially transverse relationship thereto, at least one pair of bending arms carried on said shaft for rotation thereof and being spaced apart axially of said shaft and projecting beyond opposed sides of said conveying means, a control shaft engaged to one end of main shaft in axially aligned relationship thereto, a signal receiving and processing unit for emission of processed energizing signals, clutch means connected to said signal processing unit for actuation by processed emitted signals for causing rotation of said shafts whereby the bending arms are rotated to engage the overlying workpiece foldable rearward end and carries same into bent condition, cam means interconnecting said control shaft and said main shaft for effecting dwell of said bending arms upon termination of said bending action for a predetermined interval and for permitting rotation of said main shaft thereafter, means for sequentially terminating rotation of said main shaft when said bending arms have moved a predetermined distance beyond bending position, and signal producing means energizing said processor when the next succeeding workpiece is in predetermined relation to said not stopped arms.

4,119,019

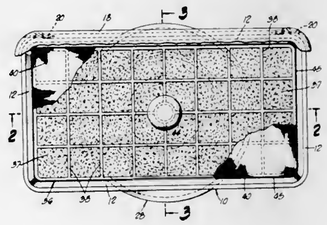
WATER REPLENISHING DEVICE FOR COFFEE MAKERS

William P. Reid, 3200 E. 29th St., Long Beach, Calif. 90806

Continuation of Ser. No. 653,291, Jan. 29, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,350

Int. Cl.² A47J *31/06*

U.S. Cl. 99—306 **7 Claims**



1. A filtering unit assembly for use in supplying replenishing water to the upper end of a heater tank of a coffee making machine, comprising:

an upstanding water receiving receptacle having downwardly converging side walls portions joined with an integral bottom wall;

said bottom wall being formed to provide a central depending well having a bottom wall with a discharge opening therein;

a container for soluble granules which release phosphate material, said container being seated in said well over said discharge opening and having permeable bottom and side wall portions for conducting water from the receptacle through said permeable side wall portion and through the container to said discharge opening; and

filter means spanning the bottom interior of the receptacle above said container for removing undersirable constituents from the water supplied from the receptacle to the heater tank, said filter means comprising a one-piece outer frame structure having an integral peripheral rib thereabout, said frame structure being constructed of a material which is sufficiently deformable to provide a water-tight seal between said rib and said wall portions.

4,119,020

APPARATUS FOR MAKING HOT DOGS AND THE LIKE

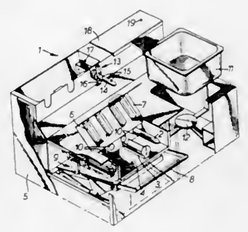
Douglas Cecil William Thomas Sharp, Three Gables, New Road Hill, Midgam, Berkshire, and Frank Ellis, 56 Thamespoint, Fairways Broom Rd., Teddington, Middlesex, both of England

Filed May 2, 1977, Ser. No. 792,853

Claims priority, application United Kingdom, May 10, 1976, 19208/76

Int. Cl.² A47J *37/08*

U.S. Cl. 99—339 **10 Claims**



1. A device for providing a cavity in a bun for receiving a filling, comprising a heating probe adapted to be inserted into a bun to compress the material of the bun to form the cavity and to toast the surface of the cavity so that the cavity remains after removal of the probe therefrom, locating means for locating a bun in alignment with the heating probe, and means for causing relative reciprotable movement between the probe and the locating means for causing the probe to be inserted into and removed from a bun located in the locating means in use.

4,119,021

GAS STOVE ATTACHMENT

Lucius Moses, Detroit, Mich., assignor to Viola M. Heyward, Sumpter, S.C.

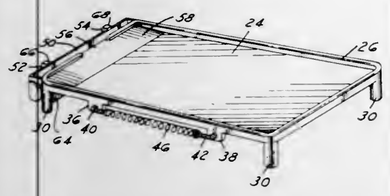
Filed Apr. 25, 1977, Ser. No. 790,435

Int. Cl.² A47J *37/10*

U.S. Cl. 99—425 **10 Claims**

5. For use with a gas stove having an upper deck provided with at least one opening surrounding a gas burner, an attachment comprising a substantially flat rectangular tray having peripheral edges, means for supporting said tray above the stove deck to provide an open region between said tray and deck, first and second opposed hook means operatively carried by opposite edges of said tray and extending beneath said tray through said open region for engaging a peripheral edge of the

burner opening, said first and second opposed hook means when so engaged holding said tray fixedly in place above the



stove deck, and a trough detachably disposed along one edge of said tray to receive grease and debris scraped from said tray.

4,119,022

DISPENSING HEAD FOR IMPREGNATING MEAT WITH A LIQUID

Dewey B. Dykes, Birmingham; E. Michael Powers, Mountain Brook; T. Kenneth Foster, Birmingham, and Robert E. Rogers, Mountain Brook, all of Ala., assignors to The Jim Dandy Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 585,400, Jun. 9, 1975, Pat. No. 4,005,226. This application Sep. 20, 1976, Ser. No. 724,703

Int. Cl.² A23L *3/34*

U.S. Cl. 99—532 **10 Claims**



2. For impregnating meat with a liquid under superatmospheric pressure, a dispensing head comprising

a nozzle-bearing member having

an outer pressing surface portion and

a continuous rim extending slopingly upward and outward about said outer pressing surface portion, and

a plurality of rigid tapered prong-like nozzles having rounded outer wall portions adjoining said outer pressing surface portion,

whereby when said dispensing head is mounted on a dispenser adapted to dispense a liquid under superatmospheric pressure and said dispenser is inverted and said nozzles penetrate into such meat and said pressing surface presses thereagainst sufficiently to spread such meat, said rim squeezes radially inward against the spread of such meat and aids in sealing the meat against said outer wall portions of said nozzles.

4,119,023

PORTABLE PALLET STRAPPING DEVICE

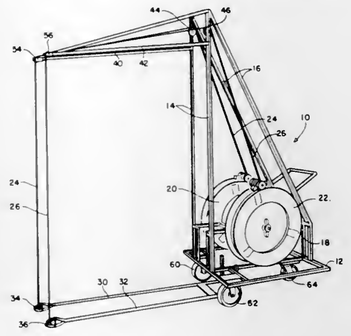
Thomas Jerald Boe; Charles M. Fell, and William Leon Jenkins, all of Naples, Fla., assignors to A. Duda and Sons, Oviedo, Fla.

Filed Jul. 11, 1977, Ser. No. 814,729

Int. Cl.² B65B *13/18*

U.S. Cl. 100—2 **10 Claims**

9. The method of threading strapping tapes through the apertures of a pallet so that a load can be readily strapped to the pallet, by the use of a threader device having tape dispensing means thereon, and a pair of threader bars extending outwardly from the base of the device, comprising the steps of securing the end of a strapping tape to the end of each threader bar, moving the threader device into contact with a loaded pallet, so as to cause the threader bars to extend through the apertures of the pallet, and the tapes to lie back along the



threader bars, removing the tape ends from the protruding ends of the threader bars, and bringing same into contact with respective loop portions of the tapes, thus to form two loops around the load, applying a tensioning tool to each tape to bring about a desirable amount of tension therein, securing each tape end fast to the loop of the respective tape, and thereafter cutting away the untensioned portion of each tape.

4,119,024

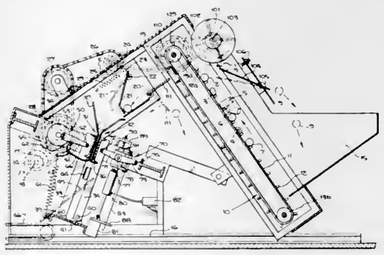
REFUSE CRUSHER

Harry B. White, 12756 Welby Way, North Hollywood, Calif. 91606

Filed Dec. 13, 1976, Ser. No. 749,795

Int. Cl.² B30B *1/26*

U.S. Cl. 100—35 **19 Claims**



18. A method of crushing objects including conveying objects from a source of objects, dropping objects off the conveyor between a pair of jaws, one of the jaws reciprocating with respect to the other jaw, closing the bottom of the jaws with a flap which is at least partially between the jaws when the jaws are open to receive objects therebetween and pivoting the flap from beneath the jaws when the jaws open after closing to crush the object to allow the object to drop out of the jaws, camming the part of the flap along the bottom of one of the jaws while the jaws are closing until the one jaw pivots the flap from beneath the jaws when the jaws close to crush an object.

4,119,025

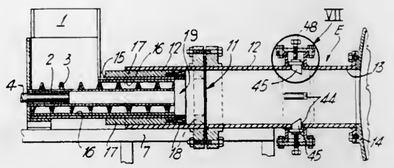
METHOD AND APPARATUS FOR CONVEYING PARTICULATE MATERIAL

Douglas Burthum Brown, Ottawa, Canada, assignor to Stake Technology Ltd., Ottawa, Canada

Filed Jan. 24, 1977, Ser. No. 762,093

Int. Cl.² B30B *9/38, 11/24, 13/00*

U.S. Cl. 100—35 **7 Claims**



1. A method of conveying a mass of particulate material from a feeding hopper outlet to a region of processing of said material, said method being of the type including the steps of conveying said material from a region at said hopper outlet by screw conveyor means, and further advancing the material through a conduit communicating said conveyor means with said region of processing, said method further including the steps of:

(a) subjecting said mass to a force generated by said screw conveyor means, said force being directed in an axial direction along a generally straight line, while simultaneously compacting said mass to a first degree of compactness, said first degree of compactness being achieved in a first region adjacent to and including a discharge area of said screw conveyor means, said first degree of compactness being achieved by the action of said screw conveyor means combined with frictional drag acting on said mass at said discharge area due to accumulation of said mass in said first region;

(b) discharging said mass from said first region into a second region, said second region being axially spaced downstream of said first region and being generally co-axial therewith;

(c) subjecting a portion of said mass located at said second region to an intermittent force directed to further advance said mass away from said first region in a direction generally co-axial with the centreline of said conveyor means, said intermittent force being imparted to said mass solely at an annular area generally co-axial with said screw conveyor means;

(d) subjecting the mass located downstream of said second region to a force frictionally retarding the mass relative to said intermittent force to thus further compact said mass to a second degree of compacting, said second degree of compacting being in excess of said first degree of compacting;

(e) further advancing the mass compacted to said second degree of compactness to said region of processing along a generally straight line co-axial with the centreline of said screw conveyor means, whereby a portion of said mass assumes the shape of a continuous, compacted plug corresponding in cross-section to the cross-section of said conduit; and

(f) discharging the leading end of said mass from said conduit into a processing means while maintaining said conduit in a permanent communication with said region of processing;

whereby said continuous compacted plug forms the sole closure means separating said region of processing from said hopper.

4,119,026

MACHINE FOR FORMING A ROUND BALE OF FIBROUS AGRICULTURAL MATERIAL

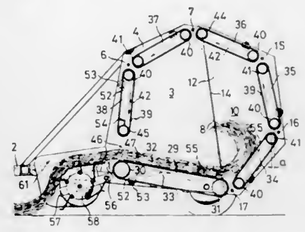
Hans Otto Sacht, Wolfenbuttel, Germany, assignor to Gebrüder Welger, Wolfenbüttel, Germany

Division of Ser. No. 612,104, Sep. 9, 1975, Pat. No. 4,009,653. This application Jan. 26, 1977, Ser. No. 762,483

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1974, 2443838

Int. Cl.² B30B *3/04*

U.S. Cl. 100—89 **9 Claims**



1. A machine for forming round bales of windrowed fibrous agricultural material and the like, comprising a cage-like frame having a horizontal central axis defining a generally cylindrically-shaped baling zone, said frame comprising a pair of upwardly extending side walls spaced apart in the horizontal direction, said side walls extending transversely of the horizontal central axis of the baling zone and defining the opposite ends of the baling zone, conveying means extending between said side walls, said conveying means comprising a bottom conveyor member for receiving the agricultural material as it enters the baling zone and a plurality of serially arranged conveying elements for receiving the agricultural material from said bottom conveyor member, and means for driving said conveying means in the direction defining the generally cylindrical circumferential peripheral of the baling zone, wherein the improvement comprises that said conveying elements are fixably journalled to the frame and stationarily mounted on said frame relative to each other during the bale forming operation and are disposed around the generally cylindrical periphery of the baling zone from said bottom conveyor member, the last one of the serially arranged said conveying elements is disposed above said bottom conveyor member in the generally cylindrical peripheral direction of the baling zone and said bottom conveyor member defines the lower side of an inlet opening into the baling zone, and said conveying elements comprise a plurality of conveying rollers arranged in side-by-side relation around the generally cylindrical periphery of the baling zone with the axis thereof disposed in generally parallel relation to the horizontal central axis of the baling zone.

4,119,027

REFUSE COMPACTOR

Alvin J. Elders, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 17, 1973, Ser. No. 397,831

Int. Cl.² B30B *15/30*

U.S. Cl. 100—215 **23 Claims**

1. A refuse compactor comprising:

a cabinet;

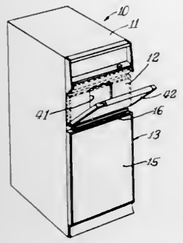
a container defining a compacting space in which refuse is disposed to be compacted and having an open portion through which refuse may be passed;

means for movably mounting the container to the cabinet for selective positioning in a compacting position within the cabinet and an access position outwardly of the cabinet for facilitated introduction of gross amounts of refuse thereinto;

ram means in said cabinet;

means for moving the ram means selectively between a retracted position adjacent the container open portion with the container in the compacting position and a compacting position wherein the ram engages and forcibly compacts the refuse in the container in its compacting position;

means for causing the configuration of the ram means in the retracted position to be different from that of the ram



means in its compacting position to define a small delivery passage within the cabinet providing limited access to the container open portion in the compacting position of the container; and

means providing controlled access to said delivery passage for introduction of small amounts of refuse through the delivery passage into the container with the container being disposed within the cabinet in its compacting position notwithstanding the disposition of the ram means adjacent the container.

4,119,028

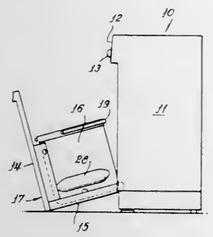
REFUSE CONTAINER FOR A COMPACTOR

Aman Ullah Khan, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 14, 1977, Ser. No. 776,998

Int. Cl.² B30B *15/32*

U.S. Cl. 100—218 **8 Claims**



1. For use in a refuse compactor, a storage receptacle for storing refuse to be compacted therein, said receptacle comprising

an open top container having a plurality of substantially vertically straight sidewalls and a bottom wall, at least one of said sidewalls having a pressure deformable hollow inwardly opening section thereof adjacent said bottom wall and extending outwardly out of alignment with the sidewall, said hollow section extending less than the horizontal extent of the sidewalls and being constructed to be deformed into substantial alignment therewith as a result of pressure being applied inwardly against said hollow section and to assume its hollow outwardly extending configuration when outwardly unrestricted.

4,119,029

MOLDED CHARACTER BELT WITH INTEGRAL SLEEVES

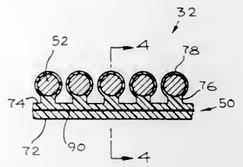
Norman McMillan, Westlake Village, and Henry M. Dier, Woodland Hills, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 639,349, Dec. 10, 1975, abandoned.

This application May 24, 1977, Ser. No. 801,202

Int. Cl.² B41J *1/20*

U.S. Cl. 101—111 **4 Claims**



1. A character belt for use in printing apparatus for successively presenting type characters to a print station, the character belt comprising:

an endless band of uniform width having inner and outer peripheral surfaces and characterized by being relatively flexible about an axis in the plane of said band perpendicular to its length and relatively rigid about an axis in the plane of said band parallel to its length;

a plurality of platforms each having an inner end substantially contiguous with said band outer peripheral surface and an outer end spaced therefrom by the height of the platform, said platforms being of uniform height and being uniformly spaced along said band outer peripheral surface extending across the width thereof and integral therewith;

a plurality of elongated slugs of circular cross-section, each having a circumferential surface and at least one end face and being oriented across the width of said band adjacent to a different one of said platforms;

a plurality of sleeves, each integral with a different one of said platforms extending from the outer end thereof, each sleeve having a wall thickness substantially less than the height of the platform, each sleeve formed of material molded around and conforming to the circumferential surface of the slug adjacent thereto, said sleeve material being permanently bonded to the circumferential surface of said slug; and

a type character carried on an end face of each of said slugs.

4,119,030

ENDLESS PRINTING BELT FOR ROTARY RUBBER STAMP

Takaji Funahashi, No. 1, 2-chome, Kitatakasho-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

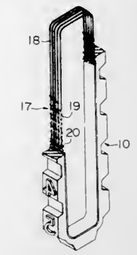
Filed Jun. 29, 1977, Ser. No. 811,190

Claims priority, application Japan, Jul. 13, 1976, 51-83380

Int. Cl.² B41J *1/20*

U.S. Cl. 101—111 **5 Claims**

1. An endless printing belt for a rotary rubber stamp, which comprises an endless rubber belt body having a plurality of printing letter sections on a surface thereof and a reinforcing endless belt fabric embedded in the back side of said endless rubber belt body, said endless belt fabric being woven by wefts including stainless steel fine wires disposed in parallel to one another in the lengthwise direction of said belt and filamentary warps comprising yarns composed of a synthetic resin having



a melting temperature substantially the same as the vulcanization temperature of the rubber of said endless rubber belt body.

4,119,031

APPARATUS FOR APPLYING AND WITHDRAWING A PRESSURE CYLINDER ACTING ON THE PLATE CYLINDER IN AN INTAGLIO PRINTING PRESS

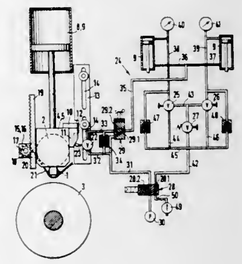
Ludger Ottenhues, Riesenbeck, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Aug. 11, 1977, Ser. No. 823,683

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2638750

Int. Cl.² B41F *13/40*

U.S. Cl. 101—153 **2 Claims**



1. An intaglio printing press having a pressure cylinder (**1**) acting on a plate cylinder (**3**), the press being adapted to be connected to a pressure source and having a frame, a journal for each end of the pressure cylinder displaceably mounted in the frame, lifting cylinder means having lifting cylinders (**8,9**) associated with respective journals (**4,5**) of the pressure cylinder (**1**) for raising and lowering the pressure cylinder, synchronizing shaft means for intercoupling the journals, and an apparatus cooperating with said lifting cylinder means for applying and withdrawing the pressure cylinder and for moving the pressure cylinder a predetermined distance to effect a cylinder change, said apparatus comprising:

first regulating valve means for controlling application and withdrawal movement of said pressure cylinder during printing by selectively connecting the pressure source to said lifting cylinders (**8,9**), said movement including a reversing period;

circuit means bypassing said first regulating valve means for connecting the pressure source to said lifting cylinders for raising the pressure cylinder for a cylinder change;

valve control means associated with one of the journals (**4,5**) and having a dog (**10**) and a control cam (**11**) for controlling said first regulating valve means, said control cam (**11**) switching said first regulating valve means during the reversing period and closing said first regulating valve means during cylinder change; and

second regulating valve means connectable to the pressure source for controlling pressure furnished said lifting cylinders during printing and including fine regulating valves (**25,26**) separately settable for each lifting cylinder (**8,9**), pressure sensing means (**40,41**) for indicating the pressures acting on the lifting cylinders, and regulating valve means (**27**) for controlling the supply of pressure from the pressure source to said fine regulating valves (**25,26**).

4,119,032

PRINTING PRESS WITH REMOVABLE PRINTING ROLL SLEEVE

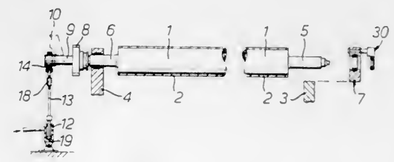
Richard John Hollis, Bristol, England, assignor to Strachan & Henshaw Limited, Bristol, England

Filed May 27, 1977, Ser. No. 801,347

Claims priority, application United Kingdom, Jun. 2, 1976, 22847/76

Int. Cl.² B41F *27/10*

U.S. Cl. 101—216 **10 Claims**



1. In a printing machine having at least one printing roll with a removable sleeve which provides a printing surface on the roll, said roll having a shaft member on each end and being journalled in side frames of the machine one beyond each axial end of the roll by bearings in the respective side frames, each said shaft member extending beyond each respective side frame, the improvement comprising:

a removable block in one of said frames, said block having at least one dimension greater than the radius of said sleeve, the bearing in said one frame being in the removable block;

means for allowing the removal of said block from its position in the said one side frame and of the bearing from the roll, so as to allow for axial sleeve-removal and fitting operations to be carried out upon the roll from that axial end when said roll is maintained substantially in its working position; and,

means beyond the other side frame and acting on a said extending shaft member for counterpoising said roll and maintaining it substantially in said working position when said removable block has been removed from its position in the said one side frame.

4,119,033

INK ROLLER DEVICE FOR PRINTING HEAD OF HAND LABELER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

Filed Jun. 1, 1977, Ser. No. 802,426

Claims priority, application Japan, Jun. 15, 1976, 51-077211[U]

Int. Cl.² B41J *1/42*

U.S. Cl. 101—348 **12 Claims**

1. In combination, an ink roller device for use in inking a printing head and an ink roller containing and supplying casing;

said ink roller device comprising:

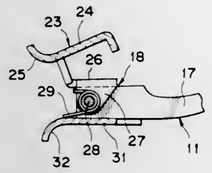
a mounting assembly for mounting said ink roller device;

a pair of arms extending from said mounting assembly; each

said arm having an end portion away from said mounting assembly; a notch defined in each said arm end portion; said notch including an entrance side leading into said notch;

an ink roller assembly removably attached to said arms; said ink roller assembly including an ink roller body; a pair of shafts, with each said shaft projecting from a respective end of said roller body; said shafts being so positioned and so sized as to be fittable in a respective one of said notches through said entrance sides thereof;

said casing having an upstanding front wall with two upstanding, vertically extending slots therein spaced a distance apart equivalent to the spacing distance separating said arms of said pair thereof; said casing having, on a wall



perpendicular to the said front wall, an outlet opening through which an ink roller body may be extracted; said front wall slots extending along said front wall beginning at said outlet opening, whereby said arms of said ink roller device may be inserted into said casing through said front wall slots, with said notches of said arms extended into said casing such that said notches may engage said shafts of an ink roller body in said casing, and the engaged said ink roller body may then be removed through said casing outlet by raising of said arms out of said front wall slots of said casing;

a plurality of said ink roller bodies normally positioned in said casing at a location to be accessible to said casing outlet and said front wall slots thereof.

4,119,034

LEAKPROOF INK SUPPLY RESERVOIR

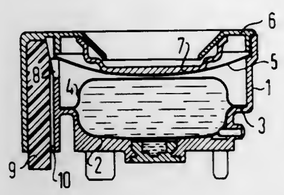
Franz Wax, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 1, 1978, Ser. No. 874,205

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 2704735

Int. Cl.² B41F *31/02*

U.S. Cl. 101—366 **7 Claims**



1. In a replaceable ink supply device for use in supplying ink to an ink printing device with the supply device including a housing means containing at least part flexible ink container and means for temporarily increasing the pressure of the ink in the container, the improvement of the housing having elevated wall means defining a chamber in which the container is at least partially received, an elastic diaphragm closing the chamber in opposition to the ink container, a plate means carried by the diaphragm for applying pressure to the container by movement of the plate means, a collection chamber associated with the housing means for receipt of ink and a venting and overflow channel between the chamber and the collection chamber interior.

4,119,035

PRINTING PLATE

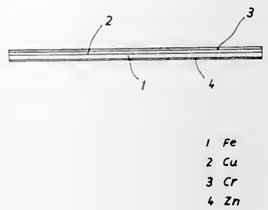
Kurt Reiser, and Paul Abendroth, both of Offenbach am Main, Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG., Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,906

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2649011

Int. Cl.² B41H *1/08*

U.S. Cl. 101—459 **1 Claim**



1. A flexible metal printing plate for clamping to the surface of a plate cylinder in a printing press in the presence of casual moisture plus traces of a plate and cylinder cleaning agent forming an electrolyte trapped in between comprising, in combination, a base layer of iron, a noble metal printing layer consisting of a layer of copper bonded to the top surface of the base layer and a layer of chromium bonded to the top surface of the copper with the bonding thereof resulting in noble metal residue on the under surface of the base layer, and a layer of zinc conductively bonded to the under surface of the base layer completely covering the same including the residue thereby to protect the surface of the cylinder in the presence of electrolyte from galvanic action by the residue.

4,119,036

ROCKET MOTOR COMPRISING COMBUSTIBLE CASE, NOZZLE, AND FINS

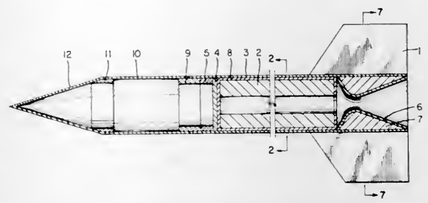
Minoru Hayashi, Tatsuno, and Kazuo Kishi, Himeji, both of Japan, assignors to Daicel Ltd., Osaka, Japan

Continuation of Ser. No. 628,503, Nov. 3, 1975, abandoned. This application Nov. 4, 1977, Ser. No. 848,740

Claims priority, application Japan, Dec. 23, 1974, 49-147810; Jan. 17, 1975, 50-7607

Int. Cl.² F42B *15/10*

U.S. Cl. 102—49.3 **22 Claims**



1. A completely combustible rocket comprising a rocket shell constructed of a laminate of high tensile strength metal foils, easily combustible metal foils and easily combustible adhesive layers, the easily combustible metal foils being of a different material than the high tensile strength metal foils.

4,119,037

CARRIER PROJECTILES FOR EJECTABLE PAYLOADS

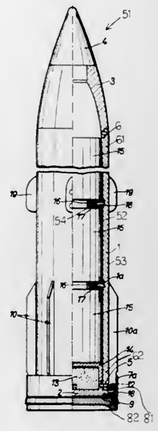
Rudolf Romer, Kaarst; Rolf Hellwig, and Dietmar Karius, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 2, 1976, Ser. No. 746,837

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2558060

Int. Cl.² F42B *13/50*

U.S. Cl. 102—69 **9 Claims**



1. In a carrier projectile adapted for supporting and ejecting a succession of longitudinally spaced payloads when an ignition charge disposed in the projectile is ignited, a central cylindrical body for receiving the successive payloads, a shell head coupled to a forward portion of the body, an ignition charge container coupled to a rear portion of the body, plunger means associated with the front portion of the ignition charge container for propelling the payloads forwardly when the charge in the charge container is ignited, a plurality of spacer elements disposed in longitudinally spaced relation in the cylindrical body for separating confronting ends of adjacent ones of the payloads, the portions of the inner wall of the cylindrical body radially aligned with the spacer elements having respective annular grooves tapering inwardly in a forward direction, and a blocking element carried by each spacer element and resiliently urged radially outwardly into contact with the associated groove on the cylindrical body so that each payload is propelled forwardly by the plunger under a positive load established by the urging force of the blocking means on the inner surface of the cylindrical body after ignition is effected.

4,119,038

CONTROLLED ACTIVATION OF RESERVE POWER SUPPLIES

Floyd Allen, Washington, D.C., and Asaf A. Benderly, Potomac, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 13, 1977, Ser. No. 796,583

Int. Cl.² F42C *11/06*

U.S. Cl. 102—207 **10 Claims**

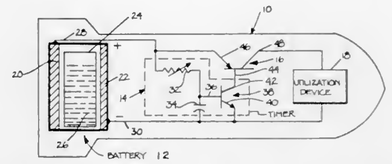
1. A system for controlling the activation of a reserve battery comprising:

a reserve battery activated in response to a predetermined external condition;

a utilization device powered by the battery;

timing means connected to the battery for switching on after a preselected time constant elapses subsequent to the instant of initial battery activation, said timing means operated by the reserve battery; and

switching means connected between the battery and the utilization device for switching current from said reserve battery to said utilization device responsive to the timing means,



said timing means operating said switching means upon lapsing of said preselected time constant, so that the utilization device draws load current from the battery only after full activation of the battery thereby preventing polarization of the battery.

4,119,039

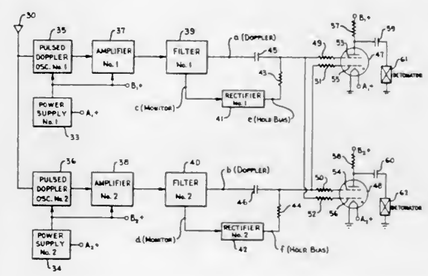
FUZE SYSTEM

Paul E. Wilkins, Fairfax, Va.; Glenn E. Neville, Washington, D.C., and Robert T. Fitzgerald, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 29, 1961, Ser. No. 113,991

Int. Cl.² F42C *13/04*

U.S. Cl. 102—214 **4 Claims**



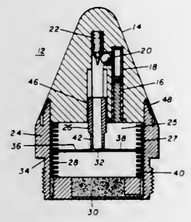
1. A fuze system comprising in combination: an antenna, a plurality of independent channels, a firing circuit, and detonator means; each of said channels comprising oscillating detector means for generating a transmitting signal and a monitoring signal, said detector means upon receipt of a target signal having an output containing a doppler frequency component, amplifying means connected to said oscillating detector means, means connected to said amplifying means for separating said monitoring signal from said doppler target signal, and rectifying means for forming a d-c holding bias from said monitoring signal; said firing circuit having first and second inputs; means for applying both the holding bias and the doppler target signal of one of said channels to said first firing circuit input, and means for applying both the holding bias and the doppler target signal of another one of said channels to said second firing circuit input said means responsive to said monitoring means enabling said fuze to operate by any remaining channels upon failure of one channel; said detonator means being connected to the output of said firing circuit.

4,119,040

VARIABLE TIME FUZE

Russell E. Lerman, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 25, 1977, Ser. No. 818,487
Int. Cl.[2] F42C *9/10*
U.S. Cl. 102—249 **3 Claims**



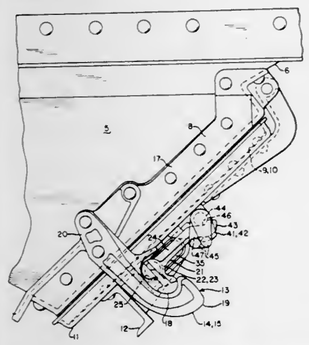
1. A fuze containing a pyrotechnic delay system for use in an explosive ordnance item comprising:
a hollow cylindrical base containing;
a spiral race positioned on the inner wall of said cylindrical base;
a delay cord positioned in said race and communicating with a booster charge;
an ogive rotatably mounted on said base;
an ignition bolt comprising;
a centerpost slidably mounted in and rotated by said ogive;
a circular head integrally mounted normal to said centerpost and peripherally extending into said race;
a primer positioned in said circular head, and
a channel communicating between the primer and an ignition charge at the periphery of the circular head for igniting said delay cord;
whereby a predetermined delay action is obtained by rotation of the ogive until the ignition charge in said circular head is positioned at a predetermined point along the delay cord in said race.

4,119,041

LOCKING MECHANISM FOR A PAIR OF RAILROAD HOPPER DOORS

James D. Hipp, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jul. 18, 1977, Ser. No. 816,368
Int. Cl.[2] B61D *7/18*
U.S. Cl. 105—308 R **9 Claims**



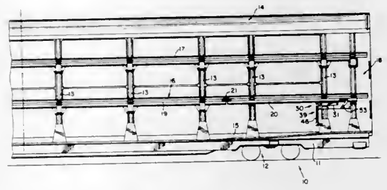
1. A locking mechanism for a pair of hopper doors which are laterally spaced side-by-side transversely of a railroad hopper car, comprising:
(a) at least one generally L-shaped cam rotatably mounted on each of the pair of hopper doors;
(b) at least one hook fixedly disposed adjacent each cam for interlocking engagement with the cams to hold the hopper doors in closed relation against a hopper door frame which is secured to a hopper of a railroad hopper car;
(c) means mounting the pair of hopper doors for unitary rotation to and from the hopper door frames;
(d) means mounting the cams for unitary rotation;
(e) a locking pawl carried by each of the hopper doors for interlocking engagement with the cams to keep the cams from rotating out of interlocking engagement with the hooks; and
(f) means mounting the pawls on the hopper doors for unitary rotation in a plane normal to the plane of the hopper doors, so that an operator can disengage the pawls from the cams and the cams from the hooks of both hopper doors from one side of the railroad car.

4,119,042

RAILWAY CAR COUNTERBALANCED TILTING DECK

David G. Naves, Calumet City, Ill.; Herman A. Aquino, Hobart, and Robert J. Mish, Merrillville, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Feb. 25, 1977, Ser. No. 772,200
Int. Cl.[2] B60P *3/08;* **B61D** *3/04, 3/16;* **F16F** *1/06*
U.S. Cl. 105—368 R **10 Claims**



1. A transportation device for carrying vehicles including a body having a lower vehicle supporting floor,
a plurality of longitudinally spaced upright side posts connected to said body on opposite side of said floor,
a deck supported on said side posts in vertically spaced relation above said floor,
said deck including a vehicle carrying first section rigidly connected to said post,
a second vehicle carrying section of said deck including hinge means connected to one end of said second section and to said first section whereupon the other end of said second section may be swung upwardly between raised and lowered positions, the improvement of,
a counterbalancing arrangement for said second deck section including:
a lever having a first end, a second end and pivot means intermediate said ends on said lever supporting said lever on one of said posts,
connecting means comprising a lost motion connection for pivotally joining the first end of said lever to the second section of said deck,
compressively loaded mechanical spring biasing means supported on one of said posts in substantially parallel relation thereto and slightly inwardly thereof and in shielded relation thereby,
said biasing means including link means pivotally connected to the second end of said lever, bracket means on said one post, and a spring operatively interposed between and connected to said link and bracket means and reactive thereagainst for exerting an upward force on the first end of said lever for raising said second section,

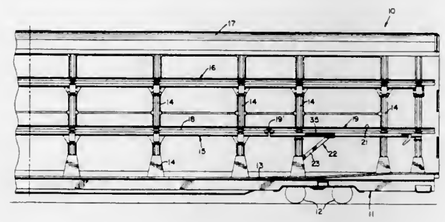
and support means on one of said posts for releasably supporting an outer end of said second section in a vehicle supporting position.

4,119,043

RAILWAY CAR COUNTERBALANCED TILTING DECK

David G. Naves, Calumet City, Ill.; Herman A. Aquino, Hobart, and Mitchell L. Morgan, Highland, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Mar. 9, 1977, Ser. No. 775,824
Int. Cl.[2] B60P *3/08;* **B61D** *3/04, 3/16;* **F16F** *1/06*
U.S. Cl. 105—368 R **9 Claims**



1. For a railway car for transporting vehicles including a car body having a floor,
a plurality of longitudinally spaced upright side posts connected to said body an opposite sides of the floor,
a deck supported on said side posts in vertical spaced relation above said floor,
said deck including a vehicle carrying first deck section rigidly connected to said side posts,
a second vehicle carrying deck section,
means hingedly supporting said second section with respect to said first section whereby one end of said second section may be pivotally moved between raised and lowered positions about an axis extending transversely of the car,
locking means on said car and second deck section selectively releasably locking said second deck section in said positions, the improvement of a support and movement limiting arrangement for said second deck comprising:
an arm extending diagonally between the second section and an adjacent post,
means pivotally supporting an end of said arm on the adjacent post to accommodate movement of said arm in a vertical plane extending longitudinally of the car,
second means pivotally connecting the other end of said arm to said second deck section,
said second pivotal means including guide means protectively carried within said second deck section and including stop means limiting longitudinal movement of said other end of said arm relative to said second deck in a direction substantially parallel to said second deck section for supportively limiting arcing movement thereof.

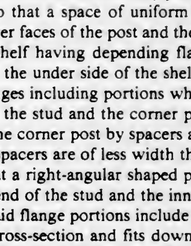
4,119,044

TOOL CADDY

Ralph E. Hines, Walden, Colo., assignor to Merlin J. Peterson, Walden, Colo., a part interest

Filed Jan. 17, 1977, Ser. No. 760,073
Int. Cl.[2] A47B *31/00*
U.S. Cl. 108—27 **6 Claims**

1. A tool caddy comprising:
a horizontal platform having wheeled support for movement over a surface;
a single post projecting rigidly upward centrally from near one margin of said platform;
a support assembly mounted on said post for movement in a vertical direction toward and away from said platform and including an upwardly-facing ledge, said ledge projecting horizontally away from opposing sides of said post;
means for latching said support assembly at selectively different heights above said platform;
a horizontal tray positionable above said platform;
a hanger affixed at one side of said tray and engagable over said ledge to support said tray removably above said platform, said hanger including a pair of downwardly depending tongues spaced laterally outward from said tray and individually disposed transversely apart to engage over said ledge on respective opposing sides of said post;
and a handle secured to said tray and positioned thereabove in an orientation enabling disengagement of said hanger from said ledge upon an upward pull to the handle.

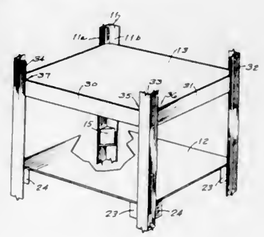


4,119,045

KNOCK-DOWN SHELVING STRUCTURE

Victor Galileo Michelotti, 6910 City Line Ave., Philadelphia, Pa. 19151

Filed Aug. 11, 1977, Ser. No. 823,829
Int. Cl.[2] A47B *47/00*
U.S. Cl. 108—156 **1 Claim**



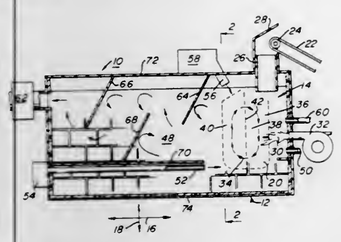
1. A shelving structure comprising upright, right-angular corner posts, each having at least one upstanding stud attached to its inner side at a level at which a shelf is to be supported, each stud being triangular in cross-section and presenting faces which are opposed to and are substantially parallel to the inner faces of the posts so that a space of uniform thickness exists between the two inner faces of the post and the opposing faces of the stud; and a shelf having depending flanges forming a triangular socket on the under side of the shelf to receive and fit the stud, said flanges including portions which snugly fit in said spaces between the stud and the corner post wherein the stud is attached to the corner post by spacers at the lower end of the stud and the spacers are of less width than the width of the stud faces so that a right-angular shaped pocket is formed between the lower end of the stud and the inner corner of the post and in which said flange portions include a tongue which is right-angular in cross-section and fits down in said pocket, and notches in said flange portions to receive said spacers.

4,119,046

INCINERATION SYSTEM AND METHOD

Jack C. Adams, 4317 S. 32nd Rd., Arlington, Va. 22206

Filed Aug. 11, 1976, Ser. No. 713,532
Int. Cl.[2] F23G *5/12*
U.S. Cl. 110—244 **19 Claims**



1. A waste material incineration method within a horizontally directed furnace, including the steps of:
(a) inserting waste material into a combustion zone of said furnace in a direction substantially normal to said horizontal direction;
(b) vortexing said waste material in said combustion zone to form a vortexing zone;
(c) densifying said waste material in a first section of said vortexing zone, having a diminishing cross-sectional area in a direction coincident with a first displacement path of said waste material in said first section; and,
(d) expanding said waste material in a second section of said vortexing zone having an expanding cross-sectional area in a direction coincident with a second displacement path of said waste material in said second section, a first portion of said waste material being maintained in said vortexing zone prior to substantially complete combustion.

12. A waste material incineration system comprising:
(a) a horizontally directed furnace having a predetermined cross-sectional area contour in a plane normal to said horizontal direction;
(b) means for vortexing said waste material within a combustion zone of said furnace, said furnace having a diminishing cross-sectional path of said waste material in a first section of said vortexing zone and an expanding cross-sectional area in a direction coincident with a second displacement path of said waste material in a second section of said vortexing zone, said displacement paths being in a direction substantially normal to said horizontal direction; and,
(c) means for removing a second portion of said waste material from said combustion zone subsequent to substantially complete combustion of said waste material in said combustion zone.

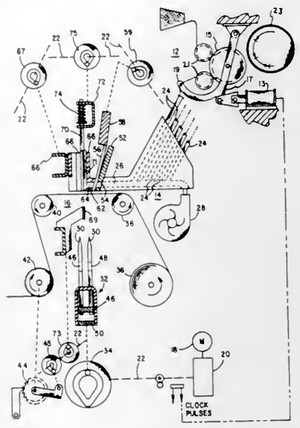
4,119,047

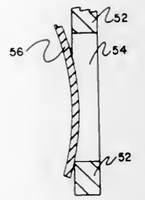
CUTTER MECHANISM FOR TUFTING MACHINE OR THE LIKE

Abram N. Spanel, 344 Stocton St., Princeton, N.J. 08540; P. Frank Eiland, Stamford; David R. Jacobs, New Canaan, both of Conn., and David N. Buell, Littleton, Colo., assignors to Abram N. Spanl, Princeton, N.J.

Filed Jun. 30, 1977, Ser. No. 811,969
Int. Cl.[2] D05C *15/16*
U.S. Cl. 112—79 FF **15 Claims**

1. In a tufting machine or the like, a cutting mechanism comprising:
a stationary blade having at least one opening therein through which at least one yarn strand projects; and
at least one reciprocating blade biased against said stationary blade and positioned so as to travel across said opening with said biasing causing said reciprocating blade to bow through the surface of the plane of said stationary blade facing said reciprocating blade into said opening thereby





severing the yarn strand as said reciprocating blade passes across said opening.

4,119,048

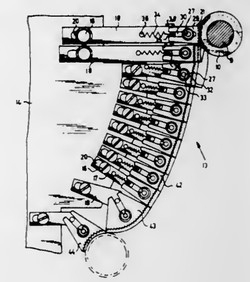
TEMPLATE CONTROL FOR SEWING MACHINES

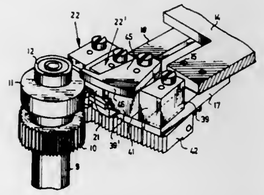
Hans Scholl, Oerlinghausen-Lipperreihe, and Horst Bernewasser, Steinhagen, both of Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Mar. 11, 1977, Ser. No. 776,545
Int. Cl.[2] D05B *21/00*
U.S. Cl. 112—121.12 **6 Claims**

1. A template control for relative movement between a workpiece and a tool on processing machines comprising:
a template including
a supporting plate,
a plurality of supporting bodies displaceably secured next to one another and parallel to one another on said supporting plate,
a plurality of tape carriers fastened to said supporting bodies, and
an elastic tape carried by said tape carriers for determining the shape of a contour of said template; toothed segments shiftably secured to each of said supporting bodies; spring means between said toothed segments and said supporting bodies for holding said toothed segments in an initial position;
a roller for following the contour of said template;
a gear pinion coaxially connected with said roller;
a drive shaft carrying said roller and said gear pinion; and
means for pressing said roller against said elastic tape and for engaging
said gear pinion with said toothed segments located next to one another for forming substantially a gear rack when said toothed segments are in operating position.

5. A template control for use in a sewing device comprising:
a sewing machine having a reciprocating needle;
supporting means for said sewing machine and permitting movement of said sewing machine in two directions;
a template including
a supporting plate,
a plurality of supporting bodies displacblly secured next to one another and parallel to one another on said supporting plate,
a plurality of tape carriers fastened to said supporting bodies,
an elastic tape carried by said tape carriers for determining the shape of a contour of said template, and





a plurality of segments having a front surface and secured next to one another to said supporting bodies, for forming a further contour part of said template,
toothed segments shiftably secured to each of said supporting bodies;
spring means between said toothed segments and said supporting bodies for holding said segments in an initial position;
a drive shaft coaxially with said needle;
a roller secured to said drive shaft for following the contour of said template;
a gear pinion coaxially connected with said roller; and
means for pressing said roller against said elastic tape and for engaging said gear pinion with said toothed segments located next to one another and forming a gear rack with uninterrupted toothing.

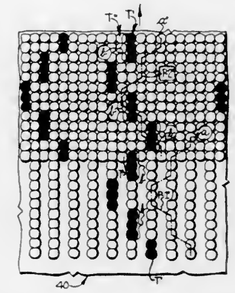
4,119,049

METHOD OF MAKING PATTERNED TUFTED FABRICS

Sandres Alfred Puckett, Laurinburg, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Division of Ser. No. 257,152, May 26, 1972, Pat. No. 3,908,570.
This application Feb. 28, 1975, Ser. No. 554,178
Int. Cl.[2] D05C *3/00*
U.S. Cl. 112—266 **8 Claims**

1. A method of making a patterned tufted pile fabric utilizing first and second parallel rows of spaced apart tufting needles with respective first and second sets of pile yarns carried by the first and second rows of needles and wherein the needles of the first row are staggered relative to the needles of the second row; said method comprising advancing a base material longitudinally past the rows of tufting needles, and forming respective rows of pile tufts of the first and second sets of pile yarns on the advancing base material by
(a) forming a longitudinal series of successive tufts from each of the respective first and second sets of pile yarns by inserting the first and second rows of needles through the base at longitudinally successive points, then



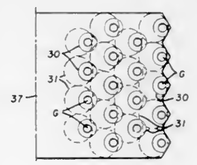
(b) shifting both rows of needles laterally of the base material to lay the first and second sets of pile yarns across the back of adjacent rows of tufts formed of the respective second and first sets of pile yarns, and then
(c) repeating the steps as prescribed whereby pile tufts of each pile yarn of the first set are formed adjacent opposite sides of pile tufts of each pile yarn of the second set and vice versa in at least a portion of the fabric.

4,119,050

METHOD FOR THE MANUFACTURE OF A CAN LID HAVING A TRIPLE-FOLD, PUSHDOWN GATE

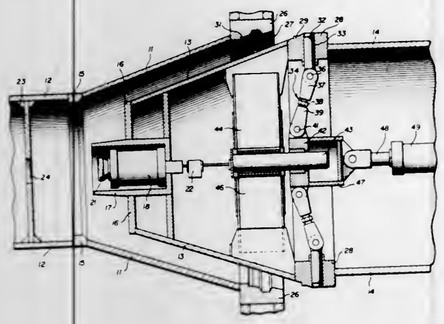
Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Filed Jan. 10, 1977, Ser. No. 758,128
Int. Cl.[2] B21D *51/38*
U.S. Cl. 113—121 C **7 Claims**



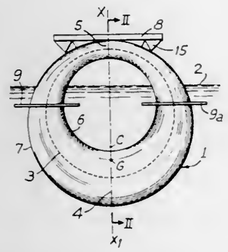
1. A method for the manufacture of a gated can lid preparatory to attaching the lid to the body of a can, said method including the steps of:
forming a triple-fold gate in a blank of metal which will constitute the can lid by drawing a cup in an aperture, folding the wall of the cup to form an interconnecting spacer strip underneath the aperture and a gate panel beneath the spacer strip, and at least partially outlining the gate with a cut in the panel underneath the spacer strip, the gate being disposed at a location offset from the center of the can lid and the drawing of the cup being such as to effect an area of disturbed metal about the gate aperture extending beyond the periphery of the can lid; and thereafter blanking the can lid through the area of disturbed metal, forming a peripheral circumferential chuck panel, a seaming panel, and a curl to complete the lid.

4,119,051
RIGID MOORING ARM QUICK DISCONNECT
James Allen Orndorff, Jr., Glen Ellyn, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Sep. 29, 1977, Ser. No. 837,689
Int. Cl.² B63B *21/56*
U.S. Cl. 114—249 **6 Claims**



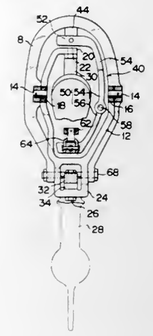
1. A locking system for joining two rigid yoke sections comprising:
a female truncated cone adapted to be connected at its smaller end to one of said yoke sections;
an annular ring attached to the circumference of said female cone at its larger end, said ring being provided on its inner face with a continuous circumferential slot;
a male truncated cone adapted to be connected at its larger end to the other of said yoke structures, said male cone being adapted to nest within said female cone;
a plurality of retractable shear keys circumferentially spaced around the larger end of said male cone and adapted to extend radially outwardly therefrom, said keys being positioned to enter said circumferential slot in said annular ring when said first and second cones are nested, whereby said cones are locked against axial displacement;
means for extending and retracting said shear keys; and
longitudinally reciprocable means attached to one of said cones for engaging the other of said cones when said cones are axially aligned in close proximity, said means being operable in one direction to draw said cones into nested relationship and in the opposite direction to separate said cones.

4,119,052
SEMI-SUBMERSIBLE VESSEL
Victor Rinaldi, 11, rue du Pré-aux-Clercs, 75007 Paris, France
Filed Jun. 27, 1977, Ser. No. 809,973
Claims priority, application France, Jun. 30, 1976, 76 19856
Int. Cl.² B63B *35/44*
U.S. Cl. 114—264 **11 Claims**



1. A semi-submersible vessel comprising a toroidal element in the form of a closed envelope defined by passing the center of a generating closed figure along a closed loop locus, said locus lying in a vertical plane and said closed figure being of variable size and having a maximum size at the lower part of the toroidal element and a minimum size at the upper part of the toroidal element so that the vessel's center of gravity is situated below its center of buoyancy, said toroidal element having a platform having a horizontal upper surface mounted on its non-immersed upper part.

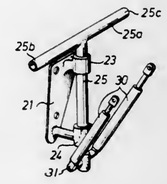
4,119,053
STEERING MECHANISM FOR INBOARD-OUTBOARD MARINE DRIVE
Masahide Yoshitomi, Yokohama, and Atsuo Yonekura, Yamato, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Dec. 20, 1977, Ser. No. 862,587
Claims priority, application Japan, Dec. 20, 1976, 51-152018; Dec. 20, 1976, 51-152019
Int. Cl.² B63H *25/42*
U.S. Cl. 115—35 **6 Claims**



1. In a steering mechanism for inboard-outboard marine drive units including an inboard engine and a power leg having a propeller rotatably mounted thereon, said power leg being adapted to be located outboard of the hull of a vessel and to be drivingly connected through transmission means having an input axis and first universal joint means to said engine;
the improvement comprising a stern plate mounted on said vessel, gimbal means rotatably mounted about a horizontal axis on said stern plate, first securing means for fixedly securing said power leg to said gimbal means at the lower end thereof, second securing means for fixedly securing said power leg to said gimbal means at the upper end thereof, axes of said first and second securing means being vertically aligned with each other, a tiller axis mounted on and through said stern plate, said tiller axis having a tiller mounted thereon, and steering arm means connected at its upper end to said tiller axis through second universal joint means, said steering arm means being divided into two parts and adapted to be pivoted with each other, lower end of said steering arm means being connected to said power leg through third universal joint means.

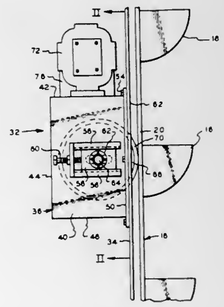
4,119,054
TRIMMABLE AND TILTABLE OUTBOARD MOTOR
Heinz Pichl, Upsala, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden
Filed Aug. 23, 1977, Ser. No. 827,004
Claims priority, application Sweden, Aug. 27, 1976, 7609501
Int. Cl.² B63H *5/12*
U.S. Cl. 115—41 HT **15 Claims**

1. In an outboard motor comprising a motor and a transom mounting bracket comprising first bearing means establishing an upright steering axis for said motor, a T-shaped swingable mounting element comprising an upright shaft rotatably disposed in said bearing means and having an upper end and a lower end portion and said element further comprising a horizontal transverse beam fixed to said shaft at its said upper end and disposed above said bearing means, said beam having opposite terminal end portions, second bearing means tiltably



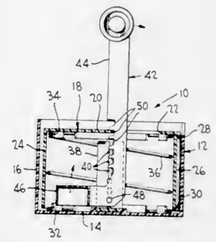
supportingly connecting said motor to said terminal portions, said lower end portion extending below said second bearing means, said motor including a connection portion disposed spacedly rearwardly of said second bearing means, and tilt adjusting means connected between said lower end portion and said connection portion.

4,119,055
TRACTION WHEEL MOTION SENSOR
Achard L. Ward, and John A. Ward, both of Jackson, Mich., assignors to Ward Industries, Inc., Jackson, Mich.
Filed Jan. 14, 1977, Ser. No. 759,349
Int. Cl.² B65G *43/00;* **G01P** *3/02*
U.S. Cl. 116—74 **3 Claims**



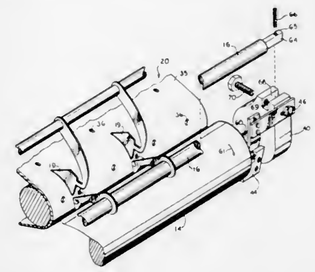
1. A traction wheel motion sensor for sensing the movement of a moving conveyor member comprising, in combination, a housing having an open end, mounting means defined on said housing for mounting said housing on a support adjacent the conveyor member to be sensed, a traction wheel shaft rotatably mounted on said housing, a traction wheel fixed on said shaft having a periphery extending from said housing open end, a friction material mounted upon said periphery of said traction wheel, said housing including a pair of spaced sidewalls, means adjustably mounting a bearing plate upon each sidewall for movement toward and away from said open end, a bearing mounted upon each bearing plate, said traction wheel shaft being rotatably mounted in said bearings, and said traction wheel being located within said housing intermediate said sidewalls whereby adjustment of said bearing plates varies the degree of extension of the periphery of said traction wheel from said open end, a rotary motion sensing device mounted on said housing having a rotatable input shaft, and power transmission means drivingly interconnecting said traction wheel shaft and said input shaft whereby said housing is mounted on a support adjacent the conveyor member to be sensed with said wheel periphery in engagement therewith and said input shaft is rotated at a rate dependent upon the rate of movement of the conveyor member.

4,119,056
WATER COLLECTION INDICATOR DEVICE
Robert F. Cahill, 4826 Kinglet, Houston, Tex. 77035
Filed Jun. 6, 1977, Ser. No. 803,887
Int. Cl.² G01F *23/08*
U.S. Cl. 116—118 A **18 Claims**



1. A water collection indicator device comprising
cup-like collector means for collecting water;
a visual signal means telescopingly positioned relative to said collector means;
bias means forcing said signal means away from said collector means; and
actuator means pivotally supported in said collector means including an arm engaging said signal means to prevent movement of said signal means away from said collector means and float means movable with rising water level in said collector means to pivot said actuator means and disengage said arm from said signal means whereby said bias means will move said signal means away from said collection means to produce a visual signal indicating collection of a predetermined amount of water.

4,119,057
GLUE APPLICATOR ROLL ASSEMBLY
Paul Wahnschaff, 3202 Marjan Dr., Atlanta, Ga. 30340
Filed Sep. 12, 1977, Ser. No. 832,657
Int. Cl.² B05C *1/02, 13/00*
U.S. Cl. 118—203 **5 Claims**



1. In apparatus for applying glue and the like to sheet-like material comprising a rotatable cylindrical roll including an annular surface and substantially flat end surfaces and mounted on an axle extending longitudinally therethrough, and means for applying liquid to said roll whereby sheet material contacts and is wetted by the roll, the improvement therein of a wiper blade assembly positioned at each end of said cylindrical roll with each wiper blade assembly comprising a support extending downwardly adjacent a flat end surface of said roll and

extending on the side of said axle on which said roll moves through a downward arc, a wiper blade mounted on the lower end portion of said support and including a substantially flat contact surface in engagement with said flat end surface of said roll, a liquid deflection surface merging at an approximately right angle with said flat contact surface and extending at a deflection angle from in front of said axle and in a downward direction toward the lower portion of said roll, said wiper blade further including a wiper leg extending from adjacent the flat end surface of said roll about the portion of annular edge of said roll adjacent the flat end surface of said roll and including a wiper leg contact surface in engagement with the annular surface of said roll and a liquid deflection surface extending from the annular surface of said roll in a downward direction.

4,119,058

GLUE APPLICATORS

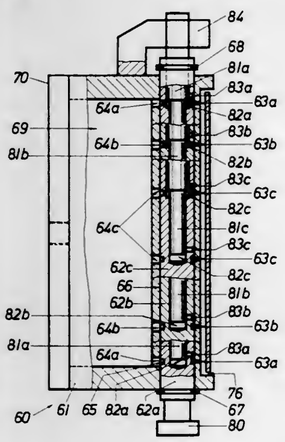
Alfred Schmermund, Kornerstrasse 62, 5820 Gevelsberg, Fed. Rep. of Germany

Filed Feb. 24, 1977, Ser. No. 771,489

Claims priority, application United Kingdom, Mar. 11, 1976, 9739/76

Int. Cl.² B05C *5/02*

U.S. Cl. 118—411 **36 Claims**



1. A glue applicator comprising a housing provided with an applicator nozzle, with valve means, and with a passage to conduct glue to the nozzle, the valve means being interposed between the passage and the nozzle and comprising a bore in the housing, a valve slide slidable in said bore to control communication between the passage and the nozzle, the valve slide being provided with a conduit and with a closure surface so arranged that in a first position of the valve slide communication between the passage and the nozzle is provided by the conduit and in a second position of the valve slide the closure surface closes at least one of the passage and the nozzle, and surfaces defining a cavity in the valve slide, the valve slide being provided with a channel which, in said second position of the valve slide, communicates with the nozzle and said cavity, said surfaces being relatively moved, on movement of the valve slide into said second position, to so increase the volume of said cavity as to create a partial vacuum therein to suck glue from the nozzle into said channel, and being relatively moved, on movement of the valve slide into said first position, to so decrease the volume of said cavity as to create a pressure to expel glue from said channel back into the nozzle.

4,119,059

MOUNTING ARRANGEMENT FOR COMPONENT ELEMENTS OF A COPYING MACHINE

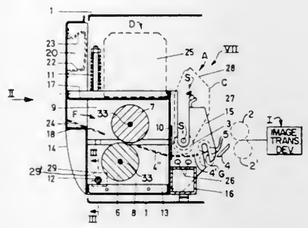
Kurt Moser; Helmut Wegmann, both of Gerlingen, and Reinhold Weigele, Korntal, all of Germany, assignors to Develop KG Dr. Eisbein & Co., Germany

Filed Apr. 15, 1976, Ser. No. 677,180

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1975, 2516436

Int. Cl.² G03G *15/00*

U.S. Cl. 118—644 **43 Claims**



1. An arrangement for a copying machine having a copying machine housing means, the arrangement comprising:

means for applying a magnetizable powder onto a paper sheet on which an image is to be copied,

means for fixing the applied magnetizable powder to the paper sheet including at least two opposed pressure roller means for applying a high pressure to the paper sheet to fix the magnetizable powder thereon,

means for structurally interconnecting said powder applying means and said powder fixing means so as to form of said powder applying means and said powder fixing means a single component element of the copying machine, and

means for mounting said single component element of the copying machine so as to be pivotable about a single axis disposed at a lower side of the copying machine housing means.

4,119,060

TONER CHARGING APPARATUS

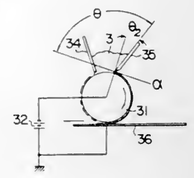
Nobuo Mochizuki, Matsudo; Hiromi Demizu, Yokohama; Hajime Oyama, Tokyo, and Teruyuki Ohnuma, Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1977, Ser. No. 815,110

Claims priority, application Japan, Jul. 16, 1976, 51/84712; Mar. 18, 1977, 52/29896

Int. Cl.² G03G *15/09*

U.S. Cl. 118—653 **8 Claims**



1. In a development apparatus for use in a copying apparatus of the type having a development roller which is rotated in close proximity to a latent electrostatic image bearing recording material, a hopper for supplying an insulating toner onto said development roller and a developer regulating member with a flat top surface and a bevelled edge disposed at the outlet of said hopper, the improvement wherein said developer regulating member is positioned in the manner that the top surface of said developer regulating member forms an angle θ_1 in the range of $0° < \theta_1 \leqq 90°$ with the bevelled surface of the edge of said developer regulating member and also forms an angle θ_2 in the range of $° \leqq \theta_2 < 90°$ with the plane including the top edge of said developer regulating member and the axis of said development rotation of said development roller and wherein upstream of said developer regulating member in the direction of rotation of said development roller, at least one additional developer regulating member is disposed in the manner that the surface thereof, which comes in contact with the toner, forms an actute angle with a tangent to a point on the surface of said development roller right under the top edge of said additional developer regulating member on the side of the tangent upstream in the direction of rotation of said development roller.

4,119,061

METHOD AND EQUIPMENT FOR CONTROL OF INTERNAL COMBUSTION ENGINE INCLUDING A FUEL-REFORMING DEVICE

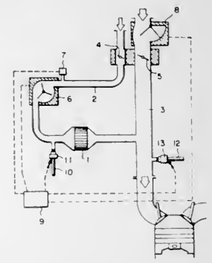
Hirohiko Hoshi; Toshio Funayama; Kazuhiko Ishiguro, all of Toyota, and Hidetomo Umehara, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jun. 6, 1977, Ser. No. 803,948

Claims priority, application Japan, Nov. 18, 1976, 51-138648

Int. Cl.² F02B *43/08*

U.S. Cl. 123—3 **11 Claims**



1. A method for control of an internal combustion engine with a fuel-reforming device comprising:

sucking the air into the engine without passing through the fuel-reforming device;

sucking the air through the fuel-reforming device into the air not having passed the fuel-reforming device, downstream of the throttle valve utilizing the negative pressure developed downstream of the throttle valve;

mechanically controlling the air flow through the fuel-reforming device in accordance with the volume of the air not passing through the fuel-reforming device by interlocking the valve for controlling the flow rate of the air not passing through the fuel-reforming device, with the throttle valve;

detecting the volume of the air passing through the fuel-reforming device and electrically controlling the volume of fuel to be supplied to the fuel-reforming device in accordance with the detected volume of the air;

generating a reformed gas through reaction in the fuel-reforming device of the fuel and the air passing through the fuel-reforming device; and

detecting the flow rate of the air not passing through the fuel-reforming device, ascertaining the total air sucked into the engine from the sum of the detected air volume not passing through the fuel-reforming device and the detected air volume passing through the device, calculating the necessary volume of fuel for the total air so that, when the fuel is insufficient, a necessary volume is supplied to the air not passing through the fuel-reforming device and, when the fuel is excessive, the volume of fuel supplied to the air passing through the fuel-reforming device is reduced.

4,119,062

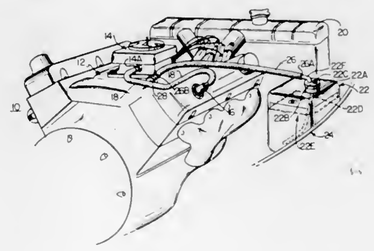
AUTOMOTIVE HYDROCARBON AND WATER VAPOR INJECTOR SYSTEM AND UNIVERSAL HOSE CONNECTOR MEANS FOR SAME

William T. Trevaskis, 3674 Colonial Ave., Los Angeles, Calif. 90066, and William J. Olson, 8262 DePalma St., Downey, Calif. 90241

Filed Mar. 17, 1976, Ser. No. 667,503

Int. Cl.² F02D *19/00*

U.S. Cl. 123—25 R **9 Claims**



1. For use in combination with an internal combustion engine having a carburetor and a vacuum hose attached to an inlet fitting on said carburetor vacuum, a kit means providing a hydrocarbon and water-vapor injection system for a said engine, comprising:

reservoir means for receiving and containing hydrocarbon and water at a position adjacent said engine;

closure means on an upper side of said reservoir means having an air ingestion inlet means transmitting ingested air to a lowermost portion of said reservoir and a vapor outlet spout;

a vapor feed hose for connection between said vapor outlet spout and said vacuum hose on said engine; and

a universal hose connector means for connecting one end of said vapor feed hose to said vacuum hose, said connector means comprising;

an inlet fitting connectable within said vapor feed hose;

an elongated, tapered and pointed penetrating shank extending from said inlet fitting so shaped and so proportioned as to pierce at least one wall of said vacuum hose;

an intermediate portion of said connector engaging the said wall of said vacuum hose when said penetrating shank is fully inserted therein;

an intake bore formed in and extending through said inlet fitting into said penetrating shank; and,

a metering orifice in said shank communicating with said intake bore so that the interior of said vacuum hose communicates with said bore through said orifice, said metering orifice for controlling the introduction of injected vapors into said vacuum hose at a predetermined rate, said orifice providing reduced vacuum pressure in said vapor feed hose and in said reservoir means;

whereby said vapor feed hose and said reservoir means are subjected to reduced pressures when compared to the pressure on said vacuum hose.

4,119,063

FEED SYSTEM FOR INTERNAL COMBUSTION ENGINES TO WHICH A FUEL-AIR MIXTURE AND WATER VAPOR ARE SUPPLIED

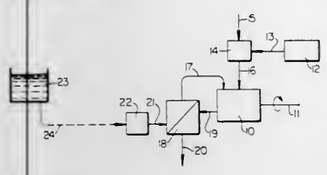
Werner Lohberg, 15, Elsener Strasse, 4790 Paderborn, Fed. Rep. of Germany

Filed Feb. 1, 1977, Ser. No. 764,597

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1976, 2604050

Int. Cl.[2] F02D *19/00*

U.S. Cl. 123—25 B **3 Claims**



1. A water vapor feed system for feeding heated water vapor into the combustion chamber of an internal combustion engine comprising:

reservoir means containing a supply of liquid water;

a case having a water chamber formed therein;

means for directing liquid water from said reservoir means into said water chamber, said means including a feed line connected to said reservoir means and inlet valve means controllably establishing a fluid connection between said feed line and said water chamber;

means for feeding water from said water chamber into said internal combustion engine, said means including a discharge line and means further including outlet valve means controllably establishing fluid communication between said water chamber and said discharge line;

said outlet valve means including pressure responsive means responsive to a drop in pressure in said discharge line to a predetermined pressure to establish communication of said discharge line with said water chamber;

heating means for heating water received in said discharge line prior to being fed into said interior combustion engine;

said inlet valve means including pressure responsive means to establish communication of said water chamber with said feed line upon a drop in pressure in said water chamber to a predetermined pressure;

said predetermined case pressure being lower than said predetermined discharge line pressure, whereby said liquid water upon entering said water chamber is reduced in pressure to cause said liquid water to be at least partially vaporized to thereby cool said case and provide a heat barrier from said heating means during operation of said internal combustion engine.

4,119,064

RICH CORE STRATIFIED CHARGE SPARK IGNITION ENGINE WITH PERIPHERAL EXHAUST PORT

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 14, 1976, Ser. No. 705,064

Int. Cl.[2] F02B *3/00*

U.S. Cl. 123—30 C **9 Claims**

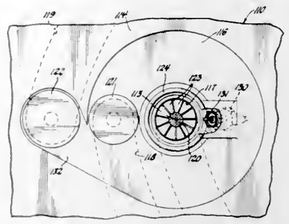
1. The combination in a spark ignition internal combustion engine of

means defining a closed end cylinder having walls and a central axis,

a piston reciprocable in said cylinder and cooperating with the cylinder closed end to define therebetween a variable volume combustion chamber free from connecting auxiliary ignition chambers,

means for forming in the combustion chamber a stratified charge of air-fuel mixture directed in a swirling pattern around the cylinder axis and having a core portion moving in a central zone of the combustion chamber surrounding the axis and an outer peripheral portion moving angularly along an outer edge portion of the combustion chamber outside the central zone and relatively more distant from the axis, said core portion of the charge being substantially richer in fuel than said outer peripheral portion, said charge forming means including a valve controlled inlet port connecting with the combustion chamber,

spark ignition means including a spark gap in the combustion chamber and extending into the central zone for igniting the richer mixture in the core portion of the charge, and



a valve controlled exhaust port for carrying combustion products from the combustion chamber, said exhaust port being spaced from the combustion chamber and connected exclusively with the outer edge thereof by a passage that opens through the combustion chamber walls distant from the central zone and is thereby adapted to preferentially receive for discharge, combustion products from the outer peripheral portion of the burned charge in which the residual concentration of unburned hydrocarbons is initially lower than in the core portion of the burned charge.

4,119,065

INTERNAL COMBUSTION ENGINE HAVING AN AUXILIARY COMBUSTION CHAMBER AND A METHOD OF CONTROL OF COMBUSTION IN SAID INTERNAL COMBUSTION ENGINE

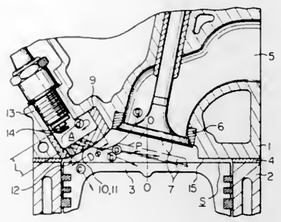
Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, Okazaki, and Katuhiko Motosugi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 22, 1976, Ser. No. 743,708

Claims priority, application Japan, Dec. 26, 1975, 50-159017

Int. Cl.[2] F02B *19/10, 19/16*

U.S. Cl. 123—32 SP **28 Claims**



1. A method of control of combustion in an internal combustion engine having an auxiliary combustion chamber and a main combustion chamber defined by a cylinder, a piston and a cylinder head, where a flame generated in the auxiliary combustion chamber is spurted into the main combustion chamber as a torch jet to ignite and burn an air-fuel mixture in the main combustion chamber, said method comprising:

supplying a homogeneous lean air-fuel mixture having an air-fuel ratio lower than the stoichiometric air-fuel ratio into the main combustion chamber at the intake stroke;

supplying at the intake stroke a part of said air-fuel mixture into the auxiliary combustion chamber through a first passage to discharge the residual gas formed in the auxiliary combustion chamber at the combustion stroke of the preceding cycle into the main combustion chamber through a second passage to thereby scavenge the auxiliary combustion chamber;

forming a suitable swirl in the auxiliary combustion chamber at the compression stroke by the air-fuel mixture flowing into the auxiliary combustion chamber through said first and second passages;

igniting the air-fuel mixture flowing in a swirl, the propagation of a flame in the radial direction of the swirl being controlled by the centrifugal force of the swirl thereby controlling the combustion rate in the auxiliary combustion chamber, and;

spurting a torch jet into the main combustion chamber through said first and second passages to ignite and burn the air-fuel mixture in the main combustion chamber at the initial stage, whereby the contents of poisonous components in an exhaust gas are reduced without reduction of the performance of the engine.

4,119,066

INTERNAL COMBUSTION ENGINE

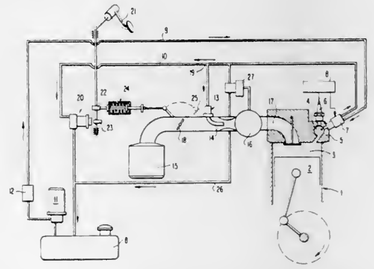
Robert Happel, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Jun. 16, 1976, Ser. No. 696,691

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1975, 2527406

Int. Cl.[2] F02B *19/10, 19/16*

U.S. Cl. 123—32 SP **20 Claims**



1. An internal combustion engine operating with applied ignition and minimum fuel injection, which comprises ignition chamber means, main combustion space means having a variable volume, a respective ignition chamber means terminating in the corresponding main combustion space means, fuel circulation means including a fuel tank, a feed line, and a return line, an injection nozzle means coordinated to the ignition chamber means and disposed within the fuel circulation means, means for supplying to the fuel circulation means a fuel quantity exceeding a discharge quantity of the injection nozzle means coordinated to the ignition chamber means, throttle means in the return line of the fuel circulation means downstream of the injection nozzle means coordinated to the ignition chamber means, and a throttle valve means arranged in a suction pipe of the engine, characterized in that a main injection means is provided for supplying a main injection quantity of fuel to the main combustion space means, a line means is provided and communicates the main injection means with the return line such that the main injection quantity is supplied from the return line, and control means are provided for controlling an adjustment of the throttling means and throttle valve means in dependence on a load of the engine so as to control the main injection quantity as a function of the load.

4,119,067

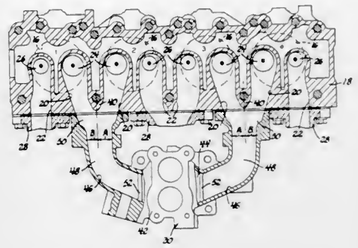
ENGINE WITH CHARGE EQUALIZING INTAKE MANIFOLD

William L. Aldrich, Lake Orion, and John M. Sawruk, Pontiac, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 6, 1976, Ser. No. 747,962

Int. Cl.[2] F02B *75/18;* **F02M** *29/04*

U.S. Cl. 123—52 MB **4 Claims**



1. In combination in an internal combustion engine,

means defining four variable volume combustion chambers aligned longitudinally and grouped in two longitudinally spaced pairs of chambers, each chamber having an intake port with the intake ports of each pair of chambers being closely spaced longitudinally at their ends for connection with a common manifold runner and the ends of the closely spaced pairs of ports being longitudinally spaced a substantial distance apart,

means for operating said chambers in sequential cycles including intake events which occur sequentially in the chambers of each pair and alternately in the separate pairs of chambers,

an intake manifold having a central plenum and a pair of runners extending oppositely from said plenum, each of said runners being connected with one of said spaced pairs of intake ports such that the sequential chamber intake events occurring alternately in the spaced pairs of chambers cause alternate pulses of fluid motion in the manifold runners with the flow dynamics tending to cause delivery of a relatively smaller charge to the first one of the sequentially timed combustion chambers of each pair,

and the improvement wherein the ends of the manifold runners are offset at their connections with their respective pairs of intake ports in directions toward said first timed chambers, such that the runners are more directly aligned with the intake ports of said first timed combustion chambers of the sequentially timed pairs than with the intake ports of the last timed chambers of such pairs to an extent to offset the manifold pulsing effect and tend to equalize charge distribution.

4,119,068

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

John J. Csonka, 625 Linwood Ave., Buffalo, N.Y. 14209, and Albert B. Csonka, 109 Larchmont Rd., Buffalo, N.Y. 14214

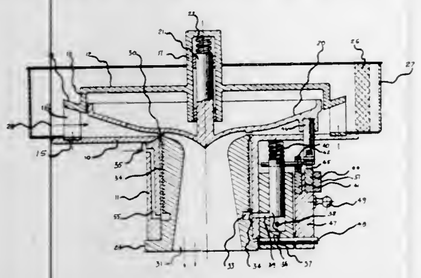
Filed Apr. 9, 1976, Ser. No. 675,303

Int. Cl.[2] F02M *7/22*

U.S. Cl. 123—117 R **4 Claims**

1. A carburetor having a housing including a generally discoidal wall and a hub portion extending axially from the central portion thereof, an air valve having a relatively flat surface directed toward and concentric with said discoidal wall and having a central conoidal portion having its apex of

said surface directed toward the interior of said hub portion, said housing wall and said valve surface defining an air passage converging radially inwardly to form an annular valving constriction and thence widening into the interior of said hub portion, said hub portion having an annular cylindrical fuel passage terminating at its upper end in a circumferential series of axially extending micro-passages for directing liquid fuel into said air passage substantially at right angles to the direction of air flow at said valving constriction whereby the fuel is atomized by the air flow at said constriction, means for selectively adjusting said air valve toward and away from said



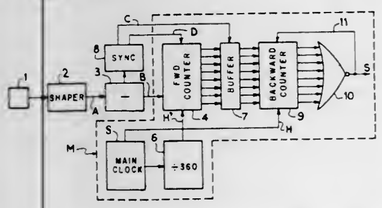
discoidal wall to regulate the volume of air drawn into an engine with which said carburetor is associated, means for supplying predetermined measured amounts of pressurized fuel to said cylindrical fuel passage and valve means for regulating said supply, said air valve adjusting means and said pressurized fuel regulating means having a common control means whereby the ratio of air to fuel is predetermined and variable at various positions of said control means, and ignition timing adjustment means connected with said common control means whereby the ignition timing has a predetermined setting for each position of said air valve and fuel valve.

4,119,069

ELECTRONIC IGNITION WITH ANGULAR TRANSCODER

Jean-Claude Perrin, Domaine de la Quietude No. 13, 06800 Cagnes sur mer, France

Filed Nov. 1, 1976, Ser. No. 737,458
Int. Cl.[2] F02P 5/04; F02B 3/00
U.S. Cl. 123—117 D **8 Claims**



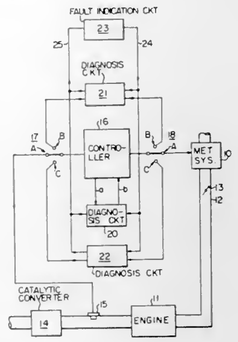
1. Apparatus for delivering utilization pulses corresponding to successive, substantially equidistant angular positions of a rotating member, comprising: speed pick-up means for detecting at each revolution of the rotating member its passage through at least one predetermined angular position and to deliver a pulse in response to said passage; means for delivering in response to the pulses produced by the pickup means input signals having a period equal to the period of rotation of said rotating member; time base generator means for delivering first and second clock signals whose frequencies are fixed and in a predetermined ratio; first counter means for counting the number of second clock signal pulses produced between two successive pulses of said input signal; first buffer memory means for storing said number during the next counting period of said first counter means; first backward counter means for counting down said number stored in the buffer memory means in synchronism with said first clock signal; first gate means for producing an output pulse at the end of each countdown of said number by the first backward counter means and to apply an input to said backward counter means for controlling a new count down of said number such that said output pulses represent successive angular positions of said rotating member and the ratio between one revolution of said rotating member and the angular distance separating two of said successive positions is equal to said predetermined ratio; first pre-programmed read-only memory means for storing a digitized code related to angular speed of said rotating member; said read-only memory means connected to receive as input said number stored by said buffer memory means and responsive thereto to produce a number dependent on said digitized code; second counter means operable under control of said input signals to receive said number representing said digitized code produced by said first read-only memory means and then to receive and count said output pulses from said first gate means up to a predetermined count value; and a second gate means for delivering said utilization signal when said second counter means has reached said predetermined count value.

4,119,070

CLOSED-LOOP MIXTURE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH CIRCUITRY FOR TESTING THE FUNCTION OF CLOSED LOOP

Masaharu Asano, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed May 6, 1976, Ser. No. 683,658
Claims priority, application Japan, May 12, 1975, 50-54612; Jun. 20, 1975, 50-83651[U]
Int. Cl.[2] F02M 7/00
U.S. Cl. 123—119 EC **8 Claims**



1. A closed-loop mixture control system for an internal combustion engine, comprising an exhaust composition sensor for in use generating a first signal representing and corresponding to the concentration of a composition of the exhaust emissions from an internal combustion engine, a first comparator to compare the first signal with a reference level to generate a second signal indicating whether the air-fuel ratio of the mixture in said engine is above or below a predetermined value, a control circuit for generating a third signal representing and corresponding to an amplification of the second signal in accordance with a predetermined response characteristic, means for supplying the mixture to said engine in accordance with the third signal, means for generating a recurrent series of binary signals occurring in accordance with a predetermined bit pattern for application to said mixture supplying means instead of the signal from said control circuit to thereby produce artificial fluctuations of the air-fuel ratio, means for storing said bit pattern in a serial form, a first shift register receptive of said

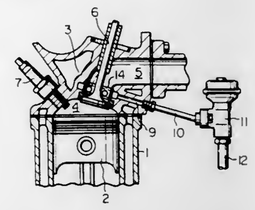
first signal resulting from said artificial fluctuations of the air-fuel ratio, a second shift register receptive of said stored bit pattern and effective to shift the received bit pattern in synchronism with said first shift register, a plurality of exclusive-OR gates connected between said first and second shift registers, and a second comparator for comparing a sum of the outputs from said exclusive-OR gates with a fixed reference to generate an output when the degree of similarity between the stored bits of said first and second shift registers exceeds a predetermined level.

4,119,071

EXHAUST GAS RECIRCULATING DEVICE IN AN INTERNAL COMBUSTION ENGINE

Kyo Hattori, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 4, 1976, Ser. No. 738,957
Claims priority, application Japan, Sep. 17, 1976, 51-110697
Int. Cl.[2] F02N 25/06
U.S. Cl. 123—119 A **15 Claims**



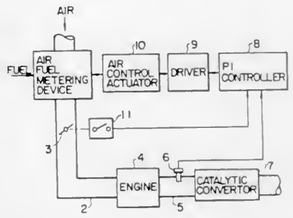
1. An internal combustion engine comprising:
a combustion chamber having a piston reciprocally mounted therein;
a cylinder head positioned over one end of said combustion chamber, an inner wall in said cylinder head defining an intake passage for feeding a combustible mixture into said combustion chamber;
an intake valve having a head and a stem, said intake valve being reciprocally mounted in said cylinder head to move along the axis of the stem to control flow from said intake passage into said combustion chamber;
an exhaust passage;
a spark plug in said combustion chamber, at least two exhaust gas outlet ports disposed in the inner wall defining said intake passage at a position near to the valve head of said intake valve, said ports being circumferentially spaced from each other around the axis of said stem to recirculate the exhaust gas into the intake passage at the time of the intake stroke of the engine, said circumferentially spaced exhaust ports being arranged to alternately stratify said combustible mixture and said recirculated exhaust gas and to supply the alternately stratified layers of said combustible mixture and said recirculated exhaust gas to substantially the entire interior of said combustion chamber except in the region of said spark plug where only said combustible mixture is supplied; and,
an exhaust gas recirculating passage connecting said exhaust gas outlet ports with said exhaust passage and having therein valve means for controlling the flow rate of the recirculated exhaust gas.

4,119,072

CLOSED LOOP AIR FUEL RATIO CONTROL SYSTEM USING EXHAUST COMPOSITION SENSOR

Masaharu Asano, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Division of Ser. No. 664,226, Mar. 5, 1976, abandoned. This application Jun. 14, 1977, Ser. No. 806,347
Claims priority, application Japan, Jul. 3, 1975, 50-26959; Jul. 3, 1975, 50-26960
Int. Cl.[2] F02M 7/00; F02B 3/00
U.S. Cl. 123—119 EC **1 Claim**



1. A closed loop mixture control system for an internal combustion engine having an air intake passage, a throttle therein, means for supplying air and fuel thereto and exhaust means, comprising:
means for generating a first signal indicative of the deviation of the air-fuel ratio within said exhaust means from a fixed reference;
an integrating controller including integrator means for providing integration of said first signal to suppress a control oscillation caused by a time lag inherent in the closed loop, said integrator means including an operational amplifier having a first input receptive of said first signal and a second input connected to a predetermined potential, and a capacitor connected between said first input and output of said amplifier to generate a control signal effective to cause said air fuel supply means to vary the ratio of air and fuel supplied to said engine in accordance with the direction of the deviation of said air-fuel ratio from said fixed reference;
means for sensing when said throttle is in a fully open position; and
switching means selectively providing a short-circuit path across said capacitor in response to the sensing means so that, with the throttle fully open, the output from said integrating controller is operated in a proportional mode and maintained at such a value that said air fuel supply means is caused to supply an enriched mixture to said engine, and when said throttle is varied from said fully open position to a part throttle position, said integrating controller commences operation in an integration mode for integration of said first signal and generates an output effective to cause said air fuel supply means to supply a leaner mixture to said engine.

4,119,073

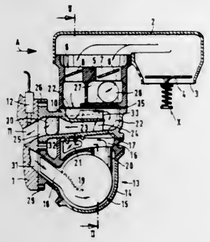
SPARK IGNITION FUEL INJECTION INTERNAL COMBUSTION ENGINE

Dieter Stock, Frankenbach, and Johannes Steinwart, Obersulm-Willsbach, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 713,702, Aug. 12, 1976, abandoned. This application Nov. 5, 1976, Ser. No. 739,254
Int. Cl.[2] F02M 31/00
U.S. Cl. 123—122 D **12 Claims**

1. In a spark-ignition fuel-injection internal combustion engine, with a measuring member in its induction system to measure the air flow and control the amount of fuel supplies to a fuel injection nozzle positioned in the induction system

downstream of the measuring member, in which part of the induction system that carries solely air is split up into a part-load passage and a full-load passage and wherein the improvement comprise a heater provided in a region of the part-load



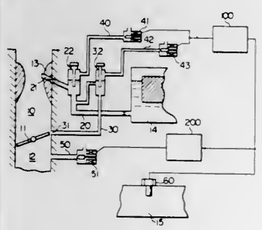
passage that lies between the measuring member and the injection nozzle wherein the fuel from the fuel injection nozzle is evaporated immediately into the heated air stream so that it is possible to form a very homogeneous and well pre-heated fuel-air mixture.

4,119,074

APPARATUS TO CONTROL THE RATIO OF AIR TO FUEL OF AIR-FUEL MIXTURE APPLIED TO AN INTERNAL COMBUSTION ENGINE

Kenji Masaki, Yokohama, and Shigeo Aono, Seki, both of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Nov. 26, 1975, Ser. No. 635,719
Claims priority, application Japan, Nov. 29, 1974, 49/137546
Int. Cl.[2] F02M *23/04*
U.S. Cl. 123—124 B **11 Claims**



1. A combination with an apparatus to control the ratio of air to fuel of an air-fuel mixture being admitted into an internal combustion engine having an intake passage, an exhaust passage and a throttle valve located in said engine intake passage, including

means sensing at least one engine operating variable which is related to the ratio of air to fuel of the mixture delivered to the engine and generating an output signal proportional to the sensed variable,

a main fuel passage for delivering fuel to a portion of the engine intake passage upstream of the throttle valve and having a main air bleed,

a slow fuel passage for delivering fuel to a portion of the engine intake passage in the neighborhood of the closed throttle position and having a slow air bleed,

a first additional air passageway connected between said main air bleed and the atmosphere,

a second additional air passageway connected between said slow air bleed and the atmosphere,

a first electromagnetic means provided in said first additional air passageway to control the rate of air passing therethrough,

a second electromagnetic means provided in said second additional air passageway to control the rate of air passing therethrough,

passage means conducting air and fuel components of a combustible charge directly into a portion of the engine intake passage downstream of the throttle valve,

a third electromagnetic means provided in said passage means to control the rate of said components passing therethrough, and

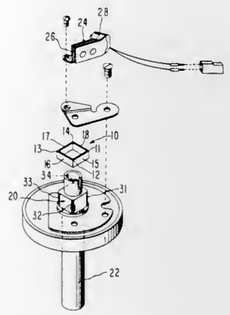
electronic control means electrically connected with said first, second and third electromagnetic means to control the same in accordance with said output signal.

4,119,075

DISTRIBUTOR SPRING FOR USE IN A MAGNETIC SENSOR

Ronald C. Grable, Santa Clara, Calif., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 9, 1976, Ser. No. 713,023
Int. Cl.[2] F02P *1/00*
U.S. Cl. 123—146.5 A **6 Claims**



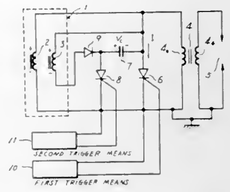
1. An electronic-ignition system for internal-combustion engines, the system having a magnetic-pulse unit using a sensor that produces a voltage trigger pulse in response to the rotation of a distributor shaft past a pole of permanent magnet, the improvement comprising a flat-leaf spring having a plurality of relatively sharp corners mounted over a portion of the shaft so that the corners of the spring pass in close proximity to and disturb the magnetic field around the permanent magnet as the shaft rotates.

4,119,076

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hiroo Sato, Susono, Japan, assignor to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Aug. 16, 1976, Ser. No. 714,803
Claims priority, application Japan, Aug. 19, 1975, 50-100297; Aug. 19, 1975, 50-100298; Sep. 5, 1975, 50-107872
Int. Cl.[2] F02P *1/00*
U.S. Cl. 123—148 E **4 Claims**



1. An ignition system for an internal combustion engine having an AC generator rotating in synchronism with the engine, said ignition system comprising;

an ignition coil having a primary winding and a secondary winding,

a first armature winding disposed in the generator to supply a current to said primary winding of said ignition coil,

a first thyristor connected in parallel with said first armature winding, a second armature winding disposed in the generator,

a capacitor connected through rectifier means across said second armature winding,

a second thyristor for applying the voltage built up on said capacitor reversely across the anode and cathode of said first thyristor,

first trigger means for triggering said first thyristor at a first angle,

and second trigger means for triggering said second thyristor at a second angle,

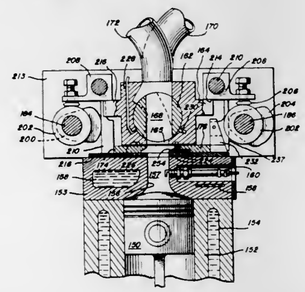
whereby conduction of said second thyristor causes turn-off of said first thyristor and resultant interruption of the current through said first thyristor leads to a large current through said primary winding of said ignition coil.

4,119,077

ROTARY VALVE SYSTEM FOR MOTORS AND THE LIKE HAVING IMPROVED SEALING MEANS

Tony E. Vallejos, Paramount, Calif., assignor to Alto Automotive, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 653,195, Jan. 28, 1976, Pat. No. 4,098,238. This application May 31, 1977, Ser. No. 801,634
Int. Cl.[2] F01L *3/00, 1/28*
U.S. Cl. 123—188 B **25 Claims**



1. In a rotary valve system for a motor and the like, including a flow conduit terminating in a combustion chamber, and a rotary valve for metering fuel flow through said flow conduit, the improvement comprising, in combination:

a pair of rotatable camshafts positioned on opposite sides of said flow conduit,

means for causing synchronous rotation of said camshafts in a manner correlating with the rotation of said rotary valve;

valve plate member means positioned between said camshafts, said plate member means being transversely movable relative to said flow conduit to define a sealing surface across said flow conduit in a first position, and to define an open aperture across said flow conduit in a second position; and

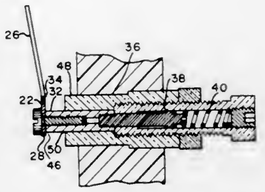
cam means on each camshaft in communication with said plate member means to cause said plate member means to respectively move between said first and second positions as said camshafts rotate.

4,119,078

ADJUSTABLE TYPE ARROW REST FOR A BOW

Jack K. Wilson, and Robert S. Wilson, both of Rte. 16, Box 200, Springfield, Mo. 65807

Filed Jul. 19, 1976, Ser. No. 706,816
Int. Cl.[2] F41B *5/00*
U.S. Cl. 124—41 A **7 Claims**



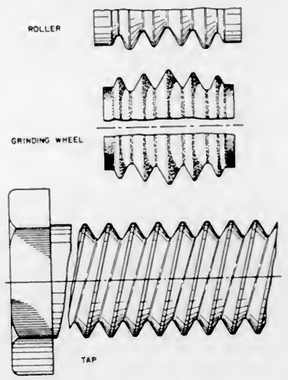
1. An arrow rest for attachment to an archery bow comprising a movable plate member adapted to be disposed at and connected to one side of a bow, an arrow rest secured to said plate member to support the bottom of an arrow, said plate member having an arrow pressure point contact area which contacts the side of an arrow when the bottom of the arrow is on said arrow rest, connecting means for connecting the plate to a bow including only one telescoping rod member extending through an opening in the side of a bow, means attaching said plate member to a cantilevered position of said rod member, means acting on said rod member to normally bias said plate member and said arrow rest away from a bow while permitting movement of said plate member and said arrow rest and pressure point contact area toward a bow against the bias of said biasing means as an arrow is shot from a bow, and means interlocking said rod member and the remainder of said connecting means to restrain said rod member from rotating motion while permitting motion of said plate member and said arrow rest and pressure point contact area toward a bow, said interlocking means and said connecting means having longitudinal axes that are substantially coextensive with each other when the arrow rest is mounted on a bow.

4,119,079

ROLLER FOR PRODUCING A PROFILE ON A GRINDING WHEEL

Erwin Junker, Talstr. 78, 7611 Nordrach, Fed. Rep. of Germany

Continuation of Ser. No. 669,249, Mar. 22, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 828,011
Int. Cl.[2] B24B *53/06*
U.S. Cl. 125—11 CD **6 Claims**



1. A profiling roller for producing a profile on a grinding

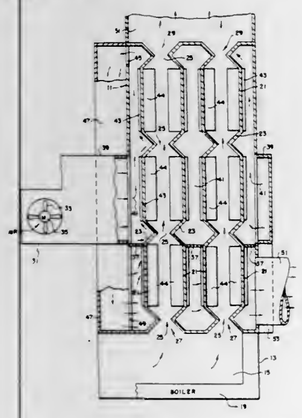
wheel for a thread grinding machine operating with longitudinal feed, said profiling roller comprising, in combination: at least one finishing roller groove in the center of the roller with a flank angle ($\alpha 1$), root radius (R_1), pitch circle radius (1) and groove depth corresponding to the final thread form to the produced by the grinding wheel, and a plurality of modified preliminary roller grooves, said preliminary grooves being on each side of said finishing roller groove and having decreasing groove depth arranged symmetrically toward the opposite ends of the roller, the root radius (R_2, R_3) on the modified preliminary roller groove progressively increasing from groove to groove ($R_3 > R_2 > R_1$) and the flank angle progressively decreasing from groove to groove ($\alpha 3$ $\alpha 2$ $\alpha 1$) towards the ends of the roller, the pitch circle radius of each successive preliminary roller groove, relative to the pitch circle radius of the next adjacent groove including the pitch circle radius of the finishing roller groove being progressively greater towards the ends of the roller such that the spacing measured from the intersecting point of the flank of each roller groove with its associated pitch circle at right angles to the corresponding flank of the next roller grooves arranged towards the roller ends, when grooves are projected over each other, is substantially equal to the groove depth difference of the next adjacent roller groove ($x_1 \cong y_1$; $x_2 \cong y_2$).

4,119,080

HEAT TRANSFER AND CONDITIONING UNIT

Robert J. Smith, 4511 E. Snover, Silverwood, Mich. 48780

Division of Ser. No. 581,201, May 27, 1975, Pat. No. 3,981,291.
This application Sep. 20, 1976, Ser. No. 724,774
Int. Cl.² F24H *3/10*
U.S. Cl. 126—110 R **5 Claims**



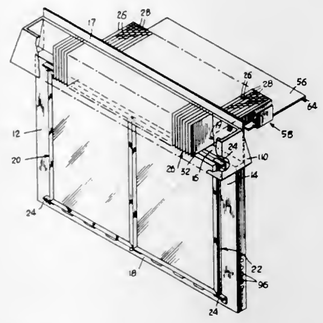
1. A heat transfer and conditioning unit comprising a casing closed at its ends;
an exhaust conduit in said casing inwardly of its walls, having a first inlet at one end of said casing adapted to receive heated exhaust gases or products of combustion; and a first outlet at the other end of the casing communicating with a flue to atmosphere;
said exhaust conduit including along its length a series of pairs of opposed parallel laterally elongated plates in longitudinal alignment;
inwardly directed opposed V-formed plates at the ends of said parallel plates interconnecting the adjacent plates and defining therewith a series of longitudinally spaced laterally elongated venturi passage along the length of said exhaust conduit; and further defining the exhaust conduit inlet and outlet; said venturis slowing down movement of and more evenly distributing the products of combustion through said exhaust conduit to said flue, so that increased quantities of heat are transferred to the walls thereof;
the walls of said exhaust conduit being spaced from said casing defining an independent fresh air heating chamber along the walls of said casing and exhaust conduit for the conductive transfer of heat to fresh air passing therethrough;
an inlet to said fresh air heating chamber extending into said casing;
an outlet for said fresh air heating chamber extending from said casing;
and air moving means connected to said air inlet for delivering air into and through said heating chamber, so that said fresh air moves along the walls of said exhaust conduit throughout the length of said casing.

4,119,081

FIREPLACE ENCLOSURE AND INTEGRAL HEAT-EXCHANGER

Harrison F. Edwards, Norwich, N.Y., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jun. 23, 1977, Ser. No. 809,185
Int. Cl.² F24C *15/10*
U.S. Cl. 126—140 **20 Claims**



1. A combination fireplace enclosure and heat-exchanger unit for providing supplemental heat to room areas external to a fireplace, comprising in combination:
(a) a fireplace enclosure frame and closure doors carried thereby and movable between open and closed positions,
(b) a thermally conductive heat absorbing means constituted of high heat conductivity metal, carried by said frame and mounted at the rear thereof, so as to be disposed above the fire and receive heat therefrom,
(c) a large plurality of thermally-conductive heat radiating elements carried by said frame and mounted at the front thereof, so as to be exposed to air circulating in the room and to transfer heat thereto, and
(d) thermally conductive means carried by the frame and constituted of high heat conductivity metal, connecting said heat-absorbing means to said radiating elements to provide for heat transfer therebetween.

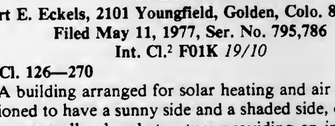
4,119,082

SUBAQUEOUS HEATER APPARATUS

Katsuya Miyamori, 4-22-7, Ryouke, Urawa, Saitama, Japan; Toru Murai, Kanagawa, and Osamu Shitamori, Yokohama, both of Japan, assignors to Katsuya Miyamori, Japan

Filed Mar. 25, 1977, Ser. No. 781,414
Claims priority, application Japan, Mar. 26, 1976, 51/33234
Int. Cl.² F24J *1/02*
U.S. Cl. 126—263 **10 Claims**

1. A subaqueous heater apparatus, comprising: a generally water-tight container; a substance within said container that will exothermically chemically react with water; a water absorbent member within said container and in contact with said substance; and means to supply said absorbent member in the container with water from outside the container by capillary action, so that the heat evolved upon the chemical reaction between said substance and water supplied to said absorbent member by said means is used as the heat source for the heater apparatus.

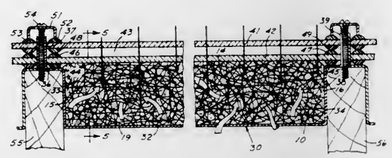


4,119,083

SOLAR ENERGY ABSORBING BODY AND COLLECTOR

Wilfred L. Heyen, 711 Florida Rd., and Keith D. Olinger, P.O. Box 2031, both of Durango, Colo. 81301

Filed May 16, 1977, Ser. No. 796,978
Int. Cl.² F24J *3/02*
U.S. Cl. 126—270 **9 Claims**



1. A solar energy absorbing body comprising:
a plurality of discrete solar energy absorbing surfaces in a random arrangement at different depths relative to a boundary face through which solar radiation is passed, said surfaces being spaced from one another to provide interstices throughout said body through which incoming solar radiation passes to strike a plurality of said discrete absorbing surfaces at different depths relative to said boundary face to cause said surfaces to become heated and through which a stream of air is passed to transfer heat from said surfaces,
said absorbing surfaces being provided by a coating on a loosely arranged mat of glass fibers, said coating being a mixture of carbon black particles and a urea-formaldehyde, water-soluble, adhesive resin that bonds said particles to said glass fibers and said glass fibers together at points of contact and gives strength to the body.

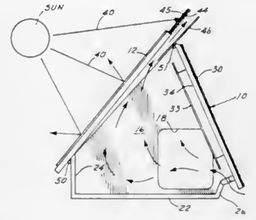
4,119,084

BUILDING WITH PASSIVE SOLAR ENERGY CONDITIONING

Robert E. Eckels, 2101 Youngfield, Golden, Colo. 80401

Filed May 11, 1977, Ser. No. 795,786
Int. Cl.² F01K *19/10*
U.S. Cl. 126—270 **12 Claims**

1. A building arranged for solar heating and air circulation, positioned to have a sunny side and a shaded side, comprising:
(a) a generally closed structure providing an interior with ingress and egress and at least one upright wall;
(b) said upright wall including solar radiation absorbing means covering a substantial area and having a black heat absorbing coating and a mono-layer of transparent focusing spherical elements thereon;
(c) an internal heat storage unit arranged adjacent the upright wall and in heat transfer relation therewith and in heat transfer relation with the interior of the building;
(d) upper vent means arranged for selective opening for discharge of heated air from the building; and,
(e) lower vent means arranged for a selective opening for the building on the shaded side thereof so that heated air from the inside of the upright wall moves outwardly through the upper vent means and air from the shaded side enters the lower vent means.

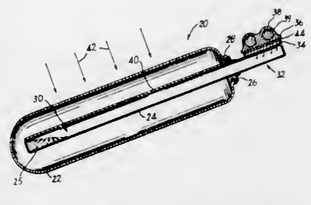


4,119,085

SOLAR ENERGY COLLECTOR

Gregory W. Knowles, Huntington; Odd E. Sangesland, Plainview; Henry J. Vroom, Commack, and Robert W. Madey, Huntington Station, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Division of Ser. No. 615,461, Sep. 22, 1975, Pat. No. 4,059,093.
This application Jun. 27, 1977, Ser. No. 810,111
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **5 Claims**



1. A solar energy collection system comprising:
(a) an elongated, evacuated, substantially cylindrical envelope of transparent material having an orifice at one end thereof, said envelope having at least two walls, the space between said walls also being evacuated;
(b) an elongated, substantially cylindrical, sealed container mounted within said envelope, one end of said container projecting through said orifice via an air-tight seal, said container being disposed at an angle with respect to horizontal, said end projecting through said envelope being located at the higher elevation;
(c) a vaporizeable liquid located within said container and concentrated at the lower elevation thereof, said fluid, upon vaporization, progressing toward the higher elevation of said container where said vapor gives up heat and condensation takes place;
(d) a plurality of axially-aligned, fin-like structures attached to and projecting from said container for enhancing the heat absorption of said container;
(e) a reflector located below said container and extending for a substantial portion of the length of said container for receiving and reflecting incident solar radiation from an area wider than said container and for concentrating said radiation on said container;
(f) a first substantially planar conductive member affixed to the emergent portion of said container for conducting therefrom heat given off by the condensation of said vaporized liquid;
(g) a second substantially planar conductive member removably fastened to said first conductive member for conducting heat therefrom; and
(h) a fluid-carrying conduit affixed to said second conduc-

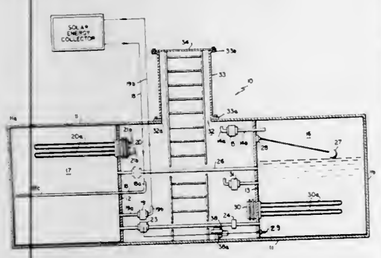
tive member for removing heat therefrom and transporting the extracted heat.

4,119,086

STORAGE TANK ASSEMBLY

Nathan E. Brussels, Cherry Hill, N.J., assignor to Solar Energy Systems, Inc., Burlington, N.J.

Filed Jul. 7, 1977, Ser. No. 813,636
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **9 Claims**



1. Apparatus for storing liquid at different temperature levels comprising unitary hollow tank means;

first and second bulkheads arranged in spaced apart fashion within the interior of the tank means and being joined to the tank wall to form three water tight compartments including first and second end compartments separated by a central compartment;

first conduit means extending through said central compartment for coupling said first compartment to an external fluid heating source;

second conduit means extending through said central compartment for coupling an external heated liquid utilization device to said second compartment;

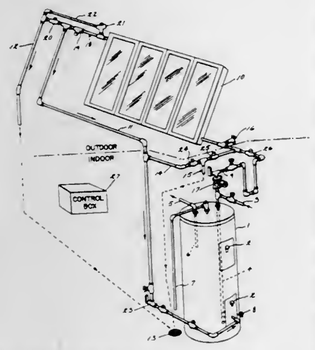
third conduit means extending through said central compartment for transferring liquid between said first and second compartments to regulate the temperature levels of the liquids in said end compartments.

4,119,087

SOLAR WATER HEATING SYSTEM

Robert E. Cook, Kankakee, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jul. 26, 1976, Ser. No. 708,876
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **3 Claims**



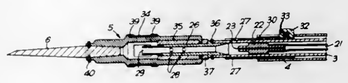
1. A solar water heating system with forced circulation of the water which comprises, a water storage tank, a solar heater, piping system connecting the tank to the solar heater for flow of water between the tank and solar heater, a cold water inlet provided in the system, an electrical circuit connected to the system with power lines connecting the circuit to a source of power, a pump connected to said piping and to the electrical circuit to circulate the water in the piping when actuated by the electrical circuit, temperature sensing means connected to the piping system and to the electrical ciruit to sense the temperature of the water in the storage tank and electrically actuate the pump for circulation of water through the system within a normal preselected temperature range between the water in the tank and the water in the solar heater, first electrically operated valve means connected in the circuit to the temperature sensing means and actuated by the latter to stop operation of the pump when the temperature of the water in the solar heater rises above a preselected temperature range between the water in the storage tank and solar heater, additional electrically operated valve means connected to the electrical circuit and thereby to the sensing means and the pump and actuated by the temperature sensing means when the water in the solar heater drops to a selected low temperature to thereby stop operation of the pump and open the system to drain and shut off flow of water to the solar heater to prevent damage to the system by freezing, and the temperature sensing means including a solar heater temperature sensor connected at the water discharge end of the solar heater to sense the temperature of the solar heated water, a tank temperature sensor connected to the tank to sense the temperature of the water stored in the tank, and the first electrically operated valve means being a temperature differential relay electrically connected by the electrical circuit to the solar heater temperature sensor and the tank temperature sensor to open and close the circuit in accordance with the preselected differential in temperature in the solar heater relative to the temperature in the tank to limit the circulation of water to the tank from the solar heater within a desired temperature range.

4,119,088

SOLDERING IRONS

Nigel L. Sim, Southampton, England, assignor to S. Mechele Limited, Southampton, England

Filed Aug. 13, 1975, Ser. No. 604,309
Claims priority, application United Kingdom, Aug. 14, 1974, 35807/74; Apr. 3, 1975, 13744/75
Int. Cl.² B23K *3/02*
U.S. Cl. 126—413 **26 Claims**



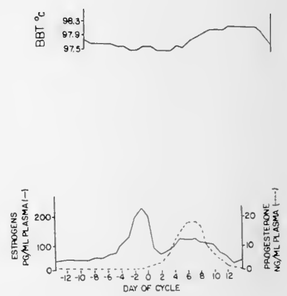
1. A gas heated soldering iron comprising a soldering head, a combustion chamber in said head, perforate flame suppression means enclosing said chamber, jet means connectible to a source of pressurized gas, a passage interconnecting said jet means and said chamber, air inlet means for supplying air to said passage at a location remote from said chamber, and gas flow regulating means for supplying gas at an automatically regulated pressure from said source to said jet means.

4,119,089

METHOD OF PREDICTING AND DETERMINING OVULATION BY MONITORING THE CONCENTRATION OF VOLATILE SULFUR-CONTAINING COMPOUNDS PRESENT IN MOUTH AIR

George Preti, Philadelphia; George R. Huggins, Wallingford, both of Pa., and Joseph Tonzetich, Vancouver, Canada, assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Feb. 2, 1977, Ser. No. 764,750
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 R **27 Claims**



1. A method of diagnosing ovulation in female mammals comprising the steps of:

(a) monitoring the mouth air of one of said mammals during the fertility cycle for at least one volatile sulfur compound commonly occurring in said mouth air of said mammals; and

(b) providing an indicator means for qualitatively and quantitatively responding to variations in the concentration of said volatile sulfur compound in said mouth air; whereby said means for indicating said variations in concentration diagnoses ovulation in said female mammal.

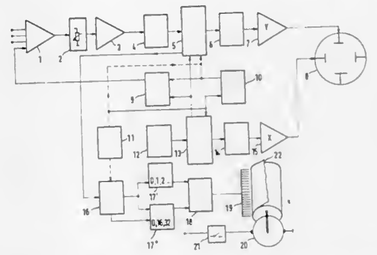
4,119,090

ELECTROCARDIOSCOPE

Heinz Dehnert, Am Bahnhof, D-7801 Hugstetten-March, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,830
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1976, 2624581
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.06 G **10 Claims**

1. An electrocardioscope comprising an input amplifier for amplifying an analog ECG signal, a display tube, an output Y-amplifier having its output coupled to said display tube for determining the Y-deflection of said display tube, an output X-amplifier having its output coupled to said display tube for determining the X-deflection of said display tube, an analog to digital converter coupled to the output of said input amplifier, a memory coupled to the output of said converter, said memory having N-addresses and M-memory values per address, a digital to analog converter connected between the output of said memory and the input of said Y-amplifier, means for effecting address selection at the memory comprising an address generator with N-sites coupled to said memory, a further digital to analog converter having its output connected to the input of said output X-amplifier, an X-counter having its output connected to the input of said further digital to analog converter, means connected to said X-counter for selectively setting N- and N+*n*-count digits into said counter, and clock



means coupled to said address generator and to said X-counter for clocking said address generator and said counter.

4,119,091

TIE FOR USE IN BONE FRACTURE SURGERY

Anthony John Partridge, Sussex, Great Britain, assignor to Chichester Partridge Limited, Sussex, England

Filed Jun. 30, 1977, Ser. No. 811,530
Claims priority, application United Kingdom, Jul. 6, 1976, 27975/76
Int. Cl.² A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 B **13 Claims**



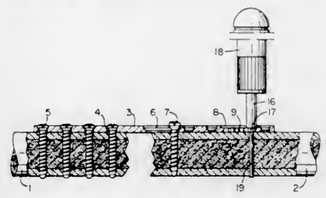
1. A device for holding together the parts of a fractured bone, comprising an elongate, flexible, plastic strap provided on at least one face thereof with ratchet teeth and provided at one end thereof with an aperture through which the other end of the strap is capable of being passed and which has a pawl adapted to engage the said ratchet teeth, and means for spacing the strap from the bone.

4,119,092

METHODS OF REDUCTION OF BONE FRACTURES

José-Luis Gil, Avda. Principado de Andorra, 3, Tarragona, Spain

Filed Apr. 22, 1977, Ser. No. 789,831
Int. Cl.² A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 D **3 Claims**



1. Improvements in methods of reduction of bone fractures, especially those which make use of a longitudinal plate of an oxidation resistant metal placed along the broken bone with its halves in contact with the ends of the segments thereof and with apertures for the insertion of screws into the proximal and distal cortical bone substance, comprising bringing together the two bone segments by first fastening one of the ends of the longitudinal plate to one of the segments then fastening the

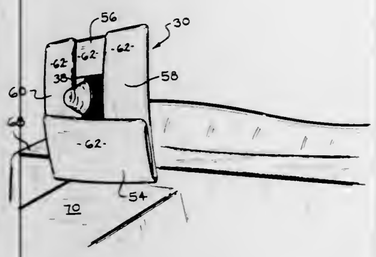
central portion of the same plate to the other segment through a slot provided in the said central portion thereof, said plate being further provided with a second slot having teeth on its internal side wall, forming a rack, said second slot being situated adjacent one of the ends of said plate, and progressively bringing together the two segments of the broken bone until they are placed in contact and alignment for the purpose of their relative immobilization for their further mending, by displacement of the said other bone segment with respect to said plate by the action of a tool applied to the slot situated adjacent the end of said plate and bearing a lateral pinion cooperating with the internal rack toothing of said second slot.

4,119,093

INTEGRAL PATIENT-LIMB SURGICAL DRAPE SYSTEM

Floyd G. Goodman, East Lansing Medical Plaza, 4528 S. Hagadorn Rd., East Lansing, Mich. 48823

Filed Sep. 24, 1976, Ser. No. 726,449
Int. Cl.[2] A61B *19/06*
U.S. Cl. 128—132 D **21 Claims**



1. A surgical drape for covering a surgery patient and isolating an extremity upon which surgery is to be performed, said drape comprising:
a generally rectangular sheet having a patient surface and an exterior surface;
a fenestration in said sheet for receiving said extremity and isolating said extremity relative to the rest of the patient's body;
an elongate limb covering mounted at its base to said sheet and over said fenestration for receiving said extremity;
said sheet being foldable about said covering so that substantially no exterior surface of said sheet is exposed; and
said covering is somewhat conical and collapsible so as to sequentially expose longitudinal portions of greater diameter as said extremity is advanced through said fenestration.

4,119,094

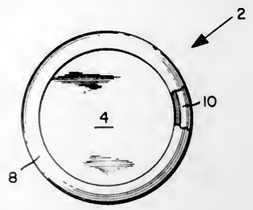
COATED SUBSTRATE HAVING A LOW COEFFICIENT OF FRICTION HYDROPHILIC COATING AND A METHOD OF MAKING THE SAME

Michael J. Micklus, Somerville, and David T. Ou-Yang, Raritan, both of N.J., assignors to Biosearch Medical Products Inc., Raritan, N.J.

Division of Ser. No. 822,412, Aug. 8, 1977, Pat. No. 4,100,309. This application Mar. 23, 1978, Ser. No. 889,249
Int. Cl.[2] A61F *5/42;* **A61M** *25/00*
U.S. Cl. 128—132 R **11 Claims**

1. An article having a very low coefficient of friction when wetting with a water base liquid or a lower aliphatic alcohol comprising:
a substrate to which conventional polyurethanes adhere, and
a cured polyvinylpyrollidone-polyurethane interpolymer coating on said substrate.

8. A condom having a base material of polyurethane, and
a cured coating of a polyvinylpyrollidone-polyurethane interpolymer on the outside of said base material wherein said coated condom has a very low coefficient of friction



when wetted with a water base liquid or a lower aliphatic alcohol.

4,119,095

RESTRAINING GARMENT

Mattie Lewis, 111 Benicia Rd., Vallejo, Calif. 94590

Filed May 19, 1977, Ser. No. 798,565
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—134 **3 Claims**



1. A restraining garment comprising a front yoke including at least a portion of a head opening, arm openings and shoulder engaging portions, a front portion including an expandable element, said front portion and said expandable element being sewn to said yoke, two tunnel elements sewn to said front portion to traverse said front portion but not sewn to said expandable portion, said tunnel elements spaced from said shoulder engaging elements to encircle the chest cage of a patient wearing said garment, a back portion including closure means for said garment, and a belt passing through said tunnel elements.

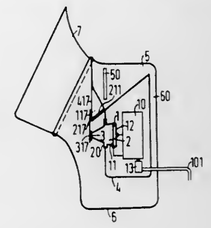
4,119,096

MEDICAL INHALATION DEVICE FOR THE TREATMENT OF DISEASES OF THE RESPIRATORY TRACT

Wolf-Dietrich Drews, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 24, 1976, Ser. No. 717,343
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1975, 2537765
Int. Cl.[2] A61M *11/00*
U.S. Cl. 128—194 **2 Claims**

1. A hand-held inhalator comprising:
an outer housing including means defining an opening shaped to receive the anatomy of the nasal regions;
wall means defining an inner protective chamber within said outer housing;
an oscillator mounted within said inner chamber, said oscillator including an electronic excitation and a piezoceramic member electrically connected to and excitable into vibration by said electronic excitation circuit, electrical supply leads connected to said electronic excitation circuit and extending in fluid-sealed relation through said chamber and outer housing for connection to an electrical supply, and switch means electrically connected in said electrical supply leads and operable to activate said electronic excitation circuit when said supply leads are connected to an electrical supply;
a conically-shaped sonic transducer extending through said wall means and mounted thereto in a liquid-tight relation at an oscillation node, said transducer carrying said piezoceramic member on its larger end, and including an



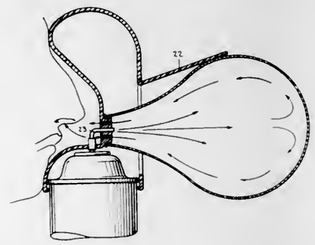
atomizing plate mounted on the smaller end of said conically-shaped sonic transducer, said atomizing plate including a surface facing the opening in said outer housing, said transducer transmitting ultrasonic vibrations to said plate; and
a liquid reservoir in said outer housing including an unobstructed outlet passageway means and wick means providing sole fluid communication from said outlet passageway means to said surface of said atomizing plate.

4,119,097

EMERGENCY OXYGEN SUPPLY

Donald Spector, Union City, N.J., assignor to Applied Research Commodities Industries, Inc., Hyattsville, Md.

Filed Feb. 3, 1977, Ser. No. 765,288
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—203 **4 Claims**



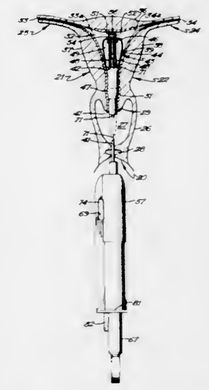
1. An emergency oxygen supply comprising:
A. a canister containing oxygen and provided with a normally-closed switch-actuated valve;
B. a mask and bellows sub-assembly constituted by a mask adapted to receive the mouth and nose of a user and to confine breathing to the interior of the mask and an inflatable bellows attached to the mask and communicating therewith;
C. means to feed oxygen from said canister into the bellows and coupled to the output of the valve, whereby when the switch is actuated, oxygen from the canister is fed into and inflates the bellows, to enrich the gas which the user inhales and exhales, and making it possible for the user to breathe the same volume of gas in the bellows until such time as the oxygen therein requires replenishment; and
D. a dome-shaped cap fitting over the top of said canister, said mask being integral with a side wall of said cap and forming a part thereof whereby the bellows attached to the mask is normally confined within the interior of the cap, the side wall of the cap opposed to the mask being provided with a spring-biased trap door that, when the bellows is inflated, is forced open by the expanding bellows to permit the bellows to expand outside of said cap.

4,119,098

MATERIAL DISPENSING APPARATUS

Lee R. Bolduc, St. Louis Park, and Eugene A. Dickhudt, St. Paul, both of Minn., assignors to Population Research Incorporated, Clearwater, Fla.

Filed Jan. 10, 1977, Ser. No. 757,780
The portion of the term of this patent subsequent to Jul. 9, 1991, has been disclaimed.
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—235 **9 Claims**



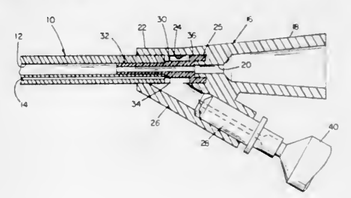
1. Apparatus for dispensing and holding materials in the Fallopian tubes of a female comprising:
first means for dispensing materials into the uterine cavity;
second means for moving dispensed materials from the uterine cavity into the canals of the Fallopian tubes; and
third means for effectively sealing the entrance to the canals of the Fallopian tubes for holding the dispensed materials within the canals.

4,119,099

CATHETER

Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation-in-part of Ser. No. 745,098, Nov. 26, 1976. This application Mar. 16, 1977, Ser. No. 778,051
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—349 R **9 Claims**



1. In a catheter having a shaft including a drainage lumen and an eye opening communicating therewith at its distal end, and an inflation lumen and a retention balloon communicating therewith,
a molded connector unit bonded to the outer surface of said

shaft adjacent the proximal end thereof, said connector unit including a drainage fitting having a bore communicating with said drainage lumen and having an inflation side arm,

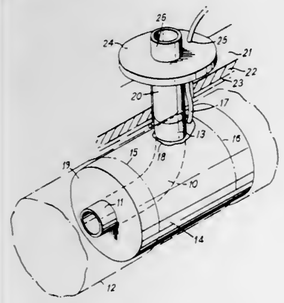
the improvement comprising a rigid adapter tube having its forward end extending into and fitting snugly within said drainage lumen at the proximal end of said shaft underlying the forward end of said bonded connector unit, and having its rearward end seating in sealing engagement against said drainage fitting to seal said drainage lumen and the bore of said drainage fitting from said inflation said arm and inflation lumen, said adapter tube having a bore providing communication between the drainage lumen and the bore of said drainage fitting, and having means separate from both said bores providing in cooperation with said connector unit a means for communication between said inflation lumen and said inflation side arm, one of said adapter tube and said connector unit including a projection and the other including a mating recess for engaging said projection to position said adapter tube with respect to said connector unit and said drainage lumen.

4,119,100

SURGICAL DEVICE FOR DISCHARGE OF FAECAL MATTER FROM THE COLON

John William Stanley Rickett, 33 Bronescombe Ave., Bishopsteignton, Teignmouth, Devon TQ14 9SR, England

Filed Mar. 18, 1977, Ser. No. 778,950
Int. Cl.[2] A61M *27/00*; A61F *5/44*
U.S. Cl. 128—350 R **6 Claims**



1. A surgical device for discharge of faecal matter from the colon when a part of the colon is to be temporarily defunctioned, the device comprising:

a bent drainage duct so dimensioned that its inner end can lie within the lumen of the colon while its outer end extends through the wall of the colon;

a flange disposed around the outer end of the drainage duct to lie against the outer surface of the abdominal wall; and

an inflatable bag surrounding the drainage duct, the inflated bag having a generally cylindrical form to fill the lumen of the colon, the inner end of said drainage duct projecting from one end of the inflated bag and the outer end projecting from a side wall of the bag.

4,119,101

MULTIPLE LUMEN ENDOTRACHEAL TUBE AND CUFF WITH LIMITED INFLATION AND PRESSURE

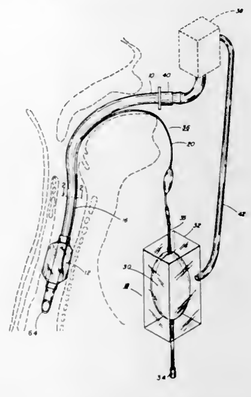
Victor Igich, 2022 44th Ave., Gulfport, Miss. 39501

Filed Mar. 1, 1976, Ser. No. 662,394
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—351 **3 Claims**

1. An endotracheal tube, with an inflatable cuff for pressure sealing and unsealing a trachea, mounted around said endotracheal tube for use with a respirator providing pulsating pressure output in artificial respiration, comprising:

(a) multiple lumen means, having oppositely disposed ends, running the length of said endotracheal tube which is adapted for one end of said oppositely disposed ends to connect with said respirator, and the other end of said oppositely disposed ends to be inserted in a trachea for aspirating lungs and an additional lumen means, having oppositely disposed free ends respectively terminating exteriorly adjacent said respirator and interiorly in said inflatable cuff; and

(b) a pressure transfer device means located outside of said endotracheal tube and having a relatively rigid outer container means adjusted to be connected to said respirator in parallel with said endotracheal tube for receiving a part of said pulsating pressure output of said respirator, and a collapsible container, that is deflatable and self-inflatable, mounted in said outer container means and connected to said additional lumen means by its exteriorly terminating oppositely disposed end for defining with said inflatable cuff a closed pneumatic system in which a limited amount of gas is injectable therein that is responsive to said part of the pulsating pressure output of the respirator received in said outer container to alternately collapse said collapsible container and inflate said inflatable cuff, and vice versa, said rigid outer container being closed except for its connection to the respirator, said collapsible container being closed except for its connection to said additional lumen means.



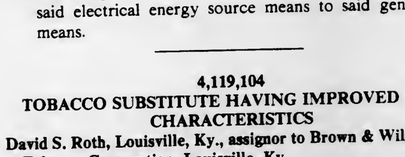
4,119,102

RADIO FREQUENCY TREATMENT OF TUMORS WHILE INDUCING HYPOTENSION

Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y. 11209

Division of Ser. No. 643,661, Dec. 23, 1975, Pat. No. 3,991,770, which is a continuation-in-part of Ser. No. 595,094, Jul. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,102, Jan. 24, 1974, abandoned. This application Nov. 11, 1976, Ser. No. 741,043
Int. Cl.[2] A61N *1/40*
U.S. Cl. 128—413 **4 Claims**

1. In the method of treating a naturally occurring tumor in a human by placing the portion of the body of the human in which the tumor is located in a radio frequency electromagnetic field thereby to heat the tumor tissue in said portion of said body by absorption of energy from said radio frequency electromagnetic field for a period of time and with intensity sufficient to cause necrosis of said tumor, but insufficient to cause significant damage to the adjacent normal tissue in said field, the improvement which comprises inducing hypotension



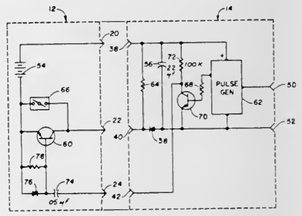
in said human while treating said tumor with said radio frequency electromagnetic field.

4,119,103

DETACHABLE POWER SOURCE WITH LOW CURRENT LEAKAGE

Thomas L. Jirak, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 27, 1976, Ser. No. 735,866
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 PS **20 Claims**



1. A body-implantable electromedical device of the type having electrical energy source means for developing electrical energy, generating means adapted to receive and responsive to electrical energy for periodically generating a tissue stimulating signal, said generating means having output means adapted to be coupled to electrode means for transmitting the stimulating signal to body tissue, coupling means for detachably coupling said electrical energy source means to said generating means, and limiting means for reducing the leakage of electrical energy from said coupling means comprising:

means for periodically transferring electrical energy from said electrical energy source means to said generating means.

4,119,104

TOBACCO SUBSTITUTE HAVING IMPROVED ASH CHARACTERISTICS

David S. Roth, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 631,094, Nov. 11, 1975, abandoned. This application May 17, 1977, Ser. No. 797,642
Int. Cl.[2] A24D *1/18*; A24B *3/14*
U.S. Cl. 131—2 **31 Claims**

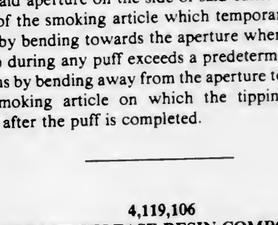
1. A tobacco substitute, which comprises:

(a) from about 10% to about 40% by weight of tobacco fines, the presence of said tobacco fines reducing ash blooming when said substitute is combusted;

(b) from about 5% to about 35% by weight of an organic binder;

(c) from about 2% to about 35% by weight of an ash stabilizing filler which is a boron compound selected from the group consisting of boric oxide, a boron oxyacid, and ammonium, alkali metal, and alkaline earth metal salts of a boron oxyacid and mixtures thereof; and

(d) from about 25% to about 75% by weight of an inorganic filler selected from the group consisting of alumina, alumina trihydrate, magnesium carbonate, calcium carbonate, charcoal and mixtures thereof.

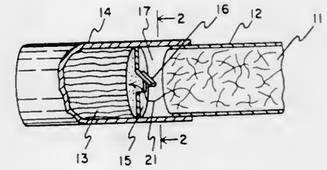


4,119,105

AIR FLOW LIMITING FILTER

William F. Owens, Jr., Pisgah Forest, N.C., assignor to Olin Corporation, Pisgah Forest, N.C.

Filed Jan. 31, 1977, Ser. No. 764,007
Int. Cl.[2] A24D *1/04*
U.S. Cl. 131—10.3 **5 Claims**



1. A filtering device for controlling the amount of smoke that can be drawn from a smoking article during each puff comprising a cylindrical tipping envelope forming a mouthpiece for mounting on one end of the smoking article, a valve mounted inside said tipping envelope biased in an opened position and providing when open the sole passage for smoke drawn through the tipping envelope from the smoking article, said valve comprising an air-impermeable baffle, an aperture in said baffle and a pressure responsive resilient flap at least as large as said aperture on the side of said baffle nearest to said one end of the smoking article which temporarily closes said aperture by bending towards the aperture whenever the pressure drop during any puff exceeds a predetermined level, and then opens by bending away from the aperture towards the end of the smoking article on which the tipping envelope is mounted after the puff is completed.

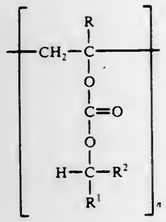
4,119,106

FLAVORANT-RELEASE RESIN COMPOSITIONS

Harvey J. Grubbs, Mechanicsville; Thomas V. Van Auken, and William R. Johnson, Jr., both of Richmond, all of Va., assignors to Philip Morris, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 624,900, Oct. 22, 1975, abandoned. This application Oct. 1, 1976, Ser. No. 728,729
Int. Cl.[2] A24B *3/12*; C08F *18/24*; C07C *69/96*
U.S. Cl. 131—17 R **12 Claims**

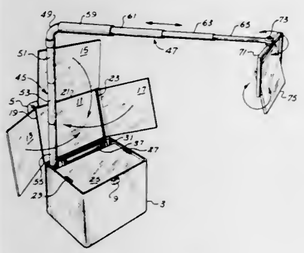
1. A polymeric composition having a molecular weight in the range between about 500 and 2,000,000 and consisting essentially of recurring monomer units corresponding to the formula:



wherein R is a member selected from the group consisting of aliphatic, alicyclic, heterocyclic and aromatic hydrocarbon radicals containing between 1 and about 10 carbon atoms; R^1 and R^2 are members independently selected from the group consisting of hydrogen and aliphatic, alicyclic, heterocyclic and aromatic hydrocarbon radicals, or R^1 and R^2 taken together with the connecting elements form an alicyclic structure, and wherein the total number of carbon atoms in R^1 and R^2 collectively does not exceed about 20; and *n* is an integer between 2 and about 10,000.

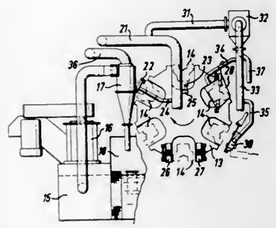
12. A smoking composition comprising an admixture of natural or reconstituted tobacco and between about 0.001 and 10 weight percent, based on the weight of tobacco, of a polymeric composition in accordance with claim **1** as an alcohol flavorant release agent.

4,119,107
PORTABLE VANITY CASE
Joseph A. Pinzone; Anthony J. Pinzone, both of 404 Fairview Ave., Ridgewood, Queens, N.Y. 11237, and Stephen J. Gagliano, 35 Coral Ct., Malverne, N.Y. 11565
Filed Dec. 16, 1976, Ser. No. 751,069
Int. Cl.² A45D *40/00*
U.S. Cl. 132—79 G **1 Claim**



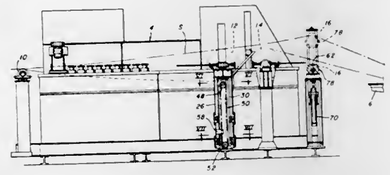
1. A portable vanity case comprising
an enclosure for receiving and storing toilet articles,
a lid mounted on said enclosure,
a first mirror mounted on the inside of said lid,
second, third and fourth mirrors connected by hinges to said first mirror to produce a composite structure which can be adjusted by hand to provide desired views of reflection,
a removable tray mounted horizontally within said enclosure,
a fifth mirror mounted on said tray and adjacent said first, second, third and fourth mirrors whereby a complete view from all angles of the facial features of the user may be obtained,
said fifth mirror having handles mounted thereon to serve the threefold function of a reflecting surface, a tray for cosmetic articles placed thereon, and a cover for the removable tray mounted within said enclosure,
a light source mounted within said enclosure and positioned between said first and said fifth mirrors to illuminate the facial features of the user,
an upstanding leg member removably held in position to extend from said enclosure by support means located within said enclosure,
said upstanding leg member comprising a plurality of interconnecting cylindrical segments which are easily assembled and disassembled,
an arm member having one end removably attached to said leg member and extending away from said leg member for pivotal movement about the vertical axis of said upstanding leg member,
said arm member comprising a plurality of telescoping hollow cylindrical segments which are adjustable to yield a desired overall arm length,
a bracket pivotally attached to the other end of said arm member, and
a sixth mirror pivotally attached to said bracket to make said mirror and said bracket independently adjustable to place said sixth mirror in any desired position,
said sixth mirror having reflecting surfaces on both front and back, one of which surfaces produces an enlarged image,
whereby the user is provided with a compact structure which enables illuminated viewing of the head and face from all possible angles while leaving the hands free for the application of cosmetics and other matters of personal grooming.

4,119,108
AUTOMATIC WASHING APPARATUS
Robert Osteen Alexander, Mitcham, England, assignor to Cera International Limited, London, England
Filed Oct. 17, 1977, Ser. No. 843,061
Int. Cl.² B08B *3/02*
U.S. Cl. 134—62 **10 Claims**



1. An industrial washing machine for washing production components, the machine comprising a housing; a washing section enclosed within the housing, the washing section including a source of washing fluid, at least one battery of jets which are mounted and located with precision at at least one washing station of the washing section and pressure fluid supply means for drawing washing fluid from said source and for feeding it under pressure to and through said at least one battery of jets; and supporting and locating means for supporting and locating each component in turn at each washing station so that each of the jets directs a pressure jet of washing fluid at a corresponding specific part of a component which is supported and located at that station by the supporting and locating means when the machine is in use; wherein the improvement comprises the provision of at least one manifold casing in which a plurality of said jets are mounted rigidly and in which a pressure fluid flow path is formed for directing to each of the jets mounted in the manifold casing washing fluid which is supplied under pressure by the pressure fluid supply means; there being locating means provided for providing precise location for each manifold casing at the respective washing station so that the jets mounted in that casing are located with precision at the respective washing station when the machine is in use, the locating means for each manifold casing comprising a respective locator stop; and releasable latching means which are provided for retaining each manifold casing releasably in abutment with the respective locator stop, the latching means being releasable to permit removal of each manifold casing from the position at which it is located precisely at the respective washing station by the respective locating means and being adapted to reclamp the respective manifold casing subsequently in the same precise position that is determined by the respective locating means.

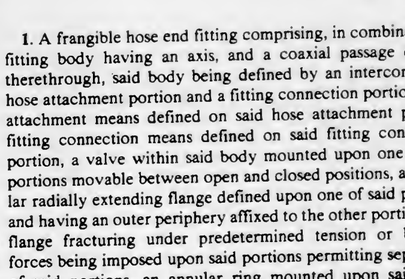
4,119,109
APPARATUS FOR TREATING STRIP
Frederick S. Lukac, New Kensington, and William P. Zbryski, Tarentum, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Filed Feb. 17, 1977, Ser. No. 769,497
Int. Cl.² B08B *3/04*
U.S. Cl. 134—64 R **11 Claims**



1. In apparatus for continuously treating alloy strip including a heat treating line, a first tank containing a molten salt bath at the exit end of said heat treating line, a driven horizontal sink roll in said first tank around which the strip passes, a second tank containing a liquid rinse at the exit end of said first tank, and a third tank containing pickling liquor at the exit end of said second tank; the improvement comprising means for raising and lowering said sink roll and its drive between positions below and above said salt bath, said means for raising and lowering said sink roll including a first vertically movable support on one side of said first tank for supporting one end of said roll and the sink roll drive, a second vertically movable support on the other side of said first tank for supporting the other end of said roll, a fixed support adjacent each of said movable supports, means on each of said fixed supports for raising its associated movable support, and upper sprocket secured to each fixed support with its axis horizontal, a lower sprocket secured to each fixed support with its axis horizontal, a shaft connecting said lower sprockets, a chain connecting each upper and lower sprocket, and means connecting each of said chains to its associated movable support whereby said sink roll is maintained horizontal during its movement.

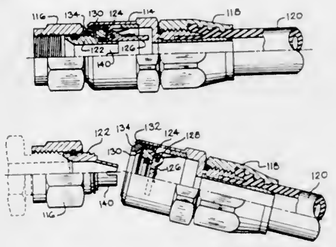
4,119,110
FLUID PURGING SYSTEM
Kirby Lee Stone, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Jun. 29, 1977, Ser. No. 811,086
Int. Cl.² B29F *1/00*
U.S. Cl. 137—15 **2 Claims**

1. A method of flushing a portion of a liquid reaction molding system containing a process liquid with particulate suspensions, which comprises:
(a) discontinuing flow of a particulate suspension liquid into a portion of the liquid reaction molding system from a particulate fluid source;
(b) flushing the particulate suspension liquid with a similar unparticulated liquid prior to system shutdown;
(c) reconvening the flow of particulate suspension liquid and flushing the similar unparticulated liquid with particulate suspension liquid prior to system start-up;



(d) mixing the flushed unparticulated fluid with process fluid from the particulate fluid source; and
(e) adjusting the particulate content of the fluid source.

4,119,111
FRANGIBLE HOSE END FITTING
Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.
Filed Jun. 28, 1976, Ser. No. 700,095
Int. Cl.² F16K *17/40*
U.S. Cl. 137—68 R **6 Claims**



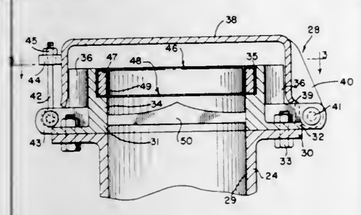
1. A frangible hose end fitting comprising, in combination, a fitting body having an axis, and a coaxial passage defined therethrough, said body being defined by an interconnected hose attachment portion and a fitting connection portion, hose attachment means defined on said hose attachment portion, fitting connection means defined on said fitting connection portion, a valve within said body mounted upon one of said portions movable between open and closed positions, an annular radially extending flange defined upon one of said portions and having an outer periphery affixed to the other portion, said flange fracturing under predetermined tension or bending forces being imposed upon said portions permitting separation of said portions, an annular ring mounted upon said body engaging said body axially spaced from said flange and engaging said flange adjacent its outer periphery to brace said flange against bending fracture, and valve positioning means mounted on the other portion comprising a tubular sleeve concentric with said passage holding said valve in said open position and out of alignment with said passage and releasing said valve to the closed position upon fracturing of said flange.

4,119,112

PRESSURE RELIEF VALVE

Franklin P. Adler, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jul. 19, 1976, Ser. No. 706,650
Int. Cl.² F16K *17/40*
U.S. Cl. 137—68 R **5 Claims**



1. A safety vent for a covered hopper car having a hopper and a pneumatic discharge mechanism adapted to be connected to a fluid pressure system for material unloading, comprising;

a tubular member having a tubular wall, one portion thereof connected to and communicating with the interior of said hopper car,

said tubular wall having a second portion communicating with the atmosphere,

a seating surface on one of said portions,

a valve member solely seated upon said surface and rupturable at a predetermined design pressure outside the car,

said member adapted to seat fluid tight against said surface solely by reduction of pressure in the car, and

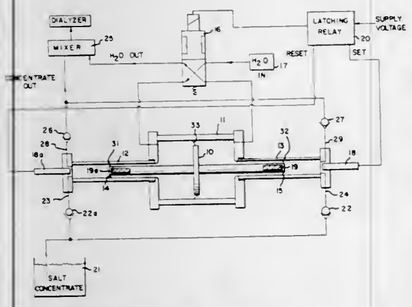
said valve member including a stretchable diaphragm stretched transversely across said tubular wall in tensioned condition whereupon rupture of the same, said diaphragm is substantially destroyed to permit flow of fluid through said tubular member.

4,119,113

DOUBLE-ACTION PROPORTIONING PUMP

Stephen Mason Meginniss, III, St. Petersburg, Fla., assignor to Extracorporeal Medical Systems, Inc., Wilmington, Del.

Filed Feb. 6, 1975, Ser. No. 547,625
Int. Cl.² A61M *16/00*; G05D *11/02*
U.S. Cl. 137—99 **5 Claims**



1. A fluid pressure driven pump comprising:

a double-acting piston means including a center cylinder, and a pair of end cylinders disposed on either side of said center cylinder, a center piston and end pistons each operated by said center piston, said end cylinders being extensions of said center cylinder with no exposed moving parts between said cylinders,

switch means operated by said piston means,

solenoid operated valve means alternately connecting opposite chambers of said center cylinder with a source of first fluid under pressure and an outlet of said valve means,

valve means alternately connecting said end cylinders to a source of second fluid and to an outlet of said valve means, said switch means being connected to operate said solenoid operated valve means between alternate states as said piston means reciprocates within said cylinder,

seals around the periphery of each end piston, said seals engaging said end cylinders to provide the only separation between said first fluid in said center cylinder and said second fluid in said end cylinders, and

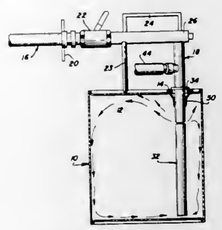
a cup seal around the periphery of said center cylinder, said cup seal being formed from a circular piece of compliant, durable rubber-like material which is deformed so that the outer periphery thereof bears against the inner surface of said center cylinder.

4,119,114

FLUID TRANSFER APPARATUS

Jack Curtis Bolton, Salinas, and Franklin Leroy Alexander, Hollister, both of Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 12, 1976, Ser. No. 741,389
Int. Cl.² F16K *43/00*
U.S. Cl. 137—318 **4 Claims**



1. Apparatus for transferring toxic fluid material from a container having closure means toward another closed location comprising conduit means and a communicating probe member having: an outer hollow sleeve member terminating at the non-communicating end thereof in rotary cutting means; closure puncturing and spring ejection means secured within said probe member near said end thereof; said closure, puncturing and spring ejection means are relatively positioned to effect puncturing of said closure means and to force compression of said spring and wash water spray port means positioned around the exterior of said probe member above said cutting, puncturing and spring ejection means to wash the interior of said container.

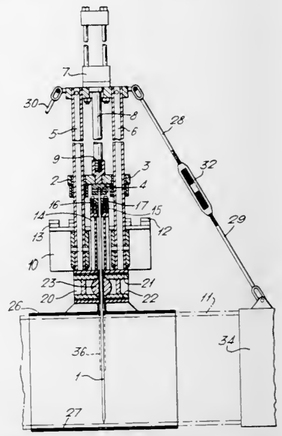
4,119,115

STOPPING FLUID FLOW IN PIPES

Alec Reginald Carruthers, Newcastle, England, assignor to British Gas Corporation, London, England

Filed Mar. 21, 1977, Ser. No. 779,488
Claims priority, application United Kingdom, Mar. 19, 1976, 11094/76
Int. Cl.² F16K *43/00*
U.S. Cl. 137—318 **5 Claims**

1. An apparatus for cutting into and stopping the flow of fluid in a plastic pipe comprising a clamp located around the pipe in a fluid tight manner, a valve mounted onto the clamp, a support member removably mounted upon the valve and having guide rails, a carriage adapted to move along said guide rails, a cutting blade having a semicircular cutting edge attached to and movable with the carriage, actuating means for moving the carriage and blade along the rails, a sealing member mounted between the carriage and the valve and adapted so that the blade, in use, passes therethrough, and clamping means for securely clamping the apparatus onto the pipe, said blade being movable through the sealing member and the valve and through the upper part of the pipe wall into the interior of the pipe the diameter of said cutting edge of said blade being slightly larger than the internal diameter of said pipe such that the blade penetrates only partially into the lower part of the pipe wall and cuts off any flow of fluid therein, and upon withdrawal of the blade from the pipe, flow is restored without loss of gas to the atmosphere.

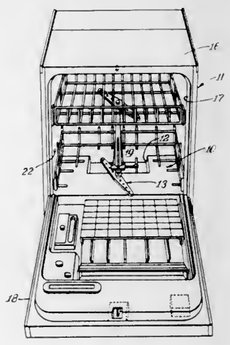


4,119,116

RECEPTACLE FILL APPARATUS

Philip P. Johnson, and William T. Lampman, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 6, 1976, Ser. No. 683,952
Int. Cl.² F16K *21/18*
U.S. Cl. 137—387 **10 Claims**



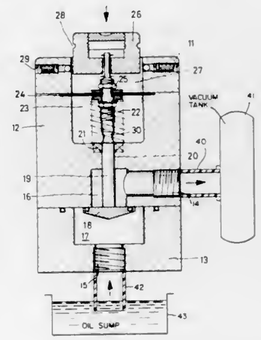
1. In an apparatus having a liquid holder receptacle, improved means for controlling the filling of the liquid receptacle from a pressurized liquid supply, comprising: a control valve defining a liquid flow passage having an upstream portion and downstream portion; means for connecting said upstream portion to a pressurized liquid supply; means for delivering liquid from said downstream portion into the receptacle, said control valve including first movable valve means for selectively closing said upstream portion for controlling liquid delivery to said downstream portion of said flow passage to said receptacle, and second movable valve means operable for selectively closing said downstream portion means for operatively said second valve means at all times independently of said first valve means for closing said downstream of the valve as an incident of the liquid level in said receptacle reaching a preselected full level, the closing of either of said portions by its associated valve means preventing further delivery of liquid to said receptacle notwithstanding a malfunctioning of the other of the valve means; and flow terminating means for causing liquid flow from said liquid supply to said receptacle to be terminated by said first valve means closing said upstream portion of the flow passage at the end of a preselected time period greater than the time period required to permit the liquid delivery means to fill said receptacle to said preselected full level, thereby permitting only up to a maximum preselected level despite a malfunctioning of said second valve means permitting the receptacle to be filled beyond said preselected full level.

4,119,117

VALVE MEANS OF A DEVICE FOR REMOVING LUBRICATING OIL

Dieter Winkelvoss, Einbeck, Fed. Rep. of Germany, assignor to Dresser Europe S.A. "LeSouverain" Boulevard du Souverain, Brussels, Belgium

Filed Mar. 24, 1977, Ser. No. 780,879
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615464
Int. Cl.² F16K *17/00*
U.S. Cl. 137—456 **14 Claims**



8. A device for removing oil from an oil containing chamber of a combustion engine, comprising:

a vacuum tank having a chamber which may be at least partially evacuated to establish a subatmospheric pressure condition therein;

a suction hose having two ends, one of which serves as a nozzle for insertion into the oil-containing chamber of the engine; and

a valve having a valve housing having interior walls which define therein a valve seat, an inlet chamber disposed on one side of said valve seat which is capable of communication with the other end of the suction hose, an outlet channel disposed on the other side of said valve seat which is capable of communication with the chamber of the vacuum tank and a control chamber which is communicative with said outlet channel and which has an opening which opens onto the exterior surface of said valve housing, a valve locking member having an upstanding valve stem coupled thereto which is mounted in said valve housing for reciprocal movement between an open and closed position relative to said valve seat, sealing means which cooperate with said valve stem when said locking member is in said closed position thereof, for sealing off said control chamber from communication with said out-

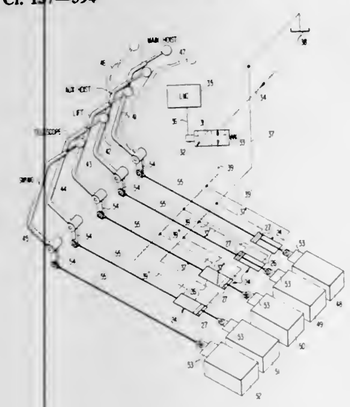
let channel, and a flexible diaphragm which is secured to said valve stem and is disposed within said control chamber with its marginal edges sealingly secured to the walls defining said control chamber so as to seal at least a portion of said chamber from the outside atmosphere, said diaphragm being at least partially responsive to a change in the pressure differential established on opposite sides thereof for moving said locking member to said closed position thereof following the completion of drawing oil from the oil-containing chamber and into the vacuum tank as a result of the subatmospheric pressure condition established therein.

4,119,118

AUTOMATIC MACHINE MOTION RESTRICTING MECHANISM

Ramesh P. Patel, Hagerstown, Md., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Jan. 13, 1977, Ser. No. 759,240
Int. Cl.[2] F16K *31/44*
U.S. Cl. 137—594 **12 Claims**



1. In a mechanism for restricting unsafe machine motions without restricting safe machine motions, a manual control element movable to initiate a machine motion, a machine motion control device associated with said manual control element, a fluid link connected between said manual control element and said control device, and means including a pressurized fluid supply device connected with said fluid link for delivering pressurized fluid to and for receiving pressurized fluid from said fluid link and operable to render the link "hard" in both directions of movement of said manual control element, or "soft" in at least one direction of movement of said manual control element selectively, and a safe and unsafe machine motion sensing apparatus coupled with said pressurized fluid supply device and normally conditioning the supply device to deliver pressurized fluid to said fluid link to render the link "hard", said sensing apparatus adapted to condition the supply device to interrupt the delivery of pressurized fluid to the fluid link, whereby the link is rendered "soft" in at least one direction of movement of the manual control element when the sensing apparatus senses an unsafe machine motion.

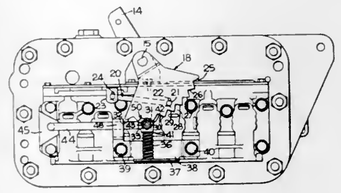
6. In a mechanism as defined in claim 1 which comprises a complete machine motion control system, additional manual control elements and machine motion control devices in coacting pairs to control a plurality of machine motions, additional fluid links connected between the manual control elements and control devices of said pairs, and said means being common to all of the fluid links in said system and being connected to each fluid link and including a device to selectively deliver pressurized fluid to the fluid links or interrupt the delivery of said fluid responsive to the activity of a safe and unsafe machine motion sensing means.

4,119,119

SHIFT CONTROL DETENT MECHANISM

Gerardus M. Ballendux, Waukesha, and Ferdynand Kolacz, New Berlin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 20, 1976, Ser. No. 752,560
Int. Cl.[2] F16K *31/524;* **G05G** *5/24*
U.S. Cl. 137—868 **10 Claims**



1. A power shift transmission control valve including a detent and shift mechanism for operating a power shift transmission comprising, a power shift transmission control valve, a shift lever pivotally mounted on said control valve, a detent segment integrally connected to said shift lever, a plurality of flow control valves reciprocally mounted in said control valve each biased to a return position, a control rack slidably mounted in said transmission control valve and defining a cammed surface of a predetermined number of valve operating positions for selectively operating said plurality of flow control valves, said detent segment defining said predetermined number of cam slots along a cam surface correlated with said valve positions, link means pivotally connecting said detent segment to said control rack for correlating said control rack with said detent segment, a detent follower selectively engaging said cam slots as said detent segment is operated by said shift lever, resilient means biasing said follower in an engaging position with said detent segment to retain said detent and shift mechanism in selective and alternative positions of said power shift transmission control valve.

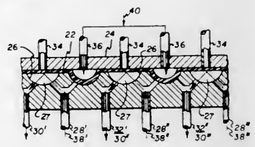
4,119,120

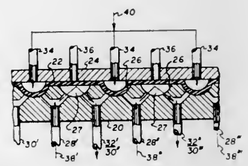
FLUID SWITCH

Gordon E. Mehaffy, and Kenneth B. Sawa, both of Yorba Linda, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 29, 1976, Ser. No. 745,885
Int. Cl.[2] F16K *31/126;* **G01N** *1/00*
U.S. Cl. 137—885 **3 Claims**

1. An improved valve for switching fluids comprising:
(a) a first plate having a pair of depressions therein;
(b) first and second fluid conduit means passing through said first plate and opening into respective ones of said pair of depressions;
(c) third fluid conduit means passing through said first plate and opening into both of said pair of depressions;
(d) a second plate assembled adjacent said first plate and having first control fluid inlet means passing through said second plate and opening opposite one of said depressions and second control fluid inlet means passing through said second plate and opening opposite the other of said depressions, each of said control fluid inlet means being connectable to a source of control fluid under pressure;
(e) an elastomeric diaphragm disposed between said first plate and said second plate when said plates are assembled adjacent one another, said diaphragm being deformed into one of said depressions to seal said fluid conduit means opening therein when control fluid under pressure is connected to said first control fluid inlet means and being deformed into the other of said depressions to seal said fluid conduit means opening therein when control fluid under pressure is connected to said second control fluid inlet means; and,





(f) means for holding said first plate, said second plate and said diaphragm in assembled adjacent relationship.

4,119,121

PROTECTIVE CLOSURE FOR INTERNAL PIPE THREADS

Kenneth A. Smiley, Eldred, Pa., assignor to Pennsylvania Plastic Products, Inc., Eldred, Pa.

Continuation of Ser. No. 694,535, Jun. 10, 1976, abandoned.
This application Nov. 7, 1977, Ser. No. 849,333
Int. Cl.[2] B65D *59/06*
U.S. Cl. 138—96 T **8 Claims**

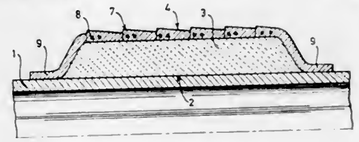
7. A plastic closure for protecting first internal threads of a first pipe coupling in which the first threads extend to the end of the first pipe coupling and have one diameter at one distance from the end of the first coupling, and second internal threads of a second pipe coupling in which the second threads terminate at a point short of the end of the second pipe coupling, and the coupling section from said point to the end of the second coupling is flared outwardly to form a recess, and the second threads have a diameter smaller than the one diameter at said one distance from the end of the second coupling comprising:
a hollow sleeve having a substantially radially inflexible end portion and an opposite radially flexible end portion;
a rim at said radially inflexible end portion of said sleeve;
first outer peripheral helical thread means on said radially inflexible end portion of said sleeve adjacent said rim for (1) threadingly engaging the first internal threads for providing a first primary means for securing the closure to the first pipe coupling, and (2) for nesting within the recess for providing a second secondary means, if any, for securing the closure to the second pipe coupling; and
second outer peripheral thread means on said radially flexible end portion of said sleeve separate and axially spaced from said first thread means, said second thread means adapted (1) to frictionally threadedly engage said first internal threads of the first pipe coupling for providing a first secondary means for securing the closure to the first pipe coupling, and (2) to be flexed radially inwardly by the second internal threads of the second pipe coupling and to frictionally threadedly engage said second internal threads to provide a second primary means for securing the closure to the second pipe coupling.

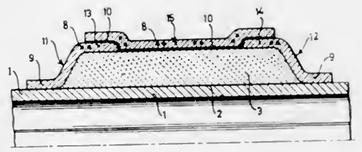
4,119,122

PIPE WITH AN OUTER FOAM PLASTIC COVERING

Warner Jan de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Netherlands

Filed Jun. 16, 1976, Ser. No. 696,629
Claims priority, application Netherlands, Jun. 19, 1975, 7507351
Int. Cl.[2] F16L *57/00*
U.S. Cl. 138—103 **19 Claims**





1. A pipe; the pipe having a length dimension; along at least a part of its length dimension, the pipe being provided on its outside with an outer foam plastic layer;
the foam plastic layer has a length dimension along the pipe that is less than the length dimension of the entire pipe; the foam plastic layer has opposite ends along the length dimension of the pipe;
outside the foam plastic layer, is a wrapped surface layer comprised of windings of thermoplastic tape, the windings are placed so that neighboring windings partially overlap at overlapping parts thereof, the overlapping parts of neighboring windings are heat sealed to each other;
the surface layer has a length dimension along the pipe that is greater than the length dimension of the foam plastic layer along the pipe and the surface layer extends beyond both opposite ends of the foam plastic layer and for a length along the surface of the pipe;
at least one threadlike reinforcing member is embedded in each overlapping part of the thermoplastic tape material and is situated at the surfaces at which the overlapping parts contact and is wound around the pipe.

4,119,123

FLEXIBLE HOSE WITH WEAR INDICATOR

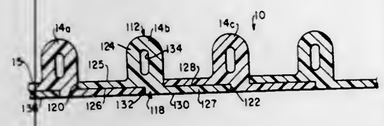
Ernest K. Samuels, Brooklyn, N.Y., assignor to Ernie Samuels, Inc., Brooklyn, N.Y.

Filed Dec. 23, 1976, Ser. No. 754,076
Int. Cl.[2] F16L *11/04, 11/06, 11/10*
U.S. Cl. 138—122 **22 Claims**

1. An elemental band for use in constructing a flexible hose comprising:
a strip of flexible material having first and second marginal edges defining the width of said strip;
at least one rib secured on top of said strip to protrude thereabove and to extend therealong between and in spaced relationship from said edges;

a lower bonding surface extending along the underside of said strip, at least a portion of said lower bonding surface extending under the area between said rib and said first edge; and

an upper bonding surface extending along the top of said strip between said rib and said second edge, said upper bonding surface lying substantially in a common plane with said lower bonding surface and said second edge being further from said rib than said first edge, said strip being formable into overlapping helical confolutions with



said upper and lower bonding surfaces in confronting relationship, with the first edge of each convolution abutting said rib in a first adjacent convolution of said band, and with said upper bonding surface conforming generally to said lower bonding surface and, in each convolution, extending under said rib in a second adjacent convolution of said band;

said strip being formable into a hose by bonding said upper and lower bonding surfaces in said confronting relationship, said rib being adapted to form a helical ridge useful as a wear indicator on the surface of said hose.

4,119,124

METHOD AND TOOL FOR APPLYING TIES

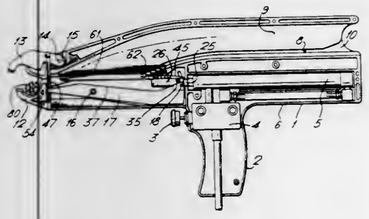
John Covell Collier, and Leonard John Owen, both of Exeter, England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 4, 1977, Ser. No. 793,661

Claims priority, application United Kingdom, May 25, 1976, 21519/76

Int. Cl.² B21F 9/02

U.S. Cl. 140—93.2 **30 Claims**



1. A method of applying a bundle tie having a flexible strap extending from an apertured frame for the passage of the strap looped back on itself with a tool having a tie storage area, a movable carriage reciprocably positioned in a guide path and a releasable loop guide defining an internal circular path, the steps comprising:

a. arranging a plurality of ties in a stack with the straps in generally parallel overlapping relationship;

b. positioning the stack in the tie storage area adjacent the carriage guide path with the straps extending forwardly and with the frame of the lowermost tie projecting into the guide path;

c. driving the carriage forwards to engage and drive the lower most tie forwardly lengthwise to loop the strap about a bundle of wires which may be positioned within the releasable loop guide, the strap following the internal circular path so as to feed the free tip thereof back through the aperture in the frame and into the carriage;

d. gripping the tip of the strap in the carriage;

e. moving the carriage rearwardly to tighten the loop about the bundle of wires;

f. shearing the strap adjacent the frame;

g. withdrawing the carriage behind the frame of the lowermost tie in the stack; and

h. moving the stack so that the frame of the lowermost tie projects into the carriage guide path.

4,119,125

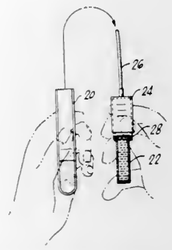
METHOD AND APPARATUS FOR HANDLING LIQUID SAMPLES

Carlos D. Elkins, 1414 S. Fairplain Ave., Whittier, Calif. 90601

Filed Jun. 22, 1977, Ser. No. 808,820

Int. Cl.² B65B 3/04

U.S. Cl. 141—11 **12 Claims**



8. A method for handling a phase separable liquid sample, the method comprising the steps of:

introducing a phase separable liquid sample into a container, processing the sample to obtain substantial separation of at least one fluid phase of said sample, siphoning the separated fluid phase into a cup by utilizing suction means to extract the separated fluid phase from said container, said suction means comprising in combination a suction cylinder and an elongated tubular probe, nesting said cup within an upper portion of said container after the separated fluid phase has been siphoned into said cup.

4,119,126

DEVICE FOR INTRODUCING FILLERS AND TERMINAL INTO GALVANIC CELL

Faat Khatovich Nabiullin, 3 Mytischinskaya ulitsa, 14a, kv. 90; Efim Mikhailovich Gertsik, Malo-Moskovskaya ulitsa, 3, kv. 92; Jury Timofeevich Rodionov, prospekt Mira, 190-A, kv. 71, and Vyacheslav Anatolievich Rabinovich, prospekt Mira, 122, kv. 270, all of Moskow, U.S.S.R.

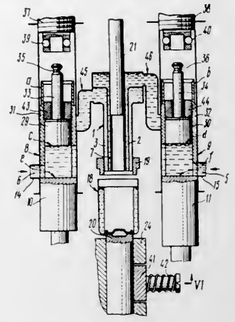
Filed Apr. 23, 1976, Ser. No. 679,792

Int. Cl.² B65B 3/32

U.S. Cl. 141—100 **1 Claim**

1. A device for introducing fillers and a terminal into the case of a galvanic cell comprising a tool in the form of a nozzle with a central channel, said nozzle having interior partitions which define at least one interior space, each of said interior spaces being concentric with said central channel; a mechanism for volumetric supply of different fillers into said interior spaces of the nozzle incorporating cylinders, each cylinder including a piston with a rod and a stop to limit the travel of the rods, a space of each of said cylinders communicating through a first hole of said cylinder with a respective pressure line feeding a respective filler and through a second hole of said cylinder with a respective interior space of the nozzle, said piston of each of said cylinders having a bushing to vacate the space of said cylinder for said respective filler, a distance between said first and second holes of said cylinder, which place the space of each of said cylinders in communication with said respective pressure line and with said respective space of said nozzle, being larger than the height of a metered portion of a respective filler in said space said bushing of the

piston in each of said cylinders being located inside of said rod and moveable relative to said rod to form said metered portion by the flow of a respective filler from said first hole into said space and having an extension with a recess, said stop for limiting the travel of said piston having a means for adjustment and having a ball retainer for receiving and holding said extension and moving said bushing relative to said rod and said piston to force said metered portion of filler from said space



through said second hole into a respective interior space of said nozzle; said piston and said rod being moveable together to open and close communication of said space with said first and said second holes and a mechanism, for creating counterpressure to resist an outflow of the fillers, operatively connected to said nozzle and comprising a pusher in the form of a rod supporting the galvanic cell to be filled pressed against a support by a spring-loaded block.

4,119,127

SHOULDER BAG

Gottfried Klug, Bobigny, France, assignor to Pelzer-Kirst GmbH and Co., Kirn, Fed. Rep. of Germany

Filed Aug. 9, 1977, Ser. No. 823,128

Int. Cl.² B65D 33/06, 33/16

U.S. Cl. 150—3 **8 Claims**



1. A bag comprising:

(a) a hollow receptacle including a front wall, a rear wall, and two side walls interconnecting said front and rear walls;

(b) an elongated carrier strap including two end portions connected to said side walls respectively,

(1) said walls and said end portions consisting essentially of pliable material,

(2) said receptacle and said strap defining a passage open transverse to said front and rear walls, and jointly extending in a closed loop about said passage,

(3) at least one of said end portions being tubular, and the hollow interior of said at least one end portion communicating with said receptacle,

(4) said receptacle being formed with an opening toward said passage, and

(5) said one portion being formed with an elongated aperture directed away from said passage to receive an elongated portion of an article carried by said receptacle.

4,119,128

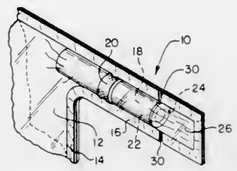
TAMPERPROOF STERILE PORT COVER AND METHOD OF MAKING SAME

Marilyn Bishop, 1 N 341 Indian Knoll Rd., West Chicago, Ill. 60185

Filed Feb. 18, 1977, Ser. No. 770,237

Int. Cl.² B65D 31/02

U.S. Cl. 150—8 **13 Claims**



8. A sterile port cover comprising:

a closed end sleeve with a generally transversely extending fracture line along which said sleeve is adapted to be severed, said sleeve being formed from two plastic sheets seamed together along the longitudinal edges of said sleeve, said sleeve having a thickness at said fracture line which is at least as great as the thickness of one of said sheets elsewhere in the sleeve,

and a rigid port tube sealably secured within said sleeve, said fracture line positioned substantially between the exterior end of said port tube and the part of said port tube which is secured to said sleeve,

said sleeve having notches at said sleeve seams aligned with said exterior end of said port tube, so that said fracture line generally follows said exterior end of said port tube.

4,119,129

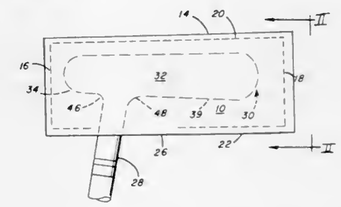
PUTTER COVER

James M. Freiberg, 221 Glenview Rd., New Kensington, Pa. 15068

Filed Sep. 19, 1977, Ser. No. 834,439

Int. Cl.² A63B 57/00

U.S. Cl. 150—52 G **6 Claims**



1. In the combination including a putter and a cover therefor, the improvement wherein said cover is comprised of:

a pair of sides formed of a flexible non-elastic material of at least the same length as the main striking face of the putter head;

said sides being joined at their top edges and partially joined along their bottom edges; an opening formed along the bottom edge of said cover defined by the endpoints of said partial joinder, said opening being greater than the dis-

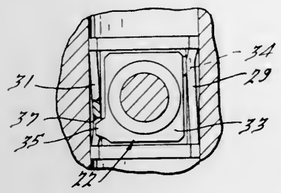
tance from the heel end of the putter head to the toe edge of the putter hosel and said opening being smaller than the distance from the toe end to the heel edge of the putter hosel.

4,119,130

BARREL NUT AND METHOD OF MANUFACTURE

Imre Berecz, Dana Point, Calif., assignor to Microdot Inc., Greenwich, Conn.

Filed Feb. 25, 1977, Ser. No. 772,128
Int. Cl.² F16B *39/00*
U.S. Cl. 151—41.76 **1 Claim**



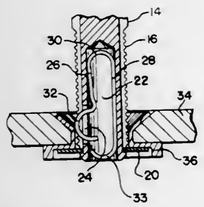
1. A barrel nut comprising a barrel element and a nut element, said barrel element comprising an elongated member semi-cylindrical in transverse cross section and having a convex side and a concave recessed side, the recessed side being of a rectangular configuration and having a flat bottom with integral longitudinal side walls and transverse imperforate end walls, a bolt receiving hole extending from the convex surface of said barrel element to said recess bottom, said nut element having a rectangular portion disposed in said recess, a pair of ears extending from opposite side edges of the rectangular portion of said nut element, apertures in the side walls of said barrel element for receiving the ears on said nut element, said apertures being larger than said ears to provide for rotational movement of said ears, said side walls being deflected radially inwardly so as to overlie said ears, said ears being diametrically opposite each other and the average distance from said end walls of said recess to said rectangular portion being no greater than the average distance from the side walls to the rectangular portion and less than the distance of rotational movement permitted said ears in said apertures whereby said ends walls preclude relative rotation between said barrel element and said nut element.

4,119,131

FASTENER WITH WIRE-FORM HOLDOUT

Frank J. Cosenza, Rancho Palos Verdes, Calif., assignor to Tridair Industries, Torrance, Calif.

Filed Mar. 4, 1977, Ser. No. 774,405
Int. Cl.² F16B *43/00*
U.S. Cl. 151—69 **6 Claims**



1. An aircraft panel fastener with a wire-form holdout comprising:

(a) a stud-like fastener body,

(b) said body having a central bore extending inwardly from its forward end,

(c) a longitudinal slot on said fastener body communicating with said bore,

(d) a generally U-shaped wire spring member having two legs with one leg extending outwardly and then inwardly forming a curved, protruding bearing surface thereon,

(e) said spring member housed in said bore with the bearing surface extending through said slot beyond the periphery of said fastener body and with the opposite leg of said member bearing against the opposite bore wall of the fastener bore,

(f) said bearing surface of said spring member biased outwardly but deflectable inwardly through said slot, and

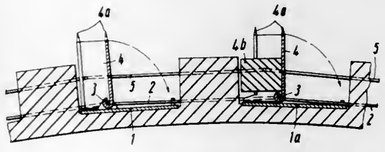
(g) said opposite leg formed with a hook at its lower end to facilitate the removal of the spring member from the bore.

4,119,132

SKID PREVENTION DEVICE FOR TIRES

Gottfried Ries, Freiburger Str. 19, 7517 Waldbronn-Reichenbach, Fed. Rep. of Germany

Filed Mar. 14, 1977, Ser. No. 777,498
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1976, 2610346
Int. Cl.² B60C *11/00*
U.S. Cl. 152—208 **17 Claims**



1. A skid prevention device for tires, which tires are provided with longitudinally-and radially-extending rows of treads separated by discrete laterally-extending rows of recesses, comprising:

a plurality of elongated generally U-shaped metal claws disposed within the rows of the recesses of the tire, the outer ends of which have spikes secured thereto, and the inner ends of which are pivotably mounted in the recesses of the tire;

mounting means for pivotably mounting said inner ends of said claws in the recesses of the tire for movement between an extended position, in which said claws are extended with said spikes of said claws extending radially outwardly beyond the upper surface of the treads of the tire, and a retracted position, in which said claws are retracted, with said spikes of said claws lying below the upper surface of the treads of the tire, said mounting means including a plurality of base plates disposed within the recesses of the tire to which the inner ends of said claws are hingeable secured and a plurality of supporting cables disposed within the recesses for securing said base plates in said recesses; and

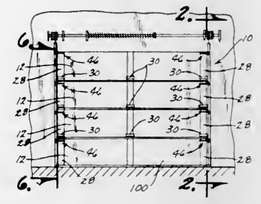
moving means for pivotably moving said claws between said extended and said retracted positions and for maintaining said claws in said extended and said retracted positions thereof, said moving means including a plurality of actuating cables disposed within the recesses, at least one of which is coupled to each of the claws in one row thereof, said actuating cables being laterally reciprocable to effect pivotable movement of said row of claws.

4,119,133

INSULATED GARAGE DOOR

Cecil R. Wolf, Rock Falls, Ill., assignor to Dwight Carter, Des Moines, Iowa

Filed Jun. 6, 1977, Ser. No. 803,480
Int. Cl.² E05D *15/38*
U.S. Cl. 160—209 **14 Claims**



1. A garage door assembly for a garage door opening having vertically disposed jambs on opposite sides thereof and a header extending between the upper ends of said jambs; said assembly comprising:

a track assembly having a pair of spaced apart tracks, each track having a horizontal upper portion and a vertical lower portion;

stop means on said vertical lower portion;

frame means mounted to said vertically disposed jambs;

mounting means movably mounting each of said vertical lower portions of said track assembly to said frame means for movement from an upper position to a lower position, said mounting means comprising a cam and a cam follower, one of said cam and cam follower being on said frame and the other of said cam and said cam follower being on said vertical portion of said track;

said cam follower being shaped to cooperate with said cam to guide said vertical portion of said track assembly toward said door jamb when said vertical portion moves from said upper to said lower position;

a flexible door having a plurality of rollers retentively guided in said track assembly whereby said rollers of said door are movable from a raised position to a lowered position wherein at least some of said rollers engage said stop means and urge said vertical portion of said track to said lower position;

said door comprising a plurality of elongated horizontally disposed door panels hinged together in edge to edge relationship about horizontal axes, at least one of said rollers being positioned at each opposite end of each of said panels;

said horizontal upper portion of said track assembly comprising an upper horizontal track and a lower horizontal track, said rollers of at least the uppermost panel of said door being retentively mounted for rolling movement in said upper horizontal track;

at least a portion of said upper horizontal track being movably mounted with respect to the remaining portion of said horizontal track for movement toward and away from said door header; and

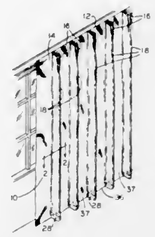
adjusting means for retentively holding said movable portion of said horizontal track against movement from a plurality of selected positions with respect to said header, said adjusting means comprising an adjusting member selectively movably mounted with respect to said frame means and retentively engaging said movable portion of said horizontal track, said adjusting member being selectively movable to cause movement of said movable portion of said horizontal track toward and away from said header.

4,119,134

DRAPERY PLEAT HOLDER

John Edward Morken, 3301 Freeman, Fort Wayne, Ind. 46804

Continuation-in-part of Ser. No. 274,276, Jul. 24, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,402
Int. Cl.² A47H *1/00*
U.S. Cl. 160—349 R **5 Claims**



1. In combination with a drapery pleat producing element adapted for producing folds throughout the entire vertical dimension of said drapery, the combination which comprises:

(a) a relatively inflexible U-shaped pleat-producing backing of constant shape wherein a plurality of said U-shaped pleat-producing backings are positioned at intervals along the bottom edge of said drapery; and,

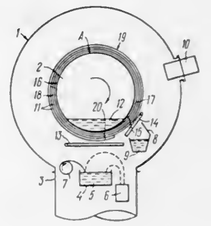
(b) gripping means formed between the confronting surfaces of said U-shaped pleat-producing backing and said drapery at the bottom edge of said drapery whereby a series of linearly vertical folds are produced continuously from the bottom edge of said drapery to the top edge of said drapery and said series of linearly vertical folds approach towards and separate from each other upon contracting and spreading said drapery respectively.

4,119,135

METHOD OF PRODUCING FOIL IN COILS

Jury Fedorovich Shevakin, Telegrafny pereulok, 11/16, kv. 53; Leonid Pavlovich Seleznev, ulitsa Ostrovityanova, 21, kv. 69; Igor Iosifovich Dobkin, 2 Avtozavodsky proezd, 5, korpus 1, kv. 6; Vladislav Alexandrovich Vasiliev, ulitsa Polotskaya, 10, kv. 53; Ljudmila Dmitrievna Kharitonova, Suvorovsky bulvar, 25, kv. 19; Grigory Ilich Kandyba, ulitsa Volgina, 25, korpus 3, kv. 101, and Nikolai Igorevich Parshin, 1 Ozerkovsky pereulok, 2/16, kv. 11, all of Moscow, U.S.S.R.

Filed May 19, 1977, Ser. No. 798,388
Int. Cl.² B22D *45/00*
U.S. Cl. 164—46 **2 Claims**



1. A method of producing foil in a coil, said method comprising the steps of applying a layer of antiadhesive to the surface of a rotating substrata and condensing metallic vapours in a vacuum on said antiadhesive layer, this resulting in producing a metal layer — the foil, and in forming a coil thereof, both processes — the producing of the foil and forming the coil thereof being effected simultaneously on one rotating substrata

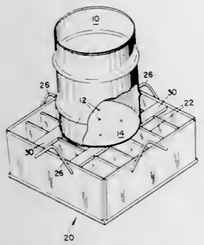
coated with a layer of said antiadhesive so that each next metal layer is formed on the antiadhesive layer applied to the preceding metal layer.

4,119,136

METHOD OF RECOVERING TIN FROM TIN DROSS

Robert Martin Gancarz, Sr., 98 Szetela Dr., Chicopee, Mass. 01021

Filed Oct. 25, 1977, Ser. No. 844,809
Int. Cl.² B22D *0/00*
U.S. Cl. 164—121 **1 Claim**



1. The process of recovering tin from tin dross consisting of the steps of:
- charging the tin dross in a metal barrel provided with apertures through its bottom,
- positioning the barrel on a partitioned steel mold with spacings between the partitions and mold walls,
- charging the barrel and mold combination into an annealing furnace maintained at an operating temperature of approximately 700° F for a time interval of between 5 and 6 hours,
- allowing the generated molten tin to drop downwardly of the barrel and through the apertures thereof into the mold,
- removing the barrel and mold from the furnace and cooling same prior to separation of mold and ingots of solidified tin.

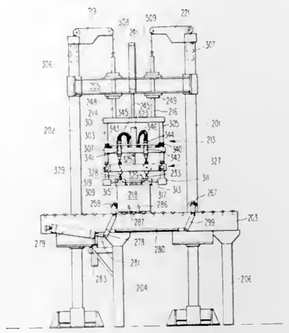
4,119,137

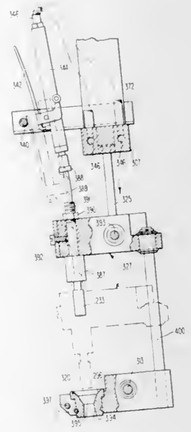
AUTOMATED POST BURN STATION

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 618,772, Oct. 2, 1975, Pat. No. 3,980,126, which is a continuation-in-part of Ser. No. 432,545, Jan. 11, 1974, Pat. No. 3,954,216, which is a continuation-in-part of Ser. No. 395,528, Sep. 10, 1973, Pat. No. 3,861,575, which is a division of Ser. No. 184,338, Sep. 28, 1971, abandoned. This application Jun. 21, 1976, Ser. No. 697,786
The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.
Int. Cl.² B22D *25/04;* **B23K** *3/02*
U.S. Cl. 164—332 **21 Claims**

3. An automated apparatus for sequentially forming integrally fused battery terminals on a plurality of storage batteries, each of which comprises at least one battery post element and adjacent battery bushing element, said apparatus comprising:
- a. a frame,
- b. head means associated with the frame and movable with respect to said frame along a first axis between standby and molding positions, said head means having mold means mounted thereon to matably encircle battery elements of a battery in a battery fusing position when said head means is in said molding position,
- c. burning means capable of selectively producing a flame for melting said battery elements when in a burning position, said burning means being mounted in slidable engagement along said first axis on said head means, for





movement with respect to said head means between a first pilot and a second burning position.

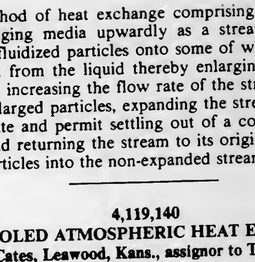
4,119,138

STRAIGHTENER FOR A MULTISTRAND CONTINUOUS-CASTING MACHINE

James T. Stull, Evans City, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 710,953, Aug. 2, 1976, abandoned. This application Oct. 27, 1977, Ser. No. 846,236
Int. Cl.² B22D *11/12;* **B21B** *39/00*
U.S. Cl. 164—448 **8 Claims**

1. In a multistrand continuous-casting machine in which two outer strands and at least one intermediate strand travel in parallel paths located close to one another, an improved straightener comprising:
- coaxial fulcrum rolls for engaging the bottom faces of the respective strands and defining a common lower tangent line for the strands;
- outer and intermediate reaction rolls for engaging the upper faces of the respective strands both preceding and following the fulcrum rolls;
- the intermediate and outer reaction rolls which follow the fulcrum rolls being spaced at different distances from the axis of the fulcrum rolls;
- respective bottom rolls opposite said reaction rolls; and
- drive means operatively connected with the bottom rolls opposite the outer and intermediate reaction rolls which follow the fulcrum roll and being located outside the paths of the outer strands;



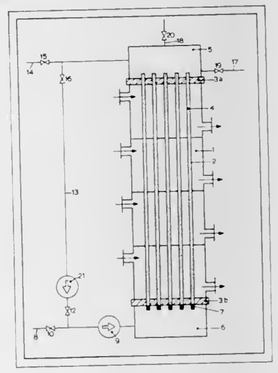
said drive means being aligned with the respective rolls which they drive.

4,119,139

HEAT-EXCHANGER COMPRISING A SYSTEM OF GRANULATE CONTAINING VERTICAL TUBES, AND A METHOD FOR OPERATING THE SAME

Dick Gerrit Klaren, Hillegom, Netherlands, assignor to Gustav Adolf Pieper, Heemstede, Netherlands

Filed May 17, 1976, Ser. No. 687,219
Claims priority, application Netherlands, May 20, 1975, 7505870
Int. Cl.² F28G *13/00*
U.S. Cl. 165—1 **5 Claims**



1. A method of heat exchange comprising flowing liquid heat-exchanging media upwardly as a stream, said stream containing fluidized particles onto some of which material is precipitated from the liquid thereby enlarging the particles, temporarily increasing the flow rate of the stream to fluidize the thus enlarged particles, expanding the stream to decrease the flow rate and permit settling out of a coarse fraction of particles and returning the stream to its original flow rate to readmit particles into the non-expanded stream.

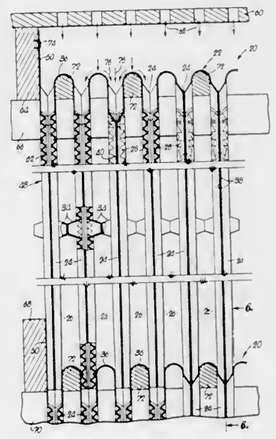
4,119,140

AIR COOLED ATMOSPHERIC HEAT EXCHANGER

Robert E. Cates, Leawood, Kans., assignor to The Marley Cooling Tower Company, Mission, Kans.

Division of Ser. No. 544,648, Jan. 27, 1975, Pat. No. 3,995,689. This application Nov. 23, 1976, Ser. No. 744,391
Int. Cl.² F28B *1/06;* **F28D** *9/02;* **F28F** *3/08, 9/00*
U.S. Cl. 165—67 **9 Claims**

1. Heat exchange apparatus for cooling a hot liquid with ambient derived air comprising:
- a plurality of imperforate, initially generally rectangular, thermally conductive, synthetic resin sheets rebent upon themselves to present individual transversely U-shaped structures which are oriented in upright, inverted, juxtaposed disposition in use with adjacent structures being joined to present a heat exchange pack,
- the upright sidewalls of each structure being located in horizontally spaced disposition, joined at the upper ends thereof by overlying, integral top bight portions, and presenting essentially upright air passages for horizontal flow of ambient derived air therethrough which enters respective structures of the pack at one upright, open end face of each of the structures below respective top portions and exits from the upright, open opposite end face thereof,
- the upright sidewalls of adjacent structures also being in horizontally spaced relationship with means being provided to interconnect and seal the upright, adjacent side margins only of proximal structures for preventing loss of liquid along substantially the entire longitudinal lengths thereof to cause the sidewalls of adjacent structures to define upright, essentially horizontally extending open top and open bottom liquid conveying liquid passages therebetween which alternate with the air passages and allow liquid delivered to the open tops of the liquid passages to gravitate downwardly therethrough in heat exchange relationship with air moving in crossflow relationship thereto through said air passages and with the cooled liquid discharging from the open bottoms of the liquid passages,
- each of said sidewalls being provided with integral projecting segments which extend into the liquid receiving passages to increase the flow path of liquid gravitating downwardly on the surfaces of respective sidewalls and also extending into the area between the sidewalls presenting each air passage for imparting turbulence to the air flowing through corresponding air passages; and
- elongated, horizontal support elements extending beneath a sufficient number of the top bight portions of the heat exchange structures in load bearing relationship thereto to fully support the pack without significant deformation at the temperature of the liquid supplied to the pack and under the liquid load thereon.

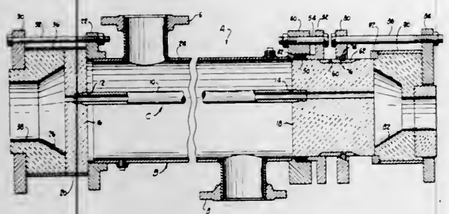


4,119,141

HEAT EXCHANGER

Bruno H. Thut, 9580 Stafford Rd., Bainbridge, Ohio 44022, and Dale T. Lehman, 5577 Valley La., Solon, Ohio 44139

Filed May 12, 1977, Ser. No. 796,175
Int. Cl.[2] F28F *9/02, 21/02*
U.S. Cl. 165—82 **2 Claims**



1. A heat exchanger of the character described comprising an elongated shell having a tubular cylindrical member having flange members adjacent to its opposite ends, one of said flange members having a counterbore facing in the direction away from said cylindrical member, a plurality of tubes having their opposite ends connected to header members, means including an end member connecting one of said header members to the other of said flange members, the other of said header members having an outside diameter slightly less than the inside diameter of said end of said cylindrical member at which said one of said flange members is located and being slidable therein, said other of said header members having an external circumferential groove therein with outwardly inclined ends, a seal at said end of said cylindrical member at which said one of said flange members is located including packing in said counterbore in said one of said flange members and a gland member slidable on said other of said header members, means for adjusting said gland member towards said one of said flange members, another end member adjacent to the end of said other of said header members facing in the direction away from said cylindrical member, means for clamping said another end member to said other of said header members comprising a sleeve member formed of a plurality of arcuately shaped parts located in said circumferential groove in said other of said header members, a split ring member surrounding said sleeve member and having its radial outer or circumferential surface inclined radially outwardly in the direction away from said end of said cylindrical member at which said one of said flange members is located, a retainer ring member surrounding said split ring member, a clamp plate at the end of said another of said end members at the end thereof facing in the direction away from the end of said cylindrical member at which said one of said flange members is located, and means for adjustably connecting said retainer ring member to said clamp plate.

4,119,142

ARRANGEMENT FOR TRANSFERRING HEAT FROM THE EXHAUST AIR LEAVING AN ENCLOSED VOLUME TO THE INPUT AIR SUPPLIED TO SAID VOLUME

Peter Heinrich Erwin Margen, Nyköping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Dec. 21, 1976, Ser. No. 752,992
Claims priority, application Sweden, Dec. 22, 1975, 7514560
Int. Cl.[2] F28D *15/00*
U.S. Cl. 165—104 S **15 Claims**

2. An arrangement for the transfer of heat from the exhaust air leaving an enclosed volume to the input air to said volume comprising:

a liquid-filled circuit having;

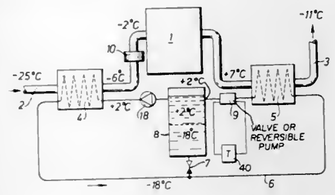
at least one first circulation pump;

at least one first heat exchanger arranged in contact with said input airflow;

at least one second heat exchanger arranged in contact with said exhaust airflow;

at least one by-pass line arranged in said circuit in parallel with said second heat exchanger;

means for controlling the liquid flow through said second heat exchanger; and,



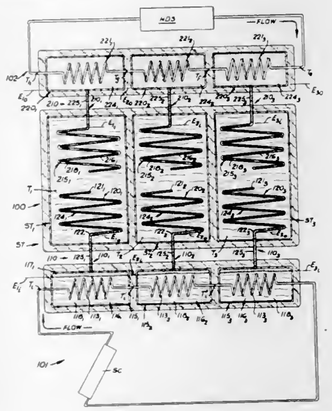
layer type heat store means for supplying heat to said first heat exchanger in the form of heat extracted from said exhaust air, while said second heat exchanger is disconnected for defrosting, having the hot side thereof coupled to said liquid circuit between the output of said second heat exchanger and the input of said first heat exchanger and having the cold side thereof coupled to said liquid circuit between the output of the first heat exchanger and the input of said second heat exchanger, whereby said heat store constitutes said by-pass line.

4,119,143

HEAT TRANSFER SYSTEM

Glen P. Robinson, Jr., Atlanta, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Sep. 22, 1975, Ser. No. 615,343
Int. Cl.[2] F28D *21/00*
U.S. Cl. 165—104 S **5 Claims**



1. A heat transfer system comprising:

a heat source generating a heated output;

first heat storage means capable of storing heat;

second heat storage means capable of storing heat;

first storage heat transfer link means in a heat exchange relationship with said heated output of said heat source to said first heat storage means to transfer heat from said heated output of said heat source to said first heat storage means;

second storage heat transfer link means in a heat exchange relationship with said heated output of said heat source after said heated output of said heat source has passed through said first storage heat transfer link means in a heat exchange relationship therewith to transfer heat remaining in said heated output from said heat source after passage through said first storage heat transfer link to said second heat storage means;

said first storage heat transfer link means comprising a first storage working fluid having a prescribed vaporizing temperature and pressure range, a first input heat exchanger carrying the first storage working fluid therein in a heat exchange relationship with said heated fluid output from said heat source to cause said heated output to selectively vaporize said first storage working fluid in said first heat exchanger, said first heat exchanger located at a first input elevation; and a first output heat exchanger operatively connected to said first input heat exchanger for receiving vaporized first storage working fluid from said first input heat exchanger and for returning condensed first storage working fluid to said first input heat exchanger, said first output heat exchanger placing the vaporized first storage working fluid in a heat exchange relationship with said first heat storage means, and said first output exchanger located at a first output elevation higher than said first input elevation so that the heat transferred to the first storage working fluid in said first input heat exchanger vaporizes the first storage working fluid, the vaporized first storage working fluid rises to said first output heat exchanger, and the heat in the vaporized first storage working fluid is transferred to said first heat storage means through said second heat exchanger as long as the temperature of said first heat storage means is lower than the temperature of the heated output of said heat source to cause the vaporized first storage working fluid in said first output heat exchanger to condense whereupon the condensed first storage working fluid flows back to said first input heat exchanger under the force of gravity for revaporization in said first input heat exchanger;

said second storage heat transfer link means comprising a second storage working fluid having a prescribed vaporizing temperature and pressure range, a second input heat exchanger serially connected to said first input heat exchanger so that the heated output of said heat source passes therethrough only after said heated output has passed through said first input heat exchanger, said second input heat exchanger carrying the second storage working fluid therein in a heat exchange relationship with said heated output passing therethrough to cause heat remaining in said heated output after passage through said first input heat exchanger to vaporize said second storage working fluid in said second input heat exchanger, said second input heat exchanger located at a second input elevation; and a second output heat exchanger operatively connected to said second input heat exchanger for receiving vaporized second storage working fluid from said second input heat exchanger and for returning condensed second storage working fluid to said second input heat exchanger, said second output heat exchanger placing the vaporized second storage working fluid in a heat exchange relationship with said second heat storage means and said second output heat exchanger located at a second output elevation higher than said second input elevation so that the heat transferred to the second storage working fluid in said second input heat exchanger vaporizes the second storage working fluid, the vaporized second storage working fluid rises to said second output heat exchanger, and the heat in the vaporized second storage working fluid is transferred to said second heat storage means through said second output heat exchanger as long as the temperature of said second heat storage means is lower than the temperature of the heated output of said heat source after its passage through said first input heat exchanger to cause the vaporized second storage working fluid in said second output heat exchanger to condense whereupon the condensed second storage working fluid flows back to said second input heat exchanger under the force of gravity for revaporization in said second input heat exchanger.

2. A heat transfer system comprising:

first heat storage means capable of storing heat;

second heat storage means capable of storing heat where the temperature in said second heat storage means is normally initially higher than the temperature in said first heat storage means;

heat sink means having an operating fluid to be heated;

first recovery heat transfer link means in a heat exchange relationship with said first heat storage means to transfer heat from said first heat storage means to said operating fluid of said heat sink means;

second recovery heat transfer link means in a heat exchange relationship with said second heat storage means to transfer heat from said second heat storage means to said operating fluid of said heat sink means after said operating fluid has passed through said first recovery heat transfer link in a heat transfer relationship therewith;

said first recovery heat transfer link means comprising a first recovery working fluid having a prescribed vaporizing temperature and pressure range, a first input heat exchanger carrying the first recovery working fluid therein in a heat exchange relationship with said first heat storage means to cause said first heat storage means to vaporize said first recovery working fluid in said first input heat exchanger, said first heat exchanger located at a first input elevation; and a first output heat exchanger operatively connected to said first input heat exchanger for receiving the vaporized first recovery working fluid from said first input heat exchanger, said first output heat exchanger placing the vaporized first recovery working fluid in a heat exchange relationship with the operating fluid of said heat sink means, and said first output heat exchanger located at a first output elevation higher than said first input elevation so that the heat transferred to the first recovery working fluid from said first heat storage means vaporizes the first recovery working fluid, the vaporized first recovery working fluid rises to said first output heat exchanger, and the heat in the vaporized first recovery working fluid is transferred to the operating fluid of said heat sink means through said first output heat exchanger as long as the temperature of the operating fluid of said heat sink means passing through said first output heat exchanger is lower than the temperature of said first heat storage means to cause the vaporized first recovery working fluid in said first output heat exchanger to condense whereupon the condensed first recovery working fluid flows back to said first input heat exchanger under the force of gravity for revaporization in said first input heat exchanger; and,

said second heat recovery link means comprising a second recovery working fluid having a prescribed vaporizing temperature and pressure range, a second input heat exchanger carrying the second recovery working fluid therein in a heat exchange relationship with said second heat storage means to cause said second heat storage means to vaporize said second recovery working fluid in said second input heat exchanger, said second input heat exchanger located at a second input elevation; and a second output heat exchanger operatively connected to said second input heat exchanger for receiving the vaporized second recovery working fluid from said second input heat exchanger and for returning the condensed second recovery working fluid to said second input heat exchanger, said second output heat exchanger connected to said first output heat exchanger so that the operating fluid of said heat sink means passes through said second output heat exchanger only after passage through said first output heat exchanger and placing the vaporized second recovery working fluid in a heat exchange relationship with the operating fluid of said heat sink means after its passage through said first output heat exchanger, said second output heat exchanger located at a second output eleva-

tion higher than said second input elevation so that the heat transferred to the second recovery working fluid from said second heat storage means vaporizes the second recovery working fluid, the vaporized second recovery working fluid rises to said second output heat exchanger, and the heat in the vaporized second recovery working fluid is transferred to the operating fluid of said heat sink means through said second output heat exchanger as long as the temperature of the operating fluid of said heat sink means passing through said second output heat exchanger after passage through said first output heat exchanger is lower than the temperature of said second heat storage means to cause the vaporized second recovery working fluid in said second output heat exchanger to condense whereupon the condensed second recovery working fluid flows back to said second input heat exchanger under the force of gravity for revaporization in said second input heat exchanger.

4,119,144

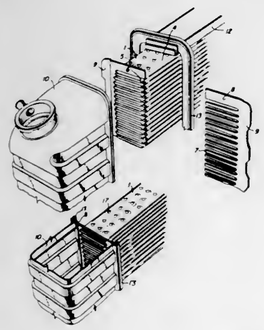
IMPROVED HEAT EXCHANGER HEADERING ARRANGEMENT

Leslie Charles Kun, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 634,652, Nov. 24, 1975, Pat. No. 4,024,623, which is a continuation-in-part of Ser. No. 372,339, Jun. 21, 1973, Pat. No. 3,924,441, which is a division of Ser. No. 189,659, Oct. 15, 1971, Pat. No. 3,757,856. This application Jul. 29, 1976, Ser. No. 709,640

Int. Cl.² F28F *9/04*

U.S. Cl. 165—175 **3 Claims**



1. In a heat exchanger including an array of flattened tube-like heat exchange channel elements, wherein each channel element is bounded by thermally conductive pressure withholding walls, with an entrance opening at one end, an exit opening at the opposite end, and wherein adjacent channel elements in said array are disposed in spaced apart relationship, an improved headering arrangement for the array of heat exchange channel elements comprising:

(a) two substantially planar comb-shaped members each having teeth extending from an outer plate segment into the array of heat exchange channel elements from opposite sides at an end section thereof such that the channel elements are in register with corresponding gaps between adjacent teeth of the comb-shaped members and the oppositely extending teeth of respective comb-shaped members are contiguously aligned to form a leak-tight seal to said channel elements; and

(b) a header leak-tightly secured to the outer plate segments of the comb-shaped members such that said header and the comb-shaped members together form a tank enclosure for fluid introduced to or withdrawn from the channel elements of said heat exchanger.

4,119,145

COLUMN STRUCTURE ENABLING HANDLING APPLIANCES ON THE SEABED, PARTICULARLY FOR THE ASSEMBLY AND MAINTENANCE OF WELL-HEADS

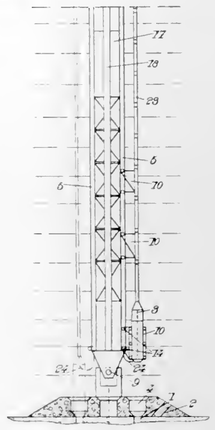
Samuel Tuson, Mesnil le Roi, France, assignor to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H., Boulogne, France

Filed May 31, 1977, Ser. No. 802,051

Claims priority, application France, Jun. 9, 1976, 76 17405

Int. Cl.² E21B *7/12*

U.S. Cl. 166—339 **7 Claims**



1. Column structure for handling appliances on the seabed, particularly for the assembly and maintenance of well-heads, or other devices intended to cooperate with the orifices of wells in the seabed, said column being coupled to a base constructed on the seabed over a certain number of drilling wells and comprising a lower part coupled to said base, a body part formed essentially by a plurality of elongated vertical members, and an upper structure forming at least one platform, trolleys movable between said upper structure and said lower part of said body part and adapted for carrying well-heads or other devices between said upper structure and said base and for releasing same upon reaching said lower part at a position above corresponding well orifices, said elongate vertical members forming said body part having lateral walls constituting guide rails for said trolleys, and said trolleys being movably disposed on said guide rails for guided movement therealong.

4,119,146

SURFACE CONTROLLED SUB-SURFACE SAFETY VALVE

Frank H. Taylor, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 18, 1977, Ser. No. 798,180

Int. Cl.² E21B *43/12*

U.S. Cl. 166—72 **13 Claims**

1. A surface controlled subsurface safety valve comprising:

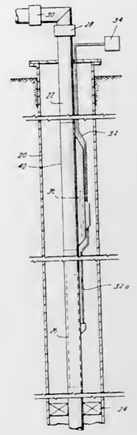
valve housing means for defining a flow path;

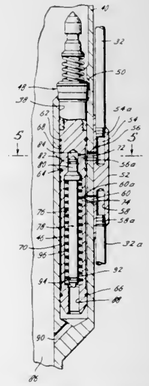
valve closure means associated with said valve housing means and adapted for movement between positions opening and closing said flow path;

means responsive to control pressure, including control pressure chamber means, and adapted to move said valve closure means to a position opening said flow path when said control pressure chamber means is pressurized a minimal amount;

means for resiliently urging said valve closure means to a position closing said flow path;

pilot valve means having a first position wherein pressurized control fluid is prevented from communicating to said control pressure chamber means and wherein said means responsive to control pressure is at least substantially pressure balanced and is affected by substantially equal but opposite fluid pressure forces and having a second position wherein pressurized control fluid communicates with said control pressure chamber means, said pilot valve means including:





valve means for controlling communication of control fluid to said control pressure chamber means,

means for resiliently biasing said valve means to said first position, and

pressure responsive means for moving said valve means to said second position when said means is pressurized a sufficient amount.

4,119,147

PUMPDOWN SAFETY VALVE

Henry P. Arendt, and Russell A. Johnston, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 20, 1976, Ser. No. 734,110

Int. Cl.² E21B *43/12*

U.S. Cl. 166—155 **18 Claims**

1. A pumpable safety valve for use in a well comprising:

a valve section including:

valve housing means having a bore extending axially therethrough,

valve member means mounted in said bore and adapted for movement between positions opening and closing said bore, and

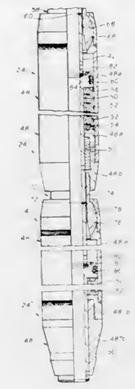
means responsive to control pressure adapted to move said valve member means to a position opening said bore;

a force exerting section including:

tubular mandrel means,

sleeve means adapted to move axially within said tubular mandrel means,

spring biasing means biasing said sleeve means to a first position with respect to said tubular mandrel means;



tube means within said valve housing means adapted to move said valve member means to a position closing said bore;

swivel connecting means connecting said tubular mandrel means and said valve housing means;

one of said sleeve means and said tube means extending through said swivel connecting means to engage the other of said sleeve means and said tube means; and

engaging means associated with each of said sleeve means and said tube means to permit engagement of said sleeve means and said tube means during articulation; and

said tube means moves said valve member means to a position closing said bore when said sleeve means is in said first position.

4,119,148

PERFORATING APPARATUS AND METHOD FOR WELL CASING

Eldon N. Deardorf, 1611 Red Fox Dr., Dayton, Ohio 45432

Filed Sep. 7, 1977, Ser. No. 831,229

Int. Cl.² E21B *43/11, 47/12*

U.S. Cl. 166—250 **8 Claims**

1. In an apparatus for perforating a well casing:

a frame supported for lowering into the well casing; a drilling tool supported on said frame, said drilling tool comprising an air-operable drill and a drill bit connected to said drill and confronting the portion of the well casing to be perforated;

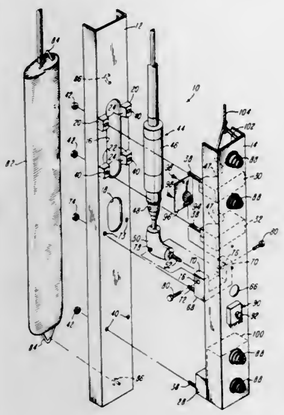
an inflatable bladder mounted on said frame for advancing the frame in a direction toward the portion of the well casing to be perforated to press the drill bit against the portion of the well casing; and

spring means for biasing the frame in a direction away from the portion of the well casing.

7. A method for perforating a well casing, comprising:

providing an apparatus including a frame, an inflatable bladder mounted on one side of the frame, an air drill mounted

on the frame and a drill bit connected thereto and extending from a generally opposite side of the frame, spring means mounted along the generally opposite side of the frame, an air compressor for providing air to said air drill and said bladder, and vacuum means connected to said bladder;



energizing said compressor to operate said air drill and inflate said bladder so that said drill bit drills a perforation into the well casing and said spring means biases said frame away from the well casing; and

energizing said vacuum means upon completion of said perforation to deflate said bladder so that said spring means moves said frame away from said casing and said drill bit out of said perforation.

4,119,149

RECOVERING PETROLEUM FROM SUBTERRANEAN FORMATIONS

Ching H. Wu, Golden, Colo.; Alfred Brown, Houston, and Wilbur L. Hall, Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,642
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—266 **7 Claims**

1. In a process for recovery of petroleum from a subterranean formation wherein steam is injected via an injection well into said subterranean formation, wherein petroleum is produced via a production well from said formation, wherein injection of steam into said formation is continued until a steam front reaches said production well such that steam condensate in admixture with petroleum enters the bore of said production well, the improvement which comprises:

a. flashing within said production well bore, said mixture of petroleum and steam condensate produced from said formation at a pressure less than the pressures of said formation for production of a vapor phase comprising steam and light hydrocarbons and a liquid phase comprising petroleum;

b. separating said vapor phase from said liquid phase; and

c. injecting at least a portion of said separated vapor phase with additional steam, into said formation, via said injection well, for enhancing production of petroleum from said formation via said production well.

4,119,150

METHOD FOR TREATING WELL BORES AND APPARATUS THEREFOR

Mark Stayton Froelich, 4400 Memorial, #2164, Houston, Tex. 77007

Filed Jan. 24, 1977, Ser. No. 762,025
Int. Cl.[2] E21B *43/02*
U.S. Cl. 166—27[illegible] **29 Claims**



27. A method for treating a subterranean site in a well bore which comprises

injecting into the well bore at the subterranean site a substantially occluding quantity of a curable resin material foam which upon curing forms a substantially chemically and dimensionally stable permeable resin foam mechanically rigid occluding structure which is permeable to liquids and gases while effectively preventing the passage of subterranean solids therethrough.

29. A charger-mixer-injector device for use in a well bore which comprises a self-contained suspended capsule adapted to be lowered through the well bore and having therein

(a) means defining reservoirs for a chargeable supply of precursor ingredients for producing a curable resin foaming material,

(b) mixing and injector means for mixing the precursor ingredients and injecting the mixed precursor ingredients into the well bore, wherein the capsule is operatively flow connected by way of feed lines with a replenishing supply of the precursor ingredients which are located at or above the surface end of the well bore.

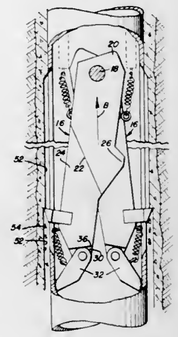
4,119,151

CASING SLOTTER

Homer Grafton Smith, Houston, Tex., assignor to Homco International, Inc., Houston, Tex.

Filed Feb. 25, 1977, Ser. No. 771,970
Int. Cl.[2] E21B *43/112, 29/00*
U.S. Cl. 166—298 **10 Claims**

1. A tool for forming vertical slots in a well sidewall, said tool comprising means to mount said tool on a drill string in fluid flow communication therewith, said tool comprising knife means, means to mount said knife means in a retracted position within said tool, means responsive to pressurization of the well fluid to move said knife means into cutting relationship with the well sidewall, whereby said tool will cut said vertical slots in said well sidewall upon said tool and said drill string being vertically reciprocated in said well, said knife means comprising a pair of blades mounted on a pivot pin in said tool for motion in a scissor-like manner, said knife means comprising a pair of machine tool-like knife points mounted one on each of said blades, means to move said knife points out of cutting relationship with said well sidewall on each downstroke of said tool in said well, said means to move said knife points out of cutting relationship comprising a pair of cams pivotally mounted one at the lower end of each of said blades, stop means defining an extended position of each cam wherein a portion of said cam extends radially outwardly of said tool a greater distance than the radially outwardly extend of said cutting point, said cam being moved into said extended position during each downstroke of said tool in said well, said cam having a nose portion adapted to slide on said sidewall during each upstroke of said tool, whereby on each upstroke said cam rotates away from said extended position about its pivot on its respective blade to permit the pressurized well fluid to extend said blade to urge said knife points into their cutting relationship.

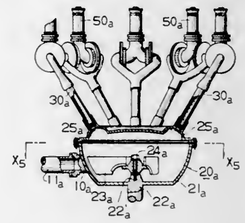


4,119,152

LONG-DISTANCE SPRAYING DEVICE FOR FIRE HOSE

Yoshio Koyama, 8-10, 2-Chome, Shonaitakaramachi, Toyonaka City, Osaka Prefecture, Japan

Filed Jan. 26, 1977, Ser. No. 762,627
Int. Cl.[2] A62C *27/00*
U.S. Cl. 169—25 **1 Claim**



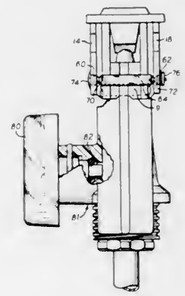
1. A spraying device for the discharge end of a fire hose, comprising a bulb member, a connecting pipe provided at one side of said bulb member, a plurality of play pipes provided at another side of said bulb member, and a plurality of nozzles attached to said play pipes respectively; said bulb member comprising a round vessel, a round cover provided on the top of said vessel, and a vertical supporting member provided through the bottom of said vessel, said round vessel having a side wall provided with a water inlet, said round cover being provided with an annular shoulder in its periphery, said annular shoulder being provided with a plurality of water outlets in a radial arrangement, said water outlets being substantially smaller than said water inlet, the upper end of said vertical supporting member projecting into said vessel, the lower end of said vertical supporting member being fixed to base means, a middle portion of said supporting member being fixed to the bottom of said vessel, said upper end of said supporting member being provided with impeller means in a relatively rotatable relation thereto; one end of said connecting pipe being connected to said water inlet in a substantially tangential relation to said side wall, said play pipes each being connected at one end to respective ones of said water outlets, the other ends of said play pipes being connected to said nozzles, said nozzles each being provided with an annular water conduit, said nozzles being provided with means to vary the angle thereof in relation to the corresponding play pipe, said play pipes and the corresponding nozzles each providing a water conduit substantially narrower than the other end of the connecting pipe.

4,119,153

TAMPER-PROOF FIRE EXTINGUISHER

Richard H. Avant, Churchville, N.Y., assignor to Bernzomatic Corporation, Rochester, N.Y.

Filed Nov. 1, 1976, Ser. No. 737,763
Int. Cl.[2] A62C *13/00*
U.S. Cl. 169—75 **8 Claims**



1. In a hand-held fire extinguisher having a cylinder with a fire extinguishing mass therein under pressure, a valve in communication with a nozzle, a trigger for opening said valve which is pivotally connected to the body of said valve and having two opposed side members, and a handle facing said trigger, the improvement wherein the body of said valve has a bore and the trigger has a pair of apertures in said side members and aligned with the ends of the bore, a breakable sealing pin inserted in the valve bore and through both of the aligned trigger apertures, said sealing pin having enlarged end portions exterior of the apertures for maintaining the pin in a substantially fixed longitudinal position and means for effecting the severing of same upon movement of the trigger to discharge the fire extinguisher comprising two points of weakness disposed at opposite end portions of the pin and aligned between the trigger side members and the ends of the bore when the pin is fixed in position by the enlarged end portions.

4,119,154

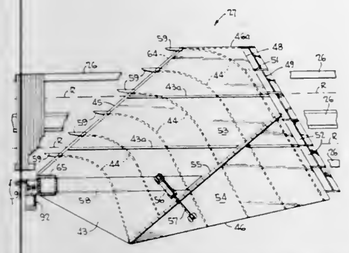
METHOD AND APPARATUS FOR TREATING BALLAST

John R. Miller, Charlotte, N.C., assignor to Southern Railway Company, Washington, D.C.

Filed Feb. 18, 1977, Ser. No. 770,277
Int. Cl.[2] E01B *27/10*
U.S. Cl. 171—16 **27 Claims**

1. A plow structure for removing ballast from beneath the rail ties of a railway, comprising, a flat, rigid and imperforae plate disposed for movement beneath the rail ties in a forward direction of travel along the railway, said plate having a leading edge sloping rearwardly in one direction relative to the longitudinal axis thereof, a plurality of spaced depending blades fixedly mounted on the underside of said plate along said leading eedge and extending toward a side edge of said plate, a portion of each said blade being curved toward said side at said leading edge for cutting and shifting the ballast toward said side upon plate movement, the remainder of said blades each being substantially straight and sloping rearwardly

toward said side edge for conveying the cut ballast outwardly of said side, and a depending scraper blade spaced from said plate and mounted thereto along the trailing edge thereof for defining an opening, said scraper blade sloping rearwardly



toward said side edge, whereby said imperforate plate prevents any separation of said ties and ballast located therebetween during plate movement, and whereby said opening permits the ballast between the ties to fall forwardly of said scraper blade to be thereby conveyed outwardly of said side of said plate.

4,119,155

AGRICULTURAL MACHINE WITH FOLDING ROTATABLE SECTIONS

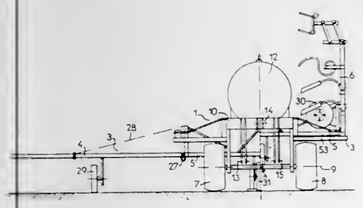
Jacques Rifflart, Arras, France, assignor to CER, France

Filed Oct. 4, 1976, Ser. No. 728,967

Claims priority, application France, Oct. 10, 1975, 75 31329; May 10, 1976, 76 14526

Int. Cl.² A01B *73/00*

U.S. Cl. 172—311 **3 Claims**



1. An agricultural machine, comprising;
a chassis having a longitudinal axis and having means for supporting the chassis on a generally flat ground for travel along the longitudinal axis;
a frame having a central section mounted on a non-rotatably secured to the chassis, having two lateral sections pivotably supported on mutually opposite lateral portions of the central section to extend in normal use transversely of the axis, and having a plurality of agricultural tools secured to the several sections at locations spaced from the axis to contact the ground in said normal use, said lateral sections being generally longitudinally coextensive with said central section;
first articulation means for permitting rotation of each lateral section with respect to said central section between a working position thereof for said normal use, in which the respective agricultural tools extend down from the section for said contacting of the ground, and an intermediate position in which said tools extend parallel to the longitudinal axis, to effect the pivotable supporting of the lateral sections on the central section, the first articulation means comprising two rigid members parallel to the longitudinal axis and means for mounting each member on the central section to permit rotation of the member with respect to said central section about a transverse axis;
second articulation means for permitting rotation of each lateral section with respect to said central section between the intermediate position thereof and a folded position for road travel, in which folded position the lateral sections extend parallel to the longitudinal axis, the second articulation means comprising a pivot for each lateral section, each pivot being mounted on one of the rigid members and parallel thereto; and
means for effecting said rotations.

4,119,156

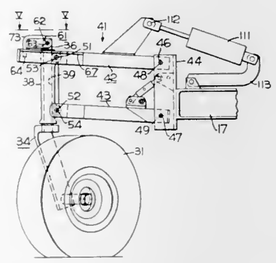
IMPLEMENT FRAME WITH CASTER WHEEL AND LOCK THEREFOR

Keith A. Wheeler, and Dawson W. Hastings, both of La Porte, Ind., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 13, 1976, Ser. No. 749,723

Int. Cl.² A01B *63/22*

U.S. Cl. 172—386 **8 Claims**



6. In combination with an implement frame:
a caster wheel support including an upstanding spindle,
a ground engaging wheel rotatably mounted on the lower end of said support,
a parallel linkage interconnecting said spindle to said implement frame for raising and lowering said implement frame between transport and working positions and permitting rotation of said support relative to said linkage about the axis of said spindle, said linkage including upper and lower links, said upper link being pivotally connected at one of its ends to said frame,
means pivotally connecting the other end of said upper link to said spindle for relative rotation about a horizontal axis as said implement frame is raised and lowered,
a latch pivotally connected to the upper end of said spindle for swinging movement about a horizontal axis, and
a ramp secured to the top of said upper link in substantially surrounding relation to said spindle, said ramp having a smooth, flat camming surface in confronting relation to said latch, said ramp including wall means defining a recess into which said latch extends to lock said support against rotation about the spindle axis only when said frame is in its lowered position.

4,119,157

CONTROL FOR CABLE PLOWS AND THE LIKE

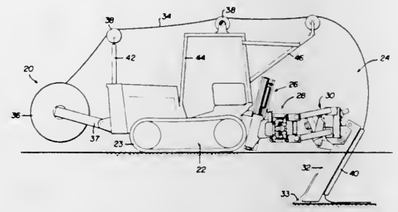
Paul R. Schuck, Davenport, and John M. Baylor, Bettendorf, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Continuation of Ser. No. 648,347, Jan. 12, 1976, abandoned. This application Sep. 26, 1977, Ser. No. 836,927

Int. Cl.² E02F *5/02*; F16L *1/02*

U.S. Cl. 172—477 **5 Claims**

1. A plow, including a vehicle and an elongated vertical blade, the improvement comprising:
a plow positioning assembly, including a support frame having support rails, means for pivotally mounting said support frame to said vehicle, piston means interconnecting said support frame and said vehicle for tilting said support frame,
a relatively fixed frame assembly having two vertically spaced rails generally transverse to the longitudinal axis of said vehicle,
means for slidably supporting said vertically spaced rails to said support rails for slidable movement of said vertically spaced rails relative to said support rails,
a slide frame assembly having slide members slidably supported on said fixed frame assembly rails,
a double acting fluid piston interconnected between said fixed and slide frame assemblies for slidably shifting said slide frame generally transverse to the longitudinal axis of said vehicle,



said slide frame assembly having a vertical pivot extending between said slide members,
a plow frame comprising a plurality of vertical and horizontal frame members, forming a box-like frame assembly, said frame pivotally supported on said vertical pivot and a pair of angularly related fluid pistons, each piston having a cylinder portion pivotally supported by a collar between its ends on said slide frame assembly between said slide members and each said piston having an extensible rod portion pivotally connected to said plow frame, said pistons adjusting the angular relation of said blade relative to said vehicle.

4,119,158

ADJUSTABLE TIP FOR PLOUGH SHARE

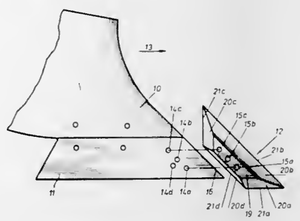
Erik Herbert Carlsson, and John Axel Karlsson, both of Overum, Sweden, assignors to Aktiebolaget Overums Bruk, Overum, Sweden

Filed May 9, 1977, Ser. No. 794,758

Claims priority, application Sweden, May 14, 1976, 7605524

Int. Cl.² A01B *15/04*

U.S. Cl. 172—704 **5 Claims**



1. A plough having a share with an adjustable and removable plough tip for attachment to the bottom front portion of said share, comprising at least three fixed points on both said share and said plough tip, at least two points on said share being arranged to align with two points on said plough tip, means co-acting with said points for removably locking said plough tip to said share in a predetermined position, said points being apertures in said share and said plough tip respectively, said apertures in the share and plough tip, when aligned, having said means to lock said share to said plough tip in a selected position, said apertures in said plough tip being in alignment and located equidistant from adjacent apertures, said points on the plough tip having the capability of permitting the peripheral edges of said plough tip to assume a multiplicity of positions on said share, said apertures in said share being arranged whereby the first aperture is located in the outer lower front part of said share, a second aperture being located upwardly and rearwardly from said first aperture and at an angle of approximately 45° to the horizontal plane, and a third aperture being located obliquely below said second aperture, and the distance between said first and second apertures being equal to the distance between the first and third apertures, whereby the entire periphery of said plough tip can be used as a cutting edge.

4,119,159

PILE DRIVING APPARATUS

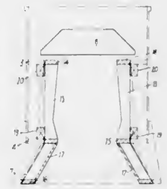
Dirk Arentsen, Leiderdorp, Netherlands, assignor to Hollandsche Beton Greop N.V., Rijswijk, Netherlands

Filed Oct. 12, 1977, Ser. No. 841,443

Claims priority, application United Kingdom, Oct. 18, 1976, 43219/76

Int. Cl.² E02D *7/00*

U.S. Cl. 173—133 **10 Claims**



1. A pile driving apparatus comprising a hammer and hammer operating mechanism mounted above a downwardly extending pile sleeve having an internal cross-section dimensioned to receive the top of a pile of a first diameter and including outwardly flaring means at its lower end forming a lead-in for said pile, whereby the apparatus may be guided onto and supported on the top of a pile to be driven with the top of the pile resting against an anvil which is struck by the blows of the hammer, in combination with an adaptor fitted within the pile sleeve and having an internal cross-section dimensioned to receive the top of a pile of smaller diameter than said first diameter, said adaptor being fabricated as a unit and comprising a plurality of vertically extending ribs rigidly interconnected by at least one ring and including outwardly flaring means at their lower ends forming a lead-in for said smaller diameter pile, and interconnecting means rigid with at least one of and extending between said adaptor unit and pile sleeve and preventing withdrawal of said adaptor unit from the pile sleeve.

4,119,160

METHOD AND APPARATUS FOR WATER JET DRILLING OF ROCK

David A. Summers, Rolla, Mo.; Marian Mazurkiewicz, Wroclaw, Poland; Dwight J. Bushnell, Corvallis, Oreg., and James Blaine, Rolla, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

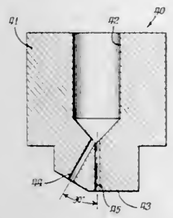
Filed Jan. 31, 1977, Ser. No. 763,926

Int. Cl.² E21B *7/18*

U.S. Cl. 175—67 **4 Claims**

4. An energy efficient method of drilling rock by utilizing a high pressure source for generating high velocity water jet streams which are ejected from a nozzle and directed against rock to be drilled along predetermined drilling axis comprising the steps of:

providing a drilling nozzle connected to the high pressure source and formed with two jet orifices with a first orifice being directed along the drilling axis and a second orifice being directed forwardly at an acute angle with respect to said first orifice and with the diameters of the respective orifices being in the approximate ratio of 1:2;



pressurizing the source so as to provide a water jet velocity from said orifices in excess of 1000 ft/sec; and

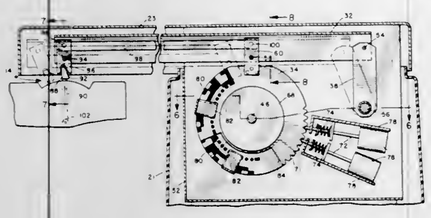
rotating said nozzle about said drilling axis at rotational speeds of approximately 1000 rpm.

4,119,161

AUTOMATIC OPERATING SYSTEM FOR LEVER TYPE POSTAGE METERING MACHINE

Robert John Price, El Cajon, and Lawrence Joseph Kamm, San Diego, both of Calif., assignors to Orbitran Company, Inc., Lakeside, Calif.

Filed Jan. 24, 1977, Ser. No. 761,728
Int. Cl.[2] G01G *19/413*
U.S. Cl. 177—3 **13 Claims**



1. In a machine for operating postage selector levers of a lever type postage metering machine, the combination comprising:

operating linkage means for each selector lever on said postage machine, said linkage means comprising first and second spaced apart link means connected by an elongated bar and mounted for oscillatory motion about spaced apart fixed centers and thereby defining a four bar linkage,

lever engaging means mounted on one end of said operating linkage means, and movable in an arc following the end of said lever about the pivot axis of said lever, said lever engaging means comprising a V-shaped notch formed in one end of a link member pivotally connected to said bar for engaging the end of said selector lever, and

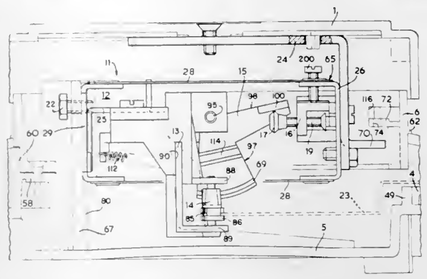
control means responsive to an input selection signal for moving selected ones of said operating linkage means for movement of said levers to selected positions, said control means comprising a drive member mounted on a rotatable drive shaft for each of said operating linkage means, and a reversible motor connected to said shaft for driving said shaft in alternate directions, means drivingly connecting said shaft to said drive members, and means for individually latching said drive members in selected positions.

4,119,162

KITCHEN OR HOUSEHOLD WEIGHING BALANCE

Peter Ackeret, Kusnacht, Switzerland, assignor to Salter Housewares, Limited, West Bromich, England

Filed Dec. 15, 1976, Ser. No. 750,883
Claims priority, application United Kingdom, Dec. 16, 1975, 51376/75; Dec. 16, 1975, 51377/75
Int. Cl.[2] G01G *3/08, 23/14*
U.S. Cl. 177—229 **10 Claims**



1. In a spring balance, a weighing mechanism comprising:

(a) a parallel motion leaf spring unit which deflects vertically under load,

(b) a movable weight indicating member connected to a gear portion rotatably mounted to turn about a vertical axis,

(c) lever means for controlling angular deflection in a horizontal plane of said weight indicating member,

(d) said lever means being mounted for angular movement in a vertical plane,

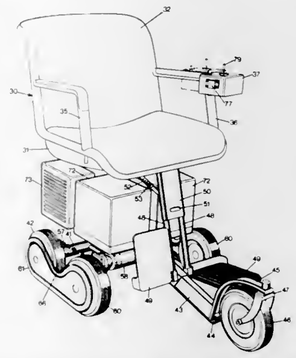
(e) said lever means including integral gear teeth which mesh directly with said pinion in order to transmit drive to the weight indicating member.

4,119,163

CURB CLIMBING WHEEL CHAIR

Douglas Ball, 58 Pacific Ave., Senneville, Quebec, Canada (H9X 1A9)

Filed Oct. 3, 1977, Ser. No. 839,033
Int. Cl.[2] B62D *61/12, 5/02*
U.S. Cl. 180—6.5 **11 Claims**



1. A self-propelled wheel-chair comprising in combination,

a seat assembly mounted on a frame,

a first pair of drive wheels on a horizontal fixed axis supporting the frame, each of the first pair positioned on either side and below the seat assembly,

two independent driving means, one for forward and backward rotation of each of the first pair of drive wheels,

a second pair of wheels on a common axis parallel to the horizontal fixed axis, the second pair of wheels having drive connecting means with adjacent first pair of drive wheels such that one of the two independent driving means drives one of the first pair of drive wheels, and, through the drive connecting means, one of the second pair of drive wheels,

a pair of link arms located one on each side of the seat assembly, each of the pair of link arms pivotally mounted from the frame about said fixed axis and supporting one of the second pair of drive wheels on the common axis,

power means for pivoting the pair of link arms together through a movement range of greater than 180°,

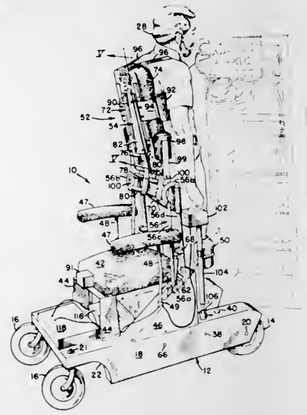
and a support means attached to the frame in front and below the seat assembly.

4,119,164

STAND-AID INVALID WHEELCHAIR

Robert K. Fogg, Jr., San Diego, and Christopher P. Staehli, Monterey, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 625,220, Oct. 23, 1975, Pat. No. 4,054,319.
This application Aug. 1, 1977, Ser. No. 820,964
Int. Cl.[2] B62D *11/04*
U.S. Cl. 180—6.5 **6 Claims**



1. An invalid stand-aid wheelchair including:

a chassis having front and rear wheels;

a motor mounted on the chassis for driving said wheels;

said chassis having a pivotally mounted knee rest;

a seat fixedly mounted on the chassis for supporting the invalid in a sitting position;

a flexible lifting strap for supporting the invalid in lifting and standing positions, said lifting strap in a seated position lying in contact with and conforming to said fixed seat;

articulated linkage connected to the chassis for supporting the lifting strap;

a freely movable backrest assembly mounted on said linkage and supporting the back of the invalid throughout a lifting and lowering movement from the seated position to and from a standing position;

means for clamping the invalid against the backrest; and

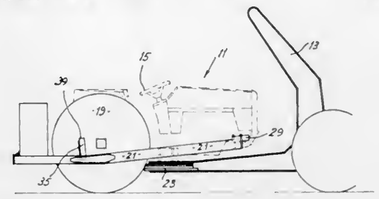
means connected between the chassis and the linkage for moving said backrest and lifting strap to create a minimum sliding movement between the surface of the backrest and the surface of the lifting strap to avoid friction with the respective portions of the invalid's body that may cause irritation and disheveling of his clothes.

4,119,165

ARTICULATED VEHICLES

Cyril Embley Bowra, Bayswater, Australia, assignor to B.H.B. Engineers Pty. Ltd., Bayswater, Australia

Filed Apr. 18, 1977, Ser. No. 788,323
Claims priority, application Australia, May 20, 1976, PC5995
Int. Cl.[2] B62D *53/02*
U.S. Cl. 180—14 A **3 Claims**



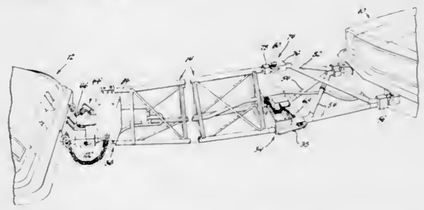
1. An articulated vehicle comprising a prime mover portion and a wheeled load supporting portion interconnected by an articulated structure, said prime mover portion being provided with a power source, driven wheels and a power transmission for transmitting drive between said power source and said wheels, said prime mover portion further including a cast structure for providing chassis support for said power source and said power transmission, said articulated structure comprising an elongated frame positioned beneath said prime mover portion and a turntable carried by said frame, said turntable being journalled to said load supporting portion for permitting relative rotation between said prime mover portion and said load supporting portion about a substantially vertical axis, said frame having spaced bearing means defining a pivot axis parallel to and vertically in line with a longitudinal central axis of said prime mover portion, said cast structure being journalled adjacent its front and rear end portions in said spaced bearing means for pivotal movement of said prime mover portion upon said frame about said axis for isolating stresses of said load supporting portion from said prime mover portion.

4,119,166

DUAL-VEHICLE OPERATING SYSTEM

Richard F. Ayotte, Livonia, and Trevor O. Jones, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 1, 1977, Ser. No. 812,179
Int. Cl.[2] B60T *7/20*
U.S. Cl. 180—14 R **3 Claims**



1. A dual-vehicle operating system comprising; a manually operated lead vehicle; an automatically operated trail vehicle; signal means on said lead vehicle for emitting signals proportional to the input of the operator; servo control means on said trail vehicle for changing the operation thereof in response to the signals emitted by said lead vehicle signal means; a mechanical connection of predetermined length mechanically and pivotally connected between the lead and trail vehicles; force sensing means on said mechanical connection for determining the presence of any longitudinal force along the longitudinal

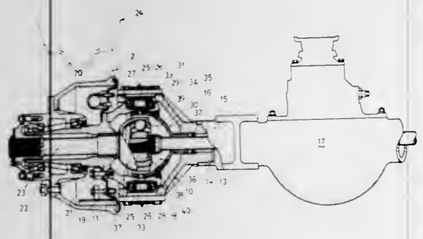
axis of said mechanical connection between the lead and trail vehicles; said servo control means on said trail vehicle being responsive to said force sensing means for varying the operation of the trail vehicle such that the force between the vehicles is returned to zero; and means on said lead vehicle, said trail vehicle and said mechanical connection for steering said trail vehicle in response to steering of said lead vehicle and for maintaining the longitudinal axis of the trail vehicle aligned with the longitudinal axis of the mechanical connection.

4,119,167

STEERING DRIVE AXLE ASSEMBLY

Shinichi Yamada, and Shigeru Komatsu, both of Osaka, Japan, assignors to Asano Gear Co., Ltd., Osaka, Japan

Filed Feb. 8, 1977, Ser. No. 766,755
Claims priority, application Japan, Jul. 28, 1976, 51-90667
Int. Cl.² B60K *17/30;* **F16D** *3/00*
U.S. Cl. 180—43 R **5 Claims**



1. A steering drive axle assembly which comprises:
a steering knuckle having an integral reduced portion rigid with one end of an axle housing;
a socket member having its integral reduced portion secured to an internal extremity of a wheel mounting spindle, said socket member being supported by a pair of substantially vertically spaced king pins which are in coaxial alignment and mounted respectively to an upper wall and a lower wall of said steering knuckle so as to be movable about said king pins;
a shell housing which includes a substantially semi-spherical portion and an integral reduced extension each of which is hollow, said substantially semi-spherical portion being provided with a smoothly spherical outer periphery and disposed within said socket member;
said reduced extension being secured at one end to an inside wall of said steering knuckle;
a constant velocity universal joint which connects a drive shaft and a driven shaft together being received within said shell housing; and
at least one sealing member being provided in sealing contact against said smoothly spherical outer periphery of said shell housing.

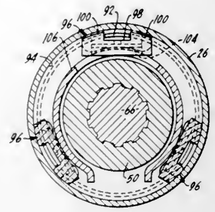
4,119,168

AUTOMATIC FOUR-WHEEL DRIVE TRANSFER CASE

Mark John Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 603,833, Aug. 11, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,496
Int. Cl.² B60K *17/34;* **F16D** *15/00*
U.S. Cl. 180—49 **9 Claims**

1. In a torque transfer assembly including a housing, an input shaft rotatably supported by said housing, first and second output shafts rotatably supported by said housing, and means coupling said input shaft with said output shafts for transfer of torque thereto; the improvement wherein said coupling means comprises an overrunning clutch having a first element rotatable with said first output shaft and defining a first clutch race, a second element rotatable with said second output shaft and defining a second clutch race, wedging means between said clutch races and movable between a clutch engaging position wherein torque is transferred to said second output shaft and a clutch disengaging position wherein torque is not transferred to said second output shaft, and means biasing said wedging



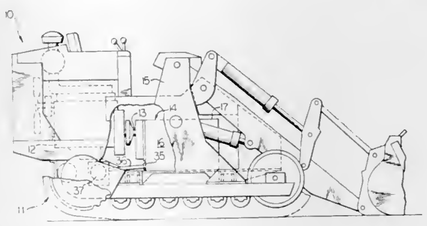
means toward said clutch engaging position, said biasing means including friction means movable with said wedging means, and resilient means biasing said friction means toward frictional engagement with said housing for effecting said biasing of said wedging means toward said clutch engaging position, said friction means also being biased toward frictional engagement with said housing by centrifugal force.

4,119,169

PUMP DRIVE FOR HYDROSTATIC MACHINES WITH EXTERNAL GEARS

Donald L. Hopkins, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 638,234, Dec. 8, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 773,046
Int. Cl.² B60K *17/10*
U.S. Cl. 180—66 R **10 Claims**



1. In a vehicle comprising a frame, ground-engaging means for propelling said vehicle over the ground, an engine mounted on the frame and having a drive shaft with a drive gear driven thereby, said drive shaft extending from said engine, a pair of hydrostatic motor means for driving the ground-engaging means, conduit means communicating with the hydrostatic motor means, a hydrostatic drive pump compartment structure mounted on the frame, a pair of hydrostatic pump means disposed within said pump compartment structure, mechanical adjustment means for individually controlling displacement of each of said pair of hydrostatic pump means, mechanical linkage means for simultaneously controlling the displacements of both of said pair of hydrostatic pump means and mechanical drive means disposed on said pump compartment structure for driving said hydrostatic pump means, an improvement comprising: using as said mechanical drive means:
a first pair of gears, each of said first pair of gears being meshed with and driven by said drive gear;
means for removably mounting each of said first pair of gears externally to said pump compartment structure;
a pair of pump drive shafts; and

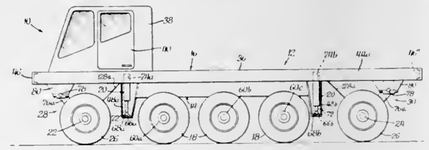
means for removably drivingly connecting each of said pump drive shafts to a respective one of said pair of gears, said pump drive shafts passing into said pump compartment structure and driving a respective one of said pair of hydrostatic pump means;
using as said pair of hydrostatic motor means;
a pair of hydrostatic motors mounted externally of said hydrostatic drive pump compartment adjacent to said ground-engaging means; and
using as said conduit means;
pipe means which interconnect said pair of hydrostatic motors each respectively with a respective one of said pair of hydrostatic pump means.

4,119,170

INTERACTING STEERING-SUSPENSION SYSTEM FOR A WHEELED VEHICLE AND THE LIKE

Brian K. Hutcherson, P.O. Box 712, Oswego, Ill. 60543

Filed Jun. 29, 1977, Ser. No. 811,169
Int. Cl.² B62D *3/02*
U.S. Cl. 180—79 **12 Claims**



1. In a vehicle, the combination comprising frame means defining the longitudinal axis of said vehicle, said frame means including a first frame section, ground engaging means mounted on said first frame section, said frame means further including a second frame section overlying said first frame section, adjustable means interconnecting said first and second frame sections in a manner to facilitate tilting of said second frame section about its longitudinal axis relative to said first frame section, front and rear axles having ground engaging wheels mounted thereon, suspension means mounting said second frame section on said front and rear axles, said suspension means associated with at least one of said front and rear axles including a pair of axle support arms connected to said one of said axles and pivotally connected to said second frame section, and means cooperative with said axle support arms to maintain said one of said axles in substantially transverse relation to said longitudinal axis when the ground reaction forces acting on the associated wheels are of predetermined magnitude, said last mentioned means being operable to change the angular relation of said one of said axles relative to said longitudinal axis so as to effect steering of said vehicle when the reaction forces acting on said associated wheels are selectively reduced from said predetermined magnitude, said adjustable interconnecting means being operable to tilt said second frame section relative to said first frame section to reduce said reaction forces in a manner to effect steering of said vehicle about an axis located outwardly from the side of said second frame section in the direction of tilt thereof.

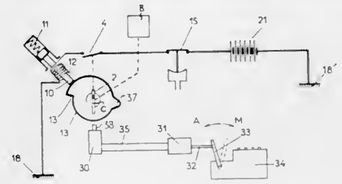
4,119,171

SAFETY ANTI-THEFT DEVICE FOR VEHICLES HAVING A DIESEL ENGINE

Yves Remontet, Chatou, France, assignor to Societe d'Exploitation des Brevets Neiman SA., Courbevoie, France

Continuation of Ser. No. 552,409, Feb. 24, 1975, abandoned. This application Nov. 23, 1976, Ser. No. 744,371
Int. Cl.² B60R *25/04*
U.S. Cl. 180—114 **4 Claims**

1. A safety device for a vehicle having a diesel combustion engine, said device comprising a key operated rotary lock comprising a rotor and a stator, a switch movable with the rotor of the lock, a bolt controlled by the lock and effective alternately to lock and to free a part of the vehicle necessary for its safe operation, said lock being movable sequentially from a first position in which said engine is stopped and said part of the vehicle is locked by said bolt, through an intermediate position in which said engine is stopped and said part of the vehicle is free of said bolt, to a third position in which said engine is running and said part of the vehicle remains free of said bolt; an operating element secured to and movable with said lock and comprising a cam element cooperating with a follower controlling a linkage to apply a controlling movement to remote means effective to allow starting and to stop said engine as said lock moves between said intermediate and third positions, a blocking surface formed on said cam element



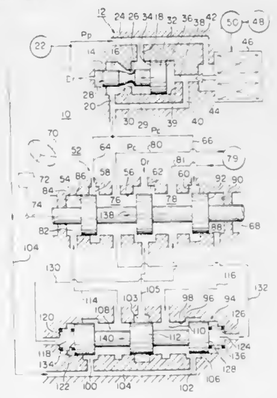
and cooperating with stop means movable between an operative position, in a path of movement of said blocking surface, in which said lock is prevented, by inter-engagement of said blocking surface and said stop means from being moved to said first position in which said bolt locks said part of the vehicle and an inoperative position in which said stop means is displaced from said path of movement of said blocking surface and the lock is freed to move to said first position to lock said part of the vehicle, means operable when the engine is running for maintaining said stop means in said operative position and means moving said stop means to said inoperative position when said engine is stopped and said lock is in said intermediate position.

4,119,172

STEERING FORCE CONTROL SYSTEM

Takayuki Yanagishima, Yokosuka, and Naohiko Inoue, Yokohama, both of Japan, assignors to Nissan Motor Company, Ltd., Japan

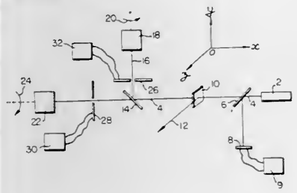
Filed Feb. 15, 1977, Ser. No. 768,827
Claims priority, application Japan, Feb. 17, 1976, 51-15510
Int. Cl.² B62D *5/08*
U.S. Cl. 180—141 **12 Claims**



1. A steering force control system for a power steering system of a vehicle, comprising

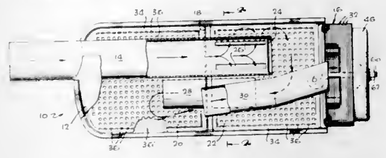
an input fluid pressure source;
pressure control valve means communicating with said source for regulating an input fluid pressure therefrom to a steering pressure;
second control valve means communicating with said pressure control valve means and with first and second fluid chambers of a power cylinder of the power steering system for controlling communication between said pressure control valve means and each of the first and second fluid chambers and for alternatively draining the first and second fluid chambers, said second control valve means having a first operative position for providing communication between said pressure control valve means and the first fluid chamber and for draining the second fluid chamber, and a second operative position for providing communication between said pressure control valve means and the second fluid chamber and for draining the first fluid chamber, said second control valve means being movable by a steering force between said first and second operative positions and having
first and second reaction force chambers;
third control valve means communicating with said source and with said first and second reaction chambers for controlling communication between said source and each of said first and second reaction chambers and for alternatively draining said first and second reaction chambers, said third control valve means having a third operative position for providing communication between said source and said first reaction chamber and draining said second reaction chamber for imparting to said second control valve means a reaction force opposing a steering force necessary for moving said second control valve means into said first operative position, and a fourth operative position for providing communication between said source and said second reaction chamber and draining said first reaction chamber for imparting to said second control valve means a reaction force opposing a steering force necessary for moving said second control valve means into said second operative position; and
operating means for moving said third control valve means into said third and fourth operative positions when said second control valve means is moved into said first and second operative positions, respectively.

4,119,173
OPTICAL SEISMOGRAPH
Ali Sekhavat, P.O. Box 837, Teheran, Iran, and Ali-Reza Bahrampour, Teheran, Iran, assignors to Ali Sekhavat, Teheran, Iran
Filed Aug. 12, 1977, Ser. No. 824,245
Int. Cl.² G01V *1/18*
U.S. Cl. 181—122 **11 Claims**



1. Optical seismograph whose function is to measure the relative movement of a beam of electromagnetic waves connected to the extremities of a plurality of pendulums, comprising a collimated source which delivers a parallel beam of electromagnetic waves and a plurality of pendulums whose oscillation paths are perpendicular to one another; means fixed in relation to the electromagnetic wave beam to send the luminous beam onto heavy ends of said pendulums and photoelectric means to measure the position variations of said ends of said pendulums with respect to said electromagnetic wave beam.

4,119,174
ENGINE MUFFLER
Edward Hugo Hoffman, Simi Valley, Calif., assignor to Skyway Recreation Products, Redding, Calif.
Filed May 20, 1977, Ser. No. 799,120
Int. Cl.² F01N *3/06, 1/08, 3/04*
U.S. Cl. 181—231 **4 Claims**

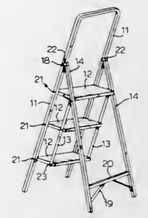


1. An engine exhaust muffler assembly comprising:
a housing forming an enclosed volume and having a dividing wall dividing said volume into first and second chambers;
a first pipe extending through said first chamber, said pipe having a first end for receiving exhaust gases located outside said housing and a second end lying in said second chamber;
a second pipe extending through said dividing wall, with one end in said first chamber and the other end in said second chamber; and
means for coupling said first chamber to a region outside the enclosed volume of said housing:
said second end of said first pipe is closed at its extreme end, and the first pipe portion which lies within said second chamber has at least one side opening in the side of said pipe and a deflector beside said side opening which directs gas exiting from said opening in a direction to spiral about said first pipe.

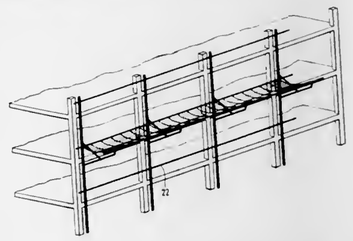
3. In a muffler assembly which includes a muffler, the improvement of a spark arrester connected to said muffler comprising:
a plurality of plates arranged in a stack with the plates having communicating holes near their centers and having peripheral portions slightly spaced apart; and
means for applying exhaust gases to said communicating holes;
said plates having holes near but spaced from their peripheries, said holes being formed so the regions of said holes are deformed to form protuberances, and the protuberances of each plate lie against the deformed regions surrounding the holes of an adjacent plate, to thereby space the plates and hold them in alignment.

4,119,175
STEP LADDER
John Alfred Herwynen, King City Post Office, King City, Ontario, Canada
Filed Jan. 17, 1975, Ser. No. 541,840
Int. Cl.² E06C *1/24*
U.S. Cl. 182—125 **1 Claim**

1. A foldable step ladder comprising a pair of front legs integrally connected in their upper parts, said front legs being pivotally connected in their upper parts to a corresponding pair of interconnected rear legs, two single step members pivotally connected between said front legs and a pair of rear tension rails pivotally interconnecting the rear of the sides of said steps to form a collapsible parallelogram, an unitary guiding link pivotally attached to each side of the top step intermediate to the ends thereof and to the corresponding inner side of said rear legs at a point below the top step, said top step resting on said guide links in the opened position of the ladder to limit rotation of the steps to a horizontal position and urging said top step to collapse said parallelogram on rotation of the said rear legs to a folded position, said guide links at said connection point below the top step extending towards the other a sufficient distance to each provide an abutment spaced from the individual leg from which it is pivotal, said top step resting on said abutments in the opened position of said ladder with said rear legs braced together below said lower step.



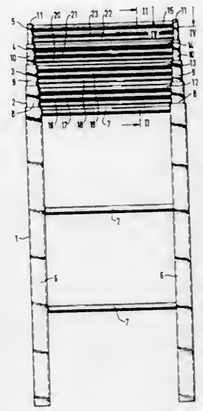
4,119,176
FALL ARRESTER, FOR BUILDING WORKS
Vicente Mira Verdu, Jose Antonio, 15, Jijona (Alicante), Spain
Filed Sep. 26, 1977, Ser. No. 836,892
Claims priority, application Spain, Sep. 29, 1976, 223512[U]
Int. Cl.² E04G *21/32*
U.S. Cl. 182—138 **8 Claims**



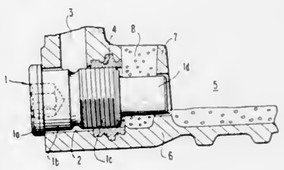
1. An improved fall arrester for building works, comprising:
a safety net, at least two supporting arm structures for said net, each of said supporting arm structures having first and second struts, the first end of said first strut being pivotally joined to the intermediate portion of said second strut thus forming the shape of a letter "Y," at least one vertical guide channel attached to said building for each of said supporting arm structures, support means for holding the second end of said first strut and a first end of said second strut in said at least one vertical guide channel, said safety net being slung, between the second ends of said second struts, said support means for holding containing means for permitting the longitudinal motion of the ends of the struts attached thereto in said guide channel and means for securing said support means at a predetermined height in said guide channel whereby the supporting arm structures, and safety net, may all be travelled along the length of the vertical guide channels, and, be secured at said height.

4,119,177
COLLAPSIBLE LADDER
Bengt Heimer Andersson, PL 1722, 310 40 Harplinge, Sweden
Filed Nov. 10, 1977, Ser. No. 850,449
Int. Cl.² E06C *1/12, 1/38*
U.S. Cl. 182—195 **9 Claims**

1. A ladder consisting of a plurality of sections including one bottom section and at least one additional section, each of said sections comprising a pair of uprights and at least two rungs the uppermost one of which is fixedly mounted in the uprights, each of said uprights being telescopically slidable into the adjoining lower upright, the uprights of said at least one additional section being provided with longitudinal guideways in which end portions of at least the lowermost one of the rungs of the section are displaceable along said uprights, stop means defining a lower terminal position for the end portions of said at least one of the rungs in said guideways, and releasable means for holding each of said sections in an extended position with respect to an adjoining section.



4,119,178
INTERNAL COMBUSTION ENGINE WITH DRY SUMP LUBRICATION
Jürgen Hass, Weinstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Nov. 5, 1976, Ser. No. 739,044
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1975, 2550315
Int. Cl.² F16N *33/00*
U.S. Cl. 184—1.5 **1 Claim**



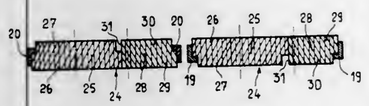
1. An internal combustion engine with a dry-sump lubrication, which comprises a common oil discharge bolt means for emptying a separate oil reservoir tank and an engine oil sump, and in which a line coming from the oil reservoir tank terminates in a bore for receiving the oil discharge bolt means ahead of a thread provided in the bore, as viewed from the outside, the bore leading to the engine oil sump, characterized in that a threaded portion for the oil discharge bolt means is sealed off on a side facing an oil space of the engine oil sump by an oil seal means involving oil collected from an oil spray, the oil discharge bolt means includes an extension following the threaded portion thereof, in that the oil seal means includes an oil pocket means, open in an upward direction and extending below and above the threaded portion, formed between the oil space of the engine oil sump and the threaded portion of the oil discharge bolt means by a baffle wall means, and in that the bore continues through the baffle wall means and the extension of the oil discharge bolt means passes at least partially through said bore inside the baffle wall and seals the same.

4,119,179

BRAKE DISC STRUCTURE

Jean Masclet, Paris, France, assignor to Messier-Hispano, Montrouge, France

Filed Jun. 14, 1977, Ser. No. 806,506
Int. Cl.² F16D *69/04, 65/12*
U.S. Cl. 188—73.2 **16 Claims**



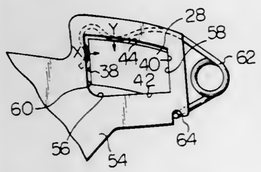
1. A disc brake comprising a plurality of stators and at least one rotating rotor interposed between two stators, said stators and rotors each comprising a friction lining, at least one of the friction linings comprising a support and a shoe engaged in said support, each shoe comprising a first part of larger cross-section and a second part of smaller cross-section extending from the first part and defining therewith a shoulder, two adjacent shoes being disposed in respective supports to face in opposite directions in such supports so that a first part of one shoe is adjacent a second part of another shoe on the same side of the support, the shoes in adjacent supports being geometrically identical, each support having an aperture in which the respective shoe is engaged, each aperture being constituted by a first bore of larger diameter extending partly in the depth of the respective support and a second bore of smaller diameter extending coaxially with the first bore in the remainder of the depth of the respective support and defining a shoulder therewith, said first and second parts of the shoe being respectively received by the first and second bores in the support with the shoulder of the shoe bearing against the shoulder of the support, said first and second parts of the shoe having contours corresponding to the bores in the support and being seated therein with slight clearance to permit heat expansion in operation, each shoe providing a braking surface on opposite sides of its support.

4,119,180

DISC BRAKE FRICTION PAD GUIDE AND SUPPORT STRUCTURE

Koji Horie, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Aug. 4, 1977, Ser. No. 821,629
Claims priority, application Japan, Aug. 27, 1976, 51-101714
Int. Cl.² F16D *65/02*
U.S. Cl. 188—73.5 **1 Claim**



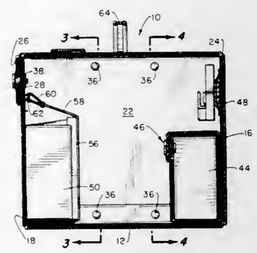
1. A disc brake comprising
a brake disc having an axis of rotation;
an inner pad and an outer pad positioned on opposite sides of said brake disc, respectively;
a torque bearing member slidably supporting said pads and supporting a caliper capable of forcing said pads against said brake disc,
said torque bearing member having an inner pad guide portion for guiding said inner pad along the axis of rotation of said brake disc on one side of said brake disc, a fixed portion opposed to the side of said brake disc, and a pair of outer pad guide portions extending from said fixed portion over the outer peripheral edge of said brake disc to a position beyond the other side of said brake disc;
said outer pad having a pair of through-holes or receiving portions for admitting said outer pad guide portions;
said pair of outer pad guide portions having an outer side surface and a bottom surface extending at a right angle to each other along the axis of rotation of said brake disc;
said pair of through-holes or receiving portions having sliding surfaces for abutting said outer side surface and the bottom surface of said outer pad guide portions;
said pair of outer pad guide portions being substantially of a rectangular transverse cross section defined by its outer side surface and inner side surface, said through-holes in said outer pad for admitting said guide portions being of a rectangular shape similar to the shape of said cross section, and a clearance being provided between the inner side surface of each of said outer pad guide portions and one of the walls defining each of said through-holes provided in said outer pad; and
a pair of coil springs provided between said outer pad and outer pad guide portions for preventing rattling of said outer pad, one end of each said coil spring being hooked by a cut away portion provided in said outer pad, and the other end of each said coil spring being hooked by an edge of said outer pad guide portion, whereby said coil springs urge said outer pad against said outer pad guide portions.

4,119,181

CARRYING CASE FOR ANIMAL CARE PRODUCTS

Constance C. Jones, 5906 Cahill Ave., Tarzana, Calif. 91356

Filed Nov. 23, 1977, Ser. No. 854,471
Int. Cl.² A45C *11/00*
U.S. Cl. 190—51 **9 Claims**



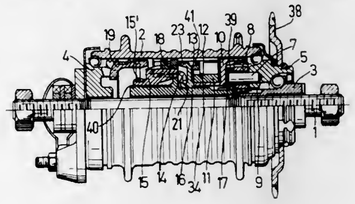
1. A carrying case for animal care products comprising:
a housing having an internal compartment created by the interconnection of a bottom wall, a top wall, a front wall, a back wall and side walls, said bottom wall being fixedly secured to said back wall, said top wall being hingedly connected to said back wall for movement in respect thereto between a closed position and an open position, said front wall being hingedly connected to said bottom wall for movement in respect thereto between a closed position and an open position, with both said top wall and said front wall in their respective closed positions there being manually activatable locking means for securing both said top wall and said front wall to said side walls and latching means for interlocking said top wall and said front wall.

4,119,182

TWO-SPEED BICYCLE HUB WITH COASTER BRAKE AND PEDAL ACTUATED SPEED SHIFT

Werner Steuer, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Jul. 27, 1977, Ser. No. 819,325
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1976, 2635850
Int. Cl.² B60K *29/02*
U.S. Cl. 192—6 A **14 Claims**



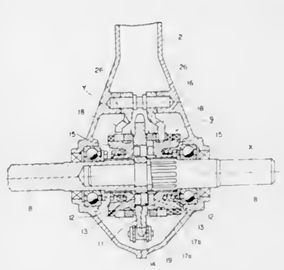
1. A multiple-speed hub for a driven wheel of a vehicle comprising:
(a) a shaft having an axis;
(b) a hub shell mounted on said shaft for rotation about said axis;
(c) a multiple-speed transmission mounted in said hub shell and including first and second transmission members operatively connected for simultaneous angular movement about said axis at different respective speeds;
(d) drive means for angularly moving said members about said axis in a forward direction and in a backward direction;
(e) brake means operatively interposed between said transmission and said hub shell for braking said rotation of the hub shell in response to backward angular movement of said members and for releasing the hub shell from the braking action in response to subsequent forward angular movement of said members;
(f) an overrunning clutch interposed between said first transmission member and said hub shell;
(g) a pawl member mounted on said second transmission member for joint angular movement;
(h) ratchet means on said hub shell;
(i) a control element mounted in said shell for rotation about said axis,
(1) said control element having an annular cam face directed toward said axis,
(2) said pawl member having a cam follower portion and a ratchet engaging tip portion;
(j) biasing means biasing said pawl member toward a position of engagement of said cam follower portion with said cam face and of said tip portion with said ratchet means,
(1) said cam face having at least one first circumferential section and at least one second circumferential section,
(2) each of said sections having an arcuate, circumferential portion adjacent said axis, a circumferential control portion sloping radially outward from said adjacent portion toward the adjacent portion of the other section in the circumferential direction of forward angular movement of said second transmission member, and an abutment portion transverse to said adjacent and control portions,
(3) the control portion of said first section extending far enough from said axis to permit driving engagement of said tip portion with said ratchet means when said cam follower portions engages said control portion of the first section,
(4) the control portion of said second section when engaged by said cam follower portion preventing engagement of said tip portion when said ratchet means,
(5) said pawl member abuttingly engaging said abutment portion when said second transmission member is moved by said drive means in said forward direction for rotating said control element about said axis,
(6) the circumferential length of the adjacent portion of said first section being approximately two thirds of the combined circumferential length of said adjacent and control portions of said first section, and
(7) the circumferential length of the adjacent portion of said second section being 25 to 50% of the combined circumferential length of said adjacent and control portions of said second section; and
(k) friction means selectively impeding rotary movement of said control element with said pawl member when said second transmission member is moved by said drive means in said backward direction,
(1) whereby said cam follower portion moves from camming engagement with one of said first and second sections into camming engagement with the other section during said backward moving of the transmission members,
(2) the circumferential length of said adjacent portion of the first section being sufficient to permit releasing of said brake means during said forward moving of said second transmission member before said cam follower portion engages said control portion of the first section.

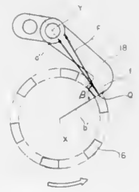
4,119,183

CLUTCH

Hisatake Fujioka; Tomeo Umemoto, both of Sakai; Masamitsu Shingaki, Kishiwada, all of Japan; Mikio Yuki, Vichy, France; Mitsuhiro Sato, Sakai, and Shosuke Kawabata, Osaka, both of Japan, assignors to Kubata Ltd., Japan

Filed Oct. 7, 1976, Ser. No. 730,318
Claims priority, application Japan, Apr. 5, 1976, 51/38418
Int. Cl.² F16D *11/06*
U.S. Cl. 192—24 **1 Claim**





1. A clutch comprising a drive rotary member, a driven rotary member engageable with and disengageable from the drive rotary member by being moved relative thereto in the direction of axis of rotation, the driven rotary member being biased toward the drive rotary member for engagement therewith, an annular cam interposed between the drive rotary

member and the driven rotary member and rotatable about the axis of rotation, and an engaging member manually operably mounted on a case to prevent rotation of the cam, the driven member and the cam being formed in facing relation to each other with wave-shaped cam surfaces, the driven rotary member and the cam being rotatable relative to each other to permit the cam surfaces to ride on each other, whereby the driven rotary member is forced away from the drive rotary member, wherein the drive rotary member is formed with a groove to hold the driven rotary member out of engagement with the drive rotary member when the extreme end of the engaging member projects toward the driven rotary member through the cam and is engaged with the groove,

characterized in that when the cam rotates in such state that the engaging member is subjected to tension due to the rotation of the cam, an angle α between a line a drawn from a first point of contact between the engaging member and the cam to a support axis of the engaging member, and a line b drawn from the first contact point to a rotation axis is determined to be from 90° to 115°, and

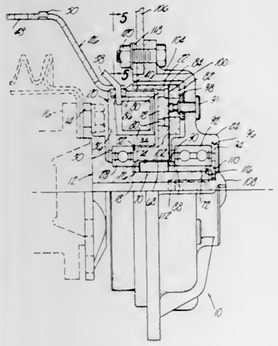
when the cam rotates in such state that the engaging member is subjected to compression due to the rotation of the cam, an angle β between a line a' drawn from a second point of contact between the engaging member and the cam to a support axis of the engaging member, and a line b' drawn from the second contact point to a rotation axis is determined to be from 65° to 90°.

4,119,184

AUTOMOTIVE FAN DRIVE ASSEMBLY

Michael Lee Mower, Elmira; William Arthur Carleton, Pine City, and Gary Richard Packard, Horseheads, all of N.Y., assignors to Facet Enterprises, Inc., Tulsa, Okla.

Filed May 4, 1977, Ser. No. 793,710
Int. Cl.[2] F16D *27/10, 43/25*
U.S. Cl. 192—82 T **8 Claims**



1. An automotive engine fan drive assembly adapted to be driven by an engine fan drive hub, said assembly comprising:

a central shaft adapted to be fixed to said fan drive hub driven by the engine;

a field coil housing rotatably mounted on said central shaft;

a field coil disposed within said field coil housing;

anti-rotation means securing said field coil housing against rotation;

circuit means for controlably energizing said field coil;

a magnetically permeable annular inner body drivingly connected to said central shaft, said inner body element axially adjacent to said field coil and having circumferential slots minimizing the magnetic flux from said field passing radially through said inner body;

a magnetizable annular armature axially adjacent said inner body, spaced from said field coil;

a fan hub assembly including a fan hub, and bearing means rotationally mounting said fan hub on said central shaft adjacent to said armature;

means releasably securing said fan hub on said central shaft;

spring connector means connecting said fan hub to said armature, said spring connector means allowing limited axial movement of said armature towards said inner body against the resistance of an axial bias force, said axial movement occurring under the influence of said magnetic flux;

clutch engagement means producing a driving connection between said inner body and said armature upon said axial movement of said armature;

a fan;

means mounting said fan to said outer hub portion;

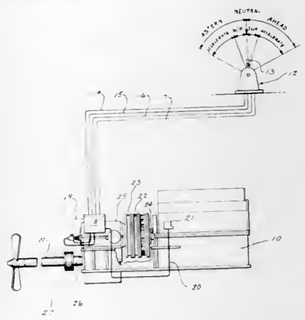
said fan hub including an outer hub portion extending over said armature and inner body whereby said armature and inner body are shielded by said outer hub portions.

4,119,185

MARINE PROPULSION CONTROL SYSTEM WITH MANEUVERING BRAKE

John M. Phinney, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Apr. 4, 1977, Ser. No. 784,165
Int. Cl.[2] F16D *67/02*
U.S. Cl. 192—.094 **9 Claims**



1. In a pneumatic control system for a marine propulsion drive which includes a prime mover controlled by a throttle speed governor, a drive train for transmitting power from the prime mover to a propeller drive shaft, astern and ahead air inflatable clutches for selectively connecting the prime mover to said drive train, a brake operable on said propeller drive shaft, throttle means for actuation of the propulsion system and including means for producing alternative ahead and astern direction pressure signals indicative of the desired direction of travel and a speed signal whose magnitude is proportional to desired speed, means responsive to said speed signal for controlling the inflation of a selected clutch, and a clutch selector valve responsive to said direction pressure signals for connecting the selected clutch to said inflation control means, the combination therewith of:

means accumulating a pressure signal responsive to said speed signal while said ahead clutch is inflated for ahead direction of travel, said accumulating means discharging said pressure signal at a controlled rate after said ahead clutch has been deflated,

brake control means responsive to said accumulated pressure signal and to said astern direction to engage said brake in response to said astern direction signal and so long as said accumulated pressure signal is above a first preselected level, and

shift delay means responsive to said accumulated pressure signal to block said astern direction signal from acting on said selector valve and said brake control means so long as said accumulated pressure is above a second, higher preselected level,

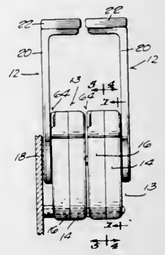
said brake control means being further responsive to the internal pressure within said astern clutch to disengage said brake when said astern clutch has been inflated to a predetermined inflation level.

4,119,186

SINGLE LEVER CONTROL HAVING A THROTTLE WARM-UP LEVER

Hrishikesh Choudhury, Gurnee, Ill., and Heinrich E. Luksch, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 28, 1977, Ser. No. 772,430
Int. Cl.[2] B60K *41/02*
U.S. Cl. 192—0.096 **22 Claims**



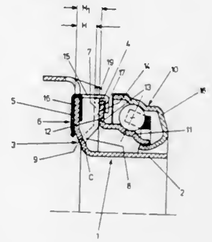
1. A single lever control comprising a housing, a main control lever, means supporting said control lever from said housing for pivotal movement about a first axis from a neutral position, through a shift position, and subsequently through a range of throttle advance positions, a warm-up lever carried by said housing for pivotal movement about a second axis between an idle position and a range of engine warm-up positions, a throttle lever adapted to actuate a remotely located throttle of an engine and carried by said warm-up lever for pivotal movement about a third axis spaced from said second axis, means connecting said control lever and said throttle lever for pivoting said throttle lever about said third axis in response to movement of said control lever from the neutral position to a throttle advance position and for permitting pivotal movement of said throttle lever in response to movement of said warm-up lever from the idle position, a gear shift lever adapted to actuate a remotely located clutch of the engine and carried by said housing for pivotal movement about a fourth axis between a neutral position and a drive position, means connecting said gear shift lever and said control lever for pivoting said gear shift lever from the neutral position to the drive position in response to movement of said control lever from the neutral position to a shift position, a lockout lever pivotally carried by said housing, means connecting said lockout lever and said warm-up lever for locating said lockout lever in a first position when said warm-up lever is in the idle position and for locating said lockout lever in a second position when said warm-up lever is in an engine warm-up position, and means connecting said lockout lever and said gear shift lever for permitting movement of said warm-up lever from the idle position when said control lever is in the neutral position, for preventing movement of said warm-up lever from the idle position when said control lever is displaced from the neutral position, for preventing movement of said gear shift lever from the neutral position when said warm-up lever is in an engine warm-up position, and thereby also preventing movement of said control lever from the neutral position, and for permitting movement of said gear shift lever from the neutral position when said warm-up lever is in the idle position, and thereby also permitting movement of said control lever from the neutral position.

4,119,187

CLUTCH RELEASE DEVICE

Horst Manfred Ernst, Eltingshausen; Armin Olschewski, Schweinfurt; Rainer Schürger, Schwanfeld; Lothar Walter, Schweinfurt; Manfred Brandenstein, Aschfeld, and Erich Burkl, Stammheim, all of Fed. Rep. of Germany, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Dec. 2, 1976, Ser. No. 746,942
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1975, 7539627[U]
Int. Cl.[2] F16D *23/00, 13/60*
U.S. Cl. 192—98 **14 Claims**



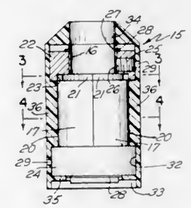
1. In a clutch release device including a sliding sleeve cooperating with a thrust bearing having inner and outer rings, wherein said sleeve is formed from sheet metal and comprises a cylindrical portion with opposite first and second ends, a radially extending flange portion at said first end, said flange portion comprising at least one bearing contact section thereof axially displaced toward said second end of the sleeve and situated adjacent one of said thrust bearing rings for engaging said ring and a further radially extending section axially spaced from said bearing section for engaging a clutch lever; the improvement wherein said flange portion has a shoulder transition section between said cylindrical portion and said bearing contact and further sections, the radial planes of said bearing contact and further sections being displaced in opposite axial directions from said transition section.

4,119,188

SELECTABLE SIZE CENTRIFUGAL CLUTCH

William Argereu, Hickory Dr., North Scituate, R.I. 02857

Filed Jan. 5, 1977, Ser. No. 756,760
Int. Cl.[2] F16D *43/18*
U.S. Cl. 192—105 BA **3 Claims**



1. The method of providing a centrifugal clutch for varying size bobbin which comprises providing radially expandable weights about a core, providing a plurality of elastic sleeves of different external diameters but each of the same internal diameter to fit over said core and weights, selecting the desired sized bobbin and selecting the desired external size sleeve to fit the selected bobbin and assembling the selected sleeve over said core and weights with the internal diameter of said sleeves

snugly embracing and contracting said weights, and inserting the selected bobbin over the selected sleeve.

4,119,189

REINFORCED CARBON AND GRAPHITE ARTICLES

Leo C. Ehrenreich, Buffalo, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 722,158, Apr. 18, 1968, Pat. No. 3,672,936.
This application Jan. 3, 1972, Ser. No. 215,161
Int. Cl.[2] C23C *9/06;* **B44D** *1/46;* **F16D** *13/60*
U.S. Cl. 192—107 M **10 Claims**

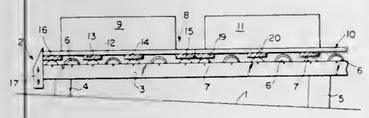
1. A high energy absorbing friction article which is a unified structural member for running in air and which is characterized by light weight and superior heat resistance even at opening temperature as great as 3000° F, the combination of a carbonized filamentary material and a carbonized in situ resin binder material associated with said carbonized filamentary material, said carbonized binder binding said filamentary material into an integral body, whereby to provide superior strength in the friction article, further characterized by a friction modifying amount up to about 48 percent by weight of ditungsten monoboride friction modifier.

4,119,190

LOW TEMPERATURE ROLLERWAY BRAKE

Edward T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed May 6, 1977, Ser. No. 794,515
Int. Cl.[2] B65G *13/075*
U.S. Cl. 193—35 A **8 Claims**



1. A gravity rollerway conveyor for use at low temperatures to store pallets and deliver them one at a time to the front lower end of the conveyor, comprising: a support; at least two downwardly and forwardly inclined flights of undriven rollers having their upper support surfaces adjacent an inclined support plane and each having a fixed generally horizontal axis of rotation generally perpendicular to its flight; means at the forward end of said rollerway conveyor for stopping and positively holding at a fixed location the forwardmost one of a plurality of loaded pallets serially extending along the conveyor; said flights of rollers having alternating groups of first rollers and second rollers with said first rollers being laterally aligned with each other and said second rollers being laterally aligned with respect to each other as between the flights; all of said first rollers having means forming their load engaging surface that are substantially free of any appreciable compression set, and all of said second rollers having means forming their load engaging surface being constructed of elastomeric material having an appreciable load compression set, at the low temperatures; and the spacing between and positioning of said rollers being such that when said rollerway conveyor is filled with serially arranged and stored stationary pallets, the support surfaces of said pallets will engage only said first rollers.

4,119,191

VARIABLE COIN CONTROL FOR FOOD DISPENSER

William A. Arzberger, Medfield, and Merle S. Brown, Cohasset, both of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Filed Feb. 7, 1977, Ser. No. 766,430
Int. Cl.[2] G07F *13/00*
U.S. Cl. 194—9 T **19 Claims**

1. Coin-operated control apparatus for a vending machine to control means for dispensing a product from the machine, said control being provided in an alterable manner to operate the means for dispensing on receipt of different total amounts of coinage, comprising;

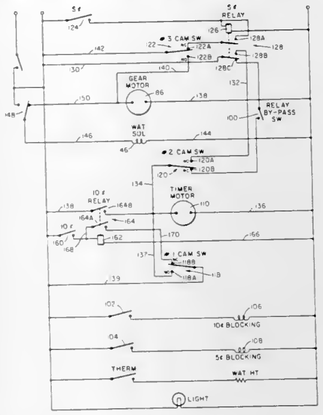
at least a first cam and a second cam and first and second cam switch means associated, respectively, with the first and second cams,

drive means for commonly supporting and simultaneously driving said first and second cams,

first coin register means responsive to receipt of a coin of first denomination,

second coin register means responsive to receipt of a coin of second denomination,

means intercoupling said first coin register means and said first cam switch means to operate said drive means in predetermined positions of the first cam,



means intercoupling said second coin register means and said second cam switch means to operate said drive means in predetermined positions of the second cam,

and means responsive to rotation of the drive means from a start position upon receipt of the proper coin or coins for initiating and maintaining operation of said dispensing means for a predetermined period of time,

said second cam having an adjustable cam track relative to the first cam track, the total coin amount for enabling the dispensing means being selectable at least in part by setting the second cam track to one of at least two different positions.

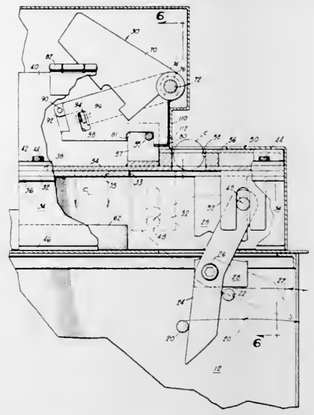
4,119,192

MULTIPLE COIN MECHANISM FOR NEWSRACK

Paul G. Hickman, Rte. 4, Box 127A, Covington, Ga. 30209

Filed Jan. 3, 1977, Ser. No. 756,198
Int. Cl.[2] G07F *5/06, 17/04*
U.S. Cl. 194—59 **10 Claims**

1. A newsrack having a front access door, a coin mechanism and coin mechanism activating and reset elements on the interior of said door, said coin mechanism comprising support and front-to-back guideway means secured to said newsrack, a coin slide having slots for coins of different denominations to fall therethrough engaged with said support and front-to-back guideway means, a pivoted crank arm on said support and front-to-back guideway means and drivingly connected with the coin slide to shift the coin slide rearwardly toward a coin depositing position and forwardly toward a coin mechanism reset position respectively in response to opening and closing of said front access door, said activating and reset elements on said door disposed rearwardly and forwardly of said pivoted crank arm to turn the same in opposite directions on its pivot, a plurality of gravity biased pawls positioned above the coin slide, a common transverse axis pivot shaft for said pawls secured to said support and front-to-back guideway means, each pawl having a forward end depending tang in the path of movement of a coin in one slot of said coin slide and also having a notch in its lower edge rearwardly of said tang, a rigid pin element on the coin slide extending transversely of said pawls and engaging said notches lockingly to limit movement of the coin slide rearwardly toward said coin depositing posi-



tion when said tangs are not engaged and elevated by coins of proper diameters moving with the coin slide, said pawls swinging upwardly on said common pivot shaft in response to engagement of the tangs by coins of proper diameters moving rearwardly with the coin slide to clear said notches from engagement with said rigid pin element and allowing the coin slide to travel rearwardly to said coin depositing position.

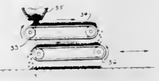
4,119,193

SHUTTLE TYPE LIVESTOCK FEEDER

Kenneth L. Smith, and Ernest H. Sancken, both of Eureka, Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Oct. 28, 1976, Ser. No. 736,487
Int. Cl.[2] B65G *69/04*
U.S. Cl. 198—371 **2 Claims**





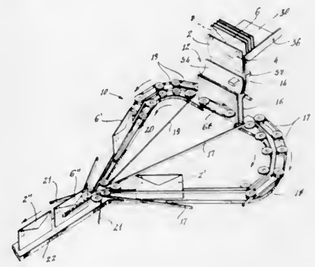
1. In a feeder for discharging feed into one or more feed receiving means of an elongated feeding course, the combination comprising an elongated track extending longitudinally along said course and co-extensive therewith, a carriage mounted for travel along said track, drive means for reciprocatingly moving said carriage on said track, a pair of guide means longitudinally spaced from each other and disposed at opposite ends inside of said carriage, an endless loop conveyor member having an elongated top portion extending between said guides for receiving feed and with said conveyor member extending downwardly around said guides and extending inwardly beneath the said top portion, independent means selectively reciprocating said conveyor member about said guides in the same or opposite direction of movement of the carriage to carry feed for discharge at an end of said top portion into one of said receiving means, and the receiving means being at least one or more corresponding feeders cascaded below the first feeder in which at least the first uppermost feeder and the second feeder located directly below the first feeder are initially moved longitudinally in the same direction with the second feeder running slightly ahead of the first feeder, an endless loop conveyor secured to the first feeder to receive and discharge feed, an endless loop conveyor secured to the second feeder and initially rotating in the same direction as the loop conveyor of the first feeder to receive and discharge feed therefrom received from the first feeder, the second feeder at the end of its run then reversing its direction of travel and the rotation of its loop conveyor, the first feeder thereafter reversing its direction of travel and the reciprocation of its loop conveyor as the second feeder commences to pass from below the first conveyor to thereby discharge feed to the second feeder as the feeders both travel longitudinally in a direction opposite to that of the starting travel of said feeders, and the second feeder then reversing direction to move to starting position with its endless loop conveyor reversing rotation to its initial rotating direction and then the first feeder reversing direction to move to its starting position with its endless loop conveyor reversing direction to rotate in the same direction as the endless loop conveyor of the second feeder.

4,119,194

SYSTEM AND APPARATUS FOR THE ORIENTATION AND BIDIRECTIONAL FEED OF INDICIA BEARING MAIL

Gerald C. Freeman, Darien, and James F. Mahoney, New Canaan, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Continuation of Ser. No. 706,577, Jul. 19, 1976, abandoned. This application Oct. 21, 1977, Ser. No. 844,236
Int. Cl.[2] B65G *47/24*
U.S. Cl. 198—400 **6 Claims**



1. A mail handling apparatus for feeding envelope mail pieces according to the location of postal indicia thereupon comprising:

A. feeding means for individually feeding mail pieces in a downward direction;

B. a chute-like receptacle means located directly below said feeding means for receiving mail pieces fed downwardly from said feeding means, said receptacle means being positionable to at least two positions;

C. a first conveyor means comencing adjacent one end of

said receptacle and aligned with one of said receptacle positions.

D. a second conveyor means comencing adjacent the other end of said receptacle and aligned with said other receptacle position.

E. an indicia detection means located between said feeding means and said receptacle for detecting the location of postage indicia on each mail piece fed thereby and for controlling the positioning of said receptacle means; and

F. ejection means operatively located at each position of said receptacle means for ejecting each mail piece from the receptacle means to one of the aligned conveyor means.

4,119,195

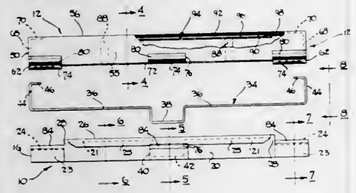
PROTECTIVE CASE

Charles D. Widener, 9 Coach Rd., Rolling Hills, Calif. 90274

Continuation of Ser. No. 579,024, May 19, 1975, abandoned. This application Apr. 22, 1977, Ser. No. 789,779

Int. Cl.[2] **B65D** *25/14, 43/16, 81/26, 85/67*

U.S. Cl. 206—204 **7 Claims**



1. In a protective casing for removably retaining an environment-sensitive object,

said casing comprising a base section and a lid section which are hingedly connected together and are movable relative to one another between a closed position and an open position;

said base section being generally rectangular and having side, front, and rear edges, said base section having a generally rectangular bottom wall, a pair of generally upstanding base side walls, a generally upstanding base front wall, and a generally upstanding base rear wall, said upstanding walls each having an upper edge, said upper edges combining to define a generally continuous and rectangular, upwardly-facing, base contact edge;

said lid section being generally rectangular and having side, front, and rear edges, said lid section having a generally rectangular top wall of essentially the same size as said bottom wall, a pair of generally upright lid side walls, a generally upright lid front wall, and a generally upright lid rear wall, said upright lid walls each having lower edge, said lower edges combining to define a generally continuous and rectangular, downwardly-facing lid contact edge of essentially the same size as said base contact edge, and being aligned and in contact with said base contact edge when said casing is in the closed position;

said casing also comprising base hinge means on said base section and lid hinge means on said lid section, said base hinge means being interengaged with said lid hinge means to form a hinged connection between said lid and base sections, said hinged connection being located at the rear edges of said lid and base sections and forming an elongated hinge axis for pivotal movement of said lid section relative to said base section about said hinge axis of said hinge connection to the open position; the improvement comprising, in combination with the foregoing casing structure, a preformed resilient wire torsion spring interengaged with said base section and with said lid section so as to retain said base hinge means interengaged with said lid hinge means, and so as to apply a continuous closing force which urges said lid contact edge and said base contact edge against one another from all open positions of said casing sections, said wire spring being elongated and extending generally the length of said rear edges of said casing sections, said spring having opposite ends disposed at opposed sides of said casing sections, said spring comprising a connector portion at each of its ends connected to one of said casing sections, a connector section intermediate its ends connected to the other of said casing sections, and a pair of elongated torsion portions extending essentially the full length of said rear edges of said casing and each having a longitudinal axis, each of said torsion portions being integrally formed with and extending between said intermediate connector section and one of said end connector sections, said spring being constructed and arranged with regard to said lid and base sections so that said elongated torsion portions are resiliently twisted about their longitudinal axes at all times so as to continuously apply said closing force,

said lid section and said cover sections each being unitary molded plastic, said lid hinge means being integrally formed with the remainder of the lid section and said cover hinge means being integrally formed with the remainder of the cover section, said base hinge means being positioned to engage said lid hinge means so as to limit relative movement between said lid section and said base section in the direction of such hinge axis, said hinge means including elongated grooves in which said portions of said spring are received, each of said spring end connector portions comprising a first part extending generally perpendicular to the torsion portions and a second part at the outer end of said first part, said second part extending generally transversely to said first part and being received in a mating recess in the casing section to which said end connector portion is connected to thereby effect said last mentioned connection.

4,119,196

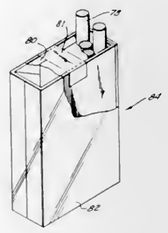
COLLAPSIBLE PACKAGE

Kenneth A. Flaherty, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed May 2, 1977, Ser. No. 792,739

Int. Cl.[2] **B65D** *85/10*

U.S. Cl. 206—271 **25 Claims**



1. A partially collapsible package comprising; a pair of opposing rigid front and rear panels, a bottom panel hinged on opposite edges to the front and rear panels and a pair of side panels hinged to the front and rear panels to form a package closed at the bottom and open at the top to receive and remove articles therethrough, each side panel and bottom panel having a weakened zone to permit collapse of the package in the direction bringing the front and rear panels together, and stop means on the panels and positioned so that as the package is collapsed the stop means will permit limited movement and partial collapse of the package and then will support the package and resist further collapse thereby providing for a partially collapsible supporting package to protect articles contained therein when the package is full and while articles are being removed and the package collapses accordingly.

4,119,197

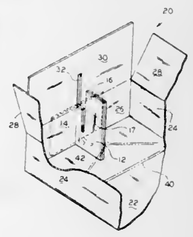
APPAREL HANGING RECEIVING ELEMENT

William M. Pilz, Eldridge, Iowa, assignor to Container Corporation of America, Chicago, Ill.

Filed Nov. 7, 1977, Ser. No. 849,013

Int. Cl.[2] **B65D** *85/18*

U.S. Cl. 206—279 **1 Claim**



1. In combination, a shipping container having integrally formed bottom, side, top and end walls, a closure flap hinged to an edge of at least one of said walls, a continuous slot formed in an end wall and extending only into said flap hinged to said end wall, and a separate apparel hanger receiving element releasably retained in said container and formed from a cut and scored blank of paperboard, or the like, said element including:

(a) a pair of inner and a pair of outer panels hingedly connected in alternating sequence along parallel hinge lines;

(b) said inner panels being folded against each other into a face-to-face relationship along one of said parallel hinge lines;

(c) each of said inner panels having a top extension hinged to an edge thereof and received through said slot formed in said closure flap of said container;

(d) said extensions being folded into contacting relationship with the exterior surface of said closure flap;

(e) said outer panels being received through said slot in said end wall of said container and folded into contacting relationship with the exterior surface of said end wall;

(f) an opening formed in said inner panels inwardly of said hinge lines connecting said inner panels with their respective adjacent outer panels and being adapted to receive a hook portion of said hanger.

4,119,198

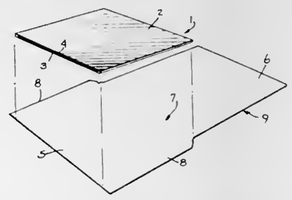
PHONOGRAPH RECORD ALBUM OR SIMILAR ITEM

Rudolph A. Froehlig, College Point, N.Y., assignor to Modern Album and Finishing Co., Inc., Hauppauge, N.Y.

Continuation of Ser. No. 530,090, Dec. 6, 1974, abandoned, which is a continuation of Ser. No. 280,053, Aug. 11, 1972, abandoned. This application Feb. 11, 1976, Ser. No. 657,253

Int. Cl.[2] **B65D** *85/30*

U.S. Cl. 206—312 **1 Claim**



1. A container comprising an inner jacket having a pair of separate superimposed flat panels sealed along the rear and side edges and being open at the front, the rear edge of the panels being sealed to each other by means of integral lips extending from the rear edge of each panel and folded inwardly in superimposed relation to its panel and the lips being superimposed on each other and adhered to each other, a thin flat one piece outer blank having a pair of panels having writing thereon connected together by a fold line wrapped around said inner jecket, the panels of the inner jacket having a substantially greater thickness than the thickness of the outer blank and being devoid of writing, the first panel of the outer blank adhered to a first panel of the jacket, the second panel of the outer blank folded around the fold line along the rear edge of the inner jacket and being adhered to the second panel of the inner jacket, side flaps extending from the first panel of the blank, said flaps being bend over the side edges of the inner jacket and adhered to the said second panel of the inner jacket below the second panel of the blank, the width of said second panel of the outer blank being narrower than the width of the second panel on said inner jacket to form side edges spaced inwardly from the side edge of the inner jacket, a zone adjacent said side edges being adhered to the said bent flaps and the free edges of the outer blank terminating at the open front of the inner jacket.

4,119,199

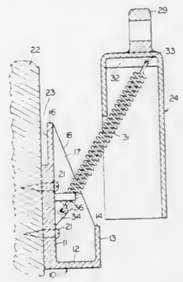
WEAPON SAFETY RECEPTACLE

Johnny B. Whitaker, Jr., 504 Lawndale La., Montgomery, Ala. 36109

Filed Oct. 3, 1977, Ser. No. 838,577

Int. Cl.[2] **B65D** *45/22, 85/00*

U.S. Cl. 206—317 **8 Claims**



1. A weapon safety receptacle comprising:

(a) a housing section having an upstanding rear wall connected at its lower end to a laterally and forwardly extending bottom wall which is connected at its forward end to an upstanding front wall that terminates at an elevation below the upper end of said rear wall to define an access opening between the upper edge of said front wall and the upper edge of said rear wall,

(b) means carried by the inner side of said upstanding rear wall for retaining at least one weapon in place within said housing section,

(c) there being a recess in the upper rear portion of said upstanding rear wall,

(d) a cover section having a top wall connected to a depending front wall and a depending rear wall with said depending front wall being adapted to extend alongside the outer surface of and terminate below the upper edge of said upstanding front wall and said depending rear wall being adapted to extend into said recess in said upper rear portion of said upstanding rear wall, and

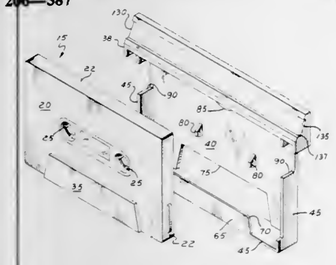
(e) at least one resilient member connecting said cover section to said housing section and urging said cover section toward and into engagement with said housing section so that said cover section remains in position to close said access opening until said cover section is pulled away from said housing section with sufficient force to overcome the force exerted by said resilient member.

4,119,200

TAPE CASSETTE HOLDER

Raymond T. Cassidy, Ashfield, and Robert St. Amand, Springfield, both of Mass., assignors to National Blank Book Company, Inc., Holyoke, Mass.

Filed Oct. 5, 1977, Ser. No. 839,582
Int. Cl.² B65D *85/672*
U.S. Cl. 206—387 **4 Claims**



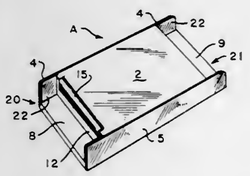
1. A holder for cassettes having tape carrying sprocket reels which is open along its lower edge exposing said tape, the adjacent side walls of the cassette having raised lands adjacent the open edge of the cassette, said holder being of unitary structure and comprising a support beam including an upwardly extending index receiving bar, a base panel depending from said beam and being provided with a pair of laterally spaced posts extending upwardly from the base panel for engaging and holding the sprocket reels of said cassette against rotation, walls extending outwardly of the marginal edges of said base panel and forming therewith a trayshaped frame, a resilient retaining tab extending inwardly from one of said walls in spaced parallel relation to the base panel and including an outwardly flared tip along the free edge thereof, said support beam extending outwardly of the tray-shaped frame and including downwardly opening notches adapted for hanging said holder on a pair of spaced parallel rails within a filing receiptacle, said holder being provided with a cutout of a size and shape to receive therein the raised land on the undersurface of a cassette disposed within said holder, thereby providing a flush surface-to-surface contact of the cassette against the said base panel, and at least one opening adjacent said support beam and spaced from said tab to provide finger access to a cassette within said holder for tilting the same outwardly and thereby deflecting said retaining tab.

4,119,201

CONTAINER INCORPORATING PARTIALLY OPENED PROTECTIVE END CELLS

Frank A. Carlson, Bridgeview, Ill., assignor to Alton Box Board Company, Alton, Ill.

Filed Jan. 14, 1977, Ser. No. 759,388
Int. Cl.² B65D *85/54*
U.S. Cl. 206—424 **8 Claims**



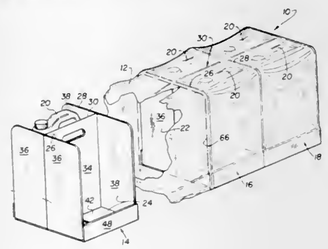
1. A container incorporating partially opened end cells and for use in providing protection for any article enclosed therein, such as a book, comprising, first and second main panels, said second main panel being divided into two parts, side panels connecting to at least one of said main panels, a pair of reentrant flaps, one of each flap connecting to the end of one of said main panels and providing for folded disposition contiguous against the connected main panel, an end flap connecting to each reentrant flap and disposed substantially at a normal to said reentrant flap and thereby providing closure at each end of the formed container, one of said reentrant flap and an end flap being connected together and foldably securing to one end of the first main panel, the other reentrant flap and its connected end flap foldably connecting to the other end of said first main panel, one part of said second main panel being foldably connected to one of said first mentioned connecting reentrant and end flaps, the other part of said second main panel being foldably connected to one of said other connecting reentrant flap and the other end flap, the reentrant flaps being folded contiguously against their respective proximate first and second main panels, the said end flaps being disposed at a normal with respect to their connecting reentrant flaps and providing substantial end closure for any article disposed within the container, said parts of the second main panel being arranged into overlying closure arranged substantially parallel with the said first main panel and thereby providing closure for any article disposed within the formed container, said side panels being folded into a side closing relationship of the container, each side panel having extensions provided at least at one end, and each extension with its connecting side panel having an overall length equivalent to the length of one of said main panels to thereby form a protective and partial end cell at each end of the said formed container.

4,119,202

PACKAGE

Lee J. Roth, c/o Kooltone Inc., 74 Mall Dr., Commack, N.Y. 11725

Filed Oct. 31, 1977, Ser. No. 847,138
Int. Cl.² B65D *75/06*
U.S. Cl. 206—432 **2 Claims**



1. An improved package for assembled products of the type allowing for partial removal from said assembly of some of said products while a packaged condition is effectively maintained for the remainder thereof, said improved package consisting of an outer plastic protective film in covering relation about at least three identically constructed product containers arranged in side-by-side relation, each said container comprising a cooperating pair of back walls interconnected along an upper edge thereof and disposed in adjacent position with each other such that each is in facing relation to a product-storage compartment, each back wall having flaps extending from the bottom thereof, said flaps folding into a tray-like construction forming a bottom for each said product-storage compartment, and a pair of side walls extending laterally along opposite sides of each said back wall to cooperate therewith in bounding each said product-storage compartment, each said side wall being of a vertical size corresponding to the height of said back walls so that said adjacent position of said back walls provides a corresponding adjacent position in each said pair of side walls contributing to the functioning thereof as plastic film-supports oriented laterally of and at spaced locations along said package, each said side wall having a first locking flap extending from the bottom thereof into said tray-like construction forming said product-storage compartment bottom, whereby the weight of said product placed into said compartment is exerted against each said first locking flap to thereby contribute to maintaining said laterally extending position of said side wall relative to said back wall.

4,119,203

RECLOSABLE HINGED BLISTER CARD PACKAGE

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Sep. 8, 1977, Ser. No. 831,507
Int. Cl.² B65D *83/00, 85/14*
U.S. Cl. 206—461 **12 Claims**



1. A reclosable hinged blister card package comprising:
(a) a paperboard card having a front surface and a back surface and an internal edge defining an opening in said card;
(b) a plastic blister having a bottom edge, a raised product holding portion, and a peripheral flange at the sides and bottom of said blister, said peripheral flange being adhered to the front surface of said card;
(c) opening tab means on said plastic blister and extending over at least a portion of said opening in said card and adapted to be pushed through said opening when said blister is reclosed for locking said blister in its reclosed position; and
(d) cut-score lines in the front surface of said card and extending partially through the thickness of said card along the inner and outer edges of said peripheral flange except along the bottom edge of said plastic blister whereby said blister may be lifted by said opening tab means with confined ply separation of the paperboard card at the portions thereof which are adhered to said peripheral flange without breaking the bond between said flange and the front surface of the paperboard card and permitting said plastic blister to be swung open about its bottom edge hinged connection to said card.

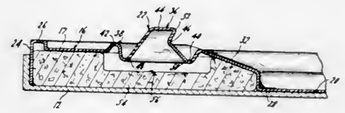
4,119,204

RESTRAINING STRUCTURE FOR USE IN CONTAINERS

George E. Peckar, Stamford, Conn., assignor to The Chaspec Manufacturing Co., Stamford, Conn.

Filed Feb. 7, 1977, Ser. No. 766,268
Int. Cl.² B65D *81/02*
U.S. Cl. 206—521 **8 Claims**

3. A mounting surface for receiving and retaining a body including a gripable edge, said mounting surface comprising:
a seat formed in said surface to receive said body with its edge above said seat; and
a plurality of clamping members formed integral with said surface and spaced around the perimeter of said seat for retaining said body on said seat, each of said clamping members comprising:
a lug having a gripping portion thereon directed generally towards the center of said seat; and
resilient means on said mounting surface for movement of at least a portion of said lug generally perpendicular to said seat in said mounting surface;



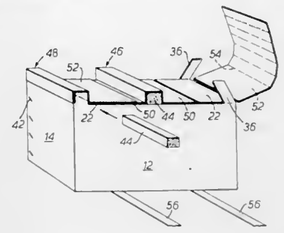
each of said clamping members being constructed and arranged so that said gripping portion engages said edge when said body is received on said seat, whereby said body is retained on said seat by said lugs.

4,119,205

PALLETIZED CONTAINERS

Paul Nigel Delany, Hockley, England, assignor to Delpack Limited, Hockley, England

Filed Jul. 21, 1977, Ser. No. 817,659
Claims priority, application United Kingdom, Jul. 22, 1976, 30567/76; Nov. 2, 1976, 45424/76
Int. Cl.² B65D *19/36*
U.S. Cl. 206—598 **9 Claims**



1. A palletized container comprising a case formed from at least one piece of foldable packaging material, the case having two opposed ends each with a bottom flap, two opposed sides each with a bottom flap which is divided to define a foldable tongue at each end of each said flap, said tongues being located outside the bottom flaps of said opposed ends, and a separate pallet secured to the base of the case and comprising two parallel pallet supports defining a channel therebetween to receive the forks of a fork-lift vehicle, each pallet support comprising an elongate member folded over and around an opposed pair of said tongues to define a hollow tube encircling said tongues, and support means within said tubes to maintain their shape.

4,119,206

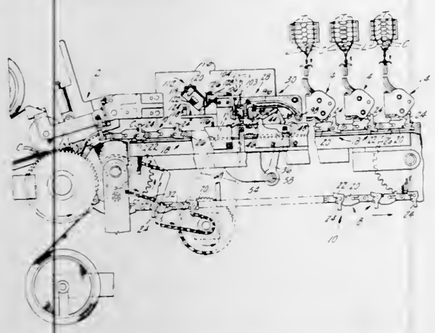
COMPONENT SEQUENCE VERIFIER

Daniel Wayne Woodman, Jr., Beverly, Mass., and Stanley Robert Vancelette, Manchester, N.H., assignors to USM Corporation, Farmington, Conn.

Filed May 13, 1977, Ser. No. 796,680
Int. Cl.² B07C *5/08*
U.S. Cl. 209—548 **15 Claims**

1. A machine for successively processing electronic components or the like comprising a continuously movable conveyor for carrying the components in sequential, spaced relation, a stationary component test or processing station adjacent to the operating path of the conveyor, and means for transferring successive components from their respective positions along

the conveyor to present them downstream to the processing station and then restore them to said sequential conveyor positions, respectively, downstream from said station, said transfer means including mechanism for changing velocity of



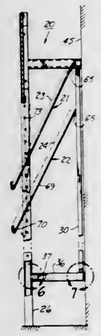
the components, respectively, as they are transferred relative to the conveyor whereby they can be presented individually to said station before being restored to said downstream positions on the conveyor without stopping or retarding its continuous movement during operation of the machine.

4,119,207

MEANS FOR DISPLAYING ARTICLES IN SHINGLED RELATIONSHIP

Robert T. Fuller, 1351 Empire St., Anaheim, Calif. 92804, and Robert J. Sanders, 2200 E. Oskosh Cir., Anaheim, Calif. 92806

Filed Oct. 18, 1976, Ser. No. 733,532
Int. Cl.[2] A47F *5/14*
U.S. Cl. 211—45 **11 Claims**



1. A display device for holding flat articles in shingled relationship comprising:

a pair of suspension uprights, each suspension upright having a plurality of spaced apart holes, holes in each of the said suspension uprights being at the same elevation and facing one another in pairs;

a support upright;

a tie member joining said uprights in a vertical array, said suspension uprights being laterally spaced apart from one another, and said support upright being spaced from both of said suspension uprights and spaced to the rear of them by a given distance from a line drawn between them; and

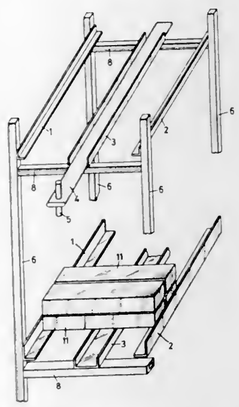
a plurality of rack members each comprising a base member, a hook on said rack member adjacent to the lower edge thereof to restrain an article resting on the rack member from sliding off, and a stiffly flexible cross member, said base member, hook and cross member being joined together to form an integral structure, said cross member being attachable to the suspension uprights by being flexed and its ends inserted into a pair of said holes, one in each of said suspension uprights, each said cross member including a pair of bends, one reverse to the other, at each end permitting the entry of the end of the cross member into a hole in the suspension upright when flexed in one direction, and inhibiting its removal when the cross member is unflexed or is flexed in the opposite direction, the rack member having a width greater than said given distance, whereby at least one of said rack members, when its cross member is attached to the suspension uprights, leans in abutment rearwardly and downwardly against the support upright and being freely pivotable without engagement to the support upright except in said leaning abutment.

4,119,208

ARRANGEMENT FOR THE MOVEMENT OF OBJECTS WITHIN THE DEPOSIT AREA OF SHELVES

Norbert Karl Acker, Falltorweg 5, 6079 Buchschlag, Germany

Filed Apr. 7, 1976, Ser. No. 674,495
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1975, 2516725; Aug. 20, 1975, 2536980; Aug. 20, 1975, 2536998
Int. Cl.[2] A47F *7/00*
U.S. Cl. 211—49 D **19 Claims**



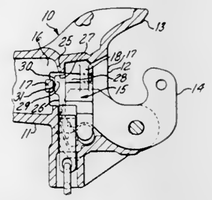
1. Apparatus for moving an object across a storage area, comprising support means for supporting the object extending in a longitudinal direction across the storage area, elongated guide means extending across the storage area in the longitudinal direction, elongated bar means associated with and adapted for movement along the guide means and having its major axis extending along the longitudinal direction for frictionally engaging a portion of the outer surface of the objects, the guide means and bar means being sized, shaped and located so that when the bar means is rotated about its longitudinal axis it will simultaneously engage both the guide means and the object and impart a condition whereby the frictional resistance between the bar means and the object is greater than that between the object and the support means so that when said condition is achieved movement of the bar means in the direction of its longitudinal axis relative to the guide means will operate to move the object.

4,119,209

LOCKING MECHANISM OF A RAILROAD CAR COUPLER

Karl J. Jwuc, Tallmadge, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 23, 1977, Ser. No. 809,181
Int. Cl.[2] B61G *3/06*
U.S. Cl. 213—121 **10 Claims**



1. A car coupler, comprising in combination:

(a) a head having a front face, a chamber adjacent the front face, and an abutment and rib disposed in the chamber in spaced relation from the front face, the abutment being farther spaced from the front face than the rib;

(b) a knuckle mounted adjacent the front face of the head for rotation between a closed position and an open position;

(c) a U-shaped lock disposed within the chamber of the head adjacent the rib and spaced from the abutment and movable from a first position, where the lock holds the knuckle in a closed position, to a lockset position where the knuckle is free to rotate from a closed position to an open position; and

(d) a lever movable within the chamber of the head free of the rib and coacting with the lock to move the lock from the first position to the lockset position, the lever having at one end thereof,

(I) a trunion projecting forwardly from the end in the direction of the knuckle for engaging the lock which is eccentrically mounted on the trunion; and

(II) a lug projecting rearwardly from the end in a direction away from the knuckle and in opposed relation to the trunion, the lug being free of the rib and terminating adjacent the abutment and positioned to engage the abutment and limit axial movement of the trunion relative to the lock to prevent disengagement of the trunion from the lock.

7. A lever movable within a chambered head of a knuckle-type coupler for lifting a U-shaped lock which maintains the knuckle of the coupler in a closed position, said lever having a pair of opposing ends, a trunion projecting from one end of the pair of opposing ends and on which the U-shaped lock is eccentrically mounted, a lug projecting from said one of the pair of opposing ends in opposite relation to the trunion for contacting an adjacent abutment in the chambered head to limit axial movement of the trunion in a direction away from the lock, and a wedging surface disposed intermediate the opposing ends of said lever, the wedging surface designed to engage and tiltably rotate the lock by imparting a positive tilting motion to said lock as it rotates within the chambered coupler head to a lockset position where the knuckle is free to rotate from a closed to an open position.

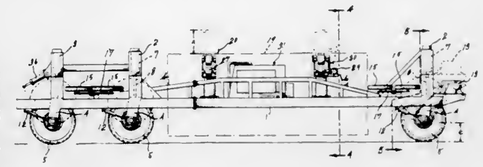
4,119,210

PIPE LAYING AND TRANSPORTING VEHICLE

Bernard Desourdy, 545 deNormandie St., Longueuil, Canada

Filed Apr. 20, 1977, Ser. No. 789,061
Int. Cl.[2] B66C *23/42*
U.S. Cl. 214—1 PA **4 Claims**

1. A pipe laying and transporting vehicle comprising an elongated frame defining a pair of opposite end portions and a central portion intermediate said end portions, first and second roadwheels mounted underneath one end portion for carrying the same and a third roadwheel mounted underneath the other end portion for carrying the same, said roadwheels disposed in a single row centrally and longitudinally of the elongated frame, an elevating device for each roadwheel connected between the same and the respective end portions for selectively elevating and lowering the roadwheels relative to said end portions, a steering system for each of said first, second, and third roadwheels, motor means mounted on the elongated frame and connected to said third roadwheel for producing propulsion of the pipe laying and transporting vehicle, guide wheels connected to each end portion and laterally projecting from each side thereof, said guide wheels outwardly adjustable relative to said frame towards operative engagement with a sidewall to laterally stabilize said vehicle, a pair of carrying devices mounted on said central portion and spaced apart therealong and operatively engaging a pipe section to carry it as it is surrounding said central portion with said opposite end



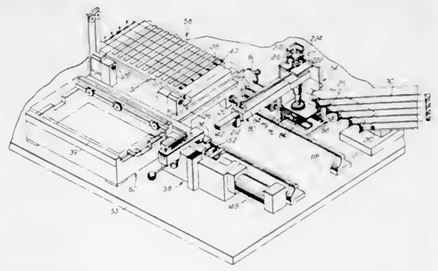
portions of said frame and with said roadwheels being on the outside of the ends of said pipe section, each carrying device including an upright support, rollers carried by the upper end of said support and axially extending longitudinally of said elongated frame, parallel one to another and radially projecting outward from the corresponding support into operative rolling engagement against the inner face of an overlying portion of a pipe section, a drive connected to the rollers to selectively rotate the latter in either of the two angular directions to rotate the pipe about its longitudinal axis, means mounting said support for up-and-down movement and for transverse movement relating to said elongated frame, first power means to raise and lower said support and rollers relative to said elongated frame, and second power means to transversely shift said support and rollers relative to said elongated frame.

4,119,211

METHOD AND APPARATUS FOR TRANSFERRING ARTICLES WHILE RE-ESTABLISHING THEIR ORIENTATION

John A. Boyer; Robert Cross; Ernest Kovacs, and Ralph J. Valentino, all of Allentown, Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 22, 1976, Ser. No. 734,831
Int. Cl.[2] B65G *47/24, 47/30, 47/91*
U.S. Cl. 214—1 BH **19 Claims**



2. A method of transferring articles having a first row orien-

tation from first rows having a first spacing to second rows having a second spacing, comprising the steps of:

removing said articles from points located on the first-spaced rows along a line along which the articles have the second row spacing;

re-establishing the first row orientation of the articles with respect to the second rows; and

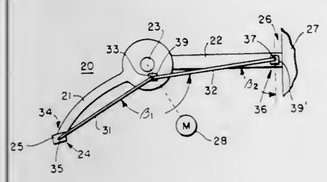
depositing the articles in the second rows having the second spacing to provide new rows of articles with the first row orientation and the second row spacing.

4,119,212

MONITORING THE LOCATION OF A ROBOT HAND

John Peter Wilfred Flemming, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,762
Int. Cl.² B65G *47/90*
U.S. Cl. 214—1 CM **8 Claims**



5. A device for handling an article while monitoring the location of the article being handled, the device comprising:

a robot arm terminating at one end thereof in a hand for supporting the article;

first means for mounting an end of the robot arm remote from said hand;

a plurality of linking elements of known lengths;

linking means for so interconnecting said plurality of linking elements as to form an open-ended linkage;

second means for pivotally coupling one end of said linkage to the hand of the robot arm;

third means for pivotally coupling the other end of the linkage to a known position, said second and third means so cooperating that the linkage does not bear any load from the article supported in the hand of the robot arm;

fourth means for measuring the relationship between adjacent, interconnected linking elements; and

fifth means for measuring the attitude of said other end of the linkage at said known position.

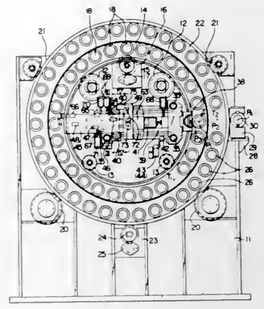
4,119,213

TOOL STORAGE MAGAZINE DEVICES

Mituharu Sato, and Seiji Nakajima, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1977, Ser. No. 837,588
Claims priority, application Japan, Sep. 29, 1976, 51-117008
Int. Cl.² B23Q *3/157*
U.S. Cl. 214—1 BB **5 Claims**

1. A tool storage magazine device comprising concentric inner and outer annular magazins, each provided with a plurality of tool pots and a blind pot which are arranged on a circle, magazine driving means for independently rotating said inner and outer annular magazines to bring a tool pot containing a designated tool or said blind pot to predetermined tool pot indexing positions, a tool holding pot disposed on the outside of said outer annular magazine for temporarily holding a tool, said tool holding pot having a center on a line interconnecting the center of said inner and outer annular magazines and the tool pot indexing positions thereof, a saddle located near said center and supported to be movable in a direction perpendicular to the axis of said magazines, a tool transfer arm supported by said saddle to be movable along said line interconnecting said tool pot indexing positions, said tool transfer arm including a gripper for gripping a tool, and means for selectively positioning said gripper to a retracted position inside of said



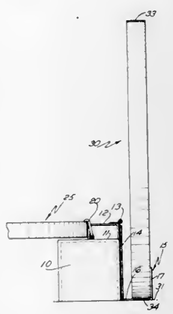
inner magazine, the tool indexing positions of said inner and outer annular magazines and to the position of said tool holding pot.

4,119,214

METHOD AND DEVICE FOR LOADING STOCK INTO A MACHINE

Rolland D. Blom, Providence, R.I., assignor to Electric Terminal Corporation, Warwick, R.I.

Filed Apr. 13, 1977, Ser. No. 787,015
Int. Cl.² B65G *7/08*
U.S. Cl. 214—1 BD **7 Claims**



1. In combination with a stock feed pan having a stock receiving surface supported above a floor surface, a device for loading stock comprising

a base supported on said floor and having a top surface with a raised portion at one end, a stock carrier having a substantially U-shaped lower portion normally resting upon the floor which supports said base so that stock for the feed pan can be rolled thereon,

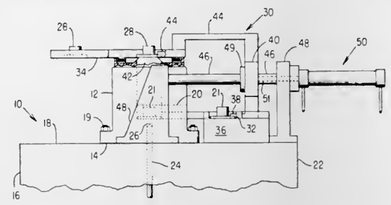
means to pivotally mount said carrier at its upper edge on the raised portion of said base at substantially the level of the upper edge of the stock feed pan lying on the top surface of said base opposite said raised position so that when the carrier is swung to a horizontal position the stock may be slid on said pivotal mount into the feed pan.

4,119,215

AUTOMATIC LOADING-UNLOADING MECHANISM FOR A POT BROACHING MACHINE

James Wellington Dopp, Rochester, Mich., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,791
Int. Cl.² B65G *47/82*
U.S. Cl. 214—1 BB **10 Claims**



1. A work transfer mechanism for simultaneously loading an unfinished workpiece into a pot broach and unloading a finished workpiece from a pot broach comprising:

a frame member linearly movable with respect to the pot broach;

drive means connected to said frame member to reciprocally move said frame member between a first position away from the pot broach and a second position proximate to the pot broach;

a loading arm connected to said frame member at one end to be movable therewith and to be located proximate to the inlet of the pot broach to allow the unfinished workpiece to move from the inlet of the pot broach into the pot broach; and

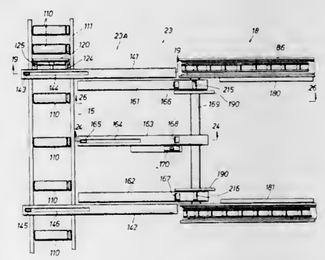
an unloading arm connected to said frame member at the end opposite said first end to be movable therewith and located proximate to the outlet of the pot broach to allow the finished workpiece to move away from the outlet of the pot broach simultaneously with the loading arm moving the unfinished workpiece into the pot broach.

4,119,216

SAWMILL STACKER ASSEMBLY MODULE

Roy R. Pryor, and Harold A. Pryor, both of P.O. Box 26, Woodville, Tex. 75979

Filed Dec. 6, 1976, Ser. No. 747,553
Int. Cl.² B65G *59/08*
U.S. Cl. 214—6 C **19 Claims**



1. In a sawmill and the like including a conveyor means for conducting timbers and other elongate bodies along a path to a preselected location, and a deck assembly adjacent said location for receiving and holding said bodies,

the improvement in combination therewith comprising

stacking means disposed adjacent said location and having arcuately movable arm members extending from said deck assembly to said conveyor means for receiving and laterally supporting said bodies arriving at said location,

shifting means fixed in a substantially horizontal plane and associated with said stacking means and extending across the path of travel of said conveyor means for shifting said bodies onto said arm members toward said deck assembly, and

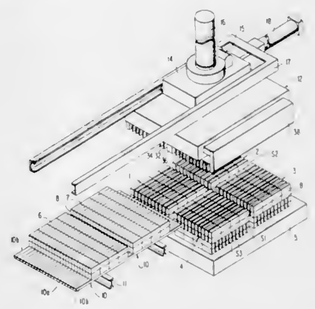
driving means for rotating said arm members of said stacking means about an axis adjacent said deck assembly to deposit said bodies onto said deck assembly.

4,119,217

METHOD AND APPARATUS FOR HACKING BRICKS

Robert E. Jones, 15 S. Oak Forest Dr., Asheville, N.C. 28803

Filed Feb. 15, 1977, Ser. No. 768,723
Int. Cl.² B65G *57/26*
U.S. Cl. 214—6 A **17 Claims**



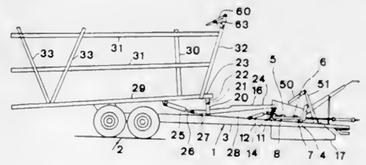
1. In the art of arranging courses of green or raw bricks in a stack for firing in a kiln with each course including a plurality of parallel rows of bricks with predetermined final spacings between each of the rows of bricks; the method comprising the steps of: first arranging a course of bricks including a plurality of generally parallel rows of bricks with first predetermined spacings between the rows of bricks greater than said final predetermined spacings between the rows of bricks, then inserting brick gripping members between the rows of bricks to extend along the opposite sides of the bricks, then moving the rows of bricks towards each other to decrease the spacings therebetween to approximately equal said predetermined final spacings, and then gripping the opposite sides of the bricks with said brick gripping members, and transporting the course of bricks to a stack to be placed in a kiln for firing the bricks.

4,119,218

HILLSIDE BALE WAGON

Jean-Pierre Guenon, Plombieres-lez-Dijon, and Serge J. C. Verdenne, Marcilly, Tille, both of France, assignors to Sperry Rand Corporation, New Holland, Pa.

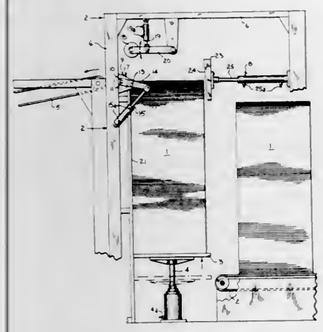
Filed Mar. 29, 1977, Ser. No. 782,578
Claims priority, application United Kingdom, Apr. 1, 1976, 13223/76
Int. Cl.² B65G *57/32*; A01D *87/12*
U.S. Cl. 214—6 B **12 Claims**



1. An automatic bale wagon for hauling bales lying in a field comprising:

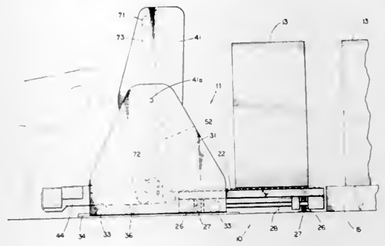
a mobile chassis adapted for movement in a forward direction across the field;
a bale pick-up means mounted on the chassis for picking up bales from the ground during movement of the bale wagon across the field;
means on the chassis for receiving bales picked-up from the ground and for forming a tier of bales thereon;
a load bed on the chassis for forming a stack of bales thereon comprising a plurality of tiers of bales, said tier forming means being movable beween a bale-receiving position and a bale-unloading position in which latter position a bale tier formed on said tier forming means is transferred to the load bed;
bale-retaining means for releasably engaging the upper surface of the top bales of the front tier of bales and applying a positive biasing force thereon toward the load bed to hold said front tier in position, said bale retaining means being retractable clear of said front tier;
resilient means for spring loading the bale retaining means to an operative position;
a rock shaft for supporting the bale-retaining means;
an arm attached at one end to the rock shaft and the other end thereof being operatively connected to the tier forming means for when the latter move towards the load bed rotating said arm and said rock shaft to pivot the bale-retaining means against the spring-loading to the retracted position; and
means operable to automatically retract the bale retaining means for permitting the transfer of a further tier of bales to the load bed from the tier forming means.

4,119,219
BATCH FEEDER
Carl R. Marschke, Phillips, Wis., assignor to Marquip, Inc., Phillips, Wis.
Filed Feb. 28, 1977, Ser. No. 772,763
Int. Cl.[2] B65G *59/02*
U.S. Cl. 214—8.5 A **18 Claims**



1. In a batch feeder for first separating a plurality of planular sheets from the top of a stack of horizontally extending vertically superimposed individual sheets and then feeding the separated sheets to a conveyor or the like:
(a) elevating means to raise the stack,
(b) separator means disposed above said elevating means for engaging and lifting the leading edges of the topmost individual sheets in the stack one-by-one in succession to form an inclined batch of individual sheets,
(c) and shifting means to move said separator means to beneath the formed batch to support the leading edge portion of the inclined batch,
(d) said separator means also forming means to drivingly remove said batch from atop the stack.

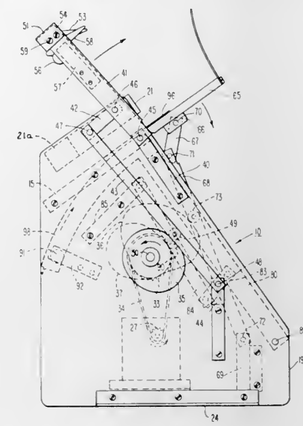
4,119,220
SHEET FEEDING APPARATUS
Louis J. Frederick, Fairmount; Kenneth E. Hoke, Marion; Jerrold W. Greene, Marion, and Stephen D. Miller, Marion, all of Ind., assignors to Greene Line Manufacturing Corp., Marion, Ind.
Filed Feb. 24, 1977, Ser. No. 771,456
Int. Cl.[2] B65H *1/22*
U.S. Cl. 214—8.5 A **10 Claims**



10. Apparatus for feeding sheets to a receiving conveyor comprising: support means for centering and supporting the stack in upright position, a cradle for the stack formed by spaced, generally L-shaped members, spaced stanchion members for pivotally supporting said cradle on a horizontal pivotal axis intermediate the ends of one set of the legs of the L-shaped members, the other set of legs carrying conveying means therebetween, means for pivoting the cradle about said axis between a load position in which said conveying means and said other set of legs are horizontal and receive the stack moving horizontally from said supporting means, the stack entering between said one set of legs positioned vertically, and a feed position in which said one set of legs is horizontal, and load support bars moved laterally into the space between said one set of legs of said cradle prior to pivotal movement of the cradle toward said feed position.

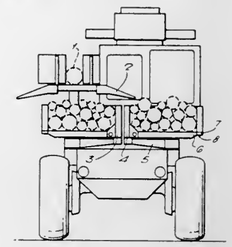
4,119,221
PACK SEPARATION AND TRANSFER APPARATUS
James E. Hazard, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Mar. 24, 1977, Ser. No. 780,982
Int. Cl.[2] B65G *47/26*
U.S. Cl. 214—8.5 A **11 Claims**

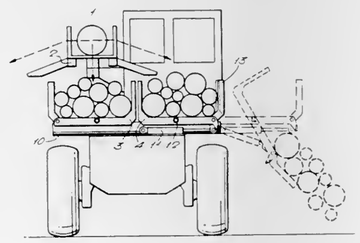
1. An apparatus for transferring a lead group of objects from a moving file to a station, each group being identified by a flag that projects a predetermined distance from the file, comprising:
(a) a hinged pan located in the path of the file for receiving objects from the moving file;
(b) flag detecting means for generating a signal when a flag has reached a predetermined point, said signal indicating that a group of objects is on the pan;
(c) a pan rotation mechanism operatively connected to the pan, responsive to the flag detection signal, for rotating the pan and the group of objects contained therein, out of the path of the moving file and adjacent to the station;
(d) a flag separation mechanism, also responsive to the flag detection signal and adapted to move in synchronism with the rotating pan, for separating the flag from the moving file and for causing the flag to travel with the group of objects in the rotating pan; and



(e) a transfer mechanism operable when the pan is adjacent to the station for transferring the group of objects from the pan to the station.

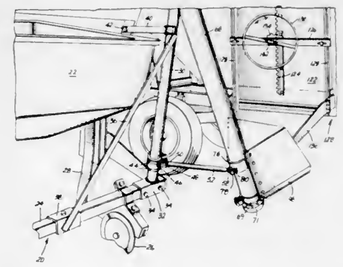
4,119,222
TREE HARVESTING APPARATUS
Matti Kaarnametsa, Tampere, Finland, assignor to Rauma-Repola Oy, Finland
Filed Jan. 5, 1976, Ser. No. 646,578
Claims priority, application Finland, Jan. 16, 1975, 750108
Int. Cl.[2] B60P *1/00*
U.S. Cl. 214—83.24 **3 Claims**





1. A tree harvesting apparatus comprising:
(a) a chassis;
(b) wheels on both sides of the chassis forming a mobile vehicle with said chassis;
(c) a tree collecting pocket movably mounted over said chassis on each side thereof, said pockets being limited to movement in a substantially horizontal plane;
(d) separate lever means pivotably connected at one end thereof to each of said pockets;
(e) vertical pivot means on said chassis for pivotably mounting the other end of said lever means to the chassis, thereby rendering each of said lever means and the pocket thereon rotatable about said vertical pivot means in a substantially horizontally disposed arc, each of said lever means being of sufficient length to extend the pockets mounted thereon to positions outside the profile of the tree harvesting apparatus; and
(f) means for emptying the extended pocket whereby trees contained in said extended pocket will drop to the ground along the side of the tree harvesting apparatus.

4,119,223
VEHICLE MOUNTED CONVEYOR
Richard E. Fiechter, R.R. #1, Box 102, Craigville, Ind. 46731
Filed Apr. 27, 1977, Ser. No. 791,510
Int. Cl.[2] B60P *1/40*
U.S. Cl. 214—83.26 **3 Claims**



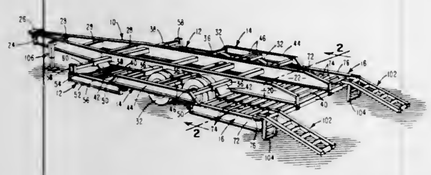
1. Apparatus for particle conveyance comprising:
a vehicle for ground transportation having a vehicle frame;
a container being mounted in said vehicle;
a substantially upright post being rigidly mounted at its lower end to said vehicle; means for rigidly bracing said post at an intermediate portion to said frame;
an elongated supporting strut mounted at one end in swivelled relation to said post and being mounted for pivotal movement about a first axis transverse to the axis of said post;
an elongated tubular member mounted in swivelled relation to said post above said strut mounting and mounted for pivotal movement about a second axis transverse to the axis of said post;
said strut having a strut rod telescoped into said strut and extensible from said strut;
said member being connected to said strut rod for pivotal movement about a third axis substantially parallel to said first axis;
a vehicle tow bar rigidly mounted to and extending forwardly from said frame; and
means for supporting said member in a stored position being rigidly mounted to said tow bar.

4,119,224
VEHICLE OF ADJUSTABLE WIDTH
David Moody, Box 4308, Waco, Tex. 76705
Continuation of Ser. No. 657,586, Feb. 12, 1976, abandoned. This application Sep. 28, 1977, Ser. No. 837,185
Int. Cl.[2] B60P *3/06*
U.S. Cl. 214—85 **18 Claims**

1. In a vehicle for transporting wheeled machines and the like, the improvement comprising:

a main frame disposed about a longitudinal axis with at least one vehicle supporting wheel rotataby mounted at each side of said main frame, said wheels having a fixed spacing relative to the frame axis to provide a vehicle width within the width allowed for vehicles on public highways,

a plurality of side sections, at least two of said side sections being disposed on each side of said frame axis and each side section having support means for receiving and supporting the wheels of the wheeled machine while being transported, loaded or unloaded,



means on said main frame supporting each of said side sections for movement substantially laterally between a retracted position and an extended position with the sections remaining parallel to said main frame during said movement,

alignment means for facilitating alignment in said positions of all of said side sections on one side of said frame axis, said alignment means comprising stop means carried by a first one of said side sections on each side of said frame axis and stop engaging means carried by a second one of said side sections on each side of said frame axis and located adjacent to said first side section.

4,119,225

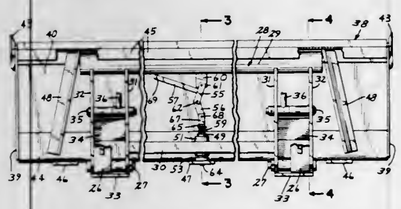
MOUNTING MEANS FOR ATTACHING AN IMPLEMENT TO A VEHICLE

Jon A. Macht, and David L. Blinne, both of Owatonna, Minn., assignors to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed Apr. 18, 1977, Ser. No. 788,127

Int. Cl.[2] E02F *3/81*

U.S. Cl. 214—145 A **2 Claims**



1. Mounting means for attaching an implement to a vehicle, said mounting means comprising:

(a) a generally horizontally elongated and generally downwardly opening channel member on said implement;

(b) means on said implement defining a recess generally downwardly spaced from said channel and having a generally vertical axis;

(c) a frame mounted on said vehicle for upward and downward movements relative to said vehicle and including a horizontally elongated rigid frame member disposed to be seated in said channel member, and a rigid bar in downwardly spaced parallel relation to said frame member for abutting engagement with said implement above said recess defining means, responsive to movement of said frame toward said implement and upward movement of said frame relative to said implement;

(d) a cylindrical locking bolt having a tapered lower end portion and an axial opening therethrough;

(e) guide means on said frame for said bolt;

(f) a support pin extending axially slidably through said axial opening and mounting said bolt for axial movements in said guide means;

(g) a coil spring encompassing said support pin above said bolt and yieldingly urging said bolt relative to said support pin toward reception of said tapered end portion in said recess;

(h) said tapered lower end portion of the bolt being disposed eccentric to said recess in a direction away from said implement when said frame is in abutting engagement with said implement, whereby said tapered end portion exerts a wedging action against a portion of said recess to hold said rigid bar in said abutting engagement with said implement;

(i) and linkage for moving said bolt away from locking reception of said tapered end portion in said recess against bias of said yielding means.

4,119,226

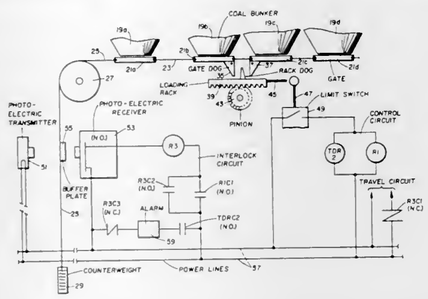
METHOD FOR PREVENTING COAL SPILLS

Robert Harding Bright, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 742,585, Nov. 17, 1976, abandoned. This application Nov. 29, 1977, Ser. No. 855,586

Int. Cl.[2] B65G *67/06*

U.S. Cl. 214—152 **4 Claims**



1. A method for preventing coal spills when coal is being loaded from a coal bunker, fitted with a coal flow control means, into hoppers of an electrified coal larry car which includes a travel circuit operative on a horizontal coke oven battery, comprising:

(a) spotting said larry car in relation to said coal bunker for receiving coal therefrom;

(b) opening said flow control means whereby coal is loaded, by gravity flow, from said bunker into said hoppers;

(c) actuating, by said operation of said flow control means, a limit switch in a control circuit whereby said electrified coal larry car is de-energized;

(d) effecting, by said operation of said flow control means, the transmission of a light signal to a photo-electrical receiver;

(e) actuating, by said photo-electrical receiver, when said receiver receives said transmission of said light signal, of an interlock circuit which prevents re-energization of said electrified coal larry car, said interlock circuit which can only be de-actuated by the closing of said flow control means; and

(f) closing said flow control means when said hoppers are fully loaded, said closing which substantially concurrently de-actuates said interlock circuit and de-actuates said limit switch thereby re-energizing said electrified coal larry car.

4,119,227

AUTOMATIC, CONTINUOUSLY OPERABLE BAG OPENING APPARATUS

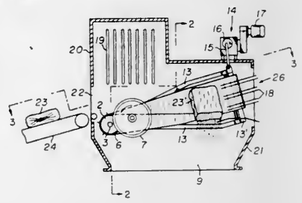
Hermann Hafner, and Otto Steiper, both of Ortenberg, Fed. Rep. of Germany, assignors to Martin Wendel KG, Buedingen, Fed. Rep. of Germany

Filed Mar. 9, 1977, Ser. No. 775,873

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611591

Int. Cl.[2] B65G *65/04*

U.S. Cl. 214—305 **7 Claims**



1. An apparatus for automatically and continuously opening bags comprising housing means, conveyor belt means including two conveyor belts arranged alongside each other with a gap therebetween, upstream roller means arranged substantially horizontally for supporting the upstream end of said conveyor belts, downstream roller means arranged at an angle to the horizontal for supporting the downstream ends of said belts, whereby the upper runs of the belts form a channel with converging side walls, knife means arranged in said gap upstream of said channel, whereby bags travelling on said conveyor belts over the knife means are cut open and turned with their still closed ends up to empty through said gap, wherein said downstream roller means (**10**, **12**) have rotational axes (**10'**) extending in parallel to each other, said upstream roller means (**2**) having a common rotational axis (**3**) supported in said housing means, said parallel axes (**10'**) of said upstream roller means extending at right angles to a plane which in turn extends through said common rotational axis, said apparatus further comprising rocker frame means (**13**), journal means supporting one end of said rocker frame means (**13**) for journalling about said common rotational axis (**3**), said rotational axes (**10'**) of said downstream roller means (**12**) being supported in the other end of said rocker frame means (**13**), and drive means (**14**) operatively interposed between said housing means and said rocker frame means (**13**).

4,119,228

HYDRAULIC CIRCUIT FOR HOISTING FLUID RAM

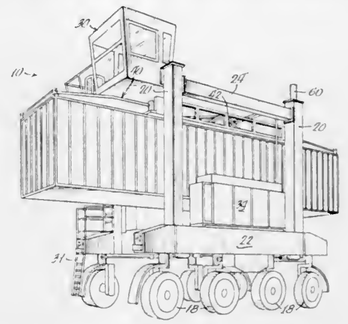
William K. Holmes, Schofield, Wis., assignor to J. I. Case Company, Racine, Wis.

Division of Ser. No. 729,402, Oct. 4, 1976. This application Oct. 25, 1977, Ser. No. 844,620

Int. Cl.[2] B60P *3/00*

U.S. Cl. 214—394 **4 Claims**

1. In a vehicle including a frame defining an open container receiving bay with a spreader supported on said frame for vertical movement in said bay; fluid ram means on said frame and connected to said spreader for raising and lowering said spreader; said ram means including at least one cylinder and piston rod assembly; and a hydraulic circuit for supplying fluid to opposite ends of said at least one cylinder, said hydraulic circuit including a pressurized fluid source, a reservoir, and first and second conduits respectively between opposite ends of said at least one cylinder and said source and said reservoir with valve means in said conduits , said valve means having a neutral and first and second operating positions for connecting the source and reservoir to either of said first and second conduits; pressure responsive valve means in one of said conduits normally preventing flow therethrough, said pressure responsive valve means being connected to the other of said conduits to open in response to pressurized fluid in said other conduit, and alternate means for lowering of the spreader when the valve means is in a neutral position, said alternate means including a normally closed bypass valve means between the end of said at least one cylinder having said one conduit connected thereto and said pressure responsive valve



means, said normally closed valve means being operable to connect said pressure responsive valve means to said end of said at least one cylinder having said one conduit connected thereto so that said pressure responsive valve is opened in response to pressurized fluid in said end of said at least one cylinder.

4,119,229

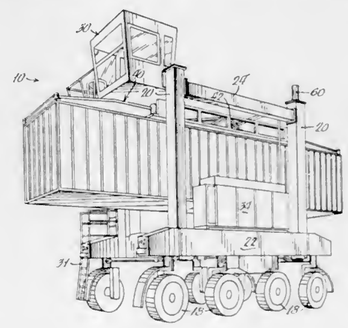
STRADDLE CARRIERS FOR CONTAINERS

William K. Holmes, Schofield, and Philip R. Pueschner, Wausau, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Division of Ser. No. 729,402, Oct. 4, 1976. This application Oct. 25, 1977, Ser. No. 844,655

Int. Cl.[2] B60P *3/00*

U.S. Cl. 214—394 **11 Claims**



1. A vehicle having an inverted U-shaped frame defining an elongated container carrying bay between first and second legs with each leg of said U-shaped vehicle having a plurality of ground engaging wheels, first and second engines respectively supported on respective legs of said vehicles; first drive means between said first engine and at least one wheel on said first leg; second drive means between said second engine and at least one wheel on said second leg; first and second pairs of pumps respectively driven by said first and second engines; a hydraulic power steering system for turning said wheels with one of said first pair of pumps supplying fluid thereto; a spreader; hoisting fluid ram means supporting said spreader for vertical movement in said bay with at least one of said pumps supplying fluid; a plurality of fluid rams on said spreader for

performing a plurality of control functions to connect a container thereto with one of said second pair of pumps supplying fluid thereto; and interconnection means for selectively connecting both said power steering system and said plurality of fluid rams to one pump when one engine fails.

4,119,230

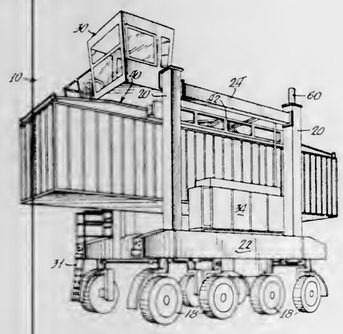
HOISTING MECHANISM FOR SPREADER WITH AUTOMATIC ATTITUDE CONTROL MEANS

Lynn L. Keller, Sturgeon Bay; Philip R. Pueschner, Wausau, and William K. Holmes, Schofield, all of Wis., assignors to J. I. Case Company, Racine, Wis.

Division of Ser. No. 729,402, Oct. 4, 1976. This application Oct. 25, 1977, Ser. No. 844,656

Int. Cl.² B60P *3/00*

U.S. Cl. 214—394 **12 Claims**



1. In a vehicle including a frame defining an open container receiving bay with a spreader supported on said frame for vertical movement, first fluid ram means on said frame and connected to one end of said spreader for raising and lowering said one end of said spreader, second fluid ram means on said frame and connected to an opposite end of said spreader for raising and lowering said opposite end of said spreader, hydraulic circuit means for supplying fluid to said ram means and including a reservoir, a pressurized fluid source, first and second electrically operated valve means each connected to said reservoir and pressurized fluid source and respectively connected to said first and second fluid rams,

an electric power source, electric circuit means connecting said power source to said first valve means and to said second valve means, control means forming a part of said circuit means for selectively effecting actuation of said first and second valve means, attitude control means for limiting the angular attitude of said spreader with respect to a reference plane, to a selected maximum, and operated in response to said spreader assuming said selected maximum angular attitude, and switch means in said circuit means responsive to operation of said attitude control means for limiting actuation of said first and second valve means for only reducing the angular attitude of said spreader from said maximum angular attitude.

4,119,231

INSERTS FOR AN INSULATED CONTAINER

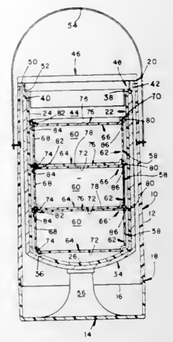
Thelma W. Johnson, R.R. 2, Box 53, 5108 Mount Pleasant South St., Greenwood, Ind. 46142

Filed Aug. 10, 1977, Ser. No. 823,516

Int. Cl.² B65D *21/02*

U.S. Cl. 215—6 **9 Claims**

1. In combination, a container having a generally cylindrical inside wall defining an insulated space, a cover for closing the space, a cylindrical insulating liner inside said container and a plurality of stackable inserts sized to fit within the lines, each insert including a dish-like receptacle having a closed end and an open end, the open end including a perimetral lip, and a lid for closing the open end of each receptacle, each lid including a portion for supporting a portion of the closed end of the next superjacent receptacle in a stack of such receptacles, and a sealing rim extending perimetrally about the support portion and adapted sealingly to receive the lip of a respective receptacle, the closed end of each receptacle including a generally flat central portion and a perimetral, downwardly and outwardly opening groove and the support portion of each lid including a generally flat recessed central portion for receiving the central portion of the closed end of the next superjacent receptacle, the groove being sized to receive the sealing rim of the next subjacent lid.



4,119,232

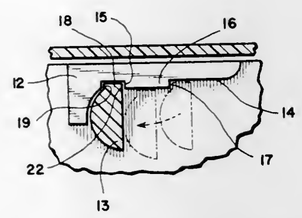
DUAL LATCHING, CHILD-RESISTANT CONTAINER

Theodore Wayne Thornton, 2036 Laird Dr., Salt Lake City, Utah 84108

Filed Dec. 13, 1977, Ser. No. 860,178

Int. Cl.² B65D *55/02, 85/56*

U.S. Cl. 215—222 **3 Claims**



1. In a child-resistant container of the dual-latching type that comprises a receptacle having an open mounth and a cover therefor, sets of locking projections rimming the cover and said open mouth of the receptacle, respectively, and spring means for normally urging cover and receptacle apart, the projections of one of said sets being of hook formation and the projections of the other of said sets being of keeper lug formation for engaging and latching with said projections of hook formation, and the said projections of hook formation each having an easily disengaged retention bed in advance of the hook thereof, which can be selectively engaged by a keeper lug during closing of the receptacle, the improvement wherein each projection of hook formation has an elongate, positive stop member extending between said bed and said hook, and each keeper lug has a corresponding and coacting, positive stop member at its top, the bed end of the stop member of the hook formation defining a positive stop for said keeper lug to prevent inadvertent turning of the cover beyond a first, easily disengaged latching condition into a second, child-resistant condition, and the hook end thereof defining the hook as a positive stop for said keeper lug to prevent release of the cover by mere turning thereof, there being required a combination of positive downward pressure on, followed by turning of, the cover for both placing the cover into and releasing the cover from child-resistant condition.

4,119,233

CLOSURE CAPS

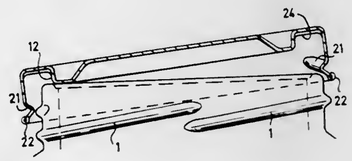
Cyril Kenneth Edwards, Oadby, and Edward Harry Webb, Rugby, both of England, assignors to Thomas Hunter Limited, Rugby, England

Filed Feb. 15, 1977, Ser. No. 768,767

Claims priority, application United Kingdom, Feb. 18, 1976, 6444/76

Int. Cl.² B65D *41/04*

U.S. Cl. 215—337 **12 Claims**



1. In the combination of a bottle, jar or the like having a neck with external threads, and a closure cap having a top and a depending skirt provided with preformed lugs or threads threadedly engaged with the said external threads on the neck so that an area of the top is engaged with the upper surface of the neck: the improvement that the top of the cap is provided, inwardly of the area engaged with the upper surface of the neck with a formation extending from the top in the same direction as the skirt to define a gap between the end of each lug or thread on the skirt and the nearest point of the formation, the said gap being sufficiently large for the formation to be able to enter the neck by pivoting about the lug or thread on the skirt when the lug or thread on the skirt is resting on the external thread on the neck but is insufficiently large to allow the formation to enter the neck whilst any of the lugs or threads on the skirt are firmly engaged beneath a thread on the neck.

4,119,234

VACUUM-TIGHT WINDOWS FOR PASSAGE OF X-RAYS OR SIMILAR PENETRATING RADIATION

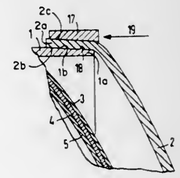
Otto Kotschak, Erlangen-Buckenhof, and Richard Frank, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 23, 1976, Ser. No. 669,725

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1975, 2513894

Int. Cl.² H01J *35/18*

U.S. Cl. 220—2.1 R **9 Claims**



1. A vacuum-tight window construction for the passage of x-ray and similar penetrating radiation, said construction comprising an annular frame having a tubular edge portion, a cap-shaped window transparent to penetrating radiation having an annular flange with radially inner and outer surfaces, and a ring, said ring, said annular flange and tubular edge portion being juxtaposed with one another and press-fit together to form an integral assembly, the outermost of the juxtaposed elements having a coefficient of thermal expansion which is less than that of the annular flange of the cap-shaped window which forms the middle juxtaposed element, the innermost of the juxtaposed elements having a coefficient of thermal expansion which is at least equal to that of the outermost element but less that that of the middle element, the innermost of the juxtaposed elements having an outer surface mating with the inner surface of the annular flange, the outermost element having an inner surface mating with the outer surface of the annular flange and encircling the annular flange of said window, the innermost element being encircled by both the outermost element and the annular flange of the window, and the elements being formed with sufficiently close tolerances and being forced together with sufficient pressure therebetween at the mating surfaces thereof to provide a tight press-fit relationship in the absence of any additional securing means.

4,119,235

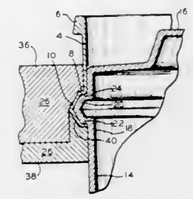
PLASTIC DRUM WITH METAL HANDLING RING

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 25, 1977, Ser. No. 800,501

Int. Cl.² B65D *7/42*

U.S. Cl. 220—71 **1 Claim**



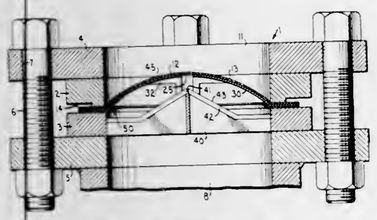
1. In combination, a plastic drum and a carrier ring attached to the top portion of said drum, comprising (1) a plastic drum having a generally vertical sidewall and having a substantially circular cross-section in a plane normal to its vertical axis, wherein said sidewall near its top has an outwardly radially extending annular projection having a substantially horizontal circumferential annular downwardly facing first ledge adjacent said sidewall and having a substantially horizontal circumferential annular upwardly facing second ledge adjacent said sidewall and (2) a metal carrier ring having a circular cross-section in a plane normal to its vertical axis and having an upper substantially cylindrical portion (i) having an open top which is at the same or a higher lever than the top of said drum, (ii) having a radially outwardly thickened top portion adapted to be grasped by steel drum chime handling devices and (iii) terminating at its base in an outwardly radially extending, substantially horizontal annular ring portion seated on said second ledge, which annular ring portion terminates in a downwardly and outwardly flaring frusto-conical section that in turn terminates in an inwardly crimped circumferential skirt portion that tightly grips said first ledge from below and exerts an upward force thereon.

4,119,236

LOW PRESSURE RUPTURE DEVICE

Kenneth R. Shaw, and Franklin A. Hansen, both of Riverside, Mo., assignors to Continental Disc Corporation, Kansas City, Mo.

Continuation-in-part of Ser. No. 712,931, Aug. 9, 1976, Pat. No. 4,079,854. This application Jan. 13, 1977, Ser. No. 759,002
The portion of the term of this patent subsequent to Mar. 21, 1995, has been disclaimed.
Int. Cl.[2] F16K *17/40*
U.S. Cl. 220—89 A **19 Claims**



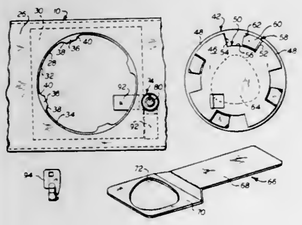
1. A safety pressure relief assembly of the rupture disc type for mounting between inlet and outlet supporting members and adapted to block flow therepast to a predetermined differential pressure, said assembly comprising:
(a) a relief disc having a concave-convex portion;
(b) a disc support member having stay structure projecting into close proximity with the concave side of said disc concave-convex portion;
(c) a cutting member having a cutting blade edge positioned in axially spaced relation from the concave side of said disc concave-convex portion and stay structure, said blade edge operably extending a substantial part of the transverse distance across said disc concave-convex portion and being offset from said stay structure whereby said disc concave-convex portion is exposed to said blade edge along a substantial extent thereof for cutting therethrough upon deflection of said disc concave-convex portion thereagainst, and
(d) said stay structure being finger-like and having a resistance to deflection only sufficient to retain said disc concave-convex portion out of cutting contact with said blade edge up to a predetermined differential pressure applied to the convex side of said disc.

4,119,237

ACCESS DOOR LOCKING MECHANISM FOR A COIN OPERATED APPARATUS

Harry Greenwald, Whitestone, and Pierre Lier, Wantagh, both of N.Y., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Sep. 27, 1976, Ser. No. 727,259
Int. Cl.[2] B65D *87/18*
U.S. Cl. 220—210 **10 Claims**



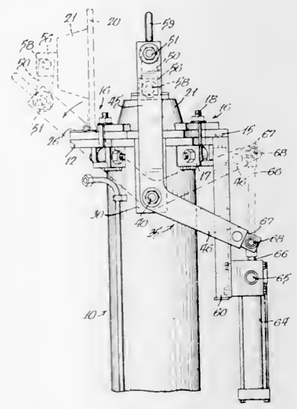
1. An access door locking mechanism for a coin operated apparatus comprising:
(a) a housing adapted to receive therein portions of a coin operated apparatus, said housing having a wall portion formed with an opening to permit access to said apparatus;
(b) closure means for the opening in said housing wall portion, said closure means being disposed for movement from a releasable position to a secured position relative to said housing wall opening;
(c) engaging means on said closure means and said housing wall portion adapted to interengage upon movement of said closure means to its secured position for retaining said closure means in said secured position, said engaging means adapted to disengage upon movement of said closure means to its releasable position for removing said closure means from said housing wall portion;
(d) the marginal edge portions of said closure means and of the housing wall portion defining said opening having complementary interfitting portions for making the outer surface of said closure means flush with the outer surface of said housing wall portion when said closure means is in its secured position; and
(e) said closure means having an irregular shaped portion projecting outwardly from its outer surface and beyond the outer surface of said housing wall portion when said closure means is mounted to said housing, said irregular shaped closure portion adapted to receive a wrench having a complementary irregular shaped opening for moving said closure means to selectively engage and disengage said engaging means.

4,119,238

CONTAINER CLOSURE HAVING OPENING MEANS

Hamedo Ali Ja'afar, Rockford, and Walter J. Iseman, Monroe Center, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 5, 1977, Ser. No. 813,222
Int. Cl.[2] B65D *55/00*
U.S. Cl. 220—211 **9 Claims**



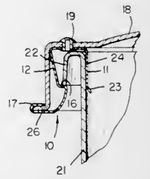
1. A closure for a container comprising, a lid movable relative to an open end of the container between open and closed positions, toggle linkage means supported by the container for movement relative thereto and including a link pivotally connected to said lid, and power means supported by said container and having a movable element connected to said toggle linkage means for moving said toggle linkage means and the lid between open and closed positions and with said linkage positionable to hold the lid closed independently of said power means.

4,119,239

CONTAINER LOCK DEVICE

Howard A. Anderson, Pittsburgh, Pa., assignor to Cities Service Company, Tulsa, Okla.

Continuation of Ser. No. 689,430, May 24, 1976, abandoned.
This application Dec. 5, 1977, Ser. No. 857,639
Int. Cl.[2] B65D *45/16*
U.S. Cl. 220—324 **7 Claims**



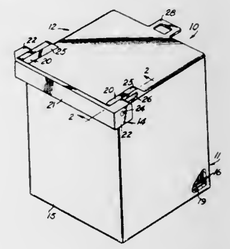
1. In combination, a container having a sidewall terminating in a lip, a cooperating container closure having a sidewall and at least one locking spring clip, said clip defining a strip of resilient material having a pair of spaced, generally paralled legs, and said legs being operable to straddle said sidewall and said lip, one leg of said pair being formed with a shoulder operable to make a locking connection with said lip, said legs being spring biased toward one another so that said one leg of the clip is movable from a first or normal position in which said shoulder makes a locking connection with said lip to a second position in which said shoulder is free of said lip and abutts said closure sidewall operative to limit the stroke of said one leg to avoid without exceeding the elastic limit of said clip.

4,119,240

POSITIVE OPEN RECEPTACLE

Sarah J. Dumas, and Hal S. Dumas, Jr., both of 300 Brentwood Dr., NE., Atlanta, Ga. 30305

Filed Dec. 23, 1976, Ser. No. 753,888
Int. Cl.[2] B65D *43/16, 43/26*
U.S. Cl. 220—331 **2 Claims**



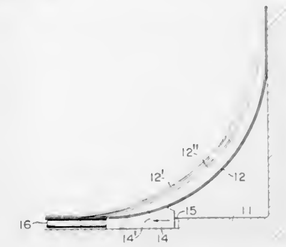
1. A refuse receptacle unit including:
a receptacle having opposed sides and a bottom wall, and defining an open top refuse chamber and foot chamber therein where said foot chamber is separated from said refuse chamber and is located immediately above the bottom wall;
a cover adapted to cover the open top of said refuse chamber;
hinge means pivotally mounting said cover on said receptacle for pivotal movement of said cover between a closed position in which said cover closes the open top of said refuse chamber, and an open position in which the open top of said refuse chamber is not closed; and,
a foot operated mechanism for operating said cover, said foot operated mechanism including a foot pedal having opposed ends within said foot chamber over said bottom wall, one end of said foot pedal pivotally mounted on said receptacle in said foot chamber at one side of said receptacle; and a transfer link pinned to the opposite end of said foot pedal adjacent that side of said receptacle opposite the side which pivotally mounts said foot pedal, said transfer link further connected to said cover so that when said foot pedal is manually depressed intermediate its opposed ends within said foot chamber and toward said bottom wall, said transfer link will cause said cover to be moved toward its open position while the manually depressing force on said foot pedal acts downwardly through said bottom wall of said receptacle to prevent tipping of said receptacle.

4,119,241

CRYOGENIC LIQUEFIED GAS TANK OF THE MEMBRANE TYPE

Kazuhisa Furuta, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Co. Ltd., Tokyo, Japan

Filed Jun. 6, 1977, Ser. No. 804,161
Claims priority, application Japan, Jun. 18, 1976, 51-72048
Int. Cl.[2] B65D *25/18*
U.S. Cl. 220—439 **4 Claims**



1. A cryogenic liquefied gas tank of the membrane type comprising a rigid outer shell, a compression resistant heat insulating layer provided at the inside of said outer shell, an inner membranous vessel provided at the inside of said heat insulating layer, said membranous vessel having at least one rounded corner portion which changes its shape in accordance with changes of its temperature, at least one movable saddle element provided between said heating insulating layer and said membranous vessel for supporting said corner portion of said membranous vessel, said saddle element having a supporting face which fits said corner portion in the most favorable manner when it is positioned at a predetermined relation with respect to said corner portion, and thermosensitive expansion and contraction rod means arranged along the wall of said membranous vessel and adapted to drive said saddle element in accordance with its expansion or conraction due to changes of its temperature which reflects changes of the temperature of said membranous vessel, thereby shifting said saddle element so that it is positioned at said predetermined relation with respect to said corner portion regardless of changes of the temperature of said inner membranous vessel.

4,119,242

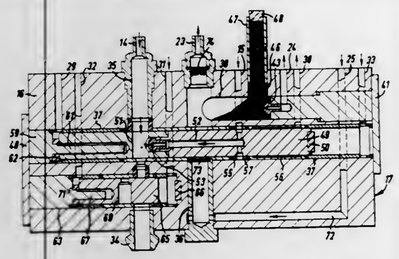
APPARATUS FOR DISPENSING DISCRETE OBJECTS FROM A LIQUID

John Bedford Jesty, Little Meadow, Roke Rd. Bere Regis, Wareham, Dorset, England

Filed Mar. 14, 1977, Ser. No. 777,517
Claims priority, application United Kingdom, Mar. 16, 1976, 10512/76
Int. Cl.[2] B65G *47/14*
U.S. Cl. 221—211 **33 Claims**

1. Apparatus for dispensing discrete objects individually comprising a housing in which are formed a chamber for containing discrete objects in fluid suspension, a dispenser duct

and a passage which connects the chamber and the dispenser duct; a transfer member; supporting means which support the transfer member for movement within the passage and which co-operate with the transfer member to prevent flow of a discrete object in fluid suspension from the chamber to the dispenser duct through the passage; a recess and a conduit which are formed in the transfer member; an orifice which is formed in the surface of the recess at one end of the conduit and which is too small for one of the discrete objects to pass through it, the transfer member being movable within the passage so that the orifice can be positioned within either of the chamber and the dispenser duct and isolated from the other; means for causing movement of discrete objects in fluid suspension in the chamber; means for creating differential pressure conditions across the orifice when the orifice is positioned within the chamber so that the pressure in the conduit is lower than the pressure of the fluid suspension of discrete objects adjacent the orifice whereby one discrete object can be held against the periphery of the orifice; and means for directing a flow of fluid along the dispenser duct towards an outlet of that duct and transversely across the orifice when the orifice is positioned within the dispenser duct so that the discrete object that was held against the periphery of the orifice and carried through the passage by the transfer member is released from the orifice and conveyed to the dispenser duct outlet by the flow of fluid that is directed across the orifice.

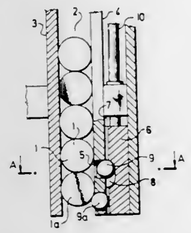


4,119,243

ARTICLE DISPENSING DEVICE

Jan Marecek; Ivan Jergl, both of Stara Tura; Rudolf Arbet, Hrachoviste; Pavol Tanuska, and Viktor Ivana, both of Stara Tura, all of Czechoslovakia, assignors to Chirana, koncern, Stara Tura, Czechoslovakia

Filed Jul. 25, 1977, Ser. No. 818,811
Int. Cl.[2] B65G *59/00*
U.S. Cl. 221—298 **5 Claims**



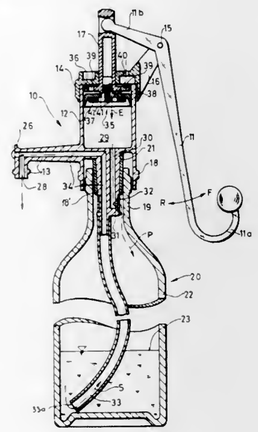
1. A dispensing and feeding device with a feeding shaft for objects to be dispensed, the shaft having opposing guide walls adjustable relative to each other according to the width of objects to be dispensed and an escapement means for the objects comprising two apertures in one of the guide walls one above the other, said apertures forming a set, a reciprocable shifter on the outer side of said one wall, the shifter having a groove and hollow for each of the sets of apertures, in each of the apertures there being movingly seated a locking element.

4,119,244

UNITARY MOUNTED AIR-PRESSURE PUMP AND LIQUID OUTLET

Peter Funke, Sundern, Fed. Rep. of Germany, assignor to Gebruder Funke, Sundern, Sauerland, Fed. Rep. of Germany

Filed Mar. 17, 1977, Ser. No. 778,717
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 7631698[U]
Int. Cl.[2] B65D *83/14*
U.S. Cl. 222—400.8 **15 Claims**



1. An arrangement for withdrawing liquid from a bottle, comprising a manually operable air piston pump mountable on the neck of a bottle, said piston pump having a first portion outwardly embracing the neck of the bottle and second portion extending into the neck of the bottle and being provided with an air channel extending substantially lengthwise of said second portion formed with an air outlet channel having a check valve and providing communication between said air pump and the interior of said bottle, said check valve comprising an outlet bore extending in a direction substantially transverse to the direction of the elongation of said air channel and a blocking element for respectively closing and opening said outlet bore; means for actuating said piston pump; means for sealingly connecting said second portion of said piston pump to the neck of the bottle; and liquid outlet means having a lower end extending into the liquid in the bottle and a discharge end outside the bottle, said liquid outlet means forming an uninterrupted passage for the liquid so that during operation of the pump the liquid flows continuously through said liquid outlet means out of the bottle, thereby also preventing creation of an undesired overpressure in said bottle.

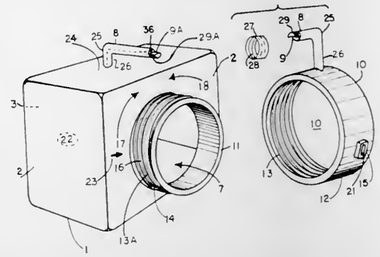
4,119,245

CAP-LESS CONTAINER AND/OR DISPENSER

John L. Conn, P.O. Box 4501-Sta. B, Spartanburg, S.C. 29303

Filed Mar. 2, 1977, Ser. No. 773,678
Int. Cl.[2] A47G *19/12*
U.S. Cl. 222—465 **1 Claim**

1. The combination of a container and removable closure wherein said container comprises a hollow vessel and having a lower transverse side opening, including closure connecting means surrounding said opening said closure having coacting means for being removably mounted on said colsure connecting means in further combination with handles on both container and closure adapted to join when said closure is mounted on said container to form an integral transverse handle, said closure having coacting means for being removably mounted on said colsure connecting means wherein said closure is ring shaped having a closure wall spaced from and opposite an opening including a curvate side wall with a spout, and connecting means includes an operture which aligns with the spout when the closure is in specific position mounted on said coacting means, said closure being movable to a second position in which the spout is sealed.

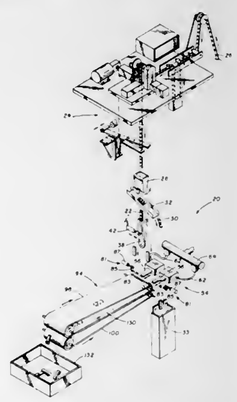


4,119,246

APPARATUS FOR CRIMPING BELT LOOPS

Joseph W. A. Off, Irving, and Judson Horace Early, Dallas, both of Tex., assignors to Haggar Company, Dallas, Tex.

Filed Jul. 7, 1977, Ser. No. 813,635
Int. Cl.[2] D06C *15/00*
U.S. Cl. 223—52 **36 Claims**



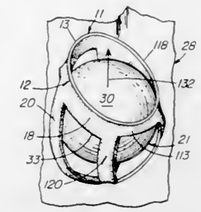
1. Apparatus for automatically crimping precut belt loops, which comprises:
- means for receiving precut belt loops in substantially vertical orientation and unfolded condition;
- means for directing received belt loops along a predetermined input path;
- means positioned adjacent the input path for folding each belt loop in the input path;
- means for individually positioning belt loops in the input path for folding by the folding means;
- means for sensing a positioned belt loop in the input path and for operating the folding means to fold said belt loop; and
- means positioned adjacent the input path and opposite the folding means for receiving folded belt loops and for directing the received folded belt loops in a crimped condition along a predetermined path.

4,119,247

GARMENT-SUPPORTABLE TENNIS BALL POCKET

Barbara Lee Newquist, One Artillery La., Scarsdale, N.Y. 10583, and Scott C. Newquist, 155 E. 88th St., New York, N.Y. 10028

Filed Apr. 28, 1977, Ser. No. 791,868
Int. Cl.[2] A45F *5/00*; **A63B** *61/00*
U.S. Cl. 224—5 D **9 Claims**



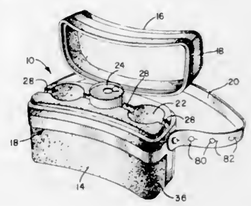
1. A garment-supportable tennis ball pocket comprising
(1) an ovally-open circumambient and lateral rim of relatively stiff, flexible material having transverse elastic recovery memory while being substantially inelastic longitudinally and with a pair of generally opposite sections thereof forming non-circular bights with opposed sides of each such bight positioned more closely toward each other than the sides of the opposed pair of intervening sections and with the latter defining arcs of appreciably lesser curvature, said circumambient rim being of an annular dimension which permits a tennis ball to slip therethrough when this rim is forced into a substantially circular shape;
(2) a plurality of elongated and flexible members depending down from said circumambient rim at annularly spaced areas and converging appreciably below this rim to a bottom common connection whereby they define together a ball-holding pocket below the rim with lateral openings between said members being too small for such ball to exit therethrough, and with the rim retaining its ovally-open shape when a tennis ball is in the pocket whereby exit of the ball out through the rim is prevented until the latter is reshaped to a substantially circular form by applying suitable lateral forces; and
(3) means to fasten said pocket to an exterior of a person's clothing.

4,119,248

PORTABLE ARTICLE CARRIER

J. Clinton Butler, P.O. Box 488, and Sidney W. Kubala, P.O. Box 943, both of Van, Tex.

Filed Mar. 14, 1977, Ser. No. 777,263
Int. Cl.[2] A45C *11/00*
U.S. Cl. 224—5 W **6 Claims**



1. A portable article carrier comprising in combination:
a receptacle body having a substantially flat top and a substantially flat bottom and at least one curved sidewall, curved to conform to the person carrying said article carrier, said receptacle body consisting of thermally insu-

lating material and containing a plurality of pockets each adapted to receive and store a can of beverage and to retain the heat or cold therein;

a receptacle cover for said receptacle body made of thermally insulating material and adapted to seat on said receptacle body;

a harness adapted to receive both said receptacle body and said receptacle cover whereby the body and cover are flexibly connected by said harness wherein said harness includes an upper horizontal strap portion surrounding the side walls of said cover, a lower horizontal strap portion surrounding the side walls of said receptacle body, a bottom strap portion disposed in a groove located in the bottom of said receptacle body and connected to said lower strap portion by at least two vertical strap portions disposed along the side walls of said receptacle body and connecting said bottom strap portion to said lower horizontal strap portion and a strap portion extending along the rear of said receptacle body and between said upper horizontal strap portion and said lower horizontal strap portion, permitting said harness to hingedly connect said receptacle body with said receptacle cover, all of said strap portions being integral with one another; and

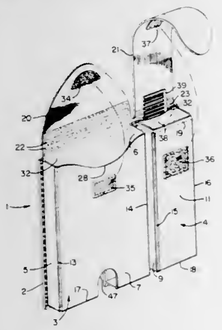
a carrying strap adapted to be worn by a person carrying said portable article carrier and including means adjustably connecting it to said harness.

4,119,249

ARTICLE CARRIER

Horacio Lou Hanson, Diego Rivera 8, Circuito Pintores, Ciudad Satelite, Mexico

Filed Apr. 22, 1977, Ser. No. 789,994
Claims priority, application Mexico, Aug. 30, 1976, 166083
Int. Cl.[2] A45C *11/00*
U.S. Cl. 224—26 R **30 Claims**



1. An article carrier comprising:

a first member having a generally rectangular main body portion including two spaced lateral edges and a bottom edge,

a second member,

means for joining said second member to said first member along each of said spaced lateral edges, along said bottom edge and along at least a portion of the first member intermediate said spaced lateral edges so as to define two individual article receiving compartments, each of said article receiving compartments including a pair of spaced side walls, a front wall interconnecting said side walls and a bottom wall, said joining means intermediate said spaced lateral edges of said first member being disposed between adjacent side walls of said at least two individual article receiving compartments so as to permit deformation of the first member without deforming the individual article receiving compartments,

said first member further including two individual cover members, each of said cover members being associated with a respective article receiving compartment for selectively opening and closing the associated article receiving compartment.

means formed in said first member at least in a fold area of at least one of said cover members for preventing flairing of edges of said cover members, said flairing preventing means extending along the width of said at least one cover member, and

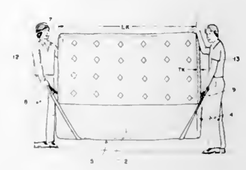
means provided in at least one of said compartments for permitting across to the articls contained therein and facilitating removal of the articles therefrom.

4,119,250

MATTRESS CARRYING DEVICE

Minehart Brutlag, Albuquerque, N. Mex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 26, 1977, Ser. No. 827,971
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—49 **1 Claim**



1. A mattress carrying device, comprising

heavy cloth-like material shaped as a substantially rectangular parallelepiped having a first pair of spaced substantially parallel sides, a second pair of spaced substantially parallel ends substantially perpendicular to the first pair of sides and joining the first pair of sides, a bottom substantially perpendicular to the sides and ends and joining them and an open top, the first sides and the bottom having a length corresponding to the length of a king-sized mattress and the second ends and the bottom having a width corresponding to the thickness of a king-sized mattress; and

a pair of carrying straps, each comprising an endless strap of substantially square 0 configuration affixed to the bottom of the material in spaced parallel relation with a corresponding one of the second ends, each of the straps also being affixed to both of the first sides and extending at an angle towards the corresponding second ends so that the strap is affixed to the material at the junction of the first sides and second ends and the open top of the material and extends in a loop beyond and outward of the corresponding second ends and the top whereby two people each holding the extending part of a corresponding one of the straps support and carry a mattress placed in the material and resting on the bottom thereof.

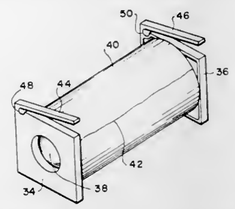
4,119,251

CONTAINER FOR DISPENSING FILM

Jerold Julius Golner, Lowell; William Joseph Miller, North Andover, and Russell Brown Strout, Winchester, all of Mass., assignors to Borden, Inc., Columbus, Ohio

Filed Jul. 15, 1977, Ser. No. 816,026
Int. Cl.[2] B26F *3/02*
U.S. Cl. 225—20 **4 Claims**

1. A container for dispensing film material on a roll comprising a container body having rear, bottom and two side panels forming an interior enclosure with a cover therefore associated with said container; a dispensing slot provided in said cover extending substantially the entire length thereof; a cutter element secured to the upper edge of said front panel extending from one end to the other and projecting thereabove; means for resiliently urging said cover above said cutter element; a pair of end supports for roll of the film material disposed in said enclosure on said bottom panel and against said side panels, said resilient means being associated with at least one of said end supports.

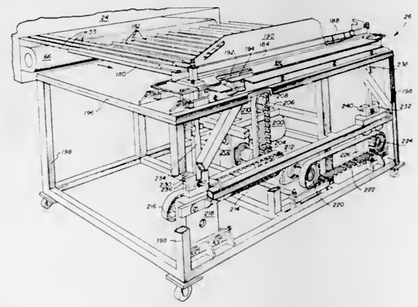


4,119,252

PORTION CONTROLLED FROZEN FOOD

Vincent E. Bernard, Richardson, Tex., assignor to The Jimmy Dean Meat Company, Inc., Dallas, Tex.

Division of Ser. No. 610,301, Sep. 4, 1975, which is a continuation-in-part of Ser. No. 526,146, Nov. 22, 1974, abandoned. This application Sep. 9, 1977, Ser. No. 832,029
Int. Cl.[2] B26F *3/00*
U.S. Cl. 225—96 **8 Claims**



1. A cutting system for periodically severing a plurality of continuous lengths of material comprising:

means for receiving a plurality of parallel lengths of material traveling in a direction parallel to the axes of said lengths,

an elongated cutting blade disposed above and normal to the direction of travel of said lengths of material,

first means for reciprocating structure transverse to the direction of travel of said lengths of material,

a first pair of bars each pivotally connected at one end to structure reciprocated by said first reciprocating means and at the opposite end to the ends of said cutting blade, said bars being pivotal at said one end about an axis transverse to the direction of travel of said lengths of material, and

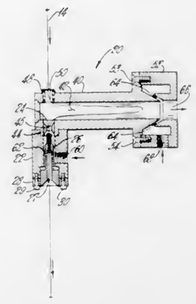
second reciprocating means for driving a second pair of bars each connected at one end to said second reciprocating means and at the opposite ends to one of said first pair of bars, respectively, to reciprocate said first pair of bars about the pivotal connection to the structure reciprocated by said first reciprocating means to move said first bars in the direction of travel of and at the same rate of speed as said lengths of material and opposite the direction of travel of said lengths while said first reciprocating means moves said first bars transverse to the direction of travel of said lengths of material such that said blade severs said lengths by moving simultaneously downward and forward, said forward movement being at the same rate of speed as said lengths.

4,119,253

METHOD AND APPARATUS FOR CONTROLLING THE ADVANCEMENT OF A STRAND

Gustav E. Benson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 20, 1977, Ser. No. 807,950
Int. Cl.[2] B65H *17/32*
U.S. Cl. 226—7 **10 Claims**



1. The method of controlling the advancement of a strand comprising:

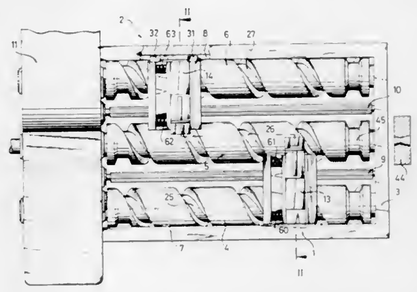
directing a first stream of fluid along the strand through a first passageway in a first direction opposite the direction of advancement of the strand to retard the advancement of the strand and to create slack in the strand, and directing said stream of fluid through a second passageway oriented transversely lengthwise with respect to the first passageway in a second direction transverse to the first direction in the absence of another stream of fluid urging said strand into said second passageway sufficient to control the slack in the strand in said second passageway.

4,119,254

APPARATUS FOR PULLING ELONGATED WORKPIECES

Horst Lorenz, Solingen, Fed. Rep. of Germany, assignor to Th. Kieserling & Albrecht, Solingen, Fed. Rep. of Germany

Filed Jan. 12, 1977, Ser. No. 758,949
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1976, 2600898
Int. Cl.[2] B65H *51/18, 17/34*
U.S. Cl. 226—112 **8 Claims**



1. Apparatus for pulling elongated workpieces including a pair of reciprocating clamping devices movable in pulling and return directions, drive means for driving said clamping devices in said directions, said drive means including rotatable shaft means having generally helical separate pulling and return drive paths thereon, said drive means further including

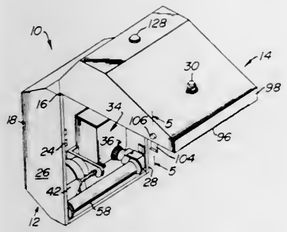
separate pulling and return drive path followers on each said clamping device, switching means for switching said pulling drive path follower into and out of cooperative relationship with said pulling drive path while switching said return drive path follower out of and into cooperative relationship with said return drive path, said switching means including levers mounted on reversing shafts for axial movement therealong and for pivotal movement therewith, said levers having upper ends connected with said clamping devices and other ends having said drive path followers thereon, and said switching means including cam discs for pivoting said reversing shafts when said clamping devices reach the end of a pulling or return stroke.

4,119,255

APPARATUS FOR AUTOMATICALLY DISPENSING MATERIAL FROM A ROLL

Alexander D'Angelo, 1813-15 E. Hart La., Philadelphia, Pa. 19134

Filed Apr. 7, 1977, Ser. No. 785,389
Int. Cl.[2] B65H *17/20, 25/30*
U.S. Cl. 226—136 **8 Claims**



1. An electrical paper roll dispenser comprising:
a base;
a cover pivotally mounted on said base;
means for rotatably supporting a paper roll within said base;
a driven roller rotatably mounted on said base forwardly of said means for rotatably supporting said paper roll;
an idler roller rotatably mounted on said cover, said idler roller being disposed within said cover to rest on said driven roller upon closure of said cover on said base;
a motor having a drive shaft and roller mounted thereon for frictionally driving said driven roller;
a triac connected to said motor for controlling the operation of said motor;
a monostable timer connected to said triac for controlling the state of said triac;
a switch mounted on said cover and connected to said monostable timer for selectively actuating the same; and
a timing capacitor connected to said monostable timer and an adjustable potentiometer connected to said timing capacitor for causing said timer to maintain said triac on for a preselected interval of time upon actuation of said switch.

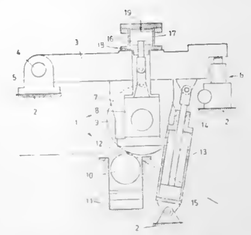
4,119,256

STRIP PINCH ROLL APPARATUS

Lothar Vogtmann, Hilchenbach; Martin Braun, and Josef Kregl, both of Kreuztal, all of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 16, 1977, Ser. No. 778,206
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614254
Int. Cl.[2] B65H *17/20*
U.S. Cl. 226—177 **13 Claims**

1. Apparatus for use in a strip mill and comprising a roll pair to feed metal strip material, one of the rolls of the roll pair being mounted on a pivotal beam by two bearing means which are displaceable independently of each other parallel to the plane of pivotal movement of the beam, setting means supporting the beam and operable to preset the rolls to a selectable spacing, first force applying means acting on the beam and operable to load the rolls in direction towards each other with



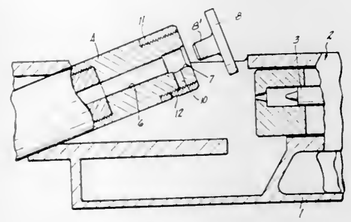
a predeterminable constant holding force, and second force applying means acting on the bearing means and operable to load said one roll with a regulateable auxiliary force selectably in the same direction as or opposite direction to the direction of the holding force applied to that roll by the first force applying means.

4,119,257

POWER ACTUATED TOOLS

Marc Combette, and Jean Ollivier, both of Valence, France, assignors to Societe de Prospection et d'Inventions Techniques SPIT, Bourg-les-Valence, France

Continuation of Ser. No. 698,633, Jun. 22, 1976, abandoned. This application Jul. 29, 1977, Ser. No. 820,191
Claims priority, application France, Jul. 2, 1975, 75 20748
Int. Cl.[2] B25C *1/14*
U.S. Cl. 227—10 **10 Claims**



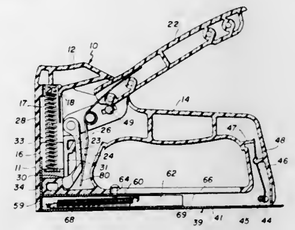
1. In a power actuated tool of the type comprising a breech, a barrel mounted on said breech and including a longitudinal bore, a combustion chamber provided in said breech and adapted for the production of combustion gases from a piece of ammunition carried therein, a percussion mechanism in said breech operativeiy disposed to fire said ammunition, and an expansion chamber provided in one of said breech and said barrel and communicating between said bore of said barrel and said combustion chamber; the improvement comprising: means for varying the effective volume of said expansion chamber to adjust the operating force of the tool, said means comprising a vent provided in the sidewall of one of said chambers adapted to provide passage for a portion of said gases to the atmosphere and a bush moveably carried about the said chamber having the said vent, said bush including at least one opening adjustably alignable with said vent, whereby flow of said gases therethrough may be controlled.

4,119,258

PLASTIC STAPLE GUN

John F. Ewig, Jr., Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Filed Aug. 1, 1977, Ser. No. 820,442
Int. Cl.[2] B25C *5/10*
U.S. Cl. 227—132 **4 Claims**



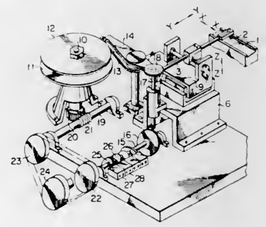
1. A stapler, comprising:
(a) a frame having two spaced, parallel side walls, each in the shape of a closed plane figure formed of a high-density polymer having an integral peripheral web, the webs engaging at a central plane midway between the side walls,
(b) a hammer slidable between the side walls,
(c) a spring residing between the walls and engaging the hammer at one end, each side wall having an inwardly-directed flange, the side walls and the flanges forming a cavity enclosing the other end of the spring,
(d) an actuating lever hinged to the frame,
(e) a lifter connected to the lever for lifting the hammer against spring pressure and releasing it to drive a staple, and
(f) a box-like element integral with an extending inwardly from each side wall, the elements meeting at said central plane to form a resilient member to engage the hammer at the end of its movement to absorb the energy therefrom.

4,119,259

AUTOMATIC BONDING APPARATUS FOR ASSEMBLING SEMICONDUCTOR DEVICES

Yuzaburo Sakamoto, Takasaki, Japan, assignor to Hitachi, Ltd., Japan

Filed Jul. 17, 1973, Ser. No. 379,972
Claims priority, application Japan, Jul. 26, 1972, 47-74183
Int. Cl.[2] H01L *21/60*
U.S. Cl. 228—4.5 **6 Claims**



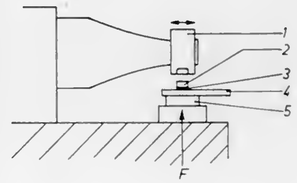
1. A bonding apparatus comprising a bonding arm and means for shifting the arm in longitudinal, transverse and vertical directions, wherein said shifting means comprises horizontal drive cams mounted on a common shaft for shifting said arm in the longitudinal and transverse directions, respectively, a vertical drive cam mounted on a second shaft for vertically shifting an end of said arm, and a mechanism for synchronizing the rotation of the first shaft carrying the horizontal drive cams with the rotation of the second shaft carrying the vertical drive cam, so that the first and second shafts are rotated with a predetermined speed ratio.

4,119,260

METHOD OF MAKING AN ELECTRICAL CONTACT ELEMENT

Dieter Stöeckel, Birkenfeld, Germany, assignor to G. Rau, Pforzheim, Germany

Filed Sep. 2, 1977, Ser. No. 830,318
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642339
Int. Cl.[2] H01R *13/40;* **B23K** *21/02*
U.S. Cl. 228—111 **4 Claims**



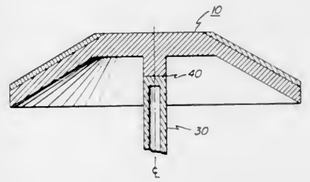
1. A method of producing an electrical contact element having at least one contact piece bonded to a carrier, said method comprising placing an intermediate layer of grinding powder between the contact piece and the carrier, and joining the contact piece and the carrier by sonic or ultrasonic welding.

4,119,261

INERTIA WELDING PROCESS FOR MAKING AN ANODE ASSEMBLY

Thomas M. Devine, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 788,247, Apr. 18, 1977. This application Dec. 12, 1977, Ser. No. 859,610
Int. Cl.[2] B23K *27/00*
U.S. Cl. 228—113 **4 Claims**



1. A method for affixing a stem to a disc which includes an x-ray target affixed to a selected surface area of a substrate to make an anode assembly for a rotating x-ray anode tube comprising
(a) preheating the disc, wherein the substrate comprises a material which is one selected from the group consisting of molybdenum and molybdenum-based alloys to a predetermined range of elevated temperature of from about 200° C. to about 400° C.;
(b) placing the preheated disc and a stem, which comprises a material which is one selected from the group consisting of columbium, columbium 291, columbium 103, and columbium-1Zr, to be joined together in inertia welding apparatus whereby the respective surface areas thereof to be inertia welded together are in an abutting relationship with each other;
(c) subjecting the positioned disc and stem to a predeter-

mined flywheel moment of inertia of from about 9#-ft^2 to about 19#-ft^2, an axial pressure of from about 35,000 psi to about 50,000 psi and a predetermined spindle speed of from about 1400 RPM to 2800 RPM, and

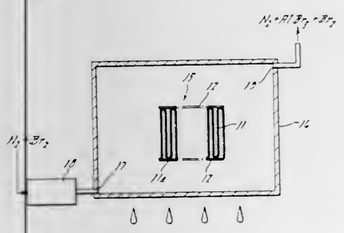
(d) joining the stem to the disc by a weld joint formed at the interface of the abutting surface areas as a result of subjecting the disc and stem to the axial pressure.

4,119,262

METHOD OF JOINING METAL, PARTICULARLY ALUMINUM OR ALUMINUM ALLOYS, USING BROMINE FLUXING AGENT

Chia-Ming Yen, Canton Township, Wayne County, and Duane J. Schmatz, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1977, Ser. No. 813,057
Int. Cl.^{2} B23K *1/04, 35/38*
U.S. Cl. 228—206 **8 Claims**



1. A method of brazing aluminum members, comprising:

(a) cleaning said aluminum members to be substantially free of oxide,

(b) bringing said aluminum members into joining relationship to provide an assembly having joining sites, said assembly being comprised of said members and of an aluminum-based brazing alloy disposed at the joining sites,

(c) heating said assembly while flowing an inert gas through and about said assembly,

(d) when said aluminum-based brazing alloy has reached a molten state, introducing a gaseous bromine fluxing agent to said inert gas in a quantity of about 1% by volume of said inert gas, and continuing said introduction for a period of 3–5 minutes while maintaining said heating level.

4,119,263

BOTTOM UNLOADING BULK CONTAINER

Jim P. Cuthbertson, Houston, Tex.; Robert A. Bamburg, Hebert, La.; Farris N. Duncan, West Monroe, La., and Roger M. Floyd, Monroe, La., assignors to Olinkraft, Inc., West Monroe, La.

Filed Jul. 29, 1977, Ser. No. 820,285
Int. Cl.^{2} B65D *5/72, 5/48, 47/10*
U.S. Cl. 229—17 B **14 Claims**

8. An improved bulk material container designed for bottom pouring from the container, comprising:

(a) a central shell portion having an upper and a lower opening;

(b) a top cap positioned on the upper opening of said shell portion;

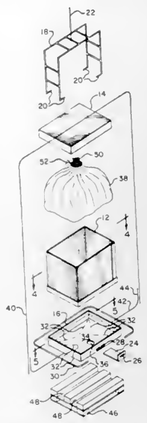
(c) a bottom cap positioned on the lower opening of said shell portion, said bottom cap comprising:

(1) the bottom cap being formed with a central portion having a plurality of side panels hingedly connected thereto;

(2) a plurality of score lines being formed on said central portion for weakening said central portion so that said portion deforms from the weight of the product positioned on the cap into a generally funnel shape;

(3) a pouring opening formed in proximity to said plurality of score lines for removing the bulk product from the container;

(4) a slot being formed in proximity to the hinged connection of one of the side panels and in proximity to said



pouring opening, said slot being sized somewhat larger than said pouring opening; and

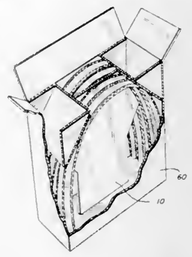
(d) an elongated slide plate positioned in said slot and partially within said container and partially outside of said container and covering said pouring opening.

4,119,264

CONTAINER DIVIDER AND DISPENSING ASSEMBLY

James A. Bennett, Mequon, Wis., assignor to Will Ross, Inc., Milwaukee, Wis.

Filed Jan. 28, 1977, Ser. No. 763,474
Int. Cl.^{2} B65D *5/48, 85/08*
U.S. Cl. 229—15 **5 Claims**



1. A blank of foldable sheet material comprising: a base panel defined by a free, front edge, a pair of connecting edges extending downwardly from the ends of said front edge and away from an axis of said base panel which is in the plane of said base panel and perpendicular to said front edge, a first pair of free, side edges extending downwardly from the ends of said connecting edges toward said axis of said base panel, a second pair of free, side edges extending from the ends of said first pair of said side edges downwardly from said front edge, and a free, rearward edge extending between the ends of said second pair of side edges;

a pair of rectangular, front panels foldably connected to said base panel along said connecting edges, each front panel having a side connecting edge which is a linear extension of one of said first, free side edges; and

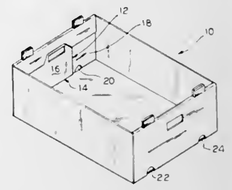
a pair of rectangular, side support panels foldably connected to said front panels along said side connecting edges of said front panels.

4,119,265

SEAMLESS LEAKPROOF CONTAINER

Joseph Dlugopolski, Lombard, Ill., assignor to Fidelity Container Corporation, Chicago, Ill.

Filed Aug. 25, 1977, Ser. No. 827,557
Int. Cl.^{2} B65D *5/22, 5/24*
U.S. Cl. 229—31 R **8 Claims**



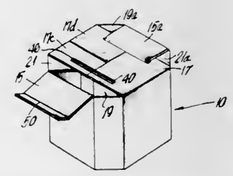
1. A seamless leakproof box comprising a generally rectangular blank divided by a plurality of score lines into a plurality of panels for integrally forming at least bottom, top, two side and two end panels, a pair of triangular corner panels formed between each side panel and its adjacent end panel, said corner panels being defined by extensions of score lines forming the adjacent side and end panels and by a diagonal score line extending from the intersection of said score lines to the corners of said blank, said pairs of corner panels coming together in a face-to-face relationship responsive to an articulation of the adjoining side and corner panels to a box configuration, said face-to-face pair of corner panels folding to lie flat against an adjacent side or end panel, when folded, each of said face-to-face pairs defining an upwardly facing locking notch perpendicular to said bottom panel, and means comprising an outwardly folding flange attached to said end panels for gluelessly folding outwardly over said end of the box and locking into the notch in said folded corner panels while in said flat position.

4,119,266

OCTAGONAL SHAPED PAPERBOARD BULK BIN

Thomas B. Dempster, Sioux City, Iowa, assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 1, 1977, Ser. No. 829,625
Int. Cl.^{2} B65D *5/08*
U.S. Cl. 229—39 R **6 Claims**



1. An octagonal-shaped paperboard bulk bin comprising:

a side wall formed from first and second opposed pairs of substantially rectangular, upstanding side panels and first and second opposed pairs of substantially rectangular, upstanding corner panels that are alternatively, foldably connected, said side panels being of greater width than said corner panels, and with each corner panel including a horizontally disposed, substantially rectangular flap foldably connected to the bottom edge thereof, each side panel of said first pair of opposed side panels including a horizontally disposed, substantially rectangular flap foldably connected to the bottom edge thereof, each side panel of said second opposed pair of side panels having a horizontally disposed, substantially rectangular slotted flap, each slotted flap including two parallel slots disposed perpendicular to the fold line thereof and extending from the edge thereof opposite said fold line for a distance corresponding to approximately one-half the width of each flap of said first pair of opposed side panels whereby with the flaps extending from said corner panels overlapping one another and being wholly disposed within the bulk bin, and with the flaps extending from said first pair of opposed side panels extending through the slots formed in said slotted flaps for engagement with said slotted flaps, a bottom wall for the bulk bin is formed.

4,119,267

BLOOD AND INTRAVENOUS SOLUTION BAG

Agis Frank Kydonieus, 1409 - 2nd Ave., New York, N.Y. 10021

Filed Aug. 18, 1976, Ser. No. 715,584
Int. Cl.^{2} B65D *31/02, 37/00*
U.S. Cl. 229—53 **15 Claims**



1. A bag for blood and/or intravenous solutions formed from two rectilinear polymeric sheet panels disposed substantially parallel to each other, joined at the respective edges thereof forming a cavity and having at least one hollow cylinder disposed transversely between the edges of said panels on one edge of the bag to connect the cavity portion of the bag with the exterior of the bag, wherein each panel comprises:

(A) an outer layer of a flexible, heat sealable polymer film having a durometer value between 60 and 80 laminated to

(B) an inner layer, made from a material which does not hydrolyze and/or leach into blood or intravenous solutions, disposed only in the cavity portion of said bag which comes into contact with the blood and/or intravenous solutions wherein the four edges of the bag are formed, at least in part, by the heat sealing to each other of the corresponding outer layers (A) and wherein on at least one edge of the bag the outer layers (A) of each panel project further outwardly than the inner layers (B) and are heat sealed to each other at said projecting portions to form at least one edge of the bag wherein said outer layer (A) is a polymer selected from the group consisting of polyvinyl chloride, polyurethane, silicone or polyvinyl fluoride and said inner layer B) is selected from the group consisting of polyethylene terephthalate, polypropylene, polybutene, polycarbonate, high density polyethylene, fluoromethylethylene, polyfluorochloroethylene, polytetrafluoroethylene, polytrifluorochloroethylene, fluorinated ethylene or polyvinylfluoride.

4,119,268

BAG HAVING A HANDLE SECURED THERETO

Daniel A. Segura, Des Moines, Iowa, assignor to Great Plains Bag Corp., Des Moines, Iowa

Continuation of Ser. No. 670,116, Mar. 25, 1976, abandoned. This application May 23, 1977, Ser. No. 799,366
Int. Cl.^{2} B65D *33/06*
U.S. Cl. 229—54 R **10 Claims**

1. A bag comprising:

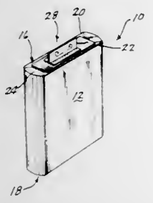
a front wall, a back wall and opposite end walls forming an

enclosed container, said end walls comprising at least two side flaps and at least two end flaps which are folded in overlapping relation to form an end closure for said bag;

a handle operatively secured to one of said end walls, said handle comprising a sheet member folded over upon itself to form a two ply thickness central portion and two diverging laterally extending single ply thickness flaps extending from the lower edge of said central portion in a plane approximately perpendicular to the plane of said central portion;

a flat sheet member secured to one of said end walls and overlapping at least portions of said side and end flaps;

said diverging flaps being in facing engagement with said flat sheet member and operatively secured thereto;



a hand receiving slit cut through said central two ply thickness portion, said slit having a lower horizontal portion with opposite ends extending upwardly and terminating in curlicue ends, said curlicue ends extending in a path which changes directions more than 180° from the direction of said horizontal portion;

said slit forming a flap portion of two ply thickness;

a horizontal fold line on said central portion for said flap portion, said fold line being approximately parallel with said horizontal portion of said slit and approximately tangential to said slit at points spaced from the opposite terminal ends of said slit;

said flap portion being deflected in a lateral direction about said fold line.

4,119,269

SERVICE BOX

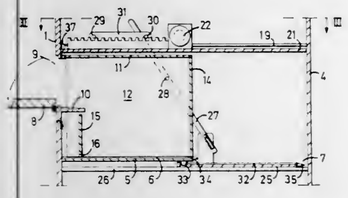
Bo Soderberg, Stockholm, Sweden, assignor to AB Vardeskydd, Gavle, Sweden

Filed Apr. 28, 1977, Ser. No. 791,884

Claims priority, application Sweden, Apr. 29, 1976, 7604939; Mar. 30, 1977, 7703718

Int. Cl.² B65D *91/00*

U.S. Cl. 232—43.3 **13 Claims**



1. A service box having outer and inner boxes which are relatively reciprocable, the outer box having a front wall, side walls, and a back wall, said front wall including an insert aperture and a lockable insert aperture hatch, characterized by the fact that: the outer box, below the insert aperture, has a fixed base extending from the front wall to about halfway to the back wall to provide, between the back wall and the fixed base, a delivery aperture; the inner box having an open bottom and comprising side walls, and a back wall; drive means including cooperating means on the outer portion of the inner box and on the inner portion of said outer box enabling forward and backward reciprocation of said inner box between a forward position over said fixed base and a rearward position over said delivery aperture; a scraper means mounted on a side wall of the inner box adjacent the lower portion of its front end and extended between the side walls of the inner box for the purpose of interacting closely adjacent the fixed base; a sliding hatch; means which mount said sliding hatch for horizontal sliding movement on the outer box immediately below the fixed base to enable closing and opening the delivery aperture; and mechanical link means interconnect said inner box and said sliding hatch so that the hatch and said inner box move in opposite forward and backward directions, whereby the hatch closes the delivery aperture when the inner box is at the front portion of the outer box and opens the delivery aperture.

4,119,270

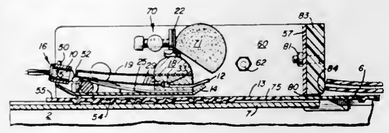
EMBOSSED CHARACTER READER

James E. Hill, Prospect Heights, and Baesley I. Dahlstrom, Des Plaines, both of Ill., assignors to Dynetics Engineering Corp., Wheeling, Ill.

Filed Sep. 14, 1976, Ser. No. 723,215

Int. Cl.² G06K *7/15, 7/04*

U.S. Cl. 235—440 **37 Claims**



1. Read head apparatus for reading embossings or apertures in surfaces, comprising in operative combination:

(a) a means for sensing variations in the contour of said surface disposed to continuously contact said surface during relative motion of said surface with respect to said sensing means;

(b) means for providing light pulses responsive to said contour variations sensed by said sensing means;

(c) said surface sensing means including at least one low-inertia movable spring wire-like finger having a portion disposed to continuously contact said surface so that said contour variations directly effect movement of said finger in response thereto;

(d) said light pulse providing means includes:

i. a light source producing a continuous, directed beam of light,

ii. means for conducting light of said beam,

iii. said light source being disposed so that light of said beam impinges on said light conducting means, and

iv. a mask disposed to intercept light of said beam; and

(e) said movable finger is disposed so that motion thereof in direct response to said contour variations effects interception of light of said beam by motion of said light conducting means relative to said mask thereby producing light pulses indicative of said contour variations.

4,119,271

RAIL BRACING SYSTEM

Frank A. Campbell, 111 Catalpa Ave., Hackensack, N.J. 07601

Filed Apr. 8, 1977, Ser. No. 786,055

Int. Cl.² E01B *9/60, 9/48*

U.S. Cl. 238—336 **14 Claims**

1. In a railway system comprising a railway rail and a fixed anchorage member supporting said rail,

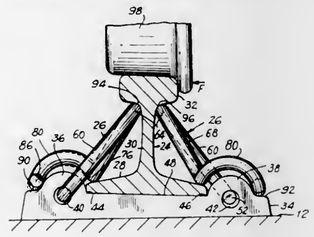
said rail including a flanged base segment, a vertically spaced railway wheel bearing surface and a web segment interconnecting said flanged base segment and said wheel bearing surface,

a pair of raised protuberances on said anchorage member in spaced relationship with each other, at least one of said raised protuberances including a through bore having a horizontal axis,

said rail being supported on said fixed anchorage member between said raised protuberances on said anchorage member,

a rail fastener and brace comprising a unitary length of resilient rod material to secure said rail to said anchorage member and brace said rail against transverse forces,

said rail fastener and brace being bent so as to have one



segment thereof disposed within the through bore in said one protuberance on said anchorage member, a second segment in abutting relationship with the upper surface of said rail flange base segment, a third segment in bracing abutting relationship with the web segment of said rail near the juncture of said web with said wheel bearing surface and a fourth segment in abutting bearing relationship to said anchorage member to provide a torsional spring effect to secure said rail to said anchorage member while providing a brace to said rail against transverse forces.

4,119,272

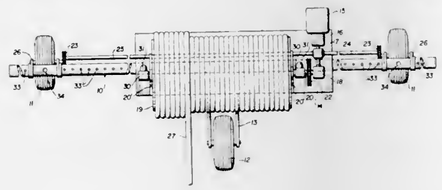
MOBILE AGRICULTURAL IRRIGATION APPARATUS

Hubert Tidwell, P.O. Box 57, Wellington, Utah 84542

Filed Feb. 23, 1977, Ser. No. 771,262

Int. Cl.² B05B *3/18*

U.S. Cl. 239—178 **4 Claims**



1. A mobile irrigation apparatus comprising a closed end apertured irrigation boom, wheeled carriage means supporting the boom substantially horizontally and including widely spaced traction wheels, a hose reel mounted above said boom on a rotational axis parallel to the boom and being supported by the boom, power drive means supported on the boom and operatively coupled with the traction wheels and hose reel to drive the same simultaneously in opposite directions of rotation, a hose coiled on the hose reel and adapted to have one end coupled with a source of water in a field to be irrigated, and conduit means interconnecting the other end of the hose on the hose reel with the interior of the apertured irrigation boom, said conduit means comprising a tubular drive shaft section for the hose reel having a swiveled connection with said other end of the hose, and tubular arms having swiveled connections with the tubular drive shaft and receiving irrigation water through the drive shaft section from the hose, said tubular arms being connected to said apertured boom and delivering irrigation water to the interior thereof.

4,119,273

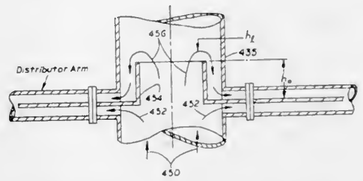
SYSTEM FOR POLLUTION SUPPRESSION

Edward T. Armstrong, Butler, N.J., assignor to TII Corporation, Lindenhurst, N.Y.

Division of Ser. No. 531,095, Dec. 9, 1974, Pat. No. 3,998,714, which is a continuation-in-part of Ser. No. 855,738, Apr. 30, 1973, Pat. No. 3,853,764, which is a continuation-in-part of Ser. No. 100,333, Dec. 21, 1970, Pat. No. 3,730,881, which is a continuation-in-part of Ser. No. 813,382, Feb. 28, 1969, Pat. No. 3,549,528, which is a continuation-in-part of Ser. No. 362,118, Apr. 23, 1964, abandoned. This application Nov. 8, 1976, Ser. No. 740,246

Int. Cl.² B05B *3/06*

U.S. Cl. 239—254 **5 Claims**



1. A rotary distributor arm apparatus for a sewage treatment system to be used in conjunction with influent to a trickling filter, comprising;

a rotatable central distribution head to receive the influent,

an elongated post extending from the top of said head,

at least two elongated distributor arms connected to and extending substantially horizontally from said head in symmetrical balanced relation thereto, each arm defining a constantly variable section modulus as a function of the radius of said arms, a plurality of tie rods extending from various points along the length of each arm and connected to said post to support said arms in a horizontal plane,

nozzle means along the length of each arm for discharging said influent,

said arms being substantially rectangular in cross section with the longer sides being horizontal, said nozzle means located in the shorter vertical sides, and

a center vertical stiffener web located between said longer sides to provide two channels, said web having holes therethrough to allow influent flow between channels and a false bottom in one of the channels so the flow path thereof is vertically above the other channel.

4,119,274

FLOW DIVERTER

Norman F. Fowle, North Palm Beach; William M. Madden, Palm Springs, and James F. Marshall, Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

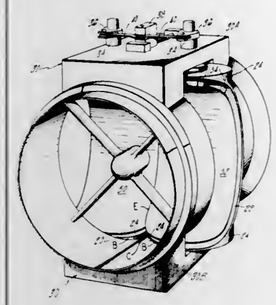
Filed Dec. 27, 1976, Ser. No. 754,772

Int. Cl.² B64C *15/06*

U.S. Cl. 239—265.29 **4 Claims**

1. In combination, a cylindrical duct (7) for flow therethrough, said duct having two directly opposite side sections (20, 22) of semi-circular length movable between an open position where they form a portion of the sides of said cylindrical duct when flow passes through said duct and a closed position where they cooperate to form a block to the flow through said duct and divert it out of both sides, each side section is formed having the same width (A) along its semi-circular length with the ends being of semi-circular shape (B), said semi-circular shape of each end of each section having a diameter equal to the width (A) of the section, cooperating

ends of semi-circular shape (B) are located adjacent each other, pivot means (34) extend outwardly from each end of each section at the center of said semi-circular shape, mounting



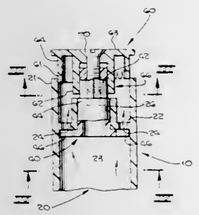
means (30) fixedly positioned externally of said duct, said pivot means being pivotally mounted in said mounting means, means (36, 38, 40) for moving said two side sections between their open and closed positions.

4,119,275

FLUID SPRAY HEAD AND METHOD ADAPTED TO SPRAY SPECIFIC PATTERN

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Filed Jan. 31, 1977, Ser. No. 764,183
Int. Cl.[2] B05B *1/14, 1/30, 15/10*
U.S. Cl. 239—456 **13 Claims**



1. In a fluid spray head for spraying an area disposed radially about the head comprising a substantially tubular body having an axial passageway open at one end and adapted at that end for communication with a source of pressurized fluid, being closed at its other end, and having a plurality of circumferentially-disposed discharged orifices wherein each orifice sprays a segment of the area, the improvement for spraying an irregularly shaped area with a proportionally matching irregularly shaped spray pattern comprising:

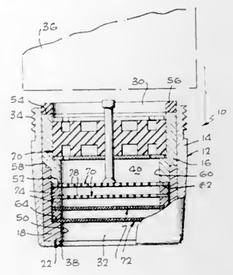
said plurality of discharge orifices being of different cross-sectional areas related to the horizontal distance from the spray head to the edge of the spray pattern segment sprayed by the respective orifice whereby the respective spray streams of said orifices travel for different horizontal distances identically proportionally related to their respective positions in the spray pattern.

4,119,276

LAMINAR STREAM SPOUT ATTACHMENT

Walter R. Nelson, 2501 Redondo Beach Blvd., Gardena, Calif. 90249

Continuation of Ser. No. 663,041, Mar. 2, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,661
Int. Cl.[2] B05B *1/34*
U.S. Cl. 239—590.3 **5 Claims**



1. A laminar stream spout attachment comprising:

a housing defining a closed, nonapertured sidewall about a cylindrical, smooth central passage having an inlet and an outlet longitudinally spaced downstream from the inlet;

at least two longitudinally spaced-apart, parallel plates positioned within and extending across the central passage, each of the plates having small apertures therethrough distributed substantially uniformly throughout the plates, the area of the apertures in each plate being between about 30% and about 35% of the total plate area thereby reshaping the flow velocity profile of the stream in the central passage to have greater uniformity across the central passage, the longitudinal spacing between the plates being between about one aperture diameter and about three aperture diameters; and

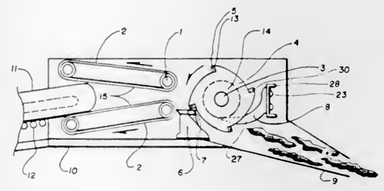
at least two longitudinally spaced, parallel screens positioned within and extending across the central passage the screens being longitudinally spaced downstream from the plates.

4,119,277

APPARATUS FOR CUTTING SCRAP TIRES

J. Rush Snyder, 3013 Harcourt Dr., Greensburg, Pa. 15601, and Timothy Myers, R.D. #2, Box 238A, Latrobe, Pa. 15650

Filed Oct. 28, 1975, Ser. No. 626,321
Int. Cl.[2] B02C *13/02, 18/22*
U.S. Cl. 241—167 **7 Claims**



1. An apparatus for cutting scrap tires comprising:

a. a housing;

b. a shaft, mounted on the housing and connected to any conventional power source for rotation purposes;

c. a plurality of rotary disc cutters, of generally circular design, axially spaced along the shaft, dimensioned with at least one cutting tool mount on the outer circumference of each cutter and directed vertically toward the center;

d. cutting tools attached to the rotary disc cutters at the location of the cutting tool mounts, of a generally rectangular design, having at least one cutting edge;

e. compression means for compressing scrap tires and feeding the compressed scrap tire transversely into the rotary disc cutters, associated with the housing;

f. a stationary anvil attached to the housing, placed in close proximity to the compression means and the rotating disc cutters; and

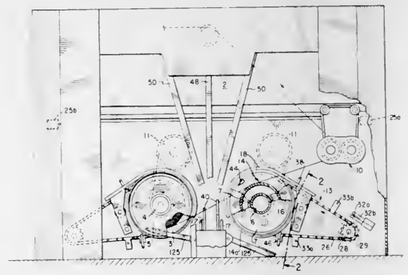
g. anvil tools attached to the stationary anvil, of a generally rectangular design having at least one cutting edge, so that the scrap tire is cut into pieces as the compressed scrap tire tends to return to its former uncompressed shape and the cutting tools rotate past the anvil tools.

4,119,278

CONTINUOUS LONG ENDS WIRE SPOOLING APPARATUS

Seymour Draizen, Old Bridge, and Konrad C. Schillebeeckx, Colts Neck, both of N.J., assignors to Syncro Machine Company, Perth Amboy, N.J.

Filed Mar. 7, 1977, Ser. No. 774,674
Int. Cl.[2] B65H *54/02*
U.S. Cl. 242—25 A **12 Claims**



1. Wire guiding apparatus for a spooler having a housing, an initially empty winding reel to receive wire extending along a path adjacent both said winding reel and a dummy reel adapted to receive an initial quantity of wire defining a long end, a fore flange between said dummy reel and said winding reel, an aft flange on said dummy reel opposite said fore flange, said apparatus comprising:

a conveyor adapted for movement at selected times in a path proximate said dummy reel;

a wire entry device mounted to said conveyor and being adapted to intercept said wire and to move said wire onto said dummy reel; and

a wire exit device mounted to said conveyor means and adapted to intercept wire being wound onto said dummy reel and to move said wire onto said winding reel for winding thereon.

4,119,279

APPARATUS AND METHOD FOR ANTICIPATING AN EMPTY SPOOL CONDITION

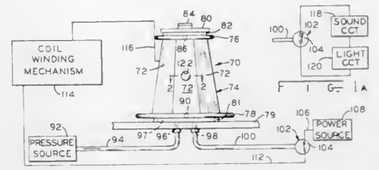
Hugh W. Hosbein, Fort Wayne, IN, assignor to Mossberg Hubbard a Division of Wanskuck Company, Garret, Ind.

Filed Aug. 8, 1977, Ser. No. 822,952
Int. Cl.[2] B65H *75/00, 25/04*
U.S. Cl. 242—54 R **26 Claims**

1. Apparatus for sensing that wire being dispensed from a spool is nearing the end, comprising

a spool having a barrel onto which wire may be wound and stored, said barrel being hollow and hermetically sealed,

valve means for controlling the opening and closing of a pressure escape port in said barrel, said valve means being movable to closed position in response to wire being contiguously wound on said barrel and further being movable to opened position by pneumatic pressure in said barrel when such wire is removed from said barrel, and



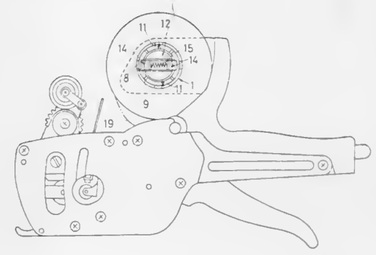
means for sensing the reduced pressure inside said barrel when said valve is opened.

4,119,280

CORE FOR ROLLED LABEL STRIP

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed May 2, 1977, Ser. No. 792,685
Claims priority, application Japan, May 7, 1976, 51-056699
Int. Cl.[2] B65H *75/02*
U.S. Cl. 242—68.5 **22 Claims**



1. A cylindrical core for supporting a rolled label strip thereon and for being detachably attached to the core supporting device of a label printing and applying machine or the like, the core for a rolled label strip comprising:

a cylindrical core body having an inner wall surface having an inner diameter; an attaching section formed in a first end face on one side of said cylindrical core body; said attaching section being provided with an inner bore passing therethrough and said inner bore having a diameter smaller than said inner diameter of said cylindrical body;

raised faces formed on said first end face;

a second end face on the other side of said cylindrical body; fitting recesses formed on said second end face;

ribs adapted for being fitted to a mandrel, said ribs being formed on said inner wall surface of said cylindrical body and said ribs extending in the direction parallel to the axis of said cylindrical body, the height of said ribs being the same as the diameter of said inner bore; and

a plurality of grooves formed in said inner wall surface of said cylindrical body in the direction parallel to the axis of said cylindrical body.

4,119,281

SPINDLE, PARTICULARLY FOR WINDING UP A STRAP IN A SAFETY BELT FOR VEHICLES

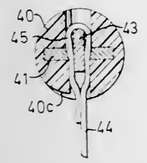
Hannu Olli Paitula, Järna, and Roland Axel Larsson, Södertälje, both of Sweden, assignors to Granges Essem Aktiebolag, Vesteras, Sweden

Filed Feb. 3, 1977, Ser. No. 765,283

Claims priority, application Sweden, Feb. 3, 1976, 7601102; Jan. 19, 1977, 7700539

Int. Cl.² B65H *75/48, 75/28*

U.S. Cl. 242—107 **13 Claims**



1. A spindle, particularly for winding up a strap in a safety belt for vehicles, comprising:

a first portion, including at least one metal sheet plate which is provided with a through slot for the strap, which gives the spindle the necessary strength, said first portion consisting of a single metal sheet plate which is bent to substantially U-shape; and

a second portion which together with the first portion forms a spindle having a substantially round cross section.

4,119,282

MAGNETIC TAPE MAGAZINE

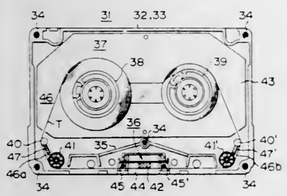
Kengo Oishi, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 28, 1977, Ser. No. 810,856

Claims priority, application Japan, Jun. 30, 1976, 51-86607[U]

Int. Cl.² G11B *23/10*

U.S. Cl. 242—199 **11 Claims**



1. A magnetic tape magazine in which a tape passage is formed at least partly by means of fixed guide pins and rotatable guide rollers, wherein the improvement comprises a guide wall having a smooth flat surface and provided in parallel to the tape fed through said tape passage, said guide wall being normally spaced slightly inwardly from the tape passage, thereby preventing the tape from winding around the guide roller.

4,119,283

KITE STRUCTURE

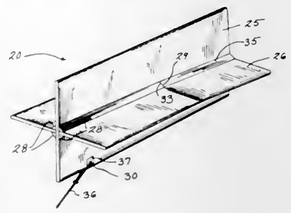
James E. De Yarman, 2943 N. Dousman St., Milwaukee, Wis. 53212

Filed Dec. 17, 1976, Ser. No. 751,723

Int. Cl.² B64C *31/06*

U.S. Cl. 244—153 A **1 Claim**

1. A kite structure, comprising a vertical plate and a transverse plate, the forward portion of said vertical plate being provided with first grooves along the longitudinal centerline on both sides thereof and the rear portion of said vertical plate having a first slot that opens rearwardly of the plate, the forward end of said first slot being aligned with the first grooves of said plate, and the rearward portion of said transverse plate being provided with second grooves along the longitudinal centerline on both sides thereof and the forward portion of said transverse plate having a second slot that opens forwardly of the plate, the rear end of said second slot being aligned with the second grooves of said plate, said plates being assembled together with the first grooves of the vertical plate receiving the



edge portions of the second slot of the transverse plate and the second grooves of the transverse plate receiving the edge portions of the first slot of the vertical plate, said first slot sloping downwardly and rearwardly in the vertical plate to enhance the press fit of the edge portions of the respective slots in the corresponding grooves during assembly and to impart a downward concavity in the transverse plate so that the latter assumes a sort of airfoil contour to enhance the flight characteristics of the kite structure, and said plates being self-supporting without need for separate and/or additional framing.

4,119,284

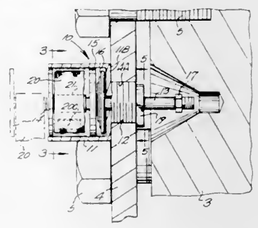
RAILROAD HOTBOX INDICATOR

Norman J. Belmont, 849 W. Luellan Dr., Roseburg, Oreg. 97470

Filed Sep. 1, 1977, Ser. No. 829,640

Int. Cl.² B61K *9/04*

U.S. Cl. 246—169 A **4 Claims**



1. An indicator operable in the presence of excessive temperatures in an overheated vehicle wheel bearing assembly, said bearing assembly including an axle mounted bearing race retainer plate centrally apertured and thereat mounting said indicator, said indicator comprising,

a housing for mounting exteriorly of said retainer plate and including a boss in threaded engagement with the aperture in said retainer plate,

a visual indicator stowed within said housing, and

an indicator ejector assembly slidably mounted in said housing and operable to reposition the indicator outwardly of the housing, said ejector assembly including a spring biased stem member terminating inwardly adjacent the axle end, a heat sensitive replaceable retainer of a fusible nature engaged with said stem member to normally hold same in an inoperable retracted state, said ejector assembly including resilient means urging the indicator to an exposed position for deployment by the airstream upon fusing of said retainer in the presence of excessive bearing temperatures.

4,119,285

PIPE AND CABLE CLIP

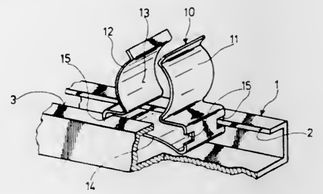
Heinz Bisping, and Erwin Schiefer, both of Munich, Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed May 2, 1977, Ser. No. 792,562

Claims priority, application Fed. Rep. of Germany, May 4, 1976, 2619702

Int. Cl.² F16L *3/24*

U.S. Cl. 248—72 **3 Claims**



1. Clip for holding pipe, cable and the like, comprising a pair of oppositely disposed clamping jaws forming a mouth-like opening therebetween through which the member to be held extends and between which the member is clamped, an elastically deformable base portion extending transversely of and interconnecting said clamping jaws, each said clamping jaw having a free end spaced outwardly from said base portion and said free ends being spaced apart and displaceable toward one another, wherein the improvement comprises that said base portion includes a pair of first bearing locations disposed in spaced relation, and a second bearing location positioned between and spaced from each of said pair of first bearing locations, said base portion being deflectible between a gripping position where said base portion can be resiliently biased into holding engagement with a support member and a release postion where said base portion is released from holding engagement and can be moved relative to said support member, said base portion having a first wall part extending transversely of said clamping jaws and having an arched shape including a convex surface facing toward said clamping jaws and a concave surface facing in the opposite direction, said convex surface having an axis extending generally parallel with the axis of the mouth-like opening between said clamping jaws along which axis a member to be held therebetween extends, said second bearing location positioned at the crown of said convex surface, and said base portion includes a pair of second wall parts each extending from an opposite side of said first wall part transversely of the direction of said first wall part and extending from said first wall part toward said clamping jaws, each of said second wall parts having at least one recess formed therein in the edge thereof extending from said first wall part toward said clamping jaws, and one of said first bearing locations being positioned in the recess in each of said second wall parts.

4,119,286

FURNITURE FRAMES

Claude Barril, 17 Rue Baron, 75017 Paris, France

Filed Mar. 28, 1977, Ser. No. 782,076

Int. Cl.² F16M *11/16;* **A47C** *7/00*

U.S. Cl. 248—188 **4 Claims**

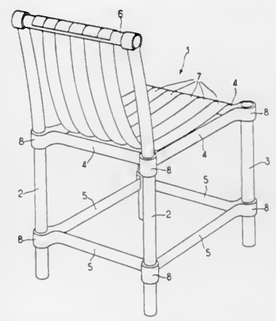
1. A furniture frame comprising

first and second tubular frame components, and

joint means for securing said components together and comprising a joint portion of said first component, and a joint portion of said second component,

said joint portion of said first component comprising a tubular exterior surface and at least two studs secured to said first component, each stud having a head projecting outwardly from said surface, said studs being coplanar and spaced from each other circumferentially of said exterior surface,

said joint portion of said second component being integral with said second component and comprising a flattened portion located between two straight portions thereof extending at an angle to each other, said flattened portion extending around and exerting a resilient clamping action on said tubular exterior surface of said first component, said flattened portion having an annular groove in its



interior surface extending circumferentially of the first component;

said stud heads each extending into said groove to lock said components and prevent longitudinal separation of said first component from said second component,

whereby, spreading said straight portions apart simultaneously unclamps and unlocks said second component from said first component for insertion and removal of the first component, and releasing said straight portions with the first component positioned in the flattened portion of the second component locks the components together.

4,119,287

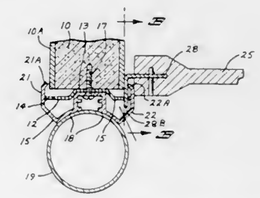
SUPPORTS FOR MOVABLE PARTITIONS

Lloyd C. Mollenkopf, Eagan, Minn., assignor to Rosemount Office Systems, Inc., Lakeville, Minn.

Filed Aug. 2, 1976, Ser. No. 710,899

Int. Cl.² A47G *29/02*

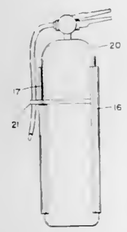
U.S. Cl. 248—243 **7 Claims**



1. In combination, a movable wall panel having a side wall surface and upright end edges, a generally vertical member extending along at least one upright edge of the panel and fixed to said wall panel, said vertical member including an edge portion extending generally normal to the side wall surface and extending outwardly from the side wall surface, a support bracket having a main portion and a leg portion generally parallel to the side wall surface when the main portion extends outwardly from the side wall surface, cooperating hook and slot means on the portion of the vertical member extending outwardly from the side wall surface and on the leg portion of said support bracket, said hook and slot means being engagable

upon movement of said leg portion in direction generally parallel to the side wall surface with the main portion of the support protruding from the side wall surface, and a cover strip attached to said wall panel and having a shield portion overlying said vertical member, said shield portion extending along said side wall surface and being spaced closely from the side wall surface, said leg portion moving between said side wall and said shield portion when the cooperating hook and slot means are moved to be engaged.

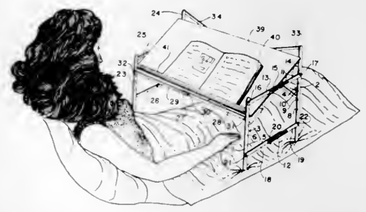
4,119,288
FIRE EXTINGUISHER SUPPORT
James T. Reynolds, 6 Holman Ave., Inver Grove Heights, Minn. 55075
Filed Jul. 25, 1977, Ser. No. 818,948
Int. Cl.² A47K *1/08*
U.S. Cl. 248—313 **1 Claim**



1. A fire extinguisher support comprising:
an elongated hollow cylindrical member having an inside surface and on outside surface with a nominal inside diameter of dimension X, said elongated hollow cylindrical member formed from a material characterized by flexibility for deforming to receive a fire extinguisher and sufficient resiliency so as to produce sufficient pressure to frictionally support a fire extinguisher therein;
said elongated hollow cylindrical member having an opening defined by an angle θ which ranges from 120° to 135°, said opening extending lengthwise for inserting a cylindrical fire extinguisher having a nominal outside diameter of dimension X; and
a resilient pad mounted to said inside surface of said hollow cylindrical member, said resilient pad extending over a portion of the inside surface of said hollow cylindrical member so that when a fire extinguisher is placed in said hollow cylindrical member said resilient pad forces a portion of the surface of the fire extinguisher into pressure contact with a second portion of the inside surface of said hollow cylindrical member to thereby produce a frictional engagement of the fire extinguisher to said elongated hollow cylindrical member and thereby securely hold a fire extinguisher therein, said elongated hollow cylindrical member having a length which ranges from about 60 to 100% of the length of the fire extinguisher to thereby provide sufficient frictional force to hold a fire extinguisher therein.

4,119,289
COLLAPSIBLE READING STAND
Julianna Kanocz, Holliswood, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jan. 16, 1978, Ser. No. 869,996
Int. Cl.² A47G *1/24*
U.S. Cl. 248—454 **1 Claim**

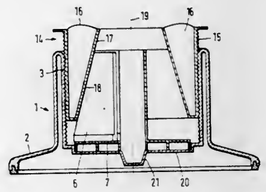
1. A collapsible reading stand, comprising
first and second upright stick-like support members in spaced, parallel upright position with an edge of each facing an edge of the other, each of said edges having spaced notches formed therein;
first and second strut members each having a pair of arms pivotally affixed to each other at one end of each and pivotally affixed to the first support member at another end of each of the first and second strut members and pivotally affixed to the second support member at the other end of each of the first and second strut members, said first and second strut members being releasably securable in position forming a linearly extending part;
third and fourth upright stick-like support members in spaced, parallel upright position with an edge of each facing an edge of the other, each of said edges having spaced notches formed therein;
third and fourth strut members each having a pair of arms pivotally affixed to each other at one end of each and pivotally affixed to the third support member at another end of each of the third and fourth strut members and pivotally affixed to the fourth support member at the other end of each of the third and fourth strut members, said third and fourth strut members being releasably securable in position forming a linearly extending part;



a fifth strut member having a pair of arms pivotally affixed to each other at one end of each and pivotally affixed to the first support member at another end of the fifth strut member and pivotally affixed to the third support member at the other end of the fifth strut member, said fifth strut member being releasably securable in position forming a linearly extending part to position said first and third support members in spaced, parallel relation;
sixth and seventh cross strut members pivotally affixed to each other at their centers and pivotally affixed to the second support member at one end of each of the sixth and seventh cross strut members and pivotally affixed to the fourth support member at the other end of each of the sixth and seventh cross strut members to position said second and fourth support members in spaced parallel relation; and
a book-supporting board-like member positionable in selected grooves of the support members for supporting a book at a desired inclination.

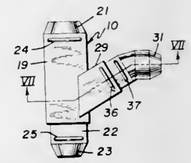
4,119,290
STAND FOR RELEASABLY LOCKING A POLE-LIKE MEMBER IN UPRIGHT POSITION
Jakob Gies, Solmser Strasse 14, 6434 Niederaula, Mengshausen, Germany
Filed Sep. 20, 1976, Ser. No. 724,419
Int. Cl.² A47G *33/12*
U.S. Cl. 248—523 **8 Claims**

1. A stand for releasably locking pole-like members of different diameters in an upright position, said stand comprising:
a tubular holder for mounting a pole-shaped member; circumferentially spaced clamping members mounted on said holder radially displaceable therein, the radially inner surfaces of the clamping members defining the peripheral outline of the space available for receiving the pole-shaped member; and setting means for selectively increasing and reducing the peripheral outline of said area, said setting means including an axially displaceable setting member disposed between the inner wall of the holder and the radially outer surfaces of the clamping members and coacting with said inner wall and outer surfaces so as to apply radially inwardly directed pressure upon said clamping members in response to an axially downward movement and to release the pressure in response to an



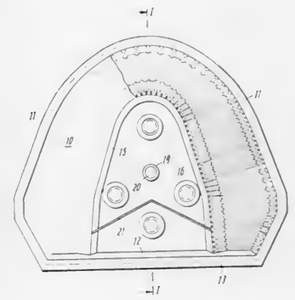
axially upward movement, and a bottom plate on said holder, said bottom plate including for each of said clamping members a radially extending guide track, each of said clamping members being slidably guided in the respective one of said tracks.

4,119,291
SEWER FORM
Joseph A. Polito, 398 Walnut St., Shrewsbury, Mass. 01545
Filed Mar. 21, 1977, Ser. No. 779,341
Int. Cl.² E03F *3/06*
U.S. Cl. 249—11 **7 Claims**



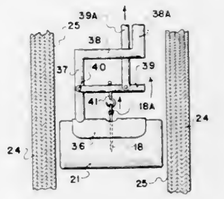
1. Sewer form for use in pouring concrete to form a floor with an invert in a manhole, the manhole having a tubular vertical wall formed with a plurality of pipe openings located at the same general horizontal level, comprising:
(a) a first thin-walled tube having a conical one end adapted to fit against a first one of the pipe openings,
(b) a second thin-walled tube having a conical one end adapted to fit against a second one of the pipe openings and having its other end telescopingly fitted into the other end of the first tube in a snug sliding fit, so that said first and second tubes are adapted to be arranged in fixed relative position with their respective conical ends pressed tightly into their respective pipe openings, and
(c) a third thin walled tube having a first portion, one end of the first portion being attached to said first tube, so that its axis lies at an acute angle to the axis of the said first tube, and having a second portion which has a conical end adapted to fit against a third one of said pipe openings and which has its other end telescopingly fitted into the other end of said first portion in a snug sliding fit.

4,119,292
MOULD FOR MAKING AND HOLDING A WORKING MODEL OF A JAW IMPRESSION FOR THE MANUFACTURE OF DENTAL PROSTHESES
Gerd Haker, Holstenstrasse 73, 2000 Hamburg 50, Germany
Filed Aug. 1, 1977, Ser. No. 820,894
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1976, 7624528[U]
Int. Cl.² A61C *9/00, 19/00;* **B29C** *1/16*
U.S. Cl. 249—54 **10 Claims**



1. A mould for the manufacture and receipt of a working model of a jaw impression for use in the manufacture of dental prostheses, which mould comprises a base having an outer side wall, an internal wall spaced from the outer side wall, retaining ribs for the working model arranged between the outer side wall and the internal wall and a hollow projection in the mould base extending into the interior of the mould within the base area bounded by the internal wall, the projection having a floor which is easily reputrable, and includes retaining elements to hold the working model in the mould.

4,119,293
SUPPORT AND INSTALLATION JACK, HOLE FORMING DEVICES AND SETTING TOOL THEREFOR
Erhard Armin Diener, 643 Saskatchewan Crescent E., Saskatoon, Canada
Filed May 9, 1977, Ser. No. 795,105
Int. Cl.² B28B *7/30*
U.S. Cl. 249—177 **12 Claims**



1. A support and installation jack for hole forming devices installed between forms prior to pouring concrete therebetween; comprising in combination telescopic elements moveable from between a released, extended position and a compressed set position and vice versa, a compression spring surrounding said elements, means adjacent the distal end of each of said elements between which said spring reacts, said spring normally urging said telescopic elements towards the said released position, and means co-operating with said telescopic elements to releasably hold said elements in the compressed set position with said compression spring being compressed, the distal ends of said elements being end sharpened.

4,119,294

PRESSURE-REGULATING VALVE

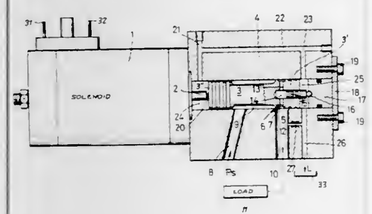
Josef Schnorrenberg, Bad Kreuznach, Fed. Rep. of Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach, Fed. Rep. of Germany

Filed Sep. 24, 1976, Ser. No. 726,430

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1975, 2544001

Int. Cl.² F16K *31/02*

U.S. Cl. 251—129 **9 Claims**



1. A pressure-regulating valve comprising:
a housing provided with a cylinder bore;
a piston axially slidable in said cylinder bore and provided with two axially spaced piston heads defining a peripheral recess between them, said housing having an inlet port opening into said recess between said piston heads and an outlet port leading to a load, said inlet port being connected to a source of high-pressure fluid, one of said piston heads having an edge bounding said recess and defining with said outlet port a restricted passage for said fluid, said one of said piston heads being formed with a blind axial bore opening into said cylinder bore at one end of said piston and communicating with said outlet port via a branch separated from said recess by said edge whereby said axial bore is cut off from said inlet port upon closure of said passage;
adjustable force-transmitting means bearing axially upon the other end of said piston in a direction tending to widen said passage;
venting means connecting portions of said cylinder bore at the ends of said piston to a region of low pressure; and
plug means slidably received in said axial bore, said housing being provided in said cylinder bore with abutment means facing said one end of said piston and backstopping said plug means for developing in said axial bore a load pressure bearing axially upon said piston in a direction opposing widening of said passage.

4,119,295

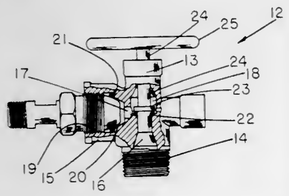
SEAL FOR LP GAS CYLINDER VALVE

William C. Blocker, 1406 N. Butler Ave., Indianapolis, Ind. 46218

Continuation of Ser. No. 599,323, Jul. 28, 1975, abandoned, which is a division of Ser. No. 478,059, Jun. 10, 1974, Pat. No. 3,929,042. This application Jun. 2, 1977, Ser. No. 802,646

Int. Cl.² F16K *51/00*

U.S. Cl. 251—144 **1 Claim**



1. In a liquid petroleum valve and tank combination including a tank for holding liquid petroleum with said tank having an outlet aperture, said combination further including a liquid petroleum valve threadedly received by said outlet aperture, said valve having a main body with a chamber formed therein and an inlet passage leading from said outlet aperture to said chamber, said main body further including an internally threaded outlet tube with an outlet passage extending therethrough opening into said chamber with said valve including means mounted to said main body operable to control flow of liquid petroleum from said tank through said chamber and said outlet passage, said outlet passage including an inner tapered portion and an outer internally threaded portion with an annular seat disposed therebetween, said valve having an externally threaded hollow cylinder threadedly received by said internally threaded portion and a hollow stem slidably extending through said hollow cylinder, said stem includes a bullet shaped enlarged head projecting through said annular seat into said inner tapered portion being secured therein by said hollow cylinder wherein the improvement comprises an O-ring seal having a circular cross section seated on said annular seat with said enlarged head forced through and against said O-ring seal effecting a fluid tight seal between said enlarged head and said main body by said hollow cylinder forcing said enlarged head against said O-ring seal with said enlarged head being spaced from said inner tapered portion by said O-ring seal, said stem including a longitudinally extending axis extending centrally through said bullet shaped enlarged head and said annular seat, said head including a frustoconical outer smooth surface projecting through said annular seat which is formed by a first annular surface and a second surface perpendicularly arranged to said first annular surface and said axis, said frustoconical outer surface spaced apart from said first annular surface and said second surface by said O-ring seal which is located between said head and seat and forced against said first annular surface and said second surface by said head providing at least three continuous surfaces of sealing contact on said O-ring seal and between said O-ring seal and said head and said annular seat and further spacing apart all portions of said head from said main body of said valve.

4,119,296

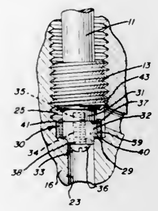
VALVE WITH ENCLOSED SOFT TIP STEM

John N. Scapes, Schaumberg, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 4, 1977, Ser. No. 774,328

Int. Cl.² F16K *1/34*

U.S. Cl. 251—210 **8 Claims**



1. In a valve having a body defining a flow chamber having a first port defined by an annular seat and a second port, a carrier in said flow chamber, and operator means movably mounted in association with said body for moving said carrier selectively inwardly toward and outwardly from said seat, an improved movable valve means for controlling fluid flow through said flow chamber between said ports, said valve means comprising:
a tubular sleeve formed of a cold flowable material having an inner diameter smaller than the inner diameter of said seat and an outer diameter greater than the inner diameter of said seat;

cylindrical mounting means on said carrier defining an inwardly facing shoulder means;
retaining means coaxially carried on the inner end of said mounting means defining an annular, outwardly facing shoulder means abutting the inner end of said sleeve having an outer diameter substantially less than the outer diameter of said sleeve and the inner diameter of said seat and substantially greater than the inner diameter of said sleeve for effectively retaining the sleeve coaxially on said mounting means captured between said inwardly facing shoulder means of the mounting means and the outwardly facing shoulder means of the retaining means; and
a tubular retainer formed of a substantially noncold flowing material coaxially surrounding said sleeve about said carrier cylindrical mounting means outwardly of said inwardly facing shoulder means, and an inner end arranged to abut said body coaxially about said seat when the carrier is moved inwardly to engage said sleeve with said seat, said sleeve being caused to cold flow between said seat and said retaining means in said first port as an incident of each forcible sealing closure of said valve and to have the incremental cold flowed portion remain extended about said shoulder means of the retaining means, said tubular retainer outer end being progressively incrementally urged outwardly about the carrier mounting means by the successive engagements of the retainer inner end with the body as the sleeve is progressively incrementally cold flowed inwardly from within the retainer to about said shoulder means of the retaining means, the axial length of the tubular retainer being substantially equal to the axial length of the sleeve prior to cold flow thereof and the axial length of said carrier cylindrical mounting means being at least approximately one-half the axial length of the tubular retainer whereby at least approximately one-half the sleeve may cold flow from within the tubular retainer before said tubular retainer outer end is disposed at the outer end of said mounting means.

4,119,297

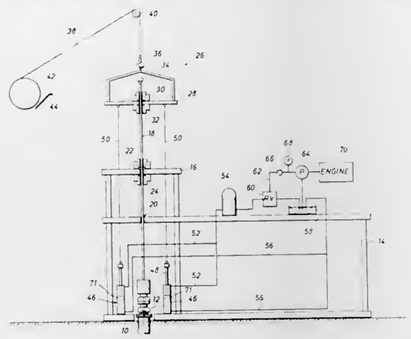
SNUBBING APPARATUS

Albert W. Gunther, P.O. Box 615, Harvey, La. 70059

Filed Mar. 14, 1977, Ser. No. 777,000

Int. Cl.² E21B *33/03*

U.S. Cl. 254—29 R **13 Claims**



1. Snubbing apparatus for lowering pipe into a pressurized well and for raising such pipe therefrom, comprising
vertical traveling means releasably secured to the pipe,
raising means secured fraulic or air operated winch drums, and hence this constant pretensioning of cables **50** is not limited to action by cylinders **46**.
fluid piston means operating beneath said vertical traveling means, and
a cable secured for downward movement of said vertical traveling means and to said piston means to effect lowering of said vertical traveling means with the application of fluid force to said piston means,
the application of a raising force by said raising means overcoming the fluid force applied to said piston means causing the raising of said vertical traveling means.

4,119,298

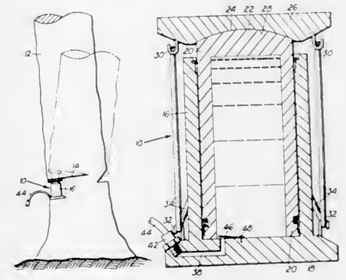
TREE FELLING RAM WITH SAFETY CHECK VALVE

Elmer R. Silvey, 1231 Dutton Rd., Eagle Point, Oreg. 97524

Filed Aug. 18, 1977, Ser. No. 825,729

Int. Cl.² B66F *3/24;* **A01G** *23/08*

U.S. Cl. 254—93 R **5 Claims**



1. A ram to assist in felling a tree by engagement between top and bottom portions of a backcut in the tree, comprising
(a) a cylinder portion having a base forming a closed end of said cylinder portion and arranged to engage one of the top or bottom portions of a backcut,
(b) said cylinder portion having an opening at the other end from said base,
(c) a piston in said cylinder portion having extending and retracting longitudinal movements,
(d) said piston having a drive end projecting from the opening in said cylinder portion,
(e) said piston also having a hollow portion facing said base of said cylinder portion,
(f) a head on said piston arranged to engage the other of the top or bottom portions of the backcut,
(g) fluid inlet means leading inwardly from the exterior of said base and opening into said cylinder portion,
(h) said fluid inlet means being arranged for association with a pressure supply and control means for admitting and returning fluid in said fluid inlet means for operating said piston,
(i) and check valve means at said opening of said fluid inlet means into said cylinder portion,
(j) the opening of said fluid inlet means being in alignment with the hollow portion of said piston whereby to locate said valve means within said cylinder portion and also in alignment with the hollow portion of said piston,
(k) said check valve means being operative to allow discharge of fluid under normal retracting conditions of said piston but operative to close off fluid return under abnormal pressure conditions to hold the piston stationary in said housing.

4,119,299

CABLE DRUM ARRANGEMENT WITH BRAKE

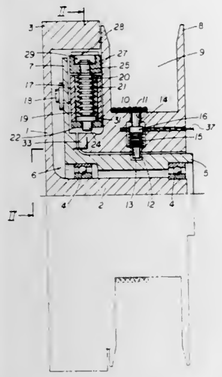
Albert Dietrich, and Alois Breiing, both of Markdorf, Fed. Rep. of Germany, assignors to Dornier Gmbh, Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 20, 1976, Ser. No. 724,932

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1975, 2546119

Int. Cl.² B66D *5/04*

U.S. Cl. 254—159 **5 Claims**



1. A cable drum arrangement comprising:

(a) a support member having a friction face circularly arcuate about an axis;

(b) a carrier member mounted on said support member for rotation about said axis;

(c) a brake shoe mounted on said carrier member,

(1) said brake shoe being radially movable toward and away from a position of engagement with said friction face,

(2) the engaged brake shoe and friction face impeding said rotation;

(d) a flyweight mounted on said carrier member for joint rotation with and radial movement on said carrier member relative to said axis;

(e) a cam follower member retained by said flyweight for joint rotation therewith;

(f) abutment means engaging said flyweight and retained on said cam follower member for joint radial movement with said flyweight;

(g) a compression spring radially interposed between said abutment means and said brake shoe for transmitting centrifugally generated force to said brake shoe during said joint rotation;

(h) actuating means responsive to completion of a predetermined number of revolutions of said carrier member about said axis for moving said cam follower member toward said brake shoe and for thereby increasing the stress of said spring sufficiently for transmitting to said brake shoe a force greater than said centrifugally generated force;

(i) a cable drum connected to said carrier member for rotation therewith about said axis during said predetermined number of revolutions and after said increasing of said stress.

4,119,300

BOLLARD-HANGER AND COUPLER SYSTEM

Clifford Goudey, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 23, 1977, Ser. No. 799,903

Int. Cl.² B66D *1/36*

U.S. Cl. 254—192 **9 Claims**

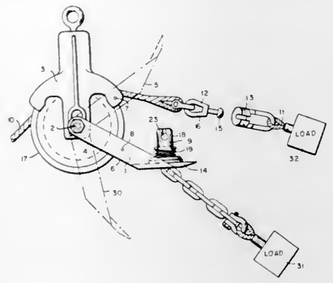
1. Apparatus to be used in conjunction with a bollard having a pulley and which supports a load by a line coupler comprising:

a U-shaped hanger having an end portion and sides connected thereto,

said hanger being pivotally attached to the bollard at the free ends of said sides of the hanger to allow said hanger to rotate about an axis parallel to that of the bollard pulley axis of rotation,

a bollard hauling line passing around the pulley of said bollard and connected to the coupler,

a load line connected between the load and the line coupler,



the space between the sides and said end portion of the U-shaped hanger and the bollard pulley being larger than the diameter of the hauling and load lines and the line coupler to allow said coupler to pass through the space,

said end portion of the U-shaped hanger being adapted to support said coupler and said load when said bollard hauling line is relieved of tension after said coupler has been Hauled-in past said space,

said line coupler comprising a first portion connected to the hauling line and second portion connected to the load line, said portions of said coupler being separable when said second portion of the coupler is supported by said hanger.

4,119,301

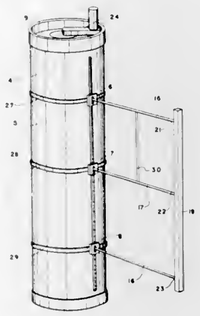
ROLLAWAY FENCE

Dannie L. Payne, Medina, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 25, 1977, Ser. No. 781,190

Int. Cl.² E04H *17/02*

U.S. Cl. 256—41 **2 Claims**



1. A rollaway fence having a plurality of fence posts supported in upright positions in spaced substantially parallel relation to each other, each of said fence posts of said rollaway fence comprising

a housing of substantially elongated cylindrical configuration having a side, a plurality of spaced side holes formed through the side and extending along an imaginary lateral line thereof, a top base and a top hole formed through the top base;

a split cylindrical guide member coaxially positioned in the housing in spaced relation with said housing, said guide member having a laterally extending gap forming a split therethrough;

a shaft coaxially rotatably mounted in the guide member in spaced relation with said guide member and extending through the top hole of the housing;

a plurality of reels coaxially affixed to the shaft and mutually spaced along said shaft;

a plurality of rolls of flexible fence cable each woundon a corresponding one of the reels in spaced parallel relation with the cable of each of said rolls passing through the gap of the guide member, around said guide member and through a corresponding one of the side holes of the housing;

a cross bar outside the housing positioned parallel to the axis of said housing, the free end of each of the cables being affixed to the cross bar in spaced parallel relation with the other cables and said cross bar being releasably affixable to the next-adjacent fence post; and

handle means positioned outside the housing and affixed to the shaft at the top hole of said housing for manually rotating said shaft to selectively release and retract said cables.

4,119,302

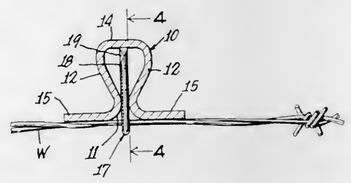
OBJECT SUPPORTS

Philip A. Moroco, 710 S. Buhl Farm Dr., Sharon, Pa. 16146, and Gaylord T. Brow, Bosler Rte., Bosler, Wyo. 82051

Filed Apr. 11, 1977, Ser. No. 786,124

Int. Cl.² B21F *27/00*

U.S. Cl. 256—48 **2 Claims**



1. An object support, comprising:

a metal post adapted to have its lower end driven into the ground, said post having a Vee section of a form to provide spaced legs joined by a bight and converging to form a narrow throat opening of substantially uniform size throughout the length of the post adapted to extend above the ground, each leg having an integrally joined flat flange extending in a direction away from said throat opening and devoid of any portions overlapping the latter so as to provide free access to the same,

a U-shaped metal staple having a pair of legs joined by a bight, each of said legs being round in cross-section for maximum strength in a lateral direction, said staple legs having a diameter larger than the size of said throat opening for drive fit into the latter and each having a pointed end adapted to loosely fit directly into said throat opening to align said staple legs with said throat opening for said drive fit, each of said staple legs having serrations therealong to grip with surfaces defining said throat opening and thereby resist movement of said staple outwardly of the latter, and

said post having spaced welds joining said converging legs at said throat opening to resist spreading of said converging legs when a staple is driven into said throat opening and thereby preventing the loosening of staples already driven into said throat opening, a said staple when driven into said throat opening being adapted to clamp an object between its bight and said flat flanges, and wherein said post legs are flattened to abut each other at the lower end of said post to provide a pointed lower end to facilitate the driving of the post into the ground.

4,119,303

METHOD AND DEVICE FOR PRECIPITATING COPPER CEMENT FROM A COPPER SOLUTION MIXED WITH IRON

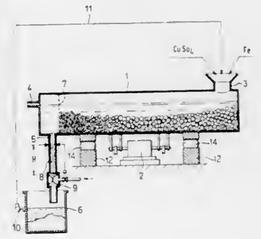
Hans Kellerwessel, Aachen, and Ernst Kausel, Cologne, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Dec. 1, 1975, Ser. No. 636,545

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1974, 2457660

Int. Cl.² C22B *3/00*

U.S. Cl. 266—92 **2 Claims**



1. Apparatus for making cement copper comprising in combination a container having an elongated chamber with a horizontally extending axis for processing a copper solution mixed with pieces of iron, inlet means leading into one end region of said chamber for charging the chamber with a copper solution and iron pieces, a static tube outlet means for the settling of cement copper depending from the bottom portion of the container at an opposite end region of said chamber and communicating with the bottom of the chamber, a valve at the lower end of said static tube outlet means controlling discharge of settled cement copper solution from the tube, a grate means for holding back said pieces of iron located within said chamber and extending transversely thereacross adjacent to but in advance of said outlet means, an overflow liquid outlet at said opposed end region of the chamber, a resilient support for the container accommodating vibration thereof, vibration drive means connected to said container to vibrate said container at a predetermined frequency and amplitude sufficient to cause continued striking together of the pieces of iron, sensing means for said static tube outlet means for determining the level of said particulate material in said tube means and for generating an instantaneous output signal representation of said determination, regulator means functionally associated with said valve for moving said valve between substantially open and substantially closed positions in response to an input signal fed thereto, and controller means functionally interconnecting said sensing means with said regulator means for receiving and comparing said instantaneous output signal with a preset signal generated by said controller means, said preset signal being representative of a predetermined fill level in said tube, said controller being further adapted to generate a difference signal representative of any predetermined comparison between said preset signal and said instantaneous output signal and to feed said difference signal to said regulator means whereby passage of particulate material through said tube is controlled by the fill level thereof in said tube during operation of said apparatus.

4,119,304

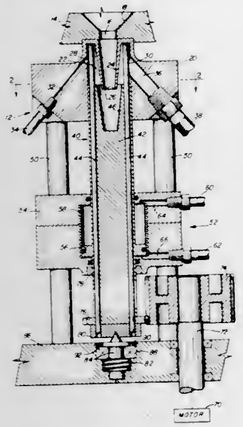
APPARATUS FOR MIXING AND DISPENSING FAST SETTING PLASTIC MATERIAL INTO A MOLD

James S. Groom, Wales, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Continuation of Ser. No. 596,389, Jul. 16, 1975, abandoned. This application Jan. 24, 1977, Ser. No. 762,044

Int. Cl.[2] B01F *7/16, 15/02;* **B29F** *3/02*

U.S. Cl. 366—189 **12 Claims**



1. A valve positionable at the opening to a mold cavity to control the flow of and to mix fast setting molding ingredients and comprising housing means defining a mixing chamber having an exit connectable with a mold opening and having two ingredient inlet ports, a mixer head disposed in the housing and including a spindle having a configuration complementary to the shape of the mixing chamber, the spindle being axially movable through the chamber of said housing between a "valve open" position wherein the spindle is withdrawn from the chamber and exposes said ports to admit fast setting ingredients to be mixed individually into the chamber and a "valve closed" position wherein the spindle closes said ports and fills said chamber to eject all ingredients from the chamber, the spindle having a central axis and an outer portion which is rotatably symmetric about the central axis and rotatable on the axis in at least the "valve open" position, at least one mixer element in the head supported by the spindle for rotation in the chamber to thereby effect mixing of the individually admitted ingredients in the "valve open" position and being movably mounted in the spindle to allow the mixing chamber to be filled by the head in the valve closed position, means connected with the spindle for reciprocating the spindle along its axis between the "valve open" and "valve closed" positions, and additional means connected with the mixer head for rotating the spindle about its axis together with the mixer element.

4,119,305

VISE

Emory H. Anderson, 3953 Laguna Blanca Dr., Santa Barbara, Calif. 93110

Filed Dec. 5, 1977, Ser. No. 857,316

Int. Cl.[2] B25B *1/04*

U.S. Cl. 269—71 **10 Claims**

1. A vise comprising:

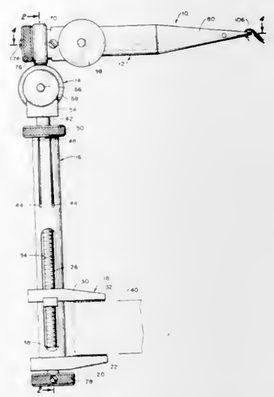
a housing;

clamping means connected to one end of said housing for releasably securing said housing to an exterior supporting structure;

swivel means connected to the free end of said housing, said swivel means being pivotable about a first axis, said swivel means including a first member and a second member, said second member being pivotable in respect to said first member about a second axis, said second axis being perpendicular to said first axis;

second lock means for fixing said first member in respect to said second member, said second lock means also functioning as a frictional brake in the movement of said second member in respect to said first member;

a vise jaw assembly mounted upon said second member and pivotable in respect thereto about a third axis, said third axis being perpendicular to both said first axis and said second axis, third lock means for fixedly positioning said vise jaw assembly relative to said second member, said third lock means being further capable of being employed as a friction brake, said vise jaw assembly including a clamping section for grasping onto an exterior device and support such thereby facilitating the performing of precise operations upon said device, said clamping section being located directly adjacent said third axis.



4,119,306

METHOD AND APPARATUS FOR SEPARATING AND PROCESSING A PLURALITY OF SUPPLE SHEETS IN A SINGLE OPERATION

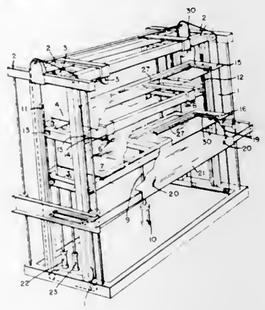
Gaspar A. Bijttebier, Grote Heerweg, 64, B-8749 Beveren-Leie, Belgium

Filed Dec. 15, 1976, Ser. No. 750,815

Claims priority, application Belgium, Dec. 16, 1975, 17082; Netherlands, Jul. 29, 1976, 7608456

Int. Cl.[2] B65H *39/05*

U.S. Cl. 270—58 **17 Claims**



1. A method for simultaneously separating at least one sheet from each of a plurality of stacks of sheets, said stacks being positioned on tables vertically spaced one above the other, the method comprising:

(a) bringing said stacks into contact with sets of pick-up devices associated with each of said tables by vertical translation,

(b) picking up at least one sheet from each of said stacks by means of said pick-up devices,

(c) returning said tables and the associated stacks by vertical translation in the direction opposite to that of step a) and thereby separating each picked-up sheet from the underlying stack,

(d) moving supporting members for each separated sheet between said sheet and the stack immediately therebeneath,

(e) disengaging each separated sheet from the pick-up devices so that the sheets drop onto the associated supporting means therebeneath, and

(f) horizontally removing the supporting means with the separated sheets thereon from beneath the pick-up devices to a desired position.

4,119,307

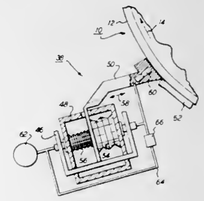
SHEET STRIPPING APPARATUS

Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1977, Ser. No. 807,858

Int. Cl.[2] B65H *29/54*

U.S. Cl. 271—174 **12 Claims**



1. An apparatus for separating a sheet having at least a portion thereof adhering removably to a moving member, including:

a stripping member spaced from the moving member and arranged to be interposed between the sheet and moving member;

means for detecting the spacing between the surface of said stripping member opposed to the moving member and the moving member; and

means, responsive to said detecting means, for translating said stripping member to maintain the surface of said stripping member opposed to the moving member spaced a substantially constant distance therefrom.

4,119,308

SHEET STRIPPING APPARATUS

Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1977, Ser. No. 807,956

Int. Cl.[2] B65H *29/54*

U.S. Cl. 271—174 **4 Claims**

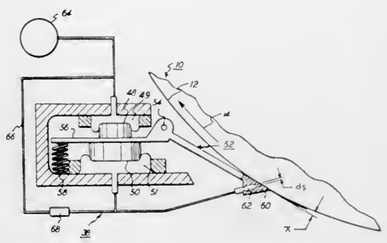
1. An apparatus for separating a sheet from a moving member, including:

a support member;

a stripping member mounted pivotably on said support member, said stripping member comprising a stripping element spaced closely adjacent to the moving member and arranged to be interposed between the moving member and sheet with the stripping element having a passageway terminating in an aperture in the surface thereof opposed to the moving member;

means for detecting the spacing between the stripping element of said stripping member and the moving member, said detecting means comprises means for supplying a pressurized gas to the passageway in the stripping element of said stripping member with the passageway being configured to provide pressure changes in response to variations in the spacing between the moving member and the stripping element of said stripping member;

means for resiliently urging the stripping element of said stripping member to a nominal position; and



a pair of diaphragms coupled to said stripping member and in communication with said detecting means, said pair of diaphragms pivoting said stripping member in response to the detected spacing between the stripping element of said stripping member and the moving member to maintain the spacing therebetween substantially constant, said pair of diaphragms being made preferably from an elastomeric material having a low spring constant with the pressure in one of said pair of diaphragms remaining substantially constant while the pressure in the other of said pair of diaphragms varies in accordance with the changes in pressure in the passageway of the stripping element of said stripping member.

4,119,309

DEVICE FOR THE FLATTENING OF SHEETS BY MEANS OF SUCTION

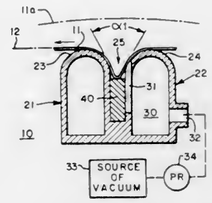
Peter Mayer, and Claus Simeth, both of Muhlheim, Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,905

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2649051

Int. Cl.[2] B65H *29/68*

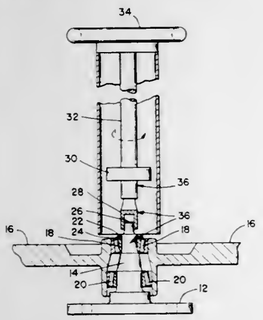
U.S. Cl. 271—183 **10 Claims**

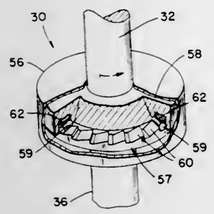


1. In a device for removing curling tendency in sheets in sheet-fed machines, particularly printing presses, having means for conveying a sheet edgewise in a transport plane, the combination comprising upstream and downstream beam-like supporting members arranged transversely with respect to the direction of sheet movement and presenting supporting surfaces which are spaced parallel to one another on one side of

the transport plane to define a groove between them, means for applying vacuum within the groove to draw a passing sheet downwardly into the groove to produce a relatively sharp concave bend in the sheet thereby to counteract the curling tendency, and means including a movable member for changing the cross-sectional profile of the groove to vary the degree of sharpness of the bend.

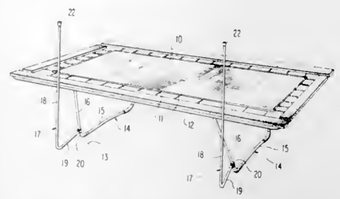
4,119,310
PLAYGROUND TURNTABLE
Bert M. Trubody, Oakland, Calif., assignor to Patterson-Williams Manufacturing Company, Santa Clara, Calif.
Division of Ser. No. 671,181, Mar. 26, 1976, abandoned. This application Apr. 25, 1977, Ser. No. 790,522
Int. Cl.[2] A63G *1/12*
U.S. Cl. 272—33 R **2 Claims**





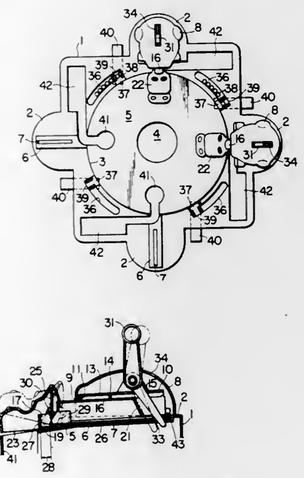
1. A playground turntable comprising a horizontal occupant supporting platform rotatable about a fixed vertical axis; a fixed shaft segment coaxially supporting said rotatable platform; a rotatable shaft segment; a ratchet drive coaxially coupling said rotatable shaft segment to said fixed shaft segment for permitting only unidirectional rotation of said rotatable shaft segment; a handcontrolled wheel mounted to said rotatable shaft segment in a position permitting a user on said platform to continuously grip said control wheel while propelling said platform in unidirectional rotation, upon intermittent application of a hand torque to said control wheel, said ratchet drive comprising first and second flat plates extending perpendicular to and coaxial with said vertical axis, said first plate fixedly secured to said first shaft and having a plurality of upstanding teeth extending radially outward and arranged in a circle around said fixed shaft, said second flat plate having a face with a plurality of elongated radially extending recesses arranged about said vertical axis and confronting said teeth, elongated roller bearings corresponding in number to and disposed in each of said recesses, and means urging said roller bearings against said teeth.

4,119,311
COMBINATION TRAMPOLINE AND REBOUNDING DEVICE WITH DETACHABLE SUPPORT MEANS
John W. Jenkins, 12424 Hillcrest Rd., and A. G. Nichols, Jr., 11515 St. Michaels, both of Dallas, Tex. 75230
Filed Mar. 25, 1977, Ser. No. 781,306
Int. Cl.[2] A63B *5/00*
U.S. Cl. 272—65 **4 Claims**



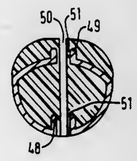
1. In a trampoline of the type wherein the bed frame is normally supported in a substantially horizontal position or plane by a pair of spaced generally U-shaped main supports having upstanding arms, each of the upstanding arms of the supports diverging outwardly and upwardly away from each other, the improvement which comprises a pair of L-shaped auxiliary supports each having a stem and means for detachably attaching said auxiliary supports to the trampoline to pivot the trampoline bed to a generally upright substantially vertical position or plane for use as a rebounding device, the length of the stem of each of the L-shaped supports being approximately twice the height of the bed frame from a floor when the trampoline is normally supported in its horizontal position.

4,119,312
GAME BOARD
Masatoshi Todokoro, 2-33, Kognaehara 2-chome, Matsudo, Chiba, Japan (270)
Filed Jan. 28, 1977, Ser. No. 763,691
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—1 R **2 Claims**



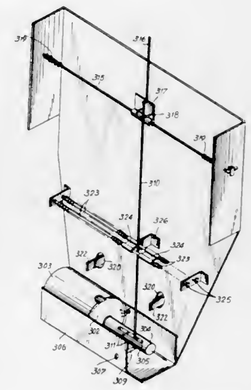
1. A game board comprising:
(a) an extended base board with a surface, a defined periphery, a defined board center, and ball delivery means to deliver a ball towards said board center;
(b) a plurality of hollow structures modeled after the body portion of an animal or otherwise shaped and disposed at the base board periphery with a slant groove therein extending towards said board center;
(c) A push-out member for each hollow structure, each push out member comprising fore and rear ends, and an upper frame astride said slant groove, a bottom in each of said hollow structures, said bottom being slidably mounted in said slant groove so that said push-out member may be pushed out of said hollow structure towards said board center, a capturing structure shaped like the head of an animal or otherwise, pivotally joined to said push-out member fore end, said capturing structure having a bottom opening which normally engages the board surface and a capturing structure interior upper part with a protuberance at said upper part which when engaged will pivot said capturing structure and raise said bottom opening.
(d) an actuator plate loosely fitted in each of said push-out members so that said plate is reciprocatively movable between the fore and rear ends of said push out member, guide chamber means at the fore end of said push out member and within said capturing structure to guide the fore portion of said actuator plate towards said protuberance;
(e) a protuberant and beveled fore end on each of said actuator plates disposed to enter said guide chamber means and hit the protuberance in said capturing structure so as to raise the capturing structure from the board surface when the actuator plate is moved from the rear end to the fore end of the push-out member; and,
(f) a lever for each push-out member, each having one end engaged with the associated actuator plate, the other end projecting out from the associated animal body-shaped hollow structure with a lever center portion pivoted to said upper frame at said push-out member rear end so that when the projecting portion thereof is moved back and forth, its end engaged with said associated actuator plate operates to force out the corresponding push-out member from said associated hollow structure through said actuator plate and spring means coupled to said lever tending to return said push-out member to its original position.

4,119,313
GAMES RACQUETS
Frank William Popplewell, Saffron Walden, and Frank Raymond Houghton, Cambridge, both of England, assignors to Dunlop Limited, England
Filed Jun. 28, 1976, Ser. No. 700,499
Claims priority, application United Kingdom, Jul. 12, 1975, 29388/75; Oct. 17, 1975, 42603/75; Feb. 7, 1976, 4836/76
Int. Cl.[2] A63B *49/02*
U.S. Cl. 273—73 K **28 Claims**



17. A frame for a games racquet, said frame comprising a head portion and a handle portion, said head portion being in the form of a loop having injection-moulded plastics material defining substantially the entire outer periphery thereof and secured to a tubular metal reinforcement, said tubular metal reinforcement running circumferentially around substantially the whole loop and being positioned so that a portion of its circumference is visible and defines substantially the entire inner periphery of said loop.

4,119,314
MINIATURE SOCCER-FOOTBALL GAME TOY
Nibaldo Mosciatti Moena, Cochrane 450, Concepcion, Chile
Filed Jan. 24, 1977, Ser. No. 762,124
Int. Cl.[2] A63F *7/06*
U.S. Cl. 273—85 F **2 Claims**



1. A miniature football game toy comprising: a ball; a plate carrying the field on which the game is to be played and having paths along which players of the game are movable; said plate having a field surface with undulations and cavities for guiding said ball towards the foot of a player; figures representing players and goal-keepers moving alternately along said paths on the surface of said plate; a control panel with control keys actuatable by an operator for moving said players and goal keepers, electromagnetic actuator means for mounting the players and goal-keepers being defined by a frame, at least one hollow magnetic coil horizontally mounted on said frame, a lever arm, said coil having a sliding core articulately linked to said lever arm for producing alternate movement of the players, said sliding core and said lever arm being mounted in the lower portion of said frame and further defined by a sliding support carrying a vertical pin and being connected to the upper end of said lever arm, a guide rail, said support being movable on said guide rail in a direction substantially parallel to said sliding magnetic core, said vertical pin having a length of movement corresponding substantially to the length of a guiding slot for the respective player and said plate having a slot for guiding the movement of the players, said actuator means being mounted under said slot.

4,119,315
COMPETITIVE ACTION PLAYING GAME WITH ERRATICALLY MOVABLE PLAYING PIECE
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316
Filed Jan. 31, 1977, Ser. No. 764,006
Int. Cl.[2] A63F *7/06*
U.S. Cl. 273—85 F **18 Claims**

1. A competitive action playing game playable with a shiftable ball-type playing piece, said playing game comprising:
(a) a game board having a playing surface extending between a pair of opposed player ends, said game board also having a plurality of longitudinally extending rows of playing piece receiving depressions extending from end to end across said playing surface with a plurality of depressions in each such row, each of said depressions being formed by at least one inwardly sloping wall which opens

into an opening at the lower end of each depression, each of the depressions in each of said rows being spaced from the next adjacent depression in the same row by substantially the same distance as an adjacent depression in a next adjacent row of depressions, the depressions in each of said rows being substantially aligned with the same depressions in such rows and the depressions in each row being substantially aligned with the depressions in the next adjacent row, the upper portion of an inclined wall in one depression being spaced from the upper portion of an inclined wall in the next adjacent depression in the same row by a distance which is substantially less than the overall dimension of each depression in the longitudinal direction, the upper portion of an inclined wall in one depression being spaced from the upper portion of an inclined wall in the next adjacent depression in the next adjacent row by a distance substantially less than the overall transverse dimension of each depression,

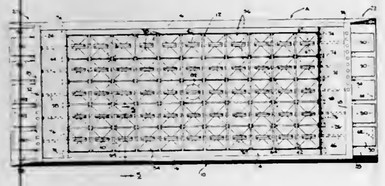
(b) a plurality of first actuating members at the first of the opposed player ends with one first actuating member for each row,

(c) a plurality of second actuating members at the second of the opposed player ends with one second actuating member for each such row,

(d) an individual first movable playing piece projecting element located at each depression in each of the rows,

(e) an individual second movable playing piece projecting element located at each depression in each of the rows,

(f) an individual first longitudinally extending connecting means for each row operatively connecting all of the first projecting elements in such row to an individual first



actuating member associated with such row, said first projecting elements in each row normally lying below said playing surface, said first projecting elements in each row being operatively connected to said first connecting means for each such row so that the first projecting elements in such row will generally simultaneously extend upwardly through the openings in the associated depressions and longitudinally toward the second player end upon actuation of said individual first actuating member to engage and propel a ball-type playing piece initially longitudinally across the playing board, said first projecting elements being shiftable to propel said ball-type playing piece generally and at least initially toward the second player end, and

(g) an individual second connecting means for each row operatively connecting all of the second projecting elements in such row to an individual second actuating member associated with each row, said second projecting elements in each row normally lying below said playing surface, said second projecting elements in each row being operatively connected to said second connecting means for each such row so that the second projecting elements in such row will generally simultaneously extend upwardly through the openings in the associated depressions and longitudinally toward the first player end upon actuation of said individual second actuating member to engage and propel a ball-type playing piece initially longitudinally across the playing board, said second projecting elements being shiftable to propel said ball-type playing piece generally initially toward the first player end, said first and second projecting elements being disposed in side-by-side relationship at each depression in each row,

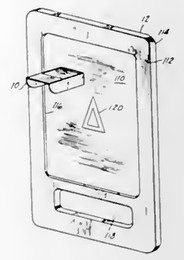
(h) said playing surface being substantially entirely formed by said depressions, so that such ball-type playing piece will alwauys roll into a depression in a particular row requiring the players to anticipate the row into which said playing piece will roll and select and actuate the proper actuating member.

4,119,316

MAGNETIC DART TOY

John S. Kettlestrings, Glendale Heights, Ill., assignor to Cling-Cal Corporation, Carol Stream, Ill.

Filed Mar. 4, 1977, Ser. No. 774,703
Int. Cl.² A63B *65/02*; F41J *3/00*
U.S. Cl. 273—95 R **9 Claims**



1. A dart for use in a game or other amusement activity comprising,

(a) a dart body,

(b) a rectangular-shaped magnetic element having a front vertical surface forming a nose portion and carried by said body, and

(c) a rear box-shaped body portion joined to said nose portion and having two spaced vertical sides joined to and separated by a partial crosspiece to create a selectively sized opening defined by said sides, said crosspiece and said nose portion,

said body and said body portion being formed by a single piece of paper-like material cut and folded to provide said crosspiece as said body and said sides extending rearwardly to form said box-shaped body portion.

4,119,317

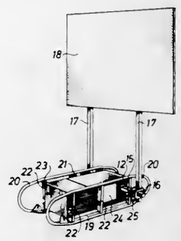
TARGET RAISING DEVICE WITH CURVED SUPPORTING RUNNERS

Ingvar Ohlund, Huskvarna, and Hans Robertson, Jonkoping, both of Sweden, assignors to Saab-Scania Aktiebolag, Jonkoping, Sweden

Filed Feb. 24, 1977, Ser. No. 771,747
Claims priority, application Sweden, Feb. 24, 1976, 7602192
Int. Cl.² F41J *1/10, 1/20*
U.S. Cl. 273—105.6 **3 Claims**

1. A target raising device for shooting practice, comprising a target mountable on a transverse shaft rotatable by a motor, a power unit for driving the motor, and a control unit for remote control of the motor, wherein the target raising device is supported by runners which are arranged along each longitudinal side of the device and which are curved up and back at the front and rear ends to form carrying handles, the mass and shape of the target raising device being such that the target raising device may be bodily moved by at least one person when grasping said handles, rods supporting said target pivoting in a plane of movement adjacent the runners, whereby the position of the transverse shaft is substantially at the centre of curvature of the curved parts of the runners at one end of the target raising device, so that as the target is raised or lowered

said rods which support the target and which are attached to the transverse shaft at right angles to it pass by the said curved



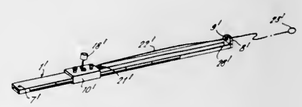
parts of the runners approximately at right angles to tangents of the said curved parts.

4,119,318

GOLF BALL FLIGHT INDICATING DEVICE

Mily de Kremer, and Peter de Kremer, both of Poole, England, assignors to Dolcofin Ltd., Poole, England

Filed Apr. 27, 1977, Ser. No. 791,334
Int. Cl.² A63B *69/36*
U.S. Cl. 273—185 C **7 Claims**



1. A golf swing training device comprising an elongate guide member including an elongate rectilinear guide track portion which provides first and second mutually opposed flat guide surfaces on respective opposite sides thereof, a slide assembly mounted on the guide member and slidable along the length thereof, the slide assembly including first and second plate members each disposed on respective sides of the guide track portion and each providing a respective generally flat surface of substantial surface area, said flat surfaces facing towards each other and thereby being cooperable with respective ones of said first and second guide surfaces, the slide assembly further including spring means urging the first and second plate members towards each other whereby said flat surfaces thereof are pressed into frictional engagement with the adjacent first and second guide surfaces of said guide track portion, such engagement producing a force retarding sliding movement of the slide assembly in both directions along the guide member, the retarding force being substantially uniform along the length of the elongate member, and means for connecting the slide assembly to a golf ball, whereby when the ball is struck into flight the slide assembly is entrained by said connecting means along the guide members against said uniform retarding force.

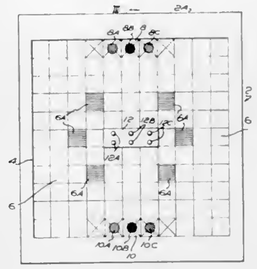
4,119,319

ELECTRICAL BOARD GAME APPARATUS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Jan. 6, 1977, Ser. No. 757,216
Claims priority, application United Kingdom, Jan. 8, 1976, 00593/76
Int. Cl.² A63F *3/00*
U.S. Cl. 273—237 **6 Claims**

1. Apparatus for playing a game comprising in combination a game board having a playing area comprising a plurality of playing positions arranged in regular array, and sets of opposed playing pieces adapted to be moved within said playing area on said playing positions, said playing area including opposed starting/finishing positions and including indicating means which are adapted, upon actuation of operating means connected thereto, to indicate whether a playing piece may move



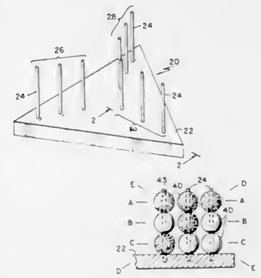
within said playing area, and determining means to determine the number of playing positions to be moved by a playing piece, said indicating means being a plurality of members arranged in pairs, said members being illuminable upon actuation of said operating means.

4,119,320

THREE DIMENSIONAL GAME

Mary Claire Chorba, 228 Bleecker St.; Peter Craig, 42 Bank St., both of New York, N.Y. 10014, and Kurt Pierce Westergren, 173 Sullivan St., New York, N.Y. 10012

Filed Jun. 6, 1977, Ser. No. 803,969
Int. Cl.² A63F *3/00*
U.S. Cl. 273—241 **18 Claims**



1. A game comprising a base, nine elongated pegs disposed substantially perpendicularly to said base and arranged on said base in spaced relation in three discrete groups, a plurality of pieces each having a hole therethrough, said hole having a cross-sectional area large enough to allow any one of said pegs to pass entirely therethrough, half of said pieces, save one piece, being of one color comprising a first set of pieces, and the remaining pieces save said one being all of a different color defining a second set of pieces, wherein there are an equal number of pieces in said first set and said second set of pieces.

4,119,321

GAME WITH BOARD AND PIECES AND DICE

Jack R. Creel, P.O. Box 2176, Pensacola, Fla. 32503

Filed Jun. 6, 1977, Ser. No. 804,121
Int. Cl.² A63F *3/00*
U.S. Cl. 273—248 **5 Claims**

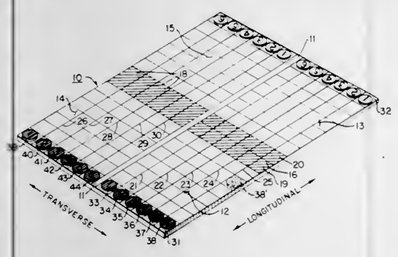
1. A game of the type including game pieces movable upon

a game board by plural players in response to the rolling of dice from starting positions of the pieces to scoring positions thereof to achieve a predetermined winning number of scoring points by adding together the values of the numbers carried by multiple game pieces moved into scoring positions, comprising:

(a) a game board having plural playing tracks each having a multiplicity of contiguous rows of spaces each extending from a starting position space to a scoring position space, and the playing tracks being assigned to the players;

(b) plural sets of differently colored game pieces, each player being assigned pieces of one distinguishing color, the game pieces being initially arranged with one piece in the starting position space of each of the contiguous rows of the playing track assigned to that player, and the game pieces of each set bearing indicia each comprising a different number;

(c) a set of multiple playing dice for selecting which of a player's pieces can be moved and each having faces bearing numbers corresponding with said indicia and having



the various faces distinguishingly colored to match the colors of the sets of game pieces, the faces of the dice in the set having the same distribution of colors and numbers for the various game pieces;

(d) a group of uniquely colored moving dice rollable with said set of dice and having faces bearing numerals for selecting how many spaces a selected game pieces can be moved; and

(e) each player being assigned on said game board two playing tracks respectively having a multiplicity of contiguous rows of spaces each extending from a starting position space to a scoring position space, and each player being assigned two sets of game pieces which bear number indicia and are similarly colored for each player and occupying said two playing tracks, one of the playing tracks having scoring position spaces unique to that player, and the other playing track having only one scoring position space for each row which is accessible to both players but can only be occupied by the game piece of one player at a time.

4,119,322

BRIDGE GAME FOR TWO OR THREE

William Weigl, 1805 Conwood Dr., Troy, Ohio 45373

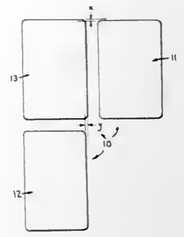
Continuation-in-part of Ser. No. 409,640, Oct. 25, 1973, Pat. No. 4,009,884. This application Feb. 22, 1977, Ser. No. 771,023

Int. Cl.[2] A63F *1/02*

U.S. Cl. 273—293 **16 Claims**

14. In a bridge deck of 52 playing cards used in a bridge game in which two or three players bid to contract for a thirteen card dummy hand which is incapable of verbal response and at least some of the cards of which dummy are unexposed to the players at the time of bidding, the improvement comprising:

means associated with the Aces of said deck and signifying the number of Aces in the unexposed cards of said dummy



hand in response to a Slam bid by one of said players calling for such number of Aces.

4,119,323

HEAT AND SOLVENT RESISTANT FLEXIBLE GASKET MEANS AND PROCESS FOR PRODUCTION THEREOF

Herbert Meister, Langnau a.A., Switzerland, assignor to Herbert Meister and Co., Zurich, Switzerland

Filed May 18, 1977, Ser. No. 798,167

Claims priority, application Switzerland, May 18, 1976, 6222/76

Int. Cl.[2] F16J *15/22*

U.S. Cl. 277—235 R **14 Claims**



1. A preformed substantially heat and solvent resistant gasket sealing means of predetermined cross section comprising:

(a) a core of compacted heat resistant fibrous material;

(b) a first, flexible, substantially helical, metallic winding surrounding said core; and,

(c) an envelope of compacted heat resistant fibrous material surrounding said winding, said envelope being impregnated with a heat and solvent resistant material in sufficient quantity to physically bind said fibrous material into an unitary envelope and to provide a substantially smooth outer surface of predeterminable cross section on said envelope.

4,119,324

BONDED TFE LIP SEAL

Dennis N. Denton, Bessemer City, and David G. Boyd, Gastonia, both of N.C., assignors to Garlock Inc., Rochester, N.Y.

Continuation of Ser. No. 538,542, Jan. 6, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,441

Int. Cl.[2] F16J *15/32*

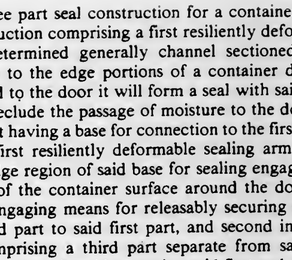
U.S. Cl. 277—134 **9 Claims**

1. A shaft seal comprising:

(a) a single annular metal case including a cylindrical portion and a radial flange;

(b) an annular, flexible, non-elastomeric sealing element having a solid, non-perforated radial portion in contact with the inside surface of said radial flange and also having a frusto-conical portion having a sealing lip on the distal end thereof; and

(c) an annular synthetic rubber filler ring located in the annular space between said cylindrical portion of said metal case and said radial portion of said sealing element and being spaced away from and out of contact with said frusto-conical portion of said sealing element and being bonded solely to said cylindrical portion of said metal case



and to said radial portion of said sealing element, said filler ring being a solid body substantially filling said annular space such that said sealing element is held in place against said radial flange of said metal case by said filler ring, said filler ring being molded in place, and including a plurality of hydrodynamic pumping elements molded on a shaft-engaging surface of said frusto-conical portion of said sealing element.

4,119,325

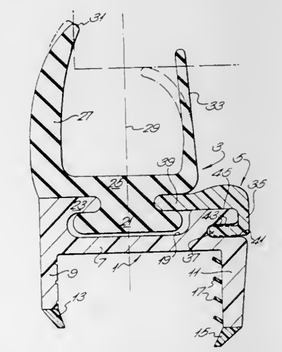
THREE-PART SEAL CONSTRUCTION

John Oakley, Kempston, and Derrick Ruffell, Stevenage, both of England, assignors to Schlegel (UK) Limited, Leeds, England

Filed May 25, 1977, Ser. No. 800,525

Int. Cl.[2] F16J *15/10;* **E06B** *7/16*

U.S. Cl. 277—207 R **20 Claims**



1. A three part seal construction for a container door, said seal construction comprising a first resiliently deformable part of a predetermined generally channel sectioned shape for application to the edge portions of a container door so that when fitted to the door it will form a seal with said edge portions to preclude the passage of moisture to the door edges, a second part having a base for connection to the first part and at least one first resiliently deformable sealing arm upstanding from an edge region of said base for sealing engagement with a portion of the container surface around the door opening, first interengaging means for releasably securing said base of said second part to said first part, and second interengaging means comprising a third part separate from said first and second parts for releasably securing said first and second parts together.

4,119,326

VARIABLE SPEED BICYCLE

John F. Porter, 5019 Newport Ave., Bethesda, Md. 20016

Filed Jun. 10, 1977, Ser. No. 805,357

Int. Cl.[2] B62M *9/08*

U.S. Cl. 280—236 **5 Claims**



1. A variable speed transmission assembly for a bicycle comprising, a drive shaft rotatably mounted on the bicycle frame, bicycle pedals connected to each end of said drive shaft, a variable speed drive pulley connected to said drive shaft, the rear axle of said bicycle providing a driven shaft, a variable speed pulley connected to said driven shaft, a drive belt extending between said drive pulley and said driven pulley, a pair of plungers slidably mounted on said bicycle frame, one end of each plunger engaging the face of a respective movable pulley half of the drive and driven variable speed pulleys, a pair of bell crank levers pivotally connected to said bicycle frame, one leg of each bell crank lever engaging the opposite end of a respective plunger, a pair of cables, and manual cable actuating means; one end of each cable being connected to the other leg of a respective bell crank lever, the opposite end of each cable being connected to said cable actuating means, whereby when the cable actuating means is moved manually in one direction the effective diameter of the drive pulley is increased while the effective diameter of the driven pulley is decreased; and when the cable actuating means is manually moved in the opposite direction the effective diameter of the drive pulley is decreased while the effective diameter of the driven pulley is simultaneously increased.

4,119,327

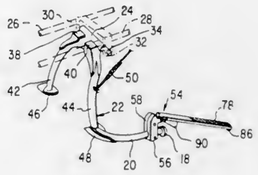
LEVER FOR MOTORCYCLE CENTER STAND

Donald E. Emerson, Palmdale, Calif., assignor to Space-Age Control, Inc., Palmdale, Calif.

Filed Jul. 13, 1977, Ser. No. 815,291

Int. Cl.[2] B62H *1/00*

U.S. Cl. 280—302 **9 Claims**



1. In a motorcycle having a main frame,

a center stand pivotally secured to a portion of said frame, said stand having spaced legs adapted to support the motorcycle on lower ends thereof in an at rest position,

upper end portions of said legs connected to pivot mounting

means, said stand being normally spring biased on said pivot mounting in an upwardly non-functional position,

a side arm on said stand extending laterally outwardly of said frame and motorcycle positioned in the non-functional position to be moved downwardly against the force of the spring to a rearwardly-vertical position and then past the pivot center to a forwardly-vertical position against the weight of the motorcycle to raise the motorcycle to a steady at rest position with the lower ends of the stand legs on the ground surface under the motorcycle,

means on said side arm adjacent its outer end on which said force is to be applied to move the arm and stand to the at rest position,

the improvement comprising:

a lever securable to said arm adjacent its outer end by which substantially additional force can be applied to said last means by contact thereagainst and to said arm to move said stand past the pivot center to the at rest position,

said lever being securable to said arm by arm engaging means,

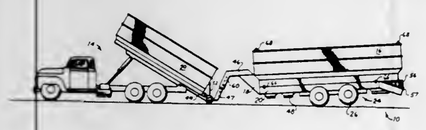
said lever being hingedly connected with said arm engaging means so as to be movable from a non-functional, out of the way position to an operating position to receive said force.

4,119,328

GOOSENECK TRAILER WITH ADJUSTABLE BOGIE

Charles Don Rhodes, P.O. Box B, Petersburg, Tex. 79250

Filed Nov. 19, 1976, Ser. No. 743,295
Int. Cl.[2] B62D *27/06, 53/06*
U.S. Cl. 280—415 B **16 Claims**



1. In a trailer having

a rectangular horizontally disposed rigid chassis including

(i) longitudinal chassis members, and

(ii) transverse chassis members,

hitch means connected to the chassis for connecting the trailer to a towing vehicle,

a plurality of ground engaging wheels,

the improved structure for attaching said wheels to said chassis comprising in combination with the above:

two independent bogies, each having

(i) a longitudinal bogie frame member,

(ii) at least one short axle,

(iii) a pair of said ground engaging wheels on said short axle, and

(iv) a spring means for connecting the axle to the bogie frame member, with

(v) the wheels straddling the bogie frame member,

each of said bogie frame members adjustably attached to one of said longitudinal chassis members as follows:

a coupling member affixed to the longitudinal chassis member,

said bogie frame member is slidingly mated to said coupling member,

at least one aperture in said bogie frame member,

a plurality of apertures in said coupling member, and

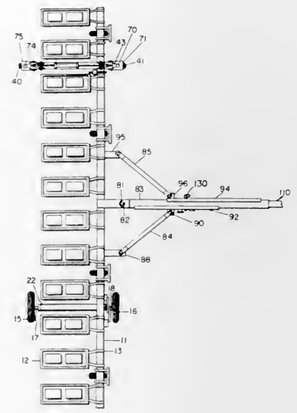
a locking pin through said bogie frame member aperture.

4,119,329

FARM APPARATUS

L. Eugene Smith, R.R. 2 Box 407, Lebanon, Ind. 46252

Filed Jun. 15, 1977, Ser. No. 806,742
Int. Cl.[2] B62D *53/00*
U.S. Cl. 280—415 R **16 Claims**



1. A farm apparatus movable by connection to a transporting vehicle comprising:

a frame including an elongated tool bar having a first end and a second end;

first attaching means for securing farm implements to the tool bar;

a first wheel assembly mounted to said frame near the first end of the tool bar, said first wheel assembly including a first wheel rotatable about a horizontal axis;

first mount means for mounting said first wheel assembly to said frame to be pivotable about a vertical axis;

a second wheel assembly mounted to said frame near the second end of the tool bar, said second wheel assembly including a second wheel rotatable about a horizontal axis;

second mount means for mounting said second wheel assembly to said frame;

means for vertically moving said first and second wheels relative said frame, said first and second wheels having a first position in contact with the ground and a second position above the ground;

a towing arm attached to said frame;

second attaching means for attaching said towing arm to said frame to be pivotable about a vertical axis with respect to said frame, said towing arm having a first position parallel to the tool bar and a second position perpendicular to the tool bar;

first locking means for locking said towing arm in the first position;

second locking means for locking said towing arm in the second position;

attaching means for attaching said towing arm in the second position to a transporting vehicle for towing the farm apparatus in a field and

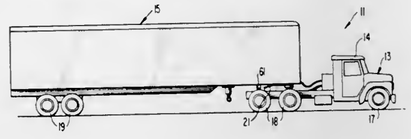
for attaching said towing arm in the first position to a transporting vehicle for towing the farm apparatus to and from a field.

4,119,330

JACKKNIFE RESTRAINING MECHANISM

Grover H. Capps, Travelers Rest, S.C., assignor to Trucksafe, Inc., Taylors, S.C.

Filed Dec. 16, 1976, Ser. No. 751,158
Int. Cl.[2] B62D *53/08;* **B60T** *7/12*
U.S. Cl. 280—432 **11 Claims**



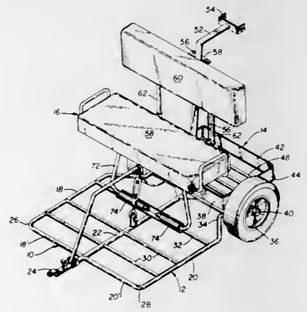
1. A coupling construction for use on a tractor and trailer pivotally and detachably connected by a fifth wheel on the tractor and a king pin on the trailer, said coupling construction comprising first cooperable means on said fifth wheel and said trailer and operable to restrain relative pivotal movement between said tractor and trailer and prevent vehicle jackknifing, control means operable by a driver of the vehicle from within a cab on said tractor to render said first cooperable means operative or inoperative, second cooperable means on said fifth wheel and said trailer and operable, when said first cooperable means is inoperative, to limit the allowed relative pivotal movement between the tractor and trailer to prevent engagement between the sides thereof.

4,119,331

COLLAPSIBLE GOLF CART TRAILER

R. Kelley Jackson, 665 S. Alton Way, Denver, Colo. 80231

Filed Sep. 26, 1977, Ser. No. 836,249
Int. Cl. B62k *15/00*
U.S. Cl. 280—639 **5 Claims**



1. A collapsible cart trailer, comprising:

(a) a horizontal base frame having right and left hand longitudinal frame members and a central longitudinal frame member joined by a plurality of transverse stringers into a unitary rigid structure;

(b) a longitudinal seat support arm pivotally attached to said frame near the forward end thereof and extending upwardly and rearwardly to a predetermined height, and then extending horizontally rearwardly to a free end;

(c) a transverse seat support bracket pivotally attached to said frame at a point rearwardly of the free end of said seat support arm and extending upwardly and forwardly from the frame to an upper end, said upper end carrying a transversely extending sleeve pivotable thereon and a longitudinally extending sleeve perpendicularly connected to the transverse sleeve and engageable with the free end of said arm;

(d) a seat having transverse and longitudinal channels on the bottom side thereof adapted to receive said transverse and longitudinal sleeves, respectively;

(e) mechanically retractable tensioning means connected to said frame between the pivotal connections of the support arm and transverse bracket and connected to the bottom of said seat forwardly of said transverse channel for retaining the seat, support arm, and transverse bracket in fixed relative positions;

(f) hitch means attached to said frame near the forward end thereof for pivotally connecting the cart trailer to a source of locomotion; and

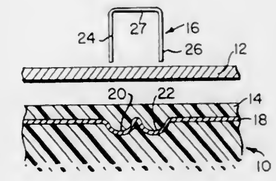
(g) a transverse axle connected to the frame and carrying a wheel on each end thereof.

4,119,332

ASSEMBLING METHOD AND APPARATUS

Arthur A. Merrill, 25 Commodore Rd., Chappaqua, N.Y. 10514

Filed Mar. 30, 1977, Ser. No. 782,633
Int. Cl.[2] B42D *1/06*
U.S. Cl. 281—25 R **14 Claims**



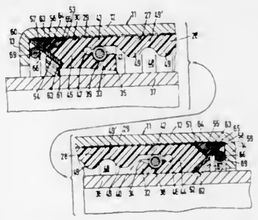
1. A fastening assembly for one or more sheets of material comprising a backing having an anvil means incorporated therein, and at least one fastener means for penetrating through the material and part way through said backing to contact said anvil means whereby said fastener means is clenched to secure the material to the backing.

4,119,333

PIPE COUPLING

Immanuel Straub, 7323 Wangs, Switzerland

Filed Jul. 18, 1977, Ser. No. 816,792
Claims priority, application Austria, Jul. 21, 1976, 25375/76
Int. Cl.[2] F16L *17/04*
U.S. Cl. 285—112 **8 Claims**



1. A pipe coupling for coupling together the pipe ends of pipes which are to be interconnected, comprising:

a clampable housing capable of being clamped about the pipe ends intended to be interconnected;

a sealing gasket enclosed in said housing and possessing a substantially C-shaped axial cross-sectional configuration;

said sealing gasket being open towards an inside portion thereof and having confronting legs structured as sealing lips and a web bearing against an inner surface of said housing, said sealing lipas extending between a respective lip root and a respective lip free end, the free end of each lip defining a sealing edge, each sealing edge defining an

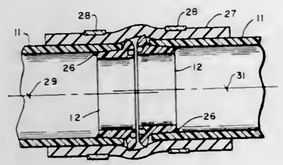
inner diameter greater than the outside diameter of said pipe ends prior to clamping of said clampable housing; and a respective helical spring ring for supporting the web at the sealing lips arranged at a point intermediate said lip roots and said sealing edges.

4,119,334

SPINWELDED PLASTIC PIPE COUPLING JOINT

Michael Halsey Steed, East Palo Alto, Calif., assignor to Fafco Incorporated, Menlo Park, Calif.

Filed Jul. 1, 1977, Ser. No. 812,135
Int. Cl.[2] F16L *21/00*
U.S. Cl. 285—236 **9 Claims**



1. A coupling joint engaging two lengths of plastic pipe at surfaces adjacent to the ends thereof, comprising

a first plastic end ring having a weld surface thereon formed to engage the surface on one pipe with an interference fit to provide radial rigidity to said pipe,

a second plastic end ring having a weld surface thereon formed to engage the surface on the other pipe with an interference fit to provide radial rigidity to said pipe

so that when the weld surfaces on said first and second plastic end rings are spun onto their respective pipe surfaces, the ring and pipe surfaces fuse from the heat of friction and upon cooling form a weld joint therebetween, and said end rings provide said additional radial rigidity at the pipe ends,

a flexible sleeve overlying said first and second plastic end rings to form a seal therewith whereby the axes of the pipe lengths may be misaligned,

means on the periphery of said first and second plastic end rings for engaging the interior of said flexible sleeve and for inhibiting axial motion thereof relative to the plastic pipe,

and clamping means overlying said flexible sleeve and said first and second plastic end rings for clamping said flexible sleeve to form a seal, said additional radial rigidity provided by the plastic end rings permitting application of higher clamping forces than would be possible without said end rings.

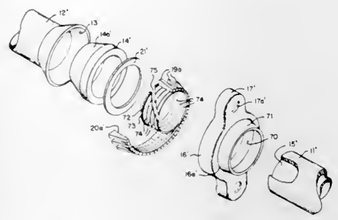
4,119,335

PIPE AND TUBING CONNECTORS

Paul F. Rieffle, and Charles E. Felker, both of Pittsburgh, Pa., assignors to Coupling Systems, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 737,700, Nov. 1, 1976. This application Jul. 11, 1977, Ser. No. 814,435
The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.
Int. Cl.[2] F16L *17/00*
U.S. Cl. 285—337 **12 Claims**

1. A coupling for one or more pipes comprising an elongate sleeve adapted to receive coaxially two opposing pipe ends to be connected, said sleeve having frusto-conical enlarged ends opening outwardly, a pair of cylindrical elastomer gaskets having frusto-conical end portions adapted to fit in the frusto-conical ends of said sleeve in sliding engagement around the pipe ends to be connected, a follower member bearing on each of said gaskets to force them into the sleeve ends, a frusto-conical opening in each follower member around the pipe ends being connected, said opening in each follower member having its large end opening toward the large end of the frusto-conical ends of the sleeve, a plurality of generally triangular jaws spaced apart around each pipe end to be connected within the frusto-conical opening in the follower member, a split cylinder between said triangular jaws and said pipe to be connected, said split cylinder having stop means on both inner and outer surfaces, said jaws around each split cylinder abutting the adjacent gasket and pressing against said gasket coaxially of the pipe, engaging means on each triangular jaw in engagement with the stop means on the outer surface of said split cylinder and tightening means acting on the follower means to move the follower means axially together whereby the gaskets are forced into the frusto-conical ends of the sleeve in sealing engagement with said ends and the pipe ends to be connected and simultaneously the triangular jaws are forced into tight radial engagement with the exterior of the pipe ends and the split cylinder around the pipe to be connected so as to prevent the pipe ends being moved axially out of the sleeve.

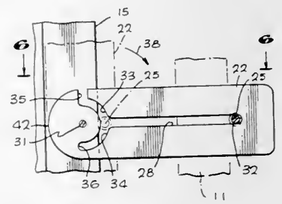


4,119,336

SECURITY LATCH

Frederic D. R. Sparrevohn, 388 Flint Ave., Long Beach, Calif. 90814

Filed Jul. 22, 1977, Ser. No. 818,108
Int. Cl.[2] E05C *17/16*
U.S. Cl. 292—268 **8 Claims**



1. A security latch comprising:

a closure means secured along the marginal region of a door and extending beyond the edge thereof;

flat latch plate means of thickness less than a gap between said door edge and the adjacent jamb of said door and mounted for rotational movement generally tangent to said door edge in the gap between said door edge and the adjacent door jamb about an axis which is anchored to said door jam and perpendicular to said door edge when said door is closed, and wherein said latch plate means extends outward beyond the plane of said marginal region of said door when said door is closed;

said latch plate means having three operative positions constituting a latched position preventing door movement, a restricted position allowing limited door movement and an unlatched position allowing full door opening and closing movement; and

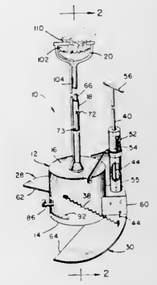
said closure means being in engagement with said latch plate means in said latched and restricted positions of operation and movable with said door and freely disengageable from said latch plate means when said latch plate means is in said unlatched position.

4,119,337

SANITARY PICKUP AND DISPOSAL DEVICE

John Sherhandt, 0-153 Tunbridge Rd., Fair Lawn, N.J. 07410

Filed Nov. 17, 1977, Ser. No. 852,210
Int. Cl.[2] A01K *29/00*
U.S. Cl. 294—1 R **15 Claims**



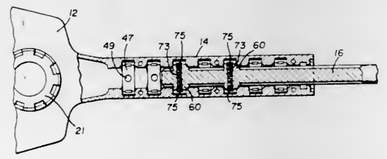
1. A santiary pickup and disposal device for removing animal waste deposits comprising a receptacle, said receptacle having an intake opening, said intake opening lying within a plane, collector blade means adapted for movement substantially within the plane of said intake opening, said collector blade means being selectively displaceable from an initial open position beyond a margin of said opening to a closed position contiguous to and overlying said opening, said receptacle being adapted for removal of waste deposits by envelopment of said deposits within the intake opening and by the cooperative action of the collector blade means being slidable under the waste deposit for capturing same within the receptacle and further incorporating cleaning means within the receptacle for contacting said collector blade means to dislodge any substances adhering to said blade means.

4,119,338

CARPET KICKER HAVING MEANS FOR ADJUSTING SHANK LENGTH

Clarito R. Agcaoili, Glendale Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Aug. 13, 1976, Ser. No. 714,052
Int. Cl.[2] A47G *27/04*
U.S. Cl. 294—8.6 **3 Claims**



1. A carpet kicker for stretching carpet having a pile and a backing, comprising:

(A) A housing formed of an upper housing member and a lower housing member affixed together by fastening means comprising:

(1) A head member having a plurality of pins adjustably mounted for engaging said carpet,

(2) A handle member having a plurality of detent members internally positioned therein in fixed relationship to said handle member and spaced apart by detent grooves, and having a plurality of groups of detent depressions, the depressions of each group being in coplanar arrangement and spaced apart 90° circumferentially, each group being spaced axially from adjacent groups, and

(B) An inner shank member arranged to telescope within said handle member and having a padded member mounted at the end thereof for being engaged by the knee of an operator, said inner shank member having at least one cam member in fixed relationship thereto, said cam member being provided with a transverse bore having a helical compression spring mounted therein with a ball bearing at the end of said spring adapted to engage said detent depressions,

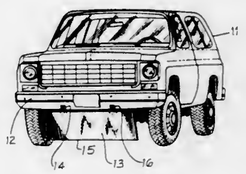
wherein the handle member portion of said upper housing member and the handle member portion of said lower housing member are each provided with spaced-apart ball bearing guide members each defining a segment of an inner cylindrical surface, the ball bearing guide members of said upper housing member cooperating with the ball bearing guide members of said lower housing member to define inner cylindrical surfaces on which the ball bearing of said cam member travels, and each cylindrical surface having four of said detent depressions for engaging said ball bearings either in the locked operative position or in the unlocked adjustment position, and providing indexing during axial adjustment movement to indicate the positions in which said inner shank member may be rotated to place it in the locked position, said inner shank member being adapted to be placed in at least one rotative position wherein said cam member is disposed within one of said detent grooves and engages the detent surfaces of said detent members to restrain said inner shank member axially, and being adapted to be rotated to another rotative position in which said cam member is free of said detent members and said inner shank member is free to be moved axially to another position with respect to said handle member indexed by said detent depressions, and wherein said inner shank member is adapted to be rotated again to the original rotative position in which said cam member once again engages said detent members and said inner shank member is once again fixed axially with respect to said handle member at a different relative axial position.

4,119,339

VEHICLE UNDERCARRIAGE AIR DEFLECTOR

Arthur Sherman Heimburger, P.O. Box 246, Nashville, Ind. 47448

Filed Sep. 10, 1976, Ser. No. 721,975
Int. Cl.[2] B62D *35/02*
U.S. Cl. 296—1 S **13 Claims**



1. An undercarriage air deflector apparatus comprising:

an elongated panel having hinge means along a marginal edge thereof adapted to attachment to a lower portion of a vehicle ahead of a vehicle front wheel suspension member;

first bracket means connectable to the lower portion of the vehicle ahead of a front wheel suspension member and having bearing means therein;

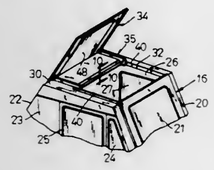
drive shaft means supported in said bearing means and having a drive pinion thereon;

second bracket means connectable to the lower portion of the vehicle ahead of a vehicle front wheel suspension member;

rocker shaft means mounted in said second bracket means

and including a rocker shaft extending parallel to said panel;
operating arm means connected to said rocker shaft means and to said panel for pivoting said panel about said hinge means as said rocker shaft means is turned; and
a drive gear on said rocker shaft means engaged by said pinion and thereby operable upon rotation of said drive shaft means to turn said rocker shaft means for pivoting said panel about said hinge means.

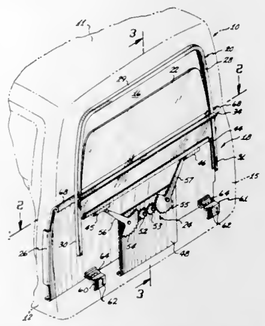
4,119,340
ROOF WINDOW FOR CRANE OPERATOR'S CAB
Roger M. Wolfe, Toddville, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.
Filed Aug. 1, 1977, Ser. No. 820,780
Int. Cl.[2] B60J *7/08*
U.S. Cl. 296—137 B **8 Claims**



1. In an operator's cab for a crane or the like:
a cab having a rear side and a roof with a roof opening in the latter;
a movable window unit;
and a pair of hinge assemblies connected between said cab and said window unit to enable the latter to be moved between a closed position relative to said roof opening and an open tilted position clear of said roof opening and adjacent the rear side of said cab;
each hinge assembly comprising a link;
first pivot means for pivotally connecting one end of said link to a first point on said cab adjacent a lateral edge of said roof opening, said link being pivotable about said first point to a position wherein said link is supported by said cab between said rear side of said cab and the rear edge of said roof opening;
and second pivot means for pivotally connecting the other end of said link to a second point on said window unit adjacent a lateral edge of said window unit, said window unit being pivotable about said second point;
said second point being located between said first point and the front edge of said roof opening when said window unit is in closed position and being locatable rearwardly of said first point when said window unit is swung to open position;
said second point being located so that the center of gravity of said window unit lies near said second point whereby said window unit tilts to a position adjacent said rear side of said cab.

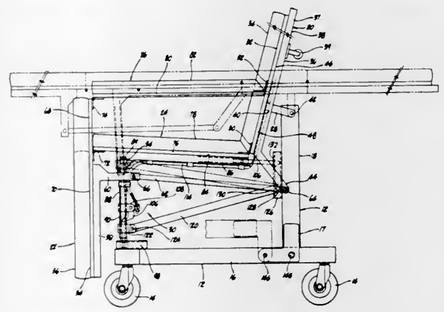
4,119,341
REAR WINDOW ASSEMBLY FOR A TRUCK CAB
Eddie G. Cook, 5727 W. Wilshire, Phoenix, Ariz. 85035
Filed Dec. 8, 1977, Ser. No. 858,610
Int. Cl.[2] B60J *5/10*
U.S. Cl. 296—146 **8 Claims**

1. A power operated rear window assembly for a truck cab having a floor panel, opposed side panels and a rear panel in the upper part of which a window opening is formed, the window opening having a top, bottom and opposed sides, said power operated rear window assembly comprising:
(a) a window channel assembly of inverted generally U-shaped configuration having a bight portion and a pair of laterally spaced legs and having a brace affixed transversely between the legs to provide an upper portion and a lower portion;
(b) said window channel assembly mountable on the inner surface of the rear panel of the truck cab with the upper portion thereof aligningly conforming with the window opening formed in the rear panel of the truck cab;
(c) a transparent window mounted in said window channel assembly and movable therein between a raised position in the upper portion thereof and a lowered position in the lower portion thereof,



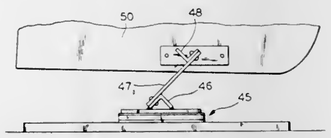
(d) power operated window regulator means mountable in the truck cab and operatively connected to said transparent window for moving thereof;
(e) a closure panel mountable in the truck cab for enclosing said power operated window regulator means and said transparent window in the lowered position thereof; and
(f) sealing means on the brace of said window channel assembly and on said closure panel for sealingly bearing on opposite sides of said transparent window.

4,119,342
CONVERTIBLE CHAIR STRUCTURE
Claude C. Jones, 303 N. Library, Waterloo, Ill. 62298
Filed Apr. 29, 1977, Ser. No. 792,355
Int. Cl.[2] A47C *1/02*
U.S. Cl. 297—80 **3 Claims**



1. A chair structure convertible from a seating mode to a prone mode comprising:
(a) base means, including ground wheel means,
(b) back means including an upper portion and a lower portion of reduced width, and including first and second hinge points disposed in spaced relation,
(c) front means having a lower portion and a bifurcated upper portion and including first and second hinge points disposed in spaced relation,
(d) seat means connected between said back means and said front means at said first hinge points and receivable between said bifurcated upper portion,
(e) arm means connected between said back means and said front means at said second hinge points and disposed on either side of said seat means,
(f) mounting means operatively connecting the back means to the base means in pivotal relation for rotation of the back means from a substantially upright position in the seating mode to a substantially horizontal position in the prone mode,
(g) said front hinge points and said back hinge points defining a four sided linkage when said structure is in the seating mode tending to approach alignment when the structure is rotated into the prone mode,
(h) support means operatively connecting the seat means to the base means, and
(i) the seat means being of substantially the same width as the reduced portion of the back means and the distance between the bifurcated portion of the front means.

4,119,343
PLATFORM ROCKER STRUCTURE
Fred R. Pentzien, Naperville, Ill., assignor to Kroehler Mfg. Co., Naperville, Ill.
Continuation-in-part of Ser. No. 759,912, Jan. 17, 1977, abandoned. This application Aug. 29, 1977, Ser. No. 828,477
Int. Cl.[2] A47C *3/02*
U.S. Cl. 297—264 **3 Claims**



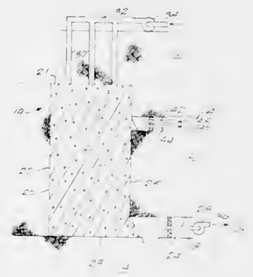
1. A platform type rocking seat, comprising
(a) a floor engaging base for supporting a seat,
(b) an angled structural member mounted on said base in a direction transverse to the central vertical plane through the front and rear of said seat, said member having two intersecting surfaces forming an upwardly directed apex,
(c) a second angled structural member mounted across the underside of said seat above, rearwardly, and in parallel to said first-mentioned member, said second member also having two intersecting surfaces forming a downwardly directed apex, with the rearward surface of the latter disposed in a plane parallel to the forward surface of said first member and displaced forwardly therefrom a slight distance,
(d) straight coplanar flexure members of epoxy glass laminate material of a thickness corresponding to said distance extending between said rearward surface of the second structural member and the forward surface of said first member, and
(e) means for affixing the opposite ends of said flexure members to the said rearward and forward surfaces of said respective structural members.

4,119,344
VEHICLE SEAT BELT ASSEMBLY WITH IMPROVED BUCKLE SECTION
Iori Kondo, Kosai, Japan, assignor to Nissan Motor Company, Ltd., Japan
Filed Dec. 10, 1976, Ser. No. 749,463
Claims priority, application Japan, Dec. 11, 1975, 50/167510[U]
Int. Cl.[2] A62B *35/00*
U.S. Cl. 297—385 **8 Claims**



1. In a vehicle safety seat belt, a buckle section comprising,
an anchor element at one end of the buckle section to be fastened to a fixed part of the vehicle body,
a buckle at the other end of the buckle section with a lug portion,
a single twisted strand connected between said anchor element and said lug portion of the buckle, said twisted strand being formed by connecting said anchor element and the lug portion of said buckle with plastic threads and thereafter twisting the threads together about the longitudinal axis thereof by rotating said anchor element relative to the lug portion of said buckle, and
a solid plastic enclosure integrally formed around said anchor element, twisted strand and lug portion.

4,119,345
IN SITU OIL SHALE RETORTING PROCESS USING INTRODUCTION OF GAS AT AN INTERMEDIATE LOCATION
William J. Bartel; Robert S. Burton, III, both of Grand Junction, Colo., and Chang Yul Cha, Bakersfield, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.
Continuation-in-part of Ser. No. 737,154, Oct. 29, 1976, abandoned, which is a continuation of Ser. No. 683,037, May 4, 1976, abandoned, which is a continuation of Ser. No. 615,043, Sep. 19, 1975, abandoned, which is a continuation of Ser. No. 492,768, Jul. 29, 1974, abandoned. This application Apr. 4, 1977, Ser. No. 784,033
Int. Cl.[2] E21B *43/24, 43/26;* **E21C** *41/10*
U.S. Cl. 299—2 **16 Claims**



1. The method of recovering oil from oil shale in situ comprising: mining a first tunnel substantially horizontally in a subterranean formation containing oil shale, mining a chamber in the formation extending above the tunnel, blasting formation adjacent the chamber to form a cavity in the formation filled with a fragmented permeable mass of formation particles containing oil shale, igniting oil shale at an intermediate level between the top and the bottom of the cavity, introducing an

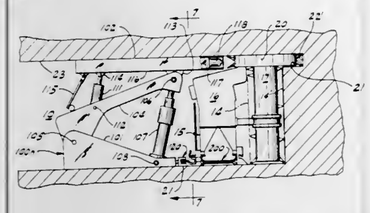
oxygen containing gas at the intermediate level to sustain combustion of the oil shale and for retorting oil shale between the intermediate level and the bottom of the cavity, thereby leaving uncombusted oil shale in the cavity between the intermediate level and the top of the cavity, and withdrawing gases from the bottom of the cavity.

4,119,346

LONGWALL MINING SYSTEM

Michael J. Amoroso, Marion, Ill., assignor to M.A.T. Industries, Inc., West Frankfort, Ill.

Filed May 2, 1977, Ser. No. 792,974
Int. Cl.[2] E21C *27/24;* E21D *23/00*
U.S. Cl. 299—11 **14 Claims**



11. A method of supporting a roof during a continuous mining operation comprising the steps of:

(a) laying an articulated conveyor adjacent the longwall face,

(b) supporting the roof adjacent the longwall by a plurality of extensible roof supports,

(c) cutting the longwall face with a continuous mining machine traveling lengthwise on the articulated conveyor,

(d) extending the roof support beyond the newly cut longwall face and into supporting engagement with the longwall after the machine has passed and unassisted by support from the machine so that the longwall assists in supporting the roof and substantially reduces the load concentration on the mine floor, and

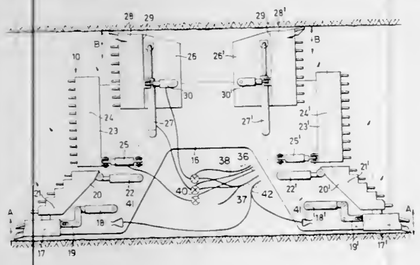
(e) progressively relocating the conveyor sections into closer adjacency with the newly cut longwall face when the machine has passed.

4,119,347

COAL PLOUGH HAVING SEPARATELY ADJUSTABLE CUTTERS AND FLEXIBLE FLUID POWER AND CONTROL LINES THEREFOR

Gerhard Merten, Lunen, and Horst Schlusener, Werne, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 770,496
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 2607100
Int. Cl.[2] E21C *27/32*
U.S. Cl. 299—34 **2 Claims**



1. A coal plough adapted to be moved back and forth along a coal face to win coal therefrom; said plough comprising, in combination:

(a) a body member mounting a plurality of adjustable cutting tool carriers thereon;

(b) a plurality of hydraulically-operated double-acting piston and cylinder units for adjusting said cutting tool carriers;

(c) a composite flexible hose including:

(i) a pressure conduit for conveying pressurized fluid to drive selected piston and cylinder units;

(ii) control lines for conveying remotely-initiated control signals, and

(iii) a water supply conduit;

(d) a plurality of control valves responsive to said control signals for connecting selected working chambers of the units to said pressure conduit to operate selected ones of said units, and

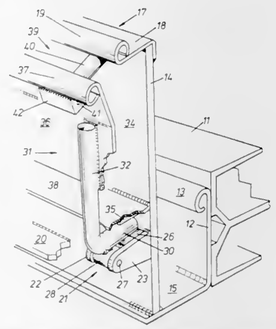
(e) a plurality of water-spray nozzles for spraying water supplied by the water conduit at the coal face when the plough is operating.

4,119,348

LOOPED CABLE CONTROL DEVICE

Brian Matthew Curtis, Chesterfield, England, assignor to Perard Engineering Limited, Ripley, England

Filed Feb. 16, 1977, Ser. No. 769,178
Claims priority, application United Kingdom, Feb. 20, 1976, 06707/76
Int. Cl.[2] E21C *35/20*
U.S. Cl. 299—43 **4 Claims**



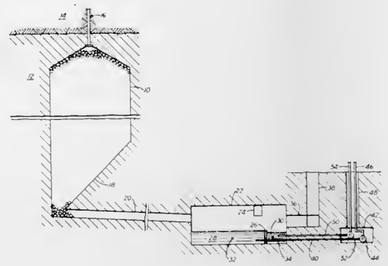
1. A looped cable control device for controlling a looped cable used to supply power or water to a mineral winning machine, which traverses along a mineral face, the device comprising an elongate wall, a plurality of longitudinally spaced legs secured to said wall for supporting the wall, each leg having an upright portion joined to the wall and an arm portion projecting substantially perpendicularly to the upright portion, mounting means for mounting said wall on a spill plate, pivot means pivotally mounting each of said legs on the mounting means, whereby, in use, a trough is defined between said wall and the spill plate, for receiving the looped cable, and said wall is pivotally movable in a direction transverse to the spill plate, stop means for limiting said pivotal movement away from the spill plate, and resilient means biasing the body into cooperation with the stop means and resiliently resisting said pivotal movement towards the spill plate, said arm portions of the legs being constrained between said stop means and said resilient means.

4,119,349

METHOD AND APPARATUS FOR RECOVERY OF FLUIDS PRODUCED IN IN-SITU RETORTING OF OIL SHALE

Peter Albulescu, Caldwell, and Joseph F. McMahon, Clinton, both of N.J., assignors to Gulf Oil Corporation, Pittsburgh, Pa. and Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 25, 1977, Ser. No. 844,629
Int. Cl.[2] E21B *43/24;* E21C *41/10*
U.S. Cl. 299—2 **9 Claims**



1. A method for the recovery of products from the retorting of oil shale in an in-situ retort comprising:

(a) passing products from the retort through a production drift into an underground separator of large cross section located no higher than the lower end of the retort;

(b) delivering liquids entering the separating chamber from the production drift into a first sump adjacent the inlet end of the separating chamber;

(c) decanting shale oil from the first sump into a second sump;

(d) discharging gases from the end of the separating chamber remote from the production drift and delivering said gases through a shaft to the surface;

(e) withdrawing aqueous liquids from the first sump and pumping said liquids to the surface; and

(f) withdrawing shale oil from the second sump and pumping said shale oil separately from the aqueous liquids to the surface.

4. Apparatus for the delivery of products discharged from an in-situ retort for the retorting of oil shale comprising:

(a) an underground separating chamber at substantially the level of the bottom of the in-situ retort;

(b) a production drift from the lower end of the in-situ retort to the inlet end of the separating chamber;

(c) a first sump in the separating chamber adjacent the inlet end thereof;

(d) a second sump in the separating chamber adjacent the outlet end thereof;

(e) a weir separating the first sump and second sump;

(f) a duct opening into the separating chamber at the outlet end thereof and extending upwardly to the surface for the delivery of gases;

(g) aqueous liquid pumping means adapted to withdraw aqueous liquids from below the liquid surface in the first sump and deliver the aqueous liquids to surface; and

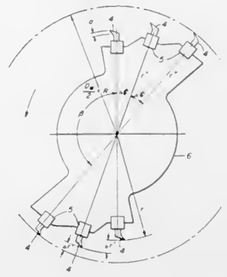
(h) oil pumping means constructed and arranged to withdraw shale oil from the second sump and deliver it separately from the aqueous liquids to the surface.

4,119,350

CUTTER DRUM

Rolf Sander, Essen, and Klaus Oberste-Beulmann, Sprockhovel, both of Fed. Rep. of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H., Bochum and Bergwerksverband, G.m.b.H., Essen, both of, Fed. Rep. of Germany

Filed May 12, 1977, Ser. No. 796,344
Claims priority, application Fed. Rep. of Germany, May 13, 1976, 2621261
Int. Cl.[2] E21C *25/10*
U.S. Cl. 299—87 **3 Claims**



1. A screw-type cutter drum for mining machines having a cylindrical body portion with helical ribs thereon, a plurality of cutter picks carried on said ribs, and a plurality of cutter picks carried on the end of said body portion and positioned in a common plane perpendicular to the axis of the body portion, said last-mentioned cutter picks being disposed in sets corresponding in number and position to said ribs, and the cutter picks in each set being equally spaced angularly from each other and placed at decreasing radial distances from the axis of the body portion, the difference in radius between adjacent picks being constant and given by

$$\Delta r = \frac{1}{z-1}\left[\frac{10^3 V_M}{4 n_W} \cdot \frac{\beta}{90^\circ} - a\right]$$

where:

Z = the number of cutter picks per set;

V_M = the transverse speed of advance of the drum;

n_W = the rotational speed of the drum;

β = the angle between adjacent cutter picks of different sets; and

a = the depth of cut of each cutter pick.

4,119,351

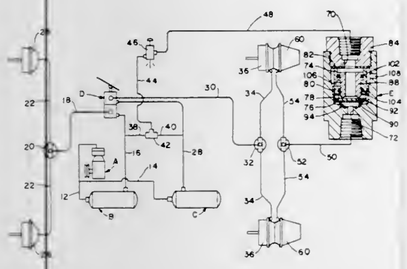
AIR BRAKE SYSTEM WITH PRESSURE HOLDING VALVE

Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 17, 1977, Ser. No. 769,548
Int. Cl.[2] B60T *15/20*
U.S. Cl. 303—6 M **3 Claims**

1. A vehicle air brake system including spring set air released parking brakes, air supply means for supplying air at a predetermined pressure to said parking brakes for releasing same, a pressure holding valve interposed between said air supply means and said parking brakes for maintaining air in said parking brakes at said predetermined pressure when said air supply means falls to operational pressures above atmospheric pressure and below said predetermined pressure, said pressure holding valve being operative to exhaust said predetermined pressure from said parking brakes when said air supply means falls below said operational pressures, said pressure holding

valve including inlet and delivery ports having a check valve interposed therebetween for normally providing flow directly therepast along a flow path from said inlet port to said delivery port and blocking reverse flow, a movable hollow piston between said inlet and delivery ports, said piston having one end normally engaging said check valve and said check valve being yieldably biased against said one end, said flow path including



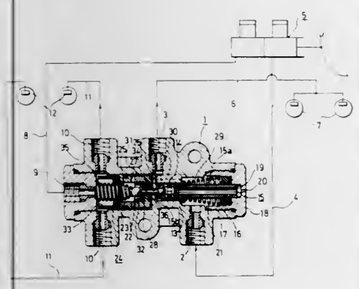
flow between said check valve and said one end of said piston, said piston being responsive to a high pressure drop from said delivery port to said inlet port for moving away from said check valve and providing flow directly past said check valve in an opposite direction along said flow path, axially-spaced seals around said piston, and an atmospheric vent port between said seals.

4,119,352

HYDRAULIC BRAKING PRESSURE CONTROL UNIT

Naosuke Masuda, Higashi-Matsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1977, Ser. No. 825,026
Claims priority, application Japan, Nov. 22, 1976, 51/140554
Int. Cl.² B60T *8/26*
U.S. Cl. 303—6 C **5 Claims**



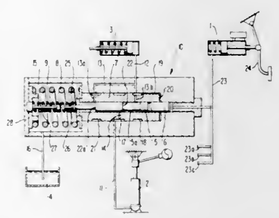
1. In an hydraulic braking pressure control unit for use in the braking system of a vehicle which braking system includes a tandem master cylinder, front wheel cylinders and rear wheel cylinders, said control unit arranged to be positioned between the tandem master cylinder and the rear wheel cylinders, said control unit including a body having a bore therein forming a first flow passage with a valve seat therein and the first flow passage providing communication between the tandem master cylinder and the rear wheel cylinders, a first valve member located in said flow passages and displaceable relative to said valve seat in said first flow passage so that when said first valve member contacts said valve seat it closes said first flow passage and when said first valve member is spaced from said valve seat it opens said first flow passage, wherein the improvement comprises a proportioning valve located in said first flow passage in contact with said first valve member and cooperating with said first valve member for reducing the braking pressure to the rear wheel cylinders at a predetermined rate compared to the braking pressures applied from the tandem master cylinder, said first flow passage including a first part upstream from said proportioning valve and a second part downstream from said proportioning valve, a second flow passage within said body interconnecting the first part and second part of said first flow passage and bypassing said proportioning valve, a second valve member displaceably located within said body for opening and closing said second flow passage, said second valve member having a first surface arranged to be exposed to the braking pressures supplied from the tandem master cylinder to the rear wheel cylinders and a second surface arranged to be exposed to the braking pressures supplied from the tandem master cylinder to the front wheel cylinders, said first and second surfaces of said second valve member being arranged so that said second valve member closes said second passage when the first and second surfaces of said second valve member are subjected to the braking pressure from the tandem master cylinder to the rear wheel cylinders and front wheel cylinders, respectively.

4,119,353

LOAD-DEPENDENT FOUR-CIRCUIT BRAKE SYSTEM ESPECIALLY FOR COMMERCIAL VEHICLES

Eugen Bihlmaier, Winnenden, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed May 13, 1977, Ser. No. 796,534
Claims priority, application Fed. Rep. of Germany, May 20, 1976, 2622534
Int. Cl.² B60T *8/20*
U.S. Cl. 303—22 R **16 Claims**



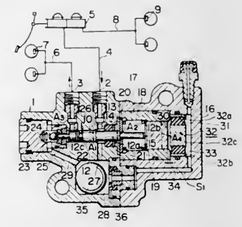
1. A load-dependent four-circuit brake installation, which comprises hydropneumatic spring means including spring leg means, brake cylinder means, and a brake pedal-operated fluid source for actuating the brake installation, characterized in that the brake cylinder means is exclusively operative by pressure from the spring leg means, each spring leg means of the hydropneumatic spring system includes a fluid connection to a brake pressure regulating valve means, said brake pressure regulating valve means including a relief valve slide member with groove means therein for connecting the fluid in said spring leg means with the brake cylinder means and further including line means for connecting the fluid from the brake pedal-operated fluid source with the relief valve slide member, said relief valve slide member being operable in a predetermined position of the relief valve slide member to allow application of a portion of the fluid pressure prevailing in the spring leg means through said groove means to said brake cylinder means corresponding to the fluid pressure acting on said relief valve slide member in response to brake pedal operation.

4,119,354

HYDRAULIC BRAKE CONTROL ASSEMBLY

Naosuke Masuda, and Nobuo Sunaga, both of Higashi-Matsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1977, Ser. No. 834,028
Claims priority, application Japan, Sep. 18, 1976, 51-112267
Int. Cl.² B60T *8/14*
U.S. Cl. 303—24 F **4 Claims**



1. In a braking fluid pressure control device of the type comprising a body formed with an inlet and an outlet respectively communicating with a master cylinder and rear wheel cylinders, a proportioning valve contained within the body for reciprocating movement therein, a spring member for biasing said proportioning valve towards its non-operative position to allow communication of said inlet with said outlet, said proportioning valve acting against said spring member due to increasing brake fluid pressure to reduce at a predetermined rate the braking fluid pressure supplied from said master cylinder to said rear wheel cylinders, the improvement comprising:

a disc valve operative when actuated to stop reciprocating movement of said proportioning valve, said disc valve being disposed within said body in spaced relation to said proportioning valve, said disc valve being deformable under fluid pressure supplied to a chamber within said body which communicates through a passage with said master cylinder, actuation of said disc valve by said deformation causing said proportioning valve to move to its non-operative position,

a transmission member interposed between said disc valve and said proportioning valve, and

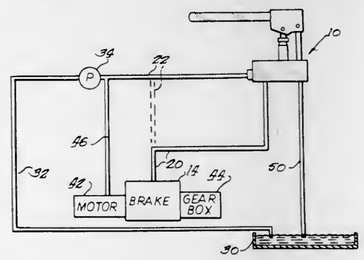
an inertia ball interposed in said passage for blocking said passage when deceleration exceeds a predetermined level to prevent further actuation of said disc valve.

4,119,355

AUXILIARY RELEASE APPARATUS FOR A HYDRAULIC PRESSURE RELEASABLE BRAKE

Charles A. Kreitner, Benton Harbor, Mich., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed Aug. 26, 1977, Ser. No. 827,896
Int. Cl.² B60T *15/16*
U.S. Cl. 303—85 **10 Claims**



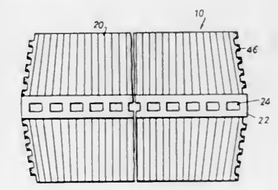
1. In combination with a normally activated hydraulic pressure releasable brake having a principal source of hydraulic pressure: an auxiliary source of hydraulic pressure, a first valve means resposive to said principal source and to said auxiliary source and coupled with said brake for allowing said auxiliary source to feed the brake and simultaneously disconnecting said principal source from the brake when the principal source is not delivering pressure to the first valve means and for disconnecting the auxiliary source of pressure from the brake and allowing the principal source of pressure to feed the brake when the principal source of pressure is delivering pressure to the first valve means and the auxiliary source is not delivering pressure thereto, and relief valve means responsive to said principal source of pressure for relieving said auxiliary source of pressure so as not to deliver pressure to the first valve means when said principal source of pressure is delivering fluid to said relief valve at a predetermined minimum pressure.

4,119,356

VEHICLE AND ENDLESS TRACK STRUCTURE THEREFOR

Jorma Toivo Tapani Pohjola, Haravatie 6, 90530 Oulu 53, Finland

Filed Feb. 6, 1976, Ser. No. 656,069
Claims priority, application Finland, Feb. 10, 1975, 750359
Int. Cl.² B62D *55/24*
U.S. Cl. 305—35 EB **14 Claims**



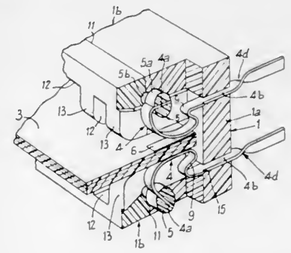
11. For use in a vehicle, and endless ground-engaging track means having elastic, stretchable and contractable opposed side edge regions which in an unstressed condition of said endless track means are shorter than the length of said opposed side edge regions when said endless track means is mounted on the vehicle, and said endless track means having an elongated central region situated between said opposed side edge regions and being longer than the same when said endless track means is in said unstressed condition.

4,119,357

CONNECTOR FOR PRINTED CIRCUIT BOARDS

Francois Robert Bonhomme, 6, Parc de Bearn, 92210 Saint Cloud, France

Filed Jul. 1, 1976, Ser. No. 701,648
Int. Cl.² H01R *13/62;* H05K *1/07*
U.S. Cl. 339—75 MP **14 Claims**



1. A connector including a contact member, said contact

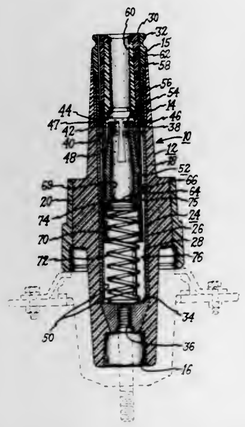
member consisting of two differentially resilient portions, and an intermediate active portion, means for capturing the ends of said portions, means for actuating by rotation the less resilient one of said portions to effect in sequence, a linear engagement between the active portion of said contact member and a confronting conducting track, a resilient deformation of said resilient portions into a surface engagement between said portions and the confronting conducting track and an accompanying sliding action between the deformed resilient portion which then constitute the active portion and the confronting conducting track surface which is slidingly wiped as rotation of said less resilient portion is progressively effected.

4,119,358

ELECTRICAL CONNECTOR SWITCHING MODULE

Henry N. Tachick, Blairstown, N.J.; Reginald S. Arnold, Pittsfield, Mass.; James E. Belcher, Dalton, Mass., and Joseph A. St. Jacques, Ashford, Mass., assignors to General Electric Company, Philadelphia, Pa.

Filed Dec. 17, 1976, Ser. No. 751,692
Int. Cl.[2] H01R *13/52*
U.S. Cl. 339—111 **13 Claims**



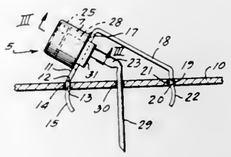
1. An electrical power cable separable connector module, comprising:
- an insulating housing having an elongated receiving passageway therein, and
- a switch insert closely fitted in said passageway, said insert comprising:
- a rigid conductive container tube having an outer open end, an inner closed end, a major axial portion of uniform diameter, and a configuration such that the diameter does not increase from said open end to said closed end, that portion of said container near said open end having an expanded diameter for telescoping receiving an insulating nosepiece having an outside diameter substantially equal to the inside diameter of said container, said inner end of said nosepiece being spaced from a shoulder in the inside wall of said container where said expanded diameter portion ends, and a resilient toroidal gasket member being seated in the groove formed by said shoulder and said end of said nosepiece to resiliently seal against the outer perimeter of said snuffer tube for preventing the escape of gas between said inside wall of said container and the outer surface of said snuffer tube;
- a snuffer tube in said container tube, said snuffer tube having a central bore for receiving a rod contact of a matching connector module and having inside said bore a layer of ablative material;
- a bore contact member adjacent said inner end of said container tube, said contact member comprising a gas port;
- a piston fixed to said contact member and adapted for driving said contact member along the axis of said container tube toward said outer end of said container tube in response to gas generated by arcing in said bore, said piston being keyed to said container to prevent it from rotation in said container, and
- resiliently sliding contact member fixed to said piston and pressing outwardly against the inside wall of said container tube to establish continuous electrical contact with said wall while said piston is in motion.

4,119,359

PHONO-SOCKET ASSEMBLY AND METHOD

Ronald L. Schultz, Northfield, Ill., assignor to Stanford Applied Engineering, Inc., Santa Clara, Calif.

Filed Aug. 25, 1977, Ser. No. 827,447
Int. Cl.[2] H01R *17/06;* **H02B** *1/02*
U.S. Cl. 339—128 **18 Claims**



1. A phono-socket assembly adapted to receive a phono-plug in electrical connection therewith, and comprising:
- a stamped and drawn thin sheet metal grounding shell having retainer means at one end of the shell and mounting bracket means on the opposite end of the shell for mounting of the assembly on a support;
- an elongate tubular contact having a phono-plug pin receiving head end portion of substantially smaller diameter than said shell and mounted within said shell on annular insulating means, and the contact having a terminal portion extending from said head end portion and projecting beyond said opposite end of the shell;
- said annular insulating means having an end retainingly engaged with said retainer means and an opposite end at said opposite end of said shell; and
- retaining fingers extending generally radially inwardly from said opposite end of said shell and having retaining tips turned toward and into generally endwise thrusting retaining engagement with said opposite end of said annular insulating means and substantially spaced from said contact whereby to retain the insulating means in assembled relation within the shell in cooperation with said retainer means and thereby maintaining said head end portion of the contact in position within said shell to receive a phono-plug pin by introduction of the pin through said one end of the shell into electrically contacting engagement within the contact head end portion.

4,119,360

A.C. INTERLOCK PLUG, CONTACT AND METHOD

Stanley A. Linkowski, Franklin Park, Ill., assignor to Chromalloy Alcon, Inc., Chicago, Ill.

Filed Aug. 4, 1976, Ser. No. 711,440
Int. Cl.[2] H01R *9/16*
U.S. Cl. 339—217 S **11 Claims**

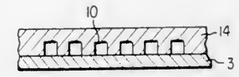
1. An electrical connector comprising:
- a dielectric body having a major face and an opposite face and a contact member mounting passage hole of slot-like form in transverse cross section with narrowly spaced opposite surfaces and substantially spaced apart longitudinal edges, the hole extending through said body and opening from both faces of the body;
- an electrically conductive contact member having an elongate pin portion and a solder lug of substantial length extending from one end of said pin portion;
- said solder lug being in pushed assembly with said body and extending through said hole from said major face and projecting from said opposite face of the body;
- said pin portion having shoulder means at its said one end and said body having a shoulder at said major face, said shoulders being in confrontation and limiting the extent of projection of said solder lug through said opening and maintaining said pin portion projecting from said major face;
- said solder lug being substantially complementary in transverse cross section to said slot-like hole and thus thin between opposite broad surfaces of the solder lug but of substantial width between longitudinal side edges of the solder lug;
- said solder lug having substantially straight parallel longitudinal side edges extending from the pin end of the solder lug toward the free end of the solder lug;
- shear formed retention spur projections of substantially triangular shape formed in said solder lug entirely within said longitudinal substantially straight side edges, each of said spur projections having a sharp tip point spaced from said pin portion shoulder and extending generally in the same direction as said pin portion projects from said solder lug;
- each of said spur projections being partially separated from the solder lug along a shear line extending away from said shoulder means diagonally inwardly from the longitudinal substantially straight side edge within which the spur projection is formed;
- each of the spur projections being deflected from the normal cross section of the solder lug and generally diagonally across the plane of one of the broad width surfaces of the solder lug whereby the spur projections remain inside said longitudinal substantially straight edges and are adapted to cam along the surface of said hole which opposes said one broad width surface of the solder lug when the solder lug is pushed through the hole in assembling the contact member with the dielectric body; and
- said spur projection points engaging in positive retaining, anchoring relation with said opposing dielectric body hole surface whereby to dig into said surface of the hole and hold the solder lug and thereby the contact member against withdrawal from the dielectric body by forces exerted on the pin portion in a direction away from said major face, while said shoulders provide positive retention of the contact member in position on the dielectric body against forces acting on the pin portion toward said major face.

4,119,361

MULTILAYER IDENTIFICATION CARD

David Leslie Greenaway, Birchwil, Switzerland, assignor to Landis & Gyr, Zug, Switzerland

Filed Aug. 9, 1976, Ser. No. 712,750
Claims priority, application Switzerland, Aug. 14, 1975, 10601/75
Int. Cl.[2] G09F *3/02*
U.S. Cl. 350—1.1 **6 Claims**



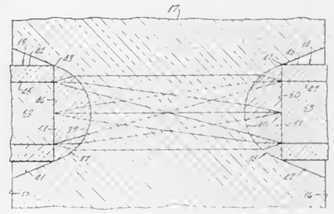
1. A card for storing information for optical reading comprising:
- optical marking means indicative of said information;
- a protective layer on each side of said optical marking means, both of said layers being opaque to light of shorter wavelength than infrared light and at least one of said protective layers being penetratable by infrared light;
- said optical marking means being provided at the inner face of one of said protective layers and having a cellular surface structure with at least 300 lines per mm to inhibit photographic copying of said information with the use of infrared light; and
- said protective layers being so connected to said optical marking means that removal of either of said protective layers therefrom will destroy said optical marking means to inhibit copying or viewing of said information.

4,119,362

OPTICAL FIBER CONNECTOR UTILIZING OPPOSED LENSES

Melvyn A. Holzman, Boulder, Colo., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Continuation-in-part of Ser. No. 635,806, Nov. 28, 1975, abandoned. This application Feb. 11, 1977, Ser. No. 767,692
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.18 **57 Claims**



1. A device for interconnecting a duality of substantially cylindrical optical fibers comprising,
- means defining a cavity having a tapered surface a portion of which comprises
- an objective lens,
- means for positioning an optical fiber unit having an outer surface, an end surface, and a corner between said end surface and said outer surface, said means for positioning including means for pressing said corner against said tapered surface for aligning the axis of said fiber unit and the axis of said cavity so that light emitted from said optical fiber unit is received and refracted by said objective lens,
- a light-transmissive means for transmitting light so refracted by said objective lens,
- means defining a second cavity having a tapered surface a portion of which comprises

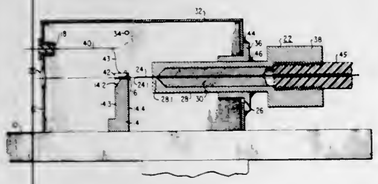
an immersion lens for receiving and refracting said light from said light-transmissive means, and means for positioning a second optical fiber unit having an outer surface, an end surface, and a corner between said end surface and said outer surface, said second means for positioning including means for pressing said corner of said second fiber unit against said tapered surface of said second cavity for aligning the axis of said second fiber unit and the axis of said second cavity so that said second fiber unit can receive said light so received and refracted by said immersion lens.

4,119,363

PACKAGE FOR OPTICAL DEVICES INCLUDING OPTICAL FIBER-TO-METAL HERMETIC SEAL

Irfan Camlibel, Stirling, and Theodore Charles Rich, Branchburg, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 18, 1976, Ser. No. 667,961
Int. Cl.[2] G02B *5/14*; H01L *33/00*
U.S. Cl. 350—96.20 **15 Claims**



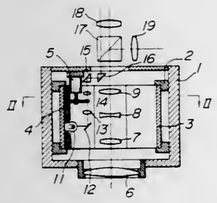
1. A hermetic seal comprising:
a metal tube wherein one end of the tube has a neck portion forming a narrow diameter opening,
a bare optical fiber extending axially through the tube and forming an annular space therebetween, the fiber being centered by the neck portion, and
solder means filling the annular space between the tube and fiber and being confined by the neck portion.

4,119,364

DEVICE FOR DISPLAYING MAGNIFICATION IN THE FIELD OF VIEW OF A MICROSCOPE

Naoyuki Takahashi, Hino, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed May 25, 1977, Ser. No. 800,307
Claims priority, application Japan, May 25, 1976, 51-67753
Int. Cl.[2] G02B *21/06*
U.S. Cl. 350—114 **3 Claims**



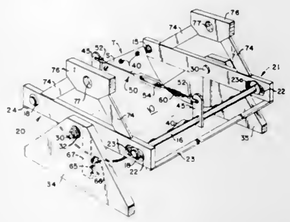
1. A device for displaying magnification in the field of view of a microscope comprising a mirror frame for the microscope incorporating with a zoom lens, a magnification display plate rotatably arranged in the mirror frame, and said magnification display plate being rotated by interlocking with movement of the zoom lens to vary magnification, whereby a predetermined magnification on the magnification display plate is displayed in the field of view of observation optical system, photographing optical system or the like.

4,119,365

TROUGH REFLECTOR

Roger Andrew Powell, 1455 Whitwood Dr., Norristown, Pa. 19401

Filed Apr. 30, 1976, Ser. No. 682,109
Int. Cl.[2] G02B *5/10*
U.S. Cl. 350—293 **20 Claims**



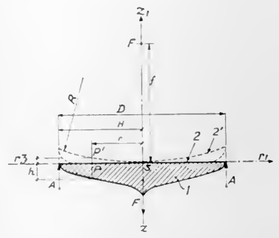
4. A trough reflector comprising a flexible planar member having a reflective surface, a pair of spaced parallel elongated members for supporting said planar member therebetween, said elongated members being disposed in a common plane, means rigidly connecting said planar member with said elongated members, means for rotatably mounting said elongated members for rotation substantially about their respective longitudinal axes, means for rotating said elongated members in opposite directions about their respective longitudinal rotational axes, to predetermined positions at which said planar member assumes a substantially cylindrical shape, and means for maintaining said elongated members in said predetermined positions.

4,119,366

MIRRORS WITH A VARIABLE FOCAL DISTANCE

Gerard R. Lemaitre, Aix-en-Provence, France, assignor to Agence Nationale de Valorisation de la Recherche- A.N.-V.A.R., France

Filed Dec. 2, 1976, Ser. No. 746,792
Claims priority, application France, Mar. 5, 1976, 76 07577
Int. Cl.[2] G02B *5/10*
U.S. Cl. 350—295 **5 Claims**



1. Mirror with a variable focal distance comprising a blank of a flexible material, of revolution about an axis, in the general form of a disc having a reflective face which has been surfaced with high precision and a rear face, opposite to said reflective face; an external radius H and a thickness h between said two faces which depends on the distance r to said axis, which disc is elastically bent by means of a variable pressure applied uniformly on one face which pressure is balanced by the reaction force of a peripheral support on which said disc bears and the reduced thickness h/H of said disc is defined at each point of said disc placed at a reduced distance $\rho = r/H$ from said axis by the formula

$$\frac{h}{H} = [\,12\,(1-\nu)\Omega\,\frac{p}{E}\,]^{\frac{1}{3}} \cdot (1-\rho 2)^{\frac{1}{3}}$$

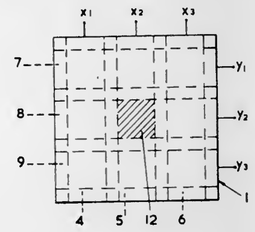
in which E and ν are respectively Young's modulus and Poisson's ratio of the material of the blank, Ω is the so-called closure coefficient of the bent mirror, p is the uniform load per unit of surface of the disc for bending said disc, and $\rho = r/H$ is the reduced distance of the point from the axis and is included between 0 and 1, said blank comprising a crown forming one piece with the disc to which it is connected by a very thin cylindrical flange which forms said peripheral support, which crown is hermetically connected to a base so that the disc, the crown and the base form a tight enclosure, which enclosure comprises means for creating in the enclosure a variable pressure, different from ambiant pressure.

4,119,367

LIQUID CRYSTAL DISPLAYS

Edward Peter Raynes, 2, Weyburn Close, Lower Wick, Worcester, County of Hereford and Worcester; Ian Alexander Shanks, 68, Lower Wyche Rd., Malvern, County of Hereford, and Worcester, both of England, and John Charles Varney, 24, Wellpark Ter., Neilston, Glasgow, Scotland

Filed Mar. 3, 1976, Ser. No. 663,360
Claims priority, application United Kingdom, Mar. 6, 1975, 9441/75
Int. Cl.[2] G02F *1/13*
U.S. Cl. 350—333 **6 Claims**



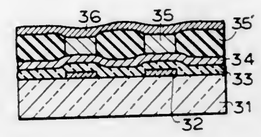
1. A method of addressing a matrix liquid crystal display which comprises a layer of liquid crystal material contained between a first and a second slide at lease one of which is transparent, said first slide having a first set of transparent strip electrodes, said second slide having a second set of transparent strip electrodes, the two sets of electrodes being arranged to form a matrix of electrode intersections, said method comprising
applying a blanking voltage across a plurality of active areas of liquid crystal to change them to their on state;
applying a first of a two phase voltage supply source which supplies two sinusoidal waveforms 60° apart in phase to an electrode in both sets of electrodes at an electrode intersection which is to be turned from an on to an off state;
applying the second of said sinusoidal waveforms to the remaining first set of electrodes, and applying a zero voltage to the remaining second set of electrodes, whereby the remaining intersections receive a threshold voltage.

4,119,368

ELASTOMER DISPLAY DEVICE

Toru Yamazaki, Sayama, Japan, assignor to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,539
Claims priority, application Japan, Dec. 25, 1975, 50/159497
Int. Cl.[2] G02F *1/00*
U.S. Cl. 350—360 **6 Claims**



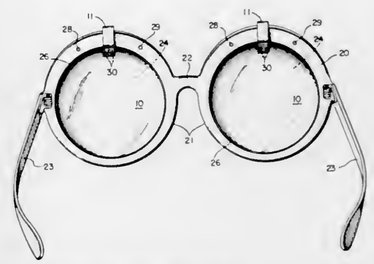
1. An elastomer display device comprising:
(a) a transparent substrate;
(b) a transparent electrically conductive membrane arranged on said transparent substrate according to a pattern to be displayed;
(c) a transparent elastomer coating overlying and in contact with the transparent substrate and also overlying and in contact with the transparent conductive membrane pattern;
(d) a metal reflecting coating overlying and contacting at least portions of the transparent elastomer coating;
(e) a transparent insulating coating in contact with the metal reflecting coating and arranged according to a pattern which overlies the transparent substrate at those portions which are not covered by the transparent electrically conductive membrane pattern to be displayed;
(f) a conductive elastomer coating in contact with the metal reflecting coating and overlying at least the transparent electrically conductive membrane pattern to be displayed;
(g) an electrode layer overlying and in contact with the conductive elastomer coating.

4,119,369

VARIABLE DENSITY OPHTHALMIC DEVICE

Vaito K. Eloranta, Needham, and Benjamin C. Ruggles, Jr., Gloucester, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 27, 1975, Ser. No. 608,401
Int. Cl.[2] G02C *7/12*
U.S. Cl. 351—49 **7 Claims**



1. An ophthalmic device comprising:
a spectacle frame member adapted to engage first and second pairs of light polarizing elements;
a first pair of light polarizing elements fixedly held by a said frame member;
a second pair of light polarizing elements which are superposed and substantially coextensive with the first pair of light polarizing elements and rotatable with respect to said first pair of light polarizing elements to provide variable

light transmission, said frame member including lips which prevent substantial radial movement of said moveable light polarizing elements; and

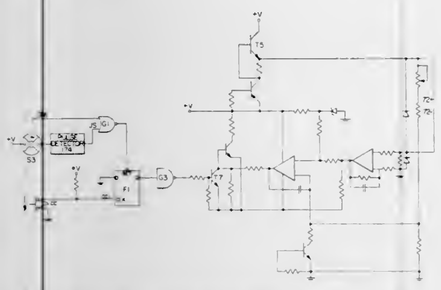
biasing means fixedly attached to each of said rotatable light polarizing elements and in engagement with respective portions of said frame member associated with each fixedly held light polarizing element whereby movement of said biasing means causes rotation of said rotatable light polarizing elements, said biasing means acting to urge each of said rotatable light polarizing elements axially toward the respective fixedly held light polarizing element with which it is superposed, said biasing means comprising a generally U-shaped element comprising first and second legs and a cross-member, said second leg comprising an offset portion which offset is toward said first leg.

4,119,370

SELF-DEVELOPING MOTION PICTURE VIEWER HAVING CONTROLLED FILM IMBIBITION

William A. Holmes, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1977, Ser. No. 790,886
Int. Cl.² G03C *11/00*
U.S. Cl. 352—130 **9 Claims**



1. In a photographic projector apparatus for processing to a viewable condition and thereafter projecting images of photographic film strip connected between a pair of spools contained in a film cassette, such apparatus including a drive motor, program means for alternately coupling said motor to each of said spools to advance said film strip in one direction and the other, said program means including means for coupling said one motor to one of said spools for winding said film strip thereon while a processing fluid is deposited on said film strip, and following a predetermined imbibition period for automatically coupling said motor to the other of said film spools to advance said film strip for projection purposes, the improvement comprising:

means for precluding application of motor torque to said one film spool during said predetermined period so as to preclude tightening of said film strip on said one film spool.

4,119,371

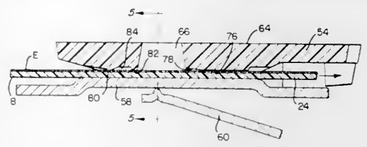
FILM CASSETTE CONTAINED PROCESSING FLUID APPLICATOR HAVING PARTICLE TRAPPING ARRANGEMENT

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1977, Ser. No. 791,136
Int. Cl.² G03C *11/00*
U.S. Cl. 352—130 **7 Claims**

1. In a cassette containing a strip of photographic film having a light-sensitive emulsion on one surface thereof and a processing fluid applicator for depositing a layer of processing fluid on a moving run of the film strip after exposure of the emulsion, the applicator including an applicator surface positioned to overlie the moving run of the film strip and having a nozzle opening for conducting processing fluid to the film followed by a doctoring surface as viewed with respect to film strip travel during the moving run to provide a processing fluid layer of a given, substantially uniform thickness on the emulsion, the improvement comprising:

particle trapping means on the applicator surface in leading arrangement to the nozzle opening as viewed with respect to film travel during the moving run to block passage to



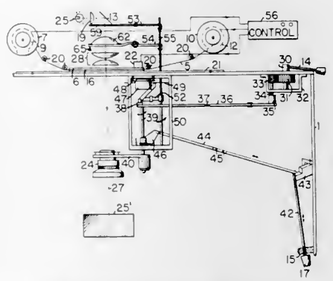
said doctoring surface of particles projecting from the emulsion to a height greater than the thickness of the processing fluid layer, said particle trapping means including at least two scraper blade formations extending transversely across the film strip and spaced apart along the longitudinal axis of the film strip to define a particle receiving channel extending transversely across the film strip.

4,119,372

MICROFICHE INSPECTION APPARATUS

Robert Anthony Morgan, Palo Alto, Calif., assignor to Terminal Data Corporation, Woodland Hills, Calif.

Filed Sep. 23, 1976, Ser. No. 725,825
Int. Cl.² G03B *21/22*
U.S. Cl. 353—26 R **8 Claims**



1. A microfiche inspection apparatus, comprising;

(a) an enclosure (**1**),

(b) a viewing screen (**2**) disposed at an angle to the vertical at the front of said enclosure,

(c) illumination means (**4**) surmounting said enclosure and having a downward light path (**27**),

(d) microfiche transport means (**9**, **12**) also surmounting said enclosure, to position microfiche (**5**) in said light path,

(e) plural objective lenses (**24**, **47**) having significantly differing characteristics,

(f) bi-position, detented, plural, rigid arm means (**35**, **36**, **38**) to selectively rotate and align one of said objective lenses at a time into said light path at significantly different locations along said light path to form an image of a selected portion of said microfiche upon said viewing screen at significantly different magnifications,

(g) a first selectively positionable condensing lens (**19**) within said illumination means, and

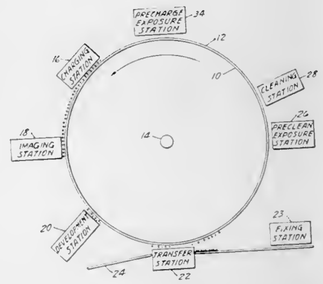
(h) first jointed auxiliary lever means (**53**, **59**) connected to said first condensing lens and to said detent arm means (**36**, **55**) to position the same in said light path selectively according to the positioning of said detented arm means.

4,119,373

ELECTROGRAPHIC APPARATUS AND METHOD FOR USING ARSENIC SELENIDE AS THE PHOTOCONDUCTOR

Leslie O. Frishman, St. Paul, and Kerry S. Nelson, Shoreview, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 8, 1976, Ser. No. 664,950
Int. Cl.² G03G *15/02*
U.S. Cl. 355—3 R **8 Claims**



1. An improvement to the method of producing multiple copies of a document using a copy machine having an arsenic selenide photoconductive layer which includes the steps of placing a uniform electrostatic charge on the photoconductor, exposing the charged photoconductor to a light image obtained from the document thereby creating on the surface of the photoconductive layer a differential potential pattern corresponding to the light image, developing the differential potential pattern by the application of toner particles to the photoconductor wherein a development technique is used that is capable of providing uniformly-filled solid areas, transferring the toner developed image to a receptor, fixing the toner to the receptor and removing any residual toner on the photoconductor following exposure of the photoconductor to a pre-clean light source, the improvement including the step of exposing the photoconductor to light energy prior to charging the photoconductor for each copy to be produced, said light energy and the light energy used during the step for exposing the charged photoconductor to a light image being selected and maintained in terms of light energy and spectral distribution to establish the arsenic selenide photoconductor at a stabilized fatigue level for the first and each subsequent copy.

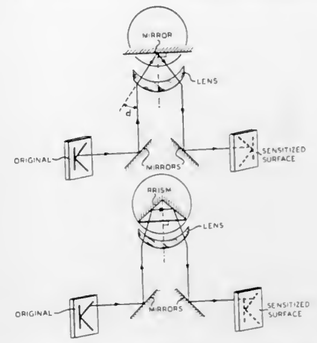
4,119,374

REPROGRAPHIC APPARATUS AND METHOD

Wolfgang Mehl, and Roland Monti, both of Geneva, Switzerland, assignors to Sublistatic Holding S.A., Spielhof, Switzerland

Filed Oct. 19, 1976, Ser. No. 733,725
Claims priority, application Switzerland, Oct. 24, 1975, 13778
Int. Cl.² G03B *27/32, 27/70*
U.S. Cl. 355—32 **7 Claims**

1. A reprographic apparatus for color copying an original including an optical system, comprising an objective lens or lenses, for forming on a surface a light image of the original and a device for selectively enabling a right way-round image or an inverted image of such original to be produced on such surface, the device comprising a prism having an isosceles triangle cross section with the base thereof, which is adjacent to the two equal angles, positionable opposite the objective lens or lenses and a mirror having a flat reflective surface alternatively interposable in the light path after the latter has passed through the lens or lenses of the objective of the optical system, said base of the isosceles and the reflective surface of the mirror being positionable at right angles to the axis of the lens or lenses, both the mirror or the prism being interposed in



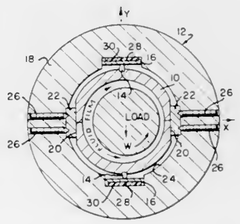
the path of the light image, according to whether a right-way-round or inverted image, respectively, is desired, means for forming on said surface a latent image of said original and means for developing said latent image.

4,119,375

BEARING AND HOUSING ASSEMBLY

Robley Gordon Kirk, and Hanns Hornschuch, both of Easton, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Sep. 1, 1977, Ser. No. 829,812
Int. Cl.² F16C *23/00*
U.S. Cl. 308—9 **8 Claims**



1. A bearing and housing assembly, comprising:

a fluid-film bearing;

a housing in envelopment of said bearing;

means mounting said bearing, within said housing, pivotally on an axis perpendicular to said bearing; wherein

said mounting means includes means accommodating relative movement between said bearing and said housing along said axis; and further including

means interposed between said bearing and said housing, on opposite sides of said bearing, for damping said relative movement; and wherein

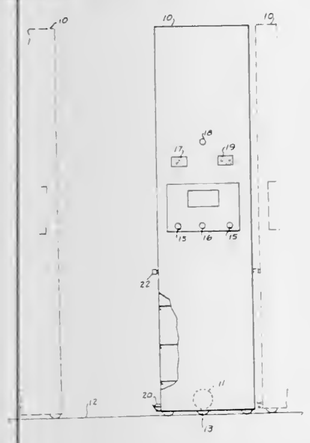
said mounting means comprises flexure pads disposed transverse to said axis, on opposite sides of said bearing, and pivot elements interposed between said bearing and said pads in contacting engagement with only intermediate, axis-bisected portions of said pads.

4,119,376

MOVABLE STORAGE UNIT SYSTEM

Ernest P. Moyer, Frederick, Md., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

Filed Nov. 22, 1976, Ser. No. 743,611
Int. Cl.[2] A47B *53/00*
U.S. Cl. 312—198 **10 Claims**



1. In a movable storage unit system, the combination comprising

a plurality of storage units at least some of which are movable toward and away from one another into and out of contact with one another to define an access space between a pair of the units,

means on each movable unit for driving said unit in two directions,

a logic control circuit on each unit,

a pair of reset controls on each unit including a reset control circuit for creating a logic signal when actuated,

a run control on each unit for creating a logic signal when actuated at a storage unit where an access space is desired,

said storage units being electrically connected such that a logic signal from said run control on the storage unit which is to move where an access space is desired directs a run signal to a next adjacent unit to cause said units to be driven successively away from said desired access space,

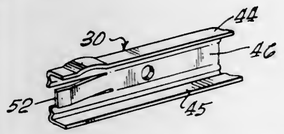
said run signal being inhibited by said reset control circuit unless the reset controls on the storage units on both sides of an open access space are actuated.

4,119,377

SELF-ALIGNING DRAWER SLIDE TAB

Lloyd L. Barber, Santa Ana, and Alan J. Koppelman, Studio City, both of Calif., assignors to Standard Precision, Inc., Santa Fe Springs, Calif.

Filed Jul. 16, 1976, Ser. No. 705,824
Int. Cl.[2] A47B *88/10*
U.S. Cl. 312—344 **1 Claim**



1. Self-aligning means for sliding drawers and associated slide mechanisms, said slide mechanisms having a plurality of slide members juxtapositioned in parallel arrangement, one above the other, wherein each slide member includes rollers secured thereto, one roller being positioned forwardly of one slide member and a second roller being positioned rearwardly of the second slide member to provide longitudinal movement between each slide member; and wherein each roller is arranged to be operably received within respective slide members thereof, said self-aligning means being characterized by:

frictional engaging means formed in one of said slide members and arranged to indirectly engage said other slide member in a releasable manner to prevent lateral movement of said drawer when said drawer is in a closed position and to provide controlled longitudinal movement of said drawer;

said first slide member being secured to the sides of said drawer for movement therewith, said second slide member being substantially mounted in a stationary manner with respect to said first slide member; and wherein said frictional engaging means is formed adjacent the forward end of said first slide member thereof, whereby said frictional engaging means is arranged to directly releasably engage said roller of said second slide member thereof;

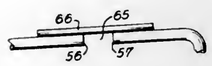
said first slide member including a back wall, and wherein said frictional engaging means comprises an elongated resilient tab member mounted to said back wall thereof adjacent the forward free end of said first slide member, said tab member being bent inwardly thereof for releasable forced engagement with the forward roller of said second slide member thereof; and wherein said tab member is formed as an integral part of said back wall of said first slide member, said tab member being lanced and bent inwardly therefrom.

4,119,378

SEGMENTED GAS DISCHARGE DISPLAY PANEL DEVICE AND METHOD OF MANUFACTURING SAME

George A. Kupsky, State College, Pa., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 492,991, Jul. 30, 1974, Pat. No. 4,051,404.
This application Jan. 29, 1976, Ser. No. 653,566
The portion of the term of this patent subsequent to Jun. 14, 1994, has been disclaimed.
Int. Cl.[2] H01J *9/38*
U.S. Cl. 316—19 **13 Claims**



1. In a process for making a gas discharge information display panel device in which a pair of rigid members define parallel flat bounderies between which information to be displayed is generated by plural discrete gas discharges between selectively energized electrodes, improvement in the sealing of said information display panel comprising the steps of

A. joining said rigid members in spaced apart relation by a sealing member having the perimetrical shape of said chamber and defining the lateral boundaries thereof, the terminal ends of said member being spaced apart to form a port so that said chamber is in communication with its ambient atmosphere,

B. bridging the spaced ends of said sealing member with a glass plugging member, said plugging member substantially matching the expansion properties of said seal member and having a fiber softening temperature below the fiber softening temperature of said seal member to form a sealable panel assembly,

C. then placing said sealable panel assembly (1) in an ambient environment of a vacuum to remove air, then (2) in an ambient environment of the desired gas filling to fill said chamber with the desired gas filling, and

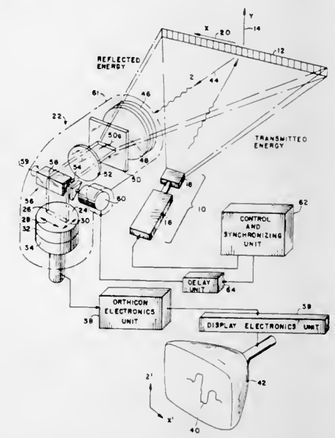
D. then heating said plugging member to a temperature below the fiber softening temperature of said seal member and above the fiber softening temperature of said plug member to join said plugging member across the spaced terminal ends of said sealing member and to the contiguous wall portions of said rigid members, to thereby seal a predetermined volume of said fill gas in said chamber.

4,119,379

OPTICAL DETECTION AND RANGING APPARATUS

Jerrold Zindler, Cambridge, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sep. 27, 1967, Ser. No. 670,971
Int. Cl.[2] G01C *3/08*; G01B *11/26*
U.S. Cl. 356—4 **19 Claims**



1. Optical detection and ranging apparatus comprising

A. an optical source (**10**) arranged to illuminate an entire field of view simultaneously,

B. means (**22**) arranged to

(1) receive reflections of said optical energy from said field of view and

(2) converge said reflections to a line extending along a first axis, with reflections received from different positions along a first direction in said field of view being positioned on said line at correspondingly different coordinates along said first axis,

C. optical sensing means (**32, 34**) responsive to optical energy in said line, said optical sensing means

(1) having an optically sensitive surface containing said first and second axes; and

(2) storing an image of the reflections impinging thereon as a result of illumination by said optical source, said stored image providing an indication of the range and position of targets disposed within the field of view, and

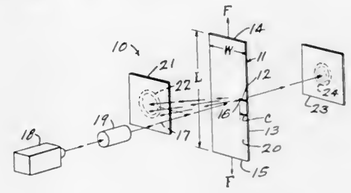
D. means (**56**) producing relative movement of said line and said sensing means along a second axis transverse to said axis, whereby reflections of source energy arriving at said receiver means at different times are sensed at correspondingly different coordinates along said second axis.

4,119,380

METHOD FOR DETERMINING STRESS-OPTICAL CONSTANTS OF OPTICALLY ISOTROPIC AND ANISOTROPIC MATERIALS

Demetrios D. Raftopoulos, and Stamatios V. Kartalopoulos, both of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio

Filed Jan. 21, 1977, Ser. No. 761,128
Int. Cl.[2] G01B *11/16*
U.S. Cl. 73—800 **3 Claims**



1. A method for determining a stress-optical constant of optically isotropic materials and optically anisotropic materials comprising the steps of:

forming a crack in a flat rectangular material specimen having a predetermined Poisson's ratio and modulus of elasticity, said crack extending from a region at the center of a long edge of said specimen into said specimen a distance sufficient to assure that caustics formed from a constrained region adjacent a crack tip are free from the influence of free surfaces of the specimen;

applying a tensile load to said specimen in a direction perpendicular to said crack;

impinging a collimated monochromatic light beam on the constrained region in said specimen adjacent the crack tip from a direction substantially perpendicular to a flat surface of the specimen and to the load applied to the specimen whereby caustics are transmitted through and reflected from the specimen;

measuring the effective diameters of the transmitted and reflected caustics at locations spaced equal distance from and on either side of the specimen; and

determining a stress-optical constant for the specimen from the measured diameters of the reflected and transmitted caustics and the predetermined Poisson's ratio and modulus of elasticity of the specimen.

4,119,381

INCUBATOR AND RADIOMETRIC SCANNER

Edward Muka, Rochester, and Clyde Pershing Glover, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,873
Int. Cl.[2] G01N *21/22*; G02B *5/14*
U.S. Cl. 356—244 **7 Claims**

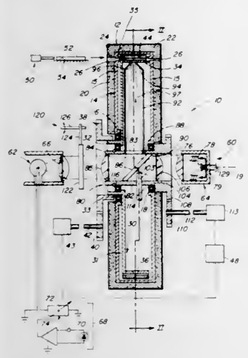
1. Apparatus for radiometric analysis of a substrate requiring controlled temperature conditions to reach a desired measurable state, the apparatus comprising

a plurality of substrate-supporting platforms mounted for rotation around an axis;

temperature control means for maintaining each platform at a desired temperature; and

means positioned on said axis for radiometrically sensing a characteristic of the substrates at said platform, said sensing means including a radiometer having a source of electromagnetic energy and a sensor aligned with said axis, a first reflector positioned to selectively deflect electromagnetic energy from said source to any one of said platforms, a second reflector positioned to reflect read-out energy from said any one platform to said sensor, said reflectors being integrally attached and comprising a two-sided mirror positioned at an angle of approximately 45° with

respect to said axis, and a pair of light pipes, one end of each pipe being positionable adjacent to the space occupied by each of the platforms to receive reflected light



therefrom and the other end of each pipe being positioned to direct light upon said second reflector; said platforms and at least a portion of said sensing means being mounted for rotation about the axis.

4,119,382

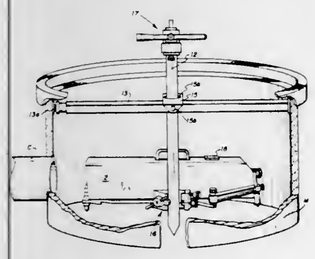
SELF-LEVELING CONSTRUCTION ALIGNMENT LASER

Lyndell J. C. George, and Robert S. Shelly, both of Jacksonville, Ark., assignors to AGL Corporation, Jacksonville, Ark.

Division of Ser. No. 624,238, Oct. 20, 1975, Pat. No. 4,053,238. This application Aug. 30, 1976, Ser. No. 718,611

Int. Cl.[2] G01C *5/02*

U.S. Cl. 356—249 **7 Claims**



1. In a system for projecting and utilizing a light beam as a reference line for construction purposes comprising:

a rectilinear rod supported for rotation about its major rectilinear axis,

a line-of-sight device,

a light beam projecting device enclosed in a housing,

both of said sighting and projecting devices fixed to said rod and spaced apart thereon in a direction parallel to said rod axis, said devices being oriented relative to said rod axis with the line-of-sight of said line-of-sight device and with the center line of the light beam both directed generally transversely to said rod axis and in a common plane parallel to said axis, wherein rotary adjustment of said rod about said axis to bring the line-of-sight device into alignment with a predetermined point causes the projected beam of light to be positioned with its center line in a plane common to said point and to the line-of-sight of said line-of-sight device,

means for angularly adjusting said devices relative to each other in a plane parallel to said rod axis including a clamp assembly removably attached to said light beam projecting device having an opening to accept said rectilinear rod, a hook plate adapted to retain said rod within said clamp assembly, a pivotable wall in said opening for angularly adjusting said light projecting device relative to the rectilinear rod in a plane parallel to said rod axis, and

a light compensator means mounted within said light projection device for intercepting said beam of light and automatically correcting slight deviations of the light beam from true horizontal, said compensator having a liquid-air interface always parallel to the true horizontal to provide compensation.

4,119,383

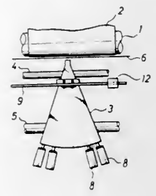
METHOD AND APPARATUS FOR INSERTING INTERMEDIATE DOTS IN A DOT MATRIX USING A DOT PRINTER

Akinori Watanabe, and Katsumasa Shinozuka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1976, Ser. No. 706,961

Int. Cl.[2] B41J *3/12, 19/30*

U.S. Cl. 400—124 **17 Claims**



4. A dot printer comprising a print head printing sequential dots at discrete locations on a printing paper, said sequential dots being identified as $n-1$th, nth and $n+1$th dots said print head being displaced relative to said printing paper with means for producing print timing pulses being connected to said print head, measuring means for measuring the time between the printing of said $n-1$-th and said n-th dot, to form a first quantity, said measuring means being connected to receive said print timing pulses, multiplying means to multiply said first quantity by $\frac{1}{2}^m$, where m is an integer, to form a second quantity which is equal to an intermediate time period less than the time period between the occurrence of said $n-1$-th and n-th print timing pulses, and intermediate dot printing means connected to said multiplying means to cause a dot to be printed at said intermediate time period after the printing of said n-th dot and before said $n+1$-th dot, whereby between two sequential dots, the first being called $n-1$ and the second n, a time quantity is determined which later controls printing of an intermediate dot between the next sequential dots, said next sequential dots being n and the next $n+1$.

4,119,384

TYPING DEVICE INCLUDING A TYPE DISC

Alfred Keiter, Wilhelmshaven, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Dec. 1, 1977, Ser. No. 856,735

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658123

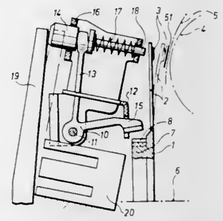
Int. Cl.[2] B41J *1/30*

U.S. Cl. 400—144.2 **5 Claims**

1. In a typing device having a platen for supporting a record carrier; a type disc including a plurality of bars each carrying a character; the disc being rotatable about an axis through predetermined angles for successively setting selected characters in a printing position; a hammer for impacting the bar of the selected character for pressing the selected character against the record carrier; and drive means for actuating the hammer; the improvement comprising

(a) a plurality of stops provided on said type disc; each said stop being assigned to a separate one of said characters; said stops being arranged at least at two different distances from said axis dependent upon the printing surface area of the associated character;

(b) an elastic lever having a first end and a second end and being movable to effect an abutting engagement of said first end with the stop of the associated character situated in the printing positon; and



(c) coupling means connecting said second end of said elastic lever to said hammer for simultaneously moving, by said drive means, said hammer towards the bar situated in the printing position and said first end of said elastic lever towards the respective stop; said elastic lever being arranged to absorb, upon engagement with the respective stop, one part of the kinetic energy imparted by said drive means, for reducing the force with which the character is pressed against the record carrier; the magnitude of said one part of the kinetic energy being a function of the distance of the respective stop from said axis.

4,119,385

RIBBON CHANGING MECHANISM FOR A TYPEWRITER

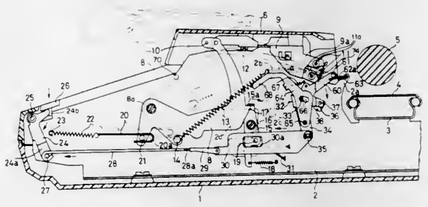
Tomoyoshi Watanabe; Tsuneo Yasui, both of Chiryu; Shigeo Ishikawa, Hazu, and Kiyomichi Okada, Ama, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 5, 1976, Ser. No. 712,007

Claims priority, application Japan, Aug. 6, 1975, 50/96200

Int. Cl.[2] B41J *33/56*

U.S. Cl. 400—215.3 **4 Claims**



1. In a typewriter having a machine frame, a top cover movably supported on said machine frame between an open position and a closed position, and a ribbon vibrator vertically movable between a lifted printing position and a lowered non-printing position, in response to a printing operation, a ribbon changing mechanism comprising:

(a) an actuating member operably connected with said ribbon vibrator to shift said ribbon vibrator between said lowered position and a ribbon changing position located above said lowered position, independently of the printing operation;

(b) a first operating means for moving said actuating member to a first position where said ribbon vibrator is shifted to said ribbon changing position;

(c) means for retaining said actuating member in one of said first position and a second position where said ribbon vibrator is shifted to said lowered position;

(d) a ribbon retaining portion including a rear ribbon retaining member and a front ribbon retaining member on said ribbon vibrator, said front ribbon retaining member defining a pair of ribbon passages including closed top and bottom portions in combination with said rear ribbon retaining member, said front ribbon retaining member being supported on a lower portion of said ribbon vibrator to be movable toward a direction for opening said closed top portions of said ribbon passages;

(e) an opener pivotally mounted on said machine frame to be engagable with said front ribbon retaining member and operably connected with said actuating member, said front ribbon retaining member being moved to open said closed top portions of said ribbon passages when said actuating member is shifted to said first position by the operation of said first operating means;

(f) a guide member provided on said machine frame for guiding the opening and closing movements of said top cover;

(g) a returning actuator provided on said top cover for returning said actuating member to said second position; and,

(h) a second operating means including said top cover and a returning member operably connected with said actuating member, said returning member having a cam portion engagable with said returning actuator for returning said actuating member to said second position by the closing movement of said top cover.

4,119,386

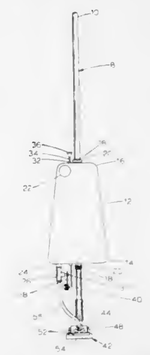
MOP ASSEMBLY TO DISTRIBUTE SELECTED LIQUIDS ON FLOOR AREAS, TO BE WAXED, CLEANED, AND/OR STRIPPED

Ernest W. Cushing, 3229 S. 135th, Seattle, Wash. 98168

Filed Jun. 10, 1976, Ser. No. 694,771

Int. Cl.[2] A47L *1/08*

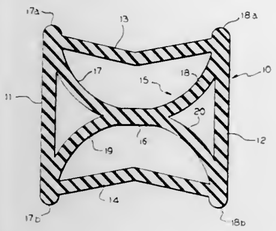
U.S. Cl. 401—138 **2 Claims**



1. A mop assembly for distributing liquids on a floor area comprising an elongated handle having an upper end to be grasped by an operator, an elongated mop head pivotally attached to the lower end of said handle, a tank carried by and surrounding a portion of said handle, said handle extending through said tank centrally thereof, means on said tank sealingly securing said tank to said handle portion, said tank being generally rectangular in horizontal section and having its major axis essentially parallel to the axis of said mop head, said tank having an upper filler opening and a lower outlet opening, a flexible conduit connecting said outlet opening to said mop head, a valve in said conduit, a sleeve extending through said tank from top to bottom generally parallel to said handle and valve operator means connected at one end to said valve and

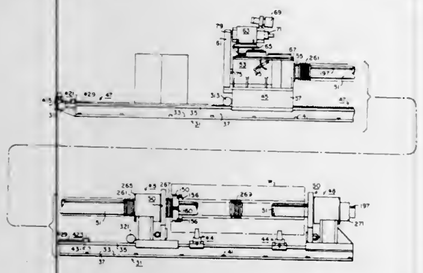
extending through said sleeve, the opposite end of said operator means projecting exteriorally of the tank.

4,119,387
PAVEMENT JOINT STRUCTURES
Delmont D. Brown, North Baltimore, Ohio, assignor to The D. S. Brown Company, North Baltimore, Ohio
Filed Jul. 18, 1977, Ser. No. 816,330
Int. Cl.[2] E01C *11/02*
U.S. Cl. 404—69 **5 Claims**



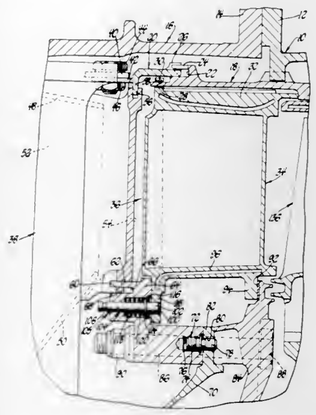
1. An interlockable elastomer seal for joints with spaced metal joint members having interlock means adapted to interlock with interlock means of the seal, said seal comprising an elongated, four sided, webbed elastomer seal having substantially planar side walls connected by a top wall and a bottom wall and a double arch, internal, elastomer web structure in which the nadir of a downwardly arched, upper arch and the apex of an upwardly arched, lower arch are united and the four ends of the two arches merge smoothly with respective side walls of the seal substantially at the four respective corners thereof, and interlock means on the four corners of said seal adapted to interlock with the interlock means of said metal joint member.

4,119,388
MACHINE TOOL
Harry J. Armitage, 1546 Cavitt Rd., Monroeville, Pa. 15146
Filed Jun. 23, 1977, Ser. No. 809,304
Int. Cl.[2] B23B *39/00, 51/08*
U.S. Cl. 408—111 **21 Claims**



1. A boring mill for boring work at a high rate, including a bed, means on said bed, for fixedly supporting said work, a massive boring bar, massive cutting-tool means rigidly mounted on said boring bar intermediate the ends thereof, a first drive, connected to said boring bar, for rotating said boring bar and the cutting tool means mounted thereon, bearing means of substantial area connected to said bed for supporting said drive and bar movably along said bed, said bearing means including at least one bearing supported by said bed external of said first drive, and a second drive for advancing said first drive and boring bar along said bed in a direction generally along said boring bar, to advance said cutting-tool means into, and to maintain said cutting-tool means in, cutting engagement with, said work.

4,119,389
RADIALLY REMOVABLE TURBINE VANES
Ted F. Gee, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 17, 1977, Ser. No. 759,911
Int. Cl.[2] F01D *9/04*
U.S. Cl. 415—189 **4 Claims**



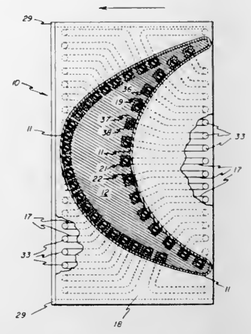
1. A radially removable stator vane array for gas turbine engines with gas flow paths therethrough comprising: an inner support ring, a first removable index vane having a base, a lock pin slidably supported in said ring including a head thereon interlocked with said base, spring means for axially loading said lock pin to maintain said head interlocked with said base and to permit retraction of said pin from said base, a plurality of circumferentially located indexed vanes on said ring on either side of said index vane, each of said indexed vanes having a base with a side slot therein, a plurality of fixed retention pins on said ring each interlocked with each of said slots to hold each of said indexed vanes thereon, said index vane being radially removable from said ring when said lock pin is retracted, each of said indexed vanes being circumferentially movable when said index vane is removed to shift the side slots therein from said fixed retention pins for positioning each indexed vane for subsequent radial separation from said ring.

4,119,390
LIQUID-COOLED, TURBINE BUCKET WITH ENHANCED HEAT TRANSFER PERFORMANCE
James T. Dakin, Schenectady, and Kenneth A. Darrow, Spraker, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 19, 1976, Ser. No. 743,271
Int. Cl.[2] F01D *5/18*
U.S. Cl. 416—96 R **6 Claims**

1. In liquid-cooled turbine bucket construction comprising an airfoil-shaped portion, a platform portion and a root portion for mounting said bucket in the rim of a rotatable turbine wheel, wherein at least said airfoil-shaped portion has a plurality of open-circuit distribution paths including subsurface coolant passages extending generally spanwise along the pressure and suction faces of said airfoil-shaped portion and liquid coolant metering means in flow communication therewith, the improvement comprising:

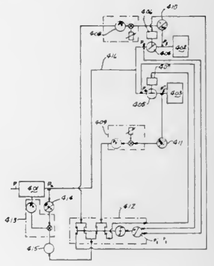
said coolant passages being of substantially circular transverse cross-section;

means for splitting liquid coolant flow affixed within individual coolant passages, said splitting means subdividing the internal volume of each such coolant passage into a plurality of helical passageways; and



means provided along said splitting means for interrupting liquid flow coming into contact with said liquid flow interrupting means and increasing the area of contact of the liquid flow with the coolant passage inner surface area adjacent thereto.

4,119,391
METHODS AND SYSTEMS FOR CONTROLLING THE OPERATION OF MEANS FOR COMPRESSING A FLUID MEDIUM AND THE CORRESPONDING NETWORKS
Alexander Rutshtein, and Naum Staroselsky, both of West Des Moines, Iowa, assignors to Compressor Controls Corporation, Des Moines, Iowa
Filed Dec. 9, 1974, Ser. No. 530,610
Int. Cl.[2] R04B *49/00;* **G05D** *11/02*
U.S. Cl. 417—26 **3 Claims**

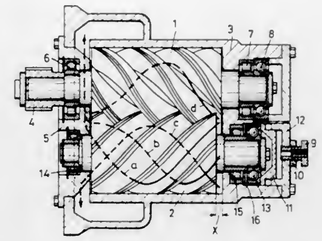


1. The method of controlling a system including compressing means for compressing a fluid medium, a plurality of users of the fluid medium spaced at a distance from said compressing means, said compressing means being fluidly connected to said users, and throttling means connected immediately before all but one of the users, comprising:

controlling the output of said compressing means and thereby maintaining a constant pressure immediately before the one of said users having no throttling means; and

controlling the throttling means before each of the other users to thereby maintain a respective desired constant pressure before each of said other users.

4,119,392
SCREW COMPRESSOR WITH AXIALLY DISPLACEABLE MOTOR
Hans Breckheimer, Eschborn, Germany, assignor to Demag AG, Duisburg, Germany
Filed Nov. 22, 1976, Ser. No. 743,780
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1975, 2553222
Int. Cl.[2] F01C *1/16, 21/12;* **F04C** *17/12, 29/08*
U.S. Cl. 418—201 **5 Claims**



1. Rotary compressor apparatus of the axial flow screw rotor type, comprising

(a) a male and a female rotor mounted with coplanar axes to rotate in intermeshing relation in said apparatus;

(b) a housing defining a working chamber for said rotors;

(c) said working chamber comprising two longitudinally extending intersecting bores with coplanar axes;

(d) said rotors rotating in sealing engagement with the walls of said bores without touching;

(e) axially spaced end wall portions in said housing transverse to said coplanar axes of said bores;

(f) said end wall portions being axially spaced from the ends of said rotors to provide mounting clearance for said rotors;

(g) a low pressure port in one said end wall portion and a high pressure port in the other said end wall portion and means for recycling output volume from said high pressure port to said low pressure port; the improvement characterized by

(h) one of said rotors being axially shorter beyond mounting limitations than the said longitudinally extending axial bore therefor and axially shorter than the other rotor; and

(i) said shorter rotor being axially displaceable toward and away from one said end wall portion for recycling output volume from said high pressure port to said low pressure port.

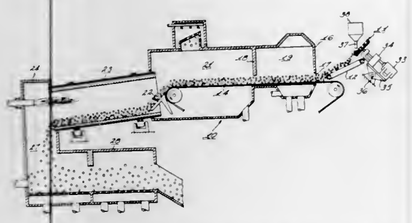
4,119,393
PAN AGGLOMERATION WITH MECHANICAL PELLET CLASSIFICATION
Glenn A. Heian, Franklin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Division of Ser. No. 551,724, Feb. 21, 1975, Pat. No. 4,017,264. This application Jan. 5, 1977, Ser. No. 757,088
Int. Cl.[2] B29B *1/02*
U.S. Cl. 425—222 **2 Claims**

1. In a material classifier arrangement for a pelletizer pan that is rotatable about an inclined axis and having an agglomerative moisturized raw material supplied thereto for movement without the rotating pan;

a supporting frame;

a material classifier means carried by said supporting frame in position to engage with the agglomerative moisturized raw material carried by said pan at the outer periphery of said pan and at an angle of between 30°to 60°as measured in a clockwise direction from a line which passes through the axis about which said pan rotates and a point which relates to the uppermost position of the pan as viewed

from the front of said pan, said classifier means being positioned above the material bed a selected distance to separate and to deflect the larger formed pellets from the smaller pellets from the up-moving moisturized raw material and allow the smaller pellets to continue to travel with



the pan and free fall in there own path of travel in a cascading return flow to the bottom of the pan over up-moving agglomerative moisturized raw material to become up-moving agglomerative moisturized raw material to thereby accelerate the motion of the pellets and effect densification and growth of the forming pellets.

4,119,394

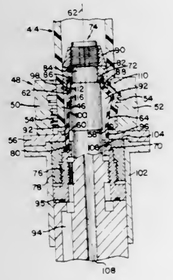
APPARATUS FOR FORMING AN END FINISH ON A HOLLOW ARTICLE

John T. Cary, Naperville, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 782,273

Int. Cl.[2] B29D *23/03*

U.S. Cl. 425—390 **9 Claims**



1. Apparatus for forming an end finish on a hollow article having a plastically deformable tubular end portion terminating in an open end of the article, the apparatus comprising a mold surface adapted to surround the end portion in juxtaposition with the outer surface thereof, an expandable tubular membrane having an upper end and a base end, said upper end being receivable within the end portion, means supporting the membrane in juxtaposition with the inner surface of the end portion, means sealing the interior of the membrane from the ambient, means restricting elongation of the membrane, means limiting expansion of the membrane to a lateral zone thereof coextensive with the end portion, means communicating with the interior of the membrane for subjecting the interior of the membrane to a fluid under pressure to expand the membrane laterally in engagement with the inner surface of the end portion, whereby to conform the outer surface of the end portion to the mold surface, choke means adjacent to the mold surface and extending inwardly thereof, mandrel means carried by the supporting means and adapted to engage the inner surface of the wall of the article opposite the choke means when the membrane is in juxtaposition with the inner surface of the end portion, the mandrel means and the choke means cooperating to constrict the wall of the article therebetween at a location adjacent to the end portion and opposite the open end of the article when the membrane is received within the end portion and the end portion is surrounded by the mold surface, whereby to preclude extrusion of the membrane between the wall of the article and the supporting means when the membrane is expanded and a third mold member adjacent the exterior of said mold surface having an inner wall position to engage said membrane and a further mold surface positioned to engage the rim portion of the article to substantially preclude expansion of the base end of said membrane.

4,119,395

METHOD OF RECOVERING HEAT OF COMBUSTION WASTE GAS ARISING FROM GLASS TANK FURNACE

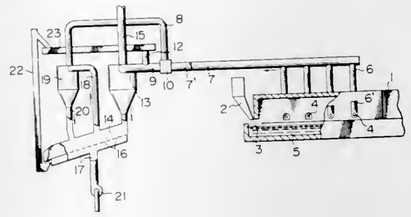
Kyohei Hatanaka; Hajime Inoue, both of Matsusaka; Haruya Hisatomi, Kamifukuoka; Koya Okuda, Chiba; Takeshi Suzuki, Himeji; Mikio Murao, and Susumu Utiyama, both of Kobe, all of Japan, assignors to Central Glass Co., Ltd., Ube and Kawasaki Jukogyo Kabushiki Kaisha, Kobe, both of, Japan

Filed Sep. 22, 1976, Ser. No. 725,532

Claims priority, application Japan, Sep. 27, 1975, 50-116656; Sep. 27, 1975, 50-116657; Sep. 27, 1975, 50-116658; Sep. 27, 1975, 50-116661

Int. Cl.[2] F23D *11/44*

U.S. Cl. 431—11 **17 Claims**



1. A method for recovering heat from the high temperature exhaust gas discharged from a glass tank furnace, which comprises the steps of: continuously discharging a first stream of high temperature exhaust gas from a glass tank furnace; continuously dispersing particles of a heat exchange substance in said exhaust gas and flowing said particles and said exhaust gas together in concurrent flow relationship in a duct, said particles having a particle size selected so that said particles are suspended in said exhaust gas to form a second stream consisting essentially of a suspension of said particles in said exhaust gas whereby said particles remain in contact with said exhaust gas and are heated by direct contact with said exhaust gas while in a suspended state therein and while flowing in concurrent flow relationship with said exhaust gas in said duct; feeding said second stream into solid-gas separation means and therein separating said heated particles from said exhaust gas; and then utilizing the heat content of said heated particles to supply heat to a glass tank furnace.

4,119,396

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF MOIST, GRANULAR MATERIALS

Andris Abelitis; Artur Behrendt, both of Hoffnungsthal, and Jakob Hinterkeuser, Menden, all of Germany, assignors to Kockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Jan. 31, 1977, Ser. No. 764,446

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605042

Int. Cl.[2] F27B *15/00*

U.S. Cl. 432—106 **3 Claims**

1. A heat exchanger for the treatment of moist, granular material comprising:

at least two superposed cyclone separators,

a relatively long gas conduit connecting the lower cyclone separator to the upper one,

at least one burner positioned within said lower cyclone separator,

a rotary kiln,

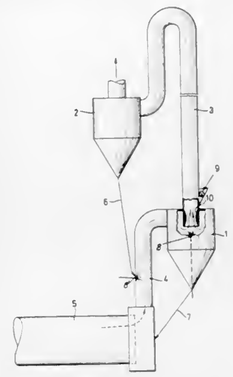
conduit means delivering hot gases from said rotary kiln to the lower of said cyclone separators,

means for discharging particles from the upper cyclone separator into said conduit means,

a burner located in said conduit means,

charging means in said relatively long gas conduit for introducing material to be treated near said lower cyclone separator,

a venturi-type constriction in said relatively long gas conduit below said charging means, said constriction having its lower end projecting into said lower cyclone separator, and



a gas flow rectifier in said relatively long gas conduit below said constriction.

4,119,397

PRODUCT AND METHOD OF PRINTING CARPET-II

Robert W. Synder, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jan. 10, 1977, Ser. No. 757,877

The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.

Int. Cl.[2] **D06P** *7/00;* **D04H** *18/00;* **D06P** *5/00*

U.S. Cl. 8—2.5 A **2 Claims**

1. A process for making decorative carpet through the use of sublimable dyes comprising the steps of:

(a) printing sublimable dyes on the carpet backing prior to the time the carpet face yarns are tufted into the carpet backing,

(b) tufting the carpet face yarns into the carpet backing with the carpet face yarn pile being on the side of the carpet backing which contains the sublimable dyes, and then

(c) transferring these sublimable dyes from the carpet backing to the carpet face yarn through the application of heat to the carpet to vaporize the dyes and the application of a vacuum to draw the dyes from the carpet backing to the carpet face yarns.

4,119,398

COMPOSITION FOR PRE-TREATING FABRIC FOR TRANSFER PRINTING AND A TRANSFER PRINTING PROCESS

Terry Brook Purser, 17 The Lawns, Hatch End, England

Filed Aug. 31, 1977, Ser. No. 829,479

Claims priority, application United Kingdom, Aug. 31, 1976, 35982/76

Int. Cl.[2] **D06P** *5/06, 5/08, 5/10*

U.S. Cl. 8—2.5 R **18 Claims**

1. A method of transfer printing a fabric containing fibres that do not readily retain dyes applied thereto by transfer printing, said method comprising

(I) applying to the fabric an aqueous composition formed by the addition to water of

(a) a coating material comprising a self-curing acrylic resin composition in an amount to provide 40 to 120 grams of said acrylic resin per liter of said water and excluding any water included in said acrylic resin composition, and

(b) at least one of (i) a softening agent for the fibres of the fabric in an amount to provide 8 to 40 grams of said agent per liter of said water and excluding any water added with said softening agent and (ii) a self-curing elastomeric polysiloxane composition in an amount to provide 1 to 35 grams of said polysiloxane composition per liter of said water and excluding any water in said polysiloxane composition.

(II) drying the thus treated fabric.

(III) transfer printing the fabric thus obtained,

(IV) curing the resin content of the coating before, during and/or after the transfer printing step.

4,119,399

COMPOSITION FOR COLORING HAIR CONTAINING AN OXIDIZING AGENT AND CERTAIN QUATERNARY AMINES

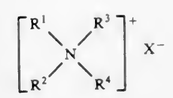
Raymond Feinland, Stamford, Conn.; Stanley Pohl, New Rochelle, and Michael Hnatchenko, Bronx, both of N.Y., assignors to Clairol Incorporated, New York, N.Y.

Division of Ser. No. 656,503, Feb. 9, 1976. This application May 11, 1977, Ser. No. 796,115

Int. Cl.[2] **A61K** *7/13*

U.S. Cl. 8—10.2 **27 Claims**

1. A composition suitable for coloring hair comprising an aqueous vehicle containing an effective amount of an oxidizing agent, from about 0.05 to 5% by weight of a quaternary amine compound of the formula:



(I)

in which:

R^1 and R^2 are long chain aliphatic hydrocarbon radicals having about 10 to 26 carbons;

R^3 and R^4 are lower alkyl radicals having about 1 to 5 carbons;

X is an anion; and

an effective amount of an oxidation dye intermediate which develops a color under oxidative conditions; said composition containing sufficient alkalizing agent to give said composition a pH in the range of from 8 to 11.

4,119,400

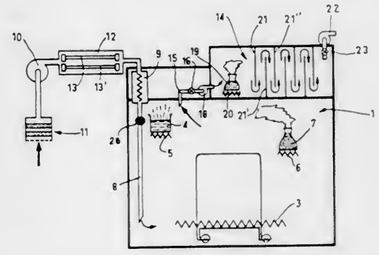
INSTALLATION FOR DISINFECTING, BY THE ACTION OF FORMALDEHYDE

Maurice Kurz, Geneva, Switzerland, assignor to Societe DETEC S.A., Geneva, Switzerland

Filed Feb. 11, 1977, Ser. No. 767,992

Int. Cl.[2] **A61L** *3/02, 3/00, 13/02*

U.S. Cl. 422—298 **4 Claims**



1. Apparatus for disinfecting medical apparatus and especially artificial respirators by the action of formaldehyde fumes subsequently neutralized by ammonia fumes and adapted to avoid the deposit of crystalline hexamethylene tetramine inside the medical apparatus, said disinfecting apparatus comprising:

a disinfection enclosure adapted to receive a medical apparatus and provided with at least one hermetically closed door through which the medical apparatus is inserted and subsequently removed;

means for introducing formaldehyde fumes into said enclosure;

air inlet means for introducing air into said enclosure;

a source of heat for raising the temperature of the air to a predetermined value;

a decontamination compartment having a UV source for decontaminating the air introduced into said enclosure;

pump means for conveying the air from outside of said enclosure successively to said decontamination compartment to said source of heat and to said disinfecting enclosure;

an auxiliary neutralization chamber communicating with said disinfecting enclosure and provided with a souce of ammonia fumes, the volume of said neutralization chamber being such as to allow said ammonia fumes to spread and to come into contact with formaldehyde fumes for a sufficient time to ensure neutralization thereof;

pump means connected to said disinfection enclosure and to said neutralization chamber and adapted to withdraw the formaldehyde fumes from said disinfection enclosure and deliver them to said neutralization chamber; and

a non-return valve allowing the formaldehyde fumes to be conveyed to said neutralization chamber and precluding

the reverse movement thereof from said neutralization chamber to said disinfection enclosure.

4,119,401

TOTAL BILIRUBIN ASSAY

Musa M. Sansur, Eastchester; Daniel L. Vlastelica, Congers, and Anne C. Delea, Yonkers, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jun. 7, 1977, Ser. No. 804,381
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **9 Claims**

1. A method for quantitatively determining the total bilirubin concentration in a bilirubin-containing biological liquid which comprises at least partially solubilizing a measured amount of said biological liquid under alkaline conditions, reacting the liberated bilirubin from said biological liquid with a stabilized diazo reagent under said alkaline conditions and spectrophotometrically measuring absorbance of the resulting solubilized mixture.

4,119,402

METHOD TO MEASURE IN VIVO N-NITROSO COMPOUNDS

David H. Fine, Framingham; Ronald D. Ross, Jr., Waltham, and David P. Rounbehler, Concord, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Sep. 10, 1976, Ser. No. 722,316
Int. Cl.² A61K *29/00*; G01N *31/06, 31/08, 33/16*
U.S. Cl. 23—230 B **11 Claims**

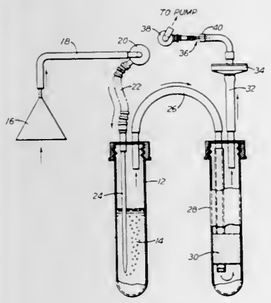
1. A method for measuring in vivo N-nitroso compounds, comprising:
- introducing one or more substances selected from the group consisting of N-nitroso compounds and N-nitroso compound precursors directly into the system of a live test animal;
- permitting the substance to metabolically react within the animal;
- terminating metabolic reactions within said animal substantially instantly; and
- measuring the amount of N-nitroso compounds present in the entire animal.

4,119,403

METHOD AND APPARATUS FOR TEMPERATURE CONTROLLED SAMPLERS

John Walter Rex, Pittsburgh, Pa., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jun. 15, 1977, Ser. No. 806,645
Int. Cl.² G01N *31/06*
U.S. Cl. 23—232 R **46 Claims**



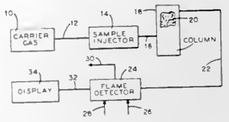
1. In a method of measuring the amount of one gas in another gas using bubblers and reagents each responsive to a particular gas in which the temperature of one reagent is controlled to be within a predetermined temperature range, the improvements in controlling the temperature of said one reagent comprising the steps of establishing a first ambient temperature zone, establishing a second temperature zone containing the bubblers and reagents, establishing a third controlled temperature zone within said second zone containing said one of said reagents, and using said first zone as a heat sump for said third zone independently of said second zone.

4,119,404

APPARATUS AND METHOD FOR SOUR GAS ANALYSIS

John G. W. Price, Carrollton, Tex., assignor to Core Laboratories, Inc., Dallas, Tex.

Filed Jul. 5, 1977, Ser. No. 812,899
Int. Cl.² G01N *21/58*
U.S. Cl. 23—232 E **16 Claims**



1. A flame photometric detector comprising a burner means with a tip; means for supplying to the burner a gas sample for analysis and a fuel; means for supplying combustion supporting gas to the burner tip; means to produce a flame to excite constituents of the sample and produce characteristic light emissions thereof; an elongated transparent chimney surrounding the flame to cool the excited constituents and concentrate maximum light emission of the sample in a preselected area remote from and excluding the flame; optical filtering means to allow only preselected characteristic light emissions to pass therethrough; and photo detector means having an optical sensing path which includes the preselected area of emission concentration but excludes the flame, and detects the emissions passing through the filtering means to produce at least one signal.

4,119,405

TEST MEANS AND METHOD FOR INTERFERENCE RESISTANT DETERMINATION OF OXIDIZING SUBSTANCES

Charles Tak Wai Lam, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 13, 1978, Ser. No. 877,499
Int. Cl.² G01N *33/16*; C12K *1/04, 1/10*
U.S. Cl. 422—56 **24 Claims**

1. Test means for the determination of an oxidizing substance which comprises a hydrazone and hydroxynapthalenesulfonate selected from the group of 4,5-dihydroxy-2,7-napthalene-disulfonic acid and 1-hydroxy-2-napthalene-sulfonic acid.

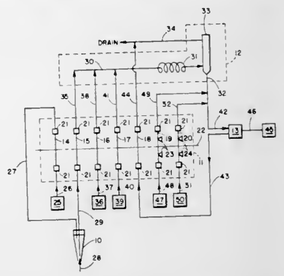
4,119,406

CALIBRATION APPARATUS

Anton Hubert Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 6, 1976, Ser. No. 683,806
Int. Cl.² A61B *5/00*; G01N *1/00, 33/16*
U.S. Cl. 422—81 **2 Claims**

1. Apparatus for calibration of a sensor during use in a calibratable system for monitoring a specific characteristic of a continuously flowing blood sample comprising in combination a first peristaltic pump means for introducing a continuously flowing blood sample from a source connected thereto; a sensor for detecting said specific characteristic, said sensor having flow path means, said first peristaltic pump means communicating with said sensor flow path means to supply a continuously flowing blood sample thereto; a drain communicating with said sensor flow path means; and a second peristaltic pump means communicating with said sensor flow path means for introducing a reference liquid from a source connected thereto to said sensor flow path means for contact with said sensor, said second pump means being capable when in



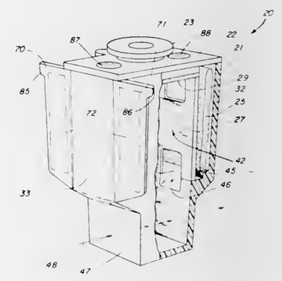
pumping operation of introducing said reference liquid to said sensor flow path means during sensor calibration at a flow rate and pressure which is greater than the flow rate and pressure of the blood sample in the sensor flow path means from the first peristaltic pump means thus causing a diversion of the continuously flowing blood sample from the sensor to the drain during calibration of the sensor.

4,119,407

CUVETTE WITH REAGENT RELEASE MEANS

Robert H. Goldstein, Tustin, Calif., and Robert M. Stahl, Indianapolis, Ind., assignors to Bio-Dynamics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 664,623, Mar. 8, 1976, abandoned, which is a continuation of Ser. No. 603,509, Aug. 11, 1975, abandoned. This application Aug. 24, 1977, Ser. No. 827,123
Int. Cl.² B04B *7/00*; G01N *1/10*
U.S. Cl. 422—58 **14 Claims**



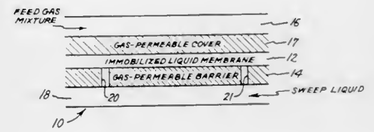
1. A cuvette for holding a liquid substance during spectrophotometer tests comprising:
- a hollow main body to receive said liquid substance, said main body including at least two opposed end walls to allow testing of said liquid substance by a spectrophotometer while said liquid substance is within said main body;
- a first bag of reagent positioned within said main body, said bag having bursting means operable to allow said reagent to escape said bag and mix with said liquid substance upon exposing said main body to a predetermined amount of centrifugal force, said bag of reagent including an outer main body of plastic sheet of a predetermined permeability;
- desiccant means mounted in said hollow main body being operable to absorb vapor within said hollow main body prior to said vapor being absorbed by said bag of reagent, said desiccant means including a container of desiccant attached to said lid, said container including an outer wall of plastic of a permeability higher than said predetermined permeability of said bag of reagent; and
- a lid sealingly mounted on said hollow main body.

4,119,408

APPARATUS FOR MAINTAINING THE SEPARATION EFFICIENCY OF IMMOBILIZED LIQUID MEMBRANES IN GAS SEPARATION

Stephen L. Matson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 22, 1977, Ser. No. 809,116
Int. Cl.² B01D *13/00, 53/22, 59/10*; C01B *17/16*
U.S. Cl. 422—169 **13 Claims**



1. In an apparatus for removing a gaseous component from a gaseous mixture, comprising:
- a first immobilized liquid membrane containing in the liquid thereof at least one species which is reversibly chemically reactive with said gaseous component;
- a first gas-permeable barrier which is substantially impervious to said liquid, said barrier being disposed with a first surface thereof in opposing relationship with a first surface of said immobilized liquid membrane;
- means for contacting said gaseous mixture with a second surface of said immobilized liquid membrane; and
- means for conducting a flow of sweep liquid along the opposite surface of said gas-permeable barrier to absorb gases emerging from said barrier;
- the improvement for substantially maintaining the separation efficiency of said membrane, comprising said first barrier having at least one discrete passage extending from said first to said opposite surface thereof, said passage being of a size effective for receiving said sweep liquid therein at pressures below the pressure at which the substantially liquid-impervious character of said barrier is overcome in the region of the barrier other than said passage such that said sweep liquid communicates with said membrane through the passage, whereby an amount of said reactive species contained in said sweep liquid is transferred therefrom through said passage into the liquid immobilized in said membrane.

4,119,409

PROCESS FOR THE PREPARATION OF SYNTHETIC COKING COAL

Yutaka Aoki, Tokyo; Akira Hase, Kawasaki; Jiro Ito, Kamakura, and Hisomu Nagai, Tokyo, all of Japan, assignors to Nissho-Iwai Co., Ltd., Tokyo, Japan

Filed May 23, 1977, Ser. No. 799,165
Claims priority, application Japan, May 27, 1976, 51/60563
Int. Cl.² C10L *5/48*
U.S. Cl. 44—1 R **10 Claims**

1. A process for preparing synthetic coking coal which comprises mixing solvent refined coal with at least one coal and heat-treating the mixture at a temperature within a range of from about 300° C. to about 480° C.

4,119,410

PROCESS FOR IMPROVING COAL

James K. Kindig, Arvada, and Ronald L. Turner, Golden, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Filed Jan. 31, 1977, Ser. No. 764,390
Int. Cl.[2] C10L *9/10*; C10B *57/00*
U.S. Cl. 44—1 R **49 Claims**

1. In a process for improving coal containing impurities and elemental sulfur wherein the coal is treated with a metal containing compound in order to enhance the magnetic susceptibility of one or more of the impurities susceptible to the metal containing compound treatment, thereby permitting the removal of these impurities by magnetic separation, the improvement comprising:

removing at least a portion of the elemental sulfur prior to performing the magnetic enhancement treatment.

5. The process of claim **2** wherein the heat pretreatment step is conducted in the presence of a member selected from the group consisting of nitrogen, steam, carbon monoxide, carbon dioxide, ammonia, methane, air, ethane, propane, butane, and other hydrocarbon compounds in the gaseous state at the pretreatment temperature.

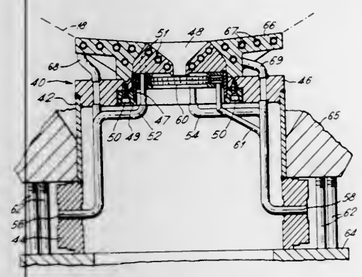
8. The process of claim **1** wherein the means for removing elemental sulfur comprises solvent extraction.

4,119,411

COAL GASIFICATION PLANT

John Alfred Anderson, Knowle, and Dennis Hebden, Guildford, both of England, assignors to British Gas Corporation, London, England

Filed Nov. 22, 1976, Ser. No. 744,035
Claims priority, application United Kingdom, Nov. 27, 1975, 48816/75
Int. Cl.[2] B01J *3/00*
U.S. Cl. 48—62 R **4 Claims**



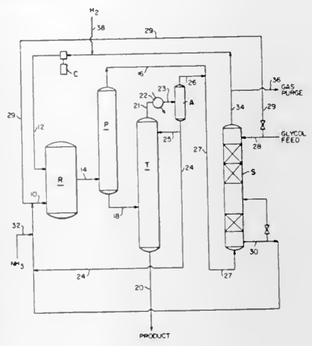
1. In a slagging gasifier comprising: a gasifying vessel; means for introducing coal into said vessel for gasification thereof in said vessel; means for introducing a gasifying medium into said vessel to effect gasification of coal therein; a hearth located at the bottom of said vessel and including a central slag removal orifice formed in a removable slag tap member positioned at said hearth for removing slag therefrom; a burner positioned beneath said slag removal orifice arranged to direct hot combustion products up the orifice for maintaining a pool of molten slag in said hearth; and a quenching chamber vessel below said gasifying vessel into which molten slag is periodically discharged downwardly from said hearth through said orifice onto said quenching chamber vessel; the improvement wherein there is provided an annular metal structure including means for supporting said slag tap member and said burner in their said positions with respect to the gasifier vessel, and means for detachably securing said structure in a gas-tight manner in operating position between the lower end of said gasifier vessel and the upper end of said quenching chamber vessel with said slag tap member and said burner being supported in their said positions, said annular metal structure forming a gas-tight passageway for material passing between said quenching chamber and said gasifier vessel.

4,119,412

AMMONIA ABSORPTION PROCESS

Prem S. Advani, Conroe, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Division of Ser. No. 644,696, Dec. 29, 1975, Pat. No. 4,091,218.
This application Oct. 19, 1977, Ser. No. 843,400
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—70 **1 Claim**



1. The process for separating ammonia from hydrogen and methane in a gas stream produced in a catalytic ammonolysis reaction in the presence of hydrogen which comprises the steps of:

a. contacting, in counter current flow, the gas stream with a dialkylene glycol in a packed tower operated at a pressure of from about 30 to about 150 psig;

b. recovering a liquid bottoms stream of the glycol rich in ammonia;

c. recovering a gaseous overhead stream consisting essentially of hydrogen and methane.

4,119,413

METHOD FOR RECOVERING HYDROGEN BROMIDE GAS

Eric R. Larsen, and Ernest L. Ecker, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 5, 1976, Ser. No. 673,578
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—71 **21 Claims**

13. A method for recovering hydrogen bromide gas from a gaseous stream comprising the steps of:

(a) contacting the gaseous stream with a nonaqueous hydrogen bromide absorbent containing acetic acid and at least one member selected from the group consisting of an acid anhydride and an acid halide to absorb at least a portion of the hydrogen bromide;

(b) heating the hydrogen bromide containing absorbent to desorb at least a portion of the hydrogen bromide.

4,119,414

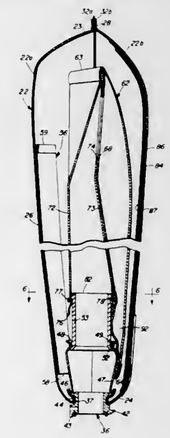
FILTER BAG CONSTRUCTION FOR A VACUUM CLEANER AND METHOD OF OPERATION

Oral M. Smaling, Normal, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.

Filed Dec. 15, 1976, Ser. No. 750,908
Int. Cl.[2] B01D *46/02*
U.S. Cl. 55—97 **9 Claims**

1. A filter bag construction for filtering dirt and other materials entrained in the exhaust air flow discharged from the exhaust outlet of a vacuum cleaner, said filter bag construction

comprising an elongated, outer, non-disposable filter bag having opposite ends and a peripheral side wall, said outer bag also having an opening in one of said ends and tubular coupling means secured in said opening, said coupling means being adapted to be connected to the exhaust outlet of said cleaner and having a portion extending into said outer bag, said outer bag also having an opening in the other of said ends through which the contents of said bag may be emptied, means for closing said other opening, an inner, porous, disposable filter bag having an opening therein and releasably connected to said portion of said coupling means, said outer filter bag being porous and capable of providing satisfactory filtration of dirt and other materials from the exhaust air flow from said cleaner without said inner, filter bag, the peripheral side wall of said outer bag also having an opening through which said inner bag may be removed and replaced, and means for closing said side wall opening whereby only said outer filter bag need be used when it is desired to provide a filter bag construction having a single stage of filtration in which the contents of the outer bag are periodically emptied by the user and whereby both the outer and inner filter bags are used when it is desired to provide a filter bag construction having two stages of filtration and in which the inner bag is periodically removed and replaced with a new bag when the inner bag is filled or otherwise in need of replacement.



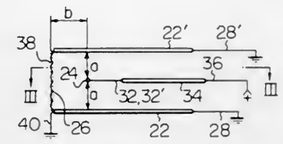
8. A method of operating a filter bag construction for a vacuum cleaner either as a single or two-stage filter, said bag construction including an elongated, porous, outer bag of filtering material having an opening in the lower end thereof and an elongated, flexible delivery tube extending lengthwise in said outer bag and having its lower end terminating above the lower end of said outer bag, said delivery tube being operable to direct unfiltered exhaust air toward the upper end of said outer bag, said opening being adapted to be connected to the exhaust outlet of the cleaner, and a flexible conduit in said outer bag having an upper end an lower end, said lower end being operatively connected to the opening in the lower end of said outer bag so as to be able to receive said unfiltered flow of exhaust air from said cleaner, said method comprising the steps of shifting the upper end of said flexible conduit from a position outside said delivery tube to a position wherein said upper end of said conduit is positioned in the lower end of said delivery tube, and operating said cleaner with the upper end of said flexible conduit positioned in the lower end of said delivery tube to obtain single stage filtration as unfiltered air discharges from the upper end of said delivery tube and passes through the pores of said outer bag.

4,119,415

ELECTROSTATIC DUST PRECIPITATOR

Kazuo Hayashi, and Ken Kamijo, both of Yokohama, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jun. 22, 1977, Ser. No. 808,684
Int. Cl.[2] B03C *3/00*
U.S. Cl. 55—124 **2 Claims**



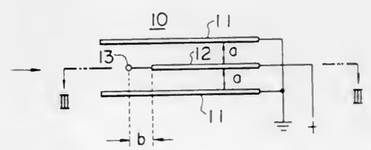
1. An electrostatic dust precipitator having a front and rear dimension and comprising a pair of substantially coextensive, grounded electrodes having respective inner faces which are substantially parallel with said front and rear dimension and which are spaced apart from each other a predetermined distance *2a* in a direction substantially normal to said front and rear dimension, the electrodes having formed therebetween an internal space having a front end substantially normal to said front and rear dimension, an electrically conductive line located between and substantially parallel with the inner faces of said electrodes, the conductive line being electrically connected to a source of d.c. voltage, and a grounded, perforated metal filter positioned at said front end substantially perpendicularly to the inner faces of said electrodes and substantially in parallel with said conductive line, wherein said conductive line is spaced apart a predetermined distance *a* from the inner face of each of said electrodes and a predetermined *b* from said metal filter positioned at said front end immediately adjacent the edges of the grounded electrodes and wherein said distance *b* is not less than the distance *a* and not more than 1.5 times the distance *a*.

4,119,416

ELECTROSTATIC PRECIPITATOR

Kazuo Hayashi, and Ken Kamijo, both of Yokohama, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jun. 22, 1977, Ser. No. 808,683
Int. Cl.[2] B03C *3/00*
U.S. Cl. 55—136 **2 Claims**

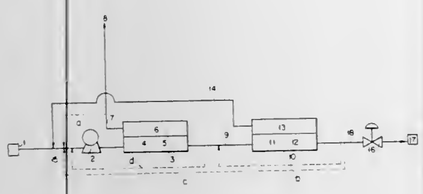


1. An electrostatic precipitator comprising at least one pair of parallel collecting plate electrodes connected to a first terminal of a potential source, an auxiliary plate electrode disposed between said collecting electrodes and connected to a second terminal of said potential source, a wire electrode extending parallel to a front edge of said auxiliary plate electrode and disposed between said parallel collecting electrodes, said wire electrode being spaced a distance *a* from each of said collecting electrodes and being spaced a distance *b* from said front edge of said auxiliary plate electrode and connected to said second terminal of said potential source, the ratio of *a* to *b* being substantially within a range of between 1:0.8 to 1:1.

4,119,417
GAS SEPARATOR

Hideaki Heki, Kawasaki; Osamu Ozaki, and Masayoshi Ohno, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Nov. 16, 1976, Ser. No. 742,239
Claims priority, application Japan, Nov. 17, 1975, 50-137280
Int. Cl.² B01D *53/22*
U.S. Cl. 55—158 10 Claims



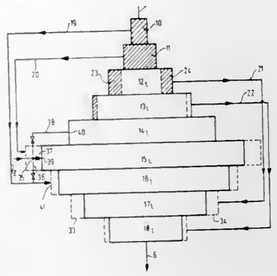
1. A gas mixture separator which comprises a first separator cell provided with a membrane; a second separation cell similarly fitted with a membrane; a feed pipe for conducting a gas mixture being separated to a high pressure chamber of the first separation cell; a leadout pipe for drawing off a gas permeating the membrane of the first separation cell from the low pressure chamber thereof; a connection pipe for carrying a gas which has not permeated the membrane of the first separation cell from the high pressure chamber thereof to the high pressure chamber of the second separation cell; a feedback pipe for returning a gas permeating the membrane of the second separation cell from the low pressure chamber thereof to the feed pipe; and a discharge pipe for removing a gas which has not permeated the membrane of the second separation cell from the high pressure chamber thereof, each of the first and second separation cells having an inlet and two outlets at the positions which enable the gases to make countercurrent flow in the cell, and membranes of the first and second separation cells having the same gas-permeating tendencies which is further provided with a recycle pipe extending from the connection pipe to the feed pipe.

3. A gas mixture separator which comprises a plurality of two-celled units arranged in multi-staged series, each of said two-celled units comprising: a first separation cell provided with a membrane; a second separation cell similarly fitted with a membrane; a feed pipe for conducting a gas mixture being separated to a high pressure chamber of the first separation cell; a leadout pipe for drawing off a gas permeating the membrane of the first separation cell from the low pressure chamber thereof to the first separation cell of the next upper stage; a connection pipe for carrying a gas which has not permeated the membrane of the first separation cell from the high pressure chamber thereof to the high pressure chamber of the second separation cell; a feedback pipe for returning a gas permeating the membrane of the second separation cell from the low pressure chamber thereof to the feed pipe; and a discharge pipe for removing a gas which has not permeated the membrane of the second separation cell from the high pressure chamber thereof to the first separation cell of the next lower stage, each of the first and second separation cells having an inlet and two outlets at positions which enable the gases to make countercurrent flow in the cell, and membranes of the first and second separation cells having the same gas-permeating tendencies.

4,119,418
SYSTEM FOR THE CONTINUOUS SEPARATION OF A GASEOUS MIXTURE

Joost Smid, Alkmaar, Netherlands, assignor to Ultra-Centrifuge Nederland N.V., The Hague, Netherlands

Filed Nov. 23, 1976, Ser. No. 744,280
Claims priority, application Netherlands, Dec. 19, 1975, 7514822
Int. Cl.² B01D *53/22*
U.S. Cl. 55—158 2 Claims



1. Cascade apparatus for the continuous separation of a gaseous mixture or a mixture of gaseous isotopes comprising an enriching cascade including a number of cascade-interconnected separating units for enriching the mixture and a depleting cascade including a number of cascade-connected separating units for depleting the mixture, which separating units are each provided with a feed connection for the mixture to be separated and two connections for the separate discharge of the separated components of the mixture, the cascade apparatus being supplied with mixture to be separated through a feed pipe-line which opens at a main feed point into a connecting pipe-line between the enriching and the depleting cascade, the top of the enriching cascade being connected to a discharge pipe-line, and the bottom of the depleting cascade being connected to a discharge pipe-line for depleted mixture, means for the temporary transfer of separating units from one stage of the cascade to another stage of the overall cascade, said means including branched connecting pipe-lines provided with closing elements, which closing elements permit the change-over of the respective separating unit as a result of closing element in one branch and of opening the closing element in the other branch, said cascade apparatus comprising at least one triple reversing pipe-line equipped with connecting points and closing elements for allowing the separating units to be included in a modified cascade structure according to a programmed change-over pattern.

4,119,419
SMOKE CONTROLLING ASH TRAY

Anthony Passaro, 2440 Prospect Ave., Bronx, N.Y. 10458, and Nicholas Joseph Parmigiano, 2560 Seymour Ave., Bronx, N.Y. 10469

Filed Dec. 7, 1976, Ser. No. 748,224
Int. Cl.² B01D *46/46;* A24F *19/09*
U.S. Cl. 55—212 20 Claims

1. An ash tray, comprising:

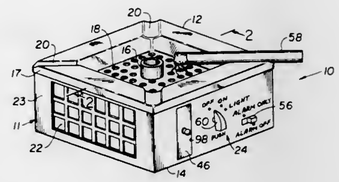
a. a housing having a passageway on one end thereof communicating with the interior of said housing and a plurality of openings for the passage of smoke into said housing,

b. support means positioned on said housing for supporting thereon a cigarette or cigar with its lighted end adjacent to said passageway,

c. a fan mounted within said housing so constructed and arranged as to create a draft of air through said passageway in a singular direction,

d. porous air outlet means arranged on said housing and positioned rearwardly of said fan, such that the draft of air created by said fan exits said housing through said porous outlet means,

e. smoke detector means operatively connected to said fan and contained within said housing, said smoke detector means adapted to detect the presence of smoke adjacent said passageway so as to obtain electrical energization of said fan such that smoke from the lighted cigarette or cigar is carried into said housing by the draft of air created by said fan,



f. control means electrically connected to said fan and said smoke detector means to automatically energize or deenergize said fan in response to the presence or absence of smoke adjacent to said smoke detector means, respectively,

g. at least one battery in said housing electrically connected to said fan for powering same,

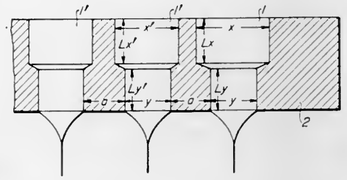
h. a purifier filter mounted in said housing between said fan and said passageway so as to obtain a filtering of the smoke prior to exiting from said housing, and

i. mounting means in said housing for supporting said filter in a manner such that said filter is removable from said housing.

4,119,420
ORIFICE PLATE FOR USE IN BUSHING FOR SPINNING GLASS FIBERS

Hiroaki Shono; Toshio Noji; Shinzo Ishikawa, and Isao Wakasa, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Aug. 5, 1977, Ser. No. 822,337
Claims priority, application Japan, Aug. 20, 1976, 51-99428
Int. Cl.² C03B *37/02*
U.S. Cl. 65—1 5 Claims



1. An orifice plate for use in a bushing for spinning glass fibers having a plain lower surface and provided with a number of densely arranged orifices each of which consists of two cascaded coaxial cylindrical bores of different diameters, one of said bores opening in the upper surface of said orifice plate to constitute a molten-glass inlet-side bore, while the other bore opening in said lower surface to constitute a molten-glass outlet-side bore, characterized in that there exists a relationship between the outermost orifices and the inner orifices located at the inside of the outermost orifices, said relationship being represented by the following equation of:

$$\gamma_s = 0.57\ \gamma_u \text{ to } 0.86\ \gamma_u$$

where, γ_s and γ_u are variables determined in accordance with the dimensions of the bores of said outermost and inner orifices, respectively, and given by the following equations of:

$$\gamma_s = \frac{L_x}{x^4} + \frac{L_y}{y^4} + \frac{(x^3 - y^3)\tan\theta}{6x^3y^3}$$

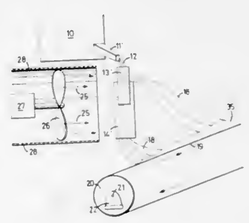
$$\gamma_u = \frac{L_{x'}}{x'^4} + \frac{L_{y'}}{y^4} + \frac{(x'^3 - y^3)\tan\theta}{6x'^3y^3}$$

where, x and x' are diameters of said inlet-side bores, respectively, of said outermost and inner orifices, L_x and $L_{x'}$ are axial lengths of said inlet-side bores, respectively, of said outermost and inner orifices, y is the diameter of said outlet-side bores of said outermost and inner orifices, L_y and $L_{y'}$ are axial lengths of said outlet-side bores, respectively, of said outermost and inner orifices, and θ is the angle at which a tapered intermediate section through which said two cylindrical bores in each orifice are connected intersects a plane parallel with the orifice plate.

4,119,421
ARRANGEMENT FOR FIBRATION OF MOLTEN MINERAL

Lennart Alenrot; Willy Hartung; Torbjorn Lund, and Ulf Aberg, all of Skovde, Sweden, assignors to Rockwool Aktiebolaget, Skovde, Sweden

Filed Jun. 7, 1977, Ser. No. 804,294
Claims priority, application Sweden, Jun. 30, 1976, 7607456
Int. Cl.² C03B *19/04*
U.S. Cl. 65—14 6 Claims



1. Apparatus for manufacturing mineral fibers from a mineral melt comprising, in combination:

two spinner wheel aggregates arranged image-symmetrically with respect to each other and each comprising a primary spinner wheel rotatable on a substantially horizontal axis for receiving melt and a secondary spinner wheel rotatable on a substantially horizontal axis and arranged in cascade relation to the primary spinner wheel for receiving material therefrom and for giving off mineral fibers to a collctor band, the directions of rotation of the primary and secondary spinner wheels, respectively, being image-symmetrical relative to one another;

means for supplying mineral melt to the primary spinner wheel of each spinner wheel aggregate;

a collector band for receiving mineral fibers given off by said secondary spinner wheels;

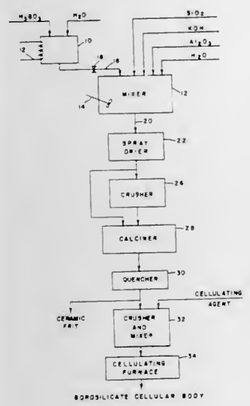
means for blowing a stream of air in a substantially horizontal direction and generally axially of said spinner wheels over the mantle surfaces of the spinner wheels for transferring fibers from said secondary spinner wheels to said collector band, said primary and secondary wheels in each spinner wheel aggregate in opposite directions and for rotating said secondary spinner wheels in a direction such that at the place where they are closest to one another, the peripheral direction of motion of each takes place from down to upwardly.

4,119,422

PULVERULENT BOROSILICATE COMPOSITION AND A METHOD OF MAKING A CELLULAR BOROSILICATE BODY THEREFROM

David Rostoker, Monroeville, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Division of Ser. No. 825,840, Aug. 18, 1977, which is a division of Ser. No. 685,054, May 10, 1976, Pat. No. 4,075,025. This application Feb. 15, 1978, Ser. No. 877,888
Int. Cl.[2] C03B *19/08*
U.S. Cl. 65—22 4 Claims



1. A method of making a cellular potassium aluminoborosilicate body comprising,

forming an aqueous boric acid solution,

separately forming an aqueous slurry of potassium hydroxide, colloidal, high surface area, alpha monohydrate alumina particles, and amorphous, high surface area, colloidal, precipitated hydrated silica particles, said potassium hydroxide being added in a sufficient amount to provide a pH of about 10 for said aqueous slurry, and subjecting said slurry to high shear mixing,

mixing the boric acid solution with said aqueous slurry whereby said boric acid is absorbed on to the surface of the colloidal particles,

thereafter adding additional amorphous, high surface area, precipitated hydrated silica until said slurry contains about 22% by weight solids,

drying said slurry and forming agglomerates of the solid constituents in said slurry,

calcining said agglomerates at a temperature sufficient to fuse said agglomerates,

quenching said calcined agglomerates to prevent substantial devitrification of said calcined agglomerates,

crushing said fused agglomerates and mixing said calcined agglomerates with a cellulating agent to form a mixture of crushed calcined agglomerates and cellulating agent, and

thereafter cellulating said mixture at a temperature sufficient to coalesce said calcined particles and gasify said cellulating agent to form cells in the coalesced material.

2. A method of making a cellular borosilicate body as set forth in claim 1 which includes,

crushing another portion of said calcined agglomerates,

positioning a layer of said crushed calcined agglomerates without said celluating agent in a container,

thereafter positioning a layer of said mixture of crushed calcined agglomerates and cellulating agent on said layer of crushed calcined agglomerates,

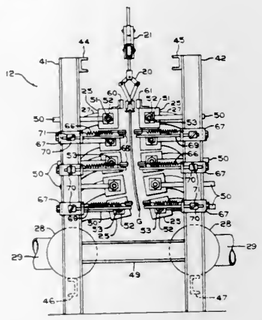
thereafter subjecting said layers to an elevated temperature sufficient to coalesce said calcined agglomerates and gasify said cellulating agent and thereby forming a composite layer of noncellular borosilicate glass with a layer of cellular borosilicate glass fused thereto.

4,119,423

TONG GUIDE MEANS IN GLASS SHEET QUENCHING APPARATUS

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1977, Ser. No. 865,766
Int. Cl.[2] C03B *23/02, 27/00*
U.S. Cl. 65—104 8 Claims



1. An apparatus for tempering glass sheets comprising:

a furnace adapted to heat glass sheets to a temperature suitable for tempering;

a quenching station including a pair of opposed arrays of orifices adapted to direct blasts of tempering medium in a generally horizontal direction onto opposite surfaces of a glass sheet received therebetween; and

means for conveying a glass sheet from the furnace into the quench station along a longitudinal path between said arrays of nozzles, said conveying means including tongs adapted to grip an upper marginal edge portion of a glass sheet so as to support the glass sheet in a generally vertical disposition;

wherein said quenching station includes rigid guide means mounted above said arrays of nozzles and parallel to and flanking said longitudinal path taken by said tongs through the quecning station, said guide means being located to face lower end portions of the tongs passing through the quenching station in closely spaced relationship thereto so as to closely limit transverse motions of the tongs.

5. A method of tempering a series of glass sheets comprising:

gripping an upper marginal edge portion of each glass sheet with tongs so as to support each glass sheet in a generally vertical position;

while thus supported, conveying each glass sheet through a heating chamber wherein the glass is heated to a temperature suitable for tempering and then through a quenching station wherein blasts of tempering medium are directed onto opposite sides of each glass sheet to impart a temper thereto;

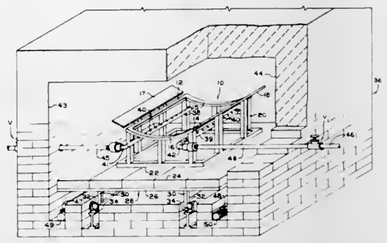
wherein the improvement comprises reducing buffeting of the glass sheets by the blasts of tempering medium by restricting side-to-side motions of the tongs with rigid tong guide means closely spaced from and flanking the path taken by the tongs through the quenching station.

4,119,424

METHOD AND APPARATUS FOR SHAPING GLASS SHEETS ON A BENDING MOLD

John A. Comperatore, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 3, 1977, Ser. No. 803,015
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—107 7 Claims



1. In the method of shaping a glass sheet by gravity sagging comprising supporting said sheet along an opposite pair of edges on oblique supports in shaping relation over an outline shaping mold, heating said glass sheet until it softens to sag and slide along said oblique supports and into conformity with the upper surface of said outline mold, the improvement comprising:

(1) observing the relative progress of said sagging and sliding of said opposite glass sheet side edges, and when one of said opposite glass sheet edges is observed to sag and slide less rapidly than the other of said opposite glass sheet edges,

(2) selectively applying cooling fluid against said glass sheet adjacent said one glass sheet side edge while refraining from applying cooling fluid against the remainder of said glass sheet, and

(3) discontinuing said selective application when both said glass sheet side edges are in approximate horizontal alignment with one another.

5. Apparatus for shaping a glass sheet by gravity sagging comprising an outline mold having an upper surface conforming in elevation and outline to the shape desired for the glass sheet after shaping, a pair of elongated slides extending obliquely upwardly and outwardly in a transverse direction from adjacent a pair of opposite side edges of said outline mold, a pair of apertured pipes extending lengthwise across the length of said mold in a direction approximately aligned with the length of an adjacent slide in a plane below said mold, each said pipe having apertures oriented to direct fluid upwardly adjacent each side edge of said outline shaping mold onto said glass sheet thereon, means to supply cooling fluid through a selected one or other of said pipes and separate valve means interposed between said cooling fluid supply means and each of said apertured pipes to control the selection of flow of cooling fluid through said one of said pipes.

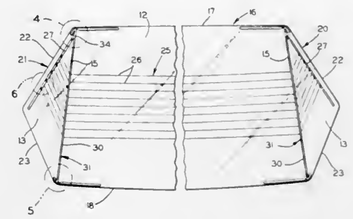
4,119,425

METHOD OF BENDING A GLASS SHEET TO A SHARP ANGLE

James G. Marriott, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Division of Ser. No. 718,154, Aug. 27, 1976. This application Oct. 11, 1977, Ser. No. 841,228
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—107 6 Claims

1. A method of forming an electrically heated glass sheet adapted to be bent to a relatively sharp angle comprising: applying an electrically conducting material to one surface of a glass sheet in a pattern forming a first circuit having a series of parallel electrically conducting lines connected at their opposite ends of a pair of spaced bus bars, applying additional electrically conducting material to said glass sheet surface in a pattern forming a second circuit having at least one electrically conducting paths extending transversely across and intersecting said electrically conducting lines of said first circuit, and



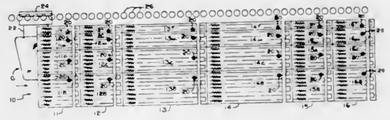
isolating said first circuit from said second circuit by forming discontinuities in said bus bars on opposite sides of each connection between said electrically conducting lines and said bus bars, respectively.

4,119,426

METHOD AND APPARATUS FOR ELIMINATING TONG VENTS IN A GLASS SHEET FURNACE

Joseph B. Kelly, Crestline, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 2, 1977, Ser. No. 830,263
Int. Cl.[2] C03B *27/02*
U.S. Cl. 65—111 8 Claims



1. In the method of heating a glass sheet to approximately its strain point or above and then cooling the glass sheet so as to increase its strength, wherein the glass sheet is heated while being gripped along edge portions by metal tongs having a greater heat capacity than the glass sheet, the improvement comprising carrying out said heating step by supporting the glass sheet opposite a first array of heating elements while maintaining protions of the tongs extending beyond the periphery of the glass sheet opposite a second array of heating elements, no portion of the glass sheet being located directly opposite said second array of heating elements, and controlling the energy inputs to the first and second arrays of heating elements independently so as to heat at a higher average rate in the region opposite the second array than in the region opposite the first array, thereby alleviating the occurrence of tong vents arising from a temperature difference between the tongs and the glass sheet.

6. An apparatus for heating glass sheets vertically hung from tongs, comprising:

a furnace having a narrow, vertically elongated heating chamber adapted to receive a vertically hanging glass sheet, arrays of heating elements along the sides of said heating chamber arranged in opposed pairs to form a plurality of heating zones, a first of said heating zones being disposed directly below a second of said heating zones, conveyor means for passing the glass sheet through said heating chamber and carrying glass-gripping tongs at an elevation where the lower, glass-gripping portions of the tongs are opposite the first heating zone while upper portions of the tongs beyond the periphery of the glass sheet are opposite the second heating zone, and means to

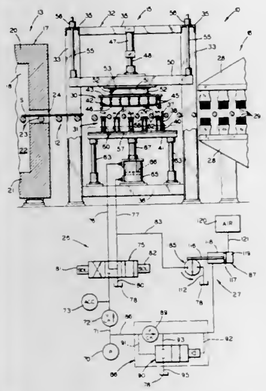
control the rate of heating in each of the heating zones independently.

4,119,427

HYDRAULIC SYSTEM FOR GLASS BENDING APPARATUS WITH PRESSURE RELEASE ASSEMBLY

Robert G. Revells, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Dec. 27, 1977, Ser. No. 864,426
Int. Cl.² C03B *23/02*
U.S. Cl. 65—159 **12 Claims**



1. In combination, a reciprocable bending member for shaping a glass sheet, an hydraulic actuator for reciprocating said bending member, and a fluid pressure release means for exhausting fluid under pressure trapped in said hydraulic actuator including a housing having a fluid inlet connected to said fluid under pressure in said actuator and a fluid outlet connected to exhaust, a normally closed valve means in said housing for controlling the flow of said fluid under pressure from said fluid inlet to said fluid outlet, means for actuating said valve means to establish communication between said fluid inlet and said fluid outlet, a control cylinder having a movable member therein defining a chamber on one side of said movable member in said cylinder, said actuating means operatively connected to said movable member, said chamber being connected to and reflecting the hydraulic pressure in a main line pressure supply conduit, said movable member being responsive to a substantial pressure reduction in said chamber as a result of a pressure failure in said main line supply conduit to initiate operation of said actuating means and effect evacuation of said fluid under pressure from said actuator.

4,119,428

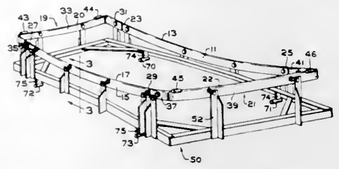
APPARATUS FOR BENDING GLASS SHEETS

Willie C. DeAngelis, Brackenridge, and Edward R. Crowe, Arnold, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 716,416, Aug. 23, 1976, abandoned. This application Aug. 25, 1977, Ser. No. 827,523
Int. Cl.² C03B *23/02*
U.S. Cl. 65—287 **6 Claims**

1. An outline bending mold for shaping glass sheets by the gravity sag method comprising:

a horizontally extending shaping rail substantially enclosing an area and presenting narrow, upwardly facing shaping surfaces corresponding in outline and contour to marginal portions of the bent glass sheet, the rail sections on a first and second opposed sides of the enclosed area having long, concavely arcuate shaping surfaces, and a pair of glass supporting members rigidly affixed outside the enclosed area to the rail section on a third side of the enclosed area, said supporting members being positioned to underlie marginal portions of the lower major surface of a flat glass sheet loaded onto the mold for bending, each of said supporting members having a rounded upper surface extending above the elevation of the adjacent portion of the shaping surface on the rail so as to slidingly support



the glass sheet being bent slightly above the adjacent portion of the shaping surface when the glass sheet is flat and to permit the glass sheet to slide into supporting contact with the adjacent portion of the shaping surface after the glass sheet has begun to sag toward the final bent contour.

4,119,429

SOIL SUPPLEMENT

Donald E. Lovness, Stillwater, Minn., assignor to Judd Ringer Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 667,655, Mar. 17, 1976, abandoned. This application Jun. 20, 1977, Ser. No. 807,837
Int. Cl.² C05F *11/08*
U.S. Cl. 71—6 **15 Claims**

1. A soil supplement for addition to the soil around a potted plant, said soil supplement comprising:

a quantity of microorganisms and enzymes in an amount equal to at least 3% of the total quantity of the supplement, said microorganisms being present in an amount equal to at least 1% of the total supplement and said enzymes being present in an amount equal to at least the amount of microorganisms,

a quantity of materials rich in protein and carbohydrates in an amount equal to at least 75% of the total, and

a sequestering agent consisting of potassium citrate in an amount equal to from 7 to 15 percent for maintaining the remaining ingredients dispersed through the soil and preventing the settling thereof.

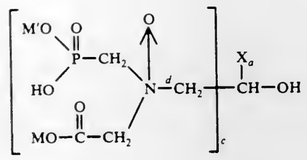
4,119,430

N-(2-HYDROXYALKYL) DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINE AND HERBICIDAL COMPOSITIONS CONTAINING SAME

Van R. Gaertner, Ballwin, and Philip C. Hamm, Glendale, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 714,054, Aug. 13, 1976, Pat. No. 4,047,927. This application May 18, 1977, Ser. No. 798,043
Int. Cl.² A01N *9/36*
U.S. Cl. 71—86 **16 Claims**

1. A compound of the formula



wherein X is selected from hydroxymethyl, lower alkoxymethyl and lower alkenoxymethyl, M is selected from hydrogen, lower alkyl and alkali metal, M′ is selected from hydrogen, lower alkyl, phenyl and alkali metal, *a* is zero or one, *c* is one or two, and *d* is zero or one, provided that the sum of *a* + *c* must equal two.

9. A phytotoxic composition comprising an inert adjuvant and a herbicidally effective amount of a compound of claim 1.

4,119,431

HERBICIDAL EFFECT OF A MIXTURE OF CIS AND TRANS ISOMERS OF S-ISOPROPYL-1-(5-ETHYL-2-METHYL-PIPERIDINECARBOTHIOATE)

Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 617,908, Sep. 29, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,485
Int. Cl.² A01N *9/22*
U.S. Cl. 71—94 **1 Claim**

1. A method of selectively controlling undesirable vegetation with respect to cotton by applying to the vegetation or the habitat thereof, a herbicidal composition of matter comprising a herbicidally effective amount of a mixture of cis and trans isomers of S-isopropyl-1-(5-ethyl-2-methylpiperidinecarbothioate) containing between about 60 and 65% of the cis isomer.

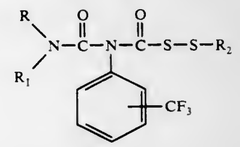
4,119,432

HERBICIDAL N-(DIALKYLCARBAMYL)-N-TRIFLUOROMETHYL-PHENYLCARBAMYL ALKYL DISULFIDES

Edmund J. Gaughan, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

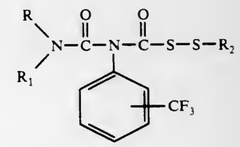
Filed May 17, 1977, Ser. No. 797,717
Int. Cl.² A01N *9/12*; C07C *179/22*
U.S. Cl. 71—98 **6 Claims**

1. A compound having the general structural formula



wherein each of R, R_1, and R_2 is a lower alkyl radical.

3. A method of controlling the growth of undesired vegetation which comprises applying to the locus where control is desired a herbicidally effective amount of a compound of the formula



wherein each of R, R_1, and R_2 is a lower alkyl radical.

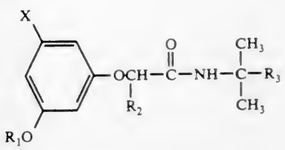
4,119,433

3-HALO-5-(LOWER ALKOXY) PHENOXY ALKYL AMIDES

Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 5, 1977, Ser. No. 812,957
Int. Cl.² A01N *9/20*; C07C *121/66, 103/22*
U.S. Cl. 71—118 **11 Claims**

9. A method for controlling undesirable vegetation comprising applying to said vegetation or the locus thereof an herbicidally effective amount of a compound having the formula



in which X is a halogen, R_1 is lower alkyl, R_2 is lower alkyl and R_3 is lower akyl, or lower alkynyl.

4,119,434

METHOD OF MAKING A BLISTERED SILICATE MATERIAL

Karl Kristian Kobs Krøyer, Engtroften 3, DK—8620, Viby J., Denmark

Filed Jul. 25, 1977, Ser. No. 819,036
Claims priority, application Denmark, Jul. 28, 1976, 3401/76; Jan. 4, 1977, 17/77
Int. Cl.² C03C *3/22*
U.S. Cl. 106—306 **11 Claims**

1. A process of making blistered crystallizable glass material having a high content of wollastonite and a low content of cristobalite comprising the steps of continuously supplying part of a selected composition of raw materials suitable for forming a crystallizable glass material to the upper end of an inclined rotary kiln, keeping said rotary kiln at a temperature sufficient to melt the raw materials supplied to the upper end thereof during their passage therethrough to form a molten bath flowing downwards through the lower part of said rotary kiln, continuously injecting the remainder of said selected composition of raw materials comprising at least one calcium-containing additive from the lower end of said rotary kiln in the form of a blast striking the wall of said rotary kiln above said molten bath over the whole of the burning zone of said rotary kiln, thereby to protect the lining of said rotary kiln and gradually to be incorporated in said molten bath under conditions to cause blister formation and causing the molten material thus formed to flow off from the lower end of said rotary kiln.

4,119,435

PROCESS OF PREPARING SOYBEAN POLYSACCHARIDES

Yukihiro Nakao, Tondabayashi; Kasumi Miyashita, Kobe, and Jun Toda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 3, 1977, Ser. No. 803,304
Claims priority, application Japan, Jul. 30, 1976, 51-91957; Aug. 30, 1976, 51-103974
Int. Cl.² C13L *3/00*
U.S. Cl. 127—34 **22 Claims**

1. A method for producing soybean polysaccharides which comprises extracting a residue, which is obtained after separation of a soy milk from soybeans by an extractive separation technique, with an aqueous alkaline solution having a pH value not less than 11 and recovering the resultant solid matter containing the soybean polysaccharides.

4,119,436

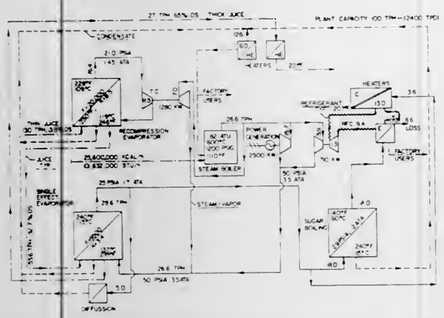
SUGAR REFINING PROCESS

Milovan Bosnjak, Denver, Colo., assignor to Buttes Gas & Oil Co., Oakland, Calif.

Filed May 23, 1977, Ser. No. 799,268
Int. Cl.² C13F *1/00*; C13G *1/02*
U.S. Cl. 127—61 **8 Claims**

6. In a process for refining sugar wherein an aqueous sugar bearing extract of the latter is concentrated to produce a concentrate having a preselected percentage of fixed solids and the sugar is crystallized by boiling a solution thereof using a predeterminable quantity and quality of steam as the source of heat, the improvement which comprises: estimating what propor-

tion of the total amount of water contained in the sugar bearing extract entering the process is needed to satisfy all the sugar boiling requirements of the sugar boiling phase thereof along with at least a part of the process heating requirements upon being evaporated, evaporating and recompressing the excess of the water contained in the sugar bearing extract over and above the total estimated requirements for the sugar boiling phase and that required to satisfy at least a part of the process



heating requirements in a recompression evaporator, and evaporating in a single effect evaporator the water contained in said proportion left over after the water contained in the remainder of the sugar bearing extract has been recompressed under conditions capable of producing steam of the quality and in the quantity predetermined as necessary to carry out all of the sugar boiling along with the chosen portion of the process heating.

4,119,437

METHOD FOR REMOVING Y_2O_3 OR SM_2O_3 CORES FROM CASTINGS

Ronald H. Arendt; Irvin C. Huseby, and Marcus P. Borom, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,753

Int. Cl.² B08B *3/08, 7/04*

U.S. Cl. 134—3 **22 Claims**

1. A method for in-place leaching of ceramic materials in contact with a casting comprising an advanced superalloy material comprising

(a) preparing an aqueous weak acid leaching solution of a weak acid material which is one selected from the group consisting of NH_4Cl, NH_4HSO_4, CH_3COOH and equimolar CH_3COOH — CH_3COONa, wherein the molarity of the solution is from about 0.1 molar to about 15 molar;

(b) heating the solution to a predetermined temperature;

(c) placing an article consisting essentially of a ceramic material which is one selected from the group consisting of Y_2O_3 and Sm_2O_3 in the heated solution, and

(d) preferentially attacking the ceramic material with the heated solution to dissolve at least a part of the ceramic material into the heated solution.

13. A method for in-place leaching of ceramic materials comprising

(a) preparing an aqueous weak acid leaching solution of NH_4NO_3, wherein the molarity of the NH_4NO_3 solution may range from 0.1 molar to saturation;

(b) heating the solution to a predetermined temperature;

(c) placing an article consisting essentially of a ceramic material which is one selected from the group consisting of Y_2O_3 and Sm_2O_3 in the heated solution;

(d) preferentially attacking the ceramic material to dissolve at least a part of the ceramic material into the heated solution as a nitrate product;

(e) collecting at least the products of the leaching action as nitrates, and

(f) heating the collected nitrates at a temperature of approximately 800° C. to convert the nitrates to at least a ceramic oxide.

4,119,438

PROCESS AND APPARATUS FOR REMOVING STRAWS FROM BOTTLES

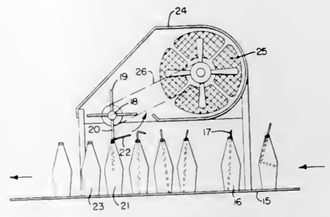
Hans Dewald, Berliner Ring 76, 6806 Viernheim, Germany

Filed Mar. 15, 1977, Ser. No. 777,851

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648706

Int. Cl.² B08B *7/00*

U.S. Cl. 134—6 **10 Claims**



1. A process for removing straws from bottles, comprising the step of rotating a plurality of resilient blades into engagement with the straws without significant projection of said blades into said bottles, the impact of the blades against the straws removing the straws from the bottles.

4,119,439

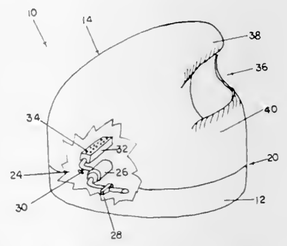
NAIL CLEANER

John L. Boucher, 4005 McLane Dr., Tampa, Fla. 33610

Filed Apr. 20, 1977, Ser. No. 789,196

Int. Cl.² B08B *3/02*

U.S. Cl. 134—183 **3 Claims**



1. A nail cleaner for cleaning beneath a person's fingernails comprising an enclosure having a basin forming the base thereof and an enlarged hood detachably attached to said basin along the perimeter thereof, an aperture formed in said enlarged hood for placing the person's hand therethrough, said aperture being disposed rearward of the front of said enlarged hood and including a skirt extending inwardly from the inner periphery thereof to prevent splashing, and a cleaning solution delivery means comprising a pump having supply source of cleaning solution and a spray manifold disposed within said enclosure operatively coupled to the outlet of said pump, said spray manifold including a plurality of orifices to discharge a cleaning solution at a predetermined delivery pressure disposed laterally relative to said aperture and perpendicular to said aperture so as to permit cleaning beneath the person's fingernails within said enclosure whereby cleaning solution engages the crevices between the person's fingertips and fingernails to dislodge and dissolve dirt.

4,119,440

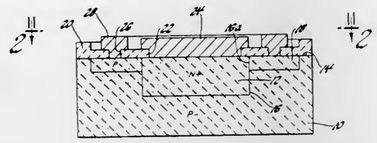
METHOD OF MAKING ION IMPLANTED ZENER DIODE

John W. Hile, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 622,081, Oct. 14, 1975, Pat. No. 4,051,504. This application Nov. 26, 1976, Ser. No. 745,050

Int. Cl.² H01L *29/90, 21/265*

U.S. Cl. 148—1.5 **1 Claim**



1. A method of making a zener diode having an accurately predetermined breakdown voltage, said method comprising the steps of:

preparing a surface of a body of semiconductive material to receive a diffusant, said body having at least a portion of one conductivity type intersecting said surface, said portion having a resistivity of about 10–100 ohm-centimeters;

diffusing an opposite conductivity type impurity into an island-like surface region of said portion to form an opposite conductivity type island-like first surface region within said one conductivity type portion and thereby form a PN junction therebetween having a breakdown voltage in excess of a predetermined breakdown voltage, said impurity having a surface concentration during diffusion at least generally equal to the limit of solid solubility of said impurity in said semiconductive material;

irradiating a second surface region of said portion contiguous said first surface region with an accurately predetermined number of ions of a conductivity determining impurity of said one type to increase the one conductivity type impurity concentration in said second region of said portion by an accurately predetermined amount within the range of about 1×10^{16} to 1×10^{19} atoms per cubic centimeter of semiconductive material, resulting in a PN junction between said first and second regions that has an accurately predetermined breakdown voltage that is lower than the breakdown voltage of the PN junction between said first region and said body portion;

making a low resistance electrical connection to said first surface region; and

making a low resistance electrical connection to said second surface region.

4,119,441

METHOD FOR THE PRODUCTION OF N-DOPED SILICON WITH A DISH-SHAPED PROFILE OF SPECIFIC RESISTANCE IN A RADIAL DIRECTION

Ernst Haas, Erlangen; Karl Platzoeder, and Manfred Schnoeller, both of Haimhaussen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 12, 1976, Ser. No. 731,440

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1975, 2552621

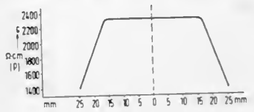
Int. Cl.² H01L *21/263*

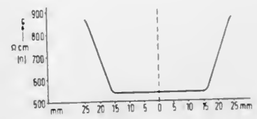
U.S. Cl. 148—1.5 **9 Claims**

1. A method for the production of an n-doped silicon single crystal having a dish-shaped specific electrical resistance profile in a radial direction about a central axis of the crystal comprising the step of exposing a silicon single crystal to a pattern of radiation with neutrons in accordance with the reaction

$$30_{Si}(n,\gamma)31_{Si}\xrightarrow{\beta}31_P$$

to such an extent that a weaker doping-material concentration is present in marginal regions of the crystal due to the production of fewer hosphorus atoms and wherein a p-conductive silicon crystal is used as initial material for exposure to the





neutron radiation, said p-conductive silicon crystal having a region of elevated specific electric resistance at central portions.

4,119,442

PROCESS FOR MANUFACTURING A STEEL PRODUCT

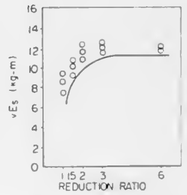
Michihiko Nagumo; Tohru Inoue, both of Tokyo, and Naoki Okumura, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 1, 1976, Ser. No. 746,307

Claims priority, application Japan, Dec. 1, 1975, 50-143717; Jun. 25, 1976, 51-74390; Sep. 14, 1976, 51-110459

Int. Cl.² C21D *7/13*

U.S. Cl. 148—2 **5 Claims**



1. A process for the manufacture of a steel product from a cast slab wherein a cast slab of not more than 200 mm is subjected to rolling under the conditions that $2 \leqq D/d \leqq 6$ and that

$$\frac{\sqrt{R\,(h_1 - h_2)}}{\frac{h_1 + h_2}{2}} \geqq 0.8$$

per at least one rolling pass, wherein D is the thickness of the cast slab, d is the thickness of the product and h_1 is the thickness before rolling per each rolling pass; h_2 is the thickness after rolling per each rolling pass; and R is the radius of the roll.

4,119,443

METHOD FOR MANUFACTURING HARDENED MACHINED PARTS

Yoshihiko Abe; Isao Okabe, both of Tokyo, and Atsushi Shirota, Kamagaya, all of Japan, assignors to Mitsubishi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1977, Ser. No. 781,469
Claims priority, application Japan, Apr. 6, 1977, 51/37807
Int. Cl.² C23F *7/00*
U.S. Cl. 148—12.1 **3 Claims**

1. A method for manufacturing nitrided machined parts from steel particularly for use under light load conditions consisting essentially of the steps of:hot rolling or forging steel which consists essentially of 0.05 to 0.15 weight % C, up to 0.50 weight % of Si, up to 1.5 weight % of Mn, 0.30 to 1.0 weight % of Cr, 0.50 to 1.0 weight % of Mo, one or more elements selected from the group consisting of 0.10 to 0.40 weight % of V, 0.03 to 0.20 weight % of Ti, 0.03 to 0.20 weight % of Nb and 0.0005 to 0.0050 weight % of B, the balance being Fe including impurities inevitable in making steel; subsequently, and without further annealing thereof, cooling the hot rolled or forged steel in air from a temperature of 900° to 1,000° C; machining the air cooled steel; and subjecting the machined steel to a nitriding process at a temperature of 500° to 650° C for from two to eight hours.

4,119,444

PACK NITRIDING PROCESS FOR LOW ALLOY STEEL

Charles A. Stickels, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 693,406, Jun. 7, 1976, and a continuation-in-part of Ser. No. 641,006, Dec. 15, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,663
Int. Cl.² C21D *1/06*
U.S. Cl. 148—16.6 **11 Claims**

1. A method of nitriding metal parts, comprising:
(a) preparing a granular packing medium which is thermally and mechanically stable at temperatures of at least 1100° F., has a high absorption capacity, and is substantially inert for the purposes herein,
(b) preparing an aqueous solution containing a predetermined concentration of a nitrogen-bearing agent selected to be solid and thermally stable when subsequently dehydrated and heated to nitriding temperatures, said thermal stability being determined by the presence of a decomposition product capable of releasing nascent nitrogen after being at said nitriding temperature for at least 4 hours,
(c) absorbing said aqueous solution into said packing medium to obtain a predetermined retention of the nitrogen-bearing agent therein, the amount of the agent retained in the packing medium being controlled by adjusting the concentration of the aqueous solution,
(d) drying said packing medium to dehydrate and remove the water therein, the resulting packing medium being impregnated with a thin residue of said nitrogen-bearing agent on substantially all grains of said medium, said residue forming a thin integrated solid shell network the average thickness of which is no greater than 0.001 inch,
(e) burying said steel part to be nitrided within said packing medium and heating said impregnated packing medium and part for a period of time sufficient to decompose said residue of said nitrogen-bearing agent for releasing nascent nitrogen bearing gas, and
(f) continuing said heating for a period of time during which continuous contact between said nascent nitrogen gas and said part surface provides for nitrogen enrichment to the steel to a predetermined depth.

4,119,445

HIGH STRENGTH ALLOY OF FERRITIC STRUCTURE

Richard A. Bosch, and John A. Straatmann, both of Poland, Ohio, assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Continuation of Ser. No. 141,947, May 10, 1971, abandoned, which is a division of Ser. No. 725,136, Apr. 29, 1968, Pat. No. 3,625,780. This application Jun. 29, 1973, Ser. No. 375,116
Int. Cl.² C22C *38/14*
U.S. Cl. 148—36 **4 Claims**

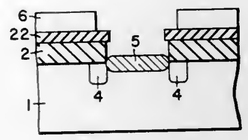
1. A killed ferrous low alloy flat rolled product of a composition consisting essentially of, in percentage by weight, 0.03–0.20 carbon, 0.04–0.35 titanium as a primary strengthening agent, 0.02–0.07 killing agent selected from the group consisting of aluminum, silicon, additional titanium, and zirconium, up to 1.5 manganese, 0.03 maximum sulfur, 0.015 maximum phosphorus, up to 0.30 silicon, up to 0.01 nitrogen, the remainder being essentially iron, and characterized by:
a fine dispersion of titanium carbonitride in a ferrite matrix, and a cold formability demonstrable by a capability of being bent through an arc, without cracking, to an inside diameter equal to the thickness of the product.

4,119,446

METHOD FOR FORMING A GUARDED SCHOTTKY BARRIER DIODE BY ION-IMPLANTATION

Sal Thomas Mastroianni, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 11, 1977, Ser. No. 823,797
Int. Cl.² H01L *21/265*
U.S. Cl. 148—1.5 **7 Claims**



1. A method for forming on a semiconductor substrate portion of first conductivity type a metal-semiconductor diode surrounded directly by a doped-guard ring of second conductivity-type and further surrounded directly by an insulating layer on said substrate, comprising ion-implanting said substrate through said insulating layer using said metal as a mask.

4,119,447

METHOD OF REORDERING FIBRES IN A WEB

Peter Manfrid Ellis, and Charles Martin Lester, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 4, 1977, Ser. No. 784,632
Claims priority, application United Kingdom, Apr. 8, 1976, 14369/76
Int. Cl.² B32B *31/20*
U.S. Cl. 156—73.1 **3 Claims**

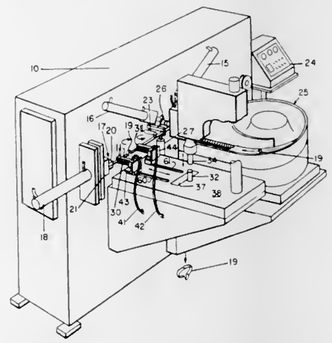
1. A method of producing a non-woven fabric from at least one fibrous web containing at least some thermally bondable thermoplastic fibres, the spaces between the fibres in the web being substantially gaseous, comprising forwarding such web or webs into a gap of decreasing width between opposed faces of rigid members which are urged towards each other and at least one of which bears a relief pattern of lands and grooves on its face, and ultrasonically energizing at least one of the members to a degree insufficient to bond the bondable fibres in the entry region of the gap but sufficient to bond such fibres before the web leaves the gap, so that the fibres of the web are at first reordered by their different local degrees of ultrasonic excitation adjacent to the lands and grooves respectively, and so that the bondable fibres are then segmentally bonded in situ by more intense ultrasonic excitation over the lands before leaving the gap.

4,119,448

APPARATUS AND METHOD FOR CONNECTING THE ENDS OF A CUT LENGTH OF RIBBON

Gerald P. Hermanson; David M. Rickel, both of Maitland, and Robert J. Carr, Winter Park, all of Fla., assignors to Dayron Corporation, Orlando, Fla.

Filed Aug. 19, 1977, Ser. No. 825,931
Int. Cl.² B29C *27/08*
U.S. Cl. 156—73.4 **18 Claims**



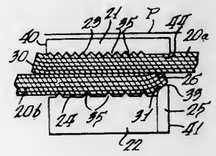
11. A method of cutting a length of material from a continuous length of material to a predetermined length and fusing the ends of said cut length of material together to form a continuous loop comprising the steps of:
clamping the end portion of a length of material on a continuous length of material in predetermined positions with a pair of clamping jaws;
cutting said end portion of said continuous length of material at a predetermined position;
looping said cut end portion of material by rotating said pair of clamping jaws in opposite direction to overlap said ends of said cut end portion of material
fusing said ends of said cut length of material together; and
discharging said endless loop of material.

4,119,449

STRAPPING JOINT AND METHOD AND APPARATUS FOR FORMING SAME

Russell J. Gould, Arlington Heights, and Karl G. Adams, Schaumburg, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Division of Ser. No. 526,893, Nov. 25, 1974, Pat. No. 3,996,403. This application Jun. 23, 1976, Ser. No. 698,941
Int. Cl.² B23K *27/00*
U.S. Cl. 156—73.5 **14 Claims**



1. Apparatus for forming a friction-fused joint in overlapping portions of a thermoplastic strap, comprising: a pair of jaws having confronting strap gripping surfaces positioned to engage the overlapping strap portions therebetween, strap gripping means on each of said surfaces, the strap gripping surface of one of said jaws having a protrusion thereon which extends beyond the strap gripping means on said latter surface; means for effecting relative movement between said jaws generally perpendicular with respect to the overlapping strap portions so that the protrusion of said one jaw initially moves into engagement with the adjacent overlapping strap portion prior to engagement by the strap gripping means on said one jaw surface, whereby the facing surfaces of the overlapping strap portions in alignment with said protrusion are initially compressed into heat generating frictional engagement with one another before the remainder of the overlapping strap portions between said jaws are gripped by the strap gripping means on the remainder of said gripping surfaces, and means for effecting relative movement between said jaws in a direction generally parallel with said strap gripping surfaces both (a) while the overlapping strap portions in alignment with said protrusion are compressed to initiate interface melting between said compressed surfaces and (b) while the remainder of the overlapping strap portions between said jaws are compressed into heat generating frictional engagement with one another to expand interface melting to the facing surfaces of the remainder of the overlapping strap portions between said jaws.

12. The method of forming a friction-fused joint in overlapping portions of a thermoplastic strap surrounding an article, comprising the steps of: positioning said overlapping strap portions between a pair of opposed jaws, said jaws having complementary shaped strap gripping surfaces facing one another, each of said strap gripping surfaces having strap gripping means thereon and one of said strap gripping surfaces having a protrusion thereon which extends beyond the the strap gripping means on said latter surface; effecting relative movement between said jaws generally perpendicularly with respect to one another so that the protrusion of the one jaw initially engages the adjacent overlapping strap portion prior to engagement by the strap gripping means on the remainder of the strap gripping surfaces to compress the facing surfaces of the overlapping strap portions in alignment with the protrusion into heat generating frictional engagement with one another; continuing the generally perpendicular movement of the jaws to bring the strap gripping means on the remainder of the strap gripping surfaces into engagement with the overlapping strap portions; effecting relative movement between said jaws in a direction generally parallel with said strap gripping surfaces while the overlapping strap portions in alignment with the protrusion are compressed to initiate interface melting between the compressed surfaces; and continuing the generally perpendicular relative movement to compress the remainder of the overlapping strap portions between said jaws into heat generating frictional engagement with one another while continuing the relative movement in the direction generally parallel to the strap gripping surfaces to expand interface melting to the facing surfaces of the overlapping strap portions between sid jaws.

4,119,450

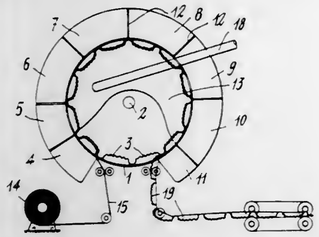
METHOD FOR MAKING A SANITARY PRODUCT

Carlo Bianco, Via Mezzanotte 104, Pescara, Italy

Filed Apr. 1, 1976, Ser. No. 672,810
Claims priority, application Italy, Apr. 4, 1975, 21990 A/75
Int. Cl.² B29C *17/04;* **B32B** *1/10*
U.S. Cl. 156—199 **5 Claims**

1. A method of making a sanitary product, particularly a diaper, comprising; providing a web of waterproof material, feeding said waterproof web to a surface with an indented shaping cavity having transverse corrugations and side walls, deforming a portion of said waterproof web by heating and applying pressure until said waterproof web portion conforms to the contour of said cavity and a pocket is formed in said web having transverse corrugations and sidewalls leaving a web surface around said pocket, advancing said waterproof web portion and web surface sequentially through a plurality of

zones in each of which the temperature and pressure are progressively higher than in the preceding zones, inserting absorbent material into said pocket so that it is held against lateral and transverse movement by said side walls, feeding a water-



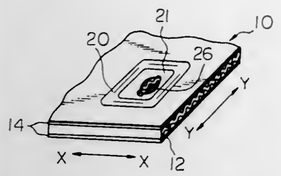
permeable covering web which is substantially coextensive with said waterproof web over said absorbent material and flush with said web surface, and sealing both of said webs to each other along at least a portion of said web surface.

4,119,451

METHOD OF PRESS-FORMING CORRUGATED PAPERBOARD AS SUBSTRATE OF CURVED TRIM BOARD

Toshihiko Fujii, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed Jul. 15, 1977, Ser. No. 816,275
Claims priority, application Japan, Jul. 15, 1976, 51-84624
Int. Cl.² B32B *31/20, 31/18*
U.S. Cl. 156—211 **11 Claims**



1. A method of producing a corrugated paperboard substrate of a trim board for application to the interior of cars, ships or buildings, the substrate having an aperture formed in a relatively small locally bulged or dented area for the installation of a separate article, the method comprising the steps of:

(a) making at least one linear notch in a flat board or corrugated paperboard to extend transversely to the ridges of the corrugated medium of said board in such a disposition that said at least one notch is entirely include in a relatively small area to subsequently be cut away to form said aperture;

(b) press-forming the notched board into a desired shape to have a locally bulged or dented area which includes said small area; and

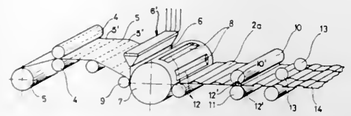
(c) forming said aperture in said bulged or dented area of the shaped board, whereby said at least one notch is entirely removed from the shaped board.

4,119,452

METHOD OF COATING AND CUTTING WRAPPER BLANKS

Erik Stolpe, Porvoo; Arto Honkanen, Helsinki, and Erkki Laiho, Kulloo, all of Finland, assignors to Pekema OY, Helsinki, Finland

Continuation of Ser. No. 690,036, May 25, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,949
Claims priority, application Finland, May 30, 1975, 751607
Int. Cl.² B29C *27/14*
U.S. Cl. 156—244.19 **2 Claims**



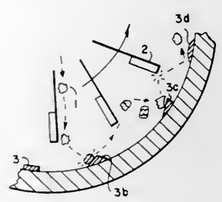
1. A method for manufacturing packaging-container blanks comprising extruding a molten thermoplastic coating material onto a substrate to form a sheet of blanks for subsequent separation into a plurality of container blanks, extruding said thermoplastic material onto said substrate between two revolving cylindrical rolls whereby the pressure of said rolls causes said coating material and said substrate to become attached to each other, reducing the pressure of said rolls to prevent the attachment of said coating material and said substrate to each other in a plurality of spaced selected elongated zones extending transverse to the length of the sheet of blanks and along at least one edge of each of the blanks to be produced from said sheet by means of grooves in one of said cylindrical rolls so located as to produce said reduction in pressure between said rolls in said selected zones, cutting transversely said thermoplastic material before the same has fully hardened by means of elongated knives located in at least some of said transverse grooves, and subsequently separating said sheet of blanks into a plurality of blanks.

4,119,453

PROCESS FOR RECLAIMING AND UPGRADING THIN-WALLED MALLEABLE WASTE MATERIAL

Mike Knezevich, R.R. #1, Box 311 A, Wabash, Ind. 46992

Filed Nov. 26, 1976, Ser. No. 745,609
Int. Cl.² B02C *13/14;* **B22F** *1/04*
U.S. Cl. 75—0.5 R **29 Claims**



1. The method for making spheroidal pellets of malleable material comprising the steps of:

reducing a feed material to a desired particulate size,

in a spherizing zone spherizing the material by repetitively and successively impactively accelerating, impactively decelerating, and impactively reaccelerating the feed material by means of at least one moving surface which throws the material through an air space against a contained target surface which does not contact the moving surface, the minimum distance between the moving surface and target surface being greater than the maximum dimension of the feed material particles,

moving the material being processed along a generally spiral path,

controlling the residence time in the spherizing zone by controlling the volume of conveying air,

continuously removing the spherized material through a sizing grating, and

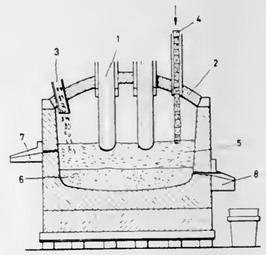
separating the spherized material from the conveying air in a collection device.

4,119,454

SMELTING METHOD

Gero Rath, Mülheim, Germany, assignor to Demag AG, Duisburg, Germany

Filed Feb. 24, 1977, Ser. No. 771,840
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1976, 2608279
Int. Cl.² C22C *5/52*
U.S. Cl. 75—12 **7 Claims**



1. A method for melting steel scrap in the vessel of an electric arc furnace, comprising the steps of

(a) maintaining the furnace vessel stationary; the improvement characterized by the steps of

(b) continuously preheating scrap to be charged to said vessel;

(c) said preheating step being carried out at a temperature of within the range of between about 500° C. and 700° C. or above;

(d) continuously charging said preheated scrap material to said vessel;

(e) continuously maintaining a slag layer covering the bath in said vessel, at a thickness within the range of between about 200 and 800 millimeters;

(f) supplying heat for melting in said vessel by a plurality of non-consumable electrodes immersed in said slag layer; and

(g) continuously withdrawing product from said vessel.

4,119,455

METHOD OF RECOVERING IRON-BEARING BY-PRODUCT FLUE DUST

Boyd E. Cass, Ligonier; David W. Coate, and Joseph R. Quigley, both of Pittsburgh, all of Pa., assignors to Carad, Inc., Pittsburgh, Pa.

Filed Sep. 28, 1977, Ser. No. 837,386
Int. Cl.² C22B *7/02*
U.S. Cl. 75—25 **20 Claims**

1. The method of recovering wet iron-bearing flue dusts collected as a by-product sludge from metallurgical process wet scrubbers for recycling, comprising the step of, reducing the moisture content of the wet flue dust sludge to a level at which the wet dust is of a plastic consistency which will extrude into cohesive agglomerates, by continually mixing with the sludge in pug mill means a metallurgically compatible dry material and sufficient hydraulic cement to rigidly bond the mixture into a cohesive mass after curing, continually extruding the mixture through an extrusion die into cohesive agglomerates, and curing the extruded agglomerates at ambient temperatures.

4,119,456

HIGH-STRENGTH CAST HEAT-RESISTANT ALLOY

Donald Brian Roach; John Andrew Van Echo, and Albert Mangold Hall, all of Columbus, Ohio, assignors to Steel Founders' Society of America, Rocky River, Ohio

Filed Jan. 31, 1977, Ser. No. 763,905
Int. Cl.² C22C *30/00, 19/05, 38/44, 38/50*
U.S. Cl. 75—122 **5 Claims**

1. A high-strength, heat-resistant castable alloy consisting of about 0.2 to about 0.75 percent carbon, about 20.0 to about 30.0 percent chromium, from about 15.0 to about 60.0 percent nickel, up to about 2.0 percent manganese, up to about 2.5 percent silicon, from about 3.0 to about 10.0 tungsten, from about 0.1 to about 1.0 zirconium, with the balance being iron plus incidental impurities.

4,119,457

MOLYBDENUM-TITANIUM-ZIRCONIUM-ALUMINUM MASTER ALLOYS

Frederick H. Perfect, Wymossing, Pa., assignor to Reading Alloys, Inc., Robesonia, Pa., a part interest

Filed May 27, 1977, Ser. No. 801,087
Int. Cl.² C22C *28/00, 30/00, 16/00*
U.S. Cl. 75—134 N **3 Claims**

1. A molybdenum-titanium-zirconium-aluminum master alloy comprising from about 20 to about 25% molybdenum, from about 1 to about 5% titanium, from about 40 to about 50% zirconium, balance aluminum, said alloy containing not more than about 0.004%, by weight, nitrogen.

4,119,458

METHOD OF FORMING A SUPERALLOY

Warren F. Moore, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 14, 1977, Ser. No. 851,493
Int. Cl.² C22C *1/03*
U.S. Cl. 75—170 **10 Claims**

1. A method of forming a regular solution secondary eutectic nickel-base or cobalt-base superalloy — which contains, on a weight basis, 2–9% rhenium and less than about 0.8% titanium, and optionally an element selected from the group consisting of chromium, aluminum, tantalum, carbon, nickel, cobalt, tungsten, vanadium, molybdenum, niobium, hafnium, zirconium and boron — which comprises combining at a temperature above the eutectic melt temperature of the superalloy (1) a primary eutectic nickel-base or cobalt-base superalloy scrap containing, on a weight basis, 2–9% rhenium, and less than about 0.8% titanium, and optionally said elements; (2) a first master alloy containing the elements nickel, aluminum, vanadium, and carbon; (3) a second master alloy containing the elements nickel and carbon, and (4) elements selected from the group consisting of rhenium, titanium, chromium, aluminum, tantalum, nickel, cobalt, tungsten, molybdenum, niobium, hafnium, zirconium and boron including combinations thereof in alloy form.

4,119,459

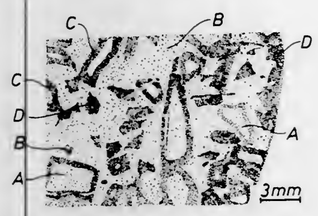
COMPOSITE BODY CONSISTING OF CEMENTED CARBIDE AND CAST ALLOY

Sven Karl Gustav Ekemar, Saltsjö-Boo, and Udo Karl Reinhold Fischer, Vallingby, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Feb. 1, 1977, Ser. No. 764,553
Claims priority, application Sweden, Feb. 5, 1976, 7601289
Int. Cl.² B22F *3/00;* **C22C** *29/00*
U.S. Cl. 75—243 **5 Claims**

1. Metallic body having great wear resistance in combination with excellent mechanical strength and toughness, the

body being composed of sintered cemented carbide and of cast iron-base alloy, the sintered cemented carbide being bonded within the cast alloy in the form of pieces, crushed parts,



powder or pressed bodies, characterized in that the cast alloy is an essentially graphitic cast iron having per se low wear resistance and hardness, its composition being so adjusted that the carbon equivalent is from 2.5 to 6.0 weight percent.

4,119,460

π-DEFICIENT N-HETEROAROMATIC CHEMICAL SENSITIZERS FOR HETEROGENEOUS ORGANIC PHOTOCONDUCTOR COMPOSITIONS AND METHODS

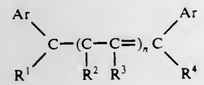
William E. Yoerger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1977, Ser. No. 800,587
Int. Cl.² G03G *5/04, 5/09*
U.S. Cl. 96—1 PC **21 Claims**

1. An electrophotographic element comprising an electrically conducting support bearing thereon a layer of a heterogeneous photoconductive insulating composition comprising particles of an organic photoconductor compound selected from the group consisting of (a) fused carbocylic ring compounds, (b) polyphenyl compounds having the structure



wherein n is an integer from 1 to 6; and (c) nitrogen-free. polyarylated compounds having the structure



wherein n is 0, 1, or 2 Ar is aryl; and R^1, R^2, R^3, and R^4 individually represent hydrogen, Ar, alkyl having 1 to about 10 carbon atoms, or alkoxy having 1 to about 10 carbon atoms, with the proviso that when n is 0, both R^1 and R^4 are Ar, and when both R^1 and R^4 are hydrogen, both R^2 and R^3 are Ar,

said photoconductor particles being dispersed in cellulose nitrate and chemically sensitized with a π-deficient N-heteroaromatic compound.

2. An electrophotographic process comprising applying a uniform charge to the surface of an electrophotographic element, imagewise exposing said charged surface to actinic radiation to form an electrostatic latent image, and developing said latent image to form a visible image, said electrophotographic element being an element as defined in claim 1.

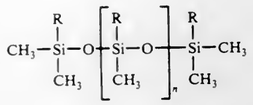
4,119,461

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY COMPRISING A SILICON OIL

Yutaka Yamada; Akira Kato, and Tohru Uchida, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 553,112, Feb. 26, 1975, abandoned, which is a continuation-in-part of Ser. No. 426,936, Dec. 13, 1973, abandoned. This application Apr. 18, 1977, Ser. No. 788,254
Claims priority, application Japan, Dec. 18, 1972, 47-126218
Int. Cl.² G03G *5/08, 5/04, 13/00;* **H01C** *13/00*
U.S. Cl. 96—1.8 **3 Claims**

1. A photosensitive material for electrophotography having a binder type photosensitive layer containing photoconductive materials of the inorganic type comprising a silicon oil having a viscosity of at least 6,000 cs when measured at 25° C. said silicon oil being represented by the following general formula:



wherein R is methyl or phenyl, and n is 700 to 2500.

4,119,462

COLOR PHOTOGRAPHIC DEVELOPER COMPOSITION

Harvey A. Hodes, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1977, Ser. No. 800,123
Int. Cl.² G03C *5/30*
U.S. Cl. 96—66.3 **3 Claims**

1. In a color photographic developer composition containing a substituted paraphenylenediamine as the color developing agent, the improvement of adding about 0.5 to 1.0 percent by volume of 2-anilinoethanol to the developer composition.

3. An improved color photographic developer composition according to claim 1 consisting of the following ingredients:

β-methanesulphonamidoethyl ethyl) amino toluidine sesquisulfate hydrate	grams	7.5
Na_2SO_3	grams	2.0
Benzyl Alcohol	millimeters	5.0
NaOH	grams	15.0
$Na_2B_4O_7 \cdot H_2O$	grams	60.0
KBr	grams	1.5
2-anilinoethanol	millimeters	10.0
Water to make 1 liter		
pH is adjusted to 11.5		

4,119,463

PHOTOGRAPHIC BINDER COMPRISING ISOBUTYLENE-MALEIC ANHYDRIDE COPOLYMER

Shigeru Iguchi; Tamotu Iwata, and Tetsuo Yano, all of Nagaoka-kyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Apr. 20, 1976, Ser. No. 678,715
Claims priority, application Japan, Apr. 24, 1975, 50/50078
Int. Cl.² G03C *1/76, 3/00*
U.S. Cl. 96—67 **10 Claims**

1. In a method for producing a photographic light sensitive material which comprises a support and photographic layers coated thereon, the improvement comprising using, as a binder for forming the photographic layers, the PVA treated product obtained by heating an isobutylene-maleic anhydride copolymer, a styrene-maleic anhydride copolymer and polyvinyl alcohol in an aqueous solution.

4,119,464

PROCESS FOR HARDENING PHOTOGRAPHIC LAYERS CONTAINING GELATINE

Wolfgang Sauertelg; Wolfgang Himmelmann; Rudolf Meyer; Erwin Ranz, all of Leverkusen, and Willibald Pelz, Cologne, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 31, 1977, Ser. No. 802,001
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2625026
Int. Cl.² G03C *1/76, 1/30*
U.S. Cl. 96—68 **12 Claims**

1. Process for hardening photographic layers which contain gelatin in multilayer photographic films comprising silver halide emulsion layers and layers which contain gelatin and light-insensitive photographic layers containing gelatin including the step of applying a solution a quick acting hardener which activates carboxyl groups, in quantities from 1 to 7% by weight and based on the quantity of gelatin, wherein the improvement comprises the step, before applying the quick acting hardener, of incorporating in the surface of a photographic layer which contains gelatin, a pre-hardener selected from the group consisting of complex forming organic and inorganic salts of aluminum, chromium and zirconium in quantities from 0.1 to 1% by weight based on the quantity of gelatin, to provide in the multilayered photographic films water and gelatin having a melting point above 35° C.

and then subsequently carrying out the step of applying the quick acting hardner in an aqueous solution containing additional water in amount sufficient to provide a total amount of water in said films which provides swelling of the multi-layered photographic films in a range of between 200 and 500 volumes percent

and maintaining the swelling for a period of 10 to 200 seconds

and then drying the multilayer photographic films at a temperature below 30° C.

4,119,465

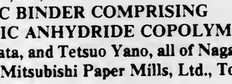
DIAZO COPYING MATERIAL FOR SECONDARY ORIGINAL

Tsutomu Matsuda; Takeshi Maeda; Takeo Hirabayashi, and Nobuyoshi Watanabe, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 4, 1977, Ser. No. 793,779
Claims priority, application Japan, May 13, 1976, 51/54626
Int. Cl.² G03C *1/38, 1/52*
U.S. Cl. 96—75 **8 Claims**

1. A method of manufacturing a diazo copying material for use in preparing a secondary original, which comprises the steps of coating onto a transparent or translucent support a dispersion in water of a composition consisting essentially of

(a) from 0.01 to 1.0 wt.%, based on the weight of said dispersion, of one or a mixture of anionic surface active agents having the formula



wherein M is Na or K, and R is alkyl having 1 to 20 carbons,

(b) from 0.1 to 20 wt.%, based on the weight of said dispersion, of a powder, and

(c) from 0.1 to 5 parts by weight, per 1 part by weight of (b), of a binding agent,

and then drying said dispersion to form a precoating layer on said support, then coating a photosensitive liquid containing a photosensitive diazonium salt onto said precoating layer and then drying said liquid to form a photosensitive layer on said precoating layer.

4,119,466

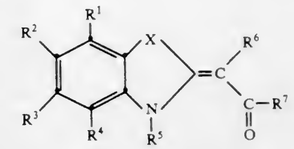
SENSITIZERS FOR PHOTOCROSSLINKABLE POLYMERS

James Albert Van Allan; Michael Paul Cunningham, both of Rochester; Donald Paul Specht, Spencerport, and Samir Yacoub Farid, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 678,805, Apr. 21, 1976, Pat. No. 4,062,686.
This application Aug. 31, 1977, Ser. No. 829,392
Int. Cl.² G03C *1/68, 1/52*
U.S. Cl. 96—115 R **15 Claims**

1. In a photosensitive composition comprising a photocrosslinkable azide polymer and a sensitizer in an amount sufficient to sensitize said polymer;

the improvement wherein said sensitizer has the following formula:



wherein X is a sulfur or a selenium atom; R^1, R^2, R^3, and R^4 independently represent hydrogen, lower alkoxy of 1 to 4 carbon atoms or taken together R^1 and R^2, R^2 and R^3, R^3 and R^4 constitute the atoms needed to complete a fused benzo ring; R^5 represents lower alkyl of 1 to 4 carbon atoms; R^6 represents



where R^8 is furyl or thienyl; R^7 is furyl or thienyl.

4,119,467

CEMENT AND PROCESS FOR PRODUCING SAME

Boris Izrailovich Nudelman, Chilanzar, kvartal 8, 27, kv. 48; Marsel Yanovich Bikbau, massiv Junus-Abad, B-2, 21, kv. 58; Alexandr Sergeevich Sventsitsky, Severo-Vostok-2, 50, kv. 64; Anatoly Yokovlevich Gadaev, kvartal Ts-5, 41, kv. 24; Ada Mirovna Prikhozhan, Mukimi, 1, kv. 95, and Isaak Mozesovich Bun, Chilanzar, kvartal 8, 6a, kv. 19, all of Tashkent, U.S.S.R.

Filed May 17, 1977, Ser. No. 797,678
Int. Cl.² C04B *7/02*
U.S. Cl. 106—100 **8 Claims**

1. A cement consisting of alite, belite, calcium chloroaluminate, a highly-basic calcium chlorosilicate, calcium orthochlorosilicate and calcium chloroalumoferrite, the components being present in the following proportions, in parts by weight:

alite	1 to 50
belite	1 to 45
calcium chloroaluminate	30 to 1
highly-basic calcium chlorosilicate	75 to 5
calcium chloro-orthosilicate	55 to 5
calcium chloroalumoferrite	2 to 22.

4,119,468

PARTICULATE METALLURGICAL HOT TOPPING COMPOSITIONS AND METHOD OF USE

Donald E. Wiley, Conneaut, Ohio, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 89,026, Nov. 12, 1970, abandoned. This application Jan. 18, 1974, Ser. No. 434,461

Int. Cl.[2] B28B *7/36*

U.S. Cl. 106—38.22 **1 Claim**

1. A metallurgical hot topping composition that when placed on the exposed molten metal in an ingot mold reacts to form a self-supporting insulating crust and then exhibits secondary burn to prolong the feeding life of the hot top reservoir metal consisting essentially of:

6.3 to 6.8% by weight iron oxide;

2.0 to 26.1% by weight aluminum powder;

60.3 to 78.2% by weight washed aluminum dross having an unwashed particle size so that about 70% by weight of the dross passes a 12 mesh screen and is retained on a 150 mesh screen;

1.5 to 3.2% by weight gypsum;

2.0 to 2.9% by weight manganese dioxide;

0 to 7.8% by weight sodium nitrate;

0 to 1.9% by weight silica sand; and

0 to 1.0% by weight siliceous volcanic rock containing 70 to 80% by weight silica;

said composition being formulated so that the ratio of FeO + Al_2O_3 + SiO_2 to Al is between 1.48/1 to 3.85/1.

4,119,469

INSULATING CERAMIC SUBSTANCES HAVING CONTROLLED POROSITY AND THE METHOD FOR PREPARING THEM BY SINTERING

Henri Carbonnel, Antony, and Francois Chaminade, Etampes, both of France, assignors to Groupement pour les Activites Atomiques et Avancees, Le Plessis Robinson, France

Continuation of Ser. No. 692,075, Jun. 2, 1976, abandoned, Continuation of Ser. No. 471,746, May 20, 1974, abandoned. This application May 3, 1977, Ser. No. 793,341

Claims priority, application France, May 18, 1973, 73.18172; Nov. 30, 1973, 73 42882

Int. Cl.[2] C04B *21/00*

U.S. Cl. 106—40 R **16 Claims**

1. A molded, insulating sintered ceramic resistant to repeated thermal shocks and passive with respect to corrosive molten metals such as aluminum or steel, said ceramic consisting essentially of fine powders of oxides of at least one element chosen from groups III and IV of the periodic classification of elements with in excess of 30% by weight of dense, sintered fine compact grains of the same oxides used as said fine powders, said ceramic having a porosity between 25 and 50%.

4,119,470

CERAMIC COMPOSITION FOR MAKING STONEWARE PRODUCTS

Dieter Hums, Schrobenhausen, Fed. Rep. of Germany, assignor to Intong AB, Kumla, Sweden

Filed Jul. 8, 1976, Ser. No. 703,605

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1975, 2533774

Int. Cl.[2] C04B *33/00, 33/13*

U.S. Cl. 106—45 **24 Claims**

1. A ceramic composition suitable for quick firing to form a stoneware product which composition consists essentially of about 4 to 8% by weight water, a lime component and a clay component in a weight ratio of clay component to lime component of 95:5 to 40:60, said lime component consisting essentially of a hydrothermally cured, highly porous lime-sand product comprised mainly of quartz grains bound together with a binder comprising calcium silicate hydrates, said lime component being obtained by grinding a hydrothermally cured, highly porous, lightweight, lime-sand product having a major proportion of spherical pores.

4,119,471

OPTICAL GLASS

Fujio Komorita, Hachioji, and Muneo Nakahara, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Ohara Kogaku, Sagamihara, Japan

Filed Nov. 30, 1977, Ser. No. 856,459

Claims priority, application Japan, Dec. 17, 1976, 51-150848

Int. Cl.[2] C03C *3/08, 3/10*

U.S. Cl. 106—47 Q **1 Claim**

1. An optical glass consisting of a composition in weight percent of 8.5 to 20% B_2O_3, 10 to 19.5% SiO_2, the sum of said B_2O_3 and SiO_2 being 24 to 33%, 13 to 25% La_2O_3, 3 to 7.5% ZrO_2, 1 to 8% TiO_2, 5 to 26% ZnO, 25.5 to 37% BaO, 0 to 5% MgO, 0 to less than 6% CaO, 0 to 10% SrO, the sum of said ZnO, BaO, MgO, CaO and SrO being 36 to 53%, 0 to 5% PbO, 0 to 5% Al_2O_3, 0 to 2% Li_2O, 0 to 2% Na_2O, 0 to 2% K_2O, the amount of or the sum of the amounts of one or more ingredients of said Li_2O, Na_2O and K_2O being 0 to 2%, and 0 to 1% of at least one oxide of the group consisting of As_2O_3 and Sb_2O_3.

4,119,472

REBONDED FUSION-CAST AZS REFRACTORY GRAIN

Otto S. Brashear, Jr.; Clifford L. Hund, both of Louisville, Ky., and Thomas M. Wehrenberg, Jeffersonville, Ind., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 1, 1976, Ser. No. 719,364

Int. Cl.[2] C04B *35/48, 35/14*

U.S. Cl. 106—57 **10 Claims**

1. Refractory composition for making refractory articles consisting of :

(A) 25–60 wt.% fusion-cast alumina-zirconia-silica refractory coarse grain being at least 89 wt.% −6+20 Tyler mesh,

(B) 0–38 wt.% fusion-cast alumina-zirconia-silica refractory medium grain being at least 73 wt.% −10+35 Tyler mesh, and

(C) 30–50 wt.% at least one component selected from the group consisting of

(1) 0–50 wt.% fusion-cast alumina-zirconia silica refractory fine grain being at least 60 wt.% −35+325 Tyler mesh, and

(2) 0–30 wt.% at least one constituent selected from the group consisting of

(a) alumina being at least 90 wt.% −325 Tyler mesh, at least 98.5 wt.% Al_2O_3 and not more than 0.5 wt.% Na_2O, and

(b) −325 Tyler mesh chromic oxide being at least 95 wt.% Cr_2O_3. the fusion-cast alumina-zirconia-silica refractory having:

(i) a three-phase microstructure of interlocking crystals of corundum phase and baddeleyite phase with intercrystalline glassy phase therebetween, the glassy phase being about 15–30 vol.% of the alumina-zirconia-silica refractory, and

(ii) an oxide analysis consisting of 35–60 wt.% Al_2O_3 plus Cr_2O_3 with Cr_2O_3 ≦60 wt.% of Al_2O_3 plus Cr_2O_3, 25–50 wt.% ZrO_2, 10–18 wt.% SiO_2, 0.8–1.8 wt.% Na_2O plus K_2O, and up to 0.7 wt.% other ingredients.

4,119,473

REFRACTORY COMPOSITION FOR USE IN METALLURGICAL FURNACES

Bert Karl Gustaf Lundgren, Nynäshamn, and Gunnar Thaning, Täby, both of Sweden, assignors to Strabruken AB, Stockholm, Sweden

Filed Apr. 26, 1977, Ser. No. 791,115

Claims priority, application Sweden, May 3, 1976, 7605031

Int. Cl.[2] C04B *35/04, 35/06*

U.S. Cl. 106—58 **6 Claims**

1. In the known refractory composition that comprises

(1) at least one refractory material selected from the group consisting of burned dolomite, burned magnesite, and mixtures thereof, and

(2) a binder admixed with the refractory material so that the refractory material can be formed into the desired shape. the improvement which comprises utilizing as said binder an aromatic substance

(a) having an atomic ratio of carbon to hydrogen of least 0.8,

(b) having an average molecular weight (M_n) of at least 1500,

(c) having an initial boiling point of at least 300° C. at 760 mmHg,

(d) that is selected from the group consisting of resin products obtained by the oxidative polymerization of a mineral oil distillate and solvent extracts from a mineral oil distillate with a content of aromatically bound carbon corresponding to a VGC-value of at least 0.85 and having an average molecular weight of 150 – 600, said polymerization being effected with or without a catalyst while splitting-off water.

4,119,474

MICROCRYSTALLINE CELLULOSE AS EXTRUSION AID/COMBUSTIBLE FILLER FOR ALUMINA

Robert Henry Whitman, and William Austin Barber, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 13, 1977, Ser. No. 815,341

Int. Cl.[2] C04B *35/10*

U.S. Cl. 106—65 **2 Claims**

1. An alumina substrate consisting essentially of extrudates made from rehydratable alumina wherein the extrudates have the following properties:

Pore Volume (water)	0.9–1.2 cc./g.
Crush Strength	>7 lbs.
Crush Number	>5 lbs.
Bulk Density (compacted)	20–32 lbs./cu. ft.
Surface Area (B.E.T.)	100–130 m^2/g.
Shrinkage	<4%

4,119,475

SINTERING OF SILICON NITRIDE USING MG AND BE ADDITIVES

Svante Prochazka, Ballston Lake; Charles D. Greskovich, Schenectady; Richard J. Charles, Schenectady, and Robert A. Giddings, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 756,086, Jan. 3, 1977. This application Nov. 7, 1977, Ser. No. 849,178

Int. Cl.[2] C04B *35/58*

U.S. Cl. 106—73.5 **5 Claims**

1. A pre-shaped polycrystalline body having a density ranging from at least about 80% to about 100% of the theoretical density of silicon nitride, said body being comprised of silicon nitride, beryllium and magnesium, said silicon nitride ranging from the β-form to at least about 80% by weight of β-form-20% by weight α-form based on the total amount of said silicon nitride, said beryllium ranging in amount from less than about 0.1% by weight to less than about 2.0% by weight of said silicon nitride, said magnesium ranging in amount from less than about 0.5% by weight to less than about 4.0% by weight of the silicon nitride, said polycrystalline body according to X-ray diffraction analysis ranging from a single phase body to one comprised of a primary phase and a secondary phase.

4,119,476

METHOD OF PRODUCING GAS DEVELOPING AGENT FOR CELLULAR CONCRETES

Boris Vasilievich Grishin, ulitsa Sevastopolskaya, II, kv. 51, Kuibyshev, U.S.S.R.

Continuation of Ser. No. 474,143, May 28, 1974, abandoned, which is a division of Ser. No. 228,735, Feb. 23, 1972, abandoned. This application Dec. 10, 1976, Ser. No. 749,443

Int. Cl.[2] C04B *21/02*

U.S. Cl. 106—87 **6 Claims**

1. A method of forming a gas concrete comprising the steps of: separating a fraction having a particle size of from 0.3 to 1.2 mm from aluminium production wastes in the form of slag obtained in making standard aluminium alloys, the fraction containing up to 70% of metallic particles of an aluminium-based alloy; grinding the separated fraction in a neutral atmosphere until a ground fraction having a particle size of from 2 to 5 microns is obtained; and mixing the ground separated fraction with a gas concrete mixture.

4,119,477

SIZE COMPOSITIONS FOR GLASS FIBER REINFORCED CEMENTITIOUS PRODUCTS

Eleanor B. Cohen, Granville; William N. Stassen, and James C. Wintgens, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 29, 1977, Ser. No. 820,200

Int. Cl.[2] C04B *31/06;* **C08L** *7/00*

U.S. Cl. 106—99 **15 Claims**

1. A plurality of filaments, at least a portion of the filaments' surfaces being in contact with the residue produced be evaporating water from an aqueous size composition consisting essentially of the following in weight percent: from 2 to 20% of an elastomer, from 0.05 to 5% of a silane from 0.05 to 5% of acetic acid, and from 0.05 to 5% of an emulsifiable lubricious tertiary fatty acid amine having the formula

$$R-\underset{\underset{O}{\|}}{C}-NR_2$$

where R is a fatty acid group and R_2 is a lower alkyl group, and the remainder being water.

4,119,478

PIGMENT COMPOSITION

George Heddle Robertson, Paisley, Scotland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 12, 1977, Ser. No. 758,622

Claims priority, application United Kingdom, Jan. 16, 1976, 1676/76

Int. Cl.[2] C09C *3/08*

U.S. Cl. 106—288 Q **10 Claims**

1. A pigment composition comprising a pigment and a colourless compound containing one or more basic nitrogen atoms directly attached to a carbon atom in a pyridine or benzimidazole ring system and having one or more urea or urethane groups.

4,119,479

METHOD FOR MANUFACTURE OF LAMINATES WHICH ARE USEFUL AS PACKAGING MATERIALS

Robert Franklin Williams, Jr., Webster, and Chen-i Lu, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

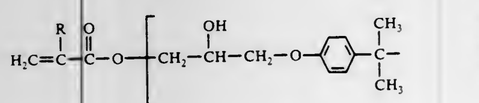
Division of Ser. No. 694,758, Jun. 10, 1976. This application Jun. 23, 1977, Ser. No. 809,499

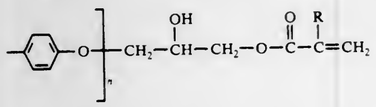
Int. Cl.[2] B29C *19/02;* **C09J** *1/00*

U.S. Cl. 156—272 **6 Claims**

1. A method of making a heat-sealable laminate which comprises:

(1) forming a sandwhich comprising (a) a layer of metal foil, (b) a layer of thermoplastic polymer, and (c) an interlayer between said layer of metal foil and said layer of thermoplastic polymer composed of a radiation-curable composition comprising an acrylic monomer and an acrylated epoxy resin of the formula:





wherein R is a hydrogen atom or a methyl group and *n* is 1 to 20, and

(2) irradiating said interlayer through said layer of thermoplastic polymer to cure said interlayer and bond it to said layer of metal foil and said layer of thermoplastic polymer.

4,119,480

METHOD OF MANUFACTURING THICK-FILM CIRCUIT DEVICES

Yusaku Nishi, and Hideo Fujii, both of Ome, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 10, 1977, Ser. No. 795,446

Claims priority, application Japan, May 13, 1976, 51-54532; May 13, 1976, 51-54533

Int. Cl.[2] B05D *3/06*

U.S. Cl. 156—272 **13 Claims**

1. A method of manufacturing a thick-film circuit device comprising:

depositing a paste material for thick-film circuit use all over the effective surface area of a substrate and drying the paste material to evaporate a thinner contained in the paste material to make the paste material porous;

depositing a photosensitive resin on the paste material and drying the resin to partially diffuse the resin into the porous material;

exposing the photosensitive resin selectively to light;

removing the unnecessary parts of the photosensitive resin and of the paste material; and

firing the paste material attached to the substrate.

7. A method of manufacturing thick-film circuit devices which comprises using a photosensitive resin to form a predetermined thick-film paste pattern and then firing said paste pattern which comprises depositing a photosensitive resin on a substrate; exposing said photosensitive resin selectively to light; removing the unnecessary parts of said photosensitive resin thereby forming openings; filling a paste material for thick-film circuit use into the openings from which said photosensitive resin was removed; and then removing the remaining photosensitive resin and firing the filled paste material.

4,119,481

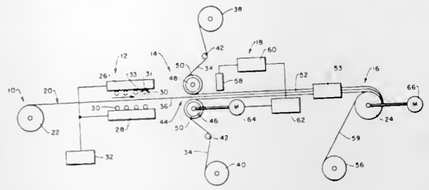
FUSION LAMINATED HIGH-TEMPERATURE FABRIC

Don A. Beckley, Newport Beach, Calif., assignor to Hitco, Irvine, Calif.

Filed Nov. 5, 1976, Ser. No. 739,039

Int. Cl.[2] B29C *27/04*

U.S. Cl. 156—272 **12 Claims**



1. A method of coating the surface of a high heat capacity, woven, inorganic, refractory fabric with a thermoplastic film having a lower heat distortion temperature comprising the steps of:

applying infra-red radiation to a surface of said fabric at a wavelength having high absorptance by said surface to heat the surface to a temperature above the softening temperature of the thermoplastic film;

applying the thermoplastic film directly to the heated surface and softening the inner surface of the film without softening the outer surface of the film and pressure bonding the inner surface of the film to the surface while at said temperature by passing the fabric-film assembly between the nip of a pair of unheated nip rolls.

4,119,482

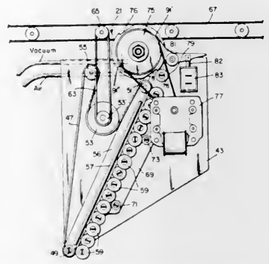
APPARATUS FOR SELECTIVELY PRINTING AND APPLYING LABELS TO ARTICLES OF DIFFERENT SIZES AND SHAPES

William F. Bennett, Cypress, Calif., assignor to Marketing Information Systems Incorporated, Long Beach, Calif.

Filed Oct. 20, 1976, Ser. No. 734,088

Int. Cl.[2] B65C *9/28, 9/42*

U.S. Cl. 156—351 **6 Claims**



1. Apparatus for printing and applying labels to articles, said labels having adhesive coated side and an indicia receiving side, said apparatus comprising:

(A) Conveyor means for transporting said articles along a predetermined path;

(B) Printing means for selectively printing any desired indicia on the indicia receiving side of individual labels;

(C) Label applicator means having a label receiving surface;

(D) And means for moving said labels from said printing means to said label receiving surface of said applicator means comprising:

(1) A plurality of label guide rollers disposed between said printing means and said applicator means, said label guide rollers being adapted to contact said adhesive-coated side of said labels;

(2) And a movable belt adjacent said plurality of label guide rollers and co-extensive therewith, said belt being adapted to contact the indicia receiving side of said labels.

4,119,483

METHOD OF STRUCTURING THIN LAYERS

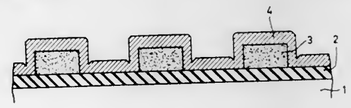
Hubertus Hübsch, Hamburg; Ursula Convertini, Borstel-Hohenraden; Heinz Dimigen, Hamburg, and Holger Lüthje, Halstenbek, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 590,969, Jun. 25, 1975, abandoned. This application Feb. 8, 1977, Ser. No. 766,662

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1974, 2436568

Int. Cl.[2] B44C *1/22;* **B29C** *17/08*

U.S. Cl. 156—655 **15 Claims**



1. A method of providing a structure comprising a certain thin layer, comprising the steps of:

(a) providing a substrate having a surface;

(b) providing directly on said substrate surface a support layer;

(c) providing a mask layer of photolacquer material on said support layer, said mask layer locally masking said support layer, said support layer being characterized by a relatively low adhesiveness for said photolacquer material, with such characteristic remaining substantially unchanged after the hereinafter mentioned heat treatment;

(d) providing said certain thin layer on said mask layer and exposed parts of said substrate surface;

(e) heating said mask layer in a certain temperature range such that the chemical reaction capacity thereof is unaffected in a detrimental manner, said temperature range being above the flow limit of said photolacquer but below such temperature at which "cross-linking" of the photolacquer is produced; and

(f) dissolving said masking layer and removing parts of said certain thin layer disposed thereon, whereby the remaining parts of said certain layer have a desired pattern.

4,119,484

METHOD FOR PRODUCING A DESIGN ON A FLAT OR ARCUATE SURFACE

Murray M. Schiffman, Westport, Conn., assignor to MBI, Inc., Westport, Conn.

Continuation-in-part of Ser. No. 733,711, Oct. 18, 1976, and Ser. No. 729,764, Oct. 5, 1976. This application Jan. 7, 1977, Ser. No. 757,505

Int. Cl.[2] B44C *1/22*

U.S. Cl. 156—659 **13 Claims**

1. A method of producing a polar-coordinate design on a flat image surface from a rectangular-coordinate design, comprising:

(a) forming the design in undistorted rectangular-coordinate form upon a flat transparency;

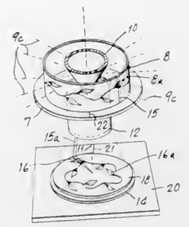
(b) forming the flat transparency into a cylindrical shape;

(c) simultaneously exposing images of the transparency to radially and inwardly directed light;

(d) redirecting the light passing through the transparency perpendicular to the radial light paths whereby corresponding images of the design are projected in a column and in polar-coordinate form;

(e) providing the flat image surface with a photosensitive coating;

(f) disposing the flat image surface substantially perpendicular to the light in the column and with its center coincident



with the axis of the columnated projection, such that the design image is exposed in distorted polar-coordinate form upon the photosensitized image surface; and

(g) processing the exposed coating on the flat image surface to selectively produce the design upon the surface.

4,119,485

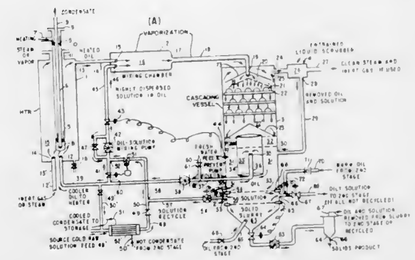
HEAT EXCHANGERS AND EVAPORATORS

Ransome W. Erwin, Ogden, Utah, assignor to Austral-Erwin Engineering Company, Houston, Tex.

Division of Ser. No. 306,183, Nov. 14, 1972, Pat. No. 3,891,496. This application May 29, 1975, Ser. No. 581,849

Int. Cl.[2] B01D *1/00*

U.S. Cl. 159—28 B **7 Claims**



5. Apparatus for effecting heat transfer of fluids, at least one of which fluids contains dispersed and/or dissolved solids, said apparatus having one or more liquid contacted surfaces which surfaces are (1) preferentially oil wettable and (2) substantially zero water adsorbent, and means for continuously supplying to said contacted surface or surfaces an organic liquid which is immiscible with the fluid contacting said surface(s), to prevent adherence of solids thereto, wherein the fluid contacted surface or surfaces comprise FEP.

4,119,486

PROCESS FOR BLEACHING WOOD PULP WITH OZONE IN THE PRESENCE OF A CATIONIC SURFACTANT

Robert C. Eckert, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 604,725, Aug. 14, 1975, abandoned. This application Dec. 2, 1976, Ser. No. 746,845

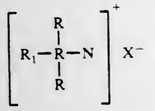
Int. Cl.[2] D21C *9/10*

U.S. Cl. 162—65 **15 Claims**

1. A process for bleaching wood pulp comprising the steps of:

(a) mixing a low consistency wood pulp slurry with 0.01%

to 1.0% cationic surfactant by weight based on ovendried pulp, said slurry comprising from 0.1% to 10% by weight of ovendried wood pulp and having a pH range from 1 to 7 and, said cationic surfactant having a formula:



wherein,

R is CH_3 or CH_2CH_3,

R_1 is an alkyl radical containing from 3 to 15 carbon atoms, an aryl radical, or an alkylaryl radical and

X is a halogen; and

(b) introducing ozone gas into said wood pulp slurry containing said cationic surfactant for a time effective to bleach said wood pulp.

4,119,487

STARCH ETHER DERIVATIVES, A METHOD FOR THE PREPARATION THEREOF AND THEIR USE IN PAPER

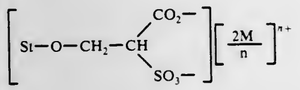
Martin M. Tessler, Edison, N.J., assignor to National Starch & Chemical Corporation, Bridgewater, N.J.

Filed Sep. 6, 1977, Ser. No. 830,422

Int. Cl.² D21H *3/28*

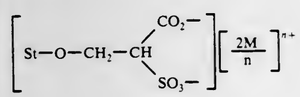
U.S. Cl. 162—175 **24 Claims**

1. As a composition of matter, a starch ether derivative of the general structure:



wherein St-O- represents a starch molecule, M is a cation, and *n* is the valence number of M.

19. A paper containing pigment and alum and having dispersed therein as a pigment retention aid a starch ether derivative of the general structure:



wherein St-O- represents a starch molecule, M is a cation, and *n* is the valence number of M, wherein said paper is prepared from a papermaking stock containing more than 4% alum by weight of dry pulp and from about 0.05 to 2.0% of said starch derivative by weight of dry pulp.

4,119,488

NUCLEAR REACTOR FUEL ELEMENT EMPLOYING ZR_2NI AS A GETTER METAL

Aldo Barosi, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

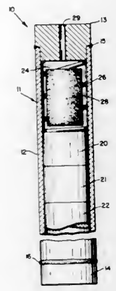
Division of Ser. No. 670,953, Mar. 26, 1976, Pat. No. 4,071,335.

This application May 2, 1977, Ser. No. 792,854

Claims priority, application Italy, Apr. 10, 1975, 22211 A/75

Int. Cl.² G21C *3/02*

U.S. Cl. 176—68 **9 Claims**



1. A nuclear reactor fuel element comprising:

A. a container defining a chamber,

B. a fissionable material in the chamber,

C. a getter metal within the chamber, said getter metal consisting essentially of Zr_2Ni

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4,119,489

METHOD OF USING NUCLEAR REACTOR FUEL ASSEMBLY

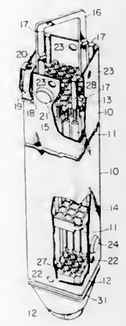
Kenichi Itoh, Hitachi; Katsutoshi Shinbo, Katsuta, and Minoru Watahiki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 8, 1976, Ser. No. 647,455

Claims priority, application Japan, Jan. 8, 1975, 50/4423

Int. Cl.² G21C *3/30*

U.S. Cl. 176—76 **7 Claims**



1. A method of using a nuclear fuel assembly having a plurality of tubular fuel elements grouped together at fixed distances from each other to form a plurality of bundles of fuel elements, with each such bundle having a plurality of fuel elements, an upper tie plate provided at the top of each bundle of fuel elements to support the top thereof, a lower tie plate provided at the bottom of each bundle of fuel elements to support the bottom thereof, a cooling fluid conducting tubular channel having a uniform cross-section provided around the external surface of each bundle of fuel elements, combined together to form a nuclear fuel reactor core and being fixed in a reactor vessel, comprising the steps of: pulling out a tubular channel from the nuclear fuel assembly in an axial direction after a predetermined operating period; turning the pulled out channel upside down; axially inserting the turned channel in its upside down orientation into the fuel assembly; and fixing the inserted channel in said fuel assembly, whereby the distortions occurring within normal operation of said assembly are more evenly distributed along the length of said channel during its life.

4,119,490

NUCLEAR FUEL ASSEMBLY

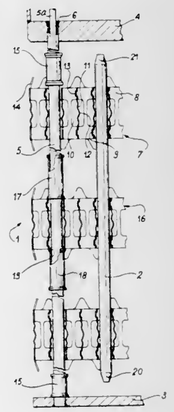
Jacques Delafosse, Gif-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 22, 1976, Ser. No. 753,451

Claims priority, application France, Jan. 12, 1976, 76 00606

Int. Cl.² G21C *3/30*

U.S. Cl. 176—78 **3 Claims**



1. A nuclear fuel assembly comprising a bundle of clad fuel pins maintained in parallel relation at the nodes of a uniform lattice by means of a series of separate grids fitted with members which apply said grids against said fuel pins, and a rigid structure formed by two parallel end plates braced by tie-rods located at uniform intervals in the lattice of fuel pins at the nodes of said lattice, the diameter of said tie-rods being substantially the same as the diameter of said fuel pins, wherein the bundle of pins is associated with a single support grid rigidly fixed to the tie-rods, the other grids being adapted for sliding movement on said tie-rods and placed in uniformly spaced relation along the fuel assembly on each side of the support grid in the vertical direction so as to ensure that the elongations of the fuel pins take place from said support grid respectively towards the bottom and top plates.

4,119,491

ENZYME-FILTRATION CLARIFICATION OF XANTHAN GUM POLYMER SOLUTION

Scott L. Wellington, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 16, 1977, Ser. No. 797,093

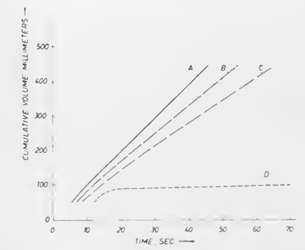
Int. Cl.² C12D *13/04*

U.S. Cl. 195—7 **6 Claims**

1. In a xanthan gum polymer solution clarification process in which an aqueous xanthan gum polymer solution that contains bacterial cell bodies is reacted with a protease enzyme, a method for concurrently reducing the treatment time and the bacteria nutritive protein content of the treated solution comprising:

mixing the enzyme and the polymer within an aqueous xanthan gum polymer solution having a temperature from 60° to 70° C., a pH of from about 10 to 11 and containing from about 6,000 to 8,000 ppm of the polymer to initiate the enzymatic disintegration of the bacterial cell bodies;

before about one fourth of the time needed for complete bacterial cell bodies disintegration, and at least as soon as a predominate proportion of bacterial cell bodies have been separated from the polymer but are still substantially intact, terminating the enzymatic cell disintegration by adjusting the pH of the solution to the extent required to provide a pH of from about 10 to 11, contacting the solution with siliceous solids having surface areas and adsorbtivities at least substantially equaling those of a relatively fine sand sized in the order of 100 mesh, adjusting the



solution pH to from about 5–7, and filtering out the siliceous solids and adsorbed partially disintegrated bacterial cell bodies by flowing the liquid portion of the polymer solution through a filter that has relatively large effective pore sizes at least equivalent to those of a 10-micron teflon millipore filter but is capable of removing substantially all of the siliceous solids and at least about 80% of the bacterial cell bodies, so that (a) the filtering time is shortened relatively to that obtainable with either a filter having finer pores or with a polymer solution having a higher pH and (b) the so treated solution is substantially free of proteinaceous material formed by the enzymatic disintegration of bacterial cell bodies.

4,119,492

PROCESS FOR FERMENTATIVELY PRODUCING VITAMIN B_{12}

Ichiro Kojima; Hiroshi Sato, both of Yokohama, and Yasuo Fujiwara, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Japan

Filed Jan. 28, 1977, Ser. No. 763,539

Claims priority, application Japan, Feb. 5, 1976, 51-10824

Int. Cl.² C12D *5/06*

U.S. Cl. 195—28 VB **4 Claims**

1. A process for producing vitamin B_{12}, which comprises cultivating a vitamin B_{12}-producing microorganism of the species Arthrobacter hyalinus under aerobic conditions in a culture medium containing at least one compound selected from the group consisting of ethyl alcohol, n-propanol, 1-propanol and acetone, and separating vitamin B_{12} from the culture broth.

4,119,493

PROCESS FOR PRODUCING A PEPTIDE

Yoshikazu Isowa; Muneki Ohmori, both of Tokyo; Hideaki Kurita, Sagamihara; Tetsuya Ichikawa, Sagamihara; Masanari Sato, Sagamihara, and Kaoru Mori, Sagamihara, all of Japan, assignors to (Zaidanhojin) Sagami Chemical Research Center, Tokyo, Japan

Continuation of Ser. No. 734,010, Oct. 19, 1976, abandoned. This application Jun. 3, 1977, Ser. No. 803,350

Claims priority, application Japan, Oct. 23, 1975, 50-126877; Apr. 19, 1976, 51-43687

Int. Cl.[2] C12D *13/06*

U.S. Cl. 195—29 **11 Claims**

1. A process for producing a peptide having the formula:

X—A—B—Y

wherein A and B are the same or different and each represents an amino acid residue or a peptide residue, X represents an amino acid protective group, Y represents a carboxyl protective group, which comprises:

reacting an acid component of an amino acid or peptide having an N-terminal protective group or a salt thereof which has the formula

X—A—OH

with an amine component of an amino acid or peptide having a C-terminal protective group or a salt thereof which has the formula

H—B—Y

in the presence of metalloproteinase enzyme produced from microorganisms in an aqueous solution having a pH necessary to maintain the activity of said metalloproteinase enzyme.

4,119,494

IMMOBILIZATION OF ENZYMES IN AN ANHYDROUS MEDIUM

Gilbert Durand, and Pierre Monsan, both of Toulouse, France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 494,818, Aug. 5, 1974, abandoned. This application Dec. 20, 1976, Ser. No. 752,135

Int. Cl.[2] C07G *7/02*

U.S. Cl. 195—68 **9 Claims**

1. Process for fixing enzymes on supports comprising providing a solid support having groups which react with the enzymes to fix the enzyme to the support, reacting the enzyme with the support at a temperature within the range of more than 60° C. up to 120° C. in an anhydrous organic liquid in which both the enzyme and support are insoluble.

4,119,495

METHOD FOR PROCESSING ACTIVATED SLUDGE INTO USEFUL PRODUCTS

Vasily Dmitrievich Belyaev, pereulok Sivtsev Vrazhek, 33, kv. 5; Sergei Vladimirovich Chepigo, Leningradsky prospekt, 74, korpus 2-a, kv. 9, both of Moscow; Nina Ivanovna Korotchenko, ulitsa Furmanova, 14, Tomilino Moskovskoi oblasti; Alexandr Nikolaevich Mezentsev, K-482, korpus 345, kv. 37, Moscow; Olga Vasilievna Samokhina, Dmitrovskoe shosse, 29, kv. 187, Moscow; Alexandra Leonidovna Krasinskaya, Leningradsky prospekt, 78, kv. 278, Moscow; Vadim Nikolaevich Timkin, K-482, korpus 338-b, kv. 60, Moscow; Yaroslav Yaroslavovich Shkop, Tverskoi bulvar, 26, kv. 26, Moscow, and Alexei Olegovich Colubev, Kolokolnikov pereulok, 17/20, kv. 16, Moscow, all of U.S.S.R.

Filed Jan. 21, 1977, Ser. No. 761,253

Int. Cl.[2] C02C *1/02;* **A23J** *1/00;* **A23K** *1/00;* **C12B** *3/00*

U.S. Cl. 195—102 **8 Claims**

1. A method for processing activated sludge into useful products, which comprises subjecting a first portion of said activated sludge to hydrolysis at a pH of 0.01 to 6.0 and a temperature of 50° to 150° C., thus forming a solution of water soluble proteins, carbohydrates, mineral substances and vitamins, and a first precipitate which is acid, separating said solution of water-soluble proteins, carbohydrates, mineral substances and vitamins from said first precipitate, subjecting a second portion of said activated sludge to alkaline extraction at a pH of 9 to 13 and a temperature of 40° to 90° C., thus forming a solution of soluble proteins and another precipitate which is alkaline and separating said solution of soluble proteins from said other precipitate.

4,119,496

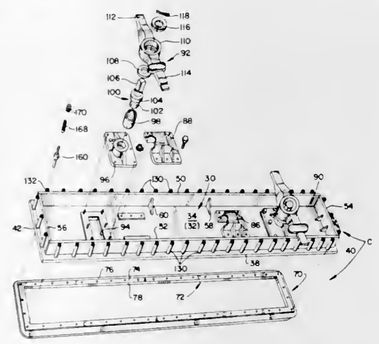
FABRICATED COKE OVEN DOOR

Patsie Carmen Campana, 2614 Sherwood Dr., Lorain, Ohio 44053

Filed May 11, 1977, Ser. No. 795,770

Int. Cl.[2] C10B *25/02*

U.S. Cl. 202—248 **18 Claims**



1. In a coke oven of the type having an elongated vertical opening in the front wall thereof with a door frame disposed about at least a portion of said opening, an elongated coke oven door adapted to be placed in a covering relationship with said opening and in a cooperative sealing relationship with said frame and further including means for releasably maintaining said door in position covering said opening and for urging said door toward said sealing relationship with said frame, the improvement comprising:

said door being fabricated from steel plate to including a main door plate having inner and outer planar faces, a pair of opposed side edges and a pair of opposed end edges with a portion of said inner face adapted to be closely spaced toward an engaging relationship with said frame; a steel side support plate rigidly affixed to said main door plate outer face adjacent each of said side edges and a steel end support plate rigidly affixed to said main door plate outer face adjacent each of said end edges, said side an end support plates extending generally normally outward from said outer face and forming a door support arrangement; and, a plurality of separate gusset members positioned generally symmetrically about the midpoint of said outer face and rigidly affixed thereto with each gusset member disposed to extend laterally across a portion of said outer face from one of said side plates in longitudinal alignment with a gusset member associated with the other of said side plates, whereby said fabricated coke oven door may be flexed during oven operation at elevated temperatures in response to the urging of said maintaining means so that said main door plate inner face will remain closely spaced toward an engaging relationship with said door frame as said frame is distorted due to exposure thereof to elevated oven temperatures and thereby maintain an effective seal between said oven door and frame.

4,119,497

PROCESS FOR THE PURIFICATION OF ACETONITRILE

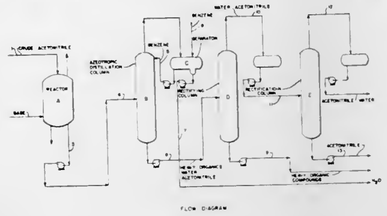
Felipe Ocampo; Francisco Meza, and Francisco Aguirre, all of Mexico City, Mexico, assignors to Instituto Mexicano del Petroleo, Mexico City, Mexico

Filed Oct. 12, 1976, Ser. No. 731,633

Claims priority, application Mexico, Dec. 1, 1975, 162235

Int. Cl.[2] B01D *3/36;* **C07C** *121/18*

U.S. Cl. 203—29 **6 Claims**



1. A process for the purification of crude acetonitrile consisting essentially of:

(a) feeding said crude acetonitrile, comprising acetonitrile, hydrogen cyanide, acrylonitrile, and water, to a reactor:

(b) feeding a stream comprising a base selected from the group consisting of alkali metal and ammonium hydroxides, ammonia, and aliphatic amines to said reactor;

(c) reacting said crude acetonitrile and said base in said reactor at a temperature between 50° F. and 212° F. and at least atmospheric pressure to form a reaction mixture in which said hydrogen cyanide and said acrylonitrile are transformed into compounds of higher molecular weight;

(d) passing said reaction mixture to an azeotropic distillation column, removing most of said water from said column in an upper stream and removing a bottom stream from said column comprising residual water, said compounds of higher molecular weight, and said acetonitrile;

(e) passing said bottom stream to a first rectifying column, removing from said first rectifying column a bottom stream comprising said compounds of higher molecular weight, and removing from said first rectifying column an upper stream comprising water and acetonitrile; and

(f) passing said upper stream from said first rectifying column to a second rectifying column, removing from said second rectifying column a bottom stream of substantially pure acetonitrile, and removing from said second rectifying column an upper stream comprising said residual water and acetonitrile.

4,119,498

MONOCRYSTALLINE METAL ELECTRODE AND METHOD OF USE

Nils Erik Gunnar Edwall, Storskiftesvagen, S-145 60 Norsborg, and Göran Sven Eklund, Karl Martins vag 17, S-185 00 Waxholm, both of Sweden

Filed Jul. 12, 1977, Ser. No. 815,061

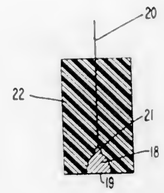
Claims priority, application Sweden, Jul. 13, 1976, 7607993

Int. Cl.[2] G01N *27/30, 27/56*

U.S. Cl. 204—1 T **5 Claims**

1. An electrode for the measurement of pH, P_{O_2} or P_{CO_2} in liquids, including a metal sensor in an insulating holder said metal sensor having a surface adapted to contact said liquids characterized in that the said metal is monocrystalline manufactured and arranged to provide only one plane crystal face for exposure to the said liquid.

4. In a method for the measurement of pH, P_{O_2} or P_{CO_2} in a liquid wherein an electrode is exposed to the liquid, the improvement comprising using as the electrode the electrode of claim 1.



4,119,499

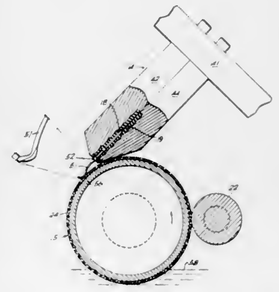
CONTINUOUS CONTACT PLATER PRODUCT

Charles Douglas Eidschun, Jr., 11004 64th Ter., N., Seminole, Fla. 33542

Continuation of Ser. No. 666,618, Mar. 15, 1976, Pat. No. 4,064,019, which is a continuation-in-part of Ser. No. 502,536, Sep. 3, 1974, abandoned, and Ser. No. 580,304, May 23, 1975, Pat. No. 4,036,705. This application Sep. 16, 1977, Ser. No. 833,890

Int. Cl.[2] C25D *5/02, 5/06, 7/00*

U.S. Cl. 204—15 **4 Claims**



1. A metallic electrical contact element having a discreet convex curvilinear surface portion intended for electrical contact, said surface having a localized conductive electrodeposited contact point thereon,

said contact being produced by providing a roller carrying an electrolyte on its periphery for plating said contact, positioning said metal contact element transversely to the axis of the roller with said periphery in tangential engagement with said contact, rotating said roller while passing an electric current between the same and said surface whereby a feather edged conductive electrical contact point is produced on said convex curvilinear surface.

4,119,500

PROCESS FOR ELIMINATING MAGNETISM OF SYNTHETIC DIAMOND GRAINS

Hiroshi Ishizuka, 19-2 Ebara 6-chome, Shinagawa-ku, Tokyo, Japan; Kazuo Suzuki, Chigasaki, and Shinichi Tamon, Fujisawa, both of Japan, assignors to Hiroshi Ishizuka, Tokyo, Japan

Filed Jul. 20, 1977, Ser. No. 817,420

Claims priority, application Japan, Jul. 19, 1976, 51-85159

Int. Cl.[2] C25D *15/00*

U.S. Cl. 204—16 **4 Claims**

1. A process for producing synthetic diamond grains for

electrodeposited abrasive tools, comprising the steps of heating in an inert gas atmosphere or in a vacuum synthetic diamond grains which have magnetic susceptibility because of ferromagnetic inclusions to a temperature between about 800° and about 1,300° C., cooling the resulting diamond grains to room temperature, subjecting the cooled diamond grains to a milling action to adjust the friability thereof ranging from 30 to 55 weight %/90 sec., and obtaining diamond grains with decreased magnetic susceptibility having a bulk density ranging from 1.75 to 1.90 g/cc.

4,119,501

ELECTROPLATING NICKEL USING ANODES OF FLATTENED NICKEL FORMS

Gordon Lloyd Fisher, Mahwah, N.J., and Ernest Lee Huston, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,644
Int. Cl.² C25D *3/12, 17/12*
U.S. Cl. 204—49 **8 Claims**

1. The process of electroplating, comprising: immersing in a nickel containing electrolyte an object to be plated and an anode basket containing a work-flattened nickel anode material, said work-flattened nickel anode material having been prepared from a pellet prepared by a carbonyl nickel process or a shot prepared from a molten nickel alloy bath, and said work-flattened nickel anode material being characterized by a capability for retention in said anode basket, an increased activity, and provision of a coarser plating residue; and imposing a current between said object to be plated and said anode basket.

4,119,502

ACID ZINC ELECTROPLATING PROCESS AND COMPOSITION

Donald A. Arcilesi, Mount Clemens, Mich., assignor to M&T Chemicals Inc., Stamford, Conn.

Filed Aug. 17, 1977, Ser. No. 825,402
Int. Cl.² C25D *3/22*
U.S. Cl. 204—55 R **6 Claims**

4. An aqueous acidic plating solution containing at least one zinc compound providing zinc cations for electroplating zinc, said zinc compound selected from the group consisting of zinc sulfate, zinc chloride and zinc sulfamate; chloride anions added as salts of bath compatible cations excepting ammonium; in the absence of complexing or chelating agents of organic nature; and containing as cooperating additives at least one alkyl propoxyethoxy polyether exhibiting the formula:

$$C_nH_{2n+1}—OC_3H_6)_{m_1}—(OC_2H_4)_{m_2}—OH$$

where n is an integer of from 6 to 14, m_1 is an integer of from 1 to 6, and m_2 is an integer of from 10 to 20, at least one aromatic sulfonate emulsifying agent, and at least one aromatic carbonyl compound.

4,119,503

TWO LAYER CERAMIC MEMBRANES AND THEIR USES

Placido Maria Spaziante, and Antonio Nidola, both of Lugano, Switzerland, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Nov. 28, 1977, Ser. No. 855,176
Claims priority, application Italy, Jul. 15, 1977, 25779 A/77
Int. Cl.² C25B *9/00, 1/00, 3/00, 13/04*
U.S. Cl. 204—59 R **28 Claims**

1. A two layer ceramic oxide membrane for electrolysis cells comprising a membrane having on the anodic side a layer of at least one oxide selected from the group consisting of Sb_2O_5, Bi_2O_5, MoO_3, WO_3, V_2O_5 and mixtures thereof and on the cathodic side a layer of at least one oxide selected from the group consisting of ZrO_2, Nb_2O_5, Ta_2O_5, TiO_2 and mixtures thereof.

6. An electrode structure comprising an electrically conductive substrate having on the side towards the electrodic gap a two layer ceramic oxide membrane having on the anodic side a layer of at least one oxide selected from the group consisting of Sb_2O_5, Bi_2O_5, MoO_3, WO_3, V_2O_5 and mixtures thereof and on the cathodic side a layer of at least one oxide selected from the group consisting of ZrO_2, Nb_2O_5, Ta_2O_5, TiO_2 and mixtures thereof.

14. In an electrolysis cell comprised of a cell having provided with electrolyte inlet and outlet means, at least one electrode pair of an anode and a cathode, means for impressing a direct current on the cell and means for recovering the electrolysis products, the improvement comprising a two layer ceramic oxide membrane on one of the electrodes with the phase towards the anolyte being selected from the group consisting of Sb_2O_5, Bi_2O_5, MoO_3, WO_3, V_2O_5 and mixtures thereof and the phase towards catholyte being selected from the group consisting of ZrO_2, Nb_2O_5, Ta_2O_5, TiO_2 and mixtures thereof.

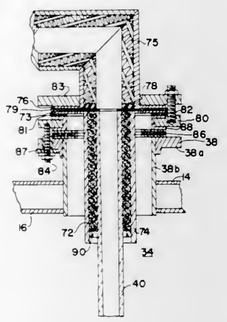
22. In an electrolysis process comprising electrolyzing an electrolyte between an anode and a cathode with a direct current, the improvement comprising providing one of the said electrode on its side toward the electrodic gap with a two phase ceramic oxide membrane of claim 1.

4,119,504

NON-WETTABLE BARRIER TO PREVENT CONDUCTION OF ELECTRICAL CURRENT BY MOLTEN SALT FILM

Robert L. Hargis, Palestine, Tex., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed May 17, 1977, Ser. No. 797,775
Int. Cl.² C25C *3/00, 3/10*
U.S. Cl. 204—64 R **11 Claims**



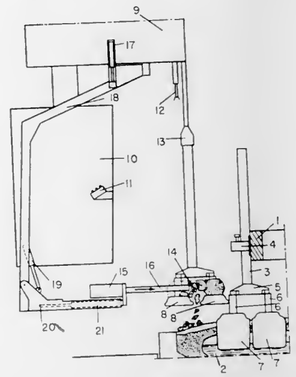
5. The method including producing metal by electrolysis in a molten salt bath, where portions of the molten salt bath condense in the form of a liquid film on a surface above the bath and wherein the improvement comprises interposing in said film an electrically insulating material which is not wet by the film, said material being in the form of a protrusion on said surface.

4,119,505

PROCESS AND DEVICE FOR CLEANING THE BUTTS OF WORN ANODES FROM AN IGNEOUS ELECTROLYSIS CELL

Pierre Baillot, and Pierre Berthet, both of Albertville, France, assignors to Aluminium Pechiney, Lyons, France

Filed Apr. 6, 1977, Ser. No. 784,963
Claims priority, application France, May 4, 1976, 76 13998
Int. Cl.² C25C *3/00, 3/06*
U.S. Cl. 204—67 **5 Claims**



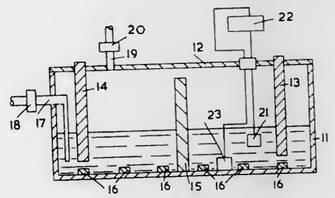
1. Process for ridding the worn anode elements of igneous electrolysis cells of covering solidified electrolyte crust in replacement of the anode comprising the steps of raising the worn anode vertically from the cell to a level above the surface of the cell, backing the raised anode from one side, aligning a percussion tool with the crust on the other side of the raised anode, moving the percussion tool towards contact with the crust of the raised anode, actuating the percussion tool rapidly to impact the crust to break the crust for release from the worn anode, and controlling such movement from a remote station.

4,119,506

FUELS

George Charles Bashforth, La Mondine, Eureka Avenue, Coast Road, St. Clement, Jersey, Channel Islands, Channel Islands

Continuation of Ser. No. 696,229, Jun. 15, 1976, abandoned, which is a continuation of Ser. No. 619,449, Oct. 3, 1975, abandoned, which is a continuation of Ser. No. 460,161, Apr. 11, 1974, abandoned. This application Dec. 1, 1977, Ser. No. 856,747
Claims priority, application United Kingdom, Apr. 12, 1973, 17608/73
Int. Cl.² C25B *3/00*
U.S. Cl. 204—72 **11 Claims**



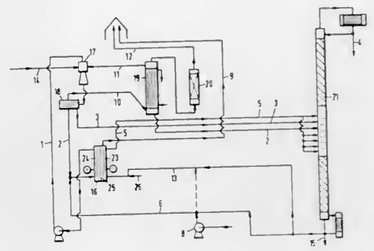
1. An electrolysis process for producing a liquid hydrocarbon capable of being used as a fuel, comprising the steps of partly filling a container with an aqueous electrolyte containing vegetable material selected from the group consisting of seaweed and a member of the cruciferae family, said container having a pair of spaced electrodes therein and carbon disposed between said electrodes, heating the electrolyte and passing a current from one electrode to the other through the electrolyte whereby the desired liquid hydrocarbon is produced, and recovering the liquid hydrocarbon.

4,119,507

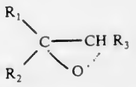
PROCESS OF PRODUCING OLEFIN OXIDE

Karl Hans Simmrock, Dortmund, and Gerhard Hellemanns, Marl, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 18, 1977, Ser. No. 852,753
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658189
Int. Cl.² C25B *3/02*
U.S. Cl. 204—80 **6 Claims**



1. An electrochemical process of producing oxiranes of the formula



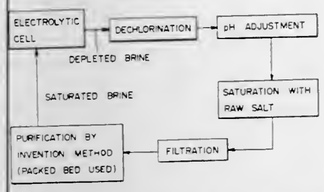
wherein R_1, R_2 and R_3 are substituents selected from the group consisting of hydrogen, methyl or ethyl and wherein the total amount of carbon atoms of R_1, R_2 and R_3 is utmost 2, from olefins by means of an electrochemical system which consists of an anode, a cathode and an intervening partition and which is supplied with an alkali metal chloride-containing, aqueous electrolyte, wherein chlorinecontaining anolyte and olefin are reacted to form olefin chlorohydrin in a reaction chamber disposed outside the electrochemical system, a partial stream of the chlorohydrin-containing solution which leaves the reaction chamber is returned to the anode chamber of the electrochemical system, another partial stream and alkaline catholyte withdrawn from the electrochemical system are reacted to form oxirane and alkali chloride, the oxirane is removed from the solution and the latter is then returned to the anode and cathode chambers of the electrochemical system, characterized in that the electrolysis is carried out in an electrochemical system in which the anolyte and catholyte are separated by a membrane consisting of a cationpermeable polyfluorohydrocarbon which contains electronegative groups.

4,119,508

METHOD OF PURIFYING THE RAW BRINE USED IN ALKALI SALT ELECTROLYSIS

Noriyuki Yokota, Ashiya; Shingo Tokuda, Nishinomiya; Yoshiro Ito, and Kenji Itaya, both of Amagasaki, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Division of Ser. No. 639,409, Dec. 10, 1975, Pat. No. 4,060,465, which is a continuation of Ser. No. 482,496, Jun. 24, 1974, abandoned. This application Jun. 9, 1977, Ser. No. 805,160
The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.
Int. Cl.² C25B *1/00, 1/26*
U.S. Cl. 204—128 **8 Claims**



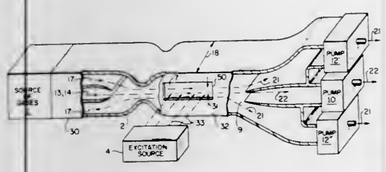
5. A method for the electrolysis of aqueous NaCl or KCl brine solution for the production of chlorine which comprises passing the brine solution through an electrolytic cell, passing an electric current through the cell and brine solution, passing the depleted brine solution to a dechlorination step to remove chlorine therefrom, adjusting the pH of the depleted brine solution to 3 to 10, saturating the depleted brine solution with raw salt containing Mg and Ca, filtering the saturated brine solution to remove undissolved solids, flowing the filtered brine solution at a pH of 3 to 10 and a space velocity of 2 to 20 hr^{-1} through a bed containing a member selected from the group consisting of solid granular water-insoluble adsorbent solids adsorptively supporting a chelate-forming compound selected from the group consisting of the aminoacetic acids containing at least one $>N—CH_2COOH$ in their molecular structure and the oligomers and the alkali metal salts thereof to selectively remove and substantially reduce the Mg and Ca concentration and recycling the saturated brine solution reduced in Mg and Ca to the electrolytic cell.

4,119,509

METHOD AND APPARATUS FOR ISOTOPE SEPARATION FROM A GAS STREAM

Abraham Szoke, Boulder, Colo., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 11, 1976, Ser. No. 695,232
Int. Cl.² B01J *1/10;* **B01K** *1/00*
U.S. Cl. 204—157.1 R **32 Claims**



1. A method for the separation of isotopes of a material comprising a first isotope and a second isotope comprising the steps of:

a. forming a stream of vapor containing said isotopes, said vapor having a velocity in the direction of said stream;
b. selectively exciting one of said isotopes by exposing said vapor to radiation at a predetermined wavelength without substantially exciting the second isotope;
c. causing the excited first isotope to undergo at least one of the processes of molecular dissociation, chemical reaction and inelastic collision with another particle while this first excited isotope is still excited, whereby this first isotope acquires an excess velocity component transverse to the velocity of the stream; and
d. separating the vapor containing the isotope energized in step (c) from the gas remaining in the stream, after a sufficient time to allow the energized isotope to be substantially segregated from the stream by its excess transverse velocity.

4,119,510

PHOTOCURABLE DIISOCYANATE COMPOSITIONS

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 7, 1975, Ser. No. 629,946
Int. Cl.² C08F *2/46, 8/18*
U.S. Cl. 204—159.23 **14 Claims**

1. A photocurable composition consisting essentially of

A. A terminally unsaturated component formed by the reaction of

(1) an aliphatic diisocyanate having from 9 to 32 carbon atoms and at least one alkyl side chain characterized by the formula

$$OCN—(CHR)_x—\underset{\displaystyle (CH_2)_z}{\underset{|}{CH}}—(CHR)_y—NCO$$

wherein each R is individually selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms, x and y are, individually, integers having values in the range of 2 to 16, Z is an integer having a value in the range of 0 to 5 and the sum of $(x+y)$ is in the range of 5 to 23; and

(2) an unsaturated compound having a maximum of 12 carbon atoms per molecule characterized by the formula

$$R^{i}—\underset{R^{i}}{\underset{|}{C}}=\underset{R^{i}}{\underset{|}{C}}—(CR^{i}_2)_n—NHR^{ii}$$

wherein each R^i is individually selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms, n is an integer having a value in the range of 1 to 6, and R^{ii} is selected from the group consisting of R^i and alkenyl having from 1 to 6 carbon atoms, wherein the reactant ratio of said diisocyanate to said unsaturated compound is about 1:2;

B. a cure-promoting amount of a polymercaptan having the formula

$$R^{iii}—SH)_c$$

wherein c is at least 2 and R^{iii} is a polyvalent organic moiety free from reactive carbon-to-carbon unsaturation; and

C. a sensitizing amount of a photosensitizer.

4,119,511

APPARATUS AND METHOD OF ASSISTING PILE DRIVING BY ELECTRO-OSMOSIS

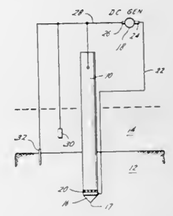
Lowell B. Christenson, 7410 Thurow, Houston, Tex. 77087

Filed Jan. 24, 1977, Ser. No. 761,737
Int. Cl.² B01D *13/02*
U.S. Cl. 204—180 R **10 Claims**

1. An apparatus for assisting the driving of a pile into soil having a body of water above the soil surface comprising,

an electrically conductive base connected to the bottom of the pile,
a d-c power source,

an insulated electrical conductor connected between the negative output of the power source and the conductive base,
a second electrical conductor connected to the positive



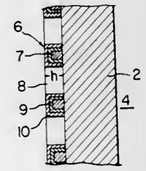
output of the power source and positioned in the water and in electrical communication through the soil with the base for moving the water downwardly along the outside of the pile whereby friction between the pile and soil is reduced making the pile easier to drive through the soil.

4,119,512

AIR-FUEL RATIO DETECTING APPARATUS

Tokuta Inoue, Mishima; Takehisa Yaegashi, and Keiji Aoki, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 3, 1977, Ser. No. 756,286
Claims priority, application Japan, Feb. 9, 1976, 51-12338
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 S **10 Claims**



1. An air-fuel ratio detecting apparatus for detecting the air-fuel ratio of an internal combustion engine by sensing the composition of exhaust gas from the engine, said apparatus comprising:

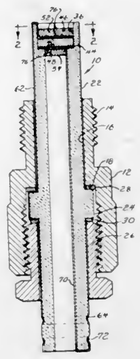
a first electrode;
a second electrode in the form of a grate having openings defined therein;
a solid electrolyte which contacts ambient atmosphere near said first electrode and contacts exhaust gas near said second electrode;
said second electrode being made of substantially solid non-porous materials and comprising:
an electrically conductive metal material one area of which is in direct electrical and physical contact with the solid electrolyte;
a first layer of another material convering other areas of the electrically conductive metal than said one; and
a second layer of a noble metal catalyst covering said first layer; and
said solid electrolyte is accessible through said openings in said second electrode for direct contact by exhaust gas.

4,119,513

OXYGEN SENSOR FOR INDUSTRIAL AIR/FUEL CONTROL

Ming S. Shum, Des Plaines; Roy E. Svacha, North Barrington; Kenneth R. Janowski, Wheaton, all of Ill., and Anthony V. Fraioli, East Selauket, N.Y., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 7, 1977, Ser. No. 775,078
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 S **8 Claims**



1. An oxygen sensor for measuring the concentration of oxygen in industrial flue gases comprising a housing and means on the housing for attaching the sensor to the wall of a flue gas containing conduit so that the inner or sensing end of the housing is exposed to gases in the conduit and the outer or reference end is exposed to the atmosphere, a nonelectrically conductive tube mounted within the housing and having a sensing end extending beyond the sensing end of the housing and a reference end extending beyond the reference end of the housing, retaining means on said tube intermediate its ends cooperating with retaining means in said housing to fixedly position and seal said tube in gas-tight relation with said housing, an oxygen ion conducting solid electrolyte disc sealed in a recess in the sensing end of said tube, sensing and reference platinum group metal electrode coatings on the sensing and reference surfaces of said electrolyte disc, conductive stripes of said platinum group metal electrode coatings extending continuously along substantially the entire length of said tube for electrically connecting said sensing and reference electrode coatings on said electrolyte disc to spaced contact portions adjacent the reference end of said tube, a felted ceramic fiber filter member positioned in bonded contact with the electrode coatings on each side of said electrolyte disc, and a uniformly dispersed coating of a platinum group metal in contact with said electrode coatings, said uniformly dispersed coating serving to increase the surface area of the electrode coatings.

4,119,514

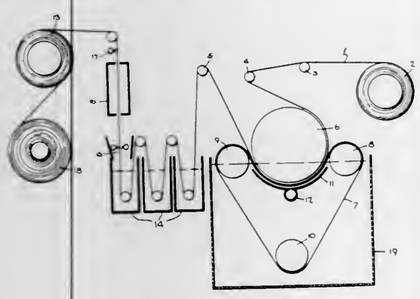
PRODUCTION OF PERFORATED METAL FOIL

John Edward Whittle, Sutton Coldfield, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 789,689, Apr. 21, 1977, Pat. No. 4,082,632, which is a continuation of Ser. No. 715,534, Aug. 8, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 867,014
Int. Cl.² C25F *7/00, 3/02, 3/14*
U.S. Cl. 204—206 **4 Claims**

1. Apparatus for perforating metal foil in the presence of an electrolyte comprising a tank suitable for holding an acidic electrolytic etching solution, a movable endless surface characterized by chemical inertness to the electrolyte to be held in the tank, an endless perforated titanium mask, means for continuously feeding a strip of metal foil into, through and from the

tank, means for simultaneously moving portions of the inert surface, the foil and the mask into sandwiched contact with the foil between the inert surface and the mask at a position where the foil is fed through the tank, means for maintaining the mask and foil in face-to-face contact for a preselected period of time when the foil is in the tank, a cathode disposed within the tank and spaced apart from the mask and more remote from the foil than from the mask, an electric current source having communication with the foil and the cathode and having a voltage



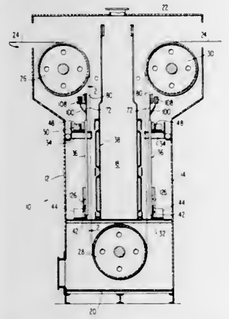
potential sufficient to maintain the foil anodic in relation to the cathode when the foil is in the tank and the tank contains a volume of electrolytic etching solution sufficient to cover the cathode, the portions of the inert surface, foil and mask at the place where these three are to be sandwiched together, means for moving the inert surface and the mask away from the foil before the foil is removed from the tank, and means for continuously returning portions of the endless inert surface and of the endless mask to sandwich with a different portion of the foil when fed into the tank.

4,119,515

APPARATUS FOR ELECTROPLATING SHEET METALS

Andrew L. Costakis, Portage, Ind., assignor to National Steel Corporation

Filed Mar. 28, 1977, Ser. No. 782,016
Int. Cl.[2] C25D *17/12, 17/02*
U.S. Cl. 204—211 **37 Claims**



1. In an apparatus for electroplating an elongated strip of metal as the strip is drawn longitudinally past a positively charged anode submerged in a bath of electrolite solution, an anode structure comprising,

a generally flat substantially rectangular anode body defined by a plurality of flat plate body segments each having side and end edges,

mounting means for supporting the body segments in a common plane in contiguous relation to one another to define a substantially continuous anode surface extending in a plane substantially parallel to the plane of the metal strip, the mounting means supporting the body segment with at least one end edge extending substantially transversely of the direction of movement of the metal strip and with at least one side edge on each body segment extending in closely spaced relation to a side edge on another body segment, the closely spaced side edges on adjacent body segments extending in the general direction of but not parallel to the direction of movement of the metal strip through the apparatus,

means electrically insulating the body segments from one another, and

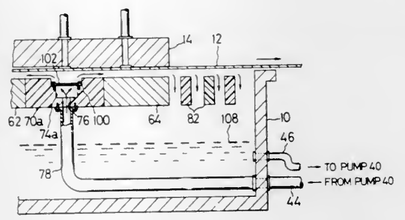
connector means for independently connecting each body segment to a source of electrical energy whereby the respective body segments may be electrically energized selectively.

4,119,516

CONTINUOUS ELECTROPLATING APPARATUS

Seiichi Yamaguchi, Shimizu, Japan, assignor to Koito Manufacturing Company Limited, Tokyo, Japan

Filed Oct. 14, 1977, Ser. No. 842,244
Claims priority, application Japan, Oct. 16, 1976, 51-139190
Int. Cl.[2] C25D *5/02, 5/08, 7/06*
U.S. Cl. 204—224 R **7 Claims**



1. An apparatus for continuously electroplating a sheet metal strip of electrically conducting material as the strip is fed longitudinally in a predetermined direction through the apparatus, comprising:

(a) a plating vessel for receiving an electrolyte solution;

(b) a cathode having a bottom surface disposed and horizontally supported over the plating vessel, the strip of material being fed under and in sliding contact with said bottom surface of the cathode;

(c) a pair of insoluble anodes mounted within the plating vessel in opposed relationship to the cathode, with a constant spacing between each anode and the strip traveling under the cathode, the pair of anodes being spaced from each other in the predetermined traveling direction of the strip;

(d) a block of electrically insulating material sandwiched between the pair of anodes and having a top surface disposed flush with the top surfaces of the anodes, there being a groove in the top surface of the insulating block which extends in a direction transverse to the predetermined traveling direction of the strip and which has a width greater than the spacing between each anode and the strip traveling under the cathode;

(e) a plate member mounted in the groove in the top surface of the insulating block and having a plurality of openings formed therein; and,

(f) means for forcibly delivering the electrolyte solution into the groove in the insulating block from under the plate member mounted therein in order to cause turbulent flow of the electrolyte solution through the spacings between the anodes and the strip traveling under the cathode, whereby the degree of turbulence of the electrolyte solution flowing through the spacings between the anodes and the strip is made constant in the transverse direction of the

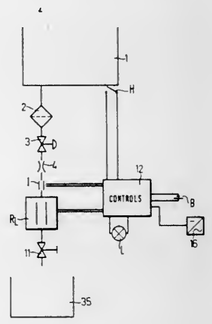
strip as the electrolyte solution forcibly delivered into the groove in the insulating block subsequently flows through the openings in the plate member and over the top surface portions of the insulating block on the opposite sides of the groove.

4,119,517

APPARATUS FOR PURIFYING WATER

Bernd Hengst, Schweinfurt am Main, Germany, assignor to Sachs-Systemtechnik GmbH, Schweinfurt am Main, Germany

Filed Jun. 8, 1977, Ser. No. 804,562
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626572
Int. Cl.[2] C25B *9/00;* **C02B** *1/82*
U.S. Cl. 204—229 **13 Claims**



1. Apparatus for purifying water by anodic oxidation comprising:

(a) a casing enclosing a chamber therein and being formed with two orifices spaced from said chamber in opposite directions, said orifices communicating with said chamber;

(b) support means for supporting said casing in an operative position in which said orifices are vertically spaced for gravity flow of the water to be purified from one of said orifices through said chamber to the other orifice;

(c) two electrodes spacedly mounted in said chamber for flow of said water therebetween;

(d) an electric battery in said casing;

(e) circuit means in said casing connecting said battery to said electrodes for passage of electric current between said electrodes through said water when said water and said battery satisfy predetermined conditions,

(1) said circuit means including signal generating means for generating a sensible signal indicative of the voltage across said electrodes being between predetermined maximum and minimum values,

(2) said casing bounding a compartment therein sealed from said chamber, said compartment enclosing at least a portion of said circuit means.

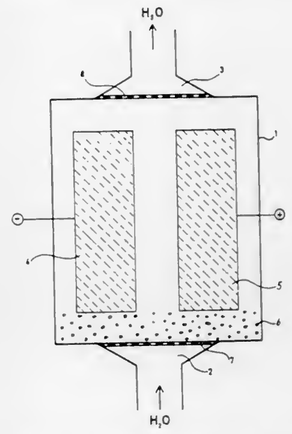
4,119,518

ELECTROLYTIC CELL FOR TREATMENT OF WATER

Jorge Miller, 8341 Noham 156, Germany

Division of Ser. No. 627,192, Oct. 30, 1975, Pat. No. 4,048,030.
This application Jun. 29, 1977, Ser. No. 811,375
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1975, 2531850
Int. Cl.[2] C10G *17/00*
U.S. Cl. 204—263 **22 Claims**

1. An electrolytic cell for the treatment of water, which comprises a closed container with a lower inlet opening and an upper outlet opening for the water, at least two radially positioned electrodes which are adapted to be connected with the positive and with the negative pole of a DC source, particles located in the interior space of the electrolytic cell whose density is higher than that of water and gratings arranged in back of the lower water inlet opening and in front of the upper



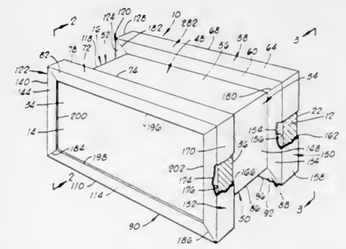
water outlet opening, said gratings having openings smaller than the diameter of the particles in the interior of the electrolytic cell, to prevent the particles from emerging from the electrolytic cell.

4,119,519

BIPOLAR ELECTRODE FOR USE IN AN ELECTROLYTIC CELL

Thomas W. Clapper, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Apr. 4, 1977, Ser. No. 784,343
Int. Cl.[2] C25B *9/00, 11/02, 11/10*
U.S. Cl. 204—268 **20 Claims**



1. A bipolar electrode for use in an electrolytic cell wherein the bipolar electrode is at least partially immersed in an electrolyte, the bipolar electrode comprising:

an anodic member having a first side, a second side, a first end, a second end, a first face and a second face;

a cathodic member having a first side, a second side, a first end, a second end, a first face and a second face of the cathodic member generally facing the second face of the anodic member and being spaced a distance therefrom; and

a connector constructed of an electrically conductive material, a portion of the connector engaging the portion of the anodic member, a portion of the connector engaging a portion of the cathodic member, and a portion of the connector extending between the second face of the anodic member and the second face of the cathodic member, the connector mechanically connecting the anodic and the

cathodic members in the spaced apart relationship and establishing electrical continuity between the anodic and the cathodic members, the connector extending about a substantial portion of the space between the anodic and the cathodic members and cooperating with the anodic and the cathodic members to substantially encompass and substantially seal a substantial portion of the space between the anodic and the cathodic members from the electrolyte, comprising:

a third connector element comprising:

a base extending between the anodic and the cathodic members;

a first flange connected to the base and engaging a portion of the anodic member generally near the first end; and

a second flange connected to the base and engaging a portion of the cathodic member generally near the first end;

a fourth connector element comprising:

a base extending between the anodic and the cathodic members;

a first flange connected to the base and engaging a portion of the anodic member generally near the second end; and

a second flange connected to the base and engaging a portion of the cathodic member generally near the second end.

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WATER SUPPLY SYSTEM

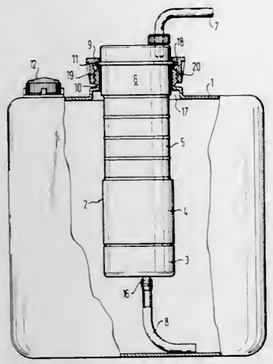
Peter Paschakarnis, Schwebheim; Bernd Hengst, Schweinfurt am Main, and Rainer Wychnanek, Zell, all of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt am Main, Germany

Filed Jun. 8, 1977, Ser. No. 804,560

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626571

Int. Cl.² C25B *9/00*; C02B *1/82*

U.S. Cl. 204—276 **9 Claims**



1. A system for supplying water fit to drink comprising:

(a) a container adapted to hold a body of water to be purified;

(b) a housing having an intake for water to be purified;

(c) fastening means releasably fastening a portion of said housing including said intake in said container for communication with said body;

(d) outlet means on said housing and extending outward of said container for discharge of purified water,

(1) said inlet and said outlet means defining a path for the flow of water through said housing from said inlet to said outlet means;

(e) means in said housing defining a cell;

(f) two electrodes spacedly mounted in said cell and electrically insulated from each other;

(g) pump means mounted in said housing for conveying the water to be purified in said path from said intake through said cell to said outlet means;

(h) filter means mounted in said housing and interposed in said path between said intake and said cell for removing particulate matter from said water prior to entry into said cell;

(i) power supply means in said housing for supplying electrolyzing current to said electrodes; and

(j) signal generating means for generating a sensible signal indicative of the operating condition of said pump means and of said power supply means.

4,119,521

FLUORESCENT DERIVATIVES OF ACTIVATED POLYSACCHARIDES

Jack G. Chirikjian, Rockville, Md., assignor to Stephen Turner, Towson, Md.

Filed Apr. 25, 1977, Ser. No. 790,384

Int. Cl.² G01N *27/26*

U.S. Cl. 204—299 R **17 Claims**

1. The chemical reaction product of a fluorescent deoxyribonucleic acid intercalating agent and a water-insoluble, activated polysaccharide wherein said agent has formed a chemical bond with the activated polysaccharide.

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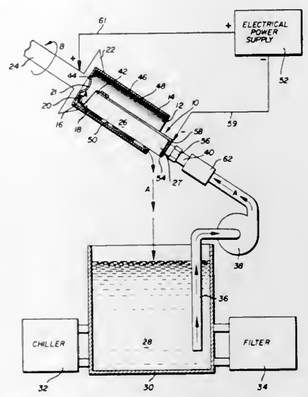
NOZZLE APPARATUS FOR ELECTROPHORETIC COATING OF INTERIOR SURFACES

Loyd R. Brower, Jr., Olympia Fields; Leonard P. Madsen, St. Anne, and Chesley L. Zutaut, Park Forest, all of Ill., assignors to Standard T Chemical Company, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 807,965, Jun. 20, 1977, which is a continuation of Ser. No. 686,110, Jun. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 597,314, Jul. 21, 1975, abandoned. This application Feb. 17, 1978, Ser. No. 878,683

Int. Cl.² B01D *13/02*; C25D *13/00*

U.S. Cl. 204—300 EC **9 Claims**



1. In an apparatus for electrophoretically coating the interior surface of an electrically conductive workpiece having a selected linear dimension and a bottom substantially normal to the selected linear dimension, which apparatus includes: a nozzle of electrically conductive material having a selected linear dimension corresponding to that of the workpiece; means for mounting the nozzle in the workpiece in closely spaced proximity to the interior surface thereof and along the selected linear dimension thereof; a reservoir for containing a liquid electrophoretic material; means for supplying electrophoretic material under pressure to the nozzle; an electrical circuit connected between the nozzle and the workpiece for establishing an electrophoretic path therebetween; and means for moving the workpiece and the nozzle relative to one another about an axis fixed relative to the workpiece and the nozzle and in a direction lateral to the selected linear dimension of the workpiece, the improvement comprising:

a nozzle having a linear portion along its linear dimension, a head portion connected to the linear portion and disposed substantially normal thereto at one end of the linear portion and including a discharge orifice therein, and inlet tubing connected to the head portion at the discharge orifice thereof for supplying electrophoretic material from the electrophoretic supply means to the discharge orifice, the head portion being of electrically conductive material and shaped whereby when the nozzle is mounted in the workpiece the head portion is disposed in closely spaced proximity to the bottom of the workpiece,

the linear portion being of electrically conductive material and coextensive with the selected linear dimension of the workpiece, the linear portion being closely spaced from the interior surface of the workpiece when the nozzle is mounted in the workpiece, and the linear portion being formed in cross-section to conform substantially to the contour of the interior surface of the workpiece,

whereby when electrophoretic material is applied to the workpiece through the discharge orifice in said nozzle a linear stream of electrophoretic material is established between the linear dimension of the workpiece and the linear portion of said nozzle, and between a radius of the bottom of the workpiece and the head portion of the nozzle, for electrophoretic migration of the electrophoretic material onto the workpiece surface, and

whereby the linear stream of electrophoretic material is passed over the entire interior surface of the workpiece by the relative motion between the workpiece and said nozzle, thereby to deposit electrophoretically a coating of the electrophoretic material over the entire interior surface.

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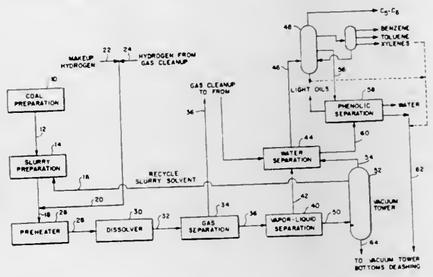
PROCESSES FOR THE PRODUCTION OF DEASHED COAL

Roger A. Baldwin, Warr Acres, and John L. Bills, Oklahoma City, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Aug. 23, 1976, Ser. No. 716,550

Int. Cl.² C10G *1/06*

U.S. Cl. 208—8 **6 Claims**



1. In a process which comprises preparing coal liquefaction products by contacting coal with dissolving solvent at elevated temperature and pressure, passing the resulting mixture to a still to remove coal dissolving solvent for recirculation and leave still bottoms which are passed to a deashing section in which the bottoms are contacted with deashing solvent under suitable conditions of elevated temperature and pressure to form an ash concentrate, the improvements which comprise:

(a) admixing said ash concentrate with a solubilizing solvent comprising at least one solvent selected from the group consisting of pyridine, cresols, pyrrolidine, anthracene oil or admixtures thereof in a solubilizer treatment zone,

(b) maintaining the temperature in said solubilizer treatment zone within a range of from about 190° F. to about 400° F. and the pressure in said solubilizer treatment zone within a range of from about atmospheric to about 300 psig,

(c) subjecting said admixture to a separation treatment to separate at least two phases, (i) a light phase comprising principally dissolved coal; solubilizing solvent; and some solid, insoluble mineral ash and (ii) a heavy phase comprising substantially solid, insoluble mineral ash; solid insoluble undissolved coal; and some solubilizing solvent,

(d) subjecting the heavy phase to solvent recovery treatment for recycle of the solubilizing solvent and recovery of the solid, insoluble mineral ash and solid, insoluble undissolved coal, and

(e) recycling the light phase to supplant a portion of the coal dissolving solvent.

4,119,524

COAL DEASHING PROCESS HAVING IMPROVED SOLVENT RECOVERY TECHNIQUES

Robert E. Leonard, Oklahoma City, and Roger A. Baldwin, Warr Acres, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jun. 1, 1976, Ser. No. 691,575

Int. Cl.² C10G *1/06*

U.S. Cl. 208—8 **8 Claims**

1. A process comprising:

mixing in a first mixing zone a first dissolving solvent with coal, solubilizing the coal at elevated temperature and pressure, and flashing the resultant mixture to produce a prepared mixture comprising the first dissolving solvent, the soluble coal products and the insoluble coal products;

mixing the prepared mixture with a second dissolving solvent in a second mixing zone to provide a feed mixture, said second dissolving solvent consisting essentially of at least one substance having a critical temperature below 800° F. selected from the group consisting of aromatic hydrocarbons having a single benzene nucleus and normal boiling points below about 310° F., cycloparaffin hydrocarbons having normal boiling points below about 310° F., open chain mono-olefin hydrocarbons having normal boiling points below about 310° F., open chain saturated hydrocarbons having normal boiling points below about 310° F., mono-, di, and tri-open chain amines containing from about 2-8 carbon atoms, carbocyclic amines having a monocyclic structure containing from about 6-9 carbon atoms, heterocyclic amines containing from about 5-9 carbon atoms, and phenols containing from about 6-9 carbon atoms and their homologs;

introducing the feed mixture into a first separation zone;

maintaining the temperature level in the first separation zone in the range of from about 460° F. to about 620° F., and maintaining the pressure level in the first separation zone in the range of from about 650 psig to about 1000 psig;

separating the feed mixture in the first separation zone into a first heavy fraction comprising the insoluble coal products, some of the first dissolving solvent and some of the second dissolving solvent, and into a first light fraction;

withdrawing the first light fraction from the first separation zone;

introducing the first light fraction into a second separation zone;

maintaining the temperature level in the second separation zone in the range of from about 630° F. to about 900° F. and the pressure level in the second separation zone in the range of from about 650 psig to about 1000 psig;

separating the first light fraction in the second separation zone into a second light fraction comprising the second dissolving solvent, and a second heavy fraction;

withdrawing the second light fraction comprising the second dissolving solvent from the second separation zone;
passing the second light fraction comprising the second dissolving solvent into the second mixing zone for mixing with the prepared mixture to aid in providing feed mixture;
withdrawing the first heavy fraction from the first separation zone;
flashing the first heavy fraction to produce one stream comprising the insoluble coal products and one other stream comprising the first and the second dissolving solvents;
separating the first dissolving solvent from the second dissolving solvent contained in the stream which was produced by flashing the first heavy fraction;
passing the thus separated first dissolving solvent into the first mixing zone for mixing with the coal; and
passing the thus separated second dissolving solvent into the second mixing zone for mixing with the prepared mixture to aid in providing the feed mixture.

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MANUFACTURE OF COKE

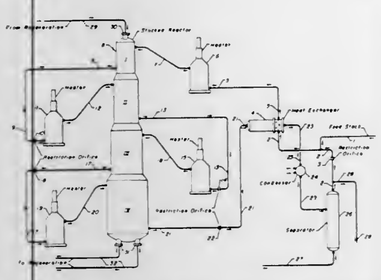
Michael David Gray, and Geoffrey Michael Kimber, both of Cheltenham, England, assignors to Coal Industry (Patents) Limited, London, England

Filed May 21, 1976, Ser. No. 688,777

Claims priority, application United Kingdom, Jun. 9, 1975, 24675/75

Int. Cl.² C10G *1/04*

U.S. Cl. 208—8 **4 Claims**



1. A process for the production of low impurity coke for the production of electrodes, which process comprises extracting a coal of volatile matter content greater than about 28% by weight on a dry ash free basis with an anthracene oil, recycled or refractorised anthracene oil of which the middle 90% boils in the range 250° to 350° C., at a temperature of about 380° to 450° C., in the liquid phase, to form an extract and insoluble matter, separating the liquid matter from the insoluble matter, heating the separated extract to distill off a distillable oil at least a portion of which is recycled as extractant and coking the residue to form said low-impurity coke wherein the residence time of coal in the extraction step is controlled and the weight ratio of extractant to coal during extraction is maintained greater than 3:1 to maintain a substantially constant specific resistivity of the filter cake.

4,119,526

MULTIPLE-STAGE HYDROCARBON CONVERSION WITH GRAVITY-FLOWING CATALYST PARTICLES

Kenneth D. Peters, Elmhurst; Elliot Veinerman, Des Plaines, and Donald E. Felch, Arlington Heights, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 9, 1977, Ser. No. 795,250

Int. Cl.² C10G *35/12*

U.S. Cl. 208—64 **14 Claims**

1. In a multiple-stage catalytic conversion system, wherein (1) heated hydrocarbonaceous charge stock and hydrogen flow serially through a plurality of catalytic reaction zones; (2) the reaction product effluent from each zone is heated prior to the introduction thereof into the next succeeding reaction zone; and, (3) catalyst particles are movable through each reaction zone via gravity-flow, the method of effecting the conversion of said charge stock which comprises the steps of:
(a) heating said charge stock and hydrogen, and introducing the heated mixture into a first reaction zone maintained at hydrocarbon conversion conditions;
(b) heating the resulting first reaction zone effluent and introducing the heated effluent into a succeeding reaction zone maintaned at hydrocarbon conversion conditions;
(c) restricting the flow of the effluent from at least one reaction zone by means of a fixed restriction orifice in said plurality and separating the effluent from the last reaction zone to provide (i) a normally liquid product stream and, (ii) a hydrogen-rich vaporous phase;
(d) restricting the flow by means of a fixed restriction orifice of at least a portion of said hydrogen-rich vaporous phase and recycling said portion to said first reaction zone, each of said flow restrictions in steps (c) and (d) producing an additional pressure drop increase, for the overall reactor system, of from about 1.0 to about 10.0 psi;
(e) at least periodically withdrawing catalyst particles from the last of said reaction zones; and,
(f) at least periodically introducing fresh, or regenerated catalyst particles into the first of said reaction zones.

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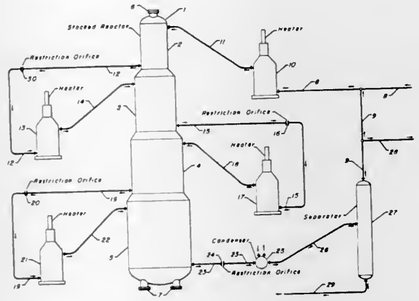
MULTIPLE-STAGE HYDROCARBON CONVERSION WITH GRAVITY-FLOWING CATALYST PARTICLES

Kenneth D. Peters, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 9, 1977, Ser. No. 795,054

Int. Cl.² C10G *35/12*

U.S. Cl. 208—64 **12 Claims**



1. In a multiple-stage catalytic conversion system, wherein (1) heated hydrocarbonaceous charge stock and hydrogen flow serially through a plurality of catalytic reaction zones; (2) the reaction product effluent from each zone is heated prior to the introduction thereof into the next succeeding reaction zone; and, (3) catalyst particles are movable through each reaction zone via gravity flow, the method of effecting the conversion of said charge stock which comprises the steps of:
(a) heating said charge stock and hydrogen, and introducing the heated mixture into a first reaction zone maintained at hydrocarbon conversion conditions;
(b) heating the resulting first reaction zone effluent and introducing the heated effluent into a succeeding reaction zone maintained at hydrocarbon conversion conditions;
(c) restricting the flow of the effluent from at least one reaction zone in said plurality by means of a fixed restriction orifice and separating the effluent from the last reaction zone to provide (i) a normally liquid product stream and, (ii) a hydrogen-rich vaporous phase, each such fixed flow restriction orifice producing an additional pressure drop increase, for the over-all reactor system, of from about 1.0 to about 10.0 psi;
(d) at least periodically withdrawing catalyst particles from the last of said reaction zones; and
(e) at least periodically introducing fresh, or regenerated catalyst particles into the first of said reaction zones.

4,119,528

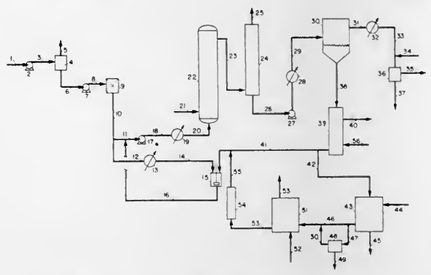
HYDROCONVERSION OF RESIDUA WITH POTASSIUM SULFIDE

William C. Baird, Jr., and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 1, 1977, Ser. No. 820,820

Int. Cl.² C10G *13/06*; B01J *23/04, 23/90*

U.S. Cl. 208—108 **13 Claims**



1. A process for the combined desulfurization and hydroconversion of a heavy hydrocarbon feedstock, which comprises contacting said heavy hydrocarbon feedstock without pretreatment with potassium sulfide in a conversion zone in the presence of a sufficient amount of added hydrogen to produce a hydrogen pressure of from about 500 to 5000 psi, in a conversion zone maintained at an elevated temperature between 500° and 2000° F., so that said heavy hydrocarbon feedstock is converted to lower boiling hydrocarbon products and is substantially desulfurized.

4,119,529

DEHYDROCYCLIZATION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 687,135, May 17, 1976, Pat. No. 4,018,669, which is a continuation-in-part of Ser. No. 522,209, Nov. 8, 1974, Pat. No. 3,960,710. This application Mar. 18, 1977, Ser. No. 779,207

The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.

Int. Cl.² C10G *35/08*; C07C *5/22*

U.S. Cl. 208—139 **26 Claims**

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon, at dehydrocyclization conditions effective to convert said hydrocarbon to an aromatic hydrocarbon as the principal reaction of the process, with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.05 to about 5 wt. % cobalt and about 0.1 to about 3.5 wt. % halogen; wherein the platinum or palladium, rhodium and catalytically available cobalt are uniformly dispersed throughout the porous carrier material; and wherein substantially all of the platinum or palladium and rhodium are present in the elemental metallic state; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrocyclization conditions as in a mixture of these states.

4,119,530

MOVING-BED REACTOR STARTUP PROCESS

George J. Czajkowski, Chicago, and Frank Stolfa, Park Ridge, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 610,479, Sep. 4, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,504

Int. Cl.² C10G *23/08*

U.S. Cl. 208—213 **3 Claims**

1. A startup method for a moving-bed reactor containing a bed of solid catalyst in a substantially cylindrical catalyst retention volume which comprises the steps of:
(a) starting on-stream operation of the reactor with the catalyst retention volume of the reactor being less than 99 vol. % full;
(b) intermittently charging a quantity of catalyst greater than 0.1 vol. % and less than 5.0 vol. % per intermittent charge of catalyst to the reactor and effecting the addition of catalyst at a first rate of catalyst transfer;
(c) intermittently removing a quantity of used catalyst from the bottom of the reactor at a second rate of catalyst transfer less than the first rate of catalyst transfer; and,
(d) equalizing the first and the second rates of catalyst transfer when the catalyst retention volume of the reactor becomes filled.

4,119,531

LARGE-PORE HYDRODEMETALLIZATION CATALYST AND PROCESS EMPLOYING SAME

P. Donald Hopkins, St. Charles, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 30, 1977, Ser. No. 811,835

Int. Cl.² C10G *17/00*

U.S. Cl. 208—251 H **6 Claims**

1. A catalyst for the catalytic hydrodemetallization of hydrocarbon streams, which catalyst consists essentially of a small amount of a single active original hydrogenation metal deposed on a large-pore, high-surface area alumina, said hydrogenation metal being a member of Group VIB of the Periodic Table of Elements and being present in the elemental form, as an oxide, as a sulfide, or mixtures thereof, said member of Group VIB of the Periodic Table of Elements being present in an amount within the range of about 0.5 wt.% to about 3 wt.%, based upon the total catalyst weight and calculated as the oxide, and said catalyst having a surface area of 120 m^2/gm to about 400 m^2/gm, a pore volume of 0.7 cc/gm to about 1.5 cc/gm, and an average pore diameter of 125 A to about 350 A.

4,119,532

BENEFICIATION METHOD

Moon C. Park, 15 Talisay Rd., Forbes Park, Makati, Philippines

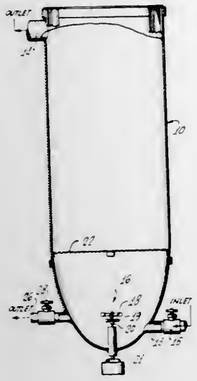
Filed Sep. 10, 1976, Ser. No. 721,988

Int. Cl.² B03B *5/58*

U.S. Cl. 209—17 **3 Claims**

1. A beneficiation method for separating severed ore into concentrate and gangue comprising:
placing a screen across a vessel having an inlet at the bottom and an outlet at the top, the screen being positioned between the bottom and the outlet;
placing severed ore on top of the screen;
supplying water to the inlet;
rotating a propeller in the vessel at high speed to break up the ore;
further rotating the propeller to cause the water supplied through the inlet to flow upwardly from the inlet through the screen to the outlet so that the presence of the screen minimizes the rotational flow of the water and equalizes

the water pressure in the area of the vessel above the screen, the gangue being carried upwardly and through



the outlet by the water, while the concentrate remains in the vessel due to its higher specific gravity; and removing the concentrate from the vessel.

4,119,533

METHOD FOR SEPARATING MIXED PLASTICS

Kozo Saitoh, Tokyo, and Sumio Izumi, Sayama, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1975, Ser. No. 603,201
Claims priority, application Japan, Aug. 9, 1974, 49-91319
Int. Cl.[2] B03B *3/02, 5/62*
U.S. Cl. 209—155 **7 Claims**

1. A method of separating highly hydrophobic plastics selected from the group consisting of thermoplastics plastics, thermosetting plastics and mixtures thereof in a plastics mixture consisting of placing the plastics mixture in an aqueous liquid medium in a vessel, agitating the aqueous liquid medium by keeping the liquid medium in a rotary, rising, descending or swirling flowing state or a combination of said flowing states by stirring the medium with rotating blades or by introducing the medium under pressure into the vessel to disperse the plastics mixture whereby the plastics having a higher hydrophobicity float on the aqueous liquid medium surface, and removing the plastics floating on the surface of the aqueous liquid medium, said agitation being conducted without significant introduction of gases into said medium.

4,119,534

MULTIPLE DECK TROMMEL SCREEN

Stuart M. Porter; Francis Edward Litty, both of Denver; Ervin C. Weimer, Wheat Ridge, and Eric G. Pollack, Denver, all of Colo., assignors to Stearns-Roger Corp., Glendale, Colo.

Filed Mar. 18, 1977, Ser. No. 778,876
Int. Cl.[2] B07B *1/24*
U.S. Cl. 209—291 **4 Claims**

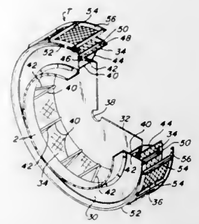
1. A multiple deck trommel screen device for connection to the discharge end of a cylindrical imperforate drum of a generally horizontal rotatable dryer for separating fines from particulate material, wherein the fines are collected in a first hopper and the rest of the particulate material is caught in a second hopper, said trommel screen device comprising:

a generally cylindrical frame for supporting at least inner and outer concentrically mounted supporting screens connectible to the discharge end of the drum;

said inner cylindrical screen mounted on said frame and having a diameter greater than the drum and having a relatively coarse mesh;

said outer cylindrical screen mounted on said frame concentric with said inner screen and having a diameter greater than said inner screen and being of fine mesh through which only the fines can pass, said frame being connectible to the discharge end of the drum so that all fines passing through both screens are collected in the first hopper and all particulate material passing over the end of said screens is collected in the second hopper;

said outer screen being made up of individual screen segments secured to said frame by agitator members on the inner side of said frame, said agitator members clamping the edges of said inner screen sections to said frame and



serving to mix the material passing through said inner screen to cause as many of said fines to engage the surface of said outer screen as possible and to pass therethrough;

said agitator members each including an inverted V-shaped member extending parallel to the longitudinal axis of said trommel screen device; and

bolts having one end connected to said V-shaped member and extending through cross members on said frame, the edges of said screen sections being positioned between the ends of said V-shaped member and said cross members and held in place when said bolts are tightened.

4,119,535

METHOD OF SANITIZING A VOLUME OF WATER IN CONJUNCTION WITH CHLORINE

Eugene B. White, 126 S. East Ave., Oak Park, Ill. 60302, and Mahindar N. Sharma, 245 W. Main St., Lake Zurich, Ill. 60047

Division of Ser. No. 351,595, Apr. 16, 1973, abandoned. This application Sep. 15, 1975, Ser. No. 613,517
Int. Cl.[2] C02B *3/06*
U.S. Cl. 210—62 **4 Claims**

3. A supplemental treatment for swimming pool water and the like, which is primarily sanitized by maintenance of an available chlorine content in such water, introduced therein from known chlorine-containing materials by means of known procedures, comprising, following a previous chlorination of such water, the steps of ascertaining by test, the pH of such water, adding to such water an amount, per unit volume of water, of a supplemental material sufficient to bring the pH of the water from the test value to between approximately 7.2 and 7.4, which supplemental material comprises a mixture of 1,3-dibromo-5,5-dimethylhydantoin and an inorganic reactive compound therefor which, in the presence of water, will readily combine with said hydantoin to release bromine therefrom, with such inorganic compound being present in excess of that required to release all of the bromine content of said hydantoin, utilizing $NaCO_3$ as said reactive compound, if said test discloses the pH of the water to be treated to be below 7.2, the proportions of the materials, by weight, being as follows:

Dibromodimethylhydantoin	1.00
$NaCO_3$	29.00

introducing in the water to be treated a sufficient amount of such supplemental material, per unit volume of water, that the excess therein of said reactive compound will bring the pH of the water treated therewith up approximately 7.2 to 7.4, said amounts of hydantoin and reactive compound being so proportioned with respect to the amount of excess reactive compound that upon said addition of such material to the water to be treated, to effect the specified pH change, the amount of hydantoin will be sufficient to provide a desired amount of available bromine per unit volume of water, not greater than a predetermined maximum value suitable for sanitizing purposes in accordance with established sanitizing techniques, and thereafter, if necessary, adding available chlorine to such water in quantities sufficient to provide a predetermined residual amount of available halogen in such water.

4. A supplemental treatment for swimming pool water and the like, which is primarily sanitized by maintenance of an available chlorine content in such water, introduced therein from known chlorine-containing materials by means of known procedures, comprising, following a previous chlorination of such water, the steps of ascertaining by test, the pH of such water, adding to such water an amount, per unit volume of water, of a supplemental material sufficient to bring the pH of the water from the test value to between approximately 7.2 and 7.4, which supplemental material comprises a mixture of 1,3-dibromo-5,5-dimethylhydantoin and an inorganic reactive compound therefor which, in the presence of water, will readily combine with said hydantoin to release bromine therefrom, with such inorganic compound being present in excess of that required to release all of the bromine content of said hydantoin, utilizing $NaHSO_4$ as said reactive compound, if said test discloses the pH of the water of be treated to be above 7.4, the proportions of the materials, by weight, being as follows:

Dibromodimethylhydantoin	1.00
$NaHSO_4$	29.00

introducing in the water to be treated a sufficient amount of such supplemental material, per unit volume of water, that the excess therein of said reactive compound will bring the pH of the water treated therewith down to approximately 7.4 to 7.2, said amounts of hydantoin and reactive compound being so proportioned with espect to the amount of excess reactive compound that upon said addition of such material to the water to be treated, to effect the specified pH change, the amount of hydantoin will be sufficient to provide a desired amount of available bromine per unit volume of water, not greater than a predetermined maximum value suitable for sanitizing purposes in accordance with established sanitizing techniques, and thereafter, if necessary, adding available chlorine to such water in quantities sufficient to provide a predetermined residual amount of available halogen in such water.

thereby producing a substantially neutral and transparent liquid.

4,119,537

METHOD FOR SLIME CONTROL

Hershel Finkelstein, 413 Beach 121 St., Rockaway Park, N.Y. 11694

Filed Apr. 29, 1977, Ser. No. 792,464
Int. Cl.[2] C02B *3/06*
U.S. Cl. 210—64 **11 Claims**

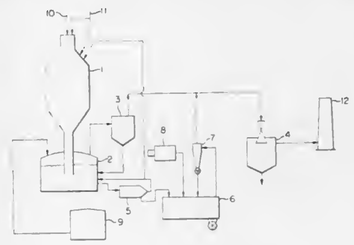
1. A method for slime control in water systems wherein is added to said water system a chemical formulation comprising chemical lime, pitch dispersing agent, sodium hydrosulfite, antifoaming agent, and a water soluble organic surfactant, wherein the formulation is added to said water system in an amount from 1. to 5,000. parts per million by weight of said chemical formulation, wherein the formulation contains 20 to 80 percent chemical lime, 0.1 to 15. percent water soluble organic surfactant, 5. to 35. percent pitch dispersing agent, 5. to 40. percent sodium hydrosulfite, 1. to 15. percent antifoaming agent.

4,119,538

TREATMENT OF WASTE LIQUID AND APPARATUS THEREFOR AND A FERTILIZER COMPOSITION OBTAINED THEREBY

Tadashi Yamauchi, Kawasaki; Mikio Akune, Yokosuka, and Susumo Kouchi, Tokyo, all of Japan, assignors to Nittetu Chemical Engineering Ltd., Tokyo, Japan

Filed Dec. 14, 1976, Ser. No. 750,375
Claims priority, application Japan, Dec. 15, 1975, 50/148514
Int. Cl.[2] C02C *5/06*
U.S. Cl. 210—67 **19 Claims**



1. A process for treating a fermentation waste liquid which contains organic and inorganic material comprising

(a) combusting a concentrate of said liquid in a combustion zone, whereby combustion products comprising ashes and combustion gas are formed;

(b) bringing said combustion products into direct contact with a fresh portion of said liquid in a contacting zone to concentrate said fresh portion of said liquid and to form a slurry comprising said ashes dispersed in the concentrated liquid in the contacting zone;

(c) recovering at least a portion of said slurry from the contacting zone;

(d) separating said recovered slurry into a concentrated liquid phase and a sedimentation phase;

(e) recovering a solid product from the sedimentation phase; and

(f) introducing at least a portion of said concentrated liquid phase into the combustion zone as said concentrate.

4,119,536

METHOD OF DISPOSING OF A FERROUS-ION CONTAINING ACIDIC AQUEOUS WASTE BY FORMING POLYCRYSTALLINE IRON COMPOUND PARTICLES

Keizo Iwase, Shiga; Toshio Takada, and Masao Kiyama, both of Kyoto, all of Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1974, Ser. No. 503,598
Int. Cl.[2] C02C *5/04*
U.S. Cl. 210—50 **4 Claims**

1. In a method of disposing of an acidic aqueous waste liquid containing ferrous ions, wherein said acidic liquid is raised in pH value by adjustment with a base and subjected to oxidation by passing air therethrough to produce a precipitate of an iron compound, the improvement comprising the steps of:

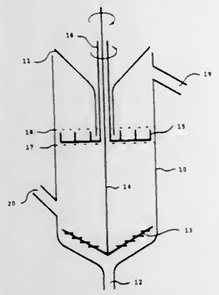
carrying out said oxidation at a temperature ranging from about 50° C to 75° C while adjusting and maintaining the pH of said aqueous waste liquid at the range of about 3.5 to 5.2 by flowing air containing ammonia gas through said liquid,

whereby to produce an iron compound precipitate in the form of easily filterable polycrystalline particles comprising agglomerates of fine particles, and then separating said precipitate from said aqueous waste liquid,

4,119,539
THREE PHASE SEPARATION

Victor Alexander Ettel, and Juraj Babjak, both of Mississauga, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Jun. 15, 1977, Ser. No. 806,753
Claims priority, application Canada, Nov. 15, 1976, 265643
Int. Cl.[2] B01D *21/14*
U.S. Cl. 210—73 R 7 Claims

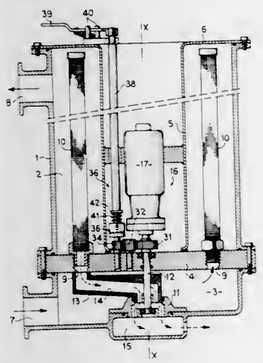


1. A process for separating a three-phase mixture of an aqueous liquid, an organic liquid less dense than the aqueous liquid and a solid denser than the aqueous liquid comprising introducing the mixture into a settler wherein the solid and the aqueous liquid settle below the organic liquid to define an organic/aqueous interface, withdrawing the organic liquid from above the interface, withdrawing the aqueous liquid and the solid from below the interface, and imparting a local agitation to the liquids at the interface level during the separation process.

4,119,540
COUNTER-CURRENT AUTOMATIC CLEANING FILTER

Jean-Claude Muller, Neuilly-sur-Seine, France, assignor to Rellumit-Inter, Courbevoie, France

Filed Dec. 9, 1977, Ser. No. 859,182
Claims priority, application France, Dec. 22, 1976, 76 38662
Int. Cl.[2] B01D *29/38*
U.S. Cl. 210—142 4 Claims

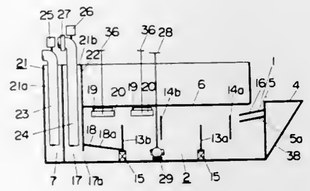


1. An automatic counter-current cleaning filter comprising a housing having an axis, means defining a filtering chamber in said housing, a number of hollow filtering elements having inlets and outlets and arranged on a circle centered on said axis in the filtering chamber, the filtering chamber having a liquid inlet and a liquid outlet with which liquid inlet and liquid outlet the interiors of the filtering elements communicate in parallel, an impurity discharging chamber in which prevails a pressure lower than the pressure of the filtered liquid, and a hollow arm defining a passageway and mounted to rotate about said axis and capable of successively connecting as it rotates about said axis all the inlets of said elements to the impurity discharging chamber by way of said passageway, a first unidirectional step-by-step drive mechanism having a driven member, a second unidirectional step-by-step drive mechanism having a driven member, and means connecting the arm to be driven by the driven member of the first drive mechanism and means connecting the arm to be driven by the driven member of the second drive mechanism in the same direction as it is driven by the drive member of the first step-by-step drive mechanism.

4,119,541
ARRANGEMENT FOR DISPOSING OF FLUID FLOATING MATTER

Shigetoshi Makaya, Osaka, Japan, assignor to M.O. (Mitsui-Osaka Maritime Construction Company Limited), Osaka, Japan

Filed May 3, 1976, Ser. No. 682,610
Int. Cl.[2] E02B *15/04*
U.S. Cl. 210—242 R 2 Claims



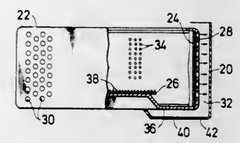
1. An arrangement for disposing of floating matter in a body of water comprising:
(a) a vessel which can float;
(b) a recovery-separation tank (**2**) in said vessel with a surface lower than that of the outside water;
(c) inlet means (**1**) at the front of the recoveryseparation recovery-separation for drawing in floating matter such as oil floating on the surface of the water outside, said inlet (**1**) leading to the recovery-separation tank (**2**);
(d) anti-emulsion plate means (**5**, **5***a*) extending from below the inlet means (**1**) downwardly into the recovery-separation tank, said anti-emulsion plate having many tiny holes so as to run through the water in the direction of thickness thereof and flow floating matter along the surface thereof.
(e) a water chamger (**17**) at the rear of the recovery-separation tank (**2**) for storing the water running the lower portion of the recovery-separation tank (**2**) through a water entrance opened at the lower part of the water chamber;
(f) floating matter reservoir (**7**) adjacent to the recovery-separation tank (**2**) for storing the floating matter overflowing therefrom;
(g) drain pump means which discharges the water out of the water chamber;
(h) suction pump means which removes the floating matter out of the floating matter reservoir;
(i) vertical plate travel path defining means for separating the floating matter and the water into layers, said vertical plate defining a quiescent region under the layer of floating matter, a lower elongated travel path and an upper shorter path so as to elongate the flow path of the water running in the lower portion of the recovery-separation tank to said drain pump and shortening the flow path of the floating matter to said floating matter reservoir maintaining a quiescent region therebetween, said travel path defining means including a plurality of vertical baffle

plates connected to the bottom of said recovery-separation tank but spaced above the bottom of said tank and so interrelated between said inlet means (**1**) at the one end of said tank and said storage water chamber (**17**) and the floating matter reservoir (**7**) for separated fractions at the other end of said tank as to cause a vertical zig-zag flow through said tank.

4,119,542
CENTRIFUGAL SEPARATOR

Mikio Yamaoka; Yukio Hayashida; Takashi Korekawa, and Toshiharu Nibu, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Continuation of Ser. No. 623,048, Oct. 16, 1975, abandoned. This application Dec. 7, 1977, Ser. No. 858,441
Claims priority, application Japan, Oct. 18, 1974, 49-120870; Apr. 11, 1975, 50-44601; Apr. 11, 1975, 50-49698
Int. Cl.[2] B01D *33/06*
U.S. Cl. 210—360 A 36 Claims



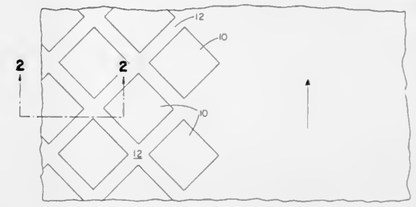
1. A centrifugal separator comprising, a driven hollow rotor having a cylindrical wall portion having a center axis and a smooth inner peripheral surface closed over at least the majority of its total area, means mounting the rotor for rotation about said center axis, and a porous, continuous-wall tubular elastic film initially elongated and having free longitudinal end portions and cylindrically positioned within said cylindrical wall portion of the rotor with said free longitudinal end portions overlapping each other, said film being free from and unfastened to said rotor and being constructed of a material of sufficient resiliency to enable said film to be urged to uniformly radially expand against the inner peripheral surface of said cylindrical wall portion by the elasticity thereof so that the film has a uniformly increased porosity and has its outer peripheral surface in contact substantially throughout the total area of the surface with the inner peripheral surface of said wall portion when the film is free from a force urging the film radially away from the inner peripheral surface of said wall portion, means and to uniformly radially contract to a uniformly decreased porosity and away from the inner peripheral surface of said cylindrical wall portion when the rotor is being driven to rotate about said center axis in the presence of liquid between said film and the inner peripheral of said cylindrical wall portion.

19. A juice extractor comprising, a driven centrifugal basket having a cylindrical wall portion having a center axis and a smooth inner peripheral surface closed over at least the majority of its total area, means mounting the centrifugal basket rotatable about said center axis, and a porous, continuous-wall tubular elastic film initially elongated and having free longitudinal end portions and cylindrically positioned within said cylindrical wall portion of the centrifugal basket with said free longitudinal end portions overlapping each other, said film being free from and unfastened to said basket and being constructed of a material of sufficient resiliency to enable said film to be urged to uniformly radially expand against the inner peripheral surface of said cylindrical wall portion by the elasticity thereof so that the film has a uniformly increased porosity and has its outer peripheral surface in contact substantially throughout the total area of the surface with the inner peripheral surface of said wall portion when the film is free from a force urging the film radially away from the inner peripheral surface of said wall portion, and to uniformly radially contract to a uniformly decreased porosity and away from the inner peripheral surface of said cylindrical wall portion when the centrifugal basket is driven to rotate about said center axis in the presence of liquid between said film and the inner peripheral surface of said cylindrical wall portion of the basket.

4,119,543
FILTER MEDIUM AND METHOD OF MAKING SAME

Grover C. Lawson, and James C. Wilson, both of Greenwich, N.Y., assignors to Hollingsworth & Vose Company, East Walpole, Mass.

Continuation-in-part of Ser. No. 691,420, Jun. 1, 1976, abandoned. This application Jul. 8, 1977, Ser. No. 813,953
Int. Cl.[2] B01D *27/02, 27/04, 39/14*
U.S. Cl. 210—496 14 Claims



1. A filter medium particularly adapted for use in an oil filter for an internal combustion engine, said medium comprising a water-laid web of fibers including at least 70% by weight of cellulose fibers, said web having a ream weight of 35 to 180 lb., said web being impregnated with resin in a pattern at its wire side to a depth from 15 to 45% of the total thickness of the web, the amount of said resin being from 9 to 15 % by weight of the web, said pattern having first zones free from said resin and other zones impregnated with said resin, at least one surface dimension of each of the first said zones being from 0.1 to 4 mm., the total area of the first said zones being from 35 to 60% of the total surface area of said wire side, and the air porosity of said impregnated web being from 1 to 200 CFM per sq.ft. at a pressure drop of 0.5 inch water on a Frazier Porosity Tester.

9. A filter medium particularly adapted for use in an oil filter for an internal combustion engine, said medium comprising a water-laid web of fibers including at least 70% by weight of cellulose fibers, said web having a ream weight of 35 to 180 lb., said web being impregnated with resin in a pattern at its wire side to a depth from 15 to 45% of the total thickness of the web, the amount of said resin being from 9 to 15% by weight of the web, said pattern having first zones free from said resin and other zones impregnated with said resin, the size and shape of each of the first said zones being such that the distance from any point on the surface of each zone to the nearest edge of the zone is from 0.05 to 2 mm., the total area of the first said zones being from 35 to 60% of the total surface area of the wire side, and the air porosity of said impregnated web being from 1 to 200 CFM per sq.ft. at a pressure drop of 0.5 in. water on a Frazier Porosity Tester.

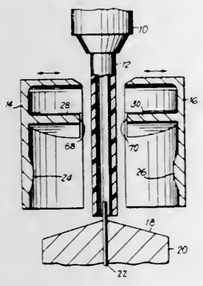
4,119,544
SETTLING CONTAINER

Ernst Vesely, Sussex, N.J., assignor to The Purdue Frederick Company, South Norwalk, N.Y.

Filed Apr. 26, 1977, Ser. No. 791,152
Int. Cl.[2] B01D *21/00*
U.S. Cl. 210—515 9 Claims

1. A device for receiving and clarifying a liquid having particles suspended therein, comprising a receptacle consisting of a one-piece plastic container having an open top, a closed bottom, and an endless side wall extending between said open top and bottom, said side wall defining with said closed bottom

of said container a hollow interior thereof adapted to receive a liquid having particles suspended therein, and said container having a central axis surrounded by said side wall, said side wall being parallel to said axis with said container having a constant cross section in any plane normal to said axis situated between said open top and closed bottom of said container, and partition means integral with said side wall and extending across the hollow interior of said container while being spaced at a substantial distance from said open top and closed bottom thereof to define in the hollow interior of said container upper and lower chambers separated from each other by said partition means, said partition means having in the hollow interior of said container a free edge spaced from an inner side surface of said side wall and defining therewith an opening through which said chambers communicate with each other, and said partition means having a peripheral portion integral with side wall and extending around said central axis through an angle substantially greater than 180° but somewhat less than 360° so that said opening defined by said free edge of said partition means and said inner surface of said side wall has in a plane normal to said axis an area of substantially less than one half the



area of the interior of said container which is surrounded by said side wall and situated in a plane normal to said axis, so that particles suspended in a liquid introduced into said container to an elevation substantially higher than said partition means will settle into said lower chamber to enable at least part of the liquid in said upper chamber to be poured out of the container in a condition substantially free of any suspended particles while, thereafter, the liquid in the lower chamber with the particles which have settled therein can also be poured out of the container, said partition means having an upper surface facing said open top of said container and a lower surface facing said closed bottom of said container, and said upper surface of said partition means being inclined with respect to said axis and having its lowest elevation situated at said free edge, said partition means including upper and lower walls both of which are integral with said side wall of said container, said upper and lower walls of said partition means intersecting at said free edge thereof and said upper and lower surfaces of said partition means respectively forming parts of said upper and lower walls thereof, said container having an exterior vertical wall extending between and formed integrally with said upper and lower walls of said partition means.

4,119,545

CONCENTRATED FABRIC SOFTENING COMPOSITION

Georges Jean Paul Chazard, Bezons, and Monique Seugnet, Colombes, both of France, assignors to Colgate Palmolive Company, New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 777,993
Int. Cl.² D06M *13/46*
U.S. Cl. 252—8.8 **8 Claims**

1. A concentrated fabric softening composition comprising from about 0.01 to about 5% by weight of an antigelling agent selected from the group consisting of alkali metal nitrates and alkali metal nitrites, from about 8 to about 20% by weight of a cationic fabric softening agent, and the remainder being substantially water.

4,119,546

PROCESS FOR PRODUCING XANTHOMONAS HYDROPHILIC COLLOID, PRODUCT RESULTING THEREFROM, AND USE THEREOF IN DISPLACEMENT OF OIL FROM PARTIALLY DEPLETED RESERVOIRS

William C. Wernau, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 711,843, Aug. 5, 1976, abandoned. This application May 3, 1977, Ser. No. 793,274
Int. Cl.² E21B *43/20*; C12B *1/00*; C12D *13/04*
U.S. Cl. 252—8.55 D **14 Claims**

1. A process for preparing a Xanthomonas colloid-containing fermentation broth suitable for the preparation of mobility control solutions used in oil recovery which comprises aerobically fermenting a Xanthomonas organism in an aqueous nutrient medium whose ingredients comprise a carbohydrate, a nitrogen source, about 0.1 to 10 grams per liter of an assimilable Krebs cycle acid, about 1 to 200 ppm chelated calcium, about 0.25 to 20 ppm iron and trace elements until at least about 100 ppm colloid is present in the broth, whereby the whole broth produced provides mobility control solutions of about 100 to 3000 ppm Xanthomonas colloid content which are substantially free of insoluble matter having a particle size greater than about 3 microns.

9. In the process for the recovery of crude oil from an oil-bearing subterranean formation wherein a hydrophilic colloid-containing mobility control solution is injected into said formation, the improvement which comprises injecting into said formation a mobility control solution containing a fermentation broth obtained by the process of claim **1**.

4,119,547

HIGH TEMPERATURE LUBRICANT COMPOSITION

Elliot S. Nachtman, Evanston, and Ronald G. Hitchcock, Chicago, both of Ill., assignors to Tower Oil & Technology Co., Chicago, Ill.

Filed Jul. 12, 1976, Ser. No. 704,296
Int. Cl.² C10M *1/10*
U.S. Cl. 252—25 **9 Claims**

1. A high temperature lubricating composition consisting essentially of (a) a high temperature liquid lubricant (b) a surfactant having an HLB number below 7 and which is soluble in the liquid lubricant, (c) a finely divided, solid, high temperature lubricant selected from the group consisting of graphite, molybdenum disulfide, mica, boron nitride and potassium iodide, (d) water, (e) a water soluble component selected from the group consisting of a low molecular weight alcohol, glycol, amine, and inorganic salt, elements (a), (b), and (c) being present in a continuous phase and elements (d) and (e) being present as a discontinuous phase dispersed in the continuous phase, with the continuous phase making up 55 to 90% by weight of the composition and the discontinuous phase making up the remainder and in which the surfactant is present in an amount within the range of up to 20% by weight of the continuous phase, the finely divided high temperature solid lubricant is present in an amount within the range of 10–30% by weight of the continuous phase and the water soluble component is present in an amount up to 25% by weight of the discontinuous phase.

4,119,548

REACTION PRODUCT OF NICKEL THIOBIS(ALKYLPHENOLATE) AND THIOBIS(ALKYLPHENOL) AND ORGANIC COMPOSITIONS CONTAINING THE SAME

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 28, 1977, Ser. No. 846,308
Int. Cl.² C10M *1/54, 3/48*; C07F *15/02, 15/04*
U.S. Cl. 252—42.7 **17 Claims**

1. An organosulfur-containing complex comprising a nickel (II) thiobis(alkylphenolate) with a thiobisphenol or a thiobis(alkylphenol) prepared by reacting from about 1.1 to about 2.5 moles of a thiobisphenol or a thiobis(alkylphenol) with 1 mole of a nickel thiobis(alkylphenolate) in a paraffinic solvent at temperatures of from about 40° to about 200° C.; all of said alkyl groups contain from 1 to about 30 carbon atoms.

8. A composition comprising a major proportion of an organic medium normally susceptible to oxidative degradation and a minor amount sufficient to impart antioxidant properties, ultraviolet stabilization and energy quenching characteristics thereto of a nickel (II) complex as described in claim **1**.

4,119,549

SULFURIZED COMPOSITIONS

Kirk Emerson Davis, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 666,546, Mar. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 560,675, Mar. 21, 1975, abandoned. This application Jul. 11, 1977, Ser. No. 814,573
Int. Cl.² C10M *1/38, 3/32*; C07G *17/00*; C09B *49/00*
U.S. Cl. 252—45 **43 Claims**

1. A method for the preparation of a sulfurized composition which comprises the steps of a reacting at about 50°–300° C., under superatmospheric pressure and in the presence of a catalyst, sulfur and hydrogen sulfide with at least one terminal aliphatic monoolefinic compound containing about 3–30 carbon atoms to form a sulfurized mixture; about 0.7–1.2 gram-atoms of sulfur and about 0.1–1.5 moles of hydrogen sulfide being used per mole of monoolefinic compound; and removing from said sulfurized mixture substantially all low boiling materials including unreacted monoolefin, mercaptan and monosulfide.

23. A sulfurized composition prepared by the method of claim **1**.

37. A lubricating composition comprising a major proportion of lubricating oil and a minor proportion, sufficient to improve extreme pressure, anti-wear or oxidation inhibiting properties, of a sulfurized composition according to claim **23**.

4,119,550

SULFURIZED COMPOSITIONS

Kirk Emerson Davis, Euclid, and Thomas Frederick Holden, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 666,545, Mar. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 560,676, Mar. 21, 1975, abandoned. This application Jul. 11, 1977, Ser. No. 814,583
Int. Cl.² C10M *1/38, 3/32*; C07G *17/00*; C09B *49/00*
U.S. Cl. 252—45 **37 Claims**

1. A method for the preparation of a sulfurized composition which comprises the steps of reacting at about 50°–300° C., under superatmospheric pressure, sulfur and hydrogen sulfide with at least one terminal aliphatic monoolefinic compound containing about 3–30 carbon atoms to form a sulfurized mixture; about 0.7–1.2 gram-atoms of sulfur and about 0.1–1.5 moles of hydrogen sulfide being used per mole of monoolefinic compound; and removing from said sulfurized mixture substantially all low boiling materials including unreacted monoolefin, mercaptan and monosulfide.

17. A sulfurized composition prepared by the method of claim **1**.

31. A lubricating composition comprising a major proportion of lubricating oil and a minor proportion, sufficient to improve extreme pressure, anti-wear or oxidation inhibiting properties, of a sulfurized composition according to claim **17**.

4,119,551

SYNTHETIC AIRCRAFT TURBINE LUBRICATING OIL COMPOSITIONS

Roberta Yaffe, Glenham, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Jun. 28, 1977, Ser. No. 810,715
Int. Cl.² C10M *1/24, 1/48*
U.S. Cl. 252—46.7 **9 Claims**

1. A synthetic lubricating oil composition for a gas turbine engine comprising a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of pentaerythritol and an organic monocarboxylic acid having from about 2 to 18 carbon atoms per molecule and containing:

(a) from about 0.3 to 5 percent by weight of the lubricating oil composition of an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from 4 to 12 carbon atoms and the alkaryl radical has from 7 to 12 carbon atoms,

(b) from about 0.3 to 5 percent by weight of a dialkyldiphenylamine in which the alkyl radicals have from 4 to 12 carbon atoms,

(c) from about 0.001 to 1 percent by weight of a polyhydroxy-substituted anthraquinone,

(d) from about 0.25 to 10 percent by weight of a hydrocarbyl phosphate ester in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms, and

(e) from about 0.05 to about 0.1 percent by weight of bis(-dialkylthiocarbamyl) sulfide containing from 1 to 6 carbon atoms in each alkyl group, linear or branched.

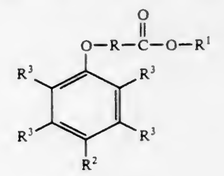
4,119,552

LUBRICANT ADDITIVE

Bryan Terence Davis, and Monty Frederick Crook, both of Wokingham, England, assignors to Edwin Cooper and Company Limited, Bracknell, England

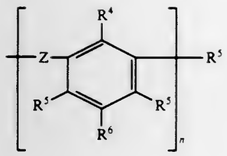
Filed Feb. 22, 1977, Ser. No. 770,579
Claims priority, application United Kingdom, Feb. 25, 1976, 7478/76
Int. Cl.² C10M *1/54*
U.S. Cl. 252—49.6 **22 Claims**

1. A boronated product useful as a lubricating oil dispersant made by reacting an initial compound having the formula:



wherein:

(a) each R^3 is the same or different and is a hydrogen atom, an alkyl group containing from 1 to about 16 carbon atoms, a halogen atom, or one R^3 group in the ortho position relative to the oxygen atom is a group of the formula:



in which

(i) n is an integer from 1 to 6,

(ii) each Z is the same or different and is a methylene group or a sulfur chain of formula $(S)_m$ wherein m is from 1 to 4,

(iii) each R^4 is the same or different and is a hydrogen atom, an alkyl group containing from 1 to 16 carbon atoms, a halogen atom, a hydroxyl group or a group of formula



(iv) each R^5 is the same or different and is a hydrogen atom, an alkyl group containing from 1 to 16 carbon atoms, a halogen atom, or a hydroxyl group, provided that one of, but not more than one of, R^4 and R^5 is a hydroxyl group,

(v) each R^6 is the same or different and is a hydrogen atom, an alkyl group containing 1 to 29 carbon atoms, a halogen atom or is as R^2, provided that one group R^3 in the ortho position relative to the oxygen atom attached to the aromatic nucleus is a hydrogen, a halogen, or a methyl or ethyl group,

(b) each R is the same or different and is a straight or branched chain alkylene group containing from 1 to 20 carbon atoms,

(c) each R^1 is the same or different and is a hydrogen atom or the ester residue of an alkanol containing from 1 to 5 carbon atoms, and

(d) each R^2 is the same or different and is an alkyl group containing at least 30 carbon atoms;

with about 0.5 to 10 equivalents per mole of said initial compound of an amine containing a reactive hydrogen atom bonded to nitrogen to form an amide and reacting said amide with a boron compound capable of introducing boron into the molecule, said boron compound being selected from the group consisting of boron acids, salts of boron acids, esters of boron acids, boron oxides, boron halides and boron salts of oxygen acids, to obtain a boronated product containing at least 0.01 atoms of boron per nitrogen atom.

4,119,553

PROCESS FOR THE PRODUCTION OF ESTERS IN THE PRESENCE OF A PYRIDINE BASE

Charles Cane, and Bertram Yeomans, both of Hull, England, assignors to BP Chemicals Limited, London, England

Filed Aug. 11, 1977, Ser. No. 823,933

Claims priority, application United Kingdom, Aug. 18, 1976, 34391/76

Int. Cl.² C07C *67/08*; C10M *1/26*; C08L *31/06*

U.S. Cl. 560—198 **18 Claims**

1. A process for the production of polyisobutenyl succinic acid or anhydride (PIBSA) esters of polyhydric alcohols containing from 3 to 20 carbon atoms and at least 3 hydroxyl groups which comprises reacting PIBSA with at least a stoichiometric amount of a polyhydric alcohol containing from 3 to 20 carbon atoms and at least 3 hydroxyl groups at a temperature in the range of from about 190° to 250° C. in the presence of a pyridine base selected from the group consisting of collidine, 2-methyl-5-ethyl pyridine, and quinoline so that the ester reaction product obtained has an hydroxyl group to ester group ratio in the range of from about 6 to 8.2.

4,119,554

CERAMIC DIELECTRIC COMPOSITION CONTAINING ALKALI METAL OXIDE

Shinobu Fujiwara, Akita, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 683,955, May 6, 1976, abandoned, which is a continuation of Ser. No. 481,141, Jun. 20, 1974, abandoned. This application Aug. 10, 1977, Ser. No. 823,261

Int. Cl.² H01B *3/12*

U.S. Cl. 252—63.2 **7 Claims**

1. A ceramic dielectric composition containing as a first component 35 to 93.5% by weight of strontium titanate, 4 to 40% by weight of bismuth trioxide and at least 2.5 but less than 60% by weight of titanium dioxide based on the first component, wherein said composition further contains as a second component at least one alkali metal oxide selected from the group consisting of the oxides of lithium, sodium, potassium, rubidium and cesium, in an amount from 0.1 to 5.0% by weight based on the total amount of said first component.

4,119,555

DIELECTRIC COMPOSITIONS COMPRISING POLYCHLOROBENZENE-ALKYL TERPHENYL MIXTURES

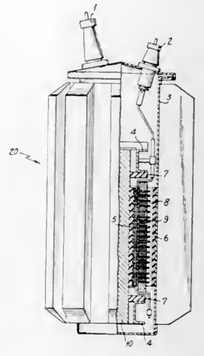
Pierre Jay, Saint-Didier Au Mont D'Or, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jun. 8, 1977, Ser. No. 804,738

Claims priority, application France, Jun. 8, 1976, 76 18172; Sep. 30, 1976, 76 29982

Int. Cl.² C10M *3/24*; H01B *3/24, 3/22*

U.S. Cl. 252—66 **18 Claims**



1. A liquid, non-flammable dielectric composition, comprising (1) a polychlorobenzene selected from the group consisting of a trichlorobenzene, a tetrachlorobenzene, and mixtures thereof, and (2) a mono- or polyalkylterphenyl, and mixtures thereof, wherein each alkyl substituent contains from 1 to 5 carbon atoms.

4,119,556

THERMAL ENERGY STORAGE MATERIAL COMPRISING MIXTURES OF SODIUM, POTASSIUM AND MAGNESIUM CHLORIDES

Talbot A. Chubb, 5023 N. 38th St., Arlington, Va. 22207

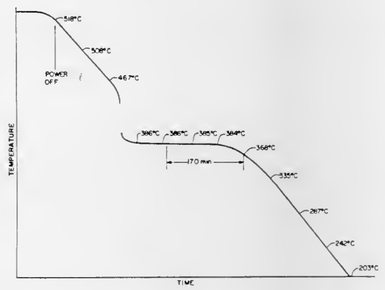
Filed Jun. 1, 1977, Ser. No. 802,395

Int. Cl.² C09K *5/06*

U.S. Cl. 252—70 **4 Claims**

1. A thermal energy-storage material which comprises a ternary salt mixture of sodium chloride, potassium chloride,

and magnesium chloride in a $NaCl:KCl:MgCl_2$ weight ratio range of 22.5 to 26.5:18:5 to 22.5:53.0 to 57.0 and an additive salt selected from the class consisting of calcium, barium, strontium chloride, sodium, potassium, and magnesium bro-



mide, sodium, potassium, and magnesium fluoride and mixtures thereof in an amount sufficient to reduce the melting point of said thermal energy-storage material below that of said ternary salt mixture and not to exceed 10 weight percent of the total composition.

4,119,557

BLEACHING COMPOSITIONS AND PROCESS FOR CLEANING FABRICS

Dennis Postlethwaite, Birkenhead, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 15, 1976, Ser. No. 750,787

Claims priority, application United Kingdom, Dec. 18, 1975, 51859/75

Int. Cl.² C11D *3/33, 3/395*; D06L *3/02*

U.S. Cl. 252—99 **6 Claims**

1. A bleaching and detergent composition for cleaning fabrics comprising from 5% to 50% by weight of an organic surface-active agent selected from the group consisting of anionic, nonanionic, zwitterionic and cationic detergents, and mixtures thereof; from 5% to 80% by weight of builder salts; from 5% to 35% by weight of a persalt selected from the group consisting of alkali metal perborates, alkali metal percarbonates and mixtures thereof; and from 0.05% to 1.0% by weight of a preformed ferric ion chelate complex, said complex being a complex of ferric ion with ethylene diamine tetraacetic acid, nitrilotriacetic acid, diethylene triamine pentaacetic acid, or hydroxyethyl ethylene diamine triacetic acid.

4,119,558

LIQUID CRYSTAL MATERIALS

David Coates, Bishops Stortford, and George William Gray, Cottingham, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

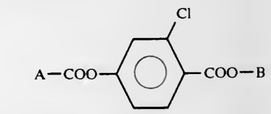
Filed Aug. 4, 1977, Ser. No. 821,919

Claims priority, application United Kingdom, Aug. 13, 1976, 33861/76

Int. Cl.² C09K *3/34*; G02F *1/13*; C07C *69/76, 69/78*

U.S. Cl. 252—299 **21 Claims**

1. A liquid crystal material which is an aromatic diester having the formula.



in which A is a 4-alkylphenyl group and B is a 2-(6-alkyl)naphthyl group or A is a 2-(6-alkyl)naphthyl group and B is a 4-alkylphenyl group wherein the alkyl groups may be the same or different.

4,119,559

UO_2F_2 INCLUSION COMPOUNDS

Edward T. Maas, Jr., Kendall Park, and John M. Longo, New Providence, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

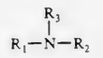
Filed Dec. 21, 1976, Ser. No. 752,734

Int. Cl.² C01G *43/00*

U.S. Cl. 252—301.1 R **24 Claims**

1. A composition of matter comprising an inclusion compound formed by reacting UO_2F_2 and an organic Lewis base, the molar ratio of Lewis base to UO_2F_2 in said composition varying in the range from 0.5 to 3.0, said Lewis base selected from the group consisting of

amines of generalized formula



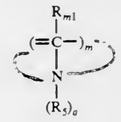
where at least one of radicals R_1, R_2 and R_3 is an aliphatic or an aromatic carbon network with carbon numbers of 1 to 6 with the remaining radicals, if any, being H,

aliphatic heterocyclic amines of generalized formula



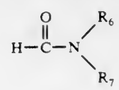
where R_4 is H or an aliphatic radical of cabon number of 1 to 4 and n can assume values of 4 to 6 inclusive and R_{n1} and R_{n2} are each individually H or methyl, each of R_{n1} and R_{n2} being the same or different,

aromatic heterocyclic amines of generalized formula



where m is an integer of 4 to 6 inclusive and $a = 1$ when $m = 4$ or 6 and $a = 0$ when $m = 5$, and R_5 is H or aliphatic radical of carbon number 1 to 4 and R_{m1} is H or methyl,

aliphatic amides of formic acid of generalized formula



where R_6 and R_7 are each individually H or an aliphatic radical of carbon number 1 to 3, each of R_6 and R_7 being the same or different,

alcohols of generalized formula

$$R_8 - O - H$$

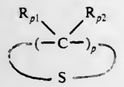
where R_8 is an aliphatic radical of carbon number 1 to 4,

sulfides of generalized formula

$$R_9 - S - R_{10}$$

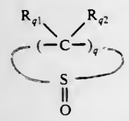
where R_9 and R_{10} are the same or different aliphatic radicals having a carbon number of 1 to 3,

aliphatic heterocyclic sulfides of generalized formula



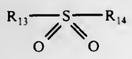
where p is an integer between 4 and 6 inclusive and R_{p1} and R_{p2} are each individually H or methyl, each of R_{p1} and R_{p2} being the same or different,

aliphatic heterocyclic sulfoxides of generalized formula



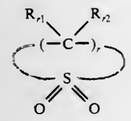
where q is an integer of 4 to 6 inclusive and R_{q1} and R_{q2} are each individually H or methyl, each of R_{q1} and R_{q2} being the same or different,

sulfones of generalized formula



where R_{13} and R_{14} are aliphatic radicals of carbon number 1 to 3,

aliphatic heterocyclic sulfones of generalized formula



where r is an integer of 4 to 6 inclusive and R_{r1} and R_{r2} are each individually H or methyl, each of R_{r1} and R_{r2} being the same or different, and mixtures thereof.

4,119,560

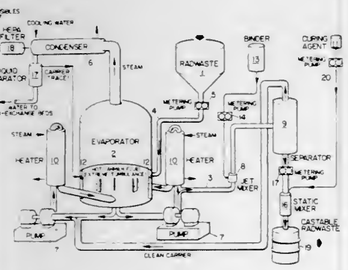
METHOD OF TREATING RADIOACTIVE WASTE

Randall D. Sheeline, San Jose, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 28, 1977, Ser. No. 781,893

Int. Cl.² C09K *3/00, 11/04*

U.S. Cl. 252—301.1 W **12 Claims**



1. A process for reducing the volume of aqueous radwaste solutions of solid radioactive materials which process comprises:

a. continuously circulating an inert carrier liquid between an evaporator station and a separator station;

b. introducing said radwaste solution into said inert carrier at said evaporator station under highly turbulent conditions and at a temperature sufficiently above that of the boiling point of said radwaste solution to cause said radwaste solution to flash vaporize under nonexplosive conditions leaving said radioactive material in a dry particulate form dispersed within said inert carrier;

c. introducing a binder material into said inert carrier and dried radioactive material at a mixer station between the evaporator station and the separator station, said binder material being:

a. liquid at the temperature of said inert carrier and capable of solidifying upon removal therefrom,

b. insoluble in said inert carrier, and

c. capable of preferentially wetting said dried particulate solid material;

whereby said binder will coat said radioactive material in said carrier; and

d. separating said coated particulate material from said carrier at said separator station.

4,119,561

METHOD FOR AVOIDING MALFUNCTIONS IN THE SOLIDIFICATION OF AQUEOUS, RADIOACTIVE WASTES IN A GLASS, GLASS CERAMIC OR GLASS CERAMIC-LIKE MATRIX

Stefan Drobnik; Herbert Koschorke, both of Stutensee; Friedrich Kaufmann, and Jaroslav Saidl, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to Gesellschaft für Kernforschung m.b.H., Karlsruhe, Fed. Rep. of Germany

Filed Mar. 17, 1977, Ser. No. 778,711

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2611954

Int. Cl.² G21F *9/14*

U.S. Cl. 252—301.1 W **4 Claims**

1. Method for preventing malfunctions in the solidification of radioactive wastes contained in an aqueous waste solution in a glass, glass ceramic or glass ceramic-like matrix, wherein the waste solution is spray-dried and calcinated, comprising adding to the aqueous waste solution, before the spray drying, diatomaceous earth in solid form in quantities of from 45g/l to 70g/l and in grain sizes of which more than 85 percent by weight of the grain size distribution are grain sizes from 6 to 75μ.

4,119,562

FLUORESCENT COMPOSITIONS

Akiyasu Kagami, Ninomiyamachi; Takashi Hase, Fujisawa; Yoshiyuki Mimura, Kamakura; Kinichiro Narita, and Minoru Hiraki, both of Chigasaki, all of Japan, assignors to Dai Nippon Toryo Co. Ltd., Osaka, Japan

Division of Ser. No. 684,674, May 10, 1976, abandoned. This application Jan. 19, 1977, Ser. No. 760,720

Claims priority, application Japan, May 12, 1975, 50-56870; May 13, 1975, 50-57104; May 22, 1975, 50-61281; Jun. 10, 1975, 50-69861; Jun. 10, 1975, 50-69862; Jun. 10, 1975, 50-69863; Aug. 28, 1975, 50-104257; Aug. 29, 1975, 50-104643

Int. Cl.² C09K *11/46*

U.S. Cl. 252—301.6 S **2 Claims**

1. A fluorescent composition comprising a mechanical mixture of zinc oxide and a eruopium activated yttrium oxysulfide phosphor (Y_2O_2S:Eu), said zinc oxide and said phosphor being present in a weight ratio from 1:9 to 9:1, the amount of europium contained in said phosphor being from 10^{-2} to 1.5×10^{-1} gram per one gram of yttrium oxysulfide.

4,119,563

PROCESS FOR THE PRODUCTION OF FUEL AND FERTILE PARTICLES

Martin Kadner, Maintal; Karl-Gerhard Hackstein, and Gerhard Spener, both of Hanau, Germany, assignors to Hobeg Hochtemperaturreaktor-Brennelement GmbH, Hanau, Germany

Filed Jan. 14, 1977, Ser. No. 759,550

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601684

Int. Cl.² G21C *21/16*

U.S. Cl. 252—301.1 S **31 Claims**

1. In a process for the production of solid spherical particles of a member of the group consisting of fuel oxides, fertile oxides, fuel carbides, fertile carbides and mixtures of such oxides and carbides consisting essentially of forcing an aqueous solution of a member of the group consisting of water soluble uranium salts, water soluble thorium salts, water soluble plutonium salts and mixtures of such salts, and in the case of the production of carbide particles also containing finely dispersed carbon therein, from a vibrating nozzle, passing the drops formed thereby through an ammonia containing gas zone and thereafter into an ammonia solution precipitation bath, the improvement consisting essentially of increasing the throughput of drops, employing in the solution passed through said nozzle at least one monomer of the group consisting of (1) water soluble and water miscible monomeric hydrocarbons substituted with at least one member of the group consisting of aldehyde, keto, ether, amino, imino, phenolic hydroxyl, carboxylic acid and carboxylamide group and (2) water soluble and water miscible monomeric heterocyclic compounds substituted with at least one member of the group consisting of carbonyl, imino and nitrile groups, said substituted hydrocarbon or substituted heterocyclic compound forming a stable adduct with uranium, thorium or plutonium in alkaline aqueous solution, said adduct being characterized by not being able to be washed out with water and by not imparting to the solution a viscosity above 15 cp at 20° C., whereby in the case a mixture of more than one monomer is applied there is used such a mixture only in which the monomers do not react with each other forming a resin or polymer at the temperature occurring in the solution and in the falling drops which is between 5° and 40° centrigrade, the mole ratio of the monomer to the total of uranium, thorium and plutonium in the solution being from 0.077 to 3:1, said monomer hardening the drops in the ammonia gas.

4,119,564

OIL-IN-WATER EMULSION AND PROCESS FOR THE PREPARATION THEREOF

Antonius Franciscus Van Dam, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 19, 1977, Ser. No. 788,721

Claims priority, application United Kingdom, Apr. 29, 1976, 17487/76

Int. Cl.² B01J *13/00*

U.S. Cl. 252—312 **24 Claims**

1. An oil-in-water emulsion which contains 0.05 to 5 percent by weight, based upon the quantity of oil, of a phospholipase A-treated phospholipoprotein having a degree of conversion of at least 55 percent, wherein:

(a) said treatment consists of treating said phospholipoprotein with a material consisting of phospholipase A enzyme, and

(b) said degree of conversion is the measure of the percentage of hydrolyzed phophatidyl choline plus hydrolyzed phosphatidyl ethanolamine based on the total amount of phosphatidyl choline plus phosphatidyl ethanolamine present before conversion,

and at least one thickening agent in a proportion which is less than one required for obtaining an emulsion of the same composition and viscosity but containing phospholipoprotein of a lower degree of conversion wherein said thickening agent is selected from the group consisting of hot or cold water soluble starch, carboxymethyl cellulose and gums.

12. A process for the preparation of an oil-in-water emulsion which comprises:

(a) treating a phospholipoprotein with a material consisting of phospholipase A to achieve a degree of conversion of at least 55%, wherein said degree of conversion is the measure of the percentage of hydrolyzed phosphatidyl choline plus hydrolyzed phosphatidyl ethanolamine based on the total amount of phosphatidyl choline plus phosphatidyl ethanolamine present before conversion,

(b) incorporating said phospholipase A-treated phospholipoprotein in said oil-in-water emulsion, and

(c) incorporating in said emulsion at least one thickening agent in a proportion which is less than the one required for obtaining an emulsion of the same composition and viscosity but containing phospholipoprotein of a lower degree of conversion, wherein said thickening agent is selected from the group consisting of hot or cold water soluble starch, carboxymethyl cellulose, and gums.

4,119,565

PRODUCTION OF MICROCAPSULES, AND THE RESULTING MICROCAPSULES

Günther Baatz, Cologne; Manfred Dahm, Leverkusen, and Walter Schäfer, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Apr. 27, 1977, Ser. No. 791,545

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619524

Int. Cl.² B01J *13/02*

U.S. Cl. 252—316 **5 Claims**

1. A method for the production of microcapsules comprising dissolving a film-forming polycarbodiimide with terminal isocyanate groups in a miscible core material or in an inert solvent with dissolved core material, introducing the resulting organic phase into an immiscible aqueous phase which contains a water-soluble catalyst for isocyanate reactions which causes self-condensation of the dissolved film-forming polycarbodiimide, whereby under the influence of intensive mixing microcapsules are formed at the phase interface.

4,119,566

PRODUCTION OF NITROGEN-RICH GAS MIXTURES

William B. Crouch, Whittier; Carolina P. Fabiero nee Posadas, Roland Heights, and Allen M. Robin, Anaheim, all of Calif., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 617,601, Sep. 29, 1975, Pat. No. 4,057,510. This application May 27, 1977, Ser. No. 801,138

Int. Cl.² C01B *2/14, 2/00*

U.S. Cl. 252—372 **4 Claims**

1. In the partial oxidation of a hydrocarbonaceous feedstock selected from the group consisting of hydrocarbonaceous fuel, liquid oxygenated hydrocarbonaceous material, and mixtures thereof with air and optionally in the presence of a supplemental temperature moderator in the reaction zone of a free-flow, noncatalytic, unpacked, refractory lined gas generator at a pressure in the range of about 1 to 250 atmospheres and a temperature in the range of about 1300° to 3000° F to produce an effluent gas mixture comprising H_2, CO, H_2O, CO_2, H_2S, COS, N_2 and A, the improvement comprising: reacting said hydrocarbonaceous feedstock containing no metals nor noncombustible materials with air and supplemental H_2O in the range of nil to 1.0 pounds of H_2O per pound of fuel, and wherein the O/C atomic ratio is in the range of 2 to 3.8 when said hydrocarbonaceous feedstock is a gaseous hydrocarbonaceous fuel, and in the range of about 2 to 2.8 when said hydrocarbonaceous feedstock is a liquid hydrocarbonaceous fuel or liquid oxygenated hydrocarbonaceous material; producing an effluent gas mixture comprising N_2, A and CO_2, and containing at least one gas from the group H_2, CO, H_2O, COS and H_2S, and being free from particulate carbon, free-oxygen and nitro-

gen oxides; removing at least one gas from the group CO_2, H_2O, COS, H_2S, H_2, and CO in a gas drying and purification zone to produce a nitrogen-rich gas mixture; and introducing said nitrogen-rich gas mixture into a vessel as a blanketing or pressurizing gas.

4,119,567

VINYL ACETATE CATALYST

Raymond C. Bartsch, Wyoming, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 641,799, Dec. 18, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,491

Int. Cl.[2] B01J *21/04, 23/44, 23/52, 31/04*

U.S. Cl. 252—430 **6 Claims**

1. A supported catalyst composition for the preparation of unsaturated organic esters from a olefinic compound, oxygen and a lower carboxylic acid in the vapor phase, the catalyst containing from about 0.5 to 2.0% by weight palladium metal, and wherein the catalyst is supported on alumina having a crystalline alpha-alumina content of greater than about 96%, a theta-alumina content of less than about 3%, a total calcium and magnesium content of less than about 750 ppm, a surface area of from about 2 to 6 m^2/g, an average crush strength of from 20 to 45 lbs, a bulk density of less than about 1.35 g/cc, and an acetic acid loading of less than about 1.5 in 200 hours.

4,119,568

SOLID SUPPORTED CATALYSTS FOR CATALYTIC REDUCTION OF NITROGEN OXIDES IN WASTE GASES

Fusao Nishida, Tokyo; Hiroo Matsuoka, Ebina; Tomiaki Yamada, Yokohama, and Goro Sato, Kitakyushu, all of Japan, assignors to Japan Gasoline Company, Ltd., Tokyo, Japan

Filed Dec. 24, 1975, Ser. No. 644,462

Claims priority, application Japan, Dec. 28, 1974, 50-2092

Int. Cl.[2] B01J *27/02, 27/18*

U.S. Cl. 252—437 **14 Claims**

1. In a method for the preparation of a catalyst for the reduction of nitrogen oxides in waste gases utilizing ammonium as the reducing agent;

said catalyst comprising an alumina or silica-alumina type carrier supporting a compound or mixture of compounds selected from the group consisting of oxides, sulfates and phosphates of a first transition metal of the Periodic Table;

which method comprises supporting at least one salt of a first transition metal of the periodic table on said carrier, drying at 100° C to 150° C and threafter calcining at 300° C to 600° C to form said compound or mixture of compounds;

the improvement which comprises preparing the carrier by adding powdered alumina or powdered silica-alumina to an aqueous solution containing a reagent selected from the group consisting of aluminum sulfate, sulfuric acid, ammonium sulfate, and ammonium sulfite and thereafter kneading, molding and drying the mixture at 100° C to 150° C followed by calcination at 300° C to 600° C;

thereby to produce a carrier containing from 0.03 to 20% by weight sulfur, based on the weight of the carrier when calculated as a sulfate or sulfite radical, and having a specific surface area of at least 50 m^2/g and a pore volume of from 0.5 to 1.5 cc/g.

4,119,569

OLEFIN POLYMERIZATION CATALYST

Richard E. Dietz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 363,482, May 24, 1973, abandoned, which is a division of Ser. No. 89,047, Nov. 12, 1970, abandoned. This application May 2, 1977, Ser. No. 792,732

The portion of the term of this patent subsequent to Jun. 3, 1992, has been disclaimed.

Int. Cl.[2] B01J *37/02, 29/00;* **C08F** *4/00*

U.S. Cl. 252—452 **11 Claims**

1. A catalyst prepared by

a. adding a titanium compound to a mineral acid;

b. introducing an alkali metal silicate into the acid containing said titanium compound to form a hydrogel;

c. aging the hydrogel for a time of greater than one hour;

d. washing the thus aged hydrogel to produce a substantially alkali metal-free hydrogel;

e. forming a mixture comprising the thus washed hydrogel and a normally liquid oxygen-containing, water soluble organic compound;

f. separating said organic compound and water from said mixture to form a xerogel; and,

g. heating said xerogel also containing chromium at a temperature of 900° to 1800° F.

5. A catalyst according to claim 1 in which said acid contains a chromium-containing compound convertible to chromium oxide.

4,119,570

SOLID SOLUTION CATALYST CONTAINING IRON CATIONS FOR THE OXYCHLORINATION OF AN ALKANE

William Joseph Kroenke, Brecksville, and Paul Peter Nicholas, Broadview Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 564,794, Apr. 3, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,910

Int. Cl.[2] B01J *21/04, 23/10, 23/74*

U.S. Cl. 252—466 J **4 Claims**

1. A solid solution catalyst consisting essentially of iron cations substituted for aluminum cations in a host lattice selected from the group consisting of α—Al_2O_3, β—Al_2O_3, $BaAl_{12}O_{19}$ and $Ba_{0.50}Ce_{0.17}Ag_{0.33}Al_{12}O_{19}$, said catalyst prepared by employing a calcinating step at temperatures above about 1100° C. and having an iron content of from about 0.5 percent to 70 percent by weight, expressed as the oxide, and having an X-ray diffraction pattern having peak positions different than that of the host lattice.

4,119,571

PELLET TYPE OXIDATION CATALYST

Louis Hegedus, Grosse Pointe Woods, and Jack C. Summers, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 658,031, Feb. 13, 1976, Pat. No. 4,051,073. This application Jul. 15, 1977, Ser. No. 815,791

The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.

Int. Cl.[2] B01J *21/04, 23/42, 23/44*

U.S. Cl. 252—466 PT **7 Claims**

1. A noble metal pellet-type oxidation catalyst comprising a porous alumina support member having a surface area of at least 100 m^2/g. up to about 250 m^2/g., a pore structure characterized by a macropore volume of at least 0.020 cm^3/g. up to the value at which the catalyst is not able to sustain the load and vibration forces in the converter and a macropore radius greater than about 10,000 A°, and a catalyst material selected from the group consisting of platinum and platinum/palladium deposited on said support to a depth of at least 90 microns up to about 250 microns, said pore structure serving to increase the diffusivity of the reactants into the interior of the catalyst, the surface area serving to compensate for the otherwise accelerated rate of poisoning caused by the increase in diffusivity, and the depth of deposit being such that the catalyst poisons do not break through the zone of deposit prior to the desired lifetime of the catalyst.

4,119,572

CARBON-GRAPHITE MATERIAL FOR BRUSHES OF ELECTRIC MACHINES AND METHOD FOR PREPARING SAME

Georgy Nikolaevich Fridman, Leninsky prospekt, 67, kv. 40; Jury Nikolaevich Vasiliev, ulitsa Vostrukhina, 6, korpus 3, kv. 67; Abram Samoilovich Fialkov, Kutuzovsky prospekt, 9, kv. 95; Vladimir Petrovich Sosedov, 1 Vladimirskaya ulitsa, 24, korpus 2, kv. 26; Alexandr Andreevich Tarasov, ulitsa Schepkina, 47, kv. 6; Yakov Gilievich Davidovich, Molodezhnaya ulitsa, 3, kv. 333; Nikolai Sergeevich Voronin, Gruzinsky val, 18/15, kv. 98; Alexei Gavrilovich Shirokov, Teply stan, 1 mikroraion A, korpus 15, kv. 92; Alexandr Iudovich Sokolovsky, ulitsa Salyam Adilya, 9, korpus 1, kv. 58, all of Moscow; Anatoly Alexandrovich Kozyrev, Sovetskaya ulitsa, 24, kv. 5, Elektrogorsk Moskovskoi oblasti; Roza Petrovna Berlizova, 1 Vladimirskaya ulitsa, 22, korpus 2, kv. 16; Evgeny Mikhailovich Kozlov, Armyansky pereulok, 9, kv. 59, both of Moscow; Anatoly Alexeevich Boiko, Komsomolskaya ulitsa, 7, kv. 38, Elektrougli Moskovskoi oblasti; Andrei Nikolaevich Gusev, Malakhitovaya ulitsa, 14, kv. 79, Moscow; Olga Borisovna Kazakova, ulitsa Sovetskaya 5, kv. 25, Elektrougli Moskovskoi oblasti; Valery Alexeevich Fugol, Savinskaya naberezhnaya, 19, kv. 64, Moscow; Nadezhda Vasilievna Kalinina, Ketcherskaya ulitsa, 8, korpus 1, kv. 42, Moscow; Valentina Mikhailovna Emelyanova, 13 Parkovaya ulitsa, 20, korpus 3, kv. 62, Moscow, all of U.S.S.R.; Abram Yakovlevich Gluskin, deceased, late of Moscow, U.S.S.R., and by Boris Abramovich Gluskin, administrator, Posledny pereulok, 8, kv. 4, Moscow, U.S.S.R.

Continuation of Ser. No. 628,562, Nov. 4, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,771

Int. Cl.[2] H01B *1/06;* **H01R** *39/26*

U.S. Cl. 252—506 **2 Claims**

1. A carbon-graphite material for brushes of electric machines impregnated with a mixture of manganese ultraphosphate and zinc ultraphosphate evenly distributed throughout the entire volume of the material in an amount of from 0.1 to 15% by weight and the ultraphosphates are sealed by a mixture of 80% by weight of cobalt linoleate containing up to 15% cobalt oxide and 20% by weight of glyptal resin with melamine in a ratio 5:1, the mixture being present in an amount of from 0.5 to 10% by weight, enhancing the contact characteristics of the carbon-graphite material.

4,119,573

GLAZE RESISTOR COMPOSITION AND METHOD OF MAKING THE SAME

Toru Ishida; Masumi Hattori, both of Hirakata; Shinichi Tanaka; Tomi Sato, both of Neyagawa, and Kenji Kuwahara, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 27, 1977, Ser. No. 846,496

Claims priority, application Japan, Nov. 10, 1976, 51/136088; Nov. 10, 1976, 51/136089

Int. Cl.[2] H01B *1/00;* **H01C** *7/02, 7/04*

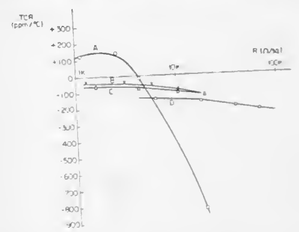
U.S. Cl. 252—519 **18 Claims**

1. A glaze resistor composition consisting essentially of 7 to 50 weight percent of a silicide component and 93 to 50 weight percent of a glass frit, said silicide component consisting essentially of magnesium silicide, molybdenum disilicide and tantalum disilicide, wherein the molar ratio of the sum of molybdenum disilicide and tantalum disilicide to magnesium silicide is from 30/70 to 90/10, and the molar ratio of molybdeum disilicide to tantalum disilicide is from 90/10 to 70/30.

4. A glaze resistor composition according to claim 1, wherein said silicide component further contains 1 to 50 molar percent of manganese disilicide.

6. A glaze resistor composition consisting essentially of 7 to 30 weight percent of a silicide component and a glass frit, said silicide component consisting essentially of magnesium silicide, molybdenum disilicide and tantalum disilicide, wherein the molar ratio of the sum of molybdenum disilicide and tantalum disilicide to magnesium silicide is from 30/70 to 90/10, the molar ratio of molybdenum disilicide to tantalum disilicide is from 90/10 to 70/30, and the weight ratio of said silicide component to aluminum oxide is from 30/58.5 to 70/10.

11. A method of making a glaze resistor, comprising the steps of: preparing a starting powder mixture of a silicide component, aluminum oxide and a first glass frit, the weight ratio of said silicide component to the sum of aluminum oxide and said first glass frit being from 30/70 to 70/30, the



ratio of aluminum oxide to said first glass frit being from 1/2 to 5/1, and said silicide component consisting essentially of magnesium silicide, molybdenum disilicide and tantalum disilicide, wherein the molar ratio of the sum of molybdenum disilicide and tantalum disilicide to magnesium silicide is from 30/70 to 90/10, and the molar ratio of molybdenum disilicide to tantalum disilicide is from 90/10 to 70/30; compressing said starting powder mixture into a compressed body; first heating said compressed body at a temperature between 700° C and 1300° C; grinding the thus heated body into granules; mixing said granules with a second glass frit in an amount such that said silicide component is in a range from 7 to 30 weight percent, and the sum of said aluminum oxide and first and second glass frits is in the range from 93 to 70 weight percent on the basis of the sum of said silicide component, aluminum oxide, and first and second glass frits; and second heating the thus prepared mixture at a temperature between 750° C and 1000° C.

4,119,574

4-HYDROXY-2,4,6,6-TETRAMETHYL CYCLOHEX-2-EN-1-ONE PERFUME COMPOSITIONS

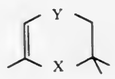
Kenneth K. Light, Long Branch; Bette M. Spencer, Ocean Grove; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Manfred Hugo Vock, Locust, N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 774,059, Mar. 3, 1977, Pat. No. 4,084,009. This application Nov. 15, 1977, Ser. No. 851,681

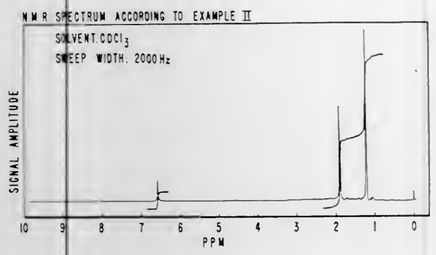
Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **3 Claims**

1. The process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes, which comprises adding thereto a small but effective amount of a cyclohexenone derivative having the structure:

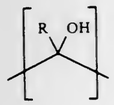


wherein one of X or Y is a keto group having the structure:





and the other of X or Y is a carbinol group having the structure:



and wherein R is C_1-C_5 alkyl.

4,119,575

POLYCYCLIC ALCOHOL PERFUME COMPOSITIONS

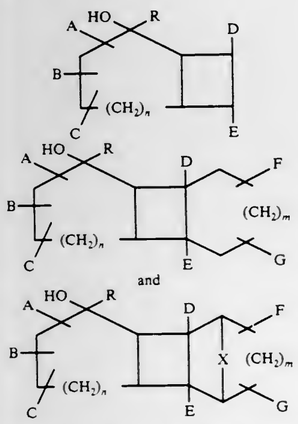
Jordan J. Bloomfield, and Dennis C. Owsley, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 645,182, Dec. 29, 1975, Pat. No. 4,044,057. This application Feb. 28, 1977, Ser. No. 772,608

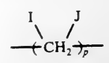
Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **24 Claims**

1. A fragrance composition having incorporated therein an odoriferous amount of a compound represented by the structural formulae:



wherein *n* is an integer 0 or 1; A, B and C each independently represent hydrogen or alkyl having from 1 to 3 carbon atoms, provided that when *n* is 0 at least one of A, B or C cannot be hydrogen; R represents hydrogen or an alkyl having from 1 to 6 carbon atoms; D and E each independently represent hydrogen or alkyl having from 1 to 6 carbon atoms, provided that the sum of the carbon atoms in D and E does not exceed 6, provided that, in the bicyclo compounds, at least one of A, B, C, D or E must be alkyl; *m* is an integer 1 through 8; F and G represent hydrogen or alkyl having from 1 to 3 carbon atoms; X represents



wherein *p* is an integer 0 through 2 and I and J each independently represent hydrogen or methyl, provided that if *p* is 0 then *m* must be greater than 2; provided that the sum of the carbon and oxygen atoms in the compound is no greater than 23, and at least one carrier commonly used in fragrance compositions.

4,119,576

PERFUME COMPOSITIONS AND COLOGNES CONTAINING 1-BUTANOYL-3,3-DIMETHYLCYCLOHEXANE

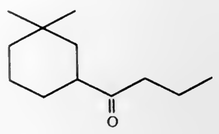
Mark A. Sprecker, Sea Bright; Manfred Hugo Vock, Locust; Frederick Louis Schmitt, Holmdel; John B. Hall, Rumson, and James Milton Sanders, Eatontown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 740,948, Nov. 11, 1976, Pat. No. 4,081,481, which is a continuation-in-part of Ser. No. 713,357, Aug. 11, 1976, Pat. No. 4,062,894. This application Nov. 15, 1977, Ser. No. 851,724

Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **3 Claims**

1. A process for augmenting or enhancing the organoleptic properties of a consumable material selected from the group consisting of perfume compositions and colognes which comprises adding thereto a small but effective perfuming quantity of 1-butanoyl-3,3-dimethylcyclohexane represented by the structure:



4,119,577

SUBSTITUTED-NORBORNANE PERFUMES COMPOSITIONS

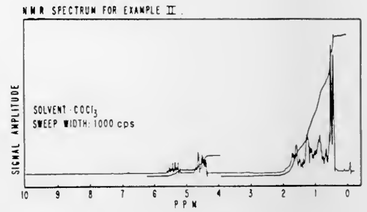
Kenneth K. Light, Long Branch; James Milton Sanders, Eatontown; Manfred Hugo Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja Dulal Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

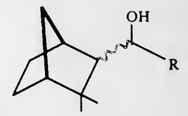
Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,125

Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **8 Claims**

1. A perfume composition comprising one or more norbornane derivatives having the structure:





wherein R is C_3 and C_4 alkenyl and at least one adjuvant selected from the group consisting of natural perfume oil, synthetic perfume oil, alcohols other than said norbornane derivatives, aldehydes, ketones, nitriles, esters and lactones.

4,119,578

HYDROSOLUBLE BAR FOR USE IN TOILET BOWLS AND METHOD OF MAKING SAME WHICH INCLUDES AN EXTRUSION STEP

Jean Daeninckx, Paris, and Bernard Chesbeuf, Saint Maur, both of France, assignors to L'Oreal, Paris, France

Filed May 3, 1976, Ser. No. 682,465

Claims priority, application France, May 2, 1975, 75 13815

Int. Cl.[2] C11D *1/14, 3/24, 3/32*

U.S. Cl. 252—548 **7 Claims**

1. Composition for extruding a hydrosoluble toilet bowl bar which is solid at room temperature and adapted to dissolve in the flushing water of a toilet bowl, said composition comprising 10–40% by weight of paradichlorobenzene, 5–30% by weight of a paraffin sulfonate which improves the cohesion and consistency of the composition and is constituted by sulfonated alkyl chains having 14–16 carbon atoms 5–30% of a foamable anionic detergent other than a paraffin sulfonate, and at least 1–10% of at least one fatty amide which controls the speed of errosion of said bar.

4,119,579

POLYMERIC ORTHOESTERS

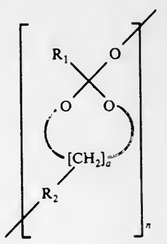
Richard Carl Capozza, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 675,185, Apr. 8, 1976, Pat. No. 4,066,747. This application Sep. 28, 1977, Ser. No. 837,310

Int. Cl.[2] C08G *65/00*

U.S. Cl. 526—270 **16 Claims**

1. A polymer of the general formula:



wherein R_1 is a member selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkenyl, and aryl, R_2 is a member selected from the group consisting of alkylene, a cycloalkylene, and a cycloalkenylene, and wherein *a* is 2 to 3, and *n* is greater than 10.

4,119,580

METHOD FOR FORMING AGGLOMERATED ION EXCHANGE RESIN

Frank C. Smith, Jr., Felton, and Richard C. Chang, Santa Clara, both of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.

Filed Nov. 7, 1977, Ser. No. 848,785

Int. Cl.[2] C08F *220/34;* **B01D** *15/08*

U.S. Cl. 521—28 **10 Claims**

1. A method for forming a plurality of agglomerated ion exchange particles comprising the steps of

(a) mixing soluble multivalent ions into an aqueous dispersion of finely divided coating particles formed of insoluble synthetic resin and having ion exchange sites with monovalent counterions on their surfaces, said multivalent ions being of the same charge as said monovalent counterions, to displace the monovalent counterions on said ion exchange sites with the multivalent ions and

(b) directing a stream of synthetic resin substrate particles, having ion exchange sites which attract said coating particles ion exchange sites, into a volume of said aqueous dispersion and agitating the mixture to form agglomerates comprising a uniform layer of coating particles affixed to the surface of said substrate particles.

4,119,581

MEMBRANE CONSISTING OF POLYQUATERNARY AMINE ION EXCHANGE POLYMER NETWORK INTERPENETRATING THE CHAINS OF THERMOPLASTIC MATRIX POLYMER

Alan Rembaum, Altadena, and Carl J. Wallace, La Crescenta, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 23, 1977, Ser. No. 771,245

Int. Cl.[2] C08L *39/08;* **C08J** *5/22;* **B01D** *15/04*

U.S. Cl. 521—27 **28 Claims**

1. A method of forming an ion-exchange membrane comprising the steps of:

dissolving in common solvent a thermoplastic matrix polymer, a first monomer selected from polytertiary amines or vinyl pyridines and a second monomer selected from organic polyhalides said first and second monomers being capable of reaction to form a cationically charged, polyquaternary, ion-exchange polymer;

evaporating the solvent while reacting the monomers to form said cationically charged, polyquaternary, ion-exchange polymer which forms a network interpenetrating the chains of the matrix polymer.

4,119,582

PROCESS FOR MANUFACTURING HIGH-RESILIENT FLEXIBLE URETHAN FOAMS

Kiyoshi Matsubara; Yuichi Nomura; Tadashi Yatomi; Tadashi Hamamura; Isao Noda; Terumi Watanabe, all of Yokohama; Takao Nomura, Nagoya, and Isao Sakata, Toyoda, all of Japan, assignors to Mitsui-Nisso Corporation; Nippon Unicar Company, Limited, both of Tokyo and Toyota Jidosha Kogyo Kabushiki Kaisha, all of, Japan

Filed Feb. 10, 1976, Ser. No. 656,979

Claims priority, application Japan, Feb. 11, 1975, 50/17295

Int. Cl.[2] C08G *18/63;* **C08K** *5/54*

U.S. Cl. 521—112 **7 Claims**

1. In a process for manufacturing high-resilient flexible urethan foams by reacting and foaming polyalkylene ether polyol component and an organic polyisocyanate component in the

presence of a blowing agent, a surfactant and catalyst, the improvement comprising

(1) using, as said polyalkylene ether polyol component, a polyalkylene ether polyol
  (a) containing 2 to 10% by weight of a vinyl polymer which is prepared by dissolving a vinyl monomer in polyalkylene ether polyol and by polymerizing said vinyl monomer in said polyalkylene ether polyol,
  (b) having a hydroxyl number which ranges from 25 to 60 mg KOH/g, and
  (c) having a primary hydroxyl group content of 20 to 70 mol% and the remaining hydroxyl groups being secondary hydroxyl groups;
(2) using, as said organic polyisocyanate component, a mixture of tolylene diisocyanate with either diphenylmethane diisocyanate or a crude diphenylmethane diisocyanate; and
(3) using, as said surfactant, a mixture of a high-molecular-weight siloxane-oxyalkylene copolymer with a separately prepared low-molecular-weight siloxane-oxyalkylene copolymer, said high-molecular-weight siloxane-oxyalkylene copolymer being a hydrolyzable siloxane-oxyalkylene copolymer expressed by the general formula

$$(R')(SiO_3)_x(R_2SiO)_y\{(C_nH_{2n}O)_zR''\}_a\{R'''\}_{3x-a}$$

wherein x is an integer of at least 1; y is an integer of at least 3; z is an integer of at least 5; a is an integer of 1 to $3x$; n is an integer of 2 to 4; R is a monovalent hydrocarbon group; R′ is an x-valent hydrocarbon group; R″ is a monovalent hydrocarbon group; and R‴is an alkyl group or trihydrocarbylsilyl group, said copolymer containing 10 to 80% by weight of polysiloxane units and 90 to 20% by weight of polyoxyalkylene units, having polysiloxane chains and polyoxyalkylene chains bonded with a C—O—Si bond and having a molecular weight of 1,000 to 16,000 and said low-molecular-weight siloxane-oxyalkylene copolymer being a hydrolyzable siloxane-oxyalkylene copolymer expressed by the formula

$$(R')(SiO_3)_x(R_2SiO)_y\{(C_nH_{2n}O)_zR''\}_a\{R'''\}_{3x-a}$$

wherein x is an integer of at least 1; y is an integer of at least 3; z is an integer of 0 or 1 to 4; a is an integer of 1 to $3x$; n is an integer of 2 to 4; R is a monovalent hydrocarbon group; R′ is an x-valent hydrocarbon group; R″ is a monovalent hydrocarbon group; and R‴ is an alkyl group or trihydrocarbylsilyl group, said copolymer containing more than 80% by weight of polysiloxane units and less than 20% by weight of polyoxyalkylene units, having polysiloxane chains and polyoxyalkylene chains bonded with a C—O—Si bond and having a molecular weight of 500 to 10,000.

4,119,583

FOAMED ARTICLES AND METHODS FOR MAKING SAME

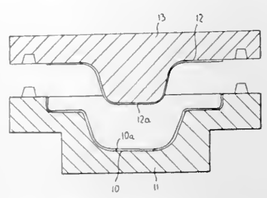
Stanislaw Franz Filip, and Alexander Miutel, both of Toronto, Canada, assignors to KLF Inventions and Patent Development and Marketing Corporation Ltd., Rexdale, Canada

Continuation-in-part of Ser. No. 631,439, Nov. 13, 1975, abandoned, and a continuation-in-part of Ser. No. 479,640, Jun. 17, 1974, abandoned. This application Jan. 31, 1977, Ser. No. 764,416

Int. Cl.² B29D *27/00;* **C08J** *9/ 08*

U.S. Cl. 521—103 **6 Claims**

1. Process for production of foam body of an unsaturated fast curing general purpose polyester resin in viscosity range from 1800 to 3000 CPS, a copolymerizable monomer vinyl compound, a finely divided bicarbonate, finely divided nucleation agent, quantity of tertiary amine hardening accelerator and peroxide catalyst to initiate cross-linking of the resin in two and a half to 6 minutes, mixing of the components and incorporating into the resin mix a 30 percent to 40 percent aqueous inorganic orthophosphoric acid which exhibits progressively decreasing level of activity as it reacts with the



bicarbonate component in liberation of carbon dioxide, the orthophosphoric acid creating phosphoric salts which act as a surfactant to help to sustain foam before it is gelled, mixing of the components at an accelerated tempo until the acid is blended throughout the resin mix and will liberate carbon dioxide before cross-linking reaction has proceeded far enough to gel the resin mix.

4,119,584

PHENOLIC FOAM MODIFIED WITH PHOSPHORUS-CONTAINING ISOCYANATE-TERMINATED PREPOLYMERS

Anthony Joseph Papa, Saint Albans; Richard Lee Rollins, South Charleston, and Frank Edward Critchfield, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 25, 1977, Ser. No. 781,162

Int. Cl.² C08G *18/24, 18/50*

U.S. Cl. 521—127 **14 Claims**

1. A process for producing a rigid phenolic foam having a density of up to about 2 pcf. which comprises forming and curing a reaction mixture containing:
  (a) a liquid phenol-aldehyde resole having a viscosity from 200 to 500,000 centipoises at 25° C.,
  (b) from 35 to 75 parts by weight of a phosphorus-containing isocyanate terminated prepolymer per hundred parts of said resole and said isocyanate terminated prepolymer,
  (c) a catalytic amount of an organotin catalyst for the curing of the reaction mixture to produce the elastomer,
  (d) from 0.5 to 5.0 parts by weight of a surface active agent per hundred parts by weight of said resole and said isocyanate terminated prepolymer, and
  (e) a halocarbon blowing agent in an amount sufficient to produce a cellular structure in the foam.

4,119,585

PROCESS FOR PREPARING RIGID POLYURETHANE FOAMS USING LATENT CATALYSTS

James F. Kenney, Mendham, and Kenneth Treadwell, Rahway, both of N.J., assignors to M&T Chemicals Inc., Stamford, Conn.

Filed May 10, 1977, Ser. No. 795,496

Int. Cl.² C08G *18/24*

U.S. Cl. 521—118 **13 Claims**

1. In an improved method for preparing a rigid polyurethane foam by reacting a polyol containing at least two active hydrogen atoms, as determined by the Zerewitinoff method, with a polyfunctional isocyanate, the reaction being conducted in the presence of a blowing agent, a surfactant and a catalyst, the improved which resides in increasing the time interval between the combining of said polyol with said isocyanate and the initiation of said reaction by employing a latent catalyst consisting essentially of a mixture containing 1) a diorganotin compound represented by a formula selected from the group

consisting of $R^1R^2SnS_x$, $R^1R^2Sn(SCN)_2$, $(R^1R^2SnSCN)_2S_x$ and $(R^1R^2SnSCN)_2O$ and 2) an amine selected from the group consisting of tertiary amines of the formula $R^3R^4R^5N$ wherein R^1 and R^2 are individually selected from the group consisting of alkyl containing from 1 to 20 carbon atoms, cycloalkyl, aryl, aralkyl and alkaryl, R^3, R^4 and R^5 are individually selected from the group consisting of alkyl containing from 1 to 20 carbon atoms, hydroxyalkyl containing from 2 to 4 carbon atoms, cycloalkyl, aryl, aralkyl and alkaryl, alternatively two of the carbon atoms of the R^3, R^4 or R^5 groups bonded to the nitrogen atom can be part of the same divalent hydrocarbon group such that the resultant ring contains 5 or 6 atoms one of which is the nitrogen atom and wherein the resultant heterocyclic ring can also contain one additional heteroatom such as oxygen, nitrogen or sulfur; and x is an interger from 1 to 4, and wherein the concentration of said diorganotin compound is from 0.1 to 10 parts by weight per 100 parts of said polyol and the concentration of said tertiary amine or heterocyclic tertiary amine is from 0.1 to 4 parts by weight per 100 parts of polyol.

4,119,586

POLYMER/POLYOL COMPOSITIONS, PROCESSES FOR MAKING SAME AND PROCESSES FOR MAKING POLYURETHANE PRODUCTS THEREFROM

Naresh Ramanlal Shah, Nitro, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 699,397, Jun. 24, 1976, abandoned. This application May 17, 1977, Ser. No. 797,666

Int. Cl.² C08G *18/14, 18/63;* **C08K** *5/06*

U.S. Cl. 521—137 **26 Claims**

1. In a polymer/polyol composition which is convertible by reaction with a polyisocyanate to a polyurethane product wherein said polymer/polyol composition is normally liquid at the temperature at which said composition is converted to said polyurethane product and wherein the polymer of said polymer/polyol composition is formed in situ in a polyol blend containing a polyol having a relatively low theoretical number average molecular weight by polymerizing in the blend one or more polymerizable ethylenically unsaturated monomers, the improvement comprising employing as the blend a polyol blend comprising about 55 to about 95 wt.% of a polyol having a theoretical number average molecular weight not greater than about 4000 and from about 45 to about 5 wt.% of a polyol having a theoretical number average molecular weight of not less than about 5000, in which blend said polymer is stably dispersed as small particles, said polymer being formed in the absence of any alkyl mercaptan and said monomers being substantially free of chemically bound halogen.

17. A method for producing a polyurethane foam by reacting and foaming a mixture comprising (a) the polymer/polyol composition claimed in claim 1, (b) an organic polyisocyanate, (c) a catalyst for the reaction of (a) and (b) to produce the polyurethane, (d) a blowing agent and (e) a foam stabilizer.

4,119,587

ADHESIVE COMPOSITIONS COMPRISING (A) HALOGENATED POLYOLEFIN (B) AROMATIC NITROSO COMPOUND AND (C) LEAD SALTS

Peter J. Jazenski, Wattsburgh, and Louie G. Manino, Erie, both of Pa., assignors to Lord Corporation, Erie, Pa.

Filed Feb. 25, 1977, Ser. No. 772,369

Int. Cl.² C08L *15/02, 7/00*

U.S. Cl. 260—3.5 **25 Claims**

1. An adhesive composition consisting essentially of
  (i) at least one halogen-containing polyolefin
  (ii) from about 1 to about 200 parts by weight, per 100 parts by weight of said polyolefin, of at least one aromatic nitroso compound;
  (iii) from about 10 to about 150 parts by weight, per 100 parts by weight of said polyolefin, of at least one lead salt of an acid selected from the group consisting of phosphorous acid and organic dicarboxylic acids and acid anhydrides;
  (iv) from zero to about 25 parts by weight, per 100 parts by weight of said polyolefin, of at least one one maleimide compound; and
  (v) an inert diluent, said diluent being present in an amount to provide a lacquer composition suitable for use as an adhesive, said lacquer having a total solids content in the range from about 5 to about 80 percent.

4,119,588

REVERSION RESISTANT RUBBER COMPOSITIONS WITH THIO CARBAMYL SULFENAMIDES

John Steven Carpino, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 14, 1976, Ser. No. 723,123

Int. Cl.² C08F *8/34;* **C08L** *7/00*

U.S. Cl. 260—5 **19 Claims**

1. A reversion resistant rubber composition comprising (1) 100 parts by weight of a sulfur vulcanizable rubber of which at least 50 parts by weight of said rubber are selected from the group consisting of natural rubber, cis-polyisoprene and mixtures thereof, and the remaining rubber is selected from at least one of the group consisting of cis-polybutadiene, emulsion polybutadiene, styrene-butadiene, butadiene-acrylonitrile, isoprene-acrylonitrile, polychloroprene, polypentenamer, and isoprene-styrene, (2) from about 0.1 part by weight to about 3 parts by weight of sulfur per 100 parts by weight of sulfur vulcanizable rubber, (3) from about 0.5 part by weight to about 5 parts by weight of a thiocarbamyl sulfenamide per 100 parts by weight of rubber wherein said thiocarbamyl sulfenamide is selected from the group consisting of N,N′-di-(oxydiethylene) thiocarbamylsulfenamide and N,N-dimethyl-N′, N′dicyclohexylthiocarbamyl-sulfenamide.

4,119,589

PROCESS FOR FIXING PROTEINS ONTO CARRIERS

Jürgen Horn, Tutzing, Garatshausen; Hans-Georg Batz, Tutzing, Obb., and Dieter Jaworek, Weilheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Jan. 18, 1977, Ser. No. 760,296

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603319

Int. Cl.² C08L *89/00*

U.S. Cl. 260—6 **13 Claims**

1. Process for immobilizing biologically-active proteins onto a carrier material, which process comprises reacting a compound containing at least two secondary amino groups at a temperature of from −80° to +50° C. with a chlorination agent with the conversion of the secondary amino groups into iminochloride groups of the formula

$$R-C(Cl)=N-R_1$$

in which R and R_1, which can be the same or different, are aliphatic, aromatic or aliphatic-aromatic radicals, and reacting the carrier material product thus obtained
  (a) directly with a biologically-active protein, in an aqueous solvent, or
  (b) with a bifunctional compound containing at least one primary amino group, optionally in an aqueous or organic solvent, and reacting the product thereby obtained containing groups of the formula

$$R-C(NH-R_2-X)=N-R_1$$

in which R_2 is an alkylene radical, an α,ω-dioxyalkylene

radical or a dicarboxylic acid amide group containing 2 to 8 carbon atoms and X is a primary amino group or a function capable of protein binding either

(i) directly with a protein or

(ii) first with at least one bifunctional or polyfunctional protein reagent and thereafter with a protein or with a reaction product of a protein with the protein reagent.

4,119,590

PROCESS FOR PRODUCING A POLYION COMPLEX HAVING A NUCLEIC ACID BASE

Toru Seita, Akihiko Shimizu, and Yujiro Kosaka, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Division of Ser. No. 687,220, May 17, 1976, Pat. No. 4,066,827. This application Jun. 22, 1977, Ser. No. 809,011

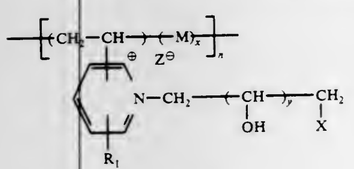
Claims priority, application Japan, 1975, 50-60241; 1975, 50-60242; 1975, 50-62533

Int. Cl.[2] C08L *89/00*

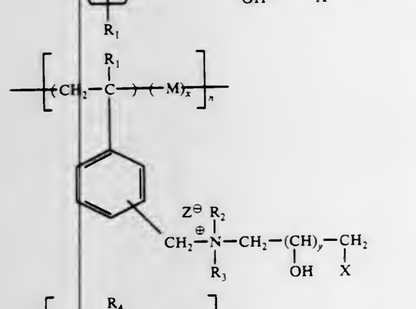
U.S. Cl. 260—8 **10 Claims**

1. A process for producing a polyion complex which comprises reacting a polyanion polymer with a nucleic acid base-containing polycation polymer having the unit formula

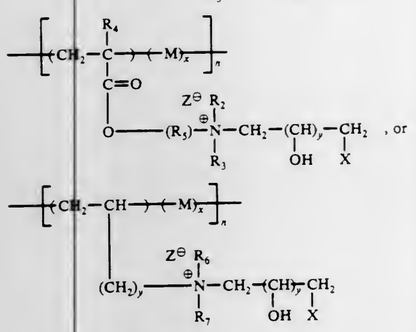
(1)



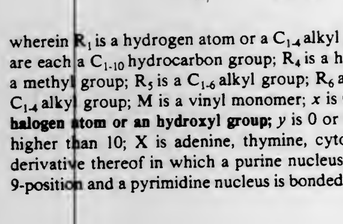
(2)



(3)



(4)



wherein R_1 is a hydrogen atom or a C_{1-4} alkyl group; R_2 and R_3 are each a C_{1-10} hydrocarbon group; R_4 is a hydrogen atom or a methyl group; R_5 is a C_{1-6} alkyl group; R_6 and R_7 are each a C_{1-4} alkyl group; M is a vinyl monomer; x is 0 -450,000; **Z is a halogen atom or an hydroxyl group;** y is 0 or 1; n is an integer higher than 10; X is adenine, thymine, cytosine, uracil or a derivative thereof in which a purine nucleus is bonded to the 9-position and a pyrimidine nucleus is bonded to the 1-position.

4,119,591

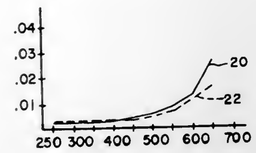
FRICTION MATERIAL REINFORCED WITH STEEL AND CELLULOSE FIBERS

Francis William Aldrich, Troy, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 5, 1977, Ser. No. 812,541

Int. Cl.[2] C08L *1/02*

U.S. Cl. 260—17.2 **10 Claims**



1. An organic friction material for use as a friction lining consisting of a mixture of:

8–50% by volume of a combination of non-asbestos fibers selected from a group consisting of fiber glass, mineral fiber, at least 3% by volume of steel fibers, and at least 5% by volume of cellulose fibers;

12–35% by volume of thermosetting phenolic resin;

5–35% by volume of cashew nut particles;

3–20% by volume of elastomeric modifiers; and

10–55% by volume of inorganic modifiers, said thermosetting phenolic resin being responsive to heat to form a matrix for holding said non-asbestos fibers, cashew nut particles, elastomeric modifiers and inorganic modifiers in a fixed relationship, said non-asbestos fibers and phenolic resin matrix providing structural strength for allowing the friction lining to withstand dynamic repeated engagements with a rotating member and providing a substantially uniform wear rate up to 600° F. during a dynamic engagement.

4,119,592

RUBBERY BLADDERS FROM EPOXY COMPOSITIONS

Walter Thomas Murphy, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 25, 1977, Ser. No. 772,047

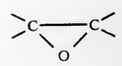
Int. Cl.[2] C08G *59/42, 81/42*

U.S. Cl. 260—18 PF **23 Claims**

1. A liquid polymer composition comprising:

a. a liquid carboxyl-terminated polymer containing polymerized units of a vinylidene monomer, siad polymer having from about 1.4 to about 2.6 carboxyl groups per molecule,

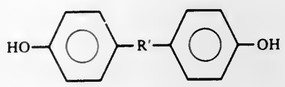
b. an epoxy resin having an average number of



epoxide groups per molecule of from about 1.7 to about 2.3,

c. a plasticizer,

d. a dihydric compound selected from the group consisting of catechol, resorcinol, hydroxybenzyl alcohol, bis benzylic alcohol, dihydroxy napthalene and bisphenols of the formula



where R′ is selected from the group consisting of an alkylene group containing 1 to 12 carbon atoms and a bivalent radical containing 1 to 8 atoms of C, O, S, and/or N, and

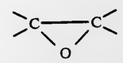
e. 2-ethyl-4-methylimidazole; wherein the equivalent ratio of

the sum of reactants a, d, and e, to epoxy is from about 0.70 to about 1.15.

13. A rubber bladder comprising:

a. a liquid carboxyl-terminated polymer containing polymerized units of a vinylidene monomer, said polymer having from about 1.4 to about 2.6 carboxyl groups per molecule,

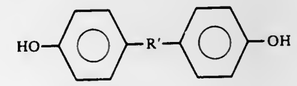
b. an epoxy resin having an average number of



epoxide groups per molecule of from about 1.7 to about 2.3,

c. plasticizer,

d. a dihydric compound selected from the group consisting of catechol, resorcinol, hydroxybenzyl alcohol, bis benzylic alcohol, dihydroxy naphthalene and bisphenols of the formula



where R′ is selected from the group consisting of an alkylene group containing 1 to 12 carbon atoms and a bivalent radical containing 1 to 8 atoms of C, O, S, and/or N, and

e. 2-ethyl-4-methylimidazole; wherein the equivalent ratio of the sum of reactants a, d, and e, to epoxy is from about 0.70 to about 1.15.

4,119,593

POLYEPOXIDE HIGH SOLIDS COATINGS

Oliver Wendell Smith, South Charleston, and Joseph Victor Koleske, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 18, 1977, Ser. No. 798,185

Int. Cl.[2] C09D *3/58*

U.S. Cl. 260—18 EP **19 Claims**

1. A high solids liquid composition comprising (I) from 40 to 90 weight percent of a polyepoxide, (II) from 10 to 60 weight percent of a monocarboxylic acid initiator having a pK_a value of less than 4 and (III) from 0.1 to 10 weight percent of a stannous salt catalyst; said percentages based on the combined weights of (I), (II) and (III); wherein said component (II) is a compound of the general formula:

$$HOOC—R—(COOR')_x$$

wherein

x is an integer having a value of from 0 to 2;

R is

(i) phenyl, or

(ii) naphthyl, or

(iii) —CH=CH— when x is 1;

R′ is

(i) an alkyl group having from 1 to 8 carbon atoms, or

(ii) a $—C_nH_{2n}(OC_nH_{2n})_mOC_pH_{2p+1}$ group or

(iii) a $—C_nH_{2n}OOCCX=CH_2$ group;

n is an integer having a value of 2 to 4;

m is an integer having a value of 0 to 7;

p is an integer having a value of 1 to 15; and

X is hydrogen or methyl;

and wherein said component (III) is a stannous acylate of a mono- or dicarboxylic acid having from 1 to 54 carbon atoms or a stannous alkoxide having from 1 to 18 carbon atoms in the alkoxide group; and wherein the equivalent ratio of free carboxyl groups in component (II) to total epoxy groups in component (I) is from 0.05:1 to 0.4:1.

4,119,594

CATALYZED ONE-SHOT SYSTEM FOR MOLDING THERMOSET POLYURETHANES

Stanley A. Iobst, Sterling Heights, and Howard W. Cox, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 31, 1977, Ser. No. 802,139

Int. Cl.[2] C08G *18/22*

U.S. Cl. 260—18 TN **3 Claims**

1. A method of molding a thermoset polyurethane article comprising;

forming a moldable dispersion of thermosetting polyurethane forming constituents consisting essentially, in chemical equivalents, of;

100 equivalents of an isocyanate selected from the group consisting of diphenylmethane diisocyanate and liquid isocyanate terminated reaction products of diphenylmethane diisocyanate and a diol,

about 40 to 85 equivalents of hydroquinone di-(beta-hydroxyethyl)ether,

an amount of a liquid polyol having a hydroxyl functionality of greater than two and an equivalent weight of the order of 2000, and

a catalytic amount of zinc stearate,

the proportions of said isocyanate, hydroquinone di-(beta-hydroxyethyl)ether, and polyol being such that there is a chemical equivalent excess of up to 10% of said isocyanate, said isocyanate being combined with said other constituents at a temperature below the activation temperature of said zinc stearate so that said dispersion has a room temperature pot life of at least several hours,

introducing said dispersion into a mold, and

heating said dispersion therein to a temperature whereat said catalyst is activated to react said constituents, thereby forming said thermoset polyurethane article.

4,119,595

LOW-TEMPERATURE EPOXY BAKING COMPOSITIONS

Ronald S. Bauer, and John A. Lopez, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 16, 1977, Ser. No. 777,984

Int. Cl.[2] C09D *3/52*

U.S. Cl. 260—21 **13 Claims**

1. A stable, low-temperature baking composition prepared by the process which comprises:

1. reacting about 1.0 chemical equivalents of an epoxy resin possessing more than one 1,2-epoxide group with from about 0.1 to about 1.0 chemical equivalents of a polymeric fatty acid,

2. reacting the resulting condensate with more than 2% by weight based on the condensate of a strong acid selected from the group consisting of para-toluene sulfonic acid, hydrochloric acid, sulfuric acid and phosphoric acid, for a period from about 2 hours to about 5 days at a temperature from about room temperature to about 250° C., and

3. adding a curing amount of an amino-plast resin.

4,119,596

THERMOSETTING COATING COMPOSITIONS

Takao Okuda, Yokohama, and Akira Wada, Kamakura, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed May 9, 1977, Ser. No. 795,369

Claims priority, application Japan, May 17, 1976, 51-56374

Int. Cl.[2] C08L *91/00, 61/24, 61/28*

U.S. Cl. 260—21 **10 Claims**

1. In a thermosetting coating composition containing at least one thermosetting aminoalkyd resin composed of 80 to 60% by weight of an alkyd resin and 20 to 40% by weight of an amino resin as a main ingredient of a vehicle, the improvement wherein the composition contains 100 parts by weight of the thermosetting aminoalkyd resin composition and 5 to 50 parts

by weight of a cyclopentadiene-derived hydrocarbon resin having a softening point of 50° to 160° C. and obtained by heat polymerizing a mixture of 85 to 55% by weight of a cyclopentadiene-type monomer with 15 to 45% by weight of a polar monolefinic monomer copolymerizable therewith wherein the cyclopentadiene-type monomer is cyclopentadiene, methyl cyclopentadiene, or a dimer, trimer or codimer of any of these.

4,119,597

ADDITIVE TO BE ADMIXED TO CEMENTS

Takasi Enoue, No. 931, Takemachi, Kagoshim-shi, Kagoshima-ken, Japan

Filed Nov. 8, 1976, Ser. No. 739,834
Claims priority, application Japan, Nov. 13, 1975, 50/136541
Int. Cl.[2] C04B *7/02, 7/355, 13/24;* **C08L** *29/04*
U.S. Cl. 260—23 R **4 Claims**

1. An additive to be admixed to cements comprising a mixture of an aqueous solution (A) of polyvinylalcohol resin which is prepared by mixing, under agitation, polyvinyl alcohol resin with at least one of aluminum sulfate and calcium hydroxide in water, and an aqueous dispersoid (B) which is prepared by dispersing vegetable oil or fat in water in the presence of a dispersing agent.

4,119,598

FIRE RETARDANT UREA-FORMALDEHYDE COMPOSITIONS

Glenn A. Pearson, 1311 Delaware, SW., Washington, D.C. 20024

Continuation-in-part of Ser. No. 606,842, Aug. 22, 1975, abandoned. This application May 6, 1977, Ser. No. 794,548
Int. Cl.[2] C08L *61/24*
U.S. Cl. 260—29.4 R **9 Claims**

1. A resinous solution comprising the reaction product of (a) about 65–80 moles of formaldehyde, (b) about 20–30 moles of urea, and (c) about 15–25 moles of phosphoric acid, said solution being formed by initial mixing of said formaldehyde and said urea followed by the addition of said phosphoric acid, whereby upon addition of said phosphoric acid, an exothermic reaction occurs leading to a substantially immediate and complete exothermic reaction to form a viscous, syrupy, water-white, aqueous resinous solution, the solution being a stable solution having a good shelf life and forming flexible, waterproof and non-burning films.

4,119,599

CATHODIC ELECTROCOATING COMPOSITIONS CONTAINING ACID-FUNCTIONAL AMINOPLAST AND FLEXIBILIZED, EPOXY-FREE, AMINATED RESIN

James T. K. Woo, Medina, Ohio, and James M. Evans, Lynn Haven, Fla., assignors to SCM Corporation, Cleveland, Ohio

Division of Ser. No. 642,694, Dec. 22, 1975, Pat. No. 4,066,525. This application Jul. 5, 1977, Ser. No. 813,082
Int. Cl.[2] C08L *61/28*
U.S. Cl. 260—29.4 R **7 Claims**

1. A cathodic electrocoating composition comprising, in aqueous dispersion:

(a) a cathodically electrodepositable, at least partially cationized binder resin comprising a major proportion by weight of a reaction product of a 1,2-epoxide-functional resin and a monoamino alcohol having at least one reactive hydrogen on the amino nitrogen, said reaction product being substantially devoid of reactive epoxide groups and having an average of at least about two reactive hydroxyl groups and an average of at least about ½ directly or indirectly pendant 5 to 20 carbon atom hydrocarbon radical per molecule;

(b) from about 0.05 to about 1 weight parts, per weight part of said binder resin, of an acid-functional aminoplast resin (i) cathodically co-electrodepositable with said binder resin from said aqueous dispersion to form an intermediate product comprising an intimate mixture of the cathodically electrodeposited forms of said binder resin and said aminoplast resin, (ii) co-reactive in said intermediate product with the cathodically electrodeposited form of said binder resin, upon heating, to transform said intermediate product into a cured resinous product. (iii) having at least about 0.0001 equivalent of titratable acid functionality of pK_a not greater than about 5 per gram of said aminoplast resin, and (iv) not soluble in the aqueous medium of said dispersion, and

(c) from about 20 to about 150 milliequivalents, per 100 grams of (a) and (b), of an anion of a water-soluble acid to enhance and stabilize the cationization of said binder resin;

said aqueous dispersion having a pH of from about 2 to about 7 and being substantially free of any water-soluble acid which will be retained in water-soluble form in said cured resinous product and of anions thereof.

4,119,600

MIGRATION-RESISTANT BINDER COMPOSITIONS FOR BONDING NONWOVEN FIBERS; ALSO METHODS AND ARTICLES

Ronald D. Bakule, Jenkintown; R. A. Gill, Abington, and Lawrence K. Wempe, Landsale, all, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 17, 1976, Ser. No. 686,980
Int. Cl.[2] C08L *33/00*
U.S. Cl. 260—29.6 RW **24 Claims**

1. A composition adapted to form a bonded composite comprising nonwoven fibers having evenly distributed therewith a binder comprising:

(A) an anionically stabilized polymer latex;

(B) a water-soluble polymer of 20% to 100% by weight of mer units containing an amine group and having a viscosity average molecular weight between 5,000 and 300,000; and

(C) a volatile base;

the latex polymer and the water-soluble polymer each being a polymer of at least one ethylenically unsaturated monomer.

4,119,601

PULVERULENT COMPOSITIONS BASED ON VINYL CHLORIDE

Bernard Bonnaud, Sisteron, and Yves Fagnoni, Vienne, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 8, 1976, Ser. No. 748,517
Claims priority, application France, Dec. 11, 1975, 75 37921
Int. Cl.[2] C08L *27/06*
U.S. Cl. 260—29.6 R **15 Claims**

1. Method of preparing pulverulent polymer or copolymer compositions based on vinyl chloride and suitable for immediate use comprising preparing a master mixture of said polymers and/or copolymers based on vinyl chloride and additives employed therewith in use by mixing in an aqueous medium a fraction of the one or more of said polymers and/or copolymers and said additives in the form of liquid additives and/or fusible solid additives, the liquid additives and at least part of the fusible solid additives being introduced with agitation in the form of one or more dispersions of finely divided particles of a homogenous phase in water, and mixing the master mixture with the remainder of the polymer and/or copolymers based on vinyl chloride.

4,119,602

AQUEOUS URETHANE CODISPERSIONS

Irving E. Isgur, Framingham; Robert R. Alexander, Milford, and Thomas P. Moy, Brighton, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Apr. 7, 1977, Ser. No. 785,579
Int. Cl.[2] C08L *75/08*
U.S. Cl. 260—29.6 NR **22 Claims**

1. An anionically stabilized aqueous codispersion of a blocked urethane prepolymer and a synthetic polymer latex,

said codispersion having a solids loading not exceeding about 50%, said blocked prepolymer comprising the condensation product of a hydrophilic polyoxyalkylene urethane prepolymer with an oxime and having a decomposition temperature of from about 140° to about 180° C.; said synthetic polymer latex having a pH value of at least about 6 selected from the group consisting of (1) copolymeric latex of a vinyl carboxylic acid with at least one additional ethylenically polymerizable monomer selected from the group consisting of (a) vinyl aromatic hydrocarbons (b) vinyl aliphatic hydrocarbons, (c) derivatives of acrylic acid, and (d) vinyl chloride, (2) butadiene-acrylonitrile latex, (3) polystyrene latex, (4) vinylpyridine latex, (5) styrene-butadiene latex, and (6) acrylic latex, said urethane prepolymer being water-dispersible and the reaction product of a polyoxyalkylene polyol containing at least 50 mole percent ethylene oxide, a molecular weight between about 200 to 20,000 and a hydroxy functionality of from about 2 to 8 with an excess of a polyisocyanate; said blocked prepolymer having a NOH/NCO molar ratio of from about 0.65 to about 1.1, said blocked prepolymer being from about 5 to about 95% of the solids content of said codispersion with the balance of the solids being said synthetic polymer latex; said codispersion having a pH value adjusted to a value of at least about 9.

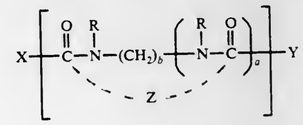
4,119,603

PLASTICIZED POLYCARBONATE COMPOSITION

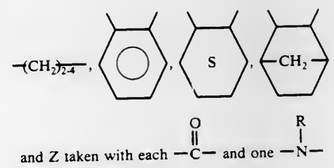
Fred Frank Holub, Schenectady, N.Y., and Phillip Steven Wilson, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 16, 1976, Ser. No. 751,454
Int. Cl.[2] C08K *5/17, 5/20*
U.S. Cl. 260—32.6 R **9 Claims**

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of a nitrogen containing plasticizer of the following formula:

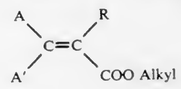


wherein X is selected from the group consisting of C_1 to C_{30} alkyl, aralkyl of 7 to 15 carbon atoms and substituted aralkyl wherein the substituents are hydroxy and C_1 to C_{30} alkyl, C_1 to C_{30} alkylene, hydroxy alkyl of 2 to 10 carbon atoms, thioalkyl of 1 to 10 carbon atoms and thioalkylene of 2 to 10 carbon atoms; Y is selected from the group consisting of hydrogen, C_1 to C_{30} alkyl, aralkyl of 7 to 15 carbon atoms and substituted aralkyl wherein the substituents are hydroxy and C_1 to C_{30} alkyl, C_1 to C_{30} alkylene, hydroxy alkyl of 2 to 10 carbon atoms, thioalkyl of 1 to 10 carbon atoms, thioalkylene of 2 to 10 carbon atoms; R is independently hydrogen or C_1 to C_{30} alkyl; *a* is an integer of 0 to 1 with the proviso that when *a* is 1, one of X or Y is other than alkyl; *b* is an integer of 0 to 20; Z is



and Z taken with each and one group form a cyclic structure.

1. A composition suitable for use in the preparation of cold water-soluble films consisting essentially of (i) a resin mixture of 40 to 55 parts by weight of a low molecular weight polyvinyl alcohol containing acyl groups having 1 to 4 carbon atoms, and having a viscosity in the range between 3 and 10 cps and a degree of hydrolysis in the range between 85 and 90 mol percent; 25 to 60 parts by weight of a medium molecular weight polyvinyl alcohol containing acyl groups having 1 to 4 carbon atoms, and having a viscosity in the range between 10 and 35 cps and a degree of hydrolysis in the range between 85 and 90 mol percent; and 0 to 20 parts by weight of a copolymer made up of 90 to 98 weight percent polymerized vinyl alcohol units and 10 to 2 weight percent of polymerized ester units which in monomeric form have the formula:

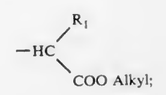


wherein

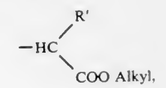
A is H or $-CH_3$;

A′ is H or —COO Alkyl;

R is H, $-CH_3$ or



provided that when R is



both A and A′ are H;

R′ is H or $-CH_3$; and

Alkyl contains 1 to 4 carbon;

which copolymer has a viscosity in the range between 10 and 60 cps and a degree of hydrolysis in the range between 95 and 100 mol percent; and (ii) as a plasticizer, 10 to 30 parts by weight of a polyethylene glycol per 100 parts by weight of said resin mixture, said polyethylene glycol having an average molecular weight in the range between 285 and 420; for each of said polymers, the viscosity being determined by the Hoeppler Falling Ball Method ASTM-D 1343-56, Part 8 and the degree of hydrolysis being determined by saponification.

4,119,605

SOLUTIONS OF POLYESTER-IMIDES

John T. Keating, Clifton Park, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

Division of Ser. No. 770,310, Feb. 22, 1977. This application Oct. 28, 1977, Ser. No. 846,392
Int. Cl.[2] C08K *5/06*
U.S. Cl. 260—33.2 R **30 Claims**

1. A solution in a solvent comprising at least 40% of a glycol ether which is a monoalkyl ether of diethylene glycol having 1 to 4 carbon atoms, phenoxy ethanol or the monophenyl ether of ethylene glycol of a polyester-polyimide having a hydroxy to carboxyl ratio of 1.25:1 to 2:1, 96 to 50% ester groups, 5 to

50% imide groups, the polyimide being an imide of reactants comprising an aromatic diamine and trimellitic anhydride, the polyester being an ester of isophthalic acid or terephthalic acid or benzophenone dicarboxylic acid with up to 10% of an alkane dicarboxylic acid having 6 to 10 carbon atoms with alcohols wherein 5 to 45% of the hydroxyl groups are contributed by (I) an etheralcohol which either (a) has the formula

$$RO(C_nH_{2n}O)_xH$$

where R is an alkyl group of 1 to 4 carbon atoms or phenyl, n is 2 or 3 and x is 2 or 3 or (b) is the monophenyl ether of ethylene glycol, (II) at least 20% of the hydroxyl group are contributed by a trihydric alcohol which is tris(2-hydroxyethyl)cyanurate, glycerine, trimethylolpropane or trimethylolethane and (III) any balance of hydroxyl groups are contributed by a dihydric alcohol, said polyester-polyimide having a sufficiently low molecular weight that it is soluble in said solvent.

4,119,606

COLD-SETTING MOULDING MIXTURE FOR PRODUCING FOUNDRY MOULDS AND CORES

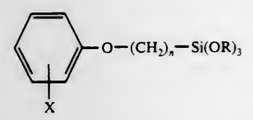
Sergei Dmitrievich Teplyakov, Seleznevskaya ulitsa, 13, kv. 3; Sergei Semenovich Zhukovsky, Profsojuznaya ulitsa, 17, korpus 1, kv. 15; Abram Moiseevich Lyass, Sharikopodshipnikovskaya ulitsa, 2, kv. 42; Zoya Vasilievna Belyakova, Nizhegorodskaya ulitsa, 7, korpus 3, kv. 14; Maiya Grigorievna Pomerantseva, Sadova-Spasskaya ulitsa, 19, kv. 6; Nina Yakovlevna Tsygankova, ulitsa Marxa-Engelsa, 8, kv. 64, and Mira-Ljudmila Solomonovna Krol, Storozhevaya ulitsa 31, kv. 20, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 391,275, Aug. 24, 1973, abandoned, and a continuation-in-part of Ser. No. 557,525, Mar. 12, 1975, abandoned, which is a continuation of Ser. No. 458,982, Mar. 8, 1974, abandoned. This application Feb. 24, 1976, Ser. No. 660,937

Int. Cl.[2] C08K *5/54, 9/06*

U.S. Cl. 260—38 **6 Claims**

1. A cold-setting moulding mixture for producing foundry moulds and cores comprising essentially a refractory filler, a binder which is synthetic resin capable of setting at room temperature in the presence of an acid catalyst, an acid catalyst selected from the group consisting of mineral and aromatic sulphonic acids, said mixture being improved by adding to it phenoxyalkylalkoxysilane having the formula



wherein "X" is selected from the group consisting of hydrogen, alkyl-, alkoxy-group and a $—O(CH_2)_nSi(OR)_3$ group, "n" 2-3 and R is a C_1-C_4 alkyl radical.

4,119,607

MULTICOMPONENT POLYESTER- BLOCK COPOLYMER- POLYMER BLENDS

William P. Gergen, and Sol Davison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 794,164, May 5, 1977, which is a continuation-in-part of Ser. No. 693,463, Jun. 7, 1976, abandoned. This application Mar. 7, 1978, Ser. No. 884,107

Int. Cl.[2] C08L *67/00;* **C08K** *7/14;* **C08L** *51/00*

U.S. Cl. 260—40 R **19 Claims**

1. A composition comprising the admixture obtained by intimately mixing about 4 to about 40 parts by weight of a block copolymer, about 5 to about 48 parts by weight of at least one dissimilar engineering thermoplastic, and a saturated thermoplastic polyester in a weight ratio of polyester to dissimilar engineering thermoplastic of greater than 1:1, so as to form a polyblend wherein at least two of the polymers have at least partial continuous interlocked networks with each other and wherein:

(a) said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, said block copolymer having an 8 to 55 percent by weight monoalkenyl arene polymer block content, each polymer block A having an average molecular weight of between about 5,000 and about 125,000, and each polymer block B having an average molecular weight of between about 10,000 and about 300,000;

(b) said thermoplastic polyester has a molecular weight in excess of about 20,000, a generally crystalline structure, a melting point over about 120° C. and is selected from the group consisting of (i) the condensation product of a dicarboxylic acid and a glycol, (ii) polypivalolactone, and (iii) polycaprolactone; and

(c) said dissimilar engineering thermoplastic resin is capable of forming a continuous structure and is selected from the group consisting of polyamides, polyolefins, thermoplastic polyurethanes, halogenated thermoplastics, and nitrile barrier resins.

4,119,608

SOLUTIONS OF POLYESTER-IMIDES

John T. Keating, Clifton Park, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,310

Int. Cl.[2] C08G *73/16, 77/12*

U.S. Cl. 528—188 **25 Claims**

1. A polyester-polyimide having a hydroxy to carboxyl ratio of 1.25:1 to 2:1, 95 to 50% ester groups, 5 to 50% imide groups, the polyimide being an imide of reactants comprising a diamine and trimellitic anhydride, the polyester being an ester of isophthalic acid or terephthalic acid with up to 10% of an alkane dicarboxylic acid having 6 to 10 carbon atoms with alcohols wherein 5 to 45% of the hydroxyl groups are contributed by (I) an ether-alcohol which either (a) has the formula $RO(C_nH_{2n}O)_xH$ where R is an alkyl group of 1 to 6 carbon atoms or phenyl, n is 2 or 3 and x is 2 or 3 or (b) is the monophenyl ether of ethylene glycol, (II) at least 20% of the hydroxyl group are contributed by a trihydric alcohol and (III) any balance of hydroxyl groups are contributed by a dihydric alcohol, said polyester-polyimide having a sufficiently low molecular weight that it is soluble in a mono lower alkyl ether of diethylene glycol alone or in the monophenyl ether of diethylene glycol or phenoxyethanol or a mixture of said phenyl ethers.

4,119,609

CURABLE EPOXY-CARBOXYLIC ACID ADDUCTS

Roy A. Allen, and LeRoy W. Scott, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 28, 1977, Ser. No. 782,207

Int. Cl.[2] C08G *59/52*

U.S. Cl. 528—99 **7 Claims**

1. A curable, carboxyl-containing precondensate prepared by reacting at a temperature from about 150° F. to about 250° F. (1) an epoxy compound containing more than one vicinal epoxy group with (2) an amino-substituted aromatic carboxylic acid, said precondensate having a theoretical acid number of from about 30 to 90 and a weight per epoxy of from about 2400 to about 40,000.

4,119,610

BROMINATED ACRYLATE DENTAL COMPOSITIONS

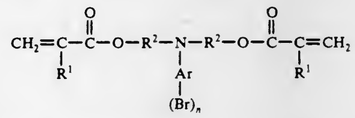
David H. Kaelble, Thousand Oaks, Calif., assignor to Arroyo Dental Products Co., La Canada, Calif.

Filed Apr. 25, 1977, Ser. No. 790,487

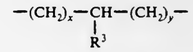
Int. Cl.[2] C08F *20/22*

U.S. Cl. 526—292 **10 Claims**

1. An ambient curing composition comprising a solution of a brominated diacrylate compound selected from compounds of the formula:



where n is an integer from 1 to 6, R^1 is hydrogen or alkyl of 1 to 6 carbon atoms, R^2 is alkylene of 1 to 5 carbon atoms or



where R^3 is hydrogen, alkyl of 1 to 4 carbon atoms or —OH and x and y are selected from 0 or an integer from 1 to 4 and Ar is an aromatic group; and

a reactive diluent selected from the group consisting of monoacrylates, diacrylates and triacrylates.

4,119,611

PROCESS FOR THE PRODUCTION OF LINEAR CONDENSATES OF PHENOL AND FORMALDEHYDE

Joachim Löbering, Grosshesselohe, Fed. Rep. of Germany, assignor to Zimmer Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 845,924

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650025

Int. Cl.[2] C08G *8/10*

U.S. Cl. 528—139 **7 Claims**

1. Process for producing linear phenol formaldehyde condensates characterized by a high degree of polymerization, purity and homogeneity which comprises

reacting in a first stage reaction phenol and formaldehyde at elevated temperature to produce a phenol-methylol product,

adjusting the pH of said phenol-methylol product to a value greater than 3,

adding in a second stage reaction said phenol-methylol product in aliquot portions to an additional quantity of molten phenol having a pH below 3, while maintaining the temperature below about 100° C,

raising stepwise the temperature of the mixture as the viscosity of the resulting condensate increases until there is no further increase in the viscosity of the condensate, and

extruding the viscous condensate.

4,119,612

POLYMERIC AND OLIGOMERIC FORMALS

Norbert Vollkommer, Troisdorf; Gerhard Schade, Witten-Bommern; Egon Norbert Petersen, Neunkirchen-Seelscheid; Gerhard Bier, Troisdorf; Herbert Klinkenberg, Troisdorf-Eschmar, and Werner Schmidt, St. Augustin-Niederberg, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bez. Cologne, Germany

Filed Apr. 29, 1976, Ser. No. 681,672

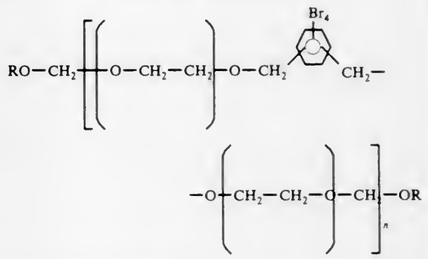
Claims priority, application Fed. Rep. of Germany, May 2, 1975, 2519575; May 2, 1975, 2519576; Nov. 13, 1975, 2550909

Int. Cl.[2] C08G *4/00*

U.S. Cl. 528—232 **43 Claims**

1. In a process for preparing a polymeric formal having 2 to 200 repeating units wherein a dihydric alcohol is contacted with paraformaldehyde in the presence of a solvent and an acid catalyst, the improvement which comprises including in the reaction mixture at least one additional alcohol, or with, instead of paraformaldehyde and additional alcohol, the corresponding dialkyl formal.

26. A polymeric formal having the formula



wherein n is a positive integer from 2 to 200, R is an optionally substituted straight or branched chain alkyl radical having 3 to 8 carbon atoms, aryl or aralkyl radicals can be substituted on one or both sides by an alkyl or hydroxyalkyl.

4,119,613

PROCESS FOR THE PRODUCTION OF POLYISOCYANATE-POLYADDITION PRODUCTS USING A MULTI-PHASE REACTION FLOW TUBE

Artur Reischl, Leverkusen; Henning Klussmann, Rommerskirchen, and Eugen Velker, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 31, 1977, Ser. No. 829,383

Claims priority, application Fed. Rep. of Germany, May 4, 1977, 2719970

Int. Cl.[2] C08G *18/08*

U.S. Cl. 526—64 **11 Claims**

1. A continuous process for the production of polyisocyanate-polyaddition products by reacting starting reaction components (A) polyisocyanates with (B) compounds containing at least two isocyanate-reactive groups in the presence of a material selected from the group consisting of organic solvents or dispersants, inert carrier gases, and mixtures thereof, comprising

(1) introducing the liquid mixture of the starting reaction components, in the form of a solution or dispersion or with an inert carrier gas, into a coil flow tube having an internal diameter of from 3 to 100 mm, a ratio of tube diameter to tube length of from 1:100 to 1:3,000 and a ratio of tube diameter to coil diameter of from 1:5 to 1:100, the fall in pressure over the length of the reaction tube amounting to from 10 mbars to 100 bars, the quantitative ratios of starting reaction components, solvents or dispersants, and inert carrier gas being selected in such a way that the proportion of the total gas phase in the reaction tube amounting to from 10 to 90%, by weight, the rate of gas flow in the tube amounting to from 20 to 300 meters/second and the average residence time of the reacting starting components in the tube amounting to less than 5 minutes; directly dissipating the generated heat of reaction through the tube jacket which is coolable or heatable in sections, so that the reaction temperature is from 20° to 250° C.;

(2) removing the solid and/or liquid reaction product, and the inert carrier gas and/or vapor-formed solvent or dispersant at the end of the reaction tube.

4,119,614

PROCESS FOR MAKING POLYESTER POLYMER

Henry L. King, Cary, and Chester C. Wu, Raleigh, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1977, Ser. No. 863,287
Int. Cl.[2] C08G *63/22*
U.S. Cl. 528—283 **9 Claims**

1. A process for preparation of polyester polymers, comprising polycondensing a glycol phthalate prepolymer in the presence of an effective amount of the reaction product of germanium dioxide and a tetraalkyl ammonium hydroxide.

4,119,615

THERMOPLASTIC ADHESIVE POLYOXAMIDE FROM POLYOXYPROPYLENE POLYAMINE

Heinz Schulze, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,400
Int. Cl.[2] C08G *69/26*
U.S. Cl. 528—343 **19 Claims**

1. A resinous polyoxamide thermoplastic adhesive formed by reacting one mole of a polyoxypropylene polyamine selected from the group consisting of diamines, triamines and mixtures thereof, and having an average molecular weight of about 190 to about 3,000 with 1–4 moles of oxalic acid or a lower alkyl mono or diester of oxalic acid to form a liquid prepolymer, 1 mole of said prepolymer being further reacted with 0.5–1.5 mole of a diamine having the formula:

$$NH_2 - R - HN_2$$

where R is a divalent hydrocarbon radical containing 2–18 carbon atoms to form said resinous polyoxamide.

4,119,616

PROCESS FOR SULFONATING UNSATURATED ELASTOMERS USING ACYL SULFATES

Charles P. O'Farrell, Clark, and George E. Serniuk, Roselle, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 441,435, Feb. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 239,307, Mar. 29, 1972, Pat. No. 3,836,511, which is a continuation-in-part of Ser. No. 123,908, Mar. 12, 1972, abandoned. This application Sep. 30, 1974, Ser. No. 510,392 The portion of the term of this patent subsequent to Sep. 17, 1991, has been disclaimed.
Int. Cl.[2] C08F *8/36*
U.S. Cl. 526—31 **8 Claims**

1. In a process for preparing a sulfonic acid ionomer of an olefinically unsaturated elastomer wherein said elastomer is an EPDM, the improvement which comprises using as a sulfonating agent acetyl sulfate, propionyl sulfate or butyryl sulfate, and sulfonating said EPDM until said EPDM contains 0.08 mole % to 15 mole % SO_3H.

4,119,617

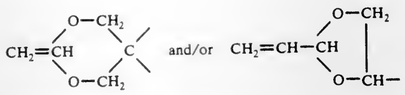
CURABLE RESINOUS COMPOSITION COMPRISING AN UNSATURATED CYCLOACETAL COMPOUND AND A POLYTHIOL COMPOUND

Toshiaki Hanyuda, Yokohama; Haruyuki Kanehiro, Kawasaki; Kojiro Mori, Tokyo, and Eiichiro Takiyama, Kamakura, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1977, Ser. No. 819,751
Claims priority, application Japan, Jul. 28, 1976, 51-89048
Int. Cl.[2] C08F *28/06*
U.S. Cl. 528—360 **6 Claims**

1. A resinous composition curable to an insoluble and infusible resin, which comprises:

(i) a compound having at least 2 unsaturated cycloacetal groups per molecule, expressed by the formula



and/or



; and

(ii) a compound selected from the group consisting of dipentene dimercaptane, ethylcyclohexyl dimercaptane, 1,6-hexane dimercaptane, and an ester product of thioglycolic acid, β-mercaptopropionic acid or mercaptosuccinic acid with a polyol,

said compound (i) and compound (ii) being mixed in a functional group ratio of 1 : 0.5–1.7, the average total number of the unsaturated cycloacetal groups in compound (i) and mercapto groups in compound (ii) being at least 5.

4,119,618

VASOACTIVE POLYPEPTIDE AND METHOD OF PREPARATION FROM NEURAL TISSUE

Sami I. Said, 5323 Harry Hines Blvd., Dallas, Tex. 75235

Filed Apr. 28, 1976, Ser. No. 681,045
Int. Cl.[2] C07C *103/52*; C07G *7/00*
U.S. Cl. 260—112 R **9 Claims**

1. A process for the isolation of a new biologically active polypeptide from the neural tissue of mammals which consists essentially of the sequential steps of:

(a) obtaining neural tissue;

(b) extracting said neural tissue by contacting with a member selected from the group consisting of dilute organic acyclic carboxylic acids and mixtures of organic acyclic carboxylic acids with lower alkyl alcohols;

(c) concentrating the resultant extract by contacting with alginic acid, filtering the resultant alginic acid containing the absorbed extract, and collecting the alginic acid containing the absorbed extract on the filter;

(d) eluting the alginic acid containing the absorbed extract by contacting with HCl aqueous solution and recovering the extract from the HCl solution;

(e) subjecting the resultant extract to gel chromatography in a chromatographic column and recovering the active fraction;

(f) subjecting the resulting active fraction from step (e) to at least two consecutive ion exchange chromatographic steps in a chromatographic column and recovering the active fraction therefrom;

(g) subjecting the active fractions to countercurrent distribution; and

(h) subjecting the resultant active fraction to lyophilization and recovering the active fraction containing the polypeptide.

4,119,619

EMULSIFICATION METHOD FOR THE PROCESSING OF KRIEL TO PRODUCE PROTEIN, LIPIDS AND CHITIN

Sergei Vasilievich Rogozhin, ulitsa Vavilova, 55/5, kv. 20; Efim Semenovich Vainerman, ulitsa Profsojuznaya, 94/20, kv. 53; Ljubov Mikhailovna Burmistrova, ulitsa Preobrazhensky val, 16, kv. 44; Jury Alexandrovich Davidovich, ulitsa Krasny Kazanets, 19, korpus 2, kv. 131; Vladimir Jurievich Ryashentsev, ulitsa Musy Dzhalilya, 34, korpus 2, kv. 230; Valentina Kirillovna Kulakova, ulitsa Kedrova, 13, korpus 2, kv. 72; Lev Lvovich Lagunov, ulitsa Trifonovskaya, 47a, kv. 47, and Vladimir Petrovich Bykov, ulitsa Chertanovskaya, 1a, korpus 1, kv. 84, all of Moscow, U.S.S.R.

Filed Dec. 8, 1977, Ser. No. 858,801
Claims priority, application U.S.S.R., Dec. 16, 1976, 2432584
Int. Cl.[2] A23J *1/04*; A23K *1/10*
U.S. Cl. 260—112 R **3 Claims**

1. A method for the processing of kriel to produce protein, lipids and chitin which comprises emulsification of lipids of kriel in an aqueous medium; separation of the resultant emulsion of lipids from the kriel mass; alkaline extraction of proteins from the kriel mass at a pH of 10 to 12; separation of the alkaline extract of proteins from chitin integuments; separation of protein from the alkaline extract.

4,119,620

NOVEL DIPEPTIDE DERIVATIVES, SALTS THEREOF, AND METHOD OF MEASURING ENZYME ACTIVITY

Toshiharu Nagatsu, Yokohama, and Shumpei Sakakibara, Suita, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 18, 1976, Ser. No. 733,343
Claims priority, application Japan, Oct. 30, 1975, 50/130809
Int. Cl.[2] C07C *103/52*; B41J *5/12*
U.S. Cl. 260—112.5 R **10 Claims**

1. Dipeptide derivatives having the structure:

X-L-proline-Y

wherein X is a residue of an amino acid selected from the group consisting of glycine, alanine, valine, leucine, serine, threonine, phenylalanine, tyrosine, tryptophane, glutamic acid, aspartic acid, lysine and arginine; and Y is a residue of a compound selected from the group consisting of p-nitroaniline, p-phenylazoaniline, and 4-phenylazo-1-naphthylamine; and acid salts of said dipeptide derivatives.

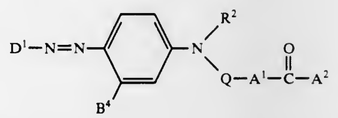
4,119,621

AZO DYES HAVING A BENZOISOTHIAZOLYL DIAZO COMPONENT

Guenter Hansen; Hermann Kaack, and Norbert Grund, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Feb. 9, 1976, Ser. No. 656,390
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1975, 2507460
Int. Cl.[2] C09B *29/08, 29/26*; D06P *3/36, 3/54*
U.S. Cl. 260—158 **8 Claims**

1. A dye having the formula



in which:

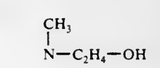
D^1 is 5-nitrobenzoisothiazolyl-(2,1), or 5-cyano-7-nitrobenzoisothiazolyl-(1,2);

B^4 is hydrogen or methyl;

R^2 is C_1 to C_4 alkyl, C_1 to C_4 alkoxyethyl, β-cyanoethyl or β-hydroxyethyl;

A^1 is a direct bond, —NH— or —O—;

A^2 is NH—(C_1 to C_4)-alkyl, NH—C_2H_4OH, NH—C_3H_6OH, or



or, when A^1 is —NH— or —O—, is OCH_3, OC_2H_5 or OC_2H_4OH; and

Q is $-C_2H_4-$, $-C_3H_6-$ or $-C_4H_8-$.

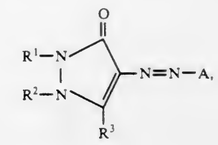
4,119,622

PYRAZOLONYLAZOANILINE OR AMINONAPHTYL COMPOUNDS FOR COPYING PROCESSES

Hans Baumann, Wachenheim, and Andreas Oberlinner, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 1, 1976, Ser. No. 737,720
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1975, 2557686
Int. Cl.[2] C09B *29/06, 29/08*
U.S. Cl. 260—162 **10 Claims**

1. An azo compound of the formula:

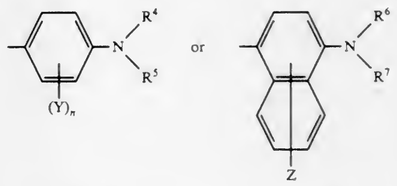


where

R^1 is hydrogen or alkyl of 1 to 4 carbon atoms,

R^2 and R^3 are each alkyl of 1 to 4 carbon atoms, or one of the radicals R^1, R^2, and R^3 is unsubstituted phenyl or phenyl substituted by alkyl of 1 to 4 carbon atoms, methoxy or ethoxy, and

A denotes



where R^4 and R^5 are each hydrogen; alkyl of 1 to 8 carbon atoms; hydroxyalkyl of 2 or 3 carbon atoms; alkoxyalkyl of 3 to 8 carbon atoms; cyanoethyl; alkylcarbonyloxyalkyl of a total of 4 to 10 carbon atoms; alkylcarbonyl with 1 to 3 carbon atoms in the alkyl; cyclohexyl; phenalkyl of 7 to 10 carbon atoms; or unsubstituted phenyl or phenyl substituted by alkyl of 1 to 4 carbon atoms, methoxy or ethoxy; or R^4 is N, N-dialkylaminoalkyl of a total of 4 to 11 carbon atoms of N, N-bisphenylalkylaminoalkyl having 7 to 10 carbon atoms per phenylalkyl and 2 or 3 carbon atoms in the aminoalkyl; or the group



is a 5-membered or 6-membered saturated heterocyclic ring selected from the group consisting of piperidine, morpholine, thiomorpholine and pyrrolidine, and

Y is hydroxy, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, bromine or alkylcarbonylamino of a total of 2 to 4carbon atoms,

n is 0, 1 or 2,

R^6 and R^7 are each hydrogen, alkyl of 1 to 4 carbon atoms, cyclohexyl or unsubstituted phenyl or phenyl substituted by alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and Z is hydrogen, hydroxy, methoxy, methoxy or hydroxysulfonyl.

4,119,623

WATER-SOLUBLE DIPHENYLAMINE-AZO-SULFATOALKOXYPHENYL DYESTUFFS

Herbert Hugl; Hans-Günter Otten; Richard Sommer, and Gerhard Wolfrum, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

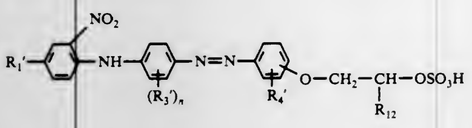
Filed Aug. 12, 1976, Ser. No. 713,820

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1975, 2536489; Dec. 19, 1975, 2557504

Int. Cl.[2] C09B *43/00*

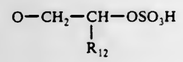
U.S. Cl. 260—206 **3 Claims**

1. Azo dyestuff which, in the form of the free acid, corresponds to the formula



wherein

R_1' represents H, SO_2—R_7', nitro, $SO_2NR_8'R_9'$ or SO_2OR_{10}',
R_3' represents halogen, C_1-C_4-alkyl, C_1-C_4-alkoxy or $SO_2NR_8'R_9'$,
R_4' represents hydrogen, C_1-C_4-alkyl or phenyl,
R_7' and R_{10}' represent C_1-C_4-alkyl, phenyl or benzyl,
R_8' and R_9' represent C_1-C_4-alkyl, phenyl, benzyl or phenethyl and
R_{12} represents hydrogen, methyl or ethyl,
n denotes 1 or 2 and
the



group is in the o-position or p-position relative to the azo bridge.

4,119,624

DISPERSE MONOAZO DYESTUFFS

Violet Boyd; Brian Ribbons Fishwick, and David John Watson, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

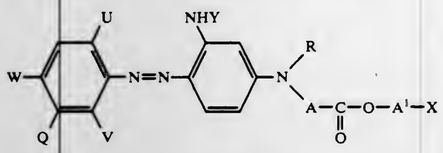
Continuation of Ser. No. 363,319, May 24, 1973, abandoned. This application Apr. 11, 1975, Ser. No. 567,404

Claims priority, application United Kingdom, Jun. 8, 1972, 26808/72

Int. Cl.[2] C09B *29/08*

U.S. Cl. 260—207.1 **3 Claims**

1. A disperse monoazo dyestuff, free from carboxylic acid and sulphonic acid groups, which is of the formula:



wherein U is selected from hydrogen, chlorine, bromine, cyano, lower alkyl, lower alkoxy, lower alkoxycarbonyl, lower alkylsulphonyl and —$CONT^1T^2$ wherein T^1 is selected from hydrogen and lower alkyl and T^2 from hydrogen, lower alkyl and phenyl;
V is selected from hydrogen, chlorine, bromine, cyano and lower alkoxycarbonyl;
Q is selected from hydrogen, chlorine, bromine, lower alkoxy and lower alkoxycarbonyl;
W is selected from hydrogen, nitro, chlorine, bromine, cyano, thiocyano, lower alkylsulphonyl, lower alkoxycarbonyl or —$SO_2NT^1T^2$ wherein T^1 is selected from hydrogen and lower alkyl, and T^2 from hydrogen, lower alkyl and phenyl;
R is cyano lower alkyl;
A and A^1 are each independently lower alkylene;
Y is selected from loweralkylcarbonyl, lower alkoxycarbonyl, benzoyl, lower alkylsulphonyl, penzenesulphonyl, aminocarbonyl and N-lower alkylaminocarbonyl; and
X is selected from lower alkoxy, lower alkoxy lower alkoxy, lower alkoxy lower alkoxy lower alkoxy, cyano, phenoxy, chlorine, bromine, lower alkoxycarbonyl, phenoxycarbonyl, benzoyl and lower alkylcarbonyl.

4,119,625

PROCESS FOR THE MANUFACTURE OF STEROID CARBOXYLIC ACIDS AND THE ESTERS THEREOF

Julius Schmidlin, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 8, 1977, Ser. No. 785,997

Claims priority, application Switzerland, Apr. 15, 1976, 4848/76

Int. Cl.[2] C07J *71/00*

U.S. Cl. 260—239.55 D **13 Claims**

1. A process for the manufacture of steroid carboxylic acids selected from the group consisting of those having the formula I

(I)

wherein R represents a hydrogen atom, an unsubstituted or substituted hydrocarbon radical, or a free or conventionally esteritied or etheritied hydroxyl group, and wherein the carboxyl group and the 5H-atom can be in the alpha or beta position, R′ represents hydrogen or methyl, and its derivatives having expanded or contracted A-, B-and C-rings, an expanded D-ring having R and COOH in 17*a*-position, one or more than one double bond and/or conventional steroid-substituents in any of the positions different from 17 or 17*a;* which process comprises oxidising a corresponding 20,21-ketoaldehyde having the group CO-CHO instead of COOH in said 17- or 17*a*-positions, wih an organic peracid in an inert solvent.

4,119,626

DEPOT STEROID ESTERS

Paul-Eberhard Schülze; Ulrich Speck; Dieter Bittler; Rudolf Wiechert, and Bernard Acksteiner, all of Berlin, Fed. Rep. of Germany, assignors to Schering, A.G., Fed. Rep. of Germany

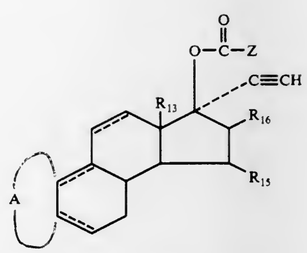
Filed Dec. 8, 1976, Ser. No. 748,411

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2558076

Int. Cl.[2] C07J *21/00*

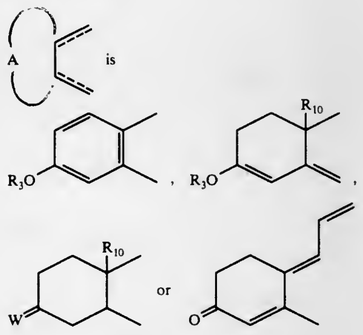
U.S. Cl. 260—239.55 C **37 Claims**

1. A depot steroid ester of the formula,

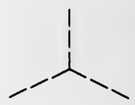


wherein

R_{13} is alkyl of 1-3 carbon atoms; each are a single or double bond;



R_{10} is hydrogen or methyl;
R_3 is hydrogen, alkanoyl of up to 4 carbon atoms, alkylsulfonyl of up to 4 carbon atoms, alkyl of up to 4 carbon atoms, or cycloalkyl of 3-8 carbon atoms;
W is H_2, O, or H, OR_3;



is a double bond in the 4,5- , 5,6-, or 5,10-position;
R_{15} and R_{16} each are hydrogen or collectively are α- or β-methylene or an additional carbon-carbon bond between the carbon atoms at the 15- and 16-position;
Z is alkenyl of up to 4 carbon atoms, X—OH, Y—CO—OH, X—O—CO—Y—CO—OH, X—O—CO—R, Y—CO—OR, X—O—CO—Y—CO—OR, or X—O—SO_2—R;
X is a straight-chain or branched alkylene, oxaalkylene or thiaalkylene of 1-6 carbon atoms, unsubstituted or substituted by —OH, —O—CO—R, or —O—SO_2—R;
Y is a direct bond, a straight-chain or branched alkylene, oxaalkylene or thiaalkylene of 1-3 carbon atoms when Y is linked at the 17-position of the steroid residue via —O—CO—; alkylene, oxaalkylene or thioalkylene of 1-16 carbon atoms, unsubstituted or substituted by an —OH, —OCOR, or —OSO_2R, when Y is linked to X via —O—CO—; or 1,4-phenylene, 1,4-cyclohexylene or 1,3-cyclopentylene substituted by up to two alkyl of 1-2 carbon atoms; and
R is alkyl or oxaalkyl of up to 22 carbon atoms.

5. 17α-Ethynyl-3,3-(2,2-dimethyltrimethylenedioxy)-17β-glycoloyloxy-18-methyl-5- and -5(10)-estrene, a compound of claim 1.

4,119,627

PROCESS FOR THE MANUFACTURE OF 6β,7-METHYLENE-3-OXO-4-ENE STEROIDS

Peter Wieland, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

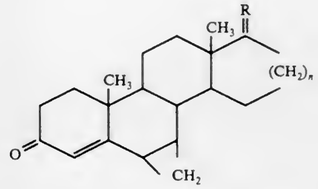
Filed Mar. 29, 1977, Ser. No. 782,585

Claims priority, application Switzerland, Apr. 6, 1976, 4299/76

Int. Cl.[2] C07J *71/00*

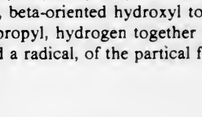
U.S. Cl. 260—239.57 **20 Claims**

1. Process for the manufacture of a 6 beta, 7-methylene-3-oxo-4-ene steroid of the general formula



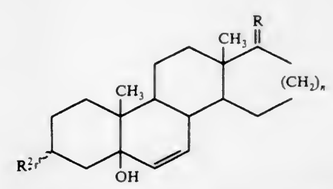
(I)

in which *n* denotes the number 1 to 2 and R represents a member selected from the group consisting of free oxo, ketalised oxo, free, etherified or esterified hydroxyl together with hydrogen, acetyl, hydroxyacetyl or a lower aliphatic hydrocarbon radical, beta-oriented hydroxyl together with y-di-lower alkylaminopropyl, hydrogen together with acetyl or hydroxyacetyl, and a radical, of the partical formula II



(II)

in which R^1 is two hydrogens, oxo, or lower alkoxy together with hydrogen, in which process, in consecutive steps, a compound of the formula III



(III)

in which *n* and R have the abovementioned meanings and R^2 represents alpha-oriented or beta-oriented hydroxyl, such hydroxyl etherified by an easily detachable protective group, or such hydroxyl esterified by a carboxylic acid, (a) is reacted with a zinc/copper-methylene iodide reagent, (b) the 3-hydroxyl group in a 6beta,7-methylene-3ξ,5-diol, if present in an etherified or esterified form, is liberated by hydrolysis, (c) the resulting 6beta,7-methylene-3ξ,5beta-diol is treated with an oxidising agent in order to dehydrogenate the 3-hydroxyl group to a 3-oxo group and (d) the resulting 6beta,7-methylene-5beta-hydroxy-3-oxo compound is treated with a dehydrating agent in order to split off the 5beta-hydroxyl group with formation of a 4,5-double bond.

4,119,628

PROCESS FOR PREPARING HEXAHYDRO-11 (EQ)-$CH_2CH_2COR_5$-2,6-METHANO-3-BENZAZOCINES

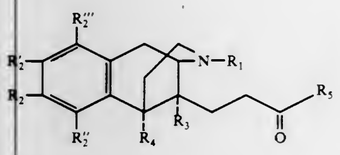
Thomas R. Lewis, Bethlehem, and William F. Michne, Poestenkill, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 785,746, Apr. 8, 1977, abandoned, which is a division of Ser. No. 725,371, Sep. 22, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,713

Int. Cl.² C07D *221/26*

U.S. Cl. 260—293.54 **26 Claims**

1. The process for preparing a compound having the formula



where:

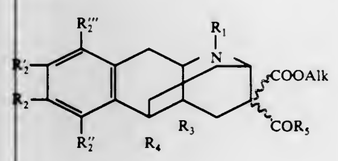
R_1 is hydrogen, lower-alkyl, lower-alkenyl, lower-alkynyl, halo-lower-alkenyl, cycloalkyl, cycloalkyl-lower-alkyl, 2- or 3-furylmethyl, or such 2- or 3-furylmethyl substituted on the unsubstituted ring carbon atoms by from one to three methyl groups, phenyl-lower-alkyl, or phenyl-lower-alkyl substituted in the phenyl ring by from one to two members of the group consisting of halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkyl-mercapto, trifluoromethyl, amino, lower-alkanoylamino or a single methylenedioxy attached to adjacent carbon atoms;

R_2, R_2', R_2'' and R_2''' are each hydrogen, or three of them are hydrogen and the fourth is halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, nitro, amino, lower-alkanoylamino, lower-alkoxy-carbonylamino or phenyl, or two of the adjacent such groups together are methylenedioxy;

R_3 is hydrogen or lower-alkyl;

R_4 is hydrogen, lower-alkyl, lower-alkoxy-lower-alkyl, hydroxy-lower-alkyl, lower-alkylthio-lower-alkyl, lower-alkyl-sulfinyl-lower-alkyl, phenylthio-lower-alkyl, phenylsulfinyl-lower-alkyl, lower-alkenyl or halo-lower-alkyl, or R_3 and R_4 together are divalent lower-alkylene, $-(CH_2)_n-$, where n is one of the integers 3 or 4;

R_5 is lower-alkyl, lower-alkylthio-lower-alkyl, lower-alkoxy-lower-alkyl, lower-alkoxy, cycloalkyl, cycloalkyl-lower-alkyl, 2- or 3-furyl, 2- or 3-furyl-$(CH_2)_m$, where m is an integer from 2 to 4, or such 2- or 3-furyl or 2- or 3-furyl-$(CH_2)_m$ substituted on the unsubstituted ring carbon atoms by from one to three methyl groups, phenyl, phenyl-$(CH_2)_m$, or phenyl or phenyl-$(CH_2)_m$ substituted in the phenyl ring by from one to two members of the group consisting of halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkyl-mercapto, trifluoromethyl, amino, lower-alkanoylamino or a single methylenedioxy attached to adjacent carbon atoms which comprises heating, with formic acid in an inert organic solvent or with a benzyl-di-lower-alkylammonium formate or a tri-lower-alkylammonium formate, a compound having the formula



where R_1, R_2, R_2', R_2'', R_2''', R_3, R_4 and R_5 have the meanings given above, and Alk is lower-alkyl.

4,119,629

CERTAIN AZAPHENOXATHIIN COMPOUNDS

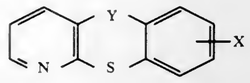
Richard Foster Miller, P.O. Box 743, Sugar Land, Tex. 77478

Continuation-in-part of Ser. No. 825,273, Aug. 17, 1977. This application Sep. 14, 1977, Ser. No. 833,049

Int. Cl.² C07D *521/00*

U.S. Cl. 260—294.8 B **7 Claims**

1. A compound of the formula:



wherein X is an electron withdrawing substituent selected from the group consisting of halogen, NO_2, and CF_3, and wherein Y is oxygen.

4,119,630

CERTAIN QUATERNARY AMMONIUM-3-CYANOPYRIDINES

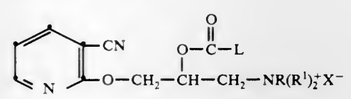
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 696,236, Jun. 15, 1976, Pat. No. 4,053,605. This application Jul. 20, 1977, Ser. No. 817,317

Int. Cl.² C07D *213/57*

U.S. Cl. 260—294.9 **11 Claims**

1. Compound having the formula:



wherein

R^1 is C_1-C_4 alkyl or benzyl,

R is C_3-C_4 branched alkyl and

L is selected from C_1-C_{10} alkyl, phenyl, mono- and disubstituted phenyl wherein said substituents are independently selected from C_1-C_4 alkyl, C_1-C_4 alkoxy and halo.

4,119,631

PENICILLINS AND THEIR PREPARATION

Rudolf Gottschlich; Werner Rogalski; Rolf Bergmann; Rosmarie Steinigeweg, and Helmut Wahlig, all of Darmstadt, Fed. Rep. of Germany, assignors to E. MERCK, Patentabteilung, Fed. Rep. of Germany

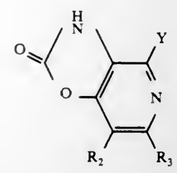
Division of Ser. No. 624,763, Oct. 22, 1975, Pat. No. 4,031,230. This application Feb. 2, 1977, Ser. No. 764,786

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1974, 2450668; Aug. 9, 1975, 2535655

Int. Cl.² C07D *233/06*

U.S. Cl. 260—295 A **3 Claims**

1. A carbamic acid lactone of the formula



wherein Y is H or alkyl of 1–4 carbon atoms and R_2 and R_3 collectively with the carbon atoms to which they are attached form a first pyridine ring which is unsubstituted, substituted by up to two of alkyl, alkoxy, dialkylamino or halogen, wherein alkyl and alkoxy in each instance are of 1–4 carbon atoms, or is fused at two adjacent carbons to a second benzene or pyridine ring.

4,119,632

METHOD OF PROMOTING THE CRYSTALLIZATION OF PICLORAM

John J. Newport, III, and Bobby G. Messick, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 2, 1977, Ser. No. 773,574

Int. Cl.² C07D *213/79;* B01J *17/02;* B01D *21/01, 9/02*

U.S. Cl. 260—295 R **7 Claims**

1. A method for promoting the spherical crystallization of picloram, which comprises combining an anionic polyacrylamide flocculating agent, picloram, and an aqueous acidic medium, wherein the flocculating agent is present in an amount of at least about 10 parts by weight of the flocculating agent per million parts by weight of the combined weight of the picloram and the aqueous acid medium.

4,119,633

2-PHENOXY AND 2-PHENYLTHIO AND 2-PHENYLAMINO-ALKYL-2-OXAZOLINES

István Tibor Tóth; Pál Bite; György Magyar; Eszter Diszler; József Borsy; Andrea Maderspach; István Polgári; Sándor Elek, and István Elekes, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

Continuation-in-part of Ser. No. 406,784, Oct. 16, 1973, Pat. No. 3,979,405. This application Aug. 17, 1976, Ser. No. 715,051

Claims priority, application Hungary, Oct. 20, 1972, GO 1222

The portion of the term of this patent subsequent to Sep. 7, 1993, has been disclaimed.

Int. Cl.² C07D *263/14*

U.S. Cl. 260—307 F **1 Claim**

1. 2-[4'-(4''-Chlorophenyl)-phenoxy]-isopropyl-4-ethyl-4-hydroxy-methyl-oxazoline.

4,119,634

BIS-BENZOXAZOLYL-COMPOUNDS

Josef Schroeder, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

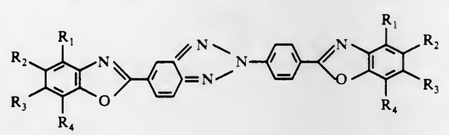
Filed Aug. 9, 1977, Ser. No. 823,133

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1976, 2636090

Int. Cl.² C07D *263/62*

U.S. Cl. 260—307 D **2 Claims**

1. A bis-benzoxazolyl compound of the formula



wherein

R_1, R_2, R_3 and R_4 independently of one another are hydrogen; halogen; C_1-C_8-alkyl; C_1-C_4-alkoxy; phenyl; phenyl-C_1-C_4-alkyl; carboxyl; cyano; C_1-C_4-alkoxycarbonyl; C_1-C_4-alkylsulfonyl; carboxamide, or carboxamide substituted by C_1-C_4-alkyl, phenyl or phenyl-C_1-C_4-alkyl; or two adjacent radicals R_1-R_4 taken together with the carbon atoms to which they are attached represent a benzene, cyclohexene or 3,3,5,5-tetramethylcyclopentene ring.

4,119,635

SUBSTITUTED 1,2,4-TRIAZOLE DERIVATIVES

Amedeo Omodei-Sale; Giorgio Pifferi; Pietro Consonni; Alberto Diena, all of Milan, and Bonaccorso Rosselli del Turco, Sarono (Varese), all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

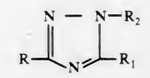
Continuation-in-part of Ser. No. 272,105, Jul. 17, 1978, abandoned. This application Sep. 3, 1976, Ser. No. 720,479

Claims priority, application Italy, Jul. 22, 1971, 42964 A/71

Int. Cl.² C07D *249/08*

U.S. Cl. 260—308 R **7 Claims**

1. A compound of formula



I

wherein

R may represent: phenyl; phenyl substituted by a radical selected from (C_{1-4})alkyl, (C_{1-4})alkoxy, fluoro, chloro, bromo, nitro, amino, cyano, carbamoyl, carboxy, hydroxymethyl, methylenedioxy and trifluoromethyl; dichlorophenyl; dimethoxyphenyl; 3,4,5-trimethoxyphenyl;

R_1 may represent: phenyl; phenyl substituted by a radical selected from (C_{1-4})alkyl, (C_{1-4})alkoxy, fluoro, chloro, bromo, hydroxymethyl, (C_{2-4})alkanoyloxymethyl, carbamoyloxymethyl, bromomethyl and dimethylaminomethyl; dimethylphenyl; dimethoxyphenyl; phenyl substituted by o-hydroxymethyl and chloro;

R_2 represents a (C_{1-4})alkyl group;

with the proviso that R and R_1 cannot simultaneously represent phenyl;

with the further proviso that, when R is phenyl, R_1 cannot be p-chlorophenyl.

4,119,636

PREPARATION OF ACYCLIC AND ALICYCLIC N-SUBSTITUTED HALO-2-PYRROLIDINONES

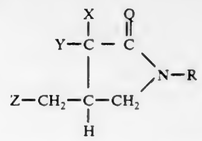
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 647,962, Jan. 9, 1976, and a continuation-in-part of Ser. No. 563,280, Mar. 28, 1975, abandoned. This application Aug. 31, 1977, Ser. No. 829,396

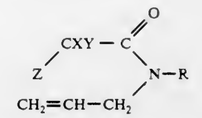
Int. Cl.² C07D *207/38*

U.S. Cl. 260—326.5 FL **6 Claims**

1. The method of preparing acyclic and alicyclic N-substituted halo-2-pyrrolidinones of the formula



in which R is lower alkyl, haloalkyl, alkenyl, cycloalkyl, cycloalkylalkyl, benzyl and chlorobenzyl; X is hydrogen or chlorine; Y is chlorine or bromine, and Z is chlorine or bromine; which comprises the steps of heating an N-alkenyl halomethyl amide of the formula



in which R, X, Y and Z are as above-defined, in the presence of a catalytic amount of ferrous ion and recovery of the resulting product.

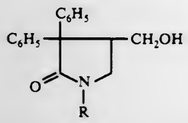
4,119,637

4-HYDROXYMETHYL-2-PYRROLIDINONES

Albert Duncan Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Sep. 23, 1975, Ser. No. 615,951
Int. Cl.[2] C07D *207/26*
U.S. Cl. 260—326.5 FL **9 Claims**

1. A compound selected from those having the formula



wherein R is selected from the group consisting of lower alkyl having one to six carbon atoms, lower cycloalkyl having four to eight carbon atoms, or phenyllower alkyl consisting of benzyl, phenethyl, phenpropyl and α-methylbenzyl.

5. A process for the production of a 1-hydrocarbon-3,3-diphenyl-4-hydroxymethyl-2-pyrrolidinone which comprises mixing a 4,5-dihydro-3,3-diphenyl-4-hydrocarbylaminomethylfuran-2(3H)one with a catalytic amount of a strong base.

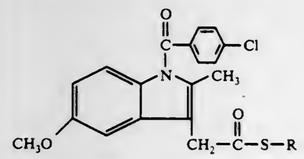
4,119,638

THIO-ESTER OF 1 (P-CHLOROBENZOYL)-5-METHOXY-2-METHYLINDOLE-3-ACETIC ACID

Richard E. Ray, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 29, 1976, Ser. No. 745,745
Int. Cl.[2] C07D *209/04*
U.S. Cl. 260—326.12 A **14 Claims**

1. A compound of the formula wherein R is



cycloalkyl radical containing 3 to 6 carbon atoms which can be optionally substituted by an alkyl radical containing 1 to 9 carbon atoms or halo; phenyl, monosubstituted or polysubstituted phenyl wherein the substituent can be linear or branched chain alkyl radical containing 1 to 9 carbon atoms, halo, alkoxy wherein the alkyl radical contains 1 to 9 carbon atoms, amino or nitro and may be alike or different.

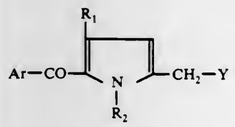
4,119,639

PREPARATION OF 5-AROYLPYRROLE-2-ACETIC ACID DERIVATIVES

John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Incorporated, Ft. Washington, Pa.

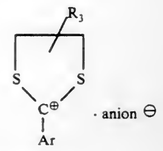
Filed Jun. 27, 1977, Ser. No. 809,956
Int. Cl.[2] C07D *207/32, 207/34*
U.S. Cl. 260—326.35 **5 Claims**

1. A method of preparing a compound having the formula:



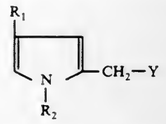
(I)

which comprises reacting a 2-Ar-1,3-dithiolanium salt having the formula:



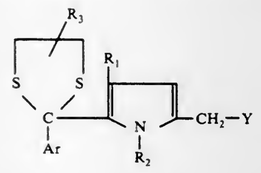
(II-a)

with a compound having the formula:



(III).

in an inert organic solvent at a temperature from about −70° C. to about 25° C. to yield a compound having the formula:



(IV)

and subsequently hydrolyzing (IV) to yield the compound of formula (I) by treatment of (IV) with methyl iodide or dimethyl sulfate in an aqueous lower alkanolic solvent or by treatment of (IV) with alkali in aqueous or aqueous alkanolic solution at 70°–180° C., wherein the foregoing formulas:

R_1 is a member selected from the group consisting of hydrogen, chloro and bromo;

R_2 is a member selected from the group consisting of hydrogen and loweralkyl;

R_3 is a member selected from the group consisting of hydrogen and loweralkyl;

Y is a member selected from the group consisting of CN, COOH and COO-loweralkyl; and

Ar is a member selected from the group consisting of phenyl, thienyl, trifluoromethylphenyl, methylthiophenyl and phenyl substituted with from one to three members each selected from the group consisting of halo, loweralkyl, and loweralkoxy.

4,119,640

POLYMERIZABLE EPOXIDE-MODIFIED COMPOSITIONS

Leonard Edward Hodakowski, St. Albans; Clairborn Lee Osborn, Charleston, both of W. Va., and Edward Bruce Harris, Spring Valley, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 10, 1975, Ser. No. 594,670
Int. Cl.[2] C07C *69/54;* **C07D** *319/04*
U.S. Cl. 260—340.7 **25 Claims**

1. A polymerizable epoxide-modified composition comprising the reaction product mixture of the conjoint reaction of:

(I) a vinylated carboxylic acid selected from the group consisting of:

(a) acrylic acid, and

(b) methacrylic acid; and

(II) an aliphatic epoxide selected from the group consisting of:

(a) an epoxide of a long chain unsaturated fatty acid, or the ester thereof, having an aliphatic chain of from 10 to 24 carbon atoms and at least one oxirane group, and

(b) an epoxide of a long chain unsaturated fatty oil having esterified aliphatic acid chains of from 10 to 24 carbon atoms wherein at least one of said esterified chains contains an oxirane group; and

(III) a diepoxide selected from the group consisting of:

(a) an epoxycycloalkyl diepoxide having at least one epoxycycloalkyl group wherein said cycloalkyl group has 5 or 6 ring carbon atoms, and

(b) a diglycidyl compound wherein the glycidyl group is attached to a phenyl group via a —O— link, and

(IV) a reactive-group-containing modifier selected from the group consisting of:

(a) aromatic and aliphatic carboxylic acids wherein the aromatic group has 6 ring carbon atoms and the aliphatic chain has from 2 to 10 carbon atoms,

(b) the anhydrides of the carboxylic acids of (IV) (a),

(c) a phenol,

(d) an aromatic or aliphatic alcohol having from 1 to 10 carbon atoms,

(e) an aliphatic carboxylic acid amide having from 2 to 10 carbon atoms in the aliphatic chain, and

(f) an aliphatic carboxylic acid halide having from 2 to 15 carbon atoms in the aliphatic chain,

wherein in said polymerizable composition the amount of reacted component (II) is from 0.1 to 1 oxirane group equivalent per carboxyl group equivalent present in component (I), the amount of reacted component (III) is from 0.1 to 1 oxirane group equivalent per carboxyl group equivalent of reacted component (I), the amount of reacted component (IV) is from 0 to 1 reactive group equivalent per carboxyl group equivalent of reacted component (I) and wherein the sum of the total reacted oxirane equivalents of components (II) and (III) plus the reacted group equivalents of component (IV) in said polymerizable composition is from 0.1 to 1 equivalent per reacted carboxyl equivalent of component (I).

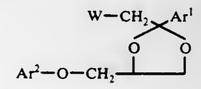
4,119,641

2-ARYL-4-ARYLOXYMETHYL-1,3-DIOXOLANES

Jan Heeres, Vosselaar, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 732,828, Oct. 15, 1976, Continuation-in-part of Ser. No. 619,863, Oct. 6, 1975, abandoned, Continuation-in-part of Ser. No. 544,157, Jan. 27, 1975, Pat. No. 3,936,470. This application Jun. 2, 1977, Ser. No. 802,703
Int. Cl.[2] C07D *317/10*
U.S. Cl. 260—340.9 R **1 Claim**

1. A chemical compound having the formula:



wherein:

W is a member selected from the group consisting of halo, methylsulfonyloxy and (4-methylphenyl)sulfonyloxy;

Ar^1 is a member selected from the group consisting of naphthalenyl, nitrophenyl, cyanophenyl, lower alkylhalophenyl and lower alkyloxy-halophenyl; and

Ar^2 is a member selected from the group consisting of phenyl, substituted phenyl, naphthalenyl and halonaphthalenyl, and wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, cyano, phenyl and phenylmethyl.

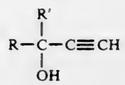
4,119,642

BUTENOLIDE SYNTHESIS VIA CARBONYLATION OF VINYLMERCURIALS IN THE PRESENCE OF INORGANIC SALTS

Richard Craig Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 616,436, Sep. 24, 1975, Pat. No. 4,010,170. This application Nov. 19, 1976, Ser. No. 743,228
Int. Cl.[2] C07D *307/58, 307/94*
U.S. Cl. 260—343.6 **9 Claims**

1. A method of preparing β-halobutenolide, and gamma substituted derivatives thereof, said method comprising, reacting a compound of the formula:



wherein R and R′ are organic moieties selected to represent the gamma substituents of the particular butenolide being prepared, with a mercuric halide to provide a vinylmercuric halide, and carbonylating said vinylmercuric halide, in the presence of a carbonylating agent selected from the group consisting of noble metals and noble metal salts, and in the presence of a basic inorganic metal salt selected from the group consisting of Group I and Group II metal salts, and aluminum oxide to provide β-halobutenolide or a gamma substituted derivative thereof.

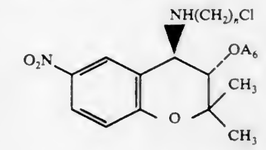
4,119,643

4-AMINO-6-NITRO DERIVATIVES OF 2H-3,4-DIHYDROBENZO[b]PYRANS

Eric Alfred Watts, Harlow, England, assignor to Beecham Group Limited, Great Britain

Filed Dec. 23, 1976, Ser. No. 753,899
Claims priority, application United Kingdom, Jan. 27, 1976, 02994/76
Int. Cl.[2] C07D *311/02;* **A61K** *31/35*
U.S. Cl. 260—345.2 **5 Claims**

1. A compound selected from the group consisting of a 3,4-dihydrobenzo[b]pyran of the formula:



and a pharmaceutically acceptable acid addition salt thereof, wherein *n* is an integer of from 2 to 5, and

A_6 is hydrogen or acetyl.

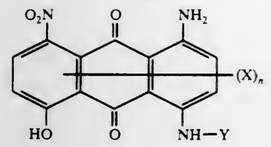
4,119,644

ANTHRAQUINONOID DISPERSE DYES

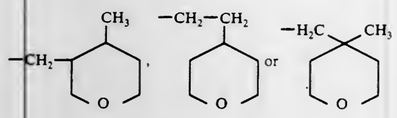
Gerhard Epple, Weisenheim; Walter Himmele, Walldorf, and Werner Fliege, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,728
Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623172
Int. Cl.[2] C07D *309/06*
U.S. Cl. 260—345.9 R **8 Claims**

1. Anthraquinonoid disperse dye of the formula



where X is chlorine or bromine, Y is



and *n* is 0, 1 or 2, or a mixture thereof.

4,119,645

METHOD OF PREPARING PHTHALIC ANHYDRIDE

Michel Auroy; Maurice Goharel, and Jacques Zoulalian, all of Chauny, France, assignors to Rhone-Progil, Paris, France

Continuation-in-part of Ser. No. 460,176, Apr. 11, 1974, abandoned. This application Jul. 20, 1977, Ser. No. 817,139
Claims priority, application France, Apr. 11, 1973, 73 13072
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.4 **14 Claims**

1. In a process for the preparation of phthalic anhydride by oxidation of ortho-xylene with air in the presence of an oxidizing catalyst in an exothermic reaction wherein the reaction gases issue at elevated temperature, circulating a heat exchange fluid through the reaction zone to maintain reaction temperature within said zone and to recover heat of reaction, recovering the heat of reaction from said heat exchange fluid and recovering heat from the reaction gases by passing said heat exchange fluid and said hot reaction gases in heat exchange with water at a temperature whereby the reaction gases issue from the heat exchange at a temperature at least 5° C. above the condensation temperature of phthalic anhydride to provide steam utilized in carrying out the process.

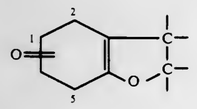
4,119,646

HEXAHYDROBENZOFURANONE COMPOUNDS

El Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Highland Park, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 400,484, Sep. 24, 1973, Pat. No. 4,011,239, which is a continuation-in-part of Ser. No. 755,732, Aug. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 714,447, Mar. 20, 1968, abandoned. This application Nov. 2, 1976, Ser. No. 737,942
Int. Cl.[2] C07D *307/79, 307/86*
U.S. Cl. 260—346.22 **3 Claims**

1. The compound having the formula



where the dangling valences are satisfied with hydrogen or a hydrocarbyl group, and wherein the =O is attached to the 1-carbon or the 5-carbon of the ring.

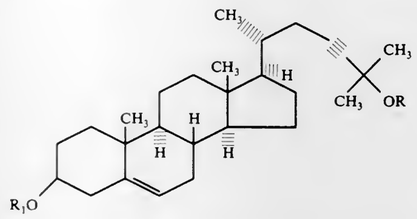
4,119,647

25-HYDROXYCHOLECALCIFEROL-23,24-^{3}H AND PROCESS FOR THE PREPARATION THEREOF

Arnold Alvin Liebman, Upper Saddle River, and Richard Robert Muccino, Verona, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

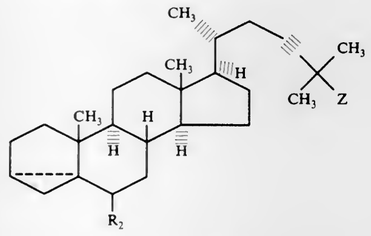
Filed Apr. 11, 1977, Ser. No. 786,158
Int. Cl.[2] C07J *9/00*
U.S. Cl. 260—397.2 **7 Claims**

1. A process for the preparation of a compound of the formula

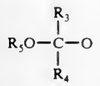


wherein R and R_1 are each independently lower alkanoyl which comprises

(a) contacting a compound of the formula



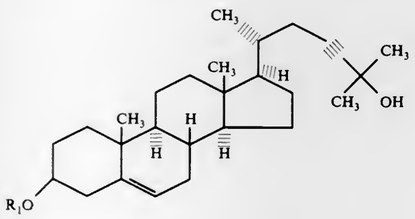
wherein R_2 is hydroxy, lower alkoxy, phenyl lower alkoxy, lower alkanoyloxy or benzoyloxy and Z is hydroxy or a group of the formula



wherein R_3 is hydrogen or lower alkyl, R_4 and R_5 are each independently lower alkyl and R_4 and R_5 taken together are lower alkylene of from 3 to 8 carbon atoms with a lower alkanoic acid of the formula

R_1OH

wherein R_1 is lower alkanoyl to afford a compound of the formula



wherein R_1 is as above

(b) contacting the compound obtained in step (a) with a lower alkanoic acid anhydride of the formula

$(R)_2O$

wherein R is as above in the presence of an acid acceptor and

(c) recovering the product.

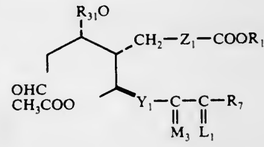
4,119,648

THROMBOXANE B ALDEHYDE INTERMEDIATES

William P. Schneider, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

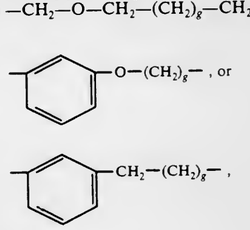
Division of Ser. No. 716,473, Aug. 20, 1976, Pat. No. 4,070,384, which is a continuation-in-part of Ser. No. 676,894, Apr. 14, 1976, Pat. No. 4,018,804. This application Sep. 6, 1977, Ser. No. 830,520
Int. Cl.[2] C09F *7/02;* C11C *3/00*
U.S. Cl. 260—405 **1 Claim**

1. A thromboxane intermediate of the formula:



wherein R_{31} is a hydroxy hydrogen replacing group; wherein Z_1 is .

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,

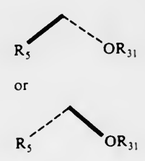


wherein *g* is one, 2, or 3;

wherein R_1 is alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one or two chloro, fluoro, or alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation;

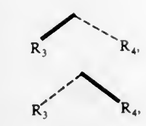
wherein Y_1 is trans—CH=CH— or —CH_2CH_2—;

wherein M_3 is

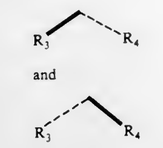


wherein R_5 is hydrogen or methyl and R_{31} is a hydroxy-hydrogen replacing group;

wherein L_1 is



or a mixture of

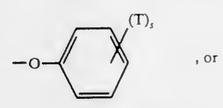


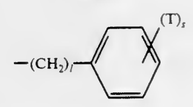
and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; and

wherein R_7 is

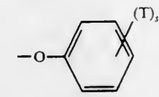
—$(CH_2)_m$—CH_3, (1)


(2)


(3)

wherein *l* is zero, one, two, or three, wherein *m* is one to 5, inclusive, T is alkyl of one to 3 carbon atoms, inclusive, alkoxy of one to 3 carbon atoms, inclusive, chloro, fluoro, or trifluoromethyl, and *s* is one, two, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is

(7)


(8)

only when R_3 and R_4 are hydrogen or methyl, being the same or different.

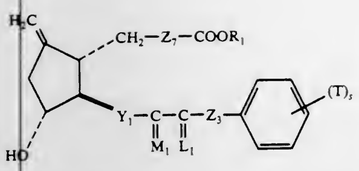
4,119,649

ω-ARYL-9-DEOXY-9-METHYLENE-PGF-TYPE COMPOUNDS

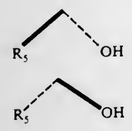
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 682,848, May 4, 1976, Pat. No. 4,060,534, which is a continuation-in-part of Ser. No. 651,622, Jan. 23, 1976, Pat. No. 4,021,467, which is a division of Ser. No. 556,768, Mar. 10, 1975, Pat. No. 3,950,363. This application Sep. 12, 1977, Ser. No. 832,242
Int. Cl.[2] C09F *7/00;* C11C *3/00*
U.S. Cl. 260—408 **226 Claims**

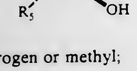
1. A prostaglandin analog of the formula



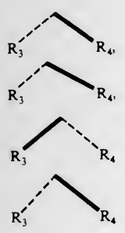
wherein Y_1 is trans—CH=CH—, —C≡C—, or —CH_2CH_2—,
wherein Z_3 is oxa or methylene, *s* is zero, one, two or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to three carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl, the various T's being the same or different, with the further proviso that Z_3 is oxa only when R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein M_1 is



or



wherein R_5 is hydrogen or methyl;
wherein L_1 is



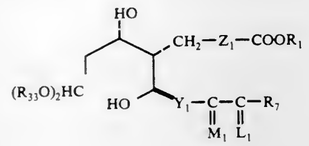
or a mixture of

and

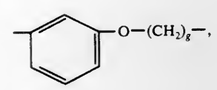
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro, and
wherein Z_7 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —C≡C—CH_2—$(CH_2)_g$—CH_2—, and
(8) —CH_2—C≡C—$(CH_2)_g$—CH_2—,
wherein *g* is one, 2, or 3; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,650
THROMBOXANE B DIALKYL-ACETAL DIOL INTERMEDIATES
William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 716,473, Aug. 20, 1976, Pat. No. 4,070,384, which is a continuation-in-part of Ser. No. 676,894, Apr. 14, 1976, Pat. No. 4,018,804. This application Sep. 6, 1977, Ser. No. 830,540
Int. Cl.[2] **C09F** *7/00;* **C11C** *3/00*
U.S. Cl. 260—408 **1 Claim**

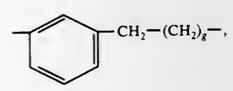
1. A thromboxane intermediate of the formula:



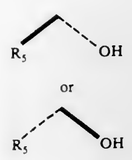
wherein
Z_1 is
(1) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis-CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7)



or
(8)



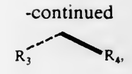
wherein *g* is one, 2, or 3;
wherein R_1 is alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one or two chloro, fluoro, or alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation;
wherein Y_1 is trans-CH=CH— or —CH_2CH_2—;
wherein M_1 is



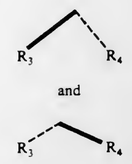
wherein R_5 is hydrogen or methyl;
wherein L_1 is



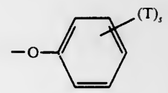
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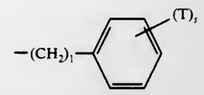
or a mixture of



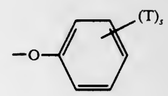
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; and
wherein R_7 is
(1) —$(CH_2)_m$—CH_3,
(2)



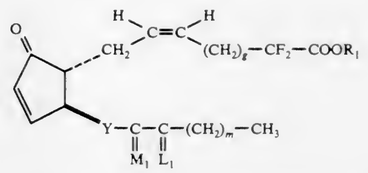
or
(3)



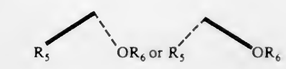
wherein *l* is zero, one, two, or three,
wherein *m* is one to 5, inclusive, T is alkyl of one to 3 carbon atoms, inclusive, alkoxy of one to 3 carbon atoms, inclusive, chloro, fluoro, or trifluoromethyl, and *s* is one, two, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



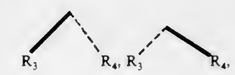
only when R_3 and R_4 are hydrogen or methyl, being the same or different; and
wherein R_{33} is alkyl of one to 5 carbon atoms, inclusive.



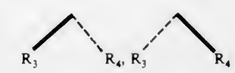
wherein Y is cis-CH=CH—; wherein *g* is 2, 3, or 4;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is

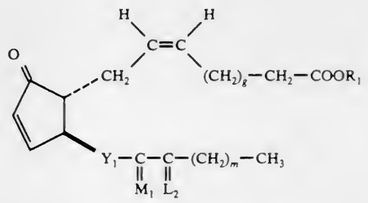


or a mixture of

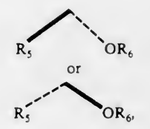


wherein R_3 and R_4 are hydrogen, methyl, fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein *m* is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

19. A compound of the formula



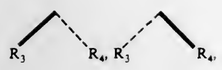
wherein Y_1 is cis-CH=CH—; wherein *g* is 2, 3, or 4;
wherein M_1 is



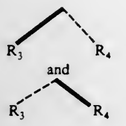
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_2 is

4,119,651
CIS-13-PGA$_2$ ANALOGS
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,183
Int. Cl.[2] **C07C** *177/00*
U.S. Cl. 260—408 **49 Claims**

1. A compound of the formula



or a mixture of

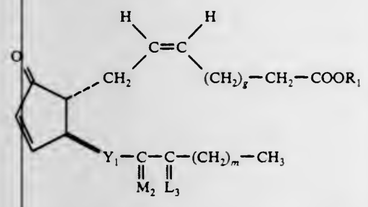


wherein R_3 and R_4 are hydrogen or fluoro, being the same or different, with the proviso that at least one of R_3 and R_4 is fluoro;

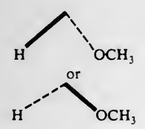
wherein m is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

30. A compound of the formula



wherein Y is cis-CH=CH—; wherein g is 2, 3, or 4; wherein M_2 is



wherein L_3 is



or a mixture of

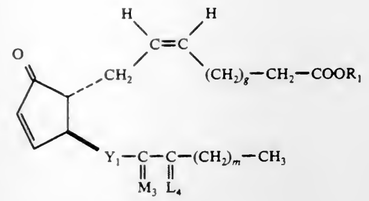


wherein R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein m is one to 5, inclusive; and

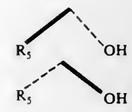
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

37. A compound of the formula



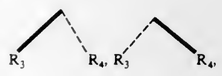
wherein Y is cis-CH=CH—;

wherein M_3 is



wherein R_5 is hydrogen or methyl;

wherein L_4 is



or a mixture of

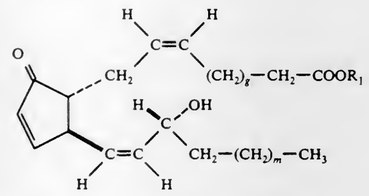


wherein R_3 and R_4 are hydrogen or methyl, being the same or different, with the proviso that one of R_3 and R_4 is methyl;

wherein m is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

48. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof;

wherein g is 2 to 4;

wherein m is one to 5; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,652

CATALYTIC ASYMMETRIC HYDROGENATION

William S. Knowles, St. Louis, and Milton J. Sabacky, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 501,555, Aug. 29, 1974, abandoned, which is a division of Ser. No. 173,620, Aug. 20, 1971, Pat. No. 3,849,480, which is a continuation of Ser. No. 758,603, Sep. 9, 1968, abandoned. This application Jun. 25, 1976, Ser. No. 700,254

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R **7 Claims**

1. An optically active metal coordination complex of the formula $M^1X_nL_3$ wherein M^1 is rhodium, X is selected from the group consisting of hydrogen, chlorine, fluorine, bromine and iodine, n is one of the integers one or three; each L is independently selected from the group $AR^5R^6R^7$, wherein A is selected from the group consisting of phosphorus and arsenic and R^5, R^6 and R^7 are each independently selected from the group consisting of hydrogen; alkyl having at least one carbon atom and a maximum of 12 carbon atoms; substituted alkyl, said substitution selected from the group consisting of amino, carbonyl, phenyl, nitro and alkoxy, said alkoxy having a maximum of 4 carbon atoms; phenyl; substituted phenyl, said substitution selected from the group consisting of alkyl having a maximum of 4 carbon atoms, amino and nitro, said substitution being less than 3 substituents; cycloalkyl having at least 3 carbon atoms and a maximum of 6 carbon atoms; pyrryl; thienyl; furyl; pyridyl and piperidyl, provided that at least one L group is optically active.

4,119,653

CO-ORDINATION COMPOUNDS OF PLATINUM

Martin Leslie Tobe, Northwood; Abdul Rauf Khokhar, London, and Peter David Michael Braddock, Beech Hill, Wigan, all of England, assignors to Rustenburg Platinum Mines Limited, Johannesburg, South Africa

Filed Apr. 5, 1977, Ser. No. 784,797

Claims priority, application United Kingdom, Apr. 6, 1976, 13888/76

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R **5 Claims**

1. A co-ordination compound of platinum having the structure:-



in which X and Y are the same or different halogen and A and B are the same or different straight chain aliphatic amine groups co-ordinated to the Pt through their N atoms each having the general formula:

$$C_nR_{2n+1}NH_2$$

in which n may vary from 3 to 9 and in which all of the R groups are the same or different and are selected from the group consisting of hydrogen, aryl, alkaryl, halogen, pseudohalogen, hydroxy, carbonyl, formyl, nitro, amido, amino, sulphonic acid, sulphonic acid salt, carboxylic acid and carboxylic acid salt.

4,119,654

COMPOSITIONS CONTAINING PLATINUM

Martin Leslie Tobe, Northwood; Abdul Rauf Khokhar, London, and Peter David Michael Braddock, Wigan, all of England, assignors to Rustenburg Platinum Mines Limited, Johannesburg, South Africa

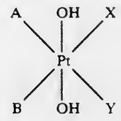
Filed Feb. 22, 1977, Ser. No. 770,313

Claims priority, application United Kingdom, Feb. 26, 1976, 7650/76

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R **6 Claims**

1. A co-ordination compound of platinum having the structure:

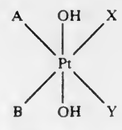


in which X and Y are halogen and A and B are the same or different branched chain aliphatic amine groups or C-substituted branched chain aliphatic amine groups co-ordinated to the Pt through their N atoms each having the general formula

$$C_nR_{2n+1}NH_2$$

in which n may vary from 3 to 9 and in which all of the R groups are the same or different and are selected from the group consisting of hydrogen, alkyl, aryl, alkaryl, aralkyl, halogen, pseudohalogen, hydroxy, carbonyl, formyl, nitro, amido, amino, sulphonic acid, sulphonic acid salt, carboxylic acid and carboxylic acid salt.

6. A composition comprising a co-ordination compound of platinum having the structures:



in which X and Y are halogen and A and B are exo 2 amino norbornane.

4,119,655

NOVEL GRAPHITE INTERCALATION COMPOUNDS AND METHOD OF MAKING SAME

Roger Hulme, Somerville, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Jan. 17, 1977, Ser. No. 760,157

Int. Cl.[2] C07F *9/90*

U.S. Cl. 260—440 **13 Claims**

1. A method of preparing intercalates of graphite comprising contacting graphite with a Lewis acid and ClF_3 in the presence of HF at a temperature in the range of from about −80° to +100° C for a time sufficient for intercalation to occur, said Lewis acid being a fluoride of an element selected from B, Si, Ge, Sn, Pb, P, As, Sb, Bi, Ti, Zr, Hf, V, Nb and Ta.

10. A blue compound of graphite consisting essentially of graphite, ClF_3, HF and a Lewis acid fluoride of an element selected from B, Si, Ge, Sn, Pb, P, As, Sb, Bi, Ti, Zr, Hf, V, Nb and Ta, said graphite being present in an amount ranging from about 30 to about 55 weight %.

4,119,656

PREPARATION OF HYDROXYLATED COMPOUNDS FROM SYNTHESIS OF GAS WITH PALLADIUM CATALYSTS

Marvin Lloyd Poutsma, Ossining; Jule Anthony Rabo, Armonk, and Alan Peter Risch, Garnersville, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 638,304, Dec. 8, 1975, abandoned. This application May 16, 1977, Ser. No. 797,242

Int. Cl.² C07C *27/06*

U.S. Cl. 260—449 R **5 Claims**

1. A heterogeneous catalytic process for selectively producing hydroxylated hydrocarbons containing from 1-2 carbon atoms from a gaseous mixture containing carbon monoxide and hydrogen which comprises contacting said gaseous mixture with a catalyst consisting essentially of palladium at a reaction temperature of from about 200° C. to about 400° C. and a reaction pressure of from about 150 to about 20,000 psia, the reaction pressure being correspondingly increased as reaction temperature is increased such that hydroxylated organic compounds are selectively produced in quantities greater than about 90%, by weight, of the total product mixture while substantially avoiding the concomitant formation of methane or higher molecular weight hydrocarbons.

4,119,657

NOVEL PEROXYCARBONATE

Takeshi Komai, Aichi, and Kazuo Matsuyama, Gamagori, both of Japan, assignors to Nihon Oil and Fats Co., Ltd., Tokyo, Japan

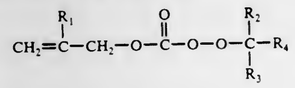
Filed May 20, 1977, Ser. No. 798,846

Claims priority, application Japan, Jun. 16, 1976, 51/69720

Int. Cl.² C07C *69/02*

U.S. Cl. 260—453 RZ **7 Claims**

1. A compound having the formula



wherein R_1 is hydrogen or alkyl having 1 to 4 carbon atoms, R_2 and R_3 are alkyls having 1 to 4 carbon atoms, and R_4 is alkyl having 1 to 12 carbon atoms.

4,119,658

AROMATIC ISOCYANATO-POLYSULPHONIC ACIDS

Dieter Dieterich, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 30, 1977, Ser. No. 782,642

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615876

Int. Cl.² C07C *119/048*; C07D *229/00*

U.S. Cl. 260—453 AR **9 Claims**

4. Solid Isocyanatopolysulphonic acids of the formula

$$(OCN)_n R(SO_3H)_m$$

which may be present in the dimerized form containing uretdione groups, in which formula R represents a mononuclear, dinuclear or trinuclear aromatic hydrocarbon group having a total of 6 to 20 carbon atoms, which may be interrupted by alkylene groups having 1 to 3 carbon atoms or substituted by alkyl groups having 1 to 4 carbon atoms; *n* represents an integer of from 1 to 3; and *m* an integer of from 2 to 6.

7. A process for the preparation of solid aromatic isocyanatopolysulphonic acids comprising reacting monoisocyanates or polyisocyanates having exclusively aromatically bound isocyanate groups with sulphur trioxide at −10° C. to 140° C., wherein the isocyanate used as starting material which is to be sulphonated is reacted with at least 50% by weight of sulphur trioxide, based on the quantity of isocyanate used as starting material.

4,119,659

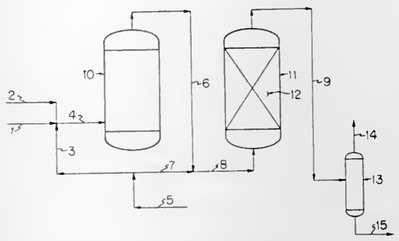
PRODUCTION OF ETHYL CHLOROTHIOFORMATE

Carlo G. Alesandrini, Jr., Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 636,266, Nov. 28, 1975, Pat. No. 4,012,405. This application Mar. 9, 1977, Ser. No. 775,821

Int. Cl.² C07C *153/09*

U.S. Cl. 260—455 R **26 Claims**



1. A process for production of a chlorothioformate having the formula

$$RSCCl \quad (O \text{ above } C)$$

in which R is C_1-C_{15} alkyl, cycloalkylmethyl having from 3 to 7 carbon atoms in the cycloalkyl portion, C_3-C_7 cycloalkyl, C_2-C_5 alkenyl, phenyl, chloro-substituted phenyl, benzyl or chloro-substituted C_1-C_{15} alkyl in which the chloro-substituent is situated at least as far as the gamma-carbon atom, with respect to the sulfur atom, comprising:

(a) contacting a mercaptan having the formula RSH with phosgene in a first continuous liquid phase reaction zone in the presence of a catalyst comprising activated carbon;

(b) removing a first reaction product from the first reaction zone;

(c) contacting the first reaction product with a catalyst comprising activated carbon in a second continuous liquid phase reaction zone; and

(d) removing a second reaction product comprising the chlorothioformate from the second reaction zone.

4,119,660

METHOD FOR MAKING DIPEROXYACIDS

James Peyton Hutchins, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 718,281, Aug. 27, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,897

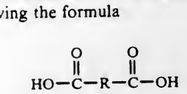
Int. Cl.² C07C *179/10*

U.S. Cl. 260—502 R **5 Claims**

1. A process for making aliphatic diperoxyacids comprising the following steps:

A. Forming a solution containing from about 6% to about 14% hydrogen peroxide, about 69% to about 82% sulfuric acid and about 6% to about 21% water,

B. Adding to the solution of A an aliphatic dibasic carboxylic acid having the formula



wherein R is an alkylene group containing from about 10 to 18 carbon atoms to form a mixture,

C. Maintaining the mixture of B at a temperature of from about 10° C. to about 50° C. until the peroxyacid crystals are formed,

D. Recovering the diperoxyacid crystals of step C by means of filtration; and

E. Washing the diperoxyacid crystals with water and drying said crystals.

4,119,661

PROCESS FOR PRODUCING ALKALI SALTS OF ALKYLSULPHONIC ACIDS

Efim Stepanovich Balakirev, ulitsa akademika Skryabina, 30, korpus 2, kv. 43; Galina Ilinichna Bogomolova, ulitsa Novo-Ostapovskaya, 8, kv. 69; Abram Iosifovich Gershenovich, ulitsa M.Ulyanovoi, 16, kv. 124, and Irina Viktorovna Gruzdeva, ulitsa Tikhomirova, 7, korpus 3, kv. 121, all of Moscow, U.S.S.R.

Filed Mar. 30, 1977, Ser. No. 783,027

Claims priority, application U.S.S.R., Apr. 5, 1976, 2343735

Int. Cl.² C07C *143/02*

U.S. Cl. 260—513 R **4 Claims**

1. A process for producing alkali metal salts of alkylsulfonic acids, wherein the alkyl contains 11 to 18 carbon atoms, comprising sulfoxidation of n-paraffins selected from the group consisting of 11 to 18 carbon atoms, and mixtures thereof; to form a reaction mixture which includes the corresponding alkylsulfonic acids, sulfuric acid, unreacted n-paraffins, sulfurous anhydride and water; outgassing said reaction mixture; neutralizing the outgassed reaction mixture with an aqueous solution of alkali metal hydroxides at a temperature of from 40°-95° C. to form an alkali metal salt neutralization product; maintaining the neutralization product at a temperature of from 100° to 160° C. under a gauge pressure of from 1 to 6 atmospheres to stratify the neutralization product into two layers, the upper layer comprising unreacted n-paraffins, the lower layer comprising an aqueous solution of a mixture of alkali metal salts of corresponding alkylsulfonic acids and sulfuric acid; separating the upper layer; adding saturated aliphatic C_1 to C_4 monohydric alcohols so that the weight ratio of lower layer to alcohol equals 1:1-2 respectively, to form an aqueous alcohol solution containing alkali metal salts of the corresponding alkylsulfonic acids and sulfuric acid; maintaining the resulting aqueous alcohol salt solution of said acids at a temperature of from 2° to 20° C. to precipitate the alkali metal salts of sulfuric acid; separating the precipitate from the aqueous alcohol solution of alkali salts of the corresponding alkylsulfonic acids; and recovering said alkylsulfonic acids.

4,119,662

CIS-4,5-DIDEHYDRO-13,14-DIDEHYDRO-PGF$_1$ COMPOUNDS

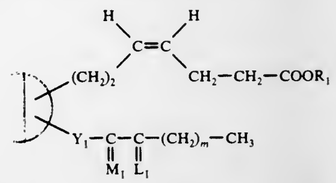
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,739, Feb. 13, 1976, Pat. No. 4,029,681. This application Mar. 7, 1977, Ser. No. 776,553

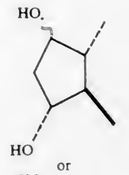
Int. Cl.² C07C *177/00*

U.S. Cl. 562—503 **53 Claims**

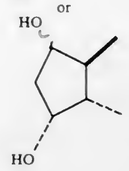
1. A prostaglandin analog of the formula:



wherein D is



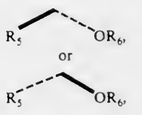
or



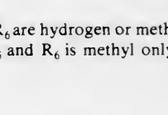
wherein Y_1 is $-C\equiv C-$;

wherein *m* is 1 to 5, inclusive;

wherein M_1 is

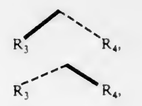


or

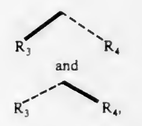


wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,663

INTER-OXA-9-DEOXY-PGF COMPOUNDS

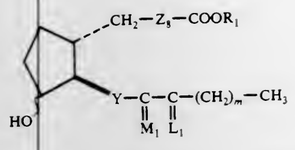
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,243, Sep. 17, 1975, Pat. No. 4,033,989. This application Apr. 11, 1977, Ser. No. 786,716

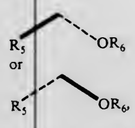
Int. Cl.² C07C *177/00*

U.S. Cl. 562—503 **33 Claims**

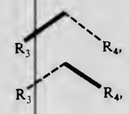
1. A prostaglandin analog of the formula



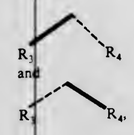
wherein Y is cis-CH=CH— or trans-CH=CH—;
wherein *m* is 1 to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_8 is
(1) $—CH_2—O—CH_2—(CH_2)_g—CH_2—$,
(2) $—(CH_2)_2—O—(CH_2)_g—CH_2—$, or
(3) $—(CH_2)_3—O—(CH_2)_g—$,
wherein *g* is 1, 2, or 3.

4,119,664

5-OXA-13,14-DIDEHYDRO-PGE$_1$ COMPOUNDS

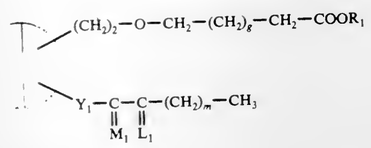
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,739, Feb. 13, 1976, Pat. No. 4,029,681. This application Mar. 7, 1977, Ser. No. 775,074

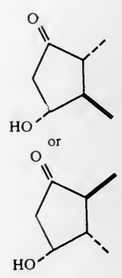
Int. Cl.[2] **C07C** *177/00*

U.S. Cl. 562—503 **53 Claims**

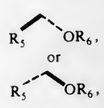
1. A prostaglandin analog of the formula:



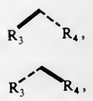
wherein D is



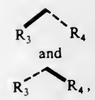
wherein Y_1 is —C≡C—;
wherein *g* is 1, 2, or 3;
wherein *m* is 1 to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,665

MANUFACTURE OF 6-AMINOCAPROAMIDE

Hans-Martin Weitz, Bad Durkheim; Rolf Fischer, Heidelberg, and Franz Josef Broecker, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 27, 1976, Ser. No. 757,768

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1976, 2601462

Int. Cl.[2] **C07C** *103/127*

U.S. Cl. 260—561 A **7 Claims**

1. A process for the manufacture of 6-aminocaproamide which comprises reacting methyl or ethyl 5-cyanovalerate with excess ammonia at temperatures of from 25° to 200° C, contacting the resulting 5-cyanovaleramide at temperatures of from 25° to 200° C and pressures of from 50 to 300 bars in the presence of ammonia and of supported cobalt and/or nickel catalysts obtained by calcination of compounds of formula I

$$[(Mg_aNi(II)_bCo(II)_c)Al_2]CO_3(OH)_{16} \cdot 4\,H_2O \qquad I$$

in which *b* and *c* denote integers or decimal numbers of from 0 to 6 and *a* denotes an integer or decimalnumber of from 0 to 4, $2(a+b+c)$ being 12, at temperatures of from 200° to 600° C, and subsequently reducing with hydrogen at elevated temperature.

4,119,666

2-DECARBOXY-2-AMINO-METHYL-9-DEOXY-9-METHYLENE-PGF-TYPE COMPOUNDS

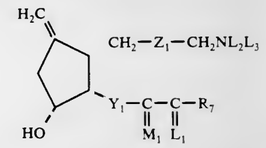
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 682,848, May 4, 1976, Pat. No. 4,060,534, which is a continuation-in-part of Ser. No. 651,622, Jan. 23, 1976, Pat. No. 4,051,467, which is a division of Ser. No. 556,768, Mar. 10, 1975, Pat. No. 3,950,363. This application Sep. 12, 1977, Ser. No. 832,243

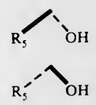
Int. Cl.[2] **C07C** *87/45, 87/50, 177/00*

U.S. Cl. 260—563 R **2 Claims**

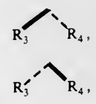
1. A prostaglandin analog of the formula



wherein Y_1 is trans-CH=CH—, —C=C—, or $—CH_2CH_2—$;
wherein M_1 is



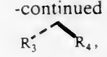
wherein R_5 is hydrogen or methyl;
wherein L_1 is



or a mixture of

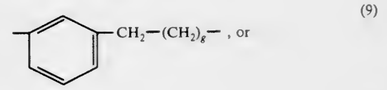


-continued

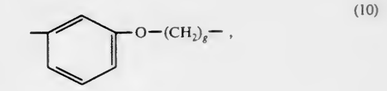


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein Z_1 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —C=C—CH_2—$(CH_2)_g$—CH_2—,
(8) —CH_2—C=C—$(CH_2)_g$—CH_2—,

(9)

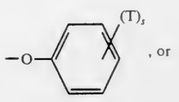


(10)

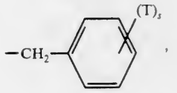


wherein *g* is one, 2, or 3;
wherein R_7 is
(1) $—(CH_2)_m—CH_3$,

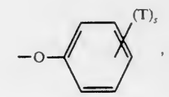
(2)



(3)



wherein *m* is one to 5, inclusive, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive and *s* is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and *s* are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and
wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive.

4,119,667

HALOANILINE DERIVATIVES AS PLANT GROWTH MODIFIERS

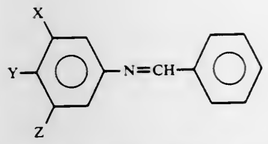
Wayne O. Johnson, Warminster; Harlow L. Warner, Hatboro, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 290,190, Sep. 18, 1972, Pat. No. 3,862,833. This application Nov. 25, 1974, Ser. No. 526,655

Int. Cl.[2] **C07C** *119/00*

U.S. Cl. 260—566 F **3 Claims**

1. A compound of the formula:



wherein X is chlorine, bromine or iodine; Y and Z are selected independently from hydrogen, chlorine and bromine; with the provision that one and only one of Y and Z is hydrogen.

4,119,668

N,N'-BRIDGED-BIS[N,N'SUBSTITUTED-2-HYDROXY ALKANEAMMONIUM] SALTS

Guy D. Diana, Stephentown, and Royal A. Cutler, Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 739,447, Nov. 8, 1976, Pat. No. 4,085,144, which is a division of Ser. No. 582,646, Jun. 2, 1975, Pat. No. 4,022,833, which is a division of Ser. No. 332,267, Feb. 14, 1973, Pat. No. 3,928,427, which is a continuation-in-part of Ser. No. 123,097, Mar. 10, 1971, abandoned. This application Sep. 15, 1977, Ser. No. 833,485

Int. Cl.[2] C07C *87/30*; A61K *31/14*

U.S. Cl. 260—567.6 P **7 Claims**

1. N,N'-(X)-bis[N-(R')-2-(R)-2-(ZO)-ethylamine] N,N'-di(atertiary alkyl of one to four carbon atoms)diammonium quaternary salt or N,N'-dibenzyldiammonium quaternary salt wherein

R is alkyl of three to fifteen carbon atoms or cycloalkyl of four to seven ring carbon atoms;

R' is atertiary alkyl of one to four carbon atoms;

X is alkylene of two to 12 carbon atoms with bonds to the nitrogen atoms at different carbon atoms or X'-Y-X'', wherein X' and X'' are alkylene of one to four carbon atoms with bonds to Y and to the nitrogen atoms at the same or different carbon atoms and Y is cycloalkylene of four to seven ring carbon atoms with bonds to X' and X'' at the same or different carbon atoms, phenylene, vinylene or ethynylene;

the sum of the number of carbon atoms of R and X is at least nine; and

Z is hydrogen.

4,119,669

3,4-XYLIDINE COMPOUNDS WHICH ARE USEFUL AS HERBICIDES AND AS INTERMEDIATES IN THE PREPARATION OF 2,6-DINITRO-3,4-XYLIDINE HERBICIDES

Stephen David Levy, and Robert Eugene Diehl, both of Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 373,079, Jun. 25, 1973, Pat. No. 3,920,742. This application Mar. 21, 1975, Ser. No. 560,847

Int. Cl.[2] C07C *87/60, 87/62*; A01N *9/20*

U.S. Cl. 260—577 **1 Claim**

1. A compound selected from the group consisting of N-sec-butyl-6-nitro-3,4-xylidine; N-(1-ethylpropyl)-2-nitro-3,4-xylidine; and N-(1-ethylpropyl)-6-nitro-3,4-xylidine.

4,119,670

PROCESS AND REACTOR FOR PREPARING ETHANOLAMINES

Michio Tsuchiya, Hiratsuka, Japan, assignor to Nippon Shokubai Kagaku Kogyo Co., Ltd, Osaka, Japan

Filed Jul. 11, 1977, Ser. No. 814,686

Claims priority, application Japan, Jul. 15, 1976, 51/83527

Int. Cl.[2] C07C *85/145*; B01D *3/02*

U.S. Cl. 260—585 C **8 Claims**

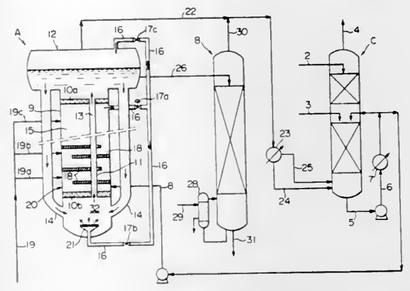
1. In a process for preparing ethanolamines by the reaction of ethylene oxide with ammonia in the liquid phase, the improvement comprising

(1) reacting ammonia and ethylene oxide in a reaction zone;

(2) passing the reaction mixture through pressure reducing means to reduce the pressure of said reaction mixture and partially vaporize the reaction mixture and feeding the partially vaporized reaction mixture to a space below the reaction zone;

(3) passing the partially vaporized reaction mixture upwardly through the reaction zone to absorb heat of reaction and to further vaporize the reaction mixture;

(4) feeding the further vaporized reaction mixture of step (3) to a gas-liquid separation zone for separation into a gas phase and a liquid phase;



(5) passing one portion of the liquid phase to the space below said reaction zone whereby said portion mixes with the partially vaporized reaction mixture from step (2) and is passed therewith through said reaction zone in step (3) and returned to said gas-liquid separation zone;

(6) passing the vapor phase to an ammonia absorber whereby the ammonia in said vapor phase is absorbed to form an ammonia solution which is fed to the reaction zone;

(7) passing the remaining portion of the liquid phase to an ammonia desorber to recover ammonia and ethanolamine; and

(8) feeding the recovered ammonia from the ammonia desorber to the ammonia desorber;

whereby heat of reaction and unreacted ammonia are effectively recovered.

4,119,671

PROCESS FOR THE PREPARATION OF HYDROXYBENZALDEHYDES

Kurt Bauer, Holzminden; Reiner Mölleken, Golmbach Ortsteil Warbsen; Helmut Fiege, Leverkusen, and Karlfried Wedemeyer, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

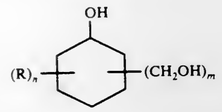
Filed Apr. 29, 1977, Ser. No. 792,425

Claims priority, application Fed. Rep. of Germany, May 7, 1976, 2620254

Int. Cl.[2] C07C *45/16*

U.S. Cl. 260—600 R **8 Claims**

1. In the process for the production of hydroxybenzaldehydes by oxidation of hydroxybenzyl alcohols of the formula



in which

m represents 1, 2 or 3 and

n represents the number which results from the difference (5 − m) and the radicals R independently of one another represent hydrogen, alkyl, aryl, alkoxy, hydroxyl, halogen, carboxyl or a fused ring,

with oxygen or oxygen-containing gases in an aqueous alkaline medium at a temperature in the range of 0 to 100° C. in the presence of a platinum metal catalyst, the improvement comprising carrying out the oxidation in the presence of lead and/or compounds thereof.

4,119,672

INTER-OXA-9-DEOXY-9,10-DIDEHYDRO-PGD$_1$ COMPOUNDS

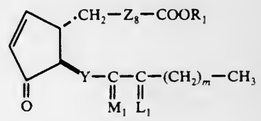
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 755,737

Int. Cl.[2] C07C *177/00*

U.S. Cl. 562—503 **33 Claims**

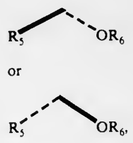
1. A prostaglandin analog of the formula



wherein Y is Cis-CH=CH— or trans-CH=CH—;

wherein *m* is 1 to 5, inclusive;

wherein M_1 is

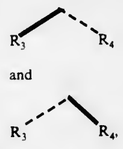


wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of



and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_8 is

(1) $—CH_2—O—CH_2—(CH_2)_g—CH_2—$

(2) $—(CH_2)_2—O—(CH_2)_g—CH_2—$, or

(3) $—(CH_2)_3—O—(CH_2)_g—$,

wherein *g* is 1, 2, or 3.

4,119,673

MANUFACTURE OF CONCENTRATED AQUEOUS SOLUTIONS OF FORMALDEHYDE

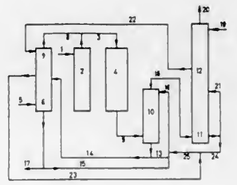
Albrecht Aicher, Frankenthal; Hans Haas, Ludwigshafen; Hans Diem, Ludwigshafen; Christian Dudeck, Ludwigshafen; Fritz Brunnmueller, Ludwigshafen, and Gunter Lehmann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

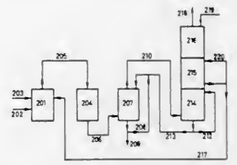
Filed Sep. 16, 1975, Ser. No. 613,925

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1974, 2444586

Int. Cl.[2] C07C *45/16*

U.S. Cl. 260—603 C **17 Claims**





1. In a process for the manufacture of a concentrated aqueous solution of formaldehyde by a catalytic oxidative dehydrogenation reaction of a starting reaction mixture comprising water, methanol and air over a catalyst bed of silver crystals arranged in a reactor and in the presence of steam at elevated temperatures of about 550° C. to 780° C., followed by absorption in water of the formaldehyde formed, the improvement which comprises:

carrying out the reaction with a throughput of said starting mixture consisting essentially of from 1 to 3 tonnes of methanol per square meter of catalyst bed cross-section per hour together with from 0.1 to 1.8 moles of water and 0.04 to 0.4 mole of formaldehyde per mole of total methanol fed to the catalyst;

absorbing the formaldehyde in an absorption stage by washing the off-gas from the reactor with water to form an aqueous formaldehyde solution; and

recycling part of the formaldehyde and water formed in the absorption stage, so as to return amounts of from 0.04 to 0.4 mole of formaldehyde and up to 1.8 moles of water per mole of total methanol fed to the catalyst, as an addition in making up said starting mixture.

4,119,674

PROCESS FOR PRODUCTION OF 1,1,1-TRICHLOROETHANE AND VINYLIDENE CHLORIDE

Theodore S. Boozalis, and John B. Ivy, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1976, Ser. No. 718,642
Int. Cl.[2] C07C *21/18, 17/00, 21/00*
U.S. Cl. 260—658 R **2 Claims**

1. In a process for chlorinating a member of the group consisting of ethane, ethylene, ethyl chloride, 1,1-dichloroethane, and mixtures thereof by the thermal chlorination to produce one or more of 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethylene, as the principal products, which products are further reacted under catalytic conditions to produce more highly chlorinated products and/or unsaturated products in liquid phase reactions in which numerous by-products containing more than 2 carbon atoms in the product stream of the thermal chlorination are detrimental to further processing in liquid phase catalytic hydrochlorination and/or dehydrochlorination reactions, the improvement which comprises chlorinating the thermal chlorination reactor effluent at a temperature below about 100° C. and in the absence of light and catalyst with up to about stoichiometric equivalent of chlorine, based on the concentration of said detrimental by-products in the thermal chlorination reactor effluent, and thereafter passing the entire chlorinated effluent stream without separation or purification to the liquid phase catalytic reaction, said chlorination rendering said detrimental by-products of the thermal chlorination harmless to the efficient operation of the subsequent process by preventing their deactivation of the catalyst.

4,119,675

PROCESS FOR TRANSALKYLATION OF ALKYLAROMATIC HYDROCARBONS USING A CATALYST COMPRISING TiF_4 AND A METAL OXIDE

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 644,786, Dec. 29, 1975, Pat. No. 4,048,248.
This application Apr. 21, 1977, Ser. No. 789,581
Int. Cl.[2] C07C *3/62, 5/28*
U.S. Cl. 260—672 T **8 Claims**

1. A process for the transalkylation of an alkylaromatic hydrocarbon which comprises contacting the alkylaromatic hydrocarbon at transalkylation conditions with a catalyst consisting essentially of titanium tetrafluoride and a Group III-A metal oxide which contains surface hydroxyl groups, and recovering a transalkylated hydrocarbon as a product of the process.

4,119,676

PROCESS FOR ISOMERIZATION OF ALKYLAROMATIC HYDROCARBON

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 644,786, Dec. 29, 1975, Pat. No. 4,048,248.
This application Apr. 21, 1977, Ser. No. 789,582
Int. Cl.[2] C07C *5/28, 3/62*
U.S. Cl. 260—668 A **8 Claims**

1. A process for the isomerization of an alkylaromatic hydrocarbon comprising contacting the aromatic hydrocarbon at isomerization conditions with a catalyst consisting essentially of titanium tetrafluoride and a Group III-A metal oxide which contains surface hydroxyl groups, and recovering an isomerized aromatic hydrocarbon as a product of the process.

4,119,677

TITANIUM TETRACHLORIDE AS HETEROGENEOUS CATALYST FOR TRANSALKYLATION OF ALKYLAROMATIC HYDROCARBONS

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 644,783, Dec. 29, 1975, Pat. No. 4,048,247.
This application Apr. 21, 1977, Ser. No. 789,583
Int. Cl.[2] C07C *3/62, 5/28*
U.S. Cl. 260—672 T **6 Claims**

1. A process for the transalkylation of an alkylaromatic hydrocarbon which comprises contacting the alkylaromatic hydrocarbon at transalkylation conditions with a catalyst system consisting essentially of titanium tetrachloride on an activated Group III-A metal oxide having surface hydroxyl groups, said catalyst system having been prepared by passing $TiCl_4$ vapor with an inert gas over said metal oxide at a temperature of 20° C. to 400° C. for 1 to 10 hours and thereafter thermally treating the resultant $TiCl_4$-containing oxide in an inert atmosphere at a temperature of from about 135° C. to about 550° C.

4,119,678

DESORBENT FOR SEPARATION OF BUTENE-1 FROM A C4 HYDROCARBON MIXTURE USING ZEOLITE X

Richard W. Neuzil, Downers Grove, and Richard L. Fergin, Mt. Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 12, 1977, Ser. No. 815,041
Int. Cl.[2] C07C *11/12*
U.S. Cl. 260—677 A **13 Claims**

1. A process for separating butene-1 from a feed containing butene-1 and other C_4 hydrocarbons, which process comprises the steps of:

(a) contacting said feed with a type X zeolite containing potassium cations to effect selective adsorption of butene-1 by said adsorbent;

(b) contacting said adsorbent containing adsorbed butene-1 with a desorbent comprising 90 to 10 LV% of hexene-1 and 10 to 90 LV% of a desorbent component selected from the group of cyclohexene and cyclohexane and mixtures thereof, thereby displacing said butene-1 from said adsorbent.

4,119,679

POWDER COATING COMPOSITION

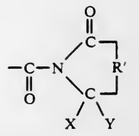
Hiroshi Nishizawa; Shigeyoshi Tanaka, and Minoru Fujishima, all of Ibaragi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 624,260, Oct. 20, 1975, abandoned. This application Oct. 11, 1977, Ser. No. 840,777
Claims priority, application Japan, Oct. 21, 1974, 49-120358
Int. Cl.[2] C08L *67/02, 63/00*
U.S. Cl. 260—835 **9 Claims**

1. A powder coating composition which comprises a mixture of

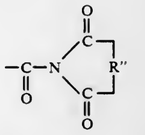
(A) a polyester resin obtained by the polycondensation of at least one polyol and at least one polycarboxylic acid, said polyol and said polycarboxylic acid containing hydroxyl and carboxyl groups in such relative proportions and being condensed in such amount as to provide free hydroxyl groups in the resultant polyester, at least 80 mol.% of said polycarboxylic acid being an aromatic carboxylic acid, said polyester having a softening point in the range of 50°–180° C.,

(B) at least one curing agent for said polyester which is an aliphatic, cycloaliphatic, heterocyclic or aromatic compound having a softening point of at least 40° C. and contains at least two terminal groups of the general formulae:



(I)

wherein R′ stands for an alkylene group with 1–11 carbon atoms, and X and Y may be the same or different and each represents a hydrogen atom or an alkyl group with 1–5 carbon atoms, or



(II)

wherein R″ stands for an alkylene group with 1–11 carbon atoms, an alkenylene group, a phenylene group or a substituted phenylene group, the amount of said curing agent being such that the terminal groups thereof are present in a ratio of 0.5–1.5 equivalents per equivalent of the free hydroxyl groups in said polyester; and

(C) a solid epoxy resin in an amount of 3–15 parts by weight per 100 parts by weight of said ingredient (A).

4,119,680

COPOLYESTERS AS IMPROVED BINDERS AND FINISHES FOR POLYESTER-CONTAINING FABRICS

Raymond N. Vachon, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1976, Ser. No. 716,920
Int. Cl.[2] C08L *61/20*
U.S. Cl. 260—850 **2 Claims**

1. A composition comprising:

I. the graft copolymer of Components A, B and C as follows

A. a water-dispersible polyester derived essentially from

(1) at least one dicarboxylic acid:

(2) at least one diol, at least 20 mole percent of said diol component being a poly(ethylene glycol) having the formula

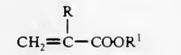
$$H{-}OCH_2CH_2{-}_nOH$$

wherein n is an integer of from 2 to about 10,

(3) at least one difunctional dicarboxylic acid sulfomonomer containing a $-SO_3M$ group attached to an aromatic nucleus, wherein M is hydrogen or Na^+, Li^+, K^+ or a combination thereof, said sulfomonomer component constituting at least about 8 mole percent to about 45 mole percent of the sum of the moles of said Components 1, 3 and 4, and

(4) from about 4 to about 8 mole percent of the sum of the moles of said Components 1, 3 and 4 of an α,β-unsaturated dicarboxylic acid selected from the group consisting of fumaric acid, maleic acid, itaconic acid and p-carboxycinnamic acid; said polymer having an inherent viscosity in the range of from about 0.15 to about 0.5 as measured at 25° C. and a concentration of about 0.5 gram of said polyester per 100 ml. of a solvent composed of 60% phenol and 40% tetrachloroethane;

B. from 10 to 80 weight percent based on the total weight of Components A, B and C of an acrylic monomer having the formula



wherein R is hydrogen, methyl or ethyl and R^1 is an alkyl radical having from 1 to about 8 carbon atoms, vinyl acetate or styrene; and

C. from 2 to 10 weight percent based on the weight of Components A, B and C of a reactive monomer selected from acrylamide, methacrylamide, hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate and hydroxypropyl methacrylate; and

II. from 1 to 10 weight percent based on the weight of Components A, B and C of a crosslinking agent selected from melamine-formaldehyde condensates, methylated melamine-formaldehyde condensates, urea-formaldehyde condensates, methylated urea-formaldehyde condensates, guanamine-formaldehyde condensates and methylated guanamine-formaldehyde condensates.

4,119,681

ADHESIVE

Roman Alexandrovich Veselovsky, Kharkovskoe shosse, 21/3, kv. 179; Tatyana Esperovna Lipatova, Vladimirskaya ulitsa, 51/53, kv. 22; Raisa Alexandrovna Kimgir, ulitsa Vernadskogo, 65, kv. 105; Jury Konstantinovich Znachkov, ulitsa Dobrokhotova, 5, kv. 177, all of Kiev; Dmitry Maximovich Pyanykh, Pionersky, ulitsa Gospitalnaya, 16, Kaliningradskaya oblast; Nuribek Nabievich Shmanov, ulitsa Baimukhanova, 26A, kv. 5, Guriev; Nikolai Dmitrievich Trifonov, ulitsa Prazhskaya, 29/1, kv. 69, and Konstantin Alexeevich Zabela, ulitsa Podvysotskogo, 10A, kv. 66, both of Kiev, all of U.S.S.R.

Filed Jun. 14, 1976, Ser. No. 695,408
Int. Cl.[2] C08L *75/00*
U.S. Cl. 260—859 R **1 Claim**

1. Adhesive composition consisting essentially of the following components in weight parts:

70% solution of oligodiethyleneglycol maleate in styrene	100
product of interacting urethane prepolymer, obtained from toluelenediisocynate and polydiethyleneglycol adipate, with perfluoropentyl alcohol and ethyleneglycol monomethacrylate	50
α- methylbenzoyl	1.

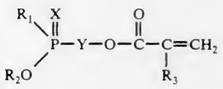
4,119,682

UNSATURATED PHOSPHORUS-CONTAINING CARBOXYLIC ACID DERIVATIVES

Hans-Jerg Kleiner, Kronberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 623,335, Oct. 17, 1975, Pat. No. 4,041,230.
This application Nov. 16, 1976, Ser. No. 742,347
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1974, 2449466
Int. Cl.[2] C07F *9/32*
U.S. Cl. 260—952 **3 Claims**

1. A phosphorus-containing compound of the general formula



wherein R_1 and R_2 are alkyl radicals having a total of up to 8 carbon atoms; R_3 is hydrogen or methyl; X is oxygen or sulfur;

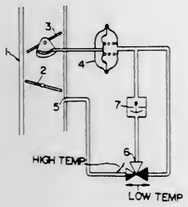
and Y is linear or branched alkylene having up to 6 carbon atoms.

4,119,683

CHOKE BREAKER SYSTEM FOR A CARBURETOR OF AN INTERNAL COMBUSTION ENGINE

Tetsuomi Tamura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 29, 1977, Ser. No. 837,702
Claims priority, application Japan, May 31, 1977, 52-62781
Int. Cl.² F02M *1/10*
U.S. Cl. 261—39 B **8 Claims**



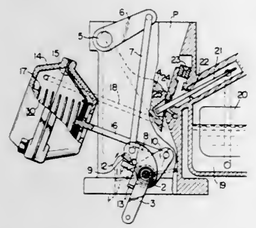
1. A choke breaker system for a carburetor of an internal combustion engine comprising a negative pressure type choke control device directly connected with a vacuum port of a suction tube of the carburetor, a check valve and a vacuum switching valve being controllable in response to an engine temperature are arranged in the passage of the negative pressure formed between said vacuum port of the suction tube and said choke control device, and arrangement of said vacuum switching valve and said check valve is constituted in such a manner that only said vacuum switching valve is to be connected in series when the temperature of the engine is below a certain level, while said vacuum switching valve and said check valve are to be connected in series when the temperature of the engine is in excess of a certain level.

4,119,684

VARIABLE STAGE TYPE CARBURETOR

Kimiji Karino, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 4, 1977, Ser. No. 839,256
Claims priority, application Japan, Oct. 6, 1976, 51-119365
Int. Cl.² F02M *9/08*
U.S. Cl. 261—44 F **1 Claim**



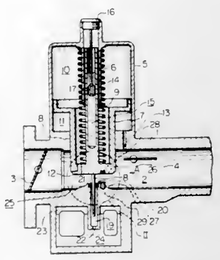
1. A variable stage carburetor having a throttle valve disposed in the intake passage thereof, a vane constituting a variable venturi and disposed at the upstream side of said throttle valve, said vane being operably connected to said throttle valve, fuel metering means disposed in a fuel passage opening in said venturi and adapted to vary the cross-sectional area of said fuel passage in response to the change of opening degree of said vane, and a vane controller adapted to be actuated by the vacuum available at said venturi so as to forcibly displace said vane to a lower opening degree when said throttle valve has been opened nearly to the maximum opening degree to reduce said vacuum at said venturi, characterized by comprising an interlocking spring acting between a limiting lever connected to a diaphragm of said vane controller and an interlocking lever connected to said vane.

4,119,685

VARIABLE VENTURI TYPE CARBURETOR

Takaaki Itoh, and Kazuo Kikuchi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sep. 28, 1977, Ser. No. 837,099
Claims priority, application Japan, Jun. 21, 1977, 52-72895
Int. Cl.² F02M *9/06*
U.S. Cl. 261—44 C **4 Claims**



1. A variable venturi type carburetor of an internal combustion engine, comprising:
- a housing;
- a bore extending through said housing and having an inner wall defining an intake passage;
- a suction piston movable mounted in said housing and having a bottom end face projecting into said intake passage, said bottom end face of said suction piston and said inner wall of said intake passage defining a venturi, said suction piston moving up and down so as to change the cross-sectional area of said venturi in response to a change in the vacuum produced in said intake passage downstream of said venturi for maintaining the velocity of air flowing into said venturi at a constant value;
- a jet disposed on the inner wall of said intake passage at a position facing said bottom end face of said suction piston;
- a needle fixed onto said bottom end face of said suction piston and entering into said jet, said jet and said needle defining an annular opening through which fuel is injected into said intake passage;
- a fuel reservoir in said housing;
- a fuel supply passage disposed in said housing and communicating said fuel reservoir with said jet;
- at least one first member made of magnetic material attached to the bottom end face of said suction piston; and
- at least one second member made of magnetic material attached to said inner wall of said venturi at the positions corresponding to the positions of said at least one first member, said first and second members magnetically contacting each other when said suction piston is in the position in which the cross-sectional area of said venturi is minimum.

4,119,686

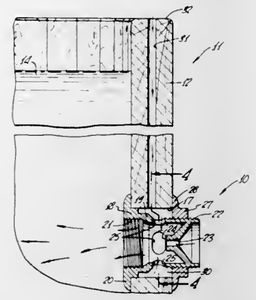
HYDRO-JET FITTING FOR HOT TUB

William W. Conger, IV, Los Osos, Calif., assignor to California Cooperage, San Luis Obispo, Calif.

Filed Oct. 3, 1977, Ser. No. 838,878
Int. Cl.² A61H *33/02*
U.S. Cl. 261—77 **4 Claims**

1. In the combination of a hydro-jet fitting and a tub, the tub including a side wall consisting of a plurality of thin, uniform staves, one of said staves having a laterally-extending hole

therein, said fitting being positioned in said hole in said one stave and being connectable to a source of water for conducting water into said tub, said fitting including a body having a central portion extending through said hole in said one stave, said body having an air inlet and said fitting including a venturi for drawing air into said body from said air inlet and mixing said air with said water, the improvement wherein:



at least some of said central portion of said body is spaced from the surface of said hole in said one stave so as to define an enclosed chamber between said body and said hole surface, said air inlet communicating with said chamber; and wherein:

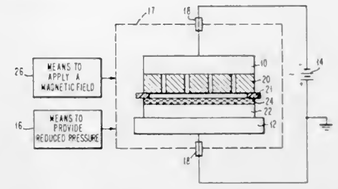
said one stave of said side wall of said tub has a continuous air passageway extending therethrough, from adjacent the top thereof to said chamber, for conducting air to said fitting.

4,119,688

ELECTRO-LITHOGRAPHY METHOD

Hiroyuki Hiraoka, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 628,266, Nov. 3, 1975, abandoned. This application Jun. 17, 1977, Ser. No. 807,601
Int. Cl.² H01J *37/31*
U.S. Cl. 264—22 **8 Claims**



1. An electro-lithographic method adapted to form a pattern of high resolution in an electron sensitive resist material comprising the steps of:
- applying a layer of E-beam resist onto an anode,
- placing a platelike opaque cathode parallel to said anode and facing said layer of resist to form a first gap therebetween,
- placing a mask in said first gap between said cathode and said resist layer to form a second gap having a thickness of 10^{-4}m to 10^{-5}m between said mask and said resist layer,
- regulating the pressure to 10^{-3} to 10^{-7} torr between said electrodes by pump means to provide an environment suitable for the formation of secondary electrons, and
- applying a pulsed electric field of at least 2 KV to said cathode whereby secondary electrons from said cathode pass through the mask and are collimated to form a high resolution mask image in said resist layer.

4,119,687

PROCESS FOR THE PRODUCTION OF POWDER-FORM HYDROLYZED ETHYLENE/VINYL ACETATE COPOLYMERS

Raoul Resz, Bergisch-Gladbach; Herbert Bartl, Odenthal-Hahnenberg; Karl Nöthen, Leverkusen; Joachim Priemer, Odenthal-Hahnenberg, and Aziz El-Sayed, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Mar. 14, 1977, Ser. No. 777,331
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1976, 2611548
Int. Cl.² B01J *2/06*
U.S. Cl. 264—9 **11 Claims**

1. A process for producing powdered ethylene/vinyl acetate copolymer which is partically or completely hydrolyzed, said copolymer before hydrolysis containing ethylene and vinyl acetate in copolymerized form in a molar ratio of from 1:2 to 20:1 and having at least 50 mol% of its acetoxy groups hydrolyzed, said process comprising passing an organic solvent solution of hydrolyzed copolymer, which gels at a temperature of from 20 to 80° C., at a temperature at least 5° about the gelation temperature through jets having a cross-section of from 4 to 400 mm at a rate of flow of from 0.01 to 5m/second into water which is at a temperature below but no more than 20° C. below the gelation temperature of the copolymer solution and which is free of surface-active substances, converting the solution thusly introduced into said water into particles of from 0.02 to 5mm in diameter by the application of high shearing force and removing adhering organic solvent by steam distillation.

4,119,689

SINTERING OF SILICON NITRIDE USING Be ADDITIVE

Svante Prochazka, Ballston Lake; Charles D. Greskovich, Schenectady; Richard J. Charles, Schenectady, and Robert A. Giddings, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,085
Int. Cl.² C04B *35/58, 35/64*
U.S. Cl. 264—65 **5 Claims**

1. A method of producing a pre-shaped polycrystalline body which consists essentially of providing at least a significantly homogeneous dispersion having an average particle size which is submicron of silicon nitride and a beryllium additive, said beryllium additive being selected from the group consisting of beryllium, beryllium carbide, beryllium fluoride, beryllium nitride, beryllium silicon nitride and mixtures thereof, said beryllium additive being used in an amount wherein the beryllium component is equivalent to from about 0.1% by weight to about 2% by weight of elemental beryllium based on the amount of silicon nitride, shaping said dispersion into a green body and sintering said green body at a temperature ranging from about 1900° C. to about 2200° C. in a sintering atmosphere of nitrogen, said nitrogen being at a superatmospheric pressure which at said sintering temperatures prevents significant thermal decomposition of said silicon nitride and produces a sintered body with a density of at least about 80% of the theoretical density of silicon nitride, the minimum pressure of said nitrogen ranging from about 20 atmospheres at a sintering temperature of 1900° C. to a minimum pressure of about 130 atmospheres at a sintering temperature of 2200° C.

4,119,690

SINTERING OF SILICON NITRIDE USING MG AND BE ADDITIVES

Svante Prochazka, Ballston Lake; Charles D. Greskovich, Schenectady; Richard J. Charles, Schenectady, and Robert A. Giddings, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,086
Int. Cl.[2] C04B *35/58, 35/64*
U.S. Cl. 264—65 **8 Claims**

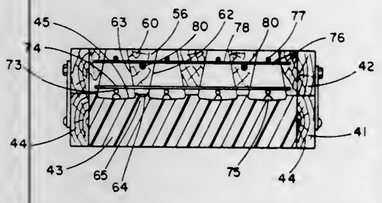
1. A method of producing a pre-shaped polycrystalline body which consists essentially of providing at least a significantly homogeneous dispersion having an average particle size which is submicron of silicon nitride, a magnesium additive and a beryllium additive, said magnesium additive being selected from the group consisting of magnesium, magnesium carbide, magnesium nitride, magnesium cyanide, magnesium fluoride, magnesium silicide, magnesium silicon nitride and mixtures thereof, said magnesium additive being used in an amount wherein the magnesium component is equivalent to from about 0.5% by weight to about 4% by weight of elemental magnesium based on the amount of silicon nitride, said beryllium additive being selected from the group consisting of beryllium, beryllium carbide, beryllium fluoride, beryllium nitride, beryllium silicon nitride and mixtures thereof, said beryllium additive being used in an amount wherein the beryllium component is equivalent to from about 0.1% by weight to about 2% by weight of elemental beryllium based on the amount of silicon nitride, shaping said dispersion into a green body and sintering said green body at a temperature ranging from about 1800° C. to about 2200° C. in a sintering atmosphere of nitrogen, said nitrogen being at a superatmospheric pressure which at said sintering temperature prevents significant thermal decomposition of said silicon nitride and produces a sintered body with a density of at least about 80% of the theoretical density of silicon nitride, the minimum pressure of said nitrogen ranging from about 10 atmospheres at a sintering temperature of 1800° C. to a minimum pressure of about 130 atmospheres at a sintering temperature of 2200° C.

4,119,691

METHOD AND MOLD FOR PRODUCING CONCRETE SLOTTED FLOOR

Paul J. Nobbe, R.R. 2, Brookville, Ind. 47012

Continuation of Ser. No. 542,167, Jan. 20, 1975, abandoned, which is a division of Ser. No. 457,068, Apr. 1, 1974, Pat. No. 3,915,422. This application Jan. 31, 1977, Ser. No. 763,844
Int. Cl.[2] B28B *1/08*
U.S. Cl. 264—71 **2 Claims**



1. A method of producing a concrete floor from a mold having a top section and a bottom section cooperating to form a mold cavity with the floor having integrally connected slats for supporting animals comprising the steps of:

providing the bottom section of said mold having a smooth top surface extending thereacross containing a plurality of elongated, longitudinally extending concave cavities separated by ridges;

providing the top section of said mold including side portions and having downwardly converging, longitudinally extending spacers and side separators positioned outwardly of said spacers on opposite sides of said mold with said spacers, said separators, said side portions and said top section ganged together and mounting said top section simultaneously with said spacers so said spacers rest atop said ridges of said bottom section, said spacers and said separators vertically extending from said ridges to the uppermost surface of said top section and said spacers extending laterally from cavity to cavity covering said ridges except at ends of said spacers, each of said separators having an inwardly facing surface diverging from said spacers as said facing surface extends toward said bottom section of said mold whereby said spacers and said separators in combination with said ridges define a plurality of slat mold voids extending between cross portion mold voids;

pouring concrete between said spacers and into said slat mold voids to form slats and into said cross portion mold voids at the ends of said spacers to integrally join said slats;

filling said mold voids to a level coincident with the uppermost surface of said top section;

vibrating said bottom section and said top section;

allowing said concrete to solidify;

lifting said top section simultaneously with said spacers upwardly in the same direction from and off said bottom section and simultaneously with said side portions and said side separators in same direction allowing said separators and said spacers to move as part of and with said top section;

removing the solidified concrete from said bottom section; and

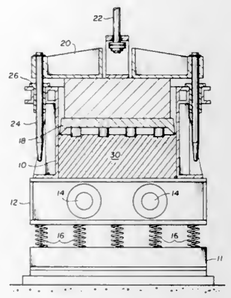
turning the solidified concrete over without said mold so the concrete in contact with said smooth top surface faces upwardly.

4,119,692

PROCESS AND APPARATUS FOR MANUFACTURING CARBON ELECTRODES

René Durinck, Villeneuve d'Ascq, France, assignor to Fives-Cail Babcock, Paris, France

Continuation-in-part of Ser. No. 644,876, Dec. 29, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,490
Claims priority, application France, Dec. 31, 1974, 74 43372
Int. Cl.[2] B28B *1/10*
U.S. Cl. 264—71 **5 Claims**



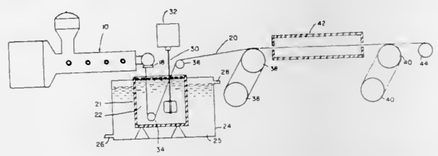
1. A process of manufacturing carbon electrodes from a pasty mass, wherein the pasty mass is placed into a mold having an open top, the mold being integral with a vibrating table and the table, mold and pasty mass constituting a vibrating assembly, maintaining the assembly at a frequency of natural vibrations, and closing the open top of the mold with a cover resting on the pasty mass in the mold, the improvement comprises the step of applying to the table vibrations of a frequency which is 1.1 to 1.6 times the frequency of the natural vibrations.

4,119,693

PROCESS FOR SPINNING POLY (ETHYLENE OXIDE) MONOFILAMENT

Richard Joseph Hartigan, Jr., Delmar, N.Y., assignor to Albany International Corp., Albany, N.Y.

Division of Ser. No. 608,666, Aug. 28, 1975. This application Jun. 6, 1977, Ser. No. 803,561
Int. Cl.[2] D01D *5/08*
U.S. Cl. 264—178 F **4 Claims**



1. A process for making poly (ethylene oxide) homopolymer monofilaments, which comprises:

providing apparatus for thermally plasticizing and shaping said homopolymer into a monofilament, which comprises an extruder having a feed zone, a heating zone, a shaping zone and means for passing said homopolymer in successive stages through each of said zones, said zones being interconnected;

feeding said homopolymer to said feed zone;

continuously passing the fed homopolymer to the heat zone, said heat zone being maintained at a temperature above the first order phase transition temperature of said homopolymer, whereby said homopolymer is thermally plasticized;

continuously passing the plasticized homopolymer to the shaping zone wherein said homopolymer is shaped in the form of a monofilament;

continuously passing the shaped homopolymer into a quench bath which comprises a saturated aqueous solution of potassium carbonate maintained at a temperature within the range of from 70° F. to 90° F. whereby the shaped homopolymer is fixed in the form of an unoriented monofilament;

removing said unoriented monofilament from the quench bath;

heating the unoriented monofilament to a temperature between the first and second order phase transition temperatures of said homopolymer;

stretching the heated unoriented monofilament to orient the molecules therein; and

allowing the oriented monofilament to cool to ambient temperatures; said homopolymer having a molecular weight within the range of from 400,000 to 900,000.

4,119,694

METHOD OF MOLDING FRANGIBLE TARGETS

Roland Vernon Manning, Salt Lake City, Utah, assignor to Manning Target Systems Inc., Salt Lake City, Utah

Division of Ser. No. 617,321, Sep. 29, 1975, Pat. No. 4,035,126, and Ser. No. 450,660, Mar. 13, 1974, abandoned. This application Mar. 7, 1977, Ser. No. 774,801
Int. Cl.[2] B29C *3/02*
U.S. Cl. 264—297 **5 Claims**

1. A method for producing frangible targets comprising:

positioning a female die on a continuous belt mounted for movement around a support surface in a loop;

advancing said belt intermittently around said loop so that said female die is positioned for an interval at selected locations in the following sequence:

a filling station with said die located atop said loop,

a target forming station with the female die located atop said loop, and

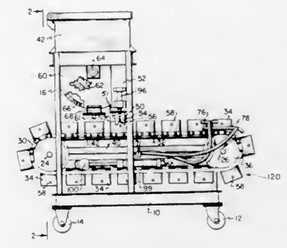
a target discharge station with said female die oriented to discharge its contents;

filling said female die carried by said continuous movable belt with a metered charge of melt comprising a mixture of part pitch and filler at said filling station;

moving said belt so that the female die filled with said melt is positioned at the target forming station below a male die;

mating said female die with said male die;

exerting a pressure on said melt in said female die;



passing a coolant through said female die wherein the coolant received by said female die is approximately the same temperature whereby said melt is cooled at an essentially constant rate to a temperature below the melt's solidifying temperature; and

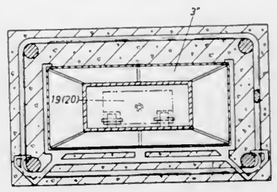
removing said solidified melt which is now in the form of a molded target from said female die at said target discharge station by orienting said female die to permit said molded target to drop out of said female die.

4,119,695

METHOD AND APPARATUS FOR FORMING HOLLOW CONCRETE ELEMENTS

Rolf Arne Conrad Asserback, Kungsportsavenyn 23, S-411 36 Goteborg, Sweden

Filed May 25, 1977, Ser. No. 800,572
Claims priority, application Sweden, May 25, 1976, 7606017
Int. Cl.[2] B28B *7/32*
U.S. Cl. 264—314 **8 Claims**



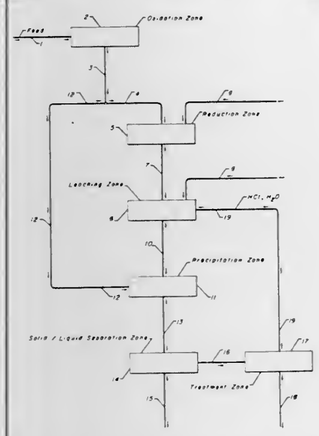
1. An improved method of manufacturing in horizontal moulds elongate concrete structural members formed internally with at least one longitudinal channel, comprising the steps of introducing into the mould in a horizontally extending direction a double-wall hose of an elastic and flexible material to form said channel the inner wall of said hose being open at least at one end and provided with support walls extending between said hose walls to divide the space between said hose walls into longitudinal chambers, inflating said chambers, casting concrete about said hose, exerting a downward load on said hose by means of weights in the interior of said hose to prevent displacement thereof, and displacing said weights in the longitudinal direction of said hose.

4,119,696

PRODUCTION OF TITANIUM METAL VALUES

William K. Tolley, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 14, 1977, Ser. No. 851,098
Int. Cl.[2] C01G *23/06*
U.S. Cl. 423—53 **8 Claims**



1. A process for the recovery of titanium values from a titanium-bearing source which contains other metal values selected from the group consisting of iron, vanadium, nickel, and chromium, said process comprising:
(a) oxidizing said source at a temperature in the range of from about ambient to about 800° C. to convert iron values contained therein to iron oxide;
(b) subjecting a portion of said oxidized source to a reductive roast at elevated temperatures;
(c) leaching said resultant reduced source with a hydrogen chloride source in a leaching zone at a temperature of from about 80° to about 100° C. to form a leach slurry;
(d) contacting said leached slurry with the remaining portion of said oxidized source containing iron oxides at a temperature in the range of from about 75° to about 105° C. to separate titanium oxides or hydrous oxide;
(e) recovering the separated titanium values;
(f) treating the resultant solution to recover said other metal values and to form a hydrogen chloride source; and
(g) recycling said hydrogen chloride source to said leaching zone.

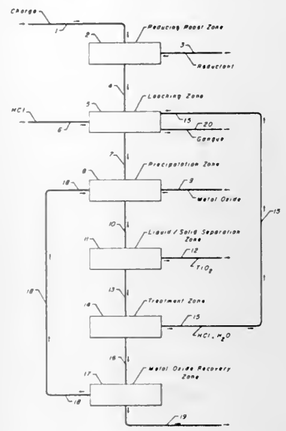
4,119,697

PRODUCTION OF TITANIUM METAL VALUES

William K. Tolley, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 11, 1977, Ser. No. 814,506
Int. Cl.[2] C01G *23/06*
U.S. Cl. 423—82 **13 Claims**

1. A process for the recovery of titanium values from a titanium bearing source which comprises subjecting said titanium bearing source to a reduction roast, thereafter leaching the reduced source with a hydrogen chloride source in a leaching zone, precipitating the leached titanium bearing source in a precipitation zone by contact at a temperature of from about 75° to about 105° C. with a metal oxide selected from the group consisting of ferric oxide, vanadium pentoxide, vanadium dioxide, chromic oxide, manganese dioxide, and cupric oxide, separating and recovering the resultant precipitated titanium dioxide, treating the spent liquor to form hydrogen chloride and recycling the latter to said leaching zone, and simultaneously forming the metal oxide and recycling thus formed metal oxide to said precipitation zone.

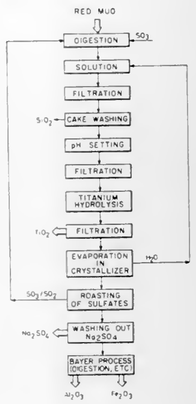


4,119,698

RECLAMATION TREATMENT OF RED MUD

Erich Zimmer, Jülich, Germany; Ahmad Nafissi, Tehran, Iran, and Günther Winkhaus, Königswinter, Germany, assignors to Kernforschungsanlage Julich, Gesellschaft mit beschränkter Haftung, Jülich and Vereinigte Aluminum-Werke Aktiengesellschaft, Bonn, both of, Germany

Continuation-in-part of Ser. No. 854,078, Nov. 23, 1977, abandoned. This application Mar. 6, 1978, Ser. No. 884,014
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653762
Int. Cl.[2] C01G *23/06;* **C01F** *7/06*
U.S. Cl. 423—82 **2 Claims**



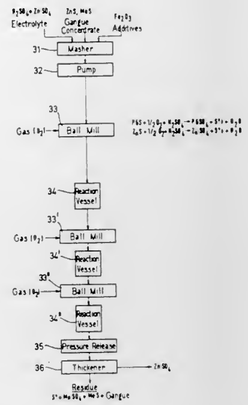
1. A process for treatment of the red mud residue of the Bayer process extraction of aluminum from bauxite comprising the steps of:
(a) heating the red mud to a temperature in the range of 250° to 350° C and then sulfating it with addition of a substance selected from the group consisting of concentrated sulfuric acid and sulfur trioxide, and mixtures of sulfuric acid and sulfur trioxide in such quantity that after a reaction time of at most one hour the principal red mud metallic components, aluminum, iron, titanium, sodium and calcium are present mainly as sulfates;
(b) then leaching the sulfates with water out of the mass formed in the previous step, to produce a sulfate solution, and separating the solution from the solid residue consisting largely of SiO_2;
(c) then adjusting the pH to a value corresponding to approximately 1.0 at 20° C, and thereafter heating the solution to a temperature of at least 90° C to form titanium oxide hydrate by hydrolysis and then separating the latter;
(d) then separating the sulfates from the water of the remaining solution by either evaporating the water or by adding acetone to precipitate sulfate from an acetone-water mixture or both;
(e) then roasting the sulfates at a temperature in the range of 900° to 1000° C to decompose the sulfates of aluminum and iron by giving off a mixture of SO_2 and SO_3 and forming the corresponding oxides;
(f) then dissolving the sodium sulfate by leaching it out with water and thereby separating it from the oxides of iron and aluminum, and
(g) separating the residual oxides of aluminum and iron from each other by the Bayer process.

4,119,699

METHOD FOR WET METALLURGICAL PROCESSES

Hans Kellerwessel, Aachen, Germany; Ernst Kausel, Lima, Peru, and Reinhard Nissen, Cologne, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Jul. 29, 1976, Ser. No. 709,922
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1975, 2533755
Int. Cl.[2] C01G *9/06;* **C22B** *3/02, 5/00*
U.S. Cl. 423—109 **6 Claims**



1. The method of conducting a wet metallurgical process on a sulphidic mineral substance with oxygen and sulphuric acid as reactants to form metal sulphates and elemental sulphur which comprises placing the substance and the reactants in an oscillating container having therein freely movable mixing and grinding bodies, heating the contents of the container above the melting point of sulphur, subjecting the container and contents to high energy oscillations which mix the reactants and substance to form a suspension while grinding the substance, whereby the liquid sulphur is separated from the unleached substance particles and fresh reactable mineral substance surfaces are brought into contact with the reactants.

4,119,700

PRODUCTION OF PHARMACEUTICAL BARIUM SULPHATE

Dennis W. J. Stone, 253 Westcroft Ave., Beaconsfield, P.O., Canada

Continuation-in-part of Ser. No. 699,325, Jun. 24, 1976, abandoned. This application Oct. 12, 1977, Ser. No. 841,607
Int. Cl.[2] C01F *11/46*
U.S. Cl. 423—156 **7 Claims**

1. A process capable of producing pharmaceutical barium sulphate containing at least 99.7% $BaSO_4$ and less than 10 ppm of heavy metals, which comprises grinding a naturally occurring barite ore containing individual crystals of substantially pure barium sulphate together with iron carbonate and silica as the predominant gangue minerals to form a granular ore material having a particle size of −35 mesh, passing this granular ore through a high intensity wet magnetic separator to remove magnetic particles, leaving a non-magnetic fraction containing barium sulphate and low specific gravity minerals, subjecting the non-magnetic fraction to gravity separation to separate a substantially pure barium sulphate fraction, subjecting this barium sulphate fraction to further grinding in an attrition mill with a particulate grinding medium which is non-contaminating of the pure barium sulphate to form a finely divided barium sulphate having a maximum particle size in the order of about 1 micron, leaching the finely divided barium sulphate fraction with a mineral acid selected from the group consisting of hydrochloric and sulphuric acid to remove acid soluble impurities and washing the leached product.

4,119,701

NO_x REDUCTION CATALYST FOR INTERNAL COMBUSTION ENGINE EMISSION CONTROL

Robert J. Fedor, Westlake, and Cameron S. Ogden, Hudson, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 524,771, Nov. 18, 1974, Pat. No. 4,006,105, which is a continuation-in-part of Ser. No. 441,504, Feb. 11, 1974, abandoned, Ser. No. 451,032, Mar. 22, 1974, abandoned, Ser. No. 453,567, Mar. 22, 1974, abandoned, Ser. No. 457,101, Apr. 1, 1974, abandoned, Ser. No. 460,742, Apr. 15, 1974, abandoned, Ser. No. 460,786, Apr. 15, 1974, abandoned, Ser. No. 460,787, Apr. 15, 1974, abandoned, Ser. No. 461,436, Apr. 15, 1974, abandoned, Ser. No. 466,737, May 3, 1974, abandoned, Ser. No. 466,965, May 6, 1974, abandoned, and Ser. No. 467,106, May 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 207,338, Dec. 13, 1971, abandoned, Ser. No. 207,284, Dec. 13, 1971, abandoned, Ser. No. 207,337, Dec. 13, 1971, abandoned, Ser. No. 207,303, Dec. 13, 1971, abandoned, Ser. No. 240,028, Mar. 31, 1972, abandoned, Ser. No. 240,029, Mar. 31, 1972, abandoned, Ser. No. 240,091, Mar. 31, 1972, abandoned, Ser. No. 240,090, Mar. 31, 1972, abandoned, Ser. No. 240,092, Mar. 31, 1972, abandoned, Ser. No. 207,281, Dec. 13, 1971, abandoned, Ser. No. 207,525, Dec. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 149,331, Jun. 2, 1971, abandoned. This application Jul. 9, 1976, Ser. No. 704,019
The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—213.2 **28 Claims**

1. In the process of reducing the nitrogen oxide content of the exhaust gases from an internal combustion engine wherein the exhaust gases are contacted with an NO_x reduction catalyst to chemically reduce oxides of nitrogen, the improvement comprising using at the NO_x reduction catalyst a catalytic structure having high NO_x reducing activity and structural durability in the presence of said exhaust gases at temperatures up to 1900° F. consisting essentially of an expanded metal foil reinforcing member having a plurality of strands defining openings therebetween which retains its strength and oxidation

resistance at temperatures in excess of about 1100° F. and up to about 1900° F. and a metallic catalytic surface layer comprising an NO_x reducing catalyst material metallurgically bonded to said reinforcing member.

4,119,702

PROCESS FOR ABATING CONCENTRATION OF NITROGEN OXIDES IN COMBUSTION FLUE GAS

Shigeru Azuhata; Hideo Kikuchi, both of Hitachi; Hidetoshi Akimoto, Tokaimura; Yukio Hishinuma, and Yoshijiro Arikawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 21, 1977, Ser. No. 817,745
Claims priority, application Japan, Jul. 28, 1976, 51-89176
Int. Cl.² C01B *21/00*
U.S. Cl. 423—235 **7 Claims**

1. A process for abating concentration of nitrogen oxides in a combustion flue gas which comprises adding urea and an oxidizing agent for decomposition of urea, said oxidizing agent selected from the group consisting of ozone, nitric acid, hydrogen peroxide, chlorine, chlorine dioxide, perchloric acid, sodium chlorate, sodium chlorite, and sodium hypochlorite, to a combustion flue gas containing nitrogen oxides, thereby reducing the nitrogen oxides in a gaseous phase in the absence of a solid catalyst, the reduction of the nitrogen oxides taking place at a temperature in the range of 200° to 800° C.

4,119,703

PROCESS FOR REMOVAL OF NITROGEN OXIDES FROM WASTE GAS

Fusao Nishida, Tokyo; Tomiaki Yamada, Yokohama; Noriyuki Suzuki, Tokyo; Takehiko Takeda, Yokohama; Tsutomu Yanagihara, Tokyo; Katsuhiko Adachi, Yokohama; Tadashi Asanabe, Tokyo; Katuaki Ohsato, Yokohama, and Kintaro Tsuda, Tokyo, all of Japan, assignors to Japan Gasoline Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 584,912, Jun. 9, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,016
Int. Cl.² B01D *53/00*
U.S. Cl. 423—239 **6 Claims**

1. A process for the reductive removal of nitrogen oxides from waste gas containing said oxides in conjunction with sulfur oxides which cmprises contacting said waste gas having a GHSV of from 1000 to 50,000 HR^{-1} with ammonia at a termperature of from 250° to 500° C. in the presence of a catalyst, the active component of which is selected from the group consisting of oxides and sulfates of iron and copper and mixtures thereof, the catalyst being supported on a silica-alumina type carrier containing at least 60% by weight of silica, the amount of the active component being from 0.5 to 20% by weight based on the weight of the carrier, the pore volume of the catalyst occupied by pores measuring at least 150 A in diameter being from 0.15 cc/g to 0.5 cc/g, the total pore volume of the catalyst being at least 0.5 cc/g and the specific surface area of the catalyst being at least 50 m^2/g.

4,119,704

PROCESS FOR MAKING GALLIUM ARSENIDE OR PHOSPHIDE

Herbert Jacob, Burghausen; Michael Blatte, Emmerting, and Fritz Kremser, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Continuation of Ser. No. 652,261, Jan. 26, 1976, abandoned. This application Aug. 28, 1977, Ser. No. 827,059
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1975, 2506265
Int. Cl.² C01B *25/00;* C22C *28/00, 30/00*
U.S. Cl. 423—299 **7 Claims**

1. A process for producing gallium arsenide or phosphide comprising the steps of:

(a) forming an intimate mixture of liquid metallic gallium and either arsenic or red phosphorus, in substantially stoichiometric proportions;

(b) grinding said mixture at a temperature between 30° C and about 60° C to attain a pasty consistency for a period of time to induce formation of gallium arsenide or phosphide;

(c) tempering the ground mixture by heating at a temperature between about 200° C and about 400° C below the sublimation point of the arsenic or the red phosphorus; and

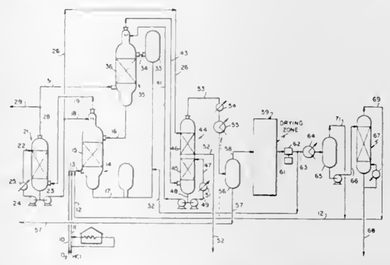
(d) recovering the gallium arsenide or phosphide.

4,119,705

PRODUCTION OF CHLORINE

Herbert Riegel, Maplewood, and Vincent A. Strangio, Glen Ridge, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Apr. 6, 1977, Ser. No. 785,286
Int. Cl.² C01B *7/04*
U.S. Cl. 423—507 **12 Claims**



1. A process for oxidizing hydrogen chloride to chlorine, comprising:

contacting in a first reaction zone gaseous hydrogen chloride and an oxygen containing gas with a molten salt mixture containing cuprous and cupric chloride to enrich the cupric chloride content of the molten salt, said first reaction zone being operated at a pressure of from 1.1 to 10 atm., a molten salt inlet temperature of from 780° F to 880° F;

introducing the molten salt enriched in cupric chloride withdrawn from the first reaction zone into a second reaction zone wherein gaseous chlorine is stripped from the molten salt by reducing the cupric chloride content thereof, the second reaction zone being operated at a pressure of from 0.1 to 2 atm., a molten salt inlet temperature of from 840° F to 1000° F, with the pressure of the first reaction zone being at least 1 atm. greater than the pressure in the second reaction zone and the molten salt inlet temperature to the second reaction zone being at least 60° F greater than the molten salt inlet temperature to the first reaction zone;

recovering a gaseous effluent containing chlorine from the second reaction zone; and

passing molten salt from the second reaction zone to the first reaction zone.

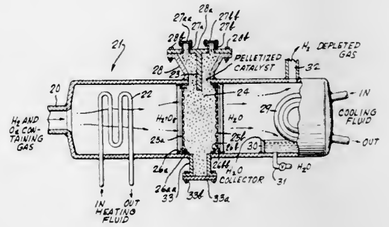
4,119,706

METHOD OF CATALYTICALLY RECOMBINING RADIOLYTIC HYDROGEN AND RADIOLYTIC OXYGEN

William M. Rogers, Alameda, Calif., assignor to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Oct. 12, 1976, Ser. No. 731,692
Int. Cl.² B01D *53/34;* C01B *5/00*
U.S. Cl. 423—580 **7 Claims**

1. A method of treating the condenser off-gases of a boiling water nuclear reactor wherein said off-gases contain a major amount of steam or water vapor and minor amounts of radiolytic hydrogen and radiolytic oxygen together with minor amounts of air and radioactive gases which comprises introducing said off-gases into contact with a mass of particle-form catalytic material disposed within a reaction zone, said mass of particle-form catalytic material occupying the complete cross-section of a length of said reaction zone, said particle-form catalytic material effecting the catalytic reaction of hydrogen and oxygen to produce water vapor, maintaining said mass of particle-form catalytic material substantially filling or occupying the complete cross-section of said reaction zone along a



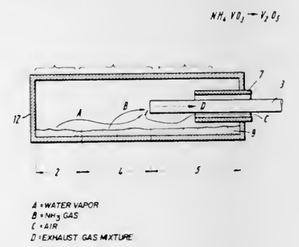
length of said reaction zone by maintaining a reservoir of said particle-form catalytic material above said reaction zone and in open communication therewith so that as said particle-form catalytic material becomes depleted from or otherwise leaves said reaction zone additional particle-form catalytic material moves or falls by gravity via at least two substantially independent flowpaths into said reaction zone to maintain said reaction zone completely filled with said particle-form catalytic material and cooling the resulting reaction product gases, now substantially depleted with respect to hydrogen and oxygen.

4,119,707

PROCESS AND EQUIPMENT FOR MANUFACTURING VANADIUM PENTOXIDE

Roland Thome; Hubert Bings, both of Luenen, and Hans Obermaier, Tacherting, all of Fed. Rep. of Germany, assignors to Vereinigte Aluminum-Werke Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,855
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1976, 2609430
Int. Cl.² C01G *31/00*
U.S. Cl. 423—592 **13 Claims**



1. A process for the manufacture of vanadium pentoxide in powder form which comprises:

heating a predetermined quantity of ammonium metavanadate composition comprising more than 10% ammonia in a first zone to between about 300° and 500° C. until the water contained in said composition has been substantially removed to form an essentially dry material and water vapor,

conducting said essentially dry composition from said first zone to a second zone,

heating said essentially dry material in said second zone to between about 500° and 600° C. to form vanadium oxides and ammonia in the presence of said water vapor from said first zone,

diluting said ammonia with said water vapor,

conducting said vanadium oxides from said second zone to a third zone,

heating said vanadium oxides in said third zone through which air is flowing in a countercurrent direction to between about 550° and 650° C. to form dry vanadium pentoxide powder, and

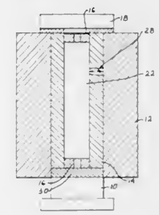
continuously performing said process in a single enclosure wherein said first, second and third zones are adjacent to and in open communication with one another.

4,119,708

HIGH TEMPERATURE, HIGH PRESSURE PROCESS UTILIZING A DUCTILE DRIVER ELEMENT

George C. Kennedy, Los Angeles, Calif., assignor to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 586,415, Jun. 12, 1975, abandoned. This application Sep. 29, 1976, Ser. No. 727,889
Int. Cl.² C01B *31/06*
U.S. Cl. 423—659 **3 Claims**



1. The method of maintaining a desired pressure in a reaction chamber on an electrically heated charge which undergoes reaction and reduces in volume, said method comprising the steps of: lining a portion of the inside walls of the reaction chamber with a sleeve of insulating material, placing said charge in said sleeve and confining said charge and said sleeve axially at one end of the reaction chamber, introducing a ductile electrically conductive driver element and a piston into the reaction chamber so as to axially confine said charge and said sleeve in said reaction chamber, interposing said driver element between said piston and said sleeve, and heating and pressurizing said charge so that as the piston advances towards said charge the driver element will deform at a lower pressure and temperature than said sleeve and flow into the adjacent end of the sleeve, without substantially deformation of said sleeve during the continued advancement of said piston required for said reaction, and sizing the driver element to allow the piston maximum forward travel without substantial deformable engagement with said insulating sleeve while maintaining a substantially constant reaction pressure on the charge.

4,119,709

DIAGNOSTIC TEST

William R. Holub, 138 Shore Rd., Port Washington, N.Y. 11050

Filed Feb. 17, 1976, Ser. No. 658,818
Int. Cl.² G01N *33/16;* A61K *43/00*
U.S. Cl. 424—1 **10 Claims**

1. A method of determining the concentration of a substance in a sample fluid by competitive binding, which comprises forming an admixture of a predetermined amount of said sample fluid, a predetermined amount of a radioactive isotope labeled form of said substance, a predetermined amount of a receptor capable of binding the labeled and unlabeled forms of the substance, and a predetermined amount of a particulate solid sorbent coated with a further amount of said receptor,

said sorbent being precoated, before said admixture is formed, with said further amount of receptor, said further amount being at least sufficient to bind all of the labeled substance, allowing the resulting heterogenous liquid phase/solid phase system to equilibrate, said liquid phase comprising said substance bound to the receptor and said radioactive isotype bound to the receptor and said solid phase comprising said coated sorbent to which is bound said substance and said radioactive isotope, separating the liquid phase from the solid phase after equilibration, and counting with a radiation counter the radioactivity of the liquid phase or the solid phase.

4,119,710

BRONCHOSPASMOLYTIC 1-(P-AMINO-PHENYL)-2-AMINO-ETHANOLS-(1) AND SALTS

Günther Engelhardt; Johannes Keck; Gerd Krüger, all of Biberach an der Riss; Klaus-Reinhold Noll, Warthausen-Oberhofen, and Helmut Pieper, Biberach an der Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

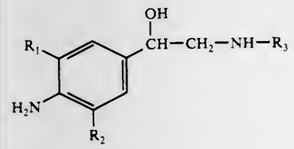
Continuation-in-part of Ser. No. 426,949, Dec. 13, 1973, abandoned. This application Dec. 28, 1976, Ser. No. 754,981

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1972, 2261914; Sep. 8, 1973, 2345442; Oct. 12, 1973, 2351281

Int. Cl.[2] A61K *31/04, 31/135, 31/275, 31/36*

U.S. Cl. 424—282 **7 Claims**

1. A racemic mixture or optically active antipode of a compound of the formula



wherein

R_1 is fluorine, chlorine, bromine, iodine or cyano,

R_2 is trifluoromethyl, nitro or cyano, and

R_3 is alkyl of 3 to 5 carbon atoms, hydroxy(alkyl of 3 to 5 carbon atoms), cycloalkyl of 3 to 5 carbon atoms, 1-(3,4-methylenedioxy-phenyl)-2-propyl or 1-(p-hydroxy-phenyl)-2-propyl,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

6. A pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective bronchospasmolytic amount of a compound of claim **1**.

4,119,711

PIPERIDINO DERIVATIVES

Sven Erik Harry Hernestam; Nils Arne Nilsson; Curt Harry Nordvi, all of Malmö, and Lars-Olof Willard, Höllviksnäs, all of Sweden, assignors to AB Ferrosan, Malmö, Sweden

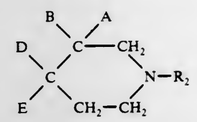
Filed Mar. 11, 1977, Ser. No. 776,903

Claims priority, application United Kingdom, Mar. 18, 1977, 10977/77

Int. Cl.[2] C07D *221/20;* **A61K** *31/445*

U.S. Cl. 424—54 **14 Claims**

1. A piperidine compound of the formula



(I)

wherein A and B each represents a hydrogen atom and D and E together represent a group R_1, R_1 being selected from the group consisting of unsubstituted straight-chain and unsubstituted branched-chain alkylene groups (forming a spiro compound) having 7–16 carbon atoms and R_2 is selected from the group consisting of unsubstituted straight-chain and unsubstituted branched-chain hydroxyalkyl groups having 2–10 carbon atoms, and acid addition salts thereof.

11. An oral and dental hygiene composition suitable for use in the treatment of dental caries and periodontitis, comprising a compound of claim **1**, in an amount effective for said purpose, in association with an orally acceptable carrier.

4,119,712

MAKEUP FOUNDATIONS

Tibor G. Goldner, Fresh Meadows, N.Y., and Eustace Fotiu, Mahwah, N.J., assignors to Revlon, Inc., New York, N.Y.

Filed Jul. 25, 1977, Ser. No. 818,432

Int. Cl.[2] A61K *7/021, 7/035*

U.S. Cl. 424—63 **3 Claims**

1. A dry pigment composition for incorporation into aqueous makeup foundations consisting essentially of

talc	50–90%,
cosmetically acceptable pigment	5–49%,
hydrophilic fumed silica	0.5–3%, and
hydrophobic fumed silica	0.5–5%

4,119,713

ANALGESIC AND ANTI-INFLAMMATORY COMPOSITION

Sam Caroslo, 111 West St., Englewood, N.J. 07631

Filed Feb. 9, 1977, Ser. No. 767,140

Int. Cl.[2] A61K *35/12, 35/56, 31/355, 31/05*

U.S. Cl. 424—95 **5 Claims**

1. An analgesic and anti-inflammatory composition for external application comprising in synergistic combination by weight:

from about 0.16 to about 0.26 percent of menthol;

from about 36 to about 60 percent of whole eggs;

a concentration of vitamin E from about 2050 to about 3450 international units per kilogram of total composition weight;

from about 0.16 to about 0.26 percent of substantially purified honey; and

a pharmacentically acceptable diluted alcohol solvent to make 100 percent.

4,119,714

GLYCERIN-ALKYLETHER-(1)-PHOSPHORIC ACID-(3)-MONOCHOLINE ESTERS AS ENHANCERS OF THE NATURAL RESISTANCE OF THE MAMMALIAN ORGANISM AGAINST NON-CARCINOGENIC PATHOGENS

Gunter Kny, Nassau, Lahn, and Otto Westphal, Freiburg, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V., Gottingen, Fed. Rep. of Germany

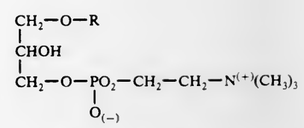
Continuation-in-part of Ser. No. 565,553, Apr. 7, 1975, abandoned, which is a continuation of Ser. No. 396,553, Sep. 12, 1973, abandoned, which is a continuation of Ser. No. 118,085, Feb. 23, 1971, abandoned. This application Jan. 26, 1977, Ser. No. 762,572

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1970, 2009342

Int. Cl.[2] A61K *31/685, 31/66*

U.S. Cl. 424—199 **4 Claims**

1. The method of increasing the immune response of the organism of a warm-blooded animal to a non-carcinogenic, antigenic stimulus, which comprises adminstering to said animal an effective immune response increasing amount of a compound of the formula



wherein R is alkyl of 12 to about 20 carbon atoms.

4,119,715

PESTICIDALLY ACTIVE O-(1-FLUORO-2-HALOGENO-ETHYL)-THIONOPHOSPHORIC (PHOSPHONIC) ACID ESTERS

Hellmut Hoffmann, Wuppertal; Dieter Arlt, Cologne; Bernhard Homeyer, Leverkusen, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

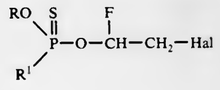
Filed Jun. 20, 1977, Ser. No. 808,227

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1976, 2630561

Int. Cl.[2] A01N *9/36;* **C07F** *9/165, 9/40*

U.S. Cl. 424—216 **9 Claims**

1. An O-(1-fluoro-2-halogeno-ethyl)-thionophosphoric (phosphonic) acid ester of the formula



in which

R is alkyl, phenyl or phenyl carrying up to three substituents selected from the group consisting of halogen, alkyl, alkylthio and nitro,

R^1 is alkyl or alkoxy, and

Hal is halogen.

2. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidal or nematicidally effective amount of a compound according to claim **1**.

4,119,716

CERTAIN DIARYLDITHIOPHOSPHORODIAMIDATES AND THEIR USE AS BIOCIDES

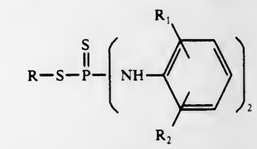
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 27, 1977, Ser. No. 819,653

Int. Cl.[2] A01N *9/36;* **C07F** *9/24*

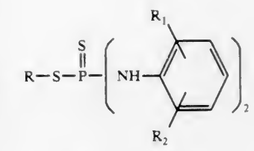
U.S. Cl. 424—220 **152 Claims**

1. A method for controlling bacteria comprising applying to the bacteria or the locus thereof a bactericidally effective amount of a compound having the formula



in which R is lower alkyl, phenyl, benzyl or p-chlorophenyl and R_1 and R_2 are halo, lower alkyl, trifluoromethyl, cyano, nitro, thicyano or hydrogen, provided that at least one of R_1 and R_2 is other than hydrogen, and further provided that if R_1 or R_2 is cyano, R is methyl or p-chlorophenyl.

29. A compound having the formula



in which R is lower alkyl, phenyl, benzyl or p-chlorophenyl and R_1 and R_2 are halo, lower alkyl, trifluoromethyl, cyano, nitro, thiocyano or hydrogen, provided that at least one of R_1 and R_2 is other than hydrogen, and further provided that if R_1 or R_2 is cyano, R is methyl or p-chlorophenyl.

4,119,717

16-S-ACYL DERIVATIVES OF FUSIDIC ACID

Welf von Daehne, Rungsted Kyst, and Poul Rødbroe Rasmussen, Frederikssund, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

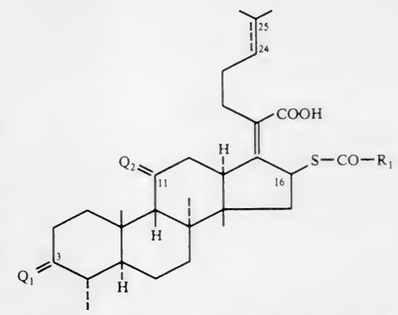
Filed Jun. 14, 1977, Ser. No. 806,376

Claims priority, application United Kingdom, Jul. 5, 1976, 27921/76

Int. Cl.[2] A61K *31/56*

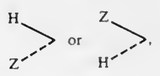
U.S. Cl. 424—238 **30 Claims**

1. A compound of the formula I



I

in which the dotted line between C-24 and C-25 indicates that the carbon atoms in question are connected by either a double bond or a single bond and in which Q_1 represents oxygen or one of the groupings



Z being a hydroxy group, a halogen atom, a methylsulfonyloxy or p-tolylsulfonyloxy group, an azido or a nitro group, Q_2 is oxygen or the grouping



and R_1 stands for a straight or branched alkyl radical having from 1 to 6 carbon atoms, a phenyl or a heterocyclyl radical having 5 or 6 ring atoms and containing nitrogen, oxygen and/or sulfur atoms, these radicals being optionally substituted with, nitro, lower alkyl radicals; or pharmaceutically acceptable, non-toxic salt or easily hydrolyzable ester thereof.

15. A pharmaceutical preparation in dosage unit form for the enteral or parenteral treatment of patients suffering from infectious diseases, which comprises as an active ingredient at least one compound according to claim **1**, or a pharmaceutically

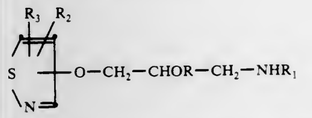
acceptable, non-toxic salt or an easily hydrolysable ester thereof, and an atoxic pharmaceutically acceptable carrier, the quantity of the said active compound being between 0.05 g and 1 g.

4,119,718
3-AMINO-2-OXY-PROPOXY-SUBSTITUTED ISOTHIAZOLES

John J. Baldwin, and Gerald S. Ponticello, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 2, 1977, Ser. No. 792,743
Int. Cl.[2] A61K *31/425;* **C07D** *275/02*
U.S. Cl. 424—248.51 **18 Claims**

1. Compounds having the formula



and pharmaceutically acceptable salts thereof wherein

R is hydrogen, benzoyl, naphthoyl, p-methylbenzoyl, p-phenylbenzoyl or C_2–C_{12} alkanoyl,

R_1 is C_1–C_{12} alkyl,

R_2 is H, Cl, Br, F, CN, $-NH_2$, $-COOR_4$ wherein R_4 is H, C_1–C_6 alkyl or C_6–C_{12} carbocyclic aryl, $-CONR_5R_6$ wherein R_5 and R_6, when separate, are H or C_1–C_6 alkyl and, when joined, are $-CH_2-(CH_2)_3-CH_2-$, $-CH-CH_2-O-CH_2-CH_2-$, $-CH_2-CH_2-NH-CH_2-CH_2-$, or $-CH_2-CH_2-N(CH_3)-CH_2-CH_2-$, $-C_1$–C_6 alkylthio, $-C_1$-Chd 6 alkysulfinyl or $-C_1$–C_6 alkylsulfonyl and

R_3 is H, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl or C_1–C_6 alkylsulfonyl.

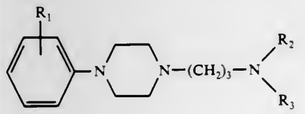
18. Pharmaceutical compositions for effecting β-adrenergic blockade containing an effective amount of a compound of claim **1** and conventional compounding ingredient.

4,119,719
PIPERAZINE COMPOUNDS

Jean-Pierre Maffrand, and Jean-Marie Pereillo, both of Toulouse, France, assignors to Parcor, Paris, France

Division of Ser. No. 664,943, Mar. 8, 1976, abandoned. This application Sep. 14, 1977, Ser. No. 833,291
Claims priority, application France, Apr. 7, 1975, 75 10729
Int. Cl.[2] A61K *31/495, 31/535*
U.S. Cl. 424—250 **19 Claims**

5. A pharmaceutical composition comprising a pharmaceutically acceptable vehicle and a piperazine compound of the formula

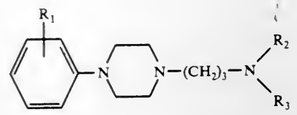


wherein

R_1 is chlorine, alkyl having 1–6 carbon atoms or alkoxy having 1–6 carbon atoms and R_2 and R_3 together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of piperidino and pyrrolidino,

or a pharmaceutically acceptable salt thereof, said piperazine compound being present in an amount sufficient to provide hypocholesterolaemic, anti-inflammatory and analgesic activity.

10. A process for normalizing the cholesterol and lipid levels in the blood of a human patient comprising administering to said patient sufficient dosage units of a pharmaceutical composition comprising a pharmaceutically acceptable vehicle and a piperazine compound of the formula



wherein

R_1 is chlorine, alkyl having 1–6 carbon atoms or alkoxy having 1–6 carbon atoms and R_2 and R_3 together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of piperidino and pyrrolidino,

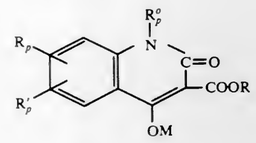
or the pharmaceutically acceptable salts thereof.

4,119,720
UNSATURATED ESTERS OF 4-HYDROXY-2-QUINOLINONE-3-CARBOXYLIC ACIDS AND SALTS THEREOF

Goetz E. Hardtmann, Morristown, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

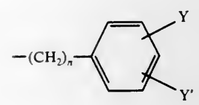
Filed Jul. 6, 1977, Ser. No. 813,267
Int. Cl.[2] A61K *31/47;* **G07D** *215/22*
U.S. Cl. 424—258 **78 Claims**

1. A compound of the formula:



wherein

R_p^o is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or



n is 0 or 1,

M is hydrogen or a pharmaceutically acceptable cation,

R is alkenyl of 3 to 6 carbon atoms or alkynyl of 3 to 6 carbon atoms,

Y and Y′ are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, trifluoromethyl or nitro, with the proviso that only one of Y and Y′ can be from the group consisting of nitro and trifluoromethyl, and

R_p and R_p' are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or trifluoromethyl, or R_p and R_p' together form 6,7-methylenedioxy, with the proviso that only one of R_p and R_p' can be from the group consisting of nitro and trifluoromethyl,

with the further proviso that the unsaturation in any alkenyl or alkynyl is on other than the alpha carbon atom.

30. The method of treating allergic conditions due to histamine release comprising administering to a mammal in need of such treatment an allergy treating effective amount of a compound of claim **1**.

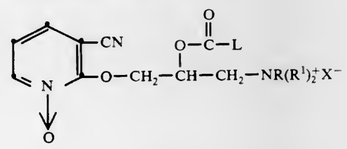
60. The pharmaceutical composition comprising in unit dosage form a pharmaceutically acceptable carrier and an amount effective to relieve allergic conditions due to histamine release of a compound of claim **1**.

4,119,721
SUBSTITUTED (3-LOWERALKYLAMINO-2-R_1O-PROPOXY)PYRIDINES, THEIR PREPARATION AND USE

John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 696,236, Jun. 15, 1976, Pat. No. 4,053,605. This application Mar. 7, 1977, Ser. No. 774,850
Int. Cl.[2] A61K *31/44;* **C07D** *213/57*
U.S. Cl. 424—263 **3 Claims**

1. A compound having the formula:



wherein

R is C_3–C_4 branched alkyl,

R^1 is C_1–C_4 alkyl or benzyl

L is selected from C_1–C_{10} alkyl, phenyl, mono- and disubstituted phenyl wherein said substituents are independently selected from C_1–C_4 alkyl, C_1–C_4 alkoxy and halo, and

X is halogen.

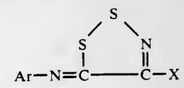
3. A method of treating hypertension in animals which comprises administering an effective amount of a compound of claim **1**.

4,119,722
METHOD FOR CONTROL OF FUNGI USING 4-HALO-5-ARYL-1,2,3,-DITHIAZOLES

Joseph E. Moore, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 698,383, Jun. 21, 1976, Pat. No. 4,059,590. This application Sep. 26, 1977, Ser. No. 836,283
Int. Cl.[2] C07D *285/06*
U.S. Cl. 424—270 **6 Claims**

1. A method for the control of fungi which comprises applying thereto or their habitats a fungicidally effective amount of a compound of the formula



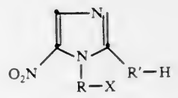
wherein X is fluoro, chloro, bromo, iodo and Ar is phenyl, naphthyl or phenyl or naphthyl substituted with 1 to 3 of the same or different substituents selected from hydroxy, fluoro, chloro, bromo, iodo, cyano, nitro, benzoyl, formyl alkanoyl of 2 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 2 carbon atoms and 1 to 5 of the same or different halogens selected from fluoro, chloro or bromo, alkoxy of 1 to 4 carbon atoms, phenoxy, or phenoxy substituted with 1 to 2 of the same different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, nitro, cyano or alkyl of 1 to 4 carbon atoms.

4,119,723
TREATMENT OF RHEUMATOID ARTHRITIS AND RELATED DISEASES

Roger Wyburn-Mason, Richmond Surrey, England, assignor to John R. A. Simoons, Summit, N.J.

Filed Jul. 8, 1977, Ser. No. 813,922
Int. Cl.[2] A61K *31/415*
U.S. Cl. 424—273 R **5 Claims**

1. A method for producing remission in patients suffering from active rheumatoid arthritis which comprises administering orally to such a patient an effective amount of a compound of the formula:



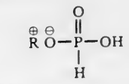
wherein R and R′ are each alkylene having 1 to 7 carbon atoms and X is lower alkylsulfonyl and the pharmaceutically acceptable acid addition salt thereof.

4,119,724
FUNGICIDAL COMPOSITIONS CONTAINING PHOSPHOROUS ACID AND DERIVATIVES THEREOF

André Thizy; Daniel Pillon; Jean-Claude Debourge, and Guy Lacroix, all Lyon, France, assignors to Pepro, France

Division of Ser. No. 527,380, Nov. 26, 1974, Pat. No. 4,075,324. This application Apr. 13, 1977, Ser. No. 787,154
Claims priority, application France, Nov. 26, 1973, 73.43801, Sept. 27, 1974 [FR], France—74.33409
Int. Cl.[2] A61L *9/04;* **A01N** *9/36*
U.S. Cl. 424—45 **16 Claims**

1. A method of controlling fungus disease in plants comprising applying to said plants in a fungicidally effective amount at least one salt of the formula



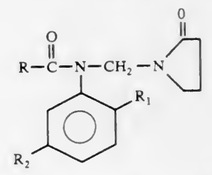
wherein R is triethyl amine, ethanol amine, 1,3-imidazole, cyclohexyl amine, aniline, aniline containing one to three alkyl substituents of 1 to 4 carbon atoms on the aromatic ring or morpholine.

4,119,725
INSECTICIDAL N-METHYLPYRROLIDINONYLACETANILIDES

Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 796,520, May 13, 1977. This application Oct. 25, 1977, Ser. No. 845,273
Int. Cl.[2] A01N *9/22*
U.S. Cl. 424—274 **5 Claims**

1. A method of controlling insect larvae on plants which comprises applying thereto an insecticidally effective amount of a compound which is an N-acyl-N-(N′-methylenepyrrolidonyl)-2,5-dialkylaniline having the formula:



where R_1 and R_2 are both lower alkyl, and R is selected from

the group consisting of alkyl, alkenyl and haloalkenyl having from 2 to 12 carbon atoms.

4,119,726

CYCLIC EXO AMIDES

Gordon Wootton, Sawbridgeworth, England, assignor to Beecham Group Limited, United Kingdom

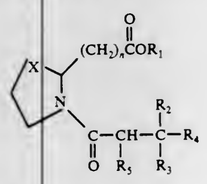
Filed May 13, 1977, Ser. No. 796,715

Claims priority, application United Kingdom, May 22, 1976, 21305/76

Int. Cl.[2] **C07D** *207/24;* **A61K** *31/40;* **C07D** *207/12*

U.S. Cl. 424—274 **29 Claims**

1. A compound selected from the group consisting of a cyclic exoamide of the formula:



wherein

n has a value of 4 to 8;

X is carbonyl; a ketal, thioketal, hemithioketal, oxime, semicarbazone or hydrazone derived from such carbonyl; or C(OH)R in which R is hydrogen or alkyl of 1 to 4 carbon atoms;

R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, phenyl, benzyl or tolyl;

R_3 is hydroxy, acyloxy of 1 to 4 carbon atoms, or benzyloxy;

each of R_2 and R_4 is independently hydrogen, alkyl of 1 to 9 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl, naphthyl, or alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 5 to 8 carbon atoms, phenyl or naphthyl, said phenyl and naphthyl being unsubstituted or substituted by up to three substituents selected from the group consisting of fluoro, chloro, bromo, trifluoromethyl, alkyl of 1 to 4 carbon atoms, nitro, and alkoxy of 1 to 4 carbon atoms, or R_2 and R_4 taken together with the carbon atoms to which they are commonly bound are cycloalkyl of 5 to 8 carbon atoms; and

R_5 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl,

and the pharmaceutically acceptable non-toxic salts thereof.

28. A pharmaceutical composition for the treatment of gastric acid secretion, bronchodilation and platelet aggregation inhibition activities comprising a compound according to claim 1 in an amount sufficient to overcome such disorders and a pharmaceutically acceptable carrier.

4,119,727

NOVEL 11-DESOXY-PROSTAGLANDIN F_2 DERIVATIVES

Jean Buendia, Le Perreux-sur-Marne; Jeanine Nierat, Suresnes, and Robert Deroy, Sceaux, all of France, assignors to Roussel Uclaf, Paris, France

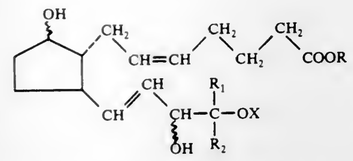
Filed May 2, 1977, Ser. No. 792,563

Claims priority, application France, Apr. 30, 1976, 76 12942; Jan. 18, 1977, 77 01299

Int. Cl.[2] **A01N** *9/00;* **C07D** *333/24*

U.S. Cl. 424—275 **18 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, an alkali metal, an equivalent of an alkaline earth metal, magnesium or a pharmaceutically acceptable amine base, R_1 and R_2 are individually selected from the group consisting of hydrogen and methyl and X is thienyl optionally substituted with at least one member of the group consisting of chlorine, —CN and methyl with the wavy lines indicating that the hydroxy may be in either one of the two possible α and β positions.

4,119,728

1-PHENOXY-2-HYDROXY-3-ALKYNYLAMINO-PROPANES AND SALTS THEREOF AND TREATMENT OF CORONARY DISEASES THEREWITH

Herbert Köppe; Werner Kummer; Helmut Stähle, and Gojko Muacevic, all of Ingelheim am Rhein, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

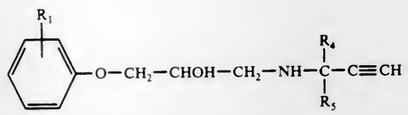
Continuation-in-part of Ser. No. 609,998, Sep. 3, 1975, Pat. No. 4,016,202, which is a continuation-in-part of Ser. No. 444,713, Feb. 22, 1974, Pat. No. 3,925,446. This application Nov. 18, 1976, Ser. No. 742,782

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1973, 2309887; Jan. 26, 1974, 2403809

Int. Cl.[2] **A61K** *31/165;* **C07C** *103/10*

U.S. Cl. 424—324 **7 Claims**

1. A racemic or optically active compound of the formula



wherein

R_1 is —NH—CO—R_9, where R_9 is lower alkyl; or —Q—CO—NR_7R_8, where Q is single bond or —CH_2—, and R_7 and R_8 are each hydrogen or lower alkyl; and

R_4 and R_5 are each alkyl of 1 to 3 carbon atoms;

or a physiologically compatible acid addition salt thereof.

7. The method of treating diseases of the coronaries in a warm-blooded animal, which comprises administering to said animal a safe but effective amount of a compound of claim 1.

4,119,729

ALKYLSULFONYLPHENOXYPROPANOLAMINE THERAPEUTIC PROCESS

William T. Comer, and William E. Kreighbaum, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 722,853, Sep. 10, 1976, Pat. No. 4,067,904, which is a continuation-in-part of Ser. No. 642,638, Dec. 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 455,099, Mar. 27, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,008

Int. Cl.[2] **A01N** *9/20*

U.S. Cl. 424—330 **6 Claims**

1. A process for treating hypertension which comprises systemically administering to a mammal in need of said treatment an antihypertensive effective amount of a compound selected from the group consisting of

1-(phenoxyisopropylamino)-3-[4-(methylsulfonyl)-m-tolyloxy]2-propanol, and

3-[4-(methylsulfonyl)-m-tolyloxy]-1-(2-phenoxyethyl-)amino-2-propanol

or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4. A process which comprises systemically administering to a mammal in need of antiarrhythmic treatment an antiarrhythmic effective amount of a compound selected from the group consisting of

1-(isopropylamino)-3-[2-(methylsulfonyl)phenoxy]-2-propanol and

1-[(4-(methoxy-α,α-dimethylphenethyl)amino]-3-[4-(methylsulfonyl)-m-tolyloxy]-2-propanol

or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4,119,730

TREATING MUSCLE SPASMS

Rolf Deininger, Cologne, and Erich Wolf, Overath, Marienlinden, both of Fed. Rep. of Germany, assignors to Chimicasa GmbH, Chur, Switzerland

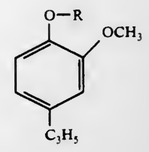
Division of Ser. No. 798,090, May 18, 1977, abandoned. This application Aug. 19, 1977, Ser. No. 825,901

Claims priority, application Luxembourg, May 18, 1976, 74973

Int. Cl.[2] **A61K** *31/09*

U.S. Cl. 424—341 **5 Claims**

1. A method of treating muscle spasm in a mammal, which comprises; administering to the mammal a unit dose form of a therapeutic composition, which comprises; a compound of the formula:



wherein R is selected from the group consisting of alkyl of from 1 to 20 carbon atoms, inclusive, cycloalkyl of from 3 to 20 carbon atoms, inclusive, polycycloalkyl having up to 20 carbon atoms, aralkyl having 7 to 20 carbon atoms, inclusive, and aryl having 6 to 20 carbon atoms, inclusive; and a pharmaceutically acceptable carrier.

4,119,731

PREPARING YEAST RAISED BAKERY PRODUCTS

Kurzius A. Karl, 9615 Cochiti, SE., Albuquerque, N. Mex. 87123

Filed Dec. 10, 1976, Ser. No. 749,308

Int. Cl.[2] **A21D** *2/36*

U.S. Cl. 426—20 **13 Claims**

1. A process for making yeast raised bakery product containing glandless cotton seeds consisting essentially of the steps of soaking said glandless cotton seed and sour culture together in water for about 15 minutes to open the seed hull,

adding together wheat flour, water, said soaked glandless cotton seed and sour culture, rye flour, whole wheat, coarse wheat, yeast, salt and malt to form a dough,

mixing said dough,

forming a portion of said dough into a desired shape,

proofing said dough,

and baking the formed dough for about 34 minutes at about 400° F.

4,119,732

METHOD FOR RAPIDLY PRODUCING CHEESE

John F. Kratochvil, Oak Brook, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Jun. 21, 1976, Ser. No. 697,712

Int. Cl.[2] **A23C** *19/00*

U.S. Cl. 426—36 **7 Claims**

1. In a process for producing American type cheese of fully developed flavor wherein milk containing between 0-3 million naturally occurring bacteria per milliliter is treated with an acid forming regular cheese starter bacteria culture, coagulated by the subsequent addition of an enzyme, whey is expelled and the resultant curd is cured, the improvement comprising: adding to the milk or curd at a point prior to the curing of the curd an extra pair of bacteria in addition to said regular cheese starter bacteria culture, and adding one or more pregastric lipases prior to or concurrent with the introduction of the milk coagulating enzyme; said extra pair of bacteria comprising at least one strain of *Streptococcus durans,* present at from 2% to 8% of the cell concentration of the starter bacteria and capable of coagulating reconstituted skim milk at 100° F. within 20 hours when added at 1% of this milk, and at least one strain of *Lactobacillus plantarum,* present at from 5% to 15% of the cell concentration of the starter bacteria and in an amount of 2–5 times as great as the *Streptococcus durans,* and capable of coagulating reconstituted skim milk at 100° F. within 24 hours when added at 1% of this milk as well as showing stimulated growth from APT broth by coagulating reconstituted skim milk containing 1% of this substance within 16 hours at 100° F. with a 1% inoculum; and curing the cheese for a period of 4 to 10 weeks at a temperature within the range of 60°–68° F. sufficient to develop a fully aged cheese flavor.

4,119,733

METHOD OF MAKING SOYBEAN BEVERAGES

Dean Shui-Tien Hsieh, Brookline; Roselie Ann Bright, Cambridge, and ChouKyun Rha, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 13, 1977, Ser. No. 796,589

Int. Cl.[2] **A23L** *2/02*

U.S. Cl. 426—46 **7 Claims**

1. A method for preparing a soybean beverage which comprises:

a. grinding whole dry soybeans to a powder of a particle size less than about 420 microns, while avoiding excessive heat generation

b. mixing said powder with water at a temperature between about 50° C. and 100° C. to form a slurry to soften the particles and to inactivate lipoxygenase,

c. homogenizing the slurry and

d. adding enzymes to the homogenized slurry to break down the cellulose, pectin and flatulent components of the homogenized slurry

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4,119,734

HIGH PROTEIN RICE MIXTURE

Albert Speil, Yonkers, N.Y., assignor to Nabisco, Inc., East Hanover, New Jersey, Tokyo, Japan

Filed Feb. 24, 1976, Ser. No. 660,869

Int. Cl.[2] **A23L** *1/20*

U.S. Cl. 426—72 **19 Claims**

1. A method of preparing a protein-enriched grain food product of substantially uniform density and hydration properties in the dry state composed of particulate soy protein and grain wherein the particulate soy protein particles have a density substantially equivalent to that of the grain whereby the protein-grain product can be packaged and transported without segregation of the product mix and hydration properties whereby preparation of the product for consumption is uniform and resembles that of said grain, said method comprising the steps of:

(a) subjecting a soybean feed material selected from the class

consisting of solvent-extracted meal, grits and flakes of soybean material having an NSI of about 30 to about 70 and containing moisture, to a mechanical pressure of at least 1800 pounds per square inch for a time and at a temperature sufficient to convert said moisture into steam whereby said soybean feed is partially disembittered, toasted without scorching and is compacted at a degree of compactness sufficient to compact said feed into a hard and substantially fused mass having a density and hydration properties substantially equivalent to that of the grain;

(b) fragmenting said mass into chunks and

(c) mixing said chunks with the grain whereby there is obtained a soy protein enriched-grain food product of substantially uniform density and hydration properties.

4,119,735

CURED MEAT SPREAD AND ITS PREPARATION

Robert H. Maher, and Lee E. Kraley, both of Fremont, Mich., assignors to Gerber Products Company, Fremont, Micb.

Filed Aug. 11, 1977, Ser. No. 823,771

Int. Cl.² A23B *4/02*

U.S. Cl. 426—264 **8 Claims**

1. A process for forming a cured meat spread, consisting essentially of the steps of:

dividing a predetermined weight of uncooked meat into chunks;

subjecting said chunks to initial heating in water heated to greater than 150° F. for a time sufficient to cause the chunks to attain an internal temperature in the range of 120°–150° F. so as to coagulate substantially all of the protein therein;

draining said chunks to provide a separated broth;

grinding said drained chunks;

adding sufficient of said previously separated broth to re-establish said predetermined weight;

adding to said ground chunks various seasonings including sufficient sodium nitrite to cure said meat;

heating said ground chunks to at least about 180° F. for a time sufficient to cause a color change indicative of protein denaturization of said meat; and

packaging said ground meat at an elevated temperature sufficient to provide commercial sterility.

4,119,736

METHOD FOR FIXING CRYOGENICALLY CONDENSED COFFEE AROMATICS IN A GLYCERIDE CARRIER

Robert Franklin Howland, New City, N.Y.; George Anthony Jasovsky, Bayonne, N.J., and Joseph Anthony Galanti, New Fairfield, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 22, 1975, Ser. No. 643,432

Int. Cl.² A23F *1/12*

U.S. Cl. 426—386 **6 Claims**

1. A method for fixing cryogenically condensed coffee aromatics in a liquid glyceride comprising the steps of:

(a) condensing as a frost a coffee aroma-containing gas which has a high carbon dioxide content,

(b) placing the aroma-containing frost in a pressure vessel,

(c) supplying heat to the contents of the vessel to produce an internal temperature in excess of 32° F. and a pressure above 506 p.s.i.a., allowing a liquid water phase to be formed and after this liquid water phase has settled to the bottom of the pressurized vessel,

(d) removing essentially all water from said pressurized vessel, therafter

(e) pumping into said pressurized vessel an amount of a liquid glyceride, said amount being about 1 gram per 0.5 to 6 grams of the aroma frost of step (a), and the internal temperature within the pressure vessel being above the congeal point of the glyceride,

(f) thereafter, slowly releasing the pressure within the vessel so that the glyceride carrier is maintained in a liquid state, and then

(g) removing the aromatized glyceride from the pressure vessel.

4,119,737

SULFUR-CONTAINING FLAVORING AGENTS

Steven van den Bosch, Woudenberg; Dirk Karel Kettenes, Putten (Gld); Kris Bart de Roos, Hoevelaken; Gerben Sipma, Hoevelaken, and Jan Stoffelsma, Hoevelaken, all of Netherlands, assignors to P.F.W. Beheer B.V., Amersfoort, Netherlands

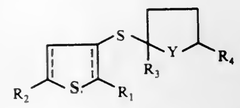
Filed Jan. 26, 1977, Ser. No. 762,534

Claims priority, application United Kingdom, Dec. 13, 1973, 57908/73

Int. Cl.² A23L *1/231*; C07D *333/00*

U.S. Cl. 426—535 **17 Claims**

1. A chemical compound having the structural formula



wherein the S-containing ring is selected from the class consisting of

(a) the tetrahydrothiophene ring;

(b) the 4,5-dihydrothiophene ring; and

(c) the thiophene ring;

Y is oxygen or sulfur and R_1, R_2, R_3 and R_4 are hydrogen or 1 to 3 carbon alkyl groups.

4,119,738

SWEET MATERIAL

Hans Wagner, Constance, and Alfred Maierhofer, Allensbach, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed May 17, 1976, Ser. No. 687,321

Claims priority, application Fed. Rep. of Germany, May 16, 1975, 2521816; Apr. 5, 1976, 2614585; Apr. 15, 1976, 2616731

Int. Cl.² A23L *1/236*

U.S. Cl. 426—548 **26 Claims**

1. A foodstuff containing a compound selected from the group consisting of the sodium and potassium salts of 2-hydroxy-4-methyl-valeric acid in an amount effective to act as a sweetener therefor, said foodstuff being selected from the group consisting of flavored beverages, baked goods, candy, cake mixes, jelly and jam.

4,119,739

PROCESS OF PREPARING SIMULATED FRUIT

Bryan Edwin Barwick, Rushden, and Michael Edwin Sneath, Wellingborough, both of England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 690,944, May 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 531,377, Dec. 10, 1974, abandoned. This application Mar. 21, 1977, Ser. No. 779,783

Int. Cl.² A23L *1/04*

U.S. Cl. 426—573 **3 Claims**

1. In a process for preparing simulated fruit berries consisting essentially of

(A) co-extruding

(a) an aqueous sol selected from the group consisting of aqueous alginate sol and aqueous low-methoxy pectin sol, and

(b) a fruit-flavored aqueous system selected from the group consisting of fruit-flavored solutions, fruit juice, fruit pulp and fruit puree to form fruit-flavored drops coated with the sol; and

(B) dropping the coated drops from 2 to 30 cms into an aqueous setting bath containing as setting agent an edible, water-soluble calcium salt to set the sol to a gel selected from the group consisting of calcium alginate and low-methoxy pectate gel and thereby form simulated fruit consisting essentially of drops of a fruit-flavored aqueous system coated with said gel;

the improvement, whereby distortion of the drops on entering the setting bath and disruptive splashing of the bath are minimised, consisting essentially in bubbling a gas non-reactive to the setting bath, the sol and the fruit-flavored system through the setting bath to form a foam at the surface of the setting bath, the height of the foam being in the range 2 to 25 millimeters.

4,119,740

COCOA EXTENDER

Silvio Crespo, Lititz, Pa., assignor to Wilbur Chocolate Company, Inc., Lititz, Pa.

Filed Jun. 14, 1977, Ser. No. 806,547

Int. Cl.² A23G *1/00*

U.S. Cl. 426—631 **30 Claims**

1. An extended cocoa powder comprising cocoa and a cocoa extender selected from the group consisting of peanut grit, almond shells and soybean flakes in a ratio of 1:99 to 99:1, said cocoa extender being prepared by roasting said cocoa extender at a temperature of from about 275° F. to about 475° F. for from about 20 to about 90 minutes to develop a cocoa imparting color and pulverizing said roasted cocoa extender 200 mesh to a cocoa-like consistency, said extended cocoa powder having the color, bulk, mouth feel and flavor of cocoa.

4,119,741

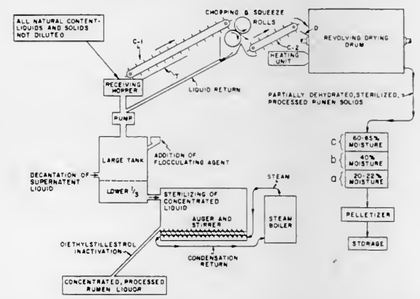
PRODUCTION OF SUBSTANTIALLY FULL-DIET BEEF CATTLE FEED THROUGH PROCESSING OF THE RUMEN CONTENT OF SLAUGHTERED CATTLE

Paul A. Stahler, 200 Maple La., Jordan, Minn. 55352

Division of Ser. No. 370,459, Jun. 15, 1973, Pat. No. 3,928,640, which is a continuation-in-part of Ser. No. 12,080, Feb. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 667,324, Sep. 7, 1967, Pat. No. 3,545,977. This application Jul. 10, 1975, Ser. No. 594,693

Int. Cl.² A23K *1/10*

U.S. Cl. 426—641 **2 Claims**



1. A nutritive beef cattle feed, furnishing at least 75% of full diet requirements for feeding cattle, comprising a high percentage of amino acids, a total protein content by weight within a range of from 10% to 12%, and a fat content by weight within a range of from 3.1% to 3.8%, said feed having been produced by treating only the rumen content of slaughtered cattle, by removing at least 80% of the liquid and flash drying at a temperature from 2000° F. to 3000° F. for from 7 to 10 minutes.

4,119,742

RECONSTITUTED FRIED PUFFED PORK SKINS

Gertraud B. Stupec, Hinsdale, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Oct. 22, 1976, Ser. No. 734,967

Int. Cl.² A23L *1/31*

U.S. Cl. 426—641 **14 Claims**

1. A method for producing a fried and puffed product from animal parts comprising:

(1) providing a starting material which comprises particles of animal parts which are sufficiently high in collagen content to cause gelatinization of the animal parts and at least 50% by weight thereof are rendered parts;

(2) moisturizing the particles to moisture contents between 18% and 35% by weight;

(3) feeding the moisturized particles to the throat to a die-ended screw-type extruder having thermally-controllable barrel sections along the length of screw;

(4) maintaining the barrel section next to the throat at temperatures of less than 85° F., maintaining the extruder barrel between the throat section and a section next to the die at a temperature of at least 215° F. to partially gelatinize but not to substantially denature said animal parts and maintaining the barrel section next to the die and the die at temperatures such that the extrudate exiting the die is at temperatures no greater than 220° F.;

(5) rotating the screw of the extruder and controlling the rate of feed of the moisturized particles to the throat so that a smooth, glossy extruder exits from the die and the extrudate will not revert to an agglomeration of particulate material at room temperature;

(6) cooling the extrudate to temperatures of less than 160° F.;

(7) cutting the extrudate to pellets so that one dimension thereof is no greater than $\frac{1}{4}$th inch;

(8) drying the pellets to moisture contents of less than 15% by weight; and

(9) frying the pellets in fat at temperatures between 350° F. and 420° F. until the moisture content of the pellets is less than 3.5% by weight and the pellets have puffed to at least twice the unpuffed volume.

4,119,743

METHOD FOR MANUFACTURE OF LAMINATES WHICH ARE USEFUL AS PACKAGING MATERIALS

Chen-i Lu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 733,560, Oct. 18, 1976, Pat. No. 4,070,398. This application Aug. 2, 1977, Ser. No. 821,116

Int. Cl.² B05D *3/06*

U.S. Cl. 427—44 **13 Claims**

1. A method of making a laminated sheet material which comprises the steps of:

(1) coating a metal foil with a first radiation-curable composition that is capable of forming a chemically-resistant layer upon radiation curing,

(2) irradiating said coating to cure said first composition,

(3) overcoating the resulting cured layer with a second radiation-curable composition that is capable of forming a heat-sealable layer upon radiation curing,

(4) irradiating said overcoat to cure said second composition, and

(5) heating said overcoat to fuse said second composition.

4,119,744

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES IN WHICH A LAYER OF SEMICONDUCTOR MATERIAL IS PROVIDED ON A SUBSTRATE

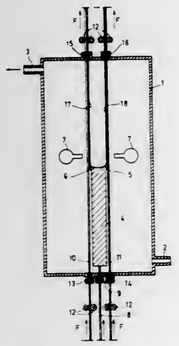
Jean-Jacques Lucien Emile Brissot, Maisons Alfort; Christian Belouet, Sceaux, and René Martres, Argentueil, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 654,940, Feb. 3, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,387

Claims priority, application France, Feb. 7, 1975, 75 03926; Sep. 26, 1975, 75 29556

Int. Cl.² B05D *5/12;* **B01D** *9/02*

U.S. Cl. 427—45 **21 Claims**



1. A method of manufacturing semiconductor devices comprising a layer of semiconductor material, comprising the steps of:

(a) providing a strip-shaped solid substrate having a main surface,

(b) providing a solid support having a substantially horizontal surface and comprising a substantially floating liquid mass of said semiconductor material on said substantially horizontal surface, said main surface being wettable by said liquid semiconductor material,

(c) contacting said liquid mass with said main surface of said substrate, onto which substrate the layer of semiconductor material is to be provided,

(d) moving said substrate in its longitudinal direction along and in contact with said liquid mass so that a liquid layer of said semiconductor material is formed on said substrate and taken along with it, and

(e) substantially progressively solidifying said liquid layer.

4,119,745

DEPOSITION OF ELECTROLUMINESCENT MATERIAL THROUGH SUPERIMPOSED DUAL MASKS

Peter John Fennemore Smith, Wimborne, England, assignor to Smiths Industries Limited, London and Phosphor Products Company Limited, Poole, both of, England

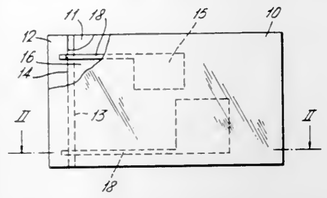
Filed Dec. 22, 1976, Ser. No. 752,941

Claims priority, application United Kingdom, Dec. 23, 1975, 52585/75

Int. Cl.² B05D *5/06*

U.S. Cl. 427—66 **8 Claims**

1. A method of manufacturing a display device having a layer of electroluminescent material which is disposed between a pair of electrodes to which a voltage is to be applied to excite the electroluminescent material to luminescence, comprising the steps of disposing on an assembly having a substrate with one of the said electrodes thereon, first and second masks with the masks overlying one another, the first mask being disposed nearest to the said assembly and having formed therein an aperture defining a region in which the said electroluminescent material is to be disposed and a slot extending from that aperture, and the second mask having an aperture therein aligned with the said aperture in the first mask, disposing the said electroluminescent material in the said aligned apertures, removing the said second mask when the electroluminescent



material in the said apertures has solidified, forming the said other electrode on the exposed surface of the said electroluminescent material and within the slot, and removing the first mask.

4,119,746

CROSS-LINKING RESIN SATURANT AND METHOD

Merrill Bleyle, Waltham, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Jun. 14, 1977, Ser. No. 806,447

Int. Cl.² B32B *27/00*

U.S. Cl. 427—381 **10 Claims**

1. The method of preparing a resin impregnated non-woven web having thermoplastic characteristics at temperatures below 190° F. and thermoset characteristics at temperatures above 190° F. comprising:

(a) preparing a cross-linking latex composition by

(1) charging a reaction vessel with a small amount of a seed latex polymer along with an initiator in an aqueous phase to provide nucleating sites for polymerization,

(2) adding, substantially continuously, monomers and emulsifiers at a controlled rate, said monomer consisting essentially of about 59 parts by weight styrene, about 41 parts by weight ethylacrylate, and 2 parts by weight N-methylolacrylamide, the addition taking place at about 150° F. over a 4½ hour period,

(3) post cooking the latex composition up to about three additional hours to reduce the free monomers content of the latex composition,

(4) adjusting the latex composition after polymerization is completed from as manufactured state to a pH value between 6.0 and 8.0 with a neutralizing agent;

(b) saturating a non-woven web with the adjusted latex composition;

(c) drying the saturated web at a temperature below about 190° F. whereby an impregnated thermoplastic non-woven web having thermoset properties above 190° F. is produced.

4,119,747

METHOD FOR APPLYING A FINISH TO A TOW

Thomas M. Veazey, Decatur, Ala., assignor to Monsanto Company, Decatur, Ala.

Filed Aug. 3, 1977, Ser. No. 821,263

Int. Cl.² B05C *5/00*

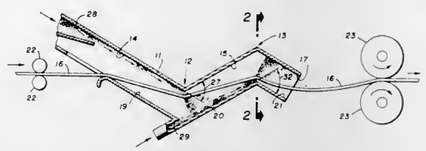
U.S. Cl. 427—424 **3 Claims**

1. The method of applying a fiber finish to a tow of filaments, comprising:

a. advancing the tow along a path through a housing, said path having at least two bends each having an inside and an outside corner, said bends being in opposite directions to each other in such a manner that said path has a sawtooth configuration; and

b. passing a liquid containing a fiber finish along the walls of the housing leading to the inside corners of the bends, the liquid having a velocity such that said liquid clings in

layers to the walls of the housing to said inside corners, the bends of said inside corners being sufficiently great



that said liquid separates from said walls and passes through the tow at said inside corners.

4,119,748

STEEL CORD REINFORCED PLASTIC MATERIALS

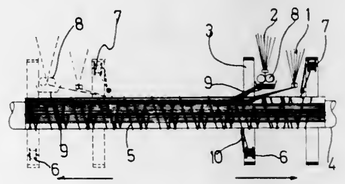
Germain Verbauwhede, Zwevegem, and Frans Coopman, Harelbeke, both of Belgium, assignors to N. V. Bekaert S.A., Zwevegem, Belgium

Filed May 26, 1976, Ser. No. 689,974

Claims priority, application United Kingdom, Jun. 5, 1975, 24300/75

Int. Cl.² B32B *15/18, 17/02*

U.S. Cl. 428—36 **37 Claims**



1. A reinforced shaped synthetic composite comprising a reinforcing material consisting essentially of at least one layer of a combination of glass fibers and steel cord, said combination comprising steel cord at least partially embedded in glass fiber rovings having substantially the same orientation as the steel cord, a synthetic resin matrix material, said glass fiber rovings being impregnated by said matrix material.

4,119,749

MOULDED LIGHT-WEIGHT FRAMED PANEL

Jacques Roth, Strasbourg; Michel Roth, Ostwald; Paul Seiler, Illkirch-Graffenstaden; Roger Lavenir, Strasbourg, and Alain Manigold, Strasbourg-Koenigshoffen, all of France, assignors to Roth Freres, S.A., Strasbourg-Meinau, France

Division of Ser. No. 650,983, Jan. 21, 1976, Pat. No. 4,059,660. This application Jul. 21, 1977, Ser. No. 817,921

Claims priority, application France, Feb. 5, 1975, 75 05064; Dec. 22, 1975, 75 40180

Int. Cl.² B32B *3/06, 3/26*

U.S. Cl. 428—99 **3 Claims**



1. A molded panel comprising in combination a sheet of corrugated cardboard, a sheet of polyurethane foam disposed on one side of said sheet of cardboard, a finishing cover sheet disposed on the side of said foam sheet which is opposite said cardboard, further polyurethane foam disposed on at least the marginal portions of said cardboard sheet on the side of said cardboard sheet opposite said foam sheet, and in-situ polymerized polyol and isocyanate securing said cover sheet and said foam sheet together and securing said foam sheet and said corrugated cardboard sheet together and securing said further foam and said corrugated cardboard sheet together, said panel being curved in the vicinity of said further foam.

3. A panel as claimed in claim 1, and fastening elements held between the cardboard and the foam and projecting from the margins of the panel to serve for fixing the panel.

4,119,750

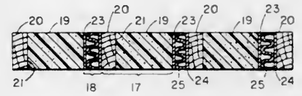
SANDWICH PANEL STRUCTURE

William Hunt Porter, West Olive, Mich., assignor to W. H. Porter, Inc., Holland, Mich.

Filed May 2, 1977, Ser. No. 792,808

Int. Cl.² B32B *5/12, 3/28*

U.S. Cl. 428—105 **19 Claims**



1. In a structural panel material of a sandwich-type construction comprising inner and outer rigid facings and a core between said facings and bonded thereto, the improvement wherein said core comprises a plurality of strips of lightweight core material arranged in parallel relation with opposing lateral surfaces; and double-faced corrugated paperboard sheet material between adjacent ones of said strips and including a center fluted portion having a plurality of undulations connected by means of the facing sheets of said paperboard material alternately to said surfaces, said core being characterized in being flexible enough to conform to a mold shape under gravity and with little or no external pressure.

4,119,751

COVER MEANS FOR PROTECTING TUBES CONVEYING HOT MEDIUMS

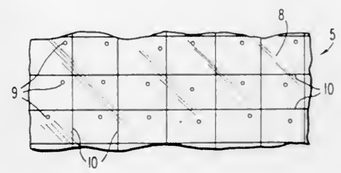
Erland Nilsson, Torshalla, and Lennart Lundbohm, Nacka, both of Sweden, assignors to Nyby Bruk AB, Sweden

Division of Ser. No. 352,420, Apr. 19, 1973, Pat. No. 3,933,181. This application Dec. 20, 1974, Ser. No. 535,086

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1972, 2219228

Int. Cl.² B32B *3/10;* **F16L** *58/00*

U.S. Cl. 428—131 **19 Claims**



1. A covering arrangement for tubes conveying hot mediums comprising at least one cover means for protecting surfaces of tubes against moisture, said cover means having holes extending therethrough with the holes in at least a first portion of the cover means being permeable to water vapor, but substantially impermeable to water, said cover means including a channel-like cross-section having a top wall and side walls with said first portion being arranged at an upper portion of said channel-like cross-section in said top wall and side walls, and said cover means further including a second portion having means for draining water from the interior of said cover

means, said first and second portions forming two parts of said cover means for enclosing a space having self-drying properties about said tubes, said means for draining being at least one second hole through said cover means at said second portion, said at least one second hole having a second size larger than said holes through said first portion, said second size permitting water to pass from the interior space of said cover means to the exterior.

4,119,752

GYPSUM WALLBOARD-MAKING PROCESS AND PRODUCT

William J. Long, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 491,097, Jul. 23, 1974, Pat. No. 4,051,291, which is a continuation of Ser. No. 221,324, Jan. 27, 1972, abandoned. This application May 23, 1977, Ser. No. 799,412
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.² B32B *7/14, 31/12*
U.S. Cl. 428—198 **6 Claims**



1. In a panel comprising a rehydrated gypsum core securely bonded to a paper cover sheet by an adhesive disposed at the interface of said core and said cover sheet, the improvement wherein said adhesive is polyvinyl alcohol and is disposed at limited areas of said interface, the amount of adhesive present at said limited areas being sufficient to provide secure bonding of said paper cover sheet to said gypsum core when said adhesive has set, and wherein substantial areas of said interface are free of said adhesive, said free areas being sufficient to provide wet bonding of said cover sheet to said core prior to the setting of said adhesive, the portion of said paper cover sheet spaced from said interface being substantially free of adhesive.

3. A process for producing gypsum wallboard comprising the following steps:

a. providing at least one paper cover sheet having a bond liner and applying a coating of a polyvinyl alcohol adhesive by calendering to provide a pattern having said adhesive at limited areas of said bond liner while leaving substantial areas free of said adhesive,

b. casting an aqueous slurry of calcium sulfate hemi-hydrate on said paper cover sheet over said bond liner with the water from said aqueous slurry establishing wet bonding between said slurry and the uncoated portions of said bond liner, and

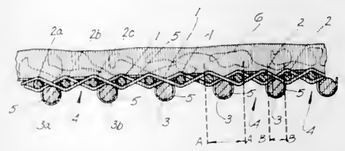
c. setting said slurry to form a core and setting said adhesive to establish an adhesive bond between said core and said paper cover sheet at the limited areas containing said adhesive.

4,119,753

PAPERMAKER'S FELT WITH GROOVED SURFACE

Frederick R. Smart, Averill Park, N.Y., assignor to Hyyck Corporation, Wake Forest, N.C.

Filed Sep. 12, 1977, Ser. No. 832,214
Int. Cl.² B32B *5/06*
U.S. Cl. 428—234 **10 Claims**



1. A papermaking fabric having a face side and a machine side, said fabric comprising interwoven warp and filling yarns on the face side of the fabric, bulky rib forming yarns on the machine side of the fabric, said rib forming yarns comprising staple or multifilament yarns extending in parallel relation and lying in spaced apart relation relative to each other to define channels therebetween, a batt surface on the face side of said fabric needled through said warp and filling yarns and into said rib forming yarns, with the channels therebetween being essentially free of batt fibers, said rib forming yarns being impregnated with a resin capable of rendering said rib forming yarns essentially incompressible in use, the batt surface on the face side of the fabric being essentially free from resin.

4,119,754

PAPERMAKERS FABRICS

Bryan James Gisbourne, Blackburn, England, assignor to Scapa-Porritt Limited, Blackburn, England

Filed Oct. 27, 1976, Ser. No. 736,161
Claims priority, application United Kingdom, Oct. 30, 1975, 44799/75
Int. Cl.² B05D *3/02;* **B32B** *27/38*
U.S. Cl. 428—255 **20 Claims**

1. An open mesh band for use as a papermakers fabric comprising:

monofilament yarns, each yarn having an outer surface and being comprised of a synthetic polymeric material;

sheaths for each of said yarns, each sheath including a second synthetic polymeric material having abrasion resistance which is greater than said first synthetic material and being in the form of a coherent continuous thin film, said second synthetic polymeric material comprising less than ten percent of the weight of the papermakers fabric; and

said films being bonded directly to each of said yarns only at said outer surfaces of said yarns so that openings in said monofilament yarns are not covered.

4,119,755

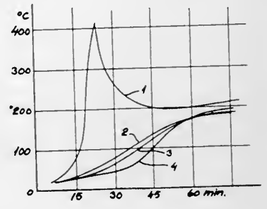
FIRE RETARDANT PLATE MATERIAL

Helge Höyer, Birkerød, Denmark, assignor to Rockwool International A/S, Hedehusene, Denmark

Filed Aug. 9, 1976, Ser. No. 712,611
Claims priority, application Denmark, Dec. 8, 1975, 3643/75
Int. Cl.² B32B *19/00*
U.S. Cl. 428—284 **1 Claim**

1. Fire retardant plate material to incorporate in walling, doors and partition means in housing, ships and the like, comprising a mineral wool, having the fibres thereof bonded together at intersections by a binding agent, said fibres being transformable from a glasslike amorphous state into crystalline

state prior to softening visibly when exposed to increasing temperature characterized in comprising at least two layers of



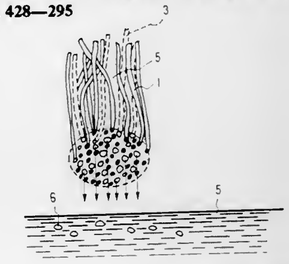
mineral wool being separated by thin layers of a substantially inorganic cement between the layers of mineral wool.

4,119,756

METHOD OF MANUFACTURING A MARKING PEN HAVING A NIB AND AN INK RESERVOIR INTEGRAL THEREWITH

Yoshio Midorikawa, Tokyo, assignor to Glasrock Products, Inc., Fairburn, Ga.

Filed Jun. 10, 1976, Ser. No. 694,525
Int. Cl.² B43K *1/12;* **D04H** *3/14*
U.S. Cl. 428—295 **9 Claims**



1. A method for producing a writing nib material having an integral ink reservoir comprising:

(a) forming a plurality of fibers into a fiber bundle;

(b) cutting said fiber bundle to a predetermined length; then

(c) impregnating a first portion of said predetermined length of said fiber bundle with a solution of polymerizable synthetic resin in solvent, leaving a second portion of said predetermined length of said fiber bundle untreated; and

(d) allowing said resin in said first portion of said fiber bundle to set whereby the gases generated by volatization of the solvent form capillary passages substantially longitudinally of said bundle.

8. The product formed by the process of claim 1.

4,119,757

FLORAL DISPLAY BLOCKS OF UREA-FORMALDEHYDE FOAM

John A. Hobson, Minneapolis, and Paul K. Schilling, St. Paul, both of Minn., assignors to H & S Industries, Inc., St. Paul, Minn.

Filed Dec. 23, 1977, Ser. No. 863,602
Int. Cl.² B32B *3/26, 5/18*
U.S. Cl. 428—311 **9 Claims**

9. Hydrophilic floral display foam blocks of frothed urea-formaldehyde resin, wherein said urea-formaldehyde resin block comprises:

(a) a frothed urea-formaldehyde resin block of substantially open cell configuration, said urea-formaldehyde resin block including:

(1) an alkyl-aryl sulfonate selected from the group consisting of sodium tertiary-butyl-benzene sulfonate, sodium hexylbenzene sulfonate, and sodium toluene sulfonate in an amount ranging from between about 3.5% and 7% of the resin solids;

(2) a water soluble acid selected from the group consisting of hydrochloric, benzene sulfonic and sulfuric acids;

(3) a quaternary ammonium salt selected from the group consisting of alkyltrimethylammonium chloride and dialkyldimethylammonium chloride wherein the alkyl portion of the compound has from between 8 and 18 carbon atoms, and wherein said ammonium salt is present in substantially equal molar relationship to said alkyl-aryl sulfonate.

4,119,758

ELECTRICAL CONDUCTORS HAVING INSULATING COATINGS FROM SOLUTIONS OF POLYESTER-IMIDES

John T. Keating, Clifton Park, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

Division of Ser. No. 770,310, Feb. 22, 1977. This application Oct. 28, 1977, Ser. No. 846,393
Int. Cl.² B32B *15/08;* **C08G** *73/16*
U.S. Cl. 428—379 **19 Claims**

1. An electrical conductor having an insulating coating of polyester-polyimide prepared by curing on the conductor a polyester-polyimide having a hydroxy to carboxyl ratio of 1.25:1 to 2:1, 95 to 50% ester groups, 5 to 50% imide groups, the polyimide being an imide of reactants comprising a diamine and trimellitic anhydride, the polyester being an ester of isophthalic acid or terephthalic acid or benzophenone dicarboxylic acid with up to 10% of an alkane dicarboxylic acid having 6 to 10 carbon atoms with alcohols wherein 5 to 45% of the hydroxyl groups are contributed by (I) an ether-alcohol which either (a) has the formula

$$RO(C_nH_{2n}O)_xH$$

where R is an alkyl group of 1 to 6 carbon atoms or phenyl, n is 2 or 3 and x is 2 or 3 or (b) is the monophenyl ether of ethylene glycol, (II) at least 20% of the hydroxyl group are contributed by a trihydric alcohol and (III) any balance of hydroxyl groups are contributed by a dihydric alcohol, said polyester-polyimide having a sufficiently low molecular weight that it is soluble in a mono lower alkyl ether of diethylene glycol or in the monophenyl ether of diethylene glycol or phenoxyethanol or a mixture of said phenyl ethers.

4,119,759

POWDERED RUBBER

Erhardt Fischer, and Michael Hugh Richmond, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Sep. 12, 1977, Ser. No. 832,474
Claims priority, application Canada, Oct. 7, 1976, 262927
Int. Cl.² B05D *7/00*
U.S. Cl. 428—407 **12 Claims**

1. A process for the production of free flowing rubber particles which comprises the coagulation of a latex of a rubber in the presence of a minor proportion of a terpolymer latex, said minor proportion being from about 1 to about 5 parts by weight of dry terpolymer per 100 parts by weight of dry rubber, heating the coagulated mixture so produced to about 190° to about 210° F. while being maintained under mild agitation, and adding to said heated coagulated mixture to encapsulate the rubber particles therein, a latex of said terpolymer in an amount of from about 5 to about 15 parts by weight of dry terpolymer per 100 parts by weight of dry rubber, separating the encapsulated rubber particles from the aqueous phase and drying the separated encapsulated rubber particles to yield free flowing rubber particles, said rubber being a copolymer of about 50 to about 80 weight percent of a C_4-C_6 conjugated diolefin and about 20 to about 50 weight percent of a C_3-C_5 vinyl compound containing a nitrile group, said coagulation being in the presence of from 0.1 to 1.0 weight percent of an

inorganic salt in water at a temperature of from about 140° to about 180° F. while being subjected to high speed, high shear agitation, characterized in that said terpolymer contains from about 40 to about 60 weight percent of a C_4-C_6 conjugated diolefin, from about 10 to about 20 weight percent of a C_3-C_5 vinyl compound containing a nitrile group and from about 30 to about 40 weight percent of a C_8-C_{10} vinyl-or vinylidene-substituted aromatic hydrocarbon and that said terpolymer has rubbery and resinous phases.

4,119,760

CHEMICAL STRENGTHENING OF GLASS

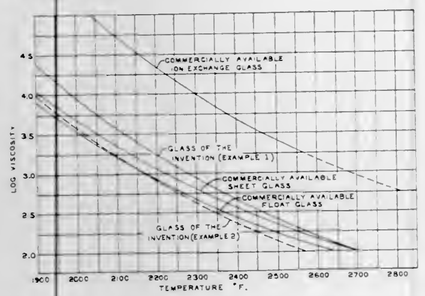
Dale W. Rinehart, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 605,108, Aug. 15, 1975, Pat. No. 4,015,045, which is a continuation-in-part of Ser. No. 432,006, Jan. 9, 1974, abandoned. This application Dec. 17, 1976, Ser. No. 751,922

The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.

Int. Cl.[2] B32B *17/00;* **C03C** *15/00, 3/04*

U.S. Cl. 428—410 **2 Claims**



1. In a method for strengthening an alkali metal silicate glass article in which sodium ions in the surface of the glass article are replaced by larger monovalent alkali metal ions by bringing the surface of the glass article into contact with the source of said larger monovalent alkali metal ions so as to place a compression layer in the surface of the glass article, the improvement which comprises forming the article to be strengthened from an alkali metal oxide-zirconiaaluminosilicate glass substantially free from devitrification consisting essentially by weight on the oxide basis of about:

Component	Percent by Weight
SiO_2	52 - 58
Na_2O	10 - 19
K_2O	0 - 10
$Na_2O + K_2O$	17 - 23
Al_2O_3	9 - 13
ZrO_2	2 - 4.5
$Al_2O_3 + ZrO_2$	12 - 17
CaO	0 - 5
MgO	4 - 6
TiO_2	0 - 7
$TiO_2 + MgO + CaO$	4 - 14

wherein the glass includes less than 0.1 percent by weight Li_2O and the above components constitute at least 95 percent by weight of the glass composition and are proportioned relative to one another so as to provide glass having a viscosity of 100 poises at a temperature less than 2800° F. and a viscosity of 10,000 poises at a temperature less than 2050° F. and having a working range of at least 125° F.

2. A chemically strengthened glass article exhibiting a surface compressive stress after being subjected to surface abrasion composed of an interior portion which is in tension and a surface compressive layer, said interior portion comprising a base glass consisting essentially by weight on the oxide basis of about:

Component	Percent by Weight
SiO_2	52 - 58
Na_2O	10 - 19
K_2O	0 - 10
$Na_2O + K_2O$	17 - 23
Al_2O_3	9 - 13
ZrO_2	2 - 4.5
$Al_2O_3 + ZrO_2$	12 - 17
CaO	0 - 5
MgO	4 - 6
TiO_2	0 - 7
$TiO_2 + MgO + CaO$	4 - 14

wherein the glass includes less than 0.1 percent by weight Li_2O and the above components constitute at least 95 percent by weight of the base glass composition and are proportioned relative to one another so as to provide a base glass having a viscosity of 100 poises at a temperature less than 2800° F. and a viscosity of 10,000 poises at a temperature less than 2050° F., and having a working range of at least 125° F.; said surface layer having a composition chemically altered from that of the base glass to the extent that the surface layer has a lesser content of sodium with a correspondingly greater content on an ionic basis of a monovalent alkali metal ion having a larger ionic diameter than sodium.

4,119,761

HEAT RADIATION ANODE

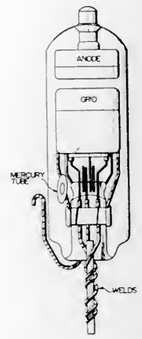
Takashi Kuze, Yokohama; Toshiharu Matsuki, Kawasaki; Koji Nagaoka, Yokohama, and Naoji Iwai, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 7, 1976, Ser. No. 748,362

Claims priority, application Japan, Dec. 12, 1975, 50-148912; Dec. 24, 1975, 50-155379

Int. Cl.[2] H01J *1/38*

U.S. Cl. 428—472 **22 Claims**



1. A heat radiation anode element comprising a substrate and a heat radiation layer formed on the substrate and comprising oxides of a chromium-containing alloy, the heat radiation layer containing at least 35% by weight of chromium based on the total weight of the metal components of the oxides, and an emissivity-improving agent selected from the group consisting of vanadium, titanium, zirconium, niobium and mixtures thereof, in an amount sufficient to improve the total emissivity of said heat radiation element.

4,119,762

COATING COMPOSITIONS COMPRISING ALKOXYMETHYLAMINOTRIAZINES AND POLYOLS

George J. Anderson, East Longmeadow; Timothy F. Desmond, Longmeadow, and J. Owen Santer, East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 20, 1976, Ser. No. 734,079

Int. Cl.[2] C08L *61/32, 61/28*

U.S. Cl. 428—524 **19 Claims**

1. A liquid composition comprising 1,4-dimethylolcyclohexane and a substantially completely methylolated polyaminotriazine substantially fully etherified with at least one C_1 to C_4 alcohol, wherein the ratio of hydroxyl groups of the 1,4-dimethylolcyclohexane to alkoxymethyl groups of the polyaminotriazine is in the range of about 1:1 to about 1:2.

4,119,763

ANTI-CORROSION WELDABLE COATINGS

Noel D. Blair, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 510,086, Sep. 27, 1974, abandoned, which is a division of Ser. No. 245,384, Apr. 19, 1972, Pat. No. 3,884,705. This application Mar. 29, 1976, Ser. No. 671,190

Int. Cl.[2] B32B *15/18, 15/02, 15/16*

U.S. Cl. 428—563 **23 Claims**

1. A weldable article having a metal surface, coated with a composition which comprises about 3 to about 80 percent by weight of a binder and about 20 to about 97 percent by weight of a filler, the filler being comprised of a major amount of a comminuted refractory ferro alloy and a minor amount of a non-metallic corrosion inhibitor selected from the group consisting of chromates, nitrites, phosphates, molybdates, tungstates, silicates and benzoates.

4,119,764

HELICAL REINFORCING BAR FOR STEEL CAGE IN CONCRETE STRUCTURE

Katsuhisa Mizuma, Fujisawa, and Tetsuro Awazu, Chigasaki, both of Japan, assignors to Neturen Company Ltd., Tokyo, Japan

Filed Nov. 23, 1976, Ser. No. 744,447

Int. Cl.[2] E04C *5/06*

U.S. Cl. 428—592 **4 Claims**



1. A helical reinforcing bar for use as a stirrup or hoop for a steel reinforcing cage for a concrete structure, said bar being a high-strength steel bar having a yield strength of over 55kg/mm² and being in the form of a helix and having no plastic deformation when the helix is collapsed to a fully-compressed state and which expands to the desired length with the coils at the desired pitch by its own elasticity, whereby the helical reinforcing bar can be compressed to a fully collapsed state and carried in this state to the site where it is to be used, and after being positioned around a group of longitudinal bars which have already been positioned in the desired positions in a reinforced structure, said spiral reinforcing bar is released, and thereupon said spiral reinforcing bar extends itself to a specified length with the same pitch being maintained between coils over the entire length of said extended helical reinforcing bar.

4,119,765

WELDED FERRITIC STAINLESS STEEL ARTICLES

Kenneth E. Pinnow, and Jerome P. Bressanelli, both of Pittsburgh, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 680,547, Apr. 27, 1976, abandoned. This application Aug. 4, 1977, Ser. No. 821,896

The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

Int. Cl.[2] B32B *15/18*

U.S. Cl. 428—683 **33 Claims**

29. A substantially fully ferritic stainless steel welded article with high corrosion resistance, said welded article consisting essentially of, in weight percent, up to 0.04 carbon, up to 0.04 nitrogen, with the carbon plus nitrogen content being above 0.02 but below 0.07, up to 1.0 manganese, up to 1.0 silicon, 23.0 to less than 28.0 chromium, 1.00 to 4.75 nickel, 2.50 to 3.50 molybdenum, up to 0.30 titanium, up to 0.30 columbium, with the columbium and titanium contents being at least equal to the amounts given by the following equation:

$$\%\ Ti/6 + \%\ Cb/8 = (\%C + \%N)$$

and the balance iron and incidental impurities.

4,119,766

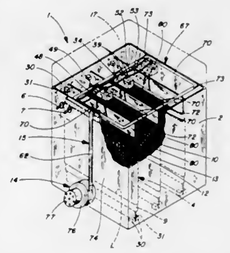
ENERGY CELL DEVICE

Gerard A. Doering, 1403 Caves Rd., Novelty, Ohio 44072

Continuation of Ser. No. 640,956, Dec. 15, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 786,996

Int. Cl.[2] H01M *2/40*

U.S. Cl. 429—70 **9 Claims**



1. An energy system which has very high power and current output for a given volume of core material with a relatively long operating life comprising,

a support receptacle adapted for receiving a liquid electrolyte therein,

at least one galvanic cell supported within said receptacle for fluid contact with said electrolyte,

said galvanic cell including,

a cathode,

an anode made from a generally flat plate made from a non-ferrous material, selected from the group consisting of magnesium and magnesium alloy,

a separator embodying an electrically nonconductive material physically separating said anode and cathode,

said separator being porous to permit flow of electrolyte between said anode and cathode,

said cathode comprising a porous, metallic multi-layer construction disposed about said separator,

each layer of said cathode material made from a copper woven sheet material having an open-mesh construction having a percentage void area greater than 50%,

said separator being of a multi-layer construction wrapped around said plate, and

said cathode being wrapped around said separator.

4,119,767

SECONDARY BATTERY

Fritz Beck, Ludwigshafen; Rolf Wurmb, Heidelberg, and Klaus Boehlke, Hessheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

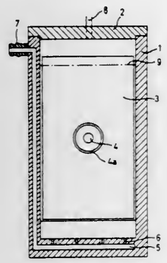
Filed Apr. 1, 1977, Ser. No. 783,700

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619147

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.[2] H01M *10/00*

U.S. Cl. 429—105 **3 Claims**



1. A secondary battery with aqueous solutions of lead salts as electrolytes and inert electrode base plates for the active materials, wherein the electrolyte additionally contains from 0.1 to 100 mmoles/l of salts of manganese, cobalt, nickel, copper, thallium, bismuth and/or antimony.

4,119,768

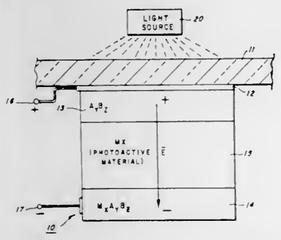
PHOTOVOLTAIC BATTERY

Michel Lucien Bayard, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 8, 1977, Ser. No. 813,920

Int. Cl.[2] H01L *31/04*

U.S. Cl. 429—111 **13 Claims**



1. A photovoltaic battery capable of generating and storing its own energy when exposed to a light source, comprising in combination:

a body of a photoactive material having a general chemical composition represented by the formula MX, where M is a positive ion and X is a negative ion, and which releases a positive ion M+ in response to its exposure to a light source,

a first layer of material which is ionically conductive with respect to the positive ion releasable by said photoactive body, said first layer being disposed against one surface of said photoactive body and having a general chemical composition represented by the formula A_yB_z, where the subscript y represents the number of atoms of element A and the subscript z represents the number of atoms of element B,

a second layer of electrically conductive material which is ionically conductive with respect to the positive ion releasable by said photoactive body and of relatively higher ionic concentration as compared to said first layer, said second layer being disposed against a surface of said photoactive body opposite from said one surface thereof and having a general chemical composition represented by the formula $M_xA_yB_z$, where M is the same ion found in the photoactive material of said photoactive body, A and B are the same elements comprising the ionically conductive material of said first layer, and the x, y and z subscripts respectively represent the number of atoms of M, A and B where $0 < x < 1$, and

a body of electronically conductive material disposed against said first layer.

4,119,769

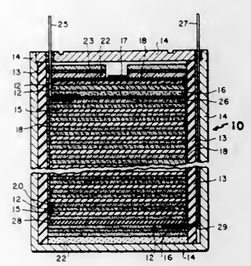
THERMAL BATTERY HAVING IRON PYRITE DEPOLARIZER

Alan Arthur Schneider, Baltimore, and George C. Bowser, Towson, both of Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Continuation of Ser. No. 675,501, Apr. 9, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 846,791

Int. Cl.[2] H01M *6/36*

U.S. Cl. 429—112 **9 Claims**



1. A thermal primary battery comprising at least one cell element including an anode which melts at the operating temperature of the battery and which comprises a metal selected from the group consisting of alkali metals, alkaline earth metals and alloys thereof, and a homogeneous mixture of a fusible electrolyte, a depolarizer consisting essentially of iron pyrite and a bonder, and a combustible heat generating pellet for melting the anode and fusing said electrolyte.

4,119,770

ELECTRICAL CELLS AND BATTERIES

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

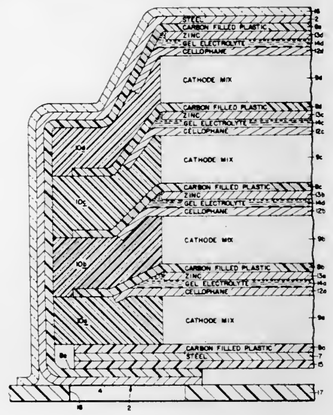
Continuation-in-part of Ser. No. 684,370, May 7, 1976, abandoned, and a continuation-in-part of Ser. No. 589,334, Jun. 23, 1975, abandoned, and a continuation-in-part of Ser. No. 647,590, Jan. 8, 1976, Pat. No. 4,007,472, and a continuation-in-part of Ser. No. 495,628, Aug. 8, 1974, abandoned. This application Jan. 24, 1977, Ser. No. 761,651

Int. Cl.[2] H01M *6/46*

U.S. Cl. 429—152 **9 Claims**

4. A thin flat laminar cell comprising a zinc anode, a manganese dioxide cathode, a separator consisting essentially of regenerated cellulose between said anode and said cathode,

and an aqueous acidic electrolyte containing ammonium chloride and zinc chloride permeating said anode, said separator



and said cathode, said cathode being in slurry form in said aqueous electrolyte.

4,119,771

NEGATIVE COBALT ELECTRODE FOR AN ALKALINE STORAGE BATTERY

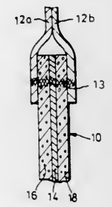
Nikolaus Saridakis, Brunswick, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed May 25, 1976, Ser. No. 690,048

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1975, 2524774

Int. Cl.[2] H01M *2/02*

U.S. Cl. 429—178 **8 Claims**



1. A negative cobalt electrode for an alkaline storage battery, comprising a layered structure including a center layer of compact, sintered cobalt powder forming an electrically conductive supporting framework, and two outer layers of porous, sintered cobalt powder, one on each side of the center layer, and forming the electrochemically active surfaces of the electrode, with the center layer being denser than the two outer layers.

4,119,772

LEAD ACID CELLS AND BATTERIES

Kenneth Peters, Worsley; Sidney Fewster; Frank Wilson, both of Bolton, and Kevin David Nicholas Kearney, Chobham, all of England, assignors to Chloride Group Limited, London, England

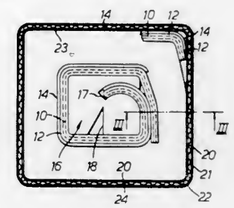
Continuation of Ser. No. 626,778, Oct. 29, 1975, Pat. No. 4,053,695. This application Aug. 17, 1977, Ser. No. 825,471

Claims priority, application United Kingdom, Oct. 31, 1974, 47470/74; May 23, 1975, 22805/75

The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.[2] H01M *6/04*

U.S. Cl. 429—204 **19 Claims**



1. A sealed lead acid cell having electrodes comprising metallic supports which minimize the evolution of hydrogen and which are separated by at least one layer of separator material, the support of the positive electrode or electrodes having positive active material deposited thereon and the support of the negative electrode or electrodes having negative active material deposited thereon, the capacity of the negative electrodes being arranged to be at least as great as the capacity of the positive electrodes, characterized in that the supports for the electrodes are in the form of a mesh or grid affording an integral current collecting strip or bar along at least one edge which will be the top or bottom edge of the structure when assembled in a cell wherein the thickness of the electrodes is less than 3 mm, the thickness of the separator is in the range of 10% to 200% of the thickness of the electrodes and the volume, E, of the electrolyte in the cell in relation to the sum of the pore volume of the separators, X, and the pore volume of the positive and negative active materials, Y, is not greater than $2X + Y$.

4,119,773

OLEFIN POLYMERIZATION CATALYST

Anthony N. Speca, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jun. 22, 1977, Ser. No. 808,942

Int. Cl.[2] C08F *4/02*

U.S. Cl. 526—130 **15 Claims**

1. A process for the preparation of an olefin polymerization catalyst which comprises:

(a) depositing on an inorganic support material, the chromium (III) compound preformed obtained from the reaction of a chromium (III) carboxylate with an aluminum alkoxide; and

(b) heating said support material having the chromium (III) reaction product deposited thereon in a non-reducing atmosphere above 300° C. up to the decomposition temperature of the support material.

4,119,774

HEPARIN PURIFICATION METHOD

Lars-Olov Andersson, Knivsta, and Erik Yngve Holmer, Bromma, both of Sweden, assignors to AB Kabi, Stockholm, Sweden

Filed Mar. 2, 1977, Ser. No. 773,504
Int. Cl.[2] A61K *31/725*
U.S. Cl. 536—21 11 Claims

1. A method for purifying a crude heparin preparation to provide a heparin preparation of enhanced heparin specific activity, which method comprises the combination of steps of (a) contacting the starting heparin preparation with a water-insoluble gel matrix having adsorbently bound to it a heparin-binding plasma protein selected from antithrombin and inter-α-trypsin inhibitor to provide a gel matrix with adsorbently bound said plasma protein and the heparin bound thereto, and (b) separating the heparin from said gel matrix having said heparin-binding plasma protein bound to it.

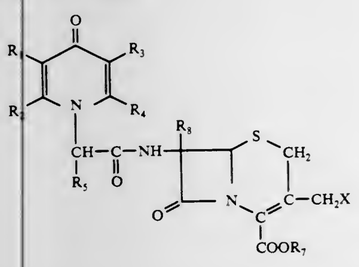
4,119,775

4-OXO-1-PYRIDINYL CEPHALOSPORIN DERIVATIVES

Ronald E. Bambury; Michael L. Edwards, both of Cincinnati, and Laird F. Miller, Loveland, all of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 508,999, Sep. 27, 1974, which is a continuation-in-part of Ser. No. 413,565, Nov. 7, 1973, abandoned. This application Oct. 9, 1975, Ser. No. 621,206
Int. Cl.[2] C07D *501/34, 499/72;* A61K *31/545, 31/43*
U.S. Cl. 544—28 7 Claims

1. A 7-[(4-oxo-1-pyridinyl)acetylamino]cephalosporin derivative having the formula:



wherein

R_1, R_2, R_3 and R_4 are each selected from the group consisting of hydrogen, halogen, loweralkyl having from 1 to 4 carbon atoms, trifluoromethyl, carboxy, carbomethoxy, carbethoxy and when R_1 is taken in combination with R_2 forms the cyclic radical $-CH_2CH_2CH_2CH_2-$ and $-CH=CH-CH=CH-$;

R_5 is selected from the group consisting of hydrogen, methyl, carboxy, carbomethoxy and carbethoxy;

X is selected from the group consisting of hydrogen, hydroxy, acetoxy and N-pyridinium;

R_7 is selected from the group consisting of hydrogen, alkanoyloxymethyl, alkanoylaminomethyl, alkoxycarbonylaminomethyl and p-(alkanoyloxy)benzyl in which the alkanoyl or alkoxy group contains from 1 to 5 carbon atoms;

R_8 is hydrogen or methoxy; and

the pharmaceutically acceptable salts thereof.

4,119,776

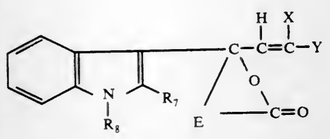
VINYL PHTHALIDE COLOR FORMERS

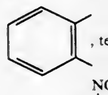
Sheldon Farber, Appleton, Wis., assignor to NCR Corporation, Dayton, Ohio

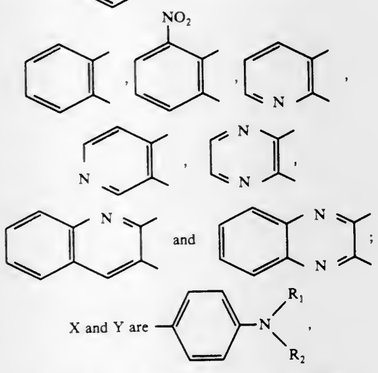
Continuation-in-part of Ser. No. 566,852, Apr. 10, 1975, Pat. No. 4,022,771. This application Apr. 25, 1977, Ser. No. 790,627
Int. Cl.[2] B41M *5/22;* C07D *491/02;* C09B *23/00*
U.S. Cl. 542—441 10 Claims

1. A compound represented by a formula selected from:

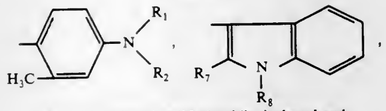
(a)



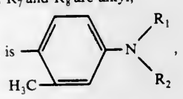
wherein E is  , tetrachloro-substituted



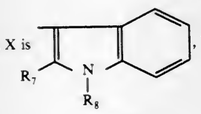
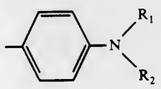
X and Y are  ,



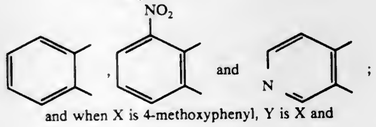
4-methoxyphenyl, 4-(N-piperidino) phenyl and 4-(N-pyrrolidino)phenyl;
and R_1, R_2, R_7 and R_8 are alkyl;

provided when X is  ,

Y is X and E is  ;

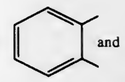
when X is  , Y is 

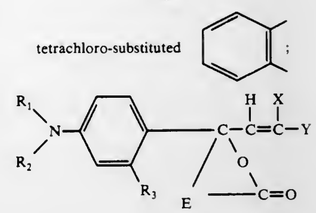
and E is  , tetrachloro-substituted



and when X is 4-methoxyphenyl, Y is X and

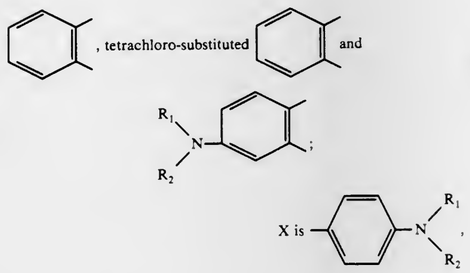
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E is  and



tetrachloro-substituted ;

wherein E is

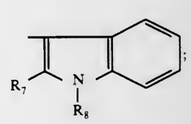


, tetrachloro-substituted and

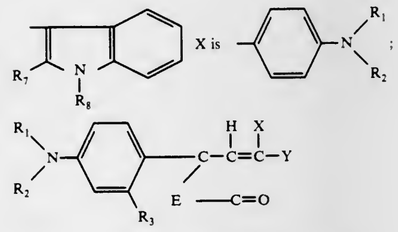
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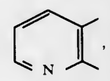
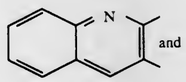
X is ,

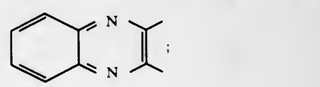
4-(N-piperidino)phenyl and 4-(N-pyrrolidino)phenyl;
Y is 4-(N-piperidino)phenyl, 4-(N-pyrrolidino)phenyl, phenyl and

 ;

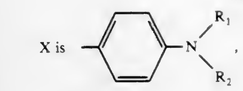
R_1 is hydrogen, alkyl and phenyl;
R_2 is alkyl and cycloalkyl;
R_3 is hydrogen and alkoxy having 1 to 4 carbons; and
R_7 and R_8 are alkyl;
provided when Y is phenyl or



wherein E is  ,  and

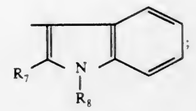
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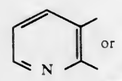
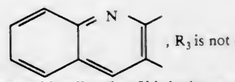
X is  ,

4-(N-piperidino)phenyl, 4-(N-pyrrolidino)phenyl;
Y is any X, hydrogen and

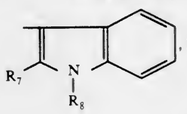
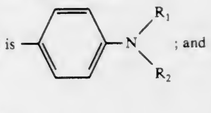
(b)

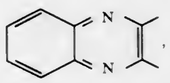
 ;

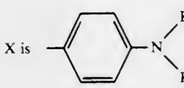
R_1, R_2, R_7 and R_8 are alkyl; and
R_3 is hydrogen, methoxy, ethoxy and chlorine;
provided when E is

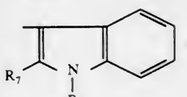
 or  , R_3 is not chlorine,

and additionally when Y is hydrogen or

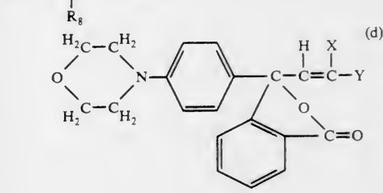
 , X is  ; and

when E is  ,

X is  , Y is 4-(N-piperidino)phenyl, 4-(N-pyrrolidino)phenyl or



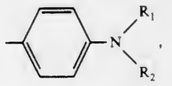
and R_3 is chlorine;



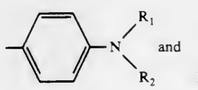
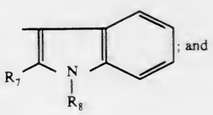
(d)

wherein X is

(c)

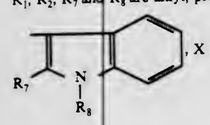
 ,

4-(N-piperidino)phenyl and 4-(N-pyrrolidino)phenyl;
Y is hydrogen, phenyl,

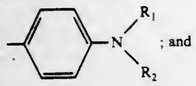
 and  ; and

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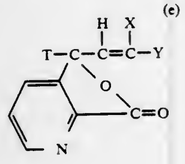
R_1, R_2, R_7 and R_8 are alkyl; provided when Y is



, X is



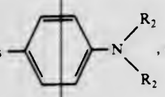
; and



(e)

wherein T is kairol-6-yl and julolidin-9-yl;

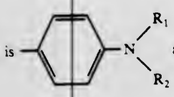
X is



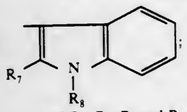
, 4-(N-piperidino)phenyl

and 4-(N-pyrrolidino)phenyl;

Y is



and



;

and R_1, R_2, R_3 and R_8 are alkyl.

8. 3-(p-diethylaminophenyl)-3-[2-methyl-bis-1,1-(p-dimethylaminophenyl)ethyleno-2] phthalide.

4,119,777

THIAZINE PRODUCTION

Hideo Usui; Sadao Ishige, both of Minami Ashigara, and Keiso Saeki, Fujimiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

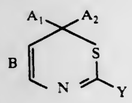
Filed Dec. 17, 1976, Ser. No. 751,874

Claims priority, application Japan, Dec. 23, 1975, 50/153706

Int. Cl.[2] **C07D** *279/14, 279/16*

U.S. Cl. 544—6 **9 Claims**

1. A process for preparing a thiazine derivative, which forms a color on contact with an electron-accepting material, represented by the formula (II):



(II)

wherein

A_1 and A_2, which may be the same of different, each is substituted with one or more substituents selected from the group consisting of

methyl, ethyl, propyl, butyl, cyclohexyl,

trifluoromethyl,

α-methylbenzyl, α, α-dimethylbenzyl, 1,1-diphenylethyl, naphthylmethyl, phenethyl,

fluorine, chlorine, bromine, iodine,

methoxy, ethoxy, propoxy, butoxy, cyclohexyloxy,

phenethyloxy, benzyloxy, naphthylmethyloxy,

phenoxy, naphthoxy,

α-pyridyloxy, γ-pyridyloxy, α-furyloxy, β-furyloxy, α-thienyloxy, β-thienyloxy, 2-pyrimidinyloxy, triazynyloxy

allyloxy, isopropenyloxy,

ethynyloxy, propargyloxy,

acetonyloxy, phenacyloxy, ethoxycarbonylmethyloxy, N,N-diethylcarbamoylmethyloxy, acetonylmethyloxy, β-ethoxycarbonylethyloxy β-(N,N-dimethylamino)ethyloxy, β-methoxyethyloxy, β-cyanoethyloxy, β-chloroethyloxy, β-methanesulfonylethyloxy,

acetoxy, benzoyloxy, 2-pyridinecarbonyloxy, ethoxycarbonyloxy,

methanesulfonyloxy, p-toluenesulfonyloxy,

an amino group selected from the group consisting of $-NH_2$, anilino, ethylamino, benzylamino, allylamino, propargylamino, cyclohexylamino, acetonylamino, ethoxycarbonylmethylamino, β-methoxyethylamino, dimethylamino, diethylamino, dibenzylamino, bis(ethoxymethyl-)amino, bis(β-chloroethyl)amino, bis(β-cyanoethyl-)amino, N-benzyl-N-ethylamino, N-ethyl-N-(p-tolyl-)amino, N-benzyl-N-(β-ethoxyethyl)amino, N-methyl-N-phenacylamino, morpholino, piperidino, pyrrolidino, α-pyridylamino, β-furylamino, α-thienylamino, 2-pyrimidinylamino, dipropylamino, dibutylamino or N-ethyl-(p-bromoanilino),

acetamido, benzamido, α-pyridinecarboxamido, butoxycarbonylamino, 3,3 diethylureido, N-ethylacetamido, p-toluenesulfonamido, N-butylmethanesulfonamido, benzothioamide, 3,3-diethylthioureido,

methylthio, ethylthio, butylthio or benzylthio,

or unsubstituted and is selected from the group consisting of

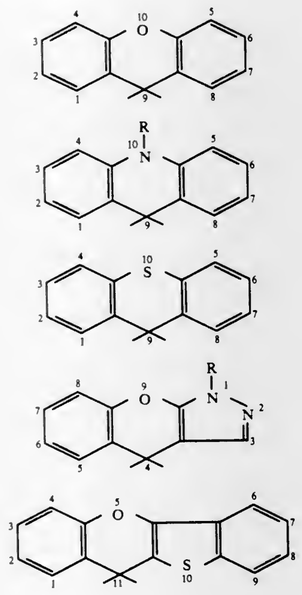
phenyl,

naphthyl,

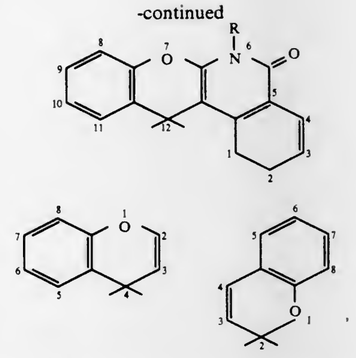
biphenyl,

a five- or six-membered heterocyclic ring selected from the group consisting of p-julolidyl, 1,2,3,4-tetrahydroquinolin-6-yl, 3,3-dimethylindolin-5-yl, 3,4-methylenedioxyphenyl, 1,2-dimethyl-5-benzimidazolyl, 10-ethylphenothiazin-3-yl, 10-ethylphenoxazin-3-yl, 9-ethylcarbazol-3-yl, dibenzofuran-3-yl, dibenzothiophen-3-yl, quinolin-8-yl, 1,2-dimethylindol-3-yl, 1-ethylimidazol-3-yl, benzo {b} furan-3-yl, benzo {b} thiophen-3-yl, 1-ethylpyrrol-3-yl, 3-furyl, 3-thienyl, 2-thiazolyl, 2-benzoxazolyl, 2-pyridyl or 4-quinolyl,

a heterocyclic formed by combining A_1 and A_2 represented by one of the following formulae:



-continued



wherein R represents a straight or branched alkyl group having 1 to 4 carbon atoms, benzyl, phenethyl or phenyl, or

a fluorene group formed by combining A_1 and A_2, at least one of A_1 and A_2 or the ring formed by combining A_1 and A_2 represents an electron donating aryl group having a said amino substituent group for A_1 and A_2 as a substituent or represents an electron donating heterocyclic group, respectively;

the ring B represents an aromatic hydrocarbon ring selected from the group consisting of a benzene ring, a naphthalene ring, a biphenyl ring or a tetralin ring or a heterocyclic ring selected from the group consisting of a pyrrole ring, a furan ring, a thiophene ring, an indole ring, a benzofuran ring, a benzothiophene ring, a carbazole ring, a dibenzofuran ring, a dibenzothiophene ring, a julolidine ring, a tetrahydroquinoline ring, a benzimidazole ring, a benzoxazole ring, a benzothiazole ring or a 1,3-benzo{d}dioxole ring; and

Y represents

a hydrogen atom,

an aliphatic group,

an aryl group,

a heterocyclic group,

an amino group,

an amido group,

an oxy group or

a thio group

said aliphatic group for Y is an unsubstituted straight chain, branched chain or cyclic alkyl of 1 to 18 carbon atoms, a straight chain, branched chain or cyclic alkyl of 1 to 18 carbons substituted with one or more of a halogen atom or a cyano group, an aralkyl group selected from the group consisting of benzyl, α-methylbenzyl, α,α-dimethylbenzyl, 1,1-diphenylethyl, naphthylmethyl or phenethyl, an alkenyl group selected from the group consisting of allyl, isopropenyl, 2-butenyl, cyclohexenyl or cinnamyl, or an alkynyl group selected from the group consisting of ethynyl, propargyl or 2-butynyl;

said aryl group for Y is selected from the group consisting of phenyl, naphthyl or biphenyl, each of which is unsubstituted or is substituted with one or more of said substituents for A_1 and A_2;

said heterocyclic group for Y is selected from the group consisting of p-julolidyl, 1,2,3,4-tetrahydroquinolin-6-yl, 3,3-dimethylindolin-5-yl, 3,4-methylenedioxyphenyl, 1,2-dimethyl-5-benzimidazolyl, 10-ethylphenothiazin-3-yl, 10-ethylphenoxazin-3-yl, 9-ethylcarbazol-3-yl, dibenzofuran-3-yl, dibenzothiophen-3-yl, quinolin-8-yl, 1,2-dimethylindol-3-yl, 1-ethylimidazol-3-yl, benzo{b}furan-3-yl, benzo{b}thiophen-3-yl, 1-ethylpyrrol-3-yl, 3-furyl, 3-thienyl, 2-thiazolyl, 2-benzoxazolyl, 2-pyridyl or 4-quinolyl, each of which is unsubstituted or is substituted with one or more of said substituents for A_1 and A_2;

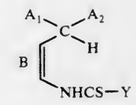
said amino group for Y is selected from the group consisting of ethylamino, butylamino, octadecyl amino, cyclohexyl amino, benzylamino, diphenylmethylamino, naphthylmethylamino, phenethylamino, allyamino, 2-butenylamino, cyclohexenylamino, propargylamino, anilino, toluidino, anisidino, xylidino, p-nitrophenylamino, p-bromophenylamino, α-naphthylamino, pyridylamino, quinolylamino, acridinylamino, bennzothiazolyamino, triazinylamino, furylamino, thienylamino, β-(N,N-dimethylamino(ethylamino) β-methoxyethylamino, β-cyanoethylamino, β-chloro ethylamino, ethoxycarbonylmethylamino, cyanomethylamino, ethoxy methylamino, ethylthiomethylamino, 4-(methylthio)-butylamino, trifluoromethylamino, 2-thiazolylmethylamino, (p-tolylsulfonyl)methylamino, 1,1-dimethyl-3-oxobutylamino, trimethylsilylamino, triphenylsilylamino, trimethoxysilylamino, diethylamino, dibenzylamino, diphenylamino, N-benzyl-N-ethylamino, N-ethyl-phenylamino bis(β-methoxyethyl)amino, morpholino, piperidino, piperazino, pyrrolidino or tetrahydroquinolino;

said amido group for Y is selected from the group consisting of acetamido, trifluoroacetamido, cyclohexanecarboxamido, benzamido, α-pyridinecarboxamido, α-furancarboxamido, butoxycarbonylamino, (butylthio) carbonylamino, 3,3-diethylureido, benzothioamido, 3,3-diethylthioureido, α-thienylthiocarbonylamino, butoxythiocarbonylamino, methanesulfonamido, p-toluenesulfonamido, dimethylaminosulfonylamino, (N-phenylbenzimidoyl)amino, (N-phenyl-trimethylacetoimidoyl)amino, (N-methylbenzimidoyl)amino {N-(4-methoxyphenyl)benzimidoyl}amino, (N-phenyl-4-chlorobenzimidoyl)-amino, pivaloylamino, isobutoxycarbonylamino, ethoxycarbonylamino, isobutyrylamino, butyrylamino, valerylamino, octanoylamino, decanoylamino, dodecanoylamino, tetradecanoylamino, octadecanoylamino, phenoxyacetylamino, methoxycarbonylamino or benzyloxycarbonylamino;

said oxy group for Y is selected from the group consisting of hydroxy or methoxy, each of which is unsubstituted or is substituted with one or more of said substituents for A_1 and A_2; and

said thio group for Y is selected from the group consisting of methylthio, ethylthio, butylthio, cyclohexylthio, benzylthio, allylthio, propargylthio, phenylthio, α-pyridylthio or 2-benzothiazolylthio;

which comprises oxidizing a thioamide derivative represented by the formula (I):



(I)

wherein A_1, A_2, ring B, and Y are as described above with an oxidizing agent selected from the group consisting of a metal oxide, a quinone, an inorganic peroxide or an organic peroxide under acid conditions at a temperature of about −10° C. to about 50° C. for all oxidizing agents except the quinone and at a temperature of about 40° C. to about 100° C. for the quinone.

4,119,778

THIOOXIME CEPHALOSPORIN DERIVATIVES

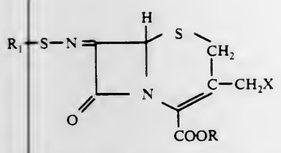
Eric M. Gordon, West Trenton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 748,425, Dec. 8, 1976. This application Nov. 9, 1977, Ser. No. 850,106

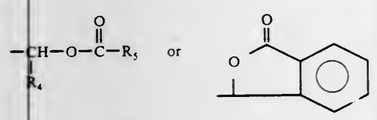
Int. Cl.[2] **C07D** *501/18*

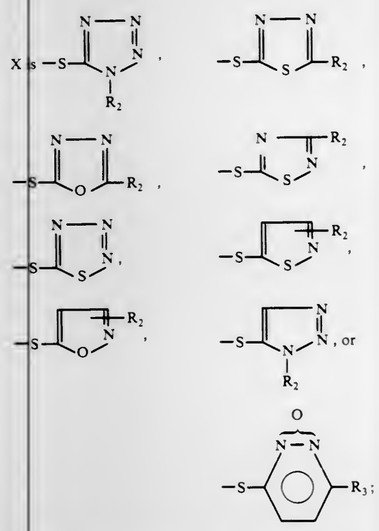
U.S. Cl. 544—26 **9 Claims**

1. A compound of the formula:



wherein R is hydrogen, lower alkyl of 1 to 4 carbons, benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, tri(lower alkyl)silyl, lower alkoxymethyl,





R_1 is lower alkyl of 1 to 4 carbons, phenyl, or phenyl having a halo, lower alkyl of 1 to 4 carbons, or lower alkoxy of 1 to 4 carbons substituent; R_2 is hydrogen or lower alkyl of 1 to 4 carbons, R_3 is hydrogen, lower alkyl of 1 to 4 carbons, methoxy, hydroxy or halogen; R_4 is hydrogen or lower alkyl of 1 to 4 carbons; and R_5 is lower alkyl of 1 to 4 carbons.

4,119,779

1,3,5-s-HEXAHYDROTRISUBSTITUTED TRIAZINES

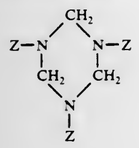
Nathaniel Grier, Englewood, and Bruce E. Witzel, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 11, 1977, Ser. No. 795,674

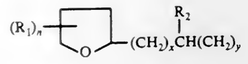
Int. Cl.[2] C07D *263/04, 405/06, 405/10, 263/06*

U.S. Cl. 544—215 **15 Claims**

1. A compound having the formula:



where each Z is R_3 or



where R_1 is hydrogen, C_1-C_8 alkyl, C_1-C_8 hydroxyalkyl, C_1-C_8 alkoxyloweralkyl, phenyl loweralkyl, phenyl and phenyl where the phenyl is monosubstituted with halogen, nitro, loweralkyl and loweralkoxy; where *n* is an integer of from 1 to 3;

R_2 is hydrogen, C_1-C_8 alkyl, phenyl loweralkyl, and phenyl, *x* and *y* are each integers from 0 to 4 and the sum of *x* and *y* is 0 to 4; and

R_3 is hydrogen, hydroxyloweralkyl, and C_1-C_8 alkyl, provided no more than one Z is R_3.

4,119,780

2(ISOPROPYLDITHIO)BENZIMIDAZOLE

Alfred Bay Sullivan, Wadsworth, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 508,047, Sep. 23, 1974, Pat. No. 4,006,155, which is a continuation-in-part of Ser. No. 266,458, Jun. 26, 1972, Pat. No. 3,859,297, which is a continuation-in-part of Ser. No. 880,893, Nov. 28, 1969, Pat. No. 3,705,923. This application Oct. 22, 1976, Ser. No. 734,996

Int. Cl.[2] C07D *235/28*

U.S. Cl. 548—329 **1 Claim**

1. 2-(Isopropyldithio)benzimidazole.

4,119,781

PROCESS FOR PREPARING 4-SUBSTITUTED IMIDAZOLE COMPOUNDS

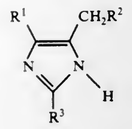
Joseph J. Lewis, and Robert L. Webb, both of West Chester, Pa., assignors to SK&F Lab Co., Carolina, P.R.

Continuation-in-part of Ser. No. 626,948, Oct. 29, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 771,044

Int. Cl.[2] C07D *233/64, 233/84*

U.S. Cl. 548—337 **14 Claims**

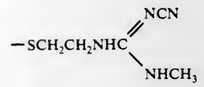
1. A process for preparing a compound of the formula:



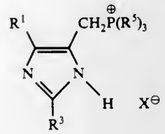
in which:

R^1 is hydrogen or lower alkyl;

R^2 is methoxy, ethoxy, n-propoxy, n-butoxy, i-butoxy, t-butoxy, $-SCH_2CH_2NH_2$ or



and R^3 is hydrogen, lower alkyl, trifluoromethyl, benzyl, amino or $-SR^4$ where R^4 is lower alkyl, phenyl, benzyl or chlorobenzyl, comprising reacting a compound of the formula:



in which:

R^1 and R^3 are defined as above;

R^5 is a lower alkyl or phenyl; and

X is halo,

with a compound of the formula R^2—H where R^2 is defined as above in an organic solvent under basic conditions.

4,119,782

PROCESS FOR THE PREPARATION OF 5-(4-AMINOBUTYL) HYDANTOIN AND/OR 1-UREIDO-5-AMINOCAPRONAMIDE

Erik Konijnenberg, Nuth; Franciscus H. A. M. J. Vandenbooren, Maastricht, and Egidius J. M. Verheijen, Born, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 4, 1977, Ser. No. 784,368

Claims priority, application Netherlands, Apr. 9, 1976, 7603742

Int. Cl.[2] C07D *233/76;* **C07C** *127/15*

U.S. Cl. 548—313 **4 Claims**

1. In a process for preparing 5-(4-amino-butyl) hydantoin including hydrogenating 5-(3-cyanopropyl) hydantoin in the liquid phase in the presence of ammonia and a hydrogenation catalyst containing nickel, cobalt or both, the improvement wherein the hydrogenation is conducted in the presence of greater than 0.4 and not more than about 2.0 moles of a dissolved alkali hydroxide per mole of hydantoin to be hydrogenated.

3. In a process for preparing 5-(4-amino-butyl) hydantoin and 2-ureido-6-aminocapronamide including hydrogenating a mixture of 5-(3-cyanopropyl) hydantoin and 2-ureido-5-cyanovaleramide in the liquid phase in the presence of ammonia and a hydrogenation catalyst containing nickel, cobalt or both, the improvement wherein the hydrogenation is conducted in the presence of greater than 0.4 and not more than about 2.0 moles dissolved alkali hydroxide per mole of compound to be hydrogenated.

4,119,783

3'LOWER ALKYLCARBONYL OXANILIC ACID ESTERS

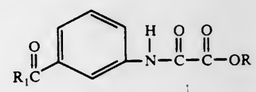
Charles M. Hall, and John B. Wright, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 18, 1977, Ser. No. 769,874

Int. Cl.[2] C07C *101/44;* **A61K** *31/195*

U.S. Cl. 560—43 **4 Claims**

1. A compound of the formula



wherein R_1 is alkyl of one to three carbon atoms, inclusive, and R is alkyl of four to eight carbon atoms, inclusive, or $(CH_2)_n$-phenyl wherein *n* is one or two.

4,119,784

ANIONIC SUBSTITUTED SULFONAMIDO BIPHENYLS

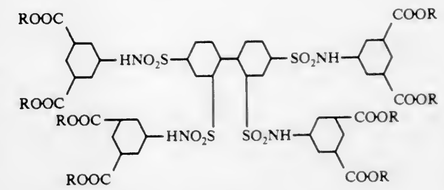
Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 1, 1977, Ser. No. 812,014

Int. Cl.[2] C07C *63/32, 69/76*

U.S. Cl. 560—44 **3 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of alkali metal; and the pharmaceutically acceptable salts thereof.

4,119,785

3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-12,13(E)-DIDEHYDRO-13,14-DIHYDRO-9-DEOXY-PGD$_1$ COMPOUNDS

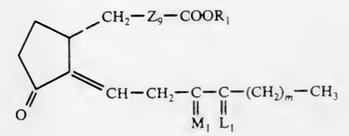
David C. Peterson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,244, Sep. 17, 1975. This application Jun. 23, 1977, Ser. No. 809,243

Int. Cl.[2] C07C *69/76, 177/00*

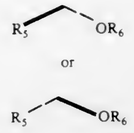
U.S. Cl. 560—53 **25 Claims**

1. A prostaglandin analog of the formula



wherein *m* is one to 5, inclusive;

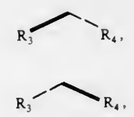
wherein M_1 is



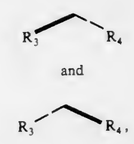
or

wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of



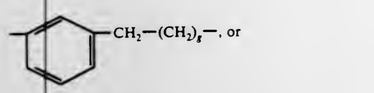
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the provisio that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms,

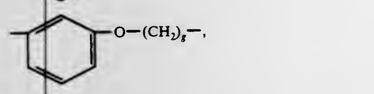
inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_9 is

(1)



(2)



wherein g is one, 2, or 3.

4,119,786

3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-12,13(E)-DIDEHYDRO-13,14-DIHYDRO-9,10-DIDEHYDRO-9-DEOXY-PGD$_1$ COMPOUNDS

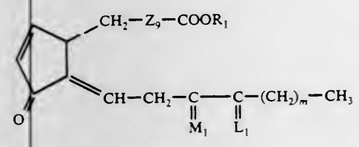
David C. Peterson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,244, Sep. 17, 1975. This application Jun. 23, 1977, Ser. No. 809,265

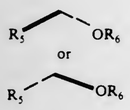
Int. Cl.^{2} C07C *69/76, 177/00*

U.S. Cl. 560—53 **25 Claims**

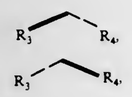
1. A prostaglandin analog of the formula



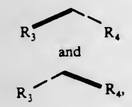
wherein m is one to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



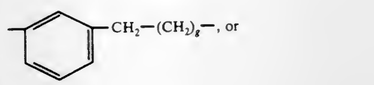
or a mixture of



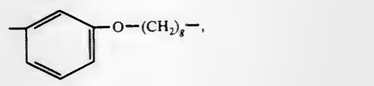
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the provisio that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_9 is

(1)



(2)



wherein g is one, 2, or 3.

4,119,787

11-DEOXY-CIS-13-PGE$_2$ ANALOGS

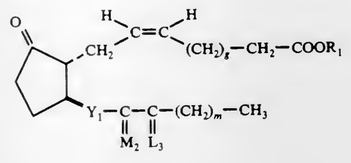
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,181

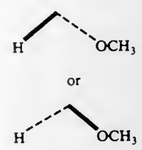
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 560—121 **7 Claims**

1. A compound of the formula



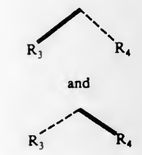
wherein Y_1 is cis—CH=CH—;
wherein g is 2, 3, or 4; wherein M_2 is



wherein L_3 is



or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein m is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms,

inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,788

α-OXY(OXO) SULFIDES AND ETHERS

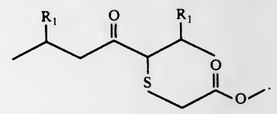
William J. Evers, Red Bank, and Howard H. Heinsohn, Jr., Hazlet, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 730,538, Oct. 7, 1976, Pat. No. 4,045,491. This application Mar. 31, 1977, Ser. No. 783,487

Int. Cl.^{2} C07C *149/20*

U.S. Cl. 560—152 **3 Claims**

1. A compound having the structure:



wherein R_1 is selected from the group consisting of hydrogen and methyl wherein each of the R_1 groups in the molecule is the same.

4,119,789

FLAME RETARDANT COMPOSITIONS

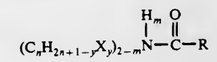
Harry Braus, Cincinnati, Ohio, and Jay R. Woltermann, Memphis, Tenn., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 505,287, Sep. 12, 1974, Pat. No. 3,979,545. This application Jun. 21, 1976, Ser. No. 698,619

Int. Cl.^{2} C07C *125/06, 127/15, 103/24, 103/47*

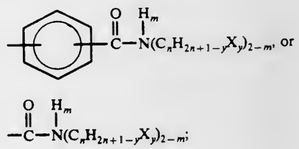
U.S. Cl. 560—161 **7 Claims**

1. A halogen containing amide of the formula



wherein
R is lower alkoxy,
lower alkoxy carbonyl,

$+N(C_nH_{2n+1-y}X_y)_2$,



X is chlorine or bromine;
m is 0 or 1;
n is 1–6;
y is 1–13; and
when R is lower alkoxy and n is 1 and m is 0, y is 2–3.

4,119,790

LOW PRESSURE CATALYTIC ETHYNYLATION PROCESS

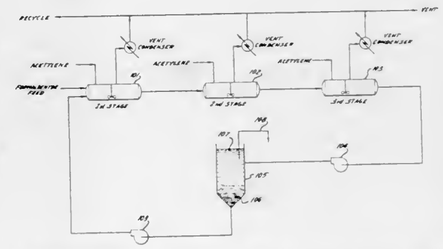
Eugene V. Hort, Wayne, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 6, 1977, Ser. No. 785,033

The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.

Int. Cl.^{2} C07C *29/00*

U.S. Cl. 568—855 **6 Claims**



1. An improved low pressure catalytic ethynylation process for producing butynediol at a high rate of production, safely, and without forming an excessive amount of undesirable by-products, which comprises:
reacting formaldehyde and acetylene at a partial pressure of acetylene of less than about 2 atmospheres, in an aqueous medium, under agitation, at a reaction temperature of about 80°–105° C., in the presence of an ethynylation catalyst slurry consisting essentially of a water-insoluble complex cuprous acetylide powder generated from a catalyst precursor material containing greater than 20% and less than 35% by weight of copper, 0 to about 3% by weight of bismuth, and a magnesium silicate carrier therefor.

4,119,791

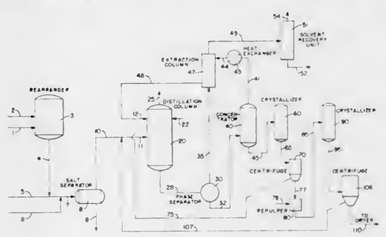
AQUEOUS RECOVERY OF HYDROQUINONE

William Shepherd Hollingshead, Cuyahoga Falls, and Edward Norbert Nowak, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 14, 1977, Ser. No. 833,204

Int. Cl.^{2} C07C *39/08*

U.S. Cl. 568—768 **8 Claims**



1. In a process for making hydroquinone comprising the steps of:
(A) reacting a feed stream comprising p-diisopropylbenzene dihydroperoxide
(1) in a reaction solvent selected from the group consisting of methyl isopropyl ketone, diisopropyl ketone, methyl isobutyl ketone, cyclohexanone, 1-pentanol, 3-pentanol, diethyl ether, diisopropyl ether, ethylisopropyl ether and mixtures of the foregoing with acetone;
(2) with an acid catalyst selected from the group consist-

ing of H_3PO_4, $HClO_4$, p-toluene-sulfonic acid, SO_2, HBF_4, H_2SiF_6, BF_3 and any Lewis acid in a concentration of from 0.05 to 3.0 weight percent of the reaction mixture;

(3) with less than three weight percent water present in the reaction mixture;

(4) within a temperature range of from 50° to 100° C. to form hydroquinone and acetone;

(B) adjusting the pH of the mixture to from about 2.5 to 5.5 after the reaction by adding a base selected from the group consisting of anhydrous ammonia, methylamines, triethylamines, and alkali and alkaline earth metal hydroxides, carbonates and oxides, thereby causing salts to form and precipitate; and

(C) separating the precipitated salts from the supernatant mixture; the improvement which comprises the steps of:

(D) feeding the supernatant mixture to a distillation column in which are combined the unit operations of distillation, to remove the acetone and most of the reaction solvent in the distillate, and extraction of the hydroquinone into a water phase which exits the distillation column together with an organic phase as the distillation bottoms stream;

(E) subjecting the bottoms to a phase separation wherein the aqueous phase contains most of the hydroquinone and the organic phase contains substantially all the impurities and a small quantity of hydroquinone;

(F) concentrating the aqueous phase from step (E);

(G) crystallizing hydroquinone from the concentrated stream from step (F);

(H) separating the crystals from step (G) from the supernatant aqueous liquid which is recycled to the distillation step (D);

(I) repulping the crystals in acetone;

(J) crystallizing the hydroquinone from the acetone; and

(K) separating the hydroquinone crystals from the supernatant acetone which is recycled to the distillation column (D).

ELECTRICAL

4,119,792

MELTING FURNACE

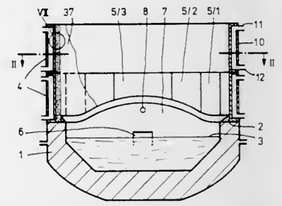
Emil A. Elsner, Baden-Baden; Dieter Ch. Ameling, Neu-Wulmstaf; Rolf Assenmacher, Willstätt, and Gerhard Fuchs, Wilstatt-Legelshurst, all of Fed. Rep. of Germany, assignors to Korf-Stahl AG., Baden-Baden, Fed. Rep. of Germany

Filed Feb. 4, 1977, Ser. No. 765,789

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2631982

Int. Cl.² F27D *1/12*

U.S. Cl. 13—32 **19 Claims**



1. A melting furnace, especially an arc melting furnace, having a furnace wall containing at least one water cooling box disposed above the melt level of the furnace, the surface of the box facing the furnace interior being provided with projections, said wall of the water cooling box which faces the furnace interior having a thickness of at least 15 mm, the projections being formed of profile irons, and a refractory composition pre-applied on said surface and said projections and serving as a refractory protective layer prior to operation of said furnace, thereby to prevent damage to said surface and projection and facilitating adhesion of a further refractory protective layer of slag forming during operation of said furnace.

4,119,793

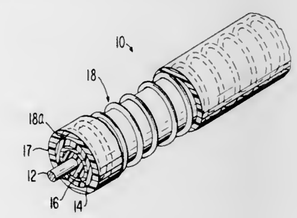
TRANSMISSION LINE BREAKDOWN VOLTAGE

Mario Rabinowitz, Menlo Park, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 26, 1976, Ser. No. 680,261

Int. Cl.² H01B *9/02*

U.S. Cl. 174—36 **19 Claims**



1. A power transmission line comprising:

a first conductor for carrying power current; a second conductor for carrying power current, said second conductor colinearly surrounding said first conductor; a dielectric insulating region separating said first and second conductors; and means disposed coaxially externally of said second conductor applying a magnetic field colinearly with said first and second conductor for producing a net helical magnetic field having a pitch dependent upon the magnitude of the magnetic field externally applied by said magnetic field applying means and upon the magnitude of the magentic field induced between said first and second conductors by power current.

4,119,794

COMPOSITE BOARD STRUCTURE INCLUDING CORRUGATED FIBERBOARD AND COMBINATION SURFACE-COVERING AND ELECTRICAL-WIRING ARRANGEMENT INCORPORATING THE BOARD STRUCTURE

Masamitsu Matsuki, Sagamihara, Japan, assignor to Nissan Motor Company, Ltd., Japan

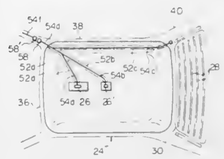
Filed Jul. 15, 1977, Ser. No. 816,273

Claims priority, application Japan, Jul. 15, 1976, 51-94658[U]

Int. Cl.² H02G *3/26, 3/02;* **B62D** *25/06*

U.S. Cl. 174—68 R **8 Claims**





1. A combination surface-covering and electrical-wiring arrangement for use on the inner face of a rigid roof panel of an automotive vehicle, comprising

a composite board structure consisting of a corrugated fiberboard comprising at least one liner having inner and outer faces and at least one corrugated paper medium which is bonded at the tops of its ridges on one side of the paper medium to the inner face of said liner, and

a facing web bonded to one face of said corrugated fiberboard,

the outer face of said liner being left uncovered and formed with at least one length of trough-shaped depression extending irrespective of the directions of said ridges and said corrugated paper medium being at least partially collapsed over its area substantially coextensive with the trough-shaped depression, and

at least one wire harness mounted at least partially in said depression.

4,119,795

SYSTEM FOR TRANSMITTING ASYNCHRONOUS BIT TRANSITIONS OF DATA SIGNALS USING TIME-DIVISION MULTIPLEXING

Ludwig Höelzl, Weidach; Jörg Mäenhardt, Munich; Konrad Reisinger, Zorneding, and Johannes Singer, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 12, 1977, Ser. No. 814,895

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635306

Int. Cl.² H04Q *11/20*

U.S. Cl. 178—50 **3 Claims**

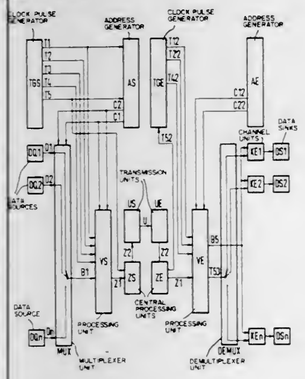
1. A system for transmitting asynchronous bit transitions of data signals using time-division multiplexing, wherein the data signals are applied to a transmit-end multiplexer via a plurality of channels and there are produced with the aid of a transmit-end coarse Raster counter and a fine Raster counter pulse messages in which the bit transitions are signaled from the transmit end to the receive end and the transmit-end multiplexer and a receive-end mutliplexer are controlled with respective transmit-end and receive-end address signals, a clock signal being generated by means of a receive-end fine Raster counter activating the channel unit over which the data signal is applied to a data processing terminal equipment,

wherein the improvement comprises transmit-end and re-

ceive-end registers (SP1, SP2 or SP4, SP5) for each channel (DQ1, DQ2 or DS1, DS2) which store the storage contents of respective transmit-end and receive-end buffer storages (SP3 or SP6) in synchronism with the clock pulse pattern of the address signals (C1, C2 or C12, C22);

a transmit-end and a receive-end bit-transition discriminator (PW1 or PW2) which receives via the respective transmit-end and the receive-end register at one input the old binary digit of the data signal (D1, D2) and at the other input, the new binary digit of the data signal, and which signals a bit transition with a respective transmit-end and a receive-end bit-transition signal when the old and the new digits differ (B3 or B6);

transmit-end and receive-end fine Raster counters (AD1 or AD3) connected respectively to the transmit-end and receive-end register (SP1, SP2 or SP4, SP5) operative to change the counter readings thereof with the bit-transition signal (B3 or B6);



a transmit-end pulse message switch (SW1) operable to read with the bit-transition signal (B3=0) the new binary digit of the data signal and the counter reading of the fine Raster counter (AD1) into the buffer storage (SP3);

the coarse Raster counters being connected on the input side to the registers (SP1, SP2 or SP4, SP5) and on the output side to the buffer storages (SP3 or SP6);

a transmit-end readout switch (SW4) whose operating positions are set by means of the transmit-end coarse Raster counter (AD2), whose inputs (00, 01, 10, 11) are connected sequentially to the locations of the registers (SP1, SP2) in which the individual bits of the pulse message are stored and over whose output the pulse message is delivered; and

means for comparing the time-slot-pattern bits of the received pulse message and the counter reading of the receive-end fine Raster counter (AD3) operable upon agreement therebetween to generate said clock signal (T53) to activate the channel unit (KE1, KE2) assigned to the address (FIGS. 1, 2 6).

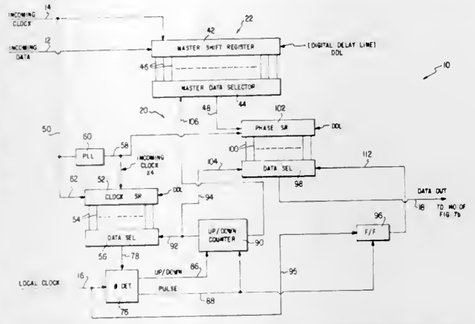
4,119,796

AUTOMATIC DATA SYNCHRONIZER

Emmett Lee Jones, Upper Marlboro, Md., assignor to Versitron, Inc., Washington, D.C.

Filed Nov. 1, 1976, Ser. No. 737,653
Int. Cl.² H04L *7/08*
U.S. Cl. 178—69.1 **20 Claims**

1. An automatic data synchronizer comprising first and second inputs for receiving clock and data pulses from a remote location, a local clock input and a data output, a first variable digital delay line coupling said data input to said data output, a second variable digital delay line coupled to said clock pulse input, a phase comparator coupled to the output of said second variable digital delay line and to said local clock input, said comparator supplying a control signal to said second variable delay line for adjusting the delay of said second delay line when the phase difference between signals applied to said local clock input and the output of said second variable delay line exceeds a predetermined amount, said adjustment being in such a direction as to keep said phase difference within



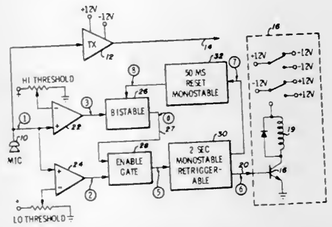
said predetermined amount, and means coupled to said comparator for adjusting the setting of said first variable digital delay line in accordance with the setting of said second variable delay line whereby clock and data signals from a remote location applied to said first and second inputs are delayed a like amount by said first and second delay lines.

4,119,797

VOICE OPERATED SWITCH HAVING AN ACTIVATION LEVEL WHICH IS HIGHER THAN ITS SUSTAINING LEVEL

Walter C. Wollert, Campbell, Calif., assignor to Technology Development Corporation, Sunnyvale, Calif.

Filed Jun. 29, 1977, Ser. No. 811,085
Int. Cl.² H04M *1/19*
U.S. Cl. 179—1 VC **3 Claims**



1. In a voice communication system having a transmitter and a speech microphone acoustically coupled through a gaseous medium to a speech source system for generating a modulation system for said transmitter, a voice activated transmit switch for turning on the transmitter comprising:

first means responsive to the output signal from said microphone and operative to provide first output pulses when the amplitude of said microphone output signal is above a predetermined "high" threshold;

second means responsive to said microphone output signal and operative to provide second output pulses when the amplitude of said microphone output signal is above a "low" threshold level;

bistable means responsive to said first output pulses and operative to switch its state;

gating means responsive to the state of said bistable means and operative to gate said second output pulses; and

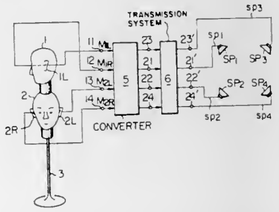
monostable means responsive to said gated second output pulses and operative to enable the transmitter, said monostable means remaining "on" for a predetermined length of time.

4,119,798

BINAURAL MULTI-CHANNEL STEREOPHONY

Makoto Iwahara, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 3, 1976, Ser. No. 720,210
Claims priority, application Japan, Sep. 4, 1975, 50-106505
Int. Cl.² H04R *5/00*
U.S. Cl. 179—1 GQ **12 Claims**



1. Apparatus for deriving signals to be applied to a multichannel stereophony using N loudspeakers located around a listener at equal distances therefrom, wherein N is at least three, the listener normally being positioned so he is facing in a predetermined angular relationship with respect to said speakers, said predetermined angular position being along a first axis, comprising

a three-dimensional structure located with respect to an axis of a sound source for simulating a human head in shape and dimensions, said sound source axis having a second axis, corresponding with the first axis, said structure having N artificial ears angularly spaced apart from each other about the vertical axis of said structure so that each of said artificial ears assumes a particular angular position relative to said second axis when said structure is oriented about its vertical axis in a given direction;

N microphones mounted respectively in the corresponding positions of said artificial ears for deriving first electrical signals M1, M2 . . . MN;

N audio transmission channels;

an acoustic transfer characteristic being established between each of said speakers and each ear of the listener at differing angular positions of the listener's ears, the transfer characteristic being such that for each angular position of the listener's ear relative to the first axis there is a corresponding angular position between the second axis and an artificial ear, whereby the acoustic transfer characteristic ajk represents the acoustic transfer characteristic from a speaker k to a listener's ear that is angularly displaced from the first axis by an angle that corresponds with the angular displacement of an artificial ear j from the second axis, where j and k each are selectively all integers ranging from unity to N; and

crosstalk cancellation circuit means for converting said first electrical signals M1, M2 . . . MN into second electrical signals *sp*1, *sp*2 . . . *sp*N respectively in accordance with the following equation for application respectively to said loudspeakers through said transmission channels without producing the effect of acoustic crosstalk which might be perceptible by said listener if said first signals were supplied directly to said loudspeakers:

$$\begin{bmatrix} sp1 \\ sp2 \\ \vdots \\ spN \end{bmatrix} = T \cdot A^{-1} \begin{bmatrix} M1 \\ M2 \\ \vdots \\ MN \end{bmatrix}$$

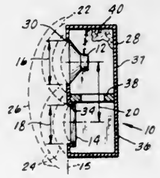
where T is a delay time and A^{-1} is the inverse matrix of a matrix A having at the j-th row and the k-th column the acoustic transfer characteristic *ajk*.

4,119,799

CRITICAL ALIGNMENT LOUDSPEAKER SYSTEM

Mark F. Merlino, 12211 Ferrari La., Garden Grove, Calif. 92641

Filed Dec. 21, 1977, Ser. No. 862,952
Int. Cl.² H04R *1/20*
U.S. Cl. 179—1 E **25 Claims**



1. Means for converting electrical vibrations into sound including:

a cabinet;

a first driver having a center and a predetermined effective piston diameter mounted to said cabinet;

a second driver having a center and a predetermined effective piston diameter similar to said piston diameter of said first driver, said second driver being mounted to said cabinet vertically from said first driver a distance center to center which is generally π times the similar piston diameter; and

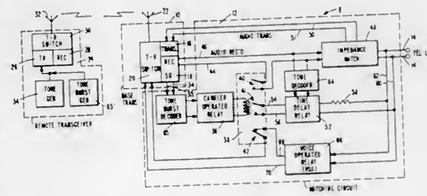
means to connect at least one of said drivers to a source of electrical vibrations.

4,119,800

RADIO-TELEPHONE INTERCONNECTION SYSTEM

Frank D. Girardi, New Kensington, Pa., assignor to Port-A-Phone, Inc., Arnold, Pa.

Filed Feb. 28, 1977, Ser. No. 773,038
Int. Cl.² H04B *1/46, 7/00;* **H04M** *11/00*
U.S. Cl. 179—2 EA **5 Claims**



1. A radio-telephone interconnection system adapted to connect a base radio transceiver having transmitter and receiver portions to a conventional telephone line, comprising:

carrier operated means adapted to be connected to the receiver portion of the base transceiver and responsive to receiver squelch signals, the receiver squelch signals energizing said carrier operated means until a radio signal is received by the transceiver, said received signal breaking

the squelch signals to deenergize said carrier operated means;

an impedance match network adapted to couple the audio output of the receiver portion of the base transceiver to a telephone line and to couple the telephone line to the audio input of the transmitter portion of the base transceiver;

a first switching means responsive to said carrier operated means interposed between the audio output of the receiver portion of the base transceiver and said impedance match network, whereby the audio output is coupled to said impedance match network only in the absence of receiver squelch signals during the receipt of radio signals by the base transceiver;

a second switching means responsive to said carrier operated means;

first time delay means responsive to said carrier operated means and adapted to activate the telephone line in the absence of receiver squelch signals, said first time delay means including a first timing circuit responsive to said second switching means, said first timing circuit being activated by said second switching means each time said carrier operated means is deenergized by the breaking of the receiver squelch signal, and a timed relay energized upon activation of said first timing circuit, said first timing circuit holding said timed relay in its energized condition for a first predetermined period of time;

a third switching means responsive to said timed relay for activating said telephone line, holding said telephone line for said first predetermined period of time after the return of the receiver squelch signal, and for deactivating said telephone line at the expiration of said first predetermined period of time when said first timing circuit times out;

voice operated means responsive to audio frequency signals on said telephone line, said voice operated means including a second timing circuit adapted to be connected to the telephone line and to be activated by audio signals thereon and VOX switching means energized upon the occurrence of said audio signals and being held in the energized condition by said second timing circuit for a second predetermined period of time after the end of said audio signal;

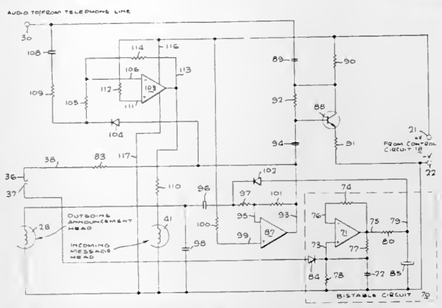
fourth switching means adapted to connect said VOX switching means to the base transceiver for switching the transceiver from a receive mode to a transmit mode upon energization of said VOX switching means, said fourth switching means being responsive to said carrier operated means to disconnect said VOX switching means from said base transceiver upon receipt of a radio signal from a remote station while the base transceiver is in a receive mode to hold the transceiver in the receive mode, said second timing means maintaining energization of said VOX switching means during the presence of audio signals and for said second period of time thereafter to permit immediate transfer of the transceiver to the transmit mode at the termination of said radio signal to prevent syllable loss in the transfer of the transceiver to the transmit mode, said second timing means further maintaining energization of said VOX switching means to hold said transceiver in the transmit mode for said second predetermined period of time during pauses in said audio signal to prevent transfer of the transceiver back to the receive mode during pauses of less than said second period of time, but to permit said VOX switching to time out and permit the transceiver to shift to its receive mode during pauses exceeding said second period of time, whereby two-way communication can be effected through said interconnection system.

4,119,801

MODE SWITCHING AND VOLTAGE REGULATOR CIRCUITRY FOR A TELEPHONE ANSWERING DEVICE

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Filed Dec. 17, 1975, Ser. No. 641,551
Int. Cl.² H04M *1/65*
U.S. Cl. 179—6 R **12 Claims**



8. A telephone answering device having a ring responsive control circuit means for switching on power upon detection of a ring signal on a telephone line, wherein a recorded outgoing announcement is transmitted to said telephone line during an initial portion of the answering cycle, and wherein an incoming message is recorded during a subsequent portion of the answering cycle, the improvement comprising:

a bistable circuit connected to assume one stable state when said power is switched on and to assume a second stable state at the completion of outgoing announcement transmission,

a first operational amplifier connected to amplify said announcement during transmission thereof, said amplifier being biased to provide a dc output about which the announcement audio is superimposed,

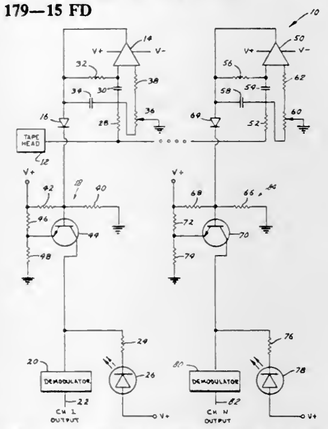
first means connecting said bistable circuit to an input terminal of said first operational amplifier so as to force the output thereof to a constant value inhibiting audio transmission therethrough when said bistable circuit is in said second stable state.

4,119,802

DIGITAL LINEAR INTERFACE SYSTEM

Roger J. Kvande, 5643 Perry Ave., S., Crystal, Minn. 55429

Filed Dec. 13, 1976, Ser. No. 749,700
Int. Cl.² H04J *1/00*
U.S. Cl. 179—15 FD **6 Claims**



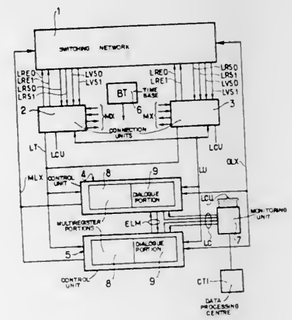
1. Digital linear interface system to interface from the output of a tape head having N mixed sine waves storing digital information on each sine wave for each respective channel to N channels of data output comprising an output from said tape head; a bandpass filter means, rectifier means, peak detector means, and demodulator means whereby each means is in series for each of said corresponding N channels of data output and each series connection connects between said output from said tape head and said N channels of digital input.

4,119,803

CONTROL UNIT FOR A TIME-DIVISION TELECOMMUNICATIONS EXCHANGE

Jean-Baptiste Jacob, Perros-Guirec, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jul. 15, 1977, Ser. No. 816,102
Claims priority, application France, Jul. 22, 1976, 76 22419
Int. Cl.² H04Q *3/54, 11/04*
U.S. Cl. 179—15 AT **17 Claims**



1. A time division telecommunications exchange comprising a switching network, connection units, a time base, and a monitoring unit connected to a data processing centre, characterised by the fact that it further comprises at least one control unit constituted by a multi-register portion and a dialogue portion connected by a dialogue bus to the said multi-register portion which sets up and clears down traffic, the said dialogue portion providing connections between the multi-register portion and the switching network and the connection units, the said control unit being connected to the switching network by network lines and by function lines; to the connection units by test lines and by marking lines and to the monitoring unit by monitoring lines, the said control unit replacing the specialised units normally employed in a time division exchange.

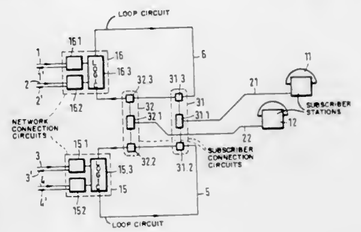
4,119,804

OPEN LOOP SYSTEM FOR TRANSMITTING DIGITAL INFORMATION

Emanuel Hafner, Hintenkappelen, and Bertil Forss, Grosshochstetten, both of Switzerland, assignors to Hasler AG, Bern, Switzerland

Filed Mar. 24, 1977, Ser. No. 780,851
Claims priority, application Switzerland, Mar. 30, 1976, 3929/76
Int. Cl.² H04J *6/00*
U.S. Cl. 179—15 AL **6 Claims**

1. Equipment for the transfer of digital information between several lines which form part of an exchange network, and a plurality of subscriber stations which are connected via subscriber connection circuits in series to a loop on which bit groups circulate in exclusively one direction, and wherein the subscriber connection circuits check all bit groups filtering out those bit groups intended for them, replacing each filtered-out bit group by another bit group and sending out these replaced bit groups in place of the ones filtered out, wherein: the lines belonging to the exchange network are PCM multiplex lines (**1**,**1**′ till **4**, **4**′); the start and the end of each loop (**5**, **6**) and at least one PCM multiplex line (**1**,**1**′ till **4**, **4**′) of the exchange network are connected to respectively one network connection circuit (**15**, **16**); the bit groups circulating on the loops (**5**, **6**) are telegrams comprising an address part, a signalling part and an information part; the network connection circuits (**15**, **16**) are adapted to convert the content of each PCM time slot arriving successively on a PCM line into the information part of a telegram; they further insert the relevant time slot numbers as the address part of the telegrams and send these out onto the relevant loop (**5**, **6**); and they conversely convert the information part of the telegrams arriving from the loop (**5**, **6**) into the content of the PCM time slots associated with the telegram addresses.

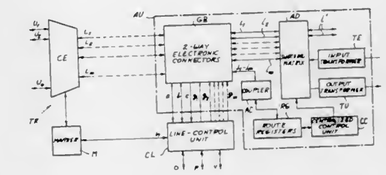


4,119,805

LINE-CONTROL UNIT FOR TELECOMMUNICATION SYSTEM

Cesare Pratelli, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 775,399, Mar. 7, 1977, abandoned. This application Jun. 20, 1977, Ser. No. 808,438
Claims priority, application Italy, Mar. 8, 1976, 20944 A/76
Int. Cl.² H04M *15/06*
U.S. Cl. 179—18 FC **12 Claims**



1. In a telecommunication system including a terminal serving a multiplicity of subscriber lines and an automatic exchange at a nodal point joined to said terminal by a number of line links less than the number of said subscriber lines, said terminal being provided with a line concentrator/distributor controlled by a marker for temporarily assigning available line links to calling and called subscriber lines, said automatic exchange being provided with switch means for establishing connections

between said line links and other parts of the system, said subscriber lines falling into different service classes restricting for at least certain of said subscriber lines the types of connections to be established,

the combination therewith of a line-control unit at said nodal point communicating with said marker by way of signaling channel independent of said line links for exchanging engagement messages with said marker identifying a subscriber line involved in the establishment of a connection and a line link temporarily assigned thereto, said line-control unit comprising:

storage means connected to said signaling channel for registering engagement messages;

programming means periodically communicating with said storage means for detecting an engagement message registered therein;

classification means including a data store engageable by said programming means for reading out data, including service-class information, relating to a calling subscriber line identified in an engagement message, originating at said marker, said classification means being provided with a data-input circuit connected to a teleprinter; and

retransmission means periodically connectable to said classification means under the control of said programming means for delivering the read-out data to said automatic exchange.

4,119,806

SUBSCRIBER'S LINE EQUIPMENT FOR A TELEPHONE EXCHANGE

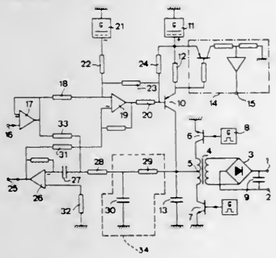
André N. Baratin, Neuilly-sur-Seine, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Dec. 6, 1977, Ser. No. 857,901

Claims priority, application France, Dec. 17, 1976, 76 38031

Int. Cl.[2] H04M *19/00*; H04B *1/58*

U.S. Cl. 179—18 FA **1 Claim**



1. A subscriber's line equipment for a telephone exchange, comprising:

a. a circuit for supplying direct current to the subscriber's line, which comprises:

1. first and second constant direct current sources, wherein:

I. the negative terminal of said first source is connected to ground; and

II. the positive terminal of said second source is connected to ground;

2. a step-up transformer having a ferrite core, with intermediate tapping of the primary winding, and primary winding terminals;

3. two pulse generators of rectangular pulses each having a duty factor of 0.5 and a repetition radio frequency;

4. a first PNP transistor connected as a current generator, in series with said first current source, wherein:

I. the collector of said transistor is connected to the intermediate tapping of said transformer;

II. the emitter of said transistor is connected, by a first resistor, to the positive terminal of said first source;

III. the base of said transistor is connected, by a second resistor, to the positive terminal of said first source, and

5. a third resistor, connected between the base of said first transistor and, by a fourth resistor, to the negative terminal of said second source;

6. two NPN transistors having a common emitter connection, wherein;

I. the collectors of said transistors are respectively connected to said primary winding terminals of said transformer;

II. the bases of said transistors are respectively connected to the output of the pulse generators; and

III. the emitters of said transistors are connected to ground; and

7. rectifying means connected to the transformer secondary winding for supplying direct current to the subscriber's line;

8. a first filtering capacitor shunting the subscriber's line; and

9. a second high-frequency decoupling capacitor, connected between ground and said intermediate tap of said transformer primary winding; and

b. a first circuit for transmitting voice signals from the telephone exchange to the subscriber's line, having an impedance-matching, unit-gain buffer amplifier at its input connected by a fifth resistor to a current generator comprising a first differential amplifier having a negative-feedback loop connected to the base of said first resistor by a sixth resistor, and wherein said third resistor comprises a positive-feedback resistor;

c. a second circuit for transmitting voice signals from the subscriber's line to said telephone exchange, comprising a low-pass filter having a seventh resistor and a third capacitor, wherein said seventh resistor is connected between the intermediate tapping of said transformer and the negative input of a second differential amplifier by an eighth resistor in series with a fourth capacitor, whereby said second differential amplifer has a negative feedback loop;

d. a ninth resistor, for providing an antiside tone effect, being connected between the output of said buffer amplifier and the connection between said fourth capacitor and said eighth resistor; and

e. a tenth resistor, for matching the impedance relative to the telephone line, being connected between the output of said second differential amplifier and the negative input of said first differential amplifier.

4,119,807

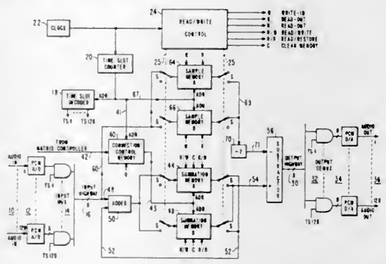
DIGITAL TIME DIVISION MULTIPLEX SWITCHING SYSTEM

Lawrence Paul Nahay, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 13, 1977, Ser. No. 806,284

Int. Cl.[2] H04M *3/56*

U.S. Cl. 179—18 BC **5 Claims**



1. A TDM telephone exchange to which *n* telephone lines are sequentially connected during *n* respective sequential time slots, comprising

timing means providing alternating write-in and read-out cycles of *n* sequential memory addresses synchronized with said *n* respective sequential time slots,

a summation memory in which a storage location accumulates the sum of message samples from one or more lines during a write-in cycle and supplies the sum of the message samples to one or more of said lines during a subsequent read-out cycle, and

a connection control memory for indirectly addressing said summation memory, said connection control memory having *n* sequential memory storage locations, addressed by said sequential memory addresses from said timing means, all memory storage locations corresponding with lines to be connected together in conference containing the address of one storage location in said summation memory,

whereby the contents of said connection control memory determines the conference connections of said telephone lines.

4,119,808

MULTI-FREQUENCY RECEIVER CIRCUITS

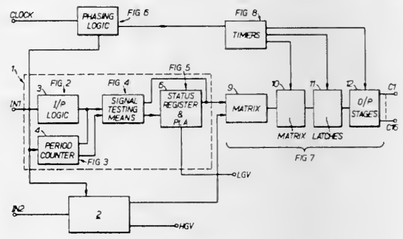
Michael Frank Atkin, Fife, Scotland, assignor to General Instrument Corporation, Clifton, N.J.

Filed Jun. 15, 1977, Ser. No. 806,585

Claims priority, application United Kingdom, Jun. 17, 1976, 25227/76

Int. Cl.[2] H04M *1/50*

U.S. Cl. 179—84 VF **10 Claims**



1. A signal processor comprising: an input for receiving a periodic signal; measuring means coupled to the input for making successive measurements of the periodic signal to determine with each measurement whether the period of the signal has a value lying within any one of a plurality of predetermined spaced ranges of values; means coupled to the measuring means for producing an output signal if the determined value falls within a single one of the ranges more than a first predetermined number of times in a group of a given number of successive measurements and for continuing to produce said output signal if in the following such group the value falls within the same signal one of the ranges more than a second predetermined number of times less than the first predetermined number; and means for storing an identification of said single one of the ranges during the production of said output signal to provide an identification of the period of the periodic signal.

4,119,809

BRAILLE LENS FOR TELEPHONE DIALS

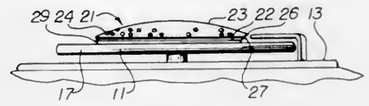
Pearl N. Bianchini, 890 Roble Ave., Menlo Park, Calif. 94025

Filed Nov. 17, 1976, Ser. No. 742,541

Int. Cl.[2] H04M *1/21*

U.S. Cl. 179—90 A **5 Claims**

1. A member to be positioned in the middle of a standard telephone dial to assist the blind in locating the finger holes of said dial comprising a transparent body having a convex upper surface having a maximum size to fit on said dial with the periphery of said convex upper surface of said body adjacent but spaced inward of the finger holes of said dial, raised Braille indicia on the upper surface of said body near the periphery thereof radially aligned with the numeral designations of said finger holes, attachment means to attach said body to the center of the dial so that said finger holes are substantially unobstructed, said attachment means engaging only said standard telephone dial, said body being removable from said dial,



and means integrally formed in said body for orienting said body by touch to align the Braille indicia radially the numeral designations.

4,119,810

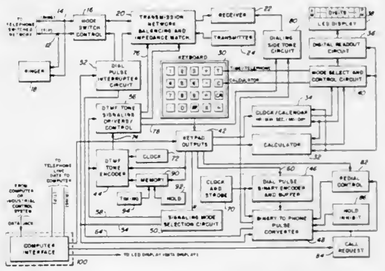
PUSHBUTTON TELEPHONE APPARATUS WITH AUTOMATIC DIALING AND COMBINATIONAL SEQUENTIAL CONTROL SIGNALLING CAPABILITIES

Allan Marin, Evanston, and Jack L. Bradbery, Evergreen Park, both of Ill., assignors to Phone Devices Corporation, Chicago, Ill.

Filed Sep. 13, 1976, Ser. No. 722,394

Int. Cl.[2] H04M *1/42*

U.S. Cl. 179—90 K **7 Claims**



1. An electronic telephone apparatus comprising:

keyboard means for entering of numeric information and function control commands including a plurality of individually operable keys, said plurality of keys comprising a standard multifrequency tone signalling array and a predetermined number of function control keys;

signalling mode means responsive to operation of a first of said keys for selectively controlling the operation of said telephone apparatus in a dial pulse signalling mode and in a tone signalling mode, said selectively controlling signalling mode means being effective to place said apparatus in said dial pulse signalling mode when the apparatus is conditioned to an off-hook state;

dial pulse means responsive to said selectively controlling signalling mode means and said keyboard means for generating dial pulse train signals, said generated dial pulse train including a number of pulses equal to the numeric designation of the key that is operated;

tone signalling means responsive to said selectively controlled signalling mode means and said keyboard means for generating tone frequencies corresponding to the numeric designation of the key that is operated according to a preassigned code; and

means enabled by said dial pulse train generating means for providing a dialing side-tone signal to the receiver element of said telephone apparatus when said dial pulse generating means is generating dial pulse train signals to inform the subscriber that outpulsing is occurring;

said dial pulse generating means comprising dial pulse mode means for storing a representation of at least one previously entered digit of numeric information as entered from said keyboard means and responsive to operation of a

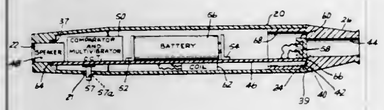
second and a third of said keys, said dial pulse mode storing means selectively enabling said dial pulse generating means to sequentially generate said dial pulse train signals corresponding to said stored representation when said third key is operated and when said selectively controlling signalling mode means is in said dial pulse signalling mode; said tone frequency generating signal means comprising tone mode means for storing a representation of at least one previously entered digit of numeric information as entered from said keyboard means and responsive to operation of said second key and a fourth of said keys, said tone mode storing means selectively enabling said tone frequency generating means to sequentially generate said tone frequencies corresponding to said stored representation when said fourth key is operated, said selectively controlling signalling mode means, upon operation of said second and fourth keys, being effective to place said apparatus in said tone signalling mode.

4,119,811

PHOTO-VIBRATORY TRANSDUCER

Larry S. Moricca, Churubusco, and Joseph G. Utasi, Fort Wayne, both of Ind., assignors to Anthony C. Moricca, Fort Wayne, Ind.

Filed Apr. 4, 1977, Ser. No. 784,286
Int. Cl.² G09B *21/00*; G06K *7/14*
U.S. Cl. 340—407 **4 Claims**



1. A photo-vibratory transducer comprising:
an elongate finger supportable and manipulable housing;
photocell means being mounted in one end of said housing for sensing a predetermined energy level in the visible frequency spectrum at said one end, and for changing electrical state in response to said sensing;
sensory means being mounted in said housing for generating a discernible vibration upon actuation;
a portable power source mounted in said housing and coupled to said photocell means to provide a first signal corresponding to said change of state;
circuit means coupling said photocell means, said sensory means, and power source for energizing said sensory means upon said photocell means sensing said predetermined energy level;
comparator circuit means mounted in said housing and being coupled to said power source and said photocell means for receiving said first signal and for comparing said first signal with a predetermined second signal and providing an output signal upon a predetermined ratio between said first and second signals;
multivibrator circuit means mounted in said housing and being coupled to said output signal and said sensory means for generating a third signal of predetermined frequency in response to said output signal for actuating said sensory means.

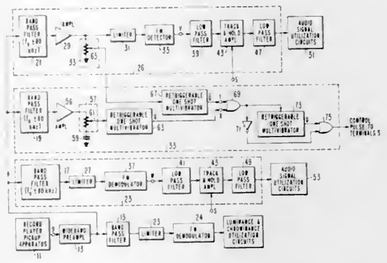
4,119,812

SIGNAL DEFECT DETECTION AND COMPENSATION WITH SIGNAL DE-EMPHASIS

Edward Coley Fox, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1977, Ser. No. 789,294
Int. Cl.² H04B *15/00*
U.S. Cl. 179—100.4 D **10 Claims**

1. An apparatus for use with a source of signals including a carrier signal which is frequency modulated in accordance with a pre-emphasized modulation signal information, said modulated carrier signal being undesirably subject to accompaniment by impulse noise; comprising:
a signal bandpass filter connected to said source of signals for passing said modulated carrier signal;
means responsive to the signal output of said bandpass filter for identifying departures of the amplitude of said signal output from a given amplitude range;
means for developing a first defect indication pulse in response to the output of said departure identifying means;
means responsive to the output of said source of signals for identifying impulse noise;
means for developing a second defect indication pulse in response to the output of said impulse noise identifying means;
means for developing a control pulse in response to the development of either of said first or second defect indication pulses;
frequency modulation detection means responsive to the signal output of said bandpass filter for developing a signal output which corresponds to the modulation signal information;



means responsive to the development of said control pulse for switching between (1) a tracking state wherein the signal appearing at an output terminal thereof is subject to variations responsively to the variations in the signal developed at the output of said first low pass filter and (2) a holding state wherein the signal appearing at the output terminal thereof at the moment of switching is maintained constant for the duration of the holding state;
means responsive to the development of said control pulse for controlling the switching state of said switching means; and
first means, coupled between the output of said modulation detection means and an input of said switching means, and second means coupled to the output of said switching means for providing in combination a de-emphasis of the output of said modulation detection means in a manner suitably complementary to the pre-emphasis of the modulation signal information; the passband of said first means being narrower than the bandwidth of the signal developed by said frequency modulation detection means.

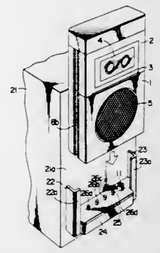
4,119,813

CASSETTE TAPE RECORDER WITH DETACHABLE COUPLING TO RADIO

Masanobu Sato, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Division of Ser. No. 639,271, Dec. 10, 1975, Pat. No. 4,041,250. This application May 9, 1977, Ser. No. 794,829
Claims priority, application Japan, Dec. 23, 1974, 50-155007; Dec. 27, 1974, 49-157061; Dec. 28, 1974, 50-002698
Int. Cl.² G11B *31/00*; H04B *1/20*
U.S. Cl. 179—100.11 **5 Claims**

1. A coupling device for cassette tape recorder comprising a pair of coupling channels formed in both lateral sidewalls of a cassette tape recorder, a pair of rails formed on a coupling surface of radio set and adapted to engage the coupling channels for detachably mounting the tape recorder on the coupling surface of the radio set, a plurality of apertures formed in a bottom surface of the tape recorder, a plurality of socket contacts disposed within the respective apertures and connected with an electrical circuit of the tape recorder, a plurality of pin contacts mounted on an insulating member secured to the coupling surface of the radio set so as to extend between the pair of rails and adapted to be brought into electrical contact with the socket contacts to provide an electrical connection between an electrical circuit of the radio set and that of the tape recorder when the latter is coupled with the radio set, a coverplate having a plurality of openings extending therethrough and disposed for a sliding movement along the bottom surface of the tape recorder, the openings in the coverplate



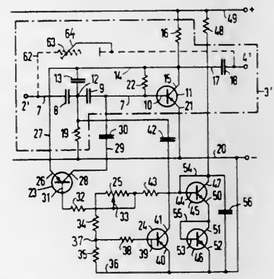
being disposed in a manner corresponding to the arrangement of the apertures in the bottom surface of the tape recorder, and a rockable pawl member pivotally mounted within the tape recorder and having a free end which engages the coverplate and a cam edge which projects into one of the coupling channels, means biasing the pawl member to urge its cam edge to project into the coupling channel and to move the coverplate to a position in which the openings therein are misaligned with the apertures to thereby substantially conceal the socket contacts, the cam edge being engaged and driven by one of the rails to rock the pawl member against the force of the bias means so that the coverplate is moved to a position in which the openings therein are aligned with the apertures when the tape recorder is physically coupled with the radio set.

4,119,814

HEARING AID WITH ADJUSTABLE FREQUENCY RESPONSE

Friedrich Harless, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 2, 1977, Ser. No. 856,971
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658301
Int. Cl.² H04R *25/00*
U.S. Cl. 179—107 FD **8 Claims**



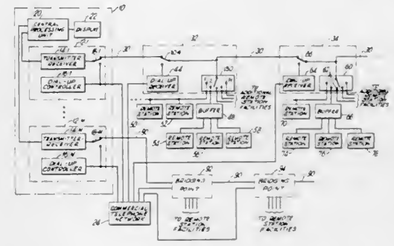
1. A hearing aid comprising a transistor amplifier stage including a transistor having a base, an emitter, and a collector, and a frequency-determining network, characterized in that the network is connected with the base of the transistor, and comprises first and a second capacitors in succession, a third capacitor having one terminal connected between the first and second capacitors and a second terminal connected to the collector of the transistor, first resistance means for connecting the collector to one pole of the operating-current-battery, the collector being connected to an output-point of the stage, second resistance means having one terminal connected between the first and the second capacitors, and having a second terminal connected to the emitter of the transistor, and for connection to an opposite pole of the battery, and third resistance means, connected between the collector and the base of the transistor.

4,119,815

CENTRAL STATION SYSTEM INCLUDING SECONDARY COMMUNICATION PATH ESTABLISHED THROUGH COMMERCIAL TELEPHONE NETWORK

Eric J. Frankfort, Brooklyn, N.Y., and David Stuart Terrett, Lincroft, N.J., assignors to American District Telegraph Company, Jersey City, N.J.

Filed May 31, 1977, Ser. No. 801,822
Int. Cl.² G08B *29/00, 26/00*; H04M *11/00*
U.S. Cl. 179—175.3 S **18 Claims**



1. In a central station system including a central station, at least one remotely located bridging point having a plurality of output ports and serving a plurality of remote stations, each of which is connected to a respective one of the output ports, and normal telecommunication means for transmitting signals between the central station and the bridging point, apparatus for connecting the central station to selected remote stations comprising:
means associated with the central station for generating address signals applied to the normal telecommunication means;
means associated with the bridging point for connecting the normal telecommunication means to the output port identified by the address signals and for isolating all other output ports form the normal telecommunication means; and
means for establishing an alternative telecommunication path between the central station and the bridging point through the commercial telephone network to which the address signals are applied and the identified output port is connected in the event of failure of the normal telecommunication means.

4,119,816

CROSS CONNECT PANEL HAVING SLIDE SWITCHES AND BUS BAR CONSTRUCTION

Robert E. Davis, Salt Lake City, Utah, assignor to Stage-Brite Inc., Minneapolis, Minn.

Filed Dec. 2, 1976, Ser. No. 746,719
Int. Cl.² H01H *9/00*
U.S. Cl. 200—1 R **5 Claims**

1. A cross connect panel, comprising:
(a) a plurality of elongated bus bars;
(b) means for supporting said bus bars in mutually insulated, spaced, parallel relationship;
(c) said supporting means comprising first insulating mem-

bers having a groove on one side to receive a bus bar and a flat portion on the other side for abutting an adjacent bus bar, second insulating members positioned between adjacent first insulating members and beneath said bus bars in supporting relationship thereto, said first and second insulating members having complementary tongue and groove portions for interlocking together, and clamping means acting orthogonally to said insulating members to compress said bus bars in the grooves of said first members;

(d) a plurality of bus rails;

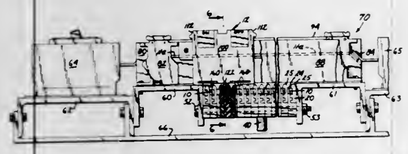
(e) means for supporting said bus rails in mutually spaced relationship substantially perpendicular to said bus bars and spaced therefrom; and

(f) slider assemblies slideably positioned on said bus rails for movement therealong for selective alignment and contact with individual bus bars.

4. A cross connect panel, comprising:

(a) a plurality of elongated bus bars;

(b) means for supporting said bus bars in mutually insulated spaced parallel relationship with adjacent bus bars separated by insulating members having rounded edges ex-



tending beyond said bus bars to form arc quenching chambers;

(c) a plurality of elongated bus rails;

(d) means for supporting said bus rails in mutually parallel spaced relationships substantially orthogonally to said bus bars and spaced thereabove;

(e) slider assemblies slideably positioned on said bus rails for movement therealong for selective alignment and contact with individual bus bars; and

(f) said slider assemblies including a pair of contact blocks slideably positioned one above the other in each slider assembly for vertical movement therein, a spring positioned between said contact blocks for urging said contact blocks apart with the upper block electrically contacting the underside of a bus rail and the lower block being urged downwardly toward said bus bars, flexible conductor means electrically interconnecting said contact blocks, and operator actuatable retraction and release mechanisms operatively connected to said lower contact block for switchably controlling the connection and disconnection of conductive paths between said bus bars and said bus rails.

4,119,817

BREAKER POINT ASSEMBLY

William J. Orr, 5909 Berkeley Dr., Berkeley, Mo. 63134

Filed Sep. 7, 1976, Ser. No. 720,758

Int. Cl.² H01H *19/00*

U.S. Cl. 200—19 A **6 Claims**

1. A breaker point assembly for use with conventional internal combustion engines, comprising,

base means,

breaker arm means pivotally mounted on a post operably mounted on said base means,

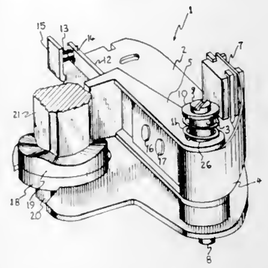
a fixed ignition point operably mounted on said base means,

a second ignition point mounted on said breaker arm means and disposed such that as said breaker arm pivots in opposite directions the second point moves into contact with the first ignition point and then away from said first ignition point,

first cam means operably mounted on a shaft and disposed proximate said base means, said first cam means disposed such that the longitudinal axis of the first cam shaft and its cam surfaces are essentially parallel to the longitudinal axis of said breaker arm post,

second cam means operably mounted on said first cam shaft and disposed such that its cam surfaces are essentially transverse to the longitudinal axis of said cam shaft,

first cam follower means operably mounted on said breaker arm means and disposed in contact with the cam surface of said first cam means,



second cam follower means operably mounted on said breaker arm means and disposed in contact with the cam surface of said second cam means,

first spring means operably mounted on said breaker arm means and said base means are disposed such that it causes said breaker arm means to pivot towards said first cam means,

second spring means operably mounted on said breaker arm post and disposed between said breaker arm means and the end of said post distal from said base means.

4,119,818

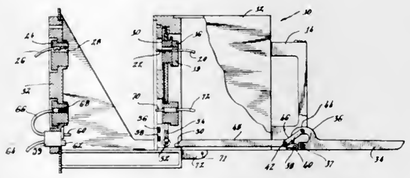
INTERCONNECTING MODULE

Rocco James Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Jan. 2, 1976, Ser. No. 646,701

Int. Cl.² H01H *9/20, 33/46*

U.S. Cl. 200—50 AA **5 Claims**



1. A circuit module for insertion into an associated receptacle, said module having a rear face and a front face and comprising:

movable closure means coupled to said module near the front face thereof for removably locking said module in an associated receptacle;

movable pawl means, coupled to said module, having a decreasing radius of curvature with respect to its associated pivot point in the direction of actuation for effecting locking of said module with an associated receptacle,

said movable closure means having a bearing surface near the pivot point thereof for actuating said movable pawl means to effect locking of said module with an associated receptacle;

first movable actuator means associated with said module, extending toward said rear face and movable in response to motion of said closure means, for actuating an electrical switch means associated with an associated receptacle;

second movable actuator means associated with said module, movable in response to motion of said closure means for actuating an electrical contact device positioned in said rear face independently of said switch means.

4,119,819

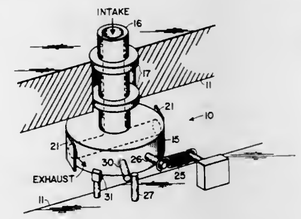
FLUID ACTIVATED VELOCITY SWITCH

Charles H. McGuire, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jan. 31, 1977, Ser. No. 763,951

Int. Cl.² H01H *35/24*

U.S. Cl. 200—81.9 R **3 Claims**



1. Apparatus for providing switching action including a member mounted for limited rotation about an axis in communication with means including a conduit with a longitudinal dimension extending along the axis for receiving a stream of fluid flowing in the longitudinal direction, means affixed to said member in fluid receiving communication with said conduit for receiving the fluid from said conduit and directing the fluid radially outwardly from the rotational axis and in a generally tangential direction to said member to cause rotation of said member in a first direction, biasing means connected to said member for biasing the rotation of said member in an opposite direction to the first direction and toward a quiescent position, and actuating means connected to said member for actuating remote apparatus upon a predetermined amount of rotation of said member.

4,119,820

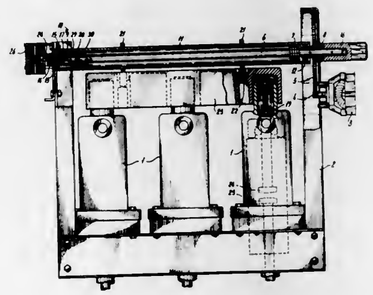
SPRING-DRIVE MECHANISM FOR ELECTRIC SWITCHES

Johannes H. L. A. Hilderink, Buurse, Netherlands, assignor to Hazemeijer B.V., Buurse, Netherlands

Filed Jun. 30, 1977, Ser. No. 811,830

Int. Cl.² H01H *3/30*

U.S. Cl. 200—153 SC **2 Claims**



1. In a spring-drive mechanism for electric switches which includes a drive shaft, a switch-on spring which can be put under tension by the drive shaft and which surrounds this drive shaft as well as a hollow shaft situated coaxially around the drive shaft and supporting at least one cam disc for operating the contacts of the switches, one end of the switch-on spring being fixedly connected to the drive shaft and the other end being fixedly connected to the hollow shaft, means being present to rotate the hollow shaft each time over a certain angle under the influence of the energy stored in the tensioned switch-on spring and operating the switch contacts in consequence thereof.

the improvement wherein the hollow shaft surrounds the switch-on spring over its whole length, wherein the means for rotating the hollow shaft over a certain angle includes a non-rotatable hollow cylinder extending coaxially within one end of the hollow shaft, said hollow cylinder including two axially staggered wall bores in the circumference of the cylinder, each bore of which contains a ball, said balls being alternately radially movable by means of a coupling shaft which is axially movable within the chamber of said hollow cylinder, said coupling shaft including surfaces with oppositely changing diameters such that when the coupling shaft is electro-magnetically or manually moved in axial direction one of said balls is partly pressed to extend outwardly of the outer surface of said cylinder by one of said surfaces with changing diameter, the inner wall of the hollow shaft being provided with a ridge extending nearly as far as the outer wall of the cylinder, the arrangement being such that, dependent on the switch on or switch off position of the switches and thus on the axial position of the coupling shaft, one of both balls which is pressed outwards, will arrest the ridge such that the hollow shaft and the cam disc supported by it can only rotate over a certain angle (α,β) necessary for switching-on or switching-off of the switch contacts.

4,119,821

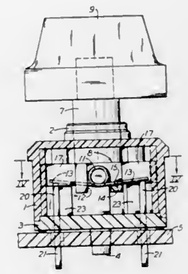
NORMALLY CLOSED SWITCH

Arthur Wayne Overton, Raleigh, N.C., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Sep. 26, 1977, Ser. No. 836,312

Int. Cl.² H01H *13/52*

U.S. Cl. 200—159 R **1 Claim**



1. A normally closed switch comprising a case having a top with an opening therethrough, a plunger having a foot in the case and a stem extending upwardly through said opening and above the case, a bridging contact member in the case at the lower end of the plunger, said contact member being formed from a spring having a central portion engaging said foot and having free end portions extending away from opposite sides of the foot to form movable contacts, a pair of stationary electric contacts mounted in the case beneath said movable contacts and normally engaged thereby, terminals connected with the stationary contacts and extending out of the case, and a fulcrum member in the case between each stationary contact and said central portion of the spring, said fulcrum members being disposed beneath said movable contacts and normally out of contact with them, the tops of the fulcrum members being

lower than the tops of said stationary contacts, and the fulcrum members being of such height that when said central portion of the spring is moved downwardly by depressing the plunger said movable contacts will engage and rock on the fulcrum members and lift away from the stationary contacts to open the switch.

4,119,822

SMALL CURRENT SWITCH

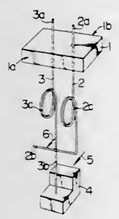
Minoru Kobayashi, Hachioji, and Shigeru Nemoto, Tachikawa, both of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,886

Claims priority, application Japan, Apr. 27, 1976, 51/54191[U]

Int. Cl.[2] H01H *1/06, 1/26*

U.S. Cl. 200—246 **3 Claims**



1. A small current switch comprising an electrically insulating base; a first resilient conductive wire having one of its ends secured to the base to provide a terminal for connection with an electrical circuit, the first wire being formed with a coiled reinforcement intermediate its ends and having its other end extending in a straight manner; a second resilient conductive wire having one of its ends secured to the base to provide another terminal for connection with an electrical circuit, the second wire being juxtaposed with the first wire and being formed with a coiled reinforcement intermediate its ends, the coiled reinforcement of the second wire being disposed in parallel relationship with that of the first wire, the other end of the second wire being bent substantially at right angles so as to extend in a direction perpendicular to the straight end of the first wire; and a switching member secured to the other end of the first wire for moving the first wire into and out of contact with the second wire.

4,119,823

ELECTRICAL SWITCH

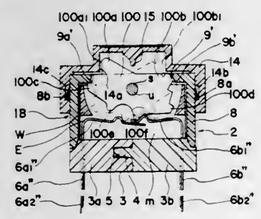
Kenichi Matsueda, and Takao Kitamura, both of Kurayoshi, Japan, assignors to Omron Tateisi Electronics Co., Japan

Filed Apr. 14, 1976, Ser. No. 677,070

Claims priority, application Japan, Apr. 19, 1975, 50/53319

Int. Cl.[2] H01H *19/06*

U.S. Cl. 200—302 **6 Claims**



1. An electrical switch of a dual-in-line package type connectable to a substrate having a plurality of switch units each movably provided to be positioned between an operative position and inoperative positions, said switch units being aligned in parallel relation to each other, said electrical switch comprising:

a base plate member;

a plurality of pairs of contact lead members supported by said base plate member, each of said contact lead members having one end portion thereof extending outwardly from one surface of said base plate member for effecting external connection of said lead member, and another end portion of said contact lead member extending from another surface of said base plate member and having an L-shaped configuration with a free end directed toward the other lead of said pair of lead members for effecting interconnection of said pair of lead members during the presence of said switch unit in said operative position;

an actuator member having two pressing portions, said actuator member rotatably mounted above said pair of contact lead members to move between a first position causing said other end portion of said pair of contact lead members to be interconnected with each other by pressing one of said two pressing portions, and a second position wherein said other end portion of said pair of contact lead members are disconnected from each other by pressing the other of said pressing portions

a housing fitted over said base plate member to enclose said contact lead members within said housing, said housing having an elongated opening formed on a top portion thereof for receiving therethrough said pressing portions; and

a cover member provided over said housing, said cover member having opposite edge portions provided on an inner surface of a top wall thereof, said opposite edge portions being engageable with an edge of said pressing portions, so as to prevent said actuator member from being moved from a predetermined position thereof.

4,119,824

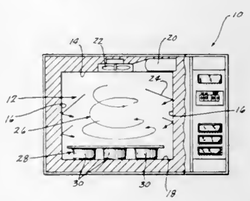
COMBINATION MICROWAVE OVEN AND COOKING UTENSIL

Calhoun G. Jeambey, 7013 Palm Dr., Des Moines, Iowa 50322

Filed Mar. 7, 1977, Ser. No. 774,779

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 E **6 Claims**



1. The combination of a microwave oven and cooking utensil, comprising, a microwave emitting source in said oven, a cooking utensil supporting surface in said oven, means in said oven for creating relative movement of said emitted

microwaves with respect to said supporting surface, a cooking utensil comprised of non-metallic material on said

supporting surface, said cooking utensil having a plurality of spaced-apart food

cavities formed therein spaced equidistant from the center of said cooking utensil, said food cavities being substantially circular in configuration, said cooking utensil having a center portion which prevents access

of food therein.

4,119,825

INDUCTION HEATING APPARATUS

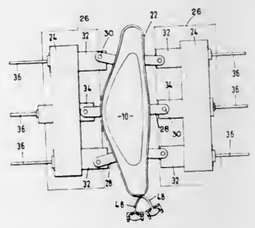
Robert Graham Taylor, Charfield, and William Alfred Proops, Bristol, both of England, assignors to Rolls-Royce (1971) Limited, United Kingdom

Filed Nov. 17, 1975, Ser. No. 632,666

Claims priority, application United Kingdom, Dec. 3, 1974, 52310/74

Int. Cl.[2] H05B *9/02*

U.S. Cl. 219—10.73 **9 Claims**



1. Induction heating apparatus comprising

a workholder adapted for supporting a workpiece;

a flexible induction coil surround said workpiece in said workholder, said coil comprising a thin, flexible strip of an electrically conductive material and a flexible sleeve surrounding said strip and defining adjacent at least one surface of the strip a passage for the flow therethrough of a cooling medium;

means for connecting the coil to a source of electrical energy;

means for causing relative movement of the coil and workpiece along the length of the workpiece;

cam means spaced from said workpiece, and

cam follower means connected to said coil and engaging said cam means,

said coil being of constant length adapted to contortion under the biasing of said cam means acting through said follower to encompass a variety of areas of different and irregular magnitude as said coil moves relative to the length of said workpiece whereby the coil may be maintained in a configuration corresponding substantially to that of the cross-section of the workpiece as the coil traverses the workpiece.

4,119,826

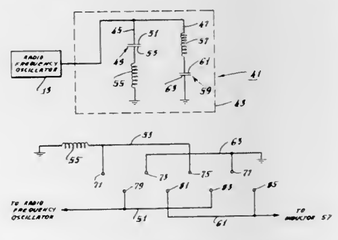
DIELECTRIC HEAT GENERATOR

Phillip Wayne Chambley, and Alan Hedley Norris, both of Rome, Ga., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 4, 1977, Ser. No. 784,577

Int. Cl.[2] H05B *9/04*

U.S. Cl. 219—10.81 **2 Claims**



1. An electrode system for a dielectric heat generator including a radio frequency oscillator comprising:

a first electrical circuit connected between the oscillator output and ground, comprising the series combination of a first capacitive electrode array and a first inductor, one terminal of said first capacitive array being connected to the oscillator output and one terminal of said first inductor being connected to ground;

a second electrical circuit connected between the oscillator output and ground, comprising the series combination of a second capacitive electrode array and a second inductor, one terminal of said second capacitive array being connected to ground and one terminal of said second inductor being connected to the oscillator output;

said first capacitive electrode array comprising first and second sets of finger electrodes located on opposite sides of a material to be dielectrically heated;

said second capacitive electrode array comprising third and fourth sets of finger electrodes located on opposite sides of the material to be dielectrically heated.

4,119,827

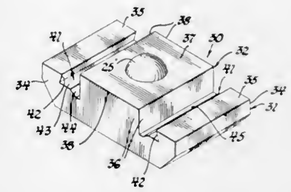
CLINCH WELD FASTENER AND METHOD OF SECURING PANELS TOGETHER

Clayton R. Lenox, Allen Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 24, 1977, Ser. No. 780,795

Int. Cl.[2] B23K *9/00, 11/04*

U.S. Cl. 219—98 **10 Claims**



1. A clinch weld fastener for clinched connection with a thin apertured, deformable first member and for welding to a second member whereby said first member is secured to said second member in abutment thereagainst by said clinch weld fastener, said clinch weld fastener having a body including a head means with a base surface on one side thereof and with a pilot portion extending integrally from said one side, said pilot portion being adapted to fit through an aperture in said first member so that said base surface can abut against one side of said first member, said body including at least two spaced apart undercut clinch groove means therein whereby material of said first member surrounding the aperture can be clinched into said undercut clinch groove means whereby said fastener can be mechanically secured to said first member, said pilot portion having an end surface opposite said head means with integral weld projection means thereon, said pilot portion with said weld projection means thereon being of a predetermined length greater than the thickness of said first member whereby said weld projection means will extend outward from the opposite side of said first member after attachment thereto for engagement with said second member so that said weld projection means will be positioned to be projection welded to said second member whereby said first member can be secured to said second member.

4. A method for securing a panel of non-ferrous deformable material to a ferrous panel by means of a clinch weld fastener comprising a body including a head having extending therefrom a pilot portion with weld projection means at the free end thereof and having undercut clinch groove means in the body thereof, said method including the steps of forming a through pilot opening for the pilot portion of the clinch weld fastener in said on-ferrous panel, inserting the pilot portion of said clinch weld fastener through said pilot opening until said head abuts against one side of said non-ferrous panel, mechanically

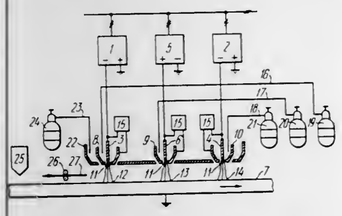
securing by clinching the clinch weld fastener to said non-ferrous panel with the material of said nonferrous panel adjacent said pilot opening positioned in said undercut clinch groove means so that the weld projection means extend outward from one surface of said non-ferrous panel, positioning said non-ferrous panel adjacent to said ferrous panel with the weld projection means in abutment against said ferrous panel and, projection welding the weld projection means of said clinch weld fastener to said ferrous panel.

4,119,828

METHOD OF PLASMA MULTIARC WELDING BY PERMANENTLY BURNING DIRECT-CURRENT ARCS

David Grigorievich Bykhovsky; Arkady Leonidovich Bolotnikov; Gennady Egorovich Strepetov, and Alexandr Ivanovich Danilov, all of Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Tekhnologichesky Institut Elektrosvarochnogo Oborudovania, Leningrad, U.S.S.R.

Filed Feb. 8, 1977, Ser. No. 766,694
Int. Cl.[2] B23K *9/08*
U.S. Cl. 219—121 P **24 Claims**



1. A method of plasma multiarc welding using a common weld pool by permanently burning direct-current arcs of different polarities comprising positioning at least three electrodes adjacent to each other, each of said electrodes being nonconsumable, positioning a workpiece to be welded in spaced relation to said three electrodes, providing a plasma-forming gas and a shielding medium to the space between said three electrodes and said workpiece, providing a direct-current power source across each of said three electrodes and said workpiece simultaneously to create at least three electric arcs, each arc being between one of said three electrodes and the workpiece such that the polarity of each arc is selected to be of straight polarity or of reversed polarity so that the arcs adjacent one another have opposite polarities, wherein the three electrodes positioned adjacent to each other and the direct-current power source provided to said electrodes are set so that the ratio of the product of the currents of two adjacent arcs to the distance between said arcs is greater than or equal to $9.5 \cdot 10^4$ amps squared per centimeter.

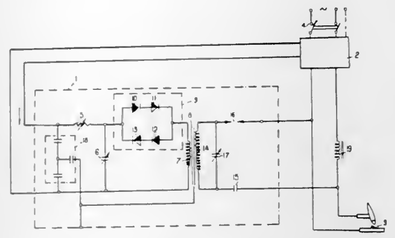
4,119,829

DEVICE FOR PRODUCING PULSES FOR THE IGNITION AND STABILIZATION OF AN ELECTRIC-ARC PROCESS

Vassil Dimitrov Bakardjiev, and Emil Assenov Doychinov, both of Sofia, Bulgaria, assignors to Institute po Zavaryavane, Sofia, Bulgaria

Filed Apr. 19, 1977, Ser. No. 788,793
Claims priority, application Bulgaria, Apr. 20, 1976, 32959
Int. Cl.[2] B23K *9/06*
U.S. Cl. 219—130.4 **3 Claims**

1. A control circuit for a discharge process in which a current source is connected across electrodes for generating an arc discharge, said circuit producing pulses for the ignition and stabilization of the arc, said circuit comprising:
a high frequency transformer having a primary winding and a secondary winding;
a separating condenser and a spark gap connected in series with said secondary winding across said electrodes;
a commutating link of noncontrollable semiconductors connected in series with said primary winding in a series network, said commutating link including a first diode and a first dynister in series and poled in one direction, and a second diode in series with a second dynister poled in the



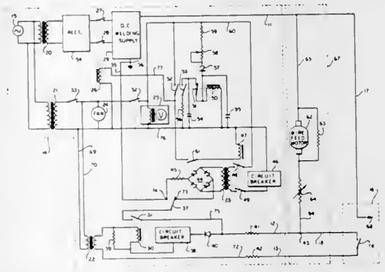
opposite direction and connected in parallel with the first diode and first dynister;
a pulse condenser connected across said network; and
a charging resistor connected in series with said charging condenser across said source, said commutating link being tied to the junction between said charging resistor and said pulse condenser.

4,119,830

REMOTE WELDING CONTROL SYSTEM

Malcolm T. Gilliland, 405 Dividend Dr., Peachtree City, Ga. 30269

Filed Aug. 8, 1977, Ser. No. 822,745
Int. Cl.[2] B23K *9/10*
U.S. Cl. 219—132 **7 Claims**



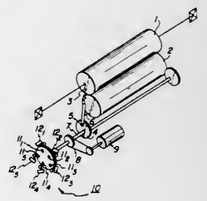
1. In a welding system having operating means at a first location comprising power supply circuit means for providing a ground potential, for providing a first potential with respect to said ground potential, and for providing welding current to said ground potential through a welding wire, and wire feed means at a second location responsive to a potential difference;
connecting means consisting of a first electrical conductor at said first potential with respect to said ground potential, a second electrical conductor and a third electrical conductor for connecting said second location to said first location;
switch means associated with said second location for connecting said second electrical conductor and said third electrical conductor;
control voltage means for generating a substantially constant control voltage between said second electrical conductor and said third electrical conductor;
wherein said control voltage is independent of and isolated from said ground potential and of a substantially lesser magnitude than said first potential when said second and third electrical conductors are not connected and producing a second potential with respect to said ground potential when said second and third electrical conductors are connected, and said potential difference is the difference between said first potential and said second potential.

4,119,831

CONTACT PRESSURE ADJUSTING DEVICE IN HEATING PRESSING FIXING APPARATUS FOR ELECTROPHOTOGRAPHIC COPIERS

Takashi Sato, Ebina, Japan, assignor to Rank Xerox, Ltd., London, England

Filed Mar. 14, 1977, Ser. No. 778,824
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—216 **3 Claims**



1. Apparatus for fixing toner images to copy paper or the like, said fuser apparatus comprising:
a first roll;
a second roll forming a nip with said first roll through which said copy paper passes;
means for applying variable pressure between said first and second rolls;
selection means corresponding to various pressures which can be applied between said rolls; and
means operably coupling said variable pressure applying means with said selection means whereby different pressures can be applied between said rolls in accordance with said selection means,
said variable pressure applying means comprising spring means operably coupled to a rotary plate in a manner so as to effect variable forces in accordance with the angular orientation of said plate and drive means coupled to said rotatable plate for positioning said plate in one of the plurality of positions in response to activation of said selection means, said selection means comprising switch means.

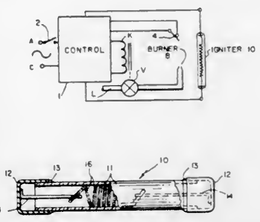
4,119,832

HERMETICALLY SEALED ELECTRICAL GAS FUEL IGNITER

Emery G. Audesse, Williamsport, Pa.; Robert M. Griffin, South Hamilton, and Max E. Oberlin, Lynn, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 17, 1976, Ser. No. 751,609
Int. Cl.[2] F23Q *7/00;* **H01C** *1/024;* **H05B** *3/44;* **H01K** *1/00*
U.S. Cl. 219—270 **4 Claims**

1. An ohmic heating element for an igniter comprising:
a hermetically sealed, elongate envelope formed by a wall of at least 99% pure alumina and having an operating temperature range to at least 1900° centigrade;
a mechanically and electrically stable self supporting coiled coil of refractory metal conductor dimensioned to carry a linear power loading of at least one hundred watts per inch disposed within the envelope, the coiling of said coiled conductor pressing peripheral surfaces of said coiled conductor into thermal and mechanical contact with the interior wall along substantially all of the coiled portion of the coiled conductor; and
conductive means supplying electrical current to the conductor at said power loading effectively to heat the exterior of the envelope wall to a temperature above 900° centrigrade.

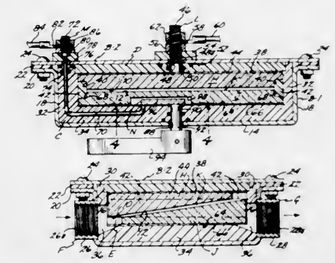


4,119,833

ELECTRIC WATER HEATER

Stephen A. Welch, 7624 Finevale, Downey, Calif. 90240

Continuation of Ser. No. 627,202, Oct. 30, 1975, abandoned.
This application Mar. 14, 1977, Ser. No. 776,843
Int. Cl.[2] H05B *3/60;* **F22B** *1/30;* **H01C** *10/02*
U.S. Cl. 219—285 **8 Claims**



1. An electrically operated water heater that includes:
a. a housing having a water inlet and water outlet;
b. a liner of a non-electrically conducting material disposed within said housing, said liner having first and second openings therein that are axially aligned with said water inlet and water outlet, said liner defining a confined space within the interior thereof that is in communication with said first and second openings and said water inlet and outlet;
c. first and second electric terminals mounted on said housing and electrically insulated therefrom, said terminals being connected to a source of electric power;
d. first and second electrically conducting sheets disposed in said confined space in space parallel relationship and in abutting contact with said liner, said first and second sheets disposed between said first and second openings;
e. first and second electrode plates, each wedge-shaped in cross section and having an obliquely disposed flat surface, arranged in said confined space with the respective obliquely disposed disposed flat surfaces thereof disposed in opposed parallel spaced relation to define a water passage therebetween, said first and second electrode plates being situated in and substantially filling said confined space with each in abutting electrical contact with a respective one of said sheets, and said first and second electrode plates having opposed pairs of aligned elongated recesses formed therein; said second electrode plate being slidable on the sheet in abutting contact therewith relative to said first electrode whereby the spacing between said opposed obliquely disposed flat surfaces may be varied;

f. an elongate electrically insulative guide member engaging each pair of aligned recesses for guiding the movement of said second electrode plate and maintaining said first and second electrode plates in abutting contact with said first and second electrically conducting sheets, said first terminal being electrically connected to said first electrically conducting sheet and said second terminal being electrically connected to said second electrically conducting sheet; and

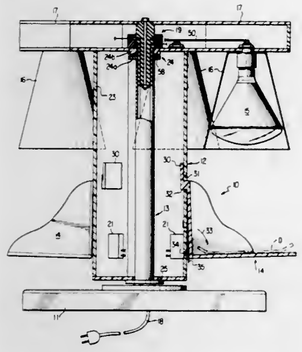
h. means operable from the exterior of the housing for manually sliding the electrode plate on said second electrically conducting sheet in abutting contact therewith to vary the width of said passage and the rate at which water discharges therethrough, with the temperature of the discharging water being dependent on said rate and the resistance said water offers to the flow of electric current between said first and second electrode plates.

4,119,834

ELECTRICAL RADIANT HEAT FOOD WARMER AND ORGANIZER

E. R. Losch, Harrisburg, Pa., assignor to Joseph D. Losch, Longwood, Fla.

Filed Jul. 23, 1976, Ser. No. 708,208
Int. Cl.² H05B *1/02*; A47J *36/24*; A47B *11/00*; A47F *5/05*
U.S. Cl. 219—354 **8 Claims**



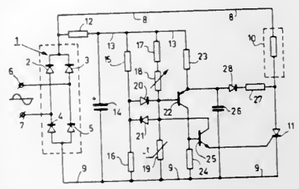
1. An appliance for warming food comprising:
a base for resting on a surface;
a frame;
means for supporting said frame to rotate about a vertical axis with respect to said base;
a plurality of trays rotatable with said frame and supported at an upper end thereof by said frame for pivotable movement with respect to said frame;
a plurality of heating means mounted on said frame above said trays to warm food placed on said trays, one of said heating being means arranged above each respective tray to project heat downwardly only to the tray with which it is associated, said heating means being arranged to rotate in unison with the frame so that each of the heating means is always in registry with its respective tray;
switch means associated with each of said trays and carried by the frame, said switch means positioned for engagement by the tray for activating said heating means associated with the respective tray in response to pivotal movement of the tray relative to the frame from placement of food on the tray; and
connector means for supplying energy to each of said heating means regardless of the rotary position of said heating means with respect to said base.

4,119,835

ELECTRONIC THERMOSTAT

Jean-Pierre Rene Coulmance, Osny, and Jean-Claude Gerard Six, Sevres, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1976, Ser. No. 749,877
Claims priority, application France, Dec. 18, 1975, 75 38854
Int. Cl.² H05B *1/02*
U.S. Cl. 219—501 **13 Claims**



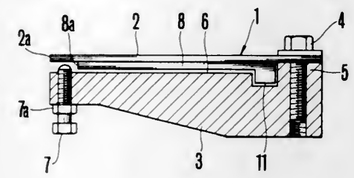
1. A method of controlling the power supplied to an electric load from a source of alternating supply voltage and applied to the load as a pulsating rectified voltage by means of a semiconductor switch comprising, monitoring a physical quantity applying to the control electrode of the semiconductor switch pulses which have been derived from a sawtooth voltage whose repetition frequency depends on a d.c. control voltage that varies as a function of the physical quantity, and superimpositng an alternating voltage with twice the frequency of the supply voltage and with a phase-shift of substantially 90° relative to the supply voltage on the d.c. control voltage.

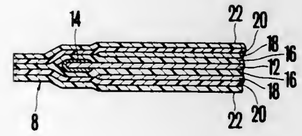
4,119,836

HEAT-CONTROLLED DOCTOR KNIFE

Yutaka Motokawa, Kakogawa, Japan, assignor to Kakogawa Plastics Kabushiki Kaisha, Kokagawa, Japan

Continuation-in-part of Ser. No. 635,320, Nov. 26, 1975, abandoned. This application Jul. 21, 1977, Ser. No. 817,598
Int. Cl.² H05B *3/34*
U.S. Cl. 219—528 **3 Claims**





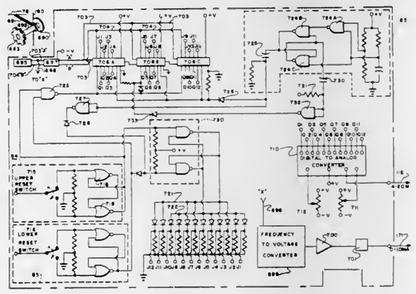
1. A heat-controlled doctor knife comprising:
a thin, flexible blade, fixedly supported along one edge on a support member;
blade flexing means disposed adjacent to and adapted to adjust the angle of the working edge of said blade opposite the fixed edge;
a flat, flexible, heat-generating element securely mounted on and in contact with one side of said blade and extending adjacent to said blade flexing means, said heat-generating element being capable of uniform heat distribution and in the form of a laminate of a sheet of carbon fiber-containing paper heat element, an electrical conductor connected to said heating element, first layers of a synthetic resin laminated to both surfaces of said heating element, layers of aluminum foil laminated to both outer surfaces of said first synthetic resin layers, and second layers of synthetic resin laminated to both outer surfaces of said aluminum foils; and
temperature control means, including a heat-sensitive fuse and a thermostat, coupled to said heat-generating element to regulate the temperature of said blade.

4,119,837

BLOCK POSITION AND SPEED TRANSDUCER FOR A COMPUTER-CONTROLLED OIL DRILLING RIG

Loren B. Sheldon, Houston, Tex., and James R. Tomashek, Wood Dale, Ill., assignors to BJ-Hughes Inc., Houston, Tex.

Filed Mar. 15, 1977, Ser. No. 777,927
Int. Cl.² G06M *3/14*
U.S. Cl. 235—92 MP **6 Claims**



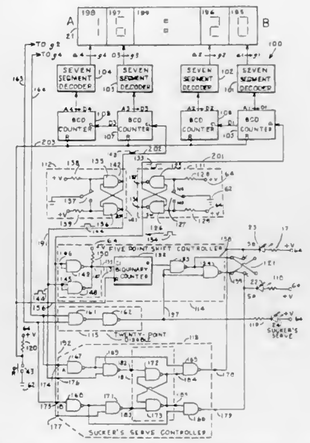
1. Apparatus for indicating the position and velocity of a traveling block with respect to a vertical guide track within a computer-controlled oil drilling rig comprising:
a friction wheel mounted on the traveling block and biased into contact with the guide track, displacement of the traveling block upwardly or downwardly with respect to the guide track rotating the friction wheel in a first or a second angular direction, respectively, at an angular velocity related to the velocity of the traveling block;
a toothed wheel mechanically coupled to the friction wheel for rotation therewith;
a magnetically responsive element operatively associated with the toothed wheel and adapted to generate an electrical signal representative of the direction of motion of the toothed wheel and to generate a pulse each time a tooth on the toothed wheel passes in proximity thereto;
a converter arrangement responsive to the frequency of the pulses output from the magnetically responsive element for generating a current signal representative of the velocity of the traveling block;
a counter arrangement for counting upwardly or downwardly the pulses output from the magnetically responsive element in accordance with the electrical signal representative of the direction of motion of the traveling block; and,
a converter responsive to the count output from the counter arrangement for generating a current signal representative of the position of the traveling block with respect to the guide track.

4,119,838

ELECTRONIC SCORE-KEEPER FOR TABLE TENNIS

Luther L. Genuit, 6231 Calle Del Paisano, Scottsdale, Ariz. 85251

Filed Aug. 15, 1977, Ser. No. 824,560
Int. Cl.² H03K *21/22*; G08B *23/00*
U.S. Cl. 235—92 GA **12 Claims**



1. An electronic score-keeper for table-tennis comprising:
first and second scoring switches,
first and second sets of numerical display devices,
first and second serve indicators,
a sucker's serve indicator,
an electronic control circuit comprising first and second electronic counters and a serve controller,
reset means,
means for coupling said serve controller to said first and said second scoring switches and to said first and second serve indicators,
means for coupling said first electronic counter to said first scoring switch and to said first set of numerical display devices,
means for coupling said second electronic counter to said second scoring switch and to said second set of numerical display devices,
said first electronic counter being responsive to actuation of said first scoring switch and said second electronic counter being responsive to actuation of said second scoring switch,
said serve controller responding to the actuation of either of said first and said second scoring switches by appropriately controlling the energization of said first and second serve indicators, and
said reset means being coupled to said first and said second electronic counters and to said serve controller,
whereby when said first or second scoring switch is actuated by the associated player each time a point is gained, the associated said sets of display devices register the running score of each player, said first and said second service indicators being alternately energized as appropriate to identify which of said players has the responsibility for the serve,
at the conclusion of the game, when said reset means is actuated by one of the players said first and said second counters and said serve controller are reset to zero for the start of another game,
wherein said serve controller comprises a five-point shift controller, and
a twenty-point disable network,
said five-point shift controller being coupled to said first and

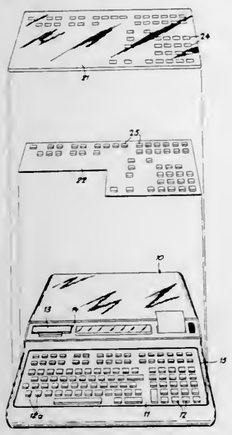
said second serve indicators and to said first and said second scoring switches,
said twenty-point disable network being coupled to said first and said second electronic counters, to said five-point shift controller, and to said sucker's serve indicator,
said five-point shift controller being responsive to said first and said second scoring switches until disabled by said twenty-point disable network,
said twenty-point disable network being responsive to said first and said second electronic counters, and
said sucker's service indicator being responsive to said twenty-point disable network,
whereby said five-point shift controller selectively energizes one or the other of said first and said second serve indicators prior to the scoring of a total of twenty points by either of the opposing players and the twenty point disable network responds to the twentieth point scored by either of the players by causing said first and second serve indicators to be deenergized and said sucker's serve indicator to be energized for the remainder of the game.

4,119,839

KEYBOARD MASK FOR GENERAL-PURPOSE CALCULATOR

Uwe L. Beckmann, Morris Plains, and Edmund Osterland, Boonton, both of N.J., assignors to W & G Instruments, Inc., Livingston, N.J.

Filed Nov. 30, 1976, Ser. No. 746,112
Int. Cl.[2] G06C *7/02*; B41J *5/08*
U.S. Cl. 235—145 R **9 Claims**



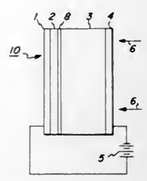
1. A masking device for limiting the operation of a keyboard-equipped general-purpose calculator to a specific task, comprising:
a flexible solid membrane emplaceable above at least a major portion of the keyboard of said calculator;
a plurality of extension keys on said membrane positioned to register with selected calculator keys of said portion upon emplacement of said membrane on said keyboard; and
a rigid panel above said membrane positioned to overlie the entire keyboard, said panel having cutouts penetrated by said extension keys, thereby enabling manual operation of any of said selected calculator keys by depression of the corresponding extension key.

4,119,840

FAST ACTING GAIN PHOTOCURRENT DEVICE

Kyler Fischer Nelson, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1976, Ser. No. 672,192
Int. Cl.[2] H01J *39/12*
U.S. Cl. 250—211 R **13 Claims**



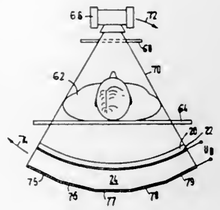
1. A fast-acting gain photocurrent device comprising:
(a) a first electrode comprising material having a work function greater than about 4eV;
(b) an insulating layer having an ionization potential below about 8eV in contact with said first electrode;
(c) a biasing layer comprising material selected from the group consisting of conductive and semiconductive material in contact with said insulating layer;
(d) a photoconductive layer having an electrical conductivity less than said biasing layer and which preferentially conducts positive charge over negative charge in contact with said biasing layer; and
(e) a second electrode in contact with said photoconductive layer, the thickness ratio of said photoconductive layer to said insulating layer being at least about 10 to 1.

4,119,841

APPARATUS FOR THE IMPLEMENTATION OF A METHOD FOR PRODUCING A SECTIONAL VIEW OF A BODY

Ottomar Jantsch, and Karl Reiss, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 29, 1976, Ser. No. 671,049
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1975, 2514409
Int. Cl.[2] H01J *31/50*; G01T *1/24*
U.S. Cl. 250—213 VT **5 Claims**



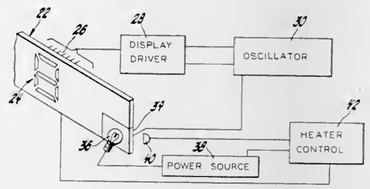
1. Apparatus for the implementation of a method for producing a sectional view of a body, the picture elements of which are derived from the absorption of ionizing rays which pass through respective body element in the cross-sectional plane of the body in respective different directions and which after conversion into electrical signals, are evaluated and fed to a printer or a display screen, and in which a fan-shaped ray beam going through the body in the cross-sectional plane of the body is fed to a scintillator in the receiver, the photons of which release electrons which are subsequently accelerated and are then converted into the corresponding electrical signals, and in which a detector system and spatially resolving semiconductor detectors for electron rays which are released in the photocathode of an electronic vacuum image converter is provided, the scintillator of which is provided as the receiver of the fan-shaped ray beam, wherein the improvement comprises spatially resolving semiconductor detectors each having associated therewith a charge transfer element, in which the formation of the signal is accomplished by charge storage and charge transfer in the semiconductor body of said semiconductor detectors, said semiconductor detectors each forming a common structural element with their associated charge transfer elements with several semiconductor detectors and their associated transfer elements provided with a common semiconductor body, said semiconductor body being one of the group consisting of N conduction silicon with a high resistivity of at least 600 ohm/cm and P conduction silicon with a resistivity af at least 1800 ohm/cm, said body reduced to a thickness of at most, 80 μm and the surface opposite the charge transfer electrodes provided as the receiving surface for the electron beams.

4,119,842

HEATER CONTROL SYSTEM FOR LIQUID CRYSTAL DEVICE

Daniel B. Hayden, Port Huron; George W. Smith, and Michael Kaplit, both of Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1977, Ser. No. 807,376
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—201 **6 Claims**



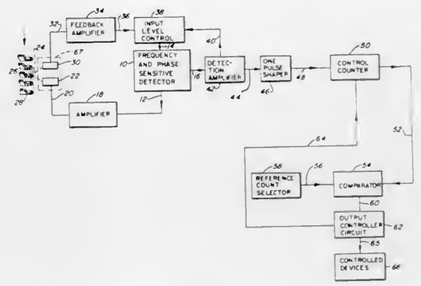
1. A heater control system for a liquid crystal device of a type having a light transmission state dependent on the frequency of an electrical control signal applied thereto, the device having a first light transmission state when an electrical signal having a frequency below a crossover frequency is applied to the device, and otherwise having a second light transmission state, said crossover frequency increasing as the temperature of said device increases, and said device having a predetermined desired crossover frequency when the temperature of the device has a predetermined value, means for heating the device, means for applying to the device a test signal of a predetermined frequency less than said desired crossover frequency by a slight amount, means for detecting the light transmission state of said device when said test signal of said predetermined frequency is applied thereto, and a control circuit responsive to the light transmission state of the device for energizing the heating means when the detected light transmission state is indicative of a temperature of said device that is below the value that corresponds to said desired crossover frequency, thus assuring that said device will attain a temperature sufficient to respond to an applied control signal of frequency no greater than the frequency of the test signal.

4,119,843

ARTICLE DETECTION SYSTEM WITH SYNCHRONOUS DEMODULATION

James J. Hinds, La Grange, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Feb. 11, 1977, Ser. No. 767,897
Int. Cl.[2] G01D *21/04*
U.S. Cl. 250—222 PC **6 Claims**



1. A system for sensing and detecting each of a plurality of moving, closely spaced articles comprising:
first transducer means for producing a luminous sensing signal;
frequency sensitive circuit means generating a continuous fixed frequency modulating signal, said frequency sensitive circuit means being responsive to a signal of said fixed frequency in phase with said generated signal for generating a first output and being responsive to the absence of a signal of said fixed frequency in phase with said generated signal for generating a second output;
first circuit means for applying said fixed frequency signal to said first transducer means to effect oscillation of said sensing signal at said fixed frequency,
second transducer means spaced from said first transducer means for sensing said luminous sensing signal and for producing an oscillating feedback signal representative thereof;
second circuit means for applying said oscillating feedback signal to the input of said frequency and phase sensitive circuit means in phase with said generated fixed frequency signal; and
a housing containing said first and second transducer means at positions spaced from the periphery of said housing and from each other, said housing defining means for directing said sensing signal from said first transducer means of a volume located at the periphery of said housing and spaced from said first and second transducer means for impingement on each of the plurality of articles passing through said volume, for directing said sensing signal impinging on each of said articles to said second transducer means and for precluding said sensing signal from said second transducer means in the absence of an article in said volume, said directing means including:
a pair of channels diverging from a point of intersection at said periphery of said housing, one of said channels extending to said first transducer means and the other of said channels extending to said second transducer means, said channels defining light paths extending from each of said transducer means to said impingement volume where said light paths intersect in said impingement volume, the dimensions of said channels along a line generally parallel to the movement of said articles through said volume being substantially smaller than the dimension of said articles in the direction of said movement;
whereby said luminous sensing signal passing through said one of said channels and impinging on an article passing through said impingement volume is reflected to said

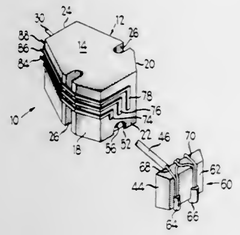
second transducer means through the other of said channels.

4,119,844

PHONOGRAPH CARTRIDGE AND SENSOR ASSEMBLY

Howard J. Morrison, Deerfield; Donald K. Fletchic, Arlington Heights, both of Ill., and Ralph H. Baer, Manchester, N.H., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jul. 30, 1976, Ser. No. 710,024
Int. Cl.² G01D *5/34*
U.S. Cl. 250—231 R **21 Claims**



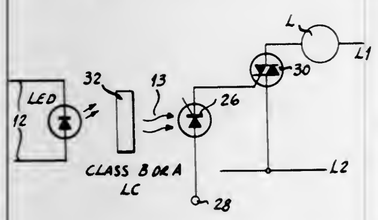
1. A phonograph cartridge for mounting within a cartridge shell on the free end of a phonograph tone arm, comprising:
a cartridge including an internal electro-mechanical transducer;
a stylus connected to the electro-mechanical transducer for tracking a record groove; and
an electro-optic sensor mounted on the cartridge in proximity to said stylus; said cartridge including a first and second set of connector pins for mounting the cartridge in a suitable cartridge shell on a phonograph tone arm, said first set of pins providing electrical connections between the electro-mechanical transducer and an amplifier, and said second set of pins for providing electrical connections between the electro-optic sensor and a land sensing electronic circuitry.

4,119,845

THERMALLY-SENSITIVE, PHOTO-CONTROLLED SEMICONDUCTOR SWITCHING SYSTEMS

Stanley V. Jaskolski, Sussex; Robert W. Lade, Waukesha, and Herman P. Schutten, Elm Grove, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 21, 1977, Ser. No. 779,639
Int. Cl.² G01D *5/34*
U.S. Cl. 250—231 R **16 Claims**



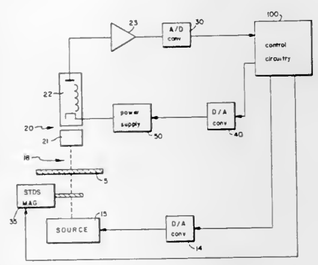
1. An electrical power switching system comprising:
an electric power supply source;
a load device;
means comprising a photo-sensitive, semiconductor switching element operable upon activation thereof for controlling application of power from said source to said load device;
a light source normally operable to provide light impinging on said photo-sensitive, semiconductor switching element for activation thereof;
thermally-sensitive, variable light transmission means interposed in the light path between said light source and said photo-sensitive, semiconductor switching element to vary the light passing through said light transmission means thereby to control said photo-sensitive, semiconductor switching element in response to change in temperature of said thermally-sensitive, variable light transmission means;
and means coupling heat from said semiconductor switching element to said thermally-sensitive variable light transmission means.

4,119,846

NON-CONTACTING GAGE APPARATUS AND METHOD

Stephen Outhwaite, Clarks Summit, Pa., and James C. Majure, Huntsville, Ala., assignors to Sangamo Weston, Inc., Archbald, Pa.

Filed Feb. 3, 1977, Ser. No. 765,180
Int. Cl.² G01D *18/00;* **G21K** *7/00;* **G01N** *23/00*
U.S. Cl. 250—252 **12 Claims**



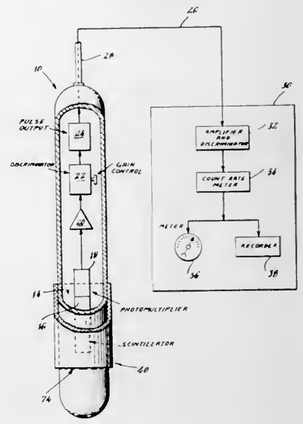
5. For use in conjunction with an apparatus for gaging the thickness of a material, said apparatus including a source of radiation, a detector spaced from the source of radiation, the space between the source and detector defining an inspection field which is adapted to receive the material, and means for generating measurement values as a function of the radiation attenuation caused by objects in the inspection field; an improved method for calibrating the source and/or the detector, comprising the steps of:
(a) storing a first set of measurement values associated with standard pieces of known thickness temporarily positioned in the inspection field;
(b) determining and storing a first function which represents the relationship between the thickness of the standard pieces and the measurement values determined therefrom;
(c) storing a second set of measurement values associated with material samples of known thickness temporarily positioned in the inspection field;
(d) determining and storing a second function which represents the relationship between the relative attenuation attributable to the standard pieces and the relative attenuation attributable to the material samples for different thicknesses thereof;
(e) storing an operator-entered nominal thickness for said material;
(f) determining the expected measured value which would be obtained upon insertion of material of nominal thickness in the inspection field by computing the expected measured value from the operator-entered nominal thickness in conjunction with said first function and said second function; and
(g) adjusting the source and/or detector in accordance with the determined expected measured value.

4,119,847

CALIBRATOR FOR RADIOACTIVITY WELL LOGGING TOOLS

James A. Waggoner, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 28, 1976, Ser. No. 736,660
Int. Cl.² G01D *18/00*
U.S. Cl. 250—252 **8 Claims**



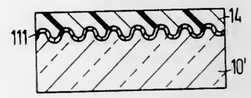
1. A portable calibrator for radioactivity logging tools having a substantially cylindrical housing adapted to be moved in a borehole and a gamma radiation detector carried by said housing, said calibrator comprising:
a flexible sheet that can be wrapped around the portion of said housing carrying the radiation detector and is of sufficient size so as to completely encircle said housing portion and to extend for about one housing diameter above and one housing diameter below said detector; and
a radioactive substance dispersed within said sheet.

4,119,848

IONOGRAPHIC RECORDING OF X-RAY IMAGES

Gerd Goldmann, Taufkirchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 3, 1977, Ser. No. 803,213
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1976, 2626068
Int. Cl.² G03G *5/022, 15/00, 16/00*
U.S. Cl. 250—315 A **6 Claims**



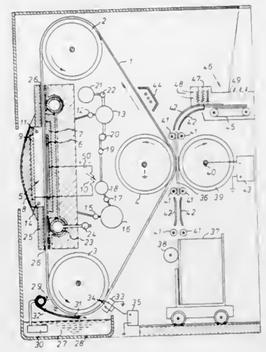
1. A device having a thermoplastic coating for ionographically recording x-ray images in which connection this thermoplastic coating forms a laminate with a transparent substrate and this laminate has disposed on it a transparent heating coating and an electrode in the form of a lamina, characterized in that to form an electrically efficient grid on the side facing the substrate **10, 10'** the thermoplastic coating **14** exhibits a corrugated structure and in that the electrode **13, 111** in the form of a lamina is applied on this corrugated side of the thermoplastic coating **14** and exhibits a corresponding corrugated structure.

4,119,849

RADIOGRAPHY

Willy Gommaire Verlinden, Edegem, and Jozef Eduard Mariën, Boechout, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Mar. 17, 1976, Ser. No. 667,565
Claims priority, application United Kingdom, Mar. 19, 1975, 11466/75
Int. Cl.² G03B *41/16*
U.S. Cl. 250—315 A **8 Claims**



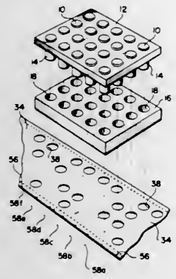
1. A method for recording and reproducing a pattern of penetrating radiation comprising radiation selected from the group consisting of X-rays and γ-rays, wherein said method comprises the steps of:
(a) exposing to a pattern of said penetrating radiation an ionizable fluid contained in a chamber between an electrode and an insulating obverse surface area of an elongated endless belt having at least one such surface area thereon and passing through one side of said chamber while applying a DC-potential difference between said electrode and an electrode adjacent the reverse surface of the endless belt, to thereby form a pattern of positive or negative charge carriers in said fluid which are biased by said potential onto said insulating surface area of said endless belt, creating an electrostatic charge pattern on said insulating surface area, the side of said chamber through which said belt passes being immersed in an insulating liquid to form a seal around said belt,
(b) advancing said belt to remove said charged surface area from said chamber and pass the same through said insulating liquid,
(c) contacting said charged surface area with an electrostatically attractable material contained in said insulating liquid to develop said pattern into a visible image,
(d) transferring said image of electrostatically attracted material to a receptor material,
(e) neutralizing residual charge on said surface area,
(f) cleaning said surface area by effecting the removal of residual electrostatically attracted material before bringing said surface area in contact again with said ionizable fluid, and
(g) returning said cleaned surface area of said belt into said chamber for a repetition of said steps.

4,119,850

MULTIPLE SAMPLE, RADIOACTIVE PARTICLE COUNTING APPARATUS

Reddy Reddy Venketeshwara Reddy, Deerfield, and David Matthews Kelso, Wilmette, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 5, 1977, Ser. No. 784,899
Int. Cl.[2] G01T *1/00*; H01J *3/14*; G01T *1/20*
U.S. Cl. 250—328 **13 Claims**



3. Apparatus for determining the respective radioactive particle sample count being emitted from a plurality of radioactive particle containing discrete samples in an array, said apparatus comprising:

a light emitting detector adjacent said array of samples responsive to the sample emitted radioactive particles to emit light pulses corresponding to the received radioactive particle information;

encoder means intermediate said sample array and said light emitting detector to modulate said radioactive particle information to enable said detector to sequentially respond to different respective coded combinations of the radioactive particles emitted from more than one but less than all of said plurality of samples in the sample array to provide correspondingly modulated light pulses;

said encoder means including movable coded means sequentially movable, in distinct coding sequences, between said sample array and said light emitting detector for sequentially blocking the radioactive particles emitted from more than one but less than all of said plurality of samples in accordance with said different respective coded combinations each associated with one of said distinct coding sequences;

said movable coded means movable in a series of said distinct coding sequences to enable said detector to sequentially respond to at least as many of said different coded combinations as the number of samples being analyzed; and

conversion means responsive to said emitted light pulses from said detector in each of said distinct coding sequences to provide corresponding decodable electrical signals for deriving said respective sample count.

4,119,851

APPARATUS AND A METHOD FOR DETECTING AND MEASURING TRACE GASES IN AIR OR OTHER GAS BACKGROUNDS

B. Wayne Castleman, Largo, and Bernard C. Schluter, Clearwater, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 23, 1977, Ser. No. 809,219
Int. Cl.[2] G01T *1/18*
U.S. Cl. 250—382 **14 Claims**

1. Apparatus for detecting trace amounts of vapors or gases in air or other gaseous backgrounds, said apparatus comprising:

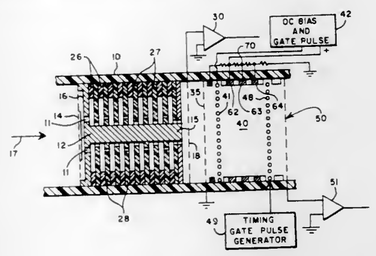
a housing defining a passage for flow of gas between an input and an output;

a source of ionizing radiation positioned in said passage near said input for creating ions in said gas;

a recombination region defined by first portion of said passage between said source of ionizing radiation and said output, said recombination region including

means for facilitating recombination of ions in said gas entering the recombination region, and

means for measuring the number of ions remaining in the gas leaving the recombination region;



a drift region defined by a second portion of said passage between said source of ionizing radiation and said output, said drift region including

a collector electrode,

means for establishing a drift potential for causing said ions to drift toward said collector electrode,

gating means for allowing only ions of predetermined mobility to reach said collector electrode, and

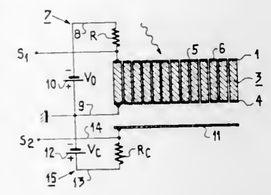
means for measuring the number of ions reaching said collector electrode.

4,119,852

SOLID DETECTOR FOR IONIZING RADIATION

Henri Rougeot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 25, 1977, Ser. No. 762,287
Claims priority, application France, Jan. 30, 1976, 76 02586
Int. Cl.[2] G01T *1/24*
U.S. Cl. 250—370 **5 Claims**



1. A solid detector for ionizing radiations comprising:

a semi-conductor body comprising electron multiplying microchannels, wherein a primary electron produces a plurality of secondary electrons;

a semi-conductor body biassing circuit, which is associated with said semi-conductor body and through which a signal called semi-conductor signal passes with each ionizing radiation;

a collector;

means for biassing said collector in such a way that said collector picks up said secondary electrons produced by said radiations by means of primary electrons, thus generating a collector signal;

a gate which is controlled by said collector signal;

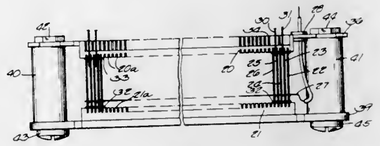
a level selector, which is controlled by said gate in order to receive said semi-conductor signal when said collector signal allows the latter signal to pass.

4,119,853

MULTICELL X-RAY DETECTOR

Peter Stephen Shelley, Brookfield; William Darrell Love, and Barry Newell Stone, both of Waukesha, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 9, 1977, Ser. No. 804,980
Int. Cl.[2] H01J *39/28*; G01N *21/52*
U.S. Cl. 250—385 **30 Claims**



9. A multicell X-radiation detector comprising:

a chamber for confining a gas that produces electronion pairs incidental to absorbing radiation,

said chamber having bottom and side walls, one of said walls having a window for admitting radiation to said chamber,

a detector assembly for being mounted in said chamber, said assembly comprising:

first and second bar members for being disposed in said chamber in spaced apart relationship,

means for securing said bar members in spaced apart relationship,

first and second insulating members fastened to said bar members, respectively, said insulating members each having a side in which there is a plurality of grooves, said grooved sides being faced toward each other,

a plurality of electrode plates secured in juxtaposed spaced apart relationship by having one pair of opposed edges engaged in corresponding grooves in said insulating members, respectively, said plates also having front edges, the spaces between said plates constituting cells for being occupied by said gas,

means for supporting said assembly in said chamber for said front edges of said plates to be at a uniform distance from said window so the layer of gas between said window and said front edges is uniform,

a cover for sealingly closing said chamber, and

means for establishing electric circuits from said plates to the exterior of said chamber.

4,119,854

ELECTRON BEAM EXPOSURE SYSTEM

Kazumitsu Tanaka, and Nobuo Goto, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1977, Ser. No. 852,435
Claims priority, application Japan, Nov. 25, 1976, 51-141415
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—397 **8 Claims**

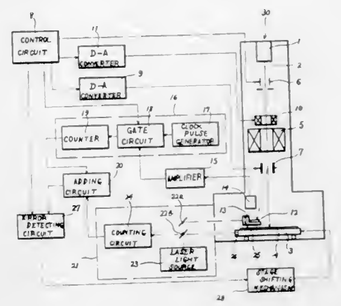
1. In an electron beam exposure system comprising an electron beam source and an electron optical system for converging and deflecting the beam, an automatically positionable workpiece stage and control means for positioning the electron beam and the workpiece stage the improvement comprising:

(a) a reference mark positioned in the vicinity of the workpiece exposure area fixed relative to the optical system,

(b) first means for measuring a distance from the reference mark to a reference point in the electron beam raster by scanning the beam over the reference mark,

(c) second means for measuring a distance between the reference mark and a reference point fixed relative to the workpiece,

(d) means for combining the outputs of the first and second measuring means and comparing to a reference signal to develop an error signal, and



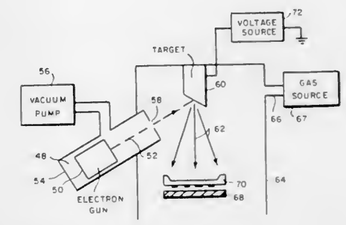
(e) means associated with said control means for changing the electron optical system conditions and/or the workpiece position to eliminate the error signal.

4,119,855

NON VACUUM SOFT X-RAY LITHOGRAPHIC SOURCE

Stephen E. Bernacki, Worcester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 8, 1977, Ser. No. 813,934
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—402 **7 Claims**



1. A soft x-ray source comprising:

a source of beam of charged particles having a velocity,

a first enclosure containing said source,

said first enclosure having an exit port aligned with said beam to allow said particles to exit the first enclosure,

a vacuum pumping system connected to said first enclosure to reduce the pressure in said first enclosure to a pressure which does not substantially scatter the particles,

a second enclosure,

a target in said second enclosure,

the exit port of said first enclosure being within said second enclosure,

said beam of particles exiting from said first enclosure through said exit port to enter said second enclosure and strike said target at a velocity to produce soft x-rays,

a source of gas,

an entrance port to said second enclosure connected to said gas source to provide gas in excess of atmospheric pressure to fill said second enclosure with said gas,

means for inserting material into said second enclosure,

whereby soft x-ray produced at said target pass through said gas to said material.

4,119,856

X-RAY DIAGNOSTIC APPARATUS FOR PRODUCING SERIES EXPOSURES

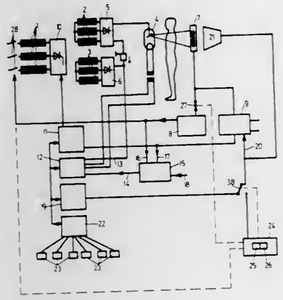
Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation-in-part of Ser. No. 486,205, Jul. 5, 1974, abandoned. This application Dec. 9, 1976, Ser. No. 749,038

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1973, 2345317

Int. Cl.[2] H05G *1/30*

U.S. Cl. 250—402 **6 Claims**



1. In an X-ray diagnostic apparatus having an X-ray tube for producing series exposures, particularly moving-picture exposures, an automatic exposure timer for terminating each exposure upon attaining a predetermined ray dosage providing an optimum film darkening; and a dose rate regulator adapted to reduce the X-ray tube voltage when the exposure time set by said automatic exposure timer drops below a lower time limit and to increase the voltage when the exposure time exceeds an upper time limit, the improvement comprising; manually operable switch means for preselection of the exposure time for an exposure and for switching off said automatic exposure timer, said switching means actuating said dose rate regulator by transmitting thereto a reference value signal for the dosage rate which causes an optimum film darkening for each particularly selected exposure time, said manually operable switch means being responsive to a single manual actuation to: (a) select an exact time duration for an exposure, and (b) switch off said automatic exposure timer, and (c) transmit the reference value signal corresponding to said exact time duration.

4,119,857

SYSTEM FOR PROGRAMMED DRAWING BY PARTICLE BOMBARDMENT

Serge Desperques-Volmier, Paris, France, assignor to Thomson-CSF, Paris, France

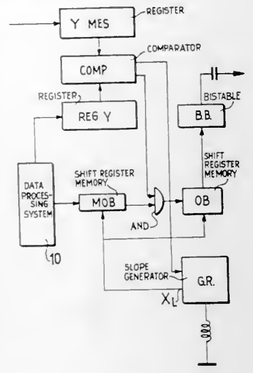
Filed Jan. 25, 1977, Ser. No. 762,796

Claims priority, application France, Jan. 30, 1976, 76 02585

Int. Cl.[2] H01J *29/00*

U.S. Cl. 250—492 A **4 Claims**

1. In an automatic device for forming programmed pattern by electron bombardment on a sample controlled by a data processing system, by forming upon the substrate an elementary rectangular image of a diaphragm, electronically controlled means for deflecting said image in a direction OX parallel to one of its sides, and scanning said sample line by line, mechanical displacing means in the OY direction perpendicular to OX a control electrode for modulating the beam intensity by all or nothing, a two stable state device controlling said electrode, an interface circuit controlled by said data processing system comprising a buffer memory and an assembly of memories, an improvement in said interface circuit consisting of a clock controlled slope generator having a period P, connected to said deflecting means for scanning each line and delivering in response N recurrent pulses numbered respectively **1** . . . j . . . **N** of period $P/N = \tau$ said assembly of memories comprising a central memory and a first and second shift register memory, each memory of said assembly, comprising N two stable state stages significant of digits "0" and "1", said pulse numbered j addressing simultaneously the stages A_j, B_j, C_j respectively of said first, said central and said second memory, means connected to said stage output for triggering said two bistable state device at time $J\tau + \tau/2$ when the addressed stage Aj is in the "1" state, at time $j\tau$ when the addressed stage Bj is in the "1" state, at time $j\tau - \tau/2$ when stage Bj is in the "1" state.



4,119,858

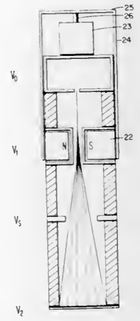
COMPACT LONG-LIVED NEUTRON SOURCE

Lawrence Cranberg, 1205 Constant Springs Dr., Austin, Tex. 78746

Filed Aug. 11, 1976, Ser. No. 713,402

Int. Cl.[2] G21G *4/02*

U.S. Cl. 250—499 **6 Claims**



1. An apparatus for generating neutrons suitable for use in a well-bore comprising a source of deuterium ions, means for accelerating and focusing said ions to a target, means for supplying a magnetic field whose direction rotates about the direction of said ions as an axis, said magnetic field deflecting said ions according to their charge-to-mass ratio before said ions impinge said target, so that said ions impinge said target in a family of concentric annuli, each annulus being impinged by ions predominantly of a single value of charge-to-mass ratio, said target containing material which is neutron-emissive when impinged by deuterium ions.

4,119,859

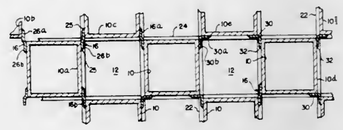
FUEL STORAGE RACK

Ronald C. Karzmar, Brighton, and Robert H. Stamm, Canton, both of Mich., assignors to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed May 23, 1977, Ser. No. 799,704

Int. Cl.[2] G21F *5/00*

U.S. Cl. 250—507 **11 Claims**



1. A storage rack for receiving spent nuclear fuel cells comprising a multiplicity of parallel elongated tubular storage modules of generally rectangular cross-section which in use extend vertically, said modules being open at the bottom ends thereof and having flat sides incorporating a neutron absorbing material, said modules being disposed in an array which in horizontal section forms a checkerboard pattern in which all modules are arranged in a first series of adjacent parallel rows and a second series of adjacent parallel rows perpendicular to the first series, in which in each row the modules occupy only alternate squares of the pattern and leave the remaining squares vacant, and in which in adjacent parallel rows the modules are staggered, whereby at the interior of the array, each module has four modules disposed diagonally adjacent the corners thereof and has four open spaces adjacent the flat sides thereof, a bracket connecting each module to the diagonally adjacent modules, each bracket being elongated in the direction of the length of the modules and consisting of two arms which extend laterally from the intermediate portion of said module, one arm of each of said brackets being welded to a side of diagonally adjacent modules adjacent the corners thereof, each module at the interior of the array having the brackets at a side thereof located outwardly from the inner portion of the array which have arms extending outwardly of the array, the pair of bracket arms at the adjacent outer corners of a pair of adjacent spaced apart inner modules being spaced apart to engage the opposite sides of a single added module placed therebetween to substantially close the side of the open space between said pair of adjacent inner modules, whereby the outwardly extending arms of said pair of brackets are readily accessible for effecting attachment thereof to the sides of said added module in the open spaces to the sides of said added module.

4,119,860

FLUID MEASUREMENT

Cornelius Leonard Gooley, 63 Staughton Rd., Glen Iris, Victoria 3146, Australia

Continuation-in-part of Ser. No. 647,439, Jan. 8, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,626

Int. Cl.[2] G01N *21/26*

U.S. Cl. 250—577 **23 Claims**

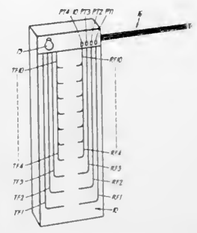
1. A method of sensing with respect to a fluid boundary which comprises the steps of:

transmitting light from a constant source;

receiving light transmitted from said source;

producing an electrical signal related to the intensity of said received light; and

detecting at least one extremum in said signal, said at least one extremum occurring when said fluid boundary is



positioned proximate the beam of light received in said receiving step.

4,119,861

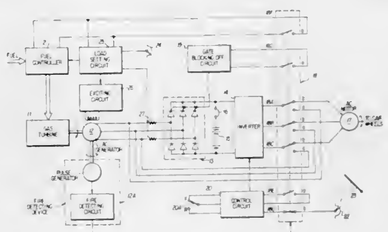
STARTING APPARATUS FOR GAS TURBINE-GENERATOR MOUNTED ON ELECTRIC MOTOR DRIVEN MOTORCAR

Choichi Gocho, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Japan

Filed Oct. 15, 1975, Ser. No. 622,626

Int. Cl.[2] B60L *11/06*

U.S. Cl. 290—13 **8 Claims**



1. A starting apparatus for a gas turbine-generator mounted on an electric motor driven motorcar comprising:

a gas turbine,

an A.C. generator with A.C. output terminals, the A.C. generator coupled directly to the turbine,

a rectifier with D.C. output terminals, the rectifier connected to the A.C. output terminals of the A.C. generator,

a battery device connected in a floating manner to the D.C. output terminals of the rectifier,

an inverter having D.C. input terminals connected to the floating battery device in parallel and A.C. output terminals from which an A.C. output is derived,

a control circuit connected to the inverter for controlling the speed of the motorcar,

at least one A.C. motor energized by the A.C. output of the inverter for driving the motorcar,

a switching device connecting he A.C. output terminals of the inverter to the A.C. output terminals of the A.C. generator when the gas turbine starts and connecting the A.C. output terminals of the inverter to the A.C. input terminals of the A.C. motor after the gas turbine is started,

a fire detecting device connected to the switching device for detecting the self ignition of the gas turbine,

a fuel controller connected to the gas turbine for controlling the quantity of fuel supplied to the gas turbine,

an exciting circuit connected to the A.C. generator for exciting the A.C. generator,

a setter for setting the speed of the gas turbine,

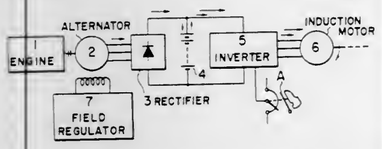
a current transformer connected to the output of the A.C. generator,
a load setting circuit disposed between the fuel controller and the exciting circuit for receiving the output of the setter and the deviation output of the current transformer and for transmitting same to the fuel controller and the exciting circuit, and
a switching means operatively connected to the switching device for controlling the fuel controller and the load setting circuit.

4,119,862

CONTROL APPARATUS OF ELECTRIC MOTOR CARS

Choichi Cocho, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawaski, Japan

Filed Sep. 29, 1975, Ser. No. 617,376
Claims priority, application Japan, Sep. 30, 1974, 49-112628
Int. Cl.[2] B60L *11/12*
U.S. Cl. 290—17 **3 Claims**



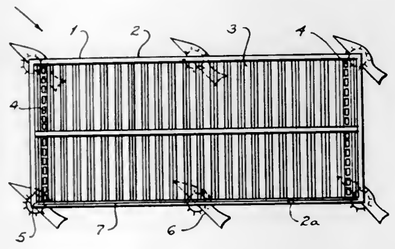
1. A control apparatus for an electric motor car wherein a generator is driven by a fuel engine, the driving motor of the car is energized by said generator, and a battery is connected in parallel with said motor to be float-charged by said generator, said control apparatus comprising
means for detecting the electric output power of said generator including a first detector for detecting the voltage of said generator, a second detector for detecting the current of said generator, and a multiplier for multiplying the output of said first detector and the output of said second detector thereby producing a signal proportional to the output power of said generator;
means including a first variable resistor which is set in accordance with the running condition of said car for producing an output which varies as a variable function of the output from said generator output power detecting means;
means for producing a reference signal;
means for comparing said variable output with said reference signal for adjusting the field current of said generator thereby maintaining the output of said generator at a substantially constant value irrespective of the running condition of said car;
an amplifier;
a second variable resistor for applying the output of said first detector to said amplifier for setting a voltage limit of said generator;
a third variable resistor for applying the output of said second detector to said amplifier for setting a current limit of said generator;
means for applying the output from said amplifier to said comparing means for comparing with said reference signal; and
means connected in the circuit of the field winding of said generator to apply a feedback signal proportional to the field current to said amplifier thereby limiting the field current to a predetermined value.

4,119,863

COMBINED HIGH DENSITY SOLAR PANELS AND VERTICAL WIND TURBINES

Donald A. Kelly, 58-06 69th Pl., Maspeth, New York, N.Y. 11378

Filed Aug. 13, 1975, Ser. No. 604,163
Int. Cl.[2] H02P *9/04*
U.S. Cl. 290—55 **10 Claims**



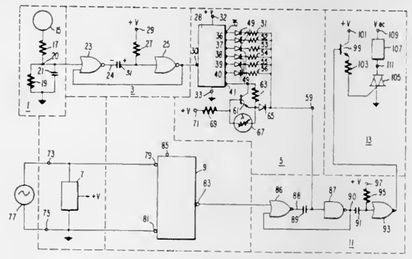
1. A combined high density solar cell and panel array with vertical wind turbines comprising multiple identical elongate panels containing multiple square silicon solar cells on both sides of said elongate panels,
each of said multiple identical elongate panels is pivotally mounted along their longitudinal center axis within a rectangular elevated open frame structure,
multiple vertical support posts supporting said rectangular elevated open frame structure, each lower end of said multiple vertical support posts is mounted to flat level rooftop surfaces,
a crank and linkage arrangement secured at one end of each of said multiple identical elongate panels,
connection means for said crank and linkage arrangement to a crank arm and timing disc,
connection of said timing disc to a timing motor,
multiple elongate angled reflectors uniformly disposed on both elongate edges of said multiple identical elongate panels,
uniformly disposed supporting fins secured to said multiple elongate angled reflectors and to said multiple identical elongate panels,
multiple vertical spray washing pipes uniformly disposed around the perimeter of said rectangular elevated open frame structure,
each said multiple vertical spray washing pipe is fitted with a spray head at the top of said spray washing means,
multiple vertical rotary wind turbines centrally disposed on each of said multiple vertical support posts comprised of vertical identical flat vanes joined together by multiple identical flat slotted discs,
orbiting bearings uniformly disposed on two of said multiple identical flat slotted discs,
a clamp-on collar disposed around each of said multiple vertical support posts,
a thrust ball-bearing axially disposed between said clamp-on collar and one of said multiple identical flat slotted discs,
a flat gear secured to the lowest of said multiple identical flat slotted discs by means of multiple ball-bearing pins of said orbiting bearings,
a pinion meshing with said flat gear axially disposed on the shaft of a vertically disposed electrical generator,
mounting means for said vertically disposed electrical generator on the surface of flat roofs,
a formed sheet metal housing disposed fully over said flat gear and pinion and said vertically disposed electrical generator,
a built-up lightweight fairing hoods disposed directly over said multiple vertical rotary wind turbines,
independent orbiting ball-bearing means for said built-up lightweight fairing hoods disposed at the upper and lower ends,
a clamp-on collar disposed around each of said multiple vertical support posts,
a thrust ball-bearing disposed between said clamp-on collar and the upper surface of said built-in lightweight fairing hood.

4,119,864

TOUCH SWITCH CIRCUITS

Cesare James Petrizio, Flanders, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 23, 1976, Ser. No. 716,539
Int. Cl.[2] H01H *35/00*
U.S. Cl. 307—116 **8 Claims**



1. A touch switch circuit for providing individual output signals, each one of which is made to occur a programmable time after the occurrence of each zero-crossing of an a.c. signal, comprising:
means including a touch plate responsive to the human touch for producing an output signal indicative thereof;
control means responsive to said output signal, for producing a control signal;
zero-crossover detector means responsive to said a.c. signal, for producing a first output pulse in response to each zero-crossing of said a.c. signal; and
delay means reponsive to each output pulse of said zero-crossover detector means for producing a second output pulse which is time delayed with respect to said first output pulse in proportion to the magnitude of said control signal and including;
a resistive network;
means responsive to said control signal of said control means for passing current through a selected resistance of said network;
a charging circuit including the selected resistance and a capacitor;
a NOR gate having a pair of input terminals, one of which is receptive of said zero-crossing signals, and an output terminal coupled to one end of said capacitor; and
an inverter having an input terminal connected to the other end of said capacitor and also connected to receive the current supplied through said selected resistance, while the output thereof is connected to the other input terminal of said NOR gate, said inverter producing an output voltage whenever the charge on said capacitor is below a given level.

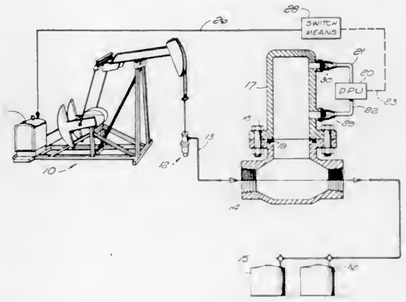
4,119,865

FLUID SENSITIVE SHUTDOWN FOR WELL PUMP

Peter Platt Elderton, Fountain Valley, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 18, 1977, Ser. No. 825,771
Int. Cl.[2] H01H *35/18*
U.S. Cl. 307—118 **2 Claims**

1. A fluid sensing system comprising: a unit adapted to pump oil from a well; means actuable to disable said unit; a pipeline connected from said unit to carry oil pumped from said well by said unit; a vertical member sealed to said pipeline, said member having a cavity in communication with the interior of said pipeline; a differential pressure unit (DPU) having low and high pressure inlets in fixed positions relative to said member and responsive to the respective lower and higher pressures in



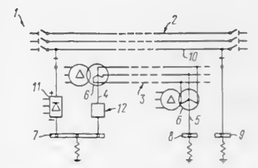
the interior of said cavity respectively above and below each other, said DPU having an output device to actuate said means when the difference between the pressures within said high and low pressure inlets is a predetermined magnitude; and apparatus to override said means when it is appropriate to restart said unit and to fill said pipeline and/or said member.

4,119,866

HIGH VOLTAGE ELECTRICAL NETWORK WITH DC ICE-MELTING DEVICE AND CURRENT RETURN THROUGH GROUND

Georgy Andreevich Genrikh, ulitsa Chekistov, 10, kv. 3; Leonid Alexeevich Nikonets, ulitsa Khasanskaya, 8, kv. 4; Petr Romanovich Khrusch, ulitsa P. Morozova, 4, kv. 3, all of Lvov; Dmitry Korneevich Kovalenko, ulitsa Pushkina, 183, kv. 9, Kustanai; Valentin Ivanovich Sidorov, Komsomolskaya ulitsa, 33, kv. 6, Kustanai; Jury Nikolaevich Belozerov, ulitsa Tafana, 161, kv. 13, Kustanai, and Evgeny Vasilievich Gorelin, ulitsa Lenina, 38, kv. 42, Kustanai, all of U.S.S.R.

Filed Feb. 14, 1977, Ser. No. 768,288
Int. Cl.[2] H02J *11/00*
U.S. Cl. 307—147 **20 Claims**



1. A high-voltage electrical network comprising:
a plurality of lines of said high-voltage electrical network, each line having several circuits, one of said plurality of lines having a heated circuit whereon the icing is melted;
neutral conductors of said high-voltage electrical network, at least two of said neutral conductors being grounded;
at least two ground circuits, at least one of said ground circuits being connected to one of said neutral conductors and serving as a first operational grounding means and another ground circuit serving as a second operational grounding means;
a device for melting the icing on one of said lines by the use

of a direct current, connected to said heated circuit of one of said lines and to one of said ground circuits,

said heated circuit of one of said lines, said two ground circuits serving as said first and second operational grounding means, said device for melting the icing on one of said lines and the ground serving as a return conductor being connected in series to one another and forming a circuit for melting the icing on one of said lines; and

a device connected to one of said neutral conductors and also connected to an associated ground circuit for preventing the direct current from flowing to said neutral conductors.

4,119,867

FREQUENCY DIVISION CIRCUIT

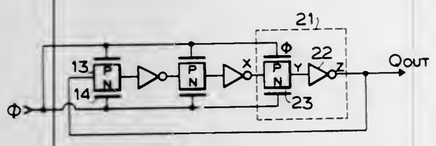
Shigeru Morokawa, Higashiyamato, and Yukio Hashimoto, Niiza, both of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Jul. 23, 1976, Ser. No. 708,188

Claims priority, application Japan, Jul. 25, 1975, 50-90052

Int. Cl.[2] H03K *23/02, 17/60*

U.S. Cl. 307—225 C **5 Claims**



1. A frequency division circuit comprising inverting memory blocks of an odd number each including: (1) a temporary memory switching element having a P channel field effect transistor and an N channel field effect transistor each of which are connected in parallel opposition, said P and N channel field effect transistors having threshold voltages of VTP_2 and VTN_2, respectively; means for applying control signals of the same phase to the gate electrodes of said P and N channel field effect transistors, said memory blocks also including: (2) an inverter circuit including a pair of field effect transistors having gate electrodes connected to one of two connected conductive electrodes of said temporary memory switching element which are formed by the parallel connection of the complementary field effect transistors; and means for serially connecting said inverting memory blocks in a closed ring with the output of the inverter of a preceding block connected to the conductive electrode of the succeeding temporary memory switching element, which is located on the side opposite to the conductive electrode connected to the gate electrodes of said field effect transistors of said inverter, thereby controlling the control gate electrodes of said inverting memory block by control signals having the same phase and at a frequency to be divided for producing a frequency divided output from the output of one of said inverting memory blocks.

4,119,868

CIRCUIT ARRANGEMENT

Robert Schach, Talheim, and Peter Scholl, Weinsberg, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

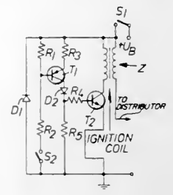
Filed Mar. 23, 1977, Ser. No. 780,362

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1976, 2612695

Int. Cl.[2] H03K *17/64*

U.S. Cl. 307—253 **5 Claims**

1. A circuit for controlling the supply of energy pulses to a coil, comprising a switching transistor connected so that its collector-emitter path presents a switchable path for delivery of energization current to the coil and connected to be unprotected against avalanche breakdown operation; resistance means connected in parallel with the base-emitter path of said transistor for preventing said transistor from being overloaded when undergoing avalanche breakdown operation, said resistance means being composed of series connected first and second resistors with the first resistor further connected to said



transistor base and the second resistor further connected to said transistor emitter; and a driving transistor for controlling the operation of said switching transistor, said driving transistor having its collector-emitter path connected to the point of connection between said first and second resistors; wherein the resistance value of said first resistor is selected to cause said driving transistor to operate in saturation when it is driving said switching transistor in conduction.

4,119,869

CONSTANT CURRENT CIRCUIT

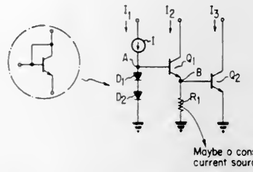
Masaru Hashimoto, Ayasemachi, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Japan

Filed Jan. 28, 1977, Ser. No. 763,675

Claims priority, application Japan, Feb. 26, 1976, 51-21060[U]

Int. Cl.[2] H03K *17/00;* **H03F** *3/04*

U.S. Cl. 307—296 R **2 Claims**



1. A constant current circuit formed on a single semiconductor pellet and comprising:

an emitter following stage having an input and an output, the emitter follower stage including a first transistor having its base connected to the input, a first resistor, and means for connecting the first resistor between the emitter of the first transistor and an external reference potential;

an output stage including a second transistor havings its base connected to the emitter of the emitter follower stage, and means for connecting the emitter of the second transistor to the external reference potential, whereby the collector current of the second transistor becomes an output current;

a diode connected to the input of the emitter follower stage;

a third transistor;

a second resistor connected between the base and the collector of the third transistor;

means for connecting the third transistor between the diode and the external reference potential; and

current power source means for supplying current to the diode.

4,119,870

READ-OUT AMPLIFIER CIRCUIT FOR A DYNAMIC MOS MEMORY

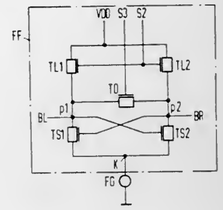
Klaus Zibert, Hohenschaeftlarn, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 19, 1977, Ser. No. 798,431

Claims priority, application Fed. Rep. of Germany, May 24, 1976, 2623219

Int. Cl.[2] H03K *5/20;* **G11C** *7/06;* **H03K** *3/353, 3/286*

U.S. Cl. 307—355 **9 Claims**



1. A read-out amplifier circuit for a dynamic MOS memory, comprising:

a flip-flop including a pair of circuit arms each comprising a switching transistor and a load transistor connected together in series at a connection point, each of said transistors having a source electrode, a drain electrode and a control electrode, said source electrodes of said switching transistors connected together to form a node;

a bit line including sub-portions connected to respective connection points for receiving signals from memory cells connected to the bit line sub-portions;

the connection point of each circuit arm connected to the control electrode of the switching transistor of the other circuit arm;

charging means for charging said node to a predetermined level before read-out of a memory cell;

a balance transistor having a source electrode and a drain electrode connected to respective connection points, and a control electrode for receiving a signal to render said balance transistor conductive for a predetermined interval; and

discharging means connected to said node, whereby that one of said switching transistors which receives a voltage change on its drain electrode resulting from a read-out signal is rendered conductive and said discharging means is operable to control the discharge of said node so that the other of said switching transistors is temporarily rendered conductive.

4,119,871

FUNCTION GENERATOR FOR THE PRODUCTION OF A VOLTAGE ACROSS A NODE TO WHICH ARE CONNECTED FLIP-FLOPS WHICH ARE ARRANGED IN BIT LINES OF A MOS MEMORY AND CONSISTS OF MOS TRANSISTORS

Klaus Zibert, Hohenschäftlarn, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

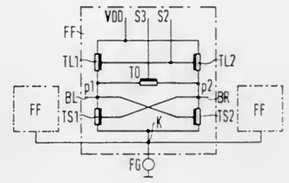
Filed Jun. 2, 1977, Ser. No. 802,815

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 2630797

Int. Cl.[2] H03K *5/20;* **G11C** *7/06;* **H03K** *3/353, 3/286*

U.S. Cl. 307—355 **5 Claims**

1. In a memory reading system of the type wherein, for each read-out circuit, the source electrodes of metal-oxide-semiconductor switching transistors of a flip-flop are connected together at a node which is common for all read-out circuits, the switching transistors are in separate arms of the flip-flops and have respective metal-oxide-semiconductor load transistors connected in series therewith, and the connection points of the load transistors and switching transistors are connected to respective bit line portions of a divided bit line, and wherein the switching transistors connected to the node are operable to pre-charge the node prior to a signal evaluation portion of a reading process and a function generator is connected to the node to controllably discharge the node during the signal evaluation portion of the reading process during which the load transistors are blocked so that each flip-flop connected to the node is triggered to a state governed by the read-out signal on the respective bit lines, the improvement in combination therewith, wherein:



said function generator comprises a pre-discharge circuit including inputs for receiving control signals and transistor means connected to said inputs and to the node for pre-discharging the node in response to said control signals, so that the switching transistors of the flip-flops are rendered conductive to place respective voltages on the bit line portions which are equal to the node voltage modified by the individual threshold voltages of the switching transistors.

4,119,872

DYNAMO ELECTRIC MACHINE

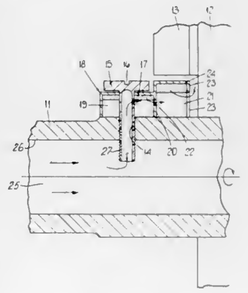
Peter Hunt, Shipley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 26, 1976, Ser. No. 670,776

Claims priority, application United Kingdom, Apr. 5, 1975, 14046/75

Int. Cl.[2] H02K *1/32*

U.S. Cl. 310—61 **2 Claims**



1. A dynamo electric machine comprising a hollow rotor shaft having an inner surface which bounds a longitudinal passageway along which cooling oil flows in use, and oil oulet means in the wall of said hollow shaft whereby oil is discharged from said passageway, said outlet means including a tubular element which extends substantially radially through the rotor shaft wall and which protrudes inwardly into said passageway from said inner surface of the shaft so as to receive oil from a region of the passageway spaced inwardly from the inner surface of the shaft, said element discharging oil at the exterior of the shaft into an annular weir member carried by and encircling the shaft and which presents an annular recess

to the shaft, oil discharged from said element collecting in use, as a result of centrifugal force in said recess and when said recess is full, overflowing an edge of said recess around the recess periphery so as to be thrown by centrifugal force, onto windings of the machine encircling said shaft and disposed generally radially outwardly from said edge of the recess, said element serving at least in part as the means securing said weir member to said shaft.

4,119,873

DYNAMOELECTRIC MACHINES

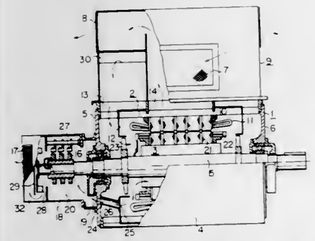
Fumio Sakurai, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 565,370, Apr. 7, 1975, abandoned. This application Sep. 16, 1976, Ser. No. 723,976

Claims priority, application Japan, Apr. 10, 1974, 49-40089[U]

Int. Cl.² H02K *9/26*

U.S. Cl. 310—56 **3 Claims**



1. In a dynamoelectric machine of the type comprising a housing, a stator and rotor contained in said housing, said housing including an inlet opening and a discharge opening for cooling air, tortuous passages between said inlet and discharge openings and in the interior of said housing for preventing foreign matter in atmospheric cooling air from entering into said stator and rotor, a fan mounted on a shaft of the rotor for circulating the cooling air through said inlet opening, said tortuous passages, said stator and rotor and said discharge opening, slip rings mounted on said rotor shaft on the outside of said housing, and a casing enclosing said slip rings and defining a slip ring chamber, the interior of said housing and said slip ring chamber being separated by a portion of said housing defining a first partition wall, the improvement which comprises a second partition wall including an annular portion mounted in said housing to encircle said fan and means for circulating a portion of the cooling air circulated by said fan through another opening in said housing in said first partition wall and into said slip ring chamber, said means for circulating including conduit means defining said another opening and connecting said second partition wall to said slip ring chamber.

4,119,874

BEARING ARRANGEMENT FOR ELONGATED ELECTRIC MOTORS

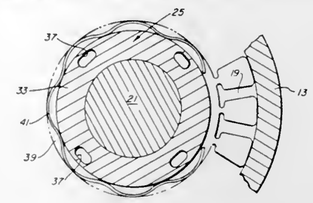
John Andrew Beavers, and Billy O. Dillion, both of Tulsa, Okla., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 11, 1977, Ser. No. 767,931

Int. Cl.² H02K *5/12*

U.S. Cl. 310—90 **5 Claims**

1. An elongated electric motor comprising:
a housing;
a homogeneous stator composed of a plurality of generally annular magnetic laminations, said stator being mounted in said housing;
a shaft rotatably mounted within said stator;
a generally cylindrical rotor composed of spaced apart rotor sections mounted on said shaft;
a plurality of spaced bearing means between adjacent rotor sections and supporting said shaft;
each of said bearing means having a ring portion engaging said stator;
each said ring portion having a groove therein intermediate its ends, the open portion of which faces said stator; and



elongated spring means in said groove in contact with said stator and said ring portion preventing rotation of said bearing means with said shaft because of the magnetic field of the stator.

4,119,875

DIRECT CURRENT ELECTRIC MOTOR

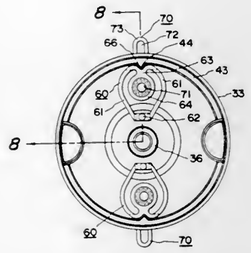
Ichiro Noguchi; Chiaki Hayashi, and Hisashi Muroga, all of Tokyo, Japan, assignors to Gakken Co., Ltd. Kabushiki Kaisha Gakushu Kenkyusha, Tokyo, Japan

Filed Jun. 10, 1976, Ser. No. 694,737

Claims priority, application Japan, Jun. 13, 1975, 50-70955

Int. Cl.² H02K *13/00*

U.S. Cl. 310—248 **17 Claims**



1. In an electric motor of the type wherein a commutator comprising a plurality of segments is fixedly mounted on a rotatable shaft within a casing having an end cap, with the commutator segments having surfaces arranged in a plane normal to the axis of the shaft, the improvement comprising:
(a) a plurality of brushes each integrally made of sheet metal, each said brush comprising:
(1) a first portion affixed at one point thereon to said end cap;
(2) a second portion connected at one end to said first portion and generally extending radially of said end cap past said first portion; and
(3) a contact formed on another end of said second portion, said second portion being angled with respect to said first portion whereby said contact is resiliently urged into sliding contact with the surfaces of said commutator segments;
(b) means on said end cap for engaging each said brush so as to lock same against angular displacement about said one point on said first portion thereof; and
(c) said second portion of each said brush having a notch-formed in said one end thereof for engagement by said engaging means on said end cap of said casing.

4,119,876

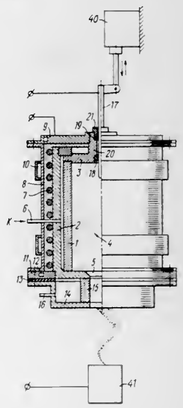
ELECTRODE STRUCTURE FOR AN ELECTRIC DISCHARGE DEVICE

Valentin Ostapovich German, ulitsa akademika Pavlova, 28, Moscow; Jury Pavlovich Kukota, ulitsa Kirova, 34a, kv. 22, Kiev; Grigory Alexandrovich Ljubimov, Rostovskaya naberezhnaya, 1, kv. 60, Moscow; Boris Vladimirovich Parfenov, Spiridonievsky pereulok, 12/9, kv. 6, Moscow; Alexandr Nikolaevich Popov, ulitsa marshala Timoshenko, 28, kv. 58, Moscow, and German Mikhailovich Schegolev, bulvar Likhacheva, 3, kv. 10, Kiev, all of U.S.S.R.

Filed Oct. 4, 1976, Ser. No. 729,265

Int. Cl.² H05H *1/00*

U.S. Cl. 313—231.4 **5 Claims**



1. An electrode structure for an electric discharge device, comprising: a discharge chamber serving as an electrode having an inner space filled completely with plasma in the course of operation and an inner surface for the transfer of electric current from said discharge chamber to said plasma under conditions of a distributed discharge; a current conductor positionable within said discharge chamber to supply said inner surface with electric current; means to provide a discharge channel outlet from said inner space of said discharge chamber; means to deliver a fluid containing actively emissive elements to said inner surface of said discharge chamber to provide distributed discharge conditions on said inner surface; means to maintain the temperature in said discharge chamber at a preset level for evaporating and ionizing the actively emissive elements in order to produce distributed discharge conditions; and means for primary initiation of a discharge.

4,119,877

ELECTRIC LAMP HAVING A CAP PLATE

Fränz Josef Grewe; Heinz Rösler; Oskar Rühl, all of Aachen; Klaus Stenke, Eschweiler, all of Fed. Rep. of Germany; Egidius Van Wersch, Voerendaal, Netherlands, and Leo Wings, Dürwiss, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

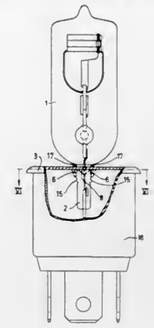
Filed Aug. 18, 1976, Ser. No. 715,515

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1975, 7526777[U]

Int. Cl.² H01J *5/48, 5/50*

U.S. Cl. 313—318 **10 Claims**

1. An automobile electric lamp which comprises: an envelope having a bulbous portion and a pinch which is rectangular in cross-section and which has first, second, third, and fourth sides, said first and third sides opposed, said second and fourth being opposed sides which are wider than said first and third sides, a filament disposed within said envelope and a metal cap plate having a rectangular recess having a lug stamped out of the plate disposed on each side of said recess, said cap plate being a resilient material and being coupled to each side of said pinch by the resilient engagement of said lugs, said lugs extending from said cap plate in a direction generally away from said bulbous portion.



4,119,878

SPARK GAP DEVICE FOR A CATHODE RAY TUBE SOCKET

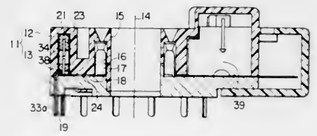
Masayuki Uda, Osaka, Japan, assignor to Hoshidenki-Seizo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1977, Ser. No. 805,481

Claims priority, application Japan, Jun. 18, 1976, 51/80043[U]

Int. Cl.² H01T *3/00;* H02H *9/06*

U.S. Cl. 313—325 **6 Claims**



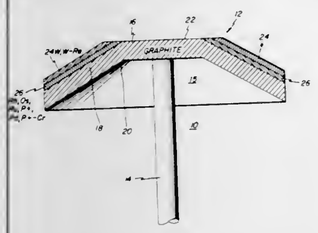
1. A spark gap device for a cathode ray tube socket comprising:
a plurality of spark gap portions, each forming a spark gap between a pair of electrodes disposed close to each other;
a flexible coupling link for coupling one electrode of each spark gap portion;
a common terminal portion formed as a unitary structure with the coupling link;
electrode terminal portions extending from the other electrodes of the spark gap portions and to be connected with contacts of the cathode ray tube socket corresponding to the electrode terminal portions; and
a plurality of molding pieces, each formed as as unitary structure with each pair of electrodes to hold the spark gap at a predetermined value;
wherein the coupling link is adapted to be bendable so that the molding pieces may lie at predetermined positions in the cathode ray tube socket when the spark gap portions are incorporated in the cathode ray tube socket.

4,119,879

GRAPHITE DISC ASSEMBLY FOR A ROTATING X-RAY ANODE TUBE

Thomas M. Devine, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,130
Int. Cl.[2] H01J *35/08*
U.S. Cl. 313—330 **8 Claims**



1. A disc for an anode assembly for a rotating x-ray anode tube comprising

a graphite substrate having two opposed major surfaces which are, respectively, the inner and outer surfaces of the substrate and an inner portion and an integral outer portion;

an anode target affixed to a predetermined surface area of the outer surface of the integral outer portion of the substrate wherein the material of the anode target is one selected from the group consisting of tungsten and a tungsten-rhenium alloy;

a layer of metal joining the anode target to the predetermined surface area of the outer surface of the integral outer portion of the substrate wherein the material of the layer of metal is one within which carbon is not soluble in the temperature range of from about 1000° C. to about 1300° C. but may have a solubility therein of from 1 to 4 atomic percent at the temperature of joining the anode target to the substrate;

the material of the layer of metal has some solubility in the material of the anode target;

the material of the layer of metal is one selected from the group consisting of rhodium, osmium, ruthenium, platinum, palladium and an alloy of platinum and chromium; and

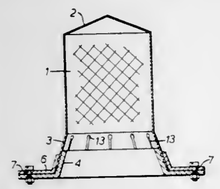
the layer has a thickness of at least ¾ mil.

4,119,880

ELECTRONIC VALVES

David Mark Wilcox, and Robert Edward Corkhill, both of Chelmsford, England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Jan. 21, 1977, Ser. No. 760,992
Claims priority, application United Kingdom, Jan. 29, 1976, 3636/76
Int. Cl.[2] H01J *1/46, 1/52, 17/04, 19/38*
U.S. Cl. 313—348 **14 Claims**



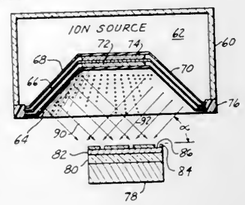
1. An electronic valve including at least one shell electrode wherein the base of said shell electrode is flared outwardly, a support therefor is tapered inwardly to accommodate said flare and a clamping member is provided to urge the flared base of said shell electrode onto the tapered portion of said support.

4,119,881

ION BEAM GENERATOR HAVING CONCENTRICALLY ARRANGED FRUSTOCONICAL ACCELERATING GRIDS

Arthur Calderon, Minnetonka, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Feb. 27, 1978, Ser. No. 881,273
Int. Cl.[2] H05H *5/02*
U.S. Cl. 313—360 **8 Claims**



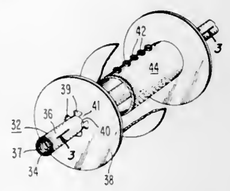
1. An ion beam generator for generating an ion beam comprising: a source of ions, and a grid arrangement for accelerating ions toward a target in a collimated beam, said grid arrangement comprising a plurality of individual frustoconical grids arranged in a concentric configuration and having apertures through the conical surface of each of said grids, said apertures being aligned normal to the conical surface of said grids so that said ion beam converges and impinges said target at a predetermined angle, said angle being between about 30° and 60°.

4,119,882

CATHODE FOR FLAT PANEL DISPLAY

Te Ning Chin, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,510
Int. Cl.[2] H01J *1/94, 29/04*
U.S. Cl. 313—411 **7 Claims**



1. In a display device having an evacuated envelope which includes substantially rectangular front and back walls secured together in spaced relation by side walls, support walls in the envelope between the front and back walls, a phosphor screen on the inner surface of the front wall and means along one of the side walls for generating electrons and directing the electrons as a plurality of beams across the front wall, said means including a thermionic emissive line cathode extending horizontally along one of said side walls, said support walls extending in spaced, parallel relation between the line cathode and the opposite side wall to provide a plurality of parallel channels, the improvement comprising,

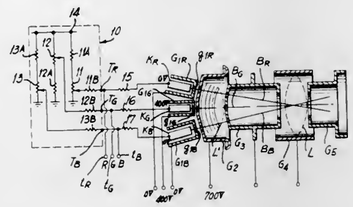
said line cathode at least partially being supported by a plurality of supports at spaced points along and between the ends of said line cathode, said supports being rigid in a direction transverse to said line cathode but allowing relative movement between said line cathode and said supports in the longitudinal direction of said line cathode and wherein said supports are each positioned at separate ones of said support walls.

4,119,883

CATHODE RAY TUBE

Senri Miyaoka, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 545,513, Jan. 30, 1975, abandoned, which is a continuation of Ser. No. 49,329, Jun. 24, 1970, abandoned. This application Aug. 1, 1975, Ser. No. 601,052
Claims priority, application Japan, Jun. 30, 1969, 44-51889
Int. Cl.[2] H01J *29/51*
U.S. Cl. 313—414 **11 Claims**



1. In combination, a cathode ray tube having a phosphor screen to reproduce color images, beam producing means for directing a plurality of electron beams to impinge on said screen and which are made to intersect each other at a point in said tube between said beam producing means and said screen and lens means common to all of said beams and including main focusing lens means positioned to dispose the optical center thereof substantially at said point where said beams intersect, at least a first and a second of said beams passing through said main focusing lens at substantially equal angles with respect to the optical axis of said lens, said angles being greater than the angle of a third of said beams with respect to the optical axis of said lens, said beam producing means comprising a plurality of individual cathodes to emit the respective electron beams, control grid means located adjacent said cathodes between said cathodes and said main focusing lens means, accelerating grid means located between said control grid means and said main focusing lens means, and brightness equalizing means to obtain color balance of the color images; and bias circuit means operative to establish different voltage potential differentials between said accelerating grid means and each of said cathodes corresponding to said first and second beams and said third beam, the voltage potential differential applied to said cathode corresponding to said third beam being substantially smaller than the voltage potential differentials applied to said cathodes corresponding to said first and second beams so that the beam velocity of said third beam is made substantially smaller than the respective beam velocities of said first and second beams in order to equalize focusing effects of said lens means on all of said beams.

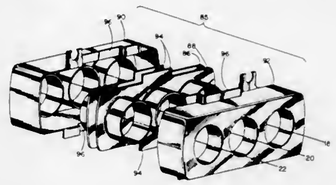
4,119,884

UNITIZED ELECTRON GUN HAVING ELECTRODES WITH INTERNAL BEAM-SHIELDING TUBES

Horst H. Blumenberg, Elmwood Park, and Kenneth A. Guzowski, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 655,592, Feb. 5, 1976, abandoned. This application Sep. 16, 1977, Ser. No. 834,029
Int. Cl.[2] H01J *29/02, 29/82*
U.S. Cl. 313—417 **2 Claims**

1. A relatively axially long unitized electron gun electrode comprising a combination of two outside sheet metal parts and two inside sheet metal parts, said combination being axially arranged and conjoined to define three effectively continuous, electrically shielding beam-passing tubes extending completely through the electrode, each tube being formed by a contiguous axial succession of deep-drawn annular lips drawn integrally from said inside and outside sheet metal parts, wherein said lips on said outside parts are deep-drawn inwardly toward each other, wherein said lips on said inside sheet metal parts are also deep-drawn, wherein said inside parts are located



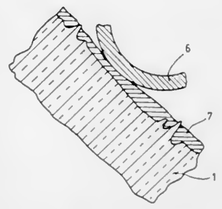
intermediately between the ends of said two outside parts to act as internal supportive members to resist deformation of said electrode when said electrode is physically stressed, and wherein said inside parts have lips that point outwardly, said lips on said inside parts being spaced from said lips on said outside parts by small gaps.

4,119,885

CATHODE RAY TUBE

Johannes Hinderikus Stöver, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 646,039, Jan. 2, 1976, abandoned. This application May 6, 1977, Ser. No. 794,394
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1975, 2555765
Int. Cl.[2] H01J *31/00*
U.S. Cl. 313—479 **1 Claim**



1. A cathode ray tube comprising:

an evacuated glass envelope; beam generating means to generate at least one electron beam;

a display screen on a wall part of the envelope which constitutes the display window;

an electrically conductive layer on a wall part of the envelope between the said beam generating means and the display screen;

an electrode;

a contact spring electrically connected to said electrode and resiliently pressing against the conductive layer, the glass surface of the envelope below said conductive layer being relatively rough with a surface roughness of approximately 20 μm and comprising projections that extend through said conductive layer with the exception of a limited area where the contact spring presses against the conductive layer the glass surface in said limited area being relatively smooth with a surface roughness of less that 3 μm and being substantially completely devoid of projections extending through said conductive layer in said limited area the thickness of said conductive layer in said limited area being between 8 and 12 μm, whereby said contact spring electrically engages said conductive layer within said area.

4,119,886

PULSE GENERATOR

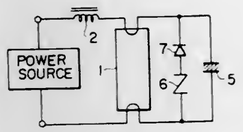
Shigeru Jyomura; Iwao Matsuyama, both of Hachioji; Katsuki Miyauchi, Hino; Tsune Miyashita, Tokyo, and Gyozo Toda, Hino, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 24, 1977, Ser. No. 762,130

Claims priority, application Japan, Feb. 6, 1976, 51/11476

Int. Cl.[2] C04B *35/46, 35/48, 35/00;* **H05B** *41/14*

U.S. Cl. 315—101 **16 Claims**



1. A pulse generator comprising (i) a condenser having a capacity which varies nonlinearly with voltage, such that current flow thereto may be abruptly cut off during some portion of a voltage cycle, whose dielectric material portion is made of ferroelectric ceramics represented by a general formula of ABO_3, wherein A is Pb and at least one of Ba and Sr, and B is selected from Zr or Zr and Ti, and the elements of A and the elements of B in ABO_3 are related by the formula $(Pb_{1-x-y}, Ba_x, Sr_y)(Ti_z, Zr_{1-z})O_3$, and (ii) an inductive element.

4,119,887

STARTER FOR DISCHARGE LAMP

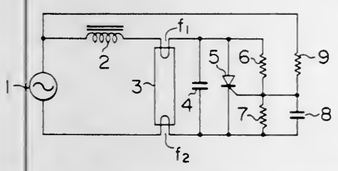
Hiroyuki Iyama; Mitsuo Akatsuka, both of Tokyo, and Teruichi Tomura, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 31, 1976, Ser. No. 672,145

Claims priority, application Japan, Jun. 27, 1975, 50-79394; Oct. 6, 1975, 50-119742

Int. Cl.[2] H05B *41/18*

U.S. Cl. 315—101 **9 Claims**



1. A starter for a discharge lamp having first and second filaments, said starter comprising

a ballast transformer,

a unidirectional thyristor having a control electrode and current-in and current-out electrodes, said current-in electrode being connected in series through said first filament and said ballast transformer to one terminal of an AC power supply, and said current-out electrode being connected through said second filament to the other terminal of said AC power source,

a first resistor connected between said control electrode and said current-in electrode, and

a second resistor connected between said control electrode and said one terminal of said AC power supply.

wherein a high voltage pulse is generated by said ballast transformer when said unidirectional thyristor is turned off.

4,119,888

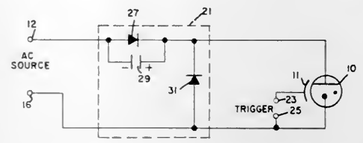
OPERATING CIRCUIT FOR FLASH LAMP DIRECTLY COUPLED TO AC SOURCE

P. Bruce Newell, Carlise, and James C. Morris, Wakefield, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 15, 1977, Ser. No. 777,872

Int. Cl.[2] H05B *41/32*

U.S. Cl. 315—205 **8 Claims**



1. A circuit for operating an arc discharge flash lamp directly coupled across a source of alternating current, said circuit comprising:

trigger pulse generating means connected to said alternating current source to be energized thereby and coupled to said flash lamp for applying pulsed high voltage to ignite the lamp; and

a voltage multiplier coupled across said flash lamp for increasing the voltage across the lamp above that provided by said alternating current source, thereby facilitating starting of the lamp by said trigger means;

said voltage multiplier comprising a first diode connected in series with said lamp, a capacitor connected across said first diode, and a second diode connected across said lamp, said first and second diodes having cathode terminals electrically connected together, said diodes and capacitor ceasing to function as a multiplier once the lamp is started, whereupon said first diode directly couples said lamp to said AC source and assures that said lamp, when ignited during a half cycle of predetermined polarity of the alternating current waveform of said source, is turned off when said waveform goes to the opposite polarity.

4,119,889

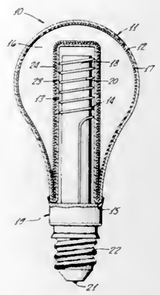
METHOD AND MEANS FOR IMPROVING THE EFFICIENCY OF LIGHT GENERATION BY AN ELECTRODELESS FLUORESCENT LAMP

Donald D. Hollister, 2031 Tweed St., Placentia, Calif. 92670

Continuation-in-part of Ser. No. 604,226, Aug. 13, 1975, Pat. No. 4,010,400. This application Feb. 14, 1977, Ser. No. 768,478

Int. Cl.[2] H05B *41/16, 41/24*

U.S. Cl. 315—248 **8 Claims**



1. In an elctrodeless fluorescent lamp of the type including a sealed, light transmissive, envelope including an elongate inner wall defining an open-ended cavity and an outer wall surrounding the inner wall forming a generally annular, hollow cavity therebetween, said annular cavity being charged with an ionizable gaseous medium, an induction coil positioned within said open-ended cavity, and a radio frequency oscillator connected to said coil, said coil and said oscillator causing ionization of said medium to form an ultraviolet light emitting discharge, the inner surface of said outer wall of said envelope being coated with a phosphor which emits visible light when excited by ultraviolet light, the improvement wherein:

the surface of said inner wall in said annular cavity is coated with a layer of an electrically insulative, ultraviolet light reflective material.

4,119,890

METHOD AND EQUIPMENT FOR MEASURING THE DISTANCE BETWEEN TWO POINTS

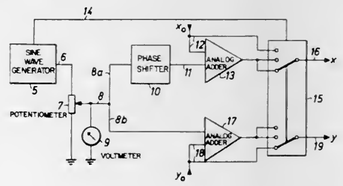
Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Jun. 6, 1977, Ser. No. 803,579

Claims priority, application Austria, Jul. 14, 1976, 5191/76

Int. Cl.[2] G01R *13/30*

U.S. Cl. 315—377 **15 Claims**



1. Equipment for measuring the distance between first and second points, comprising

a fluorescent screen,

first display control means for generating displays of said first and second points on said fluorescent screen, and

second display control means for displaying on said fluorescent screen a first mark, which coincides with the display of said first point, for displaying on said fluorescent screen a linear second mark, and for varying in a controlled manner a parameter which controls the position of said second mark on said fluorescent screen to move said second mark to a plurality of positions, in each of which said second mark constitutes a display of a circle which is centered on said first point, inclusive of one position in which said second mark is in close proximity to the display of said second point, said parameter having a predetermined, known relation to the radius of said circle so that the value of said parameter is a measure of the distance between said first and second points when said second mark is in said one position and said first mark coincides with the display of said first point,

said second display control means comprising

first and second deflecting voltage inputs adapted to receive respective deflecting voltages for controlling the display on said screen,

a generator for generating a sine wave voltage,

sine voltage control means for varying said sine voltage,

a quadrature phase shifter arranged to receive said sine wave voltage and to convert it into a cosine wave voltage,

a first d.c. voltage source for delivering a first d.c. output voltage,

a second d.c. voltage source for delivering a second d.c. output voltage,

each of said d.c. voltage sources being adjustable to vary its output voltage independently of the output voltage of the other d.c. voltage source,

a first analog connected to said generator and to said first d.c. voltage source and adapted to deliver a first sum voltage which equals the sum of said sine wave voltage and said first d.c. voltage,

a second analog adder connected to said phase shifter and to said second d.c. voltage source and adapted to deliver a second sum voltage which equals the sum of said cosine wave voltage and said second d.c. voltage, and

a sequential switch having a first pair of inputs connected to receive said first d.c. voltage and said second sum voltage, respectively, a second pair of inputs connected to receive said second d.c. voltage and said first sum voltage, respectively, a third pair of inputs connected to receive said first and second sum voltages, respectively, and a pair of outputs connected to said first and second deflecting voltage inputs, respectively,

said sequential switch being operable to connect said pairs of inputs in a cyclical sequence to respective ones of said outputs.

4,119,891

OSCILLOSCOPE FOR THE IMAGE DISPLAY OF SECTIONAL PLANES OF A BODY

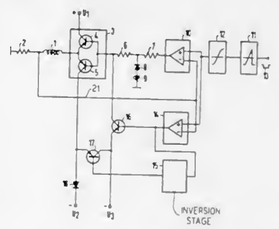
Richard Soldner, Erlangen, and Rudolf Rattmann, Herzogenaurach, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 26, 1976, Ser. No. 745,228

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557528

Int. Cl.[2] H01J *29/70*

U.S. Cl. 315—389 **16 Claims**



1. In an image display system for the image-display of sectional regions of a body, wherein control impulses (**13**) are produced in dependence upon respective transmitted ultrasonic impulses, an oscilloscope for the formation of an image in accordance with sequences of ultrasonic echo impulses received in response to the successive transmitted ultrasonic impulses during linear scanning of the region, comprising a line sweep deflection system including coil means (**1**) for producing a magnetic deflection field controlling each line trace operation in generating the image, each active line trace interval of the line trace operation being triggered by one of the control impulses (**13**), and a transistor output stage (**3**) connected with the coil means (**1**) for the purpose of controlling current flow therein, characterized by the combination of:

(a) circuit means (**10, 14, 15, 16, 17, 18**) connected to said output stage (**3**) for controlling current flow in said coil means (**1**); said circuit means comprising differental amplifier means (**10, 14**); said differential amplifier means (**10, 14**) having feedback means (**2**) connected therewith for supplying a feedback voltage thereto which is strictly proportional to coil current (I_H) in said coil means (**1**);

(b) said circuit means including a switching circuit (**16, 17**) having an overvoltage input for supplying an overvoltage input value (U_3) and operable for connecting the overvoltage input value (U_3) to the coil means (**1**) for the purpose of providing a flyback interval of each line trace operation, of reduced duration;

(c) a horizontal time base generator (**11, 12**) connected with said differential amplifier means (**10, 14**) for controlling said differential amplifier means to produce a tangential-distortion-corrected line sweep voltage; said horizontal time base generator (**11, 12**) comprising a triggerable

sweep voltage generator (**11**) having a line sweep cycle which is triggered by a control impulse (**13**) and which generatess a voltage waveform which is not corrected for tangential distortion during each line sweep cycle; and comprising a voltage dependent resistance (VDR) circuit (**12**) operated by the voltage waveform from the triggerable sweep voltage generator (**11**); and

(d) said circuit means having an operating voltage input for supplying an operating voltage (U_2) to said transistor output stage (**3**) which is substantially less said overvoltage input value (U_3) during part of each line trace operation; and

(e) said differential amplifier means being responsive to a feedback voltage from the feedback means (**2**) during the flyback interval of each line trace operation for activating said switching circuit (**16, 17**) to connect said overvoltage input value (U_3) to said coil means (**1**).

4,119,892

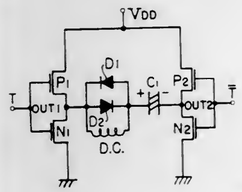
LIGHT EMITTING INDICATING CIRCUIT FOR A TIMEPIECE

Takeo Saito, and Takashi Segawa, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Nov. 11, 1976, Ser. No. 741,121

Int. Cl.[2] **G04C** *3/00*

U.S. Cl. 318—138 **8 Claims**



3. In an electric timepiece; a motor driving coil and a capacitor connected in series; driving means connected for applying repetitive complementary electrical driving signals to opposite sides of the series combination of said motor driving coil and said capacitor to repetitively flow current in alternating directions through the series combination of said motor driving coil and said capacitor to repetitively energize said motor driving coil; and indicating means responsive to the electrical driving signals for indicating energization of said motor driving coil.

4,119,893

CIRCUIT FOR FORMING AN ELECTRICAL QUANTITY WHICH IS PROPORTIONAL TO A FLUX COMPONENT IN A ROTATING FIELD MACHINE

Karlheinz Bayer; Walter Dreiseitl, and Felix Blaschke, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

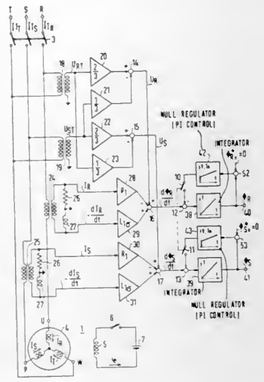
Filed Jul. 25, 1977, Ser. No. 818,854

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1976, 2635965

Int. Cl.[2] **H02P** *7/36*

U.S. Cl. 318—178 **4 Claims**

1. In a circuit for forming an electrical quantity which is proportional to a flux component of a rotating field machine, wherein the rotating field machine has a first winding provided for excitation, the circuit comprising an adder, to which are fed a voltage proportional to the phase current in a machine lead, a voltage porportional to the differential coefficient of the phase current with respect to time and a voltage proportional to the corresponding phase voltage; and an integrator which follows the adder and at the output of which the quantity proportional to the flux component is taken off; and a null regulator with PI characteristics designed to suppress the d-c component of this quantity, the input of which is connected to the output of the integrator and the output of which is connected to a summing junction at the input of the integrator, the improvement comprising the rotating field machine also having



a second winding suitable for measuring an induced voltage; means coupling a voltage which is proportional to the voltage induced in the second winding to the adder stage; and an auxiliary switch which can be switched on after the excitation process in the rotating field machine is completed coupling the output of the null regulator to the summing junction.

4,119,894

SINGLE PHASE ASYNCHRONOUS MOTOR

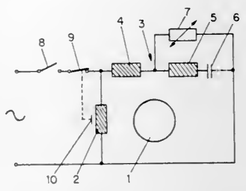
Per Germann Sorensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jun. 21, 1977, Ser. No. 808,654

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1976, 2627835

Int. Cl.[2] **H02P** *1/44*

U.S. Cl. 318—221 D **1 Claim**



1. A single phase asynchronous motor comprising a main winding branch having a main winding, an auxiliary winding branch having first and second winding sections, and first section having a first winding, said second section having a second winding and a capacitor in series, a PTC resistor in said second section shunting said second winding and said capacitor, a suitable starting torque being obtained by said first section having a predetermined ohmic resistance and said PTC having a cold starting resistance of the same order of magnitude as said ohmic resistance, and a suitable breakdown torque being obtained by said second winding having a substantially smaller cross sectional area than said first winding to provide a substantially higher resistance during operation when said PTC resistor exhibits a substantially higher resistance in its heated state.

4,119,895

BRUSHLESS D.C. MOTOR WITH PRECISE SPEED CONTROL

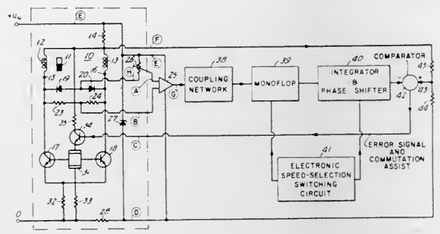
Rolf Müller, St. Georgen, Germany, assignor to Papst-Motoren KG, St. Georgen, Germany

Filed Apr. 7, 1977, Ser. No. 785,725

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1976, 2616044

Int. Cl.[2] **H02K** *29/00*

U.S. Cl. 318—254 **13 Claims**



1. A brushless d.c. motor comprising
a permanent magnet rotor;
a stator having a winding;
means supplied with d.c. current and connected to said stator winding for producing an alternating magnetic field in said stator and having a speed control circuit;
means for deriving, from said motor, signals synchronized with the rotation of said rotor;
means for generating pulses of a predetermined length;
means for triggering the generation of said pulses by said pulse generating means in response to said signals;
analog circuit means for phase-shifting and smoothing said pulses
for deriving from said pulses a smoothed voltage having a d.c. component and a superimposed a.c. component, and
means for feeding said smoothed voltage to said speed control circuit for controlling the speed of said motor by said d.c. component of said voltage while the a.c. component serves to control the armature current and torque cycles as the motor turns.

4,119,896

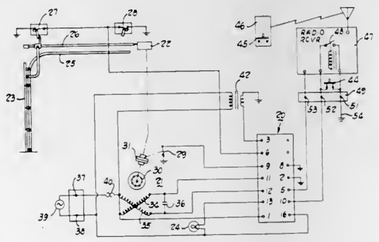
SEQUENCING CONTROL CIRCUIT

Bay E. Estes, III, Murrysville, and Richard A. Nedbal, Pittsburgh, both of Pa., assignors to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed May 28, 1976, Ser. No. 690,984

Int. Cl.[2] **H02P** *1/26*

U.S. Cl. 318—266 **13 Claims**



1. A sequencing control circuit for a single phase door operator motor operable to open and close a garage door as controlled by signals from manual switch means and load switch means,
said sequencing control circuit comprising, in combination,
output load sensing means connected to actuate the load switch means,
input means connecting said switch means to control energization of the single phase motor,
time delay means having a first time delay period,
and enabling means connecting said time delay means to said motor energization control means so that said time delay means enables control of the motor by a signal from said load switch means.

4,119,897

STATIC CONVERTOR

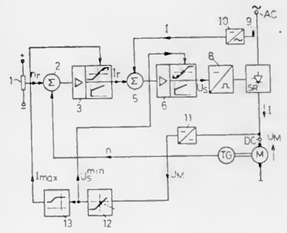
Hans Skoog, Vasteras, Sweden, assignor to ASEA AB, Vasteras, Sweden

Filed Sep. 9, 1976, Ser. No. 721,995

Claims priority, application Sweden, Sep. 24, 1975, 7510689

Int. Cl.[2] **H02P** *5/00*

U.S. Cl. 318—331 **5 Claims**



1. A convertor control device for controlling a rotational load having a variable electromotive force, comprising:
means for controlling the continuous current direct voltage of the convertor between a maximum value and a variable minimum value;
sensing means for generating a signal corresponding to the electromotive force of said load;
first function generator means for controlling said variable minimum value in accordance with said signal;
means for generating a control signal representative of the difference between the direct current of the convertor and a current reference signal; and
said means for controlling including a first regulator means responsive to said control signal and said first function generator means for controlling said direct voltage.

4,119,898

PULSE CONTROLLERS

John Morton, and Keith Drummond Stevens, both of Stockport, England, assignors to Cableform Limited, Stockport, England

Filed Dec. 22, 1976, Ser. No. 753,137

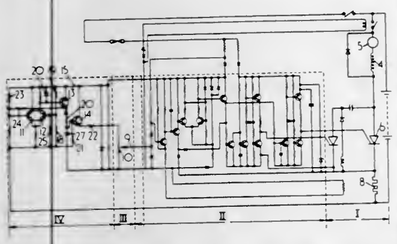
Claims priority, application United Kingdom, Dec. 24, 1975, 52782/75

Int. Cl.[2] **H02P** *5/00*

U.S. Cl. 318—341 **6 Claims**

1. A control circuit for controlling the energization of a series electric motor from a D.C. source, comprising:
a semi-conductor switching element connected in series with the motor,
a pulse generator circuit for applying a train of pulses to the semi-conductor switching element such that the switching element is turned on and off and thereby applies D.C. pulses to the motor,
means for controlling the pulse generator circuit to determine the mark/space ratio of the D.C. pulses applied to the motor.
means for sensing the current through the motor, and
means for adjustably setting and applying the maximum mark/space ratio such that when the motor current is

below a predetermined limit the maximum mark/space ratio is proportional to motor current and when the motor



current is above the predetermined limit the maximum mark/space ratio is independent of motor current.

4,119,899

MOTOR CONTROL MEANS FOR POWER DRIVEN WINDOW

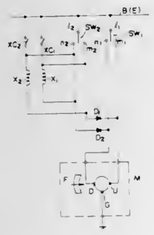
Shizuo Sumida, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Jun. 1, 1977, Ser. No. 802,582

Claims priority, application Japan, Jun. 2, 1976, 51-71903[U]; Jun. 11, 1976, 51-76539[U]

Int. Cl.[2] **G05B** *1/00*

U.S. Cl. 318—459 **6 Claims**



1. Motor control means for power driven window comprising reversible D.C. motor means adapted to be connected to a D.C. power source for driving window glass, said motor means having first and second brush means and third brush means connected to ground; an operation switch device having first switch means for selectively connecting the D.C. power source to one of said first and second brush means of said motor means and a second switch means for completing a current path between the D.C. power source and one of said first and second brush means and bypassing said first switch means, said first switch means being adapted to be closed when said switch device is moved to a first operation position and when said switch device is moved to a second operation position and said second switch means being adapted to be closed only when said switch device is moved to the second operation position; and solenoid means adapted to be energized by a counter electromotive voltage induced between said first and second brush means of said motor means during rotation of said motor means for holding said first and second switch means in the condition in which they were at the moment the solenoid is energized, said first switch means being connected between said power source and said motor, and said second switch means being connected to complete, when closed, an energizing circuit for said solenoid means by the counter electromotive voltage, whereby said first and second switch means are maintained in the second operation condition and whereby, when said motor is stopped said solenoid is deenergized to allow said first and second switch means to return to an open condition to thereby deenergize said motor means.

4,119,900

METHOD AND SYSTEM FOR THE AUTOMATIC ORIENTATION AND CONTROL OF A ROBOT

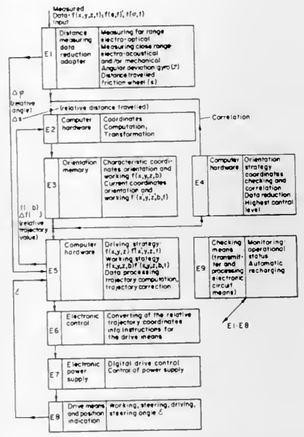
Walter Kremnitz, Eberbach, Neckar, Fed. Rep. of Germany, assignor to ITO Patent-AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 534,080, Dec. 18, 1974, abandoned. This application Jun. 16, 1976, Ser. No. 696,525

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1973, 2364002

Int. Cl.[2] **G05D** *1/00*

U.S. Cl. 318—587 **39 Claims**



1. A method for automatically orienting and controlling a robot system in a space for performing work on a defined surface in said space as a result of said orientation, said robot system travelling on said surface, comprising measuring scalar values on all sides of the system representing said surface or space, supplying said scalar values to data processing means including mathematical models and performing mathematical transformations to produce characteristic data for said surface or space which characteristic data geometrically define said surface or space, to provide a basis for said orienting, processing said characteristic data with the aid of a mathematical optimization model to form operation instructions for said robot system, said operation instructions comprising a sequence of steps for moving and working, and supplying said operation instructions to said robot system, said scalar values being ascertained predominantly during the orientation and/or working.

4,119,901

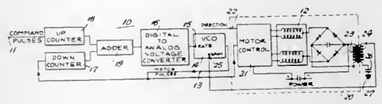
PULSE TO STEP MOTOR STABILIZING CIRCUIT

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Oct. 3, 1975, Ser. No. 619,360

Int. Cl.[2] **G05B** *19/40*

U.S. Cl. 318—685 **19 Claims**



1. A pulse to step motor stabilizing circuit comprising means

for receiving command pulses with the pulses appearing as a set number of essentially evenly-spaced pulses in consecutive equal length time intervals, oscillator means for producing a motor pulse for each command pulse, motor means for receiving the motor pulses and producing a step for each motor pulse, summing means for providing an instantaneous count of the difference between the number of command pulses and the number of motor pulses and means for causing the oscillator to produce motor pulses at a rate that is essentially equal to the instantaneous count for a time interval, in which the summing means includes counter means for increasing its count for each command pulse and decreasing its count for each motor pulse, in which the instantaneous count of the counter means for a time interval is generally equal to the number of pulses in the prior interval and in which substantially each motor pulse lags its corresponding command pulse by a duration that essentially equals the extent of a time interval.

4,119,902

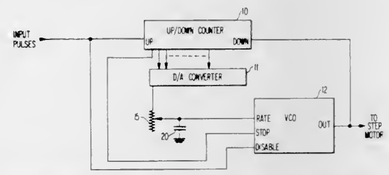
ACCELERATION/DECELERATION CONTROL CIRCUIT FOR A STEPPING MOTOR

Harold R. Newell, South Newbury, N.H., assignor to Mesur-Matic Electronics Corp., Salem, Mass.

Filed Jul. 8, 1977, Ser. No. 814,072

Int. Cl.[2] **H03K** *1/16*

U.S. Cl. 318—696 **5 Claims**



1. An improved acceleration control for a stepping motor which includes a source of pulses of constant frequency, a plural stage up/down counter with one input for stepping said counter is one direction connected to said source of pulses, decoding means connected to plural stage outputs of said counter for providing a voltage corresponding to a count stored in said counter, a variable frequency oscillator responsive to said voltage for providing pulses at a rate related to said voltage, said variable frequency oscillator having an output supplying pulses to said stepping motor, said output also connected to a further input of said plural stage up/down counter for stepping said counter in another direction wherein the improvement comprises integrating means connected between said decoder means and said variable frequency oscillator.

4,119,903

DEFIBRILLATOR CHARGING CIRCUIT

Sherman Jack Pirkle, Waltham, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 5, 1978, Ser. No. 867,263

Int. Cl.[2] **H02M** *9/04;* **A61N** *1/38*

U.S. Cl. 320—1 **1 Claim**

1. In a defibrillator,

a storage capacitor,

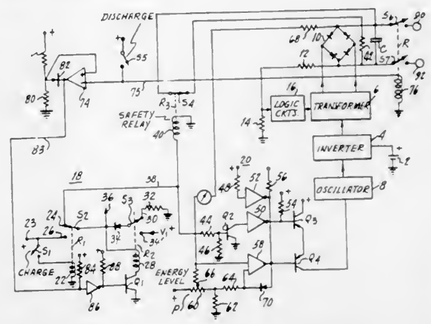
a safety relay having an armature that is closed when said relay is de-energized, said armature, when closed, providing a low impedance discharge path for said storage capacitor,

a battery,

charging means coupled between said battery and said capacitor for charging said capacitor when said means is energized, said means being normally de-energized,

a charge switch having one side connected to one side of said battery,

means coupled between the other side of said switch for energizing said safety relay when said switch is closed so as to open its armature and remove the discharge path from said storage capacitor, and



means responsive to the closure of said switch for energizing said charging means so as to cause it to charge said storage capacitor.

4,119,904

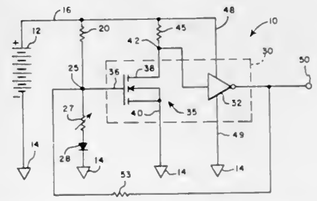
LOW BATTERY VOLTAGE DETECTOR

Stephen A. Haglund, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 11, 1977, Ser. No. 786,522

Int. Cl.[2] **H02J** *7/00;* **H03K** *3/26*

U.S. Cl. 320—48 **10 Claims**



1. Apparatus for detecting a low voltage condition in a battery comprising:

a MOSFET having a gate, a source and a drain;

an inverter having an input and an output;

first means for connecting the gate of the MOSFET to one terminal of the battery;

second means for connecting the source of the MOSFET to the other terminal of the battery;

third means for connecting the drain of the MOSFET to the one terminal of the battery and to the input of the inverter; and

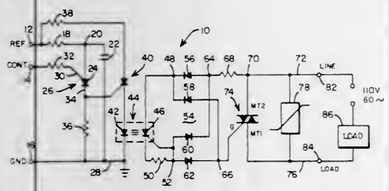
feedback means for connecting the output of the inverter to the gate of the MOSFET: a predetermined low voltage condition in the battery causing a decrease in voltage at the gate of the MOSFET, when this voltage becomes below the threshold voltage of the MOSFET, the MOSFET starts to turn off thus producing an increased voltage at the input of the inverter and a decreased voltage at the output of the inverter which is fed back to further decrease the voltage and cause rapid shut off of the MOSFET and producing an indication of the low voltage condition in the battery.

4,119,905

PROGRAMMABLE ALTERNATING CURRENT SWITCH

Dale R. Head, Savage, Minn., assignor to Precision, Inc., Minneapolis, Minn.

Filed Sep. 30, 1977, Ser. No. 838,057
Int. Cl.[2] G05F *3/04*; H03K *17/72*
U.S. Cl. 323—21 8 Claims



6. A programmable alternating current switch for controlling the average power delivered from an alternating current voltage source to a load during each half-cycle of said alternating current voltage, comprising:

(a) means including a bidirectional, triggerable semiconductor switch connected in series circuit between said source and said load; and

(b) a triggering circuit operatively connected to said triggerable semiconductor switch, said triggering circuit including,

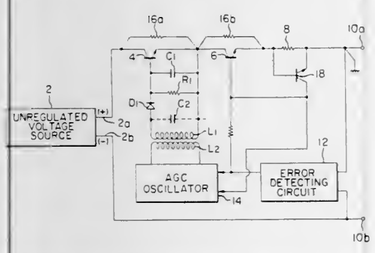
1. a diode bridge circuit adapted to be coupled between alternating current voltage source and said triggerable semiconductor switch;
2. a light activated semiconductor switching device operatively connected to said diode bridge for blocking the flow of current therethrough when said light activated semiconductor switching device is in a non-conducting condition and for allowing the flow of current therethrough when said light activated semiconductor switching device is in a conducting condition, irrespective of the instantaneous polarity of said alternating current voltage, and
3. means sychronized with the initiation of each of said half-cycles of said alternating current voltage for optically energizing said light activated semiconductor switching device at selected predetermined times following the initiation of each of said half-cycles.

4,119,906

CONSTANT HIGH VOLTAGE GENERATING CIRCUIT

Tsunemi Gonda, Yamato, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 7, 1977, Ser. No. 775,109
Claims priority, application Japan, Mar. 6, 1976, 51-23721
Int. Cl.[2] G05F *1/58*
U.S. Cl. 323—22 T 7 Claims



1. A constant high voltage generating circuit for converting the high voltage output between output terminals of an unregulated voltage source into a constant output voltage between output terminals of the constant high voltage generating circuit comprising:

an error detecting circuit for detecting any error of the output voltage of said constant high voltage generating circuit relative to a predetermined constant output voltage and producing an output that varies in response to said error;

a high frequency wave generating circuit connected to said error detecting circuit for radiating a high frequency wave that varies in accordance with the varying output of said error detecting circuit;

a receiving circuit for receiving said high frequency wave;

a rectifying and smoothing circuit connected to said receiving circuit for producing in response to the received high frequency wave a rectified and smoothed control voltage that varies in accordance with said error; and

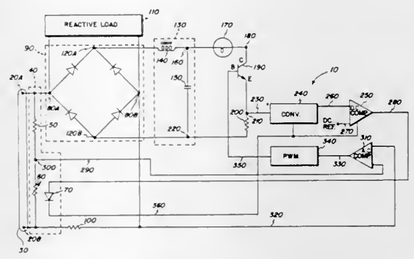
a regulating circuit providing a variable resistance path between an output terminal of said unregulated voltage source and an output terminal of said constant high voltage generating circuit, said regulating circuit having a control terminal to which said control voltage is applied and having means for varying the resistance of said path in response to the control voltage at said control terminal, thereby to regulate the high voltage output of said unregulated voltage source.

4,119,907

POWER FACTOR CORRECTOR FOR A RESISTIVE LOAD

Halsey P. Quinn, Rancho Palos Verdes, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 27, 1977, Ser. No. 801,183
Int. Cl.[2] G05F *1/68*
U.S. Cl. 323—105 1 Claim



1. A correcting circuit for compensating the power factor of a signal due to reactive loading comprising:

(a) alternating current rectification means having an input side and an output side, said input side of said rectification means receiving an alternating current signal whereby said rectification means produces at its output side a unidirectional power signal;

(b) a resistive input circuit connected across said input side of said rectification means;

(c) a resistive load coupled to said output side of said rectification means for receiving said unidirectional power signal;

(d) first comparator means coupled to said resistive load for comparing the amplitude of the signal through said resistive load with a reference signal and for generating a first control signal having an amplitude indicative of any difference between the amplitude of said signal through said resistive load and said reference signal;

(e) means coupled to said first comparator means and operatively associated with said resistive input circuit for changing the resistance of said resistive input circuit as a function of the amplitude of said first control signal;

(f) second comparator means coupled to said input side of said alternating current rectification means and coupled to a point of said resistive input circuit for generating a second control signal indicative of the difference between the alternating current signal supplied thereto from said input side of said alternating current rectification means and the alternating current signal supplied thereto from said point of said resistive input circuit; and

(g) means coupled to said second comparator means and to said resistive load for regulating the magnitude of said unidirectional power signal through said resistive load to thereby provide power factor correction.

4,119,908

METHOD FOR LOCATING BURIED MARKERS WHICH ARE DISPOSED ALONG THE PATH OF AN UNDERGROUND CONDUCTOR

Armond D. Cosman, Liberty Hill, and Gary H. Knippelmier, Round Rock, both of Tex., assignors to A. P. C. Industries, Inc., Austin, Tex.

Continuation of Ser. No. 636,071, Nov. 28, 1975, abandoned.
This application Aug. 24, 1977, Ser. No. 827,277
Int. Cl.[2] G01V *3/08, 33/02*
U.S. Cl. 324—3 6 Claims



1. A method for determining locations along the path of an underground conductor where reaccess is desired, comprising:

a. positioning each of a plurality of passive marker elements at a respective location along said underground conductor where reaccess is desired, each of said elements being an inductor-capacitor combination tuned to be resonant to a selected frequency and being disposed at a respective location adjacent and alongside said underground conductor with its central axis generally vertical;

b. coupling a transmitter capable of generating an output signal having said selected frequency to said underground conductor;

c. moving a receiver, having an antenna loop and capable of receiving said selected frequency and communicating to an operator the strength of the received signal, along the underground conductor and swinging the receiver laterally of same to obtain a peak-null-peak signal as an indication that the operator is on the conductor path, and determining the approach of a passive marker element by reception of a signal in the region where there would otherwise be a null.

4,119,909

PULSED DC TRANSIENT CONDUCTIVITY MEASUREMENT SYSTEM

David W. DeBerry, Austin, Tex., assignor to Radian Corporation, Austin, Tex.

Filed Mar. 31, 1977, Ser. No. 783,463
Int. Cl.[2] G01N *27/42*
U.S. Cl. 324—30 R 12 Claims

1. A method of measuring representations of the electrical conductivity of a fluid solution, comprising the steps of:

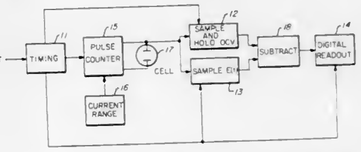
locating a sample of fluid to be measured between a pair of measurement electrodes;

sampling the zero current voltage drop between said measurement electrodes, generating a signal representative thereof and storing said representative signal;

applying a very fast rise time DC constant current pulse to said measurement electrodes;

sampling, at a predetermined time interval from the beginning of the application of said DC pulse, the constant current voltage drop between said electrodes and generating a signal representative thereof; and

forming a difference function of said zero current voltage drop and said constant current voltage drop signals to generate a measurement signal representative of the electrical conductivity of a fluid to be measured.

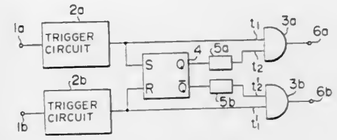


4,119,910

METHOD AND APPARATUS FOR DETECTING WHETHER PHASE DIFFERENCE BETWEEN TWO SIGNALS IS CONSTANT

Kiyoshi Hayashi, Nagoya, Japan, assignor to Shin Shirasuna Electric Corp., Nagoya, Japan

Filed Mar. 14, 1977, Ser. No. 777,508
Claims priority, application Japan, Mar. 18, 1976, 51-29515
Int. Cl.[2] G01R *25/00*
U.S. Cl. 324—83 R 2 Claims



1. A method of detecting whether the difference in phase between a first and a second signal is constant, comprising the steps of deriving a Q output and $\overline{Q}$ output from a set-reset flip-flop circuit by imparting thereto a first and a second trigger pulse which are respectively obtained on the basis of a first and a second signal to be compared with each other in respect of their phase difference; producing, on the basis of said Q and $\overline{Q}$ outputs, two pulse signals the fall portions of which correspond to the fall portions of said Q and $\overline{Q}$ outputs respectively but the rise portions of which are caused to occur while being delayed by a period of time corresponding to the duration of said trigger pulses; and producing logical products of said two pulse signals with respect to said first and second trigger pulses, whereby it is detected whether the phase difference between said first and second signals is constant or not, according to whether the outputs of said logical products are present or not.

4,119,911

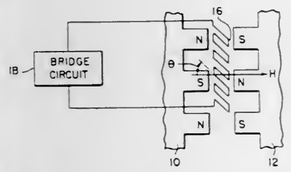
MAGNETORESISTOR DISPLACEMENT SENSOR USING A MAGNETORESISTOR POSITIONED BETWEEN RELATIVELY MOVING MAGNETIZED TOOTHED MEMBERS

Clark E. Johnson, Jr., 60 Pinecroft Rd., Weston, Mass. 02193

Filed Apr. 22, 1977, Ser. No. 789,790
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—208 10 Claims

1. A displacement transducer comprising: two toothed members each having magnetic poles arranged in alternating se-

quence in a predetermined direction; said toothed members being displaceable relative to each other and cooperating so that one magnetic pole on one of said members is spaced from a magnetic pole of opposite polarity on the other member; said magnetic poles being spaced so that magnetic flux lines pass through the space between poles of opposite polarity; at least one element of magneto-resistive material within the space between said magnetic poles and intercepted by said magnetic flux lines, said element having an electrical resistance dependent on the angular orientation and magnitude of said flux lines



with respect to said element; said element of magneto-resistive material within said space being stationary and free of contact with both said toothed members, said toothed members being unconnected and spaced from each other to form a gap therebetween, said element being located in said gap independent of the relative positions of said toothed members; and means connected to said element for measuring the electrical resistance thereof, said angular orientation varying with the relative displacement of said toothed members, whereby the measured resistance of said element is dependent on the relative displacement of said toothed members.

4,119,912

AUDIO FREQUENCY HETERODYNE MEANS AND METHOD

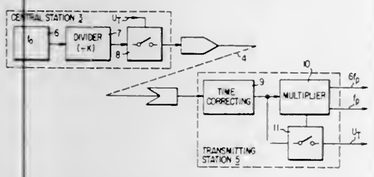
Janos Turi Nagy, Zug, and Felix Niederberger, Cham, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed May 26, 1976, Ser. No. 690,098

Claims priority, application Switzerland, Jun. 5, 1975, 7239/75

Int. Cl.[2] H03B *3/08*

U.S. Cl. 325—58 **9 Claims**



1. An apparatus for providing a specific one of a possible plurality of synchronous, in-phase audio-frequency pilot signals to a common power mains network at a plurality of ripple control transmitting stations and for transmitting gating pulses comprising:

a central station for providing a control signal including a sequence of pulses with a frequency which is a subharmonic of a specific one of a possible plurality of synchronous in-phase audio-frequency pilot signals including:

a high frequency, crystal controlled oscillator, a frequency divider for reducing the frequency of the output signal of the oscillator to the subharmonic frequency, and

means for modulating the output signal of the frequency divider responsive to said gating pulses; and,

a plurality of ripple control transmitting stations, feeding the common power mains network and receiving the control signal from the central station, each of which transmitting stations including:

means for equalizing the transit time of the control signal to each transmitting station,

a multiplier circuit operatively connected to said transit time equalizing means for multiplying the frequency fo the subharmonic signal to generate the pilot signal fed to the network, including a phase-locked-loop circuit, and

a demodulator operatively connected to said multiplier circuit for separating said gating pulses from the control signal.

4,119,913

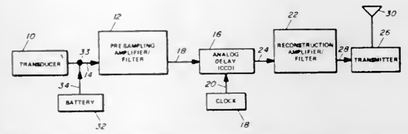
PROJECTILE IN-BORE MEMORY SYSTEM

David N. Everswick, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1977, Ser. No. 817,304

Int. Cl.[2] H04B *1/02*

U.S. Cl. 325—113 **4 Claims**



1. A projectile in-bore memory system for transmitting telemetry environmental data to a ground based telemetry receiving station which comprises:

transducer means operatively disposed in said projectile for sensing in-bore stress environment on said projectile and for generating a transducer output voltage signal in response thereto;

pre-sampling amplifier/filter means having an input electrically coupled to said transducer means for amplifying said transducer output voltage signals of interest and for filtering out unwanted high frequency components contained in said transducer output voltage signal and noise signals generated by said transducer means;

analog delay means electrically coupled to the output of said pre-sampling amplifier filter means for generating and storing discrete analog pulses in response to the output from said pre-sampling amplifier filter means, said analog delay means including means for delaying the generation of the analog pulses for a time "Y";

reconstruction amplifier/filter means electrically coupled to the output of said analog delay means for amplifying and reconstructing said transducer output voltage signal; and

transmitter means electrically coupled to the output of said reconstruction amplifier/filter means for generating an electromagnetic signal in response thereto after said time delay "Y", said signal having sufficient amplitude to be detected by said ground based telemetry receiving station.

4,119,914

DOUBLE BALANCED MIXER USING SINGLE FERRITE CORE

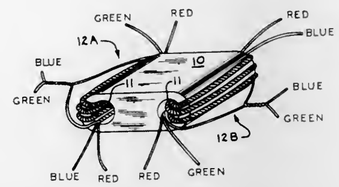
John D. Duncan, Bozeman, Mont., assignor to Dana Corporation, Toledo, Ohio

Division of Ser. No. 635,820, Nov. 28, 1975, Pat. No. 4,052,785. This application May 18, 1977, Ser. No. 798,216

Int. Cl.[2] H04B *1/26;* **H01F** *39/00*

U.S. Cl. 325—446 **8 Claims**

1. A transformer assembly comprising a single core of a magnetic material, said core defining two spaced apertures therein, and two sets of transformer windings, only one set in each of said apertures, wherein one winding of each set emerging from one end of each aperture is interconnected with



another winding of the same set emerging from another end of the same aperture.

4,119,915

ELECTRONIC TUNING SYSTEM FOR RADIO RECEIVERS, WITH DIGITAL MEMORIZATION OF THE SIGNAL FREQUENCY

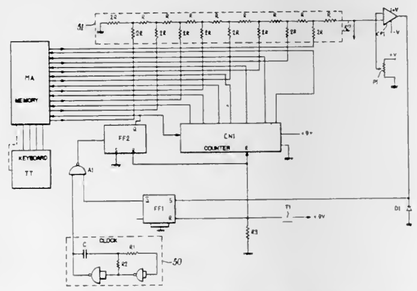
Ciro Maddaloni, Rome, Italy, assignor to Voxson S.p.A., Italy

Filed Feb. 24, 1977, Ser. No. 771,586

Claims priority, application Italy, Mar. 9, 1976, 48484 A/76

Int. Cl.[2] H04B *1/06*

U.S. Cl. 325—452 **5 Claims**



1. A circuit for generating and digitally storing control voltage signals for application to electronic tuning circuitry of an electronically tuned radio receiver comprising manual control means for generating a first control voltage; a clock pulse generator; counter means for counting clock pulses from said clock pulse generator; a digital-to-analog converter coupled to said counter means and adapted to supply a second control voltage, indicative of the number of clock pulses counted by said counter means, to electronic tuning circuitry of an electronically tuned radio receiver; a voltage comparator having a first input, a second input, and an output; the output from said converter being connected to the first input of said voltage comparator; the second input of said voltage comparator being connected to said manual control means; a gate circuit coupling said clock pulse generator to said counter means; the output from said voltage comparator being connected to said gate circuit to discontinue the supply of said clock pulses to said counter means when the second control voltage is substantially equal to the first control voltage; and digital memory means coupled to the outputs from said counter means and to the inputs of said digital-to-analog converter and arranged to digitally store clock pulse count signals corresponding to control voltages associated with tuning frequencies of selected radio broadcasting stations.

4,119,916

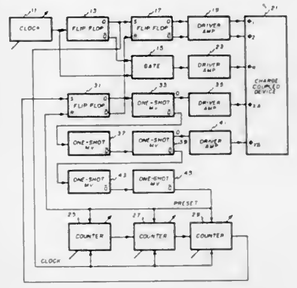
PROGRAMMABLE CHARGE COUPLED DEVICE TIMING SYSTEM

Herbert Berke, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1977, Ser. No. 798,289

Int. Cl.[2] H03K *5/15*

U.S. Cl. 328—62 **17 Claims**



1. Means for generating a plurality of timing signals, comprising in combination:

a clock signal generator;

a first flipflop having an input, a Q output, and a $\overline{Q}$ output, with the input thereof connected to the output of said clock signal generator;

a second flipflop having a set input, a reset input, a Q output, and a $\overline{Q}$ output, with the set input thereof connected to the Q output of said first flipflop;

counter means having a clock input, a preset input, and an output, with the clock input thereof connected to the output of said clock signal generator;

another flipflop having a set input, a reset input, a Q output, and a $\overline{Q}$ output, with the set input thereof connected to the output of said counter means, with the reset input thereof connected to the preset input of said counter means, and with the $\overline{Q}$ output thereof connected to the reset input of said second flipflop; and

delay means effectively connected between the Q output of said another flipflop and the preset input of the aforesaid counter means for timely supplying a predetermined delayed signal thereto and to the reset input of said another flipflop.

4,119,917

SEQUENTIALLY TRIGGERING TWO OR MORE HYDROGEN THYRATRONS WITH PRECISION TIMING

Reuben E. Nyswander, 608 A Nimitz Ave., China Lake, and Cass R. Roquemore, 239 Peg, Ridgecrest, both of Calif. 93555

Continuation of Ser. No. 304,575, Nov. 2, 1972, abandoned. This application Nov. 3, 1977, Ser. No. 848,188

Int. Cl.[2] H03K *4/00, 5/15*

U.S. Cl. 328—67 **9 Claims**

1. A precision thyratron triggering circuit comprising:

A first thyratron having an anode, a cathode, and a grid;

a second thyratron having an anode, a cathode, and a grid;

trigger generator means connected to the grid of said first thyratron for causing said first thyratron to become conductive;

a capacitor connected to the anode of said first thyratron;

a first output connected to the anode of said first thyratron;

a tapped inductor connected in series with said capacitor so as to provide a series resonant circuit therewith;

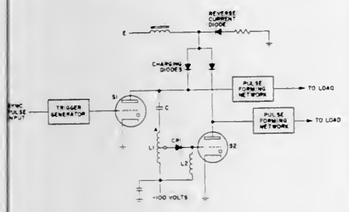
a source of negative potential connected to said tapped inductor;

an inductor connected between said source of negative potential and the grid of said second thyratron;

means connecting the tap of said tapped inductor to the grid of said second thyratron for coupling part of the resonant energy of said series resonant circuit thereto;

a second output connected to the anode of said second thyratron;

a common ground connected to the cathodes of said first and second thyratrons; and



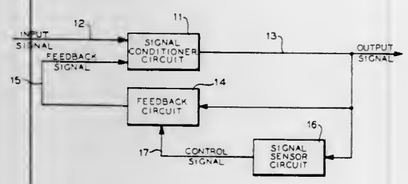
a source of positive electrical potential effectively connected to the anodes of said first and second thyratrons, whereby the triggering of said first thyratron produces a long, slowrising pulse at said first output followed by a short fast rising pulse at said second output in response to the resonant energy coupled to the grid of said second thyratron.

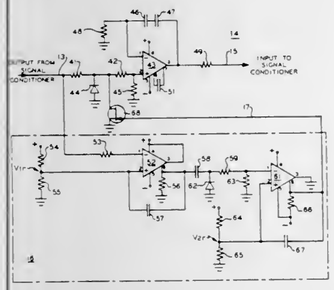
4,119,918

AUTO ZERO CIRCUIT

Richard A. Moser, Toledo, Ohio, assignor to Helm Instrument Company, Toledo, Ohio

Filed May 2, 1977, Ser. No. 793,149
Int. Cl.² H03K *5/08*
U.S. Cl. 328—165 **10 Claims**





1. Means for interrupting a feedback path in a signal conditioning system, the system including a source of an input signal having at least one signal pulse superimposed on a first d.c. voltage level, a signal conditioner circuit having an input connected to the input signal source and being responsive to the signal pulse for generating at an output a conditioned signal pulse superimposed on a second d.c. voltage level and a feedback means having an input connected to the signal conditioner output and an output connected to the signal conditioner input for establishing the second d.c. voltage level, the interrupting means comprising:

a source of a first reference voltage;

a first means having one input connected to said first reference voltage source and another input connected to the signal conditioner output for generating a signal at an output during the time the magnitude of the conditioned signal pulse exceeds the magnitude of said reference voltage;

a signal differentiating means;

a source of a second reference voltage;

a second means having one input connected to said second reference voltage source and another input connected to the output of said first means through said signal differentiating means for generating a control signal at an output during the time the magnitude of the differentiated first means output signal exceeds the magnitude of said second reference voltage; and

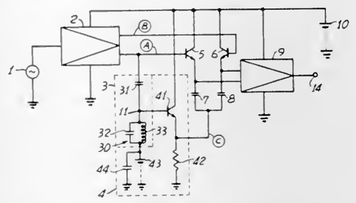
means connected to said second means output and to said feedback means input and responsive to said control signal for removing the conditioned signal pulse superimposed on the second d.c. level from said feedback means input wherein the feedback means continues to establish the second d.c. voltage level.

4,119,919

FREQUENCY DISCRIMINATOR CIRCUIT

Mitsutoshi Sugawara, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 844,981
Claims priority, application Japan, Oct. 26, 1976, 51-129197
Int. Cl.² H03D *3/22*
U.S. Cl. 329—103 **5 Claims**



1. A frequency discriminator circuit comprising an input stage amplifier responsive to an input signal for obtaining a first signal at a first output port and a second signal at a second output port, said first and second signals having different phases from each other, means for shifting the phase of said first signal, a first transistor having said first signal applied to its base, a second transistor having said second signal applied to its base, first and second capacitors having their one ends connected to the respective emitters of said first and second transistors, means for applying the output of said phase-shifting means to the other ends of said first and second capacitors, respectively, and a differential amplifier output circuit having the respective emitter outputs of said first and second transistors applied to its inputs.

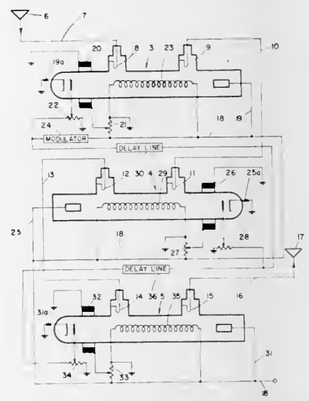
4,119,920

PULSED REPEATER AMPLIFIER

Jack C. Greene, Syosset, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1959, Ser. No. 809,893
Int. Cl.² H03F *3/58*
U.S. Cl. 330—43 **3 Claims**

1. A pulsed repeater amplifier circuit comprising three traveling wave tubes, each said tube having a helical coil disposed therewithin; an input antenna; an output antenna; means connecting the said antennas and the said tubes in cascade so that a wave received on the input antenna is conducted successively through the said three tubes to the output antenna;



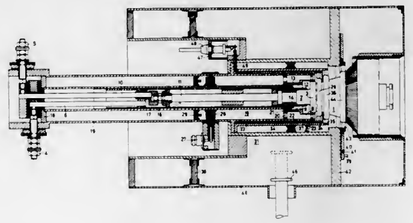
means for establishing a predetermined electrostatic field about the helical coil in each tube; and means responsive to an individual modulating signal on the control grid of each tube for amplifying the wave during predetermined intervals as it travels through each tube.

4,119,921

AMPLIFIER DEVICE FOR TRANSMITTING TETRODE

Jozef Johannus Maria Warringa, and Harry Piepers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,137
Claims priority, application Netherlands, May 3, 1976, 7604671
Int. Cl.² H03F *1/20*
U.S. Cl. 330—49 **6 Claims**



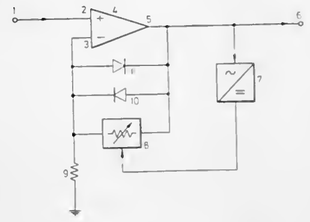
1. A device for amplifying signals in the frequency band of 470 to 1000 MHz comprising a tetrode having an anode, a cathode, a screen grid and a control grid, a first and second coaxial cylindrical conductor defining a resonant input cavity therebetween, means for supplying to said input cavity a signal to be amplified, a third cylindrical conductor coaxial with and insulated from said first and second conductors, means for connecting said third conductor to a source of dc voltage, means for connecting said third conductor to said control grid to thereby supply said control grid with dc voltage, a fourth cylindrical conductor coaxial with and insulated from said third conductor, at least one additional cylindrical conductor coaxial with and surrounding at least a portion of said fourth conductor, said additional conductor being spaced from and defining with said fourth conductor a resonant output cavity therebetween, means for grounding said fourth conductor and further means for connecting said fourth conductor to said screen grid to thereby ground said screen grid and reduce capacitance between said screen grid and said output cavity, means for extracting the amplified signal from said output cavity, means for connecting said anode to a source of dc voltage and terminal means for connecting said cathode to a source of heating current.

4,119,922

CIRCUIT FOR AUTOMATIC VOLUME COMPRESSION OR VOLUME EXPANSION

Ernst Schröder, Hanover, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H, Germany

Filed Apr. 26, 1977, Ser. No. 791,134
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619192
Int. Cl.² H03G *3/20*
U.S. Cl. 330—86 **8 Claims**



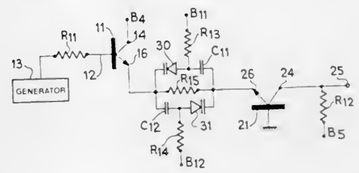
1. In a circuit for automatic volume compression or expansion in a signal path, including a differential amplifier, having a non-inverting input, an inverting input and an output, in the signal path between an information signal input terminal and an information signal output terminal, with a feedback path, containing electronically controlled impedance, connecting the amplifier inverting input to the amplifier output, and with a branch path, branched off from one of the information signal input and output terminals, in which a control voltage is derived from the information signal and fed to the electronically controllable impedance: the improvement comprising, in combination, means feeding the information signal to said non-inverting amplifier input; and means connected between said amplifier output and said inverting input and limiting the feedback voltage therebetween to a given value.

4,119,923

DISTORTION CORRECTOR FOR WIDE-BAND TRANSISTORIZED AMPLIFICATION STAGES

Philippe Legendre, and Jean-Marie Nef, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 15, 1977, Ser. No. 851,804
Claims priority, application France, Nov. 19, 1976, 76 34913
Int. Cl.² H03F *1/08, 3/10, 3/19*
U.S. Cl. 330—284 **1 Claim**



1. A corrector for a wide band transistorized amplifier having at least two cascaded amplification stages comprising a first transistor which has a common collector circuit and of which

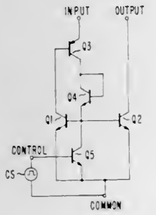
the emitter circuit is coupled with that of a second transistor having a common base circuit through first and second varactors of which the cathodes are respectively connected to the emitters of said first and second transistors, each anode of said first and second varactors being respectively connected on the one hand to the emitter of said second and first transistors through an insulating capacitor and on the other hand to two adjustable biassing sources.

4,119,924

SWITCHABLE CURRENT AMPLIFIERS

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,858
Int. Cl.[2] H03F *3/04*
U.S. Cl. 330—288 **8 Claims**



1. A current amplifier comprising:

first and second transistors of a first conductivity type and a third transistor of a second conductivity type complementary to the first, each of said transistors having first and second electrodes and a principal conduction path therebetween and having a third or control electrode, the flow of current through its principal conduction path being controlled responsive to respective control voltages between its first and third electrodes, said third transistor being a bipolar type having emitter and collector and base electrodes corresponding to its first and second and third electrodes, respectively, and having an emitterbase junction;

means for operating said third transistor in saturation, so its base current is substantially as large as its emitter current, including means for direct coupling the second electrode of said first transistor to the base electrode of said third transistor,

means for direct coupling the collector electrode of said third transistor to the third electrode of said first transistor with an offset potential greater than any afforded between the second electrode of said first transistor and the base electrode of said third transistor by said means for direct coupling the second electrode of said first transistor to the base electrode of said third transistor, and

means not including any of the foregoing elements for supplying an input current of prescribed value between the first electrode of said first transistor and the emitter electrode of said third transistor; and

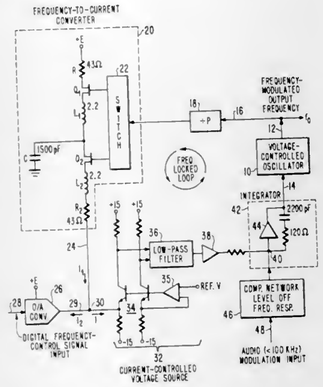
means for applying as the control potential of said second transistor a potential equal to the control potential of said first transistor appearing responsive to said input current, responsive to which said second transistor is conditioned to conduct an output current between its first and second electrodes.

4,119,925

FREQUENCY SYNTHESIZER WITH FREQUENCY MODULATED OUTPUT

Robert Jan Bosselaers, Winchester, Mass., assignor to RCA Corporation, New York, N.Y.

Filed May 16, 1977, Ser. No. 797,400
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—1 A **1 Claim**



1. Means to generate an output signal having a desired center frequency, and to frequency modulate said output signal, comprising

a voltage-controlled oscillator providing said output signal,

a frequency divider coupled to the output of said oscillator,

a frequency-to-current converter connected to the output of said frequency divider and producing an actual-frequency-representing current corresponding with the frequency of said output signal,

a digital-to-analog converter converting an input digital signal representing a desired output signal frequency to a corresponding desired-frequency-representing current,

means to produce an error current representing the difference between said actual-frequency-representing current and said desired-frequency-representing current,

a current-controlled voltage source translating said error current to a corresponding error voltage,

a low-pass filter, and an integrator, coupling said error voltage to the control voltage input of said voltage-controlled oscillator, to produce an output at the desired center frequency, and

means to apply an audio-frequency modulating voltage also to the input of said integrator, to frequency modulate the output signal from said voltage-controlled oscillator.

4,119,926

APPARATUS AND METHOD FOR STABILIZED PHASE DETECTION FOR BINARY SIGNAL TRACKING LOOPS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Phillip M. Hopkins, Houston, Tex.

Filed Dec. 8, 1977, Ser. No. 858,765
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—1 A **17 Claims**

1. A stabilized phase detector for a signal tracking loop to track an incoming signal in the presence of gain level changes and imbalance using two local reference signals, comprising:

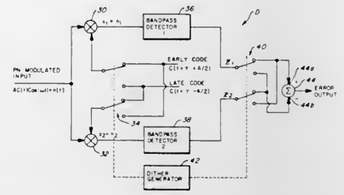
(a) mixer means for multiplying the incoming signal with the two local reference signals to form first and second product signals;

(b) first bandpass detector means for forming an error signal from the first product signal for tracking the incoming signal;

(c) second bandpass detector means for forming an error signal from the second product signal for tracking the incoming signal;

(d) means for forming a composite error signal from the error signals from said first and second bandpass detector means; and

(e) switching means comprising:



(1) first switching means for alternately interconnecting the two local reference signals to said mixer means; and

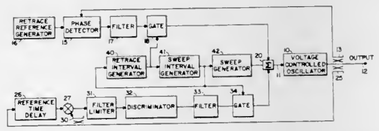
(2) second switching means for alternately interconnecting the error signals from said first and second bandpass detector means to said means for forming to thereby compensate for gain imbalance and level drift in said bandpass detector means.

4,119,927

CONSTANT RATE SWEEP FREQUENCY GENERATOR

N. Bruce Metteer, and John D. Quick, both of Phoenix, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 8, 1977, Ser. No. 814,011
Int. Cl.[2] H03B *3/04, 23/00*
U.S. Cl. 331—11 **4 Claims**



3. A method of producing a constant rate sweep frequency including the steps of:

(a) providing a variable oscillator for providing the desired frequency;

(b) periodically adjusting the oscillator to a predetermined basic or starting frequency;

(c) supplying a sweep signal to the oscillator to cause the oscillator to sweep through a desired range;

(d) continuously sensing the frequency linearity of the output signal of the oscillator and continuously adjusting the sweep signal until the output signal frequency rate of change is substantially linear.

4,119,928

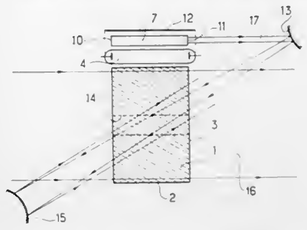
LASER HEAD AND APPLICATION THEREOF TO A LASER GENERATOR DEVICE

Maurice Michon, Draveil, and Bernard Sturel, Saint Cheron, both of France, assignors to Compagnie General d'Electrocite S.A., Paris, France

Filed Feb. 8, 1977, Ser. No. 766,816
Claims priority, application France, Feb. 17, 1976, 76 04313
Int. Cl.[2] H01S *3/093*
U.S. Cl. 331—94.5 P **11 Claims**

1. In a laser head comprising:

a neodymium doped glass active material; and a light source disposed so that a part of the light emitted by this source illuminates said active material and thereby excites it in order to make it capable of amplifying a laser beam having a wavelength of 1.06 microns passing therethrough, there being a position, of the active material which is less well illuminated by the light source than the rest of the active material; the improvement comprising a plurality of ruby crystals, each of said ruby crystals being disposed inside a resonant optical cavity, said crystals being situated close



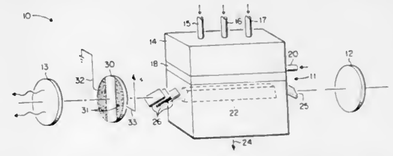
to said light source to receive at least some of that part of said light which does not illuminate said active material, so as to produce a laser radiation along the axis of these cavities; and means for directing said laser radiation on said less well illuminated portion of said active material.

4,119,929

NEAR INFRARED LASER MODULATOR

William L. Shackleford, Seal Beach; Donald C. Winter, Manhattan Beach, and David B. Hall, Hollywood, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 19, 1977, Ser. No. 798,739
Int. Cl.[2] H01S *3/10*
U.S. Cl. 331—94.5 M **5 Claims**



1. A laser for generating radiation in the wavelength region between approximately 2 and approximately 5 microns, said laser comprising:

(a) a laserable material;

(b) means for exciting the laserable material and causing a population inversion;

(c) means providing a laser cavity;

(d) means disposed in said laser cavity for linearly polarizing the radiation generated by the excited laserable material;

(e) a PLZT polycrystal disposed in said laser cavity;

(f) means for applying at will an electric voltage to said PLZT crystal for causing optical birefringence, thereby to modulate the laser output; and

(g) fluid means disposed about said crystal and transparent to the radiation generated by the laser for cooling said crystal.

4,119,930

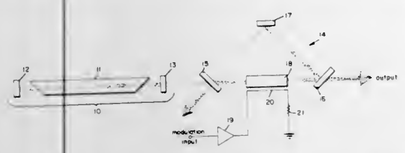
COUPLING MODULATION IN TRAVELLING WAVE RESONATOR

Richard L. Abrams, Pacific Palisades, and David M. Henderson, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 24, 1976, Ser. No. 726,337
Int. Cl.[2] G02F *1/22*
U.S. Cl. 332—7.51 **10 Claims**

1. A wideband optical ring modulator comprising, in combination, a ring resonator supportive of unidirectionally propa-

gating optical energy, a travelling wave electro-optic modulator disposed within said ring resonator, first means for coupling unmodulated optical energy into said ring resonator from



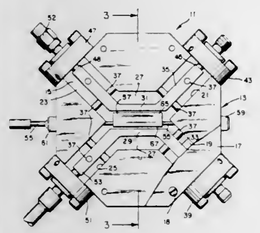
an external source and second means for coupling modulated optical energy from said ring resonator to the exclusion of unmodulated optical energy.

4,119,931

TRANSMISSION LINE SWITCH

Thomas Hudspeth, Malibu, and Harmon H. Keeling, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 6, 1976, Ser. No. 702,795
Int. Cl.[2] H01P *1/10, 5/18*
U.S. Cl. 333—7 R **8 Claims**



1. A TEM-mode transmission line switch, comprising:
a parallel transmission line coupler including first and second parallel lines; and
coupling means including a conductive vane disposed between said parallel lines and rotatable on an axis parallel to said parallel lines for isolating said parallel lines in an uncoupled position and for electromagnetically coupling said parallel lines in a coupled position, said axis being asymmetrical with respect to the cross section of said vane whereby said vane is equally spaced between said parallel lines when in said coupled position, and closer to one of said lines when in said uncoupled position.

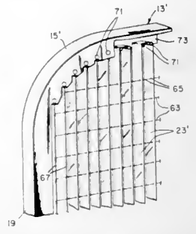
4,119,932

LINEAR POLARIZATION SELECTIVE SCREEN

Thomas A. Bockrath, Hawthorne, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 6, 1976, Ser. No. 702,787
Int. Cl.[2] H01P *1/165*
U.S. Cl. 333—21 A **13 Claims**

1. A linear polarization selective screen for interaction with electromagnetic wave energy associated with an antenna and allowing only electromagnetic waves having a desired linear polarization to pass therethrough, said screen comprising:
frame structure including first and second spaced end portions lying in a common plane;
a plurality of relatively thin conductive flat ribbons supported between said end portions of said frame structure, said ribbons being at substantially the same potential, and the broad surfaces of said ribbons being parallel and orthogonal to said common plane of said frame structure; and



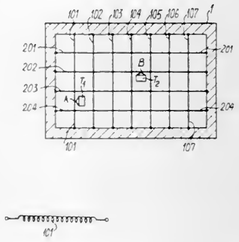
tension means associated with said frame structure and said ribbons for maintaining a predetermined tensional force on each of said ribbons.

4,119,933

MECHANICAL ARTIFICIAL REVERBERATION APPARATUS

Eric P. De Lamare, Clamart, and Pierre D. Dudon, Cachan, both of France, assignors to Telediffusion de France, Montrange, France

Filed Mar. 14, 1977, Ser. No. 777,278
Claims priority, application France, Mar. 26, 1976, 76 08795
Int. Cl.[2] H03H *9/30;* **G10H** *1/02*
U.S. Cl. 333—30 R **11 Claims**



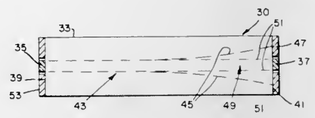
1. A mechanical reverberation apparatus comprising:
a rigid frame;
a lattice within said rigid frame consisting of a system of first arrayed coil springs and a system of second arrayed coil springs which are transverse to said first coil springs, a first predetermined number of said first coil springs being connected at their ends to said rigid frame and spaced to intersect a second predetermined number of said second springs to form thereby a network within said frame;
said lattice being in the form of at least a 2 dimensional array of said springs in a space covering a portion of an area which is substantially flat;
an electro-acoustic driver transducer;
an acousto-electric pick-up transducer;
said two systems of coil springs having at least one input connected to said electro-acoustic driver transducer to convert sound frequency electrical signals into mechanical vibrations;
each said system of coil springs having at least one output connected to said acousto-electric pick-up transducer to convert mechanical vibrations into new sound frequency electrical signals; and
a plurality of said coil springs having their ends in the form of direct joining contact with each other by contact pressure to thereby provide a certain number of coupling points at said joining ends interconnecting said coil springs to said lattice and to each other.

4,119,934

BULK ACOUSTIC WAVE DELAY LINE

Rolf D. Weglein, Los Angeles, and Michael T. Wauk, II, Palo Alto, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 9, 1977, Ser. No. 795,352
Int. Cl.[2] H03H *9/30, 9/04*
U.S. Cl. 333—30 R **7 Claims**



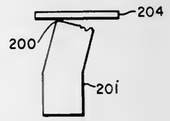
1. A bulk acoustic wave delay line, comprising:
a body of material capable of supporting bulk acoustic wave energy propagating along a path within said body, said body of material including a planar end face at each end of said path;
transducer means including a circular input transducer disposed one one of said planar end faces and a circular output transducer disposed on the other of said planar end faces for respectively converting electromagnetic wave energy to said propagating bulk acoustic wave energy and the converse thereof; and
aperture limiting means including an annular layer of bulk acoustic wave absorbing material disposed on at least one of said end faces immediately adjacent to and surrounding an associated one of said transducers for absorbing the portion of said propagating bulk acoustic wave energy impinging on said end face not covered by said associated transducer.

4,119,935

CIRCUIT INTERRUPTER INCLUDING LOW FRICTION LATCH

Raymond E. Wien, Penn Township, Allegheny County, Pa.; John F. Cotton, Athens, Ga., and Nicholas A. Salemi, Plum Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 20, 1976, Ser. No. 734,069
Int. Cl.[2] H01H *9/20*
U.S. Cl. 335—167 **13 Claims**



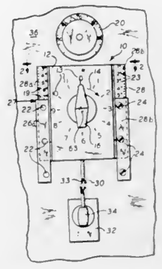
1. A circuit interrupter comprising:
separable contacts;
operating means including a releasable latch for effecting separation of said contacts upon release of said latch; and
a latching surface contacting and restraining said latch, said latching surface being movable to effect release of said latch and having a rough portion and a smooth portion, said latching surface being disposed in relation to said latch so as to cause only said smooth portion to contact said latch.

4,119,936

THERMOSTAT CONTROLLER

Lawrence J. Laviana, Kensington, Conn.; Mark H. Rhodes, Jr., Sandisfield, Mass., and Edward J. Doyle, Avon, Conn., assignors to M. H. Rhodes, Inc., Avon, Conn.

Filed Oct. 22, 1976, Ser. No. 734,721
Int. Cl.[2] H01H *37/02*
U.S. Cl. 337—303 **11 Claims**



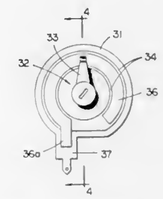
1. A thermostat control device for use with a wall mounted thermostat comprising:
a bracket fixedly mountable on the wall adjacent the thermostat, said bracket having a groove therein;
a housing, a flange extending outwardly from the housing, said flange being slidably receivable in said groove for varying the distance of said housing from said thermostat;
an electric heating element disposed in the housing for heating the thermostat when said control device is mounted on the wall adjacent said thermostat;
means for connecting said heating element to a source of electricity, switching means movable between a first position in which said electric heating element is connected to the source of electricity and a second position in which the heating element is disconnected from the source;
a timing means disposed in said housing, said timing means being manually activatable for a preselected time interval and including means for deactivating said timing means upon the passage of said preselected time interval after activation thereof; and
control means operatively connected to said timing means for moving said switching means between said two positions upon the activation and deactivation of the timing means.

4,119,937

METAL BASE RESISTOR

Myron F. Melvin, 6767 Spring Brook N. Dr., Indianapolis, Ind. 46219

Filed Nov. 8, 1976, Ser. No. 739,557
Int. Cl.[2] H01C *1/012*
U.S. Cl. 338—308 **9 Claims**



1. A film type resistor comprising a metal base, an electrically insulating coating overlying all but a predetermined exposed portion of the metal base, a continuous resistive film deposited in overlying relation to said insulating coating, said

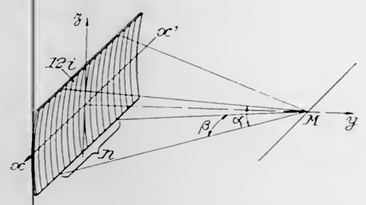
film overrunning said insulating coating only at said exposed portion of said metal base and being conductively bonded thereto, and a terminal element remote from said base-bonded portion of the film having electrical contact therewith, whereby said base and said terminal element function as terminals for the resistor.

4,119,938

METHODS AND DEVICES FOR ULTRASONIC IMAGING

Pierre Alais, Dampierre, France, assignor to Agence Nationale de Valorisation de la Rechere (ANVAR), France

Filed Nov. 6, 1975, Ser. No. 629,599
Claims priority, application France, Nov. 28, 1974, 74 39014
Int. Cl.² G01N *29/04*
U.S. Cl. 340—1 R **23 Claims**



1. A method for ultrasonic imaging with electronic scanning using an array of N identical elementary transducers distributed at equal intervals along a scanning direction, an improved scanning process comprising the steps of:

generating a single electrical signal of frequency *f*;

storing an electrical phase distribution signal representative of the phase at which said signal of frequency *f* is to be applied to *n* adjacent transducers of said array, *n* being an integer greater than 1 and less than N, said signal of frequency *f* to be applied to each of said *n* transducers either in phase or out of phase with the remaining said *n* signals by π, said electrical phase distribution signal being chosen such that said *n* adjacent transducers focus energy at a point which is located a predetermined distance from said *n* transducers;

simultaneously and temporarily applying said single signal of frequency *f* to selected ones of said set of *n* transducers with a phase shift dictated by said phase distribution signal; and

apply said signal of frequency *f* to *n* transducers at each of the plurality of successive times, each time to a set of *n* transducers which is shifted by at least one said transducer of said array of transducers, such that scanning occurs throughout said array.

4,119,939

ACOUSTIC IMAGING METHOD AND APPARATUS

Kageyoshi Katakura, Tokyo, Japan, assignor to Hitachi Medical Corporation, Japan

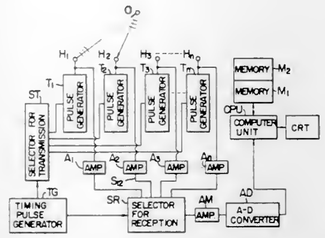
Filed Mar. 16, 1977, Ser. No. 778,088
Claims priority, application Japan, Mar. 17, 1976, 51-28051
Int. Cl.² G01S *9/66, 7/62*
U.S. Cl. 340—1 R **6 Claims**

1. An acoustic imaging method comprising:

a step of transmitting non-directional pulse-like acoustic waves from a plurality of transmitters to a target;

a step of storing, in accordance with the target position, the magnitudes of the acoustic wave signals received at time instants determined by propagation times required for the acoustic waves to propagate from said transmitters to the target position and then to a plurality of receivers; and

a step of repeating said storing step for a predetermined number of times while using a different combination of said transmitters and said receivers, whereby the magnitudes of the received signals are superposed to produce an acoustic image of said target.



4,119,940

UNDERWATER VIEWING SYSTEM

Patrick N. Keating, West Bloomfield; Roger F. Koppelman, Livonia, and Takeo Sawatari, Southfield, all of Mich., assignors to The Bendix Corporation, North Hollywood, Calif.

Filed Oct. 18, 1976, Ser. No. 733,509
Int. Cl.² G01S *9/66*
U.S. Cl. 340—5 H **6 Claims**



1. An underwater viewing system including transmitting transducer means for insonifying a volume of water,

a large areal receiving array having a large number of hydrophones for receiving sonar reflections from objects in said volume of water,

analog-to-digital converter means,

means connecting the received signals to said analog-to-digital converter means,

means for performing two-dimensional focusing and a two-dimensional Fourier analysis on said digitized signals and for reconstructing an image as it appears at said array, and

display means connected to said image reconstructing means for displaying said image;

characterized in that said transmitting transducer means includes a plurality of separate transducers spaced a significant distance apart, each of which emits a coded output signal having frequency characteristics different from the others,

homodyne means are included for comparing each hydrophone input signal with sine and cosine reference signals at each of the transmitted frequencies for separating the frequency contributions at each hydrophone including phase information for each frequency,

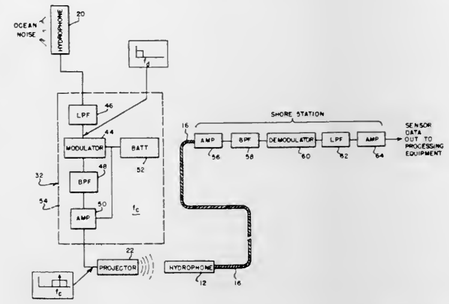
said image reconstructing means including means providing spatial modulation to account for spatial separation of the transmitters and to facilitate calibration and means combining the resultant data sets to form a synthesized data set whose resolution is commensurate with an array whose number of hydrophones is that in said actual receiving array multiplied by the number of transducers in said transmitting transducer means.

4,119,941

ACOUSTIC COUPLER

Donald K. Moore, Honolulu, Hi.; George R. Beaman, Leucadia, Calif.; John D. Hightower, Kailua, and Craig W. Graham, Jr., Honolulu, both of Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1977, Ser. No. 822,463
Int. Cl.² H04B *11/00*
U.S. Cl. 340—5 R **10 Claims**



1. An acoustic coupler for extending the listening capability of an existing cable connected hydrophone system comprising:

a sensor which is capable of sensing a condition and producing corresponding signals;

an acoustic projector;

a cable electrically connecting the acoustic projector to the sensor;

means interconnected in the cable between the projector and the sensor for modulating signals received by the sensor on a carrier wave which is within the bandpass of the existing hydrophone; and

means for clamping the acoustic projector directly on the existing hydrophone;

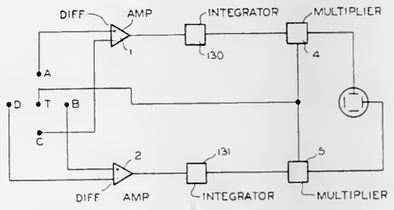
whereby upon clamping the acoustic projector to the existing hydrophone, signals from the sensor can be transmitted over said existing cable connected hydrophone system.

4,119,942

ACOUSTIC DIRECTION FINDER

Harold M. Merklinger, P.O. Box 15, Stewiacke, Nova Scotia, Canada

Filed Jul. 7, 1976, Ser. No. 703,280
Claims priority, application Canada, Jul. 8, 1975, 231036
Int. Cl.² G01S *3/80*
U.S. Cl. 340—6 R **5 Claims**



1. An acoustic signal direction finder comprising

a. at least two dipole electro-acoustic transducer means disposed in quadrature,

b. a pair of differential amplifiers, each connected to a respective transducer means for providing a pair of dipole resultant signals related to the acoustic pressure difference of the acoustic signal detected along each of the dipoles,

c. integrating means connected to the output of the differential amplifiers,

d. means for providing a common sum signal of the signal received by both transducer means in phase,

e. a pair of first multiplying means to provide a pair of display deflection signals connected to the integrating means, the individual integrated signals being applied to the respective multiplying means, and further including means for applying the common signal to both of the multiplying means, and

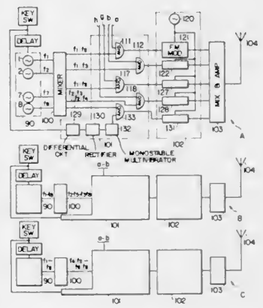
f. means for applying the deflection signals to deflection circuitry of a display device.

4,119,943

MONITOR SYSTEM FOR CONSTRUCTION VEHICLES

Yoshiaki Harazoe, and Shigeru Kurakami, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 14, 1977, Ser. No. 759,611
Int. Cl.² G08B *21/00*; H04Q *1/45*
U.S. Cl. 340—52 F **2 Claims**



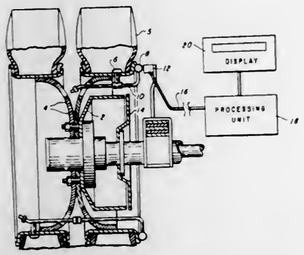
1. A monitor system for monitoring a plurality of construction vehicles, each having an engine key switch and a plurality of checkpoints, said monitoring system comprising at each said plurality of construction vehicles, a plurality of sensor means for sensing said plurality of checkpoints, respectively, and for providing an indication of abnormality at said plurality of checkpoints, respectively, audio signal oscillator means producing a set of frequencies differing from one another, said set being common to all said vehicles, mixing means for combining said frequencies in suitable combination to produce a plurality of mixed-multi-frequency signals, each of said mixed-multi-frequency signals consisting of a unique combination of said frequencies, said combination being unique both to the vehicle where generated and to all said vehicles in said monitoring system, selecting means connected to said mixing means and said sensor means for outputing respective ones of said mixed-multi-frequency signals responsive to indications of abnormality, each said sensor means produced indication of abnormality resulting in the output of a particular multi-frequency signal uniquely identifying said sensor means, a frequency modulation means for frequency modulating said outputed mixed-multi-frequency signals provided by said selecting means, and an output circuit means for transmitting the frequency modulated signal, said monitoring system further comprising a monitor station responsive to said transmitted frequency modulated signals from all said vehicles for identifying the abnormal condition and the vehicle on which the abnormal condition occurs.

4,119,944

VEHICULAR TIRE AIR PRESSURE MEASURING SYSTEM

Jesse Britton Smith, 1153 Rock Creek Dr., Garland, Tex. 75040

Filed Jun. 27, 1977, Ser. No. 810,160
Int. Cl.² B60C *23/02*
U.S. Cl. 340—58 **5 Claims**



1. An air pressure measuring system for measuring the pressure of air in a tire on a moving vehicle comprising:
an air pressure transducer mounted on a wheel, said transducer comprising a tubular housing having a first end in communication with the interior volume of a tire on said wheel, a piston slidably positioned within said tubular member, a spring between said piston and a second end of said tubular member, first and second magnetic elements fixed to the first and second ends of said tubular member respectively and a third magnetic element fixed to said piston to move therewith,
a magnetic sensor mounted on a vehicle and spaced from the path of rotation of said air pressure transducer, said sensor having an output for providing signals in response to movement of said first, second and third magnetic elements past said sensor, and
electronic processing and display means coupled to said sensor output for measuring the time intervals between passage of said first, second, and third magnetic elements past said sensor, for calculating air pressure from said time intervals, and for visually displaying said air pressure.

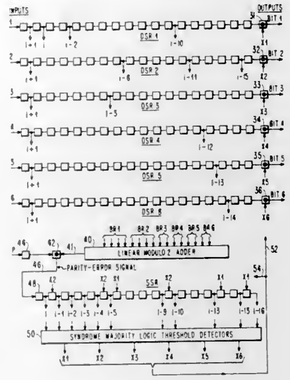
4,119,945

ERROR DETECTION AND CORRECTION

Henry Garton Lewis, Jr., Princeton, and Seraphin Bernard Calo, Rocky Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,364
Int. Cl.² G06F *11/12*
U.S. Cl. 340—146.1 AQ **1 Claim**

1. An error detection and correction system for transmitting data words together with parity bits in a manner providing relatively greater protection for at least the highest order bit of the data words; comprising
an encoder receptive to the bits of each data word for generating a parity bit according to a self-orthogonal convolutional code constructed by the use of a difference triangle for each of the bits of the data words, the difference triangles being disjoint, at least the triangle associated with the highest order bit having a larger number of base elements than triangles associated with low order bits, said encoder including:
an encoder shift register for each bit of the data word, each shift register having outputs from the first stage and from stages displaced from the first stage by the amounts of the values of the base elements of the triangle associated with the respective data bit, and
a first parity generating logic which computes the linear modulo 2 sum of said outputs of said encoder shift registers and provides a parity bit output for each data word; and
a decoder receptive over a transmission path to code words, each including a data word and an associated parity bit, from said encoder for detecting and correcting errors in the data words, said decoder including:
a decoder shift register for each bit of a received data word, each shift register having outputs from a first stage and from intermediate stages displaced from the input stage by amounts equal to the values of the base elements of the triangles associated with the respective data bits, and from a terminal stage,
a second parity generating logic which computes the linear modulo 2 sum of the outputs from the first and intermediate stages of said decoder shift registers,
a syndrome storage shift register,
means to compute the modulo 2 sum of each received parity bit with the output of said second parity generating logic and apply the resulting syndrome to the input of said syndrome storage shift register,



a syndrome majority logic threshold detector for each bit of the data word, said detectors having inputs from selected stages of said syndrome storage shift register,
an error correcting gate for each bit of the data word, each gate being receptive to the output of the terminal stage of a respective decoder shift register and the output of a respective syndrome majority logic threshold detector, and having an output providing a respective error-corrected bit of the data word, and
means coupling outputs of syndrome majority logic threshold detectors resulting from the detection of errors in solely the high order bits having difference triangles of large size, relative to the difference triangles of the low order bits, to predetermined points in said syndrome storage register to complement syndrome bits therein.

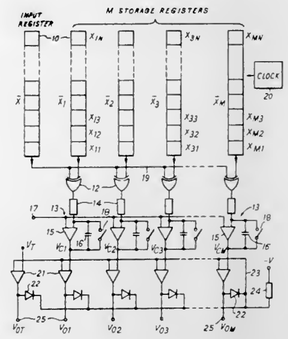
4,119,946

COMPARISON APPARATUS, E.G. FOR USE IN CHARACTER RECOGNITION

Wilfred Kenelm Taylor, Richmond, England, assignor to National Research Development Corporation, London, England

Filed May 20, 1977, Ser. No. 798,991
Claims priority, application United Kingdom, May 25, 1976, 21674/76
Int. Cl.² G06K *9/12*
U.S. Cl. 340—146.3 Q **16 Claims**

1. Apparatus for comparing vectors, comprising means defining a plurality of *n*.M shift registers for storing a plurality M of reference vectors each having N components represented by corresponding groups of *n* bits, where N and M are integers greater than 1, and *n* is selected from the group of small integers including unity, each shift register having a single bit output, means additional to said *n*.M shift registers for supplying an input vector also having N components represented by corresponding groups of *n* bits, M comparison devices each adapted to compare *n* bits of said input vector with *n* bits of its corresponding one of said M reference vectors and to provide a comparison signal representing the results of the comparison, means operative in a succession of comparison operations to present the bits of the input vector *n* at a time, simultaneously to the respective comparison devices of all M said reference vectors and concurrently to present the corresponding bits of



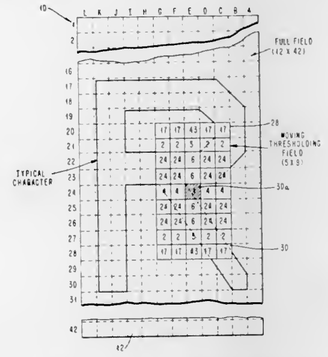
the reference vectors from the single bit outputs of said registers to the respective comparison devices, and a plurality M of summating devices operative to accumulate output signals in response to the comparison signals from the M comparison devices respectively and to provide such output signals at the conclusion of the comparison operations, that output signal whose value is at one extreme of the range of values of the output signals denoting the one of the M reference vectors with which the input vector makes the closest match.

4,119,947

OPTICAL SIGNAL PROCESSOR

Howard Noyes Leighton, 1500 Baylor Ave., Rockville, Md. 20850; Michael McHugh Siverling, 519 28th St., NW., Rochester, Minn. 55901, and Raymond John Wilfinger, 17 Square Woods Dr., LaGrangeville, N.Y. 12540

Filed Jul. 20, 1977, Ser. No. 817,465
Int. Cl.² G06K *9/12*
U.S. Cl. 340—146.3 AG **10 Claims**



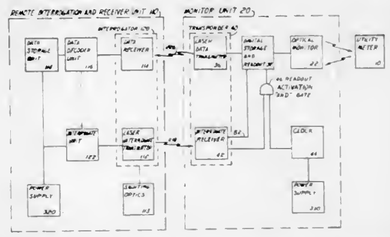
1. An optical read circuit on a large scale integrated circuit chip for reading printed matter from documents comprising,
an integrated circuit array of optically sensitive devices on said chip each device generating a signal made up of charge packets which are analog in magnitude and discrete in time, whose magnitude represents the intensity of light reflected from the document for a single element in a multi-element picture generated by the whole array of optically sensitive devices,
an integrated circuit scanning means on said chip for sequentially selecting each of the devices to be the device of interest so that the signal generated thereby can be analyzed to determine whether it is a black or white element of said multi-element picture, said scanning means including memory means for storing said signals produced by the array of optically sensitive devices including charge signals from the device of interest and from devices surrounding the device of interest in a preselected pattern to form an information base for making the analysis of the signal from the device of interest, and
an integrated circuit analysis means on said chip for generating a binary signal indicative of whether said signal from the device of interest is a black or white element in said multi-element picture said analysis means including:
an integrated circuit weighting means on said chip for weighting all said signals from said information base relative to said signal from the device of interest,
an integrated circuit comparison means on said chip comparing each of said weighted signals to the analog signal from the device of interest, and
an integrated circuit logic means for producing the binary signal on the basis of the comparisons made by the comparison means.

4,119,948

REMOTE METER READING SYSTEM

Ernest Michael Ward, 6308 Jebel Way; Steven M. Ward, 325 Bright Water, and Michael A. Dils, 329 Bright Water, all of El Paso, Tex. 79912

Filed Apr. 29, 1976, Ser. No. 681,502
Int. Cl.² H04B *9/00*; H04Q *9/14*; G08C *19/36*
U.S. Cl. 340—151 **51 Claims**



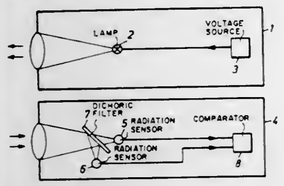
43. An electro-optical remote utility meter reading system comprising:
utility meter monitoring means comprising a transponder responsive to light radiation and upon interrogation thereof transmitting data in the form of light radiation pulses; and
a mobile interrogation and receiver means located remote from said transponder and comprising an interrogator to trigger electrooptically with light radiation said interrogation and receive said data, and wherein said last mentioned light radiation has a beam of predetermined shape and diverging geometry, and said data is passed essentially only through an uncontrolled ambient atmospheric medium.

4,119,949

FIRE DETECTOR UTILIZING TWO BANDWIDTHS OF RADIATION

Erik Gustaf Lindgren, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 22, 1977, Ser. No. 780,009
Claims priority, application Sweden, Apr. 15, 1976, 7604502
Int. Cl.[2] G08B *17/12*
U.S. Cl. 340—630 3 Claims



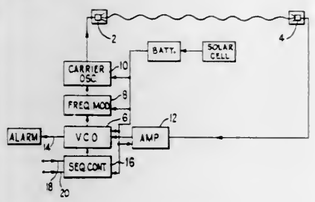
1. Optical fire detector in which a radiation-emitting means is arranged to emit a beam of radiation and a radiation-detecting means is arranged to receive the beam of radiation after it has passed through an intermediate air medium and to provide an alarm upon an obscuration of the beam of radiation, the radiation-detecting means comprising first means for individually measuring the intensity in a first and a second wavelength band of the beam of radiation and second means for comparing the individually measured intensities and providing said alarm upon a predetermined difference between them, said first means including a radiation-sensing element arranged to switch between a first and a second input of said second means, at least one of said inputs being provided with a memory, and third means being arranged to alternately divide the beam of radiation into the two wavelength bands in synchronism with the alternating switching of the radiation-sensing element.

4,119,950

GAS DETECTION

Robert J. Redding, September House, Cox Green La., Maidenhead, Berkshire, England (SL6 3EL)

Filed Feb. 18, 1977, Ser. No. 770,112
Claims priority, application United Kingdom, Apr. 7, 1976, 14179/76
Int. Cl.[2] G08B *21/00*; G01N *29/02*
U.S. Cl. 340—524 15 Claims



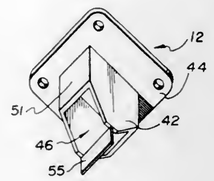
1. An alarm system for providing an alarm when an undesirable gas content occurs in the free atmosphere on a site, the system comprising:
means to generate a carrier electric signal;
an audio frequency signal generator;
a frequency modulator coupled to the carrier signal generator and to the audio frequency generator and operative to frequency modulate the carrier signal with the audio frequency signal;
a first transducer energisable by the frequency-modulated carrier signal to transmit modulated ultrasonic energy into said free atmosphere;
means responsive to the relationship between the phase of the audio modulation of the ultrasonic energy received by a second transducer and the phase of the audio modulation of the ultrasonic energy transmitted by the first transducer to generate a signal dependent upon said gas content; and
means coupled to the phase relationship responsive means to generate an alarm signal in response to the occurrence of a said undesirable gas content.

4,119,951

MICROWAVE INTRUSION SENSING UNITS AND ANTENNA THEREFOR

Gilles Garon, 408 Vauquelin, Beloeil, and Andre Henault, 2060 Charles-Gill, Montreal, both of Canada

Filed Feb. 16, 1977, Ser. No. 769,081
Int. Cl.[2] G08B *13/24*
U.S. Cl. 340—552 9 Claims



1. An antenna for use in combination with a low power microwave transceiver in an intrusion detection alarm system, said antenna comprising a rectangular waveguide adapted to be coupled at its inner end to said transceiver and having a shaped aperture at its free end with a scattering blade of electrically conductive material extending across said shaped aperture in a plane parallel to the two short side walls of said waveguide and located between and generally equidistantly from said two short side walls, said scattering blade being electrically connected to said waveguide, being supported by the two wide side walls of said waveguide and extending from the free ends of the said two wide side walls and outwardly therefrom, the short side walls of said waveguide terminating short of the free ends of said two wide side walls, said shaped aperture being symmetrical with respect to the plane of said scattering blade, wherein the outer edge of each short side wall is perpendicular to said wide side walls and wherein each wide side wall is cut at an acute angle with respect to said plane and extends from the outer edge of the respective short side wall to said scattering blade.

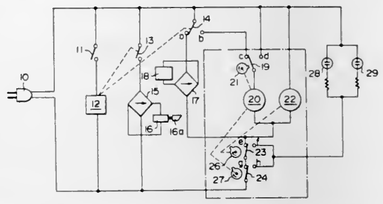
4,119,952

APPARATUS FOR MONITORING PHOTOGRAPHIC PROCESSING LIQUID

Yutaka Takahashi; Yoshio Hakamata, both of Tokyo, and Masamitu Konno, Hino, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minaniashigara, Japan

Filed Feb. 22, 1977, Ser. No. 770,780
Claims priority, application Japan, Feb. 20, 1976, 51-17510
Int. Cl.[2] G08B *1/00*
U.S. Cl. 340—309.1 4 Claims

1. An apparatus for monitoring the photographic processing liquid comprising an alarm lamp to indicate the renewal of said photographic processing liquid, a switching means connected in series to said alarm lamp, a timer which is adapted to act on said switch for closing after the lapse of a predetermined length of time subsequent to the renewal of said developing liquid, and a counter to count the photographic film rolls which have been developed, said counter being adapted to act on said switching means for closing the same when the total count of the photographic film rolls has reached a predetermined number, whereby the monitoring is performed in terms of both the effective period of time and the amount of the photographic film processed until said lamp indicates that said photographic processing liquid should be renewed.

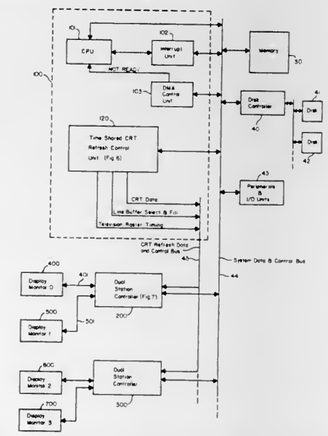


4,119,953

TIMESHARING PROGRAMMABLE DISPLAY SYSTEM

Waldemar Yeschick, Ilion, N.Y., assignor to Mohawk Data Sciences Corp., Herkimer, N.Y.

Filed Jan. 24, 1977, Ser. No. 761,849
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—324 AD 8 Claims



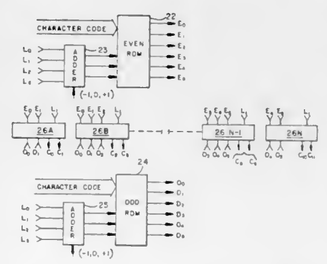
1. In display apparatus for N display units, N being an integer greater than one, each display unit having a television monitor responsive to a television signal to display a frame of characters in the form of M lines of characters, M being an integer, the signal being characterized by a periodic television raster defined by horizontal and vertical timing signals produced by a source of timing signals, the raster being adapted for encoding with a frame of character codes corresponding to and manifesting said frame of characters; each unit further including a unit line buffer for storing said frame of codes, a line at a time, means for reading the codes from said buffer, and means for combining the raster timing signals with the codes so read to produce said television signal; said display apparatus comprising:
memory means for storing for each display unit
(a) the associated frame of character codes in the form of M blocks of codes in any order of block storage locations therein, each block having a starting address and the codes in each block manifesting a line of characters, and
(b) a frame display program including M instructions corresponding to the M blocks, each instruction specifying the starting address of the associated block of codes,
instruction execution means including
(a) basic counting means responsive to the horizontal timing signals for generating a set of character line signals defining M time periods and a further set of signals defining a group of horizontal timing signals occurring within each of the M time periods;
(b) first control means utilizing the character line signal set and the further signal set to process N instructions in N sequentially occurring time slots during each character line time period, one from each program, to retrieve from memory during each such period the N blocks of codes associated with said N instructions; and
(c) second control means responsive to said signal sets to load the N blocks of codes into the corresponding N unit line buffers during each such period so that each program has one of its M instructions executed during each of the M time periods in each television frame.

4,119,954

HIGH RESOLUTION CHARACTER GENERATOR FOR DIGITAL DISPLAY UNITS

Charles Lewis Seitz, Fallbrook, and Paul Grunewald, San Diego, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 15, 1977, Ser. No. 777,689
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—324 AD 8 Claims



1. A system for displaying characters in a dot matrix form, said system comprising:
a display unit having a display face and means to scan said display face in an interlaced scan mode;
storage means to store information signals to representative of characters to be displayed, said storage means including a first store to hold information signals for even lines of the display and a second store to hold information signals for odd lines of display, which even and odd lines are to be displayed in said interlaced scan mode; and
logic means coupled to said display unit and to said storage means to receive information signals from both of said first store and second store at the same time and to generate extra bits signals for display during the particular scan being displayed whenever the information signals to be displayed form a diagonal.

4,119,955

CIRCUIT FOR DISPLAY, SUCH AS VIDEO GAME DISPLAY

Andrew J. Nichols, III, Palo Alto, Calif., assignor to Intel Corporation, Santa Clara, Calif.

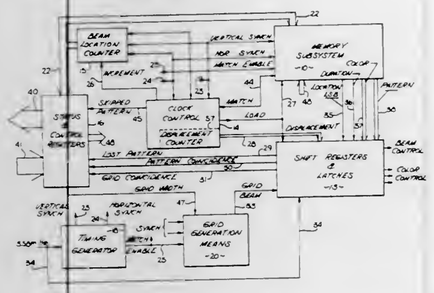
Filed Mar. 24, 1977, Ser. No. 780,967
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—324 AD 15 Claims

1. A circuit for controlling the display of patterns comprising:
a digital counter for providing a first digital signal representative of display beam location;
comparator means for comparing said first digital signal

with a second digital signal representative of the desired location of an object on said display, said comparator means coupled to said digital counter;

first memory means for storing digital information and for providing output signals representative of pattern storage locations, said first memory means coupled to said comparator means;

combining means for combining two digital signals, said combining means receiving said output signals from said first memory means and a digital signal representative of vertical beam location;



second memory means for storing digital representations of patterns, said second memory means coupled to receive output signals from said combining means; and

transfer means for receiving said digital representations of patterns from said second memory means and for providing a beam control signal for said display beam, said transfer means coupled to said second memory means;

whereby at least one pattern may be placed at said desired location on said display.

4,119,956

RASTER-SCAN DISPLAY APPARATUS FOR COMPUTER-GENERATED IMAGES

Paul Michael Murray, Tunbridge Wells, England, assignor to Redifon Flight Simulation Limited, Crawley, England

Filed Jun. 22, 1976, Ser. No. 698,708

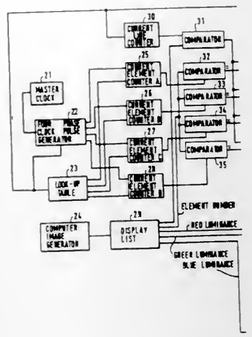
Claims priority, application United Kingdom, Jul. 16, 1975, 29812/75; Jun. 30, 1975, 27459/75

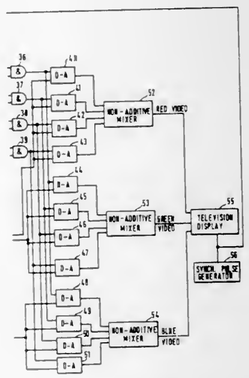
Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—324 AD **6 Claims**

1. In a digitalized visual display system employing a display device having a screen whose area is scanned by a plurality of displaced scanning lines, with each line traversing a number of elemental areas on the screen, and wherein a data signal to be displayed is periodically sampled, and a quantised signal is produced for each data sample and applied to the display device to incrementally create a visual image, the improvement comprising means for improving the resolution of the visual image:

said resolution improving means including means for producing a time displaced series of additional samples of the data signal during the time interval that the scanning beam traverses each elemental area on the screen, means for quantising each of samples to begin and to terminate at a different time than the other quantised samples, and combining means for applying said combined plural quantised samples to the display device for each elemental area, thereby to provide a combined quantised signal that more





nearly approximates a corresponding analog variation of the data signal for each elemental area.

4,119,957

DIGITAL DISPLAY FOR COOKING TIME AND POWER OF ELECTRIC COOKING DEVICE

Masayuki Sasaki, Kawasaki, and Motokazu Tamano, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

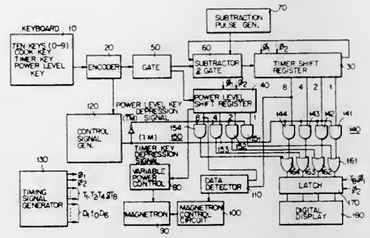
Filed Dec. 9, 1976, Ser. No. 748,896

Claims priority, application Japan, Dec. 10, 1975, 50-146366

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—337 **1 Claim**

1. A digital display apparatus for indicating a cooking time and power level of an electric cooking device comprising a first shift circulating register means having a plurality of digit stages for storing a cooking time data; a second shift register means having only four bit elements for storing a data for setting a power level of the electric cooking device; data entry means including digit keys, a timer key and a power level key for entering a cooking time data into the first shift register means in response to the depression of the timer key and subsequently selected digit keys and for entering a power level setting data into the second shift register means in response to the depression of the power level key and a subsequently selected digit key; a four-bit latch circuit; a time-division digital display means coupled to four bit outputs of the latch circuit; a first group of four gates coupled between four bit outputs of a predetermined digit stage of the first shift register means and four bit inputs of the latch circuit; a second group of four gates coupled between four bit outputs of the second shift register means and the four bit inputs of the latch circuit; and means for enabling the first group of gates and disabling the second group of gates in response to the depression of the timer key to cause the time-division digital display means to indicate



the cooking time data stored in the first shift register means and for enabling the second group of gates and disabling the first group of gates in response to the depression of the power level key to cause the time-division digital display means to indicate the power level setting data stored in the second shift register means.

4,119,958

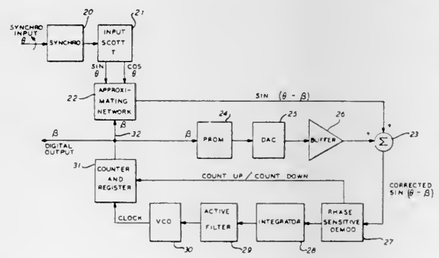
METHOD FOR ACHIEVING HIGH ACCURACY PERFORMANCE FROM CONVENTIONAL TRACKING SYNCHRO TO DIGITAL CONVERTER

David Julian Simon, Saddle Brook, N.J.; Alfred Douglas Gronner, White Plains, N.Y., and Carl Cono Stella, Valencia, Calif., assignors to The Singer Company, Little Falls, N.J.

Filed Oct. 23, 1975, Ser. No. 625,215

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 SY **3 Claims**



1. A synchro to digital converter having means to compensate for the inherent systematic converter error comprising;

a source of input synchro analog signals;

means for converting said input synchro analog signals to digital signals;

means for deriving a first analog error signal representing the difference between said input synchro analog signals and the analog equivalent of said digital signals by approximating the synchro input signals with straight line approximations of non-linear sine and cosine functions;

means for storing digital signals representative of the inherent systematic error and means for generating a second analog error signal representative of said stored digital signals; and

means for combining said second error signal with said derived first error signal to correct for output error.

4,119,959

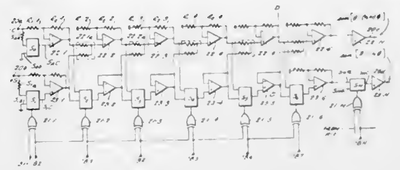
MULTI-BIT FUNCTION GENERATOR

Seymour Lanton, Plainview, N.Y., assignor to ILC Data Device Corporation, Bohemia, N.Y.

Filed Sep. 14, 1976, Ser. No. 723,111

Int. Cl.[2] H03K *13/00*

U.S. Cl. 340—347 SY **13 Claims**



1. A resolver to digital type converter comprising function generator means having:

first and second chains, each of said chains, in turn, being comprised of at least four(4) operational amplifier stages, each having two inputs and an output;

the amplifiers of a first one of said chains being connected in cascade fashion with the output of each stage being connected to a first input of the next stage;

plural switch means each being associated with one stage of said second chain or amplifiers for selectively coupling each such stage to the prior adjacent amplifier stage of either said second chain or said first chain responsive to binary input control data;

the output of each amplifier stage of said second chain being summed at the first input of the next adjacent amplifier stage of said first chain together with the output of the amplifier of the same stage in said first chain;

each of said chains having an input for receiving a reference signal applied to the first amplifier and an output coupled to the last amplifier stage in the chain, whereby at least one of the outputs generates a signal which is a function of the reference inputs and the control inputs.

4,119,960

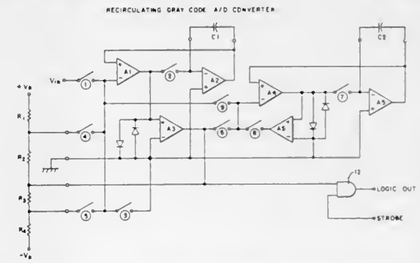
METHOD AND APPARATUS FOR SAMPLING AND HOLDING AN ANALOG INPUT VOLTAGE WHICH ELIMINATES OFFSET VOLTAGE ERROR

Lorimer K. Hill, Cupertino, Calif., assignor to Siliconix Incorporated, Santa Clara, Calif.

Filed Feb. 11, 1977, Ser. No. 767,735

Int. Cl.[2] H03K *13/09*

U.S. Cl. 340—347 AD **8 Claims**



1. A method of sampling and holding an analog input voltage utilizing a two amplifier sample and hold circuit, the output of the first amplifier being connected to an input of the second amplifier, the second amplifier forming a Miller integrator and providing a feedback of the stored voltage on the capacitor of the Miller integrator to one input of the first amplifier which is a comparator and having the analog input voltage as another input which is compared with the feedback

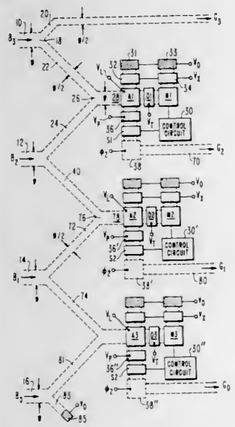
of the stored voltage to produce a correcting output, the method comprising the following steps: sampling and holding said analog voltage by use of said two amplifier sample and hold circuit; thereafter disconnecting said analog input voltage from the input of said first amplifier and disconnecting the output of the first amplifier from the input of the second amplifier; and converting said first amplifier to an amplifier of predetermined gain by connecting the output to said disconnected input such connection also providing a voltage proportional to said stored voltage.

4,119,961

CCD BINARY-TO-GRAY CODE GENERATOR

Leonard Richard Rockett, Jr., Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,920
Int. Cl.² H03K *13/25*
U.S. Cl. 340—347 DD **6 Claims**



1. A charge-coupled device (CCD) binary-to-Gray code converter comprising, in combination:

N input CCD channels for N charge signals $B_{N-1} \ldots B_0$ indicative of an N digit binary code, where B_{N-1} represents the digit of greatest significance and B_0 the digit of least significance, each such charge signal comprising a packet of charge of the same size;

means for dividing each charge packet substantially in half, one half of the charge packet $B_{N-1} = (B_{N-1}/2)$ comprising a charge packet representing the Gray code digit G_{N-1} of greatest significance; and

N−1 means, each means for adding a different half charge packet $B_j/2$ to a half charge packet $B_{j-1}/2$, in EXCLUSIVE OR fashion, each such means for producing a different output charge packet G_{j-1}, indicative of the (j−1)'th Gray code digit, where j is an integer having the values (N−1) . . . 1.

4,119,962

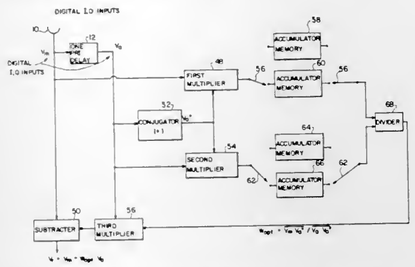
MULTIPLE MEMORY ADAPTIVE MTI

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1977, Ser. No. 854,446
Int. Cl.² G01S *9/42*
U.S. Cl. 343—7.7 **5 Claims**

1. In a moving-target-indicator radar system having an antenna for receiving successive pulses, one or more serial PRI delays to delay said successive pulses and provide said successive pulses as concurrent signal sources, and an MTI canceller having one or more adaptive loop cancellers for receiving said concurrent signal sources and cancelling correlated components between said signal sources, the improvement to said MTI cancellers which comprises:

multiple memory means included in each said adaptive loop canceller, with each memory means receiving a weight developed in the adaptive loop canceller for a different



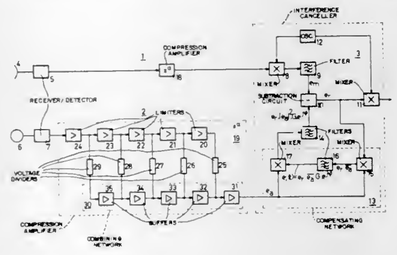
range interval and storing the weight for the range interval on a pulse-to-pulse basis, and each adaptive loop canceller having a means for switching said memory means into said adaptive loop circuit during the range interval, the memory means for each of said adaptive loop cancellers for a particular range interval being switched simultaneously.

4,119,963

COHERENT SIDE-LOBE SUPPRESSING UNIT FOR A PULSE RADAR APPARATUS

Johan Martin Carol Zwarts, Borne, and Geert Koops, Haaksbergen, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo (O), Netherlands

Filed Mar. 30, 1977, Ser. No. 782,930
Claims priority, application Netherlands, Apr. 6, 1976, 7603559
Int. Cl.² G01S *9/233*
U.S. Cl. 343—17.2 PC **4 Claims**



1. A radar system comprising a directional antenna, a transmitter coupled to said directional antenna, an omnidirectional antenna and a receiver to suppress interference signals during reception of target returns, said receiver including a first channel having an output and an input coupled to said directional antenna and a second channel having an output and an input coupled to said omnidirectional antenna, each of said channels including means for intermediate-frequency detection of signals composed of target returns and interference signals and a compression amplifier coupled to said detection means, said amplifier each having an amplitude transfer characteristic such that the signal $y(t)$ at said output of the respective channel approximates $y(t)=[x(t)]\alpha$, where $0<\alpha<1$ and $x(t)$ is the input signal to the respective compression amplifier, said receiver further comprising an interference canceller including a subtracting circuit having a pair of inputs and an output, means for coupling said output of said first channel to one of said inputs

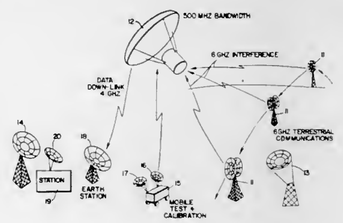
of said subtracting circuit, and a phase and amplitude compensating network coupled to said output of said second channel and said output of said subtraction circuit and having an output coupled to the other of said inputs of said subtraction circuit, said network generating at said output thereof a signal substantially equal in phase and amplitude to the signal coupled to said one input of said subtraction circuit when the signal at said output of said first channel is weaker than the signal at said output of said second channel.

4,119,964

SYSTEMS AND METHODS FOR DETERMINING RADIO FREQUENCY INTERFERENCE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Klaus G. Johannsen, Pacific Palisades; Samuel Sabaroff, Woodland Hills, both of Calif., and Varice F. Henry, Hyattsville, Md.

Filed Oct. 28, 1976, Ser. No. 736,286
Int. Cl.² G01S *7/40*
U.S. Cl. 343—17.7 **17 Claims**



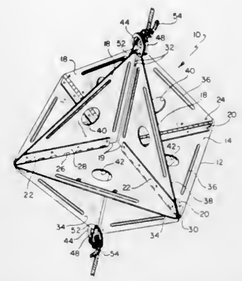
12. A system for determining radio frequency interference with communication links including a celestial body and an artifical geostationary satellite of the body, said interference originating from the body, said links being in a predetermined spectrum, comprising a relay station on the satellite said relay station including a narrow beam antenna pointing at a predetermined region of the body establishing an uplink for said interference, a second antenna on the body for establishing a communication downlink between the satellite and an Earth station on the body, and means located at the satellite for frequency translating signals and transmitting said signals between the narrow beam antenna and the second antenna; means located at the predetermined region for transmitting calibration signals with a predetermined region for transmitting calibration signals with a predetermined EIRP in the spectrum via another uplink toward the satellite, whereby the satellite relays the calibration signals back to the Earth station via said down link, said Earth station including means including the second antenna for receiving electromagnetic energy shifted in frequency by the relay station and coupled from the region to the Earth station via the satellite, circuit means at the Earth station for operating said receiving means while only RFI noise sources in the spectrum radiate from the region toward the narrow beam antenna via the interference uplink and only the calibration signals are in said another uplink and for operating the receiving means to be responsive to the calibration signals in the spectrum transmitted from the region through the narrow beam antenna and relayed through the satellite to the Earth station, said circuit means being responsive to the electromagnetic energies received by the Earth station for comparing the levels of the received energies while RFI noise sources and the calibration signals are transmitted from the region to the Earth station via the narrow beam antenna and the satellite to enable the presence of a source of radio frequency interference in the spectrum to be determined at the region.

4,119,965

RADAR REFLECTOR

Philip Kaszyk, 15 Nassau St., Pawtucket, R.I. 02860

Filed Aug. 8, 1977, Ser. No. 822,812
Int. Cl.² H01Q *15/18*
U.S. Cl. 343—18 C **2 Claims**



1. A foldable radar target, comprising a base plate of generally planar configuration, a set of four top quarter plates each of right angle triangular configuration and each having a first base side hingedly connected to the upper surface of said base plate along two intersecting lines, a set of four bottom quarter plates each of right angle triangular configuration, and each having a first base side thereof hingedly connected to the lower surface of said base plate along two intersecting lines, the second base sides of said top and bottom quarter plates respectively adapted for proximal disposition to each other along a generally vertical line when said target is in an upright use position and for disposition to the first base side of an adjacent quarter panel when said target is in a generally flat, folded, storage position, each of said quarter panels having means disposed at the terminal end of its second base side distal from said base plate when in said upright position for simultaneously suspending said target as from a boat and for maintaining said target in an upright position, said means for suspending and maintaining said target in an upright position including rings disposed at said terminal second base ends, the rings of said top and bottom quarter plates respectively being interconnectable with each other.

4,119,966

CLUTTER DISCRIMINATING APPARATUS FOR USE WITH PULSED DOPPLER RADAR SYSTEMS AND THE LIKE

David William Bouvier, Tempe; Charles H. Brenner, and Walker Butler, both of Scottsdale, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 14, 1977, Ser. No. 815,760
Int. Cl.² G01S *9/42*
U.S. Cl. 343—7.7 **7 Claims**

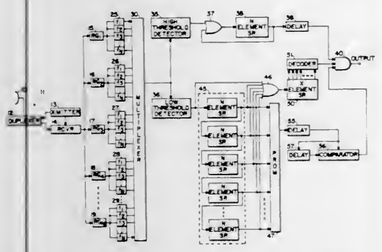
6. A method of discriminating preferred signals from clutter signals comprising the steps of:

(a) determining the amplitude of all the signals and providing an output signal for each signal that exceeds a first predetermined threshold and providing a first indication for each signal that exceeds a second predetermined threshold higher than the first predetermined threshold;

(b) determining the time duration of each output signal and the time separation from adjacent signals and providing a second indication for each output signal that lies within a relatively narrow time period and does not have other signals adjacent thereto within a wider predetermined time period;

(c) determining the frequency bandwidth of each output signal and the frequency separation of adjacent output signals and providing a third indication for each output

signal that lies within a predetermined relatively narrow bandwidth and which does not have other signals adjacent thereto within a wider predetermined bandwidth; and



(d) providing a preferrred signal detection indication each time the first, second and third indications are present for a signal.

4,119,967

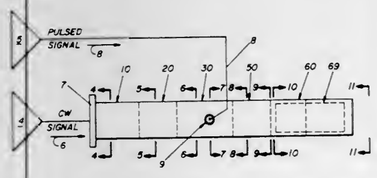
MICROWAVE DUAL MODE NON-INTERFERING CW AND PULSED SIGNAL SYSTEM METHOD AND APPARATUS

Gilbert R. Johnson, Cupertino, and Frank A. Olson, Palo Alto, both of Calif., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed May 21, 1976, Ser. No. 690,104

Int. Cl.[2] H04B *7/00*

U.S. Cl. 343—100 PE **2 Claims**



1. A microwave subsystem capable of simultaneously amplifying CW and pulsed signals comprising, in combination,
a CW amplifier tube,
a pulsed power amplifier tube,
a magic "T" hybrid having two input arms
and two output arms,
means for coupling a first signal from said CW amplifier tube to one of said input arms of said hybrid,
means for coupling a second signal from said pulsed power amplifier tube to the other of said input arms of said hybrid,
means for shifting by 90° the phase of the signals in one of said output arms of said hybrid,
a double ridge waveguide having first and second pairs of opposed sidewalls and a pair of ridges projecting inwardly from said first pair of double ridge sidewalls,
means for coupling said first CW signal from said magic "T" to said double ridge waveguide,
a quad ridge waveguide including first and second pairs of opposed sidewalls having respectively first and second pairs of ridges projecting inwardly therefrom,
a transition guide connecting said double ridge and said quad ridge waveguides and having a first pair of ridges connected to said pair of ridges of said double ridge waveguide and said first pair of ridges of said quad ridge waveguide and having a pair of opposed tapered transition ridges tapering from said second pair of double ridge sidewalls to said second pair of ridges of said quad ride waveguide,
means for coupling said pulsed power signal from said magic "T" to said quad ridge waveguide for propagating said pulsed power signal therein orthogonally with respect to said CW signal,
means for providing a short circuit in said quad ridge waveguide between said means for coupling side pulsed power signal thereto and said transition guide for preventing propagation of said pulsed power signal into said double ridge waveguide whereby said CW signal and said pulsed power signal propagate orthogonally in said double ridge waveguide,
an antenna for radiating said CW and pulsed signals, and
means connecting said antenna to said quad ridge waveguide including means for polarizing said orthogonally propagating CW and pulsed signals in opposite sense whereby said CW and pulsed signals are radiated from said antenna as signals with circular polarizations of opposite sense.

4,119,968

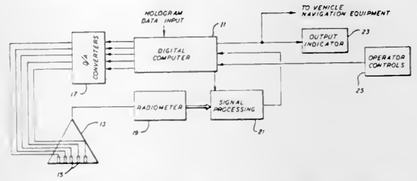
MICROWAVE CORRELATOR

Lester I. Goldfischer, New Rochelle, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Nov. 2, 1976, Ser. No. 738,002

Int. Cl.[2] G01J *1/10*

U.S. Cl. 343—100 ME **7 Claims**



5. Apparatus for carrying out an all weather position correlation to determine the position of an object suspended above a land mass comprising:
(a) a multi element phased array antenna each element in said antenna having means for controlling the phase thereof;
(b) a digital computer having stored therein a phase hologram of a land area with which correlation is desired;
(c) means to couple the stored hologram information in said computer to the individual phase control means for the elements of said antenna;
(d) a radiometer coupled to the output of said antenna;
(e) a display; and
(f) means coupling the output of said radiometer to said display.

4,119,969

SCANNING BEAM NAVIGATIONAL BEACON WITH TRANSMITTED COHERENCE REFERENCE SIGNAL AND THINNED TWO-DIMENSIONAL PHASED ARRAY

Paul Barton, Bishop Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,444

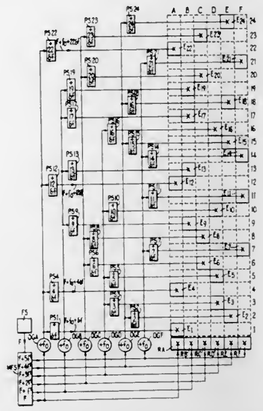
Claims priority, application United Kingdom, Jun. 10, 1976, 23994/76

Int. Cl.[2] G01S *1/16, 1/18*

U.S. Cl. 343—108 M **9 Claims**

1. A scanning-beam navigational radio beacon comprising:
a main antenna array including n first antenna elements randomly placed within a two-coordinate array configuration having $m \times n$ possible element locations, where $m \geqq 2$ and $n > m$, said n coordinate being the direction of scan, said first elements being placed one to a level in the n direction of said array and n/m elements being placed within each of said m columns of said first elements extending in said n coordinate;
a reference array including at least m second antenna elements each geometrically associated with one of said m columns of said first elements;

first means for generating an arithmetic progression of m first radio frequencies connected one to each of said m second antenna elements;
second means responsive to said first radio frequencies for generating m second frequencies each equal to one of said first frequencies plus a uniform offset;



and third means comprising n scan control phase shifters each of which is connected discretely to a corresponding one of said n first elements, the ones of said phase shifters corresponding to said first elements within each of said m columns of first elements being excited by a corresponding one of said second means frequency outputs.

4,119,970

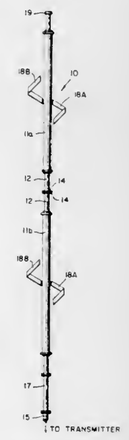
DIPOLE-SLOT TYPE OMNIDIRECTIONAL TRANSMITTING ANTENNA

Richard D. Bogner, 4 Hunters La., Roslyn, N.Y. 11576, and Leonard H. King, 67 Southgate Rd., Valley Stream, N.Y. 11581

Filed Oct. 19, 1977, Ser. No. 843,586

Int. Cl.[2] H01Q *21/00, 13/10, 9/16*

U.S. Cl. 343—727 **3 Claims**



1. In a tramsmitting antenna for radiation of signals of wavelength λ consisting of:
(a) a conductive tubular member elongated along a principal axis having a pair of diameterically opposed elongated slots parallel to the said axis defined by a pair of opposed side walls, the slots having an approximate length of λ/2;
(b) a first conductive arm of a length of approximately λ/4 extending arcuately from one of said side walls at approximately the midpoint of the slots, and in electrical connection thereto oriented at an angle of from 30° to 60° to the said axis;
(c) a second conductive arm of a length of approximately λ/4 extending arcuately from the approximate middle of the other of said side walls and in electrical connection thereto at an angle of from 30° to 60° to the said axis; and
(d) means for connecting said antenna to a source of signals of wavelength λ for electrically exicting said slots, and in turn exciting said conductive arm, the improvement comprising:
a pair of bushings secured to said tubular members on unslotted portions of said tubular member, the bushings of said pair being axially spaced by said slots;
a circumferential groove in each of said bushings;
an O-ring in each of said circumferential grooves;
a filament wound resin bonded tube surrounding the slot portion of said tubular member and sealed to said bushings by said O-rings;
means mechanically clamping said tube to said bushings; and
electrically conductive members extending through said tube and attached to said slot walls securing the conductive arms.

4,119,971

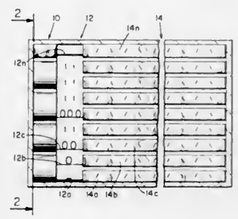
HIGH DATA RATE FREQUENCY SCAN SLOTTED WAVEGUIDE ANTENNA

Louis Stark, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 4, 1977, Ser. No. 765,464

Int. Cl.[2] H01Q *13/10*

U.S. Cl. 343—768 **4 Claims**

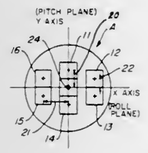


1. An improved frequency scanning antenna providing a faster scan capability comprising:
means for receiving a frequency varying signal for frequency scanning in one plane;
delay means coupled to said receiving means for providing a signal having a predetermined phase error function in response to said frequency varying signal for providing predetermined beam broadening as said frequency changes in a predetermined manner, said beam being narrow at a first angle of scan in said plane and progressively becoming broader as said frequency approaches a second angle of scan on said plane;
parallel linear array antenna means for providing a plurality of output signals, each successive signal having an incrementally varying beam width in response to said delay line means for frequency scanning in said plane in decreased scan time.

4,119,972
PHASED ARRAY ANTENNA CONTROL

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and George D. Doland, Houston, Tex.

Filed Feb. 3, 1977, Ser. No. 765,165
Int. Cl.[2] H01Q 3/26
U.S. Cl. 343—844 2 Claims

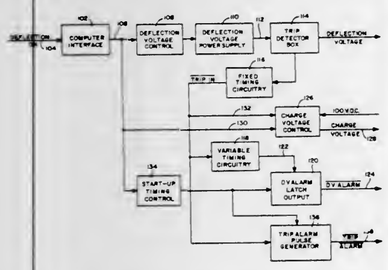


1. In a phased-angle antenna having a relatively small number of elements for radiating signals at one frequency and receiving signals at another frequency, an improvement for effective operation of the antenna at both frequencies comprising said antenna elements being arranged in a two-dimensional planar matrix of elements spaced in first and second directions with respect to a center point of the array and having the spacing in one of said directions a distance of approximately one-half wavelength of the average of said frequencies and in the other of said directions by a distance equalling the product of one and a fraction times the distance in said one of said directions, and a four bit digital control circuit for changing the phase angle of the elements wherein a phase angle increment of $\pi/6$ radians and proportional to the radiating frequency and the receiving frequency is available for steering the antenna, said control circuit including least significant digital control means to control the phase angle in one phase angle increment, next significant digital control means to control the phase angle in two phase angle increments, next most significant digital control means to control the phase angle in four phase angle increments, and most significant digital control means to control the phase angle in seven phase angle increments.

4,119,973
FAULT DETECTION AND COMPENSATION CIRCUIT FOR INK JET PRINTER

William R. Stager, Fairborn, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 6, 1977, Ser. No. 831,094
Int. Cl.[2] G01D 18/00
U.S. Cl. 346—75 9 Claims



1. An ink jet printer for depositing ink drops on a print medium, comprising

means for forming a jet stream of ink drops directed at the print medium,

means for charging drops in said jet stream,

deflection electrode means, adjacent said stream, for providing a drop deflecting electrical field when a non-zero operating potential is applied thereto, said drops passing through said field prior to striking the print medium, and

means for applying a non-zero operating potential to said deflection electrode means, including:

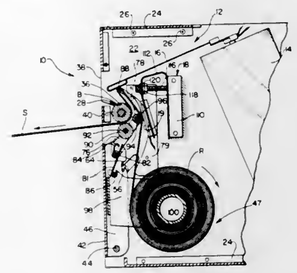
a power supply having a pair of output terminals, deflection electrode supply cable means, connected to said deflection electrode means, and

capacitor means, connecting said power supply output terminals to said deflection electrode supply cable means, for charging to the potential of said power supply output when said printer is operating normally and for providing the stored potential to said supply cable means in the event of a short to ground of said deflection electrode means, whereby the period of time needed for said deflection electrode means to return to its non-zero operating potential is substantially reduced.

4,119,974
RECORDING DEVICE

Albert W. Ondis, North Kingstown; Everett V. Pizzuti, Exeter, both of R.I., and Eugene F. Martha, North Attleboro, Mass., assignors to Atlan-Tol Industries, Inc., West Warwick, R.I.

Filed Jan. 17, 1977, Ser. No. 760,234
Int. Cl.[2] G01D 15/28
U.S. Cl. 346—145 17 Claims

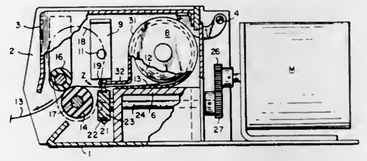


1. A device for recording information in a continuously moving sheet comprising a housing having a front face opening including a lower portion of said opening, recording means supported by said housing above said lower portion of said opening, means for advancing a running length of said sheet past said recording means, sheet positioning means for positioning portions of said sheet in operative association with said recording means, said positioning means comprising a door member adapted for projection into the space defined by said lower portion of said opening, said door pivotally positioned with respect to said housing towards and away from said recording means from a first position wherein said sheet is removed from said recording means to a second operative position with respect thereto, said member including a subassembly supported thereby for independent pivotal movement with respect thereto, said subassembly having a first segment for supporting a running length of said sheet, said housing including guide means, said subassembly including means for engaging said guide means, said guide and guide engaging means adapted for mutual contact during movement of said member between said first and second positions so as to control the independent pivotal movement of said subassembly with respect thereto whereby said first segment upwardly moves a portion of said paper above said lower portion of said opening into operative association with said recording means during said independent pivotal movement of said subassembly.

4,119,975
FACSIMILE CASSETTE WITH WIRE ELECTRODE

John M. Alden, Needham, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed Mar. 21, 1977, Ser. No. 779,763
Int. Cl.[2] G01D 15/28
U.S. Cl. 346—145 9 Claims



1. A cassette for a facsimile recorder including a scanning electrode for marking a web drawn from the cassette, the cassette comprising:

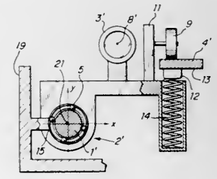
a housing for holding a supply of recording web, the housing forming a web exit path including a lip extending transversely of the web and adapted to oppose a scanning electrode external of the housing, and

a cylindrical, linear recording electrode attached to and supported by the lip adjacent the web path for cooperation with the external scanning electrode.

4,119,976
PHOTOTYPESETTER LENS CARRIAGE ARRANGEMENT

Peter R. Ebner, South Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 25, 1977, Ser. No. 790,713
Int. Cl.[2] B21B 21/00
U.S. Cl. 354—5 20 Claims



1. In a phototypesetter:

a. a carriage having an optical element affixed thereto for translating said optical element parallel to an optical axis;

b. a first way for slidably supporting a first portion of said carriage, said first way being oriented parallel with respect to said optical axis;

c. a second way separated from said first way for slidably supporting a second portion of said carriage, said second way being oriented parallel with respect to said optical axis;

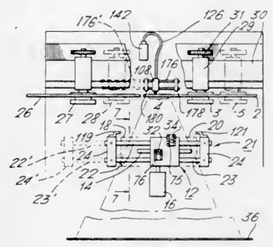
d. carriage support means coupled to said carriage and in contact with said second way for supporting the second portion of said carriage; and

e. mechanical biasing means coupled to said carriage for biasing said carriage support means against said second way to a sufficient extent to eliminate looseness between said carriage support means and said second way, thereby to maintain repeatability of the positioning of said optical element with respect to said optical axis.

4,119,977
PHOTOGRAPHIC TYPE COMPOSING MACHINE

Louis M. Moyroud, 202 Grove Way, Delray Beach, Fla. 33444

Filed Jan. 28, 1977, Ser. No. 763,611
Claims priority, application United Kingdom, Jan. 29, 1976, 3642/76
Int. Cl.[2] G03B 15/00, 17/06, 17/10
U.S. Cl. 354—7 5 Claims

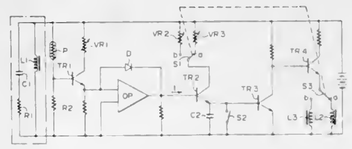


1. A photocomposing device comprising, in combination, a movable character matrix bearing a plurality of arrays of characters, matrix drive means for moving said arrays past a projection station, illuminating means for selectively illuminating said characters, projection means for projecting images of said characters onto a recording surface, spacing means for spacing successive ones of said images on said recording surface in linear groups, control means for detecting the characters in each of said groups, determining the order of projection necessary to prevent reversal of direction by said spacing means during composition of said linear group, and causing said characters to be projected in said order.

4,119,978
PHOTOGRAPHIC CAMERA WITH AUTOMATIC EXPOSURE CONTROL

Toshihiro Kondo, 2-14-3, Kamiishihara, Chofu-shi, Tokyo, Japan, assignor to Toshihiro Kondo, Chofu and Fuji Photo Film Co., Ltd., Minamiashigara, both of, Japan

Filed Sep. 21, 1976, Ser. No. 725,333
Claims priority, application Japan, Sep. 25, 1975, 50-115781
Int. Cl.[2] G03B 7/08
U.S. Cl. 354—38 9 Claims



1. In a photographic camera with automatic exposure control wherein either the shutter speed setting or the diaphragm aperture setting is preselected and the other is automatically controlled thereafter in relation to the preselected setting the improved camera comprising:

time control means for performing arithmetical operations on the indices of exposure control parameters such as scene brightness, film speed, shutter speed and diaphragm aperture, said time control means including capacitive means for producing first and second control signals, the durations of which are functions of said arithmetical operations;

shutter speed setting means for presenting a desired shutter speed;

diaphragm aperture setting means for presetting a desired diaphragm aperture;

first switching means actuable to at least two different posi-

tions which permits the shutter speed preset by said shutter speed setting means or the diaphragm aperture preset by said diaphragm aperture setting means to be selectively connected in circuit with said capacitive means so that when (a) said shutter speed setting is selected, the duration of the first control signal is a function of at least said shutter speed setting to the exclusion of said diaphragm aperture setting and (b) said diaphragm aperture setting is selected, the duration of the second control signal is a function of at least said diaphragm aperture setting to the exclusion of said shutter speed setting;

shutter control means responsive to said time control means for automatically controlling the shutter speed in accordance with the duration of said second control signal;

diaphragm aperture control means responsive to said time control means for automatically controlling the diaphragm aperture in accordance with the duration of said first control signal; and

selector switching means responsive to said first switching means and actuable to at least two different positions which permits said shutter control means or said aperture control means to be selectively connected to said time control means so that when (a) said shutter speed setting is preselected, the diaphragm aperture is automatically controlled in accordance with the duration of said first control signal and (b) said diaphragm aperture setting is preselected and supplied to said time control means, the shutter speed is automatically controlled in accordance with the duration of said second control signal

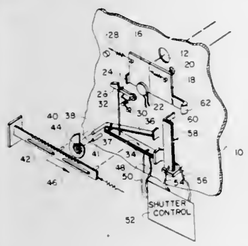
whereby said first control signal is produced during a first voltage change in a predetermined direction across said capacitive means and said second control signal is produced during a second voltage change in said predetermined direction across said capacitive means.

4,119,979

TIMED PIEZOELECTRIC SHUTTER CONTROL FOR CAMERAS

Lee Fitzpatrick Frank, and James Kelly Lee, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,835
Int. Cl.² G03B *7/08*; H01V *41/10*
U.S. Cl. 354—50 **10 Claims**



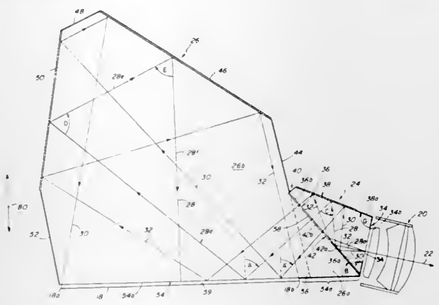
1. In a camera of the type having an exposure aperture, a shutter movable between an aperture-opening position and an aperture-closing position, means for biasing said shutter toward an aperture-closing position, means operable after said shutter is moved to an aperture-opening position for latching said shutter in an aperture-opening position, said latching means being responsive to the application of electrical energy for unlatching said shutter to allow said shutter to move from an aperture-opening toward an aperture-closing position, and means operatively coupled to said latching means for generating electrical energy, the improvement wherein said generating means comprises a piezoelectric generator, and wherein said latching means comprises a piezoelectric motor.

4,119,980

PRISM CAMERA

James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1976, Ser. No. 720,008
Int. Cl.² G03B *15/00*
U.S. Cl. 354—150 **6 Claims**



1. A compact camera for producing an image of an object on film having its photosensitive surface coincident with a film plane, said camera having the improvement comprising

A. a housing enclosing an exposure chamber,

B. a lens arrangement mounted on said housing for focusing at said film plane light from within a selected angular field of view, and

C. optical means within said exposure chamber for forming a folded optical path between said lens arrangement and said film plane, said optical means including a prism arrangement having a first surface in lightreceiving optical alignment with said lens arrangement, a second face overlying and spaced from said film plane and in optical alignment with said first surface for receiving and redirecting by total internal reflection light incident along said optical path and entering said prism arrangement through said first surface, at least one additional surface oriented in optical alignment with said second face for receiving and reflecting said internally-reflected light back onto said second face substantially transverse thereto for transmission through said second face to said film plane, said first surface receiving entering light from a first portion of said angular field, said additional surface also receiving light from another portion of said angular field, different from said first portion and reflecting said light from said other portion to said first surface, and said first surface reflects such light reflected thereto from said additional surface to said second face for transmission to said film plane.

4,119,981

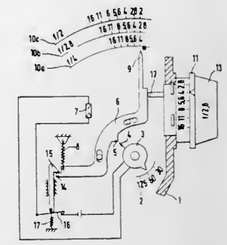
SINGLE LENS REFLEX CAMERA AND EXPOSURE MEASURING MECHANISM THEREFOR

Heinz Schulze, Dresden, German Democratic Rep., assignor to Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, German Democratic Rep.

Filed Mar. 8, 1977, Ser. No. 775,612
Int. Cl.² G03B *19/12, 7/20, 17/00*
U.S. Cl. 354—152 **1 Claim**

1. In a single lens mirror relfex camera comprising a housing adapted to receive an interchangeable objective lens of the kind in which light measurement is made with maximum diaphragm setting with subsequent stopping down to the set diaphragm aperture value at the instant of picture taking, incorporating therein an adjustable diaphragm and a diaphragm stop setting device and having extending therefrom a movable coupling element, an exposure measurement circuit within the housing having a photo electric light sensing device arranged in the light path within the camera housing, a control

means within said housing movable by said coupling member to positions in accordance with the diaphragm aperture values set and to an end position outside the aperture setting range on removal of the objective lens, a return spring connected between said control means and a fixed part of said housing to maintain engagement between said control means and said coupling member, the provision of



(a) a switch in the circuit of the exposure measurement circuit;

(b) a control slide within the housing capable of opening and closing said switch, and

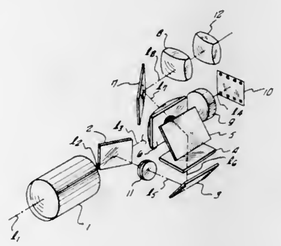
(c) a lug on said control means cooperating with said control slide to move the latter into a position to open the switch when the control means occupies said end position.

4,119,982

SMALL SIZE SINGLE LENS REFLEX CAMERA

Toshinori Imura, and Maki Yamashita, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1976, Ser. No. 727,357
Claims priority, application Japan, Sep. 29, 1975, 50-116440; Oct. 28, 1975, 50-146121[U]
Int. Cl.² G03B *19/12*
U.S. Cl. 354—155 **12 Claims**



1. A small single lens reflex camera comprising:

a small housing body;

a taking lens assembly attached to the camera body and having an optical path through the camera body including an objective focal lens system and a relay lens assembly;

a movable mirror movably mounted relative to the camera body between a first position intersecting the optical path and a second position not intersecting the optical path, the movable mirror being movably interposed between the objective lens system and the relay lens system, the relay lens assembly further including a first relay lens for focusing the light rays on a film plane; and

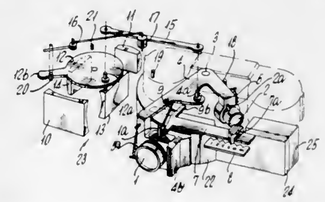
a viewfinder optical system attached to the camera body and operatively positioned relative to the first position of the movable mirror to receive light rays from the movable mirror including a focusing surface member for providing an image of an object, a second viewfinder relay lens for focusing the light rays from the object lens system on the focusing surface member, means for magnifying the image and at least three reflecting mirrors, the first and second reflecting mirrors forming an included angle of substantially 90°between their reflecting surfaces and inclined at a predetermined angle relative to the optical path of said taking lens assembly so as to make an angle (β) between an optical axis incident on the first reflecting mirror and an optical axis emitting from the second reflecting mirror, said angle (β) being within the range from 4° to 32°, the third reflecting mirror further transmitting the light rays to the magnifying means, a major angle, α, formed between the reflecting surface planes of the third reflecting mirror and the movable mirror being within the range of $92° < \alpha < 106°$, whereby the viewfinder optical system will comply with the compact design parameter of the camera while providing a relatively large and bright viewfinder image.

4,119,983

SELF-CONTAINED INTERCHANGEABLE LENS CAMERA

Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Azuchimachi, Japan

Filed Nov. 12, 1976, Ser. No. 741,425
Claims priority, application Japan, Dec. 8, 1975, 50-165992; Dec. 8, 1975, 50-165993
Int. Cl.² G03B *3/00, 13/02, 13/10*
U.S. Cl. 354—197 **23 Claims**



1. A camera equipped with a lens interchanging device comprising:

a camera body having a picture taking optical axis;

a first lens member having a movable first lens portion for adjusting the focus of said first lens member;

a first lens adjusting means provided on said first lens member and having a first driven portion which is movable so that said movable first lens portion may be moved in response to the movement of said driven portion, thereby adjusting the focus of said first lens member;

a first biasing means for biasing said first driven portion to a starting position;

a second lens member having a movable second lens portion for adjusting the focus of said second lens member;

a second lens adjusting means provided on said second lens member and having a second driven portion which is movable so that said second movable lens portion may be moved in response to the movement of said driven portion thereby adjusting the focus of said second lens member;

a second biasing means for biasing said second driven portion to a starting position;

a lens operating means retaining said first lens member and said second lens member and manually operable so that said lens members may be selectively set between a position offset from said picture taking optical axis and a position on said picture taking optical axis;

a manually operable distance setting member settable to a desired object distance for adjusting the focus of said lens members; and

control means having a first cam portion cooperative with said first biasing means to control the position of said first driven portion in accordance with the setting of said distance setting member, and a second cam portion cooperative with said second biasing means to control the

position of said second driven portion also in accordance with the setting of said distance setting member, said first and second cam portions being respectively brought into operative interconnection with the corresponding driven portion when the corresponding lens member is on said picture taking optical axis

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4,119,984

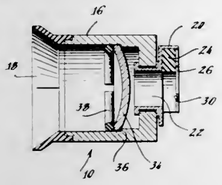
EYEPIECE

Cyril Zajac, P.O. Box 1761, Clifton, N.J. 07015

Filed May 3, 1977, Ser. No. 793,264

Int. Cl.² G03B *13/02;* **G02B** *23/16*

U.S. Cl. 354—219 **4 Claims**



1. An eyepiece for use in conjunction with a viewfinder of a camera comprising a tube, means attached to a first end of said tube rotatably securing said tube to a camera viewfinder, an eye rim attached to a second end of said tube, a prescription lens positioned in said tube and means for securing said lens within said tube.

4,119,985

VIEW FINDER FOR REFLEX CAMERA

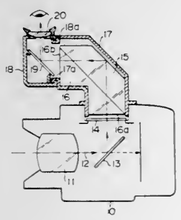
Yoshikazu Ando, Musashino, and Junichi Yokozato, Kawagoe, both of Japan, assignors to Zenza Bronica Industries, Inc., Tokyo, Japan

Filed Nov. 1, 1976, Ser. No. 737,567

Claims priority, application Japan, Nov. 4, 1975, 50-150092[U]; Nov. 11, 1975, 50-153079[U]

Int. Cl.² G03B *13/02, 19/12*

U.S. Cl. 354—223 **6 Claims**



1. A view finder for a reflex camera in which a mirror is provided in a camera body to reflect light coming through the taking lens thereof at a right angle and a focusing plate is provided at a right angle with respect to the optical axis of the light reflected by the mirror, said view finder comprising a first relecting means provided above the focusing plate of the camera to reflect at a right angle the light from the focusing plate along a path parallel to the optical axis of the taking lens, second reflecting means positioned optically behind said first reflecting means to reflect at a right angle the light from said first reflecting means, means for connecting the second reflecting means to the first reflecting means allowing the second reflecting means to take two positions with respect to the first reflecting means, said two positions being angularly different by 90°, in one of said two positions the second reflecting means reflecting the light from the first reflecting means in the direction parallel to the optical axis of the light reflected by the mirror in the camera, and in the other position the second reflecting means reflecting said light at right angle in the direction at right angle with respect to said direction, and a magnifier located optically behind said second reflecting means, wherein the improvement comprising either said first reflecting means or said second reflecting means having a roof prism to reverse the right and left of the image reflected thereby.

4,119,986

CONTROL DEVICE OF A SHUTTER FOR A CAMERA

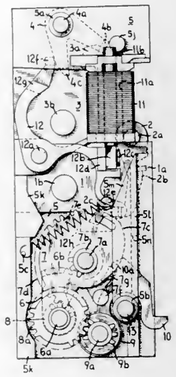
Mitsuo Koyama; Ichiro Nemoto; Eiichi Onda; Tadashi Nakagawa, and Masanori Watanabe, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Nov. 24, 1976, Ser. No. 744,925

Claims priority, application Japan, Nov. 25, 1975, 50/159495[U]

Int. Cl.² G03B *9/58*

U.S. Cl. 354—258 **6 Claims**



1. A control device of a camera shutter, comprising: opening and closing members for respectively effecting opening and closing of a shutter aperture; a magnetic control lever for controlling operation of said closing member; a control member for controlling operation of said opening member and operation of said magnetic control lever; a spring for urging said magnetic control lever towards an operative position in which said closing member is operated; and an electromagnetic, said magnetic control lever having a magnetic portion which, when said electromagnet is energized, is attracted thereto so that said magnetic control lever is held thereby in an inoperative position; said magnetic control lever and/or said control member having a respective integral flexible portion which, when the control device of the camera shutter is charged, urges said magnetic portion into contact with said electromagnet.

4,119,987

SHUTTER RELEASE MECHANISM

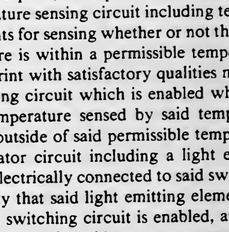
David Easton Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 16, 1977, Ser. No. 797,100

Int. Cl.² G03B *17/38;* **G05G** *1/04*

U.S. Cl. 354—268 **7 Claims**

1. A shutter release mechanism for a camera, comprising:
a motion transmitting lever;
a fulcrum in contact with said lever for pivotally supporting said lever;
a shutter control member mounted for movement by said lever from a restraining position in which shutter actuation is prevented to a releasing position in which shutter actuation is allowed;
means for moving said fulcrum out of contact with said lever to discontinue its pivotal support of said lever; and



manually operable means, operable only when said fulcrum contacts said lever, for pivoting said lever about said fulcrum to move said shutter control member from its restraining position to its releasing position.

4,119,988

CAMERA USING INSTANT PRINT FILM

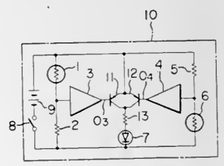
Hiroshi Iwata, Nara, and Tetsuo Yamaoka, Osaka, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Sep. 9, 1977, Ser. No. 831,808

Claims priority, application Japan, Sep. 14, 1976, 51-110304

Int. Cl.² G03B *17/50*

U.S. Cl. 354—289 **3 Claims**



1. In a camera using an instant print film of the type wherein an instant print film is loaded, exposed and then immediately developed into a print, an improvement comprising
(a) a temperature sensing circuit including temperature sensing elements for sensing whether or not the environmental temperature is within a permissible temperature range at which a print with satisfactory qualities may be obtained,
(b) a switching circuit which is enabled when the environmental temperature sensed by said temperature sensing circuit is outside of said permissible temperature range,
(c) an indicator circuit including a light emitting element which is electrically connected to said switching circuit in such a way that said light emitting element may light up when said switching circuit is enabled, and
(d) a power supply for said temperature sensing circuit, said switching circuit and said indicator circuit, whereby when the environmental temperature is outside of said permissible temperature range, said light emitting element lights up giving a warning signal.

4,119,989

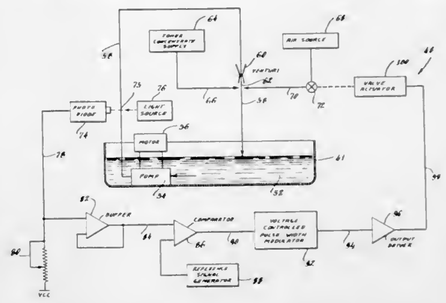
SYSTEM FOR CONTROLLING CONCENTRATION OF DEVELOPER SOLUTION

Joseph R. Carvalko, Bethel, and Robert J. Tolmie, Jr., Fairfield, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 3, 1977, Ser. No. 756,147

Int. Cl.² G03D *13/00*

U.S. Cl. 354—298 **12 Claims**



1. A system for controlling the concentration of a liquid developer solution, which includes a liquid toner concentrate and a liquid carrier, to be substantially equal to a predetermined concentration in a photocopying apparatus; said system comprising:
A. a source of light directed through the developer solution;
B. photosensor means, on which said source is focused, for generating an output signal proportional to the amount of light transmitted through the developer solution thereto;
C. reference means for generating a reference signal substantially equal to a photosensor means output signal corresponding to the predetermined developer solution concentration;
D. comparator means for comparing said output and reference signals and generating an error signal proportional to the difference therebetween;
E. servo means operable for adding at least one of the toner concentrate and the carrier to the developer solution in response to said error signal;
F. means for periodically enabling said servo means; and
G. means coupled to said comparator and to said periodic enabling means for operating said servo means during each enabling period for a variable interval of time dependent upon said error signal of said comparator whereby relatively small variable amounts of the additive are periodically added to the solution in order to maintain its predetermined concentration.

4,119,990

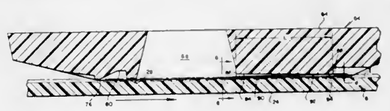
FLUID APPLICATOR DOCTOR BLADE

Paul B. Mason, Magnolia, and Martin S. Osman, Newton Highlands, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 30, 1977, Ser. No. 811,716

Int. Cl.² G03C *11/00*

U.S. Cl. 354—317 **22 Claims**



1. Fluid coating apparatus comprising:
means for supporting one side of an incremental section of an elongated strip of material;

actuatable means for progressively advancing incremental sections of the elongated strip of material across said support means in a given direction;

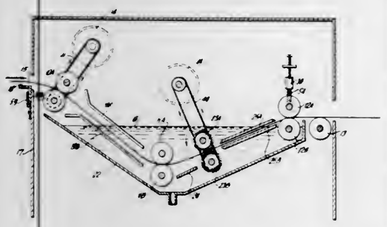
means for depositing a substantially uniform coating of a fluid to the other side of the elongated strip of material as it is progressively advanced across said support means while tending to preclude foreign matter from adversely affecting the uniformity of the fluid coating, said fluid depositing means including a processor adapted to cooperate with said support means to slidably engage an incremental section of the elongated strip of material therebetween, said processor configured to define a nozzle opening through which the fluid may be initially introduced into engagement with the elongated strip of material and a doctoring conformation communicating with said nozzle opening and extending away therefrom in said given direction, said doctoring conformation being configured to produce hydrodynamic forces in the fluid passing thereunder which increase in said given direction and further configured to present at least one surface, adjacent the fluid applied to the elongated strip of material, extending away from said nozzle opening in said given direction in a manner diverging away from the elongated strip of material.

4,119,991

HORIZONTAL ONE STEP AUTOMATIC PLATE PROCESSOR

Peter Vincent Martino, 99-60 65th Rd., Rego Park, N.Y. 11374

Filed Apr. 8, 1977, Ser. No. 785,985
Int. Cl.[2] G03D *3/08*
U.S. Cl. 354—320 **6 Claims**



1. An apparatus for continuously processing, in a horizontal through-put manner, both sides of a printing plate comprising:

a tank for containing the processing solution, said tank having an entry end and a delivery end;

a pair of substantially parallel entry rollers disposed adjacent the entry end of said tank, said rollers being disposed one above the other with the top roller leading the bottom roller to form a downwardly directed nip for receiving the plate and driving it towards the processing solution;

a pair of substantially parallel guidance members which are downwardly oriented and disposed one above the other with the lower end of each member being submerged in the processing solution, the upward ends of said guidance members being outwardly flared, and disposed adjacent the nip of said entry rollers above the processing solution;

a pair of substantially parallel orientation rollers disposed adjacent the lower ends of said guidance members, said orientation rollers being disposed one above the other to form a nip for receiving said plate and transporting it in a horizontal direction, said orientation rollers being submerged in the processing solution;

a substantially flat deflector member disposed adjacent the nip of said orientation rollers, said deflector member being upwardly oriented within the processing solution so as to direct said plate upwardly;

a pair of brush rollers disposed adjacent the deflector member, and one above the other with the top brush roller trailing the bottom brush roller to form an upwardly directed nip for receiving the plate, directing it in an upward direction and scrubbing both sides of said plate, said nip being disposed within the solution such that the plate is fully submerged in the solution as it is being scrubbed, said brush rollers being adapted to rotate at a higher speed than said orientation rollers and entry rollers;

a pair of substantially flat, parallel plate stiffening members disposed closely adjacent said brush rollers, one above the other in a closely spaced relationship for preventing the brushes from accelerating the travel of the plate, said plate stiffening members being upwardly oriented such that the upper ends thereof are disposed above the processing solution;

a pair of squeege rollers disposed adjacent the trailing end of said plate stiffening members, one above the other to form a nip for receiving the plate, removing excess solution from the plate, and transporting the plate in a horizontal direction towards the delivery end of the tank;

means for rotating said entry rollers, orientation rollers, and squeege rollers at substantially the same speed;

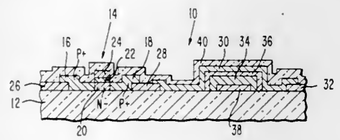
and means for rotating said brush rollers at a speed greater than that of said entry rollers, orientation rollers, and squeege rollers.

4,119,992

INTEGRATED CIRCUIT STRUCTURE AND METHOD FOR MAKING SAME

Alfred Charles Ipri, and Joseph Hurlong Scott, Jr., both of Princeton, N.J., assignors to RCA Corp., New York, N.Y.

Filed Apr. 28, 1977, Ser. No. 791,945
Int. Cl.[2] H01L *27/12*
U.S. Cl. 357—4 **9 Claims**



1. An integrated circuit structure comprising:

(a) a body of insulating material having a surface on which a single crystal semiconductor material may be epitaxially grown;

(b) at least one pair of spaced conductors on the surface of said body; and

(c) at least one semiconductor device formed of a single crystal semiconductor material epitaxially grown on said insulating material comprising:

(i) a pair of spaced semiconductor regions having a first conductivity type formed on the surface of said body, one of said spaced semiconductor regions at least partially overlying one of said pair of spaced conductors and the other of said spaced semiconductor regions at least partially overlying the other of said pair of spaced conductors;

(ii) a channel region comprising a single crystal semiconductor region lying between and adjacent to each of said spaced semiconductor regions, said channel region overlying said surface of said body;

(iii) an insulating region overlying said channel region; and

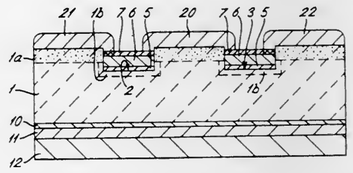
(iv) a conductive gate region overlying said insulating region.

4,119,993

GAAS MOSFET

Hans Ludwig Hartnagel, and Burhan Bayraktaroglu, both of New castle-upon-Tyne, England, assignors to National Research Development Corporation, London, England

Filed Dec. 30, 1976, Ser. No. 755,845
Claims priority, application United Kingdom, Jan. 16, 1976, 1738/76
Int. Cl.[2] H01L *29/78*
U.S. Cl. 357—23 **11 Claims**



1. A method of making a GaAs mosfet, the method comprising forming two grooves in a surface of a p-type gallium arsenide single crystal, depositing in each groove a layer of indium, depositing over the indium in each groove a layer of dopant, depositing over the dopant a layer of aluminium, anodically oxidising the surface of the work until all the aluminium is oxidised to Al_2O_3 and the gallium arsenide is oxidised to a depth contiguous to the dopant, annealing the work to form an n^+ layer in the gallium arsenide under the grooves and contiguous with the anodically oxidised gallium arsenide, in any order depositing contact metal (i) covering substantially all the anodically oxidised gallium arsenide between the grooves and in contact with both of the layers of Al_2O_3, (ii) covering the anodically oxidised gallium arsenide on the remaining side of one groove and in contact with the Al_2O_3 of that one groove, and (iii) covering the anodically oxidised gallium arsenide on the remaining side of the other groove, and rendering electrically conductive Al_2O_3 between the dopant and the contact metal (ii) and (iii).

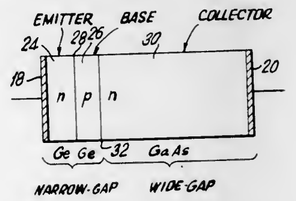
11. A GaAs mosfet produced by the method of claim 1.

4,119,994

HETEROJUNCTION AND PROCESS FOR FABRICATING SAME

Faquir Chand Jain, Storrs, and Mahmoud Ahmed Melehy, Baltic, both of Conn., assignors to University of Connecticut, Storrs, Conn.

Continuation-in-part of Ser. No. 434,707, Jan. 18, 1974, abandoned. This application Aug. 14, 1975, Ser. No. 604,794
Int. Cl.[2] H01L *29/267, 29/205*
U.S. Cl. 357—16 **6 Claims**



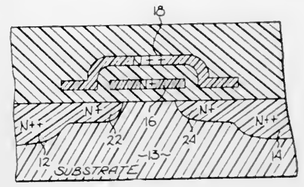
1. A semiconductor heterotransistor comprising a collector region of a wide-gap semiconductor material of one conductivity type and a base region of a narrow-gap semiconductor material of an opposite conductivity type immediately contiguous thereto and defining a p-n heterojunction therewith, said base region being contiguous to an emitter region on the opposite side of the base-collector heterojunction and defining a p-n homojunction therewith, said emitter region being formed of the same narrow-gap semiconductor material as said base region, said base and emitter regions being of opposite conductivity types, the doping level of said emitter region being higher than that in said base region, the doping level in said collector region being less than in said base region, said wide-gap collector and said narrow-gap base regions and the heterojunction therebetween forming a continuous single crystalline structure.

4,119,995

ELECTRICALLY PROGRAMMABLE AND ELECTRICALLY ERASABLE MOS MEMORY CELL

Richard T. Simko, Los Altos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 716,790, Aug. 23, 1976, abandoned. This application Mar. 17, 1977, Ser. No. 778,574
Int. Cl.[2] H01L *29/78*
U.S. Cl. 357—23 **12 Claims**



1. An electrically programmable and erasable MOS storage device disposed on a substrate comprising:

spaced-apart source and drain regions in said substrate defining a channel;

a floating gate disposed above said channel;

a first gate disposed above said channel and said floating gate;

a second gate disposed over at least a portion of said floating gate and spaced-apart from said first gate;

said floating gate having a surface texture with radii of curvature between 25A and 75A for providing an enhanced electric field between said floating gate and said second gate such that electrons from said floating gate may be transferred to said second gate;

whereby, by the application of potentials to said first gate and said drain region charge may be injected into said floating gate and whereby, by the application of a potential to said second gate charge may be removed from said floating gate.

4,119,996

COMPLEMENTARY DMOS-VMOS INTEGRATED CIRCUIT STRUCTURE

Murzban D. Jhabvala, Seabrook, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 20, 1977, Ser. No. 817,413
Int. Cl.[2] H01L *29/78*
U.S. Cl. 357—23 **16 Claims**

1. A metal oxide semiconductor transistor comprising:

a region of a first semiconductivity type;

a V-notch extending into said region;

a first doped layer abutting said region and a portion of a first edge of said V-notch, said first layer being of a second conductivity type;

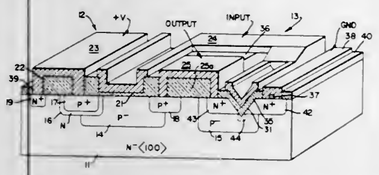
a second doped layer having a portion thereof abutting said region and a portion of a second edge of said V-notch, said second layer being of said first conductivity type and having a carrier concentration greater than said region;

a third doped layer abutting said second layer remote from said region and abutting another portion of said second edge of said V-notch, said third layer being of said second conductivity type;

a first insulating layer abutting said region and said first, second, and third layers in contact with said first and second edges of said V-notch, said first insulating layer further contacting portions of said first and third layers remote from said V-notch;

a second insulating layer spaced from said first insulating layer and abutting another portion of said third layer remote from said V-notch and abutting a portion of said second layer remote from said V-notch;

a first electrode in ohmic contact with another portion of said first layer remote from said V-notch;



a second electrode covering said second insulating layer having a portion thereof in ohmic contact with said third layer between said first and second insulating layers and another portion thereof in ohmic contact with another portion of said second layer remote from said V-notch;

a third electrode abutting said first insulating layer;

said region having a relatively low impedance from said first layer, along said first edge of said V-notch, around the apex of said V-notch, and along said second edge of said V-notch to said second layer in response to a zero bias being applied to said third electrode; and

said second layer forming a stopping channel therethrough to electron conductance during said zero biasing and forming a short channel length electron conductance path therethrough with fast response time in response to a positive bias being applied to said third electrode.

4,119,997

DOT-AND LOGIC GATE DEVICE INCLUDING MULTIEMITTER TRANSISTOR

David E. Fulkerson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 670,811, Mar. 26, 1976, Pat. No. 4,032,796, and a continuation-in-part of Ser. No. 497,018, Aug. 13, 1974, Pat. No. 3,970,866. This application Apr. 20, 1977, Ser. No. 789,036

Int. Cl.² H01L *29/72*

U.S. Cl. 357—36 **7 Claims**

1. A monolithic integrated circuit provided in a semiconductor material for performing logical functions including a "DOT—AND" function, said integrated circuit comprising:

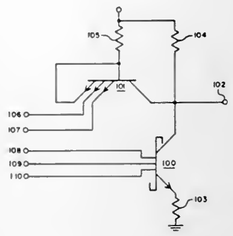
a plurality of isolated regions in said semiconductor material, each of a first conductivity type and of a first conductivity, including a first isolated region;

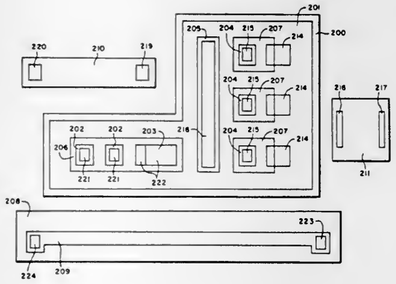
a plurality of base regions of a second conductivity type, each located entirely within said first isolated region, including first and second base regions, there being first and second base junctions between said first and second base regions and said first isolated region, respectively, whereby said first isolated region serves as a common collector region with respect to both said first and second base regions;

a plurality of emitter regions of said first conductivity type and of a second conductivity, each located within one of said plurality of base regions, including first and second emitter regions located in said first base region and including a third emitter region located within said second base region, there being first and second emitter junctions between said first and second emitter regions and said first base region, respectively, and there being a third emitter junction between said third emitter region and said second base region;

a first double contact and interconnection means made across said first emitter junction between said first emitter region and said first base region, said double contact and interconnection means being in ohmic contact with both said first base region and said first emitter region, whereby said first emitter region and said first base region are directly electrically connected;

a first set of ohmic emitter contacts in addition to said first double contact and interconnection means, each made to one of said first plurality of emitter regions and each made by the emitter interconnection lead means, including a first emitter contact made to said second emitter region, said emitter interconnection lead means being capable of transmitting signals from a source;





a plurality of ohmic base contacts in addition to said first double contact interconnection means each of said plurality of ohmic base contacts made to said plurality of base regions which are located entirely within said first isolated region and each made by base interconnection lead means, including a first base contact made to said second base region with said base interconnection lead means being capable of transmitting signals from a source;

an ohmic collector contact made to said first isolated region;

a first resistive means connectng said first double contact and interconnection means with a first voltage supply interconnection lead means adapted for energization from a voltage supply; and

a second supply interconnection means connecting said third emitter region and a second voltage supply interconnection lead means adapted for energization by a voltage source.

4,119,998

INTEGRATED INJECTION LOGIC WITH BOTH GRID AND INTERNAL DOUBLE-DIFFUSED INJECTORS

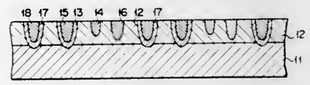
Yukuya Tokumaru; Masanori Nakai; Satoshi Shinozaki; Junichi Nakamura; Shintaro Ito, and Yoshio Nishi, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 644,292, Dec. 24, 1975, abandoned. This application Jul. 14, 1977, Ser. No. 815,768

Claims priority, application Japan, Dec. 27, 1974, 49-148562; Dec. 27, 1974, 49-148563

Int. Cl.² H01L *27/04*

U.S. Cl. 357—44 **2 Claims**



1. An integrated injection logic semiconductor device comprising a semiconductor substrate of one conductivity type, a layer of the opposite conductivity type to said one conductivity type laminated on said semiconductor substrate of one conductivity type, a first one conductivity type region formed penetrating through said opposite conductivity type layer to reach said one conductivity type semiconductor substrate, a second one conductivity type region formed in said opposite conductivity type layer, an opposite conductivity type region formed in said first one conductivity type region, a separating region formed of material of said one conductivity type and penetrating through said opposite conductivity type layer and surrounding said first and second one conductivity type regions, and an additional region of said opposite conductivity type formed in said separating region whereby said opposite conductivity type region, said first one conductivity type region and said opposite conductivity type layer constitute a lateral transistor of one polarity type; and said one conductivity type semiconductor substrate, said opposite conductivity type layer and said second one conductivity type region constitute a lateral transistor of the opposite polarity type.

4,119,999

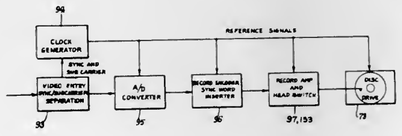
APPARATUS FOR INSERTING A DIGITAL SYNC WORD, PHASE-SYNCHRONIZED TO THE COLOR SUBCARRIER, IN PLACE OF THE HORIZONTAL SYNC SIGNAL

Luigi C. Gallo, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 28, 1977, Ser. No. 763,941

Int. Cl.² H04N *9/44, 5/78, 9/32*

U.S. Cl. 358—4 **7 Claims**



1. Apparatus for processing an analog color video information signal for recording on a magnetic media so that accurate reproducing of the signal can be carried out, comprising:

means for removing the horizontal synchronization pulses from the analog video information signal;

means for sampling said analog video information signal and converting the samples to at least one digital data stream having a predetermined data rate that is a multiple of the chrominance subcarrier frequency;

means for inserting a unique digital synchronization word into said horizontal blanking interval on at least alternate ones of successive video lines, said synchronization word being synchronized relative to the chrominance subcarrier so that the phase relationship between said synchronization words and said subcarrier is constant.

4,120,000

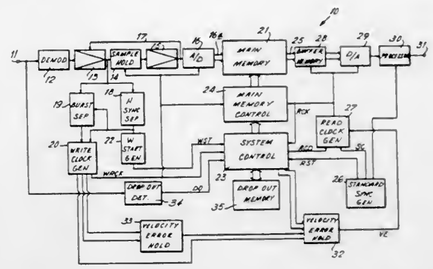
VIDEO TIME BASE CORRECTOR

Takeshi Ninomiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 703,650, Jul. 8, 1976, Pat. No. 4,054,903. This application Jul. 20, 1977, Ser. No. 817,662

Int. Cl.² H04N *5/76*

U.S. Cl. 358—8 **7 Claims**



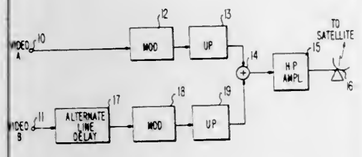
1. A time base corrector for removing time base errors from video signals comprising: main memory means including a plurality of memory units each having a capacity sufficient to store a predetermined whole number of line intervals of the video signals; input means for receiving the video signals; write clock generating means coupled to said input means for generating write clock pulses at a variable rate dependent upon time base errors in the incoming video signals; read clock generating means for generating read clock pulses at a rate which is standard at least at the beginning and end of each standard line interval of the video signals; main memory control means for selectively enabling said memory units to write therein the video signals received from said input means at a clocking rate determined by said write clock pulses, and for selectively enabling said memory units to read out therefrom, at a clocking rate determined by said read clock pulses, the video signals written in said memory units; output means for receiving the video signals selectively read out from said memory units; system control means including write addressing means generating write addresses of said memory units in a repeating cyclic order for causing said main memory control means to selectively enable said memory units in said repeating cyclic order for the writing therein of the video signals received from said input means, and read addressing means generating read addresses for causing said main memory control means to selectively enable the thereby read addressed memory units for the reading-out of the video signals stored therein, with each memory unit thus addressed for reading-out being different from the memory unit then addressed for writing; and velocity error memory means having a plurality of addresses respectively corresponding to said memory units and including means responsive to said write addressing means of the system control means for selectively writing, at said addresses, velocity error information in respect to velocity errors occurring in the video signals as written in the respective memory units, and means responsive to said read addressing means of the system control means for selectively reading-out the velocity error information from the address of said velocity error memory means which corresponds to the one of said memory units then enabled for said reading-out of the video signals therefrom; and in which said read clock generating means includes means for modulating said read clock pulses with the velocity error information being read-out from said velocity error memory means.

4,120,001

SYSTEM FOR PASSING TWO COLOR TV SIGNALS THROUGH NON-LINEAR PATH

Liston Abbott, Hightstown; Guy Ward Beakley, Princeton Junction, and Robert Earl Flory, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,795
Int. Cl.[2] H04N 9/00
U.S. Cl. 358—11 5 Claims



1. In a system in which two color television video signals having slightly different color subcarrier frequencies are transmitted over a common channel, means to minimize the observable cross modulation of the two color subcarriers, comprising

means at the transmitting end to delay alteranate lines of one of said video signals by the amount of half the period of the color subcarrier, and

means at the receiving end to delay the intermediate lines of said one video signal by the amount of half the period of the color subcarrier,

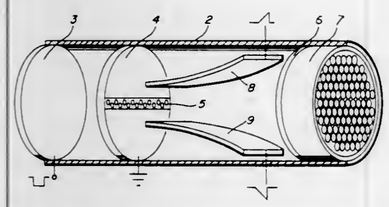
whereby the cross modulation of the color subcarrier in each video signal by the subcarrier in the other video is translated to fluctuations occurring at too high a rate to be visible on televison monitors and receivers.

4,120,002

STREAK CAMERA TUBE

Albert J. Lieber, Los Alamos, N. Mex., assignor to General Engineering & Applied Research, Inc., Palo Alto, Calif.

Continuation of Ser. No. 608,379, Aug. 27, 1975, abandoned. This application Dec. 29, 1976, Ser. No. 755,226
Int. Cl.[2] H04N 5/32
U.S. Cl. 358—111 18 Claims



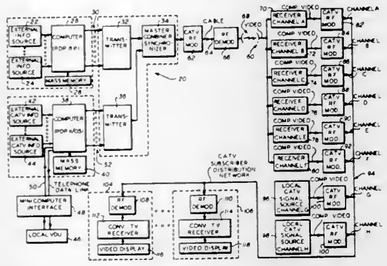
1. A streak camera image tube comprising a photocathode for receiving short duration photon images and converting them to photoelectrons, a passive collimator immediately adjacent the emission side of said photocathode, a phosphor screen for receiving said photoelectrons, and deflections electrode means adjacent the path of said photoelectrons between said passive collimator and said phosphor screen for deflecting said photoelectrons from their direction of movement across the phosphor screen.

4,120,003

MULTIPLE CHANNEL CATV SYSTEM UTILIZING ROW GRABBER INTERFACE AS CATV INPUT

David S. Mitchell, Huntington, and Robert H. Nagel, New York, both of N.Y., assignors to IDR, Inc., Farmingdale, N.Y.

Filed Jan. 21, 1977, Ser. No. 761,611
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—142 38 Claims



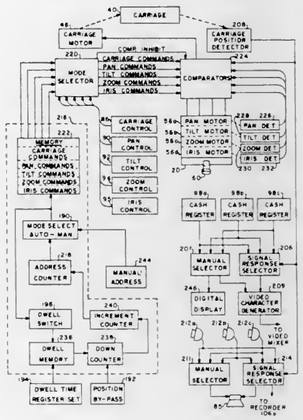
1. In a CATV type television system having a first common CATV television signal distribution means for distributing a plurality of selectable video displayable television signal channels of different video information content to a plurality of subscriber normal television multichannel video display devices capable of receiving said plurality of channels for providing said selectable video display, and first transmitting means operatively connected to said first common CATV television signal distribution means for providing said plurality of different channels to said first common CATV television signal distribution means; the improvement comprising a real time frame grabbing system for substantially instantaneously providing a selectable continuous video displayable frame or video information to a first video interface means for providing a preselected continuous video displayable frame of said information to at least one of said channels as said video information content thereof from continuously transmittable information, said real time frame grabbing system comprising second means for transmitting said video information as a plurality of pseudo video scan lines, each of said pseudo video scan lines having a television video scan line format and capable of comprising a complete self-contained packet of digital information sufficient to provide an entire displayable row of video data characters, said pseudo video scan line having an associated transmission time equivalent to said television video scan line, said packet of digital information comprising at least address information for said displayable row and data information for said displayable characters in said displayable row, said pseudo video scan line being a composite video signal, said real time frame grabbing system further comprising second television signal distribution means for distributing said transmitted composite pseudo video scan line signals to said first video interface means for providing said preselected frame of said video information to said one channel, said first transmitting means comprising said first video interface means, said first video interface means being operatively connected between said second television signal distribution means and said first common CATV television signal distribution means for processing said distributed composite pseudo video scan line signals for providing a video displayable row from each of said pseudo video scan line signals pertaining to said preselected frame for providing a selected continuous video displayable frame of dedicated information to said one channel, a predetermined plurality of said displayable video rows comprising a displayable video frame of information, whereby a plurality of CATV subscribers may receive a dedicated common channel of preselected frame grabbable information on a normal television signal channel over said CATV television signal distribution means.

4,120,004

SURVEILLANCE SYSTEM

John M. Coutta, 450 Superior Ave., Decatur, Ga. 30030

Continuation-in-part of Ser. No. 652,631, Jan. 26, 1976, Pat. No. 4,027,329. This application Apr. 11, 1977, Ser. No. 786,447
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—108 11 Claims



1. A surveillance system comprising:

an elongated carrige track positioned along a path;

a carriage adapted to be supported by and be movably operated along said track;

electrically energized drive means for positioning said carriage along said track;

a television camera supported by said carriage and positioned to view regions on at least one side of said track, and including electrically responsive camera adjustment means for adjusting at least one of the following camera functions: azimuth, tilt, zoom, and iris;

light attenuating means, including a partially opaque cover extending from end to end of said track, enabling camera viewing through one partially opaque thickness of cover for blocking light transmission in through one region of said cover and out through another region of said cover, whereby the outlines of said camera and said carriage are obscured;

display means for displaying the output of said camera; and operating means comprising:

carriage control means for selectively operating said drive means for selectively positioning said camera along said track, and

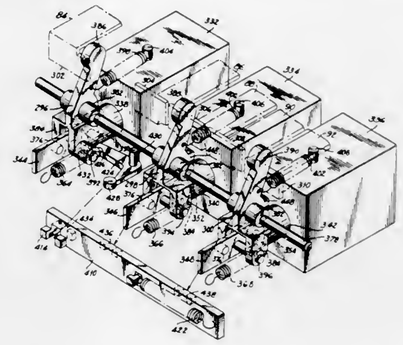
camera control means for providing electrical signals to and selectively operating said camera adjustment means, wherein said carriage control means includes means for selectively providing a plurality of discrete memory address signals, a signal means responsive to said discrete address signal for providing a location command signal to said drive means, whereby said carriage is positioned at selected positions; wherein said camera control means includes camera memory means responsive to signals from said address means for providing selected camera control signals to said camera adjustment means for selectively varying at least one of said camera functions, whereby upon the occurrence of a said memory address signal, said carriage is moved to a selected location, and at least one of said camera adjustments is adjusted for that carriage location to view a particular scene.

4,120,005

MODE SELECTING DEVICE FOR TAPE RECORDING AND/OR REPRODUCING APPARATUS

Kenichi Amano; Yutaka Suzuki, and Yoshio Kishi, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1977, Ser. No. 776,478
Claims priority, application Japan, Mar. 10, 1976, 51-26513
Int. Cl.[2] G11B 15/12; B41J 23/34
U.S. Cl. 360—61 8 Claims



1. A mode selecting device for a tape recording and/or reproducing apparatus comprising: a plurality of mode selecting push-button members which are selectively actuable from rest positions to active positions for selecting corresponding operating modes of the apparatus, a plurality of electrically energizable driving means, circuit means for selectively energizing one or more of said driving means responsive to the actuation of a selected one of said push-button members, an operating member associated with each said driving means and being movable from an inoperative position to an operating position in response to the energizing of the associated driving means, a plurality of transmission members selectively engageable by selected ones of said operating members and movable between a first position and a second position when said operating member engaged therewith is moved from its inoperative position to its operative position, movement of selected ones of said transmission members from said first position to said second position being operative to establish the corresponding operating mode of the apparatus as determined by the selectively actuated push-button member the number of said driving means being less than the number of said transmission members, and means operable by one of said driving means for shifting the operating member associated with at least another of said driving means from effective engagement with one of said transmission members to effective engagement with another of said transmission members.

4,120,006

RANDOM ACCESS RECORDING AND/OR PLAYBACK SYSTEM

Masaru Nagami, Yokohama; Kenji Hori, Tokyo; Hiromu Masaoka, Yokohama, and Yoshio Kishi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 6, 1977, Ser. No. 785,180
Claims priority, application Japan, Apr. 9, 1976, 51-39869
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—72 18 Claims

1. A random access system for recording and/or reproducing apparatus of the type used for recording information on and/or reproducing information from selectable portions of a record medium, said record medium having address signals selectively recorded thereon to identify corresponding ones of said selectable portions, said address signals including a number of address pulses plus a constant pulse number, said random

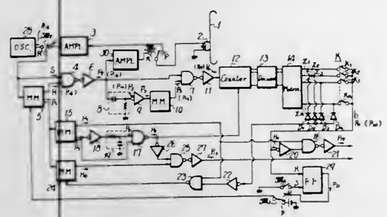
access system being operable to access selectable portions of said record medium and comprising:

detecting means for detecting said address signals recorded on said record medium;

counting means coupled to said detecting means for counting said address pulses to derive a count corresponding to the address of a respective portion of said record medium;

selecting means for selecting any one of said selectable portions of said record medium;

comparing means coupled to said counting means and to said



selecting means for comparing the count derived by said counting means to the selectable portion selected by said selecting means and for producing a coincidence signal when said count corresponds to the selected portion;

sensing means for sensing the end of an address signal detected by said detecting means; and

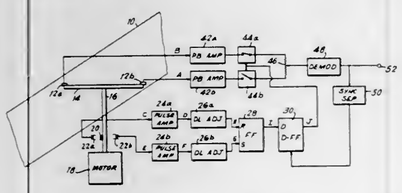
control signal generating means responsive to said coincidence signal when the end of said address signal is sensed for generating a control signal to initiate a predetermined operation of said recording and/or reproducing apparatus.

4,120,007

HEAD SWITCHING CONTROL APPARATUS FOR USE IN A VIDEO SIGNAL PROCESSING SYSTEM

Ichitaro Sato, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1977, Ser. No. 770,236
Claims priority, application Japan, Feb. 18, 1976, 51-17104[U]
Int. Cl.² G11B *15/14*
U.S. Cl. 360—64 **6 Claims**



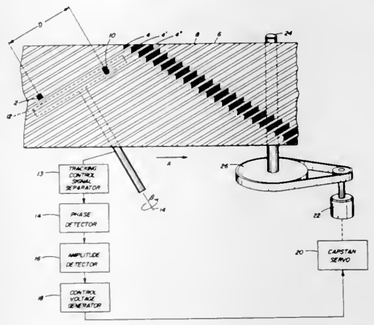
1. In video signal processing apparatus of the type comprising plural rotary record and/or playback transducers heads for scanning successive tracks across a recording medium, each track having recorded therein a composite video signal comprised of video information, horizontal synchronizing signals and a vertical blanking interval containing equalizing pulses, vertical synchronizing pulses and horizontal synchronizing pulses, head switching control apparatus for selectively connecting individual transducer heads, one at a time, to video signal receiving means, comprising: position pulse generating means for generating position pulses representing the relative positions of said transducer heads with respect to said recording medium; bi-state means having first and second states and responsive to successive position pulses applied thereto for switching between said first and second states as said transducer heads rotate into predetermined position with respect to said recording medium; video signal receiving means; switch means coupled to said transducer heads for electrically connecting individual ones of said heads to said video signal receiving means; synchronizing signal separator means coupled to said video signal receiving means for separating from said video signal the equalizing pulses, vertical synchronizing pulses and horizontal synchronizing pulses included in said vertical blanking interval; switch pulse generating means coupled to said synchronizing signal separator means to receive at least the equalizing pulses separated from said video signal and responsive to said first and second states of said bi-state means for generating a switch pulse whose state is determined by the state of said bi-state means and which switch pulse is synchronized to switch to said determined state by the first equalizing pulse which is received by said switch pulse generating means after said bi-state means has been switched to a respective one of said first and second states; and means for applying said switch pulses to said switch means for selectively actuating said switch means so as to connect said transducer heads one at a time to said video signal receiving means.

4,120,008

OVERLAP TRACK SERVO FOR DYNAMIC POSITION CORRECTION IN A ROTARY-HEAD TAPE RECORDER

Lenard M. Metzger, Rochester, and Robert B. Johnson, Scottsville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 5, 1976, Ser. No. 729,620
Int. Cl.² H04N *5/795*
U.S. Cl. 360—70 **5 Claims**



1. Apparatus for use in a magnetic tape player for aligning the path of a rotating playback head that generates a playback signal with a magnetic track helically recorded across the width of a magnetic tape having a plurality of such helical tracks recorded thereon, the apparatus comprising:

means for supporting the playback head for rotation opposite said helical tracks;

track sensing means mounted on said supporting means in fixed rotational association with the playback head, said track sensing means overlapping first and second adjacent ones of said helical recorded tracks on the magnetic tape for continuously reproducing a train of signals simultaneously with the playback signal, said train including first and second signal components from said first and second adjacent tracks respectively, said track sensing means defining a first overlapping position for producing said train of signals with said first and second signal components having a reference relationship when the playback head is aligned with one of said recorded tracks, said track sensing means defining a plurality of other overlapping positions corresponding to a plurality of misalignments between the playback head and said one recorded track, each said other overlapping position producing said train of signals with said first and second signal components having a corresponding relationship that differs from said reference relationship;

circuit means connected to said sensing means for detecting said signal components and for identifying said first and second signal components as originating from said first and second adjacent tracks, respectively;

means responsive to said first and second signal components for providing a tracking control signal that varies dependent upon the relative presence of said first and second signal components in said train of signals;

tape driving means for moving the tape through a path in the tape recorder; and

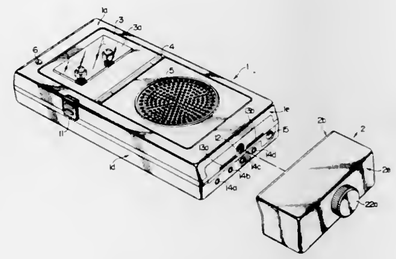
servo means responsive to said tracking control signal for causing said tape driving means to maintain a tape movement that has said one recorded track aligned with the path of the moving playback head.

4,120,009

TAPE RECORDER APPARATUS

Teruo Iwasawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jun. 13, 1977, Ser. No. 806,169
Claims priority, application Japan, Jun. 25, 1976, 51-83695
Int. Cl.² G11B *31/00*
U.S. Cl. 360—71 **10 Claims**



1. A tape recorder apparatus comprising a tape recorder internally housing a power source, a tape drive system and a pause switch for selectively controlling energization of the drive system, and an adaptor including means for releaseable electrical connection with the tape recorder without the use of an electrical cord and automatic switch means for controlling the operation of the tape recorder, said switch means and said pause switch being connected in parallel with each other between the power source and the tape drive system, whereby when the adaptor is connected with the tape recorder, the pause switch may be moved to an off position to permit the drive system of the tape recorder to be controlled by the automatic switch means.

4,120,010

AIR BEARING HEAD SUPPORT

Yasunaga Mitsuya, Tokyo; Shigemitsu Oguchi, Sayama; Wataru Hayakawa, Odawara; Hatsuo Takahashi, Chigasaki; Gen-ichi Ishida, Machida, and Masayoshi Amasaka, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Public Corp.; Hitachi, Ltd. and Fujitsu Limited, all of, Japan

Filed May 25, 1977, Ser. No. 800,178
Claims priority, application Japan, May 27, 1976, 51-61816
Int. Cl.² G11B *5/60, 21/20, 21/22, 21/02*
U.S. Cl. 360—103 **17 Claims**

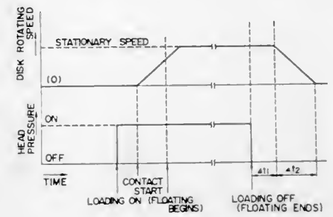
1. A magnetic disk unit comprising:

(a) floating magnetic head support means for supporting a floating magnetic head by a gimbal fixedly provided in an opening and urging the floating magnetic head against the surface of a magnetic disk at a predetermined pressure by a load spring provided in the opening;

(b) carriage means for moving the floating magnetic head support means radially of the magnetic disc;

(c) control means for actuating the load spring to apply the urging force to the floating magnetic head in response to movement of the floating magnetic head by the carriage means in a first direction radial of the magnetic disk and for putting the load spring out of its actuated state to move the urging force from the floating magnetic head in response to the movement of the floating magnetic head in a second direction;

(d) means for moving the floating magnetic head by the carriage means in the first direction, applying the urging



force to the floating magnetic head by the control means to bring the floating magnetic head into contact with the magnetic disc surface, starting the magnetic disc to revolve and raising its revolving speed up to a steady-state value to lift the magnetic head at the start of operation of the magnetic disc unit; and

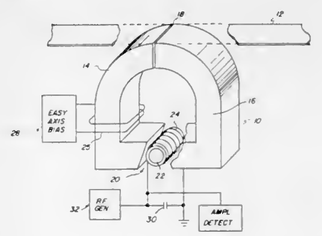
(e) means for moving the floating magnetic head by the carriage means in the second direction, removing the urging force from the floating magnetic head by the control means to raise the floating magnetic head from the rotating magnetic disc surface and stopping the magnetic disc at the time of stopping the operation of the magnetic disc unit.

4,120,011

MAGNETIC HEAD EMPLOYING EASY AXIS THIN FILM INDUCTOR

Frederick John Kolb, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,106
Int. Cl.² G11B *5/30*
U.S. Cl. 360—111 **4 Claims**



1. Magnetic head apparatus for use in detecting signal flux comprising:

a. first and second magnetic pole pieces disposed to form a transducer gap and a back gap therebetween;

b. wedge-like means at said back gap for providing a gradually changing reluctance across said back gap;

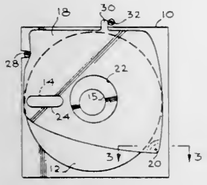
c. elongated sense element means within said back gap, said sense element means having an essentially single domain magnetic film thereon, said film being magnetically cou-

pled to said pole pieces for completing a magnetic circuit comprising said pole pieces, said transducer gap, and said film, said film being so disposed on said sense element means that the easy axis of said film is about the longitudinal axis of said sense element means and also substantially parallel to said transucer gap, said sense element means being disposed within said back gap said head apparatus being adapted to have a bias field applied across said back gap, the field extending across said back gap being applied differentially to the easy axis of said film; and

d. a sense coil inductively coupled to the easy axis of said sense element means;

whereby signal flux entering said transducer gap correspondingly causes the inductance of said sense coil to vary, and whereby variation in said sense coil inductance may be converted to an electrical signal corresponding to said inductance variation.

4,120,012
DISKETTE DOOR
George W. Bowers, Hayward, Calif., assignor to Information Terminals Corporation, Sunnyvale, Calif.
Filed Apr. 18, 1977, Ser. No. 788,286
Int. Cl.[2] G11B *23/02*; B65D *85/30*
U.S. Cl. 360—133 **8 Claims**



1. A removeable diskette for use in conjunction with a diskette receiving magnetic storage equipment which has a magnetic transducer head, and which has operating means positioned to engage the diskette, comprising:

a magnetically coated disk;

a substantially rectangular jacket enclosing the disk, said jacket having an opening to afford access to a disk surface for the magnetic transducer head;

a door member movably positioned within said jacket beside said disk;

means pivotally mounting said door member in said jacket, to enable said member to pivot between first and second positions wherein said member respectively blocks and unblocks said jacket opening;

said door member including a tab portion positioned to directly engage said operating means and move said cover to said second position when the jacket is installed on the magnetic storage equipment.

4,120,013
LAUNDRY MACHINE CONTROL SYSTEM
James W. Simmons, Arlington, Tex., assignor to Ametek, Inc., New York, N.Y.
Filed Mar. 28, 1977, Ser. No. 781,650
Int. Cl.[2] D06F *37/42*
U.S. Cl. 361—180 **15 Claims**

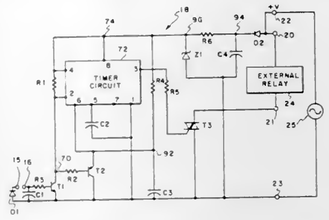
1. A system for controlling a door lock to allow access to a rotatable cylinder only with said cylinder stationary, comprising:

magnetic means having a magnetic field and an induction coil for sensing rotational motion of said cylinder at velocities greater than a predetermined minimum rotational velocity to induce a pulse signal in said coil in response to the flux of said magnetic field as said cylinder rotates at velocities greater than said predetermined minimum rotational velocity;

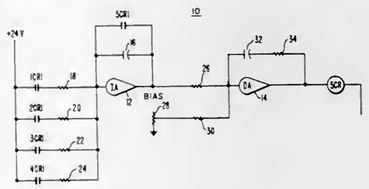
circuitry means in electrical communication with said magnetic means for amplifying the pulse signal and for converting the signal to a DC control signal;

delay means in electrical communication with said circuitry means for maintaining the DC control signal for a predetermined period of time after the pulse signal ceases, said predetermined period of time being sufficient to enable the cylinder to transition from said predetermined minimum rotational velocity to a stationary position; and

switch means responsive to the DC control signal for actuating and deactuating the cylinder door lock to control access to the rotatable cylinder.



4,120,014
DIVIDING TIMER
William H. Snedden, Newstead, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 27, 1976, Ser. No. 735,920
Int. Cl.[2] H01H *47/18*
U.S. Cl. 361—196 **1 Claim**



1. A dividing timer comprising:

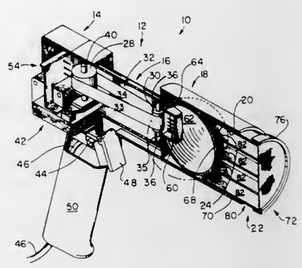
a. a first operational amplifier connected as an integrator and having a first capacitor in its feedback path;

b. a plurality of resistors in parallel, connected to the input of said first operational amplifier and to a source of d.c. potential, the resistors having ohmic magnitude proportional to a binary code; the selected resistors of the parallel combination providing a fixed ohmic magnitude;

c. A second operational amplifier, arranged as a proportional integral controller, connected to the output of said first operational amplifier;

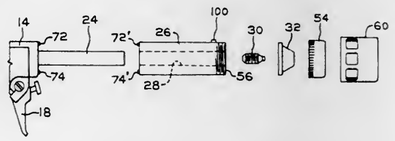
d. a relay, connected to the output of said second operational amplifier, and having a pair of normally open relay controls shunting said first capacitor, whereby by preselecting said fixed ohmic magnitude, a finite time interval can be subdivided into time periods in accordance with the number of times that the first capacitor reaches said fixed voltage during said finite time interval.

4,120,015
ELECTROSTATIC COATING-DISPENSING APPARATUS
Jack R. Haller, Columbus, Ohio, assignor to J. R. Haller, Ltd. Inc., Columbus, Ohio
Filed Feb. 28, 1977, Ser. No. 772,846
Int. Cl.[2] B05B *5/02*
U.S. Cl. 361—227 **13 Claims**



1. An apparatus for electrostatically dispensing dry coating material, said apparatus including means for generating an electrostatic potential, a housing containing said generating means, means carried by said housing for manually actuating said generating means, conductive surface means for storing said electrostatic potential generated by said generator means, the improvement comprising container means separable from said housing for holding said coating material and for transferring said electrostatic potential from said conductive surface means to said coating material, said container means including first and second ends interconnected by a side wall, said container means first end defining a conducting wall means adapted to contact said coating material when held in said container means, means for removably securing said container means to said housing with said conductive surface means adjacent said conducting wall means wherein said electrostatic potential will be transferred from the conductive surface means to the conducting wall means.

4,120,016
DETACHABLE CYLINDRICAL POWER SUPPLY FOR INDUCTION TYPE ELECTROSTATIC SPRAY GUN
Charles D. Hendricks, Livermore, Calif., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 5, 1976, Ser. No. 739,171
Int. Cl.[2] B05B *5/02*
U.S. Cl. 361—228 **14 Claims**



1. In an electrostatic spray apparatus, a spray gun having a barrel portion, at least one fluid passageway for the fluid to be sprayed, fluid valve means for controlling the flow of fluid, nozzle means in said fluid passageway for discharging said fluid in a spray, induction charging means adjacent said spray discharge nozzle, and a light-weight, portable power pack incorporating a power supply for said induction charging means, said power supply being operative to produce a high voltage, low current DC output from a low voltage, low current input, the improvement comprising:

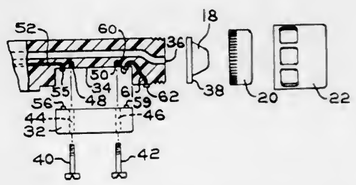
annular casing means for said power pack, said annular casing being molded around said power supply and forming a forward barrel portion of said spray gun and wherein said power supply includes transformer means comprising an annular core, said core having wound thereon an input winding and an output winding;

means for securing said annular casing means to said spray gun;

electrical contact means on said power pack and on said spray gun for connecting said power supply to said spray gun; and

means adapted to connect the high voltage output from said power supply to the induction charging means.

4,120,017
DETACHABLE POWER SUPPLY FOR INDUCTION TYPE ELECTROSTATIC SPRAY GUN
James E. Sickles, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 5, 1976, Ser. No. 739,170
Int. Cl.[2] B05B *5/02*
U.S. Cl. 361—228 **15 Claims**



1. An electrostatic spray apparatus including, in combination:

a spray gun having a barrel portion and at least one fluid passageway for the fluid to be sprayed;

a nozzle means secured to said barrel for receiving said fluid and for discharging said fluid in a spray;

induction charging means adjacent said spray discharge nozzle;

a small, light-weight power pack module incorporating a power supply for said induction charging means, said power supply being operative to produce a high voltage, low current DC output from a low voltage, low current input;

means for detachably securing said power pack to module to said spray gun in operative electrical connection with said induction charging means.

4,120,018
STOP, TAIL AND SIGNAL LAMP
Robert I. Nagel, Mesa, Ariz., assignor to Dominion Auto Accessories Limited, Toronto, Canada
Filed Jan. 27, 1977, Ser. No. 762,865
Int. Cl.[2] F21V *5/04*
U.S. Cl. 362—333 **2 Claims**

1. A back-up lens for a stop and tail lamp which comprises

a body of clear transparent material adapted to be mounted in vertical position in the lamp,

said body comprising an inner surface and an outer surface and having a generally horizontal optical axis extending at a right angle to the plane thereof,

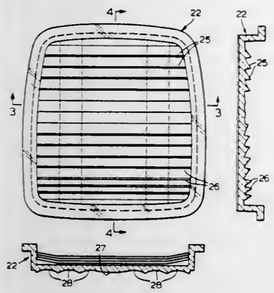
said inner surface of said body having a plurality of parallel horizontally extending dioptrics above and below the optical axis of said body and a plurality of generally parallel horizontal catadioptrics below the dioptrics,

at least one surface of each of said dioptrics is concave,

the endmost portions of each dioptric and catadioptric are at an angle to the central portions thereof,

said outer surface having a central convex cylindrical surface with the axis thereof extending generally parallel to

the plane of said body and a plurality of concave cylindrical surfaces extending vertically on opposite sides of said



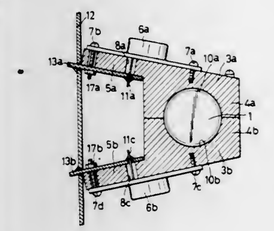
convex cylindrical surface with the axes thereof generally parallel to the plane of said body.

4,120,019

APPARATUS FOR COOLING ELECTRICAL COMPONENTS

Hiroshi Arii, Kawasaki; Hirohito Kawada, Mitaka; Takashi Yoshida, and Chiaki Nonaka, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 7, 1977, Ser. No. 766,379
Claims priority, application Japan, Feb. 14, 1976, 51-16469[U]
Int. Cl.² H05K *7/20*
U.S. Cl. 361—385 **8 Claims**



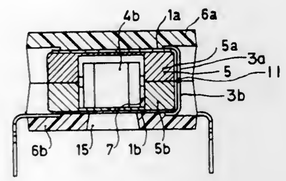
1. In a cooling assembly including a heat generating electric part having leads, a heat conductive block mounting said heat generating electric part, and a heat pipe attached to said heat conductive block for radiating the heat from said heat generating electric part to the air through said heat conductive block, the improvement in which said heat-conductive block comprises a thickened portion combined with said heat pipe, and a thinned portion having two sides formed contiguously to said thickened portion, said heat generating electric part is mounted on said heat-conductive block so that at least one part of said heat generating electric part extends on one side of said thinned portion, and a connector is arranged on the other side of said thinned portion and connected to said leads of the heat generating electric part, in which said heat conductive block comprises first and second block members having thickened portions and thinned portions, grooves conforming with the shape of said heat pipe are made in said thickened portions, and said heat pipe is held between said grooves, in which said thinned portions of the heat conductive block are opposed to each other, extending obliquely from said thickened portions, so as to diverge from each other.

4,120,020

ELECTRONIC COMPONENT WITH HEAT COOLED SUBSTRATES

Edward Uden, Barmstedt; Wilhelm Schreihage, Hartenholm, both of Fed. Rep. of Germany, and Johan Christiaan Jacobus Finck, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 11, 1976, Ser. No. 713,520
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2536957
Int. Cl.² H05K *7/20*
U.S. Cl. 361—386 **5 Claims**



1. An electronic module comprising:
first and second insulating substrates each having a first side and surface wiring on a second side,
a first heat-dissipating body attached to said first side of the first substrate,
a second heat-dissipating body attached to said first side of the second substrate,
means for making external electrical connections to the surface wiring of at least one of said substrates,
at least two connection leads electrically connecting wiring on the first substrate to a wiring on the second substrate,
means for permanently mechanically connecting said first and second heat-dissipating bodies together in abutting relationship, a first portion of each of said bodies being disposed between the two substrates and a second portion of each of said bodies extending beyond said substrates, and
insulating material enveloping said substrates, said means for making external electrical connections, and said first portions.

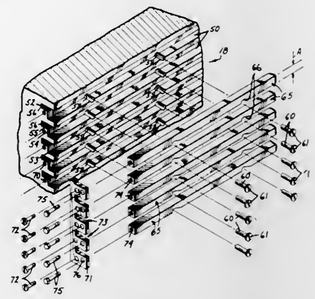
4,120,021

COOLING SYSTEM FOR ELECTRONIC ASSEMBLY

Maurice Dean Roush, Chippewa Falls, Wis., assignor to Cray Research, Inc., Chippewa Falls, Wis.

Filed Jun. 30, 1976, Ser. No. 701,017
Int. Cl.² H05K *7/20*
U.S. Cl. 361—388 **7 Claims**

1. A cooling system for an electronic computer having removable chassis mounted modules, comprising:
(a) a plurality of modules each comprising a heat conducting plate, a pair of electronic circuit board assemblies, and means for attaching said circuit board assemblies to opposite sides of said plate, said heat conducting plate being wider than said circuit board assemblies so that opposite edges of said plate form heat conducting flanges which extend beyond the edges of said circuit board assemblies;
(b) a plurality of cooling bars forming a part of said chassis, said cooling bars having internal coolant flow passages and having faces with a plurality of slots formed therein removably receiving the heat conducting flanges of said modules;
(c) means for mounting said cooling bars within said chassis in parallel relationship to each other with said slotted faces of adjacent cooling bars facing one another and spaced apart a distance corresponding to the width of said modules to define a plurality of positions for mounting said modules in said chassis;
(d) clamping means connected to said cooling bars and operative when actuated to clamp said heat conducting flanges into heat conducting contact with said cooling bars via said slots;
(e) actuation means operatively connected to said clamping means and operative in a first mode to positively release



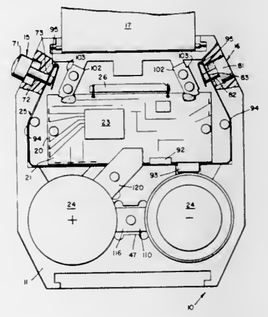
said clamping means to permit removal and replacement of modules and operative in a second mode to actuate said clamping means to positively clamp said flanges in said slots; and
(f) means for supplying coolant fluid to said internal passages of said cooling bars.

4,120,022

PLASTIC MODULAR CASING FOR AN ELECTRONIC WATCH

Carroll R. Perkins, 3400 Main St., Santa Ana, Calif. 92707; Jesse F. Cable, III, 4341 Rafael St., Irvine, Calif. 92714, and Joseph Link, 26752 Magdalena La., Mission Viejo, Calif. 92675

Filed May 24, 1976, Ser. No. 688,983
Int. Cl.² H05K *1/04*
U.S. Cl. 361—395 **2 Claims**



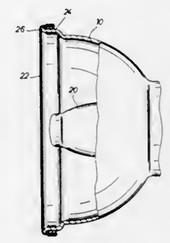
1. In a modular electronic assembly which includes an integrated circuit chip electrically powered by a pair of batteries and an electro-optical display which is operated by the integrated circuit chip, a switch mechanism for use in combination with a nonconductive modular casing, that serves as a casing for the modular electronic assembly and a battery holder for the pair of batteries which includes:
a. non-conductive modular frame that has a substrate cavity, in which the integrated circuit chip is disposed, a conducting member cavity disposed adjacent to said substrate cavity, both of which are disposed adjacent to said conducting member cavity;
b. a first battery connector disposed in said first battery cavity and used for coupling electrically the negative terminal of the battery in said first battery cavity to the casing of the battery in said second battery cavity;
c. a second battery connector disposed in said second battery cavity and used for electrically coupling the negative terminal of the battery in said second battery cavity to the integrated circuit chip; and
d. a conducting member formed from a resilient, conductive material and adapted to be fitted into said conducting member cavity of said modular frame and electrically coupled to the casing of the battery in said first battery cavity and to the integrated circuit chip, a portion of said conducting member being adapted to be formed into a spring mechanism, said switch comprising:
a. a button having a first cylindrical portion of a first particular diameter and adapted to slideably fit into a lower hole drilled in the side of said modular frame adjacent to said conducting member cavity and a second cylindrical portion of a second particular diameter which is larger than the first particular diameter, and adapted to slideably fit into an upper hole adjacent to said lower hole, said button also having a groove adjacent to the end of said first cylindrical portion and adapted to being connected mechanically to said portion of said conducting member in order to form a spring mechanism; and
b. a conducting plate electrically coupled to the integrated circuit chip and mounted adjacent to said conducting spring so that when said button is pressed said conducting member electrically contacts said conducting plate.

4,120,023

LENS CLOSURE FOR SPORTS LIGHT FIXTURE

Glen Harold McReynolds, Jr., Austin, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed May 9, 1977, Ser. No. 794,945
Int. Cl.² G03B *15/02*
U.S. Cl. 362—16 **8 Claims**



1. A lighting fixture combination, comprising
a housing for enclosing at least one light bulb therein that emits light in the visible spectrum, such that said bulb is sufficiently recessed so that the plane of an opening through which light emanates does not intersect said bulb,
said housing including entry means to access said bulb other than through said light emanating plane;
said housing including an external gasket rim located behind said light emanating plane and perpendicular thereto;
a gasket located over at least a part of said rim;
a housing window comprising a thin film of fluorocarbon polymer combining tetrafluoroethylene and hexafluoropropylene stretched across said opening and said gasket rim; and
a closing band securing said gasket and said window thin film against said rim.

4,120,024

LIGHTING INSTALLATION

Julian Borisovich Aizenberg, ulitsa Koroleva, 3a, kv. 84, Moscow; Inokh Borukhovich Bukhman, Volgogradskaya ulitsa, 31, kv. 151, Kiev; Vladimir Mikhailovich Pyatigorsky, Molodogvardeiskaya ulitsa, 24, korpus 5, kv. 58, and Natalia Mikhailovna Solomatina, ulitsa P. Korchagina, 8, kv. 114, both of Moscow, all of U.S.S.R.

Filed Oct. 18, 1976, Ser. No. 733,386
Int. Cl.[2] F21V *33/00*
U.S. Cl. 362—96 **12 Claims**

1. A lighting installation for interior lighting of structures having a covering shell and elastic pneumatic supporting members, comprising:
- at least one elastic pneumatic hollow slotted light guide which is also a supporting and shaping member of said structure, said structure including a covering shell of an elastic film; a portion of the internal surface of said light guide having a light-reflecting coating; and the other portion of said light guide facing the interior being lighted is a light-permeable slot; said hollow slotted light guide having first and second end portions
- at least one optical input device mounted on at least one of said end portions of said hollow slotted light guide and optically coupled to said hollow slotted light guide;
- at least one light source arranged in said optical input device which directs the luminous flux from said light source into said hollow slotted light guide;
- at least one inlet valve for said hollow slotted light guide; and
- means for the supply of gas through said inlet valve into said hollow slotted light guide.

4,120,025

PORTABLE CONTAINER CONVERTIBLE TO LIGHTED DANCING STAGE

John B. Deaven, 5217 3/4 Virginia Ave., Hollywood, Calif. 90029

Filed Sep. 9, 1977, Ser. No. 831,780
Int. Cl.[2] F21S *1/02*
U.S. Cl. 362—153 **4 Claims**

1. A portable structure convertible to a lighted dancing stage, including:
- (a) a bottom panel adapted to lie flat and form a dancing stage;
- (b) another panel hingedly connected to said bottom panel; and
- (c) illuminating means carried by said other panel for directing light toward said bottom panel when said other panel lies flat adjacent said bottom panel.

4,120,026

METHOD OF MIXED ILLUMINATION

Michihiro Tsuchihashi; Masato Saito; Makoto Yamanoshita, all of Amagasaki; Hidetoshi Katsura, Kamakura; Koichiro Maeyama, Kamakura; Yasushi Uchida, Kamakura, and Osamu Myodo, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1976, Ser. No. 715,653
Claims priority, application Japan, Aug. 21, 1975, 50/101482
Int. Cl.[2] F21V *9/01*
U.S. Cl. 362—231 **6 Claims**

1. A method of mixing illumination from a plurality of sources for use in casting beautiful and balanced colored shadows of opaque objects which comprises the steps of:
- arranging a plurality of color lamps in three groups including an R group of at least one lamp for emitting colored light in the range yellow to red, a G group of at least one lamp for emitting green light, and a B group of at least one lamp for emitting colored light in the range violet to blue; and
- irradiating a pair of opaque objects with colored light emitted by the color lamps in the three groups to cause colored shadows of the objects characterized by intensity ratios of illumination in the ranges of

$$0.05 \leqq I_R/(I_R + I_G + I_B) \leqq 0.85;$$

$$0.05 \leqq I_G/(I_R + I_G + I_B) \leqq 0.8; \text{ and}$$

$$0.02 \leqq I_B/(I_R + I_G + I_B) \leqq 0.8$$

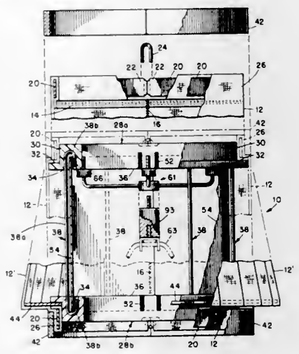
wherein I_R designates an intensity of illumination caused by irradiating with only the lamp in the R group the shadow of one of the opaque objects cast by both of the lights of the lamps in the G group and the B group, I_G designates an intensity of illumination caused by irradiating with only the lamp in the G group the shadow of the one of the opaque objects cast by both of the lights of the lamps in the R group and the B group, and I_B designates an intensity of illumination caused by irradiating with only the lamp in the B group the combination of the shadow of the one of the opaque objects cast by the light of the lamp in the R group and the shadow of the other of the opaque objects cast by the light of the lamp in the G group.

4,120,027

COLLAPSIBLE LAMP SHADE HAVING INTERCHANGEABLE CONFIGURATIONS

Mortimer M. Stark, 245-42 62nd Ave., Douglaston, N.Y. 11362

Filed Mar. 14, 1977, Ser. No. 777,515
Int. Cl.[2] F21V *11/18, 17/00*
U.S. Cl. 362—352 **17 Claims**



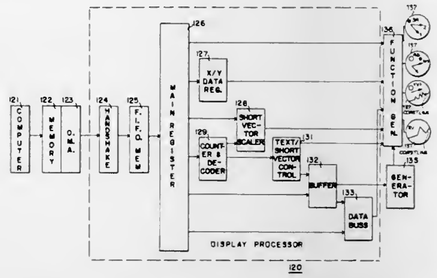
1. A collapsible lamp shade comprising:
- a shade member formed of a flexible fabric material having upper and lower continuous edge portions defining upper and lower collar portions respectively;
- upper and lower rigid hoop members, each hoop member including a circumferentially extending sidewall having a substantially vertical outwardly facing sidewall surface and a shelf portion circumferentially extending outwardly from said outwardly facing surface, said shelf portion on said upper hoop member having a substantially horizontal upwardly facing surface spaced from the upper edge surface thereof and said shelf portion on said lower hoop member having a substantially horizontal downwardly facing surface spaced from the lower edge surface thereof, said upper and lower rigid hoop members further including means provided on their lower and upper edge surfaces respectively for receiving one end of each of a plurality of support rods;
- said shade member upper collar portion being removably concentrically located around said upper hoop member outwardly facing sidewall surface and constrained from downward movement by said upwardly facing shelf portion surface and said shade member lower collar portion being removably concentrically located around said lower hoop member outwardly facing sidewall surface and constrained from upward movement by said downwardly facing shelf portion surface; and
- a plurality of support rods vertically extending between said hoop members inwardly of said shade member, each support rod having a pair of end portions receivable within said end receiving means provided on said hoop members;
- whereby said fabric shade member is maintained in a stretched configuration by said rod members which space said hoop members in a mutually opposed, parallel relationship.

4,120,028

DIGITAL DISPLAY DATA PROCESSOR

Robert J. Membrino, and John C. Gaughan, both of Silver Spring, Md., assignors to The Singer Company, Binghamton, N.Y.

Filed Oct. 21, 1976, Ser. No. 734,660
Int. Cl.[2] G06F *3/14*
U.S. Cl. 364—200 **12 Claims**



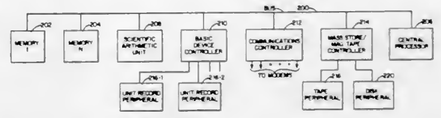
1. An electronic processing system that saves computer software and computer time by receiving instruction and data words from a digital computer that contain information for automatically controlling the appearance at a particular X, Y position of desired graphical conical matter, alphanumeric characters and symbols of predetermined sizes on a plurality of individually addressable stroke writing cathode ray tubes, said processing system comprising:
- a. an interface that causes the instruction and data words of a digital computer to be electrically compatible with the remainder of said system so that the instruction and data words may be transferred from said computer;
- b. a first-in-first-out instruction and data memory coupled to said interface so said instruction and data words which contain information on X, Y positioning, alphanumeric characters or symbol addressing, alphanumeric character size and conical radius and centering may be entered into said first-in-first-out memory and exit said memory serially in the order said data and instruction words entered said memory;
- c. a first register coupled to said memory for temporarily storing at a given time one data word and/or one instruction word when the remainder of said system has completed the processing of the previous instruction and/or data word and is ready to process the next data or instruction word;
- d. decoding means coupled to said first register for decoding the instructions stored in said register;
- e. sequencing means coupled to said decoding means and said first register for controlled processing of said data word and/or said instruction word; and
- f. a plurality of writing means for writing various types of conical graphical matter, alphanumeric characters and symbols on respective ones of said plurality of cathode ray tubes in accordance with the information given by said instruction and data words, said means coupled to said plurality of cathode ray tubes, said decoding means and said sequencing means, whereby said system follows the instructions and processes the data transmitted by said computer permitting said computer to process additional information since said computer will have less information to process because said computer will only send instruction and data words to said processing system when said computer wants to change the information and data currently appearng on one or all of said cathode ray tubes.

4,120,029

METHOD AND APPARATUS FOR RECOVERING A SIGNAL TRANSFERRED OVER A COMMON BUS IN A DATA PROCESSING SYSTEM

Gordon Lewis Steiner, Milford, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 27, 1976, Ser. No. 754,287
Int. Cl.[2] G06F *3/04*
U.S. Cl. 364—200 **12 Claims**



8. In a data processing system having a common bus for coupling a plurality of units for the transfer of information therebetween, each transfer taking place during a bus cycle granted to the highest priority unit requesting a bus cycle, the unit transferring said information referred to as a master unit in a particular cycle and the unit receiving said information referred to as a slave unit for a particular cycle, apparatus for recovering a signal to a predetermined value, said signal representing a portion of said information, said apparatus comprising:
- A. means for indicating by means of a first signal to each of said units that a previous master unit has transferred information, including said signal to be recovered, over said bus during a previous bus cycle;
- B. first means for enabling said signal to be recovered to recover to said predetermined value, in response to said means for indicating, in a period of time determined by the length of said bus, the characteristic impedance of a signal line of said bus on which said signal to be recovered is transferred, and the value of a termination impedance coupled with said signal line, said value of said termination impedance being greater than said characteristic impedance;
- C. second means for enabling, responsive to said means for indicating and operative concurrently with the operation of said first means for enabling, for enabling the generation of a control signal;
- D. means, responsive to said control signal, for deactivating an acknowledgement signal provided by a previous slave unit to said previous master unit in response to the transfer of information from said previous master unit;
- E. means for coupling, in response to said means for deactivating, a new master unit to transfer information over said bus; and
- F. means for transferring, in response to said means for coupling, a strobe signal to a new slave unit for use in receiving information at said new slave unit.

4,120,030

COMPUTER SOFTWARE SECURITY SYSTEM

Richard Johnstone, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Mar. 11, 1977, Ser. No. 776,702
Int. Cl.[2] G06F *13/06, 7/00;* **G11C** *7/00*
U.S. Cl. 364—200 **9 Claims**

1. In a computer system including means for generating a

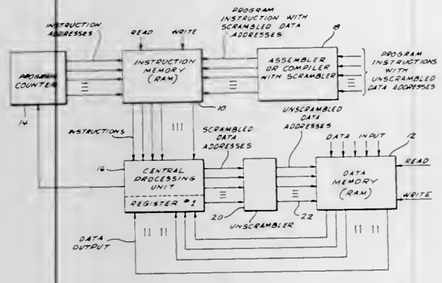
sequence of instruction signals which represent program instructions for performing designated computer operations, some instruction signals having data address portions which represent the addresses at which data involved in the corresponding operations is stored, said instruction signals being stored in memory means in said computer system, the improvement for disguising said program instructions comprising:

a data memory in said memory means, said data memory having address input conductors and data output conductors;

means for storing in said data memory data signals representing quantities referred to in said program instructions at the addresses specified in said data address portions of said instruction signals;

scrambler means for scrambling the data address portions of said instruction signals in accordance with a predetermined cipher key;

an instruction memory in said memory means;



means for storing said instruction signals including those with scrambled data address portions in said instruction memory;

means for reading said instruction signals out of said instruction memory;

an unscrambler coupled in series with said data memory address conductors, said unscrambler being operable in accordance with said cipher key to unscramble any scrambled data address signals applied to the input thereof and to apply the unscrambled data address signals to said data memory address conductors;

means for applying said scrambled data address signals read out of said instruction memory to the input of said unscrambler; and

means for reading data out of said data memory at said unscrambled addresses in accordance with said program instructions for use in the corresponding computer operations.

4,120,031

UTILITY USAGE MONITORING SYSTEMS

Dan D. Kincheloe, Newport, Beach; Elmo M. Gregory, Costa Mesa; Carl David Todd, Costa Mesa, and Edson B. Gould, III, all of Newport Beach, Calif. 92660, assignors to Energy Conservation Systems, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 706,679, Jul. 19, 1976. This application Jun. 27, 1977, Ser. No. 810,675

Int. Cl.[2] G06K *1/00;* **G01R** *19/16;* **G06F** *15/20*

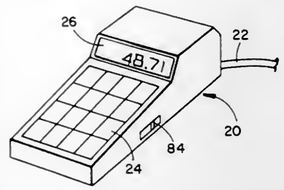
U.S. Cl. 364—464 **71 Claims**

1. A device for monitoring usage of a particular utility and displaying the accumulated usage in a monetary designation comprising;

means for providing an analog signal responsive to the rate of usage of the utility,

voltage controlled oscillator means responsive to said analog signal for providing a voltage controlled oscillator means signal having a repetition rate responsive to the rate of usage of the utility,

means for providing a cumulative signal responsive to the cumulative repetition of said voltage controlled oscillator means signal, said last named means including means for varying the relationship of said cumulative signal with respect to said cumulative repetition of said voltage con-



trolled oscillator means signal in accordance with a cost per unit of the utility; and

means for displaying said cumulative signal in numerical form.

4,120,032

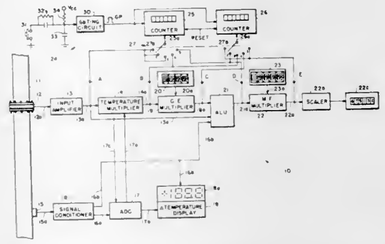
METHODS AND SYSTEMS FOR USE WITH PULSE TRAIN CIRCUITRY

Mohammad Kian Mirdadian, 7015 Atwell, Houston, Tex. 77036

Continuation of Ser. No. 553,834, Feb. 27, 1975, Pat. No. 4,038,534. This application May 6, 1977, Ser. No. 794,415 The portion of the term of this patent subsequent to Jul. 26, 1994, has been disclaimed.

Int. Cl.[2] G01F *1/08, 15/02*

U.S. Cl. 364—510 **12 Claims**



1. A system for simultaneously obtaining pulse counts from first and second electrical pulse train producing means comprising:

(a) a first counter for counting the pulses in the pulse train produced by said first means;

(b) a second counter for counting the pulses in the pulse train produced by said second means;

(c) gating means actuatable at random for simultaneously starting the counting operation of said first and second counters, and actuatable at random for simultaneously stopping said counting operation of said first and second counters; and

(d) display means for displaying the accumulated counts in said first and second counters when said counting operations have been so simultaneously stopped.

4,120,033

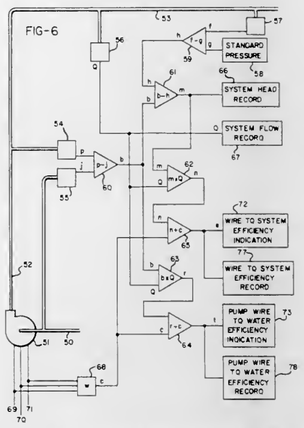
APPARATUS AND METHOD FOR DETERMINING PUMPING SYSTEM HEAD CURVES

Anthony Bruce Corso, and James Burton Rishel, both of Cincinnati, Ohio, assignors to Corporate Equipment Company, Cincinnati, Ohio

Filed Jan. 4, 1977, Ser. No. 756,909

Int. Cl.[2] G01L *13/00;* **G01D** *9/02*

U.S. Cl. 364—510 **7 Claims**



1. Recording apparatus for a fluid supply system comprising first measuring means for generating a first signal indicative of the actual pumping head at a supply point for said system, second measuring means for generating a second signal indicative of the actual fluid delivery pressure at a delivery point in said system, signal generating means for generating a third signal indicative of a desired fluid delivery pressure at said delivery point, combining means for combining said first, second and third signals to obtain a fourth signal indicative of said first signal reduced by an amount equal to the difference between said second and third signals, and first recording means for recording said fourth signal as an indication of a system head requirement.

4,120,034

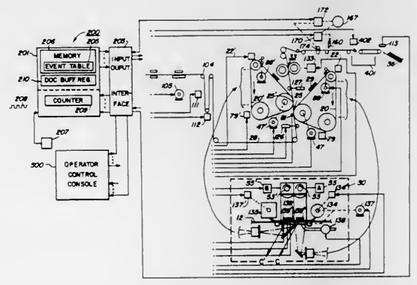
PROGRAMMABLE CONTROLLER FOR CONTROLLING REPRODUCTION MACHINES

Bernard C. Fisk, Dallas, Tex., and Gerald C. VerSchage, Henrietta, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1974, Ser. No. 496,663

Int. Cl.[2] G06F *15/20;* **G03G** *15/00*

U.S. Cl. 364—518 **3 Claims**



1. A method of operating a reproduction system including a reproduction machine having a plurality of process step implementing means, a programmable controller operatively connected to enable said plurality of process step implementing means, and means for receiving input signals from the controller, comprising the steps of:

inputting a reproduction run instruction of a predetermined characteristic to said controller;

storing an operating program having instruction routines for determining timing intervals between successive copying process steps;

commanding said controller to operate whereby said controller generates timed control signals related to the timing intervals in successive cycles for making copies in succession; and

programming said controller with instruction routines for enabling said controller to scan the input signals periodically at the controller cycle speed.

4,120,035

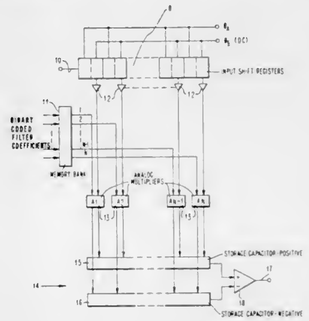
ELECTRICALLY REPROGRAMMABLE TRANSVERSAL FILTER USING CHARGE COUPLED DEVICES

Moises Cases, Fishkill; Fung Yuel Chang, and Barry Jay Rubin, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1977, Ser. No. 825,123

Int. Cl.[2] G06G *7/16;* **H03K** *5/159*

U.S. Cl. 364—602 **6 Claims**



1. A CCD digital filter comprising:

means for sampling without destroying an analog signal at various points and providing voltages proportional to each sampled signal;

means for separately applying said voltages to a CCD analog multiplier;

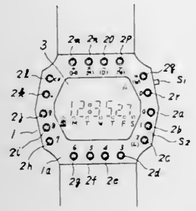
said analog multiplier including means for applying one of said voltages to a sample signal gate which creates charge linearly proportional to the amplitude of said analog signal; means for applying an digital filter coefficient for creating or not-creating said charge depending upon whether the bit of said filter coefficient is 1 or 0; a charge splitting storage gate; means for transferring charge from the substrate beneath the said sampled signal gate to the substrate beneath the said charge splitting gate; a charge splitting control gate for splitting the said charge; means for dumping one portion of the said split charge; and means for passing the said filter coefficient through the said analog multiplier successively according to the number of bits in said filter coefficient which results in the multiplication of said analog signal by said filter coefficient;

means for simultaneously dumping the separate multiplied sample signal into a means for summing all sample signals to produce an analog signal modified by digital filter coefficients.

4,120,036
TIME INFORMATION CORRECTION IN COMBINATION TIMEPIECE AND CALCULATOR

Hidetoshi Maeda, Tenri, and Takehiko Sasaki, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 3, 1976, Ser. No. 720,205
Claims priority, application Japan, Sep. 5, 1975, 50-122917[U]; Apr. 2, 1976, 51-37371
Int. Cl.² G04B 47/00; G06F 7/38
U.S. Cl. 364—705 9 Claims



1. In a combination timepiece and calculator including numeral keys for introducing numeral information into the combination timepiece and calculator, function keys for introducing operation commands into the combination timepiece and calculator, a base frequency signal generator, a power source, a computation circuit for calculator operation, a time information keeping circuit for timepiece operation having a plurality of time information sections including at least an hour information section and a minute information section, and a digital display for displaying the information stored in the computation circuit and the time information keeping circuit, the improvement comprising:

a. a mode selection switch for alternatively activating said computation circuit for calculator operation and said digital display for displaying time information;

b. a selection means for selecting a desired one of at least said hour and minute information sections, in the time information keeping circuit;

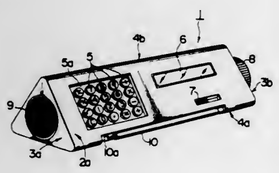
c. a time information correction command generator for resetting the information stored in said selected section of the time information keeping circuit to zero; and

d. a time information setting means for introducing a desired value into only said desired one selected section of the time information keeping circuit.

4,120,037
DESK-TOP ELECTRONIC CALCULATOR AND TAPE RECORDER ASSEMBLY

Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Mar. 4, 1977, Ser. No. 774,401
Claims priority, application Japan, Mar. 23, 1976, 51-34932[U]
Int. Cl.² G06F 15/02
U.S. Cl. 364—705 9 Claims

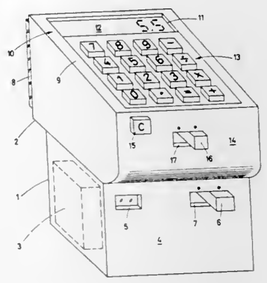


1. A desk-top electronic calculator and tape recorder assembly characterized in that the assembly has a housing in the form of a triangular prism, the housing having one side in which input keys and a numerical display associated with the calculator are disposed and another side in which a cassette receiving chamber is formed, and a loudspeaker is disposed in at least one face of the housing.

4,120,038
FLASH UNIT WITH ELECTRONIC EXPOSURE SETTING CALCULATOR

Albert Stieringer, Weil der Stadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,692
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 7607299[U]
Int. Cl.² G06F 7/38
U.S. Cl. 364—705 9 Claims



1. In a flash unit for use with a photographic camera of the type having exposure-variable adjusters settable to different camera settings for setting the values of independent and dependent flash-exposure variables of the photographic camera, electronic calculating means usable by the photographer for inputting the values of independent exposure variables and operative for automatically calculating therefrom the numerical value of a camera setting to be established for a dependent flash-exposure variable.

4,120,039
ELECTRONIC DIGITAL WATCH COMBINED WITH A COMPUTER

Janos Fischer, Feldblumenweg 22, Zurich, Switzerland

Filed Jun. 14, 1977, Ser. No. 806,372
Claims priority, application Switzerland, Jun. 25, 1976, 8129/76
Int. Cl.² G06F 3/02, 15/02; G04B 19/30
U.S. Cl. 364—705 4 Claims



1. A combination electronic digital watch-computer device which includes

a display field which is operable in conjunction with either the electronic digital watch portion of said device or the computer portion of said device;

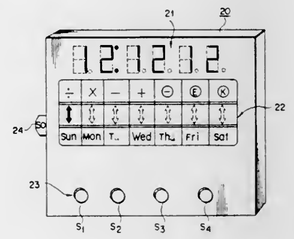
said computer portion of said device including a keyboard which is divided into at least two sections, each being connected to an adjacent section by a hinge so as to be foldable on top of one another in a non-accessable mode or folded out away from one another into a useable mode;

the keyboard including a plurality of keys, each formed by side walls enclosing a depression, a bottom wall, and a vertically movable trigger means projecting upwardly into the depression from the bottom wall, the trigger means being positioned so as to be disposed eccentrically within the depression.

4,120,040
ELECTRONIC CALCULATOR

Mitsuo Aihara, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kawasaki, Japan

Continuation of Ser. No. 666,069, Mar. 11, 1976, abandoned.
This application Nov. 7, 1977, Ser. No. 849,130
Claims priority, application Japan, Mar. 14, 1975, 50-30037; Apr. 30, 1975, 50-51444
Int. Cl.² G06F 3/02, 15/02; G04B 19/30
U.S. Cl. 364—709 1 Claim



1. An electronic calculator and timepiece having only four input keys and one lockswitch capable of addition, subtraction, multiplication and division of numbers comprised of the digits 0–9 and capable of displaying the time by hours, minutes and seconds and the date by year, month, day and day of the week comprising:

a first display section for displaying numbers to be added, numbers to be subtracted, numbers to be multiplied, numbers to be divided and numbers which constitute the result of addition, subtraction, multiplication and division,

a second display section for displaying the addition operation, the subtraction operation, the multiplication operation and the division operation and for indicating whether the result of an addition, subtraction, multiplication or division is positive or negative,

the only four input keys comprising:

a digit presetting key,

a digit shifting key,

an arithmetic operational mode designating key,

an equal key,

a digit being entered and displayed in the first display section by the number of times the digit presetting key is depressed,

a multidigit number being entered and displayed in the first display section by depressing the digit presetting key a selected number of times to enter a first digit, transferring the first digit one column to the left by depressing the digit shifting key, depressing the digit presetting key a selected number of times to enter a second digit in the column previously occupied by the first digit, transferring the first digit one further column to the left and the second digit one column to the left by depressing the digit shifting key to permit entry of a third digit in the column previously occupied by the second digit by depressing the digit presetting key a selected number of times,

an addition, subtraction, multiplication or division operation being entered and displayed in the second display section by depressing the arithmetic operational mode designating key a predetermined number of times, the predetermined number of times being different for the addition, subtraction, multiplication and division operations,

the result of the addition, subtraction, multiplication and division being entered and displayed in the first display section by depressing the equal key,

the first display section being cleared by simultaneously depressing a combination of the four input keys,

a lock switch for selecting operation as a calculator or for selecting operation as a timepiece,

the second display section also displaying the days of the week,

the first display section displaying the time by hours, minutes and seconds when the lock switch has selected operation as a timepiece,

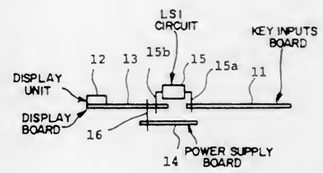
the first display section displaying the date by year, month and day and the second display section displaying the day of the week when the lock switch has selected operation as a timepiece and one of the input keys has been depressed, and

the designation of a time digit position requiring correction, the correction of the digit appearing in the time digit position, the time correction of seconds, the designation of a calendar digit position requiring correction and the correction of the digit appearing in the calendar digit position being effected when the lock switch has selected operation as a timepiece by depressing one of the input keys or by simultaneously depressing a combination of the four input keys.

4,120,041
SEMICONDUCTOR DEVICE FOR USE IN AN ELECTRONIC APPARATUS HAVING A PLURALITY OF CIRCUIT BOARDS

Masao Hayakawa, Kyoto, and Masahiro Nomura, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1976, Ser. No. 747,059
Claims priority, application Japan, Dec. 5, 1975, 50-164505
Int. Cl.² G06F 15/00; H05K 1/04
U.S. Cl. 364—712 7 Claims



1. In a semiconductor device for use in an electronic apparatus which includes information entry means mounted on a first circuit board and display means mounted on a second circuit board, the improvement comprising:

a Dual In-line Plug-in type package for containing the semiconductor device therein;

output terminals of the semiconductor device aligned on one side of the Dual In-line Plug-in type package;

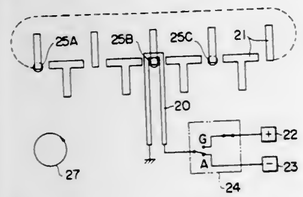
input terminals of the semiconductor device aligned on the other side of the Dual In-line Plug-in type package; and

means for installing the Dual In-line Plug-in type package to extend between the first circuit board and the second circuit board in such a manner that the output terminals of the semiconductor device are connected to the second circuit board and the input terminals of the semiconductor device are connected to the first circuit board both mechanically and electrically, respectively, to physically join said boards together through said package.

4,120,042
MAGNETIC BUBBLE INFORMATION WRITING DEVICE

Masuo Kasai, Kokubunji; Shigeru Yoshizawa, Tokorozawa, and Minoru Hiroshima, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 612,430, Sep. 11, 1975. This application Oct. 12, 1976, Ser. No. 731,317
Claims priority, application Japan, Sep. 11, 1974, 49-103914 Mar. 28, 1975 [JP] Japan 50-36735
Int. Cl.[2] G11C *19/00*
U.S. Cl. 365—2 **8 Claims**

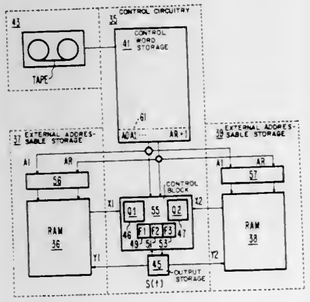


1. A magnetic bubble information writing device comprising:
a sheet of magnetic material in which single wall domains can be propagated, said material having a preferred direction of magnetization substantially normal to the plane of said sheet,
means for providing a bias field substantially normal to the plane of said sheet,
magnetic layer patterns adjacent to said sheet for defining a propagation channel for domains in said sheet,
means for generating a magnetic field rotating through 360 degrees in the plane of said sheet,
a single conductor loop disposed on a projecting portion of said magnetic layer patterns, enclosing only said projecting portion, and
means for selectively applying without regard to old information a current of a first polarity and a current of a second polarity respectively into the conductor loop when an information "0" and "1" respectively are to be written, whereby said old information can be conformed to new information to be written.

4,120,043
METHOD AND APPARATUS FOR MULTI-FUNCTION, STORED LOGIC BOOLEAN FUNCTION GENERATION

Chauchang Su, West Bloomfield Township, Oakland County, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 30, 1976, Ser. No. 682,118
Int. Cl.[2] G06F *1/02, 13/00*
U.S. Cl. 364—900 **8 Claims**

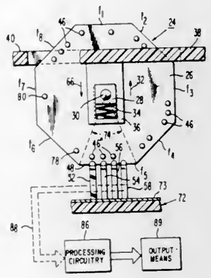


1. In a stored logic, Boolean function generator comprising an operator storage means for storing a predetermined sequence of Boolean operations, a first memory means and a second memory means for storing binary signals, an output storage means and circuitry means coupled to said operator storage means, said first memory means and said second memory means, and said output storage means, a method for performing a Boolean function by executing said predetermined sequence of Boolean operations stored in said operator storage means by successively configuring said circuitry means to execute said predetermined sequence of Boolean operations on said binary signals as they are transferred between said first memory means and said second memory means via said configured circuitry means, said method comprising the steps of:
(1) loading said predetermined sequence of Boolean operations into said operator storage means;
(2) loading said binary signals into said first memory means;
(3) transferring one of said sequence of Boolean operations from said operator storage means to said circuitry means;
(4) executing said transferred Boolean operation in said circuitry means upon said binary signals stored in said first memory means and storing the operational results in said second memory means;
(5) transferring another of said sequence of Boolean operations from said operator storage means to said circuitry means;
(6) executing said another transferred Boolean operation in said circuitry means upon said binary signals stored in said second memory means and restoring the results in said first memory means;
(7) continually performing steps (3) – (6) until all of said predetermined sequence of Boolean operations have been executed; and
(8) transferring the results of said last performed Boolean operations to said output storage means.

4,120,044
DATA ENCODING KEYBOARD

George Michael Harayda, Middlesex, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 16, 1976, Ser. No. 723,955
Int. Cl.[2] G06F *3/02, 7/38*
U.S. Cl. 364—900 **8 Claims**

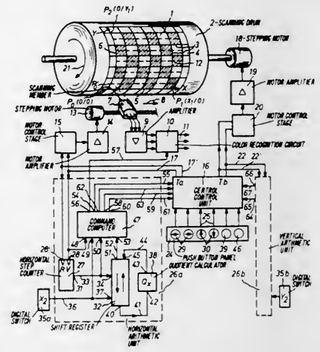


1. In an electronic system of the type including keyboard means for entering information into the system, processing means for processing the entered information and for performing selected operations in response to said entered information, and output means for displaying the results of the entered information or selected operation, said processing means performing any one of a plurality of operations in response to the entered information determined by said input means, the input means comprising a plurality of separate, different rotary thumbwheel pushbutton switch means having first and second positions coupled to said processing means, each said switch means having a first normally open switch condition when said switch means is in said first position, said switch means including switch encoding means having a plurality of selectable binary encoded second closed switch conditions when said switch means is displaced to said second position, each said closed switch condition entering information or causing said processing means to perform an operation corresponding to the selected binary code of that switch means.

4,120,045
APPARATUS AND METHOD FOR STEPWISE SCANNING OF PATTERNS ACCORDING TO A SCANNING RASTER

Klaus Moellgaard, and Ulrich Sendtko, both of Kiel, Germany, assignors to Dr. Ing. Rudolf Hell, GmbH, Germany

Filed Sep. 27, 1976, Ser. No. 726,671
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1975, 2543246
Int. Cl.[2] G06K *7/14*
U.S. Cl. 364—900 **19 Claims**



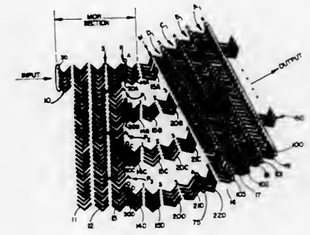
1. A process for scanning a pattern by a scanning member moving relatively to the pattern in individual steps, wherein said pattern is divided into a plurality of fictitious meshes enclosed by raster lines of an imaginary scanning raster, and in which before scanning, the necessary number of steps corresponding to the width of one mesh in a first step direction is obtained by forming a quotient from the number of steps corresponding to the length of the pattern in said step direction and from the number of meshes in said step direction, and wherein the calculation of quotients is made for both said first step dimension and a second dimension of the pattern, forming multiples of said quotients, each of said multiples associated with a fictitious raster line which determines the necessary number of individual steps from the scanning start to said raster line, and wherein the numbers of steps which are carried out during scanning in said first and second dimensions of the pattern are counted and compared to the respective multiples of said quotients, and when these are equal or deviate from a predetermined fraction of an individual step, a signal is generated which indicates the beginning of the next adjacent raster line of the imaginary scanning raster and wherein upon a greater deviation than said predetermined fraction the signal is utilized after an additional step has been accomplished.

4,120,046
TWO DIMENSIONAL STRETCHER DETECTOR

Thomas T. Chen, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 6, 1977, Ser. No. 831,034
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—8 **11 Claims**

1. A magnetic bubble domain detection device comprising,
input means for receiving a magnetic bubble domain,
replicator means for producing a plurality of magnetic bubble domains in response to a magnetic bubble domain at said input means,
a plurality of propagation paths for receiving the magnetic bubble domains from said replicator means, and

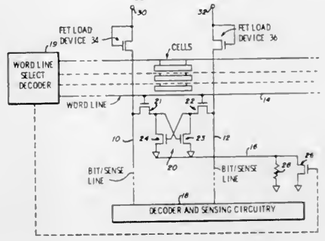


a plurality of common propagation devices for receiving the magnetic bubble domains from each of said plurality of propagation paths,
said plurality of propagation paths are arranged to transfer bubbles from said replicator means to said plurality of common propagation devices in different time periods.

4,120,047
QUASI-STATIC MOS MEMORY ARRAY WITH STANDBY OPERATION

Andrew G. Varadi, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 20, 1977, Ser. No. 789,175
Int. Cl.[2] G11C *7/00*
U.S. Cl. 365—227 **3 Claims**



1. An MOS static memory array comprising, in combination, a plurality of MOS memory cells, means for writing information into said MOS memory cells, means for reading information contained in said MOS memory cells, and constant energy source means for maintaining the information state of said MOS memory cells during the period of time when there is no reading or writing operation being performed with said MOS memory cells, a plurality of Bit/Sense lines connected to said MOS memory cells, a plurality of Word line select decoder lines connected to said MOS memory cells, and a plurality of common return lines connected to said MOS memory cells, each of said common return lines having current sinking means for permitting current sinking into said current sinking means from all of said MOS memory cells connected to each of said common return lines during writing and reading operations, and means connected to each of said common return lines for permitting some current flow from each of said MOS memory cells connected to each of said common return lines to pass through said common return lines during the period of time when there is no reading or writing operation being performed with said MOS memory cells, said current sinking means comprising an MOS device, said current flow permitting means

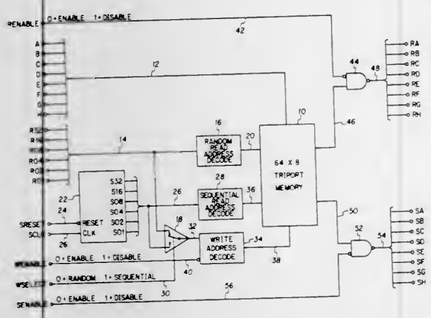
comprising only one resistor device, said resistor device being connected in parallel to said MOS device, each of said memory cells comprising four MOS devices, each of said four MOS devices having a gate electrode, a drain region and a source region, one of said four MOS devices having its gate electrode connected to one of said plurality of Word lines and its drain region connected to one of a pair of Bit/Sense lines, a second of said four MOS devices having its gate electrode connected to the same one of said plurality of Word line select decoder lines and its drain region connected to the second of said pair of Bit/Sense lines, a third and fourth of said four MOS devices connected up in a cross-coupled arrangement having the drain region of the third of said four MOS devices connected to the source region of said second of said four MOS devices and to the gate electrode of the fourth of said four MOS devices, the drain region of the fourth of said four MOS devices is connected to the source region of said one of said four MOS devices and to the gate electrode of the third of said four MOS devices, the source regions of both the third and fourth of said four MOS devices being connected to one of said plurality of common return lines that is associated with said one of said plurality of Word lines said memory array being adapted to operate at all times with a single power supply, said memory array being adapted to operate at all times with a +5 volt single power supply.

4,120,048

MEMORY WITH SIMULTANEOUS SEQUENTIAL AND RANDOM ADDRESS MODES

James L. Fuhrman, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 27, 1977, Ser. No. 864,281
Int. Cl.² G11C *8/00*
U.S. Cl. 365—239 **3 Claims**



1. Multiple access memory apparatus comprising, in combination:

cell memory means including data input means, random access output means, sequential access output means, random read input means, sequential read input means, and write input means;

data source means connected to said data input means of said cell memory means for supplying data bits thereto;

sequential address signal supply means;

random address signal supply means; and

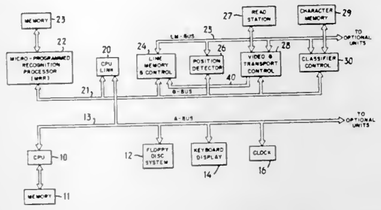
control means connected to said cell memory means, said sequential address signal supply means and said random address signal supply means for providing one of simultaneous operation modes of (1) random read/sequential read, (2) random read/sequential write and (3) random write/sequential read.

4,120,049

LINE MEMORY

Michael Thaler, East Hartford, and Ronald Gocht, Manchester, both of Conn., assignors to Scan-Optics, Inc., East Hartford, Conn.

Filed Jun. 24, 1977, Ser. No. 809,697
Int. Cl.² G11C *11/26, 8/00*
U.S. Cl. 365—230 **4 Claims**



1. A line memory for use in a character recognition system comprising:

a plurality of random access memory units, each memory unit being capable of storing a plurality of one bit words, each memory unit having appropriate address controls;

a plurality of multiplexers, one for each of the memory units, said multiplexers having as many inputs as there are memory units and being adapted to transfer any one of these inputs to its output on command, the outputs of said multiplexers being connected to the inputs of said memory units;

an input data bus with the inputs of each multiplexer connected to separate lines of the input data bus, the outputs of the memory units being connected to separate lines of said input data bus;

a plurality of latch circuits for storing the outputs of the multiplexers;

a memory control circuit means for controlling the multiplexers and address controls on the memory units so as to store lines of data presented on the input data bus in parallel blocks and to supply two-dimensional arrays of the stored data to the latch circuits;

a controller bus for supplying data to the memory and instructions to the memory control circuit to bring about the control of the multiplexers and the address controls of the memory units; and

a line memory bus for supplying data from the latch circuits to sub-assemblies of the character recognition system, for supplying data to the input data bus and for supplying requests for data to the memory control circuit to bring about the control of the multiplexers and the address control of the memory units.

4,120,050

DEVOLATILIZING VENT

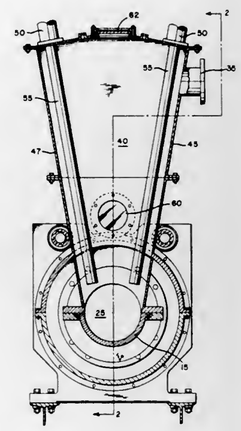
Gregory C. Craig, and William B. Eckstein, both of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Mar. 17, 1977, Ser. No. 778,464
Int. Cl.² B29B *1/10*
U.S. Cl. 366—75 **10 Claims**

1. A vent for use with devolatilizing apparatus including a cylindrical cage having an inlet and an outlet for a material to be devolatilized, a rotatable shaft carrying a plurality of screw members in said cage arranged to convey the material through said cage, and means for rotating said shaft, comprising:

means defining a vent opening in the upper portion of the cage,

vent duct means, communicating with said vent opening, for defining a closed vent chamber into which vapor may escape, said vent chamber extending substantially vertically above said vent opening, the horizontal cross-sectional area of said chamber increasing from the bottom to the top of said chamber, and



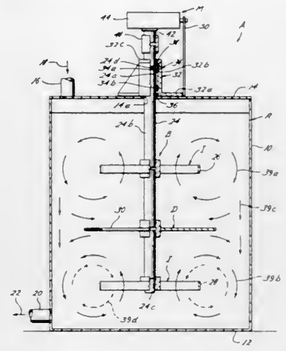
vapor return means communicating only with the upper portion of said vent chamber for extracting vapor from said chamber.

4,120,051

MIXING APPARATUS

Franklin M. Lohning, Sugar Land, Tex., assignor to Franklin Enterprises, Inc., Sugar Land, Tex.

Filed Sep. 19, 1977, Ser. No. 834,715
Int. Cl.² B01F *7/16*
U.S. Cl. 366—142 **9 Claims**



1. A mixing apparatus for mixing fluids in a reservoir, each fluid having different densities requiring different torques for proper mixing thereof, comprising:

mixing means in the reservoir for mixing the fluid within the reservoir;

motor means mounted with the reservoir and operably connected to said mixing means for powering said mixing means for mixing the fluid within the reservoir; and,

limit means operably controlling said motor means for limiting the maximum horsepower of said motor means absorbed in mixing the fluid to substantially the rated horsepower of said motor means to prevent overloading of said motor means.

DESIGN PATENTS

GRANTED OCT. 10, 1978

ERRATA

For CLASS	See PATENT NO.
D08-343	249,871
D14-061	249,882
D99-027	249,899
D99-028	249,900

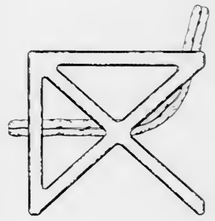
249,826
BIB
Henry Gustaf Reinhold Glaby, Näsbydalsvägen 4, s-183 31 Täby, Sweden
Filed Sep. 3, 1976, Ser. No. 720,375
Claims priority, application Sweden, Mar. 5, 1976, 76516
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—229



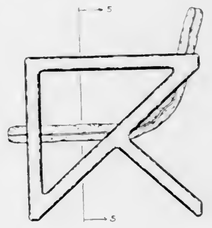
249,827
WELDING HELMET
Perry J. Rieppel, Worthington, and Harold R. Henderson, Lancaster, both of Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Feb. 28, 1977, Ser. No. 772,793
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



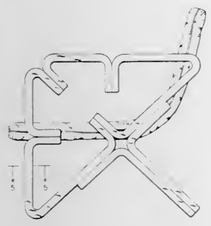
249,828
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,607
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



249,829
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,608
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



249,830
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,620
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



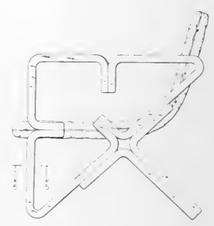
249,831
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,618
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



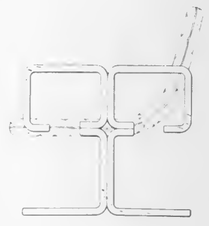
249,832
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,900
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



249,833
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,621
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



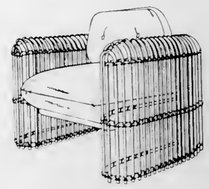
249,834
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,625
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



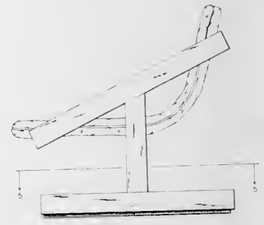
249,835
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,907
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



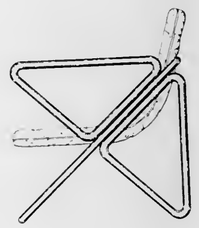
249,836
CHAIR
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11560
Filed Feb. 16, 1977, Ser. No. 769,298
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



249,837
CHAIR
Steven Douglas Gageby, 12 Hay Cmp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,612
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



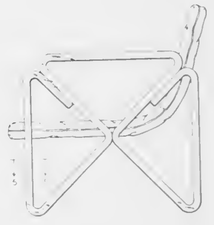
249,838
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,619
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,839
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,628
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



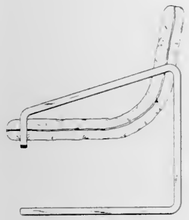
249,840
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,746
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



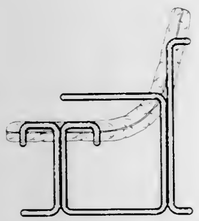
249,841
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,901
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



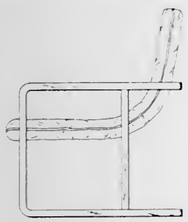
249,842
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,902
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,843
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,615
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



249,844
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,894
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



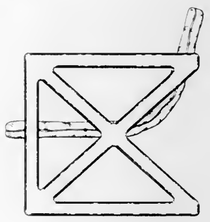
249,845
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,899
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



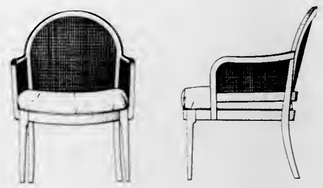
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CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,903
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



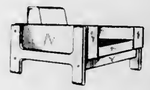
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CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,624
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



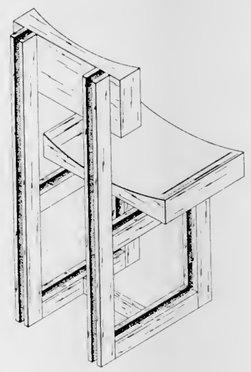
249,848
ARMCHAIR
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,680
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70



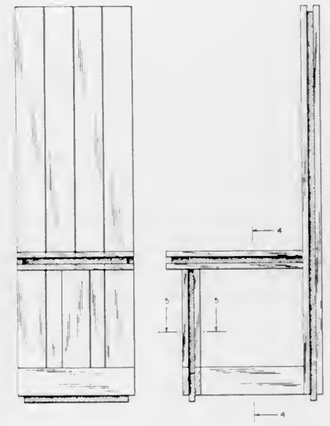
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ARMCHAIR
Armin E. Schoeller, 4271 SE. Marine Dr., Burnaby, B. C., Canada
Filed Aug. 20, 1976, Ser. No. 716,213
Claims priority, application Canada, Feb. 24, 1976, 2402763
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



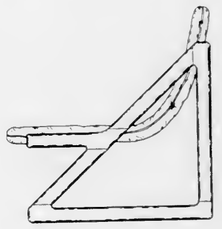
249,850
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,601
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



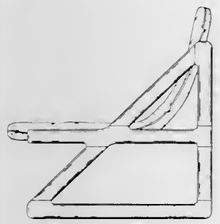
249,851
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,605
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



249,852
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,609
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



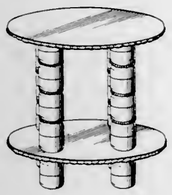
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CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,610
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



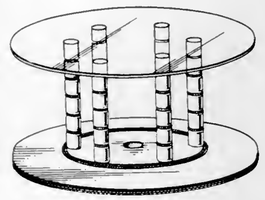
249,854
TOWEL HOLDER
Giovanni Baldini, Turin, Italy, assignor to Carrara & Matta S.p.A., Turin, Italy
Filed Aug. 17, 1976, Ser. No. 715,080
Claims priority, application Italy, Feb. 24, 1976, 52982 B/76
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99



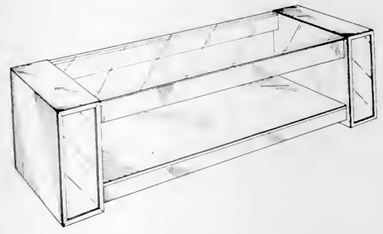
249,855
TABLE
Kevin Charles Levell, 1570 N. Edgemont St., Los Angeles, Calif. 90027
Filed Jul. 19, 1976, Ser. No. 706,682
Term of patent 3 years
Int. Cl. D6—*03*
U.S. Cl. D6—148



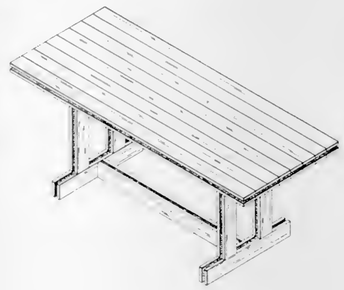
249,856
CIRCULAR TABLE
Kevin Charles Levell, 1570 N. Edgemont St., Los Angeles, Calif. 90027
Filed Aug. 2, 1976, Ser. No. 710,677
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—148



249,857
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,681
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



249,858
TABLE
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,604
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



249,859
TABLE
Armin E. Schoeller, 4271 SE. Marine Dr., Burnaby, B. C., Canada
Filed Aug. 20, 1976, Ser. No. 716,212
Claims priority, application Canada, Feb. 24, 1976, 2402762
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



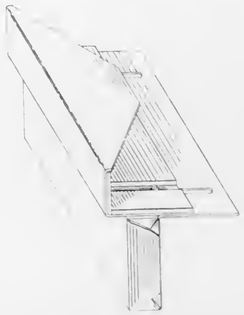
249,860
TABLE
Nicholas Ungaro, Louisville, Ky., assignor to Peters-Revington Corporation, Delphi, Ind.
Filed Nov. 10, 1976, Ser. No. 740,578
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



249,861
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,682
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



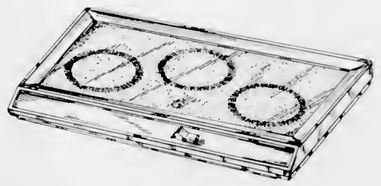
249,862
ARM REST
Willard C. Knight, 2777 Sherman Blvd., Fort Wayne, Ind. 46808
Filed Feb. 11, 1977, Ser. No. 767,815
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



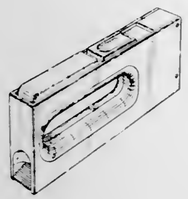
249,863
ELECTRIC COOKING PLATE WITH MIDDLE SENSOR
Karl Fischer, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Geraete Blanc und Fischer
Filed Aug. 19, 1976, Ser. No. 716,010
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121



249,864
WARMING TRAY
Frederick Gordon Mackay, Tarzana, Calif., and Horace Ted Keryluk, Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.
Filed Oct. 26, 1976, Ser. No. 735,315
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—122



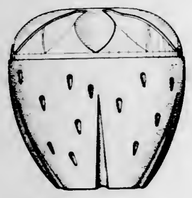
249,865
STAPLE TACKER
Owen Mortimer Wright, Swansea, Wales, assignor to Ofrex Group Limited, London, England
Filed Apr. 26, 1977, Ser. No. 791,160
Claims priority, application United Kingdom, Oct. 26, 1976, 977649/76
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—49



249,866
BOTTLE
Ieuan Richard Felix, Wirral, England, assignor to Lilly Industries, Ltd., London, England
Filed Jun. 21, 1976, Ser. No. 698,620
Claims priority, application United Kingdom, Dec. 19, 1975, 973713/75
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—130



249,867
DUSTING POWDER CONTAINER
Michael Reich, Mamaroneck, N.Y., assignor to New York Pencil Company, Inc., Long Island City, N.Y.
Filed Dec. 13, 1976, Ser. No. 749,871
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—203



249,868
CANDY DISPENSER
Frank Russert, Palos Heights, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,403
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



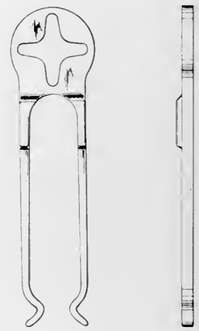
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CONTAINER FOR LINGERIE OR THE LIKE
Thomas Tillander, Brooklyn, N.Y., assignor to Koret, Inc., New York, N.Y.
Filed Jul. 26, 1976, Ser. No. 708,381
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



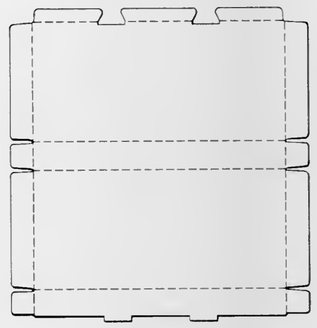
249,870
CONTAINER FOR LINGERIE OR THE LIKE
Thomas Tillander, Brooklyn, N.Y., assignor to Koret, Inc., New York, N.Y.
Filed Jul. 26, 1976, Ser. No. 708,382
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



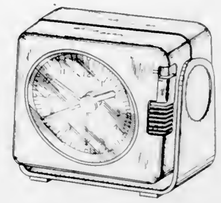
249,871
LOCK SECURING DEVICE
Geoffrey N. Cannon, London, Canada, assignor to Geoffrey Cannon Enterprises, Inc., London, Canada
Filed Dec. 17, 1976, Ser. No. 751,908
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343



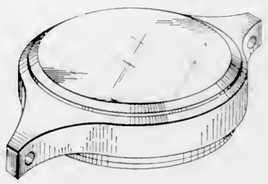
249,872
BOX BLANK
Vernard S. Booth, Albany, Ga.; Everett A. Coons, West Monroe, La., and Billy W. Oswalt, Albany, Ga., assignors to Olinkraft, Inc.
Filed Oct. 19, 1976, Ser. No. 733,783
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



249,873
ELECTRIC CLOCK
Fritz Eduard Zabransky, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 8, 1975, Ser. No. 620,581
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26



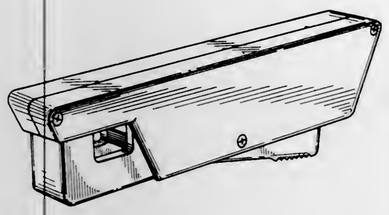
249,874
DIGITAL WRIST WATCH
William James Lawrence, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 12, 1976, Ser. No. 731,601
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



249,875
LADDER INCLINOMETER
Paul Bumbal, 175 Pinehurst Ave., New York, N.Y. 10033, and John V. Mizzi, 12 Wagon Wheel Rd., Poughkeepsie, N.Y. 12601
Filed Jul. 23, 1976, Ser. No. 708,107
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69



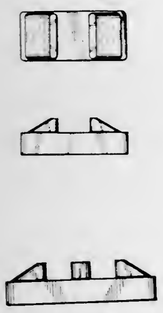
249,876
INDUCTIVE CLAMP
David E. Maxwell, Cary; James R. Shaffer, Mt. Prospect, and Lee Radtke, Lake Zurich, all of Ill., assignors to Sun Electric Corporation, Chicago, Ill.
Filed Nov. 24, 1976, Ser. No. 744,696
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—79



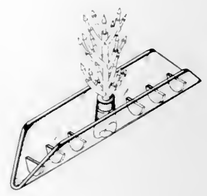
249,877
PENDANT
Gerald Shambrook, R.F.D. 1, Roberts, Ill. 60962
Filed Dec. 1, 1976, Ser. No. 746,253
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61



249,878
RING GUARD INSERT
Edward B. A. Sokoloski, 404 W. Verona Ave., Verona, Wis. 53593
Filed Oct. 6, 1976, Ser. No. 730,280
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—86



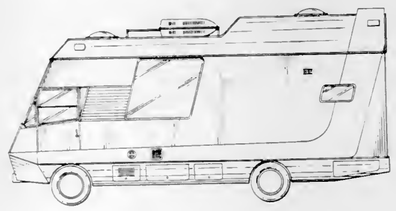
249,879
ANCHOR FOR ARTIFICIAL AQUARIUM PLANT
Allan H. Willinger, 315 E. 84th St., New York, N.Y. 10028, assignor to Willinger Bros., Inc., New York, N.Y.
Filed Jun. 13, 1977, Ser. No. 806,085
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D11—146



249,880
FLAG
Elizabeth R. Starr, 615 S. Manhattan Pl., Los Angeles, Calif. 90005
Continuation-in-part of Ser. No. 681,428, Apr. 29, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,783
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—175

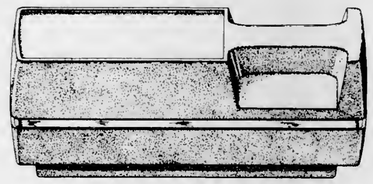


249,881
MOTOR HOME
Francesco Ginoulhiac, via Colle Aperto 38, 24100 Bergamo, Italy
Filed Jan. 21, 1977, Ser. No. 761,334
Claims priority, application Italy, Jun. 25, 1976, 21813/76[U]
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—100

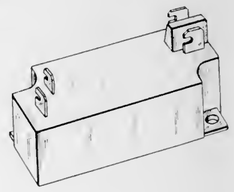


249,882
TELEPHONE STAND
Donald Michael Genaro, Haworth, N.J.; John Niel McGarvey, Drexel Hill, Pa., and Gordon Elliot Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 604,592, Aug. 14, 1975, which is a continuation-in-part of Ser. No. 469,855, May 14, 1974, Pat. No. Des. 237,506, which is a continuation-in-part of Ser. No. 424,413, Dec. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 364,704, May 29, 1973, abandoned. This application Sep. 23, 1977, Ser. No. 836,206
The portion of the term of this patent subsequent to Nov. 4, 1989, has been disclaimed.
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—61



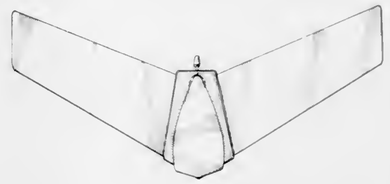


249,883
SOLID STATE RELAY
Howard William Collins, Santa Ana, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.
Filed Dec. 29, 1976, Ser. No. 755,355
Term of patent 14 years
Int. Cl. D13—*33*
U.S. Cl. D13—33

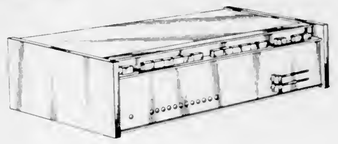


249,884
ANTENNA
Harry Greenberg, Kerhonkson, N.Y., assignor to Avnet, Inc., Ellenville, N.Y.
Filed Jun. 9, 1976, Ser. No. 694,141
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86

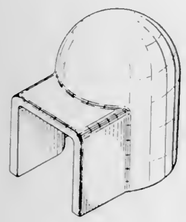




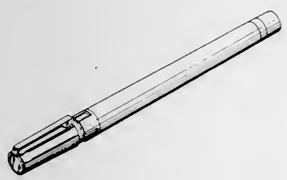
249,885
ENCLOSURE FOR HIGH FIDELITY AUDIO REPRODUCTION EQUIPMENT
Richard E. Defreitas, Westford; Peter W. Mitchell, Charlestown; Peter D. Tribeman, Sharon; Samuel Wilensky, Concord, and Joseph L. Boucher, Tewksbury, all of Mass., assignors to Hybrid Systems Corporation, Bedford, Mass.
Filed Sep. 13, 1976, Ser. No. 722,797
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96



249,886
FOUNDRY RISER SLEEVE
Tony William Bastock, Sandbach, England, assignor to Foseco International Limited, United Kingdom
Filed Jun. 13, 1977, Ser. No. 806,163
Claims priority, application United Kingdom, Mar. 3, 1977, 978747/77
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—135



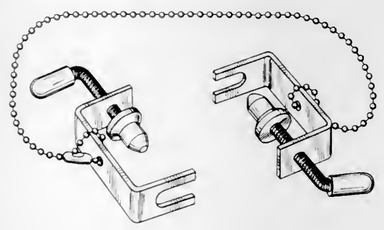
249,887
STYLOGRAPHIC PEN
Gerold Anderka, Ellerbek; Ulrich Reif, Duesseldorf, and Herbert Wolder, Hamburg, all of Fed. Rep. of Germany, assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.
Filed Feb. 22, 1977, Ser. No. 770,490
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 10292
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43



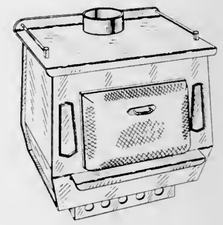
249,888
WRITING INSTRUMENT
James E. Barnes, Woodside, N.Y., assignor to The Gillette Company, Boston, Mass.
Filed Jan. 15, 1976, Ser. No. 649,531
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51



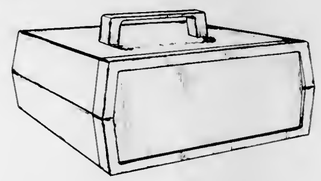
249,889
HYDRAULIC LINE PLUG CLAMP UNIT
Ferdinando DeAmicis, 6401 Oliver Ave. South, Richfield, Minn. 55423
Filed Aug. 4, 1976, Ser. No. 711,512
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



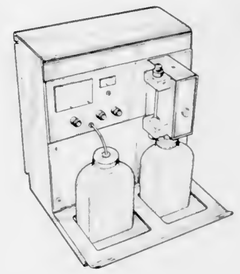
249,890
WOOD BURNING STOVE WITH SCREEN
Roger A. Chinn; Edna A. Chinn, both of Tigard; John E. Blaser, Tualatin, and Keith N. Bender, Aloha, all of Oreg., assignors to Roger's Fireplace Shoppe, Inc., Tigard, Oreg.
Filed Oct. 14, 1977, Ser. No. 842,377
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



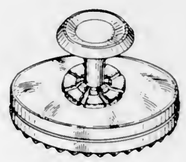
249,891
OXYGEN ANALYZER HOUSING
Robert O. Rowland, Hemet, and Miguel A. Ruksenas, Fallbrook, both of Calif., assignors to Hudson Oxygen Therapy Sales Company, Temecula, Calif.
Filed Dec. 6, 1976, Ser. No. 747,922
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



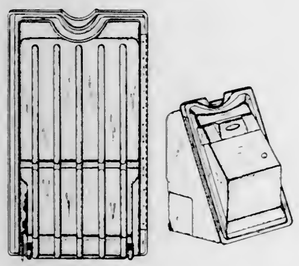
249,892
GLUCOSE ANALYZER
Robert J. Aul, Perrysburg; Philip J. Breno, Oregon; Wayne J. Zitkus; Barry Watson, both of Toledo, all of Ohio, and Paul R. Maguire, Los Angeles, Calif., assignors to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 604,406, Aug. 13, 1975, abandoned. This application Aug. 25, 1976, Ser. No. 717,777
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21



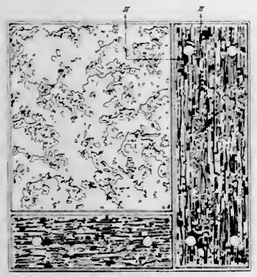
249,893
FACIAL MUSCLE EXERCISER
Verna Marie Armbruster, 14671 Fieldstone Dr., Saratoga, Calif. 95070, and Betty Stratton Hasbrouck, 5511 Sharon La., San Jose, Calif. 95124
Filed Sep. 17, 1977, Ser. No. 724,241
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



249,894
STEAM CABINET HOUSING
Thomas J. Brancaccio, Atlantic Beach, and Bernardo P. Ragone, Lido Beach, both of N.Y., assignors to Vitamaster Industries, Inc., Brooklyn, N.Y.
Filed Jan. 28, 1977, Ser. No. 763,425
Term of patent 14 years
Int. Cl. D23—*02*; D24—*99*
U.S. Cl. D24—37



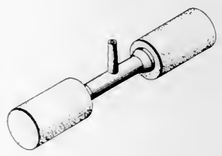
249,895
CEILING TILE OR SIMILAR ARTICLE
Ronald F. Oleski, 36 Brandt Blvd., Landisville, Pa. 17538, assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Oct. 14, 1976, Ser. No. 732,524
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—97



249,896
SMOKING DEVICE
Roger Graham, 5218 Monroe Pl., Hyattsville, Md. 20781
Filed Jan. 16, 1976, Ser. No. 649,701
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03



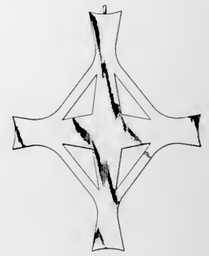
249,897
AIR STONE
Allan H. Willinger, New York, N.Y., assignor to Willinger Bros., Inc., New York, N.Y.
Filed Jul. 15, 1977, Ser. No. 816,071
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—12



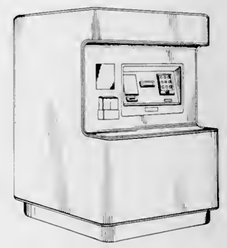
249,898
COMBINED FEED TROUGH AND SUPPORT
George O. Chaires, P.O. Box 5175, Tallahassee, Fla. 32301
Filed Feb. 2, 1977, Ser. No. 764,940
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16



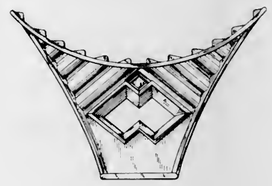
249,899
CROSS
Phillip L. Nally, 302 W. Muir, Bardstown, Ky. 40004
Filed Nov. 3, 1976, Ser. No. 738,353
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D99—27



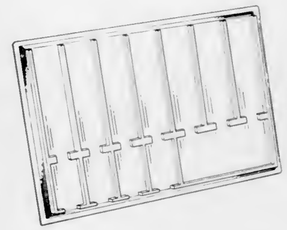
249,900
TRAVELERS CHECK DISPENSING MACHINE
Robert E. Lee, Lewisboro, N.Y., assignor to American Express Company, New York, N.Y.
Filed Feb. 16, 1977, Ser. No. 769,058
Term of patent 14 years
Int. Cl. D31—*99*
U.S. Cl. D99—28



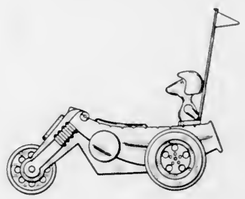
249,901
THROAT PIECE FOR TENNIS RACKET
Jackson Tse, Bellevue, Wash., assignor to Chin America Corp., Redmond, Wash.
Filed Dec. 3, 1976, Ser. No. 747,373
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



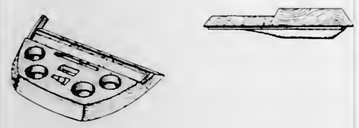
249,902
CARD-GAME DISPLAY BOARD
Walter Zawicki, and Stephanie S. Zawicki, both of 322 N. Main St., Moscow, Pa. 18444
Filed Dec. 29, 1976, Ser. No. 755,334
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—13 A



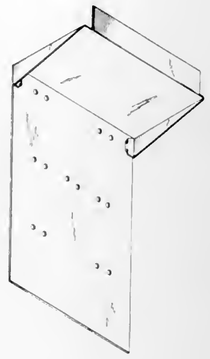
249,903
TOY MOTORCYCLE
Michael C. Cartabiano, Seekonk, Mass., assignor to Child Guidance Playthings, Inc., New York, N.Y.
Filed Jan. 24, 1977, Ser. No. 761,708
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



249,904
AUTOMOTIVE CONSOLE TRAY
Daniel M. Monopoli, 65 East Palatine Rd., Wheeling, Ill. 60090
Filed Sep. 20, 1976, Ser. No. 725,039
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D87—1 R



249,905
SIGN HOLDER FOR USE WITH PERFORATED DISPLAY BOARD
Ray Galazzo, Staten Island, N.Y., assignor to Daido Corporation, Piscataway, N.J.
Filed Nov. 8, 1976, Ser. No. 739,570
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 A



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Duda and Sons: *See—*
Boe, Thomas Jerald; Fell, Charles M.; and Jenkins, William Leon, 4,119,023, Cl. 100-2.000.

A. H. Robins Company, Inc.: *See—*
Cale, Albert Duncan, Jr., 4,119,637, Cl. 260-326.5FL.

A. O. Smith Corporation: *See—*
Cook, Robert E., 4,119,087, Cl. 126-271.000.

A. O. Smith Harvestore Products, Inc.: *See—*
Smith, Kenneth L.; and Sancken, Ernest H., 4,119,193, Cl. 198-371.000.

A. P. C. Industries, Inc.: *See—*
Cosman, Armond D.; and Knippelmier, Gary H., 4,119,908, Cl. 324-3.000.

AB Ferrosan: *See—*
Hernestam, Sven Erik Harry; Nilsson, Nils Arne; Nordvi, Curt Harry; and Willard, Lars-Olof, 4,119,711, Cl. 424-54.000.

AB Kabi: *See—*
Andersson, Lars-Olov; and Holmer, Erik Yngve, 4,119,774, Cl. 536-21.000.

AB Vardeskydd: *See—*
Soderberg, Bo, 4,119,269, Cl. 232-43.300.

AB Volvo Penta: *See—*
Pichl, Heinz, 4,119,054, Cl. 115-41.0HT.

Abbott Laboratories: *See—*
Reddy, Reddy Reddy Venketeshwara; and Kelso, David Matthews, 4,119,850, Cl. 250-328.000.

Abbott, Liston; Beakley, Guy Ward; and Flory, Robert Earl, to RCA Corporation. System for passing two color TV signals through non-linear path. 4,120,001, Cl. 358-11.000.

Abe, Yoshihiko; Okabe, Isao; and Shirota, Atsushi, to Mitsubishi Seiko Kabushiki Kaisha. Method for manufacturing hardened machined parts. 4,119,443, Cl. 148-12.100.

Abelitis, Andris; Behrendt, Artur; and Hinterkeuser, Jakob, to Kockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for the thermal treatment of moist, granular materials. 4,119,396, Cl. 432-106.000.

Abendroth, Paul: *See—*
Reiser, Kurt; and Abendroth, Paul, 4,119,035, Cl. 101-459.000.

Aberg, Ulf: *See—*
Alenrot, Lennart; Hartung, Willy; Lund, Torbjorn; and Aberg, Ulf, 4,119,421, Cl. 65-14.000.

Abrams, Richard L.; and Henderson, David M., to Hughes Aircraft Company. Coupling modulation in travelling wave resonator. 4,119,930, Cl. 332-7.510.

Acker, Norbert Karl. Arrangement for the movement of objects within the deposit area of shelves. 4,119,208, Cl. 211-49.00D.

Ackeret, Peter, to Salter Housewares, Limited. Kitchen or household weighing balance. 4,119,162, Cl. 177-229.000.

Aksteiner, Bernard: *See—*
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Aksteiner, Bernard, 4,119,626, Cl. 260-239.55C.

Adachi, Katsuhiko: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.

Adams, Dustin Stetson; Field, Frederick C., Jr.; and Layton, James Ronald, to Du Pont de Nemours, E. I., and Company. Yarn of entangled fibers. 4,118,921, Cl. 57-140.00R.

Adams, Jack C. Incineration system and method. 4,119,046, Cl. 110-244.000.

Adams, Karl G.: *See—*
Gould, Russell J.; and Adams, Karl G., 4,119,449, Cl. 156-73.500.

Addy, Tralance O.; and Gutman, David P., to Scott Paper Company. Method for minimizing the accumulation of static charges on fibers resulting from fiberization of pulp lap sheets. 4,118,832, Cl. 19-304.000.

Adler, Franklin P., to Pullman Incorporated. Pressure relief valve. 4,119,112, Cl. 137-68.00R.

Advani, Prem S., to Texaco Development Corporation. Ammonia absorption process. 4,119,412, Cl. 55-70.000.

Aeroquip Corporation: *See—*
Allread, Alan R., 4,119,111, Cl. 137-68.00R.

Agcaoili, Clarito R., to United States Gypsum Company. Carpet kicker having means for adjusting shank length. 4,119,338, Cl. 294-8.600.

Agence Nationale de Valorisation de la Recherche- A.N.V.A.R.: *See—*
Lemaitre, Gerard R., 4,119,366, Cl. 350-295.000.

Agence Nationale de Valorisation de la Rechere (ANVAR): *See—*
Alais, Pierre, 4,119,938, Cl. 340-1.00R.

AGFA-Gevaert Aktiengesellschaft: *See—*
Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, 4,119,464, Cl. 96-68.000.

AGFA-Gevaert N.V.: *See—*
Verlinden, Willy Gommaire; and Marien, Jozef Eduard, 4,119,849, Cl. 250-315.00A.

AGL Corporation: *See—*
George, Lyndell J. C.; and Shelly, Robert S., 4,119,382, Cl. 356-249.000.

Aguirre, Francisco: *See—*
Ocampo, Felipe; Meza, Francisco; and Aguirre, Francisco, 4,119,497, Cl. 203-29.000.

Ahmed, Adel Abdel Aziz, to RCA Corporation. Switchable current amplifiers. 4,119,924, Cl. 330-288.000.

Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, to BASF Aktiengesellschaft. Manufacture of concentrated aqueous solutions of formaldehyde. 4,119,673, Cl. 260-603.00C.

Aihara, Mitsuo, to Tokyo Shibaura Electric Company, Ltd. Electronic calculator. 4,120,040, Cl. 364-709.000.

Air Products and Chemicals, Inc.: *See—*
Wiley, Donald E., 4,119,468, Cl. 106-38.220.

Airco, Inc.: *See—*
Rothchild, Ronald D., 4,118,873, Cl. 34-36.000.

Aizaki, Seigo: *See—*
Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, 4,118,892, Cl. 47-66.000.

Aizenberg, Julian Borisovich; Bukhman, Inokh Borukhovich; Pyatigorsky, Vladimir Mikhailovich; and Solomatina, Natalia Mikhailovna. Lighting installation. 4,120,024, Cl. 362-96.000.

Ajinomoto Co., Inc.: *See—*
Nagatsu, Toshiharu; and Sakakibara, Shumpei, 4,119,620, Cl. 260-112.50R.

Akatsuka, Mitsuo: *See—*
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Akimoto, Hidetoshi: *See—*
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Akins, Lewis F.: *See—*
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Aktiebolaget Atomenergi: *See—*
Margen, Peter Heinrich Erwin, 4,119,142, Cl. 165-104.00S.

Aktiebolaget Overums Bruk: *See—*
Carlsson, Erik Herbert; and Karlsson, John Axel, 4,119,158, Cl. 172-704.000.

Akune, Mikio: *See—*
Yamauchi, Tadashi; Akune, Mikio; and Kouchi, Susumo, 4,119,538, Cl. 210-67.000.

Alais, Pierre, to Agence Nationale de Valorisation de la Rechere (ANVAR). Methods and devices for ultrasonic imaging. 4,119,938, Cl. 340-1.00R.

Albany International Corp.: *See—*
Hartigan, Richard Joseph, Jr., 4,119,693, Cl. 264-178.00F.

Albulescu, Peter; and McMahon, Joseph F., to Gulf Oil Corporation; and Standard Oil Company (Indiana). Method and apparatus for recovery of fluids produced in in-situ retorting of oil shale. 4,119,349, Cl. 299-2.000.

Alden, John M., to Alden Research Foundation. Facsimile cassette with wire electrode. 4,119,975, Cl. 346-145.000.

Alden Research Foundation: *See—*
Alden, John M., 4,119,975, Cl. 346-145.000.

Aldrich, Francis William, to Bendix Corporation, The. Friction material reinforced with steel and cellulose fibers. 4,119,591, Cl. 260-17.200.

Aldrich, William L.; and Sawruk, John M., to General Motors Corporation. Engine with charge equalizing intake manifold. 4,119,067, Cl. 123-52.0MB.

Alenrot, Lennart; Hartung, Willy; Lund, Torbjorn; and Aberg, Ulf, to Rockwool Aktiebolaget. Arrangement for fibration of molten mineral. 4,119,421, Cl. 65-14.000.

Alesandrini, Carlo G., Jr., to Stauffer Chemical Company. Production of ethyl chlorothioformate. 4,119,659, Cl. 260-455.00R.

Alexander, Franklin Leroy: *See—*
Bolton, Jack Curtis; and Alexander, Franklin Leroy, 4,119,114, Cl. 137-318.000.

Alexander, Robert Osteen, to Cera International Limited. Automatic washing apparatus. 4,119,108, Cl. 134-62.000.

Alexander, Robert R.: *See—*
Isgur, Irving E.; Alexander, Robert R.; and Moy, Thomas P., 4,119,602, Cl. 260-29.6NR.

Ali Ja'afar, Hamedo; and Iseman, Walter J., to Sundstrand Corporation. Container closure having opening means. 4,119,238, Cl. 220-211.000.

Allegheny Ludlum Industries, Inc.: *See—*
Lukac, Frederick S.; and Zbryski, William P., 4,119,109, Cl. 134-64.00R.

Allen, Floyd; and Benderly, Asaf A., to United States of America, Army. Controlled activation of reserve power supplies. 4,119,038, Cl. 102-207.000.

Allen Organ Company: *See—*
Whitefield, John Thomas, 4,119,006, Cl. 84-1.130.

Allen, Roy A.; and Scott, LeRoy W., to Shell Oil Company. Curable epoxy-carboxylic acid adducts. 4,119,609, Cl. 528-99.000.

Alliance Manufacturing Company, Inc., The: *See—*
Estes, Ray E., III; and Nedbal, Richard A., 4,119,896, Cl. 318-266.000.

Allis-Chalmers Corporation: *See—*
Ballendux, Gerardus M.; and Kolacz, Ferdynand, 4,119,119, Cl. 137-868.000.
Heian, Glenn A., 4,119,393, Cl. 425-222.000.
Wheeler, Keith A.; and Hastings, Dawson W., 4,119,156, Cl. 172-386.000.

Allread, Alan R., to Aeroquip Corporation. Frangible hose end fitting. 4,119,111, Cl. 137-68.00R.

Alto Automotive, Inc.: *See—*
Vallejos, Tony E., 4,119,077, Cl. 123-188.00B.

Alton Box Board Company: *See—*
Carlson, Frank A., 4,119,201, Cl. 206-424.000.

Aluminium Pechiney: *See—*
Baillot, Pierre; and Berthet, Pierre, 4,119,505, Cl. 204-67.000.

Aluminum Company of America: *See—*
Hargis, Robert L., 4,119,504, Cl. 204-64.00R.

Alza Corporation: *See—*
Capozza, Richard Carl, 4,119,579, Cl. 526-270.000.

Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, to Sony Corporation. Mode selecting device for tape recording and/or reproducing apparatus. 4,120,005, Cl. 360-61.000.

Amasaka, Masayoshi: *See—*
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.

Ameling, Dieter Ch.: *See—*
Elsner, Emil A.; Ameling, Dieter Ch.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,119,792, Cl. 13-32.000.

American Can Company: *See—*
Kuchenbecker, Morris W., 4,119,203, Cl. 206-461.000.

American Chain & Cable Company, Inc.: *See—*
Moyer, Ernest P., 4,119,376, Cl. 312-198.000.

American Cyanamid Company: *See—*
Conrow, Ransom Brown; and Bernstein, Seymour, 4,119,784, Cl. 560-44.000.
Levy, Stephen David; and Diehl, Robert Eugene, 4,119,669, Cl. 260-577.000.
Whitman, Robert Henry; and Barber, William Austin, 4,119,474, Cl. 106-65.000.

American District Telegraph Company: *See—*
Frankfort, Eric J.; and Terrett, David Stuart, 4,119,815, Cl. 179-175.30S.

American Electrical Heater Company: *See—*
Kuhn, Robert A., 4,118,821, Cl. 15-104.920.

Ames, Ward A., to Tridan Tool & Machine, Inc. Self cleaning progressive fin die with improved stripping means. 4,118,968, Cl. 72-328.000.

Ametek, Inc.: *See—*
Simmons, James W., 4,120,013, Cl. 361-180.000.

Amoroso, Michael J., to M.A.T. Industries, Inc. Longwall mining system. 4,119,346, Cl. 299-11.000.

AMP Incorporated: *See—*
Busler, Willard Leroy, 4,118,859, Cl. 29-622.000.
Collier, John Covell; and Owen, Leonard John, 4,119,124, Cl. 140-93.200.

Ampex Corporation: *See—*
Gallo, Luigi C., 4,119,999, Cl. 358-4.000.

Amsterdamse Ballast B.V.: *See—*
van Zeggelaar, Gerrit Hendrik, 4,118,990, Cl. 73-714.000.

Ancra Corporation: *See—*
Knox, Howard T.; and Prete, Ernest, Jr., 4,118,833, Cl. 24-68.0CD.

Anderson, Emory H. Vise. 4,119,305, Cl. 269-71.000.

Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, to Monsanto Company. Coating compositions comprising alkoxymethylaminotriazines and polyols. 4,119,762, Cl. 428-524.000.

Anderson, Howard A., to Cities Service Company. Container lock device. 4,119,239, Cl. 220-324.000.

Anderson, John Alfred; and Hebden, Dennis, to British Gas Corporation. Coal gasification plant. 4,119,411, Cl. 48-62.00R.

Andersson, Bengt Heimer. Collapsible ladder. 4,119,177, Cl. 182-195.000.

Andersson, Goran, to BBC Aktiengesellschaft Brown, Boveri & Cie. Regulation system for a steam turbine installation. 4,118,935, Cl. 60-662.000.

Andersson, Lars-Olov; and Holmer, Erik Yngve, to AB Kabi. Heparin purification method. 4,119,774, Cl. 536-21.000.

Ando, Yoshikazu; and Yokozato, Junichi, to Zenza Bronica Industries, Inc. View finder for reflex camera. 4,119,985, Cl. 354-223.000.

Aoki, Keiji: *See—*
Inoue, Tokuta; Yaegashi, Takehisa; and Aoki, Keiji, 4,119,512, Cl. 204-195.00S.

Aoki, Yutaka; Hase, Akira; Ito, Jiro; and Nagai, Hisomu, to Nissho-Iwai Co., Ltd. Process for the preparation of synthetic coking coal. 4,119,409, Cl. 44-1.00R.

Aono, Shigeo: *See—*
Masaki, Kenji; and Aono, Shigeo, 4,119,074, Cl. 123-124.00B.

Appleman, Donald T. Take-apart figure toy. 4,118,887, Cl. 46-22.000.

Applied Research Commodities Industries, Inc.: *See—*
Spector, Donald, 4,119,097, Cl. 128-203.000.

Aquino, Herman A.: *See—*
Naves, David G.; Aquino, Herman A.; and Mish, Robert J., 4,119,042, Cl. 105-368.00R.
Naves, David G.; Aquino, Herman A.; and Morgan, Mitchell L., 4,119,043, Cl. 105-368.00R.

Arbet, Rudolf: *See—*
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, 4,119,243, Cl. 221-298.000.

Arcadia Refining Company: *See—*
Cave, Ellis K., 4,118,981, Cl. 73-194.0EM.

Arcilesi, Donald A., to M&T Chemicals Inc. Acid zinc electroplating process and composition. 4,119,502, Cl. 204-55.00R.

Arendt, Henry P.; and Johnston, Russell A., to Otis Engineering Corporation. Pumpdown safety valve. 4,119,147, Cl. 166-155.000.

Arendt, Ronald H.; Huseby, Irvin C.; and Borom, Marcus P., to General Electric Company. Method for removing Y_2O_3 or Sm_2O_3 cores from castings. 4,119,437, Cl. 134-3.000.

Arentsen, Dirk, to Hollandsche Beton Groep N.V. Pile driving apparatus. 4,119,159, Cl. 173-133.000.

Argereu, William. Selectable size centrifugal clutch. 4,119,188, Cl. 192-105.0BA.

Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, to Sony Corporation. Apparatus for cooling electrical components. 4,120,019, Cl. 361-385.000.

Arikawa, Yoshijiro: *See—*
Azuhata, Shigeru; Kikuchi, Hideo; Akimoto, Hidetoshi; Hishinuma, Yukio; and Arikawa, Yoshijiro, 4,119,702, Cl. 423-235.000.

Arlt, Dieter: *See—*
Hoffmann, Hellmut; Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,119,715, Cl. 424-216.000.

Armitage, Harry J. Machine tool. 4,119,388, Cl. 408-111.000.

Armstrong Cork Company: *See—*
Synder, Robert W., 4,119,397, Cl. 8-2.50A.

Armstrong, Edward T., to TII Corporation. System for pollution suppression. 4,119,273, Cl. 239-254.000.

Armstrong, Nolen L. Sleep training pillow for the prevention of snoring. 4,118,813, Cl. 5-337.000.

Arnold, Reginald S.: *See—*
Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., 4,119,358, Cl. 339-111.000.

Arroyo Dental Products Co.: *See—*
Kaelble, David H., 4,119,610, Cl. 526-292.000.

Arzberger, William A.; and Brown, Merle S., to Jet Spray Cooler, Inc. Variable coin control for food dispenser. 4,119,191, Cl. 194-9.00T.

Asanabe, Tadashi: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.

Asano Gear Co., Ltd.: *See—*
Yamada, Shinichi; and Komatsu, Shigeru, 4,119,167, Cl. 180-43.00R.

Asano, Masaharu, to Nissan Motor Company, Ltd. Closed-loop mixture control system for an internal combustion engine with circuitry for testing the function of closed loop. 4,119,070, Cl. 123-119.0EC.

Asano, Masaharu, to Nissan Motor Company, Ltd. Closed loop air fuel ratio control system using exhaust composition sensor. 4,119,072, Cl. 123-119.0EC.

ASEA AB: *See—*
Skoog, Hans, 4,119,897, Cl. 318-331.000.

Assenmacher, Rolf: *See—*
Elsner, Emil A.; Ameling, Dieter Ch.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,119,792, Cl. 13-32.000.

Asserback, Rolf Arne Conrad. Method and apparatus for forming hollow concrete elements. 4,119,695, Cl. 264-314.000.

Atkin, Michael Frank, to General Instrument Corporation. Multi-frequency receiver circuits. 4,119,808, Cl. 179-84.0VF.

Atlan-Tol Industries, Inc.: *See—*
Ondis, Albert W.; Pizzuti, Everett V.; and Martha, Eugene F., 4,119,974, Cl. 346-145.000.

Audesse, Emery G.; Griffin, Robert M.; and Oberlin, Max E., to GTE Sylvania Incorporated. Hermetically sealed electrical gas fuel igniter. 4,119,832, Cl. 219-270.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Stock, Dieter; and Steinwart, Johannes, 4,119,073, Cl. 123-122.00D.

Aurora Equipment Company: *See—*
Mittag, Douglas C., 4,118,816, Cl. 14-69.500.

Auroy, Michel; Goharel, Maurice; and Zoulalian, Jacques, to Rhone-Progil. Method of preparing phthalic anhydride. 4,119,645, Cl. 260-346.400.

Austral-Erwin Engineering Company: *See—*
Erwin, Ransome W., 4,119,485, Cl. 159-28.00B.

Autospin, Inc.: *See—*
Korte, Helmut Gerhard, 4,118,846, Cl. 29-90.00R.

Avant, Richard H., to Bernzomatic Corporation. Tamper-proof fire extinguisher. 4,119,153, Cl. 169-75.000.

Awazu, Tetsuro: *See—*
Mizuma, Katsuhisa; and Awazu, Tetsuro, 4,119,764, Cl. 428-592.000.

Axelrod, Jerome, to Jerome Alexander Cosmetics, Inc. Hair brush. 4,118,823, Cl. 15-176.000.

Ayotte, Richard F.; and Jones, Trevor O., to General Motors Corporation. Dual-vehicle operating system. 4,119,166, Cl. 180-14.00R.

Azuhata, Shigeru; Kikuchi, Hideo; Akimoto, Hidetoshi; Hishinuma, Yukio; and Arikawa, Yoshijiro, to Hitachi, Ltd. Process for abating concentration of nitrogen oxides in combustion flue gas. 4,119,702, Cl. 423-235.000.

B. F. Goodrich Company, The: *See—*
Carpino, John Steven, 4,119,588, Cl. 260-5.000.
Kroenke, William Joseph; and Nicholas, Paul Peter, 4,119,570, Cl. 252-466.00J.
Murphy, Walter Thomas, 4,119,592, Cl. 260-18.0PF.

B.H.B. Engineers Pty. Ltd.: *See—*
Bowra, Cyril Embley, 4,119,165, Cl. 180-14.00A.

Baatz, Gunther; Dahm, Manfred; and Schafer, Walter, to Bayer Aktiengesellschaft. Production of microcapsules, and the resulting microcapsules. 4,119,565, Cl. 252-316.000.

Babcock & Wilcox Company, The: *See—*
Dopp, James Wellington, 4,119,215, Cl. 214-1.0BB.

Babjak, Juraj: *See—*
Ettel, Victor Alexander; and Babjak, Juraj, 4,119,539, Cl. 210-73.00R.

Baer, Ralph H.: *See—*
Morrison, Howard J.; Fletchic, Donald K.; and Baer, Ralph H., 4,119,844, Cl. 250-231.00R.

Bagger en Grond (Amsterdam Ballast Dredging) Ballast-Nedam Groep N. V.: *See—*
van Zeggelaar, Gerrit Hendrik, 4,118,990, Cl. 73-714.000.

Bahl, Horst H.: *See—*
Owen, A. B.; Gifford, Bruce M.; Bahl, Horst H.; and Akins, Lewis F., 4,118,850, Cl. 29-243.520.

Bahrampour, Ali-Reza: *See—*
Sekhavat, Ali; and Bahrampour, Ali-Reza, 4,119,173, Cl. 181-122.000.

Baillot, Pierre; and Berthet, Pierre, to Aluminium Pechiney. Process and device for cleaning the butts of worn anodes from an igneous electrolysis cell. 4,119,505, Cl. 204-67.000.

Bainard, Dean R.; and Denton, Dennis N., to Garlock Inc. Bi-directional hydrodynamic shaft seal method. 4,118,856, Cl. 29-511.000.

Baird, William C., Jr.; and Bearden, Roby, Jr., to Exxon Research & Engineering Co. Hydroconversion of residua with potassium sulfide. 4,119,528, Cl. 208-108.000.

Bakardjiev, Vassil Dimitrov; and Doychinov, Emil Assenov, to Institute po Zavaryavane. Device for producing pulses for the ignition and stabilization of an electric-arc process. 4,119,829, Cl. 219-130.400.

Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. 3-Halo-5-(lower alkoxy) phenoxy alkyl amides. 4,119,433, Cl. 71-118.000.

Baker, James G., to Polaroid Corporation. Prism camera. 4,119,980, Cl. 354-150.000.

Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., to Rohm and Haas Company. Migration-resistant binder compositions for bonding nonwoven fibers; also methods and articles. 4,119,600, Cl. 260-29.6RW.

Balakirev, Efim Stepanovich; Bogomolova, Galina Ilinichna; Gershenovich, Abram Iosifovich; and Gruzdeva, Irina Viktorovna. Process for producing alkali salts of alkylsulphonic acids. 4,119,661, Cl. 260-513.00R.

Baldwin, John J., to Merck & Co., Inc. Certain quaternary ammonium-3-cyanopyridines. 4,119,630, Cl. 260-294.900.

Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. 3-Amino-2-oxy-propoxy-substituted isothiazoles. 4,119,718, Cl. 424-248.510.

Baldwin, John J., to Merck & Co., Inc. Substituted (3-loweralkylamino-2-rio-propoxy)pyridines, their preparation and use. 4,119,721, Cl. 424-263.000.

Baldwin, Roger A.; and Bills, John L., to Kerr-McGee Corporation. Processes for the production of deashed coal. 4,119,523, Cl. 208-8.000.

Baldwin, Roger A.: *See—*
Leonard, Robert E.; and Baldwin, Roger A., 4,119,524, Cl. 208-8.000.

Ball, Douglas. Curb climbing wheel chair. 4,119,163, Cl. 180-6.500.

Ballendux, Gerardus M.; and Kolacz, Ferdynand, to Allis-Chalmers Corporation. Shift control detent mechanism. 4,119,119, Cl. 137-868.000.

Bamburg, Robert A.: *See—*
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,119,263, Cl. 229-17.00B.

Bambury, Ronald E.; Edwards, Michael L.; and Miller, Laird F., to Richardson-Merrell Inc. 4-Oxo-1-pyridinyl cephalosporin derivatives. 4,119,775, Cl. 544-28.000.

Baratin, Andre N., to Jeumont-Schneider. Subscriber's line equipment for a telephone exchange. 4,119,806, Cl. 179-18.0FA.

Barber, Lloyd L.; and Koppelman, Alan J., to Standard Precision, Inc. Self-aligning drawer slide tab. 4,119,377, Cl. 312-344.000.

Barber, William Austin: *See—*
Whitman, Robert Henry; and Barber, William Austin, 4,119,474, Cl. 106-65.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Schippers, Heinz; Dammann, Peter; and Bauer, Karl, 4,118,843, Cl. 28-255.000.

Barosi, Aldo, to S.A.E.S. Getters S.p.A. Nuclear reactor fuel element employing Zr_2Ni as a getter metal. 4,119,488, Cl. 176-68.000.

Barril, Claude. Furniture frames. 4,119,286, Cl. 248-188.000.

Bartel, William J.; Burton, Robert S., III; and Cha, Chang Yul, to Occidental Oil Shale, Inc. In situ oil shale retorting process using introduction of gas at an intermediate location. 4,119,345, Cl. 299-2.000.

Bartl, Herbert: *See—*
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.

Barton, Paul, to International Standard Electric Corporation. Scanning beam navigational beacon with transmitted coherence reference signal and thinned two-dimensional phased array. 4,119,969, Cl. 343-108.00M.

Bartoo, George O., to Quaker Oats Company, The. Toy elevator safety override drive mechanism. 4,118,886, Cl. 46-1.00R.

Bartsch, Raymond C., to National Distillers and Chemical Corporation. Vinyl acetate catalyst. 4,119,567, Cl. 252-430.000.

Barwick, Bryan Edwin; and Sneath, Michael Edwin, to Thomas J. Lipton, Inc. Process of preparing simulated fruit. 4,119,739, Cl. 426-573.000.

BASF Aktiengesellschaft: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.
Baumann, Hans; and Oberlinner, Andreas, 4,119,622, Cl. 260-162.000.
Beck, Fritz; Wurmb, Rolf; and Boehlke, Klaus, 4,119,767, Cl. 429-105.000.
Epple, Gerhard; Himmele, Walter; and Fliege, Werner, 4,119,644, Cl. 260-345.90R.
Hansen, Guenter; Kaack, Hermann; and Grund, Norbert, 4,119,621, Cl. 260-158.000.
Weitz, Hans-Martin; Fischer, Rolf; and Broecker, Franz Josef, 4,119,665, Cl. 260-561.00A.

Bashforth, George Charles. Fuels. 4,119,506, Cl. 204-72.000.

Batz, Hans-Georg: *See—*
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Bauer, Karl: *See—*
Schippers, Heinz; Dammann, Peter; and Bauer, Karl, 4,118,843, Cl. 28-255.000.

Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of hydroxybenzaldehydes. 4,119,671, Cl. 260-600.00R.

Bauer, Ronald S.; and Lopez, John A., to Shell Oil Company. Low-temperature epoxy baking compositions. 4,119,595, Cl. 260-21.000.

Baumann, Hans; and Oberlinner, Andreas, to BASF Aktiengesellschaft. Pyrazolonylazoaniline or aminonaphtyl compounds for copying processes. 4,119,622, Cl. 260-162.000.

Bayard, Michel Lucien, to Texas Instruments Incorporated. Photovoltaic battery. 4,119,768, Cl. 429-111.000.

Bayer Aktiengesellschaft: *See—*
Baatz, Gunther; Dahm, Manfred; and Schafer, Walter, 4,119,565, Cl. 252-316.000.
Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, 4,119,671, Cl. 260-600.00R.
Dieterich, Dieter, 4,119,658, Cl. 260-453.0AR.
Hoffmann, Hellmut; Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,119,715, Cl. 424-216.000.
Hugl, Herbert; Otten, Hans-Gunter; Sommer, Richard; and Wolfrum, Gerhard, 4,119,623, Cl. 260-206.000.
Reischl, Artur; Klussmann, Henning; and Velker, Eugen, 4,119,613, Cl. 526-64.000.
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.
Schroeder, Josef, 4,119,634, Cl. 260-307.00D.

Bayer, Karlheinz; Dreiseitl, Walter; and Blaschke, Felix, to Siemens Aktiengesellschaft. Circuit for forming an electrical quantity which is proportional to a flux component in a rotating field machine. 4,119,893, Cl. 318-178.000.

Baylor, John M.: *See—*
Schuck, Paul R.; and Baylor, John M., 4,119,157, Cl. 172-477.000.

Bayraktaroglu, Burhan: *See—*
Hartnagel, Hans Ludwig; and Bayraktaroglu, Burhan, 4,119,993, Cl. 357-23.000.

Baytzner-Coulthard Dokumentations und Werbefilm GmbH: *See—*
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BBC Aktiengesellschaft Brown, Boveri & Cie: *See—*
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Beach, David Easton, to Eastman Kodak Company. Shutter release mechanism. 4,119,987, Cl. 354-268.000.

Beakley, Guy Ward: *See—*
Abbott, Liston; Beakley, Guy Ward; and Flory, Robert Earl, 4,120,001, Cl. 358-11.000.

Beaman, George R.: *See—*
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Beane, Frank T. Drain line and method of installing. 4,118,940, Cl. 405-174.000.

Bearden, Roby, Jr.: *See—*
Baird, William C., Jr.; and Bearden, Roby, Jr., 4,119,528, Cl. 208-108.000.

Beatrice Foods Co.: *See—*
Stupec, Gertraud B., 4,119,742, Cl. 426-641.000.

Beavers, John Andrew; and Dillion, Billy O., to Borg-Warner Corporation. Bearing arrangement for elongated electric motors. 4,119,874, Cl. 310-90.000.

Beck, Fritz; Wurmb, Rolf; and Boehlke, Klaus, to BASF Aktiengesellschaft. Secondary battery. 4,119,767, Cl. 429-105.000.

Becker, Herbert, to Metallwerk Max Brose & Co. Window lifting mechanism. 4,118,893, Cl. 49-348.000.
Beckley, Don A., to Hitco. Fusion laminated high-temperature fabric. 4,119,481, Cl. 156-272.000.
Beckman Instruments, Inc.: *See*—
Mehaffy, Gordon E.; and Sawa, Kenneth B., 4,119,120, Cl. 137-485.000.
Beckmann, Uwe L.; and Osterland, Edmund, to W & G Instruments, Inc. Keyboard mask for general-purpose calculator. 4,119,839, Cl. 235-145.00R.
Beecham Group Limited: *See*—
Watts, Eric Alfred, 4,119,643, Cl. 260-345.200.
Wootton, Gordon, 4,119,726, Cl. 424-274.000.
Behrendt, Artur: *See*—
Abelitis, Andris; Behrendt, Artur; and Hinterkeuser, Jakob, 4,119,396, Cl. 432-106.000.
Belcher, James E.: *See*—
Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., 4,119,358, Cl. 339-111.000.
Bell Telephone Laboratories Incorporated: *See*—
Camlibel, Irfan; and Rich, Theodore Charles, 4,119,363, Cl. 350-96.200.
Belmont, Norman J. Railroad hotbox indicator. 4,119,284, Cl. 246-169.00A.
Belouet, Christian: *See*—
Brissot, Jean-Jacques Lucien Emile; Belouet, Christian; and Martres, Rene, 4,119,744, Cl. 427-45.000.
Belozerov, Jury Nikolaevich: *See*—
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich. Method for processing activated sludge into useful products. 4,119,495, Cl. 195-102.000.
Belyakova, Zoya Vasilievna: *See*—
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.
Benderly, Asaf A.: *See*—
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Bendix Corporation, The: *See*—
Aldrich, Francis William, 4,119,591, Cl. 260-17.200.
Keating, Patrick N.; Koppelman, Roger F.; and Sawatari, Takeo, 4,119,940, Cl. 340-5.00H.
Benkoe, Erwin: *See*—
Goldfarb, Adolph E.; and Benkoe, Erwin, 4,119,315, Cl. 273-85.00F.
Goldfarb, Adolph E.; and Benkoe, Erwin, 4,119,319, Cl. 273-237.000.
Bennett, James A., to Will Ross, Inc. Container divider and dispensing assembly. 4,119,264, Cl. 229-15.000.
Bennett, William F., to Marketing Information Systems Incorporated. Apparatus for selectively printing and applying labels to articles of different sizes and shapes. 4,119,482, Cl. 156-351.000.
Benson, Gustav E., to Owens-Corning Fiberglas Corporation. Method and apparatus for controlling the advancement of a strand. 4,119,253, Cl. 226-7.000.
Berecz, Imre, to Microdot Inc. Barrel nut and method of manufacture. 4,119,130, Cl. 151-41.760.
Bergmann, Rolf: *See*—
Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, 4,119,631, Cl. 260-295.00A.
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Sandet, Rolf; and Oberste-Beulmann, Klaus, 4,119,350, Cl. 299-87.000.
Berke, Herbert, to United States of America, Navy. Programmable charge coupled device timing system. 4,119,916, Cl. 328-62.000.
Berlizova, Roza Petrovna: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Bernacki, Stephen E., to Massachusetts Institute of Technology. Non vacuum soft x-ray lithographic source. 4,119,855, Cl. 250-402.000.
Bernard, Vincent E., to Jimmy Dean Meat Company, Inc., The. Portion controlled frozen food. 4,119,252, Cl. 225-96.000.
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Bernhard, William F.: *See*—
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Bernstein, Seymour: *See*—
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Bernzomatic Corporation: *See*—
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Berthet, Pierre: *See*—
Baillot, Pierre; and Berthet, Pierre, 4,119,505, Cl. 204-67.000.
Bertsch, Lyle E. Swimming pool structure and method of erecting the same. 4,118,809, Cl. 4-172.190.
Bevacqua, Louis Albert, to Motorola Inc. Tuning display mechanism for multiband pushbutton tunable receiver. 4,118,991, Cl. 74-10.330.
Bianchini, Pearl N. Braille lens for telephone dials. 4,119,809, Cl. 179-90.00A.
Bianco, Carlo. Method for making a sanitary product. 4,119,450, Cl. 156-199.000.
Bieber, William J. Automatic transmission shifter. 4,118,999, Cl. 74-475.000.
Bier, Gerhard: *See*—
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.
Bihlmaier, Eugen, to Daimler-Benz Aktiengesellschaft. Load-dependent four-circuit brake system especially for commercial vehicles. 4,119,353, Cl. 303-22.00R.
Bijttebier, Gaspar A. Method and apparatus for separating and processing a plurality of supple sheets in a single operation. 4,119,306, Cl. 270-58.000.
Bikbau, Marsel Yanovich: *See*—
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.
Bills, John L.: *See*—
Baldwin, Roger A.; and Bills, John L., 4,119,523, Cl. 208-8.000.
Bings, Hubert: *See*—
Thome, Roland; Bings, Hubert; and Obermaier, Hans, 4,119,707, Cl. 423-592.000.
Bio-Dynamics, Inc.: *See*—
Goldstein, Robert H.; and Stahl, Robert M., 4,119,407, Cl. 422-58.000.
Biosearch Medical Products Inc.: *See*—
Micklus, Michael J.; and Ou-Yang, David T., 4,119,094, Cl. 128-132.00R.
Bishop, Marilyn. Tamperproof sterile port cover and method of making same. 4,119,128, Cl. 150-8.000.
Bisping, Heinz; and Schiefer, Erwin, to Hilti Aktiengesellschaft. Pipe and cable clip. 4,119,285, Cl. 248-72.000.
Bisping, Heinz: *See*—
Schiefer, Erwin; and Bisping, Heinz, 4,118,838, Cl. 24-115.00R.
Bite, Pal: *See*—
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Bittler, Dieter: *See*—
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, 4,119,626, Cl. 260-239.55C.
Bivens, David J., to Bivens Winchester Corporation. Car washing apparatus with long shallow angle side brush. 4,118,820, Cl. 15-53.0AB.
Bivens Winchester Corporation: *See*—
Bivens, David J., 4,118,820, Cl. 15-53.0AB.
BJ-Hughes Inc.: *See*—
Sheldon, Loren B.; and Tomashek, James R., 4,119,837, Cl. 235-92.0MP.
Blaine, James: *See*—
Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, 4,119,160, Cl. 175-67.000.
Blair, Noel D., to Hooker Chemicals & Plastics Corp. Anti-corrosion weldable coatings. 4,119,763, Cl. 428-563.000.
Blaschke, Felix: *See*—
Bayer, Karlheinz; Dreiseitl, Walter; and Blaschke, Felix, 4,119,893, Cl. 318-178.000.
Blatte, Michael: *See*—
Jacob, Herbert; Blatte, Michael; and Kremser, Fritz, 4,119,704, Cl. 423-299.000.
Blau, Harry. Collar stay system. 4,118,803, Cl. 2-132.000.
Blaw-Knox Foundry & Mill Machinery, Inc.: *See*—
Eibe, Werner E., 4,118,963, Cl. 72-21.000.
Bleyle, Merrill, to W. R. Grace & Co. Cross-linking resin saturant and method. 4,119,746, Cl. 427-381.000.
Blinne, David L.: *See*—
Macht, Jon A.; and Blinne, David L., 4,119,225, Cl. 214-145.00A.
Block and Company, Inc.: *See*—
Block, Mitchell L.; and Pane, Angelo, 4,118,962, Cl. 70-455.000.
Block, Mitchell L.; and Pane, Angelo, to Block and Company, Inc. Obturator for safe deposit boxes and the like. 4,118,962, Cl. 70-455.000.
Blocker, William C. Seal for LP gas cylinder valve. 4,119,295, Cl. 251-144.000.
Blom, Rolland D., to Electric Terminal Corporation. Method and device for loading stock into a machine. 4,119,214, Cl. 214-1.0BD.
Bloomfield, Jordan J.; and Owsley, Dennis C., to Monsanto Company. Polycyclic alcohol perfume compositions. 4,119,575, Cl. 252-522.000.
Blumenberg, Horst H.; and Guzowski, Kenneth A., to Zenith Radio Corporation. Unitized electron gun having electrodes with internal beam-shielding tubes. 4,119,884, Cl. 313-417.000.
Bockrath, Thomas A., to Hughes Aircraft Company. Linear polarization selective screen. 4,119,932, Cl. 333-21.00A.
Boe, Thomas Jerald; Fell, Charles M.; and Jenkins, William Leon, to A. Duda and Sons. Portable pallet strapping device. 4,119,023, Cl. 100-2.000.
Boehlke, Klaus: *See*—
Beck, Fritz; Wurmb, Rolf; and Boehlke, Klaus, 4,119,767, Cl. 429-105.000.
Boehringer Ingelheim GmbH: *See*—
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,119,728, Cl. 424-324.000.
Boehringer Mannheim GmbH: *See*—
Horn, Jurgen; Batz, Hans-Georg; and Jaworek, Dieter, 4,119,589, Cl. 260-6.000.
Bogner, Richard D.; and King, Leonard H. Dipole-slot type omnidirectional transmitting antenna. 4,119,970, Cl. 343-727.000.
Bogomolova, Galina Ilinichna: *See*—
Balakirev, Efim Stepanovich; Bogomolova, Galina Ilinichna; Gershenovich, Abram Iosifovich; and Gruzdeva, Irina Viktorovna, 4,119,661, Cl. 260-513.00R.
Boiko, Anatoly Alexeevich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Bolduc, Lee R.; and Dickhudt, Eugene A., to Population Research Incorporated. Material dispensing apparatus. 4,119,098, Cl. 128-235.000.
Bolotnikov, Arkady Leonidovich: *See*—
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, 4,119,828, Cl. 219-121.00P.
Bolton, Jack Curtis; and Alexander, Franklin Leroy, to Union Carbide Corporation. Fluid transfer apparatus. 4,119,114, Cl. 137-318.000.
Bonhomme, Francois Robert. Connector for printed circuit boards. 4,119,357, Cl. 339-75.0MP.
Bonnaud, Bernard; and Fagnoni, Yves, to Rhone-Poulenc Industries. Pulverulent compositions based on vinyl chloride. 4,119,601, Cl. 260-29.60R.
Boochever, Evelyn; and Munk, Michael. Enthalpy control for an environmental humidification and cooling system. 4,118,945, Cl. 62-176.00C.
Boozalis, Theodore S.; and Ivy, John B., to Dow Chemical Company, The. Process for production of 1,1,1-trichloroethane and vinylidene chloride. 4,119,674, Cl. 260-658.00R.
Borden, Inc.: *See*—
Golner, Jerold Julius; Miller, William Joseph; and Strout, Russell Brown, 4,119,251, Cl. 225-20.000.
Borg-Warner Corporation: *See*—
Beavers, John Andrew; and Dillion, Billy O., 4,119,874, Cl. 310-90.000.
Fogelberg, Mark John, 4,119,168, Cl. 180-49.000.
Borom, Marcus P.: *See*—
Arendt, Ronald H.; Huseby, Irvin C.; and Borom, Marcus P., 4,119,437, Cl. 134-3.000.
Boron, Joseph J., to Rossborough Manufacturing Co. Bottom fill sampling apparatus. 4,118,988, Cl. 73-425.40R.
Borsy, Jozsef: *See*—
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Bosch, Richard A.; and Straatmann, John A., to Youngstown Sheet and Tube Company. High strength alloy of ferritic structure. 4,119,445, Cl. 148-36.000.
Bosnjak, Milovan, to Buttes Gas & Oil Co. Sugar refining process. 4,119,436, Cl. 127-61.000.
Bosselaers, Robert Jan, to RCA Corporation. Frequency synthesizer with frequency modulated output. 4,119,925, Cl. 331-1.00A.
Boucher, John L. Nail cleaner. 4,119,439, Cl. 134-183.000.
Bourquard, Pierre, to Pibor S.A. Push-button assembly and manufacturing method. 4,118,923, Cl. 58-88.00B.
Bouvier, David William; Brenner, Charles H.; and Butler, Walker, to Motorola Inc. Clutter discriminating apparatus for use with pulsed doppler radar systems and the like. 4,119,966, Cl. 343-7.700.
Bowers, George W., to Information Terminals Corporation. Diskette door. 4,120,012, Cl. 360-133.000.
Bowra, Cyril Embley, to B.H.B. Engineers Pty. Ltd. Articulated vehicles. 4,119,165, Cl. 180-14.00A.
Bowser, George C.: *See*—
Schneider, Alan Arthur; and Bowser, George C., 4,119,769, Cl. 429-112.000.
Boyd, David G.: *See*—
Denton, Dennis N.; and Boyd, David G., 4,119,324, Cl. 277-134.000.
Boyd, Violet; Fishwick, Brian Ribbons; and Watson, David John, to Imperial Chemical Industries Limited. Disperse monoazo dyestuffs. 4,119,624, Cl. 260-207.100.
Boyer, John A.; Cross, Robert; Kovacs, Ernest; and Valentino, Ralph J., to Western Electric Company, Inc. Method and apparatus for transferring articles while re-establishing their orientation. 4,119,211, Cl. 214-1.0BH.
Boyer, Peter W.: *See*—
Nusbaumer, Kay T.; and Boyer, Peter W., 4,119,017, Cl. 92-108.000.
BP Chemicals Limited: *See*—
Cane, Charles; and Yeomans, Bertram, 4,119,553, Cl. 560-198.000.
Bradbery, Jack L.: *See*—
Marin, Allan; and Bradbery, Jack L., 4,119,810, Cl. 179-90.00K.
Braddock, Peter David Michael: *See*—
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,653, Cl. 260-429.00R.
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,654, Cl. 260-429.00R.
Braid, Milton, to Mobil Oil Corporation. Reaction product of nickel thiobis(alkylphenolate) and thiobis(alkylphenol) and organic compositions containing the same. 4,119,548, Cl. 252-42.700.
Brandenstein, Manfred: *See*—
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,119,187, Cl. 192-98.000.
Brashear, Otto S., Jr.; Hund, Clifford L.; and Wehrenberg, Thomas M., to Corning Glass Works. Rebonded fusion-cast AZS refractory grain. 4,119,472, Cl. 106-57.000.
Braun, Martin: *See*—
Vogtmann, Lothar; Braun, Martin; and Kregl, Josef, 4,119,256, Cl. 226-177.000.
Braus, Harry; and Woltermann, Jay R., to National Distillers and Chemical Corporation. Flame retardant compositions. 4,119,789, Cl. 560-161.000.
Brazhnikov, Nikolai Ivanovich. Method of and device for controlling gas-liquid or liquid-liquid interface in monolayer reservoirs. 4,118,983, Cl. 73-290.00V.
Breckheimer, Hans, to Demag AG. Screw compressor with axially displaceable motor. 4,119,392, Cl. 418-201.000.
Breidenbach, Hans: *See*—
Pfeil, Christian; and Breidenbach, Hans, 4,119,016, Cl. 91-449.000.
Breiing, Alois: *See*—
Dietrich, Albert; and Breiing, Alois, 4,119,299, Cl. 254-159.000.
Brenner, Charles H.: *See*—
Bouvier, David William; Brenner, Charles H.; and Butler, Walker, 4,119,966, Cl. 343-7.700.
Bressanelli, Jerome P.: *See*—
Pinnow, Kenneth E.; and Bressanelli, Jerome P., 4,119,765, Cl. 428-683.000.
Brickhouse, Preston E.; and Dunlap, Clinton B. Portable chair tub. 4,118,810, Cl. 4-173.00R.
Bridgestone Liquefied Gas Co. Ltd.: *See*—
Furuta, Kazuhisa, 4,119,241, Cl. 220-439.000.
Bright, Robert Harding, to Koppers Company, Inc. Method for preventing coal spills. 4,119,226, Cl. 214-152.000.
Bright, Roselie Ann: *See*—
Hsieh, Dean Shui-Tien; Bright, Roselie Ann; and Rha, ChouKyun, 4,119,733, Cl. 426-46.000.
Brilakis, Antony A. Programmable question and answer device. 4,118,876, Cl. 35-9.00A.
Brissot, Jean-Jacques Lucien Emile; Belouet, Christian; and Martres, Rene, to U.S. Philips Corporation. Method of manufacturing semiconductor devices in which a layer of semiconductor material is provided on a substrate. 4,119,744, Cl. 427-45.000.
British Gas Corporation: *See*—
Anderson, John Alfred; and Hebden, Dennis, 4,119,411, Cl. 48-62.00R.
Carruthers, Alec Reginald, 4,119,115, Cl. 137-318.000.
Brody, Mitchell D. Thermal energy meter. 4,118,979, Cl. 73-193.00R.
Broecker, Franz Josef: *See*—
Weitz, Hans-Martin; Fischer, Rolf; and Broecker, Franz Josef, 4,119,665, Cl. 260-561.00A.
Brola, Gabriel, to Enterprise Industrielle de Chaudronnerie. Process and apparatus for transforming heat at a relatively low temperature into power or energy. 4,118,934, Cl. 60-647.000.
Brooks & Perkins, Incorporated: *See*—
Karzmar, Ronald C.; and Stamm, Robert H., 4,119,859, Cl. 250-507.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Watanabe, Tomoyoshi; Yasui, Tsuneo; Ishikawa, Shigeo; and Okada, Kiyomichi, 4,119,385, Cl. 400-215.300.
Brow, Gaylord T.: *See*—
Moroco, Philip A.; and Brow, Gaylord T., 4,119,302, Cl. 256-48.000.
Brower, Loyd R., Jr.; Madsen, Leonard P.; and Zutaut, Chesley L., to Standard T Chemical Company, Inc. Nozzle apparatus for electrophoretic coating of interior surfaces. 4,119,522, Cl. 204-300.0EC.
Brown, Alfred: *See*—
Wu, Ching H.; Brown, Alfred; and Hall, Wilbur L., 4,119,149, Cl. 166-266.000.
Brown, Delmont D., to D. S. Brown Company, The. Pavement joint structures. 4,119,387, Cl. 404-69.000.
Brown, Douglas Burthum, to Stake Technology Ltd. Method and apparatus for conveying particulate material. 4,119,025, Cl. 100-35.000.
Brown, Merle S.: *See*—
Arzberger, William A.; and Brown, Merle S., 4,119,191, Cl. 194-9.00T.
Brown & Williamson Tobacco Corporation: *See*—
Flaherty, Kenneth A., 4,119,196, Cl. 206-271.000.

Roth, David S., 4,119,104, Cl. 131-2.000.
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., to Exxon Production Research Company. Stressed caisson retained island. 4,118,941, Cl. 405-204.000.
Bruggemann & Brand KG: *See—*
Fengels, Gerd, 4,118,840, Cl. 24-239.000.
Brunnmueller, Fritz: *See—*
Aichet, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.
Brunswick Corporation: *See—*
Schildbach, August J., 4,118,845, Cl. 29-33.00K.
Brussels, Nathan E., to Solar Energy Systems, Inc. Storage tank assembly. 4,119,086, Cl. 126-271.000.
Brutlag, Minehart, to Raymond Lee Organization, Inc., The, a part interest. Mattress carrying device. 4,119,250, Cl. 224-49.000.
Bucher, Adolf. Spiral staircase. 4,118,908, Cl. 52-185.000.
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., to Polaroid Corporation. Method of making a flat battery. 4,118,860, Cl. 29-623.500.
Buell, David N.: *See—*
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,119,047, Cl. 112-79.0FF.
Buendia, Jean; Nierat, Jeanine; and Deroy, Robert, to Roussel Uclaf. Novel 11-desoxy-prostaglandin F_2 derivatives. 4,119,727, Cl. 424-275.000.
Bukhman, Inokh Borukhovich: *See—*
Aizenberg, Julian Borisovich; Bukhman, Inokh Borukhovich; Pyatigorsky, Vladimir Mikhailovich; and Solomatina, Natalia Mikhailovna, 4,120,024, Cl. 362-96.000.
Bun, Isaak Mozesovich: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.
Bundy, Gordon L., to Upjohn Company, The. ω-Aryl-9-deoxy-9-methylene-PGF-type compounds. 4,119,649, Cl. 260-408.000.
Bundy, Gordon L., to Upjohn Company, The. Inter-oxa-9-deoxy-PGF compounds. 4,119,663, Cl. 562-503.000.
Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-9-deoxy-9-methylene-PGF-type compounds. 4,119,666, Cl. 260-563.00R.
Burkl, Erich: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,119,187, Cl. 192-98.000.
Burmistrova, Ljubov Mikhailovna: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.
Burndy Corporation: *See—*
Noschese, Rocco James, 4,119,818, Cl. 200-50.0AA.
Burnham, Peter B., to Harsco Corporation. Telescopic tow guard for a dock board. 4,118,817, Cl. 14-71.300.
Burroughs Corporation: *See—*
Seitz, Charles Lewis; and Grunewald, Paul, 4,119,954, Cl. 340-324.0AD.
Su, Chauchang, 4,120,043, Cl. 364-900.000.
Burton, Robert S., III: *See—*
Bartel, William J.; Burton, Robert S., III; and Cha, Chang Yul, 4,119,345, Cl. 299-2.000.
Bushnell, Dwight J.: *See—*
Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, 4,119,160, Cl. 175-67.000.
Busler, Willard Leroy, to AMP Incorporated. Packaging and assembly of sheet metal parts. 4,118,859, Cl. 29-622.000.
Bussjager, Rudy C.: *See—*
Lord, Richard G.; Bussjager, Rudy C.; and Geary, David F., 4,118,944, Cl. 62-98.000.
Butler, J. Clinton; and Kubala, Sidney W. Portable article carrier. 4,119,248, Cl. 224-5.00W.
Butler, Walker: *See—*
Bouvier, David William; Brenner, Charles H.; and Butler, Walker, 4,119,966, Cl. 343-7.700.
Buttes Gas & Oil Co.: *See—*
Bosnjak, Milovan, 4,119,436, Cl. 127-61.000.
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Tekhnologichesky Institut Elektrosvarochnogo Oborudovania. Method of plasma multiarc welding by permanently burning direct-current arcs. 4,119,828, Cl. 219-121.00P.
Bykov, Vladimir Petrovich: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.
Cable, Jesse F., III: *See—*
Perkins, Carroll R.; Cable, Jesse F., III; and Link, Joseph, 4,120,022, Cl. 361-395.000.
Cableform Limited: *See—*
Morton, John; and Stevens, Keith Drummond, 4,119,898, Cl. 318-341.000.
Cahill, Robert F. Water collection indicator device. 4,119,056, Cl. 116-118.00A.
Calderon, Arthur, to Control Data Corporation. Ion beam generator having concentrically arranged frustoconical accelerating grids. 4,119,881, Cl. 313-360.000.
Cale, Albert Duncan, Jr., to A. H. Robins Company, Inc. 4-Hydroxymethyl-2-pyrrolidinones. 4,119,637, Cl. 260-326.5FL.
California Cooperage: *See—*
Conger, William W., IV, 4,119,686, Cl. 261-77.000.
California Institute of Technology: *See—*
Rembaum, Alan; and Wallace, Carl J., 4,119,581, Cl. 521-27.000.
Calo, Seraphin Bernard: *See—*
Lewis, Henry Garton, Jr.; and Calo, Seraphin Bernard, 4,119,945, Cl. 340-146.1AQ.
Camlibel, Irfan; and Rich, Theodore Charles, to Bell Telephone Laboratories Incorporated. Package for optical devices including optical fiber-to-metal hermetic seal. 4,119,363, Cl. 350-96.200.
Campana, Patsie Carmen. Fabricated coke oven door. 4,119,496, Cl. 202-248.000.
Campbell, Frank A. Rail bracing system. 4,119,271, Cl. 238-336.000.
Canadian Patents & Development Limited: *See—*
Tucker, Helen G.; Tanney, John W.; and Hayes, William F., 4,118,973, Cl. 73-55.000.
Cane, Charles; and Yeomans, Bertram, to BP Chemicals Limited. Process for the production of esters in the presence of a pyridine base. 4,119,553, Cl. 560-198.000.
Canon Kabushiki Kaisha: *See—*
Ichiyanagi, Toshikazu, 4,118,922, Cl. 58-23.0BA.
Capozza, Richard Carl, to Alza Corporation. Polymeric orthoesters. 4,119,579, Cl. 526-270.000.
Capps, Grover H., to Trucksafe, Inc. Jackknife restraining mechanism. 4,119,330, Cl. 280-432.000.
Carad, Inc.: *See—*
Cass, Boyd E.; Coate, David W.; and Quigley, Joseph R., 4,119,455, Cl. 75-25.000.
Carbonnel, Henri; and Chaminade, Francois, to Groupement pour les Activites Atomiques et Avancees. Insulating ceramic substances having controlled porosity and the method for preparing them by sintering. 4,119,469, Cl. 106-40.00R.
Carborundum Company, The: *See—*
Ehrenreich, Leo C., 4,119,189, Cl. 192-107.00M.
Carl Hurth Maschinen- und Zahnradfabrik: *See—*
Eichinger, Johann, 4,118,996, Cl. 74-404.000.
Loos, Herbert; Heckmaier, Manfred; and Reichert, Gerhard, 4,119,014, Cl. 90-1.60R.
Seitz, Max, 4,119,013, Cl. 90-1.000.
Carleton, William Arthur: *See—*
Mower, Michael Lee; Carleton, William Arthur; and Packard, Gary Richard, 4,119,184, Cl. 192-82.00T.
Carlson, Frank A., to Alton Box Board Company. Container incorporating partially opened protective end cells. 4,119,201, Cl. 206-424.000.
Carlsson, Erik Herbert; and Karlsson, John Axel, to Aktiebolaget Overums Bruk. Adjustable tip for plough share. 4,119,158, Cl. 172-704.000.
Carmel Energy, Inc.: *See—*
Sperry, John S.; Krajicek, Richard W.; and Cradeur, Robert R., 4,118,925, Cl. 60-39.050.
Carosio, Sam. Analgesic and anti-inflammatory composition. 4,119,713, Cl. 424-95.000.
Carpino, John Steven, to B. F. Goodrich Company, The. Reversion resistant rubber compositions with thio carbamyl sulfenamides. 4,119,588, Cl. 260-5.000.
Carr, Robert J.: *See—*
Hermanson, Gerald P.; Rickel, David M.; and Carr, Robert J., 4,119,448, Cl. 156-73.400.
Carrier Corporation: *See—*
Lord, Richard G.; Bussjager, Rudy C.; and Geary, David F., 4,118,944, Cl. 62-98.000.
Carruthers, Alec Reginald, to British Gas Corporation. Stopping fluid flow in pipes. 4,119,115, Cl. 137-318.000.
Carson, John Robert, to McNeil Laboratories, Incorporated. Preparation of 5-aroylpyrrole-2-acetic acid derivatives. 4,119,639, Cl. 260-326.350.
Carter, Dwight: *See—*
Wolf, Cecil R., 4,119,133, Cl. 160-209.000.
Carter, Ray L. Animal trap holder. 4,118,885, Cl. 43-97.000.
Carvalko, Joseph R.; and Tolmie, Robert J., Jr., to Pitney-Bowes, Inc. System for controlling concentration of developer solution. 4,119,989, Cl. 354-298.000.
Cary, John T., to Continental Group, Inc., The. Apparatus for forming an end finish on a hollow article. 4,119,394, Cl. 425-390.000.
Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, to International Business Machines Corporation. Electrically reprogrammable transversal filter using charge coupled devices. 4,120,035, Cl. 364-602.000.
Cass, Boyd E.; Coate, David W.; and Quigley, Joseph R., to Carad, Inc. Method of recovering iron-bearing by-product flue dust. 4,119,455, Cl. 75-25.000.
Cassidy, Raymond T.; and St. Amand, Robert, to National Blank Book Company, Inc. Tape cassette holder. 4,119,200, Cl. 206-387.000.
Castleman, B. Wayne; and Schluter, Bernard C., to Honeywell Inc.

Apparatus and a method for detecting and measuring trace gases in air or other gas backgrounds. 4,119,851, Cl. 250-382.000.
Catalyst Research Corporation: *See—*
Schneider, Alan Arthur; and Bowser, George C., 4,119,769, Cl. 429-112.000.
Caterpillar Tractor Co.: *See—*
Hopkins, Donald L., 4,119,169, Cl. 180-66.00R.
Cates, Robert E., to Marley Cooling Tower Company, The. Air cooled atmospheric heat exchanger. 4,119,140, Cl. 165-67.000.
Cave, Ellis K., to Arcadia Refining Company. Flowmeter. 4,118,981, Cl. 73-194.0EM.
Ceca S.A.: *See—*
Duboc, Jean; and Poitier, Bernard, 4,118,836, Cl. 24-73.0SA.
Central Glass Co., Ltd.: *See—*
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.
CER: *See—*
Rifflart, Jacques, 4,119,155, Cl. 172-311.000.
Cera International Limited: *See—*
Alexander, Robert Osteen, 4,119,108, Cl. 134-62.000.
Cha, Chang Yul: *See—*
Bartel, William J.; Burton, Robert S., III; and Cha, Chang Yul, 4,119,345, Cl. 299-2.000.
Chambley, Phillip W.: *See—*
Norris, Alan H.; and Chambley, Phillip W., 4,118,842, Cl. 28-218.000.
Chambley, Phillip Wayne; and Norris, Alan Hedley, to Champion International Corporation. Dielectric heat generator. 4,119,826, Cl. 219-10.810.
Chaminade, Francois: *See—*
Carbonnel, Henri; and Chaminade, Francois, 4,119,469, Cl. 106-40.00R.
Champion International Corporation: *See—*
Chambley, Phillip Wayne; and Norris, Alan Hedley, 4,119,826, Cl. 219-10.810.
Dempster, Thomas B., 4,119,266, Cl. 229-39.00R.
Norris, Alan H.; and Chambley, Phillip W., 4,118,842, Cl. 28-218.000.
Chang, Fung Yuel: *See—*
Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,120,035, Cl. 364-602.000.
Chang, Richard C.: *See—*
Smith, Frank C., Jr.; and Chang, Richard C., 4,119,580, Cl. 521-28.000.
Charles, Richard J.: *See—*
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,475, Cl. 106-73.500.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,689, Cl. 264-65.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,690, Cl. 264-65.000.
Chaspec Manufacturing Co., The: *See—*
Peckar, George E., 4,119,204, Cl. 206-521.000.
Chazard, Georges Jean Paul; and Seugnet, Monique, to Colgate Palmolive Company. Concentrated fabric softening composition. 4,119,545, Cl. 252-8.800.
Chellis, Fred Freeman, to Cryogenic Technology, Inc. Refrigeration system with magnetic linkage. 4,118,943, Cl. 62-6.000.
Chen, Thomas T., to Rockwell International Corporation. Two dimensional stretcher detector. 4,120,046, Cl. 365-8.000.
Chepigo, Sergei Vladimirovich: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.
Chesbeuf, Bernard: *See—*
Daeninckx, Jean; and Chesbeuf, Bernard, 4,119,578, Cl. 252-548.000.
Chevron Research Company: *See—*
Moore, Joseph E., 4,119,722, Cl. 424-270.000.
Chibana, Masanobu: *See—*
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.
Chicago Bridge & Iron Company: *See—*
Orndorff, James Allen, Jr., 4,119,051, Cl. 114-249.000.
Chichester Partridge Limited: *See—*
Partridge, Anthony John, 4,119,091, Cl. 128-92.00B.
Chimicasa GmbH: *See—*
Deininger, Rolf; and Wolf, Erich, 4,119,730, Cl. 424-341.000.
Chin, Te Ning, to RCA Corporation. Cathode for flat panel display. 4,119,882, Cl. 313-411.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT.: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Chirana, koncern: *See—*
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, 4,119,243, Cl. 221-298.000.
Chirikjian, Jack G., to Turner, Stephen. Fluorescent derivatives of activated polysaccharides. 4,119,521, Cl. 204-299.00R.
Chloride Group Limited: *See—*
Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, 4,119,772, Cl. 429-204.000.
Cholet, Jacques: *See—*
Layotte, Pierre-Claude; and Cholet, Jacques, 4,118,994, Cl. 74-61.000.
Chorba, Mary Claire; Craig, Peter; and Westergren, Kurt Pierce. Three dimensional game. 4,119,320, Cl. 273-241.000.
Choudhury, Hrishikesh; and Luksch, Heinrich E., to Outboard Marine Corporation. Single lever control having a throttle warm-up lever. 4,119,186, Cl. 192-0.096.
Christenson, Lowell B. Apparatus and method of assisting pile driving by electro-osmosis. 4,119,511, Cl. 204-180.00R.
Chromalloy Alcon, Inc.: *See—*
Linkowski, Stanley A., 4,119,360, Cl. 339-217.00S.
Chubb, Talbot A. Thermal energy storage material comprising mixtures of sodium, potassium and magnesium chlorides. 4,119,556, Cl. 252-70.000.
Ciba-Geigy Corporation: *See—*
Robertson, George Heddle, 4,119,478, Cl. 106-288.00Q.
Schmidlin, Julius, 4,119,625, Cl. 260-239.55D.
Wieland, Peter, 4,119,627, Cl. 260-239.570.
Cillichemie Ernst Vogelmann: *See—*
Preuninger, Manfred; Hollender, Gottfried; and Schaber, Herbert, 4,118,906, Cl. 52-100.000.
Cincinnati Milacron Inc.: *See—*
Stone, Kirby Lee, 4,119,110, Cl. 137-15.000.
Cities Service Company: *See—*
Anderson, Howard A., 4,119,239, Cl. 220-324.000.
Citizen Watch Co. Ltd.: *See—*
Morokawa, Shigeru; and Hashimoto, Yukio, 4,119,867, Cl. 307-225.00C.
Yamazaki, Toru, 4,119,368, Cl. 350-360.000.
Clairol Incorporated: *See—*
Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, 4,119,399, Cl. 8-10.200.
Clapper, Thomas W., to Kerr-McGee Corporation. Bipolar electrode for use in an electrolytic cell. 4,119,519, Cl. 204-268.000.
Clemens, Anton Hubert, to Miles Laboratories, Inc. Calibration apparatus. 4,119,406, Cl. 422-81.000.
Clement, Paul Santas, Jr. Applicator having insertable sponge cartridge. 4,118,824, Cl. 15-244.00R.
Cling-Cal Corporation: *See—*
Kettlestrings, John S., 4,119,316, Cl. 273-95.00R.
Coal Industry (Patents) Limited: *See—*
Gray, Michael David; and Kimber, Geoffrey Michael, 4,119,525, Cl. 208-8.000.
Coate, David W.: *See—*
Cass, Boyd E.; Coate, David W.; and Quigley, Joseph R., 4,119,455, Cl. 75-25.000.
Coates, David; and Gray, George William, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal materials. 4,119,558, Cl. 252-299.000.
Cobb, Keith M.: *See—*
Taylor, James B., Jr.; and Cobb, Keith M., 4,118,858, Cl. 29-622.000.
Codman & Shurtleff, Inc.: *See—*
Reimels, Harry G., 4,118,805, Cl. 3-1.000.
Cohen, Eleanor B.; Stassen, William N.; and Wintgens, James C., to Owens-Corning Fiberglas Corporation. Size compositions for glass fiber reinforced cementitious products. 4,119,477, Cl. 106-99.000.
Cohen, Fredric S.: *See—*
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,118,860, Cl. 29-623.500.
Coldiron, Ronnie Hamilton, to Turf-Tech Inc. Sod cutter. 4,119,002, Cl. 83-120.000.
Coleman, William H.; and Maszk, Francis S., to Westinghouse Electric Corp. Bearing load indicator. 4,118,933, Cl. 73-766.000.
Colgate Palmolive Company: *See—*
Chazard, Georges Jean Paul; and Seugnet, Monique, 4,119,545, Cl. 252-8.800.
Collier, John Covell; and Owen, Leonard John, to AMP Incorporated. Method and tool for applying ties. 4,119,124, Cl. 140-93.200.
Colubev, Alexei Olegovich: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.
Combette, Marc; and Ollivier, Jean, to Societe de Prospection et d'Inventions Techniques SPIT. Power actuated tools. 4,119,257, Cl. 227-10.000.
Comer, William T.; and Kreighbaum, William E., to Mead Johnson & Company. Alkylsulfonylphenoxypropanolamine therapeutic process. 4,119,729, Cl. 424-330.000.
Commissariat a l'Energie Atomique: *See—*
Delafosse, Jacques, 4,119,490, Cl. 176-78.000.
Compagnie General d'Electrocite S.A.: *See—*
Michon, Maurice; and Sturel, Bernard, 4,119,928, Cl. 331-94.50P.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Jacob, Jean-Baptiste, 4,119,803, Cl. 179-15.0AT.
Compax Corp.: *See—*
Diggle, Edmund A., Jr., 4,118,841, Cl. 26-18.600.
Comperatore, John A., to PPG Industries, Inc. Method and apparatus for shaping glass sheets on a bending mold. 4,119,424, Cl. 65-107.000.

Compressor Controls Corporation: *See—*
Rutshtein, Alexander; and Staroselsky, Naum, 4,119,391, Cl. 417-26.000.
Compton, William A., to International Harvester Company. Radiation pyrometers. 4,118,985, Cl. 73-346.000.
Conger, William W., IV, to California Cooperage. Hydro-jet fitting for hot tub. 4,119,686, Cl. 261-77.000.
Conn, John L. Cap-less container and/or dispenser. 4,119,245, Cl. 222-465.000.
Conrow, Ransom Brown; and Bernstein, Seymour, to American Cyanamid Company. Anionic substituted sulfonamido biphenyls. 4,119,784, Cl. 560-44.000.
Consonni, Pietro: *See—*
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.
Container Corporation of America: *See—*
Goeppner, Ronald R.; Kuehne, William M.; and Russell, Timothy D., 4,118,972, Cl. 73-40.000.
Pilz, William M., 4,119,197, Cl. 206-279.000.
Continental Disc Corporation: *See—*
Shaw, Kenneth R.; and Hansen, Franklin A., 4,119,236, Cl. 220-89.00A.
Continental Group, Inc., The: *See—*
Cary, John T., 4,119,394, Cl. 425-390.000.
Control Data Corporation: *See—*
Calderon, Arthur, 4,119,881, Cl. 313-360.000.
Convertini, Ursula: *See—*
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, 4,119,483, Cl. 156-655.000.
Cook, Eddie G. Rear window assembly for a truck cab. 4,119,341, Cl. 296-146.000.
Cook, Robert E., to A. O. Smith Corporation. Solar water heating system. 4,119,087, Cl. 126-271.000.
Coopman, Frans: *See—*
Verhauwhede, Germain; and Coopman, Frans, 4,119,748, Cl. 428-36.000.
Corbett, Robert John, to Huck Manufacturing Company. Double action fastener installation tool for blind rivets and the like. 4,118,969, Cl. 72-391.000.
Core Laboratories, Inc.: *See—*
Price, John G. W., 4,119,404, Cl. 23-232.00E.
Corkhill, Robert Edward: *See—*
Wilcox, David Mark; and Corkhill, Robert Edward, 4,119,880, Cl. 313-348.000.
Corning Glass Works: *See—*
Brashear, Otto S., Jr.; Hund, Clifford L.; and Wehrenberg, Thomas M., 4,119,472, Cl. 106-57.000.
Corporate Equipment Company: *See—*
Corso, Anthony Bruce; and Rishel, James Burton, 4,120,033, Cl. 364-510.000.
Corse, Louis Gaston, to Machines Chambon. Apparatus for transversely cutting a web of material. 4,119,003, Cl. 83-341.000.
Corso, Anthony Bruce; and Rishel, James Burton, to Corporate Equipment Company. Apparatus and method for determining pumping system head curves. 4,120,033, Cl. 364-510.000.
Cosenza, Frank J., to Tridair Industries. Fastener with wire-form holdout. 4,119,131, Cl. 151-69.000.
Cosman, Armond D.; and Knippelmier, Gary H., to A. P. C. Industries, Inc. Method for locating buried markers which are disposed along the path of an underground conductor. 4,119,908, Cl. 324-3.000.
Costakis, Andrew L., to National Steel Corporation. Apparatus for electroplating sheet metals. 4,119,515, Cl. 204-211.000.
Cotton, John F.: *See—*
Wiet, Raymond E.; Cotton, John F.; and Salemi, Nicholas A., 4,119,935, Cl. 335-167.000.
Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, to U.S. Philips Corporation. Electronic thermostat. 4,119,835, Cl. 219-501.000.
Coulthard, James Albert, to Baytzner-Coulthard Dokumentations und Werbefilm GmbH. Partitions and screens. 4,118,903, Cl. 52-36.000.
Coupling Systems, Inc.: *See—*
Rieffle, Paul F.; and Felker, Charles E., 4,119,335, Cl. 285-337.000.
Coutta, John M. Surveillance system. 4,120,004, Cl. 358-108.000.
Cox, Howard W.: *See—*
Iobst, Stanley A.; and Cox, Howard W., 4,119,594, Cl. 260-18.0TN.
Cradeur, Robert R.: *See—*
Sperry, John S.; Krajicek, Richard W.; and Cradeur, Robert R., 4,118,925, Cl. 60-39.050.
Craig, Gregory C.; and Eckstein, William B., to French Oil Mill Machinery Company, The. Devolatilizing vent. 4,120,050, Cl. 366-75.000.
Craig, Peter: *See—*
Chorba, Mary Claire; Craig, Peter; and Westergren, Kurt Pierce, 4,119,320, Cl. 273-241.000.
Cranberg, Lawrence. Compact long-lived neutron source. 4,119,858, Cl. 250-499.000.
Cray Research, Inc.: *See—*
Rousu, Maurice Dean, 4,120,021, Cl. 361-388.000.
Creel, Jack R. Game with board and pieces and dice. 4,119,321, Cl. 273-241.000.
Crespo, Silvio, to Wilbur Chocolate Company, Inc. Cocoa extender. 4,119,740, Cl. 426-631.000.
Criglar, John J.; and Lazarus, Arnold. Pressure transducer for musical instruments. 4,119,007, Cl. 84-1.140.
Crimella, Renato. Automatic toe forming machine for shoes, in particular dancing and gymnastics shoes. 4,118,815, Cl. 12-7.900.
Crist, Eugene A.: *See—*
Kehl, Donald K.; and Crist, Eugene A., 4,118,891, Cl. 47-59.000.
Critchfield, Frank Edward: *See—*
Papa, Anthony Joseph; Rollins, Richard Lee; and Critchfield, Frank Edward, 4,119,584, Cl. 521-127.000.
Crook, Monty Frederick: *See—*
Davis, Bryan Terence; and Crook, Monty Frederick, 4,119,552, Cl. 252-49.600.
Cross, Robert: *See—*
Boyer, John A.; Cross, Robert; Kovacs, Ernest; and Valentino, Ralph J., 4,119,211, Cl. 214-1.0BH.
Crouch, William B.; Fabiero nee Posadas, Carolina P.; and Robin, Allen M., to Texaco Inc. Production of nitrogen-rich gas mixtures. 4,119,566, Cl. 252-372.000.
Crowe, Edward R.: *See—*
DeAngelis, Willie G.; and Crowe, Edward R., 4,119,428, Cl. 65-287.000.
Crucible Inc.: *See—*
Pinnow, Kenneth E.; and Bressanelli, Jerome P., 4,119,765, Cl. 428-683.000.
Cryogenic Technology, Inc.: *See—*
Chellis, Fred Freeman, 4,118,943, Cl. 62-6.000.
Csonka, Albert B.: *See—*
Csonka, John J.; and Csonka, Albert B., 4,119,068, Cl. 123-117.00R.
Csonka, John J.; and Csonka, Albert B. Carburetor for internal combustion engines. 4,119,068, Cl. 123-117.00R.
Cunningham, Michael Paul: *See—*
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, 4,119,466, Cl. 96-115.00R.
Curtis, Brian Matthew, to Perard Engineering Limited. Looped cable control device. 4,119,348, Cl. 299-43.000.
Curvino, Salvatore J.; and Warner, Albert E., to United Technologies Corporation. Automatic stall recovery system. 4,118,926, Cl. 60-39.060.
Cushing, Ernest W. Mop assembly to distribute selected liquids on floor areas, to be waxed, cleaned, and/or stripped. 4,119,386, Cl. 401-138.000.
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Bottom unloading bulk container. 4,119,263, Cl. 229-17.00B.
Cutler-Hammer, Inc.: *See—*
Jaskolski, Stanley V.; Lade, Robert W.; and Schutten, Herman P., 4,119,845, Cl. 250-231.00R.
Cutler, Royal A.: *See—*
Diana, Guy D.; and Cutler, Royal A., 4,119,668, Cl. 260-567.60P.
Czajkowski, George J.; and Stolfa, Frank, to UOP Inc. Moving-bed reactor startup process. 4,119,530, Cl. 208-213.000.
D. H. Baldwin Company: *See—*
Kimble, Thomas E., 4,119,008, Cl. 84-242.000.
D. S. Brown Company, The: *See—*
Brown, Delmont D., 4,119,387, Cl. 404-69.000.
Daeninckx, Jean; and Chesbeuf, Bernard, to L'Oreal. Hydrosoluble bar for use in toilet bowls and method of making same which includes an extrusion step. 4,119,578, Cl. 252-548.000.
Dahlstrom, Baesley I.: *See—*
Hill, James E.; and Dahlstrom, Baesley I., 4,119,270, Cl. 235-440.000.
Dahm, Manfred: *See—*
Baatz, Gunther; Dahm, Manfred; and Schafer, Walter, 4,119,565, Cl. 252-316.000.
Dai Nippon Toryo Co. Ltd.: *See—*
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.
Daicel Ltd.: *See—*
Hayashi, Minoru; and Kishi, Kazuo, 4,119,036, Cl. 102-49.300.
Daimler-Benz Aktiengesellschaft: *See—*
Bihlmaier, Eugen, 4,119,353, Cl. 303-22.00R.
Happel, Robert, 4,119,066, Cl. 123-32.0SP.
Hass, Jurgen, 4,119,178, Cl. 184-1.500.
Dakin, James T.; and Darrow, Kenneth A., to General Electric Company. Liquid-cooled, turbine bucket with enhanced heat transfer performance. 4,119,390, Cl. 416-96.00R.
Dammann, Peter: *See—*
Schippers, Heinz; Dammann, Peter; and Bauer, Karl, 4,118,843, Cl. 28-255.000.
Dana Corporation: *See—*
Duncan, John D., 4,119,914, Cl. 325-446.000.
Danfoss A/S: *See—*
Sorensen, Per Germann, 4,119,894, Cl. 318-221.00D.
D'Angelo, Alexander. Apparatus for automatically dispensing material from a roll. 4,119,255, Cl. 226-136.000.
Danilov, Alexandr Ivanovich: *See—*
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, 4,119,828, Cl. 219-121.00P.
Darrow, Kenneth A.: *See—*
Dakin, James T.; and Darrow, Kenneth A., 4,119,390, Cl. 416-96.00R.
Dataproducts Corporation: *See—*
McMillan, Norman; and Dier, Henry M., 4,119,029, Cl. 101-111.000.

Davidovich, Jury Alexandrovich: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.
Davidovich, Yakov Gilievich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Davies, John F.: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.
Davis, Bryan Terence; and Crook, Monty Frederick, to Edwin Cooper and Company Limited. Lubricant additive. 4,119,552, Cl. 252-49.600.
Davis, Kirk Emerson, to Lubrizol Corporation, The. Sulfurized compositions. 4,119,549, Cl. 252-45.000.
Davis, Kirk Emerson; and Holden, Thomas Frederick, to Lubrizol Corporation, The. Sulfurized compositions. 4,119,550, Cl. 252-45.000.
Davis, Robert E., to Stage-Brite Inc. Cross connect panel having slide switches and bus bar construction. 4,119,816, Cl. 200-1.00R.
Davison, Sol: *See—*
Gergen, William P.; and Davison, Sol, 4,119,607, Cl. 260-40.00R.
Dayron Corporation: *See—*
Hermanson, Gerald P.; Rickel, David M.; and Carr, Robert J., 4,119,448, Cl. 156-73.400.
DeAngelis, Willie G.; and Crowe, Edward R., to PPG Industries, Inc. Apparatus for bending glass sheets. 4,119,428, Cl. 65-287.000.
Deardorf, Eldon N. Perforating apparatus and method for well casing. 4,119,148, Cl. 166-250.000.
Deaven, John B. Portable container convertible to lighted dancing stage. 4,120,025, Cl. 362-153.000.
Debeaux, Alain, to Souriau et Cie. Flowmeters-volumeters. 4,118,980, Cl. 73-194.00C.
DeBerry, David W., to Radian Corporation. Pulsed DC transient conductivity measurement system. 4,119,909, Cl. 324-30.00R.
Debourge, Jean-Claude: *See—*
Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, 4,119,724, Cl. 424-45.000.
Degen, Hugo, to Inpaver AG. Device for inclining the supporting surface of a reclining furniture. 4,118,811, Cl. 5-62.000.
Dehnert, Heinz. Electrocardioscope. 4,119,090, Cl. 128-2.06G.
Deininger, Rolf; and Wolf, Erich, to Chimicasa GmbH. Treating muscle spasms. 4,119,730, Cl. 424-341.000.
de Jong, Jacobus J. A.: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.
de Kremer, Mily; and de Kremer, Peter, to Dolcofin Ltd. Golf ball flight indicating device. 4,119,318, Cl. 273-185.00C.
de Kremer, Peter: *See—*
de Kremer, Mily; and de Kremer, Peter, 4,119,318, Cl. 273-185.00C.
Delafosse, Jacques, to Commissariat a l'Energie Atomique. Nuclear fuel assembly. 4,119,490, Cl. 176-78.000.
De Lamare, Eric P.; and Dudon, Pierre D., to Telediffusion de France. Mechanical artificial reverberation apparatus. 4,119,933, Cl. 333-30.00R.
Delany, Paul Nigel, to Delpack Limited. Palletized containers. 4,119,205, Cl. 206-598.000.
Delea, Anne C.: *See—*
Sansur, Musa M.; Vlastelica, Daniel L.; and Delea, Anne C., 4,119,401, Cl. 23-230.00B.
Delpack Limited: *See—*
Delany, Paul Nigel, 4,119,205, Cl. 206-598.000.
Demag AG: *See—*
Breckheimer, Hans, 4,119,392, Cl. 418-201.000.
Rath, Gero, 4,119,454, Cl. 75-12.000.
De Martelaere, David L. Universal piston pin remover and installer. 4,118,851, Cl. 29-283.000.
Demizu, Hiromi: *See—*
Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, 4,119,060, Cl. 118-653.000.
Dempster, Thomas B., to Champion International Corporation. Octagonal shaped paperboard bulk bin. 4,119,266, Cl. 229-39.00R.
Densen Common, Incorporated: *See—*
Johnson, Dennis Elmer, 4,118,868, Cl. 33-169.00R.
Denton, Dennis N.; and Boyd, David G., to Garlock Inc. Bonded TFE lip seal. 4,119,324, Cl. 277-134.000.
Denton, Dennis N.: *See—*
Bainard, Dean R.; and Denton, Dennis N., 4,118,856, Cl. 29-511.000.
de Putter, Warner Jan, to Wavin B.V. Pipe with an outer foam plastic covering. 4,119,122, Cl. 138-103.000.
de Roos, Kris Bart: *See—*
van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.
Deroy, Robert: *See—*
Buendia, Jean; Nierat, Jeanine; and Deroy, Robert, 4,119,727, Cl. 424-275.000.
Desmond, Timothy F.: *See—*
Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,119,762, Cl. 428-524.000.
Desourdy, Bernard. Pipe laying and transporting vehicle. 4,119,210, Cl. 214-1.0PA.
Desperques-Volmier, Serge, to Thomson-CSF. System for programmed drawing by particle bombardment. 4,119,857, Cl. 250-492.00A.
Dessau, Ralph M.: *See—*
Heiba, El Ahmadi I.; and Dessau, Ralph M., 4,119,646, Cl. 260-346.220.
De Trey, Rene: *See—*
Lendi, Georges; Voinescu, Nicolae; and De Trey, Rene, 4,118,867, Cl. 33-164.00C.
Deutsch Company Electronic Components Division, The: *See—*
Holzman, Melvyn A., 4,119,362, Cl. 350-96.180.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Wagner, Hans; and Maierhofer, Alfred, 4,119,738, Cl. 426-548.000.
Develop KG Dr. Eisbein & Co.: *See—*
Moser, Kurt; Wegmann, Helmut; and Weigele, Reinhold, 4,119,059, Cl. 118-644.000.
Devine, Thomas M., Jr., to General Electric Company. Inertia welding process for making an anode assembly. 4,119,261, Cl. 228-113.000.
Devine, Thomas M., Jr., to General Electric Company. Graphite disc assembly for a rotating x-ray anode tube. 4,119,879, Cl. 313-330.000.
Dewald, Hans. Process and apparatus for removing straws from bottles. 4,119,438, Cl. 134-6.000.
De Yarman, James E. Kite structure. 4,119,283, Cl. 244-153.00A.
Diana, Guy D.; and Cutler, Royal A., to Sterling Drug Inc. N,N'-Bridged-bis[N,N'substituted-2-hydroxy alkaneammonium] salts. 4,119,668, Cl. 260-567.60P.
Dickhudt, Eugene A.: *See—*
Bolduc, Lee R.; and Dickhudt, Eugene A., 4,119,098, Cl. 128-235.000.
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, to Selenia-Industrie Elettroniche Associate S.p.A. Low thermal loss cryogenic containers for infrared radiation detecting devices, with integrated feed-through connections. 4,118,947, Cl. 62-514.00R.
Diehl, Robert Eugene: *See—*
Levy, Stephen David; and Diehl, Robert Eugene, 4,119,669, Cl. 260-577.000.
Diem, Hans: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.
Diena, Alberto: *See—*
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.
Diener, Erhard Armin. Support and installation jack, hole forming devices and setting tool therefor. 4,119,293, Cl. 249-177.000.
Dier, Henry M.: *See—*
McMillan, Norman; and Dier, Henry M., 4,119,029, Cl. 101-111.000.
Dieterich, Dieter, to Bayer Aktiengesellschaft. Aromatic isocyanatopolysulphonic acids. 4,119,658, Cl. 260-453.0AR.
Dietrich, Albert; and Breiing, Alois, to Dornier Gmbh. Cable drum arrangement with brake. 4,119,299, Cl. 254-159.000.
Dietz, Richard E., to Phillips Petroleum Company. Olefin polymerization catalyst. 4,119,569, Cl. 252-452.000.
Diggle, Edmund A., Jr., to Compax Corp. Apparatus for compacting woven gauze bandages. 4,118,841, Cl. 26-18.600.
Dillion, Billy O.: *See—*
Beavers, John Andrew; and Dillion, Billy O., 4,119,874, Cl. 310-90.000.
Dils, Michael A.: *See—*
Ward, Ernest Michael; Ward, Steven M.; and Dils, Michael A., 4,119,948, Cl. 340-151.000.
Dimigen, Heinz: *See—*
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, 4,119,483, Cl. 156-655.000.
Dionex Corporation: *See—*
Smith, Frank C., Jr.; and Chang, Richard C., 4,119,580, Cl. 521-28.000.
Diszler, Eszter: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Dlugopolski, Joseph, to Fidelity Container Corporation. Seamless leakproof container. 4,119,265, Cl. 229-31.00R.
Dobkin, Igor Iosifovich: *See—*
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.
Dr. Ing. Rudolf Hell, GmbH: *See—*
Moellgaard, Klaus; and Sendtko, Ulrich, 4,120,045, Cl. 364-900.000.
Doering, Gerard A. Energy cell device. 4,119,766, Cl. 429-70.000.
Doland, George D.: *See—*
United States of America, National Aeronautics and Space Administration; and Doland, George D., 4,119,972, Cl. 343-844.000.
Dolcofin Ltd.: *See—*
de Kremer, Mily; and de Kremer, Peter, 4,119,318, Cl. 273-185.00C.
Dominion Auto Accessories Limited: *See—*
Nagel, Robert I., 4,120,018, Cl. 362-333.000.

Dopp, James Wellington, to Babcock & Wilcox Company, The. Automatic loading-unloading mechanism for a pot broaching machine. 4,119,215, Cl. 214-1.0BB.
Dornier Gmbh: *See—*
Dietrich, Albert; and Breiing, Alois, 4,119,299, Cl. 254-159.000.
Dow Chemical Company, The: *See—*
Boozalis, Theodore S.; and Ivy, John B., 4,119,674, Cl. 260-658.00R.
Larsen, Eric R.; and Ecker, Ernest L., 4,119,413, Cl. 55-71.000.
Newport, John J., III; and Messick, Bobby G., 4,119,632, Cl. 260-295.00R.
Doychinov, Emil Assenov: *See—*
Bakardjiev, Vassil Dimitrov; and Doychinov, Emil Assenov, 4,119,829, Cl. 219-130.400.
Doyle, Edward J.: *See—*
Laviana, Lawrence J.; Rhodes, Mark H., Jr.; and Doyle, Edward J., 4,119,936, Cl. 337-303.000.
Draizen, Seymour; and Schillebeeckx, Konrad C., to Syncro Machine Company. Continuous long ends wire spooling apparatus. 4,119,278, Cl. 242-25.00A.
Dreiseitl, Walter: *See—*
Bayer, Karlheinz; Dreiseitl, Walter; and Blaschke, Felix, 4,119,893, Cl. 318-178.000.
Dresser Europe S.A. "LeSouverain" Boulevard du Souverain: *See—*
Winkelvoss, Dieter, 4,119,117, Cl. 137-456.000.
Drews, Wolf-Dietrich, to Siemens Aktiengesellschaft. Medical inhalation device for the treatment of diseases of the respiratory tract. 4,119,096, Cl. 128-194.000.
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, to Gesellschaft fur Kernforschung m.b.H. Method for avoiding malfunctions in the solidification of aqueous, radioactive wastes in a glass, glass ceramic or glass ceramic-like matrix. 4,119,561, Cl. 252-301.10W.
Duboc, Jean; and Poitier, Bernard, to Ceca S.A. Device for fixing the electrodes of electrostatic dust precipitator filters. 4,118,836, Cl. 24-73.0SA.
Dudeck, Christian: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Bruenmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.
Dudon, Pierre D.: *See—*
De Lamare, Eric P.; and Dudon, Pierre D., 4,119,933, Cl. 333-30.00R.
Dumas, Hal S., Jr.: *See—*
Dumas, Sarah J.; and Dumas, Hal S., Jr., 4,119,240, Cl. 220-331.000.
Dumas, Sarah J.; and Dumas, Hal S., Jr. Positive open receptacle. 4,119,240, Cl. 220-331.000.
Duncan, Farris N.: *See—*
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,119,263, Cl. 229-17.00B.
Duncan, John D., to Dana Corporation. Double balanced mixer using single ferrite core. 4,119,914, Cl. 325-446.000.
Dunlap, Clinton B.: *See—*
Brickhouse, Preston E.; and Dunlap, Clinton B., 4,118,810, Cl. 4-173.00R.
Dunlop Limited: *See—*
Popplewell, Frank William; and Houghton, Frank Raymond, 4,119,313, Cl. 273-73.00K.
Du Pont de Nemours, E. I., and Company: *See—*
Adams, Dustin Stetson; Field, Frederick C., Jr.; and Layton, James Ronald, 4,118,921, Cl. 57-140.00R.
Wysong, Robert David, 4,119,604, Cl. 260-33.20R.
Durand, Gilbert; and Monsan, Pierre, to Rhone-Poulenc Industries. Immobilization of enzymes in an anhydrous medium. 4,119,494, Cl. 195-68.000.
Durinck, Rene, to Fives-Cail Babcock. Process and apparatus for manufacturing carbon electrodes. 4,119,692, Cl. 264-71.000.
Durling, Harold, to Midland-Ross Corporation. Air brake system with pressure holding valve. 4,119,351, Cl. 303-6.00M.
Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., to Jim Dandy Company, The. Dispensing head for impregnating meat with a liquid. 4,119,022, Cl. 99-532.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Biet, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.
Dynetics Engineering Corp.: *See—*
Hill, James E.; and Dahlstrom, Baesley I., 4,119,270, Cl. 235-440.000.
Dyson, Evelyna Chelsey, to Revlon, Inc. Eyebrow contour guide. 4,118,870, Cl. 33-174.00D.
E. MERCK, Patentabteilung: *See—*
Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, 4,119,631, Cl. 260-295.00A.
E. R. Squibb & Sons, Inc.: *See—*
Gordon, Eric M., 4,119,778, Cl. 544-26.000.
Early, Judson Horace: *See—*
Off, Joseph W. A.; and Early, Judson Horace, 4,119,246, Cl. 223-52.000.
Eastman Kodak Company: *See—*
Beach, David Easton, 4,119,987, Cl. 354-268.000.
Frank, Lee Fitzpatrick; and Lee, James Kelly, 4,119,979, Cl. 354-50.000.
Kolb, Frederick John, Jr., 4,120,011, Cl. 360-111.000.
Lu, Chen-i, 4,119,743, Cl. 427-44.000.
Metzger, Lenard M.; and Johnson, Robert B., 4,120,008, Cl. 360-70.000.
Muka, Edward; and Glover, Clyde Pershing, 4,119,381, Cl. 356-244.000.
Vachon, Raymond N., 4,119,680, Cl. 260-850.000.
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, 4,119,466, Cl. 96-115.00R.
Williams, Robert Franklin, Jr.; and Lu, Chen-i, 4,119,479, Cl. 156-272.000.
Yoerger, William E., 4,119,460, Cl. 96-1.0PC.
Eberle, William J., to General Battery Corporation. Automated post burn station. 4,119,137, Cl. 164-332.000.
Ebner, Peter R., to Itek Corporation. Phototypesetter lens carriage arrangement. 4,119,976, Cl. 354-5.000.
Eckels, Robert E. Building with passive solar energy conditioning. 4,119,084, Cl. 126-270.000.
Ecker, Ernest L.: *See—*
Larsen, Eric R.; and Ecker, Ernest L., 4,119,413, Cl. 55-71.000.
Eckert, Robert C., to Westvaco Corporation. Process for bleaching wood pulp with ozone in the presence of a cationic surfactant. 4,119,486, Cl. 162-65.000.
Eckstein, William B.: *See—*
Craig, Gregory C.; and Eckstein, William B., 4,120,050, Cl. 366-75.000.
Edwall, Nils Erik Gunnar; and Eklund, Goran Sven. Monocrystalline metal electrode and method of use. 4,119,498, Cl. 204-1.00T.
Edwards, Cyril Kenneth; and Webb, Edward Harry, to Thomas Hunter Limited. Closure caps. 4,119,233, Cl. 215-337.000.
Edwards, Harrison F., to Sunbeam Corporation. Fireplace enclosure and integral heat-exchanger. 4,119,081, Cl. 126-140.000.
Edwards, Michael L.: *See—*
Bambury, Ronald E.; Edwards, Michael L.; and Miller, Laird F., 4,119,775, Cl. 544-28.000.
Edwin Cooper and Company Limited: *See—*
Davis, Bryan Terence; and Crook, Monty Frederick, 4,119,552, Cl. 252-49.600.
Ehrenreich, Leo C., to Carborundum Company, The. Reinforced carbon and graphite articles. 4,119,189, Cl. 192-107.00M.
Eibe, Werner E., to Blaw-Knox Foundry & Mill Machinery, Inc. Closed loop integrated gauge and crown control for rolling mills. 4,118,963, Cl. 72-21.000.
Eichinger, Johann, to Carl Hurth Maschinen- und Zahnradfabrik. Reversing gear in particular for a Z-drive for watercrafts. 4,118,996, Cl. 74-404.000.
Eidschun, Charles Douglas, Jr. Continuous contact plater product. 4,119,499, Cl. 204-15.000.
Eiland, P. Frank: *See—*
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,119,047, Cl. 112-79.0FF.
Ekemar, Sven Karl Gustav; and Fischer, Udo Karl Reinhold, to Sandvik Aktiebolag. Composite body consisting of cemented carbide and cast alloy. 4,119,459, Cl. 75-243.000.
Eklund, Goran Sven: *See—*
Edwall, Nils Erik Gunnar; and Eklund, Goran Sven, 4,119,498, Cl. 204-1.00T.
Elders, Alvin J., to Whirlpool Corporation. Refuse compactor. 4,119,027, Cl. 100-215.000.
Elderton, Peter Platt, to International Telephone and Telegraph Corporation. Fluid sensitive shutdown for well pump. 4,119,865, Cl. 307-118.000.
Electric Power Research Institute, Inc.: *See—*
Rabinowitz, Mario, 4,119,793, Cl. 174-36.000.
Electric Terminal Corporation: *See—*
Blom, Rolland D., 4,119,214, Cl. 214-1.0BD.
Elek, Sandor: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Elekes, Istvan: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Elkins, Carlos D. Method and apparatus for handling liquid samples. 4,119,125, Cl. 141-11.000.
Ellis, Frank: *See—*
Sharp, Douglas Cecil William Thomas; and Ellis, Frank, 4,119,020, Cl. 99-339.000.
Ellis, Peter Manfrid; and Lester, Charles Martin, to Imperial Chemical Industries Limited. Method of reordering fibres in a web. 4,119,447, Cl. 156-73.100.
Eloranta, Vaito K.; and Ruggles, Benjamin C., Jr., to Polaroid Corporation. Variable density ophthalmic device. 4,119,369, Cl. 351-49.000.
El-Sayed, Aziz: *See—*
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.
Elsner, Emil A.; Ameling, Dieter Ch.; Assenmacher, Rolf; and Fuchs, Gerhard, to Korf-Stahl AG. Melting furnace. 4,119,792, Cl. 13-32.000.
Emelyanova, Valentina Mikhailovna: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Emerson, Donald E., to Space-Age Control, Inc. Lever for motorcycle center stand. 4,119,327, Cl. 280-302.000.
Engelhard Minerals & Chemicals Corporation: *See—*
Rogers, William M., 4,119,706, Cl. 423-580.000.
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, to Boehringer Ingelheim GmbH. Bronchospasmolytic 1-(p-amino-phenyl)-2-amino-ethanols-(1) and salts. 4,119,710, Cl. 424-282.000.
English Electric Valve Company Limited: *See—*
Wilcox, David Mark; and Corkhill, Robert Edward, 4,119,880, Cl. 313-348.000.
Enoue, Takasi. Additive to be admixed to cements. 4,119,597, Cl. 260-23.00R.
Enterprise Industrielle de Chaudronnerie: *See—*
Brola, Gabriel, 4,118,934, Cl. 60-647.000.
Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H.: *See—*
Tuson, Samuel, 4,119,145, Cl. 166-339.000.
Epple, Gerhard; Himmele, Walter; and Fliege, Werner, to BASF Aktiengesellschaft. Anthraquinonoid disperse dyes. 4,119,644, Cl. 260-345.90R.
Ernie Samuels, Inc.: *See—*
Samuels, Ernest K., 4,119,123, Cl. 138-122.000.
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, to SKF Industrial Trading & Development Company B.V. Clutch release device. 4,119,187, Cl. 192-98.000.
Erwin, Ransome W., to Austral-Erwin Engineering Company. Heat exchangers and evaporators. 4,119,485, Cl. 159-28.00B.
Esquire, Inc.: *See—*
McReynolds, Glen Harold, Jr., 4,120,023, Cl. 362-16.000.
Essilor International: *See—*
Godot, Jean Marie, 4,118,898, Cl. 51-216.0LP.
Essilor International, Cie Generale d'Optique: *See—*
Mignen, Bernard, 4,118,853, Cl. 29-424.000.
Estes, Bay E., III; and Nedbal, Richard A., to Alliance Manufacturing Company, Inc., The. Sequencing control circuit. 4,119,896, Cl. 318-266.000.
Ettel, Victor Alexander; and Babjak, Juraj, to International Nickel Company, Inc., The. Three phase separation. 4,119,539, Cl. 210-73.00R.
Evans, James M.: *See—*
Woo, James T. K.; and Evans, James M., 4,119,599, Cl. 260-29.40R.
Evers, William J.; and Heinsohn, Howard H., Jr., to International Flavors & Fragrances Inc. α-Oxy(oxo) sulfides and ethers. 4,119,788, Cl. 560-152.000.
Everswick, David N., to United States of America, Army. Projectile in-bore memory system. 4,119,913, Cl. 325-113.000.
Ewig, John F., Jr., to Parker Manufacturing Company. Plastic staple gun. 4,119,258, Cl. 227-132.000.
Extracorporeal Medical Systems, Inc.: *See—*
Meginniss, Stephen Mason, III, 4,119,113, Cl. 137-99.000.
Exxon Production Research Company: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.
Exxon Research & Engineering Co.: *See—*
Baird, William C., Jr.; and Bearden, Roby, Jr., 4,119,528, Cl. 208-108.000.
Hulme, Roger, 4,119,655, Cl. 260-440.000.
Maas, Edward T., Jr.; and Longo, John M., 4,119,559, Cl. 252-301.10R.
O'Farrell, Charles P.; and Serniuk, George E., 4,119,616, Cl. 526-31.000.
Fabiero nee Posadas, Carolina P.: *See—*
Crouch, William B.; Fabiero nee Posadas, Carolina P.; and Robin, Allen M., 4,119,566, Cl. 252-372.000.
Facet Enterprises, Inc.: *See—*
Mower, Michael Lee; Carleton, William Arthur; and Packard, Gary Richard, 4,119,184, Cl. 192-82.00T.
Fafco Incorporated: *See—*
Steed, Michael Halsey, 4,119,334, Cl. 285-236.000.
Fagnoni, Yves: *See—*
Bonnaud, Bernard; and Fagnoni, Yves, 4,119,601, Cl. 260-29.60R.
Falk Corporation, The: *See—*
Phinney, John M., 4,119,185, Cl. 192-.094.
Farber, Sheldon, to NCR Corporation. Vinyl phthalide color formers. 4,119,776, Cl. 542-441.000.
Farid, Samir Yacoub: *See—*
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, 4,119,466, Cl. 96-115.00R.
Fazi, Marco: *See—*
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, 4,118,947, Cl. 62-514.00R.
Fedor, Robert J.; and Ogden, Cameron S., to Gould Inc. NO_x reduction catalyst for internal combustion engine emission control. 4,119,701, Cl. 423-213.200.
Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, to Clairol Incorporated. Composition for coloring hair containing an oxidizing agent and certain quaternary amines. 4,119,399, Cl. 8-10.200.
Felch, Donald E.: *See—*
Peters, Kenneth D.; Veinerman, Elliot; and Felch, Donald E., 4,119,526, Cl. 208-64.000.
Felker, Charles E.: *See—*
Rieffle, Paul F.; and Felker, Charles E., 4,119,335, Cl. 285-337.000.
Fell, Charles M.: *See—*
Boe, Thomas Jerald; Fell, Charles M.; and Jenkins, William Leon, 4,119,023, Cl. 100-2.000.
Fengels, Gerd, to Bruggemann & Brand KG. Fastening hook. 4,118,840, Cl. 24-239.000.
Fergin, Richard L.: *See—*
Neuzil, Richard W.; and Fergin, Richard L., 4,119,678, Cl. 260-677.00A.
Fewster, Sidney: *See—*
Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, 4,119,772, Cl. 429-204.000.
Fialkov, Abram Samoilovich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Fichtel & Sachs AG: *See—*
Steuer, Werner, 4,119,182, Cl. 192-6.00A.
Fidelity Container Corporation: *See—*
Dlugopolski, Joseph, 4,119,265, Cl. 229-31.00R.
Fiechter, Richard E. Vehicle mounted conveyor. 4,119,223, Cl. 214-83.260.
Fiege, Helmut: *See—*
Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, 4,119,671, Cl. 260-600.00R.
Field, Frederick C., Jr.: *See—*
Adams, Dustin Stetson; Field, Frederick C., Jr.; and Layton, James Ronald, 4,118,921, Cl. 57-140.00R.
Fieldcrest Mills, Inc.: *See—*
Puckett, Sandres Alfred, 4,119,049, Cl. 112-266.000.
Filip, Stanislaw Franz; and Miutel, Alexander, to KLF Inventions and Patent Development and Marketing Corporation Ltd. Foamed articles and methods for making same. 4,119,583, Cl. 521-103.000.
Finck, Johan Christiaan Jacobus: *See—*
Uden, Edward; Schreihage, Wilhelm; and Finck, Johan Christiaan Jacobus, 4,120,020, Cl. 361-386.000.
Fine, David H.; Ross, Ronald D., Jr.; and Rounbehler, David P., to Thermo Electron Corporation. Method to measure in vivo N-nitroso compounds. 4,119,402, Cl. 23-230.00B.
Finkelstein, H. Method for slime control. 4,119,537, Cl. 210-64.000.
Fischer, Erhardt; and Richmond, Michael Hugh, to Polysar Limited. Powdered rubber. 4,119,759, Cl. 428-407.000.
Fischer, Janos. Electronic digital watch combined with a computer. 4,120,039, Cl. 364-705.000.
Fischer, Rolf: *See—*
Weitz, Hans-Martin; Fischer, Rolf; and Broecker, Franz Josef, 4,119,665, Cl. 260-561.00A.
Fischer, Udo Karl Reinhold: *See—*
Ekemar, Sven Karl Gustav; and Fischer, Udo Karl Reinhold, 4,119,459, Cl. 75-243.000.
Fisher, Gordon Lloyd; and Huston, Ernest Lee, to International Nickel Company, Inc., The. Electroplating nickel using anodes of flattened nickel forms. 4,119,501, Cl. 204-49.000.
Fishwick, Brian Ribbons: *See—*
Boyd, Violet; Fishwick, Brian Ribbons; and Watson, David John, 4,119,624, Cl. 260-207.100.
Fisk, Bernard C.; and VerSchage, Gerald C., to Xerox Corporation. Programmable controller for controlling reproduction machines. 4,120,034, Cl. 364-518.000.
Fitzgerald, Robert T.: *See—*
Wilkins, Paul E.; Neville, Glenn E.; and Fitzgerald, Robert T., 4,119,039, Cl. 102-214.000.
Fives-Cail Babcock: *See—*
Durinck, Rene, 4,119,692, Cl. 264-71.000.
Flaherty, Kenneth A., to Brown & Williamson Tobacco Corporation. Collapsible package. 4,119,196, Cl. 206-271.000.
Flemming, John Peter Wilfred, to Western Electric Company, Inc. Monitoring the location of a robot hand. 4,119,212, Cl. 214-1.0CM.
Fletchic, Donald K.: *See—*
Morrison, Howard J.; Fletchic, Donald K.; and Baer, Ralph H., 4,119,844, Cl. 250-231.00R.
Fliege, Werner: *See—*
Epple, Gerhard; Himmele, Walter; and Fliege, Werner, 4,119,644, Cl. 260-345.90R.
Flory, Robert Earl: *See—*
Abbott, Liston; Beakley, Guy Ward; and Flory, Robert Earl, 4,120,001, Cl. 358-11.000.
Floyd, Roger M.: *See—*
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,119,263, Cl. 229-17.00B.
Foellner, Donald M. Display system for watches and the like. 4,118,924, Cl. 58-127.00R.
Fogelberg, Mark John, to Borg-Warner Corporation. Automatic four-wheel drive transfer case. 4,119,168, Cl. 180-49.000.

Fogg, Robert K., Jr.; and Staehli, Christopher P., to United States of America, Navy. Stand-aid invalid wheelchair. 4,119,164, Cl. 180-6.500.

Ford Motor Company: *See—*
Stickels, Charles A., 4,119,444, Cl. 148-16.600.
Yen, Chia-Ming; and Schmatz, Duane J., 4,119,262, Cl. 228-206.000.

Forss, Bertil: *See—*
Hafner, Emanuel; and Forss, Bertil, 4,119,804, Cl. 179-15.0AL.

Foster, T. Kenneth: *See—*
Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., 4,119,022, Cl. 99-532.000.

Fotiu, Eustace: *See—*
Goldner, Tibor G.; and Fotiu, Eustace, 4,119,712, Cl. 424-63.000.

Fowle, Norman F.; Madden, William M.; and Marshall, James F., to United Technologies Corporation. Flow diverter. 4,119,274, Cl. 239-265.290.

Fox, Edward Coley, to RCA Corporation. Signal defect detection and compensation with signal de-emphasis. 4,119,812, Cl. 179-100.40D.

Foxboro Company, The: *See—*
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., 4,118,977, Cl. 73-141.00R.

Fraioli, Anthony V.: *See—*
Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., 4,119,513, Cl. 204-195.00S.

Frank, Lee Fitzpatrick; and Lee, James Kelly, to Eastman Kodak Company. Timed piezoelectric shutter control for cameras. 4,119,979, Cl. 354-50.000.

Frank, Richard: *See—*
Kotschak, Otto; and Frank, Richard, 4,119,234, Cl. 220-2.10R.

Franke, Kurt, to Siemens Aktiengesellschaft. X-ray diagnostic apparatus for producing series exposures. 4,119,856, Cl. 250-402.000.

Frankfort, Eric J.; and Terrett, David Stuart, to American District Telegraph Company. Central station system including secondary communication path established through commercial telephone network. 4,119,815, Cl. 179-175.30S.

Franklin Enterprises, Inc.: *See—*
Lohning, Franklin M., 4,120,051, Cl. 366-142.000.

Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., to Greene Line Manufacturing Corp. Sheet feeding apparatus. 4,119,220, Cl. 214-8.50A.

Freeman, Gerald C.; and Mahoney, James F., to Pitney-Bowes, Inc. System and apparatus for the orientation and bidirectional feed of indicia bearing mail. 4,119,194, Cl. 198-400.000.

Freese, Courtland F. H., to Globe Manufacturing Company. Suspender ends. 4,118,804, Cl. 2-340.000.

Freiberg, James M. Putter cover. 4,119,129, Cl. 150-52.00G.

French Oil Mill Machinery Company, The: *See—*
Craig, Gregory C.; and Eckstein, William B., 4,120,050, Cl. 366-75.000.

Fresnel, Jacques, to Sleever. Thermoplastic wrapping machine. 4,118,916, Cl. 53-292.000.

Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and by Gluskin, Boris Abramovich, administrator. Carbon-graphite material for brushes of electric machines and method for preparing same. 4,119,572, Cl. 252-506.000.

Frishman, Leslie O.; and Nelson, Kerry S., to Minnesota Mining and Manufacturing Company. Electrographic apparatus and method for using arsenic selenide as the photoconductor. 4,119,373, Cl. 355-3.00R.

Froehlig, Rudolph A., to Modern Album and Finishing Co., Inc. Phonograph record album or similar item. 4,119,198, Cl. 206-312.000.

Froelich, Mark Stayton. Method for treating well bores and apparatus therefor. 4,119,150, Cl. 166-276.000.

Frye, Guenter, to Rheinmetall GmbH. Double-feed sprocket arrangement for munition changing. 4,119,012, Cl. 89-33.0SF.

Fuchs, Gerhard: *See—*
Elsner, Emil A.; Ameling, Dieter Ch.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,119,792, Cl. 13-32.000.

Fugol, Valery Alexeevich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Fuhrman, James L., to Rockwell International Corporation. Memory with simultaneous sequential and random address modes. 4,120,048, Cl. 365-239.000.

Fuji Electric Co., Ltd.: *See—*
Miyoshi, Noriomi; and Tsuruoka, Michihiko, 4,118,993, Cl. 74-37.000.

Fuji Photo Film Co., Ltd.: *See—*
Kondo, Toshihiro, 4,119,978, Cl. 354-38.000.
Oishi, Kengo, 4,119,282, Cl. 242-199.000.
Takahashi, Yutaka; Hakamata, Yoshio; and Konno, Masamitu, 4,119,952, Cl. 340-309.100.
Usui, Hideo; Ishige, Sadao; and Saeki, Keiso, 4,119,777, Cl. 544-6.000.

Fujii, Hideo: *See—*
Nishi, Yusaku; and Fujii, Hideo, 4,119,480, Cl. 156-272.000.

Fujii, Toshihiko, to Nissan Motor Company, Ltd. Method of press-forming corrugated paperboard as substrate of curved trim board. 4,119,451, Cl. 156-211.000.

Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, to Kubata Ltd. Clutch. 4,119,183, Cl. 192-24.000.

Fujishima, Minoru: *See—*
Nishizawa, Hiroshi; Tanaka, Shigeyoshi; and Fujishima, Minoru, 4,119,679, Cl. 260-835.000.

Fujitsu Limited: *See—*
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.

Fujiwara, Shinobu, to TDK Electronics Co., Ltd. Ceramic dielectric composition containing alkali metal oxide. 4,119,554, Cl. 252-63.200.

Fujiwara, Yasuo: *See—*
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,119,492, Cl. 195-28.0VB.

Fulkerson, David E., to Honeywell Inc. DOT-AND logic gate device including multiemitter transistor. 4,119,997, Cl. 357-36.000.

Fuller, Robert T.; and Sanders, Robert J. Means for displaying articles in shingled relationship. 4,119,207, Cl. 211-45.000.

Funahashi, Takaji. Endless printing belt for rotary rubber stamp. 4,119,030, Cl. 101-111.000.

Funayama, Toshio: *See—*
Hoshi, Hirohiko; Funayama, Toshio; Ishiguro, Kazuhiko; and Umehara, Hidetomo, 4,119,061, Cl. 123-3.000.

Funke, Peter, to Gebruder Funke. Unitary mounted air-pressure pump and liquid outlet. 4,119,244, Cl. 222-400.800.

Furuta, Kazuhisa, to Bridgestone Liquefied Gas Co. Ltd. Cryogenic liquefied gas tank of the membrane type. 4,119,241, Cl. 220-439.000.

Fusco, Robert A., to General Electric Company. Lubricated mandrel for a finning machine. 4,118,964, Cl. 72-43.000.

Futamase, Tsuyoshi: *See—*
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.

Futters (London) Limited: *See—*
Jackson, Ewart William, 4,118,966, Cl. 72-114.000.

G. D. Searle & Co.: *See—*
Ray, Richard E., 4,119,638, Cl. 260-326.12A.

G. Rau: *See—*
Stoeckel, Dieter, 4,119,260, Cl. 228-111.000.

Gadaev, Anatoly Yokovlevich: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.

Gaertner, Van R.; and Hamm, Philip C., to Monsanto Company. N-(2-hydroxyalkyl) derivatives of N-phosphonomethylglycine and herbicidal compositions containing same. 4,119,430, Cl. 71-86.000.

GAF Corporation: *See—*
Hort, Eugene V., 4,119,790, Cl. 568-855.000.
Schneider, Louis; and Graham, David E., 4,119,725, Cl. 424-274.000.

Gagliano, Stephen J.: *See—*
Pinzone, Joseph A.; Pinzone, Anthony J.; and Gagliano, Stephen J., 4,119,107, Cl. 132-79.00G.

Gakken Co., Ltd. Kabushiki Kaisha Gakushu Kenkyusha: *See—*
Noguchi, Ichiro; Hayashi, Chiaki; and Muroga, Hisashi, 4,119,875, Cl. 310-248.000.

Galanti, Joseph Anthony: *See—*
Howland, Robert Franklin; Jasovsky, George Anthony; and Galanti, Joseph Anthony, 4,119,736, Cl. 426-386.000.

Gallo, Luigi C., to Ampex Corporation. Apparatus for inserting a digital sync word, phase-synchronized to the color subcarrier, in place of the horizontal sync signal. 4,119,999, Cl. 358-4.000.

Gancarz, Robert Martin, Sr. Method of recovering tin from tin dross. 4,119,136, Cl. 164-121.000.

Garlock Inc: *See—*
Bainard, Dean R.; and Denton, Dennis N., 4,118,856, Cl. 29-511.000.

Garlock Inc.: *See—*
Denton, Dennis N.; and Boyd, David G., 4,119,324, Cl. 277-134.000.

Garon, Gilles; and Henault, Andre. Microwave intrusion sensing units and antenna therefor. 4,119,951, Cl. 340-552.000.

Gaughan, Edmund J., to Stauffer Chemical Company. Herbicidal N-(dialkylcarbamyl)-N-trifluoromethyl-phenylcarbamyl alkyl disulfides. 4,119,432, Cl. 71-98.000.

Gaughan, John C.: *See—*
Membrino, Robert J.; and Gaughan, John C., 4,120,028, Cl. 364-200.000.

Gaylord, Richard S.: *See—*
Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., 4,118,909, Cl. 52-196.000.

Geary, David F.: *See—*
Lord, Richard G.; Bussjager, Rudy C.; and Geary, David F., 4,118,944, Cl. 62-98.000.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H.: *See—*
Sander, Rolf; and Oberste-Beulmann, Klaus, 4,119,350, Cl. 299-87.000.

Gebruder Funke: *See—*
Funke, Peter, 4,119,244, Cl. 222-400.800.

Gebruder Welger: *See—*
Sacht, Hans Otto, 4,119,026, Cl. 100-89.000.

Gee, Ted F., to General Motors Corporation. Radially removable turbine vanes. 4,119,389, Cl. 415-189.000.

General Battery Corporation: *See—*
Eberle, William J., 4,119,137, Cl. 164-332.000.

General Cable Corporation: *See—*
Small, Robert F.; and Meredith, Joel B., 4,118,907, Cl. 52-115.000.

General Electric Company: *See—*
Arendt, Ronald H.; Huseby, Irvin C.; and Borom, Marcus P., 4,119,437, Cl. 134-3.000.
Dakin, James T.; and Darrow, Kenneth A., 4,119,390, Cl. 416-96.00R.
Devine, Thomas M., Jr., 4,119,261, Cl. 228-113.000.
Devine, Thomas M., Jr., 4,119,879, Cl. 313-330.000.
Fusco, Robert A., 4,118,964, Cl. 72-43.000.
Holub, Fred Frank; and Wilson, Phillip Steven, 4,119,603, Cl. 260-32.60R.
Leclair, Robert A., 4,118,936, Cl. 60-720.000.
Matson, Stephen L., 4,119,408, Cl. 422-169.000.
Moore, Warren F., 4,119,458, Cl. 75-170.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,475, Cl. 106-73.500.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,689, Cl. 264-65.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,690, Cl. 264-65.000.
Shelley, Peter Stephen; Love, William Darrell; and Stone, Barry Newell, 4,119,853, Cl. 250-385.000.
Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., 4,119,358, Cl. 339-111.000.

General Engineering & Applied Research, Inc.: *See—*
Lieber, Albert J., 4,120,002, Cl. 358-111.000.

General Foods Corporation: *See—*
Howland, Robert Franklin; Jasovsky, George Anthony; and Galanti, Joseph Anthony, 4,119,736, Cl. 426-386.000.

General Instrument Corporation: *See—*
Atkin, Michael Frank, 4,119,808, Cl. 179-84.0VF.

General Motors Corporation: *See—*
Aldrich, William L.; and Sawruk, John M., 4,119,067, Cl. 123-52.0MB.
Ayotte, Richard F.; and Jones, Trevor O., 4,119,166, Cl. 180-14.00R.
Gee, Ted F., 4,119,389, Cl. 415-189.000.
Hayden, Daniel B.; Smith, George W.; and Kaplit, Michael, 4,119,842, Cl. 250-201.000.
Hegedus, Louis; and Summers, Jack C., 4,119,571, Cl. 252-466.0PT.
Hile, John W., 4,119,440, Cl. 148-1.500.
Iobst, Stanley A.; and Cox, Howard W., 4,119,594, Cl. 260-18.0TN.
Klomp, Edward D., 4,119,064, Cl. 123-30.00C.
Lenox, Clayton R., 4,119,827, Cl. 219-98.000.

Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich. High voltage electrical network with DC ice-melting device and current return through ground. 4,119,866, Cl. 307-147.000.

Genuit, Luther L. Electronic score-keeper for table tennis. 4,119,838, Cl. 235-92.0GA.

George, Lyndell J. C.; and Shelly, Robert S., to AGL Corporation. Self-leveling construction alignment laser. 4,119,382, Cl. 356-249.000.

Georgi, Hans: *See—*
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.

Gerber Products Company: *See—*
Maher, Robert H.; and Kraley, Lee E., 4,119,735, Cl. 426-264.000.

Gergen, William P.; and Davison, Sol, to Shell Oil Company. Multicomponent polyester- block copolymer- polymer blends. 4,119,607, Cl. 260-40.00R.

German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich. Electrode structure for an electric discharge device. 4,119,876, Cl. 313-231.400.

Gershenovich, Abram Iosifovich: *See—*
Balakirev, Efim Stepanovich; Bogomolova, Galina Ilinichna; Gershenovich, Abram Iosifovich; and Gruzdeva, Irina Viktorovna, 4,119,661, Cl. 260-513.00R.

Gertsik, Efim Mikhailovich: *See—*
Nabiullin, Faat Khatovich; Gertsik, Efim Mikhailovich; Rodionov, Jury Timofeevich; and Rabinovich, Vyacheslav Anatolievich, 4,119,126, Cl. 141-100.000.

Gesellschaft fur Kernforschung m.b.H.: *See—*
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, 4,119,561, Cl. 252-301.10W.

Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen mbH: *See—*
Zeh, Horst, 4,118,987, Cl. 73-422.00R.

Gewerkschaft Eisenhutte Westfalia: *See—*
Merten, Gerhard; and Schlusener, Horst, 4,119,347, Cl. 299-34.000.
Unger, Eberhard; and Von Schenk, Wolf-Rudiger, 4,118,938, Cl. 405-145.000.

Giddings, Robert A.: *See—*
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,475, Cl. 106-73.500.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,689, Cl. 264-65.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,690, Cl. 264-65.000.

Gies, Jakob. Stand for releasably locking a pole-like member in upright position. 4,119,290, Cl. 248-523.000.

Gifford, Bruce M.: *See—*
Owen, A. B.; Gifford, Bruce M.; Bahl, Horst H.; and Akins, Lewis F., 4,118,850, Cl. 29-243.520.

Gil, Jose-Luis. Methods of reduction of bone fractures. 4,119,092, Cl. 128-92.00D.

Gill, R. A.: *See—*
Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., 4,119,600, Cl. 260-29.6RW.

Gilliland, Malcolm T. Remote welding control system. 4,119,830, Cl. 219-132.000.

Girardi, Frank D., to Port-A-Phone, Inc. Radio-telephone interconnection system. 4,119,800, Cl. 179-2.0EA.

Gisbourne, Bryan James, to Scapa-Porritt Limited. Papermakers fabrics. 4,119,754, Cl. 428-255.000.

Gitter, John E. Louvered window cleaner. 4,118,822, Cl. 15-121.000.

Glasrock Products, Inc.: *See—*
Midorikawa, Yoshio, 4,119,756, Cl. 428-295.000.

Globe Manufacturing Company: *See—*
Freese, Courtland F. H., 4,118,804, Cl. 2-340.000.

Glover, Clyde Pershing: *See—*
Muka, Edward; and Glover, Clyde Pershing, 4,119,381, Cl. 356-244.000.

Gluskin, Abram Yakovlevich, deceased: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Gluskin, Boris Abramovich, administrator: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Gocho, Choichi, to Tokyo Shibaura Electric Company, Ltd. Starting apparatus for gas turbine-generator mounted on electric motor driven motorcar. 4,119,861, Cl. 290-13.000.

Gocho, Choichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Control apparatus of electric motor cars. 4,119,862, Cl. 290-17.000.

Gocht, Ronald: *See—*
Thaler, Michael; and Gocht, Ronald, 4,120,049, Cl. 365-230.000.

Godot, Jean Marie, to Essilor International. Mounting block for mounting a lens in a lens trimming and bevelling machine. 4,118,898, Cl. 51-216.0LP.

Goeppner, Ronald R.; Kuehne, William M.; and Russell, Timothy D., to Container Corporation of America. Apparatus for detecting leaks in composite packages. 4,118,972, Cl. 73-40.000.

Goharel, Maurice: *See—*
Auroy, Michel; Goharel, Maurice; and Zoulalian, Jacques, 4,119,645, Cl. 260-346.400.

Goldfarb, Adolph E.; and Benkoe, Erwin. Competitive action playing game with erratically movable playing piece. 4,119,315, Cl. 273-85.00F.

Goldfarb, Adolph E.; and Benkoe, Erwin. Electrical board game apparatus. 4,119,319, Cl. 273-237.000.

Goldfischer, Lester I., to Singer Company, The. Microwave correlator. 4,119,968, Cl. 343-100.0ME.

Goldmann, Gerd, to Siemens Aktiengesellschaft. Ionographic recording of X-ray images. 4,119,848, Cl. 250-315.00A.

Goldner, Tibor G.; and Fotiu, Eustace, to Revlon, Inc. Makeup foundations. 4,119,712, Cl. 424-63.000.

Goldschmidt, Rolf; Hansgen, Klaus; and Hiersig, Heinz M., to Mannesmann Aktiengesellschaft. Method of making gear and shaft or hub assemblies. 4,118,848, Cl. 29-159.200.

Goldstein, Robert H.; and Stahl, Robert M., to Bio-Dynamics, Inc. Cuvette with reagent release means. 4,119,407, Cl. 422-58.000.

Golner, Jerold Julius; Miller, William Joseph; and Strout, Russell Brown, to Borden, Inc. Container for dispensing film. 4,119,251, Cl. 225-20.000.

Gonda, Tsunemi, to Nippon Kogaku K.K. Constant high voltage generating circuit. 4,119,906, Cl. 323-22.00T.

Goodman, Floyd G. Integral patient-limb surgical drape system. 4,119,093, Cl. 128-132.00D.

Goodyear Tire & Rubber Company, The: *See—*
Hollingshead, William Shepherd; and Nowak, Edward Norbert, 4,119,791, Cl. 568-768.000.

Gooley, Cornelius Leonard. Fluid measurement. 4,119,860, Cl. 250-577.000.

Gordon, Eric M., to E. R. Squibb & Sons, Inc. Thiooxime cephalosporin derivatives. 4,119,778, Cl. 544-26.000.

Gordon, Sidney; Wilkins, John Thomas; and Mayo, Haydn Frank, to R. G. Dixon & Company Limited. Floor treating machines. 4,118,819, Cl. 15-49.00R.

Gorelin, Evgeny Vasilievich: *See—*
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.

Gormley, Edward J.: *See—*
McSherry, Thomas; and Gormley, Edward J., 4,118,910, Cl. 52-699.000.

Gorsky, Peter, to Raymond Lee Organization, Inc., The, a part interest. Fish bite indicator. 4,118,882, Cl. 43-17.000.

Goto, Nobuo: *See—*
Tanaka, Kazumitsu; and Goto, Nobuo, 4,119,854, Cl. 250-397.000.

Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, to E. MERCK, Patentabteilung. Penicillins and their preparation. 4,119,631, Cl. 260-295.00A.

Goudey, Clifford, to Massachusetts Institute of Technology. Bollard-hanger and coupler system. 4,119,300, Cl. 254-192.000.

Gould, Edson B., III: *See—*
Kincheloe, Dan D.; Gregory, Elmo M.; Todd, Carl David; and Gould, Edson B., III, 4,120,031, Cl. 364-464.000.

Gould Inc.: *See—*
Fedor, Robert J.; and Ogden, Cameron S., 4,119,701, Cl. 423-213.200.
Scapes, John N., 4,119,296, Cl. 251-210.000.

Gould, Russell J.; and Adams, Karl G., to Signode Corporation. Strapping joint and method and apparatus for forming same. 4,119,449, Cl. 156-73.500.

Governale, Bernard C., to Peachtree Doors, Inc. Liner for intersecting cross bore and edge bore of foam-filled metal skinned door. 4,118,895, Cl. 49-503.000.

Grable, Ronald C., to W. R. Grace & Co. Distributor spring for use in a magnetic sensor. 4,119,075, Cl. 123-146.50A.

Graham, Craig W., Jr.: *See—*
Moore, Donald K.; Beaman, George R.; Hightower, John D.; and Graham, Craig W., Jr., 4,119,941, Cl. 340-5.00R.

Graham, David E.: *See—*
Schneider, Louis; and Graham, David E., 4,119,725, Cl. 424-274.000.

Gralnik, Sidney. Two piece finger ring. 4,118,948, Cl. 63-15.000.

Granges Essem Aktiebolag: *See—*
Paitula, Hannu Olli; and Larsson, Roland Axel, 4,119,281, Cl. 242-107.000.

Gray, George William: *See—*
Coates, David; and Gray, George William, 4,119,558, Cl. 252-299.000.

Gray, Michael David; and Kimber, Geoffrey Michael, to Coal Industry (Patents) Limited. Manufacture of coke. 4,119,525, Cl. 208-8.000.

Great Plains Bag Corp.: *See—*
Segura, Daniel A., 4,119,268, Cl. 229-54.00R.

Greenaway, David Leslie, to Landis & Gyr. Multilayer identification card. 4,119,361, Cl. 350-1.100.

Greene, Jack C., to United States of America, Navy. Pulsed repeater amplifier. 4,119,920, Cl. 330-43.000.

Greene, Jerrold W.: *See—*
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,119,220, Cl. 214-8.50A.

Greene Line Manufacturing Corp.: *See—*
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,119,220, Cl. 214-8.50A.

Greenwald, Harry; and Lier, Pierre, to Walter Kidde & Company, Inc. Access door locking mechanism for a coin operated apparatus. 4,119,237, Cl. 220-210.000.

Gregory, Elmo M.: *See—*
Kincheloe, Dan D.; Gregory, Elmo M.; Todd, Carl David; and Gould, Edson B., III, 4,120,031, Cl. 364-464.000.

Greskovich, Charles D.: *See—*
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,475, Cl. 106-73.500.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,689, Cl. 264-65.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,690, Cl. 264-65.000.

Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, to U.S. Philips Corporation. Electric lamp having a cap plate. 4,119,877, Cl. 313-318.000.

Grier, Nathaniel; and Witzel, Bruce E., to Merck & Co., Inc. 1,3,5-s-Hexahydrotrisubstituted triazines. 4,119,779, Cl. 544-215.000.

Griffin, Robert M.: *See—*
Audesse, Emery G.; Griffin, Robert M.; and Oberlin, Max E., 4,119,832, Cl. 219-270.000.

Grishin, Boris Vasilievich. Method of producing gas developing agent for cellular concretes. 4,119,476, Cl. 106-87.000.

Grohoski, Edward Gregory, to Hartford Special Machinery Company, The. Die mounting assembly for a planetary work forming machine. 4,118,965, Cl. 72-102.000.

Gronner, Alfred Douglas: *See—*
Simon, David Julian; Gronner, Alfred Douglas; and Stella, Carl Cono, 4,119,958, Cl. 340-347.0SY.

Groom, James S., to Package Machinery Company. Apparatus for mixing and dispensing fast setting plastic material into a mold. 4,119,304, Cl. 366-189.000.

Grossbard, Henry. Brilliantized step cut stone. 4,118,949, Cl. 63-32.000.

Grossbard, Henry. Brilliantized step cut stone with faceted crown. 4,118,950, Cl. 63-32.000.

Groupement pour les Activites Atomiques et Avancees: *See—*
Carbonnel, Henri; and Chaminade, Francois, 4,119,469, Cl. 106-40.00R.

Grouwinkel, G. Franklin: *See—*
Jacobson, Michael D.; and Grouwinkel, G. Franklin, 4,118,930, Cl. 60-266.000.

Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., to Philip Morris, Incorporated. Flavorant-release resin compositions. 4,119,106, Cl. 131-17.00R.

Grumman Aerospace Corporation: *See—*
Knowles, Gregory W.; Sangesland, Odd E.; Vroom, Henry J.; and Madey, Robert W., 4,119,085, Cl. 126-271.000.

Grund, Norbert: *See—*
Hansen, Guenter; Kaack, Hermann; and Grund, Norbert, 4,119,621, Cl. 260-158.000.

Grunewald, Paul: *See—*
Seitz, Charles Lewis; and Grunewald, Paul, 4,119,954, Cl. 340-324.0AD.

Gruppo Lepetit S.p.A.: *See—*
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.

Gruzdeva, Irina Viktorovna: *See—*
Balakirev, Efim Stepanovich; Bogomolova, Galina Ilinichna; Gershenovich, Abram Iosifovich; and Gruzdeva, Irina Viktorovna, 4,119,661, Cl. 260-513.00R.

GTE Sylvania Incorporated: *See—*
Audesse, Emery G.; Griffin, Robert M.; and Oberlin, Max E., 4,119,832, Cl. 219-270.000.
Newell, P. Bruce; and Morris, James C., 4,119,888, Cl. 315-205.000.

Guenon, Jean-Pierre; and Verdenne, Serge J. C., to Sperry Rand Corporation. Hillside bale wagon. 4,119,218, Cl. 214-6.00B.

Gulf Oil Corporation: *See—*
Albulescu, Peter; and McMahon, Joseph F., 4,119,349, Cl. 299-2.000.

Gunther, Albert W. Snubbing apparatus. 4,119,297, Cl. 254-29.00R.

Gusev, Andrei Nikolaevich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Gutman, Arnold D., to Stauffer Chemical Company. Certain diaryldithiophosphorodiamidates and their use as biocides. 4,119,716, Cl. 424-220.000.

Gutman, David P.: *See—*
Addy, Tralance O.; and Gutman, David P., 4,118,832, Cl. 19-304.000.

Gutos Metallschliessenfabrik Bader & Hoch KG: *See—*
Hoch, Fritz, 4,118,837, Cl. 24-75.000.

Guzowski, Kenneth A.: *See—*
Blumenberg, Horst H.; and Guzowski, Kenneth A., 4,119,884, Cl. 313-417.000.

H & S Industries, Inc.: *See—*
Hobson, John A.; and Schilling, Paul K., 4,119,757, Cl. 428-311.000.

Haas, Ernst; Platzoeder, Karl; and Schnoeller, Manfred, to Siemens Aktiengesellschaft. Method for the production of n-doped silicon with a dish-shaped profile of specific resistance in a radial direction. 4,119,441, Cl. 148-1.500.

Haas, Hans: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.

Hackstein, Karl-Gerhard: *See—*
Kadner, Martin; Hackstein, Karl-Gerhard; and Spener, Gerhard, 4,119,563, Cl. 252-301.10S.

Hafner, Emanuel; and Forss, Bertil, to Hasler AG. Open loop system for transmitting digital information. 4,119,804, Cl. 179-15.0AL.

Hafner, Hermann; and Steiper, Otto, to Martin Wendel KG. Automatic, continuously operable bag opening apparatus. 4,119,227, Cl. 214-305.000.

Hagelueken, Hubert P.: *See—*
Walther, Carl Kurt; Walther, Henning D.; Hagelueken, Hubert P.; and Temme, Karl, 4,118,896, Cl. 51-163.200.

Haggar Company: *See—*
Off, Joseph W. A.; and Early, Judson Horace, 4,119,246, Cl. 223-52.000.

Haglund, Stephen A., to Honeywell Inc. Low battery voltage detector. 4,119,904, Cl. 320-48.000.

Hakamata, Yoshio: *See—*
Takahashi, Yutaka; Hakamata, Yoshio; and Konno, Masamitu, 4,119,952, Cl. 340-309.100.

Haker, Gerd. Mould for making and holding a working model of a jaw impression for the manufacture of dental prostheses. 4,119,292, Cl. 249-54.000.

Hall, Albert Mangold: *See—*
Roach, Donald Brian; Van Echo, John Andrew; and Hall, Albert Mangold, 4,119,456, Cl. 75-122.000.

Hall, Charles M.; and Wright, John B., to Upjohn Company, The. 3'Lower alkylcarbonyl oxanilic acid esters. 4,119,783, Cl. 560-43.000.

Hall, David B.: *See—*
Shackleford, William L.; Winter, Donald C.; and Hall, David B., 4,119,929, Cl. 331-94.50M.

Hall, John B.: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.

Hall, Wilbur L.: *See—*
Wu, Ching H.; Brown, Alfred; and Hall, Wilbur L., 4,119,149, Cl. 166-266.000.

Haller, Jack R., to J. R. Haller, Ltd. Inc. Electrostatic coating-dispensing apparatus. 4,120,015, Cl. 361-227.000.

Hamaker, Ralph A., to Xerox Corporation. Sheet stripping apparatus. 4,119,307, Cl. 271-174.000.

Hamaker, Ralph A., to Xerox Corporation. Sheet stripping apparatus. 4,119,308, Cl. 271-174.000.

Hamamura, Tadashi: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.

Hamm, Philip C.: *See—*
Gaertner, Van R.; and Hamm, Philip C., 4,119,430, Cl. 71-86.000.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,119,715, Cl. 424-216.000.

Hansen, Franklin A.: *See—*
Shaw, Kenneth R.; and Hansen, Franklin A., 4,119,236, Cl. 220-89.00A.

Hansen, Guenter; Kaack, Hermann; and Grund, Norbert, to BASF Aktiengesellschaft. Azo dyes having a benzoisothiazolyl diazo component. 4,119,621, Cl. 260-158.000.

Hansgen, Klaus: *See—*
Goldschmidt, Rolf; Hansgen, Klaus; and Hiersig, Heinz M., 4,118,848, Cl. 29-159.200.

Hanson, Horacio Lou. Article carrier. 4,119,249, Cl. 224-26.00R.

Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, to Showa Highpolymer Co., Ltd. Curable resinous composition comprising an unsaturated cycloacetal compound and a polythiol compound. 4,119,617, Cl. 528-360.000.

Happel, Robert, to Daimler-Benz Aktiengesellschaft. Internal combustion engine. 4,119,066, Cl. 123-32.0SP.

Hara, Haruo: *See—*
Nozaki, Hiromi; and Hara, Haruo, 4,118,974, Cl. 73-61.400.

Harayda, George Michael, to RCA Corporation. Data encoding keyboard. 4,120,044, Cl. 364-900.000.

Harazoe, Yoshiaki; and Kurakami, Shigeru, to Kabushiki Kaisha Komatsu Seisakusho. Monitor system for construction vehicles. 4,119,943, Cl. 340-52.00F.

Harben, Grover S., Jr., to Stork-Gamco, Inc. Opening cut machine. 4,118,829, Cl. 17-11.000.

Hardtmann, Goetz E., to Sandoz, Inc. Unsaturated esters of 4-hydroxy-2-quinolinone-3-carboxylic acids and salts thereof. 4,119,720, Cl. 424-258.000.

Hargis, Robert L., to Aluminum Company of America. Non-wettable barrier to prevent conduction of electrical current by molten salt film. 4,119,504, Cl. 204-64.00R.

Harless, Friedrich, to Siemens Aktiengesellschaft. Hearing aid with adjustable frequency response. 4,119,814, Cl. 179-107.0FD.

Harnischfeger Corporation: *See—*
Wolfe, Roger M., 4,119,340, Cl. 296-137.00B.

Harris, Edward Bruce: *See—*
Hodakowski, Leonard Edward; Osborn, Clairborn Lee; and Harris, Edward Bruce, 4,119,640, Cl. 260-340.700.

Harris, Richard D.; Smith, Franklin G.; and Moshofsky, Jerome F., to R. D. Bussard & Son, Inc. Elastic fastener. 4,118,835, Cl. 24-73.0MC.

Harsco Corporation: *See—*
Burnham, Peter B., 4,118,817, Cl. 14-71.300.

Hartford Special Machinery Company, The: *See—*
Grohoski, Edward Gregory, 4,118,965, Cl. 72-102.000.

Hartigan, Richard Joseph, Jr., to Albany International Corp. Process for spinning poly (ethylene oxide) monofilament. 4,119,693, Cl. 264-178.00F.

Hartnagel, Hans Ludwig; and Bayraktaroglu, Burhan, to National Research Development Corporation. GaAs mosfet. 4,119,993, Cl. 357-23.000.

Hartung, Stephan; and Jaksch, Erhard, to Jenoptik Jena G.m.b.H. Device for positioning an object. 4,118,869, Cl. 33-174.0TA.

Hartung, Willy: *See—*
Alenrot, Lennart; Hartung, Willy; Lund, Torbjorn; and Aberg, Ulf, 4,119,421, Cl. 65-14.000.

Hase, Akira: *See—*
Aoki, Yutaka; Hase, Akira; Ito, Jiro; and Nagai, Hisomu, 4,119,409, Cl. 44-1.00R.

Hase, Takashi: *See—*
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.

Hashimoto, Masaru, to Tokyo Shibaura Electric Company, Ltd. Constant current circuit. 4,119,869, Cl. 307-296.00R.

Hashimoto, Yukio: *See—*
Morokawa, Shigeru; and Hashimoto, Yukio, 4,119,867, Cl. 307-225.00C.

Hasler AG: *See—*
Hafner, Emanuel; and Forss, Bertil, 4,119,804, Cl. 179-15.0AL.

Hass, Jurgen, to Daimler-Benz Aktiengesellschaft. Internal combustion engine with dry sump lubrication. 4,119,178, Cl. 184-1.500.

Hastings, Dawson W.: *See—*
Wheeler, Keith A.; and Hastings, Dawson W., 4,119,156, Cl. 172-386.000.

Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, to Central Glass Co., Ltd.; and Kawasaki Jukogyo Kabushiki Kaisha. Method of recovering heat of combustion waste gas arising from glass tank furnace. 4,119,395, Cl. 431-11.000.

Hattori, Kyo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculating device in an internal combustion engine. 4,119,071, Cl. 123-119.00A.

Hattori, Masumi: *See—*
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.

Hayakawa, Masao; and Nomura, Masahiro, to Sharp Kabushiki Kaisha. Semiconductor device for use in an electronic apparatus having a plurality of circuit boards. 4,120,041, Cl. 364-712.000.

Hayakawa, Wataru: *See—*
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.

Hayashi, Chiaki: *See—*
Noguchi, Ichiro; Hayashi, Chiaki; and Muroga, Hisashi, 4,119,875, Cl. 310-248.000.

Hayashi, Kazuo; and Kamijo, Ken, to Nissan Motor Company, Ltd. Electrostatic dust precipitator. 4,119,415, Cl. 55-124.000.

Hayashi, Kazuo; and Kamijo, Ken, to Nissan Motor Company, Ltd. Electrostatic precipitator. 4,119,416, Cl. 55-136.000.

Hayashi, Kiyoshi, to Shin Shirasuna Electric Corp. Method and apparatus for detecting whether phase difference between two signals is constant. 4,119,910, Cl. 324-83.00R.

Hayashi, Kosei: *See—*
Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, 4,118,892, Cl. 47-66.000.

Hayashi, Minoru; and Kishi, Kazuo, to Daicel Ltd. Rocket motor comprising combustible case, nozzle, and fins. 4,119,036, Cl. 102-49.300.

Hayashida, Yukio: *See—*
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, 4,119,542, Cl. 210-360.00A.

Hayden, Daniel B.; Smith, George W.; and Kaplit, Michael, to General Motors Corporation. Heater control system for liquid crystal device. 4,119,842, Cl. 250-201.000.

Hayes, John C.; and Pollitzer, Ernest L., to UOP Inc. Dehydrocyclization with an acidic multimetallic catalytic composite. 4,119,529, Cl. 208-139.000.

Hayes, William F.: *See—*
Tucker, Helen G.; Tanney, John W.; and Hayes, William F., 4,118,973, Cl. 73-55.000.

Hazard, James E., to Scott Paper Company. Pack separation and transfer apparatus. 4,119,221, Cl. 214-8.50A.

Hazemeijer B.V.: *See—*
Hilderink, Johannes H. L. A., 4,119,820, Cl. 200-153.0SC.

Hazen Research, Inc.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,119,410, Cl. 44-1.00R.

Head, Dale R., to Precision, Inc. Programmable alternating current switch. 4,119,905, Cl. 323-21.000.

Hebden, Dennis: *See—*
Anderson, John Alfred; and Hebden, Dennis, 4,119,411, Cl. 48-62.00R.

Heckmaier, Manfred: *See—*
Loos, Herbert; Heckmaier, Manfred; and Reichert, Gerhard, 4,119,014, Cl. 90-1.60R.

Heeres, Jan, to Janssen Pharmaceutica N.V. 2-Aryl-4-aryloxymethyl-1,3-dioxolanes. 4,119,641, Cl. 260-340.90R.

Hegedus, Louis; and Summers, Jack C., to General Motors Corporation. Pellet type oxidation catalyst. 4,119,571, Cl. 252-466.0PT.

Heian, Glenn A., to Allis-Chalmers Corporation. Pan agglomeration with mechanical pellet classification. 4,119,393, Cl. 425-222.000.

Heiba, El Ahmadi I.; and Dessau, Ralph M., to Mobil Oil Corporation. Hexahydrobenzofuranone compounds. 4,119,646, Cl. 260-346.220.

Heimburger, Arthur Sherman. Vehicle undercarriage air deflector. 4,119,339, Cl. 296-1.00S.

Heinsohn, Howard H., Jr.: *See—*
Evers, William J.; and Heinsohn, Howard H., Jr., 4,119,788, Cl. 560-152.000.

Heki, Hideaki; Ozaki, Osamu; and Ohno, Masayoshi, to Tokyo Shibaura Electric Co., Ltd. Gas separator. 4,119,417, Cl. 55-158.000.

Hellemanns, Gerhard: *See—*
Simmrock, Karl Hans; and Hellemanns, Gerhard, 4,119,507, Cl. 204-80.000.

Hellwig, Rolf: *See—*
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, 4,119,037, Cl. 102-69.000.
Helm Instrument Company: *See—*
Moser, Richard A., 4,119,918, Cl. 328-165.000.
Henault, Andre: *See—*
Garon, Gilles; and Henault, Andre, 4,119,951, Cl. 340-552.000.
Hencye, Ronald E.: *See—*
Lanz, Donald D.; and Hencye, Ronald E., 4,118,995, Cl. 74-245.00S.
Henderson, David M.: *See—*
Abrams, Richard L.; and Henderson, David M., 4,119,930, Cl. 332-7.510.
Hendricks, Charles D., to PPG Industries, Inc. Detachable cylindrical power supply for induction type electrostatic spray gun. 4,120,016, Cl. 361-228.000.
Hengst, Bernd, to Sachs-Systemtechnik GmbH. Apparatus for purifying water. 4,119,517, Cl. 204-229.000.
Hengst, Bernd: *See—*
Paschakarnis, Peter; Hengst, Bernd; and Wychnanek, Rainer, 4,119,520, Cl. 204-276.000.
Henry, Varice F.: *See—*
United States of America, National Aeronautics and Space Administration; Johannsen, Klaus G.; Sabaroff, Samuel; and Henry, Varice F., 4,119,964, Cl. 343-17.700.
Hensel, Paul Christopher, to Post Office, The. Dielectric optical waveguide severing apparatus. 4,118,862, Cl. 30-124.000.
Hensley, Albert L., Jr.: *See—*
Hopkins, P. Donald; and Hensley, Albert L., Jr., 4,119,531, Cl. 208-251.00H.
Herbert Meister and Co.: *See—*
Meister, Herbert, 4,119,323, Cl. 277-235.00R.
Hermanson, Gerald P.; Rickel, David M.; and Carr, Robert J., to Dayron Corporation. Apparatus and method for connecting the ends of a cut length of ribbon. 4,119,448, Cl. 156-73.400.
Hernestam, Sven Erik Harry; Nilsson, Nils Arne; Nordvi, Curt Harry; and Willard, Lars-Olof, to AB Ferrosan. Piperidino derivatives. 4,119,711, Cl. 424-54.000.
Herwynen, John Alfred. Step ladder. 4,119,175, Cl. 182-125.000.
Hesston Corporation: *See—*
White, Allen Andrew, 4,118,918, Cl. 56-341.000.
Hewlett-Packard Company: *See—*
Pirkle, Sherman Jack, 4,119,903, Cl. 320-1.000.
Heyen, Wilfred L.; and Olinger, Keith D. Solar energy absorbing body and collector. 4,119,083, Cl. 126-270.000.
Heyward, Viola M.: *See—*
Moses, Lucius, 4,119,021, Cl. 99-425.000.
Hickman, Paul G. Multiple coin mechanism for newsrack. 4,119,192, Cl. 194-59.000.
Hiersig, Heinz M.: *See—*
Goldschmidt, Rolf; Hansgen, Klaus; and Hiersig, Heinz M., 4,118,848, Cl. 29-159.200.
Hightower, John D.: *See—*
Moore, Donald K.; Beaman, George R.; Hightower, John D.; and Graham, Craig W., Jr., 4,119,941, Cl. 340-5.00R.
Hilderink, Johannes H. L. A., to Hazemeijer B.V. Spring-drive mechanism for electric switches. 4,119,820, Cl. 200-153.0SC.
Hile, John W., to General Motors Corporation. Method of making ion implanted zener diode. 4,119,440, Cl. 148-1.500.
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Bisping, Heinz; and Schiefer, Erwin, 4,119,285, Cl. 248-72.000.
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Himmele, Walter: *See—*
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Hinds, James J., to National Can Corporation. Article detection system with synchronous demodulation. 4,119,843, Cl. 250-222.0PC.
Hines, Ralph E., to Peterson, Merlin J., a part interest. Tool caddy. 4,119,044, Cl. 108-27.000.
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Abelitis, Andris; Behrendt, Artur; and Hinterkeuser, Jakob, 4,119,396, Cl. 432-106.000.
Hipp, James D., to Midland-Ross Corporation. Locking mechanism for a pair of railroad hopper doors. 4,119,041, Cl. 105-308.00R.
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Matsuda, Tsutomu; Maeda, Takeshi; Hirabayashi, Takeo; and Watanabe, Nobuyoshi, 4,119,465, Cl. 96-75.000.
Hiraki, Minoru: *See—*
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.
Hiraoka, Hiroyuki, to International Business Machines Corporation. Electro-lithography method. 4,119,688, Cl. 264-22.000.
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Katai, Masuo; Yoshizawa, Shigeru; and Hiroshima, Minoru, 4,120,042, Cl. 365-2.000.
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Azuhata, Shigeru; Kikuchi, Hideo; Akimoto, Hidetoshi; Hishinuma, Yukio; and Arikawa, Yoshijiro, 4,119,702, Cl. 423-235.000.
Hitachi Chemical Company, Ltd.: *See—*
Nishizawa, Hiroshi; Tanaka, Shigeyoshi; and Fujishima, Minoru, 4,119,679, Cl. 260-835.000.
Hitachi, Ltd.: *See—*
Azuhata, Shigeru; Kikuchi, Hideo; Akimoto, Hidetoshi; Hishinuma, Yukio; and Arikawa, Yoshijiro, 4,119,702, Cl. 423-235.000.
Itoh, Kenichi; Shinbo, Katsutoshi; and Watahiki, Minoru, 4,119,489, Cl. 176-76.000.
Iyama, Hiroyuki; Akatsuka, Mitsuo; and Tomura, Teruichi, 4,119,887, Cl. 315-101.000.
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.
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Kasai, Masuo; Yoshizawa, Shigeru; and Hiroshima, Minoru, 4,120,042, Cl. 365-2.000.
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Hitachi Medical Corporation: *See—*
Katakura, Kageyoshi, 4,119,939, Cl. 340-1.00R.
Hitchcock, Ronald G.: *See—*
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Beckley, Don A., 4,119,481, Cl. 156-272.000.
Hnatchenko, Michael: *See—*
Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, 4,119,399, Cl. 8-10.200.
Hobeg Hochtemperaturreaktor-Brennelement GmbH: *See—*
Kadner, Martin; Hackstein, Karl-Gerhard; and Spener, Gerhard, 4,119,563, Cl. 252-301.10S.
Hobson, John A.; and Schilling, Paul K., to H & S Industries, Inc. Floral display blocks of urea-formaldehyde foam. 4,119,757, Cl. 428-311.000.
Hoch, Fritz, to Gutos Metallschliessenfabrik Bader & Hoch KG. Buckle for a belt and the like. 4,118,837, Cl. 24-75.000.
Hodakowski, Leonard Edward; Osborn, Clairborn Lee; and Harris, Edward Bruce, to Union Carbide Corporation. Polymerizable epoxide-modified compositions. 4,119,640, Cl. 260-340.700.
Hodes, Harvey A., to United States of America, Army. Color photographic developer composition. 4,119,462, Cl. 96-66.300.
Hoebrechts, Albert J. G.; and van Eekelen, Alex H. A. M., to Monroe Auto Equipment Company. Connector assembly for windshield wipers. 4,118,825, Cl. 15-250.320.
Hoechst Aktiengesellschaft: *See—*
Kleiner, Hans-Jerg, 4,119,682, Cl. 260-952.000.
Hoelzl, Ludwig; Maenhardt, Joerg; Reisinger, Konrad; and Singer, Johannes, to Siemens Aktiengesellschaft. System for transmitting asynchronous bit transitions of data signals using time-division multiplexing. 4,119,795, Cl. 178-50.000.
Hoffman, Edward Hugo, to Skyway Recreation Products. Engine muffler. 4,119,174, Cl. 181-231.000.
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Hoffmann-La Roche Inc.: *See—*
Liebman, Arnold Alvin; and Muccino, Richard Robert, 4,119,647, Cl. 260-397.200.
Hoke, Kenneth E.: *See—*
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Holden, Thomas Frederick: *See—*
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Arentsen, Dirk, 4,119,159, Cl. 173-133.000.
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Zwarts, Johan Martin Carol; and Koops, Geert, 4,119,963, Cl. 343-17.2PC.
Hollender, Gottfried: *See—*
Preuninger, Manfred; Hollender, Gottfried; and Schaber, Herbert, 4,118,906, Cl. 52-100.000.
Holleran, Eileen M. Apparatus for cleaning the lower portion of shoes. 4,118,818, Cl. 15-36.000.
Holley, Anthony G. Music training device. 4,119,010, Cl. 84-470.00R.
Hollingshead, William Shepherd; and Nowak, Edward Norbert, to Goodyear Tire & Rubber Company, The. Aqueous recovery of hydroquinone. 4,119,791, Cl. 568-768.000.
Hollingsworth & Vose Company: *See—*
Lawson, Grover C.; and Wilson, James C., 4,119,543, Cl. 210-496.000.
Hollis, Richard John, to Strachan & Henshaw Limited. Printing press with removable printing roll sleeve. 4,119,032, Cl. 101-216.000.
Hollister, Donald D. Method and means for improving the efficiency of

light generation by an electrodeless fluorescent lamp. 4,119,889, Cl. 315-248.000.
Holly, Harry H.: *See—*
Holly, James A.; and Holly, Harry H., 4,118,831, Cl. 17-32.000.
Holly, James A.; and Holly, Harry H., to Hollymatic Corporation. Molding device. 4,118,831, Cl. 17-32.000.
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Holly, James A.; and Holly, Harry H., 4,118,831, Cl. 17-32.000.
Holmer, Erik Yngve: *See—*
Andersson, Lars-Olov; and Holmer, Erik Yngve, 4,119,774, Cl. 536-21.000.
Holmes, William A., to Polaroid Corporation. Self-developing motion picture viewer having controlled film imbibition. 4,119,370, Cl. 352-130.000.
Holmes, William K., to J. I. Case Company. Hydraulic circuit for hoisting fluid ram. 4,119,228, Cl. 214-394.000.
Holmes, William K.; and Pueschner, Philip R., to J. I. Case Company. Straddle carriers for containers. 4,119,229, Cl. 214-394.000.
Holmes, William K.: *See—*
Keller, Lynn L.; Pueschner, Philip R.; and Holmes, William K., 4,119,230, Cl. 214-394.000.
Holtom, Gerald Herbert. Manufacture of boat hulls and other hollow articles. 4,118,814, Cl. 9-6.00P.
Holub, Fred Frank; and Wilson, Phillip Steven, to General Electric Company. Plasticized polycarbonate composition. 4,119,603, Cl. 260-32.60R.
Holub, William R. Diagnostic test. 4,119,709, Cl. 424-1.000.
Holzman, Melvyn A., to Deutsch Company Electronic Components Division, The. Optical fiber connector utilizing opposed lenses. 4,119,362, Cl. 350-96.180.
Homco International, Inc.: *See—*
Smith, Homer Grafton, 4,119,151, Cl. 166-298.000.
Homeyer, Bernhard: *See—*
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Honeywell Inc.: *See—*
Castleman, B. Wayne; and Schluter, Bernard C., 4,119,851, Cl. 250-382.000.
Fulkerson, David E., 4,119,997, Cl. 357-36.000.
Haglund, Stephen A., 4,119,904, Cl. 320-48.000.
Honeywell Information Systems, Inc.: *See—*
Steiner, Gordon Lewis, 4,120,029, Cl. 364-200.000.
Honkanen, Arto: *See—*
Stolpe, Erik; Honkanen, Arto; and Laiho, Erkki, 4,119,452, Cl. 156-244.190.
Hooker Chemicals & Plastics Corp.: *See—*
Blair, Noel D., 4,119,763, Cl. 428-563.000.
Hope, Henry F.; and Hope, Stephen F. Transport roller rack. 4,118,998, Cl. 74-421.00R.
Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 4,118,998, Cl. 74-421.00R.
Hopkins, Donald L., to Caterpillar Tractor Co. Pump drive for hydrostatic machines with external gears. 4,119,169, Cl. 180-66.00R.
Hopkins, P. Donald; and Hensley, Albert L., Jr., to Standard Oil Company (Indiana). Large-pore hydrodemetallization catalyst and process employing same. 4,119,531, Cl. 208-251.00H.
Hopkins, Phillip M.: *See—*
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Hori, Kenji: *See—*
Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, 4,120,006, Cl. 360-72.000.
Horie, Koji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Disc brake friction pad guide and support structure. 4,119,180, Cl. 188-73.500.
Horn, Jurgen; Batz, Hans-Georg; and Jaworek, Dieter, to Boehringer Mannheim GmbH. Process for fixing proteins onto carriers. 4,119,589, Cl. 260-6.000.
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Kirk, Robley Gordon; and Hornschuch, Hanns, 4,119,375, Cl. 308-9.000.
Hort, Eugene V., to GAF Corporation. Low pressure catalytic ethynylation process. 4,119,790, Cl. 568-855.000.
Hosbein, Hugh W., to Mossberg Hubbard a Division of Wanskuck Company. Apparatus and method for anticipating an empty spool condition. 4,119,279, Cl. 242-54.00R.
Hoshi, Hirohiko; Funayama, Toshio; Ishiguro, Kazuhiko; and Umehara, Hidetomo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and equipment for control of internal combustion engine including a fuel-reforming device. 4,119,061, Cl. 123-3.000.
Hoshidenki-Seizo Kabushiki Kaisha: *See—*
Uda, Masayuki, 4,119,878, Cl. 313-325.000.
Houghton, Frank Raymond: *See—*
Popplewell, Frank William; and Houghton, Frank Raymond, 4,119,313, Cl. 273-73.00K.
Howland, Robert Franklin; Jasovsky, George Anthony; and Galanti, Joseph Anthony, to General Foods Corporation. Method for fixing cryogenically condensed coffee aromatics in a glyceride carrier. 4,119,736, Cl. 426-386.000.
Hoxan Co., Ltd.: *See—*
Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, 4,118,984, Cl. 73-295.000.
Hoyer, Helge, to Rockwool International A/S. Fire retardant plate material. 4,119,755, Cl. 428-284.000.
Hruza, Denis E., Sr.: *See—*
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Hsieh, Dean Shui-Tien; Bright, Roselie Ann; and Rha, ChouKyun, to Massachusetts Institute of Technology. Method of making soybean beverages. 4,119,733, Cl. 426-46.000.
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, to U.S. Philips Corporation. Method of structuring thin layers. 4,119,483, Cl. 156-655.000.
Huck Manufacturing Company: *See—*
Corbett, Robert John, 4,118,969, Cl. 72-391.000.
Hudspeth, Thomas; and Keeling, Harmon H., to Hughes Aircraft Company. Transmission line switch. 4,119,931, Cl. 333-7.00R.
Huggins, George R.: *See—*
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Hughes Aircraft Company: *See—*
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Bockrath, Thomas A., 4,119,932, Cl. 333-21.00A.
Hudspeth, Thomas; and Keeling, Harmon H., 4,119,931, Cl. 333-7.00R.
Stark, Louis, 4,119,971, Cl. 343-768.000.
Weglein, Rolf D.; and Wauk, Michael T., II, 4,119,934, Cl. 333-30.00R.
Hugl, Herbert; Otten, Hans-Gunter; Sommer, Richard; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. Water-soluble diphenylamine-azo-sulfatoalkoxyphenyl dyestuffs. 4,119,623, Cl. 260-206.000.
Hulme, Roger, to Exxon Research & Engineering Co. Novel graphite intercalation compounds and method of making same. 4,119,655, Cl. 260-440.000.
Hums, Dieter, to Intong AB. Ceramic composition for making stoneware products. 4,119,470, Cl. 106-45.000.
Hund, Clifford L.: *See—*
Brashear, Otto S., Jr.; Hund, Clifford L.; and Wehrenberg, Thomas M., 4,119,472, Cl. 106-57.000.
Hunt, Peter, to Lucas Industries Limited. Dynamo electric machine. 4,119,872, Cl. 310-61.000.
Hunter, Edwin J., to Toro Company, The. Fluid spray head and method adapted to spray specific pattern. 4,119,275, Cl. 239-456.000.
Huseby, Irvin C.: *See—*
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Huston, Ernest Lee: *See—*
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Hutcherson, Brian K. Interacting steering-suspension system for a wheeled vehicle and the like. 4,119,170, Cl. 180-79.000.
Hutchins, James Peyton, to Procter & Gamble Company, The. Method for making diperoxyacids. 4,119,660, Cl. 260-502.00R.
Huwood Limited: *See—*
Saunders, Graham John, 4,118,939, Cl. 61-45.00D.
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Ichikawa, Tetsuya: *See—*
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Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Electronic watch or clock and accessory devices therefor. 4,118,922, Cl. 58-23.0BA.
IDR, Inc.: *See—*
Mitchell, David S.; and Nagel, Robert H., 4,120,003, Cl. 358-142.000.
Igich, Victor. Multiple lumen endotracheal tube and cuff with limited inflation and pressure. 4,119,101, Cl. 128-351.000.
Iguchi, Shigeru; Iwata, Tamotu; and Yano, Tetsuo, to Mitsubishi Paper Mills, Ltd. Photographic binder comprising isobutylene-maleic anhydride copolymer. 4,119,463, Cl. 96-67.000.
ILC Data Device Corporation: *See—*
Lanton, Seymour, 4,119,959, Cl. 340-347.0SY.
Imperial Chemical Industries Limited: *See—*
Boyd, Violet; Fishwick, Brian Ribbons; and Watson, David John, 4,119,624, Cl. 260-207.100.
Ellis, Peter Manfrid; and Lester, Charles Martin, 4,119,447, Cl. 156-73.100.
Imura, Toshinori; and Yamashita, Maki, to Minolta Camera Kabushiki Kaisha. Small size single lens reflex camera. 4,119,982, Cl. 354-155.000.
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Kirk, Robley Gordon; and Hornschuch, Hanns, 4,119,375, Cl. 308-9.000.
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Inpaver AG: *See—*
Degen, Hugo, 4,118,811, Cl. 5-62.000.
Institut Francais de Petrole: *See—*
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Institute po Zavaryavane: *See—*
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Intel Corporation: *See—*
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Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,120,035, Cl. 364-602.000.
Hiraoka, Hiroyuki, 4,119,688, Cl. 264-22.000.
International Flavors & Fragrances Inc.: *See—*
Evers, William J.; and Heinsohn, Howard H., Jr., 4,119,788, Cl. 560-152.000.
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,119,574, Cl. 252-522.000.
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.
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Pfeil, Christian; and Breidenbach, Hans, 4,119,016, Cl. 91-449.000.
International Nickel Company, Inc., The: *See—*
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Fisher, Gordon Lloyd; and Huston, Ernest Lee, 4,119,501, Cl. 204-49.000.
Whittle, John Edward, 4,119,514, Cl. 204-206.000.
International Standard Electric Corporation: *See—*
Barton, Paul, 4,119,969, Cl. 343-108.00M.
International Telephone and Telegraph Corporation: *See—*
Elderton, Peter Platt, 4,119,865, Cl. 307-118.000.
Intong AB: *See—*
Hums, Dieter, 4,119,470, Cl. 106-45.000.
Iobst, Stanley A.; and Cox, Howard W., to General Motors Corporation. Catalyzed one-shot system for molding thermoset polyurethanes. 4,119,594, Cl. 260-18.0TN.
Iowa State University Research Foundation, Inc.: *See—*
Larock, Richard Craig, 4,119,642, Cl. 260-343.600.
Ipri, Alfred Charles; and Scott, Joseph Hurlong, Jr., to RCA Corporation. Integrated circuit structure and method for making same. 4,119,992, Cl. 357-4.000.
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Iwahara, Makoto, to Victor Company of Japan, Limited. Binaural multi-channel stereophony. 4,119,798, Cl. 179-1.0GQ.
Iwai, Naoji: *See—*
Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, 4,119,761, Cl. 428-472.000.
Iwasaki, Shozo, to Kabushiki Kaisha Akashi Seisakusho. Loading shaft positioning apparatus for hardness tester. 4,118,975, Cl. 73-81.000.
Iwasawa, Teruo, to Olympus Optical Company Ltd. Tape recorder apparatus. 4,120,009, Cl. 360-71.000.
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, to Nippon Electric Co., Ltd. Method of disposing of a ferrous-ion containing acidic aqueous waste by forming polycrystalline iron compound particles. 4,119,536, Cl. 210-50.000.
Iwata, Hiroshi; and Yamaoka, Tetsuo, to West Electric Co., Ltd. Camera using instant print film. 4,119,988, Cl. 354-289.000.
Iwata, Tamotu: *See—*
Iguchi, Shigeru; Iwata, Tamotu; and Yano, Tetsuo, 4,119,463, Cl. 96-67.000.
Iyama, Hiroyuki; Akatsuka, Mitsuo; and Tomura, Teruichi, to Hitachi, Ltd. Starter for discharge lamp. 4,119,887, Cl. 315-101.000.
Izraeli, Hyman, to Teschner, David. Crimping apparatus. 4,118,971, Cl. 72-410.000.
Izumi, Sumio: *See—*
Saitoh, Kozo; and Izumi, Sumio, 4,119,533, Cl. 209-155.000.
J. I. Case Company: *See—*
Holmes, William K., 4,119,228, Cl. 214-394.000.
Holmes, William K.; and Pueschner, Philip R., 4,119,229, Cl. 214-394.000.
Keller, Lynn L.; Pueschner, Philip R.; and Holmes, William K., 4,119,230, Cl. 214-394.000.
Schuck, Paul R.; and Baylor, John M., 4,119,157, Cl. 172-477.000.
Venable, Phillip G., 4,119,000, Cl. 74-479.000.
J. R. Haller, Ltd. Inc.: *See—*
Haller, Jack R., 4,120,015, Cl. 361-227.000.
Jackson, Ewart William, to Futters (London) Limited. Tool for wall anchors. 4,118,966, Cl. 72-114.000.
Jackson, R. Kelley. Collapsible golf cart trailer. 4,119,331, Cl. 280-639.000.
Jacob, Herbert; Blatte, Michael; and Kremser, Fritz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for making gallium arsenide or phosphide. 4,119,704, Cl. 423-299.000.
Jacob, Jean-Baptiste, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Control unit for a time-division telecommunications exchange. 4,119,803, Cl. 179-15.0AT.
Jacobs, David R.: *See—*
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,119,047, Cl. 112-79.0FF.
Jacobson, Michael D.; and Grouwinkel, G. Franklin, to United States of America, Navy. Filter-cooler. 4,118,930, Cl. 60-266.000.
Jacobson, Sava. Mode switching and voltage regulator circuitry for a telephone answering device. 4,119,801, Cl. 179-6.00R.
Jacyno, Anthony; and Smith, Richard T., to McGraw-Edison Company. Assembly for removably attaching flexible cutting line element in grass trimmer. 4,118,865, Cl. 30-276.000.
Jain, Faquir Chand; and Melehy, Mahmoud Ahmed, to University of Connecticut. Heterojunction and process for fabricating same. 4,119,994, Cl. 357-16.000.
Jaksch, Erhard: *See—*
Hartung, Stephan; and Jaksch, Erhard, 4,118,869, Cl. 33-174.0TA.
Janowski, Kenneth R.: *See—*
Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., 4,119,513, Cl. 204-195.00S.
Janssen Pharmaceutica N.V.: *See—*
Heeres, Jan, 4,119,641, Cl. 260-340.90R.
Jantsch, Ottomar; and Reiss, Karl, to Siemens Aktiengesellschaft. Apparatus for the implementation of a method for producing a sectional view of a body. 4,119,841, Cl. 250-213.0VT.
Japan Gasoline Company, Ltd.: *See—*
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, 4,119,568, Cl. 252-437.000.
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
Jaskolski, Stanley V.; Lade, Robert W.; and Schutten, Herman P., to

Cutler-Hammer, Inc. Thermally-sensitive, photo-controlled semiconductor switching systems. 4,119,845, Cl. 250-231.00R.
Jasovsky, George Anthony: *See—*
Howland, Robert Franklin; Jasovsky, George Anthony; and Galanti, Joseph Anthony, 4,119,736, Cl. 426-386.000.
Jaworek, Dieter: *See—*
Horn, Jurgen; Batz, Hans-Georg; and Jaworek, Dieter, 4,119,589, Cl. 260-6.000.
Jay, Pierre, to Rhone-Poulenc Industries. Dielectric compositions comprising polychlorobenzene-alkyl terphenyl mixtures. 4,119,555, Cl. 252-66.000.
Jazenski, Peter J.; and Manino, Louie G., to Lord Corporation. Adhesive compositions comprising (a) halogenated polyolefin (b) aromatic nitroso compound and (c) lead salts. 4,119,587, Cl. 260-3.500.
Jeambey, Calhoun G. Combination microwave oven and cooking utensil. 4,119,824, Cl. 219-10.55E.
Jenkins, Charles J., to Otis Engineering Corporation. Motion compensator. 4,118,954, Cl. 64-23.000.
Jenkins, John W.; and Nichols, A. G., Jr. Combination trampoline and rebounding device with detachable support means. 4,119,311, Cl. 272-65.000.
Jenkins, William Leon: *See—*
Boe, Thomas Jerald; Fell, Charles M.; and Jenkins, William Leon, 4,119,023, Cl. 100-2.000.
Jenoptik Jena G.m.b.H.: *See—*
Hartung, Stephan; and Jaksch, Erhard, 4,118,869, Cl. 33-174.0TA.
Jergl, Ivan: *See—*
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, 4,119,243, Cl. 221-298.000.
Jerome Alexander Cosmetics, Inc.: *See—*
Axelrod, Jerome, 4,118,823, Cl. 15-176.000.
Jesty, John Bedford. Apparatus for dispensing discrete objects from a liquid. 4,119,242, Cl. 221-211.000.
Jet Spray Cooler, Inc.: *See—*
Arzberger, William A.; and Brown, Merle S., 4,119,191, Cl. 194-9.00T.
Jeumont-Schneider: *See—*
Baratin, Andre N., 4,119,806, Cl. 179-18.0FA.
Jhabvala, Murzban D., to United States of America, National Aeronautics and Space Administration. Complementary DMOS-VMOS integrated circuit structure. 4,119,996, Cl. 357-23.000.
Jidosha Kiki Co., Ltd.: *See—*
Masuda, Naosuke, 4,119,352, Cl. 303-6.00C.
Masuda, Naosuke; and Sunaga, Nobuo, 4,119,354, Cl. 303-24.00F.
Jim Dandy Company, The: *See—*
Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., 4,119,022, Cl. 99-532.000.
Jimmy Dean Meat Company, Inc., The: *See—*
Bernard, Vincent E., 4,119,252, Cl. 225-96.000.
Jirak, Thomas L., to Medtronic, Inc. Detachable power source with low current leakage. 4,119,103, Cl. 128-419.0PS.
Johannsen, Klaus G.: *See—*
United States of America, National Aeronautics and Space Administration; Johannsen, Klaus G.; Sabaroff, Samuel; and Henry, Varice F., 4,119,964, Cl. 343-17.700.
Johnson, Clark E., Jr. Magnetoresistor displacement sensor using a magnetoresistor positioned between relatively moving magnetized toothed members. 4,119,911, Cl. 324-208.000.
Johnson, Delp W. Structure for relocatable building with folding plate roof and folding end walls. 4,118,901, Cl. 52-18.000.
Johnson, Dennis Elmer, to Densen Common, Incorporated. Child height gauge. 4,118,868, Cl. 33-169.00R.
Johnson, Gilbert R.; and Olson, Frank A., to Teledyne, Inc. Microwave dual mode non-interfering CW and pulsed signal system method and apparatus. 4,119,967, Cl. 343-100.0PE.
Johnson, Philip P.; and Lampman, William T., to Whirlpool Corporation. Receptacle fill apparatus. 4,119,116, Cl. 137-387.000.
Johnson, Robert B.: *See—*
Metzger, Lenard M.; and Johnson, Robert B., 4,120,008, Cl. 360-70.000.
Johnson, Thelma W. Inserts for an insulated container. 4,119,231, Cl. 215-6.000.
Johnson, Wayne O.; Warner, Harlow L.; and Yih, Roy Y., to Rohm and Haas Company. Haloaniline derivatives as plant growth modifiers. 4,119,667, Cl. 260-566.00F.
Johnson, William R., Jr.: *See—*
Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., 4,119,106, Cl. 131-17.00R.
Johnston, Russell A.: *See—*
Arendt, Henry P.; and Johnston, Russell A., 4,119,147, Cl. 166-155.000.
Johnstone, Richard, to Kearney & Trecker Corporation. Computer software security system. 4,120,030, Cl. 364-200.000.
Jones, Claude C. Convertible chair structure. 4,119,342, Cl. 297-80.000.
Jones, Constance C. Carrying case for animal care products. 4,119,181, Cl. 190-51.000.
Jones, Emmett Lee, to Versitron, Inc. Automatic data synchronizer. 4,119,796, Cl. 178-69.100.
Jones, Robert E. Method and apparatus for hacking bricks. 4,119,217, Cl. 214-6.00A.
Jones, Trevor O.: *See—*
Ayotte, Richard F.; and Jones, Trevor O., 4,119,166, Cl. 180-14.00R.
Jos. Schneider & Co. Optische Werke: *See—*
Schnorrenberg, Josef, 4,119,294, Cl. 251-129.000.
Judd Ringer Corporation: *See—*
Lovness, Donald E., 4,119,429, Cl. 71-6.000.
Junker, Erwin. Roller for producing a profile on a grinding wheel. 4,119,079, Cl. 125-11.0CD.
Jwuc, Karl J., to Midland-Ross Corporation. Locking mechanism of a railroad car coupler. 4,119,209, Cl. 213-121.000.
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, to Hitachi, Ltd. Pulse generator. 4,119,886, Cl. 315-101.000.
Kaack, Hermann: *See—*
Hansen, Guenter; Kaack, Hermann; and Grund, Norbert, 4,119,621, Cl. 260-158.000.
Kaarnametsa, Matti, to Rauma-Repola Oy. Tree harvesting apparatus. 4,119,222, Cl. 214-83.240.
Kabushiki Kaisha Akashi Seisakusho: *See—*
Iwasaki, Shozo, 4,118,975, Cl. 73-81.000.
Kabushiki Kaisha Hayashi Zoen: *See—*
Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, 4,118,892, Cl. 47-66.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Harazoe, Yoshiaki; and Kurakami, Shigeru, 4,119,943, Cl. 340-52.00F.
Matsuzaki, Hiroshi; and Tsukiji, Yoshihiro, 4,118,844, Cl. 29-27.00C.
Yoshitomi, Masahide; and Yonekura, Atsuo, 4,119,053, Cl. 115-35.000.
Kabushiki Kaisha Ohara Kogaku: *See—*
Komorita, Fujio; and Nakahara, Muneo, 4,119,471, Cl. 106-47.00Q.
Kabushiki Kaisha Sato: *See—*
Sato, Yo, 4,119,033, Cl. 101-348.000.
Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,119,280, Cl. 242-68.500.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, 4,118,920, Cl. 57-34.00R.
Kadner, Martin; Hackstein, Karl-Gerhard; and Spener, Gerhard, to Hobeg Hochtemperaturreaktor-Brennelement GmbH. Process for the production of fuel and fertile particles. 4,119,563, Cl. 252-301.10S.
Kaelble, David H., to Arroyo Dental Products Co. Brominated acrylate dental compositions. 4,119,610, Cl. 526-292.000.
Kaeser, Arthur L., to Parker Sweeper Company. Mobile blower unit for leaves and other debris. 4,118,826, Cl. 15-328.000.
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, to Dai Nippon Toryo Co. Ltd. Fluorescent compositions. 4,119,562, Cl. 252-301.60S.
Kakogawa Plastics Kabushiki Kaisha: *See—*
Motokawa, Yutaka, 4,119,836, Cl. 219-528.000.
Kalinina, Nadezhda Vasilievna: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Kaman Aerospace Corporation: *See—*
Kaman, Charles William, II, 4,119,009, Cl. 84-293.000.
Kaman, Charles William, II, to Kaman Aerospace Corporation. Stringed instrument neck with peghead. 4,119,009, Cl. 84-293.000.
Kamath, Venkatesh: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Kamijo, Ken: *See—*
Hayashi, Kazuo; and Kamijo, Ken, 4,119,415, Cl. 55-124.000.
Hayashi, Kazuo; and Kamijo, Ken, 4,119,416, Cl. 55-136.000.
Kamm, Lawrence Joseph: *See—*
Price, Robert John; and Kamm, Lawrence Joseph, 4,119,161, Cl. 177-3.000.
Kando, Akiyoshi; and Yoneya, Kiyoo, to Yoshida Kogyo K.K. Retaining device for concealed slide fastener. 4,118,839, Cl. 24-205.10R.
Kandyba, Grigory Ilich: *See—*
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.
Kanehiro, Haruyuki: *See—*
Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, 4,119,617, Cl. 528-360.000.
Kanocz, Julianna, to Raymond Lee Organization, Inc., The, a part interest. Collapsible reading stand. 4,119,289, Cl. 248-454.000.
Kaplit, Michael: *See—*
Hayden, Daniel B.; Smith, George W.; and Kaplit, Michael, 4,119,842, Cl. 250-201.000.
Karino, Kimiji, to Hitachi, Ltd. Variable stage type carburetor. 4,119,684, Cl. 261-44.00F.
Karius, Dietmar: *See—*
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, 4,119,037, Cl. 102-69.000.

Karl, Kurzius A. Preparing yeast raised bakery products. 4,119,731, Cl. 426-20.000.

Karlsson, John Axel: *See*—
Carlsson, Erik Herbert; and Karlsson, John Axel, 4,119,158, Cl. 172-104.000.

Kartalopoulos, Stamatios V.: *See*—
Raftopoulos, Demetrios D.; and Kartalopoulos, Stamatios V., 4,119,380, Cl. 73-800.000.

Karzmar, Ronald C.; and Stamm, Robert H., to Brooks & Perkins, Incorporated. Fuel storage rack. 4,119,859, Cl. 250-507.000.

Kasai, Masuo; Yoshizawa, Shigeru; and Hiroshima, Minoru, to Hitachi, Ltd. Magnetic bubble information writing device. 4,120,042, Cl. 365-2.000.

Kaszyk, Philip. Radar reflector. 4,119,965, Cl. 343-18.00C.

Katakura, Kageyoshi, to Hitachi Medical Corporation. Acoustic imaging method and apparatus. 4,119,939, Cl. 340-1.00R.

Kato, Akira: *See*—
Yamada, Yutaka; Kato, Akira; and Uchida, Tohru, 4,119,461, Cl. 96-1.800.

Kato, Takashi: *See*—
Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, 4,118,920, Cl. 57-34.00R.

Katsura, Hidetoshi: *See*—
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.

Kaufmann, Friedrich: *See*—
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, 4,119,561, Cl. 252-301.10W.

Kausel, Ernst: *See*—
Kellerwessel, Hans; and Kausel, Ernst, 4,119,303, Cl. 266-92.000.
Kellerwessel, Hans; Kausel, Ernst; and Nissen, Reinhard, 4,119,699, Cl. 423-109.000.

Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, to Vilnjussky Inzhenerno-Stroitelny Institut. Centrifugal elastic coupling. 4,118,953, Cl. 64-12.000.

Kawabata, Shosuke: *See*—
Fujiota, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192.24.000.

Kawada, Hirohito: *See*—
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,120,019, Cl. 361-385.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.

Kazakova, Olga Borisovna: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Kearney, Kevin David Nicholas: *See*—
Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, 4,119,772, Cl. 429-204.000.

Kearney & Trecker Corporation: *See*—
Johnstone, Richard, 4,120,030, Cl. 364-200.000.
Kirkham, Edward E., 4,118,871, Cl. 33-174.0PC.

Keating, John T., to Schenectady Chemicals, Inc. Solutions of polyester-imides. 4,119,605, Cl. 260-33.20R.

Keating, John T., to Schenectady Chemicals, Inc. Solutions of polyester-imides. 4,119,608, Cl. 528-188.000.

Keating, John T., to Schenectady Chemicals, Inc. Electrical conductors having insulating coatings from solutions of polyester-imides. 4,119,758, Cl. 428-379.000.

Keating, Patrick N.; Koppelman, Roger F.; and Sawatari, Takeo, to Bendix Corporation, The. Underwater viewing system. 4,119,940, Cl. 340-5.00H.

Keck, Johannes: *See*—
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.

Keeling, Harmon H.: *See*—
Hudspeth, Thomas; and Keeling, Harmon H., 4,119,931, Cl. 333-7.00R.

Kehl, Donald K.; and Crist, Eugene A. System for growing plants. 4,118,891, Cl. 47-59.000.

Keiter, Alfred, to Olympia Werke AG. Typing device including a type disc. 4,119,384, Cl. 400-144.200.

Keller, Lynn L.; Pueschner, Philip R.; and Holmes, William K., to J. I. Case Company. Hoisting mechanism for spreader with automatic attitude control means. 4,119,230, Cl. 214-394.000.

Kellerwessel, Hans; and Kausel, Ernst, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and device for precipitating copper cement from a copper solution mixed with iron. 4,119,303, Cl. 266-92.000.

Kellerwessel, Hans; Kausel, Ernst; and Nissen, Reinhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method for wet metallurgical processes. 4,119,699, Cl. 423-109.000.

Kelly, Donald A. Combined high density solar panels and vertical wind turbines. 4,119,863, Cl. 290-55.000.

Kelly, Joseph B., to PPG Industries, Inc. Method and apparatus for eliminating tong vents in a glass sheet furnace. 4,119,426, Cl. 65-111.000.

Kelso, David Matthews: *See*—
Reddy, Reddy Reddy Venketeshwara; and Kelso, David Matthews, 4,119,850, Cl. 250-328.000.

Kendall Company, The: *See*—
Patel, Bhupendra C., 4,119,099, Cl. 128-349.00R.

Kennametal Inc.: *See*—
Kennedy, George C., 4,119,708, Cl. 423-659.000.

Kennedy, David P.: *See*—
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,118,860, Cl. 29-623.500.

Kennedy, George C., to Kennametal Inc. High temperature, high pressure process utilizing a ductile driver element. 4,119,708, Cl. 423-659.000.

Kennedy, John M.; and Kennedy, William R. Door frame and door assembly for a mine stopping. 4,118,894, Cl. 49-402.000.

Kennedy, William R.: *See*—
Kennedy, John M.; and Kennedy, William R., 4,118,894, Cl. 49-402.000.

Kenney, James F.; and Treadwell, Kenneth, to M&T Chemicals Inc. Process for preparing rigid polyurethane foams using latent catalysts. 4,119,585, Cl. 521-118.000.

Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung: *See*—
Zimmer, Erich; Nafissi, Ahmad; and Winkhaus, Gunther, 4,119,698, Cl. 423-82.000.

Kerr-McGee Corporation: *See*—
Baldwin, Roger A.; and Bills, John L., 4,119,523, Cl. 208-8.000.
Clapper, Thomas W., 4,119,519, Cl. 204-268.000.
Leonard, Robert E.; and Baldwin, Roger A., 4,119,524, Cl. 208-8.000.

Kettenes, Dirk Karel: *See*—
van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.

Kettlestrings, John S., to Cling-Cal Corporation. Magnetic dart toy. 4,119,316, Cl. 273-95.00R.

Khan, Aman Ullah, to Whirlpool Corporation. Refuse container for a compactor. 4,119,028, Cl. 100-218.000.

Kharitonova, Ljudmila Dmitrievna: *See*—
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.

Khokhar, Abdul Rauf: *See*—
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,653, Cl. 260-429.00R.
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,654, Cl. 260-429.00R.

Khrusch, Petr Romanovich: *See*—
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.

Kikuchi, Hideo: *See*—
Azuhata, Shigeru; Kikuchi, Hideo; Akimoto, Hidetoshi; Hishinuma, Yukio; and Arikawa, Yoshijiro, 4,119,702, Cl. 423-235.000.

Kikuchi, Kazuo: *See*—
Itoh, Takaaki; and Kikuchi, Kazuo, 4,119,685, Cl. 261-44.00C.

Kimber, Geoffrey Michael: *See*—
Gray, Michael David; and Kimber, Geoffrey Michael, 4,119,525, Cl. 208-8.000.

Kimble, Thomas E., to D. H. Baldwin Company. Means for improving the repetition characteristics of an upright piano action. 4,119,008, Cl. 84-242.000.

Kimgir, Raisa Alexandrovna: *See*—
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.

Kincheloe, Dan D.; Gregory, Elmo M.; Todd, Carl David; and Gould, Edson B., III. Utility usage monitoring systems. 4,120,031, Cl. 364-464.000.

Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for improving coal. 4,119,410, Cl. 44-1.00R.

King, Henry L.; and Wu, Chester C., to Monsanto Company. Process for making polyester polymer. 4,119,614, Cl. 528-283.000.

King, John O., Jr. Fastener with removable pintail and locking collet. 4,118,849, Cl. 29-240.000.

King, Leonard H.: *See*—
Bogner, Richard D.; and King, Leonard H., 4,119,970, Cl. 343-727.000.

Kirk, Robley Gordon; and Hornschuch, Hanns, to Ingersoll-Rand Company. Bearing and housing assembly. 4,119,375, Cl. 308-9.000.

Kirkham, Edward E., to Kearney & Trecker Corporation. Binary inspection probe for numerically controlled machine tools. 4,118,871, Cl. 33-174.0PC.

Kishi, Kazuo: *See*—
Hayashi, Minoru; and Kishi, Kazuo, 4,119,036, Cl. 102-49.300.

Kishi, Yoshio: *See*—
Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, 4,120,005, Cl. 360-61.000.
Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, 4,120,006, Cl. 360-72.000.

Kitamura, Takao: *See*—
Matsueda, Kenichi; and Kitamura, Takao, 4,119,823, Cl. 200-302.000.

Kiwala, Jacob: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,119,574, Cl. 252-522.000.

Kiyama, Masao: *See*—
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, 4,119,536, Cl. 210-50.000.

Klaren, Dick Gerrit, to Pieper, Gustav Adolf. Heat-exchanger comprising a system of granulate containing vertical tubes, and a method for operating the same. 4,119,139, Cl. 165-1.000.

Klein, Gerald B. Method for the manufacture of a can lid having a triple-fold, pushdown gate. 4,119,050, Cl. 113-121.00C.

Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Unsaturated phosphorus-containing carboxylic acid derivatives. 4,119,682, Cl. 260-952.000.

KLF Inventions and Patent Development and Marketing Corporation Ltd.: *See*—
Filip, Stanislaw Franz; and Miutel, Alexander, 4,119,583, Cl. 521-103.000.

Klinkenberg, Herbert: *See*—
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Kellerwessel, Hans; and Kausel, Ernst, 4,119,303, Cl. 266-92.000.
Kellerwessel, Hans; Kausel, Ernst; and Nissen, Reinhard, 4,119,699, Cl. 423-109.000.

Klomp, Edward D., to General Motors Corporation. Rich core stratified charge spark ignition engine with peripheral exhaust port. 4,119,064, Cl. 123-30.00C.

Klug, Gottfried, to Pelzer-Kirst GmbH and Co. Shoulder bag. 4,119,127, Cl. 150-3.000.

Klussmann, Henning: *See*—
Reischl, Artur; Klussmann, Henning; and Velker, Eugen, 4,119,613, Cl. 526-64.000.

Knezevich, Mike. Process for reclaiming and upgrading thin-walled malleable waste material. 4,119,453, Cl. 75-0.50R.

Knippelmier, Gary H.: *See*—
Cosman, Armond D.; and Knippelmier, Gary H., 4,119,908, Cl. 324-3.000.

Knowles, Gregory W.; Sangesland, Odd E.; Vroom, Henry J.; and Madey, Robert W., to Grumman Aerospace Corporation. Solar energy collector. 4,119,085, Cl. 126-271.000.

Knowles, William S.; and Sabacky, Milton J., to Monsanto Company. Catalytic asymmetric hydrogenation. 4,119,652, Cl. 260-429.00R.

Knox, Howard T.; and Prete, Ernest, Jr., to Ancra Corporation. Buckle assembly with strap tightening mechanism. 4,118,833, Cl. 24-68.0CD.

Kny, Gunter; and Westphal, Otto, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V. Glycerin-alkyletiier-(1)-phosphoric acid-(3)-monocholine esters as enhancers of the natural resistance of the mammalian organism against non-carcinogenic pathogens. 4,119,714, Cl. 424-199.000.

Kobayashi, Akiyoshi, to Toyoda-Koki Kabushiki-Kaisha. Head stock for grinding machine. 4,118,899, Cl. 51-237.00R.

Kobayashi, Katsuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Flexible joint for a power transmission. 4,118,952, Cl. 64-12.000.

Kobayashi, Minoru; and Nemoto, Shigeru, to Olympus Optical Company Ltd. Small current switch. 4,119,822, Cl. 200-246.000.

Kobe Steel, Limited: *See*—
Tuda, Goro; Sawada, Yoshihisa; and Mugitani, Yasuhiro, 4,119,015, Cl. 90-17.000.

Kochs Adler AG: *See*—
Scholl, Hans; and Bernewasser, Horst, 4,119,048, Cl. 112-121.120.

Kockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Abelitis, Andris; Behrendt, Artur; and Hinterkeuser, Jakob, 4,119,396, Cl. 432-106.000.

Koito Manufacturing Company Limited: *See*—
Yamaguchi, Seiichi, 4,119,516, Cl. 204-224.00R.

Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, to Nippon Oil Company, Ltd. Process for fermentatively producing vitamin B_{12}. 4,119,492, Cl. 195-28.0VB.

Kokusan Denki Co., Ltd.: *See*—
Sato, Hiroo, 4,119,076, Cl. 123-148.00E.

Kolacz, Ferdynand: *See*—
Ballendux, Gerardus M.; and Kolacz, Ferdynand, 4,119,119, Cl. 137-868.000.

Kolb, Frederick John, Jr., to Eastman Kodak Company. Magnetic head employing easy axis thin film inductor. 4,120,011, Cl. 360-111.000.

Koleske, Joseph Victor: *See*—
Smith, Oliver Wendell; and Koleske, Joseph Victor, 4,119,593, Cl. 260-18.0EP.

Komai, Takeshi; and Matsuyama, Kazuo, to Nihon Oil and Fats Co., Ltd. Novel peroxycarbonate. 4,119,657, Cl. 260-453.0RZ.

Komatsu, Shigeru: *See*—
Yamada, Shinichi; and Komatsu, Shigeru, 4,119,167, Cl. 180-43.00R.

Komorita, Fujio; and Nakahara, Muneo, to Kabushiki Kaisha Ohara Kogaku. Optical glass. 4,119,471, Cl. 106-47.00Q.

Kondo, Iori, to Nissan Motor Company, Ltd. Vehicle seat belt assembly with improved buckle section. 4,119,344, Cl. 297-385.000.

Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. System for generating tone source waveshapes. 4,119,005, Cl. 84-1.010.

Kondo, Toshihiro, to Kondo, Toshihiro; and Fuji Photo Film Co., Ltd. Photographic camera with automatic exposure control. 4,119,978, Cl. 354-38.000.

Konijnenberg, Erik; Vandenbooren, Franciscus H. A. M. J.; and Verheijen, Egidius J. M., to Stamicarbon, B.V. Process for the preparation of 5-(4-aminobutyl) hydantoin and/or 1-ureido-5-aminocapronamide. 4,119,782, Cl. 548-313.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Nozaki, Hiromi; and Hara, Haruo, 4,118,974, Cl. 73-61.400.
Yamada, Yutaka; Kato, Akira; and Uchida, Tohru, 4,119,461, Cl. 96-1.800.

Konno, Masamitu: *See*—
Takahashi, Yutaka; Hakamata, Yoshio; and Konno, Masamitu, 4,119,952, Cl. 340-309.100.

Koops, Geert: *See*—
Zwarts, Johan Martin Carol; and Koops, Geert, 4,119,963, Cl. 343-17.2PC.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, to Boehringer Ingelheim GmbH. 1-Phenoxy-2-hydroxy-3-alkynylamino-propanes and salts thereof and treatment of coronary diseases therewith. 4,119,728, Cl. 424-324.000.

Koppelman, Alan J.: *See*—
Barber, Lloyd L.; and Koppelman, Alan J., 4,119,377, Cl. 312-344.000.

Koppelman, Roger F.: *See*—
Keating, Patrick N.; Koppelman, Roger F.; and Sawatari, Takeo, 4,119,940, Cl. 340-5.00H.

Koppers Company, Inc.: *See*—
Bright, Robert Harding, 4,119,226, Cl. 214-152.000.

Korekawa, Takashi: *See*—
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, 4,119,542, Cl. 210-360.00A.

Korf-Stahl AG.: *See*—
Elsner, Emil A.; Ameling, Dieter Ch.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,119,792, Cl. 13-32.000.

Kornylak Corporation: *See*—
Kornylak, Edward T., 4,119,190, Cl. 193-35.00A.

Kornylak, Edward T., to Kornylak Corporation. Low temperature rollerway brake. 4,119,190, Cl. 193-35.00A.

Korotchenko, Nina Ivanovna: *See*—
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.

Korte, Helmut Gerhard, to Autospin, Inc. Burnishing attachment. 4,118,846, Cl. 29-90.00R.

Kosaka, Yujiro: *See*—
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,119,590, Cl. 260-8.000.

Koschorke, Herbert: *See*—
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, 4,119,561, Cl. 252-301.10W.

Kotschak, Otto; and Frank, Richard, to Siemens Aktiengesellschaft. Vacuum-tight windows for passage of X-rays or similar penetrating radiation. 4,119,234, Cl. 220-2.10R.

Kouchi, Susumo: *See*—
Yamauchi, Tadashi; Akune, Mikio; and Kouchi, Susumo, 4,119,538, Cl. 210-67.000.

Kovacs, Ernest: *See*—
Boyer, John A.; Cross, Robert; Kovacs, Ernest; and Valentino, Ralph J., 4,119,211, Cl. 214-1.0BH.

Kovalenko, Dmitry Korneevich: *See*—
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.

Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Control device of a shutter for a camera. 4,119,986, Cl. 354-258.000.

Koyama, Yoshio. Long-distance spraying device for fire hose. 4,119,152, Cl. 169-25.000.

Koyo Seiko Company Limited: *See*—
Okuda, Hiroji, 4,118,967, Cl. 72-239.000.

Kozlov, Evgeny Mikhailovich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Kozyrev, Anatoly Alexandrovich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich;

Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Krafft, Kurt, to Systems Design & Development. Powder room and bathroom system and method of assembling same. 4,118,854, Cl. 29-428.000.

Krajicek, Richard W.: *See—*
Sperry, John S.; Krajicek, Richard W.; and Cradeur, Robert R., 4,118,925, Cl. 60-39.050.

Kraley, Lee E.: *See—*
Maher, Robert H.; and Kraley, Lee E., 4,119,735, Cl. 426-264.000.

Krasinskaya, Alexandra Leonidovna: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.

Kratochvil, John F., to Swift & Company. Method for rapidly producting cheese. 4,119,732, Cl. 426-36.000.

Kregl, Josef: *See—*
Vogtmann, Lothar; Braun, Martin; and Kregl, Josef, 4,119,256, Cl. 226-177.000.

Kreighbaum, William E.: *See—*
Comet, William T.; and Kreighbaum, William E., 4,119,729, Cl. 424-330.000.

Kreitner, Charles A., to Lambert Brake Corporation. Auxiliary release apparatus for a hydraulic pressure releasable brake. 4,119,355, Cl. 303-85.000.

Kremnitz, Walter, to ITO Patent-AG. Method and system for the automatic orientation and control of a robot. 4,119,900, Cl. 318-587.000.

Kremser, Fritz: *See—*
Jacob, Herbert; Blatte, Michael; and Kremser, Fritz, 4,119,704, Cl. 423-299.000.

Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Method and equipment for measuring the distance between two points. 4,119,890, Cl. 315-377.000.

Kretztechnik Gesellschaft m.b.H.: *See—*
Kretz, Carl, 4,119,890, Cl. 315-377.000.

Kroehler Mfg. Co.: *See—*
Pentzien, Fred R., 4,119,343, Cl. 297-264.000.

Kroenke, William Joseph; and Nicholas, Paul Peter, to B. F. Goodrich Company, The. Solid solution catalyst containing iron cations for the oxychlorination of an alkane. 4,119,570, Cl. 252-466.00J.

Krol, Mira-Ljudmila Solomonovna: *See—*
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.

Kronogard, Sven-Olof, to United Turbine AB & Co. Kommanditbolag. Gas turbine power plant. 4,118,927, Cl. 60-39.16R.

Kroyer, Karl Kristian Kobs. Method of making a blistered silicate material. 4,119,434, Cl. 106-306.000.

Kruger, Gerd: *See—*
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.

Krupich, Vladimir Vladimirovich: *See—*
Kavtselis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.

Kubala, Sidney W.: *See—*
Butler, J. Clinton; and Kubala, Sidney W., 4,119,248, Cl. 224-5.00W.

Kubata Ltd.: *See—*
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Makio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 191-24.000.

Kuchenbecker, Morris W., to American Can Company. Reclosable hinged blister card package. 4,119,203, Cl. 206-461.000.

Kuehne, William M.: *See—*
Goeppner, Ronald R.; Kuehne, William M.; and Russell, Timothy D., 4,118,972, Cl. 73-40.000.

Kuhn, Robert A., to American Electrical Heater Company. Device for cleaning soldering iron tips. 4,118,821, Cl. 15-104.920.

Kukota, Jury Pavlovich: *See—*
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Kulakova, Valentina Kirillovna: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.

Kummer, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,119,728, Cl. 424-324.000.

Kun, Leslie Charles, to Union Carbide Corporation. Improved heat exchanger headering arrangement. 4,119,144, Cl. 165-175.000.

Kupsky, George A., to Owens-Illinois, Inc. Segmented gas discharge display panel device and method of manufacturing same. 4,119,378, Cl. 316-19.000.

Kurakami, Shigeru: *See—*
Harazoe, Yoshiaki; and Kurakami, Shigeru, 4,119,943, Cl. 340-52.00F.

Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, to Hoxan Co., Ltd. Liquid level indicator for an extremely low temperature-liquefied gas employing a superconductor wire. 4,118,984, Cl. 73-295.000.

Kurita, Hideaki: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.

Kurosawa, Astushi: *See—*
Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, 4,118,984, Cl. 73-295.000.

Kurz, Maurice, to Societe DETEC S.A. Installation for disinfecting, by the action of formaldehyde. 4,119,400, Cl. 422-298.000.

Kuwahara, Kenji: *See—*
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.

Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, to Tokyo Shibaura Electric Co., Ltd. Heat radiation anode. 4,119,761, Cl. 428-472.000.

Kvande, Roger J. Digital linear interface system. 4,119,802, Cl. 179-15.0FD.

Kydonieus, Agis Frank. Blood and intravenous solution bag. 4,119,267, Cl. 229-53.000.

Lacroix, Guy: *See—*
Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, 4,119,724, Cl. 424-45.000.

Lade, Robert W.: *See—*
Jaskolski, Stanley V.; Lade, Robert W.; and Schutten, Herman P., 4,119,845, Cl. 250-231.00R.

Lagunov, Lev Lvovich: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.

Laiho, Erkki: *See—*
Stolpe, Erik; Honkanen, Arto; and Laiho, Erkki, 4,119,452, Cl. 156-244.190.

Lam, Charles Tak Wai, to Miles Laboratories, Inc. Test means and method for interference resistant determination of oxidizing substances. 4,119,405, Cl. 422-56.000.

Lambert Brake Corporation: *See—*
Kreitner, Charles A., 4,119,355, Cl. 303-85.000.

Lamlee, Stewart. Wearable seedling container. 4,118,889, Cl. 47-14.000.

Lamons Metal Gasket Company: *See—*
Owen, A. B.; Gifford, Bruce M.; Bahl, Horst H.; and Akins, Lewis F., 4,118,850, Cl. 29-243.520.

Lampman, William T.: *See—*
Johnson, Philip P.; and Lampman, William T., 4,119,116, Cl. 137-387.000.

Land, Edwin H., to Polaroid Corporation. Electrical cells and batteries. 4,119,770, Cl. 429-152.000.

Landis & Gyr: *See—*
Greenaway, David Leslie, 4,119,361, Cl. 350-1.100.

Lange, Wilhelm: *See—*
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.

Lanton, Seymour, to ILC Data Device Corporation. Multi-bit function generator. 4,119,959, Cl. 340-347.0SY.

Lanz, Donald D.; and Hencye, Ronald E., to Omark Industries, Inc. Integral tie strap and rivet assemblies for saw chains. 4,118,995, Cl. 74-245.00S.

Larock, Richard Craig, to Iowa State University Research Foundation, Inc. Butenolide synthesis via carbonylation of vinylmercurials in the presence of inorganic salts. 4,119,642, Cl. 260-343.600.

Larsen, Eric R.; and Ecker, Ernest L., to Dow Chemical Company, The. Method for recovering hydrogen bromide gas. 4,119,413, Cl. 55-71.000.

Larsson, Roland Axel: *See—*
Paitula, Hannu Olli; and Larsson, Roland Axel, 4,119,281, Cl. 242-107.000.

Lavenir, Roger: *See—*
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.

Laviana, Lawrence J.; Rhodes, Mark H., Jr.; and Doyle, Edward J., to M. H. Rhodes, Inc. Thermostat controller. 4,119,936, Cl. 337-303.000.

Lawson, Grover C.; and Wilson, James C., to Hollingsworth & Vose Company. Filter medium and method of making same. 4,119,543, Cl. 210-496.000.

Layotte, Pierre-Claude; and Cholet, Jacques, to Institut Francais de Petrole. Movable device for generating acoustic shear waves in the earth. 4,118,994, Cl. 74-61.000.

Layton, James Ronald: *See—*
Adams, Dustin Stetson; Field, Frederick C., Jr.; and Layton, James Ronald, 4,118,921, Cl. 57-140.00R.

Lazarus, Arnold: *See—*
Criglar, John J.; and Lazarus, Arnold, 4,119,007, Cl. 84-1.140.

Leader, Victor. Method of cutting and bagging grass. 4,118,917, Cl. 56-1.000.

Leclair, Robert A., to General Electric Company. Surge tank for pneumatically operated motors. 4,118,936, Cl. 60-720.000.

Lee, James D. Protective guard for an ignition switch on a steering column of a motor vehicle. 4,118,961, Cl. 70-237.000.

Lee, James Kelly: *See—*
Frank, Lee Fitzpatrick; and Lee, James Kelly, 4,119,979, Cl. 354-50.000.

Leenhouts, Albert C., to Superior Electric Company, The. Pulse to step motor stabilizing circuit. 4,119,901, Cl. 318-685.000.

Legendre, Philippe; and Nef, Jean-Marie, to Thomson-CSF. Distortion corrector for wide-band transistorized amplification stages. 4,119,923, Cl. 330-284.000.

Lehman, Dale T.: *See—*
Thut, Bruno H.; and Lehman, Dale T., 4,119,141, Cl. 165-82.000.

Lehmann, Gunter: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.

Leighton, Howard Noyes; Siverling, Michael McHugh; and Wilfinger, Raymond John. Optical signal processor. 4,119,947, Cl. 340-146.3AG.

Lemaitre, Gerard R., to Agence Nationale de Valorisation de la Recherche- A.N.V.A.R. Mirrors with a variable focal distance. 4,119,366, Cl. 350-295.000.

Lemon, Maurice Charles; and Spear, John Francis, to Universal Towel Company. Washing machines and rinsing machines. 4,118,958, Cl. 68-22.00R.

Lendi, Georges; Voinescu, Nicolae; and De Trey, Rene, to Tesa S.A. Micrometer head for internal measurement instrument. 4,118,867, Cl. 33-164.00C.

Lenox, Clayton R., to General Motors Corporation. Clinch weld fastener and method of securing panels together. 4,119,827, Cl. 219-98.000.

Leo Pharmaceutical Products Ltd. A/S Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
von Daehne, Welf; and Rasmussen, Poul Rodbroe, 4,119,717, Cl. 424-238.000.

Leonard, Robert E.; and Baldwin, Roger A., to Kerr-McGee Corporation. Coal deashing process having improved solvent recovery techniques. 4,119,524, Cl. 208-8.000.

Lequeux, Christian, to Union Financiere et Industrielle S.A. Method of interconnecting two members. 4,118,855, Cl. 29-447.000.

Lerman, Russell E., to United States of America, Army. Variable time fuze. 4,119,040, Cl. 102-249.000.

Lester, Charles Martin: *See—*
Ellis, Peter Manfrid; and Lester, Charles Martin, 4,119,447, Cl. 156-73.100.

LeVeen, Harry H. Radio frequency treatment of tumors while inducing hypotension. 4,119,102, Cl. 128-413.000.

Lever Brothers Company: *See—*
Postlethwaite, Dennis, 4,119,557, Cl. 252-99.000.
Van Dam, Antonius Franciscus, 4,119,564, Cl. 252-312.000.

Levy, Stephen David; and Diehl, Robert Eugene, to American Cyanamid Company. 3,4-Xylidine compounds which are useful as herbicides and as intermediates in the preparation of 2,6-dinitro-3,4-xylidine herbicides. 4,119,669, Cl. 260-577.000.

Lewchuk, Richard R., to PPG Industries, Inc. Glazing tool. 4,118,911, Cl. 52-749.000.

Lewis, Bernard L., to United States of America, Navy. Multiple memory adaptive MTI. 4,119,962, Cl. 343-7.700.

Lewis, Henry Garton, Jr.; and Calo, Seraphin Bernard, to RCA Corporation. Error detection and correction. 4,119,945, Cl. 340-146.1AQ.

Lewis, Joseph J.; and Webb, Robert L., to SK&F Lab Co. Process for preparing 4-substituted imidazole compounds. 4,119,781, Cl. 548-337.000.

Lewis, Mattie. Restraining garment. 4,119,095, Cl. 128-134.000.

Lewis, Thomas R.; and Michne, William F., to Sterling Drug Inc. Process for preparing hexahydro-1*l* (eq)-$CH_2CH_2COR_5$-2,6-methano-3-benzazocines. 4,119,628, Cl. 260-293.540.

LGZ Landis & Gyr Zug AG: *See—*
Turi Nagy, Janos; and Niederberger, Felix, 4,119,912, Cl. 325-58.000.

Liautaud, Jean. Marine platform for offshore drilling operations and the like. 4,118,942, Cl. 405-204.000.

Libbey-Owens-Ford Company: *See—*
Marriott, James G., 4,119,425, Cl. 65-107.000.
Revells, Robert G., 4,119,427, Cl. 65-159.000.

Licentia Patent-Verwaltungs-G.m.b.H: *See—*
Schroder, Ernst, 4,119,922, Cl. 330-86.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Schach, Robert; and Scholl, Peter, 4,119,868, Cl. 307-253.000.

Lieber, Albert J., to General Engineering & Applied Research, Inc. Streak camera tube. 4,120,002, Cl. 358-111.000.

Liebman, Arnold Alvin; and Muccino, Richard Robert, to Hoffmann-La Roche Inc. 25-Hydroxycholecalciferol-23,24-^{3}H and process for the preparation thereof. 4,119,647, Cl. 260-397.200.

Lier, Pierre: *See—*
Greenwald, Harry; and Lier, Pierre, 4,119,237, Cl. 220-210.000.

Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., to International Flavors & Fragrances Inc. 4-Hydroxy-2,4,6,6-tetramethyl cyclohex-2-en-1-one perfume compositions. 4,119,574, Cl. 252-522.000.

Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Substituted-norbornane perfumes compositions. 4,119,577, Cl. 252-522.000.

Lindgren, Erik Gustaf, to Telefonaktiebolaget L M Ericsson. Fire detector utilizing two bandwidths of radiation. 4,119,949, Cl. 340-630.000.

Link, Joseph: *See—*
Perkins, Carroll R.; Cable, Jesse F., III; and Link, Joseph, 4,120,022, Cl. 361-395.000.

Linker Machines, Inc.: *See—*
Melanson, Leslie B., 4,118,828, Cl. 17-1.00F.

Linkowski, Stanley A., to Chromalloy Alcon, Inc. A.C. Interlock plug, contact and method. 4,119,360, Cl. 339-217.00S.

Lipatova, Tatyana Esperovna: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.

Lipschutz, Paul, to Neiman S.A. Adjustable locking device immobilized by a safety lock. 4,118,960, Cl. 70-59.000.

Lison, Achim: *See—*
Wittkopp, Helmut; and Lison, Achim, 4,119,001, Cl. 82-1.00C.

Litty, Francis Edward: *See—*
Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., 4,119,534, Cl. 209-291.000.

Liu, Hsing Ching; and Liu, Lan-dih. Educational toy. 4,118,877, Cl. 35-9.00R.

Liu, Lan-dih: *See—*
Liu, Hsing Ching; and Liu, Lan-dih, 4,118,877, Cl. 35-9.00R.

Ljubimov, Grigory Alexandrovich: *See—*
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Lobering, Joachim, to Zimmer Aktiengesellschaft. Process for the production of linear condensates of phenol and formaldehyde. 4,119,611, Cl. 528-139.000.

Lohberg, Werner. Feed system for internal combustion engines to which a fuel-air mixture and water vapor are supplied. 4,119,063, Cl. 123-25.00B.

Lohning, Franklin M., to Franklin Enterprises, Inc. Mixing apparatus. 4,120,051, Cl. 366-142.000.

Long, William J., to United States Gypsum Company. Gypsum wallboard-making process and product. 4,119,752, Cl. 428-198.000.

Longo, John M.: *See—*
Maas, Edward T., Jr.; and Longo, John M., 4,119,559, Cl. 252-301.10R.

Loos, Herbert; Heckmaier, Manfred; and Reichert, Gerhard, to Carl Hurth Maschinen- und Zahnradfabrik. Method for precision working, particularly shaving, of gears. 4,119,014, Cl. 90-1.60R.

Lopez, John A.: *See—*
Bauer, Ronald S.; and Lopez, John A., 4,119,595, Cl. 260-21.000.

Lord Corporation: *See—*
Jazenski, Peter J.; and Manino, Louie G., 4,119,587, Cl. 260-3.500.

Lord, Richard G.; Bussjager, Rudy C.; and Geary, David F., to Carrier Corporation. High performance heat exchanger. 4,118,944, Cl. 62-98.000.

L'Oreal: *See—*
Daeninckx, Jean; and Chesbeuf, Bernard, 4,119,578, Cl. 252-548.000.
Morane, Bruno, 4,118,874, Cl. 34-101.000.

Lorenz, Horst, to Th. Kieserling & Albrecht. Apparatus for pulling elongated workpieces. 4,119,254, Cl. 226-112.000.

Losch, E. R., to Losch, Joseph D. Electrical radiant heat food warmer and organizer. 4,119,834, Cl. 219-354.000.

Losch, Joseph D.: *See—*
Losch, E. R., 4,119,834, Cl. 219-354.000.

Love, William Darrell: *See—*
Shelley, Peter Stephen; Love, William Darrell; and Stone, Barry Newell, 4,119,853, Cl. 250-385.000.

Lovness, Donald E., to Judd Ringer Corporation. Soil supplement. 4,119,429, Cl. 71-6.000.

Lowenheck, Konrad, to N. Civy & Cie, SA. Thread tension gage. 4,118,978, Cl. 73-144.000.

Lu, Chen-i, to Eastman Kodak Company. Method for manufacture of laminates which are useful as packaging materials. 4,119,743, Cl. 427-44.000.

Lu, Chen-i: *See—*
Williams, Robert Franklin, Jr.; and Lu, Chen-i, 4,119,479, Cl. 156-272.000.

Lubrizol Corporation, The: *See—*
Davis, Kirk Emerson, 4,119,549, Cl. 252-45.000.
Davis, Kirk Emerson; and Holden, Thomas Frederick, 4,119,550, Cl. 252-45.000.

Lucas Industries Limited: *See—*
Hunt, Peter, 4,119,872, Cl. 310-61.000.
Sivill, Alistair David, 4,118,932, Cl. 60-500.000.

Ludwig, Clarence H. Cutting blade. 4,119,004, Cl. 83-661.000.

Lukac, Frederick S.; and Zbryski, William P., to Allegheny Ludlum

Industries, Inc. Apparatus for treating strip. 4,119,109, Cl. 134-64.00R.
Luksch, Heinrich E.: *See*—
Choudhury, Hrishikesh; and Luksch, Heinrich E., 4,119,186, Cl. 192-0.096.
Lummus Company, The: *See*—
Riegel, Herbert; and Strangio, Vincent A., 4,119,705, Cl. 423-507.000.
Lund, Torbjorn: *See*—
Alenrot, Lennart; Hartung, Willy; Lund, Torbjorn; and Aberg, Ulf, 4,119,421, Cl. 65-14.000.
Lundbohm, Lennart: *See*—
Nilsson, Erland; and Lundbohm, Lennart, 4,119,751, Cl. 428-131.000.
Lundgren, Bert Karl Gustaf; and Thaning, Gunnar, to Strabruken AB. Refractory composition for use in metallurgical furnaces. 4,119,473, Cl. 106-58.000.
Luthje, Holger: *See*—
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, 4,119,483, Cl. 156-655.000.
Lutz, Winfried: *See*—
Schieber, Hans; and Lutz, Winfried, 4,118,955, Cl. 66-158.000.
Lyass, Abram Moiseevich: *See*—
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.
Lyles, Bobby J., to Thiokol Corporation. Means for mounting solid propellant in a rocket motor. 4,118,928, Cl. 60-255.000.
M.A.T. Industries, Inc.: *See*—
Amoroso, Michael J., 4,119,346, Cl. 299-11.000.
M. H. Rhodes, Inc.: *See*—
Laviana, Lawrence J.; Rhodes, Mark H., Jr.; and Doyle, Edward J., 4,119,936, Cl. 337-303.000.
M.O. (Mitsui-Osaka Maritime Construction Company Limited): *See*—
Makaya, Shigetoshi, 4,119,541, Cl. 210-242.00R.
M&T Chemicals Inc.: *See*—
Arcilesi, Donald A., 4,119,502, Cl. 204-55.00R.
Kenney, James F.; and Treadwell, Kenneth, 4,119,585, Cl. 521-118.000.
Maas, Edward T., Jr.; and Longo, John M., to Exxon Research & Engineering Co. UO_2F_2 inclusion compositions. 4,119,559, Cl. 252-301.10R.
Machines Chambon: *See*—
Corse, Louis Gaston, 4,119,003, Cl. 83-341.000.
Macht, Jon A.; and Blinne, David L., to Owatonna Manufacturing Company, Inc. Mounting means for attaching an implement to a vehicle. 4,119,225, Cl. 214-145.00A.
Maddaloni, Ciro, to Voxson S.p.A. Electronic tuning system for radio receivers, with digital memorization of the signal frequency. 4,119,915, Cl. 325-452.000.
Madden, William M.: *See*—
Fowle, Norman F.; Madden, William M.; and Marshall, James F., 4,119,274, Cl. 239-265.290.
Maderspach, Andrea: *See*—
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Madey, Robert W.: *See*—
Knowles, Gregory W.; Sangesland, Odd E.; Vroom, Henry J.; and Madey, Robert W., 4,119,085, Cl. 126-271.000.
Madsen, Leonard P.: *See*—
Brower, Loyd R., Jr.; Madsen, Leonard P.; and Zutaut, Chesley L., 4,119,522, Cl. 204-300.0EC.
Maeda, Hidetoshi; and Sasaki, Takehiko, to Sharp Kabushiki Kaisha. Time information correction in combination timepiece and calculator. 4,120,036, Cl. 364-705.000.
Maeda, Takeshi: *See*—
Matsuda, Tsutomu; Maeda, Takeshi; Hirabayashi, Takeo; and Watanabe, Nobuyoshi, 4,119,465, Cl. 96-75.000.
Maenhardt, Joerg: *See*—
Hoelzl, Ludwig; Maenhardt, Joerg; Reisinger, Konrad; and Singer, Johannes, 4,119,795, Cl. 178-50.000.
Maeyama, Koichiro: *See*—
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Matsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.
Maffrand, Jean-Pierre; and Pereillo, Jean-Marie, to Parcor. Piperazine compounds. 4,119,719, Cl. 424-250.000.
Magyar, Gyorgy: *See*—
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Maher, Robert H.; and Kraley, Lee E., to Gerber Products Company. Cured meat spread and its preparation. 4,119,735, Cl. 426-264.000.
Mahoney, James F.: *See*—
Freeman, Gerald C.; and Mahoney, James F., 4,119,194, Cl. 198-400.000.
Maierhofer, Alfred: *See*—
Wagner, Hans; and Maierhofer, Alfred, 4,119,738, Cl. 426-548.000.
Majure, James C.: *See*—
Outhwaite, Stephen; and Majure, James C., 4,119,846, Cl. 250-252.000.
Makaya, Shigetoshi, to M.O. (Mitsui-Osaka Maritime Construction Company Limited). Arrangement for disposing of fluid floating matter. 4,119,541, Cl. 210-242.00R.
Manigold, Alain: *See*—
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.
Manino, Louie G.: *See*—
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Mannesmann Aktiengesellschaft: *See*—
Goldschmidt, Rolf; Hansgen, Klaus; and Hiersig, Heinz M., 4,118,848, Cl. 29-159.200.
Manning, Roland Vernon, to Manning Target Systems Inc. Method of molding frangible targets. 4,119,694, Cl. 264-297.000.
Manning Target Systems Inc.: *See*—
Manning, Roland Vernon, 4,119,694, Cl. 264-297.000.
Mansen, David Joel. Method and means for beach restoration. 4,118,937, Cl. 405-30.000.
Mansson, Martin; and Torstenfelt, Ragnar, to Stal-Laval Turbin AB. Method of assembling a turbo-machine, apparatus for use in the method, and turbo machine constructed according to said method. 4,118,847, Cl. 29-156.80R.
Marbacher, Lothar, to Palitex Project Company GmbH. Yarn take-up and supply mechanism for use with textile machines. 4,118,919, Cl. 57-34.00R.
Marcussen, Henry, to Whirlpool Corporation. Centrifugal dispenser for washing machine agitator. 4,118,957, Cl. 68-17.00A.
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, to Chirana, koncern. Article dispensing device. 4,119,243, Cl. 221-298.000.
Margen, Peter Heinrich Erwin, to Aktiebolaget Atomenergi. Arrangement for transferring heat from the exhaust air leaving an enclosed volume to the input air supplied to said volume. 4,119,142, Cl. 165-104.00S.
Marien, Jozef Eduard: *See*—
Verlinden, Willy Gommaire; and Marien, Jozef Eduard, 4,119,849, Cl. 250-315.00A.
Marin, Allan; and Bradbery, Jack L., to Phone Devices Corporation. Pushbutton telephone apparatus with automatic dialing and combinational sequential control signalling capabilities. 4,119,810, Cl. 179-90.00K.
Marketing Information Systems Incorporated: *See*—
Bennett, William F., 4,119,482, Cl. 156-351.000.
Marley Cooling Tower Company, The: *See*—
Cates, Robert E., 4,119,140, Cl. 165-67.000.
Marquip, Inc.: *See*—
Marschke, Carl R., 4,119,219, Cl. 214-8.50A.
Marriott, James G., to Libbey-Owens-Ford Company. Method of bending a glass sheet to a sharp angle. 4,119,425, Cl. 65-107.000.
Marschke, Carl R., to Marquip, Inc. Batch feeder. 4,119,219, Cl. 214-8.50A.
Marshall, James F.: *See*—
Fowle, Norman F.; Madden, William M.; and Marshall, James F., 4,119,274, Cl. 239-265.290.
Martha, Eugene F.: *See*—
Ondis, Albert W.; Pizzuti, Everett V.; and Martha, Eugene F., 4,119,974, Cl. 346-145.000.
Martin, Ronald. Belt-type sander accessory. 4,118,897, Cl. 51-170.0EB.
Martin Wendel KG: *See*—
Hafner, Hermann; and Steiper, Otto, 4,119,227, Cl. 214-305.000.
Martino, Peter Vincent. Horizontal one step automatic plate processor. 4,119,991, Cl. 354-320.000.
Martres, Rene: *See*—
Brissot, Jean-Jacques Lucien Emile; Belouet, Christian; and Martres, Rene, 4,119,744, Cl. 427-45.000.
Marvin Glass & Associates: *See*—
Morrison, Howard J.; Fletchic, Donald K.; and Baer, Ralph H., 4,119,844, Cl. 250-231.00R.
Masaki, Kenji; and Aono, Shigeo, to Nissan Motor Company, Ltd. Apparatus to control the ratio of air to fuel of air-fuel mixture applied to an internal combustion engine. 4,119,074, Cl. 123-124.00B.
Masaoka, Hiromu: *See*—
Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, 4,120,006, Cl. 360-72.000.
Masclet, Jean, to Messier-Hispano. Brake disc structure. 4,119,179, Cl. 188-73.200.
Mason, Paul B.; and Osman, Martin S., to Polaroid Corporation. Fluid applicator doctor blade. 4,119,990, Cl. 354-317.000.
Massachusetts Institute of Technology: *See*—
Bernacki, Stephen E., 4,119,855, Cl. 250-402.000.
Goudey, Clifford, 4,119,300, Cl. 254-192.000.
Hsieh, Dean Shui-Tien; Bright, Roselie Ann; and Rha, ChouKyun, 4,119,733, Cl. 426-46.000.
Szoke, Abraham, 4,119,509, Cl. 204-157.10R.
Mastroianni, Sal Thomas, to Motorola Inc. Method for forming a guarded Schottky barrier diode by ion-implantation. 4,119,446, Cl. 148-1.500.
Masuda, Naosuke, to Jidosha Kiki Co., Ltd. Hydraulic braking pressure control unit. 4,119,352, Cl. 303-6.00C.
Masuda, Naosuke; and Sunaga, Nobuo, to Jidosha Kiki Co., Ltd. Hydraulic brake control assembly. 4,119,354, Cl. 303-24.00F.
Maszk, Francis S.: *See*—
Coleman, William H.; and Maszk, Francis S., 4,118,933, Cl. 73-766.000.
Matson, Stephen L., to General Electric Company. Apparatus for maintaining the separation efficiency of immobilized liquid membranes in gas separation. 4,119,408, Cl. 422-169.000.
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, to Mitsui-Nisso Corporation; Nippon Unicar Company, Limited; and Toyota Jidosha Kogyo Kabushiki Kaisha. Process for manufacturing high-resilient flexible urethan foams. 4,119,582, Cl. 521-112.000.
Matsuda, Tsutomu; Maeda, Takeshi; Hirabayashi, Takeo; and Watanabe, Nobuyoshi, to Ricoh Co., Ltd. Diazo copying material for secondary original. 4,119,465, Cl. 96-75.000.
Matsueda, Kenichi; and Kitamura, Takao, to Omron Tateisi Electronics Co. Electrical switch. 4,119,823, Cl. 200-302.000.
Matsuki, Masamitsu, to Nissan Motor Company, Ltd. Composite board structure including corrugated fiberboard and combination surface-covering and electrical-wiring arrangement incorporating the board structure. 4,119,794, Cl. 174-68.00R.
Matsuki, Toshiharu: *See*—
Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, 4,119,761, Cl. 428-472.000.
Matsuoka, Hiroo: *See*—
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, 4,119,568, Cl. 252-437.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, 4,119,542, Cl. 210-360.00A.
Matsuyama, Iwao: *See*—
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.
Matsuyama, Kazuo: *See*—
Komai, Takeshi; and Matsuyama, Kazuo, 4,119,657, Cl. 260-453.0RZ.
Matsuzaki, Hiroshi; and Tsukiji, Yoshihiro, to Kabushiki Kaisha Komatsu Seisakusho. Machine tool. 4,118,844, Cl. 29-27.00C.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V.: *See*—
Kny, Gunter; and Westphal, Otto, 4,119,714, Cl. 424-199.000.
Mayer, Peter; and Simeth, Claus, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for the flattening of sheets by means of suction. 4,119,309, Cl. 271-183.000.
Mayo, Haydn Frank: *See*—
Gordon, Sidney; Wilkins, John Thomas; and Mayo, Haydn Frank, 4,118,819, Cl. 15-49.00R.
Mazurkiewicz, Marian: *See*—
Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, 4,119,160, Cl. 175-67.000.
MBI, Inc.: *See*—
Schiffman, Murray M., 4,119,484, Cl. 156-659.000.
McCauley, Kenneth G. Minnow dipper. 4,118,807, Cl. 43-4.000.
McCracken, Mark M.: *See*—
Ross, Robert G.; and McCracken, Mark M., 4,118,866, Cl. 32-22.000.
McFarlane, Douglas A. Method and apparatus for threading worms on fishhooks. 4,118,881, Cl. 43-4.000.
McGraw-Edison Company: *See*—
Jacyno, Anthony; and Smith, Richard T., 4,118,865, Cl. 30-276.000.
McGuire, Charles H., to Motorola Inc. Fluid activated velocity switch. 4,119,819, Cl. 200-81.90R.
McMahon, Joseph F.: *See*—
Albulescu, Peter; and McMahon, Joseph F., 4,119,349, Cl. 299-2.000.
McMillan, Norman; and Dier, Henry M., to Dataproducts Corporation. Molded character belt with integral sleeves. 4,119,029, Cl. 101-111.000.
McMurtry, David Roberts: *See*—
Woodward, Clifford Stanley; and McMurtry, David Roberts, 4,118,997, Cl. 74-417.000.
McNeil Laboratories, Incorporated: *See*—
Carson, John Robert, 4,119,639, Cl. 260-326.350.
McReynolds, Glen Harold, Jr., to Esquire, Inc. Lens closure for sports light fixture. 4,120,023, Cl. 362-16.000.
McSherry, Thomas; and Gormley, Edward J. Anchorable tubular device. 4,118,910, Cl. 52-699.000.
Mead Corporation, The: *See*—
Stager, William R., 4,119,973, Cl. 346-75.000.
Mead Johnson & Company: *See*—
Comer, William T.; and Kreighbaum, William E., 4,119,729, Cl. 424-330.000.
Medtronic, Inc.: *See*—
Jirak, Thomas L., 4,119,103, Cl. 128-419.0PS.
Meginniss, Stephen Mason, III, to Extracorporeal Medical Systems, Inc. Double-action proportioning pump. 4,119,113, Cl. 137-99.000.
Mehaffy, Gordon E.; and Sawa, Kenneth B., to Beckman Instruments, Inc. Fluid switch. 4,119,120, Cl. 137-885.000.
Mehl, Wolfgang; and Monti, Roland, to Sublistatic Holding S.A. Reprographic apparatus and method. 4,119,374, Cl. 355-32.000.
Meister, Herbert, to Herbert Meister and Co. Heat and solvent resistant flexible gasket means and process for production thereof. 4,119,323, Cl. 277-235.00R.
Melanson, Leslie B., to Linker Machines, Inc. Apparatus for peeling sausages. 4,118,828, Cl. 17-1.00F.
Melehy, Mahmoud Ahmed: *See*—
Jain, Faquir Chand; and Melehy, Mahmoud Ahmed, 4,119,994, Cl. 357-16.000.
Melvin, Myron F. Metal base resistor. 4,119,937, Cl. 338-308.000.
Membrino, Robert J.; and Gaughan, John C., to Singer Company, The. Digital display data processor. 4,120,028, Cl. 364-200.000.
Merck & Co., Inc.: *See*—
Baldwin, John J., 4,119,630, Cl. 260-294.900.
Baldwin, John J.; and Ponticello, Gerald S., 4,119,718, Cl. 424-248.510.
Baldwin, John J., 4,119,721, Cl. 424-263.000.
Grier, Nathaniel; and Witzel, Bruce E., 4,119,779, Cl. 544-215.000.
Meredith, Joel B.: *See*—
Small, Robert F.; and Meredith, Joel B., 4,118,907, Cl. 52-115.000.
Merklinger, Harold M. Acoustic direction finder. 4,119,942, Cl. 340-6.00R.
Merlino, Mark F. Critical alignment loudspeaker system. 4,119,799, Cl. 179-1.00E.
Merrill, Arthur A. Assembling method and apparatus. 4,119,332, Cl. 281-25.00R.
Merten, Gerhard; and Schlusener, Horst, to Gewerkschaft Eisenhutte Westfalia. Coal plough having separately adjustable cutters and flexible fluid power and control lines therefor. 4,119,347, Cl. 299-34.000.
Messick, Bobby G.: *See*—
Newport, John J., III; and Messick, Bobby G., 4,119,632, Cl. 260-295.00R.
Messier-Hispano: *See*—
Masclet, Jean, 4,119,179, Cl. 188-73.200.
Mesur-Matic Electronics Corp.: *See*—
Newell, Harold R., 4,119,902, Cl. 318-696.000.
Metallgesellschaft Aktiengesellschaft: *See*—
Simmrock, Karl Hans; and Hellemanns, Gerhard, 4,119,507, Cl. 204-80.000.
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.
Metallwerk Max Brose & Co.: *See*—
Becker, Herbert, 4,118,893, Cl. 49-348.000.
Metteer, N. Bruce; and Quick, John D., to Motorola Inc. Constant rate sweep frequency generator. 4,119,927, Cl. 331-11.000.
Metzger, Lenard M.; and Johnson, Robert B., to Eastman Kodak Company. Overlap track servo for dynamic position correction in a rotary-head tape recorder. 4,120,008, Cl. 360-70.000.
Meyer, Rudolf: *See*—
Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, 4,119,464, Cl. 96-68.000.
Meza, Francisco: *See*—
Ocampo, Felipe; Meza, Francisco; and Aguirre, Francisco, 4,119,497, Cl. 203-29.000.
Mezentsev, Alexandr Nikolaevich: *See*—
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.
Michelotti, Victor Galileo. Knock-down shelving structure. 4,119,045, Cl. 108-156.000.
Michne, William F.: *See*—
Lewis, Thomas R.; and Michne, William F., 4,119,628, Cl. 260-293.540.
Michon, Maurice; and Sturel, Bernard, to Compagnie General d'Electrocite S.A. Laser head and application thereof to a laser generator device. 4,119,928, Cl. 331-94.50P.
Micklus, Michael J.; and Ou-Yang, David T., to Biosearch Medical Products Inc. Coated substrate having a low coefficient of friction hydrophilic coating and a method of making the same. 4,119,094, Cl. 128-132.00R.
Microdot Inc.: *See*—
Berecz, Imre, 4,119,130, Cl. 151-41.760.
Midland-Ross Corporation: *See*—
Durling, Harold, 4,119,351, Cl. 303-6.00M.
Hipp, James D., 4,119,041, Cl. 105-308.00R.
Jwuc, Karl J., 4,119,209, Cl. 213-121.000.
Midorikawa, Yoshio, to Glasrock Products, Inc. Method of manufacturing a marking pen having a nib and an ink reservoir integral therewith. 4,119,756, Cl. 428-295.000.
Mignen, Bernard, to Essilor International, Cie Generale d'Optique. Method of making an ophthalmic lens of progressively variable focal power. 4,118,853, Cl. 29-424.000.
Miles Laboratories, Inc.: *See*—
Clemens, Anton Hubert, 4,119,406, Cl. 422-81.000.
Lam, Charles Tak Wai, 4,119,405, Cl. 422-56.000.
Miller, John R., to Southern Railway Company. Method and apparatus for treating ballast. 4,119,154, Cl. 171-16.000.
Miller, Jorge. Electrolytic cell for treatment of water. 4,119,518, Cl. 204-263.000.
Miller, Laird F.: *See*—
Bambury, Ronald E.; Edwards, Michael L.; and Miller, Laird F., 4,119,775, Cl. 544-28.000.
Miller, Richard Foster. Certain azaphenoxathiin compounds. 4,119,629, Cl. 260-294.80B.
Miller, Stephen D.: *See*—
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,119,220, Cl. 214-8.50A.
Miller, William Joseph: *See*—
Golner, Jerold Julius; Miller, William Joseph; and Strout, Russell Brown, 4,119,251, Cl. 225-20.000.
Mimura, Yoshiyuki: *See*—
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.

Minnesota Mining and Manufacturing Company: *See—*
Frishman, Leslie O.; and Nelson, Kerry S., 4,119,373, Cl. 355-3.00R.

Minolta Camera Kabushiki Kaisha: *See—*
Imura, Toshinori; and Yamashita, Maki, 4,119,982, Cl. 354-155.000.
Tanaka, Harumi, 4,119,983, Cl. 354-197.000.

Mirdadian, Mohammad Kian. Methods and systems for use with pulse train circuitry. 4,120,032, Cl. 364-510.000.

Mish, Robert J.: *See—*
Naves, David G.; Aquino, Herman A.; and Mish, Robert J., 4,119,042, Cl. 105-368.00R.

Misiano, Carlo: *See—*
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, 4,118,947, Cl. 62-514.00R.

Mitchell, David S.; and Nagel, Robert H., to IDR, Inc. Multiple channel CATV system utilizing row grabber interface as CATV input. 4,120,003, Cl. 358-142.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Iguchi, Shigeru; Iwata, Tamotu; and Yano, Tetsuo, 4,119,463, Cl. 96-67.000.

Mitsubishi Seiko Kabushiki Kaisha: *See—*
Abe, Yoshihiko; Okabe, Isao; and Shirota, Atsushi, 4,119,443, Cl. 148-12.100.

Mitsuda, Tadao; Yasuda, Takeru; and Okuda, Sigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Switch device for detecting a position of a throttle valve of an internal combustion engine. 4,118,976, Cl. 73-118.000.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Saitoh, Kozo; and Izumi, Sumio, 4,119,533, Cl. 209-155.000.

Mitsui-Nisso Corporation: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.

Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, to Nippon Telegraph and Telephone Public Corp.; Hitachi, Ltd.; and Fujitsu Limited. Air bearing head support. 4,120,010, Cl. 360-103.000.

Mittag, Douglas C., to Aurora Equipment Company. Crossover or bridge. 4,118,816, Cl. 14-69.500.

Miutel, Alexander: *See—*
Filip, Stanislaw Franz; and Miutel, Alexander, 4,119,583, Cl. 521-103.000.

Miyamori, Katsuya; Murai, Toru; and Shitamori, Osamu, to Miyamori, Katsuya. Subaqueous heater apparatus. 4,119,082, Cl. 126-263.000.

Miyaoka, Senri, to Sony Corporation. Cathode ray tube. 4,119,883, Cl. 313-414.000.

Miyashita, Kasumi: *See—*
Nakao, Yukihiro; Miyashita, Kasumi; and Toda, Jun, 4,119,435, Cl. 127-34.000.

Miyashita, Tsune: *See—*
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.

Miyauchi, Katsuki: *See—*
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.

Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. System for transporting cheeses produced by spinning machinery. 4,118,920, Cl. 57-34.00R.

Miyoshi, Noriomi; and Tsuruoka, Michihiko, to Fuji Electric Co., Ltd. Mechanism for converting rotary motion into linear reciprocating motion. 4,118,993, Cl. 74-37.000.

Mizuma, Katsuhisa; and Awazu, Tetsuro, to Neturen Company Ltd. Helical reinforcing bar for steel cage in concrete structure. 4,119,764, Cl. 428-592.000.

Mobil Oil Corporation: *See—*
Braid, Milton, 4,119,548, Cl. 252-42.700.
Heiba, El Ahmadi I.; and Dessau, Ralph M., 4,119,646, Cl. 260-346.220.

Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, to Ricoh Co., Ltd. Toner charging apparatus. 4,119,060, Cl. 118-653.000.

Modern Album and Finishing Co., Inc.: *See—*
Froehlig, Rudolph A., 4,119,198, Cl. 206-312.000.

Moellgaard, Klaus; and Sendtko, Ulrich, to Dr. Ing. Rudolf Hell, GmbH. Apparatus and method for stepwise scanning of patterns according to a scanning raster. 4,120,045, Cl. 364-900.000.

Moena, Nibaldo Mosciatti. Miniature soccer-football game toy. 4,119,314, Cl. 273-85.00F.

Mohawk Data Sciences Corp.: *See—*
Yeschick, Waldemar, 4,119,953, Cl. 340-324.0AD.

Molleken, Reiner: *See—*
Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, 4,119,671, Cl. 260-600.00R.

Mollenkopf, Lloyd C., to Rosemount Office Systems, Inc. Supports for movable partitions. 4,119,287, Cl. 248-243.000.

Monroe Auto Equipment Company: *See—*
Hoobrechts, Albert J. G.; and van Eekelen, Alex H. A. M., 4,118,825, Cl. 15-250.320.

Monsan, Pierre: *See—*
Durand, Gilbert; and Monsan, Pierre, 4,119,494, Cl. 195-68.000.

Monsanto Company: *See—*
Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,119,762, Cl. 428-524.000.
Bloomfield, Jordan J.; and Owsley, Dennis C., 4,119,575, Cl. 252-522.000.
Gaertner, Van R.; and Hamm, Philip C., 4,119,430, Cl. 71-86.000.
King, Henry L.; and Wu, Chester C., 4,119,614, Cl. 528-283.000.
Knowles, William S.; and Sabacky, Milton J., 4,119,652, Cl. 260-429.00R.
Sullivan, Alfred Bay, 4,119,780, Cl. 548-329.000.
Veazey, Thomas M., 4,119,747, Cl. 427-424.000.

Monti, Roland: *See—*
Mehl, Wolfgang; and Monti, Roland, 4,119,374, Cl. 355-32.000.

Moody, David. Vehicle of adjustable width. 4,119,224, Cl. 214-85.000.

Mookherjee, Braja Dulal: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.

Moore, Donald K.; Beaman, George R.; Hightower, John D.; and Graham, Craig W., Jr., to United States of America, Navy. Acoustic coupler. 4,119,941, Cl. 340-5.00R.

Moore, Joseph E., to Chevron Research Company. Method for control of fungi using 4-halo-5-aryl-1,2,3,-dithiazoles. 4,119,722, Cl. 424-270.000.

Moore, Warren F., to General Electric Company. Method of forming a superalloy. 4,119,458, Cl. 75-170.000.

Morane, Bruno, to L'Oreal. Hair dryer, especially for long hair. 4,118,874, Cl. 34-101.000.

Morgan, Mitchell L.: *See—*
Naves, David G.; Aquino, Herman A.; and Morgan, Mitchell L., 4,119,043, Cl. 105-368.00R.

Morgan, Robert Anthony, to Terminal Data Corporation. Microfiche inspection apparatus. 4,119,372, Cl. 353-26.00R.

Mori, Kaoru: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.

Mori, Kojiro: *See—*
Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, 4,119,617, Cl. 528-360.000.

Moricca, Anthony C.: *See—*
Moricca, Larry S.; and Utasi, Joseph G., 4,119,811, Cl. 340-407.000.

Moricca, Larry S.; and Utasi, Joseph G., to Moricca, Anthony C. Photo-vibratory transducer. 4,119,811, Cl. 340-407.000.

Moritomo, Sadao; Tatsumi, Youji; and Sugita, Terumitsu, to Seiko Seiki Kabushiki Kaisha. Method for controlling grinding process. 4,118,900, Cl. 51-281.00R.

Morken, John Edward. Drapery pleat holder. 4,119,134, Cl. 160-349.00R.

Moroco, Philip A.; and Brow, Gaylord T. Object supports. 4,119,302, Cl. 256-48.000.

Morokawa, Shigeru; and Hashimoto, Yukio, to Citizen Watch Co. Ltd. Frequency division circuit. 4,119,867, Cl. 307-225.00C.

Morris, James C.: *See—*
Newell, P. Bruce; and Morris, James C., 4,119,888, Cl. 315-205.000.

Morrison, Howard J.; Fletchic, Donald K.; and Baer, Ralph H., to Marvin Glass & Associates. Phonograph cartridge and sensor assembly. 4,119,844, Cl. 250-231.00R.

Morton, Douglas Ross, Jr., to Upjohn Company, The. Inter-oxa-9-deoxy-9,10-didehydro-PGD$_1$ compounds. 4,119,672, Cl. 562-503.000.

Morton, John; and Stevens, Keith Drummond, to Cableform Limited. Pulse controllers. 4,119,898, Cl. 318-341.000.

Moser, Kurt; Wegmann, Helmut; and Weigele, Reinhold, to Develop KG Dr. Eisbein & Co. Mounting arrangement for component elements of a copying machine. 4,119,059, Cl. 118-644.000.

Moser, Richard A., to Helm Instrument Company. Auto zero circuit. 4,119,918, Cl. 328-165.000.

Moses, Lucius, to Heyward, Viola M. Gas stove attachment. 4,119,021, Cl. 99-425.000.

Moshofsky, Jerome F.: *See—*
Harris, Richard D.; Smith, Franklin G.; and Moshofsky, Jerome F., 4,118,835, Cl. 24-73.0MC.

Mossberg Hubbard a Division of Wanskuck Company: *See—*
Hosbein, Hugh W., 4,119,279, Cl. 242-54.00R.

Motokawa, Yutaka, to Kakogawa Plastics Kabushiki Kaisha. Heat-controlled doctor knife. 4,119,836, Cl. 219-528.000.

Motorola Inc.: *See—*
Bevacqua, Louis Albert, 4,118,991, Cl. 74-10.330.
Bouvier, David William; Brenner, Charles H.; and Butler, Walker, 4,119,966, Cl. 343-7.700.
Mastroianni, Sal Thomas, 4,119,446, Cl. 148-1.500.
McGuire, Charles H., 4,119,819, Cl. 200-81.90R.
Metteer, N. Bruce; and Quick, John D., 4,119,927, Cl. 331-11.000.

Motosugi, Katuhiko: *See—*
Noguchi, Masaaki; Tanaka, Yukiyasu; and Motosugi, Katuhiko, 4,119,065, Cl. 123-32.0SP.

Mower, Michael Lee; Carleton, William Arthur; and Packard, Gary Richard, to Facet Enterprises, Inc. Automotive fan drive assembly. 4,119,184, Cl. 192-82.00T.

Moy, Thomas P.: *See—*
Isgur, Irving E.; Alexander, Robert R.; and Moy, Thomas P., 4,119,602, Cl. 260-29.6NR.

Moyer, Ernest P., to American Chain & Cable Company, Inc. Movable storage unit system. 4,119,376, Cl. 312-198.000.

Moyroud, Louis M. Photographic type composing machine. 4,119,977, Cl. 354-7.000.

Muacevic, Gojko: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,119,728, Cl. 424-324.000.

Muccino, Richard Robert: *See—*
Liebman, Arnold Alvin; and Muccino, Richard Robert, 4,119,647, Cl. 260-397.200.

Mugitani, Yasuhiro: *See—*
Tuda, Goro; Sawada, Yoshihisa; and Mugitani, Yasuhiro, 4,119,015, Cl. 90-17.000.

Muka, Edward; and Glover, Clyde Pershing, to Eastman Kodak Company. Incubator and radiometric scanner. 4,119,381, Cl. 356-244.000.

Muller, Jean-Claude, to Rellumit-Inter. Counter-current automatic cleaning filter. 4,119,540, Cl. 210-142.000.

Muller, Rolf, to Papst-Motoren KG. Brushless d.c. motor with precise speed control. 4,119,895, Cl. 318-254.000.

Munk, Michael: *See—*
Boochever, Evelyn; and Munk, Michael, 4,118,945, Cl. 62-176.00C.

Murai, Toru: *See—*
Miyamori, Katsuya; Murai, Toru; and Shitamori, Osamu, 4,119,082, Cl. 126-263.000.

Murao, Mikio: *See—*
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.

Muroga, Hisashi: *See—*
Noguchi, Ichiro; Hayashi, Chiaki; and Muroga, Hisashi, 4,119,875, Cl. 310-248.000.

Murphy, Walter Thomas, to B. F. Goodrich Company, The. Rubbery bladders from epoxy compositions. 4,119,592, Cl. 260-18.0PF.

Murray, Paul Michael, to Redifon Flight Simulation Limited. Raster-scan display apparatus for computer-generated images. 4,119,956, Cl. 340-324.0AD.

Myers, Timothy: *See—*
Snyder, J. Rush; and Myers, Timothy, 4,119,277, Cl. 241-167.000.

Myodo, Osamu: *See—*
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.

N. Civy & Cie, SA: *See—*
Lowenheck, Konrad, 4,118,978, Cl. 73-144.000.

N. V. Bekaert S.A.: *See—*
Verbauwhede, Germain; and Coopman, Frans, 4,119,748, Cl. 428-36.000.

Nabisco, Inc.: *See—*
Spiel, Albert, 4,119,734, Cl. 426-72.000.

Nabiullin, Faat Khatovich; Gertsik, Efim Mikhailovich; Rodionov, Jury Timofeevich; and Rabinovich, Vyacheslav Anatolievich. Device for introducing fillers and terminal into galvanic cell. 4,119,126, Cl. 141-100.000.

Nachtman, Elliot S.; and Hitchcock, Ronald G., to Tower Oil & Technology Co. High temperature lubricant composition. 4,119,547, Cl. 252-25.000.

Nafissi, Ahmad: *See—*
Zimmer, Erich; Nafissi, Ahmad; and Winkhaus, Gunther, 4,119,698, Cl. 423-82.000.

Nagai, Hisomu: *See—*
Aoki, Yutaka; Hase, Akira; Ito, Jiro; and Nagai, Hisomu, 4,119,409, Cl. 44-1.00R.

Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, to Sony Corporation. Random access recording and/or playback system. 4,120,006, Cl. 360-72.000.

Nagaoka, Koji: *See—*
Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, 4,119,761, Cl. 428-472.000.

Nagatsu, Toshiharu; and Sakakibara, Shumpei, to Ajinomoto Co., Inc. Novel dipeptide derivatives, salts thereof, and method of measuring enzyme activity. 4,119,620, Cl. 260-112.50R.

Nagel, Robert H.: *See—*
Mitchell, David S.; and Nagel, Robert H., 4,120,003, Cl. 358-142.000.

Nagel, Robert I., to Dominion Auto Accessories Limited. Stop, tail and signal lamp. 4,120,018, Cl. 362-333.000.

Nagumo, Michihiko; Inoue, Tohru; and Okumura, Naoki, to Nippon Steel Corporation. Process for manufacturing a steel product. 4,119,442, Cl. 148-2.000.

Nahay, Lawrence Paul, to RCA Corporation. Digital time division multiplex switching system. 4,119,807, Cl. 179-18.0BC.

Nakada, Akira: *See—*
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.

Nakagawa, Tadashi: *See—*
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.

Nakahara, Muneo: *See—*
Komorita, Fujio; and Nakahara, Muneo, 4,119,471, Cl. 106-47.00Q.

Nakai, Masanori: *See—*
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.

Nakajima, Seiji: *See—*
Sato, Mituharu; and Nakajima, Seiji, 4,119,213, Cl. 214-1.0BB.

Nakamura, Junichi: *See—*
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.

Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, to Sekisui Kagaku Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Hayashi Zoen. Connectable nursery box structures having compartmentalizing grids. 4,118,892, Cl. 47-66.000.

Nakao, Yukihiro; Miyashita, Kasumi; and Toda, Jun, to Takeda Chemical Industries, Ltd. Process of preparing soybean polysaccharides. 4,119,435, Cl. 127-34.000.

Narita, Kinichiro: *See—*
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.

National Blank Book Company, Inc.: *See—*
Cassidy, Raymond T.; and St. Amand, Robert, 4,119,200, Cl. 206-387.000.

National Can Corporation: *See—*
Hinds, James J., 4,119,843, Cl. 250-222.0PC.

National Distillers and Chemical Corporation: *See—*
Bartsch, Raymond C., 4,119,567, Cl. 252-430.000.
Braus, Harry; and Woltermann, Jay R., 4,119,789, Cl. 560-161.000.
Speca, Anthony N., 4,119,773, Cl. 526-130.000.

National Research Development Corporation: *See—*
Hartnagel, Hans Ludwig; and Bayraktaroglu, Burhan, 4,119,993, Cl. 357-23.000.
Taylor, Wilfred Kenelm, 4,119,946, Cl. 340-146.30Q.

National Semiconductor Corporation: *See—*
Varadi, Andrew G., 4,120,047, Cl. 365-227.000.

National Starch & Chemical Corporation: *See—*
Tessler, Martin M., 4,119,487, Cl. 162-175.000.

National Steel Corporation: *See—*
Costakis, Andrew L., 4,119,515, Cl. 204-211.000.

National Union Electric Corporation: *See—*
Smaling, Oral M., 4,119,414, Cl. 55-97.000.

Nava, Giorgio Furtunato, to Vega S.p.A. Bending unit for a bending-glueing machine. 4,119,018, Cl. 93-49.0AC.

Naves, David G.; Aquino, Herman A.; and Mish, Robert J., to Pullman Incorporated. Railway car counterbalanced tilting deck. 4,119,042, Cl. 105-368.00R.

Naves, David G.; Aquino, Herman A.; and Morgan, Mitchell L., to Pullman Incorporated. Railway car counterbalanced tilting deck. 4,119,043, Cl. 105-368.00R.

NCR Corporation: *See—*
Farber, Sheldon, 4,119,776, Cl. 542-441.000.

Neasham, Leo B. Drive unit for selectively effecting driving or free-wheeling condition of propeller shafting. 4,118,951, Cl. 64-4.000.

Nedbal, Richard A.: *See—*
Estes, Bay E., III; and Nedbal, Richard A., 4,119,896, Cl. 318-266.000.

Nef, Jean-Marie: *See—*
Legendre, Philippe; and Nef, Jean-Marie, 4,119,923, Cl. 330-284.000.

Neiman S.A.: *See—*
Lipschutz, Paul, 4,118,960, Cl. 70-59.000.

Nelson, Kerry S.: *See—*
Frishman, Leslie O.; and Nelson, Kerry S., 4,119,373, Cl. 355-3.00R.

Nelson, Kyler Fischer, to Xerox Corporation. Fast acting gain photocurrent device. 4,119,840, Cl. 250-211.00R.

Nelson, Walter R. Laminar stream spout attachment. 4,119,276, Cl. 239-590.300.

Nemoto, Ichiro: *See—*
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.

Nemoto, Shigeru: *See—*
Kobayashi, Minoru; and Nemoto, Shigeru, 4,119,822, Cl. 200-246.000.

Neturen Company Ltd.: *See—*
Mizuma, Katsuhisa; and Awazu, Tetsuro, 4,119,764, Cl. 428-592.000.

Neuzil, Richard W.; and Fergin, Richard L., to UOP Inc. Desorbent for separation of butene-1 from a C4 hydrocarbon mixture using zeolite X. 4,119,678, Cl. 260-677.00A.

Neville, Glenn E.: *See—*
Wilkins, Paul E.; Neville, Glenn E.; and Fitzgerald, Robert T., 4,119,039, Cl. 102-214.000.

Newell, Harold R., to Mesur-Matic Electronics Corp. Acceleration/deceleration control circuit for a stepping motor. 4,119,902, Cl. 318-696.000.

Newell, P. Bruce; and Morris, James C., to GTE Sylvania Incorporated. Operating circuit for flash lamp directly coupled to AC source. 4,119,888, Cl. 315-205.000.

Newport, John J., III; and Messick, Bobby G., to Dow Chemical Company, The. Method of promoting the crystallization of picloram. 4,119,632, Cl. 260-295.00R.

Newquist, Barbara Lee; and Newquist, Scott C. Garment-supportable tennis ball pocket. 4,119,247, Cl. 224-5.00D.

Newquist, Scott C.: *See—*
Newquist, Barbara Lee; and Newquist, Scott C., 4,119,247, Cl. 224-5.00D.

Nibu, Toshiharu: *See—*
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, 4,119,542, Cl. 210-360.00A.

Nicholas, Paul Peter: *See—*
Kroenke, William Joseph; and Nicholas, Paul Peter, 4,119,570, Cl. 252-466.00J.
Nichols, A. G., Jr.: *See—*
Jenkins, John W.; and Nichols, A. G., Jr., 4,119,311, Cl. 272-65.000.
Nichols, Andrew J., III, to Intel Corporation. Circuit for display, such as video game display. 4,119,955, Cl. 340-324.0AD.
Nidola, Antonio: *See—*
Spaziante, Placido Maria; and Nidola, Antonio, 4,119,503, Cl. 204-59.00R.
Niederberger, Felix: *See—*
Turi Nagy, Janos; and Niederberger, Felix, 4,119,912, Cl. 325-51.000.
Nierat, Jeanine: *See—*
Buendia, Jean; Nierat, Jeanine; and Deroy, Robert, 4,119,727, Cl. 424-275.000.
Nihon Denshi Kabushiki Kaisha: *See—*
Tanaka, Kazumitsu; and Goto, Nobuo, 4,119,854, Cl. 250-397.000.
Nihon Oil and Fats Co., Ltd.: *See—*
Komai, Takeshi; and Matsuyama, Kazuo, 4,119,657, Cl. 260-453.0RZ.
Nikonets, Leonid Alexeevich: *See—*
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.
Nilsson, Erland; and Lundbohm, Lennart, to Nyby Bruk AB. Cover means for protecting tubes conveying hot mediums. 4,119,751, Cl. 428-131.000.
Nilsson, Nils Arne: *See—*
Hernestam, Sven Erik Harry; Nilsson, Nils Arne; Nordvi, Curt Harry; and Willard, Lars-Olof, 4,119,711, Cl. 424-54.000.
Ninomiya, Takeshi, to Sony Corporation. Video time base corrector. 4,120,000, Cl. 358-8.000.
Nippon Electric Co., Ltd.: *See—*
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, 4,119,536, Cl. 210-90.000.
Sugawara, Mitsutoshi, 4,119,919, Cl. 329-103.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.
Nippon Kogaku K.K.: *See—*
Gonda, Tsunemi, 4,119,906, Cl. 323-22.00T.
Nippon Oil Company, Ltd.: *See—*
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,119,492, Cl. 195-28.0VB.
Nippon Shokubai Kagaku Kogyo Co., Ltd: *See—*
Tsuchiya, Michio, 4,119,670, Cl. 260-585.00C.
Nippon Steel Corporation: *See—*
Nagumo, Michihiko; Inoue, Tohru; and Okumura, Naoki, 4,119,442, Cl. 148-2.000.
Nippon Telegraph and Telephone Public Corp.: *See—*
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.
Nippon Unicar Company, Limited: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Nippon Zeon Co. Ltd.: *See—*
Okuda, Takao; and Wada, Akira, 4,119,596, Cl. 260-21.000.
Nishi, Yoshio: *See—*
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.
Nishi, Yusaku; and Fujii, Hideo, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing thick-film circuit devices. 4,119,480, Cl. 156-271.000.
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, to Japan Gasoline Company, Ltd. Solid supported catalysts for catalytic reduction of nitrogen oxides in waste gases. 4,119,568, Cl. 252-437.000.
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, to Japan Gasoline Company, Ltd. Process for removal of nitrogen oxides from waste gas. 4,119,703, Cl. 423-239.000.
Nishizawa, Hiroshi; Tanaka, Shigeyoshi; and Fujishima, Minoru, to Hitachi Chemical Company, Ltd. Powder coating composition. 4,119,479, Cl. 260-835.000.
Nissan Motor Company, Ltd.: *See—*
Asano, Masaharu, 4,119,070, Cl. 123-119.0EC.
Asano, Masaharu, 4,119,072, Cl. 123-119.0EC.
Fujii, Toshihiko, 4,119,451, Cl. 156-211.000.
Hayashi, Kazuo; and Kamijo, Ken, 4,119,415, Cl. 55-124.000.
Hayashi, Kazuo; and Kamijo, Ken, 4,119,416, Cl. 55-136.000.
Kondo, Iori, 4,119,344, Cl. 297-385.000.
Masaki, Kenji; and Aono, Shigeo, 4,119,074, Cl. 123-124.00B.
Matsuki, Masamitsu, 4,119,794, Cl. 174-68.00R.
Yamagishima, Takayuki; and Inoue, Naohiko, 4,119,172, Cl. 180-141.000.
Nissen, Reinhard: *See—*
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Nissho-Iwai Co., Ltd.: *See—*
Aoki, Yutaka; Hase, Akira; Ito, Jiro; and Nagai, Hisomu, 4,119,409, Cl. 44-1.00R.
Nittetu Chemical Engineering Ltd.: *See—*
Yamauchi, Tadashi; Akune, Mikio; and Kouchi, Susumo, 4,119,538, Cl. 210-67.000.
Nitto Boseki Co., Ltd.: *See—*
Shono, Hiroaki; Noji, Toshio; Ishikawa, Shinzo; and Wakasa, Isao, 4,119,420, Cl. 65-1.000.
Nobbe, Paul J. Method and mold for producing concrete slotted floor. 4,119,691, Cl. 264-71.000.
Noda, Isao: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Noguchi, Ichiro; Hayashi, Chiaki; and Muroga, Hisashi, to Gakken Co., Ltd. Kabushiki Kaisha Gakushu Kenkyusha. Direct current electric motor. 4,119,875, Cl. 310-248.000.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Motosugi, Katuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine having an auxiliary combustion chamber and a method of control of combustion in said internal combustion engine. 4,119,065, Cl. 123-32.0SP.
Noji, Toshio: *See—*
Shono, Hiroaki; Noji, Toshio; Ishikawa, Shinzo; and Wakasa, Isao, 4,119,420, Cl. 65-1.000.
Noll, Klaus-Reinhold: *See—*
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.
Nomura, Masahiro: *See—*
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Nomura, Takao: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Nomura, Yuichi: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Nonaka, Chiaki: *See—*
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,120,019, Cl. 361-385.000.
Nonnenmacher, Gerhard; Robeller, Walter; and Veil, Karl, to Robert Bosch GmbH. Control arrangement for a hydrostatic drive. 4,118,931, Cl. 60-444.000.
Nordvi, Curt Harry: *See—*
Hernestam, Sven Erik Harry; Nilsson, Nils Arne; Nordvi, Curt Harry; and Willard, Lars-Olof, 4,119,711, Cl. 424-54.000.
Norris, Alan H.; and Chambley, Phillip W., to Champion International Corporation. Weave-de-weave process. 4,118,842, Cl. 28-218.000.
Norris, Alan Hedley: *See—*
Chambley, Phillip Wayne; and Norris, Alan Hedley, 4,119,826, Cl. 219-10.810.
Noschese, Rocco James, to Burndy Corporation. Interconnecting module. 4,119,818, Cl. 200-50.0AA.
Nothen, Karl: *See—*
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Nowak, Edward Norbert: *See—*
Hollingshead, William Shepherd; and Nowak, Edward Norbert, 4,119,791, Cl. 568-768.000.
Nozaki, Hiromi; and Hara, Haruo, to Konishiroku Photo Industry Co., Ltd. Method and apparatus for measuring erythrocyte sedimentation rate. 4,118,974, Cl. 73-61.400.
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich. Cement and process for producing same. 4,119,467, Cl. 106-100.000.
Nusbaumer, Kay T.; and Boyer, Peter W., to PHD, Inc. Non-rotatable fluid power cylinder. 4,119,017, Cl. 92-108.000.
Nyby Bruk AB: *See—*
Nilsson, Erland; and Lundbohm, Lennart, 4,119,751, Cl. 428-131.000.
Nyswander, Reuben E.; and Roquemore, Cass R. Sequentially triggering two or more hydrogen thyratrons with precision timing. 4,119,917, Cl. 328-67.000.
Oakley, John; and Ruffell, Derrick, to Schlegel (UK) Limited. Three-part seal construction. 4,119,325, Cl. 277-207.00R.
Oberlin, Max E.: *See—*
Audesse, Emery G.; Griffin, Robert M.; and Oberlin, Max E., 4,119,832, Cl. 219-270.000.
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O'Brien, Edward F.: *See—*
Putnam, Roger L., Jr.; and O'Brien, Edward F., 4,118,913, Cl. 53-551.000.
Ocampo, Felipe; Meza, Francisco; and Aguirre, Francisco, to Instituto

Mexicano del Petroleo. Process for the purification of acetonitrile. 4,119,497, Cl. 203-29.000.
Occidental Oil Shale, Inc.: *See—*
Bartel, William J.; Burton, Robert S., III; and Cha, Chang Yul, 4,119,345, Cl. 299-2.000.
O'Farrell, Charles P.; and Serniuk, George E., to Exxon Research & Engineering Co. Process for sulfonating unsaturated elastomers using acyl sulfates. 4,119,616, Cl. 526-31.000.
Off, Joseph W. A.; and Early, Judson Horace, to Haggar Company. Apparatus for crimping belt loops. 4,119,246, Cl. 223-52.000.
Ogawa, Iwakichi, to Takara Co., Ltd. Articulated magnetic doll. 4,118,888, Cl. 46-22.000.
Ogden, Cameron S.: *See—*
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Ohlund, Ingvar; and Robertson, Hans, to Saab-Scania Aktiebolag. Target raising device with curved supporting runners. 4,119,317, Cl. 273-105.600.
Ohmori, Muneki: *See—*
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Ohno, Masayoshi: *See—*
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Ohnuma, Teruyuki: *See—*
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Ohya, Akiyoshi: *See—*
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Okabe, Isao: *See—*
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Okada, Kiyomichi: *See—*
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Oki Electric Industry Co., Ltd.: *See—*
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Okuda, Hiroji, to Koyo Seiko Company Limited. Apparatus for releasing drive assembly from roll neck and connecting same thereto. 4,118,967, Cl. 72-239.000.
Okuda, Koya: *See—*
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Okuda, Takao; and Wada, Akira, to Nippon Zeon Co. Ltd. Thermosetting coating compositions. 4,119,596, Cl. 260-21.000.
Okumura, Naoki: *See—*
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Olin Corporation: *See—*
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Olinkraft, Inc.: *See—*
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Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., to Foxboro Company, The. Electric signal transmitter for vibrating-wire sensor. 4,118,977, Cl. 73-141.00R.
Olson, Frank A.: *See—*
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Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, to Gruppo Lepetit S.p.A. Substituted 1,2,4-triazole derivatives. 4,119,635, Cl. 260-308.00R.
Omron Tateisi Electronics Co.: *See—*
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Onda, Eiichi: *See—*
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.
Ondis, Albert W.; Pizzuti, Everett V.; and Martha, Eugene F., to Atlan-Tol Industries, Inc. Recording device. 4,119,974, Cl. 346-145.000.
Ono Seiko Co., Ltd.: *See—*
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Orbitran Company, Inc.: *See—*
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Orndorff, James Allen, Jr., to Chicago Bridge & Iron Company. Rigid mooring arm quick disconnect. 4,119,051, Cl. 114-249.000.
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Orr, William J. Breaker point assembly. 4,119,817, Cl. 200-19.00A.
Osaka Soda Co. Ltd.: *See—*
Yokota, Noriyuki; Tokuda, Shingo; Ito, Yoshiro; and Itaya, Kenji, 4,119,508, Cl. 204-128.000.
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Taylor, Frank H., 4,119,146, Cl. 166-72.000.
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Ottenhues, Ludger, to Windmoller & Holscher. Apparatus for applying and withdrawing a pressure cylinder acting on the plate cylinder in an intaglio printing press. 4,119,031, Cl. 101-153.000.
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Outboard Marine Corporation: *See—*
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Outhwaite, Stephen; and Majure, James C., to Sangamo Weston, Inc. Non-contacting gage apparatus and method. 4,119,846, Cl. 250-252.000.
Overton, Arthur Wayne, to Stackpole Components Company. Normally closed switch. 4,119,821, Cl. 200-159.00R.
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Owen, A. B.; Gifford, Bruce M.; Bahl, Horst H.; and Akins, Lewis F., to Lamons Metal Gasket Company. Gasket forming apparatus. 4,118,850, Cl. 29-243.520.
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Cohen, Eleanor B.; Stassen, William N.; and Wintgens, James C., 4,119,477, Cl. 106-99.000.
Owens-Illinois, Inc.: *See—*
Kupsky, George A., 4,119,378, Cl. 316-19.000.
Uhlig, Albert R., 4,119,235, Cl. 220-71.000.
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Oyama, Hajime: *See—*
Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, 4,119,060, Cl. 118-653.000.
Ozaki, Osamu: *See—*
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P.F.W. Beheer B.V.: *See—*
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Putnam, Roger L., Jr.; and O'Brien, Edward F., 4,118,913, Cl. 53-551.000.

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Paitula, Hannu Olli; and Larsson, Roland Axel, to Granges Essem Aktiebolag. Spindle, particularly for winding up a strap in a safety belt for vehicles. 4,119,281, Cl. 242-107.000.

Palitex Project Company GmbH: *See—*
Marbacher, Lothar, 4,118,919, Cl. 57-34.00R.

Palmisano, Rocco Richard, to United States of America, Army. Removable encapsulant for protection of electronic equipment. 4,118,861, Cl. 29-631.000.

Pandapas, George, Jr. Musical information apparatus providing visual and audible output. 4,119,011, Cl. 84-470.00R.

Pane, Angelo: *See—*
Block, Mitchell L.; and Pane, Angelo, 4,118,962, Cl. 70-455.000.

Pangburn, William H. Child separating and support device. 4,118,812, Cl. 5-92.000.

Papa, Anthony Joseph; Rollins, Richard Lee; and Critchfield, Frank Edward, to Union Carbide Corporation. Phenolic foam modified with phosphorus-containing isocyanate-terminated prepolymers. 4,119,584, Cl. 521-127.000.

Papst-Motoren KG: *See—*
Muller, Rolf, 4,119,895, Cl. 318-254.000.

Parcor: *See—*
Maffrand, Jean-Pierre; and Pereillo, Jean-Marie, 4,119,719, Cl. 424-250.000.

Parfenov, Boris Vladimirovich: *See—*
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Park, Moon C. Beneficiation method. 4,119,532, Cl. 209-17.000.

Parkell Products, Inc.: *See—*
Ross, Robert G.; and McCracken, Mark M., 4,118,866, Cl. 32-22.000.

Parker Manufacturing Company: *See—*
Ewig, John F., Jr., 4,119,258, Cl. 227-132.000.

Parker Sweeper Company: *See—*
Kaeser, Arthur L., 4,118,826, Cl. 15-328.000.

Parmigiano, Nicholas Joseph: *See—*
Passaro, Anthony; and Parmigiano, Nicholas Joseph, 4,119,419, Cl. 55-212.000.

Parshin, Nikolai Igorevich: *See—*
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.

Partridge, Anthony John, to Chichester Partridge Limited. Tie for use in bone fracture surgery. 4,119,091, Cl. 128-92.00B.

Paschakarnis, Peter; Hengst, Bernd; and Wychnanek, Rainer, to Sachs-Systemtechnik GmbH. Water supply system. 4,119,520, Cl. 204-275.000.

Passaro, Anthony; and Parmigiano, Nicholas Joseph. Smoke controlling ash tray. 4,119,419, Cl. 55-212.000.

Patel, Bhupendra C., to Kendall Company, The. Catheter. 4,119,099, Cl. 128-349.00R.

Patel, Hiralal V., to Weatherhead Company, The. Crimping diameter adjusting valve. 4,118,970, Cl. 72-402.000.

Patel, Ramesh P., to Walter Kidde & Company, Inc. Automatic machine motion restricting mechanism. 4,119,118, Cl. 137-594.000.

Patterson-Williams Manufacturing Company: *See—*
Trubody, Bert M., 4,119,310, Cl. 272-33.00R.

Payne, Dannie L., to Raymond Lee Organization, Inc., The, a part interest. Rollaway fence. 4,119,301, Cl. 256-41.000.

Peachtree Doors, Inc.: *See—*
Governale, Bernard C., 4,118,895, Cl. 49-503.000.

Pearson, Glenn A. Fire retardant urea-formaldehyde compositions. 4,119,598, Cl. 260-29.40R.

Pech, Walter: *See—*
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.

Peckar, George E., to Chaspec Manufacturing Co., The. Restraining structure for use in containers. 4,119,204, Cl. 206-521.000.

Pekema OY: *See—*
Stolpe, Erik; Honkanen, Arto; and Laiho, Erkki, 4,119,452, Cl. 156-244.190.

Pelz, Willibald: *See—*
Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, 4,119,464, Cl. 96-68.000.

Pelzer-Kirst GmbH and Co.: *See—*
Klug, Gottfried, 4,119,127, Cl. 150-3.000.

Pennsylvania Plastic Products, Inc.: *See—*
Smiley, Kenneth A., 4,119,121, Cl. 138-96.00T.

Pentzien, Fred R., to Kroehler Mfg. Co. Platform rocker structure. 4,119,343, Cl. 297-264.000.

Pepro: *See—*
Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, 4,119,724, Cl. 424-45.000.

Perard Engineering Limited: *See—*
Curtis, Brian Matthew, 4,119,348, Cl. 299-43.000.

Pereillo, Jean-Marie: *See—*
Maffrand, Jean-Pierre; and Pereillo, Jean-Marie, 4,119,719, Cl. 424-250.000.

Perfect, Frederick H., to Reading Alloys, Inc., a part interest. Molybdenum-titanium-zirconium-aluminum master alloys. 4,119,457, Cl. 75-134.00N.

Perkins, Carroll R.; Cable, Jesse F., III; and Link, Joseph. Plastic modular casing for an electronic watch. 4,120,022, Cl. 361-395.000.

Perrin, Jean-Claude. Electronic ignition with angular transcoder. 4,119,069, Cl. 123-117.00D.

Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, to Chloride Group Limited. Lead acid cells and batteries. 4,119,772, Cl. 429-204.000.

Peters, Kenneth D.; Veinerman, Elliot; and Felch, Donald E., to UOP Inc. Multiple-stage hydrocarbon conversion with gravity-flowing catalyst particles. 4,119,526, Cl. 208-64.000.

Peters, Kenneth D., to UOP Inc. Multiple-stage hydrocarbon conversion with gravity-flowing catalyst particles. 4,119,527, Cl. 208-64.000.

Petersen, Egon Norbert: *See—*
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Peterson, David C., to Upjohn Company, The. 3,7-Inter-m-phenylene-4,5,6-trinor-12,13(E)-didehydro-13,14-dihydro-9-deoxy-PGD$_1$ compounds. 4,119,785, Cl. 560-53.000.

Peterson, David C., to Upjohn Company, The. 3,7-Inter-m-phenylene-4,5,6-trinor-12,13(E)-didehydro-13,14-dihydro-9,10-didehydro-9-deoxy-PGD$_1$ compounds. 4,119,786, Cl. 560-53.000.

Peterson, Merlin J.: *See—*
Hines, Ralph E., 4,119,044, Cl. 108-27.000.

Petrizio, Cesare James, to RCA Corporation. Touch switch circuits. 4,119,864, Cl. 307-116.000.

Pfeil, Christian; and Breidenbach, Hans, to International Harvester Company. Hydraulic control device. 4,119,016, Cl. 91-449.000.

Pfizer Inc.: *See—*
Wernau, William C., 4,119,546, Cl. 252-8.55D.

PHD, Inc.: *See—*
Nusbaumer, Kay T.; and Boyer, Peter W., 4,119,017, Cl. 92-108.000.

Philip Morris, Incorporated: *See—*
Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., 4,119,106, Cl. 131-17.00R.

Phillips Petroleum Company: *See—*
Dietz, Richard E., 4,119,569, Cl. 252-452.000.
Williams, Ralph P., 4,119,510, Cl. 204-159.230.

Phinney, John M., to Falk Corporation, The. Marine propulsion control system with maneuvering brake. 4,119,185, Cl. 192-.094.

Phone Devices Corporation: *See—*
Marin, Allan; and Bradbery, Jack L., 4,119,810, Cl. 179-90.00K.

Phosphor Products Company Limited: *See—*
Smith, Peter John Fennemore, 4,119,745, Cl. 427-66.000.

Pibor S.A.: *See—*
Bourquard, Pierre, 4,118,923, Cl. 58-88.00B.

Pichl, Heinz, to AB Volvo Penta. Trimmable and tiltable outboard motor. 4,119,054, Cl. 115-41.0HT.

Pieper, Gustav Adolf: *See—*
Klaren, Dick Gerrit, 4,119,139, Cl. 165-1.000.

Pieper, Helmut: *See—*
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.

Piepers, Harry: *See—*
Warringa, Jozef Johannus Maria; and Piepers, Harry, 4,119,921, Cl. 330-49.000.

Pifferi, Giorgio: *See—*
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.

Pillon, Daniel: *See—*
Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, 4,119,724, Cl. 424-45.000.

Pilz, William M., to Container Corporation of America. Apparel hanging receiving element. 4,119,197, Cl. 206-279.000.

Pinnow, Kenneth E.; and Bressanelli, Jerome P., to Crucible Inc. Welded ferritic stainless steel articles. 4,119,765, Cl. 428-683.000.

Pinzone, Anthony J.: *See—*
Pinzone, Joseph A.; Pinzone, Anthony J.; and Gagliano, Stephen J., 4,119,107, Cl. 132-79.00G.

Pinzone, Joseph A.; Pinzone, Anthony J.; and Gagliano, Stephen J. Portable vanity case. 4,119,107, Cl. 132-79.00G.

Pirkle, Sherman Jack, to Hewlett-Packard Company. Defibrillator charging circuit. 4,119,903, Cl. 320-1.000.

Pitney-Bowes, Inc.: *See—*
Carvalko, Joseph R.; and Tolmie, Robert J., Jr., 4,119,989, Cl. 354-298.000.
Freeman, Gerald C.; and Mahoney, James F., 4,119,194, Cl. 198-400.000.

Pittinger, Charles B., Jr.: *See—*
Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr., 4,118,864, Cl. 30-276.000.

Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr. Incremental feed means and method for filament-trimmer filaments. 4,118,864, Cl. 30-276.000.

Pittsburgh Corning Corporation: *See—*
Rostoker, David, 4,119,422, Cl. 65-22.000.

Pizzuti, Everett V.: *See—*
Ondis, Albert W.; Pizzuti, Everett V.; and Martha, Eugene F., 4,119,974, Cl. 346-145.000.

Platzoeder, Karl: *See—*
Haas, Ernst; Platzoeder, Karl; and Schnoeller, Manfred, 4,119,441, Cl. 148-1.500.

Pohjola, Jorma Toivo Tapani. Vehicle and endless track structure therefor. 4,119,356, Cl. 305-35.0EB.

Pohl, Stanley: *See—*
Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, 4,119,399, Cl. 8-10.200.

Poitier, Bernard: *See—*
Duboc, Jean; and Poitier, Bernard, 4,118,836, Cl. 24-73.0SA.

Polaroid Corporation: *See—*
Baker, James G., 4,119,980, Cl. 354-150.000.
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,118,860, Cl. 29-623.500.
Eloranta, Vaito K.; and Ruggles, Benjamin C., Jr., 4,119,369, Cl. 351-49.000.
Holmes, William A., 4,119,370, Cl. 352-130.000.
Land, Edwin H., 4,119,770, Cl. 429-152.000.
Mason, Paul B.; and Osman, Martin S., 4,119,990, Cl. 354-317.000.
Stella, Joseph A., 4,119,371, Cl. 352-130.000.

Poler, Stanley. Intra-ocular lens. 4,118,808, Cl. 3-13.000.

Polgari, Istvan: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.

Polito, Joseph A. Sewer form. 4,119,291, Cl. 249-11.000.

Pollack, Eric G.: *See—*
Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., 4,119,534, Cl. 209-291.000.

Pollitzer, Ernest L.: *See—*
Hayes, John C.; and Pollitzer, Ernest L., 4,119,529, Cl. 208-139.000.

Polster, Morton A. Disposable hooded garment. 4,118,802, Cl. 2-84.000.

Polysar Limited: *See—*
Fischer, Erhardt; and Richmond, Michael Hugh, 4,119,759, Cl. 428-407.000.
Souwand, Steve Elia, 4,118,982, Cl. 73-194.00R.

Pomerantseva, Maiya Grigorievna: *See—*
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.

Ponticello, Gerald S.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,119,718, Cl. 424-248.510.

Popov, Alexandr Nikolaevich: *See—*
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Popplewell, Frank William; and Houghton, Frank Raymond, to Dunlop Limited. Games racquets. 4,119,313, Cl. 273-73.00K.

Population Research Incorporated: *See—*
Bolduc, Lee R.; and Dickhudt, Eugene A., 4,119,098, Cl. 128-235.000.

Porier, Victor L.; and Bernhard, William F., to Thermo Electron Corporation. Prosthetic blood vessel. 4,118,806, Cl. 3-1.400.

Port-A-Phone, Inc.: *See—*
Girardi, Frank D., 4,119,800, Cl. 179-2.0EA.

Porter, John F. Variable speed bicycle. 4,119,326, Cl. 280-236.000.

Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., to Stearns-Roger Corp. Multiple deck trommel screen. 4,119,534, Cl. 209-291.000.

Porter, William Hunt, to W. H. Porter, Inc. Sandwich panel structure. 4,119,750, Cl. 428-105.000.

Post Office, The: *See—*
Hensel, Paul Christopher, 4,118,862, Cl. 30-124.000.

Postlethwaite, Dennis, to Lever Brothers Company. Bleaching compositions and process for cleaning fabrics. 4,119,557, Cl. 252-99.000.

Poutsma, Marvin Lloyd; Rabo, Jule Anthony; and Risch, Alan Peter, to Union Carbide Corporation. Preparation of hydroxylated compounds from synthesis of gas with palladium catalysts. 4,119,656, Cl. 260-449.00R.

Powell, Roger Andrew. Trough reflector. 4,119,365, Cl. 350-293.000.

Powers, E. Michael: *See—*
Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., 4,119,022, Cl. 99-532.000.

PPG Industries, Inc.: *See—*
Comperatore, John A., 4,119,424, Cl. 65-107.000.
DeAngelis, Willie G.; and Crowe, Edward R., 4,119,428, Cl. 65-287.000.
Hendricks, Charles D., 4,120,016, Cl. 361-228.000.
Kelly, Joseph B., 4,119,426, Cl. 65-111.000.
Lewchuk, Richard R., 4,118,911, Cl. 52-749.000.
Rinehart, Dale W., 4,119,760, Cl. 428-410.000.
Seymour, Samuel L., 4,119,423, Cl. 65-104.000.
Sickles, James E., 4,120,017, Cl. 361-228.000.

Pratelli, Cesare, to Societa Italiana Telecomunicazioni Siemens S.p.A. Line-control unit for telecommunication system. 4,119,805, Cl. 179-18.0FC.

Precision, Inc.: *See—*
Head, Dale R., 4,119,905, Cl. 323-21.000.

Prete, Ernest, Jr.: *See—*
Knox, Howard T.; and Prete, Ernest, Jr., 4,118,833, Cl. 24-68.0CD.

Preti, George; Huggins, George R.; and Tonzetich, Joseph, to University of Pennsylvania, Trustees of the. Method of predicting and determining ovulation by monitoring the concentration of volatile sulfur-containing compounds present in mouth air. 4,119,089, Cl. 128-2.00R.

Preuninger, Manfred; Hollender, Gottfried; and Schaber, Herbert, to Cillichemie Ernst Vogelmann. Concrete vessel having wall apertures lined with tubular inserts. 4,118,906, Cl. 52-100.000.

Price, John G. W., to Core Laboratories, Inc. Apparatus and method for sour gas analysis. 4,119,404, Cl. 23-232.00E.

Price, Robert John; and Kamm, Lawrence Joseph, to Orbitran Company, Inc. Automatic operating system for lever type postage metering machine. 4,119,161, Cl. 177-3.000.

Priemer, Joachim: *See—*
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.

Prikhozhan, Ada Mirovna: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.

Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., to General Electric Company. Sintering of silicon nitride using Mg and Be additives. 4,119,475, Cl. 106-73.500.

Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., to General Electric Company. Sintering of silicon nitride using Be additive. 4,119,689, Cl. 264-65.000.

Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., to General Electric Company. Sintering of silicon nitride using Mg and Be additives. 4,119,690, Cl. 264-65.000.

Procter & Gamble Company, The: *See—*
Hutchins, James Peyton, 4,119,660, Cl. 260-502.00R.

Proops, William Alfred: *See—*
Taylor, Robert Graham; and Proops, William Alfred, 4,119,825, Cl. 219-10.730.

Pryor, Harold A.: *See—*
Pryor, Roy R.; and Pryor, Harold A., 4,119,216, Cl. 214-6.00C.

Pryor, Roy R.; and Pryor, Harold A. Sawmill stacker assembly module. 4,119,216, Cl. 214-6.00C.

Puckett, Sandres Alfred, to Fieldcrest Mills, Inc. Method of making patterned tufted fabrics. 4,119,049, Cl. 112-266.000.

Pueschner, Philip R.: *See—*
Holmes, William K.; and Pueschner, Philip R., 4,119,229, Cl. 214-394.000.
Keller, Lynn L.; Pueschner, Philip R.; and Holmes, William K., 4,119,230, Cl. 214-394.000.

Pullerits, Kalju: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.

Pullman Incorporated: *See—*
Adler, Franklin P., 4,119,112, Cl. 137-68.00R.
Naves, David G.; Aquino, Herman A.; and Mish, Robert J., 4,119,042, Cl. 105-368.00R.
Naves, David G.; Aquino, Herman A.; and Morgan, Mitchell L., 4,119,043, Cl. 105-368.00R.

Purdue Frederick Company, The: *See—*
Vesely, Ernst, 4,119,544, Cl. 210-515.000.

Purser, Terry Brook. Composition for pre-treating fabric for transfer printing and a transfer printing process. 4,119,398, Cl. 8-2.50R.

Putnam, Roger L., Jr.; and O'Brien, Edward F., to Package Machinery Company. Short product drop vertical form, fill and seal packaging machine. 4,118,913, Cl. 53-551.000.

Pyanykh, Dmitry Maximovich: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.

Pyatigorsky, Vladimir Mikhailovich: *See—*
Aizenberg, Julian Borisovich; Bukhman, Inokh Borukhovich; Pyatigorsky, Vladimir Mikhailovich; and Solomatina, Natalia Mikhailovna, 4,120,024, Cl. 362-96.000.

Quaker Oats Company, The: *See—*
Bartoo, George O., 4,118,886, Cl. 46-1.00R.

Quick, John D.: *See—*
Metteer, N. Bruce; and Quick, John D., 4,119,927, Cl. 331-11.000.

Quigley, Joseph R.: *See—*
Cass, Boyd E.; Coate, David W.; and Quigley, Joseph R., 4,119,455, Cl. 75-25.000.

Quinn, Halsey P., to Xerox Corporation. Power factor corrector for a resistive load. 4,119,907, Cl. 323-105.000.

R. D. Bussard & Son, Inc.: *See—*
Harris, Richard D.; Smith, Franklin G.; and Moshofsky, Jerome F., 4,118,835, Cl. 24-73.0MC.

R. G. Dixon & Company Limited: *See—*
Gordon, Sidney; Wilkins, John Thomas; and Mayo, Haydn Frank, 4,118,819, Cl. 15-49.00R.

Rabinovich, Vyacheslav Anatolievich: *See—*
Nabiullin, Faat Khatovich; Gertsik, Efim Mikhailovich; Rodionov, Jury Timofeevich; and Rabinovich, Vyacheslav Anatolievich, 4,119,126, Cl. 141-100.000.

Rabinowitz, Mario, to Electric Power Research Institute, Inc. Transmission line breakdown voltage. 4,119,793, Cl. 174-36.000.

Rabo, Jule Anthony: *See—*
Poutsma, Marvin Lloyd; Rabo, Jule Anthony; and Risch, Alan Peter, 4,119,656, Cl. 260-449.00R.

Radian Corporation: *See—*
DeBerry, David W., 4,119,909, Cl. 324-30.00R.

Raftopoulos, Demetrios D.; and Kartalopoulos, Stamatios V., to University of Toledo, The. Method for determining stress-optical constants of optically isotropic and anisotropic materials. 4,119,380, Cl. 73-800.000.

Railoc Company, Inc.: *See*—
Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., 4,118,909, Cl. 52-196.000.

Rank Xerox, Ltd.: *See*—
Sato, Takashi, 4,119,831, Cl. 219-216.000.

Ranz, Erwin: *See*—
Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, 4,119,464, Cl. 96-68.000.

Rasmussen, Poul Rodbroe: *See*—
von Dachne, Welf; and Rasmussen, Poul Rodbroe, 4,119,717, Cl. 424-238.000.

Rath, Gerb, to Demag AG. Smelting method. 4,119,454, Cl. 75-12.000.

Rattmann, Rudolf: *See*—
Soldner, Richard; and Rattmann, Rudolf, 4,119,891, Cl. 315-389.000.

Rauma-Repola Oy: *See*—
Kaartamets, Matti, 4,119,222, Cl. 214-83.240.

Ray, Richard E., to G. D. Searle & Co. Thio-ester of 1 (p-chlorobenzoyl)-5-methoxy-2-methylindole-3-acetic acid. 4,119,638, Cl. 260-326.12A.

Raymond Lee Organization, Inc., The: *See*—
Brutlag, Minehart, 4,119,250, Cl. 224-49.000.
Gorsky, Peter, 4,118,882, Cl. 43-17.000.
Kanocz, Julianna, 4,119,289, Cl. 248-454.000.
Payne, Dannie L., 4,119,301, Cl. 256-41.000.

Raynes, Edward Peter; Shanks, Ian Alexander; and Varney, John Charles. Liquid crystal displays. 4,119,367, Cl. 350-333.000.

RCA Corporation: *See*—
Abbott, Liston; Beakley, Guy Ward; and Flory, Robert Earl, 4,120,001, Cl. 358-11.000.
Ahmed, Adel Abdel Aziz, 4,119,924, Cl. 330-288.000.
Bosselaers, Robert Jan, 4,119,925, Cl. 331-1.00A.
Chin, Te Ning, 4,119,882, Cl. 313-411.000.
Fox, Edward Coley, 4,119,812, Cl. 179-100.40D.
Harayda, George Michael, 4,120,044, Cl. 364-900.000.
Ipri, Alfred Charles; and Scott, Joseph Hurlong, Jr., 4,119,992, Cl. 357-4.000.
Lewis, Henry Garton, Jr.; and Calo, Seraphin Bernard, 4,119,945, Cl. 340-146.1AQ.
Nahay, Lawrence Paul, 4,119,807, Cl. 179-18.0BC.
Petrizio, Cesare James, 4,119,864, Cl. 307-116.000.
Rockett, Leonard Richard, Jr., 4,119,961, Cl. 340-347.0DD.

Reading Alloys, Inc.: *See*—
Perfect, Frederick H., 4,119,457, Cl. 75-134.00N.

Redding, Robert J. Gas detection. 4,119,950, Cl. 340-524.000.

Reddy, Reddy Reddy Venketeshwara; and Kelso, David Matthews, to Abbott Laboratories. Multiple sample, radioactive particle counting apparatus. 4,119,850, Cl. 250-328.000.

Redifon Flight Simulation Limited: *See*—
Murray, Paul Michael, 4,119,956, Cl. 340-324.0AD.

Reichert, Gerhard: *See*—
Loos, Herbert; Heckmaier, Manfred; and Reichert, Gerhard, 4,119,014, Cl. 90-1.60R.

Reid, William P. Water replenishing device for coffee makers. 4,119,019, Cl. 99-306.000.

Reimels, Harry G., to Codman & Shurtleff, Inc. Artificial sphincter. 4,118,805, Cl. 3-1.000.

Reischl, Artur; Klussmann, Henning; and Velker, Eugen, to Bayer Aktiengesellschaft. Process for the production of polyisocyanate-polyaddition products using a multi-phase reaction flow tube. 4,119,613, Cl. 526-64.000.

Reiser, Kurt; and Abendroth, Paul, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Printing plate. 4,119,035, Cl. 101-459.000.

Reisinger, Konrad: *See*—
Hoelzl, Ludwig; Maenhardt, Joerg; Reisinger, Konrad; and Singer, Johannes, 4,119,795, Cl. 178-50.000.

Reiss, Karl: *See*—
Jantsch, Ottomar; and Reiss, Karl, 4,119,841, Cl. 250-213.0VT.

Rellumit-Inter: *See*—
Muller, Jean-Claude, 4,119,540, Cl. 210-142.000.

Rembaum, Alan; and Wallace, Carl J., to California Institute of Technology. Membrane consisting of polyquaternary amine ion exchange polymer network interpenetrating the chains of thermoplastic matrix polymer. 4,119,581, Cl. 521-27.000.

Remontet, Yves, to Societe d'Exploitation des Brevets Neiman SA. Safety anti-theft device for vehicles having a diesel engine. 4,119,171, Cl. 180-114.000.

Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, to Bayer Aktiengesellschaft. Process for the production of powder-form hydrolyzed ethylene/vinyl acetate copolymers. 4,119,687, Cl. 264-9.000.

Revells, Robert G., to Libbey-Owens-Ford Company. Hydraulic system for glass bending apparatus with pressure release assembly. 4,119,427, Cl. 65-159.000.

Revlon, Inc.: *See*—
Dyson, Evelyna Chelsey, 4,118,870, Cl. 33-174.00D.
Goldner, Tibor G.; and Fotiu, Eustace, 4,119,712, Cl. 424-63.000.

Rex, John Walter, to W. R. Grace & Co. Method and apparatus for temperature controlled samplers. 4,119,403, Cl. 23-232.00R.

Reynolds, James T. Fire extinguisher support. 4,119,288, Cl. 248-313.000.

Rha, ChouKyun: *See*—
Hsieh, Dean Shui-Tien; Bright, Roselie Ann; and Rha, ChouKyun, 4,119,733, Cl. 426-46.000.

Rheinmetall GmbH: *See*—
Frye, Guenter, 4,119,012, Cl. 89-33.0SF.
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, 4,119,037, Cl. 102-69.000.

Rhodes, Charles Don. Gooseneck trailer with adjustable bogie. 4,119,328, Cl. 280-415.00B.

Rhodes, Mark H., Jr.: *See*—
Laviana, Lawrence J.; Rhodes, Mark H., Jr.; and Doyle, Edward J., 4,119,936, Cl. 337-303.000.

Rhone-Poulenc Industries: *See*—
Bonnaud, Bernard; and Fagnoni, Yves, 4,119,601, Cl. 260-29.60R.
Durand, Gilbert; and Monsan, Pierre, 4,119,494, Cl. 195-68.000.
Jay, Pierre, 4,119,555, Cl. 252-66.000.

Rhone-Progil: *See*—
Auroy, Michel; Goharel, Maurice; and Zoulalian, Jacques, 4,119,645, Cl. 260-346.400.

Rich, Theodore Charles: *See*—
Camlibel, Irfan; and Rich, Theodore Charles, 4,119,363, Cl. 350-96.200.

Richardson, David A.: *See*—
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., 4,118,977, Cl. 73-141.00R.

Richardson-Merrell Inc.: *See*—
Bambury, Ronald E.; Edwards, Michael L.; and Miller, Laird F., 4,119,775, Cl. 544-28.000.

Richmond, Michael Hugh: *See*—
Fischer, Erhardt; and Richmond, Michael Hugh, 4,119,759, Cl. 428-407.000.

Rickel, David M.: *See*—
Hermanson, Gerald P.; Rickel, David M.; and Carr, Robert J., 4,119,448, Cl. 156-73.400.

Rickett, John William Stanley. Surgical device for discharge of faecal matter from the colon. 4,119,100, Cl. 128-350.00R.

Ricoh Co., Ltd.: *See*—
Matsuda, Tsutomu; Maeda, Takeshi; Hirabayashi, Takeo; and Watanabe, Nobuyoshi, 4,119,465, Cl. 96-75.000.
Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, 4,119,060, Cl. 118-653.000.

Rieffle, Paul F.; and Felker, Charles E., to Coupling Systems, Inc. Pipe and tubing connectors. 4,119,335, Cl. 285-337.000.

Riegel, Herbert; and Strangio, Vincent A., to Lummus Company, The. Production of chlorine. 4,119,705, Cl. 423-507.000.

Ries, Gottfried. Skid prevention device for tires. 4,119,132, Cl. 152-208.000.

Rifflart, Jacques, to CER. Agricultural machine with folding rotatable sections. 4,119,155, Cl. 172-311.000.

Rinaldi, Victor. Semi-submersible vessel. 4,119,052, Cl. 114-264.000.

Rinehart, Dale W., to PPG Industries, Inc. Chemical strengthening of glass. 4,119,760, Cl. 428-410.000.

Risch, Alan Peter: *See*—
Poutsma, Marvin Lloyd; Rabo, Jule Anthony; and Risch, Alan Peter, 4,119,656, Cl. 260-449.00R.

Rishel, James Burton: *See*—
Corso, Anthony Bruce; and Rishel, James Burton, 4,120,033, Cl. 364-510.000.

Roach, Donald Brian; Van Echo, John Andrew; and Hall, Albert Mangold, to Steel Founders' Society of America. High-strength cast heat-resistant alloy. 4,119,456, Cl. 75-122.000.

Robeller, Walter: *See*—
Nonnenmacher, Gerhard; Robeller, Walter; and Veil, Karl, 4,118,931, Cl. 60-444.000.

Robert Bosch GmbH: *See*—
Nonnenmacher, Gerhard; Robeller, Walter; and Veil, Karl, 4,118,931, Cl. 60-444.000.
Stieringer, Albert, 4,120,038, Cl. 364-705.000.

Robertson, George Heddle, to Ciba-Geigy Corporation. Pigment composition. 4,119,478, Cl. 106-288.00Q.

Robertson, Hans: *See*—
Ohlund, Ingvar; and Robertson, Hans, 4,119,317, Cl. 273-105.600.

Robin, Allen M.: *See*—
Crouch, William B.; Fabiero nee Posadas, Carolina P.; and Robin, Allen M., 4,119,566, Cl. 252-372.000.

Robinson, Glen P., Jr., to Scientific-Atlanta, Inc. Heat transfer system. 4,119,143, Cl. 165-104.00S.

Rockett, Leonard Richard, Jr., to RCA Corporation. CCD Binary-to-Gray code generator. 4,119,961, Cl. 340-347.0DD.

Rockwell International Corporation: *See*—
Chen, Thomas T., 4,120,046, Cl. 365-8.000.
Fuhrman, James L., 4,120,048, Cl. 365-239.000.

Rockwool Aktiebolaget: *See*—
Alenrot, Lennart; Hartung, Willy; Lund, Torbjorn; and Aberg, Ulf, 4,119,421, Cl. 65-14.000.

Rockwool International A/S: *See*—
Hoyer, Helge, 4,119,755, Cl. 428-284.000.

Rodionov, Jury Timofeevich: *See*—
Nabiullin, Faat Khatovich; Gertsik, Efim Mikhailovich; Rodionov, Jury Timofeevich; and Rabinovich, Vyacheslav Anatolievich, 4,119,126, Cl. 141-100.000.

Rogalski, Werner: *See*—
Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, 4,119,631, Cl. 260-295.00A.

Rogers, Robert E.: *See*—
Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., 4,119,022, Cl. 99-532.000.

Rogers, William M., to Engelhard Minerals & Chemicals Corporation. Method of catalytically recombining radiolytic hydrogen and radiolytic oxygen. 4,119,706, Cl. 423-580.000.

Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich. Emulsification method for the processing of kriel to produce protein, lipids and chitin. 4,119,619, Cl. 260-112.00R.

Rohm and Haas Company: *See*—
Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., 4,119,600, Cl. 260-29.6RW.
Johnson, Wayne O.; Warner,. Harlow L.; and Yih, Roy Y., 4,119,667, Cl. 260-566.00F.

Rohrs, Kenneth V.: *See*—
Sietmann, Vernon H.; and Rohrs, Kenneth V., 4,118,875, Cl. 34-174.000.

Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See*—
Mayer, Peter; and Simeth, Claus, 4,119,309, Cl. 271-183.000.
Reiser, Kurt; and Abendroth, Paul, 4,119,035, Cl. 101-459.000.

Rollins, Richard Lee: *See*—
Papa, Anthony Joseph; Rollins, Richard Lee; and Critchfield, Frank Edward, 4,119,584, Cl. 521-127.000.

Rolls-Royce Limited: *See*—
Woodward, Clifford Stanley; and McMurtry, David Roberts, 4,118,997, Cl. 74-417.000.

Rolls-Royce (1971) Limited: *See*—
Taylor, Robert Graham; and Proops, William Alfred, 4,119,825, Cl. 219-10.730.

Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, to Rheinmetall GmbH. Carrier projectiles for ejectable payloads. 4,119,037, Cl. 102-69.000.

Roquemore, Cass R.: *See*—
Nyswander, Reuben E.; and Roquemore, Cass R., 4,119,917, Cl. 328-67.000.

Rosemount Office Systems, Inc.: *See*—
Mollenkopf, Lloyd C., 4,119,287, Cl. 248-243.000.

Rosler, Heinz: *See*—
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.

Ross, Robert G.; and McCracken, Mark M., to Parkell Products, Inc. Dental handpiece control apparatus. 4,118,866, Cl. 32-22.000.

Ross, Ronald D., Jr.: *See*—
Fine, David H.; Ross, Ronald D., Jr.; and Rounbehler, David P., 4,119,402, Cl. 23-230.00B.

Rossborough Manufacturing Co.: *See*—
Boron, Joseph J., 4,118,988, Cl. 73-425.40R.

Rosselli del Turco, Bonaccorso: *See*—
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.

Rostoker, David, to Pittsburgh Corning Corporation. Pulverulent borosilicate composition and a method of making a cellular borosilicate body therefrom. 4,119,422, Cl. 65-22.000.

Roth, David S., to Brown & Williamson Tobacco Corporation. Tobacco substitute having improved ash characteristics. 4,119,104, Cl. 131-2.000.

Roth Freres, S.A.: *See*—
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.

Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, to Roth Freres, S.A. Moulded light-weight framed panel. 4,119,749, Cl. 428-99.000.

Roth, Lee J. Package. 4,119,202, Cl. 206-432.000.

Roth, Michel: *See*—
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.

Rothchild, Ronald D., to Airco, Inc. Method and apparatus for inerting the atmosphere above a moving product surface. 4,118,873, Cl. 34-36.000.

Rougeot, Henri, to Thomson-CSF. Solid detector for ionizing radiation. 4,119,852, Cl. 250-370.000.

Rounbehler, David P.: *See*—
Fine, David H.; Ross, Ronald D., Jr.; and Rounbehler, David P., 4,119,402, Cl. 23-230.00B.

Roush, Maurice Dean, to Cray Research, Inc. Cooling system for electronic assembly. 4,120,021, Cl. 361-388.000.

Roussel Uclaf: *See*—
Buendia, Jean; Nierat, Jeanine; and Deroy, Robert, 4,119,727, Cl. 424-275.000.

Rubin, Barry Jay: *See*—
Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,120,035, Cl. 364-602.000.

Ruffell, Derrick: *See*—
Oakley, John; and Ruffell, Derrick, 4,119,325, Cl. 277-207.00R.

Ruggles, Benjamin C., Jr.: *See*—
Eloranta, Vaito K.; and Ruggles, Benjamin C., Jr., 4,119,369, Cl. 351-49.000.

Ruhl, Oskar: *See*—
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.

Russell, Timothy D.: *See*—
Goeppner, Ronald R.; Kuehne, William M.; and Russell, Timothy D., 4,118,972, Cl. 73-40.000.

Rustenburg Platinum Mines Limited: *See*—
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,653, Cl. 260-429.00R.

Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,654, Cl. 260-429.00R.

Rutshtein, Alexander; and Staroselsky, Naum, to Compressor Controls Corporation. Methods and systems for controlling the operation of means for compressing a fluid medium and the corresponding networks. 4,119,391, Cl. 417-26.000.

Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., to Railoc Company, Inc. Silo door construction. 4,118,909, Cl. 52-196.000.

Rutten, Peter T.: *See*—
Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., 4,118,909, Cl. 52-196.000.

Ryashentsev, Vladimir Jurievich: *See*—
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.

Ryu, Ji-Yong, to UOP Inc. Process for transalkylation of alkylaromatic hydrocarbons using a catalyst comprising TiF_4 and a metal oxide. 4,119,675, Cl. 260-672.00T.

Ryu, Ji-Yong, to UOP Inc. Process for isomerization of alkylaromatic hydrocarbon. 4,119,676, Cl. 260-668.00A.

Ryu, Ji-Yong, to UOP Inc. Titanium tetrachloride as heterogeneous catalyst for transalkylation of alkylaromatic hydrocarbons. 4,119,677, Cl. 260-672.00T.

S.A.E.S. Getters S.p.A.: *See*—
Barosi, Aldo, 4,119,488, Cl. 176-68.000.

S. B. Foot Tanning Company: *See*—
Waite, Richard G., 4,118,959, Cl. 69-30.000.

S. Mechele Limited: *See*—
Sim, Nigel L., 4,119,088, Cl. 126-413.000.

Saab-Scania Aktiebolag: *See*—
Ohlund, Ingvar; and Robertson, Hans, 4,119,317, Cl. 273-105.600.

Sabacky, Milton J.: *See*—
Knowles, William S.; and Sabacky, Milton J., 4,119,652, Cl. 260-429.00R.

Sabaroff, Samuel: *See*—
United States of America, National Aeronautics and Space Administration; Johannsen, Klaus G.; Sabaroff, Samuel; and Henry, Varice F., 4,119,964, Cl. 343-17.700.

Sachs-Systemtechnik GmbH: *See*—
Hengst, Bernd, 4,119,517, Cl. 204-229.000.
Paschakarnis, Peter; Hengst, Bernd; and Wychnanek, Rainer, 4,119,520, Cl. 204-276.000.

Sacht, Hans Otto, to Gebruder Welger. Machine for forming a round bale of fibrous agricultural material. 4,119,026, Cl. 100-89.000.

Saeki, Keiso: *See*—
Usui, Hideo; Ishige, Sadao; and Saeki, Keiso, 4,119,777, Cl. 544-6.000.

Said, Sami I. Vasoactive polypeptide and method of preparation from neural tissue. 4,119,618, Cl. 260-112.00R.

Saidl, Jaroslav: *See*—
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, 4,119,561, Cl. 252-301.10W.

St. Amand, Robert: *See*—
Cassidy, Raymond T.; and St. Amand, Robert, 4,119,200, Cl. 206-387.000.

St. Jacques, Joseph A.: *See*—
Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., 4,119,358, Cl. 339-111.000.

Saito, Katsuro: *See*—
Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, 4,118,984, Cl. 73-295.000.

Saito, Masato: *See*—
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.

Saito, Takeo; and Segawa, Takashi, to Seiko Koki Kabushiki Kaisha. Light emitting indicating circuit for a timepiece. 4,119,892, Cl. 318-138.000.

Saitoh, Kozo; and Izumi, Sumio, to Mitsui Mining & Smelting Co., Ltd. Method for separating mixed plastics. 4,119,533, Cl. 209-155.000.

Sakakibara, Shumpei: *See*—
Nagatsu, Toshiharu; and Sakakibara, Shumpei, 4,119,620, Cl. 260-112.50R.

Sakalauskas, Valerienas Antano: *See*—
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.

Sakamoto, Yuzaburo, to Hitachi, Ltd. Automatic bonding apparatus for assembling semiconductor devices. 4,119,259, Cl. 228-4.500.

Sakata, Isao: *See*—
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.

Sakurai, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Dynamo-electric machines. 4,119,873, Cl. 310-56.000.

Salemi, Nicholas A.: *See*—
Wien, Raymond E.; Cotton, John F.; and Salemi, Nicholas A., 4,119,935, Cl. 335-167.000.

Salter Housewares, Limited: *See*—
Ackeret, Peter, 4,119,162, Cl. 177-229.000.

Samokhina, Olga Vasilievna: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.

Samuels, Ernest K., to Ernie Samuels, Inc. Flexible hose with wear indicator. 4,119,123, Cl. 138-122.000.

Sancken, Ernest H.: *See—*
Smith, Kenneth L.; and Sancken, Ernest H., 4,119,193, Cl. 198-371.000.

Sander, Rolf; and Oberste-Beulmann, Klaus, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H.; and Bergwerksverband, G.m.b.H. Cutter drum. 4,119,350, Cl. 299-87.000.

Sanders Associates, Inc.: *See—*
Zindler, Jerrold, 4,119,379, Cl. 356-4.000.

Sanders, James Milton: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.

Sanders, Robert J.: *See—*
Fuller, Robert T.; and Sanders, Robert J., 4,119,207, Cl. 211-45.000.

Sandoz, Inc.: *See—*
Hardtmann, Goetz E., 4,119,720, Cl. 424-258.000.

Sandvik Aktiebolag: *See—*
Ekemar, Sven Karl Gustav; and Fischer, Udo Karl Reinhold, 4,119,459, Cl. 75-243.000.

Sandy, Julius W., to Wahl Clipper Corporation. Hair trimming head. 4,118,863, Cl. 30-195.000.

Sangamo Weston, Inc.: *See—*
Outhwaite, Stephen; and Majure, James C., 4,119,846, Cl. 250-252.000.

Sangesland, Odd E.: *See—*
Knowles, Gregory W.; Sangesland, Odd E.; Vroom, Henry J.; and Madey, Robert W., 4,119,085, Cl. 126-271.000.

Sangster, Richard H. B.: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.

Sansur, Musa M.; Vlastelica, Daniel L.; and Delea, Anne C., to Technicon Instruments Corporation. Total bilirubin assay. 4,119,401, Cl. 23-230.00B.

Santer, J. Owen: *See—*
Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,119,762, Cl. 428-524.000.

Saridakis, Nikolaus, to Volkswagenwerk Aktiengesellschaft. Negative cobalt electrode for an alkaline storage battery. 4,119,771, Cl. 429-178.000.

Sasaki, Masayuki; and Tamano, Motokazu, to Tokyo Shibaura Electric Co., Ltd. Digital display for cooking time and power of electric cooking device. 4,119,957, Cl. 340-337.000.

Sasaki, Takehiko: *See—*
Maeda, Hidetoshi; and Sasaki, Takehiko, 4,120,036, Cl. 364-705.000.

Sato, Goro: *See—*
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, 4,119,568, Cl. 252-437.000.

Sato, Hiroo, to Kokusan Denki Co., Ltd. Ignition system for an internal combustion engine. 4,119,076, Cl. 123-148.00E.

Sato, Hiroshi: *See—*
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,119,492, Cl. 195-28.0VB.

Sato, Ichitaro, to Sony Corporation. Head switching control apparatus for use in a video signal processing system. 4,120,007, Cl. 360-64.000.

Sato, Masaaki, to Olympus Optical Company Ltd. Desk-top electronic calculator and tape recorder assembly. 4,120,037, Cl. 364-705.000.

Sato, Masanari: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.

Sato, Masanobu, to Olympus Optical Company Ltd. Cassette tape recorder with detachable coupling to radio. 4,119,813, Cl. 179-100.110.

Sato, Mitsuhiro: *See—*
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192-24.000.

Sato, Mitsuharu; and Nakajima, Seiji, to Toshiba Kikai Kabushiki Kaisha. Tool storage magazine devices. 4,119,213, Cl. 214-1.0BB.

Sato, Takashi, to Rank Xerox, Ltd. Contact pressure adjusting device in heating pressing fixing apparatus for electrophotographic copiers. 4,119,831, Cl. 219-216.000.

Sato, Tomi: *See—*
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.

Sato, Yo, to Kabushiki Kaisha Sato. Ink roller device for printing head of hand labeler. 4,119,033, Cl. 101-348.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Core for rolled label strip. 4,119,280, Cl. 242-68.500.

Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, to AGFA-Gevaert Aktiengesellschaft. Process for hardening photographic layers containing gelatine. 4,119,464, Cl. 96-68.000.

Saunders, Graham John, to Huwood Limited. Mine roof support. 4,118,939, Cl. 61-45.00D.

Sawa, Kenneth B.: *See—*
Mehaffy, Gordon E.; and Sawa, Kenneth B., 4,119,120, Cl. 137-885.000.

Sawada, Yoshihisa: *See—*
Tuda, Goro; Sawada, Yoshihisa; and Mugitani, Yasuhiro, 4,119,015, Cl. 90-17.000.

Sawatari, Takeo: *See—*
Keating, Patrick N.; Koppelman, Roger F.; and Sawatari, Takeo, 4,119,940, Cl. 340-5.00H.

Sawruk, John M.: *See—*
Aldrich, William L.; and Sawruk, John M., 4,119,067, Cl. 123-52.0MB.

Saxton, Olivia. Anchor for furniture including television sets with telescopic insert rod. 4,118,902, Cl. 52-27.000.

Scan-Optics, Inc.: *See—*
Thaler, Michael; and Gocht, Ronald, 4,120,049, Cl. 365-230.000.

Scapa-Porritt Limited: *See—*
Gisbourne, Bryan James, 4,119,754, Cl. 428-255.000.

Scapes, John N., to Gould Inc. Valve with enclosed soft tip stem. 4,119,296, Cl. 251-210.000.

Schaber, Herbert: *See—*
Preuninger, Manfred; Hollender, Gottfried; and Schaber, Herbert, 4,118,906, Cl. 52-100.000.

Schach, Robert; and Scholl, Peter, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit arrangement. 4,119,868, Cl. 307-253.000.

Schade, Gerhard: *See—*
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Schafer, Walter: *See—*
Baatz, Gunther; Dahm, Manfred; and Schafer, Walter, 4,119,565, Cl. 252-316.000.

Schegolev, German Mikhailovich: *See—*
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Schenectady Chemicals, Inc.: *See—*
Keating, John T., 4,119,605, Cl. 260-33.20R.
Keating, John T., 4,119,608, Cl. 528-188.000.
Keating, John T., 4,119,758, Cl. 428-379.000.

Schering, A.G.: *See—*
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, 4,119,626, Cl. 260-239.55C.

Schieber, Hans; and Lutz, Winfried, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Yarn feed arrangements for knitting machines. 4,118,955, Cl. 66-158.000.

Schiefer, Erwin; and Bisping, Heinz, to Hilti Aktiengesellschaft. Pipe clamp. 4,118,838, Cl. 24-115.00R.

Schiefer, Erwin: *See—*
Bisping, Heinz; and Schiefer, Erwin, 4,119,285, Cl. 248-72.000.

Schiffman, Murray M., to MBI, Inc. Method for producing a design on a flat or arcuate surface. 4,119,484, Cl. 156-659.000.

Schildbach, August J., to Brunswick Corporation. Apparatus for producing fine metal filaments. 4,118,845, Cl. 29-33.00K.

Schillebeeckx, Konrad C.: *See—*
Draizen, Seymour; and Schillebeeckx, Konrad C., 4,119,278, Cl. 242-25.00A.

Schilling, Paul K.: *See—*
Hobson, John A.; and Schilling, Paul K., 4,119,757, Cl. 428-311.000.

Schippers, Heinz; Dammann, Peter; and Bauer, Karl, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Processes and apparatus for thermal treatment of filaments. 4,118,843, Cl. 28-255.000.

Schlegel (UK) Limited: *See—*
Oakley, John; and Ruffell, Derrick, 4,119,325, Cl. 277-207.00R.

Schloemann-Siemag Aktiengesellschaft: *See—*
Vogtmann, Lothar; Braun, Martin; and Kregl, Josef, 4,119,256, Cl. 226-177.000.

Schlumberger Technology Corporation: *See—*
Waggoner, James A., 4,119,847, Cl. 250-252.000.

Schlusener, Horst: *See—*
Merten, Gerhard; and Schlusener, Horst, 4,119,347, Cl. 299-34.000.

Schluter, Bernard C.: *See—*
Castleman, B. Wayne; and Schluter, Bernard C., 4,119,851, Cl. 250-382.000.

Schmatz, Duane J.: *See—*
Yen, Chia-Ming; and Schmatz, Duane J., 4,119,262, Cl. 228-206.000.

Schmermund, Alfred. Glue applicators. 4,119,058, Cl. 118-411.000.

Schmidlin, Julius, to Ciba-Geigy Corporation. Process for the manufacture of steroid carboxylic acids and the esters thereof. 4,119,625, Cl. 260-239.55D.

Schmidt, Werner: *See—*
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Schmitt, Frederick Louis: *See—*
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.

Schneider, Alan Arthur; and Bowser, George C., to Catalyst Research Corporation. Thermal battery having iron pyrite depolarizer. 4,119,769, Cl. 429-112.000.

Schneider, Louis; and Graham, David E., to GAF Corporation. Insecticidal N-methylpyrrolidinonylacetanilides. 4,119,725, Cl. 424-274.000.

Schneider, Peter F. Piston pin remover and installer. 4,118,852, Cl. 29-283.000.

Schneider, William P., to Upjohn Company, The. Thromboxane B aldehyde intermediates. 4,119,648, Cl. 260-405.000.

Schneider, William P., to Upjohn Company, The. Thromboxane B dialkyl-acetal diol intermediates. 4,119,650, Cl. 260-408.000.

Schnoeller, Manfred: *See—*
Haas, Ernst; Platzoeder, Karl; and Schnoeller, Manfred, 4,119,441, Cl. 148-1.500.

Schnorrenberg, Josef, to Jos. Schneider & Co. Optische Werke. Pressure-regulating valve. 4,119,294, Cl. 251-129.000.

Scholl, Hans; and Bernewasser, Horst, to Kochs Adler AG. Template control for sewing machines. 4,119,048, Cl. 112-121.120.

Scholl, Peter: *See—*
Schach, Robert; and Scholl, Peter, 4,119,868, Cl. 307-253.000.

Schreiber, William L.: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.

Schreihage, Wilhelm: *See—*
Uden, Edward; Schreihage, Wilhelm; and Finck, Johan Christiaan Jacobus, 4,120,020, Cl. 361-386.000.

Schroder, Ernst, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit for automatic volume compression or volume expansion. 4,119,922, Cl. 330-86.000.

Schroeder, Josef, to Bayer Aktiengesellschaft. Bis-benzoxazolyl-compounds. 4,119,634, Cl. 260-307.00D.

Schuck, Paul R.; and Baylor, John M., to J. I. Case Company. Control for cable plows and the like. 4,119,157, Cl. 172-477.000.

Schultz, Ronald L., to Stanford Applied Engineering, Inc. Phonosocket assembly and method. 4,119,359, Cl. 339-128.000.

Schulze, Heinz, to Texaco Development Corporation. Thermoplastic adhesive polyoxamide from polyoxypropylene polyamine. 4,119,615, Cl. 528-343.000.

Schulze, Heinz, to Veb Pentacon Dresden Kamera-und Kinowerke. Single lens reflex camera and exposure measuring mechanism therefor. 4,119,981, Cl. 354-152.000.

Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, to Schering, A.G. Depot steroid esters. 4,119,626, Cl. 260-239.55C.

Schurger, Rainer: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,119,187, Cl. 192-98.000.

Schutten, Herman P.: *See—*
Jaskolski, Stanley V.; Lade, Robert W.; and Schutten, Herman P., 4,119,845, Cl. 250-231.00R.

Schymura, Konrad: *See—*
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.

Scientific-Atlanta, Inc.: *See—*
Robinson, Glen P., Jr., 4,119,143, Cl. 165-104.00S.

SCM Corporation: *See—*
Woo, James T. K.; and Evans, James M., 4,119,599, Cl. 260-29.40R.

Scott, Joseph Hurlong, Jr.: *See—*
Ipri, Alfred Charles; and Scott, Joseph Hurlong, Jr., 4,119,992, Cl. 357-4.000.

Scott, LeRoy W.: *See—*
Allen, Roy A.; and Scott, LeRoy W., 4,119,609, Cl. 528-99.000.

Scott Paper Company: *See—*
Addy, Tralance O.; and Gutman, David P., 4,118,832, Cl. 19-304.000.
Hazard, James E., 4,119,221, Cl. 214-8.50A.

Segawa, Takashi: *See—*
Saito, Takeo; and Segawa, Takashi, 4,119,892, Cl. 318-138.000.

Segura, Daniel A., to Great Plains Bag Corp. Bag having a handle secured thereto. 4,119,268, Cl. 229-54.00R.

Seiko Koki Kabushiki Kaisha: *See—*
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.
Saito, Takeo; and Segawa, Takashi, 4,119,892, Cl. 318-138.000.

Seiko Seiki Kabushiki Kaisha: *See—*
Moritomo, Sadao; Tatsumi, Youji; and Sugita, Terumitsu, 4,118,900, Cl. 51-281.00R.

Seiler, Paul: *See—*
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.

Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, to Toyo Soda Manufacturing Co., Ltd. Process for producing a polyion complex having a nucleic acid base. 4,119,590, Cl. 260-8.000.

Seitz, Charles Lewis; and Grunewald, Paul, to Burroughs Corporation. High resolution character generator for digital display units. 4,119,954, Cl. 340-324.0AD.

Seitz, Max, to Carl Hurth Maschinen- und Zahnradfabrik. Hydraulic chucking device in a hobbing machine. 4,119,013, Cl. 90-1.000.

Sekhavat, Ali; and Bahrampour, Ali-Reza, to Sekhavat, Ali. Optical seismograph. 4,119,173, Cl. 181-122.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, 4,118,892, Cl. 47-66.000.

Selenia-Industrie Elettroniche Associate S.p.A.: *See—*
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, 4,118,947, Cl. 62-514.00R.

Seleznev, Leonid Pavlovich: *See—*
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.

Semon, William P. Article of footwear. 4,118,878, Cl. 36-59.00C.

Sendtko, Ulrich: *See—*
Moellgaard, Klaus; and Sendtko, Ulrich, 4,120,045, Cl. 364-900.000.

Serniuk, George E.: *See—*
O'Farrell, Charles P.; and Serniuk, George E., 4,119,616, Cl. 526-31.000.

Seugnet, Monique: *See—*
Chazard, Georges Jean Paul; and Seugnet, Monique, 4,119,545, Cl. 252-8.800.

Seymour, Samuel L., to PPG Industries, Inc. Tong guide means in glass sheet quenching apparatus. 4,119,423, Cl. 65-104.000.

Shackleford, William L.; Winter, Donald C.; and Hall, David B., to TRW Inc. Near infrared laser modulator. 4,119,929, Cl. 331-94.50M.

Shah, Naresh Ramanlal, to Union Carbide Corporation. Polymer/-polyol compositions, processes for making same and processes for making polyurethane products therefrom. 4,119,586, Cl. 521-137.000.

Shanks, Ian Alexander: *See—*
Raynes, Edward Peter; Shanks, Ian Alexander; and Varney, John Charles, 4,119,367, Cl. 350-333.000.

Sharma, Mahindar N.: *See—*
White, Eugene B.; and Sharma, Mahindar N., 4,119,535, Cl. 210-62.000.

Sharp, Douglas Cecil William Thomas; and Ellis, Frank. Apparatus for making hot dogs and the like. 4,119,020, Cl. 99-339.000.

Sharp Kabushiki Kaisha: *See—*
Hayakawa, Masao; and Nomura, Masahiro, 4,120,041, Cl. 364-712.000.
Maeda, Hidetoshi; and Sasaki, Takehiko, 4,120,036, Cl. 364-705.000.

Sharpe, Thomas H. Impaction augmented jet engine. 4,118,929, Cl. 60-262.000.

Shaw, Kenneth R.; and Hansen, Franklin A., to Continental Disc Corporation. Low pressure rupture device. 4,119,236, Cl. 220-89.00A.

Sheeline, Randall D., to United Technologies Corporation. Method of treating radioactive waste. 4,119,560, Cl. 252-301.10W.

Sheldon, Loren B.; and Tomashek, James R., to BJ-Hughes Inc. Block position and speed transducer for a computer-controlled oil drilling rig. 4,119,837, Cl. 235-92.0MP.

Shell Oil Company: *See—*
Allen, Roy A.; and Scott, LeRoy W., 4,119,609, Cl. 528-99.000.
Bauer, Ronald S.; and Lopez, John A., 4,119,595, Cl. 260-21.000.
Gergen, William P.; and Davison, Sol, 4,119,607, Cl. 260-40.00R.
Wellington, Scott L., 4,119,491, Cl. 195-7.000.

Shelley, Peter Stephen; Love, William Darrell; and Stone, Barry Newell, to General Electric Company. Multicell X-ray detector. 4,119,853, Cl. 250-385.000.

Shelley, Shelley W. Modular building construction system. 4,118,905, Cl. 52-79.200.

Shelly, Robert S.: *See—*
George, Lyndell J. C.; and Shelly, Robert S., 4,119,382, Cl. 356-249.000.

Sherhandt, John. Sanitary pickup and disposal device. 4,119,337, Cl. 294-1.00R.

Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich. Method of producing foil in coils. 4,119,135, Cl. 164-46.000.

Shields, Walter A. Vial assembler. 4,118,914, Cl. 53-282.000.

Shimizu, Akihiko: *See—*
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,119,590, Cl. 260-8.000.

Shin Shirasuna Electric Corp.: *See—*
Hayashi, Kiyoshi, 4,119,910, Cl. 324-83.00R.

Shinbo, Katsutoshi: *See—*
Itoh, Kenichi; Shinbo, Katsutoshi; and Watahiki, Minoru, 4,119,489, Cl. 176-76.000.

Shingaki, Masamitsu: *See—*
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192-24.000.

Shinozaki, Satoshi: *See—*
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.

Shinozuka, Katsumasa: *See—*
Watanabe, Akinori; and Shinozuka, Katsumasa, 4,119,383, Cl. 400-124.000.

Shirai, Tetsuo: *See—*
Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, 4,118,984, Cl. 73-295.000.

Shirokov, Alexei Gavrilovich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexan-

drovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Shirota, Atsushi: *See—*
Abe, Yoshihiko; Okabe, Isao; and Shirota, Atsushi, 4,119,443, Cl. 148-12.100.

Shitamori, Osamu: *See—*
Miyamori, Katsuya; Murai, Toru; and Shitamori, Osamu, 4,119,082, Cl. 126-263.000.

Shkop, Yaroslav Yaroslavovich: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Kototchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.

Shmanov, Nuribek Nabievich: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.

Shono, Hiroaki; Noji, Toshio; Ishikawa, Shinzo; and Wakasa, Isao, to Nitto Boseki Co., Ltd. Orifice plate for use in bushing for spinning glass fibers. 4,119,420, Cl. 65-1.000.

Shore, William S. Plant package. 4,118,890, Cl. 47-28.00R.

Showa Highpolymer Co., Ltd.: *See—*
Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, 4,119,617, Cl. 528-360.000.

Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., to UOP Inc. Oxygen sensor for industrial air/fuel control. 4,119,513, Cl. 204-195.00S.

Shuster, Edward J.: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,119,574, Cl. 252-522.000.
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.

Sickles, James E., to PPG Industries, Inc. Detachable power supply for induction type electrostatic spray gun. 4,120,017, Cl. 361-228.000.

Sidorov, Valentin Ivanovich: *See—*
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.

Siemens Aktiengesellschaft: *See—*
Bayer, Karlheinz; Dreiseitl, Walter; and Blaschke, Felix, 4,119,893, Cl. 318-178.000.
Drews, Wolf-Dietrich, 4,119,096, Cl. 128-194.000.
Frank, Kurt, 4,119,856, Cl. 250-402.000.
Goldmann, Gerd, 4,119,848, Cl. 250-315.00A.
Haas, Ernst; Platzoeder, Karl; and Schnoeller, Manfred, 4,119,441, Cl. 148-1.500.
Harless, Friedrich, 4,119,814, Cl. 179-107.0FD.
Hoelzl, Ludwig; Maenhardt, Joerg; Reisinger, Konrad; and Singer, Johannes, 4,119,795, Cl. 178-50.000.
Jantsch, Ottomar; and Reiss, Karl, 4,119,841, Cl. 250-213.0VT.
Kotschak, Otto; and Frank, Richard, 4,119,234, Cl. 220-2.10R.
Soldner, Richard; and Rattmann, Rudolf, 4,119,891, Cl. 315-389.000.
Wax, Franz, 4,119,034, Cl. 101-366.000.
Zibert, Klaus, 4,119,870, Cl. 307-355.000.
Zibert, Klaus, 4,119,871, Cl. 307-355.000.

Sietmann, Vernon H.; and Rohrs, Kenneth V. Method and means of drying particulate material. 4,118,875, Cl. 34-174.000.

Signode Corporation: *See—*
Gould, Russell J.; and Adams, Karl G., 4,119,449, Cl. 156-73.500.

Siliconix Incorporated: *See—*
Hill, Lorimer K., 4,119,960, Cl. 340-347.0AD.

Silvey, Elmer R. Tree felling ram with safety check valve. 4,119,298, Cl. 254-93.00R.

Sim, Nigel L., to S. Mechele Limited. Soldering irons. 4,119,088, Cl. 126-413.000.

Simeth, Claus: *See—*
Mayer, Peter; and Simeth, Claus, 4,119,309, Cl. 271-183.000.

Simko, Richard T., to Intel Corporation. Electrically programmable and electrically erasable MOS memory cell. 4,119,995, Cl. 357-23.000.

Simmons, James W., to Ametek, Inc. Laundry machine control system. 4,120,011, Cl. 361-180.000.

Simmrock, Karl Hans; and Hellemanns, Gerhard, to Metallgesellschaft Aktiengesellschaft. Process of producing olefin oxide. 4,119,507, Cl. 204-80.000.

Simon, David Julian; Gronner, Alfred Douglas; and Stella, Carl Cono, to Singer Company, The. Method for achieving high accuracy performance from conventional tracking synchro to digital converter. 4,119,958, Cl. 340-347.0SY.

Simon, Virgil S., to Thomas A. Schutz Co., Inc. Animated display device having a curved platen and a movable film. 4,118,879, Cl. 40-437.000.

Simonetti, Enrico: *See—*
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, 4,118,947, Cl. 62-514.00R.

Simoons, John R. A.: *See—*
Wyburn-Mason, Roger, 4,119,723, Cl. 424-273.00R.

Simpson, Donald C.: *See—*
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., 4,118,977, Cl. 73-141.00R.

Singer Company, The: *See—*
Goldfischer, Lester I., 4,119,968, Cl. 343-100.0ME.
Membrino, Robert J.; and Gaughan, John C., 4,120,028, Cl. 364-200.000.
Simon, David Julian; Gronner, Alfred Douglas; and Stella, Carl Cono, 4,119,958, Cl. 340-347.0SY.

Singer, Johannes: *See—*
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Sipma, Gerben: *See—*
van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.

Siverling, Michael McHugh: *See—*
Leighton, Howard Noyes; Siverling, Michael McHugh; and Wilfinger, Raymond John, 4,119,947, Cl. 340-146.3AG.

Sivill, Alistair David, to Lucas Industries Limited. Energy conversion systems. 4,118,932, Cl. 60-500.000.

Six, Jean-Claude Gerard: *See—*
Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, 4,119,835, Cl. 219-501.000.

SK&F Lab Co.: *See—*
Lewis, Joseph J.; and Webb, Robert L., 4,119,781, Cl. 548-337.000.

SKF Industrial Trading & Development Company B.V.: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,119,187, Cl. 192-98.000.

Skoog, Hans, to ASEA AB. Static convertor. 4,119,897, Cl. 318-331.000.

Skyway Recreation Products: *See—*
Hoffman, Edward Hugo, 4,119,174, Cl. 181-231.000.

Sleever: *See—*
Fresnel, Jacques, 4,118,916, Cl. 53-292.000.

Smaling, Oral M., to National Union Electric Corporation. Filter bag construction for a vacuum cleaner and method of operation. 4,119,414, Cl. 55-97.000.

Small, Robert F.; and Meredith, Joel B., to General Cable Corporation. Lifting equipment having telescopic boom with automatic extension limiting. 4,118,907, Cl. 52-115.000.

Smart, Frederick R., to Hyyck Corporation. Papermaker's felt with grooved surface. 4,119,753, Cl. 428-234.000.

Smid, Joost, to Ultra-Centrifuge Nederland N.V. System for the continuous separation of a gaseous mixture. 4,119,418, Cl. 55-158.000.

Smiley, Kenneth A., to Pennsylvania Plastic Products, Inc. Protective closure for internal pipe threads. 4,119,121, Cl. 138-96.00T.

Smith, Frank C., Jr.; and Chang, Richard C., to Dionex Corporation. Method for forming agglomerated ion exchange resin. 4,119,580, Cl. 521-28.000.

Smith, Franklin G.: *See—*
Harris, Richard D.; Smith, Franklin G.; and Moshofsky, Jerome F., 4,118,835, Cl. 24-73.0MC.

Smith, George W.: *See—*
Hayden, Daniel B.; Smith, George W.; and Kaplit, Michael, 4,119,842, Cl. 250-201.000.

Smith, Herman W., to Upjohn Company, The. cis-4,5-Didehydro-13,14-didehydro-PGF$_1$ compounds. 4,119,662, Cl. 562-503.000.

Smith, Herman W., to Upjohn Company, The. 5-Oxa-13,14-didehydro-PGE$_1$ compounds. 4,119,664, Cl. 562-503.000.

Smith, Homer Grafton, to Homco International, Inc. Casing slotter. 4,119,151, Cl. 166-298.000.

Smith, Jesse Britton. Vehicular tire air pressure measuring system. 4,119,944, Cl. 340-58.000.

Smith, Kenneth L.; and Sancken, Ernest H., to A. O. Smith Harvestore Products, Inc. Shuttle type livestock feeder. 4,119,193, Cl. 198-371.000.

Smith, L. Eugene. Farm apparatus. 4,119,329, Cl. 280-415.00R.

Smith, Oliver Wendell; and Koleske, Joseph Victor, to Union Carbide Corporation. Polyepoxide high solids coatings. 4,119,593, Cl. 260-18.0EP.

Smith, Peter John Fennemore, to Smiths Industries Limited; and Phosphor Products Company Limited. Deposition of electroluminescent material through superimposed dual masks. 4,119,745, Cl. 427-66.000.

Smith, Richard T.: *See—*
Jacyno, Anthony; and Smith, Richard T., 4,118,865, Cl. 30-276.000.

Smith, Robert J. Heat transfer and conditioning unit. 4,119,080, Cl. 126-110.00R.

Smiths Industries Limited: *See—*
Smith, Peter John Fennemore, 4,119,745, Cl. 427-66.000.

Sneath, Michael Edwin: *See—*
Barwick, Bryan Edwin; and Sneath, Michael Edwin, 4,119,739, Cl. 426-573.000.

Snedden, William H., to Westinghouse Electric Corp. Dividing timer. 4,120,014, Cl. 361-196.000.

Snyder, J. Rush; and Myers, Timothy. Apparatus for cutting scrap tires. 4,119,277, Cl. 241-167.000.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Pratelli, Cesare, 4,119,805, Cl. 179-18.0FC.

Societe de Prospection et d'Inventions Techniques SPIT: *See—*
Combette, Marc; and Ollivier, Jean, 4,119,257, Cl. 227-10.000.

Societe DETEC S.A.: *See—*
Kurz, Maurice, 4,119,400, Cl. 422-298.000.

Societe d'Exploitation des Brevets Neiman SA.: *See—*
Remontet, Yves, 4,119,171, Cl. 180-114.000.

Soderberg, Bo, to AB Vardeskydd. Service box. 4,119,269, Cl. 232-43.300.

Sokolovsky, Alexandr Iudovich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Solar Energy Systems, Inc.: *See—*
Brussels, Nathan E., 4,119,086, Cl. 126-271.000.

Soldner, Richard; and Rattmann, Rudolf, to Siemens Aktiengesellschaft. Oscilloscope for the image display of sectional planes of a body. 4,119,891, Cl. 315-389.000.

Solomatina, Natalia Mikhailovna: *See—*
Aizenberg, Julian Borisovich; Bukhman, Inokh Borukhovich; Pyatigorsky, Vladimir Mikhailovich; and Solomatina, Natalia Mikhailovna, 4,120,024, Cl. 362-96.000.

Sommer, Richard: *See—*
Hugl, Herbert; Otten, Hans-Gunter; Sommer, Richard; and Wolfrum, Gerhard, 4,119,623, Cl. 260-206.000.

Sony Corporation: *See—*
Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, 4,120,005, Cl. 360-61.000.
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,120,019, Cl. 361-385.000.
Miyaoka, Senri, 4,119,883, Cl. 313-414.000.
Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, 4,120,006, Cl. 360-72.000.
Ninomiya, Takeshi, 4,120,000, Cl. 358-8.000.
Sato, Ichitaro, 4,120,007, Cl. 360-64.000.

Sorensen, Per Germann, to Danfoss A/S. Single phase asynchronous motor. 4,119,894, Cl. 318-221.00D.

Sosedov, Vladimir Petrovich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Souriau et Cie: *See—*
Debeaux, Alain, 4,118,980, Cl. 73-194.00C.

Southern Railway Company: *See—*
Miller, John R., 4,119,154, Cl. 171-16.000.

Souwand, Steve Elia, to Polysar Limited. Flow measurement. 4,118,982, Cl. 73-194.00R.

Space-Age Control, Inc.: *See—*
Emerson, Donald E., 4,119,327, Cl. 280-302.000.

Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., to Spanl, Abram N. Cutter mechanism for tufting machine or the like. 4,119,047, Cl. 112-79.0FF.

Spanl, Abram N.: *See—*
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,119,047, Cl. 112-79.0FF.

Sparrevohn, Frederic D. R. Security latch. 4,119,336, Cl. 292-268.000.

Spaziante, Placido Maria; and Nidola, Antonio, to Oronzio de Nora Impianti Elettrochimici S.p.A. Two layer ceramic membranes and their uses. 4,119,503, Cl. 204-59.00R.

Spear, John Francis: *See—*
Lemon, Maurice Charles; and Spear, John Francis, 4,118,958, Cl. 68-22.00R.

Speca, Anthony N., to National Distillers and Chemical Corporation. Olefin polymerization catalyst. 4,119,773, Cl. 526-130.000.

Specht, Donald Paul: *See—*
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, 4,119,466, Cl. 96-115.00R.

Speck, Ulrich: *See—*
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, 4,119,626, Cl. 260-239.55C.

Spector, Donald, to Applied Research Commodities Industries, Inc. Emergency oxygen supply. 4,119,097, Cl. 128-203.000.

Spencer, Bette M.: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,119,574, Cl. 252-522.000.

Spener, Gerhard: *See—*
Kadner, Martin; Hackstein, Karl-Gerhard; and Spener, Gerhard, 4,119,563, Cl. 252-301.10S.

Sperry, John S.; Krajicek, Richard W.; and Cradeur, Robert R., to Carmel Energy, Inc. Combustion chamber and thermal vapor stream producing apparatus and method. 4,118,925, Cl. 60-39.050.

Sperry Rand Corporation: *See—*
Guenon, Jean-Pierre; and Verdenne, Serge J. C., 4,119,218, Cl. 214-6.00B.

Spiel, Albert, to Nabisco, Inc. High protein rice mixture. 4,119,734, Cl. 426-72.000.

Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, to International Flavors & Fragrances Inc. Perfume compositions and colognes containing 1-butanoyl-3,3-dimethylcyclohexane. 4,119,576, Cl. 252-522.000.

Sprecker, Mark A.: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.

Sprung, Philip D. Building structure. 4,118,904, Cl. 52-63.000.

Spruogis, Bronislavas Prano: *See—*
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.

Stackpole Components Company: *See—*
Overton, Arthur Wayne, 4,119,821, Cl. 200-159.00R.

Staehli, Christopher P.: *See—*
Fogg, Robert K., Jr.; and Staehli, Christopher P., 4,119,164, Cl. 180-6.500.

Stage-Brite Inc.: *See—*
Davis, Robert E., 4,119,816, Cl. 200-1.00R.

Stager, William R., to Mead Corporation, The. Fault detection and compensation circuit for ink jet printer. 4,119,973, Cl. 346-75.000.

Stahl, Robert M.: *See—*
Goldstein, Robert H.; and Stahl, Robert M., 4,119,407, Cl. 422-58.000.

Stahle, Helmut: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,119,728, Cl. 424-324.000.

Stahler, Paul A. Production of substantially full-diet beef cattle feed through processing of the rumen content of slaughtered cattle. 4,119,741, Cl. 426-641.000.

Stake Technology Ltd.: *See—*
Brown, Douglas Burthum, 4,119,025, Cl. 100-35.000.

Stal-Laval Turbin AB: *See—*
Mansson, Martin; and Torstenfelt, Ragnar, 4,118,847, Cl. 29-156.80R.

Stalwart Dyeing Company Limited: *See—*
Stoyel, Nigel John William, 4,118,956, Cl. 68-5.00D.

Stamicarbon, B.V.: *See—*
Konijnenberg, Erik; Vandenbooren, Franciscus H. A. M. J.; and Verheijen, Egidius J. M., 4,119,782, Cl. 548-313.000.

Stamm, Robert H.: *See—*
Karzmar, Ronald C.; and Stamm, Robert H., 4,119,859, Cl. 250-507.000.

Standard Oil Company (Indiana): *See—*
Albulescu, Peter; and McMahon, Joseph F., 4,119,349, Cl. 299-2.000.
Hopkins, P. Donald; and Hensley, Albert L., Jr., 4,119,531, Cl. 208-251.00H.

Standard Precision, Inc.: *See—*
Barber, Lloyd L.; and Koppelman, Alan J., 4,119,377, Cl. 312-344.000.

Standard T Chemical Company, Inc.: *See—*
Brower, Loyd R., Jr.; Madsen, Leonard P.; and Zutaut, Chesley L., 4,119,522, Cl. 204-300.0EC.

Stanford Applied Engineering, Inc.: *See—*
Schultz, Ronald L., 4,119,359, Cl. 339-128.000.

Stark, Louis, to Hughes Aircraft Company. High data rate frequency scan slotted waveguide antenna. 4,119,971, Cl. 343-768.000.

Stark, Mortimer M. Collapsible lamp shade having interchangeable configurations. 4,120,027, Cl. 362-352.000.

Staroselsky, Naum: *See—*
Rutshtein, Alexander; and Staroselsky, Naum, 4,119,391, Cl. 417-26.000.

Stassen, William N.: *See—*
Cohen, Eleanor B.; Stassen, William N.; and Wintgens, James C., 4,119,477, Cl. 106-99.000.

Stauffer Chemical Company: *See—*
Alesandrini, Carlo G., Jr., 4,119,659, Cl. 260-455.00R.
Baker, Don R.; and Walker, Francis H., 4,119,433, Cl. 71-118.000.
Gaughan, Edmund J., 4,119,432, Cl. 71-98.000.
Gutman, Arnold D., 4,119,716, Cl. 424-220.000.
Teach, Eugene G., 4,119,636, Cl. 260-326.5FL.
Tilles, Harry, 4,119,431, Cl. 71-94.000.

Stearns-Roger Corp.: *See—*
Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., 4,119,534, Cl. 209-291.000.

Steed, Michael Halsey, to Fafco Incorporated. Spinwelded plastic pipe coupling joint. 4,119,334, Cl. 285-236.000.

Steel Founders' Society of America: *See—*
Roach, Donald Brian; Van Echo, John Andrew; and Hall, Albert Mangold, 4,119,456, Cl. 75-122.000.

Steiner, Gordon Lewis, to Honeywell Information Systems, Inc. Method and apparatus for recovering a signal transferred over a common bus in a data processing system. 4,120,029, Cl. 364-200.000.

Steinigeweg, Rosmarie: *See—*
Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, 4,119,631, Cl. 260-295.00A.

Steinwart, Johannes: *See—*
Stock, Dieter; and Steinwart, Johannes, 4,119,073, Cl. 123-122.00D.

Steiper, Otto: *See—*
Hafner, Hermann; and Steiper, Otto, 4,119,227, Cl. 214-305.000.

Stella, Carl Cono: *See—*
Simon, David Julian; Gronner, Alfred Douglas; and Stella, Carl Cono, 4,119,958, Cl. 340-347.0SY.

Stella, Joseph A., to Polaroid Corporation. Film cassette contained processing fluid applicator having particle trapping arrangement. 4,119,371, Cl. 352-130.000.

Stenke, Klaus: *See—*
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.

Sterling Drug Inc.: *See—*
Diana, Guy D.; and Cutler, Royal A., 4,119,668, Cl. 260-567.60P.
Lewis, Thomas R.; and Michne, William F., 4,119,628, Cl. 260-293.540.

Steuer, Werner, to Fichtel & Sachs AG. Two-speed bicycle hub with coaster brake and pedal actuated speed shift. 4,119,182, Cl. 192-6.00A.

Stevens, Keith Drummond: *See—*
Morton, John; and Stevens, Keith Drummond, 4,119,898, Cl. 318-341.000.

Stickels, Charles A., to Ford Motor Company. Pack nitriding process for low alloy steel. 4,119,444, Cl. 148-16.600.

Stieringer, Albert, to Robert Bosch GmbH. Flash unit with electronic exposure setting calculator. 4,120,038, Cl. 364-705.000.

Stock, Dieter; and Steinwart, Johannes, to Audi NSU Auto Union Aktiengesellschaft. Spark ignition fuel injection internal combustion engine. 4,119,073, Cl. 123-122.00D.

Stoeckel, Dieter, to G. Rau. Method of making an electrical contact element. 4,119,260, Cl. 228-111.000.

Stoffelsma, Jan: *See—*
van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.

Stolfa, Frank: *See—*
Czajkowski, George J.; and Stolfa, Frank, 4,119,530, Cl. 208-213.000.

Stolpe, Erik; Honkanen, Arto; and Laiho, Erkki, to Pekema OY. Method of coating and cutting wrapper blanks. 4,119,452, Cl. 156-244.190.

Stone, Barry Newell: *See—*
Shelley, Peter Stephen; Love, William Darrell; and Stone, Barry Newell, 4,119,853, Cl. 250-385.000.

Stone, Dennis W. J. Production of pharmaceutical barium sulphate. 4,119,700, Cl. 423-156.000.

Stone, Kirby Lee, to Cincinnati Milacron Inc. Fluid purging system. 4,119,110, Cl. 137-15.000.

Stork-Gamco, Inc.: *See—*
Harbert, Grover S., Jr., 4,118,829, Cl. 17-11.000.

Stover, Johannes Hinderikus, to U.S. Philips Corporation. Cathode ray tube. 4,119,885, Cl. 313-479.000.

Stoyel, Nigel John William, to Stalwart Dyeing Company Limited. Fabric printing machine. 4,118,956, Cl. 68-5.00D.

Straatmann, John A.: *See—*
Bosch, Richard A.; and Straatmann, John A., 4,119,445, Cl. 148-36.000.

Strabruken AB: *See—*
Lundgren, Bert Karl Gustaf; and Thaning, Gunnar, 4,119,473, Cl. 106-58.000.

Strachan & Henshaw Limited: *See—*
Hollis, Richard John, 4,119,032, Cl. 101-216.000.

Strangio, Vincent A.: *See—*
Riegel, Herbert; and Strangio, Vincent A., 4,119,705, Cl. 423-507.000.

Straub, Immanuel. Pipe coupling. 4,119,333, Cl. 285-112.000.

Strepetov, Gennady Egorovich: *See—*
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, 4,119,828, Cl. 219-121.00P.

Strout, Russell Brown: *See—*
Golner, Jerold Julius; Miller, William Joseph; and Strout, Russell Brown, 4,119,251, Cl. 225-20.000.

Stull, James T., to United States Steel Corporation. Straightener for a multistrand continuous-casting machine. 4,119,138, Cl. 164-448.000.

Stupec, Gertraud B., to Beatrice Foods Co. Reconstituted fried puffed pork skins. 4,119,742, Cl. 426-641.000.

Sturel, Bernard: *See—*
Michon, Maurice; and Sturel, Bernard, 4,119,928, Cl. 331-94.50P.

Su, Chauchang, to Burroughs Corporation. Method and apparatus for multi-function, stored logic Boolean function generation. 4,120,043, Cl. 364-900.000.

Sublistatic Holding S.A.: *See—*
Mehl, Wolfgang; and Monti, Roland, 4,119,374, Cl. 355-32.000.

Sugawara, Mitsutoshi, to Nippon Electric Co., Ltd. Frequency discriminator circuit. 4,119,919, Cl. 329-103.000.

Sugita, Terumitsu: *See—*
Moritomo, Sadao; Tatsumi, Youji; and Sugita, Terumitsu, 4,118,900, Cl. 51-281.00R.

Sullivan, Alfred Bay, to Monsanto Company. 2(Isopropyldithio)benzimidazole. 4,119,780, Cl. 548-329.000.

Sumida, Shizuo, to Toyo Kogyo Co., Ltd. Motor control means for power driven window. 4,119,899, Cl. 318-459.000.

Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, to University of Missouri, The Curators of the. Method and apparatus for water jet drilling of rock. 4,119,160, Cl. 175-67.000.

Summers, Jack C.: *See—*
Hegedus, Louis; and Summers, Jack C., 4,119,571, Cl. 252-466.0PT.

Sunaga, Nobuo: *See—*
Masuda, Naosuke; and Sunaga, Nobuo, 4,119,354, Cl. 303-24.00F.

Sunbeam Corporation: *See—*
Edwards, Harrison F., 4,119,081, Cl. 126-140.000.

Sundstrand Corporation: *See—*
Ali Ja'afar, Hamedo; and Iseman, Walter J., 4,119,238, Cl. 220-211.000.

Superior Electric Company, The: *See—*
Leenhouts, Albert C., 4,119,901, Cl. 318-685.000.

Suzuki, Kazuo: *See—*
Ishizuka, Hiroshi; Suzuki, Kazuo; and Tamon, Shinichi, 4,119,500, Cl. 204-16.000.

Suzuki, Noriyuki: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.

Suzuki, Takeshi: *See—*
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.

Suzuki, Yoshihisa: *See—*
Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, 4,118,920, Cl. 57-34.00R.

Suzuki, Yutaka: *See—*
Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, 4,120,005, Cl. 360-61.000.

Svacha, Roy E.: *See—*
Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., 4,119,513, Cl. 204-195.00S.

Sventsitsky, Alexandr Sergeevich: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.

Swenson, Harold R., to Systematic Packaging, Inc. Apparatus for automatically applying tubing around an object. 4,118,915, Cl. 53-291.000.

Swift & Company: *See—*
Kratochvil, John F., 4,119,732, Cl. 426-36.000.

Syncro Machine Company: *See—*
Draizen, Seymour; and Schillebeeckx, Konrad C., 4,119,278, Cl. 242-25.00A.

Synder, Robert W., to Armstrong Cork Company. Product and method of printing carpet-II. 4,119,397, Cl. 8-2.50A.

Systematic Packaging, Inc.: *See—*
Swenson, Harold R., 4,118,915, Cl. 53-291.000.

Systems Design & Development: *See—*
Krafft, Kurt, 4,118,854, Cl. 29-428.000.

Szoke, Abraham, to Massachusetts Institute of Technology. Method and apparatus for isotope separation from a gas stream. 4,119,509, Cl. 204-157.10R.

Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., to General Electric Company. Electrical connector switching module. 4,119,358, Cl. 339-111.000.

Takada, Toshio: *See—*
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, 4,119,536, Cl. 210-50.000.

Takahashi, Hatsuo: *See—*
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.

Takahashi, Naoyuki, to Olympus Optical Company Ltd. Device for displaying magnification in the field of view of a microscope. 4,119,364, Cl. 350-114.000.

Takahashi, Yutaka; Hakamata, Yoshio; and Konno, Masamitu, to Fuji Photo Film Co., Ltd. Apparatus for monitoring photographic processing liquid. 4,119,952, Cl. 340-309.100.

Takara Co., Ltd.: *See—*
Ogawa, Iwakichi, 4,118,888, Cl. 46-22.000.

Takeda Chemical Industries, Ltd.: *See—*
Nakao, Yukihiro; Miyashita, Kasumi; and Toda, Jun, 4,119,435, Cl. 127-34.000.

Takeda, Takehiko: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.

Takiyama, Eiichiro: *See—*
Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, 4,119,617, Cl. 528-360.000.

Tamano, Motokazu: *See—*
Sasaki, Masayuki; and Tamano, Motokazu, 4,119,957, Cl. 340-337.000.

Tamon, Shinichi: *See—*
Ishizuka, Hiroshi; Suzuki, Kazuo; and Tamon, Shinichi, 4,119,500, Cl. 204-16.000.

Tamura, Tetsuomi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Choke breaker system for a carburetor of an internal combustion engine. 4,119,683, Cl. 261-39.00B.

Tanaka, Harumi, to Minolta Camera Kabushiki Kaisha. Self-contained interchangeable lens camera. 4,119,983, Cl. 354-197.000.

Tanaka, Kazumitsu; and Goto, Nobuo, to Nihon Denshi Kabushiki Kaisha. Electron beam exposure system. 4,119,854, Cl. 250-397.000.

Tanaka, Shigeyoshi: *See—*
Nishizawa, Hiroshi; Tanaka, Shigeyoshi; and Fujishima, Minoru, 4,119,679, Cl. 260-835.000.

Tanaka, Shinichi: *See—*
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.

Tanaka, Yukiyasu: *See—*
Noguchi, Masaaki; Tanaka, Yukiyasu; and Motosugi, Katuhiko, 4,119,065, Cl. 123-32.0SP.

Tanney, John W.: *See—*
Tucker, Helen G.; Tanney, John W.; and Hayes, William F., 4,118,973, Cl. 73-55.000.

Tanuska, Pavol: *See—*
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, 4,119,243, Cl. 221-298.000.

Tarasov, Alexandr Andreevich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Tatsumi, Youji: *See—*
Moritomo, Sadao; Tatsumi, Youji; and Sugita, Terumitsu, 4,118,900, Cl. 51-281.00R.

Taylor, Frank H., to Otis Engineering Corporation. Surface controlled sub-surface safety valve. 4,119,146, Cl. 166-72.000.

Taylor, James B., Jr.; and Cobb, Keith M., to Texas Instruments Incorporated. Method of making an electronic calculator. 4,118,858, Cl. 29-622.000.

Taylor, Robert Graham; and Proops, William Alfred, to Rolls-Royce (1971) Limited. Induction heating apparatus. 4,119,825, Cl. 219-10.730.

Taylor, Wilfred Kenelm, to National Research Development Corporation. Comparison apparatus, e.g. for use in character recognition. 4,119,946, Cl. 340-146.30Q.

TDK Electronics Co., Ltd.: *See—*
Fujiwara, Shinobu, 4,119,554, Cl. 252-63.200.

Teach, Eugene G., to Stauffer Chemical Company. Preparation of acyclic and alicyclic N-substituted halo-2-pyrrolidinones. 4,119,636, Cl. 260-326.5FL.

Technicon Instruments Corporation: *See—*
Sansur, Musa M.; Vlastelica, Daniel L.; and Delea, Anne C., 4,119,401, Cl. 23-230.00B.

Technology Development Corporation: *See—*
Wollert, Walter C., 4,119,797, Cl. 179-1.0VC.

Telediffusion de France: *See—*
De Lamare, Eric P.; and Dudon, Pierre D., 4,119,933, Cl. 333-30.00R.

Teledyne, Inc.: *See—*
Johnson, Gilbert R.; and Olson, Frank A., 4,119,967, Cl. 343-100.0PE.

Telefonaktiebolaget L M Ericsson: *See—*
Lindgren, Erik Gustaf, 4,119,949, Cl. 340-630.000.

Temme, Karl: *See—*
Walther, Carl Kurt; Walther, Henning D.; Hagelueken, Hubert P.; and Temme, Karl, 4,118,896, Cl. 51-163.200.

Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna. Cold-setting moulding mixture for producing foundry moulds and cores. 4,119,606, Cl. 260-38.000.

Terminal Data Corporation: *See—*
Morgan, Robert Anthony, 4,119,372, Cl. 353-26.00R.

Terrett, David Stuart: *See—*
Frankfort, Eric J.; and Terrett, David Stuart, 4,119,815, Cl. 179-175.30S.

Tesa S.A.: *See—*
Lendi, Georges; Voinescu, Nicolae; and De Trey, Rene, 4,118,867, Cl. 33-164.00C.

Teschner, David: *See—*
Izraeli, Hyman, 4,118,971, Cl. 72-410.000.

Tessler, Martin M., to National Starch & Chemical Corporation. Starch ether derivatives, a method for the preparation thereof and their use in paper. 4,119,487, Cl. 162-175.000.

Texaco Development Corporation: *See—*
Advani, Prem S., 4,119,412, Cl. 55-70.000.
Schulze, Heinz, 4,119,615, Cl. 528-343.000.

Texaco Inc.: *See—*
Crouch, William B.; Fabiero nee Posadas, Carolina P.; and Robin, Allen M., 4,119,566, Cl. 252-372.000.
Wu, Ching H.; Brown, Alfred; and Hall, Wilbur L., 4,119,149, Cl. 166-266.000.
Yaffe, Roberta, 4,119,551, Cl. 252-46.700.

Texas Instruments Incorporated: *See—*
Bayard, Michel Lucien, 4,119,768, Cl. 429-111.000.
Taylor, James B., Jr.; and Cobb, Keith M., 4,118,858, Cl. 29-622.000.

Th. Kieserling & Albrecht: *See—*
Lorenz, Horst, 4,119,254, Cl. 226-112.000.

Thaler, Michael; and Gocht, Ronald, to Scan-Optics, Inc. Line memory. 4,120,049, Cl. 365-230.000.

Thaning, Gunnar: *See—*
Lundgren, Bert Karl Gustaf; and Thaning, Gunnar, 4,119,473, Cl. 106-58.000.

Thermo Electron Corporation: *See—*
Fine, David H.; Ross, Ronald D., Jr.; and Rounbehler, David P., 4,119,402, Cl. 23-230.00B.
Porier, Victor L.; and Bernhard, William F., 4,118,806, Cl. 3-1.400.

Therrien, Gordon G.: *See—*
Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., 4,118,909, Cl. 52-196.000.

Thiokol Corporation: *See—*
Lyles, Bobby J., 4,118,928, Cl. 60-255.000.

Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, to Pepro. Fungicidal compositions containing phosphorous acid and derivatives thereof. 4,119,724, Cl. 424-45.000.

Thomas A. Schutz Co., Inc.: *See—*
Simon, Virgil S., 4,118,879, Cl. 40-437.000.

Thomas Hunter Limited: *See—*
Edwards, Cyril Kenneth; and Webb, Edward Harry, 4,119,233, Cl. 215-337.000.

Thomas J. Lipton, Inc.: *See—*
Barwick, Bryan Edwin; and Sneath, Michael Edwin, 4,119,739, Cl. 426-573.000.

Thome, Roland; Bings, Hubert; and Obermaier, Hans, to Vereinigte Aluminum-Werke Aktiengesellschaft. Process and equipment for manufacturing vanadium pentoxide. 4,119,707, Cl. 423-592.000.

Thomson-CSF: *See—*
Desperques-Volmier, Serge, 4,119,857, Cl. 250-492.00A.
Legendre, Philippe; and Nef, Jean-Marie, 4,119,923, Cl. 330-284.000.
Rougeot, Henri, 4,119,852, Cl. 250-370.000.

Thornton, Theodore Wayne. Dual latching, child-resistant container. 4,119,232, Cl. 215-222.000.

Thut, Bruno H.; and Lehman, Dale T. Heat exchanger. 4,119,141, Cl. 165-82.000.

Tidwell, Hubert. Mobile agricultural irrigation apparatus. 4,119,272, Cl. 239-178.000.

TII Corporation: *See—*
Armstrong, Edward T., 4,119,273, Cl. 239-254.000.

Tilles, Harry, to Stauffer Chemical Company. Herbicidal effect of a mixture of cis and trans isomers of S-isopropyl-1-(5-ethyl-2-methylpiperidinecarbothioate). 4,119,431, Cl. 71-94.000.

Timkin, Vadim Nikolaevich: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.

Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, to Rustenburg Platinum Mines Limited. Co-ordination compounds of platinum. 4,119,653, Cl. 260-429.00R.

Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, to Rustenburg Platinum Mines Limited. Compositions containing platinum. 4,119,654, Cl. 260-429.00R.

Toda, Gyozo: *See—*
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.

Toda, Jun: *See—*
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Todd, Carl David: *See—*
Kincheloe, Dan D.; Gregory, Elmo M.; Todd, Carl David; and Gould, Edson B., III, 4,120,031, Cl. 364-464.000.

Todokoro, Masatoshi. Game board. 4,119,312, Cl. 273-1.00R.

Tokuda, Shingo: *See—*
Yokota, Noriyuki; Tokuda, Shingo; Ito, Yoshiro; and Itaya, Kenji, 4,119,508, Cl. 204-128.000.

Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, to Tokyo Shibaura Electric Co., Ltd. Integrated injection logic with both grid and internal double-diffused injectors. 4,119,998, Cl. 357-44.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Gocho, Choichi, 4,119,862, Cl. 290-17.000.
Sakurai, Fumio, 4,119,873, Cl. 310-56.000.

Tokyo Shibaura Electric Company, Ltd.: *See—*
Aihara, Mitsuo, 4,120,040, Cl. 364-709.000.
Gocho, Choichi, 4,119,861, Cl. 290-13.000.
Hashimoto, Masaru, 4,119,869, Cl. 307-296.00R.
Heki, Hideaki; Ozaki, Osamu; and Ohno, Masayoshi, 4,119,417, Cl. 55-158.000.
Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, 4,119,761, Cl. 428-472.000.
Nishi, Yusaku; and Fujii, Hideo, 4,119,480, Cl. 156-272.000.
Sasaki, Masayuki; and Tamano, Motokazu, 4,119,957, Cl. 340-337.000.
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.

Tolley, William K., to UOP Inc. Production of titanium metal values. 4,119,696, Cl. 423-53.000.

Tolley, William K., to UOP Inc. Production of titanium metal values. 4,119,697, Cl. 423-82.000.
Tolmie, Robert J., Jr.: *See—*
Carvalko, Joseph R.; and Tolmie, Robert J., Jr., 4,119,989, Cl. 354-298.000.
Tomashek, James R.: *See—*
Sheldon, Loren B.; and Tomashek, James R., 4,119,837, Cl. 235-92.0MP.
Tomura, Teruichi: *See—*
Iyama, Hiroyuki; Akatsuka, Mitsuo; and Tomura, Teruichi, 4,119,887, Cl. 315-101.000.
Tonzetich, Joseph: *See—*
Preti, George; Huggins, George R.; and Tonzetich, Joseph, 4,119,089, Cl. 128-2.00R.
Toro Company, The: *See—*
Hunter, Edwin J., 4,119,275, Cl. 239-456.000.
Torstenfelt, Ragnar: *See—*
Mansson, Martin; and Torstenfelt, Ragnar, 4,118,847, Cl. 29-156.80R.
Toshiba Kikai Kabushiki Kaisha: *See—*
Sato, Mituharu; and Nakajima, Seiji, 4,119,213, Cl. 214-1.0BB.
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT. 2-Phenoxy and 2-phenylthio and 2-phenylamino-alkyl-2-oxazolines. 4,119,633, Cl. 260-307.00F.
Tower Oil & Technology Co.: *See—*
Nachtman, Elliot S.; and Hitchcock, Ronald G., 4,119,547, Cl. 252-25.000.
Toyo Kogyo Co., Ltd.: *See—*
Sumida, Shizuo, 4,119,899, Cl. 318-459.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,119,590, Cl. 260-8.000.
Toyoda-Koki Kabushiki-Kaisha: *See—*
Kobayashi, Akiyoshi, 4,118,899, Cl. 51-237.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hattori, Kyo, 4,119,071, Cl. 123-119.00A.
Horie, Koji, 4,119,180, Cl. 188-73.500.
Hoshi, Hirohiko; Funayama, Toshio; Ishiguro, Kazuhiko; and Umehara, Hidetomo, 4,119,061, Cl. 123-3.000.
Inoue, Tokuta; Yaegashi, Takehisa; and Aoki, Keiji, 4,119,512, Cl. 204-195.00S.
Itoh, Takaaki; and Kikuchi, Kazuo, 4,119,685, Cl. 261-44.00C.
Kobayashi, Katsuyuki, 4,118,952, Cl. 64-12.000.
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Mitsuda, Tadao; Yasuda, Takeru; and Okuda, Sigeru, 4,118,976, Cl. 73-118.000.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Motosugi, Katuhiko, 4,119,065, Cl. 123-32.0SP.
Tamura, Tetsuomi, 4,119,683, Cl. 261-39.00B.
Treadwell, Kenneth: *See—*
Kenney, James F.; and Treadwell, Kenneth, 4,119,585, Cl. 521-118.000.
Trevaskis, William T.; and Olson, William J. Automotive hydrocarbon and water vapor injector system and universal hose connector means for same. 4,119,062, Cl. 123-25.00R.
Tridair Industries: *See—*
Cosenza, Frank J., 4,119,131, Cl. 151-69.000.
Tridan Tool & Machine, Inc.: *See—*
Ames, Ward A., 4,118,968, Cl. 72-328.000.
Trifonov, Nikolai Dmitrievich: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kingir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.
Trubody, Bert M., to Patterson-Williams Manufacturing Company. Playground turntable. 4,119,310, Cl. 272-33.00R.
Trucksafe, Inc.: *See—*
Capps, Grover H., 4,119,330, Cl. 280-432.000.
TRW Inc.: *See—*
Shackleford, William L.; Winter, Donald C.; and Hall, David B., 4,119,929, Cl. 331-94.50M.
Tseng, Ching Y.: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Method of mixed illumination. 4,120,026, Cl. 362-231.000.
Tsuchiya, Michio, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process and reactor for preparing ethanolamines. 4,119,670, Cl. 260-585.00C.
Tsuda, Kintaro: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
Tsukiji, Yoshihiro: *See—*
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Tsuruoka, Michihiko: *See—*
Miyoshi, Noriomi; and Tsuruoka, Michihiko, 4,118,993, Cl. 74-37.000.
Tsygankova, Nina Yakovievna: *See—*
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.
Tubin, Eddie Sam. Personnel cooler. 4,118,946, Cl. 62-514.00R.
Tucker, Helen G.; Tanney, John W.; and Hayes, William F., to Canadian Patents & Development Limited. Apparatus for measuring the flow rate and/or viscosity of a fluid. 4,118,973, Cl. 73-55.000.
Tuda, Goro; Sawada, Yoshihisa; and Mugitani, Yasuhiro, to Kobe Steel, Limited. Billet milling equipment. 4,119,015, Cl. 90-17.000.
Turenko, Oleg Borisovich: *See—*
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.
Turf-Tech Inc.: *See—*
Coldiron, Ronnie Hamilton, 4,119,002, Cl. 83-120.000.
Turi Nagy, Janos; and Niederberger, Felix, to LGZ Landis & Gyr Zug AG. Audio frequency heterodyne means and method. 4,119,912, Cl. 325-58.000.
Turner, Ronald L.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,119,410, Cl. 44-1.00R.
Turner, Stephen: *See—*
Chirikjian, Jack G., 4,119,521, Cl. 204-299.00R.
Tuson, Samuel, to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H. Column structure enabling handling appliances on the seabed, particularly for the assembly and maintenance of well-heads. 4,119,145, Cl. 166-339.000.
Uchida, Tohru: *See—*
Yamada, Yutaka; Kato, Akira; and Uchida, Tohru, 4,119,461, Cl. 96-1.800.
Uchida, Yasushi: *See—*
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.
Uda, Masayuki, to Hoshidenki-Seizo Kabushiki Kaisha. Spark gap device for a cathode ray tube socket. 4,119,878, Cl. 313-325.000.
Uden, Edward; Schreihage, Wilhelm; and Finck, Johan Christiaan Jacobus, to U.S. Philips Corporation. Electronic component with heat cooled substrates. 4,120,020, Cl. 361-386.000.
Ueda, Shozo: *See—*
Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, 4,118,920, Cl. 57-34.00R.
Uhlig, Albert R., to Owens-Illinois, Inc. Plastic drum with metal handling ring. 4,119,235, Cl. 220-71.000.
Ultra-Centrifuge Nederland N.V.: *See—*
Smid, Joost, 4,119,418, Cl. 55-158.000.
Umehara, Hidetomo: *See—*
Hoshi, Hirohiko; Funayama, Toshio; Ishiguro, Kazuhiko; and Umehara, Hidetomo, 4,119,061, Cl. 123-3.000.
Umemoto, Tomeo: *See—*
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192-24.000.
Unger, Eberhard; and Von Schenk, Wolf-Rudiger, to Gewerkschaft Eisenhutte Westfalia. Apparatus for and method of driving tunnels. 4,118,938, Cl. 405-145.000.
Union Carbide Corporation: *See—*
Bolton, Jack Curtis; and Alexander, Franklin Leroy, 4,119,114, Cl. 137-318.000.
Hodakowski, Leonard Edward; Osborn, Clairborn Lee; and Harris, Edward Bruce, 4,119,640, Cl. 260-340.700.
Kun, Leslie Charles, 4,119,144, Cl. 165-175.000.
Papa, Anthony Joseph; Rollins, Richard Lee; and Critchfield, Frank Edward, 4,119,584, Cl. 521-127.000.
Poutsma, Marvin Lloyd; Rabo, Jule Anthony; and Risch, Alan Peter, 4,119,656, Cl. 260-449.00R.
Shah, Naresh Ramanlal, 4,119,586, Cl. 521-137.000.
Smith, Oliver Wendell; and Koleske, Joseph Victor, 4,119,593, Cl. 260-18.0EP.
Union Financiere et Industrielle S.A.: *See—*
Lequeux, Christian, 4,118,855, Cl. 29-447.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Coates, David; and Gray, George William, 4,119,558, Cl. 252-299.000.
United States Gypsum Company: *See—*
Agcaoili, Clarito R., 4,119,338, Cl. 294-8.600.
Long, William J., 4,119,752, Cl. 428-198.000.
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Army: *See—*
Allen, Floyd; and Benderly, Asaf A., 4,119,038, Cl. 102-207.000.
Everswick, David N., 4,119,913, Cl. 325-113.000.
Hodes, Harvey A., 4,119,462, Cl. 96-66.300.
Lerman, Russell E., 4,119,040, Cl. 102-249.000.
Palmisano, Rocco Richard, 4,118,861, Cl. 29-631.000.

Wilkins, Paul E.; Neville, Glenn E.; and Fitzgerald, Robert T., 4,119,039, Cl. 102-214.000.
Wong, Theodore T. S., 4,118,857, Cl. 29-574.000.
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Doland, George D. Phased array antenna control. 4,119,972, Cl. 343-844.000.
Hopkins, Phillip M. Apparatus and method for stabilized phase detection for binary signal tracking loops. 4,119,926, Cl. 331-1.00A.
Johannsen, Klaus G.; Sabaroff, Samuel; and Henry, Varice F. Systems and methods for determining radio frequency interference. 4,119,964, Cl. 343-17.700.
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Jhabvala, Murzban D., 4,119,996, Cl. 357-23.000.
Navy: *See—*
Berke, Herbert, 4,119,916, Cl. 328-62.000.
Fogg, Robert K., Jr.; and Staehli, Christopher P., 4,119,164, Cl. 180-6.500.
Greene, Jack C., 4,119,920, Cl. 330-43.000.
Jacobson, Michael D.; and Grouwinkel, G. Franklin, 4,118,930, Cl. 60-266.000.
Lewis, Bernard L., 4,119,962, Cl. 343-7.700.
Moore, Donald K.; Beaman, George R.; Hightower, John D.; and Graham, Craig W., Jr., 4,119,941, Cl. 340-5.00R.
U.S. Philips Corporation: *See—*
Brissot, Jean-Jacques Lucien Emile; Belouet, Christian; and Martres, Rene, 4,119,744, Cl. 427-45.000.
Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, 4,119,835, Cl. 219-501.000.
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, 4,119,483, Cl. 156-655.000.
Stover, Johannes Hinderikus, 4,119,885, Cl. 313-479.000.
Uden, Edward; Schreihage, Wilhelm; and Finck, Johan Christiaan Jacobus, 4,120,020, Cl. 361-386.000.
Warringa, Jozef Johannus Maria; and Piepers, Harry, 4,119,921, Cl. 330-49.000.
United States Steel Corporation: *See—*
Stull, James T., 4,119,138, Cl. 164-448.000.
United Technologies Corporation: *See—*
Curvino, Salvatore J.; and Warner, Albert E., 4,118,926, Cl. 60-39.060.
Fowle, Norman F.; Madden, William M.; and Marshall, James F., 4,119,274, Cl. 239-265.290.
Sheeline, Randall D., 4,119,560, Cl. 252-301.10W.
United Turbine AB & Co. Kommanditbolag: *See—*
Kronogard, Sven-Olof, 4,118,927, Cl. 60-39.16R.
Universal Maschinenfabrik Dr. Rudolf Schieber KG: *See—*
Schieber, Hans; and Lutz, Winfried, 4,118,955, Cl. 66-158.000.
Universal Towel Company: *See—*
Lemon, Maurice Charles; and Spear, John Francis, 4,118,958, Cl. 68-22.00R.
University of Connecticut: *See—*
Jain, Faquir Chand; and Melehy, Mahmoud Ahmed, 4,119,994, Cl. 357-16.000.
University of Missouri, The Curators of the: *See—*
Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, 4,119,160, Cl. 175-67.000.
University of Pennsylvania, Trustees of the: *See—*
Preti, George; Huggins, George R.; and Tonzetich, Joseph, 4,119,089, Cl. 128-2.00R.
University of Toledo, The: *See—*
Raftopoulos, Demetrios D.; and Kartalopoulos, Stamatios V., 4,119,380, Cl. 73-800.000.
UOP Inc.: *See—*
Czajkowski, George J.; and Stolfa, Frank, 4,119,530, Cl. 208-213.000.
Hayes, John C.; and Pollitzer, Ernest L., 4,119,529, Cl. 208-139.000.
Neuzil, Richard W.; and Fergin, Richard L., 4,119,678, Cl. 260-677.00A.
Peters, Kenneth D.; Veinerman, Elliot; and Felch, Donald E., 4,119,526, Cl. 208-64.000.
Peters, Kenneth D., 4,119,527, Cl. 208-64.000.
Ryu, Ji-Yong, 4,119,675, Cl. 260-672.00T.
Ryu, Ji-Yong, 4,119,676, Cl. 260-668.00A.
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Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., 4,119,513, Cl. 204-195.00S.
Tolley, William K., 4,119,696, Cl. 423-53.000.
Tolley, William K., 4,119,697, Cl. 423-82.000.
Upjohn Company, The: *See—*
Bundy, Gordon L., 4,119,649, Cl. 260-408.000.
Bundy, Gordon L., 4,119,663, Cl. 562-503.000.
Bundy, Gordon L., 4,119,666, Cl. 260-563.00R.
Hall, Charles M.; and Wright, John B., 4,119,783, Cl. 560-43.000.
Morton, Douglas Ross, Jr., 4,119,672, Cl. 562-503.000.
Peterson, David C., 4,119,785, Cl. 560-53.000.
Peterson, David C., 4,119,786, Cl. 560-53.000.
Schneider, William P., 4,119,648, Cl. 260-405.000.
Schneider, William P., 4,119,650, Cl. 260-408.000.
Smith, Herman W., 4,119,662, Cl. 562-503.000.
Smith, Herman W., 4,119,664, Cl. 562-503.000.
Yankee, Ernest W., 4,119,651, Cl. 260-408.000.
Yankee, Ernest W., 4,119,787, Cl. 560-121.000.
USM Corporation: *See—*
Woodman, Daniel Wayne, Jr.; and Vancelette, Stanley Robert, 4,119,206, Cl. 209-548.000.
Usui, Hideo; Ishige, Sadao; and Saeki, Keiso, to Fuji Photo Film Co., Ltd. Thiazine production. 4,119,777, Cl. 544-6.000.
Utasi, Joseph G.: *See—*
Moricca, Larry S.; and Utasi, Joseph G., 4,119,811, Cl. 340-407.000.
Utiyama, Susumu: *See—*
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.
Vachon, Raymond N., to Eastman Kodak Company. Copolyesters as improved binders and finishes for polyester-containing fabrics. 4,119,680, Cl. 260-850.000.
Vainerman, Efim Semenovich: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.
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Vallejos, Tony E., to Alto Automotive, Inc. Rotary valve system for motors and the like having improved sealing means. 4,119,077, Cl. 123-188.00B.
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, to Eastman Kodak Company. Sensitizers for photocrosslinkable polymers. 4,119,466, Cl. 96-115.00R.
Van Auken, Thomas V.: *See—*
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Vancelette, Stanley Robert: *See—*
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Van Dam, Antonius Franciscus, to Lever Brothers Company. Oil-in-water emulsion and process for the preparation thereof. 4,119,564, Cl. 252-312.000.
Vandenbooren, Franciscus H. A. M. J.: *See—*
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van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, to P.F.W. Beheer B.V. Sulfur-containing flavoring agents. 4,119,737, Cl. 426-535.000.
Van Echo, John Andrew: *See—*
Roach, Donald Brian; Van Echo, John Andrew; and Hall, Albert Mangold, 4,119,456, Cl. 75-122.000.
van Eekelen, Alex H. A. M.: *See—*
Hoebrechts, Albert J. G.; and van Eekelen, Alex H. A. M., 4,118,825, Cl. 15-250.320.
Van Wersch, Egidius: *See—*
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van Zeggelaar, Gerrit Hendrik, to Bagger en Grond (Amsterdam Ballast Dredging) Ballast-Nedam Groep N. V.; and Amsterdamse Ballast B.V. Method and device for measuring a pressure in a suspension conduit. 4,118,990, Cl. 73-714.000.
Varadi, Andrew G., to National Semiconductor Corporation. Quasi-static MOS memory array with standby operation. 4,120,047, Cl. 365-227.000.
Varney, John Charles: *See—*
Raynes, Edward Peter; Shanks, Ian Alexander; and Varney, John Charles, 4,119,367, Cl. 350-333.000.
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Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
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Veazey, Thomas M., to Monsanto Company. Method for applying a finish to a tow. 4,119,747, Cl. 427-424.000.
Veb Pentacon Dresden Kamera-und Kinowerke: *See—*
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Vega S.p.A.: *See—*
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Veil, Karl: *See—*
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Velker, Eugen: *See—*
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Venable, Phillip G., to J. I. Case Company. Remote control assembly. 4,119,000, Cl. 74-479.000.
Verbauwhede, Germain; and Coopman, Frans, to N. V. Bekaert S.A. Steel cord reinforced plastic materials. 4,119,748, Cl. 428-36.000.
Verbeke, Henry. Method of securing a commodity in a plastic bag. 4,118,912, Cl. 53-469.000.
Verdenne, Serge J. C.: *See—*
Guenon, Jean-Pierre; and Verdenne, Serge J. C., 4,119,218, Cl. 214-6.00B.
Verdu, Vicente Mira. Fall arrester, for building works. 4,119,176, Cl. 182-138.000.
Vereinigte Aluminum-Werke Aktiengesellschaft: *See—*
Thome, Roland; Bings, Hubert; and Obermaier, Hans, 4,119,707, Cl. 423-592.000.
Zimmer, Erich; Nafissi, Ahmad; and Winkhaus, Gunther, 4,119,698, Cl. 423-82.000.
Verheijen, Egidius J. M.: *See—*
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Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich. Adhesive. 4,119,681, Cl. 260-859.00R.
Vesely, Ernst, to Purdue Frederick Company, The. Settling container. 4,119,544, Cl. 210-515.000.
Vickers, Charles K.; and Vickers, Patricia A. Muzzle rest. 4,118,880, Cl. 42-94.000.
Vickers, Patricia A.: *See—*
Vickers, Charles K.; and Vickers, Patricia A., 4,118,880, Cl. 42-94.000.
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Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
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Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.
Vogtmann, Lothar; Braun, Martin; and Kregl, Josef, to Schloemann-Siemag Aktiengesellschaft. Strip pinch roll apparatus. 4,119,256, Cl. 226-177.000.
Voinescu, Nicolae: *See—*
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Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, to Dynamit Nobel Aktiengesellschaft. Polymeric and oligomeric formals. 4,119,612, Cl. 528-232.000.
von Daehne, Welf; and Rasmussen, Poul Rodbroe, to Leo Pharmaceutical Products Ltd. A/S Lovens Kemiske Fabrik Produktionsaktieselskab. 16-Sacyl derivatives of fusidic acid. 4,119,717, Cl. 424-238.000.
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Isgur, Irving E.; Alexander, Robert R.; and Moy, Thomas P., 4,119,602, Cl. 260-29.6NR.
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Wada, Akira: *See—*
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Waggoner, James A., to Schlumberger Technology Corporation. Calibrator for radioactivity well logging tools. 4,119,847, Cl. 250-252.000.
Wagner, Hans; and Maierhofer, Alfred, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Sweet material. 4,119,738, Cl. 426-548.000.
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Wahnschaff, Paul. Glue applicator roll assembly. 4,119,057, Cl. 118-203.000.
Waite, Richard G., to S. B. Foot Tanning Company. Hide processing machine and method. 4,118,959, Cl. 69-30.000.
Wakasa, Isao: *See—*
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Ward, Achard L.; and Ward, John A., to Ward Industries, Inc. Traction wheel motion sensor. 4,119,055, Cl. 116-74.000.
Ward, Ernest Michael; Ward, Steven M.; and Dils, Michael A. Remote meter reading system. 4,119,948, Cl. 340-151.000.
Ward Industries, Inc.: *See—*
Ward, Achard L.; and Ward, John A., 4,119,055, Cl. 116-74.000.
Ward, John A.: *See—*
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Ward, Steven M.: *See—*
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Warner, Albert E.: *See—*
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Warringa, Jozef Johannus Maria; and Piepers, Harry, to U.S. Philips Corporation. Amplifier device for transmitting tetrode. 4,119,921, Cl. 330-49.000.
Watahiki, Minoru: *See—*
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Watanabe, Akinori; and Shinozuka, Katsumasa, to Oki Electric Industry Co., Ltd. Method and apparatus for inserting intermediate dots in a dot matrix using a dot printer. 4,119,383, Cl. 400-124.000.

Watanabe, Masanori: *See—*
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.
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Watanabe, Tomoyoshi; Yasui, Tsuneo; Ishikawa, Shigeo; and Okada, Kiyomichi, to Brother Kogyo Kabushiki Kaisha. Ribbon changing mechanism for a typewriter. 4,119,385, Cl. 400-215.300.
Watkins, Bernard. Fishhook and releasing tool therefor. 4,118,883, Cl. 43-43.160.
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Wehrenberg, Thomas M.: *See—*
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Weidler, Erhard Alfred. Stretching device. 4,118,834, Cl. 24-68.0TT.
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Weigl, William. Bridge game for two or three. 4,119,322, Cl. 273-293.000.
Weiland, Richard J. Device for skinning animals and fowl. 4,118,830, Cl. 17-21.000.
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Welch, Stephen A. Electric water heater. 4,119,833, Cl. 219-285.000.
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Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, to Metallgesellschaft Aktiengesellschaft. Temperature measuring device for rotary kilns. 4,118,986, Cl. 73-351.000.
West Electric Co., Ltd.: *See—*
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Khan, Aman Ullah, 4,119,028, Cl. 100-218.000.
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Whitaker, Johnny B., Jr. Weapon safety receptacle. 4,119,199, Cl. 206-317.000.
White, Allen Andrew, to Hesston Corporation. Baler apparatus. 4,118,918, Cl. 56-341.000.
White, Eugene B.; and Sharma, Mahindar N. Method of sanitizing a volume of water in conjunction with chlorine. 4,119,535, Cl. 210-62.000.
White, Harry B. Refuse crusher. 4,119,024, Cl. 100-35.000.
Whitefield, John Thomas, to Allen Organ Company. Continuously variable attack and decay delay for an electronic musical instrument. 4,119,006, Cl. 84-1.130.
Whitman, Robert Henry; and Barber, William Austin, to American Cyanamid Company. Microcrystalline cellulose as extrusion aid/-combustible filler for alumina. 4,119,474, Cl. 106-65.000.
Whittle, John Edward, to International Nickel Company, Inc., The. Production of perforated metal foil. 4,119,514, Cl. 204-206.000.
Widener, Charles D. Protective case. 4,119,195, Cl. 206-204.000.
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Wieland, Peter, to Ciba-Geigy Corporation. Process for the manufacture of 6β,7-methylene-3-oxo-4-ene steroids. 4,119,627, Cl. 260-239.570.
Wien, Raymond E.; Cotton, John F.; and Salemi, Nicholas A., to Westinghouse Electric Corp. Circuit interrupter including low friction latch. 4,119,935, Cl. 335-167.000.
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Wiley, Donald E., to Air Products and Chemicals, Inc. Particular metallurgical hot topping compositions and method of use. 4,119,468, Cl. 106-38.220.
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Wilkins, Paul E.; Neville, Glenn E.; and Fitzgerald, Robert T., to United States of America, Army. Fuze system. 4,119,039, Cl. 102-214.000.
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Hernestam, Sven Erik Harry; Nilsson, Nils Arne; Nordvi, Curt Harry; and Willard, Lars-Olof, 4,119,711, Cl. 424-54.000.
Williams, Ralph P., to Phillips Petroleum Company. Photocurable diisocyanate compositions. 4,119,510, Cl. 204-159.230.
Williams, Robert Franklin, Jr.; and Lu, Chen-i, to Eastman Kodak Company. Method for manufacture of laminates which are useful as packaging materials. 4,119,479, Cl. 156-272.000.
Wilson, Frank: *See—*
Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, 4,119,772, Cl. 429-204.000.
Wilson, Jack K.; and Wilson, Robert S. Adjustable type arrow rest for a bow. 4,119,078, Cl. 124-41.00A.
Wilson, James C.: *See—*
Lawson, Grover C.; and Wilson, James C., 4,119,543, Cl. 210-496.000.
Wilson, Phillip Steven: *See—*
Holub, Fred Frank; and Wilson, Phillip Steven, 4,119,603, Cl. 260-32.60R.
Wilson, Robert S.: *See—*
Wilson, Jack K.; and Wilson, Robert S., 4,119,078, Cl. 124-41.00A.
Windmoller & Holscher: *See—*
Ottenhues, Ludger, 4,119,031, Cl. 101-153.000.
Wings, Leo: *See—*
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.
Winkelvoss, Dieter, to Dresser Europe S.A. "LeSouverain" Boulevard du Souverain. Valve means of a device for removing lubricating oil. 4,119,117, Cl. 137-456.000.
Winkhaus, Gunther: *See—*
Zimmer, Erich; Nafissi, Ahmad; and Winkhaus, Gunther, 4,119,698, Cl. 423-82.000.
Winter, Donald C.: *See—*
Shackleford, William L.; Winter, Donald C.; and Hall, David B., 4,119,929, Cl. 331-94.50M.
Wintgens, James C.: *See—*
Cohen, Eleanor B.; Stassen, William N.; and Wintgens, James C., 4,119,477, Cl. 106-99.000.
Wittkopp, Helmut; and Lison, Achim, to Wilhelm Hegenscheidt

GmbH. Method of and machine for reprofiling a railroad-car wheel. 4,119,001, Cl. 82-1.00C.
Witzel, Bruce E.: *See—*
Grier, Nathaniel; and Witzel, Bruce E., 4,119,779, Cl. 544-215.000.
Wolf, Cecil R., to Carter, Dwight. Insulated garage door. 4,119,133, Cl. 160-209.000.
Wolf, Erich: *See—*
Deininger, Rolf; and Wolf, Erich, 4,119,730, Cl. 424-341.000.
Wolfe, Roger M., to Harnischfeger Corporation. Roof window for crane operator's cab. 4,119,340, Cl. 296-137.00B.
Wolfrum, Gerhard: *See—*
Hugl, Herbert; Otten, Hans-Gunter; Sommer, Richard; and Wolfrum, Gerhard, 4,119,623, Cl. 260-206.000.
Wollert, Walter C., to Technology Development Corporation. Voice operated switch having an activation level which is higher than its sustaining level. 4,119,797, Cl. 179-1.0VC.
Woltermann, Jay R.: *See—*
Braus, Harry; and Woltermann, Jay R., 4,119,789, Cl. 560-161.000.
Wong, Theodore T. S., to United States of America, Army. Flipped method for characterization of epitaxial layers. 4,118,857, Cl. 29-574.000.
Woo, James T. K.; and Evans, James M., to SCM Corporation. Cathodic electrocoating compositions containing acid-functional aminoplast and flexibilized, epoxy-free, aminated resin. 4,119,599, Cl. 260-29.40R.
Wood, Ralph R., to Wyle Laboratories. Locking mechanism. 4,118,989, Cl. 73-487.000.
Woodman, Daniel Wayne, Jr.; and Vancelette, Stanley Robert, to USM Corporation. Component sequence verifier. 4,119,206, Cl. 209-548.000.
Woodward, Clifford Stanley; and McMurtry, David Roberts, to Rolls-Royce Limited. Bevel gearing. 4,118,997, Cl. 74-417.000.
Wootton, Gordon, to Beecham Group Limited. Cyclic exo amides. 4,119,726, Cl. 424-274.000.
Wright, John B.: *See—*
Hall, Charles M.; and Wright, John B., 4,119,783, Cl. 560-43.000.
Wu, Chester C.: *See—*
King, Henry L.; and Wu, Chester C., 4,119,614, Cl. 528-283.000.
Wu, Ching H.; Brown, Alfred; and Hall, Wilbur L., to Texaco Inc. Recovering petroleum from subterranean formations. 4,119,149, Cl. 166-266.000.
Wurmb, Rolf: *See—*
Beck, Fritz; Wurmb, Rolf; and Boehlke, Klaus, 4,119,767, Cl. 429-105.000.
Wyburn-Mason, Roger, to Simoons, John R. A. Treatment of rheumatoid arthritis and related diseases. 4,119,723, Cl. 424-273.00R.
Wychnanek, Rainer: *See—*
Paschakarnis, Peter; Hengst, Bernd; and Wychnanek, Rainer, 4,119,520, Cl. 204-276.000.
Wyle Laboratories: *See—*
Wood, Ralph R., 4,118,989, Cl. 73-487.000.
Wysong, Robert David, to Du Pont de Nemours, E. I., and Company. Polyvinyl alcohol compositions for use in the preparation of water-soluble films. 4,119,604, Cl. 260-33.20R.
Xerox Corporation: *See—*
Fisk, Bernard C.; and VerSchage, Gerald C., 4,120,034, Cl. 364-518.000.
Hamaker, Ralph A., 4,119,307, Cl. 271-174.000.
Hamaker, Ralph A., 4,119,308, Cl. 271-174.000.
Nelson, Kyler Fischer, 4,119,840, Cl. 250-211.00R.
Quinn, Halsey P., 4,119,907, Cl. 323-105.000.
Yaegashi, Takehisa: *See—*
Inoue, Tokuta; Yaegashi, Takehisa; and Aoki, Keiji, 4,119,512, Cl. 204-195.00S.
Yaffe, Roberta, to Texaco Inc. Synthetic aircraft turbine lubricating oil compositions. 4,119,551, Cl. 252-46.700.
Yakshtas, Arunas Romualdo: *See—*
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.
Yamada, Shinichi; and Komatsu, Shigeru, to Asano Gear Co., Ltd. Steering drive axle assembly. 4,119,167, Cl. 180-43.00R.
Yamada, Tomiaki: *See—*
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, 4,119,568, Cl. 252-437.000.
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
Yamada, Yutaka; Kato, Akira; and Uchida, Tohru, to Konishiroku Photo Industry Co., Ltd. Photosensitive material for electrophotography comprising a silicon oil. 4,119,461, Cl. 96-1.800.
Yamagishi, Hiroaki, to Ono Seiko Co., Ltd. Clutch mechanism for push-button tuner. 4,118,992, Cl. 74-10.330.
Yamaguchi, Seiichi, to Koito Manufacturing Company Limited. Continuous electroplating apparatus. 4,119,516, Cl. 204-224.00R.
Yamamoto, Yukio, to Yoshida Kogyo K.K. Door hinge attachment device. 4,118,827, Cl. 16-137.000.
Yamanoshita, Makoto: *See—*
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, to Matsushita Electric Industrial Company, Limited. Centrifugal separator. 4,119,542, Cl. 210-360.00A.
Yamaoka, Tetsuo: *See—*
Iwata, Hiroshi; and Yamaoka, Tetsuo, 4,119,988, Cl. 354-289.000.
Yamashita, Maki: *See—*
Imura, Toshinori; and Yamashita, Maki, 4,119,982, Cl. 354-155.000.
Yamauchi, Tadashi; Akune, Mikio; and Kouchi, Susumo, to Nittetu Chemical Engineering Ltd. Treatment of waste liquid and apparatus therefor and a fertilizer composition obtained thereby. 4,119,538, Cl. 210-67.000.
Yamazaki, Toru, to Citizen Watch Co. Ltd. Elastomer display device. 4,119,368, Cl. 350-360.000.
Yanagihara, Tsutomu: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
Yanagishima, Takayuki; and Inoue, Naohiko, to Nissan Motor Company, Ltd. Steering force control system. 4,119,172, Cl. 180-141.000.
Yankee, Ernest W., to Upjohn Company, The. Cis-13-PGA$_2$ analogs. 4,119,651, Cl. 260-408.000.
Yankee, Ernest W., to Upjohn Company, The. 11-Deoxy-cis-13-PGE$_2$ analogs. 4,119,787, Cl. 560-121.000.
Yano, Tetsuo: *See—*
Iguchi, Shigeru; Iwata, Tamotu; and Yano, Tetsuo, 4,119,463, Cl. 96-67.000.
Yasuda, Takeru: *See—*
Mitsuda, Tadao; Yasuda, Takeru; and Okuda, Sigeru, 4,118,976, Cl. 73-118.000.
Yasui, Tsuneo: *See—*
Watanabe, Tomoyoshi; Yasui, Tsuneo; Ishikawa, Shigeo; and Okada, Kiyomichi, 4,119,385, Cl. 400-215.300.
Yatomi, Tadashi: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Yen, Chia-Ming; and Schmatz, Duane J., to Ford Motor Company. Method of joining metal, particularly aluminum or aluminum alloys, using bromine fluxing agent. 4,119,262, Cl. 228-206.000.
Yeomans, Bertram: *See—*
Cane, Charles; and Yeomans, Bertram, 4,119,553, Cl. 560-198.000.
Yeschick, Waldemar, to Mohawk Data Sciences Corp. Timesharing programmable display system. 4,119,953, Cl. 340-324.0AD.
Yih, Roy Y.: *See—*
Johnson, Wayne O.; Warner, Harlow L.; and Yih, Roy Y., 4,119,667, Cl. 260-566.00F.
Yoerger, William E., to Eastman Kodak Company. π-Deficient N-heteroaromatic chemical sensitizers for heterogeneous organic photoconductor compositions and methods. 4,119,460, Cl. 96-1.0PC.
Yokota, Noriyuki; Tokuda, Shingo; Ito, Yoshiro; and Itaya, Kenji, to Osaka Soda Co. Ltd. Method of purifying the raw brine used in alkali salt electrolysis. 4,119,508, Cl. 204-128.000.
Yokozato, Junichi: *See—*
Ando, Yoshikazu; and Yokozato, Junichi, 4,119,985, Cl. 354-223.000.
Yonekura, Atsuo: *See—*
Yoshitomi, Masahide; and Yonekura, Atsuo, 4,119,053, Cl. 115-35.000.
Yoneya, Kiyoo: *See—*
Kando, Akiyoshi; and Yoneya, Kiyoo, 4,118,839, Cl. 24-205.10R.
Yoshida Kogyo K.K.: *See—*
Kando, Akiyoshi; and Yoneya, Kiyoo, 4,118,839, Cl. 24-205.10R.
Yamamoto, Yukio, 4,118,827, Cl. 16-137.000.
Yoshida, Takashi: *See—*
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,120,019, Cl. 361-385.000.
Yoshitomi, Masahide; and Yonekura, Atsuo, to Kabushiki Kaisha Komatsu Seisakusho. Steering mechanism for inboard-outboard marine drive. 4,119,053, Cl. 115-35.000.
Yoshizawa, Shigeru: *See—*
Kasai, Masuo; Yoshizawa, Shigeru; and Hiroshima, Minoru, 4,120,042, Cl. 365-2.000.
Youngstown Sheet and Tube Company: *See—*
Bosch, Richard A.; and Straatmann, John A., 4,119,445, Cl. 148-36.000.
Yuki, Mikio: *See—*
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192-24.000.
Zabela, Konstantin Alexeevich: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.
(Zaidanhojin) Sagami Chemical Research Center: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.
Zajac, Cyril. Eyepiece. 4,119,984, Cl. 354-219.000.
Zbryski, William P.: *See—*
Lukac, Frederick S.; and Zbryski, William P., 4,119,109, Cl. 134-64.00R.
Zeh, Horst, to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen mbH. Device for taking liquid samples. 4,118,987, Cl. 73-422.00R.

Zenith Radio Corporation: *See—*
Blumenberg, Horst H.; and Guzowski, Kenneth A., 4,119,884, Cl. 313-417.000.
Zenza Bronica Industries, Inc.: *See—*
Ando, Yoshikazu; and Yokozato, Junichi, 4,119,985, Cl. 354-223.000.
Zhukovsky, Sergei Semenovich: *See—*
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.
Zibert, Klaus, to Siemens Aktiengesellschaft. Read-out amplifier circuit for a dynamic MOS memory. 4,119,870, Cl. 307-355.000.
Zibert, Klaus, to Siemens Aktiengesellschaft. Function generator for the production of a voltage across a node to which are connected flip-flops which are arranged in bit lines of a MOS memory and consists of MOS transistors. 4,119,871, Cl. 307-355.000.
Ziegelmeyer, Harold R. Pusher lug aligning devices. 4,118,872, Cl. 33-181.00R.
Zimmer Aktiengesellschaft: *See—*
Lobering, Joachim, 4,119,611, Cl. 528-139.000.
Zimmer, Erich; Nafissi, Ahmad; and Winkhaus, Gunther, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung; and Vereinigte Aluminum-Werke Aktiengesellschaft. Reclamation treatment of red mud. 4,119,698, Cl. 423-82.000.
Zindler, Jerrold, to Sanders Associates, Inc. Optical detection and ranging apparatus. 4,119,379, Cl. 356-4.000.
Znachkov, Jury Konstantinovich: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.
Zoulalian, Jacques: *See—*
Auroy, Michel; Goharel, Maurice; and Zoulalian, Jacques, 4,119,645, Cl. 260-346.400.
Zutaut, Chesley L.: *See—*
Brower, Loyd R., Jr.; Madsen, Leonard P.; and Zutaut, Chesley L., 4,119,522, Cl. 204-300.0EC.
Zwarts, Johan Martin Carol; and Koops, Geert, to Hollandse Signaalapparaten B.V. Coherent side-lobe suppressing unit for a pulse radar apparatus. 4,119,963, Cl. 343-17.2PC.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Agusti, Agustin, to J. Uriach & Cia S.A. Triamcinolone acetonide derivative. Re. 29,799, Cl. 424-241.000.

Asada, Takeo: *See—*
Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, Re. 29,796, Cl. 194-4.00C.

El-Jay, Inc.: *See—*
Johnson, Louis W., Re. 29,798, Cl. 241-275.000.

Eyberger, Harry, to Vamco Machine and Tool, Inc. Self-contained feed roll for power punch presses. Re. 29,795, Cl. 83-245.000.

J. Uriach & Cia S.A.: *See—*
Agusti, Agustin, Re. 29,799, Cl. 424-241.000.

Johnson, Louis W., to El-Jay, Inc. Impact crusher. Re. 29,798, Cl. 241-275.000.

Mink, George. Material handling apparatus having gripping means for moving articles in several directions. Re. 29,797, Cl. 214-1.0BD.

Mizuta, Yukio: *See—*
Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, Re. 29,796, Cl. 194-4.00C.

Omron Tateisi Electronics Co.: *See—*
Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, Re. 29,796, Cl. 194-4.00C.

Tanaka, Toshio: *See—*
Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, Re. 29,796, Cl. 194-4.00C.

Vamco Machine and Tool, Inc.: *See—*
Eyberger, Harry, Re. 29,795, Cl. 83-245.000.

Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, to Omron Tateisi Electronics Co. Automatic credit loan machine. Re. 29,796, Cl. 194-4.00C.

LIST OF PLANT PATENTEES

Anderson, Frederic W., to Burchell Nursery, Inc., The. Nectarine tree (48-G-140). 4,314, 10-10-78, Cl. 41.000.

Burchell Nursery, Inc., The: *See—*
Anderson, Frederic W., 4,314, Cl. 41.000.

Highcroft Orchards: *See—*
Lowry, David B., 4,315, Cl. 36.000.

Lowry, David B., to Highcroft Orchards. Pear tree. 4,315, 10-10-78, Cl. 36.000.

Pan-American Plant Company: *See—*
Petusky, Kerry S., 4,311, Cl. 74.000.
Shoesmith, Leonard H., 4,312, Cl. 74.000.
Shoesmith, Leonard H., 4,313, Cl. 80.000.

Petusky, Kerry S., to Pan-American Plant Company. Chrysanthemum plant named Amber Concord. 4,311, 10-10-78, Cl. 74.000.

Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named Wolverine. 4,312, 10-10-78, Cl. 74.000.

Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named wildcat. 4,313, 10-10-78, Cl. 80.000.

LIST OF DESIGN PATENTEES

Adkinson, Joseph E. Armchair. 249,848, 10-10-78, Cl. D6-70.000.

Adkinson, Joseph E. Cocktail table. 249,857, 10-10-78, Cl. D6-175.000.

Adkinson, Joseph E. Cocktail table. 249,861, 10-10-78, Cl. D6-179.000.

American Express Company: *See—*
Lee, Robert E., 249,900, Cl. D31-22.000.

Anderka, Gerold; Reif, Ulrich; and Wolder, Herbert, to Koh-I-Noor Rapidograph, Inc. Stylographic pen. 249,887, 10-10-78, Cl. D19-43.000.

Arcair Company: *See—*
Rieppel, Perry J.; and Henderson, Harold R., 249,827, Cl. D2-232.000.

Armbruster, Verna Marie; and Hasbrouck, Betty Stratton. Facial muscle exerciser. 249,893, 10-10-78, Cl. D24-36.000.

Armstrong Cork Company: *See—*
Oleski, Ronald F., 249,895, Cl. D25-97.000.

Aul, Robert J.; Breno, Philip J.; Zitkus, Wayne J.; Watson, Barry; and Maguire, Paul R., to Owens-Illinois, Inc. Glucose analyzer. 249,892, 10-10-78, Cl. D24-21.000.

Avnet, Inc.: *See—*
Greenberg, Harry, 249,884, Cl. D14-86.000.

Baldini, Giovanni, to Carrara & Matta S.p.A. Towel holder. 249,854, 10-10-78, Cl. D6-99.000.

Barnes, James E., to Gillette Company, The. Writing instrument. 249,888, 10-10-78, Cl. D19-51.000.

Bastock, Tony William, to Foseco International Limited. Foundry riser sleeve. 249,886, 10-10-78, Cl. D15-135.000.

Bell Telephone Laboratories, Incorporated: *See—*
Genaro, Donald Michael; McGarvey, John Niel; and Sylvester, Gordon Elliot, 249,882, Cl. D14-61.000.

Bender, Keith N.: *See—*
Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 249,890, Cl. D23-97.000.

Blaser, John E.: *See—*
Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 249,890, Cl. D23-97.000.

Booth, Vernard S.; Coons, Everett A.; and Oswalt, Billy W., to Olinkraft, Inc. Box blank. 249,872, 10-10-78, Cl. D9-245.000.

Boucher, Joseph L.: *See—*
Defreitas, Richard E.; Mitchell, Peter W.; Tribeman, Peter D.; Wilensky, Samuel; and Boucher, Joseph L., 249,885, Cl. D14-96.000.

Brancaccio, Thomas J.; and Ragone, Bernardo P., to Vitamaster Industries, Inc. Steam cabinet housing. 249,894, 10-10-78, Cl. D24-37.000.

Breno, Philip J.: *See—*
Aul, Robert J.; Breno, Philip J.; Zitkus, Wayne J.; Watson, Barry; and Maguire, Paul R., 249,892, Cl. D24-21.000.

Bumbal, Paul; and Mizzi, John V. Ladder inclinometer. 249,875, 10-10-78, Cl. D10-69.000.

Cannon, Geoffrey N., to Geoffrey Cannon Enterprises, Inc. Lock securing device. 249,871, 10-10-78, Cl. D8-343.000.

Carrara & Matta S.p.A.: *See—*
Baldini, Giovanni, 249,854, Cl. D6-99.000.

Cartabiano, Michael C., to Child Guidance Playthings, Inc. Toy motorcycle. 249,903, 10-10-78, Cl. D34-15.0AN.

Chaires, George O. Combined feed trough and support. 249,898, 10-10-78, Cl. D30-16.000.

Child Guidance Playthings, Inc.: *See—*
Cartabiano, Michael C., 249,903, Cl. D34-15.0AN.

Chin America Corp.: *See—*
Tse, Jackson, 249,901, Cl. D34-5.0ST.

Chinn, Edna A.: *See—*
Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 249,890, Cl. D23-97.000.

Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., to Roger's Fireplace Shoppe, Inc. Wood burning stove with screen. 249,890, 10-10-78, Cl. D23-97.000.

Collins, Howard William, to international Rectifier Corporation. Solid state relay. 249,883, 10-10-78, Cl. D13-33.000.

Coons, Everett A.: *See—*
Booth, Vernard S.; Coons, Everett A.; and Oswalt, Billy W., 249,872, Cl. D9-245.000.

Daido Corporation: *See—*
Galazzo, Ray, 249,905, Cl. D96-12.00A.

DeAmicis, Ferdinando. Hydraulic line plug clamp unit. 249,889, 10-10-78, Cl. D23-40.000.

Defreitas, Richard E.; Mitchell, Peter W.; Tribeman, Peter D.; Wilensky, Samuel; and Boucher, Joseph L., to Hybrid Systems Corporation. Enclosure for high fidelity audio reproduction equipment. 249,885, 10-10-78, Cl. D14-96.000.

E.G.O. Elektro-Geraete Blanc und Fischer: *See—*
Fischer, Karl, 249,863, Cl. D7-121.000.

Felix, Ieuan Richard, to Lilly Industries, Ltd. Bottle. 249,866, 10-10-78, Cl. D9-130.000.

Fischer, Karl, to E.G.O. Elektro-Geraete Blanc und Fischer. Electric cooking plate with middle sensor. 249,863, 10-10-78, Cl. D7-121.000.

Foseco International Limited: *See—*
Bastock, Tony William, 249,886, Cl. D15-135.000.

Gageby, Steven Douglas. Chair. 249,828, 10-10-78, Cl. D6-56.000.

Gageby, Steven Douglas. Chair. 249,829, 10-10-78, Cl. D6-56.000.

Gageby, Steven Douglas. Chair. 249,830, 10-10-78, Cl. D6-56.000.

Gageby, Steven Douglas. Chair. 249,831, 10-10-78, Cl. D6-56.000.

Gageby, Steven Douglas. Chair. 249,832, 10-10-78, Cl. D6-56.000.

Gageby, Steven Douglas. Chair. 249,833, 10-10-78, Cl. D6-56.000.

Gageby, Steven Douglas. Chair. 249,834, 10-10-78, Cl. D6-56.000.

Gageby, Steven Douglas. Chair. 249,835, 10-10-78, Cl. D6-56.000.

Gageby, Steven Douglas. Chair. 249,837, 10-10-78, Cl. D6-67.000.

Gageby, Steven Douglas. Chair. 249,838, 10-10-78, Cl. D6-67.000.

Gageby, Steven Douglas. Chair. 249,839, 10-10-78, Cl. D6-67.000.

Gageby, Steven Douglas. Chair. 249,840, 10-10-78, Cl. D6-67.000.

Gageby, Steven Douglas. Chair. 249,841, 10-10-78, Cl. D6-67.000.

Gageby, Steven Douglas. Chair. 249,842, 10-10-78, Cl. D6-67.000.

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October 17, 1978 Volume 975 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 2, 1978.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,590,016, Re. S.N. 936,891, Filed Aug. 25, 1978, Cl. 260/29.6 H, POLYMERIZABLE MONOMERS, John Joseph Hopwood, Owner of Record: *Dulux Australia Ltd., Clayton Victory, Australia,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 141

3,680,384, Re. S.N. 934,452, Filed Aug. 17, 1978, Cl. 73/361, TWO WIRE TELEMETRY SYSTEM, Earl A. Grindheim, Owner of Record: *Rosemount Inc., Minneapolis, Minn.,* Attorney or Agent: Sidney Neuman, et al., Ex. Gp.: 244

3,859,594, Re. S.N. 934,451, Filed Aug. 17, 1978, Cl. 324/57 R, TWO WIRE CURRENT TRANSMITTER RESPONSIVE TO A RESISTANCE SENSOR INPUT SIGNAL, Earl A. Grindheim, Owner of Record: *Rosemount Inc., Minneapolis, Minn.,* Attorney or Agent: Sidney Neuman, et al., Ex. Gp.: 252

3,868,434, Re. S.N. 932,822, Filed Aug. 10, 1978, Cl. 260/880 R, POLYMER COMPOSITION AND PROCESS, Richard C. Westphal, et al., Owner of Record: *American Hoechst Corporation, Somerville, N.J.,* Attorney or Agent: Leroy G. Sinn, et al., Ex. Gp.: 144

3,994,290, Re. S.N. 934,730, Filed Aug. 18, 1978, Cl. 128/57, MASSAGE DEVICE, William E. Springer, et al., Owner of Record: *Clairol Incorporated, New York, N.Y.,* Attorney or Agent: Leonard W. Sherman, et al., Ex. Gp.: 335

3,996,311, Re. S.N. 932,821, Filed Aug. 10, 1978, Cl. 260/880 R, GRAFT POLYBUTADIENE-STYRENE INTERPOLYMERS AND PROCESS FOR MAKING SAME, Richard C. Westphal and Paul Heinig, Owner of Record: *American Hoechst Corporation, Somerville, N.J.,* Attorney or Agent: Leroy G. Sinn, et al., Ex. Gp.: 144

4,012,991, Re. S.N. 868,030, Filed Mar. 9, 1978, Cl. 90/13.05, KEY DECODING AND DUPLICATING APPARATUS AND METHOD, Tim M. Uyeda, Owner of Record: *Klaus W. Gartner, La Palma, Calif.,* Attorney or Agent: L. J. Bovasso, et al., Ex. Gp.: 324

4,016,763, Re. S.N. 934,450, Filed Aug. 17, 1978, Cl. 73/362 AR, TWO WIRE CURRENT TRANSMITTER RESPONSIVE TO A RESISTIVE TEMPERATURE SENSOR INPUT SIGNAL, Earl A. Grindheim, Owner of Record: *Rosemount Inc., Minneapolis, Minn.,* Attorney or Agent: Sidney Neuman, et al., Ex. Gp.: 244

4,033,722, Re. S.N. 888,691, Filed Mar. 20, 1978, Cl. 23/230.3, ASSARY FOR MYASTHENIA GRAVIS, Jon M. Lindstrom, Owner of Record: *The Salk Institute for Biological Studies, San Diego, Calif.,* Ex. Gp.: 171

4,034,389, Re. S.N. 933,781, Filed Aug. 14, 1978, Cl. 354/322, APPARATUS FOR DEVELOPING A TRAVELLING PHOTOGRAPHIC EMULSION CARRIER, Heinrich Huss, Owner of Record: *Inventor,* Attorney or Agent: Ralph R. Roberts, Ex. Gp.: 211

4,068,184, Re. S.N. 929,679, Filed Jul. 31, 1978, Cl. 330/257, CURRENT MIRROR AMPLIFIER, Adel Abdel Aziz Ahmed, Owner of Record: *RCA Corporation, Princeton, N.J.,* Attorney or Agent: H. Christoffersen, et al., Ex. Gp.: 252

4,075,928, Re. S.N. 933,720, Filed Aug. 14, 1978, Cl. 91/29, SAFETY VALVE FOR FLUID SYSTEMS, Paul A. Bitonti, Owner of Record: *Ross Operating Valve Company, Detroit, Mich.,* Attorney or Agent: Paul F. Seibold, et al., Ex. Gp.: 341

4,084,001, Re. S.N. 933,254, Filed Aug. 10, 1978, Cl. 424/322, PHARMACOLOGICALLY ACTIVE COMPOUNDS, Graham John Durant, et al., Owner of Record: *Smith Kline & French Laboratories Limited, Welwyn Garden City, England,* Attorney or Agent: William H. Edgerton, et al., Ex. Gp.: 125

PATENT NOTICES

Certificates of Correction for the Week of Oct. 17, 1978

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D. 243,367	4,048,344	4,077,967	4,085,106
3,700,683	4,048,877	4,078,257	4,085,137
3,701,443	4,050,158	4,078,465	4,085,229
3,763,183	4,051,147	4,078,618	4,085,456
3,771,501	4,051,952	4,078,866	4,085,572
3,787,460	4,052,222	4,079,125	4,085,617
3,868,941	4,054,383	4,079,237	4,085,637
3,948,831	4,054,610	4,079,318	4,086,045
3,949,646	4,055,727	4,079,390	4,086,254
3,950,217	4,056,429	4,079,748	4,086,824
3,962,187	4,057,123	4,079,827	4,087,020
3,968,308	4,061,479	4,080,089	4,087,318
3,970,830	4,061,586	4,080,140	4,087,367
3,975,282	4,061,758	4,080,367	4,087,532
3,978,234	4,062,291	4,080,396	4,087,757
3,995,686	4,062,672	4,080,412	4,087,777
3,997,663	4,062,863	4,080,893	4,088,206
3,998,790	4,064,138	4,080,927	4,088,222
4,012,496	4,064,350	4,081,279	4,088,331
4,013,783	4,065,191	4,081,371	4,088,585
4,017,524	4,065,349	4,081,544	4,088,659
4,022,758	4,065,570	4,081,555	4,088,679
4,026,972	4,065,640	4,081,734	4,088,778
4,028,807	4,068,031	4,081,825	4,088,784
4,030,812	4,068,252	4,082,072	4,089,173
4,031,517	4,069,271	4,082,156	4,089,194
4,032,782	4,069,662	4,082,333	4,089,362
4,033,667	4,071,681	4,082,645	4,090,179
4,035,296	4,072,689	4,082,777	4,090,223
4,037,031	4,073,906	4,083,141	4,090,300
4,038,521	4,074,014	4,083,242	4,090,780
4,039,878	4,074,302	4,083,301	4,090,891
4,040,089	4,074,852	4,083,406	4,091,174
4,043,299	4,075,680	4,083,865	4,091,471
4,043,840	4,075,912	4,083,902	4,091,797
4,043,964	4,076,367	4,084,182	4,092,049
4,045,422	4,076,606	4,084,352	4,092,450
4,045,664	4,076,648	4,084,424	4,093,778
4,046,270	4,077,107	4,084,680	
4,046,609	4,077,363	4,084,923	

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,779,860, O. A. Oshida and M. Shawgo, THERMAL AND ACOUSTICAL STRUCTURAL INSULATING COMPOSITION, Interference No. 99,545, decided July 17, 1978, claims 1, 2, 4 and 11.

Patent No. 3,819,043, T. S. Harrison, DISPENSER PACK FOR PRE-MOISTENED TOWELETTES, Interference No. 99,184, decided May 9, 1978, claims 1, 5 and 11–13.

Patent No. 3,907,316, H. Marker, H. Kroger and H. Steinmetz, METHOD AND DEVICES FOR RELEASING A SKI BOOT FROM THE SKI. Interference No. 99,297, decided May 1, 1978, claims 1, 3, 5–9, 11, 12, 13, 24 and 25.

Patent No. 3,908,209, W. E. Fillmore, FLUID DISPENSING APPARATUS, Interference No. 99,702, decided June 16, 1978, claims 1, 3–8 and 10–13.

Patent No. 3,952,711, J. A. Kimberley and R. D. Kraus, DIESEL INJECTION NOZZLE WITH INDEPENDENT OPENING AND CLOSING CONTROL, Interference No. 99,797, decided June 9, 1978, claims 1–6.

Patent No. 3,958,004, E. J. Cragoe, Jr. and G. M. Fanelli, Jr., PHENOXYACETIC ACID DERIVATIVES AS URICOSURIC AGENTS, Interference No. 99,606, decided July 31, 1978, claims 1–4.

Patent No. 3,978,882, G. Cornelius, MOVER UNIT FOR IRRIGATION LINE, Interference No. 99,624, decided July 17, 1978, claims 1–11.

Patent No. 3,981,945, T. E. Attwood and B. W. Farrant, COATING COMPOSITIONS COMPRISING A POLYSULFONE AND A FLUOROCARBON POLYMER. Interference No. 99,537, decided June 22, 1978, claims 1–4 and 6–9.

Patent No. 4,028,319, D. A. Jones, Jr., J. M. Schlatter, R. A. Mikulec, J. A. Reuter and R. H. Mazur, 2 AND 3-SUBSTITUTED ENKEPHALINS, Interference No. 99,833, decided July 19, 1978, claim 6.

Disclaimers

3,735,812.—*John Flavell* and *Max William Betts,* Coventry, and *Frank Robinson,* Borrowash; England. KNITTING MACHINES. Patent dated May 29, 1973. Disclaimer filed Aug. 18, 1978, by the assignee, *Courtaulds Ltd.*

Hereby enters this disclaimer to claims 1 to 16, inclusive, of said patent.

3,908,228.—*John I. Newcomer,* Rockford, Ill. SELF-CLOSING HINGE. Patent dated Sept. 30, 1975. Disclaimer filed Aug. 25, 1978, by the assignee, *Amerock Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,950,716.—*Albert R. Cellerini, Paul Skalka,* and *William I. Stephenson, Jr.,* Beaver, Pa. MULTI-POLE CIRCUIT BREAKER WITH ADJUSTABLE THERMAL TRIP UNIT. Patent dated Apr. 13, 1976. Disclaimer filed July 11, 1978, by the assignee, *Westinghouse Electric Corporation.*

Hereby enters this disclaimer to claims 1–6 of said patent.

3,950,717.—*Albert R. Cellerini* and *Louis N. Ricci,* Beaver Falls, Pa. MULTI-POLE CIRCUIT BREAKER WITH ADJUSTABLE THERMAL TRIP UNIT. Patent dated Apr. 13, 1976. Disclaimer filed July 11, 1978, by the assignee, *Westinghouse Electric Corporation.*

Hereby enters this disclaimer to claims 1–6 of said patent.

3,969,950.—*Jim Lee Rau,* Lafayette, and *Hollis Newcomb White, Jr.,* West Lafayette, Ind. DRIVE ASSEMBLY. Patent dated July 20, 1976. Disclaimer filed Aug. 28, 1978, by the assignee, *TRW Inc.*

Hereby enters this disclaimer to claims 1, 2, 9, 12, 13, 16 and 17 of said patent.

3,970,086.—*Ernest Cheslow,* Glencoe, Ill. DISPOSABLE DIAPER HAVING TAB FASTENING MEANS WITH ONE END THEREOF RELEASABLY ADHERED TO DIAPER. Patent dated July 20, 1976. Disclaimer filed Aug. 25, 1978, by the assignee, *Johnson & Johnson.*

Hereby enters this disclaimer to claims 6, 7 and 8 of said patent.

4,009,799.—*George H. Fathauer,* Mesa, Ariz. MONITOR FOR SEED PLANTING APPARATUS. Patent dated Mar. 1, 1977. Disclaimer filed Aug. 25, 1978, by the assignee, *Dickey-John Corporation.*

Hereby enters this disclaimer to claims 11, 13, 14, 15, 17, and 18 of said patent.

4,021,490.—*Paul S. Hudson,* Bartlesville, Okla. PROCESS FOR PRODUCTION OF PHENOL AND CYCLOHEXANONE. Patent dated May 3, 1977. Disclaimer filed Aug. 14, 1978, by the assignee, *Phillips Petroleum Company.*

Hereby enters this disclaimer to claim 13 of said patent.

4,037,267.—*Thaddeus William Kisor,* Flemington, N.J. PACKAGE FOR SEMICONDUCTOR COMPONENTS. Patent dated July 19, 1977. Disclaimer filed Aug. 30, 1978, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1–9, inclusive, of said patent.

4,047,540.—*Myrl E. Orme,* Canoga Park, and *Ralph L. Vick,* Granada Hills, Calif. MULTI-PATH VALVE STRUCTURE HAVING EXTENDED LIFE AND BACKWASHING CAPABILITY. Patent dated Sept. 13, 1977. Disclaimer filed Aug. 14, 1978, by the assignee, *The Bendix Corporation.*

Hereby enters this disclaimer to claims 11, 12 and 13 of said patent.

4,068,336.—*Michael M. Becka,* Nashua, N.H. MACHINE FOR CLAMPING THE HEEL PORTION OF AN UPPER TO THE CORRESPONDING PORTION OF A FORM. Patent dated Jan. 17, 1978. Disclaimer filed Aug. 23, 1978, by the assignee, *International Shoe Machine Corporation.*

Hereby enters this disclaimer to claims 1 through 18 of said patent.

Dedications

3,913,258.—*Anthony J. Souza,* Lancaster, and *Harlan W. Martin,* New Holland, Pa. COLLAPSIBLE LIVE ANIMAL TRAP. Patent dated Oct. 21, 1975. Dedication filed Aug. 22, 1978, by the assignee, *Woodstream Corporation.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,979,377.—*Edward Ephraim Jaffe,* Union, N.J., *William Joseph Marshall,* Wilmington, Del., and *Ernest Anton Stefancsik,* Flemington, N.J. YELLOW AZO PIGMENT AND PROCESS OF PREPARATION FROM DICHLOROANILINE AND BARBITURIC ACID. Patent dated Sept. 7, 1976. Dedication filed Aug. 16, 1978, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby dedicates said patent to the Public.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

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DOUGLAS J. CAMPION,
Patent Program Coordinator
National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent 3,981,144. Dual Stage Supersonic Diffuser. Filed Oct. 28, 1975. Patented Sept. 21, 1976.

Patent 3,981,264. Droplet Impact Recorder. Filed Jan. 16, 1975. Patented Sept. 21, 1976.

Patent 3,981,450. In-Flight Modulating Thrust Reverser. Filed Sept. 22, 1975. Patented Sept. 21, 1976.

Patent 3,981,467. Launch Lock Device. Filed Oct. 17, 1975. Patented Sept. 21, 1976.

Patent 3,981,588. Means and Method for Determining Meridian Location and Azimuth. Filed Aug. 5, 1974. Patented Sept. 21, 1976.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch, General Services Division, Federal Bldg., Agricultural Research Service Hyattsville, Md. 20782

Patent 3,953,607. Method of Controlling Insects Using 7-Ethoxyl-1-(p-Ethylphenoxyl)-3,7-Dimethyl-2-Octene. Filed Nov. 26, 1974. Patented Apr. 27, 1976.

Patent 3,978,932. Apparatus and Method for Obtaining Undisturbed Soil Core Samples. Filed Jan. 28, 1975. Patented Sept. 7, 1976.

Patent 3,981,100. Highly Absorbant Starch-Containing Polymeric Compositions. Filed Sept. 8, 1975. Patented Sept. 21, 1976.

Patent 3,983,067. Diacetal Derivatives of Polyunsaturated Fatty Esters as Primary Plasticizers for Polyvinylchloride. Filed July 1, 1974. Patented Sept. 28, 1976.

Patent 3,984,361. Preparation of Starch Graft Polymer Latexes by Sonification. Filed May 30, 1975. Patented Oct. 5, 1976.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent 981,176. Dual Frequency Acoustic Gas Composition Analyzer. Filed Sept. 16, 1974. Patented Sept. 21, 1976.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts.
Washington, D.C. 20240

Patent 3,949,353. Underground Mine Surveillance System Filed June 23, 1975. Patented Apr. 6, 1976.

Patent 3,971,226. Prestresses Roof Support System. Filed Oct. 31, 1975. Patented July 27, 1976.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,982,178. Method of Determining Adequency of Substrate Memory Wire During the Plating Process. Filed Jan. 29, 1975. Patented Sept. 21, 1976.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters NASA—
Code GP-2, Washington, D.C. 20546

Patent 3,965,096. Ultraviolet and Thermally Stable Polymer Compositions. Patented June 22, 1976.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch, General Services Division, Federal Bldg., Agricultural Research Service Hyattsville, Md. 20782

Patent 3,960,902. Synthetic Hormones for Insect Control. Filed July 2, 1975. Patented June 1, 1976.

Patent 3,970,688. Synthetic Hormones for Insect Control. Filed July 2, 1975. Patented July 20, 1976.

Patent 3,975,560. Phosphorus and Nitrogen Containing Resins for Flameproofing Organic Textiles. Filed Aug. 22, 1974. Patented Aug. 17, 1976.

Patent 3,982,014. Arthropod Maturation Inhibitors. Filed Mar. 24, 1975. Patented Sept. 21, 1976.

Patent 3,985,616. Immobilization of Enzymes With a Starch-Graft Copolymer. Filed Sept. 8, 1975. Patented Oct. 12, 1976.

Patent 3,985,921. Treatment of Wood With Butylene Oxide. Filed June 18, 1975. Patented Oct. 12, 1976.

Patent 3,986,259. Rotary Bark Hack. Filed Apr. 17, 1976. Patented Oct. 19, 1976.

Patent 3,987,058. Preparation and Uses of Stable, Bound Stationary Phases. Filed Feb. 27, 1975. Patented Oct. 19, 1976.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,915,695. Method for Treating Reactive Metals in a Vacuum Furnace. Filed Jan. 8, 1974. Patented Oct. 28, 1975.

Patent 3,924,675. Energy Absorber for Sodium Heated Heat Exchanger. Filed May 3, 1973. Patented Dec. 9, 1975.

Patent 3,928,027. Nonswelling Alloy. Filed Aug. 20, 1974. Patented Dec. 23, 1975.

Patent 3,934,239. Adjustable Electronic Load-Alarm Relay. Filed Sept. 27, 1974. Patented Jan. 20, 1976.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent 3,983,118. Production of N-5-Methyltetrahydrohomofolic Acid and Related Reduced Derivatives of Homofolic Acid. Filed Aug. 16, 1974. Patented Sept. 28, 1976.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts.
Washington, D.C. 20240

Patent 3,977,312. Parachute Stopping for Mine Ventilation Use. Filed Oct. 31, 1975. Patented Aug. 31, 1976.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 23, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters: Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-5-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-30-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-19-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-23-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors: Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-28-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-2-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	3-20-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-3-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-6-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-13-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-8-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

REISSUES

OCTOBER 17, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

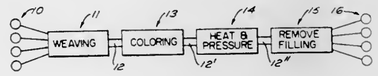
Re. 29,800
METHOD OF TREATING YARNS TO PROVIDE KINKING AND/OR MOTTLED EFFECTS IN FABRICS

Kirkland H. Gibson, North Kingstown, and Henry E. Protzmann, East Greenwich, both of R.I., assignors to H. G. P. Corp., Johnston, R.I.

Original No. 3,605,225, dated Sep. 20, 1971, Ser. No. 853,042, Aug. 26, 1969. Application for reissue Apr. 15, 1977, Ser. No. 787,745

Int. Cl.[2] **D02G** *1/00*

U.S. Cl. 28—218 **5 Claims**



1. The method of simultaneously treating a plurality of yarns which comprises providing a plurality of relatively large warp yarns, weaving in a selected fabric construction said warp yarns with [a] *one single continuous* filling yarn of a relatively smaller diameter than said warp yarns and disposed with relation to said warp yarns *a greater distance apart than the warp yarns and* in *knit-like loops along one edge, each filling yarn loop knitted to the preceding loop to provide* a continuous unweavable relation[,] *from one end only,* coloring said fabric *while in said unweavable relation* to color the warp yarns, the weave selection providing the character of the kink imparted to the warp yars, *moving said fabric to another station* and [unweaving] *continuously pulling on said filling yarn to unweave* said filling yarn *and then packaging the separated warp yarns* to provide a plurality of colored *warp* yarns of controlled kink character ranging from no *perceptible* kink to high kink amplitude for reworking into various forms.

Re. 29,801
SWAGING APPARATUS

Jon K. Whitledge, Mantua, Ohio, assignor to Samuel Moore And Company, Aurora, Ohio

Original No. 3,858,298, dated Jan. 7, 1975, Ser. No. 313,792, Dec. 11, 1972. Continuation-in-part of Ser. No. 216,093, Jan. 7, 1972, Pat. No. 3,785,050. Application for reissue Oct. 26, 1977, Ser. No. 845,577

The portion of the term of this patent subsequent to January 15, 1991, has been disclaimed.

Int. Cl.[2] **B23P** *19/02*

U.S. Cl. 29—237 **1 Claim**

5. An apparatus for securing a fitting to a hose which comprises a ball screw and ball nut assembly, a swaging die having a die cavity adjacent one end of the screw with the cavity aligned with the screw, means for supporting said ball nut and said die against relative longitudinal movement and against rotation with the screw comprising a cast one-piece frame having a first end member, a second end member spaced longitudinally from the first end member and a pair of laterally spaced side support members integral at one end thereof with the said first end member and integral at the other end with the said second end member, an opening through the said first end member and an opening through the second end member for supporting the swaging die, said openings having a common axis, said ball screw passing through said opening through the first end member and said ball nut secured to said first end member, means carried by said end of the screw for pressing a fitting and hose assembly in said die cavity comprising a holder element secured to the said screw end for rotation therewith and having a cavity therein, a pusher element having one end in the cavity of the holder element and an opposite end adapted to support a fitting and hose assembly as it is moved towards the die cavity, means for securing the pusher element in the cavity of the holder element against rotation with the screw and against substantial longitudinal movement relative to the screw comprising a thrust bearing in the cavity of the holder element and about the said pusher, a generally triangularly shaped clamp pivotally secured at its apex to each of said side support members and having an arcuate shaped base disposed to press the die into the opening through the said second end member of the frame, and means for turning the screw in the nut.

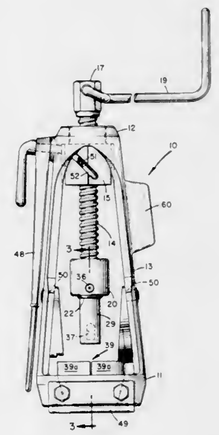
Re. 29,802
SWAGING APPARATUS

Jon K. Whitledge, Mantua, and Edward M. Kavick, Chardon, both of Ohio, assignors to Samuel Moore and Company, Aurora, Ohio

Original No. 3,858,298, dated Jan. 7, 1975, Ser. No. 313,792, Dec. 11, 1972. Continuation-in-part of Ser. No. 216,093, Jan. 7, 1972, Pat. No. 3,785,050. Application for reissue Oct. 26, 1977, Ser. No. 845,576

Int. Cl.[2] **B23P** *19/02*

U.S. Cl. 29—237 **3 Claims**



1. An apparatus for securing a fitting to a hose which comprises a ball screw and ball nut assembly, a swaging die having a die cavity adjacent one end of the screw with the cavity aligned with the screw, means for supporting said ball nut and said die against relative longitudinal movement and against rotation with the screw comprising a cast one-piece frame having a first end member, a second end member spaced longitudinally from the first end member and a pair of laterally spaced side support members integral at one end thereof with the said first end member and integral at the other end with the said second end member, an opening through the said first end member and an opening through the second end member for supporting the swaging die, said openings having a common axis, said ball screw passing through said opening through the first end member and said ball nut secured to said first end member, means carried by said end of the screw for pressing a fitting and hose assembly in said die cavity comprising a holder element secured to the said screw end for rotation therewith and having a cavity therein, a pusher element having one end in the cavity of the holder element and an opposite end adapted to support a fitting and hose assembly as it is moved towards the die cavity, means for securing the pusher element in the

cavity of the holder element against rotation with the screw and against substantial longitudinal movement relative to the screw comprising a thrust bearing in the cavity of the holder element and about the said pusher, and means for turning the screw in the nut.

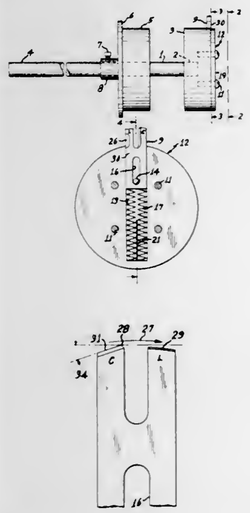
Re. 29,803
PIPE CUTTING TOOL

Clinton E. Breese, Ponte Vedra Beach, Fla., assignor to Breese Manufacturing, Inc., Jacksonville Beach, Fla.

Original No. 3,999,292, dated Dec. 28, 1976, Ser. No. 617,378, Sep. 29, 1975. Application for reissue Dec. 27, 1977, Ser. No. 864,932

Int. Cl.[2] **B23D** *21/10, 21/14;* **B26D** *3/16*

U.S. Cl. 30—105 **15 Claims**



11. In an inside tube cutter comprising a body member adapted to be disposed and rotated on a predetermined axis in a predetermined direction inside a tube, a bifurcated cutting bit comprising a cutting leg and leading cutting depth control leg, and means slideably mounting said bit on said body member for sliding inwardly and outwardly thereof and with said legs extending outwardly of said member and lying in a plane normal to said rotational axis and with said leading leg disposed in said predetermined direction from said cutting leg, said cutting leg terminating outwardly in a cutting edge disposed outwardly a short distance beyond the outer end of said leading leg as measured radially from said axis.

Re. 29,804
INSULATING WALL UNIT

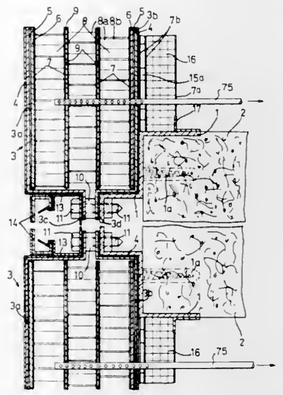
Otto Alfred Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Fed. Rep. of Germany

Original No. 3,834,096, dated Sep. 10, 1974, Ser. No. 231,815, Mar. 6, 1972. Continuation-in-part of Ser. No. 826,958, May 22, 1969, Pat. No. 3,646,721, and a continuation-in-part of Ser. No. 37,068, May 13, 1970. Application for reissue Oct. 17, 1977, Ser. No. 843,050

Claims priority, application Fed. Rep. of Germany, May 22, 1968, 1759635; Sep. 21, 1968, 1784816; Mar. 29, 1969, 1916384; May 13, 1969, 1924313; May 21, 1969, 1925789; Jun. 25, 1969, 1932202

Int. Cl.[2] **E04B** *1/74*

U.S. Cl. 52—172 **11 Claims**



1. In a wall unit comprising panels laying at opposite faces of said unit, a seal arranged between the margins of said panels to air-tightly seal the wall unit, and an insulation occupying the cavity between said panels, the improvement which consists in additionally providing the wall unit at its one side with an additional panel, spaced from the wall unit and forming therewith an associated cavity, said additional panel being permeable to condensed moisture, air, and vapors and allowing the condensed moisture deposited thereon to pass therethrough into said associated cavity, said associated cavity serving to eliminate moisture condensed on said additional panel.

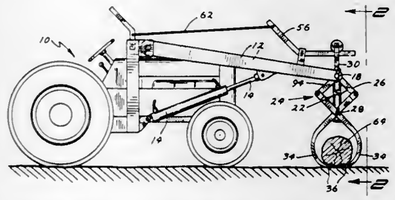
Re. 29,805
LOADER ATTACHMENT FOR HANDLING LOGS, BALES AND THE LIKE

Edward L. Koehnen, Akeley, Minn. 56433

Original No. 4,030,625, dated Jun. 21, 1977, Ser. No. 717,949, Aug. 26, 1976. Application for reissue Feb. 27, 1978, Ser. No. 881,841

Int. Cl.[2] **B66C** *1/62*

U.S. Cl. 214—147 G **6 Claims**



1. A loader attachment for use with a prime mover having parallel, spaced apart, power actuated, front end loader support arms extending outwardly therefrom; said loader attachment including:

a. a main horizontal frame support bar pivotally mounted [in] *with respect to* outer ends of said support arms;

b. [a pair of vertical guides extending downwardly from the said frame support bar in spaced relation to each other and symmetrically about the center of the frame support bar] *a horizontal hook support bar situated in vertical alignment below said main horizontal frame support bar and parallel to it;*

c. [a horizontal hook support bar extending through the vertical guides] *guide means operably associated with respect to said main frame support bar and said hook support bar to permit relative vertical movement of said frame support bar and said hook support bar with respect to each other while maintaining said hook support bar in the same vertical plane as said frame support bar;*

d. two pairs of jaw-forming hooks, each having central portions pivotally supported, one pair of each end of said hook support bar in approximate vertical alignment beneath said frame support bar;

e. a rigid link pivotally connecting an upper[, outer] end portion of each of said hooks with [a vertically aligned portion of] *respect to* said frame support bar;

f. a hook support bar lifting strap integral with and extending upwardly from said hook support bar;

g. said [guides] *guide means* being of configuration to permit movement of said hook support bar between a first lower position wherein each of the hooks of each pair of hooks is in closed, adjacent relationship to the other hook of said pair of hooks, and a second upper position wherein said hooks are spaced at a maximum distance away from each other; and

h. means for moving said hook support bar lifting strap to move said hook support bar between said first and said second positions.

Re. 29,806
ROTOR HOUSING FOR A ROTARY PISTON TYPE ENGINE AND METHOD FOR MANUFACTURING THE SAME

Hirotaka Iida, No. 2002-47, Hesaka-cho, Hiroshima-shi, Hiroshima-ken; Hiroshi Masaoka, No. 616, Onaga-machi, Hiroshima-shi, Hiroshima-ken; Michinobu Yamada, No. 2-31, 5-chome, Ujinahigashi, Hiroshima-shi, Hiroshima-ken; Mutsuo Ichihara, No. 2110-5, Fuchu-cho, Aki-gun, Hiroshima-ken; Yoshitaka Uebayashi, No. 1412-8, Fuchu-cho, Aki-gun, Hiroshima-ken; Koji Tashiro, No. 5580, Higashikaita, Kaita-cho, Aki-gun, Hiroshima-ken, and Sadao Taketomo, No. 510-4, Aza Ohmachi, Yasufuruichi-cho, Asa-gun, Hiroshima-ken, all of Japan

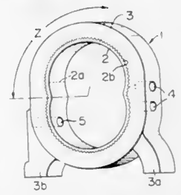
Original No. 3,934,321, dated Jan. 27, 1976, Ser. No. 459,329, Apr. 9, 1974. Application for reissue Apr. 14, 1976, Ser. No. 676,712

Claims priority, application Japan, Apr. 10, 1973, 48-40580; Apr. 11, 1973, 48-41639

Int. Cl.[2] **F01C** *21/00;* **B23P** *15/00*

U.S. Cl. 418—178 **18 Claims**

11. A rotor housing for a rotary piston type engine, comprising a liner provided by a rolled metal sheet which is scratched at one side to form a rough surface and has opposite terminal edges welded together to form a trochoidal configuration with said rough surface directed outside, and an aluminum based metal housing substrate cast around the liner, said welded terminal edges of the



metal sheet being disposed within a cold zone of the housing located substantially opposite an ignition plug opening.

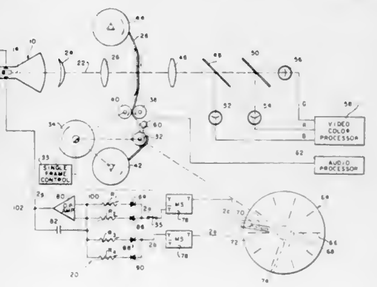
Re. 29,807
SCANNING APPARATUS RESPONSIVE TO THE MOVEMENT OF IMAGE BEARING MEDIA

Lenard M. Metzger, Brighton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 3,651,254, dated Mar. 21, 1972, Ser. No. 60,502, Aug. 3, 1970. Application for reissue May 8, 1972, Ser. No. 251,334

Int. Cl.[2] **H04N** *5/36, 5/86*

U.S. Cl. 358—54 **22 Claims**



1. In apparatus for deriving an image signal from an information bearing medium having a plurality of successive image frames disposed thereon, the combination comprising:

a. means for defining a scanning station;

b. means for moving the information bearing medium at a nominal image frame rate relative to said scanning station;

c. means for scanning repetitively at a first rate the image frames moving relative to said scanning station in a raster pattern comprising a plurality of spaced line scans and for providing an image signal of the scanned image frames;

d. first means for detecting the first rate from the movement of the information bearing medium relative to said scanning station and for producing a first signal indicative of the first rate;

e. second means for detecting the raster deflection rate of said scanning means from the movement of the information bearing medium relative to said scanning station and for producing a second signal indicative of the raster deflection rate;

f. third means responsive to said first and second signals for producing a third signal indicative of the raster deflection rate of said second signal and the first rate of said first signal; and

g. means responsive to said third signal for positioning the scanning raster pattern in synchronism with the moving image frames in accordance with said raster deflection rate and repeating the scanning raster pattern at said first rate.

PLANT PATENTS

GRANTED OCTOBER 17, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,316

PLUM TREE (25-P-40)

Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.

Filed Jan. 6, 1978, Ser. No. 867,369
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, characterized—in comparison to the Cassellman and Rosemary—by a harvest about 2 weeks later, and by clingstone fruit having less exterior red color, but brighter yellow skin and flesh, and much sweeter flavor.

4,317

DWARF PEACH TREE (54-P-455)

Frederic W. Anderson, 826 W. 22nd St., Merced, Calif. 95340

Filed Jan. 6, 1978, Ser. No. 867,370
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, which, while having the desirable characteristics of the full-size Lovell, is—in comparison—genetically dwarf.

4,318

NECTARINE TREE (44-G-520)

Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.

Filed Jan. 6, 1978, Ser. No. 867,371
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, particularly characterized by clingstone fruit which ripens a few days later than the Late Le Grand and a few days earlier than the Regal Grand; the fruit, as further compared with said prior varieties, being, on the average, slightly smaller in size but more uniform, more attractive in appearance by reason of greater red exterior color, and of better eating quality.

4,319

ALMOND TREE (17-J-495)

Frederic W. Anderson, Merced, Calif., assignor to The Burchell Nursery, Inc., Modesto, Calif.

Filed Jan. 30, 1978, Ser. No. 873,290
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, particularly characterized by flowers having red anthers on the stamens, and by being self-fruitful.

PATENTS

GRANTED OCT. 17, 1978

ERRATA

For CLASS	See PATENT NO.
405–264	4,120,163
405–289	4,120,164
405–145	4,120,165
405–225	4,120,166
405–157	4,120,167
405–170	4,120,168
405–169	4,120,171
073–159	4,120,183
838–086	4,120,220
124–085	4,120,276
225–565	4,120,432
206–586	4,120,441
308–006 C	4,120,538
356–073	4,120,582
408–150	4,120,599
428–187	4,120,608
422–016	4,120,654
422–015	4,120,655
422–028	4,120,656
422–068	4,120,661
073–425.6	4,120,662
075–238	4,120,719
096–001.5 N	4,120,720
096–036.3	4,120,721
096–049	4,120,722
096–074	4,120,723
096–087 A	4,120,724
096–097	4,120,725
096–107	4,120,726
096–114	4,120,727
096–114.1	4,120,728
106–035	4,120,729
106–039.6	4,120,730
106–044	4,120,731
106–047 Q	4,120,732
106–048	4,120,733
106–067	4,120,734
106–084	4,120,735
106–090	4,120,736
106–109	4,120,737
106–288 Q	4,120,738
156–245	4,120,749
116–114 V	4,120,818
521–038	4,120,831
521–081	4,120,833
521–164	4,120,834
528–140	4,120,847

ERRATA—Continued

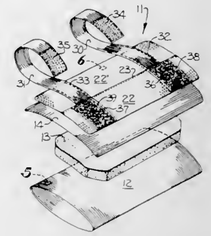
528–067	4,120,848
528–502	4,120,849
528–066	4,120,850
562–457	4,120,895
562–430	4,120,896
340–630	4,121,110
324–104	4,121,147
340–321	4,121,160
528–288	4,121,266
099–353	4,121,301

PATENTS

GRANTED OCTOBER 17, 1978

GENERAL AND MECHANICAL

4,120,052
CUSHIONED PROTECTOR
Carl D. Butler, Blanch, N.C., assignor to Royal Textile Mills, Inc., Yanceyville, N.C.
Filed Oct. 12, 1977, Ser. No. 841,343
Int. Cl.[2] A41D *13/08*
U.S. Cl. 2—16 **4 Claims**



1. A cushioned protector for aiding in preventing injury to the knee or elbow of the wearer and comprising
(a) an elongate sleeve of textile material having sufficient stretchability to be easily drawn over and resiliently engage and cover the knee or elbow of the wearer,
(b) a cushioning pad carried by said sleeve and adapted to cover and protect the knee or elbow of the wearer,
(c) flexible protective panel means extending longitudinally of said sleeve and covering at least the major portion of said cushioning pad, said panel means permitting said sleeve to slide along a rough surface and protecting the textile material from damage by said rough surface, and
(d) adjustable strap means secured adjacent opposite ends of said protector and encircling said protector, said adjustable strap means comprising a pair of elastic tapes, one end of each of said elastic tapes being secured to said protective panel means, the other end of each of said elastic tapes including one element of a separable fastener secured thereto, and including a second element of said separable fastener fixed on said protective panel for releasably connecting said one element of said separable fasteners thereto, said elastic tapes increasing the resilient engagement of opposite ends of said protector to aid in preventing the slipping of said sleeve on the knee or elbow of the wearer.

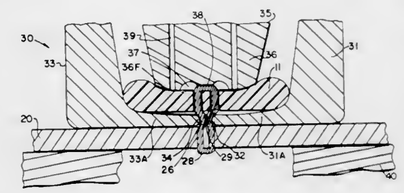
4,120,053
OBJECT-DISPENSING WEARING APPAREL
Frank R. Nemirofsky, 2837 Trotter Way, Walnut Creek, Calif. 94596
Filed Nov. 23, 1977, Ser. No. 854,300
Int. Cl.[2] A41B *1/00*
U.S. Cl. 2—115 **10 Claims**

1. A garment for dispensing novelty items of a predetermined size and shape, the garment comprising:
an article of clothing adapted to be worn by a person, the article including a portion having an outer surface, an inner surface, and an aperture formed thereon to communicate the outer surface to the inner surface, the aperture being dimensioned and configured relative to the size and shape of individual ones of the novelty items to allow only one novelty item to pass therethrough at a time;
indicia affixed to the outer surface suggesting the aperture as a point from which the novelty items may be received; and
a pocket formed by a sheet of flexible material disposed in confronting relation to the inner surface, the material having an outer periphery that is positioned in generally surrounding relation to the aperture and attached to the



inner surface, the pocket being adapted to hold a plurality of the novelty items in general proximate position with the aperture.

4,120,054
BUTTON ASSEMBLY FOR TEXTILE MATERIAL
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Filed Oct. 6, 1976, Ser. No. 729,959
Int. Cl.[2] D05B *3/14*
U.S. Cl. 2—265 **14 Claims**



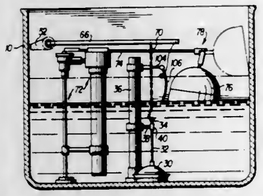
1. A fastening assembly comprising in combination with an article made of textile material,
a fastening button having at least one hole extending therethrough,
a thread-like element passing through said textile material and forming at least one loop, said thread-like element extending through said hole in said button in a manner to dispose adjacent portions of said thread-like element between said button and said textile material close to each other, and
adhesive bonding means securing said adjacent portions of said thread-like material which are disposed close to each other together between said button and said textile material.

4,120,055
TWO-STAGE TOILET FLUSHING APPARATUS
Paul F. Mormile, R.D. #1, Box 215, Mechanicville, N.Y. 12118
Continuation of Ser. No. 666,543, Mar. 15, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,825
Int. Cl.[2] E03D *1/36, 5/02*
U.S. Cl. 4—324 **10 Claims**

1. Flushing apparatus for a toilet having a water tank containing a float actuating a first valve to control the amount of water admitted to the tank and also containing a second valve operable to flush the water stored in the tank into the toilet bowl, the improvement which comprises:
handle means including a single manually actuable handle operable between a first normal position and distinct first

and second actuated positions, said handle in its said first normal position permitting closure of said second valve so as to permit the filling of the tank when said first valve is open,

operating means for said first valve controlled jointly by said float and by said handle means when said handle is in its said normal position to permit closure of said first valve when the water level in the tank reaches a first predetermined partially-filled level,



said operating means for said first valve being controlled jointly by said float and by said handle means when said handle is in its said first actuated position to close said first valve only when the water level in the tank reaches a second level higher than said first level,

and flushing means controlled by said handle means when said handle is moved to its said second actuated position to open said second valve to flush the bowl with the quantity of water then stored in the tank.

4,120,056

FLUSH TOILET ACCESSORY

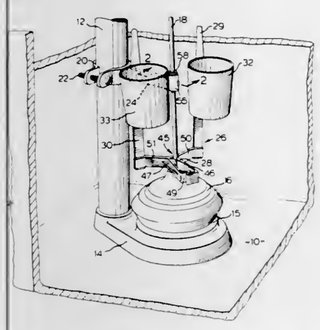
Clarence F. Phripp, R.R. #1, St. Clements, Ontario, Canada (N0B 2M0), and Norman R. Preston, 169 Ross Ave., Kitchener, Ontario, Canada (N2A 1V5)

Continuation-in-part of Ser. No. 615,923, Sep. 23, 1975, Pat. No. 4,032,997. This application May 11, 1977, Ser. No. 797,809

Claims priority, application United Kingdom, Sep. 30, 1974, 42437/74

Int. Cl.[2] **E03D** *1/14*

U.S. Cl. 4—324 **9 Claims**



1. A flush regulator for use in a toilet flush tank for regulating the outflow therefrom through an outlet pipe, the toilet flush tank including a hollow ball valve adapted to stop up the outlet pipe, a vertical stem with its lower end attached to the ball valve and its upper end adapted to be pulled up to initiate a flush, and a bracket extending laterally from an overflow pipe within the tank and having a vertical bore through which the stem passes, the regulator comprising:

gripping means for gripping the vertical stem,

two upright post members supported from said gripping means, the post members being spaced from the stem and from each other,

and two upwardly open cup members capable of containing water mounted respectively to the post members, each cup member being wholly to one side of its respective post member and positioned such that rotation of the regulator in one direction with respect to the bracket will bring one of the post members into contact with the bracket, and rotation of the regulator in the other direction with respect to the bracket will bring the other post members into contact with the bracket, thereby preventing contact or catching of a cup member under or against the bracket.

4,120,057

ELECTROMECHANICAL ADJUSTING DEVICE

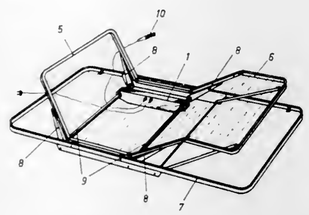
Gernot Neumann, Lippereihe, Fed. Rep. of Germany, assignor to Hanning Elektro-Werke Robert Hanning, Bielefeld, Fed. Rep. of Germany

Filed May 17, 1977, Ser. No. 797,629

Claims priority, application Fed. Rep. of Germany, May 21, 1976, 2622783

Int. Cl.[2] **A47B** *83/04;* **A61G** *7/10;* **F16D** *67/02*

U.S. Cl. 5—66 **7 Claims**



1. An electromechanical adjusting device for pivotable head and/or foot parts of a bed frame with a pivot in the form of a rod movable with the pivotable part and extending transversely of said bed frame, said adjusting device comprising a reversable rotary electric motor, a reduction gear for said electric motor, free wheeling spring clutch means in said reduction gear arranged to allow slip motion of said rod in a direction to raise said pivotable part, an insulative protective casing for said adjusting device and means for supporting said adjusting device on said rod.

4,120,058

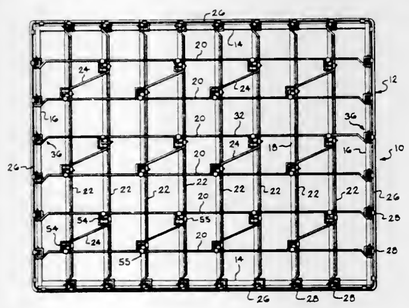
LOW PROFILE BOX SPRING ASSEMBLY

John P. Kitchen, Georgetown, Ky., and Jack C. Mandusky, Adrian, Mich., assignors to Hoover Universal, Inc., Saline, Mich.

Filed Aug. 15, 1977, Ser. No. 824,347

Int. Cl.[2] **A47C** *23/02*

U.S. Cl. 5—247 **2 Claims**



1. In a formed wire box spring assembly which includes a horizontally disposed generally rectangular frame and a plurality of formed wire springs mounted on said frame and extending upwardly therefrom, each of said springs comprising a unitary wire body member having a generally horizontal load supporting portion and yieldable end portions depending from the ends of said load supporting portion, each of said end portions comprising three vertically spaced torsion bars and a pair of inclined connecting bars arranged in a fish-mouth formation, the bottom one of said torsion bars being positioned on said frame, a mounting foot integral with said bottom torsion bar and engaged with said frame inwardly thereof from said bottom torsion bar, the top one of said torsion bars being located at one end of said load supporting portion and being generally parallel and in vertical alignment with said lower torsion bar, the intermediate one of said torsion bars being located inwardly of said frame from said top one of said torsion bars, one of said connecting bars extending from one end of said intermediate torsion bar to the corresponding end of said upper torsion bar and the other one of said connecting bars extending from the opposite end of said intermediate torsion bar to the corresponding end of said bottom torsion bar, said intermediate torsion bar being positioned between said top and bottom torsion bars so that said one connecting bar extends upwardly and outwardly from said intermediate torsion bar and said other connecting bar extends downwardly and outwardly from said intermediate torsion bar.

4,120,059

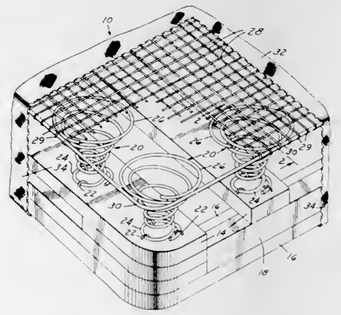
FURNITURE SPRING ASSEMBLY AND METHOD FOR MANUFACTURE THEREOF

Paul Cavaler, 22698 Essex Way, Southfield, Mich. 48075

Filed Apr. 25, 1977, Ser. No. 790,286

Int. Cl.[2] **A47C** *23/02*

U.S. Cl. 5—256 **10 Claims**



1. A spring assembly for furniture comprising a plurality of substantially conical coil springs each having a spring height, means attached to ends of said springs of lesser diameter to support said springs such that spring end coils of greater diameter lie in a substantially common plane, and a mesh overlying said spring end coils of greater diameter in said substantially common plane, said end coils of greater diameter being free-floating with respect to said mesh and with respect to each other.

4,120,060

MATTRESS CONSTRUCTION

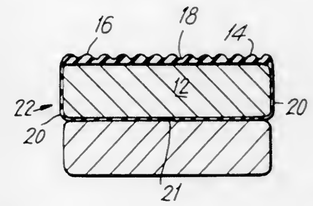
Richard C. Lush, 1922 E. 14 St., Brooklyn, N.Y. 11229

Continuation-in-part of Ser. No. 627,532, Dec. 31, 1975, abandoned. This application Nov. 21, 1977, Ser. No. 853,278

Int. Cl.[2] **A61G** *7/02*

U.S. Cl. 5—345 R **8 Claims**

1. An improved mattress construction having means for acting with a users feet at the foot end of said mattress and allowing positioning of a users toes while lying on the stomach, said means being disposed along designated locations across said mattress for transmittal of body movement through said users toes with said means, said mattress being provided with a generally planar outer ticking layer wherein said improvement comprises: said mattress being provided with means having at least one transverse row of uniformly spaced protuberances



integral with said ticking across the entire width of said mattress to define means adapted to co-act with said toes, said means being disposed away from said foot end of said mattress for a distance along the length of said mattress to enable engagement of the toes of said user at surfaces formed by the protuberances.

4,120,061

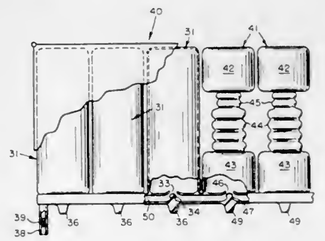
PNEUMATIC MATTRESS WITH VALVED CYLINDERS OF VARIABLE DIAMETER

Harold E. Clark, 14 Beacon Hill, Fairport, N.Y. 14450

Filed Oct. 13, 1977, Ser. No. 841,658

Int. Cl.[2] **A47C** *27/08*

U.S. Cl. 5—350 **17 Claims**



1. A pneumatic mattress, comprising

a first plurality of flexible, hollow cells, which are similar in configuration and circular in cross section,

each of said cells comprising at least one section of relatively large diameter, and at least another section smaller in diameter than said one section and connected coaxially to said one section,

means for supporting said cells in side-by-side vertical relation with the upper ends of the uppermost of said sections disposed in coplanar relation,

said means including a flexible plenum extending completely and continuously beneath the lower ends of said cells, and each of said cells having in the lower end thereof an orifice for connecting the interior of each cell with the interior of said plenum,

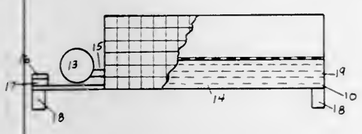
means for supplying gas under pressure to the interior of said plenum for distribution through said orifices to said cells, and

a plurality of valves in said plenum releasably insertable into said orifices for individually closing the orifices in said cells individually to trap gas under pressure in said cells, when closed, thereby to prevent return thereof to said plenum.

4,120,062
WATERBED ENVIRONMENTS

Richard P. Anderson, Albert Meadow, Bar Harbor, Me. 04689

Filed Mar. 25, 1976, Ser. No. 670,438
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—370 **3 Claims**

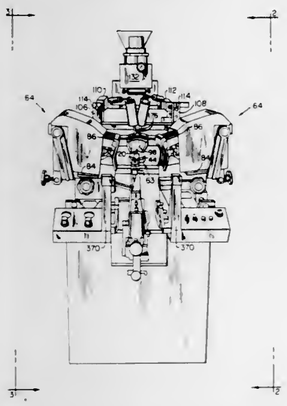


1. An infant waterbed environment comprising:
water bladder means;
means for supporting said bladder means comprising a porous sidewall pervious to the passage of water and a base of convex curvature upwards adapted to shed water away from said base in the event of a leak in the bladder;
means for displacing water contained in the bladder means at selected frequencies to provide pulsations sensible to an infant on the water bladder comprising displacement pump means and reservoir means communicating with the bladder means, said pump coupled with said reservoir for displacing water into the bladder from the reservoir and withdrawing water from the bladder into the reservoir at selected frequencies thereby providing pulsations of rushing water in the bladder means and consequently a sensible and audible environment which recreates aspects of the intrauterine environment;
and means for adjusting the frequency of the pulsations produced by said displacement pump.

4,120,063
CEMENT SIDE AND HEEL LASTING MACHINE

Walter Vornberger, Tewksbury, Mass., and Karl F. Vornberger, Amherst, N.H., assignors to International Shoe Machine Corporation, Nashua, N.H.

Division of Ser. No. 762,685, Jan. 26, 1977, Pat. No. 4,082,060.
This application Sep. 6, 1977, Ser. No. 831,039
Int. Cl.[2] A43D *21/00*
U.S. Cl. 12—12 **2 Claims**

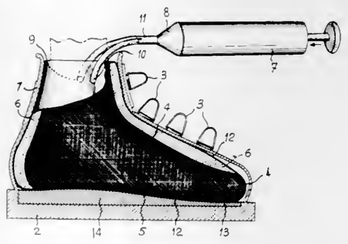


1. A side and heel lasting machine, operable on a shoe assembly formed of a last having an insole located on its bottom and an upper mounted thereon, comprising: a shoe assembly support for supporting the shoe assembly bottom-up with the toe end of the shoe assembly facing forwardly and with the side and heel portions of the upper margin extending upwardly of the insole; a slide plate, located rearwardly of the support, mounted for forward-rearward movement; heel wiping means mounted to the slide plate for forward movement with respect to the slide plate in a heel wiping stroke from a retracted position wherein the heel wiping means is in a position in readiness for wiping to an advanced position wherein the heel wiping means has wiped the heel portion of the upper margin against the corresponding portion of the insole periphery; a shoe assembly engaging member mounted to the slide plate below the heel wiping means; a side wiping means located on each side of the support, each side wiping means being mounted for inward movement from a position of disengagement with the shoe assembly through a side wiping stroke to an inner position wherein the side wiping means has wiped a side portion of the upper margin against a corresponding portion of the insole periphery; means for initially maintaining the slide plate in a rearward position; means for initially maintaining the heel wiping means in its retracted position; means for thereafter moving the slide plate forwardly until the shoe assembly engaging member engages the heel end extremity of the shoe assembly; means for thereafter imparting a heel wiping stroke to the heel wiping means; means for initially maintaining each side wiping means in its position of disengagement; and means for thereafter imparting a side wiping stroke to each side wiping means; the machine having the improvement comprising: means mounting each side wiping means for forward-rearward movement; and connecting means so connecting each side wiping means to the slide plate as to cause forward movement of the side wiping means concomitantly with said forward movement of the slide plate whereby the heel wiping stroke and the side wiping strokes may be performed simultaneously regardless of the position of engagement of the shoe assembly engaging member with the heel end extremity of the shoe assembly.

4,120,064
METHOD FOR ADJUSTING A SKI-BOOT TO A SKIER'S FOOT

Georges Pierre Joseph Salomon, Annecy, France, assignor to Etabliessements Francois Salomon et Fils, Annecy, Haute-Savoie, France

Filed Oct. 15, 1975, Ser. No. 622,688
Claims priority, application France, Oct. 15, 1974, 74 34643; Oct. 8, 1975, 75 30799
Int. Cl.[2] A43D *9/00*; A43B *7/14*
U.S. Cl. 12—142 R **26 Claims**

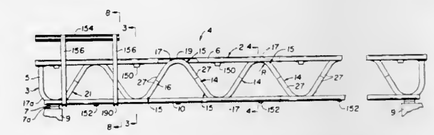


1. A method for adjusting a ski boot including an outer shell, a sole and a slipper located inside said shell and providing at least one cavity between said shell and the foot, comprising: placing the foot to which the boot is to be fitted in the slipper, filling the cavity with a mixture of products solved in at least one volatile product, said mixture being in a stable viscous state; and eliminating the at least one volatile product by causing said volatile product to escape at the atmosphere into a gaseous phase until hardening of the mixture of products.

4,120,065
LIGHTWEIGHT MODULAR, TRUSS-DECK BRIDGE SYSTEM

Eugene W. Sivachenko, 6471 Riverside Dr., Redding, Calif. 96001; Firoze H. Broacha, Lakewood, Colo., and Artemas M. Larkin, Redding, Calif., assignors to Eugene W. Sivachenko, Redding, Calif.

Filed Dec. 15, 1977, Ser. No. 860,796
Int. Cl.[2] E01D *15/00*
U.S. Cl. 14—6 **71 Claims**



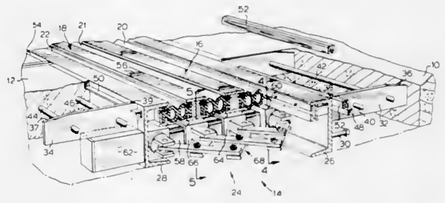
55. A lightweight high efficiency modular bridge constructed of a plurality of pre-assembled bridge modules, the bridge comprising: a plurality of longitudinally extending, side-by-side modules, each module having a width less than about 48 inches, spaced apart upper and lower chord plates, and a chord plate connecting sinusoidal support structure alternatingly connected to the upper and the lower chord plates, the support structure having a web-like configuration defined by serially arranged center sections and upper and lower crown portions connected with the center sections, the support structure further having a width substantially equal to the width of the chord plates; means for fastening the crown portions to the chord plates over substantially their full width; the chord plates and the support being constructed of corrugated metal plate defining longitudinally running corrugations, the corrugations of the chord plates and of the support nesting in each other, the corrugations further having a trapezoidal cross-section, a corrugation depth of at least about 5½ inches and a corrugation pitch larger than the corrugation depth; load distribution ribs positioned intermediate fastening points between the crown portions and the upper chord plate, being oriented perpendicular to the upper chord plate corrugations, and having a width so as to contact all modules of the bridge; means for rigidly securing the load distribution ribs to the upper chord plates only; the load distribution ribs having a section modulus which is sufficiently large so that vehicular point loads applied to the upper chord plate in the vicinity of a load distribution rib are transferred by the load distribution rib onto the upper chord plates of the bridge over a width of several feet so as to cause a more even distribution of the vehicular point load on the upper chord plates and thereby reduce the stressing thereof; a plurality of spaced apart upright posts located proximate lateral sides of the outermost modules of the bridge; means rigidly connecting the posts with each of the upper and the lower chord plates so that a portion of the post protrudes above the upper chord plate; a guard rail extending over the length of the bridge and secured to the protruding portions of the upright posts to define lateral safety barriers for the bridge; and a road bed placed on top of the upper chord plate to define a surface on which vehicular traffic can move.

4,120,066
EXPANSION JOINT FOR ROADWAY SECTIONS

Yves Gerald Leroux, 8790 Terrasse Forget, La Salle, Quebec, Canada

Filed Jun. 1, 1977, Ser. No. 802,497
Int. Cl.[2] E01D *19/06*
U.S. Cl. 14—16.5 **18 Claims**

1. An expansion joint for adjacent first and second roadway sections having a gap therebetween to allow expansion of said sections, the joint comprising:
at least one intermediate beam member in said gap and extending along at least a substantial portion of the width of the roadway sections;
resilient sealing means located in and closing gaps between said intermediate beam member and the roadway sections, substantially to seal the roadway surface across the gap;
a plurality of joint units in spaced apart relationship across the width of the roadway sections, each said joint unit extending from the first roadway section to the second roadway section across the gap, and including:
a spanning member extending from the first roadway section to the second roadway section and movable with respect to at least one of said roadway sections;
each said joint unit further including a glider box, fixedly secured to the intermediate beam member, the spanning member passing through said glider box in sliding relation thereto so as to support the intermediate beam member on the spanning member for relative movement therebetween;



each joint unit further including means for substantially maintaining a predetermined ratio of distance between the first roadway section edge and the intermediate beam member, to that between the second roadway section edge and the intermediate beam member, when the size of the gap between the first and second roadway sections changes, said means comprising:
a sectionally expandable and contractable device secured to the first roadway section, the intermediate beam member and the second roadway section, said device having expandable and contractable sections between said securings which expand and contract in the direction across the gap, the expansion or contraction of one of said device sections causing corresponding expansion or contraction of the others of said device sections, in predetermined relationship thereto, so as to move the intermediate beam member transversely across said gap in response to movement of the first roadway section or second roadway section to vary the size of said gap.

4,120,067
ARTICULATED CLOSURE FOR A PASSENGER LOADING BRIDGE

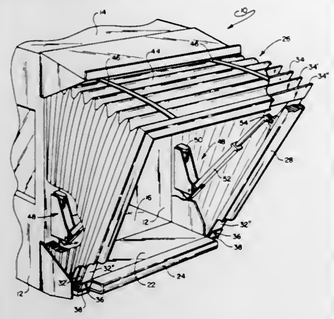
George D. Hone, Roy; Kenneth L. Noall, and Robert L. Saunders, both of Ogden, all of Utah, assignors to Abex Corporation, New York, N.Y.

Filed Mar. 15, 1978, Ser. No. 886,975
Int. Cl.[2] B65G *69/24*
U.S. Cl. 14—71.5 **10 Claims**

1. A closure for a cab which connects a passenger loading bridge to an aircraft, the closure having a platform, a flexible frame including a pair of flexible spaced uprights interconnected at their upper ends by a flexible transverse member, a curtain connecting the frame to the cab, and drive means for moving the frame toward and away from the cab, characterized by:
fist pivot means pivoting the lower ends of the frame uprights to the platform to enable lateral swinging movement and
the drive means including
an extensible arm assembly comprising inward and outward arms;

second pivot means pivoting the inward arm to the cab to enable vertical and lateral movement,

a flexible joint connecting the outward arm to the frame and



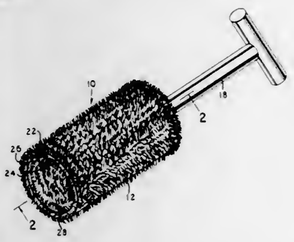
a power actuator connected to the inward arm for vertically swinging the arm assembly to move the frame toward and away from the cab.

4,120,068

RALLY WHEEL CLEANING IMPLEMENT

Philip Michael Kaczmarek, 11313 Grandville, Detroit, Mich. 48228

Filed Apr. 18, 1977, Ser. No. 788,629
Int. Cl.[2] A46B *5/00, 9/00, 15/00*
U.S. Cl. 15—160 **3 Claims**



1. A cleaning brush for cleaning recessed lug nuts on the wheel of a vehicle comprising:

a generally thin-walled hollow cylinder having front and rear edge surfaces, an outer surface and an inner surface;

a partition wall extending generally normal to the central longitudinal axis of said cylinder;

a elongated handle fixed to said partition wall having a first end extending in a direction generally coincident with the longitudinal axis of said cylinder and a head fixedly connected to said first end;

a plurality of brush bustles extending outwardly from said outer surface along substantially the entire surface thereof in a direction generally normal to the longitudinal axis of said cylinder;

a plurality of brush bristles extending inwardly from said inner surface toward the central longitudinal axis of said cylinder along substantially the entire surface thereof in a direction generally normal to the longitudinal axis of said cylinder; and

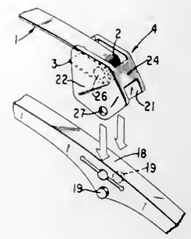
a plurality of brush bristles extending from both of said edge surfaces and outwardly therefrom in a direction generally parallel to the central longitudinal axis of said cylinder.

4,120,069

ADAPTER FOR COUPLING WINDSHIELD WIPER BLADE HOLDER WITH HOOKED WIPER ARM

Bernard C. Sharp, White Plains, N.Y., and John T. Petrik, Newtown, Conn., assignors to Parker-Hannifin Corporation, Shelton, Conn.

Filed Apr. 20, 1977, Ser. No. 789,233
Int. Cl.[2] B60S *1/40*
U.S. Cl. 15—250.32 **7 Claims**



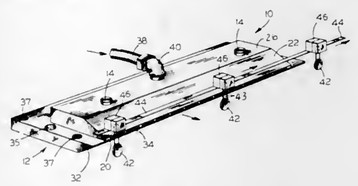
1. An adapter for connecting a wiper blade holder with a windshield wiper arm that terminates in a hook having a finger turned back along the arm, comprising a unitary molded body of resilient material forming two similarly shaped side panels and a front wall and a cross shaft which join together respective forward upper portions of said panels and hold the upper portions of said panels spaced apart to receive said hook between them, said panels having on lower portions thereof elements to mate with and to couple said body to coupling elements on a central portion of said blade holder, said front wall and said cross shaft being spaced apart longitudinally of said panels and disposed relative to said lower portions and to backward upper portions of said panels so that said body apart from the blade holder can be held in a posture in which the space between said shaft and said wall will be aligned with the finger of said hook, whereupon said finger can be passed through said space to engage said shaft pivotably in said hook, said lower portions and said backward upper portions of said panels having between them unobstructed space slightly wider than said hook and through which said hook when engaged with said shaft is free to turn upon an ensuing turning of said body about the axis of said shaft to a position for mating said coupling elements, whereby upon such turning said hook will be captured transversely by said shaft, longitudinally between said shaft and said front wall and laterally between the upper portions of said panels.

4,120,070

CLEANING SYSTEM

Hubert J. Severin, 18 Beacon Rd., Bethany, Conn. 06525

Continuation-in-part of Ser. No. 600,638, Jul. 31, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,578
Int. Cl.[2] B08B *5/02*
U.S. Cl. 15—306 B **6 Claims**



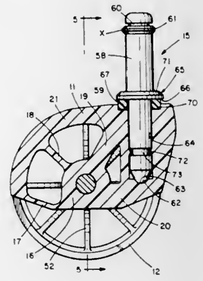
1. A system for cleaning, with air, relatively thin parts of workpieces, comprising: an air knife, comprised of a body having an outer edge portion, and an internal chamber with an inlet thereinto and an outlet therefrom, said inlet being adapted to receive air under pressure from a source thereof, and said outlet being comprised of a multiplicity of side-by-side, closelyadjacent channels extending from said chamber each channel ending in an orifice opening at said outer edge portion of said body, said orifices thereby cooperatively providing a substantially continuous slit therealong elongated in a predetermined direction, so that air charged under pressure into said chamber may issue from said slit as a sheet in streamline flow; and means for conveying a plurality of workpieces in succession along a travel path which includes a portion extending closely adjacent to said slit of said air knife and generally parallel to said predetermined direction along substantially the entire length of said slit, said conveying means being adapted to support the workpiece with thin parts thereof, which are to be cleaned, disposed generally transversely of said slit during their generally paralle! movement along said travel path portion, said air knife being the only such air knife present at said travel path portion, so that the streamline flow of the sheet of air issuing from said slit of said air knife is not unduly disturbed and may impinge upon the thin parts of the workpieces to effect cleaning thereof along well-defined margins.

4,120,071

DUAL WHEEL CASTER

Donald C. Crescenzi, Branford, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed May 17, 1976, Ser. No. 686,732
Int. Cl.[2] B60B *33/00*
U.S. Cl. 16—37 **3 Claims**



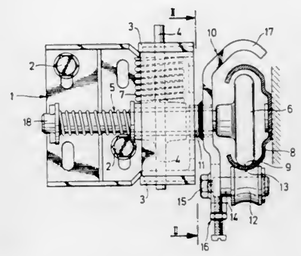
1. A caster assembly, comprising; a horn for supporting a wheel, a generally vertical bore in said horn extending from an upper surface of the horn and terminating within the horn to form a rounded lower thrust surface in the horn, a bearing surface on the upper surface of the horn, a vertical pintle in the horn bore having an integral upper flange having a diameter substantially greater than the diameter of the bore, said flange having a flat lower surface engaging the bearing surface on the horn to transmit downward axial thrust load between the horn and the pintle, said pintle having an integral rounded end at the bottom thereof defining a lower thrust bearing surface, said pintle being sufficiently long so that the lower thrust bearing surface engages the rounded lower thrust surface on the horn to transmit downward axial thrust load betweem the horn and the pintle.

4,120,072

COMBINED SUPPORTING ROLLER-FRICTION DRIVE ARRANGEMENT FOR OVERHEAD SINGLE-PANEL DOORS

Michael Hormann, Steinhagen, Germany, assignor to Hormann KG Amshausen, Germany

Filed Aug. 23, 1977, Ser. No. 827,092
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 7626729
Int. Cl.[2] E05D *13/02*
U.S. Cl. 16—87 R **10 Claims**



1. Apparatus for supporting and frictionally drivingly opening and closing an overhead single-panel door such as a garage door or the like; said apparatus comprising:

a drive roller having a drive roller axle;

drive roller support means for rotatably supporting said drive roller at a door with said drive roller axle disposed to be rotatably driven by driving means;

a relatively fixed guide track frictionally drivingly engageable with said drive roller along one side thereof;

a bearing bracket rotatably supported at said drive roller axle, and

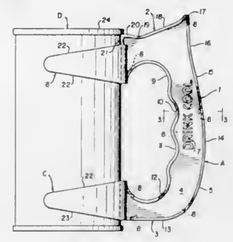
a pair of counterpressure rollers rotatably supported at said bearing bracket and being engageable with a side of said guide track opposite said one side at respective positions of the guide track spaced from one another in the direction of travel of the drive roller, whereby said counterpressure rollers assist in assuring continuous frictional driving contact of said drive roller and said guide track.

4,120,073

DETACHABLE HOLDER FOR BEVERAGE CANS

Robert L. Studebaker, 5732 S. Evanston Pl., Tulsa, Okla. 74105

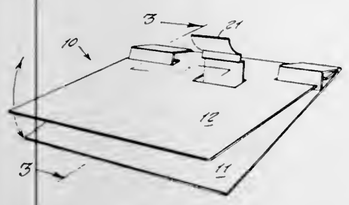
Filed Mar. 24, 1977, Ser. No. 781,038
Int. Cl.[2] A45J *45/07;* **B65D** *23/10, 25/28*
U.S. Cl. 16—114 R **3 Claims**



1. A one-piece detachable holder for beverage cans integrally molded of a plastic material comprising a substantially U-shaped hand gripping portion including upper and lower legs, a resilient arcuate can engaging clip extending from each leg and each encompassing the can outer surface more than 180° about an arcuate inner clip radius substantially equal but

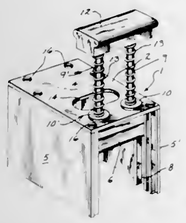
slightly less than the outer radius of a can to be held, said upper leg having an integral upstanding shoulder surface about its associated clip for engagement of the can outer surface beneath an external flange on a can to be held and extending downwards to merge with the upper surface of the clip for engaging the outer surface of said cans therewith over a vertical surface extending from said shoulder surface downwardly through the can engaging clip.

4,120,074
SNAP-LOCKING HINGE
David A. Haber, 320-B Ave. C, Gunter AFS, Ala. 36115
Filed Jun. 3, 1977, Ser. No. 803,062
Int. Cl.[2] E05D *1/06, 7/10*
U.S. Cl. 16—171 **2 Claims**



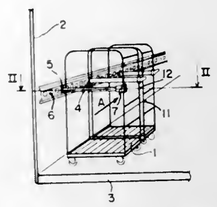
1. A snap-locking hinge, comprising in combination, a top hinge plate and a bottom hinge plate, said top hinge plate having a central opening and a slot on each opposite side edge, and said bottom hinge plate having hinge guides engaging such slots and a snap member engaging said central opening; said snap-locking member including a shoulder engaging an edge of said central opening when said top hinge plate is in a fully opened position; and snap-locking member additionally including a notch engaging said central opening edge when said top plate is in a partly closed position; said snap-locking member including a second notch engaging said central opening edge when said top plate is in a closed position; and spring means on said top plate allowing sliding of said plate laterally respective to said bottom plate, for disengaging said opening edge from said snap-lock member, said spring means comprising a struck-out notch on each said opposite side edge of said top plate, thus forming a narrow, resilient spring finger, that is located beyond a top plate end edge, about which said top plate pivots within said hinge guide, so that lateral sliding of said top plate thus forces said spring finger to move toward said end edge, in order to provide said disengagement.

4,120,075
HUMANE SACRIFICER
William B. Rypstat, 909 Ethel St., Wausau, Wis. 54401
Filed Aug. 29, 1977, Ser. No. 828,387
Int. Cl.[2] A22B *3/00*
U.S. Cl. 17—1 R **4 Claims**



1. A sacrificer for humanely killing an animal includes a housing for receiving at least the head and neck region of said animal, said housing having an end wall, a top wall, a pair of side walls and a blade adapted for reciprocal movement positioned in the housing at the opposite end from the end wall; said end wall having a viewing area therein so that when the animal is properly orientated in the housing to face the end wall it can see through the viewing area to the outside and said top wall having a viewing area therein so that it can be determined from outside the housing if the animal is properly orientated in the housing so that the animal will be struck a killing blow in the head or neck region by moving the blade forcibly downward.

4,120,076
SYSTEM EMPLOYING A STRAP FOR STOWING CONTAINERS AGAINST A WALL
Charles Jean-Pierre Lebre, 35, rue de l'Orangerie, 91700 Ste Genevieve des Bois, France
Filed Apr. 7, 1977, Ser. No. 785,678
Claims priority, application France, Apr. 13, 1976, 76 10763
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—68 CD **4 Claims**



1. A system for stowing roll-containers against a wall, comprising a strap, an anchoring device for fastening a first end of the strap on the wall, and a tightener device engaging the strap adjacent its second end, said tightener device comprising:

a tubular casing comprising two parallel faces and two sides which connect said faces and form therewith a tubular conduit through which said strap extends, the strap extending freely from the anchoring device into the entrance at a first end of said conduit, the cross-section of said conduit increasing from said first end, each of said sides of said casing being extended outside said conduit and at the second end thereof opposite said first end of the conduit by an outwardly curved portion forming a hook directed towards said first end of the conduit, whereby each hook is adapted to be engaged against an element of a roll-container to be stowed;

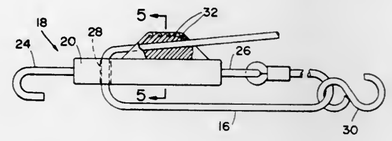
self-tightening means in said tightener device engaging said strap adjacent its second end;

a tensioning rotatable lever for actuating said self-tightening means, the strap in stowed position being tightened by rotating said lever in a first direction and said lever being constituted at least in two parts movable with respect to each other, one of said parts comprising the free end of the lever and being retractable after the strap has been tightened; and

locking means for holding the strap under tension after tightening thereof.

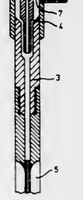
4,120,077
TIE-DOWN TENSIONING DEVICE
William F. Fink, Novato, Calif., assignor to Roberton & Schwartz, San Francisco, Calif.
Filed May 9, 1977, Ser. No. 795,298
Int. Cl. F16G *11/04*
U.S. Cl. 24—130 **8 Claims**

1. A tie-down tensioning device comprising a rigid body of cast polycarbonate plastic defining an elongated open-ended, open top channel, said channel tapering from minimum transverse dimensions at the bottom thereof to larger transverse dimensions at the open top thereof, said body having a metallic rod formed into a generally U-shape planar figure rigidly fixed thereto and projecting therefrom to provide attachment means at the opposite ends of said channel with the bottom of said U-shape projecting from said body at one end of said channel and the free ends of the legs thereof projecting from said body



at the other end of said channel and being formed to provide a hook means, and an opening through said body at one end of said channel having cross-sectional dimensions larger than said minimum transverse dimensions of said channel at the bottom thereof, the sides of said channel each being grooved to provide a plurality of elongated ridges extending from the bottom of said channel to the top of said channel inclined away from said opening.

4,120,078
SIMULTANEOUS TEXTURIZING AND ENTANGLING OF FILAMENT BUNDLES
Wolfgang Martin, Ludwigshafen; Wolfgang Bauer, Heidelberg; Dieter Herion, Frankenthal; Hermann Linge, Carlsberg, and Hans Knopp, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Dec. 22, 1976, Ser. No. 753,413
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558481; Jul. 19, 1976, 2632384
Int. Cl.[2] D02G *1/16, 3/34;* **D02J** *1/06*
U.S. Cl. 28—252 **6 Claims**



1. A process for the manufacture of texturized and entangled filament bundles from drawn or partially drawn filaments of synthetic high molecular weight materials, by passing said filaments, by means of a heated fluid, through a tubular first treatment zone, and thereafter through a second tubular treatment zone from which the fluid can escape radially through slots running in the lengthwise direction, wherein, on bringing together the heated fluid with the filament bundle to be treated, at the inlet to the first treatment zone, the flow velocity of the fluid is left substantially unchanged, and in the first treatment zone a volume mass flow factor

$$VM = \frac{G_{fl} + G_{gl}}{V_l}$$

of from 50 to 150 kg/m per m^3 is maintained, in which formula V_l is the volume of the filament guide tube expressed in units of length and G_{fl} is defined as

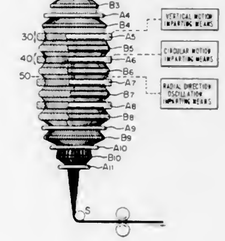
$$G_{fl} = G'_f \times \frac{1}{w_l}$$

and Gg_l is defined as

$$G'_g \times \frac{1}{w_g},$$

where G'_f is the amount of fluid and G'_g is the amount of filament passing per unit time, w_l is the flow velocity of fluid in the filament guide tube and w_g is the velocity of the filament bundle in the filament guide tube.

4,120,079
TOW OPENING APPARATUS
Masataka Yamaguchi; Saeko Yamaguchi, and Tadashi Ohokubo, all of Tokyo, Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan
Filed Oct. 11, 1977, Ser. No. 841,129
Int. Cl.[2] D01D *11/02*
U.S. Cl. 28—282 **5 Claims**



1. A filamentary tow opening apparatus, comprising:

a plurality of opening rings each having a plurality of small protrusions or ridges and valleys formed on the interior peripheral surfaces thereof,

a plurality of opening disks each having a plurality of small protrusions or ridges and valleys formed on the exterior peripheral surfaces thereof,

said plurality of opening rings and said plurality of opening disks being alternately disposed and vertically spaced apart from each other by a suitable distance, and

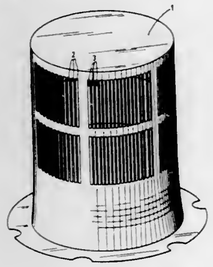
means for feeding tow filaments to, and discharging said filaments from, said plurality of rings and disks in alternate contact with the interior peripheral surfaces of said opening rings and the exterior peripheral surfaces of said opening disks, whereby said tow filaments are opened.

4,120,080

METHOD OF MANUFACTURING GRID ELECTRODES FOR ELECTRON TUBES

Johannes Wilhelmus Antonius Krol, Eindhoven, Netherlands; Bernhard Lersmacher, Aachen, and Horst Seifert, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1977, Ser. No. 776,254
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1976, 2613170
Int. Cl.[2] H01J 9/14
U.S. Cl. 29—25.18 10 Claims



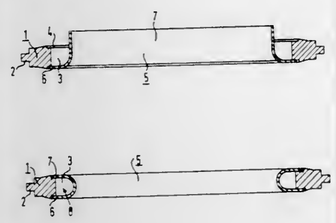
1. A method of manufacturing grid electrodes for electron tubes comprising the steps of depositing pyrolytic graphite by thermal decomposition of a carbonaceous gas on a mandril thereby to form a moulded body, separating the moulded body thus formed from the mandril, providing said body with grid-like apertures, and annealing said body at a temperature of 700° to 1200° C. for less than three minutes in an oxygen containing atmosphere.

4,120,081

MANUFACTURE OF PISTONS INCORPORATING A THERMAL BARRIER

Fritz Rösch, Schwabach, and Rudolf Zimmermann, Nuremberg, both of Germany, assignors to Alcan Aluminiumwerk Nürnberg GmbH, Germany

Filed May 26, 1977, Ser. No. 800,880
Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624412
Int. Cl.[2] B23P 15/10
U.S. Cl. 29—156.5 R 7 Claims



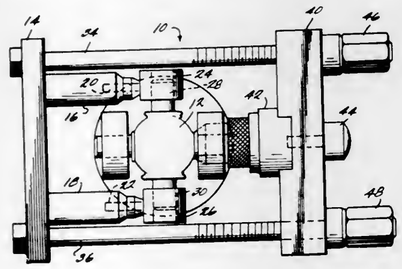
1. A method of producing a piston comprising
(a) forming a piston ring carrier insert by
(i) forming an annular steel member, having two opposite circumferentially extending edges, to be channel-shaped in radial cross-section, the channel facing radially outward, and
(ii) securing said opposite circumferentially extending edges of said annular member to axially opposite radially-inner inner edge portions respectively of an annular ferrous metal piston ring carrier body whereby an enclosed annular space is formed between the body and the annular member,
(b) treating the assembled insert to form an iron/aluminium alloy at the external surface of the insert,
(c) placing the treated assembled insert in a piston mould and
(d) casting aluminium in the mould to form the piston.

4,120,082

UNIVERSAL DRIVE SHAFT SERVICE KIT

William L. Bond, 510 Greenwood Rd., Linthicum Heights, Md. 21090

Filed Sep. 19, 1977, Ser. No. 834,662
Int. Cl.[2] B23P 19/04
U.S. Cl. 29—254 6 Claims



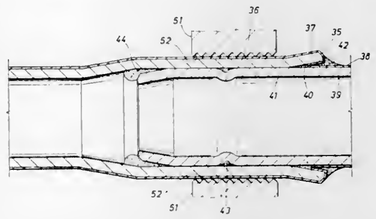
1. A tool for removing bearings having a nylon locking ring from the yoke of a constant velocity universal drive shaft without damaging the yoke comprising:
a stud support member;
a pair of yoke supports extending upwardly from said stud support member at separated locations to engage said yoke;
a pair of rods extending upwardly from said stud support member outside said yoke supports, and threaded on the end opposite said stud support member;
a top member having bores through which said rods extend;
means mounted on said top member for engaging said yoke about a bearing, and for receiving said bearing; and
thrust means engaging said threads on each said rod for applying a force to said top member to cause said nylon locking ring to shear and said bearing to move into said engaging and receiving means.

4,120,083

METHOD OF PIPE JOINING

Marvin C. Echols, Houston, Tex., assignor to Zap-Lok Systems International, Inc., Houston, Tex.

Filed Dec. 6, 1976, Ser. No. 747,726
Int. Cl.[2] B23P 3/00, 25/00
U.S. Cl. 29—458 7 Claims



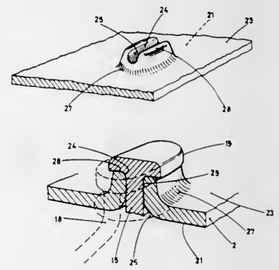
1. In a method of forming mechanical joints between tubular elements, of the type wherein a bell is formed in an end portion of one such element for receiving a pin end of the other element, the improvement comprising:
tapering inwardly one end of tubular member to form a pin end and enlarging one end of another tubular member to form a bell end sized to receive a pin end with an interference fit,
forming an annular groove on the exterior on a cylindrical wall portion of said pin end as near to said tapered end as practicable, and
applying a lubricant-sealant to one of said ends so as to fill the angular space between said tapered end and said annular groove upon formation of said joint, and inserting said pin end into said bell end in interference fit.

4,120,084

METHOD OF MAKING IMPROVED LUG AND HOLE CONNECTION BETWEEN SHEET METAL ELEMENTS

Knut Olof Lennart Wallman, Fergas AB, Oskarsgatan 10, S-582 21 Linköping, Sweden

Filed May 11, 1977, Ser. No. 795,859
Claims priority, application Sweden, May 12, 1976, 7605383
Int. Cl.[2] B23P 11/00
U.S. Cl. 29—509 5 Claims



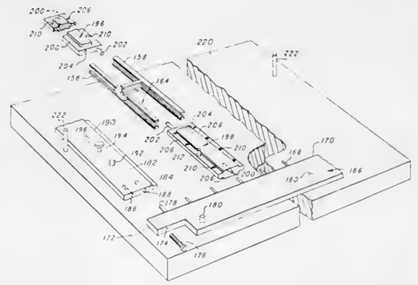
1. The method of making a permanent connection between a first sheet metal element having inner and outer surfaces and a second sheet metal element having an integral lug projecting lengthwise outwardly beyond an end edge thereon, whereby the elements are disposed substantially normal to one another with said end edge on the second element engaged along its length against the inner surface of the first element and with said lug projecting lengthwise through a hole in said first element, said method being characterized by:
A. forming the hole in the first element by
(1) applying outward force to the inner surface of said first element along a line segment having a length no greater than the width of the lug, while
(2) applying inward force to the outer surface of said first element around a circular zone circumscribing said line segment, to form the hole without removal of material from the first element, and to produce out-turned wall portions at opposite sides of the hole and a convexly rounded surface between the inner surface of each wall portion and the adjacent undeformed portion of the inner surface of the first element, and
(3) said hole being so formed that the distance between said out-turned wall portions is slightly less than the thickness of the second element;
B. so forming the second element that the lug thereon has a length greater than the projected distance from the inner surface of the first element to the outer edges of said wall portions;
C. inserting the lug into the hole in the direction from the inner towards the outer surface of the first wall element until said end edge on the second element is engaged against the inner surface of the first element; and
D. by applying substantially endwise force to the projecting end portion of the lug over substantially the entire end area thereof, forming a laterally enlarged head thereon which firmly engages the outer edges of said wall portions, but terminating the application of such endwise force before substantial reworking of said wall portions occurs.

4,120,085

BEAM TYPE PLANAR ARRAY ANTENNA METHOD OF FABRICATION

Robert K. Peterson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 547,899, Feb. 7, 1975, Pat. No. 3,987,451.
This application Aug. 6, 1976, Ser. No. 712,425
Int. Cl.[2] H01Q 13/10; H01P 11/00
U.S. Cl. 29—600 2 Claims



1. A method of fabricating a planar array antenna comprising:
(a) configuring an antenna back plate with a plurality of series slots from a sheet of antenna forming material;
(b) configuring an antenna front plate with a plurality of shunt slots from a sheet of antenna forming material;
(c) positioning the back plate on a jig base plate;
(d) positioning a cavity templet on the jig base plate to define flanged beam bonding areas on the back plate, and coating the flanged beam bonding areas of the back plate with a bonding primer;
(e) replacing the back plate with the front plate and positioning the cavity templet on the jig base plate to define flanged bonding areas on the front plate, and coating the flanged bonding areas of the front plate with a bonding primer;
(f) coating top and bottom surfaces of a plurality of flanged members with a primer coat, attaching strips of bonding material, and inserting them through the open end of a jig along a plurality of cavity forming mandrels to position the flanges of the flanged beams to mate with the flanged bonding areas of the front and back plates, and closing the open end of the jig to lock the flanged members and mandrels into position in the frame;
(g) positioning the jig carrying the flanged beams on the jig base plate over the front plate, and positioning the back plate, with the flanged beam area facing down, over the jig carrying the flanged beams;
(h) positioning a manifold templet on the jig base plate to define the manifold bonding area on one side of the back plate, coating the manifold area of the back plate with a bond primer, and removing the manifold templet;
(i) positioning the manifold on the back plate with the open faced waveguides facing down and in alignment with the primed manifold open faced areas of the back plate;
(j) placing pressure plates within areas defined by the manifold waveguides to lock the manifold components into position;
(k) placing the jig bearing the array into a vacuum bag and

drawing a vacuum to exert a uniform force on the front and back plates;

(l) heating the bag to a bonding temperature to bond the manifold to the back plate, and the back and front plates to the flanged beams; and

(m) removing the array antenna from the jig and the mandrels from the cavities of the array antenna and attaching shorting bars to close the open ends of the cavities of the array antenna.

4,120,086

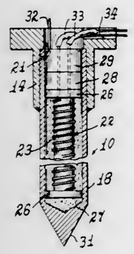
METHOD OF MAKING ELECTRICALLY HEATED NOZZLE

Walter R. Crandell, Addison, Ill., assignor to Fast Heat Element Manufacturing Co., Elmhurst, Ill.

Continuation-in-part of Ser. No. 516,618, Oct. 21, 1974, Pat. No. 3,970,821. This application Jul. 16, 1976, Ser. No. 705,996

Int. Cl.[2] **H05B** *3/00*

U.S. Cl. 29—611 **14 Claims**



1. The method of making an integral heated torpedo for a molding nozzle which comprises winding a wire resistor upon a core having an opening therein extending the length thereof, extending a lead wire through said opening, connecting the end of said wire resistor to said lead wire, placing a ceramic spacer at each end of said core, inserting the core and spacers unsheathed into the open bore of a casing comprising a torpedo body closed at one end, filling the bore with heat transfer electrical insulation material to fill all voids in said bore between said core and spacers and said casing, placing an insulated washer in the open end of the bore, swaging the casing to reduce the diameter thereof and to pack the insulation material tightly around the core and in all gaps in the bore, and shaping the closed end of the casing.

4,120,087

METHOD OF SECURING A BATTERY TERMINAL TO AN EXTERNAL WALL

Keith John Bruce McEwan, Solihull, England, assignor to Joseph Lucas (Batteries) Limited, Birmingham, England

Continuation of Ser. No. 514,941, Oct. 15, 1974, abandoned, which is a division of Ser. No. 336,711, Feb. 28, 1973, abandoned. This application Sep. 17, 1976, Ser. No. 724,458

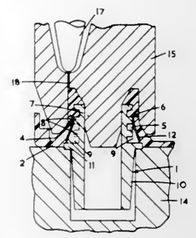
Int. Cl.[2] **H01M** *2/16*

U.S. Cl. 29—623.2 **3 Claims**

1. A method of securing a battery terminal bushing to an external wall of an electric storage battery, said external wall being formed of a synthetic thermo plastic material, said method including the steps of:

locating one end of the terminal busing in an aperture in said external wall, there being a clearance between the bushing and said wall, said wall including an integral annular ridge extending around said aperture;

partially melting said integral annular ridge adjacent to said molten filler material by injection molding a molten synthetic plastic filler material into said clearance; and



allowing said filler material to cool and solidify forming a liquid-tight joint between said filler material and said integral annular ridge.

4,120,088

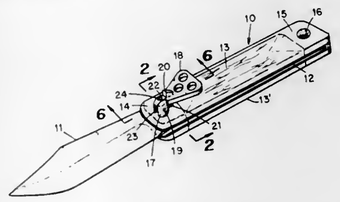
KEY-LOCK KNIFE

Paul S. Phelps, 1306 Woodlawn Dr., Maryville, Tenn. 37801

Filed Oct. 11, 1977, Ser. No. 840,611

Int. Cl.[2] **B26B** *1/04*

U.S. Cl. 30—160 **3 Claims**



1. An improved knife of the type wherein a blade is secured to a rotatable blade pivot passing transversely through a knife handle, and a turning key is connected to said blade pivot exterior to said knife handle with a second pivot whereby said blade may be moved from a position within said knife handle to an extended position substantially aligned with said knife handle, the improvement which comprises:

said blade pivot being provided with an axial bore, said bore having a closure at an end opposite said turning key;

a detent element mounted coaxially within said bore, wherein said detent element comprises a helical spring within said bore in contact with said closure and a spherical ball at a second end of said bore in contact with said spring; and

a cylindrical end surface on said turning key having an axis coexistent with an axis of said second pivot, said cylindrical surface being provided with a plurality of semispherical depressions to receive a portion of said spherical ball in specific pivoted positions of said turning key about the axis of said second pivot.

4,120,089

VEGETABLE AND FRUIT-SLICING UTENSILS

Alfred Börner, Pickliessemer Str. 3, 5521 Dudeldorf, Fed. Rep. of Germany

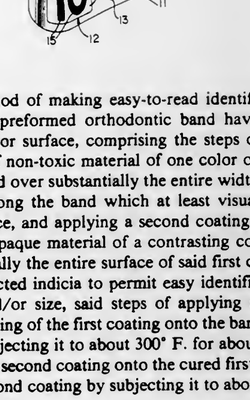
Filed Mar. 17, 1977, Ser. No. 778,597

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2611879; Mar. 24, 1976, 2612362

Int. Cl.[2] **B26B** *3/00*

U.S. Cl. 30—278 **20 Claims**

1. In a kitchen utensil for cutting vegetables, fruit and the like into portions such as slices, such utensil including two opposite rails, a back plate carried by the rails, a removable front plate between the rails having a surface generally parallel to and spaced from a surface of the back plate and a slicing blade between the two plates having a cutting edge at least part of which lies in the same plane as a surface of the back plate,



the improvement comprising the removable front plate having on its underside bearers each containing at least one step, and supporting ledges projecting inwardly from the rails for supporting said bearers.

4,120,090

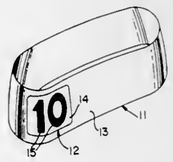
ORTHODONTIC BAND WITH IDENTIFICATION AND METHOD OF MAKING THE IDENTIFICATION

Peter C. Kesling, Green Acres, LaPorte, Ind. 46350

Continuation-in-part of Ser. No. 628,332, Nov. 3, 1975, abandoned. This application Mar. 15, 1977, Ser. No. 777,667

Int. Cl.[2] **A61C** *13/22*

U.S. Cl. 32—14 A **1 Claim**



1. The method of making easy-to-read identification for a stainless steel preformed orthodontic band having a highly polished exterior surface, comprising the steps of applying a first coating of non-toxic material of one color onto the exterior surface and over substantially the entire width of the band at one area along the band which at least visually dulls the polished surface, and applying a second coating of non-toxic substantially opaque material of a contrasting color onto and over substantially the entire surface of said first coating in the form of a selected indicia to permit easy identification of the band type and/or size, said steps of applying said coatings including printing of the first coating onto the band, curing the coating by subjecting it to about 300° F. for about 15 minutes, printing of the second coating onto the cured first coating, and curing the second coating by subjecting it to about 300° F. for about 15 minutes.

4,120,091

DEVICE FOR ESTIMATED AIR NAVIGATION, OBTAINED THROUGH THE COMBINATION OF VARIOUS MEASURING AND CALCULATING INSTRUMENTS

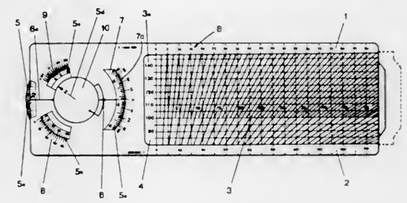
Augusto Borgato, Via Casalini 5, Rovigo, Italy (45100)

Filed Dec. 3, 1976, Ser. No. 747,157

Claims priority, application Italy, Dec. 29, 1975, 64509 A/75

Int. Cl.[2] **G01C** *21/20*

U.S. Cl. 33—15 B **13 Claims**



1. Instrument for estimated air navigation comprising a base member, scalimetric rulers extending along two parallel longitudinal borders of said base member, a rotatable member located on said base member inwardly of said longitudinal borders, a circular logarithmic slide rule having a first scale on said base member and a second scale on said rotatable member, a first goniometer connected to the rotatable member of said slide rule and having a marking which is alignable with meridians on a chart, an index mark on said base adjacent to said first goniometer, said first goniometer having course-indicating markings adjacent to and alignable with said index mark, said first goniometer being transparent and rotatable with the rotatable member to align the marking with meridians on a chart, a chronometric nomograph on said base member in spaced relation to said first goniometer, a polar grating on said base member, a slider mounted on said base member for translatory movement thereon and a second goniometer supported by and rotatable on said slider, said second goniometer being transparent and having scales thereon overlying said polar grating.

4,120,092

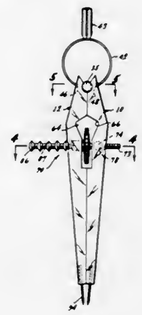
PLASTIC INJECTION MOLDED BOW COMPASS

Goodwin F. Hanson, 4640 W. 118th St., Hawthorne, Calif. 90205

Filed Apr. 11, 1977, Ser. No. 786,516

Int. Cl.[2] **B43L** *9/22*

U.S. Cl. 33—27 B **3 Claims**



1. A compass or divider comprising first and second leg members having a pivotal relationship to each other, a stem extending between the leg members providing for angular adjustment of said leg members toward and away from each other, said stem having threaded means at one end, said first

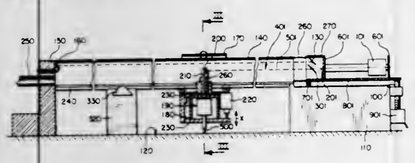
leg member having threaded means rotatably mounted thereon, said threaded end of said stem being threadly engaged in said threaded means to allow pivoting of said stem about the rotation axis of said threaded means, said second leg being provided with a keyhole shaped opening having a larger part and a smaller part, the other end of said stem having a diameter which will fit into the smaller part of said opening and having spaced parts of a larger diameter to fit into said larger part of said opening, said stem being pivoted with said threaded means with respect to said first leg and directly connected to said second leg via said opening and said larger diameter parts for coarse adjustment of said first leg with respect to said second leg and said stem is rotated about its axis for fine adjustment via said threaded engagement.

4,120,093

PLANAR MEASURING INSTRUMENT

Alfons Spies, Munich, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Oct. 21, 1976, Ser. No. 734,536
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1975, 2547478; Jun. 5, 1976, 2625489
Int. Cl.[2] G01B 7/34
U.S. Cl. 33—174 P **30 Claims**



1. A measuring instrument for measuring the extent to which the surface of an object deviates from a reference line comprising:

means for generating a substantially collimated light beam which defines the reference line;

means for measuring the position with respect to the reference line of the surface of the object along a measuring direction;

detection means associated with the measuring means adapted to detect the light beam and to register the deviation along the measuring direction of the measuring means from the light beam; and

position adjusting means responsive to the detection means adapted to adjust the position of the measuring means automatically to substantially eliminate the deviation.

4,120,094

MEASURING DEVICE FOR SPAGHETTI OR THE LIKE

Peter Pfaelzer, 50 Larry La., Oakland, Calif. 94611

Filed Feb. 14, 1977, Ser. No. 768,092
Int. Cl.[2] G01B 5/00, 5/26
U.S. Cl. 33—174 T **3 Claims**

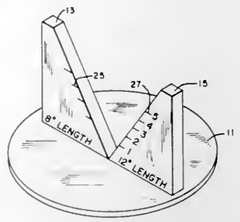
1. A measuring device particularly adapted for measuring uncooked spaghetti or the like comprising

a base member having a generally planar horizontally disposed upper surface wherein said base member is sized and shaped such that the hard spaghetti sticks or other noodles may be placed thereon and supported thereon substantially parallel to said upper surface,

a pair of upright support members mounted on said base for permitting the spaghetti sticks or other noodles to be stacked vertically on said base between said members to at least the top thereof, and

indicia disposed on at least one surface of at least one of said upright support members for indicating the number of individual servings of spaghetti or other noodles stacked upon said base.

3. A measuring device particularly adapted for measuring uncooked spaghetti or the like comprising a base member and a pair of upright support members secured to said base member, said pair of upright support members having opposed faces angled with respect to each other wherein said base member



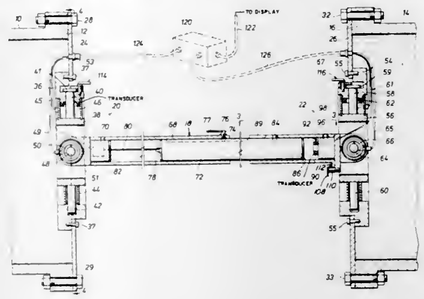
and said pair of upright support members are formed to receive and support hard spaghetti sticks or other generally straight noodles in horizontally oriented positions in a vertically stacked arrangement between said pair of upright support members, said measuring device further comprising measuring indicia disposed on at least one surface of at least one of said upright members for indicating the amount of spaghetti or other noodles disposed between said upright support members.

4,120,095

METHOD AND APPARATUS FOR DETERMINING THE SPATIAL RELATIONSHIP BETWEEN TWO MISALIGNED TUBULAR MEMBERS

Maurice P. Lebourg, One Greenway Plaza East Suite 428, Houston, Tex. 77046

Continuation-in-part of Ser. No. 609,196, Sep. 2, 1975, abandoned. This application Aug. 10, 1976, Ser. No. 713,281
Int. Cl.[2] G01B 3/38
U.S. Cl. 33—180 R **28 Claims**



4. A method of determining the spatial relationship between two misaligned pipes comprising the steps of:

placing a frame including a gimbal assembly on each pipe end to define, with respect to a known reference point on each pipe, a pair of three-axis orthogonal coordinate systems having their respective origins at known positions relative to the centers of the two pipe faces, a first coordinate system having a pair of mutually perpendicular X, Z axes defined by the axes of the first gimbal assembly and lying in a plane parallel to the first pipe face and a Y axis defined by the centerline of the first pipe, and a second coordinate system having a pair of mutually perpendicular X', Z' axes defined by the axes of the second gimbal assembly and lying in a plane parallel to the second pipe face and a Y' axis defined by the centerline of the second pipe;

measuring by direct readings the following geometric parameters:

(a) the center-to-center distance between the origins defining a line segment, L_1;

(b) the angular displacement, θ, of L_1 about the Z axis;

(c) the angular displacement, ϕ, of L_1 about the X axis;

(d) the angular displacement, θ', of L_1 about the Z' axis;

(e) the angular displacement, ϕ', of L_1 about the X' axis; and

(f) the angular displacement, γ, between axes X, Z and axes X', Z' as projected onto a plane perpendicular of L_1.

21. An apparatus for determining the spatial relationship between two misaligned pipes having substantially planar ends and for identifying on each face of an interconnecting spool a point which will coincide after assembly with a known point on the face of each pipe, comprising:

a pair of frames adapted for attachment to the pipe ends and having aligning means for referencing the orientation thereof with respect to a known point on the pipe;

first and second gimbal assemblies each mounted on a frame and defining a three axis orthogonal coordinate system having two mutually perpendicular axes lying in a plane parallel to the face of the end;

a staight extensible connector member connected at its end to said first and second gimbal assemblies to define a straight line between the gimbal assemblies;

said connector member having means capable of defining and retaining a known displacement of one gimbal system with respect to the other;

a transducer for each gimbal axis for registering the rotation of said member about the two axes of the respective gimbal assemblies when the gimbals thereof are positioned for connection to said member;

a fifth transducer for registering the length of said extensible member when connected between the gimbal assemblies; and

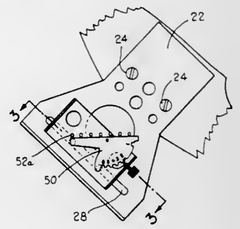
means for transmitting the values of the parameters registered by said transducers to a read-out device at a remote location.

4,120,096

BOW SIGHT

Charles R. Keller, 411 Old Evans Rd., Martinez, Ga. 30907

Filed Jun. 13, 1977, Ser. No. 805,743
Int. Cl.[2] F41G 1/02
U.S. Cl. 33—265 **4 Claims**



1. A sight for use on a bow for aiding an archer in sighting on a target from both an elevated and level shooting position, said sight comprising:

an elongated sighting element having at least one sighting bead thereon,

means for pivotally mounting said elongated extending sighting element on a horizontal axis,

said sighting element being balanced about said horizontal axis so that said bead pivots about said horizontal axis as said bow is tilted for automatically determining the proper elevation of said bow when shooting from an elevated position,

said elongated sighting element including:

(i) an arcuate surface adjacent a bottom portion thereof,

(ii) a plurality of slots spaced about said arcuate surface, and

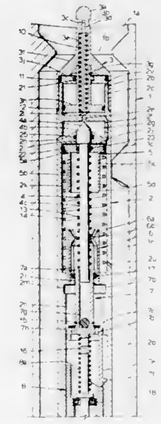
means for inserting a locking element in one of said slots for locking said elongated sighting element in a predetermined position about said horizontal axis.

4,120,097

PULSE TRANSMITTER

John Doise Jeter, 201 W. Clara, Iowa Park, Tex. 76367

Filed Oct. 2, 1974, Ser. No. 511,218
Int. Cl.[2] E21B 47/022
U.S. Cl. 33—307 **16 Claims**



1. A device to create pressure pulses in fluid moving in a pipe string for use in earth bore hole related operations to transmit information to the earth surface from a down hole assembly attached to a pipe string comprising; first valve means supported in the pipe string through which at least part of the fluid flows to change the resistance to flow to produce periodic pressure pulses in said fluid by movement to and from a first position of generally more flow restriction and a second position of generally less flow restriction, moving means to move said first valve from said first position to said second position, actuator means having a second valve positionable in two positions to control the movement of the moving means, said actuator means also having means responsive to the fluid pressure differential across the first valve means to move the second valve means to one of said two positions at a repetition rate and thus control the movement of the moving means to cycle at said repetition rate to constantly cycle the first valve means between said first and second positions, sensor means to sense at least one downhole condition, regulator means responsive to the output of said sensor to control the cyclic repetition rate of said actuator means so that the pressure pulses periodically produced in the fluid will have a repetition rate that is proportional to the output of said sensor.

4,120,098

SOLVENT EXCHANGE DRYING OF MEMBRANES FOR GAS SEPARATION

Philip Manos, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 22, 1976, Ser. No. 698,695
Int. Cl.[2] B01D 31/00
U.S. Cl. 34—9 **6 Claims**

1. In the process for drying a semipermeable, polymeric membrane that is wet with an aqueous membrane-wetting liquid by contacting the wet membrane with at least one re-

placement liquid inert to the membrane and to the membrane-wetting liquid to remove water from the membrane and removing the replacement liquid from the membrane; the improvement which comprises contacting, at a temperature of about from −50° C. to 50° C., said wet semipermeable polymeric membrane in which the polymer has a Critical Surface Tension of at least about 42 dynes per centimeter with at least one replacement liquid consisting essentially of at least one organic solvent which is selected from the class consisting of an aliphatic alcohol having 1–3 carbon atoms, acetonitrile, and an aqueous solution thereof, and in which the organic solvent is capable of penetrating the membrane and has a surface tension of less than about 35 dynes per centimeter at 20° C., and a hydrogen bonding parameter of at least about 1.5 (calories per cubic centimeter)$^{\frac{1}{2}}$, and wherein the relative surface tension of the membrane wetting liquid, the concentration of the solvent in the replacement liquid and the viscosity and the molar volume of the organic solvent are such as to provide a Permeation Factor less than or equal to about 50, provided, however, that when the temperature of contact is about from 20° C. to −50° C., the Permeation Factor is less than or equal to about 100 − 2.5 T, wherein T is the temperature of contact in degrees centigrade; and after water has been substantially completely removed from the membrane, evaporating the replacement liquid to obtain a membrane free of water and replacement liquid.

4,120,099

APPARATUS FOR TRAINING THE TELECONTROL OF A MODEL HELICOPTER OR THE LIKE

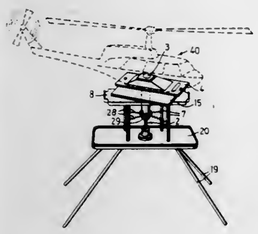
Helmut Fett, Lovenicher Weg 15, 5000 Cologne 41, Fed. Rep. of Germany

Filed Mar. 31, 1977, Ser. No. 783,281

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613734

Int. Cl.^{2} G09B *9/08*

U.S. Cl. 35—12 K **23 Claims**



1. Apparatus for training remote control of a powered model helicopter comprising a base plate, a generally upright telescopic support having upper and lower end portions, first means connecting said lower end portion to said base plate, an assembly plate adapted to have a model remote controlled helicopter secured thereto, second means in the form of a universal joint connection between said upper end portion and said assembly plate whereby a model helicopter under power secured to said assembly plate is capable of roll, yaw and pitch motions, said upright telescopic support upper and lower end portions being defined respectively by a sleeve and a rod, said rod being secured to said base plate by said first connecting means, and means removably securing a portion of said second universal joint connecting means to said sleeve.

4,120,100

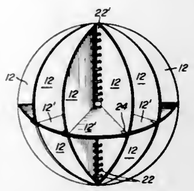
EDUCATIONAL BOOK

Judith A. Dugan, Santa Barbara, Calif., assignor to David S. Magee, Flint, Mich., a part interest

Filed Jan. 13, 1977, Ser. No. 759,195

Int. Cl.^{2} B44F *7/00*

U.S. Cl. 35—73 **13 Claims**



1. An educational book comprising:

a plurality of pages having adjacent edges;

fastening means for holding the pages together along the adjacent edges for turning movement relative to each other;

means for interconnecting adjacent pages to assemble the book into a three-dimensional object, the interconnecting means including a flap portion extending from one surface of each page, the flap portion having spaced side walls connected along at least portions of the periphery thereof to define a pocket therebetween, the opening of each pocket communicating with the other surface of the page through said page and receiving at least portions of the flap portion of the rearwardly adjacent page thereinto to hold the pages together; and,

wedge means disposed between the spaced side walls of each flap portion for providing an enlarged pocket between said spaced side walls.

4,120,101

ORTHOPAEDIC FOOTWEAR

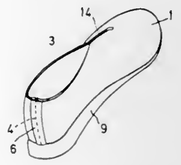
John Alan Drew, 433 Uxbridge Rd. Ealing, London W.5., England

Filed Dec. 15, 1976, Ser. No. 750,716

Claims priority, application United Kingdom, Jul. 7, 1976, 28295/76

Int. Cl.^{2} A43B *1/10, 23/00*

U.S. Cl. 36—4 **9 Claims**



1. An article of orthopedic footwear adapted to be selectively modified to conform to the foot of the wearer having a sole, an upper sheet of thermosoftening material secured to the sole, the upper sheet having two edges permanently joined at a seam, strip of thermosoftening material having edges that are welded to the outer surface of the upper sheet covering the seam, the article having means allowing trimming of the article to selectively modify the article to conform to the foot of the wearer and to retain the structural integrity and modified shape of the article when so modified.

4,120,102

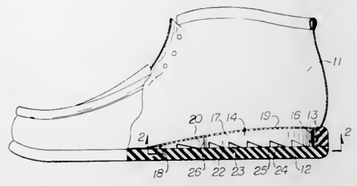
HEEL PAD WITH RADIAL RIBS

Robert H. Kenigson, 601 Pisces La., Foster City, Calif. 94409

Filed Apr. 21, 1977, Ser. No. 789,510

Int. Cl.^{2} A43B *19/00, 21/32, 7/24*

U.S. Cl. 36—71 **5 Claims**



1. A removable insert pad shaped and dimensioned to fit inside the heel of a conventional shoe from the back of said shoe to about the beginning of the arch, said pad being formed of a resilient material, the top surface of said pad being smooth, the underside of said pad being formed with a plurality of ribs cut into said underside radiating outward from a position near the middle of the wearer's heel extending out to the margin of said pad, each said rib being deformable under the weight of the wearer's heel to flex in a direction tending to twist the heel from the wearer's opposite foot, the back edge of said pad being rounded to conform to the inside of the back of said shoe, the side edges being parallel to each other and the front edge being transverse to said side edges, the width of said ribs increasing proceeding outwardly from the center of said pad.

4,120,103

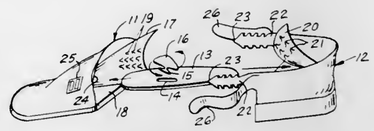
DISPOSABLE BOWLING SHOE

Robert D. Colby, 280 W. State St., Montrose, Mich. 48457

Filed Sep. 22, 1977, Ser. No. 835,778

Int. Cl.^{2} A43B *3/26, 5/00*

U.S. Cl. 36—97 **3 Claims**



1. A disposable bowling shoe, comprising a toe portion with an inner sole secured at one longitudinal side edge, an adjustable arch support received within said toe portion, a heel portion, and an inner sole secured at one longitudinal side edge within said heel portion; said arch support including a tab having a T-shaped tongue, said tongue being received within and rotated within an elongated slot of said arch support, said tab comprising an adjustable arch member so to fit all sizes of feet, and when one end of said arch support is received within said toe portion and the other end is received within said heel portion beneath said inner soles of said toe portion and heel portion, said inner soles are folded downwards and the wearer, by applying pressure, with his foot, will cause a plurality of pointed and spaced-apart tabs of said inner sole to puncture the ends of said arch support, and thus render said arch support secure within said shoe.

4,120,104

SHOE FOR CROSS-COUNTRY SKIING

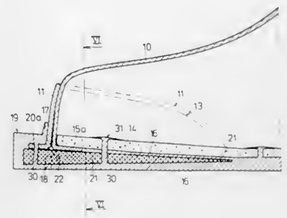
Raimo Juhani Lasmo, Espoo, Finland, assignor to Karku-Titan Oy, Finland

Filed Mar. 3, 1977, Ser. No. 774,144

Claims priority, application Finland, Mar. 9, 1976, 760599

Int. Cl.^{2} A43B *5/04*; A43C *13/08*

U.S. Cl. 36—117 **5 Claims**



1. In a shoe, such as a shoe for cross-country skiing, an upper, an insole fixed thereto, and an outsole in the form of a casting, the improvement wherein said upper has at a front tip region a layer of sheet material having an outer surface situated at the exterior of the shoe with said layer of sheet material having an outwardly extending lower edge region embedded in said outsole, said outwardly extending lower edge region being formed with at least one aperture through which part of said outsole extends, said upper also having an inwardly extending lower edge region fastened to said insole with said insole and inwardly extending edge region being formed with an aperture passing therethrough and filled with material of said outsole.

4,120,105

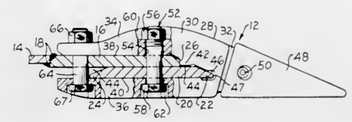
BUCKET ADAPTER WITH LOAD ABSORBING MEANS

Visvaldis A. Stepe, Willow Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 15, 1977, Ser. No. 824,599

Int. Cl.^{2} E02F *9/28*

U.S. Cl. 37—142 R **15 Claims**



1. An earthworking implement, comprising:

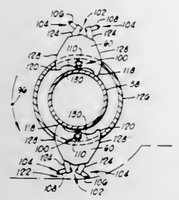
(a) a support plate having one forward end;

(b) a cutting edge extending forwardly of said one forward end of said support plate and having one forward cutting end;

(c) a tooth adapter having rearwardly extending upper and lower legs forming a cavity therebetween, said support plate and said cutting edge extending into said cavity, said adapter having an integral load-absorbing shoulder extending into said cavity and abutting said one forward end of said support plate; and

(d) means for securing together said support plate, said cutting edge, and said legs.

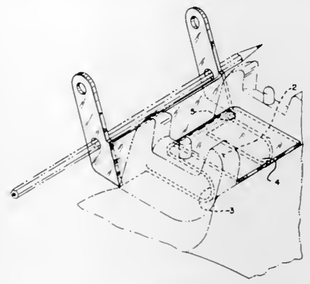
4,120,106
SIDEBANK EXCAVATOR WITH ROTATING VERTICAL CUTTER ASSEMBLY
Donald Wayne Smith, Edmond; George W. Swisher, Jr., Oklahoma City, and Larry W. Teel, Yukon, all of Okla., assignors to CMI Corporation, Oklahoma City, Okla.
Filed Apr. 14, 1977, Ser. No. 787,629
Int. Cl.[2] E02F 3/24; B65G 57/00
U.S. Cl. 37—190 **6 Claims**



1. In a sidebank excavator movable in a first transverse direction along and adjacent to an embankment and in a second transverse direction substantially opposite to the first transverse direction, the excavator having a conveyor assembly for conveying particulate material deposited on a receiving portion thereof to a discharge portion thereof remote from the receiving portion, the improvement comprising:
an elongated cutter support assembly having a lower end connected to the excavator adjacent to the receiving portion of the conveyor assembly for rotation about the longitudinal axis of the cutter support assembly, and an upper end connected to the excavator with the longitudinal axis of the cutter support assembly extending upwardly from the lower end thereof;
means for rotating the cutter support assembly about the longitudinal axis thereof in a selected one of a first rotary direction and a second rotary direction substantially opposite to the first rotary direction;
a cutter having an inner end pivotally connected to the periphery of the cutter support assembly and an outer end disposed radially outwardly of the inner end thereof relative to the axis of the cutter support assembly, the cutter having an earth engaging portion extending generally outwardly from the outer end thereof relative to the axis of the cutter support assembly with a first tooth extending generally orthogonal to the axes of the cutter and the cutter support assembly generally in the first rotary direction, and a second tooth extending generally orthogonal to the axis of the cutter and the cutter support assembly but substantially opposite to the first tooth, the cutter being rotatable about the inner end thereof in a first pivotal direction to decrease the radial distance between the second tooth and the cutter support assembly relative to the radial distance between the first tooth and the cutter support assembly, and in a second pivotal direction to decrease the radial distance between the first tooth and the cutter support assembly relative to the radial distance between the second tooth and the cutter support assembly; and
means for preventing the introduction of particulate material into the pivotal connection between the cutter and the cutter support assembly.

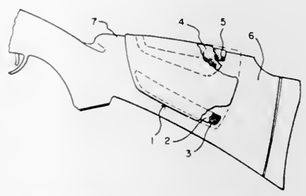
4,120,107
TELEPHONE BRACKET FOR HOLDING ADVERTISING AND WRITING INSTRUMENT
Michael P. Bukowsky, 6942 Birdie La., St. Louis, Mo. 63129
Filed Dec. 8, 1976, Ser. No. 748,509
Int. Cl.[2] G09F 3/00
U.S. Cl. 40—336 **4 Claims**

1. A bracket for use in conjunction with a telephone and designed for rotatably supporting a collection of advertising cards in addition to holding a writing instrument comprising a base member, a panel connecting to said base member and extending angularly at an obtuse angle upwardly from said base member, a pair of arms, one of each arm connecting to said panel at a side thereof and projecting upwardly beyond said panel, each arm having an aperture provided through its proximate upper end and designed for accommodating the rotatable support of the advertising cards therein, a slot provided in each arm below the said upper arm apertures and at a distance providing clearance from any cards held by the said



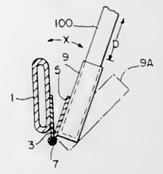
rotatable support, the slot in each arm comprising an aperture, and said apertures being aligned for holding a writing instrument therethrough, a retainer, an integrally curved portion connecting said base member and said retainer together, said base member, retainer, and their integrally curved portion provided for clamping onto the telephone to thereon display the rotatable advertising cards and dispose its held writing instrument for convenient usage, and a double faced adhesive tape attaching to the underside of the base member and capable of securing the backet to a supporting surface.

4,120,108
GUN STOCK COVERS
Charles K. Vickers, and Patricia A. Vickers, both of 160 Friar La., McMurray, Pa. 15317
Continuation-in-part of Ser. No. 669,199, Mar. 19, 1976, abandoned. This application Jun. 24, 1977, Ser. No. 809,906
Int. Cl.[2] F41C 23/00
U.S. Cl. 42—74 **7 Claims**



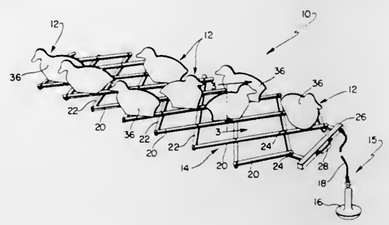
1. A cover for a gun stock including a comb comprising a pad of flexible material dimensioned to cover the comb and depend therefrom along both sides of the gun stock short of the bottom thereof, a layer of flexible material affixed to the under side of the pad, and mating quick connect-disconnect separable fastener elements, one such fastener element being affixed to each lower edge of the pad and one such mating fastener element being affixed to the gun stock on each side thereof.

4,120,109
EXTENDED MAGAZINE HOLDER
Daniel Dennis Musgrave, 8201 Caraway St., Cabin John, Md. 20731
Filed Aug. 2, 1977, Ser. No. 821,246
Int. Cl.[2] F41C 27/00
U.S. Cl. 42—90 **7 Claims**



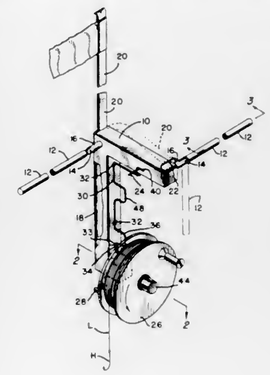
1. A device for holding a cartridge magazine in an extended position comprising releaseable means adapted for engagement with said magazine near a base of said magazine and a structure supported on the person of a user and positionally adapted for support of said means, said means being adapted for said engagement while said magazine is inserted into a magazine receptacle of a firearm.

4,120,110
DUCK DECOY
Anthony Aeschliman, Berkley St., Berkley, Mass. 02780
Filed Feb. 14, 1977, Ser. No. 768,482
Int. Cl.[2] A01M 31/06
U.S. Cl. 43—3 **9 Claims**



1. A decoy assembly comprising a longitudinally oriented support having upper and lower surfaces adapted for relative respective movement between collapsed and laterally expanded positions, a plurality of decoy members each including a substantially flat body having a profile in the form of a duck or the like, said decoy members being attached in an upright attitude to portions of said upper surface only and in an overall pattern with at least some of said members being laterally displaced from each other, at least some of said members being pivotal about individual upright axes with respect to said support, whereby said decoy members are longitudinally aligned in closely spaced lateral relationship in said collapsed position and pivotal about said upper surface in said expanded position so as to assume varying rotational positions with respect to said overall pattern, said support being a lazy-tong unit including a first set of substantially parallel longitudinally oriented laterally spaced elongated elements defining said upper surface and a second set of substantially parallel longitudinally oriented laterally spaced elongated elements underlying said first set thereof and defining said lower surface, said sets of elements crisscrossing over one another with at least some vertically adjacent elements in said respective sets thereof being pivotally interconnected to each other so that said support may be moved in an overall single accordian fashion motion between said collapsed and expanded positions, while maintaining said parallel disposition of the elements of respective sets thereof in parallel disposition to each other, said assembly being adapted to float in use upon a body of water and said lazy-tong unit enabling separate longitudinally spaced portions thereof to upwardly flex from the unit as a whole so as to enable an undulating movement responsive to wavelike motion of said body of water to occur in said assembly while floating.

4,120,111
ICE-FISHING TIP-UP
Russell L. Young, Jr., 424 Washington St., Boonton, N.J. 07005
Filed Jul. 30, 1974, Ser. No. 493,167
Int. Cl.[2] A01K 97/12
U.S. Cl. 43—17 **4 Claims**

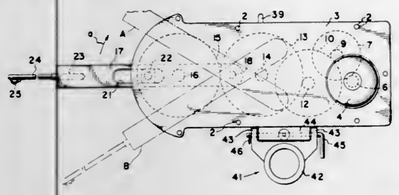


1. An ice-fishing tip-up, comprising:
a body;
a reel for storage, pay-out, and retrieval of line;
said reel being coupled to said body for rotation in one direction for line retrieval and for rotation in an opposite direction for line pay-out;
a plurality of support limbs pivotally coupled to said body;
a resilient, tip-up signalling indicator coupled to said body;
means carried by said body for holding said indicator in a non-signalling position; and
means carried by said reel and said body cooperative for releasing said indicator from said holding means; wherein
said body has a support extending therefrom in cantilever fashion;
said reel is rotatably mounted on said support;
said support is threaded; and further including
means for securing said reel on said support; wherein
said securing means is threaded for threadedly engaging said support;
said securing means, upon being threadedly engaged with said support and torqued, with a selective force, in said one direction, is urged against a surface of said reel for adjustably constraining said reel against rotation with a selective constraint; and
said constraint-effecting securing means, responsive to a forced rotation of said reel in said opposite direction, also rotates in said opposite direction to immediately and incrementally release said selective constraint of said reel.

4,120,112
APPARATUS FOR AGITATING A FISHING LINE
Alexander J. McBain, 5395 Frovan, Saginaw, Mich. 48603
Filed Oct. 18, 1976, Ser. No. 733,035
Int. Cl.[2] A01K 87/00
U.S. Cl. 43—19.2 **9 Claims**

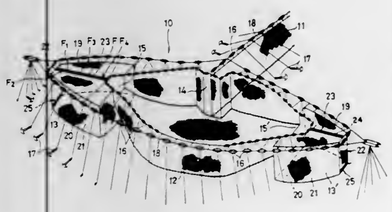
1. Apparatus for agitating a fishing line comprising a base; an elongate arm member; a pair of rotary members in driving engagement with each other; means mounting each of said

members on said base for rotation about its own axis; means eccentrically connecting said arm member to one of said rotary members for rotation therewith; coupling means eccentrically



and slideably connecting said arm member to the other of said rotary members for rotation therewith and for sliding movements relative thereto; and means for rotating said rotary members in opposite directions.

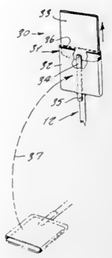
4,120,113
POUND FISHING NET STRUCTURE
Kiyoo Yoneya, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Japan
Filed Jan. 21, 1977, Ser. No. 761,449
Claims priority, application Japan, Jan. 24, 1976, 51/6626[U]
Int. Cl.[2] A01K *69/00*
U.S. Cl. 43—100 **3 Claims**



1. A pound fishing net structure comprising a fence net, a vestibule enclosure net, a plurality of trap nets, each trap net comprising a ceiling webbing, a bottom webbing and a peripheral webbing having a fish outlet, said ceiling webbing having an elongated slit extending substantially over the full length of said ceiling webbing, and an opening and closing means attached to the edges of said slit for opening and closing the same.

4,120,114
FLY SWATTER WITH EXTENDABLE HANDLE
Donald H. Little, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Dec. 16, 1976, Ser. No. 751,129
Int. Cl.[2] A01M *3/02*
U.S. Cl. 43—137 **4 Claims**

1. An extendable fly swatter comprising in combination a striking pad secured to a handle, said pad comprising a fixed member secured to one end of said handle and an extendable member slidably mounted on said fixed member, including means elastically securing said movable member to said handle whereby said movable member can move from a normal unextended position to extended positions, said means biasing said movable member to said unextended position, the movement to the extended positions resulting from centrifugal forces exterted during fly swatting, wherein said movable member



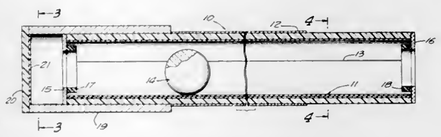
and said fixed member having abutting surfaces in all positions providing a swatting surface that is continuous in all positions.

4,120,115
SWITCH
Nicholas M. Mushkin, 4755 E. Flamingo, Las Vegas, Nev. 89109
Filed Jan. 10, 1977, Ser. No. 757,989
Int. Cl.[2] A01M *3/02*
U.S. Cl. 43—137 **7 Claims**



1. A device for killing insects comprising:
an elongated handle, one end of which has a circumferential exterior surface, and a plurality of elongated flexible strands having one end secured to the circumferential end of said handle, said strand ends being disposed substantially uniformly around said circumferential handle end surface and secured by a length of wire circumferentially wrapped around said handle end, said strand ends lying between said wire and said handle end, and a resilient member disposed between said handle end surface and said strand ends, whereby said wire is wrapped to force said strand ends securely against said resilient member.

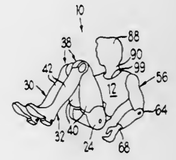
4,120,116
OPTICAL TOY
Guy Williams, 11816 Goshen Ave., Los Angeles, Calif. 90049
Filed Jan. 31, 1977, Ser. No. 763,724
Int. Cl.[2] A63H *33/00*; G02B *27/08*
U.S. Cl. 46—1 R **10 Claims**



1. A toy comprising a circular tubular member with a mirrored inner surface, said tubular member containing a transparent sphere rollable through the interior of said tubular member, said tubular member having a retaining means on each end for preventing said sphere from passing from said tubular member, said retaining means forming an eyepiece to permit viewing

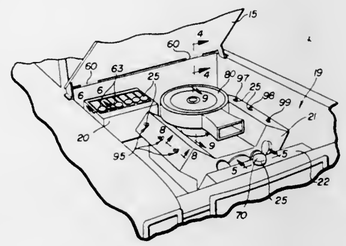
and having a prismatic refraction means positioned over the outer end of said tubular member.

4,120,117
ARTICULATED FIGURE TOY
Rouben T. Terzian, Chicago; Howard J. Morrison, Deerfield; Palmer J. Schoenfield, Evanston, and Wayne A. Kuna, Elmhurst, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 26, 1977, Ser. No. 762,407
Int. Cl.[2] A63H *13/12, 13/16*
U.S. Cl. 46—130 **10 Claims**



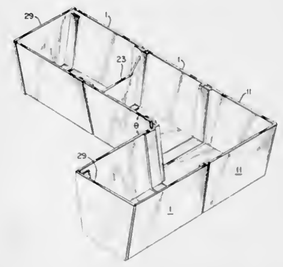
1. An articulated figure toy comprising:
a central torso portion;
an upper torso portion pivotally coupled to said central torso portion;
a lower torso portion pivotally coupled to said central torso portion; and
connecting means connected between said upper and lower torso portions, said connecting means including a biasing means having a stable over-center position when the torso portions are generally aligned corresponding to a standing position of the figure toy and a released position corresponding to a bending position of the figure toy, for maintaining the figure toy in the over-center position and for movement of the figure toy torso portions to the released position upon impact to the figure toy in a manner to move said biasing means off said over-center position.

4,120,118
SEMI-DISASSEMBLABLE TOY VEHICLE
Richard Mathews, and Lorraine Mathews, both of 12909 S. Escanaba, Chicago, Ill. 60633
Filed Jan. 6, 1977, Ser. No. 757,486
Int. Cl.[2] A63H *11/10*
U.S. Cl. 46—201 **8 Claims**



1. A semi-disassemblable toy vehicle, comprising in combination, a vehicle body having a hinged openable hood and a hinged openable trunk lid, an engine compartment recess behind the openable hood, a trunk compartment recess behind the openable trunk lid, a plurality of engine, radiator and battery representations affixed within the engine compartment recess, each such representation carrying at least one loosenable member, each representation and the carried loosenable member together defining means for permanently preventing the loosenable member from being entirely removed from the representation, and a plurality of tool members adapted to fit within and be removed from the trunk compartment recess, each tool including a tooi head adapted to engage at least one but not all of the loosenable members and operate only the fitted loosenable member so as to alternatively loosen and tighten the fitted loosenable member in the associated carrying representation.

4,120,119
ELBOW PLANTER BOX
Hugo George Engel, Somerville, N.J., assignor to Superior Tool & Manufacturing Company, Somerville, N.J.
Filed Jul. 29, 1976, Ser. No. 709,769
Int. Cl.[2] A01G *9/02*
U.S. Cl. 47—66 **7 Claims**



1. In a planter box adapted for containing plants, the combination comprising:
at least two box-like receptacles each having a bottom, opposing sides, an open top, and at least one open end;
an elbow-like receptacle having an open top, a bottom, two pairs of opposing sides, and two open reduced ends forming flanges and offset from one another at a given angle greater than zero and less than 180°, said flanges each being dimensioned for snugly fitting within and being rigidly attached to the sides and bottom of an open end of two individual ones of said box-like receptacles, respectively, thereby connecting said receptacles together at said given angle; and end cap means for selectively closing any open ends of said box-like receptacles, and means for connecting said receptacles so that the outside surfaces of said planter box between the end caps have substantially no discontinuities except for those at the bend of the elbow-like receptacle.

4,120,120
LIFTING ARRANGEMENT FOR A WINDOW OF A VEHICLE AND THE LIKE
Herbert Becker, Coburg-Neuses, Germany, assignor to Metallwerk Max Brose GmbH & Co., Coburg, Germany
Filed Nov. 23, 1977, Ser. No. 854,139
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654902
Int. Cl.[2] E05F *11/14*
U.S. Cl. 49—351 **8 Claims**

1. In a window lifting arrangement including a support member, a window carrier member mounted on said support member for movement in a vertically extending path, stop means on said support member for limiting said movement, drive means on said support member, and linkage means drivingly connecting said drive means to said carrier member, the linkage means including a link member, first securing means movably securing said link member to said carrier member, and second securing means securing said link member to said support member, the improvement in one of said securing means which comprises:

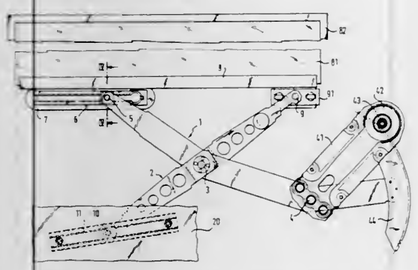
(a) a forked guide channel fixedly mounted on one of the two members secured to each other by said one securing means,

(1) said channel including two branch portions elongated in a common direction and a bight portion connecting respective, longitudinally terminal parts of said branch portions,

(2) said branch portions transversely bounding an elongated guide slot therebetween, and said bight portion bounding said slot in one longitudinal direction,

(3) said slot being approximately keyhole-shaped and having an enlarged, longitudinally terminal first part, and an elongated second part narrower than said first part,

(4) said branch portions being formed with respective longitudinal grooves open in a direction away from said slot,



(5) said one member having two edge portions received in said grooves respectively and thereby fastening said channel to said one member; and

(b) a guide pin fixedly mounted on the other secured member,

(1) said pin having a shank portion received in said slot for longitudinal movement and two enlarged head portions outside said slot on respective ends of said shank portion,

(2) the width of said first part of the slot being sufficient to pass one of said head portions,

(3) the width of said second part of the slot being smaller than the corresponding dimension of each of said head portions for securing said pin against transverse movement out of said second part.

4,120,121

METHOD AND APPARATUS FOR COLLECTING PRECIOUS METAL PARTICLES

Stuart A. Surman, 442 Silver Avenue, Southampton, Pa. 18966, assignor to Stuart A. Surman, Southampton, Pa.

Filed Feb. 14, 1977, Ser. No. 768,587
Int. Cl.[2] **B24B** *55/06*
U.S. Cl. 51—270 **17 Claims**

1. In a dust collecting apparatus, the combination of

an enclosure comprising a floor, a roof and a back, at least a portion of the back being transparent;

means to direct a flow of liquid interiorly of the enclosure to wet dust particles within the enclosure,

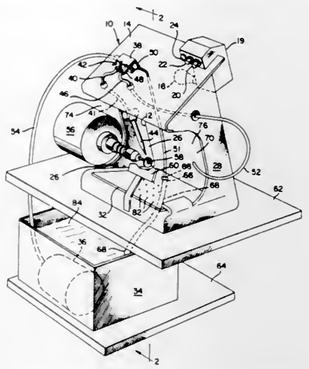
said means to direct comprising a water reservoir and a nozzle which directs a stream of water from the reservoir upon the dust;

a drain provided in the enclosure to lead water and entrained dust particles from the enclosure;

a source of illumination to light a working area interorly of the enclosure,

the source of illumination being mounted exteriorly of the enclosure in a position to direct light rays interiorly,

the said roof slanting forwarding from the back and wherein some of the light rays strike the roof, and



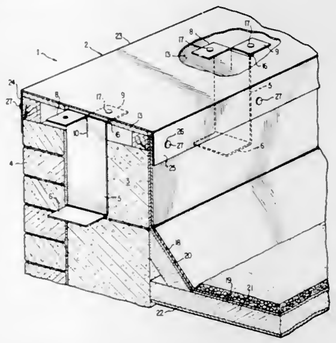
the underside of the roof being provided with a reflecting surface.

4,120,122

ROOF EDGE AND WALL CAP AND ANCHOR

Norman Bahr, P.O. Box 1845, Grand Island, Nebr. 68801

Filed Aug. 23, 1977, Ser. No. 826,983
Int. Cl.[2] **E04D** *13/00;* **E04B** *1/38*
U.S. Cl. 52—58 **8 Claims**



1. A cap assembly for walls comprising

a U-shaped cover frame having

a generally planar base portion and

a pair of supports forming the legs of the U-shaped cover frame

at lest one aperture in said base portion

means for anchoring said cover frame to a wall including an anchor member having

a bottom portion adapted for embedment in a wall and a split end adapted to extend upward from the wall through said aperture in said base portion, and

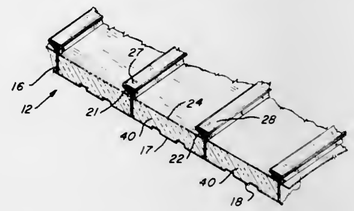
said split end of said anchor member being formed of a bendable sheet metal whereby said split ends may be bent over onto a surface of said base portion for securement thereon.

4,120,123

STRUCTURAL CAP AND COMPOSITE STRUCTURE FOR BUILDINGS AND THE LIKE

Gary A. Knudson, 17356 W. 57th Ave., Golden, Colo. 80401

Filed Nov. 15, 1976, Ser. No. 741,512
Int. Cl.[2] **E04B** *1/32, 1/88;* **E04C** *1/30*
U.S. Cl. 52—86 **5 Claims**



1. A panel assembly in a building structure comprising:

(a) a first panel connected between a second panel and a third panel, said panels having a bottom, a pair of sidewalls projecting from opposite side edges of the associated bottom providing an outer opening and a pair of interlocking flanges projecting in a first direction from the ends of said sidewalls and connected along a first seam structure and a second seam structure on the opposite sides of said first panel joining the sidewalls of said first panel with the adjacent sidewalls of said second and third panels,

(b) a fourth panel connected along the opposite side edges to said first and second seam structures covering the outer opening of said first panel, said fourth panel having:

(i) a body which includes a generally laterally extending intermediate portion in spaced overlying and covering relation to the bottom of said first panel providing a space closed on all sides,

(ii) first and second side portions attached to, extending along and projecting from the opposite side edges of said intermediate portion,

(a) said first side portion having:

(i) a first sidewall section disposed within and extending along a first sidewall of said first panel,

(ii) a first inside section angularly extending laterally in from said first sidewall section and away from said intermediate portion at a selected incline with the plane of said intermediate portion oppositely spaced from said first seam structure,

(iii) a first substantially straight flange section extending laterally out from said first inside section substantially parallel to said intermediate portion covering and strengthening said first seam structure and held in place by a substantially straight lateral flange section and a terminal lateral edge fastening section of an adjacent panel similar to said fourth panel covering the opening in said second panel joining one side edge of said fourth panel to said first seam structure to form a first composite seam structure of a generally hollow triangular structural shape,

(c) said second side portion located substantially laterally out from the associated intermediate portion and having:

(i) a second sidewall section disposed within and extending along a second sidewall of said first panel,

(ii) an arcuate section extending laterally generally in from and in horizontally spaced relationship to an associated intermediate portion providing a track for a seamforming device for fastening adjacent similar fourth panels to said first and second seam structures,

(iii) a second substantially straight flange section extending laterally out from said arcuate section in spaced substantially parallel relation to an associated intermediate portion covering and strengthening said second seam structure,

(iv) a terminal lateral edge fastening section projecting beyond said second flange section angularly folded back and laterally inwardly against a first inside section of a next adjacent panel similar to said fourth panel and said terminal lateral edge adapted initially to extend outwardly and toward an associated intermediate portion to form an inwardly facing channel-like configuration with a receiving opening of a sufficient lateral dimension in relation to the lateral dimension of the first lateral flange section and first inside section of said next adjacent panel similar to said fourth panel to receive them by insertion via said receiving opening, said receiving opening having been narrowed by a seam-forming device covering said receiving opening in said third panel joining the other side edge of said fourth panel to said second seam structure to form a second composite longitudinally continuous seam structure of a generally hollow triangular structural shape,

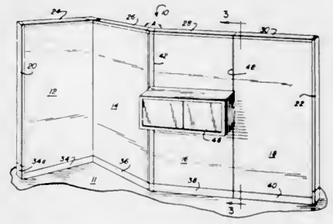
(d) said interlocking flanges of said first and second panels being secured within the area formed by the first inside section and substantially straight flange section of the associated first side portion of said fourth panel and said next adjacent panel similar to said fourth panel.

4,120,124

MOVABLE WALL ASSEMBLY

Philip A. Temple; Gene B. Hasbrouck, both of Corry, Pa., and Stanley M. Howe, Muscatine, Iowa, assignors to Hon Industries Inc., Muscatine, Iowa

Filed Jun. 21, 1977, Ser. No. 808,640
Int. Cl.[2] **E04B** *2/56*
U.S. Cl. 52—122 **29 Claims**



1. A movable wall assembly for selectively partitioning an interior space comprising, in combination, an elongated base; adjustable support elements spaced along said base; elongated leveling support means mounted on said support elements and adjustable therewith to effectuate leveling of said support means; wall panels supportably mounted on said leveling support means; a vertical post member at each vertical edge of said panels, each of said posts being supported on said support means and engaging the adjacent vertical edge of the respective panel; and tie means engaging upper portions of adjacent panels for mutual support thereof, whereby said levelling support means is adapted to be leveled prior to assembling said panels and post members thereon.

4,120,125

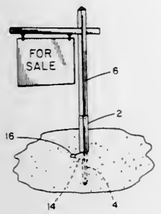
POST SUPPORT

Joseph Cvetan, 11549 S. Kedvale, Alsip, Ill. 60658

Filed Nov. 10, 1977, Ser. No. 850,081
Int. Cl.[2] **E02D** *5/74*
U.S. Cl. 52—156 **4 Claims**

1. A support comprising an elongated socket having a height sufficient to extend a substantial distance along the height of a post to be supported therein whereby a post may be supported solely by the support, an elongated spike-like member extending from the bottom of the socket for mounting in a supporting surface, a vertical stabilizing member extending outwardly

from the upper end of said pointed member and a horizontally extending flat plate attached only to the free end of the said

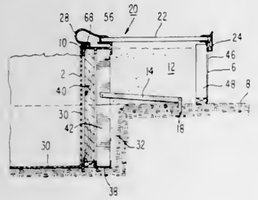


vertical stabilizing member whereby a post received in said socket will be entirely self-supported thereby.

4,120,126
PATIO POOL

Robert E. West, Yardley, Pa., assignor to Cascade Industries, Inc., Edison, N.J.

Filed Sep. 30, 1975, Ser. No. 618,104
Int. Cl.[2] E04H *3/16*
U.S. Cl. 52—169.7 **15 Claims**



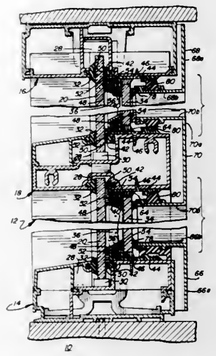
1. A patio pool structure comprising
(a) an outer wall positioned upon undisturbed ground level earth;
(b) an inner wall positioned upon undisturbed earth within a pool excavation;
(c) a plurality of rigid struts fixedly attached at one end to said inner wall and at the other end to said outer wall for maintaining said inner wall and said outer wall in a fixed position whenever the pool is empty and whenever the pool is full;
(d) a filler material located above ground level between said outer wall and said inner wall and below ground level between said inner wall and the undisturbed earth to fill the space therebetween and provide a stable wall structure; and
(e) a patio platform assembly mounted upon the top edges of said inner wall and said outer wall and extending over said filler material.

4,120,127
DOUBLE GLAZED WALL STRUCTURE

S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Apr. 1, 1977, Ser. No. 783,802
Int. Cl.[2] E06B *7/12, 3/28*
U.S. Cl. 52—172 **38 Claims**

1. Apparatus for converting into a double glazed wall structure an existing single glazed wall structure of the type having a single thickness first glazing panel with a peripheral edge portion seated and supported in a glazing pocket of at least one frame member, said apparatus comprising:
a spacer element supportable from said frame member on one side of said first glazing panel and having a stop surface parallel thereof facing a parallel surface of an edge portion of a new second glazing panel disposed in spaced apart parallel relation from said first panel forming a dead air space therebetween,
said spacer element comprising an elongated hollow tubular member having a pair of spaced apart side walls facing said first and second glazing panels, a first wall extending transversely between said first and second side walls and having openings therein for communication between the interior of said tubular member and said space, and
a second transversely extending wall spaced from said first mentioned transversely extending wall and adjacent a facing surface of said frame member,

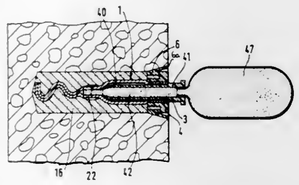


a tongue adjacent said one side of said first glazing panel extending inwardly of said second transversely extending wall into said glazing pocket of said frame member interlocked between a wall of said pocket and an adjacent surface of said first glazing panel,
desiccant material in communication with said space defined between said first and second glazing panels, and
means for supporting an edge portion of said second glazing panel in place adjacent said spacing element.

4,120,128
ARRANGEMENT FOR SECURING OBJECTS TO SUPPORT STRUCTURES WITH MULTI-COMPONENT HARDENABLE BINDER MATERIAL

Mathias Pauls, Lauterbach, Fed. Rep. of Germany, assignor to Artur Fischer Forschung, Tumlingen, Waldachtal, Fed. Rep. of Germany

Filed Mar. 31, 1977, Ser. No. 783,196
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1976, 2615185
Int. Cl.[2] E04B *1/41*
U.S. Cl. 52—173 R **10 Claims**

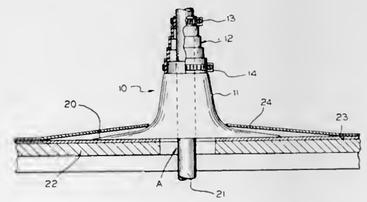


1. An arrangement for securing an object to a support structure having an anchoring hole, comprising a sleeve-shaped anchoring element having one part of transverse dimensions smaller than, and another part of transverse dimensions substantially corresponding to those of the anchoring hole, said anchoring element being insertable into the anchoring hole through an open end thereof so that said other part supports said anchoring element at the open end of the anchoring hole with clearance between the latter and said one part and closes the open end of said clearance upon insertion, said anchoring element having an interior passage; and a closed collapsible container accommodating components of a multi-component hardenable binding material and having a first portion fittingly insertable into said interior passage of said anchoring element and a second portion remaining outside of said anchoring element upon such insertion of the same so that when said first portion of said container is inserted in said interior passage of said anchoring element and said second portion of said container is subjected to requisite collapsing force, the binding material is discharged from said container into said clearance to anchor said anchoring element in the anchoring hole, without thereby filling said interior passage of said anchoring element about said first portion of said container since such filling is prevented by the presence of said first portion.

4,120,129
PIPE FLASHING UNIT

William M. Nagler, Chicago, Ill., and Vernon Earl Woosley, Richmond, Va., assignors to The Pate Company, Broadview, Ill.

Filed Sep. 1, 1976, Ser. No. 719,422
Int. Cl.[2] E04D *13/14*; E04G *15/06*
U.S. Cl. 52—219 **4 Claims**

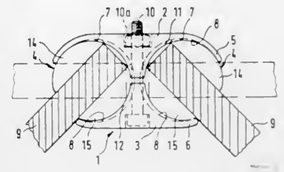


1. A flashing unit to provide weather proof egress for a single pipe element through a roof surface, said flashing unit comprising:
a unitary hollow housing of seamless construction, having an axis perpendicular to said surface,
said housing being circular in cross-section perpendicular to said axis,
said housing having an upper end and a lower end,
said upper end and said lower end being open, thereby defining a passageway through said housing;
a circular base flange,
said flange formed integrally with said housing at said lower end,
said flange being formed perpendicular to said axis to contact a flat surface,
said housing tapering generally outwardly from said upper end to said flange; and
a hollow sealing element having a top and a bottom,
said sealing element including a plurality of concentric upstanding stepped sections of differing cross-sectional dimension,
said stepped sections being arranged in order of increasing cross-sectional dimension from said top to said bottom, said stepped sections being selectively severable whereby a communicating passageway through said sealing element may be formed,
said bottom of said sealing element sized to closely fit said housing at said upper end of said housing, whereby said housing, said pipe element, and said sealing element define a chase, sealed at its top, for said pipe element; and
means for retaining said sealing element in weather tight contact with said housing and with said pipe element.

4,120,130
CLAMPING DEVICE

Felix Puschkarski, Zierleitengasse 40, A-1190 Wien, Austria

Filed Sep. 19, 1977, Ser. No. 834,781
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1976, 2642227
Int. Cl.[2] E04B *1/60*
U.S. Cl. 52—285 **16 Claims**

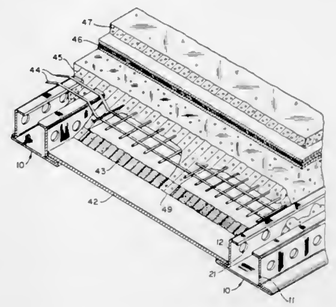


1. A clamping device for detachably connecting two plates disposed at an angle with respect to each other, the device comprising two clamping jaws connected to each other by bolt means and forming bearing seats on opposite sides of the bolt means, the bearing seats having cylindrical inner surfaces, cylindrical clamping bodies disposed and rotatable in each of said bearing seats about an axis approximately perpendicular to the bolt means as long as the clamping device is in an unmounted state, each of said clamping bodies consisting of a separate clamping element the cross sectional area of which has the form of a segment of a circular surface so that each clamping element has an arcuate and a plane side surface portion.

4,120,131
BUILDING STRUCTURE

Frank E. Carroll, Barrington, Ill., assignor to Carroll Research, Inc., Rolling Meadows, Ill.

Filed Sep. 3, 1976, Ser. No. 720,353
Int. Cl.[2] E04B *1/16*
U.S. Cl. 52—310 **19 Claims**



1. An insulated deck structure comprising:
a series of parallel sheet metal structural shapes which are symmetrical about a vertical bisecting plane having:
opposing generally parallel equal length sides, a flange extending outwardly at substantially 90° from one end of each of said sides, a base closure extending from the outermost end of one of said outwardly extending flanges to the outward end of the other of said outwardly extending flanges forming a closure between said parallel sides at said one end, and flanges projecting inwardly from the other end of each of said parallel sides a distance forming a slot between the terminal ends and said inwardly projecting flanges;

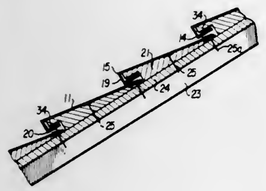
corrugated structural decking above and resting upon the inwardly extending flanges of said structural shapes; and insulation board resting on said outwardly extending flanges and extending between adjacent structural shapes beneath said corrugated structural decking.

4,120,132

METAL ROOFING SHINGLE AND HOLDING STRIP THEREFOR

John W. Kendrick, P.O. Box 441, Gulfport, Miss. 39501

Filed Mar. 3, 1976, Ser. No. 663,439
Int. Cl.[2] E04D *1/28, 1/34*
U.S. Cl. 52—478 **7 Claims**



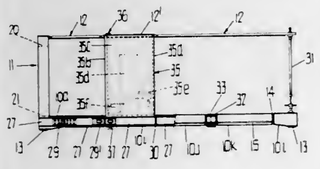
1. A metallic roofing shingle comprising a body portion of trapezoidal configuration wherein the top and bottom edges thereof are parallel and the bottom edge is of a dimension less that that of the top, a third edge thereof being substantially normal to the top and bottom edges, said bottom edge being bent and rebent to provide a channel, a holding strip disposed in backing relation to said shingle body; said holding strip being of wedge shape in cross-section, the thicker edge thereof having a rib; said rib being loosely disposed in said channel, whereby said rib is spaced from said bent and rebent edges and said channel is free to discharge moisture therein and permit circulation of air therearound.

4,120,133

METHOD OF CONSTRUCTING A TRANSPORTABLE PREFABRICATED ROOM ELEMENT

Franklin Bartlett Rodgers, Baar, and Herbert Grassl, Ruswil, both of Switzerland, assignors to Credelca A.G., Zug, Switzerland

Continuation of Ser. No. 366,276, Jun. 4, 1973, abandoned, which is a continuation of Ser. No. 121,992, Mar. 8, 1971, abandoned. This application Jul. 24, 1974, Ser. No. 491,532
Int. Cl.[2] E04B *1/35*
U.S. Cl. 52—745 **6 Claims**



1. A method of erecting a plural-storey building in which at least two uperimposed storeys comprise transportable prefabricated room elements constructed from room element sections, each room element being a cell-like structure, having two opposed sides and two opposed ends constituting four vertical faces of the cell, and comprising a rigid floor panel structure and a vertical load-bearing structure, of room height, rigidly connected to the floor panel structure adjacent to an end of the floor panel structure, the room elements being prefabricated at a factory remote from the building site by rigidly fixing the load-bearing structure to the floor panel structures, which room elements are subsequently transported from the factory to the building site and there disposed face-to-face in each of the said storeys with the room elements of each upper storey stacked on the room elements of the next lower storey and supported by the load-bearing structure or structures of the latter, the load-bearing structures of superimposed room elements being in vertical register, characterized in that each room element is superimposed by the following steps:

(a) prefabricating sections of the room element, each of which room element sections comprises a prefabricated section of the floor panel structure and any vertical load-bearing structure associated with that panel section in the completed room element,

(b) applying to the room element sections substantially all installations, glazing and surface finish associated with each room element section in the completed room element,

(c) assembling the room element sections in end-to-end relationship at the factory remote from the building site, with their floor panel sections in substantially a common plane, and

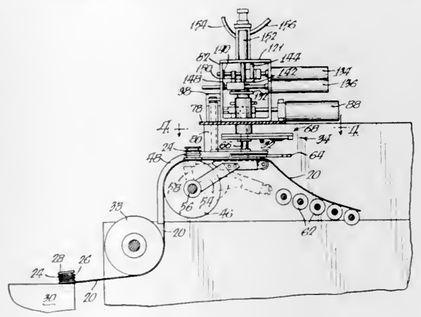
(d) rigidly connecting the room element sections, in said relationship, at the factory by structural means uniting the room element sections comprising assembled floor panel sections and vertical load-bearing structures into a rigid structural frame of the room element, thereby forming a rigid and substantially complete room element.

4,120,134

APPARATUS FOR AND METHOD OF FILLING FLEXIBLE CONTAINERS

William R. Scholle, Corona del Mar, Calif., assignor to Scholle Corporation, Northlake, Ill.

Filed Jul. 5, 1977, Ser. No. 815,533
Int. Cl.[2] B65B *3/00, 31/00*
U.S. Cl. 53—434 **33 Claims**



1. In an apparatus for filling flexible containers connected in continuous web form, each container having a spout communicating therewith adapted to be closed by a separable cap, means for incrementally advancing said containers seriatim to a filling station, filling means at said filling station for sequentially filling each container through the opening in its spout, and means for placing a cap on the spout to close the filled container, said advancing means then advancing the filled container from the filling station to move a succeeding empty container thereto.

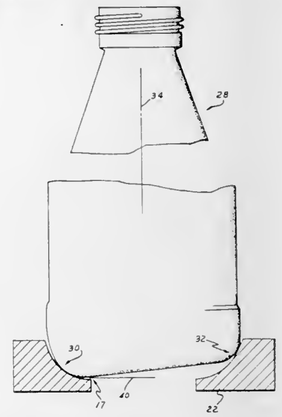
18. A method of filling containers each having a filling aperture therein adapted to be closed by a closure, comprising the steps of providing a plurality of containers connected together seriatim in a continuous row; moving the row of containers to move the containers seriatim to a filling station; and at the filling station, filling the respective container with contents through the aperture therein, and placing the closure on the container to close the aperture therein.

4,120,135

SUPPORTING THIN-WALLED CONTAINERS

Eugene P. Baldyga, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 1, 1976, Ser. No. 746,388
Int. Cl.[2] B65B *7/28*
U.S. Cl. 53—473 **11 Claims**



1. In the process of protecting the fragile lower portion of a thin-walled plastic bottle having axially spaced upper finish and lower curved portions during axial loading of the bottle while filling, capping or the like which includes the step of restraining said lower portion against substantially radially outward deflection while said load is applied without supporting the finish portion, the improvement which comprises:

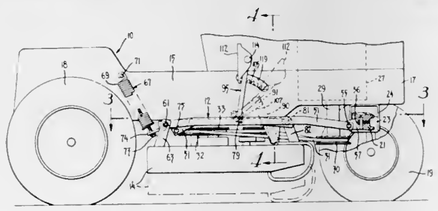
confining said restraint against substantially radially outward deflection to a localized curved area of said lower portion while maintaining a seating ring section unsupported during said loading.

4,120,136

IMPLEMENT SUPPORTING AND LIFTING LINKAGE

Jack Howard Rose, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Dec. 27, 1976, Ser. No. 756,022
Int. Cl.[2] A01D *35/12*
U.S. Cl. 56—17.1 **12 Claims**



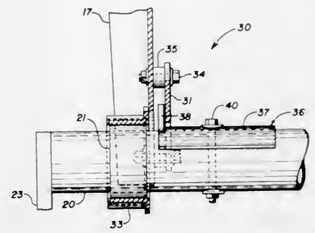
1. In a support for a mower beneath a tractor having a frame and an axle, scissor linkage means including draft link means and lift link means pivoted one to the other above said mower, means supporting said draft link means to said axle beneath said frame for vertical swinging movement, means supporting said lift link means to said frame for vertical swinging movement, pivot means connecting one portion of said mower to said draft link means and another pivot means connecting another portion of said mower to said lift link means, resilient means connected at one end to said frame and at its other end to said scissor linkage means to urge said scissor linkage and said mower upwardly to thereby overcome the effects of gravity acting thereon, lever means connected to said lift link means and pivotally mounted to said frame for moving said lift link means and said mower in relation to said frame, and foot treadle means connecting to said lever means for moving and maintaining said lever means in predetermined positions corresponding to predetermined elevations of said mower.

4,120,137

TINE BAR RETAINING DEVICE

Ernest A. Schoeneberger, Leola, and Edward A. Blakeslee, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 19, 1977, Ser. No. 825,998
Int. Cl.[2] A10D *57/02*
U.S. Cl. 56—226 **9 Claims**



1. In a crop harvesting apparatus of the type employing a cam operated rotating reel including rotatably and axially mounted and driven aligned spiders supporting, on respective aligned legs thereof, elongate tine bars journalled at respective support locations on each spider leg and movable laterally relative thereto, each said tine bar further including a cam follower on one end thereof for engagement with said cam to control the rotation of said tine bar relative to said spiders as they rotate 360° about the axis of said spiders, the improvement comprising:

a device for selective adjustment of the lateral position of each said tine bar relative to said spiders, said device including

a guide plate fixed to, and spaced from a lateral side of one of said spiders adjacent the tine bar journal location thereon forming a channel therebetween at least partially radially about said location;

a bolt-sized orifice through said tine bar adjacent said side of said one spider;

a clip having a primary leg portion and a tab portion extending substantially perpendicularly away therefrom, said tab portion fitting in said channel, said leg portion having an elongate slot therethrough with the long axis thereof substantially parallel to the longitudinal axis of the tine bar; and

a bolt extending through said slot and said orifice and fixed to said tine bar whereby said tine bar may be selectively laterally adjusted relative to said spiders, yet rotate relative thereto as required.

4,120,138

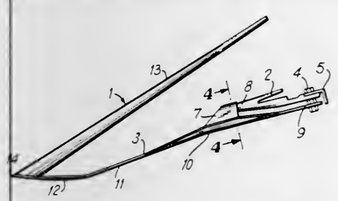
GRAIN LIFTER FOR THE CUTTER MECHANISMS OF HARVESTERS

Gustav Schumacher, II, and Gunter Schumacher, both of 5231 Eichelhardt Westerwald, Fed. Rep. of Germany

Filed Jul. 8, 1976, Ser. No. 704,024
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1975, 2531435
Int. Cl.[2] A01D *55/10*
U.S. Cl. 56—313 **8 Claims**

1. For use with a harvester cutter mechanism which includes a mower guard finger having a front tip region and a mower

guard finger holder, a grain lifter comprising an elongated support leg having a rear upper region secured to said holder, a front lower region adapted to glide along the ground, an elongated intermediate region inclined rearwardly and upwardly from said front lower region, and a fourth elongated region situated between said intermediate and rear regions, a holder fixed to and extending upwardly from said forth region of said support leg and embracing said front tip region of said mower guard finger, said fourth region of said support leg having a cross section which provides said fourth region with



a rigidity sufficient to prevent yielding of said support leg at said fourth region thereof during operation of the harvester, while said rear upper region, front lower region, and elongated intermediate region of said support leg are made of a solid flat material which is springy and capable of yielding resiliently during operation of the harvester, said fourth region of said support leg being made of the same material as and being integral with the adjoining regions thereof but being transversely curved to have the configuration of an elongated channel of substantially U-shaped cross section to provide said fourth section with said rigidity.

4,120,139

CABLE MAKING APPARATUS

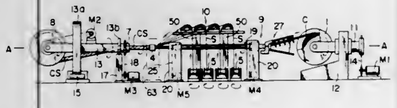
Shinichi Terasawa; Akitoshi Okamura; Shigeru Okuyama; Takehiko Nishiyama, and Tadao Nishida, all of Higashi-Osaka, Japan, assignors to Tatsuta Densen Kabushiki Kaisha, Osaka, Japan

Filed Jul. 25, 1977, Ser. No. 819,035

Claims priority, application Japan, Jul. 29, 1976, 51-91736

Int. Cl.[2] D01H *13/02, 13/04*

U.S. Cl. 57—13 **13 Claims**



1. In apparatus for assemblying a cable by laying outer strands around a core, wherein the apparatus is of the type including core pay-out means and cable take-up means rotatable in the same direction about a common, stationary first axis and further rotatable about revolving second axes transverse to the first axis for paying out the core and taking up the assembled cable, respectively, a plurality of outer strand pay-out means each rotatable about a stationary third axis and each further rotatable about a revolving fourth axis transverse to the third axis for paying out one of the outer strands, and a stationary laying die disposed on the first axis between the core pay-out means and the cable take-up means for closely receiving and passing therethrough the outer strands and the core so as to assemble for the former around the latter, the improvement which comprises means for guiding the core from the core pay-out means to the laying die substantially along the first axis, the core guiding means including means for smoothly transmitting a pre-twist, which is imparted to the core by the rotation of the core pay-out means about the first axis, through the length of the core from the core pay-out means to the laying die, and means for guiding each outer strand from one of the outer strand pay-out means to the laying die along a path having a curve therein, the outer strand guiding means including a series of interspaced linearly tapered rollers disposed along the curve in the path of each outer strand and held in engagement therewith, at least some of the tapered rollers being each set at an angle to the direction transverse to the axial direction of the outer strand being fed thereover, whereby a pretwist imparted to each outer strand by the rotation of one of the outer strand pay-out means about the third axis is smoothly transmitted through the length of the outer strand from the outer strand pay-out means to the laying die, and whereby the core and the outer strands can be assembled into the cable of improved characteristics.

4,120,140

METHOD AND DEVICE FOR JOINING A THREAD

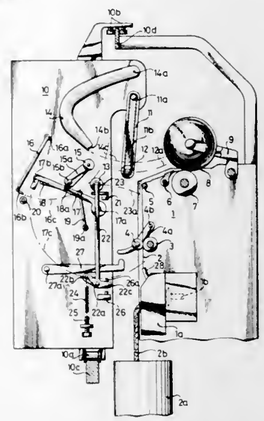
Hans Raasch, and Hans Grecksch, both of Monchengladbach, Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Germany

Filed May 11, 1977, Ser. No. 795,736

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620805

Int. Cl.[2] D01H *15/00*

U.S. Cl. 57—34 R **5 Claims**



1. Method of joining a thread of a take-up coil at a spinning station of a rotor spinning machine having a normal travel course therethrough from the spinning rotor to the take-up coil for a thread that has been spun therein and having a thread draw-off device and a thread guide disposed in the normal travel course, the joining being effected by means of a traveling joining device having a thread draw-off device for drawing off a thread end from the take-up coil and having a thread delivery device for transferring the drawn-off thread end to the spinning rotor of the spinning station, the method comprising the steps of guiding a thread back from the take-up coil to the spinning rotor through the thread draw-off device of the joining device, which has been switched to reverse operation, and through the thread draw-off device of the spinning station which has been switched to idling operation, switching the thread draw-off device of the joining device to forward operation at an instant at which the thread is joined, switching on the thread draw-off device of the spinning station at an instant at which the thread draw-off devices of both the spinning station and the joining device are operating together, removing the thread from the thread draw-off device of the joining device by means of the thread delivery device and transfering the thread thereby to the normal travel course of the thread and to the thread guide in the spinning station against the action of a restoring force, and rotating the take-up coil during said transfer at a speed that is increased over the normal winding speed.

4,120,141

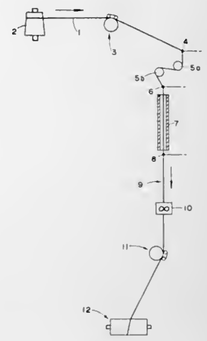
PROCESS AND APPARATUS FOR THE PRODUCTION OF TEXTURED POLYESTER YARN

George Lopatin, Newton Centre, Mass., and Menachem Lewin, Jerusalem, Israel, assignors to The State of Israel Ministry of Commerce and Industry, Jerusalem, Israel

Filed Jul. 27, 1977, Ser. No. 819,529

Int. Cl.[2] D02G *1/02*

U.S. Cl. 57—34 HS **20 Claims**



1. A process for the simultaneous drawing and false-twist texturing of partially oriented polyester yarn, which comprises passing the yarn from a supply source, in succession, through:

a. a yarn feed system;

b. a heating zone wherein the yarn is heated to a temperature of from about 175° to about 235° C;

c. a heat-maintenance zone, wherein the yarn is maintained, for at least 0.05 secs. after the yarn leaves said heating zone, at a temperature below said temperature of the heating zone and from about 150° to about 190° C;

d. a cooling zone wherein the yarn is cooled to a temperature below about 80° C;

e. a false-twisting means;

f. take-up means which is effecting the drawing of the yarn in said temperature maintenance zone and cooling zone; and

g. winding-up means.

11. Apparatus for the simultaneous drawing and false-twist texturing of partially oriented polyester yarn, comprising in sequence:

a yarn feed system;

yarn heating means adapted to heat the yarn to a temperature of from about 175° to about 235° C;

heat maintenance means adapted to maintain the yarn at a temperature below said temperature of the heating means and between about 150° and about 190° C., for at least 0.05 secs.;

false-twisting means disposed at such a distance from said heat maintenance means so as to provide for an interposed cooling zone sufficient to allow the yarn to cool to a temperature below about 80° C before it reaches said false-twisting means;

a draw-roller system adapted to effect drawing of the yarn to the desired draw ratio; and

winding-up means.

4,120,142

YARN INJECTION MECHANISM FOR COOPERATION WITH PNEUMATIC YARN THREADING DEVICES OF A TEXTILE YARN PROCESSING MACHINE

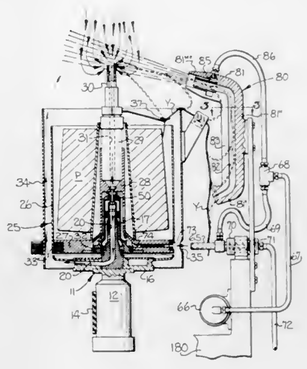
Gustav Franzen, Willich, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Oct. 17, 1977, Ser. No. 842,891

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1976, 2646921

Int. Cl.[2] D01H *15/00, 13/04*

U.S. Cl. 57—34 R **11 Claims**



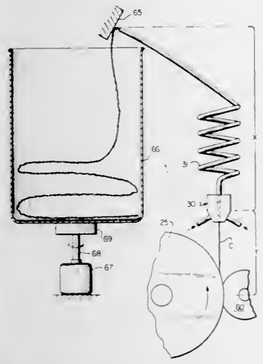
1. In a textile yarn processing machine, such as a two-for-one twister or the like, the combination of:

a plurality of spindle assemblies mounted in generally side-by-side relationship along the outside of said machine and each including a driven rotating rotor mechanism, a stationary carrier mechanism for carrying a hollow supply package of yarn, and an elongate yarn passageway extending downwardly through the top of said carrier mechanism along the axis of said spindle assembly and radially outwardly through said rotor mechanism for receiving the yarn from the supply package therethrough during yarn processing;

selectively-operable pneumatic threading mechanisms for being operated to automatically thread yarn withdrawn from the supply package through said yarn passageway during threading-up of said spindle assemblies by creating a suction through the yarn entry portion of said passageway and a positive air stream through the yarn exit portion of said passageway; and

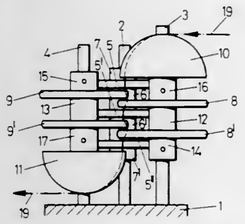
pneumatic yarn injection means, operatively associated with said threading mechanisms of each of said spindle assemblies, for creating a suction extending therein for grasping and containing therein a free end of yarn extending outwardly from the supply package of yarn along the outside of said machine and for creating a positive air stream extending thereout for conveying and comletely releasing the grasped and contained free end of yarn therefrom to the entry portion of said yarn passageway through said spindle assembly for receipt by the suction created therethrough by said pneumatic threading mechanisms for effecting threading-up of said spindle assembly and to eliminate manual handling of the free end of yarn during such pneumatic threading-up of said spindle assembly.

4,120,143
FLUID SELF-TWIST SPINNING APPARATUS
Phillip W. Chambley, and Alan H. Norris, both of Rome, Ga., assignors to Champion International Corporation, Stamford, Conn.
Filed Oct. 25, 1977, Ser. No. 845,340
Int. Cl.[2] H01B 13/04
U.S. Cl. 57—34 AT 7 Claims



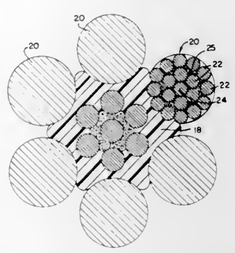
1. In combination with an apparatus for forming a plied self-twisted yarn from at least two singles yarn strands of the type comprising means for false-twisting each of the yarn strands and guide means for conveying said yarn strands away from said false-twisting means, the improvement comprising fluid jet means downstream of said guide means for promoting the plying of said strands, said fluid jet means including a source of fluid under pressure, a twist jet comprising a body having inlet means for selective connection to said source of fluid under pressure and a control yarn passage communicating with said inlet means, and an elongated coiled tube having an inlet end and an outlet end, the inlet end of said tube being connected to the outlet end of said passage to convey yarn away from said twist jet and being spaced from said guide means to define a plying region therebetween.

4,120,144
DEVICE FOR FRICTION FALSE-TWISTING OF TEXTILE YARNS OF SYNTHETIC MATERIAL
Gustav Brehm, Wattwil, Switzerland, assignor to Heberlein Maschinenfabrik AG., Wattwil, Switzerland
Filed Nov. 9, 1976, Ser. No. 740,081
Claims priority, application Switzerland, Nov. 24, 1975, 15115/75
Int. Cl.[2] D02G 1/04
U.S. Cl. 57—77.4 3 Claims



1. A device for friction false-twisting textile yarn comprising a support, three substantially parallel shafts mounted on said support with their axes, in plan view, at the corners of an equilateral triangle, each shaft mounted for rotation about its longitudinal axis, a first friction element presenting a convex surface of revolution about an axis fixed coaxially on one of said shafts, said first friction element being formed so that the axis of said one of said shafts intersects a convex end portion of said convex surface, a second friction element presenting a convex surface of revolution about an axis and fixed coaxially on a different one of said shafts, said second friction element being substantially similar to said first friction element and inverted relatively to said first friction element to present a convex end portion of its convex surface facing oppositely to said first mentioned end portion, said first and second friction elements being axially displaced from one another with respect to the axes of said plurality of shafts, a plurality of circular disc-like friction members distributed between and fixed coaxially to all three of said shafts between said first and second friction elements in spaced relation therewith, said disc-like members being formed so that their edges overlap in spaced relation with respect to one another, guiding means for guiding yarn to be false twisted transversely to said axis of revolution of said first friction element to pass over the convex end portion thereof and then sinuously over overlapping edges of said disc-like members to said second friction element, and guiding means for guiding yarn transversely to said axis of revolution of said second friction element after passing to the convex end portion of said second friction element.

4,120,145
LUBRICATED PLASTIC IMPREGNATED WIRE ROPE
Ferdinand Chiappetta; Fred Edgar Dykeman, both of Kenosha, and Paul Allen Turner, Burlington, all of Wis., assignors to AMSTED Industries Incorporated, Chicago, Ill.
Filed Aug. 3, 1977, Ser. No. 821,574
Int. Cl.[2] D07B 1/06, 1/16
U.S. Cl. 57—149 19 Claims



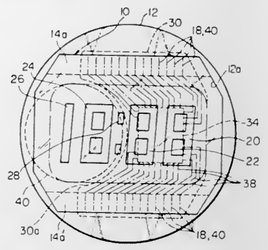
7. A wire rope comprising: a lubricated wire core; a plurality of wire strands laid around said core to define a wire rope of predetermined outside diameter; and a thermoplastic material filling the interstices between said core and said strands and between adjacent strands, said thermoplastic material forming a spacing between said strands and said core and between adjacent strands to hold said strands in a predetermined relationship to said core and to each other, said thermoplastic material extending radially outwardly to a point less than the outside diameter of said rope.

4,120,146
STRINGS FORMED AT LEAST PARTIALLY OF SYNTHETIC MATERIAL
Jacques André Robin, 125 boulevard Malesherbes, Paris, France
Filed Jun. 28, 1977, Ser. No. 810,881
Claims priority, application France, Jun. 29, 1976, 76 19684; May 31, 1977, 77 16536
Int. Cl.[2] D02G 3/36, 3/40
U.S. Cl. 57—162 14 Claims

1. A process of manufacturing strings constituted at least in part of synthetic material, said process comprising the following steps:

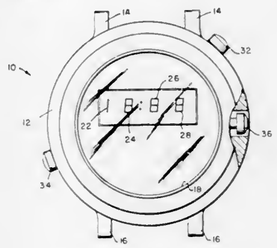
(a) forming at least one bundle of multifilaments of material selected from the class consisting of synthetic and natural materials, the filaments being parallel one to another,
(b) impregnating all the multifilaments of said bundle with a thermosettable adhesive impregnation product having an appropriate elasticity when hardened,
(c) making said impregnation product prepolymerise up to a chosen degree of partial polymerisation,
(d) twisting said bundle while avoiding the drying out of its impregnated multifilaments thanks to the partial degree of polymerisation chosen for this twisting step and
(e) finally completing the polymerisation of said impregnation product to harden the same.

4,120,147
WATCH MODULE ASSEMBLY
Tomomi Murakami, Higashiyamoto, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan
Filed Jan. 3, 1977, Ser. No. 756,561
Claims priority, application Japan, Jan. 8, 1976, 51-1765; Mar. 2, 1976, 51-22407
Int. Cl.[2] G04B 37/04; G04C 3/00, 17/00
U.S. Cl. 58—50 R 9 Claims



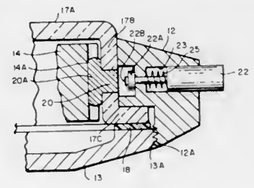
1. A watch module construction comprising:
an electrooptical display cell having first separate rows of electric contact terminals, said first rows being spaced from and parallel to one another;
a first support frame including means for retaining said display cell in a fixed place;
a second support frame fixedly connected to said first support frame;
a printed circuit substrate disposed on said second support frame and having second rows of electric contact terminals formed on said substrate with printed circuit leads formed thereon, said printed circuit leads being connected to said second rows of electric contact terminals and terminating on said substrate at an area displaced from a center of said first support frame;
an integrated circuit chip mounted on said area of said substrate and connected to said printed circuit leads;
compressible conductive rubber members disposed between said first and second rows of electric terminals to provide electrical connections therebetween; and a battery support plate disposed between said first and second support frames and adapted to support a battery thereon;
said second support frame and said substrate having cutouts formed at a position opposing said area with respect to the center of said first support frame to accommodate said battery in line with said integrated circuit chip on a plane parallel to said display cell.

4,120,148
LOGIC CIRCUIT FOR USE IN TWO OR THREE BUTTON DIGITAL WATCH
Norman E. Moyer, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Aug. 2, 1976, Ser. No. 710,494
Int. Cl.[2] G04B 27/00
U.S. Cl. 58—85.5 4 Claims



1. A method of allowing the same IC chip to be used in different digital watches with differing numbers of push buttons, which comprises:
(a) providing circuitry to initialize the digital watch's logic to operate as a watch with a predetermined number of push buttons when batteries are inserted into the watch case, the batteries permitting a predetermined number of push buttons to be operable; and
(b) providing circuitry to detect the depression of additional push buttons thereby causing the watch to function appropriately for the additional push buttons and permitting said additional push buttons to be operable.

4,120,149
ELECTRONIC WATCH
Richard Edward Ripley, Attleboro, Mass., assignor to Textron, Inc., Providence, R.I.
Filed Mar. 11, 1977, Ser. No. 776,710
Int. Cl.[2] G04B 37/00
U.S. Cl. 58—88 R 6 Claims



1. In an electronic watch comprising:
a back,
a bezel, and
an electronically controlled module for digitally displaying a time signal,
the improvement comprising,
a crystal comprising,
an upper member with its lower surface adjacent to the upper surface of said module,
a first flange extending downwardly from the edge of said upper member adjacent to the side of said module, and
a second flange extending laterally outwardly from the bottom of said first flange,
contact means having a longitudinal portion sealed into said first flange and an inner end portion which is electrically connected to said module,
a plunger mounted in a bore in said bezel, said plunger being

movable along the axis of said bore, whereby the inner end portion of the plunger is engagable with the outer end of said contact means and the outer end portion of said plunger is exposed for receiving pressure by the user to cause said engagement to occur,

a sealing member positioned between said second flange and an upper surface of said back, and

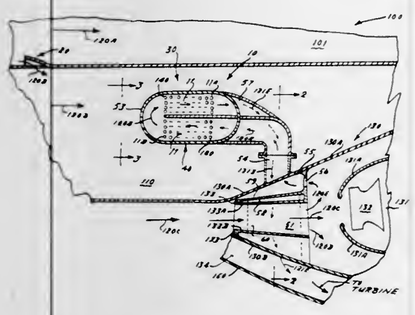
means for holding said upper surface of said back against said sealing member and said sealing member against said second flange.

4,120,150

COMPACT FUEL-TO-AIR HEAT EXCHANGER FOR JET ENGINE APPLICATION

Thomas G. Wakeman, West Chester, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 17, 1977, Ser. No. 797,669
Int. Cl.[2] F02C *7/18, 7/22*
U.S. Cl. 60—39.09 R **5 Claims**



1. A compact fuel-to-air heat exchanger, in combination with a gas turbine engine having: a hot flow of cooling air; an air duct in communication with said hot flow of cooling air; a combustor section also in communication with said hot flow of cooling air and having a combustor, a combustor dome, a diffuser, and an outward combustor section casing, wherein said outward combustor section casing and said air duct define a fire safety cavity; means, disposed between said air duct and said defined fire safe cavity, for ventilating said fire safe cavity; and, a cool flow of fuel for and to said combustor; wherein said heat exchanger is disposed internal of said gas turbine engine and within said ventilated and defined fire safe cavity, and also is simultaneously disposed near said combustor dome and said diffuser, and wherein said heat exchanger comprises:

a. means for cooling said hot flow of cooling air;

b. means for heating said cool flow of combustor fuel, with this said means in association with said cooling air cooling means;

wherein said means for cooling and said means for heating include, in common, a plurality of flow tubes through which said combustor fuel flows, with said flow tubes disposed in a crossflow relationship with and to said hot flow of cooling air, and with said fuel flow tubes having a common fuel inlet manifold and a common fuel outlet manifold;

and whereby heat is transferred from said hot flow of cooling air to said cool flow of combustor fuel, thereby resulting in an exhaust flow of cooled cooling air;

c. and, means for manifolding, and for directing flow of, said hot flow of cooling air and said exhaust flow of cooled cooling air, wherein said cooling air manifolding and flow-directing means includes:

(1) an inlet, in said combustor section, into which said hot flow of cooling air enters;

(2) means, associated with said inlet, for diverting a portion of said hot flow of entering cooling air;

(3) a casing, housing said plurality of combustor fuel flow tubes;

(4) a first plurality of conduits, leading from said diverting means to said casing, and connected to said diverting means and said casing, to direct said diverted portion of hot flow of cooling air to said casing, and to said plurality of combustor fuel flow tubes housed therein, whereby said diverted portion of said hot flow of cooling air is cooled;

(5) a plurality of air manifolds interposed between and connected to said diverting means and said first plurality of conduits, with one air manifold for each conduit, wherein each air manifold has a plurality of intake air holes therein through which flows said diverted portion of hot flow of cooling air from said diverting means to said air manifold;

(6) a second plurality of conduits, connected to and leading from said casing, to direct and to exhaust said cooled diverted portion of cooling air flow from said casing, and from said plurality of combustor fuel flow tubes housed therein, to a plurality of plenum chambers, with one plenum chamber for each conduit of said second plurality, wherein each plenum chamber is defined by a baffle and a wall of said diffuser;

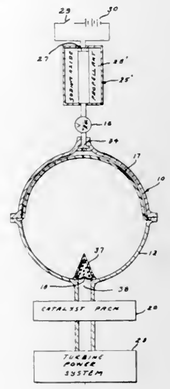
(7) and, a third plurality of conduits, connected to and leading from said plenum chambers through said diffuser and into a duct defined by a casing for said combustor section and a rotor drum, with said duct leading to said hot turbine and said hot turbine parts, whereby said cooled diverted portion of cooling air flow is directed from said plenum chambers to said hot turbine and hot turbine parts.

4,120,151

SOLID PROPELLANT PRESSURIZATION OF MONOPROPELLANT FUEL POWERED SYSTEM

Richard E. Quigley, Jr., Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 25, 1977, Ser. No. 790,773
Int. Cl.[2] F02C *1/04*
U.S. Cl. 60—39.46 M **1 Claim**



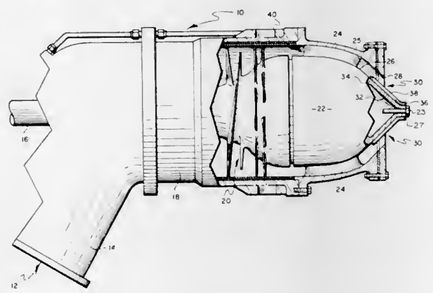
1. In an auxiliary power unit having a turbine adapted to supply power to a load, an expulsion tank including a movable flexible biadder, secured to the wall of said tank; a monopropellant within said tank on one side of said bladder; an outlet in said tank on the side of said bladder adjacent said monopropellant; means, within said outlet, for retaining the monopropellant within said tank until the pressure in said tank reaches a predetermined level; a catalyst pack connected between said tank outlet and said turbine; said catalyst pack including means for decomposing the monopropellant to provide a turbine drive gas; apparatus for pressurizing said positive expulsion tank; comprising: a solid propellant cartridge including a sodium azide solid propellant; means for connecting said solid propellant cartridge to said positive expulsion tank on the side of said bladder remote from said monopropellant; a pressure regulation valve connected between said solid propellant cartridge and said positive expulsion tank; means, in said positive expulsion tank, for preventing direct impingement of gas from the solid propellant cartridge onto said bladder; means adjacent the outlet of said positive expulsion tank for puncturing the flexible bladder to admit the positive expulsion tank pressurizing gas to the catalyst pack to flush monopropellant products from the catalyst pack.

4,120,152

ANTI-VORTEX PINTLE

Eugene D. Jackson, III, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 15, 1977, Ser. No. 777,732
Int. Cl.[2] B63H *11/00*
U.S. Cl. 60—221 **1 Claim**



1. A high velocity axial flow pump apparatus wherein flow leaving an inducer is guided through a large diameter annulus formed by an outer housing and a center pintle body to a smaller nozzle discharge diameter by a stator, pintle, nozzle combination, the improvement which comprises:

at least one substantially axially aligned, radially extended guide vane affixed to said pintle, a first end of said guide vane being affixed to said pintle near the downstream exit of said stator, a second end of said guide vane is affixed to and terminated substantially at the discharge end of said pintle body adjacent said nozzle, said guide vanes being low profile, said guide vanes protruding beyond the surface of said pintle in a radially outward direction towards said surrounding pump housing a distance one-half or less the annulus between said pintle and said housing a minimize frictional drag and nozzle blockage of the outflowing fluid, said guide vane serving to substantially eliminate tangential whirl of fluid prior to the fluid exiting said nozzle.

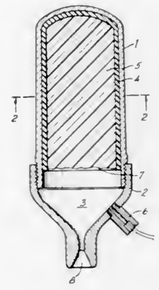
4,120,153

SOLID PROPELLANT GAS GENERATING DEVICE

Otto G. Schaffling, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 143,274, Oct. 2, 1961, Pat. No. 3,947,523.
This application May 21, 1964, Ser. No. 373,125
Int. Cl.[2] F02K *9/04*
U.S. Cl. 60—255 **8 Claims**

1. In combination with a vessel forming a rocket motor combustion chamber, a rubber-base liner firmly adhering to the interior chamber wall, said rubber-base liner containing between about 2.5 and 30 percent by weight of an inorganic metal salt selected from the group consisting of zinc chromate, barium chromate, zinc phosphate, lead phosphate, potassium phosphate, and mixtures thereof, and a propellant charge substantially filling the lined portion of the chamber, said propellant charge firmly adhering to said liner.

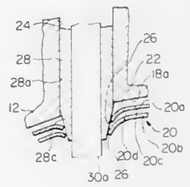


4,120,154

INTERNAL COMBUSTION ENGINE

Akira Yokota, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 8, 1976, Ser. No. 674,767
Claims priority, application Japan, Apr. 22, 1975, 50-54915[U]
Int. Cl.[2] F01N *3/10;* **F02B** *23/00*
U.S. Cl. 60—282 **1 Claim**



1. In an exhaust system for an internal combustion engine:

an exhaust manifold having at least one manifold passage;

a cylinder head having at least one exhaust discharge opening at which said cylinder head is connected to said manifold passage, at least one exhaust intake opening and at least one exhaust port bore extending from said exhaust discharge opening to said exhaust intake opening, said cylinder head having wall means defining said exhaust port bore and a valve guide receiving bore having one end opening outward of said cylinder head and an opposite end opening to said exhaust port bore;

a double-walled port liner formed by an inner metal tube and an outer metal tube, said outer metal tube surrounding said inner metal tube and cooperating with same to form a space therebetween, said inner metal tube defining an exhaust flow passage,

said double-walled port liner being fixedly mounted within said exhaust port bore so that a second space is formed between said outer metal tube and said wall means,

said first mentioned space surrounding substantially all of the outer surfaces of said inner metal tube, being closed at an area adjacent said exhaust intake opening, and being open to said manifold passage at an area adjacent said exhaust discharge opening,

said second space surrounding substantially all of the outer surfaces of said outer metal tube, being closed at the area

adjacent said exhaust intake opening, and being open to said manifold passage at the area adjacent said exhaust discharge opening.

a valve guide having a sleeve portion fixedly received in said valve guide receiving bore, said valve guide having a tapered end portion extending into said exhaust flow passage through said outer and inner metal tubes having seal portions, respectively, which are bent toward said exhaust flow passage to contact said tapered end portion to seal between said tapered end portion and said outer and inner metal tubes; and

an exhaust valve having a stem slidably received in said valve guide.

4,120,155

PROPULSION ARRANGEMENT

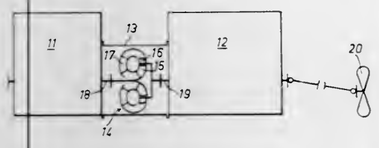
Herbert Deutschmann, Friedrichshafen, Germany, assignor to Motoren- und Turbinen-Union Friedrichshafen GmbH, Germany

Filed Oct. 4, 1976, Ser. No. 729,181

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1975, 2545665

Int. Cl.[2] **F02B** *37/00, 73/00*

U.S. Cl. 60—599 **45 Claims**



1. A propulsion arrangement including two diesel engines, characterized in that the first of the two engines has means for producing a predetermined compression ratio which ensures a reliable starting, the first engine includes an exhaust gas-driven supercharger means and fuel injection means for providing an optimal partial load operation of the engine, and in that the second of the two engines has means for producing a predetermined compression ratio lower than the ratio of the first of the two engines, which lower ratio permits high supercharging and high average pressures, the second engine includes an exhaust-driven supercharger means for delivering high supercharging pressure in full load operation of the second engine, and in that means are provided for supplying surplus exhaust from the first engine to the second engine to prepare an air charge of the second engine for reliable ignition conditions in partial load operation of the second engine.

4,120,156

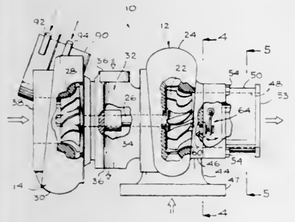
TURBOCHARGER CONTROL

Charles E. McInerney, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 8, 1977, Ser. No. 804,687

Int. Cl.[2] **F02D** *23/00*

U.S. Cl. 60—602 **20 Claims**



1. A turbocharger comprising a turbine housing and a compressor housing each having a gas inlet and a gas outlet, said turbine housing having a bleed hole formed therein opening into said gas inlet, said bleed hole and said gas outlet being formed in a common end surface on said turbine housing; a turbine wheel and a compressor wheel disposed within said turbine housing and said compressor housing, respectively, and mounted for simultaneous rotation on a common shaft; a gas discharge housing mounted in operative association with said turbine housing matingly engaging said end surface to extend over the bleed hole and gas outlet, said discharge housing having a gas discharge passage communicating with the gas outlet of said turbine housing, and a bypass chamber communicating between the discharge passage and the bleed hole; and valve means movably mounted on said discharge housing for seating on said turbine housing end surface to selectively close the bleed hole.

4,120,157

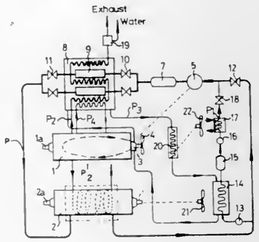
POWER GENERATING AND AIR CONDITIONING SYSTEM UTILIZING WASTE HEAT

Mou-Lin Tang, No. 18-3, Alley 133, Lane 100, Tung Yuan St., Taipei, Taiwan

Filed Mar. 2, 1977, Ser. No. 773,479

Int. Cl.[2] **F01K** *23/10*

U.S. Cl. 60—618 **7 Claims**



1. Power generating and air conditioning system having an internal combustion engine, a vapor engine having a rotor inside and a refrigerant cycling circuit, said system comprising:

(a) a power generating refrigerant circuit including in series:

a refrigerant pump;

a receiver;

a heat exchanger having at least two accumulating chambers disposed therein and connected in parallel with each other, each of said chambers having a check valve at its inlet to permit the entry of low pressure refrigerant from said receiver and each of said chambers having a release valve at its outlet to prohibit the exit of said refrigerant until it had reached a predetermined working pressure; and,

a vapor engine disposed successively along the flow direction of the refrigerant and arranged in order by related piping to return said refrigerant to said refrigerant pump

(b) an air conditioning cooling circuit having one end connected to the outlet side of said vapor engine and having the other end connected to the suction end of said refrigerant pump and operative to bypass a portion of said refrigerant from said power generating circuit to produce a cooling effect and then to return said refrigerant to said power generating circuit said cooling circuit including in series:

condenser means;

liquid storage means for storing the condensed refrigerant;

evaporation means for evaporating said refrigerant and thereby absorbing heat from a space desired to be cooled

(c) means for introducing waste heat of said internal combustion engine into said heat exchanger to elevate said refrigerant to a predetermined working pressure in said accumulating chambers;

(d) means for operating each of said accumulator check valves and each said accumulator release valves alternatively in sequence to release refrigerant accumulated at a working pressure alternatively from successive accumulating chambers to provide a substantially continuous flow of refrigerant to operate said vapor engine whereby the waste heat of said internal combustion engine is exchanged through said heat exchanger with said refrigerant inside said exchanger and said refrigerant is thereby elevated to a predetermined working pressure in said accumulating chambers and part of said refrigerant is released into said vapor engine to drive the rotor thereof through expansion of the refrigerant to generate power and part of said refrigerant is introduced to said cooling circuit to be condensed and evaporated to produce a cooling effect.

4,120,158

POWER CONVERSION AND SYSTEMS FOR RECOVERING GEOTHERMAL HEAT

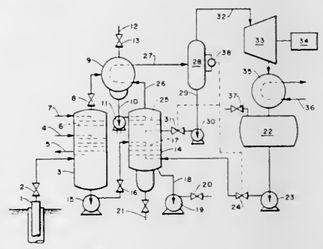
Itzhak Sheinbaum, 2038 E. Altadena Dr., Altadena, Calif. 91101

Filed Nov. 15, 1976, Ser. No. 741,646

The portion of the term of this patent subsequent to Nov. 2, 1993, has been disclaimed.

Int. Cl.[2] **F03G** *7/00*

U.S. Cl. 60—641 **16 Claims**



1. The process of recovering heat from geothermal fluid which may contain salt, non-condensables and dissolved minerals comprising the steps of:

separating the liquid geothermal fluid from the gaseous geothermal fluid;

heating a working fluid in a first heat exchange relationship by direct contact heat exchange with the separated geothermal liquid;

transforming at least a portion of the working fluid to a gaseous state by further heating the preheated working fluid in a second heat exchange relationship with the separated gaseous portion of the geothermal fluid; and

expanding the gaseous working fluid in a power extraction gas expansion device.

4,120,159

STEAM TURBINE CONTROL SYSTEM AND METHOD OF CONTROLLING THE RATIO OF STEAM FLOW BETWEEN UNDER FULL-ARC ADMISSION MODE AND UNDER PARTIAL-ARC ADMISSION MODE

Hiroshi Matsumoto; Yoshiyuki Nakano; Toshihiko Higashi, and Akihiro Yasumoto, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 19, 1976, Ser. No. 734,017

Claims priority, application Japan, Oct. 22, 1975, 50-126398; Mar. 26, 1976, 51-32615

Int. Cl.[2] **F22D** *1/12*

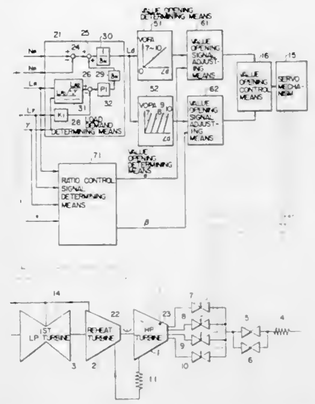
U.S. Cl. 60—667 **8 Claims**

1. In a steam turbine control system having a turbine and a plurality of valves operable to admit steam to a first stage of the turbine through a nozzle arc, the combination of:

means for generating a load demand signal according to a speed reference signal, speed feed-back signal, load reference signal, load feed-back signal, and load change rate signal:

means for generating a first valve opening signal under a full arc admission mode according to said load demand signal;

means for generating a second valve opening signal under a partial arc admission mode according to said load demand signal;



means for generating first and second ratio control signals between steam flow under the full arc admission mode and steam flow under the partial arc admission mode according to the load reference signal, the load feed-back signal, the load change rate signal, and a first stage temperature change rate signal;

means for adjusting the said first valve opening signal according to said first ratio control signal;

means for adjusting the said second valve opening signal according to said second ratio control signal; and

load control means arranged to position said valves to admit a desired total steam flow to said turbine according to the adjusting valve opening signals.

4,120,160

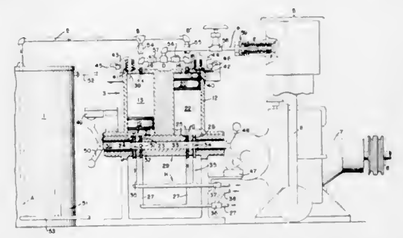
POWER GENERATION SYSTEM

Rock Davis, P.O. Box 6, Symsonia, Ky. 42082

Filed Mar. 2, 1977, Ser. No. 773,487

Int. Cl.[2] **F01K** *23/00*

U.S. Cl. 60—670 **14 Claims**



11. In a power generation system having a low pressure source of liquid, means connected to said source for pressurizing said liquid to a substantially high pressure, means for forming vapor from said pressurized liquid, and turbine means for

deriving mechanical motion from said vapor, the improvement wherein said pressurizer comprises:

(a) wall means defining first and second chambers having variable volumes, each chamber having an intake and discharge opening;

(b) first valve means between said source of liquid and the intake openings of said first and second chambers for permitting liquid to flow into said first chamber when its volume is expanding and to keep liquid from flowing into the intake opening of said second chamber when its volume is contracting;

(c) second valve means between said source of liquid and the intake opening of said first and second chambers for permitting liquid to flow into said second chamber when its volume is expanding and to keep liquid from flowing into the intake opening of said first chamber when its volume is contracting;

(d) third valve means connected to the discharge opening of said second chamber to allow pressurized liquid to flow out of said second chamber when its volume is contracting;

(e) fourth valve means connected to the discharge opening of said first chamber to allow pressurized liquid to flow out of said first chamber when its volume is contracting;

(f) means for expanding said first chamber's volume when said second chamber is contracting to pressurize the liquid therein and for contracting said first chamber's volume to pressurize the liquid therein when said second chamber's volume is expanding;

(g) means for sensing when said first and second chambers' volumes are at their minimum contracted volume;

(h) means responsive to said sensing means for alternatively contracting and expanding the volumes of said first and second chambers so that low pressure liquid is flowing into the intake opening of said first chamber when relatively high pressure liquid is flowing out of the discharge opening of said second chamber, and so that low pressure liquid is flowing into the intake opening of said second chamber when relatively high pressure liquid is flowing out of the discharge opening of said first chamber; and

(i) pipe means connected to said third and fourth valve means (d and e), said pipe means being adapted to conduct pressurized liquid to a slide valve means connected to said means for forming vapor; said slide valve means having wall means to define a valve chamber and a multiplicity of orifices through which pressurized liquid is injected into said vapor forming means, said slide valve means having an element slidably mounted in said valve chamber, whereby said slide valve is alternatively opened and closed due to pressure differences between said pressurized liquid entering said slide valve and the vapor formed from said injected liquid.

4,120,161

EXTERNAL HEAT ENGINE

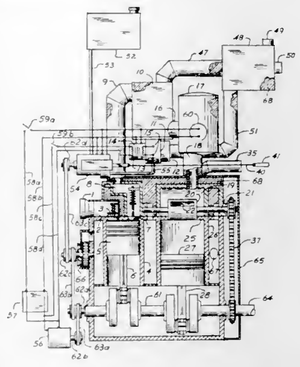
Reinhold C. Gedeit, 613 Beloit Ave., Forest Park, Ill. 60130

Continuation-in-part of Ser. No. 642,361, Dec. 19, 1975, abandoned, and Ser. No. 763,302, Jan. 28, 1977, abandoned. This application Oct. 12, 1977, Ser. No. 841,577

Int. Cl.[2] F02G *1/02*

U.S. Cl. 60—682 **7 Claims**

1. In an open cycle air engine of the reciprocating piston type having at least one compression cylinder and one power cylinder, the power cylinder being of larger volume than the compression cylinder, said engine having heater means for heating the compressed air, valve means for admitting atmospheric air into said compression cylinder, valve means for allowing said air after compression to leave said compression cylinder, means defining a passageway allowing said compressed air to enter said air heater, valve means for admitting said compressed and heated air into said power cylinder, valve means for allowing the expanded and cooled down air to leave said power cylinder after the power stroke is completed, a housing for said valve means, a cylinder cooling system, and insulating means around all hot parts of the engine facing the outside, the improvements comprising in combination, means defining a hot air reserve chamber for allowing the heated and compressed air to expand under constant pressure, means defining a passageway between said air heater means and said hot air reserve chamber, means defining a passage from said hot air reserve chamber to said valve housing for admitting



said hot compressed air into said power cylinder, said air heater including a fuel feed control means, burner means for continuous combustion of combustible fliud, blower means for supplying atmospheric air to said burner means, and means to ignite the combustible fluid and air mixture; and means to control the maximum pressure and temperature within said hot air reserve chamber.

4,120,162

PLANT COMPRISING A POWER STATION AND A COOLING TOWER

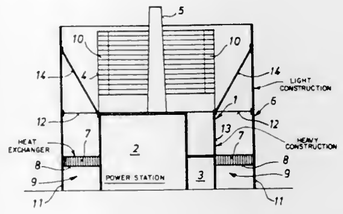
Hermann Heeren, Nuremberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Nov. 10, 1976, Ser. No. 740,727

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1975, 2550527

Int. Cl.[2] F01K *9/00*

U.S. Cl. 60—690 **6 Claims**



1. A plant, especially steam power plant, which includes: a power station with power station buildings having outer walls of a heavy weight conventional construction and with a cooling tower forming a double mantle construction surrounding said power station buildings and comprising in combination an inner cooling tower section and an outer cooling tower section surrounding said inner cooling tower section in spaced relationship thereto, the outer walls of said power station buildings forming at least a portion of said inner cooling tower section, and at least a portion of said outer cooling tower sections being of a light weight construction, any portion of said inner cooling tower section extending upwardly from said power plant buildings rests on said power plant buildings, supporting means associated with said outer cooling section for resting the latter on the ground, and wind bracing means likewise associated with said outer cooling section and resting said outer cooling section on said power plant buildings.

4,120,163

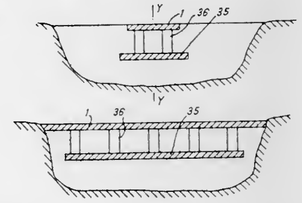
SOIL TREATMENT

Hisashi Shiraki, Fuchu, Japan, assignor to Kitagawa Iron Works Co., Ltd., Japan

Continuation of Ser. No. 610,217, Sep. 4, 1975, abandoned. This application Jul. 1, 1977, Ser. No. 812,930

Int. Cl.[2] E02D *3/12*

U.S. Cl. 405—264 **2 Claims**



1. A method, for the treatment of weak soil to provide stabilized land, comprising the steps of:

(i) moving an agitating means within said weak soil in a first lateral direction and simultaneously up and down so as to obtain the agitation of a first layer having length and breadth and having a depth corresponding to the extent of up and down movement,

(ii) simultaneously with said movement of the agitating means, feeding to the soil being agitated in the vicinity of the agitating means a soil stabilizer material,

(iii) repeating steps (i) and (ii) with the agitating means moved through a different portion of depth in the weak soil so as to obtain a second layer of treated soil spaced in the up or down direction from said first layer,

(iv) moving said agitating means, simultaneous feeding of said soil stabilizer material, up or down from the position of said first layer to the position of said second layer but without lateral movement, thereby to form a column of stabilized soil integral with both of said layers,

steps (iii) and (iv) being in either order.

4,120,164

UNDERGROUND ROADWAY OR TUNNEL SUPPORT

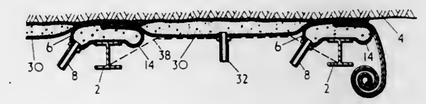
Malcolm George Tomlin, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Jul. 28, 1977, Ser. No. 820,064

Claims priority, application United Kingdom, Aug. 4, 1976, 32452/76

Int. Cl.[2] E21D *17/00*

U.S. Cl. 405—289 **10 Claims**



1. A method of supporting an underground roadway or tunnel comprising installing a series of spaced rigid support members along the roadway or tunnel, the rigid support member being erected in turn adjacent to newly exposed mine or rock surface as the roadway or tunnel is extended, locating deformable container means in at least portions of voids existing between the erected rigid support members and adjacent portions of the mine or rock surface, filling the deformable container means with flowable material such that the deformable container means is urged into contact with said adjacent portions of the mine or rock surface filling at least portions of the voids which previously existed between the rigid support members and the adjacent portions of the mine or rock surface and extending deformable limb means associated with the last installed deformable container means towards a newly erected rigid support member such that the limb means is inserted between the newly erected rigid support member and an adjacent portion of the mine or rock surface and is retained in the extended position when the next installed deformable container means associated with said newly erected rigid support member is filled with flowable material.

4,120,165

METHODS OF AND APPARATUS FOR DRIVING TUNNELS

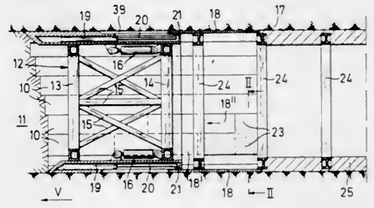
Dieter Stuckmann, Selm, and Hans Jütte, Dortmund-Brechten, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Feb. 11, 1977, Ser. No. 767,930

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605741; Feb. 13, 1976, 2605740

Int. Cl.[2] E01G *3/02*

U.S. Cl. 405—145 **20 Claims**



1. In a method of driving a tunnel or the like which utilizes a drive shield with a plurality of drive members individually displaceable and supported by frame means, and elongated rear tail members associated and movable with the drive members, creating a lining for the tunnel to the rear of the drive shield, characterized by:

(a) successively advancing the elongated rear tail members, and

(b) introducing concrete in successive strips into the spaces left as the elongated rear tail members are successively advanced.

4,120,166

CEMENT MONITORING METHOD

Fred A. Brooks, Jr., Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Mar. 25, 1977, Ser. No. 781,087

Int. Cl.[2] E02B *17/00*

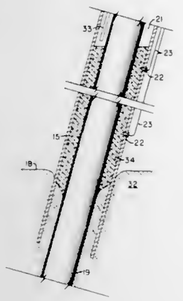
U.S. Cl. 405—225 **3 Claims**

1. In the cementing of an offshore tubular support member having a pile positioned therein, a method for determining the degree of set of the cement, which comprises:

(a) securing a probe capable of measuring the electrical resistance of fluid at a fixed elevation in the annulus defined by said support member and said pile,

(b) upwardly displacing fluid in said annulus with a cement slurry until said slurry reaches an elevation above said

probe as indicated by a change in the electrical resistance measured by said probe, and



(c) monitoring the electrical resistance of said cement slurry measured by said probe for a time period sufficient to indicate set of the cement.

4,120,167

OFFSHORE PIPE LAYING

Lee Richard Denman, P.O. Box 52891, Houston, Tex. 77052, and William Randolph Abrams, Box 312, Mystic, Conn. 06355

Filed Jun. 6, 1977, Ser. No. 803,888

Claims priority, application United Kingdom, Jun. 17, 1976, 25172/76

Int. Cl.[2] F16L *1/00*; G01S *9/66*

U.S. Cl. 405—157 **10 Claims**



1. A method of laying pipeline offshore, comprising driving a pipe-laying barge along a predetermined right-of-way, feeding a continuous length of pipe from the barge to the underlying marine bottom so that the pipe is laid approximately along a predetermined path in the right-of-way, driving a vessel substantially over and along the track of the pipe as laid, ascertaining, by means of an echo sounder, the position of the touch-down point of the pipeline, computing the lateral deviation of the touch-down point from the predetermined path, and controlling the lateral displacement of the pipe-laying barge in accordance with the computed deviation of the touch-down point from the path so as to reduce the aforementioned deviation.

4,120,168

APPARATUS FOR LAYING A PIPELINE IN A BODY OF WATER

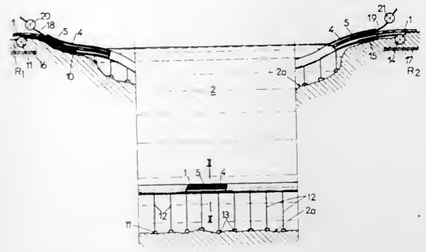
Jacques Edouard Lamy, Fontenay-aux-Roses, France, assignor to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris", Paris, France

Continuation-in-part of Ser. No. 690,873, May 28, 1976, Pat. No. 4,052,862. This application Jul. 14, 1977, Ser. No. 815,729

Claims priority, application France, May 30, 1975, 75 16962; May 13, 1976, 76 14432

Int. Cl.[2] F16L *1/00*

U.S. Cl. 405—170 **13 Claims**



1. Apparatus for use in laying a pipeline on the bed of a body of water, comprising:

(a) a pipeline, a ballast tube enclosing the pipeline over the whole of its length so that an intermediate space is created between the pipeline and the ballast tube, and means keeping the pipeline inside the ballast tube to form therewith an integral assembly adapted to be laid in the body of water;

(b) a supply of liquid less dense than water, and means for filling the intermediate space with said liquid, to give the assembly a positive buoyancy while said assembly is being laid in the body of water; and

(c) a supply of a medium denser than said liquid, and means for filling the intermediate space with said medium and recovering said liquid, once said assembly has been laid in the body of water to give the assembly a negative buoyancy whereby said assembly rests on said bed.

4,120,169

MULTIPHASIC PUMP FOR ROTATING CRYOGENIC MACHINERY

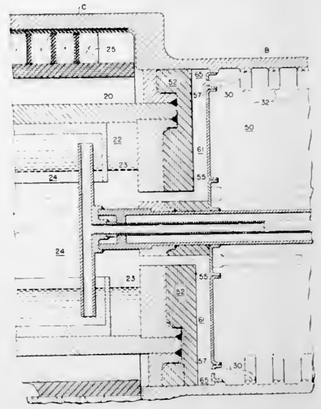
Phillip William Eckels, Pittsburgh, Pa., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Dec. 15, 1976, Ser. No. 750,794

Int. Cl.[2] F17C *7/02*

U.S. Cl. 62—55 **4 Claims**

1. A mixed phase pump for rapidly rotating cryogenic machinery which machinery includes a rapidly rotating support cylinder rotated substantially about its axis containing a two-phase liquid-gas refrigerant with said liquid normally classified to the periphery of said support cylinder to define a cylindrical pool and said gas classified to the interior of the refrigerant to define a gaseous refrigerant core with a cylindrical liquid gas interface therebetween, said support cylinder including said pump for withdrawing gaseous refrigerant from said pool, and means for communicating liquid refrigerant to said pool, said pump comprising: a pump housing, said pump housing rotatable about an axis substantially coincident to the axis of said refrigerant support cylinder; said pump housing defining at least one passageway extending from a first end adjacent the axis of rotation of said pump housing to an opposite end radially remote from the axis of rotation of said pump housing; a gaseous helium inlet communicated to said gaseous refrigerant core at one end and to said axially adjacent portion of said passageway at the opposite end to provide for the inflow of gaseous refrigerant from said core to said pump; a gaseous refrigerant outlet removed axially outward from said inlet, said outlet communicating to said pump passageway at a distance less than the full radially outward distance of said passageway to permit the outflow of helium gas from said pump; and, said passageway defining between said outlet and the axially remote portion of said passage a liquid refrigerant storage volume to prevent liquid that penetrates in said inlet from gaining access to said pump outlet.



4,120,170

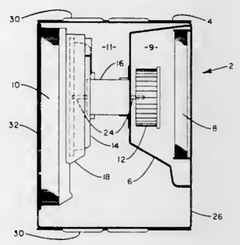
APPARATUS FOR REDUCING CONDENSATE NOISE IN AN AIR CONDITIONER

Robert J. Whitwell, Syracuse, and Theodore S. Bolton, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 4, 1977, Ser. No. 784,103

Int. Cl.[2] F25B *47/00*

U.S. Cl. 62—91 **7 Claims**



1. Apparatus in an air conditioning unit for reducing condensate noise which comprises:

an evaporator section wherein condensate is formed;

a condenser section having an axial condenser fan;

means for powering the fan;

fluid transfer means, whereby condensate is transferred from the evaporator section of the unit to the condenser section of the unit;

slinger means communicating with the condensate in the condenser section of the unit; and

a condenser fan shroud encasing the condenser fan having an orifice acting as an air flow guide and further having a curvilinear baffle forming a splash surface closely fitted to the slinger means whereby the splash surface is provided so that the condensate thrown by the slinger means strikes the splash surface at an acute angle.

5. A method for reducing operating noise in an air conditioning unit having an evaporator section where condensation is formed, a condenser section having an axial condenser fan and having means for powering the fan which comprises:

transferring the condensation from the evaporator section of the unit to the condenser section of the unit;

slinging the condensation from the condenser section of the unit into the condenser fan air stream;

encasing the axial condenser fan with a condenser fan shroud defining a condenser fan orifice which acts as an air flow guide; and

enclosing the means for slinging the condensation with a closely spaced curvilinear baffle having a splash surface which the condensate impacts at an acute angle.

4,120,171

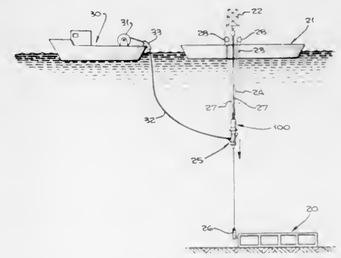
APPARATUS AND METHOD OF CONNECTING A FLEXIBLE LINE TO A SUBSEA STATION

Georges M. Chateau, Pau, France, and Chester B. Falkner, Jr., Huntington Beach, Calif., assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Jan. 13, 1977, Ser. No. 759,031

Int. Cl.[2] F16L *1/04*

U.S. Cl. 405—169 **12 Claims**



1. In a system for connecting a line having a connector on one end thereof to a subsea station having guide post means thereon, said guide post means being connected to guide lines leading to a first vessel positioned above said subsea station, said line to be connected being carried by a second vessel, the combination of:

a connector guide frame means cooperable with said guide lines for movement between said guide post means and said first vessel;

said connector guide frame means including socket means, said socket means having means for receiving and connecting thereto said connector on said one end of said line carried by said second vessel while said guide frame means is at the surface at said first vessel;

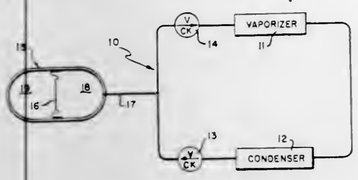
and guide sleeve means carried by the connector guide frame, slideably cooperable with said guide lines, and releasably cooperable with said guide post means whereby said connector guide frame means is adapted to be lowered to said subsea station along said guide lines;

means mounting said socket means on said connector guide frame means for pivotal movement in selected angular relation to said guide frame means whereby said connecting means with one end of said line attached thereto being yieldable relative to said connector guide frame means during lowering of said connector guide frame means to said subsea station;

and means for locking said socket means in a preselected position when said connector guide frame means is at said subsea station;

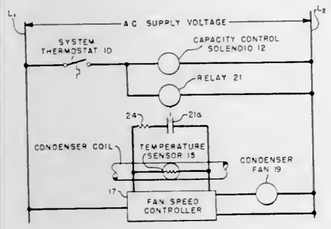
said socket means and said connecting means permitting connection of said connector with a means to be connected to said one end of said line when said guide frame means is at said preselected position at said subsea station.

4,120,172
HEAT TRANSPORT SYSTEM
Bill L. Pierce, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 5, 1977, Ser. No. 794,296
Int. Cl.[2] F25B *1/00*; F25D *15/00*
U.S. Cl. 62—115 4 Claims



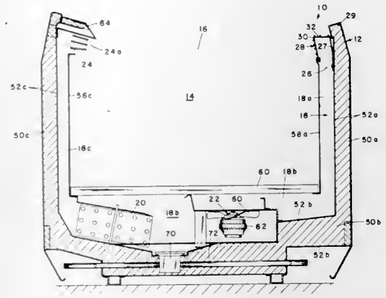
4. A method of transporting heat from a heat source to a heat sink over a considerable distance comprising vaporizing a vaporizable liquid in the nucleate boiling mode with heat from the heat source, condensing the vapors thus produced by rejecting heat to the heat sink, returning the condensate to the vaporizer through two check valves in series to complete a coolant loop and driving the vaporizable liquid around the coolant loop with a pneumatic spring connected to the loop between the two check valves.

4,120,173
HEAD PRESSURE CONTROL SYSTEM FOR REFRIGERATION APPARATUS
Francis Alfred Kimpel, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Jun. 2, 1977, Ser. No. 802,689
Int. Cl.[2] F25B *39/04*
U.S. Cl. 62—181 11 Claims



1. In a refrigeration system having full capacity and reduced capacity operating modes, and which includes an air-cooled condenser, a head pressure control system comprising:
control means, operable when the refrigeration system is established in its full capacity operating mode, for maintaining the condenser pressure in said refrigeration system relatively constant at a first control point despite wide variations in condenser cooling air temperature;
and modifying means for altering the operation of said control means, when the refrigeration system is established in its reduced capacity operating mode, to maintain the condenser pressure relatively constant at a second control point, substantially lower than said first control point, despite wide variations in condenser cooling air temperature.

4,120,174
AIR DEFROST DISPLAY CASE
William C. Johnston, Atlanta, Ga., assignor to Kysor Industrial Corporation, Cadillac, Mich.
Filed Mar. 16, 1977, Ser. No. 778,216
Int. Cl.[2] A47F *3/04*; F25B *29/00*
U.S. Cl. 62—256 11 Claims

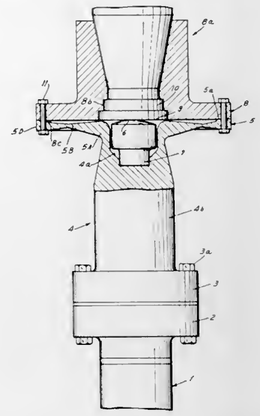


1. A chest-type ar defrost refrigerated display operable in a refrigeration mode and a defrost mode, comprising:
a storage chest having an open top, a refrigeration coil, and recirculation air flow passage means for recirculating cold air from said open top to said coil and back to and across said open top during the refrigeration mode, said passage means including a refrigerated air outlet opening at one side of said open top and oriented for air flow therefrom in a direction across said open top, and an air return opening at the opposite side of said open top having a biorientation including portions oriented to receive return air flow across said open top from said refrigerated air outlet opening during the refrigeration mode, and other portions oriented to discharge reverse defrost air flow from said passage means into ambient air during the defrost mode; and two-way air propelling means arranged to so recirculate cold air in one direction through said passage means in the refrigeration mode, and to cause defrost air flow from the ambient air, in the reverse direction through said passage means, and out said bioriented opening to the ambient air during the defrost mode, the defrost air flow in said reverse direction through said passage means being greater than refrigeration flow in said one direction.

4,120,175
FLEXIBLE SHAFT COUPLING
Robert Dernedde, Frankenthal, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Fed. Rep. of Germany
Filed Sep. 16, 1976, Ser. No. 723,712
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1975, 2542946
Int. Cl.[2] F16D *3/56*
U.S. Cl. 64—15 B 19 Claims

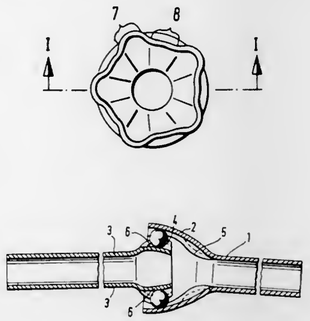
1. A flexible coupling, particularly for transmission of torque to rotary parts of a pump in a nuclear reactor plant, comprising coaxial first and second rotary members having first and second flanges which are adjacent to each other, at least said first flange being elastically deformable; means for fastening said flanges to each other so that rotation of one of said members results in the transmission of torque to the other of said members through the medium of said fastening means; and first and second thrust transmitting elements respectively provided in said first and second rotary members and surrounded by the respective flanges, said elements having abutting faces which

are in substantial point contact with each other in the region of the common axis of said rotary members and bear against each



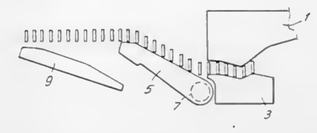
other with a predetermined force acting in the axial direction of said rotary members.

4,120,176
UNIVERSAL JOINT
Alfred Ebbinghaus, P.O. Box 1320, 7080 Aalen, Fed. Rep. of Germany
Filed Jun. 16, 1976, Ser. No. 696,515
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1975, 2527376; Jan. 21, 1976, 2602074; Feb. 3, 1976, 2603991
Int. Cl.[2] F16D *3/30*
U.S. Cl. 64—21 7 Claims



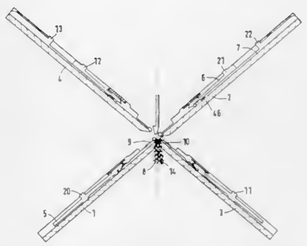
1. A universal joint comprising:
an outer bearing race defining member, said outer race defining member having a generally concave internal configuration, said outer race defining member being integral with and at the first end of a tubular drive shaft, the wall thickness of said outer race defining member being the same at all points and being substantially equal to the wall thickness of the tubular drive shaft;
an inner bearing race defining member, said inner race defining member being integral with and at the first end of a tubular driven shaft and having a generally spherical configuration, said inner race defining member being received in said concave end portion of said drive shaft outer bearing race defining member and cooperating therewith to define ball bearing races; and
bearings positioned in said races.

4,120,177
RADIALLY INSERTABLE AND PIVOTABLE CAMS
Fabrizio Micheletti, Fucecchio, Florence, Italy, assignor to Brematex S.p.A., Prato, Florence, Italy
Filed Jul. 20, 1977, Ser. No. 817,346
Claims priority, application Italy, Jul. 20, 1976, 9533 A/76
Int. Cl.[2] D04B *9/00*
U.S. Cl. 66—40 3 Claims



1. In a circular knitting machine, means for selectively positioning needles comprising a needle positioning cam radially movable into and out of the path of needle control butts, a needle raising cam mounted on the machine in advance of said needle positioning cam and being pivoted at its advance end for pivoting from a lower inoperative position out of the path of said control butts to an inclined clearing position in the path of said control butts for raising said control butts to clear said positioning cam, and allow insertion of said positioning cam without interference with said control butts and means for pivoting said raising cam to said clearing position to permit insertion of said positioning cam without interference with the control butts.

4,120,178
KNITTING MACHINE
Gottfried Kuhnert, Aalen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Westhausen, Germany
Continuation-in-part of Ser. No. 665,202, Mar. 9, 1976, abandoned. This application Oct. 4, 1977, Ser. No. 839,472
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1975, 2511086
Int. Cl.[2] D04B *7/06*
U.S. Cl. 66—63 3 Claims



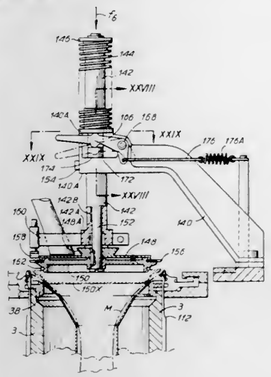
1. A double flat-bed knitting machine comprising four needle beds disposed in two mutually opposed pairs, a plurality of needles associated with each pair of needle beds, slide means carrying cam means for actuating said needles in the needle beds, each pair of needle beds being disposed in one of two mutually bisecting planes respectively, each of said needles having a hook and tongue at each end, associated plate means for moving said needles, and transfer plates disposed at least in the needle beds remote from the location of the knitware take-off.

4,120,179

YARN CUTTING DEVICE FOR A CIRCULAR KNITTING MACHINE

Fabrizio Micheletti, Fucecchio (Firenze), Italy, assignor to Brematex S.p.A., Prato, Italy

Filed Jul. 20, 1977, Ser. No. 817,345
Claims priority, application Italy, Jul. 20, 1976, 9532 A/76
Int. Cl.[2] D04B *15/61*
U.S. Cl. 66—145 R **6 Claims**



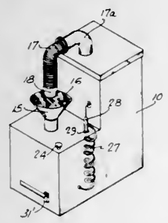
1. In a circular knitting machine of the rotating cylinder type having a ring mounted at its upper end over which the fabric being knit passes into the cylinder, a yarn cutting device comprising a support, a disc having peripheral teeth thereon mounted for free rotation on said support coaxial with said cylinder and movable into frictional engagement with said cylinder for rotation of said disc with said cylinder, an annular resilient friction element seated in said device and facing said cylinder ring for engagement therewith to transmit rotation of the cylinder to rotation of said disc, stationary cutting means mounted on said support and cooperating with said rotating disc to cut yarn, and means for moving said disc into ring engagement for yarn cutting rotation therewith and away from said ring to an inoperative position.

4,120,180

MACHINE FOR CLEANING A FABRIC WORKPIECE

John J. Jedora, 724 Richelieu St., Timmins, Ontario, Canada (P4N 5G6)

Filed May 10, 1977, Ser. No. 795,535
Int. Cl.[2] D06B *5/24*
U.S. Cl. 68—20 **9 Claims**



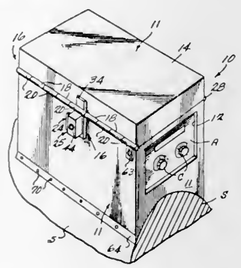
1. A machine for cleaning a fabric workpiece, comprising
(a) a suction nozzle having a screen for supporting the workpiece horizontally;
(b) air blowing means including a motor and a fan;
(c) means for connecting said nozzle to the suction side of said air blowing means for drawing air through said nozzle and past said motor for thereby cooling said motor and heating said air;
(d) means for connecting the pressure side of said air blowing means to a downwardly directed blowing nozzle situtated above said screen;
(e) a tool for applying water to a selected area of the workpiece on the screen, said selected area being substantially smaller than the entire area of the workpiece on the screen; and
(f) means for supplying a controlled flow of water under controlled pressure to said tool to control said flow to enable water supplied to said selected area of the workpiece to be rapidly withdrawn through the suction nozzle by said air to inhibit such water from spreading in and splashing on the workpiece beyond said selected area.

4,120,181

LOCKING MECHANISM

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Division of Ser. No. 760,955, Jan. 21, 1977, Pat. No. 4,058,993.
This application May 13, 1977, Ser. No. 796,823
The portion of the term of this patent subsequent to Nov. 22, 1994, has been disclaimed.
Int. Cl.[2] E05B *65/52*
U.S. Cl. 70—58 **14 Claims**



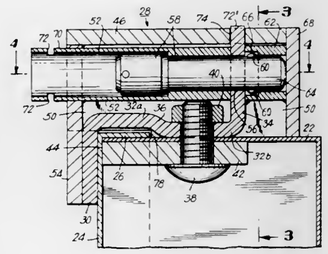
1. A locking mechanism for first and second relative movable members comprising
(a) a first plurality of spaced tubular members having aligned bores and extending from said first movable member,
(b) a second plurality of spaced tubular members having aligned bores and extending from said second movable member, said second plurality of tubular members being spaced apart in a manner to receive said first plurality of spaced tubular member therebetween with bores of said first and second plurality of members aligned,
(c) a removable hardened metal latching bolt having cross-sectional dimensions generally corresponding in shape to the shape of said bores in said first and second plurality of spaced tubular members for receipt thereby to hold said first and second plurality of bores in alignment, and
(d) a locking means for holding said latching bolt in place received by said first and second plurality of tubular members to prevent relative movement between said tubular members, said locking means including a key-release means; and said locking means, including said key-release means, being mounted exterior of said latching bolt.

4,120,182

TAMPER-PROOF LOCKING DEVICE

Lionel S. Michelman, Pomona; Samuel M. Michelman; David L. Michelman, both of Queens, and Milton Michelman, Long Beach, all of N.Y., assignors to Michelman Iron Works Corp., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 783,274, Mar. 31, 1977, Pat. No. 4,096,718, which is a continuation-in-part of Ser. No. 693,293, Jun. 7, 1976, Pat. No. 4,031,722. This application Dec. 19, 1977, Ser. No. 861,687
The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.
Int. Cl.[2] E05B *65/52*
U.S. Cl. 70—63 **28 Claims**



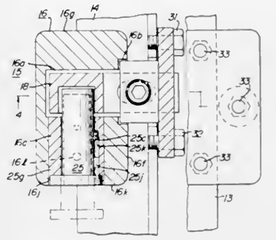
1. A tamper-proof locking device mountable on a lidded container or the like, said device comprising a first member and a second member, said first member having a first portion constructed and arranged to overlie the lid of the container when the lid is closed, said first member having a second portion functionally unitary with and rigidly secured to said first portion, said second portion being constructed and arranged to overlie a side wall of the container below the lid, said first member having a third portion functionally unitary with and rigidly secured to the second portion and extending away from said second portion in a direction away from said side wall of the container, said third portion having an opening therein the axis of which is perpendicular to the plane of the lid, means to firmly secure said second portion to said side wall of the container, said securing means including at least one element constructed and arranged to be operated by a tool in cooperation therewith and located externally of the container, said element in securing position being disposed on the surface of the second portion remote from the container, said second member including a first portion which in cooperation with said first member and when assembled thereon defines with said first member an enclosure that prevents access of a tool to said element, said element in the absence of said second member being accessible to said tool and when said second member is assembled on said first member being inaccessible to said tool, said second member having a second portion which is substantially parallel to the third portion of said first member, said second portion of said second member having an opening therein in alignment with the opening in the third portion of the first member, and a rectilinear shackle receivable in said openings, said shackle having a head constructed and arranged to be disposed above the opening in said second member, said shackle additionally including at a point remote from said head a projection which is extensible from and receivable in said shackle, said projection when the second member is assembled on the first member being arranged to be extended to underlie the third portion of the first member.

4,120,183

LOCK ASSEMBLY FOR HIGH SECURITY CONTAINER

Russell W. Walters, Richmond, Ky., assignor to BMR Security Products Corp., Richmond, Ky.

Filed Jul. 22, 1976, Ser. No. 707,627
Int. Cl.[2] B65D *55/14*
U.S. Cl. 70—159 **15 Claims**



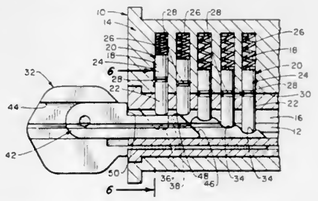
1. A lock assembly comprising:
(a) means for securing said assembly to a member, and
(b) lock housing means connected to said securing means, said lock housing means having,
(i) a continuous top portion,
(ii) a continuous first side portion adjacent said top portion,
(iii) a second side portion opposite said first side portion,
(iv) a first end portion,
(v) a substantially cylindrical sleeve portion,
(vi) a bar lock extendible in its longitudinal direction within said sleeve portion of said lock-housing means and when said assembly is in the locked condition said bar lock is accessible for unlocking only at said first end portion, said bar lock being capturable within said sleeve portion,
(vii) a second end portion which has a continuous unbroken surface,
(viii) a bottom portion opposite said top portion, said bottom portion being provided with an opening into which strike means may be introduced for engagement by said bar lock and said lock housing means covering and concealing said strike means except through said bottom portion opening.

4,120,184

LOCK WITH NORMALLY NON-REMOVABLE KEY AND AUXILIARY KEY REMOVAL DEVICE FOR USE IN INTERIOR LOCKSETS

John R. Gerlach, Monterey Park, Calif., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 19, 1977, Ser. No. 834,650
Int. Cl.[2] E05B *11/00, 19/00*
U.S. Cl. 70—389 **14 Claims**



1. In a keyed, pin-tumbler lock of the general type having a lock cylinder rotatable in a lock casing, a key slot in the cylinder, a series of spaced-apart radial pin holes partially in each of the lock casing and cylinder and intersecting the key slot,

resiliently inwardly urged sets of casing and cylinder pins with one set in each pin hole, a key in the key slot axially intersecting each of the pin holes with a key notch therein aligned for each set of pins positioning that pin set with a parting line between its casing and cylinder pins at a casing-cylinder parting line permitting cylinder rotation by the key; the improvements in combination therewith comprising: a radial pin hole at least in said lock cylinder intersecting said key slot and spaced from any other radial pin hole; a cylinder pin in that said cylinder pin hole; resiliently reacting means for urging that said cylinder pin into said key slot; a key notch in said key radially aligned with and abutting an end of that said cylinder pin when said key is properly in said key slot; abutment means on said key at an axial side of at least that said key notch axially inward of said lock cylinder at all times axially obstructing that said cylinder pin when that said cylinder pin is in its said key notch and in all positions of said lock cylinder for preventing radial disengagement of that said cylinder pin radially from its said key notch upon attempted axial removal of said key from said key slot to thereby prevent such key removal from said key slot in all positions of said lock cylinder; said resiliently reacting means being constructed and arranged relative to that said cylinder pin to permit free rotation of said lock cylinder at all times at least when that said cylinder pin is received in its said key notch; all key notches in said key including that said key notch having usual surface means at axial sides thereof axially outward of said lock cylinder where necessary for at all times permitting free usual insertion of said key into said key slot in usual manner, all key notches in said key except those having said abutment means having usual surface means at axial sides thereof axially inward of said lock cylinder where necessary for at all times permitting free usual removal of said key from said key slot; a separate key removal member axially insertable into said key slot adjacent said key and having removal surface means thereon for permitting said insertion while moving and retaining at least that said cylinder pin radially from its said key notch and said abutment means obstruction to thereby permit usual axial removal of said key from said key slot.

4,120,185

CONTROL SYSTEM FOR OPERATING STEPS OF A PRESS AND/OR TRANSFER MECHANISM

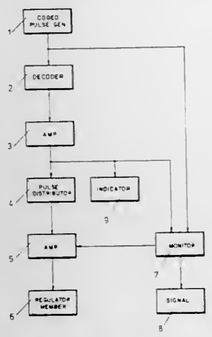
Franz Schneider; Helmut Braitinger, and Burkhard Schumann, all of Göppingen, Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

Filed Jan. 22, 1976, Ser. No. 651,531

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1975, 2501637

Int. Cl.² B21D *43/02;* B21J *7/46*

U.S. Cl. 72—24 **19 Claims**



1. A control system for controlling operating steps of at least one of a press means and a transfer means therefor comprising coded pulse generating means for providing a coded pulse output in dependence upon the position of a drive shaft of a press drive means, decoding means for decoding the coded pulse output, of the pulse generating means for supplying a decoded pulse output, pulse distributor means for providing an output on at least one of a plurality of output paths in accordance with the decoded output of the decoder means, and at least one regulating means for controlling an operating step being coupled to pulse distributor means for receiving an output therefrom in accordance with the position of the drive shaft of the press means.

4,120,186

MULTI-DIE/BLOCK DRAWING MACHINES

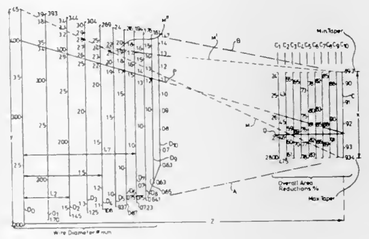
John Warner Pamplin, Bishop Auckland; James Vine Bennett, and Peter Fred Elson, both of Eastleigh, all of England, assignors to Marshall Richards Barcro Limited, Crook, England

Filed Jun. 1, 1977, Ser. No. 802,507

Claims priority, application United Kingdom, Jun. 4, 1976, 23126/76

Int. Cl.² B21C *1/00*

U.S. Cl. 72—278 **4 Claims**



1. A method of determining a drawing die drafting sequence for a plurality of at least three successive drawing dies of decreasing cross-sectional areas of a multi-die/block drawing machine comprising choosing the relative cross-sectional areas of the plurality of dies so that the logarithm of the ratio of the product of the initial and final cross-sectional areas of material approaching and leaving each pair of successive dies of the plurality of dies to the square of the cross-sectional area of the material between the successive dies is substantially a constant throughout the sequence.

4,120,187

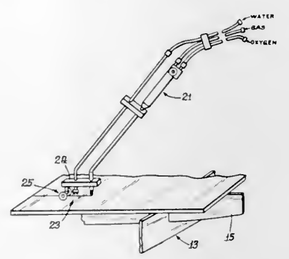
FORMING CURVED SEGMENTS FROM METAL PLATES

Roger F. Mullen, Foxboro, Mass., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed May 24, 1977, Ser. No. 800,037

Int. Cl.² B21D *11/00*

U.S. Cl. 72—342 **11 Claims**



1. A method of forming a metal plate to have a three-dimensional shape of predetermined compound curvature, which method comprises

locally heating a metal plate to an elevated temperature along a relatively narrow band by moving a heat source along a predetermined line at a rate such that said heating extends completely through the thickness of said plate,

quickly cooling said plate along said line following said heating so that significant shrinkage occurs within the plane of said plate in a direction substantially perpendicular to said line of heating, and

repeating said heating and cooling steps along additional lines in a preselected geometric pattern arranged throughout all regions of the plate which pattern is derived from the linear distortion which is inherent in the projection of the predetermined compound curvature onto said metal plate whereby the total result of said in-plane shrinkage is that said plate assumes said predetermined compound curvature.

4,120,188

BLIND RIVETER

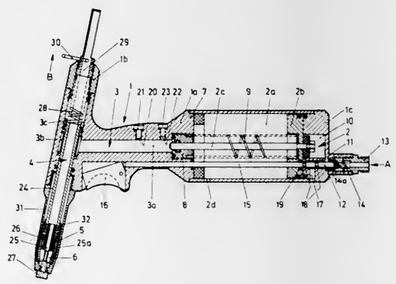
Manfred Schwab, Wiesbaden, Fed. Rep. of Germany, assignor to Fa Alfred Hansel, Nieten-Und Metallwarenfabrik, Ruhr, Fed. Rep. of Germany

Filed Aug. 25, 1976, Ser. No. 717,492

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1975, 2537794

Int. Cl.² B21J *15/34*

U.S. Cl. 72—391 **3 Claims**



1. In a blind riveter comprising

chuck jaws for clamping a tension shaft of a blind rivet,

a longitudinally movable tension chuck for moving the chuck jaws radially relative to the tension shaft for clamping and releasing the tension shaft as the tension chuck longitudinally moves in relationship to the chuck jaws back and forth from a charging position into a tension position, the charging position being for insertion of the tension shaft of a blind rivet into the chuck jaws and the tension position being for applying tension to the tension shaft of the blind rivet, wherein as the tension shaft longitudinally moves, the chuck jaws and a clamped tension shaft are carried along until reaching a tear off position of the tension shaft,

a stop face being pressed against the chuck jaws by a loaded spring for pressing the chuck jaws into the charging position,

a loaded return spring for pressing the tension chuck into the charging position, and

means for moving the tension chuck against the force of the return spring,

the improvement comprising an adjustable abutment for the return spring, wherein the position of the abutment is adjustable to vary the load of the return spring for shifting the charging position of the tension chuck.

4,120,189

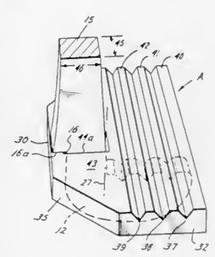
PULLING HOOK APPARATUS

Garland Jones, Jr., Rt. 1, Box 841, Conroe, Tex. 77301

Filed Jul. 5, 1977, Ser. No. 812,579

Int. Cl.² B21D *1/12*

U.S. Cl. 72—457 **7 Claims**



1. An all-purpose pulling hook apparatus for straightening or and bending automobile parts with a pulling device, comprising:

a hook member comprising a longitudinally extending handle portion having an eye portion at one end thereof for attaching to the pulling device and having a hook pulling portion at the other end thereof for engaging the automobile parts;

said hook member having a connection point wherein said hook pulling portion connects with said handle portion of said hook member;

said eye portion having a pulling contact point adjacent said end of said hook member;

said hook pulling portion including a hook pulling member having a work engaging surface extending at about a right angle from said handle portion;

a pulling plate member having a work engaging surface of greater size than said work engaging surface of said hook pulling member, said pulling plate member having an opposed plate member back surface;

said pulling plate member having an opening therein for receiving and removably retaining said handle portion with said work engaging surface of said hook pulling portion contacting said opposed plate member back surface of said pulling plate member;

said eye portion and said hook pulling portion are positioned so that a straight pull on said hook member by the pulling device results in a force line that substantially intersects with said connection point and said pulling contact point to facilitate firm engagement with the automobile parts to be straightened or bent; and,

wherein the plane of said work engaging surface of said hook pulling member is oriented at a slight acute angle to a perpendicular to said force line in the direction of said eye portion to prevent slippage of said pulling plate member from the automobile parts to be straightened or bent under a pulling load.

4,120,190

CRAFT DEVICE FOR DECORATIVELY DEFORMING METAL CANS AND THE LIKE

Floyd E. Schlau, East Greenwich, R.I., and Howard J. Morrison, Deerfield, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 14, 1977, Ser. No. 767,432

Int. Cl.² B21J *13/08*

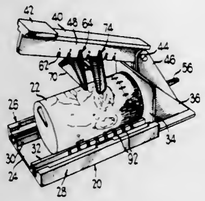
U.S. Cl. 72—458 **12 Claims**

1. Apparatus for decoratively deforming cylindrical metal cans comprising:

a base for supporting a can laid on its side,

a pair of can deforming elements selectively engageable with an upwardly facing surface portion of said can laid in

position on said base, one of said deforming elements including an edge for engaging a can at a highest area on said upwardly facing surface portion, and the other of said deforming elements including a pair of edges angularly disposed to one another for engaging said upwardly facing surface portion of said can at spaced apart lower areas on opposite sides of said highest area.



lever means extending longitudinally of said can and pivotally mounted on said base adjacent one end thereof for manual pivotal movement toward and away from said upwardly facing portion of said can,

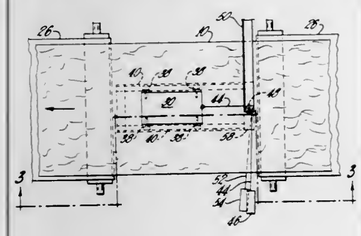
and means for detachably supporting said can deforming elements for controlled deforming engagement against said can surface at selected one of a plurality of longitudinally spaced apart locations on said lever means.

4,120,191

QUALITY CONTROL FOR FIBROUS MATS

James Alan Fly, Conroe, Tex., and Robert O. Slonaker, Pataskala, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 10, 1977, Ser. No. 823,255
Int. Cl.[2] G01N *19/02*
U.S. Cl. 73—9 **5 Claims**



1. Apparatus for measuring the looseness of a fibrous mat comprising:

(a) an abrasive surface;

(b) means for urging said abrasive surface into contact with said mat with a predetermined force;

(c) means for moving said abrasive surface with respect to said mat; and

(d) a strain gauge for measuring the frictional force between said abrasive surface and said mat.

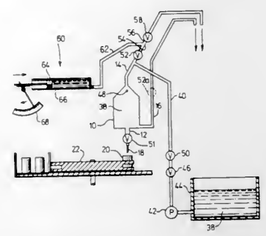
4,120,192

GAS SAMPLING APPARATUS

Lionel Herbert Williamson, 2292 Weston Rd., Apt. 806, Weston, Ontario, M9N 1Z2, Canada

Filed Jun. 17, 1977, Ser. No. 807,475
Int. Cl.[2] G01N *7/04*
U.S. Cl. 73—19 **8 Claims**

1. A method of determining the quantity of air present in a liquid containing dissolved CO_2 comprising the steps of: introducing a predetermined quantity of said liquid to a sampling system, preferentially absorbing free CO_2 gas evolved from said predetermined quantity of liquid in a liquid CO_2— absorbent solution contained in said system whereby any air present in said gas is concentrated as a residual gas in said liquid CO_2— absorbent solution, subjecting said liquid CO_2— absorbent solution and residual gas in a confined volume to a



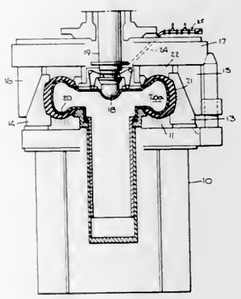
predetermined compressive force and measuring the amount of any resulting volumetric change whereby the volume of air present can be determined.

4,120,193

LEAK-DETECTING APPARATUS

Walter J. Tomsic, Warren, and Floyd E. Hamilton, Detroit, both of Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 12, 1977, Ser. No. 796,285
Int. Cl.[2] G01M *3/16*
U.S. Cl. 73—40 **4 Claims**



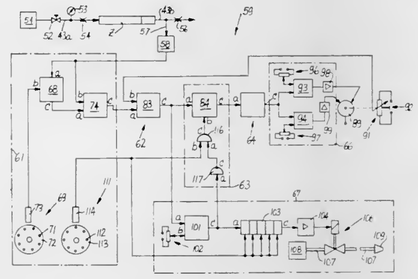
1. In a fluid-operated tire-vulcanizing press having an operating cycle wherein a fluid-inflatable diaphragm which forms an expansible chamber is utilized in conjunction with heated molds to shape and cure a pneumatic tire positioned between the inflatable diaphragm and the molds, leak-detecting apparatus comprising leakage fluid-transfer means communicating with said chamber when a leak occurs in said chamber, and sensing means in said fluid-transfer means and responsive to leakage fluid from said expansible chamber and actuated by said leakage fluid for indicating a malfunction of the press, said fluid-transfer means including means for preventing air from outside the press from entering the fluid-transfer means in the vicinity of said sensing means.

4,120,194

METHOD AND APPARATUS FOR TESTING THE WRAPPERS OF CIGARETTES, FILTER ROD SEGMENTS, AND ANALOGOUS ROD-SHAPED ARTICLES

Joachim Reuland, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. K.G., Fed. Rep. of Germany

Filed Sep. 8, 1975, Ser. No. 611,407
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1974, 2444708; Nov. 26, 1974, 2455768
Int. Cl.[2] G01M *3/32*
U.S. Cl. 73—45.2 **39 Claims**



1. A method of testing the wrappers of cigarettes, cigars, filter rods, analogous rod-shaped smokers' products, components thereof, and the like, comprising the steps of generating pneumatic test signals indicative of the extent to which imperfections are present in the wrappers of such rod-shaped articles and converting the pneumatic test signals into electrical test signals; conveying said test signals along a first path; generating a pneumatic comparison signal and converting said pneumatic comparison signal into an electrical comparison signal; conveying said comparison signals along a second path, at least a portion of one of said paths being common to at least a portion of the other of said paths so that drift phenomena, if any, and not ascertained, which influence the characteristics of said test signals in each common portion of said paths also influence the characteristics of said comparison signals; deriving from the electrical comparison and test signals derived signals dependent upon the difference between the electrical comparison and test signals but uninfluenced by drift phenomena; and determining whether the wrappers are defective or non-defective by comparing the derived signals against a reference value.

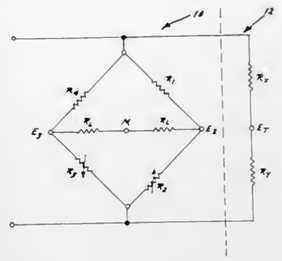
4,120,195

METHOD OF USING EMBEDDED NORMAL STRESS SENSORS IN PROPELLANT GRAINS

Harold Leeming, Redlands, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 11, 1977, Ser. No. 823,556
Int. Cl.[2] G01L *1/22*
U.S. Cl. 73—768 **1 Claim**

1. In an improved process for utilizing embedded stress sensors having a modified bridge circuit containing temperature sensitive active resistive elements and first and second serially connected resistors coupled in parallel with said bridge, comprising the steps of connecting the output of the bridge circuit to a diaphragm gage; measuring the voltage of the bridge circuit; detecting a voltage output between one point on the bridge circuit and a point between the serially connected first and second resistors; and monitoring changes in



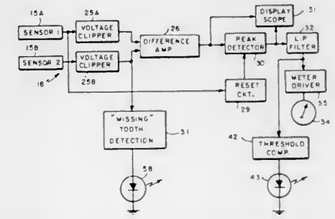
the diaphragm gage output to determine changes in temperature and stress conditions.

4,120,196

PRODUCTION TOOL WEAR DETECTOR

Dean Elwyn Hamilton, Lancaster, Mass.; Marcel Pierre Joseph Gaudreau, La Pocatiere, Canada, and Alan Leo Wu, Cambridge, Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Mar. 25, 1977, Ser. No. 781,145
Int. Cl.[2] G01N *3/58*
U.S. Cl. 73—104 **23 Claims**



1. A system for detecting the wear characteristics of at least one cutting tool having at least one cutting surface and at least one non-wearing reference surface, said system comprising

at least one sensing means for providing information concerning the distance from said sensing means to said at least one cutting surface and for providing information concerning the distance from said sensing means to said at least one non-wearing reference surface;

means for processing the information concerning said at least one cutting surface distance and the information concerning said at least one reference surface distance, said processing means providing a determination of the wear characteristics of said at least one cutting tool.

4,120,197

DEVICE FOR SENSING EXERTED LOAD ON A ROPE, WIRE, OR THE LIKE

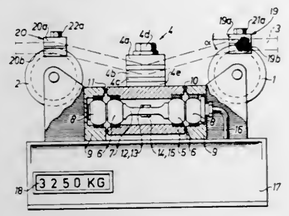
Kurt E. Johansson, Kiruna, Sweden, assignor to Ingenjorsfirman R. Ohrnell AB, Karlstad, Sweden

Filed Dec. 9, 1977, Ser. No. 859,101
Claims priority, application Sweden, Dec. 16, 1976, 7614175
Int. Cl.[2] G01L *5/10*
U.S. Cl. 73—144 **12 Claims**

1. A device for sensing exerted load on a rope, wire, or the like, comprising:

two mutually aligned wheels (1, 2) having respective rope or wire retaining means around at least a portion of their

peripheral surfaces, said rope, wire, or the like passing over at least a portion of each of said wheels and in engagement with said retaining means;
a clamping device (4) mounted between said wheels for clamping said rope, wire, or the like, with its path diverted between said wheels;
a load sensor placed between said wheels and connected to said clamping device (4) and;
load indicating means (16,17,18) coupled to said sensor to indicate a load exerted on said rope, wire, or the like;



said load sensor including a shaft (7), a roller (5), self-aligning means (6) pivotably mounting said roller (5) on said shaft (7) at spaced apart positions on said shaft, said roller (5) being mechanically connected to said clamping device (4), and a plurality of transducers (12–15) mounted to said shaft (7), said transducers (12–15) being arranged to produce an electrical quantity which is a function of the bending of said shaft (7) and being coupled to said load indicating means which indicates load as a function of said electrical quantity.

4,120,198

WEIGHT-ON-BIT MEASURING APPARATUS

Denis R. Tanguy, Houston, and Larry J. Leising, Sugar Land, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 26, 1977, Ser. No. 791,101
Int. Cl.[2] E21B *47/00*
U.S. Cl. 73—151 **11 Claims**



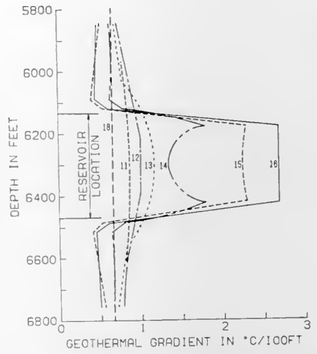
1. A weight-on-bit measuring apparatus comprising: tubular housing members adapted to be connected in a drill string and arranged for limited longitudinal relative movement; means for connecting one of said members to a drill bit; means yieldably resisting longitudinal relative movement of said members in a manner such that the extent of said relative movement is a function of the axial loading of said members; and means for measuring the longitudinal relative movement of said members including a sensor on the other of said members, linkage means coupled between said one member and said sensor, and means providing an elastic discontinuity in said linkage means for substantially isolating said sensor from vibration of said one member due to the cutting action of a drill bit.

4,120,199

HYDROCARBON REMOTE SENSING BY THERMAL GRADIENT MEASUREMENT

Irshad R. Mufti, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 10, 1977, Ser. No. 776,345
Int. Cl.[2] E21B *47/00*
U.S. Cl. 73—154 **7 Claims**



1. A method of exploring for hydrocarbon deposits from a borehole in the earth which does not penetrate a hydrocarbon deposit, comprising;
measuring temperature gradient at a plurality of depths along at least a portion of a borehole which does not penetrate a hydrocarbon deposit,
plotting the measured values of temperature gradient versus depth, and
inspecting the plot of temperature gradient versus depth to infer proximity of a region having unusually low thermal conductivity and limited lateral extent.

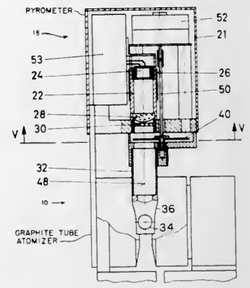
4,120,200

METHOD AND DEVICE FOR PYROMETRIC TEMPERATURE MEASUREMENTS

Klaus Joachim Braun, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Jun. 13, 1977, Ser. No. 805,752
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627254
Int. Cl.[2] G01J *5/52, 5/62*
U.S. Cl. 73—355 R **9 Claims**

1. A device for pyrometrically measuring temperature of an object within range of between about 100° C and about 2700° C comprising:
a radiation detector, sensitive at least in a limited wavelength range of from about 8 to about 14 microns,
a filter which is only transparent in said limited wavelength range,
a reflecting member for imaging the radiation detector onto itself,
temperature control means for automatically maintaining the temperature of the radiation detector at a substantially constant value,
means for alternately directing radiation from said object and the radiation of the detector reflected from the reflecting member to the radiation detector through the filter, and
signal processing means for receiving signals from said radiation detector and outputting a signal indicative of the



temperature of the object, responsive to the difference between the radiation detected from the object and the radiation of the detector reflected from the reflecting member

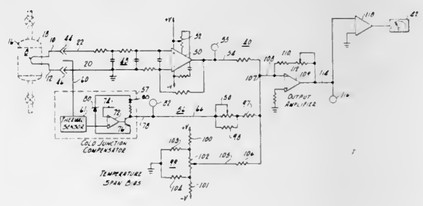
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4,120,201

THERMOCOUPLE TEMPERATURE MEASUREMENT CIRCUIT HAVING COLD JUNCTION COMPENSATION

Thomas J. Wargo, Waukegan, Ill., assignor to Partlow Corporation, New Hartford, N.Y.

Filed Mar. 18, 1977, Ser. No. 779,182
Int. Cl.[2] G01K *7/12*
U.S. Cl. 73—361 **9 Claims**



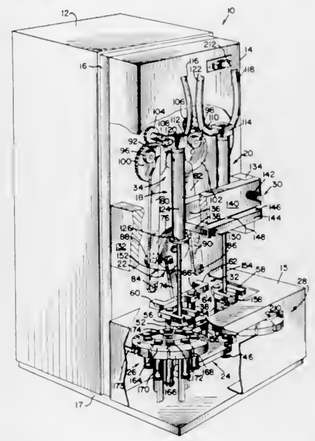
1. A circuit for providing cold junction temperature compensation to a thermocouple having a hot junction applied to a body for temperature measuring purposes, said circuit providing an output signal for driving a signal responsive temperature indicating meter, said circuit comprising:
input terminals connectable to said thermocouple for forming the cold junction for which temperature compensation must be provided and for receiving an input signal from the thermocouple;
an input amplifier coupled to said input terminals for amplifying the thermocouple input signal;
cold junction temperature compensation means including integrated circuit means having a temperature sensor means located in proximity to the cold junction for sensing the temperature of the cold junction and amplifier means providing a signal, the magnitude of which varies in accordance with the temperature of the cold junction, said cold junction temperature compensation means further including means for applying a predetermined cold junction temperature compensation coefficient to the signal of said integrated cicuit means to provide an output signal having a predetermined relationship between signal magnitude and cold junction temperature;
summing junction means for receiving the output signals from said input amplifier and cold junction temperature compensation means for providing a temperature indicating signal which is compensated for cold junction temperature;
bias means coupled to said summing junction for providing a bias signal; and
output amplifier means having an input connected to said summing junction and an output connectable to said temperature indicating meter, said output amplifier means having means for adjusting the gain thereof.

4,120,202

POSITIVE DISPLACEMENT PUMP

Richard J. Range, and Charles I. Soodak, both of Silver Spring, Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 15, 1977, Ser. No. 777,597
Int. Cl.[2] G01N *1/14*
U.S. Cl. 73—421 R **14 Claims**



12. A positive displacement pump apparatus for aspirating and discharging liquid materials to be analyzed, said apparatus including at least one syringe assembly having a movable plunger unit, a reciprocable carriage, said carriage having means associated therewith for engaging a portion of said plunger, means for reciprocating said carriage under power, a syringe valve movable between at least first and second positions permitting, respectively, communication between said syringe interior and an intake line and between said syringe interior and a discharge line, means for moving said valve between said positions, means for controllably varying the effective length of the syringe stroke, said means including an assembly for selectively inserting separate stroke-length determining means between a portion of said carriage and a portion of said syringe plunger, and an operative drive connection between said means for reciprocating said carriage and said means for moving said valve between said first and second positions.

4,120,203

CROSSCUT SAMPLER FOR PNEUMATIC CONVEYING SYSTEMS

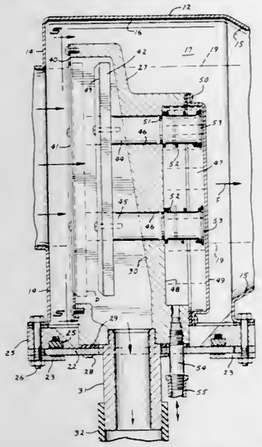
George William Clements, Minneapolis, and Hugo Wenshau, Burnsville, both of Minn., assignors to Gustafson, Inc., Hopkins, Minn.

Filed Apr. 14, 1977, Ser. No. 787,369
Int. Cl.[2] G01N *1/20*
U.S. Cl. 73—422 R **6 Claims**

1. Apparatus for drawing a representative sample of flowing material from the conveying pipe of a pneumatic conveying system, comprising

a sealed housing with aligned entrance and exit ports for connection into the conveying pipe, the housing having an open interior with an unobstructed central flow passage aligned with the ports to permit free flow of the material laden air moving through the pipe, the housing also having open side portions adjacent the central passage,

means collecting and storing samples of the material flowing through the central passage of the housing and including a sample collecting head in the housing and movable therein from one side portion and in a first direction transversely of the central passage and entirely through said



central passage and into another side portion, the head having a front face oriented to confront the entrance port of the housing and having an elongate opening to extend entirely across the central passage in a direction transversely of said first direction,

means mounting and moving the collecting head in said first direction, and

a closure in the housing and releasably engaging the head at the opening to tightly close and seal the opening, and the closure being on the head and movable into and out of obstructing relation with the opening.

4,120,204

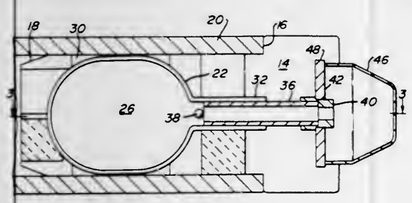
DEVICE FOR COLLECTING SAMPLES OF MOLTEN METALS

Omer P. Cure, Diepenbeek, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.

Continuation-in-part of Ser. No. 723,360, Sep. 15, 1976, Pat. No. 4,037,478. This application Jul. 27, 1977, Ser. No. 819,308

Int. Cl.[2] G01N *1/12*

U.S. Cl. 73—425.4 R **9 Claims**



1. A device for collecting a sample of molten metal comprising a non-metallic refractory body having a chamber therein, a vessel in said chamber and comprised of mating portions which are readily separable, a filling conduit supported by said body and having one end communicating with one end of said vessel, the other end of said conduit terminating adjacent an end face at the immersion end of said body, a second conduit made from a frangible material, one end of said second conduit communicating with said vessel at the opposite end of the vessel from said first conduit, and at least a major portion of said second conduit projecting beyond the end face of said body at the end of said body opposite said immersion end of the body, and transverse dimensions of said chamber being at least as large as the transverse dimensions of said conduits, and deoxidizing material supported by at least one of said vessel and conduits, said filling conduit being of metal and releasably connected to each of the mating portions of said vessel.

4,120,205

DEVICE FOR THE REPEATED REPRODUCIBLE DELIVERY OF DEFINITE VARIABLE AMOUNTS BY VOLUME

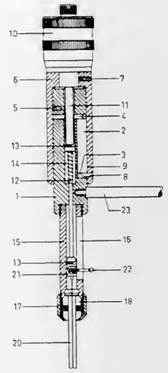
Johannes Ripphahn, and Ernst Kriegbaum, both of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

Filed Jul. 19, 1977, Ser. No. 816,977

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2632970

Int. Cl.[2] B67D *1/10;* G01N *1/14*

U.S. Cl. 73—425.6 **11 Claims**



1. Apparatus adapted for variable predeterminable settings to effect the repeated, reproducible delivery of definite volumetric amounts of liquid, and with permissive interim cleaning of the apparatus without altering the predetermined delivery setting thereof; and comprising a syringe cylinder and piston assembly having a piston with actuating means for the piston; a micrometer screw assembly; mounting means connecting the said assemblies for relative movement therebetween, and stop means adjustably located by said micrometer screw assembly to a pre-selected position for limiting the intake stroke of the syringe piston in accordance with the predetermined setting of the micrometer screw assembly as determined by the preselected volume to be delivered from the syringe cylinder on the exhaust stroke of the syringe piston, and another position upon relative movement of said assemblies with the stop means shiftable to permit full intake and exhaust strokes of the syringe piston, as for interim cleaning or rinsing of the syringe cylinder, without altering the predetermined setting of the stop means by the micrometer screw assembly upon return to the pre-selected position of the assemblies.

4,120,206

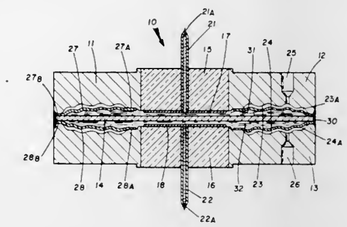
DIFFERENTIAL PRESSURE SENSOR CAPSULE WITH LOW ACCELERATION SENSITIVITY

Stanley E. Rud, Jr., Eden Prairie, Minn., assignor to Rosemount Inc., Minneapolis, Minn.

Filed Jan. 17, 1977, Ser. No. 759,837

Int. Cl.[2] G01L *9/12*

U.S. Cl. 73—718 **15 Claims**



1. A pressure sensor for operation in environments requiring a desired design minimum temperature, comprising a housing, means defining a cavity in said housing at one end thereof, a first diaphragm fixed to said housing and enclosing said cavity, said first diaphragm having portions which deflect relative to the housing under pressure, a second flexible diaphragm sealingly fixed to said housing within said cavity and separating the first diaphragm from first portions of said cavity and defining an isolation chamber with respect to said first portions of said cavity, means to supply a pressure to be measured to said isolation chamber, said second diaphragm having a surface facing the first diaphragm, an incompressible fluid layer between substantially the entire surface of said second diaphragm facing said first diaphragm, said fluid layer being of minimal dimension in direction substantially normal to said first diaphragm and sufficient only to form a fluid layer between said diaphragms which transfers pressures in said isolation chamber acting on said second diaphragm through said fluid to change deflection of said deflecting portion of the first diaphragm and prevent the first and second diaphragms from contacting each other in the deflecting portions of the first diaphragm at said desired minimum temperature during operation of said sensor to minimize the fluid head in direction substantially normal to said first diaphragm, and means supported on second portions of said housing cavity different from the first portions to sense deflection of said first diaphragm from a reference position.

4,120,207

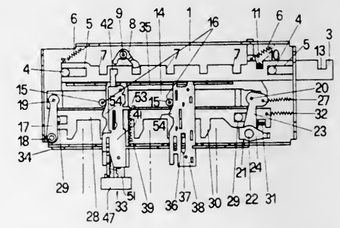
KEYBOARD FOR THE PRESELECTION OF ELECTROMAGNETIC SIGNALS

Ezio F. Dellantonio, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Oct. 12, 1976, Ser. No. 731,331

Int. Cl.[2] F16H *35/18;* H03J *5/08*

U.S. Cl. 74—10.33 **10 Claims**



1. In a keyboard for the preselection of electromagnetic signals, wherein a frame carries a tuning system operated by a manual knob operated tuning mechanism provided with a disengageable clutch means and by a number of pushbutton keys each having stored thereon a position to be imparted to the tuning system, the improvement comprising: a tuning slider longitudinally reciprocal with respect to the frame, wherein said tuning slider is declutchably coupled to said manual knob mechanism and coacts with the tuning system by selecting different predetermined signals corresponding to each longitudinal position of said tuning slider; a number of levers pivoted on the frame, each lever having one end coacting with the tuning slider; and adjustable means engaging the other end of each of said levers and provided on each of said keys, the keys being guided on the frame at right angles to the tuning slider, said keys being also reciprocal between an extracted rest position and a retracted operative position, in which operative position the adjustable means imparts a selected rotation to the corresponding lever and thereby implements a selected longitudinal movement to said tuning slider, the improvement further comprising:

a link reciprocal on the frame parallel to said tuning slider; a number of elements projecting from said link; an eared cam on each key; and spring means urging said link towards a position wherein one of the projecting elements engages the eared cam of the corresponding key pushed into the operative position, to lock it in that position.

4,120,208

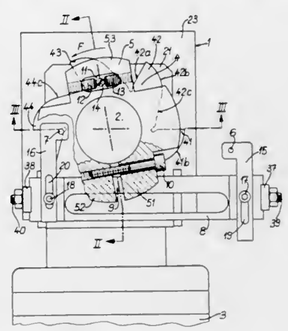
CONTROL STEPPING DEVICE

Robert Habib, 36 Quai Gustave Ador, 1207 Geneva, Switzerland

Continuation-in-part of Ser. No. 586,620, Jun. 13, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 740,070

Int. Cl.[2] F16H *27/02*

U.S. Cl. 74—128 **11 Claims**



1. Stepping device, comprising;

a support having means defining a stepping area;

a single plate of circular outline, the plate having a number of teeth distributed over a circumferential area thereon with a gap between every two teeth, each tooth having a side oblique to a diameter of the plate;

means for mounting the plate in the stepping area, interchangeably with generally similar plates having different numbers of teeth, for rotation about the center of the circular outline; and

an elongate arm mounted for longitudinal forward and backward movements in the stepping area, parallel to a diameter of the plate, and having means for effecting such movements, the arm having finger means thereon for forwardly and backwardly moving therewith along a path generally diametrical of the plate and disposed relative to the teeth to effect intersecting of oblique sides of successive ones of the teeth with said path for (a) thereby engaging successive ones of the oblique sides to effect successive steps of the rotation of the plate and (b) temporarily locking the plate against the rotation thereof, at the end of each move-

ment of the arm, by then locating the finger means in a base portion of a gap between the tooth the oblique side of which was engaged during the movement and a next following one of the teeth.

4,120,209

CLAMPING MECHANISM FOR TEMPORARILY CLAMPING CABLES AND THE LIKE

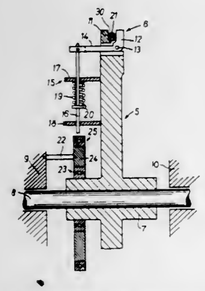
Kurt Vogt, Beinwil am See, Switzerland

Continuation of Ser. No. 288,175, Sep. 11, 1972, abandoned. This application May 8, 1975, Ser. No. 575,557

Claims priority, application Switzerland, Mar. 8, 1972, 3395/72

Int. Cl.[2] **F16H** *55/36;* **B21F** *17/00;* **B65H** *59/16, 81/00*

U.S. Cl. 74—230.24 **2 Claims**



1. A clamping mechanism for temporarily clamping a cable or the like, comprising a carriage, a clamping wheel mounted at said carriage to rotate about a first rotational axis and carrying a plurality of guide assemblies for the cable, said guide assemblies each comprising:

a first clamping jaw which is integral with the clamping wheel and extends substantially radially thereof;

an L-shaped member having one limb which constitutes a second clamping jaw extending substantially radially of the clamping wheel at one side thereof, and the other limb extending substantially parallel to said rotational axis to the other side of the clamping wheel, the L-shaped member being mounted to pivot with respect to the clamping wheel about an axis which is located at said one side of the clamping wheel and is perpendicular

both to said first rotational axis and to the radius from said first rotational axis to the second clamping jaw;

a control rod which is located at said other side of said clamping wheel and acts on the free end of said other limb; and

spring means which act on the control rod to urge said second clamping jaw towards the first clamping jaw in order to clamp fixedly a section of cable located therebetween,

and the clamping mechanism further comprising a stationary control element which acts on the control rods in opposition to said spring means to eliminate the clamping action of the cooperating pairs of clamping jaws for receiving and releasing respectively the cable at predetermined portions of the revolving path of travel of the clamping wheel, said stationary control element having a circular periphery which is centered on a second rotational axis offset from but parallel to the first rotational axis, and the mechanism also comprising a circular bearing member which is supported at said circular periphery to rotate about said second rotational axis and is constrained to rotate at the same angular velocity as the clamping wheel.

4,120,210

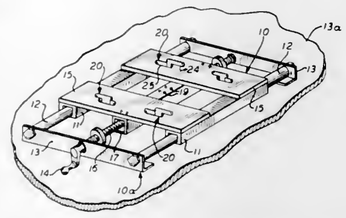
MOUNT FOR MOTOR HAVING VARIABLE PITCH PULLEY

Jerome J. Sloyan, Trenton, N.J., assignor to Automatic Motor Base Co., Windsor, N.J.

Filed Jul. 15, 1976, Ser. No. 705,456

Int. Cl.[2] **F16M** *11/04, 7/00*

U.S. Cl. 74—242.13 R **9 Claims**



1. A motor mount comprising a longitudinally movable carriage having an upper surface on which a motor is mounted, said surface having stud-receiving portal openings that are elongated in a direction transverse to the longitudinal direction of movement of said carriage, each of said portal openings being composed of a pair of slots each having toe and heel ends with the toe ends projecting in a direction longitudinally away from each other and with the heel ends lapping one with respect to the other, said portal openings being operatively receptive of motor clamping studs therethrough at selected locations ranging from toe to toe of the slots and said portal openings being arranged in a substantial rectangular pattern on the upper surface so that a portal opening is located at each corner of an imaginary right angle rectangle on said upper surface.

4,120,211

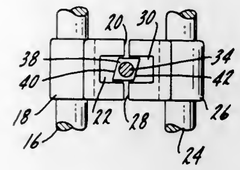
TRANSMISSION SHIFT CONTROL MECHANISM

Dan Joseph Showalter, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 6, 1977, Ser. No. 794,494

Int. Cl.[2] **G05G** *9/14*

U.S. Cl. 74—473 R **4 Claims**



1. In a shift control mechanism for a multi-speed transmission including first and second elements movable along first and second parallel axes respectively between engaging and neutral positions, said first and second elements respectively defining first and second gates in alignment in said neutral positions, and a shift member selectively movable into said gates for selecting one of said elements and movable along said axes for moving the selected element along its axis; the improvement wherein said shift member defines first and second opposed flat surfaces oriented respectively at substantially equal acute angles relative to said first and second axes, said shift member and said elements being constructed and arranged such that said shift member is movable in said first gate for moving said first element from one engaged position through its neutral position to another engaged position with said shift member spaced from said second element, said shift member also being movable in said first gate for moving said first element from one engaged position toward its neutral position with said second surface sliding along said second element, being guided by said second surface for movement at one of said acute angles out of said first gate and into said second gate as said first element is moved to its neutral position, and being movable in said second gate for moving said second element from its neutral position to one of its engaging positions with said shift member spaced from said first element.

4,120,212

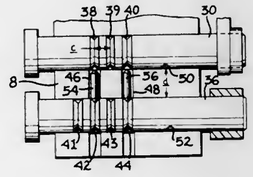
FORWARD-REVERSE INTERLOCK FOR A TRANSMISSION

R. Dale Philipsen, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 25, 1977, Ser. No. 844,551

Int. Cl.[2] **G05G** *5/10*

U.S. Cl. 74—476 **4 Claims**



1. A shift interlock for a transmission gear shift control system having a pair of shift forks, the shift interlock comprising:

a housing defining a pair of substantially parallel bores separated by a first predetermined distance;

a first rod operably connected to one of said shift forks, said first rod reciprocably disposed in one of said parallel bores and defining thereabout three circumferential annular grooves each spaced on from the next a second predetermined distance center-to-center;

a second rod operably connected to the other of said shift forks and reciprocably disposed in the other of said parallel bores, the second rod defining thereabout four circumferential annular grooves each spaced one from the next the same second predetermined distance center-to-center;

said housing further defining a pair of lock pin bores normal to and interconnecting said parallel bores, said lock pin bores having a center-to-center spacing equal to twice said second predetermined distance;

and a pair of lock pins each disposed in one of said lock pin bores and having a length greater than said first predetermined distance;

said first rod movable from a neutral position in a first direction or a second direction to urge at least one of said lock pins into one of the four annular grooves of said second rod to prevent reciprocation of said second rod, said second rod reciprocable from a neutral position in the same first and second directions only with said first rod in the neutral position.

4,120,213

SELF-BALANCING CONTINUOUS POWER TRANSMISSION SYSTEM AND METHOD

Abraham Levy, 44 Alumim St., Afeka, Tel Aviv, Israel

Filed Oct. 6, 1975, Ser. No. 619,878

Int. Cl.[2] **F16H** *47/08*

U.S. Cl. 74—688 **66 Claims**

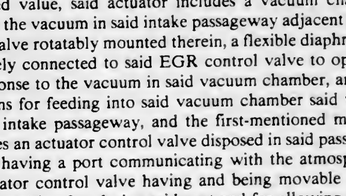
1. A method of torque transmission between a prime mover and a load, comprising in combination the steps of:

providing a planetary system including first, second and third members;

providing a hydraulic torque coupling having an input and an output;

interconnecting said planetary system and said hydraulic torque coupling in a feedback loop by rigidly connecting said first member to said input and rigidly connecting said output with said second member;

coupling said prime mover to said third member of the planetary system; and



transferring the output torque of the planetary system and the hydraulic torque coupling from said second member and said output to the load.

4,120,214

EXHAUST GAS RECIRCULATION SYSTEM

Yoshio Toda, Yokohama, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 30, 1976, Ser. No. 718,967

Claims priority, application Japan, Dec. 22, 1975, 50-153172

Int. Cl.[2] **F02M** *25/06;* **F02B** *33/00*

U.S. Cl. 74—860 **6 Claims**

1. An exhaust gas recirculation system for an internal combustion engine for a motor vehicle, comprising an exhaust gas recirculation (EGR) passageway for feeding exhaust gas of said engine into an intake passageway thereof, an exhaust gas recirculation (EGR) control valve disposed in said EGR passageway to meter in accordance with an operating condition of said engine the amount of said engine exhaust gas passing through said EGR passageway, an actuator for operating said EGR control valve to control the degree of opening of said EGR control valve to vary the effective cross sectional area of said EGR passageway in accordance with the vacuum prevailing in said intake passageway, and means for causing said actuator to close said EGR control valve when a transmission of said vehicle provides a gear ratio lower than a predetermined value, said actuator includes a vacuum chamber fed with the vacuum in said intake passageway adjacent to a throttle valve rotatably mounted therein, a flexible diaphragm operatively connected to said EGR control valve to operate it in response to the vacuum in said vacuum chamber, and passage means for feeding into said vacuum chamber said vacuum in said intake passageway, and the first-mentioned means comprises an actuator control valve disposed in said passage means and having a port communicating with the atmosphere, said actuator control valve having and being movable between a first position for closing said port and for allowing the supply of said intake passageway vacuum into said vacuum chamber and a second position for stopping the supply of said intake passageway vacuum into said vacuum chamber and for providing communication between said vacuum chamber and said

port to admit atmospheric air into said vacuum chamber to cause said diaphragm to close said EGR control valve, operating means for alternatively moving said actuator control valve into said first and second positions, and first control means responsive to a gear ratio provided by said transmission which ratio is higher than a predetermined value to cause said operating means to move said actuator control valve into said first position and to a gear ratio provided by said transmission which ratio is lower than said predetermined value to cause said operating means to move said actuator control valve into said second position.

second control means responsive to a temperature of said engine below a predetermined value to close said passage means to cause said actuator to close said EGR control valve irrespective of gear ratio conditions of said transmission,

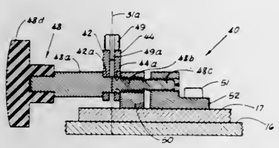
operating means comprising a solenoid which has a core operatively connected to said actuator control valve and causes said actuator control valve to move into said first position when deenergized and to move into said second position when energized, and said first control means comprises first switch means which is electrically connected to said solenoid and is normally opened to deenergize said solenoid and is closed to energize said solenoid in response to said gear ratio lower than said predetermined value, and said second control means comprises second switch means which is electrically connected to said solenoid in parallel with said first switch means and is normally opened to deenergize said solenoid and is closed to energize said solenoid in response to a temperature of said engine below said predetermined value.

4,120,215

SAW CHAIN GRINDER

Peter D. Kaye, Monroe, Oreg., assignor to Bell Industries, Los Angeles, Calif.

Filed Feb. 27, 1976, Ser. No. 662,026
Int. Cl.[2] B23D *63/00*
U.S. Cl. 76—25 A **11 Claims**



1. A grinder for sharpening saw chain cutting teeth comprising:

a base;

a mounting bracket:

arcuate guide means disposed adjacent to said base for receiving said mounting bracket and enabling the mounting bracket to be angularly displaced therealong about a preselected, fixed reference axis;

a power-driven, rotary grinding wheel;

an elongate arm supporting said grinding wheel adjacent one end thereof, said arm having its other end pivotally connected to said mounting bracket obliquely thereto permitting selective movement of said grinding wheel toward and away from said base; and

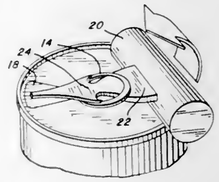
releasable clamping means connected to said base for supporting a length of saw chain with a selected one of its cutting teeth in position for sharpening by said grinding wheel, said clamping means including opposed, substantially parallel first and second elongate members adapted to receive saw chain links therebetween, and means connected to said elongate members selectively operable for simultaneously displacing said elongate members at an equal rate relative to a preselected datum line for clamping a saw chain link therebetween with the saw chain's lengthwise centerline substantially aligned and maintained, independently of saw chain width, on said datum line, said means for simultaneously displacing said elongate members including a clamp block and a clamp screw having a first threaded segment for engaging like threads in said clamp block, said clamp screw including a second threaded segment concentric with said first threaded segment, said second threaded segment having a thread lead twice that of said first threaded segment, and contacting means including a movable clamp nut threadably engaged with said second threaded segment, said movable clamp nut disposed between said clamp block and one of said elongate members, said clamp screw having abutment means arranged for abutment against the other of said elongate members so that when said clamp screw is rotated for further engagement with said clamp block, said abutment means and said movable clamp nut contact and simultaneously displace their associated elongate members at an equal rate toward said preselected datum line.

4,120,216

CAN OPENER FOR USE WITH RING-TYPE OPENER TABS

Norton Robert Goldberg, 8029 Keeler, Skokie, Ill. 60076

Filed Aug. 24, 1977, Ser. No. 827,249
Int. Cl.[2] B67G *7/40*
U.S. Cl. 81—3.46 A **5 Claims**



1. An opener for use with ring-type can opening tabs comprising:

an elongated handle;

head-insertion means sized and shaped for insertion into the ring of a pull-tab can, the head insertion means having force transmitting fulcrum means sized and shaped for insertion into the ring of a pull-tab can along with the head-insertion means;

extension means connecting the head-insertion means to the handle thereby forming extension-handle and extension-head interfaces; and

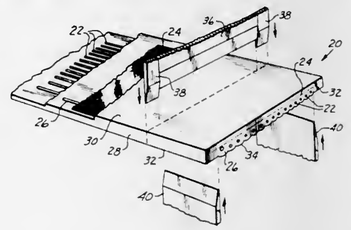
the head-insertion means including: (a) tip means at the end thereof opposite the extension-head interface; and (b) means for gripping the pull-tab can ring adjacent the extension-head interface whereby the head-insertion means may be inserted in one direction in a gripping position within the ring of a pull-tab can and the can may be easily opened by exerting an upward and forward force in the other direction on the handle.

4,120,217

RIBBON CABLE SLITTER AND METHOD OF STRIPPING CABLE

Charles R. Rodd, and Richard L. Scheuerman, both of Redwood Falls, Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Dec. 9, 1977, Ser. No. 858,932
Int. Cl.[2] H02G *1/12*
U.S. Cl. 81—9.51 **19 Claims**



1. Apparatus for slitting a ribbon cable, said cable being of the class having a body of insulation material forming first and second opposite sides and edge portions and having a plurality of elongated conductors disposed in a first plane within said body between said first and second sides and having a metallic ground plane disposed in a second plane within said body between said first plane and said second side, said edge portions being disposed between said first and second sides and outside the bounds of said conductors, said apparatus comprising: first blade means for slitting said insulation material along the length of a portion of said cable between said edge portions and the bounds of said conductors from said first side to a depth approximately equal to the distance to said ground plane; second blade means for slitting through said cable across said edge portions; third blade means generally coplanar with said second blade means for slitting said insulation and ground plane between said edge portions from said second side to a depth at least as great as the distance to said ground plane; and operative means for simultaneously pressing said first, second and third blade means into said cable.

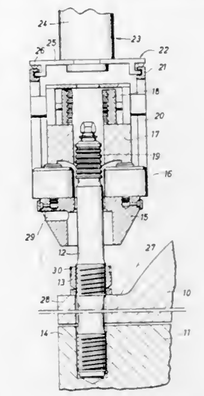
4,120,218

ARRANGEMENT FOR THREADING BOLTS INTO AND OUT OF TAPPED BORES OF REACTOR VESSELS

Kurt Tögel, Witten; Hans Warnke, Herne, and Horst Westerfeld, Castrop-Rauxel, all of Fed. Rep. of Germany, assignors to Klöckner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Sep. 8, 1977, Ser. No. 832,071
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 2640991
Int. Cl.[2] B25B *29/02*
U.S. Cl. 81—57.38 **19 Claims**

1. In an arrangement for threading connecting elements, particularly threaded bolts equipped with nuts threaded thereon, into and out of tapped bores especially to attach a lid to and detach the same from a reactor vessel, a combination comprising a carrier ring adapted to be supported on the lid during the threading operations; at least one lifting cylinder-and-piston unit mounted on said carrier ring and operative for tensioning a respective threaded bolt during a part of each of said operations; a double-rail track mounted on and extending over the entire circumference of said carrier ring with a spacing therefrom; and at least one bolt-rotating device supported on said track for displacement circumferentially of the same and operative for applying an axial force to the respective threaded bolt which substantially counterbalances the weight of the latter during a different part of each of said operations, and for rotating the respective counterbalanced threaded bolt.

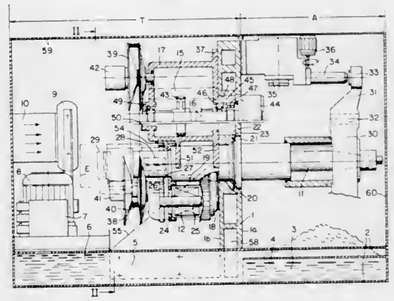


4,120,219

TURNING MACHINE TOOL

Eberhard Van der Horst, Erkelenz, Germany, assignor to A. Monforts, Mönchengladbach, Germany

Filed Jul. 6, 1977, Ser. No. 813,332
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1976, 2630248
Int. Cl.[2] B23B *3/00, 19/02, 17/00*
U.S. Cl. 82—2 R **6 Claims**



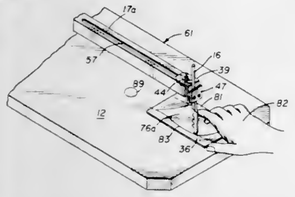
1. In a turning machine tool having a workpiece spindle and a tool turret shaft extending parallel thereto and including a transmission and drive means, a single free-standing front plate for supporting and bearing the spindle and the turret shaft, said front plate having a front side at which a working space is provided and a rear side on which the transmission and the drive means are mounted, the transmission having a housing and the spindle and the turret shaft being supported in bearing parts, said transmission housing and said spindle and turret-shaft bearing parts being mutually braced at a spacing from said rear side of said front plate so that, in said working space at said front side of said front plate, coordination of a workpiece placed on the spindle to the tools of the turret, is stabilized.

4,120,220

GLASS CUTTER APPARATUS

Wayne C. Mullen, 3291 Vivian Dr., Wheatridge, Colo. 80033

Filed Jan. 14, 1977, Ser. No. 759,296
Int. Cl.[2] B26D *3/08*; C03B *33/00*
U.S. Cl. 83—886 18 Claims



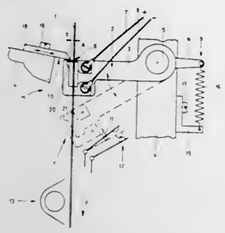
1. Glass cutter apparatus to facilitate the by hand cutting of intricately shaped pieces of glass comprising a support table with a surface having a sufficient hardness, smoothness and durability to resist scratching by sharp edges of cut glass providing a low friction contact surface for a sheet of glass, a cutter support arm disposed in spaced position with respect to said table, glass cutter receiving means on said arm, a glass cutter providing a glass scoring element engaged and held by said receiving means with the scoring element thereof disposed for spring biased pressured contact with glass in place on said contact surface of said table, and force adjusting means including spring bias means for changing the spring biased force exerted by said cutter and the scoring element thereof on the glass to be scored, said combination inclusive of the low friction table contact surface being useful when the user of said cutter apparatus for easy movement of the glass around said contact surface, moves the glass that is to be cut with respect to the cutter and its scoring element whereby score lines are provided outlining the intended segment pieces.

4,120,221

ARRANGEMENT FOR SEVERING WEBS

Francisco Speich, Gipf-Oberfrick, Switzerland, assignor to Jakob Müller, Forschungs-und Finanz AG, Frick, Switzerland

Filed Oct. 19, 1977, Ser. No. 843,782
Claims priority, application Switzerland, Oct. 20, 1976, 13281/76
Int. Cl.[2] B26D *7/10*
U.S. Cl. 83—62.1 12 Claims



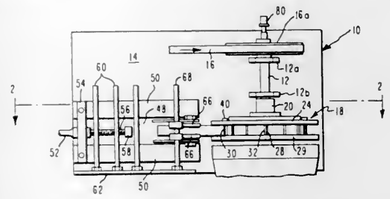
1. An arrangement for severing webs, particularly fabrics, of thermally severable materials, comprising a support; means for severing a respective web, including a severing tool having a severing portion, and means for heating at least said severing portion of said severing tool; means for so mounting said severing tool on said support that said severing portion contacts and severs the web during relative movement between the latter and said support and also for displacement of said severing tool relative to said support between an extended position and a retracted position in dependence on the resistance offered by the web to the severing action of said severing portion, including means for urging said severing tool toward said extended position thereof; and means for controlling the severing action of said severing portion by regulating the temperature of the latter, including a heat-conductive abutment member which is in a heat-transmitting contact with said severing tool at said severing portion thereof in said extended position, and out of such contact in said retracted position, of said severing tool.

4,120,222

STAPLE LENGTH CUTTER WITH LOW NOISE LEVEL JET TO ASSIST IN DOFFING CUT STAPLE

Jerry Fuller Potter, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 16, 1977, Ser. No. 833,895
Int. Cl.[2] D01G *1/04*
U.S. Cl. 83—99 8 Claims



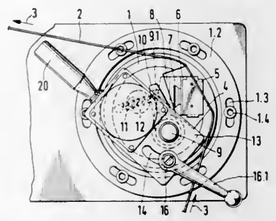
1. In an apparatus for cutting filamentary material into predetermined lengths comprising a cutting assembly including a plurality of knife edges secured to a reel having an upper and a lower mounting member and having means adapted to receive successive wrappings of filamentary material to be cut in contact with said plurality of knife edges and means for forcing said material between adjacent knife edges to a doffing point thereby severing said filamentary material into lengths of controlled dimensions, the improvement comprising means for removing the severed material, said means comprising: an orifice in said upper mounting member directed toward the proximity of the doffing point of the severed material; and means communicating with said orifice for continuously supplying pressurized fluid thereto.

4,120,223

APPARATUS FOR MAKING TAPES

Frank Bosse, Tecklenburg, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,725
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 2652011
Int. Cl.[2] B26D *1/10*
U.S. Cl. 83—425.3 8 Claims



1. An apparatus for making tapes by longitudinally severing continuously fed film comprising:

a frame;

a guide rod mounted in said frame;

a set of juxtaposed cutting knives pivotably mounted on said guide rod, said knives having cutting edges with cutting regions defined on the cutting edges for contacting and severing film; and

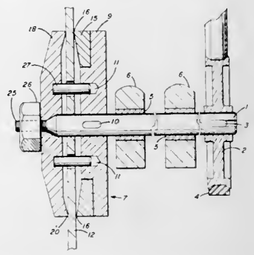
pivoting drive means for driving said set of juxtaposed cutting knives in such manner that the cutting regions move to and fro over the cutting edges while severing continuously fed film.

4,120,224

SAW BLADE MOUNTING ARRANGEMENT

Wade M. Van Steenberg, Sigel, Pa. 15860, and Florian O. Temchulla, 409 N. Penn. St., Punxsutawney, Pa. 15767

Filed Aug. 17, 1977, Ser. No. 825,224
Int. Cl.[2] B27B *5/32*
U.S. Cl. 83—666 4 Claims



1. In a rotary saw having an arobr with a threaded end, drive means for rotating said arbor, a circular saw blade mounted on said arbor, said saw blade being mounted in substantially perpendicular relationship to the axis of said arbor, a solid collar mounted on said arbor at one side of said saw blade, a removable collar mounted on said arbor at the opposite side of said saw blade from said solid collar having an annular rim contacting the saw blade, and a retaining nut on said threaded end of said arbor forcing said collars toward each other, the improvement comprising an annular groove formed at the periphery of said solid collar, an annular insert in said annular groove, said annular insert having a rim adapted to contact a face of said saw blade, the diameter of said rim on said insert and the diameter of said rim on said removable collar being the same, whereby said rims contact the opposite faces of said saw blade when said retaining nut is tightened on the threaded end of said arbor to force said removable collar and said saw blade toward said solid collar.

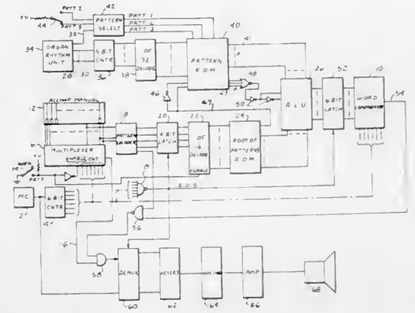
4,120,225

METHOD AND APPARATUS FOR AUTOMATICALLY PRODUCING IN AN ELECTRONIC ORGAN RHYTHMIC ACCOMPANIMENT MANUAL NOTE PATTERNS

Ralph Nowack Dietrich, and John William Robinson, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jan. 17, 1977, Ser. No. 759,908
Int. Cl.[2] G10H *1/60*
U.S. Cl. 84—1.03 19 Claims

1. The method of playing notes in a selected rhythmic pattern in an electronic organ having sound signal generator means, transducer means and keyers connecting the generator means with the transducer means, said organ having playing keys and multiplexing means for scanning said playing keys sequentially and including a counter driven by a high frequency clock and having a binary word output, said organ also having demultiplexer means responsive to binary data supplied thereto for actuating said keyers and synchronized with said multiplexer means, said method comprising: developing a respective first binary word in conformity with the depression of each of at least some of said playing keys forming pattern control kys, developing a first series of binary words in succession according to a selected rhythmic pattern and substantially slower than the frequency of the multiplexer clock, sequentially combining said first binary word with each word of said first series of binary words to develop a second series of binary words, comparing each word of said second series of binary words with the binary word output of said counter, and supplying a pulse to said demultiplexer means each time the compared words are equal.

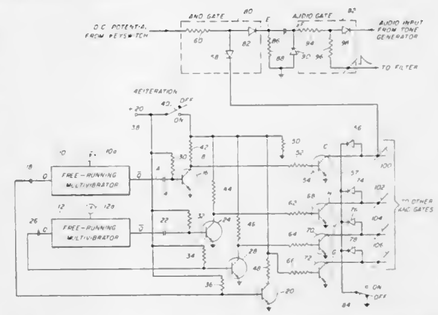


4,120,226

CIRCUIT FOR REITERATING PERCUSSIVE SOUNDS IN ELECTRONIC MUSICAL INSTRUMENT

Robert A. Finch, Palos Park, Ill., assignor to CBS Inc., New York, N.Y.

Continuation of Ser. No. 680,220, Apr. 26, 1976, abandoned. This application Jul. 7, 1977, Ser. No. 813,641
Int. Cl.[2] G10F *1/00*
U.S. Cl. 84—1.03 7 Claims



1. In an electronic organ having a plurality of keyswitches wherein actuation of each keyswitch acts to apply as one of two inputs to a respective one of a like plurality of logic gates a DC potential of predetermined amplitude, and wherein conduction of a logic gate acts to cause an associated one of a like plurality of audio gate circuits to couple from a tone generator to output utilization means a single note of a musical scale corresponding to the actuated keyswitch, a reiteration circuit for automatically reiterating a sound corresponding to a note for so long as the keyswitch for that note is depressed to produce percussion effects, said system comprising:

pulse generating means for producing a repetitive substantially rectangular waveform pulse signal having a first voltage level during a substantially greater portion of each cycle than it has a second voltage level, which first level being sufficient when applied as a second input to a logic gate simultaneously with application of said DC potential as a first input to render said logic gate conducting and said second level being incapable of rendering a logic gate conducting when applied thereto simultaneously with the

application of said DC potential, whereby to minimize the chance of a keyswitch being actuated when said repetitive pulse signal is at said second level; and

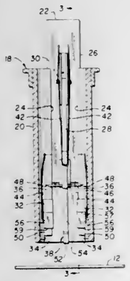
means connecting said pulse generating means to said logic gates for coupling said repetitive pulse signal as a second input to selected ones of said logic gates.

4,120,227

GUITAR WITH KEYBOARD PLUCKING MEANS

Jaime A. Bolaños, Edif. F.G. la Diagonal No. 424, San Salvador, El Salvador

Filed Aug. 4, 1977, Ser. No. 821,843
Int. Cl.² G10D 3/16
U.S. Cl. 84—320 **7 Claims**



1. For use in a multiple string musical instrument, a plurality of plucking means arranged in an array across said instrument with each plucking means adjacent a string corresponding thereto, each said plucking means comprising:

a housing;

a carriage guide within said housing;

a carriage mounted within said carriage guide and disposed for movement transverse to said string between a first rest position and a second stroke position;

a finger pivotally mounted at a first end to said carriage, said finger being biased against said carriage;

a head at the end of said finger opposing said first end for engaging said string;

a cam follower attached to said finger and extending laterally therefrom; and

a cam pivotally mounted to said housing, said cam having a face portion disposed to intercept said follower upon movement from said first to second position for laterally offsetting said finger from said carriage, said cam being further pivotable between a first rest position and a second nonrest position; said carriage in said first position being operative to urge said follower toward said face portion including a corner permitting a lateral return displacement upon movement of said carriage toward said stroke position, and said cam being movable to said second cam position only upon encounter with said follower upon movement of said carriage from said stroke position to said carriage rest position whereby said head is moveable in an eccentric path for stroking a string and permitting free vibration of said string thereafter.

4,120,228

HAND HELD MOUTHPIECE VISUALIZER FOR INTERIOR EMBOUCHURE

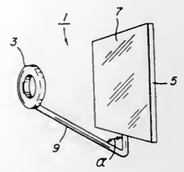
Howard Windows, Jr., 23 Linden St., Natrona, Pa. 15065

Filed Feb. 22, 1977, Ser. No. 770,394
Int. Cl.² G09B 15/00
U.S. Cl. 84—453 **2 Claims**

1. A training device for developing the proper interior embouchure of brass instrument players comprising:

a brass instrument training mouthpiece in the form of an annular member having the dimensions of the rim of a selected brass instrument mouthpiece which provides visual observation of the interior embouchure from the rear of the training mouthpiece when the player's lips are applied to the front thereof;

a body member having a planar reflective surface; and



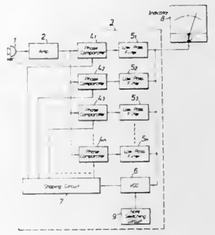
means for mounting said training mouthpiece to said body member in unobstructed spaced relation with said rim parallel and in line with the planar reflective surface and with the rear of the training mouthpiece facing the planar reflective surface such that a player placing his lips to the front of the mouthpiece may observe the full interior embouchure as reflected in the reflective surface.

4,120,229

ELECTRONIC TUNER

Kyozo Ota, Fuchu, Japan, assignor to Keio Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1975, Ser. No. 643,054
Claims priority, application Japan, Dec. 30, 1974, 50-1813
Int. Cl.² G10G 7/02
U.S. Cl. 84—454 **8 Claims**



1. An electronic tuner for musical instruments comprising:

an amplifier for amplifying an input musical signal, said amplifier including means operative to shape said input musical signal into a square wave;

a reference oscillator of the type adapted to have its oscillation frequency controlled by a control voltage to produce a reference oscillation signal of controlled frequency;

a phase comparator coupled to said oscillator and to said amplifier for comparing the amplified musical sound signal in phase with said reference oscillation signal;

a waveform shaping circuit for shaping the oscillation signal from said reference oscillator into a square wave, said waveform shaping circuit comprising a plurality of frequency dividers connected in cascade and supplied with said reference oscillation signal to frequency divide said reference oscillation signal, and an AND gate for obtaining the logical product of the outputs from the frequency dividers and for supplying the phase comparator with said logical product in the form of a signal containing a higher harmonic;

said phase comparator comprising a multiplier for multiplying the square wave musical signal from the amplifier by the output from the waveform shaping circuit;

a low-pass filter for extracting the low-frequency component from the output of said phase comparator and applying it as the control voltage to said reference oscillator; and

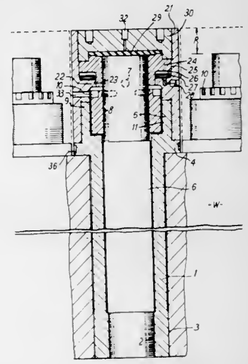
an indicator connected to the output of said low-pass filter and responsive to said control voltage for providing a direct visual indication of the ratio between said reference oscillation signal and the frequency of said input musical signal.

4,120,230

SELF-STRAINING BOLTS

Thomas Walter Bunyan, London, England, assignor to Pilgrim Engineering Developments Limited, London, England

Filed Feb. 23, 1977, Ser. No. 771,092
Int. Cl.² F16B 31/04; B23P 11/02
U.S. Cl. 85—1 T **14 Claims**



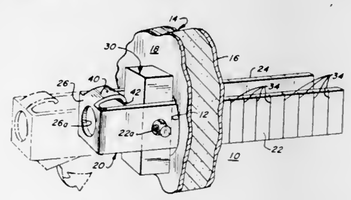
1. A compound bolt comprising a hollow shank, a core member within the hollow shank, the shank and core member being secured to each other against relative axial movement in both directions at or adjacent a first end of the bolt assembly, releasable transfer means at or adjacent the second end of the assembly for transferring tension forces from the core member to the hollow shank, the core member being capable of withstanding in compression the normal tensile force generated in the shank in use when such force is transferred thereto by the transfer means, and coupling means at or adjacent the second end of the core member for applying tensile and compressive forces to the core member.

4,120,231

HOLLOW WALL FASTENER

George A. Neumayer, 890 Brand La., Deerfield, Ill. 60015

Filed Feb. 10, 1977, Ser. No. 767,542
Int. Cl.² F16B 37/04
U.S. Cl. 85—3 R **7 Claims**



1. A hollow wall fastener for insertion in a hole formed in a wall panel between inner and outer faces comprising:

an elongated body adapted for longitudinal insertion in said hole from said outer face toward said inner face, said elongated body including a pair of spaced apart legs having free outer ends and opposite inner end portions interconnected by an integral cross member;

a toggle element pivotally mounted between said legs on axles extending into circular openings fixed in said legs adjacent said inner end portions for pivotal movement about a pivot axis extending transversely of said body, said toggle element being pivotal between a first position aligned with said legs for insertion of said body in said hole and a second position generally normal thereto wherein a face of said toggle element is adapted to bear against said inner face of said wall after said element clears said hole upon insertion of said body, said toggle element including a threaded aperture normal to said face thereof for receiving a threaded screw fastener when said toggle element is in said second position; and

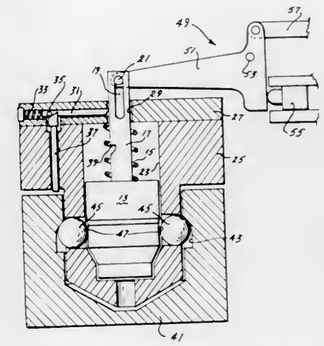
a deflectable finger integral with said cross member adjacent said toggle element and including a free end portion engageable with the toggle element for biasing said toggle element from said first position toward said second position.

4,120,232

SOCKET LUG ASSEMBLY FOR AIRCRAFT STORES

Charles R. Hoffman, Jr., Fort Walton Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 14, 1977, Ser. No. 787,680
Int. Cl.² B64C 1/22; F16D 1/00; F41F 5/02
U.S. Cl. 89—1.5 R **3 Claims**



1. A socket lug assembly for releasably attaching a store and the like to a bomb rack on an aircraft, said socket lug assembly comprising a cylindrical spindle positioned in a block for vertical slidable movement therein, said spindle having a reduced diameter at the lowermost end portion, a rod member extending upwardly from said spindle, a coil spring disposed around said rod member for urging said spindle downward, a lug for attaching a store thereto positioned over the outer lower end of said block, a groove on the inner wall surface of said lug, a plurality of metal spheres positioned in the groove in said lug and in contact with an inclined surface on said spindle, said groove having an inclined upper surface for forcing said plurality of metal spheres inwardly against the inclined surface of said spindle in response to additional downward force applied to said lug, and means for providing upward movement to said rod member with said spindle attached such that the reduced diameter of said spindle is in line with the metal spheres allowing said plurality of spheres to move inwardly out of the groove in said lug thereby releasing said lug from said block.

4,120,233

HYDRAULIC CONTROL SYSTEM FOR AT LEAST TWO CONSUMERS

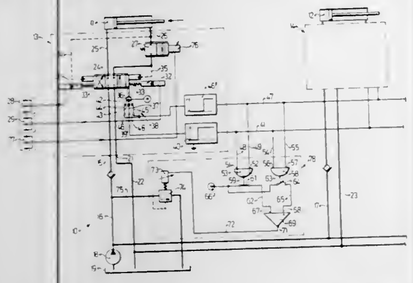
Joachim Heiser, Stuttgart; Wolfgang Bernhardt, Korntal, and Roland Schempp, Abstatt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 24, 1977, Ser. No. 809,936

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1976, 2630468

Int. Cl.² F15B *11/16*

U.S. Cl. 91—511 10 Claims



1. In an hydraulic control system for controlling the delivery of pressure fluid to at least two hydraulic consumers, in combination, a plurality of pressure-compensated direction-reversing valves, one for each consumer, each valve performing a direction-control function for determining the direction of flow of fluid in the system, a throttling function for determining the smallest flow cross-section in the system, and a pressure-compensation function for determining the line pressure in the system, each valve comprising first and second control valve stages of which one performs two of said functions and the other the remaining one of said functions; a plurality of electromechanical transducers, one for each of said valves, each transducer operative for sensing the setting of that one of the control valve stages of the associated valve which performs the pressure-compensation function and generating electrical signals dependent upon the sensed setting; line pressure regulating means operative for regulating the line pressure in the system; and an electrical information-processing unit operative for receiving said electrical signals, evaluating the same, and in dependence upon the results of the evaluations automatically adjusting the setting of the line pressure regulating means.

4,120,234

DEVICE FOR DISTRIBUTING A FLUID FLOW IN FIXED PROPORTIONS

Karl Evert Anders Joelson, Lenhovda, Sweden, assignor to AB Vabyma, Sweden

Continuation of Ser. No. 579,908, May 22, 1975, abandoned.

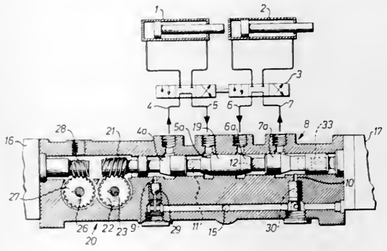
This application Feb. 16, 1977, Ser. No. 769,218

Claims priority, application Sweden, Jul. 1, 1974, 7408672

Int. Cl.² F15B *11/22*

U.S. Cl. 91—518 13 Claims

1. A device for distributing fluid from a source of pressurized fluid to first and second consumers while maintaining a fixed ratio between the fluid flows to said consumers, including a valve device connected between said source and said consumers and comprising a housing having a bore and a valve slide rotatably and slideably fitted in said bore in said housing and provided with consumer inlet valves adapted to regulate the fluid flow from said source for pressurized fluid to said consumers in dependence upon the axial position of said valve slide, displacement type rotary flow value gauges, means for directing fluid flow consumed by said consumers to an associated gauge, a comparator interconnecting said gauges for sensing the ratio between the fluid flows through said gauges and including two self-locking worm gears with transmission means between them, said valve slide being coupled to the worm of one of said worm gears so as to rotate with said worm



and so as to be displaced in said bore of said housing when the proportion between the speeds of rotation of said flow value gauges deviates from a predetermined value.

4,120,235

APPARATUS FOR TRANSVERSELY SEALING A WRAPPING TUBE

Otto Beck, Stuttgart-Heumaden, and Klaus Hamm, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

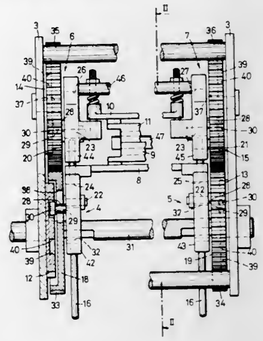
Filed Apr. 1, 1977, Ser. No. 783,662

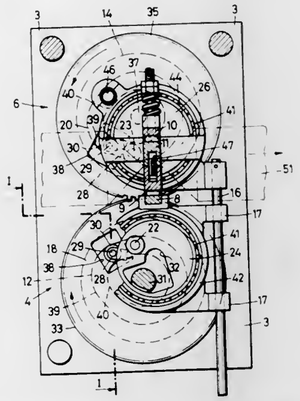
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614990

Int. Cl.² B31B *1/64*

U.S. Cl. 93—33 H 11 Claims

1. Apparatus for transversely sealing a wrapping tube comprising: opposed sealing tools movable in unison linearly along an operating path having a beginning and an end while sealing a wrapping tube and returning from said end to said beginning by moving along arcuate return paths, crank mechanisms for so moving said tools and including cam tracks and cooperating cam followers, said cam followers being urged against said cam tracks under the influence of centrifugal force during movement of said tools along said return paths; interconnecting guide means for guiding said tools along said paths; and wherein said tools are mounted on carriers and said guide





means extends substantially perpendicular to said operating path.

4,120,236

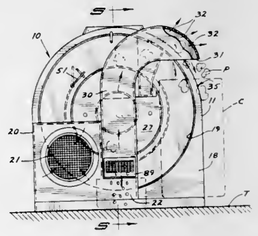
CORN POPPER

James K. Blomberg, Minneapolis, Minn., assignor to The Popper's Choice Company, Minneapolis, Minn.

Filed Oct. 25, 1977, Ser. No. 844,650

Int. Cl.² A23L *1/18*

U.S. Cl. 99—323.9 8 Claims



1. In a popcorn popper,

(a) an outer housing,

(b) a roasting drum mounted in the housing for rotation on its horizontal center axis,

(c) drive means for rotating the drum,

(d) said drum having a popping chamber and a discharge chamber,

(e) heating means for heating the popping chamber,

(f) means for depositing corn kernels in the popping chamber for popping therein as the drum is rotated,

(g) separator means between the popping chamber and discharge chamber for directing corn kernels after they are popped into the discharge chamber, and

(h) means for discharging popped corn from the discharge chamber and out of the roasting drum while the drum continues to rotate.

4,120,237

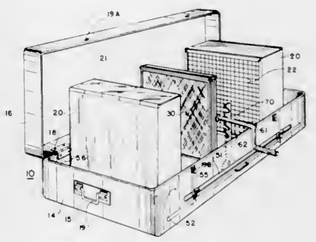
VERTICAL BARBECUE

Otto Mecherlen, Queens Village, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,268

Int. Cl.² A47J *33/00, 37/07*

U.S. Cl. 99—340 2 Claims



1. A barbecue unit, the outer housing of which is shaped as a carrying case formed of a base section hinged to a cover section, said base and cover sections each shaped as an open box, with

a pair of similar burner units each in the form of a box fitted with a grate unit as the face side of the burner unit, said boxes each formed with a side hinged to the remainder of the box,

said burner unit boxes of a size so that the two boxes may be contained in side-by-side orientation in the base section of the housing and each of a height to extend beyond the rim of the base section in said orientation,

means to fix said boxes in an erect position in spaced relation to each other inside the base section with the face side of each burner unit facing the other, and

detachable means to mount a rotisserie bar to said base unit between said burner unit boxes in the erect position, together with a grill unit formed of a pair of grill plates hinged together, with one of said plates fitted with means to slidably engage the rotisserie bar in a non-rotatable fashion relative to said bar,

said grill plates each fitted with first means to detachably latch the two grill plates together when said plates are folded in parallel array to each other, and with each grill plate fitted with second means to alternatively detachably engage each grill plate with the face side of an individual burner unit so that in the unfolded mode of the grill plates, and the side-by-side orientation of the burner unit boxes both grill plates extend in a substantially common plane over the face sides of the burner units, to which they are detachably fastened.

4,120,238

BALE BINDING APPARATUS WITH RESILIENTLY MOUNTING FILAMENT TWISTING MECHANISM

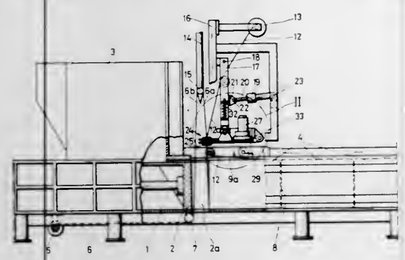
Anton Schäfer, Langenfeld; Karl Probst, Solingen, and Kurt Hüfken, Krefeld, all of Germany, assignors to Lindemann Maschinenfabrik GmbH, Dusseldorf, Germany

Filed Jun. 20, 1977, Ser. No. 808,319

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628540

Int. Cl.² B65B *13/28*

U.S. Cl. 100—11 **11 Claims**



1. In apparatus for applying binding filaments about bales of material, said apparatus including press means for producing said bales, and binding means operating to apply about each bale at least one loop of a binding filament arranged to extend within a winding plane, said binding means including a twisting head for twisting together ends of said binding filament, said twisting head being moveably mounted upon said apparatus to be swung in and out of twisting position, the improvement comprising means resiliently mounting said twisting head when said head is in said twisting position, said resilient mounting means being arranged to enable movement of said twisting head in a direction generally toward said bale during the time that said twisting head is performing a twisting operation.

4,120,239

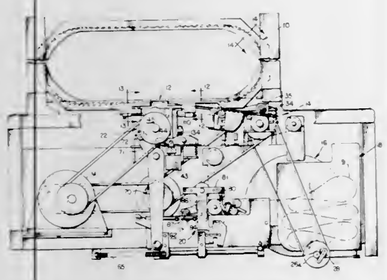
STRAPPING MACHINE

James A. Pasic, and Marvin I. Berg, both of Montesano, Wash., assignors to Ovalstrapping, Inc., Hoquiam, Wash.

Filed Mar. 10, 1977, Ser. No. 776,140

Int. Cl.² B65B *13/32*

U.S. Cl. 100—26 **25 Claims**



1. A strap supply and accumulating apparatus for flexible strapping machines comprising:

means for supporting a coil of strap for rotation about an axis of rotation,

coil drive means for directly engaging the strap on the peripheral surface of the coil for rotating said coil,

an accumulating compartment having an inlet and an outlet,

feed roll means located at said compartment inlet for moving strap into said inlet,

means coupling said coil drive means to said feed roll means for substantially synchronous rotation of the feed roll means and coil drive means whereby the linear speed of the strap leaving the coil and the linear speed of the strap passing through the feed roll means are approximately equal during all strap movements, and

means for controlling said coil drive and feed roll means for varying the quantity of strap fed into said accumulating compartment.

4,120,240

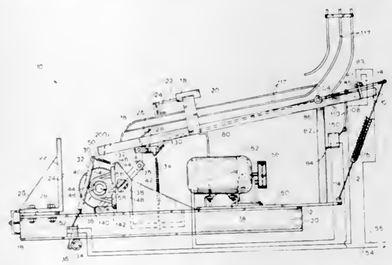
CONTAINER COMPACTOR

George L. Smith, P.O. Box 2153, Sanford, Fla. 32771

Filed Sep. 7, 1976, Ser. No. 720,965

Int. Cl.² B30B *15/30*

U.S. Cl. 100—45 **13 Claims**



1. Apparatus for sequentially compacting a plurality of containers comprising:

a first plate having a first compacting surface;

a second plate juxtaposed with said first plate and having a second compacting surface;

means for reciprocally moving said second plate toward and away from said first plate so as to effect compacting of containers between said first and second compacting surfaces;

a magazine for sequentially feeding most of said containers into the space between said first and second plates when in an open, noncompacting position;

means for energizing said reciprocal moving means responsive to the weight of a predetermined number of said containers in said magazine and continuously operating said moving means during any energization cycle thereof until most of said predetermined number of containers are compacted;

a first shaft; and

means coupling said moving means and said sequential feeding means to said first shaft so that each is commonly operative responsive to rotation of said first shaft.

4,120,241

FEEDER PENETRATION ADJUSTMENT MECHANISM

Charles A. Smith, New Holland, and John H. Merritt, Ephrata, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 19, 1977, Ser. No. 825,873

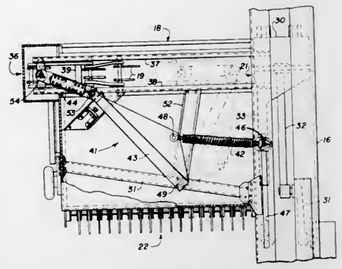
Int. Cl.² B30B *5/00*

U.S. Cl. 100—142 **9 Claims**

5. A hay baler having a fore-and-aft extending bale chamber provided with a feed opening in a side wall thereof, a driven plunger reciprocable in said bale chamber to compress hay deposited therein into bales, an infeed housing substantially perpendicular to and in alignment with said feed opening, a feed mechanism mounted within said infeed housing for reciprocable movement therein toward and away from said feed opening, a drive linkage connected between said plunger and said feed mechanism including

a main pivot arm having a first end and a second end, said first end of said main pivot arm pivotally fixed at a point spaced from said feed mechanism and said plunger;

a spring-biased telescoping arm having a first end pivotally connected to said plunger and a second end pivotally connected to said main pivot arm at a location spaced from said first end of said main pivot arm;



an adjustable length arm having a first end pivotally connected to said second end of said main pivot arm and a second end pivotally connected to said feed mechanism, whereby adjustment of said adjustable length arm controls the relative movement between said plunger and said feed mechanism.

4,120,242

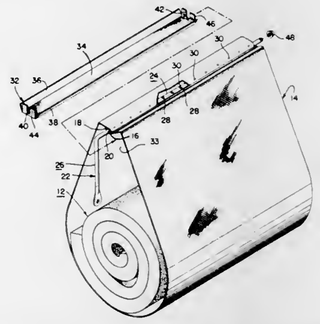
BULKY MATERIAL COMPACTER

Joseph Vosbikian, 617 Ashmead Rd., Cheltenham, Pa. 19012, and John R. Kalalian, 1004 Shadeland Ave., Drexel Hill, Pa. 19026

Filed Oct. 28, 1977, Ser. No. 846,438

Int. Cl.² B30B *5/04*

U.S. Cl. 100—212 **13 Claims**



1. A compacter for maintaining a bulky compressible item in a tightly rolled condition to make the item easily transportable, said compacter including:

a flexible strap for encircling the compressible material, said strap having opposed laterally extending end margins adjacent to each other;

a rotatable, rigid winder for use in rolling up the strap from both of its end margins, said winder including an elongate section extending laterally across the strap and about which the strap is rolled up, and a lever section connected to the elongate section to provide a mechanical advantage for rotating the elongate section of the winder to roll up the the strap tightly around the compressible material; and

a latching means connected to the lever section of the winder to prevent the winder from turning in a direction to unroll said strap.

4,120,243

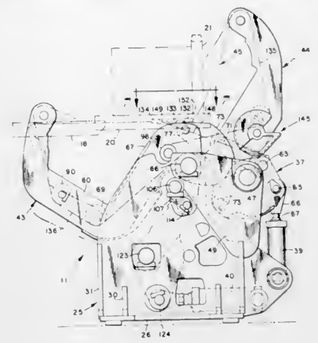
BUNDLE COMPACTOR

Irving Leonard Kaplan, Pepper Pike, Ohio, assignor to Carl Krasny & Associates, Inc., Warrensville Heights, Ohio

Filed Mar. 29, 1977, Ser. No. 782,494

Int. Cl.² B30B *5/04*

U.S. Cl. 100—212 **40 Claims**



1. A bundle compactor for elongated elements comprising two arm assemblies mounted for movement between open and closed positions, a flexible element extending between the distal ends of said arm assemblies and in the closed position thereof encircling the bundle, the distal end of at least one of said arm assemblies being furcated symmetrically with respect to the distal end of the other arm assembly so that such distal ends may interfit, and said flexible element being furcated accordingly, whereby, when said flexible element is tightened when said arm assemblies are closed, the compacting force will be evenly distributed about a plane normal to the axis of the bundle.

4,120,244

GRIPPER MOVEMENT CHANGEOVER DEVICE ON A SHEET-TURNING DRUM FOR PERFECTOR PRINTING MACHINES

Arno Wirz, Bammental, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Feb. 7, 1977, Ser. No. 765,903

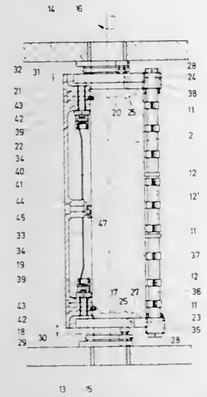
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1976, 2604895

Int. Cl.² B41F *21/04*

U.S. Cl. 101—230 **5 Claims**

1. Gripper movement changeover device on a sheet-turning drum for perfector printing machines having two drive members for the gripper movement located at opposite ends of the drum, the drive members being pivotable about pivot pins, each of the drive members carrying a roller selectively engageable with either one of two coaxially disposed control cams located adjacent the ends of the drum for following the cams comprising a bridge disposed in a cavity formed in the sheet-turning drum, said bridge extending over the length of the sheet-turning drum, a plate fastened in said cavity and formed with a slot, an eccentric bolt mounted in said bridge and having an eccentric pin engaging in the slot formed in said plate, the drive members being movably mounted on said bridge for displacement together with said bridge axially of the drum,

whereby upon rotation of said eccentric bolt against said slot, said bridge is caused to be longitudinally displaced a distance



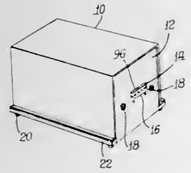
corresponding to the mutual spacing of the control cams of the respective drive members.

4,120,245

LABEL PRINTER

Edward C. Karp, Belvidere, and Charles Emile De Croix, Woodstock, both of Ill., assignors to Sanitary Scale Company, Belvidere, Ill.

Filed Jan. 10, 1977, Ser. No. 758,072
Int. Cl.[2] B41J *15/02, 11/08, 11/20*
U.S. Cl. 101—288 **7 Claims**



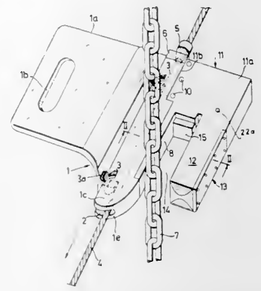
1. A label printer for printing information on a tape having a print-receptive layer and a supporting layer, said label printer comprising:
- a supply spool for the tape;
- a unitary, adjustable platen having a tape-supporting surface disposed to receive tape from said supply spool from a tape ingress end to an opposing tape egress end, said tape ingress end resting on a pivoting bar disposed perpendicularly to the path of tape feed for pivoting the platen about the axis of the pivoting bar, and said tape egress end terminating in a delaminating bar;
- a printing head disposed above but closely adjacent to the tape egress end of said platen for printing information on the print-receptive layer of tape;
- a spring disposed to urge the tape egress end of said platen downwardly away from the printing head;
- platen adjusting means including a fixed screw support and a pair of adjustment screws threaded through said screw support such that the ends of said screws bear on said tape egress end of said platen for urging said tape egress end upwardly against the bias of said spring;
- tape advancement means disposed downstream of said delaminating bar and engaging the supporting layer of tape for advancing the tape over said platen and delaminating bar;
- a take-up spool for the supporting layer of tape; and
- means for driving said tape advancement means in synchronism with the line printing function of said printing head;
- whereby the adjustment of said screws causes said platen to pivot about said pivoting bar to position the tape egress end of the platen relative to the printing head and simultaneously adjust the delaminating bar to its proper height, and the printed upon print-receptive layer of tape is separated from the bottom supporting layer by said delaminating bar.

4,120,246

SUBMARINE EXPLOSIVE CABLE CUTTING DEVICE TOWED BY A TOWING CABLE

Udo Sabranski, and Jochen Schmitt, both of Willich, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 12, 1976, Ser. No. 731,829
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1975, 2548595
Int. Cl.[2] F42B *3/08*
U.S. Cl. 102—24 HC **22 Claims**



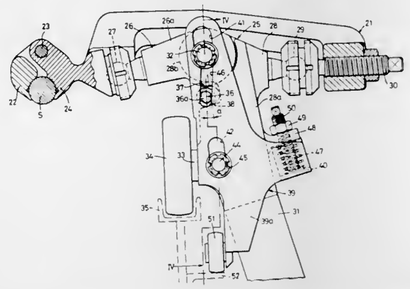
1. A submarine explosive cutting device adapted to cut the anchoring chains or cables of sea mines when towed by a towing cable in a mine sweeping operation, comprising in combination,
- a gripper body having a pair of parallel shank portions projecting in the towing direction and forming a gripper mouth adapted to receive an anchoring chain or cable of a sea mine;
- a stabilization float having a handle releasably connected to a first shank portion of said pair of shank portions of said gripper body;
- a release plate operatively mounted between said pair of shank portions at the bottom of said gripper mouth;
- ignition means mounted in said gripper body and being operatively connected to said release plate;
- an anchor chain or cable cutting unit including an explosive charge disposed at least partially in the other one of said pair of shank portions and being adapted to coact and be detonated by said ignition means;
- said stabilization float having a portion with a groove extending along said first shank portion which is adapted to receive the towing cable and further having towing cable protecting means extending along said first shank portion at one side of said gripper mouth;
- locking means operatively mounted on said stabilization float and adapted to prevent the towing cable separating from said cutting device; whereby said gripper body which includes the anchor chain or cable cutting unit is releasably connected to the stabilization float of the cutting device in such a way that when a predetermined force, applied to said gripper body, is exceeded said gripper body is sheared off the remainder of said cutting device.

4,120,247

CLAMP COUPLING ON A SUSPENSION GEAR OF A CIRCULAR SUSPENSION RAILWAY

Werner A. Müller, Bern, and Hans Abegglen, Hinterkappelen, both of Switzerland, assignors to Von Roll AG, Departement Bahn- und Stahlbau, Bern, Switzerland

Filed Mar. 9, 1977, Ser. No. 775,878
Claims priority, application Switzerland, Feb. 15, 1977, 1851/77
Int. Cl.[2] B61B *12/12*
U.S. Cl. 104—208 **4 Claims**



1. In a suspension gear of a continuous wire ropeway which includes a haulage-and-support cable, wherein the coupling of the suspension gear to said haulage-and-support cable is effected and sustained by the net weight of the suspension gear, a clamp coupling comprising a rack, a fixed clamp jaw firmly affixed to said rack, a movable clamp jaw mounted on said rack, a suspension gear support bar, a control carriage, and a toggle lever mechanism connecting said movable clamp to said suspension gear support bar and to said control carriage, said toggle lever mechanism being supported on said rack and including a first and a second lever, two universal joints respectively connecting one of the levers to a portion of said rack spaced from said clamp jaws and connecting the other one of said first and second levers to said movable clamp jaw, said first and second levers being hinged to one another about an axis which extends at right angles to the longitudinal axis of said support bar and also at right angles to a straight line extending between the centers of said two universal joints, one of said first and second levers of said toggle lever mechanism which is mounted on said portion of said rack that is spaced from said clamp jaws being rigidly attached to said support bar, the improvement comprising obstruction device means for automatically preventing said toggle lever mechanism from buckling upwardly upon the application of side loads on said support bar, and means for setting up said obstruction device for operation after actuation of the movable clamp jaw of said clamp coupling towards its closed position and for rendering said obstruction device inactive before actuation of said movable clamp jaw of said clamp coupling towards its open position.

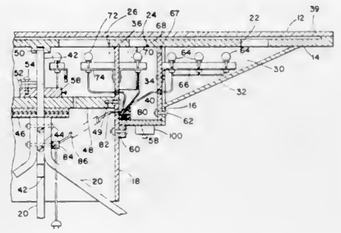
4,120,248

ILLUMINATED DECORATIVE TABLES

Ronald Broach, 1108 Franklin Ave., Apt. 2, Cincinnati, Ohio 45237

Filed Nov. 24, 1975, Ser. No. 634,453
Int. Cl.[2] A47B *85/00*
U.S. Cl. 108—23 **8 Claims**

1. A decorative table comprising
- a horizontally disposed light transmitting top unit, said top unit including an upper planar surface and an underlying planar disc having patterned light transmitting portions,
- a plurality of illuminating means disposed and attached to a supporting disc, beneath said top unit for illuminating the respective light transmitting portions,
- a powered means for sequentially and momentarily actuating said illuminating means, and



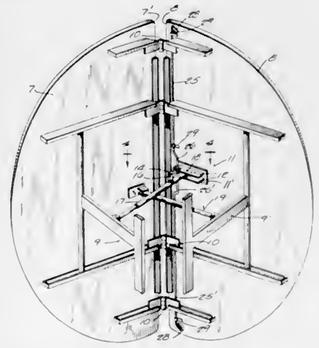
- a floor engaging support means having a supporting shaft extending upwardly from said support means engaging and supporting said top unit and said illuminating means.

4,120,249

FOLDING TABLE EQUIPPED WITH IMPROVED LATCH MECHANISM THAT HOLDS TABLE TOP SECTIONS COPLANAR AND PREVENTS ACCIDENTAL INJURY DURING UNFOLDING

Robert O. Blink, Greenfield, and William C. Lutzke, Milwaukee, both of Wis., assignors to Mitchell Manufacturing Company, Milwaukee, Wis.

Filed Aug. 8, 1977, Ser. No. 822,443
Int. Cl.[2] A47B *3/091*
U.S. Cl. 108—113 **6 Claims**



1. In a folding table of the type in which the top of the table has hingedly connected sections that have adjacent edges and are coplanar when the table is unfolded and set up for use,
- wherein each of said table top sections has leg means hingedly connected thereto, and leg struts connecting the leg means of one table top section with the other table top,
- wherein the axis of the hinge connection between the table top sections is so located with respect to the adjacent edges of the table top sections that those edges are closely contiguous when the table top sections are coplanar,
- improved means for eliminating the hazard of accidentally pinching one's fingers between the adjacent edges of the table top sections as those edges approach contiguity during unfolding of the table, and which comprises:
- A. coacting latch elements operable upon being brought into a predetermined engaged relationship, to hold the table top sections against unintended displacement out of coplanar relationship,
  - (1) one of said latch elements being a lever pivotally mounted at the underside of one of the table top sections

to swing about an axis spaced from and parallel to that of the hinged connection between the table top sections, to and from a defined position in which one edge of said lever faces the hinge axis but is spaced therefrom,

(a) said edge having a notch, and

(b) spring means biasing said lever to its said defined position,

(2) the other latch element being a bolt of a size to fit in said notch,

(a) said bolt being fixed on the leg strut that has one of its ends hingedly connected with the same table top section on which said lever is pivotally mounted and its other end connected with the leg means of the other table top section, and

(b) the length of said strut and the locations of its connections with the first identified table top section and the leg means of the other table top section being such that as the table top sections approach coplanar orientation, the bolt carried by said strut collides with said edge of said lever at a point spaced from its notch and thereby blocks further movement of the table top sections towards coplanar orientation as long as said lever remains in its said defined position; and

B. means including at least one manually actuatable handle for moving said spring biased lever out of its said defined position,

said manually actuatable handle being movably mounted at the underside of one of the table top sections and being connected with said lever to swing the same about its pivotal mounting in opposition to the biasing force thereon, far enough to permit entry of said bolt into said notch during unfolding of the table for use and to permit said bolt to leave said notch preparatory to folding up the table for storage.

4,120,250

CONNECTING STRUCTURE FOR SHELVES

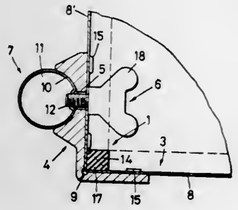
Hans Viessmann, Im Hain, 3559 Battenberg, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 797,411

Claims priority, application Fed. Rep. of Germany, May 19, 1976, 7615841[U]; Mar. 22, 1977, 7708836[U]

Int. Cl.² A47B *9/00*

U.S. Cl. 108—144 **24 Claims**



1. A connecting structure for shelves comprising:

a plurality of vertical supporting members having a predefined profile and having at least one hole therein,

a tray held in a substantially horizontal orientation by said supporting members and having substantially vertical flank faces and corner edges therebetween,

a plurality of L-shaped elbows defined by first and second legs secured to adjacent flank faces of said tray adjacent the corner edges thereof and covering the same, each of said elbows having at least one punch-through opening through one of said two legs thereof to receive therethrough screw means for connection of one of said flank faces of said tray to one of said supporting members at the hole provided therein.

4,120,251

AUTOMATIC METHOD AND APPARATUS FOR CLOSING A TOE END OF A SEAMLESS HOSE MATERIAL UTILIZING A STRAIGHT LINE STITCHING BY MEANS OF A STATIONARILY DISPOSED SEWING MACHINE

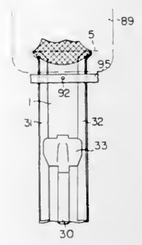
Osho Takatori, Nara; Etsuo Nishikawa, Goze, and Yosinobu Fukuyama, Kashihara, all of Japan, assignors to Takatori Machinery Works, Ltd., Yamatotakada, Japan

Filed Aug. 24, 1976, Ser. No. 717,133

Claims priority, application Japan, Jun. 11, 1976, 51-67598

Int. Cl.² D05B *19/00, 21/00*

U.S. Cl. 112—121.15 **8 Claims**



1. Apparatus for closing seamless hose material comprising

a stationarily disposed sewing machine;

a frame;

a plurality of holding members for holding a seamless hose material respectively thereon, said holding members being mounted on said frame for movement along said frame laterally to the front of said sewing machine;

a pair of finger pieces mounted on each said holding member, said pair of finger pieces having free ends and each finger piece having a projection at a respective free end which projects outwardly from a side of each said finger piece;

means for moving each respective finger piece of each pair of finger pieces laterally with respect to each other;

a hose guiding pin device moving synchronously along with each said holding member in a parallel direction, each said pin device being disposed between a respective pair of said finger pieces to fixedly support a seamless hose material at an intermediate region in such a manner that a one point engagement exists therebetween, whereby said engaging part of said material can be fixedly supported by said pin, and then said material together with a pair of finger pieces can be advanced toward said sewing machine, until the front edges of said finger pieces reach a stitching line by means of said sewing machine.

4,120,252

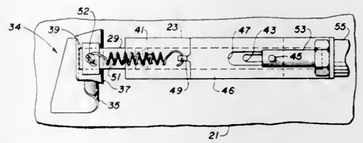
HEMMER ATTACHMENT FOR A SEWING MACHINE

Aaron Glassman, Scranton, Pa., assignor to Pennsylvania Sewing Research Corp., Dunmore, Pa.

Filed Sep. 7, 1977, Ser. No. 831,190

Int. Cl.² D05B *35/04*

U.S. Cl. 112—143 **7 Claims**



1. A hemmer attachment for a sewing machine comprising guiding walls arranged to fold a margin of a body of material

to form a hem, said walls comprising a stationary outer portion and a movable inner portion mating with said outer portion, and means attached to said inner portion for translating said inner portion away from its mating position with said outer portion and then rotating said inner portion away from its outer portion, characterized in that said translating-and-rotating means comprise

(a) a holder for a sliding member;

(b) a sliding member in said holder, said sliding member comprising (i) a driving part and (ii) a driven part connected in tandem with a pin to said driving part, said inner portion of said walls being attached to said driven member;

(c) connection means attached to said driving part for positioning said sliding member in one of at least two different positions with respect to said holder; whereby, in one position, said pin and a portion of said driven part are inside said holder and, in the other position, said pin and said driven part are outside said holder;

(d) and means for rotating said driven part about said pin when said sliding member is moved from said one position to said other position.

4,120,253

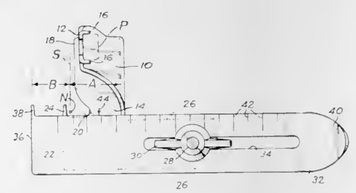
TUBULAR LOOP FORMING TOOL FOR SEWING MACHINES

Thomas O. Blair, 8026 SE. Powell Blvd., Portland, Oreg. 97206

Filed Apr. 15, 1977, Ser. No. 787,859

Int. Cl.² D05B *29/00, 35/00*

U.S. Cl. 112—151 **6 Claims**



1. A sewing machine loop forming tool, comprising:

(a) a body having an upper end portion adapted for attachment to the presser bar of a sewing machine,

(b) a foot member on the lower end of the body having a forward portion dimensioned to extend laterally across the longitudinal sewing line of the needle of a sewing machine and a rearward portion having an inner side edge disposed laterally inward of said sewing line, whereby to allow rearward movement of fabric stitched together by the needle of the sewing machine, and

(c) fabric fold gauge means on the forward portion of the foot member having a fabric folding edge located on the side of the sewing line opposite the said inner side edge of the rearward portion of the foot member and extending rearwardly at least substantially to the transverse line of the needle of a sewing machine, for folding fabric extending from under the foot member back over the latter for stitching the lapped portions of fabric together as the fabric progresses rearwardly through the sewing machine.

4,120,254

DIRECT DRIVE FEED SYSTEM FOR SEWING MACHINES

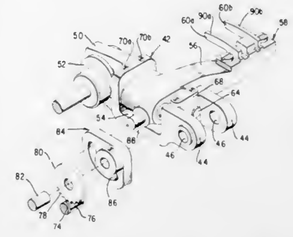
John A. Herr, Garwood, and James A. Transue, Union, both of N.J., assignors to The Singer Company, Elizabeth, N.J.

Filed Sep. 14, 1977, Ser. No. 833,199

Int. Cl.² D05B *27/02, 69/10*

U.S. Cl. 112—158 E **8 Claims**

1. In a sewing machine have an endwise reciprocable thread carrying needle supported for penetrating a fabric to form stitches therein, a work feed mechanism including a feed dog for moving fabric across a work surface of said sewing machine, support means for said feed dog including a guide frame mounted on the machine for reciprocation in one plane and a feed dog carrier mounted for linear reciprocation in the guide frame in another plane perpendicular to the plane of reciproca-



tion of the guide frame, and driving means connected to the support means for imparting reciprocatory motion to the guide frame and feed dog carrier in the said one and another plane respectively during operation of the machine, the driving means including a low inertia, permanent magnet rotary electrically reversible motor.

4,120,255

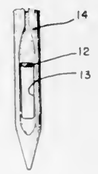
MONOFILAMENT SEWING THREAD

Philippe Hardy-The McLain, Columbia, S.C., assignor to Shakespeare Company, Columbia, S.C.

Continuation-in-part of Ser. No. 720,255, Sep. 3, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,518

Int. Cl.² D05B *85/00*

U.S. Cl. 112—222 **6 Claims**



1. In combination with a sewing machine needle having a rectangular eye elongated axially thereof, a synthetic monofilament sewing thread of substantially rectangular cross section having a width to thickness ratio of about 3.0:1 to about 4.0:1, said thread adapted to lie flatwise against the inner end of said eye when passing through said eye during a stitching operation.

4,120,256

APPARATUS FOR SEALING FLANGE JOINTS

Joel H. Semler, 9202 Larston, Houston, Tex. 77055

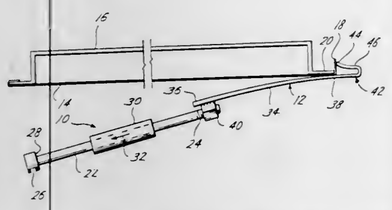
Filed Sep. 6, 1977, Ser. No. 830,849

Int. Cl.² B21D *19/00*

U.S. Cl. 113—57 **6 Claims**

1. A flanging tool used in attaching a vehicular door panel to a door frame, that may be used with the door on or off of the vehicle, when combined with an impact tool having a rod with a connecting end and a retaining end, and a weight disposed around the rod and moveable along the rod to provide a force at the connecting end by movement of the weight against a stop shoulder located at the retaining end, comprising a shank of sufficient length to enable said flanging tool to be used on the door panel edge located inside the body cavity when the door is open, having a connecting end and a crimping end;

means attached at the connecting end of said shank for connecting the shank to the connecting end of the rod of the impact tool; and a hook mounted with the crimping end of said shank having a flared end means of sufficient length for initially engaging a flanged edge of the door panel and beginning to fold the edge over a door frame lip; said flared end means generally curving outwardly from the shank side of said crimping portion and dimensioned for folding the edge over the lip;



and a crimping portion means of generally U-shaped cross-section with one side of the "U" extending into the shank and the other side of the "U" extending into the flared end means, said crimping portion means being of sufficient length for progressively engaging the door panel edge as the flared end means folds the edge over the door frame lip and to progressively crimp the edge to the lip, the folding and crimping of the edge to the door frame lip being accomplished by movement of the weight against the stop shoulder.

4,120,257

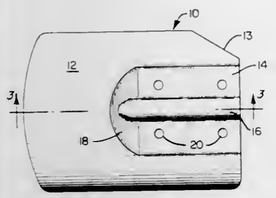
SHEET METAL FAN BLADE FORMING PROCESS

Joseph Victor Matucheski, Indianapolis, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed May 24, 1977, Ser. No. 799,983

Int. Cl.[2] B63B *19/00*

U.S. Cl. 113—116 D **3 Claims**



1. A method of making a curved sheet metal fan blade from a sheet metal workpiece which is to be flattened over a portion thereof for subsequent superposed attachment to a flat mounting arm, including the steps of:

(a) forming a workpiece of generally cylindrical contour and of a desired outline,

(b) stamping a rib on the workpiece, the rib extending from one edge of the workpiece towards another edge of the workpiece,

(c) simultaneously flattening the workpiece by stamping at portions laterally of the rib to thereby form a flat mounting pad, the mounting pad adapted to be attached to a flat spider arm of a fan hub,

(d) whereby step (c) will not cause departure from the initial workpiece outline.

4,120,258

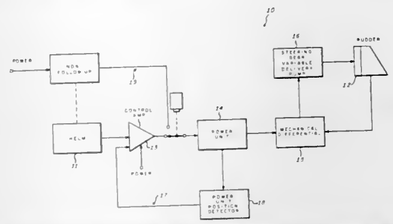
VARIABLE RATIO HELM

William T. Spurgin, Charlottesville, Va., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 13, 1976, Ser. No. 731,614

Int. Cl.[2] B63H *25/00*

U.S. Cl. 114—144 E **5 Claims**



1. An improved variable rate ship's helm for controlling the ship's rudder position, from one hardover position to a second hardover position through rotational displacement of the ship's steering means, from one hardover to another hardover stop position disposed less than 360° about the steering means, wherein the improvement comprises a non-linear potentiometer responsive to the displacement of said steering means and coupled to the ship's rudder, said non-linear potentiometer so constructed and arranged for producing an electrical signal which is linearly related to a first portion of the displacement of said steering means between fixed limits, centered about midships, of the steering means and associated potentiometer displacement, and which is non-linearly related to the remaining portion of the displacement of said steering means and associated potentiometer from each of said fixed limits to said respective hardover stop positions, the linear or non-linear electrical signal varying the ship's rudder position in a linear or non-linear manner, respectively.

4,120,259

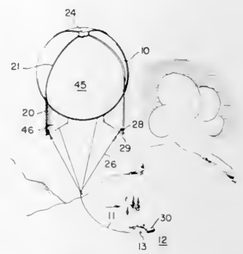
VISUAL AND RADAR EMERGENCY DETECTION BALLOON

Gene W. Wilson, Enterprise, Oreg., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Feb. 23, 1977, Ser. No. 771,079

Int. Cl.[2] G08B *21/00;* **H01Q** *15/18*

U.S. Cl. 116—124 B **1 Claim**



1. A balloon which may be tethered by a flexible cord to provide a visual and a radar target to signal an emergency situation at a site from which the balloon is tethered, in which said balloon is fitted with radar and light reflecting projecting cards that extend away from the balloon to increase the area of reflectivity of the balloon and sheets to light and radar rays, comprising

a balloon inflated with a gas such as helium so as to cause it to rise in air,

an elastic strap means fitted over the top of the balloon which expands so as to permit the circumference of the balloon to expand as the balloon expands in flight, said strap means formed of a plurality of leg section, each said leg section being joised to a common cross-piece above the top of the balloon, with each strap leg section extending from the cross-piece and about the top section of the balloon to join to individual cards of said projecting cards, the individual cards flat and extending below the lower section of the balloon, with each flat card fastened to an individual tie cord, with all said tie cords tied together below the balloon at a common point to the common tether cord so as to retain each said card abutting a lower quadrant of the balloon, with

each said card extending in a substantially vertical plane below the balloon in a radial plane relative to the balloon, said cards aligned by the elastic strap and the tie cords so that at least two such cards extend in substantially mutually perpendicular vertical planes, in which the

external surface of said balloon and each said card is coated with a layer of light and radar reflective material, and in which the cards serve to extend the plane of visual and radar reflection area of the balloon.

4,120,260

APPARATUS FOR APPLYING REFRACTORY MATERIAL ONTO THE INNER SURFACE OF A FURNACE

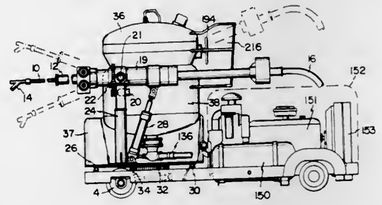
Sueki Kubo; Toshiro Watanabe; Masayuki Fujita; Tadahiko Matsuno, all of Kitakyushu, and Akira Morita, Ibaragi, all of Japan, assignors to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

Filed Apr. 19, 1977, Ser. No. 788,941

Claims priority, application Japan, Apr. 19, 1976, 51/44759; Nov. 12, 1976, 51/136733; Nov. 16, 1976, 51/154018[U]; Nov. 24, 1976, 51/141422; Dec. 1, 1976, 51/161518[U]; Dec. 3, 1976, 51/145757; Dec. 3, 1976, 51/162941; Dec. 8, 1976, 51-148048; Dec. 23, 1976, 51-173401; Jan. 20, 1977, 52-6182; Feb. 7, 1977, 52-12679; Feb. 15, 1977, 52-17727; Mar. 28, 1977, 52-38147

Int. Cl.[2] B05B *13/06*

U.S. Cl. 118—317 **28 Claims**



1. An apparatus for applying a refractory material onto the inner surface of a furnace comprising in combination:

a mobile transport car;

a rotatable turntable mounted on said transport car;

a spray pipe having a spray nozzle at one end thereof for spraying refractory material onto the inner surface of a furnace and adapted to receive the refractory material from a supply of the refractory material adjacent the other end thereof, said spray pipe comprising inner and outer pipes;

support means positioned on said rotatably turntable rotatably and pivotably supporting said spray pipe;

storage means mounted on said rotatable turntable for storing at least a supply of refractory material therein, said storage means including a first tank for the storage of refractory material and a second tank for the storage of water which is concentrically disposed relative to said refractory material storage tank, and

means carried by said transport car for supplying the refractory material to said spray pipe from said storage means and for propelling the refractory material through said spray pipe and spray nozzle.

4,120,261

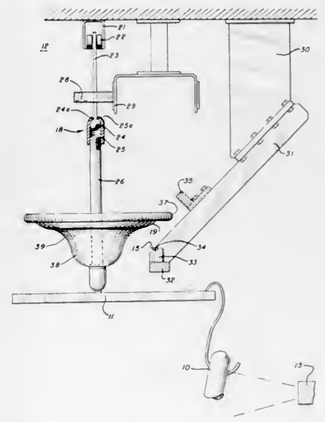
ELECTROSTATIC COATING SYSTEM

Joseph C. Hafele; Thomas J. Richards, and Paul L. Wright, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 25, 1977, Ser. No. 855,060

Int. Cl.[2] B05B *5/02*

U.S. Cl. 118—630 **12 Claims**



1. In a coating system in which a workpiece at a high electrostatic potential is moved by conveyor through a coating zone, an improved workpiece charging system comprising:

a workpiece support to move the workpiece through the coating zone and having a swivel joint therein;

a conductor extending through the coating zone adjacent the path of said support;

a source of DC potential connected with said conductor to establish a charging field: and

a charge collector on said support having a spherically contoured surface with a convex face presented to said charged conductor, said spherically contoured surface swinging from said swivel joint with the spacing of said charge collector surface from said charged conductor substantially constant.

4,120,262

APPARATUS FOR TRANSFERRING A PLURALITY OF SMEARS

Stanford L. Adler, Monsey, N.Y., and Abraham Gordon, Teaneck, N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 642,421, Dec. 19, 1975, abandoned. This application Jun. 15, 1977, Ser. No. 806,640

Int. Cl.[2] B05C *1/02*

U.S. Cl. 118—642 **7 Claims**

1. Transfer apparatus for transferring a plurality of discrete biological cellular smears of blood from a substrate to a backing element, comprising:

(a) substrate element having a first surface,

(b) a plurality of smears of biological cellular material,

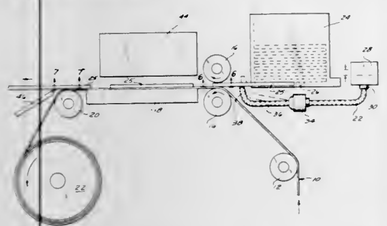
(c) said biological cellular smears being positioned on said first surface of said substrate element in spaced relationship,

(d) means adapted and constructed to move said substrate element along a predetermined path,

(e) a plurality of backing elements each having a first surface,

(f) supply means for said backing elements,

(g) means adapted and constructed to move said backing element in proximity to said path and in opposing surface relationship with said first surface of said substrate element,
(h) transfer medium,
(i) said transfer medium being transparent and exhibiting a refractive index substantially that of said smear of biological cellular material,
(j) means adapted and constructed when said transfer apparatus is operated to introduce along said path said transfer medium between the first surface of said backing element and the first surface of said substrate element in sufficient quantity to essentially encapsulate said smears of biological cellular material,

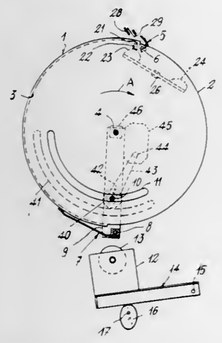


(k) means adapted and constructed when said transfer apparatus is operated to sandwich said transfer medium between said first surface of said substrate element and said first surface of said backing element along said path whereby said smears of biological cellular material are encapsulated within said transfer medium,
(l) means adapted and constructed when said transfer apparatus is operated to part said backing element from said substrate element along said path,
(m) said transfer medium having sufficient adhesive properties whereby said transfer medium is selectively adhered to said first surface of said backing element and said smears of biological cellular matrial adhere to said transfer medium when said transfer apparatus is operated.

4,120,263
MATRIX SUPPORTING DEVICES IN ELECTROSTATIC DEVELOPMENT APPARATUS

Vittorino Boschet, Milan, Italy, assignor to Grafosol S.p.A., Milan, Italy

Filed Feb. 18, 1977, Ser. No. 769,866
Claims priority, application Italy, Feb. 26, 1976, 20602 A/76
Int. Cl.[2] G03G *15/09*
U.S. Cl. 118—657 **3 Claims**

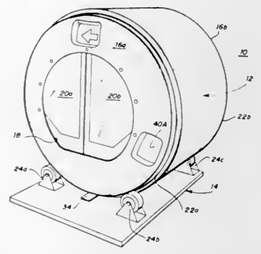


1. Improvements in matrix supporting devices for use in electrostatic development apparatus having a cylindrical surface to which a matrix sheet is to adhere, pliers for retaining a rear portion of the matrix sheet, a magnetic cylinder or roller, and associated toner containing tray, said improvements comprising:
means for moving said pliers along said cylindrical surface; and
carrying means supporting said magnetic cylinder or roller and associated toner containing tray, such that said cylinder or roller and said tray are moved away from said cylindrical surface to allow passage of said pliers.

4,120,264
SANITARY FACILITY FOR PETS

Joseph M. Carter, 11750 W. Belfort, Apt. 1307, Stafford, Tex. 77477

Filed May 11, 1977, Ser. No. 796,034
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—1 **7 Claims**



1. A device for selectively removing small animal feces and agglomerated waste matter from soiled pet litter comprising:
a rotatable chamber adapted to contain said litter, the wall of said chamber having at least one opening suitable for animal ingress and egress, and a second opening substantially coincident with the axis of rotation for removal of said feces and waste;
a base to moveably support the chamber for rotational movement about an axis with respect to the base; and,
at least one selectively restrictive, porous surface, rigidly situated interior said chamber and communicating with said opening for removal of feces and waste, said porous surface being inclined with respect to the interior drum surface, such that the combination of gravity and the selectively restrictive surface cooperate as the chamber is rotated to retain the waste matter on said surface, while simultaneously moving the retained matter toward said second opening to ultimately exit the chamber.

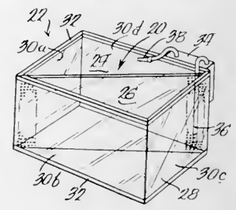
4,120,265
AQUARIUM DIVIDER

Thomas E. Davis, 666 Amber La., Apt. 101, Carol Stream, Ill. 60187

Filed Nov. 18, 1976, Ser. No. 742,868
Int. Cl.[2] A01K *64/00*
U.S. Cl. 119—5 **2 Claims**

1. In an aquarium tank having a bottom and four side walls, a clear, transparent, diagonal divider physically dividing the tank into two compartments while maintaining the visual impression of a single compartment aquarium, said divider being vertical, resting on the bottom of the aquarium and being of a height slightly greater than the level of the water in the aquarium, said divider being clear, imperforate and transparent throughout the major portion of the area thereof and including perforate areas adjacent and along its two ends for passage of water back and forth between the two compartments into which the aquarium is divided, and resilient mounting members at the two ends of said divider for fitting the same snugly into diagonally opposite corners of the aquarium into which

the divider extends, and including small slots along the top of the divider just below the level of the water in the aquarium for

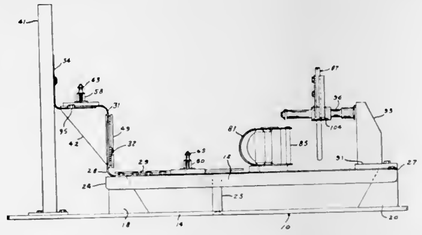


circulation therethrough of surface water, the remainder of said divider, except for adjacent said two ends, being imperforate.

4,120,266
SUBHUMAN PRIMATE RESTRAINT SYSTEM

Clarence M. Oloff, Montgomery County; Alva A. Karl, Dayton; Walter M. Wolff, Enon; Lloyd W. Halbrook, Dayton, all of Ohio; Ray D. Brown, Galveston, Tex., and Raymond G. Dickey, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 23, 1976, Ser. No. 753,959
Int. Cl.[2] A61D *3/00*
U.S. Cl. 119—103 **6 Claims**

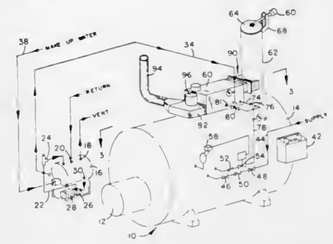


1. A restraint assembly for subhuman primate, comprising: a rigid frame member; said frame member including a pair of plate members attachable to a platform which may be secured to a centrifuge; said frame member including a body support plate member and an adjustable seat and leg support member; means for securing the body of a subhuman primate to the body support plate; lower arm restraint means for securing the arms of said subhuman primate to the body support plate member; lower leg restraint means for securing the legs of said subhuman primate to said seat and leg support member; upper leg restraint means secured to said seat and leg support member for preventing removal of the legs of the subhuman primate from said lower leg restraint means; upper arm restraint means secured to said body support member for preventing removal of the arms of the subhuman primate from the lower arm restraint means; means attached to said frame member for holding the head and neck of the subhuman primate against the body support member; said head and neck holding means including slidable means for permitting movement of the head and neck of the subhuman primate.

4,120,267
TUBE AND PLATE HEAT EXCHANGER

Michael J. Wood, 9431 Lotus Dr., Westminster, Calif. 92683

Filed Jan. 21, 1977, Ser. No. 761,331
Int. Cl.[2] F22D *1/08;* **F28F** *1/30*
U.S. Cl. 122—20 B **12 Claims**



1. A heat exchanger for exchanging heat between a gas and a liquid wherein the improvement comprises:
a duct for conducting hot exhaust gases from a prior combustion process;
a plurality of interconnected tubes provided with an inlet and an outlet and passing through said duct to receive heat from the exhaust gases;
means to connect said tubes at the inlet and outlet thereof to a fluid that is to be heated therein;
a plurality of plates in contact with the respective tubes implaced in said duct for receiving heat from the exhaust gases passing thereover;
fan means connected to said duct to draw exhaust gases in the direction of said fan means across the plates and tubes, thereby diminishing the restriction of gas flow caused by said plates and tubes;
a damper within said duct for regulating the flow of gases through said duct over said plates and tubes of the heat exchanger; and,
means to control said damper comprising at least in part a differential pressure detector for detecting differences in pressure between the upstream and downstream points within said duct for accordingly adjusting the position of said damper.

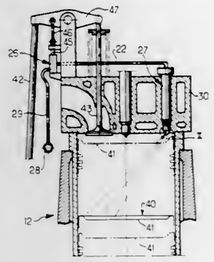
4,120,268
DEVICE FOR INJECTING WATER INTO THE CYLINDERS OF AN INTERNAL COMBUSTION ENGINE, PARTICULARLY FOR REDUCING THE DEGREE OF POLLUTION OF THE LATTER

Dirk Bastenhof, Eaubonne, France, assignor to Societe d'Etudes de Machines Thermiques-S.E.M.T., Saint Denis, France

Filed May 24, 1977, Ser. No. 799,930
Claims priority, application France, Jul. 2, 1976, 76 20383
Int. Cl.[2] F02D *19/00*
U.S. Cl. 123—25 C **4 Claims**

1. In an internal combustion engine having at least one cylinder, a piston reciprocable in the cylinder, at intake valve for the cylinder, means for actuating the intake valve to open during each intake stage of the combustion cycle in the cylinder for admitting combustion air into the cylinder and to shut at approximately the beginning of each compression stage of the combustion cycle, a device for injecting a predetermined amount of water into the cylinder, and means for actuating the water injection device during a predetermined portion of the combustion cycle in the cylinder, the improvement wherein the means for actuating the water injection device is operatively coupled to the means for actuating the intake valve for actuating the water injection device to inject said predetermined amount of water in synchronization with the shutting of the intake valve at the beginning of the compression stage of

the combustion cycle in the cylinder, the predetermined amount of water maintaining the temperature in the cylinder



below the critical value for significant nitrogen oxide production, with consequent reduction of pollution from the engine.

4,120,269

COMPENSATION FOR INHERENT FLUCTUATION IN OUTPUT LEVEL OF EXHAUST SENSOR IN AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

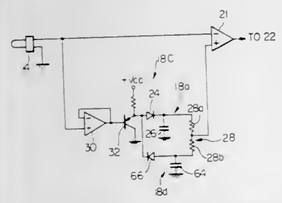
Takeshi Fujishiro, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 19, 1976, Ser. No. 715,652

Claims priority, application Japan, Sep. 30, 1975, 50-117244; Dec. 13, 1975, 50-167488[U]

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EE **8 Claims**



1. In a feedback control system for maintaining the airfuel ratio of a combustion mixture feed to an internal combustion engine, the system including an exhaust sensor which is installed in the exhaust line of the engine and produces an output voltage representing the concentration of a definite component of the exhaust gas of the engine, the concentration being in dependence on the airfuel ratio of the combustible mixture consumed in the engine, a comparison circuit to detect the magnitude of a deviation of the output voltage of the exhaust sensor from a reference voltage and a control circuit to control the function of the air-fuel proportioning device based upon the detected magnitude of the deviation, a circuit for producing the reference signal comprising:

a first capacitor connected to the exhaust sensor to continuously receive the output voltage of the exhaust sensor, and a voltage divider connected in parallel with said first capacitor, said voltage divider being adjusted such that the output voltage of said voltage divider is continuously below and in a definite proportion to the maximal value of the output voltage of said exhaust sensor; and

a second capacitor connected in parallel with said first capacitor to interpose said voltage divider, a first diode through which the output voltage of the exhaust sensors is applied to the said first capacitor and said voltage divider and a second diode with the anode thereof connected to said second capacitor and the cathode thereof connected to the anode of said first diode, said voltage divider being adjusted such that the output voltage of said voltage divider is continuously in a definite proportion to the mean value of maximal and minimal values of the output voltage of the exhaust sensor, said output voltagge of said voltage divider being used as the reference voltage.

4,120,270

CLOSED-LOOP MIXTURE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH FAIL-SAFE CIRCUIT ARRANGEMENT

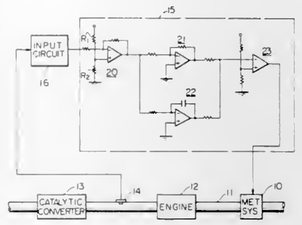
Masaharu Asano, Yokohama, and Makoto Anzai, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 2, 1976, Ser. No. 692,193

Claims priority, application Japan, Jun. 3, 1975, 50-74368[U]

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EE **10 Claims**



1. A closed-loop mixture control system for an internal combustion engine including means for supplying air and fuel thereto in variable ratio and means for adjusting said air and fuel supplied to said engine in response to a feedback control signal, comprising:

an exhaust gas sensor operable at a high sensor temperature for generating a first voltage signal in response to the absence of a predetermined constituent gas in the exhaust gas and for generating a second voltage signal in response to the presence of the predetermined constituent gas in the exhaust gas, said sensor having an internal impedance varying inversely with the temperature of said sensor from a very high impedance at its low, nonoperable temperature to a very low impedance at its high operating temperature;

an input impedance circuit means connected to one terminal of said sensor, a second terminal of the sensor being connected to a reference potential, said circuit means connected to said sensor terminals and having an impedance value intermediate said very high and very low internal impedances of said sensor so that when the internal impedance of the said sensor is either at said very high or very low level, said input impedance circuit means develops a potential substantially equal to said reference potential; and

an exhaust gas sensor amplifier circuit connected to said input impedance circuit means, the output signal of said amplifier circuit having a first voltage level in response to the internal impedance of said sensor being either very high or very low, said amplifier circuit being adapted to switch between said first voltage level and a second voltage level in response to said first and second voltage signals from said sensor, the output of said amplifier circuit being a feedback control signal which causes said air fuel adjusting means to enrich said supplied air-fuel mixture when the internal impedance of said sensor is very high or very low.

4,120,271

VENTILATING ARRANGEMENT FOR AN ENGINE COMPARTMENT

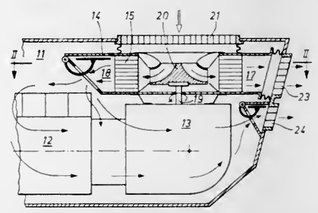
Franz Edmaier, Markdorf, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Sep. 9, 1976, Ser. No. 721,753

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1975, 2540040

Int. Cl.² F01P *11/10*; F28F *9/22*

U.S. Cl. 123—41.49 **5 Claims**



1. Ventilating and cooling arrangement for an engine compartment of a liquid-cooled internal combustion engine of the type having a radiator for recooling the engine coolant by means of ambient air; said arrangement comprising:

ambient air moving means for drawing air through said radiator,

and an air conducting housing separate from the engine compartment and surrounding the radiator,

wherein said air conducting housing is configured to form two radiator exhaust air chambers at respective different positions adjacent said radiator, one of said radiator exhaust air chambers communicating a first portion of the exhaust air from said radiator to the engine compartment as engine compartment cooling and ventilation air, the other of said radiator exhaust air chambers communicating a second portion of the exhaust air from said radiator to the surrounding atmosphere in bypassing relationship to said engine compartment,

wherein said radiator is a ring radiator having a central inlet for said ambient air and radially extending outlets for said air disposed around the circumference thereof, and wherein said ambient air moving means is a fan disposed in the central portion of said radiator, and

wherein between one-third (1/3) and one-half (1/2) of the ring radiator periphery opens into said radiator exhaust air chamber communicating with the engine compartment.

4,120,272

DEVICE FOR OPTIMUM CONTROL OF THE SPARKING TIME OF A SPARK IGNITION ENGINE, DURING ITS OPERATION

Andre Douaud, Puteaux, and Joseph Rialan, Meudon, both of Francé, assignors to Institut Francais du Petrole, France

Filed Dec. 21, 1976, Ser. No. 752,852

Claims priority, application France, Dec. 30, 1975, 75 40081

Int. Cl.² F02P *5/14, 3/08*

U.S. Cl. 123—117 D **19 Claims**

1. An automatic device for optimum control of the spark advance point in a spark ignition circuit of an engine, comprising

means for detecting the occurrence of knocking during the combustion, said detecting means being responsive to the vibration of the engine exclusively during a fraction of the combustion phase corresponding to a selected angular interval of rotation of the crankshaft,

adjustment means actuated by said detection means and connected to the ignition circuit, said adjustment means applying a time-delay to the ignition circuit upon detection of a selected number of knock-containing power cycles,

and means for following the rotation of the crankshaft and producing successive electric pulses corresponding to consecutive angular positions of the crankshaft in order to define said angular interval during which said detecting means is responsive to the engine vibrations,

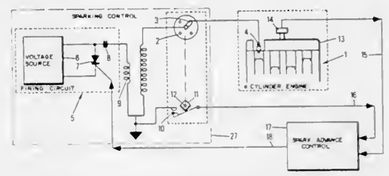
wherein said adjustment means comprises

a first adding circuit delivering a signal after summing up a fixed number of power cycles,

a second adding circuit for delivering a signal after summing up a fixed number of knock-containing power cycles, each of said adding circuits having an output terminal connected to terminals for simultaneously resetting both adding circuits,

electric up- and downcounting means connected to both of said adding circuits for delivering a spark advance control signal defining an angular correction for the spark advance having a range with preselected limit values and dependent on the difference of the respective numbers of signals delivered by said first and second adding circuits, and

control means, connected to said up- and downcounting means and to said means following the rotation of the crankshaft for controlling the spark advance in said spark ignition circuit.



4,120,273

STARTING AID FOR INTERNAL COMBUSTION ENGINES

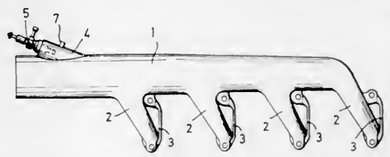
Walter Krause, Rösrath-Stümpen; Peter Bober, Cologne, and Eckhard Haas, Porz-Ensen, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Apr. 21, 1976, Ser. No. 678,888

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1975, 2518156

Int. Cl.² F02M *7/00*; F02B *3/00*

U.S. Cl. 123—122 G **11 Claims**



1. For use in preheating combustion air compressed with an internal combustion injection engine without a carburetor, a starting aid which includes in combination: a straight air intake pipe leading to at least one branch pipe to a combustion cylinder, for conveying air to said engine, said air intake pipe being provided with an outwardly bulging section in a straight wall upstream of the air flow to said branch to form a chamber opening into the air intake pipe, at least one flame heater plug extending from the outside of the upstream end of said bulging section into the interior of said upstream end of said outwardly bulging section of said air intake pipe and disposed entirely

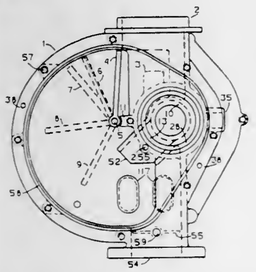
within said chamber for preheating the entire air flow in said air intake pipe to a very high temperature at a value still below that for self ignition of a fuel mixture which is to be avoided, said bulging section being largest in cross section at its upstream end and tapering in the direction of air flow to a smaller cross section at its downstream end, so that the heated air from said flame heater plug will enter directly into said air intake pipe, and an apertured plate with a plurality of apertures throughout its length placed in the opening where said bulging section bulges out from said air intake pipe to separate said chamber from the air flow in the adjacent portion of said air intake pipe so the air flow does not interfere with the action of the flame heater plug and to maintain a reduced temperature while permitting communication therebetween through the apertures of said apertured plate to assure preheating stability without extinguishing said flame heater plug regardless of low starting temperatures and regardless of increasing speed to attain operation with smoke-free combustion, a portion of said air in said intake pipe entering through some of said perforations for combustion in said bulge and exiting said bulge through others of said perforations.

4,120,274

CARBURETORS OR FUEL MIXING SYSTEMS

Warren H. De Lancey, 1580 Prospect Ave., Apt. H-4, Elyria, Ohio 44035

Filed Jun. 5, 1975, Ser. No. 584,203
Int. Cl.[2] F02M *69/00*
U.S. Cl. 123—139 E **19 Claims**



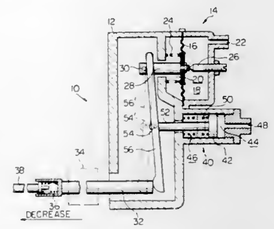
1. A carburetor for supplying a continuous mixture of air and finely divided fuel particles to an internal combustion engine having a fuel volume control comprising:
(a) a main body having an air inlet and a mixture outlet, a closed conduit connecting said inlet and outlet, and a valve in said outlet controlled by linkage to the engine's fuel volume control;
(b) a shaft, one end of which extends to the exterior of said body enclosure, a vane in said conduit fixed to and rotatable on said shaft, the position of said vane defining the size of a variable orifice in said conduit, and a spring biasing said vane against the direction of air movement to a minimum orifice size but responsive to increasing air volume to enlarge said orifice area approximately in proportion to the air volume passing from said inlet to said outlet;
(c) a variable capacity rotary metering pump for measuring fuel volume, a constant speed electric motor driving said pump, said pump housed in said main body enclosure and having its inlet connected to a pressurized fuel supply, and its discharge mixing with the metered air, and a modulating shaft for modulating the output of said pump, said modulating shaft extending to the exterior of said body enclosure;
(d) a mechanical linkage connected between said vane and said modulating shaft whereby said vane supplies the energy and movement to position said modulating shaft and maintain the air-fuel ratio within predetermined limits regardless of air volume.

4,120,275

ENGINE FUEL INJECTION PUMP GOVERNOR

Hiroshi Isobe; Toru Koyanagi, and Toru Sakuranaka, all of Higashi Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1976, Ser. No. 699,788
Claims priority, application Japan, Jun. 28, 1975, 50/90815[U]; Jun. 28, 1975, 50/90816[U]
Int. Cl.[2] F02D *1/04*
U.S. Cl. 123—140 MC **5 Claims**



1. An engine fuel injection pump governor comprising in combination:
a fuel injection control member movable from a maximum fuel injection position in a fuel injection decreasing direction;
biasing means urging the control member toward the maximum fuel injection position;
an engine induction air pressure sensor;
a linkage connecting the air pressure sensor to the control member in such a manner that the control member is moved thereby in a fuel injection increasing direction as a magnitude of sensed induction air pressure increases;
an engine oil pressure sensor connected to the linkage in such a manner that the control member is moved thereby to the maximum fuel injection position when a sensed engine oil pressure is substantially zero and is moved thereby in the fuel injection decreasing direction as the engine oil pressure increases;
an engine speed sensor for moving the control member toward the maximum fuel injection position as a sensed engine speed decreases below a predetermined value; and
releasing means for allowing the control member to be moved by the speed sensor against the action of the air pressure sensor;
said air pressure sensor comprising a rod movable in response to sensed induction air pressure, the oil pressure sensor comprising a rod movable in response to sensed oil pressure and the linkage comprising a lever pivotally supported at an intermediate point thereof by the rod of the oil pressure sensor and pivotally engageable at its opposite end portions with the rod of the air pressure sensor and with the control member respectively.

4,120,276

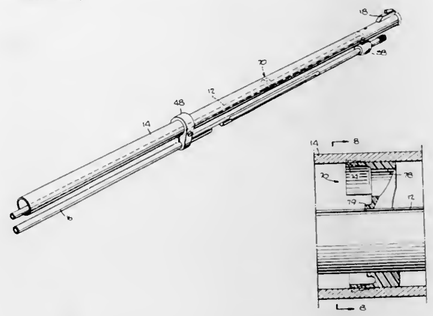
GUN WITH INTERMEDIATE SUPPORT FOR BARREL THEREOF

Roger Curran, Stratford, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Feb. 4, 1977, Ser. No. 765,554
Int. Cl.[2] F41F *17/06*; F41B *11/06*
U.S. Cl. 124—85 **16 Claims**

1. A gun comprising:
a gun frame;
a gun barrel shroud;

means carried by said frame for supporting an end portion of said barrel shroud;
a gun barrel within said barrel shroud and spaced radially therefrom;
means carried by said frame for supporting an end portion of said barrel;
means coupling the opposite end portion of said barrel and the opposite end portion of said barrel shroud one to the other for supporting said opposite barrel end within said shroud;



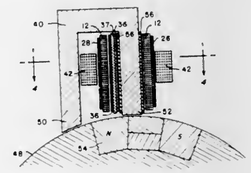
means disposed within said shroud intermediate the opposite end portions thereof for supporting the gun barrel at a location intermediate the barrel support means at the opposite ends of said barrel thereby maintaining the barrel substantially straight throughout its length, and said intermediate supporting means having a through opening for receiving the gun barrel, said intermediate supporting means having attached thereto outer margins for bearing against the inside wall surface of the shroud, said margins flaring outwardly from and extending from said intermediate supporting means in axial and radial directions.

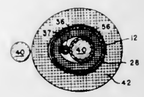
4,120,277

BREAKERLESS MAGNETO DEVICE

Jack W. Ehlen, Torrance, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Apr. 25, 1977, Ser. No. 790,704
Int. Cl.[2] F02P *1/00*
U.S. Cl. 123—148 CC **13 Claims**





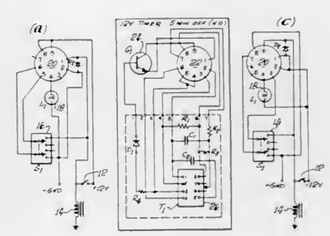
1. A magneto ignition system for use with an internal combustion engine, comprising:
a first core,
a first winding mounted on said first core,
means for completing a circuit through said first winding,
a second core positioned inside said first winding next adjacent and spaced from said first core,
a trigger winding mounted on said second core,
a rotor having a permanent magnet for producing varying flux through said first and second cores to induce voltages across the respective first winding and trigger winding, and
means responsive to the voltage generated in said trigger winding for selectively interrupting the flow of current through said circuit means.

4,120,278

AUTOMATIC SHUT-DOWN CONTROL SYSTEM FOR TRUCK DIESEL ENGINES EQUIPPED WITH EXHAUST-DRIVEN SUPERCHARGERS

Gaylan J. Ward, 2626 Chico Ave., S. El Monte, Calif. 91733

Filed Sep. 17, 1976, Ser. No. 724,268
Int. Cl.[2] F02B *77/00*
U.S. Cl. 123—198 D **4 Claims**



1. A controller for the automatic performance of predetermined operating modes prior to the shut down of automotive diesel engines equipped with exhaust-turbine superchargers, said controller comprising:
integrated circuit means wired as a time-lapse mechanism,
an initiating circuit connected to said integrated circuit means for starting the time-lapse operation thereof,
switching means connected to the electrical circuit of the diesel engine; and a momentary switch connected to said initiating circuit, whereby said initiating circuit induces said integrated circuit means to provide an output signal for a predetermined period of time, and whereby said output signal operates said switching means to provide current derived from the electrical circuit of said diesel engine to ensure the operation of the engine at a predetermined speed regime for said predetermined period of time, wherein said integrated circuit means include a plurality of integrated circuit devices, each adapted to provide a particular output signal for a predetermined time, and wherein said switching means include a plurality of switching elements, each operated by one of said output signals, for the provision of a plurality of sequential current to the integral controls of the engine, to ensure the operation of said engine for said plurality of predetermined periods of time, each at a predetermined speed require.

4,120,279

BARBECUE PIT HANGER

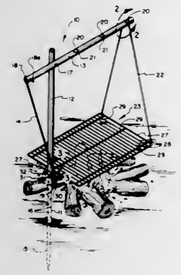
Von M. White, 474 3rd Ave., Salt Lake City, Utah 84103

Filed Oct. 14, 1976, Ser. No. 732,364
Int. Cl.[2] F24B *3/00*; A47J *33/00*
U.S. Cl. 126—30 **5 Claims**

1. A barbecue pit hanger comprising
a stake having a plurality of holes therein, said holes being spaced along the length of said stake;
an upper sleeve having a lower end adapted to telescope over an upper end of the stake;
a hanger arm pivotally connected intermediate its length to an upper end of the upper sleeve, said hanger arm having

a hole through one end thereof, and at least one notch formed in a top surface thereof adjacent the other end of the arm; and

a locking rod having one end bent to extend through the hole in the hanger bar and the other end bent to extend through a hole in the stake when the hanger bar is extending substantially transversely to the stake and upper sleeve thereon; and a wire support hanger positioned in one of said notches of the hanger arm and suspended from the hanger arm; and a food supporting accessory supported at one of its ends by the wire supported at hanger and including a portion spaced from said one end supported by the end of the locking rod extending through the stake.

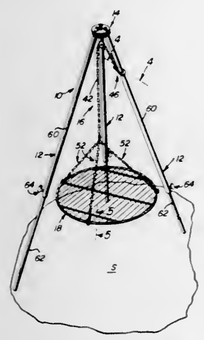


4,120,280

ADJUSTABLE GRILL DEVICE

Harold L. Iverson, 1 Live Oak La., Fort Myers, Fla. 33905, and Robert M. Lemley, Fort Myers, Fla., assignors to Harold L. Iverson, Fort Myers, Fla., a part interest

Filed Mar. 14, 1977, Ser. No. 777,570
Int. Cl.[2] A47J *33/00*; F16M *11/00*; F24B *3/00*
U.S. Cl. 126—30 **11 Claims**



1. An adjustable grill device, comprising, in combination:

(a) at least three coextensively arranged legs;

(b) head means connected to the legs for disposing the legs in coextensive and adjustable relationship with respect to one another; and

(c) support means mounted on the head means for suspending a cooking utensil beneath the head means, the head means including, in combination:

(1) first and second substantially parallel, planar plates spaced from one another and provided with a plurality of matching holes, the number of holes being the same as the number of the legs, the legs being disposed in the holes for adjustment relative to the planes of the plates; and

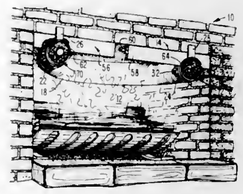
(2) retaining means disposed between the plates and engaging the legs for holding the legs in the holes provided in the plates.

4,120,281

FIREPLACE HEAT EXCHANGER

Richard Wass, 376 Gorden Petty Ct., Brentwood, Tenn. 37027

Filed Sep. 22, 1975, Ser. No. 615,671
Int. Cl.[2] F24B *7/04*
U.S. Cl. 126—121 **10 Claims**



1. A heat exchanger for a fireplace comprising:

(a) a flexible tubular body with expanded interior and expanded exterior heating surfaces, said tubular body forming an elongated passage of generally circular cross section and having inlet and outlet ports at opposite ends, said tubular body having annular ribs defining said expanded interior heating surface which bounds said elongated passage and said expanded exterior heating surface on the outer periphery of said tubular body;

(b) clamp means mounted to each end of said tubular body and configured to be clamped to a lintel of the fireplace for securing said tubular body by its ends only to the lintel of the fireplace in a substantially horizontal plane, said tubular body having a substantially U-shaped profile when mounted to the lintel, said tubular body sufficiently flexible to be readily bent into said U-shaped configuration and sufficiently rigid to be self-supporting in said substantially horizontal plane when only its ends are mounted to the lintel by said clamp means;

(c) a cap mounted to each end of said tubular body and defining air deflectors;

(d) a blower mounted within said tubular body, said blower having energized and deenergized states, said blower operative to make air flow inwardly through said inlet port and outwardly through said outlet port when in said energized state;

(e) a controller electrically connected to said blower; and

(f) a temperature sensor mounted to said tubular body, said temperature sensor having opened and closed states, said temperature sensor actuated into its closed state on a temperature rise in the range of 100° to 140° F. and is deactuated into its opened state on a temperature drop in the range of 80° to 120° F.;

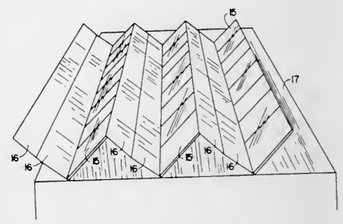
(g) said blower, said controller and said temperature sensor electrically interconnected with one another, said temperature sensor operative to energize said blower when in said closed state, said temperature sensor operative to deenergize said blower when in said opened state, said controller operative to regulate the speed of said blower when said temperature sensor is in said closed state, said expanded exterior heating surface providing increased heat transfer between heated air in said fireplace and said tubular body, said expanded interior heating surface providing increased heat transfer between said tubular body and said air flowing in said tubular body.

4,120,282

SOLAR RADIATION REFLECTOR AND COLLECTOR ARRAY

Patrick N. Espy, 10,008 Hickory Hill La. SE., Huntsville, Ala. 35803

Filed Apr. 28, 1977, Ser. No. 791,731
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **6 Claims**



1. An improved non-tracking and concentrating solar radiation conversion system for collecting diffuse and beam solar radiation directly and by reflection comprising:

a. at least one planar solar radiation collector of substantially elongated rectangular dimensions;

b. said collector having long axes arrayed in an approximate east-west direction with planar surfaces tilted downwardly toward the equator at an angle from the horizontal approximately equal to the latitude of the array plus 23.5°;

c. a reflector system having one reflector aperture of substantially elongated rectangular dimensions for each of said collectors;

d. said reflector apertures having long axes parallel with the long axes of said solar radiation collectors with aperture planes tilted downwardly from the equator at an angle from the horizontal equal to 66.5° minus the latitude of the array;

e. said reflector apertures being alternately spaced in a north-south direction with said solar radiation collectors;

f. the upper edge of each of said reflector apertures being joined with the upper end of the adjacent solar radiation collector and the lower edges of each of said reflector apertures being joined with the lower edges of the next adjacent solar radiation collector;

g. said reflector apertures comprising at least one planar reflector facet having a highly light reflective surface sufficient to reflect all noon-time sun rays incident upon the reflector aperture to said solar radiation collector.

4,120,283

SOLAR HEAT COLLECTOR

Anton Allen Eder, Moscow, Id., assignor to Idaho Research Foundation, Inc., Moscow, Id.

Continuation-in-part of Ser. No. 678,126, Apr. 19, 1976, abandoned. This application May 26, 1977, Ser. No. 800,723
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **8 Claims**

1. In a solar heat collector;

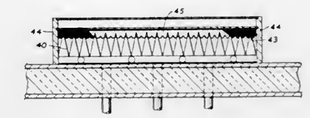
a support frame having transverse width and longitudinal length, the front of the frame being adapted to be faced toward the sun and the back of the frame being adapted to be faced away from the sun;

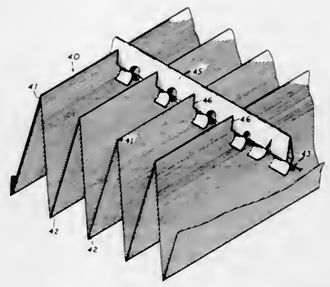
said frame being in the form of an enclosure having transversely spaced side members and longitudinally spaced end members enclosing an area of solar heat collection;

a plurality of taut flexible support lines stretching between opposed members of the frame, lines being parallel to one another and located in a common plane within the enclosure;

a folded sheet of lightweight flexible material capable of absorbing solar energy, such as a sheet of metallic foil;

said folded sheet being expanded accordion style within the frame to form a series of pleats which present parallel raised peaks and depressed valleys facing toward the front of the frame;





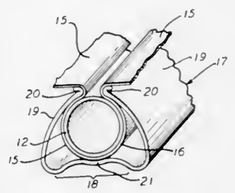
the folded sheet being suspended upon said lines for structural support of the sheet.

4,120,284

CLIP FOR CLINCHING A HEAT EXCHANGE CONDUIT WITH A SOLAR HEAT ABSORBER

John L. Cotsworth, 11 Lake Rd., Short Hills, N.J. 07078, and Daniel F. Ilich, 149-44 Cherry Ave., Flushing, N.Y. 11355

Filed Apr. 14, 1977, Ser. No. 787,386
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **4 Claims**



1. A clip for clinching a heat exchange conduit with a solar heat absorber comprising:

(a) a generally C-shaped, resilient member having a central portion and outer portions,

(b) the outer portions being externally convex, and deflectable, and defining arms for clinching an object therebetween,

(c) an arch on the central portion on the member, between the arms, for supporting the object clinched between the arms,

(d) a solar heat absorber,

(e) a conduit in contact with a portion of the solar heat absorber,

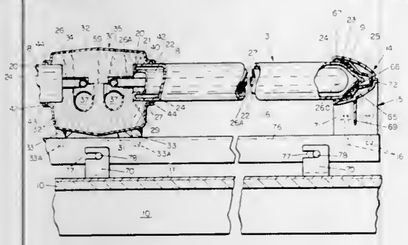
(f) the C-shaped member embracing the solar heat absorber and deforming it to embrace the conduit.

4,120,285

MODULAR TUBULAR SOLAR ENERGY COLLECTOR APPARATUS

Duane C. Nugent, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 1, 1976, Ser. No. 737,364
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **41 Claims**



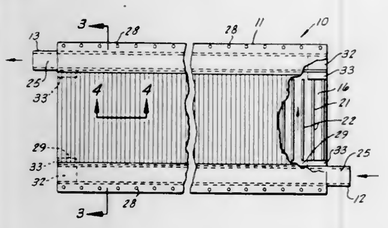
1. A solar energy collection apparatus comprising
a hollow transparent cover tube closed at one end,
a hollow absorber tube closed at one end having a lesser outside dimension than the inside dimension of the cover tube and disposed within the latter and providing a space therebetween, the absorber tube having a solar energy absorbing surface comprised of a wave length selective coating exposed to solar radiation,
means sealing the space between said cover and absorber tubes near their other ends, said space being evacuated to subatmospheric pressure,
an elongated, continuous fluid conducting tubing that is non-reflective of thermal radiation comprised of two lengths thereof disposed adjacent each other and interconnected to each other at one end through a reverse bend portion, said two lengths and reverse portion being positioned in the absorber tube surrounded by the absorbing surface and extending along a major portion of the axial length thereof, and
a fluid supply means connected to one of the two lengths of the fluid conducting tubing for circulating a fluid therethrough.

4,120,286

RIDGED SURFACE SOLAR HEATER

Joseph Farber, 1605 Sherington Pl., Newport Beach, Calif. 92663

Filed Jun. 7, 1976, Ser. No. 693,702
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **3 Claims**



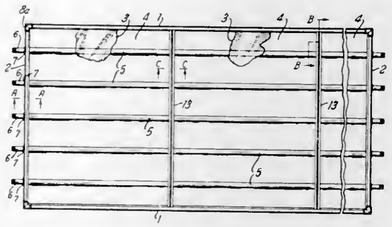
1. A heat exchanger adapted to heating fluid by absorption of radiant energy and cooling fluid by radiation and convection comprising:
a. a longitudinally extruded plastic panel having a substantially flat bottom surface, an upper surface parallel to the bottom surface, and a plurality of tubular channels parallel to each other and to the top and bottom surfaces, said channels being longitudinally disposed between the upper and lower panel surfaces, said upper panel surface longitudinally extending an equidistant amount beyond both ends of the channels and said lower panel surface longitudinally extending an equal and equidistant amount beyond both ends of the channels;
b. a curvilinear cross-section inlet manifold tube disposed parallel to one edge of the panel and perpendicular to the longitudinal axis of the panel, said inlet manifold tube having a plurality of outlet holes each having a smaller cross-sectional area than the manifold tube cross-sectional area, disposed along the length thereof adjacent to the entrances to the tubular channels within the panel;
c. coupling between the panel and the inlet manifold comprising a fluid-tight bond between the bottom surface of one upper panel surface extension and the top curvilinear surface of the inlet manifold tube, and a fluid-tight bond between the upper surface of the corresponding lower panel surface extension and the lower curvilinear surface of the inlet manifold;
d. a curvilinear cross-section outlet manifold tube disposed parallel to the opposite edge of the panel and perpendicular to the longitudinal axis of the panel, said outlet manifold tube having a plurality of inlet holes each having a smaller cross-sectional area than the manifold tube cross-sectional area, disposed along the length thereof adjacent to the outlets of the tubular channels within the panel;
e. coupling between the panel and the outlet manifold comprising a fluid-tight bond between the bottom surface of the opposite upper panel surface extension and the top curvilinear surface of the outlet manifold tube, and a fluid-tight bond between the upper surface of the corresponding lower panel surface extension and the lower curvilinear surface of the outlet manifold, and
f. extensions of the upper and lower panel surfaces beyond the outside edges of the manifold tubes, each upper extension being conformally adhered to the corresponding lower extension is a lap joint, comprising thereby flanges disposed along the outside edges of the inlet and outlet manifold tubes, said flanges being adapted to mounting the heat exchanger onto a supporting structure.

4,120,287

SOLAR HEATING PANELS

Kevin C. Marles; Brian W. Spencer, both of Torquay, and Raymond Spencer, St. Ives, all of England, assignors to Solar Apparatus & Equipment Limited, London, England

Filed Mar. 16, 1977, Ser. No. 778,229
Claims priority, application United Kingdom, Apr. 13, 1976, 15022/76
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **14 Claims**



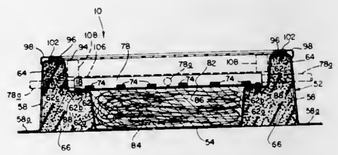
1. A solar heating panel comprising a frame formed from frame members defining the side and end walls of the panel, an absorber plate for absorbing solar radiation falling thereon, the absorber plate being formed with a plurality of corrugations each of which defines a U-shaped channel in the reverse surface of the plate, each channel being substantially parallel to a side wall of the panel and each channel having a semi-cylindrical internal surface, a corresponding plurality of cylindrical tubes for carrying a liquid to be heated, the external diameter of each tube being equal to the internal diameter of the semi-cylindrical internal surface of the associated U-shaped channel, and locating means for locating the tubes within the U-shaped channels, the locating means comprising upper locating means bearing on the upper curved surfaces of the corrugations in the absorber plate, and lower locating means bearing on the lower surfaces of the tubes, the upper locating means including bar members and the lower locating means including inverted T-bars, and both the bar members and the T-bars being secured to the side frame members in positions for effectively clamping the upper parts of the cylindrical surfaces of the tubes in heat conducting contact with the internal semi-cylindrical surfaces of the U-shaped channels.

4,120,288

SOLAR COLLECTOR

Walter H. Barrett, Woonsocket, R.I., assignor to Columbia Chase Corporation, Braintree, Mass.

Filed Jan. 21, 1977, Ser. No. 761,450
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **9 Claims**



1. A solar collector comprising
A. a monolithic frame formed of a resin material and back assembly, said assembly having
(1) a back wall,
(2) an upstanding side wall extending around the periphery of the back wall, said side wall being composed of a pair of spaced-apart inner and outer wall sections and a bridging web connecting the inner and outer sections so as to form a channel all around the collector,
B. an absorber plate,
C. means for positioning the absorber plate in the assembly so that the absorber plate is spaced from and substantially parallel to the assembly back wall,
D. a light transmitting outer anti-convection cover substantially coextensive with the frame assembly, having a coefficient of expansion about that of said resin material and
E. means for securing the anti-convection cover to said bridging web, said panel further including a mass of insulation material filling the channel between the side wall sections,
F. the inner wall section of the assembly is formed with an intermediate step spaced parallel to the assembly back wall and extending all around the periphery of the back wall so as to define the positioning means, and
G. the absorber plate is seated on said step so as to define an enclosed space between the absorber plate and the back wall.

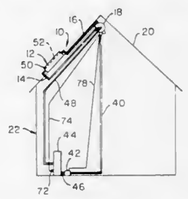
4,120,289

REFRIGERANT CHARGED SOLAR WATER HEATING STRUCTURE AND SYSTEM

Edward W. Bottum, 9357 Spencer Rd., Brighton, Mich. 48116

Filed Apr. 20, 1977, Ser. No. 789,010
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **3 Claims**

1. A solar water heating system comprising a solar collector structure, a heat exchange structure, said heat exchange structure comprising a closed vessel, tubular means in said vessel, said tubular means having inlet and outlet means extending from said vessel, water storage means, said inlet and outlet means being connected to said water storage means, and pump means connected in one of said inlet and outlet means between said tubular means and said water storage means for circulation of water from said water storage means through said tubular means to heat same and thence back to said water storage means, means for circulating a refrigerant heat transfer medium in gaseous form from the collector structure to the interior of said closed vessel and in liquid form from the closed vessel to the collector structure thereby forming a solar energy system, and a refrigerant heat transfer medium in said solar energy system, said solar collector structure including refrigerant flow structure adapted for the flow of fluid refrigerant therethrough, said last mentioned structure having a lower



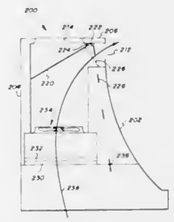
portion adapted to be flooded with liquid refrigerant and an upper portion contiguous therewith to receive gaseous refrigerant which boils off the liquid refrigerant, electrical control means operative to discontinue operation of the system when the temperature of the water in the storage means reaches a predetermined level and to discontinue operation of this system when the temperature differential in the heat exchange structure is insufficient to cause effective transfer of heat for heating of water, the internal volume of said vessel being greater than the total internal volume of said solar collector structure and said tubular means connecting such vessel and said solar collector structure so that liquid refrigerant may be stored in the vessel during times when operation of the system is discontinued, said solar collector being located to receive sun rays.

4,120,290

VENTING AND RECIRCULATING VENT KITCHEN HOOD

Leon O. Bowen, Jr., and Michael T. McVean, both of Cleburne, Tex., assignors to Rangaire Corporation, Cleburne, Tex.

Division of Ser. No. 700,216, Jun. 28, 1976, Pat. No. 4,088,123.
This application Sep. 23, 1977, Ser. No. 836,212
Int. Cl.[2] F24C *15/08;* **F23J** *11/00*
U.S. Cl. 126—299 D **3 Claims**



1. A kitchen stove hood for selectively providing air ventilation or recirculation in a kitchen area over a stove and having top, bottom, sides, back and front portions;
said hood including an air intake opening at said bottom portion;
a fan for causing air from the kitchen area to flow through said air intake opening;

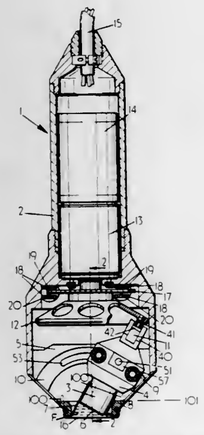
an air recirculation outlet in said hood for recirculating air to the kitchen area;
an air vent outlet in said hood for venting air from the kitchen area;
a damper blade mounted for movement between a first position adjacent said recirculation outlet and a second position adjacent said vent outlet for selectively opening and closing said outlets;
spring means for normally biasing said damper blade in said first position adjacent said recirculation outlet;
means for moving said damper blade between said first and second positions, such that when said damper blade is in said first position and recirculation outlet is closed and said vent outlet is open to vent air outside the kitchen area, and when said damper blade is in said second position said spring means is extended and said recirculation outlet is open and said vent outlet is closed to recirculate air into the kitchen area; and
releasable means for maintaining said damper blade in said second position until it is desired to allow said damper blade to be moved to said first position by the action of said spring means.

4,120,291

ULTRASONIC SCANNING APPARATUS

John Stewart Paton, Beith, and Alexander Shaw, Glasgow, both of Scotland, assignors to Greater Glasgow Health Board, Scotland

Filed Jan. 13, 1976, Ser. No. 648,666
Claims priority, application United Kingdom, Jan. 17, 1975, 2020/75
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 V **10 Claims**



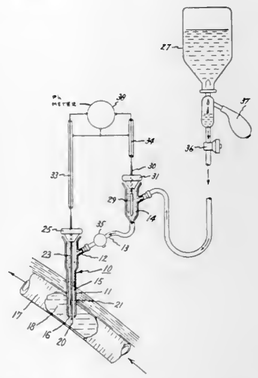
1. An ultrasonic scanning device for use in examining a mass by the transmission and reception of ultrasonic signals, comprising a housing having a window, and a thin, ultrasonically transparent flexible plastic stretched membrane secured across said window to provide a window closure, mounting means secured within the housing, an ultrasonic transmission/reception probe within the housing and mounted in the mounting means so as to face said window closure, ultrasonic coupling means between the probe and the window closure and means for moving the probe, said ultrasonic coupling means including a coupling fluid and a rolling diaphragm sealingly secured to the probe and to the housing around said window to sealingly enclose a window space between the probe and the membrane, the coupling fluid filling the window space and being confined by the diaphragm between the probe and the membrane, the mounting means constraining the probe so that the latter can effect a pivoting movement relative to the housing only in a plane through said window closure and the moving means being arranged to oscillate the probe rapidly between extreme positions of said planar pivoting movement to provide real-time scanning, the ultrasonic coupling means being arranged to deform with oscillating movement of the probe such that the window closure can be kept stationary relative to the surface of the mass being examined while the probe is oscillated rapidly in a desired plane while transmitting and receiving ultrasonic signals through said window closure to achieve real-time scanning of the mass being examined.

4,120,292

IMPLANTABLE ELECTROCHEMICAL SENSOR HAVING AN EXTERNAL REFERENCE ELECTRODE

Oliver H. LeBlanc, Jr.; Leonard W. Niedrach, and William H. Stoddard, Jr., all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 620,707, Oct. 8, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,468
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 E **2 Claims**



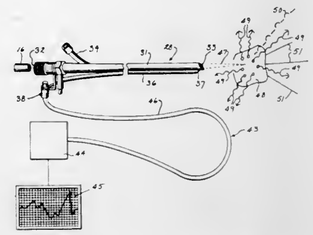
1. A specific ion sensor assembly for in vivo use comprising an insulated sensing electrode having an electrochemically active portion at one end, a catheter receiving coaxially and enclosing a portion of the insulated length of the sensing electrode and having an open end through which the electrochemically active portion of the sensing electrode extends exteriorly of the catheter for contact with a substance of a living organism to be tested, the catheter also having a laterally extending branch, means for delivering electrolyte into the catheter in proximity to the electrochemically active portion including a conduit connected to the catheter branch and communicating with the catheter through said branch for delivery of electrolyte into the catheter from an electrolyte reservoir, a chlorided silver reference electrode positioned in the conduit at a point removed from the catheter branch and exposed for direct contact with electrolyte flowing through the conduit and into the catheter and through the open end of the catheter, an electrolyte consisting essentially of an injectable isotonic solution flowing in the conduit in contact with the reference electrode and into the catheter branch and out of the catheter, and electrical conductor means for connecting the sensing electrode and the reference electrode to electrical readout means including a sensing electrode lead and a reference electrode lead.

4,120,293

LASER SYSTEM AND METHOD

Myron C. Muckerheide, Schofield, Wis., assignor to A. Ward Ford Memorial Institute, Inc., Wausau, Wis.

Filed Sep. 17, 1976, Ser. No. 724,119
Int. Cl.² A61B 6/00
U.S. Cl. 128—2 A **10 Claims**



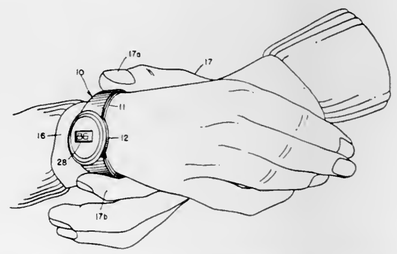
1. A system selectively conducting a laser beam to vaporize absorbing material located at an internal area of a living mammal, comprising a laser generator selectively supplying a laser beam having a predetermined wavelength, and a laser amplifier crystal having a beam output face spaced from a beam input face having a cross-sectional dimension which is greater than twice the cross-sectional dimension of said output face, said amplifier having a cross-sectional dimension which continuously decreases from a point adjacent said input face to a point adjacent said output face and providing a tapered spontaneous pumping zone of substantially reduced cross-section adjacent said output face and selectively emits a laser beam of said predetermined wavelength from said output face into said internal area and vaporizing said absorbing material.

4,120,294

ELECTRODE SYSTEM FOR ACQUIRING ELECTRICAL SIGNALS FROM THE HEART

Donna L. Wolfe, 32511 Sea Island Dr., Laguna Niguel, Calif. 92677

Filed Aug. 26, 1976, Ser. No. 718,017
Int. Cl.² A61B 5/02
U.S. Cl. 128—2.05 T **15 Claims**



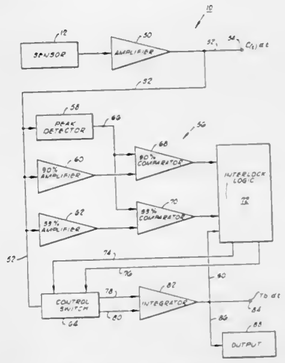
1. An electrode system for sensing heart activity comprising a wristband adapted to be worn on the wrist of one hand and having inner sensing electrode means directly engagable with such wrist; insulating barrier means extending over said inner sensing electrode means for shielding the same against contact with any part of the wearer's body except said wrist; outer sensing electrode means carried by said wristband and electrically isolated from said inner electrode means by said insulating barrier means; said inner and outer sensing electrode means being disposed on oppositely-facing sides of said wristband with said barrier means interposed between said inner and outer sensing electrode means; said outer sensing electrode means being exposed and adapted for selective contact by the fingers of the wearer's other hand; and sensing circuit means disposed in said wristband in electrical circuit with said inner and outer electrode means for sensing electrical signals derived therefrom that are representative of the electrical activity of the wearer's heart.

4,120,295

APPARATUS FOR INTEGRATION OF FLUID DILUTION CURVES

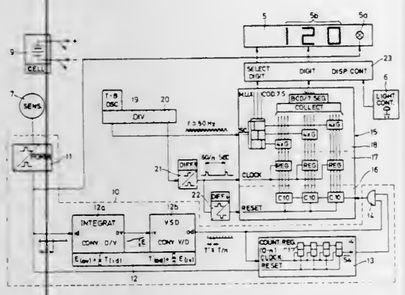
Thomas A. Hill, 2645 NW. 26th, Oklahoma City, Okla. 73107

Filed Dec. 13, 1976, Ser. No. 750,278
Int. Cl.² A61B 5/02
U.S. Cl. 128—2.05 F **6 Claims**



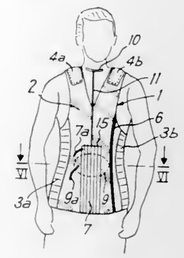
1. A circuit for analyzing a time analog concentration curve of the type derived in blood flow analysis in response to introduction of an indicator in the blood system, comprising:
sensing means coactive with the bloodstream for developing an indicator concentration curve in the form of a time analog electrical signal of the type having an initial rise from a base value, through a peak and subsequent exponential decay to said base value;
an input terminal receiving said time analog electrical signal;
a first switching means having input and output;
a first resistance connected between said input terminal and the input to the first switching means;
a second switching means having input and output;
a second resistance connected between said input terminal and the input to said second switching means;
an operational amplifier receiving input from said first and second switching means output;
a capacitor connected from the output of said operational amplifier to said input thereof;
first means receiving input from said operational amplifier and being operative to close said first switching means upon departure of said time analog electrical signal from said base value through initial rise, peak and exponential decay to a first selected value of peak amplitude;
second means including a comparator, receiving input of said time analog electrical signal and being operative to close said second switching means at a second selected value of peak amplitude greater than said first selected value of peak amplitude;
third means including a comparator, receiving input of said time analog electrical signal to open each of said first and second switching means at said first selected value of peak amplitude; and
output means receiving output of said operational amplifier to provide an analog voltage indication proportional to the total concentration curve integral.

4,120,296
PULSIMETER
Francois Prinz, Brügg, Switzerland, assignor to Heuer-Leonidas S.A., Berne, Switzerland
Filed Jun. 3, 1976, Ser. No. 693,064
Claims priority, application Switzerland, Jun. 4, 1975, 7188/75
Int. Cl.[2] A61B 5/02
U.S. Cl. 128—2.05 T **8 Claims**



1. A pulsimeter for indicating the average heart beat rate by counting the number of beats occurring during a predetermined period of time of sufficient length to offset deviations in duration liable to affect each said period taken alone, comprising:
a case,
a counting and display portion housed within said case, and
pulse-sensing means including a fitting suitable for gripping a part of the human body where the pulse can be detected, and a sensor mounted in said fitting for application flat against said part of the human body;
said counting and display portion comprising:
an electronic circuit to which said sensor is electrically connected,
a source of electrical energy mounted in said case and connected to said electronic circuit for powering said circuit, and
a display device mounted within said counting and display portion;
said electronic circuit comprising:
counter means,
input processing means connected to said pulse-sensing means for applying input pulses to said counter means, the number of said input pulses applied during said predetermined period of time being substantially proportionate to the number of pulse beats detected by said sensor during said period of time, said period of time being equal to $60/n$ seconds, n being a whole-number factor of 60,
reset means for resetting said counter means at the beginning of each said period of time,
memorization means for storing the value attained by said counter means at the end of each said period of time and for retaining said value until the end of the following said period of time, and
display control means connected to said memorization means and to said display device for causing said display device to display the value contained in said memorization means, said value representing the pulse rate detected;
said input processing means comprising:
pulse-former stage means receiving a signal from said sensor and supplying a pulse of fixed and predetermined duration and amplitude for each heart beat detected by said sensor,
integrator stage means for converting interval duration into voltage, said integrator stage means receiving said pulses from said pulse-former stage means and supplying a voltage varying as a direct function of the duration of the intervals between said pulses from said pulse-former stage means, and
voltage-sensitive oscillator stage means for converting voltage into interval duration, said voltage-sensitive oscillator stage means receiving said voltage from said integrator stage means and supplying a signal to said counter means having pulses recurring at intervals varying in duration as a direct function of said voltage, said direct functions operative in said integrator stage means and in said voltage-sensitive oscillator stage means, respectively, bearing a relationship to one another such that for any given interval T between the pulses entering said integrator stage means, said oscillator stage means supplies a signal having n times as many pulses separated by an interval T′ equal to T/n.

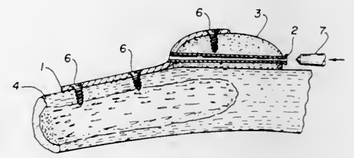
4,120,297
ORTHOPEDIC CORSET
Pierre Rabischong, Saussan, and Jean-Pierre L. Bel, Montpellier, both of France, assignors to Institut National de la Sante Et de la Recherche Medicale, Paris, France
Filed Feb. 24, 1977, Ser. No. 771,549
Claims priority, application France, Mar. 5, 1976, 76 07576
Int. Cl.[2] A61F 5/02
U.S. Cl. 128—78 **11 Claims**



1. An orthopaedic corset for correcting the deformations of the spine, comprising:
a vest made of non-stretch material which envelopes the trunk of the wearer;
separate front and rear stiffening structures, each comprising a separate group of a plurality of vertical inflatable tubes, said stiffening structures each being fixed to said vest in predetermined positions, with said rear stiffening structure being located along the axis of the back of the wearer and the front stiffening structure being located in the center of the front of the wearer;
and an inflatable bag secured to said vest and located thereon to be placed against the abdominal cavity under the front stiffening structure when the vest is worn, whereby predetermined forces are applied to the wearer to straighten the spine.

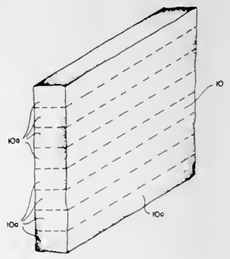
4,120,298
IMPLANT TO SECURE THE GREATER TROCHANTER
Irving E. Fixel, 111 N. 31 Ave., Hollywood, Fla. 33021
Filed Dec. 6, 1976, Ser. No. 748,234
Int. Cl.[2] A61F 5/04; A61B 17/18
U.S. Cl. 128—92 D **5 Claims**

1. A bone implant fixation device for support and fixation of the greater trochanter to the femur by implantation in skeletal bone, comprising
a plate member, comprising a thin metal plate having a first portion which is adapted to fit over the exterior surface of the femur shaft and a second portion adapted to fit over the exterior surface of the trochanter, said first and second portions having a bend therebetween, said bend being adapted to extend across the meeting ends of the trochanter and the femur shaft and to space apart said first portion and said second portion of the plate member in substantially parallel planes,
a plurality of hollow pin members attached to said plate member at the location of said bend such that said pin



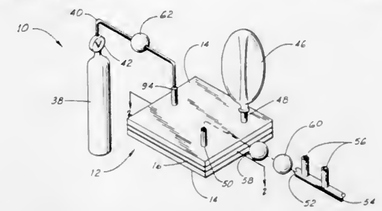
members extend from said plate in a plane which is substantially parallel to the plane of said second portion of said plate,
fastener means extending through said plate member adapted to secure said implant device to skeletal bone to which the implant device is to be applied.

4,120,299
SNORE-PREVENTION ARTICLE AND PROCESS FOR MANUFACTURING THE SAME
Joseph J. Russo, 6240 B Tapia Dr., Malibu, Calif. 90265
Continuation-in-part of Ser. No. 679,526, Apr. 23, 1976, abandoned. This application Dec. 22, 1976, Ser. No. 753,399
Int. Cl.[2] A62B 7/10
U.S. Cl. 128—140 N **6 Claims**



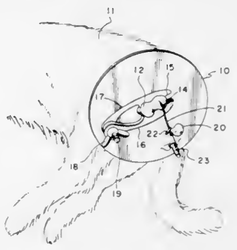
1. A snore-prevention device comprising:
a pair of cotton balls,
said cotton balls being of a size and shape to fit into the vestibule of the human nose to block the flow of air through the nostril beneath the tip of the nose, leaving the area of the nostril immediately above the lip substantially open,
an elongate thread joining said cotton balls to form a dumbbell-like configuration,
said elongate thread having a length slightly longer than the distance between the vestibules of the human nose whereby said thread prevents the cotton balls from being drawn into the nose and permits easy removal, and
non-toxic securing means for securing said cotton balls to said elongate thread whereby said balls and said thread form a dumbbell-like configuration.

4,120,300
BREATHING APPARATUS
Brian L. Tiep, Monrovia, Calif., assignor to City of Hope National Medical Center, Duarte, Calif.
Filed Nov. 29, 1976, Ser. No. 745,591
Int. Cl.[2] A61M 16/00
U.S. Cl. 128—203 **13 Claims**



1. In a breathing apparatus having a supply means for supplying a gas capable of being breathed, an enclosed reservoir means for temporarily storing a gas, a respiration means for conveying a gas to and from the respiratory tract of an individual and a control means responsive to the inhalation and exhalation from and into said respiration means, said control means being connected to said supply, reservoir and respiration means, in which the improvement comprises:
said fluidic control device comprises a bistable fluidic amplifier having a first input port directly connected to said source, a second port directly connected to said reservoir means and a third port directly connected to said respiration means, said fluidic control device containing no moving parts and including means responsive only to a variation in the gas pressure within said respiration means so as to permit flow from both said supply means and said reservoir means into said respiration means upon inhalation through said respiration means and so as to cause gas flow from said supply means into said reservoir means upon exhalation into said respiration means.

4,120,301
APPARATUS FOR SURGICAL PROCEDURES INVOLVING ANIMALS
James Shepperd Lovick, Henderson, Tex. 75652
Filed Nov. 8, 1976, Ser. No. 739,501
Int. Cl.[2] A61B 17/00
U.S. Cl. 128—303 R **7 Claims**



1. An apparatus for use in the castration of an animal comprising:
a shield means having an upper surface and a lower surface with an aperture extending through said shield means, said aperture being adapted to receive the scrotum of said animal;
a scrotum retaining means adapted to engage and restrain said scrotum adjacent the upper surface of said shield means as said scrotum is pulled through said aperture; and
a spermatic cord restraining means adapted to engage and

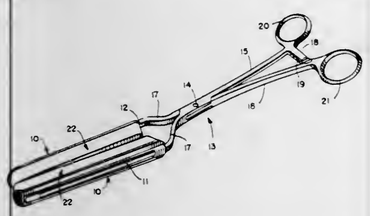
restrain a spermatic cord of said animal in a predetermined position when a testicle is withdrawn from the scrotum, said spermatic cord restraining means including means to elevate and restrain said spermatic cord above the upper surface of said shield means and comprising a clip means to engage said spermatic cord, said clip means being operably affixed to the upper end of an arm means with the lower end of said arm means being affixed to and supported by said shield means.

4,120,302

DISPOSABLE PADS FOR SURGICAL INSTRUMENTS

John S. Ziegler, Arlington Heights, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 8, 1976, Ser. No. 730,961
Int. Cl.[2] A61B *17/28*
U.S. Cl. 128—322 **13 Claims**



1. A disposable pad for use with a surgical instrument comprising a resilient flexible elongated member of generally U-shaped cross sectional configuration having proximal and distal ends and having an open-sided channel therein for slidably receiving a supporting element of said instrument, stop means provided by said pad adjacent said distal end for limiting the longitudinal insertion of said element into said channel from the proximal end of said member, retention means for preventing transverse movement of said element out of said channel, said retention means being located adjacent the proximal end of said flexible elongated member and completely bridging said channel, and latching means provided by said member for securing said element against longitudinal displacement from said channel, said latching means normally being disposed in a latching position but being shiftable into a releasing position as said elongated member is flexed.

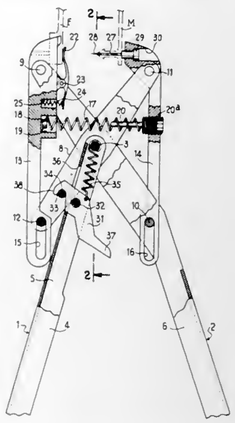
4,120,303

TONGS, IN PARTICULAR FOR MOUNTING EAR-BUTTONS ON ANIMALS

René Villa-Massone, Sannois, and Michel Divaret, La Milesse, both of France, assignors to Cooper France S. A., Paris, France

Filed Mar. 24, 1977, Ser. No. 780,826
Claims priority, application France, Mar. 29, 1976, 76 09024; Nov. 17, 1976, 76 34618
Int. Cl.[2] A01K *11/00*
U.S. Cl. 128—330 **14 Claims**

1. A tongs, in particular for mounting an ear-button or ear-ring on animals, comprising a first lever and second lever forming handles, a pivot pin pivotally interconnecting the first and second levers, a first jaw and a second jaw movable between an open position and a closed position, a return spring for returning the jaws to the open position of the jaws, means for connecting the first and second levers respectively to the first and second jaws for shifting the jaws to the closed position of the jaws and comprising a mechanism for temporarily maintaining the jaws parallel to each other, rapidly-actuated means for shifting the jaws to the open position of the jaws when the first and second levers are moved toward each other beyond a position of the levers corresponding to said closed position of the jaws, the mechanism for temporarily maintaining the jaws parallel to each other comprising a link, a branch of the second lever, the link being pivoted to the branch substantially in the middle of the branch, means for rendering the link integral with the first lever and comprising said pivot pin and temporary immobilizing means which are interposed between the link and the first lever, the first and second jaws having end portions carrying means for holding respective parts of the ear-button, the branch of the second lever and the link having end portions respectively pivoted to respective ones of said



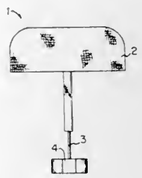
end portions of the first jaw and second jaw, an opposite end of the second jaw being pivoted and slidably connected to the second lever and an opposite end of the first jaw being pivoted and slidably connected, in an armed position of the tongs, to an assembly comprising the first lever and the link, which first lever and link are rendered integral with each other by the temporary immobilizing means.

4,120,304

NASO-GASTRIC TUBE HOLDER

Burdette J. Moor, 2029 S. 146 Cir., Omaha, Nebr. 68144

Filed Oct. 12, 1976, Ser. No. 731,185
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—348 **6 Claims**



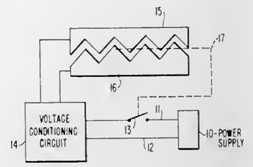
1. Apparatus for holding a naso-gastric tube in position relative to a patient's nares comprising
(a) a rigid slotted holding means removably attached and adapted to be selectively movably affixed by frictional engagement to the naso-gastric tube
(b) adhesive securing means adapted to be removably affixed to the exterior of the patient's nose; and
(c) flexible elongate connector means affixed at one end to said holding means, and affixed at the other end to said adhesive securing means.

4,120,305

SYSTEM FOR ADMINISTERING AN ELECTRIC SHOCK

Kevin George Rhoads, Lehighton, Pa., and George Michael Plotkin, Massapequa Pk., N.Y., assignors to VRL Growth Associates, Inc., Boston, Mass.

Filed Sep. 10, 1976, Ser. No. 722,313
Int. Cl.[2] A61N *1/38*
U.S. Cl. 128—405 **32 Claims**



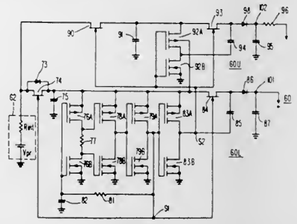
1. A personal defense system comprising in combination,
a normally quiescent electrical circuit means which, when activated generates an electrical voltage waveform which has a relatively high voltage portion to break down the skin resistance of an assailant, and then couples directly to the assailant's sensory nerves a lower amplitude signal within the passband of the nerves of the human body, said lower amplitude signal being of sufficient amplitude to temporarily disable said assailant, and
a pair of output electrodes connected to said normally quiescent electrical circuit means, said circuit means being activated only upon the presence of a portion of said assailant's body between said pair of output electrodes to produce between said electrodes said electrical voltage waveform.

4,120,306

CARDIAC PACER WITH PRE-PROGRAMMED POWER SOURCE INTERFACE MEANS

Alexis C. M. Renirie, Dieren, Netherlands, assignor to Vitatron Medical B.V., Dieren, Netherlands

Division of Ser. No. 802,736, Jun. 2, 1977, which is a division of Ser. No. 651,549, Jan. 2, 2976, Pat. No. 4,031,899. This application Feb. 2, 1978, Ser. No. 874,611
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 PT **12 Claims**



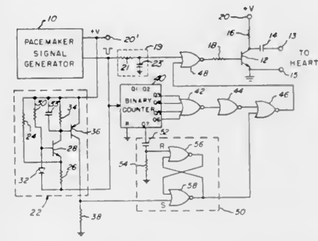
1. Pacer apparatus for use in combination with an electrode for supplying pacing stimulus signals, said apparatus having
a power source having internal resistance characteristics which vary with energy depletion thereof, said internal resistance characteristics being substantially linear until a knee is reached, at which point the internal characteristic of the source increases sharply, and
a stimulus generator for generating stimulus signals, said generator having a stimulus signal rate which is a function of the voltage provided thereto, and further characterized by comprising
connecting means for connecting power from said DC power source to said stimulus generator, said connecting means having a voltage transmission characteristic which is a predetermined function of said source internal resistance, said transmission characteristic changing substantially at said knee, whereby the voltage provided to said stimulus generator changes substantially when said knee is reached, producing a change of said stimulus signal rate corresponding to the reaching of said knee.

4,120,307

CARDIAC PACEMAKER

Thomas L. Jirak, Plymouth, and Pieter M. J. Mulier, St. Paul, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 26, 1976, Ser. No. 735,632
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 PT **57 Claims**



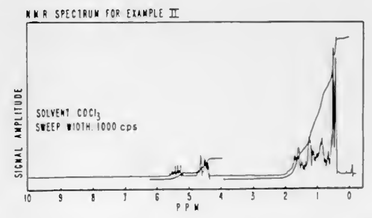
1. Apparatus for use with a signal generating pacemaker having a power supply and output means adapted for connection to a heart, comprising: first means for sensing a change in power supply condition; and second means connected and responsive to the first means for repetitively applying a benign arrhythmia inducing arrhythmic signal to the output means in response to a change in power supply condition.

4,120,308

SUBSTITUTED NORBORNANE DERIVATIVES USED IN THE PROCESS OF FLAVORING TOBACCO AND THE PRODUCT THEREOF

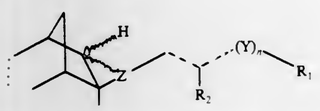
Kenneth K. Light, Long Branch; James Milton Sanders, Eatontown; Manfred Hugo Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja Dulal Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,134
Int. Cl.[2] A24B *3/12*
U.S. Cl. 131—17 R **3 Claims**

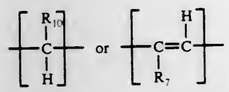


2. A smoking tobacco composition comprising smoking

tobacco and intimately admixted therewith an organoleptic property augmenting or enhancing quantity of a composition comprising a norbornane derivative having the structure:

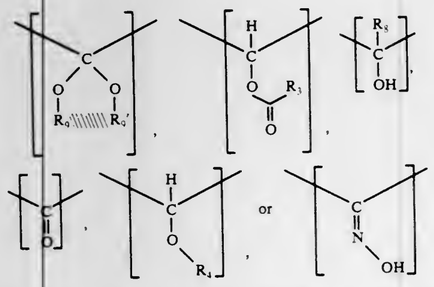


wherein each of the dashed lines represents a carbon-carbon single bond or a carbon-carbon double bond with the proviso that at least one of the dashed lines is a carbon-carbon single bond; wherein n is 0 or 1 with the proviso that n is 1 when both dashed lines are carbon-carbon single bonds and n is 0 when one of the dashed lines is a carbon-carbon double bond; wherein R_1 and R_2 are each the same or different hydrogen or lower alkyl; wherein Y is*



("cis and/or "trans")

wherein Z is one of the moieties:



wherein R_3 and R_4 are each alkyl; wherein R_7, R_8 and R_{10} are each the same or different hydrogen or lower alkyl; wherein R_9 and R_9' taken separately are the same or different lower alkyl, or taken together is lower alkylene; wherein the dotted line represents a carbon-carbon single bond or a carbon-carbon double bond; and wherein each of the wavy lines represents, in the alternative, exo or endo isomers.

4,120,309

HAND OPERATED DEVICE FOR PRODUCING TOBACCO ARTICLES LOW IN NOXIOUS SUBSTANCES

Victor Brantl, Frauenplatz 10, 8 Munich 2, and Wolfgang Seeger, Portenlaengerstr. 17, 8022 Gruenwald, both of Fed. Rep. of Germany

Filed Nov. 11, 1976, Ser. No. 740,871

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639820

Int. Cl.² A24F *13/00, 25/00, 47/00*

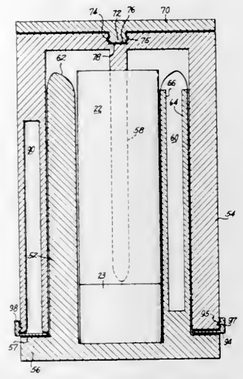
U.S. Cl. 131—170 R **15 Claims**

1. A portable manually actuated device for modifying preformed tobacco articles to render the tobacco articles with a low carbon monoxide content, comprising:

a substantially tubular holder having a tobacco article-receiving opening for receiving therein the entire length of the tobacco article, said tubular holder comprising a cylindrical base, a tubular holding portion extending from said base, said holding portion having an inside diameter allowing snug holding of a preformed tobacco article, an outside diameter which is smaller than the diameter of said base, a length which is sufficient to substantially receive the entire length of said preformed tobacco article; and

tobacco displacement means extending cooperatingly with respect to said tobacco article receiving end into said tubular holder, said tobacco displacement means comprising

a tubular member having a closed end and an open end, side walls forming an outside diameter and an inner diameter approximately equal to the diameter of the outside diameter of said tubular holder, whereby said tubular member is adapted to telescopically slide at its open end over said tubular holder at its end having the tobacco article-receiving opening,



a tobacco displacing mandrel centrally arranged inside of said tubular member, said mandrel extending at a length which is less than the length of the preformed tobacco article and having an effective thickness sufficient to provide a tobacco-free longitudinal space congruent with the central longitudinal axis of said preformed tobacco article upon removal of said displacement means from the tobacco article, and

wherein said tubular holder comprises a helical thread on its outer diameter, said tubular member of said tobacco displacement means comprises a cooperating helical thread on its inside diameter, whereby said tobacco displacement means is caused to rotate with respect to said tubular holder when the two are longitudinally moved in telescoping arrangement.

4,120,310

FILTER FOR CIGARETTES, CIGARS AND THE LIKE

Choon Bae Lee, 273-22, and Byung Chul Lim, 35-13, both of Roryang jin-2-dong, Kwanak-koo, Seoul, Korea

Filed Dec. 10, 1976, Ser. No. 749,614

Int. Cl.² A24D *7/04*

U.S. Cl. 131—261 B **4 Claims**

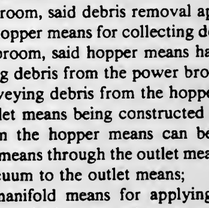
1. A smoking filter for use in cigarettes, cigars, cigarette holders and tobacco pipes, comprising:

a first cylindrical tube having a plurality of openings around the circumference thereof, said first tube being open at the top thereof;

a bottom covering across the bottom of said first cylindrical tube;

a second cylindrical tube surrounding and spaced from said first tube, said second tube being substantially the same height as said first tube;

a first flange extending from the top edge of said first tube to the top edge of said second tube across the space between said first and second tubes; and



a first attack surface surrounding the inside of said second cylindrical tube opposite said openings in said first cylindrical tube.

4,120,311

VACUUM OPERATED DEBRIS REMOVAL APPARATUS AND METHOD FOR A POWER BROOM

Charles L. Dunham, and Thomas H. Kiernan, both of Grand Rapids, Mich., assignors to Gravel-Vac Service Co., Inc., Grand Rapids, Mich.

Filed Feb. 4, 1977, Ser. No. 765,776

Int. Cl.² F01H *1/04*

U.S. Cl. 134—6 **19 Claims**

1. Vacuum operated debris removal apparatus for a power broom wherein debris is brushed from a surface by a rotating cylindrical broom, said debris removal apparatus comprising:

enclosed hopper means for collecting debris swept up by the power broom, said hopper means having inlet means for receiving debris from the power broom and outlet means for conveying debris from the hopper means, the hopper and outlet means being constructed such that debris collected in the hopper means can be removed from the hopper means through the outlet means by the application of a vacuum to the outlet means;

vacuum manifold means for applying a debris removing vacuum to the hopper outlet means, said manifold means including inlet means connected to the hopper outlet means and outlet means adapted to be connected to a vacuum source;

support means for movably supporting the hopper means with respect to the surface such that the weight of the debris removal apparatus is not carried by the brush of the power broom, the support means permitting the debris removal apparatus to be moved over a surface with the power broom; and

attachment means for attaching the debris removal apparatus to the power broom such that the hopper inlet means is maintained in position to receive debris from the power broom as the power broom is operated over the surface.

4,120,312

VACUUM-TYPE WATER REMOVAL SYSTEMS FOR BUILDINGS

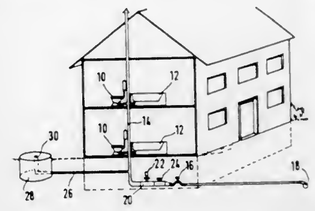
Harald Richard Michael, Am Gosslers Park 9, 2000 Hamburg 55, Germany

Filed Nov. 28, 1977, Ser. No. 855,086

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653713

Int. Cl.² E03D *1/00*

U.S. Cl. 137—236 R **10 Claims**



1. In a vacuum water removal system for buildings wherein waste water collected from facilities in the building is fed by gravity feed lines to a collection chamber connected to a vacuum line for removal of the collected waste water and wherein a check valve is connected between said collection chamber and said vacuum line which opens automatically when a predetermined maximum water level is reached, the improvement wherein a vented backwash receptacle is included in said system in fluid communication therewith at a location above the maximum water level in the collection chamber and below the facilities from which waste water is collected, the volume of said backwash receptacle being large as compared with that of said collection chamber.

4,120,313

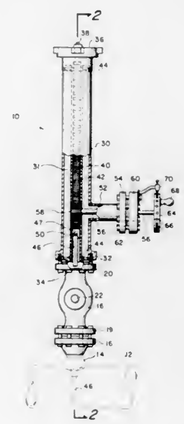
COUPON HOLDER

Harvey L. Lewis, R.R. 4, Box 202, Independence, Kans. 67301

Filed Mar. 2, 1977, Ser. No. 773,744

Int. Cl.² G01N *33/00*

U.S. Cl. 137—268 **3 Claims**



1. A holder for inserting into and retrieving a corrosion coupon from a pipeline while under pressure comprising:

(a) an upstanding elongated cylindrical chamber;

(b) means at the lower end for sealing attachment of the

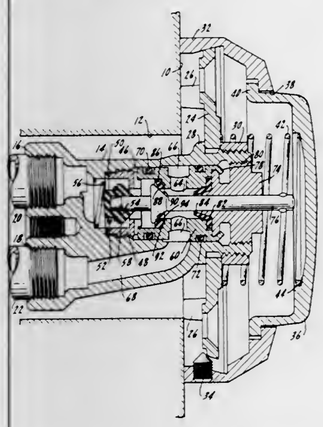
chamber to a valve, which is itself attached as an upwardly extending side branch to a pipeline;
(c) closure means at the upper end of said chamber for closing and sealing said chamber;
(d) an elongated rack inside said chamber, and means to guide said rack for longitudinal motion;
(e) insulating means at the lower end of said rack for support of a corrosion coupon;
(f) a horizontal side pipe attached to said chamber;
(g) a pinion shaft rotatably supported within said side pipe, the outer end extending sealably therefrom;
(h) a pinion gear affixed to the inner end of said shaft within said chamber;
(i) a handwheel affixed to said pinion shaft externally of said chamber, the handwheel having equally spaced detent holes on the peripheral suface thereof; and
(j) a spring driven pin slidably supported to said side pipe, the pin engaging detent holes in said handwheel to lock said handwheel in selectable positions, said rack means and insulation means being contained fully within said chamber when said rack means is fully upwardly withdrawn.

4,120,314

REMOTE ACTUATED FLUSH VALVE

Frederic Lissau, Chicago, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Feb. 11, 1977, Ser. No. 767,740
Int. Cl.[2] F16K *43/00*
U.S. Cl. 137—329.4 **4 Claims**



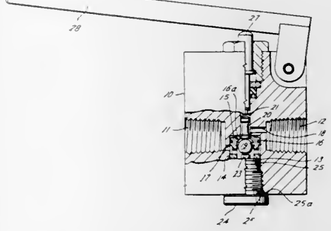
1. A hydraulic actuator for use in operating a remotely located flush valve including a housing, fluid inlet and outlet ports in said housing adapted to be connected to a flush valve, said inlet port normally being under fluid pressure derived from the flush valve, passage means in said housing connecting said ports,
a retainer member attached to said housing and positioned in said passage means,
a sleeve positioned in said passage means and in coaxial alignment with said retainer member,
a stem reciprocally positioned in said retainer and said sleeve and said stem extending outward from said housing,
first and second seal members positioned on said stem, said first seal member being located closer to said inlet port than said second seal member,
said first seal member being loosely held in said retainer member and a first seat defined by said retainer member in said passage means for said first seal member,
a flexible second seat member positioned in said passage means for contact by said second seal member,
support means for said second seat member located on the interior surface of said sleeve, said support means comprising an annular shoulder and a relieved area, said relieved area being downstream of said shoulder to prevent pressure build-up downstream of said second seat member,
spring means positioned in said passage means and urging said sealing members toward said seats,
said first and second seal members being positioned on said stem in spaced relationship whereby said first seal member is in an open position when said second seal member is in a sealing position, fluid pressure at said inlet urging said first seal member, after removal from said stem, against said first seat to close communication between said inlet and outlet ports.

4,120,315

VELOCITY CHECK VALVE

David E. Snyder, Longview, Tex., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Aug. 24, 1977, Ser. No. 827,338
Int. Cl.[2] F16K *25/00*
U.S. Cl. 137—454.6 **9 Claims**



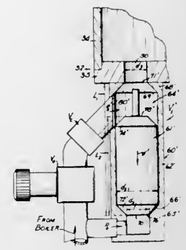
1. A velocity check valve including a housing having an inlet port and an outlet port and a bore located between said ports; a removable seat sleeve slidably received in said bore and having an annular seat at one end; a first passageway communicating said inlet port to the interior of said seat sleeve upstream of said seat; a second passageway communicating said outlet port with said seat on the downstream side thereof; a ball fitting loosely in said sleeve and adapted to engage said seat to prevent flow therethrough; a resiliently biased stem abutting said ball and urging it from seated position; a fixed stop adapted to abut the ball when it is in unseated position to limit its movement away from the seat; the ball and the interior of the seat sleeve being dimensioned to restrict flow past the ball to induce a pressure differential thereacross which increases and decreases proportional to increases and decreases in fluid flow rate, the ball being movable to seated position when pressure on the downstream side materially decreases below the upstream pressure, the bias exerted by the stem being insufficient to prevent such ball movement when said downstream pressure so decreases; the ball when unseated being free to turn to present different portions of its surface to the seat during its movement between seated and unseated positions.

4,120,316

FLOW CONTROL VALVE ASSEMBLY

Glen P. Robinson, Jr., Atlanta, and Samuel V. Shelton, Stone Mountain, both of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Division of Ser. No. 565,629, Apr. 7, 1975, Pat. No. 4,009,587, which is a continuation-in-part of Ser. No. 550,413, Feb. 18, 1975, Pat. No. 3,988,901. This application Feb. 28, 1977, Ser. No. 772,535
Int. Cl.[2] G05D *7/01*
U.S. Cl. 137—498 **5 Claims**



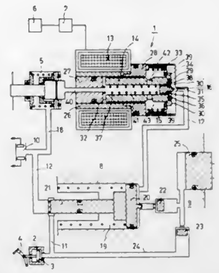
1. A flow control valve for controlling the flow of a working fluid therethrough from a pressurized source of fluid at a prescribed source pressure comprising:
a housing defining a valve chamber therein having opposed ends, an outlet port from one end of said valve chamber, an inlet port to said valve chamber adjacent said outlet port and an actuation port to the other end of said valve chamber;
a valve body having opposed ends movably carried within said valve chamber between a closed position in which said valve body prevents the flow of working fluid from said inlet port out through said outlet port, and an open position in which said valve body permits the flow of working fluid from said inlet port out through said outlet port, said valve body defining a first working face on one end thereof and a second working face on the opposite end thereof, said second working face continuously exposed to the pressure of the working fluid at said actuation port in both said open and closed positions, and said first working face exposed only to the pressure of the working fluid downstream of said outlet port when said valve body is in said closed position and exposed to the pressure of the working fluid at said inlet port when said valve body is in said open position; and
valve control means for selectively moving said valve body from said open position to said closed position, said control means continuously maintaining the pressure of the working fluid at said actuation port substantially at the prescribed source pressure and reducing pressure of the working fluid at said inlet port below the prescribed source pressure proportionally to the velocity of the working fluid flowing through said inlet port so that movement of said valve body from said open position is responsive only to a prescribed pressure differential between said inlet port and said actuation port generated by the velocity of the working fluid flowing through said inlet port and out through said outlet port and movement of said valve body from said closed position to said open position is responsive only to a prescribed pressure differential between the working fluid downstream of said outlet port and said actuation port independently of the pressure at said inlet port.

4,120,317

ANTI-LOCK VEHICLE BRAKE SYSTEMS

Derek Robert Skoyles, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 366,307, Jun. 1, 1973, abandoned. This application Feb. 27, 1976, Ser. No. 661,987
Claims priority, application United Kingdom, May 11, 1973, 28586/73
Int. Cl.[2] F16K *31/06*
U.S. Cl. 137—509 **2 Claims**



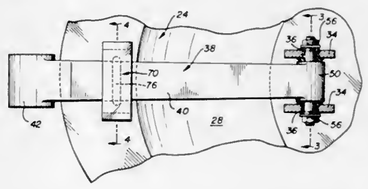
1. A solenoid valve mechanism comprising a cooperating poppet and valve seat, a first bias spring for urging said poppet into sealing engagement with said valve seat, a solenoid armature carrying said poppet and including first means for selectively urging said poppet against said spring bias, a solenoid coil cooperating with said solenoid armature, said armature being provided with fluid sealing means and a second bias spring for urging said armature into a first position in which said fluid sealing means forms a fluid seal around said poppet and said valve seat, said first means urging said poppet against said spring bias only after an initial axial displacement of the armature from said first position, said initial axial displacement being caused by a solenoid force produced on energization of said solenoid coil, said mechanism further including second means for bleeding fluid intermediate said (1) cooperating poppet and valve seat and (2) said fluid sealing means when said mechanism is unenergized, said armature being dimensioned so that upon said initial displacement said fluid seal is broken; said armature, said poppet and said first means cooperatively engaging following said initial displacement and upon further axial displacement of the armature away from said first position to displace said poppet from said valve seat.

4,120,318

DAMPENING MEANS FOR SWING CHECK VALVE

Jerry W. Jourdan, Alvin, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,485
Int. Cl.[2] F16K *15/03*
U.S. Cl. 137—527.4 **7 Claims**



1. In a check valve having a valve body with a valve chamber therein and flow passageways therethrough connected to said valve chamber, a clapper-type disc-shaped valve member,

an elongate arm pivotally supporting said valve member and being mounted within said valve body to swing freely between open and closed positions of the valve member, an improvement in said check valve comprising:

(a) support means secured to the back face of said disc-shaped valve member having an opening therethrough, said arm having a hub on the upper and lower ends thereof, a support pin received within the lower hub and extending through the opening in said support means, bushing around the pin and fitting within the opening; and

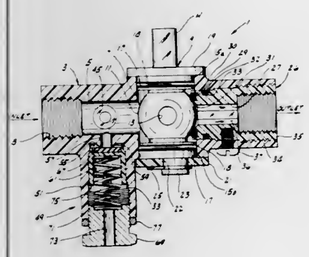
(b) a generally channel-shaped strap secured to the rear face of the valve member and extending about a mid-portion of said arm to restrain pivotal movement between the arm and valve member, and resilient dampening means extending around the arm at a position between the arm and the strap to limit relative movement between the strap and said arm and to absorb forces being transmitted between the arm and valve member.

4,120,319

MANIFOLD ASSEMBLY FOR COMPRESSED AIR STORAGE TANK OR THE LIKE

Joseph L. Krechel, Chesterfield, and Michael J. Purvis, Maplewood, both of Mo., assignors to Control Devices, Incorporated, St. Louis, Mo.

Division of Ser. No. 621,956, Oct. 14, 1975, Pat. No. 4,076,211.
This application Oct. 17, 1977, Ser. No. 842,661
Int. Cl.² F16K *24/00*
U.S. Cl. 137—583 **5 Claims**



1. A manifold assembly for use as an outlet manifold for a compressed air tank or the like comprising a manifold body having a main flow passage therethrough, said passage having an inlet end for attachment to said tank for communication with compressed air or the like within the tank and an outlet end, selectively operable valve means intermediate said inlet and outlet ends for blocking and unblocking flow through said passage, and pressure relief means disposed between said valve means and said inlet end for relieving pressure from within said tank in the event the pressure level within the tank exceeds a predetermined pressure level, said manifold body having a lateral bore of generally circular cross-section extending through said main flow passage, said valve means comprising a unitary ball valve member received in said lateral bore, said ball valve member being rotatable about the longitudinal axis of said lateral bore between a closed position in which it blocks flow through said passage and an open position in which it permits flow through said passage, said ball valve member comprising a generally spherical ball portion having an aperture therethrough constituting a portion of said flow passage when said ball valve member is in its open position, and a pair of circular sealing heads, one on each side of said ball portion, each of said sealing heads carrying a seal which slidably, sealingly engages the walls of said lateral bore so as to seal said ball member relative to said manifold body and to permit rotational and axial movement of said ball valve member within said lateral bore, said sealing heads being of substantially the same diameter so that pressure forces acting on said ball valve member which tend to move the latter axially within said bore are balanced, means external to said manifold body at each end of said ball valve member for retaining said ball valve member within said lateral bore by engagement with said manifold body, and seal means insertable in said main flow passage from one end thereof, said seal means comprising a seal body having a longitudinal bore therethrough constituting a portion of said main flow passage, and an end seal carried on the inner end of said seal body engageable with said ball portion, said retaining means permitting limited axial movement of said ball valve member in said lateral bore to a position in which said end seal is sealingly seated on said spherical ball portion for preventing leakage around said ball portion to said outlet when said ball member is in its closed position.

4,120,320

Patent Not Issued For This Number

4,120,321

TIMING DEVICE FOR A FLUID SIGNAL AND FLUID ACTUATOR THEREFOR

Charles P. O'Neil, Milwaukee, Wis., assignor to Amerace Corporation, New York, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,471
Int. Cl.² F16K *31/165*
U.S. Cl. 137—271 **41 Claims**

1. In a timing device for providing a fluid signal at a given point upon the expiration of a prescribed timed interval following a given event, the timing device including

a frame;

a motion transmitting member mounted in the frame for movement along a prescribed path of travel in either one of two directions between a first location and a second location; and

timing means on the frame coupled with the motion transmitting member for effecting movement of the motion transmitting member at a predetermined rate in only one of said two directions to establish said timed interval between the departure of said motion transmitting member from the first location thereof and the arrival of the motion transmitting member at the second location, and permitting return movement of the motion transmitting member from the second location to the first location at an unrescticted rate:

a fluid switching device on the frame, said switching device comprising

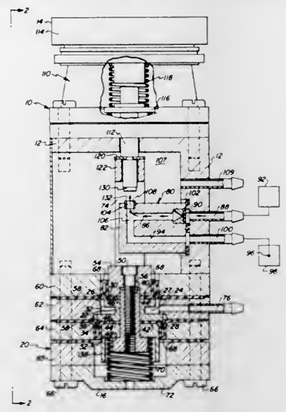
an input passage for a fluid input;

an output passage communicating with the given point;

a control passage communicating with the input and output passages;

switching means on the frame for operation between a first condition wherein the control passage is effective to divert the fluid input provided at the input passage away from the output passage, and a second condition wherein the control passage enables the fluid input to be directed to the output passage, the switching means being responsive to the motion transmitting member for operation from one to the other of the first and second conditions upon the arrival of the motion transmitting member at the second location thereof to provide a fluid signal at the given point, and wherein the timing device further includes;

a fluid actuator having a fluid chamber including a chamber wall extending between sealed longitudinally opposite



first and second ends, and a piston within the chamber spaced laterally from the chamber wall and movable longitudinally between a first position located adjacent the first end of the chamber and a second position located adjacent the second end of the chamber;

coupling means coupling the piston with the motion transmitting member such that the motion transmitting member is retained in the first location thereof when the piston is in the first position and the motion transmitting member is free to move toward the second location thereof, under the influence of the timing means, when the piston is in the second position;

resilient biasing means biasing the piston in a given direction toward one of the first and second positions and the respective one of the first and second ends of the chamber;

a diaphragm extending between the piston and the chamber wall at the end of the chamber opposite said one end toward which the piston is biased; and

activating means for admitting a working fluid into the chamber upon activation of the fluid actuator to move the piston in a direction opposite to said given direction toward the other of said first and second positions against the bias of the resilient biasing means, and for releasing the working fluid from the chamber upon deactivation of the fluid actuator to enable return of the piston in response to the bias of the resilient biasing means;

the diaphragm including a longitudinally extending salient-shaped flexible portion between the piston and the chamber wall whereby movement of the piston between the first and second positions thereof is accompanied by a rolling movement of the salient-shaped flexible portion of the diaphragm;

a further diaphragm extending between the piston and the chamber wall at said one end of the chamber, the further diaphragm having a longitudinally extending salient-shaped flexible portion between the piston and the chamber wall, whereby movement of the piston is accompanied by a rolling movement of the salient-shaped flexible portion of the further diaphragm, the total area of the piston and the first said diaphragm acted upon by the working fluid in the chamber being greater than the corresponding total area of the piston and the further diaphragm so that movement of the piston in response to the working fluid is in the direction opposite to said given direction; and

means for selectively reversing the given direction of the resilient biasing means; and

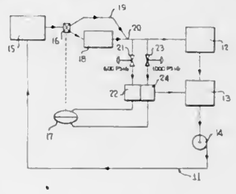
means for selectively reversing the relative location of the diaphragms so as to reverse the direction of movement of the piston in response to the working fluid in the chamber, whereby the motion transmitting member is free to move from the first location toward the second location thereof selectively in response to activation and deactivation of the fluid actuator.

4,120,322

HYDRO-FLUIDIC TEMPERATURE SENSOR AND CONTROL SYSTEM

Romald E. Bowles, 2105 Sondra Ct., Silver Spring, Md. 20904

Filed Apr. 22, 1975, Ser. No. 571,012
Int. Cl.² F15C *1/18*
U.S. Cl. 137—842 **6 Claims**



1. A high pressure hydraulic turbulence amplifier comprising generally coaxial and spaced power nozzle and receiving orifice separated by a reaction region, means for issuing a liquid having laminar flow characteristics from said power nozzle, across said reaction region and into said receiving orifice, said reaction region containing the same liquid as issued from said power nozzle, the density-viscosity parameters of the liquid, the liquid pressure supplied to the power nozzle and the diameter of said power nozzle being interrelated such that upon variation of said density-viscosity parameters of said liquid by a prescribed amount said laminar stream becomes turbulent in said reaction region, and means for producing turbulence of said laminar stream said last mentioned means including intersecting said laminar stream with a liquid of higher temperature in said reaction region.

4,120,323

POLYGONALLY WRAPPED SLEEVE, AND METHODS AND DEVICES FOR MAKING SAME

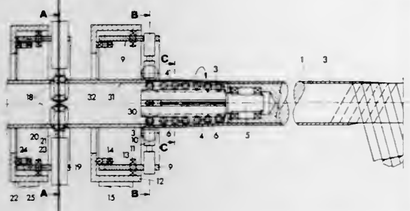
Franz J. Saul, Gürzenicher Str. 61, 5160 Düren, Germany

Filed May 20, 1975, Ser. No. 579,058

Claims priority, application Fed. Rep. of Germany, May 20, 1974, 2424413

Int. Cl.[2] **F16L** *11/00;* **B31C** *3/00;* **B65H** *81/00;* **B65D** *3/00*

U.S. Cl. 138—129 **10 Claims**



1. A substantially flat-sided, polygonal, tubular packaging sleeve comprising,

spirally overlayed layers of strips made from material which is selectively softenable by the application of bonding material thereto and remains softened thereby until said bonding material has set, and is susceptible to stretching deformation while in the softened state, said strips having been bonded together by a bonding material which, until is set, caused the material from which at least some of said layers are made to be softened,

said sleeve having longitudinally oriented corners between the sides thereof, each of which comprises an impressed bend in the wall of said sleeve with associated stretching deformation of at least some of the constituent layers.

4,120,324

HIGH PRESSURE HOSE COMPOSED OF ELASTOMERS AND EMBEDDED REINFORCEMENTS

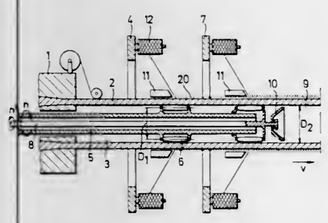
Karl Heinz Pahl, Düsseldorf-Lohausen, Germany, assignor to Pahl'sche Gummi- und Asbestgesellschaft Paguag, Düsseldorf, Germany

Continuation of Ser. No. 492,558, Jul. 29, 1974, abandoned. This application Jun. 21, 1976, Ser. No. 698,617

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1973, 2338948

Int. Cl.[2] **F16L** *11/00*

U.S. Cl. 138—137 **11 Claims**



1. A high pressure built-up multi-layer hose for use in conveying fluids therein when said hose is under high hydrostatic pressure imposed by a body of water thereabove, said hose made of multi-layers of elastomers and a plurality of layers of reinforcing inserts therein, the respective elastomer layers made of different elastomeric compounds of different permeability factors, said layers so physically disposed with relation to one another and said reinforcing layers through the thickness of the wall of the hose so as to define a wall which is permeable to some of the components being conveyed and impermeable to other components being conveyed when said hose is disposed beneath a body of water imposing said high hydrostatic pressure, said wall comprising a first inner layer of a first elastomeric compound having the lowest permeability factor, a first reinforcing layer touching and disposed over said first inner layer of elastomeric compound, a second elastomeric layer touching and disposed over said first reinforcing layer, said second elastomeric layer having a lower permeability factor than the layer disposed therebeneath, said hose having an inside diameter greater than 50 mm, a jointless length of at least 100 meters, said permeable wall having a permeability of the different layers with respect to harmful components conveyed within said hose which increases from the inside of said hose to the exterior thereof.

4,120,325

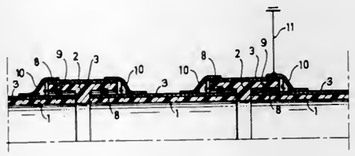
ELECTRICALLY CONDUCTING PLASTIC PIPE SYSTEM

Warner Jan de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Division of Ser. No. 447,582, Mar. 4, 1974, Pat. No. 3,943,273. This application Jan. 7, 1976, Ser. No. 647,242

Int. Cl.[2] **F16L** *9/14*

U.S. Cl. 138—145 **1 Claim**



1. A polyvinylchloride pipe having an inner and outer surface characterized in that one of said surfaces is provided with a continuous coating layer of a thermosetting modified epoxy material which is fully connected with the surface of the pipe and adheres thereto, the thermosetting coating containing a quantity of soot-like conducting carbon particles so that the thermosetting coating layer is electrically conductive, the coating being connectible with means for discharging the electric charges.

4,120,326

SHED FORMING DEVICE FOR LOOMS

Ladislav Bezstarosti; Josef Lzicar; Jiri Lanta, all of Usti nad Orlici, and Vladimir Kriz, Brno, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

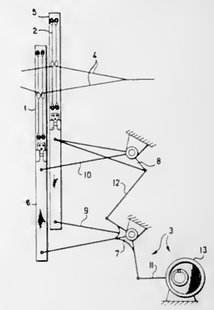
Filed Sep. 27, 1976, Ser. No. 726,491

Claims priority, application Czechoslovakia, Oct. 3, 1975, 6699-75

Int. Cl.[2] **D03C** *13/00, 9/06;* **D03D** *47/26*

U.S. Cl. 139—55.1 **14 Claims**

1. In a travelling-wave shedding loom having a shed forming device comprising heald holders arranged side-by-side in arrays across the warp sheet, and a mechanism for reciprocating and controlling the heald holders, the improvement wherein the upper portion of each holder supports the healds and the lower portion of each holder is drivingly connected with the heald reciprocating mechanism, each said heald holder comprising two separate members which are connected to each other in the loom, a lock for selectively connecting the two members of the holder, said lock comprising one portion of one member of the holder which is formed so that one end thereof may be telescoped into a mating portion of the other member,



and a pawl for selectively holding the members in telescoped connected position.

4,120,327

DOUBLE-LIFT DOBBY

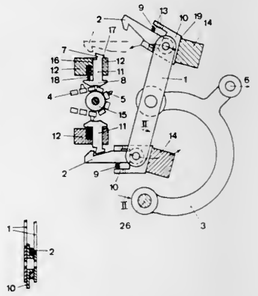
Rudolf Schwarz, Horgen, Switzerland, assignor to Staeubli Ltd., Switzerland

Filed May 25, 1977, Ser. No. 800,286

Claims priority, application Switzerland, May 28, 1976, 6745/76

Int. Cl.[2] **D03C** *1/06*

U.S. Cl. 139—71 **5 Claims**



1. In a negative double-lift dobby comprising an information containing pattern card, a baulk. draw hooks mounted at opposite ends of said baulk, a jack-lever pivotally connected to a mid-section of said baulk, control means for cyclically oscillating said baulk and holding hook members and support means therefor supporting said holding hook members for movement into and out of the path of movement of said draw hooks, the improvement comprising wherein said support means is a guideway in a stationary bar, wherein said holding hook members are reciprocally slidably supported in said guideway between opposite first and second limit positions, said holding hook members each having a holding hook thereon and selectively controlled means remote from said holding hook responsive to said information embodied on said pattern card for effecting a sliding movement of said holding hook member in said guideway between said first and second limit positions, each of said holding hooks being positioned in the path of movement of said draw hooks when in one of said first and second limit positions, and resilient means for effecting a yielding of the position of at least one of said draw hook and said holding hook to facilitate the passage of said draw hook past said holding hook when said holding hook is in said one of said first and second limit positions.

4,120,328

SHUTTLE CONSTRUCTION

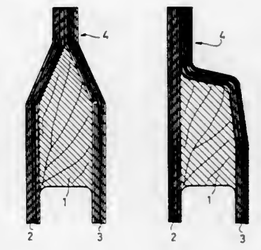
Louis Rosenast, Wald, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Aug. 15, 1977, Ser. No. 824,781

Claims priority, application Switzerland, Aug. 23, 1976, 10647/76

Int. Cl.[2] **D03J** *5/02*

U.S. Cl. 139—196.1 **3 Claims**



1. Shuttle construction for a weaving machine having a center piece and a cover formed from resin-impregnated fabric webs surrounding the center piece, characterized by the fact that the cover consists of two parts each having inner and outer surfaces, each part extending in the longitudinal direction and forming a wall of the shuttle, and which parts come together and overlie each other along a portion of their inner surfaces to form an overlap in the region of the tip of the shuttle.

4,120,329

GRIPPER SHUTTLE FOR PICKING IN WEAVING MACHINES

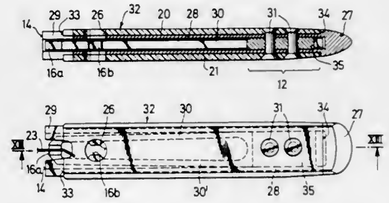
Otto Hintsch, Wallisellen, Switzerland, and Rudolf Stauner, Konstanz, Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 19, 1977, Ser. No. 826,233

Claims priority, application Switzerland, Aug. 24, 1976, 10712/76

Int. Cl.[2] **D03J** *5/06*

U.S. Cl. 139—196.2 **25 Claims**



1. A gripper shuttle for picking in a weaving machine comprising

a metal inner part having a pair of opposed external surfaces;

a plastics sleeve disposed about said metal inner part in locked relation and having a pair of opposed wide sidewalls bearing substantially throughout the entire length thereof on said external surfaces of said inner part and a pair of opposed narrow sidewalls, said wide sidewalls having outer sliding surfaces for sliding on a series of guide teeth during picking and for engagement by a catcher during braking; and

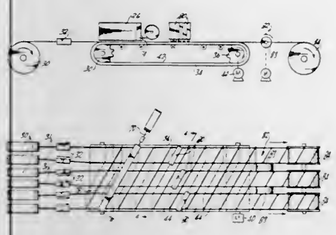
a yarn clamp having a pair of resilient arms disposed within said inner part for engaging a yarn.

4,120,330

METHOD FOR MANUFACTURING A WIRE MATRIX

Victor P. Weismann, 430 Prospect Cir., South Pasadena, Calif. 91030

Division of Ser. No. 646,607, Jan. 5, 1976, abandoned. This application May 6, 1977, Ser. No. 794,376
Int. Cl.² B21F *15/02, 21/10*
U.S. Cl. 140—112 **1 Claim**



1. The method of making a three-dimensional wire matrix composed of a plurality of wire trusses comprising the steps of:

feeding a plurality of truss longitudinal runner wires along parallel paths in a common plane with the spacing between adjacent wires of each pair being substantially less than the spacing between the wires of each pair,

laying a plurality of spaced parallel truss strut cross-wires against the runner wires, each of the cross-wires bridging all of the runner wires and being disposed diagonally relative to the runner wires,

securing each of the cross-wires to the runner wires at the points of intersection to form a two-dimensional wire grid,

cutting each of the cross-wires after it is secured to the runner wires between each adjacent pair of runner wires to form a plurality of separate trusses each of which has parallel struts disposed diagonally between and connected to two parallel longitudinal truss runners,

twisting each of the separate trusses about its length through an angle of 90° so that the plane defined by the struts and runners of each truss is parallel to the corresponding plane of the other trusses, adjacent trusses being twisted in opposite rotary directions,

contacting both of the longitudinal runner wires of each of the separate trusses at spaced locations therealong by a plurality of parallel matrix transverse wires disposed in two parallel planes perpendicular to the planes of the trusses, and

attaching the matrix transverse wires to the truss runners to secure the transverse wires and the trusses in a matrix framework in which the struts in adjacent trusses slope in opposite directions relative to the runners of the trusses.

4,120,331

LOW PRESSURE GAS REGULATOR

Charles S. Krivanek, III, 2443 Vauxhall Rd., Union, N.J. 07083

Filed May 11, 1977, Ser. No. 796,028
Int. Cl.² B08B *9/08;* **F16K** *9/00*
U.S. Cl. 141—66 **8 Claims**

1. A low pressure gas regulator for purging vessels comprising:

(a) an outlet-conduit for gas,

(b) an intake-conduit for gas,

(c) an exhaust-conduit for gas,

(d) a first valve means having passages therein alternatively connecting the intake and exhaust conduits to the outlet conduit,

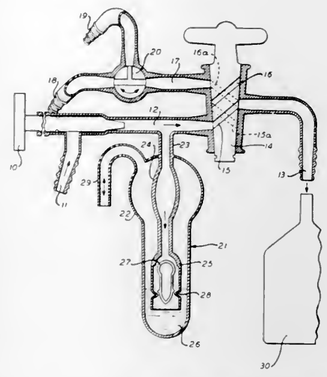
(e) an indicating valve connected to the intake conduit for receiving at least part of the gas from the intake conduit,

(f) a conduit in the indicating valve communicating with the intake conduit and extending toward the bottom of the indicating valve.

(g) a liquid at the bottom of the indicating valve covering the bottom of the conduit,

(h) a float captured in the bottom of the conduit,

(i) a vent passage in the indicating valve opening the indicating valve to ambient pressure,



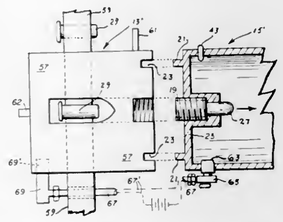
(j) the float functioning as a check valve in response to the liquid level in the conduit to block the passage of gaseous material up the conduit in the indicating valve, and into the intake conduit when the liquid rises in the conduit when closed, and to pass gaseous material down through the conduit in the indicating valve when open; the passage of bubbles through the liquid providing an indication of the pressure condition in the intake conduit for gas.

4,120,332

AUTOMATIC DETACHABLE CHARGING HEAD FOR PRESSURE TANK

Elisha C. Davis, 1344 Davis Ave., Enumclaw, Wash. 98022

Filed Sep. 16, 1976, Ser. No. 724,051
Int. Cl.² B65B *3/26*
U.S. Cl. 141—197 **3 Claims**



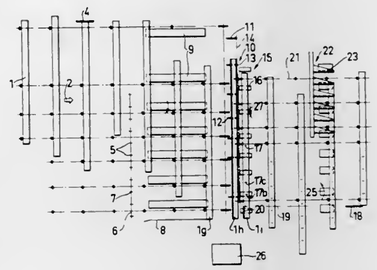
1. In combination, a detachable charging head and pressure tank having a check valve in operative communication with the charging head to allow gases therefrom to flow into the tank and a safety pressure release mechanism to prevent overpressurization, said detachable charging head comprising a charging cartridge containing a combustionable material suitable for producing gases positioned in the central area of said charging head, means for threadably attaching said charging head to said pressure tank, means for axially aligning said charging head and said pressure tank, and means for filling the pressure tank by firing said charging cartridge including an automatic charging head comprising a firing breech with a trigger attached thereto, a feed belt for supplying charging cartridges to said firing breech, and a cocking bolt on said firing breech for setting the trigger in position for firing to force gases through the check valve into the tank thereby causing the tank to become pressurized.

4,120,333

METHOD AND APPARATUS FOR TRIMMING TIMBER

Hans Arthur Hellgren, and Karl Georg Erhard Marklund, both of Skelleftea, Sweden, assignors to Renholmens Mekaniska Verkstad AB, Byske, Sweden

Filed Apr. 27, 1976, Ser. No. 680,802
Claims priority, application Sweden, Apr. 28, 1975, 7504907
Int. Cl.² B27B *1/00, 31/04*
U.S. Cl. 144—312 **5 Claims**



1. In a method of trimming timber pieces moving at spaced intervals and perpendicularly to their longitudinal direction to facilitate length and quality determination of said pieces in order to obtain optimal yield from each timber piece, comprising the steps of:

(a) trimming first ends of said pieces during said movement;

(b) advancing said pieces to a turnover mechanism;

(c) applying on the lower surface of each one of said timber pieces a plurality of marks equally spaced relative to each other over a substantial length of each piece incorporating the second transverse end thereof, each one of said marks being located at a distance from said first trimmed end which is a multiple of the spacing between the marks;

(d) turning said piece in said turnover mechanism to make said marks visible from above said piece, inspecting all of the piece surfaces so as to properly grade the piece and then selecting that mark at which said piece is to be trimmed off;

(e) positioning said selected mark in registry with a saw line parallel with the advancing direction of the pieces for a second trimming saw, by moving said piece in its longitudinal direction; and

(f) advancing said piece to said second trimming saw to cut off the piece at the selected mark.

4,120,334

ONE OPERATOR SHAKE SPLITTING APPARATUS

John H. Hughes, Aberdeen, Wash., assignor to J. H. Hughes, Inc., Montesano, Wash.

Filed Feb. 22, 1977, Ser. No. 770,567
Int. Cl.² B27L *7/00*
U.S. Cl. 144—326 R **11 Claims**

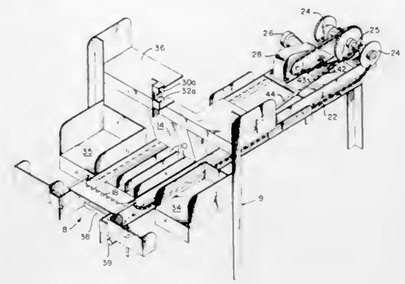
1. A shake splitting apparatus for splitting shakes from a pre-kerfed shake block comprising:

a block support surface,

means on said support surface for blocking movement of the block along the support surface,

splitting means having a forward end for slicing into the inner end of a kerf in a block resting on the surface against the blocking means, and

means for pulling said splitting means toward said blocking means for splitting a shake free of said block, said pulling means including flexible tension means coupled to said forward end of the splitting means and positioned below said forward end whereby the forward end of the splitting means applies both a splitting force and a downward force for holding the block on the support surface during splitting.

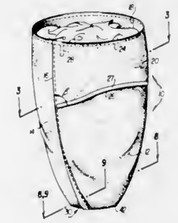


4,120,335

LAUNDRY BAG

Winalee G. Mitchell, c/o Principle Business Enterprises Inc., Pine Lake Industrial Park, Dunbridge, Ohio 43414

Continuation-in-part of Ser. No. 700,262, Jun. 28, 1976, abandoned. This application Apr. 8, 1977, Ser. No. 785,975
Int. Cl.² B65D *29/00*
U.S. Cl. 150—7 **8 Claims**



1. In a bag which includes a wall portion and a flap secured to the upper portion of said wall portion, said flap having a bag-open position in which said flap forms a pocket with a downwardly directed mouth to receive a means for supporting said bag, and a bag-closed position in which said pocket has been pushed inside out and slipped over an opening in the top of the bag, said flap being attached to opposite sides of the wall portion by a pair of upstanding seams, with which the lower edge of said flap intersects, the improvement characterized in that said flap, when laid flat in an unstretched condition, is narrower at the center than at the side edges thereof, and said lower edge, viewed with the flap in both the bag-open position and the bag-closed position, intersects with each of said seams at an acute angle, said flap being otherwise free of seams which intersect with said lower edge.

4,120,336

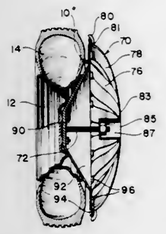
TRACTION DEVICE FOR POWER DRIVEN VEHICLES

William C. Baskall, 10520 Pierson Cir., Broomfield, Colo. 80020

Filed Sep. 27, 1976, Ser. No. 727,224
Int. Cl.² B60C *27/02*
U.S. Cl. 152—216 **4 Claims**

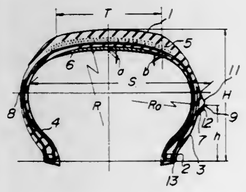
1. A traction device for use on a vehicle having a wheel and tire assembly connected to the vehicle, comprising:

(a) base means connectable to said wheel and tire assembly;
(b) a traction member connected to said base means having a predetermined first configuration and being flexible enough to be deformed into a second configuration, the traction member fitting within the diameter of and along side said wheel and tire assembly when in the first configuration and extending beyond the diameter of the wheel and tire assembly and covering at least a portion of the tire tread when in said second configuration;
(c) engaging means attached to said base means and contacting said traction member, the engaging means being selectively moveable to urge the traction member from the first



configuration into the second configuration or to release the traction member from the second configuration, the engaging means comprising a shaft perpendicularly attached to said base means and an adjusting member axially moveable thereon;
(d) the traction member comprising a dome-shaped member having its concave side facing the tire and wheel assembly and having its central area attached to said adjusting member, the outer rim of said dome-shaped member covering a portion of the tire tread when the adjusting member moves the dome-shaped member axially toward the tire and wheel assembly into said second configuration.

4,120,337
SAFETY PNEUMATIC TIRE FOR PASSENGER CARS
Akio Soma, Musashi-Murayama; Haruro Kawashima, Kodaira; Makoto Yamauchi, Higashi-Murayama, and Shoji Tanaka, Higashi-Yamato, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Apr. 12, 1977, Ser. No. 786,933
Claims priority, application Japan, Apr. 16, 1976, 51-43413
Int. Cl.[2] B60C *13/00*
U.S. Cl. 152—353 R **5 Claims**



1. A safety pneumatic radial tire for passenger cars comprising a pair of bead cores, a pair of sidewall portions, a tread portion extending across the two sidewall portions in a ratio R/S of 1.2/1 to 2.5/1, where R is the curvature of the inner surface of the tread portion and S is the maximum width of the tire exclusive of any protection rib, at least one carcass ply containing cords embedded therein and extending across the two bead cores in a substantially radial direction, a belt reinforcing layer arranged between the carcass ply and the tread portion, a viscous rubber puncture-sealing layer arranged on the inner circumferential surface of the tread portion, an annular protection rib on at least one side of the sidewall portions and coaxial therewith, said protection rib having a substantially trapezoidal cross-sectional shape, the vertical height of the middle position of the outer end and inner end of the protection rib from the bead base portion being positioned less than at the maximum width position of the tire therefrom but being at least 35% of the height of the cross-section of the tire, a first concaved surface having a radius of R_1, which extends from the outer end of the protection rib towards the tread portion, a second concaved surface having a radius of R_2, which extends from the inner end of the protection rib towards the bead portion, and said radii being in a relation of $R_1 > R_2$, and the cross-sectional shape of the protection rib being defined by the following formulae:

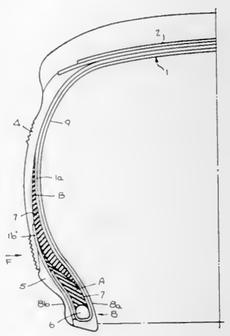
$$3.0R_0 > R_1 > 0.5R_0$$

$$1.4 \geqq d_1/d \geqq 0.7 \quad \text{and}$$

$$1.2 \geqq W/d_1 \geqq 0.5$$

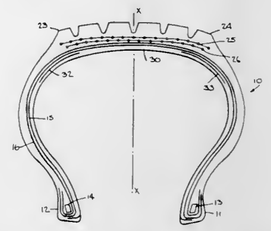
wherein R_0 is the radius of curvature of the sidewall portion located near the protection rib, R_1 is the radius of the concaved surface of the protection rib, d is the thickness of the sidewall portion, d_1 is the height of the protection rib, and W is the upper width of the protection rib.

4,120,338
PNEUMATIC TIRE HAVING AN IMPROVED HEEL STRUCTURE
Henri J. Mirtain, 35, Avenue de la Somme, Compiegne, France
Filed Oct. 4, 1976, Ser. No. 729,456
Int. Cl.[2] B60C *15/04*
U.S. Cl. 152—354 R **15 Claims**



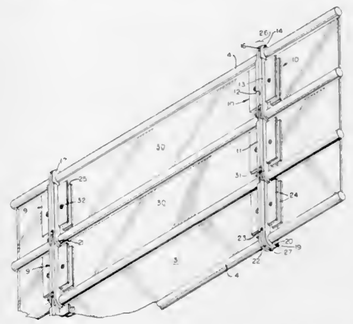
1. A pneumatic tire having, in cross-section, an inner wall portion and an outer wall portion, a bead core disposed between said inner and outer wall portions, a carcass disposed between said inner and outer wall portions, a tread defining a tread region and forming a crown-like cover on the carcass, and a rubber filler assembly disposed between said inner and outer wall portions, said filler assembly having a base portion at the bead core and extending toward the tread between said inner and outer wall portions, said filler assembly including an inner and outer wall portion corresponding to the inner and outer wall portions of said tire and being of generally decreasing thickness from said bead core as it extends toward said tread and having not more than two filler elements consisting of a first element of reinforced stranded rubber with a Shore A hardness in the order of 85° to 93° and a second element of nonreinforced rubber with a Shore A hardness in the order of 70° to 95°, the first and second elements being in mutual contact at an oblique angle with the equatorial plane of the tire, such that said first element incorporates all of said base portion and is of generally decreasing thickness in a direction from the bead core toward the tread, and said second element is disposed remote from said bead core and is of generally increasing thickness in said direction up to a point of maximum thickness and then of generally decreasing thickness in said direction to a terminal point at a predetermined distance from said bead core, said carcass having a first ply portion passing from said tread region along the inner wall side of said rubber filler assembly in substantially continuous contact with the inner wall side of said rubber filler assembly from the terminal point of said second element to the base portion of said first element and is folded about the bead core to form a turnup at the outer wall portion of said filler assembly extending toward said tread, and terminating before the terminal point of said second element said turnup being in substantially continuous contact with the outer wall portion of said filler assembly, said tire further including a second ply having a portion overlapping the outer wall of said filler assembly between said turnup and the terminal point of said second element.

4,120,339
PNEUMATIC TIRE HAVING CARCASS CORDS WHICH DEPART FROM THE RADIAL PLANE IN THE TREAD REGION
Daniel Shichman, Trumbull, Conn., assignor to Uniroyal, Inc., New York, N.Y.
Continuation of Ser. No. 648,617, Jan. 12, 1976, abandoned. This application Jun. 24, 1977, Ser. No. 809,594
Int. Cl.[2] B60C *9/10*
U.S. Cl. 152—354 RB **13 Claims**



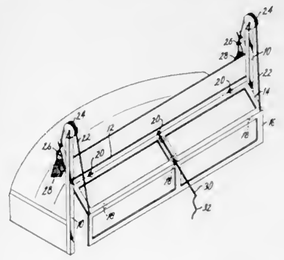
1. A pneumatic tire having tread and sidewall portions and a shoulder region comprising:
a carcass comprising two beads and at least one ply of cords extending from bead to bead, the shortest line along said carcass from the end region of a given cord of said ply at one bead to the end region of said given cord at the other bead being a line lying in a plane in the range of 0° to 5° from a radial plane of the tire, said end regions of said given cord at both beads being substantially equally spaced from said radial plane;
said carcass cords intersecting the shortest lines along said carcass between the end regions of said cords at said one bead to the end regions of said cords at said other bead, the intersections occurring at said end regions of said cords and at a point therebetween, said carcass cords having a slope departing gradually from the slope of said shortest lines, the maximum angular departure of said slope of said carcass cords of said one ply from said slope of said shortest lines between said end regions of said cords of said one ply being at least 10° averaged over a substantial length of said cords of said one ply;
one or more breaker ply plies of cords extending continuously over said carcass plies from shoulder region to shoulder region of the tire and each having two circumferential edges and each having a cord angle averaged over a region extending a substantial distance on each side of the equator of the tire in the range of 12° to less than 20° with respect to said equator and having a cord angle averaged over a substantial distance at said edges of said breaker ply which is higher than said average breaker cord angle on each side of said equator;
all breaker plies of cords of the tire having cord angles displaced from 0°;
said tread and sidewall portions being of elastomeric material disposed over said carcass and breaker plies.

4,120,340
CLOSURE
John A. Stascavage, Exeter; William W. Rawls, and Alexander Buchholz, both of Mountaintop, all of Pa., assignors to Cornell Iron Works, Inc., Mountaintop, Pa.
Filed Nov. 8, 1977, Ser. No. 850,089
Int. Cl.[2] E06B *9/08*
U.S. Cl. 160—133 **15 Claims**



1. A displaceable grille closure including, a plurality of parallel spaced apart rods, at leasttwo series of link assemblies joined to and maintaining said rods in said parallel relationship, each said series including a plurality of similar and axially aligned link assemblies, each said assembly having a tongue and a groove at opposite axial ends thereof and each provided with a transverse opening therethrough, said openings of said tongue and groove of adjacent said assemblies intermeshed and journaled about a common one of said rods, attachment means on each side of each said assembly and a panel having oposite end edges respectively connected to said attachment means of two laterally adjacent assemblies of said two series.

4,120,341
GREENHOUSE DOOR ASSEMBLY
John Peter Doering, Salinas, Calif., assignor to Union Carbide Corporation, New York, N.Y.
Filed Sep. 7, 1977, Ser. No. 831,073
Int. Cl.[2] E05D *15/26*
U.S. Cl. 160—213 **9 Claims**



1. A door assembly suitable for relatively large openings such as an entire greenhouse end and movable between a

closed position and an upper open position disposed above the door opening and clear of said opening, comprising:

spaced apart vertical side frame members and a top horizontal frame member defining said door opening, said side frame members extending substantially above said horizontal frame member,

upper and lower door sections controlling said door opening, said sections being pivotally connected along their adjacent edges and the upper edge of said upper door section being pivotally attached to said horizontal frame member,

cable means attached to upper door section on either side at points proximate to its edge connected to said lower door section, and extending upward to and passing over a pulley means affixed to said vertical side frame members at a height sufficiently above the point of attachment of said upper edge of said upper door section to said horizontal member that said door sections are substantially clear of said door opening when said upper door section is pivoted upward, said cable means then extending down to and being attached to the outer end of lever arms pivotally attached at their inner ends to the back sides of said vertical frame members,

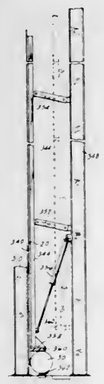
counterweights collectively balancing the combined weight of said upper and lower door sections and attached in approximately equal increments to said outer ends of said lever arms.

4,120,342

AIRCRAFT HANGER DOOR

Kelly D. Mama, Mount Prospect, and Otto C. Roller, Chicago, both of Ill., assignors to Channon Corporation, Chicago, Ill.

Filed Dec. 17, 1976, Ser. No. 751,809
Int. Cl.[2] A47G *5/02*; E06B *9/20*
U.S. Cl. 160—310 **11 Claims**



1. A closure apparatus for a vertical-opening defined by a header, a pair of spaced side walls and a floor, the side walls each having a marginal edge, said apparatus comprising:

a curtain including top, bottom and side marginal edges, said top marginal edge attached to the header and said side marginal edges overlapping respective ones of the marginal edges of the side walls;

an elongate tube having a longitudinal axis of rotation, said tube attached to said bottom marginal edge of said curtain;

vertical guide track means supported adjacent at least one of the side marginal edges of said curtain;

tube guide means engaging and movable along said vertical guide track means;

control means including motor means connected to said tube and to said tube guide means for rotating said tube in one direction to roll up said curtain and in the opposite direction to pay out said curtain; and

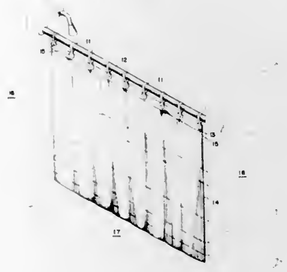
side seal means including a pair of resilient members carried on respective ones of the marginal edges of the side walls and a pair of parallelogram structures disposed adjacent respective ones of the side walls, each of said parallelogram structures including a fixed member and a movable member parallel to and pivotally connected to said fixed member and movable to clamp the respective marginal edge of said curtain against the respective resilient member.

4,120,343

DISPOSABLE SHOWER CURTAIN ENSEMBLE

Eunice D. Wilson, 2504 Tonoka Rd., Richmond, Va. 23223

Filed Sep. 6, 1977, Ser. No. 831,029
Int. Cl.[2] A47H *1/00*; A47K *3/14*
U.S. Cl. 160—330 **1 Claim**



1. A shower curtain assembly consisting of a flexible opaque rectangular sheet comprised of a cellulosic paper having a basis weight between 50 and 400 grams per square meter, at least one surface of said paper being covered by an adherent layer of water-resistant organic polymer material, said sheet containing adjacent its upper edge a uniformly spaced series of holes, and flexible strap members having an elongated configuration terminating in anchor ends having an area of between ½ to 3 square inches attached by contact-type adhesive to opposed sides of said sheet in a manner occluding a hole and providing direct adhesive bonding across the area of said hole, each of said strap members thereby forming a closed loop disposed above said upper edge, and adapted to engage an overhead support rod, said sheet having been deployed from a compactly folded state having initially formed folds in the vertical direction representing pleated folds, and subsequently formed folds in the horizontal direction.

4,120,344

METHOD OF CONTINUOUS CASTING TELLURIUM CONTAINING STEELS

Arthur C. Borg, Calumet City, and Alex Zletz, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 20, 1977, Ser. No. 817,143
Int. Cl.[2] B22D *11/00*
U.S. Cl. 164—73 **4 Claims**

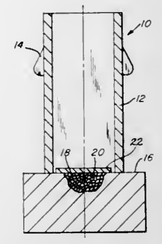
1. In a process of continuous casting of tellurium steel, which includes pouring tellurium steel into a mold to form a cast and lubricating the interface between the mold and said tellurium steel, the improvement comprises lubricating said interface with a composition consisting essentially of a white petroleum mineral oil.

4,120,345

METHOD FOR INGOT MOLD REPAIR

Robert R. Strange, Northfield, Ohio, and James M. Zimmer, Brighton Township, Beaver County, Pa., assignors to Crucible Inc, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 784,769, Apr. 5, 1977, abandoned. This application Nov. 3, 1977, Ser. No. 848,046
Int. Cl.[2] B22D *7/06, 19/10*
U.S. Cl. 164—92 **5 Claims**



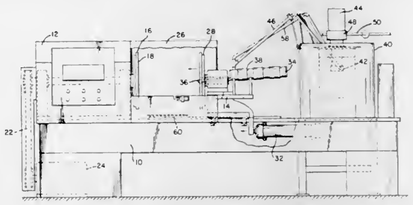
1. In a method for ingot casting using a vertical mold having a mold bottom with a relieved portion produced by erosion during casting, which method includes the steps of casting molten metal into said mold to form a casting upon solidification of said molten metal and removal of said solidified casting from said mold, the improvement comprising, prior to casting, essentially filling said relieved portion with metal particles only and covering said relieved portion with a plate, whereby during casting the molten metal is essentially prevented from entering the relieved portion of said mold stool and said metal particles do not significantly comingle with said molten metal during casting, and whereby said metal particles sinter together to at least partially fill said relieved portion.

4,120,346

AUTOMATIC CENTRIFUGAL BABBITTING APPARATUS AND METHOD

Thomas A. Teager, Natick, Mass., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 4, 1977, Ser. No. 793,580
Int. Cl.[2] B22D *19/08*
U.S. Cl. 164—105 **6 Claims**



1. Apparatus for applying babbitting material to a cylindrical bearing shell, comprising:

a first rotatable end plate including a sealing face thereon against which the outer marginal portion of one open end of said bearing shell is received and sealed;

a spaced apart, opposite end plate assembly including a rotatable end plate having a sealing face thereon against which the outer marginal portion of the other open end of said bearing is received and sealed;

openable housing means generally enclosing the space in which the bearing shell is received between said plates for babbitting;

means moving said opposite end plate assembly between one position clamping said shell between said end plates in a sealing relation, and other positions for releasing said shell after babbitting;

an upwardly-open, inclined babbitt-receiving trough carried by said opposite end plate assembly and including conduit means connecting the lower end of said trough to a location between said end plates and corresponding to the interior space of a bearing shell when the shell is in position for babbitting;

a stationary, molten babbitt tank adjacent said opposite end plate assembly;

a molten babbitt pump immersed in said tank at an intermediate level;

an electric motor mounted above said tank and connected to drive said pump;

pipe means connected to the discharge of said pump and extending to a pipe outlet located to overlie the open top side of said trough throughout the range of movement of said trough in its positioning in accordance with the length of a particular bearing shell;

means heating said babbitt tank;

means admitting a coolant into said housing for circulation about said bearing shell;

means rotating said first end plate at a predetermined speed in accordance with the size of a particular bearing;

means energizing said pump electric motor for a controlled time to feed a specified volume of babbitt into said trough in a continuous uninterrupted flow; and

a control system including switch means and timer means actuating and deactuating in a predetermined sequence and for preselected times the rotating means for the first end plate, the coolant circulating means, and the molten babbitt pump motor;

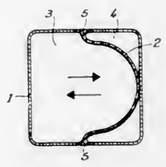
said predetermined sequence including first actuating said end plate rotating means, then said coolant admission means, and then said molten babbitt pump motor, and then deactuating first said molten babbitt pump motor and thereafter said coolant circulating means, and said end plate rotating means.

4,120,347

TWO-PASSAGE PIPE, ESPECIALLY FOR AIR CONDITIONING INSTALLATIONS

Imre Molnar, Am Haushof 5, 4005 Meerbusch 1, Fed. Rep. of Germany

Filed Oct. 4, 1976, Ser. No. 729,147
Int. Cl.[2] F25B *29/00*
U.S. Cl. 165—48 R **3 Claims**



3. In combination in an air conditioning installation: an air conditioning device having an air inlet and an air outlet, a plurality of rooms to be air conditioned having inlet means for admitting conditioned air and also having outlet means for discharging air to be re-conditioned, first conduit means establishing communication between said outlet means of said rooms and said inlet of said air conditioning device, second conduit means connected to said outlet of said air conditioning device and branching out into a first branch and a second branch, post-heater means having an air inlet communicating

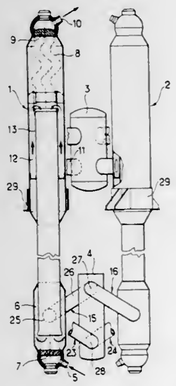
with said first branch and also having an outlet, cooler means having an inlet communicating with said second branch and also having an outlet, conveying means comprising a pipe and a flexible air impermeable diaphragm fastened to said pipe along diametrically oppositely located sections of said pipe, said sections extending over the length of said pipe and being located substantially along a central longitudinal plane of said pipe thereby dividing said pipe into two adjoining passages arranged alongside each other, said diagphragm being in a position to vary flow quantity through said adjoining passages alternately between essentially 0% and 100% of the collective flow quantity possible through the two passages in said pipe, said two passages respectively communicating with said outlet of said post-heater means and said cooler means for respectively conveying cooled and heated air to said inlet means of said rooms, and mixing means interposed between said conveying means and said rooms for respectively admixing cold and warm air to the air respectively passing through said two passages to said air in said passages prior reaching said rooms.

4,120,348

HEAT EXCHANGER HAVING A PLURALITY OF MODULES CONNECTED IN PARALLEL

Pierre Pouderoux, Meudon, France, assignor to Stein Industrie S.A., Valizy-Villacoublay, France

Filed Dec. 10, 1976, Ser. No. 749,260
Claims priority, application France, Dec. 18, 1975, 75 38834
Int. Cl.[2] F28F *7/00*
U.S. Cl. 165—81 **2 Claims**



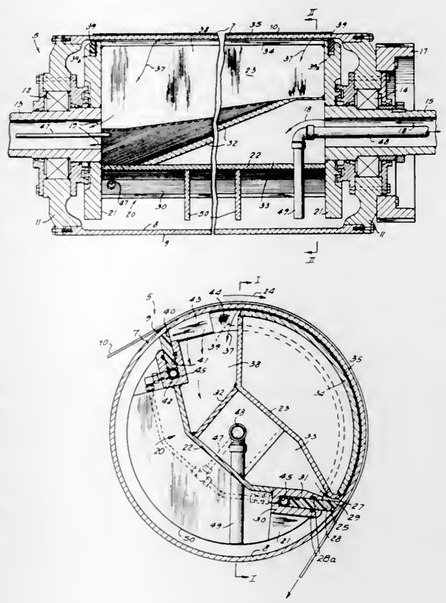
1. A heat exchanger for heat exchange between a molten alkaline metal and water to be vaporized and superheated, employing a plurality of heat exchanger modules; a common feed vessel for receiving said molten alkaline metal for distribution to said modules; a common sump for recycling cooled molten alkaline metal metal from said modules; said feed vessel being disposed above said sump and said heat exchanger modules being formed of generally vertically oriented elongated members disposed around said feed vessel and sump, wherein: said feed vessel being connected to said heat exchanger modules by short straight collectors, and said sump being connected to said modules by generally U-shaped collectors having respective inputs and outputs at different levels whereby said sump collectors being formed to have sufficient resilience for expansion of a heat exchanger module in the event of accidental reaction between said alkaline metal and cooling fluid of said heat exchanger.

4,120,349

HEAT TRANSFER ROLL

Robert J. Alheid, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 12, 1976, Ser. No. 731,433
Int. Cl.[2] F28D *11/02*
U.S. Cl. 165—89 **12 Claims**



1. A hollow rotary heat transfer roll having a cylindrical heat transfer wall providing an inner cylindrical surface and an outer cylindrical periphery, on a substantial width and limited length circumferential segmental area of which a web is adapted to travel in heat transfer relation, comprising in combination:

means for circulating a heat transfer liquid through the interior of said roll;

and means within the roll for controlling the liquid to flow counter to the direction of rotation of the roll and in a substantially uniform and unbroken thin sheet-like layer stream in heat transfer relation to said inner cylindrical surface substantially limited to and constrained to be in alignment with said segmental area on which the web travels;

whereby heat transfer through said heat transfer wall between the liquid stream and the web is effected with optimum heat transfer efficiency attained with minimum heat transfer liquid flow rate.

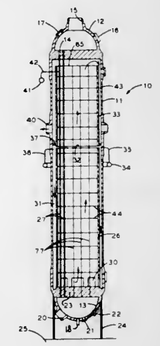
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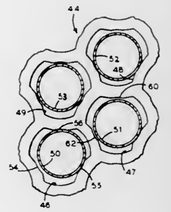
TUBE SUPPORT STRUCTURE

Frank E. Norton, York, Pa., assignor to The Babcock & Wilcox Company, New York, N.Y.

Division of Ser. No. 559,861, Mar. 19, 1975, and Ser. No. 175,600, Aug. 27, 1971, abandoned. This application Jul. 6, 1976, Ser. No. 702,550
Int. Cl.[2] F28F *1/00*; F28D *7/00*
U.S. Cl. 165—162 **3 Claims**

1. In a heat exchanger tube and shell structure, a generally flat plate having a plurality of individual tube receiving apertures formed therein, at least three members, integral with said plate defining said apertures said integral members protruding inwardly toward the center of said respective apertures wherein the improvement comprises, the inwardmost end of each of said members terminating on an arc that defines a circle having a diameter which is slightly greater than the outside diameter of the individual tube that is to be received within said respective apertures, said members further forming bights between at least adjacent pairs of said members in order to provide a predetermined flow area when the tube that is individual to the respective aperture is lodged in place said inwardly extending members have sides that establish the deepest portions of said bights formed between adjacent member pairs, said deepest bight portions each defining a circle that has a larger diameter than the circle defined by said inwardmost member ends and said deepest bight portions being located on a circle having a center that substantially coincides with the center of said circle that is defined by said inwardmost member ends.





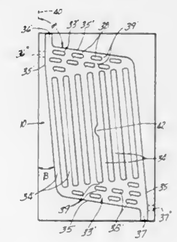
4,120,351

HEAT EXCHANGE PANEL WITH IMPROVED HEADER

Charles A. Kleine, Florissant, Mo., and Verne L. Middleton, East Alton, Ill., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 573,953, May 2, 1975, and Ser. No. 632,502, Nov. 17, 1975, which is a continuation-in-part of Ser. No. 573,953,. This application Nov. 17, 1975, Ser. No. 632,643
Int. Cl.[2] F28F *3/14*
U.S. Cl. 165—170 **13 Claims**

1. A heat exchange panel for use in a solar energy collector system possessing a system of internal tubular passageways defining opposed headers, said headers connected by a plurality of spaced parallel individual connecting portions of said passageways extending therebetween, said headers having entry and exit portions extending therefrom to opposed edges of said panel to provide ingress and egress openings for said heat exchange medium, each of said entry and said exit portions having a central axis, said headers possessing outer boundaries defining the perimeter thereof, at least one of said boundaries lying adjacent the apex of said perimeter defining an external angel of at least 91° with respect to the central axis of the most adjacent entry or exit portions, said angle taken in the plane containing said panel, wherein said headers are triangular in shape and possess a plurality of parallel fluid channels communicating with the connecting portions of said passageways and running in a direction substantially transverse



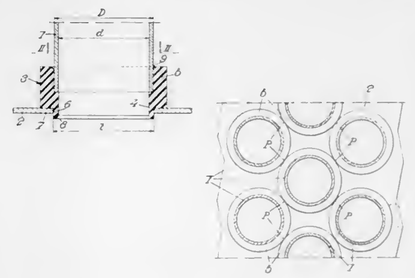
thereto wherein said parallel channels are defined by a plurality of aligned bonded portions located within said headers assisting in the distribution of said heat exchange medium to the respective connecting portions and wherein said connecting portions are disposed at an angle of at least 1° with respect to an extended straight line of the central axis of the most adjacent exit or entry portion extrapolated through said more adjacent exit or entry portion.

4,120,352

DEVICE FOR CONNECTING EXCHANGER TUBES TO PERFORATED PLATES

Jean Husson, Louviers, France, assignor to S.E.R.A. Husson Societe d'Etudes et Realisations Aerodynamiques, Paris, France

Filed Dec. 6, 1976, Ser. No. 747,737
Claims priority, application France, Dec. 5, 1975, 75 37533
Int. Cl.[2] F28F *9/06*
U.S. Cl. 165—173 **3 Claims**



1. In a device wherein n rings of resilient material connect in tight sealing relationship a bundle of n parallel tubes of inside diameter d and outside diameter D in a heat exchanger to the edges of n holes in a rigid plate,

the improvement comprising the diameter t of the holes being substantially equal to D and the rings having in axial half-section the shape of a flattened Z and comprising a plurality of cylindrical sleeves party enclosing one another, each sleeve including a first sleeve of inside diameter d and outside diameter t whose ends are respectively sealingly received in a hole of the plate and in axial abutment with the end of a tube, and a second sleeve of inside diameter D whose ends are respectively in sealing contact with the exterior of a tube end and in abutment with the

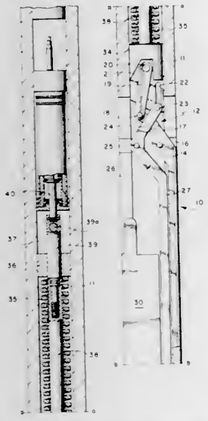
edge of a hole, the second sleeves of the rings bearing laterally against one another.

4,120,353

DEVICE TO MOVE DENSITY LOGGING TOOL AGAINST WELL WALL

Raymond Earl Roesner, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 19, 1977, Ser. No. 788,956
Int. Cl.[2] E21B *47/08*
U.S. Cl. 166—65 R **3 Claims**



1. In a wellbore logging instrument having a pivotal decentralizing arm and a borewall engaging logging pad connected to an elongated body member, with an actuator motor assembly for pivoting the decentralizing arm inward and outwards from the body, the improvement comprising:

linkage means connecting said decentralizing arm and said logging pad to said motor assembly and having cam means for limiting movement of said logging pad to a relatively small radial distance while allowing relatively great radial extension of said decentralizing arm;

wherein said cam means comprises an actuator plunger connected to said motor assembly, longitudinally slidably mounted in said enlongated body, and having said decentralizing arm and said logging pad movably secured thereto; and,

wherein said motor assembly comprises an electric motor operably connected to a drive link assembly arranged to control a compression spring abutting said actuator plunger.

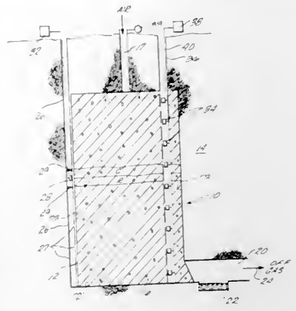
4,120,354

DETERMINING THE LOCUS OF A PROCESSING ZONE IN AN IN SITU OIL SHALE RETORT BY PRESSURE MONITORING

Richard D. Ridley, and Robert S. Burton, III, both of Grand Junction, Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 3, 1977, Ser. No. 803,363
Int. Cl.[2] E21B *43/24, 47/06*
U.S. Cl. 166—251 **36 Claims**

2. A method for determining the locus of a processing zone advancing through a fragmented permeable mass of particles in an in situ oil shale retort in a subterranean formation containing oil shale, the method comprising the step of monitoring pressure in the fragmented mass at at least two locations spaced



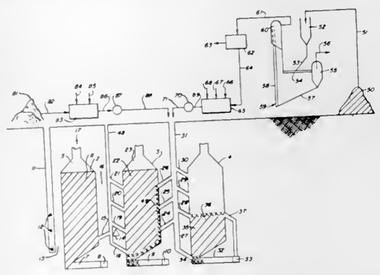
apart from each other in the direction of advancement of the processing zone.

4,120,355

METHOD FOR PROVIDING FLUID COMMUNICATION FOR IN SITU SHALE RETORT

Jay C. Knepper, Denver, and Eugene L. Grossman, Littleton, both of Colo., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 30, 1977, Ser. No. 829,070
Int. Cl.[2] E21C *41/10*; E21B *43/24, 33/13*
U.S. Cl. 166—259 **5 Claims**



1. A method for the recovery of shale oil and disposal of spent oil shale comprises:

forming a subterranean oil shale retort containing a rubblized retortable mass of oil shale, said retort being substantially surrounded by a mass of unmined formation;

retorting the oil shale contained in said subterranean retort so as to recover at least a portion of the shale oil present;

drilling at least one hole through the unmined formation adjacent to the retort;

providing communication between at least one of said holes and an adjacent retort; and

passing an aqueous slurry of spent oil shale through said drill hole into said retort;

so that spent oil shale can be effectively disposed of in a manner not detrimental to the environment.

4,120,356

WELL-CLEANING PROCESS USING VISCOSIFIED SURFACTANT SOLUTIONS

John J. Meister, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 728,377, Sep. 30, 1976, Pat. No. 4,071,457, which is a division of Ser. No. 654,435, Feb. 2, 1976, Pat. No. 4,007,792. This application Oct. 31, 1977, Ser. No. 847,203
Int. Cl.[2] E21B *43/00, 21/00*
U.S. Cl. 166—267 **2 Claims**

1. A method for cleaning a borehole comprising:

(a) introducing into said borehole a composition comprising in admixture:

(1) a fluid consisting essentially of

(A) 10–90 weight percent of water and

(B) 90–10 weight percent of chloroform,

(2) 1–5,000 ppm of a cationic surfactant,

(3) 1–5,000 ppm of an anionic surfactant,

(4) 50–20,000 ppm acid in a quantity sufficient to reach a pH of $\leqq$4.5 in the aqueous phase, and

(5) 50–20,000 ppm buffer salt in mol ratio of buffer salt to acid component (4) in the range of 0.1:1 to 5:1;

the ppm values being based on the combined weight of water and chloroform;

(b) removing said composition comprising borehole cuttings from the borehole,

(c) letting the composition comprising the borehole cuttings settle, and

(d) recovering at least a portion of the liquids of said composition.

4,120,357

METHOD AND APPARATUS FOR RECOVERING VISCOUS PETROLEUM FROM THICK TAR SAND

Donald J. Anderson, Newport Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 11, 1977, Ser. No. 840,689
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—272 **8 Claims**



1. A method of assisting the recovery of viscous petroleum from a petroleum-containing formation comprising the steps of forming a production well through a petroleum-containing formation, said formation having an initial low potential for fluid injection, inserting a casing string having a production opening near its lower portion into said production well, providing a production flow line in said production well from a position adjacent said production opening to the earth's surface, extending a tubular member into said production well to form a closed-loop flow path from the earth's surface to the lower portion of said formation and back to the earth's surface, circulating a hot fluid through said closed-loop flow path to heat the viscous petroleum in said formation adjacent at least a portion of said production well to form a first potential passageway for fluid flow through said formation, providing a plurality of injection wells linearly spaced apart from said production well and communicating with the upper portion of said formation, the first of said injection wells positioned for injection of hot drive fluid into said first potential passageway for fluid flow in said formation and the remaining injection wells linearly spaced apart from said first injection well and each other at least a distance equal to the distance between said production well and said first injection well, injecting a hot drive fluid through said first injection well into the upper portion of said formation into said first potential passageway to promote flow of petroleum to the production opening near the bottom of said casing string of said production well and to form a second potential passageway for fluid flow in said formation communicating with the next adjacent linearly spaced apart injection well, stopping injection of hot drive fluid through said first injection well when significant breakthrough of hot drive fluid occurs in said production well, starting injection of hot drive fluid through said next adjacent injection well into said second potential passageway for fluid flow in said formation to promote flow of petroleum to said production well and progressively stopping hot drive fluid injection at a given injection well as significant hot drive fluid breakthrough to the said production well occurs and starting hot drive fluid injection at the next further linearly spaced apart injection well.

5. A system for use in assisting the recovery of viscous petroleum from a petroleum-containing formation comprising a production well extending through a viscous petroleum-containing formation, a casing string having a production opening near its lower portion positioned in said production well, a production flow line in the said casing string extending from a position adjacent said production opening to the earth's surface, a tubular member into said casing string forming a closed-loop flow path from the earth's surface to the lower portion of said formation and back to the earth's surface, a source of hot fluid, conduit means connecting said source of hot fluid to said closed-loop flow path for circulation therethrough to heat the viscous petroleum in said formation adjacent at least a portion of said production well to form a first potential passageway for fluid flow through said formation, a plurality of injection wells linearly spaced apart from said production well and communicating with the upper portion of said formation, the first of said injection wells positioned for injection of hot drive fluid into said first potential passageway for fluid flow in said formation and the remaining injection wells linearly spaced apart from said first injection well and each other at least a distance equal to the distance between said production well and said first injection well, a source of hot drive fluid, conduit means connecting said source of hot drive fluid to said injection wells and valve means on said conduit means for selectively controlling flow of hot drive fluid to said injection wells.

4,120,358

SURFACTANT OIL RECOVERY METHOD FOR USE IN HIGH TEMPERATURE FORMATIONS CONTAINING WATER HAVING HIGH SALINITY AND HARDNESS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 643,965, Dec. 24, 1975, Pat. No. 4,016,932. This application Apr. 11, 1977, Ser. No. 786,165
The portion of the term of this patent subsequent to Apr. 12, 1994, has been disclaimed.
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—275 **7 Claims**

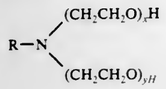
1. A method for recovering petroleum from a subterranean, permeable, petroleum-containing formation, which formation also contains water having a salinity from about 40,000 to about 140,000 parts per million total dissolved solids including from 3,000 to 12,000 parts per million polyvalent ions including calcium and magnesium, the temperature of said formation being from about 80° F. to about 180° F., said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication therewith, comprising

(a) injecting into the formation via the injection well, an aqueous saline surfactant-containing fluid to displace pe-

troleum through the formation toward the production well, said surfactant-containing fluid comprising:

(1) at least one primary anionic surfactant selected from the group consisting of petroleum sulfonate, alkyl sulfonates having from 8 to 25 carbon atoms, alkylaryl sulfonates having from 5 to 20 carbon atoms in the alkyl chain, and mixtures thereof;

(2) a dipolyethoxylated alkyl or alkylaryl amine nonionic surfactant having the following structure



wherein R is an alkyl radical having from 6 to 25 carbon atoms, or an alkylaryl group having from 6 to 25 carbon atoms in the alkyl chain; and

x and y are 1 to 12 and the sum of x and y is from 2 to 24, the total number of ethoxy groups per molecule of the nonionic surfactant being chosen so that the cloud point of the nonionic surfactant at the salinity of the formation water is from 20° F. to 80° F. greater than the temperature of the formation, the concentration of each of said anionic surfactant and said nonionic surfactant in the aqueous fluid being in the range from about 0.05 percent to about 5 percent by weight

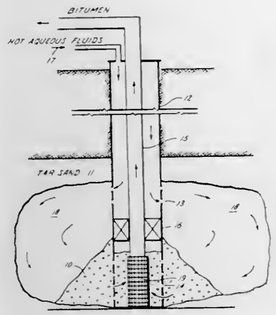
(b) recovering petroleum displaced by the surfactant containing fluid from the formation via the producing well.

4,120,359

METHOD FOR FORMING A NON-DISSOLUBLE SAND CONTROL PACK AND A SAND CONTROL PACK MADE THEREBY

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Mar. 11, 1977, Ser. No. 776,679
Int. Cl.[2] E21B *43/04*
U.S. Cl. 166—278 **10 Claims**



1. A method for forming a pack of solid particulate material for resisting the deteriorating and dissolving effect of continuous hot steam flooding in a well bore for penetrating a petroliferous formation comprises,

(a) selecting a granular material that is resistant to solubility at the temperatures of hot steam of silicon carbide,

(b) mixing a slurry of the granular silicon carbide material, and

(c) injecting the slurry of insoluble unconsolidated granular silicon carbide material into the well bore opposite the permeable formation to create a permeable pack of particulate material against the formation face thereby minimizing migration of sand and other formation particles into the well bore from the formation and particularly for resisting continuous high heat exposure, as from the steam flooding.

4,120,360

TREATING WELLS TO MITIGATE FLOW-AFTER-CEMENTING

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 16, 1977, Ser. No. 796,912
Int. Cl.[2] E21B *33/14*
U.S. Cl. 166—293 **6 Claims**

1. A method of cementing a well that penetrates the earth, comprising the steps of:

blending a low-density calcined shale cement with attapulgite in an amount no greater than about 2 weight percent based on cement and water in an amount to form a thixotropic cement slurry having a density within the range of 11.5 lb/gal to 13.5 lb/gal and having essentially zero water separation;

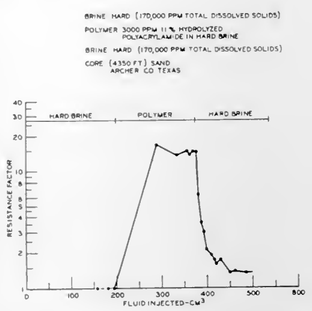
injecting said slurry down said well; and maintaining said slurry in said well to allow said slurry to set.

4,120,361

METHOD FOR REDUCING THE PERMEABILITY OF SUBTERRANEAN FORMATIONS TO BRINES

Curtis B. Threlkeld; James E. Hessert, and Richard L. Clampitt, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 462,325, Apr. 19, 1974, Pat. No. 3,949,811, which is a continuation-in-part of Ser. No. 353,452, Apr. 23, 1973, abandoned, and Ser. No. 359,722, May 14, 1973, abandoned, said Ser. No. 353,452, Continuation-in-part of Ser. No. 193,338, said Ser. No. 359,722, Continuation-in-part of Ser. No. 184,784. This application Sep. 11, 1975, Ser. No. 612,514
Int. Cl.[2] E21B *33/138, 43/22, 43/25*
U.S. Cl. 166—294 **7 Claims**



1. In the method of treating a subsurface oil and water-producing interval of a formation located adjacent to a well bore to decrease the volume ratio of water to oil produced therefrom wherein an aqueous solution of a partially hydrolyzed polyacrylamide, said solution being substantially free of a crosslinking agent for said polyacrylamide, is injected into the producing formation and then producing fluids from said formation, the improvement which comprises:

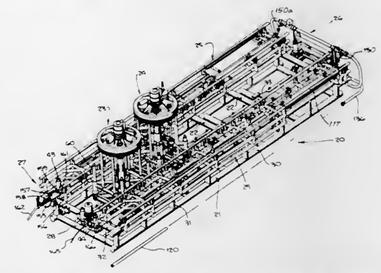
crosslinking the polymer after it is introduced into the formation and prior to producing fluids from the treated formation by contacting said polymer with an aqueous solution containing a water soluble salt of a di or trivalent metal cation or an organic crosslinking agent.

4,120,362

SUBSEA STATION

Georges M. Chateau, Pau, France, and Chester B. Falkner, Jr., Huntington Beach, Calif., assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Nov. 22, 1976, Ser. No. 743,586
Int. Cl.[2] E21B *33/035*
U.S. Cl. 166—339 **16 Claims**



1. A subsea installation for assembly and use in virtually any depth of water by vertical installation of subsea components comprising, in combination:

an elongated rectangular rigid base frame means adapted to be permanently placed on a sea floor and having top and bottom parallel side members,

said base frame means including transverse members providing a plurality of framed receptor openings with said side members,

a conductor pipe centrally located in each opening,

support members for said conductor pipe connected to said side and transverse members;

a base guide unit receivable in one of said receptor openings, coaxially aligned with said conductor pipe, and removably secured to said support members;

a removable, unitary module assembly vertically cooperable with said base guide unit for aligning and registering said module assembly with said one receptor opening in said base frame means;

said module assembly having well operable means adapted for connection to well components by relative vertical movement;

said side members and said transverse members at ends of said base frame means having vertically disposed guide means for connection by relative vertical movement to well operating components;

and control means supported from said base frame means for said module assembly and releasably interconnected with said module assembly.

4,120,363

ROOT-CROP HARVESTER

Arnold E. Ernst, Wolverton, Minn. 56594, assignor to Arnold E. Ernst, Wolverton, Minn.

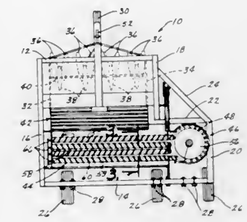
Filed Nov. 26, 1976, Ser. No. 744,967
Int. Cl.[2] A01D *19/02*
U.S. Cl. 171—58 **3 Claims**

1. A root crop harvester including a main frame having transversely extending front and rear frame members; wheel means secured to and supporting the rear of the main frame; hitch means secured to a forward portion of the main frame and adapted to be connected to a propelling tractor for at least partially supporting the front of the main frame; root digging means secured to and depending from the front frame member; first conveyor means supported from the main frame behind the root digging means for receiving roots therefrom and moving the same upwardly and rearwardly; second conveyor means including a plurality of transversely extending elongated rollers rotatably mounted on the frame in parallel relation for receiving roots from the first conveyor means and moving the same laterally; a vertical auger conveyor mounted on the frame and including a rotatable auger disposed at one end of the second conveyor means for receiving roots therefrom and elevating the roots for discharge purposes, and drive means for the first conveyor means, second conveyor means, and vertical auger conveyor said drive means being supported on the main frame and including a main drive shaft extending generally forwardly along the hitch means for connection with the tractor; wherein the improvement comprises:

first resiliently yieldable mounting means attached to the main frame and supporting the forwardmost roller at the vertical auger conveyor end, said first mounting means disposed forward of said forwardmost roller toward the hitch means, wherein said first resiliently yieldable mounting means includes:

a hollow cylinder attached intermediate the ends thereof to said frame and disposed forward to said forwardmost roller;

an end member attached at one end to the forwardmost end of said cylinder and having an opening in the opposite end thereof;



a yoke rotatably attached to said forwardmost roller;

a rod attached at one end to said yoke and adapted to slideably engage the interior of said hollow cylinder;

a threaded shaft attached at one end to the opposite end of said rod and having the opposite end thereof extending through the opening in said end member;

a coil tension spring surrounding said threaded shaft and disposed such that one end is in contact with said opposite end of said rod;

a sleeve member surrounding said threaded shaft and disposed such that one end contacts said end member and the opposite end thereof contacts the opposite end of said spring; and

a nut threadably engaging said opposite end of said threaded shaft extending exterior of said end member; and

second resiliently yieldable mounting means attached to the main frame and supporting the rearwardmost rollers at the vertical auger conveyor end, said second mounting means disposed rearward of said rearwardmost roller away from the hitch means.

4,120,364

AUTOMATIC CONTROL DEVICE FOR TRACTOR MOUNTED TOOLS

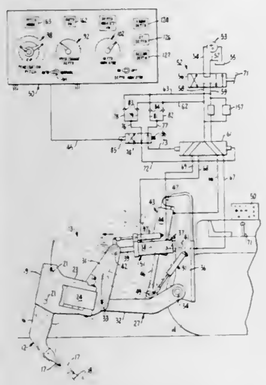
Darrel M. Wooldridge, Oakland, Calif., assignor to American Tractor Equipment Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 570,034. This application Mar. 3, 1977, Ser. No. 773,954
Int. Cl.[2] A01B *63/111*
U.S. Cl. 172—2 **8 Claims**

1. An improvement in a tractor mounted tool having a power operated tool positioning mount and a control circuit therefor which includes a depth control circuit having depth sensor means for detecting vertical displacement of the tool and generating an output signal in proportional relationship with the instantaneous position of the tool, a depth selector means connected in the depth control circuit with the depth sensor means and having means for displaying a preselected

position setting of the tool and generating an output signal in proportional relationship with the preselected position, a pitch control circuit connected in the control circuit with the depth selector means, the pitch control circuit including a pitch sensor means for detecting angular displacement of the tool and generating an output signal in proportional relationship with the angular position of the tool, and a pitch selector means connected with the pitch sensor means, and control means connected in the circuit, the improvement comprising:

the depth and pitch control circuits each being connected together and each including a bridge connected voltage divider with the sensor and selector means of each circuit being a part of the bridge connected voltage divider associated with said each circuit; and



the control means including null means connecting said sensor and selector means in each of said depth and pitch control circuits forming a null detector between each of said voltage dividers, a depth relay connected to a depth null means and a pitch relay connected to a pitch null means, said depth relay being de-energized when the potential difference between the depth sensor and the depth selector is below a triggering voltage of said depth null means, said control means of said depth and pitch control circuits each generating a control output signal when the sensor means output signal correspondingly compares with the selector means output signal thereby denoting that the power operated tool is at a preselected position, said pitch circuit control means being connected with said depth circuit and initiating a change in pitch of the tool when the tool is detected at a preselected depth.

4,120,365

TRACK ELIMINATOR APPARATUS

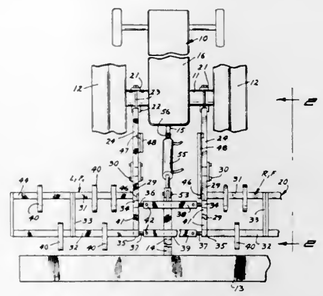
Leo A. Kuhn, 225 Clark Ave., Harvey, N. Dak. 58341

Filed Apr. 28, 1977, Ser. No. 791,796

Int. Cl.² A01B *63/102*

U.S. Cl. 172—488 **6 Claims**

4. In combination with a tractor having a rear axle, transversely opposite rear wheels and hitch mechanism between the rear wheels, track eliminator apparatus comprising a first and second longitudinally extending bottom frame member that is parallel to the other, each longitudinal bottom frame member having a first end and a second end, for each bottom longitudinal frame member at least one upright, each upright having a lower end joined to the respective longitudinal bottom frame member and an upper end at a substantially higher elevation than the bottom frame members, means extending transversely between the longitudinal bottom frame members only at about the elevation of the upper ends of the uprights for connecting each upright on one bottom longitudinal frame member to the other to through the uprights retain the longtiudinal bottom frame members substantially transversely spaced from one another, first draw bar means pivotally mounted on the tractor for connecting the first frame member to the tractor, second draw bar means pivotally mounted on the tractor in substantial transverse spaced relationship to the first draw means for connecting the second frame member to the tractor, a first plurality of earth breaking tools, a second plurality of earth breaking tools, first transversely extending frame means for mounting the first plurality of tools rearwardly of one of the rear wheels, second transversely extending frame means for mounting the second plurality of tools rearwardly of the other of the rear wheels, said first frame means being joined to the first frame member to extend transversely outwardly thereof in



a direction away from the second frame member, the second frame means being joined to the second frame member to extend transversely outwardly thereof in a direction away from the first frame member, and a piston cylinder combination pivotally mounted on the tractor transversely between the first and second draw bar means and pivotally connected to the means connecting the uprights for moving the last mentioned means between a tool ground breaking position and a tool elevated ground travel position, and a grain drill having a grain box longitudinally on the opposite side of the ground engaging tools from the tractor and a tow bar extending beneath the means connecting the uprights and connected to the tractor.

4,120,366

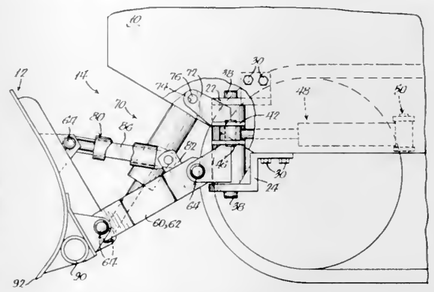
MOUNTING ARRANGEMENT FOR DOZER BLADE

Roland N. Nissen, Wichita, and James S. Flippin, Clearwater, both of Kans., assignors to J. I. Case Company, Racine, Wis.

Filed Aug. 31, 1977, Ser. No. 829,221

Int. Cl.² E02F *3/76*

U.S. Cl. 172—805 **6 Claims**



1. In a vehicle having a dozer blade supported thereon, a mounting arrangement for attaching said dozer blade to said vehicle comprising mounting means defining a vertical pivot axis on said vehicle, a bracket structure pivoted on said vertical pivot axis, a single angle fluid ram connected to said vehicle and said bracket structure for pivoting said bracket structure about said vertical pivot axis, a pair of arms each having one end connected by a universal connection to said bracket structure at horizontally spaced locations, said arms having opposite ends connected by universal connections at horizontally spaced locations on said dozer blade, rigidifying means between said bracket structure and said blade preventing transverse movement therebetween, a single lift fluid ram having one end pivoted on said bracket structure and an opposite end pivoted by a universal connection on said blade, a single tilt fluid ram having one end connected to one of said arms and an opposite end connected by a universal connection to said dozer blade, and a rigid link of fixed length having one end connected to the other of said arms and an opposite end connected by a universal connection to said dozer blade so that actuation of said angle fluid ram will pivot said bracket structure, arms and dozer blade as a unit about said vertical pivot axis, actuation of said lift fluid ram will pivot said arms and dozer blade as a unit about a horizontal pivot axis on said bracket structure, and actuation of said tilt fluid ram will change the angular orientation of a lower edge of said dozer blade with respect to a horizontal plane.

4,120,367

PNEUMATIC IMPACT GUN

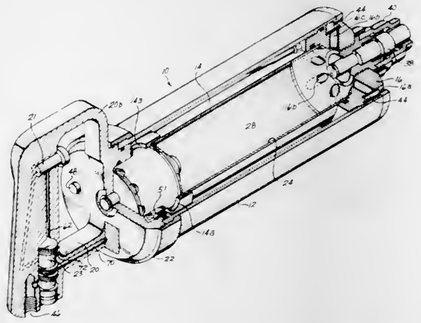
David Lee Wagner, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 699,772, is a continuation-in-part of Ser. No. 591,972, Jun. 30, 1975, abandoned. This application Jul. 8, 1977, Ser. No. 782,806

The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.

Int. Cl.² B21J *15/18*

U.S. Cl. 173—137 **3 Claims**



1. A pneumatic impact gun for upsetting one end of a rivet in a single impact comprising:

piston means slidably arranged in a cylinder for impacting an anvil disposed at the downstream end of said cylinder;

means for admitting a manually adjustable flow of air into said cylinder to displace said piston means a predetermined distance downstream within said cylinder over a variable time;

means for storing an accumulated charge of compressed air arranged to communicate with said piston means; and,

means for passing compressed air from said storage means so that when said piston means has been displaced a predetermined distance by the flow of compressed air from said admitting means, said storing means dumps an accumulated charge of compressed air into contact with the upstream side of said piston means to displace said piston means rapidly downstream in said cylinder to thereupon impact said anvil, wherein said piston means comprises a thin-walled circular cylinder with a hemispherical dome at the downstream end, said dome carrying shoulders therein and a boss thereon, said boss impacting said anvil when said piston moves downstream.

4,120,368

SUPPLYING MOTIVE FLUID TO BELOW GROUND TOOL DRIVE FROM A PRESSURIZED BORE HOLE

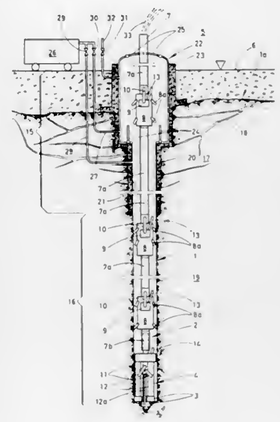
Sven Halvor Johansson, Saab Scania Aktiebolag, Linkoping, Sweden (S 581 88)

Filed Nov. 3, 1977, Ser. No. 848,219

Claims priority, application Sweden, Nov. 5, 1976, 7612371

Int. Cl.² E21B *1/08, 3/12*

U.S. Cl. 175—71 **9 Claims**



7. A method of deepening a substantially deep bore hole in the earth with the use of a drill driven by a pneumatic motor that has a pressure air inlet and an exhaust air outlet and a duct which extends upwardly through the bore hole from said motor, which method is characterized by:

A. communicating the interior of said duct with the atmosphere at the upper end of the duct;

B. sealing the upper end portion of the bore hole air tight all around said duct;

C. forcing air under pressure into the bore hole beneath the sealed upper end portion thereof, externally of said duct;

D. communicating the pressure air inlet of said motor with the bore hole externally of said duct;

E. directing exhaust air from the exhaust air outlet of said motor into the interior of said duct; and

F. communicating the interior of said duct with a localized zone in the bottom of the bore hole that is external to the duct to thereby enable drilling debris to be forced into the duct and up through it to the surface by pressurized air from the bore hole.

4,120,369

METHOD FOR DRILLING A WELL THROUGH UNCONSOLIDATED DOLOMITE FORMATIONS

Paul W. Fischer, Whittier; David S. Pye, Brea, and Julius P. Gallus, Anaheim, all of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Oct. 3, 1977, Ser. No. 838,895

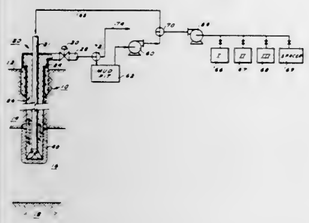
Int. Cl.² E21B *33/138*

U.S. Cl. 175—72 **18 Claims**

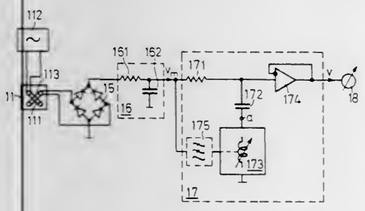
1. In a method for drilling a bore hole through a subterranean formation containing one or more zones of unconsolidated dolomite, the improvement which comprises the steps of:

(a) drilling a distance through said subterranean formation,

thereby exposing a newly drilled portion of said formation;
(b) interrupting said drilling;
(c) introducing into said bore hole a sequence of discrete reactant slugs of substantially oil-free solutions comprised of (I) an aqueous solution containing a water-soluble acid, a water-soluble surface active agent and a first water-soluble precipitating agent for silicates; (II) an aqueous solution containing a water-soluble silicate; and (III) an aqueous solution containing a second water-soluble precipitating agent for silicates;
(d) displacing each of said reactant slugs from said bore hole and into said newly drilled portion of said formation, wherein said reactant slugs become mixed;
(e) allowing said reactant slugs to react in said newly drilled portion of the formation, thereby forming a substantially impermeable, consolidated annular sheath about said bore hole; and
(f) resuming said drilling.

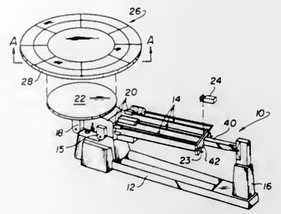


4,120,370
WEIGHING EQUIPMENT
Jorgen Bosson, and Gunnar Cragfors, both of Vesteras, Sweden, assignors to Asea Aktiebolag, Vasteras, Sweden
Filed Jun. 14, 1976, Ser. No. 695,386
Claims priority, application Sweden, Aug. 28, 1975, 7509541
Int. Cl.[2] G01G *23/10, 19/18*
U.S. Cl. 177—185 **10 Claims**



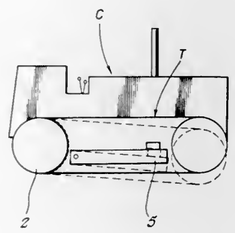
1. In a weighing equipment for weighing a load, comprising: means for supporting the load, said load and supporting means being capable of mechanical oscillations with a load dependent natural frequency, a transducer for producing a signal indicative of the weight of the load, a tunable band exclusion filter for filtering said signal and including an input connected to the transducer for receiving said signal and tuning means responsive to said signal for varying the tuning of the filter in accordance with the natural frequency of said mechanical oscillations.

4,120,371
LOAD HOLDER EXTENSION FOR BEAM BALANCE SCALES
Robert Allen Zohn, and Carole Zohn, both of Great Neck, N.Y., assignors to Correct Count Company Inc., Mineola, N.Y.
Filed Nov. 29, 1977, Ser. No. 855,717
Int. Cl.[2] G01G *21/22*
U.S. Cl. 177—262 **16 Claims**



1. An extension platform for a beam balance weighing scale comprising:
a generally planar upper surface;
a lower surface provided with a grid of reinforcing ribs thereon subdividing said lower surface into a plurality of compartments;
and a seating projection depending from said lower surface configured and dimensioned for seating about the peripheral edge of the weighing platform of a beam balance scale of predetermined size.

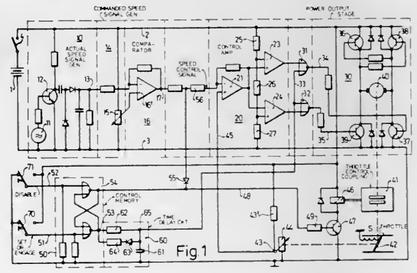
4,120,372
JOINTS
Siegfried Hartwich, Letter, Fed. Rep. of Germany, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Aug. 30, 1976, Ser. No. 719,035
Claims priority, application United Kingdom, Sep. 2, 1975, 36359/75
Int. Cl.[2] B62D *55/10*
U.S. Cl. 180—9.5 **3 Claims**



1. A crawler vehicle comprising a chassis, a sprocket mounted on said chassis and adapted to drive an endless track, said track being supported by a frame pivoted to said chassis adjacent said sprocket and connected at a spaced location to a transversly extending beam which is pivoted intermediate its ends to said chassis for pivotal movement about a longitudinal axis, said joint including a shaft connected to said frame, an axially movable journal on said shaft, said journal presenting a spherical outer surface to a complimentary race, a housing connected to said race extending in an axial direction beyond said journal, two pieces to said housing, fastening means by which said pieces are connected to each other and connected to said beam to form a cavity between said shaft and said housing, said pieces each having apertures therein for passage

of said shaft therethrough which are larger than the periphery of said shaft, and sealing means located in said housing and abutting said shaft and said housing to close the apertures in said pieces to form a joint which permits relative movement in a longitudinal direction while inhibiting movement in a transverse direction.

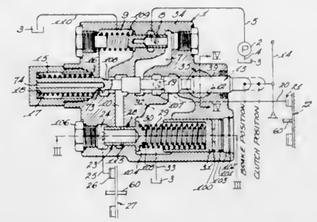
4,120,373
VEHICLE SPEED CONTROL SYSTEM WITH DUAL INTERRUPT SAFETY CIRCUIT
Helmut Fleischer, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 22, 1977, Ser. No. 770,585
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609843
Int. Cl.[2] B60K *31/00*
U.S. Cl. 180—105 E **12 Claims**



1. Vehicle speed control system to control a fuel supply element (42) of an internal combustion (IC) engine driving the motor vehicle comprising
means (10) providing an actual speed signal;
means (14) providing a command speed signal;
comparator means (16) connected to said actual and said command speed signal providing means and providing a speed error signal;
an automatically controllable positioning element (40) controlling the position of the fuel supply element (42) of the engine;
a control stage (20) and a power stage (30) connected to and controlled by the comparator means (16) and providing output energization for automatic control of the positioning element (40);
a selectively engageable coupling (41) interposed between the positioning element (40) and the fuel supply element (42);
electromagnetic control means (46) controlling, in response to an "engage" and a "disable" signal, respectively, selective engagement and disengagement of the coupling (41) to thereby engage or disable control of the fuel supply element position as a function of speed error signals, and
means (50, 55, 56) applying the "disable" signal as an overriding speed control signal to the automatically controllable positioning element to command operation of the positioning element (40) in a direction to move the fuel supply element to idle speed fuel supply position.

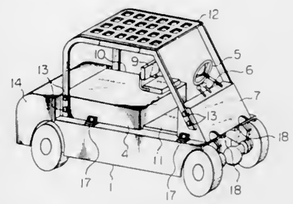
4,120,374
SAFETY START SWITCH AND POWER TAKEOFF CONTROL VALVE ARRANGEMENT
Charles P. Heisig, Cudahy, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed May 4, 1977, Ser. No. 793,606
Int. Cl.[2] B60J *23/00;* **B60K** *28/00*
U.S. Cl. 180—53 R **10 Claims**

1. A safety device for use on a motor vehicle comprising, a starting circuit including, a safety start switch in said starting circuit for disabling said starting circuit when said safety start switch is open, a plunger for operating said safety start switch, resilient means normally biasing said safety switch to an open position, a drive shaft, a power takeoff drive line including a power takeoff shaft, a hydraulic clutch coupling said drive shaft with said power takeoff shaft through said drive line, a hydraulic circuit including a control valve for controlling operation of said hydraulic clutch, insulating mounting means supporting said safety start switch on said control valve, a



longitudinally movable valve spool in said control valve defining a clutch engaging position for selectively engaging said clutch and a clutch disengaging position for disengaging said clutch, means on said valve spool engaging said plunger of said safety start switch for permitting opening said safety start switch when said valve spool is in the clutch engaging position and closing said safety start switch when said valve spool is in the clutch disengaging position.

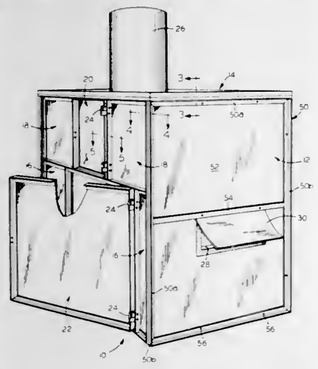
4,120,375
TILTABLE CAB CONSTRUCTION FOR AN INDUSTRIAL VEHICLE
Akibumi Shinoda, Handa, and Noriyoshi Kido, Toyota, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Japan
Filed Apr. 6, 1977, Ser. No. 785,124
Claims priority, application Japan, Apr. 15, 1976, 51/47855[U]; Jul. 30, 1976, 51/102413[U]
Int. Cl.[2] B62D *33/06*
U.S. Cl. 180—89.14 **4 Claims**



1. An industrial vehicle comprising:
first and second parallel side frame members;
at least one cross-member interconnecting said frame members;
vehicle operating and drive apparatus disposed between said frame members;
a cab including an engine hood, a toe board, a front protector, vehicle driving and operating means and a driver's seat, said cab being supported by and disposed atop said frame members and extending therebetween, one side of said cab being pivotally mounted by hinge means to one of said frame members, the other side of said cab being detachably secured to the other frame member;
said cab having two longitudinal reinforcing members affixed thereto beneath said hood and toe board and disposed between and parallel to said side frame members,

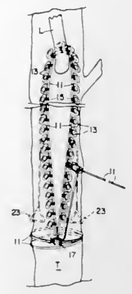
each of said reinforcing members being near a corresponding said frame members, with a small space therebetween;
said cab being spaced from said one frame member by said hinge means;
a resilient mat disposed on the other frame member for supporting said cab;
whereby the spaces between (i) said reinforcing members and said frame members and (ii) said cab and said frame members comprise labyrinths for attenuating noise generated by said apparatus.

4,120,376
NOISE CONTROL ENCLOSURE
Charles E. Palmer, Turnpike Rd., Somers, Conn. 06071
Filed Nov. 8, 1976, Ser. No. 739,485
Int. Cl.[2] E04B *1/82*
U.S. Cl. 181—204 **19 Claims**



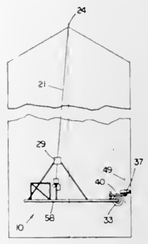
1. A sound deadening enclosure comprising:
(a) a plurality of sound deadening panels disengageably assembled to each other to form said enclosure, said panels each having:
(1) a structural frame extending about the periphery thereof and comprised of oppositely disposed frame members secured to each other to provide said frame and an opening therein;
(2) each of said frame members of a panel having a mounting surface extending inwardly of the periphery of said frame;
(3) a sheet of sound deadening material extending across and closing said opening and overlying said mounting surfaces of said frame members of each structural frame;
(4) means securing the overlying portions of each of said sheets to the mounting surfaces it overlies, each of said sheets of sound deadening material being disposed so as to cover its associated structural frame whereby said structural frame is completely shielded by said sound deadening material from the interior of said enclosure; and
(b) fastening means disengageably connecting abutting frame members of adjacent panels to each other with a portion of said sound deadening sheet of said panels interposed between at least some abutting frame members to provide an acoustical seal therebetween.

4,120,377
TREE-CLIMBING KIT
Edward David Charles, and Edward H. Charles, both of Rte. 2, Box 251, Creal Springs, Ill. 62922
Filed Jun. 22, 1977, Ser. No. 809,063
Int. Cl.[2] A63B *27/00*; E06C *5/36*
U.S. Cl. 182—3 **11 Claims**



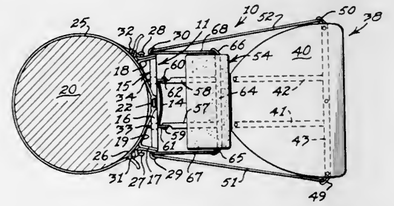
1. A tree-climbing device comprising: an elongated slender flexible element of a length exceeding twice the anticipated climb limit and of a tensile strength exceeding the expected maximum weight of a climber; a plurality of hook-receiving loops attached to said element at climbing-step-spaced intervals along a medial portion of said element; a pair of climbing members of roughly average-adult-human-body length, each having a stirrup at its lower end and a loop-engaging hook at its upper end; and means for firmly fastening the end portions of said element low on the trunk of said tree after said element has been draped over the base of a limb, said last-mentioned means comprising a first hook-ended rigid element fixed to one end of said flexible element and a second hook-ended rigid element attachable to one of said loops, both of said elements being adapted to receive loop-free end portions of said flexible element in fastening it to said tree trunk.

4,120,378
MOVABLE WORK SUPPORT FOR CYLINDRICAL STRUCTURES
Ernest E. Mills; E. Bennett Mills, and Stanley L. Mills, all of R.R. 1, Straughn, Ind. 47387
Filed Mar. 7, 1977, Ser. No. 774,772
Int. Cl.[2] E04G *3/10*
U.S. Cl. 182—14 **18 Claims**



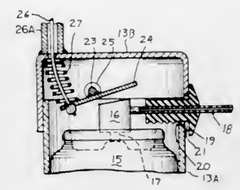
1. A movable work support, particularly adapted for use within a silo or similar structure having a cylindrical side wall and a top, which comprises:
a frame having first and second ends, said frame including a work support surface at the first end;
attachment means for securing a load including said frame to about the center of the top of a cylindrical structure, said attachment means including an elongated member having a first end portion connectable at a first location at about the center of the top of the structure and a second end portion connected to said frame, the load secured by the elongated member having a center of gravity;
vertical movement means for moving said frame vertically with respect to the cylindrical structure;
horizontal movement means for moving said frame in a horizontal plane relative the cylindrical structure;
bearing means connected with said frame at the second end of said frame for bearing against the side wall of the cylindrical structure at a second location, the distance between the work support surface of said frame and the second location being greater than half the interior diameter of the cylindrical structure to position the work support surface adjacent a part of the side wall opposite the second location; and
locating means for causing the distance between the center of gravity of the load and the second location to be greater than the perpendicular distance from the second location to a vertical line extending through the first location at about the center of the top of the cylindrical structure.

4,120,379
TREE STAND AND SEAT
Samuel E. Carter, Rte. 4, Box 263, Leitchfield, Ky. 42754
Filed Aug. 22, 1977, Ser. No. 826,518
Int. Cl.[2] A47C *9/10*
U.S. Cl. 182—187 **4 Claims**



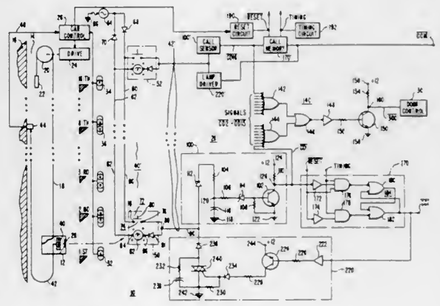
1. A combination tree stand and seat structure comprising:
(a) a normally upright frame member having opposite sides, top and bottom end portions, and a normally vertical axis,
(b) first and second flexible linear suspension members having respectively first and second ends,
(c) means fixing said first ends to the top end portion of said frame member,
(d) a first pair of connectors fixed to the top end portion of said frame member,
(e) a pair of second connectors, each second connector being fixed to an opposite side of the bottom end portion of said frame member,
(f) the second ends of said linear suspension members being adapted to be detachably connected to said first connectors or to said second connectors,
(g) a platform member having front and rear portions,
(h) lower hinge means on the bottom end portion of said frame member connected to the rear end portion of said platform member to support said platform member for swinging movement about an axis transverse to said vertical axis,
(i) first support means on said frame member connected to said platform member to limit the downward swinging movement of said platform member to an operative planar position substantially normal to said vertical axis,
(j) a seat member having front and rear portions,
(k) upper hinge means on said frame member above said lower hinge means connected to the rear end portion of said seat member to support said seat member for swinging movement about an axis transverse to said vertical axis, and
(l) second support means on said frame member connected to said seat member to limit the downward swinging movement of said seat member to an operative planar sitting position substantially normal to said vertical axis and spaced above said platform member a distance to permit a person to sit upon said seat member with his feet upon said platform member.

4,120,380
OILER FOR MOTORCYCLE DRIVE CHAINS
David R. Mann, 12 Weymouth St., Apt. 8, Portland, Me. 04101
Filed Jun. 20, 1977, Ser. No. 807,811
Int. Cl.[2] F16N *7/10*
U.S. Cl. 184—15 R **7 Claims**



1. An oiler attachable to a frame member of a motorcycle and for use in lubricating the motorcycle chain with an oil can, the can of the type having an outlet the discharge through which is effected by the operation of a plunger exposed at one end of the can, said oiler including a container for said can and having a port and attachable to the frame member adjacent a course of said chain, said container comprising an open-ended chamber dimensioned to slidably receive said can with the plunger exposed and a cap removably attached to said chamber and dimensioned to receive the plunger within it, a lever pivotally supported in said cap, means connected to and operable to move said lever between a first inoperative position and a second position in which the lever moves the plunger to effect the discharge of oil, said means including a spring yieldably maintaining said lever in said first position and operator controlled means to effect the second lever position, and an oil delivery conduit connected to the outlet of the can and extending through the port of the container and disposed to deliver oil, when the plunger is activated, to said chain course.

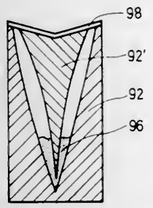
4,120,381
ELEVATOR SYSTEM
Paul R. Otto, Marlboro, and William N. C. Leang, Randolph Township, Morris County, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 24, 1977, Ser. No. 771,610
Int. Cl.[2] B66B *1/46*
U.S. Cl. 187—29 R **7 Claims**



1. An elevator system, comprising:
a building having a plurality of floors,

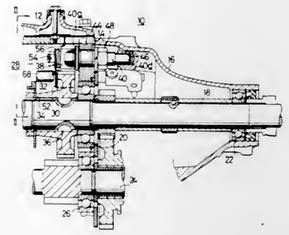
an elevator car mounted in said building,
motive means for said elevator car for moving said elevator car to serve the floors in said building,
call means for registering a call for elevator service including a plurality of pushbuttons and associated visual indicating means, and a single call wire for each pushbutton and its associated visual indicating means,
a source of alternating potential,
a first diode connected to said source of alternating potential providing half cycles of a first polarity,
a second diode connected to said source of alternating potential providing half cycles of a second polarity,
each of said pushbuttons and its associated visual indicating means having first ends connected in common to the associated single call wire, and second ends connected to said first and second diodes, respectively,
a plurality of sensor means, each of said sensor means being connected to a different call wire and being responsive to half cycles of the first polarity appearing on the call wire for providing a first signal while the associated pushbutton is actuated,
call memory means for each pushbutton switchable between first and second conditions, each of said call memory means switching from its first to its second condition in response to its associated sensor means providing a first signal, with said second condition indicating the registration of a call,
driver means for each visual indicating means responsive to an associated call memory means being in its second condition for energizing its associated visual indicating means from half cycles of the second polarity,
and reset means switching a selected call memory means back to its first condition when an associated registered call has been answered,
each of said sensor means providing a first signal each time its associated pushbutton is actuated to provide half cycles of the first polarity on the associated call wire notwithstanding half cycles of the second polarity on the call wire when said pushbutton is actuated.

4,120,382
WIDE-BAND VIBRATION DAMPER
Oskar Eschorr, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany
Filed Sep. 10, 1976, Ser. No. 722,128
Int. Cl.[2] F16F 7/00; G10K 11/04
U.S. Cl. 188—1 B **3 Claims**



1. A wide-band vibration damper for reducing sound propagation in a solid body comprising first horn means having a recess therein, reverse horn means having a wide end and a narrow end, and a force transmission element, said reverse horn means being disposed in said recess of said first horn means, said reverse horn means being connected at its wide end to the first horn means by said force transmission element and damping material means connecting said reverse horn means at its narrow end to said first horn means.

4,120,383
PARKING BRAKE MECHANISM FOR MOTOR VEHICLE EQUIPPED WITH AUTOMATIC TRANSMISSION
Tamio Kawamoto, Sagamihara, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Apr. 4, 1977, Ser. No. 784,613
Claims priority, application Japan, Apr. 5, 1976, 51-37068
Int. Cl.[2] B60T 1/00
U.S. Cl. 188—31 **6 Claims**

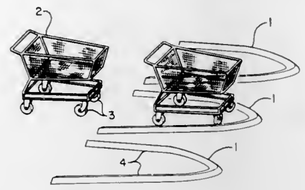


1. A parking brake mechanism for a motor vehicle transmission having a transmission output shaft on which a parking gear is securely mounted, comprising:
a brake pawl mounted for rotation about a first axis and carrying a tooth engageable with said parking gear;
first biasing means arranged to bias said brake pawl in a direction to be disengaged from said parking gear;
a cam plate connected to said brake pawl for rotation therewith about said first axis and for rotation relative to said brake pawl about a second axis;
a manually operable control rod having a raised portion with a wedge surface, said wedge surface being engageable with said cam plate upon relative axial displacement of said control rod in a direction toward said cam plate, to urge rotation of said brake pawl about said first axis into engagement with said parking gear; and
second biasing means arranged to bias said cam plate to rotate about said second axis in a first direction toward said wedge surface, to urge engagement of said cam plate with said wedge surface;
said wedge surface of said control rod including first and second inclined sections which are engageable with said cam plate to produce the rotation of said cam plate about said second axis in a direction opposite to said first direction against the bias of said second biasing means, and the rotation of said cam plate and said brake pawl about said first axis in a direction urging said brake pawl into engagement with said parking gear, respectively, the inclination angle of said first inclined section with respect to the axis of said rod being larger than that of said second inclined section;
said brake pawl having a surface to which said cam plate is attached in a manner that the cam plate is rotatable about said second axis along a plane containing said surface of said brake pawl, said surface being inclined with respect to said first axis so as to face toward said wedge surface of said control rod.

4,120,384
SHOPPING CART BRAKING APPARATUS
Kim L. Choy, 735 28th Ave., San Mateo, Calif. 94403
Filed Sep. 12, 1977, Ser. No. 832,347
Int. Cl.[2] B60T 3/00
U.S. Cl. 188—32 **11 Claims**

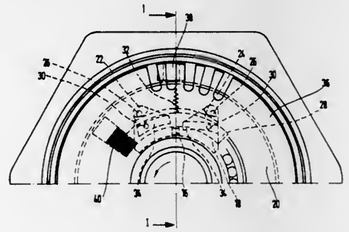
8. A shopping cart braking system comprising:
a. a shopping cart having swivel wheels;

b. sloped surface members adapted for receiving said wheels; and



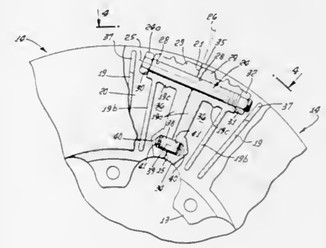
c. slanted sides of said wheels having an angular incident less than the slope of said surface members.

4,120,385
LOCKING DEVICE FOR A MECHANICAL ANTISKID REGULATOR
Willibald Roider, Munich, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany
Filed Jun. 17, 1977, Ser. No. 807,681
Int. Cl.[2] B60T 8/16
U.S. Cl. 188—181 R **6 Claims**



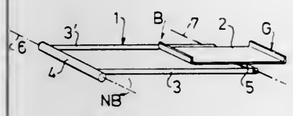
1. A locking device for a mechanical antiskid regulator for a brake system particularly on railway vehicles operated by a pressure medium comprising a flywheel mass coupled to an axle so as to be capable of independent movement with respect to the axle, a cam on said flywheel mass and having a central position, a cam disc coupled to rotate with a wheel of the axle and having a recess therein receiving said cam, a pair of spaced locking elements pivotally suspended on said cam disc on both sides of the central position of said cam, said locking elements each having a flange extending into said recess, a displaceable ring segment pivotally connected to said locking elements, and rotatably mounted stop means engageable with either side of said ring segment from either direction of rotation to displace said ring segment to pivot a said locking element such that a flange of the pivoted locking element is moved into the path of said cam to prevent said flywheel mass from deflecting in a direction as a function of the direction of rotation.

4,120,386
MULTIPLE PIECE BRAKING DISC ASSEMBLY
Franklin B. Airheart, Sylmar, Calif., assignor to Airheart Products, Inc., Chatsworth, Calif.
Filed May 6, 1977, Ser. No. 794,469
Int. Cl.[2] F16D 65/12
U.S. Cl. 188—218 XL **1 Claim**



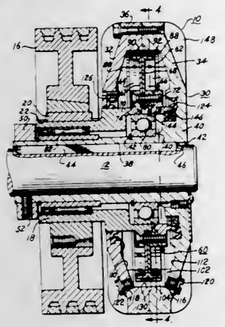
1. A braking disc assembly connectable to rotating structure, comprising
(a) multiple arc-shaped disc body sections having opposite faces for engagement with brake pads, said faces having radially spaced inner and outer edges,
(b) and retention means between said opposite faces for releasably retaining said sections in assembled relation to form an integrated disc with said faces maintained in two spaced parallel planes, said sections defining a first axis,
(c) said retention means including an elongated fastener extending between said sections defining a second axis extending parallel to said planes and in a direction generally perpendicular to a radius from said first axis,
(d) said retention means also including a guide pin extending between said sections and defining a third axis extending parallel to said planes and in direction generally perpendicular to said radius, said fastener and pin being spaced apart in the direction of said radius, the pin closer to the first axis than the fastener,
(e) said retention means including abutting ribs on the sections which are locally thickened and form first protruding bosses containing through bores receiving the fastener, said bores located proximate a circle defined by the radially outermost peripheries of the sections, said ribs also being locally thickened to form second bosses containing second bores receiving the guide pin, said second bosses located adjacent said face inner edges which are arcuate, said second bores being closed at the opposite ends of the pin and having equal diameters, whereby the pin is completely enclosed by the abutting ribs and second bosses, said second bosses projecting from said abutting ribs and in opposite directions parallel to said third axis,
(f) said sections including parallel plates defining said opposite faces and defining a space therebetween, and ribs integral with the plates, certain of said ribs extending radially outwardly of said first bosses, the second bosses protruding into open proximity to others of said ribs which project radially inwardly from opposite end portions of the first bosses,
(g) said abutting ribs being everywhere substantially thicker than said other ribs, the fastener being several times longer than the pin, and the overall width of each first boss at locations between the thickened rib and the other rib and in radial directions being about the same as the combined widths, in a direction parallel to said second axis, of said abutting ribs at locations between the first and second bosses, each of said thickened ribs merging with one of said first bosses and one of said second bosses,
(h) there being only one open space between each of said second bosses and one of said first bosses, said space having an open dimension substantially free of ribbing between one of said other ribs and one of said thickened ribs, said dimension being measured in a direction parallel to said second axis, and being everywhere greater than the width of either of said thickened ribs, those portions of said second bosses and of said other ribs closest to said bosses which are closest to said first axis being at substantially the same radial distance from said first axis.

4,120,387
FOOT-OPERATED DEVICE FOR CONTROLLING ENGINE POWER AND BRAKING EFFECT IN MOTOR VEHICLES
Sven Ivar Arne Otteblad, Partille; Hans Erik Osborn Brelen, Skövde; Per Folke Magnus Wistrand, Jönköping, and Svante Ragnar Samuelson, Goteborg, all of Sweden, assignors to AB Volvo, Göteborg, Sweden
Filed Apr. 11, 1977, Ser. No. 786,569
Claims priority, application Sweden, Apr. 9, 1976, 7604223
Int. Cl.[2] B60K *41/20*; G05G *1/14*
U.S. Cl. 192—3 S 9 Claims



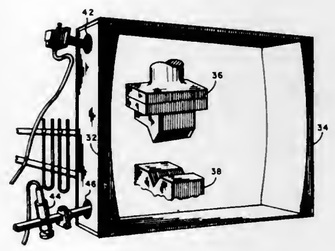
1. A foot-operated device for controlling engine power and braking effect in motor vehicles, characterized in that the device comprises a pedal (2) and a pedal holder (1), said pedal (2) being movably mounted on the pedal holder (1) for controlling the engine power (G) and normal braking (B) with the aid of mutually opposing pedal movements about/along an axis (7; 9; 13; 21; 24; 3) fixed in relation to the pedal holder (1), said pedal holder (1) being movably mounted in the vehicle and adapted to provide emergency braking (NB) on a relatively heavy depression of the pedal (2) in the direction of the lower part of the leg, with the help of the movement of the pedal holder (1).

4,120,388
DRY FLUID DRIVE AND ROTOR THEREFOR
Donald L. Nisley, Mishawaka, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.
Filed Nov. 4, 1976, Ser. No. 738,705
Int. Cl.[2] F16D *23/10*
U.S. Cl. 192—105 A 11 Claims



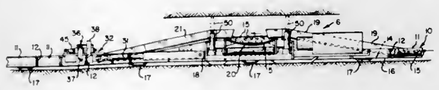
1. A dry fluid drive comprising a housing having a center axis about which said housing rotates, said housing having two spaced side walls and an annular peripheral portion therebetween defining a cavity in said housing concentric therewith, dry fluid in said cavity, and a rotor assembly disposed in said cavity and having a hub in alignment with the center axis of said housing and extending axially from the housing, said rotor having a radially extending portion and a lateally extending flange at the periphery of said radially extending portion spaced from said peripheral portion of said housing, circumferentially arranged irregularities on said flange for engagement with the dry fluid, said side walls, peripheral portion of said housing and said rotor flange forming a restricted area at the periphery of said rotor for containing a continuous mass of dry fluid when the drive is in operation.

4,120,389
PROXIMITY SENSOR
Clifford W. Erickson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 534,997, Dec. 20, 1974, abandoned. This application Sep. 7, 1976, Ser. No. 721,147
Int. Cl.[2] H04B *9/00*
U.S. Cl. 192—129 A 9 Claims



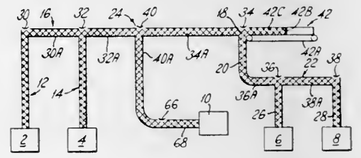
1. Apparatus for protecting a machine operator from a hazardous area of a machine, the apparatus comprising:
means for generating a spatial distribution of resonant energy interposed between the operator and the hazardous area wherein the means for generating a spatial distribution of resonant energy comprises,
beam resonant cavity means wherein the resonant beam cavity means comprises concave curved surfaces facing one another and separated from one another along an axis, and
energy source means for introducing energy into the beam resonant cavity means, the energy being resonant in a mathematically describable spatial distribution wherein the energy source means introduces energy into the resonant cavity means at a position not on the axis;
detector means for sensing energy within the spatial distribution; and
control means for controlling the machine in response to the detector means.

4,120,390
CROSSOVER DUMP AND CONVEYOR ADVANCER
Warren G. Montgomery, 2 Berwood Dr., Rte. 8, Morgantown, W. Va. 26505
Filed Jan. 3, 1977, Ser. No. 756,489
Int. Cl.[2] B65G *41/00*
U.S. Cl. 198—309 8 Claims



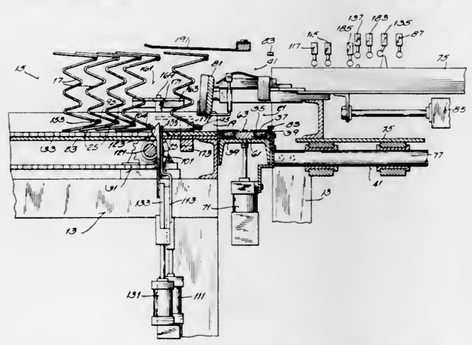
1. A conveyor system having a main conveyor means, a pan line supporting said main conveyor means, and a secondary conveyor means extending cross-wise to and above said main conveyor means and adapted to receive material carried by said main conveyor means, the improvement comprising having a crossover dump including a tunnel portion extending over a portion of said pan line and supporting a part of said secondary conveyor means where said pan line is movable through said tunnel with respect to said crossover dump and said secondary conveyor, an entry ramp extending from said pan line to a position above and to one side of said secondary conveyor means, a reentry ramp extending from a position above and to one side of said secondary conveyor to said pan line where said entry and reentry ramps support portions of said main conveyor means whereby material conveyed by said main conveyor means is conveyed up said entry ramp to fall onto said secondary conveyor means, and advance means associated with said crossover dump for engaging and moving said pan line in a series of successive incremental movements along its length with respect to said crossover dump.

4,120,391
CONVEYOR SYSTEMS FOR CIGARETTES AND OTHER ROD-LIKE ARTICLES
Desmond Walter Molins; Dennis Hinchcliffe, and Peter Alec Clarke, all of London, England, assignors to Molins Limited, England
Filed Oct. 23, 1973, Ser. No. 408,256
Claims priority, application United Kingdom, Oct. 27, 1972, 49787/72
Int. Cl.[2] B65G *43/08*
U.S. Cl. 198—347 55 Claims



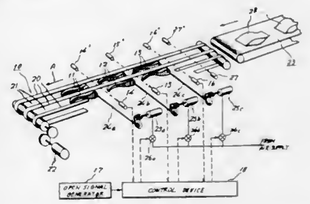
1. A conveyor system for conveying a stack of cigarettes or the like, comprising means defining a channel for the passage of a continuous stack of cigarettes, said channel having a wall formed partly by a conveyor having protrusions at regular intervals on its operative face which contacts the stack of cigarettes during use, and a pulley having a middle part around which the conveyor passes and two coaxial outer parts on opposite sides of the middle part and of a larger diameter than the middle part for guiding the cigarettes in the region of the pulley.

4,120,392
COIL SPRING FEEDING APPARATUS
Helmut Sturm, Kenosha, Wis., assignor to Frank L. Wells Company, Kenosha, Wis.
Continuation-in-part of Ser. No. 545,095, Jan. 29, 1975, Pat. No. 4,050,610. This application Feb. 14, 1977, Ser. No. 768,065
Int. Cl.[2] B65G *15/20*, *47/10*
U.S. Cl. 198—451 6 Claims



4. A coil spring feeding apparatus comprising a frame, a plurality of coil spring magazines arranged on said frame in parallel relation to each other and each having a discharge end, said magazines each being adapted to contain a plurality of coil springs, a conveyor assembly extending transversely of and adjacent to said discharge ends of said magazines for receiving coil springs from said magazines and for transporting the coil springs transversely of and away from said magazine ends, said conveyor including a pair of spaced, parallel endless belts each having a top surface, means for supporting said belts for travel transversely of said magazine ends, drive means for intermittently moving said belts transversely of said magazine ends, an elongated platform having an upper surface, means on said frame supporting said platform between said belts and for movement between a raised position with said platform upper surface generally coplanar with said belt top surfaces and a lower position with said platform upper surface beneath said belt top surfaces, and means for locating said platform in said lower position during belt movements and for locating said platform in said raised position between belt movements, and means for withdrawing the endmost coil springs from said magazines and for transferring the endmost coil springs onto said conveyor assembly between belt movements.

4,120,393
DEVICE OF CONTROLLING INTERVAL OF ARTICLES ON BELT CONVEYER
Akira Motooka, Kakogawa, and Takeshi Yoshida, Tatsuno, both of Japan, assignors to Yamato Scale Co., Japan
Filed Jan. 4, 1977, Ser. No. 781,055
Claims priority, application Japan, Jan. 5, 1976, 51-51340
Int. Cl.[2] B65G *47/29*
U.S. Cl. 198—460 1 Claim



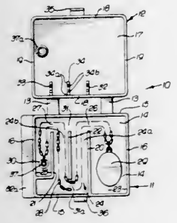
1. A device for controlling the interval of articles fed by a belt conveyer, comprising a belt conveyer including a plurality of conveying belts which are arranged in parallel with lateral gaps therebetween to form a common carrying surface, a plurality of gate devices arranged at intervals along the longitudinal direction under said belts, each of said gate devices including a fork member movably supported under said belts and a fork driving unit for driving said fork member to a position protruding upwardly from said gaps to block passage of said articles by lifting them from the carrying surface in the "CLOSED" state of said gate device and to a position beneath said belts to allow said passage in "OPEN" state thereof, a plurality of article detectors disposed respectively just before said gate devices for sensing said articles on said belts and producing a detection signal when the article is sensed, an opening signal generator for generating a series of opening signals at predetermined intervals, a gate control device for driving the endmost one of said gate devices into the "CLOSED" state in response to the detection signals of the article detector disposed respectively just before said endmost gate device and into "OPEN" state in response to said opening signal and driving the other gate devices into "CLOSED" state in response to the detection signals of the article detectors disposed respectively just before said other gate devices only when the gate immediately downstream is in "CLOSED" state, and an emergency detector disposed before the article detector of the first gate device for interrupting the motion of the belt conveyer when it senses an article and said first gate is in the "CLOSED" position.

4,120,394

CASE FOR CARRYING PENDANT AND CHAIN

Isaac B. Soltes, 1923 S. McPherrin Ave., Monterey Park, Calif. 91754

Filed Aug. 23, 1976, Ser. No. 716,961
Int. Cl.[2] B65D *1/36*
U.S. Cl. 206—45.34 **10 Claims**



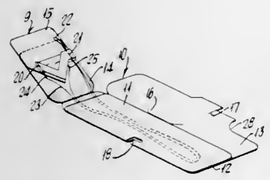
1. In combination with a pendant, chain and clasp, a device for storing same comprising
(a) a case including a receptacle and lid and having partitions to define a pendant chamber receiving the pendant, a chain chamber receiving the chain, and a clasp chamber receiving the clasp,
(b) a peg in the clasp chamber removably retaining the clasp, the peg having a free end off which the clasp may be removed,
(c) the chain extending in dual strand configuration generally cyclically between partitions, the chain chamber located between the clasp chamber and the pendant chamber and the partitions defining local slots sized to pass the chain between said chambers, whereby chain strand entanglement is prevented,
(d) the case including a lid removably assembled to the receptacle to close over the chambers for retaining the pendant, chain and clasp therein.

4,120,395

PACKAGE FOR DOUBLE-ARMED SUTURES

Harvey B. Mandel, North Brunswick, and Eberhard H. Thyen, Middlesex, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 2, 1977, Ser. No. 830,372
Int. Cl.[2] A61L *17/02*
U.S. Cl. 206—63.3 **21 Claims**



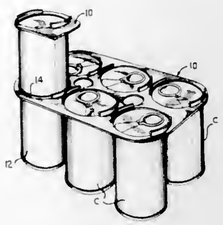
1. A folded package for a double-armed suture comprising
(a) a center panel, a first and second cover panel foldably attached to said center panel along two sides thereof, and a needle mounting panel foldably attached to said center panel along a third side thereof,
(b) needle mounting means on said needle mounting panel,
(c) suture loop retaining means on one of said panels, and
(d) a double-armed suture contained in said package having both needles secured in said needle mounting means and a suture loop substantially equidistant from each needle secured in said suture loop retaining means,
said first cover panel of said package being folded over said center panel with a major portion of said suture enclosed therebetween,
said needle mounting panel being folded over said first cover panel with said needles and needle mounting means enclosed therebetween, and
said second cover panel being folded over said needle mounting panel and first cover panel with said suture loop retaining means enclosed therebetween,
whereby when the second cover panel and needle mounting panel are unfolded from said center panel, said needles and said suture loop are readily accessible and said suture may be cut at said loop to obtain two single-armed sutures of substantially equal length before removing said suture from between said folded panels.

4,120,396

REUSABLE CAN CARRIER WITH CAN ENLOCKING MEANS ON OPPOSITE SURFACES

Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Aug. 16, 1977, Ser. No. 825,241
Int. Cl.[2] B65D *85/62, 75/00*
U.S. Cl. 206—151 **10 Claims**



1. A new article of manufacture comprising a reusable carrier for cans in the form of a sheet of plastics material having opposing surfaces, said sheet having a preselected number of can receiving means projecting from each of said surfaces, each can receiving means of one of said surfaces being in alignment with a corresponding can receiving means of the other of said surfaces, each can receiving means being in the form of a projecting flange cooperating with a portion of said sheet to define a socket for receiving a radial projection carried by an end portion of a can, said flange being interrupted by spaces to form circumferentially spaced arcuate segments, and the flange segments of each can retaining means of said one surface being out of phase with the flange segments of the corresponding can receiving means of said other surface.

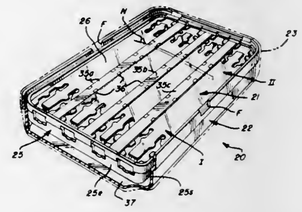
4,120,397

UNIT FOR ACCOMMODATING DISPOSABLE BLADELIKE ARTICLES

Arthur E. Neumann, Winnetka, Ill., assignor to Richard-Allan Medical Industries, Inc., Richland, Mich.

Filed Oct. 4, 1977, Ser. No. 839,387
Int. Cl.[2] B65D *25/00;* **B65F** *7/00;* **A61B** *19/02;* **A61F** *13/00*
U.S. Cl. 206—370 **15 Claims**

1. A disposable unit for used bladelike articles, each having a distortable trailing end portion, wherein said unit effects endwise removal of an article from the tang of a handle and permanently accommodates the removed article within the unit without physical contact between the used article and the person utilizing the unit, said unit comprising a receptacle provided with at least one interior elongated article-accommodating compartment accessible only through an entry formed in at least one end of the compartment, said entry having a configuration for permitting the tang and assembled article to be manually inserted endwise into the compartment through the entry and only the tang to be manually withdrawn endwise from the compartment through the entry subsequent to the article being removed therefrom, said entry including a first perimetric segment and a second perimetric segment in substantially opposed spaced relation with respect thereto; protruding cam means disposed within said compartment in the path of movement of the tang and assembled article and adjacent said second perimetric segment for engaging and distorting the trailing end portion of the article independently of the tang when the tang and assembled article are manually



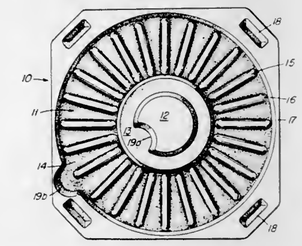
inserted endwise through the entry into the compartment, the distorted article trailing end portion abutting a fixed segment of a first compartment-forming wall and being automatically removed substantially endwise from the tang and permanently entrapped within said compartment when the tang is withdrawn from the compartment through the entry, said fixed first portion of the compartment-forming wall being adjacent to but offset from said cam means and coacting therewith to effect blockage of said entry with respect to the removed article accommodated within said compartment.

4,120,398

PACKAGING SUPPORT STRUCTURE

George Dayman Braddon, Sr., Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,956
Int. Cl.[2] B65D *65/671, 1/34, 21/02*
U.S. Cl. 206—408 **9 Claims**



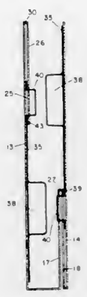
1. In an improved tray structure for the support of a reel of tape-like film material wound on flat annular hub, said hub having a large outside circumference on which the tape is wound and a relatively smaller inside circumference; said tray being characterized by having a bottom support wall having a raised center portion adapted to fit within said smaller inside circumference of said hub to restrict the lateral movement of said hub across said bottom wall; said bottom wall being further characterized by a first annular zone disposed around said raised center portion and of substantially the same inside and outside diameter of said annular hub, and a second annular zone concentric with said first annular zone and having a thickness profile which is relatively greater than that of said first zone, such that when a roll of said tape-like material is placed on said bottom wall, said first annular zone will support the hub and said second annular zone will support the tape wound on said hub; the improvement comprising;
means in said second annular zone for supporting a roll of the tape-like film material, which tape is substantially more narrow than the hub on which it is wound, comprising a plurality of elevated portions in said bottom wall distributed throughout said second annular zone, the top (portion) of said elevated portions providing a rest surface comprising a plane elevated above the surface of said first annular zone by an amount substantially equal to half the difference between the thickness of said annular hub and the width of said relatively narrow tape-like film material, which elevated rest surface separately supports said reel of said relatively narrow tape in a substantially flat configuration and aids in maintaining the physical integrity of said reel.

4,120,399

REFILLABLE TABLET PACKAGE

John W. Clarke, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 26, 1977, Ser. No. 836,285
Int. Cl.[2] B65D *85/56*
U.S. Cl. 206—474 **6 Claims**



1. A folder in combination with a removable strip of separable pharmaceutical unit doses, said folder comprising a unitary sheet of flexible material forming a cover panel connected to a back panel by a retainer panel, said retainer panel having an upper layer in folded connection with an edge of said cover panel and a lower layer in folded connection with said upper layer and an edge of said back panel, said lower layer overlying said back panel and said upper layer overlying said lower layer to form a pleated construction, said retainer panel having a plurality of spaced holes, said removable strip having a longitudinal stub area defined by a tear line separating said strip into two sections along a longitudinal axis, said stub area being positioned between said retainer and back panel and maintained therein by a plurality of raised projections on said stub area removably interlocked with said retainer panel spaced holes.

4,120,400

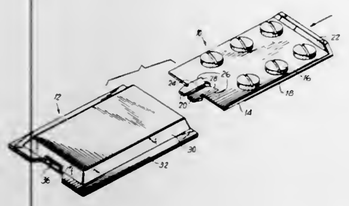
PILL PACKAGE

Bernard Kotyuk, Glendale, N.Y., assignor to Primary Design Group, Inc., New York, N.Y.

Filed Nov. 22, 1976, Ser. No. 743,822
Int. Cl.[2] B65D *85/56*
U.S. Cl. 206—528 **4 Claims**

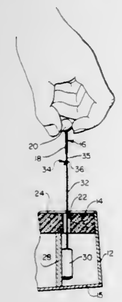
1. A child-proof tablet package for holding tablets comprising a shield member and a card member, said card member including means for receiving said tablets, said shield member having two ends, one end for receiving and removing said card member and the other end defining a lock receptacle opening, said card member further including a pair of locking tabs intergral with said card member and extending beyond one end

thereof, each of said tabs hinged to card member by scored lines and including a locking notch at its side edge, wherein



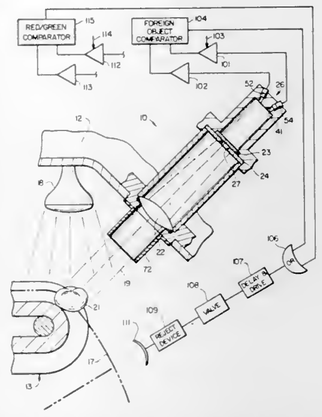
said locking notch engages said shield member at said opening for establishing a locked position with respect to said card member and said shield member.

4,120,401
FINGER RING DISPLAY
Thomas A. Newman, Cranston, R.I., assignor to McGrath-Hamin, Inc., Providence, R.I.
Filed Oct. 25, 1977, Ser. No. 845,414
Int. Cl.[2] B65D *1/34*
U.S. Cl. 206—566 **7 Claims**



1. A jewelry display for finger rings having enlarged ornamental portions and the like, comprising a frame for supporting a display member in turn having a generally planar display surface, said member having a plurality of relatively narrow slots formed entirely therethrough and opening on said display surface, said slots being large enough to permit the frictional receipt of the shank portion of said finger rings, but not large enough for said ornamental portion to pass therethrough, whereby such ornament is retained on said display surface of said display member, a plurality of finger rings disposed within said slots, automatically retractable tether means supported by said frame and positioned behind said slots, and means for connecting the shank portions of each said finger ring to its respective tether means such that each of said finger rings may be grasped and pulled away from said front surface for trial fitting and thereafter automatically retracted to a position adjacent said display surface, said connecting means being characterized in that engagement is made solely with the outer surface of said shank portion, thereby leaving the inner surface of said shank portion completely free and unencumbered.

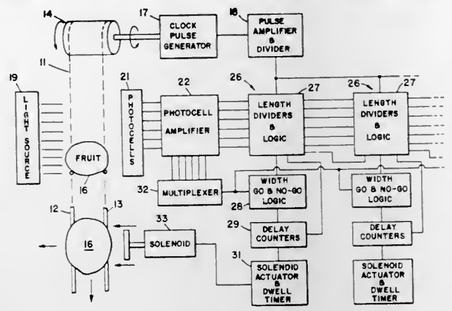
4,120,402
COLOR SORTER INCLUDING A FOREIGN OBJECT REJECT SYSTEM
Ronald E. Swanson, Sunnyvale, Calif., assignor to Acurex Corporation, Mountain View, Calif.
Filed Jun. 3, 1977, Ser. No. 803,125
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—75 **7 Claims**



1. A color sorter system for sorting produce and rejecting foreign objects comprising means for causing the produce and objects to be sorted and rejected to pass an inspection station, means at the inspection station for illuminating the produce and objects, means for receiving radiant energy reflected from the produce and objects and forming first and second produce sorting signals and first and second foreign object reject signals, said produce sorting signals being generated responsive to reflected energy at first and second wavelengths and said foreign object reject signals being generated responsive to energy at third and fourth wavelengths, means for comparing said first and second produce sorting signals and generating a produce reject signal when the signals have a predetermined relationship and means for comparing said third and fourth signals and generating a foreign object reject signal when said foreign reject signals have a predetermined relationship.

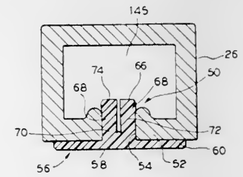
4,120,403
PHOTOELECTRIC APPARATUS FOR SORTING VARIEGATED ARTICLES ACCORDING TO SIZE
Stephen P. Stephanos, Oakland, Calif., assignor to George E. Lauer, Oakland, Calif.
Filed Jun. 28, 1976, Ser. No. 700,547
Int. Cl.[2] B07C *1/10*
U.S. Cl. 209—564 **11 Claims**

1. Apparatus for sorting objects according to size, comprising a plurality of photosensors arrayed in a column, a light source column disposed parallel to and opposite said photosensor column, conveyor means for transporting said objects between said columns, clock pulse generator means for generating pulses corresponding to a uniform incremental advance of said conveyor means, a plurality of sizing logic circuit means each receiving said clock pulses and the signals from said photosensors and for selecting those of said objects which fall within predetermined length and width criteria, a plurality of impulse devices for removing said selected objects off said conveyor means, said sizing logic circuit means including a plurality of sizing logic circuits, each of said circuits connected with one of said impulse devices, each sizing logic circuit including width counter means, said width counter means including means for selecting the signal of one of said photosensors and determining if said photosensor is interrupted by a passing object, a first multiplexer for selecting and passing the signal of one of said photosensors, and a minimum width counter actuated by said one photosensor signal passing



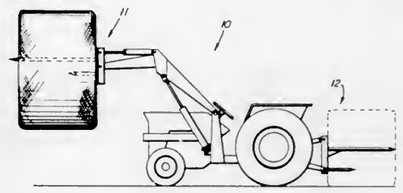
through said first multiplexer and connected to said clock pulse generator means for counting said pulses while said one photosensor is interrupted.

4,120,404
COUPLER SHANK BEARING ARRANGEMENT FOR SUPPORTING RAILROAD CAR COUPLERS ON COUPLER CARRIERS
Osvaldo F. Chierici, Elmhurst, and Richard F. Murphy, Aurora, both of Ill., assignors to Holland Company, Lombard, Ill.
Filed Sep. 30, 1977, Ser. No. 838,162
Int. Cl.[2] B61G *7/10*
U.S. Cl. 213—61 **11 Claims**



1. In a railroad car wheeled for riding on track rails and having a body including a center sill projecting from one end of the car and equipped with a coupler striker casting and a coupler mounted on the center sill for swinging movement sidewise of the car and movement longitudinally of the car in response to buff and draft forces acting on the coupler, said coupler including a shank extending through the casting for connection to the sill, with the shank being hollow and defining a lower wall on the underside of same, and a coupler carrier supported by the center sill and having a load support surface on which the coupler shank rests, a coupler shank bearing arrangement interposed between the coupler shank and the coupler carrier, said bearing arrangement comprising:
- a bearing structure comprising a body formed from an ultra high molecular weight polymer material of dry self lubricating characteristics,
- said body being shaped to define:
- a lower generally planar bearing plate portion riding on the coupler carrier and an upper mounting portion upstanding from said bearing plate portion of said body,
- said body mounting portion comprising:
- a rectilinear ridge structure defining a base section integral with said body bearing plate portion, and
- a head section projecting normally of and away from said body bearing plate portion and having a crest extending longitudinally of and substantially paralleling said ridge structure,
- said bearing plate portion engaging the coupler shank lower wall on one side of said bearing plate portion,
- said ridge structure between said crest and said base section of said body defining an apex portion extending along either side of said ridge structure adjacent said crest and projecting laterally of said ridge structure and at approximately equal levels above said bearing plate portion,
- said ridge structure defining a slot extending longitudinally thereof and opening at said crest for the full length of said ridge structure to divide said ridge structure into a plurality of parallel mounting walls extending longitudinally of said ridge structure,
- said slot extending through the depth of said ridge structure to approximately said base section thereof,
- said coupler shank lower wall being formed to define a slot extending longitudinally of said shank in which said body ridge structure is received,
- said coupler shank slot being dimensioned transversely of said coupler shank to substantially complement the transverse dimension of said ridge structure base portion,
- said ridge structure at the level of said apex portions having a dimension transversely of said ridge structure that is greater than said coupler shank slot transverse dimension,
- said ridge structure slot being dimensioned transversely of said ridge structure such that said walls are spaced from each other along said crest,
- said ridge structure apex portions being disposed within the coupler shank,
- said coupler shank along said slot thereof defining a lip on either side of said slot underlying the respective ridge structure apex portions, whereby said shank lips serve as stops opposing dislodgement of said ridge structure from said shank slot.

4,120,405
SPEAR-TYPE TRACTOR-ATTACHED HAY BALE PICKUP DEVICE
John B. Jones, College Grove, and Robert W. Upton, Pulaski, both of Tenn., assignors to Four Star, Inc., College Grove, Tenn.
Filed Sep. 5, 1975, Ser. No. 610,893
Int. Cl.[2] B65G *67/02*
U.S. Cl. 214—1 HH **5 Claims**



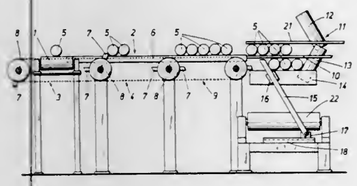
5. A bale handling device for use with a tractor for lifting large roll-type bales comprising: a frame means having one vertical and two horizontal members with the horizontal members securely attached at the top and bottom of said vertical member, securing means for securing said frame to said tractor consisting of two vertical securing bars each of which is slidably attached to each of the horizontal members with one of said securing bars on each side of said vertical member, with each of said securing bars having attachment means in the center thereof for attachment to said tractor, an elongated pointed spear rigidly secured to and projecting forwardly from said frame for insertion into the end of a round bale adjacent the center thereof when the bale is on the ground, a shorter pointed spear detachably secured to and projecting forwardly from said frame, said shorter spear being disposed below the elongated pointed spear and in parallel relation thereto for insertion into the end of a round bale below the center thereof.

4,120,406

APPARATUS FOR FORMING A STACK COMPOSED OF LAYERS OF ROUND-SECTION ELONGATED ITEMS

Herbert Durnig, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed May 13, 1977, Ser. No. 796,703
Claims priority, application Austria, May 24, 1976, 3790/76
Int. Cl.[2] B65G *57/22*
U.S. Cl. 214—6 N 7 Claims



1. Apparatus for forming a stack composed of layers of round-section elongated items, which comprises

layer-forming means for receiving said items and arranging them in a first plurality of layers in which the number of elongated items increases by one from each layer to the next, and in a succeeding plurality of layers in which the number of elongated items decreases by one from each layer to the next,

a stack support, which is adapted to be lowered from an uppermost elevation in increments equal to the height of one of said layers,

first lateral backing means comprising two sections, which are disposed one above the other and connected to said stack support to move in unison therewith,

second lateral backing means which are horizontally spaced from said first backing means and protrude above and below said stack support and are constrained to move relative thereto in such a manner that the extent of said second backing means above said stack support increases as said stack support is lowered,

said two sections of said first backing means, said stack support, and said second backing means defining four respective successive side faces of a regular hexagonal prism having a horizontal axis,

said apparatus further comprising a plurality of carrying arms which are closely spaced above said uppermost elevation and spaced above said second backing means and adapted to receive each of said layers from said layer-forming means and to support said layer and operable to move therewith to a position over a portion of said stack support which is disposed between said first and second backing means, and then to move out of said position beyond said first backing means in a direction which is parallel to said layer,

said first lateral backing means being arranged to engage each of said layers supported by said carrying arms as they are moved out of said position, so that said layer is held against moving with the carrying arms out of said position and is caused to be deposited on said stack support between said first and second backing means,

said first backing means being adapted to back all said layers thus deposited on said stack support,

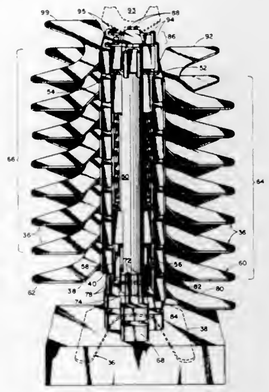
said second backing means being adapted to back said layers of said first plurality thereof which have thus been deposited on said stack support

4,120,407

SPACE-CONSERVATIVE APPARATUS WITH MECHANICAL MEMORY FOR HOLDING AND CATALOGING SHADOW MASKS

Leslie L. Baur, Glen Ellyn, and Thaddeus J. Hajduk, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 5, 1977, Ser. No. 813,048
Int. Cl.[2] B65G *57/30, 59/06*
U.S. Cl. 214—6 BA 2 Claims



1. For use in the manufacture of television picture tubes, and specifically for use with an n-station screening apparatus for screening picture tube faceplates, a space-conservative apparatus with mechanical memory for holding and cataloging shadow masks uniquely paired with said faceplates while said faceplates are being screened, said apparatus comprising:

a plurality of mask holders in the quantity $n+1$;

a support column supporting said mask holders and having a first means for ratcheting upward a stack of ascending mask holders and a second, gravity-assisted means for ratcheting downward a stack of descending mask holders;

an up and down reciprocating lower transfer turret supported on the lower end of said support column for removing downward one-at-a-time said mask holders from the bottom of said stack of descending mask holders, for rotating said mask holders to a first position wherein masks are placed upon and/or removed from said mask holders, for rotating said mask holders to a second position below said stack of ascending mask holders, and for bottom loading said mask holders upward one-at-a-time onto said bottom of said stack of ascending mask holders;

an upper transfer turret supported on the upper end of said support column for rotating said mask holders from the top of said stack of ascending mask holders to the top of said stack of descending mask holders;

whereby said mask holders follow a cycle of being bottom loaded onto said stack of ascending mask holders, ratcheted upwards, rotated to said stack of descending mask holders, ratcheted downward, removed downward from the bottom of said stack of descending mask holders, rotated to a predetermined load/unload position and rotated to the bottom of said stack of ascending mask holders;

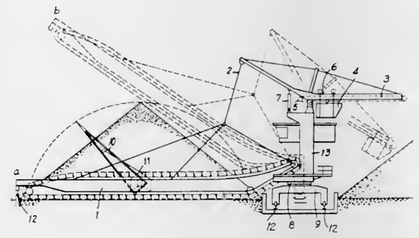
whereby said apparatus insures in a foolproof way that a one-to-one relationship is retained between said faceplates and said shadow masks when said faceplates are separated from said shadow masks and insure that excessive handling of and the possibility of damage to said shadow masks is prevented.

4,120,408

BRIDGE SCRAPER

Karl Gehring, St. Ingbert, and Kurt Kamm, St. Ingbert-Hassel, both of Fed. Rep. of Germany, assignors to Pohlig-Heckel-Bleichert Vereinigte Maschinen-Fabriken, Cologne, Fed. Rep. of Germany

Filed Jun. 7, 1977, Ser. No. 804,273
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627392
Int. Cl.[2] B65G *65/28*
U.S. Cl. 214—10 8 Claims



1. A bridge scraper for taking bulk material from at least one dump disposed between outer and inner tracks extending on opposite sides of said dump, said bridge scraper comprising

a main frame in wheeled engagement with and movable along said inner track,

a scraper bridge mounted on said main frame for vertical pivotal movement between a raised inoperative position and an operative position, in which said bridge extends generally horizontally and is in wheeled engagement with said outer track,

a scraper chain carried by said bridge and having a lower course which extends along said bridge and in said operative position of said bridge is operable to scrape bulk material from said dump at the base thereof toward said main frame,

slope-breaking means carried by said bridge and engageable with said dump above said base thereof when said bridge is in said operative position,

a rocker mounted on said frame for vertical pivotal movement and having a counterweight arm extending away from said bridge,

a linkage connecting said rocker to said bridge and arranged to hold said counterweight arm in a substantially horizontal position when said bridge is in said operative position and to impart to said counterweight arm a downward pivotal movement as said bridge is raised,

bridge-actuating means operable to move said bridge between said inoperative and operative positions,

counterweight tracks carried by and extending along said counterweight arm,

a counterweight carried by and in wheeled engagement with and movable along said counterweight tracks and adapted to urge said bridge toward said inoperative position, and

control means carried by said rocker and operable to control the movement of said counterweight along said arm,

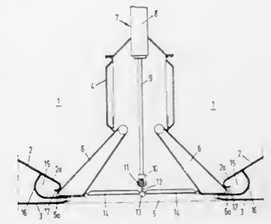
whereby said counterweight is movable outwardly along said counterweight for an increased mechanical advantage when the bridge is to be raised.

4,120,409

HOPPER BARGE HAVING A BOTTOM DISCHARGE OPENING CLOSABLE BY HOPPER DOORS

Bartele vander Werff, Medemblik, Netherlands, assignor to A. Vuyk & Zonen's Scheepswerven B.V., aan de IJssel, Netherlands

Filed Feb. 17, 1977, Ser. No. 769,712
Claims priority, application Netherlands, Feb. 23, 1976, 7601808
Int. Cl.[2] B67D *3/00*
U.S. Cl. 214—15 R 5 Claims



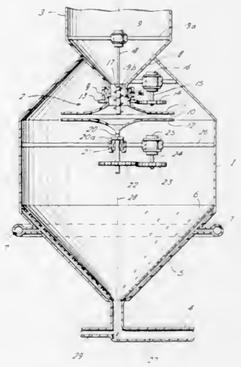
1. A hopper barge comprising a hopper including inclined side walls and having a discharge opening, a central keelson box disposed above said opening, suction passage means extending along said discharge opening adjacent one of said side walls, at least one hopper door, control means coupled to said door for moving the door pivotably and in translation between a first position in which said discharge opening is closed and said passage means is blocked, a second position in which the discharge opening is fully open and the door is substantially retracted into the keelson box, and a third position intermediate the first and second positions in which the discharge opening is closed and said passage means is open.

4,120,410

APPARATUS FOR THE SUPPLY OF FUEL POWDER TO A GAS-PRESSURIZED VESSEL

Maarten J. van der Burgt, The Hague, Netherlands, assignor to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

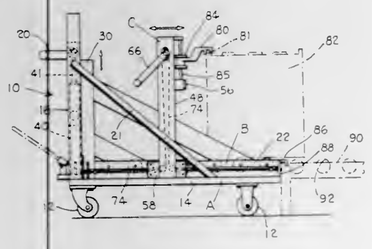
Filed Jul. 27, 1977, Ser. No. 819,366
Claims priority, application Netherlands, Sep. 13, 1976, 7610130
Int. Cl.[2] B65G *65/30*
U.S. Cl. 214—17 B 5 Claims



1. An apparatus for the supply of fuel powder to a gas-pressurized vessel, comprising:

a centrifugal pump for supplying powder to the vessel;
means for mounting said centrifugal pump in the vessel for injecting powder into the vessel by centrifugal force;
a supply tube for the supply of powder from outside of the vessel to the centrifugal pump;
the axis of rotation of the centrifugal pump coinciding with the center line of the supply tube;
said pump comprising two rotatably mounted trays positioned in said vessel and having a discharge slit in the area between said trays;
said supply tube being in communication with area between said trays for flowing the powder from the supply tube outwardly through said slit into said vessel as said trays are rotated in said vessel; and
means to rotate the trays in the same direction at a small relatively different speed.

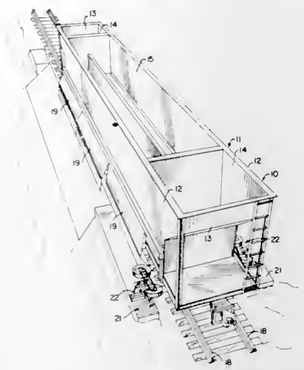
4,120,411
PORTABLE BATTERY CART
Bobby L. Johnson, 508 Crane Ave., Greenville, S.C. 29611
Filed Sep. 15, 1977, Ser. No. 833,495
Int. Cl.[2] B60P *1/32*
U.S. Cl. 214—38 BA **7 Claims**



1. A portable battery cart for transporting electrical batteries comprising:
a wheeled base frame including a pair of laterally spaced vertical members adjacent one end thereof;
an elevator platform carried by said vertical members of said base frame in a cantilevered manner;
lift means for moving said elevator platform vertically relative to said base frame;
movable frame means carried by said elevator platform including a pair of laterally spaced vertical legs with a cross member extending therebetween;
latch means carried by said movable frame means being vertically movable relative thereto releaseably connecting said frame means to said battery;
hook means carried by said elevator platform for connecting said cart to an associated storage platform whereon said batteries are loaded and unloaded; and
drive means for moving said movable frame means horizontally relative to said elevator platform including a chain belt having opposing ends affixed adjacent the ends of said elevator platform, a drive sprocket carried by said movable frame means in engagement with said chain belt, and an idler sprocket carried on each side of said drive sprocket in engagement with said chain belt.

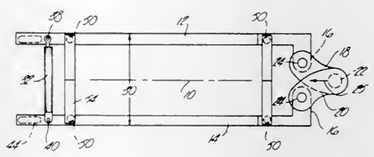
4,120,412
TRACKSIDE DOOR CLOSING ARRANGEMENT FOR RAILWAY HOPPER CARS
Roy W. Miller, Highland, and Ernest J. Nagy, Munster, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Aug. 12, 1977, Ser. No. 823,884
Int. Cl.[2] B61D *7/30*
U.S. Cl. 214—63 **9 Claims**

1. For a railway hopper car having a longitudinally extending discharge door hingedly mounted on the car for movement laterally outwardly from closed to open position relative to a discharge opening, the improvement comprising:
a trackside operating mechanism including a base positioned to one side of a railway track,
an upright pedestal mounted on said base,
a horizontal arm pivotally mounted on said base for swinging movement on a vertical axis,



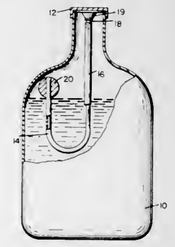
wheel means including a pair of wheels longitudinally spaced on said arm for pivotal movement about vertical axis,
means connected to one wheel for imparting rotation of said one wheel to said other wheel,
said wheel means being positioned to engage the side of an open door of said hopper car traveling along the side of said trackside operating mechanism thereby swinging said door inwardly toward said car to a closed position.

4,120,413
SELF LOAD/UNLOAD TRANSPORTER
William G. Harris, and Jerome T. Cipkowski, both of Warren, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 31, 1977, Ser. No. 801,710
Int. Cl.[2] B60P *1/54*
U.S. Cl. 214—394 **1 Claim**



1. A trailer for transporting containerized freight, comprising: two spaced parallel horizontal rails defining the trailer longitudinal axis; the outboard edges of said rails being approximately the same distance apart as the width of a standard freight container, whereby the container is enabled to rest on the rail upper faces while the trailer is being transported from one geographical location to another; a kingpin located forwardly of the rails on the trailer axis; a separate swingable link connecting the kingpin to the front end of each rail; said kingpin being capable of attachment to a tractor so that when the tractor is driven in a reverse direction the kingpin will cause the rear ends of the links to swing outwardly, to thereby shift the front ends of the rails away from one another; a fluid cylinder means trained between the rails near their rear ends, said fluid cylinder means being actuable to shift the rear ends of the rails away from one another, whereby the rails then define a circumscribed space wider than a standard freight container; said fluid cylinder means having a swingable connection with one of the rails and a detachable connection with the other rail, whereby said fluid cylinder means can be swung to a non-obstruct position paralleling said one rail when it is desired to drive the trailer to or from a position straddling a ground-contacting freight container; a first container lift means spanning the rails near their front ends, and second container lift means spanning the rails near their rear ends; each container lift means being of inverted U configuration, whereby the trailer can be driven to or from a position straddling a ground-contacting freight container without interference from the lift means; each lift means including an expansible-contractible beam that changes length while the rails are being adjusted toward or away from one another.

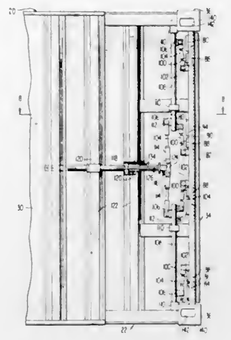
4,120,414
SELF-VENTING CAP
Thomas S. Harrison, Deer Isle, Me., and Ross L. Doyle, Ramsey, N.J., assignors to Sterling Drug Inc., New York, N.Y.
Filed Sep. 2, 1977, Ser. No. 830,107
Int. Cl.[2] B65D *51/16*
U.S. Cl. 215—307 **5 Claims**



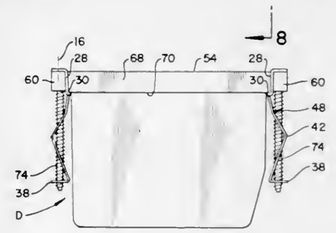
1. The combination of a liquid container with a self-venting cap wherein said cap includes a rigid tube extending to approximately the geometrical center of the container, a free-ended flexible tube in extension of the rigid tube, and a float on the flexible tube at its free end, the length of the flexible tube being sufficient to cause the float to closely approach the inside of the container at all points regardless of the relative position of the container, so that the float holds the end of the tube above liquid level at any position of the container providing for venting of any gas pressure generated from the contained liquid.

4,120,415
REFUSE CONTAINER
Donald J. Hopkins, Knoxville; John C. Salyers, Oak Ridge, and Paul L. Goranson, Knoxville, all of Tenn., assignors to Carrier Corporation, Syracuse, N.Y.
Division of Ser. No. 641,371, Dec. 17, 1975, Pat. No. 4,044,914.
This application May 19, 1977, Ser. No. 798,733
Int. Cl.[2] B65D *00/00, 45/00*
U.S. Cl. 220—1 T **8 Claims**

1. In a refuse container having walls, a bottom frame, and an end closure, an improved latching apparatus comprising:
complementary connector means on the end closure and the container;
one of said complementary connector means operable between an engaged position and a released position; and actuating means operatively connected to the one connector means, having an over-center mechanical lock and operable to operate the one connector means between the engaged and released positions thereof.



4,120,416
MOUNTING BRACKET FOR ELECTRICAL BOXES
Eugene J. Suk, Pittsburgh, Pa., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Nov. 26, 1976, Ser. No. 745,396
Int. Cl.[2] H02G *3/08;* **G12B** *9/00*
U.S. Cl. 220—3.4 **5 Claims**



1. An electrical box including peripheral and rear walls defining a cavity having an opening with a peripheral edge, opposite bosses extending outwardly from said peripheral wall adjacent said peripheral edge, bracket mounting screw receiving holes through said bosses extending along screw axes substantially perpendicular to the plane of said opening, said bosses having front surfaces facing in the same direction as said opening and oppositely facing rear surfaces, said bosses having opposite side surfaces extending between said front and rear surfaces, a mounting bracket positioned adjacent each said boss for mounting said box within an opening in a wall, each said bracket including a base positioned adjacent said rear surface and having a screw receiving opening aligned with said bracket mounting screw receiving hole, a deformable portion extending from said base generally along a portion of said peripheral wall toward said rear wall and having a flange with a screw receiving bore aligned with said hole and opening, a screw extending freely through said hole and opening and being threaded into said bore so that tightening of same moves said flange toward said base and deforms said deformable portion outwardly away from said peripheral wall, said screw also holding said bracket to said box by extending through said hole and opening and being threaded into said bore, spaced-apart opposite legs extending from said base along said opposite sides of said boss closely adjacent thereto, wings extending outwardly from said legs adjacent said peripheral edge of said opening, said peripheral wall of said box having shoulders on the outer surface thereof at least on opposite sides of said

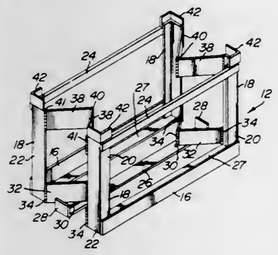
bosses and spaced toward said rear wall from said opening, and hook portions extending rearwardly closely adjacent said outer surface of said box peripheral wall from the edges of said wings located closest to said outer surface of said box peripheral wall and terminating in hooks engaged over said shoulders to hold said bracket against rocking about said boss and to stiffen said wings against bending outwardly of said box relative to said legs.

4,120,417

SYSTEMS WITH DISPOSABLE TRAYS

Salvatore A. Aquino, 337 Trevor La., Bala-Cynwyd, Pa. 19004

Filed Aug. 8, 1977, Ser. No. 822,508
Int. Cl.[2] B65D *7/24, 25/14*
U.S. Cl. 220—6 **4 Claims**



1. In combination, a collapsible crate and a disposable tray positioned within said crate, said crate being rectangular and bounded by four vertical corner uprights defining the four corners of said crate with two opposing sides and two opposing ends further defined therebetween, opposing sides of said crate having a lower horizontal side bar and an upper horizontal side bar extending between respective corner uprights defining said opposing sides, opposing ends of said crate having a lower horizontal end bar and an upper horizontal end bar extending between respective corner uprights defining said opposing ends, each end bar being hingedly secured to the respective upright adjacent thereto, each end bar comprising two bar pieces being secured together with a central hinge located centrally of said end bars, a bottom bar extending generally parallel to said side bars, said bottom bar having slot means with said central hinge of each said lower end bar being slidable in said slot means, said bottom bar being slidably connected to each said lower end bar and said crate being collapsible to bring the side bars closer to each other to the extent each said central hinge is slidable in said slot means except when said disposable tray is positioned within said crate and rests upon said bottom bar.

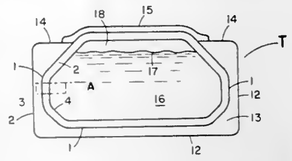
4,120,418

METHOD OF PRODUCING A BARRIER IN A THERMALLY INSULATED CONTAINER

Michael H. Collins, Huxley, Nr. Chester, and Jeremy D. Le Hardy Guiton, Chichester, both of England, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Jun. 4, 1976, Ser. No. 693,215
Claims priority, application United Kingdom, Sep. 30, 1975, 39982/75
Int. Cl.[2] B65D *25/18*
U.S. Cl. 220—444 **3 Claims**

1. A method of producing a barrier in a thermally insulated container lined with polyurethane foam for storage or transport of liquefied gases, comprising the steps of:
cutting or grinding an inner surface of polyurethane foam previously applied onto an inner surface of a container rigid outer shell to obtain a substantially flat cut or ground surface of polyurethane foam;
applying a first layer of an epoxy resin formulation, comprising an epoxy resin and a curing agent, onto the polyurethane foam cut or ground surface;
allowing the epoxy resin formulation first layer to gel;
applying a second layer of an epoxy resin formulation, comprising an epoxy resin and a curing agent, onto the gelled first layer;
applying a layer of glass-fiber material onto the second layer



when the epoxy resin formulation of the second layer is still wet;
compacting the glass-fiber material into the second layer;
applying a third layer of an epoxy resin formulation, comprising an epoxy resin and a curing agent, onto the second layer; and
allowing the epoxy resin formulations of the second and third layers to gel.

4,120,419

HIGH STRENGTH SEAMLESS CHIME CAN BODY, SHEET METAL CONTAINER FOR VACUUM PACKS, AND MANUFACTURE

William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1976, Ser. No. 659,995
Int. Cl.[2] B65D *7/42*
U.S. Cl. 220—66 **3 Claims**



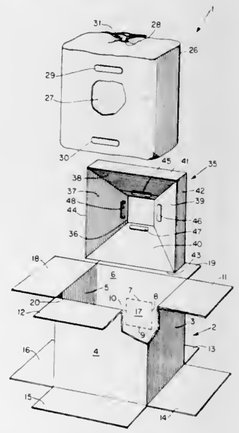
1. Sheet metal can body having a seamfree sidewall symmetrically spaced from a central longitudinal axis defining an open end and having a unitary endwall joined to the sidewall at its remaining opposite longitudinal end by a seam-free reinforced chime juncture, such can body being for use in a sealed two-piece can in which the reinforced chime juncture and unitary endwall are able to withstand both vacuum packing and the internal pressure of food processing without permanent distortion,
such reinforced chime juncture comprising
channel means disposed about a peripheral portion of the can body endwall contiguous to the sidewall,
such channel means including an outer channel, and
an inner channel contiguous to and radially inward of the outer channel,
each such channel opening in a longitudinal direction to present a toroidal configuration when viewed axially,
such channels being defined by a plurality of wall portions of such can body sheet metal disposed in radially spaced relationship to each other and with the major directional component of each wall portion being longitudinal of the can body,
such plurality of wall portions including an outer wall, an intermediate wall, and an inner wall,
the outer wall comprising a portion of the sidewall contiguous to the endwall,
the intermediate wall being located radially inwardly of and joined to the outer wall so as to define with the outer wall such outer channel,
the outer channel having a U-shaped configuration in radial cross-section with such U-shaped configuration opening toward the interior of the can body,
the inner wall being disposed radially inwardly of and joined to the intermediate wall so as to define with the intermediate wall such inner channel,
such inner wall extending longitudinally a dimension equal to at least half that of a corresponding longitudinal dimension of the intermediate wall,
the inner channel having a U-shaped configuration in radial cross section with such U-shaped configuration opening toward the exterior of the can body and defining an apex at its closed end,
the unitary endwall including a panel portion extending laterally from such inner wall toward the central longitudinal axis,
such endwall panel including a centrally located substantially planar disc circumscribed by at least one reinforcing ring profile means,
such endwall panel being capable of flexing to enable longitudinal movement of its central point along the central longitudinal axis, with such flexing action changing the longitudinal orientation of the inner wall about the apex of the inner channel such that the inner wall at its longitudinal end opposite to such apex can be moved in a radial direction without permanent distortion of chime juncture and contiguous sheet metal.

4,120,420

LINED PARALLELEPIPEDAL PACKAGE FOR DISPENSING FLOWABLE MATERIALS

Robert S. Dirksing, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 16, 1978, Ser. No. 878,367
Int. Cl.[2] B65D *25/14, 5/70*
U.S. Cl. 220—416 **10 Claims**



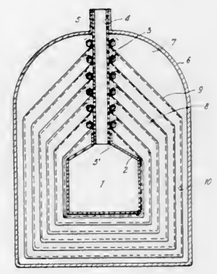
1. A parallelepipedal dispensing package comprising a carton having a plurality of sidewalls and top and bottom closure means, a funnel, a bag-type liner for housing a predetermined quantity of flowable material, said funnel having an outlet end juxtaposed an inwardly facing surface of one of said sidewalls, the interior surface of said funnel having a sufficient degree of taper with respect to the nominal angle of repose of said flowable material that substantially all of said flowable material can gravitate from said package when said package is oriented with said funnel pointing downwardly and when the portions of said liner and said one sidewall which span the outlet end of said funnel are breached.

4,120,421

CONTAINERS FOR CRYOGENIC LIQUIDS

Roger Prost, Saint Egreve, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 15, 1977, Ser. No. 777,934
Claims priority, application France, Mar. 25, 1976, 76 08651
Int. Cl.[2] B65D *25/18;* F17C *13/00*
U.S. Cl. 220—423 **7 Claims**



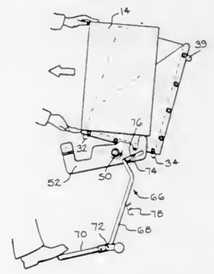
1. In a container for liquified gases, which comprises an inner container to hold the liquified gas, said inner container comprising a container body and an elongated neck, and an outer shell spaced away from the said inner container, said shell forming with said inner container an evacuated insulating space packed with material made up of superimposed pairs of layers of materials, each pair of layers consisting of a conductive foil and an insulating sheet, marginal portions of each pair of layers being in individual thermal contact with the neck of the inner container along annular areas spaced from one another along said neck, said neck extending to said outer shell; the improvement in which the neck of the inner container is made from a plastic material, the said thermal contact between each pair of layers and the neck being achieved by means of an annular part which presses said marginal portion of each pair of layers directly onto said neck.

4,120,422

SYSTEM FOR STORING AND TRANSPORTING FLAT BOARD-LIKE ELEMENTS

Robert L. Propst, and Paul L. Propst, both of Ann Arbor, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Nov. 8, 1976, Ser. No. 740,054
Int. Cl.[2] B65G *1/04*
U.S. Cl. 221—88 **7 Claims**



1. A rack for storing and transporting flat board-like elements of predetermined thickness, such as printed circuit

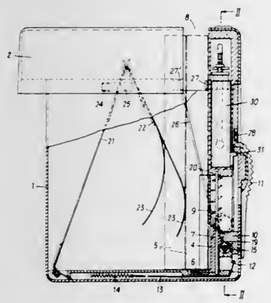
boards, said rack comprising a main frame, a plurality of upright partition members mounted on said frame in uniformly spaced positions in which said partition members define a plurality of side-by-side stalls, each of said stalls being of a width slightly greater than said predetermined thickness to accommodate one of said elements in an upright position therein, element support means on said frame operable to support a plurality of said elements in upright positions in said stalls, said element support means comprising support members assembled with said partition members so as to be in fixed positions with respect to said partition members and being spaced to provide for said elements being edgewise accessible in said stalls, means operable to extend into a stall and engage the edge of an element therein for the purpose of moving said element in a direction to facilitate removal thereof from said stall, said means comprising a body member mounted on said frame for movement transversely of said stalls, said body member being pivotally mounted on said frame so that said body member is pivotally movable selectively into a plurality of said stalls, and coacting means on said body member and on said partition members operable in response to movement of said body member toward and into engagement with at least one of said partition members to advance said body member in one direction toward a succeeding stall so that repeated movement of said body member toward and away from said partition members advances said body member transversely of said stalls in one direction so that said body member is positioned in alignment after each succeeding stall to facilitate removal of an element from each of said stalls.

4,120,423

CIGARETTE DISPENSER

Rudolf Frühwirth, Klusemannstrasse 4, 8053 Graz, Austria

Filed Jun. 9, 1977, Ser. No. 804,873
Claims priority, application Austria, Jun. 10, 1976, 4245/76
Int. Cl.[2] B65G *59/00*
U.S. Cl. 221—115 **12 Claims**



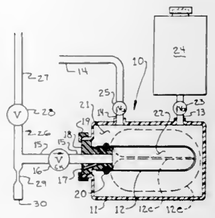
1. A dispenser for cigarettes, comprising:
- a casing for the cigarettes to be dispensed and having an opening through which the cigarettes may be dispensed,
- at least two dispensing means slidably guided in said casing towards said opening and away therefrom between a starting position and a dispensing position, each of said dispensing means having a protrusion adapted to underlie a cigarette for moving that cigarette towards said opening of said casing,
- a transporting mechanism in said casing which urges the cigarettes towards said dispensing means,
- each of said dispensing means being loaded by resilient means towards the starting position of said dispensing means,
- a slider means slidably guided in said casing towards said opening and away therefrom by hand between a starting position and a dispensing position,
- a further resilient means for resiliently urging said slider means towards its starting position,
- a cam means rotatably mounted in said slider means and having a number of cam surfaces corresponding to the number of dispensing means, said cam surfaces being displaced with respect to each other, seen in circumferential direction of the cam means,
- a protrusion provided on each of said dispensing means for co-operation with one of said cam surfaces,
- said slider means being slidably movable beyond said dispensing position towards said opening of said casing, said cam means being rotated when said slider means is moved beyond said dispensing position.

4,120,424

LIQUID DISPENSING PUMP

Alfred E. Zygiel, deceased, late of Dallas, Tex., by Mary E. Zygiel, heiress and devisee, assignor to The Cornelius Company, Golden Valley, Minn.

Filed Dec. 2, 1976, Ser. No. 748,242
Int. Cl.[2] B67D *5/56;* **G01F** *11/08*
U.S. Cl. 222—133 **1 Claim**



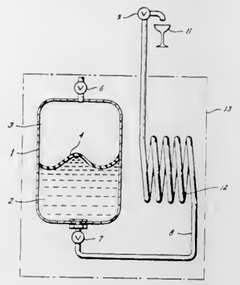
1. A liquid dispensing pump powerable by a pressurized liquid, comprising:
- (a) a pump housing having therein a pumping and pressurizing chamber, said chambers being physically divided from each other;
- (b) means movable within the housing for transferring a pressure in the pressurizing chamber to the pumping chamber and for reducing the volume of the pumping chamber;
- (c) a liquid inlet to the pumping chamber, said inlet having a valve for directing liquid flow into the pumping chamber;
- (d) a liquid outlet from the pumping chamber, said outlet having a valve for directing liquid flow from the pumping chamber;
- (e) a liquid source line having an upstream end adapted to be connected to a source of liquid under pressure, a normally closed control valve which upon being opened and operable for permitting a flow of liquid under pressure through said source line, a flow restrictor downstream of said control valve for backing up at least part of the source pressure during flow of liquid therethrough, and an outlet for discharge of liquid flowing through said restrictor;
- (f) a pressurizable power conduit having an inlet end fluidly connected to said source line in between the control valve and the restrictor, a second end fluidly connected to the pressurizing chamber, and a check valve for permitting a flow of liquid under pressure from said source line through the conduit to the pressurizing chamber and for precluding reverse flow of liquid from the pressurizing chamber back to the source line from whence the liquid came; and
- (g) an open drain fluidly connecting the pressurizing chamber to atmosphere, said drain being sized with respect to said power conduit to form a greater restriction to flow of power liquid therethrough than does said power conduit, for permitting flow of power liquid through the drain during an operative pressurization of the pressurizing chamber of only a fractional portion of the power liquid passing through said power conduit during such pressurization, and for draining from said pressurizing chamber the remainder of the power liquid passed through said power conduit during such operative pressurization, upon termination of an operative pressurization of said power conduit, said drain being a capillary aperture sized for retaining by capillary action a prime of liquid within the power conduit and pressurizing chamber.

4,120,425

APPARATUS FOR DISPENSING SPARKLING WINES

George M. Bethurum, Pasadena, Tex., assignor to The Champagne Machine Inc., Pasadena, Tex.

Continuation of Ser. No. 285,563, Sep. 1, 1972, abandoned. This application Jun. 25, 1976, Ser. No. 699,955
Int. Cl.[2] B67D *5/62*
U.S. Cl. 222—146 C **2 Claims**



1. An apparatus for dispensing sparkling wine without foaming or going flat, comprising;
- a storage vessel including an inert flexible diaphragm subdividing vessel into a gas containing portion and a sparkling wine containing portion, said portions being inversely variable in volume;
- a throttling orifice having its inlet connected to the vessel in the liquid containing portion;
- an elongated tube connected to the outlet of the throttling orifice, said tube being sufficiently long that the gradual pressure drop as wine flow therethrough prevents frothing of the wine, the flow cross-section of the tube being greater than the flow cross-section through the throttling orifice;
- an on-off valve on the end of the tube where the sparkling wine is dispensed; and
- wherein the elongated tube has an inside diameter of about $\frac{1}{8}$ inch and a length of about 30 feet; and is curled into a coil for a major portion of its length between the throttling orifice and the on-off valve.

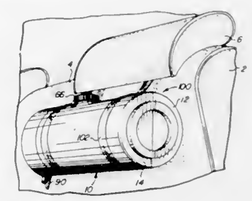
4,120,426

LIQUID CARRIER AND DISPENSER APPARATUS FOR VEHICLES

William J. Grubbs, 2041 S. Kolb Rd., Tucson, Ariz. 85710

Filed Feb. 10, 1977, Ser. No. 767,527
Int. Cl.[2] B67D *5/60, 5/62*
U.S. Cl. 222—183 **11 Claims**

1. Liquid carrier and dispenser apparatus for vehicles, comprising, in combination:
- container means having an interior for holding a quantity of liquid and having a longitudinal axis disposed in a generally horizontal orientation, and a first end and a second end equally perpendicular to the longitudinal axis;
- insulation means disposed about the container means;
- an end cap disposed at and removably secured to the first end of the container means for sealing the end of the container means when secured thereto and for providing access into the interior of the container means when removed therefrom;
- a filler boss extending upwardly from the container means substantially perpendicular to the longitudinal axis of the container means and communicating with the interior of the container means for filling the container means with a liquid;
- cap means removably secured to the filler boss for providing access into the interior of the container means when removed therefrom and for venting the interior of the container means as liquid is drained from the interior of the container means, including



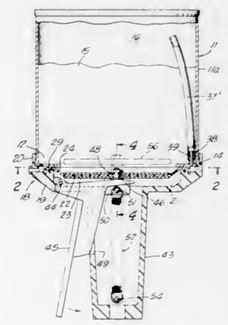
- a cylindrical portion,
- an end wall disposed at one end of the cylindrical portion and including a first aperture extending therethrough,
- an insert secured to the cylindrical portion and including a second aperture extending therethrough, and
- a spacer disposed between the end wall and the insert to prevent direct communication between the first and the second apertures; and
- spigot means for selectively draining liquid from the container means.

4,120,427

POWDER GUN

John W. McRoskey; Leonard H. McRoskey, both of Los Angeles, and Delbert D. Swartz, Torrance, all of Calif., assignors to Republic Tool & Manufacturing Corp., Los Angeles, Calif.

Filed Dec. 29, 1976, Ser. No. 755,219
Int. Cl.[2] B05B *11/04*
U.S. Cl. 222—193 **8 Claims**



5. A powder dispersing device comprising the combination of:
- (a) a container containing a powder to be dispersed;
- (b) a movable wall connected with an open outlet end of said container and being movable toward and away from said container whereby the volume of said container is decreased and increased;
- (c) an outlet chamber;
- (d) communication means connecting said outlet chamber to the interior of said container independently of said mov-

able wall whereby when said movable wall is moved toward said container air will flow from said container through said communication means and through said outlet chamber;

(e) means including openings connecting said chamber with the open end of said container, said powder moving through said openings and into said chamber when air is forced through said chamber;

(f) an outlet from said chamber through which air flows carrying with it the powder which has moved into said chamber; and

(g) means for moving said movable wall.

4,120,428

HAND TOOLS FOR DISPENSING PARTICULATE MATTER

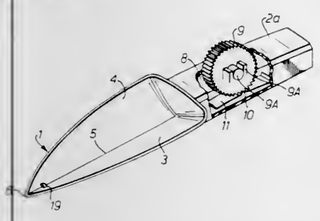
Frank Boram, 6 Littlemead, Esher, Surrey, England

Filed Mar. 17, 1977, Ser. No. 778,373

Claims priority, application United Kingdom, Apr. 8, 1976, 143778/76

Int. Cl.² B65D *83/06*

U.S. Cl. 222—201 **11 Claims**



2. A hand tool for dispensing particulate matter comprising

a scoop having two walls arranged in generally V-shaped configuration for containing the particulate matter,

a handle rigid with the scoop,

vibration-generating means housed in the handle operable to vibrate the scoop and so progressively drive the particulate material towards the end of the scoop remote from the handle, and

a barrier secured to the two walls of the scoop adjacent the end of the scoop remote from the handle arranged to separate individual items of the particulate matter as it progressively traverses the barrier.

4,120,429

DISPENSING PUMP HAVING BELLOWS METERING CHAMBER

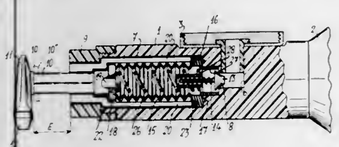
André Vignot, Coubron, France, assignor to Societe Prodene, Vaujours, France

Filed Apr. 20, 1977, Ser. No. 789,432

Claims priority, application France, Apr. 23, 1976, 76 11999; Jan. 6, 1977, 77 00234

Int. Cl.² B67D *5/42*

U.S. Cl. 222—207 **16 Claims**



1. A device for dispensing metered amounts of liquid or pasty products, which comprises

a chamber communicating through a pair of valve means on the one hand with an orifice opening into a reservoir containing the product to be dispensed, and on the other hand with an outlet nozzle,

a delivery and suction member disposed within said chamber and consisting of a tube of resilient material pleated accordion-like and having one end engaging in a fluid-tight manner the edge of an inlet orifice opening into said chamber,

a control push member comprising a hollow stem rigid with the other end of said tube of resilient material, said push member also incorporating said outlet nozzle for ejecting the product,

a return spring disposed internally of said pleated tube and constantly urging said pleated tube and push member to their inoperative positions, and

a rigid sleeve coaxial to and enclosing said resilient pleated tube, one end of said sleeve engaging the tube end held in a fluid-tight manner against the edge of the inlet orifice of the chamber of the device, the other end of said sleeve being rigid with the corresponding end of said chamber adjacent said control push member.

4,120,430

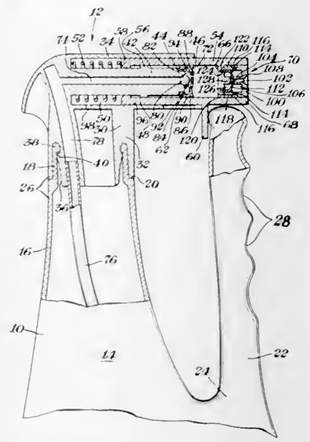
PUMP DISPENSING PACKAGE

Floyd R. French, Kentwood, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 19, 1977, Ser. No. 834,606

Int. Cl.² B05B *9/04*

U.S. Cl. 222—324 **2 Claims**



1. The combination comprising an actuator integrally formed in a blown plastic bottle, the actuator having a first end flexibly and pivotally joined to the bottle, and a second end spaced from the bottle a distance such that the bottle is adapted to define a back hand rest while the fingers of the hand may be extended to grip the actuator, said actuator being operatively associated with a dispensing pump having connection to the bottle.

4,120,431

TIP SEAL DISPENSER VALVE FOR A PRESSURIZED CONTAINER

Robert S. Schultz, Old Greenwich, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.

Filed Jan. 28, 1977, Ser. No. 763,412

Int. Cl.² B65D *83/14*

U.S. Cl. 222—518 **8 Claims**

1. A tip seal dispenser valve for a pressurized container of a viscous product, said valve comprising:

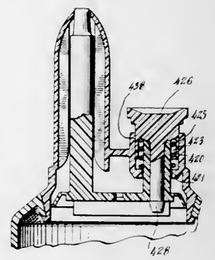
A. a valve body, mountable with the container, including

1. a hollow valve channel, in fluid communication with the interior of the container, having a major axis and defining an outlet orifice at its outer end,

2. a hollow actuator channel, laterally displaced from said valve channel, having a major axis parallel to the major axis of said valve channel,

3. a metering cylinder with which both said valve channel and actuator channel communicate,

B. a valve core having a tip mounted for axial reciprocal movement in said valve channel between a closed position with said core tip blocking said outlet orifice and an open position with said core tip withdrawn from said outlet orifice,



C. an actuator button mouned for axial reciprocal movement in said actuator channel,

D. a piston mounted to make a sliding fit in said metering cylinder and thereby being interposed between said outlet orifice and the interior of the container and further interconnecting said valve core and actuator button to effect and guide movement of said valve core in said valve channel between said closed and open positions when said actuator button is moved, said piston having metering orifice means offset with respect to the outlet orifice through which a major portion of the viscous product passes when moving from the interior of the container to said outlet orifice to be dispensed therefrom under pressure.

4,120,432

CASTOR

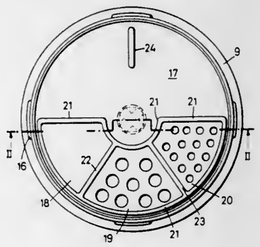
Dieter Fuchs, Westring 15-17, 4503 Dissen T.W., Fed. Rep. of Germany

Filed Aug. 19, 1976, Ser. No. 715,688

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1975, 7527172[U]

Int. Cl.² A47G *19/24*

U.S. Cl. 222—565 **4 Claims**



1. A castor for pulverous, granular or lumpy substances such as spices, comprising in combination:

(a) a cylindrical hollow body having an opening;

(b) a cylindrical cap insert adapted to be matingly received by said hollow body and having a portion extending across said opening when said cap insert is mounted in said hollow body, said portion having a main aperture, said cap insert having an externally threaded neck therein;

(c) a cylindrical lid adapted to be mounted on said cap insert and having an internal threaded portion which is adapted to threadably engage said neck of said cap insert;

(d) a cylindrical cover slide rotatably mounted within said cap insert, said cover slide having a sieve plate and wall means projecting from said sieve plate which surround and separate a plurality of perforate regions in said sieve plate and are adapted to coact with the underside of said lid to effectively separate and seal from each other the perforate regions of said sieve plate when the lid is fully mounted on the cap insert, the free edges of said wall means most remote from said sieve plate being in flush contact with the interior surface of said lid when the lid is mounted on the cap insert and thereby closes said castor.

4,120,433

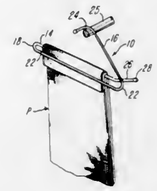
HANGER FOR SUPPORTING PANTS AND THE LIKE

Alan F. Meckstroth, 2310 Far Hills Bldg., Dayton, Ohio 45419

Filed Aug. 31, 1977, Ser. No. 829,231

Int. Cl.² A47J *51/094*

U.S. Cl. 223—95 **13 Claims**



1. A hanger for supporting pants from a clothes rod, comprising a generally horizontal elongated first support member, a generally horizontal elongated second support member disposed above said first support member in generally parallel spaced relation, a third support member connected to said first support member and projecting above said second support member, means for releasably connecting said third support member to the clothes rod with said first and second support members depending from said third support member, said second support member being supported in a cantilever manner between said first and third support members and having a free end, means for guiding said free end and said second support member on one side of inverted vertical pants and said first and third support members on the other side of the pants when said hanger is inverted and slid laterally onto the pants and while maintaining said spaced relation between said first and second support members, and the vertical spacing between said first and second support members being sufficient to avoid clamping the pants therebetween when the inverted hanger is slid laterally onto the pants to facilitate convenient and quick attachment of the hanger to the pants.

4,120,434

BELT SUPPORTED CAMERA CADDY

Donald R. Hewes, Rte. 2, Box 224D, Newberg, Oreg. 97132

Filed Mar. 30, 1977, Ser. No. 783,081

Int. Cl.² A45F *5/02*

U.S. Cl. 224—5 V **7 Claims**

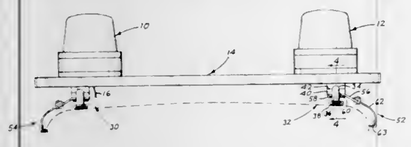
1. In combination with a camera of the type including a body defining front and rear sides, top and bottom sides extending between said front and rear sides and a lens barrel assembly projecting outwardly from the front side of said body, a camera caddy comprising an elongated strip of flexible and resilient material, opposite end portions of said strip having first and second barrel assembly receiving openings formed therethrough, said strip including a longitudinally extending central portion located between said openings and extending from one

of said opposite end portions to the other of said opposite end portions, said central portion having closed ended, transversely spaced longitudinal belt receiving slots formed therein for enabling said strip to be attached to a waist belt of the user, said strip being of a length to snugly encircle a portion of said



camera with the opposite end portions of said strip disposed in end overlapped relation with said lens barrel assembly removably projecting through said openings and said central portion overlying the bottom side of said camera when said camera caddy is supporting the camera from the user's belt with the belt threaded through said slots.

4,120,435
EMERGENCY LIGHT BAR
George W. Eby, Rt. 1, Box 278A, Colton, Oreg. 97017
Filed Aug. 27, 1976, Ser. No. 718,169
Int. Cl.[2] B60N *11/00*
U.S. Cl. 224—42.1 F **5 Claims**



1. A bar and emergency warning unit assembly for vehicle mounting comprising

a single elongate continuous hollow bar adapted to span the width of the roof of the cab of the vehicle having an elongate upper web, opposed side flanges integral at upper margins with said web, and a pair of opposed inwardly projecting elongate shoulders joined to respective lower margins of said flanges forming the bottom of the bar, said shoulders having inner edges spaced from each other to define an elongate opening extending along the base of the bar,

an emergency warning unit mounted on the top of said bar,

a foot structure under the bar for supporting the bar on the roof of a vehicle, the foot structure including an elongate segment extending transversely of said bar equipped with roof engaging pads,

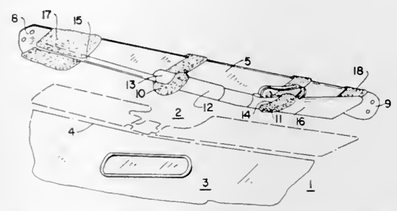
each of said shoulders along its upper side having a raised rib extending therealong with an elongate trough defined intermediate the rib and the flange to which the shoulder joins,

clamp means joining the foot structure to said bar, said clamp means including an upper clamp member engaging the upper sides of said shoulders and having a lower surface region complementing the rib and trough of each shoulder, and a lower clamp member engaging the undersides of said shoulders, said segment of the foot structure extending under said lower clamp member, said clamp means further including a block supporting the underside of said segment opposite said lower clamp member, the trough and raised ribs of said shoulders and the complementing lower surface region of the upper clamp member being effective to contribute to the rigidity of the bar by inhibiting twisting and flexing of the bar,

and hook mechanism adapted to engage a protuberance on a vehicle

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4,120,436
GUN RACK FOR A VEHICLE
Delwin L. Burch, Graham, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Oct. 25, 1977, Ser. No. 845,266
Int. Cl.[2] B62J *7/00*
U.S. Cl. 224—42.1 C **3 Claims**



1. A gun rack for a vehicle having a cab, a roof covering the cab and a windshield at the front of the cab extending along the width of the roof from side to side thereof, the windshield having an upper edge substantially joining the roof and extending parallel thereto, said gun rack comprising

a plank-like member having spaced opposite substantially planar first and second surfaces and spaced opposite first and second ends;

a pair of C-type open hook members extending from the first surface of the member in spaced substantially parallel relation with each other at intermediate points between the first and second ends thereof, said hook members releasably supporting a rifle at points thereof between the barrel and stock;

a first band of soft material on the first surface of the member at the first end thereof;

a second band of soft material on the first surface of the member at the second end thereof; and

fastening means affixing the member to the roof in the cab substantially parallel to the upper edge of the windshield with the second surface of the member abutting said roof whereby said member releasably supports a rifle in the hook members thereof with the first and second bands preventing scratching of the stock and barrel.

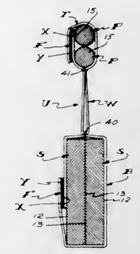
4,120,437
CARRIER FOR SKIS AND SKI POLES
Clarence M. Hara, 2018 W. 150th St., Gardena, Calif. 90247
Filed May 9, 1977, Ser. No. 794,825
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 S **2 Claims**

1. A carrier assembly for carrying a pair of skis and a pair of ski poles, comprising:

a pair of coupling straps, each of which is made wholly of flexible material and which includes top and bottom loops and an intermediate portion therebetween;

the bottom loop being of a size to encircle a pair of skis placed in side-by-side relationship, the top loop being of a size to encircle a pair of ski poles placed in side-by-side relationship, and the intermediate portion being of a length to provide a finger-clearing space between the top and bottom loops when in use;

one of said loops and the intermediate portion of each strap comprising a unitary strip of flexible material doubled back upon itself to provide the loop at one end of the intermediate portion, and the other loop comprising a unitary strip of flexible material fastened intermediate the ends thereof to the end of said intermediate portion opposite from said one loop; and



each of said loops being split and having overlapping end portions with pressure-engagable fastening means for adjustably and releasably securing said end portions together.

4,120,438
NAIL DRIVER
Ivan J. Litch, 21611 Locust Way, Lynnwood, Wash. 98036
Filed Mar. 7, 1977, Ser. No. 774,598
Int. Cl.[2] B25C *1/02*
U.S. Cl. 227—147 **1 Claim**



1. An apparatus for driving a nail into a surface comprising:

an open-ended tubular housing having an internal bore therein, a forward end which contacts over its entire surface the surface into which the nail is to be driven and a rear end,

an end cap having an aperture therein with a diameter smaller than the diameter of the internal bore of the housing and closing the rear end of the housing,

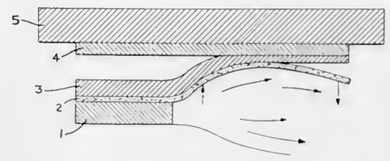
a rod having a diameter approximating the diameter of the aperture in the end cap and having a length greater than the length of the tubular housing received in the internal bore, the rod having a rear end projecting from the bore at the rear end of the housing through the aperture in the end cap and a forward end secured to a magnetic rod portion having a diameter approximating the diameter of the internal bore of the housing, the aperture in the end cap and the magnetic rod aligning the rod within the internal bore of the housing,

a weighted handle secured to the rear end of the rod,

a first compression spring surrounding the rod and extending between the weighted handle and the end cap to absorb the momentum of the weighted handle at the forward end of a driving stroke and to cushion the forward movement of the rod with respect to the housing, and

a second compression spring having a relatively low spring constant mounted within the tubular housing and extending between the magnetic rod portion and the end cap for resiliently biasing the rod in a forward direction but not providing the rod with sufficient momentum to drive a nail, the apparatus used by inserting a nail in the bore at the forward end of the housing with the head of the nail magnetically secured to the magnetic rod portion and driving the nail into the surface by placing the forward end of the housing against the surface and repetitively withdrawing the weighted handle and hurling the weighted handle toward the surface.

4,120,439
METHOD FOR WELDING BY EXPLOSION OF POWDER MATERIAL ON A FIRM SURFACE
Per Ingemar Persson, Nora, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden
Filed Jun. 27, 1977, Ser. No. 810,086
Claims priority, application Sweden, Jul. 6, 1976, 7607713
Int. Cl.[2] B23K *21/00*
U.S. Cl. 228—107 **7 Claims**



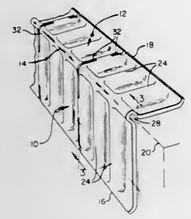
1. A method of welding powdered material to a surface comprising placing at least one layer of powdered material onto a support of ductile material, positioning a surface to be coated by the powdered material in facing spaced relation with said powdered material, placing an explosive charge on the support on the surface thereof opposite the powdered material, and detonating the explosive charge to produce acceleration of the support and the powdered material thereon towards the surface to be coated to cause impact of the powdered material with the surface to be coated, the detonation of the explosive charge proceeding along the length of the charge to progressively bring the powdered material into impact contact with the surface to be coated, the speed of detonation of the explosive charge being less than the speed of sound in the powdered material or support.

4,120,440
WELDING, A STEEL SUITABLE FOR USE THEREIN
Philip R. Kirkwood, Middlesbrough, and Allan Clark, Newton Aycliffe, both of England, assignors to British Steel Corporation, London, England
Continuation of Ser. No. 638,518, Dec. 8, 1975, abandoned. This application May 11, 1977, Ser. No. 795,884
Claims priority, application United Kingdom, Dec. 12, 1974, 53806/74
The portion of the term of this patent subsequent to Jun. 14, 1994, has been disclaimed.
Int. Cl.[2] B23K *35/30*
U.S. Cl. 228—231 **10 Claims**

1. A consumable welding wire for submerged arc welding under a basic flux, said wire consisting essentially of steel consisting essentially of

Carbon 0.15 maximum
Manganese: 0.5–1.5
Silicon: 0.03–0.10
Molybdenum: less than 0.2
Aluminium: 0.05 maximum
Titanium: 0.03–0.05
Boron 0.002–0.008
Sulphur: 0.04 maximum
Phosphorus: 0.04 maximum
Iron and incidental impurities: Balance.

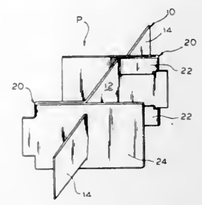
4,120,441
ANGLE EDGE GUARD
Richard D. Hurley, 3210 NW. McKinley Dr., Corvallis, Oreg. 97330
Continuation of Ser. No. 656,571, Feb. 9, 1976, abandoned. This application Apr. 25, 1977, Ser. No. 791,128
Int. Cl.[2] B65D *5/00*
U.S. Cl. 206—586 **4 Claims**



1. A unitary angle edge guard protector adapted for interposition between a substantially ninety degree interior corner of a shipping container and the exterior angle edge of an object being shipped, comprising:
(a) a pair of generally flat molded pulp walls;
(b) said walls being integrally joined by an arcuate portion and being in substantially ninety degree relation to one another when in place between said interior corner of a shipping container and a said exterior angle edge of an object being shipped;
(c) each of said walls having an outwardly facing surface;
(d) each of said walls having outwardly facing elongate leading edges;
(e) each of said outwardly facing surface of said walls having a plurality of outwardly facing indentations at spaced intervals from a predetermined distance from said leading edge and a predetermined distance from said arcuate portion and normal to said leading edges;
(f) said arcuate portion defining an inwardly facing elongate groove between said inwardly facing surface of said walls;
(g) each of said inwardly facing surface of said walls having a plurality of inwardly facing indentations normal to said leading edges at spaced interals from a predetermined distance from said leading edge to said arcuate portion and integral with said elongate groove;
(h) said inwardly facing indentations being joined by relatively flat planar surfaces and said planar surfaces being oppositely disposed to said outwardly facing indentations;
(i) said outwardly facing indentations being joined by substantially rounded web surfaces and said rounded web surfaces being oppositely disposed to said inwardly facing indentations;
(j) said walls including an angle of less than ninety degrees in a free, non-stressed condition, said walls being relatively movable around said elongate groove from the non-stressed condition to the ninety degree condition.

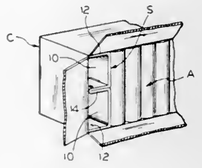
4,120,442
PARTITION ARRANGEMENT
Boyd T. Skaggs, Louisville, Ky., assignor to Container Corporation of America, Chicago, Ill.
Filed Feb. 10, 1978, Ser. No. 876,521
Int. Cl.[2] B65D *5/48, 25/04*
U.S. Cl. 229—15 **7 Claims**

1. A one-piece, six-cell partition, formed from a unitary blank of foldable paperboard, comprising:
(a) a flat, vertically disposed, longitudinal member having a center portion and a pair of integral end portions;
(b) a pair of vertically disposed transverse members spaced from each other a distance equal to the length of the longitudinal member center portion;
(c) each of said transverse members including:
(i) an inner element foldably joined at an inner vertical edge to an adjacent vertical end edge of said longitudinal member center portion;
(ii) an outer element foldably joined at an outer vertical



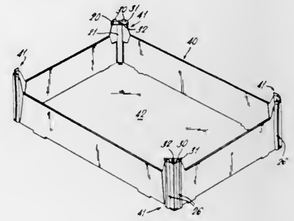
edge to a corresponding outer vertical edge of said inner member and disposed thereagainst in parallel relation therewith;
(d) each of said longitudinal member end sections extending beyond a related transverse member and through an opening in the outer element thereof.

4,120,443
CUSHIONING INSERT
Jeffrey M. Gardner, Wheaton, and Robert E. Beck, Chicago, both of Ill., assignors to Container Corporation of America, Chicago, Ill.
Filed Feb. 6, 1978, Ser. No. 875,451
Int. Cl.[2] B65D *5/48, 25/04*
U.S. Cl. 229—42 **1 Claim**



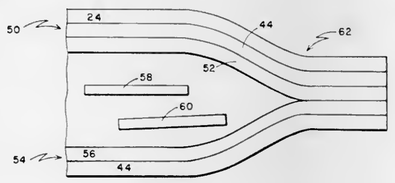
1. A cushioning insert, formed of a unitary blank of foldable paperboard, for providing an air cell to protect articles packaged within an outer container having bottom, side and end walls, comprising:
(a) a pair of co-planar, main panels aligned with each other in side by side relation, and adapted to be positioned within an outer container in spaced parallel relation with an end wall thereof;
(b) a pair of relatively narrow side panels foldably joined at their inboard side edges to adjacent outer side edges of respective main panels and adapted to be positioned within an outer container adjacent respective side walls thereof between said insert main panels and a related end wall of an outer container;
(c) a pair of relatively narrow center panels foldably joined at their outboard edges to each other and at their inboard side edges to adjacent inner side edges of respective main panels;
(d) an integral support member for maintaining said center panels in parallel relation with said side panels and in normal relation with said main panels, comprising:
(i) a pair of generally triangular, vertical, flange elements foldably joined at lower side edges to lower edges of respective main panels along downwardly diverging fold lines;
(ii) a pair of generally rectangular, horizontal flange elements foldably joined at inboard side edges to upper edges of respective vertical flange elements and foldably joined at other adjacent side edges to lower edges of respective center panels.

4,120,444
SECURING DEVICES
Lionel Cedric Nall Gray, Great Woodland Farm, Lyminge, Folkestone, Kent, CT18 8DW, England
Filed Mar. 30, 1977, Ser. No. 782,964
Int. Cl.[2] B65D *5/44;* **A44B** *21/00;* **B65D** *21/02*
U.S. Cl. 229—49 **18 Claims**



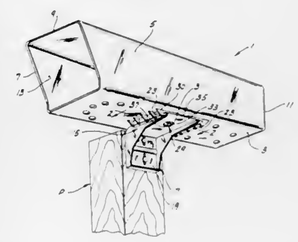
1. A clip capable of fitment over a corner of the marginal wall of a box, comprising a bifurcated member of a resilient, but self supporting material, of which a first furcation is adapted to fit inside and along the corner of the box, and of which a second furcation is longer than the first furcation to which it is joined by a head portion and is adapted to extend along and outside the corner, the free end of the longer, second furcation being formed as a foot which is positioned so as to engage and thereby support the underside of the corner of the base of the box when the clip is fitted thereover, there being means permitting resilient flexure of the first furcation with respect to the second furcation in a direction away from the second furcation such that the flexing of said first furcation away from the second furcation permits the fitment of the clip over said corner, and the cessation of said flexure once the clip is fitted over said corner permits the first furcation to urge the corner towards engagement with said foot and said second furcation.

4,120,445
INFORMATION-BEARING ARTICLE FOR CONVEYING INFORMATION WHICH CANNOT BE SURREPTITIOUSLY DETECTED
Lee A. Carrier, Longmeadow, and Leon G. Carpenter, Wilbraham, both of Mass., assignors to Ludlow Corporation, Needham Heights, Mass.
Filed May 12, 1976, Ser. No. 685,646
Int. Cl.[2] B65D *33/34*
U.S. Cl. 229—53 **16 Claims**



1. A pouch formed of a sheet material comprising a polymer-based cohesive seal and said pouch comprising a polymer-based coating formed of small thermoplastic polymeric particles deposited in intimate contact with another within said pouch-forming sheet material, and wherein the appearance of said based coating is irreversibly and substantially changed by subjecting said polymeric particles to temperatures of at least 140° F.

4,120,446
NEWSPAPER DELIVERY RECEPTACLE
Vincent F. Fuemmeler, 514 Teal Lake Rd., Mexico, Mo. 65265
Continuation of Ser. No. 618,009, Sep. 30, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,666
Int. Cl.[2] B65D *91/00*
U.S. Cl. 232—17 **9 Claims**

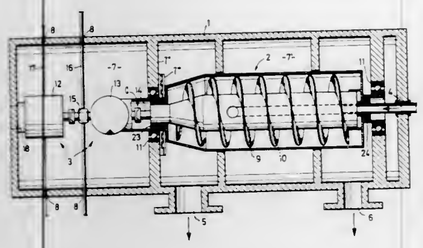


1. A newspaper delivery receptacle having a bottom, sides and top, closed at one end constituting its back end and open at its front end for insertion of a newspaper therein, and means for mounting said receptacle in generally horizontal position on a post comprising a bracket having a vertical leg adapted to be fastened to the post and a horizontal leg extending laterally outwardly from the vertical leg, and means on the outside of the bottom of the receptacle for slidably receiving said horizontal leg of the bracket, said bottom having an integral portion extending between said receiving means and integrally joined to said bottom on all sides thereof including the sides at said receiving means, said horizontal leg having an integral portion extending from side to side of the horizontal leg, one of said portions having a boss and the other having an opening for receiving said boss, and at least one of said portions being adapted to flex between the sides thereof for snap-fastening the receptacle to said horizontal leg upon sliding the receptacle into interengagement with said horizontal leg, said means for slidably receiving said horizontal leg comprising a channel defined by a pair of shoulders extending transversely across the outside of the bottom of the receptacle having grooves for slidably receiving the side margins of said horizontal leg of the bracket, and said receptacle being adapted to be applied to the bracket by sliding the receptacle onto the horizontal leg of the bracket from the outer end thereof, with said channel being open at each of its ends allowing the receptacle to be slid onto the horizontal leg with the front end of the receptacle toward either side of that leg.

4,120,447
PRESSURE-TIGHT SOLID BOWL SCREW CENTRIFUGE
Ernst Adolf Jäger, Vilsbiburg, Germany, assignor to Flottweg-Werk Dr. Georg Bruckmayer GmbH & Co. KG, Germany
Filed Oct. 26, 1976, Ser. No. 735,903
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1975, 2547538
Int. Cl.[2] B04B *3/04, 9/06*
U.S. Cl. 233—7 **11 Claims**

1. A centrifuge arrangement comprising:
a centrifuge bowl,
a screw rotatably arranged in the centrifuge bowl,
drive motor means for driving said centrifuge bowl and said screw,
a housing means for completely enclosing said centrifuge bowl and said drive motor means in a pressure-tight manner, and

means provided at said housing means for enabling a creation of a higher pressure in an area surrounding the drive



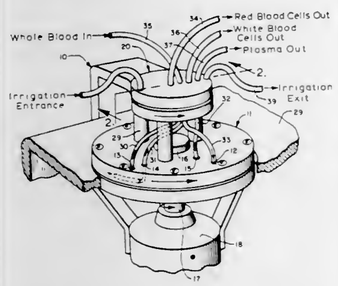
motor means than in an area surrounding the centrifuge bowl.

4,120,448

CENTRIFUGAL LIQUID PROCESSING APPARATUS WITH AUTOMATICALLY POSITIONED COLLECTION PORT

Herbert M. Cullis, Silver Spring, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 8, 1977, Ser. No. 804,697
Int. Cl.[2] B04B *11/06*
U.S. Cl. 233—22 **12 Claims**



1. A centrifugal processor for use in conjunction with centrifugation apparatus including rotatable drive means for separating a selected fractional component from a whole fluid, said separator comprising, in combination:

a housing carried on said rotatable drive means and defining a centrifugal processing separation chamber;

inlet means including an inlet port for supplying the whole fluid to be processed to said separation chamber, said selected fraction congregating within said chamber in a collection zone upon centrifugation of said chamber; and

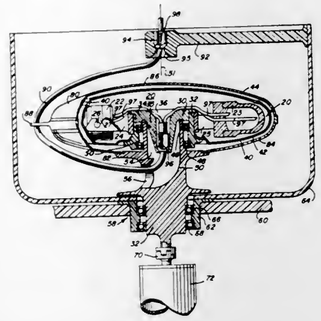
collection means including a free-floating collection port disposed within said chamber and floating within said separation zone during rotation of said chamber for removing said selected fraction therefrom.

4,120,449

CENTRIFUGAL PROCESSING APPARATUS USING TUBE DRIVE

Richard I. Brown, Northbrook, and Daniel R. Boggs, Vernon Hills, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 13, 1977, Ser. No. 805,952
Int. Cl.[2] B04B *9/00*
U.S. Cl. 233—23 R **7 Claims**



1. Centrifugal processing apparatus, which comprises:

a stationary base;

a processing chamber rotatably mounted with respect to said base for rotation about a predetermined axis;

an umbilical cable segment formed of tubular material having a dynamic stiffness of between 0.1 in.[2] pounds and 100 in.[2] pounds for establishing fluid communication with said processing chamber, one end of said cable segment being fixed with respect to said base substantially along said axis at one side of said processing chamber, the other end of said cable segment being attached substantially on said axis in rotationally locked engagement to said processing chamber;

means for engaging and driving said cable segment;

means rotatably coupling said engaging and driving means to said processing chamber;

means for rotating said engaging and driving means to drive said cable segment at a selected speed; and

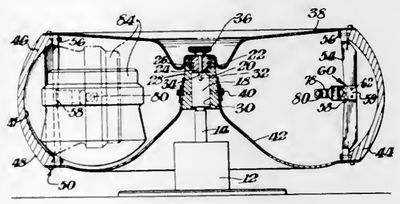
said processing chamber forming an idling member which follows only the driving rotation of said cable segment to rotate at twice the speed of said cable segment without the need for any external drive.

4,120,450

HIGH-CAPACITY CENTRIFUGE ROTOR

Thomas Wilson Whitehead, Newtown, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 6, 1977, Ser. No. 794,673
Int. Cl.[2] B04B *5/02*
U.S. Cl. 233—26 **15 Claims**



1. In a swinging-bucket centrifuge rotor having a hub, an outer ring having upper, mid, and lower portions, radial means interconnecting said hub and said ring for rotation about a generally vertical axis, and pivotal means for pivotally supporting said buckets to swing upwardly and outwardly in use to contact and be supported against radial movement by said ring, the improvement wherein:

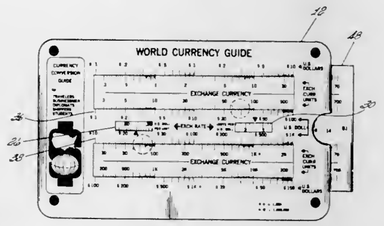
said ring has a radial cross section having a radial thickness that is less at said mid portion than at said upper and lower portions.

4,120,451

CURRENCY CONVERTER FOR USE WITH PRE-ESTABLISHED AND KNOWN CONVERSION DATA

Gerald F. Stapleton, 967 St. Mary's La., Santa Barbara, Calif. 93111

Filed May 7, 1976, Ser. No. 684,085
Int. Cl.[2] G06G *1/02*
U.S. Cl. 235—89 R **11 Claims**



1. A converter adapted to be programmed for use by pre-established conversion data and known conversion data comprising

a fixed frame having means defining

a hollowed-out central area extending axially therethrough,

a first opening extending lengthwise across the frame and having extending lengthwise in parallel thereto at least one reference line of indicia designating a selected range of a quantity of a reference item in the form of a logarithmic scale;

a second opening positioned in spaced relationship with said first opening and having a first reference mark designating a unit of a reference item to be converted into a quantity number of a selected item; and

a third opening positioned in a spaced relationship with said first opening and said second opening and having a second reference mark designating the reciprocal of the conversion displayed in said second opening at said first reference mark;

means defining a first aperture and a program reference mark positioned at a predetermined location adjacent the aperture, and

means defining a second aperture having a reading reference mark positioned at a predetermined location adjacent the second aperture;

a removable slider positioned within and movable through said central area and having

at least one exchange quantity line of indicia designating a selected range of a quantity of a selected item in the form of a logarithmic scale adapted to be viewed through said first opening;

a separate second line of indicia designating quantity numbers of said selected item adapted to be viewed through said second opening;

a separate third line of indicia designating quantity numbers of said reference item adapted to be viewed through said third opening;

a first pre-established conversion data bearing area having in a predetermined position names identifying groups of units of a corresponding selected item to be converted between the reference indicia and the selected indicia, each of said identifying name being adapted to be selectively viewed through said first aperture when set adjacent said program reference mark; and

a second pre-established conversion data bearing area having in a predetermined position the name of a unit of the selected item corresponding to the identifying name contained in said first pre-established conversion data information bearing area, said name of the unit of a selected item being adapted to be viewed through the second aperture adjacent the reading reference mark in response to the identifying name being positioned adjacent said program reference mark;

said lines of indicia having a pre-established relationship therebetween wherein the range of the quantity of the selected item of said exchange quantity line is fixed relative to the range of quantity numbers of a selected item represented by the second line of indicia and the quantity numbers of the reference item represented by the third of indicia, said relationship being established by the predetermined locations of each of said line of indicia affixed to said slider;

said slider being responsive to being programmed relative to the frame for conversion between the reference item and selected item by at least one of positioning the slider to locate the pre-established conversion data in the form of an identifying name in the first aperture adjacent the programmed reference mark, positioning the slider to locate the pre-established conversion data in the form of a name of a unit of a selected item in the second aperture adjacent the reading reference mark, positioning the slider to locate a known quantity of units of a reference item for a unit of a selected item adjacent the first reference mark in the second opening, and positioning the slider to locate a known quantity of units of a reference item for a unit of selected item adjacent the first reference mark in the third opening;

said slider when so programmed simultaneously displaying the conversion between the quantity of a selected item per unit of a reference item and the reciprocal thereof adjacent the reference mark in said second and third opening respectively and setting the at least one exchange quantity of indicia relative to said first opening wherein the conversion between quantity of units of a reference item and quantity of units of a selected item can be read directly between each of the logarithmic scales.

4,120,452

AUTOMATIC VENDING SYSTEM

Atsushi Kimura, Ikeda, and Tasuku Ishimoto, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 12, 1976, Ser. No. 713,643
Claims priority, application Japan, Aug. 14, 1975, 50-99220; Sep. 25, 1975, 50-116193; Sep. 25, 1975, 50-116194; Sep. 26, 1975, 50-116991; Feb. 10, 1976, 51-13430
Int. Cl.[2] G07F *7/08;* **G06K** *19/06*
U.S. Cl. 235—381 **5 Claims**

1. An automatic vending system for use in a hotel or the like, comprising:

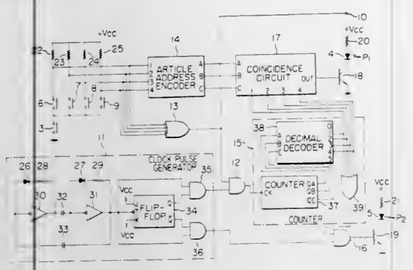
a plurality of vending machines each of which stores a plurality of articles to be sold and is enabled to sell an article by selection means, each of said machines including a transmitter capable of generating a serial article code representative of an article selected by said selection means and clock means;

a portable individual identification means for sequentially serially holding the article codes generated in response to the operation of said selection means for selecting a desired article after said identification means has been inserted into the vending machine;

an accounting meachine for reading the article codes from said identification means so as to calculate the sum of the prices of the articles sold for liquidation by a holder of said identification means;

the transmission of the signals between the vending machine and the identification means being made by wireless coupling means;

a selected article being sold in response to a sale signal, and

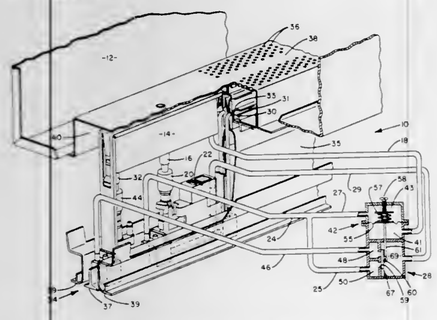


means for generating said sale signal only when the article code recorded in the identification means coincides with the article code generated by said transmitter after the article code generated by said selection means has been stored in said identification means.

4,120,453
AIR DISTRIBUTION UNIT

Carl C. Herb, Camillus, and Robert A. Rose, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,388
Int. Cl.² F24F *11/04*
U.S. Cl. 236—49 **3 Claims**



1. In an air distribution unit for discharging conditioned air into an area to be conditioned, means defining a plenum chamber for receiving conditioned air, means defining an outlet from said plenum chamber into the area to be conditioned, a damper arrangement including an inflatable bellows to regulate the flow of conditioned air from said plenum chamber to said outlet means, and control means including thermostatic means to vary the inflation of said bellows in accordance with the temperature of the area being conditioned whereby inflation of the bellows is increased to decrease the quantity of air discharged into the area and is decreased to increase the quantity of conditioned air discharged into the area, wherein the improvement comprises:

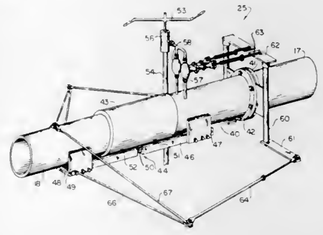
said control means including override means operable to decrease the pressure in said bellows to reduce the inflation thereof to a predetermined maximum to maintain a minimum flow of conditioned air from said plenum chamber to said outlet means when said inflatable bellows, in response to said thermostatic means, has substantially terminated the flow of air from said plenum chamber to said outlet means, said override means including pressure responsive means operable to transmit a predetermined magnitude control signal to inflate said bellows to a predetermined level; and

a three-way valve having a first operating position whereat a pressure signal indicative of sensed area temperature is transmitted to said bellows and a second operating position whereat said predetermined magnitude control signal is transmitted to said bellows.

4,120,454
CENTER PIVOT IRRIGATION APPARATUS

Larry D. Holtzen, 1311 3rd St., Deshler, Nebr. 68340

Filed Mar. 24, 1977, Ser. No. 780,941
Int. Cl.² B05B *3/02*
U.S. Cl. 239—177 **8 Claims**



1. A self-propelled sprinkling and irrigating apparatus for connection to a pivotable source of pressurized water, said apparatus comprising:

(a) a first elongate conduit having a first end and a second end, said first end of said first elongate conduit adapted to be connected in fluid flow communication with the pivotable source of pressurized water;

(b) a first sprinkler section including:

a first tower conduit having a first end and a second end, said first end of said tower conduit flexibly and sealingly connected to the second end of said first elongate conduit and in fluid flow communication therewith;

first and second valves each having an input and an output port, said input ports connected to and in fluid flow communication with said first tower conduit, said output ports connected to and in fluid flow communication with a common manifold;

valve control means connected to said first and second valves, said first elongate conduit and said first tower conduit for selectively opening and closing said first and second valves in response to the alignment of said first elongate conduit and said first tower conduit;

(c) a first support tower rigidly connected to said first tower conduit, said first support tower having a pair of wheels thereon adapted to contact the ground;

(d) a first transmission having at least forward and reverse gearing affixed to said first support tower and drivingly connected to said pair of wheels;

(e) a first sprinkler head connected to and in fluid flow communication with said manifold;

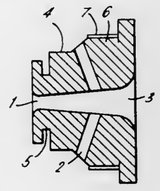
(f) a first drive shaft connected between said first sprinkler head and said first transmission; and

(g) first electrical control means connected to said first transmission to control the gearing of said first transmission.

4,120,455
APPARATUS FOR COOLING METAL SECTIONS

Stephan Hubert Wilmotte, Chaudfontaine; Jean Adolphe Nautet, Hony, and Marios Economopoulos, Liege, all of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie, Brussels, Belgium

Filed Jan. 19, 1977, Ser. No. 760,579
Claims priority, application Belgium, Jan. 23, 1976, 837884; Aug. 6, 1976, 845004
Int. Cl.² B22D *11/124*
U.S. Cl. 239—429 **7 Claims**

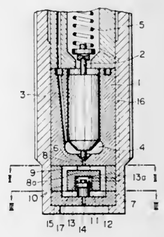


1. Cooling apparatus for cooling metal sections, comprising: (a) a series of sprayers for simultaneously spraying a mixture of liquid and gas, each sprayer having a gas inlet at one end, a mixture outlet at the other end, two distinct peripheral shoulders and at least one liquid inlet between the two shoulders; (b) an elongate manifold for supplying the sprayers with gas, having outlet orifices adapted to seat the gas-inlet-side shoulders of the respective sprayers in a gas-tight manner; and (c) an elongate manifold for supplying the sprayers with liquid, having outlet orifices adapted to seat the mixture-outlet-side shoulders of the respective sprayers in a liquid-tight manner.

4,120,456
FUEL INJECTION VALVE WITH VORTEX CHAMBER OCCUPYING AUXILIARY VALVE

Takeo Kimura, and Hitoshi Tomita, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1976, Ser. No. 747,147
Claims priority, application Japan, Jan. 28, 1976, 51-8434[U]
Int. Cl.² B05B *1/30, 1/34*
U.S. Cl. 239—464 **2 Claims**



1. In a fuel injection valve for an internal combustion engine including a valve body having a central bore therein, a circular main valve seat within the valve body, a fuel reservoir within the valve body adjacent to and surrounding the main valve seat, and an inwardly opening needle valve slidably disposed in said bore and having a tip portion adapted to enter and engage the main valve seat to isolate the fuel reservoir therefrom, the improvements characterized by:

(a) a fuel injection opening in the lower end of the valve body defining an auxiliary valve seat at its upper end,

(b) a vortex chamber defined in the valve body just above the fuel injection opening,

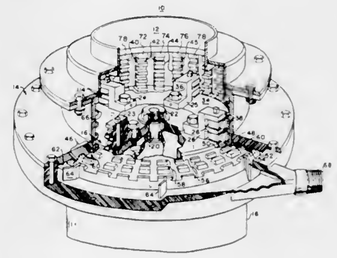
(c) fuel delivery passages having inlet ends communicating with the circular main valve seat to receive fuel flowing past said needle valve when open, and outlet ends tangentially communicating with the vortex chamber, and

(d) an auxiliary valve disposed above the vortex chamber for entering and occupying said chamber in response to a reduction in pressure in said vortex chamber at the completion of each injection cycle and for engaging the auxiliary valve seat to close the fuel injection opening, thereby expelling substantially all residual fuel from the vortex chamber in preparation for the next injection cycle.

4,120,457
PULVERIZER

Donald F. Link, Huntsville, Ala., assignor to Recovery Systems, Inc., Charleston, S.C.

Continuation-in-part of Ser. No. 766,132, Feb. 7, 1977, Pat. No. 4,074,868. This application Oct. 25, 1977, Ser. No. 845,362
Int. Cl.² B02C *13/16*
U.S. Cl. 241—46 R **4 Claims**



1. A pulverizer comprising:

a stator member comprising:

a vertically oriented, generally round, cylindrical, interior surface, the top end of which forms an input opening to said pulverizer, and said surface having a plurality of vertical and circumferentially horizontal spaced rows and columns of lands and grooves, and wherein grooves lying in one column vary in depth with respect to grooves lying in horizontally adjacent grooves;

a first circular plate extending around and radially outward from a lower end of said interior surface, and having a lower, generally horizontal, surface comprising a plurality of concentrically and circumferentially spaced lands;

a motor;

a rotor member driven from said motor comprising:

a second circular plate positioned for rotation about a vertical axis concentric with said cylindrical surface of said stator member, and

at least one hammer rotably attached to said second circular plate for horizontal pivotal movement about a vertical axis, said hammer being positioned to pass within a groove with lands of said cylindrical surface of said stator member, and

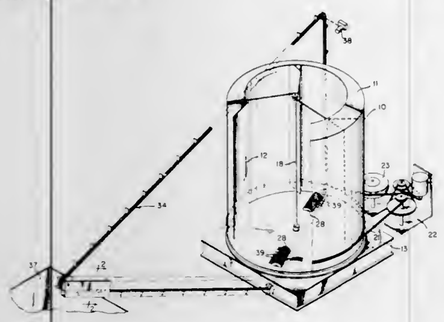
a plurality of concentrically and circumferentially spaced lands and grooves in said second circular plate and positioned for mating rotation between said lands of said first circular plate of said stator member; and

collection means including an annular passageway generally outboard of said circular plates for collecting pulverized material passing outboard and between said circular plates and for providing said material as a confined output flow.

4,120,458
ROTARY WOOD WASTE GRINDER

John H. Hughes, Montesano, Wash., assignor to J. H. Hughes, Inc., Montesano, Wash.

Filed Jun. 17, 1977, Ser. No. 807,424
Int. Cl.[2] B02C *13/286*
U.S. Cl. 241—186 R 8 Claims

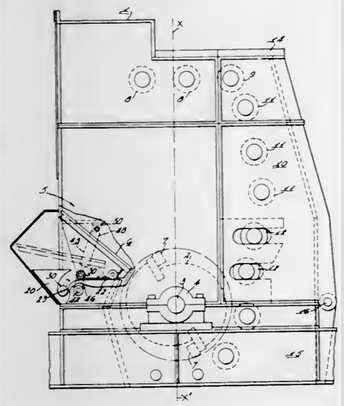


7. A wood waste grinder comprising storage means for holding a pile of wood waste material, a plurality of freely rotatable, non-powered, toothed wheels located below said storage means, means for moving the pile and wheels relative to one another for engaging the waste material with the toothed wheels, and with the relative movement providing the [illegible] force to rotate the wheels, and means for carrying [illegible] material away from the storage means.

4,120,459
IMPACT CRUSHER WITH RETRACTABLE AND TILTABLE FEED CHUTE

Keith B. Lowe, Appleton, Wis., and William R. Gray, Joplin, Mo., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 433,841, Jan. 16, 1974, abandoned. This application Mar. 3, 1975, Ser. No. 554,917
Int. Cl.[2] B02C *13/04, 13/286*
U.S. Cl. 241—186.2 5 Claims



1. A crusher having a housing enclosing a rotor carrying hammers arranged to strike and throw input material to disintegrate upon impact with target members spaced from the rotor, and an improved input material feed assembly on a side of a vertical plane through the axis of the rotor, opposite at least some of the target members; and said feed assembly comprising:

(a) a pair of horizontally spaced vertical parallel side walls perpendicular to the rotor axis;

(b) a feed chute extending transversely between said side walls;

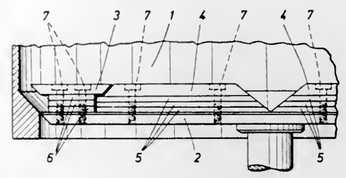
(c) camming means supporting said chute relative to the side walls with the chute inclined downwardly toward the rotor and having a material discharge lip in close proximity to the rotor; and

(d) said camming means including an element carried by the side walls to turn an engaging member connected to the chute about a fixed horizontal axis beneath the upper end of the chute, and said element having a portion for moving the engaged member downwardly and away from the rotor to move the chute away from the rotor and tilt the upper end of the chute downwardly toward a horizontal position.

4,120,460
DISINTEGRATING APPLIANCE

Helmuth Bacher, Linz, Austria, assignor to Krauss-Maffei Austria Gesellschaft m.b.H., Asten Nr. 211, Austria

Filed Jun. 3, 1977, Ser. No. 803,228
Claims priority, application Austria, Jun. 8, 1976, 4168/76
Int. Cl.[2] B02C *18/12, 18/18*
U.S. Cl. 241—278 R 2 Claims



1. An appliance for disintegrating synthetic thermoplastic waste material, comprising

(a) an upright container having an open top for receiving the waste material and an open bottom,

(b) a rotor disc mounted in the open bottom of the container for rotation in a horizontal plane about a vertical axis,

(1) the container having an inside surface defining the open bottom and the rotor disc having a periphery extending close to the inside surface,

(c) a plurality of cutting teeth mounted on the rotor disc and disposed at the periphery thereof,

(1) each cutting tooth having a cutting edge extending in a horizontal plane,

(d) a like plurality of radial ribs mounted on the rotor disc and projecting upwardly therefrom,

(1) each of the ribs being associated with a respective one of the cutting teeth and leading thereto, and

(2) the ribs being flush with the associated teeth in the direction of rotation of the rotor disc, and

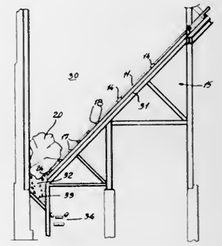
(e) shim means mounted detachably between the rotor disc and each of the ribs and of the cutting teeth for adjusting the height of the ribs and teeth.

4,120,461
LUMP BREAKING DEVICE

Heine Ahlgreen Sorensen, R.R. #3, Ayers Cliff, Quebec, Canada (J0B 1C0)

Filed Apr. 11, 1977, Ser. No. 786,582
Int. Cl.[2] B02C *1/00*
U.S. Cl. 241—283 1 Claim

1. A lump breaking device for breaking lumps formed in particulate material, said device comprising displaceable support means, a plurality of saw-tooth elements supported by a portion of said support means, each said saw-tooth elements having opposed lump-breaking edges extending on at least one side of said support means and disposed in a plane extending parallel to one another and parallel to a reciprocating axis, reciprocating drive means secured to said support means for reciprocating same along said reciprocating axis whereby said lump-breaking edges will reciprocate and break up lumps of particulate material positioned thereover, said displaceable support means comprising a plurality of parallel spaced elongated support members extending parallel to said reciprocating axis, said lump-breaking edges being opposed cutting edges, said opposed cutting edges extending angularly from an apex of each said saw-tooth elements, said reciprocating drive

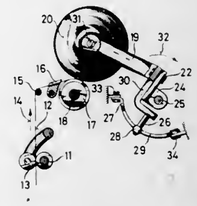


means being at least one piston secured adjacent a free end of one or more of said support members, a plurality of bridge bars secured between pairs of said support members remote from said free end, said saw-tooth elements being secured to said bridge bars, said bridge bars being disposed parallel to one another and secured at opposite ends between respective pairs of said support members, and guide bearings for maintaining said support members in parallel relationship and in a respective longitudinal axis, adjacent pairs of said pairs of support members being reciprocated in alternating sequence, and said support members being pointed at their ends opposed to said free ends to penetrate and break up lumps of particulate material.

4,120,462
METHOD AND DEVICE FOR CONTROLLING AND/OR REGULATING THREAD TENSION DURING WINDING OF A TEXTILE COIL

Hans Raasch, and Hans Ludwig Neuhaus, both of Monchen-Gladbach, Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Germany

Filed Mar. 29, 1976, Ser. No. 671,113
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1975, 2513981
Int. Cl.[2] B65H *59/38, 54/42, 54/52*
U.S. Cl. 242—45 14 Claims

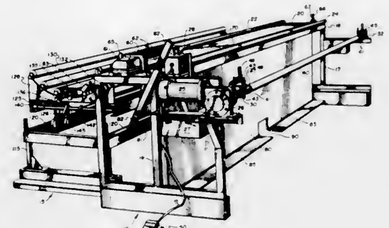


1. Method of controlling or regulating tension in a thread being wound on a textile coil rolling on a winding roller of a thread winding device, at least one of the winding roller and the textile coil being of conical construction, which comprises tipping one of the winding roller and the textile coil relative to the other so as to increase the compressive force of the textile coil on the winding roller toward one of the two ends of the line of contact therebetween whereby the peripheral speed of the textile coil is varied by varying the transmission ratio between the rotary speed of the winding roller and the rotary speed of the textile coil to an extent greater than the variation in the transmission ratio therebetween resulting from the increasing fullness of the winding on the coil.

4,120,463
FLOOR COVERING MEASURING AND CUTTING APPARATUS

Gilbert L. Alinder, Sun City, Ariz., and Lloyd E. Anderson, Brooklyn Park, Minn., assignors to National Carpet Jobbers, Minneapolis, Minn.

Filed Aug. 31, 1977, Ser. No. 829,286
Int. Cl.[2] B65H *19/20*
U.S. Cl. 242—56 R 13 Claims



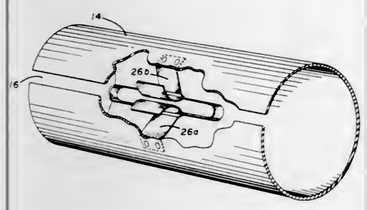
1. A floor covering measuring and cutting apparatus comprising: a stand having end supports with legs thereon and a flat table top extending between said supports, roller means distributed along the one edge of each side of said flat table top; drive motor means and control means therefor mounted on one of said end supports adjacent one end of said flat table top; a drive mandrel coupled to said drive motor means; a journaled mandrel mounted on the other of said end supports and aligned with said drive mandrel; a shaft removably mounted in said mandrels and extending therebetween for rotation by said drive mandrel; said shaft being positioned to one side of and below the flat table top and adapted to have floor covering material rolled thereon with operation of said drive motor means; a guide plate pivotally mounted beneath said table top on said end supports and adapted to be pivoted to be positioned below said shaft; lever means attached to said guide plate for pivoting the same; guide means positioned across said table top adjacent said one end thereof; measuring means positioned on said table top adjacent said drive means for measuring floor covering moved through said measuring means and across said table top; a cutter guide positioned on the table top adjacent the edge of said table top and adjacent said drive and driven mandrels; and an adjustable bed positioned longitudinally adjacent the extent of said stand and having a concave surface for supporting and rolling a roll of carpet material from which a piece of floor covering is to be measured and cut; said bed being adjustable longitudinally to bring an edge of the carpet material into alignment with the guide means on said table top as said roll of carpet material is unrolled.

4,120,464

TAKE-UP ROLL MECHANISM

Joseph M. Uritis, Chagrin Falls, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 2, 1977, Ser. No. 856,833
Int. Cl.[2] B65H *75/24*
U.S. Cl. 242—72 R **7 Claims**



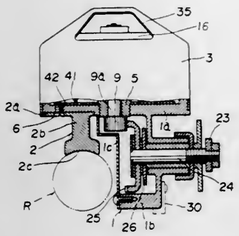
1. Improved apparatus for winding a strip of thin material, comprising:
a cylinder of thin-walled resilient material;
longitudinally extending slit through the wall of said cylinder;
means for supporting said cylinder for rotation about its axis;
means cooperating with said supporting means for expanding said cylinder radially as said supporting means is engaged with said cylinder and for allowing said cylinder to contract as said supporting means is disengaged;
means cooperating with said cylinder for gripping a strip of thin material inserted through said slit as said cylinder is expanded radially and for releasing such a strip of thin material as said cylinder is allowed to contract.

4,120,465

FISHING REEL

Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Aug. 4, 1977, Ser. No. 821,815
Claims priority, application Japan, Aug. 13, 1976, 51/108907[U]
Int. Cl.[2] A01K *89/01, 89/02*
U.S. Cl. 242—84.2 A **4 Claims**



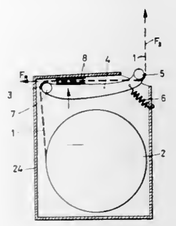
1. A fishing reel mounted to a fishing rod for winding a fishing line on a spool by operating a handle bar, said reel comprising:
a reel body;
a mounting leg for mounting said reel body to the fising rod;
a spool fixed to said reel body;
a rotary frame having a guide lever guiding the fishing line onto said spool;
a rotary shaft supporting therewith said rotary frame; and
a handle shaft having a handle bar which is operated to rotate said rotary shaft therewith;
said reel body having a tubular shaft which is fixed thereto and has the axis extending to intersect rectangularly with the axis of said handle shaft, said tubular shaft supporting therewith said rotary shaft in relation of being rotatable and axially movable, said tubular shaft being provided at the outer periphery of the utmost end thereof with a cam portion, said rotary shaft being protruded from the utmost end of said tubular shaft so as to fix said rotary frame at the protrudent portion of said rotary shaft, said mounting leg being mounted to said reel body, said mounting leg having a mounting seat face of a given length in the longitudinal direction of said fishing rod, said mounting seat face being lengthwise extending to be substantially rectangular with respect to the axis of said rotary shaft so that the reel body may be mounted to the fishing rod through said mounting leg in such a manner that the axis of rotation of said rotary frame extends substantially rectangularly with respect to the longitudinal direction of said fishing rod so that the fishing line may be drawn out toward the tip of said fishing rod in relation of being bent substantially rectangularly with respect to the axis of said rotary frame, said rotary frame being formed in a cup-like shape, said guide lever being movable radially of said rotary frame, said guide lever being capable of being protruded from the side wall of said rotary frame, said guide lever having a coil spring inserted between the guide lever and said side wall, said coil spring urging said guide lever radially inward of said rotary frame so that the radially inner end face of said guide lever may be in contact with the outer periphery and cam portion of said tubular shaft, said protrudent portion of the rotary shaft carrying at its utmost end a support and a control plate in relation of being movable axially of said rotary shaft, said support having supporting legs which are extending toward a stationary member fixed to said reel body, said supporting legs being brought into contact with said stationary member when said support is axially moved, thereby to prevent said support from further moving toward said stationary member, said control plate being adapted to be pressed toward said rotary frame for keeping said support stationary thereby to allow said rotary shaft to be axially movable by use of said support.

4,120,466

SAFETY BELT CLAMPING DEVICE

Heinz Dieter Adomeit, Knesebeckstr. 6/7, Berlin, Germany

Continuation of Ser. No. 593,710, Jul. 7, 1975, abandoned. This application Apr. 21, 1977, Ser. No. 789,607
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1974, 2432956
Int. Cl.[2] A62B *35/00;* **B65H** *75/48*
U.S. Cl. 242—107.2 **4 Claims**



1. A vehicle safety belt retractor, comprising:
a. a housing;
b. a winding drum being rotatably mounted on said housing;
c. belt means attached to said winding drum for protraction and retraction with respect thereto;
d. clamp means for clamping said belt to prevent sudden protraction thereof, said clamp means including:
(i) a first fixed planar clamping surface;
(ii) a lever pivotally mounted at one end thereof; and
(iii) a second displaceable planar clamping surface carried by the intermediate portion of said lever for movement from a rest position toward said fixed clamping surface to clamp the belt therebetween;

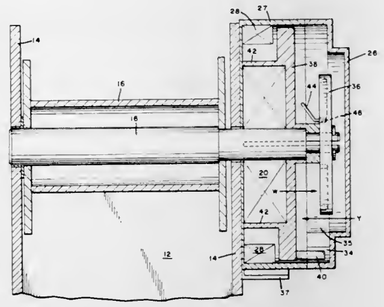
e. resilient means coupled to said lever for biasing said lever for movement about its pivot in a direction to urge the second clamping surface carried by said lever away from said first clamping surface;
f. first guide means mounted adjacent said one end of said lever for guiding said belt means;
g. second, displaceable, guide means carried by the other end of said lever for entrainment of said belt means thereabout, and operating in response to preselected abnormal tension of said belt to pivot said lever and thereby move said second clamping surface toward said first clamping surface;
said belt means normally extending off said winding drum to said first guide means, past said pivot, thence between said clamping surfaces without contact therewith and thence over said second guide means whereby in normal operation the retractor allows always free winding and unwinding of the belt between said clamping surfaces without contact therewith, but where a predetermined abnormal tension on the belt applies a force to said lever via the second guide means to actuate said lever into its clamping position against the bias of said resilient means in a substantially normal direction with no wedging action, said planar clamping surfaces being substantially parallel to the plane of the web at the point of contact therewith.

4,120,467

COMFORT MECHANISM FOR SEAT BELT RETRACTOR

Robert Larry Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Apr. 27, 1977, Ser. No. 791,617
Int. Cl.[2] B65H *75/48*
U.S. Cl. 242—107 **10 Claims**



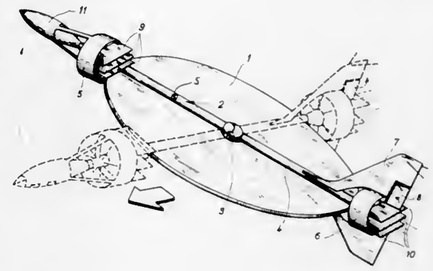
1. A safety belt retractor comprising a frame;
a spool mounted for rotation on said frame and having seat belt webbing wound thereon;
first means biasing said spool in a rewind direction;
and means for reducing the tension of said belt against the wearer due to the bias force of said first biasing means, said tension reducing means comprising a second means biasing said spool in a rewind direction, said second biasing means having a lower biasing force than said first biasing means, means for activating said tension reducing means upon a retraction movement of a withdrawn seat belt followed by a slight further extension of said belt and a subsequent slight additional retraction of said belt from said further extended position, said activating means including means for blocking out the rewind bias of said first biasing means and permitting said second biasing means to apply its lesser rewind force to said spool.

4,120,468

REMOTELY PILOTED VEHICLE

Hans-Otto Fischer, Willich, Fed. Rep. of Germany, assignor to Rhein-Flugzeugbau GmbH, Monchengladbach, Fed. Rep. of Germany

Continuation of Ser. No. 630,020, Nov. 7, 1975. This application Feb. 10, 1978, Ser. No. 876,576
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1974, 2455687
Int. Cl.[2] B64C *3/12*
U.S. Cl. 244—13 **10 Claims**



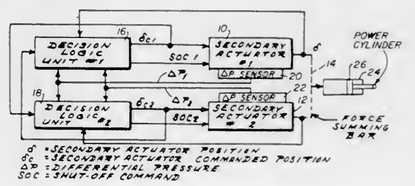
1. Remotely piloted aircraft of the aerodynamic lift variety and constructed for rapid action course changes with little or no banking comprising, a plane disc for establishing and providing substantially all the aerodynamic lift of said aircraft during forward motion without rotation of the disc, and independently from any rotation of the disc; and
a fuselage without wings and static lifting power and being mounted on the disc for unrestrained turning in its entirety, the fuselage having (a) propulsion means for producing thrust in the direction of extension of the fuselage; (b) means for control of the aircraft including turning of the thrust producing fuselage in relation to the disc for changing the direction of flight; (c) a payload housing; and (d) a center of gravity displaced in forward direction of an axis of turning of the disc; the direction of thrust production being changed upon turning of the fuselage on the disc.

4,120,469

IN-LINE ACTUATOR MONITORING AND CONTROL APPARATUS

Theodore F. Westermeier, St. Charles, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 10, 1977, Ser. No. 776,391
Int. Cl.[2] G05D *1/00*
U.S. Cl. 244—194 **5 Claims**



1. An in line monitoring and control apparatus comprising in combination:
first and second actuator units arranged in a redundant configuration, said first and second actuator units being hydraulically operated and controlled by electrical input signals respectively, said first and second actuator units

having their respective output force applied to a force summing means, said first and second actuator units each operating on a differential pressure, said first and second actuator units each providing an actuator position signal, and

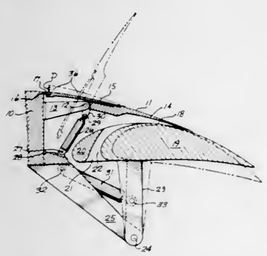
first and second decision logic units to respectively provide control signals to said first and second actuator units, said first decision logic unit providing a first control command and a first position command to said first actuator unit, said second decision logic unit providing a second control command and a second position command to said second actuator unit, said first decision logic unit receiving a first actuator position signal from said first actuator means, said second decision logic unit receiving a second actuator position signal from said second actuator unit, said first and second decision logic units respectively compare said first and second actuator position signals with the respective first and second position command to determine an actuator unit failure, said first and second decision logic units each receive a first and second differential pressure signal from said first and second actuator units, said first and second decision units each utilizing said first and second differential pressure signal to determine an actuator unit failure, said first or second decision logic units providing a shut-off command to the failed actuator unit.

4,120,470

EFFICIENT TRAILING EDGE SYSTEM FOR AN AIRCRAFT WING

Philip Charles Whitener, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1976, Ser. No. 727,507
Int. Cl.[2] B64C *9/20, 21/08*
U.S. Cl. 244—213 **3 Claims**



1. A trailing edge apparatus for an airplane wing having fixed structure with an upper aerodynamic surface, said apparatus comprising:

a spoiler assembly having an upper aerodynamic surface and a trailing edge; and

a flap assembly having an upper aerodynamic surface;

said upper surfaces forming effectively a continuation of said upper surface of said wing;

said spoiler assembly being attached to said fixed structure by a pivot and two parallel links;

said flap assembly being pivotally attached to said fixed structure; said spoiler assembly comprising:

a first rigid element having an upper surface and being pivotally connected to said fixed structure;

a second rigid element having an upper surface and being powered-hingedly attached to said first rigid element;

a flexible element having a forward edge, an aft edge and an upper surface and being attached at said aft edge to said first rigid element and extending forward so that said forward edge slidably engages said fixed structure, said forward edge being held in said engagement by said parallel links;

said upper surfaces in combination forming the aft upper surface of said wing;

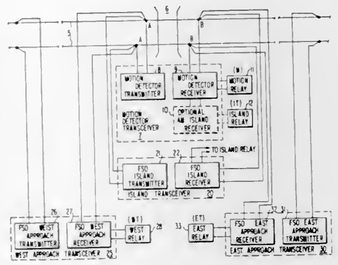
actuating means adapted to adjust the positions of said spoiler assembly and said flap assembly relative to each other and to said fixed structure, said flexible element flexing during said adjustments so that said upper aft surface of said wing is smoothly curved at all adjustment positions.

4,120,471

HIGHWAY CROSSING SYSTEM WITH IMPROVED RING SUSTAIN FEATURE

John H. Auer, Jr., Fairport, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jun. 21, 1977, Ser. No. 808,592
Int. Cl.[2] B61L *29/32*
U.S. Cl. 246—128 **13 Claims**



1. A highway crossing warning system in combination with a highway crossing warning device comprising:

motion detector means coupled to track rails adjacent said crossing for detecting approaching train motion, said motion detector means having a sensitivity to approaching motion which varies inversely with distance between train and crossing,

at least one wrap-around track circuit for detecting train presence in at least a corresponding approach area of said track rails,

circuit means responsive to said at least one wrap-around track circuit and said motion detector means for energizing said highway crossing warning device on detection of train presence within said approach area and for deenergizing said highway crossing warning device if said motion detector thereafter fails to detect approaching motion, and

delay means for inhibiting said circuit means from de-energizing said highway crossing warning device for a predetermined time after said motion detector first indicates lack of approaching motion.

4,120,472

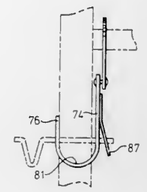
LADDER CADDY WITH RUNG CATCH MEANS

John Alfred Balne, 1247 Haig Blvd., Mississauga, Ontario, Canada

Filed Sep. 1, 1977, Ser. No. 829,789
Int. Cl.[2] E06C *7/14*
U.S. Cl. 248—211 **10 Claims**

1. In a ladder caddy, for use with house ladders of the type having opposed side rails and a plurality of rungs extending therebetween, said caddy having a frame portion comprising a rigid J-frame having a long limb and a short limb, said limbs forming a bight therebetween to straddle over a said ladder side rail when in use with an erected ladder to locate said side rail in partially entered relation between said limbs, each said limb having a bore therethrough, the bores being in mutually aligned relation to receive an appliance support spindle in substantially horizontally extending relation therethrough in

load transfer relation with said rigid J-frame, and rung catch means attached to said long limb and extending therefrom to



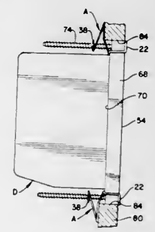
engage a said rung, to pivotally secure said J-frame in stable mounted and load supporting relation upon said ladder.

4,120,473

MOUNTING BRACKET FOR ELECTRICAL BOXES

Eugene J. Suk, Pittsburgh, Pa., assignor to Midland-Ross Corporation, Cleveland, Ohio

Division of Ser. No. 745,396, Nov. 26, 1976. This application Feb. 13, 1978, Ser. No. 876,868
Int. Cl.[2] H02G *3/08;* **F16B** *2/24*
U.S. Cl. 248—205 R **3 Claims**



1. A bracket for mounting electrical boxes or the like to walls comprising a base having a screw receiving opening therethrough along an axis, an elongated deformable portion extending from said base generally along said axis, a flange on said deformable portion spaced from said base and extending substantially parallel thereto, a hole in said flange around said axis for threadably receiving a screw extended through said opening, a sharp bend in said deformable portion intermediate said base and flange, a shallow bend in said deformable portion intermediate said base and said sharp bend, said deformable portion transversely scored at said shallow bend, said sharp and shallow bends being in opposite directions, opposite legs extending from said base in a direction opposite from said deformable portion, flat wing portions extending outwardly from said legs substantially parallel to said base, and hook portions extending from said wing portions toward said base and terminating at hooks adjacent said base.

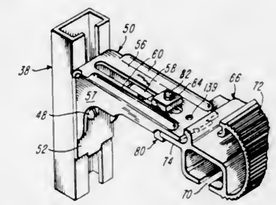
4,120,474

DRAPERY SUPPORT ASSEMBLY

Glen A. Hurley, Dayton, Ohio, assignor to Hurley's Concepts, Inc., Dayton, Ohio

Filed Oct. 6, 1976, Ser. No. 730,017
Int. Cl.[2] A47H *1/10*
U.S. Cl. 248—263 **17 Claims**

1. An adjustable drapery support assembly comprising in combination a vertically extending frame member, means for securing one side of said frame member against a wall, an opposite side of said frame member bounding a longitudinal slot, a mounting bracket having a bracket leg adapted to lie facially against and slidably engage said opposite side and a bracket arm projecting outwardly from said opposite side at substantially a right angle to said leg and adapted for supporting drapery rodding, said arm having depending side walls bearing against said leg, rib means extending along sides thereof and projecting outwardly therefrom for resisting bending movements of said arm, and a longitudinally extending slot disposed between said rib means, the end of said arm remote from said leg being deflected outwardly to form a hook portion, a nut bearing against said opposite side and slidable longitudinally of said frame member, a fastener passing through an



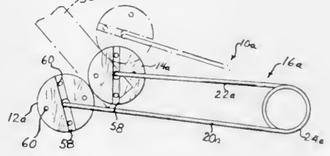
aperture in said leg between said side walls and engaging said nut through the slot bounded by said opposite side for fixedly securing said leg in facially contacting relation to said opposite side, and an extension arm overlying said bracket arm, fastener means passing through said slot of said bracket arm for securing an end of said extension arm disposed adjacent said frame member to said bracket arm, said extension arm overlying said hook portion.

4,120,475

BOOK HOLDING APPARATUS

Peter P. Penner, 31862 Carlsrue, Clearbrook, B.C., Canada

Filed Nov. 1, 1976, Ser. No. 737,739
Int. Cl.[2] A47B *97/04*
U.S. Cl. 248—451 **6 Claims**



1. A book holding device comprising:

a. a mounting frame having a rear pivot end and a forward contact end, said frame comprising:

1. a base arm having a pivot end and a contact end, spaced from one another by a first greater base dimension,

2. a secondary arm having a pivot end and a contact end spaced from one another by a second smaller dimension,

3. said two arms having a spring connection at the pivot ends thereof to urge the contact ends of the arms toward each other to a contact position,

4. said mounting frame having a base axis extending from the pivot end of the base arm to the contact end thereof,

b. a base contact member mounted to the base arm at the contact end thereof and having a first contact surface adapted to engage one surface of a book at a first contact plane positioned at an angle with respect to said base axis,

c. a secondary contact member mounted to the contact end of the secondary arm member at a location rearwardly of the base contact member and having a second contact surface opposing the first contact surface at a second contact plane at an angle with respect to said base axis, said secondary contact member having a first contact position on one side of said base axis to engage a book at

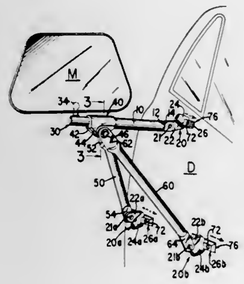
a first angle with respect to said base axis, and having a second contact position on the other side of said base axis so as to engage a book at a second angle with respect to said base axis, said spring connection being such as to urge said secondary contact member to an intermediate location proximate said base axis.

4,120,476

VEHICLE REAR VIEW MIRROR MOUNTING

Joseph R. Bourassa, Huntington, and Manuel Lopez, Trumbull, both of Conn., assignors to Par'-er-Hannifin Corporation, Shelton, Conn.

Filed Oct. 21, 1974, Ser. No. 516,759
Int. Cl.[2] A47F *5/00;* **A47G** *1/24*
U.S. Cl. 248—486 **3 Claims**



1. A vehicle door rear view mirror mounting comprising an arm adapted to protrude substantially horizontally from a vehicle door, a mirror support held by an outer end portion of said arm, two legs diverging each from the other in downward direction, means connecting the respective upper ends of said legs pivotally with and in a fixed location on the outer end of said arm, and footing brackets connected pivotably, respectively, with the inner end of said arm and the lower ends of said legs and adapted to be fastened at three spaced apart locations on the vehicle door, said legs each being pivotable independently of the other relative to said arm about a substantially horizontal axis at said connecting means so that, with said arm protruding substantially horizontally at a desired level from a vehicle door having any of various outside contours, said legs may be swung to positions suited for fastening the said brackets thereon onto the vehicle door, the axes of the respective pivotable connections of said legs with said arm and of said brackets with said arm and said legs being substantially parallel and normally being substantially horizontal, whereby a mirror on said support may be mounded readily in a desired viewing position on a vehicle door having any of various outside contours, each of said footing brackets comprising a head member pivotably connected to the respective arm end or leg end and a mating plate member adapted to be fixed to the vehicle door at one of said three locations, one of said members comprising a horizontally elongate rail portion and the other of them having a horizontally elongate channel therein to receive slidably and retain said rail portion, and means on said head member for fastening it against displacement relative to said plate member when said rail portion is engaged in said channel.

4,120,477

MOLD AND METHOD FOR INJECTION MOLDING A SOLE ONTO A SHOE UPPER

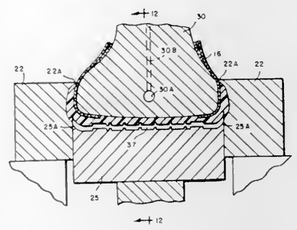
Juan Justamante, Hialeah, Fla., assignor to Suave Shoe Corporation, Miami Lakes, Fla.

Filed May 26, 1977, Ser. No. 800,659
Int. Cl.[2] B29C *1/00;* **B29F** *1/12*
U.S. Cl. 249—109 **4 Claims**

1. In a mold for injection molding a sole onto an upper, the mold comprising longitudinally extending ring plate means which define the mouth of the mold in which a lasted shoe upper may be sealingly engaged, the inner faces of said ring plate means having the contour of the sides of the peripheral portion of the bumper to be molded, and a sole plate the upper surface of which is provided with the design to be formed on the bottom of the sole, said sole plate being adapted for movement towards and away from the bottom of a lasted shoe upper positioned in the mouth of the mold, the improvement comprising,

the ring plate means having a generally concave inner surface at its upper portion and

the sole plate compirising a fin extending upwardly about its periphery, the inner surface of said fin being generally



concave and generally forming a continuation of the lower portion of said generally concave inner surface of the ring plate means when the sole plate is in a lower position and the upper portion of said fin being spaced inwardly from said generally concave inner surface of the ring plate means when the sole plate is in an upper position, whereby said fin forms a peripheral groove adjacent to the lower side of a first sole part which is injection molded when the sole plate is in said upper position and the inner generally concave surface of said fin forms a downwardly extending continuation of the peripheral face of the bumper of the first sole part on a second sole part which is injection molded when the sole plate is in said lower position.

4,120,478

GAS-HYDRAULIC PRESSURE TYPE ACTUATOR FOR PIPELINE VALVE

Akira Hasegawa, Yokohama, Japan, assignor to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Dec. 6, 1976, Ser. No. 747,853
Claims priority, application Japan, Dec. 8, 1975, 50-146517; Jul. 8, 1976, 51-81680
Int. Cl.[2] F16K *31/143, 31/12;* **F15B** *15/22*
U.S. Cl. 251—31 **5 Claims**

1. An actuator assembly for opening and closing a gas pipeline valve (**2**), comprising:

(a) an actuator cylinder (**4**),

(b) a pair of spaced pistons disposed in the cylinder and coupled together for joint movement in the cylinder by a connecting rod (**4***b*),

(c) means (**3**) coupling the connecting rod to the pipeline valve,

(d) a selective pressure supply valve (**12**),

(e) means (**5, 6**) coupling gas pressure from the pipeline to an input port of the supply valve,

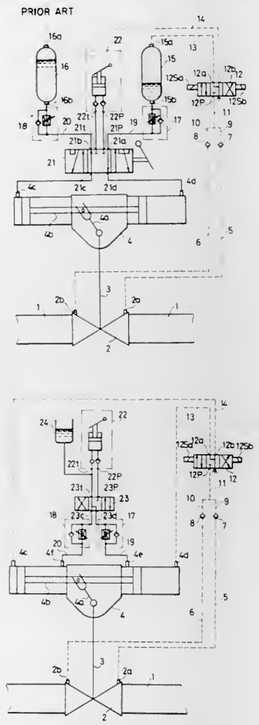
(f) means (**13, 14**) individually coupling output ports of the supply valve to opposite ends of the actuator cylinder on the piston face side of each piston, whereby gas pressure may be applied directly to a selected end of the cylinder to drive the coupled pistons and open or close the pipeline valve,

(g) a pair of flow control valves (**17, 18**),

(h) a change-over valve (**23**) connected in series between the flow control valves, and

(i) hydraulic circuit means (**19, 20**) individually and directly connecting the respective flow control valves in series between hydraulic chambers defined in the actuator cylinder on the connecting rod side of each piston, whereby

PRIOR ART



hydraulic fluid is transferred from one chamber to the other through the flow control valves in response to the movement of the coupled pistons, and the flow control valves thereby regulate the speed of the coupled pistons.

4,120,479

RISING STEM VALVE ACTUATOR

Richard L. Thompson; Murray J. Hubbert, and Vernon J. Wade, all of Houston, Tex., assignors to Bettis Corporation, Houston, Tex.

Filed Apr. 15, 1977, Ser. No. 787,882
Int. Cl.[2] F16K *31/124*
U.S. Cl. 251—56 **1 Claim**

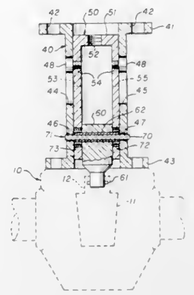
1. A valve actuator comprising:

a cylinder carrying a 2-way piston and piston rod depending from said piston rod having means at one end thereof for attachment to an input sleeve;

a mounting sleeve adapted to be fixed both to said cylinder and to a valve, said mounting sleeve having a first opposed pairs of slots of L-shaped configuration and a second opposed pair of axially oriented slots;

an input sleeve, adapted to be attached to said piston rod, movably positioned within said mounting sleeve, said input sleeve carrying opposed rollers for preventing, in combination with said axially oriented slots, relative rotation of said sleeves, said input sleeve also having an opposed pair of arcuately configured slots; and

an output member carrying a pin, the opposed ends of said pin extending through both said pair of arcuately configured slots of said input sleeve as well as through said pair of L-shaped slots in said mounting sleeve and said output



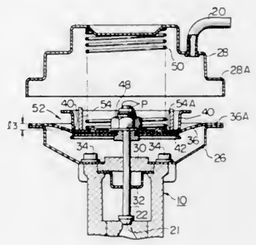
member also having means adapted to fix said output member to a valve.

4,120,480

VALVE DEVICE FOR AN EXHAUST GAS RECIRCULATION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Masahisa Ando, Aichi; Keigo Katow, Toyota, and Masami Yamazaki, Toyokawa, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 16, 1976, Ser. No. 696,856
Claims priority, application Japan, Feb. 24, 1976, 51-18419
Int. Cl.[2] F16K *31/126;* **F02M** *25/06*
U.S. Cl. 251—61.5 **2 Claims**



1. A valve device for an exhaust gas recirculation system of an internal combustion engine, which comprises:

a body having a first passageway adapted for connection with the exhaust line of the engine and a second passageway adapted for connection with the intake line of the engine;

a valve member opening or closing a valve seat formed between said first and second passageways, and;

a diaphragm mechanism having a casing secured to said body, a diaphragm arranged across the interior of said casing so as to form at least one chamber on at least one side of said diaphragm, which chamber is adapted for connection with an engine port formed in said intake line to transmit a vacuum signal from the intake line to said chamber;

a set of plates disposed on both sides of the diaphragm;

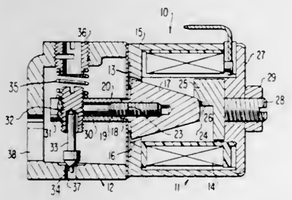
a sleeve member having a stem portion and a flange portion, said sleeve member being inserted into said diaphragm disposed through the set of plates with the flange portion engaging one of said plates;

a nut screwed onto one end of said stem portion remote from said flange portion;

a rod, a first end of which is fixed to said valve member and

the other end of which is capable of being axially, slidably inserted to said sleeve member;
an arc weld between the rod and sleeve member fixing the sleeve member in a location on said other end of said rod, and;
a spring member urging the diaphragm in the longitudinal direction of the rod so that the valve member closes said valve seat, the location of said weld being such that said diaphragm allows said valve member to be detached from the valve seat against the force caused by said spring so as to allow said valve device to be opened, when a vacuum of a predetermined level is formed in the chamber.

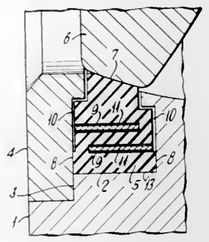
4,120,481
ELECTROMAGNETIC CONTROL VALVE, ESPECIALLY FOR AUTOMATICALLY SHIFTING CHANGE-SPEED TRANSMISSIONS
Arwed von Koch, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft
Filed Mar. 11, 1976, Ser. No. 665,861
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1975, 2511152
Int. Cl.² F16K *31/10*
U.S. Cl. 251—129 **30 Claims**



1. An electromagnetic control valve for pressure media, the control valve includes a magnet part and a valve part, the magnet part including an electromagnet means, and an armature means controlled by the electromagnet means, and at least one magnetic gap formed between a portion of the electromagnet means and the armature means, the valve part including a valve body means and a valve seat means cooperable with the valve body means, means for throttling a pressure medium flowing into the valve part, the valve body means being operatively connected with the armature means so as to be displaceable with respect to the valve seat means in dependence upon an energization of the electromagnet means to control an inflow of the throttled pressure medium into the valve part, and means for mounting the armature means and the valve body means so as to be pivotal about an axis located outside the magnetic gap, characterized in that a diaphragm means is mounted between the magnet part and the valve part for sealing said magnet part from said valve part, and in that the pivotal mounting means includes knife edge bearing means for suspending the armature means and valve body means at the diaphragm means at least approximately in a mass center of the armature means and valve body means.

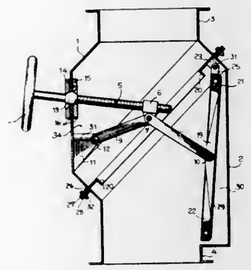
4,120,482
FLUID SEAL
Derek Michael Cox, 76 Irvine Rd., Kilmarnock, Ayrshire, Scotland
Filed Jun. 16, 1977, Ser. No. 807,095
Int. Cl.² F16K *1/226*
U.S. Cl. 251—306 **6 Claims**

1. A valve for controlling fluid flow comprising:
a. a valve casing having a fluid passage therethrough, one end of said casing having an annular notch adjacent the passage and, a shoulder adapted to receive a retaining ring;
b. a retaining ring removably secured to said shoulder, said ring and notch defining a groove adapted to receive a sealing strip;
c. a sealing strip, said strip positioned in the groove and adapted to be compressed by an obturator, said strip including: a sealing face adapted to cooperate with an obturator; a pair of oppositely disposed spaced-apart side faces extending from said sealing face, each of said side faces having a slot therein distortable when said sealing strip is compressed by said obturtor, each slot overlapping the other slot without interfering with the other slot; and a



base extending between said side faces, the width of said base being greater than the width of either of the slots;
d. a deformation-limiting means disposed in each slot, said means cooperating with said sealing strip to limit deformation of said strip;
e. a stem rotatably disposed in said passage and extending through said casing; and,
f. an obturator secured to said stem for movement therewith, said obturator compressingly engaging said sealing strip to regulate fluid flow through the passage.

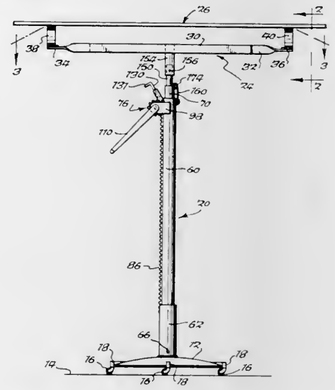
4,120,483
STOP VALVE
Jacques LeRoch, 2261 Marmier, Apt. 7, Longueuil, Quebec, Canada (J4K 4V1)
Filed Apr. 25, 1977, Ser. No. 790,651
Int. Cl.² F16K *31/44, 31/50*
U.S. Cl. 251—229 **8 Claims**



1. A stop valve, comprising:
a valve body defined by wall means, and having a longitudinal axis;
divider plate means extending across the interior of said valve body and dividing it into first and second chambers, said divider plate means lying at an angle to said longitudinal axis and carrying a valve seat means;
a valve plate received within said first chamber and pivotally mounted at a location along one side of said valve body to be movable between a closed position in engagement with said valve seat means, and an open position swung away from said valve seat means toward said one side of said valve body; and

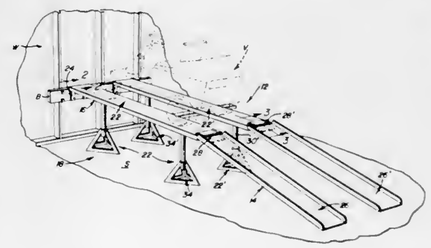
control means operable for moving said valve plate between said open and closed positions thereof, said control means including:
a shaft, having an outer end disposed outside said valve body and an inner end portion within said valve body, the outer end of said shaft being adapted to carry handle means, the inner portion thereof being threaded, and said shaft carrying ball means thereon positioned between said outer end and said threaded inner end portion;
socket means mounted on said wall means within said second chamber on an opposite side of said valve body from said one side, and adapted to receive said ball means to thereby mount said shaft for both rotational and pivotal movement, the threaded inner portion of said shaft extending toward said valve seat where said valve is in said open position;
nut means received on said threaded inner portion of said shaft; and
a first and a second link, having inner and outer ends the inner ends of said links being pivotally connected to each other and to said nut means, the outer end of said first link being pivotally connected to said valve plate, and the outer end of said link being pivotally connected to said wall means within said second chamber on said opposite side of said valve body,
said first and said second links being arranged to define a "V" relative to said nut means and forming an angle therebetween less than 180°,
whereby when said shaft is rotated in a first direction to close said stop valve, said nut means will be moved toward said socket means and the angle between said first and said second links will progressively become smaller, effecting movement of said valve plate toward its closed position, and vice versa.

4,120,484
PANEL HOISTING AND POSITIONING DEVICE
James H. Zimmer, 312 Newfield Ave., Buffalo, N.Y. 14207
Filed Nov. 9, 1977, Ser. No. 849,889
Int. Cl.² B60P *1/12*
U.S. Cl. 254—6 C **14 Claims**



1.A panel hoisting and positioning device comprising:
(a) a maneuverable base;
(b) a raising and lowering means having a stationary component fixed to said base and a movable component operatively associated with said stationary component and adapted to be raised and lowered relative to said base; and
(c) panel supporting means connected to said raising and lowering means including bar means connected generally centrally thereof to said movable component of said raising and lowering means and disposed generally perpendicular to the direction said component is raised and lowered and first and second panel engaging elements fixed to opposite ends of said bar means, each of said panel engaging elements having a shape such that it contacts a panel at two spaced apart panel contacting sections of said element, each of said sections being in the form of a strip having a convex curvature along the length of the strip in a direction facing the panel, each of said sections contacting the panel along the entire width of the strip, and each of said panel engaging elements being flexible at least in the portions thereof including said panel contacting sections.

4,120,485
FOLDING RACK AND WORK TABLE
Joseph W. McConnell, 9722 W. 136 La., Cedar Lake, Ind. 46303
Filed Nov. 1, 1977, Ser. No. 848,568
Int. Cl.² E02C *3/00*
U.S. Cl. 254—88 **11 Claims**

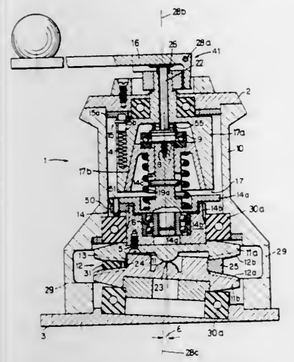


1. A service rack and work table unit, comprising, in combination:
(a) rack means for supporting a vehicle to be serviced and including a planar table surface; and
(b) ramp means attached to the rack means for permitting the vehicle to be brought onto and removed from the rack means, the rack means including attachment means pivotally mounting the rack means on a support for swinging movement between a storage position wherein the planar table surface is substantially vertical and a work position wherein the planar table surface is substantially horizontal.

4,120,486
METHOD AND APPARATUS FOR THE SLIP-FREE HAULING OF A ROPE OR THE LIKE
Walter Mehnert, Ottobrunn, Fed. Rep. of Germany, assignor to Director Ing. Fritz Loertscher, Flums/SG, Switzerland
Filed Jan. 24, 1977, Ser. No. 761,880
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603202; Aug. 5, 1976, 2635267
Int. Cl.² B66D *1/30*
U.S. Cl. 254—150 R **36 Claims**

1. An apparatus for the slip-free hauling of rope means, comprising housing means, clamping pulley means in said housing means, braking means, relative arresting means operatively connecting said clamping pulley means with said braking means, means operatively connecting said clamping pulley means to said relative arresting means, control means, absolute arresting means operatively connecting said control means with said housing means, auxiliary means operatively connecting said control means to said relative arresting means, first and second spring means operatively connecting said braking means to said absolute and relative arresting means, respectively, whereby said housing means operatively position said recited means, said control means being adapted to initiate and

control the braking, releasing, and arresting of said slip-free hauling in such a manner that a looping angle of less than 360°



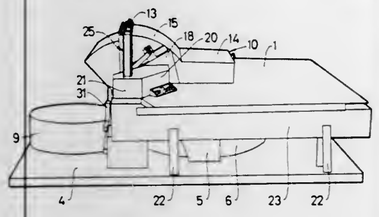
of said rope means relative to said clamping pulley means is maintained at all times.

4,120,487

FUME HOOD FOR A MELT POT

Karl-Erik Sjogren, Sandared, Sweden, assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed May 19, 1977, Ser. No. 798,377
Claims priority, application Sweden, Dec. 20, 1976, 7614284
Int. Cl.[2] F27B *14/02*
U.S. Cl. 266—158 **13 Claims**



1. Apparatus for collecting and removing smoke and fumes from a melting furnace plant comprising: a platform tiltably supported by stationary supporting members, the tilting axis being near one edge of the platform, a furnace rigidly connected to the platform, said furnace having a furnace chamber open at the top and accessible through a charging orifice in the platform, said furnace having a pouring spout connected to the upper part of the side wall of the furnace and located near the tilting axis;

(a) a hood pivotably supported by supporting members attached to said platform, said hood being angularly movable towards and away from a portion of the platform thereby surrounding the charging orifice of the platform in its lowered position, the pivot axis of said hood being parallel with the tilting axis of the furnace and extending at the same side of the furnace as said tilting axis,

(b) a pair of parallel wall members arranged on the upper surface of said platform and extending at right angles to said tilting axis, said wall members extending from the edge of the platform which is near the tilting axis along the platform and having such a vertical extension with respect to the plane of the platform as in any angular position of said hood, the hood together with said wall members and with the upper surface of the platform define a cowl facing said charging orifice,

(c) a first air duct attached to said platform,

(d) a second air duct supported by stationary supporting members, said first air duct having an inlet orifice connected to said cowl and an outlet orifice surrounding said tilting axis, said outlet orifice being connected to and freely rotatable with respect to an inlet orifice of said second air duct,

(e) the end of said hood which is nearest to the pivotal axis of the hood forms a second cowl, the orifice of which is located, when said hood is in its bottom position with reference to the platform, near a vertical plane through the pivot axis of the hood, and,

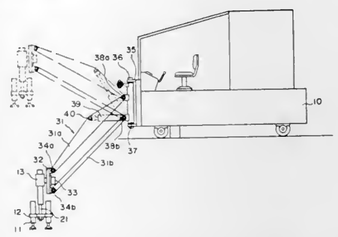
(f) a second hood adapted to said orifice of the second cowl and arranged to be angularly displaceable into and out of said first mentioned hood, said second hood being pivotal about the axis of said first hood.

4,120,488

STAMPING APPARATUS FOR APPLYING LINING MATERIAL TO IRON RUNNERS

Motohiko Iizuka, Fukuyama; Hiroyuki Danjo, Bizen; Kazuo Ikeda, Fukuyama, and Masatoshi Yoshimura, Kasaoka, all of Japan, assignors to Shinagawa Shirorenga Kabushiki Kaisha; Nippon Kokan Kabushiki Kaisha, both of Tokyo; Kabushiki Kaisha Ikeda Kikai Seisakusho and Shinagawa Roko Kabushiki Kaisha, both of Fukuyama, all of Japan

Filed Jan. 19, 1978, Ser. No. 871,481
Claims priority, application Japan, Feb. 4, 1977, 52-10635
Int. Cl.[2] C21B *7/00*
U.S. Cl. 266—281 **4 Claims**



1. A stamping apparatus for applying a lining material to an iron runner comprising:

arm means mounted at the base thereof to a travelling device and including a base member vertically mounted to one end thereof, said arm means further including a link mechanism and a swivelling mechanism, whereby said arm means is adapted to vertically and horizontally move said base member;

a balancing cylinder vertically supported on said base member through the intermediary of turnning means, said balancing cylinder holding therein a piston by upper and lower cylinder chambers, said balancing cylinder including compressed air inlet means, setting regulator means and main control regulator means for maintaining the pressure in each of said cylinder chambers at a setting pressure and a piston rod whereby maintaining constant the pressing force of at least one rammer mounted to one end of said piston rod, said balancing cylinder being rotatable so as to be held horizontally as well as in an inclined position; and

said at least one rammer mounted to said piston rod in parallel with said balancing cylinder.

4,120,489

DOUBLE TRUNCOCONICAL SPRING OF WIRE WITH CIRCULAR CROSS SECTION

Arthur Borlinghaus, Berghausen, Germany, assignor to Bebrueder Ahle, Karlsthal Post Berghausen, Germany

Continuation-in-part of Ser. No. 48,348, Jun. 22, 1970. This application Mar. 30, 1973, Ser. No. 346,531
Int. Cl.[2] F16F *1/04*
U.S. Cl. 267—61 R **1 Claim**



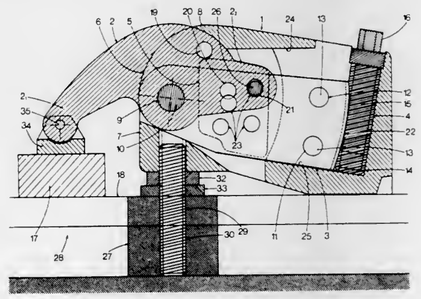
1. A double truncoconical spring made of wire having a circular cross section, the coil having the greatest diameter being toward the middle of the spring, the coils of one half of said spring, under maximum load, being positioned inside one another in the form of a spiral, said spring having a partially progressive characteristic, said spring composed of wire whose diameter is greatest in the middle of the spring and whose diameter diminishes towards both ends of the spring in a ratio such that the condition of maximum stress is fulfilled for each coil and, as loading increases, the inner coils lay themselves progressively against the bearing surfaces at the ends of the spring.

4,120,490

CLAMPING DEVICE FOR A MACHINE TOOL

André Carossino, B.P. #755, 95004 Cergy Cedex, France

Filed Mar. 7, 1978, Ser. No. 884,306
Claims priority, application France, Mar. 10, 1977, 77 07067; Jan. 23, 1978, 78 01765
Int. Cl.[2] B23Q *3/06*
U.S. Cl. 269—94 **12 Claims**



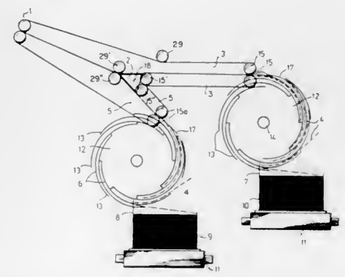
1. A device for clamping work to be machined on a table of a machine tool, the device comprising means defining a body in the form of a housing, anchoring means for fixing it to the table of the machine tool, a pivotal jaw mounted on the housing to pivot about an axis, actuating means mounted on the housing to be accessible from outside the housing, an independent lever which extends the jaw and is mounted on the housing to pivot about said axis, means coupling the lever to the actuating means for pivoting the lever about said axis, the jaw and the lever being relatively pivotable about said axis, and detachable coupling means for rendering the jaw and lever rigid with each other in different selectable relative angular positions so as to pivot together when the actuating means is brought into action.

4,120,491

SHEET STACKING APPARATUS

Hans Friedrich Lang, Landau, Germany, assignor to Gustav Weyland KG, Landau, Pfalz, Germany

Filed May 27, 1977, Ser. No. 801,071
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1976, 7619535[U]
Int. Cl.[2] B65H *29/58*
U.S. Cl. 271—64 **2 Claims**



1. An apparatus for stacking sheets in a rotary printing press, which comprises the combination of

(a) a conveyor band means having a delivery end for conveying successive ones of the sheets to the delivery end,

(b) a sheet receiving drum mounted for rotation adjacent the delivery end of the conveyor band means, the drum comprising

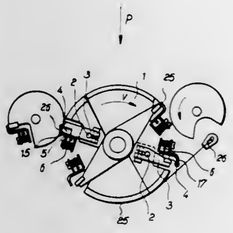
(1) a plurality of like axially spaced discs, each disc having a series of spirally extending, equidistant pockets distributed uniformly about the periphery thereof, each pocket defining an inlet opening for receiving a respective one of the sheets from the delivery end as the drum rotates successive ones of the inlet openings into sheet receiving relationship with the delivery end, the inlet openings of the pockets of all discs being in alignment,

(c) stripper elements mounted peripherally spaced from the delivery end of the conveyor band means at a sheet stacking station and extending between the discs of the sheet receiving drum whereby an inner end of each successive sheet is stopped by the stripper elements as the drum rotates and brings the inner sheet end into engagement with the stripper elements and further rotation of the drum strips the successive sheets out of the pockets wherein they have been received and stacks the successive sheets,

(d) sheet guide elements mounted between the discs and surrounding a substantial portion of the periphery of the drum and extending to the delivery end of the conveyor band means, the sheet guide elements ending before the stacking station to enable the successive sheets to fall from their pockets, and

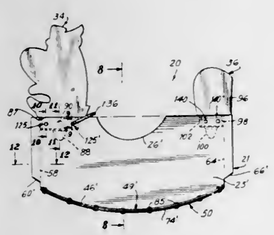
(e) a sheet guide element extending outwardly and tangentially to the drum at each inlet opening of the pockets, the sheet guide elements cooperating to provide closed pockets for the respective sheets during rotation of the drum from the delivery end to the stacking station.

4,120,492
GRIPPER MECHANISM
Arnošt Černy, Blansko, Czechoslovakia, assignor to Adamovske strojirny, narodni podnik, Adamov, Czechoslovakia
Filed Aug. 8, 1977, Ser. No. 822,898
Claims priority, application Czechoslovakia, Aug. 16, 1976, 5311/76
Int. Cl.[2] B65H *5/12*
U.S. Cl. 271—277 5 Claims



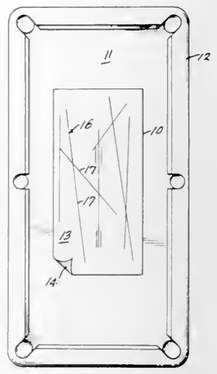
1. A gripper mechanism for seizing the trailing edge of a paper sheet on the surface of a transfer drum for turning said paper sheet, comprising a plurality of rollers obliquely arranged in the gripper mechanism and mounted symmetrically on both sides of a middle axis of the gripper mechanism, the axes of the rollers forming an angle α with the axis of the gripper shaft in the range from 0° to 30°, the individual angles α opening in a direction toward the middle axis of the gripper mechanism, the angle α for rollers relatively close to the middle axis being less than the angle α for rollers relatively remote therefrom.

4,120,493
COLLAPSIBLE ROCKING TOY
Irving Sommer, Commack, N.Y., assignor to Toy Professionals Unlimited, Inc., Commack, N.Y.
Filed Feb. 9, 1977, Ser. No. 767,195
Int. Cl.[2] A63G *17/00*
U.S. Cl. 272—52 16 Claims



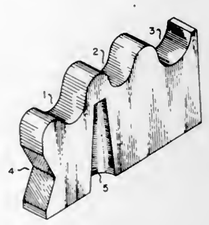
1. A rocking toy comprising, side panel means, said side panel means being pivotally joined at the top thereof along a longitudinally extending line, and each having an arcuate lower end formed with an outwardly folded peripheral flange for rocking thereof, base panel means secured to and between the peripheral flanges of the lower ends of said side panel means, said base panel means being foldable about its longitudinally extending centerline for folding coordinate with the pivoting of said side panel means and seat means mounted to said said panel means.

4,120,494
POCKET BILLARD TRAINING DEVICE
Hjalmer E. Roe, 5948 Gany Mede Dr., Toledo, Ohio 43623
Filed Feb. 25, 1977, Ser. No. 772,245
Int. Cl.[2] A63D *15/00*
U.S. Cl. 273—2 10 Claims



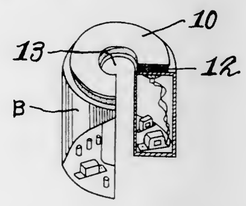
1. A pocket billiards training device for use on a billiard table having a playing area comprising, a layer of cloth material having an upper surface and a lower surface, said layer of material being of an area less than such playing area of such billiard table and identifying means on said upper surface of said layer of cloth material for guiding a player in making predetermined billiard shots, said lower surface including a nap for gripping such billiard table playing area.

4,120,495
BILLIARD HAND BRIDGE
Joseph R. Moughler, 85 Laurel Dr., Smithtown, N.Y. 11787
Filed Apr. 2, 1976, Ser. No. 672,985
Int. Cl.[2] A63D *15/00*
U.S. Cl. 273—23 1 Claim



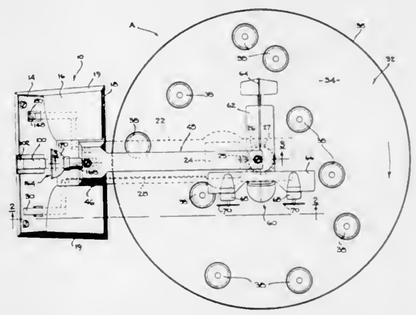
1. A billiard, pool or like cue guide comprising a body of generally flat, rectangular, slab-like form, having three sets of two opposite surfaces, a first set comprising first and second surfaces, a second set comprising third and fourth surfaces and a third set comprising fifth and sixth surfaces, each of said first, third and fifth surfaces having at last one cue guiding groove and said second, fourth, and sixth surfaces being constituted as means for supporting said body on a flat surface and being substantially mutually perpendicular, said first surface comprising a long side of said slab-like body and said second surface comprising an opposite long flat side of said body, said first surface having three cue guiding grooves, the spacing of bases of those grooves from said second surface each being different; said third surface comprising a relatively short side of said slab-like body having a single cue guiding groove therein and said fourth surface comprising an opposite short flat surface of said body; said sixth surface comprising a large flat surface and said fifth surface comprising an opposite surface having a single, relatively long, cue guiding groove formed therein, said last mentioned groove having a base inclined to the plane of said sixth surface and constituting means, when said sixth surface is disposed on a rail of a pool table, for guiding a cue in playing a ball close to said rail.

4,120,496
GOLF CUP WITH SOUND PRODUCING DEVICE
Yozo Niina, No. 562, Tozinmachi, Usuki City, Oita Prefecture, Japan
Filed Mar. 2, 1977, Ser. No. 773,558
Claims priority, application Japan, Mar. 5, 1976, 51-23089
Int. Cl.[2] A63B *57/00, 69/36;* G11B *15/00*
U.S. Cl. 273—34 R 2 Claims



1. In combination, a golf cup having drainage holes in the bottom thereof, a projection projecting upwardly from the bottom of said golf cup, an annular circuit box on said projection, the hollow center of said circuit box being a flagstick base receiving hole, the top of said circuit box being a metal contact, an annular sponge on said top and having a plurality of apertures therein extending through the thickness of said sponge, a metal conact plate on the top surface of said sponge and having a plurality of projections on the under side of said contact plate projecting into said apertures in said sponge and having the free ends spaced from said top when the sponge is in the uncompressed condition and contacting said top when said sponge is compressed, and a sound producing circuit within said circuit box having an energy source and a sound producing means and said top and said contact plate being coupled in said sound producing circuit as an actuating switch for said sound producing circuit, said sound producing circuit having means for keeping the circuit energized for producing a sound for a predetermined time after the projections on said contact plate is moved into contact with said top, whereby when a golf ball falls into said golf cup and strikes said terminal plate, said sponge is compressed and said projections contact said top for energizing said sound producing circuit.

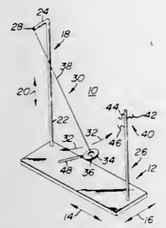
4,120,497
TARGET GAME WITH RELEASABLE OBJECTS AND ROTATING TARGET MEMBER
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316
Filed Feb. 22, 1977, Ser. No. 770,606
Int. Cl.[2] A63B *63/06;* A63F *7/02*
U.S. Cl. 273—95 B 22 Claims



14. A method of operating a toy for dropping one or more objects from a simulated airborne vehicle onto target positions, said method comprising:
(a) effecting selective movement along one path of a simulated airborne vehicle supported on an arm extending over a target area through manual actuation of a remote lever,
(b) causing continuous rotational movement generally transverse to said path by the target area which has a plurality of spaced apart identified target positions on its upper surface,
(c) sighting one of the target positions on the target area through a relatively short tubular stationary sight located remote from the vehicle, maintaining the sighting eye substantially stationary, and actuating said remote lever to effectuate said movement to move said vehicle and align a mirror located on said vehicle through said sight to bring into view one of said target positions, and
(d) releasing individual ones of a plurality of of objects carried by an elongate element on the vehicle through manual actuation of a remote release member when the vehicle has been shifted to a position relative to the target area, the action of releasing the objects occurring while the user of the toy operates the remote release member and simultaneously looks through the sight at a remote position from the vehicle to drop the object when the selected target position appears in the desired location through the sight and which target position is achieved through such selective movement of the vehicle.

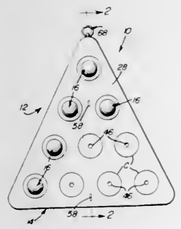
17. A target toy comprising:
(a) means defining a generally horizontal target area disposed on a supporting surface, said target area rotating generally continuously,
(b) means defining a self standing base having an upright section and a transverse section extending outwardly from the upright section, said transverse section being positioned with at least a portion thereof extending over and spaced above said target area,
(c) an object carrier supported on said transverse section for movement therealong and over said target area,
(d) control means on said base selectively manually operable by a user to cause said movement of said carrier on said transverse section,
(e) at least one object releasably carried by said carrier,
(f) sighting means comprising a relatively short tubular sighting member on said base, an optical element mounted on said carrier and being optically aligned with said sighting member for the entire path of movement of said carrier on said transverse section to enable a user of the toy to look through the sighting member and to view a portion of the target area by means of the optical element, the length and cross section of said sighting member being such that the user's view through the sight will not extend beyond the limits of the optical element when the carrier is at its furthest position from the sighting member,
(g) release means on said base in close proximity to said control means and being selectively manually operable by a user to release an object from said carrier, said tubular sighting member being located in relation to said release means to enable a user of said target toy to simultaneously operate said release means while viewing a portion of the target area through said sighting member and in a position remote from said carrier.

4,120,498
AMUSEMENT SYSTEM
Steven C. Mutschler, 2070 Garden Springs Dr., Lexington, Ky. 40504, and Loane J. Randall, Naples, Fla., assignors to Steven C. Mutschler, Lexington, Ky.
Filed Apr. 26, 1977, Ser. No. 791,051
Int. Cl.[2] A63B *67/06*
U.S. Cl. 273—99 **9 Claims**



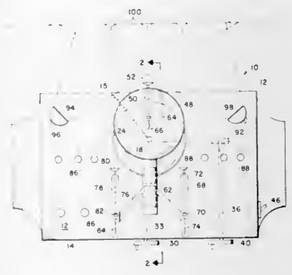
1. An amusement system comprising:
(a) a longitudinally extended base member;
(b) a first rod member secured to said base member, said first rod member extending in a substantially vertical direction above said base member;
(c) tethered projectile means secured to said first rod member;
(d) a second rod member secured to said base member, said second rod member being longitudinally displaced from said first rod member;
(e) first target means secured to said second rod member for releasably capturing said tethered projectile means; and,
(f) second target means secured to said base member, said second target means being positionally located for interception of a displacement path of said tethered projectile means, said second target means including at least one target rod member being inclined with respect to said base member for blocking at least one displacement path of said tethered projectile means to said first target means.

4,120,499
RING TOSS GAME DEVICE
Anthony N. Stazzone, 5703 Haverhill Dr., Parma, Ohio 44129
Filed Apr. 26, 1977, Ser. No. 791,018
Int. Cl.[2] A63B *67/06*
U.S. Cl. 273—100 **6 Claims**



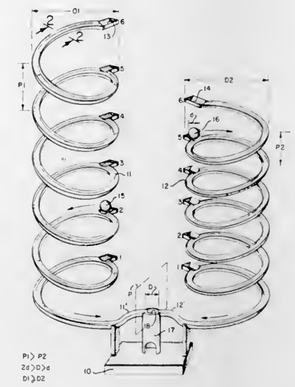
1. A ring toss game device, comprising, in combination:
(a) a game board including a frame forming means for removably receiving a peg;
(b) a peg removably mounted on the board by the means for removably receiving;
(c) support means attached to the game board for permitting the game board to be variously disposed; and
(d) a ring to be tossed at the board for retention by the peg during the playing of a ring toss game, the frame of the game board comprising a hollow container provided with an apertured interior cavity and an opening permitting access to the cavity, the peg and ring being selectively storable in the cavity, and a double-wall means partially surrounding and forming the interior cavity and an airtight chamber within the frame for permitting the frame to float in a liquid body, the frame being formed by two spaced, substantially parallel, planar faces and a side wall extending between and around the periphery of the faces for substantially enclosing a space between the faces, the space between the faces including the cavity and chamber, the opening permitting access to the cavity being formed in the side wall, with the side wall portion extending away from the opening being the double-wall means forming the airtight chamber in cooperation with the faces of the frame.

4,120,500
LIGHT IMAGE TARGET WITH ELEVATING AND ROTATING PROJECTOR
Benedict Montanarello, 35 Odell Ave., Apt. 2C, Yonkers, N.Y. 10701
Filed Jan. 5, 1977, Ser. No. 756,870
Int. Cl.[2] A63B *65/02;* **F41B** *7/08*
U.S. Cl. 273—101 **2 Claims**



1. Space flight game apparatus comprising a light source in combination with indicia, said indicia being positioned in between said light source and a planar surface, said light source and indicia being pivotally mounted for casting said light image at any one of a plurality of positions on a planar surface, at least one launching tube mounted on a platform extending from a base having propelling means operatively associated therewith, said propelling means arranged to deliver an accelerating force to a projectile, trigger means for releasing an accelerating force from said propelling means, said platform being rotatable in a horizontal plane about a pivot extending therefrom, said platform being rotated through a rotatable wheel operatively associated with said platform, said rotatable wheel having a cord secured thereto at one end, said pivot about which said platform is rotatable comprising an axle substantially transverse to said platform, the other end of said cord being wound around and secured to said axle, resilient means operatively associated with said platform for applying a return torque to said platform when said platform is rotated, whereby rotation of said wheel causes said axle and platform to rotate, said platform being raised and lowered through crank means operatively associated with said platform for raising and lowering said platform, said rotatable wheel and said crank means being arranged so that said launching tube can be aligned to fire a projectile at a light image cast by said light source in combination with indicia at any of said plurality of positions on a planar surface.

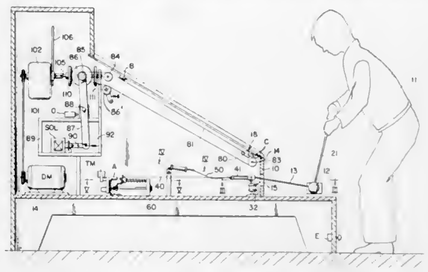
4,120,501
INCLINED TRACK BALL AND DICE GAME
Roger Lee Atherton, 5328 Larkspur St., Ventura, Calif. 93001
Filed Sep. 29, 1977, Ser. No. 837,928
Int. Cl.[2] A63F *7/02*
U.S. Cl. 273—120 R **6 Claims**



1. An inclined track ball and dice game including, in combination:
(a) a frame structure defining first and second inclined tracks disposed in spaced positions and each having numbered levels, means on each level defining a numbered starting position, the lowest ends of said tracks extending towards each other along upwardly sloped path portions to meet at a common point at the highest point of said path portions, said point being below the levels of the lowest numbered levels of said tracks;
(b) a pair of dice,
(c) two balls dimensioned to be supported by said tracks respectively so that when placed at a starting position corresponding to a number on said dice and released, they will roll down the tracks by gravity;
whereby a person can throw the dice and thereafter position said balls on specifically numbered levels of the tracks determined by the numbers showing on the dice, respectively, the person then releasing the highest level ball and after a given time interval the other ball, said person attempting to evaluate said given time interval so that said balls will meet at said highest point of said sloped path portions and rebound back to come to rest at the lowest points of the inclined tracks upon which they were respectively initially positioned.

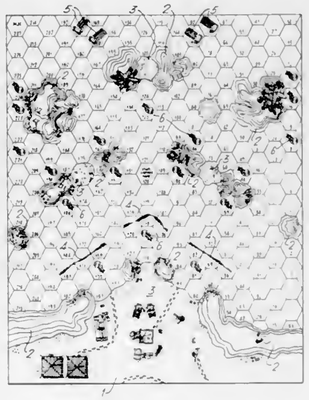
4,120,502
GOLF GAME APPARATUS
William H. Martin, Guelph, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jul. 18, 1977, Ser. No. 816,647
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—176 R **4 Claims**

1. An apparatus for simulating the play of gold comprising a display unit on which an indicator is mounted to travel from a start position to a finish position and a drive unit which incorporates a captive ball mounted to the apparatus together with electro-mechanical means to cause the indicator to travel a distance related to the impact force with which the captive ball is struck,
said electro-mechanical means including first electro-mechanical means to translate the impact force against the captive golf ball into a measured time period which is proportioned to said impact force and a second electro-



mechanical means to drive the indicator for the duration of said time period.

4,120,503
CHASE-TYPE BOARD GAME
Richard Brabazon Macrory, and Nicholas Gordon Young, both of 68 Stockwell Park Rd., London, S.W. 9, England
Filed Jan. 26, 1977, Ser. No. 762,924
Claims priority, application United Kingdom, Feb. 3, 1976, 4195/76
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—244 **3 Claims**



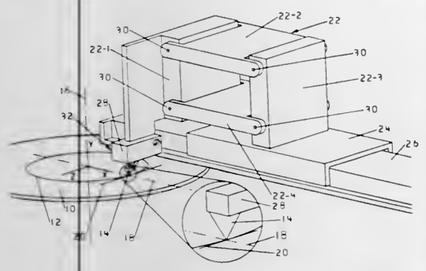
3. A game comprising a plurality of playing pieces each in the form of a model swimmer having removable legs, a different playing piece in the form of a shark, a playing surface divided into at least two areas one area representative of sea and the other area representative of land, a plurality of playing spaces on that part of the playing surface representative of sea, each playing space being individually identifiable by a different character reference and a plurality of different chance instructions adversely affecting a player's progress in a game, a plurality of different chance instructions favorably affecting a player's progress in a game, said chance instructions being carried on chance cards, and dice means for determining whether a player follows either an adverse chance instruction or a favorable chance instruction.

4,120,504

DISK TRACKING AND SUPPORT APPARATUS

William Buttfield Brecht, 114 Bloomingdale Ave., Wayne, Pa. 19087

Filed Jul. 20, 1976, Ser. No. 707,057
Int. Cl.[2] G11B *3/10*
U.S. Cl. 274—23 A **41 Claims**



1. Apparatus for rotating a disk and causing a stylus to track a groove signal therein along a line radial to said disk, comprising:
(a) a stylus;
(b) a stylus holder;
(c) a four bar linkage, moveable parallel to said radial line in response to stylus vertical movement, all four bars coplanar, said stylus holder secured to a first bar thereof, said four bar linkage comprising:
(i) a first bar generally perpendicular to said disk, moveable vertically unitarily with said stylus holder;
(ii) a second bar pivotally connected to said first bar and to a third bar for coplanar movement with respect thereto, rotatable in response to vertical movement of said first bar;
(iii) a said third bar pivotally connected to said second bar and a fourth bar for coplanar movement with respect thereto, generally parallel to yet spaced apart from said first bar, moveable parallel to said line radial said disk in response to stylus vertical movement;
(iv) a said fourth bar pivotally connected to said first and third bars, rotatable unitarily with said second bar in response to vertical movement of said first bar and said stylus;
(d) means, moveable along a track line parallel to said line radial to said disk, for supporting said four bar linkage;
(e) track means for guiding said support means along said track line, secured to a base;
(f) a base including means for supporting a platter;
(g) a platter, rotatable on said base about an axis, for supporting said disk; and
(h) means, connected to said base, for rotating said platter about said axis.

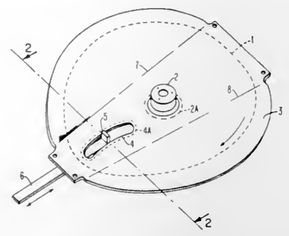
4,120,505

STABILIZING BACKING PLATE FOR A FLEXIBLE DISK STORE

Allen Ronald Cox; Michael Robert Hatchett, and Leonard John Rigbey, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1977, Ser. No. 815,394
Int. Cl.[2] G11B *3/60*
U.S. Cl. 274—39 R **11 Claims**

1. For use in a recording and/or reproducing apparatus wherein a record disc rotates over a stationary backing plate, the improvement being a stabilizing backing plate on which a bearing surface is provided, a face of the plate provided with a plurality of spaced depressions distributed over the face in a regular grid pattern and separated by portions of untreated plate whereby air entrapped in said depressions enhances start-up of rotation of a record disk which is adjacent said plate and covering said depressions.

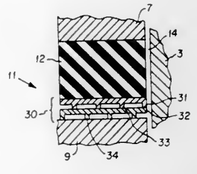


4,120,506

WELLHEAD SEAL

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 21, 1977, Ser. No. 863,005
Int. Cl.[2] F16J *15/20*
U.S. Cl. 277—105 **5 Claims**



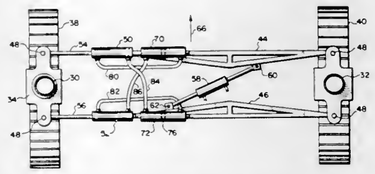
1. In a wellhead having an elastic annular seal means, the improvement comprising at least one annular resilient back-up means adjacent said seal means, said backup means comprising a stack of at least two annular resilient members, each member having a plurality of spaced apart protrusions thereon, said members being oriented in relation to one another so that the protrusions of each member abut the adjacent member in between the protrusions of that adjacent member.

4,120,507

COMPENSATED EXTENDABLE STEERING MEANS FOR HEAVY MACHINES

Charles P. Miller, McHenry, Ill., assignor to Miller Formless Co. Inc., McHenry, Ill.

Filed Mar. 16, 1977, Ser. No. 778,122
Int. Cl.[2] B62D *11/22*
U.S. Cl. 280—6 R **3 Claims**



1. A mobile construction machine including:
a main frame;
a pair of vertically adjustable support means affixed to opposite sides of said main frame;
ground engagement means disposed from said adjustable support means;

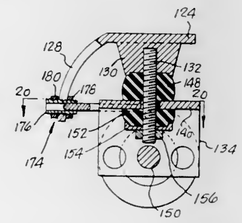
each of said ground engagement means being connected to said support means through a vertical steering axis;
a pair of transverse steering linkages connecting between said ground engagement means fore and aft of said vertical pivot axes;
means to actuate said steering linkages and turn said ground engagement means in unison;
each of said steering linkages having a compensating cylinder adapted to provide for the simultaneous extension and retraction of said steering linkages with changes in elevation of the grade supporting said machine;
a floating cylinder associated with each of said compensating cylinders and carried by said machine;
said compensating cylinders and said floating cylinders each having a displacement chamber on one side of the piston therein and a replacement chamber through which its piston rod extends on the other side of its respective piston;
conduit means cross-connecting the respective displacement chambers of said compensating cylinders with the displacement chambers of said floating cylinders; and
conduit means connecting the replacement chamber of each of said compensating cylinders with the replacement chamber of its associated said floating cylinder.

4,120,508

WHEELED SKATEBOARDS

John Steven Brown, 1141 Humbolt St., and Thomas Gerald Hillard, 1628 4th St., both of Santa Rosa, Calif. 95404

Filed Mar. 30, 1977, Ser. No. 782,916
Int. Cl.[2] A63C *17/02*
U.S. Cl. 280—11.28 **14 Claims**



6. An adjustable truck for supporting a pair of wheels which are connected to an axle, said truck adapted to be mounted to the underside of a board, which comprises:
first means for rotatably supporting said axle about a first, substantially vertical pivot axis;
second means coupled to said axle for rotatably supporting same about a second pivot axis which is inclined with respect to said first pivot axis;
third means adapted to be mounted to the underside of said board for supporting said first and second means; and
fourth means coupled to said second and third means for adjusting the angle of inclination of said second pivot axis whereby the turning radius of said wheels may be selectively adjusted.

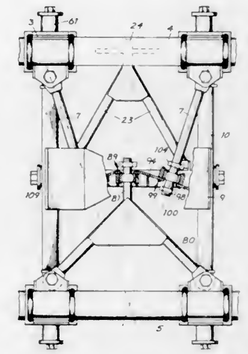
4,120,509

SELF-STEERING TANDEM AXLE BOGIE

Richard James Reeve, 5505 E. Evergreen, Apt. 306, Vancouver, Wash. 98661, and Dennis Raymond Shirley, 14670 NE. Russell Ct., Portland, Oreg. 97320

Filed Apr. 22, 1977, Ser. No. 789,883
Int. Cl.[2] B62D *13/00*
U.S. Cl. 280—81 A **7 Claims**

1. A self-steering tandem axle bogie for a vehicle comprising:
a. a pair of longitudinally extending frame supporting members;
b. front and rear transversely extending wheel axles, opposite end regions of which are universally attached to end regions of the frame supporting members for sliding movement thereon, permitting relative angular movement between the two wheel axles in a common plane and independent tilt of each wheel axle out of said plane;
c. a transversely extending steering unit for transmitting vehicle load to the frame supporting members, said unit



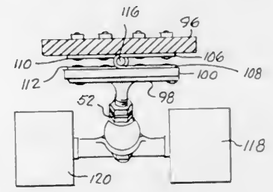
being universally attached at opposite ends to the frame supporting members and longitudinally spaced between said front and rear axles; and
d. a pair of steering arms, each arm coupling one of the end regions of said front axle to the corresponding transverse side of said steering unit by pivotal joining means at each end of said arm, for transmitting, upon vehicle turning occurring, angular movement between said steering unit and said frame supporting members to said front axle to effect angular movement of said front axle, relative to said rear axle, in the direction of vehicle turn.

4,120,510

WHEELED SKATEBOARDS

Thomas Gerald Hillard, Santa Rosa, Calif., assignor to John S. Brown, Santa Rosa, Calif., a part interest

Filed Mar. 30, 1977, Ser. No. 782,915
Int. Cl.[2] A63C *17/02*
U.S. Cl. 280—87.04 A **8 Claims**



1. Apparatus, which comprises:
a first substantially planar support member adapted to support a rider on the upper surface thereof;
a second substantially planar support member positioned underneath said first support member;
wheeled truck means connected to the underside of said second support member for turning to the left or right in response to the tilting of said second support member respectively to the left or right about its longitudinal axis; and
means operatively connecting said first and second support

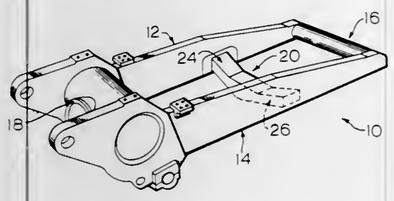
members for preventing said truck from turning until said first support member is tilted a predetermined amount.

4,120,511

SADDLE/MAIN FRAME FABRICATION

Royce D. Allen, East Peoria, and Rollen G. Easter, Tremont, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 4, 1977, Ser. No. 765,517
Int. Cl.[2] B62D *21/00*
U.S. Cl. 280—795 **8 Claims**



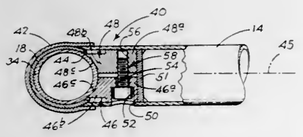
1. Frame structure comprising:
first beam means comprising upper and lower members,
first sidewall means fixed to the upper and lower members, and second sidewall means fixed to the upper and lower members; and
second beam means defining an end portion positioned in an opening defined by the second sidewall means and one of the upper and lower members, and fixed to the second sidewall means;
wherein the end portion comprises an end plate positioned substantially coplanar with the second sidewall means; and
first and second reinforcing members respectively extending between and fixed to the upper and lower members, and a third reinforcing member extending between and fixed to the first and second reinforcing members in the area of the opening.

4,120,512

SADDLE PILLAR CLAMP FOR BICYCLE

Lawrence A. Newlands, 2371 SW. Cedar, Portland, Oreg. 97205

Filed Jan. 14, 1977, Ser. No. 759,389
Int. Cl.[2] B62K *19/36*
U.S. Cl. 280—281 R **6 Claims**



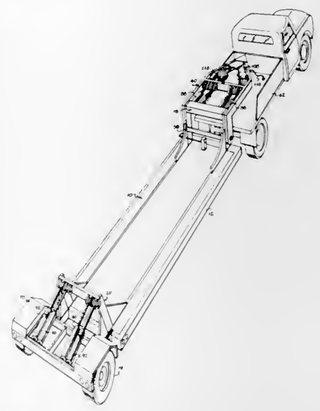
1. Means in a bicycle frame for mounting the pillar of a bicycle seat, where the frame includes a first elongated, cylindrical, hollow, generally horizontal frame member, and a second elongated, cylindrical, hollow, generally upright frame member, with said first frame member having one end joined adjacent the upper end of said second frame member, and with said second frame member including an open top defined by a continuous generally circular wall expanse adapted freely to receive such a pillar within the member with the pillar extending downwardly past the region of joinder of said two frame members, said mounting means comprising
means defining an opening in said second frame member exposing to the interior thereof the interior of said first frame member,
a first concealed clamping member disposed within said first frame member adjacent said opening and including a clamping face exposed to the interior of said second frame member and clampingly engageable with a seat pillar received within said second frame member,
a second concealed clamping member disposed within said first frame member adjacent, and movable relatively toward and away from, said first clamping member, said second clamping member also having a clamping face exposed to the interior of said second frame member clampingly engageable with a seat pillar received within said second frame member in cooperation with said clamping face on said first clamping member, and
actuating means operatively connected to said clamping members, accessible and operable from outside said frame for shifting said members relatively toward and away from each other without effecting any configuration change in said upper end of said second frame member.

4,120,513

IMPLEMENT TRAILER

Henry Wayne Hurt, Lubbock, Tex., assignor to Lubbock Manufacturing Company, Lubbock, Tex.

Filed Aug. 4, 1977, Ser. No. 821,594
Int. Cl.[2] B62D *53/06*
U.S. Cl. 280—423 B **16 Claims**



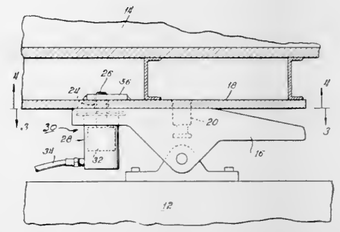
1. In a trailer having
a frame with
(i) a longitudinal axis,
(ii) a gooseneck connected to
(iii) a front end of a main bed, and
(iv) a rear member connected to
(v) a rear end of said main bed,
at least two ground engaging wheels connected to the frame,
universal means for attaching the gooseneck to a towing vehicle; the improved structure comprising in combination with the above:
a. the front end of the main bed being connected to the gooseneck by front pivots,
b. front motor means interconnecting the gooseneck and the main bed for pivoting said gooseneck relative to said main bed about the front pivots, and
c. front locking means for maintaining the gooseneck in a fixed position in relationship to said main bed, said front locking means including
d. at least one hollow cylinder,
e. a longitudinal rod slidably fitting within the hollow cylinder, and
f. a locking pin in correlated holes in the hollow cylinder and rod.

4,120,514

SAFETY DEVICE FOR TRACTOR-TRAILERS TO PREVENT JACKKNIFING

O'Neal Sanders, 7544 South Essex, Chicago, Ill. 60649

Filed Jun. 10, 1977, Ser. No. 805,322
Int. Cl.[2] B62D *53/08*
U.S. Cl. 280—432 **10 Claims**



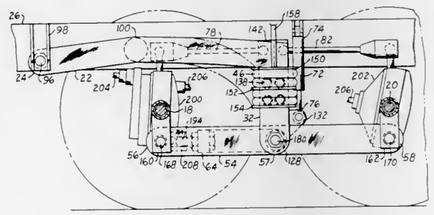
1. In a tractor-trailer rig which comprises a tractor having a fifth-wheel coupler and a semi-trailer having a complementary coupler comprising a wear plate and a coupling pin projecting downwardly from said wear plate and providing, when the rig is coupled, an axis about which the rig is articulated with the angle of articulation being sufficiently large to permit maneuvering of the semi-trailer as needed, with the undesirable consequence that jackknifing can occur under certain circumstances, and adjustable means adjustable from an inoperative position to an operative position, said adjustable means in the operative postion limiting the angle of articulation sufficiently to eliminate or to minimize the danger of jackknifing, the combination therewith in which said adjustable means comprises a pressure fluid cylinder which has its top affixed to the undersurface of said fifth-wheel coupler and which is adapted to project a pin up through a bore in said fifth-wheel coupler and then through an enlarged aperture in said wear plate, said pressure fluid cylinder having a collar integral with the top of said cylinder which surrounds said pin and projects up into said bore in a close complementary fit to a point near but not above the upper surface of said fifth-wheel coupler, said enlarged aperture having stops circumferentially displaced from said pin, so that the rotation of said tractor relative to said trailer is limited by said stops when said pin is in the projected position, whereby the thrust on said pin, resulting from it engaging one of said stops, is transferred to said fifth-wheel coupler through said collar.

4,120,515

SUSPENSION SYSTEM FOR TANDEM AXLE VEHICLES

David S. Vinton, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 15, 1977, Ser. No. 787,816
Int. Cl.[2] B60G *5/02*
U.S. Cl. 280—678 **6 Claims**



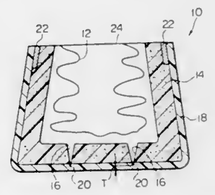
1. A suspension system for tandem axle vehicles including a vehicle frame, comprising:
a first anti-roll member having a first end and being pivotally connected at the first end to one portion of the vehicle frame;
a second anti-roll member having a first end and being spaced from the first anti-roll member and pivotally connected at the first end to another portion of the vehicle frame;
a crossbeam member having opposite ends and being rigidly connected at each of said opposite ends to a respective second end of the spaced anti-roll members;
torque tube means for limiting relative movement between the anti-roll members, said means having opposed ends and being connected at each of said opposed ends to a respective anti-roll member; and
resilient suspension means for resiliently interconnecting the frame portions and the crossbeam member.

4,120,516

COVER MEMBER FOR A SAFETY AIR-CUSHION DEVICE AND A METHOD OF PRODUCING THE SAME

Yukio Takamatsu, Ikeda; Takashi Wakabayashi, Toyonaka; Hideyo Noda, Kyoto; Kiyoshi Ichikawa, Tokyo; Tsuneteru Kamegai, Yokosuka, and Kazuo Ikawa, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Dec. 2, 1976, Ser. No. 746,713
Claims priority, application Japan, Dec. 5, 1975, 50-162886[U]
Int. Cl.[2] B60R *21/10*
U.S. Cl. 280—728 **4 Claims**



1. A cover member for substantially covering an expansible air-cushion in a dormant condition, said expansible air-cushion being expanded to break said cover member and thus to get out from said cover member to protect an occupant of a vehicle at a vehicle collision, said cover member comprising:
a bag-shaped inner laminate arranged to substantially cover up said expansible air-cushion in a dormant condition and having at least one slit extending through said inner laminate, said inner laminate being made of a relatively low density polyurethane foam; and
a bag-shaped outer laminate arranged to cover the outer surface of said inner laminate and having at least one cut portion at its inner surface portion thereof, said outer laminate being made of a relatively high density polyurethane foam and said cut portion being positioned to open to said slit of said inner laminate.

4,120,517

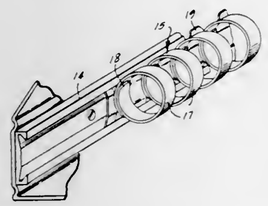
REMOVABLE PLASTIC BINDING

Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Jun. 21, 1977, Ser. No. 808,556
Int. Cl.[2] B42D *1/06*
U.S. Cl. 281—19 R **11 Claims**

1. A removable binding system for attachment to a cover to retain paper sheets thereto, comprising:
a channel member mountable on the cover; and
a removable binding having a base portion and a plurality of paper sheet retaining loops formed of curled finger-like strips extending from the base portion, a retaining means

extending from longitudinal sides of the base portion being provided for engagement in said channel member, said



base portion, finger-like strips, and retaining means being formed from a single sheet of material.

4,120,518

CARBONLESS COPYING PAPERS

Günther Baatz, Cologne; Manfred Dahm, Leverkusen, and Kurt Triebeneck, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 19, 1977, Ser. No. 788,771

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617747

Int. Cl.² B41M *5/22*

U.S. Cl. 282—27.5 **5 Claims**

1. A paper sheet containing a donor layer comprising a plurality of microcapsules containing, as core material, a solution of at least one dyestuff precursor in an organic solvent and, as encapsulating material, at least one polycarbodiimide which contains a plurality of units of the formula —R—N=C-=N—R— wherein R is alkylene, cycloalkylene, arylene or a substitution product thereof.

4,120,519

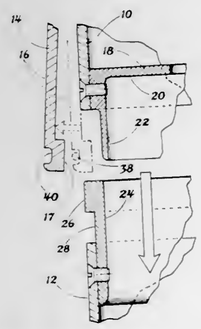
COLLET TYPE CYLINDER SEPARATION DEVICE

Robert M. Bridges, Northridge, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Oct. 3, 1977, Ser. No. 838,604

Int. Cl.² F16L *37/08*

U.S. Cl. 285—3 **7 Claims**



1. Apparatus for fastening together a pair of cylindrical members having substantially the same diameter comprising

a first annular member fastened to the inside surface near the end of one of said cylindrical members having a small flange extending radially outwardly to approximately the outside diameter of said cylindrical member, said flange being spaced from the end of said cylindrical member and cooperating therewith to define an annular groove;

a second annular member fastened to the inside surface of the adjoining end of the second of said cylindrical members, said second annular member including an axially extending flange of diameter just less than the inside diameter of said first annular member thereby permitting said first and second annular members to telescope together, said second annular member also including an inwardly extending radial flange;

a plurality of circumferentially spaced arcuate members fastened to the outside of said cylindrical member, said arcuate members each including a plurality of spring fingers extending beyond the end of said second cylindrical member and each of said fingers including a radially inwardly extending flange and a groove extending circumferentially on the outside of said fingers;

a small diameter wire rope positioned in the grooves of said fingers and tensioning means attached to one of said cylindrical members for tightening and securing said rope to cause said fingers to be forced into said annular groove, thereby locking said cylindrical members together; and

an explosively actuated cutter attached to one of said cylindrical members for severing said wire rope to release said cylindrical members from each other.

4,120,520

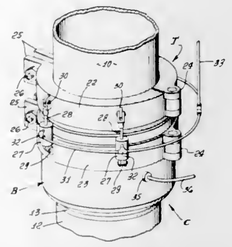
LOCKABLE RIGID CONNECTOR FOR PIPE AND METHOD OF MAKING THE SAME

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco, Inc., Ventura, Calif.

Filed May 4, 1977, Ser. No. 793,525

Int. Cl.² F16L *35/00*

U.S. Cl. 285—18 **19 Claims**



1. A lockable rigid pipe connector comprising: a pin and a box; said pin having an externally tapered section and a transverse make up shoulder; said box having an internally tapered body section to receive the tapered section of said pin and having an inner transverse make up shoulder confronting said pin make up shoulder; said pin section and said box section having therebetween axially spaced companion tapered sealing portions; said box section having port means between said sealing portions for admission therebetween of a pressure fluid acting to circumferentially expand said box section and compress said pin section; and means on said pin and box engageable by a loading tool for axially relatively forcing said sections and compressively loading said make up shoulders while said pressure fluid is acting on said sections; said pin and box sections being held against axial separation with said make up shoulders in compression and said box section in tension by a pressure energized shrink fit between said pin section and said box section upon relief of said pressure fluid; said pin and box having opposed axially spaced locking shoulders for receiving locking means insertable between said locking shoulders while said make up shoulders are under compression and said box is in tension and one of said pin and box having access means enabling insertion of said locking means between said locking shoulders.

4,120,521

COMBINED MOULD ELEMENT AND SEALING RING

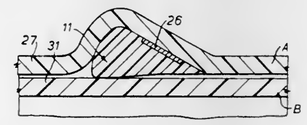
Gunnar Parmann, Alvøy, Norway, assignor to Rieber & Son Plastic-Industri A/S, Bergen, Norway

Division of Ser. No. 608,758, Aug. 28, 1975, Pat. No. 4,030,872.

This application Jan. 21, 1977, Ser. No. 760,958

Int. Cl.² F16L *55/00*

U.S. Cl. 285—113 **6 Claims**



1. A pipe joint comprising

a first pipe of thermoplastic material having a socket end including an internal annular groove and internal cylindrical surfaces on each side of said groove of substantially equal diameter;

a second pipe having an insert end within said socket end; and

a sealing ring disposed in said groove wholly between said cylindrical surfaces concentrically between and sealingly engaging said insert end and said socket end, said ring being a unitary ring composed of a body of elastically yielding material and a rigid circumferentially continuous annular ring member within said body, said ring member having an outer diameter greater than said diameter of said internal cylindrical surfaces.

4,120,522

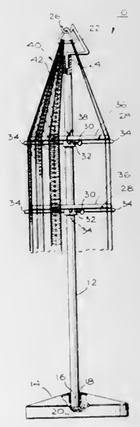
MACRAME-FORMING DEVICE

Patricia A. Rodnunsky, 17810 Simonds St., Granada Hills, Calif. 91344

Filed Apr. 4, 1977, Ser. No. 784,057

Int. Cl.² D04G *5/00*

U.S. Cl. 289—18 **12 Claims**



1. An improved macrame-forming device, said device comprising, in combination:

a. an elongated center pole;

b. a support base secured to and maintaining said pole in an upright generally vertical position;

c. a plurality of frame support members releasably secured to said pole at spaced locations along its length and extending outwardly therefrom;

d. A plurality of frames supported by said frame support members; and

e. a macrame material-holding bracket secured to said pole above said support members and adjacent the upper end of said pole.

4,120,523

SAFETY FASTENING

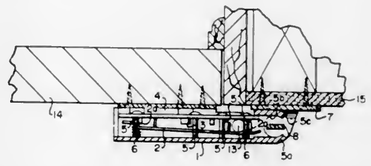
D. Jose Antonio Navarro Fayos, Valencia, Spain, assignor to Montajes Electronicos Dorcas S.A., Siete Aguas, Spain

Filed Jul. 25, 1977, Ser. No. 818,543

Claims priority, application Spain, Jan. 26, 1977, 225.949

Int. Cl.² E05C *17/16*

U.S. Cl. 292—268 **9 Claims**



1. An opening controller device for a door or the like comprising:

an elongated latch means of a given size and a catch means, said latch and said catch means adapted for mounting adjacent each other, one on the door and the other on a support opposite at least one side of the door,

said catch means including a catch member having first and second sides, said first side being of a larger dimension than said second side,

said latch means having an end formed with an opening and a mouth providing entry to and exit from said opening, said opening being of a size to accept the entry of the second side of the catch member but to prohibit withdrawal of the latch means from said catch member when said first side of the catch member is presented to the exit of said opening,

and means for slidably and pivotally mounting said latch means relative to said catch member and to the member on which it is mounted, said mounting means permitting said opening at the end of said latch means to have the catch member accepted therein when the latch means is slidably moved to said catch member with the second side thereof presented to the mouth of the opening and to permit pivoting of the latch means relative to said catch member when the door is pivoted open relative to the support means so that the catch member is prevented from leaving said opening by the first side of the catch member being presented to the exit of the opening.

4,120,524

DEVICE FOR OPENING, CLOSING AND LATCHING A VENT CLOSURE MEMBER

Elwood W. Buck, Jr., Pasadena, Calif., assignor to D G Shelter Products Company, City of Industry, Calif.

Filed Jul. 7, 1977, Ser. No. 813,502

Int. Cl.² E05C *17/34*

U.S. Cl. 292—263 **7 Claims**

1. In a means for opening, closing, and latching a closure member hinged at one side of an opening defined by a frame provided in a wall, the combination of:

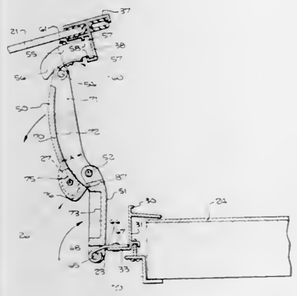
an upper latch member having one end provided with a pivotal connection to said closure member;

a lower latch member having one end provided with a pivotal connection to said frame; the other ends of said latch members being pivotally interconnected together; the pivotal connection of the lower latch member to said frame having a pivotal axis adjacent the plane of the frame opening;

and actuating means connected to said upper latch member

the said pivotal connection of said latch members to said closure and to said frame being at the side of said opening opposite to said hinged connection of said closure member to said frame;

the pivotal interconnections of the other ends of said latch members lying beneath the framed opening when the closure member is closed and the latch members are collapsed and in nested relation;



said pivotal connections providing pivotal axes having a toggle relationship in closed position of said closure member;

and means to adjust clearance of said nested latch members with respect to the interior surface of said wall, said adjustment means including

a bolt carried by said closure members;

and a connecting block threaded on said bolt and providing a pivotal connection for said upper latch member.

4,120,525

LATCH ASSEMBLY

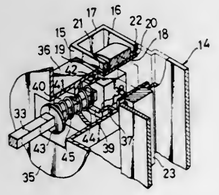
Tetsuro Kagoura, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 29, 1977, Ser. No. 782,507

Claims priority, application Japan, Mar. 3, 1976, 51/41104[U]

Int. Cl.[2] E05C *13/00*

U.S. Cl. 292—336.3 **9 Claims**



1. A latch assembly for use on a closure frame member, said latch assembly comprising:

(a) a support frame having attachment means adapted to be attached to the closure frame member;

(b) a hollow shaft mounted in said support frame and rotatable about a longitudinal axis thereof;

(c) a latch bolt fixed at one end thereof to said hollow shaft and extending radially from said hollow shaft, said latch bolt being angularly movable about said axis between a first position in which said bolt is retracted within said support frame and a second position in which said bolt has the opposite end projecting outwardly from said support frame;

(d) a casing adapted to be attached to the closure member, said casing having a bore and having fixed engagement means;

(e) a handle having a further shaft disposed in and rotatably supported by said bore in an axially fixed position;

(f) a driver torque bar having its outer end mounted coaxially in said handle-shaft and corotatable therewith and axially freely movable therein, said driver torque bar having an enlarged driver on its inner end, said driver being normally held in an angularly fixed position in response to said driver's being engaged partly with said fixed engaging means, said driver normally also extending partly into said hollow shaft in driving engagement therewith, and said driver being shiftable out of engagement with said fixed engaging means upon axial movement of said driver torque bar toward said hollow shaft to enable angular movement thereof; and

(g) shifting means movably carried on said axially fixed handle for shifting said driver torque bar axially toward said hollow shaft.

4,120,526

APPARATUS FOR TRANSPORTING COIL CORES

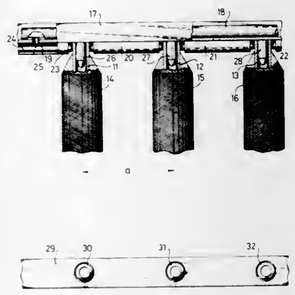
Joachim Rohner, Mönchen-Gladbach, Germany, assignor to W. Schlafhorst & Co., Mönchen-Gladbach, Germany

Filed Nov. 16, 1976, Ser. No. 742,110

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1975, 2551679

Int. Cl.[2] B66C *1/46;* **D01H** *9/08*

U.S. Cl. 294—87 R **12 Claims**



1. Apparatus for jointly transporting wound or unwound coil cores of a textile machine having a multiplicity of work stations comprising a centrally controllable beam disposed alongside the textile machine, a multiplicity of engageable and disengageable clamping elements fastened to said beam in direction of alignment thereof, said clamping elements being disposed offset with respect to a given mutual spacing of the work stations along said beam, each of said clamping elements being disposed so as to be effective in two opposite directions for engaging respective ends of two adjacent coil cores, each of said clamping elements comprising an elongated housing connected to said beam and at least one clamping member movably mounted in said housing.

4,120,527

CAB DESIGN

Dean M. Lawrence, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 15, 1977, Ser. No. 787,811

Int. Cl.[2] B62D *33/06*

U.S. Cl. 296—28 C **15 Claims**

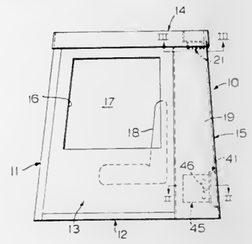
1. In a vehicle cab structure defining an operator compartment, an improved air circulating means comprising:

a pair of parallel, spaced hollow uprights defining upright rear corners of the cab structure;

an upper hollow horizontal wall having air flow communication at its opposite ends with an upper portion of said hollow uprights;

a lower hollow horizontal wall having air flow communication at its opposite ends with a lower portion of said hollow uprights;

first passage means carried by said upper wall for providing air flow communication between said compartment and said hollow upper wall;



second passage means carried by said lower wall for providing air flow communication between said compartment and said hollow lower wall; and

air flow means for causing air to be circulated in a flow path through said horizontal hollow walls, upright cab structure corners, and compartment.

4,120,528

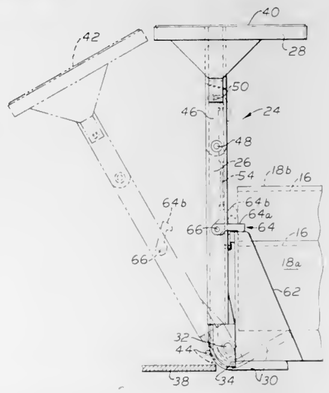
LATCH FOR OVERHEAD GUARDS ON INDUSTRIAL VEHICLES

Frank R. Samide, Chardon, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Jul. 18, 1977, Ser. No. 816,832

Int. Cl.[2] B60J *7/24*

U.S. Cl. 296—107 **5 Claims**



1. An industrial vehicle, comprising:

a weighted member removably mounted in the vehicle;

an overhead guard mounted on the vehicle and pivotally controlled between first and second positions by mounting and removing the weighted member, respectively; and

means for latching and unlatching the guard, said means being movable under the influence of gravity to latch the guard in the first position when the weighted member is positioned in the vehicle and being movable by the weighted member to unlatch the guard as the weighted member is removed from the vehicle.

4,120,529

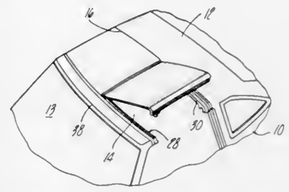
REMOVABLE ROOF PANELS FOR VEHICLES

Richard R. Chrysler, Brighton, Mich., assignor to Cars & Concepts, Inc., Brighton, Mich.

Filed Dec. 30, 1976, Ser. No. 755,665

Int. Cl.[2] B60J *7/08*

U.S. Cl. 296—137 B **8 Claims**



1. A roof panel assembly for vehicles having a vehicle body with a roof portion, said roof portion including a windshield header with a first marginal edge rearwardly thereof extending from one side of said body to the other, a roof panel having a second marginal edge spaced rearwardly from said windshield header and extending from one side of said body to the other, a central frame member having opposed ends attached to said first and second marginal edges and disposed on the longitudinal center line of said body, a pair of seal members at opposite sides of said central frame member and mounted on said marginal edges and said central frame member, a pair of panel members detachably supported at opposite sides of said central frame member for engagement with said pair of seal members, first and second frame members extend transversely from one side of said body to the other and being attached to said first and second marginal edges, respectively, and in which said central frame member is attached to said first and second frame members.

4,120,530

INVALID CHAIRS

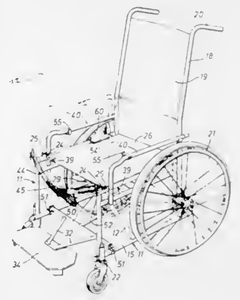
Michael Imbro, 62 Heathcote St., Sandford Hill, Longton, Stoke-on-Trent, England

Filed Apr. 27, 1977, Ser. No. 791,411

Claims priority, application United Kingdom, Apr. 30, 1976, 17784/76

Int. Cl.[2] A47C *1/02*

U.S. Cl. 297—337 **16 Claims**



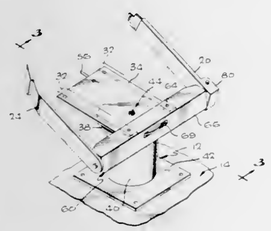
1. An assembly for assisting movement of an occupant in changing between sitting and standing postures in an invalid chair having a fixed frame structure, said assembly comprising:

(a) a movable seat member support means,

(b) first means movably mounting said seat member support means on said frame structure for movement between a

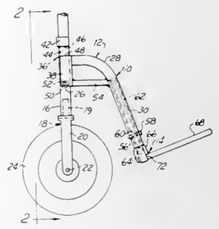
seating support position and a relatively displaced forward standing support position,
(c) said first movable mounting means being effective to permit forwards and upwards angular movement of said seat member support means from a substantially horizontal orientation in said seating support position to a substantially upright back-supporting orientation in said relatively displaced forwards standing support position,
(d) a movable foot rest structure having a foot plate member,
(e) second means movably mounting said foot rest structure for movement between a raised foot-supporting position and a lowered ground-engaging position, and
(f) mechanical linkage means operatively interconnecting said seat member support means and said foot rest structure to transmit pressure and motion from one to the other,
(g) said foot plate member being maintained in a substantially horizontal orientation during the angular movement of the foot rest structure between the raised foot supporting position and the lowered ground engaging position,
(h) hand grip support members detachably mounted to the chair frame structure for assisting and steadying the chair occupant when changing between sitting and standing postures,
(i) said seat member seat means being controllable by the chair occupant varying and controlling foot pressure applied to the foot rest structure through shifting and altering his weight distribution and mainipulating said hand grip support members,
(j) said seat member support means being effective to move and exert supporting pressure against the body of the chair occupant to assist his movement in changing between a sitting posture in the chair and a standing posture on the foot rest structure.

4,120,531
VEHICLE CHAIR AND SEAT BELT ARRANGEMENT FOR CHAIR
Frank J. Hefferman, Burbank, Calif., assignor to Stylar Industries, Inc., Burbank, Calif.
Filed Dec. 6, 1976, Ser. No. 748,064
Int. Cl.[2] A62B *35/00*
U.S. Cl. 297—349 **4 Claims**



1. A chair comprising:
a chair pedestal having a lower end for mounting on a floor and an upper end with an outwardly-extending flange;
a seat assembly rotatably mounted on said pedestal to swivel thereon, said seat assembly having forward and rearward parts;
a coupling member connected to said seat assembly to swivel with it, said coupling having a pedestal-engageable portion with-opposite ends, lying at the rearward part of said seat assembly and extending under said flange, for engaging said pedestal to prevent forward movement of the coupling in an emergency; and
a seat belt assembly which includes a seat belt which can extend around the front of said seat sssembly to hold a person therein, said seat belt assembly having opposite mounting portions attached to locations on said coupling which lie at said opposite ends of said pedestal-engageable portion of said coupling, whereby to provide secure holding of the seat belt assembly.

4,120,532
SNAP-ON SWING-AWAY FOOT REST FOR WHEEL CHAIRS
Wayne N. Clanan, 1458 Burns Ave., Detroit, Mich. 48214
Filed Aug. 1, 1977, Ser. No. 820,695
Int. Cl.[2] A47C *7/50*
U.S. Cl. 297—429 **1 Claim**

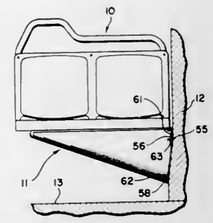


1. A snap-on swing-away bracket for connecting a conventional wheel chair foot rest to a leg of a conventional wheel chair, said bracket comprising
an elongated hollow vertical wheel chair leg-attachment member having longitudinally-spaced lower and upper wheel chair leg-gripping portions of approximately U-shaped cross-section having oppositely-facing entrance openings of sufficient widths for the passage therethrough of said leg and having interior configurationa adapted to snugly engage said leg,
said leg-gripping portions having a gap therebetween also of sufficient width for the passage therethrough of said leg,
and an elongated downwardly-extending foot rest mounting arm having an upper arm portion secured to said leg-attachment member and having a lower arm portion with means therein for connecting the conventional foot rest thereto,
said lower leg-gripping portions having a lower end with an upwardly-extending notch therein adapted to fixedly engage a stop element projecting laterally from the wheel chair leg,
said lower end aside from said notch having a mainly annular transverse bearing face slidably engageable with the stop element in response to swinging of said bracket relatively to the wheel chair leg while supported by the stop element.

4,120,533
CANTILEVERED SUPPORTING SHELL FOR SEAT
Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.
Filed May 31, 1977, Ser. No. 801,842
Int. Cl.[2] A47C *1/12*
U.S. Cl. 297—451 **21 Claims**

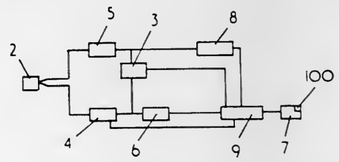
1. Structure for supporting a seat in cantilevered relation to a wall, said structure comprising:
a rigid, trough-shaped, structural, exterior skin;
said trough-shaped skin having an outer end and an open inner end;

means for mounting said inner end of said trough-shaped skin on said wall;
and means for mounting a seat atop said trough-shaped skin;



said rigid, structural, exterior skin comprising means for providing cantilevered support to said seat.

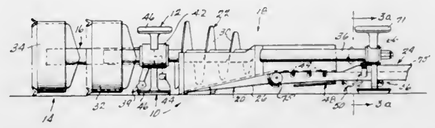
4,120,534
APPARATUS FOR CONTROLLING THE STEERING MECHANISM OF A MINING MACHINE
George Thomas Addison, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, England
Filed Nov. 30, 1976, Ser. No. 746,003
Claims priority, application United Kingdom, Dec. 10, 1975, 50604/75
Int. Cl.[2] E21C *35/08*
U.S. Cl. 299—1 **7 Claims**



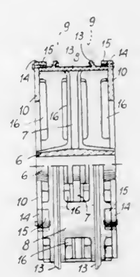
1. Apparatus for controlling the steering mechanism of a mining machine having a detector for sensing the cutting horizon of the machine relative to the boundary of a mineral seam when the machine is mining in the seam, comprising
first electrical means having a relatively long time constant for normally controlling the machine's steering mechanism in response to the detector's output signal,
second electrical means having a time constant which is relatively short compared to the time constant of said first electrical means for overriding said first electrical means should the detector output signal reach a preselected condition, and
third electrical means sensitive to a transient difference between the outputs of said first and second electrical means, said third electrical means overriding the first electrical means when the transient difference exceeds a preselected amount.

4,120,535
SCOOP-BELT MINER
Frank A. Delli-Gatti, Jr., Beckley, W. Va., assignor to Coaltex, Inc., Beckley, W. Va.
Filed May 6, 1977, Ser. No. 794,647
Int. Cl.[2] E21C *27/22, 35/20*
U.S. Cl. 299—18 **26 Claims**

1. A mining machine comprising
(a) a non-rotatable body member, with stabilizing means for insuring non-rotative movement of said body member in a bore,
(b) at least one rotatable pilot cutting head mounted in front of said non-rotatable body member, and means for rotating said cutting head including a rotatable shaft operatively connected to said cutting head,
(c) conveying means mounted behind said pilot head in operative association with said body member, for conveying material cut by said pilot head away from the cutting site, said conveying means comprising (i) scoop means disposed posteriorly of said cutting head and having a flat, leading bottom portion substantially abutting the bore floor and then extending posteriorly therefrom at a positive angle, and having side members that funnel toward each other, (ii) at least one auger section associated with said shaft for rotation of said pilot head, and located posteriorly of said pilot head and having a continuously decreasing diameter flight extending away from said pilot head, and disposed above said scoop means bottom portion for conveying cut material up said bottom portion, and (iii) a conveyor belt disposed posteriorly of said scoop means and extending to the bore mount, said scoop means bottom portion and side members funnelling toward said conveyor belt, and a top, transporting surface of said conveyor belt being disposed adjacent the termination of said scoop means bottom portion and side members, said at least one auger section terminating anteriorly of said conveyor belt, and
(d) said stabilizing means disposed between said at least one cutting head and said scoop.



4,120,536
WHEEL EQUIPPED WITH BRAKE, PARTICULARLY FOR MOTOR-CYCLES
Dario Bernardi, Via Mazzini 5, Cattolica, (Prov Forli), Italy
Filed Aug. 26, 1975, Ser. No. 607,987
Claims priority, application Italy, Aug. 30, 1974, 44027 A/74
Int. Cl.[2] B60T *1/02*
U.S. Cl. 301—6 E **1 Claim**



1. A wire spoke wheel and brake assembly particularly for motorcycles, comprising in combination a hub member defining a wheel axis of rotation and a sleeve member coaxial and concentric therewith and circumferentially spaced therefrom, bracket members rigidly connecting said sleeve member with said hub member, said sleeve member having a cylindrical outer surface extending parallel to said wheel axis of rotation and including connecting means for connecting thereon wire spokes for the wheel rim, said wire spokes extending from said sleeve member on the side thereof remote from said hub member, said sleeve member having a lateral extension parallel to the wheel axis of rotation and lateral circumferential edges delimiting said lateral extension thereof, said bracket members

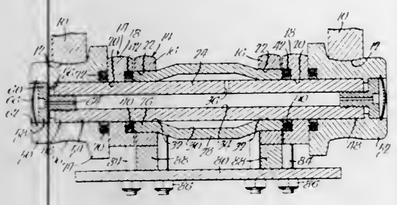
having at least near said sleeve member a thickness in the direction of said lateral extension smaller than said lateral extension of said sleeve member thereby to provide a free space between said lateral circumferential edges and said bracket members, at least one braking annular disc coaxial with said axis of rotation and extending in a plane perpendicular thereto, said annular braking disc being fixed to one of said lateral circumferential edges and having one annular portion thereof extending radially from said sleeve member towards said hub member, a braking element surrounding a portion of said braking disc at said annular portion thereof extending towards said hub member and wherein said sleeve member has apertures in said cylindrical surface thereof for the passage of cooling air therethrough.

4,120,537

TRACK LINK ASSEMBLY HAVING ROLLER BUSHINGS

Robert D. Roley; Glenn M. Haslett, both of Peoria, and Dennis L. Blunier, Danvers, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 15, 1977, Ser. No. 787,814
Int. Cl.[2] B62D *55/20*
U.S. Cl. 305—14 **1 Claim**



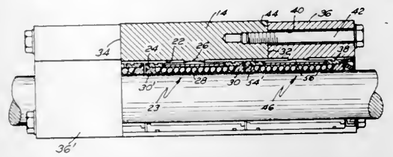
1. In a track link assembly, the combination of:
a plurality of track links each formed of spaced apart elements and each having opposed ends, one of said ends being relatively wide and the other being relatively narrow, said ends being provided with track pin receiving bores, the narrow ends of said links being interposed between the wide ends of the next adjacent link with said track pin receiving bores in alignment;
a plurality of central bushings, one for each link, having reduced diameter ends received in the bores of the spaced apart elements forming each link at the relatively narrow end thereof, said central bushing having an expanded central interior;
annular seals carried by each spaced apart element forming each track link and disposed about the bores at the relatively wide ends thereof and in abutment with the reduced diameter ends of the corresponding central bushing;
a plurality of pins, each of greater length than the width of said relatively wide ends and extending through corresponding ones of said aligned bores and central bushings to pivotally interconnect adjacent ones of said links, each said track pin including a central bore opening to both ends of the pin and a radial conduit extending from said central cavity into fluid communication with said expanded central interior of said central bushing, the ends of each pin projecting from both sides of the relatively wide ends of each track link, said central bore being threaded at both of its ends;
a plurality of roller bushings, two for each track pin, each having an axial bore for receiving a corresponding end of one of said track pins, a radially inwardly directed shoulder within said bore intermediate its ends, a radially outwardly directed peripheral flange, and an annular seal receiving groove generally concentric with said axial bore and at one end of said axial bore;
annular seals within said grooves;
said roller bushings being disposed on corresponding ends of said track pins such that the annular seals in said annular grooves abut the adjacent sides of the corresponding track links;
headed, threaded fasteners in said axial bores and threaded into said central bores such that the heads of said fasteners engage corresponding ones of said radially inwardly directed shoulders to retain said roller bushings on said pin ends, at least one threaded fastener for each pin having its head recesses within the axial bore of the associated roller bushing and being provided with an axial conduit in fluid communication with said central bore;
snap caps removably closing the ends of said axial bores remote from said one end; and
a plurality of track shoes, one for each track link, secured to a corresponding link.

4,120,538

PILLOW BLOCK INCLUDING PLURALITY OF SELF-ALIGNING LINEAR MOTION BEARINGS

William E. Headen, East Greenwich, R.I., assignor to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.

Filed Mar. 24, 1977, Ser. No. 780,772
Int. Cl.[2] F16C *29/02*
U.S. Cl. 308—6 C **3 Claims**



1. A mounting unit for supporting an aligning round machine tool ways comprising an elongated first pillow block having a base and end faces, said base fastened to a machine tool frame, said first block having a cylindrical opening therethrough on an axis substantially parallel to said base and normal to the end faces, anti-friction bearing assembly received in said cylindrical central opening of said first block, a flangeless second block having a cylindrical central opening therethrough, said second block having a plurality of bores parallel to the axis of said cylindrical central opening of said second blocks, bolts having a diameter less than the diameter of said bores received therein and threadingly received in one end face of said first block, a unitary second anti-friction bearing assembly received in the cylindrical openings of each block.

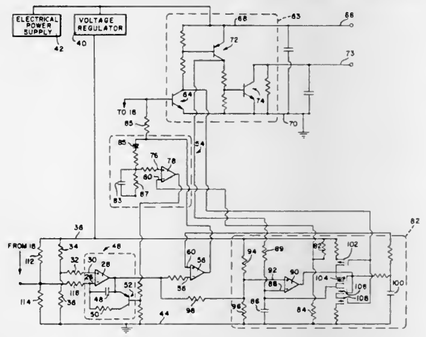
4,120,539

ADAPTIVE BRAKING SYSTEM WITH SPECIAL CONTROL FOR SLIPPERY SURFACES

Ralph W. Carp; Leoncio T. Ang, both of Newport News, Va.; Laurence D. Leadbetter, Loran, Ohio, and Grant Arthur Cornell, Walled Lake, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 16, 1977, Ser. No. 807,283
Int. Cl.[2] B60T *8/00*
U.S. Cl. 503—103 **10 Claims**

1. In a vehicle having a wheel, a brake controlling said wheel, and fluid pressure responsive means for actuating said brake, an adaptive braking system controlling communication to said fluid pressure responsive means comprising speed sensing means for generating a speed signal as a function of the rotational velocity of said wheel, modulator means for controlling communication to the fluid pressure responsive means, skid detecting means responsive to said speed signal for generating a skid detecting signal when an incipient skidding condition exists and terminating said skid detecting signal when the incipient skidding condition terminates, pressure command signal generating means responsive to the skid detecting signal for generating a pressure command signal representing a commanded fluid pressure level at said fluid pressure responsive means, said pressure command signal varying between predetermined maximum and minimum limits, means responsive to said pressure command signal for generating a control signal actuating said modulator means, and means for delaying an increase in fluid pressure communicated to said fluid pressure responsive means following a fluid pressure decrease in which the pressure command signal is at its minimum value while the skid detecting signal is generated.

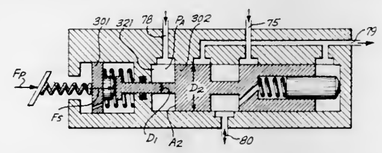


4,120,540

AIRCRAFT AUTOMATIC BRAKING SYSTEM

Garrett Howard Devlieg, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 632,113, Nov. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 477,244, Jun. 7, 1974, Pat. No. 3,920,282, which is a division of Ser. No. 394,890, Sep. 6, 1973, Pat. No. 3,917,356. This application Feb. 17, 1977, Ser. No. 769,804
The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.
Int. Cl.[2] B60T *11/12*
U.S. Cl. 303—117 **3 Claims**



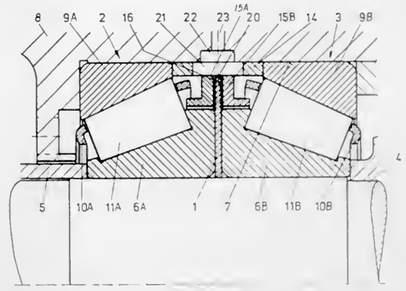
3. In combination in an aircraft braking system:
first means for providing an electrically controlled hydraulic pressure command;
second means for generating a manually controlled hydraulic pressure command;
valve means responsive to said first and second means for providing hydraulic pressure to control aircraft braking;
said hydraulic pressure being exclusively responsive to said electrically controlled hydraulic pressure command when a proportional part of said electrically controlled hydraulic pressure command is greater than the force applied for generating said manually controlled hydraulic pressure command, said hydraulic pressure being representative of the sum of said applied force and said electrically controlled hydraulic pressure command when said proportional part of said electrically controlled hydraulic pressure command is less than said applied force. means for providing hydraulic pressure to control aircraft braking;
said hydraulic pressure being exclusively responsive to said electrically controlled hydraulic pressure command when a proportional part of said electrically controlled hydraulic pressure command is greater than the force applied for generating said manually controlled hydraulic pressure command, said hydraulic pressure being representative of the sum of said applied force and said electrically controlled hydraulic pressure command when said proportional part of said electrically controlled hydraulic pressure command is less than said applied force.

4,120,541

LUBRICATING DEVICE

Siegfried Schiemann, Schweinfurt, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 20, 1977, Ser. No. 844,138
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 7633126[U]
Int. Cl.[2] F16C *33/66*
U.S. Cl. 308—187 **10 Claims**



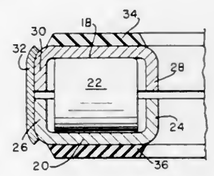
1. A lubricating device for lubricating the bearing surfaces of a rolling bearing supporting a rotating shaft, comprising a disk having a facing surface, said disk coupled to and rotating with said shaft, a fixed support having a counter surface surrounding said disk so as to form a relatively narrow spacing between said disk facing surface and said counter surface, said support including a passageway from said counter surface to said bearing surface, a source of lubricant, and means passing said lubricant to said narrow spacing, and hydrodynamic means for providing a hydrodynamic force to said lubricant for forcing said lubricant from said narrow space to said bearing surface.

4,120,542

CAGELESS THRUST BEARING WITH UNGUIDED ROLLERS

Chander Prakash Bhateja, Harwinton; Richard Lassen Alling, Torrington, and Dean Edward Johnston, Thomaston, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Dec. 15, 1976, Ser. No. 750,611
Int. Cl.[2] F16C *19/34*
U.S. Cl. 308—219 **5 Claims**



1. A cageless thrust bearing with unguided cylindrical rollers comprising: a pair of axially separated flat thrust bearing raceways; a plurality of cylindrical rollers all having the same diameter located between said separated flat thrust raceways;

and a pair of axially extending radially separated containment members, the radial separations of the containment members being too great and the lengths of the cylindrical rollers too small for both ends of the radially aligned cylindrical rollers to contact the containment members at the same time when the containment members are concentric or for the containment members to cooperatively radially orient the cylindrical rollers.

4,120,543

UNITIZED SEALED BALL THRUST BEARING

Pliney O. Greene, Jr., Sandusky, Ohio, and Darrell D. Pendleton, Belmont, N.C., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1977, Ser. No. 864,210
Int. Cl.[2] F16C *19/00*
U.S. Cl. 308—233 **3 Claims**



1. A unitized sealed thrust bearing comprising:
a first bearing race having a circular protrusion at the terminus of a conical skirt inclined toward a second bearing race,
a complement of antifriction elements disposed between said bearing races and rollably engaging respective confronting bearing raceways thereof,
said second bearing race further having inner and outer circular sealing lips of elastomeric material bonded thereto which cooperate with surfaces of said first race to provide seals between the bearing races radially inwardly and outwardly of the antifriction elements,
one of said sealing lips being attached to a flared portion of the second bearing race in close proximity to the circular protrusion and having a radially facing circular notch receiving the circular protrusion to provide a unitized assembly, said one sealing lip being of sufficient stiffness to permit snap assembly of the bearing races and the subsequent secure retention of the bearing components in a unitized assembly.

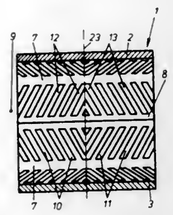
4,120,544

SELF-PRESSURIZING RADIAL FRICTION BEARING

Wolfgang Hüber, Schweinfurt, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 11, 1977, Ser. No. 795,934
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624849
Int. Cl.[2] F16C *32/06, 17/02*
U.S. Cl. 308—240 **12 Claims**

1. In a self-pressuring radial bearing including a sleeve operable with a rotatable shaft and a quantity of fluid lubricant from a lubricant supply space, the sleeve bore and shaft circumference comprising adjacent bearing surfaces respectively in sliding engagement, and the bearing including in a first of said bearing surfaces a plurality of pumping grooves oriented at acute angles to the axis of the bearing, the improvement in combination therewith wherein said first bearing surface has defined therein a plurality of axial flutes spaced circumferentially and communicating with said lubricant supply space, a plurality of said pumping grooves are distributed on each side of each flute, each pumping groove having an open end communicating with said flute and an opposite closed end spaced in the circumferential direction from the open end, whereby



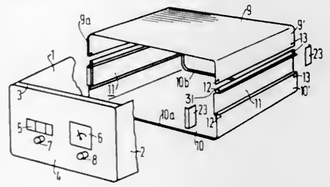
lubricant is pressurized in those pumping grooves whose closed end relative to the open end is in the direction of rotation of the second of said bearing surfaces relative to the first of said surfaces.

4,120,545

HOUSING FOR AN ELECTRICAL OR ELECTRONIC APPARATUS

Heinz Happak, and Alfred Wittmann, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 26, 1977, Ser. No. 800,896
Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2624148
Int. Cl.[2] A47B *81/06;* H05K *5/00*
U.S. Cl. 312—7 R **11 Claims**



1. A housing for a self-supporting interior structure of electrical and electronic apparatus, comprising:
upper and lower U-shaped casing members, each casing member having two edge walls, a front panel, and a side connecting and spacing member joining by the edge walls the upper and lower casing members on each of opposite sides of the cabinet; and
each side connecting and spacing member comprising an integral extruded U-shaped channel forming a lateral depression extending inwardly of said casing member edge walls, said channel having flat upper and lower inwardly extending surfaces and a flat vertical wall inwardly of the edge walls extending between the upper and lower surfaces, flanges being provided extending above the upper surface and below the lower surface, said flanges attaching the spacing members to the edge walls, and said vertical wall and upper and lower surfaces of each U-shaped channel forming a guide rail.

4,120,546

ROTARY FILE

Orin C. Veigel, Afton, Wyo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 11, 1977, Ser. No. 850,720
Int. Cl.[2] A47B *49/00*
U.S. Cl. 312—134 **1 Claim**



1. A rotary file, comprising
a housing having a bottom, a top spaced from the bottom and substantially parallel thereto, a pair of spaced substantially parallel sides joining the top and bottom and substantially perpendicular thereto, a front joining the top, bottom and sides and substantially perpendicular thereto, and a back joining the top, bottom and sides and substantially perpendicular thereto and in spaced substantially parallel relation with the front;
a pair of elongated cylindrical rollers rotatably mounted in the housing in spaced parallel relation parallel to the top and bottom, one of the rollers being in proximity with the top of the housing and the other of the roller being in proximity with the bottom of the housing;
an endless belt mounted on and extending between the rollers and rotatable therewith;
a plurality of shelf members affixed to the belt and extending substantially perpendicularly from said belt in spaced substantially parallel relation for releasably storing files between next-adjacent shelf members;
motive means coupled to one of the rollers for rotating said rollers and thereby rotating said belt to move said shelf members cyclically from top to bottom to top inside the housing;
an opening formed in the front of the housing and covered by a selectively openable door to provide access to the shelf member for inserting and removing files;
a substantially semicylindrical guide sheet at the bottom of the housing to prevent files from falling out from between the shelf members at the bottom of the cycle; and
a plurality of spring-biased follower members affixed to the shelf members for releasably clamping files stored between next-adjacent shelf members, each of said follower members being pivotally coupled to a corresponding one of said shelf members and having a spring urging it toward a next-adjacent one of said shelf members.

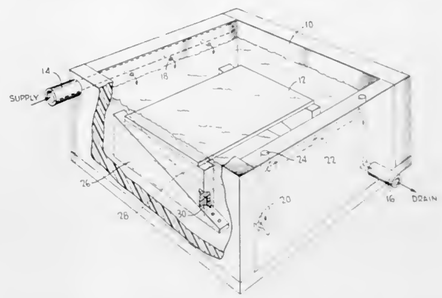
4,120,547

DISSECTING TRAY

G. Richard Price, Aberdeen, and Jeffrey N. Plant, Edgewood, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 23, 1976, Ser. No. 744,581
Int. Cl.[2] A61B *19/00;* B01L *1/00;* G01N *1/00*
U.S. Cl. 312—209 **6 Claims**

1. A dissecting tray comprising:
(1) tank means for containing dissecting fluid,
(2) a horizontal rigid platform in said tank means below the fluid level for supporting a specimen during dissection and mounting means for supporting said platform,
(3) a fluid supply means in a first side wall of said tank means for supplying dissecting fluid to said tank means near the fluid level, and
(4) drain means including a fluid pickup in a second side wall of said tank means opposite said first sidewall and near the bottom of said tank means for maintaining the fluid in said tank means at a constant level while said fluid is being supplied, and wherein said fluid supply means and said drain means are arranged and constructed such that a one way passage of fluid can be maintained horizontally across said platform to keep said platform immersed in a bath of fresh fluid.

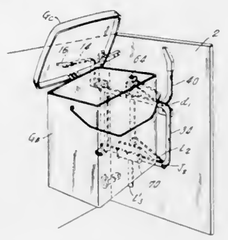


4,120,548

DISPLACEABLE GARBAGE BIN HOLDER

Nathan Manor, 69 Zahal St., Tel Aviv, Israel

Filed Dec. 17, 1976, Ser. No. 751,944
Claims priority, application Israel, Sep. 16, 1976, 50492
Int. Cl.[2] A47B *51/00*
U.S. Cl. 312—249 **8 Claims**



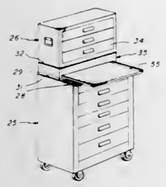
1. A displaceable garbage-bin holder having a support frame which is pivotably connected to a bracket means for mounting the holder onto a stationary support and swingable about a vertical axis provided at a rear side of said frame and a linkage system for the vertical displacement of the bin, the linkage system comprising first, second and third link-bars; said first link-bar being pivotably mounted at one end to the front end of the frame by a first journal; said second link-bar being pivotably mounted at one end to the front end of the frame by a second journal located below said first journal; said third link-bar being pivotably mounted to the opposite ends of said first and second link-bars by third and fourth journals, respectively; said first, second and third link-bars comprising a spacer means; means for suspending a garbage-bin on said third link-bar; and a handle for pivotting the linkage system about said first and second journals so that said third journal is displaced from a lower position to an elevated position beyond the upper dead-center of the said linkage system defined by a line passing through said first and second journals, for stably supporting said linkage system in said elevated position.

4,120,549

SHEET METAL TOOL CHEST SUPPORT WITH SLIDING WORK SHELF

Harvey Lee Bureau, 8 Pleasantdale Ave., Waterville, Me. 04901

Filed Apr. 27, 1977, Ser. No. 791,412
Int. Cl.[2] A47B *88/00*
U.S. Cl. 312—253 **6 Claims**



1. In combination:
a roll-around tool cabinet having an upper, horizontal work bench surface of predetermined width and depth;
a multiple drawer tool chest having a front with at least one slide out drawer at the bottom thereof, and a bottom surface of less depth than, but equal width to, said upper work bench surface said tool chest being removably supported at the rear of said work bench surface with a narrow forward portion of said work bench surface exposed as a shelf-like strip;
and a removable support interposed between said chest and cabinet, said support including an upstanding front wall and a pair of integral upstanding side walls, all of sheet metal, and of uniform height within the range of 2 to 6 inches, said support removably seating said chest at a level well above the upper surface of said cabinet with said shelf-like strip exposed;
said support defining a hollow enclosure having back wall means including an access opening for access to said enclosure and having a shelf opening in the lower portion of said upstand-front wall;
a shelf slidable in said shelf opening, said shelf being coextensive in depth and width with said work bench surface, having a rearward portion normally housed in the lower portion of said enclosure and having a forward portion normally extending outside said support and covering said shelf-like strip;
said shelf being slidable from said normal position to a position in which said forward portion extends forwardly beyond said shelf-like strip to provide the normal work bench area of said cabinet, said slide-out shelf is formed of sheet metal, the side edges thereof being bent upwardly to form side flanges and the front edge being bent downwardly to form a stop, said shelf includes a plurality of channel members of sheet metal affixed to the underside thereof and extending from front to back to reinforce said shelf when extended,
and floor means extending across the interior of said enclosure for slidably guiding said shelf.

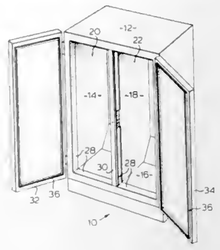
4,120,550

MULLION ADJUSTING DEVICE

Raymond Robert Sherburn, Montreal, Canada, assignor to Canadian General Electric Company, Limited, Toronto, Canada

Filed Sep. 15, 1977, Ser. No. 833,780
Int. Cl.[2] F25B *47/00;* **E06B** *1/20*
U.S. Cl. 312—296 **11 Claims**

1. In a domestic refrigerating appliance having at least two separate compartments and at least two doors sealing said compartments, said compartments being separated by a divider panel having a mullion cover upon which said doors seal,
The improvement wherein said mullion cover is interconnected intermediate the ends thereof to the wall structure defining said compartments by
(a) spring means acting to bias said mullion cover in a first direction in the plane of said divider panel



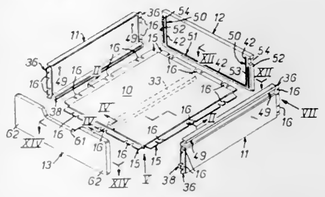
(b) a variable length element actuatable to bias said mullion cover in opposition to said spring means, whereby the curvature of said cover may be adjusted.

4,120,551

INTERLOCKING DRAWER ASSEMBLY

Lucien Joseph Godtschalck, Orsay, France, assignor to Krieg & Zivy Industries, Le Plessis-Robinson, France

Filed Oct. 26, 1976, Ser. No. 735,544
Claims priority, application France, Oct. 31, 1975, 75 33328
Int. Cl.[2] A47B *88/00*
U.S. Cl. 312—330 R **3 Claims**



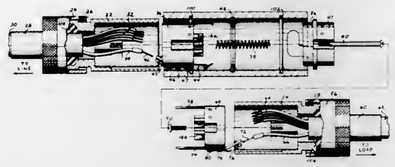
1. A readily mountable drawer comprising a bottom panel, two side panels, a front panel and a back panel, pairs of complementary positive detent means integrally formed in one piece with respective juxtaposed panels for hand assembling said drawer by substantially exclusively unidirectional relative displacement of said juxtaposed panels until they are locked in place relative to one another, each of said panels being connected to an adjacent one of said panels by an interlocking connection including an elongated male strip generally lying in a plane and a similarly elongated female part defining an elongated groove, and said detent means including each male strip being at least partially discontinuous in a transverse direction to define a pair of independent hooks, each hook lying generally coplanar with the remainder of said male strip and having a free portion lying along a free edge of said male strip, and each hook free portion having on one surface thereof a transverse detent projecting normal to said plane, said female part having a notch opening from the interior of said groove and receiving each detent, and the opposite surface of each hook free portion having a relieved part extending transversely away from said free edge beyond said detent to permit flexing of said hook free portion relative to the remainder of said hook and passage of said hook free portion into said groove together with entry of said detent into said notch.

4,120,552

SWITCHABLE ELECTRICAL CONNECTOR

Edward D. Winkler, Reading, and Earl E. Dalrymple, Waltham, both of Mass., assignors to Anderson Power Products, Inc., Boston, Mass.

Filed Jul. 7, 1977, Ser. No. 813,521
Int. Cl.[2] H01R *13/54, 33/30*
U.S. Cl. 339—90 R **10 Claims**



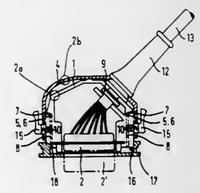
1. A switchable electrical connector comprising:
a first generally cylindrical housing;
first and second movable electrical connectors mounted in said first generally cylindrical housing for relative axial movement and relative unitary rotational movement therein, said first and second connectors being adapted for electrical engagement and disengagement with each other;
a third movable electrical connector mounted in said first housing for axial and rotational movement therein, said third electrical connector being electrically connected to said second electrical connector;
a second generally cylindrical housing having an outside diameter less than the inside diameter of said first generally cylindrical housing;
a fourth electrical connector mounted in said second generally cylindrical housing and adapted for electrical engagement and disengagement with the third electrical connector mounted in said first generally cylindrical housing; and,
cooperatively operative interlock means mounted on said first and second housings for preventing: (i) the electrical engagement of said first and second electrical connectors before the electrical engagement of said third and fourth electrical connectors; and (ii) the electrical disengagement of said third and fourth electrical connectors before the electrical disengagement of said first and second electrical connectors.

4,120,553

PLUG HOUSING FOR MULTIPOLAR PLUG CONNECTORS

Edwin Muz, Mühlbach-Eppingen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 531,104, Dec. 9, 1974, abandoned. This application Oct. 6, 1977, Ser. No. 839,982
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1973, 7343790[U]
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—91 R **1 Claim**



1. In a plug housing for an elongated multi-pin electrical plug connector comprising, in combination:
two substantially identical mirror-image half-shells matable along peripheral side edges thereof to form a substantially rigid housing having a chamber therein with an opening along the bottom of said housing,
each of said half-shells having a plurality of cut-outs located along peripheral side wall portions thereof and a plurality of projections located along peripheral side walls thereof and extending outwardly from said side walls,
a first pair of mating cut-outs of said half-shells being adapted for receiving a first elongated multi-pin electrical plug connector within the opening of the housing formed by said half-shells, said first pair of cut-outs maintaining said first elongated plug connector in a fixed position relative to the bottom opening of the chamber within the housing formed by said half-shells,
a second pair of mating cut-outs of said half-shells spaced from said first pair of cut-outs and being adapted for receiving a connector cable for said first elongated plug connector and for receiving and fastening a pull-release clip associated with said cable,
a third pair of mating cut-outs of said half-shells spaced from said first and second pair of cut-outs and being adapted for receiving an externally actuable locking means,
a fourth pair of mating cut-outs of said half-shells spaced from said first, second and third pair of cut-outs and being adapted for receiving actuating elements for said locking means,
a first pair of mating projections of said half-shells being adapted for engaging cut-outs in a hood positionable over the housing formed by said half-shells,
a second pair of mating projections of said half-shells spaced from said first pair of projections and being adapted to contact inner surfaces of a hood positionable over the housing formed by said half-shells,
a third pair of mating projections of said half-shells spaced from said first and second pair of projections and being adaptable to mate with arresting projections of a connector receptacle positionable along a bottom of the housing formed by said shell halves;
a first elongated multi-pin electrical plug connector positioned within said first pair of cut-outs of said half-shells and across the bottom opening of the chamber within the housing formed by said half-shells;
a connector cable and associated pull-release clip associated with said cable positioned within said second pair of cut-outs of said half-shells, said cable being electrically connected with individual poles of said first multi-pin plug connector;
a connector receptacle having attached thereto a second elongated multi-pin plug connector matable with said first elongated plug connector, said connector receptacle being releasably attached along the bottom of the housing formed by said half-shells and in communication with the bottom opening of said housing,
said connector receptacle having arresting projections along inner side wall portions thereof, said arresting projections mating with said third pair of projections of said half-shells so that said second multi-pin plug connector mates with said first multi-plug connector;
an externally actuated locking means operationally associated with the housing formed by said half-shells, said locking means being adapted for releasably engaging said arresting projections of said connector receptacle and automatically locking said first and second elongated plug connectors together upon joining of said housing and said connector receptacle and releasing said plug connectors in response to external manipulation of said locking means,
said locking means comprising bent spring wires positioned within said third pair of cut-outs of said half-shells and actuating elements having surface portions in operational contact with said wires and being positioned within said fourth pair of cut-outs in said half-

shells, said actuating elements having surface portions extending externally of said housing for manipulation externally of said housing, and

a hood formed of a slightly elastic material adapted to fit over the housing formed by said half-shells and to hold said half-shells in an assembled position,

said hood having a plurality of cut-outs along peripheral side wall portions thereof adapted to mate with at least some of the plurality of cut-outs in the housing formed by said half-shells,

said hood having interior walls defining a chamber having a bottom opening therein for receiving the housing formed by said half-shells;

said inner surfaces of the hood being in contact with said second pair of mating projections of said half-shells so as to define a space between said inner surfaces and the exterior wall of said housing;

at least one of the cut-outs of said hood engaging said first pair of mating projections of said half-shells and maintaining said hood in fixed relation to the housing formed by said half-shells,

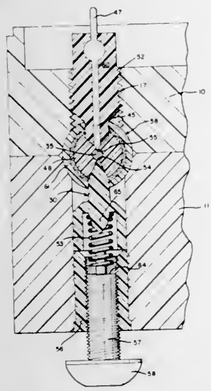
whereby said hood is rapidly attachable to the housing formed by said half-shells in a simple and substantially frictionless transitory movement.

4,120,554

COAXIAL CABLE CONNECTOR

Edward Armond Bianchi, and Edger Wilmot Forney, Jr., both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 1, 1977, Ser. No. 820,504
Int. Cl.[2] H01R *11/20*
U.S. Cl. 339—97 R **17 Claims**



1. A coaxial cable connector comprising:

first and second matable housing means comprising means for retaining a coaxial cable having a center conductor and an outer conductor in a predetermined position as said first and second housing means are mated;

a first conductive center conductor probe having an insulative sheath therearound position in said first housing means to penetrate into said coaxial cable and press against said center conductor of said coaxial cable as said first and second housing means are mated, with said insulative sheath insulating said conductive probe from the outer conductor of said coaxial cable;

a spring loaded back-up probe position in said second housing means to penetrate into said coaxial cable and press against the center conductor thereof at a point opposite said first probe; and

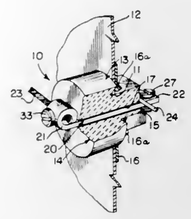
contact means positioned in one of said first and second housing means to penetrate and make contact with said outer conductor.

4,120,555

CONNECTOR-TERMINAL ASSEMBLY FOR ELECTRICAL CONDUCTORS

Ned H. Shiflett, Charden, and William J. Seybert, Cincinnati, both of Ohio, assignors to Eltra Corporation, New York, N.Y.

Filed Apr. 4, 1977, Ser. No. 784,567
Int. Cl.[2] H01B *17/26*; H01R *7/12*
U.S. Cl. 339—126 R **10 Claims**



1. In an electrical connector assembly adapted for mounting through a hole in a firewall, said assembly including:

a single insulator structure with a first portion thereof having a cross-section substantially of like shape and smaller than said firewall hole for positioning therethrough, and a second portion adjacent to and integral with said first portion having a cross-section larger than said firewall hole for abutting said firewall when positioned adjacent thereto; said insulator including a connector mounting hole extending through both first and second portions;

an elongate electrical connector positioned in said connector mounting hole and including opposed ends which extend outwardly of both respective insulator portions defining electrical terminals thereon, each electrical terminal including a fastener capable of retaining an electrical conductor thereon, said connector being free of tensile stress along the length thereof as mounted in said connector mounting hole; and

means for anchoring said insulator in mounted position in said firewall hole;

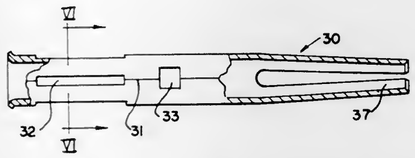
the improvement wherein said anchor means is adapted to be secured on said insulator in spatial relation to said connector, and said insulator is free of compressive stress in a direction parallel to the axis of said connector hole therein.

4,120,556

ELECTRICAL CONTACT ASSEMBLY

Clifford R. Waldron; Karl W. Yonkers, both of Unadilla, and Herbert K. Uhlig, Bainbridge, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1976, Ser. No. 662,677
Int. Cl.[2] H01R *11/08*
U.S. Cl. 339—142 **30 Claims**



1. A one piece unitary electrical contact stamped and formed from a sheet of metal, said contact comprising:

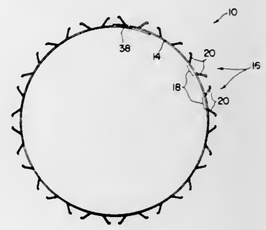
a sleeve having an open seam extending the entire axial length of said sleeve, said sleeve having a front mating portion, and a rear wire receiving portion having at least four slots in the wall thereof, with the longitudinal axis of each slot extending parallel to the longitudinal axis of said sleeve, said slots symmetrically arranged around the longitudinal axis of said sleeve.

4,120,557

ELECTRICAL CONNECTOR

Raymond G. Horrocks, Fairview Park, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Aug. 22, 1977, Ser. No. 826,480
Int. Cl.[2] H01R *13/06*
U.S. Cl. 339—252 R **12 Claims**



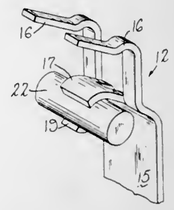
1. An electrical connector strip adapted to interconnectingly engage complementary male and female members of a plug-and-socket connector each defining a cylindrical interconnection surface, comprising a strip of annular shape and integrally and unitarily provided with a plurality of resiliently deformable, substantially parallel louvers constituting a cylindrical tubular array of louvers, a pair of annular rail portions of said strip unitarily connecting the louvers at opposite ends of the tubular array, the louvers being distributed around said tubular array in spaced relation to each other, the louvers comprising bottom portions adapted to be supported against one of said cylindrical interconnection surfaces and pairs of flange portions on each side of each bottom portion and slanting upwardly for engagement with the other of said cylindrical interconnection surfaces.

4,120,558

SOLDER BEARING TERMINAL

Jack Seidler, New Rochelle, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.

Filed Aug. 15, 1977, Ser. No. 824,441
Int. Cl.[2] H01R *11/06*
U.S. Cl. 339—275 T **4 Claims**



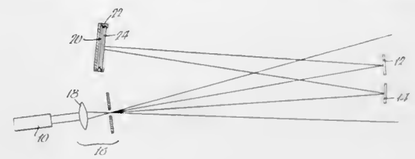
1. A terminal clip for securement to a contact pad on a substrate comprising a clip body portion, a plurality of contact fingers projecting from an end of the body portion and bent to define a gap adapted to receive the edge of a substrate, and a cylindrical mass of solder, said fingers including a pair of fingers spaced laterally apart and located distally of the clip and a central finger having a width corresponding substantially to the distance between said spaced fingers, said central finger including means adapted to extend at least 180° around said cylindrical mass of solder for holding said mass of solder in a position adjacent said gap and on the side thereof nearer the clip body portion, at least a portion of said means being narrower than the central finger.

4,120,559

METHOD OF ESTABLISHING SECRET INFORMATION

Nils Abramson, and Hans Bjelkhagen, both of Stockholm, Sweden, assignors to AB ID-kort, Stockholm, Sweden

Filed Sep. 27, 1976, Ser. No. 726,735
Claims priority, application Sweden, Oct. 1, 1975, 7511006
Int. Cl.[2] G03H *1/04*
U.S. Cl. 350—3.60 **18 Claims**



1. A method of establishing and reading secret information in the form of a holographic interference pattern comprising:

exposing a first holographic plate with laser light reflected from an object and with a reference laser light to form a first hologram;

deforming the laser light reflected from the object in accordance with the secret information to be established;

exposing a second holographic plate with the deformed laser light reflected from the object and with the reference laser light to form a second hologram;

maintaining the first hologram separate from the second hologram to keep secret the secret information;

combining the first and second holograms by spacing the first and second holograms apart from each other by a predetermined distance; and

simultaneously illuminating the first and second holograms with a laser light for observing the secret information.

4,120,560

OPTICAL WAVEGUIDE NETWORK

Peter Baues, Krailling, and Gerhard Winzer, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 692,739, Jun. 4, 1976, abandoned. This application Jan. 20, 1978, Ser. No. 871,011
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1975, 2525678
Int. Cl.[2] G02B *5/14*; G02F *1/13*
U.S. Cl. 350—96.14 **4 Claims**

1. An optical waveguide network including means for switching a guided signal from one to the other of two adjacent parallel disposed optical waveguides comprising:

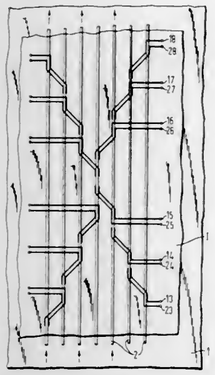
a substrate of electro-optical material;

a plurality of parallel disposed optical waveguides formed on said substrate;

a plurality of electrode pairs including at least two for each optical waveguide being disposed above the plane of said waveguides for inducing in said substrate a waveguide between two adjacent channels when a voltage is applied to an electrode pair;

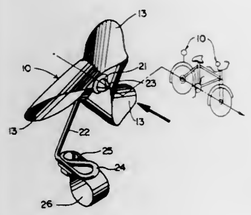
said electrode pairs when a voltage is applied thereto causing an induced optical waveguide to be induced in the substrate between said two adjacent waveguides and causing the relative refractive index of the substrate to change with respect to that of the optical waveguide so

that it is greater than that of the optical waveguide, whereby the guided wave is transferred to the substrate



and through the induced waveguide to the adjacent waveguide.

4,120,561
LIGHT REFLECTIVE SIGNALING AND WARNING DEVICE
Clinton M. Burkholder, 11 Bowman St., Westborough, Mass. 01581
Filed Mar. 4, 1976, Ser. No. 663,925
Int. Cl.[2] G02B *5/12*
U.S. Cl. 350—99 **3 Claims**



1. A light retroreflective signaling and warning device comprising:

a flexible unitary light retroreflecting rotatable element including a rotatably supported central portion in turn supporting multiple separate radially extended and returned portions all arcuately curved and mutually convergent so their respective extremities are all overlapped and mutually rotatably supported coaxially with said central portion,

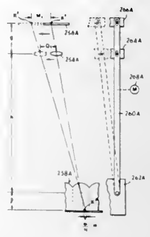
said central portion and said radially extended and returned portions of said rotatable element being so shaped and arranged that light rays directed toward the center of a reference sphere enveloping said device, from any area on the surface of the reference sphere, are retroreflected toward their source,

the respective opposing surfaces of said flexible central portion and said flexible extended and returned portions of said rotatable element each being completely covered with a layer of light transparent material having a smooth damage resistant outer surface and protecting a continuous array of very small individually operative and collectively effective light retroreflecting elements,

said respective layers of light transparent material respectively protecting said arrays of light reflecting elements also together enclosing an interposed opaque flexible central layer of material with its opposite sides comprising smooth light reflective surfaces, and

each of the opposing surfaces of said flexible rotatable element being a conspicuously different predetermined color so that the single color or the respective configurations and the relative dispositions of the respective conspicuously different predetermined colors visible to an observer adjacent to the source of light retroreflected by said signaling and warning device indicates to the observer the spacial orientation of said signaling and warning device relative to the observer, and any progressive change in the color configurations and the color content of the retroreflected light seen by the observer signals the sense and the magnitude of a progressive change in the spacial orientation of said signaling and warning device relative to the position of the observer.

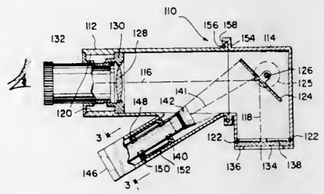
4,120,562
STEREOSCOPIC PICTURE
Allen Kwok Wah Lo, and Jerry Curtis Nims, both of Dunwoody, Ga., assignors to Dimensional Development Corporation, Atlanta, Ga.
Division of Ser. No. 508,823, Sep. 24, 1974, Pat. No. 3,953,869.
This application Apr. 12, 1976, Ser. No. 676,385
The portion of the term of this patent subsequent to Apr. 27, 1993, has been disclaimed.
Int. Cl.[2] G02B *27/22*; G03B *27/32, 35/14*
U.S. Cl. 350—130 **1 Claim**



1. In an image array formed on the photosensitive surface of lenticular print film of lenticule width *w*, said image array consisting of a multiplicity of image bands each of which is aligned with a lenticule of the film and each of which comprises N condensed images formed by projecting through a projecting lens and onto the aligned lenticule a portion of each of a corresponding N two-dimensional views of an object field taken from spaced vantage points, the improvement wherein:

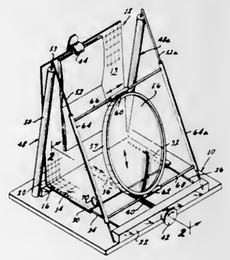
each condensed image is formed by continuously changing the angle of projection of said portion of the corresponding two-dimensional view, while maintaining the projected image of a selected element of the two-dimensional view in registry with a reference point and while maintaining the ratio of (1) the distance between said selected element of the two-dimensional view and its projecting lens and (2) the distance between such projecting lens and the lenticular print film substantially constant, by an amount sufficient to scan the image of said portion over a distance along the photosensitive surface such that said each condensed image occupies a width of substantially *w*/N, whereby said scanning results in said each condensed image being greater in width than the width *m* of an individual lineiform image formed by the aligned lenticule of said portion of the corresponding two-dimensional view, said each condensed image being substantially in focus and of substantially uniform image density across the fully width *w*/N thereof.

4,120,563
REFLECTING AND MAGNIFYING VIEWING APPARATUS
John Stefanou, 31 Meadow St., East Orange, N.J. 07017
Filed Jan. 5, 1977, Ser. No. 756,887
Int. Cl.[2] G02B *27/00*
U.S. Cl. 350—235 **6 Claims**



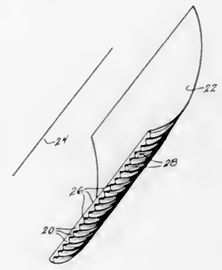
1. Reflecting and magnifying viewing apparatus comprising first tube means and second tube means joined to one another through a first coupling means extending around said first tube means, a second coupling means extending around said second tube, sealing means for rotatingly sealing said first coupling means to said second coupling means, both of said coupling means allowing for rotating said first tube means with respect to said second tube means and for preventing the leakage of light into said first tube means and said second tube means both of said coupling means being open towards the center thereof to allow the passage of light through said first tube means and said second tube means, said first tube means having an open end and said second tube means having an open end, the longitudinal axis of said first tube means and the longitudinal axis of said second tube means intersecting one another at an angle less than 180°, reflecting means positioned in said second tube means, said reflecting means being mounted on pivot means, the rotational axis of said pivot means being parallel to the surface of said reflecting means and being intersected by the longitudinal axis of said second tube means, substantially in a transverse manner, illuminating means in said first tube means, said illuminating means being positioned to reflect on said reflecting means, magnifying means positioned in at least one of said open ends of said tubes.

4,120,564
READING STAND WITH MAGNIFIER
Roberto Rios, 533 E. 182nd St., Carson, Calif. 90746
Filed Feb. 7, 1977, Ser. No. 765,975
Int. Cl.[2] G02B *27/02*
U.S. Cl. 350—241 **5 Claims**



1. As an article of manufacture, a reading and magnifying stand comprising in combination, a base, a carrier for reading material having an upright part positioned for fore and aft adjusting movement relative to the base, a magnifying lens and a supporting frame for the lens positioned to carry the lens forwardly of the said carrier and means for adjusting the magnifying lens in directions normal to each other, the carrier including adjusting means adjustable from the front of the article from a position in front of the magnifying lens, the said adjusting means comprising a lead screw cooperable with a block carried by the said carrier and having an adjusting knob at its end.

4,120,565
PRISMS WITH TOTAL INTERNAL REFLECTION AS SOLAR REFLECTORS
Arnulf Rabl, and Veronika Rabl, both of Downers Grove, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jun. 16, 1977, Ser. No. 807,105
Int. Cl.[2] G02B *5/04*
U.S. Cl. 350—286 **9 Claims**

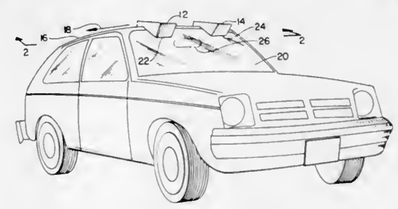


1. In a radiant energy concentration collection device having at least one reflective wall of particular contour for directing received radiant energy to a particular location in concentrated form, the improvement in said wall, comprising:

a plurality of rectangular prisms positioned so that the frontal faces thereof abut and correspond in contour to said particular contour,

the prisms being aligned so that both rectroreflection and specular reflection by total internal reflection associated with each prism is toward the particular location.

4,120,566
REARVIEW APPARATUS FOR VEHICLES
Salvatore Sanci, and Innocenzio Di Mauro, both of 71 Wolverleigh Blvd., Toronto, Ontario, Canada
Filed Apr. 18, 1977, Ser. No. 788,361
Int. Cl.[2] G02B *5/08*
U.S. Cl. 350—302 **9 Claims**



1. A rearview apparatus for vehicles for providing a rear field of vision via the roof top of a vehicle comprising a pair of periscope devices, said pair of periscope devices each having an open rear end for interception therein of a portion of the forwardly projecting light rays extending from the rear of said vehicle towards the front of said vehicle and an open rear lower portion, said open rear lower portion being disposed adjacent the front windshield of said vehicle, an image viewing apparatus having a display panel, a pair of image diverting assemblies for directing light rays transmitted through said

front windshield by said pair of periscope devices to said image viewing apparatus, image size expanding means for expanding said light rays directed by said image diverting assemblies into expanded size light rays so as to provide an expanded view thereof upon said display panel, said image viewing apparatus and said pair of image diverting assemblies being disposed within the interior confines of said vehicle and affixed thereto, light filtering means for selectively filtering said expanded size light rays before said expanded size light rays are displayed on said display panel, the apparatuses comprising said light filtering means and said image expanding means being located in a first housing, said apparatus comprising said light filtering means being located adjacent said display panel, flexible packing means for excluding vision obstructing objects from between said open rear lower portion and said front windshield.

4,120,567

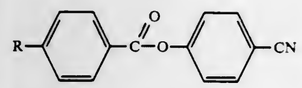
ELECTRO-OPTIC DEVICE

Lawrence Alan Goodman, East Windsor; Aaron William Levine, Lawrenceville, and Dietrich Meyerhofer, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

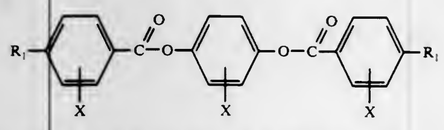
Filed Feb. 11, 1977, Ser. No. 767,957
Int. Cl.[2] C09K *3/34*; G02F *1/13*
U.S. Cl. 350—350 **2 Claims**



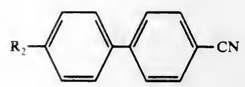
1. An electro-optic device having an improved viewing angle comprising a nematic liquid crystal composition between two electrodes, wherein the liquid crystal composition has an index of refraction anisotropy of less than 0.23 and contains a mixture of at least one compound from each of the following groups of liquid crystal compounds (1) a liquid crystal ester having the formula



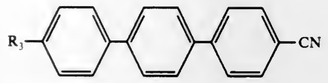
wherein R is an alkyl group of 4 to 10 carbon atoms; (2) a liquid crystal diester having the formula



wherein R_1 at each occurrence is an alkyl group of 1 to 10 carbon atoms, and X at each occurrence is hydrogen or a methyl group with the proviso that at least one X is methyl; (3) a liquid crystal biphenyl having the formula



wherein R_2 is an alkyl or alkoxy group of 3 to 8 carbon atoms; and (4) a liquid crystal terphenyl compound having the formula



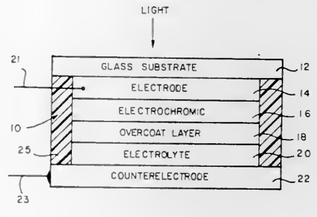
wherein R_3 is an alkyl or alkoxy group of 4 to 6 carbon atoms.

4,120,568

ELECTROCHROMIC CELL WITH PROTECTIVE OVERCOAT LAYER

Satyendra Kumar Deb, East Brunswick, and Horst Witzke, Princeton, both of N.J., assignors to Optel Corporation, Princeton, N.J.

Filed Jan. 12, 1977, Ser. No. 758,734
Int. Cl.[2] G02F *1/00*
U.S. Cl. 350—357 **18 Claims**



1. An electrochromic device comprising:
a transparent substrate for admitting impinging light into the device;
an electrode deposited, along a first surface thereof, on the substrate;
an electrochromic layer deposited on an opposite surface of the electrode;
an electrolyte layer positioned in spaced relationship to the electrochromic layer;
overcoat means positioned in contacting interposing relation to the electrochromic and electrolyte layers for protecting the electrochromic layer from degradation by the electrolyte layer;
a counterelectrode contacting the electrolyte layer; and
electrical leads connected to the electrode and counterelectrode for imposing a voltage across the device and controlling the transmission characteristics of the device to impinging light.

4,120,569

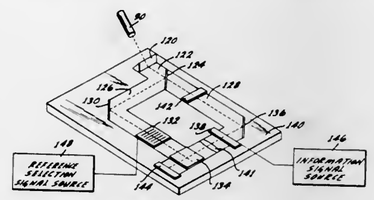
METHOD AND APPARATUS FOR THE HOLOGRAPHIC STORAGE AND RETRIEVAL

Chester L. Richards, Jr., Irvine, Calif., assignor to Marvin H. Kleinberg, Beverly Hills, Calif., a part interest

Continuation of Ser. No. 540,321, Jan. 13, 1975, abandoned. This application Jan. 7, 1977, Ser. No. 757,659
Int. Cl.[2] G03H *1/12*; G02F *1/03*
U.S. Cl. 350—3.68 **40 Claims**

1. Apparatus for creating in a storage medium a plurality of individually accessible holograms comprising in combination:
(1) storage medium;
(2) a source of substantially coherent illumination;

(3) a first path between said source and said medium, adapted to include an object whose image is to be recorded as a holographically stored wave front;
(4) a second path between said source and said medium adapted to exclude the object whose image is to be recorded said first and second paths intersecting in said medium; and
(5) spatial modulator means, interposed in said second path, for selectively modifying the illumination in a predetermined fashion including a set of submodulators each of which can controllably affect the correlation state of the



passing wave, for inducing a plurality of controlling spatial modulations on the passing wave generating mutually uncorrelated, spatially modulated sets; the members of the set of modulations produced by said modulator means being sharply autocorrelated, said submodulators being arranged along the path so as to successively affect the propagating wave; whereby a plurality of wave fronts each corresponding to a different image may be stored in said medium, each having associated therewith a particular modification of the illumination in said second path at the time the wave front is stored.

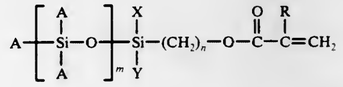
4,120,570

METHOD FOR CORRECTING VISUAL DEFECTS, COMPOSITIONS AND ARTICLES OF MANUFACTURE USEFUL THEREIN

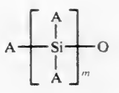
Norman G. Gaylord, New Providence, N.J., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 698,592, Jun. 22, 1976, abandoned, which is a continuation of Ser. No. 548,209, Feb. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 461,882, Apr. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 263,541, Jun. 16, 1972, Pat. No. 3,808,178. This application Sep. 6, 1977, Ser. No. 830,509
The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.
Int. Cl.[2] G02C *7/04*; C08F *230/08*
U.S. Cl. 351—40 **1 Claim**

1. Method of treating visual defects of the human eye in the form of refractive errors which includes the step of fitting to the patient's eye a corrective contact lens fabricated from a solid copolymer of comonomers, said copolymer having increased oxygen permeability in comparison with poly(methylmethacrylate) and consisting essentially of
(a) about 10 to 70 parts by weight of a polysiloxanylalkyl ester of the structure.



wherein
(1) X and Y are selected from the class consisting of C_1–C_5 alkyl groups, phenyl groups and Z groups,
(2) Z is a group of the structure



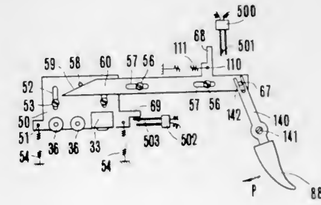
(3) A is selected from the class consisting of C_1–C_5 alkyl groups and phenyl groups,
(4) R is selected from the class consisting of methyl groups and hydrogen,
(5) *m* is an integer frome one to five, and
(6) *n* is an integer from one to three; and
(b) about 30 to 90 parts by weight of an ester of a C_1–C_{20} monohydric alkanol and an acid selected from the class consisting of acrylic and methacrylic acids.

4,120,571

MOTION PICTURE CAMERA FOR USE WITH A CARTRIDGE FOR FILM HAVING A SOUND TRACK

Keiichi Sakaguchi, Yokohama; Yoshio Komine, Tokyo; Toshikazu Ichiyanagi, Tokyo; Mamoru Shimazaki, Tokyo, and Kazuya Hosoe, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 462,526, Apr. 19, 1974, abandoned. This application Apr. 5, 1976, Ser. No. 673,619
Claims priority, application Japan, Apr. 23, 1973, 48-46385; Apr. 23, 1973, 48-46388
Int. Cl.[2] G03B *31/02*
U.S. Cl. 352—27 **8 Claims**



1. A motion picture camera for use with a roll of sound signal recordable photographic film, said film having a first film path for exposure of the film and a second film path for sound signal recording of the film, comprising:
a housing;
picture taking means mounted in the housing for taking motion pictures in the form of motion picture frames on the film along said first film path;
sound recording means mounted in the housing for recording sound signals on the film along said second film path;
framing speed changing means coupled to said picture taking means for selecting a predetermined motion picture framing speed applicable to simultaneous sound signal recording; and
connecting means coupled to said framing speed changing means and said sound recording means for changing over from a picture taking state without sound accompaniment to a picture taking state with sound accompaniment in response to the selecting operation of said framing speed changing means.

4,120,572

MULTIPLE FILM TYPE MOTION PICTURE PROJECTION

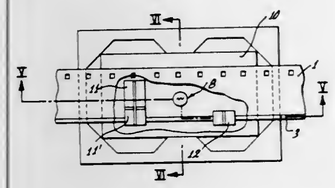
Michael Grallert, Brunswick, and Jörg Moschner, Salzgitter-Lebenstedt, both of Fed. Rep. of Germany, assignors to Rollei-Werke Franke & Heidecke, Brunswick, Fed. Rep. of Germany

Filed Dec. 21, 1976, Ser. No. 752,928

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558747

Int. Cl.[2] **G03B** *21/50*

U.S. Cl. 352—92 **7 Claims**



1. In a motion picture projector constructed for different operating conditions corresponding to different types of film, the projector including different sound pickup systems, such films having a leader portion provided with machine readible markings which characterize the particular type of film, the combination comprising:

a carriage disposed for movement transversely to the film;

pickup means on the carriage for reading the markings on said leader portion and generating pulses in response thereto, the carriage having a position so that the pickup means is disposed above the center of the film;

circuit means including logic decoding means coupled to said pickup means for receiving therefrom said pulses and providing control signals representative of the type of film as identified by the markings; and

control means coupled to said circuit means and operable by said signals for switching predetermined operating conditions in the projector including selection of frame rate of reproduction selection of a sound reproducing system in the projector and shifting the carriage so that the pickup means becomes disposed above a sound track of the film.

4,120,573

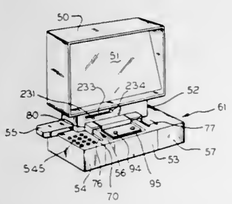
MICROFICHE READER

Robert F. Johnston, Wildwood, and Thomas R. Wells, Des Plaines, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jun. 28, 1976, Ser. No. 700,704

Int. Cl.[2] **G03B** *23/08*

U.S. Cl. 353—27 A **21 Claims**



1. An automatic microfiche extractor for use with a microfiche reader wherein a library file of microfiche is stored in a cartridge in individual microfiche carriers so that it is not necessary to manually manipulate the individual microfiche, each of said carriers having a notch formed thereon, said extractor comprising means including at least one hook for automatically engaging said notches for extracting and feeding a selected microfiche from said cartridge to said reader and then returning said microfiche to the vacated cartridge location, an elongated plate-like means having said extractor hook means dependent from one end thereof, said elongated plate-like means moving back and forth in said extracting, feeding and returning motions and tipping up and down in a microfiche engaging and disengaging motion, rack means having a row of teeth and mounted on said plate-like means for supporting the extractor, pinion means meshing with the teeth of said rack means, said rack means having a first arm extending parallel to the back and forth movement of said extractor means and a second arm extending parallel to said up and down motion, automatic feed means comprising said extractor mounting means, said rack means and said pinion means, and means responsive to operation of said pinion means for providing the automatic feed by moving said extractor over a path which extends horizontally, raises and drops so that said hook may be removed from and then returned into said notches in the microfiche carrier without damaging them.

4,120,574

PORTABLE MICROFILM READER

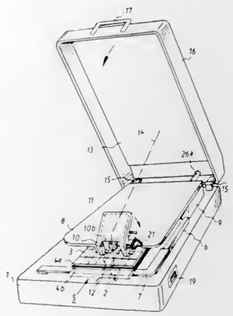
Wilfried Hofmann; Guenther Lueder, both of Taufkirchen; Walter Rauffer, Munich; John Krueger, Munich, and Adolf Koopmann, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 27, 1977, Ser. No. 791,472

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618472

Int. Cl.[2] **G03B** *23/08, 21/28*

U.S. Cl. 353—27 R **6 Claims**



1. In a portable microfim reader having a body, a projection light source projecting a light beam mounted in the body, a projection surface, a deflection mirror pivotally mounted on the body, the mirror deflecting onto the projection surface the projection beam which proceeds from a frame of microfilm that is to be viewed, and a cover hingedly attached to the rear of the body, said cover containing the projection surface,

the improvement comprising a mechanism adapted to automatically lift the deflection mirror into an erected, operative position when the cover is fully manually opened, and adapted to automatically fold the deflection mirror when the cover is manually closed,

said mechanism including linking means operationally mounted in said body which transmit the pivotal movement of said cover to said deflection mirror, so that said deflection mirror is automatically pivoted when said cover is manually pivoted,

said linking means comprising at least one first linking rod slidably, movably mounted in said body and having a free end in contact with said cover; and

biasing means urging said free end of said first linking rod into contact with said cover.

4,120,575

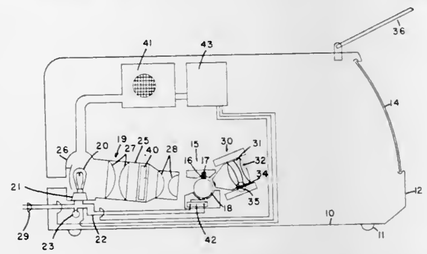
TEST TUBE PROJECTION SYSTEM AND METHOD

Bert Bach, 270 West End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 740,002, Nov. 8, 1976, abandoned. This application Jul. 11, 1977, Ser. No. 814,261

Int. Cl.[2] **G02B** *21/36;* **G03B** *21/22;* **G01N** *21/00*

U.S. Cl. 353—39 **9 Claims**



1. A projection system for the viewing of an enlarged image of a layer of material temporarily formed on the interior of a test tube wall, comprising

a test tube having a curved wall with a predetermined curvature;

a base;

a holding means on the base to removably position the test tube at an angle to the vertical, said test tube being rotatable about its axis, the said angle to the vertical and rotation is such that a layer of material temporarily adheres to said interior wall above the normal level of the material in the test tube,

a light source positioned on one side of said test tube and directed to shine its light through said test tube and through said layer of material on the curved test tube wall;

a projection lens means mounted on said base to receive said lighted image of said material and focus upon and project an enlarged image of said layer of material; and

a curved projection screen upon which said projection lens means projects its image, the curvature of said screen being substantially similar to the curvature of said test tube wall but on an enlarged scale, said projection screen having a concave side which receives said projected image and a convex side showing said image for viewing.

4,120,576

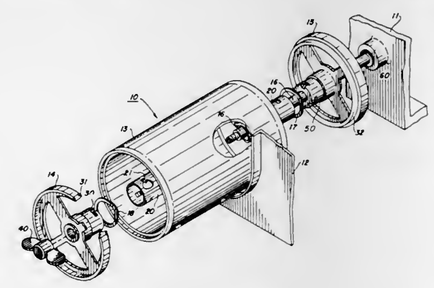
DRUM SUPPORT APPARATUS

Andrew N. Babish, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1977, Ser. No. 784,083

Int. Cl.[2] **G03G** *15/00*

U.S. Cl. 355—3 DR **10 Claims**



7. In a xerographic apparatus including a photosensitive drum and a frame within which the xerographic apparatus is mounted, a shaft mounted on said frame, a tubular member fitted over said shaft, at least one hub adapted to be releasably connected to said tubular member and said shaft for supporting said drum and seated against said drum; the improvement comprising:

first means located on a portion of said bub that is adapted to cooperate with a second means located on said tubular member, and wherein rotation of said first means by approximately 20° engages said first means with said second means; and

securing means for establishing an equal distribution of force on said at least one hub in order to diminish circular drum run-out.

4,120,577

COLOR TRANSFER COPYING PROCESS AND APPARATUS USING CHARGE REMOVING ELECTRODES

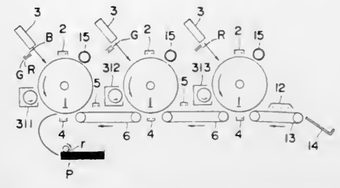
Koji Watanabe, Tokyo; Mitsunori Ohta, Kunitachi, and Makoto Tomono, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1977, Ser. No. 807,015

Claims priority, application Japan, Jun. 25, 1976, 51-75197

Int. Cl.[2] **G03G** *15/01*

U.S. Cl. 355—4 **9 Claims**



1. A color transfer copying process for forming on a transfer sheet a colored image corresponding to an original by repeating for a prescribed number of times the procedure of: projecting a reflected ray image from the original to be copied on a photosensitive material uniformly charged by a charging electrode through a filter to form an electrostatic latent image on the photosensitive material, converting the latent image to a toner image by using a powdery developer containing a coloring toner and transferring electrostatically by means of a transfer electrode the toner image onto said transfer sheet, while using selectively blue, green and red filters, said process being characterized in that a charge-removing electrode is disposed in the vicinity of a transfer passage for said transfer sheet so that said electrode acts on said transfer sheet after completion of the transfer operation and said charge-removing electrode is energized in regular sequence with the same frequency as that of the transfer operations to diminish the retention charge of the coloring toner transferred onto the transfer sheet at the transfer operation, whereby it is possible at a subsequent transfer operation to transfer and superpose a predetermined quantity of the coloring toner of the coloring toner image on the photosensitive material onto the transfer sheet even in areas overlapped with the coloring toner image formed at the preceding transfer operation.

6. A color transfer copying apparatus for forming a colored image corresponding to an original comprising:

means for projecting an image from the original to be copied onto a photosensitive material uniformly charged by a charging electrode through a filter to form an electrostatic latent image on the photosensitive material;

means for converting the latent image to a toner image by using a powdery developer containing a coloring toner;

first electrostatic means for transferring electrostatically the toner image onto a transfer sheet;

and second electrostatic means disposed in the vicinity of a

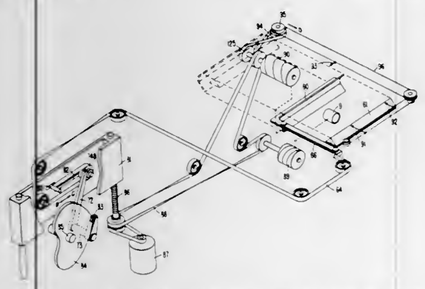
transfer passage for the transfer sheet for acting on the transfer sheet after completion of the transfer operation to diminish the retention charge of the coloring toner transferred onto the transfer sheet at the electrostatic transfer operation, whereby it is possible at a subsequent transfer operation to transfer and superpose a predetermined quantity of the coloring toner of another coloring toner image on the photosensitive material onto the transfer paper in an area overlapped with the coloring toner image formed by said first electrostatic means.

4,120,578

CONTINUOUSLY VARIABLE REDUCTION SCANNING OPTICS DRIVE

Raymond Alex Daniels; David Kent Gibson; Paul Kummli, all of Boulder; Spencer Allan Snell, Lyons, and Michael Henry Ulrich, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 7, 1976, Ser. No. 721,124
Int. Cl.[2] G03G *15/28*
U.S. Cl. 355—8 **24 Claims**



1. A continuously variable reduction imaging system for an electrophotographic copier machine, wherein a document to be copied is typically of rectangular shape, comprising:
   a glass platen upon which said document to be copied is placed;
   a mount for carrying photoreceptive material;
   main motive means for moving said mount;
   a source of illumination;
   a document scanning system comprised of a scanning carriage for traversing said document and directing illumination from said source to said document;
   means for driving said scanning carriage;
   an optics system for direction illumination from said document to produce an image on said photoreceptive material, said optics system including a lens; and
   an optics positioning system including means for adjusting said lens to continuously variable settings in a continuously variable manner to achieve any desired magnification ratio between two boundaries and including locating means for maintaining the reference edge of the document at a constant position on the image plane regardless of the continuously settable magnification ratio selected.

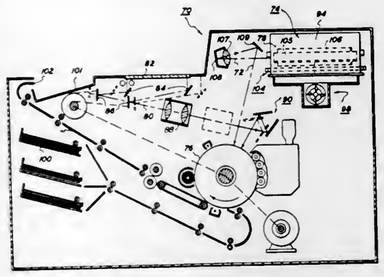
4,120,579

IMAGING SYSTEM FOR A PHOTOCOPYING DEVICE

Dominick J. Maiorano, West Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1976, Ser. No. 719,757
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—11 **5 Claims**

1. Image forming apparatus including a stationary illumination source, said apparatus comprising:
   belt means for moving a document past said illumination source, said illumination source being disposed adjacent one side of said belt;
   means positioned to said one side of said belt for projecting a light pattern reflected from said document along an optical path;
   a photoreceptor having a uniform, electrostatically charged portion positioned in said optical path whereby said light pattern impinges upon an area thereof and causes the charged portion to be discharged in accordance with said light pattern; and
   specular reflector means positioned adjacent the opposite side of said belt to reflect illumination from said source adjacent all the edges of said document along said optical path whereby illumination strikes said uniformly charged



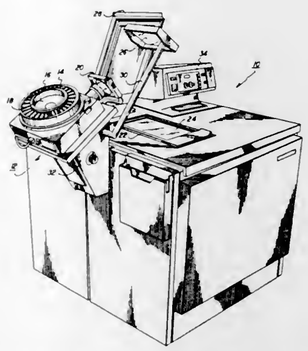
portion in an area adjacent the area struck by said light pattern, said illumination being sufficient to discharge said adjacent area, said specular reflector comprising a first set of planar surfaces each disposed at predetermined angles relative to said belt and a second set of planar surfaces each disposed at predetermined angles relative to said belt such that the planar surfaces of said first set are substantially perpendicular to lines which pass through a first reference point and said planar surfaces of said second set are substantially perpendicular to a plurality of lines all of which pass through a second reference point.

4,120,580

COLLATING SYSTEM FOR SLIDE REPRODUCTION

Louis D. Mailloux, Fairport, and James E. Bollman, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1976, Ser. No. 701,447
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 **17 Claims**



1. An electrostatographic printing machine for reproducing a plurality of transparencies, including:
   means for storing the transparencies in an operator selectable ordered sequence;
   means for reproducing each one of the transparencies to form at least one set of copies thereof;

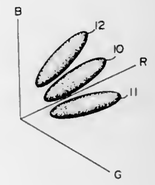
   means, operatively associated with said storing means, for indexing automatically said storing means to advance successive transparencies into cummunication with said reproducing means to form copies thereof; and
   programming means, coupling said reproducing means with said storing means, for actuating said storing means in response to said reproducing means completing the copying of one of the transparencies to advance the next successive transparency into communication with said reproducing means to form a copy thereof.

4,120,581

APPARATUS FOR AUTOMATICALLY PRINTING COLOR PHOTOGRAPHS

Koji Takahashi; Taizo Akimoto; Shigeru Watanabe, and Takaaki Terashita, all of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Filed Jun. 22, 1977, Ser. No. 808,903
Claims priority, application Japan, Jun. 22, 1976, 51-73577
Int. Cl.[2] G03B *27/78, 27/32*
U.S. Cl. 355—38 **5 Claims**



1. Apparatus for automatically printing color photographs on color photographic papers from color originals comprising means for measuring the red, green and blue densities of a number of points in the original, means for determining if the points are of flesh color including (a) means for comparing the measured red, green and blue densities with a predetermined region corresponding to a reference flesh color and defined in a two or three dimensional coordinate system having the red, green and blue densities as the axes thereof, and (b) means for determining that the points are of flesh color when the measured densities are contained in said region, means for counting the number of the points which are determined as of flesh color, and means for controlling the exposure to print the original on the color photographic paper in such a color balance and density that the flesh color is reproduced in a desired color balance and density when the number of the points determined to be flesh color is more than a predetermined number.

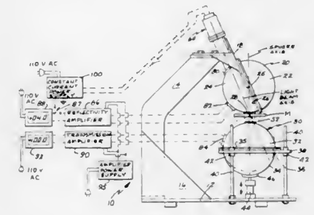
4,120,582

LIGHT REFLECTIVITY AND TRANSMISSION TESTING APPARATUS AND METHOD

Martin De Vries; Harold A. Fitzgerald, II, both of Holland; Eldon J. Nyhof, Zeeland, and James D. van Putten, Jr., Holland, all of Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed Oct. 27, 1976, Ser. No. 736,251
Int. Cl.[2] G01N *21/48, 21/22*; G01J *1/04*
U.S. Cl. 356—73 **29 Claims**

1. Apparatus for testing the light reflectivity and light transmission of an optical element or test sample such as a mirror or the like comprising:
   first and second closed, hollow, light-integrating spheres aligned along a common axis, each sphere including a test aperture extending through its circumference, said test apertures being aligned with one another along said axis and intermediate the spheres when so aligned;
   support means for supporting a test sample such as a mirror tightly against and between said spheres and immediately adjacent said test apertures and for clamping a test sample therebetween and sealing out ambient light from said spheres;
   means for moving at least one of said spheres toward and away from the other for insertion of a test sample therebetween, said spheres being movable sufficiently close to one another so as to clamp said test sample tightly between said support means and seal out ambient light;
   light source means for directing a beam of light at an angle to said axis through said first sphere, said test aperture in said first sphere, and against and at an angle other than normal to the surface of said test sample a predetermined area of which is exposed in said test aperture when said



test sample is supported by said support means, said beam being directed so as to pass through both test apertures and into said second sphere in the absence of a test sample between said spheres;
   photo-detection means for detecting the total amount of reflected light in said first sphere and the total amount of transmitted light in said second sphere; and
   means for separately indicating the total amounts of reflected and transmitted light, respectively, detected by said photo-detection means whereby the total light reflectivity and total light transmission of the said predetermined area of a test sample is simultaneously and instantaneously measured.

4,120,583

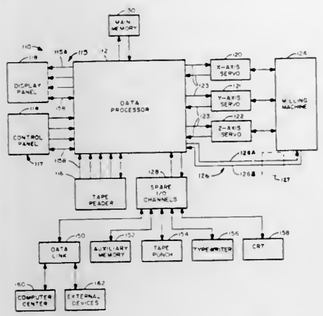
HIGH REGISTRATION PHOTOMASK METHOD AND APPARATUS

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, and Ser. No. 134,948, Apr. 19, 1971, and Ser. No. 135,040, Apr. 19, 1971, and Ser. No. 230,872, Mar. 1, 1972, and Ser. No. 232,459, Mar. 7, 1972, and Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, and Ser. No. 246,867, Apr. 24, 1972, and Ser. No. 288,247, Sep. 11, 1972, and Ser. No. 291,394, Sep. 22, 1972, and Ser. No. 302,771, Nov. 1, 1972, and Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, and Ser. No. 476,743, Jun. 5, 1974. This application Dec. 20, 1976, Ser. No. 752,751
Int. Cl.[2] G03B *27/04*
U.S. Cl. 355—86 **36 Claims**

1. A contact exposure system for providing duplicate exposures of high registration images, said contact exposure system comprising:
   master image means for providing high registration images to be duplicated, said master image means including a plurality of images having high registration therebetween;
   an illumination sensitive medium for providing illumination exposures in response to an illuminated master image means;
   contact exposure means for providing contact between said master image means and said illumination sensitive medium; and

illumination means for illuminating said master image means to provide an exposure of said master image means on said



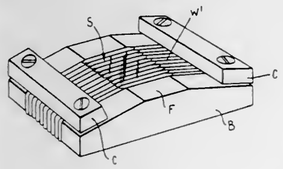
illumination sensitive medium when in said contact therebetween.

4,120,584

METHOD OF PREPARING SMALL SAMPLES INCLUDING LINISHING AN AREA OF THE SAMPLES

Raymond John Hodges, Churchill, and Charles Brian Belcher, Birmingham, both of Australia, assignors to Australian Wire Industries (Pty.) Limited, Melbourne, Australia

Filed Jun. 30, 1976, Ser. No. 701,178
Int. Cl.² G01N *1/00*
U.S. Cl. 356—36 **13 Claims**



1. A method of preparing small metal samples of a size normally too small for direct irradiation and excitation by an instrument for analysis by instrumental techniques, said method comprising the steps of holding a representative plurality of said samples in firm contact with a surface of a backing member, said plurality of said samples held in close proximity to each other and providing an area of said samples upon said surface, and linishing smooth the samples of said area across a surface parallel or tangential to said backing member surface to provide an analytical surface which is suitable for said instrumental analysis.

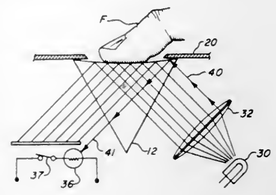
4,120,585

FINGERPRINT IDENTIFICATION SYSTEM USING A PLIABLE OPTICAL PRISM

Vito A. DePalma, Tonawanda, and Raymond W. King, Buffalo, both of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Nov. 19, 1976, Ser. No. 743,424
Int. Cl.² G06K *9/08*
U.S. Cl. 356—71 **3 Claims**

1. A fingerprint based identification terminal including:
sensor means;
optically clear, pliable, resilient prism means;
light source means for shining onto one internal surface of said prism means and being internally reflected onto said sensor means in accordance with the topographic configuration of any member contacting the external surface corresponding to said one internal surface and any resulting deformation of said one internal surface;
whereby when a finger contacts a planar surface of said prism means corresponding to said one internal surface, said planar surface and thereby said internal surface will



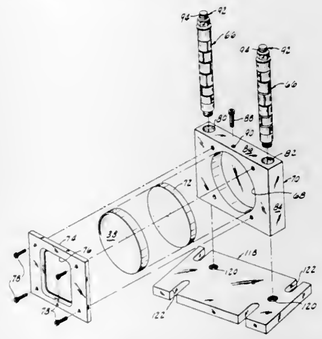
deform to partially mirror the ridge-valley configuration of the contacting finger to give a greater area of contact resulting in a high contrast image being reflected onto said sensor means due to absorption of light at said one internal surface where said planar surface is contacted by the finger.

4,120,586

METHOD AND MEANS FOR ALIGNING FOCUSING MIRRORS IN AN OPTICAL SPECTROMETER

David L. Lessner, Baltimore, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 28, 1977, Ser. No. 763,383
Int. Cl.² G01J *3/18*; G02B *7/18*
U.S. Cl. 356—100 **12 Claims**



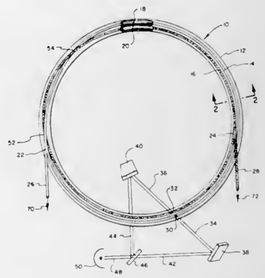
1. A means facilitating alignment of a focusing mirror which comprises a mirror mounting means for receiving a focusing mirror, radially expandable mounting means, said mirror mounting means having a bore for receipt of said radially expandable mounting means, a base plate, said radially expandable mounting means being attached to said base plate and providing rigid support in expanded condition for the mirror mounting means; and means for exerting a compressive force on said radially expandable mounting means.

4,120,587

DOUBLE OPTICAL FIBER WAVEGUIDE RING LASER GYROSCOPE

Victor Vali; Richard W. Shorthill, both of Salt Lake City, Utah; Raymond Goldstein, Pasadena, Calif., and Reuben S. Krogstad, Seattle, Wash., assignors to University of Utah Research Institute, Salt Lake City, Utah

Filed Nov. 24, 1975, Ser. No. 634,944
Int. Cl.² G01B *9/02*
U.S. Cl. 356—106 LR **12 Claims**



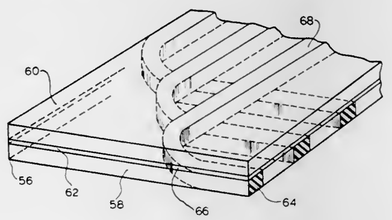
1. A laser apparatus for determining angular rotation of an area comprising:
a double core optical fiber waveguide having a first and a second core, the waveguide circumscribing the area 360°;
a gain medium interposed into each of the first and second cores;
means for activating each gain medium to induce laser oscillation in each core;
means in the first core for limiting laser oscillation in a clockwise direction and means in the second core for limiting laser oscillation in a counterclockwise direction;
means for removing a portion of the laser oscillation radiation from each core;
means for combining the portions of removed laser oscillation radiation, and
means for detecting frequency differences between the laser oscillations.

4,120,588

MULTIPLE PATH CONFIGURATION FOR A LASER INTERFEROMETER

Erik Chaum, 4701 Caritina Dr., Tarzana, Calif. 91356

Filed Jul. 12, 1976, Ser. No. 704,444
Int. Cl.² G01B *9/02*
U.S. Cl. 356—106 LR **14 Claims**



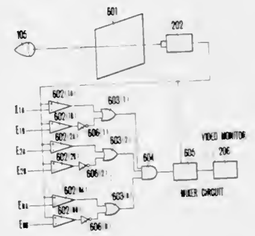
8. In an inertial rotational sensor, a waveguide transmission path comprising an ordered plurality of coupled waveguide loops in a first and second plane, each waveguide loop, at least partially circumscribing an area and having at least one crossing waveguide segment in said first plane crossing a waveguide segment of at least one other one of said plurality of waveguide loops in said second plane, said crossing waveguide segment being offset and isolated from said waveguide segment of said other one of said plurality of waveguide loops.

4,120,589

METHOD AND APPARATUS FOR MEASURING THE DISTRIBUTION OF A LIGHT FIELD ABOUT THE OPTICAL AXIS OF A LIGHT SOURCE

Yoshitada Mima, Tachikawa; Naoaki Kubushiro, Komae, and Koji Kojima, Kawasaki, all of Japan, assignors to Hitachi Denshi Kabushiki Kaisha and Kabushiki Kaisha Banzai, both of, Japan

Filed May 10, 1977, Ser. No. 795,532
Claims priority, application Japan, Jul. 2, 1976, 51/77726
Int. Cl.² G01J *1/00*
U.S. Cl. 356—121 **9 Claims**



1. A method of measuring the distribution of light field about the optical axis of a light source comprising the steps of generating a video signal by picking up the light of said light source projected upon a screen, quantizing said video signal by means of a plurality of pairs of voltage comparators, each pair including voltage comparators set with different reference voltage levels, inverting one of the outputs of the voltage comparators of respective pairs in an orderly manner, synthesizing the one of the outputs of the respective pairs with the rest of the outputs thereof thus forming a dark and bright stripe signal, and displaying said stripe signal on a video display unit for producing a radially discrete annular pattern representative of equibrightness curves of the light distribution.

4,120,590

METHOD FOR MEASURING THE THICKNESS OF TRANSPARENT ARTICLES

Robert J. Bieringer, Toledo, and James A. Ringlien, Maumee, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

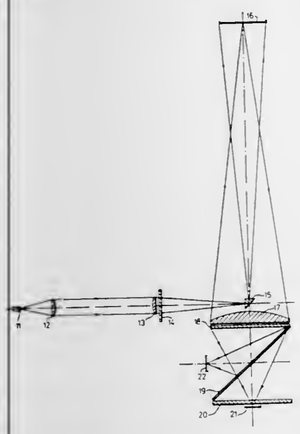
Filed Jun. 3, 1977, Ser. No. 803,000
Int. Cl.² G01B *11/00*
U.S. Cl. 356—161 **4 Claims**



1. A method for measuring the thickness of transparent articles which comprises the steps of:
generating a plural component beam of light;

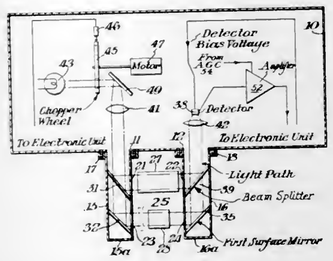
optically converging said plural component beam of light;
illuminating said transparent article with said convergent plural component beam of light thereby causing two separate reflections for all components of said plural component beam of light, one of said reflections representing reflection from the front surface of said transparent article and the other said reflections representing reflection from the rear surface of said transparent article;
projecting said reflections onto a detector plane which is conjugate to a plane in the vicinity of said article to thereby give two separate co-planar images of said plural component beam of light; and
measuring the average separation of said two separate images as an index of the thickness of said article at a point along the optic axis of the system.

4,120,591
COLOR DETECTION DEVICE
Ludovicus Petrus Maria van Valkenburg, 's-Prinsensingel 17, Maasland, Netherlands
Filed Dec. 1, 1976, Ser. No. 746,626
Claims priority, application Netherlands, Dec. 3, 1975, 7514061
Int. Cl.[2] G01J *3/46, 3/48*
U.S. Cl. 356—178 **4 Claims**



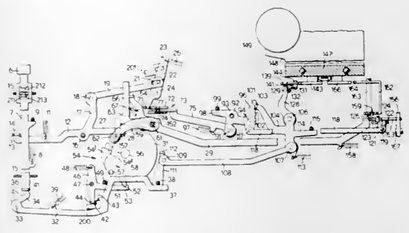
1. A color detection device for detecting the color of an object comprising:
a source of light;
first polarizing means for polarizing the light from said source in a first direction;
first directing means for directing said light onto said object;
second polarizing means oriented to block light that has been mirror-reflected from said object and pass only a part of the light that has been diffuse-reflected from said object;
second directing means for directing said portion of light to said second polarizing means;
a dividing mirror for dividing the light passing through said second polarizing means into a plurality of beams;
color filter means through which at least one of said beams pass; and
light detection means for producing signals proportional to the intensity of each of said beams.

4,120,592
MULTIPLEX OPTICAL ANALYZER APPARATUS
Sydney Winn Fleming, Wilmington, Del., and Gregory Paul Weeks, Waynesboro, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 24, 1976, Ser. No. 670,079
Int. Cl.[2] G01N *21/24*
U.S. Cl. 356—201 **7 Claims**



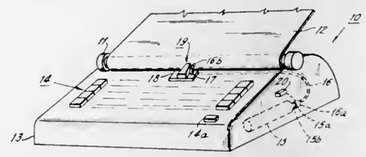
1. In an absorption type photometric analyzer having a radiation source, means for sequencing radiation wavelengths, radiation collimating means and a radiation detector operating in synchronization with the means for sequencing radiation wavelengths, a radiation routing apparatus receiving analytical radiation from said radiation collimating means comprising: means for splitting said analytical radiation into first and second beams of preselected wavelength bands and for reflecting said first beam of preselected wavelength band through a first sample cell disposed athwart said first beam of preselected wavelength band of radiation to form a first beam of emergent radiation, and for transmitting said second beam of preselected wavelength band through a second sample cell disposed athwart said second beam of preselected wavelength band of radiation to form a second beam of emergent radiation; and means for merging the first and second beams of emergent radiation along a coincident path to said detector.

4,120,593
LINE-SPACING SYSTEM FOR PRINTING OFFICE MACHINES
Domenico Roano, Parella, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Jun. 17, 1976, Ser. No. 697,180
Claims priority, application Italy, Jun. 23, 1975, 68607 A/75
Int. Cl.[2] B41J *19/90*
U.S. Cl. 400—549 **6 Claims**



1. In a printing office machine of the type having a carriage, a controllable line spacing mechanism and a controllable carriage return mechanism for returning the carriage to the beginning of the printing line, comprising:
actuatable control means for enabling both the line spacing mechanism and the carriage return mechanism;
means for actuating said control means to effect both the line spacing and the return of the carriage to the beginning of the printing line;
manually actuatable stop means for preventing the movement of the carriage to override said carriage return mechanism; and
means for manually actuating both the control means and the stop means to effect the line spacing of the carriage without the return of the carriage to the beginning of the printing line, wherein the forward shifting of the carriage is effected by an escapement tooth coacting with a first rack of the carriage and wherein said stop means includes a second rack disposed on the carriage and a detent configured to coact with the second rack, wherein said detent is disposed in correspondence with the printing point of the machine to enable line-spacing without carriage return to the beginning of the printing line from any position along the printing line, wherein said control means effects the line-spacing before the return of the carriage and wherein said stop means includes a movable support slidably disposed relative to said carriage and shifted together therewith for disenabling the carriage return mechanism after the enabling of the line spacing mechanism, and wherein said detent is mounted on the movable support and the travel of the support is less than or equal to the escapement step of the first rack.

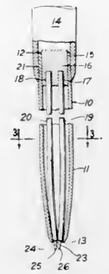
4,120,594
CORRECTION DEVICE FOR TYPEWRITERS AND THE LIKE
Robert Howard, Windham, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.
Filed Feb. 4, 1977, Ser. No. 765,627
Int. Cl.[2] B41J *29/36*
U.S. Cl. 400—697 **2 Claims**



1. Apparatus for applying characters to a sheet of paper, including means for correcting errors, said apparatus including:
supporting means comprising a platen for supporting a sheet of paper;
printing means mounted for movement adjacent to said supporting means for selectively applying characters to said sheet of paper;
a pressurized source of correction fluid;
a hollow flexible tube having a first and a second end, said first end being connected to said source of pressurized correction fluid, said second end being mounted to move with said printing means to selectively apply said correction fluid to said sheet of paper; and
coiling means responsive to movement of said printing means for coiling said hollow flexible tube.

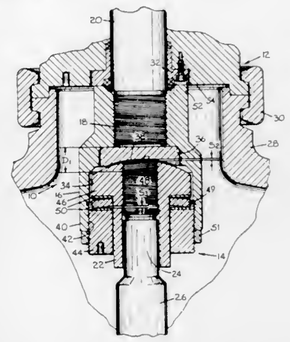
4,120,595
PEN FOR WRITING A DOUBLE LINE
Joseph A. Moreno, P.O. Box 568, Saegertown, Pa. 16433
Filed Dec. 10, 1976, Ser. No. 749,449
Int. Cl.[2] B43K *27/04, 27/08*
U.S. Cl. 401—35 **6 Claims**

1. A writing instrument comprising a hollow body open at one end with two elongated flexible members inside said body and rigidly secured thereto at their ends remote from said open end and extending substantially to said open end, in engagement with each other and in engagement with said body around said open end,
writing means on the outer ends of said flexible members, extending from said open end,



said flexible members being free to slide and twist on each other and slide on said body at said open end, whereby said writing ends engage a writing surface and describe two lines that cross each other irrespective of the position in which said body is held by the hand of the writer.

4,120,596
VALVE-ACTUATOR COUPLING
Timothy Edward Kunkle, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Mar. 4, 1976, Ser. No. 663,786
Int. Cl.[2] F16K *41/00;* **F16B** *7/18*
U.S. Cl. 403—14 **1 Claim**



1. A coupling device for a valve stem and an actuator rod operably extending from a valve actuator, said stem and said rod being aligned on a common axis, said stem being capable of axial movement toward and away from said actuator while maintaining at least a predetermined minimum distance therebetween, said coupling device comprising:
a first fitting being axially adjustably mounted on an end of one of said stem and said rod and including a cavity therein;
a second fitting being axially adjustably mounted on an end of the other of said stem and said rod and including an enlarged portion adapted to be loosely fitted within said cavity allowing some axial movement of said enlarged portion with respect to said first fitting;
said first and said second fittings respectively having aligned first surfaces thereon which are generally perpendicular to said axis, said first surfaces making contact during

movement of said rod in a direction away from said actuator;

spring means disposed within said cavity of said first fitting between said first fitting and said second fitting and capable of limited resilient deflection while exerting a force on said first and said second fittings in a direction tending to decrease an axial distance between said stem and said rod until said first surfaces make contact;

said first and said second fitting having aligned second surfaces thereon which are capable of making contact to maintain said axial distance between said stem and said rod within a predetermined limit during movement of said rod in a direction toward said actuator and to prevent said spring means from being fully deflected;

locating means mounted on said rod and adapted to make contact with said actuator for maintaining said end of said rod at least a desired distance from said actuator, said locating means being capable of preselected axial positioning on said rod to establish said desired distance for maintaining said axial distance between said stem and said rod less than said predetermined limit when said stem and said rod are positioned toward said actuator; and

said first fitting having an opening therein to allow viewing of said cavity and said spring means to facilitate some deflection of said spring means when establishing said desired distance of said end of said rod from said actuator by axial adjustment of said first fitting, said second fitting and said locating means.

4,120,597

BALL JOINT

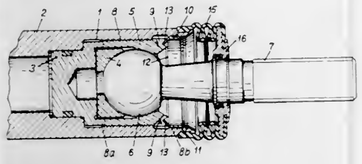
Barry John Millard, Reading, England, assignor to Adwest Engineering Limited, Great Britain

Filed Feb. 28, 1977, Ser. No. 772,903

Claims priority, application United Kingdom, Mar. 2, 1976, 8327/76

Int. Cl.[2] F16C *11/06*

U.S. Cl. 403—24 **25 Claims**



1. A ball and socket joint comprising:

(a) a socket for receiving a ball;

(b) a first screw thread formed in a circumferential wall of the socket;

(c) a ball housing secured in said socket in threaded engagement with said first screw thread for retaining a ball in the socket;

(d) a second screw thread formed in the circumferential wall of the docket at a location outwardly from said first screw thread toward the mouth of the socket; the second screw thread being of opposite hand to said first screw thread and being of larger diameter than said first screw thread so that the ball housing can pass therethrough into threaded engagement with said first screw thread;

(e) an annular locking member secured to said socket in threaded engagement with said second screw thread and in retaining abutting relationship with said ball housing;

(f) at least one recess in the ball housing abutted by said annular locking member; and

(g) a radially inwardly directed portion formed on said annular locking member which is deformed axially into said at least one recess in the ball housing to prevent relative rotation between the locking member and the ball housing.

4,120,598

ASSEMBLY FIXTURE FOR FURNITURE

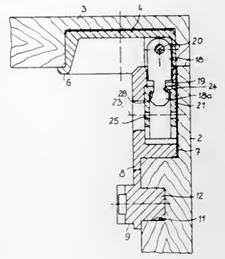
Ernst Zernig, Hemer, and Manfred Rüther, Nachrodt, both of Fed. Rep. of Germany, assignors to Firma Richard Heinze GmbH & Co. KG, Herford, Fed. Rep. of Germany

Filed Sep. 13, 1976, Ser. No. 722,959

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1975, 2541554

Int. Cl.[2] F16B *12/50*

U.S. Cl. 403—68 **14 Claims**



1. In an assembly fixture for furniture of the type comprising a first fixture section containing a casing that can be embedded in an associated first furniture part, and a second fixture section adapted to be fastened to an associated second furniture part and arranged to cooperate with said first fixture section for attaching said first and second furniture parts to one another, said furniture including a door having a hinge attached thereto, said hinge having a pivotal hinge bracket adapted to be attached to said first furniture part for pivotally supporting said door from said first furniture part, the improvement wherein the casing of said first fixture section has a flange, said flange carrying an adjusting plate for longitudinally adjustable engagement with said pivotal hinge bracket of said hinge.

4,120,599

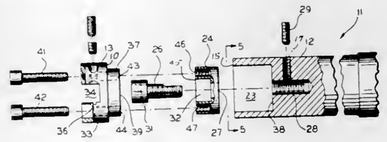
BORING TOOL

Norman H. Lovendahl, 814 N. Clinton, River Forest, Ill. 60305

Filed May 4, 1977, Ser. No. 793,612

Int. Cl.[2] B23B *51/00*

U.S. Cl. 408—150 **8 Claims**



1. An improved boring tool, said boring tool comprising:

a main shaft;

said main shaft having a longitudinal axis;

eccentric means at one end of said main tool shaft being radially eccentric relative to the said longitudinal axis;

tool holder means holding a cutting tool for boring purposes;

locking means for locking said tool holder to said shaft so as to prevent movement of said tool holder axially and radially relative to said shaft, whereby chatter is prevented; and

collar means including said locking means coupled to said tool holder means and rotatably mounted in said eccentric means to enable said tool holder means to continuously rotate through 360 degrees, thereby continuously varying the distance from the edge of the cutting tool to the axis of said shaft as said tool holder means is rotated.

4,120,600

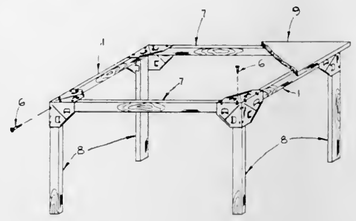
CORNER BRACKET

Gordon H. Rees, 1650 Fillmore Ave., Buffalo, N.Y. 14211

Filed Apr. 12, 1976, Ser. No. 676,284

Int. Cl.[2] F16B *7/00*

U.S. Cl. 403—231 **7 Claims**



1. A corner construction bracket for three dimensional frames comprising:

(a) a unitary member having three mutually perpendicularly related planar sides, said member being relatively strong and stiff and being formed of a relatively rigid, yet at least somewhat resilient material, adjacent faces of said sides forming an interior surface,

(b) each said side being rigidly affixed edgewise to each of the other two sides,

(c) means on each said side other than separate fastening means for guiding an end portion of at least one frame element of a selected size into proper position in said bracket, said means also both biasing said end portion against one adjacent side and holding it substantially parallel to said side simultaneously

(d) each said side also including suitably positioned holes for receiving fasteners for fastening said bracket to said frame elements,

(e) said frame element holding means including an inwardly extending projection for engaging an outwardly facing side of the end portion of an inserted frame element, said projection having an attached edge and a free edge, said projection being relatively elongated and positioned in spaced, parallel relation to said one adjacent side, said spacing being substantially equal to one dimension of said selected size,

(f) said projection spacing being at least somewhat adjustable by bending said projection to accommodate minor variations in the size of the frame elements from said selected size, whereby three frame elements may be inserted into said bracket and held in mutually perpendicular relation pending the insertion of separate fasteners.

4,120,601

SPADE DRILL

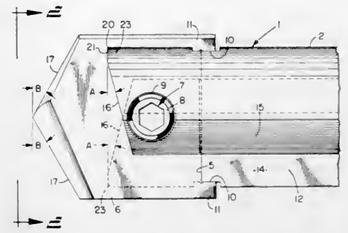
Milton L. Benjamin, Chagrin Falls, Ohio, assignor to Erickson Tool Company, Solon, Ohio

Filed Oct. 6, 1977, Ser. No. 839,923

Int. Cl.[2] B23B *31/44, 51/00*

U.S. Cl. 408—226 **5 Claims**

1. In a spade drill wherein a holder has a slot diametrically across one end thereof, and a blade having cutting edges forming an obtuse angle cutting point is clamped in said slot by screw means with its cutting edges disposed axially forwardly of the open end of said slot and with its other end in abutting engagement with the bottom of said slot, the improvement which comprises oppositely beveled end surfaces on said holder which are perpendicular to the opposite side faces of the blade and which respectively extend angularly from near the axially forward corner of the slot at an angle less than the angle of the respective cutting edges to define convergent passages of right angle cross section for tracking the flow of



chips toward diametrically opposite obtuse angle longitudinal grooves in said holder.

4,120,602

METHOD AND APPARATUS FOR CONTROLLING A WATER TURBINE

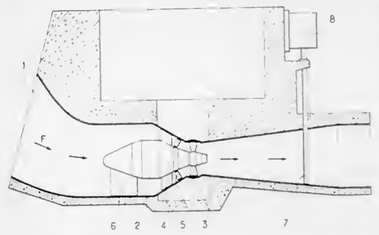
Lucien Megnint, Grenoble, France, assignor to Neyrpic - Creusot Loire, Grenoble and Compagnie Nationale du Rhone, Lyons, both of, France

Filed Jan. 3, 1977, Ser. No. 757,796

Claims priority, application France, Jan. 6, 1976, 76 00154

Int. Cl.[2] F01D *17/00*

U.S. Cl. 415—1 **2 Claims**



1. A method of controlling the operation of a bulb type water turbine having a mobile guide vane assembly comprising a plurality of pivotable guide vanes which are short and noncontiguous and constitute a circumferential array in juxtaposition to a stationary conical front guide vane assembly and downstream thereof, a water turbine disposed downstream of said bulb for receiving water flow discharging from said pivotable guide vanes and a gate sluice downstream of said turbine for closing off flow through an annular duct carrying said bulb, said mobile guide vane assembly and said stationary guide vane assembly, said method comprising the steps of:

limiting the angular play of the pivotable guide vanes during turbine operation to cause said mobile guide vane assembly to only, variably deflect the water during turbine operation and

employing the gate sluice for controlling the starting and stopping of the turbine and water-tight sealing of the turbine when the turbine is stopped.

4,120,603

JET FLAP CONTROLLED FUEL PUMP

Noel L. Downing, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

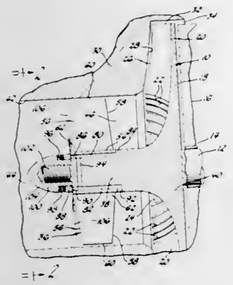
Filed Mar. 28, 1977, Ser. No. 781,701

Int. Cl.[2] F04D *17/00*

U.S. Cl. 415—11 **3 Claims**

1. A fluid flow inducer for supplying inlet fuel flow to a high

speed centrifugal pump comprising a housing with a bore therein, a rotating shaft driven by the centrifugal pump located concentrically within said bore, a conoidally configured inlet nose on said shaft, a plurality of circumferentially spaced inducer blades each having a leading edge, a base connected to said shaft and a tip located in close proximity to the wall of said bore and operative upon rotation of said shaft to produce a higher pressure in said bore downstream of said blades which increases as fuel flow rate is reduced through said bore, and



means on said shaft including a valve responsive to pressure in said bore downstream of said blades and an outlet from said shaft closely adjacent said leading edge to produce a radially outwardly directed curtain of fuel slung from said rotating shaft immediately upstream of said blades when a predetermined downstream pressure occurs, said curtain reducing the axial inlet velocity component of fuel flow at the leading edge of each of said blades to stabilize fuel flow across the inducer during low flow, high speed operating conditions.

4,120,604

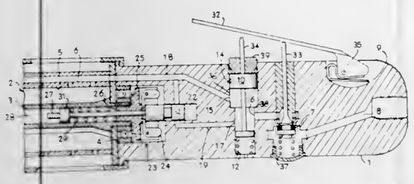
PORTABLE PNEUMATIC NUT RUNNING TOOL HAVING AIR SHUT-OFF CONTROLS

Nicholas J. Garofalo, 259-09 81st Ave., Floral Park, N.Y. 11004

Filed Apr. 29, 1977, Ser. No. 792,147

Int. Cl.[2] F01B *25/00;* **B23B** *45/04*

U.S. Cl. 415—25 **10 Claims**



1. A portable pneumatic nut running tool comprising an air driven torque transmitting motor, a primary and a secondary air feed passage connecting with the motor, a throttle valve operable from a closed normal position to an open position to feed operating air to both the primary and secondary passages, a shiftable control valve normally blocking the secondary passage to flow of operating air to the motor, centrifugally operable means responsive to acceleration of the motor to shift the control valve to open the secondary passage to flow of operating air to the motor, a blocking valve movable from an open normal position to a position blocking the primary passage to flow of operating air to the motor, manipulative lever means movable through an initial angle to open the throttle valve and movable through a further angle to move the blocking valve to its position blocking the primary passage, spring means responsive to a predetermined degree of deceleration of the motor to return the control valve to its position blocking the secondary passage, and return spring means responsive to manual release of the lever means to return the throttle and blocking valves to normal.

4,120,605

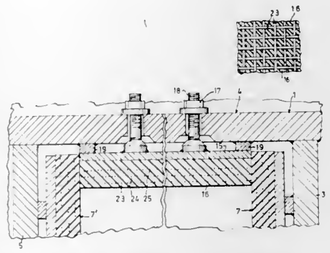
WEAR LINERS FOR ABRASIVE-MATERIAL HANDLING EQUIPMENT

George P. Hurst, Jackson, Calif., assignor to Skega Aktiebolag, Ersmark, Sweden

Continuation of Ser. No. 575,773, May 9, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,195

Int. Cl.[2] F03B *11/00;* **F04D** *7/02, 29/02*

U.S. Cl. 415—170 R **8 Claims**



1. A liner for a centrifugal pump for pumping abrasive material, which pump includes an impeller between the opposed sidewalls of a case having a volute surrounding said impeller and extending to the pump outlet, comprising:

(a) a volute-shaped liner of rubber adapted to be positioned within and to follow said volute having a generally radially inwardly facing wear surface for engagement with the abrasive material pumped by said pump when said liner is within said volute and the impeller is operating;

(b) a sheet of abrasive resistant wire mesh embedded within said liner disposed parallel with said wear surface providing a mesh surface for resisting wear from abrasion upon such wear of said liner to said mesh surface;

(c) the rubber of said layer being vulcanized and substantially inseparably bonded to the wires of said sheet and;

(d) said sheet of abrasive resistant wire mesh being located closer to said wear surface of said layer when said layer is installed in said apparatus than to the opposite surface of said layer.

4,120,696

SUBMERSIBLE MOTOR PUMP

Karl Reiss, Limbach, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 12, 1976, Ser. No. 731,335

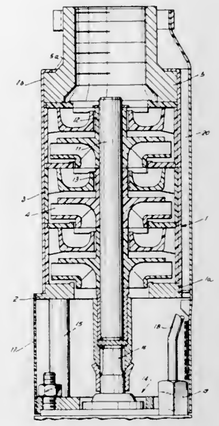
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1975, 2548584

Int. Cl.[2] F04D *29/44*

U.S. Cl. 415—199.1 **9 Claims**

1. In a submersible motor pump, a combination comprising a tubular pump housing having first and second end portions; fluid conveying means including at least one stage in said housing, said stage having a casing; first and second compressing members respectively extending into said first and second end portions; and first and second connecting means for permanently securing said first and second compressing members to the respective end portions at such a distance from each other that said casing is subjected to axial stresses, said casing

consisting of deformable material and bearing against the internal surface of said housing as a result of said axial stresses with



a force which suffices to invariably prevent any movements of said casing relative to said housing.

4,120,607

ROTOR BLADE FOR A GAS TURBINE ENGINE

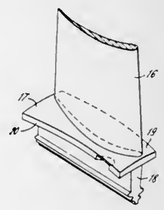
John Frederick Coplin, Duffield, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 16, 1977, Ser. No. 778,170

Claims priority, application United Kingdom, Mar. 26, 1976, 12278/76

Int. Cl.[2] F01D *5/30*

U.S. Cl. 416—2 **7 Claims**



1. A rotor assembly for a gas turbine engine comprising: a casing; a rotor mounted within said casing and having a plurality of rotor blades assembled thereon and defining at least one blade row; a containment ring carried by said casing outward of said at least one blade row, said containment ring being sufficiently strong to withstand impact of one of said blades; and each of said blades having an aerofoil portion with a convex flank and a concave flank, an inner platform having opposed edges arranged to abut against corresponding edges of adjacent platforms when said blades are assembled on said rotor, a root portion of reduced thickness relative to said platform at a point of attachment to said platform, and one of said edges lying adjacent to said convex flank of said aerofoil portion having an indentation formed thereon with one wall facing backwards at an angle less than 90° to said one edge whereby if said aerofoil portion and said platform becomes detached from said root portion and/or said rotor, motion of said aerofoil portion and said platform will be contained by engagement between said indentation on said platform and a leading edge of a next adjacent blade in said at least one blade row.

4,120,608

HEAT-STABLE POLYMER COATING COMPOSITION WITH ANTIOXIDANT

Eustathios Vassiliou, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 606,298, Aug. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,938, Sep. 27, 1974, abandoned, and a continuation-in-part of Ser. No. 552,870, Feb. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,938,. This application Mar. 24, 1977, Ser. No. 780,905

The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.

Int. Cl.[2] B05D *3/02;* **B32B** *3/10, 27/00*

U.S. Cl. 428—187 **11 Claims**

1. A process for producing decorative patterns within a baked coating composition on a substrate, said coating composition consisting essentially of

(a) heat-stable polymer stable at temperatures above 300° C.,

(b) colorant,

(c) antioxidant, and

(d) liquid carrier;

said process consisting essentially of applying the composition either as a subsequent coat over or directly under an oxidation catalyst composition which is arranged in a decorative pattern on a substrate, and then baking the coating; wherein said oxidation catalyst or its decomposition products diffuse into the coating and catalyze oxidation of the colorant, thereby rendering, upon baking, the decorative pattern visible within the heat-stable polymer coating.

11. An article bearing a baked coating produced by the process of claim 1.

4,120,609

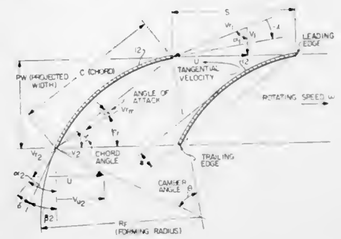
SHEET METAL FAN

Cheng-Chien Chou, Carmel, and Clifford Sau Leong Yee, Indianapolis, both of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Filed Jun. 14, 1976, Ser. No. 695,818

Int. Cl.[2] F04D *29/38*

U.S. Cl. 416—223 R **1 Claim**



1. A rotating fan comprising, in combination:

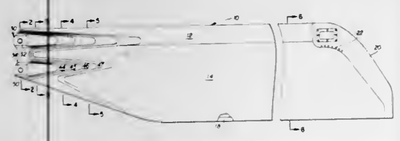
(a) a hub secured to and rotated by a rotary shaft;

(b) a plurality of sheet metal fan blades fixed in spaced circumferential relation to said hub and projecting radially therefrom; each fan blade having a leading edge and a trailing edge defining a chord length C therebetween, and a forming radius of curvature at each radial station r which establishes with said chord length C a camber angle θ and a chord angle γ at each such station; and each fan blade having its chord angle and its camber angle varied over its radial length such that the theoretical energy transfer ΔH_{TH} per unit mass of air at each radial station r is equal to $K_H(r^n)$ over at least 70% of its radial length, where n is a constant greater than 1 but less than 2 and

$$K_H = \left(\frac{\Delta p}{\rho g}\right)\left(\frac{1}{\eta_{oa}}\right)\frac{(n+2)(r_o^2 - r_i^2)}{2[r_o^{(n+2)} - r_i^{(n+2)}]}$$

in which:
ρ = density of air
r_i = fan blade inner radius
r_o = fan blade outer radius
Δp = average pressure rise across the fan
η_{oa} = overall fan efficiency
g = gravitational acceleration.

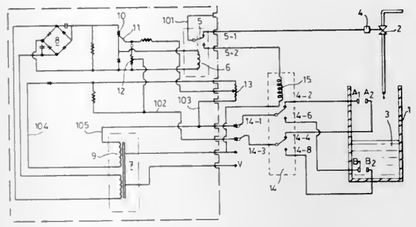
4,120,610
HELICOPTER BLADE STRUCTURE
James L. Braswell; Cecil E. Covington, both of Hurst; Nolan B. Phillips, Forth Worth, and David E. Snyder, Arlington, all of Tex., assignors to Textron, Inc., Providence, R.I.
Filed May 16, 1974, Ser. No. 470,520
Int. Cl.[2] B64C *27/48*
U.S. Cl. 416—226 **11 Claims**



1. A helicopter blade comprising:
(a) an elongated metallic nose spar having a closure member therefor to form a nose spar assembly of material having a high modulus of elasticity and having upper and lower trailing flanges closed by said member with a coupling bushing directly connected to said assembly for direct transfer of primary loads from said spar to said bushing,
(b) a trailing skin structure attached to and supported from said nose spar assembly,
(c) bands of unidirectional fiberglass material having a lower modulus of elasticity than said assembly and extending the length of the blade and bonded to the upper and lower interior surfaces of said nose spar assembly with a loop formed at the root of said blade by said bands and attached to said bushing for secondary transfer of load from said blade, and
(d) grip means engaging said bushing to couple said blade to a helicopter rotor mast whereby said nose spar assembly normally will operate at high strain levels and said bands operate at low strain levels until failure of said nose spar assembly and thereafter maintain the load.

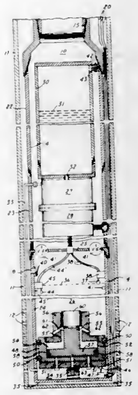
4,120,611
ELECTRONIC DEVICE FOR AUTOMATICALLY CONTROLLING THE LEVEL OF A LIQUID IN A VAT
Roger M. Salve, "Clos Monfort" 51 Rue Haute 51, B-1330 Rixensart, Belgium
Filed Apr. 7, 1977, Ser. No. 785,751
Int. Cl.[2] F04B *49/06;* **H01H** *35/18*
U.S. Cl. 417—36 **3 Claims**

1. An electronic device for automatically controlling the level of a liquid in a vat fed with the liquid through pump means, said electronic device comprising in combination:
(a) first resistor means placed at a relatively higher level on the inner wall surface of the vat, said resistor means having a resistance which is variable in response to the presence or absence of the liquid at the position thereof;
(b) second resistor means placed at a relatively lower level on the inner wall surface of the vat, said resistor means having a resistance which is variable in response to the presence or absence of the liquid at the position thereof;
(c) first switching means responsive to a control signal for being switched from a first to a second state, the first state being effective to enable the operation of the feed pump means for the liquid, whereby the switching of said first switching means to its second state causes the feed pump means to be stopped,
(d) control means fed from an electric supply source for producing said control signal for the first switching means, said control means comprising impedance means which includes the resistance of either of said first and



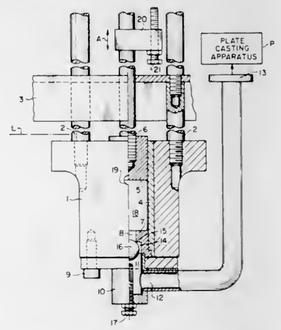
second resistor means, said control means further comprising second switching means responsive to an energizing signal for being switched from a first to a second state, said first state being effective for connection across the first resistor means and said second state being effective for connection across the second resistor means, the said energizing signal for the second switching means being produced in response to the first switching means being operated to its second state.

4,120,612
AUTOMATIC PUMP FOR DEEP WELLS
Kenard D. Brown, 1227 S. Willow St., Casper, Wyo. 82601
Filed Jan. 22, 1976, Ser. No. 651,512
Int. Cl.[2] F04B *9/10*
U.S. Cl. 417—53 **16 Claims**



1. In a deep well pump assembly of the type including an upwardly extending cylinder having therein a reciprocating piston for receiving liquid from a reservoir formation and delivering liquid to the surface and means for actuating the piston dependent upon the accumulation of a predetermined quantity of liquid in said cylinder above the piston, the improvement which comprises:
means including a hydraulic pump mounted in said assembly and having its outlet connected to deliver liquid to said cylinder below said piston for driving said piston upwardly in said cylinder to discharge fluid from said cylinder, said cylinder below said piston constituting an expansible chamber,
said means dependent upon the accumulation of a predetermined quantity of liquid in said cylinder above said piston including a sensor in said cylinder for detecting the level of liquid therein and connected to initiate the operation of said hydraulic pump, and
means actuated by said piston at the upper end of its stroke and controlling said piston driving means for returning said piston to its bottom position in said cylinder.

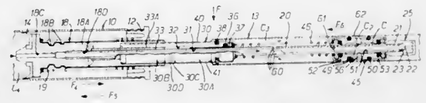
4,120,613
PUMP FOR MOLTEN LEAD, PARTICULARLY INJECTION PUMP USED IN THE MANUFACTURE OF STORAGE BATTERY PLATES
Kurt Kürvers, and Johann König, both Büddingen, Fed. Rep. of Germany, assignors to Accumulatorenfabrik Sonnenschein GmbH, Büddingen, Fed. Rep. of Germany
Filed Jan. 25, 1977, Ser. No. 762,327
Int. Cl.[2] F04B *39/10, 39/12;* **C21D** *1/06*
U.S. Cl. 417—53 **15 Claims**



15. In the art of casting lead structures, a method of making structural elements defining at least portions of a pump chamber of a pump to pump molten lead, said pump having a housing structure element (**1, 4**) defining at least a portion of a pump chamber (**18**);
means (**19**) introducing molten lead into the pump chamber;
and a pump element (**5**) located in the housing structure element (**1, 4**) forming a surface defining the pump chamber
comprising the steps of
high-pressure permanent mold casting said elements of a cast iron having a lamellar graphite structure;
nitriding said castings in a bath of molten cyanides and cyanates at a temperature of from 500° to 600° C. for a period of at least ½ hour;
and thereafter cooling said castings in air to room temperature.

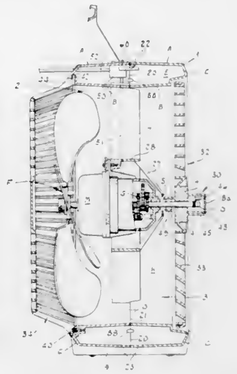
4,120,614
HAND BICYCLE PUMP WITH PRESSURE PRESELECTION AND DISPLAY MEANS
Paul C. Bouder, Soisy-sous-Montmorency, France, assignor to Etablissements Poutrait-Morin S.A., Aubervilliers, France
Filed Jul. 27, 1977, Ser. No. 819,678
Claims priority, application France, Jul. 30, 1976, 76 23309; Jun. 9, 1977, 77 17631
Int. Cl.[2] F04B *21/00, 49/00;* **F16K** *15/20*
U.S. Cl. 417—63 **20 Claims**

1. A hand bicycle pump generally of elongate cylindrical configuration comprising a pump rod mounting a compression piston and a pump body having air inlet means and displaceable along said pump rod and defining a compression chamber with said compression piston, an air circulation tube disposed inside said pump rod and communicating at one end with said compression chamber and at the other end with means for temporarily coupling said pump to an inflatable body, pressure preselection and display means accommodated in said pump rod around said air circulation tube and accessible from outside said pump, said pressure preselection and display means adapted to vary the spring force of spring means normally biasing a piston control member towards its inflating position, said piston control member adapted to be in communication



with the pressure inside the inflatable body through said coupling means, whereby in response to pressure in the inflatable body exceeding said preselected pressure said piston control member is urged away from its inflation position against the biasing force of said spring means, and valve means responsive to displacements of said piston control member for bringing said compression chamber into communication with the atmosphere when the pressure inside the inflatable body exceeds the preselected pressure.

4,120,615
BOX FANS
Phillip William Keem, North Croydon; Laimons Kaimins, Forest Hill, and James Graham, Eltham, all of Australia, assignors to Allware Agencies Limited, London, England
Filed Feb. 4, 1977, Ser. No. 765,628
Int. Cl.[2] F04B *39/02*
U.S. Cl. 417—360 **9 Claims**



1. A box fan comprising a box-like structure containing an electric motor and a fan blade assembly operable by the motor, which structure consists of a front section and a rear section forming a box having front and rear openings which are interconnected to form a duct through said box, the fan blade assembly being positioned for causing air flow through the duct when the motor is operating, wherein the two sections are held securely together by a locking means including external resiliently operable disguised clamps which are disposed transversely of the interface between said sections, said locking means further including an interlocking means, elements of which include the combination of an interfacial edge on a first of the sections; a tongue adjacent the edge and interiorly of said first section, said tongue terminating in a hooked portion and extending beyond the adjacent interfacial edge; an interfacial edge on the second of the sections opposing that of the

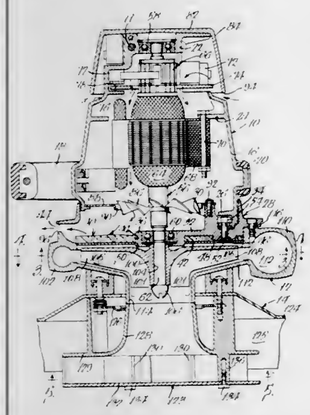
first; and a hooked portion adjacent the interfacial edge of the second section and interiorly of said second section and located in alignment with said tongue and cooperating to engagingly receive the tongue hooked portion when the two sections are assembled by first being pivoted about an axis formed by joining the interfacial edges adjacent the cooperating hooked portions to provide leverage for engaging said hooked portions upon swinging the sections together to complete the assembly of the box, said clamps being positioned at a side of the box opposite that of said interlocking means to retain the engagement of the cooperating elements.

4,120,616

VACUUM CLEANER-BLOWER ASSEMBLY WITH SOUND ABSORBING ARRANGEMENT

Niles M. Dwyer, Park Ridge, and Janis A. Rasins, Chicago, both of Ill., assignors to Breuer Electric Manufacturing Company, Chicago, Ill.

Filed Oct. 6, 1975, Ser. No. 619,790
Int. Cl.² F04B *35/04, 39/06;* **F04D** *29/44*
U.S. Cl. 417—373 **7 Claims**



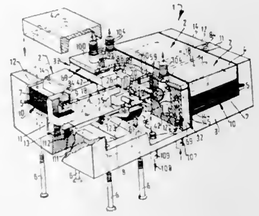
1. A vacuum cleaner-blower assembly comprising, in combination, an electric motor having a commutator assembly adjacent one end and an output shaft at its other end, a housing for said motor enclosing said commutator assembly and having elongate inlet slots on the periphery of said housing for admission of air to said housing, an axial vane cooling fan on said output shaft within said housing, sound absorbing material consisting solely of a disc shaped mat juxtaposed in the discharge flow from said axial cooling fan and normal to said shaft, said housing having elongate outlet slots on the periphery of said housing and located radially outwardly of said mat, said fan drawing cooling air inwardly through said inlet slots, over said commutator assembly and over and through the motor, impinging the air generally perpendicularly against said sound absorbing mat and discharging the air outwardly through said outlet slots; an impeller on said output shaft outwardly of said motor housing, a casing and a support disc enclosing said impeller, said casing being connected to said motor housing, said sound absorbing material lying against said support disc, said sound absorbing material having an opening for said output shaft, said support disc supporting said sound absorbing material and being located adjacent said impeller, said impeller comprising a plurality of curved vanes facing radially and axially away from said motor and each comprising an inner portion curved forwardly in the direction of impeller rotation and an outer or tip portion curved rearwardly relative to the direction of impeller rotation, said inner portions projecting axially beyond said tip portions in the direction away from said motor, said casing including a tubular inlet chamber surrounding the axially extending portions of the inner portions of said vanes, a generally transverse wall paralleling and enclosing the tip portions of said vanes and an exhaust chamber surrounding the outer periphery of said vanes, said exhaust chamber comprising a volute chamber of linearly increasing cross-sectional area leading to a generally tangential outlet; said impeller upon energization of said motor rotating within said casing to draw fluid at high vacuum pressure axially into said tubular inlet chamber, to discharge the fluid without turbulence radially into said volute chamber and to discharge the fluid through said tangential outlet; whereby the assembly provides a vacuum connection at said tubular inlet chamber and a blower connection at said tangential outlet and produces substantial fluid force and volume of flow with minimal cooling fan and impeller noise and power consumption.

4,120,617

PUMP DEVICE FOR SUPPLYING FUEL TO A COMBUSTION ENGINE

Willem Brinkman, Velp, Netherlands, assignor to Holec N.V., Hengelo, Netherlands

Filed Mar. 10, 1976, Ser. No. 665,533
Claims priority, application Netherlands, Jan. 21, 1976, 7600624
Int. Cl.² F04B *17/00, 35/04, 21/02, 21/04*
U.S. Cl. 417—410 **26 Claims**



1. In a device for supplying fuel to an atomizer of a combustion engine, a housing having a cylinder therein, a coupling member having an abutment member, a displacer body slidably received in said cylinder and defining a pump chamber therewith, said displacer body being connected to said coupling member in offset relation to said abutment member, drive means for moving said coupling member back and forth to reciprocate said displacer body within said cylinder, rigid stop means for engagement by said abutment member to limit movement of said coupling member, and thereby control the stroke of said displacer body, inlet valve means for allowing fuel to flow into said pump chamber as said displacer body moves in that direction increasing the volume of said chamber, and outlet valve means for allowing fuel to flow out of said pump chamber when the displacer body is moved in the opposite direction to decrease the volume of said pump chamber, the improvement wherein:

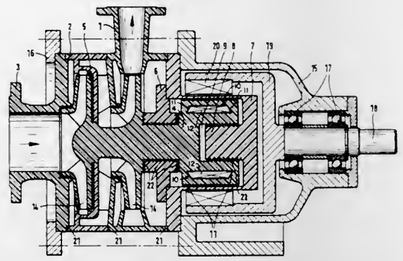
said displacer body includes a guide collar slidably received in said cylinder and an elongate, flexible tie portion extending from said guide collar to said coupling member whereby said flexible tie portion is free to deform when said coupling member tends to cock due to engagement of said abutment member against said stop means, thereby to relieve said guide collar of such cocking within said cylinder.

4,120,618

PERMANENT MAGNETIC CENTRIFUGAL PUMP

Franz Klaus, Uhland Strasse 54, 463 Bochum, Fed. Rep. of Germany

Filed Aug. 2, 1976, Ser. No. 710,929
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1975, 2534740
Int. Cl.² F04B *17/00*
U.S. Cl. 417—420 **8 Claims**



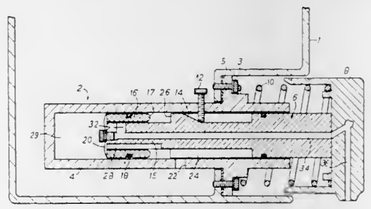
1. A high power, high pressure permanent magnet centrifugal pump having an impeller driving inner rotor with a plurality of individual permanent bar magnets associated therewith in which all components which are in direct contact with the pumped fluid, particularly the pump casing, the impeller assembly including its shaft, and the inner rotor, and the gap tube, are made entirely of a synthetic plastics material, in which the permanent magnets of the inner rotor are bar magnets of trapezoidal cross-section which are completely embedded in the inner rotor in dispostions parallel to the rotor axis, and their side faces and end faces are tapered and inclined towards each other in the radially outward direction, and in which bearing material which imparts the hardness and frictional properties of ordinary bearings to the bearing surfaces is incorporated in the synthetic plastics material forming the bearing surfaces of the bearings of the impeller assembly and inner driven rotor.

4,120,619

RECIPROCATING PUMPS FOR DISPENSING PASTES, LIQUIDS AND OTHER SUBSTANCES

Trevor William Blackband, Sheffield, England, assignor to Sterling-Winthrop Group Limited, London, England

Continuation of Ser. No. 606,608, Aug. 21, 1975, abandoned. This application Aug. 29, 1977, Ser. No. 828,843
Int. Cl.² F04B *7/00;* **G01F** *11/06, 11/38*
U.S. Cl. 417—511 **12 Claims**



1. A reciprocating dispensing pump comprising:

a cylinder adapted to be attached to a product container, said cylinder having an open outer end and an inner end;

a piston slidably extending into said cylinder through said outer end thereof, said piston having an inner end defining with said inner end of said cylinder a space, said piston having adjacent said inner end thereof a reduced diameter length portion, said piston being movable inwardly of said cylinder from an outer first position to an inner second position;

spring means positioned to urge said piston to said outer second position;

said piston having therein a longitudinally extending outlet passage;

said piston having therein a product outlet port connecting said space and said outlet passage;

said piston having therein a product inlet port opening into said space independently of said outlet passage;

said outlet port having an extreme inner edge, said inlet port having an extreme outer edge, said extreme inner and outer edges being spaced by a first axial length;

a tubular sleeve slidably mounted on said reduced diameter length portion, said sleeve being axially displaceable relative to said piston between a first sleeve position and a second sleeve position in response to movement of said piston between said outer first and inner second positions of said piston;

said sleeve having an axially extending portion of a second axial length at least equal to said first axial length, said axially extending portion being completely solid and unperforated;

said axially extending portion of said sleeve, when said sleeve is in said first sleeve position, closing said outlet port, thereby blocking communication between said space and said outlet passage and being axially spaced from and thereby uncovering said inlet port;

said axially extending portion of said sleeve, when said sleeve is in said second sleeve position, closing said inlet port and being axially spaced from and thereby uncovering said outlet port, thereby allowing communication between said space and said outlet passage;

said axially extending portion of said sleeve never simultaneously uncovering both said inlet and outlet ports; and

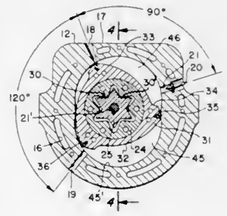
said axially extending portion of said sleeve, during initial relative movement of said sleeve from said second sleeve position to said first sleeve position in response to initial movement of said piston from said inner second position to said outer first position, maintaining said inlet port blocked and said outlet port unblocked, such that a reduced pressure is created in said space and in said outlet passage, thereby withdrawing any product in said outlet passage inwardly therefrom into said space.

4,120,620

ROTARY INTERNAL COMBUSTION ENGINE

Adolph A. Campos, Newark, and Joseph V. Michele, Nutley, both of N.J., assignors to Campos Associates, Summit, N.J.

Filed Dec. 10, 1976, Ser. No. 749,642
Int. Cl.² F01C *1/02, 17/02;* **F02B** *55/14*
U.S. Cl. 418—61 A **8 Claims**



1. In a rotary combustion engine comprising a main housing formed with a generally oval vertically elongated rotor cavity comprising a substantially semi-cylindrical lower portion, an arcuate top portion at a radial distance from the center of said lower portion greater than the radius of said lower portion, and arcuate upwardly convergent side portions smoothly connect-

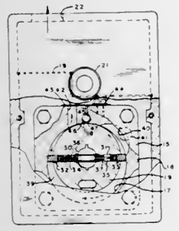
ing said arcuate top (tip) portion and substantially semi-cylindrical lower portion, said cavity having a fuel intake port communicating with the cavity at one side of said top portion, fuel ignition means in the cavity adjacent the opposite side of said top portion, said cavity being provided with a peripheral exhaust port in said lower portion at the same side of the cavity as said intake port, a shaft journaled in the housing with its axis displaced from said center toward said arcuate top portion, a rotor having a periphery comprising three successive sides of similar shape, means for supporting said rotor on said shaft and respective sealing members on the periphery of said rotor between its successive sides sealing engaging the peripheral surface of said rotor cavity and cooperating with said convergent side portions to cause the rotor to at times assume a depressed position providing a differential of radial distance between the center of the shaft and the portion of said peripheral surface at opposite sides of the ignition means engaged by two successive sealing members whereby to define differential in distance providing a differential surface on which combustion pressure in the space immediate adjacent one of said sealing members to provide a thrust (surface) on the rotor, the improvement which comprises utilizing as said rotor a rotor having a star-shaped aperture, said aperture loosely receving an intermediate portion of said shaft.

4,120,621

OIL SEALED SINGLE STAGE VACUUM PUMP

Richard E. Pikul, DeSoto, Mo., assignor to Puritan Bennett Corporation, Kansas City, Mo.

Filed Jul. 19, 1976, Ser. No. 706,937
Int. Cl.[2] F04C *27/02*
U.S. Cl. 418—99 **2 Claims**



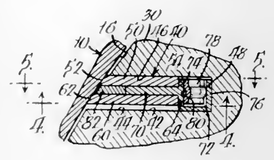
1. A rotary oil sealed single stage vacuum pump for producing an approximate absolute vacuum, comprising a cylindrical stator, a rotor eccentrically positioned for rotation within said stator, said stator having an interior wall, at least a pair of vanes radially disposed within and biased outwardly of said rotor, the outer ends of said vanes being in sliding contact with the inner cylindrical wall of the said stator, said rotor at one location being in contiguity with a segment of the interior wall of said stator, a crescent shaped pumping chamber being provided between the remaining portions intermediate the said rotor and the stator wall, there being a pump intake and an outlet port provided respectively to either side of the said rotor and stator location of contiguity, a valve means normally closing said outlet port, an oil slot formed through the said stator wall, proximate the location of its contiguity with the rotor and disposed for furnishing a quantity of oil to the said location for forming an oil seal thereat, said oil slot being offset between about 1° to 5° from the precise point of contiguity between the said rotor and stator, and being located closer to the pump intake, said oil slot being continuous along its length and being wider than the said valve means to provide for a constant flow of oil to said oil port and for formation of the oil seal at this location of rotor and stator contiguity, the length of said oil slot being less than the width of the pump rotor, said pump having a reservoir, said reservoir communicating with the outlet port and the oil slot and designed for supplying a quantity of oil to the location of the valve means and the location of contiguity between the said rotor and stator for forming the said seal thereat.

4,120,622

STATIC OIL SEAL ASSEMBLY

Alexander Goloff, East Peoria, and Charles E. Ballard, Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 16, 1977, Ser. No. 797,222
Int. Cl.[2] F04C *27/00*
U.S. Cl. 418—142 **7 Claims**



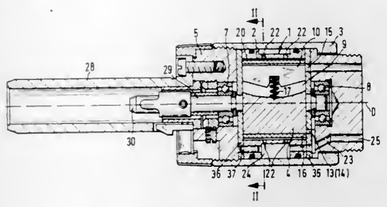
1. In a mechanism such as an engine, pump, compressor, expander or the like having a housing defining an operating chamber, a shaft journalled within the housing, a piston within the housing and movable within the operating chamber and operatively associated with the shaft, an oil seal receiving groove on the piston and a double rail oil seal received in the groove and sealingly engaging the housing, the improvement wherein the double rail oil seal comprises a pair of separate metallic, band-like scraper rails each having one side engaging said housing and an opposite side within said groove and a spacer of impervious, flexible material within said groove sealingly engaging said opposite sides of said scraper rails, said spacer including built-in spring means biasing said spacer into said sealing engagement and said scraper rails out of said groove; said spring means comprising an undulating leaf spring appearing corrugated in cross section with a surface facing said scraper rail opposite sides, a depression between opposite sides of said spring, the portion of said spring including said surface adjacent said depression serving to individually bias an associated one of said scraper rails.

4,120,623

PNEUMATIC VANE-TYPE MOTOR WITH BEARING RING FOR VANE TIPS

Gerd Löhn, Biberach, Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Germany

Filed May 5, 1977, Ser. No. 794,228
Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621486
Int. Cl.[2] F01C *1/00, 13/02, 21/02;* **F16C** *35/00*
U.S. Cl. 418—173 **1 Claim**



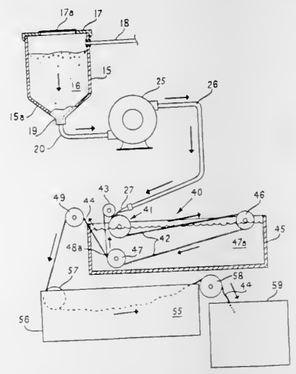
1. A pneumatic vane-type motor for a dental handpiece to drive a dental tool, comprising: a sleeve-shaped motor housing located in the outer surface of said handpiece and forming a stator; a circular-cylindrical inner surface of said housing; a rotor within said inner surface and having a rotary axis parallel to the axis of said cylindrical inner surface, said axes being spaced apart; a power take-off shaft connected to clutch means for driving said dental tool; axially extending grooves in said rotor; rotor vanes radially and movably mounted in said grooves and extending with their outer ends towards said circular cylindrical inner surface; air inlet means for compressed air and air outlet means discharging into a space between said rotor and said circular cylindrical inner surface; a bearing ring located between said circular cylindrical inner surface and said outer ends of said rotor vanes, said bearing ring being freely rotatable and coaxial with said inner surface; said bearing ring having an inner surface contacting said vanes at their outer ends in said axial grooves; annular gap means located between said bearing ring and said circular cylindrical inner surface, said annular gap means comprising an air cushion bearing for said bearing ring and receiving compressed air via a plurality of circumferentially spaced passages in said motor housing; a compressed-air supply line and a branch line; said passages being connected via said branch line to said compressed-air supply line, said air supply line supplying said air inlet means, said air inlet means discharging into said space between said rotor and said circular cylindrical inner surface.

4,120,624

APPARATUS FOR AND METHOD OF FORMING FOOD PRODUCT INTO A STRIP OR RIBBON

Clinton C. Witmer, and Frank M. Tate, both of Modesto, Calif., assignors to Tri/Valley Growers, San Francisco, Calif.

Filed Mar. 8, 1977, Ser. No. 775,557
Int. Cl.[2] B29D *7/00;* **A23P** *1/00*
U.S. Cl. 425—71 **2 Claims**



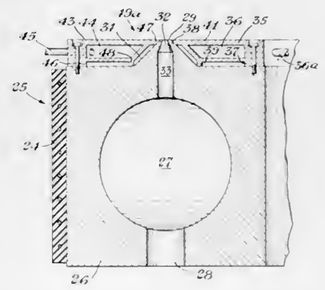
1. Apparatus for continuously producing a ribbon of gelled food material, such ribbon having a uniform thickness and width, said food material as introduced into the apparatus being liquid and being capable of gelling on contact with an aqueous solution of a gelling agent, said apparatus comprising:
(a) a vessel containing a body of liquid aqueous gelling agent
(b) a casting wheel having a circumferential groove having a width and a depth adapted to form a ribbon of the desired width and thickness, said wheel being mounted for rotation about a horizontal axis with its lower portion submerged in said body of liquid and its upper portion above the upper surface of said liquid
(c) an endless belt supported for movement in a closed path, said path including:
(1) first portion converging with the periphery of said wheel above the liquid level in said vessel,
(2) a second portion in peripheral contact with said wheel and overlying said peripheral groove to form a mold bounded by the wheel and the belt, said second portion extending from the point of convergence of the belt and wheel down into the body of liquid gelling agent,
(3) a third portion diverging from said casting wheel at a point below the upper surface of said liquid gelling agent and extending for a distance submerged in said liquid sufficiently to harden the surface of the ribbon, and
(4) a fourth, return portion to said point of convergence
(d) means continuously rotating said casting wheel and continuously moving said belt in its closed path and
(e) means continuously supplying said liquid food material to said casting wheel in proximity to said point of convergence.

4,120,625

DIE FACE CUTTER

Earl T. Heckeroth, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 18, 1977, Ser. No. 788,384
Int. Cl.[2] B29F *3/08*
U.S. Cl. 425—71 **6 Claims**



1. An apparatus for the preparation of granules from a plurality of extruded heat-plastified synthetic resinous thermoplastic strands, the apparatus comprising in cooperative combination a die, the die having a die body, the die body defining an annular plenum, the plenum having a means to communicate with a source of heat-plastified synthetic resinous material, the die having a die face of generally annular configuration, the die body adjacent the die face defining a plurality of extrusion openings communicating with the annular plenum, the extrusion openings being capable of extruding heat-plastified synthetic resinous strands, the extrusion openings terminating on the die face remote from the means to communicate with such a source of heat-plastified thermoplastic resinous material, a cooling plate placed along the die face and being spaced in some areas from the die face, the cooling plate exposing the extrusion openings and permitting passage of the resinous strands, a rotatable cutter operatively associated with said plate to work against the cooling plate and to engage extruded thermoplastic strands emerging from the extrusion openings, to thereby sever the strands into pellets or granules, said die face where the extrusion openings terminate and a downstream surface of the cooling plate being coplanar

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4,120,626

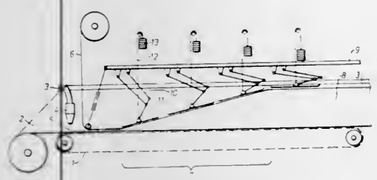
DEVICE FOR THE CONTINUOUS PRODUCTION OF FOAM BLOCKS OF RECTANGULAR CROSS-SECTION

Heinrich Keller, Troisdorf, Germany, assignor to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Filed Jul. 1, 1977, Ser. No. 812,040
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632302
Int. Cl.[2] B29D *27/04*
U.S. Cl. 425—89 **5 Claims**

1. In a device for the continuous production of foam blocks of rectangular cross-section, comprising an endless conveyor belt with side walls, means operatively associated with said conveyor for supplying a covering sheet to the upper surface of the upper rim of the conveyor belt and the side walls, a

charging device for supplying a foamable reaction mixture to the upstream end of the said upper rim of the conveyor belt, and a plurality of mold covers which are placed along the foaming area and each of which is suspended from a guiding device, the improvement wherein each guiding device comprises mounting means, first and second links secured to said mounting means, a diagonally extending rod pivotally con-



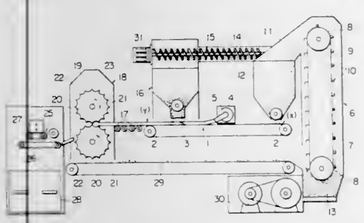
nected at its lower end to the mold cover, a first lever pivotally connected at one end to the first link and pivotally connected at its opposite end to a point on the rod intermediate its ends, and a second lever pivotally connected at one end to the second link downstream of the pivotal connection between the first lever and the first link and pivotally connected at its opposite end to the upper end of the rod.

4,120,627

APPARATUS FOR MAKING BALL-SHAPED MARSHMALLOW PRODUCTS

Minoru Abe, Zama, Japan, assignor to Eiwa Confectionary Co., Fuchu, Japan

Filed Mar. 16, 1977, Ser. No. 778,289
Int. Cl.[2] A23G *3/00*
U.S. Cl. 425—92 **9 Claims**



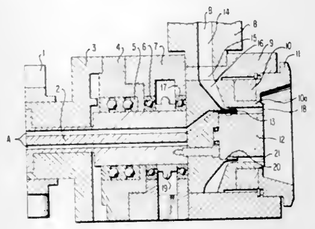
1. An apparatus for making a ball-shaped marshmallow product, comprising:
(a) a tubular extruder for forming a string of marshmallow,
(b) a conveyor belt disposed below a nozzle of the extruder for transporting said string of marshmallow,
(c) first and second powder supply means arranged adjacent each other proximate an inlet end of said conveyor belt,
(d) first and second feed hoppers respectively connected to said powder supply means, the former being disposed above the conveyor belt and upstream from the extrusion nozzle and the latter being disposed above the conveyor belt and downstream from said nozzle,
(e) a roll cutter disposed proximate the discharge end of said conveyor for cutting the powdered string of marshmallow at spaced intervals and forming each cut portion into a ball-shaped product,
(f) a drive source coupled to said conveyor, said powder supply means, and said roll cutter, and
(g) pressing and transferring means transferring each cut portion from the roll cutter to a container while simultaneously flat pressing each cut portion,
(h) said second powder supply means including an endless belt vertically disposed on a pair of rollers journalled above the other in a housing, and a plurality of bucket scoops mounted on the outer periphery of said belt, said second supply means being connected to said second hopper by a powder feed cylinder.

4,120,628

APPARATUS FOR MANUFACTURING PLASTIC TUBES FROM PLASTICS OF DISSIMILAR PROPERTIES

Rigas Christos Simos, Athens, Greece, assignor to General Enterprises Corp., Ltd., Greece

Continuation of Ser. No. 493,629, Jul. 31, 1974, abandoned, which is a continuation of Ser. No. 197,227, Nov. 10, 1971, abandoned. This application Nov. 24, 1976, Ser. No. 744,879
Claims priority, application Greece, May 5, 1971, 45310
Int. Cl.[2] B29D *23/04*
U.S. Cl. 425—131.1 **8 Claims**



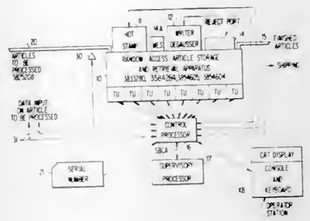
1. An extrusion apparatus for manufacturing plastic tubes from plastics of dissimilar properties comprising an outer shell, a shaft centrally disposed with respect to said outer shell and rotatably mounted for rotation with respect to said outer shell, means arranged at an outlet end of the extrusion apparatus for forming an annular extrusion passage, at least one first supply duct means for one plastic material extending through the rotatable shaft from one end thereof to an at least first outlet means into the extrusion passage, a second supply duct means for another plastic material extending through said outer shell to a second outlet means into said extrusion passage, said at least first supply duct means and said at least first outlet means being for production of a spiral or helical tape or filament, and said second supply duct means and said second outlet means being for production of the tube wall, said spiral or helical tape or filament becoming embedded in the material forming the tube wall in said extrusion passage.

4,120,629

PRODUCTION CONTROL APPARATUS

John Hunt Christian, Tucson, Ariz., and James Leroy Overacker, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 6, 1976, Ser. No. 702,638
Int. Cl.[2] B29C *3/00*; B65G *47/48*
U.S. Cl. 425—135 **3 Claims**



1. Article processing apparatus, including in combination:
a random access article storage and retrieval apparatus having a multiplicity of addressable article storage locations;

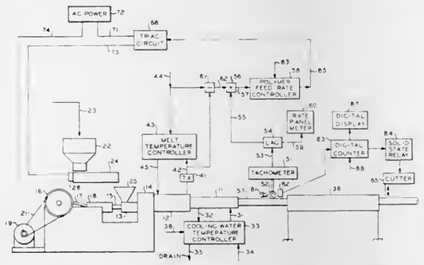
a first article processing unit having an input and output port connected to said article storage apparatus;
a second article processing unit having an input and output port connection to said article storage and retrieval apparatus;
a plurality of article test units each individually having input and output ports to said article storage and retrieval apparatus;
means including an input port to said article storage and retrieval apparatus for receiving articles to be processed;
input service means for assigning said received article to one of said storage locations throughout the article processing procedures;
first unit service means for transferring articles from their respective storage locations to and from said first article processing unit;
second unit service means for selectively transferring articles from their respective storage locations to and from said second unit;
third unit service means for transferring articles from said respective storage locations to and from one of said plurality of article testing units;
queue means for assigning articles in a queue for said units while residing in such article storage locations;
a control processor responsive to said queue means for operating said random access article storage and retrieval apparatus to sequence an article first through said first unit then said second unit and then one of said test units.

4,120,630

AUTOMATIC CONTROL OF EXTRUSION RATE

Ronald J. LaSpisa, and Richard F. Giles, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 12, 1976, Ser. No. 666,283
Int. Cl.[2] B29F *3/08*
U.S. Cl. 425—142 **8 Claims**



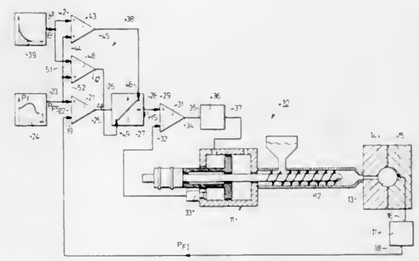
1. Automatically controlled extruder apparatus comprising:
an extruder having a plasticization section and a long land die section for producing an extrudate of a predetermined cross section, means operatively associated with said plasticization section and said long land die section for moving material through said plasticization section and then through said long land die section, heating means operatively associated with said plasticization section for supplying heat to said material in said plasticization section so that said material is molten at the inlet of said long land die section, cooling means operatively associated with said long land die section for removing heat from said material in said long land die section so that at least the outer portions of the extrudate solidify before leaving said long land die section;
feed means operatively associated with said extruder for feeding particles of said material into said plasticization section at a manipulatable rate; and
automatic control means operatively associated with said extruder and said feed means comprising means for measuring the actual rate of extrusion of said extrudate and establishing a first signal representative thereof, means for establishing a second signal representative of the desired rate of extrusion of said extrudate, means responsive to said first and second signals for establishing a third signal which bears a predetermined relationship to the magnitude and sign of the difference between said actual rate of extrusion and said desired rate of extrusion, and means responsive to said third signal for adjusting said feed means to manipulate the rate of feeding of particles into said plasticization section to maintain said actual rate of extrusion at least substantially equal to said desired rate of extrusion.

4,120,631

INJECTION-MOLDING MACHINE FOR SYNTHETIC PLASTIC MATERIAL

Volkmar Leutner, and Roman Romes, both of Friolzheim, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 8, 1976, Ser. No. 664,806
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1975, 2514009
Int. Cl.[2] B29F *1/06*
U.S. Cl. 425—145 **18 Claims**



1. An injection-molding machine of the type which is operative when activated for performing a complete injection-molding cycle, the machine comprising, in combination, means defining a mold cavity; injecting means so positioned relative to the mold cavity as to be operative for injecting synthetic plastic material into the mold cavity; hydraulic drive means coupled to the injecting means and operative for driving the injecting means, and including an hydraulic cylinder; and regulating means coupled to the hydraulic drive means and, by controlling the operation of the hydraulic drive means, operative for effecting negative-feedback control of the pressure in the mold cavity and negative-feedback control of the pressure in the hydraulic cylinder, and including means operative during the course of the injection-molding cycle for effecting an automatic transition from negative-feedback control of the mold cavity pressure to negative-feedback control of the hydraulic cylinder pressure, the regulating means comprising a first feedback transducer located to sense the pressure inside the mold cavity and operative for generating a first feedback signal whose value is indicative of the mold cavity pressure, a second feedback transducer located to sense the pressure inside the hydraulic cylinder and operative for generating a second feedback signal whose value is indicative of the hydraulic cylinder pressure, actuating means hydraulically coupled to the hydraulic cylinder and operative for controlling the pressure in the hydraulic cylinder in dependence upon the value of a received actuating signal, the means for effecting the automatic transition comprising means connected to the actuating means and to the first and second feedback transducers and operative for applying to the actuating means in actuating signal whose value varies as a function of variations in the value of the first feedback signal during the negative-feedback control of the mold cavity pressure and whose value varies as

a function of variations in the value of the second feedback signal during the negative-feedback control of the hydraulic cylinder pressure.

4,120,632

MOLDS FOR PRODUCTION OF PLASTICS MATERIAL BOATS

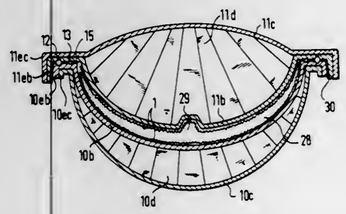
Helmut Stoeberl, Gstadt, Germany, assignor to Klepper-Werke Kommanditgesellschaft, Germany

Continuation-in-part of Ser. No. 450,785, Mar. 13, 1974, abandoned, which is a division of Ser. No. 323,319, Jan. 12, 1973, Pat. No. 3,840,926. This application Jun. 21, 1976, Ser. No. 698,151

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1972, 2201310

Int. Cl.[2] B29C *1/00*

U.S. Cl. 425—405 R **15 Claims**



1. A mold adapted for the production of foam-filled boat hulls which comprises a bottom mold half having a peripheral outturned side flange and defining a bottom mold cavity within the peripheral flange, a top mold half having a peripheral outturned side flange overlying the peripheral flange of the bottom mold half and defining within the peripheral flange a top wall for the mold cavity, said peripheral flanges of said bottom and top mold halves defining the parting line for the mold and having mating portions defining grooves, means for venting said grooves to suction to draw the peripheral flanges together to seal the parting line and for venting said grooves to pressure to open the parting line and separate the mold halves, and additional means in one peripheral flange for venting air from the closed mold cavity.

4,120,633

EXTRUSION PRESS HEAD FOR THE EXTRUSION OF TUBULAR STRANDS OF PLASTIC MATERIAL

Harald Feuerherm, Alfred-Delp-Str. 1, 5210 Troisdorf, Fed. Rep. of Germany

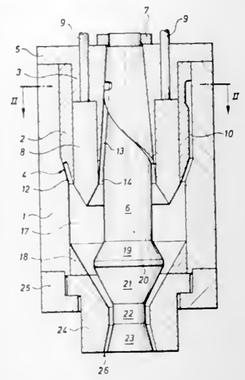
Filed Jun. 7, 1977, Ser. No. 804,378

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625786; Sep. 3, 1976, 2639665

Int. Cl.[2] B29D *23/04*

U.S. Cl. 425—462 **19 Claims**

1. In an extrusion press head for the extrusion of tubular strands of plastic material, a combination comprising an outer housing; a mandrel extending coaxially through said outer housing and defining therewith an annular space; an annular piston axially movable in said annular space; and at least one feed channel for a plasticized material, said at least one feed channel having an annular outlet end communicating with said annular space below the piston, said annular outlet end having an inner diameter which is greater than the inner diameter of



the annular piston so that at least part of said annular piston is located between said outlet end and said mandrel.

4,120,634

APPARATUS FOR THE CONTINUOUS PRODUCTION OF ORIENTED HOLLOW BODIES FROM A THERMOPLASTIC

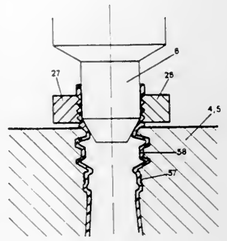
Edmond Michel, Brussels; Marcel Duikers, La Hulpe, and André Poty, Lillois-Witterzee, all of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Mar. 4, 1977, Ser. No. 774,657

Claims priority, application France, Mar. 22, 1976, 76 08421

Int. Cl. B29D *23/03*

U.S. Cl. 425—525 **12 Claims**



1. Apparatus for the continuous production of oriented hollow bodies from a thermoplastic by blow-extrusion, which comprises a means for the extrusion of at least one continuous tubular parison from the thermoplastic and also comprises (1) at least one first station provided with means for blow-moulding lengths of the tubular parison into preforms, and which receives at least one preform mould which seizes a length of extruded parison whilst leaving open one end of this length which protrudes beyond the mould, and at least one blow nozzle means which can be introduced into the open and protruding end of the length of parison so as to provide the preforms with a definitive moulded neck and a part located thereabove with the part of the preform below the neck being the part molded in the final blow molding means, (2) at least one fixed second station provided with means for the heat conditioning of the preforms to their orientation temperature and (3) at least one fixed third station provided with means for the final blow-moulding of the conditioned preforms into the finished bodies, equipped with at least one blow nozzle and at least one

final blow mould of which the cavity reproduces the shape of the desired oriented hollow bodies, characterized in that the transfer of the preforms from one of these stations to the other is ensured by movable equipment and gripping organs mounted on the movable equipment, the gripping organs having means gripping the part of the preforms located above their neck and being moved by the movable equipment so as to disengage the preforms from the successive stations, transfer them to the next station and engage them in this station.

4,120,635

BLOW MOLD FOR THE PRODUCTION OF BELLOWS MADE OF A HIGHLY ELASTIC PLASTIC

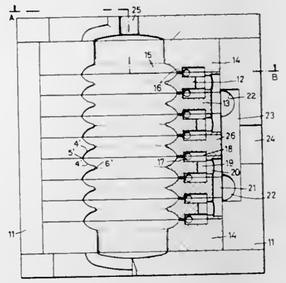
Erhard Langecker, Hohbuschener Weg 5, Meinerzhagen, Fed. Rep. of Germany

Filed Feb. 7, 1977, Ser. No. 765,984

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605546

Int. Cl.[2] B29D *23/03*

U.S. Cl. 425—535 **5 Claims**



1. A blow mold for the production of bellows made from a highly elastic material, said blow mold comprising:

a pair of separable mold halves, each mold half having a plurality of adjacent semi-circular shaped disk elements having abutting facing areas defining facing planes and are positioned parallel with reference to each other, said disk elements of each mold half being stacked to form a column, said column defining a bellows-shaped mold cavity, the cavity having outer apexes and inner apexes, the outer apexes of the mold cavity being located at the facing planes of adjacent disk elements, the inner apexes being defined by the innermost extension of each disk element, the areas of the cavity between said inner and outer apexes defining the side flanks of the bellows-shaped mold cavity, said side flanks being curved from the inner to the outer apexes, said facing planes of said adjacent disk elements each defining at each of said outer apexes an arcuate slit which extends substantially the full arcuate length of the adjacent disk elements, said slits communicating with said mold cavity at said outer apexes; and

passage means in said mold for selectively communicating compressed air to said cavity or a vacuum to said slits for respectively communicating compressed air to said cavity and venting air from said cavity.

4,120,636

APPARATUS FOR BLOW-MOLDING HOLLOW ARTICLES, IN PARTICULAR BOTTLES

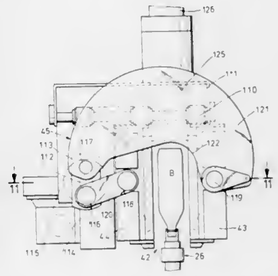
Adolf Appel, and Wolfgang Reymann, both of Hamburg, Germany, assignors to Gildemeister Corpoplast GmbH, Hamburg, Germany

Filed Oct. 1, 1976, Ser. No. 728,827

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1975, 2545130

Int. Cl.[2] B29D *23/03*

U.S. Cl. 425—541 **6 Claims**



1. In a blow molding apparatus wherein an axially elongated blowable parison is blown into a final article in a pair of blow mold sections openable and closable on a median plane coinciding with the longitudinal axis of the parison, the improvement of an opening and closing mechanism for said sections comprising a pivot plate pivotal about an axis parallel to said median plane and perpendicular to the longitudinal parison axis, means for pivoting said plate about said axis, said pivot plate being displaced from said median plane and adjacent to one mold section and remote from the other mold section and being in general alignment with the direction of movement of the adjacent mold section, a relatively short pivot link interconnecting the adjacent mold section and the pivot plate, a relatively long pivot link interconnecting the remote mold section and said pivot plate and projecting from the pivot plate across the median plane to the remote mold section, said links being connected to said pivot plate on opposite sides of said pivot plate axis, the link connections to the pivot plate being aligned in a plane substantially parallel to the median plane of the mold sections when the mold sections are open and being aligned in a plane substantially normal to the median plane when the mold sections are closed.

4,120,637

HOT WATER SPRAY INJECTION FOR SMOKE SUPPRESSION IN FLARES

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Oct. 26, 1976, Ser. No. 735,625

Int. Cl.[2] F23G *7/06*

U.S. Cl. 431—5 **10 Claims**

1. Apparatus for utilizing hot water for smoke suppression in flares for vented hydrocarbons, comprising;

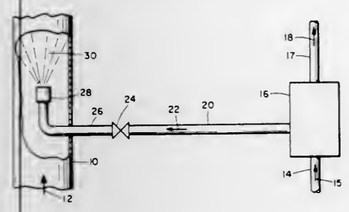
(a) conduit means for the flow of waste gases to a flare for burning in the atmosphere;

(b) means to supply hot water under pressure to a plurality of nozzles within said conduit means;

whereby said hot water will be sprayed in cones of fine water droplets, at high velocity, into said flow of waste gases to thoroughly turbulently mix therewith;

whereby said mixture of water droplets, and gas will reach a selected resultant temperature, in which said gas will be saturated at said temperature; and

(c) control means to control the rate of flow of hot water responsive at least to the rate of mass flow of waste gases;



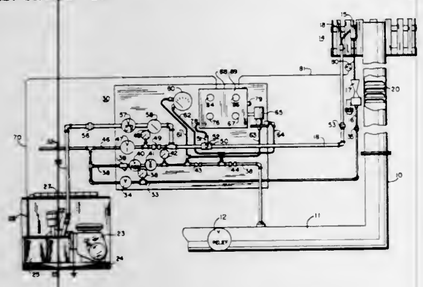
and wherein the temperature of said water is at least 150° F.

4,120,638

IGNITION SYSTEM FOR FLARES

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Filed Jul. 15, 1977, Ser. No. 815,991
Int. Cl.² F23D *13/20*
U.S. Cl. 431—15 **12 Claims**



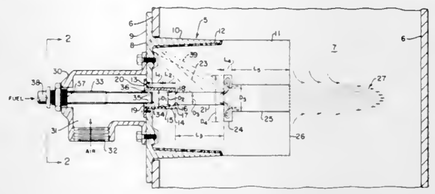
1. An ignition system for flares comprising
a flare stack, a pilot for igniting gas discharged from said flare stack,
an igniter pipe extending to said pilot for directly initiating the operation of said pilot by flame propagation thereto,
a portable source of electric energy,
a source of fuel gas for ignition and for pilot gas supply,
portable means for supplying air under pressure for admixture with fuel gas from said source and for delivery to said igniter pipe,
an ignition coupling to which said source of gas and said means for supplying air are connected through manually controlled valves for said air and said gas and which is connected to said igniter pipe,
said ignition coupling having a spark plug connected thereto energized by a spark coil,
a manually operable switch connected to said source of electric energy and to said spark coil for energizing said spark plug for delivering a flame for propagation in said igniter pipe, and
a fluid connection to said pilot from said source of fuel gas and having an air induction device therein.

4,120,639

HIGH MOMENTUM BURNERS

Arvind C. Thekdi, Sylvania; Dennis A. Chojnacki, Toledo, and Klaus H. Hemsath, Sylvania, all of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 30, 1977, Ser. No. 811,601
Int. Cl.² F23R *1/02*
U.S. Cl. 431—158 **12 Claims**



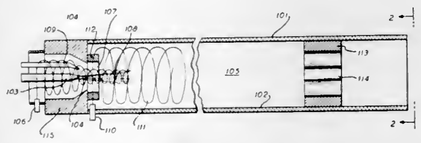
1. A high momentum burner, comprising:
(a) means for discharging an annular stream of air, under pressure, through an annular orifice at a predetermined velocity; (b) means for radially directing into the stream of air, a combustible fuel for admixture with the air;
(c) a burner insert coacting with the orifice and having an opening coaxially aligned with the orifice, the insert designed to increase the velocity of the stream of air and fuel through the opening, whereby a more intimate contact of the fuel and air is achieved;
(d) a first cylindrical chamber abuting the opening of the insert in spaced relation from the orifice, the first chamber being coaxially aligned with the opening for receiving the air and fuel for further mixing;
(e) means coacting with the second chamber for igniting fuel therein;
(f) a second cylindrical chamber abuting the first chamber and coaxially aligned therewith in spaced relation from the opening of the insert, the diameter of the second chamber being substantially greater than the diameter of the first chamber, the second chamber designed to cause recirculation of gas therein to increase the temperature of the mixture of fuel and air and stabilize the combustion of the fuel; and
(g) a third cylindrical chamber abuting the second chamber and coaxially aligned therewith in spaced relation from the first chamber, the third chamber having a diameter greater than the diameter of the first chamber and less than the diameter of the second chamber, the chambers being sized relative to each other to maintain therein, a fluid pressure which is less than the ambient atmosphere into which the flame and any entrained fluid and products of combustion are discharged.

4,120,640

BURNER FOR LIQUID FUEL

Charles K. Martin, Boonton, N.J., assignor to Infern-O-Therm Corporation, Keyport, N.J.

Filed Feb. 18, 1977, Ser. No. 770,195
Int. Cl.² F23D *15/02*
U.S. Cl. 431—353 **8 Claims**



1. A burner for liquid fuel, comprising:
(a) a combustion tube, having an inner surface;

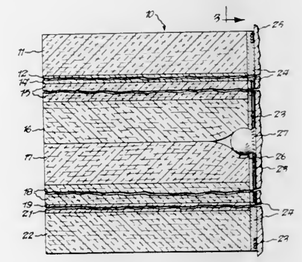
(b) an end bell, secured to the combustion tube;
(c) nozzle means, secured to the end bell, for atomizing the liquid fuel and introducing the liquid fuel as a fine spray, into a combustion chamber defined by the inner surface of the combustion tube;
(d) auxiliary air introduction means, secured to one end of the end bell, for producing an auxiliary vortex flow of air around and concentric with the nozzle means so as to entrain the fine spray of liquid fuel and form a fuel-air mixture, the fuel-air mixture being carried by the auxiliary vortex flow of air into the combustion chamber;
(e) means for igniting the fuel-air mixture;
(f) main air introduction means, secured to the other end of the end bell, for producing a main vortex flow of air around the fuel-air mixture, the main vortex flow of air serving to separate the fuel-air mixture from the inner surface of the combustion tube and to provide additional air for combustion of the fuel-air mixture; and,
(g) collar means, secured to the end bell and surrounding the nozzle means, the collar means for controlling combustion of the fuel-air mixture by controlling the manner in which the fuel-air mixture is transported into the combustion chamber and the rate at which the fuel-air mixture mixes with the main vortex flow of air, the collar means is a right circular cylindrical shell surrounding the nozzle means.

4,120,641

CERAMIC FIBER MODULE ATTACHMENT SYSTEM

Thomas Aquinas Myles, Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 2, 1977, Ser. No. 773,586
Int. Cl.² F27D *1/16*
U.S. Cl. 432—3 **19 Claims**



1. A ceramic fiber module, comprising:
(a) a weldable backing;
(b) a plurality of ceramic fiber mats, each mat being substantially perpendicular to the backing, and all of the mats of a module being substantially parallel to each other;
(c) adhesive, bonding at least a portion of one end of each ceramic fiber mat to the weldable backing, leaving a portion of the backing accessible; and
(d) metallic spherical means for welding the backing to a metallic at the accessible position of the backing substrate.

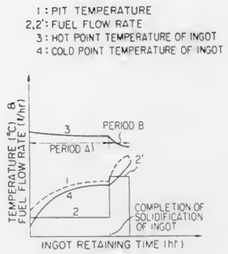
4,120,642

METHOD FOR HEATING INGOT IN SOAKING PIT

Kohichiroh Miyauchi; Atsushi Ohsumi; Yukio Haga; Tsutomu Izumi; Masahiro Tsuru, all of Fukuyama; Kazuo Kunioka, and Shunichi Sugiyama, both of Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1977, Ser. No. 792,800
Claims priority, application Japan, May 25, 1976, 51-59697
Int. Cl.² C21D *1/52;* **F27B** *3/02*
U.S. Cl. 432—12 **3 Claims**

1. A method for heating a steel ingot in a soaking pit, which comprises:
charging a steel ingot having a still-liquid portion therein into a soaking pit; then,
heating said ingot by injecting a fuel from a combustion unit of said soaking pit into said soaking pit with a constant and minimum fuel flow rate capable of holding a pit temperature higher by from 10° to 100° C than the cold point temperature of said ingot at the completion of solidification of said still-liquid portion in said ingot, until said



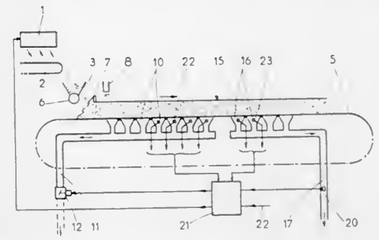
still-liquid portion in said ingot is completely solidified; and then,
upon the completion of said solidification, further heating the surface portions of said ingot up to above a prescribed temperature permitting rolling thereof by injecting a fuel from said combustion unit into said soaking pit with a constant fuel flow rate of at least 60% of the maximum fuel flow rate of said combustion unit, thereby reducing the fuel consumption in said soaking pit.

4,120,643

METHOD OF REGULATING THE PROCESS OF AGGLOMERATION OF A MINERAL ON AN ENDLESS CHAIN

Michel Benoit, Puteaux, France, assignor to Delattre-Levivier, Courbevoie, France

Filed Dec. 24, 1975, Ser. No. 644,173
Claims priority, application France, Jan. 15, 1975, 75 01061
Int. Cl.² F27B *9/12;* **C22C** *1/20*
U.S. Cl. 432—36 **5 Claims**



1. A method of regulating the process of agglomeration of products, the products including minerals, on an endless conveyor traveling at constant speed, comprising the steps of:
passing the products on the conveyor through a firing zone, the firing zone having a first set of suction boxes disposed below the conveyor, the first set of suction boxes being connected to a common firing suction duct;
passing the fired products on the conveyor through a cooling zone, the cooling zone having a second set of suction boxes disposed below the conveyor, the second set of suction boxes being connected to a common cooling suction duct, gases passing through the suction ducts;
measuring the temperature of the gases in the common cooling suction duct;

comparing the measured temperature with a preset temperature, a signal resulting from the temperature comparison; and

regulating the flow of gases in the common firing suction duct from the comparison signal.

4,120,644

APPARATUS FOR REGENERATION OF SPENT ACTIVE CARBON

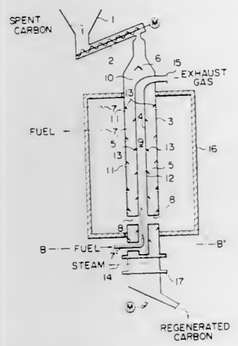
Kouichi Numasaki; Yoshihisa Sakai, both of Yokohama; Takehiko Nawa, Yokosuka; Zenji Matsumoto, Izumi, and Nobutaka Ninomiya, Nagaokakyo, all of Japan, assignors to JGC Corporation, Tokyo and Takeda Chemical Industries, Ltd., Osaka, both of Japan

Filed Mar. 23, 1977, Ser. No. 780,790

Claims priority, application Japan, Mar. 31, 1976, 51-35862

Int. Cl.[2] **F27B** *15/10;* **B01J** *8/12*

U.S. Cl. 432—99 **9 Claims**



1. A double-cylinder type apparatus for regeneration of spent active carbon, which comprises a heating furnace provided with at least one burner and at least one annular regeneration chamber composed of an inner cylinder and an outer cylinder installed concentrically inside said heating furnace and extending from the top of said furnace to the bottom of said furnace and arranged so that the heated gas from said burner contacts said outer cylinder to heat same, said outer cylinder having a plurality of holes penetrating the side wall thereof, said outer cylinder being constructed so that spent active carbon can be fed into the upper part of said annular regeneration chamber and the regenerated active carbon can be removed from the lower part of said regeneration chamber, and means from heating the annular regeneration chamber from both the inner cylinder side and the outer cylinder side thereof, including ducts extending from the lower part of said inner cylinder through said regeneration chamber and said outer cylinder and communicating with said heating furnace so that the combustion gas within said heating furnace is introduced into the inner cylinder, whereby the combustion gas is effective to heat said annular regeneration chamber from both the inner cylinder side and the outer cylinder side thereof.

4,120,645

SYSTEM FOR HANDLING HIGH SULFUR MATERIALS

Glenn A. Heian, Franklin, Wis., and Robert F. Kohl, Tucson, Ariz., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 576,995, May 13, 1975, Pat. No. 4,065,320. This application Jan. 27, 1977, Ser. No. 762,980

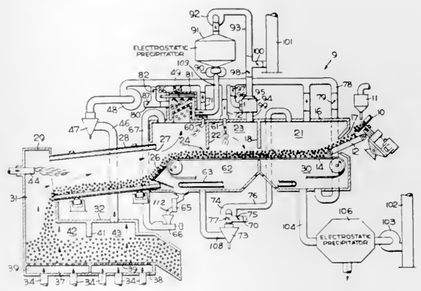
Int. Cl.[2] **F27B** *7/02*

U.S. Cl. 432—106 **16 Claims**

1. In a material heat-treating furnace apparatus (**9**) having structure defining a drying chamber (**21**) for receiving a cement material to be treated and for preconditioning the material, and at least one preheat chamber (**23-24**) for receiving material from the drying chamber (**21**), a travelling grate (**14**) mounted within the structure for conveying the material successively through the respective chambers, a first windbox (**30**) located beneath the travelling grate (**14**) in the drying chamber (**21**), a second windbox (**62**) located beneath the travelling grate in the preheat chamber (**23-24**), a kiln (**28**) mounted to receive material directly from the preheat chamber (**23-24**), and at least one cooling chamber (**43**) disposed to receive material from the kiln, the drying and preheat chambers, the kiln, and the cooling chamber being connected in a series flow arrangement to define a material flow path from the drying chamber to the cooling chamber, a fan system means (**74**) including a first dust collector means (**73**) for withdrawing gases from the second windbox (**62**) and passing them to the drying chamber (**21**), and gas-conveying means for directing usable gases developed within the apparatus into various zones of the apparatus, comprising:

means (**81-91-93-98-99**) for directing off-gases from the kiln (**28**) into the preheat chamber (**23-24**);

a supply source (**63**) of lime-bearing material which is chemically reactive with sulfur;



a first duct (**67**) means connected between said supply source of a lime-bearing material which is chemically reactive with sulfur and the preheat chamber (**23-24**);

a mixing device (**81**) connected to the preheat chamber (**23-24**) for receiving kiln off-gases which have been treated with the lime-bearing material;

an air supply (**82**) connected to said mixing device (**81**) for mixing air with the treated kiln off-gases to temper said kiln off-gases;

a second duct means (**109**) connected to said mixing device (**81**);

a second dust collector means (**90-91**) connected to said mixing device (**81**) and to the preheat chamber (**23-24**) for the removal of solid sulfur compound dust particles from the tempered mixed gases prior to said tempered mixed gases being supplied to the preheat chamber; and,

a third duct means (**93-99**) connected between said second dust collector means (**90-91**) and the preheat chamber for passing cleansed tempered mixed gases back through the material in the preheat chamber.

4,120,646

OVEN HEATING SYSTEM

Edwin I. Groff, and Edwin Terry Groff, both of 301 W. Chestnut St., West Reading, Pa. 19602

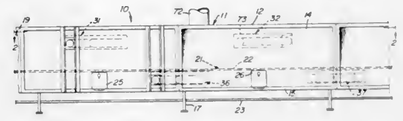
Filed Mar. 7, 1977, Ser. No. 774,900

Int. Cl.[2] **F27B** *9/00*

U.S. Cl. 432—121 **10 Claims**

1. Heating apparatus comprising an elongate chamber, conveyor means extending longitudinally through and in general parallelism with said chamber for moving product to be heated, and a plurality of heating elements in said chamber,

each of said heating elements comprising an elongate conductive tube extending transversely across the path of conveyor movement, a fuel burner at one end of said tube for introducing a combustible mixture into said one tube end to provide a flame extending internally along said tube, and outlet means in said tube adjacent to the other end thereof for discharging combustion products, said outlet means opening laterally from said tube generally longitudinally of said chamber in a plane generally parallel to said conveyor and chamber, for radiation by said tube and convection by said outlet means without direct



combustion product discharge against said conveyor or chamber.

4,120,647

PROCESS FOR THE DYEING OF WOOL-CONTAINING FIBRE MATERIALS

Alain Lauton, Saint-Louis, France, and Hans-Ulrich Berendt, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 23, 1977, Ser. No. 799,908
Claims priority, application Switzerland, Jun. 4, 1976, 7114/76; Sep. 21, 1976, 11934/76
Int. Cl.[2] D06P *5/00, 3/16, 1/645;* D06M *3/02*
U.S. Cl. 8—17 13 Claims

1. A process for the dyeing of wool-containing fibers, selected from the group consisting of wool and polyester/wool blend comprising the step of treating the fibers in the temperature range of 95° to 125° C. with a dye liquor comprising an anionic dye and a cyclic N-methylolurea compound which is etherified or unetherified.

4,120,648

DYE PREPARATION

Suresh C. Agarwal, Bottmingen, and Zdenek Koci, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 16, 1976, Ser. No. 751,224
Claims priority, application Switzerland, Dec. 23, 1975, 16690/75
Int. Cl.[2] C09B *67/00;* D06P *1/642;* C07D *233/34*
U.S. Cl. 8—85 R 1 Claim

1. A solid dye preparation consisting essentially of a powder or granulates obtained by mixing in the dry state:

(1) a 1:1 adduct of thiourea and a lactam, or a 1:1 adduct of dicyandiamide and said lactam, wherein said lactam is of the formula

$$CO-(CH_2)_x-NH,$$

wherein

x is 3 to 6, or mixtures thereof;

(2) a water-soluble acid dye in an amount that said preparation contains 0.2 to 1 part by weight of said lactam per part of said dyestuff;

(3) alone or in the presence of dextrin, urea, sodium chloride, sodium sulphate, anionic dispersing or wetting agents, condensation products of cresol, naphtholsulfonic acid and formaldehyde, or antidusting agents.

4,120,649

TRANSPLANTS

Israel Schechter, Neve Matz 12, Rehovoth, Israel

Filed Mar. 29, 1976, Ser. No. 671,728
Claims priority, application Israel, Apr. 10, 1975, 47062
Int. Cl.[2] C14C *3/16;* A61F *1/24*
U.S. Cl. 8—94.11 25 Claims

1. A process for diminishing the antigenicity of tissues derived from one species when used as a transplant in a different species, for rendering such tissues substantially resistant to infection, and for rendering such tissues liable to be stored for a prolonged period of time, comprising:

treating the tissue in a solution of glutaraldehyde in an aqueous solvent of suitable pH; and

transplanting the treated tissue into an animal species different than that from which the original tissue was derived.

4,120,650

LAUNDERING PROCESS FOR DUAL BLEACHING STAINED FABRICS

Frank Robert Kappler, Wyandotte; Roma Jean Killian, Melvindale, and John Joseph Cramer, Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 5, 1977, Ser. No. 857,675
Int. Cl.[2] D06L *3/06*
U.S. Cl. 8—109 14 Claims

1. A method of reclaiming stained cellulosic and cellulosic-polyester blend textile fabrics by a washing and bleaching process comprising: bleaching said textile fabrics in an aqueous solution of at least one anionic or non-ionic surface-active agent at a concentration of about 0.01 percent to about 0.25 percent by weight in admixture with (a) about 0.01 percent to about 1 percent by weight of a chlorine-releasing agent and (b) about 0.01 percent to about 2 percent by weight of an oxygen-releasing agent at a pH of about 9 to about 12, a temperature of about 160° F. to about 190° F. for a period of time of about 5 minutes to about 30 minutes.

4,120,651

DISULFONES AS PEROXYGEN ACTIVATORS

Clifford A. Erickson, Princeton; Joseph H. Finley, Metuchen; John H. Blumbergs, Highland Park, and Fred R. Scholer, Cranbury, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 3, 1977, Ser. No. 838,848
Int. Cl.[2] D06L *3/02*
U.S. Cl. 8—111 12 Claims

1. A process for the low temperature bleaching of stained and/or soiled fabrics which comprises treating them with an aqueous peroxygen bleaching solution having a pH of about 6 to about 12 and containing as a peroxygen activator therefor, an effective amount of a disulfone having the formula:

$$RSO_2SO_2R_1$$

wherein R and R_1, which may be alike or different, are each selected from the class consisting of an alkyl radical of 1 to 18 carbon atoms; a cycloalkyl radical of 3 to 7 carbon atoms said alkyl and cycloalkyl radicals bearing optional substituents selected from the group consisting of lower alkoxyl, fluoro and chloro; and an aromatic radical selected from the group consisting of phenyl, naphthyl and heterocyclic having 1 ring or 2 fused rings containing 5 to 6 members of which 1 to 2 are heteroatoms selected from the class consisting of nitrogen, oxygen and sulfur, said aromatic radicals optionally bearing 1 to 3 substituents selected from the class consisting of nitro, alkyl of 1 to 16 carbon atoms, alkoxy of 1 to 16 carbon atoms, aliphatic carboxamido of 1 to 16 carbon atoms, benzamido, chlorine and bromine.

4,120,652

AROMATIC SULFONYL AZIDES AS PEROXYGEN ACTIVATORS

Fred R. Scholer, Cranbury, and John H. Blumbergs, Highland Park, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 3, 1977, Ser. No. 838,905
Int. Cl.[2] D06L *3/02;* C11D *7/54*
U.S. Cl. 8—111 15 Claims

1. A process for the low temperature bleaching of stained or soiled fabrics which comprises treating them with an aqueous peroxygen bleaching solution having a pH of about 6 to about 12 and containing as a peroxygen activator therefor, an effective amount of an aromatic sulfonyl azide having the formula:

$$R-(SO_2N_3)_n$$

wherein R is an aromatic ring selected from the group consisting of phenyl, naphthyl and heterocyclic of 1 or 2 rings each containing 5 to 6 members of which 1 or 2 are nitrogen or

sulfur atoms said aromatic ring optionally bearing 1 to 3 substituents selected from the group consisting of nitro, alkyl of 1 to 6 carbon atoms, lower fluorinated alkyl alkoxy of 1 to 6 carbon atoms, aliphatic carboxamido of 1 to 6 carbon atoms, benzamido and halogen and *n* is an integer 1 or 2, it being provided that there are at least 5 carbon atoms per azide function.

8. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator, an aromatic sulfonyl azide of the formula:

$$R-(SO_2N_3)_n$$

wherein R is an aromatic ring selected from the group consisting of phenyl, naphthyl and heterocyclic of 1 or 2 rings each containing 5 to 6 members of which 1 or 2 are nitrogen or sulfur atoms said aromatic ring optionally bearing 1 to 3 substituents selected from the group consisting of nitro, alkyl of 1 to 6 carbon atoms, lower fluorinated alkyl alkoxy of 1 to 6 carbon atoms, aliphatic carboxamido of 1 to 6 carbon atoms, benzamido and halogen and *n* is an integer 1 or 2, it being provided that there are at least 5 carbon atoms per azide function.

4,120,653

METHOD OF MACHINE WASHING OF SOLID SOILED MATERIALS BY CONTACTING THE CIRCULATING WASH LIQUID WITH ORGANIC CATIONIC EXCHANGE RESINS

Heinz Smolka, Langenfeld, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 2, 1977, Ser. No. 847,792

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2651793

Int. Cl.[2] **B08B** *3/00*

U.S. Cl. 8—137 **9 Claims**

1. A method for machine washing and cleaning of solid materials utilizing washing and cleaning solutions in the presence of water-insoluble cation exchange agents which are capable of binding the hardness components of the water and the soil, comprising withdrawing and recycling the tap water having a hardness of more than 80 mg CaO/liter in contact with said solid soiled materials through a water-insoluble cation exchange copolymer in particulate state having a swelled average particle diameter in excess of 20μ and having a calcium binding power of at least 2 mVal/gm, said copolymer being a copolymer or graft polymer derived from monoolefinically-unsaturated carboxylic acids, said cation exchange copolymer being maintained out of contact with said solid soiled materials in a separate area from the washing area, for such time until the water has a hardness of not more than 70 mg CaO/liter, then adding other soluble washing and cleaning compounds including between 0.5 gm/liter and 2 gm/liter of a water-soluble calcium-binding sequestrant and customary surface-active compounds selected from the group consisting of an anionic surface-active compound, a nonionic surface-active compound and mixtures thereof to said softened tap water and washing said solid materials while continuing the recycling of the wash solution through said cation exchange copolymer, wherein the total amount of washing solution is continuously or intermittently cyclically circulated from the washing area through the separate area with the cation exchange copolymer and then back to the washing area at least five times during the cleaning process, and where the amount of the cation exchange copolymer is so selected that the residual hardness of the filtered washing solution is less than 20 mg CaO/liter.

4,120,654

ALKYNOXYMETHYL AMINES AS CORROSION INHIBITORS

Patrick M. Quinlan, St. Louis, Mo., and Richard D. McBride, Arlington, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 496,145, Aug. 9, 1974, Pat. No. 4,026,807. This application Dec. 29, 1976, Ser. No. 755,420

Int. Cl.[2] **C23F** *9/00, 9/02, 11/10;* **C23G** *1/02*

U.S. Cl. 422—16 **7 Claims**

1. A process of inhibiting corrosion of metals in contact with aqueous or oil-based acid systems which comprises adding to said system a small amount effective to inhibit the corrosion of said metals of a compound of the formula

$$RN(CH_2\text{-}OR')_2$$

where R is a hydrocarbon group and R' is an acetylenic moiety.

4,120,655

METHOD FOR THE INHIBITION OF CORROSION OF FERROUS METALS IN AN AQUEOUS MEDIUM

Michel Crambes, Villette-de-Vienne; Henri Grangette, Lyon; Pierre Pivette, Sucy-en-Brie, and Philippe Haicour, Paris, all of France, assignors to Societe Nationale Elf Aquitaine, Paris, France

Filed Jul. 11, 1977, Ser. No. 814,652

Claims priority, application France, Jul. 13, 1976, 76 21471

Int. Cl.[2] **C23F** *11/12, 11/14, 11/16*

U.S. Cl. 422—15 **6 Claims**

1. A method for the inhibition of corrosion of ferrous metals in an aqueous medium consisting of adding to the aqueous medium from about 10 to 2000 ppm of a mixture consisting essentially of a water-soluble complex salt of a metal of groups II to VIII of the periodic table and of a hydrocarboxylic acid selected from the group consisting of tartaric, citric, maleic, gluconic and salicylic acids together with a phosphoric ester of an alkanolamine.

4,120,656

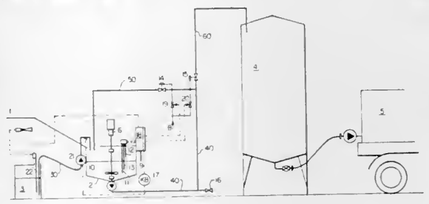
METHOD AND APPARATUS FOR COLLECTING MUCOSA

Bent Aage Henningsen, Holte, Denmark, assignor to Novo Industri A/S, Bagsvaerd, Denmark

Filed Mar. 24, 1977, Ser. No. 780,753

Int. Cl.[2] **A22B** *5/00;* **A61L** *1/00, 3/00*

U.S. Cl. 422—28 **7 Claims**



1. An apparatus for collecting and stabilizing intestinal mucosa or a like material which comprises:

a. a collecting tank into which the intestinal mucosa is introduced;

b. a preservative reservoir from which preservative is intermittently metered into the collecting tank; and

c. a storage reservoir into which preserved intestinal mucosa is intermittently transferred; said apparatus further comprising transfer means connecting said collecting tank, preservative reservoir and storage reservoir and controller means including a lower liquid level control and an upper liquid level control inside the collecting tank; said controller means further including means actuated by said upper liquid level control for initiating transfer of the intestinal mucosa from the collecting tank to the storage reservoir when the level of intestinal mucosa inside the collecting tank reaches the upper level control and for halting such transfer when the level of intestinal mucosa inside the collecting tank declines to the level of the lower level control, and for metering preservative from the preservative reservoir into the collecting tank when the liquid level of intestinal mucosa declines to the level of the lower level control through transfer of intestinal mucosa to the storage reservoir.

4,120,657

PROCESS OF AND EQUIPMENT FOR THE ANALYSIS OF LIQUID SAMPLES BY TITRATION

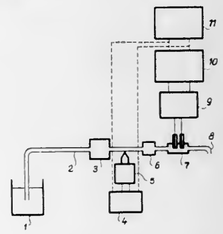
Geza Nagy, Debrecen; Erno Pungor, Budapest; Klara Toth, Budapest; Jeno Havas, Budapest, and Zsofia Feher, Budapest, all of Hungary, assignors to EGYT Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Apr. 18, 1977, Ser. No. 788,540

Claims priority, application Hungary, Apr. 20, 1976, EE 2421

Int. Cl.[2] **B01K** *3/00;* **G01N** *31/16*

U.S. Cl. 23—230 R **9 Claims**



1. A process for the selective analysis of flowing liquid samples, comprising flowing said liquid at a constant volume rate, feeding into the flowing liquid sample an amount of a reagent adequate to the measurement of the concentration of at least one constituent of the sample in a first period of time, and decreasing to zero the rate of flow of the reagent within a second predetermined period of time, during said first and second periods observing the changes occurring in the reaction mixture, and carrying out the determination of the concentration of said constituent of the liquid sample by comparing the time which elapses between the appearances of the two chemical equivalence points with calibration curves prepared with standard solutions, such elapsed time having a known functional relationship with the concentration of said constituent of the liquid sample.

4,120,658

METHOD AND APPARATUS FOR DETERMINATION OF DISSOCIATION OF OXYGEN FROM BLOOD

Stephen P. Bruttig, 9424 Grand Ave., Omaha, Nebr. 68134

Filed Nov. 11, 1976, Ser. No. 741,100

Int. Cl.[2] **G01N** *27/00, 33/16*

U.S. Cl. 23—230 B **6 Claims**

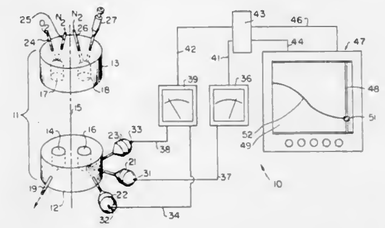
1. A method for determination of the dissociation of oxygen from blood comprising the steps of:

(a) providing a sample of blood having a partial pressure of oxygen equal to zero;

(b) placing an oxygen atmosphere of at least 97% oxygen above, and in contact with, the surface of said sample of blood;

(c) simultaneously monitoring the changes in the pH and partial pressure of oxygen in the liquid phase and not the gaseous phase in said sample of blood as the oxygen is absorbed, said monitoring including the production of a continuous curve of increasing liquid phase partial pressure of oxygen v. decreasing pH from desaturation to saturation of said sample of blood with oxygen; and

(d) analyzing said curve to determine the partial pressure of oxygen at 50% saturation by intersecting said curve with a horizontal line beginning at a point ½ the distance between saturation and desaturation and then vertically expanding the point of intersection to determine the partial pressure of oxygen.



4,120,659

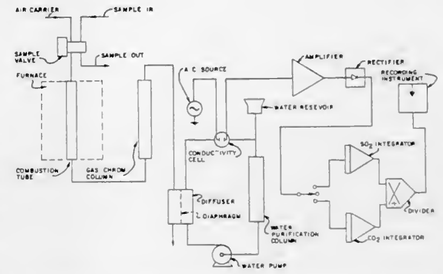
SULFUR ANALYSIS

Wendell P. Cropper, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 7, 1977, Ser. No. 813,692

Int. Cl.[2] **G01N** *27/06, 31/12*

U.S. Cl. 23—230 PC **5 Claims**



3. Apparatus for measuring the concentration of sulfur in a carbonaceous sample having oxidation means producing carbon dioxide and sulfur -containing gas, wherein the improvement comprises:

ratio means for taking the ratio of a quantitative signal generated from the sulfur -containing gas to a quantitative signal generated from the carbon dioxide.

4,120,660

METHOD AND APPARATUS FOR THE DETERMINATION OF OXIDATIVE STABILITY OF POLYMERS UNDER SHEAR CONDITIONS

Joseph Donnelly Trizisky, Amherstview, Canada, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 9, 1977, Ser. No. 849,934

Claims priority, application Canada, Nov. 9, 1976, 265588

Int. Cl.[2] **G01N** *27/00*

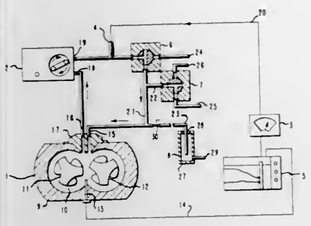
U.S. Cl. 23—230 R **18 Claims**

8. A method for determining the oxidative stability of polymers under shear conditions, said method comprising the steps of:

(a) heating polymer to a pre-selected temperature in the presence of a first gas that is inert with respect to the

polymer, said polymer being viscous or visco-elastic at the pre-selected temperature,

(b) replacing the inert gas with an oxygen-containing gas, said oxygen-containing gas being at atmospheric pressure, and



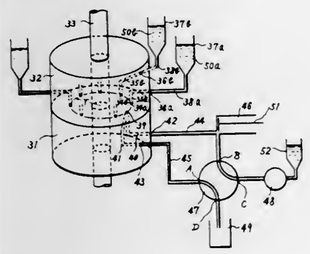
(c) while subjecting the polymer to shear measuring the amount of oxygen in the oxygen-containing gas over a period of time, the pressure of the oxygen-containing gas being maintained at atmospheric pressure by addition of a second gas that is inert with respect to the polymer.

4,120,661

SAMPLING DEVICE

Toyohiko Naono, Tokyo, Japan, assignor to Nihon Denshi Kabishiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1978, Ser. No. 882,450
Claims priority, application Japan, Mar. 3, 1977, 52-22990
Int. Cl.[2] G01N *1/14*
U.S. Cl. 422—68 **7 Claims**



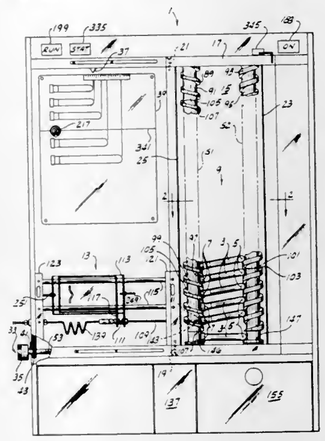
1. A sampling device comprising first and second valve bodies, said bodies having abutting faces in sliding contact and being movable relative one to the other, said first body having at least one sample holding duct which may be filled with sample, said sample holding duct opening through an internal sample outlet port in the abutting face of said first body, said second body having at least one pair of ducts each duct of said pair directly connected to an internal sample inlet port in the abutting face of the second body, means for bringing the ports into registration and moving them out of registration, at least one sampling pump connected to at least one duct in each said pair of ducts in the second body, said sampling pump arranged to draw the sample through internal outlet and internal inlet ports when they are in registration, said at least one pair of ducts in said second body connected such that the sample drawn may be discharged therefore when no ports are in registration.

4,120,662

SPECIMEN SAMPLING APPARATUS

Egil Fosslien, Tampa, Fla., assignor to Cortex Research Corporation, Tampa, Fla.

Filed Jan. 18, 1978, Ser. No. 870,453
Int. Cl.[2] G01N *1/14*
U.S. Cl. 73—425.6 **53 Claims**



1. Apparatus for obtaining samples from specimens of blood or the like contained in a series of closed containers, which specimens include a plurality of particles such as cells, comprising:

means for moving the closed containers along a predetermined path to a sampling station and for imparting motion to the closed containers while they are moved along the path to obtain a substantially uniform distribution of the particles contained therein; and

means for penetrating the closed containers when they reach the sampling station to withdraw specimen samples from said containers.

4,120,663

HYDROGEN GENERATING DEVICE

Jacques Fally, Orsay, France, assignor to Compagnie General d'Electricite S.A., Paris, France

Filed Aug. 12, 1976, Ser. No. 713,957
Claims priority, application France, Aug. 27, 1975, 75 26389
Int. Cl.[2] B01J *7/00*
U.S. Cl. 422—198 **14 Claims**

1. In a hydrogen generating device including:

a steam vessel comprising spaced first and second walls and including closure means closing off said walls and forming with said walls a steam decomposition chamber;

tube means for introducing steam into said steam vessel decomposition chamber;

furnace means for heating said steam within said steam vessel to a temperature sufficient to decompose at least some of said steam into hydrogen and oxygen, an oxygen passing membrane forming said second wall;

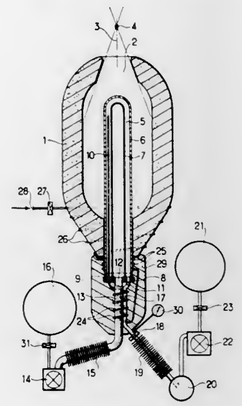
collector means exterior of said vessel and connected to said steam vessel for collecting hydrogen,

the improvement wherein:

said membrane comprises a double doped metallic oxide including a first doping to effect passage of oxygen ions through said membrane and a second doping different from said first doping to effect return conduction of electrons through said membrane, and wherein the amount of said second doping is sufficient keep the membrane in electronic equilibrium,

a third wall, said third wall and second second wall defining an oxygen collecting chamber;

vacuum pump means connected to said oxygen collection chamber for maintaining a reduced pressure on the side of



said membrane exterior of said vessel to cause oxygen to pass through said membrane for collection; and

means exterior of said oxygen collecting chamber and connected to said pump means for collecting oxygen.

4,120,664

PRODUCTION OF LOW-SULFUR COAL POWDER FROM THE DISINTEGRATION OF COAL

William K. T. Gleim, Seattle, Wash., assignor to Energy Modification, Inc., Gainesville, Fla.

Filed Oct. 13, 1977, Ser. No. 841,750
Int. Cl.[2] C10L *9/10*; C10G *1/00*
U.S. Cl. 44—1 R **10 Claims**

1. A method for producing a low ash-low sulfur content coal dust from small lumps of dry coal, which comprises,

(a) mixing macro-sized coal lumps with a liquid SO_2 stream within a confined reaction zone and passing the mixture upwardly therein while at a temperature and elevated pressure sufficient to maintain the SO_2 in liquid phase to provide for a resulting separation of the lump coal into micro-sized coal particles and residue material,

(b) withdrawing floating and suspended coal particles and liquid from the upper portion of the reaction zone and passing the mixture to a separation zone while still under superatmospheric pressure to provide for the separation of the micro-sized coal from the liquid SO_2 and resulting extracted hydrocarbons,

(c) discharging and recovering the fine micro-sized particles as a desired low ash-low sulfur coal dust, and

(d) recovering the separated liquid SO_2 stream from said separation zone for recycle to said reaction zone.

5. The method of claim 1 further characterized in that the liquid SO_2 stream may comprise a mixture of hydrocarbons selected from the group of aromatics, dienes, and the combination thereof, wherein the hydrocarbon portion of the stream is not greater than about 60% of such stream.

4,120,665

PROCESS FOR IMPROVING COAL

James K. Kindig, Arvada, and Ronald L. Turner, Golden, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Filed Jan. 21, 1977, Ser. No. 761,307
Int. Cl.[2] C10L *9/10*; C10B *57/00*
U.S. Cl. 44—1 R **42 Claims**

28. In a process for improving coal wherein raw coal is treated with iron carbonyl in order to enhance the magnetic susceptibility of one or more impurities, thereby permitting the removal of these impurities by magnetic separation, the improvement comprising:

pretreating the coal by heating it to at least a temperature for at least a period of time sufficient to essentially meet or exceed a time and temperature relationship expressed as:

$$D \geq K(50/T-90)^3$$

wherein D is time in hours and T is temperature in degrees Celsius and is not less than about 95° C., and wherein K is at least about 0.5.

4,120,666

HOLLOW CORE SYNTHETIC FIREPLACE LOG AND METHOD AND APPARATUS FOR PRODUCING SAME

Steven R. Lange, 8355 Quay Dr., Arvada, Colo. 80003

Filed Jun. 21, 1976, Ser. No. 698,259
Int. Cl.[2] C10L *5/00, 5/36, 5/22*
U.S. Cl. 44—10 R **21 Claims**

5. An apparatus for fabricating synthetic fireplace logs by a continuous extrusion process, comprising:

an open-ended compaction chamber adapted for receiving raw material in one end and continuously extruding said raw material in a compacted state out its opposite end,

a compactor associated with said one end of said compaction chamber capable of continuously feeding a dry, raw material into said one end of said compaction chamber,

wax delivery means in said compaction chamber for uniformly impregnating said compacted raw material with hot, molten wax as said raw material continuously advances through said compaction chamber; and

a cooling area in said compaction chamber for cooling said mixture of raw material and molten wax, thereby resulting in said mixture acquiring the integrity of a hard, rigid synthetic log structure.

12. A method of producing synthetic fireplace logs, comprising the steps of:

feeding shredded paper into a compactor;

compacting said shredded paper into an elongated chamber with an opening at each end and with an inside cross-sectional configuration conforming to the desired finished shape of said log;

injecting hot, molten wax into said compacted paper in said compaction chamber; and

cooling and hardening said wax while said paper and wax mixture is still in said compaction chamber to form a solid, homogenous member.

4,120,667

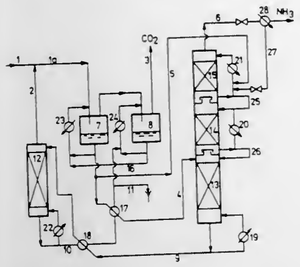
ISOLATION OF PURE AMMONIA FROM GAS MIXTURES CONTAINING AMMONIA AND CARBON DIOXIDE

Hans Gettert, Mannheim; Hermann Dieter Fromm, Gruenstadt; Martin Molzahn, Ludwigshafen; Ernst-Juergen Schier, Bad Durkheim, and Hans Henning Schneehage, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 12, 1977, Ser. No. 841,552
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646804
Int. Cl.[2] B01D *53/14*
U.S. Cl. 55—48 **10 Claims**

1. A process for isolating ammonia from gas mixtures containing ammonia and carbon dioxide by partially absorbing the gas mixture in a solvent, with intimate mixing and using residence times of at most 0.1 second, then separating the non-absorbed gas mixture and the solution obtained, and desorbing the solution containing excess ammonia, wherein, in a first desorption stage, only the ammonia present in an excess over a molar ratio of 3 parts of ammonia to 1 part of carbon dioxide is expelled by heating and the entrained carbon dioxide is

washed out of the expelled ammonia with solutions which contain free ammonia, the residual solution from the first desorption stage is substantially freed from ammonia and carbon



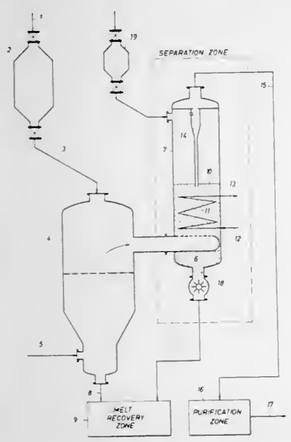
dioxide in a second desorption stage, the expelled solvent-containing gas together with fresh gas mixture is recycled to the absorption and the solvent obtained from the second desorption stage is employed as solvent in the absorption.

4,120,668

METHOD FOR REMOVING ENTRAINED MELT FROM A GASEOUS STREAM

Lowell David Fraley, Sugarland, Tex., assignor to Pullman Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 698,236, Jun. 21, 1976, abandoned. This application May 16, 1977, Ser. No. 797,264
Int. Cl.[2] B01D *49/00*
U.S. Cl. 55—72 **10 Claims**



1. A process for removal of entrained melt from a gaseous stream comprising:

(a) maintaining solid, particulate material in a separation zone at a temperature below the temperature of the gaseous stream;

(b) passing the gaseous stream containing entrained melt upwardly through the solid, particulate material at a sufficient velocity to fluidize the material;

(c) solidifying the entrained melt on the fluidized, solid, particulate material in the separation zone by maintaining the solid particulate material at a temperature below the condensation temperature of the entrained melt to form coated particulate material;

(d) removing at least a portion of the coated particulate material from the separation zone;

(e) adding clean solid, particulate material to the separation zone; and

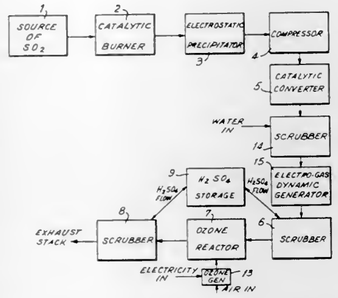
(f) withdrawing a cleaned gaseous stream from the separation zone.

4,120,669

WASTE GAS POLLUTION CONTROL SYSTEMS

Steven C. Amendola, 11 Thornwood Pl., Scarsdale, N.Y. 10583

Filed Apr. 25, 1977, Ser. No. 790,575
Int. Cl.[2] B01D *53/14*
U.S. Cl. 55—73 **3 Claims**



1. A method for removing sulfur oxides from waste gases, said method comprising:

(a) converting substantial amounts of sulfur dioxide present in said waste gases to sulfur trioxide in the presence of a catalyst;

(b) scrubbing the product resulting from step (a) with H_2SO_4 so as effectively to remove substantial amounts of the converted sulfur trioxide, such that the unconverted gases remaining have a reduced sulfur dioxide content of approximately 300 ppm;

(c) reacting the unconverted gases resulting from the operations of steps (a) and (b) with ozone, thereby to convert substantially all of the sulfur dioxide remaining in the unconverted gases to sulfur trioxide;

(d) scrubbing the gas mixture resulting from step (c) so as to remove the sulfur trioxide, whereby the sulfur dioxide content of the waste gases is reduced to approximately 100 ppm; and

(e) further comprising the steps of additionally scrubbing the gas mixture resulting from the catalytic conversion step (a) with water, and producing electric power by passing the sulfuric acid mist resulting from the additional scrubbing operation through an electric field developed in an electro-gas dynamic generator.

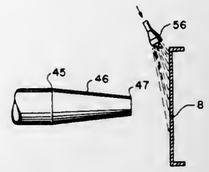
4,120,670

POLLUTION CONTROL APPARATUS AND METHOD

Ladislav J. Pircon, 305 Canterberry La., Oak Brook, Ill. 60521

Continuation-in-part of Ser. No. 632,648, Nov. 17, 1975, Pat. No. 4,036,609, which is a continuation-in-part of Ser. No. 252,914, May 12, 1972, Pat. No. 3,920,422, which is a continuation-in-part of Ser. No. 190,248, Oct. 18, 1971, Pat. No. 3,853,506. This application Jul. 18, 1977, Ser. No. 816,677
The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.
Int. Cl.[2] B01D *47/00*
U.S. Cl. 55—90 **15 Claims**

1. A process having a pressure drop of about 0.4 to 8 inches of water for removing particulate matter from gas streams comprising passing said gas stream having particulate matter therein through the entry of a nozzle; accelerating the gas stream through a converging portion of said nozzle having a mean angle of convergence of about 4° to 8° providing outlet velocities of about 2 to 12 times the entrance velocity; passing said particulate-containing gas stream from the nozzle outlet through an expansion zone decelerating the gas, said acceleration and deceleration of the gas stream causing particulates to agglomerate; impinging said agglomerates and particulates



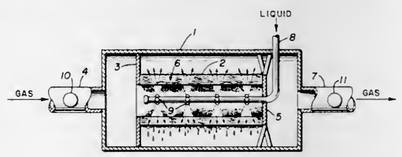
upon a fixed flat surface of substantially imperforate material thereby separating said particulates and agglomerates from said gas stream; removing said particulates and agglomerates from the expansion zone; and separately removing clarified gas from the expansion zone.

4,120,671

SEPARATION OF AEROSOLS FROM GASES IN A HORIZONTALLY DISPOSED CYLINDRICAL FIBER BED

Daniel E. Steinmeyer, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 7, 1976, Ser. No. 693,601
Int. Cl.[2] B01D *46/04*
U.S. Cl. 55—96 **27 Claims**



1. In a process for removing a liquid from a moving gas stream in a separator by flowing said liquid containing gas through at least one cylindrical fiber bed element contained in said separator, each of said at least one cylindrical fiber bed element comprising a non-matting bed of randomly distributed fibers having a mean diameter of at least about 5 microns packed to a substantially uniform bed voidage of from about 85 to 98% within the annular space between two substantially concentric cylindrical screens to provide a hollow core in said at least one cylindrical element, said flow resulting in separation of a substantial proportion of the liquid from the gas as a collected liquid phase, the improvement comprising:

(a) causing said liquid containing gas to flow through each of said at least one cylindrical element from the core side thereof outwardly while each of said at least one cylindrical element is oriented with its longitudinal axis at an angle of from about 0° to 30° from the horizontal, the fiber bed in each of said at least one cylindrical element being such that (i) it is operating under non-flooding conditions for the liquid loading contained in the gas and (ii) the residual saturation of said fiber bed against gas phase drag of the liquid phase is less than the residual saturation of said fiber bed against gravity drainage of the liquid phase, and

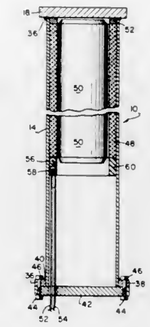
(b) continuously draining the collected liquid phase from the outer circumference of each of said at least one cylindrical element.

4,120,672

RAPPER ASSEMBLY FOR ELECTROSTATIC PRECIPITATORS

Philip M. Lanese, Belle Mead, N.J., assignor to Belco Pollution Control Corporation, Parsippany, N.J.

Filed Dec. 30, 1976, Ser. No. 755,521
Int. Cl.[2] B03C *3/76*
U.S. Cl. 55—112 **5 Claims**



1. An electrode rapper assembly for electrostatic precipitators comprising:

a cylindrical cover;

a coil within said cover and concentric therewith;

an anvil rigidly connected with said cover;

a ferro-magnetic plunger movably mounted within said coil and movable to strike said anvil;

a first junction;

a second junction, said coil being connected between said first and second junctions;

a series solid state rectifier diode;

a parallel solid state rectifier diode;

a wire connecting one end of said parallel solid state rectifier diode with said first junction and another wire connecting the other end of said parallel rectifier diode to said second junction so as to be in parallel with said coil and permit current flow through said parallel rectifier diode so that it passes from said second junction through said parallel rectifier diode to said first junction;

two conductors for supplying rectified A. C. current,

one of said conductors being connected to one of said junctions, the other of said conductors being connected to one end of said series rectifier diode; and

a wire connecting the other end of said series rectifier diode with the other of said junctions so that current passing through said series rectifier diode can pass only from said first junction to said second junction while passing through said coil;

whereby energizing current can flow through said coil to generate a magnetic field and move said plunger upward and interruption of said energizing current will permit said plunger to drop, the current induced in said coil upon said interruption flowing through said second junction, said parallel rectifier, said first junction and said coil until dissipated.

4,120,673
APPARATUS FOR SEPARATING GASES FROM LIQUIDS

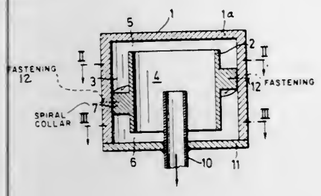
Achim zur Nieden, Cologne, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Feb. 18, 1977, Ser. No. 769,924

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1976, 2606673

Int. Cl.[2] **B01D** *45/16*

U.S. Cl. 55—205 **2 Claims**



1. An apparatus for separating gas from a fluid, which comprises in combination:

a hollow cylindrical receptacle, the ends of which respectively comprise cover means;

a hollow cylindrical insert located within said receptacle and in spaced relationship thereto so as to define respective first and second annular gaps axially above and axially below between the end portions of said insert and said cover means and so as to divide the interior of said receptacle into an annular outer section and a cylindrical inner section, said outer section being provided with a tangentially oriented inlet positioned therein for receiving said fluid and a tangentially oriented outlet positioned in the lower portion of the outer section below the inlet for withdrawing said fluid in a uniform rotating film on the inner wall of said insert to facilitate and reinforce removal of gas supplemental to centrifugal forces from below at said second annular gap;

a spirally ascending collar in said outer section and interposed between the inner wall of said receptacle and the outer circumference of said insert, said collar comprising a guiding surface thereon communicating with said inlet and following the spiral contour of said collar, said collar ascending upwardly in the direction of said first gap located axially there above and communicating therewith; and

ventilating means communicating with said insert for withdrawing said gas from said receptacle with improved separation of gas from the fluid.

4,120,674
FILTERING ARRANGEMENT FOR VACUUM LOADERS

Franz Haag, Isny, Allgaü, and Paul Bongartz, Isny-Kleinhaslach, both of Fed. Rep. of Germany, assignors to Motan Gesellschaft mit beschrankter Haftung, Isny, Allgau, Fed. Rep. of Germany

Filed Jun. 9, 1977, Ser. No. 805,000

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625734

Int. Cl.[2] **B01D** *46/04*

U.S. Cl. 55—302 **7 Claims**

1. A filtering arrangement for vacuum loaders, for filtering, conveying and cleaning operations, particularly for pulverous materials, which comprises in combination:

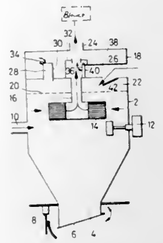
a filtering container having an inner wall;

a cylindrical conveying filter arranged within said filtering container having inlets and outlets arranged in such a way as to convey air to be withdrawn from said filtering container radially through said conveying filter;

a scavenging air filter arranged within said filtering container and above said conveying filter, said scavenging air filter forming a scavenging air chamber with a portion of said inner wall of said filtering container, said scavenging air filter being in the form of a diaphragm and being arranged for passing air vertically therethrough, a blower means connected in communication with the scavenging air chamber and operable selectively; and

cover means associated with said filtering container and having opening means connectable to said blower means, said cover means including:

first valve means for connecting the interior of said conveying filter selectively with the suction side of said blower means,



second valve means for connecting the interior of said conveying filter selectively with outside air during the cleaning operation in a flow direction radially of said conveying filter, and

third valve means for connecting said scavenging air chamber selectively with the suction of said blower means during the cleaning operation of said conveying filter in opposite counter flow radial direction from inside to outside due to selective instant reversal of flow direction effected by said first and second valve means selectively therewith.

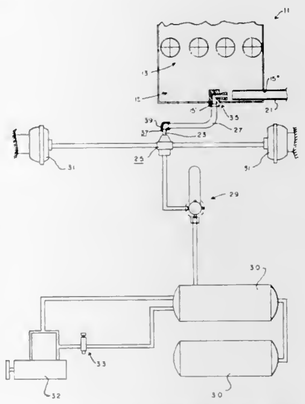
4,120,675
AIR CLEANER

Tonnie M. Boyles, and Hubert E. Hunter, both of Louisville, Miss., assignors to Taylor Machine Works, Inc., Louisville, Miss.

Filed Oct. 17, 1977, Ser. No. 842,967

Int. Cl.[2] **B01D** *45/18*

U.S. Cl. 55—431 **10 Claims**



1. An improved air cleaner system of the type including

separator means for separating particulate material from air before the air passes into the air intake of an internal combustion engine and including a bin for receiving and containing any particulate material so separated, wherein said improvement comprises: means for coupling the exhaust port of a pressurized air brake system to said bin to allow the pressurized air expelled from said brake system when said brake system is activated and subsequently deactivated to pass through said bin and expel any particulate material contained within said bin therefrom.

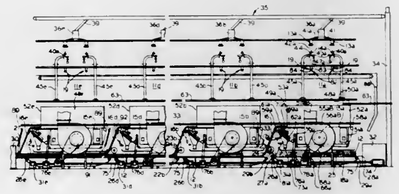
4,120,676
METHOD AND APPARATUS FOR PRODUCING BLANKETS OF MINERAL FIBERS

William Peter Hahn, Somerville, N.J.; Edward Lee Hite, Toledo, Ohio; Donald Eugene Shisler, Defiance, Ohio, and Charles Donald Simmers, Bowling Green, Ohio, assignors to Johns-Manville Corporation, Denver, Colo.

Filed Mar. 20, 1972, Ser. No. 236,372

Int. Cl.[2] **C03B** *37/04*

U.S. Cl. 65—4 R **22 Claims**



1. Apparatus for the production of mineral fiber mats comprising a plurality of mat forming modules arranged in an in-line orientation; fiber issuing means for each module comprising means for making mineral fibers from molten mineral material; a forming chamber for each of said modules; means for directing said fibers toward said forming chamber and means for cooling said fibers; a mat delivery station for each of said modules; a fiber collecting conveyor for each of said modules in said forming chamber and having a foraminous fiber receiving surface adapted to collect fiber in mat form in said forming chamber and to convey said mat in the direction of said in-line orientation from said forming chamber to said mat delivery station; means for applying binder to said fibers before said fibers are conveyed from said forming chamber to said mat delivery station; a suction box in communication with said forming chamber through said fiber collecting conveyor; said mat delivery stations of respective modules being spaced apart in said in-line orientation; and a transfer conveyor located beneath said delivery stations and arranged to advance horizontally adjacent a plurality of said spaced delivery stations in the direction of said in-line orientation and adapted to receive mat from the individual delivery stations at spaced locations along said conveyor and each of said delivery stations including means for superposing said mat on said transfer conveyor or on the mat delivered from at least one preceding delivery station.

4,120,677
METHOD FOR MAKING A GLASS-REACTED-CERAMIC

Ian Burn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

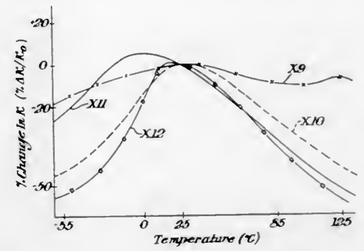
Filed Oct. 26, 1976, Ser. No. 735,656

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.[2] **C03B** *23/20, 32/00;* **H01B** *3/00;* **C03C** *21/00*

U.S. Cl. 65—18 **6 Claims**

1. A method for making a glass-reacted-ceramic body having a high dielectric constant at 25° C. comprising mixing in a suspension medium the three finely ground prefired powders consisting essentially of a powder of barium titanate, powders of an alkaline-earth-zirconate and powder of a cadmium containing glass; forming a body of said powdered mixture; and



firing said body between 1800° F. and 2050° F. to react said titanate powder with said zirconate powder and to form an alkaline-earth-titanate-zirconate phase that is intermixed with a glass phase.

4,120,678
SEALING GLASS VEHICLE AND COMPOSITION AND METHOD FOR MAKING SAME

Josef Francel; James E. King, both of Toledo, and John M. Woulbroun, Grand Rapids, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 637,351, Dec. 3, 1975, Pat. No. 4,038,091, which is a division of Ser. No. 516,900, Oct. 22, 1974, Pat. No. 3,973,975, which is a continuation-in-part of Ser. No. 246,316, Apr. 21, 1972, abandoned, and a continuation-in-part of Ser. No. 511,202, Oct. 1, 1974, Pat. No. 3,967,973, which is a continuation of Ser. No. 246,316,. This application Jun. 27, 1977, Ser. No. 810,150

Int. Cl.[2] **C03C** *27/00*

U.S. Cl. 65—32 **4 Claims**

1. In a method of sealing two glass surfaces together with a paste of PbO-containing sealing glass frit in the presence of reducing conditions in such manner as to prevent the tendency of the PbO to be reduced and a dielectric breakdown to occur in the seal formed between said glass surfaces, the improvement wherein said PbO in said sealing glass frit remains unreduced in the presence of said reducing conditions and said dielectric breakdown is prevented, said improvement comprising incorporating an effective amount of BaO_2 powder in said paste.

4,120,679
PRODUCTION OF SEMI-REFLECTING GLASS PRODUCTS

Daniel Philibert, Louveciennes, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jun. 15, 1977, Ser. No. 806,666

Claims priority, application France, Jun. 15, 1976, 76 18154

Int. Cl.[2] **C03C** *17/00*

U.S. Cl. 65—60 B **11 Claims**

1. The process of producing semi-reflecting glass products by forming a metal oxide coating thereon comprising applying to at least a portion of one surface of said product a solution of at least one charge-transfer complex in a non-aqueous organic solvent therefor, said product having been heated prior to said application to a temperature sufficient to evaporate said solvent and cause pyrolysis of said charge-transfer complex, and said charge-transfer complex having the general formula MeX_nY_n where Me is a polyvalent heavy metal or metalloid, X is at least one beta-diketone radical having no more than 10 carbon atoms, Y is at least one beta-diketone radical having no more than 10 carbon atoms and differing from X; or one of X

or Y can be at least one halogen radical, and *m* and *n* equal the valence of Me.

4,120,680

METHOD OF HEAT TREATING GLASS IN A FLUIDIZED BED AND APPARATUS THEREFORE

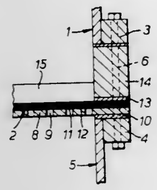
Raymond Peter Cross, Preston, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Jun. 10, 1977, Ser. No. 805,568

Claims priority, application United Kingdom, Jun. 10, 1976, 24124/76

Int. Cl.[2] C03B *27/00*

U.S. Cl. 65—114 **9 Claims**



1. In a method of thermally treating a glass article by immersing the article in a fluidised bed of particulate material in a quiescent uniformly expanded state of particulate fluidisation, which bed has a tranquil top surface through which the article is lowered as it is immersed in the bed, the improvement comprising:

establishing a high pressure drop in the fluidising gas flow across a porous membrane through which fluidising gas is supplied to the bed uniformly over the whole of the base of the bed, said high pressure drop being at least 60% of the pressure at which the fluidising gas is supplied beneath the membrane and being sufficient to produce a uniform distribution of fluidising gas flow upwardly from the upper face of the porous membrane through the depth of the fluidised bed to maintain the bed stable in said quiescent state of fluidisation.

5. Fluidised bed apparatus comprising:

a container for the fluidised bed;

a plenum chamber;

means for supplying fluidising gas to the plenum chamber; and

a membrane separating the container from the plenum chamber and having an upper surface which forms the whole base of the container, which membrane comprises a perforated rigid member supporting a plurality of layers of material having a low permeability to gas flow such that the pressure drop in the fluidising gas flow across the membrane is at least 60% of the pressure at which fluidising gas is supplied to the plenum chamber, and the upper surface of which membrane produces a uniform distribution of fluidising gas flow upwardly through the fluidised bed.

4,120,681

METHOD OF THERMAL TREATMENT OF GLASS IN A FLUIDIZED BED

Raymond Peter Cross, Preston, and Derek Edward Thomas, Chester, both of England, assignors to Pilkington Brothers Limited, St. Helens, England

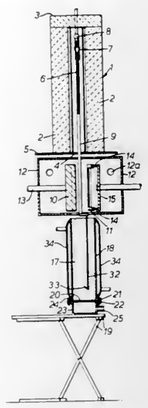
Continuation of Ser. No. 717,263, Aug. 24, 1976, abandoned. This application Nov. 8, 1977, Ser. No. 849,631

Claims priority, application United Kingdom, Aug. 29, 1975, 35770/75; Jun. 10, 1976, 24123/76

Int. Cl.[2] C03B *27/00*

U.S. Cl. 65—114 **18 Claims**

1. A method of thermally treating glass in which the glass is contacted with a gas-fluidised particulate material placed in a quiescent uniformly expanded state of particulate fluidisation by gas fed to the particulate material under pressure from an external source, with control of the gas feed being such that the gas velocity while the glass is being contacted by said particulate material is between the velocity corresponding to incipient fluidisation and that velocity corresponding to maximum expansion, wherein the particulate material is comprised of buoyant particles of non-compacted particle structure which is such that the apparent density of the particles is less than the actual density of the material forming the particles and wherein the material forming the buoyant particles and the temperature of the material are so selected that the heat transfer coefficient of the fluidised material is sufficient to produce a desired thermal treatment of the glass at it cools in the material.



4,120,682

INSTALLATION FOR SUPERFICIALLY TREATING THE OUTER SURFACES OF BOTTLES

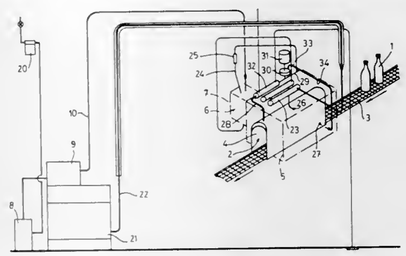
Maurice R. G. Galanti, Ransart, Belgium, assignor to Institut National du Verre, Charleroi, Belgium

Filed Dec. 5, 1977, Ser. No. 857,713

Claims priority, application Belgium, Mar. 25, 1977, 0176141

Int. Cl.[2] C03C *17/00*

U.S. Cl. 65—181 **6 Claims**



1. An installation for superficially treating the outer surfaces of glass bottles which are already shaped but not yet annealed, said installation comprising:

a tunnel,

an inlet for the bottles in said tunnel,

an outlet for said bottles in said tunnel,

means for longitudinally displacing said bottles into said tunnel,

an evaporator,

means for supplying said evaporator with hot liquid reagent,

means for supplying said evaporator with a current of hot, filtered and dehydrated air,

at least one drop-by-drop feed member arranged into said evaporator for delivering said liquid reagent at an adjustable flow rate, whereby said current of air when traversing said tunnel evaporates said delivered liquid reagent in order to produce a gaseous reactive mixture containing said air and said gaseous reagent,

two lateral inlet openings at said inlet of said tunnel for admitting a flow of gaseous reactive mixture into said tunnel

a collector at said outlet of said tunnel for collecting said gaseous reactive mixture having traversed said tunnel

a recycling conduit extending from said collector to two derived conduits which open into said lateral inlet openings

a sucking fan provided in said recycling conduit for moving said gaseous reactive mixture through said recycling conduit and said derived conduits

a cooler mounted on said recycling conduit for cooling said gaseous reactive mixture,

a supply conduit extending from said evaporator to said recycling conduit for continuously introducing added portions of fresh gaseous reactive mixture into said recycled gaseous reactive mixture flowing through said recycling conduit,

heating means mounted on said supply conduit for suitably heating said added portions of fresh gaseous reactive mixture before their introducing into said recycling conduit. so as to obtain a constantly thermically and chemically reconditionned gaseous reactive mixture formed by said both recycled and fresh gaseous reactive mixtures and flowing through said tunnel over the entire length of the path of said bottles and around said bottles to act thereon.

4,120,683

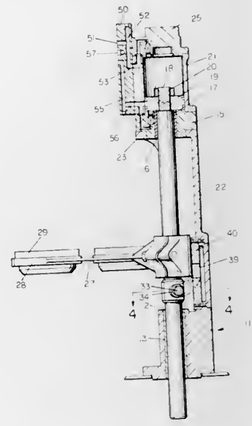
FUNNEL ARM OPERATING MECHANISM

George W. Irwin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 1, 1977, Ser. No. 820,656

Int. Cl.[2] C03B *5/30, 9/40*

U.S. Cl. 65—207 **6 Claims**



1. In apparatus for forming hollow glass articles in which a parison forming mold is supplied with a charge of glass through the open, upper end of the parison mold and wherein the charge is guided by a funnel seated on the parison mold to guide the charge thereinto prior to forming the parison therein and the formed parison is then transferred to a blow mold where the parison is expanded into the final article shape, the improvement in the funnel-operating mechanism comprising:

a parison mold positioned at a parison station;

a vertically extending casting mounted adjacent said parison mold and supported by a section box;

a cylindrical fluid motor having a top and closing cap mounted to the upper end of said motor;

a vertical passage formed in the upper portion of said casting and a coaxially aligned passage formed in the lower portion of said casting, said passages being in coaxial alignment;

cylindrical bushings mounted in said passages formed in the casting;

a vertically movable piston within said fluid motor;

a downwardly extending piston rod connected to said piston and extending downwardly through said cylindrical bushings;

a semi-cylindrical cam plate connected to said casting intermediate the cylindrical bushings and spaced from said downwardly extending piston rod;

a radially extending cam follower connected to said piston rod, said follower engaging said cam plate;

a radially extending support arm fixed to said rod, said support arm being fixed to said rod immediately above the location of said cam follower, said arm supporting guide funnels;

a fixed support beam extending adjacent the upper end of said motor; and

bracket means connected to, and extending between, said beam and the upper end cap of said motor to effectively immobilize the upper end of said motor.

4,120,684

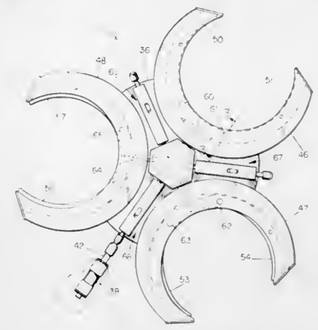
MOLD RING TRANSFER APPARATUS

James D. Mallory, Maumee; John F. Fleck, Reynoldsburg, and Mario Cuniberti, Columbus, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 31, 1977, Ser. No. 801,687

Int. Cl.[2] C03B *19/04*

U.S. Cl. 65—302 **4 Claims**



1. In an apparatus for orienting and transferring a mold ring of a centrifugal mold for casting a hollow glass article such as a television tube funnel of a generally frusto-pyramidal configuration, wherein said apparatus is operated in an indexing mode between discrete stations, one of said stations requiring release of said mold ring to said centrifugal mold and another of said stations requiring removal of said mold ring from said centrifugal mold, the improvement which comprises:

a drive shaft driven in said indexing mode;

a support member housing attached to said drive shaft for rotation therewith, said support member having a plurality of cut out portions formed in its periphery, the number of said cut out portions being equal to the number of discrete stations;

a hollow, arcuate support finger holder attached to each of said cut outportions;

a pair of support fingers movably attached to each of said support finger holders and movable as a unit from a retracted position within said hollow support finger holders to a position beyond said support finger holder at least partially extending into the center of said arcuate support finger holder, whereby a mold ring is held when said support fingers are extended and released when said support fingers are retracted;

mechanical linkage means, carried by said support member housing, for interconnecting all of said pairs of support fingers to allow retraction of one pair of said support fingers and simultaneous extension of all of the rest of said pairs of support fingers when said mechanical linkage means is actuated, said mechanical linkage means including:

(a) an upper cage member attached to said support member housing, said upper cage member including upstanding sidewalls;

(b) a lower cage member attached to said upper cage member, thereby defining an open space between said upper and lower cage members;

(c) a shuttle positioned in said open space between said upper and lower cage members and movable within said open space;

(d) a plurality of connecting rods, equal in number to the number of said pairs of support fingers, connecting each pair of said support fingers to said shuttle; and

(e) means for driving said shuttle, to open and close said support fingers, in response to said means for actuating said mechanical linkage; and

means for actuating said mechanical linkage means in synchronism with the cycle of said apparatus.

4,120,685

PROCESS FOR THE PREPARATION OF UREA-FORMALDEHYDE CONDENSATES TO BE USED AS FERTILIZERS

Silvio Vargiu, Casatenova (Como); Giorgio Mazzoleni, Milan, and Silvestro Pezzoli, Biassono (Milan), all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Mar. 8, 1977, Ser. No. 775,684

Int. Cl.[2] C05C 9/00

U.S. Cl. 71—30 **12 Claims**

1. A process for the preparation of fertilizers with a slow and controlled release of nitrogen, consisting of condensates of urea with formaldehyde, having values of IA, Win and HWin (as hereinbefore defined) ranging from 48 to 58, from 20 to 24 and from 10 to 12 respectively, which comprises:

(a) bringing into contact formaldehyde, urea and methanol in an aqueous reaction medium in a formaldehyde/urea molar ratio ranging from 2.0:1 to 2.5:1 and with an amount of methanol ranging from 4 to 10 moles for each 100 moles of formaldehyde and condensing the resulting mixture in a first condensation stage, at a pH of the aqueous reaction medium ranging from 8 to 9.5 and at a temperature of 60 to 98° C., until a product having a viscosity from 15 to 30 sec. as measured at 25° C. in a Ford cup No. 4 is obtained;

(b) adding formic acid to the product obtained in (a) and condensing the resulting aqueous mixture in a second condensation stage, at a pH ranging from 4.0 to 5.5 and a temperature ranging from 60° to 98° C., until a product with a viscosity ranging from 35 to 45 sec. as measured at 25° C. in a Ford cup No. 4 is obtained;

(c) neutralizing the product obtained in (b) up to a pH ranging from 6.8 to 7.5;

(d) adding urea to the product obtained in (c) thereby to bring the formaldehyde/urea molar ratio to a value of from 0.6:1 to 0.75:1 and condensing the resulting aqueous mixture in a third condensation stage at a pH ranging from 5.7 to 6.8 and at a temperature ranging from 60° to 98° C., until a product with a viscosity ranging from 45 to 50 sec. as measured at 25° C. in a Ford cup No. 4 is obtained;

(e) heating the product obtained in (d) at a temperature ranging from 200° to 400° C. for a time ranging from 0.5 to 5 minutes and recovering the resulting solid fertilizer.

4,120,686

COMPOSITION FOR COMBATING SLIMES

Wilfried Paulus, and Hermann Genth, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

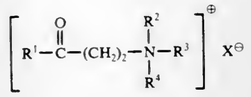
Filed Jun. 2, 1976, Ser. No. 692,171

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1975, 2528994

Int. Cl.[2] A01N 9/02

U.S. Cl. 71—67 **4 Claims**

1. Composition for combating slimes containing as the active compound combination, tetramethylthiuram disulfide and aroyl-ethyl ammonium salts of the formula



wherein

R^1 is benzoyl or chlorobenzoyl and

R^2, R^3 and R^4 are the same or different and are C_1–C_6 aliphatic or form together with the nitrogen atom, a heterocyclic group of 5 or 6 members in the ring or a monosubstituted or polysubstituted C_1–C_6 aliphatic or a heterocyclic ring formed together with said nitrogen atom said heterocyclic ring having 5 or 6 members wherein the substituent is fluorine, chlorine, bromine, iodine, a hydroxyl group, a nitro group, a C_1–C_6 alkyl radical, a C_1–C_6 halogen alkyl radical or a C_1–C_6 straight or branched alkoxy group, and

X is an anion of an inorganic or organic acid, the weight ratio of the aroyl-ethyl-ammonium salt to the tetramethylthiuram disulfide being between 1:0.01 and 1:99.

4,120,687

BENZOPHENONES AND BENZHYDROLS

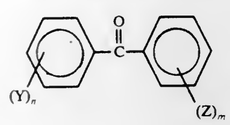
Robert H. Meisinger, 1005 Gerson Dr., Warminster, Pa. 18974

Filed Feb. 19, 1976, Ser. No. 659,609

Int. Cl.[2] A01N 5/00

U.S. Cl. 71—78 **6 Claims**

1. A method for controlling the growth of suckers in growing tobacco plants which comprises applying to the plants an effective aount of a compound of the formula



wherein

each Y and each Z independently is a halogen atom, a $(C_1$–$C_8)$ alkyl group, a trifluoromethyl group, a $(C_1$–$C_4)$ alkoxy group, a hydroxy group, a nitro group or a $(C_1$–$C_4)$ alkylthio group,

m is 0, 1, or 2, and

n is 0, 1, 2, or 3.

4,120,688

METHOD OF INCREASING SUCROSE YIELD OF SUGARCANE

Geneva Gail Otten, c/o Sharon Woods Technical Center 1150 Reed Hartman Hwy., Cincinnati, Ohio 45241, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 673,315, Apr. 5, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,468

Int. Cl.[2] A01N 9/36

U.S. Cl. 71—86 **8 Claims**

1. A method for increasing the sucrose yield of field grown sugarcane comprising applying to the cane at a time ranging from about 2 weeks to about 10 weeks prior to harvest aminomethylphosphonic acid in an amount ranging from about 0.1 pounds per acre to about 15 pounds per acre.

4,120,689

BENZYL AND ARYL ESTERS OF N-PHOSPHONOMETHYL GLYCINES, HERBICIDAL COMPOSITIONS AND USE THEREOF

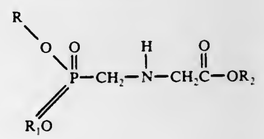
Gerard A. Dutra, Ladue, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 644,406, Dec. 29, 1975, abandoned. This application Oct. 4, 1977, Ser. No. 839,244

Int. Cl.[2] A01N 9/36; C07F 9/09

U.S. Cl. 71—86 **39 Claims**

1. A compound of the formula



wherein R and R_1 are each selected from the group consisting of phenyl, benzyl, naphthyl, biphenylyl, benzyloxyphenyl and phenyl, benzyl or naphthyl groups substituted with from 1 to 3 groups selected from the class consisting of hydroxyl, lower alkyl, lower alkoxy, lower alkylthio, trifluoromethyl, carbo (lower alkoxy), nitro, or halo; and R_2 is a lower alkyl group, and the strong acid salts of such compounds.

2. A method which comprises contacting a plant with a herbicidally effective amount of a compound of claim 1.

4,120,690

2-ACYLAMINOTHIAZOL-4-YLACETAMIDES AS POST-EMERGENT SELECTIVE HERBICIDES

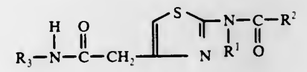
Roger P. Cahoy, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1976, Ser. No. 743,542

Int. Cl.[2] A01N 9/12; C07D 417/04

U.S. Cl. 71—90 **13 Claims**

1. The method of selectively combating unwanted vegetation which comprises applying to the unwanted vegetation in the presence of the crop plants an effective amount of a compound having the general structural formula



in which R^1 is hydrogen or lower alkyl, R^2 is amino, lower alkyl, lower chloroalkyl, lower alkylamino, lower alkenylamino, lower alkoxy or C_3 to C_5 cycloalkyl and R^3 is phenyl, thiazolyl, thiadiazolyl or lower alkyl-substituted, halogen-substituted or trifluoromethyl-substituted phenyl, thiazolyl or thiadiazolyl.

4,120,691

HERBICIDAL SULFONAMIDES

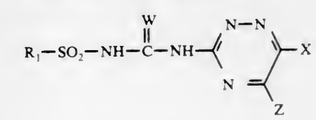
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 769,912, Feb. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 674,668, Apr. 7, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,823

Int. Cl.[2] C07D 253/06; A01N 9/16

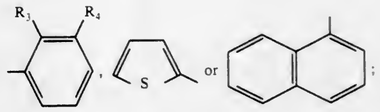
U.S. Cl. 71—93 **55 Claims**

1. A compound having the formula:



wherein

R_1 is



R_3 is hydrogen, fluorine, chlorine, bromine, nitro, methyl or methoxy;

R_4 is hydrogen, fluorine, chlorine, bromine, methyl or methoxy;

W is oxygen or sulfur;

X and Z are independently hydrogen, methyl or methoxy; or an agriculturally suitable salt thereof;

provided that X and Z may not be hydrogen simultaneously.

12. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,120,692

THIO PYRIDINE N-OXIDES AND REGULATION OF THE NATURAL GROWTH AND DEVELOPMENT OF PLANTS THEREWITH

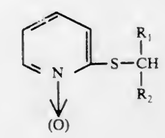
Howard L. Plant, Milford; John W. Zukel, Hamden, and Ronald B. Ames, Naugatuck, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 677,660, Apr. 16, 1976, Pat. No. 4,050,921. This application Jul. 20, 1977, Ser. No. 817,302

Int. Cl.[2] A01N 9/22

U.S. Cl. 71—94 **13 Claims**

1. A method of regulating the natural growth or development of plants which comprises applying to said plants an effective non-herbicidal plant-regulating amount of a 2-thiopyridine N-oxide compound of the formula



wherein:

R_1 is hydrogen, C_1 to C_{15} alkyl, alkenyl or benzyl;

R_2 is hydrogen,

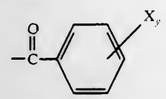
C_1 to C_{12} alkyl,

C_1 to C_4 alkenyl,

C_2 or C_3 alkoxycarbonyl,

C_5 or C_6 alicyclic,

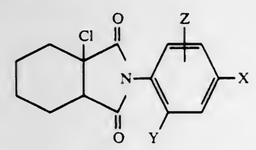
phenyl provided R_1 is not phenyl,
phenyl substituted with from 1 to 3 substituents which may be the same or different and are selected from the group consisting of C_1 to C_3 alkyl, halogen, cyano, nitro, C_1 or C_2 alkoxy, phenoxy, dioxymethylene and 2,2-dichlorocyclopropyl; and phenyl substituted with 4 to 5 substituents which may be the same or different and are selected from methyl and chlorine;
1-methyl-2,2-dichlorocyclopropyl, 2,2-dichlorocyclopropyl, naphthyl, 9-anthryl, 5-indanyl, 4-biphenylyl, 2-benzothiazolyl, 2-thienyl or benzyl;
R_1 and R_2 may be joined together in the form of a polymethylene chain $-(CH_2)_m-$ where m is 3, 4 or 5 to form a carbocyclic ring;
and when R_1 is hydrogen or methyl R_2 can be the radical



where y is 0, 1 or 2 and the X's are the same or different and are selected from C_1 to C_3 alkyl, halogen, and 2,2-dichlorocyclopropyl.

4,120,693
SUBSTITUTED ISOINDOLES
Steven Jerome Goddard, West Grove, Pa., and George Levitt, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jul. 29, 1976, Ser. No. 709,820
Int. Cl.[2] A01N 9/22; C07D 209/34
U.S. Cl. 71—96 **24 Claims**

1. A compound of the formulae

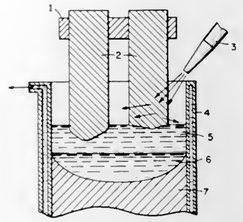


wherein X is H, F, Cl, Br, CN, NO_2 or OCH_3; Y is H, F or CH_3; and Z is H, F, Cl, Br or OCH_3 provided that
(1) when Y is CH_3, X is F, Cl or Br;
(2) when Z is 6-Cl or 6-Br, Y is F; and,
(3) X, Y and Z may not all be H simultaneously.

4,120,694
PROCESS FOR PURIFYING A TITANIUM-BEARING MATERIAL AND UPGRADING ILMENITE TO SYNTHETIC RUTILE WITH SULFUR TRIOXIDE
Gerald W. Elger; Ruth A. Stadler, and Philip E. Sanker, all of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Filed Sep. 6, 1977, Ser. No. 830,523
Int. Cl.[2] C22B 1/06, 7/04
U.S. Cl. 75—1 T **13 Claims**

1. A process for removing alkaline earth oxide impurities from a titania slag consisting essentially of reacting said slag with sulfur trioxide gas at a temperature of about 600° to 1100° C to form a reaction product containing alkaline earth sulfates, and subsequently leaching said sulfates from the reaction product with water.

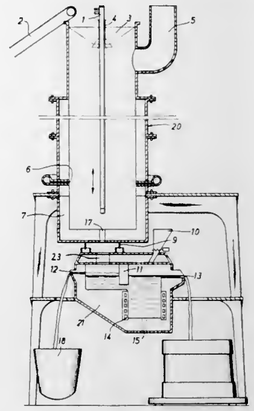
4,120,695
PROCESS OF THE ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES
Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Leonid Mikhailovich Stupak, Brest-Litovsky prospekt, 39, kv. 9; Viktor Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54; Alexei Georgievich Bogachenko, ulitsa Miljutenko, 15/2, kv. 141, all of Kiev; Sergei Sergeevich Kazakov, N-Dnepropetrovskaya ulitsa, 14a, kv. 39, Zaporozhie, and Anatoly Konstantinovich Tsykulenko, ulitsa Babushkina, 23, kv. 38, Kiev, all of U.S.S.R.
Continuation of Ser. No. 551,409, Feb. 20, 1975, abandoned, which is a continuation of Ser. No. 474,145, May 28, 1974, abandoned, which is a continuation of Ser. No. 251,736, May 9, 1972, abandoned. This application Feb. 15, 1977, Ser. No. 768,741
Int. Cl.[2] C22D 7/00
U.S. Cl. 75—10 C **3 Claims**



1. A method of electroslag remelting of consumable electrodes comprising the steps of: securing at least two electrodes having dissimilar cross sections and shapes in a common electrode holder; establishing a slag bath in a mold cavity; immersing the end surfaces of the consumable electrodes to an equal depth in the slag bath; progressively melting the consumable electrodes and forming a metal bath in the cavity of the mold under the slag bath, the consumable electrodes melting at different rates and their end surfaces becoming immersed in the slag bath at different depths; feeding a gaseous cooling medium onto the exposed surface of the consumable electrode having its end surface closer to the slag/atmosphere interface than the end surfaces of the other electrodes whereby the consumable electrode which is less immersed in relation to the other electrodes is partially cooled by the gaseous cooling medium and descends into the slag bath; and continuing to feed the gaseous cooling medium until the penetration of all of the electrodes into the slag bath becomes equal.

4,120,696
PROCESS FOR THE PRODUCTION OF STEEL
Günther Geck, Hagen, and Jürgen Langhammer, Bremen, Platjenwerbe, both of Germany, assignors to Klöckner-Werke AG, Duisburg, Germany
Continuation of Ser. No. 471,074, May 17, 1974, abandoned. This application Jan. 5, 1977, Ser. No. 756,849
Claims priority, application Fed. Rep. of Germany, May 19, 1973, 2325593
Int. Cl.[2] C21C 5/52
U.S. Cl. 75—13 **6 Claims**

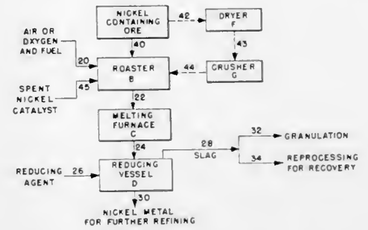
1. A process for the continuous production of steel from a ferrous metal charge, comprising
admitting said ferrous metal charge into a substantially vertically arranged first zone so as to form a column of said charge in said first zone,
said charge continuously descending along said first zone by gravity,
and the leading end of said column being located in said first zone;
continuously melting said leading end by directing an oxidizing flame at said column from below said column, thereby burning off impurity components in said charge during the melting thereof,
so as to obtain a mass which includes molten steel and slag;
continuously performing direct transfer of said mass from said first zone into a second zone which is arranged below and communicates with said first zone,
said second zone being at least substantially sealed from ambient atmosphere so as to prevent oxygen from entering said second zone;
continously separating and removing said slag from said molten metal in said second zone;
superheating said molten metal by electrical means;
and introducing a deoxidizing agent and alloying additions into said superheated molten metal thereby obtaining steel having a desired composition;
and continuously removing said steel from said second zone.



4,120,697
SEGREGATION-SEPARATION OF COPPER FROM NICKEL IN COPPER-NICKEL SULFIDE CONCENTRATES
Lamar D. Coffin, Edison, and William R. Opie, Holmdel, both of N.J., assignors to Amax Inc., Greenwich, Conn.
Filed Apr. 15, 1977, Ser. No. 787,786
Int. Cl.[2] C22B 15/00
U.S. Cl. 75—72 **12 Claims**

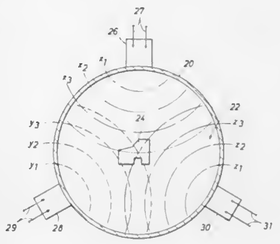
1. The process for separating copper values from at least one nickeliferous sulfidic material selected from the group consisting of ore, ore concentrates, mattes, or other metallurgical intermediates which comprises roasting the sulfidic material to produce a calcine, mixing the calcine with at least one halide salt heat transformable to a halogen or hydrogen halide at a segregation roasting temperature in small but effective amounts to halogenate copper values contained in the calcine and a particulate carbonaceous reductant, heating the mixture to a segregation roasting temperature between about 625° C. and 725° C. whereby copper values contained in the calcine are halogenated, transported to the carbonaceous reductant and precipitated as metallic copper on the carbonaceous reductant, cooling the heated calcine mixture and separately recovering the metallic copper precipitate which has a copper to nickel ratio of at least eight times that of the sulfidic material.

4,120,698
RECOVERY OF NICKEL FROM WASTES
Walter D. Atchison, Hudson; Alan English, Cleveland, both of Ohio, and Donald Halter, Riddle, Oreg., assignors to The Hanna Mining Company, Cleveland, Ohio
Filed Nov. 21, 1977, Ser. No. 853,089
Int. Cl.[2] C22D 7/00
U.S. Cl. 75—82 **16 Claims**



1. A method for recovering nickel from waste materials containing nickel which comprises the steps of
(a) subjecting a mixture of the waste material and a nickel-containing ore to oxidizing conditions at an elevated temperature,
(b) melting the oxidized mixture,
(c) subjecting the melt to reducing conditions, and
(d) recovering the desired nickel.

4,120,699
METHOD FOR ACOUSTICAL CLEANING
Alvin B. Kennedy, Jr., P.O. Box 1271, Alvin, Tex. 77511; Lawrence E. Shirey, Alta Loma, Tex.; Harper Eugene Sharp, Houston, Tex.; Lawrence E. Trowbridge, Seabrook, Tex., and Robert L. Magee, Alvin, Tex., assignors to Alvin B. Kennedy, Jr., Alvin, Tex.
Continuation-in-part of Ser. No. 521,762, Nov. 7, 1974, abandoned. This application Mar. 18, 1976, Ser. No. 668,316
Int. Cl.[2] B08B 3/12, 17/02; F28G 7/00
U.S. Cl. 134—1 **11 Claims**



1. The method of cleaning the surfaces of a body immersed in a liquid contained in a vessel, comprising the steps of
propagating a plurality of opposing acoustic wave trains through the liquid in said vessel, wherein each wave train includes a series of wave fronts having a frequency and phase relationship, and
limiting the energy level in each wave train to below the cavitation level of the liquid, and
continuously varying the frequency of at least one of said wave trains with respect to the other wave trains for causing constructive interference between said opposing acoustic wave trains to create a series of augmented acoustic waves that are spatially displaced in relation to each other and successive in time interval, each augmented wave having an intensity greater than the cavitation level

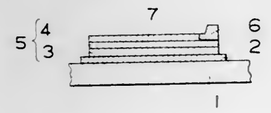
of the liquid for cleaning the surfaces of the body by sweeping over the surfaces.

4,120,700

METHOD OF PRODUCING P-N JUNCTION TYPE ELEMENTS BY IONIZED CLUSTER BEAM DEPOSITION AND ION-IMPLANTATION

Kiyoshi Morimoto, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Japan

Filed Dec. 28, 1976, Ser. No. 755,066
Claims priority, application Japan, Dec. 30, 1975, 50-156808
Int. Cl.[2] H01L *21/265, 7/54*
U.S. Cl. 148—1.5 **4 Claims**



1. A method of producing a p-n junction type solid-state element comprising the steps of:
providing a substrate;
forming a substrate electrode on at least a part of the upper surface of the substrate;
vaporizing a semiconductor material of one impurity type in a vacuum region to form a vapor of said material;
bombarding the vapor with electrons to ionize at least a part thereof;
accelerating the ionized vapor in an electric field to cause the vapor to impinge on the substrate electrode to form an ion-plated semiconductor layer of the one impurity type on the substrate, the substrate electrode being formed of a metal film such as can produce an ohmic contact with the semiconductor layer of the one impurity type;
ionizing impurity atoms such as can form a semiconductor layer having the type of conductivity opposite to that of the semiconductor layer of the one impurity type;
accelerating the impurity ions by giving them kinetic energies;
implanting the impurity ions in the semiconductor layer of the one impurity type to form an ion-implanted semiconductor layer of the other impurity type; and
forming an upper terminal electrode on at least a part of the upper surface of the semiconductor layer of the other impurity type, the upper terminal electrode being formed of a metal film such as can produce an ohmic contact with the semiconductor layer of the other impurity type.

4,120,701

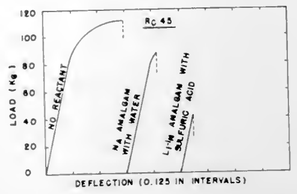
REACTANT FOR STEEL

Clarence H. Walker, Jr., Phoenix, Ariz., and William B. Steward, Jr., Haddon Heights, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 25, 1966, Ser. No. 576,178
Int. Cl.[2] C22F *3/00;* **C22C** *7/00*
U.S. Cl. 148—4 **6 Claims**

1. A method for diminishing the strength and ductility of steel comprising contacting said steel with a lithium-indium amalgam containing a small amount of sulfuric acid.

5. A reactant for diminishing the strength and ductility of steel consisting essentially of an amalgam containing about 0.75



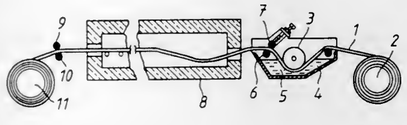
to 1.25 weight percent lithium, about 0.25 to 0.75 weight percent indium, and a small amount of sulfuric acid.

4,120,702

TREATING A SILICON STEEL MATERIAL HAVING A SILICATE PROTECTIVE COATING THEREON WITH AN AQUEOUS SOLUTION CONTAINING PHOSPHATES TO FORM A FURTHER PROTECTIVE COATING

Carl Artur Åkerblom, Surahammar, Sweden, assignor to Asea Aktiebolag, Sweden

Filed Jul. 6, 1977, Ser. No. 813,255
Claims priority, application Sweden, Oct. 29, 1976, 7612028
Int. Cl.[2] C23F *7/10*
U.S. Cl. 148—6.15 R **16 Claims**



1. A process for reinforcing a silicon steel material which has an alkaline earth metal silicate protective layer thereon comprising the steps of coating the alkaline earth metal silicate protective layer with an aqueous solution containing colloidal or suspended silica; 10–200 parts by weight phosphate ions, based on 100 parts by weight of silica calculated as SiO_2 without water; 2–20 parts by weight of ions selected from the group consisting of iron and manganese ions, or both; and an amount of negative ions which deviates from an equivalent amount of hydrogen ions in the solution by a maximum of 40 percent and which are capable of converting to volatile products at temperatures of below 400° C; and then heating the coated silicon steel material to form a further protective phosphate layer over the alkaline earth metal silicate protective layer.

4,120,703

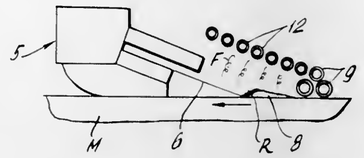
METHOD AND APPARATUS FOR REDUCING SMOKE AND PREVENTING SECONDARY FINS DURING SCARFING

Stephen August Engel, Shenorock, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 608,987, Aug. 29, 1975, abandoned. This application Aug. 26, 1977, Ser. No. 828,204
Int. Cl.[2] B23K *7/06*
U.S. Cl. 148—9.5 **24 Claims**

1. In a thermochemical scarfing process wherein (a) a stream of scarfing oxygen is directed against a reaction zone of molten metal on the surface of the metal workpiece to produce a thermochemical reaction thereon, and (b) relative movement is provided between the oxygen stream and the workpiece to continue the reaction along the metal surface to produce the desired scarfing cut, said reaction forming a molten puddle in front of the advancing reaction zone that tends to grow larger as the cut progresses, the improvement comprising:

(c) directing at least one stream of non-reactive fluid so as to form a fluid sheet-like curtain that provides a cover over



the reaction zone and at least the rear portion of the molten puddle in such manner that said curtain forms a pocket with the surface of the workpiece.

4,120,704

MAGNETIC ALLOY AND PROCESSING THEREFOR

Richard L. Anderson, Marengo, Ill., assignor to The Arnold Engineering Company, Marengo, Ill.

Filed Apr. 21, 1977, Ser. No. 789,747
Int. Cl.[2] C21D *1/04;* **C22C** *38/30*
U.S. Cl. 148—103 **24 Claims**

1. In a process for producing an iron-base magnetic alloy having, by weight, from 3 to 19% cobalt, at least 10% chromium, from 10 to 40% of at least one element from the group consisting of chromium, vanadium, titanium, columbium, aluminum, silicon, molybdenum, tungsten and zirconium, up to 0.1% carbon, up to 0.1% nitrogen and up to 1.0% of elements from the group consisting of magnesium and calcium; which process includes the steps of: preparing a melt of said alloy, casting said alloy, hot working said alloy, and heat treating said alloy so as to develop its magnetic properties; the improvement comprising the steps of: incorporating in said melt more than 0.01% of at least one rare earth element from the group consisting of yttrium, lanthanum and the elements from the lanthanide series, and refining said metal so as to remove undesirable products resulting from reaction between said rare earth addition and undesirable impurities, said rare earth addition and refining improving the hot ductility of said metal; said heat treated magnetic alloy having no more than 0.5% of said rare earth addition and no more than 1.0% manganese.

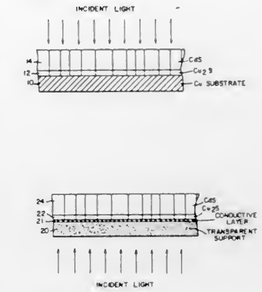
4,120,705

VACUUM DEPOSITION PROCESS FOR FABRICATING A CDS—CU_2S HETEROJUNCTION SOLAR CELL DEVICE

Fred A. Shirland, Franklin Township, Westmorland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 563,420, Mar. 28, 1975, abandoned. This application Feb. 11, 1976, Ser. No. 657,136
Int. Cl.[2] H01L *21/363, 31/04*
U.S. Cl. 148—174 **2 Claims**

1. A method for making an epitaxial heterojunction device comprising the steps of:
(a) heating a substrate having an electrically conductive surface in a vacuum chamber to a temperature range of about 200° C to about 435° C;
(b) vapor depositing a crystalline layer of Cu_2S on said conductive surface from starting material maintaining close to a stoichiometric ratio of two copper atoms to one sulfur atom while maintaining said temperature range; and



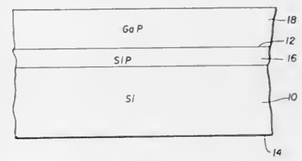
(c) halting step (b) and abruptly initiating vapor deposition of a crystalline layer of Cds on said crystalline layer of Cu_2S while maintaining said temperature range.

4,120,706

HETEROEPITAXIAL DEPOSITION OF GAP ON SILICON SUBSTRATES

Donald R. Mason, Indialantic, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Sep. 16, 1977, Ser. No. 833,935
Int. Cl.[2] H01L *21/205, 21/302, 29/26*
U.S. Cl. 148—175 **17 Claims**



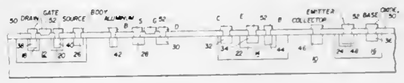
1. A method of forming a gallium phosphide layer on a silicon substrate comprising:
(a) prebaking said substrate in palladium diffused hydrogen;
(b) treating (111) plane of said silicon substrate with a phosphide in the range of 1100° C. to 1140° C. to form a silicon phosphide surface; and
(c) epitaxially depositing gallium phosphide on said silicon phosphide surface at a reduced temperature.

4,120,707

PROCESS OF FABRICATING JUNCTION ISOLATED IGFET AND BIPOLAR TRANSISTOR INTEGRATED CIRCUIT BY DIFFUSION

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Mar. 30, 1977, Ser. No. 782,694
Int. Cl.[2] H01L *27/02, 21/225, 21/20, 29/72*
U.S. Cl. 148—186 **14 Claims**



1. A process for fabricating junction isolated, integrated circuits including bipolar and insulated gate field effect transistors in a surface of an N-type substrate without forming junction isolation regions comprising the steps of:

diffusing impurities into said surface to form spaced P-type body region and collector region in said substrate, said P-type regions having a first surface impurity concentration and a first depth sufficient to produce a low impurity gradient;
diffusing impurities into said surface to form spaced N-type source and drain regions in said P-type body region and base region in said P-type collector region, said N-type regions having a second surface impurity concentration and a second depth sufficient to produce a lower impurity gradient at junction with said P-type regions;
diffusing impurities into said surface to form spaced P-type source and drain regions in said N-type substrate and an emitter region in said N-type base region; and
diffusing impurities into said surface to form N-type contact regions in said N-type base, source and drain regions.

4,120,708

NONMETALLIZED SOLID FLUORINE OXIDIZER GAS GENERATOR

Joseph E. Flanagan, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 732,243, Oct. 14, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,446
Int. Cl.[2] C06B *45/08*
U.S. Cl. 149—17 **1 Claim**

1. A solid propellant composition for chemical laser applications comprising:
the fluorine oxidizing salt NF_4PF_6;
a material serving simultaneously as an augmenting fuel and sequestering agent, said material being selected from the group consisting of NaN_3, Na_3N and mixtures thereof; and polyphosphonitrile as a polymer fuel.

4,120,709

TECHNIQUE FOR IMPROVING PROCESSIBILITY OF CERTAIN COMPOSITE PROPELLANTS BY CALCINING THE IRON OXIDE BURNING RATE CATALYST

James W. Hamner; James O. Hightower, both of Huntsville, and Carl M. Rector, New Market, all of Ala., assignors to Thiokol Corporation, Newtown, Pa.

Filed Apr. 25, 1973, Ser. No. 354,293
Int. Cl.[2] C06B *45/10*
U.S. Cl. 149—19.92 **3 Claims**

1. A method of lengthening the processing pot life of a hydroxy terminated isocyanate cured polymer propellant containing ammonium perchlorate, aluminum powder and iron oxide which comprises the use of iron oxide which has been calcined at a temperature in the range of from 225° C. to 850° C. inclusive prior to admixture into the propellant.

4,120,710

NITROALIPHATIC DIFLUOROFORMALS

Howard M. Peters, Palo Alto, and Robert L. Simon, Jr., San Carlos, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 16, 1975, Ser. No. 641,320
The portion of the term of this patent subsequent to Nov. 25, 1992, has been disclaimed.
Int. Cl.[2] C06B *25/00*; C07C *43/04*
U.S. Cl. 149—88 **6 Claims**

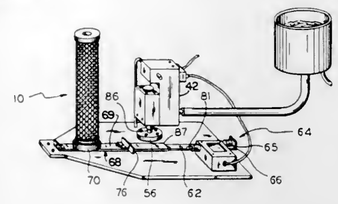
1. A nitroaliphatic difluoroformal of the formula $RCH_2OCF_2OCH_2R'$ wherein R = $FC(NO_2)_2$— and R' = $F_2C(NO_2)$— or CF_3—; or R = R' $CF_3OCH_2C(NO_2)_2$—.

4,120,711

PROCESS FOR SEALING END CAPS TO FILTER CARTRIDGES

William J. Gudeman, Elgin, Ill., assignor to Universal Water Systems, Inc., West Chicago, Ill.

Filed Sep. 30, 1977, Ser. No. 838,140
Int. Cl.[2] B29C *27/00*; B65C *11/04*
U.S. Cl. 156—69 **10 Claims**



1. A method for adhesively sealing annular, cup-shaped end caps to a cylindrical cartridge of filter material comprising the steps of:
providing an annular end cap receiving means, said end cap receiving means being generally cup-shaped in cross-section and being adapted for receiving an end cap, the inner surface of said receiving means being presented upwardly and said receiving means being slidably mounted on an elongate track for movement between first and second positions;
providing means for dispensing a preselected quantity of a liquid adhesive into said receiving means when said receiving means is in said first position in response to a signal;
providing means for generating said signal when said receiving means is moved to said first position;
placing an end cap in said receiving means so that the inner surface thereof is presented upwardly, moving said receiving means to its first position and dispensing said quantity of molten adhesive therein while said receiver is stationary;
moving said receiving means to its second position;
inserting one end of said cylindrical cartridge into said adhesive containing end cap under sufficient pressure to spread said adhesive over the end thereof while said adhesive is still in a molten condition; and
hardening said adhesive to seal end cap to said cartridge.

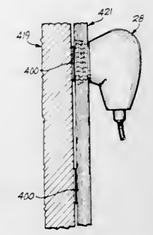
4,120,712

METHOD OF SECURING TWO NON-METAL SURFACES TOGETHER USING A HOT MELT TYPE FASTENER HEATABLE BY INDUCTION HEATING

Melvin R. Sindt, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 559,341, Mar. 17, 1975, Pat. No. 3,996,402, which is a continuation-in-part of Ser. No. 448,110, Mar. 4, 1974, abandoned, which is a division of Ser. No. 331,724, Feb. 12, 1973, Pat. No. 3,845,268. This application Dec. 11, 1975, Ser. No. 639,678
Int. Cl.[2] B29C *27/00*; E04F *13/00*
U.S. Cl. 156—71 **1 Claim**

1. The method of securing a sheet of nonmetallic panelling to a nonmetallic support structure which comprises:
selecting a hot melt type fastener having a pressure contact sensitive outer surface portion, a pair of sheets of heat activatable material and an inner eddy current conducting sheet, said eddy current conducting sheet disposed between said pair of sheets of heat activatable material, said pressure contact sensitive outer surface portion comprising a coating disposed on a first of said pair of sheets;
positioning said fastener with the pressure contact sensitive outer surface portion thereof against said support structure;
applying pressure between said outer surface portion and said support structure by applying forces against said fastener;
removing said pressure;
positioning said sheet of panelling against said nonmetallic



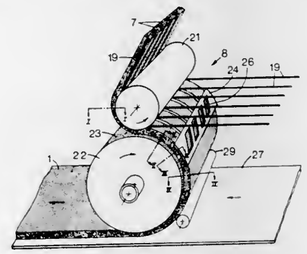
support structure in overlying relationship with respect to said fastener;
positioning an induction heater apparatus against said sheet of panelling and in overlying relationship with respect to said fastener; then
energizing said induction heater to transmit electrical energy and induce eddy currents in said eddy current conducting sheet for a predetermined time period.

4,120,713

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF A FIBROUS WEB-LIKE PILE PRODUCT

Finn Ulrik Hansen Jensen, Skanderborg; Per Drengsgaard Nielsen, Braedstrup, and Esben Bruhn, Hov, all of Denmark, assignors to A/S Weston Taeppefabrik, Denmark

Filed Jun. 14, 1977, Ser. No. 806,371
Claims priority, application Denmark, Jun. 21, 1976, 2781/76
Int. Cl.[2] B32B *31/18*
U.S. Cl. 156—72 **9 Claims**



1. A process for the continuous production of a fibrous web-like pile product consisting of fibers oriented substantially at right angles to the two main surfaces of the web, starting from a primary fibrous web in which the fibers are oriented substantially along the main surfaces of the web either transversely or longitudinally of the web, comprising the steps of cutting the primary web into strips consisting of cut-off fibers, arranging the strips side by side with the cut-off fibers standing on end and conveying them in this side-by-side relationship to a first depositing position, depositing the strips in the first depositing position onto a moving intermediary supporting arcuate surface having perforations, sucking air through said perforations by creating a vacuum on the side of said intermediary supporting surface facing away from the strips, thereby creating on the strips an attractive force sufficient to hold them attached thereto while being inverted by the supporting surface, at the same time guiding the afflux of air to the intermediary supporting surface through the web formed by the strips at least over part of the travel of the latter on the intermediary supporting surface in such a manner as to subject the fibers forming the strips to a spreading effect transversely of the strips, and thereafter depositing the fibers in inverted position at a second depositing position onto a moving product receiving surface while at the same time interrupting the suction acting on the fibers being deposited.

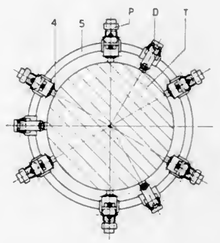
4. An apparatus for the continuous production of a fibrous web-like pile product consisting of fibers oriented substantially at right angles to the two main surfaces of the web, starting from a primary fibrous web in which the fibers are oriented substantially along the main surfaces of the web either transversely or longitudinally of the web, said apparatus comprising means for cutting the primary web into strips consisting of cut-off fibers, arranging the strips side by side with the cut-off fibers standing on end and conveying them in this side-by-side relationship to a first depositing position, characterized in that it comprises a movable element constituting a perforated intermediate supporting arcuate surface arranged to receive said strips in said first depositing position and to convey them to a second depositing position for deposition in inverted position on a moving product receiving surface, means active between said first and second depositing positions for producing an attractive force acting on the strips in a direction towards said intermediate supporting surface to retain the strips thereon and for subjecting the fibers of the strips to a spreading action directed towards the spaces between the strips while said strips are being inverted by said supporting surface.

4,120,714

APPARATUS FOR SETTING BEAD RINGS ON THE CARCASS OF A VEHICLE TIRE

Bruno Colombani, and Antonio Pacciarini, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 21, 1977, Ser. No. 789,638
Claims priority, application Italy, May 12, 1976, 23171 A/76
Int. Cl.[2] B29H *17/12*
U.S. Cl. 156—131 **16 Claims**



1. A method for assembling reinforcement rings of the casing beads of a tire wherein casing fabrics are wound around a cylindrical drum of the expandable type, the rings are centered in a plane normal to the axis of said drum in a position coaxial to the latter, the ring is locked axially on both sides thereof in the centered position by means of a pliers-style grasping device which is axially shiftable, the rings are fitted onto said drum by axially shifting said device into a pre-set position along the longitudinal development of the drum which position is fixed with respect to the adjacent extremity of said drum, and which leaves both extremities of said casing fabrics axially protruding towards the exterior with respect to the whole complex of said rings, the said casing fabrics are expanded by expansion of said drum and are pressed against the radially internal surface of said rings, said locking device is thereafter removed, characterized in that it comprises at least the following steps:
(1) said rings are centered by means of radial thrusts directed

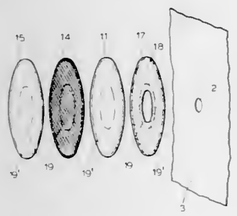
towards the exterior and brought to bear on at least three distinct points on the radially internal surface of said ring;
(2) carrying out on said ring, after said centering but before said locking thereof the further step, preliminary to said fitting of said ring onto said drum, of reviving the adhesiveness of said ring, at least on most of its radially internal surface;
(3) said locking device accompanying the drum surface under expansion at one side of said ring and said locking device being removed only when said casing fabric has radially surpassed the ring on both sides.

4,120,715

METHOD OF MANUFACTURING A FILTER FOR USE IN VENTING COLOSTOMY OR ILEOSTOMY APPLIANCES

Malcolm Charles Ockwell; Patrick Hugh McLeod, and Peter James Briggs, all of London, England, assignors to Matburn (Holdings) Limited, London, England

Filed Jun. 30, 1977, Ser. No. 811,532
Claims priority, application United Kingdom, Jul. 6, 1976, 27974/76
Int. Cl.² A61F *5/44;* B32B *31/18, 31/20*
U.S. Cl. 156—252 **4 Claims**



2. A method of making a filter for use in venting a colostomy or ileostomy bag, the process comprising passing a sheet of release paper and a backing film adhered thereto by a layer of adhesive through a punching station; punching a hole through the release paper and backing film; forming an assembly comprising a first sheet of gas-permeable and water-impermeable, spun-bonded material, a second sheet of gas-permeable, spun-bonded material, a sheet of carbon cloth between the first and second sheets, and the sheet of release paper, and adhered backing film, adjacent the first sheet; passing the assembly to a heat-sealing station; heat sealing the backing film and the first and second sheets together by an annular weld extending through the carbon cloth to define a filter comprising the first and second sheets with the carbon cloth therebetween and the release paper and adhered backing film, the backing film being directly welded to the first sheet; and punching out the welded filter from the remainder of the assembly.

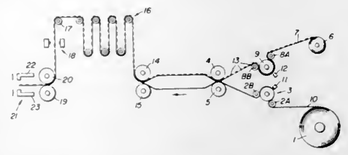
4,120,716

METHOD OF APPLYING PRINTED LABELS TO FLEXIBLE ENVELOPES USING CORONA DISCHARGE TREATMENT

Robert André Bonet, Epernon, France, assignor to W. R. Grace & Co., Duncan, S.C.

Filed Jun. 3, 1977, Ser. No. 802,997
Claims priority, application United Kingdom, Jun. 3, 1976, 23042/76
Int. Cl.² B29C *19/02;* B32B *31/00*
U.S. Cl. 156—272 **6 Claims**

1. A method of applying printed labels to flexible envelopes comprising
(a) providing a first flattened tubular thermoplastic film material and sealing it transversely at periodic intervals and then severing the sealed tubing at periodic intervals so as to construct a flexible envelope having a sealed bottom and open top,
(b) forming printed labels by printing a series of repetitive indicia on a second sheet of thermoplastic film the width of each of said indicia being less than the width of one side of said flattened tubing,
(c) subjecting a face of the printed labels and at least a portion of the first film material having the same dimensions as said labels to a corona discharge treatment, and



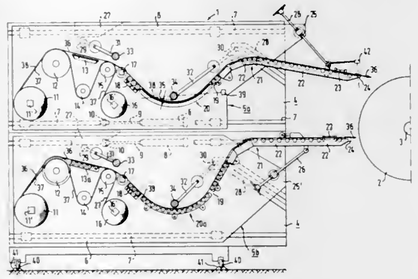
(d) bringing the treated face of the printed labels into contact with the treated part of the said first film material to bond the printed labels to the said first film material either before, during or after formation of the flexible envelope, and wherein
the step of bringing into contact is carried out without generalized application of heat.

4,120,717

LOADING DEVICE FOR A TIRE ASSEMBLY DRUM

Harry Rost, Munich, Germany, assignor to Metzeler Kautschuk AG, Munich, Germany

Filed May 26, 1977, Ser. No. 800,913
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2623638
Int. Cl.² B29H *17/20*
U.S. Cl. 156—405 R **17 Claims**



1. A loading device for supplying cord strips, intended for the belt or body of a tire, to a tire assembly drum, the loading device being comprised of at least one guide unit, said at least one guide unit comprising:
a storage roll, said storage roll being adapted to store said cord strip and a backing strip;
a deflecting means receiving said cord strip and backing strip from said storage roll;
initial separating means for separating said cord strip from said backing strip;
a take-up roller means temporarily reuniting said cord strip and said backing strip;
final separating means for separating said cord strip from said backing strip and for storing said removed backing strip;
compensating loop means for forming said cord strip into a short loop, said compensating loop means comprising a curved cage means including sliding guide surfaces;

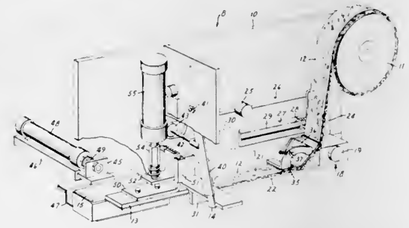
feed means for feeding said cord strip onto said tire assembly drum, said compensating loop means being rigidly positioned between said final separating means and said feed means;
drive means for driving each said respective means; and
extensible positioning guides for longitudinally positioning said guide unit relative to said tire assembly drum.

4,120,718

APPLICATOR FOR HEAT-ACTIVATABLE TAPE

Mark G. Hudalla, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 615,774, Sep. 22, 1975, Pat. No. 4,019,948.
This application Feb. 18, 1977, Ser. No. 770,182
Int. Cl.² B32B *31/00*
U.S. Cl. 156—499 **1 Claim**



1. A tape applicator for applying a length of material coated with a heat-activatable adhesive to a receptor surface, said applicator comprising
movable support pad means for supporting a length of said material,
means for moving said pad means from a first receiving position to a second applying position to apply said length of material to the receptor surface,
heater block means for making wiping contact with the adhesive-coated surface of said length of material supported on said pad means for activating said adhesive before the length of material is placed into contact with said receptor surface, said heater block means comprising a bar of metal having a longitudinal axis and having a bore disposed parallel with said axis,
a heating unit disposed within said bore which is thermostatically controlled to maintain a high surface temperature on said bar of metal, and
spring means supporting said bar of metal for urging the same toward said pad means during wiping contact between said block means and the adhesive of a length of material on said pad means to afford intimate contact between said bar of metal and said adhesive.

4,120,719

CEMENTED CARBONITRIDE ALLOYS CONTAINING TANTALUM

Toshio Nomura; Tsuyoshi Asai; Takaharu Yamamoto, and Akio Ilara, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Dec. 6, 1976, Ser. No. 747,689
Int. Cl.² B22F *3/00;* C22C *29/00*
U.S. Cl. 75—238 **5 Claims**

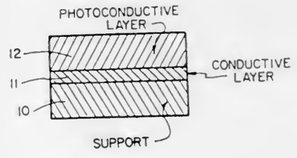
1. A cemented carbonitride alloy comprising refractory metallic components and non-metallic components for forming mainly a hard phase with an iron group metal for binding the hard phase, in which the refractory metallic components are titanium, tantalum, tungsten and molybdenum, the non-metallic components are nitrogen and carbon, the proportion of nitrogen being 5 to 40% by weight of the non-metallic components, the total amount of the non-metallic components being 0.8 to 1.0 times as much as that of the refractory metallic components by atomic ratio and the hard phase consisting of a carbonitride free from a phase consisting of tungsten carbide only and which alloy contains 3 to 25% by weight of the binder metal, at least 20% by weight of titanium, 5 to 40% by weight of tungsten and molybdenum, the ratio by weight of the sum of tungsten carbide and molybdenum carbide to all the carbides added as raw materials being less than 0.5, and 3 to 40% by weight of tantalum.

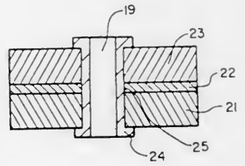
4,120,720

COMBINED MEANS FOR ACCURATELY POSITIONING ELECTROSTATOGRAPHIC RECORDING MEMBERS DURING IMAGING AND MEANS FOR ESTABLISHING ELECTRICAL CONNECTION WITH THE INTERMEDIATE CONDUCTIVE LAYER THEREOF

Frank C. Gross, Wilbraham, Mass., assignor to Scott Paper Company, Philadelpia, Pa.

Filed Jan. 18, 1974, Ser. No. 434,399
Int. Cl.² G03G *5/04;* C23B *5/50;* B41M *3/08;* H02G *3/04*
U.S. Cl. 96—1.5 N **10 Claims**





1. In an electrostatographic recording member comprising at least:
(1) an electrically-insulating substrate;
(2) an electrically-conductive intermediate layer overlying a first surface of said substrate; and
(3) an electrically-insulating outer layer overlying said conductive layer, said outer layer containing a photoconductive material or being composed of a dielectric material of high volume resistivity;
the improvement comprising a combined means for accurately positioning said recording member during imaging thereof and for establishing an electrical ground connections to said intermediate conductive layer, said combined means comprising at least two separate holes through said recording member in a non-image area thereof and a conductive lacquer coating on the inner surface of at least one of said holes, said holes being adapted to receive protrusions during imaging to accurately position said recording member and said conductive lacquer being in electrical contact with the exposed intermediate conductive layer on the inner surface of said hole.

4,120,721

RADIATION CURABLE COMPOSITIONS FOR COATING AND IMAGING PROCESSES AND METHOD OF USE

Arthur Donald Ketley, Columbia, Md.; Paul Richard Hein, and Michael Wen-Chien Yang, both of Marietta, Ga., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jun. 2, 1977, Ser. No. 802,706
Int. Cl.[2] B05D *3/06*
U.S. Cl. 96—36.3 **8 Claims**

1. A liquid radiation curable composition comprising
(1) 10 to 80% by weight of an acrylic or methacrylic terminated, urethane containing polyene,
(2) 5 to 60% by weight of a non-water soluble vinyl monomer diluent,
(3) 0.1 to 35% by weight of a polythiol and
(4) 0.01 to 10% by weight of a photoinitiator,
which forms a solid cured polythioether on exposure to actinic or high energy ionizing radiation.

4. The process of forming a printing plate which comprises exposing to actinic radiation projected through an image-bearing transparency selected portions of a radiation curable composition comprising
(1) 10 to 80% by weight of an acrylic or methacrylic terminated, urethane containing polyene,
(2) 5 to 60% by weight of a non-water soluble vinyl monomer diluent,
(3) 0.1 to 35% by weight of a polythiol and
(4) 0.01 to 10% by weight of a photoinitiator for a time sufficient to insolubilize the radiation curable composition in the exposed portions and thereafter removing the unexposed radiation curable composition.

7. The process of forming a coating on a substrate which comprises applying to the surface of a substrate a layer of a composition comprising
(1) 10 to 80% by weight of an acrylic or methacrylic terminated, urethane containing polyene,
(2) 5 to 60% by weight of a non-water soluble vinyl monomer diluent,
(3) 0.1 to 35% by weight of a polythiol and
(4) 0.01 to 10% by weight of a photoinitiator and thereafter exposing the layer to actinic radiation thereby curing said composition.

4,120,722

THERMAL DEVELOPMENT OF IMAGED LIGHT-SENSITIVE RECORDING MATERIAL USING MICROWAVES

Yoshihiko Okamoto, and Takahiro Ohta, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 596,124, Jul. 15, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,385
Claims priority, application Japan, Jul. 15, 1974, 49-81361
Int. Cl.[2] G03C *5/34, 5/24*
U.S. Cl. 96—49 **5 Claims**





1. A process for thermal development which comprises irradiating with microwaves an imagewise light exposed thermally developable light-sensitive recording material comprising a support having a conductive material dispersed therein and a thermally developable light-sensitive recording layer on the support and in thermal contact therewith, said support having a surface electric resistence ranging from about 1 ohm/□ to about 10^5 ohm/□, whereby the heat generated in said support develops said thermally developable recording material.

4,120,723

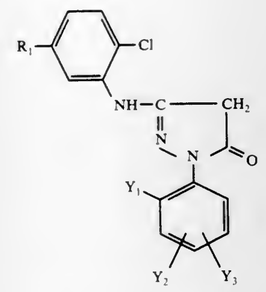
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT

Hiroshi Hara, and Kotaro Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

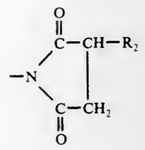
Filed Jun. 13, 1977, Ser. No. 805,959
Claims priority, application Japan, Jun. 11, 1976, 51-69147
Int. Cl.[2] G03C *1/40, 1/76*
U.S. Cl. 96—74 **22 Claims**

1. A color photographic light-sensitive silver halide element comprising a support having thereon a photographic layer containing (a) at least one magenta coupler represented by the general formula (II):

(II)



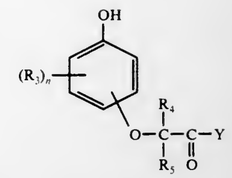
wherein Y_1 represents a halogen atom, an alkyl group having 1 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms; Y_2 and Y_3, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group having 1 to 5 carbon atoms or an alkoxy group having 1 to 5 carbon atoms; R_1 represents R_2CONH—, R_2OOC—, R_2NHSO_2— or



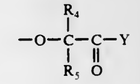
wherein R_2 represents a hydrogen atom, a straight chain or branched chain alkyl group, having 1 to 35 carbon atoms, an alkenyl group having 2 to 22 carbon atoms, a cycloalkyl group having 5 to 22 carbon atoms, an aralkyl group having 7 to 22 carbon atoms or a cycloalkenyl group having 5 to 22 carbon atoms, and

(b) at least one color image stabilizer represented by the general formula (III):

(III)



wherein R_3 represents a hydrogen atom, an alkyl group having 1 to 35 carbon atoms, an alkenyl group having 1 to 22 carbon atoms, a cycloalkyl group having 5 to 22 carbon atoms, an aralkyl group having 7 to 22 carbon atoms, a cycloalkenyl group having 5 to 22 carbon atoms and an aryl group having 6 to 35 carbon atoms; *n* represents an integer of 1 to 4 and where *n* is 2 to 4, the R_3 groups may be the same or different; the



group is substituted at a position unsubstituted with R_3 and wherein R_4 and R_5, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 35 carbon atoms, an alkenyl group, a cycloalkyl group, an aralkyl group or a cycloalkenyl group; and Y represents a hydrogen atom, an alkyl group having 1 to 35 carbon atoms, an alkenyl group, an aralkyl group, a cycloalkyl group, a cycloalkenyl group, an aryl group having 6 to 35 carbon atoms, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an arylamino group, an alkylamino group, a cyclic amino group, a heterocyclic amino group or a hydroxy group.

8. The color photographic light-sensitive element as claimed in claim 1, wherein said photographic layer is a green-sensitive silver halide emulsion layer.

10. The color photographic light-sensitive element as claimed in claim 8, further including a blue-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer on said support.

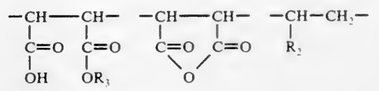
4,120,724

SUBBING MATERIAL FOR STYRENE BASES USED IN PHOTOGRAPHIC ELEMENTS

Sumitaka Tatsuta; Nobuo Yamamoto, and Nobuo Tsuji, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 561,505, Mar. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 402,692, Oct. 2, 1973, abandoned. This application Feb. 18, 1977, Ser. No. 770,147
Claims priority, application Japan, Oct. 2, 1972, 47-98821
Int. Cl.[2] G03C *1/78*
U.S. Cl. 96—87 A **20 Claims**

1. A method for manufacturing a photographic material which comprises coating a subbing composition in layer form on a styrene-based polymer support, said composition consisting essentially of 5g or less per m^2 of said support of a complete or partial reaction product of: materials consisting essentially of (a) a copolymer of styrene or vinyl acetate with maleic anhydride which contains 40–50% by weight of maleic anhydride with (b) water or a hydroxy compound represented by the general formula R_1—OH wherein R_1 is a monovalent hydrocarbon group having 1 to 12 carbon atoms or monovalent organic group having 2–12 carbon atoms and consisting of at least two hydrocarbon fragments and at least one ether linkage between said hydrocarbon fragments, at least 30% of the maleic anhydride units of said copolymer being reacted with the water or the hydroxy compound thereby obtaining a reaction product consisting essentially of the following recurring units:



in which R_3 is a hydrogen atom or a group defined by R_1, R_2 is a phenyl group or a —$OCOCH_3$ group and the amount of the maleic anhydride unit in said copolymer may be zero, and coating a hydrophilic photographic composition containing a hydrophilic resin binder in layer form on the subbing layer, where the resulting hydrophilic photographic composition layer is selected from the group consisting of (1) a layer containing silver halide, (2) a layer containing physical developing nuclei to serve as a receiving layer in diffusion transfer photography, a hydrophilic photographic curl preventing backing layer or a hydrophilic photographic anti-halation backing layer, where a compound containing at least two epoxy groups per molecule is contained in a proportion of from 10 to 500% by weight based on the weight of said copolymer in at least one of the subbing composition or the hydrophilic photographic composition.

4,120,725

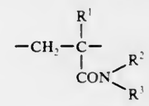
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kiyoshi Nakazyo; Shinji Sakaguchi, and Nobuo Tsuji, all of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 24, 1977, Ser. No. 771,704
Claims priority, application Japan, Feb. 24, 1976, 51-19214
Int. Cl.[2] G03C *1/10, 1/40*
U.S. Cl. 96—97 **9 Claims**

1. A color photographic light-sensitive material having at least one gelatin silver halide emulsion layer containing an organic solvent dispersed therein, wherein said solvent contains a hydrophobic coupler and a polymer having a recurring unit represented by the following general formula (I):

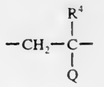
(I)



wherein R^1 represents a hydrogen atom or a lower alkyl group, and R^2 and R^3, which may be the same or different, each represents a hydrogen atom, an aliphatic hydrocarbon group, an aromatic hydrocarbon group, an alkyl-substituted amino group or an aryl-substituted amino group, with the proviso that both of R^2 and R^3 are not simultaneously hydrogen atoms, the total number of carbon atoms of R^2 and R^3 is 4 or more, R^2 and R^3 do not contain an acidic group and R^2 and R^3 can combine together to form a ring;

wherein a gelatin continuous phase in said gelatin silver halide emulsion layer contains a polymer having a recurring unit represented by the following general formula (II):

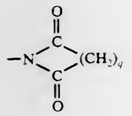
(II)



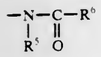
wherein R^4 has the same meaning as defined for R^1; and Q represents:

(1) —$(CH_2)_pOH$

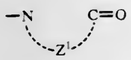
wherein *p* represents 0 or 1,



wherein q represents an integer of 2 to 4,



wherein R^5 represents an alkyl group; and R^6 represents a hydrogen atom or an alkyl group,



wherein Z^1 represents the atoms necessary to form a lactam ring, an oxazolidone ring or a pyridone ring, or



wherein Z^2 represents the atoms necessary to form a morpholine ring.

4,120,726

SILVER-HALIDE EMULSION SENSITIZED WITH AN ASYMMETRICAL DISULFIDE

Gerhard Hanisch, Dessau; Günther Fischer, Leipzig; Seigfried Gahler, Wolfen; Udo Franz, Dessau; Karl Küschel, Mühlbeck; Roland Mayer, Dresden; Günther Bach, and Karl-Wilhelm Jünge, both of Dessau, all of German Democratic Rep., assignors to VEB Filmfabrik Wolfen, German Democratic Rep.

Continuation of Ser. No. 676,592, Apr. 13, 1976, abandoned. This application Aug. 12, 1977, Ser. No. 824,188

Claims priority, application German Democratic Rep., Apr. 15, 1975, 0318542

Int. Cl.[2] **G03C** *1/28*

U.S. Cl. 96—107 **20 Claims**

1. A photographic emulsion comprising a silver-halide and a sensitizing amount of an asymmetrical disulfide of the formula

$$(W)_a(X)_bA\text{-}S\text{-}S\text{-}B(Y)_c(Z)_d$$

wherein A and B are independently a benzyl radical or an alkyl radical containing 1 to 4 carbon atoms; X and Y are independently a carboxyl or a C_1 alkoxycarbonyl group; W and Z are independently amino groups which can be alkylated or acylated with a radical having 1 to 2 carbon atoms; wherein the Y and Z groups are attached to the same or different carbon atoms of the B radical, and the W and X groups are attached to the same or different carbon atoms of the A radical and a, b, c, d are each independently integers from 0 to 1; and the sums of $a + d$ is 1 or 2 and $b + c$ is 1.

4,120,727

POLYMERIC CYANOALKYL ACRYLATE SILVER HALIDE PEPTIZER

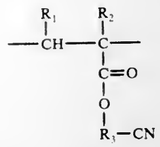
Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 638,818, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 531,801, Dec. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 339,824, Mar. 9, 1973, abandoned. This application Jun. 13, 1977, Ser. No. 806,150

Int. Cl.[2] **G03C** *1/72*

U.S. Cl. 96—114 **7 Claims**

1. A photosensitive silver halide emulsion wherein the silver halide grains have adsorbed on their surface a substantially continuous layer of an emulsion peptizer consisting essentially of a water soluble film-forming polymeric silver halide grain-growing protective colloid having in its structure at least about 0.5 mole percent repeating units of the formula:



wherein R_1 is hydrogen, a lower alkyl group or a halogen; R_2 is hydrogen, a lower alkyl group, halogen or cyano group; and R_3 is a 1 to 6 carbon alkylene group or a 3 to 6 carbon cycloalkylene group.

4,120,728

THERMALLY DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Shinpei Ikenoue, and Takao Masuda, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 491,010, Jul. 23, 1974, abandoned. This application Apr. 26, 1976, Ser. No. 680,417

Claims priority, application Japan, Jul. 23, 1973, 48-82852

Int. Cl.[2] **G03C** *1/02, 1/38*

U.S. Cl. 96—114.1 **54 Claims**

1. A thermally developable light-sensitive material comprising a support having thereon at least one layer containing (a) an organic silver salt, (b) a catalytic amount of a light-sensitive silver halide, (c) a reducing agent and (d) a binder, wherein the improvement comprises utilizing as said light-sensitive silver halide, a silver halide which was prepared in the absence of a protective colloid by mixing a solution of a compound capable of releasing a halide ion and a solution of a compound capable of releasing silver ion in the presence of a surface active agent, said silver halide also having been dispersed in a medium of an emulsion of a slightly water-soluble solvent in water present during the preparation of said light-sensitive silver halide.

4,120,729

NOVEL LOW TEMPERATURE MATURING DENTAL GLAZE

Milagros B. Smyth, East Brunswick Township, Middlesex County, and James Lee-You, East Windsor Township, Mercer County, both f, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Oct. 27, 1977, Ser. No. 846,050

Int. Cl.[2] **A61C** *13/02;* **C03C** *5/00;* **C09K** *3/00*

U.S. Cl. 106—35 **4 Claims**

1. A translucent dental glaze composition suitable for application to a dental porcelain coated metal substrate, said glaze having (a) an average particle size of 10 ± 4 microns and not more than 1% of the particles having a diameter greater than 30 microns, (b) a maturing temperature of from 1400° to 1600° F. and at least about 200° F. lower than the vitrifying temperature of the dental porcelain of the substrate, and (c) a coefficient of thermal expansion of from 9 to 12 × 10^{-6}/° C. which is lower than the coefficient of thermal expansion of the dental porcelain, and consisting essentially of, on a weight basis:

SiO_2	45–52%
B_2O_3	15–20%
Al_2O_3	10–15%
K_2O	3.5–7.5%
Na_2O	12–17%
CaO	0–1%
ZnO	0–1%
F	1–3%

4. In a method for glazing an artificial tooth comprising a dental porcelain coated metal substrate which has been previously fired and ground comprising the steps of coating said tooth with a dispersion of a glaze in a liquid vehicle, drying said tooth to remove said liquid, and firing said dried tooth, the improvement whereby the tooth is fired to a glossy, slightly textured finish at a temperature of from 1400° to 1600° F. and the glaze is a composition according to claim 1.

4,120,730

BIOCOMPATIBLE CERAMIC GLASS

Felix Trojer, Grand Lancy, Switzerland; Grahame Paul O'Connor, West-Wickham, England, and Helmut Tannenberger, Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge, Geneva, Switzerland

Filed Feb. 18, 1976, Ser. No. 659,019

Claims priority, application Switzerland, Feb. 20, 1975, 2132/75

Int. Cl.[2] **C03C** *3/22, 3/04*

U.S. Cl. 106—39.6 **5 Claims**

1. A biocompatible glass ceramic consisting essentially of a Na_2O, CaO and SiO_2 vitreous matrix containing vitreous inclusions in which are dispersed crystals of a compound isomorphous with hydroxyapatite and having the formula $Ca_{(10-x)}M_xSi_xP_{(6-x)}O_{24}F_2$, where x is 2 to 6 and M is a lanthanide or yttrium, and crystals of $Na_2Ca_2Si_3O_9$ and $Ca_3(PO_4)_2.2Ca_2SiO_4$ in said matrix, said crystals being present in an effective amount to permit bonding of said glass ceramic to bone, the glass ceramic being prepared from a mixture having the following molar percentage limits:

SiO_2 = 35 to 50
Na_2O = 20 to 30
CaO = 10 to 30
P_2O_5 = 2.5 to 10
lanthanide or yttrium oxide = 3 to 10
alumina = up to 5
sodium fluoride = up to 10
calcium fluoride = up to 5.

4,120,731

METHOD OF MAKING MOLTEN SILICON INFILTRATION REACTION PRODUCTS AND PRODUCTS MADE THEREBY

William B. Hillig, Ballston Lake, and Charles R. Morelock, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 23, 1976, Ser. No. 660,261

Int. Cl.[2] **C04B** *35/56*

U.S. Cl. 106—44 **3 Claims**

1. Machinable castings having a density of from 1.6 to 2.7 g/cm^3 which are the infiltration products of reaction under vacuum conditions and at a temperature of from 1400° C to 1700° C of molten silicon and a substantially uniform mixture consisting essentially of by volume

(A) from 45% to 90% of particulated carbon having up to an equal proportion by volume based on the volume of (A) of silicon carbide particles, and

(B) from 10% to 55% of particulated boron nitride.

4,120,732

OPTICAL GLASS

Fujio Komorita, Hachioji, and Muneo Nakahara, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho, Sagamihara, Japan

Filed Dec. 12, 1977, Ser. No. 860,024

Int. Cl.[2] **C03C** *3/12, 3/14*

U.S. Cl. 106—47 Q **2 Claims**

1. An optical glass consisting of a composition in weight percent of 10 to less than 17% B_2O_3, 20 to 55% La_2O_3, 0.5 to 38% Gd_2O_3, 0.5 to 32% WO_3, 0 to 10% ZrO_2, 0 to 30% Ta_2O_5, the total of said ZrO_2 and Ta_2O_5 being 2 to 35%, 0 to 5.5% SiO_2, 0 to 5% GeO_2, 0 to 16% Y_2O_3, 0 to 5% Tb_4O_7, 0 to 38% Yb_2O_3, the total of said Y_2O_3, Tb_4O_7, and Yb_2O_3 being 0 to 40%, 0 to less than 2% TiO_2, 0 to 31% Nb_2O_5, 0 to 3% SnO_2, 0 to 5% Al_2O_3, 0 to 5% In_2O_3, 0 to 5% Bi_2O_3, and an oxide or oxides selected from the group consisting of MgO, CaO, SrO, BaO, ZnO and PbO, the amount of or the total amount of said MgO, CaO, SrO, BaO, ZnO and PbO being 0 to less than 2%.

4,120,733

LEAD-FREE GLAZE FOR ALUMINA BODIES

Randy O. Knapp, Cottam, Canada, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Dec. 1, 1977, Ser. No. 856,225

Int. Cl.[2] **C03C** *5/02*

U.S. Cl. 106—48 **6 Claims**

1. A lead-free ceramic glaze for application to sintered high alumina substrates and maturing at temperatures from 1900° to 2200° F. consisting essentially of from 48 to 54 weight percent SiO_2, from 7 to 11 percent Al_2O_3, from 16½ to 20 percent B_2O_3, from 11 to 14 percent BaO, from 2 to 3 percent CaO, from 2 to 2½ percent ZnO, from 4¼ to 5¼ percent Na_2O, and from 0.4 to 1 percent K_2O.

4,120,734

MONOLITHIC REFRACTORY COMPOSITIONS

Taizo Taniguchi; Itsutoshi Iwasaki, both of Kita-kyushu; Toshihiko Takeshige, Shimonoseki; Koji Onizuka, and Soichi Hashiguchi, both of Kita-kyushu, all of Japan, assignors to Taiko Rozai Co. Ltd., Japan

Filed Nov. 8, 1977, Ser. No. 849,531

Claims priority, application Japan, Nov. 26, 1976, 51/142509

Int. Cl.[2] **C04B** *35/66*

U.S. Cl. 106—67 **1 Claim**

1. Monolithic castable refractory compositions used for lining various smelting furnaces or other industrial furnaces, molten metal containers and the like, comprising the following ingredients:

refractory clay:	3 - 12% by weight
metallic aluminum powder (purity = 90% or higher; particle size = 0.074mm or less for 50% or more by weight of the aluminum powder):	0.1 - 5.0% by weight
deflocculating agent:	0.01 ~ 1.0% by weight
coagulant:	1 ~ 8% by weight
reaction inhibitor for aluminum powder:	to be added in a quantity from 0.0 to 0.5% by weight
refractory aggregate with particle size adjusted:	balance

4,120,735

BRICK AND METHOD OF MAKING SAME

Robert H. Smith, Philadelphia, Pa., assignor to Gilbert Associates, Inc., Reading, Pa.

Continuation-in-part of Ser. No. 509,297, Oct. 25, 1974, abandoned. This application Jun. 7, 1976, Ser. No. 693,283
Int. Cl.[2] C04B *35/16*
U.S. Cl. 106—84 2 Claims

1. The method of making a brick or similar fired construction unit comprising mixing about 50 to 60% inorganic substantially non-ferrous residue from municipal incinerators, by weight, which is milled and passed through a 4 mesh screen and composed of non-ferrous metal, glass and other non-metals, with the remainder of coal fly ash together with a binder of about 1 to 4% by weight, of the mixture, shaping, and firing the mixture at a temperature of between about 1700° and 1750° F. for about ½ hour to provide greater compressive strength and less water absorption than ordinary fly ash brick or clay brick with less firing temperature.

4,120,736

OIL WELL CEMENTING PROCESS AND COMPOSITION

Jerry D. Childs, and Roosevelt Love, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 654,497, Feb. 2, 1976, Pat. No. 4,047,567. This application Feb. 28, 1977, Ser. No. 772,715
Int. Cl.[2] C04B *7/35*
U.S. Cl. 106—90 2 Claims

1. A non-gelling hydraulic cement composition having a high degree of predictability containing a retarder for controlling rheology and setting time of hydraulic cement comprising a mixture of hydraulic cement, at least one water soluble hydroxy carboxylic acid and a low molecular weight sulfoalkylated lignin; wherein the weight ratio of said acid to lignin is in the range of about 1:0.1–5; wherein said carboxylic acid is a substantially linear aliphatic acid having at least one terminal carboxyl group in the form of acid, salt or mixtures thereof; and wherein said sulfoalkylated lignin has a molecular weight in the range of about 2,000–10,000 and which is substantially sulfoalkylated on the benzene ring of the lignin molecule in the position ortho to a hydroxy group and the sulfonate group is attached to the ortho position by an alkylidene radical having one to three carbon atoms.

4,120,737

MANUFACTURE OF CALCIUM SULPHATE ALPHA HEMIHYDRATE

John Sorbie Berrie, and Graham Edward Woolley, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 22, 1975, Ser. No. 570,946
Claims priority, application United Kingdom, May 3, 1974, 19444/74
Int. Cl.[2] C04B *11/00*
U.S. Cl. 106—109 9 Claims

1. A process for the manufacture of calcium sulphate alpha-hemihydrate which comprises the step of reacting an aqueous solution of calcium chloride which is the calcium chloride/-sodium chloride containing liquor produced as a waste effluent in the ammonia soda process and sulphuric acid in an aqueous system at a temperature which is above the calcium sulphate hemihydrate/calcium sulphate dihydrate (gypsum) transition temperature under the reaction conditions.

4,120,738

LIGHT WEIGHT AGGREGATE AND METHOD FOR MAKING SAME

Dan C. Tate, Canton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 11, 1977, Ser. No. 841,011
Int. Cl.[2] C08L *97/00*
U.S. Cl. 106—288 Q 7 Claims

1. A method for producing a light weight aggregate comprising the steps of

composing a mixture of caustic extract filtrate obtained from a kraft pulping process with fly ash and water to produce a wet agglomerate;

forming the wet agglomerate into discrete bodies; and

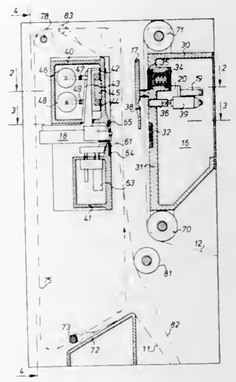
burning said bodies to form said light weight aggregate.

4,120,739

BUTT SPLICER FOR BUTT-JOINING A FRESH WEB TO A PROGRESSING WEB

Emiel Adriaan Peeters, s'Gravenwezel, and Willy Lodewijk Pauwels, Schelle, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 2, 1976, Ser. No. 738,049
Claims priority, application United Kingdom, Nov. 19, 1975, 47696/75
Int. Cl.[2] B65H *21/00*; G03D *15/04*
U.S. Cl. 156—506 14 Claims



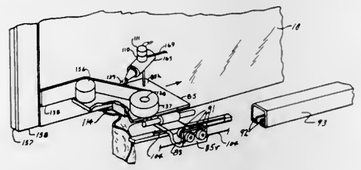
1. A butt splicer for butt-joining a fresh web to an expiring web, said splicer having portions thereof arranged to define adjacent aligned superposed paths for the webs, which splicer comprises relatively displaceable clamping means for clamping, preparatory to splicing, said web portions firstly along a common path and subsequently along separate paths, considered according to the direction of movement of the webs, cutter means arranged for displacement transversely of the webs for cutting both webs progressively transversely along a first line situated on said common path and for cutting one of said webs along a second line situated on a said separate path, means for removing the strip of said one web which is located between the two lines of cut, and means for applying a tape splice to the adjacent end portions of the webs produced by the cutting of the webs along said first line, while the webs are still clamped by the clamping means.

4,120,740

TAPE APPLICATOR FOR DRAPERY TABLER

Ronald Wade Morgan, 9509 Tiverton Way, Louisville, Ky. 40222, and David Lane Witherspoon, 2104 Evergreen Rd., Anchorage, Ky. 40223

Continuation-in-part of Ser. No. 648,166, Jan. 12, 1976, Pat. No. 3,996,083, which is a continuation-in-part of Ser. No. 505,619, Sept. 13, 1974, abandoned.
Filed Nov. 24, 1976, Ser. No. 744,646
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—522 7 Claims



1. A drapery manufacturing device, including:

A. a frame, having first and second spaced, plane-defining, parallel guide tracks;

B. a trolley, transversely spanning said tracks and movably connected thereto with respect to said frame and including a transverse member;

C. means on said transverse member of said trolley to grasp the hem edge of a panel to be formed into a drapery and to hold said panel in a plane on movement of said trolley with respect to said frame;

D. drive means to move said trolley with respect to said frame; and

E. reference means defining a reference plane adjacent to the lower end of said frame,

F. the improvement of a tape applicator means mounted adjacent to the lower end of said frame for transverse movement relative to said frame to adhesively apply one face of a reinforcing tape along the lower portion of said drapery panel so that said drapery panel may be folded over on itself along the line formed by said tape in such manner that said tape is sandwiched between the two layers of said panel to be secured to said layers of said panel and form a reinforced heading for said drapery panel.

4,120,741

CARTON SEALING STRIP APPLICATOR

Hans Rolf Ingemar Linnér, Helsingborg, Sweden, assignor to AB Akerlund & Rausing, Lund, Sweden

Continuation of Ser. No. 777,722, Mar. 15, 1977, Pat. No. 4,069,093. This application Oct. 17, 1977, Ser. No. 842,571
Claims priority, application Sweden, Nov. 12, 1976, 7612636
Int. Cl.[2] B26D *5/00*; B31B *1/72*
U.S. Cl. 156—522 8 Claims

1. Sealing strip applicator apparatus for use in a packaging machine in which a series of folding boxes is fed one after another in a predetermined direction with substantially constant center-to-center distances and a sealing strip is applied to at least one open end of each folding box, the sealing strip being formed by cutting a length from a continuous ribbon of sealing material, said apparatus comprising:

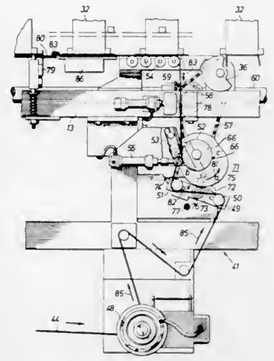
means for feeding said sealing ribbon parallel to at least first and second boxes;

means for adhering said ribbon to said open end of said first box when said first and second boxes are in a first position;

means for feeding said first and second boxes to a second position wherein said second box occupies the position previously occupied by said first box;

means for cutting said ribbon at the trailing edge of said first box at a cutting station with said first and second boxes in said second position; and

means responsive to the operation of said cutting means for withdrawing the sealing ribbon a distance equal to the distance between said first and second boxes so that the



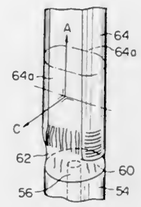
leading edge of said ribbon is aligned with the leading edge of said second box.

4,120,742

CAPACITANCE TYPE PICKUP STYLUS AND METHOD OF PRODUCING SAME

Akira Asano, and Keiji Segawa, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Oct. 28, 1976, Ser. No. 736,392
Claims priority, application Japan, Oct. 30, 1975, 50/129779
Int. Cl.[2] G11B *3/44*
U.S. Cl. 156—608 6 Claims



1. A method of producing a pickup stylus of the capacitance type having a shaped tip for tracking and a flat side face with an electrode film coated thereon for the pickup of information signals, inscribed in a recording medium as geometric variations of a track, as variations in the capacitance between the recording medium and the stylus upon relative movement on the track, the method comprising the steps of:

growing by a modified edge defined film fed growth technique a single crystal of a hard mineral of a hexagonal system containing as an essential component aluminum oxide in the form of an elongated body having a substantially constant cross section; said modified edge defined film fed growth technique including the steps of (a) spreading a melt of said hard mineral as a film over a flat and circular surface through a capillary, the circular surface having a cross-sectional diameter no greater than about 0.3 mm and determining, but differing from the cross-sectional shape of the grown crystal, and (b) continuously growing said elongated body from said melt by vertically pulling up said film through the surface with a seed crystal of said hard mineral, said seed crystal being oriented such that an *a*-axis of said seed crystal coincides with the direction of the pullup of said seed crystal, whereby the longitudinal axis of said elongated body coincides with said *a*-axis of said single crystal and said

elongated body has a pair of inherently flat and smooth side faces both parallel to said longitudinal axis and normal to the *c*-axis of said single crystal, so that said cross section is defined by a pair of parallel straight lines with a spacing less than the diameter of said circular surface and a pair of outwardly convex arcs generally conforming to the edge of said circular surface;

on at least one of said flat and smooth side faces, forming a thin electrode film in intimate contact with the side face; and

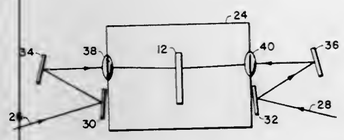
shaping an end portion of said elongate body with said electrode film thereon such that the shaped end portion serves as the tip of the stylus.

4,120,743

CROSSED GRAIN GROWTH

Aslan Baghdadi, and Ralph J. Ellis, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1975, Ser. No. 645,574
Int. Cl.[2] B01J *17/12*
U.S. Cl. 156—620 **12 Claims**



1. A method for modifying the crystalline structure of a sheet of semiconductor material which comprises:

establishing a molten region at the edge of and extending through the thickness of said sheet;

moving said molten region across said sheet to an opposing edge of said sheet thereby creating a path of elongated crystal grains;

establishing a molten zone parallel to and abutting said path along a portion thereof and extending through the thickness of said sheet; and

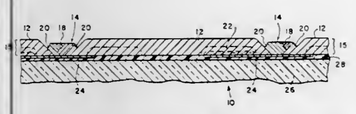
causing said molten zone to travel in a direction transverse to said path.

4,120,744

METHOD OF FABRICATING A THERMAL DISPLAY DEVICE

Thomas R. Payne, Plano; Harry K. James, and Millard M. Judy, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 156,756, Jun. 25, 1971, abandoned. This application Jul. 26, 1973, Ser. No. 383,411
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—653 **4 Claims**



1. The method for fabricating a thermal display device which comprises:

selectively etching one face of a slice of monocrystalline semiconductor material to form a grid of moats and an array of mesas, the tops of said mesas lying substantially in a plane,

growing a relatively thick layer of oxide on the slice, the oxide layer being sufficiently thin to not fill the moats,

depositing a layer of polycrystalline semiconductor material on the oxide layer on said one face to provide a thick monolithic structure for processing,

then removing monocrystalline semiconductor material from the face opposite said one face of the slice to the depth of the oxide layer in the moats,

then forming circuit components in said mesas for converting said mesas into heat dissipating devices,

then forming electrical conductors on said opposite face for contacting said circuit components,

then mounting said device on an insulated substrate, and

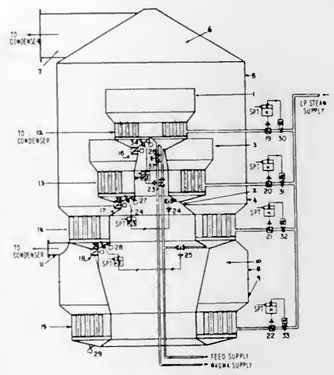
then removing only the polycrystalline semiconductor material and the layer of oxide overlying said plane while leaving sufficient polycrystalline semiconductor material and oxide in the moats to interconnect the mesas into a monolithic structure.

4,120,745

SEMI-CONTINUOUS VACUUM PAN SYSTEM

Detre Gotthard, Sydney, Australia, assignor to CSR Limited, Sydney, Australia

Filed Aug. 31, 1976, Ser. No. 719,083
Claims priority, application Australia, Sep. 1, 1975, PC 2997
Int. Cl.[2] B01D *1/06*
U.S. Cl. 159—27 B **12 Claims**



1. A low head semi-continuous vacuumm pan system for crystallising a substance from its solution; said system including a sequential array of individual vacuum pans, each pan having associated therewith a discharge volume, said discharge volume being measured as discharge levels of solution head in each pan and each pan being positioned in said array so that each discharge volume is greater than the discharge volume of an immediately preceding pan, and each pan further having: a heat supply means, a top-up solution supply means, and a means for transferring all its contents into an immediately following pan in said array when the volume of the contents of each pan reaches said associated discharge volume.

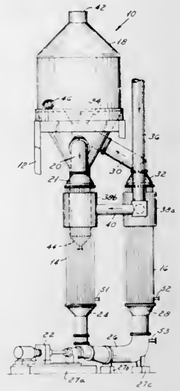
4,120,746

MULTIPLE STEAM CHEST SERIES FLOW EVAPORATOR

Reynard W. Gingrich, Fort Erie, Canada, assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 539,138, Jan. 7, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,759
Int. Cl.[2] B01D *1/12*
U.S. Cl. 159—47 R **13 Claims**

1. A method for evaporating a liquor comprising a solvent and a solute in a forced circulation evaporator, said evaporator comprising in combination an evaporation chamber equipped with liquor inlet and outlet and vapor discharge outlet, at least first and second heat exchangers each with liquor inlet and outlet interconnected in series for heating liquor, said heat exchangers positioned external to the evaporation chamber and interconnected with the liquor inlet and outlet of the evaporation chamber, pump means for forcibly circulating heated liquor from the first exchanger to the second exchanger and to the evaporation chamber, said pump means being positioned between the liquor outlet of the first exchanger and the liquor inlet of the second exchanger, said evaporator including means for feeding liquor into the evaporator and product removal, said method comprising the steps of:



(a) feeding the liquor into the evaporator,

(b) heating the liquor to a temperature greater than its boiling point by forcibly circulating the liquor through the first and second heat exchangers,

(c) forcibly circulating the heated liquor from the heat exchangers to the evaporation chamber to vaporize and discharge a portion of the solvent, and

(d) removing concentrated product from the evaporator.

4,120,747

USE OF OZONE TREATED CHEMITHERMOMECHANICAL PULP IN A HIGH BULK TISSUE PAPERMAKING PROCESS

Henry David Sarge, III, Okeana, and David Charles Kleinschmidt, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 554,378, Mar. 3, 1975, abandoned. This application Jul. 18, 1977, Ser. No. 817,073
Int. Cl.[2] D21B *1/12*; D21C *9/00*
U.S. Cl. 162—117 **8 Claims**

1. A process for making soft, bulky, absorbent paper webs which comprises the steps of:

a. supplying an aqueous papermaking furnish comprising from about 5% to about 70% by weight of total fiber chemi-thermomechanical pulp having a modified Canadian standard freeness from about 500 to about 750 cc and consisting essentially of intact and lignin coated fibers, wherein said chemi-thermomechanical pulp has been prepared by treating wood chips with a liquor containing chemicals selected from the group consisting of sodium sulfite, sodium bisulfite, sodium carbonate, and mixtures thereof prior to defibration, and wherein said chemi-thermomechanical pulp has been treated with ozone subsequent to defibration;

b. forming an uncompacted paper web from said papermaking furnish;

c. supporting said uncompacted paper web on a conveying and imprinting fabric;

d. thermally predrying said uncompacted paper web to a fiber consistency of from about 30% to about 98%;

e. imprinting the knuckle pattern of said conveying and imprinting fabric into the thermally predried uncompacted paper web; and

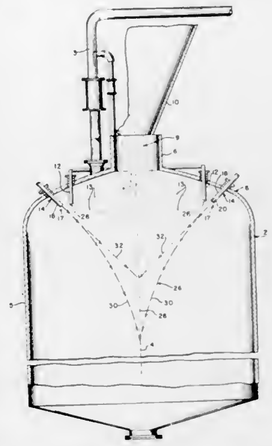
f. finally drying the web so formed.

4,120,748

DIGESTER SYSTEM FOR DELIVERING WOOD CHIPS IN AN EVEN LAYER INTO A DIGESTER

Jerry Zucker, Lake Como, Fla., assignor to Hudson Pulp & Paper Corp., New York, N.Y.

Continuation of Ser. No. 565,567, Apr. 7, 1975, abandoned. This application Nov. 9, 1976, Ser. No. 740,315
Int. Cl.[2] D21C *7/06, 7/14*
U.S. Cl. 162—242 **7 Claims**



1. A digester for wood chips comprising, the combination of, a digester tank comprising a top wall with a central opening substantially smaller in diameter than said tank and through which a stream of wood chips can be delivered into said tank having a central vertical axis so that the chips fall centrally through the tank in a zone along said central vertical axis; spray means for supplying spray liquor transversely with respect to said tank and into said stream to intersect the entire width of said stream and wet said wood chips, said spray means for supplying spray liquor being located within said tank below the top wall of the tank and within a zone spaced radially outwardly relative to said axis and to the zone occupied by said stream of wood chips falling through the central opening in the top wall of the tank; and steam jet means, located adjacent to said spray means wherein said steam jet means comprises a plurality of nozzle units each of which projects a jet of steam downwardly and inwardly at an angle to a radial direction from said axis, with said jets being spaced circumferentially and cooperating with each other to produce a steam vortex, in a zone within said tank which is beneath the zone at which said liquor is sprayed on the wood chips falling through the tank, wherein the liquor is distributed and directed toward the axis of said vortex, and said liquor-wetted wood chips are separated from each other with movement produced by the steam vortex which is radial outwardly relative to said axis and with downward movement produced by gravity, said liquor-wetted wood chips being wetted by said liquor and falling downwardly and being distributed horizontally into a substantially even-topped layer in said tank.

4,120,749

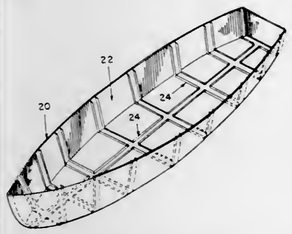
METHOD OF MAKING FIBER-REINFORCED PLASTIC UNITIZED BOAT HULL FRAME

Richard V. Humphrey, 10 Loring Ave., Kingston, Mass. 02364

Division of Ser. No. 599,848, Jul. 28, 1975, abandoned. This application Nov. 10, 1976, Ser. No. 740,653

Int. Cl.[2] **B29D** *9/00;* **B63B** *5/24*

U.S. Cl. 156—245 **10 Claims**



1. The method of constructing a fiber-reinforced plastic unitized frame for a boat hull, said frame comprising at least one longitudinal frame member and a plurality of transverse frame members, said method comprising the steps of:

a. forming a support mold of the exterior surface of said hull, said support mold having a plurality of plastic abhorent frame member portions corresponding to the shape and location of said longitudinal and said transverse frame members;

b. placing a longitudinal strip of fiber-reinforced plastic in an uncured state over each of said protions of the mold corresponding to a longitudinal frame member;

c. placing additional transverse strips of fiber-reinforced plastic in the uncured state over each of said portions of the mold corresponding to a transverse frame member wherein each of said transverse strips are in contact with at least one longitudinal strip; and

d. curing said strips to form said unitized frame.

4,120,750

NUCLEAR ENERGY PLANT WITH CLOSED WORKING GAS CIRCUIT

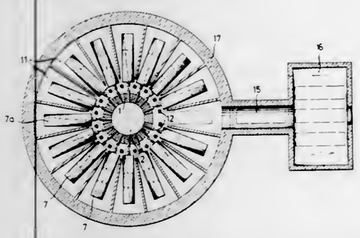
Siegfried Förster, Alsdorf; Peter Quell, Aachen-Haaren, and Berthold Sack, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Filed Dec. 17, 1975, Ser. No. 641,538

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1974, 2460165

Int. Cl.[2] **G21D** *5/08*

U.S. Cl. 176—60 **7 Claims**



1. A nuclear energy plant having a closed circuit for the working gas, which includes in combination: a nuclear reactor operated with a plurality of loops for working gas, each loop being formed as a structural unit comprising at least one turbo set for generating electric energy and circuit components for cooperation with said turbo set, said structural units radially surrounding said reactor in radially spaced relationship thereto, a plurality of first conduits respectively and independently of each other connecting said reactor with each structural unit for conveying hot working gas from said reactor to said turbo sets and subsequently through the respective pertaining circuit components, and a plurality of second conduits respectively and independently of each other leading from each structural unit to said reactor for conveying to said reactor working gas after the latter has passed through said circuit components and thereby has undergone a drop in temperature, said first conduit and said second conduit of each structural unit having connections comprising at least one shut-off valve to connect said unit with said reactor.

4,120,751

FUEL ELEMENT SKELETON

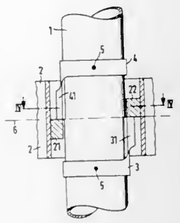
Helmut Bezold, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, (Ruhr), Germany

Filed Feb. 10, 1977, Ser. No. 767,342

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1976, 2605594

Int. Cl.[2] **G21C** *3/30*

U.S. Cl. 176—78 **11 Claims**



1. Fuel element skeleton having a play-free form-locking connection between groups of structural parts thereof respectively formed of materials of varying thermal expansion, the connection comprising means secured to a first group of the structural parts and having respective contact surfaces on diametrically opposite sides of the first group of structural parts, said contact surfaces being disposed in a common plane perpendicular to the longitudinal axis of said means, and said contact surfaces facing in mutually opposite axial directions of the first group of the structural parts, and means provided on a second group of the structural parts for defining respective abutment surfaces disposed in a common plane and mutually spaced from one another, said abutment surfaces facing in mutually opposite directions, said first and said second groups of the structural parts being disposed relative to one another in a position wherein the contact surfaces of said first group of the structural parts are in engagement with the respective abutment surfaces of said second group of the structural parts and wherein the common plane in which the contact surfaces are disposed in coincident with the common plane in which the abutment surfaces are disposed.

4,120,752

MIXED OXIDE FUEL PELLET FOR FUEL ROD OF NUCLEAR REACTOR CORE

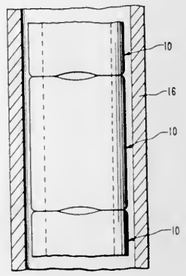
Howard Ocken, Palo Alto, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 4, 1976, Ser. No. 711,758

Int. Cl.[2] **G21C** *3/30*

U.S. Cl. 176—73 **6 Claims**

1. A mixed-oxide fuel pellet for a nuclear core fuel rod comprising: a body having an inner part and an outer part integral with and surrounding the inner part, the inner part containing a mixture of uranium oxide and plutonium oxide, the outer part containing uranium oxide free of plutonium oxide and having an exposed outer surface, the body being insertable into a fuel rod of a nuclear reactor with the outer surface of the outer part being contiguous to the inner surface of the rod.



4,120,753

SOLID ABSORBANT SAFETY DEVICE FOR A NUCLEAR REACTOR

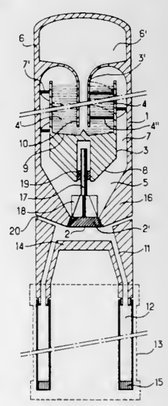
Claude Malaval, Antony, France, assignor to Groupement Atomique Alsacienne Atlantique, Le Plessis Robinson, France

Continuation of Ser. No. 416,140, Nov. 15, 1973, abandoned. This application Dec. 16, 1975, Ser. No. 641,323

Claims priority, application France, Nov. 21, 1972, 72.41261

Int. Cl.[2] **G21C** *7/06*

U.S. Cl. 176—86 R **3 Claims**



1. In combination, a water cooled reactor and a safety device, said reactor comprising:

water maintained under pressure within said reactor,

a core immersed in said water and comprising several elongated vertical guide tubes open to said water,

said safety device comprising:

a vertical cylindrical tank mounted above said core and immersed in said water,

conduit means connecting the bottom of said tank to said tubes,

means forming within said cylindrical tank, fluid connected, upper, lower and intermediate compartments,

absorbant in particulate form within said intermediate compartment,

an opening within said lower compartment providing fluid communication between said conduit means and said lower compartment,

fluid under pressure within said tank upper compartment,

a closing element closing off said opening at the bottom of said lower compartment, said closing element comprising a uranium plug brazed at its periphery by means of a fusible metal to the tank wall defining said opening;

whereby, in response to depressurization of the water within which said core and said tank are immersed, said plug is ejected by a pressure differential existing between said tank interior and exterior upon overheating of the brazed metal to initiate a rapid flow of pressurized fluid from said tank to said elongated guide tubes with fluid flow through said intermediate compartment fluidizing said particulate absorbant and forcing it to flow with said pressurized fluid through said conduit means and into said elongated guide tubes.

4,120,754

DETECTION OF ALKYLATING COMPOUNDS

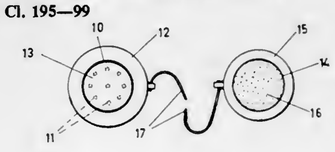
Anton Willem Barendsz, Katwijk aan Zee; Cornelis De Borst, Delft; Alfred Johannes Antonius Post, Alphen aan de Rijn, and Joannes Schimmel, Delft, all of Netherlands, assignors to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van de Rijksverdediging, The Hague, Netherlands

Filed Nov. 1, 1976, Ser. No. 737,189

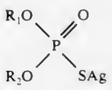
Claims priority, application Netherlands, Oct. 4, 1975, 7512939

Int. Cl.[2] **G01N** *31/14*

U.S. Cl. 195—99 **5 Claims**



1. A combined detection set for the detection of sulphur and nitrogen mustard gases, wherein the mustard gases to be determined are brought into contact with a silver salt of a thiophosphoric acid having the formula



in which R_1 and R_2 are members selected from the group consisting of alkyl having 1 to 10 carbon atoms, cycloalkyl and aryl having one ring under conditions whereby cholinesterase-inhibiting compounds are produced, and wherein the cholinesterase-inhibiting compounds are detected and/or determined by a chromogenous substrate for these compounds, wherein the set comprises:

(a) an adsorbing substrate strip, which successively has been impregnated with:

(1) a suspension of an adsorbing agent in water,

(2) a suspension or solution of said silver salt of the thiophosphoric acid in an organic solvent, and

(3) a cholinesterase solution in water, in an amount whereby the desired enzymatic activity on the substrate strip is obtained;

(b) an aqueous buffer solution, having a pH 7.5–8, and

(c) a second strip, impregnated with a cholinesterase-inhibiting detection amount of a chromogenous substrate.

4,120,755

KINETIC METHOD FOR DETERMINATION OF GLUCOSE CONCENTRATIONS WITH GLUCOSE DEHYDROGENASE

Kenneth J. Pierre, and Ker-Kong Tung, both of Vista, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 28, 1977, Ser. No. 791,825
Int. Cl.[2] G01N *31/14*
U.S. Cl. 195—103.5 C **14 Claims**

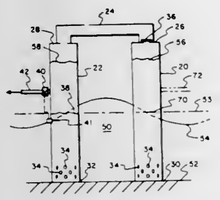
1. A kinetic glucose reagent of the type comprising a buffer, a pyridine coenzyme, and glucose dehydrogenase, characterized in that said buffer has a pH of from about 7.9 to about 9.0.

4,120,756

METHOD FOR PURIFYING A LIQUID BY PRESSURE DISTILLATION

Vincent E. Carman, 10728 NE. Halsey D-34, Portland, Oreg. 97220

Division of Ser. No. 656,431, Feb. 9, 1976, Pat. No. 4,035,241. This application Apr. 18, 1977, Ser. No. 788,622
Int. Cl.[2] B01D *3/02*
U.S. Cl. 203—11 **4 Claims**



1. A method of purifying a liquid by pressure-induced vaporization and condensation comprising the steps of:
(a) partially filling a first walled enclosure with a quantity of said liquid;
(b) partially filling a second walled enclosure with a second quantity of said liquid;
(c) filling the remainder of said first and second enclosures with vapor of said liquid;
(d) decreasing the pressure within said first enclosure to a value sufficient to cause a portion of said liquid contained therein to evaporate into a vapor, and simultaneously increasing the pressure within said second enclosure to a value sufficient to cause a portion of any vapor contained therein to condense into a liquid;
(e) transferring substantially only that vapor produced by evaporation in said first enclosure from said first enclosure into said second enclosure;
(f) removing from said second enclosure substantially only that liquid produced by condensation in said second enclosure; and
(g) repeating said steps (d) through (f) until a predetermined quantity of condensed liquid has been removed from said second enclosure.

4,120,757

METHOD OF MAKING SINTERED PLAQUE CADMIUM ELECTRODES

Harvey N. Seiger, and Vincent J. Puglisi, both of Waterford, Conn., assignors to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Nov. 25, 1977, Ser. No. 854,928
Int. Cl.[2] C25D *9/08*; C25B *1/16, 11/06*
U.S. Cl. 204—2.1 **10 Claims**

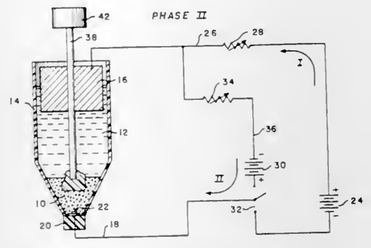
1. An improved method of making sintered plaque cadmium electrodes, said method comprising:
a. electrochemically depositing cadmium hydroxide into the pores of a sintered nickel plaque cathode from a heated aqueous electrolyte at acid pH and at a controlled current density in a treating zone containing an anode;
b. at least periodically contacting said electrolyte during said electrochemical deposition with neutralizing agent selected from the group consisting of cadmium oxide, cadmium hydroxide and mixtures thereof to neutralize acid generated at said anode in said treating zone; and,
c. continuing said electrochemical deposition until an improved loading level of said cadmium hydroxide within said sintered nickel plaque cathode is obtained.

4,120,758

PRODUCTION OF POWDER METALLURGY ALLOYS

Ralph E. Rippere, 4145 W. Banff La., Phoenix, Ariz. 85023

Continuation-in-part of Ser. No. 611,810, Sep. 9, 1975, Pat. No. 4,046,643. This application Jul. 14, 1977, Ser. No. 815,762
Claims priority, application Canada, Sep. 7, 1976, 260613
Int. Cl.[2] C25D *5/18, 7/00, 5/50*
U.S. Cl. 204—10 **43 Claims**



1. A method of producing a multimetal alloy comprising the steps of:
(a) providing a cathode comprising a powder of at least a first metal;
(b) electro-depositing particles of at least a second metal onto said cathode from an electrolytic composition containing ions of said second metal by imposing direct electrical current on the electrolytic composition;
(c) continuing the electro-deposition of said particles until a desired multi-metal composition is obtained wherein the deposited metal forms a discrete, annular layer superimposed upon the cathodic powder base, the exterior layer being of a metal which is less chemically active than the metal of the cathode powder; and
(d) sintering the multi-metal composition below the melting point of the composition to form an alloy.

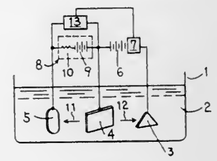
4,120,759

CONSTANT CURRENT DENSITY PLATING METHOD

Hiroshi Asami, and Masao Kaji, both of Otsu, Japan, assignors to New Nippon Electric Company, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 782,417, Mar. 29, 1977, Pat. No. 4,065,374. This application Sep. 13, 1977, Ser. No. 832,907
Claims priority, application Japan, Aug. 10, 1976, 5195872
Int. Cl.[2] C25D *1/00*; C25C *1/20*; C25D *21/12*; G05F *1/10*
U.S. Cl. 204—14 R **6 Claims**

1. A plating method comprising starting out with an electrolytic solution of uniform ion concentration in a plating bath, detecting the change in the electric resistance in said electrolytic solution between a standard or reference electrode and a constant current source, to produce a control output signal representing said resistance change, regulating the plating current in response to said control output signal to maintain a constant plating current density in said plating bath, interrupting the plating by repeated electrolysis steps which alternate with plating steps, applying during the electrolysis steps a voltage to the bath which is higher than the plating voltage, and setting the duration of the electrolysis steps to be shorter than the duration of the plating steps, whereby the piling-up of plating metal in places not supposed to be plated, is prevented.

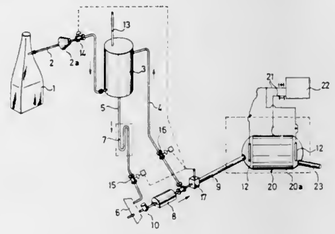


4,120,760

SURFACE TREATMENT OF METALS

Kenji Ueda, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1976, Ser. No. 662,418
Claims priority, application Japan, Mar. 20, 1975, 50-33604
Int. Cl.[2] C25D *3/22, 7/00*; C23F *14/00, 15/00*
U.S. Cl. 204—55 R **8 Claims**



1. A method for imparting corrosion resistance to the surface of a metal body having a potential nobler than that of zinc coming into contact with sea water, comprising the steps of contacting said sea water with a sulfur dioxide-containing gas under conditions such that sulfurous acid is formed and reacts with the dissolved oxygen in said sea water to free said sea water of substantially all of said dissolved oxygen, contacting said sea water freed of dissolved oxygen with the surface of the metal body and forming with an anode a galvanic cell in which the said metal body is the cathode and the seawater freed of oxygen is the electrolyte, at least one of said anode and electrolyte containing zinc, said galvanic cell acting to coat said metal body with zinc without an accompanying deposition or crystallization of the hydroxide and carbonate constituents of said sea water.

4,120,761

ELECTROCHEMICAL PROCESS FOR THE PREPARATION OF ACETALS OF 2-HALOALDEHYDES

Donald A. White, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 15, 1977, Ser. No. 861,068
Int. Cl.[2] C25B *3/02*; C07C *41/10*
U.S. Cl. 204—59 R **16 Claims**

1. A process for the preparation of acetals of 2-haloaldehydes which comprises subjecting a substantially anhydrous liquid electrolysis medium comprising a primary alcohol having at least one beta hydrogen atom and an anhydrous hydrogen halide selected from the group consisting of hydrogen chloride and hydrogen bromide to electrolysis in an electrolytic cell to yield the acetal of the 2-haloaldehyde corresponding to the primary alcohol.

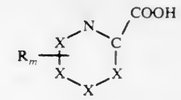
4,120,762

ELECTROCHEMICAL RECORDING MEDIUM

Sylvester Charles Sviokla, Ocean Bluff, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed Sep. 30, 1977, Ser. No. 838,156
Int. Cl.[2] G01D *15/06, 15/10, 15/34*
U.S. Cl. 204—2 **13 Claims**

1. In an electrolytic recording medium comprising a porous support impregnated with an electrolytically conducting aqueous solution of a strong electrolyte
and a marking compound, the improvement comprising the addition of a six-membered hetero-aromatic nitrogen-containing compound of the formula:



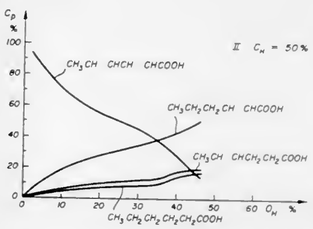
where each X is a member selected from the group consisting of nitrogen and carbon; and R is a member selected from the group consisting of hydrogen, halogen, hydroxyl, lower aliphatic radicals of 1–6 carbons, carboxyl, sulfo and alkoxy-radicals, said carboxyl, sulfo and alkoxy radicals being substituted with a member from the group consisting of hydrogen and lower aliphatic radicals of 1–6 carbons and *m* is a whole integer varying between 1 and 5.

4,120,763

HYDROGEN TRANSFER BY METAL HYDRIDE BETWEEN AQUEOUS MEDIUM AND ORGANIC COMPOUND

Frederic Breda, and Pierre Jonville, both of Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge-Geneve, Switzerland

Filed Jun. 9, 1977, Ser. No. 805,168
Claims priority, application Switzerland, Jun. 10, 1976, 7339/76
Int. Cl.[2] C25B *3/04, 11/04*
U.S. Cl. 204—73 R **4 Claims**



1. A process for the continuous hydrogenation of an organic compound, comprising the steps of:
(a) disposing said organic compound in an aqueous electrolyte medium contained within an electrolysis cell provided with a cathodic working electrode and a counter-electrode, said cathodic working electrode comprising a metallic hydride whose metal component consists essentially of a first component selected from the group of titanium, zirconium, lanthanum and palladium and at least one second component selected from the group which consists of iron, nickel, cobalt, copper, chromium, manganese, vanadium, niobium and silver which composition is capable of exchanging hydrogen with said organic compound and said aqueous medium in a reversible manner such that said compound reacts with hydrogen from said metallic hydride and thereby undergoes hydrogenation and that said metallic hydride is regenerated by undergo-

ing an electrochemical reaction with said aqueous medium; and

(b) passing an electrolysis current through said cell between said electrodes so that said metallic hydride is regenerated by undergoing said electrochemical reaction while said organic compound undergoes hydrogenation, said electrolysis current being such as to provide substantially continuous hydrogenation of said compound by reversible exchange of hydrogen without release of gaseous hydrogen at said working electrode.

4,120,764

PROCESS FOR PRODUCING A TETRAALKYLTHIURAM DISULFIDE

Sigeru Torii; Hideo Tanaka, and Kiyoshi Mishima, all of Okayama, Japan, assignors to Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

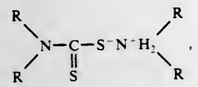
Filed Jan. 16, 1978, Ser. No. 869,409

Claims priority, application Japan, Jan. 20, 1977, 52-4375; Feb. 23, 1977, 52-18073

Int. Cl.[2] **C25B** *3/02*; **C07C** *155/10*

U.S. Cl. 204—78 **8 Claims**

1. A process for producing a tetraalkylthiuram disulfide which comprises electrolytically oxidizing a dialkylammonium dialkyldithiocarbamate having the formula



wherein each R represents an alkyl group having from 1 to 4 carbon atoms, in the presence or absence of a supporting electrolyte to produce a tetraalkylthiuram disulfide, said electrolytic oxidation being carried out in at least one solvent which dissolves at least one of the starting dialkylammonium dialkyldithiocarbamate and the resulting tetraalkylthiuram disulfide.

4,120,765

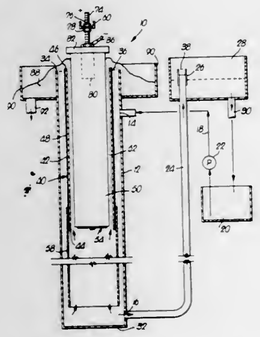
METHOD AND APPARATUS FOR PRODUCING FOAM

Arthur Shelley King, 8021 Cherokee La., Leawood, Kans. 66206

Filed Jun. 16, 1977, Ser. No. 807,051

Int. Cl.[2] **C02C** *5/12*

U.S. Cl. 204—149 **7 Claims**



1. In a method of producing foam by exposing a body of foamable liquid to electrolytic action from a pair of oppositely charged electrodes, the improvement comprising:

arranging the electrodes in an upright disposition and in adjacently opposed relationship;

placing the upright electrodes within the body of liquid so that both electrodes are substantially surrounded by the liquid;

circulating liquid upwardly between the electrodes from the body of liquid surrounding the electrodes; and

preventing bubbles generated by the electrodes during such circulation from escaping the electrodes at least until a point adjacent the upper surface of the body is reached.

4,120,766

HYDROXYL-CONTAINING LIQUID POLYMERS AND PROCESS FOR PREPARATION THEREOF

Changkiu Keith Riew, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 28, 1977, Ser. No. 782,104

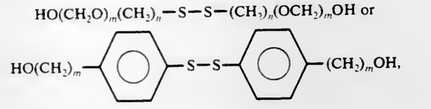
Int. Cl.[2] **B01J** *1/10*

U.S. Cl. 204—158 R **12 Claims**

1. A process for preparing a hydroxyl-containing liquid polymer containing an average from 1.1 to 4 hydroxyl groups per molecule, said polymer having an aliphatic backbone containing carbon-carbon linkages comprising at least 95% of total polymeric backbone weight, said process comprising polymerizing

(1) at least one vinylidene monomer having at least one terminal $CH_2{=}C<$ group, together with

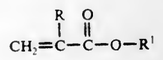
(2) at least one hydroxyl-containing disulfide having the formula



wherein *m* is an integer from 0 to 10, and *n* is an integer from 1 to 10,

(3) the polymerization being conducted in the presence of ultraviolet radiation having a wavelength from about 1,850 A to about 6,000 A, wherein

(4) said vinylidene monomer is selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, and (e) acrylic acids and acrylates having the formula



said R being hydrogen or an alkyl or hydroxyalkyl radical containing 1 to 3 carbon atoms, and said R^1 being hydrogen, an alkyl or hydroxyalkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl, or cyanoalkyl radical containing 2 to 12 carbon atoms.

4,120,767

PHOTOCHEMICAL METHOD FOR CARBON ISOTOPIC ENRICHMENT

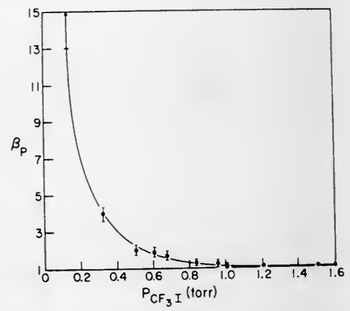
Steven N. Bittenson, and Paul L. Houston, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,217

Int. Cl.[2] **B01J** *1/10*

U.S. Cl. 204—158 R **20 Claims**

1. A photochemical method for selective carbon isotopic enrichment in a starting material comprising a gaseous mixture of at least two isotopic CF_3I species which comprises irradiating a gaseous isotopic mixture comprising said CF_3I at a pressure below about 10 torr in a reaction zone with laser radiation having an energy of at least about 0.1 joule/cm^2 and having a wavelength selectively coinciding with the absorption band of one but not the other of said CF_3I species, thereby selectively exciting and disproportionating said one species and causing it to form a reaction product other than said one species to provide relative enrichment of said other species; continuing said irradiation for a period of time to cause significant relative



enrichment of said other species; and recovering from the gaseous phase in said reaction zone unreactive isotopic starting material enriched in said other species.

4,120,768

PROCESS FOR ELECTROCOATING AQUEOUS COATING COMPOSITION COMPRISING DISPERSION IN WATER OF IONIZABLE SALT OF EPOXY AMINE ADDUCT

David Vincent Gibson, North Bayswater, and Bruce Leary, Frankston, both of Australia, assignors to Dulux Australia Ltd., Melbourne,, Australia

Division of Ser. No. 651,780, Jan. 23, 1976, Pat. No. 4,064,990, which is a continuation of Ser. No. 471,954, May 21, 1974, abandoned. This application Jun. 15, 1977, Ser. No. 806,826

Claims priority, application Australia, Jun. 4, 1973, 3548/73

Int. Cl.[2] **C25D** *13/06*

U.S. Cl. 204—181 C **4 Claims**

1. A method of depositing a coating composition on an electrically conductive substrate which comprises immersing said article in an aqueous coating composition consisting essentially of a dispersion in water of an ionizable salt of an epoxy-amine adduct and an acid together with a crosslinking agent for the adduct, characterized in that the ionizable salt consists of the combination of an acid and an epoxy-amine adduct selected from the compounds of the formulae

$$B_1 - A_1 - C_1 - A_2 - B_2 \quad (a)$$

and

$$B_{1-A1} - C_1 - A_2\,C_2 - A_3 - B_2 \quad (b)$$

wherein

A_1, A_2 and A_3 are epoxy free residues of essentially straight-chain di-epoxides;

B_1 and B_2 and residues of primary or secondary mono-amines which have a pK_b value of 4 maximum;

C_1 and C_2 are residues of amines having one or two primary amino groups; and further characterized in that:

(1) the acid shall have a pK_a value of from 1.5–6.0, and if it is a carboxylic acid it shall contain not more than two carboxyl groups;

(2) at least 40% of the amine groups must be reacted with the acid, to form an amine salt; and

(3) the epoxy-amine adduct shall have a molecular weight of 1500 – 7000; making said substrate the cathode and passing electrical current between said substrate and a counter-electrode which is in electrical contact with said aqueous coating composition.

4,120,769

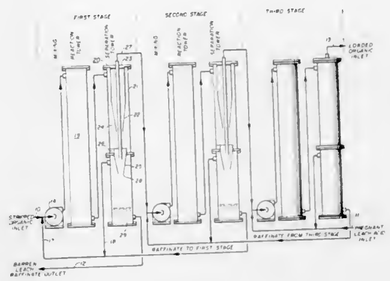
PROCESS FOR MIXING AND SEPARATION IN A SOLVENT EXTRACTION SYSTEM

Floyd Leon Prestridge, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 27, 1977, Ser. No. 819,320

Int. Cl.[2] **C25C** *1/12*; **B03C** *5/00*; **C22B** *3/00, 15/00*

U.S. Cl. 204—186 **4 Claims**



1. A cyclic process for selectively recovering metals from a material containing other metallic values in addition to the selected metal, comprising,

(A) leaching said material with an aqueous leach solution;

(B) Recovering a pregnant, aqueous leach solution containing the selected metal and other metallic contaminants dissolved therein;

(C) intimately mixing the recovered aqueous leach solution with an organic medium containing a ligand which is capable of selectively extracting the selected metal from the aqueous solution, thereby producing a dispersion comprising an aqueous portion containing said other metallic and exchanged ions, and an organic portion containing the ligand and the selected metal values;

(D) passing the dispersion from step (C) through a flow path across which charged electrodes establish an electrostatic field which coalesces the drops of aqueous leach solution dispersed in the organic medium;

(E) centrifuging the electrically treated dispersion to agglomerate the coalesced drops of aqueous solution and separate them from the organic medium;

(F) recycling the agglomerated aqueous phase as leach solution for further leaching of said material;

(G) intimately mixing the organic phase from step (E) with an aqueous stripping solution which is capable of stripping the selected metal ions from the ligand of the organic phase, thereby producing a second dispersion comprising an aqueous portion containing the selected metal and an organic portion containing the ligand;

(H) passing the dispersion from (G) through a second flow path across which electrodes establish an electrostatic field which coalesces the drops of aqueous leach solution dispersed in the organic medium;

(I) centrifuging the electrically treated dispersion to agglomerate the coalesced drops of aqueous stripping solution and separate them from the organic medium;

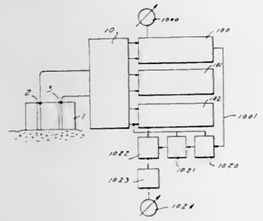
(J) recycling the organic phase from step (I) as the organic medium containing a ligand to be mixed with further leach solution in step (C); and

(K) recovering the selected metal values from the aqueous stripping phase obtained in step (I).

4,120,770
APPARATUS FOR THE POLAROGRAPHIC MEASUREMENT OF OXYGEN

Manfred Kessler, Dortmund, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Gottingen, Fed. Rep. of Germany

Filed Jul. 21, 1977, Ser. No. 817,663
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2632931
Int. Cl.[2] **G01N** *27/54*
U.S. Cl. 204—195 R **6 Claims**

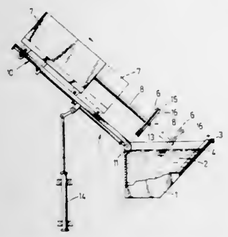


1. An apparatus for the polarographic measurement of oxygen concentration comprising, in combination, a polarography electrode and a reference electrode for engagement with the medium to be analyzed, the polarography electrode having an effective diameter of 100 microns or more; first means operative when connected across the electrodes for effecting hydrogen generation within the medium and including a voltage source; second means operative when connected across the electrodes for effecting a polarographic measurement of hydrogen concentration; third means operative when connected across the electrodes for effecting a polarographic measurement of oxygen concentration; and switchover means operable for connecting the first, second and third means, in succession, across the electrodes.

4,120,771
DEVICE FOR MANUFACTURING SUBSTANTIALLY FLAT DIES

Léon Dewallens, Louvain, Belgium, assignor to Fabrication Belge de Disques "Fabeldis", Molenbeek-Saint-Jean, Belgium

Filed Sep. 7, 1977, Ser. No. 831,351
Claims priority, application Belgium, Sep. 10, 1976, 170518
Int. Cl.[2] **C25D** *17/06, 21/12*
U.S. Cl. 204—225 **10 Claims**

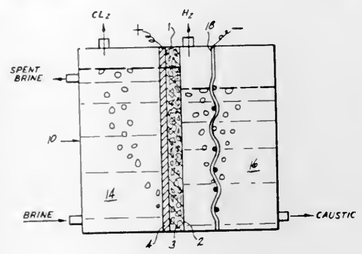


1. A device for manufacturing dies or counterparts for gramophone records using a substrate composed of a material of low electrical conductivity which has been previously metallized, comprising:
- a container for containing an electrolyte;
- at least one anode having a generally planar face mounted in said container;
- means to mount the substrate so that its face is generally parallel to the face of said anode;
- a cathode current supply, connected to said mounting means, so as to cause the substrate to function as a cathode;
- introducing and removing means, connected to said mounting means, for introducing said substrate into and removing it from the electrolyte so that the faces of the substrate and the anode are substantially parallel;
- driving means, connected to said mounting means, for substantially continuously varying the distance between the substrate and said anode after the substrate has been introduced into the electrolyte, and maintaining the faces of the substrate and the anode substantially parallel to each other.

4,120,772
CELL FOR ELECTROLYZING AQUEOUS SOLUTIONS USING A POROUS ANODE SEPARATOR

Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 627,995, Nov. 3, 1975, Pat. No. 4,032,427. This application Apr. 26, 1977, Ser. No. 791,087
The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.
Int. Cl.[2] **C25B** *11/06, 13/04*
U.S. Cl. 204—252 **22 Claims**



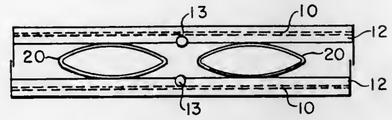
1. A cell for electrolyzing alkali metal chloride solutions comprised of an anode compartment, a cathode compartment, an anode separator dividing the anode compartment from the cathode compartment, a cathode in the cathode compartment, where the anode separator comprises a porous plate of a valve metal selected from the group consisting of titanium, tantalum, and niobium, said porous plate having a face, a back and an interior structure, said face having an electrochemically active coating selected from the group consisting of a platinum group metal, a platinum group metal oxide and mixtures thereof, said back and a portion of said interior having an electrochemically non-active barrier layer comprising a mixture of an oxide of titanium, tantalum, or niobium and a ceramic oxide selected from the group consisting of silicon oxide, aluminum oxide, magnesium oxide, calcium oxide, and mixtures thereof, wherein said portion is at least 10 percent of said interior structure.

4,120,773
COMPRESSIBLE SELF GUIDING ELECTRODE ASSEMBLY

John E. Ridgway, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Aug. 25, 1977, Ser. No. 827,635
Int. Cl.[2] **C25B** *9/04, 11/00, 15/04*
U.S. Cl. 204—252 **12 Claims**

1. A compressible electrode assembly for an electrolytic cell comprising in combination at least two opposed electrode working faces, separated by a compressible, resilient insulating elastic means, at least two sets of spacer assembly guides attached to the working faces that when the electrode assembly is inserted into a cell, compression occurs by the spacer assembly guides contacting complementary electrodes, the gap between the complementary electrode and working face being determined by the thickness of the spacer assembly guide and said working face being electrically connected to the cell.



4,120,774
REDUCTION OF ELECTRODE OVERVOLTAGE

Thomas Gordon Hart, Royal Oak, Mich., assignor to Energy Development Associates, Madison Heights, Mich.

Filed Jan. 24, 1977, Ser. No. 761,722
Int. Cl.[2] **C25B** *11/12;* **C25D** *17/10*
U.S. Cl. 204—294 **9 Claims**

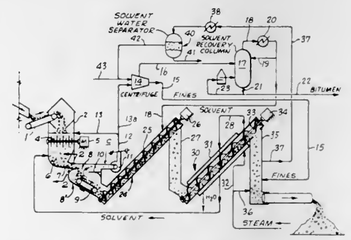
1. A method of decreasing the halogen overvoltage of a carbon electrode which comprises contacting said electrode with nitric acid for an effective overvoltage reducing length of time of about 10–1200 hours.

7. A carbon substrate exhibiting a decreased oxidation and reduction halogen overvoltage produced by the process of claim 1.

4,120,775
PROCESS AND APPARATUS FOR SEPARATING COARSE SAND PARTICLES AND RECOVERING BITUMEN FROM TAR SANDS

Robert G. Murray, Palo Alto, and Benjamin J. Gikis, Los Altos Hills, both of Calif., assignors to Natomas Company, San Francisco, Calif.

Filed Jul. 18, 1977, Ser. No. 816,506
Int. Cl.[2] **B03B** *5/36;* **C10G** *1/00;* **C10C** *1/18;* **B01D** *11/02*
U.S. Cl. 208—11 E **7 Claims**

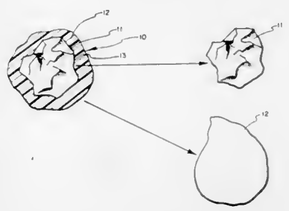


1. In the solvent extraction of bitumen from sand wherein a tar sand is extracted with a solvent, said sand comprising a mixture of coarse and fine particles, and wherein after extraction the sand is separated from the resulting bitumen solution, the improvement which comprises:
- (a) providing a slurry of sand and bitumen solution resulting from admixture of tar sand with a tar solvent;
- (b) passing such slurry in a generally horizontal stream through a first conduit having a generally horizontal bottom wall, then over an open space overlying and communicating with an underlying body of solvent, then into a second conduit having a generally horizontal bottom wall which is located at a lower level than the bottom wall of said first conduit, the relative rate of passage of the slurry over said open space being such as to cause coarse particles of sand to settle through said open space into said underlying body of solvent and to cause fine particles to continue with the stream into said second conduit rather than settling out with the coarse sand particles.

4,120,776
SEPARATION OF BITUMEN FROM DRY TAR SANDS

Jan D. Miller, and Jaime E. Sepulveda, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Aug. 29, 1977, Ser. No. 828,357
Int. Cl.[2] **C10G** *1/04*
U.S. Cl. 208—11 LE **4 Claims**



1. A process for displacing bitumen from grains of sand in a tar sand having a negligible quantity of connate water comprising the steps of:
- obtaining a tar sand having a negligible quantity of connate water;
- comminuting the tar sand to obtain particles of tar sand; and
- digesting the particles of tar sand to displace bitumen from the grains of sand comprising the steps of:
  - preparing a digestion solution comprising an aqueous solution of caustic wetting agent, the caustic wetting agent being present in the digestion step in a concentration within the range on the order of about 0.2 normal to 1.0 normal thereby maintaining the pH above about 10;
  - maintaining the temperature of the digestion solution within the range on the order of about 70° C. to the boiling point of the digestion solution; and
  - displacing bitumen from the grains of sand with a high shear environment by mixing the particles of tar sand with the digestion solution in an amount to provide a solids concentration within the range on the order of about 50 to 80%, the displacing step further comprising agitating the mixture thereby providing the high shear environment for displacing the bitumen from the grains of sand.

4,120,777
PROCESS FOR RECOVERY OF BITUMINOUS MATERIAL FROM TAR SANDS

Alfred R. Globus, Bayside, N.Y., assignor to Guardian Chemical Corporation, Hauppauge, N.Y.

Filed Jul. 13, 1976, Ser. No. 704,843
Int. Cl.[2] **C10G** *1/04*
U.S. Cl. 208—11 LE **16 Claims**

1. A process for the recovery of bituminous matter from tar sands comprising admixing said tar sands with water and 0.5–5% by weight of an alkali or alkaline earth metal bicarbonate salt, mixing the slurry thus produced and thereafter withdrawing said bituminous material extracted from said tar sands.

4,120,778

PROCESS FOR THE CONVERSION OF HYDROCARBONS IN ATMOSPHERIC CRUDE RESIDUE

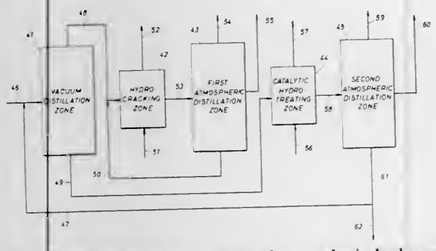
Frans Goudriaan, and Jakob Van Klinken, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 9, 1977, Ser. No. 831,850

Claims priority, application Netherlands, Sep. 22, 1976, 7610510

Int. Cl.[2] C10G *39/00, 13/06*

U.S. Cl. 208—80 **8 Claims**



1. A process for the preparation of atmospheric hydrocarbon oil distillates from a hydrocarbon oil residue obtained by atmospheric distillation which comprises:

(a) fractionating said residue by vacuum distillation into a vacuum distillate and a vacuum residue,

(b) cracking said vacuum distillate in a cracking zone comprising either a catalytic cracking zone or a hydrocracking zone to obtain a cracked product,

(c) fractionating said cracked product by atmospheric fractionation distillation into at least one light distillate product, a cracked intermediate fraction and a cracked residue, and recycling at least part of said cracked intermediate fraction or said cracked residue to the cracking zone of step (b),

(d) hydrotreating the vacuum residue from step (a) in a catalytic hydrotreating zone under such conditions that more than 50% by weight of the total feed to the catalytic hydrotreating zone is converted to a product having a lower boiling point than the feed,

(e) fractionating said hydrotreated product by atmospheric fractionation distillation into at least one light atmospheric distillate product, a hydrotreated intermediate fraction and a hydrotreated residue,

(f) fractionating said hydrotreated residue by vacuum distillation into a vacuum distillate and a hydrotreated vacuum residue, and then,

(g) recycling at least 50% by weight of the hydrotreated vacuum residue from step (f) to the cracking zone of step (b).

4,120,779

PROCESS FOR DESULFURIZATION OF RESIDUA WITH SODAMIDE-HYDROGEN AND REGENERATION OF SODAMIDE

William Chalmers Baird, Jr.; Roby Bearden, Jr., and Ralph Louis Bollinger, Jr., all of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 571,955, Apr. 28, 1975, Pat. No. 4,017,381.

This application Aug. 11, 1976, Ser. No. 713,628

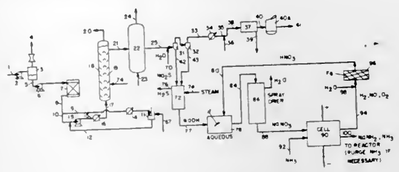
Int. Cl.[2] C10G *13/06;* **B01J** *23/04, 23/90*

U.S. Cl. 208—108 **10 Claims**

1. A process for the desulfurization and hydroconversion of a sulfur-containing petroleum oil feedstock, which comprises;

contacting a sulfur-containing petroleum oil feedstock, in a desulfurization-hydroconversion zone, with sodamide in the presence of added hydrogen at a temperature of from between 400°–2,000° F, said feedstock being maintained substantially in the liquid phase, thereby forming an oil-salt mixture comprising a sulfur-reduced oil phase and a salt phase, said salt phase comprising sodium sulfur salts;

contacting said mixture with water to form an aqueous sodium sulfur salt phase and to separate the oil phase from the aqueous sodium sulfur salt phase;



converting said aqueous sodium sulfur salts to sodium chloride;

converting said sodium chloride to sodamide; and

returning at least a portion of the so-regenerated sodamide to said desulfurization-hydroconversion zone.

4,120,780

CATALYSTS FOR HYDRODEMETALLIZATION OF HYDROCARBONS CONTAINING METALLIC COMPOUNDS AS IMPURITIES AND PROCESS FOR HYDRO-TREATING SUCH HYDROCARBONS USING SUCH CATALYSTS

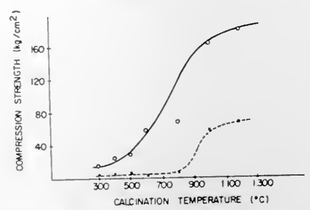
Tatsuo Morimoto, Yokohama; Munekazu Nakamura, Kamakura; Masayoshi Inooka, and Teizaburo Yawata, both of Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Division of Ser. No. 704,020, Jul. 9, 1976, Pat. No. 4,075,125.

This application May 26, 1977, Ser. No. 800,909

Int. Cl.[2] C10G *23/02*

U.S. Cl. 208—211 **3 Claims**



1. A process for hydrodemetallization of hydrocarbons containing metallic compounds as impurities, comprising contacting hydrogen and hydrocarbons containing metallic compounds as impurities with a catalyst at a temperature of from 300° C. to 500° C. and a hydrogen pressure of from 10 to 300 kg/cm^2, said catalyst having been prepared by admixing red mud with from 1 to 10% by weight based on the weight of the red mud of a member selected from the group consisting of alumina; clay, alumina-yielding substance and mixtures thereof, said admixture being shaped and calcined at a temperature of 600° C. to 1,100° C., the feed rate of said hydrocarbons being from 0.1 to 20 parts by volume of said hydrocarbons per hour for unit part by volume of said catalyst and the feed rate of said hydrogen being 89 to 1780 Normal liters of hydrogen per liter of said hydrocarbons.

4,120,781

PROCESS FOR REDUCING THE LEVEL OF RADIOACTIVITY OF A STREAM OF LIGHT HYDROCARBONS

Swan T. Sie, and Franciscus H. J. Bukkems, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 660,532, Feb. 23, 1976, abandoned.

This application Feb. 22, 1977, Ser. No. 770,726

Claims priority, application Netherlands, Feb. 21, 1975, 7502072

Int. Cl.[2] C10G *25/00*

U.S. Cl. 28—251 R **16 Claims**

1. A process for reducing the level of radioactivity of a stream of light hydrocarbons comprising, passing a stream of light hydrocarbons containing radioactive metals or compounds thereof through a space containing solid particles containing, in sulfidic form, one or more metals from Group VI B, alone, or combined with one or more metals from Group VIII B of the Periodic Table, the stream of hydrocarbons being passed through at a temperature lower than 100° C. and at a space velocity of 0.1–110 kg per hour per liter of space filled with solid particles.

4,120,782

METHOD FOR IMPROVING THE TREATING CAPACITY OF A CLAY SORBENT

Costandi A. Audeh, Princeton, N.J., and Tsoung-Yuan Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,747

Int. Cl.[2] C10G *25/12*

U.S. Cl. 208—305 **10 Claims**

1. A process for (1) increasing the capacity of a solid sorbent used in a finishing unit for oils of lubricating viscosity and for (2) effecting the removal of undesirable organo-polar compounds from lubricating oils in contact with said sorbent in paid finishing unit comprising (a) continuously removing sorbent from said finishing unit, (b) contacting said sorbent from step (a) with anhydrous acid gas until an effective amount of said gas is adsorbed therein (c) returning the sorbent from step (b) to the finishing unit and (d) contacting said oil and sorbent under suitable removal conditions of temperature and pressure until substantially all of said undesirable compounds are removed from the oil thereby improving the quality of said oil and wherein said solid sorbent is a clay selected from attapulgite, bentonite, kaolin, kaolinite, bauxite, fullers earth, halloysite, montmorillonite, illite and synthetic amorphous silica-aluminas.

4,120,783

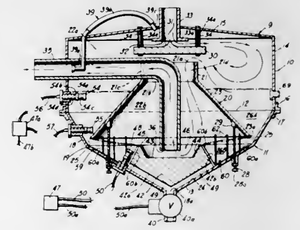
APPARATUS AND PROCESS FOR ORDINARY AND SUBMARINE MINERAL BENEFICIATION

George P. Baummer, 25 Strabane Ct., Baltimore, Md. 21234

Filed Jul. 5, 1977, Ser. No. 812,460

Int. Cl.[2] B03B *5/02*

U.S. Cl. 209—18 **47 Claims**



1. Process for the recovery of heavy constituents from particulate material carried in a transporting fluid forming a slurry, comprising:

(a) passing said slurry along a prescribed path;

(b) directing said slurry in a first zone from said prescribed path and thence back toward said path so as to subject the slurry to centrifugal force for progressively throwing certain particulate material out of the path of travel of said slurry;

(c) collecting said particulate material which is thrown out of said slurry and directing the same along a second prescribed path while agitating said particulate material; and

(d) collecting the heaviest portion of the agitated particulate material.

4,120,784

SCREENING APPARATUS

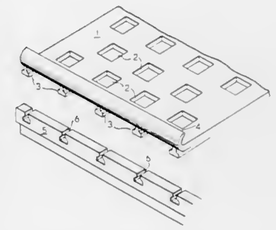
Anthony George Hassall, Sandiway, England, assignor to N. Greening Limited, Warrington, England

Filed Feb. 28, 1977, Ser. No. 773,036

Claims priority, application South Africa, Jun. 16, 1976, 76/3584; Australia, Jun. 17, 1976, 14997

Int. Cl.[2] B07B *1/46*

U.S. Cl. 209—399 **11 Claims**



1. Screening apparatus including a screening surface formed of one or more plates of flexible nonmetallic material having apertures therethrough, a plurality of attachment bars projecting from the underface of the or each plate at intervals along the length thereof, each attachment bar extending in the direction of the width of the plate, and a support structure for supporting said plate or plates, said support structure including a plurality of spaced support bars running transversely of the attachment bars and provided at intervals along their length corresponding to the intervals of the attachment bars with slots of a shape to receive the attachment bars of the plate or plates.

4,120,785

RUBBER SCREENS FOR VIBRATORY SCREENING APPARATUS

Katsuo Kanamori, Kobe; Nobuo Sakurai, Nishinomiya, and Ryozo Arai, Kobe, all of Japan, assignors to Mitsuboshi Belting Limited, Kobe, Japan

Filed Feb. 23, 1977, Ser. No. 771,274

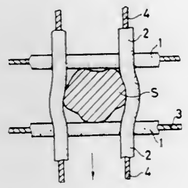
Claims priority, application Japan, Feb. 23, 1976, 51-20996[U]; Mar. 6, 1976, 51-26616[U]

Int. Cl.[2] B07B *1/28*

U.S. Cl. 209—401 **51 Claims**

1. A rubber screen for a vibratory screening apparatus, comprising a plurality of first parallel rope members having suitable cross-sectional shapes and arranged in a particle flowing direction, each of said first rope members having a tensile member composed of a strand of filaments having a high elongation at break and an organic material having flexibility and/or elasticity covering said tensile member, and a plurality of second parallel rope members having suitable cross-sectional shapes and arranged in a direction normal to said first rope members, each of said second rope members having a tensile member of a material having a low elongation at break and an

organic material having flexibility and/or elasticity and covering said tensile member; each of the points of intersection between said first and second rope members being suitably



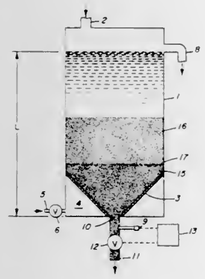
bonded, the elongation at break of said first parallel rope members as a whole being greater than the elongation at break of said second parallel rope members as a whole.

4,120,786

SEPARATION OF MIXED ION EXCHANGE RESINS

George E. Petersen, Fremont, and James M. Dotson, Danville, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 29, 1977, Ser. No. 782,327
Int. Cl.[2] B03B *5/66*
U.S. Cl. 209—454 **18 Claims**



1. A method for separating a mixture of cation and anion exchange resins from each other comprising the steps of:

hydroclassifying the cation and anion resins by introducing the mixture of resins and a carrier fluid to a treatment zone in a countercurrent flow,

monitoring the pH of the resins in the treatment zone, a change in the pH of the resins indicating the position of an interface between the separated cation and anion resins, and

removing the separated cation resin from a level in the treatment zone below the interface between the separated cation and anion resins until the pH of the resin being removed becomes basic, and thereafter

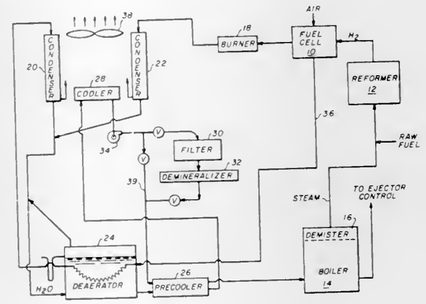
removing the separated anion resin from the treatment zone.

4,120,787

FUEL CELL WATER CONDITIONING PROCESS AND SYSTEM AND DEAERATOR FOR USE THEREIN

Brian A. Yargeau, East Windsor Hill, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 29, 1976, Ser. No. 755,336
Int. Cl.[2] C02B *1/10, 1/40*
U.S. Cl. 210—26 **23 Claims**



1. A method for the treatment of fuel cell condensate, said method enabling the use of the condensate as feed water for a steam generator, the steam generator including a boiler and providing steam to a reformer which produces a fuel for the fuel cell from a raw material supplied thereto, said method comprising the steps of:

transferring heat from fuel cell exhaust gases to water in a deaerator tank, dissolved gases being released from said water through the heating thereof, the fuel cell exhaust gases including water vapor;

condensing the water from the exhaust gases subsequent to their use in heating water in the deaerator tank;

delivering the condensate to the deaerator tank for heating;

drawing water from the deaerator tank;

cooling the water drawn from the deaerator tank;

treating the cooled water to remove therefrom materials which would have a deleterious effect on the steam generator or reformer; and

delivering the treated water to the boiler of the steam generator.

13. In a fuel cell power plant, the power plant including a reformer for producing fuel for a fuel cell from hydrocarbon materials supplied thereto, the power plant additionally including a steam generator which supplies process steam to the reformer, improved apparatus for the purification of water produced as a by-product of the generation of electricity through an electro-chemical reaction in the fuel cell, the water exiting the fuel cell in the form of water vapor entrained with hot exhaust gases, said improved water purification apparatus comprising:

deaerator means, said deaerator means including a tank in which liquid is heated to drive off dissolved gases and a heat exchanger disposed in said tank;

means for delivering moisture laden fuel cell exhaust gases to the heat exchanger of said deaerator means whereby fuel cell waste heat provides the requisite thermal energy for operation of said deaerator means;

condenser means connected to said deaerator means and receiving exhaust gases passed through said heat exchanger, said condenser means condensing water from the fuel cell exhaust gases;

means for delivering the condensate from said condenser means to the tank of said deaerator means;

means for withdrawing water from said deaerator means tank, said withdrawing means including means for cooling the withdrawn water;

means connected to said withdrawing means for removing contaminates from said cooled water, said contaminate removing means including a particulate filter; and

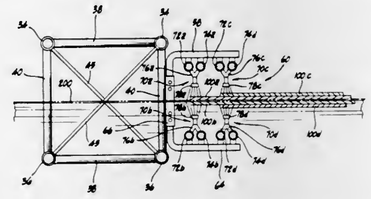
means for delivering water passed through said contaminate removing means to the power plant steam generator.

4,120,788

OIL SLICK REMOVAL AND RECOVERY SYSTEM

Robert D. Ellis, P.O. Box 340, Flora, Ill. 62839

Filed May 23, 1977, Ser. No. 799,213
Int. Cl.[2] C02B *9/02*
U.S. Cl. 210—30 A **20 Claims**



3. A method of removing oil from a water surface comprising the steps of:

(a) forming a floatable, oil sorbent foam layer below the oil,

(b) forming a floatable, oil sorbent foam layer above the oil to cooperate with the first layer to form a floating foam sandwich,

(c) allowing the foam layers to contact the oil under and upper surfaces to absorb the oil, and

(d) removing the oil impregnated foam sandwich from the water.

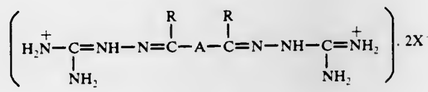
4,120,789

METHOD FOR THE PURIFICATION OF SEWAGE WATERS WHICH CONTAIN ORGANIC COMPOUNDS OF AN ANIONIC NATURE

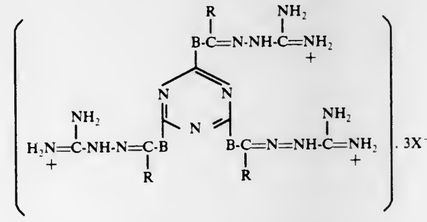
Raffaele Fusco, Milan, Italy, assignor to ANIC, S.p.A., Palermo, Italy

Filed Feb. 15, 1977, Ser. No. 768,837
Claims priority, application Italy, Feb. 23, 1976, 20456 A/76
Int. Cl.[2] C02B *1/20;* **C02C** *5/02*
U.S. Cl. 210—54 **5 Claims**

1. The method of purifying sewage water by removing therefrom an anionic organic compound contained therein that reacts with a bis-guanylhydrazonium or tris-guanylhydrazonium salt represented by the formulae:



or



wherein:

R is hydrogen or an aliphatic chain having from 1 to 3 C, atoms,

A represents aromatic rings connected through heteroatoms to other aromatic rings or to aliphatic chains,

B represents an aromatic ring bound by oxygen atoms to the triazine system,

X^- represents an anion consisting of Cl^-, Br^-, OSO_4H^-, NO_3^-, $CH_3SO_3^-$ or $Ar—SO_3^-$,

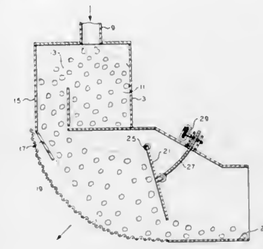
to form a saline derivative that is very poorly water-soluble, which comprises adding to said sewage water an effective quantity of at least one of said bis-guanylhydrazonium or tris-guanylhydrazonium salts so that a precipitate and a supernatant liquor are formed, and then decanting said supernatant liquor.

4,120,790

SYNTHETIC RUBBER DEWATERING APPARATUS AND METHOD

Donald Tinker, Bonnet Bay, and Keith E. Berg, Lurnia, both of Australia, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 28, 1977, Ser. No. 810,836
Int. Cl.[2] B01D *25/04*
U.S. Cl. 210—65 **8 Claims**



1. An apparatus for dewatering rubber crumb slurry, said apparatus comprising:

(a) a concave surfaced screen sloping downward and attached to

(b) a chute leading away from the screen;

(c) a collecting vessel depended beneath the screen in a manner to collect material passed through the screen;

(d) a means for directing an inlet feedstream downward toward said screen; and

(e) means for controlling direction and amount of slurry flow comprising:

(1) a first baffle fixed in relation to the inlet line and the screen to direct inlet flow away from the screen toward the face of

(2) an adjustable second baffle, downstream of said first baffle, with

(3) means for adjustment of said second baffle both to redirect slurry flow from the first baffle onto the screen and to limit the spacing between the screen and the second baffle thereby restricting slurry flow from the screen surface onto the chute.

8. A method for removing water from water crumb slurry, said method comprising directing said slurry downward toward a concave surfaced screen onto means for controlling direction and amount of slurry flow comprising:

(1) a fixed baffle directing the slurry flow away from the screen toward the face of

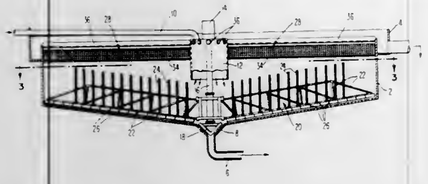
(2) a second baffle, said second baffle being adjustable, adjusting said second baffle to redirect the slurry flow onto the screen and to limit the spacing between the screen and the second baffle thereby restricting slurry flow along the screen surface, while controlling the amount of water from said slurry which passes through said screen.

4,120,791

SLUDGE THICKENER APPARATUS AND METHOD

Francis C. Wright, Yardville, N.J., assignor to IU Conversion Systems, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 645,944, Jan. 2, 1976, abandoned. This application Sep. 28, 1977, Ser. No. 837,317
Int. Cl.[2] B01D *21/06*
U.S. Cl. 210—84 8 Claims



1. A method for separating a relatively solids-free effluent and a relatively high solids concentration thickened underflow from a feed comprising a solid-liquid mixture of sufficiently high solids concentration to be a hindered settling material, said method comprising feeding said mixture to and treating said mixture in a thickening apparatus comprising

(I) a first horizontal section consisting of a plurality of inclined passageways,

(II) a second horizontal section coextensive with and below said first section, said second section consisting of a compressive thickening zone in which solids concentration is increased by the compressive effects of (a) the solids-liquid mixture upon itself in said zone and (b) vertically projecting horizontally moving members therein,

(III) effluent removal means above said first horizontal section,

(IV) thickened underflow removal means below said second horizontal section, and

(V) means for introducing influent hindered settling solids feed between said first and second horizontal sections whereby incoming feed partitions itself into a heavier fraction immediately being distributed at the top of said compressive thickening zone for further thickening and a lighter fraction immediately rising through said inclined passageways,

said inclined passageways being adapted to receive a predominantly upflowing liquid from said feed mixture and to form a presettled solids deposit which flows downwardly into said compressive thickening zone, the solids concentration and flow rate of feed being adapted to provide relatively slow liquid upflow rates and relatively long solids detention time in said compressive thickening zone with a resultant enhancement of solids liquid separation efficiency relative to solids loading rate, the remainder of said method comprising removing from the top of said apparatus a relatively solids-free effluent and from the bottom of said apparatus a thickened high solids concentration underflow.

4,120,792

COMBINED FILTER AND INCINERATOR

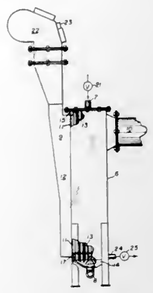
Dwight P. Clark, Tremonton, and William F. Wagner, Brigham City, both of Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Aug. 15, 1977, Ser. No. 824,575
Int. Cl.[2] C02C *3/00*
U.S. Cl. 210—152 10 Claims

1. A combination filter and incinerator for waste water treatment, comprising:

an enclosure having inlet and outlet ports for hot air and inlet and outlet ports for waste water;

at least one porous, tubular, refractory, filter-grate in the enclosure, closed at one end and connected at the other end to the waste-water outlet port, so that waste water entering the enclosure from the inlet port must pass through the walls of the filter-grate in order to be discharged through the waste water outlet port, whereby solid particles in the waste water become deposited on the outer surface of the filter-grate;



a source of forced, hot air, connected to the hot air, inlet port, and capable of incinerating solid waste particles on the filter grate; and

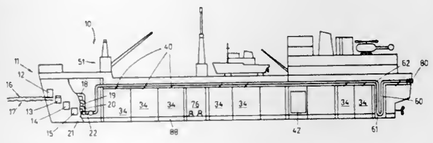
means for alternately introducing waste water and heated air into the enclosure.

4,120,793

POLLUTING OIL RECOVERY APPARATUS

Patrick J. Strain, 27 Tanglewood Dr., Ottawa, Ontario, Canada

Filed Nov. 3, 1975, Ser. No. 627,846
Int. Cl.[2] E02B *15/04*
U.S. Cl. 210—175 1 Claim



1. A means for recovering oil spilled upon a large water surface such as an ocean, bay, river, lake or the like, comprising in combination;

a vessel having a stern and a bow with storage tanks disposed therebetween;

a plurality of sluice gates opening on either side of said bow to allow oil and water from said water surface to enter into said vessel;

at least one conduit having a bow end and a stern end, and being horizontally disposed the length of said vessel, wherein said bow end is attached to said sluice gates in fluid communication therewith and wherein said stern end is attached in fluid communication therewith to a water discharge means at the stern of said vessel;

a water discharge valve in said conduit stern end to allow control of the discharge of water from said vessel;

at least one U-bend in said conduit downwardly disposed the depth of said vessel and located adjacent the stern thereof;

suction pump means constructed and arranged to draw an oil and water mixture into said sluice gates and pump said mixture along said conduit;

a steam jacket surrounding said conduit to heat the said mixture therein; baffle means in said conduit downwardly and forwardly adjustable from an upper side of said conduit to entrap a layer of oil therein while water is drawn out along the lower side of said conduit,

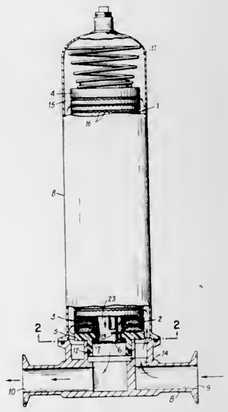
and pipe means having one open end therein entering and communicating with said conduit proximate the upper side thereof adjacent the forward facing portion of each baffle means, and having another end communicating with a storage tank, and pump means to draw off said layer of oil entrapped in said conduit and to conduct it through said pipe to said storage tank.

4,120,794

FILTER CARTRIDGE ASSEMBLY

Bruce George Taylor, Kensington, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,231
Int. Cl.[2] B01D *25/18, 27/00*
U.S. Cl. 210—345 12 Claims



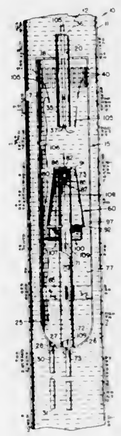
1. A filter cartridge assembly employing base means at a first end and closure means having a fluid output port at a second opposite end, filter media in the form of a series of individual filtration elements serially disposed between said base means and said closure means, cooperating with one another to define a total effective filtration area, said cartridge assembly including: disc shaped filter media receptacle means for positioning each of said filtration elements between adjacent receptacle means; said receptacle means being further defined by oppositely disposed downstream and upstream fluid flow surfaces, each of said surfaces cooperating with respective opposite surfaces of adjacent receptacle means and filtration elements disposed therebetween, said filtration elements each respectively disposed with an area defined by first and second concentrically spaced flange means formed on said downstream surface; orifice means centrally formed of said receptacle means; a plurality of passage ways formed on said downstream and upstream surfaces for fluid flow to said orifice means; first sealing means formed on said downstream surface concentrically spaced with respect to said first flange means for coaction with said filtration elements; spaced abutments serially disposed about said orifice means in proximity to said second flange means, said abutment means forming radial fluid flow passage means leading into individual orifices extending into said central orifice means, for directing fluid flow out of said cartridge assembly and through said output port in said closure means; fluid inlet passage means at the outer edge of said receptacle means being formed between spaced abutment means on said upstream surface; third flange means extending away from said upstream surface formed about said central orifice means, said third flange means being engagable with second flange means of an adjacent receptacle means to interlock said receptacle means, whereby each of said filtration elements are fixedly positioned between respective downstream and upstream surfaces of adjacent receptacle means; second sealing means concentrically spaced from said third flange means formed on said upstream surface; positioning means adapted to be disposed within said orifice means for positioning respective receptacle means and filtration elements in stacked aligned relationship with respect to one another, said positioning means extending between said base means and said closure means being fixedly engagable with said closure means under a compressive load for urging each of said filtration elements to seal at the points of contact with said first and second sealing means of said receptacle means to isolate said downstream and upstream fluid flow passage ways.

4,120,795

DEVICE FOR SEPARATING A PLURAL PHASE FLUID SYSTEM INTO ITS CONSTITUENT PHASES

Claude C. Laval, Jr., 2444 N. Farris Ave., Fresno, Calif. 93705

Filed Dec. 5, 1977, Ser. No. 857,437
Int. Cl.[2] B01D *21/26*
U.S. Cl. 210—512 R 19 Claims



1. A device for separating a fluid system containing at least two phases having different specific gravities comprising:

(A) a vortexing chamber having upper and lower end portions and a sidewall having an inwardly disposed surface of revolution concentric to a longitudinal axis for the chamber, said upper end portion having an emitting passage concentrically therethrough;

(B) means for supplying such a fluid system into the upper end portion of the vortexing chamber tangentially to said axis so that the fluid swirls downwardly in the chamber to centrifuge portions of the heavier phase outwardly for descent in the chamber to the lower end portion thereof and said fluid then swirls upwardly through the emitting passage; and

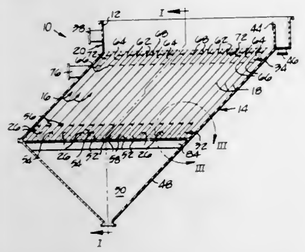
(C) a plate mounted transversely of said axis concentrically of the chamber and with the lower end portion of the chamber defining a settling compartment, said plate having an opening therepast adjacent to said sidewall to admit the fluid containing the centrifuged portions of said heavier phase to the compartment, and said plate having an auxiliary passage therethrough concentrically of said axis juxtapositioned to the emitting passage whereby the fluid swirling upwardly to and through said passage draws fluid from the settling compartment through the auxiliary passage to reduce the pressure in the settling compartment and facilitate settling of the heavier phase therein.

4,120,796

VERTICAL FLOW INCLINED PLATE CLARIFIER

Werner P. E. Huebner, 6 Sweetbriar Ct., Toronto, Ontario, Canada (M4A 2G5)

Filed Mar. 1, 1977, Ser. No. 773,436
Int. Cl.² B01D *21/00*
U.S. Cl. 210—522 **16 Claims**



1. In a clarifier having inclined flow passages formed by a plurality of spaced apart, inclined parallel plates mounted within a housing, the clarifier being adapted for upflow operation with the housing forming a sediment chamber below the inclined plate and means at the upper end of the plates for receiving effluent, the improvement comprising

a flow regulating channel assembly for regulating flow of influent into the respective flow passages from a separate influent chamber formed by the housing,

a portion of the housing forming openings adjacent the lower ends of the inclined plates for respectively communicating the influent chamber with each inclined flow passage,

each flow regulating channel assembly including

an elongated plate spaced apart from the lower inclined surface of each clarifier plate adjacent its lower inclined end, the elongated plate forming an enclosed region together with the lower inclined surface of the spaced apart clarifier plate, the enclosed region being in commincation with the influent chamber through one of said openings,

upper and lower flow restricting passage means being arranged above and below the elongated plate and extending substantially along the length of the elongated plate to limit flow from the upper and lower ends respectively of the enclosed region while communicating the enclosed region with both the respective flow passage and sediment chamber, the amount of flow limitation produced by the upper and lower flow restrictions being selected so that influent liquid entering the enclosed region from the separate influent chamber tends to be distributed uniformly across the respective flow passage and to flow upwardly from the enclosed region while suspended solids settling out of the influent liquid within the enclosed region tend to pass downwardly through the lower flow restriction toward the sediment chamber.

4,120,797

CROSS-FLOW INCLINED PLATE CLARIFIER

Werner P. E. Huebner, 6 Sweetbriar Ct., Toronto, Ontario, Canada (M4A 2G5)

Filed Mar. 1, 1977, Ser. No. 773,321
Int. Cl.² B01D *21/10*
U.S. Cl. 210—522 **28 Claims**

1. An inclined plate clarifier comprising

a housing having generally horizontal, spaced-apart support beams in a lower portion thereof,

a plurality of clarifier plates arranged transversely upon said support beams, lateral edges of said plates being adjacent opposite end walls of said housing,

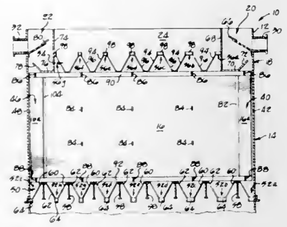
spacer means for maintaining said clarifier plates in inclined and parallel space-apart relation to each other to form inclined flow passages therebetween,

a vertical inlet divider plate extending transversely across said inclined plates and supported thereupon adjacent one housing end wall to form an inlet chamber above said inclined plates,

said housing forming an inlet conduit in communication with said inlet chamber,

a vertical outlet divider plate arranged transversely above said inclined plates and supported thereupon adjacent the other housing end wall to form an oulet chamber above said inclined plates,

means forming inlet and outlet channels adjacent said opposite housing end walls respectively below and in commu-



nication with said inlet and outlet chambers, said inlet and outlet channels being formed so that influent from said inlet chamber tends to enter said inclined flow passages by means of said inlet channel and influent exiting said inclined flow passages tends to pass through said outlet channel to enter said outlet chamber, and

said housing forming an outlet conduit in communication with said outlet chamber,

the construction and arrangement of said clarifier plates and said inlet divider plate and outlet divider plate being suitable for arrangement within said housing so that they are maintained in place upon said support beams under the influence of gravity, thereby facilitating their installation and removal from the housing.

4,120,798

FLAME RETARDANTS FOR SYNETHETIC MATERIALS

Vladimir Mischutin, East Brunswick, N.J., assignor to White Chemical Corporation, Bayonne, N.J.

Continuation-in-part of Ser. No. 538,896, Jan. 6, 1975, abandoned, and a continuation-in-part of Ser. No. 797,767, May 17, 1977. This application Jun. 22, 1977, Ser. No. 808,956
The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.
Int. Cl.² C09K *3/28*
U.S. Cl. 252—8.1 **16 Claims**

1. A composition for rendering a disperse dyeable, synthetic, heat stable thermoplastic, substantially hydrophobic polymeric substrate in the form of fibers or fabrics, flame retardant, that comprises:

a water-insoluble organic flame retardant brominated compound, having a melting point above 100° C.; and a particle size of 10 microns or less in diameter;

an aqueous medium wherein said fire retardant compound is suspended; one or more surfactants; and

an inert, organic, water-soluble protective colloid in an amount sufficient to maintain said flame retardant compound in suspension in said aqueous medium.

4,120,799

COMPOSITIONS FOR SOURING AND SOFTENING LAUNDERED TEXTILE MATERIALS, METHOD OF PREPARING THE SAME, AND STOCK SOLUTIONS PREPARED THEREFROM

John D. Ciko, Allen Park; John J. Cramer, and Geoffrey A. Jamieson, both of Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 545,382, Jan. 30, 1975, Pat. No. 4,053,423. This application May 26, 1977, Ser. No. 800,795
Int. Cl.² D06M *13/10*
U.S. Cl. 252—8.6 **29 Claims**

1. A stable homogeneous liquid composition for souring laundered textile materials and imparting softness thereto consisting essentially of

I. About 0.5–25% by weight of a softening agent for textile materials, the softening agent consisting essentially of an aqueous emulsion of partially oxidized emulsifiable polyethylene having a molecular weight of about 1,000–10,000;

II. About 3–50% by weight of an acidic souring agent for laundered textile materials selected from the group consisting of hydrofluorosilicic acid, ammonium silicofluoride, zinc silicofluoride, ammonium acid fluoride, potassium acid fluoride and orthophosphoric acid; and

III. About 25–96.5% by weight of water;

the said ingredients I, II and III being present in amounts whereby a stable homogeneous liquid composition is produced.

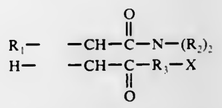
4,120,800

OIL RECOVERY AND MOBILITY CONTROL USING SUCCINAMATE SURFACTANT SYSTEMS

Joseph J. Valcho, Naperville, and Robert E. Karll, Batavia, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 25, 1977, Ser. No. 827,563
Int. Cl.² E21B *43/22*
U.S. Cl. 252—8.55 D **27 Claims**

1. A method for recovering oil from an oil-bearing formation which comprises injecting into the formation an aqueous fluid to displace the oil in the formation containing from about 1 to 15 percent by weight of the aqueous fluid of a water soluble succinamate surface-active agent having the following general formula:



wherein R_1 is alkenyl having an average molecular weight in the range of from about 150 to about 600; each R_1 is independently selected from the group consisting of hydrogen, lower alkyls, hydroxyl-substituted lower alkyls and hydroxyl-substituted ethoxylated lower alkyls; R_3 is selected from the group consisting of O or O—SO_3; and X is a cation.

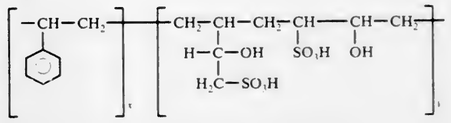
4,120,801

WATERFLOODING PROCESS EMPLOYING ANIONIC-NONIONIC COPOLYMER

Catherine S. H. Chen, Berkeley Heights; Frederick C. Schwab, Metuchen, and Edward W. Sheppard, Lambertville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 23, 1977, Ser. No. 799,487
Int. Cl.² E21B *43/22*
U.S. Cl. 252—8.55 D **5 Claims**

1. In a method of recovering oil from an oil-containing subterranean formation penetrated by an injection well and a production well and wherein an aqueous fluid is injected via said injection well into said formation to displace said oil to said production well, the improvement comprising employing in at least a portion of said aqueous fluid injected via said injection well into said formation a water soluble copolymer in an amount sufficient to thicken said portion of said aqueous fluid and improve the efficiency thereof in displacing said oil to said production well, said copolymer having a molecular weight within the range of 50,000 to 500,000 and having long sequences of an oil soluble nonionic segment formed of polymer blocks of a styrene monomer and long sequences of a water soluble anionic segment formed of polymer blocks of a butadiene monomer chemically modified to provide a hydroxysulfonate group thereon as the anionic function, said copolymer having the following structural formula:



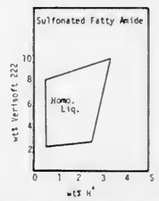
where the ratio of *x*:*y* is equal to or less than 1.

4,120,802

COMPOSITIONS FOR SOURING AND SOFTENING LAUNDERED TEXTILE MATERIALS, METHOD OF PREPARING THE SAME, AND STOCK SOLUTIONS PREPARED THEREFROM

John D. Ciko, Allen Park; John J. Cramer, and Geoffrey A. Jamieson, both of Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

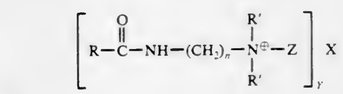
Division of Ser. No. 545,382, Jan. 30, 1975, Pat. No. 4,053,423. This application May 26, 1977, Ser. No. 800,624
Int. Cl.² D06M *13/40*
U.S. Cl. 252—8.75 **30 Claims**



1. A stable homogeneous liquid composition for souring laundered textile materials and imparting softness thereto consisting of

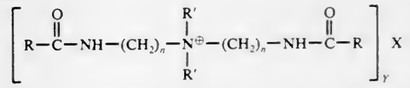
I. about 0.5–25% by weight of a softening agent for textile materials, the softening agent consisting of at least one quaternized fatty amide corresponding to the following structural formulae

1.



and

2.



wherein R is selected from the group consisting of monovalent alkyl radicals and sulfonated monovalent alkyl radicals containing about 8–22 carbon atoms, R′ is selected from the group consisting of monovalent alkyl radicals and sulfonated monovalent alkyl radicals containing about 1–3 carbon atoms, Z is selected from the group

consisting of monovalent alkyl radicals and sulfonated monovalent alkyl radicals containing 1–22 carbon atoms, *n* is about 1–6, X is an anion selected from the group consisting of halide, sulfate, phosphate, alkyl sulfates having about 1–3 carbon atoms in the alkyl group and alkyl phosphate having about 1–3 carbon atoms in the alkyl group, and Y is an integer having a numerical value equivalent to the valency of X;

II. about 3–50% by weight of an acidic souring agent for laundered textile materials selected from the group consisting of hydrofluorosilicic acid, ammonium silicofluoride, zinc silicofluoride, ammonium acid fluoride, potassium acid fluoride and orthophosphoric acid; and

III. about 25–96.5% by weight of water;

the said ingredients I, II and III being present in amounts whereby a stable homogeneous liquid composition is produced.

4,120,803

LUBRICANT COMPOSITION CONTAINING A DISPERSANT WHICH IS A CONDENSATION PRODUCT OF A COPOLYMER, POLYAMINE AND A POLYCARBOXYLIC ACID

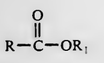
Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 15, 1976, Ser. No. 741,782
Int. Cl.[2] **C10M** *1/36, 3/30*
U.S. Cl. 252—51.5 A **18 Claims**

1. An oil soluble lubricating oil dispersant which is made by:

(A) copolymerizing a mixture of

(i) about 3–55 mole percent of a material having the formula



wherein R is an olefinically unsaturated hydrocarbon radical of up to 25 carbon atoms in which the carboxyl group is separated from all olefinic bonds by at least two carbon atoms and R_1 is selected from the group consisting of hydrogen and alkyl radicals containing 1 to about 15 carbon atoms,

(ii) about 5 to 80 mole percent of a conjugated diethylenically unsaturated aliphatic hydrocarbon of 4 to about 12 carbon atoms, and

(iii) about 92 to 15 mole percent of a monoalkene of 3 to about 30 carbon atoms, said material and said monoalkene being selected such that the total number of carbon atoms in these compounds is at least 12, said copolymerization being conducted at a temperature of about 0°–50° C. to form an intermediate copolymer,

(B) reacting said intermediate copolymer with at least 1.1 equivalents of a hydrocarbyl polyamine containing 2 to about 12 carbon atoms and from about 2 to about 7 amine nitrogen atoms at a temperature of about 60°–320° C. to form an amidated copolymer which contains unreacted >NH and then

(C) coupling said unreacted >NH by reaction at about 100°–300° C. with about 0.01–1.5 equivalents of a polycarboxylic acid per equivalent of said >NH group, said polycarboxylic acid being selected from the group consisting of

(i) aliphatic dicarboxylic acid, and

(ii) aromatic polycarboxylic acid containing an aryl group of about 6–10 carbon atoms and having 2 to 3 carboxylic groups bonded to said aryl group, said aliphatic dicarboxylic acid and aromatic polycarboxylic acid including precursor compound which yield said aliphatic dicarboxylic acid and said aromatic polycarboxylic acid under reaction conditions.

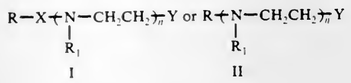
4,120,804

ASHLESS OIL DISPERSANTS

William L. Smith; Jacqueline S. Kelyman, both of Midland, Mich., and Ladell Jones, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 7, 1977, Ser. No. 774,821
Int. Cl.[2] **C10M** *1/32*
U.S. Cl. 252—47.5 **12 Claims**

1. A lubricating oil or a petroleum-based fuel for a combustion engine comprising a small but sufficient amount to impart detergency of an oil-soluble polymer of the formula



I II

wherein

(a) R is a saturated or substantially saturated polyolefin having a molecular weight of at least about 250;

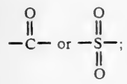
(b) R_1 is hydrogen or



wherein R_2 is hydrogen or alkyl of from 1 to about 18 carbon atoms with the proviso that at least about 60 percent of the R_1 groups are



(c) X is



(d) Y is a terminal organic or inorganic group; and

(e) *n* is an average value of from about 2 to about 15.

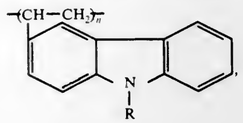
4,120,805

ELECTROPHOTOGRAHIC LIQUID DEVELOPER CONTAINING NEGATIVELY CHARGED TONER

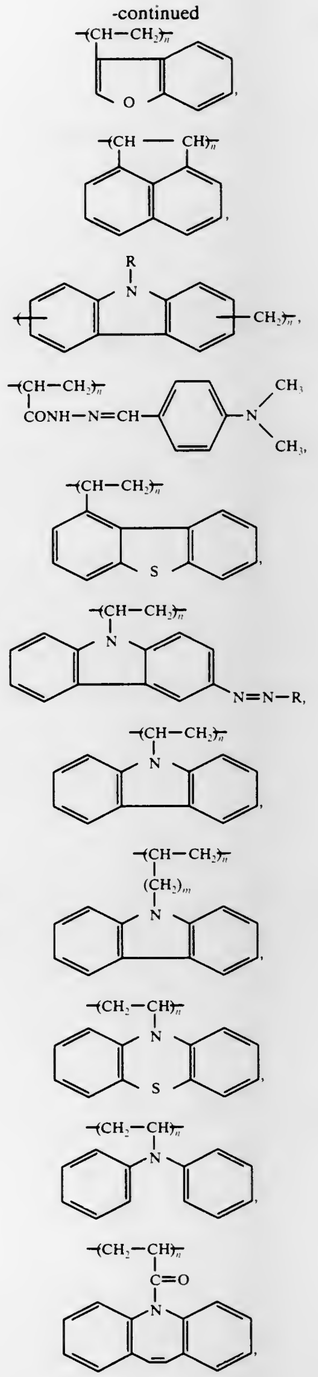
Hiroshi Yamashita; Sadao Osawa; Takashi Saida, and Yutaka Sakasai, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 2, 1977, Ser. No. 792,954
Claims priority, application Japan, Apr. 30, 1976, 51-48418
Int. Cl.[2] **G03G** *9/12*
U.S. Cl. 252—62.1 L **10 Claims**

1. An electrophotographic liquid developer containing a negatively charged toner, which developer is produced by the process which comprises: adding a solution (A) of a high-molecular weight compound having a molecular weight of about 500 to about 1,000,000 consisting essentially of a skeletal structure selected from the group consisting of:



-continued



wherein N and the sum of $m + n$ each ranges from about 5 to about 10^4 and the ratio m/n ranges from about 1:40 to about 50:1, where R is an alkyl group having 1 to 6 carbon atoms, a phenyl group, an alkoxy group, a hydroxy group, a halogen atom or a cyano group which high molecular weight compound is dissolved in an electrically insulating solvent (1) which dissolves more than about 4 wt. % of the high-molecular weight compound at room temperature and at atmospheric pressure to an organic solvent (2) in which the high-molecular weight compound is substantially insoluble, thereby depositing the high-molecular weight compound in a finely divided particle form, wherein an organic resin which is soluble in both of organic solvent (1) and organic solvent (2) in an amount of at least about 0.05 wt. % is dissolved in at least one of solution (A) and organic solvent (2), said developer being used as such as a wet developer.

4,120,806

HEXAGONAL-SYSTEM FERRITE POWDER, COMPOSITE PLASTIC-FERRITE MAGNET COMPRISING SAME AND PROCESS FOR PRODUCTION THEREOF

Yasuo Watanabe, and Seizi Isoyama, both of Okayama, Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Division of Ser. No. 826,704, Aug. 22, 1977. This application Feb. 15, 1978, Ser. No. 878,022
Claims priority, application Japan, Aug. 30, 1976, 51-103356; Aug. 30, 1976, 51-103357
Int. Cl.[2] **C04B** *35/26;* **H01F** *1/117*
U.S. Cl. 252—62.54 **9 Claims**

1. A process for the production of a plastic-ferrite composite magnet which comprises: contacting a ferrous salt and a salt of Ba, Sr, Pb or Ca with an alkali in a liquid phase to form a co-precipitated product of $Fe(OH)_2$ and MCO_3, wherein M represents Ba, Sr, Pb or Ca, keeping the co-precipitated product thus obtained in the solution at a pH of from 9 to 12 and at a temperature of from 50° to 80° C., blowing air into the solution at a substantially constant rate to form fine bubbles for the purpose of oxidizing part of the $Fe(OH)_2$ formed in the solution to $Fe(OH)_3$, thereby converting a substantial part of the precipitated $Fe(OH)_2$ to Fe_3O_4 precipitate which has good filtering characteristics, is substantially free from alkalis and other co-existing ions and has a narrow distribution of grain size, calcining the co-precipitated product thus obtained at a temperature of from 400° to 900° C. to form a hexagonal-system ferrite powder; and kneading the hexagonal-system ferrite powder thus obtained with a thermoplastic resin.

4,120,807

PROCESS FOR PRODUCING HEXAGONAL-SYSTEM FERRITE POWDER

Yasuo Watanabe, and Seizi Isoyama, both of Okayama, Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1977, Ser. No. 826,704

Claims priority, application Japan, Aug. 30, 1976, 51-103356; Aug. 30, 1976, 51-103357

Int. Cl.[2] H01F *1/117*

U.S. Cl. 252—62.62 **7 Claims**

1. A process for the production of a hexagonal-system ferrite powder which comprises two steps: (1) the first step comprising contacting a ferrous salt and a salt of Ba, Sr, Pb or Ca with alkali in a liquid phase to form therein a co-precipitated product of the $Fe(OH)_2$ and MCO_3, wherein M represents Ba, Sr, Pb or Ca; keeping the co-precipitated product thus obtained in the solution at a pH of 9–12 and a temperature of 50°–80° C.; blowing air into the solution at a constant rate to form fine bubbles for the purpose of oxydizing part of the $Fe(OH)_2$ formed in the solution to $Fe(OH)_3$, thereby converting a substantial part of the precipitated $Fe(OH)_2$ to Fe_3O_4 precipitate which has good filtering characteristics, is substantially free from alkalis and other coexisting ions and has a narrow distribution of grain size; and (2) the second step in which the co-precipitated product obtained in the first step is subjected to calcination treatment which is carried out at a temperature in the range of 400°–900° C.

7. The hexagonal-system ferrite powder which is prepared by the process as defined in claim 1.

4,120,808

GAS DISCHARGE DIELECTRIC CONTAINING A SOURCE OF BORON, GALLIUM, INDIUM, OR THALLIUM

Bernard W. Byrum, Jr., Toledo; Roger E. Ernsthausen, Luckey, and Michael E. Fein, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 205,276, Dec. 6, 1971, abandoned. This application Apr. 15, 1976, Ser. No. 677,599

The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.

Int. Cl.[2] H01B *3/02*

U.S. Cl. 252—63.2 **9 Claims**

1. As an article of manufacture, a dielectric material body for a gaseous discharge panel, said dielectric body having a gas contacting charge storage side surface and an electrode contacting side surface and containing a surface deposit of an oxide of at least one element selected from the group consisting of boron, gallium, indium, and thallium, said oxide deposit having a thickness of at least about 100 angstrom units to about 10,000 angstrom units.

4,120,809

WASHING AND BLEACHING WITH COMPOSITION CONTAINING BLEACH ACTIVATOR AND A NITRILOTRICARBOXYLIC ACID COMPOUND

Leo Thomas Murray, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 382,065, Jul. 24, 1973, Pat. No. 3,969,257, which is a continuation of Ser. No. 165,700, Jul. 23, 1971, abandoned, which is a continuation of Ser. No. 685,285, Nov. 24, 1967, abandoned. This application May 5, 1976, Ser. No. 683,601

The portion of the term of this patent subsequent to Jul. 13, 1990, has been disclaimed.

Int. Cl.[2] C11D *7/54*

U.S. Cl. 252—102 **15 Claims**

1. A bleaching composition consisting essentially of (1) a stable, water-soluble inorganic peroxide bleaching agent, (2) an activator which is an acyl-containing compound capable of reaction with said peroxide in aqueous media whereby to form oxidizing species capable of providing bleaching activity and selected from the group consisting of

(a) trisacetyl cyanurate,

(b) phenyl acetate,

(c) acetylsalicyclic acid, and

(d) C1-4 alkyl and phenyl chloroformates, and

(3) a compound a nitrilotricarboxylic acid selected from the group consisting of nitrilotriacetic acid and water-soluble sodium, potassium and ammonium salts thereof, the nitrilotricarboxylic compound being present in an amount sufficient to improve the bleaching effectiveness of the composition, the activator-peroxide mol ratio being within the range of from about 0.01 to about 2.0 and the nitrilotricarboxylic compound-peroxide mol ratio being within the range of from 0.001 to 0.10.

4,120,810

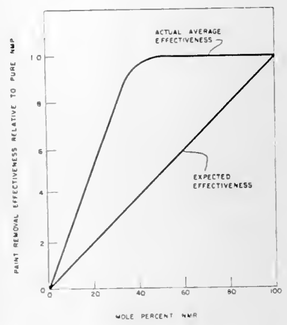
PAINT REMOVER WITH IMPROVED SAFETY CHARACTERISTICS

David A. Palmer, 343 Hazelwood Dr., Naperville, Ill. 60540

Continuation-in-part of Ser. No. 512,896, Oct. 7, 1974, abandoned. This application Oct. 21, 1976, Ser. No. 734,656

Int. Cl.[2] C11D *3/44, 7/50*

U.S. Cl. 252—153 **6 Claims**



1. A paint, varnish, and general coatings remover or deglosser with improved safety characteristics consisting essentially of a mixture of at least two chemicals, the first chemical making up approximately 15 to 60 mole percent of the mixture and being one or more of the chemicals selected from the group consisting of n-methyl 2-pyrrolidone, n-vinyl 2-pyrrolidone, and butyrolactone; and the second chemical making up at least 35 mole percent of the mixture and comprising blends of alkyl naphthalenes and alkyl benzenes which have a molar volume greater than or equal to about 140 cc/g mole.

4,120,811

SAFE BLEACHING COMPOSITIONS FOR COLORED AND PATTERNED FABRICS

Kouichi Yagi, Tokyo, and Yunosuke Nakagawa, Koshigaya, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

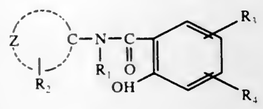
Filed Aug. 10, 1977, Ser. No. 823,271

Claims priority, application Japan, Sep. 2, 1976, 51-105277

Int. Cl.[2] C11D *7/56, 7/18, 3/395;* **D06L** *3/02*

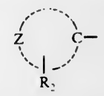
U.S. Cl. 252—186 **10 Claims**

1. A bleaching composition consisting essentially of from 50 to 99.9 percent by weight of inorganic peroxide capable of releasing hydrogen peroxide in aqueous solution, from 0.01 to 10 percent by weight of a compound having the formula (I):



(I)

wherein R_1 is hydrogen or alkyl having one to 3 carbon atoms,



is 5- or 6-membered heterocyclic radical which may have a fused ring; R_2 is hydrogen, alkyl having one to 10 carbon atoms, phenyl, pyridyl or pyrrolidone, which may optionally be substituted; R_3 is hydrogen, halogen, alkyl, phenyl, alkoxy, phenoxy, amino, acyloxy, carbamoyl or acyl which may optionally be substituted, or R_3 may form a benzo group together with R_4; R_4 is the same as R_3 or a monovalent radical having the formula $-R_5Y$ wherein R_5 is an alkylene or alkylidene group having 1 to 6 carbon atoms or phenylene, and Y is a radical formed by removing R_4 from a compound of the formula (1)

and the balance is essentially water-soluble inorganic builder, water-soluble organic builder or mixture thereof.

4,120,812

POLYETHYLENE GLYCOL-STABILIZED PEROXYGENS

Charles William Lutz, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 17, 1977, Ser. No. 807,630

Int. Cl.[2] C11D *3/395, 7/54;* **C01B** *15/10*

U.S. Cl. 252—186 **3 Claims**

1. In a process in which a particulate peroxygen compound, selected from the group consisting of sodium carbonate peroxide, sodium perborate and mixtures thereof, is coated with a stabilizing agent, the improvement which comprises mixing the particulate peroxygen with about 0.1 to about 3.0 weight percent of a polyethylene glycol having an average molecular weight of from 300 to 1,500 and recovering a stabilized, polyethylene glycol-coated peroxygen compound.

4,120,813

HYGROSCOPIC RESIN AND HUMIDITY SENSOR USING THE SAME

Hideo Hatanaka; Yoshinobu Murakami, both of Katano, and Kazuhisa Morimoto, Settsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 16, 1977, Ser. No. 797,117

Int. Cl.[2] C09K *3/00*

U.S. Cl. 252—194 **4 Claims**

1. A humidity sensor comprising a hygroscopic resin, which resin comprises a vinyl polymer having epoxy group, said vinyl polymer being a copolymerization product of (a) a hydrophylic vinyl monomer selected from the group consisting of 2-hydroxyethyl acrylate and 2-hydroxyethyl methacrylate and (b) a further vinyl monomer having an epoxy group and being selected from the group consisting of glycidyl acrylate and glycidyl methacrylate, the amount of said further vinyl monomer being from 1 to 30 mole percent on the basis of the weight of said copolymerization product,

said hygroscopic resin having a electrically conductive powder dispersed therein, the amount of said electrically conductive powder being from 30 to 100 weight parts on the basis of 100 weight parts of said hygrosopic resin.

4,120,814

FLUOROPHOSPHATE-BASE LASER GLASSES

Tetsuro Izumitani, Hino, and Michitaka Tsutome, Akishima, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,440

Claims priority, application Japan, Feb. 28, 1977, 52/21081

Int. Cl.[2] C03C *3/16;* **C09K** *11/08*

U.S. Cl. 252—301.4 P **9 Claims**

1. A stable fluorophosphate-base laser glass having a non-linear refractive index coefficient of 0.5 to 0.7 $\times$ 10^{-13} e.s.u. and a liquid phase temperature of 550° to 750° C. consisting essentially of 5 to 25% $\frac{1}{2}P_2O_5$ and the remainder being a mixture of fluorides of the metals Al, Ba, Sr and Ca, and 0 to 25% fluorides of Na, K and Li and 0 to 5% of each of the fluorides of Y, La and Mg, and 0.01 to 3% of at least one laser oscillation component selected from the group consisting of $\frac{1}{2}$ Er_2O_3, $\frac{1}{2}$ Eu_2O_3 and $\frac{1}{2}Nd_2O_3$ incorporated into said glass, said percentages being cationic %, said glass not containing any glass forming component which would adversely affect laser oscillation efficiency thereof.

4,120,815

POLYMERIC DEMULSIFIERS

Manjeri S. Raman, Houston, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 25, 1977, Ser. No. 844,561

Int. Cl.[2] B01D *17/04*

U.S. Cl. 252—341 **1 Claim**

1. A method of breaking oil-in-water emulsions which comprise the steps of treating the emulsion with at least a demulsifying amount of a blend of about 50 weight percent of a cationic water-in-oil emulsion polymer which is prepared by the polymerization of a monomer mixture of 50 percent by weight acrylamide, 47.5 percent by weight diallyl dimethyl ammonium chloride, 2.5 percent by weight diallyl diethyl ammonium chloride and about 50 percent by weight of a water-in-oil amphoteric emulsion polymer which is prepared from a monomer mixture of 47.8 by weight acrylamide, 2.2 percent by weight acrylic acid, 47.5 percent by weight diallyl dimethyl ammonium chloride and 2.5 percent by weight diallyl diethyl ammonium chloride.

4,120,816

DEFOAMING APPARATUS

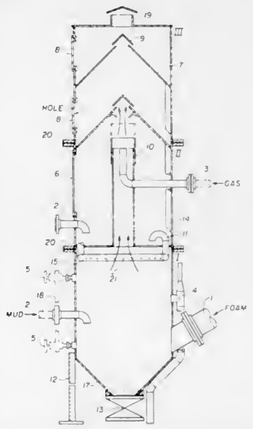
Jacques de Lautrec, and Jean-Francois Coste, both of Saint Gaudens, France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Aug. 3, 1977, Ser. No. 821,512

Claims priority, application France, Aug. 6, 1976, 76 24069

Int. Cl.[2] B01D *19/00*

U.S. Cl. 252—361 **7 Claims**



1. A defoaming apparatus comprising a vertical cylindrical column having a lower level containing foam to be broken, an intermediate level, and an upper level; a frusto-conical bottom section into which said lower level communicates; conduit means for charging foam mixed with rubbish to said lower level; conduit means for charging mud to said lower level; valve means at the bottom of said bottom section to regulate

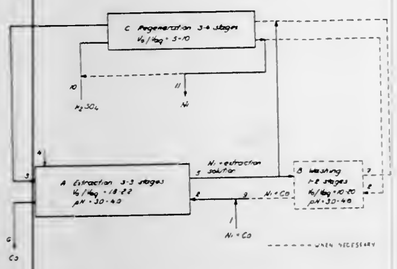
the discharge of sediment therefrom, at a rate controlled, in conjunction with the feeding of mud and foam, to maintain said lower level filled with mud and foam; means for injecting gas at low pressure and high flow into a vertical shaft of adjustable height located in said intermediate level and coaxial with said column, said shaft being open at each end, a plurality of superposed pairs of inclined vanes located in said upper level, and covered by a conical cap; whereby when gas is injected into said shaft a partial vacuum is created and the foam is drawn up into the shaft and discharged into said against said vanes; means for recovering liquid from the foam that breaks when driven against said vanes and spraying same over the surface of the foam in said lower level; and means for removing the gas released from said foam.

4,120,817

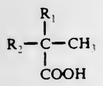
EXTRACTION AGENT COMPOSITION

Leif Erik Ingmar Hummelstedt; Bror Göran Nyman, both of Turku, and Raimo Juhani Leimala, Pori, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation of Ser. No. 373,764, Jun. 26, 1973, abandoned. This application Sep. 29, 1975, Ser. No. 617,694
Claims priority, application Finland, Jul. 3, 1972, 1891/72
Int. Cl.² B01F *1/00*
U.S. Cl. 252—364 **5 Claims**



1. An extraction agent composition for the separation from each other of nickel (II) and cobalt (II) in aqueous solutions containing such nickel and cobalt, which composition consists essentially of a hydrocarbon carboxylic acid having the formula



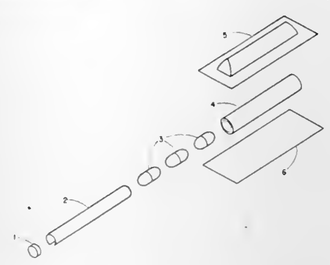
where R_1 and R_2 are alkyl groups such that the acid contains 9 to 11 carbon atoms in an amount sufficient to extract nickel and a hydroxy-oxime which is 5,8-diethyl-7-hydroxy-6-dodecyl oxime, 2-hydroxy-5-nonylbenzophenoxime, 2-hydroxy-3-chloro-5-nonylbenzophenoxime, or mixtures thereof, in a non-polar solvent, together with a small amount of dinonylnaphthalene sulphonic acid or 12–18 carbon atom-alkyl-substituted benzene sulphonic acid having a molecular weight of 330 to 390 sufficient to affect the phase interface tension and diminish the drop size of the dispersed phase and to accelerate the conversion of the material.

4,120,818

IRREVERSIBLE WARMUP INDICATOR

Frank E. Swindells, Arlington, Va., and Mary G. Klimas, Fort Pierce, Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 10, 1976, Ser. No. 713,312
Int. Cl.² C09K *3/00*
U.S. Cl. 116—114 V **10 Claims**



1. An irreversible warmup indicator comprising:
a. gelatin capsule having a seam therein;
b. a strip of indicating paper-aluminum foil laminate covering one-half of the circumference of the capsule with the aluminum side of the laminate in contact with the capsule;
c. a sealed glass tube containing said capsule and said laminate;
d. a plastic outer casing containing said sealed glass tube;
e. a liquid placed in said capsule with a melting point which is equal to the temperature to be monitored, said liquid having a positive thermal expansion coefficient in the temperature range immediately above its freezing point, whereby the apparatus is activated by freezing the liquid and a subsequent temperature rise causes thawing of the liquid, which expands and escapes through the seam in the capsule and contacts the indicating paper; and
f. a dye, which is either dissolved in said liquid or is placed in powder form on said indicating paper.

4,120,819

METHOD FOR PLATINUM OR PALLADIUM CATALYST REACTIVATION

Robert James Small, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 15, 1977, Ser. No. 833,506
Int. Cl.² B01J *23/96, 21/20;* **C07C** *103/32*
U.S. Cl. 252—413 **5 Claims**

1. In a process for the reductive alkylation of an acid hydrazide wherein the hydrazide is reacted with formaldehyde in the presence of hydrogen and palladium or platinum catalyst supported on carbon; the improvement of regenerating said catalyst by recovering same from the reaction mixture, slurrying with a dilute aqueous solution of a lower monobasic carboxylic acid or a mineral acid, and thereupon intimately contacting said slurry with a free oxygen containing gas or a labile oxygen containing compound to restore the catalyst activity to essentially its initial level, and removing said regenerated catalyst from said slurry.

2. The improvement in accordance with claim 1 wherein said free oxygen containing gas is air.

3. The improvement in accordance with claim 2 wherein said acid is selected from the group consisting of formic, acetic, hydrochloric, sulfuric, nitric and phosphoric.

4,120,820

HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Donald F. Birkelbach, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1976, Ser. No. 746,354
Int. Cl.² C08F *4/64*
U.S. Cl. 252—429 B **7 Claims**

1. A catalytic reaction product of (A) a complex of a trivalent titanium halide with water or an organic electron donor selected from alcohols having 2–8 carbon atoms, ethers having 2 to 20 carbon atoms, ketones having 3–20 carbon atoms, amines having 1–20 carbon atoms, olefins having 2–20 carbon atoms and mixtures thereof, (B) an organomagnesium component selected from (1) an organomagnesium compound or (2) a complex of an organomagnesium compound and an organometallic compound in an amount sufficient to solubilize the organomagnesium compound in hydrocarbon, said organomagnesium compound and said complex being represented respectively by the following formulas

$$MgR_2 \text{ and } MgR_2 \times MR_y$$

wherein each R_2 is independently a hydrocarbyl group having from 1 to 8 carbon atoms, M is a metal selected from Al, Zn, Si, Sn and P, y is the number of hydrocarbyl groups and corresponds to the valencey of M and x is about 0.001 to 10 and (C) a halide source selected from (1) an active non-metallic halide, said non-metallic halide corresponding to the formula R'X wherein R' is hydrogen or an organic group at least as active as sec-butyl and does not poison the catalyst and X is halogen or (2) a metallic halide corresponding to the formula $MR_{y-a}X_a$ wherein M is a metal of Group 3*a* or 4*a* of Mendeleev's Periodic Table of Elements, R is a monovalent organic radical, X is halogen, y is a number corresponding to the valence of M and a is a number from 1 to y; provided that the proportions of the foregoing components of said catalytic reaction product being such that the atomic ratio of Mg:Ti is within the range which is from about 1:1 to about 2000:1, either B, C or a mixture thereof contains aluminum or an aluminum trialkyl or an aluminum alkyl halide is added separately such that the atomic ratio of Al:Ti is within the range from about 0.1:1 to about 2000:1, the atomic ratio of Mg:X is within the range from about 0.01:1 to about 1:1.

4,120,821

CATALYST FOR CONVERSION OF ENGINE EXHAUST GAS

Akio Iizuka; Michiichi Taguchi, both of Yokohama, and Muneyuki Kubo, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 12, 1976, Ser. No. 713,788
Claims priority, application Japan, Aug. 28, 1975, 50-103415
Int. Cl.² B01J *21/02, 23/56, 8/02*
U.S. Cl. 252—432 **15 Claims**

1. A catalyst for simultaneous oxidation of hydrocarbons and carbon monoxide and reduction of nitrogen oxides in exhaust gas of an internal combustion engine, consisting essentially of a carrier which is made of active alumina at least in a surface portion thereof, 0.05–0.2 Wt% of the carrier of platinum, 0.0015–0.045 Wt% of the carrier of rhodium and 0.002–5 Wt% of the carrier of boron said catalyst being produced by impregnating said carrier with three thermally decomposable compounds of, respectively, platinum, rhodium and boron and then baking the impregnated carrier at temperatures not higher than 650° C.

4,120,822

CATALYTICALLY ACTIVE COMPOSITION FOR ELECTROLESS PLATING

Melvin Neil Jameson, St. M... ys; James Donald Klicker, Morgantown; Gerald Albert Krulik, Washington, and James Farnsworth York, Morgantown, all of W. Va., assignors to McGean Chemical Co., Cleveland, Ohio

Continuation of Ser. No. 652,002, Jan. 26, 1976, abandoned. This application May 11, 1977, Ser. No. 795,836
Int. Cl.² B01J *27/06;* **C23C** *3/00*
U.S. Cl. 252—441 **6 Claims**

1. A method of preparing a catalytically active concentrate free from extrinsic sources of acid comprising the steps of:
(1) melting a predetermined quantity of a hydrated stannous chloride composition;
(2) adding an aqueous solution of palladium chloride and a water soluble halide salt, other than said stannous chloride composition and said palladium chloride, selected from the group consisting of bromide and chloride to the molten hydrated stannous chloride;
(3) adding anhydrous stannous chloride to the mixture in a quantity sufficient to convert, at a minimum, all but 20% of the water in said aqueous solution to water of hydration associated with said anhydrous stannous chloride;
(4) reacting the mixture at a temperature between 35° and 140° C; and
(5) cooling the product to yield a dry, friable material or a liquid or a semisolid concentrate.

4,120,823

MANUFACTURE OF A TITANIUM-CONTAINING COMPONENT FOR CATALYSTS OF THE ZIEGLER-NATTA TYPE

Heinz Mueller-Tamm, Ludwigshafen; Hans Schick, Mannheim; James F. R. Jaggard, Ludwigshafen, and Johann Nickl, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 855,874
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658937
Int. Cl.² C01G *23/02*
U.S. Cl. 252—442 **14 Claims**

1. A process for the manufacture of a titanium-containing component of a catalyst for the homopolymerization and copolymerization of α-monoolefins of 3 to 6 carbon atoms by the Ziegler-Natta method, by milling together
(a) a titanium-containing compound of the general formula

$$TiCl_3 \cdot nAlCl_3$$

where n is a number from 0.01 to 1, and
(b) an ether which contains a total of from 4 to 30 carbon atoms and has the general formula

$$R^1 - O - R^2$$

where R^1 and R^2 are identical or different and each is open-chain alkyl of 1 to 15 carbon atoms, phenyl or alkylphenyl, where alkyl is of 1 to 8 carbon atoms, wherein
(1) a vibratory ball mill producing a milling acceleration of from 30 to 80 m.sec.$^{-2}$ is employed,
(2) the mill is first charged with the titanium-containing compound (a), after which it may or may not be operated in the absence of a diluent at from −50° to +100° C. over a period of from 0.5 to 100 hours, then
(3) whilst milling at a grist temperature of from −50° to +80° C., an amount of the ether (b) which corresponds to a molar ratio of aluminum in the titanium-containing compound (a) to ether (b) of from 1:5 to 1:0.5 to 1:0.05 is added continuously or at intervals, in the absence of a diluent, at a rate of from 0.01 to 200 ml/min per 2.5 kg of titanium-containing compound (a), thereafter
(4) whilst being milled, the grist is brought to from −10° to +100° C. and is kept in this temperature range until from

6 to 85% of the aluminum trichloride originally present in a bonded form in the titanium-containing compound (a) has been eliminated from the latter, after which

(5) the product obtained in accordance with (4) is washed with at least 0.6 **times its amount by weight of a hydrocarbon which is liquid at standard temperature and pressure and boils below** 150° C. at standard pressure, then

(6) the product obtained in accordance with (5) is dried and milled, in the absence of diluents, for a period of from 5 to 60 minutes at from −50 ° to +10° C., subsequently

(7) the product obtained in accordance with (6) is suspended in from 0.5 to 60 times its amount by weight of a hydrocarbon which is liquid at standard temperature and pressure and boils below 150° C. at standard pressure, thereafter

(8) the suspension obtained in accordance with (7) is mixed with the ether (b) in such amount that a molar ratio of titanium from the titanium-containing compound (a) to ether (b) of from 1:0.5 to 1:5 results and the batch is agitated vigorously for a period of at least 5 minutes at from 0° to 90° C., thereupon

(9) the solid is isolated from the suspension obtained in accordance with (8) and is washed with at least an equal amount by weight of a hydrocarbon which is liquid at standard temperature and pressure and boils below 150° C. at standard pressure, and thereupon

(10) the product obtained in accordance with (9) is dried and milled, in the absence of diluents, for a period of from 5 to 60 minutes at from −50° to +10° C.

4,120,824

TETRAVALENT MANGANESE-CARBON OXIDATION CATALYSTS AND METHODS OF THEIR PREPARATION

Walter M. Kruse, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Apr. 18, 1977, Ser. No. 788,138

Int. Cl.[2] **B01J** *21/18, 23/34;* **C08G** *61/10;* **C07C** *37/00*

U.S. Cl. 252—447 **7 Claims**

1. A heterogeneous oxidation catalyst consisting essentially of about 1 to 10% by weight of tetravalent manganese precipitated on porous carbon which is substantially free of mineral impurities.

3. A method of preparing a catalyst as claimed in claim 1 which comprises slurry a aqueous solution of a permanganate salt with a porous carbon substantially free of mineral impurities and subsequent thereto drying the slurry at temperatures of below 25° C. to obtain a solid catalyst.

6. A method as claimed in claim 3 wherein the drying is accomplished by vacuum drying.

7. A method as claimed in claim 3 wherein the drying is accomplished by freeze drying.

4,120,825

HYDROGENATIVE CONVERSION CATALYST

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 244,947, Apr. 17, 1972, Pat. No. 3,835,027. This application Jan. 25, 1974, Ser. No. 436,605

Int. Cl.[2] **B01J** *29/06*

U.S. Cl. 252—455 Z **7 Claims**

1. The composition including an amorphous refractory oxide component consisting essentially of at least one of alumina, titania, zirconia and silica-magnesia, a catalytically active amount of at least one crystalline zeolitic aluminosilicate and a hydrogenation component comprising at least one of the metals, oxides and sulfides of Periodic Groups VIB and VIII having improved hydrocarbon conversion characteristics prepared by intimately admixing a finely divided form of said refractory oxide component previously thermally activated at a temperature of at least about 600° F. with said aluminosilicate in finely divided form and forming an aggregate of the combination of said activated refractory oxide, zeolitic aluminosilicate and hydrogenation component, and thermally activating said aggregate at a temperature above 600° F.

4,120,826

HYDRODESULFURIZATION CATALYSTS BASED ON SUPPORTS PREPARED FROM REHYDRATABLE ALUMINA

Robert H. Ebel; Donald P. Spitzer, both of Riverside, and William Edward Bambrick, Old Greenwich, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 14, 1976, Ser. No. 696,092

Int. Cl.[2] **B01J** *21/04, 23/84, 23/88*

U.S. Cl. 252—465 **12 Claims**

1. A method of preparing hydrotreating catalysts for catalytic hydrodesulfurization of petroleum, having activated alumina supports, comprising:

preparing a partially dehydrated, rehydratable alumina by flash calcining Bayer process hydrated alumina;

rehydrating said partially dehydrated alumina with water which contains acid at pH below 7 at rehydration temperature, for the time needed for rehydration;

solidifying the rehydrated alumina;

mulling the solidified rehydrated alumina with sufficient water to make a mulled mixture suitable for particle forming; forming particles of desired size and configuration from the mulled mixture;

drying the formed alumina particles and then calcining same by heating to calcining temperature;

impregnating the calcined particles with liquid solutions of soluble compounds which are thermally decomposable to oxides of cobalt or nickel and to oxides of molybdenum or tungsten; and

activating the impregnated alumina particles by calcining heat treatment to form hydrotreating catalysts.

4,120,827

FUEL IGNITER COMPRISING A NOVEL SILICON CARBIDE COMPOSITION AND PROCESS FOR PREPARING THE COMPOSITION

Charles John Boos, Lewiston; Elwood Benjamin Hausler, Grand Island; James Arthur Hirsch, Niagara Falls; Martin Richard Kasprzyk, Buffalo, and Elmer Gene Smith, Niagara Falls, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 12, 1976, Ser. No. 666,297

Int. Cl.[2] **H01B** *1/02*

U.S. Cl. 252—512 **35 Claims**

1. A composition comprising particulate silicon carbide having an average particle size of less than about 20 microns pressed at a temperature of from about 1800° to about 2400° C. at a pressure of from about 70 to about 750 kilograms per square centimeter for a sufficient time to obtain a density above about 2.5 grams per cubic centimeter, said composition further comprising at least 95.0 weight percent silicon carbide containing from about 0.005 to about 0.05 moles per 100 grams of composition of at least one dissolved negative doping element, said at least one negative doping element being in sufficient mole excess of the total moles of all positive doping elements present in said composition to provide sufficient negative doping to said composition to reduce the cold volume resistivity to less than about 1.25 ohm cms and to reduce the ratio of cold volume resistivity at 20° C. to hot volume resistivity at 1200° C. of less than about 12 to 1.

4,120,828

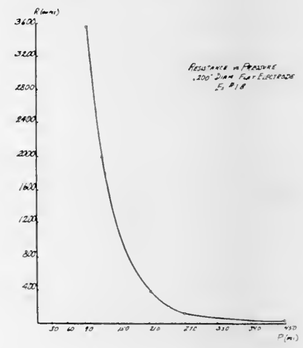
PRESSURE SENSITIVE RESISTANCE AND PROCESS OF MAKING SAME

Michael Michalchik, Newport Beach, Calif., assignor to Dynacon Industries, Inc., West Milford, N.J.

Filed Aug. 15, 1977, Ser. No. 824,298

Int. Cl.[2] **H01B** *1/02*

U.S. Cl. 252—513 **7 Claims**



1. As an article of manufacture, finely divided metallic particles, each having a coating of deformable, electrically semiconducting compound thereon.

4,120,829

ELECTRICALLY SEMI-CONDUCTING CERAMIC BODY

Francis H. Dulin, Oakland Township, Oakland County, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Continuation-in-part of Ser. No. 321,563, Jan. 8, 1973, abandoned. This application Mar. 31, 1976, Ser. No. 672,153

Int. Cl.[2] **H01B** *1/04*

U.S. Cl. 252—516 **2 Claims**

1. A fired, electrically semi-conducting ceramic body having an apparent porosity from 20 to 40 and improved resistance to erosion, and consisting essentially of silicon carbide particles having a median particle size from about 3 to about 25 microns dispersed in a bonding matrix, said silicon carbide particles constituting from about 50 to about 70 percent of the body.

4,120,830

USE OF SPIRANE DERIVATIVES TO IMPROVE PERFUME COMPOSITIONS

Walter Renold, Onex; Werner Skorianetz, Geneva; Karl-Heinrich Schulte-Elte, Onex, and Günther Ohloff, Bernex, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

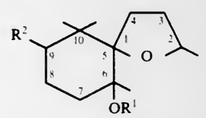
Continuation-in-part of Ser. No. 625,452, Oct. 23, 1975, Pat. No. 4,014,905, which is a continuation-in-part of Ser. No. 542,072, Jan. 17, 1975, abandoned. This application Oct. 1, 1976, Ser. No. 728,644

Int. Cl.[2] **C11B** *9/00*

U.S. Cl. 252—522 **10 Claims**

1. A process for improving, enhancing or modifying the organoleptic properties of perfumes which comprises adding thereto a spirane derivative of formula

(II)



wherein the symbol R^1 represents a hydrogen atom or an alkanoyl radical containing from 1 to 6 carbon atoms and R^2 represents a hydrogen atom or a methyl radical.

4,120,831

PROCESS FOR PRODUCING CARBOXYL CATIONITES

Nadezhda Nikolaevna Kuznetsova, Bolshoi prospekt, 11, kv. 7; Georgy Vasilievich Samsonov, 10 linia, 9, kv. 5; Klavdia Pavlovna Papukova, ulitsa Korablestroitelei, 19, korpus 1, kv.702; Galina Vladimirovna Bilibina, 7 linia, 2, kv. 33; Larisa Konstantinovna Shataeva, 3 Sovetskaya ulitsa, 9, kv. 22; Aida Alexandrovna Selezneva, prospekt Metallistov, 80, korpus 1, kv. 77; Nina Petrovna Kuznetsova, ulitsa Ostroumova, 7/9, kv. 13, all of Leningrad; Oyar Ansovich Vitols, ulitsa Lenina 11, kv. 40, Rizhsky raion, Olaine; Anite Ansovna Shtrausa, ulitsa Revoljutsii, 87, kv. 1, Riga; Lev Romanovich Gudkin, ulitsa Korablestroitelei, 23, korpus 1, kv. 279, Leningrad; Rimma Nikodimovna Mishaeva, naberezhnaya reki Karpovki, 13, kv. 27, Leningrad, and Karina Moiseevna Rozhetskaya, ulitsa Podvopnika Kuzmina, 50, kv. 36, Leningrad, all of U.S.S.R.

Filed Jun. 2, 1977, Ser. No. 802,629

Int. Cl.[2] **C08J** *5/20;* **C08F** *4/40, 20/70*

U.S. Cl. 521—38 **5 Claims**

1. A process for producing carboxyl cationites comprising dissolution of an unsaturated carboxylic acid and a vinyl-containing amide as comonomers and an initiator of radical polymerization in a 5–50% acetic acid; as the unsaturated carboxylic acids use is made of compounds selected from the group consisting of methacrylic and acrylic acids; as the vinyl-containing amides use is made of compounds selected from the group consisting of hexahydro-1,3,5-triacryloyltriazine, N,N'-methylenediacrylamide, N,N'-ethylenedimethacrylamide and N,N'-hexamethylenedimethacrylamide; the unsaturated carboxylic acid and vinyl-containing amide are taken in a weight ratio of 3–12:1 at a concentration of said comonomers in a 5–50% acetic acid equal to 10–30%; the resulting reaction mixture is dispersed in a silicone liquid selected from the group consisting of polyethylsiloxane and polymethylphenylsiloxane liquids; weight ratio of said reaction mixture to said silicone liquid is 1:3–5 respectively; copolymerization is then effected in suspension at a temperature of from 20° to 100° C.

4,120,832

PROCESS FOR THE PREPARATION OF A COATING COMPOSITION FOR ROADS, AIRPORTS AND INDUSTRIAL FLOORINGS

Marcel Ceintrey, Marly Le Roi, France, assignor to Screg Routes et Travaux Publics, Paris, France

Filed Oct. 30, 1975, Ser. No. 627,471

Claims priority, application France, Nov. 8, 1974, 74 37158

The portion of the term of this patent subsequent to Apr. 27, 1993, has been disclaimed.

Int. Cl.[2] **C08J** *11/04;* **C08L** *27/06, 95/00*

U.S. Cl. 260—2.3 **4 Claims**

1. Process for preparation of a coating composition useful for roads, airports, industrial floorings, canals and dams, comprising inorganic granulates coated with 4–12 wt%, by weight of the granulates, of a 25°–60° EVT coal tar pitch, and with 5–30 wt%, by weight of the coal pitch, of ground waste plastic materials selected from the group consisting of waste polyvinyl chloride packaging material, waste polyvinyl chloride material used for the production of bottles and flasks, waste polyvinyl chloride material with added impact-resistant styrene-butadiene-acrylonitrile resin material and polyvinyl chloride waste material containing up to 10 wt% waste polyethylene, and having a particle size of less than 10 mm, comprising admixing pre-ground waste plastic materials with inorganic granulates heated at a temperature of 120°–150° C. and below the decomposition temperature of said plastic materials, during a period of time of less than 30 seconds, then adding the pitch heated at a temperature of about 120° C. to about 140° C., and mixing said ingredients during a period of time sufficient to

initiate the plasticizing of the waste material and coat the granulates.

4,120,833

MODIFIERS FOR PVC FOAM, PROCESS FOR EXTRUDING MODIFIED PVC FOAM AND MODIFIED PVC FOAM COMPOSITIONS

Marshall T. Purvis, and R. Peter Grant, both of Newtown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 453,627, Mar. 22, 1974, Pat. No. 3,983,296.
This application Jun. 14, 1976, Ser. No. 695,608
Int. Cl.[2] C08J *9/06;* **C08L** *27/06, 33/08, 49/00*
U.S. Cl. 921—81 **21 Claims**

1. A modifier system for extruding polyvinyl chloride foam comprising:

a first core shell polymer having a hard shell polymerized from a shell-forming monomer system comprised of, in major part, at least one C_1 to C_4 alkyl methacrylate, having a molecular weight ($\overline{M}_v$) above 1.5 million, polymerized in the presence of, but less than about 20% grafted to, a crosslinked core polymerized from a core-forming monomer system comprised of, in major part, C_2 to C_8 alkyl acrylate, and about 0.1 to 5 weight percent, based on C_2 to C_8 alkyl acrylate, of a glycol dimethacrylate crosslinking agent, the weight ratio of shell to core being about 40:60 to 75:25; and

a second core-shell polymer having a shell polymer having an average molecular weight ($\overline{M}_v$) of at least about 450,000 polymerized from a shell-forming monomer system comprised of, in major part, at least one C_1 to C_2 alkyl methacrylate, and polymerized in the presence of, but less than about 20% grafted to, a core polymer having an average molecular weight ($\overline{M}_v$) of at least about 5,000 up to about 100,000 polymerized from a monomer or monomer mixture comprising, in major part, at least one C_1 to C_8 alkyl acrylate, the weight ratio of shell to core being about 60:40 to 0:100,

wherein the weight ratio of the first core-shell polymer to the second core-shell polymer is about 20:1 to about 2:1.

21. A formable composition comprising 100 parts by weight polyvinyl chloride or copolymers of vinyl chloride containing up to 20% by weight of other monovinylidene compounds, about 1 to 25 parts by weight of the modifier system of claim **1**, and about 0.1 to 5 parts by weight of a blowing agent, said composition being extrudable and, when extruded, being highly processable with improved resistance to thermal decomposition.

4,120,834

MODIFIED POLYOLS

Pierluigi Fatutto, Mestre (Venice), Italy, assignor to Montedison S.p.A., Milan, Italy

Filed Jul. 6, 1977, Ser. No. 813,417
Claims priority, application Italy, Jul. 9, 1976, 25181 A/76
Int. Cl.[2] C08J *9/00*
U.S. Cl. 521—164 **8 Claims**

1. Modified polyols consisting of the reaction product of diols having an equivalent weight ranging from 30 to 150, with polyisocyanates having an equivalent weight ranging from 50 to 200, characterized in that said modified polyols exhibit a diol/isocyanate weight ratio comprised between 10 and 1 and an OH/NCO equivalent ratio comprised between 3 and 50.

8. Formulations for polyurethane foams containing, as polyol-polyether components, one or more of the modified polyols according to claim **1**.

4,120,835

THERMOSETTING ACRYLIC ENAMEL CONTAINING IRON PYROPHOSPHATE

Carol Eve Goodell, Rochester, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 692,501, Jun. 3, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,653
Int. Cl.[2] C08L *1/14*
U.S. Cl. 260—15 **8 Claims**

1. An improved thermosetting acrylic enamel coating composition containing 10–60% by weight of a film-forming polymer blend and a solvent for said polymer blend in which the polymer blend consists essentially of

(a) about 50–80% by weight of an acrylic polymer consisting essentially of

(1) 0–25% by weight styrene,

(2) 25–55% by weight methyl methacrylate,

(3) 38–48% by weight of a soft constituent selected from the group consisting of an alkyl acrylate and an alkyl methacrylate wherein the alkyl groups have 2–12 carbon atoms,

(4) 5–20% by weight of a hydroxy containing constituent selected from the group consisting of a hydroxy alkyl acrylate and a hydroxy alkyl methacrylate wherein the alkyl group contains 1–8 carbon atoms, and

(5) 1–5% by weight of an α,b-unsaturated monocarboxylic acid;

(b) about 5–50% by weight of cellulose acetate butyrate having a viscosity of 1–6 seconds; and

(c) about 5–50% by weight of melamine formaldehyde resin at least partially alkylated with an aliphatic monohydric alcohol;

wherein the improvement used in combination therewith comprises:

0.1–5% by weight based on the weight of the polymer blend, of iron pyrophosphate powder.

4,120,836

PROCESS FOR PREPARING SHAPED CELLULOSE ACETATE ARTICLE

Andrew B. Auerbach, Livingston; John P. Thelman, Kenvil, and Albin F. Turbak, Convent Station, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 14, 1977, Ser. No. 833,076
Int. Cl.[2] C08L *1/12*
U.S. Cl. 260—15 **6 Claims**

1. In a process for preparing a cellulose acetate shaped article comprising mixing a solution of cellulose diacetate containing free hydroxyl groups with an acetone solvent, said solution containing an acetone-soluble methylolated polymer selected from the group consisting of melamine and quanamine polymers having a degree of polymerization between 2 and 10, and regenerating a shaped article from said solution, the improvement comprising adding to said solution from 1 to 20% by weight based on the weight of the methylolated polymer of a cyclic area compound selected from the group consisting of ethylene urea and hydrocarbon substituted ethylene ureas.

4,120,837

ORGANOSILOXANES USEFUL IN MOLDING COMPOSITIONS BASED ON UNSATURATED POLYESTERS AND UNSATURATED MONOMERS

Werner Schäfer, Diedenbergen; Hans-Albrecht Scholz, Hochheim, and Siegfried Wilhelm, Wiesbaden, all of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 9, 1977, Ser. No. 794,996
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621740
Int. Cl.[2] C08L *67/06*
U.S. Cl. 260—22 S **38 Claims**

1. A molding composition comprising

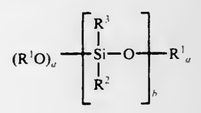
(i) 12 to 40 weight percent of unsaturated polyester resins,

(ii) 0.5 to 5 weight percent of unsaturated monomers,

(iii) 30 to 85 weight percent of a member selected from the group consisting of inorganic fillers, organic fillers, reinforcing agents, and mixtures thereof,

(iv) 0.01 to 1.0 weight percent of at least one siloxane selected from the group consisting of

(A) a siloxane of the formula



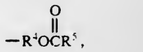
wherein

a is 0 or 1,

b is a number from 1 to 500, provided that when *a* is 0, *b* is equal to or greater than 3 and the compound is a cyclosiloxane,

R^1 is a member selected from the group consisting of hydrogen, alkyl and trimethylsilyl,

R^2 is a member selected from the group consisting of alkyl of 8 to 32 carbon atoms,



and $-R^4OR^6$, where R^4 is a divalent radical, R^5 is alkyl of 12 to 22 carbon atoms and R^6 is alkyl of 8 to 22 carbon atoms, provided that up to 80 mole % of the above-mentioned radicals may be replaced by methyl and provided further that at least one R^2 group per molecule is other than methyl, and

R^3 is methyl or alkoxy of 1 to 4 carbon atoms,

(B) a carboxyorganosiloxane which corresponds in structure to that of a linear methyl silicone having a continuous Si—O—Si— chain wherein a large portion of the alkyl groups are replaced by ester groupings prepared by esterification with an alcohol having from 1 to 4 carbon atoms, and

(C) a mixture of the above siloxanes, said siloxane or mixture of siloxanes acting as an external and/or internal lubricant, and

(v) the remainder catalysts and a member selected from the group consisting of dyestuffs, pigments and mixtures thereof in conventional amounts.

4,120,838

POLYPHOSPHAZENE WIRE COVERINGS

John Charles Vicic, Painesville, Ohio, and Kennard Anthony Reynard, Adrian, Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 1, 1977, Ser. No. 821,018
Int. Cl.[2] C08L *85/02, 43/02*
U.S. Cl. 260—29.1 SB **9 Claims**

1. A composition suitable as a fire resistant low smoking, electrically insulating covering for electrically conducting metal wires comprising for each 100 parts by weight of polyaryloxyphosphazene polymer:

(1) between 50 and 125 parts by weight of a hydrated filler selected from the group consisting of $Mg(OH)_2$, Al_2O_3·3-H_2O and mixtures thereof;

(2) an effective amount of a curing agent;

(3) between 3 and 11 parts by weight of a polysiloxane as a processing agent; and

a compound of lead in an amount which is effective to improve the moisture resistance of the composition.

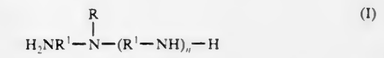
4,120,839

OLIGOMERIC AMINO-CONTAINING AMINOLYSIS PRODUCTS OF POLYMETHACRYLATES OR POLYACRYLATES, AND EPOXY RESIN COATING COMPOSITIONS CONTAINING SUCH AMINOLYSIS PRODUCTS AS CURING AGENTS

William D. Emmons, Huntingdon Valley, and Travis E. Stevens, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 13, 1977, Ser. No. 758,894
Int. Cl.[2] C08F *8/32;* **C08L** *23/36, 63/00*
U.S. Cl. 260—29.2 EP **18 Claims**

1. A solid product of aminolysis by an alkylene polyamine of the formula:



(I)

wherein

R^1 is an alkylene group having 2 to 6 carbon atoms,

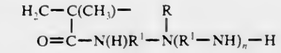
R is H or R^1NH_2, and

n is 0 or an integer from 1 to 4, of an alkyl methacrylate ester oligomer having a number average molecular weight from about 600 to 10,000, selected from the group consisting of:

(1) homopolymers of a (C_1–C_4) alkyl methacrylate and

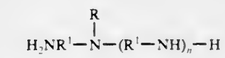
(2) copolymers exclusively of at least two alkyl methacrylates in which a (C_1–C_4) alkyl methacrylate is the major component,

the product having N-amino-substituted methacrylamide units of the formula:



wherein R^1, R, and *n* are as defined hereinabove, in the oligomer chain.

5. A coating composition having a binder consisting essentially of (a) a product of aminolysis by an alkylene polyamine of the formula



(I)

wherein

R^1 is an alkylene group having 2 to 6 carbon atoms,

R is H or R^1NH_2, and

n is 0 or an integer from 1 to 4, of a vinyl oligomer having a number average molecular weight from about 600 to about 10,000 selected from the group consisting of

(1) homopolymers of a (C_1–C_4) alkyl methacrylate,

(2) copolymers of at least two alkyl methacrylates in which a (C_1–C_4) alkyl methacrylate is the major component,

(3) homopolymers of a (C_1–C_4) alkyl acrylate,

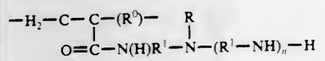
(4) copolymers exclusively of at least two alkyl acrylates in which a (C_1–C_4) alkyl acrylate is the major component,

(5) copolymers of an alkyl acrlate with an alkyl methacrylate containing at least 35 mole percent of at least one (C_1–C_6) alkyl acrylate or methacrylate, and

(6) copolymers of (a) at least one monomer selected from

alkyl acrylates and alkyl methacrylates with (b) at least one monomer selected from acrylic acid, methacrylic acid, styrene, and vinyltoluene, such copolymers containing at least 35 mole percent of at least one (C_1-C_6) alkyl acrylate or methacrylate,

the product having N-amine-substituted amide units of the formula



wherein

R_0 is H or CH_3,

R^1 is an alkylene group having 2 to 6 carbon atoms, and

R is H or R^1NH_2, and

n is 0 or an integer from 1 to 4 and also having carboxylic units selected from methacrylic acid and acrylic acid units in the oligomer chain, the product having 0.5 to 10 milliequivalents of amine per gram and 0.25 to 5 milliequivalents of carboxylic acid per gram, at least some of the carboxylic acid units being in the form of an internal salt of amine groups on the amide units and (b) a resin-forming polyepoxide, the proportion of aminolysis product used in the composition providing from 25 to 75 equivalents of amine with respect to 75 to 25 equivalents of epoxide groups provided in the polyepoxide.

4,120,840

PHOSPHORUS ACID TO STABILIZE QUATERNIZED POLYACRYLAMIDE

John R. Hurlock, Hickory Hills, and Edward G. Ballweber, Glenwood, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jan. 28, 1977, Ser. No. 763,477

Int. Cl.[2] C08L *61/20*

U.S. Cl. 260—29.4 UA **7 Claims**

1. A method for the stabilization of water-in-oil emulsions of finely divided water-soluble quaternary salts of poly trimethylamino methylol acrylamide of the type comprising:

A. 5–70% by weight of the emulsion of a hydrophobic liquid;

B. 0.1–21% by weight of the emulsion of a water-in-oil emulsifying agent;

C. 10–50% by weight of the emulsion of the quaternary salt of poly trimethylamino methylol acrylamide; and,

D. 30–95% by weight of the emulsion of an aqueous phase consisting of the polymer and water;

said polymer further characterized as having a particle size of from 0.1 microns to 10 microns within the emulsion; the method which comprises:

E. Adding with mixing to said water-in-oil emulsion from 5–80 mole percent of orthophosphorus acid based on the quaternary salt of poly trimethylamino methylol acrylamide present in said emulsion so as to adjust the pH of said emulsion to a level of from 3.0–5.5;

F. Heating the resultant water-in-oil emulsion to a temperature of from about 60°–90° C. for about 2–20 hours; and then,

G. Recovering a stabilized water-in-oil emulsion of the quaternary salt of poly trimethylamino methylol acrylamide.

4,120,841

LEVELLING AGENT FOR AQUEOUS PAINTS

Hiroshi Takahashi, Nishinomiya; Seizaburo Hirai, Takatsuki, and Toshio Abo, Ibaraki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 678,900, Apr. 21, 1976, abandoned. This application Jun. 10, 1977, Ser. No. 805,436

Claims priority, application Japan, Apr. 21, 1975, 50-48990

Int. Cl.[2] C08L *23/26, 23/36*

U.S. Cl. 260—29.6 H **13 Claims**

1. A method for imparting to an aqueous paint composition the ability to substantially avoid cissing of, and formation of craters in, coatings of the composition applied to a substrate, which comprises incorporating in the composition a copolymer of a monoethylenically, alpha, beta-unsaturated monobasic or dibasic carboxylic acid and an alkyl acrylate or alkyl methacrylate having in each case from 1 to 18 carbon atoms in the alkyl moiety, in an amount of from about 0.1 to 4% by weight based on the weight of the composition, the copolymer having an average molecular weight of from about 2,000 to 80,000 when determined by gel permeation chromatography, and an acid value of from about 30 to 200, the content of the carboxylic acid units in the copolymer being from about 5 to 40% by weight based on the weight of the copolymer in the case of the monobasic carboxylic acid, or from about 2.5 to 20% by weight based on the weight of the copolymer in the case of the dibasic carboxylic acid, the carboxyl groups of the copolymer being completely or substantially completely neutralized with a base.

4,120,842

SAND CONSOLIDATION COMPOSITION

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 753,760, Dec. 23, 1976. This application Sep. 19, 1977, Ser. No. 834,099

Int. Cl.[2] B22C *1/22;* **C08K** *5/01;* **E21B** *33/13*

U.S. Cl. 260—33.6 UA **10 Claims**

1. A treating composition for use in forming a fluid permeable barrier film in a sand containing, unconsolidated oil producing formation which consists essentially of, on a volume basis, 10 to 25% of furfuryl alcohol, 1 to 4% of a nonionic dispersing surfactant, 1 to 4% of water, 0.5 to 1.5% of a silane bonding agent, 1 to 5% of a polymerization catalyst for said furfuryl alcohol, 5 to 15% of a low-in-aromatics (about 20% maximum) petroleum distillate fraction, and from about 47 to about 76% of a high-in-aromatics (above about 80%) petroleum fraction.

4,120,843

STRIPPABLE SOLDER MASK MATERIAL COMPRISING POLYSULFONE, SILICON DIOXIDE FILLER, AND SOLVENT

Joseph G. Ameen, Apalachin; Glenn V. Elmore, Vestal, and Anthony E. Peter, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 671,898, Mar. 29, 1976, abandoned. This application Apr. 10, 1978, Ser. No. 894,673

Int. Cl.[2] B23K *35/22;* **C08G** *75/20*

U.S. Cl. 260—33.8 R **4 Claims**

1. A solder mask material operative to protect gold thermocompression bonding sites on a ceramic module during a solder dipping operation, said mask material comprising a thermoplastic, thermostable strippable base of polysulfone, a solvent for the polysulfone, said solvent chosen from the group consisting of orthodichlorobenzene, monochlorobenzene, methylene chloride and trichloroethylene, and a filler of finely divided silicon dioxide particles, said filler being operative to hold the molten polysulfone in place during the solder dipping operation.

4,120,844

MOLDED CALCIUM CARBONATE FILLED PROPYLENE RESIN COMPOSITES

Fred J. Meyer, Chelsea, and Seymour Newman, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 9, 1977, Ser. No. 775,811

Int. Cl.[2] C08K *3/26*

U.S. Cl. 260—42 **2 Claims**

1. A method for increasing impact strength of calcium carbonate filled propylene resin composites which comprises (A) admixing with high intensity rotary blade mixing (1) propylene resins which pass through a 20 mesh screen but are retained on a 325 mesh screen with (2) calcium carbonate filler which passes through a 60 mesh screen and at least 80% by weight passes through a 325 mesh screen to form a uniformly or substantially uniformly mixed powdery blend at a weight ratio of (2):(1) being about 7:13–9:11, the calcium carbonate filler having a number average particle diameter greater than 10 millimicrons, wherein the propylene resins comprise propylene homopolymer and copolymer and (B) fusing the uniformly or substantially uniformly mixed powdery blend which consists essentially of the particles of the filler and the particles of the resin to form the high impact composites.

4,120,845

SULFIDE CONTAINING TIN STABILIZERS

Thomas G. Kugele, Cincinnati, Ohio, assignor to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

Division of Ser. No. 492,969, Jul. 26, 1974, Pat. No. 4,062,881. This application Aug. 22, 1977, Ser. No. 826,917

Int. Cl.[2] C08K *5/58*

U.S. Cl. 260—45.75 S **57 Claims**

1. A halogen containing vinyl of vinylidene polymer composition containing a monoorganotin or diorganotin mercaptoalkyl ester of a carboxylic acid or mercapto hydroxyalkyl ester of a carboxylic acid mono or polysulfide useful as a stabilizer for improving the resistance to deterioration of vinyl chloride polymers when heated at 350° F, containing at least one tin atom having one to two hydrocarbyl groups having from 1 to 20 carbon atoms and selected from the group consisting of alkyl, aryl, cycloalkyl, aralkyl and alkenyl and linked to the tin through carbon, at least one mercaptoalkyl ester of a carboxylic acid group linked to tin through the sulfur of the mercaptoalkyl group and at least one mono or polysulfide sulfur group bonded exclusively to tin, the organotin compound having an amount of tin within the range from 10 to 42% by weight and an amount of sulfur within the range from 8 to 42% by weight.

4,120,846

BENZOYLOXYBENZOATES AND COMPOSITIONS STABILIZED THEREWITH

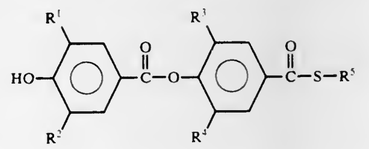
John D. Spivack, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 563,251, Mar. 28, 1975, Pat. No. 4,051,104, which is a continuation of Ser. No. 318,324, Dec. 26, 1972, abandoned. This application Sep. 22, 1977, Ser. No. 835,760

Int. Cl.[2] C07C *153/11;* **C08K** *9/04*

U.S. Cl. 260—45.85 B **5 Claims**

1. A benzoyloxybenzoate having the structure



wherein

R^1, R^2, R^3, and R^4 are tert-butyl groups,

R^5 is alkyl group having up to 30 carbon atoms, phenyl or alkyl substituted phenyl having up to 24 carbon atoms.

4. A composition of matter stabilized against degradation which comprises an organic material subject to oxidative and ultraviolet light degradation and a compound of claim 1.

4,120,847

HIGH ORTHO ETHERIFIED RESOLE RESINS

Harry M. Culbertson, Belchertown, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 647,958, Jan. 9, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 830,537

Int. Cl.[2] C08G *8/36*

U.S. Cl. 528—140 **21 Claims**

1. A high ortho etherified phenol-formaldehyde resole resin being characterized by:

A. having a reacted formaldehyde to phenol mol ratio of 1.10 to 2.0, said formaldehyde reacting with said phenol, forming methylol groups taking a final orientation of about 90% to 100% in the ortho position,

B. having said phenol selected from the group consisting of phenol, meta-substituted phenols and mixtures of phenol and substituted phenols,

C. having condensed phenol-aldehyde linkages wherein 25 to 90% of said linkages are benzyl ether linkages having a final orientation essentially in the ortho position and 10 to 75% are methylene linkages taking a final orientation of about 70 to 90% in the ortho position and about 10 to 30% in the para position,

D. having an average degree of polymerization of less than 4.0, and

E. having said methylol groups partially etherified with monohydric alcohols.

12. An improved process for preparing an etherified high ortho resole resin, said resin being characterized by:

A. having a reacted formaldehyde to phenol mol ratio of 1.10 to 2.0, said formaldehyde reacting with said phenol, forming methylol groups taking a final orientation of about 90% to 100% in the ortho position,

B. having said phenol selected from the group consisting of phenol, meta-substituted phenols and mixtures of phenol and substituted phenols,

C. having condensed phenol-aldehyde linkages wherein 25 to 90% of said linkages are benzyl ether linkages having a final orientation essentially in the ortho position and 10 to 75% are methylene linkages taking a final orientation of about 70 to 90% in the ortho position and about 10 to 30% in the para position,

D. having an average degree of polymerization of less than 4.0, and

E. having said methylol groups partially etherified with monohydric alcohols, said etherified resoles being prepared by first reacting said phenol and said formaldehyde in an aqueous reaction mixture under reflux at about 80° C. to 100° C., in the presence of a divalent electropositive metal ion, while maintaining the pH in the range of about 4 to 7, wherein said pH is controlled by having a sufficient amount of an organic acid present, forming said resole in said reaction mixture, the improvement comprising, etherifying said resole with a monohydric alcohol at a temperature of 65° to 100° C. in said reaction mixture and dehydrating the resultant aqueous reaction mixture to a water content of less than about 1 weight percent and an alcohol content of less than about 5% by weight providing an etherified high ortho resole resin as a single phase clear liquid varnish.

4,120,848

POLYURETHANE SPECTACLE FRAMES OR SINGLE PARTS THEREOF AND PROCESS FOR MAKING

Yoichi Mori; Kanichi Ueda, and Masao Takahashi, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

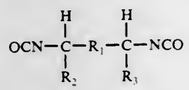
Filed Dec. 14, 1976, Ser. No. 750,567

Claims priority, application Japan, Dec. 19, 1975, 50/150659

Int. Cl.[2] **C08G** *18/76, 18/77, 18/42, 18/48*

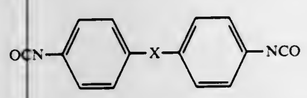
U.S. Cl. 528—67 **7 Claims**

1. Spectacle frames or single parts thereof, having a heat distortion temperature of about 60° to about 70° C., a bending modulus of 19,500 to 23,500 kg/cm^2 and a hardness of 81 to 82, composed of a cured, reaction product which is prepared by the reaction of (1) a mixture of two types of diisocyanates represented by the following formulae (A) and (B):



(A)

wherein R_1 is a divalent aliphatic hydrocarbon group having 1 to 12 carbon atoms and R_2 and R_3, which may be the same or different, are hydrogen or an aliphatic hydrocarbon group having 1 to 8 carbon atoms,



(B)

wherein X is oxygen or a divalent aliphatic hydrocarbon group having 1 to 5 carbon atoms, with (2) a polyhydroxy compound having a hydroxyl value of 150 to 1,300, more than 2.0, on average, hydroxyl groups in the molecule and an average molecular weight of 300 to 5,000, the ratio in amount of the diisocyanate of type (b) to the total of the two types of diisocyanates (A) and (B) being in the range of 0.2 to 0.7 by mole and the ratio in amount of the total of the two types of diisocyanates (A) AND (B) to the polyhydroxy compound being such that the ratio in number of the isocyanato group (—NCO) present in the two types of diisocyanates (A) and (B) to the hydroxyl group (—OH) present in the polyhydroxy compound is in the range of 0.5 to 1.5.

4,120,849

PROCESS FOR CRYSTALLIZING AND DRYING POLYETHYLENE TEREPHTHALATE AND APPARATUS TO CARRY OUT SAID PROCESS

Siegfried Breitschaft, Augsburg, and Rolf Holtermann, Tafertingen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 16, 1976, Ser. No. 751,014

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558730

Int. Cl.[2] **C08G** *63/74*

U.S. Cl. 528—502 **2 Claims**

1. A process for crystallizing and drying granules of amorphous polyethylene terephthalate by treating same with hot gases at a temperature of from 120° to 190° C., the hot gases passing through a cylindrical layer of loose polyester granules, which comprises crystallizing and drying the polyethylene terephthalate in a single process step with avoidance of fluidization and movement of said layer wherein under the action of the hot gases the cylindrical layer of loose polyester granules agglomerates to a cylindrical block, destroying said cylindrical block from the bottom thereof by scratching it off in layers by means of a perforated tray rotating about its vertical axis and provided with stripping edges and discharge slots, and discharging the disintegrated polyester material through the discharge slots of the perforated tray.

4,120,850

POLYETHER URETHANE POLYMERS PREPARED FROM A COPOLYMER OF TETRAHYDROFURAN AND ETHYLENE OXIDE

Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 6, 1977, Ser. No. 830,472

Int. Cl.[2] **C08G** *18/48*

U.S. Cl. 528—66 **9 Claims**

1. A polyether urethane polymer which is the reaction product of

(a) a copolymer of tetrahydrofuran and ethylene oxide or propylene oxide, the copolymer containing about 20% to about 70%, by weight, of ethylene oxide or propylene oxide units and having a number average molecular weight of about 550 to about 3,000 and a hydroxyl functionality of 2.0;

(b) an organic diisocynate; and

(c) 1,4-butanediol or hydroquinone bis(betahydroxyethyl)ether.

4,120,851

PROCESS FOR POLYMERIZING HIGH NITRILE ABS POLYBLENDS

Henry K. Chi, Longmeadow, and Alton L. Higgins, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 22, 1977, Ser. No. 826,442

Int. Cl.[2] **C08F** *297/04*

U.S. Cl. 260—880 R **20 Claims**

1. In a process for preparing an ABS polyblend by:

A. emulsion polymerizing a mixture consisting essentially of a monomer formulation dispersed in a diene rubber aqueous latex, grafting at least a portion of said monomer formulation as superstrate interpolymer on said rubber as a substrate providing a graft copolymer, said monomer formulation consisting essentially of a monovinylidene aromatic monomer and an ethylenically unsaturated nitrile monomer, forming during polymerization thereof an ABS polyblend of said graft copolymer and a matrix interpolymer, the improvement comprising:

B. emulsion polymerizing said mixture to a conversion of from about 85 to 98% as a partially polymerized mixture,

C. charging additional monovinylidene aromatic monomer as a sole monomer to said partially polymerized mixture in an amount of about 2-15% by weight of said monomer formulation,

D. further emulsion polymerizing said partially polymerized mixture in the presence of said additional monovinylidene aromatic monomer to essential completion, and

E. recovering said polyblend having improved color and impact strength.

4,120,852

ORGANIC COMPOUNDS

Wilfried Bauer, Munchenstein, and Janos Pless, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

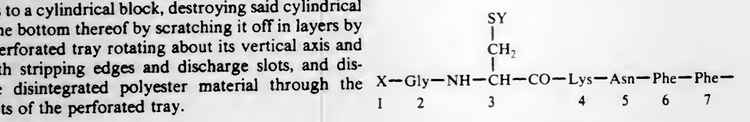
Filed May 7, 1975, Ser. No. 575,156

Claims priority, application Switzerland, May 13, 1974, 6493/74; Oct. 4, 1974, 13377/74

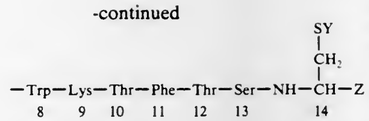
Int. Cl.[2] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 S **16 Claims**

1. A peptide of the formula



-continued

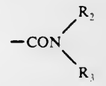


in free base form, pharmaceutically acceptable acid addition salt form or pharmaceutically acceptable complex form where

X is H-Ala, D-Ala, β-Ala, propionyl or Ac-Ala (wherein Ac is pharmaceutically acceptable acyl),

Y is hydrogen or a direct bond between the sulphur atoms in positions 3 and 14, and

Z is the radical —COOH, —COOR$_1$ (wherein R_1 is lower alkyl),



(wherein R_2 and R_3 independently are hydrogen or lower alkyl) or —CH$_2$OH,

with the proviso that X is other than H-Ala, when Z is COOH.

4,120,853

ESTERIFICATION OF CARBOXYLIC ACIDS BY CONTACT WITH A PHOSPHONIUM SALT

Noboru Yamazaki, and Fukuji Higashi, both of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

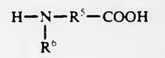
Division of Ser. No. 688,289, May 20, 1976, which is a division of Ser. No. 475,877, Jun. 3, 1974, Pat. No. 3,974,219, which is a continuation-in-part of Ser. No. 305,256, Nov. 10, 1972, abandoned. This application Jul. 13, 1977, Ser. No. 815,242

Claims priority, application Japan, Nov. 22, 1971, 46-93872; Feb. 19, 1972, 47-17355

Int. Cl.[2] **C07C** *103/52*

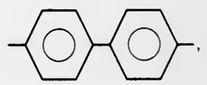
U.S. Cl. 260—112.5 R **4 Claims**

1. A process for producing an active ester of an amino acid having a protected amino group which comprises reacting the carboxyl group of an amino acid of the formula,

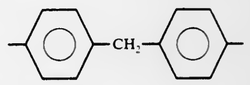


(IV)

having a protected amino group, wherein R^5 is alkylene or alkylidene having 1-30 carbon atoms which may have a substituent selected from the group consisting of phenyl, salicyl, canbamoyl and carboxyl cycloalkylene or cycloalkylidene having 3-8 carbon atoms, phenylene, a group of the formula



a group of the formula



or a group in which two or more groups selected from the group consisting of the above-mentioned aliphatic and aromatic hydrocarbon groups are bonded through —CONH—; and R^6 is hydrogen or alkyl having 1-4 carbon atoms, with a phosphonium salt obtained by reacting a phosphorous ester selected from the group consisting of monomethyl, monoethyl, monoisopropyl, monophenyl, dimethyl, diethyl, diisopropyl, di-n-butyl, diphenyl, triethyl, triisopropyl and tributyl esters of phosphorous acid and an ammonium salt of the phosphorous monoester, with an organic base selected from the group consisting of pyridine, 2-methylpyridine, 3-methylpyridine, 4-methylpyridine, 2,6-dimethylpyridine or triethylamine, and an oxidizing agent selected from the group consisting of bromine, iodine, mercurous chloride, mercuric chloride, mercuric bromide or mercuric acetate, at a temperature of from 30° to 200° C., and then reacting the activated amino acid with a hydroxyl or mercapto group-containing compound of the formula

R^4OH (III-a)

or

R^4SH (III-b)

wherein R^4 is alkyl having 1-18 carbon atoms, cycloalkyl having 3-8 carbon atoms, phenyl, naphthyl, aryl having at least one substituent selected from the group consisting of alkyl having 1-4 carbon atoms, nitro, cyano, N,N-dimethylamino and methoxycarbonyl, or phenylalkyl having 7-12 carbon atoms, at a temperature of from 0° to 200° C.

4,120,854

DISAZO AND TRISAZO DYES HAVING A 1,3-DIAMINO-, DIHYDROXY- OR AMINO-HYDROXY-BENZENE NUCLEUS AND METAL COMPLEXES THEREOF

Heinz Wicki, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

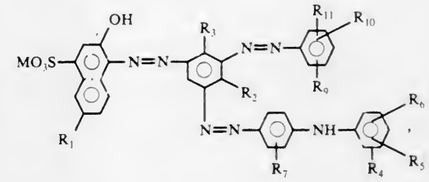
Continuation-in-part of Ser. No. 563,872, Mar. 31, 1975, abandoned. This application Sep. 27, 1976, Ser. No. 726,979

Claims priority, application Switzerland, Apr. 10, 1974, 5066/74; Nov. 14, 1974, 15186/74; Nov. 25, 1974, 15620/74; Nov. 25, 1974, 15621/74

Int. Cl.[2] **C09B** *33/02, 33/20, 45/24, 45/34*

U.S. Cl. 260—145 C **43 Claims**

1. A 1:1 copper, 1:1 nickel, 1:2 chromium, 1:2 cobalt or 1:2 iron complex of a comound of the formula



or a mixture of such complexes, wherein

R_1 is hydrogen or nitro,

R_2 is hydroxy or —NH$_2$,

R_3 is hydroxy or —NH$_2$,

R_4 is hydrogen, nitro or C$_{1-4}$ alkyl,

R_5 is hydrogen, nitro or C$_{1-4}$ alkoxy,

R_6 is hydrogen, C$_{1-4}$alkyl, C$_{1-4}$alkoxy, —COOM or —SO$_3$M,

R_7 is hydrogen or —SO$_3$M,

R_9 is hydrogen, hydroxy, —NH$_2$, C$_{1-4}$alkyl or C$_{1-4}$alkoxy,

R_{10} is hydrogen, nitro, —COOM or —SO$_3$M,

R_{11} is hydrogen, fluoro, chloro, bromo, iodo, nitro or C$_{1-4}$alkyl, and

each M is hydrogen or a non-chromophoric cation,

wherein each 1:2 chromium, 1:2 cobalt and 1:2 iron complex has an additional M balancing the negative charge of the complexed metal atom.

4,120,855

BACTERICIDALLY ACTIVE MONOCHLOROTRIAZINE DYES

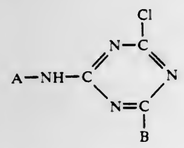
Vladimir Leibovich Liverant, ulitsa Lenina, 50, kv. 15; Lev Moiseevich Yagupolsky, ulitsa I.Kudri, 41, kv. 48; Andrei Yakovlevich Ilichenko, ulitsa I.Kudri, 39, kv. 45; Faina Borisovna Tinashpolskaya, ulitsa Miljutenko, 11/1, kv. 106; Elena Alexeevna Fedorovskaya, ulitsa Yakira, 16/8, korpus 2, kv. 29; Lidia Ivanovna Petrik, Vozdukhoflotsky prospekt, 52, kv. 139, all of Kiev; Iosif Yakubovich Kalantarov, ulitsa Kuibysheva, 4/1, kv. 15, Dushanbe; Mira Semenovna Kopylova, ulitsa Patorzhinskogo, 16, kv. 4, Kiev, and Idima Evgenievna Meitus, ulitsa Putovskogo, 69, kv. 26, Dushanbe, all of U.S.S.R.

Filed Oct. 18, 1976, Ser. No. 733,369

Int. Cl.[2] C09B *62/06, 62/08, 62/10;* **A61L** *1/00*

U.S. Cl. 260—153 **5 Claims**

1. A bactericidally active monochlorotrizine dye compound having the formula:



wherein A is chromophoric; and B is a bactericidal component selected from the group consisting of hydroxyl derivatives, antibiotics, and NH_2 derivatives.

4,120,856

PROCESS FOR THE PREPARATION OF 3-FLUOROBENZODIAZEPINES

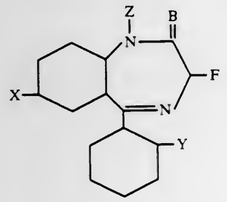
Elena Maria Bingham, Wilmington, Del., and William Joseph Middleton, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 687,318, May 26, 1976, which is a continuation-in-part of Ser. No. 597,502, Jul. 31, 1975, abandoned. This application Nov. 23, 1977, Ser. No. 854,261

Int. Cl.[2] C07D *243/26, 487/04*

U.S. Cl. 260—239.3 D **1 Claim**

1. A Process for preparing a compound of the formula:



wherein

X is Cl, Br, NO_2 or CF_3;

Y is H, Cl, Br or F;

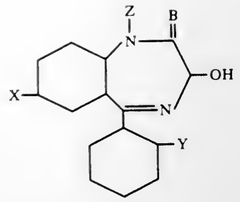
Z is H, hydrocarbyl of 1–4 carbons, $—CH_2—CF_3$, —COHNR, $—CH_2—CH_2NR_2$ or $—CH_2CH_2NR_2.A$, where R is alkyl of 1–4 carbons, and A is a pharmaceutically suitable acid;

B is O; or

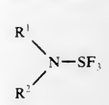
B and Z together is =N—N=C(R')-where R' is H or C_1–C_4 alkyl

which comprises:

contacting, under substantially anhydrous conditions at a temperature of about −80° to +10° C., a compound of the formula



with a compound of the formula:



where B, X, Y and Z are as previously defined, and R^1 and R^2 individually are a primary alkyl group of 1–4 carbons or taken together are $—(CH_2)_4—$ or $—(CH_2)_5—$.

4,120,857

DERIVATIVES OF 1,2,3,3-TETRAMETHYL-2-AZABICYCLO[2.2.2]OCTAN-5-ENDO-OL

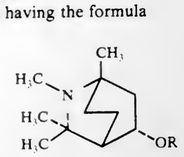
Mario Longobardi, Via S. Martino 49/4, 16131 Genova; Pietro Schenone, Via Zara 25-1, 16145 Genova, and Francesco Bondavalli, Via Genova 6F/13, 17100 Savona, all of Italy

Filed Apr. 26, 1977, Ser. No. 791,096

Int. Cl.[2] C07D *221/24*

U.S. Cl. 260—293.54 **10 Claims**

1. A compound having the formula



wherein R is $—COR_1$ in which R_1 is cyclo(lower)alkyl, p-aminophenyl, 3,4,5-trimethoxyphenyl or diphenylmethyl, $—CONHR_2$ in which R_2 is phenyl, or $—(CH_2)_3NHCOR_3$ in which R_3 is phenyl or diphenylmethyl; or a pharmaceutically acceptable acid addition salt thereof.

4,120,858

14-SUBSTITUTED VINCANES

Otto Clauder; Jozsef Kökösi; Laszlo Szporny, and Egon Kárpati, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

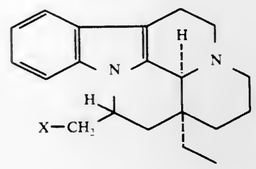
Filed Aug. 30, 1976, Ser. No. 719,066

Claims priority, application Hungary, Sep. 1, 1975, RI 577

Int. Cl.[2] C07D *519/04*

U.S. Cl. 260—293.55 **7 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein X is a straight or branched chain lower alkanesulfonyloxy, benzenesulfonyloxy, p-toluenesulfonyloxy, naphthalenesulfonyloxy, thiocyanato, azido, amino, or amino mono- or disubstituted by one of the following groups: C_1 to C_6 alkyl, C_2 to C_6 alkenyl, C_2 to C_6 alkynyl, C_3 to C_{20} cycloalkyl, C_3 to C_{20} cycloalkenyl, C_7 to C_{20} araliphatic, C_6 to C_{14} aromatic, acyl group of a carboxylic acid with a C_1 to C_6 hydrocarbon, acyl group of a carboxylic acid with a C_1 to C_6 hydrocarbon substituted by halogen, oxo, amino, phenyl, diphenyl or naphthyl, benzoyl, C_1 to C_6 alkoxycarbonyl, C_3 to C_{20} cycloalkyloxycarbonyl, C_7 to C_{20} aralkoxycarbonyl, aminocarboimido, and pymolidino, piperidino, perhydroazepino and 4-methylpiperidino group formed with the nitrogen of said amino.

4,120,859

(N-SUBSTITUTED-PYRIDYL)-ALKYL SULFONIC ACID BETAINES AS ELECTROPLATING ADDITIVES

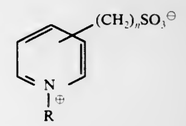
Kurt Pluss, and Bruno Romano De Martin, both of Schaffhausen, Switzerland, assignors to Cilag-Chemie A.G., Schaffhausen, Switzerland

Division of Ser. No. 763,452, Jan. 27, 1977, Pat. No. 4,067,785, which is a continuation-in-part of Ser. No. 666,525, Mar. 12, 1976, abandoned. This application Jul. 15, 1977, Ser. No. 816,104

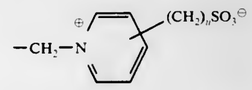
Int. Cl.[2] C07D *213/52*

U.S. Cl. 260—294.8 R **16 Claims**

1. A pyridyl alkyl sulfonic acid betaine having the formula:



in which the substituent $—(CH_2)_nSO_3^{\ominus}$ is in the 2- or 4-position of the pyridyl ring; *n* is the integer 1 or 2; and R is a member selected from the group consisting of methyl; methallyl; benzyl; halobenzyl wherein said halo has an atomic weight less than 80; loweralkylbenzyl wherein said loweralkyl has from 1 to 4 carbons; and benzyl substituted with the group:



wherein the substituent $—(CH_2)_nSO_3^{\ominus}$ is in the 2- or 4-position of the pyridyl ring and *n* is the integer 1 or 2.

4,120,860

3-ARYL-1-(2- OR 4-IMINODIHYDRO-1-PYRIDYL)-2-PROPANOL ANTIARRHYTHMIC COMPOUNDS

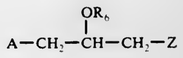
Julius Diamond, and Ronald A. Wohl, both of Morris Plains, N.J., assignors to Cooper Laboratories, Inc., Parsippany, N.J.

Filed May 10, 1977, Ser. No. 795,530

Int. Cl.[2] C07D *211/80*

U.S. Cl. 260—296 R **16 Claims**

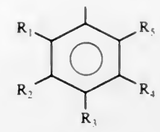
1. A compound having the structural formula:



wherein:

A is an aromatic radical selected from the group consisting of:

(a) substituted phenyl groups having the formula:



wherein R_1, R_2, R_3, R_4, and R_5, which may be the same or different are substituents selected from the group consisting of:

hydrogen,
alkyl,
alkenyl,
alkynyl,
cycloalkyl,
phenyl,
alkoxy,
halo,
hydroxy,
hydroxymethyl,
amino,
acyloxy,
acylamino,
acylalkylamino,
dialkylamino,
trifluoromethyl,
nitro,
cyano,
acyl,
formyl,
carboxy,
alkoxycarbonyl,
carbamoyl,
alkylsulfonyl,
alkoxyalkyl,
carboxyalkyl,
carbamoylalkyl,
alkoxyalkoxy,

provided that at least one of R_1, R_2, R_3, R_4, and R_5 must be hydrogen, no more than 4 may be loweralkyl, no more than three may be loweralkoxy, no more than 2 may be halogen, and no more than one may be any of the other substituents; and the total carbon content of all the substituents must not exceed 6 carbon atoms;

(b) naphthyl and naphthyl substituted with no more than two alkyl groups and no more than one other substituent selected from the group consisting of

halo,
alkoxy,
nitro,
aminosulfonyl,
acylamino,

provided that the total carbon content of all the substituents must not exceed 4 carbon atoms;

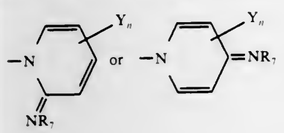
(c) polycyclic carbocyclic radicals selected from the group consisting of

indenyl,
indanyl,
5,6,7,8-tetrahydronaphthyl,
6,7,8,9-tetrahydro-5H-benzocycloheptenyl,
5,6,7,8,9,10-hexahydrobenzocyclooctenyl,
5,6,7,8-tetrahydro-5,8-methano-1-naphthyl
5,6,7,8-tetrahydro-5,8-ethano-1-naphthyl,

(d) bicyclic heterocyclic radicals selected from the group consisting of

4-benzofuranyl,
7-benzofuranyl,
2-acetyl-7-benzofuranyl,
4-benzothienyl,
7-benzothienyl,
8-thiochromanyl,
5-quinolyl,
5-isoquinolyl;

Z is an iminopyridyl radical having the structural formula



wherein:

Y is selected from the group consisting of
hydrogen,
loweralkyl,
loweralkenyl,
loweralkoxy,
loweralkoxycarbonyl,
loweracyloxy,
loweracylamino,
carbamoyl,
cyano,
halo,

and n = 1 or 2 when Y is loweralkyl or halo,
and n = 1 in all other cases;

R_6 is selected from the group consisting of hydrogen,
loweralkoxycarbonyl,
loweracyl,
carboxyloweracyl,
carbamoyl,
thiocarbamoyl and

R_7 is selected from the group consisting of
hydrogen,
loweralkyl,
loweralkenyl,
loweralkynyl,
C_3-C_8 cycloalkyl,
C_4-C_8 cycloalkylalkyl,
phenyl,
benzyl,
phenylethyl,
loweralkoxycarbonyl,
loweracyl,
carboxyloweracyl,
carbamoyl,
thiocarbamoyl;

and pharmaceutically acceptable acid addition salts.

13. 3-(1-Naphthyl)-1-(2-imino-1,2-dihydro-3-methyl-1-pyridyl)-2-propanol and pharmaceutically acceptable acid addition salts.

4,120,861

2-(5-PHENYL-1,3,4-THIADIAZOL-2-YL)BENZOIC ACID

Walter G. Brouwer, Guelph; Edwin J. MacPherson, Elmira, both of Canada; Ronald B. Ames, Naugatuck, Conn.; Robert W. Neidermyer, Cheshire, Conn., and Charles E. Crittendon, Cheshire, Conn., assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal Ltd., Ontario, Canada

Division of Ser. No. 648,237, Jan. 12, 1976, Pat. No. 4,035,175, which is a division of Ser. No. 492,376, Jul. 29, 1974, Pat. No. 3,947,263. This application May 2, 1977, Ser. No. 793,111

Int. Cl.[2] **C07D** *285/12*

U.S. Cl. 260—302 D **1 Claim**

1. 2-(5-Phenyl-1,3,4-thiadiazol-2-yl)benzoic acid.

4,120,862

USE OF COPPER HALIDE CATALYSTS AND CERTAIN EPOXY COMPOUNDS TO OXIDIZE NITRO-SUBSTITUTED SCHIFF BASES TO BENZOXAZOLES

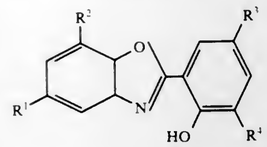
Donald N. Brattesani, Oakland, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1977, Ser. No. 827,649

Int. Cl.[2] **C07D** *263/56*

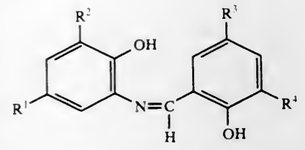
U.S. Cl. 260—307 D **10 Claims**

1. The method of preparing benzoxazoles of the formula



wherein one of R^3 and R^4 is —NO2 and the other is —H, —NO2 or alkyl of 1 to 20 carbons and R^1 and R^2 are independently —H or alkyl of 1 to 20 carbons, with the proviso that R^1, R^2, R^3 and R^4 contain a total of at least 6 carbons,

said method comprising contacting a corresponding Schiff base of the formula



wherein R^1, R^2, R^3 and R^4 are as above defined, with a copper halide catalyst CuX_n, X being Br or Cl and n being 1 or 2, and with a peroxy compound of the formula R^5—O—O—R^6, in which R^6 is H or R^5 and R^5, independently, in each occurrence, is a hydrocarbyl group of 2 to 20 carbons,

said contacting being effected by agitating a mixture of said Schiff base, said catalyst, said peroxy compound and an inert liquid, at a temperature of at least 25° C., for at least 5 minutes.

4,120,863

FLUORINE-CONTAINING BENZOXAZOLES

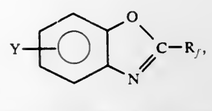
Christ Tamborski, and John B. Christian, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 27, 1977, Ser. No. 837,329

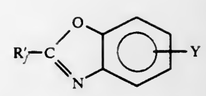
Int. Cl.[2] **C07D** *263/56*

U.S. Cl. 260—307 D **5 Claims**

1. A fluorine-containing benzoxazole having the following structural formula:



wherein R_f is C_xF_{2x+1}, where x is an integer from 1 to 10, inclusive; $CF_2(OCF_2CF_2)_yOC_2F_5$, where y is zero or an integer from 1 to 10, inclusive; $CF(CF_3)[OCF_2CF(CF_3)]_zOC_3F_7$, where z is zero or an integer from 1 to 10, inclusive; or



where R_f' is $(CF_2)_4O(CF_2)_4O(CF_2)_4$ or $Z[CF(CF_3)CF_2O]_n(CF_2)_4[OCF_2CF(CF_3)]_nZ$, where each Z is $(CF_2)_4O$ or $CF(CF_3)OCF_2CF_2O$, and n is an integer from 1 to 5, inclusive; and Y is C_xF_{2x+1}, where x is an integer from 1 to 10, inclusive; $CF_2(OCF_2CF_2)_yOC_2F_5$, where y is zero or an integer from 1 to 10, inclusive; $CF(CF_3)[OCF_2CF(CF_3)]_zOC_3F_7$, where z is zero or an integer from 1 to 10, inclusive; or hydrogen, R_f being C_xF_{2x+1} only when Y is other than hydrogen.

4,120,864

1,2,4-4H-TRIAZOLE DERIVATIVES

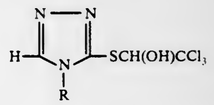
Michael C. Seidel, Levittown; William C. von Meyer, Willow Grove, and Stanley A. Greenfield, Ambler, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 67,198, Aug. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 847,481, Jul. 3, 1969, Pat. No. 3,701,784, which is a continuation-in-part of Ser. No. 757,490, Sep. 4, 1968, Pat. No. 3,769,411. This application Jun. 30, 1972, Ser. No. 267,766

Int. Cl.[2] **C07D** *249/12*

U.S. Cl. 260—308 R **2 Claims**

1. A compound of the formula



wherein R is alkyl straight or branched of 1 to 12 carbon atoms.

4,120,865

METAL COMPLEX AND METHOD FOR PREPARING

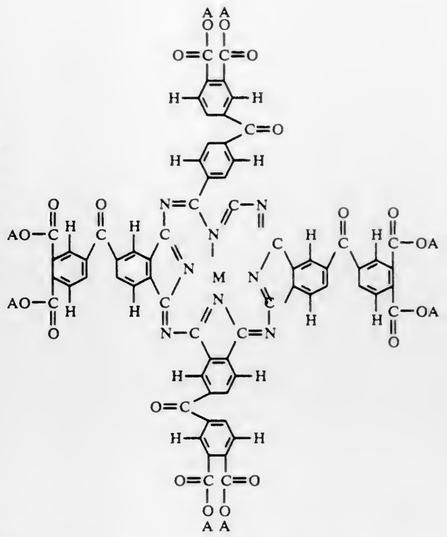
Clifford Ward, Louisa, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 753,400, Dec. 22, 1976, Pat. No. 4,090,954. This application Sep. 6, 1977, Ser. No. 830,513

Int. Cl.[2] **C09B** *47/04*

U.S. Cl. 260—314.5 **7 Claims**

1. A catalyst for oxidizing soluble alkali mercaptide compounds to disulfide compounds in an aqueous alkaline solution, comprising a metal complex of 2,3, 7,8,12,13,17,18-tetra [1,2-benzo-4 (4'-phthaloyl)]-porphyrazine-2-,22,23,24-tetraene, or a substituted derivative thereof having the structural formula:



where M is a metal selected from the group consisting of iron, manganese, chromium, magnesium, copper, nickel, zinc, titanium, hafnium, thorium, tin, lead, columbium, tantalum, antimony, bismuth, molybdenum, palladium, platinum, silver, mercury, vanadium and cobalt and A is hydrogen or an alkali metal.

4,120,866

PREPARATION OF ARYLSULPHONIUM SALTS

Adolf Winkler, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 16, 1977, Ser. No. 833,927

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644591

Int. Cl.[2] **C07D** *209/82*

U.S. Cl. 260—315 **9 Claims**

1. A process for the production of an arylsulphonium fluoride, comprising reacting an aromatic compound of the formula

Ar—H

in which Ar is an aromatic radical with a sulphoxide of the formula



in which R^1 and R^2 each independently is an aliphatic or aromatic radical or, together, a divalent radical, in the presence of hydrogen fluoride.

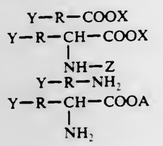
4,120,867

MONORADIOIODINATED PHENOLIC ESTERS, ACIDS AND AMINES

Anandrao S. Akerkar, Pomona, N.Y., and Herman Rutner, Hackensack, N.J., assignors to Becton, Dickinson & Company, Rutherford, N.J.

Filed Sep. 29, 1976, Ser. No. 727,407
Int. Cl.[2] C07D *207/40*
U.S. Cl. 260—326.4 **18 Claims**

1. A compound selected from the group consisting of:



(a)
(b)
(c)
(d)

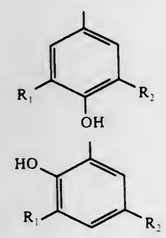
wherein

R is selected from the group consisting of straight and branched chain aliphatic hydrocarbons having from 1 to 6 carbon atoms;

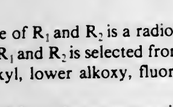
X is selected from the group consisting of hydrogen and active ester moieties;

Z is selected from the group consistng of acyl or benzyloxycarbonyl;

Y is selected from the group consisting of:



I



II

wherein one of R_1 and R_2 is a radioiostope of iodine and the other of R_1 and R_2 is selected from the group consisting of lower alkyl, lower alkoxy, fluoro-, chloro-, bromo-, and nitro-;

A is selected from the group consisting of hydrogen, lower alkyl, an alkali metal and an alkaline earth metal.

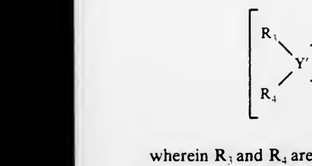
4,120,868

CYCLIC 2-METHYL-2,4-DIALKOXY-3-BUTEN-1-AL-ACETALS, THEIR PREPARATION AND USE

Hagen Jaedicke, Ludwigshafen, and Joachim Paust, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 9, 1977, Ser. No. 859,020
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1976, 2659507
Int. Cl.[2] C07D *319/04*
U.S. Cl. 260—340.7 **1 Claim**

1. A cyclic 2-methyl-2,4-dialkoxy-3-buten-1-al-acetal of the general formula I



(I)

where R^1 to R^6 are H, $-CH_3$ or $-C_2H_5$ and R^7 and R^8 may be identical or different and are alkyl of 1 to 10 carbon atoms.

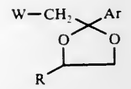
4,120,869

2-ARYL-1,3-DIOXOLANES

Jan Heeres, Vosselaar, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 732,826, Oct. 15, 1976, which is a continuation-in-part of Ser. No. 619,863, Oct. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 544,157, Jan. 27, 1975, Pat. No. 3,936,470. This application Jun. 2, 1977, Ser. No. 802,701
Int. Cl.[2] C07D *317/10*
U.S. Cl. 260—340.9 R **1 Claim**

1. A chemical compound having the formula:



wherein:

W is a member selected from the group consisting of halo, (4-methylphenyl)sulfonyloxy and methylsulfonyloxy;

Ar is a member selected from the group consisting of phenyl, substituted phenyl, and naphthalenyl, and wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, nitro and cyano; and

R is a member selected from the group consisting of alkyloxymethyl wherein the alkylgroup has from 1 to 10 carbon atoms, alkenyl, alkenyloxymethyl, wherein said alkenyl has from 2 to 10 carbon atoms, hydroxymethyl, 2-propynyloxymethyl, halomethyl, arylmethyl and arylmethoxymethyl, wherein said aryl is a member selected from the group consisting of phenyl, substituted phenyl, naphthalenyl and mono- and di-halonaphthalenyl, and wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, cyano, nitro, phenyl, phenylmethyl, benzoyl, halobenzoyl, lower alkylcarbonyl, lower alkyloxycarbonyl and trifluoromethyl, provided that when more than 1 substituents are present only 1 thereof may be selected from the group consisting of phenyl, phenylmethyl, benzoyl and halobenzoyl.

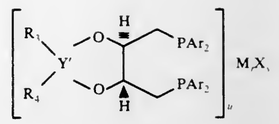
4,120,870

METAL PHOSPHINE COMPLEX

John Melvin Townsend, Montclair, and Donald Herman Valentine, Jr., Highland Park, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 18, 1977, Ser. No. 816,235
Int. Cl.[2] C07D *317/10*
U.S. Cl. 260—340.9 R **7 Claims**

1. A compound of the formula



M_pX_u

wherein R_3 and R_4 are alkyl or aryl or taken together with Y′ form a substituted or unsubstituted cycloalkyl ring: Y′ is carbon; P is phosphorus: Ar is phenyl, naphthyl anthryl phenanthryl or azulyl which may be substituted in one or more positions with a lower alkyl, halogen, lower alkoxy, amino, nitro, mono and di-lower alkylamino group; M is a Group IB or IIB metal; X is selected from the group consisting of halide, perchlorate, tetrahalogenoborate, hexahalogenophosphate, or hexahalogenoantimonate wherein said halogenates comprise fluorine and chlorine, and tetraphenylborate; *u* is an integer from 1–3; *r* and *s* are 1 or 2 depending on the valence of M and the value of *u;* the dimers or oligomers thereof.

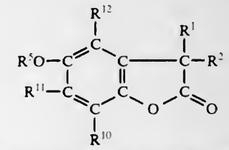
4,120,871

5-ORGANOSULFONYL, 5-ORGANOSULFINYL OR 5-HALOALKANOYL-BENZOFURAN-2-ONES

Peter Stuart Gates, Cambridge; John Gillon, Great Shelford, and David Thomas Saggers, Saffron Walden, all of England, assignors to Fisons Limited, England

Division of Ser. No. 575,361, May 6, 1975, Pat. No. 4,051,154, which is a continuation of Ser. No. 279,262, Aug. 9, 1972, Pat. No. 3,937,702, which is a continuation of Ser. No. 826,274, May 20, 1969, Pat. No. 3,689,507. This application Jul. 11, 1977, Ser. No. 815,058
Int. Cl.[2] C07D *307/83*
U.S. Cl. 260—343.3 R **3 Claims**

1. A benzofuranyl compound of the formula:



wherein R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen and alkyl of 1–6 carbon atoms; R^5 is selected from the group consisting of R^8CO-, R^9SO_2- and R^9SO-, in which R^8 is halogen substituted alkyl of 1–4 carbon atoms, and R^9 is selected from the group consisting of (a) alkyl of 1–4 carbon atoms, (b) substituted alkyl of 1–4 carbon atoms wherein the substituent is selected from the group of halogen and alkoxy of 1–6 carbon atoms, (c) phenyl and (d) phenyl substituted by a member of the group of halogen and alkyl of 1–4 carbon atoms and R^{10}, R^{11} and R^{12} are the same or difference and are selected from the group consisting of hydrogen, alkyl of 1–4 carbon atoms, halogen, cyano, acetyl and alkoxy of 1–4 carbon atoms.

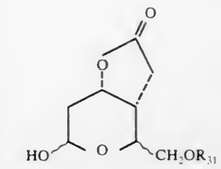
4,120,872

4α,6-DIHYDROXY-2α-HYDROXY-METHYL-3β-TETRAHYDROPYRAN ACETIC ACID γ LACTONE DERIVATIVES

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 676,893, Apr. 14, 1976, Pat. No. 4,048,194. This application May 12, 1977, Ser. No. 796,090
Int. Cl.[2] C07D *493/04*
U.S. Cl. 260—343.6 **2 Claims**

1. A thromboxane intermediate of the formula



wherein R_{31} is a hydroxy-hydrogen replacing group selected from the group consisting of R_9, R_{10}, and R_{34};

wherein R_9 is an acyl protecting group selected from the group consisting of

(a) benzoyl;

(b) benzoyl substituted with one to 5 alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 12 carbon atoms, inclusive, or nitro, with the proviso that not more than 2 substituents are other than alkyl, and that the total number of carbon atoms in the substituents does not exceed 10 carbon atoms, with the further proviso that the substituents are the same or different.

(c) benzoyl substituted with alkoxycarbonyl of 2 to 5 carbon atoms, inclusive;

(d) naphthoyl;

(e) naphthoyl substituted with one to 9, inclusive, alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, with the proviso that not more than 2 substituents on either of the fused aromatic rings are other than alkyl and that the total number of carbon atoms in the substituents on either of the fused aromatic rings does not exceed 10 carbon atoms, with the further proviso that the various substituents are the same or different; and

(f) alkanoyl of 2 to 12 carbon atoms, inclusive;

wherein R_{10} is a blocking group selected from the group consisting of

(a) tetrahydropyranyl;

(b) tetrahydrofuranyl; and

(c) a group of the formula

$$-C(OR_{11})(R_{12})-CH(R_{13})(R_{14}),$$

wherein R_{11} is alkyl of one to 18 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl or phenyl substituted with one to 3 alkyl of one to 4 carbon atoms, inclusive, wherein R_{12} and R_{13} are alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 alkyl of one to 4 carbon atoms, inclusive, or when R_{12} and R_{13} are taken together $-(CH_2)_a-$ or $-(CH_2)_b-O-(CH_2)_c-$ wherein *a* is 3, 4, or 5, or *b* is one, 2, or 3, and *c* is one, 2, or 3, with the proviso that *b* plus *c* is 2, 3, or 4, with the further proviso that R_{12} and R_{13} may be the same or different, and wherein R_{14} is hydrogen or phenyl;

wherein R_{34} is an arylmethyl hydroxy-hydrogen replacing group selected from the group consisting of

(a) benzyl,

(b) benzyl substituted by one to five alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive, with the further proviso that the various substituents are the same or different,

(c) benzhydryl,

(d) benzhydryl substituted by one to ten alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive,

(e) trityl, and

(f) trityl substituted by one to 15 alkyl of one to four carbon atoms, inclusive, chloro, bromo, iodo, fluoro, nitro, phenylalkyl of 7 to 12 carbon atoms, inclusive.

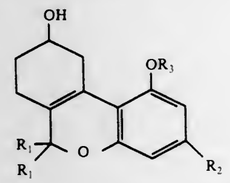
4,120,873

9-HYDROXY-7,8,9,10-TETRAHYDRO-6H-DIBENZO [b][d]PYRANONES

Cheuk Man Lee, Libertyville, and Raymond John Michaels, Mundelein, both of Ill., assignors to Sharps Associates, Cambridge, Mass.

Division of Ser. No. 593,352, Jul. 7, 1975, Pat. No. 4,066,667.
This application Jul. 8, 1977, Ser. No. 813,994
Int. Cl.[2] C07D *311/80*
U.S. Cl. 260—343.21 **11 Claims**

1. A compound of the formula



wherein R_1R_1 is oxygen; R_2 *is* C_1–C_{20} alkyl or (halogen substituted phenyl C_1–C_{20}) alkyl; and R_3 is hydrogen, loweralkyl, loweralkenyl, or loweralkynyl.

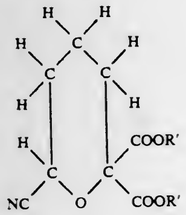
4,120,874

DIESTERS OF 6-CYANO-2,2-TETRAHYDROPYRANDICARBOXYLATES

Marvin M. Crutchfield, Creve Coeur, Mo., and Kent P. Lannert, Freeburg, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 5, 1977, Ser. No. 756,946
Int. Cl.[2] C07D *309/28*
U.S. Cl. 260—345.8 R **1 Claim**

1. A compound of the formula



wherein R′ is lower alkyl.

4,120,875

NOVEL CURING AGENTS DERIVED FROM ORGANOTHIOSTANNOIC ACIDS

Justin L. Hirshman, East Brunswick, N.J., and Robert V. Russo, Brooklyn, N.Y., assignors to M&T Chemicals Inc., Stamford, Conn.

Filed Aug. 26, 1974, Ser. No. 500,248
Int. Cl.[2] C07D *307/60*
U.S. Cl. 260—346.11 **3 Claims**

1. A curing agent for epoxide compounds, wherein said curing agent consists essentially of the reaction product obtained by heating at between 100° and 200° C. for between 30 and about 120 minutes a mixture comprising 1) a carboxylic acid anhydride selected from the group, consisting of acetic, propionic, butyric, benzoic, naphthoic, azelaic, sebasic, succinic, alkenylsuccinic, itaconic, citraconic, phthalic, maleic, trimelletic, chlorendic, tetrabromophthalic and tetrachlorophthalic anhydrides, benzophenonetetracarboxylic, pyromellitic dianhydride, ethylene glycol bis-trimellitate dianhydride, glycerol tris-trimellitate trianhydride and adducts of maleic anhydride with cyclic diolefins, and 2) between 0.1 and 70%, based on the total weight of both reactants, of an organothiostannoic acid anhydride exhibiting the formula $(RSnS_{1.5})n$ wherein R represents an alkyl radical containing between 1 and 20 carbon atoms and n represents an integer between 2 and 5, inclusive.

4,120,876

PREPARATION OF MALEIC ANHYDRIDE FROM FOUR-CARBON HYDROCARBONS

Noel J. Bremer, Kent; James F. White, Akron, and Ernest C. Milberger, Solon, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Oct. 19, 1976, Ser. No. 733,739
Int. Cl.[2] C07D *307/60*
U.S. Cl. 260—346.75 **13 Claims**

1. In a process for the preparation of maleic anhydride by the oxidation of n-butane, n-butenes, 1,3-butadiene or mixture thereof with molecular oxygen in the vapor phase at a reaction temperature of about 250° C. to 600° C. in the presence of a catalyst, the improvement comprising using as a catalyst a catalyst of the formula

$$X_aMo_{12}P_bAs_cO_x$$

wherein X is at least one element selected from the group consisting of Sn, rare earth metal, Zr, Rh, Mn, Re, Ru, Cu, Pb, Zn, Ti, Cr, Nb, Al, Ga, and alkaline earth metal; and
wherein
a is a positive number less than about 20;
b and *c* are numbers from 0.001 to 10;
x is the number of oxygens required by the valence states of the other elements present.

4,120,877

OXIDATION OF OLEFINS TO OXIRANE COMPOUNDS WITH PERIODATE COMPOUNDS

William P. Coker, and Robert E. Lane, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 19, 1977, Ser. No. 834,609
Int. Cl.[2] C07D *301/12*
U.S. Cl. 260—348.23 **16 Claims**

1. A process for forming an oxirane compound from a compound containing olefinic unsaturation which comprises contacting said compound containing olefinic unsaturation or a mixture thereof with a periodate represented by the formulas MIO_4, MH_4IO_6 and $M_2H_3IO_6$ or their hydrates, wherein M is a monovalent metal selected from lithium, sodium, potassium, rubidium, cesium, and silver or an ammonium group represented by the formula R_4N^+ wherein each R is independently a hydrocarbon group having from about 1 to about 8 carbon atoms, at a temperature, pressure and time sufficient to form said oxirane compound and thereafter recovering said oxirane compound.

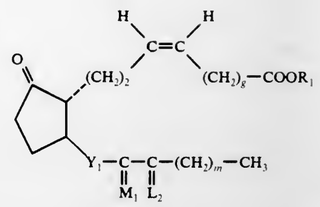
4,120,878

CIS-4,5-DIDEHYDRO-11-DEOXY-CIS-13-PGE$_1$ ANALOGS

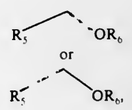
Ernest W. Yankee, 6828 Rothbury, Portage, Mich. 49081

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909.
This application Mar. 3, 1977, Ser. No. 774,084
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 **18 Claims**

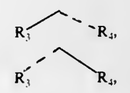
1. A compound of the formula



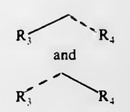
wherein Y_1 is cis-CH=CH—; wherein *g* is 2, 3, or 4; wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_2 is

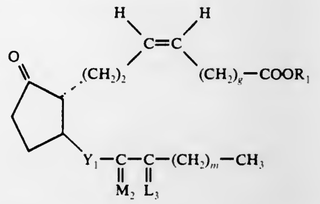


or a mixture of

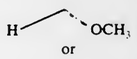


wherein R_3 and R_4 are hydrogen or fluoro, being the same or different, with the proviso that at least one of R_3 and R_4 is fluoro;
wherein *m* is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

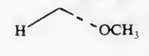
12. A compound of the formula



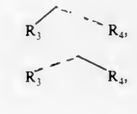
wherein Y_1 is cis-CH=CH—; wherein *g* is 2, 3, or 4; wherein M_2 is



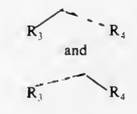
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wherein L_3 is



or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein *m* is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

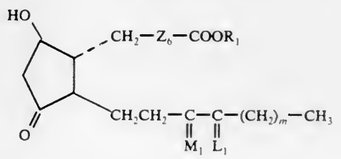
4,120,879

13,14-DIHYDRO-9β-PGD$_2$ COMPOUNDS

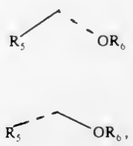
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184.
This application Dec. 30, 1976, Ser. No. 756,108
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 **25 Claims**

1. A prostaglandin analog of the formula

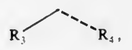


wherein *m* is one to 5, inclusive;
wherein M_1 is

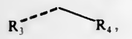


or

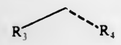
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



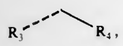
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or a mixture of



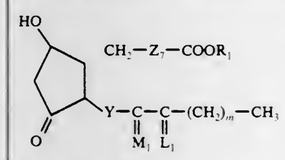
and



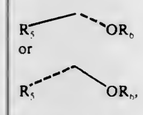
wherein R_3 and R_4 are hydrogen, or methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_6 is
(1) cis-$CH{=}CH{-}CH_2{-}(CH_2)_g{-}CF_2{-}$,
(2) cis-$CH{=}CH{-}CH_2{-}(CH_2)_g{-}CH_2{-}$, or
(3) cis-$CH_2{-}CH{=}CH{-}(CH_2)_g{-}CH_2{-}$,
wherein g is one, 2, or 3.

4,120,880
9β-PGD$_1$ COMPOUNDS
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 756,107
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 **33 Claims**

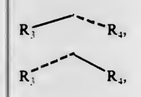
1. A prostaglandin analog of the formula



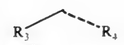
wherein Y is cis—CH=CH— or trans —CH=CH—;
wherein m is 1 to 5, inclusive;
wherein M_1 is



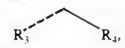
wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of the R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_7 is

(1) $-(CH_2)_3-(CH_2)_g-CF_2-CF_2-$, or

(2) $-(CH_2)_3-(CH_2)_g-CH_2-$,

wherein g is 1, 2, or 3.

4,120,881
PREDOMINANTLY ALIPHATIC LOWER HYDROCARBON MATERIALS FROM CARBONACEOUS SOLIDS
Charles M. Starks; Robert G. Jackson; David V. Porchey, and Dennis J. Royer, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Jan. 9, 1975, Ser. No. 539,679
Int. Cl.[2] C07C *27/06*
U.S. Cl. 260—449.6 R **7 Claims**

1. A process comprising:
(a) gasifying carbonaceous solids with from about 0.1 to about 3 pounds of steam per pound of said solids at temperatures in the range of 500° C to 2,100° C and pressures of atmospheric to 1,000 atmospheres to form a gasification product stream containing a mixture of water, carbon dioxide, carbon monoxide, hydrogen, sulfur compounds and hydrocarbon materials of a predominantly aliphatic type,
(b) combining the gasification product stream with first and second internal recycle streams rich in hydrocarbon materials of a predominantly aliphatic type to form a crude product stream,
(c) removing water, carbon dioxide and sulfur compounds from the crude product stream to form a purified product stream containing essentially only hydrocarbon materials, carbon monoxide and hydrogen,
(d) cooling the purified product stream to liquefy and separate the hydrocarbon materials from the carbon monoxide and hydrogen,
(e) directly introducing the carbon monoxide and hydrogen from step (d) to a catalytic reaction zone and reacting the carbon monoxide and hydrogen in said zone to produce a first internal recycle stream rich in hydrocarbon materials of a predominantly aliphatic type, said reaction being conducted under conditions of temperatures in the range of about 150° C to 450° C, pressures in the range of atmospheric to 75 atmospheres and space velocities in the range of 500 to 50,000 V/V/hr STP, in the presence of a Fischer-Tropsch catalyst containing iron, cobalt, nickel or ruthenium,
(f) recycling the first internal recycle stream of step (e) back to step (b) of the process,
(g) fractionally separating the hydrocarbon materials of step (d) into product hydrocarbon materials and residual higher hydrocarbon materials,
(h) directly introducing the residual hydrocarbon materials to a cracking zone and cracking said hydrocarbon materials to produce a second internal recycle stream, said cracking being carried out using about 0.2 to 1.5 pounds of steam per pound of hydrocarbon materials, temperatures of 750° C to 950° C, hydrocarbon materials partial pressures up to about 2 atmospheres and residence times of 0.01 to 10 seconds, and
(i) recycling the second internal recycle stream of step (h) back to step (b) of the process.

4,120,882
METAL COMPLEXES
Günther Wilke, and Ernst Willi Müller, both of Mulheim, Germany, assignors to Studiengesellschaft Koble m.b.H., Mulheim, Germany
Continuation of Ser. No. 692,167, Jun. 2, 1976, abandoned, which is a division of Ser. No. 573,198, Apr. 30, 1975, Pat. No. 4,017,526, which is a continuation of Ser. No. 532,900, Mar. 9, 1966, abandoned, which is a division of Ser. No. 104,221, Apr. 20, 1961, abandoned, which is a continuation-in-part of Ser. No. 76,520, Dec. 19, 1960, abandoned, and Ser. No. 203,753, Jun. 20, 1962, abandoned. This application May 18, 1977, Ser. No. 798,199
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1959, 15930; Apr. 28, 1960, 16427; Jun. 30, 1971, 18017
Int. Cl.[2] C07F *15/04, 15/06*
U.S. Cl. 260—439 R **11 Claims**

1. As a novel complex compound, $Ni(P(C_6H_5)_3)_4$ comprising tetrakis(triphenylphosphine)nickel in the form of red-brown crystals.

4,120,883
METHOD FOR PRODUCING AN ORGANOMAGNESIUM COMPLEX
Hisaya Sakurai; Hideo Morita; Tadashi Ikegami; Katsuaki Maeda, and Masayasu Furusato, all of Okayamaken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Dec. 13, 1976, Ser. No. 750,303
Claims priority, application Japan, Dec. 22, 1975, 50-151833; Apr. 12, 1976, 51-40339; Apr. 14, 1976, 51-41245
Int. Cl.[2] C07F *5/06*
U.S. Cl. 260—448 A **10 Claims**

1. A method for producing a hydrocarbon-soluble organomagnesium complex of the formula

$$Mg_\alpha Al_\beta R^1{}_p Y_q$$

wherein
α, β, p and q each is a number greater than zero,
α/β = about 0.5 to 20,
2α and $3\beta = p + q$,
q/β = about 0.5 to 1.5,
Y is OR^2 or $OSiR^3R^4R^5$,
R^1, R^2 and R^3 each independently is a hydrocarbon radical having 1 to 20 carbon atoms, and
R^4 and R^5 each independently is a hydrocarbon radical having 1 to 20 carbon atoms, hydrogen or a halogen atom, which comprises reacting in an inert hydrocarbon medium at a temperature of about 50°–150° C. and for about 0.5 to 20 hours
(A) an ether-free solution containing about 0.1-2.5 mols per liter of organomagnesium compound of the formula

$$R^1{}_\alpha MgX_{2-\alpha}$$

with (B) a solution containing about 0.005-5 mols per liter of an aluminum compound of the formula

$$AlYX_2$$

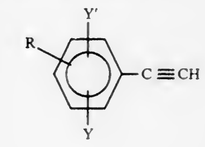
wherein
X is a halogen atom, and
a is a positive number up to 2.

4,120,884
STORAGE-STABLE, LIQUID POLYISOCYANATES POSSESSING CARBODIIMIDE GROUPS, AND PROCESS FOR THEIR MANUFACTURE
Frank Peter Woerner, Mutterstadt; Peter T. Kan, Ludwigshafen, and Georg Falkenstein, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jan. 28, 1977, Ser. No. 763,647
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606419
Int. Cl.[2] C07C *119/055*
U.S. Cl. 260—453 SP **8 Claims**

1. An improved storage-stable, liquid polyisocyanate possessing carbodiimide groups, which contains from about 25 to about 35% by weight, based on the total weight, of NCO groups, obtained by condensing a polyisocyanate in the presence of a catalyst selected from the group consisting of phospholine, phospholidine, phospholine oxide and phospholidine oxide wherein the improvement consists in that condensation has been stopped and the condensation product stabilized by a stopper selected from the group consisting of iron (III) chloride, benzoyl chloride, methyl-p-toluenesulfonate and dimethylsulfate.

4,120,885
ETHYNYLBENZENE COMPOUNDS AND DERIVATIVES THEREOF
Julius Diamond, Morris Plains, N.J., assignor to William H. Rorer, Inc., Fort Washington, Pa.
Division of Ser. No. 574,837, May 14, 1975, which is a continuation of Ser. No. 431,254, Jan. 7, 1974, Pat. No. 3,923,910. This application Nov. 23, 1976, Ser. No. 744,330
Int. Cl.[2] C07C *153/09, 149/28, 161/00*
U.S. Cl. 260—455 R **10 Claims**

1. A compound of the formula



where
R is selected from the group consisting of
hydrogen,
alkyl,
cycloalkyl,
alkylcycloalkyl,
cycloalkenyl,
aryl or
substituted aryl where the substituent is Y″;
Y and Y′ are each selected from the group consisting of
hydrogen,
mercapto,
acylthio,
loweralkylthio,
loweralkylsulfinyl and
loweralkylsulfonyl,
Y″ is selected from the group consisting of
Y,
loweralkyl,
trifluoromethyl and
halo,
with the proviso that at least one of Y and Y′ is other than hydrogen.

4,120,886

S-ARYL N-CYCLOALKYLTHIOLCARBAMATES

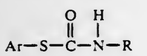
Jay Kent Rinehart, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 701,382, Jun. 30, 1976, Pat. No. 4,055,656. This application Oct. 17, 1977, Ser. No. 842,818

Int. Cl.[2] C07C *153/09*; A01N *9/12*

U.S. Cl. 260—455 A **3 Claims**

1. A composition represented by the general formula:



wherein:

Ar is an aryl selected from the group consisting of 4-methoxyphenyl, 4-ethoxyphenyl, 4-isopropoxyphenyl, and 4-tert-butoxyphenyl; and

R is cyclohexyl or cyclopropyl.

4,120,887

LUBRICATING OIL ADDITIVE, PROCESS FOR THE SYNTHESIS THEREOF AND LUBRICATING OIL ADDITIVE COMPOSITION

Nobukazu Okamoto, Saitama, Japan, assignor to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 714,320, Nov. 28, 1972, Pat. No. 4,071,548, which is a division of Ser. No. 310,095, Nov. 28, 1972, Pat. No. 3,991,098. This application Nov. 21, 1977, Ser. No. 853,246

Claims priority, application Japan, Nov. 30, 1971, 46/96580; Nov. 30, 1971, 46/96581

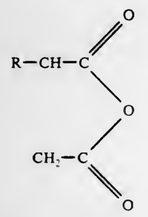
Int. Cl.[2] C07F *5/04*

U.S. Cl. 260—462 R **3 Claims**

2. A lubricating oil additive composition comprising a reaction product obtained by

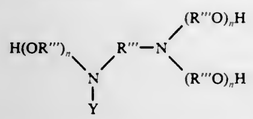
I. reacting

A. an alkyl- or alkenylsuccinic anhydride of the formula



wherein R is alkyl or alkenyl having from 40 to 200 carbon atoms, with

B. a compound of the formula



wherein R''' is ethylene or propylene, and n is a number from 3 to 8

at a molar ratio of A:B in the range of 1:1 to 1:0.1,

at a temperature in the range of from 150° to 220° C.,

until the infared absorptions for $\nu_{C=O}$ at 1870cm^{-1} and 1790cm^{-1} disappear, an infrared absorption for $\nu_{C=O}$ is present at 1750cm^{-1} and an infrared absorption for ν_{OH} is present at about 3450cm^{-1}, and

II. reacting the product of step I with boric acid or boric acid anhydride at a molar ratio of from 0.3 to one mole of boric acid or boric acid anhydride per one mole of A, under reduced pressure, at a temperature of 100° to 200° C. until the infrared absorption for ν_{OH} at about 3450cm^{-1} disappears and no turbidity or precipitate appears when the reaction mixture is dissolved in n-pentane and is cooled.

3. A composition as claimed in claim 2 in which between step I and step II, the reaction product of step I is reacted with C. a secondary alkanol amine of the formula

wherein R''' is as defined above,

at a molar ratio of the reaction product of step I:C in the range of from 1:0.3 to 1:1, under reduced pressure, at a temperature in the range of from 150° to 200° C., until infrared absorptions are present for $\nu_{C=O}$ at 1750cm^{-1} and 1650cm^{-1}, an infrared absorption is present for ν_{OH} at about 3450cm^{-1} and no turbidity is observed when the reaction mixture is dissolved in n-pentane and is cooled.

4,120,888

PREPARATION OF CHLORINE-SUBSTITUTED CHLOROFORMATES

Franklin Anderson Bolth, Baltimore, Md., assignor to Minerec Corporation, New York, N.Y.

Filed Jan. 26, 1978, Ser. No. 872,573

Int. Cl.[2] C07C *68/02*

U.S. Cl. 260—463 **7 Claims**

1. A continuous process for the production of chlorine-substituted chloroformates from phosgene and 1-2 epoxy ring compounds comprising;

establishing a circulating stream of said chloroformate;

passing said stream through a catalyst bed of activated carbon;

injecting said phosgene and an epoxy compound selected from the group consisting of propylene epoxide, ethylene epoxide, allyl glycidal ether and phenyl glycidal ether into said stream ahead of said catalyst; and

drawing off chloroformate as product.

4,120,889

CYANO ETHYNYLBENZENE COMPOUNDS

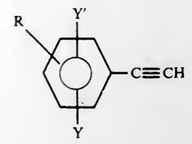
Julius Diamond, Morris Plains, N.J., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 574,837, May 14, 1975, which is a continuation of Ser. No. 431,254, Jan. 7, 1974, Pat. No. 3,923,910, which is a division of Ser. No. 268,419, Jul. 3, 1972, Pat. No. 3,852,364. This application Nov. 23, 1976, Ser. No. 744,333

Int. Cl.[2] C07C *121/52, 121/60*

U.S. Cl. 260—465 K **7 Claims**

1. A compound of the formula



where

R is

alkyl of 3 to 7 carbon atoms,

cycloalkyl of 5 to 7 carbon atoms,

1 to 7 carbon atoms alkyl-substituted cycloalkyl of 5 to 7 carbon atoms,

cycloalkenyl of 5 to 7 carbon atoms,

phenyl or

substituted phenyl where the substituent is Y'';

Y and Y' are each selected from the group consisting of

hydrogen and

cyano;

Y'' is selected from the group consisting of

Y,

lower alkyl of 1 to 7 carbon atoms,

trifluoromethyl and

halo,

with the proviso that at least one of Y and Y' is other than hydrogen.

4,120,890

DIPHOSPHONOALKANE CARBOXYLIC ACIDS, PROCESS OF PREPARATION AND METHODS OF USE

Helmut Blum, and Karl-Heinz Worms, both of Dusseldorf, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

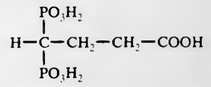
Division of Ser. No. 761,271, Jan. 21, 1977, Pat. No. 4,077,997. This application Sep. 14, 1977, Ser. No. 833,143

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1976, 2602030

Int. Cl.[2] C07F *9/38*; A61K *7/16*

U.S. Cl. 260—502.4 P **2 Claims**

1. A diphosphonoalkane carboxylic acid selected from the group consisting of (A) a compound of the formula



and (B) a non-toxic, pharmacologically acceptable water-soluble salt thereof.

4,120,891

UREYLENE NAPHTHALENE SULFONIC ACIDS

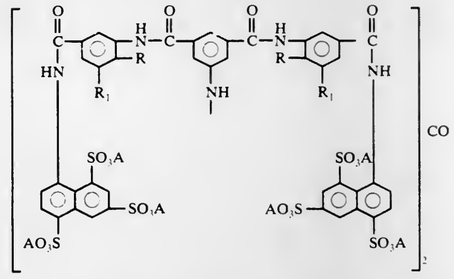
John Frank Poletto, Nanuet, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 1, 1977, Ser. No. 812,192

Int. Cl.[2] C07C *143/30*; A61K *31/185*

U.S. Cl. 260—506 **6 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen and methyl; R_1 is selected from the group consisting of hydrogen and carboxyl; A is a pharmaceutically acceptable salt cation.

4,120,892

ANIONIC NAPHTHALENE THIOUREIDO NAPHTHALENE SULFONIC ACIDS

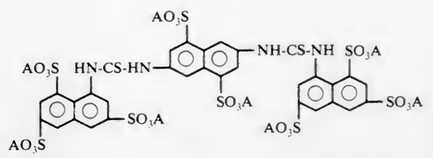
John Frank Poletto, Nanuet; Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 5, 1977, Ser. No. 813,059

Int. Cl.[2] C07C *143/30*; A61K *31/185*

U.S. Cl. 260—506 **2 Claims**

1. A compound of the formula:



wherein A is a pharmaceutically acceptable salt cation.

4,120,893

ANIONIC NAPHTHALENE THIOUREIDO TOLUENESULFONIC ACIDS

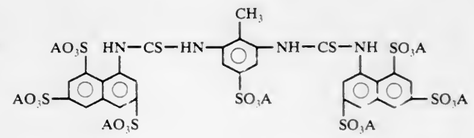
John Frank Poletto, Nanuet; Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 29, 1977, Ser. No. 811,102

Int. Cl.[2] C07C *143/30*; A61K *31/185*

U.S. Cl. 260—506 **2 Claims**

1. A compound of the formula:



wherein A is a pharmaceutically acceptable salt cation.

4,120,894

SULFO-M-PHENYLENEBIS(SULFONYLIMINO)-DIISOPHTHALIC ACID SALTS

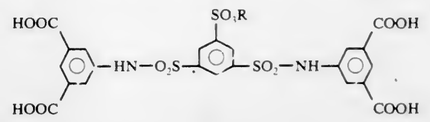
Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 13, 1977, Ser. No. 805,771

Int. Cl.[2] C07C *143/52*; A61K *31/19*

U.S. Cl. 260—507 R **2 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of alkali metal; and the pharmaceutically acceptable salts thereof.

4,120,895

S-PHENENYLTRIS (IMINOCARBONYL) TRIISOPHTHALIC ACID SALTS

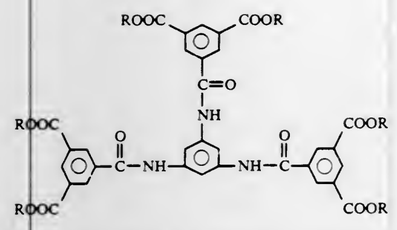
Ransom Brown Conrow, Pearl River; John Frank Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 29, 1977, Ser. No. 811,098

Int. Cl.[2] C07C *63/32, 69/76*

U.S. Cl. 562—457 **1 Claim**

1. A compound of the formula:



wherein R is selected from the group consisting of alkali metal; and the pharmaceutically acceptable salts thereof.

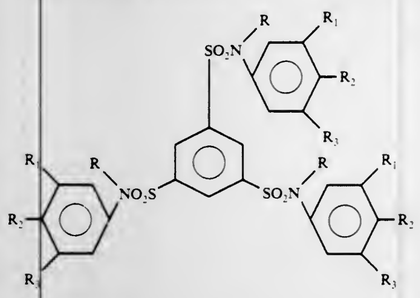
4,120,896

S-PHENENYLTRIS(SULFONYLIMINO)TRI-ANIONIC SUBSTITUTED BENZENE DICARBOXYLIC ACIDS AND SUBSTITUTED ALKYL AMINO ACIDS AND THEIR SALTS

Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to America Cyanamid Company, Stamford, Conn.

Filed Jun. 13, 1977, Ser. No. 805,774
Int. Cl.[2] C07C *101/68;* A61K *31/195*
U.S. Cl. 562—430 **5 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen, sodium and C_1-C_6 alkyl; R_1 is selected from the group consisting of hydrogen, carboxyl, and —COONa; R_2 is selected from the group consisting of hydrogen, carboxyl and —COONa; R_3 is selected from the group consisting of carboxyl, and —COONa; and the non-toxic pharmaceutically acceptable salts thereof.

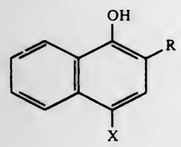
4,120,897

2-ALKYL-1-NAPHTHOL-4-SULFONIC ACIDS

Gregory Wayne Schwing, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 672,724, Apr. 1, 1976, Pat. No. 4,049,705. This application Jun. 14, 1977, Ser. No. 806,516
Int. Cl.[2] C07C *143/70*
U.S. Cl. 260—543 R **2 Claims**

1. A compound of the formula



wherein

R is alkyl of 11 to 14 carbon atoms, and
X is $—SO_2Cl$.

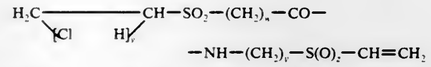
4,120,898

SULFUR CONTAINING VINYL AMIDE CROSS-LINKING AGENTS

Norman Alfred Smith, Hornchurch, and Rainer Kitzing, Ingatestone, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 18, 1977, Ser. No. 760,291
Claims priority, application United Kingdom, Feb. 4, 1976, 4281/76
Int. Cl.[2] C07C *103/38, 103/60;* G03C *1/30*
U.S. Cl. 260—561 S **3 Claims**

1. A vinyl compound of the general formula



wherein v is 0 or 1, w is 2 or 3 y is 2 to 6 and z is 1 or 2.

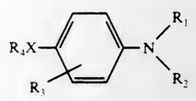
4,120,899

POLYCYCLOANILINES

Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

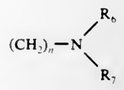
Division of Ser. No. 576,342, May 12, 1975, Pat. No. 4,036,977, which is a continuation-in-part of Ser. No. 507,462, Sep. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 416,402, Nov. 16, 1973, abandoned. This application May 26, 1977, Ser. No. 800,800
Int. Cl.[2] C07C *103/127*
U.S. Cl. 260—562 R **18 Claims**

1. A compound of the formula



in which

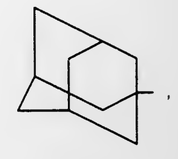
X = O, S, CH_2, N-lower alkyl or N-lower alkylacyl, each alkyl of one to six carbon atoms, inclusive;
R_1 = hydrogen,
alkyl of one to eight carbon atoms, inclusive;
$(CH_2)_n$phenyl,
lower alkynyl of one to six carbon atoms, inclusive;
$(CH_2)_n$O-phenyl,

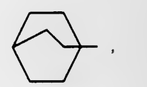


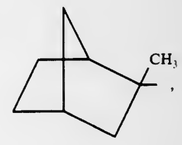
in which R_6 and R_7 is lower alkyl of one to six carbon atoms, inclusive, or $(CH_2)_n$OH;
n = 1, 2, or 3;
R_2 = lower alkyl acyl of one to six carbon atoms, inclusive;
R_3 = hydrogen,
halogen,
methyl,
2,6-dimethyl,
3,5-dimethyl,
—CHO,
$—CH_2OH$,
$—CH(CH_3)OH$,
$—CH_2SCH_3$,

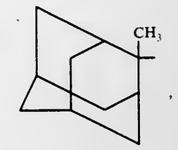


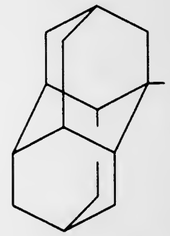
R_1 and R_2 as defined above
R_4 is a bridged polycyclic hydrocarbon attached through a tertiary carbon atom, said R_4 of the formulae



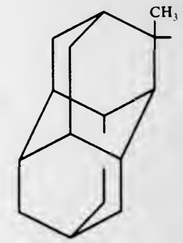








or



and pharmacologically acceptable acid addition salts.

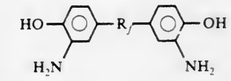
4,120,900

FLUOROCARBON BIS(O-AMINOPHENOL) COMPOUNDS CONTAINING A HYDROCARBON MOIETY

Robert C. Evers, Dayton, and Tonson Abraham, Kettering, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 1, 1977, Ser. No. 856,385
Int. Cl.[2] C07C *91/44;* C08G *23/00, 65/40*
U.S. Cl. 260—571 **3 Claims**

1. A bis(o-aminophenol) compound having the following structural formula:



where R_f is $(CF_2)_3$—$(CH_2)_2$—$(CF_2)_3$ or $(CF_2)_3CH$═$CH(CF_2)_3$.

4,120,901

PRODUCTION OF PRIMARY AND SECONDARY AMINES BY REACTION OF AMMONIA WITH CONJUGATED DIENE IN THE PRESENCE OF PD/PHOSPHINE CATALYST AND PRIMARY OR SECONDARY ALIPHATIC ALCOHOL SOLVENT MEDIUM

Charles F. Hobbs, Des Peres, and Dudley E. McMackins, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 31, 1977, Ser. No. 829,558
Int. Cl.[2] C07C *85/18*
U.S. Cl. 260—585 D **9 Claims**

1. The process of reacting ammonia with a conjugated diene having from 4 to 8 carbon atoms in a solvent reaction medium consisting essentially of one or more alcohols selected from the group consisting of primary and secondary aliphatic alcohols and in the presence of a catalyst system consisting essentially of a palladium compound with a phosphine ligand containing from 2 to 4 phosphorus atoms to thereby produce an unsaturated amine product selected from the group consisting of secondary and primary amines.

4,120,902

OXIDATION PRODUCT RECOVERY

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 7, 1977, Ser. No. 775,144
Int. Cl.[2] C07C *27/04, 27/34, 37/08, 45/24*
U.S. Cl. 260—586 R **8 Claims**

1. In a process for the oxidation of hydrocarbyl aromatic compounds with an oxygen-containing gas under conditions which produce hydrocarbyl aromatic hydroperoxides, the steps of separating and recovering oxidation products from the oxidation reaction effluent which comprises:

(a) contacting the oxidation reaction effluent comprising hydrocarbyl aromatic hydroperoxide and unoxidized hydrocarbyl aromatic reactants with an alcohol-base-water solvent mixture under extraction conditions which form a first aqueous hydrocarbyl aromatic hydroperoxide phase also containing alcohol and base and residual amounts of unoxidized hydrocarbyl aromatic and a hydrocarbyl aromatic phase and separating said first aqueous phase from said aromatic phase;
(b) extracting said residual amounts of unoxidized hydrocarbyl aromatic solvent under extraction conditions such that said paraffin hydrocarbon extracts said residual unoxidized hydrocarbyl aromatic leaving a second aqueous phase comprising hydrocarbyl aromatic hydroperoxide base and alcohol;
(c) subjecting said second aqueous phase remaining in (b) to solvent extraction by contacting with an aromatic solvent

under extraction conditions which form an extract phase containing aromatic solvent, hydrocarbyl aromatic hydroperoxide, and residual amounts of base and a third aqueous phase and separating said extract phase from said third aqueous phase; and

(d) washing said extract phase with water to remove residual amounts of base leaving a purified phase of aromatic solvent and hydrocarbyl aromatic hydroperoxide.

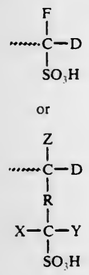
4,120,903

METHOD FOR PREPARING POLY(TETRAMETHYLENE ETHER) GLYCOL

Gerfried Pruckmayr, Media, Pa., and Robert H. Weir, Nashville, Ind., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 30, 1977, Ser. No. 782,735
Int. Cl.[2] C07C *41/02, 41/00*
U.S. Cl. 260—615 B **4 Claims**

1. In a process for preparing poly(tetramethylene ether) glycol by polymerizing tetrahydrofuran using water or 1,4-butanediol as a chain terminator, the improvement comprising using as a catalyst a polymer of monoethylenically unsaturated monomers, the polymer being effectively free of functional groups which interfere with the polymerization and containing groups of the formula



or

where

~~~~~represents the polymer chain or a segment thereof;

D is hydrogen, an aliphatic or aromatic hydrocarbon radical of 1 to 10 carbon atoms, a halogen or a segment of the polymer chain;

X and Y are hydrogen, an aliphatic or aromatic hydrocarbon radical of 1 to 10 carbon atoms, or fluorine, but at least one of X and Y must be fluorine;

R is a linear or branched linking group having up to 40 carbon atoms in the principal chain; and

Z is hydrogen, an aliphatic or aromatic hydrocarbon radical of 1 to 10 carbon atoms, or halogen.

4,120,904

SYNTHESIS OF FLUOROTRINITROMETHANE

Donald Pilipovich, Agoura; Louis R. Grant, Jr., Los Angeles, and Richard D. Wilson, Canoga Park, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1977, Ser. No. 801,453
Int. Cl.[2] C07C *79/12*
U.S. Cl. 260—644 **10 Claims**

1. In a process for preparing fluorotrinitromethane in which tetranitromethane is reacted in an aprotic solvent with a complex having the following formula:

$MOCF(CF_{3-x}Cl_x)_2$, wherein M is an alkali metal and x is zero to 2, inclusive, the improvement which comprises conducting the reaction in the presence of chlorine or bromine.

4,120,905

REMOVAL OF NITROSATING AGENTS

William N. Cannon, Cumberland, and Richard F. Eizember, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 21, 1977, Ser. No. 835,087
Int. Cl.[2] C07C *79/12*
U.S. Cl. 260—646 **10 Claims**

1. A process for lowering the concentration of nitrosating agents in 1-chloro-2,6-dinitro-4-(trifluoromethyl)benzene which comprises

(1) bubbling a gas which is non-reactive with 1-chloro-2,6-dinitro-4-(trifluoromethyl)benzene through a mixture of (a) 1-chloro-2,6-dinitro-4-(trifluoromethyl)benzene containing nitrosating agents and (b) an aqueous solution of a base which is

(a) sodium carbonate,

(b) potassium carbonate,

(c) sodium hydroxide, or

(d) potassium hydroxide,

at a temperature of about 50°–100° C., until the concentration of nitrosating agents is lowered; or

(2) contacting 1-chloro-2,6-dinitro-4-(trifluoromethyl)benzene containing nitrosating agents with an aqueous solution of a base which is

(a) sodium carbonate,

(b) potassium carbonate,

(c) sodium hydroxide, or

(d) potassium hydroxide,

at a temperature of about 50°–100° C., separating the once-treated 1-chloro-2,6-dinitro-4-(trifluoromethyl)benzene, and thereafter bubbling a gas which is non-reactive with 1-chloro-2,6-dinitro-4-(trifluoromethyl)benzene through an aqueous mixture of the once-treated 1-chloro-2,6-dinitro-4-(trifluoromethyl)-benzene, at a temperature of 50°–100° C., whereby there is obtained 1-chloro-2,6-dinitro-4-(trifluoromethyl)benzene characterized by a lowered concentration of nitrosating agents.

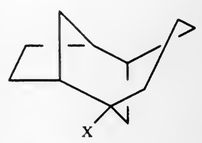
4,120,906

1-HALOGENOTRICYCLO [4.3.1.1^{2,5}] UNDECANE AND PROCESS FOR THE PREPARATION THEREOF

Yoshiaki Inamoto; Koji Aigami; Motoyoshi Ohsugi; Hiroshi Ikeda, and Yoshiaki Fujikura, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1977, Ser. No. 833,679
Claims priority, application Japan, Oct. 7, 1976, 51-120983
Int. Cl.[2] C07C *17/20*
U.S. Cl. 260—648 C **8 Claims**

1. 1-Halogenotricyclo [4.3.1.1^{2,5}] undecane having the formula (I):



(I)

wherein X is chloro or bromo.

4,120,907

BIS(μ-DIPHENYLPHOSPHIDO)TRIS(TRIETHYLPHOSPHINE)DINICKEL OLIGOMERIZATION OF 1,3 BUTADIENE

Darryl R. Fahey, and John E. Mahan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 684,350, May 7, 1976. This application Dec. 8, 1977, Ser. No. 858,598
Int. Cl.[2] C07C *13/26, 13/27*
U.S. Cl. 260—666 B **3 Claims**

1. A process for oligomerizing at least one conjugated diene having 4 to 7 carbon atoms per molecule comprising contacting said at least one conjugated diene with a catalyzing amount of bis(μ-diphenylphosphido)tris(triethylphosphine)dinickel in a suitable diluent under suitable reaction conditions.

4,120,908

PROCESS FOR THE CONVERSION OF C_8 AROMATIC HYDROCARBONS

Setsuo Kamiyama; Katsumi Kaneko, both of Ooi; Yukio Nagashima, Wako; Hiroshi Furukawa, Ooi, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1977, Ser. No. 797,992
Claims priority, application Japan, Jun. 4, 1976, 51-64564
Int. Cl.[2] C07C *15/08*
U.S. Cl. 260—668 A **10 Claims**

1. A process for the conversion of C_8 aromatic hydrocarbons to isomerize xylenes present which comprises contacting a mixture of C_8 aromatic hydrocarbons with an acid leached hydrogen form mordenite catalyst having a silica (SiO_2) to alumina (Al_2O_3) molar ratio of 15 to 21 at a temperature of 180° to 250° C. under a pressure of atmospheric to 200 Kg/cm^2.

4,120,909

PREPARATION OF ETHYNYLBENZENES

Ali Amirnazmi, Tehran, Iran, assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 11, 1977, Ser. No. 823,882
Int. Cl.[2] C07C *15/09*
U.S. Cl. 260—668 R **9 Claims**

1. The process of preparing ethynylbenzenes which comprises contacting an acetylbenzene unsubstituted in the benzene ring except for the acetyl group(s) with an alumina-containing catalyst selected from the group consisting of alumina, a natural aluminum silicate or a synthetic aluminum silicate at a temperature in the range of from about 500° to about 650° C.

4,120,910

AROMATIZATION OF ETHANE

Pochen Chu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,217
Int. Cl.[2] C07C *15/02;* C01B *29/28;* C01G *9/04*
U.S. Cl. 260—673 **8 Claims**

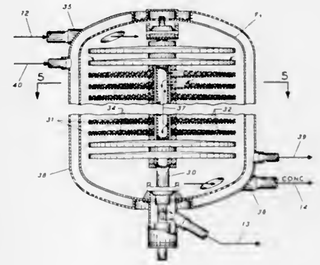
1. A process for producing aromatic compounds which comprises contacting, in the absence of added air or oxygen under conversion conditions, a gaseous paraffinic hydrocarbon feed containing ethane, with a catalyst comprising a crystalline aluminosilicate zeolite characterized by a constraint index within the approximate range of 1 to 12 and a silica to alumina ratio of at least 12, said catalyst having incorporated therein from about 0.01 to 30 weight percent based on the total weight of the catalyst of a metal or metal oxide wherein said metal is selected from the group consisting of Group VIII, IIB and IB metals and mixtures thereof whereby ethane present in said gaseous feed is converted to aromatic compounds and recovering said aromatic compounds as liquids.

4,120,911

METHOD FOR CONCENTRATING A SLURRY CONTAINING A SOLID PARTICULATE COMPONENT

James Melvin Davidson, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 204,010, Dec. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 163,527, Jul. 2, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 427,869
Int. Cl.[2] C07C *7/14*
U.S. Cl. 260—674 A **20 Claims**



1. A process for increasing the concentration of a slurry comprising a particulate solid in a carrier liquid, which comprises removing a portion of said liquid from the slurry by:

(1) introducing the slurry into a filtration zone containing a rotating unit, said unit containing a filter assembly adapted to pass said liquid as a filtrate while screening out said solid;

(2) collecting said filtrate in a chamber in said assembly by maintaining a pressure differential between said slurry in said zone and said filtrate in said chamber;

(3) withdrawing the filtrate from said chamber; and

(4) withdrawing the resulting concentrated slurry from said zone;

wherein said solid had a sensity greater than that of said carrier liquid, and wherein said unit is rotated at a velocity sufficient to generate a centrifugal force in the range from about 10 to 100 gravitational units and wherein substantially only centrifugal force is used to displace solids from said filter assembly.

10. A method for increasing the concentration of a slurry comprising solid p-xylene in a carrier liquid, which comprises removing a portion of said liquid from the slurry by:

(1) introducing the slurry into a filtration zone containing a rotating unit, said unit containing a filter assembly adapted to pass said liquid as a filtrate while screening out said solid p-xylene;

(2) collecting said filtrate in a chamber in said assembly by maintaining a pressure differential between said slurry in said zone and said filtrate in said chamber;

(3) withdrawing the filtrate from said chamber; and

(4) withdrawing the resulting concentrated slurry from said zone;

wherein said unit is rotated at a velocity sufficient to generate a centrifugal force in the range from about 10 to 100 gravitational units and wherein substantially only centrifugal force is used to displace solids from said filter assembly.
~~~~~

4,120,912

RECOVERY OF LEWIS ACID/BRONSTED ACID CATALYST WITH HYDROGEN AT ELEVATED TEMPERATURES AND PRESSURES

Roger Hulme, Somerville, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 628,589, Nov. 4, 1975, abandoned. This application Jul. 5, 1977, Ser. No. 812,635

Int. Cl.[2] **C07C** *3/54, 3/56, 5/28*

U.S. Cl. 260—683.47 **27 Claims**

1. In a hydrocarbon conversion process which comprises contacting a hydrocarbon feedstock with a substantially liquid phase catalyst comprising (a) one or more Lewis acids selected from the group consisting of the fluorides, chlorides and bromides of tantalum(V), niobium(V) and mixtures thereof and at least an equal molar amount of (b) a strong Bronsted acid, thereby forming a hydrocarbon phase and a catalyst phase, said catalyst phase having become at least partially deactivated due to the formation of catalytically less active complexes with at least a portion of said Lewis acid, the improvement which comprises recovering at least a portion of the Lewis acid component of said catalyst by contact with hydrogen at a temperature between about 100° and about 500° C. and at a hydrogen partial pressure of at least 1 atmosphere for a period of time sufficient to obtain the Lewis acid component of said catalyst possessing a lower level of said catalytically less active complexes than that possessed by the Lewis acid component of said partially deactivated catalyst.

4,120,913

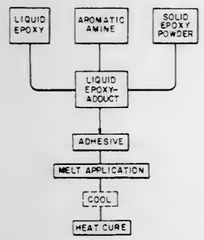
EPOXY-AMINE ADHESIVE COMPOSITIONS

Edward M. Petrie, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 10, 1976, Ser. No. 749,593

Int. Cl.[2] **C08L** *63/00*

U.S. Cl. 260—830 TW **9 Claims**



1. A method of making an adhesive composition comprising the steps of:

(1) admixing, at a temperature of up to about 40° C.:

(A) 1 part by weight of a liquid mixture consisting of a liquid epoxy resin, having a viscosity of from about 500 cps. to about 22,500 cps. at 25° C., selected from the group consisting of diglycidyl ethers of bisphenol A epoxy resins, diglycidyl ethers of bisphenol F epoxy resins and mixtures thereof, and about 0.20 part by weight to about 1.5 parts by weight of an amine selected from the group consisting of liquid aromatic diamines and liquefied solid aromatic diamines, to provide a stoichiometric excess of amine; with

(B) a solid epoxy resin powder, selected from the group consisting of diglycidyl ethers of bisphenol A epoxy resins, diglycidyl ethers of bisphenol F epoxy resins, novolac epoxy resins and mixtures thereof, having a melting point of between about 55° C. to about 225° C. and an average particle size of between about 10 microns to about 420 microns; and

(2) maintaining a temperature for the admixture of up to about 40° C., said temperature being effective to permit the liquid epoxy resin and the amine to react to form a solid reaction product adduct and effective to allow the solid epoxy resin powder to remain unreacted, wherein a stable, solid two phase system of dispersed epoxy powder and adduct is formed, where the weight ratio of solid epoxy resin powder:adduct is from about 1 to 6:1, and the melting point of the adduct is within about 1° C. to about 50° C. of the melting point of the epoxy resin powder.

4,120,914

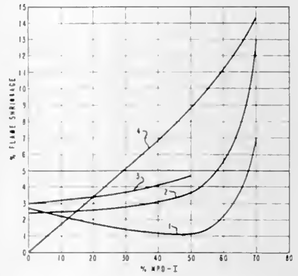
AROMATIC POLYAMIDE FIBER BLEND FOR PROTECTIVE CLOTHING

Wallace Peery Behnke, Newark; Robert Stuart Chapin, and John Francis Fierro, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 4, 1977, Ser. No. 765,751

Int. Cl.[2] **C08L** *77/10*

U.S. Cl. 260—857 TW **5 Claims**



1. An intimate blend of aromatic polyamide staple fiber components comprising 45–55 weight percent poly(m-phenylene isophthalamide) fibers and 45–55 weight percent poly(p-phenylene terephthalamide) fibers whose stress-strain curve exhibits no yield point.

4,120,915

STYRENE-DIENE$_1$-DIENE$_2$ BLOCK TERPOLYMER WITH IMPROVED THERMAL STABILITY

Lawrence M. Fodor, and Alonzo G. Kitchen, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1976, Ser. No. 704,589

Int. Cl.[2] **C08F** *297/04*

U.S. Cl. 260—880 B **12 Claims**

1. A process for producing an antioxidant-containing thermally stable resinous polymer of styrene, 1,3-butadiene and isoprene, said polymer having 70–95 weight percent of said styrene based on a total weight of said styrene, butadiene, and isoprene, said isoprene being present in an amount within the range of 2–15 parts per 100 parts of said styrene, butadiene, and isoprene, said process comprising:

(1) forming said polymer by contacting said styrene with an organolithium initiator under polymerization conditions and effecting polymerization thereof; thereafter sequentially adding and polymerizing said isoprene and said 1,3-butadiene; and thereafter introducing a polyfunctional coupling agent to form a coupling polymer;

(2) adding the antioxidant to the coupled polymer; and

(3) recovering the coupled polymer.

4,120,916

AMORPHOUS AND CRYSTALLINE POLYOLEFIN BASED HOT-MELT ADHESIVE

Max F. Meyer, Jr., and Richard L. McConnell, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1977, Ser. No. 773,566

Int. Cl.[2] **C08L** *23/12, 23/14*

U.S. Cl. 260—897 A **10 Claims**

1. An adhesive composition capable of being used as a hot-melt adhesive comprising a blend of

(1) 3 to 20 weight percent polyethylene having a melting point of 95° to 115° C., a melt viscosity at 190° C. of about 100 to about 30,000 and a density of about 0.904 g/cm^3 to about 0.940 g/cm^3, and an acid number of 0 to 60,

(2) 94 to 60 weight percent of amorphous poly-alph-olefin, and

(3) 3 to 20 weight percent of at least one member of the group consisting of crystalline polypropylene or crystalline propylene/ethylene copolymers containing not more than 20 percent by weight ethylene having a melt viscosity of about 100 to about 100,000 cp at 190° C.

4,120,917

PROCESS FOR PREPARING TERTIARY ALKYLPHOSPHORODICHLORIDITES

Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

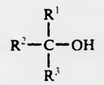
Filed Mar. 28, 1977, Ser. No. 782,271

Int. Cl.[2] **C07F** *9/146*

U.S. Cl. 260—976 **6 Claims**

1. A method which comprises reacting, at temperatures of 0° C. or less:

(a) A tertiary alcohol having the formula:



in which R^1, R^2 and R^3 are selected from the group consisting of alkyl having from about 1 to about 4 carbon atoms, aryl having from about 6 to about 8 carbon atoms, and aralkyl having from about 7 to about 10 carbon atoms, at least one being alkyl; with

(b) a tertiary amine in a molar ratio of tertiary amine to tertiary alcohol of 1:1 or more; and

(c) PCl_3 in an amount from about 1.25 to about 4 moles of PCl_3 per mole of alcohol, which amount is in excess of the stiochometric amount needed to react with the alcohol, wherein said alcohol is added slowly to said excess PCl_3; and recovering, at temperatures of 0° C. or less, a tertiary alkyl phosphorodichloridite product.

4,120,918

TAMPER PROOF IDLE ADJUSTING SCREWS

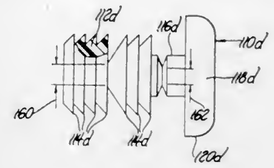
Daryl O. Codling, Rochester, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed May 16, 1977, Ser. No. 796,990

Int. Cl.[2] **F02M** *3/08*

U.S. Cl. 261—41 D **14 Claims**

1. A fuel metering system effective for metering the rate of fuel flow to an associated combustion engine, comprising body means, conduit means formed in said body means communicating with a source of fuel, orifice means formed generally in said body means for receiving fuel from said conduit means and discharging said fuel into induction passage means associated with said engine, an opening formed in said body means, said opening receiving adjustably positionable valve means, said valving means being selectively adjustably positionable with respect to said orifice means in order to thereby cooperate with said orifice means in order to cooperatingly define an effective metering area for metering said rate of said fuel flow from said conduit means and to said induction passage means, and closure means fitted into said opening as to effectively close said opening to access to said valving means, said closure means



comprising stress localizing means effective to cause a structural failure at at least one preselected location in said closure means when an attempt is made to withdraw said closure means from said opening.

4,120,919

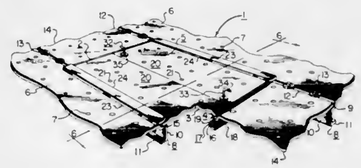
QUICK OPENING REMOVABLE TRAY SECTIONS FOR FLUID CONTACT

Robert W. McClain, Dallas, Tex., assignor to Glitsch, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 745,383, Nov. 11, 1976, abandoned. This application May 23, 1977, Ser. No. 799,711

Int. Cl.[2] **B01D** *3/32*

U.S. Cl. 261—114 TC **34 Claims**



1. In a tray for a fluid contact vessel, a quick opening removable tray section including

an open polygonal frame in the tray having lateral and transverse members defining the perimeter of an opening in said tray,

a cover complementary to the frame and composed of a pair of polygonal panels having adjacent inner lateral margins hingedly connected to each other so as to permit folding of the cover,

the panels of said cover having perimetrical outer lateral side and transverse end margins overlying and resting on the lateral and transverse members of said frame,

opposed means secured to the edge portions of said tray adjacent said lateral members of said frame for connecting the outer lateral side margins of said cover panels to said tray,

at least one of the opposed connecting means being immobile and overlying at least one of said lateral frame members in spaced relationship for slidably confining at least one of said outer lateral side margins of said panels, and

frictional fastening means at the perimetrical outer transverse side margin of at least one of said cover panels for detachably connecting at least one of said transverse margins of said panels to at least one of the underlying transverse members of said frame.

4,120,920

PROCESS FOR EXTRUSION OF PYROTECHNICAL COMPOSITIONS

Pierre Cougoul; Marc Saunier, both of Saint Medard en Jalles, and Jean Lucien Tranchant, Vert le Petit, all of France, assignors to Societe Nationale des Poudres et Explosifs, France

Filed Sep. 20, 1976, Ser. No. 725,044
Claims priority, application France, Sep. 25, 1975, 75 29338
Int. Cl.[2] C06B *21/00*
U.S. Cl. 264—3 R 9 Claims

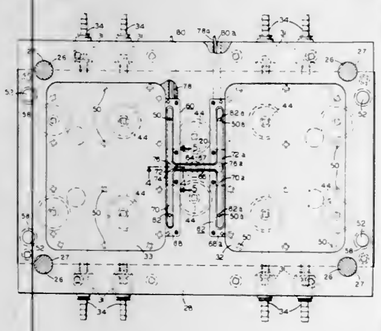
1. A process for the production of propellants based on nitrocellulose, said nitrocellulose being gelatinized by an explosive oil, which comprises introducing the constituents of the propellant into a screw extruder and subjecting the mixture of the constituents in the extruder to the following steps (1) mixing and shearing the constituents of the composition to effect gelatinization thereof; (2) compacting; (3) retarding the forward movement of the composition; (4) drying the gelatinized composition by evaporation under reduced pressure; (5) progressively pressurizing prior to extrusion of the composition from the outlet die of the extruder, carrying out said sequence of steps: (1), (2), (3), (4) and (5) at least once.

4,120,921

METHOD FOR INJECTION MOLDING PLASTIC

Geoffrey R. Webster, Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 555,649, Mar. 5, 1975, Pat. No. 4,017,237.
This application Dec. 13, 1976, Ser. No. 750,346
Int. Cl.[2] B29F *1/00*
U.S. Cl. 264—23 3 Claims



1. A method of injection molding a plurality of parts of plastic material comprising:

(a) providing a mold having at least two cavities therein, each of said cavities being connected by a runner to a common entry point,

(b) providing at least all but one of said cavities with a gate comprising a constriction orifice, each gate permitting the flow of said material therethrough only when ultrasonic energy is applied thereto,

(c) maintaining all but one cavity in the closed gate state and injecting plastic material into said mold until the said one cavity is filled, and

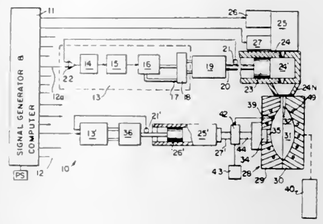
(d) after the material in said one cavity has frozen, sequentially supplying ultrasonic energy to the gate of each of the remaining cavities whereby plastic material in the constriction orifice increases rapidly in temperature and is permitted to pass therethrough and into the respective gated cavity, the material in each filled cavity being permitted to freeze before said energy is supplied to the next gate in the sequence.

4,120,922

METHOD FOR MOLDING

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 297,452, Oct. 13, 1972, Pat. No. 3,820,928, Continuation-in-part of Ser. No. 416,219, Nov. 15, 1973, Continuation of Ser. No. 194,630, Nov. 1, 1971, abandoned, Continuation of Ser. No. 725,401, Apr. 15, 1968, said Ser. No. 297,452, is a continuation-in-part of Ser. No. 849,014, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 721,401, Apr. 15, 1968, Pat. No. 3,616,495, which is a continuation-in-part of Ser. No. 421,860, Dec. 29, 1964, and Ser. No. 421,817, Dec. 29, 1964, and Ser. No. 439,549, Mar. 15, 1965, which is a continuation-in-part of Ser. No. 734,340, Mar. 9, 1958, Pat. No. 3,173,175. This application Jun. 25, 1974, Ser. No. 483,037
Int. Cl.[2] B29F *1/06*
U.S. Cl. 264—40.7 8 Claims



1. A method of molding articles of a molten molding material comprising the steps of:

injecting a predetermined quantity of molten thermoplastic molding material into a closed cavity of a mold during a molding cycle wherein said molten thermoplastic molding material is capable of solidifying to a defined shape when it cools and is operable to begin to solidify after entering said mold cavity and wherein the physical characteristics of the article molded thereof may vary in accordance with the rate of flow of said molding material into said mold and

during said molding cycle and as said molding material is injected into said mold cavity, predeterminately controlling the flow of said molten molding material into said mold cavity wherein the rate of flow of said molding material into and throughout said mold cavity varies in such a manner as to predetermine the manner in which said predetermined quantity of molding material solidifies throughout said mold cavity so as to provide a molded article having predetermined physical characteristics throughout the material of said molded article.

4,120,923

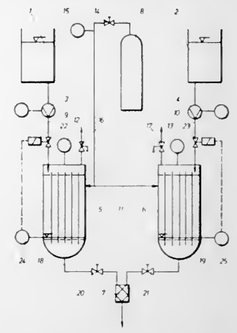
PROCESS FOR MANUFACTURING FOAMED MATERIALS INVOLVING CONTACTING A THIN UNBROKEN FILM OF LIQUID RESIN WITH A GASEOUS BLOWING AGENT UNDER PRESSURE

Werner Kloker; Franz Bovender; Franz Gromping, all of Krefeld; Leonhard Goerden, Oedt, and Harald Niesel, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 15, 1975, Ser. No. 605,026
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1974, 2440022
Int. Cl.[2] B29D *27/04*
U.S. Cl. 264—45.3 3 Claims

1. A process of manufacturing foamed materials from a liquid thermosetting resin having a viscosity less than 6000 cP, comprising the steps of contacting a thin unbroken film of the liquid resin in a pressure vessel under pressure of 3 to 350 bars at a temperature of between 0° to 50° C. for a residence time of 0.1 to 120 minutes with a blowing agent having a boiling point

under normal pressure which is below 0° C., causing the liquid resin to smoothly flow without absorbing discernible bubbles of the blowing agent down and over an elongated surface means having a vertical component disposed within the pressure vessel whereby the liquid resin film absorbs the blowing agent so rapidly that the resin film flowing off from the elongated surface means can immediately be withdrawn from the pressure vessel, deposited on a surface, subjected to pressure release, allowed to expand and to cure into a foamed resin.

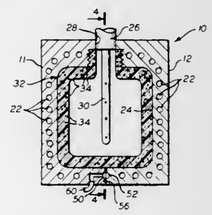


4,120,924

METHOD FOR MAKING FOAMED BLOWN WARE

Dewey Rainville, Westfield, N.J., assignor to Rainville Company, Inc., Westfield, N.J.

Filed Apr. 22, 1977, Ser. No. 789,832
Int. Cl.[2] B29G *7/02;* B29D *27/00;* B29F *5/00*
U.S. Cl. 264—45.5 2 Claims



1. The method of making plastic blown ware including applying a molten tubular plastic blank to a mold cavity, blowing the plastic blank by supplying gas under pressure to the inside of the plastic blank to expand said plastic blank into contact with the wall of the mold cavity, cooling the mold so that the plastic forms a skin on the outside of the blank upon contact with the mold, and evacuating air from the mold cavity around the outside of the plastic blank to expedite the expansion of the plastic blank into contact with the wall of the mold cavity, characterized by supplying to the mold cavity a plastic blank that contains a blowing agent that expands the plastic by the formation of gas bubbles therein to produce an expanded or foamed wall for the plastic blank, formulating the plastic material and blowing agent to obtain a closed-cell foam, and reducing the pressure of the gas that blows the plastic blank immediately after the plastic blank has expanded into contact with the wall of the mold, and controlling the reduction in gas pressure to obtain a desired size of bubble within the plastic while the plastic is cooling to a hard condition in which the bubble size becomes set.

4,120,925

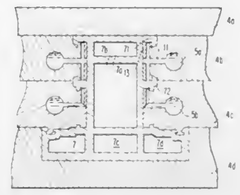
Patent Not Issued For This Number

4,120,926

PROCESS FOR REDUCING THE SHRINKAGE OF EXTRUDED PROFILED ELEMENTS OF THERMOPLASTIC SYNTHETIC RESINS

Siegfried Titz, Wissen, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Germany

Filed Feb. 2, 1976, Ser. No. 654,726
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1975, 2504190
Int. Cl.[2] B29D *9/20*
U.S. Cl. 264—89 3 Claims



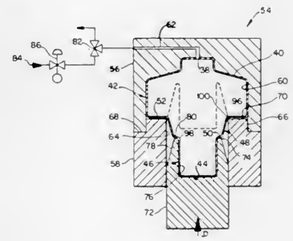
1. A process for reducing the shrinkage of profiled elements of thermoplastic synthetic resins, which shrinkage is produced by undesired stresses frozen in during extrusion in an extruder die and calibration in a calibrating device, which comprises maintaining the extrusion speed of the profiled element upon exiting from an extruder die at approximately the same speed as the calibrating speed and take-off speed of the profiled element during its subsequent passage through a calibrating device and cooling the extruded profiled element in the inlet phase of the calibration in said calibration device at defined locations distributed over the periphery of the cross section of the element to a greater extent than at the remaining locations of the periphery, whereby a reinforcing corset is produced which absorbs the tensile forces during the subsequent further drawing of the element through the calibrating device, the exit cross section of the extruder die being so dimensioned that the profiled element is extruded with cross-sectional dimensions that correspond approximately to those of the calibrated element exiting from the calibrating device.

4,120,927

PROCESS FOR MAKING A ONE PIECE ROTOR LINER

Steven Thomas Nielsen, Sunnyvale, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 10, 1976, Ser. No. 684,814
Int. Cl.[2] B29C *17/07*
U.S. Cl. 264—98 4 Claims



1. A process for making a one piece generally enclosed convolute rotor liner having two chambers in fluid communication comprising the steps of:

molding an elongated member having at least two generally cylindrical shaped portions concentrically aligned along the rotational axis of said liner, one of said portions having a diameter greater than the other of said portions, said

portions being integrally joined and longitudinally spaced from each other along said axis by a shifting section, said elongated member having a ridge located at the interface of said other cylindrical portion and said shifting section;
placing said other cylindrical portion within a mating recess of a forcing tool;
engaging said ridge with the forward annular rim of said forcing tool;
holding said one cylindrical portion in a stationary position;
moving said other cylindrical portion toward said one cylindrical portion;
pivoting said shifting section over said forward annular rim of said forcing tool to position said other cylindrical portion in a recessed position within said one cylindrical portion to form a central chamber surrounded by an annular chamber; and
maintaining the shape of said other cylindrical portion while it is being moved into said recessed position within said one cylindrical portion.

4,120,928

PRODUCTION OF BIAXIALLY STRETCHED FILM OF POLYAMIDE BLEND

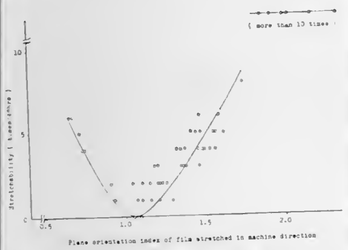
Kaoru Furukawa, Takatsuki; Koichi Matsunami, Otsu; Toshihiko Ota, Otsu; Tetsushi Murakami, Otsu; Hiroshi Nagai, Otsu, and Kazuo Tamaki, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 15, 1977, Ser. No. 788,047

Claims priority, application Japan, Apr. 19, 1976, 51-44689; May 8, 1976, 51-52559; May 8, 1976, 51-52561; May 10, 1976, 51-53685; May 10, 1976, 51-53686; Aug. 9, 1976, 51-95277; Aug. 5, 1976, 51-93830

Int. Cl.² B29D *7/24*

U.S. Cl. 264—171 **25 Claims**



1. A process for preparing a biaxially stretched film of a polyamide blend, which comprises melt extruding a polyamide blend to make an unstretched film and stretching the unstretched film firstly in a machine direction at a temperature of 50° to 130° C. in a draw ratio of 2 to 5 and secondly in a transverse direction at a temperature of 70° to 160° C. in a draw ratio of 2 to 5,
(a) said polyamide blend comprising 97 to 80% by weight of an α-type aliphatic polyamide,
(b) and 3 to 20% by weight of at least one polyamide selected from the group consisting of:
(i) an α-type aliphatic polyamide different from the polyamide in (a),
(ii) a γ-type aliphatic polyamide,
(iii) a non-crystalline aliphatic polyamide, and
(iv) a ring-containing polyamide which contains in the molecule 0 to 50 mol % of repeating units comprising a xylylenediamine residue.

4,120,929

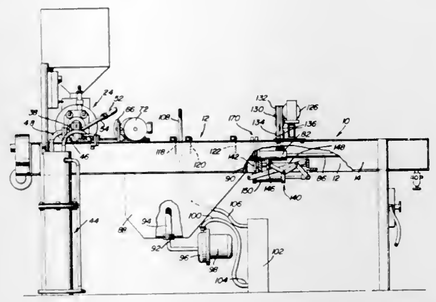
METHOD FOR PRODUCING A SPIRALLY WOUND PLASTIC ARTICLE

Donald J. Reum, P.O. Box B, Albany, Minn. 56307

Filed Dec. 28, 1976, Ser. No. 755,079

Int. Cl.² B29C *17/00*

U.S. Cl. 264—210 R **8 Claims**



1. The method of producing a spirally wound article of thermoplastic material, said method comprising extruding a heated strip of thermoplastic material from a die with the strip including opposite side longitudinal side surfaces interconnected by narrow opposite side longitudinal edges, advancing said strip past first and second stations while drawing said strip down between said die and said first station, performing controlled initial partial contact cooling of one side surface of said strip at said first station, arcuately deflecting said strip at said first station during said partial cooling of said strip and with said side edges of said strip comprising the inner and outer portions of the arcuate section of said strip, further drawing said strip down between said first and second stations, and thereafter guiding said strip, at said second station, through a plurality of strip guiding spaced convolutions about a journaled cylindrical member driven at a peripheral speed substantially equal to the linear speed of said strip and further cooling said strip through out at least a major portion of its passage through said second station.

4,120,930

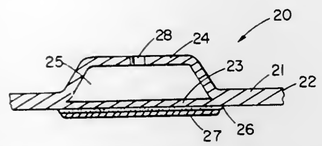
METHOD OF COATING A COMPOSITE MOLD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 495,793, Aug. 8, 1974, abandoned, Continuation-in-part of Ser. No. 300,299, Oct. 24, 1972, Pat. No. 3,827,667, which is a continuation of Ser. No. 53,833, Jul. 10, 1970, abandoned, which is a continuation-in-part of Ser. No. 601,259, Nov. 1, 1966, Pat. No. 3,529,987, which is a continuation-in-part of Ser. No. 432,033, Nov. 25, 1964, Pat. No. 3,414,863, and Ser. No. 432,924, Jan. 8, 1965, Pat. No. 3,346,220. This application Sep. 2, 1976, Ser. No. 719,807

Int. Cl.² B29C *1/02, 1/04;* **B28B** *7/36;* **B22B** *9/00*

U.S. Cl. 264—225 **1 Claim**



1. A method of molding comprising:
producing a mold for shaping a material to be molded by casting a first mold portion formed of a material selected from the group consisting of: Portland cement, carbon, pyrolytic graphite, castable ceramic material, mortar and plastic resins in a form of a predetermined shape to define a mold base having a first surface portion having a molding cavity formed therein of a predetermined configuration,
flowing and depositing a first layer of material to form a coating of predetermined thickness onto said first surface portion of said molding cavity and bonding said first layer of material to said surface of said molding cavity whereby said first layer of material is selected from the group consisting of: nickel, steel, aluminum, titanium, coper, molybdenum, tungsten and pyrolytic graphite,
depositing a second hard surface layer as a coating of predetermined thickness onto said first layer whereby said hard surface layer is selected from the group consisting of the carbides, nitrides, and oxides of tungsten, titanium, boron, silicon, aluminum, and pyrolytic graphite,
operatively assembling said coated first mold portion in a forming machine with a second complementary mold member having a surface portion thereof, which is shaped to define a cavity between at least a portion of said first surface portion of said first mold portion, and a portion of the surface of said second mold member when the two are so operatively assembled,
and disposing a material to be molded between said first mold member and said second complementary mold member in said cavity and forming said material to shape therebetween by engaging at least a portion of the surface of said second hardened layer so as to shape said moldable material.

4,120,931

METHOD OF MANUFACTURING ORIENTED AMORPHOUS AROMATIC POLYMERIC FILMS

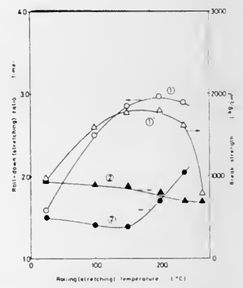
Nobuo Fukushima, Otsu; Yukikazu Uemura, Amagasaki; Takuzo Okumura, Tokyo, and Haruo Hayashida, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 26, 1977, Ser. No. 801,020

Claims priority, application Japan, May 27, 1976, 51-61896; Sep. 22, 1976, 51-114278; Dec. 20, 1976, 51-153921

Int. Cl.² B29D *7/24;* **B29C** *17/02*

U.S. Cl. 264—288 **28 Claims**



17. A method for producing a high-strength film of an amorphous aromatic high polymer, which comprises passing a raw film comprising said high polymer, which contains more than 80% of an amorphous resin having aromatic nuclei in the main chains thereof, a crystallinity of less than 30% and a secondary transition point of higher than 150° C., through at least one pair of compression rolls maintained between the temperatures of 100° C. lower than and 50° C. higher than the secondary transition point of said amorphous resin, thereby rolling said raw film, and then stretching the rolled film in at least one of the following directions:
(1) the same direction as the rolling direction, and
(2) a direction normal to the rolling direction, said stretching being carried out between the temperatures of 100° C. lower than and 50° C. higher than the secondary transition point of said amorphous resin.

4,120,932

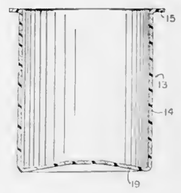
METHOD OF FABRICATING PLASTIC CONTAINERS HAVING REDUCED GAS PERMEABILITY FROM A COMPOSITE BILLET

Donald J. Roth, Chicago Heights, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Continuation of Ser. No. 615,254, Sep. 22, 1975, abandoned, which is a division of Ser. No. 469,486, May 13, 1974, Pat. No. 3,923,190. This application Nov. 24, 1976, Ser. No. 744,557

Int. Cl.² B29C *17/03*

U.S. Cl. 264—292 **13 Claims**



1. A method of forming a thermoplastic container having increased resistance to gas permeability which comprises preparing a composite billet comprised of an outer peripheral area consisting essentially of a moldable thermoplastic resin and an internal central core comprised of the thermoplastic resin modified with a second material which lowers the gas pemeability of the resin, the outer peripheral area being substantially devoid of the second material, and then molding the billet into a hollow container having a body closed at one end and terminating in an upper open end surrounded with a peripheral flange integral with the body, the flange being formed from the thermoplastic outer peripheral area of the billet and the body being formed from the modified thermoplastic billet core.

4,120,933

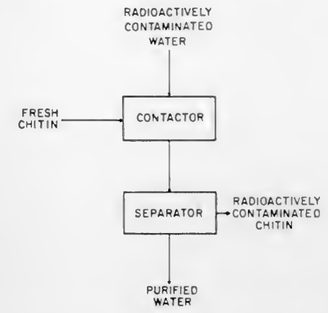
DECONTAMINATION OF PLUTONIUM FROM WATER WITH CHITIN

Gary L. Silver, Centerville, Ohio, assignor to The United States of America as represented by the Unites States Department of Energy, Washington, D.C.

Filed Sep. 27, 1977, Ser. No. 837,251

Int. Cl.² C01G *56/00*

U.S. Cl. 423—6 **1 Claim**



1. A process for removing at least an 80% portion of plutonium from an aqueous solution containing said plutonium comprising; adding to said aqueous solution a buffer solution to

provide a pH in the range of about 5 to about 10, thereafter contacting said resulting solution with comminuted chitin, subsequently agitating said solution, thereafter separating the solution from the chitin, and finally incinerating the chitin to produce an ash containing a portion of said plutonium.

4,120,934

METHOD FOR WORKING-UP SHALE

Thomas K. Miöen, Stockholm, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Jun. 25, 1976, Ser. No. 700,032
Claims priority, application Sweden, Jul. 1, 1975, 7507509
Int. Cl.² B01D *11/00*
U.S. Cl. 423—18 **18 Claims**

1. A method for working-up shale while recovering metals therefrom and the sulfur content thereof, comprising crushing the shale; roasting the crushed shale in a roasting furnace, whereby a sulfur dioxide containing gas is obtained; removing the gas from the furnace and passing it to a stage in which sulfur is recovered as sulfuric acid, elementary sulfur or liquid sulfur dioxide; leaching the roasted shale with a aqueous sulfuric acid solution so as to dissolve recoverable metals present in the shale, said recoverable metals comprising one or more of the metals uranium, molybdenum, vanadium, aluminum, magnesium, potassium and sodium and also any phosphorus in the form of phosphate; recovering valuable constituents of the leaching soution by means of extraction and precipitation; passing the residual leaching solution to the roasting furnace and converting in said roasting furnace the sulfur content of the residual leaching solution to sulfur dioxide during simultaneous roasting and combustion of the shale therein.

4,120,935

DUMP LEACHING OF COPPER

Gerald F. Fountain; Jaime Veloz, and Harry R. Dahlberg, all of Inspiration, Ariz., assignors to Inspiration Consolidated Copper Company, Morristown, N.J.

Continuation of Ser. No. 692,935, Jun. 4, 1976, abandoned. This application Nov. 11, 1977, Ser. No. 850,442
Int. Cl.² C22B *15/08*
U.S. Cl. 423—41 **8 Claims**

1. The method of recovering copper from low grade oxidized copper ore containing a substantial amount of tenorite, melaconite, or other oxidized mineral substantially insoluble in dilute aqueous sulfuric acid which comprises establishing a dump of such ore in fragmented form; said dump being a depth of at least about 10 feet, percolating into said dump a strong aqueous sulfuric acid solution containing at least about 200 g/l H_2SO_4 until the ore fragments are substantially completely wetted, then discontinuing such percolation and allowing the wetted ore to age in contact with the strong acid for a period from about 10 to 30 days, then percolating through the dump a washing of dilute aqueous sulfuric acid containing about 10 to 30 g/l H_2SO_4, collecting the washings, and recovering copper from said washing.

4,120,936

PROCESS FOR CONVERSION OF UF_6 TO UO_2

John P. DeLuca, New Providence, and Edward T. Maas, Jr., Kendall Park, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 773,129, Feb. 28, 1977, abandoned. This application May 16, 1977, Ser. No. 797,538
Int. Cl.² C01G *43/02*; C07F *5/00*
U.S. Cl. 423—261 **29 Claims**

1. A process for converting UF_6 to UO_2 comprising:
(a) forming a single phase solution including an active solution of water and a base selected from the group consisting of pyridine and methyl-substituted pyridines, N,N-disubstituted carboxylic acid amides, ammonia and mono-, di- and trimethyl substituted amines, sulfoxides and sulfones and an inert diluent acetonitrile.
(b) adding UF_6 to said single phase solution so that said UF_6 reacts with said single phase solution to form a uranyl fluoride containing precipitate which is separated from the remaining single phase solution, and
(c) converting said precipitate to UO_2 by thermal and reductive means.

4,120,937

PROCESS FOR THE PRODUCTION OF HALOSILICON ACIDS AND ORGANIC SILICON ACID COMPOUNDS AND RESINOUS PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Filed Oct. 25, 1977, Ser. No. 845,464
Int. Cl.² C01B *25/01*
U.S. Cl. 423—325 **29 Claims**

1. The process for the production of halosilicon acids by the following steps:
(a) mixing about 1 part by weight of a dry, fine, granular hydrated silica with about 1 to 2 parts by weight of a silicon tetrahalide, silicon tetrachloride;
(b) agitating the mixture at ambient temperature and pressure for 1 to 4 hours, and the chemical reaction is complete in 6 to 12 hours, thereby
(c) producing a white, fine, granular mixture of halosilicon acids.

4,120,938

AQUEOUS SOLUTIONS OF ALKALI POLYSILICATES

Rainer Haase, Bokel, Schleswig, Holstein; Volker Hunger, Rheidt, and Arnold Lenz, Cologne-Stammheim, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 496,778, Aug. 12, 1974, Pat. No. 3,984,526. This application Jul. 8, 1976, Ser. No. 748,603
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1973, 2343026
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.² C01B *33/32*
U.S. Cl. 423—332 **5 Claims**

1. A stable aqueous lithium polysilicate solution of a lithium polysilicate, said solution containing alkoxy groups of 1 to 3 carbon atoms, said solution having less than 50 parts per million of sodium or potassium ions wherein the mol ratio of silica to lithium oxide is 4–5:1, the SiO_2 content of said solution is between 20 and 22 percent by weight, said stable aqueous lithium polysilicate solution prepared by a process consisting essentially of contacting a tetraalkoxysilane of the formula $Si(OR)_4$ wherein each R is independently a straight or branched-chain alkyl group of 1 to 3 carbon atoms with an agent consisting essentially of an aqueous lithium hydroxide solution at a temperature between room temperature and the boiling point of the reaction mixture and at a temperature up to 100° C., the ratio of silane to lithium hydroxide being such that the reaction product has a silica to lithium oxide mol ratio of 4–5:1, distilling over substantially all of the alcohol formed by the reaction of the silane with the lithium hydroxide down to a residual alkoxy group content of 0.15 to less than 2 weight percent and during or immediately following said distillation adding water to adjust the silica content of said solution to between 20 and 22 weight percent and cooling the resultant product with stirring.

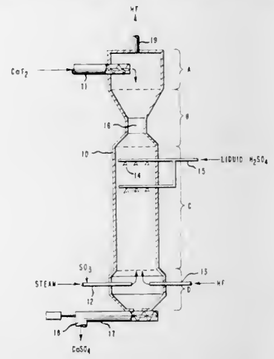
4,120,939

HYDROGEN FLUORIDE PROCESS

William Hollis Ehlig, Baytown, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 26, 1977, Ser. No. 800,869
Int. Cl.² C01B *7/22*
U.S. Cl. 423—483 **4 Claims**

1. In a process for producing hydrogen fluoride by the reaction of sulfuric acid with a metal fluoride to produce gaseous hydrogen fluoride and metal sulfate wherein the energy balance is satisfied by feeding part of the sulfuric acid required for the mass balance as vaporous sulfur trioxide and steam and the remainder is fed as liquid sulfuric acid, the improvement comprising dropping particles of said metal fluoride having a particle size between 1 and 300 microns through the reaction zone of a vertical, stationary reactor countercurrent to a gas stream containing sulfur trioxide, sulfuric acid and water vapor, said gas stream being at or near its dew point in the reaction zone, introducing liquid sulfuric acid into the reaction zone, the rate of fall of said particles within the reaction zone being such that a liquid phase of condensed sulfuric acid is maintained on the surfaces of the particles while in said zone and the particles and acid are maintained in the free fall state for a preiod of time sufficient to complete the reaction to form gaseous hydrogen fluoride, and recovering gaseous hydrogen fluoride from the top of said reactor and removing metal sulfate from the bottom of said reactor.



4,120,940

DIRECT PRODUCTION OF COARSE PARTICLE INORGANIC FLUORIDES

William Carl Warneke, Lakeland, Fla., assignor to Borden, Inc., Columbus, Ohio

Filed Jun. 27, 1977, Ser. No. 810,047
Int. Cl.² C01F *5/28, 11/22*
U.S. Cl. 423—490 **4 Claims**

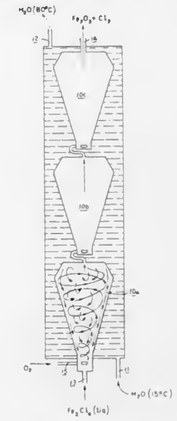
1. A process for making a controlled size and shape particulate material selected from the group consisting of calcium fluoride and magnesium fluoride substantially free of finely-divided powder resulting from combining
(1) a solid coarse particle reactant selected from calcium carbonate and magnesium oxide and having an average particle size greater than about 100 microns and the particle shape desired in the final product, and
(2) a dilute aqueous reactant solution selected from solutions of hydrofluoric acid and ammonium fluoride that completely mixes with said solid reactant to form a reactive mixture,
raising the temperature of the reactive mixture to from 90° F to boiling temperature for from ½ to 5 hours to cause reaction between (1) and (2) and to form a coarse particulate product, and separating said particulate product from the mixture by drying at from 180° to 225° F followed by calcining at about 1000° F for a sufficient time to remove remaining water without disturbing the particle size and shape of said product, which particle size is substantially identical to that of said solid reactant.

4,120,941

PROCESS FOR THE OXIDATION OF HALIDES

Rudolf Nowak, and Gerhard Holland, both of Frankfurt am main, Fed. Rep. of Germany, assignors to Halomet AG, Basel, Switzerland

Filed Oct. 31, 1974, Ser. No. 519,505
Int. Cl.² C01B *13/14*
U.S. Cl. 423—592 **6 Claims**



1. In a process for the oxidation of halides or mixtures thereof with oxygen or oxygen-containing gases in an oxidation chamber, the improvement wherein solid or liquid halides are supplied to the oxidation chamber through an inlet nozzle, the temperature at which said solid or liquid halides are supplied to the oxidation chamber and/or the pressure in the oxidation chamber being selected so that the vapor pressure of the halides supplied is greater than the pressure in the oxidation chamber, up to or substantially to the critical temperature of said halides to thereby prevent any substantial crust formation at or on the inlet nozzle.

4,120,942

STAGED REHYDRATION OF ALUMINA

Donald P. Spitzer, Riverside, and William Edward Bambrick, Old Greenwich, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 696,093, Jun. 14, 1976, abandoned. This application Oct. 17, 1978, Ser. No. 842,849
Int. Cl.² C01F *7/02*
U.S. Cl. 423—626 **8 Claims**

1. A method of preparing formed alumina extrudates from a partially dehydrated, rehydratable alumina prepared by flash calcining Bayer process alumina, and having LOI in the range from 3 to 15 and rehydration index in the range from 15 to 80, said method comprising:
rehydrating said partially dehydrated alumina by mixing with water which contains acid at pH below 7 and heating the mixture to 80°–100° C. for the time needed for rehydration;
solidifying the rehydrated alumina; mulling the solidified, rehydrated alumina with sufficient water to make a mulled mixture suitable for extrusion;
extruding the mulled mixture into a desired extrudate shape; and
drying said extrudate shapes and calcining the dried extrudate to activate the alumina.

4,120,943

PROCESS FOR PRODUCING PSEUDO-BOEHMITE

Toshiyuki Iwaisako; Naomi Yamaguchi; Hisao Yomogida, and Yoshinobu Ito, all of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 683,520, May 5, 1976, abandoned, which is a continuation of Ser. No. 456,389, Mar. 29, 1974, abandoned. This application Dec. 17, 1976, Ser. No. 751,683

Claims priority, application Japan, Apr. 6, 1973, 48/38774

Int. Cl.[2] **C01F** *7/02, 7/34*

U.S. Cl. 423—628 **10 Claims**

1. A process for the production of a pseudo-boehmite product which comprises initially mixing an alkali aluminate and a halohydrin selected from the gorup consisting of ethylene chlorohydrin, propylene chlorohydrin, epichlorohydrin, trimethylene chlorohydrin, glycerol monochlorohydrin, glycerol dichlorohydrin, and 1-hydroxy-2-chloropropyl-methacrylate for a period of 5 seconds to 10 hours at a temperature of from −10° C. to 50° C., the molar ratio of halohydrin to alkali aluminate being from 0.8 to 20, the concentration of alkali aluminate being up to 25% by weight, and thereafter raising the temperature of the mixture to from 50° C. to 100° C. to effect precipitation of the desired pseudo-boehmite; said pseudo-boehmite characterized by the following physical properties:

(a) bulk density, 0.05 to 0.2 g/cc;
(b) oil absorption, 2.5 to 6.0 cc/g;
(c) specific surface area, 200 to 500 m^2/g;
(d) pore volume, 2.0 to 7.0 cc/g (0.0035μ–176μ);
(e) Pore volume, 2.0 to 4.0 cc/g (0.176μ–176μ).

4,120,944

PREPARATION OF CARBONYL SULFIDE AND PRODUCTION OF METHYL MERCAPTAN THEREFROM

Donald H. Kubicek, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1976, Ser. No. 719,220

Int. Cl.[2] **C01B** *31/26;* **C07C** *149/06*

U.S. Cl. 423—416 **10 Claims**

1. A process for the production of methyl mercaptan which comprises contacting at a temperature in the approximate range of 300° to 600° F. and a pressure in the approximate range of 0 to 1000 psig a mixture of carbonyl sulfide and hydrogen with a sulfactive hydrogenation catalyst consisting essentially of a combination of at least one Group VIII sulfide, at least one Group VI sulfide and an inorganic oxide support.

9. A process for the production of carbonyl sulfide which comprises contacting a mixture of carbon dioxide and carbon disulfide with a supported phosphotungstic acid catalyst at a temperature in the approximate range of 400° to 550° F. and a pressure in the approximate range of 0–•psig.

4,120,945

SUBSTRATE COATED WITH RECEPTOR AND LABELED LIGAND FOR ASSAYS

Sidney Gutcho, Monsey, and Henry McCarter, Pine Island, both of N.Y., assignors to Becton, Dickinson & Company, Rutherford, N.J.

Filed Jul. 6, 1976, Ser. No. 702,691

Int. Cl.[2] **G01N** *33/16, 23/00, 31/06*

U.S. Cl. 424—1 **19 Claims**

1. An article for the assay of a ligand, comprising:

a solid, a receptor for both the ligand to be assayed and a labeled form of the ligand to be assayed on said solid, and a labeled form of the ligand to be assayed reversibly coated on at least 0.5% and no more than 25% of the surface of said receptor, whereby during an assay for the ligand, the labeled form of the ligand is removed from the receptor for re-equilibration with the receptor in competition with the ligand to be assayed.

12. In a process for the assay of a ligand, the improvement comprising:

equilibrating a sample including the ligand to be assayed with a solid phase having a receptor applied thereto and a labeled form of the ligand reversibly coated on at least 0.5% and no more than 25% of the surface of the receptor, whereby the labeled form of the ligand is removed from the receptor for re-equilibration with the receptor in competition with the ligand to be assayed.

4,120,946

PHARMACEUTICAL COMPOSITIONS FOR BARIUM OPACIFICATION AND METHOD OF PREPARING THEM

André Queuille, 93, rue Denfert-Rochereau, 93130 Noisy-le-Sec, and Francoise Herbemont, 10 La Renardiere, 1, rue Jean-Jaures, 93470 Coubron, both of France

Filed May 23, 1977, Ser. No. 799,163

Claims priority, application France, May 26, 1976, 76 15975

Int. Cl.[2] **A61K** *29/02*

U.S. Cl. 424—4 **8 Claims**

1. A pharmaceutical composition for barium opacification of the digestive tract, comprising colloidal barium sulfate and a polyacrylamide having a molecular weight of at least about one million in an aqueous vehicle, the polyacrylamide content being between 0.1% and 5% of the barium sulfate content.

4,120,947

XANTHINE COMPOUNDS AND METHOD OF TREATING BRONCHOSPASTIC AND ALLERGIC DISEASES

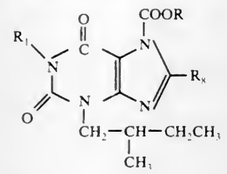
Julius Diamond, Morris Plains, N.J., assignor to Cooper Laboratories, Inc., Parsippany, N.J.

Filed Mar. 31, 1976, Ser. No. 672,388

Int. Cl.[2] **C07D** *473/06;* **A61K** *31/52*

U.S. Cl. 424—45 **48 Claims**

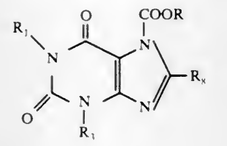
1. A compound having the formula:



wherein

R_1 = C_1–C_2 alkyl
R_x = H, C_1–C_4 alkyl
R = C_1–C_4 alkyl, 2-halo-(C_2–C_3 alkyl), or phenyl

16. A pharmaceutical composition comprising an amount effective for bronchodilation of a compound of the formula:



wherein

R_1 = C_1–C_2 alkyl
R_3 = CH_2—(C_1–C_4 alkyl), CH_2—(C_3–C_4 alkenyl), CH_2—(C_3–C_4—cyclo—alkyl)
R_x = H, C_1–C_4 alkyl
R = C_1–C_4 alkyl, 2-halo—(C_2–C_3 alkyl), or phenyl

in combination with a non-toxic inert pharmaceutically acceptable diluent to give a dosage form selected from tablets, capsules, or aerosol mists.

4,120,948

TWO PHASE ANTIPERSPIRANT COMPOSITIONS

David Lee Shelton, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 29, 1976, Ser. No. 745,723

Int. Cl.[2] **A61K** *7/34*

U.S. Cl. 424—66 **10 Claims**

1. An antiperspirant composition in the form of a two-phase stick, said composition comprising:

(A) from about 40 to 60% by weight of the composition of a solid, substantially anhydrous antiperspirant phase comprising

I. from about 8 to about 15% by weight of the antiperspirant phase of a water-insoluble high melting wax which has a melting point of from about 150° F. to about 215° F.

II. from about 20 to about 50% by weight of the antiperspirant phase of a water-insoluble liquid, organic, non-hydrocarbon emollient; and

III. from about 30 to about 60% by weight of the antiperspirant phase of a solid particulate astringent antiperspirant material; and,

(B) from about 40 to 60% by weight of the composition of a gel phase contiguous to said solid antiperspirant phase, said gel phase comprising

I. from about 10 to 92% by weight of the gel phase of a polyhydric aliphatic alcohol containing from 2 to 4 carbon atoms and from 2 to 3 hydroxy groups; and

II. from about 5 to 15% by weight of the gel phase of a gel forming agent selected from the group consisting of sodium salt of a fatty acid containing from 14 to about 22 carbon atoms and potassium salt of a fatty acid containing from about 14 to about 22 carbon atoms.

4,120,949

OPHTHALMIC SOLUTION

Krishna M. Bapatla, Succasunna, and Katharyn M. Brychta, Morris Plains, both of N.J., assignors to Cooper Laboratories, Inc., Parsippany, N.J.

Filed Oct. 5, 1977, Ser. No. 839,332

Int. Cl.[2] **A61K** *31/74, 31/79*

U.S. Cl. 424—80 **8 Claims**

1. An ophthalmic solution having the following composition:

Hydroxyethyl cellulose	0.8%
Polyvinylpyrrolidone	1.5%
Polyvinyl alcohol	0.5%
Hydroxypropyl methylcellulose	0.4%
Benzalkonium chloride	0.01%
Disodium edetate	0.01%

in a physiologically acceptable aqueous phosphate buffer, having a pH of 6.0 to 8.0.

4,120,950

MEDICAMENT FOR PREVENTING AND TREATING PSEUDOMONAS AERUGINOSA INFECTIONS AND METHOD OF ITS PREPARATION

Yuzuru Homma, Tokyo, Japan, assignor to The Green Cross Corporation, Osaka, Japan

Filed Aug. 17, 1976, Ser. No. 715,198

Claims priority, application Japan, Feb. 5, 1976, 51-10866

Int. Cl.[2] **A61K** *39/40;* **C07G** *7/00*

U.S. Cl. 424—87 **7 Claims**

1. A composition suitable for preventing and eliminating infectious diseases caused by P. aeruginosa which produce elastase and protease, and which comprises a γ-globulin aqueous solution prepared from human serum or plasma showing an HA liter of at least ×128 for OEP antibodies, at least ×32 for elastase antibodies and at least ×64 for protease antibodies.

4,120,951

POLYPEPTIDE HORMONES OF THE THYMUS

Gideon Goldstein, Riverdale, N.Y., assignor to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Division of Ser. No. 606,843, Aug. 22, 1975, which is a continuation-in-part of Ser. No. 429,202, Dec. 28, 1973, abandoned. This application May 9, 1977, Ser. No. 795,333

Int. Cl.[2] **A61K** *37/00*

U.S. Cl. 424—177 **16 Claims**



1. A therapeutic composition of matter comprising a therapeutically effective amount of the polypeptide:

H_2N—GLY—GLN—PHE—LEU—GLU—ASP—PRO—SER—VAL—LEU—THR—LYS—GLU—LYS—LEU—LYS—SER—GLU—LEU—VAL—ALA—ASN—ASN—VAL—THR—LEU—PRO—ALA—GLY—GLU—GLN—ARG—LYS—ASP—VAL—TYR—VAL—GLN—LEU—TYR—LEU—GLN—HIS—LEU—THR—ALA—VAL—LYS—ARG—COOH,

in a pharmaceutically acceptable carrier.

4,120,952

METHOD FOR THE TREATMENT OF DIARRHEA IN MONOGASTRIC ANIMALS

Bartley P. Cardon, Tucson, Ariz., assignor to Arizona Feeds, Tucson, Ariz.

Continuation-in-part of Ser. No. 619,903, Oct. 6, 1975, Pat. No. 4,010,262. This application Feb. 22, 1977, Ser. No. 771,176

The portion of the term of this patent subsequent to Oct. 7, 1992, has been disclaimed.

Int. Cl.[2] **A61K** *31/715*

U.S. Cl. 424—180 **10 Claims**

1. The method of treating monogastric animals suffering from diarrhea, comprising orally administering to the animal an effective amount of pregelatinized starch in a liquid mixture.

4,120,953

NOVEL 2,2', 2"-[s-PHENENYLTRIS(SULFONYLIMINO)TRIS]-[2-DEOXY-α-D-GLUCOPYRANOSE], DODECAKIS (H-SULFATE) COMPOUNDS AND THEIR SALTS

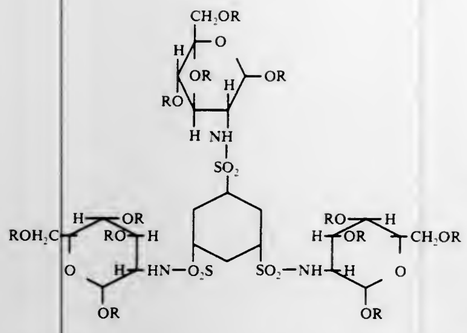
Vijay Gopalan Nair, Nanuet, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 4, 1977, Ser. No. 784,491

Int. Cl.[2] **A61K** *31/70*

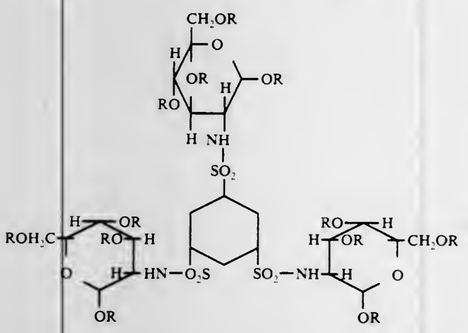
U.S. Cl. 424—180 **14 Claims**

6. A method of inhibiting the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement inhibiting amount of a pharmaceutically acceptable compound of the formula:

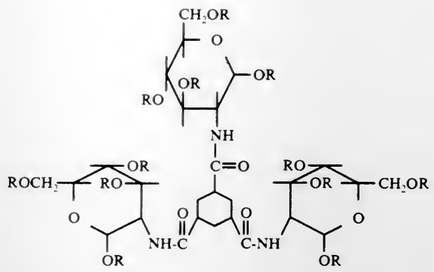


wherein R is a moiety selected from the group consisting of $-SO_3H.N(CH_3)_3$ and $-SO_3X$, wherein X is selected from the group consisting of alkali metal; and the pharmaceutically acceptable salts thereof.

10. A method of inhibiting the complement system in a warm-blooded animal which comprises internally administering to said animal an effective complement inhibiting amount of a pharmaceutically acceptable compound of the formula:

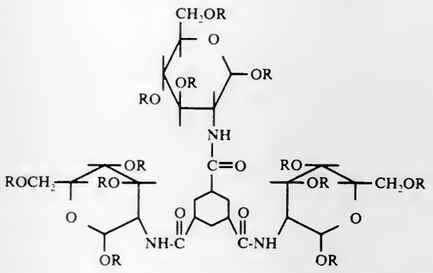


wherein R is a moiety selected from the group consisting of $-SO_3H.N(CH_3)_3$ and $-SO_3X$, wherein X is selected from the group consisting of alkali metal; and the pharmaceutically acceptable salts thereof.



wherein R is selected from the group consisting of hydrogen, acetyl, $-SO_3Na$, $-SO_3H.N(CH_2CH_3)_3$ and $-SO_3H.N(CH_3)_3$.

14. A method of inhibiting the complement system in a warm-blooded animal which compresses internally administering to said animal an effective complement inhibiting amount of a compound of the formula:



wherein R is selected from the group consisting of hydrogen, acetyl, $-SO_3Na$, $-SO_3H.N(CH_2CH_3)_3$ and $-SO_3H.N(CH_3)_3$.

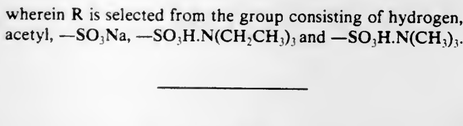
4,120,954

2,2',2''-[S-PHENENYLTRIS(CARBONYLIMINO)]TRIS-2-DEOXY-D-GLUCOPYRANOSE AND SALTS THEREOF

Joseph Peter Joseph, Cliffside Park, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 4, 1977, Ser. No. 784,202
Int. Cl.[2] **A61K** *31/70*
U.S. Cl. 424—180 **21 Claims**

8. A method of inhibiting the complement system in body fluid which compresses subjecting said body fluid to the action of an effective complement inhibiting amount of a compound of the formula:



wherein R is selected from the group consisting of hydrogen, acetyl, $-SO_3Na$, $-SO_3H.N(CH_2CH_3)_3$ and $-SO_3H.N(CH_3)_3$.

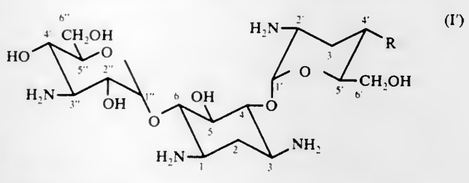
4,120,955

METHOD FOR PRODUCTION OF KANAMYCIN C AND ITS DERIVATIVES

Hamao Umezawa, Tokyo, and Shinichi Kondo, Yokohama, both of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed May 23, 1977, Ser. No. 799,806
Claims priority, application Japan, Jun. 16, 1976, 51-69759
Int. Cl.[2] **A61K** *31/71;* **C07H** *15/22*
U.S. Cl. 424—180 **6 Claims**

3. A deoxykanamycin C compound of the formula (I'):



(I')

wherein R is a hydroxyl group or hydrogen atom, or a pharmaceutically acceptable acid-addition salt thereof.

6. An antibacterial composition comprising as the active ingredient deoxykanamycin C compound according to claim **3**, in an antibacterially effective amount to inhibit the growth of bacteria, in combination with a carrier for the active ingredient.

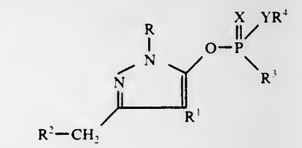
4,120,956

COMBATING ARTHROPODS WITH 3-ALKOXYMETHYL-AND-ALKYLTHIOMETHYL-PYRAZOL(5)YL(THIONO)(-THIOL)-PHOSPHORIC(PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES

Fritz Maurer; Hans-Jochem Riebel; Rolf Schröder, all of Wuppertal; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 19, 1977, Ser. No. 834,861
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 2643564
Int. Cl.[2] **A01N** *9/36;* **C07F** *9/165, 9/141, 9/38*
U.S. Cl. 424—200 **10 Claims**

1. A compound of the formula



in which

R is hydrogen, alkyl with 1 to 6 carbon atoms, cyanoalkyl with 1 to 4 carbon atoms in the alkyl part or phenyl,
R^1 is hydrogen or halogen,
R^2 is alkoxy or alkylthio each with 1 to 6 carbon atoms,
R^3 is alkyl, alkoxy or monoalkylamino each with 1 to 6 carbon atoms, or phenyl,
R^4 is alkyl with 1 to 6 carbon atoms, and
X and Y each independently is oxygen or sulphur.

9. A method of combating arthropods which comprises applying to said arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim **1**.

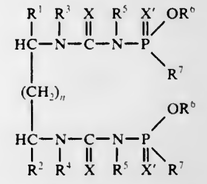
4,120,957

BIS-PHOSPHORAMIDATES

Ernest D. Weiler, Ambler; W. David Weir, Levittown, and Martha Wolfersberger, Perkasie, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 699,830, Jun. 25, 1976, abandoned. This application Jun. 3, 1977, Ser. No. 803,181
Int. Cl.[2] **A01N** *9/36;* **C07F** *9/22*
U.S. Cl. 424—204 **26 Claims**

1. A compound of the formula:



wherein R^1 and R^2 are the same or different groups selected from hydrogen, (C_1–C_6) alkyl, aralkyl of up to 11 carbon atoms or (C_6–C_{10}) aryl; and when *n* is an integer of 0 to 2, R^1 and R^2 can be joined together with the alkylene chain to which they are attached to form cyclohexyl; R^3 and R^4 are the same or different groups selected from hydrogen, unsubstituted (C_1–C_6) alkyl, (C_1–C_6) haloalkyl, (C_1–C_6) hydroxy alkyl, (C_1–C_6) alkoxyalkyl, (C_1–C_6) nitroalkyl, (C_3–C_6) alkenyl, (C_3–C_6) alkynyl, phenylalkynyl, (C_3–C_8) cycloalkyl, (C_4–C_{12}) cycloalkylalkyl, cycloalkenylalkyl, ferrocenemethyl, aryl, optionally substituted aralkyl or aralkenyl of up to 11 carbon atoms, wherein the substituent is one or more substituents selected from (C_1–C_3) alkyl, (C_1–C_3) alkoxy, (C_1–C_3) alkylthio, di-(C_1–C_3) alkylamino, cyano, nitro or halo, R^5 is selected from hydrogen, (C_1–C_6) alkyl, (C_1–C_6) alkenyl, (C_3–C_8) cycloalkyl, (C_4–C_{12}) cycloalkylalkyl, optionally substituted aralkyl of up to 11 carbon atoms, optionally substituted (C_6–C_{10}) aryl wherein the substituent is one or more substituents selected from (C_1–C_3) alkyl, (C_1–C_3) alkoxy, (C_1–C_3) alkylthio, di-(C_1–C_3) alkylamino, cyano, nitro or halo, R^6 is selected from (C_1–C_4) alkyl; (C_2–C_8) alkoxyalkyl, (C_2–C_4) haloalkyl or optionally substituted (C_6–C_{10}) aryl wherein the substituent is one or more substituents selected from (C_1–C_3) alkyl, (C_1–C_3) alkoxy, (C_1–C_3) alkylthio, di-(C_1–C_3) alkylamino, cyano, nitro or halo; R^7 is selected from (C_1–C_5) alkoxy, (C_1–C_5) alkylthio, optionally substituted (C_6–C_{10}) aryloxy or optionally substituted (C_6–C_{10}) arylthio wherein the substituent is one or more substituents selected from (C_1–C_3) alkyl, (C_1–C_3) alkoxy, (C_1–C_3) alkylthio, di-(C_1–C_3) alkylamino, cyano, nitro or halo; X is oxygen or sulfur, X' is oxygen or sulfur and *n* is an integer of 0 to 10 provided that when R^7 is alkoxy and *n* is 0, at least one of the R^1, R^2, R^3 and R^4 groups is other than hydrogen, the $(CH_2)_n$ group may be substituted with alkyl, hydroxy, alkoxy or aryl and the pharmaceutically acceptable metal salts and metal salt complexes thereof.

10. An anthelmintic composition for oral administration comprising an anthelmintically effective amount of a compound, metal salt, or metal salt complex, of claim **1** and a pharmaceutically acceptable carrier.

4,120,958

NOVEL 2-ACETOXYBENZOIC ACID-NICOTINAMIDE COMPLEXES

Anwar A. Hussain, Lexington, Ky., assignor to Interx Research Corporation, Lawrence, Kans.

Filed Mar. 11, 1977, Ser. No. 776,933
Int. Cl.[2] **A61K** *31/625;* **C07D** *213/81, 213/82*
U.S. Cl. 424—232 **10 Claims**

1. A 2-acetoxybenzoic acid complex of the formula:

$$A \cdot N_{(x)}$$

wherein *A* represents 2-acetoxybenzoic acid; wherein *N* represents a member selected from the group consisting of nicotinamide and iso-nicotinamide; and wherein (*x*) represents an integer of about 1:1 to 1:2.

5. A method for inducing an analgesic, antipyretic and anti-inflammatory response in a warm-blooded animal, which comprises:

orally administering thereto a safe and effective amount of a complex of the formula:

$$A \cdot N_{(x)}$$

wherein *A* represents 2-acetoxybenzoic acid; wherein *N* represents a member selected from the group consisting of nicotinamide and iso-nicotinamide; and wherein (*x*) represents an integer of about 1:1 to 1:2, said complex being administered in combination with a pharmaceutically acceptable inert diluent.

4,120,959

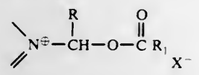
LABILE QUATERNARY AMMONIUM SALTS USEFUL IN BINDING BILE ACIDS IN WARM-BLOODED ANIMALS

Nicolae S. Bodor, Lawrence, Kans., assignor to Interx Research Corporation, Lawrence, Kans.

Division of Ser. No. 691,781, Jun. 1, 1976, Pat. No. 4,046,899. This application Jun. 24, 1977, Ser. No. 809,852
Int. Cl.[2] **A61K** *31/56, 31/415*
U.S. Cl. 424—238 **29 Claims**

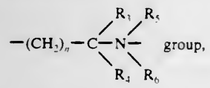
1. A method for substantially binding free and conjugated bile acids in a warm-blooded animal characterized as being ulcer-prone which comprises orally administering thereto, a

therapeutically effective bile acid binding amount of a compound having the formula:

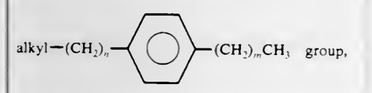


(I)

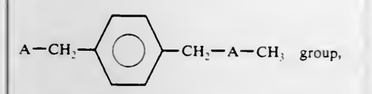
wherein >N represents an imidazolyl group; wherein R represents a member selected from the group consisting of a hydrogen atom, a C_1–C_{20} open chain or cyclo alkyl group, a C_1–C_{20} alkoxyalkyl group, a C_1–C_{20} alkanoyloxyalkyl group, a C_1–C_{20} haloalkyl group, a C_1–C_{20} carboxyalkyl group, a phenyl group, a naphthyl group, and a substituted phenyl or naphthyl group, whose substituents are selected from the group consisting of a halogen atom, an O—C_1–C_4 alkyl group, an O—C_1–C_8 alkanoyl group, a nitro group, a carboxyl group, and a carboethoxy group; wherein R_1, which may be the same or different, represents any member defined by R above with the proviso that R cannot be a hydrogen atom, a



wherein R_3, R_4, R_5 and R_6 are each selected from the group consisting of a hydrogen atom, a methyl group or an ethyl group, a C_1–C_{22} straight or branched



wherein *n* in each occurrence and *m* represent an integer of from 0 to 22, an



wherein A represents a C_1–C_{22} straight or branched alkyl group as above or a $-(CH_2CH_2O)_p$ group, wherein the *p* represents an integer of from 0 to 22, and the residue of any naturally occurring bile acid selected from the group consisting of cholic acid, deoxycholic acid, glycocholic acid and chenodeoxycholic acid; and wherein X represents a halogen atom, a methanesulfonate group, a fluorosulfonate group and a tosylate group.

4,120,960

THERAPEUTIC AGENTS

Norman W. Bristow, Wollaton; Peter E. Macey, Nottingham; Kenneth J. Nichol, West Bridgford, and Malcolm F. Sim, Woodborough, all of England, assignors to The Boots Company Limited, England

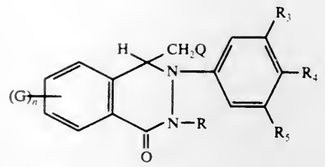
Continuation-in-part of Ser. No. 519,541, Oct. 31, 1974, abandoned, which is a continuation-in-part of Ser. No. 412,354, Nov. 2, 1973, abandoned. This application Aug. 1, 1977, Ser. No. 820,907

Claims priority, application United Kingdom, Oct. 31, 1973, 50623/73; Denmark, Apr. 26, 1974, 2297/74

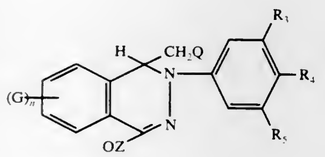
Int. Cl.[2] **C07D** *237/32;* **A61K** *31/50;* **C07D** *417/04*

U.S. Cl. 424—250 **29 Claims**

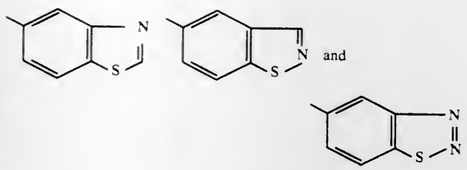
1. A therapeutic composition for inducing diuresis in mammals comprising a therapeutically effective diuretic amount of a compound of the formula:



or its enol form of the formula:

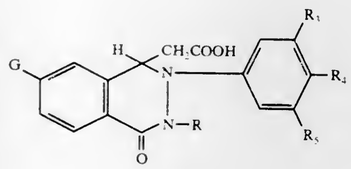


wherein Q is selected from the group consisting of COOH and CH_2OH, R is selected from the group consisting of hydrogen and C_{1-7} alkyl, Z is hydrogen or acetyl, R_5 is hydrogen, R_3 and R_4 are each independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, iodine, nitro, cyano, C_{1-7} alkyl, trifluoromethyl, 1-hydroxypropyl, methoxymethyl, phenyl, C_{1-4} alkoxy, C_{1-4} alkylthio, trifluorometylthio, phenylthio, methylsulphonyl, methylsulphinyl, acetyl, propionyl, trifluoroacetyl, benzoyl, thenoyl, hydroxy, sulphamoyl, N,N-dimethylsulphamoyl, N,N-diethylsulphamoyl, amino, N-methylamino, N,N-dimethylamino, N-ethylamino, N,N-diethylamino, N,N-methylethylamino, N-methylformamido, N-methylacetamido, N-methylmethanesulphonamido, N-methyl-p-toluenesulphonamido, 1-pyrrolyl, or R_3 and R_4 together form a portion of a heterocyclic ring fused to the benzene ring to form a group selected from the group consisting of:

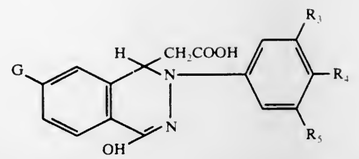


wherein *n* is 0 or 1 and G is in the 7-position and is selected from the group consisting of fluorine, chlorine, bromine, C_{1-4} alkyl, C_{1-4} alkylthio and C_{1-4} alkoxy or is in the 6 position and is fluorine, or a pharmaceutically acceptable alkyl having 1 to 7 carbon atoms inclusive ester or salt of those compounds in which Q is COOH; said compound being in admixture with a pharmaceutically acceptable carrier.

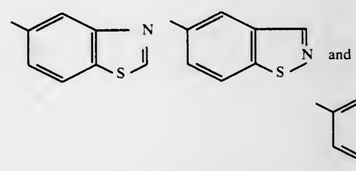
16. A compound of the formula:



or its enol form having the formula:



wherein, R is selected from the group consisting of hydrogen and C_{1-7} alkyl, R_5 is hydrogen, R_3 and R_4 together with the benzene to which they are attached form a fused ring system selected from the group consisting of:



and wherein G is selected from the group consisting of fluorine, chlorine, bromine, C_{1-4} alkyl and C_{1-4} alkoxy, and pharmaceutically acceptable salts and alkyl having 1 to 7 carbon atoms inclusive esters of these compounds.

4,120,961

RING SUBSTITUTED PYRAZINO-ISOQUINOLINE DERIVATIVES AND THEIR PREPARATION

Jürgen Seubert; Rolf Pohlke, both of Darmstadt; Herbert Thomas, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to E. Merck, Fed. Rep. of Germany

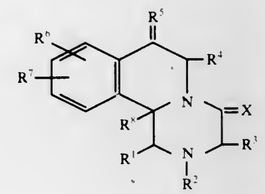
Division of Ser. No. 607,810, Aug. 26, 1975, Pat. No. 4,051,243. This application Jul. 20, 1977, Ser. No. 817,467

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1974, 2441261

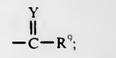
Int. Cl.[2] **A61K** *31/495;* **C07D** *241/36*

U.S. Cl. 424—250 **22 Claims**

1. A compound of the formula



wherein R^1 is a hydrogen atom, hydroxy or alkyl; R^2 is



R^3 is a hydrogen atom, alkyl or hydroxyalkyl; R^4 is a hydrogen atom, alkyl or phenyl; R^5 is an oxygen atom, two hydrogen atoms, or a hydrogen atom and one of alkyl, phenyl, halogen atom, or hydroxy; R^6 and R^7, which can be alike or different, each are a hydrogen atom, a halogen atom, hydroxy, amino, nitro, cyano, alkyl, alkoxy, alkanoyloxy, monoalkylamino, dialkylamino, alkanoylamino, benzoyloxy; R^8 is a hydrogen atom or alkyl; R^9 is phenyl which is unsubstituted or mono- or di-substituted by a fluorine or chlorine atom, hydroxy, nitro, amino, monoalkylamino, dialkylamino or alkanoylamino; Hal is a fluorine, chlorine, bromine or iodine atom, X and Y, which can be the same or different, each is an oxygen or sulfur atom; alkyl, hydroxyalkyl, alkoxy and alkanoyl, unless otherwise indicated, in each instance being up to 4 carbon atoms; with the proviso that R^2 is



when R^1 and R^3 to R^8, inclusive, each are hydrogen atoms and X is an oxygen atom; and the physiologically acceptable salts thereof.

17. An anthelmintic composition comprising an anthelmintically effective amount per unit dosage of at least one compound of claim 1 in admixture with a pharmaceutically acceptable carrier or in admixture with an animal feed or feed concentrate.

4,120,962

FUSED PYRIMIDIN-4(3H)-ONES AS ANTIALLERGY AGENTS

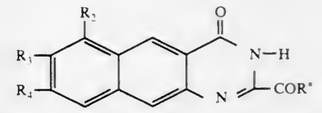
Thomas H. Althuis, Groton; Leonard J. Czuba, New London; Hans-Jurgen E. Hess, Old Lyme, and Saul B. Kadin, New London, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 667,515, Mar. 16, 1976, Pat. No. 4,044,134, which is a division of Ser. No. 485,945, Jul. 5, 1974, Pat. No. 3,974,161, which is a continuation-in-part of Ser. No. 444,138, Feb. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 351,025, Apr. 13, 1973, abandoned. This application Apr. 11, 1977, Ser. No. 786,185

Int. Cl.[2] **C07D** *239/90;* **A61K** *31/505*

U.S. Cl. 424—251 **15 Claims**

1. A compound selected from the group consisting of



and the pharmaceutically-acceptable cationic salts thereof wherein

R^o is selected from the group consisting of hydroxy, alkoxy having 1 to 4 carbon atoms, hydroxyalkoxy having 2 to 4 carbon atoms, amino and hydroxyamino;

each of R_2, R_3 and R_4 is selected from the group consisting of hydrogen, alkyl and alkoxy having 1 to 4 carbon atoms, halo, benzyloxy, hydroxy, thiol, alkanoyloxy having 1 to 4 carbon atoms, benzylthio, benzoyloxy, benzylsulfinyl, methylthio and methylsulfinyl and

R_2 and R_3, and R_3 and R_4 when taken together are selected from the group consisting of methylenedioxy and ethylenedioxy.

4,120,963

CERTAIN PYRIDO[3,4-B]INDOLE-1-ONES

Wolfgang Kampe, Heddesheim; Martin Senn, Eppelheim; Max Thiel, Mannheim; Wolfgang Bartsch, Viernheim, and Karl Dietmann, Mannheim-Vogelstang, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

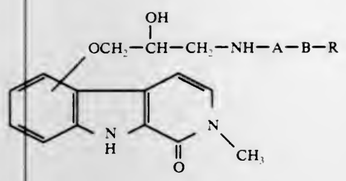
Filed May 19, 1977, Ser. No. 798,736

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626889

Int. Cl.[2] **C07D** *471/14;* **A61K** *31/44*

U.S. Cl. 424—256 **8 Claims**

1. Aminopropanol compound of the formula



wherein

A is alkylene of from 2-6 carbon atoms,

B is sulfur or a valency bond,

R is a straight-chained or branched lower alkyl; and the pharmacologically compatible salts thereof.

4,120,964

APORPHINE DERIVATIVES

Johannes Hartenstein, Stegen-Wittental, and Gerhard Satzinger, Denzlingen, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

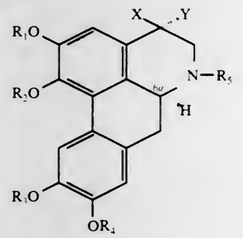
Filed May 25, 1977, Ser. No. 800,492

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625116

Int. Cl.[2] **A61K** *31/47;* **C07D** *217/24*

U.S. Cl. 424—258 **8 Claims**

1. A compound of the formula:



(I)

wherein R_1, R_2, R_3 and R_4 which may be the same or different are lower alkyls of 1 to 3 carbon atoms; R_5 is hydrogen or a straight chained, cyclic or branched lower alkyl of up to 5 carbon atoms; and wherein X or Y in the trans position to the 6α-hydrogen atom is hydroxyl while the remaining X or Y symbol is hydrogen; with the proviso that when R_5 is methyl then at least one of R_1, R_2, R_3 or R_4 is ethyl, and the pharmaceutically acceptable acid addition salts thereof.

8. One compound according to "Phamaceutical compositions for the treatment of hypertension having an anti-hypertensive amount of a compound of claim **1**, in admixture with a solid or liquid pharmaceutical diluent or carrier.

4,120,965

OCTAHYDRO-1,4-DIAZEPINO[1,7,b]ISOQUINOLINES

Gerhard Bormann, Munchenstein, and Richard Berthold, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

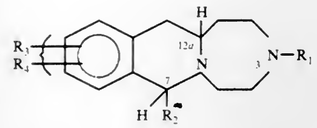
Continuation-in-part of Ser. No. 744,705, Nov. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 639,945, Dec. 11, 1975, abandoned. This application May 19, 1977, Ser. No. 798,314

Claims priority, application Switzerland, May 19, 1976, 6255/76; Dec. 20, 1974, 17020/74

Int. Cl.[2] **C07D** *471/04;* **A61K** *31/47*

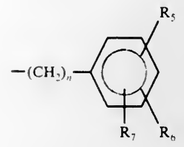
U.S. Cl. 424—258 **57 Claims**

1. A compound of formula I,



I

wherein R_1 is hydrogen or alkyl of 1 to 5 carbon atoms, R_2 is a group



wherein *n* is a whole number from 0 to 3,

R_5 and R_6, independently, are hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen of atomic number from 9 to 35, or together are 3,4-methylenedioxy,

R_7 is hydrogen, or when both R_5 and R_6 are alkoxy of 1 to 4 carbon atoms also may be alkoxy of 1 to 4 carbon atoms,

R_3 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or halogen of atomic number from 9 to 35, and

R_4 is hydrogen or alkoxy of 1 to 4 carbon atoms,

in free base form or in pharmaceutically acceptable acid addition salt form.

5. A pharmaceutical composition for use in treating aggression or inducing or promoting sleep comprising an effective amount of a compound according to claim **1** in association with a pharmaceutical carrier or diluent.

4,120,966

HETEROCYCLIC-METHYLTHIOETHYL-DITHIOCARBAMATES AND ISOTHIOUREAS

Thomas Henry Brown, Welwyn Garden City; Graham John Durant, Welwyn Garden City; Charon Robin Ganellin, Welwyn Garden City, and Robert John Ife, Stevenage, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

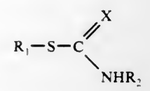
Division of Ser. No. 652,925, Jan. 27, 1976, Pat. No. 4,056,621. This application Aug. 11, 1977, Ser. No. 823,559

Claims priority, application United Kingdom, Feb. 3, 1975, 4538/75

Int. Cl.[2] **A61K** *31/44;* **C07D** *213/52, 213/53*

U.S. Cl. 424—263 **4 Claims**

1. A compound of the formula:



wherein R_1 represents a grouping of the structure

$$\text{Het} - CH_2S(CH_2)_2-$$

wherein Het is a pyridine, ring, which ring is optionally substituted by lower alkyl, lower alkoxy or halogen R_2 is hydrogen, lower alkyl or the same as R_1; X is sulphur, =NH or =NCN; or a hydrate or pharmaceutically acceptable acid addition salt or hydrated salt thereof.

4. A method of blocking histamine H_2-receptors which comprises administering to an animal in an effective amount to block said receptors a compound of claim **1**.

4,120,967

SUBSTITUTED HYDROXY PYRIDONES AND THEIR USE AS MINOR TRANQUILIZERS, SLEEP INDUCERS AND NEUROLEPTICS

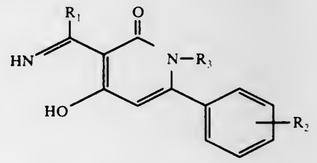
Jeffrey Nadelson, Lake Parsippany, N.J., assignor to Sandox, Inc., E. Hanover, N.J.

Division of Ser. No. 664,237, Mar. 5, 1976, Pat. No. 4,024,262, which is a continuation-in-part of Ser. No. 602,324, Aug. 6, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,399

Int. Cl.[2] **A61K** *31/44;* **C07D** *213/44*

U.S. Cl. 424—263 **3 Claims**

1. A method of inducing sleep which comprises administering to a mammal in need of said treatment a sleep-inducing effective amount of a compound of the formula



where

R_1 represents lower alkyl having 1 to 4 carbon atoms or cycloalkyl having 3 to 6 carbon atoms,

R_2 represents hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl or alkoxy, and

R_3 represents straight chain lower alkyl, or a pharmaceutically acceptable salt thereof.

4,120,968

HETEROCYCLIC ALKYLAMINOCYCLOBUTENEDIONES

Charon Robin Ganellin, Welwyn Garden City, and Rodney Christopher Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

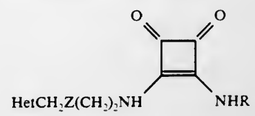
Division of Ser. No. 705,216, Jul. 14, 1976, Pat. No. 4,062,863. This application Sep. 15, 1977, Ser. No. 833,404

Claims priority, application United Kingdom, Jul. 31, 1975, 31971/75

Int. Cl.[2] **A61K** *31/44;* **C07D** *213/36*

U.S. Cl. 424—263 **6 Claims**

1. A compound of the formula:



wherein R is hydrogen, lower alkyl or $(CH_2)_2Z'CH_2Het'$; Z and Z' may each be sulphur or methylene; and Het is a pyridine ring optionally substituted by hydroxy, methoxy, chloro or bromo Het' is a pyridine ring optionally substituted by hydroxy, methoxy, chloro or bromo, a thiazole ring or an isothiazole ring or Het' may be an imidazole ring optionally substituted by methyl or bromo; or a pharmaceutically acceptable acid addition salt thereof.

6. A method of blocking histamine H_2-receptors which comprises administering to an animal in an effective amount to block said receptors a compound of claim **1**.

4,120,969

HETEROCYCLIC ANALGETIC AND ANTIDIARRHEAL COMPOUNDS

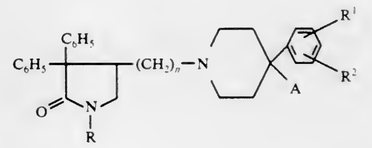
William John Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 615,952, Sep. 23, 1975, abandoned, which is a continuation-in-part of Ser. No. 541,684, Jan. 16, 1975, abandoned. This application May 12, 1977, Ser. No. 796,264

Int. Cl.[2] **C07D** *401/06*

U.S. Cl. 424—267 **34 Claims**

1. A compound selected from 1-R-4-(omega-substituted alkyl)-3,3-diphenyl-2-pyrrolidinones of the formula:



wherein;

R is selected from the group consisting of hydrogen, lower-alkyl, cyclohexyl and benzyl,

R^1 is selected from the group consisting of hydrogen, chloro, bromo, fluoro, trifluoromethyl and lower-alkoxy,

R^2 is selected from the group consisting of hydrogen, chloro, bromo and fluoro,

A is selected from the group consisting of lower-alkylcarbonyloxy and lower-alkoxycarbonyl, and *n* is 1, 2 or 3.

4,120,970

COMPOSITION FOR PREVENTING DECAY OF FRUIT AND INHIBITING SPORULATION THEREON

John R. Bice, and Philip J. Lewis, both of Corona, Calif., assignors to Brogdex Company, Pomona, Calif.

Continuation of Ser. No. 253,195, May 15, 1972, abandoned, which is a continuation-in-part of Ser. No. 53,996, Jul. 10, 1970, Pat. No. 3,674,510. This application Dec. 27, 1973, Ser. No. 428,930

Int. Cl.[2] **A23L** *3/34*

U.S. Cl. 424—270 **5 Claims**

1. A synergistic composition which simultaneously inhibits decay of citrus fruit by molds and fungi and prevents sporulation of said molds and fungi without adversely affecting the appearance and fitness for comsumption of the fruit, said composition containing as active ingredients 2-(4-thiazolyl) benzimidazole and an alkali metal salt of orthophenyl pheonl tetrahydrate, the alkali metal being selected from the group consisting of sodium and potassium, the weight ratio of 2-(4-thiazolyl) benzimindazole to the alkali metal salt of ortho-phenyl phenol tetrahydrate, expressed as ortho-phenyl phenol, being 1:0.5–15.

4,120,971

NOVEL N-CARBOXY-ALPHA-AMINO ACID ANHYDRIDES

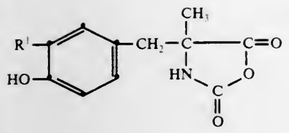
Walfred S. Saari, and Joel R. Huff, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 1, 1977, Ser. No. 773,258

Int. Cl.[2] **A61K** *31/42*

U.S. Cl. 424—272 **5 Claims**

1. Method of treating hypertension which comprises administering an antihypertensive amount of compound having the formula



wherein R^1 is H or hydroxy to a hypertensive patient.

4,120,972

IMIDAZOLYLMETHYLTHIO-ETHYL ISOTHIOUREA COMPOUNDS

Thomas Henry Brown; Graham John Durant; Charon Robin Ganellin, all of Welwyn Garden City, and Robert John Ife, Stevenage, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

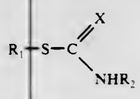
Division of Ser. No. 652,925, Jan. 27, 1976, Pat. No. 4,056,621. This application Aug. 11, 1977, Ser. No. 823,560

Claims priority, application United Kingdom, Feb. 3, 1975, 4538/75

Int. Cl.[2] A61K *31/415;* C07D *233/64*

U.S. Cl. 424—273 R 7 Claims

1. A compound of the formula:



wherein R_1 represents a grouping of the structure



wherein

Het is an imidazole ring, which ring is attached at a ring carbon atom and is optionally substituted by lower alkyl, lower alkoxy or halogen;

R_2 is hydrogen, lower alkyl or the same as R_1; X is =NH or =NCN; or a hydrate or pharmaceutically acceptable acid addition salt or hydrated salt thereof.

6. A pharmaceutical composition to block histamine H_2-receptors comprising in an effective amount to block said receptors a compound of claim 1 in combination with a pharmaceutically acceptable diluent or carrier.

4,120,973

IMIDAZOLYL ALKYLAMINOCYCLOBUTENEDIONES

Charon Robin Ganellin, Welwyn Garden City, and Rodney Christopher Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

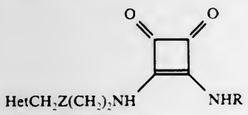
Division of Ser. No. 705,216, Jul. 14, 1976, Pat. No. 4,062,863. This application Sep. 15, 1977, Ser. No. 833,403

Claims priority, application United Kingdom, Jul. 31, 1975, 31971/75

Int. Cl.[2] C07D *233/64;* A61K *31/415*

U.S. Cl. 424—273 R 9 Claims

1. A compound of the formula:



wherein R is $(CH_2)_2Z'CH_2Het'$; Z and Z' may each be sulphur or methylene; and Het and Het' may each be an imidazole ring attached at a ring carbon and optionally substituted by methyl or bromo; or a pharmaceutically acceptable acid addition salt thereof.

9. A method of blocking histamine H_2-receptors which comprises administering to an animal in an effective amount to block said receptors a compound of claim 1.

4,120,974

CERTAIN EPOXY COMPOUNDS IN ADMIXTURE AS INSECT REGULATING AGENTS

Georg Fráter, Greifensee; Albert Pfiffner, Bülach; Milos Suchy, Pfaffhausen, and René Zürfluh, Bülach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 27, 1976, Ser. No. 755,362

Claims priority, application Austria, Jan. 9, 1976, 105/76

Int. Cl.[2] A01N *9/28;* C07D *303/02*

U.S. Cl. 424—278 3 Claims

1. A composition for the regulation of insect growth, said composition containing as active compounds about 50% to about 75% by weight 6,7-epoxy-1-(p-ethylphenoxy)-3-ethyl-7-methyl-nonane and about 50% to about 25% by weight 6,7-epoxy-1-(p-ethylphenoxy)-3,4,7-trimethylnonane relative to the total weight of these two active compounds.

4,120,975

METHOD OF PSYCHIATRIC CONDITIONS

Thomas Samuel Campbell Orr, Melton Mowbray, and Patrick John Kingsley, Belton, Nr. Loughborough, both of England, assignors to Fisons Limited, London, England

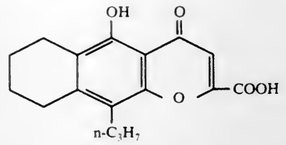
Continuation-in-part of Ser. No. 717,875, Aug. 26, 1976, Pat. No. 4,067,992. This application Sep. 8, 1977, Ser. No. 831,537

Claims priority, application United Kingdom, Sep. 15, 1976, 38101/76; Jun. 25, 1977, 26732/77

Int. Cl.[2] A61K *31/35*

U.S. Cl. 424—283 10 Claims

1. A method of treatment of psychiatric conditions in mammals which method comprises administration of an effective amount of a compound of the formula I,



I

or a therapeutically acceptable salt, alkyl C 1 to 10 ester, mono-alkyl C 1 to 10 amide, di-alkyl C 1 to 10 amide or an unsubstituted amide thereof, as active ingredient, to a patient suffering from such a condition.

4,120,976

TREATMENTS FOR ARTHRITIS AND CAST DERMATITIS

Thomas A. Hosick, Box PMB 12-8, Atlanta, Ga. 30315

Filed Dec. 13, 1977, Ser. No. 860,126

Int. Cl.[2] A61K *31/36*

U.S. Cl. 424—282 8 Claims

1. A method for the treatment of arthritis comprising administering to arthritics for the relief of symptoms accompanying arthritis a member selected from the group consisting of 3,4-methylenedioxyamphetamine and its non-toxic acid addition salts in dosage amounts of approximately 0.2 to 1.5 milligrams per kilogram of body weight.

6. A method for the treatment of symptoms accompanying cast dermatitis of those afflicted comprising administering to the afflicted approximately 1.5 milligrams of a member selected from a group consisting of 3,4-methylenedioxyamphetamine and its non-toxic acid addition salts per killogram of body weight.

4,120,977

METHOD OF AND FEED FOR FARMING MEAT POULTRY ESPECIALLY CHICKENS AND GUINEA FOWL

Germano Cagliero, Ivrea (Turin), Italy, assignor to Marxer, S.p.A., Loranze d'Ivrea, Italy

Filed Apr. 7, 1977, Ser. No. 785,457

Claims priority, application Italy, Apr. 23, 1976, 67988 A/76

Int. Cl.[2] A23K *1/17*

U.S. Cl. 424—285 6 Claims

1. A method for promoting the growth rate of broilers and guinea fowl meat poultry, comprising feeding healthy poultry with a feed containing from 10 to 25 ppm of nifuroxazide.

4,120,978

PHARMACEUTICAL COMPOSITION FOR INHIBITING AND BLOCKING CARDIOSELECTIVE BETA-RECEPTORS

Max Wilhelm, Watchung, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

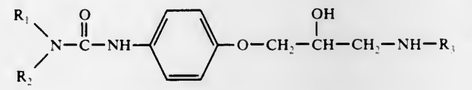
Continuation of Ser. No. 639,683, Dec. 11, 1975, Pat. No. 4,038,313, which is a continuation of Ser. No. 361,373, May 17, 1973, Pat. No. 3,935,259, which is a continuation-in-part of Ser. No. 101,393, Dec. 24, 1970, abandoned. This application Apr. 4, 1977, Ser. No. 784,893

Claims priority, application Switzerland, Jan. 8, 1970, 204/70

Int. Cl.[2] A61K *31/17*

U.S. Cl. 424—322 2 Claims

1. A pharmaceutical composition for inhibiting and blocking cardioselective Beta-receptors which comprises a therapeutically effective amount of an 1-ureidophenoxy-2-hydroxy-3-aminopropane of the formula



wherein R_1 denotes hydrogen, R_2 denotes cycloalkyl having 4 to 7 ring members and R_3 denotes lower alkyl or a therapeutically usable acid addition salt of such a compound together with a pharmaceutical carrier.

4,120,979

ALKYLATED POLYAMINES, THEIR PREPARATION AND USE AS MICROBIOCIDES

Günter Schwarzmann; Ulrich Holtschmidt, and Günter Bertelmann, all of Essen, Germany, assignors to Th. Goldschmidt AG, Germany

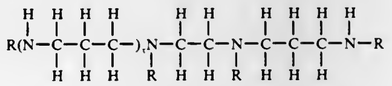
Filed Sep. 6, 1977, Ser. No. 830,772

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1976, 2641836

Int. Cl.[2] A01N *9/20;* C07C *87/14, 87/20*

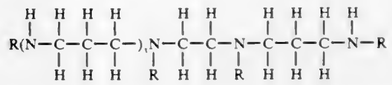
U.S. Cl. 424—325 9 Claims

1. A compound or mixture of compounds having the general formula



in which R is hydrogen or an alkyl group containing 8 to 18 carbon atoms, at least one R being alkyl, and x is 0 or 1.

4. A process for killing microbes which comprises contacting said microbes with a microbiocidally effective amount of a compound or mixture of compounds having the formula



in which R is hydrogen or an alkyl group containing 8 to 18 carbon atoms, at least one R being alkyl, and x is 0 or 1.

4,120,980

PROTEIN-RICH FOODSTUFFS FOR RUMINANTS

Norbert Merget, Bochum, and Friedhelm Koch, Dülmen, both of Germany, assignors to Veba Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Filed Sep. 8, 1976, Ser. No. 721,631

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1975, 2540457

Int. Cl.[2] A23L *1/18, 1/22*

U.S. Cl. 426—69 4 Claims

1. A foodstuff or foodstuff supplement for ruminants comprising a particulate proteinaceous feed material of vegetable, animal or synthetic origin, the surface of the particle thereof having been treated with a member selected from the group consisting of an aldehyde and a vinyl or acrylic polymer whereby the proteinaceous component is substantially resistant to digestion in the rumen of a ruminant but digestable in the small intestines of said ruminant and a non-proteinaceous nitrogen compound, said compound being present in a weight equivalent ratio of 0.1 to 10.0 with respect a nitrogen equivalent content of said particulate proteinaceous feed material.

4,120,981

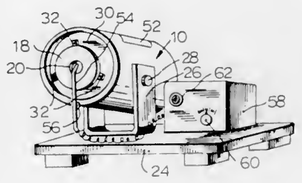
METHOD OF COOKING FOOD

William H. Burkhart, Room 190, 960 San Antonio Rd., Los Altos, Calif. 94022

Division of Ser. No. 568,864, Apr. 17, 1975, Pat. No. 4,048,473. This application Oct. 2, 1975, Ser. No. 618,779

Int. Cl.[2] A01K *43/00;* G01N *33/02*

U.S. Cl. 426—231 27 Claims



1. A method of cooking food which comprises tumbling the food in the presence of some liquid in a rotating vessel that is liquid-impervious except for a vent opening in a removable cap closing one end of the vessel and thereby stirring the contents of the vessel, distributing the liquid over a substantial portion of the inner surface of the vessel and promoting an even temperature distribution of the vessel contents, preselecting a desired temperature for the food to be cooked applying heat to the contents of the vessel sufficient to cause gases to be evolved, venting said gases from the vessel through said vent opening while the vessel is rotated with heat applied thereto and while retaining in the vessel the distributed liquid that is not gasified and vented, measuring the temperature of the evolved gases and thereby effectively measuring the surface temperature of the food and the temperature of the liquid in the vessel, automatically controlling the heat applied in accordance with the measured temperature of said gases, and automatically producing a signal when said pre-selected temperature is reached in order that the applicaton of heat may thereaf-

ter be reduced sufficiently to terminate cooking of food in the vessel when the food has been properly cooked.

4,120,982

HYDROXYPROPYLATED, EPICHLOROHYDRIN CROSSLINKED TAPIOCA STARCH DERIVATIVE FOR ACID RETORT MEDIA

James E. Eastman, and Frank del Valle, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of Ser. No. 112,817, Feb. 4, 1971, abandoned. This application Sep. 22, 1975, Ser. No. 615,334

Int. Cl.[2] **A23L** *1/10, 3/02*

U.S. Cl. 426—405 **3 Claims**

1. A method of continuous retort canning particularly adapted for canning bland or delicately flavored foods in an acid medium, the steps comprising:

(a) preparing a 5–8% by weight dry solids aqueous slurry of a hydroxypropylated, epichlorohydrin crosslinked tapioca based starch derivative, said starch derivative having a degree of substitution of hydroxypropyl units of about 0.08–0.3 and having a level of crosslinking with epichlorohydrin sufficient to obtain an alkali fluidity ranging from 71–98 ml. for test sample containing 3 grams of the starch derivative in water to make 10 ml., plus 90 ml. of 0.375N NaOH;

(b) combining said aqueous slurry with a food material;

(c) adjusting the pH of said slurry to a range of 3–5;

(d) disposing the aqueous starch slurry and the food material in a plurality of containers;

(e) sealing said containers;

(f) heating the starch slurry and food materials sealed in said containers to a temperature of at least 210° F. without degrading the starch derivative for a period of 8–20 minutes to effect sterilization of the starch slurry and food materials sealed in said containers; and

(g) simultaneously moving said containers with agitation while heating to effect a uniform suspension of the food materials throughout the starch slurry after heating.

4,120,983

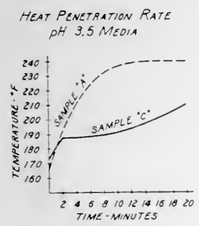
HYDROXYPROPYLATED, EPICHLOROHYDRIN CROSSLINKED TAPIOCA AND CORN STARCH DERIVATIVES

Frank del Valle; John V. Tuschhoff, and Charles E. Streaty, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of Ser. No. 112,660, Feb. 4, 1971, abandoned. This application Sep. 22, 1975, Ser. No. 615,629

Int. Cl.[2] **A23L** *1/10, 3/02*

U.S. Cl. 426—405 **5 Claims**



1. In the method of continuous retort canning and sterilizing food products in individual sealed containers in which internal food mass temperatures of at least 210° F. are attained within about 10 to 20 minutes after the initiation of the food product heating cycle, and the food product including the starch derivative is first canned and sealed prior to sterilization, the improvement comprising the step of using as a principal food retort medium a hydroxypropylated, epichlorohydrin crosslinked starch derivative derived from a starch selected from the group consisting of corn starch and tapioca starch, said starch derivative having a degree of substitution of hydroxypropyl units of about 0.085–0.3, and having been subjected to epichlorohydrin cross-linking to obtain an alkali fluidity ranging from 45–70 cm^3. for a 3 gram sample in 0.375 N NaOH of the tapioca derivative and ranging from 60–90 cm^3. for a 4 gram sample with 0.375 N NaOH of the corn starch derivative, said starch derivative having an initial Brookfield viscosity before retort processing of less than about 1,100 centipoise when slurried in a retort medium having a pH of 3–7 and comprising about 50 gm. d.s.b. starch/1,000cm^3. water, and a final Brookfield viscosity of at least 3,000 to 7,000 centipoise after retorting said medium in said sealed containers with tumbling action for about 15–20 minutes by means of a heat source capable of raising the internal temperature of the retort medium to at least 210° F. to 240° F. said retort medium having a heat penetration rate without degrading the starch derivative such that the internal temperature of said retort medium is capable of attaining a temperature of at least 210° F. to 240° F. after heating under retort conditions for 8–12 minutes.

4,120,984

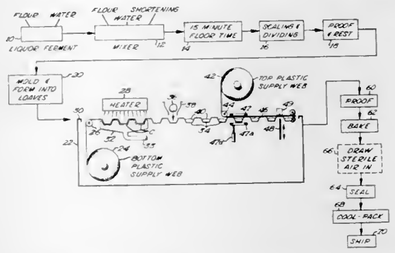
PROCESS FOR PREPARING FOOD IN THE PACKAGE

Donald G. Richardson, Shorewood, and Richard G. Hans, Edina, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Oct. 27, 1976, Ser. No. 736,039

Int. Cl.[2] **B65B** *25/16, 25/22*

U.S. Cl. 426—412 **6 Claims**



1. A process of baking foods in flexible containers comprising providing a flexible package that is a barrier to microorganisms and is capable of withstanding baking temperatures, placing the farinaceous food product in the package, sealing the package to provide a filled package, maintaining a vent opening in said flexible package to allow the escape of steam and gas during baking, plaing the package in a baking oven and exposing it to heat for a sufficient period of time to bake or to cook the food product and generate steam to fill the space within the package, excess steam being allowed to escape through the vent opening, providing a source of sterile air free from viable mold spores, allowing said package to cool and inspire said sterile air through the vent opening as steam within said package condenses, the amount of sterile air inspired being in an amount sufficient to prevent the package from being crushed by the atmospheric pressure when the vapor condenses within the package, thereafter sealing the vent opening to completely seal the package to contain said condensed moisture generated during baking and the inspired sterile air whereby a package of bakery goods is provided which is free from mold for a period of 120 days storage at room temperature.

4,120,985

SULFUR-CONTAINING FLAVORING AGENTS

Steven van den Bosch, Woudenberg, Netherlands, assignor to P.F.W. Beheer B.V., Amersfoort, Netherlands

Filed May 12, 1976, Ser. No. 685,874

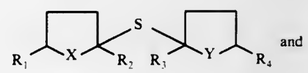
Claims priority, application United Kingdom, Jun. 9, 1975, 24720/75

Int. Cl.[2] **A23L** *1/231;* **C07D** *307/20, 307/64, 333/34*

U.S. Cl. 426—535 **14 Claims**

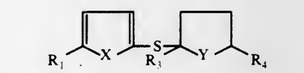
1. A chemical compound having a structural formula selected from the class consisting of

a)



and

b)



wherein X and Y are oxygen or sulfur; and wherein R_1, R_2, R_3, and R_4 are hydrogen or a 1 to 3 carbon alkyl group.

4,120,986

WHOLE EGG REPLACER

Charles Carl Lynn, Longwood, Fla., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 664,113, Mar. 5, 1976, abandoned. This application Jun. 28, 1977, Ser. No. 810,706

Int. Cl.[2] **A21D** *13/00;* **A23L** *1/32*

U.S. Cl. 426—549 **18 Claims**

1. The process of preparing a whole egg replacer base comprising the steps of:

providing from about 40% to 95% of a high protein content material prepared by combining non-elastic protein material, oil and salt and heating at a low simmering temperature,

adding a mild acid to the foregoing and continuing heating for a period of time sufficient to bring out flavor characteristics,

adding water and vegetables and boiling;

adding additional water and non-elastic protein material and continuing boiling,

adding a thickening agent and continuing boiling to obtain a material of high protein content; and,

adding to the high protein content material:

food grade emulsifier	2–12% (active ingredient basis)
a gum	0.75–1.5%
pregelatinized starch	4–12%
dextrin	2–12%
lecithin	0–12%
appearance agent	0–15%
texturizing agent selected from the group consisting alginate, carrageenan and mixtures thereof	0–4%
neutralizer	0–5%

all percentages being by weight.

4,120,987

AERATED CONFECTIONS

Carl Orville Moore, Rochester, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Jul. 5, 1977, Ser. No. 812,539

Int. Cl.[2] **A23G** *3/00*

U.S. Cl. 426—572 **21 Claims**

1. Aerated confection having the textural and eating qualities of grained, aerated confections, said aerated confection comprising:

(a) a continuous, stable homogeneous external aqueous film phase comprising from about 10% to about 25% by weight water, from about 25 to about 250 parts by weight sweetening agent, one part by weight water-soluble protein hydrolyzate characterized as being soluble in water throughout the pH 4–7 range at a 20% dry solids concentration and from about 2 to about 20 parts by by weight high-amylose starch uniformly dispersed throughout said film phase, and

(b) a discontinuous internal phase of minute gas bubbles homogeneously dispersed and entrapped by the continuous external film phase in an amount sufficient to provide an aerated confection having density of less than 0.75 gms/ml.

4,120,988

PROTEIN SNACK PRODUCT OF IMPROVED STRUCTURAL INTEGRITY

David T. Hahn, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Sep. 19, 1977, Ser. No. 834,755

Int. Cl.[2] **A23L** *1/34;* **A23J** *3/00*

U.S. Cl. 426—573 **3 Claims**

1. A method for making an improved fat fried puffed protein snack product comprising:

(a) preparing an aqueous slurry consisting essentially of water and at least20% by weight of oilseed protein isolate;

(b) mechanically working the slurry under ambient conditions into a fully hydrated irreversible, plastic gel;

(c) forming the gel into a desired shape;

(d) cooling the shaped gel sufficiently to form ice crystals of the free water;

(e) drying the formed and cooled gel to from 5 to 20% moisture; and

(f) deep fat frying the dried gel to produce said product.

4,120,989

HIGH PROTEIN PASTA FORMULATION

Donald A. Grindstaff, Rochester, Minn., and John R. Eterno, Lemont, Ill., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 1, 1976, Ser. No. 737,311

Int. Cl.[2] **A23L** *1/16*

U.S. Cl. 426—577 **13 Claims**

1. A high protein pasta which will not craze upon drying and storage consisting essentially of from about 80% to about 95% flour, from about 0 to about 8% soy protein isolate and from about 5 to about 20% of a whey protein concentrate/emulsifier composition consisting essentially of:

a. from about 90% to about 99% of a whey protein concentrate wherein at least 60% of the protein is denatured and,

b. from about 10% of about 1% food grade emulsifier.

4,120,990

POLYOXYALKYLENE PROPYLENE GLYCOL ESTERS FOR IMPROVED COOKING AND SALAD OIL

Paul Seiden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 31, 1977, Ser. No. 783,085

Int. Cl.[2] **A23D** *5/00*

U.S. Cl. 426—601 **12 Claims**

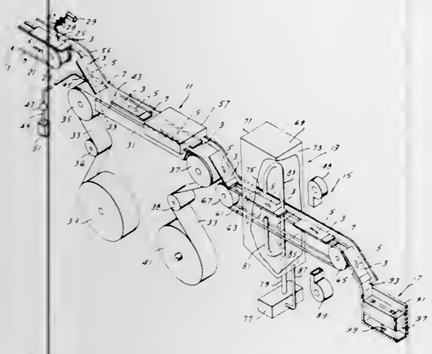
1. A cooking and salad oil composition having improved blendability in vinegar-and-oil salad dressings and low fat absorption in foodstuffs fried therein, said composition consisting essentially of a liquid glyceride base oil containing from about 0.005% to about 1.0% by weight of a polyoxyalkylene propylene glycol ester emulsifier containing from about 5 to about 35 oxyalkylene units per molecule and having a higher fatty acid portion in said ester of about 12 to about 22 carbon atoms.

4,120,991

PROCESS FOR MOUNTING TISSUE SECTIONS WITH AN U.V. LIGHT CURABLE MOUNTING MEDIUM

Leonard Ornstein, White Plains; Hazel Elizabeth Williams, Ossining, and Julius Intraub, Plainview, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 10, 1976, Ser. No. 749,557
Int. Cl.[2] G01N *1/28*
U.S. Cl. 427—2 11 Claims



1. A method of mounting a stained thin section of a biological specimen, comprising the steps of: providing a thin layer of polymerizable material of low volatility over the surface of a solvent-wet specimen supported on a transparent substrate, so as to permeate said specimen, substantially totally evaporating the solvent in said specimen, covering said specimen subsequent to the evaporation of said solvent with a planar member which is oxygen-impermeable, and polymerizing said thin layer of material by exposure to U.V. radiation, said thin layer of material preventing damage to said specimen resulting from drying thereof prior to covering with said planar member, said thin layer of material further being transparent when polymerized.

4,120,992

ABRASION-RESISTANT OPTICAL ELEMENT

Bernard L. Laurin, Ludlow; Don H. Rotenberg, Westboro, both of Mass., and Harry D. Crandon, Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 644,710, Dec. 29, 1975, Pat. No. 4,049,868. This application Jun. 23, 1977, Ser. No. 809,497
Int. Cl.[2] B05D *3/02, 3/06, 3/10;* G02B *1/10*
U.S. Cl. 427—164 5 Claims

1. The process of coating an organic optical element with a transparent, abrasion-resistant surface coating comprising:

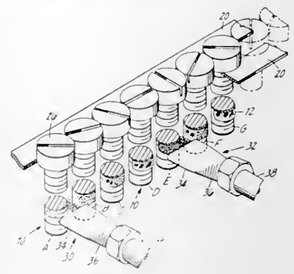
1. surface treating said organic optical element to promote adhesion of said abrasion-resistant surface coating,
2. applying to at least one surface of said organic optical element a mixture comprising a polysilicic acid ester of an alcohol containing from 1 to 12 carbon atoms, said ester having up to four silicic acid ester groups per silicon atom, a hydrolyzed vinyl polymer, a surface active agent and a cross-linking agent selected from the group consisting of formaldehyde, zirconyl nitrate, and mixtures thereof and
3. drying and curing said coating at an elevated temperature.

4,120,993

METHOD OF MAKING SELF-LOCKING FASTENERS

Richard Joseph Duffy, Salem, and Philip James Rodden, Beverly, both of Mass., assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 683,067, May 4, 1976, abandoned. This application Sep. 29, 1977, Ser. No. 837,897
Int. Cl.[2] B05D *3/02, 1/36*
U.S. Cl. 427—195 6 Claims



1. In a method of providing a threaded surface of an article with a self-locking element comprising an adhered body of normally hard, tough, resilient resin including the steps of heating the threaded surface to a temperature above the softening point of said resin, thereafter directing a stream of fine particles of said resin to a selected area of said threaded surface while said threaded surface is at a temperature above said softening point, catching resin particles from said stream by softening them and causing them to be held on said threaded surface and to melt to a continuous resin body extending smoothly between generally axially extended edges of said area by heat from said threaded surface and solidifying said resin body, the improvement which comprises applying said resin particles in a plurality of spaced successive streams, controlling the rate at which and time during which resin particles of a first stream are directed to said threaded surface to form a deposit of a first portion of resin particles held on said threaded surface by heat softened resin and with exposed portions of said deposit retaining particulate character, said deposit of resin being in amount less than that desired in the self-locking element, maintaining said threaded surface at a temperature above said softening point for a time after completing deposition of said first portion of resin particles determined relative to the quantity and melting characteristics of the resin particles substantially completely to melt the deposited first portion of resin, thereafter directing a further stream of resin particles at the molten resin deposit where the particles are caught up and held by said molten resin to build up the quantity of resin on said threaded surface, coalescing the deposited resin to a substantially continuous body of resin extending smoothly between generally axially extending edges and cooling said body of resin to harden it to a solid body resistant to displacement and effective to give a locking action when a complementary threaded surface is assembled with said threaded surface.

4,120,994

METHOD OF PREPARING HEAT-TRANSFER MEMBERS

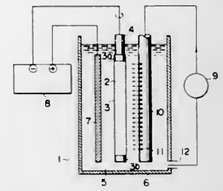
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 7, 1975, Ser. No. 556,203
Claims priority, application Japan, Mar. 11, 1974, 49-27077; Nov. 6, 1974, 49-127713; Nov. 29, 1975, 50-138062; Jan. 14, 1975, 50-6695
Int. Cl.[2] B05D *3/12*
U.S. Cl. 427—239 6 Claims

1. A method of preparing a tubular heat transfer member having a porous metallic heat-transfer interface, said member

being tubing adapted to form an internal surface of a heat pipe having an evaporation zone, a condensation zone and an intermediate liquid transport zone, said method comprising the steps of

(a) mechanically roughening the surface of said member by providing said surface with a multitude of small cuts to a depth of at least 0.1mm so as to form in the evaporation and condensation zones a greater proportion of a multitude of small cuts extending essentially transverse to the axial direction of said tubing and in said intermediate



liquid transport zone a greater proportion of a multitude of small cuts extending essentially in parallel with the axis of said tubing; closely spaced from each other and uniformly distributed;

(b) disposing said surface of a substrate in contact with a solution containing a salt of a thermally conductive metal; and

(c) depositing said metal from said solution upon said substrate so as to form a dendritic metallic layer thereon constituting said porous heat-transfer interface.

4,120,995

PROCESS FOR BONDING A DURABLE LOW SURFACE ENERGY COATING

Peter Beverley Phipps, Saratoga; Bhim Sain Sharma, San Jose, both of Calif., and Anthony Wai Wu, Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1977, Ser. No. 843,194
Int. Cl.[2] C23C *13/04*
U.S. Cl. 427—248 A 6 Claims

1. A process for bonding a durable low surface energy coating to a metal or oxide surface, said process comprising maximizing the hydroxide ion concentration on the surface by treating said surface with an alkali, rigorously drying said surface, and then contacting the rigorously dry surface with a rigorously dry material having the formula

$$Rf - O - (CH_2)_n - SiX_3$$

wherein Rf is a fluorinated lower alkyl group, n in an integer from 2 to 10, and X is halogen, cyanide or alkoxy group, thereby condensing the fluorinated material with the hydroxide ions on said surface.

4,120,996

METHOD OF PROVIDING CORROSION RESISTANCE TO METAL SURFACES

Nicholas T. Castellucci, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 23, 1977, Ser. No. 799,880
Int. Cl.[2] B05D *3/10, 3/00, 1/38*
U.S. Cl. 427—318 11 Claims

1. An ecological method of providing corrosion resistance to metal surfaces, comprising:

(A) contacting the metal surface with an ascorbic acid-containing composition free of beta-diketones,

(B) rinsing the pretreated metal surface to remove excess treating composition,

(C) directly coating the pretreated metal surface with a film-forming material.

6. A method of providing improved corrosion resistance to a metal surface, comprising:

(A) contacting the metal surface with a composition obtained by mixing elemental molybdenum and ascorbic acid,

(B) rinsing the metal surface to remove excess treating composition,

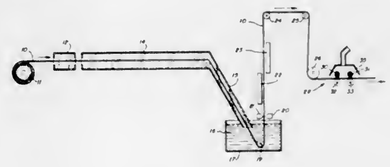
(C) directly coating the pretreated metal surface with a film-forming material.

4,120,997

PROCESS FOR PRODUCING ONE-SIDE GALVANIZED SHEET MATERIAL

Lawrence L. Franks, St. John, and David W. Gomersall, Valparaiso, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed May 11, 1976, Ser. No. 685,365
Int. Cl.[2] B05D *3/12*
U.S. Cl. 427—367 10 Claims



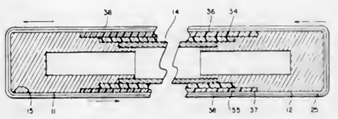
1. A process of making a one-side-only zinc coated ferrous metal strip comprising; continuously moving an endless ferrous metal strip through a zinc coating means which provides on one of the surfaces thereof a metallic zinc coating having a thickness which is adapted to protect the surface against corrosion while providing on the other surface of the said strip an ultra-thin metallic zinc film, moving said coated strip continuously through a heat treating zone in which heat is applied directly to only said ultra-thin metallic zinc film, heating said ultra-thin metallic zinc film in said heating zone until all of the zinc in said film is converted into a zinc-iron intermetallic surface film and discontinuing heating thereof before any significant increase in thickness occurs in the zinc-iron alloy intermetallic sub-surface layer associated with the said zinc coating, and removing completely the said zinc-iron intermetallic surface film from the surface of said strip by applying an abrading force thereto.

4,120,998

COMPOSITE STRUCTURE

Nejat A. Olez, St. Louis, Mo., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 3, 1977, Ser. No. 765,209
Int. Cl.[2] B32B *19/06*
U.S. Cl. 428—33 6 Claims



1. a cocured bonded structure characterized by its capability to collect multidirectional stress loads within a limited space envelope and transfer said loads to full composite section capable of withstanding said loads, comprising:

a. a pair of rigid strut caps,

b. each of said strut caps having a generally rectangular

outer end and an inner end, top and bottom stepped down sections extending from said outer end toward said inner end, and a section adjacent said inner end being relieved on all four sides,

c. a tubular rectangular strut positioned between said strut caps and fitting over said relieved inner end section of each said strut cap, said strut composed of a precured multidirectional fiber composite,

d. a plurality of straight layers of composite multidirectional oriented filaments extending between respective said top stepped sections of said strut caps, the first said layer contacting the top of said strut and the next, longer, layer contacting the top of the preceding layer,

e. a plurality of straight layers of composite multidirectional oriented filaments similarly extending between respective said bottom stepped sections of said strut caps,

f. a plurality of layers of hoop-wound unidirectional fibers wrapped around said outer ends of said strut caps from top to bottom along said preceding straight layers, and

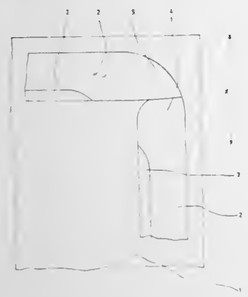
g. an outer wrap of woven fiber fabric surrounding the preceding structure at a right angle to said hoop-wound layers, said outer wrap being spaced inwardly from each outer end of said strut caps to leave opposite side portions of said caps exposed near said outer end thereof.

4,120,999

MULTIPLE PANE WINDOWS WITH IMPROVED SEALS

Pierre Chenel, Enghien les Bains, and Michel Jean Moncheaux, Chalon sur Saone, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jun. 29, 1976, Ser. No. 700,882
Claims priority, application France, Jul. 10, 1975, 75 21646
Int. Cl.[2] B32B *1/04;* **E04C** *2/34*
U.S. Cl. 428—34 **6 Claims**



1. A multiple pane window comprising a pair of transparent or translucent sheets arranged in generally parallel spaced relationship with a filamentary seal between said sheets adjacent the periphery thereof, said window having a plurality of sides and corners and said filamentary seal having a joint at one of said corners, said filamentary seal having a plurality of juxtaposed layers over the major portion of the length thereof, at least one layer containing a larger proportion of desiccant material and at least another layer containing a smaller proportion or no desiccant material, and said seal at said joint at one of the corners having only the layer or layers containing said smaller proportion or no desiccant material abutting each other.

4,121,000

COATING COMPOSITION COMPRISING A POLYSILOXANE RESIN-FORMING PRECONDENSATE, A FLUOROCARBON POLYMER, AN EPOXY RESIN, A SILICONE FLUID, AND AN INORGANIC HARDENING AGENT

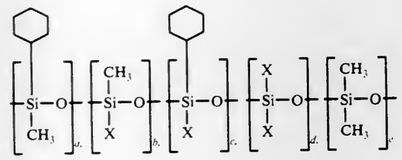
David K. Wald, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 664,233, Mar. 5, 1976. This application Jan. 23, 1978, Ser. No. 871,698
Claims priority, application Canada, Mar. 2, 1977, 272978
Int. Cl.[2] C08L *83/12*
U.S. Cl. 428—35 **12 Claims**

1. A coating composition having a solids content of 25–80% by weight in an inert liquid carrier and comprised of:

(a) a binder comprised of

(1) 40–93%, based on the weight of the binder, of a polysiloxane resin-forming precondensate which has one or more of the units



wherein

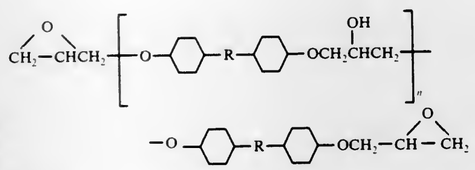
X is a functional group which allows cross-linking at its site, and

a, b, c, d and *e* are of a magnitude and in proportions which provide the resin with a degree of substitution, measured as the ratio of phenyl plus methyl groups to silicon atoms, of at least about 1.0, and a ratio of phenyl groups to silicon atoms of at least about 0.3,

and which has a silanol content above 4%, based on the weight of the precondensate;

(2) 5–50%, based on the weight of the binder, of a fluorocarbon polymer; and

(3) 2–40%, based on the weight of the binder, of an epoxy resin having the formula



wherein

n is an integer from 0–42, and

R is an alkylene group of 1–4 carbon atoms;

(b) 0.2–10%, based on the weight of the binder, of a silicone fluid which is a dimethyl polysiloxane fluid having a viscosity of 50–5000 centistokes measured at 25° C.;

(c) a finely divided inorganic hardening agent in a hardening agent-to-binder ratio of about 5/100 to 400/100; and

(d) a inert liquid carrier.

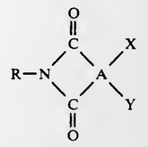
4,121,001

CROSSLINKING AGENT FOR POLYMERS AND WIRE CONSTRUCTION UTILIZING CROSSLINKED POLYMERS

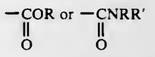
Alan J. Gotcher, Sunnyvale; Paul B. Germeraad, Palo Alto, and Viktors Jansons, Los Gatos, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 14, 1977, Ser. No. 759,473
Int. Cl.[2] B32B *15/00;* **H01B** *7/00;* **C08F** *2/46*
U.S. Cl. 428—35 **26 Claims**

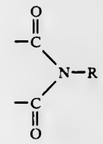
1. A composition comprising an organic crosslinkable polymer having a melt processing temperature of at least 200° and from about 0.1 wt % up to about 30 wt % of crosslinking agent said crosslinking agent comprising a compound of the formula



wherein X is hydrogen and Y is



and X and Y are substituents on adjacent carbon atoms of A or wherein X and Y together form the imide ring system



which is joined to A on adjacent carbons atoms, thereof, wherein A is an aromatic, heteroaromatic, alicyclic, or heterocyclic system or an open chain aliphatic moiety, where R is vinyl, allyl, methallyl or propargyl and wherein R′ is hydrogen, C_1 to C_{12} alkyl or R, or a mixture of said compounds.

17. A formed article comprising an electrical conductor having as an insulating coating thereover the product of the process of crosslinking the composition of claim 1.

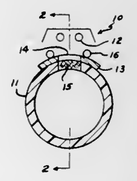
19. A shaped article comprising the composition of claim 1 in elongate substantially tubular form.

4,121,002

FABRICATION OF ANTENNA WINDOWS

R. Bruce Baldwin, Billerica, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 6, 1977, Ser. No. 813,393
Int. Cl.[2] H01Q *1/42*
U.S. Cl. 428—36 **5 Claims**



1. In a fiber-reinforced, resin matrix composite an antenna window comprising an opening in the composite having edges defining a predetermined shape, the opening being free of the resin matrix and containing the reinforcing fibers originally present in the composite prior to removal of resin to form the opening; and an electromagnetic-transparent resin filling the opening and being bonded to its edges and to the reinforcing fibers therein so that the resin is an integral part of the composite, lacking in joints and containing continuous reinforcing fibers.

4,121,003

TAMPER INDICATING LABELS

Frederick P. Williams, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Apr. 22, 1977, Ser. No. 790,118
Int. Cl.[2] B32B *7/06;* **G09F** *3/02*
U.S. Cl. 428—40 **10 Claims**



1. A laminated label comprising:

(a) a flexible transparent or translucent plastic film, having reverse printed one side thereof a disruptable information containing pattern printed in an ink which ink is not fully dried or cured to a high cohesive integral film, and

(b) a layer of pressure sensitive adhesive bonded to the printed side of said plastic film,

the plastic film, the disruptable pattern, and the adhesive layer having relative affinities such that the affinity of the adhesive layer for the substrate to which it is applied, the affinity of the adhesive layer for the disruptable ink pattern, the affinity of the disruptable ink for the plastic film, the affinity of the disruptable ink for any conventional ink separating the disruptable ink from the adhesive layer or the cohesive strength of the adhesive layer all being greater than the cohesive strength of the disruptable pattern, with

the adhesive layer being formed from an adhesive which has at least one of the following characteristics:

(i) an adhesive which has an affinity for the surface to which the laminated label is adhered which is greater than the cohesive force of the adhesive layer,

(ii) an adhesive which has an affinity for the surface to which the laminated label is adhered greater than the affinity of the adhesive layer for said plastic film,

so that when the laminated label has been mounted on an object, attempted removal causes delamination of the label with at least a tamper indicating amount of the disruptable printed pattern remaining adhered to at least a portion of the pressure sensitive adhesive which remains on the object.

4,121,004

STRIP ROLL FOR USE IN DISPENSING TICKETS

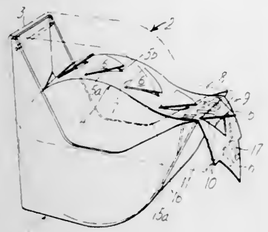
Åke Ehrlund, Spånga, Sweden, assignor to AB Turn-O-Matic, Sundbyberg, Sweden

Division of Ser. No. 326,457, Jan. 24, 1973, Pat. No. 3,885,724. This application Nov. 4, 1974, Ser. No. 520,865
Int. Cl.[2] B65D *85/66*
U.S. Cl. 428—43 **2 Claims**

1. A strip roll for use in an assembly for dispensing tickets and which assembly has a tear-off device and from which the end of the strip roll protrudes comprising

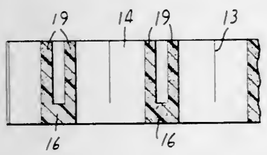
a strip of flexible material from which single pieces of one and the same predetermined length are intended to be torn

off and having a pair of marginal edges and a feeding direction away from said roll,
said strip having a series of longitudinally spaced apart penetrated lines,
each of said lines shaped and adapted to form an individual tongue shaped flap,
each of said lines starting from a point adjacent to but spaced inwardly of said strip from the first of said marginal edges and extending in said feeding direction of said strip toward the centerline thereof, and on the other side of said centerline extending back opposite said feeding direction of said strip to a point adjacent to but spaced inwardly from the second of said marginal edges of said strip,
said flaps equally spaced longitudinally along said strip with the longitudinal spacing between corresponding portions of adjacent flaps equal to said predetermined length,
the points at the ends of each of said penetrated lines lying on a straight line which is substantially perpendicular to



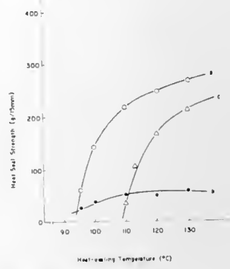
the longitudinal direction of the strip and with each flap firmly connected to the remainder of said strip along said straight line between said points,
the end of each of said flaps remote from said firmly connected portion having a width smaller than that of said firmly connected portion and with the smaller end of each flap directed forwards in said feeding direction of said strip and dimensioned to be gripped for pulling the strip and tearing a single end piece from said strip, and
marginal strip portions at both sides of each flap between the end points of said penetrated line and the adjacent marginal edges of said strip and connecting all of said pieces of predetermined length in said strip,
whereby when said end of said strip roll protruding from said dispensing assembly is pulled, the strip moves to place the marginal strip portions which are closest said protruding strip end at the tear-off device for severing the end piece of said strip and leaving the next adjacent flap protruding from the assembly.

4,121,005
CONFORMABLE FOAM
Charles William Roberts, North Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 13, 1978, Ser. No. 877,310
Int. Cl.[2] B32B *3/10*
U.S. Cl. 428—131 **6 Claims**



1. A foam material which is conformable to body members and comprises a relatively thick foam sheet having a top surface and a skin contacting surface, said foam sheet containing therethrough a substantial number of perforations, said foam between a substantial number of the perforations being cut from the top surface through a portion of the thickness of the foam, said cuts resulting in foam segments which are hingedly connected to adjacent segments adjacent the skin contacting surface of said foam sheet, said foam containing a sufficient number of perforations to permit the foam to be relatively extensible in the longitudinal dimension and said foam having a stiffness in its latitudinal dimension of from about 0.4 gm/cm to about 2.0 gm/cm.

4,121,006
COATED POLYOLEFIN FILM
Yuichi Harada; Tetsuo Ishihara, and Shigeyuki Takahashi, all of Amagasaki, Japan, assignors to Daicel Ltd., Sakai, Japan
Filed Aug. 18, 1976, Ser. No. 715,380
Claims priority, application Japan, Aug. 25, 1975, 50/102796
Int. Cl.[2] B32B *3/00*
U.S. Cl. 428—172 **9 Claims**



1. A polyolefin film coated with
I. an undercoat consisting essentially of a mixture of
(a) polyvinylidene chloride or vinylidene chloride copolymer containing at least 88 weight percent of vinylidene chloride monomer units, and
(b) a chlorinated polypropylene having a chlorine content of from 15 to 55 percent by weight and an intrinsic viscosity of from 0.3 to 3.0 dl/g, wherein intrinsic viscosity is determined by measuring the viscosity of a solution of 0.2 to 0.5 percent by weight of said chlorinated polypropylene in decalin at 135° C., or a graft polymer of said chlorinated polypropylene having grafted thereto from 2 to 30 percent by weight, based on the weight of the graft polymer, of an ethylenically unsaturated vinyl monomer,
wherein the weight ratio of a/b is from 99/1 to 90/10, and
II. a top coat consisting essentially of a vinylidene chloride copolymer containing from 35 to 88 weight percent of vinylidene chloride monomer units.

4,121,007
PRINTED CIRCUIT BOARD MADE BY DISPERSION IMAGING
Hidehiko Kobayashi; Tatsumi Arakawa; Tetsuo Shiga; Kaoru Ohmura, and Sakae Ito, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Aug. 10, 1976, Ser. No. 713,317
Claims priority, application Japan, Aug. 19, 1975, 50-99785; Jun. 21, 1976, 51-72250
Int. Cl.[2] H01K *3/18*
U.S. Cl. 428—201 **13 Claims**

1. A printed circuit board comprising:
a base made of an insulating material;
a layer coated on the base and made of a polymer having a melting point or a softening point of 50 to 300° C. which polymer is selected from the group consisting of polyurethane, polyvinylidene chloride, polyvinyl acetate, polyvinyl butyral, a copolymer of vinylidene chloride and vinyl acetate or acrylonitrile, a copolymer of vinyl chloride and vinyl acetate, a polycarbonate, a polyamide, a copolymer of styrene and acrylonitrile, a copolymer of acrylonitrile, butadiene and styrene, an epoxy resin, and blends thereof;
a layer covered on the layer of polymer and made of a dispersion imaging material containing elements selected from the group consisting of iron, cobalt, nickel, copper, silver, gold, bismuth, antimony, tin, aluminum, cadmium, zinc, lead, selenium, indium and tellurium;
said layer of dispersion imaging material having dispersed portions and undispersed portions; and
a pattern circuit of a conductive metal deposited only on said undispersed portions of the dispersion imaging material.

4,121,008
FOAM SANDWICH CONSTRUCTIONS
Robert Maxwell Seddon, Knaresborough, England, assignor to Unitex Limited, Knaresborough, England
Continuation-in-part of Ser. No. 547,939, Feb. 7, 1975, abandoned. This application Oct. 27, 1976, Ser. No. 735,959
Int. Cl.[2] B32B *7/00*
U.S. Cl. 428—251 **20 Claims**



1. A sandwich structure comprising two external skins each of a material having a relatively high modulus of elasticity and a relatively high tensile strength between which is sandwiched a core of a foam material having a relatively low density, a shear modulus of at least 3,400 kN/m^2 when measured at a strain of 10%, and a shear strength of not less than 620 kN/m^2, the said external skins being uniformly and firmly fixed to the core, the shear strength of the overall structure being mainly dependent on the properties of the core, and at least 50% of the resistance to deflection of the overall structure when under load being attributable to the core and said core providing the greater part of stress transmission between the external skins.

4,121,009
ANTI-STATIC FABRIC SOFTENING COMPOSITIONS AND PROCESSES FOR DRYING AND SOFTENING TEXTILES THEREWITH
Paritosh Mohan Chakrabarti, Wayne, N.J., assignor to GAF Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 502,638, Sep. 3, 1974, abandoned. This application Sep. 14, 1976, Ser. No. 723,199
Int. Cl.[2] D06M *13/34*
U.S. Cl. 428—260 **30 Claims**

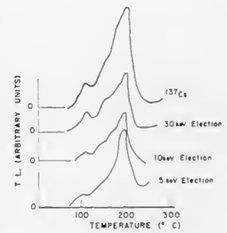
1. A fabric softening composition comprising
(a) a fabric softener having the formula:

$$RCON(CH_2CH_2OH)CH_2CH_2NHCH_2COOH$$

wherein R is an unsubstituted or substituted C_{11}-C_{21} aliphatic hydrocarbon radical which, when substituted, has at least one substituent selected from the group consisting of Cl, Br, OH, and OCH_3 and (b) an adsorbent substrate having from about 10% to about 90% free space based on the overall volume of the substrate, the fabric softener being incorporated into said substrate.

22. A process of simultaneously drying and softening textile materials in a dryer, comprising the step of contacting said textile materials, under normal drying conditions, with an effective amount of a fabric softening composition as defined in claim 1.

4,121,010
THERMOLUMINESCENT PHOSPHOR
Jerome B. Lasky, and Paul R. Moran, both of Madison, Wis., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jul. 27, 1977, Ser. No. 819,429
Int. Cl.[2] B32B *5/16;* **C09K** *11/08*
U.S. Cl. 428—403 **7 Claims**



1. A thermoluminescent phosphor comprising a major portion by weight of LiF and a minor proportion by weight of the dopants boron and magnesium.

4,121,011
POLYMERIC ARTICLE COATED WITH A THERMOCHROMIC PAINT
Leon C. Glover, Los Altos, and Eugene F. Lopez, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Division of Ser. No. 635,951, Nov. 28, 1975, which is a continuation-in-part of Ser. No. 460,124, Apr. 11, 1974, abandoned. This application Jun. 9, 1977, Ser. No. 805,007
Int. Cl.[2] C09J *7/02;* **C09D** *5/26;* **B65D** *65/14, 83/00*
U.S. Cl. 428—347 **6 Claims**

1. In an article comprising a polymeric material subject to oxidative degradation and having a thermochromic paint thereon, said paint containing a thermochromic pigment comprising a metallic compound, the improvement comprising the addition to the paint of a non-thermochromic compound in amounts effective to inhibit degradation of said polymeric material by the thermochromic pigment, said non-thermochromic compound selected from the group consisting of the sulfates, hydrated sulfates and nitrides of boron, aluminum, tin, lead, arsenic, antimony, bismuth, zinc and phosphorus; the sulfides and hydrated sulfides of boron, aluminum, bismuth and phosphorus; the oxides and hydrated oxides of boron, arsenic, and antimony and the salts, organic compounds and free acids of the oxyanions of boron, arsenic, and antimony and oxides, salts and organic derivatives of oxyanions of phosphorus.

4,121,012
CRIMPED, HIGH-STRENGTH RAYON YARN AND METHOD FOR ITS PREPARATION
Gregory C. Bockno, Media, Pa., assignor to Avtex Fibers Inc., Valley Forge, Pa.
Continuation-in-part of Ser. No. 376,430, Jul. 5, 1973, abandoned, which is a continuation of Ser. No. 84,202, Oct. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 709,375, Feb. 29, 1968, abandoned. This application Feb. 6, 1976, Ser. No. 655,811
Int. Cl.[2] D01F *2/06;* **D01D** *5/22*
U.S. Cl. 428—369 **15 Claims**

1. A method for preparing crimped high-strength rayon which consists essentially of extruding a multiplicity of filaments of viscose prepared with from about 6 to about 9 percent cellulose, from about 6 to about 9 percent caustic soda, and from about 28 to about 39 percent carbon disulfide, based on the weight of the cellulose, said viscose containing from about 1 to about 8 percent based on the weight of the cellulose of a

regeneration retardant, and having a spinning ball-fall viscosity of from about 40 to about 150 and a common salt index of from about 6 to about 11, into a spinning bath containing from about 4 to about 7 percent sulfuric acid, from about 2 to about 5 percent zinc sulfate and from about 15 to about 24 percent sodium sulfate, said spinning bath being maintained at a temperature ranging from about 30° to about 55° C., withdrawing coagulated and incompletely regenerated filaments from said spinning bath and passing said filaments through an aqueous stretch bath maintained at a temperature ranging from about 75 to about 100° C., stretching said filaments in said stretch bath from about 90 to about 140 percent and then sluicing the filaments in a relaxed state in a plasticizing medium.



4,121,013

RECORD MATERIAL

Robert E. Miller, and Bruce W. Brockett, both of Appleton, Wis., assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 570,051, Apr. 28, 1975, Pat. No. 4,022,936. This application Apr. 21, 1977, Ser. No. 789,384

Int. Cl.[2] B41L *1/20;* **E05A** *3/48*

U.S. Cl. 428—411 **11 Claims**

1. A sensitized record sheet material comprising a substrate and a coating comprising an active material consisting essentially of the dried residue of an aqueous dispersion of a 3,5-substituted salicylic acid, a zinc compound selected from the group consisting of zinc oxide, zinc carbonate, zinc phosphate and zinc phenol sulfonate, and ammonium hydroxide at a pH of 7.5 to 10.0, wherein the 3,5'substituted salicylic acid is present in an amount of 0.1 to 0.4 grams per square meter and the 3,5-substituted salicylic acid and the zinc compound are present in a weight ratio of 1:1 to 1:6.

5. A process for making a paper coating composition comprising the steps of:

(a) dispersing into an aqueous liquid vehicle active material consisting essentially of a 3,5-substituted salicylic acid and a zinc compound, selected from the group consisting of zinc oxide, zinc carbonate, zinc phosphate, zinc phenol sulfonate, wherein the 3,5-substituted salicyclic acid and the zinc compound are present in a weight ratio of about 1:1 to 1:6; and

(b) adjusting the pH of the dispersion to 7.5 to 10.0 by addition of ammonium hydroxide.

9. A paper coating composition comprising an aqueous liquid vehicle and active material consisting essentially of a 3,5-substituted salicylic acid; a zinc compound selected from the group consisting of zinc oxide, zinc carbonate, zinc phosphate and zinc phenol sulfonate; and ammonium hydroxide in an amount to maintain the pH of the composition at 7.5 to 10.0, wherein the 3,5' substituted salicylic acid and the zinc compound are present in a weight ratio of about 1:1 to 1:6.

4,121,014

HAZE-FREE TRANSPARENT LAMINATE HAVING A PLASTICIZED POLYVINYL ACETAL SHEET

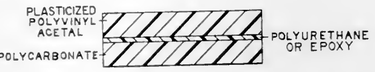
Paul F. Shaffer, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 340,512, Mar. 12, 1973, abandoned. This application Jul. 25, 1977, Ser. No. 818,913

Int. Cl.[2] B32B *27/36*

U.S. Cl. 428—412 **7 Claims**

1. A substantially haze-free transparent laminate comprising a sheet of polycarbonate, a sheet of polyvinyl acetal plasticized with a plasticizer that produces haze in said polycarbonate when said plasticized polyvinyl acetal contacts said polycarbonate and a layer of polyurethane or an epoxy resin interposed between the interfacial surfaces of said sheet of polycarbonate and said sheet of polyvinyl acetal so plasticized for protecting said polycarbonate sheet from haze produced by



contact with said plasticized sheet and for bonding said sheets together.

4,121,015

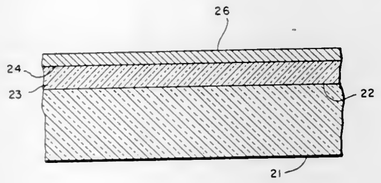
CURED EPOXY POLYMER HAVING IMPROVED ADHESIVE PROPERTIES

Charles Allen McPherson, Eastampton Township, Burlington County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Continuation of Ser. No. 465,376, May 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 443,648, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 369,038, Jun. 11, 1973, abandoned. This application Nov. 1, 1976, Ser. No. 737,638

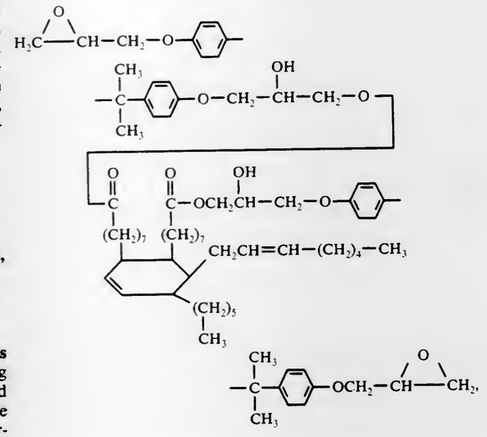
Int. Cl.[2] B32B *15/08, 27/38*

U.S. Cl. 428—418 **14 Claims**



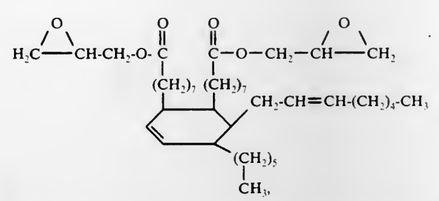
1. An article which comprises:

a first layer comprising a fully cured virgin epoxy polymer resulting from fully curing a mixture of (1) a resin component comprising, (a) about 25 to about 95 parts by weight per 100 parts by weight of said resin component of a diglycidyl ether based upon linoleic dimer acid selected from the group consisting of (a^1) an adduct of two moles of the diglycidyl ether of bisphenol A and one mole of linoleic dimer acid having a structural formula of

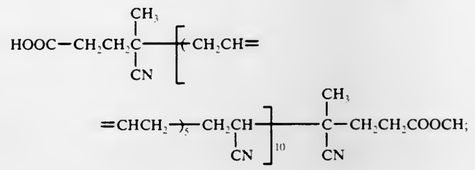


and an epoxide equivalent weight of 650 to 750, (b^1) a diglyc-

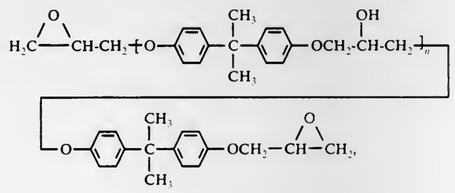
idyl ether of linoleic dimer acid having a structural formula of



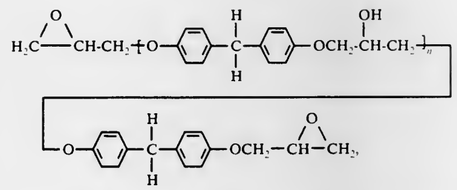
and an epoxide equivalent weight of 400 to 420, and (c^1) a mixture thereof; (b) about 5 to about 50 parts by weight per 100 parts by weight of the resin component of an elastomerically modified epoxy resin blend comprising the reaction product of about 40 weight percent of a carboxyl terminated acrylonitrile/butadiene random copolymer having a structural formula of



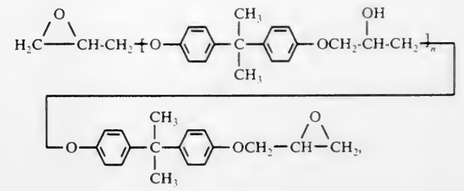
containing 2.37 percent carboxyl groups, 18 to 19 percent bound acrylonitrile and having a number average molecular weight of 3200, combined with about 60 weight percent of a diglycidyl ether selected from the group consisting of a diglycidyl ether of bisphenol A having a general structural formula of



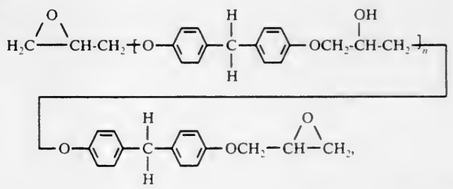
where *n* is the number of repeated units in the resin chain, having an epoxide equivalent weight of 180 to 195 and a diglycidyl ether of bisphenol F having a general structural formula of



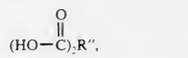
where *n* is the number of repeated units in the resin chain having an epoxide equivalent weight of 152 to 167, and (c) a remainder of the resin component of a suitable diglycidyl ether selected from the group consisting of a diglycidyl ether of bisphenol A, having a general structural formula of



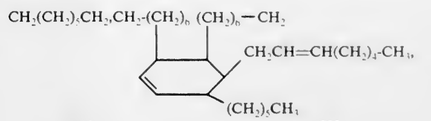
where *n* is the number of repeated units in the resin chain, a diglycidyl ether of bisphenol F having a general structural formula of



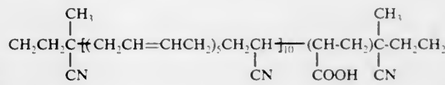
where *n* is the number of repeated units in the resin chain and a mixture thereof; and (2) a suitable curing agent selected from the group consisting of (a) an acid anhydride present in an amount ranging from about 16 to about 60 parts by weight per 100 parts by weight of the resin component, (b) a suitable polyamine present in an equal mole-to-mole ratio with the resin component, (c) a mixture comprising said polyamine in (b) above combined with at least 5 parts by weight per 100 parts by weight of the resin component of a suitable acid anhydride, (d) a mixture comprising said acid anhydride in (a) above combined with up to about 30 parts by weight per 100 parts by weight of the resin component of a carboxylic acid selected from the group consisting of a dicarboxylic acid having a structural formula of



where R'' is an organic radical selected from the group consisting of



and



and a trimer acid having a stoichiometry of $C_{54}H_{90}O_6$, and a mixture thereof, and (e) mixture of the foregoing; and

an adherent metal layer deposited on at least a portion of said first fully cured virgin epoxy layer.

4,121,016

COMPOSITION OF VINYL CHLORIDE POLYMER AND TWO ACRYLIC POLYMERS WHICH CAN BE REINFORCED WITH POLYESTER

William Emmett Garrison, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 667,660, Mar. 17, 1976, abandoned. This application Jan. 11, 1977, Ser. No. 758,491
Int. Cl.[2] B32B *27/30*; C08L *27/06, 33/12*
U.S. Cl. 428—483 10 Claims

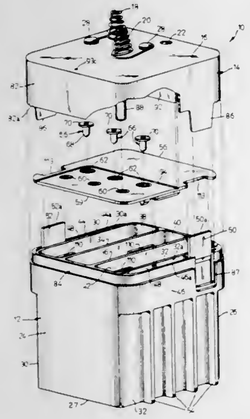
1. A reinforced composition consisting essentially of a polyester directly bonded to a composition consisting essentially of
(A) 60 to 80 parts by weight of vinyl chloride polymer containing at least about 85% by weight vinyl chloride polymerized units, in which any copolymer units are polymerized units of a lower α-olefin of 2 to 4 carbon atoms;
(B) 11 to 23 parts by weight of acrylic elastomeric polymer containing about 30 to about 95% by weight butyl acrylate polymerized units and about 70 to about 5% by weight methyl methacrylate polymerized units; and
(C) 15 to 30 parts by weight acrylic polymer containing about 75 to 100% weight methyl methacrylate polymerized units and about 25 to 0% by weight lower alkyl acrylate polymerized units.

4,121,017

PORTABLE RECHARGEABLE LEAD-ACID BATTERY

Thomas John Dougherty, Waukesha, and Roy Erving Hennen, Mequon, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Oct. 25, 1977, Ser. No. 845,280
Int. Cl.[2] H01M *2/30*
U.S. Cl. 429—7 17 Claims



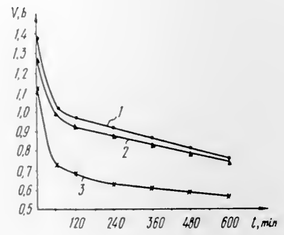
1. A rechargeable lead-acid portable battery comprising: a molded polymer container having a plurality of upstanding walls defining at least two cells therein separated by partition wall means; channel wall means joined to one of said upstanding container walls, said one upstanding container wall and said channel wall means defining a spatial separation therebetween, said channel wall means having a bottom edge and opposite ends connected to said upstanding container wqall and having an upper edge generally parallel to the upper edge of one of said upstanding container walls and spaced from said upper edge of said one upstanding container wall; at least a pair of battery plates supported in each of said cells, one of said plates of each of said pairs being a negative plate and the other of said plates being a positive plate; an aperture in said partition wall means; means for providing electrical connection between a positive plate of one of said cells and a negative plate of the other of said cells, said connection means including an electrically conductive connection extending through said aperture; a first cover covering said cells in sealed relation and preventing electrolyte from escaping from said cells; a second battery cover positioned over said first cover, said first and second covers defining cavity means therebetween, said second cover supporting a positive terminal and a negative terminal in spaced apart relation, and means for providing electrical connection between said plates and said positive terminal and said negative terminal.

4,121,018

POSITIVE ELECTRODE FOR AIR-DEPOLARIZED ALKALINE PRIMARY CELL WITH THICKENED ELECTROLYTE

Meer Danilovich Kocherginsky, ulitsa Komarova, 6, kv. 23; Lidia Fedorovna Penkova, ulitsa 3 Mytischinskaya, 14a, kv. 124, and Viktor Arsenievich Naumenko, ulitsa Novo-Alexeevskaya, 48, korpus 37, kv. 28, all of Moscow, U.S.S.R.

Filed Aug. 9, 1976, Ser. No. 712,505
Int. Cl.[2] H01M *12/06*
U.S. Cl. 429—27 3 Claims



1. In an air-depolarized alkaline primary cell comprising a positive electrode and a thickened electrolyte; the improvement, whereby said cell exhibits improved storage life and service life, comprises a positive electrode formed of an air oxygen reduction catalyst, carbon, and an alkaline solution; said air oxygen reduction catalyst being manganese dioxide of γ-modification, and the mass composition of said electrode, in terms of percentage by weight, is as follows:

electrolytic or synthetic manganese dioxide of γ-modification	33 to 67
carbon	12 to 40
potassium hydroxide solution	20 to 28

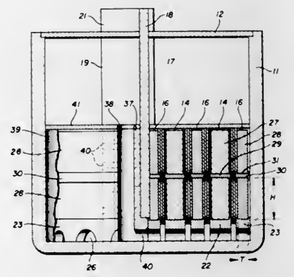
4,121,019

LEAD-ACID STORAGE BATTERY

Nelson Lee Garrett, Jr., Davenport, Iowa, assignor to Garrett Plante Corporation, Westchester, Ill.

Filed Jul. 20, 1977, Ser. No. 817,492
Int. Cl.[2] H01M *10/16*
U.S. Cl. 429—94 8 Claims

1. A lead-acid storage cell having a case adapted to hold an electrolyte;
first and second electrode plate assemblies enclosed within said case;
at least one electrically insulating porous separator positioned between said first and second assemblies for preventing direct electrical contact therebetween while permitting said electrolyte free access to both of said assemblies;
each of said assemblies comprising:
a plurality of elongated strips of lead each having a generally vertical face, said strips being vertically arranged in a stack, each of said strips having a ratio of height-to-thickness within the range of 0.5–10;
an elongated, resilient shock-absorbing retainer separating and in contact with the horizontal edges of adjacent strips in said stack, the upper and lower faces of said retainer being provided with means for preventing relative lateral displacement of said adjacent strips;



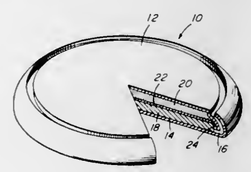
an elongated, resilient shock-absorbing support bridge positioned below and in contact with the lowermost strip in said assembly, the upper surface of said bridge being provided with means to prevent relative lateral displacement between said bridge and said lowermost strip, and the lower surface of said bridge resting on the bottom of said case; and
electrically conductive means electrically interconnecting the strips in said assembly.

4,121,020

ULTRA-THIN BUTTON-TYPE PRIMARY ELECTROCHEMICAL CELL

James Epstein, Sharon, and William P. Brissette, Halifax, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 761,353, Jan. 21, 1977, abandoned, which is a continuation of Ser. No. 612,056, Sep. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 539,751, Jan. 9, 1975, abandoned. This application Sep. 19, 1977, Ser. No. 834,745
Int. Cl.[2] H01M *6/12*
U.S. Cl. 429—162 1 Claim



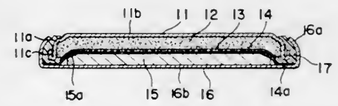
1. An ultra-thin button-type primary electrochemical cell having a thickness of less than 5mm and comprising:
a pair of shallow, opposed, dished cover members formed of conductive metallic material, the outer rim of a first one of the members fitting within the outer rim of the second one of the members so that a disc-shaped space is formed therebetween;
an electrically insulating sealing gasket positioned between the outer rims of the cover members to electrically isolate the cover members from each other so that the respective cover members may act as the terminals of the primary electrochemical cell,
the outer rim of the first one of the cover members being compressed against the sealing gasket thereby forcing the sealing gasket against the second cover member to seal the primary electrochemical cell;
the sealing gasket being a ring having a rim which has an inwardly facing L-shaped cross-section so that the sealing gasket fits within the outer rim of the second cover member and the first cover member fits within the upright portion and against the base portion of the rim, the upright portion being inwardly distorted against the first cover member by the compressed outer rim of the second cover member, and wherein the sealing gasket is formed of a fluorocarbon polymer;
a thin, porous carbon cathode disc including a mechanical binder for forming a binding network of chain-like connections between the cathodic particles, the cathode thereby having a flexible structure adapted to conform to the cell wall geometry, the cathode fitting within and being in mechanical and electrical contact with the inner surface of one of the cover members,
the thin preformed porous carbon cathode having a conductive metallic screen current collector at a side thereof which is in mechanical and electrical contact with the respective cover member,
the screen current collector of the thin preformed porous carbon cathode being spot-welded to the respective cover member;
a thin lithium anode disc fitting within and being in mechanical and electrical contact with the inner surface of the other of the cover members, said lithium anode disc being pressed into the first cover member to form electrical contact therewith;
a thin porous separator being interposed between and in contact with the anode and the cathode; and
an effective quantity of an electrolytic solution comprising a solute dissolved in an inorganic oxyhalide or thiohalide solvent diffused through the cathode disc and the separator,
wherein the solvent is selected from the group consisting of phosphorus oxychloride, thionyl chloride, sulfuryl chloride, and mixtures thereof; and
wherein the solvent functions as the cathode depolarizer and is electrochemically reduced on the carbon cathode during discharge of the cell.

4,121,021

SILVER OXIDE PRIMARY CELL

Hiromichi Ogawa, Katano; Kenji Inoue, Hirakata, and Akira Fujiwara, Shijonawate, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 7, 1977, Ser. No. 813,775
Claims priority, application Japan, Jul. 7, 1976, 51-81239
Int. Cl.[2] H01M *6/12*
U.S. Cl. 429—162 10 Claims



1. A silver oxide primary cell of flat type which comprises:
a casing composed of a cup and a cap electrically insulated from and received in the cup to define a sealed chamber between the cup and the cap;
a positive electrode having a silver oxide as its principal active material;
a separator;
an electrolyte absorbent layer impregnated with an electrolyte;
a negative electrode having zinc as its principal active material;
said positive electrode, separator, electrolyte absorbent

layer and negative electrode being stacked one above the other in the order given above, the stack being housed within the casing in a manner such that said positive and negative electrodes are held in contact with the cup and the cap, respectively; and

at least one of the opposed peripheral edges on the respective surfaces of the positive electrode being chamfered to provide a chamfered edge, the entire area of said chamfered edge being in intimate contact with the separator.

4,121,022

POLY (2-HYDROXYETHYLMETHACRYLATE) MEMBRANES FOR ELECTROCHEMICAL USE

Richard Dick, Paris; Georges Feuillade, Arpajon; Robert Gadessaud, Massy Palaiseau, and Louis Nicolas, Neuilly sur Seine, all of France, assignors to Compagnie Generale d'Electricite, Paris Cedex and Institut National de Recherche Chimique Appliquee Ircha, Paris, both of France

Filed Dec. 13, 1977, Ser. No. 860,410

Claims priority, application France, Dec. 13, 1976, 76 37503

Int. Cl.[2] H01M *6/04*

U.S. Cl. 429—204 **8 Claims**

1. A semi-permeable membrane with a microporous structure comprising a first polymer and a second polymer intimately mixed together, the first polymer being reticulated poly (2-hydroxyethylmethacrylate), wherein the second polymer comprises one polymer or a mixture of several different polymers chosen from among the following substances: polyoxyethylene glycol, polyvinylpyrrolidone, polyacrylic acid, polymethacrylic acid, copolymers of acrylic or methacrylic acid, polyacrylates and polymethacrylates of alkyls, and copolymers of acrylates and methacrylates of alkyls.

8. A lead-acid storage cell comprising a positive electrode, a negative electrode, a separator and a sulphuric acid electrolyte, characterized by the fact that the separator is at least partially constituted by a membrane according to claim 1.

4,121,023

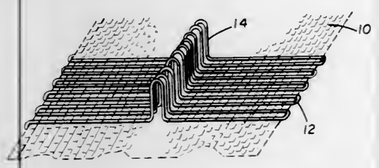
BATTERY PLATE AND METHODS OF MANUFACTURE

David B. Parkinson, Cleveland Heights, and Truman D. Parkinson, Chardon, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 7, 1977, Ser. No. 840,372

Int. Cl.[2] H01M *4/14, 4/74*

U.S. Cl. 429—211 **4 Claims**



1. Battery plate structure comprising:

a web of textile material having spaced conductive material wires included as at least a portion of the discrete weft elements of said web, said wires extending at least part way across said web and being gathered to form at least two spaced terminals;

electrochemically active material applied to said web at laterally spaced locations thereon adjacent said spaced terminals, said material penetrating said web to intimately contact said wires; and

means cooperating with said web between said laterally spaced locations for supporting said plate structure by said web, without significantly mechanically stressing said wires.

4,121,024

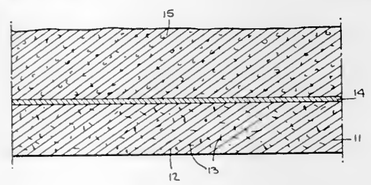
NEGATIVE ELECTRODE FOR LEAD-ACID STORAGE BATTERY

Pierre Paul Turillon, Ramsey, N.J.; Michael Neill Hull, and George Frederick Nordblom, both of Yardley, Pa., assignors to The International Nickel Company, Inc., New York, N.Y. and ESB Corporation, Philadelphia, Pa.

Filed Nov. 10, 1977, Ser. No. 850,271

Int. Cl.[2] H01M *4/66*

U.S. Cl. 429—245 **5 Claims**



1. A negative electrode for lead-acid storage batteries comprising

(A) a base comprising a porous, sintered matrix of metal substantially less dense than lead infiltrated with a metal selected from the group consisting of lead, lead alloys and metals wetted by lead in the molten condition:

(B) a layer of pure lead metallurgically bonded to and covering at least a part of the surface of said base and:

(C) negative active battery mass adhered to said layer of pure lead.

4,121,025

POLYMER COMPOSITIONS

Gerald Scott, c/o The University of Aston in Birmingham, Gosta Green, Birmingham 4, England

Filed Jul. 20, 1971, Ser. No. 164,462

Claims priority, application United Kingdom, Jul. 22, 1970, 35546/70; May 3, 1971, 12826/71

Int. Cl.[2] C08J *3/20*

U.S. Cl. 526—4 **14 Claims**

1. In a plastics composition which comprises a thermoplastic homopolymer or copolymer of a vinyl monomer or mixture thereof the improvement wherein it also contains at least one non-ionic organo-soluble antioxidant complex of a chain-breaking, peroxide-decomposing, metal ion deactivating or ultra-violet light stabilising compound selected from the group consisting of an aryl-amine, a phenol and a trivalent phosphorus antioxidant and a metal selected from iron, silver, palladium, molybdenum, chromium, tungsten or cerium in an amount such as to cause degradation of the pastics composition at the end of the desired life of the composition, said amount being from about 0.001% to about 0.1% by weight based on the weight of the polymer.

4,121,026

COPOLYMERS OF ALPHA-OLEFINS AND MALEIC ANHYDRIDE REACTED WITH AMINES IN THE PRESENCE OF LEWIS ACIDS

William J. Cheng, and David B. Guthrie, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 23, 1973, Ser. No. 344,420

Int. Cl.[2] C08F *8/32, 8/44, 22/06*

U.S. Cl. 526—15 **10 Claims**

1. A process of reacting a copolymer of an alpha-olefin and maleic anhydride with a primary amine, a secondary amine or mixtures thereof in the presence of a Lewis acid, the molar ratio of amine to maleic anhydride in the copolymer being from about 0.25 to about 3.

6. The product of claim 1.

4,121,027

POLYMERIZATION INITIATORS CONTAINING THIO BRIDGES

Heinz Pohlemann, Limburgerhof; Herbert Naarmann, Wattenheim, and Dieter Seebach, Lich, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhine, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,881

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1976, 2624631

Int. Cl.[2] C08C *19/20, 19/00;* C08F *2/00, 4/16*

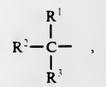
U.S. Cl. 526—29 **10 Claims**

1. A process for the manufacture of a polymer of one or more vinyl compounds by polymerizing the monomeric vinyl compound(s), employing as initiator in an amount of from 0.05 to 5% by weight based on the monomer(s) a compound which forms free radicals, wherein said compound which forms free radicals that is used during the polymerization is selected from organic compounds, containing thio bridges, of the general formula (I)

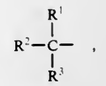


(I)

where R^1, R^2 and R^3 may be identical or different and each is —S—alkyl, —S—cycloalkyl or —S—aryl, each substituent R^1, R^2 and R^3 being of up to 14 carbon atoms, and any 2 of the substituents being optionally linked to form a ring, and R^4 is —S—alkyl, —S—cycloalkyl or —S—aryl, each of up to 14 carbon atoms, or is



but, where R^4 is



R^3 may also be hydrogen or an —Si—(—X)$_3$ group, X being linear alkyl of 1 to 3 carbon atoms.

4,121,028

PRESSURE SENSITIVE ADHESIVE COMPOSITION

Richard G. Marchessault, Louisville; Thomas P. Carter, Jr., Jeffersontown, and Martin M. Williams, Louisville, all of Ky., assignors to Celanese Polymer Specialties Company, Louisville, Ky.

Filed Jul. 5, 1977, Ser. No. 812,880

Int. Cl.[2] C08F *8/32, 8/42*

U.S. Cl. 526—48.1 **7 Claims**

1. In a pressure-sensitive adhesive composition which when dry forms a tacky adhesive of high cohesive strength, said composition being formed from an organic solvent solution of

(A) an acrylic interpolymer made from

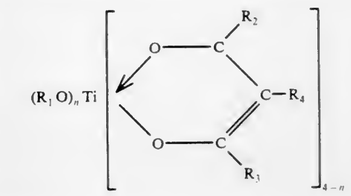
(1) about 0.5 to about 20 weight percent of a polymerizable monoethylenically unsaturated carboxylic acid,

(2) at least one monomer selected from the group consisting of alkyl esters of acrylic acid or methacrylic acid wherein the alkyl group contains 4 to 18 carbon atoms or dialkyl esters of maleic or fumaric acid wherein each alkyl group contains 4 to 18 carbon atoms and

(3) optionally, another monomer copolymerizable therewith,

wherein the interpolymer has a weight average molecular weight in the range of 10,000 to 500,000 and a glass transition temperature in the range of 0° C. to −75° C., and

(B) a chelate ester of orthotitanic acid having the formula



wherein n is an integer of 2 or 3, R_1 is C_2 to C_{10} alkyl, alkenyl, substituted alkyl or substituted alkenyl group, R_2 is C_1 to C_6 alkyl, alkoxy, alkenyl, or alkenoxy group, R_3 is a C_1 to C_6 alkyl or alkenyl group or a C_6 to C_{10} aryl group, and R_4 is hydrogen or a C_1 to C_6 alkyl or alkenyl group, and R_2 and R_3 may be combined as an ethylene or trimethylene group;

the improvement which comprises the addition to said adhesive composition of a tertiary amine in the amount of about 0.01 to about 1.5 equivalents of amine per each carboxylic acid equivalent in the interpolymer.

4,121,029

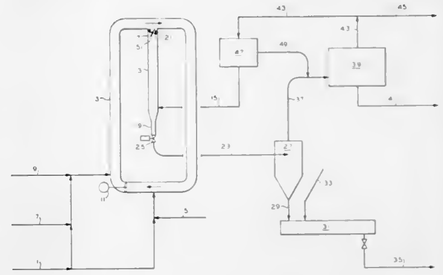
POLYOLEFIN REACTOR SYSTEM

Howard B. Irvin, and Fred T. Sherk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 6, 1976, Ser. No. 748,086

Int. Cl.[2] C08F *10/06*

U.S. Cl. 526—64 **8 Claims**



1. In a pipe-loop reactor system, apparatus comprising

(1) a wash column attached to the upper run of the reactor with means at the juncture of the wash column and of the pipe-loop reactor for restricting flow from the loop into the wash column,

(2) an appended settling leg attached to the wash column, said wash column provided with means for admitting purified monomer wash liquid into the base of the column above the settling leg, and

(3) means for removing polymer slurry from said settling leg.

4,121,030

TRANSITION METAL COMPOSITION

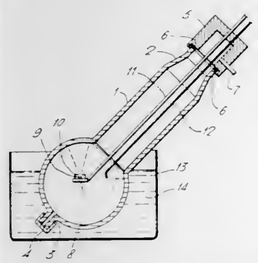
John Paton Candlin, Aston; Keith Collier Wilson, St. Albans, and Ronald Pearce, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 24, 1976, Ser. No. 744,827

Claims priority, application United Kingdom, Nov. 25, 1975, 48406/75

Int. Cl.[2] **C08F** *10/00, 10/02*

U.S. Cl. 526—119 **21 Claims**



1. A process for the treatment of compounds of transition metals wherein a compound of a transition metal of Group IVA of the Periodic Table, which compound contains at least one π-bonded arene group, is contacted with a particulate inorganic compound which is (A) an inorganic oxide, an inorganic hydroxide, an inorganic oxyhalide, an inorganic hydroxyhalide or an inorganic halide; (B) a mixture of at least two compounds from (A); or (C) a compound obtained by the reaction of at least two compounds from (A).

4,121,031

PROCESS FOR PRODUCING RANDOM COPOLYMERS

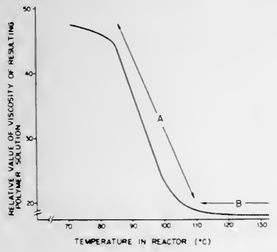
Saburo Minekawa; Sigeru Yonekawa; Haruro Tabata, all of Yokohama-shi, Kanagawa-ken; Takashi Ishida, Kamakura-shi, Kanagawa-ken; Satoshi Tsuchida, Yokohama-shi, Kanagawa-ken, and Kiyoshi Yamada, Kawasaki-shi, Kanagawa-ken, all of Japan

Continuation of Ser. No. 200,558, Nov. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 686,226, Nov. 28, 1967, abandoned. This application Jun. 24, 1976, Ser. No. 699,313

Claims priority, application Japan, Dec. 9, 1966, 41-80365

Int. Cl.[2] **C08F** *4/48, 236/10*

U.S. Cl. 526—173 **12 Claims**



9. In the process for producing a substantially random copolymer by contacting 1,3-butadiene and styrene in the presence of a catalyst consisting of [metallic lithium or] an alkyllithium in a hydrocarbon solvent to form said copolymer, the improvement which comprises charging simultaneously to a reactor a reactor charge consisting of said butadiene, styrene and n-butyllithium catalyst, and n-hexane solvent, or charging simultaneously said butadiene, styrene and n-hexane solvent to n-butyllithium catalyst in a reactor, the concentration of styrene and butadiene being from about 25 to about 33 percent by weight, the styrene/butadiene ratio being from 1/10 to 4/10, and in the process maintaining the resulting reaction mixture at a temperature not higher than 150° C. and above about 100° C. when the [sytrene] styrene/butadiene ratio is 4/10 and above about 110° C. when the styrene/butadiene ratio is 1/10, at which temperature the viscous solution of the resulting copolymer separates from said reaction mixture to form a slurry.

4,121,032

PROCESS FOR PREPARING ALTERNATING COPOLYMER OF CONJUGATED VINYL COMPOUND AND OLEFINIC UNSATURATED COMPOUND WITH OXYGEN AND BORON COMPOUND

Kohei Nakaguchi, Osaka; Shohachi Kawasumi, Kobe; Masaaki Hirooka, Ibaraki; Hiroshi Yabuuchi, Takatsuki, and Hiroyoshi Takao, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

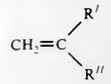
Division of Ser. No. 320,909, Jan. 4, 1973, Pat. No. 3,894,997, which is a continuation-in-part of Ser. No. 3,559, Jan. 9, 1970, abandoned, which is a continuation of Ser. No. 560,857, Jun. 27, 1966, abandoned. This application Apr. 15, 1975, Ser. No. 568,319

Claims priority, application Japan, Jun. 30, 1965, 40/39488; Jul. 10, 1965, 40/41590

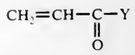
Int. Cl.[2] **C08F** *4/52, 20/18*

U.S. Cl. 526—197 **4 Claims**

1. In a process for preparing an alternating copolymer by copolymerizing an olefinic unsaturated compound having the formula



wherein R^{I} and R^{II} are independently hydrogen, a halogen atom, a hydrocarbon radical having 1 to 20 carbon atoms, or a halogen-containing hydrocarbon radical having 1 to 20 carbon atoms, and a conjugated vinyl compound selected from the group consisting of acrylonitrile and compounds having the formula,



wherein Y is a member selected from the group consisting of

$Z'R$, $Z'H$, $-Z'_{k}Me'$,

NR′R″ and R groups, and halogen and hydrogen atoms; Z′ is an oxygen or sulfur atom; R is a hydrocarbon or halohydrocarbon radical having 1 to 20 carbon atoms; R′ and R″ are the same or different groups selected from the group consisting of hydrogen atom and a hydrocarbon or halohydrocarbon radicals having 1 to 20 carbon atoms, and may be bonded to each other to form a morpholino, a pyrrolidino or a piperidino group; and Me′ is an element from Groups I to II of the Mendeleev Periodic Table, where k is equal to the valency of Me′, or an ammonium group, with a catalyst at a temperature of $-150°$ to $+100°$ C, the improvement which comprises effecting the copolymerization at a pressure up to 100 kg/cm^2 by contacting the monomers in the presence of oxygen present in an amount up to 100 mole percent based on said catalyst with said catalyst selected from the group consisting of (1) at least one organo-boron halide having the formula,

$BR'''_{n}X_{3-n}$

wherein R‴ is a hydrocarbon radical having 1 to 20 carbon atoms, X is a halogen atom, and n is 1 or 2, (2) a combination of at least two members selected from the groups having the following formulas,

$BR'''_{n}X_{3-n}$ (a)

wherein R‴, X and n are as defined above,

BR'''_{3} (b)

wherein R‴ is a hydrocarbon radical having 1 to 20 carbon atoms, and

BX'_{3} (c)

wherein X′ is a halogen atom, said catalyst being used in an amount of from 0.0005 to 10 moles per mole of said conjugated vinyl compound.

4,121,033

CHLOROPRENE-SULFUR POLYMERIZATION WITH DI(O-ALKYLTHIONOTHIOLCARBONOXY)SULFIDES

Morris S. Edmondson, Alvin, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

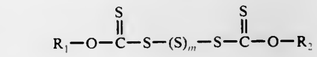
Filed Nov. 8, 1976, Ser. No. 739,635

The portion of the term of this patent subsequent to Dec. 2, 1992, has been disclaimed.

Int. Cl.[2] **C08F** *2/26, 2/24, 36/18*

U.S. Cl. 526—223 **5 Claims**

1. A process for the emulsion polymerization of chloroprene and sulfur for the preparation of chloroprene-sulfur copolymers having improved viscosity stability which comprises polymerizing chloroprene and 0.2 to 0.6 parts by weight of elemental sulfur per 100 parts of polymerizable monomer in the presence of 0.05 to 5.0 parts by weight per 100 parts of monomer of a modifier having the formula



wherein R_1 is a hydrocarbon radical having from 1 to 8 carbon atoms, R_2 is a hydrocarbon radical having from 1 to 8 carbon atoms and m is 1 to 4.

4,121,034

BIOLOGICALLY ACTIVE TRIORGANOTIN COPOLYMERS

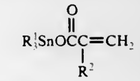
John R. Bednarski, Flushing, N.Y., and David B. Russell, Westfield, N.J., assignors to M&T Chemicals Inc., Stamford, Conn.

Division of Ser. No. 738,001, Nov. 2, 1976. This application Jun. 13, 1977, Ser. No. 805,838

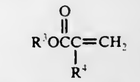
Int. Cl.[2] **C08F** *30/04, 130/04, 230/04, 4/32*

U.S. Cl. 526—240 **14 Claims**

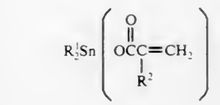
1. A biologically active copolymer obtained by reacting in the presence of a free radical polymerization initiator and a liquid hydrocarbon medium at least one solubilized triorganotin compound of the general formula



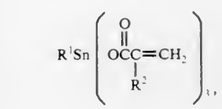
with at least one solubilized copolymerizable monomer of the general formula



and from 0.01 to 10%, based on total monomer weight, of a crosslinking agent selected from the group consisting of divinyl benzene, compounds of the formulae



and



esters of acrylic or metharylic acid with polyfunctional alcohols and phenols, wherein said esters contain from 2 to 4 residues of said acid, and wherein each R^1 is individually selected from the group consisting of alkyl radicals containing from 1 to 8 carbon atoms, cycloalkyl and aryl radicals, R^2 and R^4 are individually selected from hydrogen and methyl radicals and R^3 represents an alkyl radical containing from 1 to 18 carbon atoms, a cyclohexyl or a phenyl radical.

4,121,035

5-AMINO-2-HYDRAZINOPYRIDINE AND DERIVATIVES THEREOF

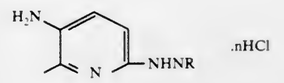
George C. Wright, Norwich, and James L. Butterfield, New Berlin, both of N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,507

Int. Cl.[2] **C07D** *213/77;* **A61K** *31/44*

U.S. Cl. 542—417 **4 Claims**

1. A compound of the formula:



wherein R is H_2, benzylidene or 3,4-dimethoxybenzylidene and n is 1 or 2.

4,121,036

3-AMINO-2-HYDRAZINOPYRIDINE DERIVATIVES

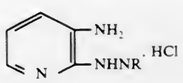
George C. Wright, Norwich, and James L. Butterfield, New Berlin, both of N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,581

Int. Cl.[2] **C07D** *213/77;* **A61K** *31/44*

U.S. Cl. 542—417 **4 Claims**

1. A compound of the formula:



wherein R is 3,4-dimethoxybenzylidene, 4-hydroxybenzylidene or isopropylidene.

4,121,037

PROCESS FOR PRODUCING 5-FLUOROURACIL DERIVATIVE WITH A CALCIUM CHLORIDE CATALYST

Toshio Nakamura, Ohmiya; Yasuo Hoshide, Tokyo; Yoshio Hashimoto, Gyoda; Kenichi Suzuki, Saitama, and Yohji Yoshida, Kawaguchi, all of Japan, assignors to Nikken Chemicals Co., Ltd., Tokyo, Japan

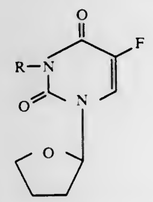
Filed Mar. 3, 1977, Ser. No. 774,050

Claims priority, application Japan, Jun. 26, 1976, 51-75713; Aug. 28, 1976, 51-102800

Int. Cl.[2] **C07D** *239/54*

U.S. Cl. 544—313 **14 Claims**

1. A process for producing a 5-fluorouracil derivative having the formula



wherein R represents a hydrogen atom or a 2-tetrahydrofuryl group which comprises reacting more than an equimolar amount of 2,3-dihydrofuran with 5-fluorouracil in a polar aprotic solvent in the presence of a catalytically effective amount of calcium chloride as a catalyst under neutral or basic conditions at a reaction temperature of 50 to 150° C under at least autogenous pressure.

4,121,038

3,7-INTER-M-PHENYLENE-3-OXA-13,14-DIDEHYDRO-11-DEOXY-17-PHENYL-4,5,6,18,19,20-HEXANOR-PGE$_1$ COMPOUNDS

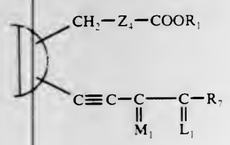
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,966

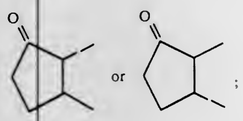
Int. Cl.[2] **C07C** *177/00*

U.S. Cl. 560—53 **73 Claims**

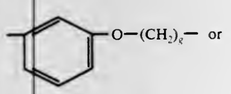
1. A prostaglandin analog of the formula



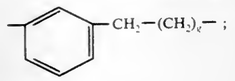
wherein D is



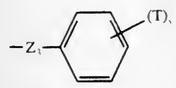
wherein Z_4 is



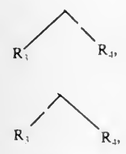
-continued



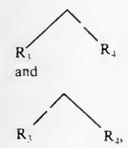
wherein g is 1, 2, or 3;
wherein R_7 is



wherein Z_3 is oxa or methylene, *s* is 0, 1, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of 1 to 3 carbon atoms, inclusive, or alkoxy of 1 to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl, with the further proviso that one or both of R_3 and R_4 is fluoro only when Z_3 is methylene;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen; and
wherein R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with 1, 2, or 3 chloro or alkyl of 1 to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,121,039

PROCESS FOR PRODUCING AN UNSATURATED GLYCOL DIESTER USING A CATALYST COMPRISING PALLADIUM CONTAINING THORIUM AS A PROMOTOR

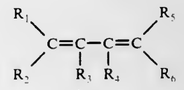
R. Parthasarathy, and Eugene Victor Hort, both of Wayne, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,479

Int. Cl.[2] **C07C** *67/05*

U.S. Cl. 560—244 **16 Claims**

1. A process for the production of unsaturated diesters, which comprises reacting in a liquid phase a conjugated diene of the formula:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 may be same or different and each represents hydrogen or an alkyl group having 1 to 6 carbon atoms, a carboxylic acid selected from the group consisting of aliphatic, aromatic and alicyclic carboxylic acid having 2 to 20 carbon atoms, and oxygen in the presence of a supported solid catalyst consisting essentially of elemental palladium containing thorium as a promotor.

4,121,040

4-(TETRAZOL-5-yl)-Δ^3-CEPHEM COMPOUNDS

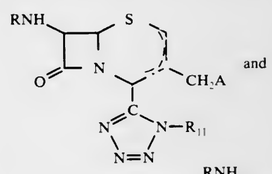
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 658,303, Feb. 17, 1976, Pat. No. 4,045,436, which is a division of Ser. No. 508,634, Sep. 23, 1974, Pat. No. 3,966,719, which is a continuation-in-part of Ser. No. 407,097, Oct. 17, 1973, abandoned. This application Apr. 27, 1977, Ser. No. 791,522

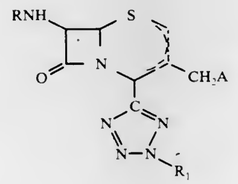
Int. Cl.[2] **C07D** *501/18*

U.S. Cl. 544—28 **13 Claims**

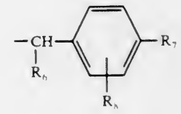
1. A compound selected from the group consisting of



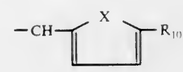
and



wherein R is selected from the group consisting of 2,2,2-trichloroethoxycarbonyl, 2,2,2-tribromoethoxycarbonyl and benzyloxycarbonyl;
A is selected from the group consisting of hydrogen and acetoxy;
R_1 is selected from the group consisting of hydrogen and alkanoyloxymethyl having from three to six carbon atoms, 1-(alkanoyloxy)ethyl having from four to seven carbon atoms, methoxymethyl, and phthalidyl;
and R_{11} is selected from the group consisting of hydrogen, alkanoyloxymethyl having from three to six carbon atoms, 1-(alkanoyloxy)ethyl having from four to seven carbon atoms, methoxymethyl, phthalidyl,



wherein R_9 is selected from the group consisting of alkyl having from one to three carbon atoms and phenyl and R_7 is selected from the group consisting of hydroxy, methoxy, alkanoyloxy having two to four carbon atoms, and benzyloxy and R_8 is selected from the group consisting of hydrogen, hydroxy, fluoro, chloro, bromo, iodo, methyl, methoxy, alkanoyloxy having from two to four carbon atoms, phenyl and benzyloxy and



wherein R_9 and R_{10} are each selected from the group consisting of hydrogen and methyl and X is selected from the group consisting of oxygen and sulfur.

4,121,041

7-(AMIDINOTHIO)ACETAMIDO-7-METHOXY CEPHALOSPORINS

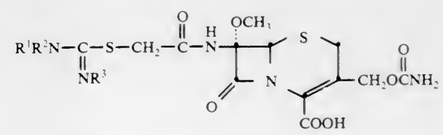
Robert F. Czaja, Scotch Plains, and Edward J. J. Grabowski, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 4, 1977, Ser. No. 765,477

Int. Cl.[2] **C07D** *501/40;* **A61K** *31/545*

U.S. Cl. 544—21 **3 Claims**

1. The compound having the following formula



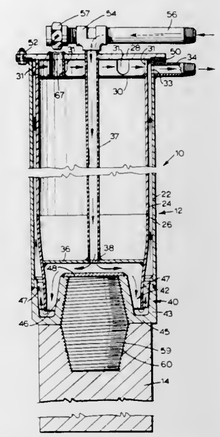
wherein R^1, R^2 and R^3 are the same or different and are hydrogen, loweralkyl of 1–5 carbon atoms, or phenyl.

4,121,042

COMPOSITE ELECTRODE WITH NON-CONSUMABLE UPPER SECTION

Otto E. Prenn, Sherwood Park, Canada, assignor to The Steel Company of Canada Limited, Canada

Filed Oct. 7, 1976, Ser. No. 730,621
Claims priority, application Canada, Sep. 1, 1976, 260316
Int. Cl.[2] H05B *7/07*
U.S. Cl. 13—18 R **6 Claims**



1. A composite electrode for electric arc furnaces, comprising:

an elongated, substantially cylindrical metallic portion having a top end and a bottom end, the portion including an outer wall of substantially uniform section along its length, the outer wall having an outside surface and an inside surface, an inner wall spaced inwardly from the outer wall to define therewith a passage of annular section, a pipe constituting conduit means longitudinally within said metallic portion, the pipe being spaced inwardly from said inner wall and communicating with the bottom of said passage to allow cooling liquid to move within said portion along a path which brings cooling liquid into intimate contact with substantially all of the inside surface of said outer wall, said path having a downward leg and an upward leg, one leg being along said pipe and the other leg being along said passage,

an elongated consumable portion having a top end and a bottom end,

and connector means for joining the top end of the consumable portion to the bottom end of the metallic portion.

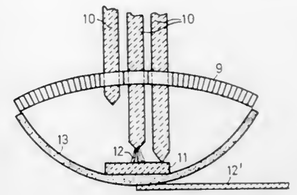
4,121,043

PREHEATING METALLURGICAL ENCLOSURES

Bo Vesteras Rappinger, Vesteras, Sweden, assignor to Asea Aktiebolag, Vesteras, Sweden

Filed Apr. 26, 1977, Ser. No. 790,946
Claims priority, application Sweden, May 24, 1976, 7605840
Int. Cl.[2] F27D *23/00*
U.S. Cl. 13—34 **9 Claims**

1. A method for preheating a metallurgical enclosure having a refractory lining which after preheating is exposed to the heat of molten metal, said method comprising enclosing said lining in a substantially gas-tight manner and forming an elec-



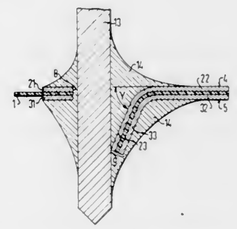
tric open arc producing arc radiation at a location inside of said enclosure so as to expose said lining directly to said radiation.

4,121,044

FLEXIBLE THROUGH-CONTACTED PRINTED CIRCUITS

Hans Hadersbeck; Ernst Andrascek, both of Munich, and Alfred Groeber, Stockdorf, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 26, 1976, Ser. No. 690,272
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1975, 2524581
Int. Cl.[2] H05K *1/00*
U.S. Cl. 174—68.5 **7 Claims**



1. A flexible printed circuit board comprising:

a flexible insulating sheet having electrical conductor paths on upper and lower portions thereof at and surrounding a core region, said upper and lower portions respectively defining a component-mounting side and a solder-applying side;

a tongue portion severed from said board at said core regions along a non-closed, convexly-extending line, said tongue portion being attached to said board along a hinge line joining ends of said non-closed line, said tongue portion being bent so as to extend at an angle of less than 90° toward said solder-applying side so that an overstretching of said conductor paths on upper portions of said insulating sheet is safely avoided; and

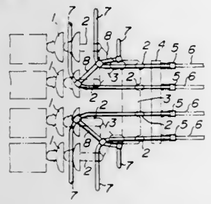
the tongue portion and conductor paths forming, with solder applied on said solder-applying side of said board and allowed to flow and harden onto said core region and into contact with said conductor paths on upper and lower surfaces of said tongue portions, a substantially perfect through-contact between upper and lower portions of the circuit board.

4,121,045

CORONA SHIELDING BY JUMPER ASSEMBLY

Mankichi Yamada, Inazawa, and Hiroshi Fujita, Inuyama, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Sep. 7, 1977, Ser. No. 831,284
Claims priority, application Japan, Sep. 13, 1976, 52-108830
Int. Cl.² H01B *17/44, 17/48*
U.S. Cl. 174—141 R **3 Claims**



1. An apparatus for corona shielding a plurality of tension insulator strings coupled to a plurality of conductors by line hardware comprising

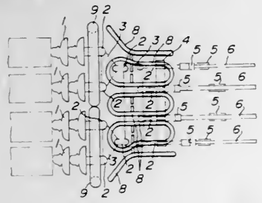
a plurality of jumper wires connected with said conductors and spaced apart from each other so as to surround the ends of said insulator strings on the energized side and shield said ends and line hardware, thereby preventing corona discharge therefrom.

4,121,046

CORONA SHIELD FOR TENSION INSULATOR ASSEMBLY

Hiroshi Fujita, Inuyama, and Kazuhisa Kato, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Sep. 7, 1977, Ser. No. 831,285
Claims priority, application Japan, Sep. 13, 1976, 51-108829
Int. Cl.² H01B *17/44, 17/48*
U.S. Cl. 174—141 R **6 Claims**



1. An apparatus for corona shielding a high tension insulator assembly having a plurality of insulator strings anchoring a plurality of conductors with line hardware comprising

at least three shielding rings substantially surrounding the line hardware at the anchored ends of said conductors but not said insulator strings, each ring having a substantial portion thereof forming a respective plane extending substantially along the longitudinal direction of said conductors.

4,121,047

CIRCUIT ARRANGEMENT FOR THE SWITCHING ON AND OFF OF A TELEPRINTER PBX EXCHANGE

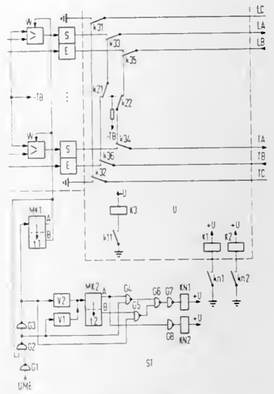
Filip Jelina, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,260
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635305
Int. Cl.² H04L *15/00*
U.S. Cl. 178—3 **3 Claims**

1. Circuit arrangement for teleprinter PBX exchanges, in which a switch-over device connects at least a part of the PBX lines directly to the main connection lines upon the switching off of the PBX exchange, and reconnects the PBX lines and the main connection lines both separately and to the PBX exchange on the switching on of the PBX exchange, in order to prevent impermissible connections occurring during the switching off and the switching on of the PBX exchange, the improvement comprising two time-dependent switching devices (**MK1**, **MK2**) provided for the analysis of switch-off and switch-on signals (UM=0, UM=1) which respectively characterize the switching off and switching on of the PBX exchange;

said first switching device (**MK1**) being operable to be switched on by the switch-off signal (UM=0) and operable to switch on a switch circuit (**W**) which is assigned to each transmitting device (**S**) of the PBX exchange;

said switch circuit being operable to connect the transmitting devices (S) to start polarity for a period of time (*t1*) determined by the first switching device (**MK1**);



said second switching device (**MK2**) being operable to be switched on by the switch-on and the switch-off signals (UM=0, UM=1) and having assigned thereto first and second control switching means (**KN1**, **KN2**), a switch-over device (U) having first switching means (**K1**, **K3**) connected to said first control switching means to directly connect the wires (TA, TB, TC) of the PBX lines to the wires (LA, LB, LC) of the main connection lines, or to separately connect these lines to the PBX exchange; and

second switching means (**K2**) which is arranged in the switchover device (U) and is operable to be controlled by the second control switching means (**KN2**) to connect start polarity (−TB) to the wires (LA, TA) leading in the direction of reception for a period of time (*t2*) determined by the second switching device (**MK2**), in each case prior to the switchover of the main connection lines and the PBX lines.

4,121,048

MULTIPLE SHIFT ELECTRONIC KEYBOARD

Rathindra N. Dev Choudhury, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 28, 1977, Ser. No. 819,788
Int. Cl.² B41J *25/24*; H04L *15/06*
U.S. Cl. 178—17 C **14 Claims**

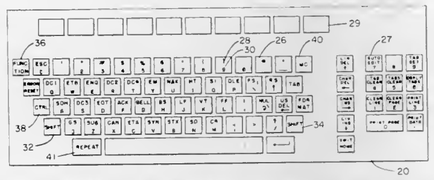
1. In a keyboard encoding system of the type which is operated in response to the depression of a first key member representing a selected character for generating coded data representing the key depressed, a circuit operable upon the depression and release of a second key member for generating coded data for use in selecting a second character in response to the depression of the first key member comprising:

(a) means for generating a plurality of first signals;

(b) means for transmitting said first signals to said first and second key members for sensing the depression of said first and second key members;

(c) circuit means responsive to the depression and release of said second key member for generating a plurality of said first signals;

(d) and encoding means operable in response to the generation of said first signals and connected to said circuit means and said first key member for receiving said first signals upon depression of said first and second key members and said first signal upon release of said second key member, said encoding means outputting coded data representing the depression and release of said second key member for use in selecting a second character in response to the depression of said first key member.

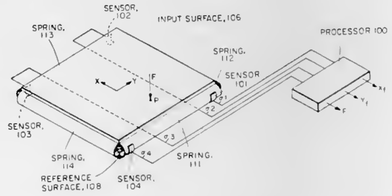


4,121,049

POSITION AND FORCE MEASURING SYSTEM

Frederick W. Roeber, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 1, 1977, Ser. No. 783,538
Int. Cl.² G08C *21/00*; G01G *3/14*
U.S. Cl. 178—18 **28 Claims**



1. In combination:

first and second substantially rigid bodies;

spring means interconnecting said rigid bodies, said spring means extending along substantially the entire periphery of said substantially rigid bodies, said spring means restraining lateral movement between said first and second substantially rigid bodies; and

means for producing electrical signals representing a change in distance between portions of said substantially rigid bodies in response to a force applied to one of said bodies.

4,121,050

DIFFERENTIAL TRI-PHASE SHIFT KEYED MODULATION

Richard P. Witt, Weston, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 2, 1977, Ser. No. 765,026
Int. Cl.² H04L *27/24*
U.S. Cl. 178—67 **1 Claim**

1. In a differential tri-phased shift keyed modulation system a phase comparator for the detection of data transmission shift keyed modulation comprising

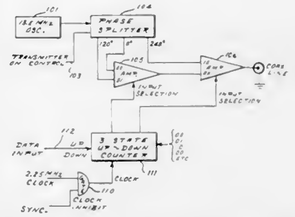
a signal receiving source,

a center tapped delay line having a total storage duration equal to the system transmission signalling rate,

a first phase shifter, said delay line and said first phase shifter being fed from said signal receiving source,

a first phase demodulator being fed simultaneously by the center tap of said delay line and by said first phase shifter wherein said first phase demodulator develops a clock synchronizing signal at the system data rate,

a second phase shifter driven by said signal receiving source,



a second phase demodulator receiving the outputs of said delay line and said second phase shifter for the detection of the received signal data content,

a third phase shifter driven by said signal receiving source, and

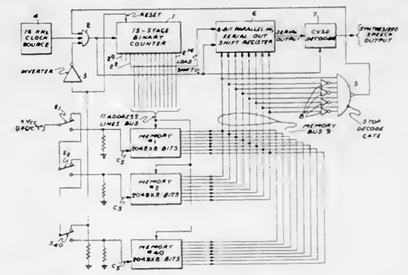
a third demodulator, said third phase demodulator being driven by said delay line and said third phase shifter and adjusted to detect pauses occuring in the shifting of transmission signal phase.

4,121,051

SPEECH SYNTHESIZER

Harry Place, Ridgewood, N.J., assignor to International Telephone & Telegraph Corporation, Nutley, N.J.

Filed Jun. 29, 1977, Ser. No. 811,009
Int. Cl.² G10L *1/00*
U.S. Cl. 179—1 SM **17 Claims**



1. A speech synthesizer comprising:

N first means each having N phonetic sounds stored therein in digital form, where N is an integer greater than one;

second means each coupled to a different one of said first means to select desired phonetic sounds in digital form from an addressed one of said first means;

third means coupled to said second means to convert said selected desired phonetic sounds in digital form to analog synthesized speech; and

a fourth means coupled to said first means and said second means to automatically stop the operation of said third means for short phonetic sounds;

said first means including

N memories; and

said second means including

N switch means each coupled to a different one of said memories to select said desired phonetic sounds,

a clock source,

a binary counter to generate a different address for each of said memories, and

an AND gate coupled to said switch means, said clock source and said fourth means to control the coupling of the clock of said source to said counter.

4,121,052

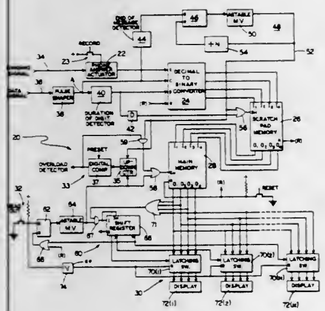
TELEPHONE DATA RECORDING SYSTEM

Herbert L. Richard, 1555 Farlow Ave., Crofton, Md. 21113

Continuation of Ser. No. 652,325, Jan. 26, 1976, abandoned. This application Jun. 16, 1977, Ser. No. 808,196

Int. Cl.[2] H04M *17/00*

U.S. Cl. 179—2 DP **6 Claims**



1. A system for transferring messages via telephone lines comprising:

means for generating a call signal from a first telephone to a second telephone over the telephone lines;

means at said second telephone for detecting said call signal and in response thereto causing said second telephone to capture the telephone lines;

means at said first telephone for generating on the lines a single, complete, variable length digital message associated with said call signal, said variable length message having M digitally encoded characters, where $1 \leqq M \leqq N$, N being a constant;

means at said second telephone for storing successive, incoming ones of said variable length messages, said storage means including a memory having a plurality of storage banks, each of said storage banks containing N storage locations for storing up to N digitally encoded characters, means for generating a gating signal corresponding to the length of each character of the incoming, variable length message, converter means responsive to said gating signal for converting said incoming, digital characters to binary coded signals, means for detecting the end of the incoming variable length message, pulse generator means for generating N pulses, means for shifting said binary coded signals into said memory in response to the N pulses generated by said pulse generator, means responsive to said end of message detecting means for operating said pulse generator to shift the M binary coded characters of said incoming message into an N stage storage bank of said memory, (N–M) storage locations of said bank thereby remaining empty;

display means at said second telephone for visually displaying only one complete message; and

readout means at said second telephone for successively reading out single ones of said stored messages to said display means, said readout means displaying the content of only one storage bank each time said readout means is activated, each readout containing a single complete, stored message.

4,121,053

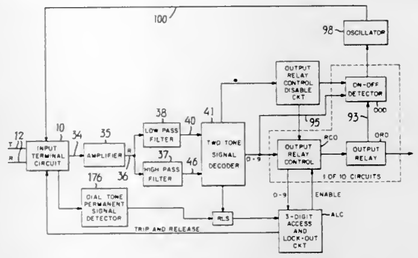
TELEPHONE COMMAND APPARATUS

William J. Dick, 188-20A 69th Ave., Flushing, N.Y. 11365

Filed May 5, 1977, Ser. No. 793,958

Int. Cl.[2] H04M *11/00*

U.S. Cl. 179—2 A **16 Claims**



1. Telephone command apparatus comprising

(a) signal transmission channel means,

(b) input circuit means connectible to a telephone line and responsive to telephone ringing signals for conditioning said signal transmission means to transmit signals therethrough,

(c) decoder means in said transmission channel means for providing a plurality of separate outputs representative, respectively, of a plurality of coded signals supplied as inputs thereto through said channel means,

(d) a plurality of controllable means for effecting a plurality of operations, respectively,

(e) a plurality of control means for actuating said respective controllable means, said control means being initially disabled to receive the outputs from said decoder means, and

(f) access control means initially enabled to receive the outputs from said decoder means and responsive to a predetermined combination of said separate outputs representative of a predetermined combination of first coded signals supplied to said input circuit means for enabling said plurality of control means to receive from said decoder means separate outputs, respectively, representative of other coded signals supplied to said input circuit means, whereby said controllable means may be selectively actuated in response to said other coded signals supplied to said input circuit means from said telephone line.

4,121,054

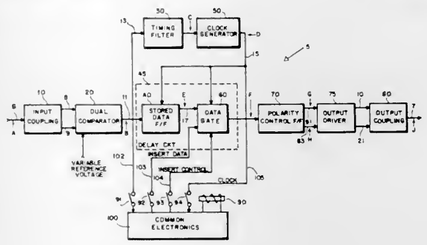
REGENERATIVE LINE ACCESS MODULE

Philip Popkin, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Jan. 3, 1977, Ser. No. 756,194

Int. Cl.[2] H04J *3/08*

U.S. Cl. 179—15 BD **12 Claims**



1. A line access module having input and output, and

adapted to be connected in a series relationship to a digital data transmission line carrying a data pulse stream, said module comprising:

pulse regeneration means for receiving attenuated and distorted data signals at the input of said module, and for producing reshaped data signals at the output of said module, said pulse regeneration means comprising a dual comparator having a selectable reference threshold voltage;

timing extraction means electrically connected to and receiving signals from said pulse regeneration means, for producing a clock signal having a fundamental frequency equal to the fundamental frequency of the data pulse stream, said timing extraction means comprising means for filtering out a fundamental sinusoidal signal from the reshaped data pulses and shifting the phase of the filtered signal from the phase of the fundamental component of the reshaped data pulses, and square wave generation means responsive to the zero crossings of the filtered sinusoidal signal for producing said clock signal;

data gating means having two states, said data gating means electrically connected between said pulse regeneration means and said output of said module for passing the reshaped data signals to said output when said gating means is in the first of said states, and for blocking the reshaped data signals from reaching said output when said gating means is in the second of said states, said data gating means also connected to said timing extraction means to receive the clock signals therefrom; and

relay means having contacts connected to said data gating means whereby operation of said relay means places said data gating means in said second state in response to externally-generated data signals and connects externally-generated data signals to said data gating means.

4,121,055

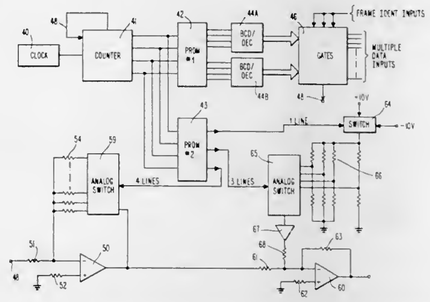
INTEGRATED PROGRAMMABLE COMMUTATION AND SIGNAL CONDITIONING CIRCUIT

Michael J. Doherty, Warrington, Pa., assignor to Microcom Corporation, Warminster, Pa.

Filed Jun. 6, 1977, Ser. No. 803,636

Int. Cl.[2] H04J *3/04*

U.S. Cl. 179—15 A **14 Claims**



10. A functionally integrated commutation and conditioning circuit, for deriving a commutated signal from a multiplicity of data inputs, comprising:

a. a commutating path having a plurality of inputs connected to multiple data channels, for successively gating sampled signals from respective ones of said data channels to derive a multi-channel commutated signal;

b. a conditioning path connected to the output of said commutating means, and having means for providing a plurality of respective conditioning operations for each channel of said commutated signal; and

c. means for synchronizing and programming the operation of said commutating means and said conditioning path, whereby said conditioning path operates with respective programmed characteristics for the time interval of each successive channel of said commutated signal.

4,121,056

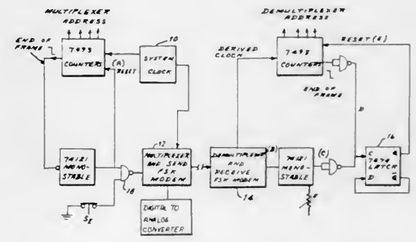
TIME DIVISION DIGITAL MULTIPLEXER APPARATUS

James E. Stout, Raymore, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 14, 1977, Ser. No. 806,435

Int. Cl.[2] H04J *9/00*

U.S. Cl. 179—15 BM **6 Claims**



1. An improved multiplexed data transmission system of the type wherein a plurality of input data signals and a clock signal are frequency division multiplexed for transmission over voice grade transmission circuits, wherein the improvement comprises:

a delay equalization and frame synchronization apparatus comprising in combination:

a sending unit for generating a system clock frequency and a plurality of output signals derived from said system clock frequency, said sending unit generating an end of frame signal which initiates a reset pulse, said reset pulse disables the generation of said plurality of output signals and enables a send modem, said send modem modulates said system clock frequency to provide an output FSK signal,

a receive unit receiving said output FSK signal, said receive unit demodulating said FSK signal to provide a clock carrier and a control pulse, said control pulse is utilized to generate a receive reset pulse, said clock carrier which is phase-locked with said system clock frequency is utilized to provide a plurality of receive output signals upon the occurrence of said receive reset pulse, said plurality of receive output signals and said plurality of output signals in said sending unit being fully synchronized, and,

a digital to analog converter unit receiving a plurality of digital input signals, said digital to analog converter unit sequentialy sampling said plurality of digital input signals and converting them into serial data, said serial data being applied to a sinusoidal oscillator with a first and second oscillating frequency, said sinusoidal oscillator providing an FSK output signal in response to said serial data.

4,121,057

FRAME SYNCHRONIZING DEVICE

Jacques Luder, Ris-Orangis, France, assignor to Societe Anonyme dite Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 2, 1977, Ser. No. 821,220

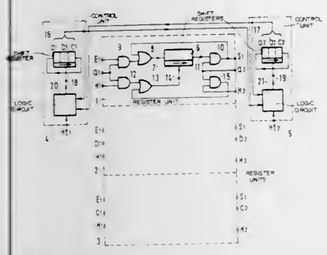
Claims priority, application France, Aug. 20, 1976, 76 25345

Int. Cl.[2] H04J *3/06*

U.S. Cl. 179—15 BS **6 Claims**

1. A device for synchronising a "frame" of a first data pulse train at a first bit rate to a second data pulse train at a second bit rate, the device comprising a memory, and first and second control circuits for activating respectively the loading of the memory in synchronism with "frame" pulses of the first pulse

train, and the unloading of the memory in synchronism with "frame" pulses of the second pulse train; wherein the memory is constituted by three looped shift register units, each having a capacity of one complete frame, and wherein the two control circuits have identical structures and cyclically connect the



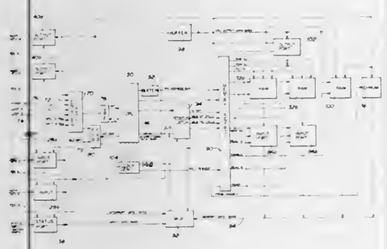
input of the device to the inputs of the shift registers and likewise cyclically connect the outputs of the shift registers to the output of the device in such a way that each of the control circuits switches from one register unit to the next only if that next unit is not already activated at the switching instant by the other control circuit.

4,121,058

VOICE PROCESSOR

Stephen C. Jusko, Point, and Thomas C. Tillotson, Greenville, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Dec. 13, 1976, Ser. No. 749,999
Int. Cl.[2] G11B *13/00*
U.S. Cl. 179—15.55 T **27 Claims**



1. Apparatus for rate conversion of audio signals, comprising in combination:

data storage means having address locations for storing digital data representing audio signals,

means for transferring digital data representing an audio signal to write address locations in said data storage means at an input rate,

means for retrieving the digital data from read address locations in said data storage means at a readout rate independent of the input rate,

means for monitoring the address differential between the read address locations and the write address locations,

means for resetting the means for retrieving at a preselected address differential from said means for transferring when the address differential exceeds preestablished maximum or minimum limits, and

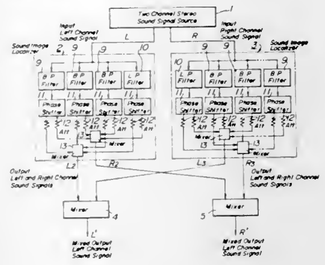
means for generating an audio signal in analog format from the retrieved digital data at the readout rate.

4,121,059

SOUND FIELD EXPANDING DEVICE

Katsumi Nakabayashi, Kawasaki, Japan, assignor to Nippon Hoso Kyokai, Japan

Filed Apr. 12, 1976, Ser. No. 675,784
Claims priority, application Japan, Apr. 17, 1975, 50-45773
Int. Cl.[2] G11B *31/00*
U.S. Cl. 179—100.1 TD **3 Claims**



1. A sound field expanding device for generating a sound field expanded with respect to an original sound field, said original sound field being that produced by left and right loudspeakers obliquely positioned in front of a listener in the absence of said expanding device, comprising,

left and right side sound image localizer means for receiving left and right channel sound signals respectively from a two channel stereo sound signal source and shifting the left and right side sound images to the left and right sides of the listener to produce an angular displacement of the sound images that is greater than that produced by said original sound field, each of said localizer means including

a plurality of filters coupled to said sound signal source to receive a corresponding channel sound signal, said filters passing succeeding frequency band components of said channel sound signal,

a plurality of phase shifters coupled to said plurality of filters for adjusting the phases of the frequency band components of said channel sound signal,

a plurality of attenuators coupled to said plurality of phase shifters for attenuating the phase-shifted components of said channel sound signal, and

a plurality of mixers coupled to said plurality of attenuators for mixing the phase-shifted attenuated components of said channel sound signal and generating respective channel localized output sound signals; and

left and right side mixing means each coupled to the mixers of said left and right side sound image localizer means for mixing respectively left channel sound signals derived from both of said sound image localizer means and right channel sound signals derived from both of said sound image localizer means, said left and right side mixing means being coupled to said left and right side loudspeakers respectively.

4,121,060

TOUCH BUTTON SWITCH FOR DICTATION HANDSET

Alan Earl Bohnhoff, Loxley, Ala., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Filed Mar. 30, 1977, Ser. No. 782,894
Int. Cl.[2] G11B *19/16*
U.S. Cl. 179—100.1 DR **5 Claims**

1. A dictation system including a dictation recorder having first and second modes of operation and a dictate station from which said first and second modes of operation of said dictation recorder may be controlled by an operator, wherein the improvement comprises a control switch apparatus for use in said dictate station by said operator for controlling said first and second modes of operation of said dictation recorder from said dictate station, comprising:

a first input voltage means for providing a first input voltage in response to the electrical contact of said first input voltage means with said operator;

said first input voltage means including a first contact surface having a first voltage,

a second contact surface separated from said first contact surface by an insulating material and having a second voltage, and

a means for changing the voltage of at least one of said first and second contact surfaces to said first input voltage in response to the electrical interposition of said operator between said first contact surface and said second contact surface;

a second input voltage means for providing a second input voltage in response to the electrical contact of said second input voltage means with said operator; said second input voltage means including

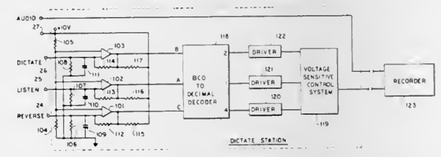
a third contact surface having a third voltage,

a fourth contact surface separated from said third contact surface by an insulating material and having a fourth voltage; and

a means for changing the voltage of at least one of said third and fourth contact surfaces to said second input voltage in response to the electrical interposition of said operator between said third contact surface and said fourth contact surface;

a reference voltage means for providing a first reference voltage and a second reference voltage;

a first analog voltage comparison means for comparing said first input voltage with said first reference voltage and for



providing a first digital output in response to said first input voltage and said first reference voltage being in a predetermined relationship;

a second analog voltage comparison means for comparing said second input voltage with said second reference voltage and for providing a second digital output in response to said second input voltage and said second reference voltage being in a predetermined relationship;

a control signal means:

for providing said first digital output from said first analog voltage comparison means to said dictation recorder as a first control signal to cause said dictation recorder to be operated in said first mode of operation;

for providing said second digital output from said second analog voltage comparison means to said dictation recorder as a second control signal to cause said dictation recorder to be operated in said second mode of operation; and

for preventing said first control output and said second control output from being provided to said dictation recorder simultaneously in response to the simultaneous input of said first digital output from said first analog voltage comparison means and of said second digital output from said second analog voltage comparison means.

5. A dictation system including a dictation recorder having a first mode of operation and a second mode of operation, a dictate station from which said dictation recorder can be controlled by an operator, wherein the improvement is a control system comprising:

first input switch means having a first contact surface and a second contact surface electrically isolated from said first contact surface for providing a first input voltage in response to the electrical interposition of said operator between said first contact surface and said contact surface;

second input switch means having a third contact surface and a fourth contact surface electrically isolated from said third contact surface for providing a second input voltage in response to the electrical interposition of said operator between said third contact surface and said fourth contact surface;

first comparator means for providing a first digital signal in response to said first input voltage;

second comparator means for providing a second digital signal in response to said second input voltage;

decoder driver means operatively interconnected with said first comparator means and said second comparator means and said dictation recorder for placing said dictation recorder in said first mode of operation in response to said first digital signal,

placing said dictation recorder in said second mode of operation in response to said second digital signal, and

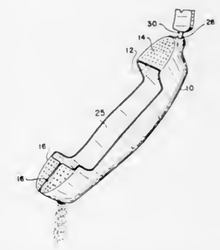
rendering said dictation recorder inoperative in response to the concurrent presence of said first digital signal and said second digital signal.

4,121,061

TELEPHONE HOLDER

Robert G. Donaldson, Chicago, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 10, 1977, Ser. No. 823,517
Int. Cl.[2] H04M *1/05*
U.S. Cl. 179—156 R **2 Claims**



1. A holder for removably fitting about and holding a telephone hand set therein comprising a one-piece cradle for said hand set; said cradle having a hollow ear piece-receiving first cup, a smaller, hollow mouthpiece-receiving second cup connected to said first cup by a hollow, open body portion; and an arcuate, head-engaging member adapted to fit over and embrace the head of the wearer, which head-engaging member is attached to an end wall of the said first cup, wherein said cradle is formed of a resilient material, with the first and second said cups formed with a perforated cover section, in which

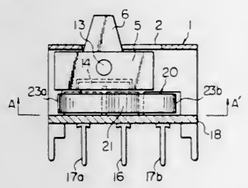
a through slot is formed in the cover section of the mouthpiece-receiving second cup to divide the said cover section, with said slot continuing along an end wall of the said second cup and terminating at a rounded rim end which bounds an opening of a size to provide a passaage for a telephone cord extending from the mouthpiece end of the telephone hand set fitted in said holder.

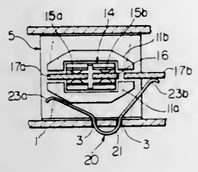
4,121,062

CHANGE-OVER SLIDE SWITCH WITH GROUNDING SPRING MEMBER

Hitoshi Fujino, Furukawa, Japan, assignor to Alps Electric Co., Ltd, Japan

Filed Apr. 29, 1977, Ser. No. 792,400
Claims priority, application Japan, May 1, 1976, 51-55617[U]
Int. Cl.[2] H01H *15/02*
U.S. Cl. 200—16 F 1 Claim





1. A change-over switch comprising
a metal frame having an open end;
a base plate attached to the open end of said frame and comprised of an electrically insulating material;
a row of terminals aligned on said base plate, said row including two stationary terminals and a common terminal therebetween;
a slider comprised of an electrically insulating material and received slidably within said frame, said slider having a recess formed in its lower portion and projections extending from peripheral portions of said recess;
a movable contact fixed within said recess, said movable contact being adapted to electrically connect said common terminal alternatively with one or the other of said stationary terminals upon sliding movement of said slider; and
means connected to said frame for grounding the stationary terminal not connected electrically to said common terminal, said means including a grounding spring member adapted to be connected to ground and having two arms each adapted to engage a respective stationary terminal, whereby upon sliding movement of said slider to connect a selected stationary terminal to said common terminal, said projection moves between said selected stationary terminal and the arm engaged thereto for isolating said selected terminal from ground.

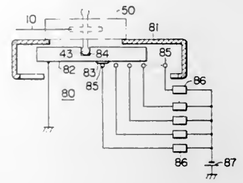
4,121,063

POWER TRANSMISSION FLAT CABLE FOR REMOTE-CONTROLLED ELECTRICAL APPARATUS

Mitsuo Aimi, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Limited, Japan

Filed Mar. 2, 1976, Ser. No. 663,060
Claims priority, application Japan, Jun. 3, 1975, 50-75708[U]; Jun. 25, 1975, 50-90146[U]
Int. Cl.[2] H01H *3/00*
U.S. Cl. 200—18 7 Claims

1. Apparatus for controlling an electrical characteristic from a remote location, comprising:
a master control device having a manually operating member operable to variable positions in response to an external force applied thereto;
an electrical circuit device having a mechanical operating member permitting the same to provide a variable electrical characteristic in response to variable positioning of said master control device;
a force-transmitting mechanism comprising an elongated, planar, force-transmitting member, longitudinally spaced sections, extending transversely of said force-transmitting member and overlying different sides of the same, and a pair of longitudinally extending planar guide members having portions connecting said spaced sections and to which said sections are rigidly connected, said force-transmitting member and said guide members having an equal thickness and disposed on a same plane, said guide members cooperating with said transverse sections to retain said force-transmitting member against lateral escape;
a first connector connected at one end of said force-transmitting mechanism, comprising a first block formed with a first guide slot and connected with one end of said guide



members of said force-transmitting mechanism and including first means for nonoperatively connected said block with said master control device, and a first guide follower slidably received in said slot and connected with one end of said force-transmitting member of said mechanism and operatively connected with the operating member of said master control device so that the guide follower is slidable in said slot in response to the operation of said master control device;
a second connector connected at the opposite end of said force-transmitting mechanism, comprising a second block having a second guide slot and connected with the opposite end of said guide members of said mechanism and including second means for nonoperatively connected said second block with said electrical circuit device, and a second guide follower slidably received in said second slot and connected with the opposite end of said force-transmitting member and operatively connected with the operating member of said electrical circuit device so that the second guide follower is slidable in response to the movement of the first guide follower.

4,121,064

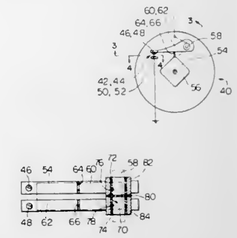
IGNITION DISTRIBUTOR HAVING INDEPENDENT IGNITION SYSTEM BREAKER ARM CONTACTS SIMULTANEOUSLY ENGAGING COMMON CONDUCTIVE POST

Yasuo Nakajima, Yokosuka; Yoshimasa Hayashi, Yokohama, and Makio Waku, Urawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 10, 1977, Ser. No. 776,213
Claims priority, application Japan, Mar. 11, 1976, 51/28870[U]
Int. Cl.[2] H01H *19/00*
U.S. Cl. 200—19 A 2 Claims

2. In an internal combustion engine having at least one combustion chamber, two spark plugs disposed in the combustion chamber, a first and a second independent ignition system each of which is connected to one of said spark plugs, for energizing said spark plugs at the same ignition timing, an intake system

for supplying therethrough a mixture of air and fuel to the combustion chamber, an exhaust system for discharging therethrough the exhaust gases emitted from the combustion chamber and an exhaust gas recirculation system for recirculating a portion of the exhaust gases from the exhaust system to the intake system, an ignition distributor comprising:
a pair of spaced apart fixed contacts;
a cam driven to rotate around an axis thereof in timed relation with the engine and having an axially uniform periphery;
a pivot post parallelly off-set from the axis of said cam;
first and second breaker arms mounted on said pivot post one above the other and each having a contact engaging one of said fixed contacts, each of said breaker arms also having a rubbing block engaged by said cam for pivoting each of said breaker arms away from one of said fixed contacts;



said fixed contacts and the contacts of said breaker arms constituting two sets of breaker contacts respectively connected to a different one of said independent ignition systems;
a pair of insulating bushings each of which is mounted on one of said breaker arms to insulate each of said breaker arms from pivot post; and
an insulating washer mounted on said pivot post and interposed between said first and second breaker arms for insulation between said breaker arms, in which said breaker arms are of an identical configuration so that said rubbing blocks engage the periphery of said cam at a circumferentially identical position thereof such that upon rotation of said cam, said two sets of breaker contacts open and close at exactly the same instant to produce the said same ignition timing.

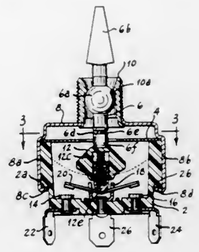
4,121,065

TOGGLE SWITCH LEVER LOCK

Tony O. Woodard, Pine Level, N.C., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 31, 1977, Ser. No. 846,682
Int. Cl.[2] H01H *3/20, 9/20*
U.S. Cl. 200—42 T 8 Claims

1. A lockable toggle lever operated device comprising: a pivoted toggle lever having a handle portion at its upper end;
a support comprising a bushing providing a pivot supporting said toggle lever at an intermediate portion thereof extending through the bore of said bushing for pivotal movement to operate said device;
an actuator at the lower end of said toggle lever comprising a spring-biased plunger engaging said device and biasing said toggle lever up against said pivot while allowing limited depression thereof against the force of said spring-biased plunger;
lever guiding means comprising flat surfaces on first opposite sides of said toggle lever and a guide plate mounted to said support having an elongated slot cooperating with said flat surfaces to guide said toggle lever for non-rotatable pivotal movement in one plane while allowing said limited depression thereof;
and lever locking means comprising interference means on the other opposite sides of said toggle lever normally above said guide plate and being operative following depression of said toggle lever and a quarter turn rotation thereof for providing locking interference between said interference means and the edges of said slot to prevent pivotal movement of said toggle lever out of its center position.
4. A lockable toggle lever switch comprising:
a pivotal toggle lever having a handle at its external end and arranged to pivot from its center position in at least one direction;
a housing comprising an electrically insulating base and a frame connected thereto;
said frame having a bushing including a bore with means therein pivoting said toggle lever at an intermediate point for movement to operate said switch;
stationary contact means within said housing connected through said base to external terminals;
movable contact means within said housing selectively operable to "on" position closing a circuit with respect to said stationary contact means or to "off" position opening said circuit;



a contact actuator coupled to the lower end of said toggle lever comprising spring-biased means engaging said movable contact means and biasing said toggle lever up against said pivoting means while allowing limited downward depression thereof against the force of said spring-biased means;
lever guiding means comprising flat portions on opposite sides of said toggle lever and means mounted within said housing providing parallel edges coacting with said flat portions to confine the pivotal movement of said toggle lever to one plane while preventing rotary movement thereof on its longitudinal axis while allowing said limited depression thereof;
and lever locking means comprising a pair of grooves in said toggle lever extending between said flat portions and normally spaced above said parallel edges of said lever guiding means affording rotation of said toggle lever a quarter turn on its longitudinal axis, following depression of said toggle lever against the force of said spring-biased means enough to lower said grooves to the level of said parallel edges of said lever guiding means, thereby to cause said guiding edges to enter said grooves and to lock said toggle lever against pivotal movement from said center position.

4,121,066

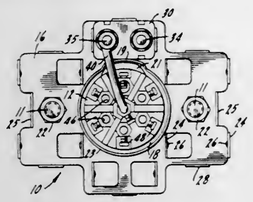
CIRCUIT BREAKER ADAPTER

Charles Horowitz, Niles, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Jun. 16, 1977, Ser. No. 807,022
Int. Cl.[2] H02B *1/10;* H01H *37/52, 61/01*
U.S. Cl. 200—51 R 3 Claims

1. A circuit breaker conversion adapter for use on a conventional electrical connector receptacle not having circuit breakers thereon, said adapter comprising a mounting plate having a

generally circular opening for positioning said plate on a connector receptacle, said mounting plate having spaced holes positioned for alignment with the conventional mounting bolts of a connector receptacle, said mounting plate having upstanding flange means, a plurality of circuit breakers, said circuit



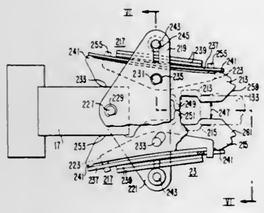
breakers and flange means having cooperating mounting means thereon, each circuit breaker having an electrical terminal adapted to receive a wire from an electrical harness, each circuit breaker having a second electrical terminal for receiving one end of a second wire which is adapted to be connected to a contact pin of an electrical connector receptacle.

4,121,067

CONTACT STRUCTURE FOR DRAWOUT SWITCHGEAR

James O. Rexroad, Beaver, and John P. Majcher, Chippewa Township, Beaver County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 5, 1977, Ser. No. 757,104
Int. Cl.[2] H01H *1/50*
U.S. Cl. 200—50 AA **6 Claims**



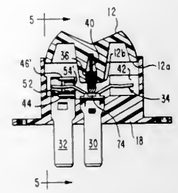
1. Drawout switchgear comprising a cell having an opening at the front thereof, stationary primary terminal stab supported in the cell, stationary secondary terminal stab supported in the cell, a circuit interrupting unit movable into and out of the cell, movable primary terminal means on the circuit interrupting unit movable with the circuit interrupting unit, movable secondary terminal means on the circuit interrupting unit movable with the circuit interrupting unit, each movable terminal means comprising a terminal support, at least one pair of oppositely disposed contact fingers for engaging the terminal stab, means biasing said pair of fingers toward each other into engagement with said terminal support, said biasing means comprising leaf springs disposed on the outer sides of said pair of contact fingers to provide said biasing means, bracket means for holding said contact fingers and said terminal support and said contact fingers together, and the bracket means extending between and restrainingly engaging the leaf springs substantially centrally thereof.

4,121,068

POLARITY REVERSING ELECTRICAL SWITCH

Vincent W. Peck, Waltham, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 28, 1977, Ser. No. 772,378
Int. Cl.[2] H01H *13/28*
U.S. Cl. 200—67 G **20 Claims**



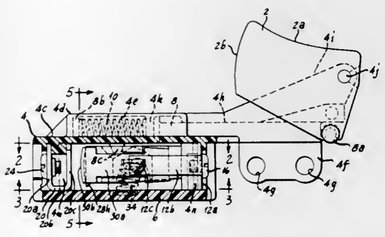
1. A polarity reversing electrical switch comprising
A. a housing
B. a first pair of identically formed terminals mounted in said housing and spaced apart from each other, each terminating at one end thereof in a contact for connection into an electrical circuit and having at the other end a cradle for rockably supporting a contact arm therein,
C. a second pair of identically formed terminals mounted in said housing and spaced apart from each other and from said first pair, each terminating at one end in a contact for connection into said circuit and having at the other end integral first and second contact surfaces spaced apart from each other, said terminals being positioned in said housing such that the first contact surface of each terminal lies opposite the second contact surface of the opposite terminal to thereby form mixed pairs of contact surfaces, and
D. a pair of contact arms rockably seated in said cradles of the first terminal pair and extending intermediate said contact surfaces, each arm being rotatable into contact with a corresponding pair of the opposed contact surfaces of the second terminal pair to thereby selectively electrically interconnect the first and second terminal pair in either of two configurations in accordance with the position of said arms.

4,121,069

SNAP-ACTION ELECTRIC SWITCH WITH FULCRUM MEANS FOR LIMITED CONTACT SLIDING AND POSITIVE-OFF TORQUE

Eric L. Long, Mequon, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Aug. 19, 1976, Ser. No. 715,898
Int. Cl.[2] H01H *5/06*
U.S. Cl. 200—67 A **20 Claims**



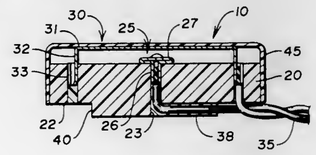
1. In an electric switch comprising an upwardly biased apexed contactor cammed downwardly from above by a movable operator to snap laterally against stationary contact means as the apex is crossed by the operator;
the improvement comprising fulcrum means effective during disengagement of said stationary contact means to stop the downward movement of said contactor before said operator crosses said apex to thereby form a moment arm to the point of operator-contactor engagement such that further movement of said operator towards said apex exerts a torque on said contactor to pivot said contactor away from said stationary contact means until said apex is crossed.

4,121,070

ENCLOSED PUSH BUTTON TYPE SWITCH

John P. Silbernagel, Crystal, Minn., assignor to Renal Systems, Inc., Minneapolis, Minn.

Filed Mar. 4, 1977, Ser. No. 774,249
Int. Cl.[2] H01H *9/04*
U.S. Cl. 20—67 DB **10 Claims**



1. A single enclosed, sealed push button switch comprising:
a base frame having top and bottom surfaces and having a plurality of mounting holes therein substantially perpendicular to said top and bottom surfaces;
a centrally located contact member having connector means mounted in one of said holes with a contact member projecting from the top surface of said base frame;
a second contact member having connector means and overlying the first named contact member and having a substantially flat upper surface, said second contact member having flanges extending normal to the flat surface to space the flat surface from the first contact member;
connector means included in said flanges projecting through other of said holes in said base frame for mounting said second contact member on said base frame;
lead wires extended substantially perpendicular to the bottom surface of said base frame through said mounting holes and connected to said connector means of said contact members;
corrosion-resistant sealing means sealing said mounting holes through which said lead wires extend; and corrosion-resistant enclosure means fitted over and substantially conforming in shape with said base frame and enclosing said contact members, said enclosure means being flexible on the surface adjacent said contact members to enable depression of the same to move said second contact member into engagement with the first named contact member, said enclosure means being bonded through a corrosion-resistant adhesive to said base frame to completely hermetically seal the entire switch thereby preventing the entry of any moisture and corrosive debris from entering the switch to cause malfunctioning of said switch.

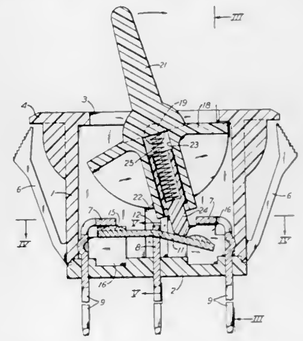
4,121,071

ELECTRIC SWITCH

Dudley H. Campbell, and Arthur W. Overton, both of Raleigh, N.C., assignors to Stackpole Components Company, Raleigh, N.C.

Filed Feb. 17, 1977, Ser. No. 769,556
Int. Cl.[2] H01H *13/28*
U.S. Cl. 200—67 G **2 Claims**

1. An electric switch comprising a housing having a separate base attached to one end and an opening at the opposite end, an electric end contact secured to each end of the base inside the housing, central electric terminal means secured to the central part of the base between said end contacts and projecting from the housing, terminals carried by the base outside of the housing and connected to said end contacts, a rigid metal strip forming a bridging contact having a central portion resting on the inner end of said central terminal means and rockable thereon, the end contacts having portions overlying the end portions of the bridging contact, said base and all of the contacts and terminals forming together a base unit in which the bridging contact cannot escape from between said base and



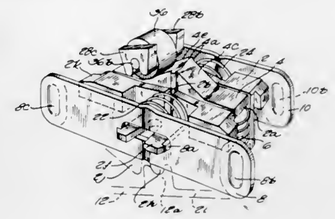
said overlying portions of the end contacts before the base is secured to the rest of the switch housing, and manually operable actuating means extending down through said housing opening and engaging the upper surface of the bridging contact for rocking that contact on said central terminal means to electrically connect the latter with the overlying portion of either of said end contacts, at least one end portion of the bridging contact being provided with a longitudinal slot extending inwardly from the end of that contact, a rigid dielectric member extending into said slot from said base to restrict lateral movement of the bridging contact.

4,121,072

SNAP-ACTION OVERCENTER SWITCH HAVING AN APEXED PLUNGER DEPRESSIBLE IN A ROCKABLE ACTUATOR BLOCK

Harold W. Hults, New Berlin, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jun. 9, 1976, Ser. No. 694,388
Int. Cl.[2] H01H *13/28*
U.S. Cl. 200—67 A **15 Claims**



1. An electric switch comprising:
housing means;
an actuator block pivotally mounted on said housing means;
an apexed plunger carried by said actuator block for pivotal movement therewith and depressible therein transversely of the pivotal axis thereof;
means biasing said plunger outwardly of said actuator block;

operator means movably mounted to said housing means and having cam means engaging said plunger against the bias of said biasing means and translationally movable across the apex thereof to cause snap-action over-center pivoting of said actuator block when said cam means crosses said apex in response to movement of said operator means; and contact means actuated by said actuator block;

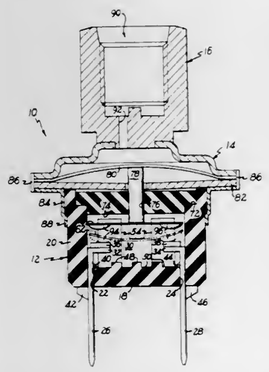
wherein said actuator block has two stable positions, a clockwise pivoted position and a counterclockwise pivoted position, and wherein said plunger has left and right oppositely inclined camming surfaces meeting at said apex, said actuator block being insaid clockwise pivoted position when said cam means is engaging said left inclined surface of said plunger, said plunger being cammingly depressed within said actuator block against the bias of said biasing means by said cam means as said cam means traverses said left inclined surface towards said apex, said actuator block pivoting counterclockwise to said counterclockwise pivoted position when said cam means crosses said apex from said left inclined surface to said right inclined surface, said actuator block being in said counterclockwise pivoted position when said cam means is engaging said right inclined surface of said plunger, said plunger being cammingly depressed within said actuator block against the bias of said biasing means by said cam means as said cam means traverses said right inclined surface towards said apex, said actuator block pivoting clockwise to said clockwise pivoted position when said cam means crosses said apex from said right inclined surface to said left inclined surface.

4,121,073

CONDITION RESPONSIVE ELECTRICAL SWITCH HAVING IMPROVED BRIDGING CONTACT MEANS

Thomas Bileski; Joe W. Crawford, both of Dallas; Bobby D. Blanton, Seagoville; Carl N. Johnson, Dallas; Felix Garcia, Garland; John W. Orcutt, Garland; Glen C. Shepherd, Garland, and James A. Oursler, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 28, 1977, Ser. No. 772,701
Int. Cl.[2] H01H *35/34*
U.S. Cl. 200—83 P **14 Claims**



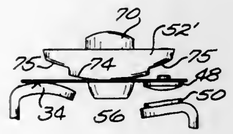
1. Condition responsive switch apparatus comprising a housing, condition actuatable means mounted in the housing movable to and from first and second configurations upon the occurrence of preselected conditions, a pair of spaced stationary electrically conductive contact members disposed in the housing, an electrically conductive element having at least four legs, the first and second legs extending along one straight line and the third and fourth legs extending along another straight line, the straight lines intersecting one another, the first and second legs adapted to move into electrical engagement and disengagement with the pair of stationary contacts forming a closed circuit path between the stationary contacts when the element is in electrical engagement therewith and an open circuit path when the element is in disengagement therewith, reaction stop surfaces formed in the housing, the third and fourth legs having distal end portions disposed on the stop surfaces, the stop surfaces located in the housing such that a first force is exerted on the element tending to maintain the first and second legs in one of two positions of engagement and disengagement with the stationary contacts, the condition actuatable means adapted to exert a second force on the element when the condition actuatable means is in one of the first and second configurations larger than and opposing the first force so that the first and second legs are maintained in the other of the two positions of engagement and disengagement with the stationary contacts, when the condition actuatable means is in the other of its first and second configurations no second force is exerted on the element so that the first force maintains the first and second legs in the one of the two positions of engagement and disengagement with the stationary contacts.

4,121,074

CONDITION RESPONSIVE APPARATUS WITH MOTION TRANSFER MEMBER TO MOVABLE CONTACT ARM

John W. Orcutt, Garland, Tex., and James M. Mills, Lexington, Ky., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 29, 1977, Ser. No. 837,970
Int. Cl.[2] H01H *35/34*
U.S. Cl. 200—83 P **10 Claims**



1. A condition responsive device comprising a base formed of electrically insulative material defining a switch chamber therein, a switch means disposed in the chamber including a movable contact arm and first and second terminal members, the movable contact arm cantilever mounted on a distal end of the first terminal member and having a free end portion mounting a movable contact thereon adapted to move into and out of electrical engagement with a distal end of the second terminal member, the movable contact having the contact engaging surface on one side of the movable contact arm and a portion extending through and projecting from an opposite side of the movable contact arm, means defining an opening in the base communicating with the switch chamber, condition responsive means mounted at the open end of the base adapted to move from a first position to a second position and back upon being exposed to preselected conditions to respectively close and open an electrical circuit from the first terminal through the movable contact arm to the second terminal, and a motion transfer member slidably disposed intermediate the movable contact arm and the condition responsive means, the member having a curved bottom surface extending over a major portion of the length of the movable contact arm so that movement of the condition responsive means from the first position

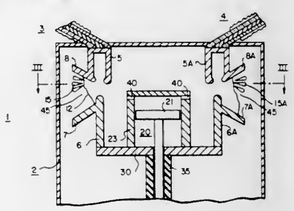
to the second position causes the motion transfer member to bend the movable contact arm to conform to the bottom surface configuration of the motion transfer member to thereby distribute impact forces from the condition responsive means along the length of the movable contact arm, and a recess formed in the curved bottom surface to receive therein the projecting portion of the movable contact when condition responsive means is in the second position.

4,121,075

DOUBLE-BREAK PUFFER-TYPE COMPRESSED-GAS CIRCUIT-BREAKER

Masaharu Tanaka, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1976, Ser. No. 745,251
Claims priority, application Japan, Nov. 27, 1975, 50-141888
Int. Cl.[2] H01H *33/88*
U.S. Cl. 200—148 A **6 Claims**



1. A high-voltage double-break compressed-gas circuit-interrupter of the puffer-type including means defining a gas-filled enclosure, means providing a pair of spaced stationary contact structures disposed within said gas-filled enclosure, each of said relatively-stationary contact structures having an outwardly-extending arcing horn (8), a movable U-shaped rod-like conducting bridging member having outwardly-extending arcing horns disposed at the outer extremities thereof, the inner extremity of each of the two arcing horns constituting a movable contact which is engageable with a respective stationary contact for arc generation, a common gas-compressing piston-and-cylinder arrangement disposed generally centrally within said gas-filled enclosure including a common piston-part and a common cylinder-part, means mechanically connecting one of said common parts to the generally-central portion of said movable U-shaped rod-like conducting bridging member to be carried thereby for causing the simultaneous actuation of said common gas-compressing arrangement with establishment of said double series arcs, a pair of oppositely-directed gas-ejector aperture openings associated with said common gas-compressing piston-and-cylinder arrangement for directing a pair of oppositely-directed flows of compressed gas into the two serially-related arcs to effect thereby their extinction, and the outer leg portions of said movable U-shaped rod-like conducting bridging member being disposed in such close proximity that the oppositely-directed current flows within said two leg portions will generate an electromagnetic field about each leg portion to thereby repel the two generated arcs outwardly upon the two pairs of arcing horns while the arcs themselves are simultaneously reacted upon by the two outwardly-directed gas-jet flows.

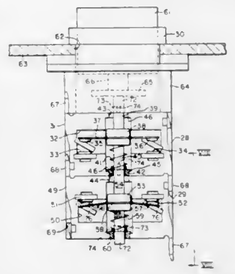
4,121,076

CONVERTIBLE SWITCH

Glenn R. Taylor; John H. Mullen, both of Brighton Township, Beaver County, and Stephen S. Dobrosielski, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 653,043, Jan. 28, 1976, abandoned. This application May 5, 1977, Ser. No. 793,996
Int. Cl.[2] H01H *13/04*
U.S. Cl. 200—280 **1 Claim**

1. A convertible switch structure comprising a push button actuator, and at least two contact blocks stacked in end-to-end surface abutment; each contact block having a dielectric housing including opposite end walls and opposite side walls forming a contact compartment, each block having stationary and movable contacts; each block also having movable contact operating means including a guided reciprocable plunger, the opposite end walls of each contact block having plunger-receiving openings; the openings of each contact block being aligned, the plungers of adjacent contact blocks being in end-to-end abutment, one plunger being operatively connected to the push button actuator, each movable contact operating means also comprising a bridging contact member upon which the movable contacts are mounted, said means also comprising spring means for biasing the plunger toward the push button operator, the stationary contacts being mounted in the compartment adjacent one end wall thereof, the push button actuator comprising a casing having a bottom wall in abutment with



the end wall of a contact block, the casing and housings having interlocking means for holding the actuator and switch blocks together; the interlocking means comprising similar latching hooks, one hook at one corner of the block and another hook only at a diagonally opposite corner of the block, each block also having cooperating in-turned latching surfaces only at other diagonally opposite corners, the hooks being detachably engaged with the latching surfaces, the casing also having latching hook means on one side and cooperating in-turned latching surface means on the other side which latching means engage corresponding interlocking means on the adjacent contact block, the opposite walls of each contact block being reversely mounted with respect to an adjacent block or casing to effect conversion of said block between normally open and normally closed contact modes, and the movable contact operating means being reversible within the compartment when the corresponding contact block is reversely mounted.

4,121,077

CIRCUIT BREAKER HAVING IMPROVED MOVABLE CONTACT POSITION INDICATOR

Stephen A. Mrenna, and Glenn R. Thomas, both of Brighton Township, Beaver County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1977, Ser. No. 811,227
Int. Cl.[2] H01H *9/16, 50/06*
U.S. Cl. 200—308 **10 Claims**

1. A circuit breaker comprising:

a stationary contact;

a movable contact operable between open and closed positions with respect to said stationary contact;

a movable contact holder coupled to, and movable with, said movable contact;

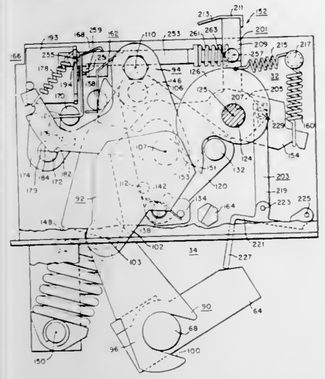
means for effecting movement of said movable contact between said open and closed positions including a rotatable drive shaft;

indicator means, mounted on but independently movable from said drive shaft, operable between first and second positions for indicating the position of said movable contact with respect to said stationary contact, said indi-

cator means being in said first position when said movable contact is in said closed position and said indicator means being in said second position when said movable contact is in said open position;

biasing means for biasing said indicator means in said first position; and

connection means operable between third and fourth positions for moving said indicator means from said first to said second positions, movement of said connection means from said third position to said fourth position moving said indicator means from said first position to said second position, said contact holder contacting said connection means upon movement of said movable contact from said closed to said open position and moving said connection means from said third to said fourth position.



4,121,078

MICROWAVE HEATING APPARATUS

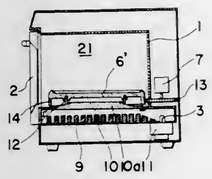
Teruhisa Takano, Osaka; Noboru Kurata, Nara; Shigeru Kusunoki, Yamatokoriyama, and Hirofumi Yoshimura, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 27, 1976, Ser. No. 680,809

Claims priority, application Japan, Apr. 30, 1975, 50-52974; Apr. 30, 1975, 50-52977; May 7, 1975, 50-54981

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 F **21 Claims**



1. A microwave heating apparatus comprising wall means defining a heating chamber, at least one surface waveguide means for producing surface wave energy and disposed in said heating chamber, oscillator means in said apparatus actuable to produce a microwave output at least part of which is coupled to said surface waveguide means, a cover made of dielectric material, said cover being disposed within said heating chamber in a position above and close to said surface waveguide means so as to cover the surface of said surface waveguide means for stabilization of electromagnetic wave characteristics of said surface waveguide means and for preventing soiling of said surface waveguide means, and a support table for an article to be heated disposed adjacent to the upper surface of said cover for supporting an article to be heated thereon, said support table and said waveguide means being relatively movable parallel to the plane of the surface of said support table, and driving means connected with one of said support table and said waveguide means for producing said relative movement.

4,121,079

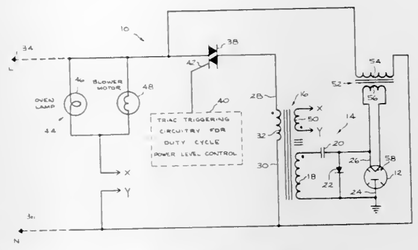
MINIMIZING LAMP FLICKER AND BLOWER SPEED VARIATION IN A MICROWAVE OVEN EMPLOYING DUTY CYCLE POWER LEVEL CONTROL

Larry R. Harmon, Jeffersontown, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 25, 1977, Ser. No. 790,582

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 B **5 Claims**



1. A microwave oven circuit comprising:

a power transformer connected to energize a magnetron;

a duty cycle controlled switching element connected to periodically energize said power transformer from an AC power source which supplies voltage and current, the voltage available from the AC power source dropping slightly during those intervals when said power transformer is energized and loads the power source;

means including at least one load device energized constantly from the AC power source for which it is desirable to minimize voltage variations; and

a low voltage secondary winding on the power transformer connected in series with said constantly energized means and phased to provide a voltage boost to said constantly energized means upon energization of the power transformer, thereby to approximately compensate for the drop in available AC voltage.

4,121,080

WIRE ELECTRODE VIBRATION DAMPER

Johann Janicke, Haute-Savoie, France, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Jun. 24, 1976, Ser. No. 699,355

Claims priority, application Switzerland, Jul. 7, 1975, 8825/75

Int. Cl.[2] B23P *1/08*

U.S. Cl. 219—69 W **16 Claims**

1. In a support and guiding means for a wire electrode in an electro-erosion machining apparatus wherein said wire electrode is fed into a machining zone between a pair of support and guiding members permitting longitudinal displacement of said wire electrode in a predetermined direction, said wire electrode having an unsupported portion of a given length, the improvement for damping transverse oscillations of the unsupported length of said wire electrode comprising a pair of bearing surfaces disposed between the support and guiding members for providing a variation of the unsupported length of said wire electrode as a function of the direction of transverse oscillation of said wire electrode, each of said bearing surfaces being disposed parallel to the axis of said wire electrode, said bearing surfaces being of different lengths and disposed at an angle to each other proximate one of said support and guiding means.



4,121,081

APPARATUS FOR AND METHOD OF REFEEDING ELECTRODES IN AN ELECTRICAL DISCHARGE MACHINING APPARATUS

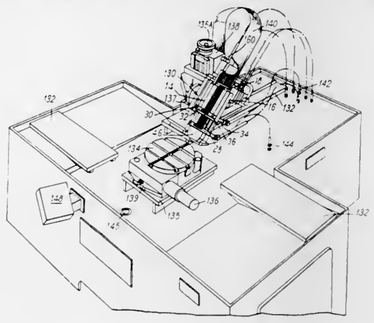
George Edward Baker, Asfordby, near Melton Mowbray, England, assignor to Amchem Company Limited, Silbey, England

Filed Oct. 12, 1976, Ser. No. 731,571

Claims priority, application United Kingdom, Oct. 15, 1975, 42164/75

Int. Cl.[2] B23P *1/08*

U.S. Cl. 219—69 E **15 Claims**



2. An electrical discharge machining apparatus for machining a workpiece, said apparatus comprising a nose guide, an electrode cartridge having means for containing at least one electrode, the cartridge being mounted for rectilinear movement with respect to said nose guide of the apparatus with part of the length of each electrode supported in the nose guide, a clamp releasably clamping each electrode in the cartridge and means offering frictional resistance to the passage of each electrode through the cartridge when the clamp is released, and means for advancing the cartridge and each frictionally retained electrode towards the nose guide beyond the portion where each electrode will engage an associated workpiece, each electrode being received back into the cartridge upon striking the workpiece.

4,121,082

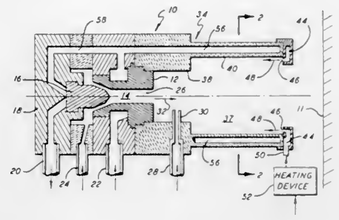
METHOD AND APPARATUS FOR SHIELDING THE EFFLUENT FROM PLASMA SPRAY GUN ASSEMBLIES

John H. Harrington, Warwick; Richard T. Smyth, and John D. Weir, both of Huntington, all of N.Y., assignors to Metco, Inc., Westbury, N.Y.

Filed Apr. 27, 1977, Ser. No. 791,478

Int. Cl.[2] B23K *9/04*

U.S. Cl. 219—76.16 **51 Claims**



1. A plasma spray gun assembly for coating substrates comprising, in combination:

a nozzle electrode having a nozzle passage therethrough;

a rear electrode;

means for passing plasma-forming gas through the nozzle electrode;

means for passing an arc-forming current between said electrodes to form a plasma effluent;

means for introducing spray coating material into the plasma effluent;

a wall shroud for said plasma effluent extending from the exit of the nozzle electrode; and

means for forming a hot gas shroud for said plasma effluent at least within the wall shroud.

4,121,083

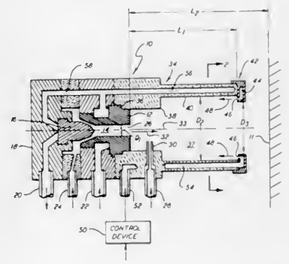
METHOD AND APPARATUS FOR PLASMA FLAME-SPRAYING COATING MATERIAL ONTO A SUBSTRATE

Richard T. Smyth, Huntington, N.Y., assignor to Metco, Inc., Westbury, Long Island, N.Y.

Filed Apr. 27, 1977, Ser. No. 791,479

Int. Cl.[2] B23K *9/04*

U.S. Cl. 219—76.16 **42 Claims**



1. A plasma spray gun assembly for coating substrates comprising, in combination;

a nozzle electrode having a nozzle passage therethrough;

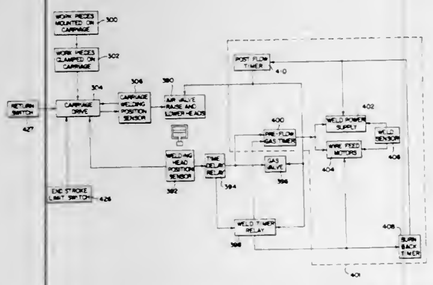
a rear electrode;

means for passing plasma-forming gas through the nozzle electrode;

means for passing an arc-forming current between said electrodes to form a plasma effluent;

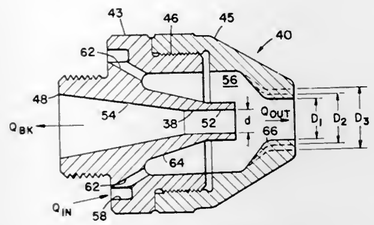
means for introducing spray coating material into the plasma effluent;
a wall shroud for said plasma effluent extending from the exit of the nozzle electrode; and
means for forming a flame shroud for said plasma effluent at least within the wall shroud.

4,121,084
METHOD AND APPARATUS FOR WELDING WORKPIECES
Charles W. Wear, Gretna, Nebr., assignor to The Youngstown Steel Door Company, Cleveland, Ohio
Filed Feb. 17, 1976, Ser. No. 658,716
Int. Cl.[2] B23K 9/00
U.S. Cl. 219—91.2 **2 Claims**



1. A method of welding workpieces to provide a structure having a plurality of areas with joined and bonded locations with at least one of said areas being different in depth than the depth of one of its adjacent areas, which method includes the combination of steps of:
providing at least one group of arc welding heads in a predetermined spatial arrangement;
moving said workpieces under said one group of heads;
stopping said workpieces in a position of orientation such that a first zone on the workpieces which includes portions of more than one of said areas different in depth are under said one group of heads;
lowering of said one group of heads until they come into contact with and exert pressure on said workpieces adjacent locations to be welded in the areas different in depth in said first zone;
activating said one group of welding heads to weld said workpieces at said locations to be welded in said first zone including providing a flow of shielding gas at said locations to be welded; and,
feeding welding wire towards said locations to be welded and substantially simultaneously activating a power supply and an arc igniting welding current so that a welding arc is ignited between the workpieces and the welding wire;
sensing the ignition of said welding arc;
adjusting the speed of feeding the welding wire and the magnitude of the welding current to provide a more uniform weld;
stopping the feeding of welding wire;
burning back the welding wire until a welding arc no longer exists;
turning off the welding power supply;
stopping the flow of the shielding gas; and,
lifting said one group of welding heads.

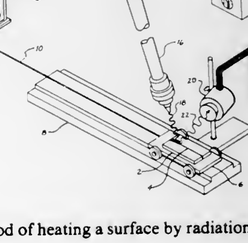
4,121,085
GAS NOZZLE FOR LASER WELDING
Donald P. Diemer; Joseph C. Hafele; Robert H. Hawkins, all of Peoria, and Gerald P. Simmons, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 7, 1976, Ser. No. 684,229
Int. Cl.[2] B23K 27/00
U.S. Cl. 219—121 L **8 Claims**



1. A laser system comprising a housing defining a chamber within said housing, mirror means mounted in said chamber in said housing, a first aperture in said housing for receiving a laser beam from a laser beam source, a second aperture in said housing for allowing exiting of said laser beam after it has been reflected by said mirror means, nozzle means defining an inlet and an outlet and a nozzle axis therethrough, said nozzle means being mounted on said housing over said second aperture so that a laser beam passing through second aperture will pass into said inlet and exit from said outlet coaxially with said nozzle axis, said mirror means including a mirror operatively positioned with respect to said nozzle axis, and including a centrally disposed mirror aperture defined therein along said nozzle axis, gas inlet means in said nozzle means for introducing a flow of gas intermediate said inlet and said outlet, said mirror aperture, said second aperture and said nozzle means being unobturated entirely along said nozzle axis so that fluid communication is provided between said chamber and said nozzle means entirely along said nozzle axis, and wherein said nozzle means has means therein for causing a backflow coaxially with said nozzle axis of a portion of the gas introduced into the nozzle back through said inlet, said second aperture, said mirror aperture and into said chamber while simultaneously allowing a portion of the gas to flow forwardly through said outlet also coaxially with said nozzle axis.

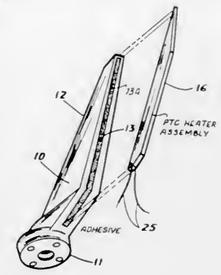
4,121,086
METHOD FOR IRRADIATION OF ROUND-SECTION CYLINDRICAL OBJECTS WITH ACCELERATED ELECTRONS
Vadim Leonidovich Auslender, Morskoi prospekt, 15, kv. 24; Gersh Itskovich Budker, ulitsa Maltseva, 6; Georgy Borisovich Glagolev, Morskoi prospekt, 7, kv. 11; Anatoly Alexandrovich Livshits, Morskoi prospekt, 1, kv. 21, all of Novosibirsk; Vitaly Petrovich Perepelkin, ulitsa Lobachevskogo, 10, kv. 60, Moscow; Vladimir Arkhipovich Polyakov, ulitsa Maltseva, 1, kv. 27, Novosibirsk; Lev Vladimirovich Chepel, Tokmakov pereulok, 3, kv. 38, Moscow; Ilya Lvovich Chertok, Morskoi prospekt 16, kv. 11, and Vladimir Georgievich Cheskidov, ulitsa Rubinovaya, 5, kv. 34, both of Novosibirsk, all of U.S.S.R.
Filed May 11, 1977, Ser. No. 795,722
Claims priority, application U.S.S.R., May 12, 1976, 2359068[I]
Int. Cl.[2] B23K 9/00
U.S. Cl. 219—121 EM **3 Claims**

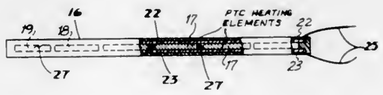
1. A method for irradiation of equally-sized round-section cylindrical objects using accelerated electrons, whereby an irradiation area is formed by directing three ribbon electron beams at an angle of 120° to one another, comprising the step of placing in said irradiated area three said objects to provide the same irradiation condition to each by arranging that the centers of the cross sections of said objects coincide with the apices of an imaginary equilateral triangle, each side of said imaginary triangle is normal to the direction of one of said electron beams and has a length equal to at least two diameters



of the cross section of said object, and the width of each said electron beam is not less than a triangle side length plus the diameter of said object; whereby the exposure dose is reduced about three times due to a decrease in the current density on the surfaces of said objects.

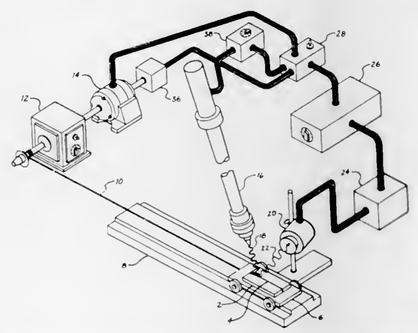
4,121,088
ELECTRICALLY HEATED AIR DATA SENSING DEVICE
John A. Doremus, Wayzata, and William R. Kirkpatrick, Faribault, both of Minn., assignors to Rosemount Inc., Minneapolis, Minn.
Filed Oct. 18, 1976, Ser. No. 733,048
Int. Cl.[2] H05B 3/02; G01W 1/10; H01C 7/02
U.S. Cl. 219—201 **12 Claims**





1. In an air data sensor for an aircraft having deicing heaters installed in the sensor in a position to heat the sensor to prevent icing, wherein said deicing heaters comprise a plurality of PTC heater elements, flexible strip means bonded to the electrically connecting said PTC heater elements in parallel to form a PTC heater assembly, means comprising a flexible, electrically insulating, thermally conductive material embedding said PTC heater assembly, and means to mount the embedded PTC heater assembly on an air data sensor with the thermally conductive material positioned between the PTC heater assembly and adjacent surfaces of the air data sensor and in heat transfer relationship thereto, said flexible strip means being sufficiently flexible to permit the individual PTC heater elements to shift relative to each other under thermal gradients.

4,121,087
METHOD AND APPARATUS FOR CONTROLLING LASER WELDING
Norman D. Malmuth, Westlake Village, Calif.; George Birnbaum, Rockville, Md., and William F. Iceland, Los Alamitos, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 18, 1977, Ser. No. 852,896
Int. Cl.[2] B23K 9/00
U.S. Cl. 219—121 L **15 Claims**

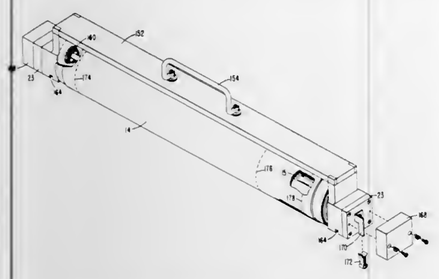


1. A method of heating a surface by radiation comprising the steps of:
(a) projecting a beam of radiation upon a portion of the surface to be heated;
(b) measuring the said radiation reflected by the surface to be heated;
(c) moving the surface to be heated relative to said beam of radiation; and
(d) controlling the radiation projected per unit area of the surface being heated as a function of the measured radiation reflected by the surface to be heated.

4,121,089
APPA[illegible]OF THE REVERSAL OF A HOT ROLL IN A FUSING ASSEMBLY
Robert [illegible]op, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 29, 1977, Ser. No. 820,272
Int. Cl.[2] H05B 1/00
U.S. Cl. 219—216 **10 Claims**

1. In a copier of the type having a master document support glass with common side registration for all original documents to be copied, means for creating a visible toner image copy thereof on a sheet of copy paper, and a fuser assembly including a hot roll and backup roll for fusing said toner image onto a sheet of copy paper; said copier being capable of supplying sheets of copy paper of different lengths so that at least one end of the hot roll in the fuser assembly is variably used in accordance with the length of copy sheets used, the improvement comprising:
a symmetrical hot roll mounting mechanism that is removably mounted within the fuser assembly to facilitate man-

ual removal of the hot roll for end-for-end reversal of said hot roll in order that roll wear may be distributed over the



length of the roll to thereby extend the effective usefulness of the hot roll.

4,121,090

WATER-JET ELECTRODE STEAM GENERATOR

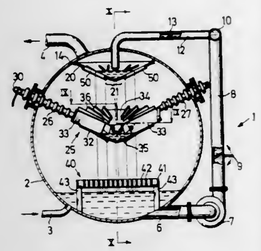
Albert Kuenzli, Wiesendangen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 10, 1976, Ser. No. 740,659

Claims priority, application Switzerland, Sep. 23, 1976, 12057/76

Int. Cl.[2] H05B *3/60*; F22B *1/30*

U.S. Cl. 219—284 **4 Claims**



1. In an electric steam generator, the combination comprising a vessel;

at least one horizontal dish-shaped water distribution device in said vessel defining a dam to permit water in said device to overflow at least a part of said dam in unthrottled manner for all loads of the steam generator, said distribution device having a shallow conical surface open toward the top to receive water and a plurality of slots extending from a rim of said device towards the center of said device to define the overflow edge of said dam;

a load-proportional water supply means for supplying water to said conical surface of said distribution device; and

an electrode in said vessel below said distribution device for receiving water overflowing said dam in free fall.

4,121,091

APPARATUS FOR HEATING EYEGLASS FRAMES

Richard C. Wareham, 2372 N. 90th St., Milwaukee, Wis. 53227

Division of Ser. No. 664,534, Mar. 8, 1976, Pat. No. 4,054,376, which is a continuation-in-part of Ser. No. 555,436, Mar. 5, 1976, abandoned. This application May 12, 1977, Ser. No. 796,378

Int. Cl.[2] F27D *11/02*

U.S. Cl. 219—400 **9 Claims**

1. A heating device comprising:

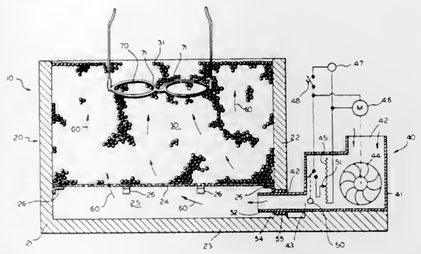
a receptacle having a bottom and side walls and being open at its upper end,

partition means mounted within said receptacle and extending between said side walls for dividing said receptacle into upper and lower portions,

a quantity of heat retentive beads disposed in the upper portion of said receptacle,

said partition means having a multiplicity of openings which are sufficiently small to support said beads but which permit the relatively free passage of air from the lower portion of said receptacle to the upper portion thereof,

heating means,



blower means coupled to the lower portion of said receptacle and to said heating means for delivering heated air to said lower portion from said heating means for passage upwardly through said openings, the pressure of said heated air in the lower portion of said receptacle being maintained at a level which does not substantially exceed atmospheric pressure whereby said beads are agitated by said heated air without fluidization.

4,121,092

ELECTRIC POWER APPARATUS

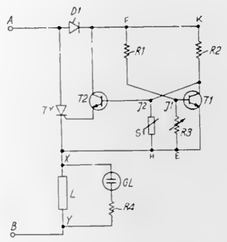
Hans Undin, Akersberga, Sweden, assignor to Pressmaster, Ltd., Stockholm, Sweden

Filed Mar. 23, 1976, Ser. No. 669,443

Claims priority, application Sweden, Mar. 27, 1975, 7503590

Int. Cl.[2] H05B *1/02*

U.S. Cl. 219—501 **8 Claims**



1. Electric circuit means for controlling the supply of electric power to a power consuming appliance in dependence on a parameter, the circuit means comprising supply and appliance terminals for connecting the circuit means to an AC power supply and to said appliance; a first potential divider circuit comprising a first terminal, a second terminal, a first tapping between said first and second terminal, a set point resistor for providing a set point representing a desired value of the parameter as an electrical analogue of said value connected between said first terminal and said first tapping, and a first resistor connected between said second terminal and said first tapping; a second potential divider circuit comprising a third terminal, a fourth terminal, a second tapping between said third and fourth terminal, a sensor responsive to an actual value of the parameter and representing an electrical analogue of said actual value connected between said third terminal and said second tapping, and a second resistor connected between said fourth terminal and said second tapping; a thyristor for performing a switching operation such as repeatedly to connect a said appliance terminal to, and to disconnect it from, a said supply terminal; a first and a second transistor defining control means for performing a control operation on said switching operation and connecting so as to perform said control operation in dependence on said actual value and on said set point; a diode connected in series with the collector of said second transistor so as to protect said transistors from injurious negative base-emitter voltages and, when said electric circuit means are connected to said AC power supply and said appliance, to prevent the supply of current to the appliance during alternate half-cycles of said AC supply; said first and third terminals being connected to the emitter of said first transistor and to a said appliance terminal, said first tapping being connected to the base of said first transistor, said second tapping being connected to the base of said second transistor, the collector of said second transistor being connected in series with said diode to a said supply terminal, the emitter of said second transistor being connected to the gate of said thyristor, said thyristor being connected between said last-mentioned supply terminal and said last-mentioned appliance terminal, and a second supply terminal also defining a second appliance terminal.

4,121,093

SURFACE HEATING EQUIPMENT

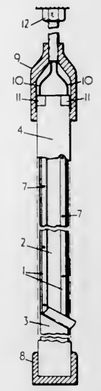
Geoffrey Hugh Wainwright, Hale, England, assignor to Heat Trace Limited, Stockport, England

Filed Nov. 26, 1976, Ser. No. 745,336

Claims priority, application United Kingdom, Nov. 29, 1975, 49185/75

Int. Cl.[2] H05B *3/34*

U.S. Cl. 219—528 **4 Claims**



1. An electrical heating tape, comprising:

(a) a longitudinally extending, flexible tape having a continuous electrical heating element incorporated therein, said heating element extending from one end of said flexible tape to the other and over substantially the full width of said flexible tape,

(b) two spaced apart, longitudinally extending, flexible, electrically conductive foils mounted on one face of said flexible tape overlying said heating element,

(c) electrically non-conductive means insulating said foils from said heating element,

(d) a plurality of electrically conductive means each penetrating said non-conductive means to individually electrically connect said heating element to said foils at spaced locations along the length of said foils, said electrically conductive connecting means being individually positioned to effect the connection of said heating element in a plurality of longitudinally extending heating circuits each connected in parallel between said foils, and

(e) an electrically insulating sheath encasing the assembly of said flexible tape and said foils.

4,121,094

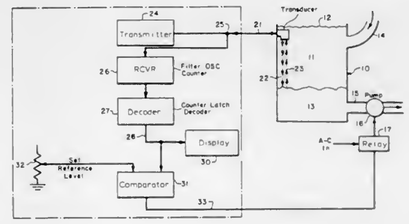
SYSTEM FOR DETECTING, INDICATING AND REGULATING THE LEVEL OF SEMI-SOLID MATTER IN A RESERVOIR

Ronald J. DiVito, Arlington Heights, and Howard A. Steck, Palatine, both of Ill., assignors to Driomi, Inc., Arlington Heights, Ill.

Filed Feb. 16, 1977, Ser. No. 769,012

Int. Cl.[2] G06M *3/02*; G01S *9/66*

U.S. Cl. 235—92 FL **4 Claims**



1. A system for detecting and indicating the level of sludge in a reservoir, comprising;

a transducer mounted near the top of said reservoir, including an electrical input connection for receiving electrical energy to produce a sonic signal, and likewise operable to produce an electrical signal in response to the receipt of a sonic signal;

a transmitter, connected to generate a train of signals at a reference frequency and apply the reference signals over a common electrical connection to the electrical input connection of the transducer;

a receiver circuit having an input connection coupled to the common electrical connection, for providing an output signal responsive to receipt of an electrical signal from the transducer;

a decoder circuit, connected to receive the receiver output signal and provide an information signal denoting the level of sludge in the reservoir; and

display means, connected to receive the information signal from the decoder and to provide a visible indication of the sludge level;

an outlet conduit near the bottom of said reservoir, and a pump positioned in connected with said conduit to discharge sludge from the reservoir when the pump is energized;

a comparator circuit having first and second input connections, and having an output circuit for regulating energization of the pump;

means for establishing a reference level signal at the first input connection of the comparator circuit; and

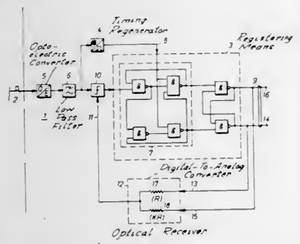
means for applying the information signal from the decoder circuit to the second input connection of the comparator circuit, such that the comparator circuit output operates to energize the pump when the information signal indicates a sludge level about the reference level.

4,121,095

OPTICAL RECEIVER

György Gezá Endersz, Älvsjö, and Gunnar Stefan Forsberg, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 16, 1977, Ser. No. 777,970
Claims priority, application Sweden, Apr. 15, 1976, 7604503
Int. Cl.[2] H03K *5/153;* **H04B** *1/10, 9/00*
U.S. Cl. 250—199 **1 Claim**



1. An optical receiver for providing a dispersion-compensated detection of digital information transferred by a light pulse train via a fibre conductor, said device comprising:

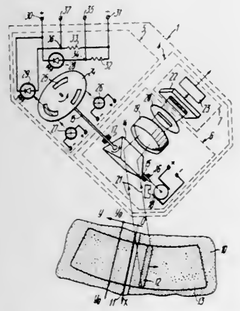
a registering means and a timing regenerating means connected in parallel to the fibre conductor via an opto-electrical converter, said registering means including a sampling contact, an activation input for a short activation of the sampling contact and connected to said timing regenerating means, and an output for reproducing the registered digital information transferred by the light pulse train, decision means having a decision level determining input supplied with a control voltage obtained from the output of said registering means via a digital-to-analog converting link and being interconnected between the optoelectrical converter and the sampling contact of the registering means, said digital-to-analog converting link having a most significant input connected to a non-inverting pole and a next most significant input connected to an inverting pole of the registering means.

4,121,096

SYSTEM FOR AUTOMATIC CONTROL OF OBJECT BY CONTRAST PROGRAM

Vasily Grigorievich Merezhkin, 10 kvartal, 3 aviagorodok 1, kv. 18, Varketilsky massiv, Tbilisi, U.S.S.R.

Filed Jun. 30, 1977, Ser. No. 811,837
Int. Cl.[2] G05B *1/00*
U.S. Cl. 250—202 **9 Claims**



1. A system for automatic control of an object by a contrast program comprising:

an information scanner producing electrical signals whose combination carries information on the coordinate of said contrast program on an analyzed surface and having an input, which is an input of said system, a signal output, a first marker output and a second marker output, said information scanner including a reference signal generator and a conversion unit for conversion of a specified portion of a radiation flux into an electrical signal carrying information on said contrast program, said conversion unit having an input, which is said input of said information scanner, a first output, and a second output, said unit for conversion including scanning means having an input, which is the input of said conversion unit, a first output and, a second output, and a receiver converting the radiation flux having an input and an output, which is said second output of said conversion unit and serves as said signal output of said information scanner, said input of said receiver being connected to said first output of said scanning means, said reference signal generator producing electrical signals carrying information on the scanning of said analyzed surface and having an input and first and second marker outputs which are, respectively, the first and second marker outputs of said information scanner, said second output of said scanning means being connected to said input of said reference signal generators;

a processing unit for processing the electrical signals carrying information on said contrast program and on said analyzed surface having a signal input, first and second marker inputs, and first and second outputs, said signal input of said processing unit being connected to said signal output of said information scanner, said first and second marker inputs of said processing circuit being connected, respectively, to said first and second marker outputs of said information scanner, said processing unit including a forming unit for forming normalized electrical signals carrying information on said contrast program having a signal input, which is said signal input of the processing unit, and a signal output, and a logical circuit, for processing the electrical signals carrying information on said contrast program and on the scanning of said analyzed surface and for producing the electrical signals carrying information on the deviation of said object from the specified position with respect to said contrast program, having a signal input, first and second marker inputs, which are respectively said first and second marker inputs of said processing unit, and first and second outputs, which are respectively said first and second outputs of said processing unit, said signal input of said logical signal being connected to said signal output of said forming unit; and

an actuating mechanism executing the commands to control said object and having first and second inputs and an output, which is the output of said system, said first and second inputs of said actuating mechanism being connected, respectively, to said first and second output of the processing unit.

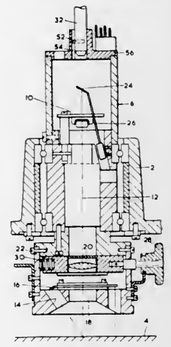
4,121,097

PHOTOELECTRICALLY CONTROLLED LINE FOLLOWER APPARATUS

James English, Eastbourne, England, assignor to BOC Limited, London, England

Filed Jul. 6, 1977, Ser. No. 813,343
Claims priority, application United Kingdom, Jul. 8, 1976, 28549/76
Int. Cl.[2] G05B *1/00*
U.S. Cl. 250—202 **5 Claims**

1. A photoelectric line follower for following a line on a surface disposed in a plane, comprising a body rotatable about a given axis and adapted to carry at one of its ends at least one source of light to shine light on said plane, said line intersecting the said axis externally of the body; scanning means; a photoelectric transducer; optical means secured to the body for collecting light reflected from the surface and directing it to the scanning means for causing the light to be oscillated across the face of said photoelectric transducer so that the optical axis of the optical means is oscillated transversely to the line being followed; wherein the improvement consists in the provision of circuit means for altering the light output of the lamps to cause the transducer to produce a signal of chosen amplitude



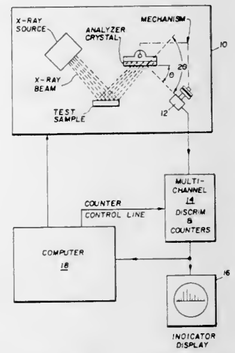
and polarity when the said surface is wholly white, and bias-changing means for altering the electrical bias of the photoelectric transducer to cause it to produce a signal of the same amplitude but opposite polarity when that part of the said surface which intersects the optical axis is wholly black.

4,121,098

RADIATION ANALYSIS APPARATUS AND METHOD UTILIZING MULTI-CHANNEL PULSE PEAK VOLTAGE DISCRIMINATOR

Emil Jagoutz, Mainz-Gonsenheim, and Christl Palme, Mainz, both of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Germany

Filed Mar. 29, 1977, Ser. No. 782,564
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703562
Int. Cl.[2] G01N *23/20;* **G21K** *1/00*
U.S. Cl. 250—273 **10 Claims**



1. Apparatus for analysis of X-ray fluorescence, comprising, in combination:

means for causing a sample material to emit a beam of X-ray fluorescence;

a refraction crystal interposed in said beam for providing spectrometric angular dispersion of X-rays in a refracted beam in accordance with their wave length;

an angle-sensitive X-ray detector for detecting X-ray intensity with respect to wave length as represented by refraction angle in said beam and producing electric pulses at its output;

a multichannel peak voltage discriminator circuit having a plurality of channels each corresponding to a different range of pulse heights and having its input connected to the output of said detector for providing an output responsive to an input pulse only in that one of its multiplicity of output channels which corresponds to the voltage range in which the peak voltage of the input pulse lies, and

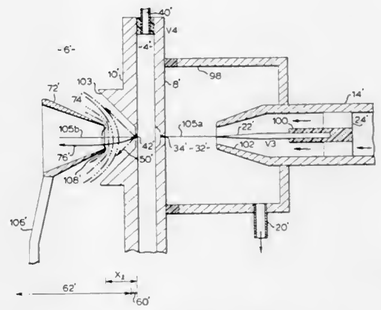
means connected to each output channel of said multichannel peak voltage discriminator for producing a signal representative of the number of pulses produced in said output channel.

4,121,099

METHOD AND APPARATUS FOR FOCUSSING AND DECLUSTERING TRACE IONS

John Barry French; Neil M. Reid, both of Thornhill, and Janette A. Buckley, Willowdale, all of Canada, assignors to The Governing Council of the University of Toronto, Toronto, Canada

Continuation-in-part of Ser. No. 555,202, Mar. 3, 1975, Pat. No. 4,023,398. This application Apr. 25, 1977, Ser. No. 790,216
Int. Cl.[2] B01D *59/44*
U.S. Cl. 250—296 **17 Claims**



1. A method of focussing ions travelling from a gaseous region through a vacuum chamber to an analyzer in the vacuum chamber, said gaseous region being adjacent said vacuum chamber, said method comprising:

(a) admitting gas from said gaseous region into said vacuum chamber through an orifice in said chamber, said orifice communicating with said gaseous region,

(2) maintaining a vacuum in said chamber and maintaining said gas in said gaseous region at a higher pressure so that said gas passes through said orifice and expands from said orifice into said chamber generally in the form of a cone in said chamber and oriented about an axis extending through said orifice with its apex adjacent the orifice, said cone of expanding gas being termed a free jet, the number density in molecules per cubic centimeter of said gas in said free jet being high close to said orifice and falling rapidly with increasing distance from said orifice, the number density of said gas being relatively very low in a vacuum region in said chamber remote from said orifice and said analyzer being in said vacuum region,

(3) moving said ions through said orifice into said free jet in said chamber, the expanding gas in said free jet tending to cause said ions to diverge conically,

(4) focussing said ions to direct at least some of said ions along a path of travel extending from said orifice into said vacuum region toward said analyzer by applying an electric field to said ions in a selected region which is adjacent said orifice and in said free jet, said field being arranged to direct the paths of at least some of said ions along said path of travel, said selected region being close to said orifice so that the number density of said gas in said selected region is relatively high to limit the kinetic energy spread which ions in said selected region can acquire from accelerations imparted by said electric field,

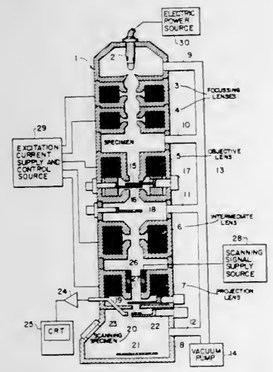
(5) and maintaining the region along said path of travel between said selected region and said vacuum region substantially free of all but weak electric fields, to limit the kinetic energy spread imparted to ions in their travel from said selected region to said analyzer.

4,121,100

ELECTRON MICROSCOPE

Morioki Kubozoe; Yoshihisa Minamikawa, both of Katsuta, and Shinjiro Katagiri, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 18, 1977, Ser. No. 788,538
Claims priority, application Japan, Apr. 21, 1976, 51-44490
Int. Cl.[2] G01M *23/00;* G21M *1/08*
U.S. Cl. 250—311 **10 Claims**



1. An electron microscope having means for generating an electron beam, a focussing lens system for focussing said electron beam on a predetermined first position, a magnification lens system including an objective lens and at least two additional magnification lenses and adapted for magnifying the focussed electron beam and projecting it on a screen, and means for holding a specimen to be electron-microscopically analyzed detachably at said first position, characterized by comprising:

means for detachably holding a specimen to be scanning-electron-microscopically analyzed at a second position disposed outside the lens field of one of said additional magnification lenses and at the side thereof close to said screen; means for operating said focussing and said magnification lens systems such that they may focus said generated electron beam on said specimen to be scanning-electron-microscopically analyzed; means for scanning said specimen to be scanning-electron-microscopically* analyzed with said electron beam focussed thereon to thereby generate a signal inherent in said scanned specimen; and means for detecting said signal,

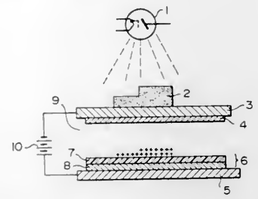
wherein one of said magnification lenses nearest to said second position at the side of said objective lens has an upper and a lower magnetic poles and an excitation coil for forming said lens field between said magnitic poles, said lower magnetic pole being made to have substantially flattened plate-like form.

4,121,101

METHOD OF RECORDING RADIOGRAPHIC IMAGES

Seije Matsumoto, Minami-ashigara; Isoji Takahashi, Asaka; Takao Komaki; Masamitsu Ishida, both of Minamiashigara; Tomotaka Kozeki, Tokyo; Kazuo Horikawa, and Kozi Shimanuki, both of Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 22, 1976, Ser. No. 744,119
Claims priority, application Japan, Nov. 21, 1975, 50-139960; Nov. 21, 1975, 50-139961
U.S. Cl. 250—315 A **9 Claims**



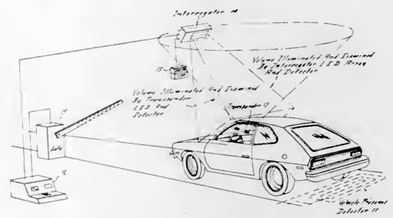
1. A method of recording a radiographic image on a recording material wherein radiations are irradiated through an object the image of which is to be recorded, the radiations being capable of causing a material to emit secondary electrons or ionize a fluid in a gas or liquid where the radiations passing through the object are further irradiated upon a substance which emits charged particles upon receipt of the radiations, the amount of the charged particles emitted thereby being large where the dose of radiations received thereby is large, an insulating latent image recording layer is located being faced to said substance, and an electric field is applied across a space where said charged particles are emitted and said insulating latent image recording layer for collecting said charged particles on the surface of the recording layer to form an electrostatic latent image in a pattern representing a radiographic image of said object, wherein the improvement comprising making said insulating latent image recording layer of a photoconductive insulating material responsive to said radiations and attaching said layer on a conductive substrate, and partly neutralizing the charge of the electrostatic latent image formed on the photoconductive insulating latent image recording layer with the radiations passing through said object and said substance and irradiated upon the surface of the recording layer, the responsiveness of said photoconductive insulating layer to said radiations contributing to the partial neutralization of said charge of the electrostatic latent image.

4,121,102

OBJECT IDENTIFICATION SYSTEM

Stephen S. Wilson, Ann Arbor, Mich., assignor to Kilo Corporation, Detroit, Mich.

Filed Jul. 27, 1976, Ser. No. 709,237
Int. Cl.[2] G01J *1/00;* G01S *9/56*
U.S. Cl. 250—341 **145 Claims**



1. A system for remotely identifying an object including a transponder associated with the object to be identified and containing information identifying said object and an interrogator for determining the identification of said object, the improvement wherein:

said interrogator is operative to transmit an interrogator signal having a predetermined clock frequency and to detect signals from said transponder representative of said identifying information; and

said transponder includes resonating means adapted to resonate at said clock frequency and to provide an output signal which at least initially increases in amplitude as pulses are repetitively received at said clock frequency, said resonating means being relatively non-responsive to pulses at frequencies other than said clock frequency, said transponder also including threshold means being responsive to a predetermined amplitude of said resonating means output signal attained only after a plurality of said repetitive pulses at said clock frequency are received by said resonating means to cause said transponder to transmit at said clock frequency in response to the receipt of said interrogator signal a sequence of transponder pulses representing in signal form said identifying information.

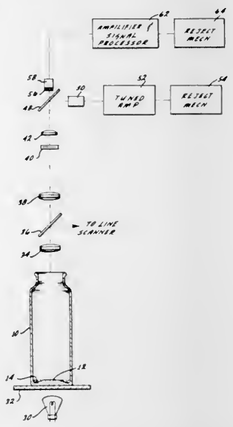
2. The object identification system of claim 1 wherein said interrogator includes infrared transmitting means for transmitting an infrared interrogator signal, and said transponder includes infrared detecting means for receiving said infrared interrogator pulses.

4,121,103

CAUSTIC DETECTION SYSTEM

Fredrick L. Calhoun, Rolling Hills, Calif., assignor to Industrial Dynamics Company, Ltd., Torrance, Calif.

Filed Nov. 5, 1976, Ser. No. 739,059
Int. Cl.[2] G01N *21/24, 21/34*
U.S. Cl. 250—343 **30 Claims**



1. An inspection system for detecting the presence of an aqueous base solution in the bottom of a container, including,

means disposed relative to the container for directing energy including at least energy in the infrared region through the bottom of the container and along the central axis of the container, and

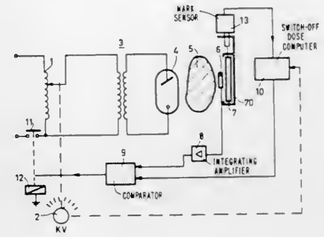
means disposed relative to the container for detecting the energy of particular infrared wavelengths passing from the bottom of the container and for producing signals in accordance with such detection and with the presence of an aqueous base solution providing for the absorption of the energy at the particular infrared wavelengths and with the absence of an aqueous base solution allowing for the passage of the energy at the particular infrared wavelengths.

4,121,104

X-RAY EXAMINING DEVICE WITH AUTOMATIC TIMER AND FILM CONTAINER FOR AN X-RAY EXAMINING DEVICE

Detlev Richter, Norderstedt, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1976, Ser. No. 751,473
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1975, 2556699
Int. Cl.[2] G01J *1/42*
U.S. Cl. 250—355 **10 Claims**



1. In an X-ray examining device having an X-ray source, a film container support for receiving a film container with intensifying screens and an automatic timer which comprises

a measuring device for determining a measuring signal which corresponds to a radiation dose to be measured,

a switch-off signal computer for generating a switch-off dose signal which corresponds to a preset radiation dose,

and a comparator and switch-off device for switching-off the X-ray source when the measuring and switch-off dose signal are in agreement; the improvement wherein:

the film container support includes a mark sensor for sensing a mark on a film container to be accommodated into the film container support; and

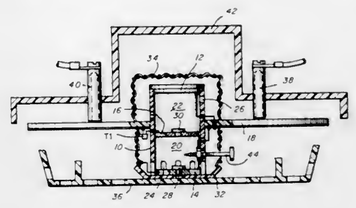
an output of the mark sensor is connected to an input of the switch-off signal computer to provide a switch-off dose signal which is tuned to a preset high voltage and matched to an intensifying screen in said film container.

4,121,105

IONIZATION DETECTOR

Elias E. Solomon, Duxbury, Mass., assignor to The Gamewell Corporation, Medway, Mass.

Continuation-in-part of Ser. No. 593,704, Jul. 7, 1975, Pat. No. 4,021,671. This application Nov. 8, 1976, Ser. No. 739,455
Int. Cl.[2] G01T *1/18*
U.S. Cl. 250—381 **23 Claims**



1. An ionization detector comprising;

a chamber structure including means defining a first chamber, means defining a second chamber having means for receiving gases from external of the second chamber, and common boundary means between chambers including a common electrode,

one electrode associated with said second chamber,

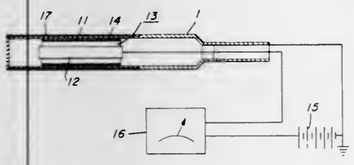
another electrode within the first chamber defining a third chamber within the first chamber and being at least partially open to provide an ionization path between the first and third chambers,
means including a radioactive source disposed in at least the second chamber for establishing an ionization current in the chamber structure,
and means coupled from at least the common electrode for detecting changes in the ionization current.

4,121,106

SHIELDED REGENERATIVE NEUTRON DETECTOR

James H. Terhune, and John P. Neissel, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 8, 1977, Ser. No. 766,717
Int. Cl.[2] G01T *3/00*
U.S. Cl. 250—390 **14 Claims**



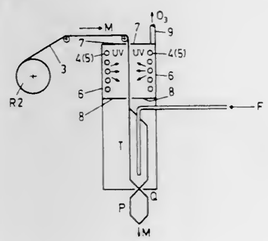
1. A neutron detector comprising:
a sealed chamber having two spaced electrodes positioned therein;
an ionizable gas disposed within the space between said electrodes;
a layer of a mixture of an active material and a breeding material positioned within said chamber, said active material and said breeding material being U-235 and U-234, respectively; and
a portion of said detector being formed of a shielding material positioned to decrease the neutron flux to which the active material and the breeding material are subjected,
said breeding and shielding materials having substantially matching neutron capture cross-section curves, whereby their individual effects on detector life are mutually enhanced.

4,121,107

APPARATUS FOR AUTOMATIC LOW-BACTERIA TO ASEPTIC FILLING AND PACKING OF FOODSTUFFS

Robert Bachmann, Dottingen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Division of Ser. No. 557,259, Mar. 11, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,343
Claims priority, application Switzerland, Apr. 10, 1974, 5050/74
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—455 **5 Claims**



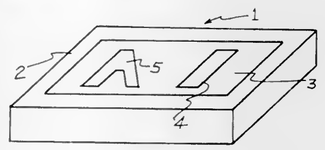
1. An apparatus for automatically filling and packaging foodstuffs under aseptic to low-bacterial count conditions, said foodstuffs having been previously disinfected or sterilized, comprising:
at least two mercury discharge tubes having a high-current, low-pressure mercury discharge with a current density of more than 1 A/cm^2 and a mercury pressure of 5×10^{-3} to 5×10^{-1} Torr, the discharge tubes having discharge paths, the material surrounding the discharge paths within the discharge tubes being transparent at least for the wavelength 253.7 nm;
means for passing a packaging material to a station for receiving said foodstuffs;
means for applying the spectral radiation intensity of the 253.7 nm line of the ultraviolet radiation of the discharge tubes on the packaging material with at least 0.05 W/cm^2, the discharge tubes being arranged one behind the other relative to the direction (M) of movement of said packaging material toward said station and extending across the entire width of said packaging material, said discharge paths of said discharge tubes lying in a plane (E) parallel to the plane of the irradiated portion of said packaging material,
said radiation applying means including a reflector formed of an upper part disposed above and parallel to the plane of said discharge paths, and two side parts extending from said upper part to a line of said packaging material at those points at which said ultraviolet radiation begins and ends, respectively, the reflectivity of the reflector being better than 0.75 and said two side parts being approximately perpendicular to said upper part, wherein the ratio of the vertical distance (*a*) between the plane (E) of the discharge paths and the packaging material to the distance (*d*) between two adjacent discharge paths is at least 0.5, the shortest distance (*e*) between the two outer discharge paths and the adjacent side parts is smaller than twice the diameter (D) of one discharge tube and the shortest distance (*f*) between the side parts and the packaging material is less than 10 mm.

4,121,108

X-RAY FILM MARKING DEVICE AND METHODS OF MAKING AND USING THE SAME

George H. Manor, 324 Lanark, St. Louis, Mo. 63137

Filed Sep. 7, 1976, Ser. No. 720,669
Int. Cl.[2] G03B *41/16*; G03C *5/16*
U.S. Cl. 250—476 **12 Claims**



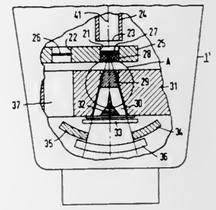
1. An x-ray marking device comprising,
frame means,
indicia means operably disposed within the boundaries of said frame means, said indicia being discrete from said frame means, wherein said indicia extends substantially the full depth of said device,
suspension means disposed between said frame and indicia.

4,121,109

ELECTRON ACCELERATOR WITH A TARGET EXPOSED TO THE ELECTRON BEAM

Leonhard Taumann, Lafayette, Calif., and Rudolf Schittenhelm, Erlangen, Germany, assignors to Applied Radiation Corporation, Walnut Creek, Calif.

Filed Apr. 13, 1977, Ser. No. 787,275
Int. Cl.[2] H05G *3/00*
U.S. Cl. 250—505 **10 Claims**



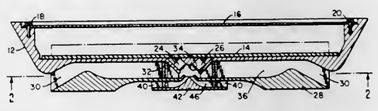
1. An electron accelerator comprising:
(a) an electron beam;
(b) a target means exposed to the electron beam for the production of x-ray deceleration radiation in a beam cone;
(c) a collimator behind the target in the direction of the beam, said collimator having a fixed dimension passageway sufficient for a beam cone adjusted to maximum dimensions;
(d) adjustable x-ray aperture plates behind the collimator in the direction of the beam; and
(e) an electron absorber behind the target in the direction of the beam, said absorber being made of a material of a relatively low atomic number which is lower than the atomic number of copper, and an additional electron absorber positioned in the collimator and made of a material atomic number lower than the atomic number of copper.

4,121,110

OPTICALLY BIASED SMOKE DETECTOR

Elias E. Solomon, 20 Christina Ct., Duxbury, Mass. 02332

Filed Nov. 4, 1976, Ser. No. 738,750
Int. Cl.[2] G01N *21/26*
U.S. Cl. 340—630 **19 Claims**



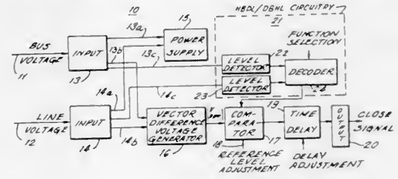
1. In an optical smoke detector wherein the presence of smoke modifies the reception by a transducer of light from a source to trigger an alarm, a system for optically biasing said transducer comprising means for determining the field of view of said transducer and for causing a controlled and determinable amount of light emanating from said source to reach said field of view of said transducer directly from said source, said means for determining including means for adjustably controlling the direct light between source and transducer.

4,121,111

APPARATUS FOR DETECTION OF SYNCHRONISM BY MEANS OF VECTOR DIFFERENCE MEASUREMENT

George A. Crisafulli, Hatfield, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 18, 1976, Ser. No. 733,440
Int. Cl.[2] H02J *3/00*
U.S. Cl. 307—87 **10 Claims**



1. Apparatus for detecting the relative synchronism between a first and a second a.c. signal occurring on first and second lines, respectively, said apparatus comprising:
(A) first means for generating a vector difference signal representing the magnitude of the vector difference between said first and said second a.c. signals;
(B) second means for monitoring the instantaneous magnitudes of said first and second a.c. signals and for determining when first and second conditions exist:
(1) said first condition being defined as that condition wherein said first a.c. signal has an instantaneous magnitude which is greater than a first predetermined value and said second a.c. signal has an instantaneous magnitude which is less than a second predetermined value;
(2) said second condition being defined as that condition wherein said first a.c. signal has an instantaneous value which is less than said first predetermined value and said second a.c. signal has an instantaneous value greater than said second predetermined value;
(c) switch means responsive to said second means and selectively operable in first, second and third states, said switch means to generate an enabling signal:
(1) when said first condition exists and said switch means is in said first state;
(2) when said second condition exists and said switch means is in said second state;
(3) when either said first or said second conditions exist and said switch means is in said third state;
(D) third means for enabling a desired interconnection between said first and said second lines if either said vector difference signal is less than a predetermined value for a predetermined time period or said switch means generates said enabling signal for said predetermined time period.

4,121,112

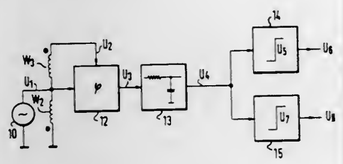
PULSE GENERATOR

Gunter Fritz Hartig, Hansastrasse 29, Karlsruhe, Fed. Rep. of Germany (D-7500)

Filed Jun. 24, 1976, Ser. No. 699,488
Claims priority, application Switzerland, Jul. 2, 1975, 8604/75
Int. Cl.[2] H02P *9/00*
U.S. Cl. 307—106 **8 Claims**

1. A pulse generator for the generation of pulses which are synchronously associated with the movement of a mechanical part, comprising:
an element provided with teeth;
a pick-up head having an exciting winding for generating a field, said teeth running past said pick-up head and modulating said field;
means for providing a carrier frequency voltage for exciting said exciting winding;
said pick-up head further including a measuring winding in which said field modulated by said teeth induces a measuring voltage;

circuit means responsive to said measuring voltage for converting said measuring voltage into a pulse sequence, said circuit means including a phase discriminator into which said measuring voltage and said exciting voltage are supplied, said measuring winding including first and second winding parts, one of which being connected in a direction opposite to the other such that said measuring voltage is the voltage difference between a first voltage induced in said first winding part and a second voltage induced in said second winding part;



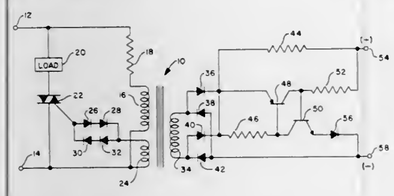
said second winding part being arranged such that said second voltage compensates a basic voltage component of said first voltage which is in phase with said exciting voltage, so that the measuring winding provides a total measuring voltage having a relatively large phase shift with respect to said exciting voltage dependent upon instantaneously located material adjacent said pick-up head;

and wherein said exciting winding and said measuring winding are arranged concentrically in relation to one another on a bell shaped core.

4,121,113
ELECTRIC SWITCH

Robert Edward White, Aloha, and David Edward Moeckli, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 11, 1977, Ser. No. 786,000
Int. Cl.² H01H *9/54*
U.S. Cl. 307—140 **3 Claims**



1. A remotely activated electrical control circuit for applying power to a load, the circuit comprising:

switch means connected to an alternating current power supply and in series with the load for switching power to the load;

control means for controlling the conduction and non-conduction of said switch means, said control means being isolatively coupled to said alternating current power supply and said switch means;

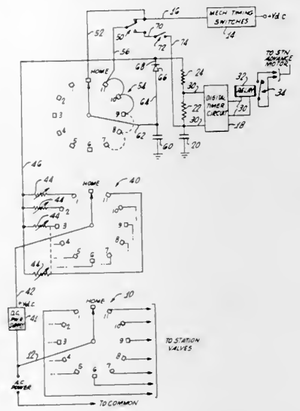
said control means includes a transformer with a first winding for applying a control voltage to said switch means for turning it on and off and also includes a control section for selectively shorting a second winding of said transformer; and

said control section includes a full-wave rectifier connected between the output terminals of said second winding of said transformer for providing a DC voltage to activate said control means.

4,121,114
STATION TIMING SELECTION CIRCUIT FOR IRRIGATION CONTROLLER

Richard L. Ruggles, Mount Baldy, Calif., assignor to Clemar Manufacturing Corporation, Azusa, Calif.

Filed Dec. 10, 1976, Ser. No. 749,386
Int. Cl.² H01H *7/00*
U.S. Cl. 307—141 **8 Claims**



1. In an irrigation control system having a plurality of irrigation stations which are actuated sequentially in a scheduled irrigation cycle, station timing means for timing the irrigation at each station, and a timing capacitor and timing resistor, both associated with said station timing means, the improvement comprising:

an additional capacitor connectable in parallel with said timing capacitor; and

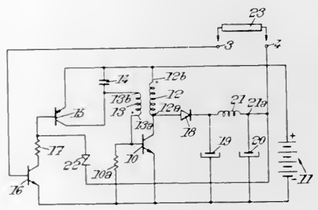
means for connecting said additional capacitor in parallel with said timing capacitor for selected ones of said plurality of irrigation stations;

whereby said means for connecting said additional capacitor provides for operation of selected ones of said plurality of irrigation stations for relatively long station times.

4,121,115
D. C. POWER PACKS, INTER ALIA OF THE DISPOSABLE KING, FOR PROVIDING A PREDETERMINED RATED VOLTAGE

Henri Courier de Mére, Paris, France, assignor to Bicosa Societe de Recherches, France

Filed Dec. 15, 1976, Ser. No. 750,648
Claims priority, application France, Dec. 18, 1975, 75 38878
Int. Cl.² H02J *7/00*
U.S. Cl. 307—150 **13 Claims**



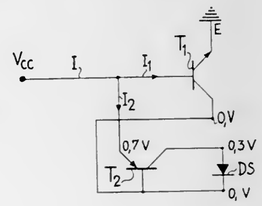
1. A power pack for a d.c. energized device, adapted to provide a predetermined d.c. voltage, said power pack having

a casing of a given external shape and dimension, and supporting two output terminals located in predetermined positions, said casing including therein at least one d.c. power supply, such as a cell, adapted to output an on-load d.c. voltage lower than the said predetermined d.c. voltage and a low-consumption converter circuit for converting a signal from the d.c. power supply into a d.c. voltage signal of the predetermined value, the signal from the converter circuit being applied across the said output terminals, and control electrode type switching means, said switching means connected between one of said outpt terminals and said d.c. power supply and controlled by a load across said terminals such that in a no-load state said switching means inhibits operation of said converter circuit and the drain on the d.c. power supply.

4,121,116
COMPONENT FOR LOGIC CIRCUITS AND LOGIC CIRCUITS EQUIPPED WITH THIS COMPONENT

Pham Ngu Tung, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 22, 1977, Ser. No. 770,309
Claims priority, application France, Feb. 27, 1976, 76 05585
Int. Cl.² H03K *19/08*
U.S. Cl. 307—213 **3 Claims**



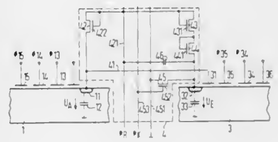
1. A solid state component for logic circuit comprising integrated upon one and the same substrate, in combination, a first, a second, a third and a fourth semiconductive layer forming three rectifying junctions, and a first and a second complementary transistor having respective emitters, bases and collectors, said first layer being the emitter of said first transistor, said second layer, the base of said first transistor and the emitter of said second transistor, the third layer being the collector of said first transistor and the base of said second transistor, the fourth layer being the collector of said second transistor, said first layer being connected to ground, said second layer being adapted for connection to a constant d.c. current source, a rectifying element connected in parallel with said third and said fourth layers, said third layer being connected to ground when said first transistor is conductive, and the voltage drop across said rectifying element when unblocked being predetermined and lower than the voltage drop across said third and fourth layer when the junction formed therebetween is unblocked.

4,121,117
REGENERATOR CIRCUIT FOR CCD ARRANGEMENTS

Kurt Hoffmann, Taufkirchen, and Gottfried Wotruba, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sep. 2, 1976, Ser. No. 720,050
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1975, 2541662
Int. Cl.² H01L *27/10, 29/78;* **G11C** *19/28*
U.S. Cl. 307—221 D **23 Claims**

1. Regenerator circuit for CCD arrangements for connecting a first CCD arrangement having an output diffusion zone to a second CCD arrangement, said output diffusion zone having a capacitance to ground during operation, said second CCD arrangement having an input diffusion zone, said input diffusion zone having a capacitance to ground during operation, a first input transistor being formed by said input diffusion zone, a gate electrode adjacent said input diffusion zone and a potential well which lies below the next adjacent electrode of said second CCD arrangement, said output diffusion zone being connected via a connection line to said gate electrode of said input transistor, and having a first load element which on the one hand is connected to said output diffusion zone and on the other hand to a first control line to which a first potential with an amplitude having a first value can be connected, a second load element being provided which on the one hand is connected to said first control line and on the other hand to a



third load element, said third load element being connected on the one hand to said second load element and on the other hand to said input diffusion zone of said second CCD arrangement, a capacitor coupling said first control line to said input diffusion zone of said second CCD arrangement, a second transistor being connected on the one hand to said input diffusion zone and on the other hand to a second control line to which ground potential can be connected, and the gate terminal of said second transistor being connected to a third control line to which a second potential having a second value can be connected, the capacitance of the coupling capacitor being determined in accordance with the formula:

$$C_{46} = \frac{\sigma_U \cdot C_{33}}{U_R - \sigma_U} = \frac{\frac{\Delta U_A}{2} \cdot C_{33}}{U_R - \frac{\Delta U_A}{2}}$$

where:

C_{46} is the value of said coupling capacitor;

C_{33} is the capacitance between the input diffusion zone and ground;

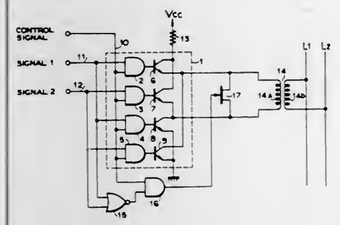
U_R is the amplitude of the voltage pulses in said first control line;

U_A is the value of the charges stored by the capacitance formed between the output diffusion zone and ground;

ΔU_A is the value of the charge arriving at said output diffusion zone divided by the output capacitance formed between the output diffusion zone and ground; and

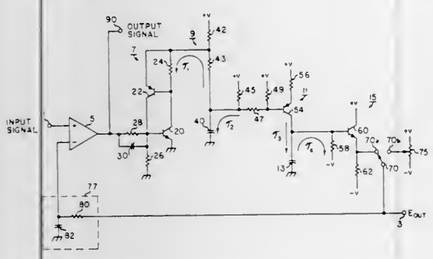
δ_U is ΔU_A divided by 2, which arises when a charge is transmitted to the output diffusion zone.

4,121,118
BIPOLAR SIGNAL GENERATING APPARATUS
Seiichi Miyazaki, Wakou, Japan, assignor to Ohkura Electric Co., Ltd., Tokyo, Japan
Filed Jul. 6, 1977, Ser. No. 813,241
Claims priority, application Japan, Jul. 7, 1976, 51-90155
Int. Cl.[2] H03K *5/20, 13/24*
U.S. Cl. 307—262 **4 Claims**



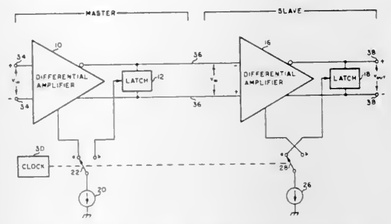
1. In an apparatus for generating a bipolar signal from two kinds of signals which are related such that at a period of time at which one of said two signals has an "H" level the other signal has an "L" level, said bipolar signal having a positive level at a period of time at which said first signal has said "H" level having a negative level at a period of time at which said second signal has said "H" level and having a level of its neutral region at a period of time at which both said first and second signals have said "L" levels, respectively, the improvement comprising a transformer having a primary winding and a secondary winding, a first switch means for supplying a current to said primary winding flowing therethrough in one direction when said first signal has said "H" level, a second switch means for supplying a current to said primary winding flowing therethrough in a direction opposite to said direction and a third switch means for connecting two terminals of said primary winding with each other when both said first and second signals have said "L" levels, respectively.

4,121,119
PULSE PEAK DETECTOR
Gordon Wallace Meigs, and Wayne Donald Thomas, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Feb. 16, 1977, Ser. No. 769,074
Int. Cl.[2] H03K *5/00*
U.S. Cl. 307—351 **2 Claims**



1. A peak detector for producing a D.C. voltage proportional to the peak amplitude of an input signal, said peak detector including an input signal path, a storage element for storing a peak voltage value and providing a D.C. voltage output therefrom, and a comparator for generating an error signal when the amplitude of the input signal exceeds the output voltage, wherein the improvement comprises:
control circuit means for controlling the voltage to which said storage element charges, said control circuit means including a current source coupled to said storage element, a resettable timing circuit coupled to said current source for turning said current source on for at least a predetermined time period to provide current to charge said storage element, and latch means responsive to said error signal for resetting said timing circuit and thereby turning said current source on, said latch means comprising a pair of oppositely-poled transistors connected in a regenerative relationship.

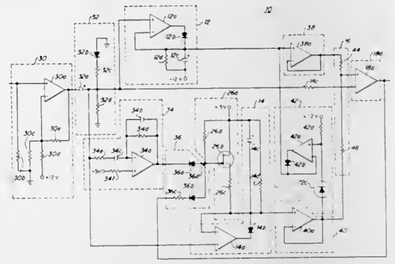
4,121,120
CLOCK DRIVEN VOLTAGE COMPARATOR EMPLOYING MASTER-SLAVE CONFIGURATION
Steven E. Wetterling, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed May 5, 1977, Ser. No. 793,980
Int. Cl.[2] G11C *7/06*
U.S. Cl. 307—352 **11 Claims**



1. A clock-driven voltage comparator, comprising:
comparator means for receiving an input signal and periodically determining therefrom logic states, said comparator means comprising a first emitter-coupled pair of transistors the bases of which are adapted to receive said input signal;
amplifier means couped to said comparator means for amplifying said logic states, said amplifier means comprising a second emitter-coupled pair of transisors the bases of which are coupled to the collectors of said first pair of transistors; and
first and second latch means operatively coupled to said comparator means and said amplifier means respectively for holding said logic states until new logic states are determined, said first latch means comprising a third emitter-coupled pair of transistors the collectors of which are cross coupled to the collectors of said first pair of transistors, and said second latch means comprises a fourth emitter-coupled pair of transistors the collectors of which are cross coupled to the collectors of said second pair of transistors.

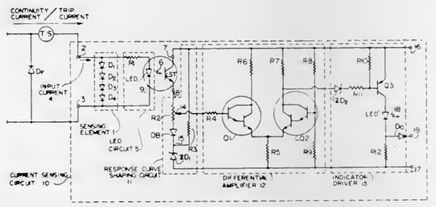
4,121,121
FOLLOWER RESPONSE CONTROL CIRCUIT
Stephen Chester Gabeler, Sudbury, Mass., assignor to Computer Identics Corporation, Westwood, Mass.
Filed Sep. 13, 1977, Ser. No. 832,934
Int. Cl.[2] H03K *5/01, 5/08*
U.S. Cl. 307—358 **8 Claims**

1. A follower response control circuit for a system for reading binary coded information and providing a reader signal with positive levels representing the first binary state and negative levels representing the second binary state, and having a positive peak follower circuit and a negative peak follower circuit, each of which includes means for defining a pre-established time constant for producing, respectively, a positive peak signal and a negative peak signal in response to the reader signal, comprising:
means for defining a second time constant for one of said peak follower circuits;
switching means for selectively switching said means for defining a second time constant in and out of said one of said peak follower circuits;
a direction detector circuit for determining whether the reader signal level is moving toward the polarity of the peaks followed by said one of said peak follower circuits;
a level detector circuit for determining whether the reader signal level is in the one of said states represented by the polarity of the peaks which said one of said peak follower circuit follows; and



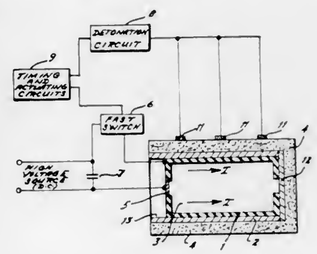
a switch control circuit responsive to said detector circuits for operating said switching means to introduce said means for defining a second time constant into said one of said peak follower circuits to alter temporarily the pre-established time constant of that peak follower circuit during the period when the reader signal level is moving toward and is in the one of said states represented by the polarity of the peaks followed by said one of said follower circuits.

4,121,122
CURRENT SENSING CIRCUITRY
Kurt Pokrandt, 101-1406 Laburnum St., Vancouver, British Columbia V6J 3W3, Canada
Filed Dec. 22, 1976, Ser. No. 753,368
Int. Cl.[2] H03K *5/153, 5/20*
U.S. Cl. 307—362 **5 Claims**



1. A current sensing circuit arrangement, comprising:
(a) a plurality of series connected diodes providing a first D.C. current path from a first point to a second point so that current flows in the forward direction through each of said diodes when a positive voltage is applied to said first point relative to said second point;
(b) a light emitting diode circuit connected in parallel with said series connected diodes for producing light energy dependent on the voltage across said current sensing element when current flows in said first path from said first point to said second point;
(c) a light sensitive transistor electrically isolated from said light emitting diode circuit and positioned to receive said light energy produced, said light sensitive transistor having a base for receiving said light energy, an emitter and a collector;
(d) an output control circuit, comprising:
(i) a control circuit input operatively connected to said light sensitive transistor;
(ii) a control circuit output;
(iii) a high input impedance, high gain amplifier having an amplifier input and an amplifier output, said amplifier output operatively connected to said control circuit output;
(iv) voltage reference means for providing a fixed voltage reference at a voltage reference point;
(v) first resistance means connected between said control circuit input and said amplifier input;
(vi) second resistance means and a blocking diode connected in series between said amplifier input and said voltage reference point.

4,121,123
EXPLOSIVELY DRIVEN PLASMA CURRENT GENERATOR
Richard L. Crolius, Rancho Palos Verdes, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 17, 1977, Ser. No. 778,761
Int. Cl.[2] H02N *4/00*
U.S. Cl. 310—10 **2 Claims**

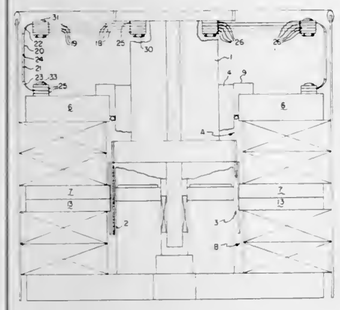


1. An explosively driven plasma current generator comprising
a cylindrical member of conductive material,
means for generating a magnetic field within said cylindrical member,
an end plate of conductive material connected to effect electrically and hermetically tight closure of one end of said cylindrical member,
a partial end plate disposed within and spaced from the distal end of said cylindrical member effecting electrically tight closure thereof,
insulating means disposed on the inner surface of said cylindrical member and in combination with said partial end plate effecting hermetically tight closure of the distal end of said cylindrical member,
gas plasma disposed within said cylindrical member,
explosive means disposed around the outer peripheral surface of said cylindrical member, and
means for detonating said explosive means.

4,121,124
ELECTRODYNAMIC FORCE GENERATOR
Frederick C. Hunt, 10246 Clipper Cove, Aurora, Ohio 44202
Filed Jul. 26, 1976, Ser. No. 709,008
Int. Cl.[2] H02H *33/02*
U.S. Cl. 310—13 **4 Claims**

1. A center gap permanent magnet electrodynamic force generator comprising upper and bottom annular permanent magnet sections, the upper section comprising a top plate, an outer pole plate, a center pole and at least one ring magnet interposed between the top plate and the outer pole plate, the bottom section comprising a bottom plate, a center pole, an outer pole plate and at least one ring magnet interposed be-

ture so as to provide a maximum flux density for the magnet material used, the magnetic field through the magnets of each sub-assembly being parallel to the axis of said structure and in opposition to each other, said structure being cylindrical and provided with a center air gap inwardly adjacent said center plate, and a table structure positioned in said air gap.



4,121,125

PLUNGER COMPRESSOR

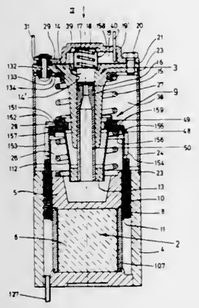
Heinrich Dölz, Berliner Strasse 66, D-6368 Bad Vilbel, Fed. Rep. of Germany

Filed Dec. 8, 1976, Ser. No. 748,530

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558667

Int. Cl.[2] **H02K** *33/18*

U.S. Cl. 310—27 **12 Claims**



1. An oscillatory electrodynamic compressor comprising a sealed housing having a fluid inlet and a fluid outlet and having located within said housing a permanent magnet formed by a pair of radially spaced pole shoes, a cylindrical electrically excitable coil axially movable between said pole shoes, a cylinder member arranged in tandem axially with said magnet having a longitudinally extending compression bore, a plunger reciprocable within said bore having an end extending outwardly toward said coil, means fixedly connecting said coil and said plunger for conjoint movement so that on excitation of said coil said plunger is caused to compress fluid within said bore, said plunger having fluid inlet valve communicating with said housing inlet and said bore having fluid discharge valve means operable upon the compression of fluid within said bore in communication with the housing outlet, said coil and connected plunger being resiliently supported by a pair of opposed springs, one of which bears against said connection means on the magnet side thereof and the other bears against said connection means on the compression side thereof, said connection means and said springs being formed so that in the absence of excitation of said coil the planes defined by the bearing of the springs against the connection means intersect the axis of the plunger within the length of the cylinder bore.

4,121,126

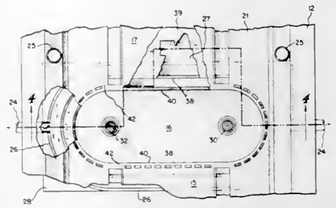
GENERATOR TERMINAL BOX WITH MULTIPLE FLUX SHIELDING AND FORCED VENTILATION

Anthony F. Armor, Schenectady; Sterling C. Barton, Scotia; Madabushi V. Chari, Burnt Hills; Harold E. Collings, Schenectady, and George W. Turnbull, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,923

Int. Cl.[2] **H02K** *9/00*

U.S. Cl. 310—59 **10 Claims**



1. In a terminal box for a dynamoelectric machine having a high voltage bushing passing therethrough and having a wall subject to heating from stray leakage flux from said bushing, a flux shield structure comprising:
(a) a first shield member spaced from said wall and providing a passage between said first shield member and said wall for flow of cooling fluid;
(b) a second shield member interposed between said first shield member and said bushing, said second shield member being spaced from said first shield member to provide a passage for flow of cooling fluid therebetween; and
(c) said first shield member being formed of a magnetic metallic material and said second shield member being formed of a non-magnetic metallic material.

4,121,127

EXTERNAL-ROTOR TYPE DRUM MOTOR

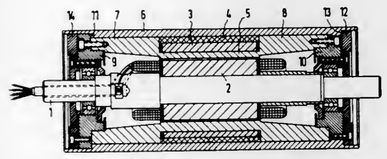
Hans-Joachim Adelski, Salz, and Wilhelm Gertz, Bad-Neustadt, Saale, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 15, 1977, Ser. No. 768,830

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612537

Int. Cl.[2] **H02K** *7/00*

U.S. Cl. 310—67 R **1 Claim**



1. An external-rotor type drum motor comprising:
a rotor having first and second portions extending axially in opposite directions, said first and second portions forming parts of the shorting ring of said rotor;
first and second end bells fastened to the ends of said first and second portions, respectively;
a drum cylinder serving as the return yoke for said rotor, said drum cylinder surrounding said rotor and end bells and having first and second inner shoulders at its ends adjacent said first and second end bells, respectively, said first inner shoulder resting against said first end bell;
a ring for securing said drum cylinder in the axial direction, said ring being fastened to said second end bell and resting against said second inner shoulder of said drum.

4,121,128

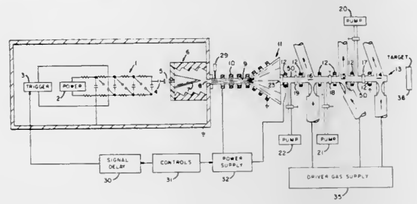
COLLECTIVE ION ACCELERATOR WITH FOIL-LESS BEAM EXTRACTION WINDOW

Thomas G. Roberts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 668,877, Mar. 22, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,673

Int. Cl.[2] **H01J** *7/16;* **H05H** *1/00*

U.S. Cl. 313—7 **5 Claims**



1. In an ion beam generating system including an evacuated ion accelerator and an ion extraction window spaced downstream therefrom, the improvement comprising:
(a) means for generating electrons for flow through said accelerator;
(b) means for injecting ions into said electron flow in said ion accelerator;
(c) means for connecting said accelerator to said ion extraction window; and
(d) a plurality of aerodynamic windows disposed in serial spaced relation along said connecting means, each said aerodynamic window being disposed for decreasing the pressure in said connecting means in a predetermined stepped relation.

4,121,129

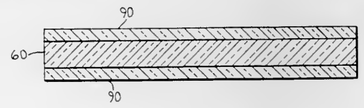
DISPLAY PANEL AND METHOD OF MANUFACTURE THEREOF

Thomas C. Maloney, Bernardsville, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 24, 1977, Ser. No. 800,048

Int. Cl.[2] **H01J** *61/30*

U.S. Cl. 313—221 **2 Claims**



1. A display panel including
a gas-filled envelope having a base plate and a face plate hermetically sealed together, said face plate having a viewing window,
a plurality of parallel cathode strips disposed generally vertically on the top surface of said base plate,
a plurality of horizontal anode strips on the inner surface of said face plate, said anode strips overlying said cathode strips, each crossing of an anode strip and a cathode strip defining a glow discharge cell, and
an insulating plate having a bottom surface and a top surface and a plurality of parallel channels therein, said plate being seated on said base plate so that said channels define rows of elemental cathode portions of said cathode strips, each channel being aligned with an anode strip, each row of elemental cathode portions being aligned with an anode strip and operable therewith, cathode glow being visible to a viewer through an anode strip and a channel,
said insulating plate being coated, on said top and bottom surfaces and on the walls of said channels, with an opaque material so that cathode glow cannot be seen by a viewer other than when viewed directly through an anode and a channel in said insulating plate.

4,121,130

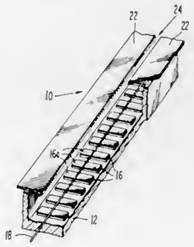
CATHODE STRUCTURE AND METHOD OF OPERATING THE SAME

Robert Allen Gange, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 737,098, Oct. 29, 1976, abandoned. This application Apr. 4, 1977, Ser. No. 784,365

Int. Cl.[2] **H01J** *1/46, 21/10*

U.S. Cl. 313—302 **26 Claims**



1. A cathode structure, which comprises:
an insulating substrate having a plurality of discrete electrode pads on a surface thereof;
a thermionic cathode positioned to one side of said surface, said cathode extending across a surface of each one of said electrode pads in spaced relation therewith such that separate portions of said cathode are associated with different ones of said electrode pads; and
an apertured electrode positioned in spaced relation to said cathode and said electrode pads.

4,121,131

COLOR TELEVISION DISPLAY TUBE AND METHOD OF MANUFACTURING SAME

Johannes van Esdonk, and Petrus Franciscus Antonius Haans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 6, 1977, Ser. No. 757,347

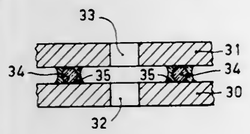
Claims priority, application Netherlands, Jan. 16, 1976, 7600422

Int. Cl.[2] **H01J** *29/07, 9/02*

U.S. Cl. 313—402 **13 Claims**

1. An article of manufacture comprising first and second apertured metal sheets defining first and second electrodes, respectively, of a color selection electrode system for a color display tube and insulating means for maintaining said sheets in substantially congruent relationship with each other with the apertures in said first sheet being aligned in a predetermined

relationship with the apertures in the second sheet; said insulating means being disposed between solid areas of said sheets and comprising a solid insulating core surrounded by an outer jacket, said jacket having a softening temperature lower than the softening temperature of said core so that upon heating the



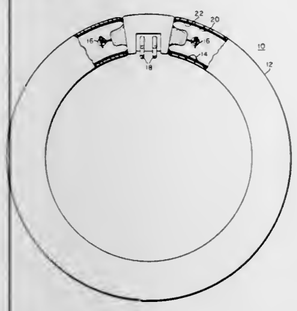
assembly formed by said sheets and said insulating means to a temperature at which said jacket is softened sufficiently to flow into contact with and adherently join said sheets to said core, said core remains solid forming an insulating spacer which maintains said sheets spaced a predetermined distance from each other.

4,121,132

PHOSPHOR COATING METHOD AND RESULTING FLUORESCENT LAMP

Robert W. Repsher, Bloomfield, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 28, 1977, Ser. No. 837,069
Int. Cl.[2] C09K *11/42*; H01J *61/46*
U.S. Cl. 313—486 **10 Claims**



1. In combination with a fluorescent lamp comprising a sealed elongated light-transmitting glass envelope enclosing a discharge-sustaining filling and operating electrodes supported proximate the ends thereof and adapted to have a radiation-generating discharge maintained therebetween, an improved phosphor coating carried on the envelope interior surface and comprising:

(a) a predetermined coating weight of preselected finely divided phosphor particles carried on the interior surface of said envelope; and

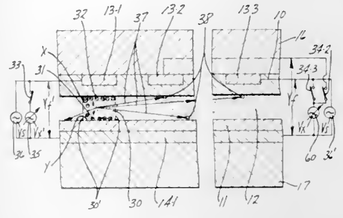
(b) said phosphor particles firmly bound both to one another and to the interior envelope surface by a melted and solidified mixture of boric anhydride and sodium borate, the combined weight of sodium borate plus boric anhydride (expressed in terms of an equivalent amount of boric acid prior to heating and melting) being from about 1% to 3% by weight of the phosphor, and the relative weight ratios of sodium borate to boric anhydride (expressed in terms of an equivalent amount of boric acid prior to heating and melting) being from about 1:2 to 1:4.

4,121,133

DIELECTRIC FOR MULTIPLE GASEOUS DISCHARGE DISPLAY/MEMORY PANEL HAVING IMPROVED VOLTAGE CHARACTERISTICS

Roger E. Ernsthausen, Lucky, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 293,817, Oct. 2, 1972, which is a continuation-in-part of Ser. No. 60,376, Aug. 3, 1970, abandoned. This application Aug. 9, 1973, Ser. No. 385,740
Int. Cl.[2] H01J *1/90*
U.S. Cl. 313—518 **6 Claims**



1. As an article of manufacture, a dielectric charge storage body for a gaseous discharge panel, said dielectric body being selectively enriched with at least one element selected from the group consisting of lithium, sodium, potassium, cesium, beryllium, magnesium, calcium, strontium and barium in an amount sufficient to provide gas discharge device operating voltages which are substantially uniform and which do not significantly change with time after a period of aging.

4,121,134

ROTATABLE MULTIPLE FILAMENT LAMP AND SOCKET ADAPTER

James Francis Fontenelle, 928 Clouet St., New Orleans, La. 70117

Filed Oct. 27, 1977, Ser. No. 845,999
Int. Cl.[2] H01K *1/62*
U.S. Cl. 315—64 **2 Claims**



1. A multiple filament lamp, lightable one filament at a time and comprising in combination:

(a) Non-conducting base means having a bottom terminal and a plurality of recessed side terminals for defining a plurality of open circuits therebetween, and having a circumferential retainer recess exteriorly defined adjacent an end of said base means with a retainer snap ring mounted in said recess;

(b) Glass bulb means, having the same plurality of filaments

therein as said plurality of recessed side terminals in said base means, fixed on the end of said base means adjacent said circumferential recess, said plurality of filaments having a side of all said filaments connected to said bottom terminal means, and other side of each filament of said plurality of filaments connected to said respective side terminals recessed in said base means; and

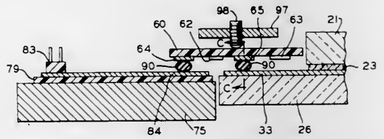
(c) Socket adapter means, adapted to screw into a standard lamp socket having energized bottom and side terminals, and defining and opening for slidably receiving and replaceably retaining said base and bulb means for free rotation therein and with said bottom terminal of said base means registering with said energized bottom terminal of said standard lamp socket, and with conducting means mounted in said socket adapter means for sequentially registering said plurality of side terminals of said base means with said energized side terminal of said standard lamp socket as said base and bulb means are rotated, thereby sequentially energizing said filaments one at a time.

4,121,135

APPARATUS FOR INTERFACING WITH PLASMA TYPE DISPLAY PANELS

Raymond L. Hunt; Ben H. Lin; Thomas A. Ream; Gene D. Robertson, and John H. Young, all of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed Dec. 20, 1976, Ser. No. 745,335
Int. Cl.[2] H05B *37/00, 41/00*
U.S. Cl. 315—169 R **13 Claims**



1. An improved interface apparatus for use with a relatively flat discharge display panel of the type having row and column electrodes for forming discrete discharge cites thereon and having an outer periphery and extensions on at least two sides of the periphery, the extensions having input terminal contacts connected to the row and column electrodes for connection to circuitry essential to the operation of the display panel, the improved apparatus comprising:

circuit means having input terminals and output terminal contacts and having electrical conductors for providing electrical inter-connections between predetermined ones of the input terminals and predetermined ones of the output terminal contacts;

a plurality of circuit modules for providing at least a part of the display panel operating circuitry and having input and output terminal contacts connected to the circuitry, the input and output terminal contacts of the circuit modules being adapted to releasably overlay and mate with the output terminal contacts and the input terminal contacts of the respective circuit means and the display panel;

module clamping means for releasably receiving and holding said circuit modules in positions about the extensions of the display panel for providing said mating of said circuit module contacts with said contacts of the display panel and circuit means whereby electrical interface connections are provided between the input terminals of said circuit means and the plurality of the releasably received circuit modules and between the plurality of the modules and the display panel; and

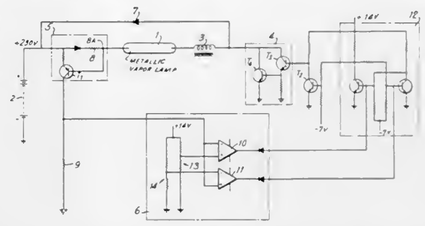
a plurality of electrically conductive and compressible elastomeric pads interposed between at least the output terminal contacts of said circuit means and the input terminal contacts of the received circuit modules.

4,121,136

APPARATUS FOR FEEDING DISCHARGE LAMPS FROM A DIRECT CURRENT SOURCE

Jean-Claude Fournier, and Albert Hermitte, both of Toulon, France, assignors to Etat Francais, Paris, France

Filed May 12, 1977, Ser. No. 796,483
Claims priority, application France, May 18, 1976, 76 14881
Int. Cl.[2] H05B *41/36*
U.S. Cl. 315—205 **7 Claims**



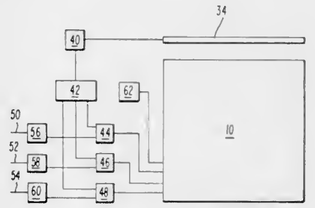
1. Power supply apparatus for feeding a discharge lamp comprising a choke and a direct current source mounted in series with the discharge lamp, said apparatus further comprising means for chopping direct current including an electronic switch and a detector of current intensity mounted in series with said choke, first comparator means comparing the intensity of the current to a fixed maximum level from a D.C. source for opening the switch when the maximum level is reached and second comparator means comparing the intensity of the current to a fixed minimum value from a D.C. source for closing the switch when the minimum value is reached such that the intensity of the current always remains between these two values.

4,121,137

SYSTEM FOR ACHIEVING IMAGE UNIFORMITY IN DISPLAY DEVICES

Thomas Lloyd Credelle, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1976, Ser. No. 741,403
Int. Cl.[2] H01J *29/70, 29/72*
U.S. Cl. 315—366 **8 Claims**



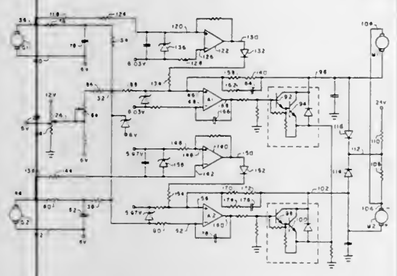
1. A system for achieving brightness uniformity in an image display device having a plurality of electron beams modulatd by a brightness signal, said system comprising:

means for sensing the electron current of each electron beam with an electron collector upon which the electron beams impinge;

means for storing the sensed electron beam current information; and

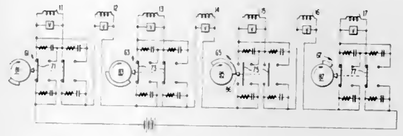
means for modifying the brightness signal in response to the stored electron beam current information so as to compensate for non-uniform electron beam currents.

4,121,138
SERVO SYSTEM
John R. Flint, Barrington; Rolf B. Erikson, Lincolnwood, and George Rabindran, Morton Grove, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed May 31, 1977, Ser. No. 801,703
Int. Cl.[2] B65H *77/00*
U.S. Cl. 318—7 **4 Claims**



1. In a web transport system for advancing a web between first and second spools rotated, respectively, by first and second drive motors, a system for controlling the speed and direction of rotation of the spools, comprising:
means for generating a DC reference voltage;
means for generating a control voltage which is representative of the desired speed and direction of rotation of the first and second spools and which is a selectably variable DC voltage whose magnitude is variable between levels above and below the level of said reference voltage;
first and second servo generators for generating electrical outputs representative of the direction and speed of rotation of the first and second spools, respectively, said outputs being negative with respect to said reference voltage when the spools rotate in a first direction and positive with respect to said reference voltage when the spools rotate in a second opposite direction;
means for continuously and algebraically summing the control voltage with the outputs of said first and second speed sensing means, the summed signal constituting a motor drive signal;
a first comparator having a reference input receiving said reference voltage, a signal input receiving said motor drive signal, and an output coupled to said first drive motor;
a second comparator having a reference input receiving said reference voltage, a signal input receiving said motor drive signal, and an output coupled to said second drive motor;
said first comparator being responsive to said motor drive signal being positive with respect to said reference voltage for actuating said first drive motor for rotation in a first direction, and said second comparator being responsive to said motor drive signal being negative with respect to said reference voltage for actuating said second drive motor for rotation in a second, reverse direction,
means coupled between said first servo generator and said first comparator and responsive to said first servo generator developing an output which is positive with respect to said reference voltage for applying a first bias voltage to the signal input of said first comparator, said bias voltage being of a magnitude sufficient to ensure that said first comparator actuates said first drive motor whenever the output of said first servo generator is positive with respect to said reference voltage; and
means coupled between said second servo generator and said second comparator and responsive to said second servo generator developing an output which is negative with respect to said reference voltage for applying a second bias voltage to the reference input of said second comparator, said second bias voltage being of a magnitude sufficient to ensure that said second comparator actuates said second drive motor whenever the output of said second servo generator is negative with respect to said reference voltage,
whereby said first and second bias voltages compensate for internal offset voltages in said first and second comparators, respectively, to ensure that said first drive motor is actuated whenever said first servo generator develops an output positive with respect to said reference voltage, and that said second drive motor is actuated whenever said second servo generator develops an output negative with respect to said reference voltage.

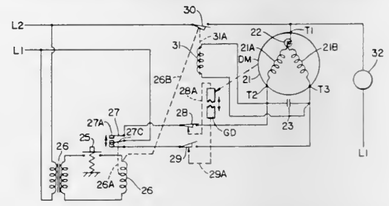
4,121,139
MAGNETIC APPARATUS FOR PRODUCING MOVEMENT
J. William Putt, 3278 W. Cedar St., Allentown, Pa. 18104
Continuation-in-part of Ser. No. 634,568, Nov. 24, 1975, abandoned. This application Jan. 10, 1977, Ser. No. 758,227
Int. Cl.[2] H02K *33/16*
U.S. Cl. 318—134 **15 Claims**



1. Apparatus for producing movement, comprising
a plurality of magnets,
means for supporting said magnets for relative movement along an axis with pairs of adjacent said magnets being movable from mutually proximate relative positions to mutually distant relative positions where the distance between them is increased by a given distance, at least two of said magnets being movable both relative to each other and relative to a third said magnet,
means for changing the polarity of one of each adjacent pair of magnets to move the adjacent magnets between their mutually proximate relative positions and their mutually distant relative positions,
one of said magnets being a driven magnet which is movable along said axis through a distance which is equal to the total of said given distances, and
output means connected to said driven magnet.

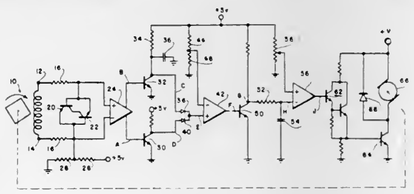
4,121,140
MOTOR CONTROL CIRCUIT
Melvin L. Jones, Irving, Tex., assignor to Overhead Door Corporation, Dallas, Tex.
Filed Mar. 4, 1977, Ser. No. 774,256
Int. Cl.[2] H02P *1/44*
U.S. Cl. 318—221 R **7 Claims**

1. A motor control circuit for preventing automatic restarting of an electric motor following an interruption of electric current flow therethrough, comprising:
electric power terminals energizable from an electric current source;
an electric motor comprising, in series, winding means and an automatic reset thermal overload protector, said motor having terminals for electrical connection to said winding means and protector;
a current supply switch means actuable to a state for serially connecting said motor winding means and protector across said electric power terminals;
a start switch;
a first switch control means associated with said current supply switch means and energizable by said start switch for switching said current supply switch means to said connecting state in response to actuation of said start switch;
a second switch control means connected across a pair of said motor terminals for energization with said motor; and



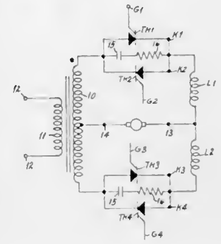
a common restart prevention switch connected in series with said current supply switch means and motor across said electric power terminals, and means connecting said common restart prevention switch to said first switch control means for closure thereby to permit current flow to said motor while said start switch is being actuated and also connecting said common restart prevention switch to said second switch control means for continuing and existing flow of current through said common switch to said motor, but for otherwise blocking current flow to said motor.

4,121,141
D.C. MOTOR SPEED CONTROL CIRCUITRY
Jerome A. Frazee, Milpitas, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed May 13, 1977, Ser. No. 796,587
Int. Cl.[2] H02P *5/16*
U.S. Cl. 318—326 **6 Claims**



1. Circuitry for controlling the speed of a D.C. motor having means for generating an A.C. output signal proportional to the rotational speed of said motor, said control circuitry comprising:
first operational amplifier means coupled to receive the A.C. output signal proportional to the rotational speed of said motor and coupled to a first source of reference potential to thereby generate first and a second square wave output signals, said first and said second square wave output signals being complementary to each other, and being at a frequency proportional to the frequency of said A.C. output signal;
first integrating means coupled to the first operational amplifier means for integrating the second square wave signal;
OR gate means coupled to the first integrating means and to the first operational amplifier means for combining the first square wave signal with the integrated second square wave signal;
second operational amplifier means coupled to the OR gate means to receive the output signal therefrom and coupled to a second reference voltage source for producing a third square wave signal;
second integrating means coupled to receive and integrate the signal from the second operational amplifier means;
comparison means for comparing the integrated pulses from said integrating means with an adjustable D.C. speed control reference voltage; and
variable duty cycle switching means in circuit with the D.C. motor, said switching means coupled to the output of said comparison means for conducting current through said motor when said speed control reference voltage exceeds the level of said integrated pulses.

4,121,142
FULL-WAVE BIDIRECTIONAL DC MOTOR DRIVE CIRCUIT
Alfred Harold Morser, Letchworth; Roy Gibson, Biggleswade; Paul Szekely, Watford, and Bruce Trayton Parker, Luton, all of England, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Sep. 20, 1977, Ser. No. 834,844
Int. Cl.[2] H02P *5/16*
U.S. Cl. 318—345 C **6 Claims**



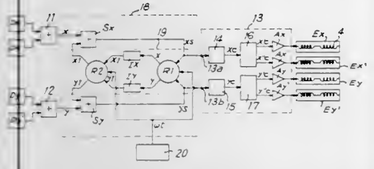
1. A full-wave DC motor control circuit responsive to a bipolar command signal for controlling an AC input signal being provided to a supply transformer, said supply transformer having a center tap of a secondary winding connected to one of two leads of a motor armature, the control circuit comprising:
(a) a center tapped choke having the center tap connected to the other lead of the motor armature;
(b) a first pair of thyristors having
(1) the anode of the first thyristor being connected to the cathode of the second thyristor and one end of the supply transformer, and
(2) the cathode of the first thyristor being connected to the anode of the second thyristor and one end of the choke;
(c) a second pair of thyristors having
(1) the anode of a third thyristor being connected to the cathode of the fourth thyristor and the other end of the supply transformer, and
(2) the cathode of the third thyristor being connected to the anode of the fourth thyristor and the other end of the choke;
(d) means responsive to each zero crossing of the AC input signal for generating a ramp funtion signal; and
(e) means responsive to the command signal and the generating means for alternately triggering between the pairs of thyristors with each half cycle of the AC input signal to produce a current flow through the motor armature thereby causing the motor to move in accordance with the command signal, said triggering means being effective in response to a zero command signal to simultaneously trigger one thyristor in each pair of thyristors to produce a current flow through the triggered thyristors, the supply transformer and the choke but not through the motor armature.

4,121,143

DEVICE FOR COMPENSATING SYNCHRONOUS DISTURBANCES IN THE MAGNETIC SUSPENSION OF A ROTOR

Helmut Habermann; Maurice Brunet, and Pierre Joly, all of Vernon, France, assignors to Societe Anonyme dite: Societe Europeene de Propulsion, Puteaux, France

Filed Dec. 17, 1976, Ser. No. 751,941
Claims priority, application France, Dec. 24, 1975, 75 39759
Int. Cl.² G05B *11/01*
U.S. Cl. 318—629 **6 Claims**



1. A magnetic suspension system for a rotor, comprising at least one active radial electromagnetic bearing having electromagnetic windings; detecting means for producing a position signal representative of the radial position of the rotor with respect to a predetermined radial position; energizing means for supplying current to said windings; and a servo-circuit coupled between said detecting means and said energizing means for controlling the current supplied to said windings in response to said position signal so as to maintain the rotor in said predetermined radial position, wherein said servo-circuit comprises:

band rejection filter means receiving said position signal and having a frequency rejection band centered on a central frequency equal to $n \cdot \omega$, where n is an integer and ω is the rotational speed of the rotor, for eliminating from said position signal a component having the frequency $n \cdot \omega$, and

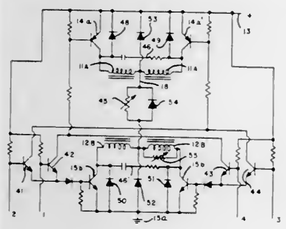
means for generating a signal representative of the rotational speed ω of the rotor and connected to said band rejection filter means for continuously slaving said central frequency of said frequency rejection band to the value $n \cdot \omega$.

4,121,144

STEPPING MOTOR ENERGIZING CIRCUIT AND METHOD FOR MINIMIZING STEP POSITION ERROR

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Jan. 24, 1977, Ser. No. 761,850
Int. Cl.² H02K *37/00*
U.S. Cl. 318—696 **10 Claims**



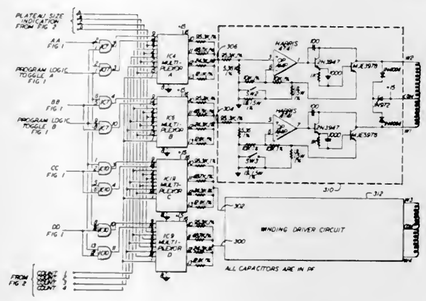
1. A circuit for energizing a stepping motor having a plurality of step positions and having two windings that are simultaneously maintained energized to maintain each step position with the circuit minimizing step position error caused by current imbalance in the two windings by causing the same value of current to flow in each winding comprising a source of unidirectional power, a pair of connections to each winding, means for connecting the windings in series with each other across the source of power by one of each pair of connections being connected together and switch means connected in series with the other one of the connections of each winding and the source of power, said switch means including means for changing the current flow in one winding independently of the other winding and for reversing the effective direction of current flow in either winding independently of the other winding.

4,121,145

HIGH RESOLUTION STEPPING MOTOR DRIVE

Paul Conway Talmadge, Ansonia, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 25, 1977, Ser. No. 772,178
Int. Cl.² H02K *37/00*
U.S. Cl. 318—696 **18 Claims**



1. A method for controlling the rest position of a multipole stepping motor comprising the steps of:

applying an energizing signal to each winding such that each signal comprises a leading edge which is an ascending staircase having a selectable number of steps and a trailing edge of a descending staircase having said selectable number of steps and a plateau between the leading and trailing edge which is at a selectable magnitude;

producing said ascending staircase in any given winding at a time preceding that when a descending staircase is produced in an adjacent winding;

producing said descending staircase in said given winding at a time following an ascending staircase being produced in the other adjacent winding; and

applying said energizing signals to said windings until the total number of steps in all ascending and all descending staricases equals a selectible Number N.

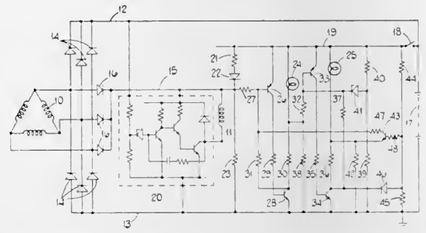
4,121,146

BATTERY CHARGING SYSTEMS FOR ROAD VEHICLES

William Frank Hill, Stafford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 1, 1977, Ser. No. 773,271
Claims priority, application United Kingdom, Mar. 3, 1976, 8422/76
Int. Cl.² H02J *7/14*
U.S. Cl. 320—48 **7 Claims**

1. A battery charging system for a road vehicle, comprising an alternator having an armature and a field winding, first, second and third supply lines, a further supply line, a full wave rectifier connecting the armature to first and second supply lines for connection to the battery to be charged, an auxiliary rectifier connecting the armature to a third supply line which is at substantially the same voltage as the first supply line when the alternator is running, a voltage regulator circuit by means of which the field winding is connected between the second and third supply lines, a switch connecting the first line to a further supply line, a resistor and a diode connected in series between the further and third supply lines, said diode conducting when the voltage on the third supply line is lower than that on the further line, a current path of high impedance relative to the impedance of said resistor interconnecting the second and third supply lines, a first warning lamp, means sensitive to the voltage between the further and third supply lines for illuminating the first warning lamp, means sensitive to the voltage



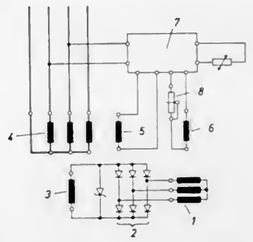
drop across said first warning lamp for illuminating the second warning lamp when said voltage drop across the first warning lamp exceeds a predetermined value, and an over-voltage sensing means for illuminating said second lamp when the voltage between the further and second supply lines exceed a threshold value.

4,121,148

BRUSHLESS SYNCHRONOUS GENERATOR SYSTEM

Hubert Platzer, Linz, Austria, assignor to Dipl.-Ing. Hitzinger & Co., Linz, Austria

Filed Apr. 25, 1977, Ser. No. 790,263
Claims priority, application Austria, Apr. 27, 1976, 3079/76
Int. Cl.² H02K *19/34*; H02P *9/14*
U.S. Cl. 322—59 **6 Claims**



1. A brushless synchronous generator system, comprising

a generator having a stator which is provided with a multipole main winding and with an auxiliary winding, which is separate from and has the same number of poles as said main winding and a coil width not in excess of one-half of the pole pitch of said main winding,

an exciter having a field exciting winding, and

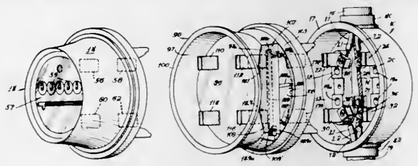
a controller connected between said auxiliary winding and said field-exciting winding to energize the latter.

4,121,147

ELECTRIC METER FOR MOUNTING WITH A STANDARD WATTHOUR METER

Dale F. Becker, Seneca, S.C.; Trevor N. Samuel, Rochester, Ill., assignor to Sangamo Electric Company, Springfield, Ill.

Continuation of Ser. No. 538,164, Jan. 2, 1975, abandoned. This application Sep. 13, 1976, Ser. No. 722,594
Int. Cl.² G01R *19/16, 1/04*
U.S. Cl. 324—104 **12 Claims**



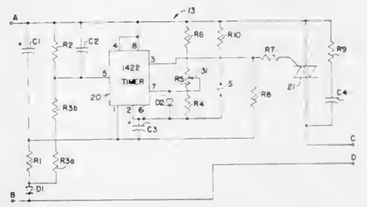
1. In an electrical meter for use with a standard watthour meter and a standard meter socket, a housing including a display area, a meter receiving section comprising a base plate, a plurality of jaw members supported by said base plate and positioned on said base plate to receive the blades of a standard watthour meter, meter socket engaging means comprising a plurality of blades extending rearwardly of said housing and positioned to engage the jaws of a standard meter socket, an electrical meter assembly supported within a longitudinally disposed part of said housing and in tandem relation with said watthour meter and said meter socket, said electrical meter assembly including an indicator located adjacent said display area, a plurality of conductor means connecting said blade members to said jaw members, and means for coupling said electrical meter assembly to at least one of said conductor means to provide a power measurement on said indicator, said housing including the elctrical meter assembly being located within a circumference defined by the rearward projection of the circumference of the base of said standard watthour meter.

4,121,149

TIMING CONTROL FOR AC POWER CIRCUIT

Daniel A. Seltzer, Richardson, Tex., assignor to DAS Design Corporation, Dallas, Tex.

Filed Dec. 30, 1976, Ser. No. 755,454
Int. Cl.² H05B *9/06*
U.S. Cl. 323—19 **12 Claims**



1. Circuitry for variable control of an AC power circuit comprising

a first timing circuit means responsive to varying DC input control voltage levels for producing, alternately, high and low DC output voltage levels; said timing circuit means including an output, an input for a control voltage, and means for comparing an input control voltage with upper and lower trigger voltage levels for switching the timing circuit output between high and low voltage levels;

a second power supply circuit means, coupled to the AC power circuit, for producing a selected DC supply voltage for said first circuit means and other circuit means;

a third switching circuit means including a DC operated electronic, alternating current switch for selectively opening and closing said AC power circuit; the DC operating circuit for said switch being connected between the positive side of said DC power supply and said timing circuit output;

a fourth control voltage circuit means for producing a con-

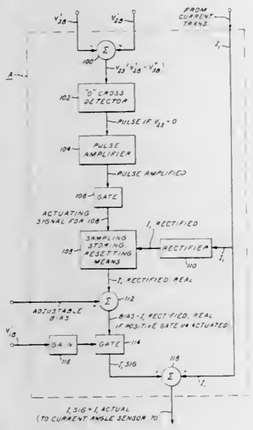
trol voltage which increases or decreases at a selected rate; said control voltage circuit means including variable resistance means connected directly between the positive side of said DC power supply and said timing circuit input, and a capacitor connected between said timing circuit input and the negative side of said DC power supply; said variable resistance means including a wiper contact connected to said timer circuit input through a series connected diode passing current to said input, and connected to a timing circuit discharge terminal; said timing circuit discharge terminal functioning to connect said wiper contact to the negative side of said DC power supply when said timing circuit output voltage level is low.

4,121,150

GAIN COMPENSATION FOR POWER FACTOR IN LINE CURRENT REGULATING SYSTEMS INVOLVING REACTIVE POWER

Fred William Kelley, Jr., Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Jul. 25, 1977, Ser. No. 818,363
Int. Cl.[2] G05F *1/68*; H02J *3/18*
U.S. Cl. 323—102 **15 Claims**



9. Reactive current supply apparatus for an a-c electric power system including a critical voltage supply bus electrically separated by series impedance from load terminals which are adapted for connection to a major load subject to rapid oscillatory variation of reactive current demand comprising: fixed capacitor means connected across said load terminals, fixed inductor means connected across said load terminals in series circuit relation with static switching means, said static switching means including gating means for phase controlling the conduction angle of said switching means thereby to control the magnitude of reactive current traversing said inductor means, means for generating a unidirectional electrical signal representative in direction of the phase relation of the reactive component of load current at said load terminals and representative in magnitude to the magnitude of said reactive component of load current, means responsive to said electric signal for so controlling said gating means that the sum of the reactive currents traversing said fixed capacitor means and said fixed inductor means is substantially equal and opposite to said reactive component of load current, and, means for deriving first and second signals respectively representative of the line current and line to neutral voltage at said critical voltage supply bus, means including a current angle sensor for sensing the magnitude of the phase angle between said first and second signals and directing an output signal therefrom to said static switching means so as to regulate the phase angle, wherein the improvement comprises:

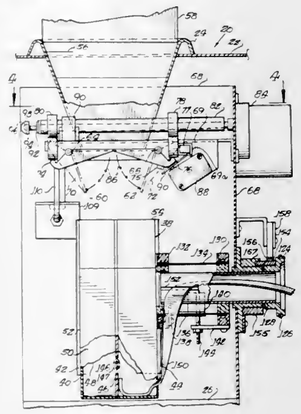
a. means for sensing the magnitude of the in phase component of said line current at said critical bus and producing an output signal which is representative thereof;
b. means for receiving said output signal representative of the in phase component of said line current and determining whether said magnitude of said in phase current component is insufficient to result in stable power system operation; and
c. means for adding an in phase current component signal to said first signal and directing the combination thereof to said current angle sensor whenever said in phase current component is determined to be insufficient to result in stable power system operation.

4,121,151

ANALYSIS INSTRUMENT

David B. Funk, Virden, and William E. Midden, Springfield, both of Ill., assignors to Dickey-john Corporation, Auburn, Ill.

Filed Apr. 27, 1977, Ser. No. 791,651
Int. Cl.[2] G01R *27/26*
U.S. Cl. 324—61 R **20 Claims**



1. In an analysis instrument for measuring selected constituent contents of a sample of material, the combination comprising: a test cell for receiving said sample, said test cell defining a capacitor having measurable electrical properties modified in accordance with the dielectric constant of the sample, which dielectric constant is a function of the contents thereof, means for producing an output condition corresponding to the bulk density of a sample including means for adjusing the volume of the sample received in said test cell to a predetermined constant volume and weighing means for producing an output condition corresponding to the weight of said sample in said test cell, said measurable electrical properties of said capacitor and said bulk density output condition producing means coacting to give measurable outputs indicative of the selected constituent contents of said sample in the test cell.

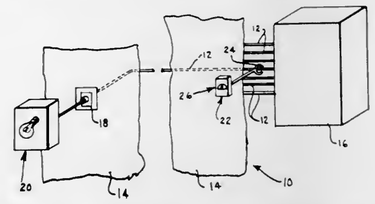
4,121,152

METHOD AND APPARATUS FOR TRACING ELECTRICAL CABLES

Edgar C. Hale, 1261 Via Esperanza, San Dimas, Calif. 91173, and Stephen R. Troy, 104-20 89th Ave., Richmond Hill, N.Y. 11418

Filed May 17, 1976, Ser. No. 687,284
Int. Cl.[2] G01R *19/16*
U.S. Cl. 324—66 **1 Claim**

1. A method of tracing electrical cables between an outlet and a circuit breaker, said method comprising the steps of electrically connecting a pulsing electrical load means having a load element, a silicon controlled rectifier for connecting and disconnecting the load across the outlet, a diode, a resistor and a capacitor forming a time delay circuit connected across the outlet and a voltage sensitive silicon trigger diode switch responsive to the voltage level on the time delay circuit for triggering the silicon controlled rectifier to said outlet, adjusting the amount of additive current passed by said pulsing load to a value proportional to the existing load current in said cables whereby said additive current can be readily detected, placing a clamp-on ammeter sequentially about each of a plurality of said cables and detecting a fluctuation in current flow with said clamp-on ammeter corresponding to the fluctuation in current being drawn by said pulsing load while said clamp-on ammeter is clamped about said cable.

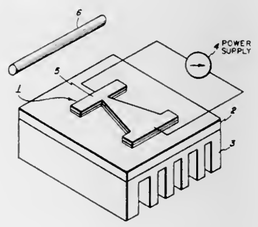


4,121,153

TAPERED RESISTOR METER

David D. Thornburg, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1976, Ser. No. 747,166
Int. Cl.[2] G01R *19/00*
U.S. Cl. 324—96 **1 Claim**



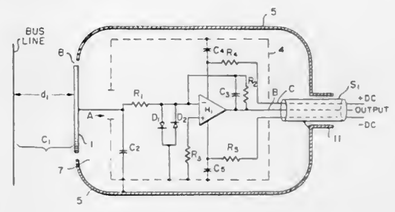
1. An improved analog meter which has no moving parts and which is substantially electric field insensitive comprising:
a tapered resistor device comprised of (1) an electrically resistive element having a tapered form, and (2) a layer of a thermally quenched phosphor material operatively associated with said electrically resistive element, said phosphor material exhibiting a change in color contrast when it is both (*i*) heated beyond a threshold temperature and (*ii*) viewed under light of ultraviolet wavelength,
means for coupling said electrically resistive element to a current surce, said electrically resistive element developing a non-uniform temperature profile on electrical energization due to its tapered form whereby said electrically resistive element heats a portion of said layer of phosphor material to beyond said threshold temperature, the magnitude of the portion of said phosphor heated to beyond said threshold temperature being related directly to the magnitude of the current from said current source, and
means for illuminating said layer of phosphor material with light of ultraviolet wavelength whereby the portion of said phosphor heated to beyond said threshold temperature exhibits a color which is in contrast to the color of other portions of said layer of phosphor material such that the magnitude of the current from said current source is indicated.

4,121,154

ALTERNATING CURRENT POTENTIAL MEASURING DEVICE

Charles M. Keating, Portland, Oreg., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation of Ser. No. 622,345, Oct. 14, 1975, abandoned.
This application Dec. 10, 1976, Ser. No. 749,584
Int. Cl.[2] G01R *1/20, 15/04*
U.S. Cl. 324—126 **5 Claims**



1. A voltage measuring apparatus for measuring the magnitude of the voltage on an alternating current power line without physically contacting said line with the apparatus comprising in combination:
an elongated power line attached to and supported above the earth for carrying a high voltage alternating current, said line forming a first electrode;
a voltage sensing apparatus having a second electrode with a generally flat planar surface which is adapted to face towards and substantially parallel with the elongated length of said power line, said second electrode also being spaced a known distance from said first electrode with ambient gas therebetween;
said first and second electrodes acting as a first capacitor with said ambient gas therebetween;
a second capacitor electrically connected to said second electrode at one side and to ground potential at the other side so that a voltage signal can be impressed thereon from said second electrode;
an electrically grounded shield surrounding said second electrode on all sides excepting its planar surface facing towards and parallel to said power line, said second electrode being supported by an insulated support means relative to said electrically grounded shield, said grounded shield surrounding and being connected to said second capacitor at its ground potential side and said grounded shield being supported by means of a pole above the earth;
circuit means encompassed by said grounded shield for detecting the magnitude of said voltage signal and converting it to a second electrical signal representative of the voltage drop between the first and second electrodes; and
remote readout means outside of said grounded shield electrically connected to said circuit means for displaying the magnitude of said second signal.

4,121,155

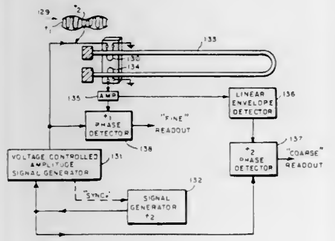
POSITION READOUT DEVICE

Jacques R. Chamuel, Allston, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Dec. 2, 1976, Ser. No. 747,072
Int. Cl.[2] G01R *33/00*
U.S. Cl. 324—207 **36 Claims**

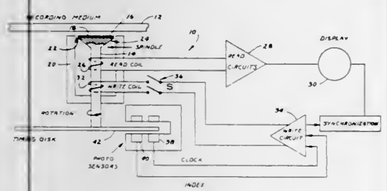
1. A position determining system comprising

at least one delay element capable of supporting a traveling wave signal;
signal producing means;
at least one driver transducer means located at at least one position at said delay element;
at least one receiver transducer located at at least one other position of said delay element;
said driver transducer means being responsive to said signal producing means for causing a traveling wave to propagate along said delay element from said at least one position to said at least one other position so that said traveling wave signal traverses a distance to be measured more than once;



means responsive to the signal at said at least one driver transducer means and the signal received at said at least one receiver transducer means for determining the distance between a reference position fixed with respect to said delay element and the position of one of said driver transducer means or receiver transducer means; and
means for substantially reducing reflections of said traveling wave signal in said delay element.

4,121,156
ROTATING SPINDLE AND STATIONARY TRANSDUCER DEVICE FOR SENSING THE PREFERRED MAGNETICALLY PERMEABLE ORIENTATION IN MAGNETIC MEDIA
Arthur Barnhart Olson, Edina, Minn., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Oct. 21, 1977, Ser. No. 844,330
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—210 **2 Claims**

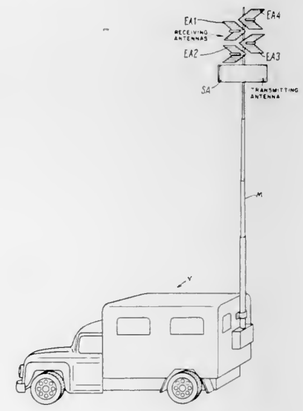


1. A magnetic orientation sensor for magnetic recording media comprising:
a transducer consisting of a cylindrical structure having a generally circular shaped planar face perpendicular to the cylindrical axis said cylindrical structure having an axial, longitudinal central opening,
a rotatable spindle mounted in the central opening of said transducer, said spindle having a head portion having a generally flat face co-planar with the face of said cylinder,
a longitudinal element of magnetic material mounted in the face of the head portion of said spindle, extending from one edge of the face to the other and forming a pair of flux gaps with said transducer, and
at least one coil magnetically coupled to said spindle and within said transducer for applying drive signals and for receiving signals induced
said sensor, in operation, being disposed with the faces of said cylinder and said spindle in a parallel plane and proximate to a sample of essentially planar recording media.

4,121,157
CASTABLE MAGNETIC PARTICLE FLAW DETECTION COMPOSITION AND METHOD USING CONSTITUENTS THAT ARE NON-VOLATILE AND RESISTANT TO OXIDATION BELOW 100° F AND HAVING A VISCOSITY LESS THAN 12,000 CENTIPOISES
Henry J. Weltman; Mark T. Carroll; John E. Halkias; William T. Kaarlela, and Jack D. Reynolds, all of Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.
Filed Jul. 5, 1977, Ser. No. 812,873
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—216 **17 Claims**

11. A composition forming a room temperature vulcanizable casting material for precise visual inspection of magnetically inductive substances by application of the material directly to a workpiece to be inspected, solidifying in situ to elastic flexible form and removing the casting, for determining and permanently recording the presence of flaw or flaws in the workpiece by migration of visible magnetizable particles in the composition to the flawed area when the workpiece and casting material are subjected to an effective magnetic flux comprising: a base formulation having:
a. a proportion of about 100 parts by weight of polymeric rubber compound that is vulcanizable at room temperature by addition of a suitable catalyst material thereto; said rubber compound consisting essentially of only constituents that are non-volatile below about 100° F so as to resist shrinking, that are resistant to oxidation below about 100° F so as to resist rancidity, and that are not exuded from the rubber for a period of time; said rubber having a first color that is effective for providing for a contrast with ferromagnetic particles; said rubber compound having a viscosity less than about 12,000 centipoises;
b. a proportion of about 0.1–10 parts by weight of visible ferromagnetic particles in the size range of about 0.8 to about 10 microns; said ferromagnetic particles having a second color that contrasts with said first color to facilitate visual observation of anomalous concentrations and alignments of said ferromagnetic particles;
c. a diluent that contains only constituents that are non-volatile below about 100° F so as to resist shrinkage, that are resistant to oxidation below about 100° F so as to resist rancidity and that will not be exuded from the base formulation after it is removed from the surface of the workpiece; said diluent consisting essentially of a material that is compatible with said polymer rubber composition and miscible with said rubber in all proportions from about 1 to 4 to about 4 to 1; said diluent having a sufficiently low viscosity and being in a proportion such that its admixture with said rubber is brought to the range of from about 100 to about 1000 centipoises before application to the surface of said workpiece; and
a proportion of about 0.2 to about 6 parts by weight per 100 parts of said base formulation of catalyst for vulcanizing said rubber compound to said flexible elastic form so as to immobilize said ferromagnetic particles that have migrated to any flaw under the influence of a magnetic field.

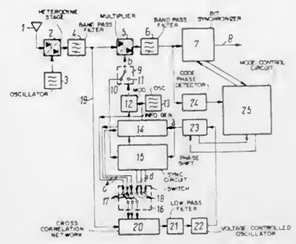
4,121,158
RADIO SYSTEM
Manfred Hanni, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich
Continuation of Ser. No. 552,163, Oct. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 324,067, Jan. 11, 1973, abandoned. This application Oct. 22, 1976, Ser. No. 736,164
Int. Cl.[2] H04B *1/38, 7/04*
U.S. Cl. 325—55 **11 Claims**



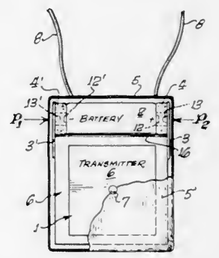
1. A radio system including a large number of transmitting receiving exchanges spatially distributed over an area and each connected to and serving a large number of individual subscribers who may become interconnected via another such exchange, each of said exchanges comprising means providing a plurality of radio frequency voice channels of different frequency within a frequency range that is fixed for the system, means for pulse modulating signals in said voice channels, a vocoder for reducing the bandwidth of the individual signals in a voice channel, means for transmitting said voice channels including an omnidirectional antenna which radiates toward the other exchanges with little grouping in the plane determined by the exchange, a plurality of means for receiving transmissions from other exchanges including a plurality of directional antennas which group both in the horizontal and vertical planes, and means for connecting said receiving means to a subscriber connected to the exchange.

4,121,159
METHOD FOR THE SYNCHRONIZATION OF A TRANSMISSION PATH
Ernst Lampert, Unterpfaffenhofen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Oct. 28, 1971, Ser. No. 195,062
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1970, 2054734
Int. Cl.[2] H04B *1/10;* **H04L** *7/00*
U.S. Cl. 325—65 **8 Claims**

1. A method of synchronizing the transmitting and receiving apparatus of a transmission system which operates on a time or code multiplex SSMA basis wherein information is transmitted in a broad frequency band compared to the base band normally occupied thereby, comprising the steps of: at the transmitting apparatus, frequency shift modulating an oscillation and digitally phase modulating each frequency element of the frequency modulated oscillation with a unique phase modulation, and transmitting the dual modulated signal at the beginning of information transmittal; and at the receiving apparatus, receiving the dual modulated signal; producing a frequency and phase modulated signal equal to that received; multiplying the produced signal with respect to its phase while comparing the power thereof with the power of the received signal to detect a power maximum of the multiplied signal in a narrow frequency band, and switching to operation under the control of a locally produced oscillation for normal synchronous conditions in response to maximum power detection.

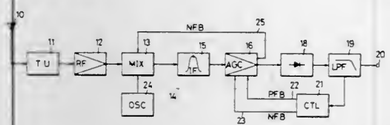


4,121,160
SWITCH MEANS FOR RADIO ALARM DEVICE
Thomas R. Cataldo, 5169 Princess Ann Dr., La Canada, Calif. 91001
Filed Mar. 22, 1977, Ser. No. 780,011
Int. Cl.[2] H04B *1/034*
U.S. Cl. 340—321 **4 Claims**



1. In a miniature alarm transmitter device adapted to be worn on the body of a person under the clothing:
a battery, and
a miniature radio transmitter built on a circuit board, said battery having a terminal at each of its opposite ends and extending generally parallel to one side portion of said board;
a pair of resilient metal spring contact and support members each secured to said side portion adjacent one of said terminals and having a contact portion extending generally outward opposite to one of said terminals;
a pair of ring-like resilient insulating spacers each positioned between each said contact portion and its adjacent said terminal,
said spacers electrically separating both said contact portions and terminals and also supporting said battery by its said terminals from said members, and
an outer housing in the form of a soft flexible bag enclosing both said battery and transmitter, whereby squeezing pressure through said outer housing simultaneously against both said support members toward each other is adapted to press both said contacts against their respective battery terminals to activate said transmitter.

4,121,161
AM RECEIVER
Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 19, 1975, Ser. No. 642,344
Claims priority, application Japan, Dec. 28, 1974, 50-3367
Int. Cl.[2] H04B *1/28*
U.S. Cl. 325—404 **7 Claims**



1. In an AM receiver having an amplifier stage for amplifying received signals which vary from an extremely low level through a range of usable sensitivity to a high level, said amplifier stage including an automatic gain control means for providing gain variable between a maximum gain level and a minimum gain level, detector and filtering means coupled to said amplifier stage for providing an audio signal, and control means having an input coupled to said detector and filtering means and providing a control signal to said automatic gain control means for changing said gain thereof to a predetermined gain level intermediate said maximum and minimum gain levels when said received signals are at said extremely low level, to said maximum gain level when said received signals are within said range of usable sensitivity, and to said minimum gain level when said received signals are at said high level; said automatic gain control means comprising:

first and second bias voltage sources;

first and second input terminals receiving said control signal and said received signal, respectively;

control current means electrically connected to said first input terminal and responsive to said control signal for producing a control current varying with said control signal;

signal current means electrically connected to said control current means and to said first bias voltage source for producing a signal current which varies inversely with said control current;

means electrically connected to said control current means, said signal current means, said second bias voltage source and said second input terminal, and modulating said signal current with said received signal to produce an output signal; and

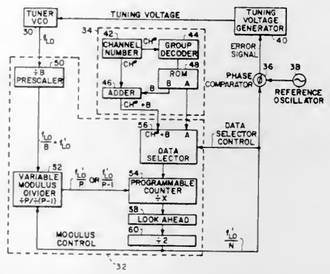
output terminal means electrically connected to said signal current means and receiving said output signal through the latter.

4,121,162
DIGITAL PHASE LOCKED LOOP TUNING SYSTEM
Jade Henry Alberkrack, and Stephen Earl Hilliker, both of Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 14, 1976, Ser. No. 695,875
Int. Cl.[2] H04B *1/16*
U.S. Cl. 325—421 **24 Claims**

1. A digital phase locked loop tuning system responsive to a local oscillator signal for producing a frequency synthesized digital output signal which is utilized to control the frequency of the local oscillator, the local oscillator having a plurality of frequencies associated therewith corresponding, respectively, to a plurality of selectable channels, each of the channels being allocated to one of at least two channel groups with each channel in a particular channel group being separated from an adjacent channel in the particular channel group by a predetermined frequency spacing of the local oscillator, comprising:

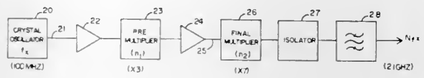
programming means responsive to an input signal representing a selected channel number of a particular channel group for generating a first digital control signal having a value corresponding to the selected channel number and for generating a second digital control signal representative of said particular channel group, said second digital control signal being a constant predetermined value for all of said channel numbers that are within said group; and

programmable divider means coupled to said programming means being responsive to said first, second digital control signals and the local oscillator signal, in a local oscillator mode, for generating the digital output signal which is representative of a desired frequency corresponding to said selected channel number, said programmable divider



means including means for dividing the local oscillator signal by first and second factors, said first factor being related to the frequency separation between local oscillator signals by an integral number, the local oscillator signal being divided by said first factor during a first interval for a first number of periods of the output signal and being divided by said second factor for a second number of periods of the output signal, said first number of periods being related to the number of the channel selected, said second number being related to the channel group within which the selected channel lies.

4,121,163
LOW-NOISE MICROWAVE SIGNAL GENERATOR
Josef L. Fikart, Port Coquitlam, Canada, assignor to GTE Lenkurt Electric (Canada) Ltd., Burnaby, Canada
Filed Jul. 5, 1977, Ser. No. 812,544
Int. Cl.[2] H03B *19/00*
U.S. Cl. 328—16 **6 Claims**



1. Apparatus for producing a low-noise frequency-stable microwave signal comprising:

a low-noise frequency-stable VHF signal generator providing a first signal having a frequency f_x;

first amplifier means having a first amplifier input and a first amplifier output, said first amplifier input connected to said signal generator, and providing signal gain in the VHF range to said first signal;

first frequency multiplier means having a first multiplier input and a first multiplier output, said first multiplier input connected to said first amplifier output, said multiplier means generating a second signal harmonically related to f_x;

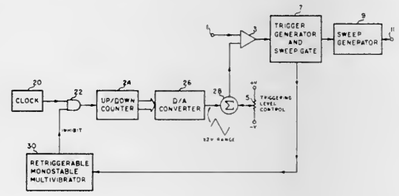
second amplifier means having a second amplifier input and a second amplifier output, said second amplifier input connected to said first multiplier output, and providing signal gain to said second signal;

second frequency multiplier means having a second multiplier input and a second multiplier output, said second multiplier input connected to said second amplifier output,

said second multiplier means generating a signal of frequency Nf_x, where N is a predetermined integer and Nf_x is in the microwave frequency range; and

a microwave bandpass filter connected to said second multiplier output, having a passband centered about Nf_x, and producing a microwave frequency signal having a total noise content less than what would be produced by an otherwise equivalent amplifier-frequency-multiplier combination interconnected between said VHF signal generator and said microwave bandpass filter.

4,121,164
AUTOMATIC TRIGGER CIRCUIT
Dennis LeRoy Feucht, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Apr. 27, 1977, Ser. No. 791,271
Int. Cl.[2] H03K *4/08*
U.S. Cl. 328—181 **3 Claims**



1. An automatic trigger circuit, comprising:

a signal input;

a variable reference voltage source for providing a variably adjustable voltage level within a predetermined triggering voltage window;

a comparator having a first input terminal coupled to said signal input and a second input terminal coupled to said reference voltage source, said comparator generating triggering signals in response to a comparison between said signal input and said variably adjustable voltage level;

scanning means for causing said reference voltage automatically to scan through said triggering voltage window, said scanning means including means for generating a triangular voltage waveform the peak-to-peak amplitude of which is at least twice the peak-to-peak amplitude of said triggering voltage window, said scanning means further including means for summing said triangular voltage waveform with said variably adjustable voltage level to provide a scanning reference voltage; and

control means for disabling said scanning means for a predetermined period of time after a triggering signal is generated.

4,121,165
DIGITAL DEMODULATOR WITH INTERPOLATION FOR LINEARLY AMPLITUDE-MODULATED DATA SIGNALS
Renato Dogliotti; Umberto Mazzei, both of Turin, and Umberto Mengali, Pisa, all of Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy
Filed Apr. 22, 1977, Ser. No. 790,081
Claims priority, application Italy, Apr. 22, 1976, 67962 A/76
Int. Cl.[2] H03D *1/02;* H03K *9/02*
U.S. Cl. 329—50 **5 Claims**

1. A digital demodulator of data signals of a given symbol frequency transmitted by linear amplitude modulation of a carrier, comprising:

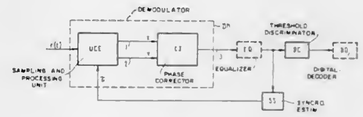
a source of first, second and third clock pulses, said first clock pulses having a cadence higher than said symbol frequency but not harmonically related thereto, said second and third clock pulses having a cadence equal to said symbol frequency while being relatively staggered by half a cycle of their cadence;

analog/digital conversion means connected to said source for deriving a series of digitized samples from an incoming modulated carrier at the cadence of said first clock pulses;

delay means connected to said conversion means and controlled by said first clock pulses for simultaneously presenting a multiplicity of successively received digitized samples on respective outputs thereof;

first and second memory means respectively storing first and second sets of interpolation coefficients which are functions of the carrier frequency, said first and second memory means having enabling inputs connected to said source for respectively receiving said second and third clock pulses therefrom;

a generator of address signals controlled by said first and second clock pulses, said generator being connected to said



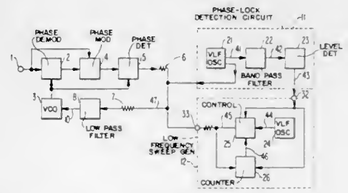
first and second memory means for reading out a multiplicity of first interpolation coefficients from said first memory means in the presence of a second clock pulse and for reading out a multiplicity of second interpolation coefficients from said second memory means in the presence of a third clock pulse;

digital filter means with first and second inputs respectively connected to said first and second memory means and with other inputs connected to the outputs of said delay means for deriving from said digitized samples and from said first and second interpolation coefficients two interleaved trains of in-phase samples and quadrature samples;

phase-correcting means connected to said digital filter means for recovering a phase-coherent baseband signal from said in-phase and quadrature samples; and

synchronization-estimating means downstream of said phase-correcting means feeding back an error signal to said source for establishing an optimum relative time position of said first, second and third clock pulses.

4,121,166
PHASE SYNCHRONIZING CIRCUIT FOR DEMODULATION OF MULTI-PHASE PSK SIGNALS
Youichi Matsumoto, and Yoshimi Tagashira, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Nov. 11, 1977, Ser. No. 850,518
Claims priority, application Japan, Nov. 11, 1976, 51-136044
Int. Cl.[2] H03D *3/02*
U.S. Cl. 329—122 **5 Claims**



1. In a phase synchronizing circuit for the demodulation of multi-phase PSK signals comprising a phase synchronizing loop, including a voltage controlled oscillator for generating a variable frequency output in response to a control voltage and a phase comparator for providing a comparison output representative of the phase difference between the output of said voltage controlled oscillator and an input signal, said compari-

son output serving as said control voltage, the improvement wherein said phase synchronizing circuit further comprises:

phase synchronization detector means connected to said phase synchronizing loop for detecting the phase-synchronized and unsynchronized states of said loop;

low frequency oscillator means connected to receive the output of said phase synchronizing detector means for generating a predetermined variable-amplitude voltage supplied as a frequency sweep voltage for said voltage controlled oscillator during a period of time, said period of time running from the detection at said detector of the phase-unsynchronized state to a predetermined period of time after the detection of the change from the phase-unsynchronized state to the synchronized state; and

means for supplying the output of said low frequency oscillator to said phase synchronizing loop.

4,121,167

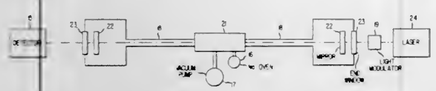
AMPLIFYING CHARACTERISTICS OF A CAVITY-ENCLOSED NONLINEAR MEDIUM

Hyatt McDonald Gibbs, Warren; Samuel Leverte McCall, Jr., Gillette, and Thirumalai Nallan Chakravarthy Venkatesan, Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1976, Ser. No. 735,989

Int. Cl.[2] H01S *3/00*

U.S. Cl. 330—4.3 **66 Claims**



1. A method of amplifying variations in an optical signal of a given wavelength comprising:

introducing light of the given wavelength into a cavity formed by at least two surfaces that reflect light of the given wavelength, and which surfaces are separated at least in part by a positive-temperature nonlinear medium;

fixing the cavity and medium characteristics such that the dispersive properties of the medium dominate or are equal to the absorptive properties of the medium at the given wavelength and such that there is a single valued relationship between the intensities of the incident and transmitted signals which exhibits gain; and

extracting the amplified signal from said cavity, the invention characterized in that

the dispersive properties of the medium are made to dominate its absorptive properties by inducing transitions within the material through the absorption of light, which transitions introduce dispersive contributions due to non-driven states, which contributions are greater than 10 percent of the dispersive contributions due to the driven states.

4,121,168

OPTICALLY COUPLED BIAS CIRCUIT FOR COMPLEMENTARY OUTPUT CIRCUIT AND METHOD

Robert M. Stitt, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Aug. 24, 1977, Ser. No. 827,212

Int. Cl.[2] H03F *3/21*

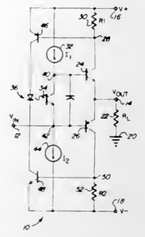
U.S. Cl. 330—265 **15 Claims**

1. A complementary transistor output circuit having an output and an input and comprising:

(a) a first output transistor of a first conductivity type having first and second electrodes and a control electrode;

(b) a second output transistor of a second conductivity type having first and second electrodes and a control electrode, said first electrode of said first transistor being coupled to said first electrode of said second transistor and being also coupled to said output, said input being coupled to said control electrode of both said first and second transistors; and

(c) means electrically responsive to an output current component through one of said output transistors and coupling said first and second control electrodes for biasing said first and second output transistors to produce a bias current component in said first and second transistors which is substantially independent of any variations in said output current component through said one of said output transistors, including any variations in said output current caused by temperature variations in said one of said output transistors.



4,121,169

AMPLIFIER DEVICE

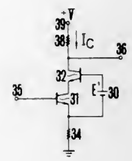
Masayuki Iwamatsu, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 13, 1977, Ser. No. 759,123

Claims priority, application Japan, Jan. 19, 1976, 51-3373[U]

Int. Cl.[2] H03F *3/04*

U.S. Cl. 330—296 **14 Claims**



1. In an amplifier device of the type comprising first and second cascode connected three electrode active semiconductor elements each having a control electrode, a majority carrier input electrode and a majority carrier output electrode and wherein the control electrode of the first element is connected to a signal input terminal, the majority carrier input electrode of the first element is connected to a source of reference potential through resistance means, the majority carrier output electrode of the first element is connected to the majority carrier input electrode of the second element, and the majority carrier output electrode of the second element is connected to a voltage source via a resistor and to an output terminal, the improvement wherein the control electrode of said second element is connected back to the majority carrier input electrode of said first element through a constant current biasing circuit means without intervening impedance means.

4,121,170

TUNABLE OSCILLATOR WITH HIGH STABILITY AND ACCURATE FREQUENCY

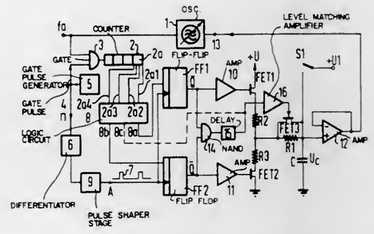
Heribert Hartmann, Hohenbrunn Riemerling, and Guenter Wess, Seefeld, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jul. 22, 1977, Ser. No. 818,088

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641501

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—1 A **11 Claims**



1. A tunable oscillator having a high degree of frequency accuracy and stability, wherein a counter is provided which periodically checks the actual frequency output of the oscillator and wherein, depending upon the counting value reached in the lowest stage of the counter produces one of two logic signals and the first signal is formed on the occurrence of a number which deviates in a first, correlated number sequence which indicates a frequency deviation from the theoretical value in a first direction, and the second signal is formed on the occurrence of a number which deviates in a second correlated number sequence which indicates a frequence deviation from the theoretical value in the opposite direction, and wherein said logic signals are used to recharge a capacitor, whose charging voltage represents a regulating voltage which reduces the frequency drift of said oscillator, characterized in that a recharging circuit for said capacitor (C) contains a switch (FET3), which is actuated on the repeated occurrence of indentical or differing numerical values directly in series in one of the number sequences, and causes the charging- or discharging- constant to switch to a lower value.

4,121,171

FILTERING CIRCUIT FOR A PHASE-LOCKED LOOP

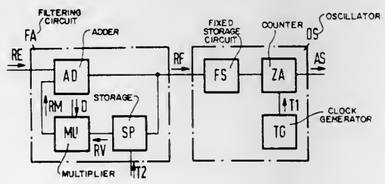
Gero Schollmeier, Gauting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 12, 1977, Ser. No. 814,900

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1976, 2631937

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—1 A **3 Claims**



1. A phase-locked loop receiving an input signal and generating an output signal comprising:

a phase detector means coupled to said input and output signals for detecting the phase difference between said input and output signals, said phase detector means producing a phase detecting control signal having instantaneous values depending upon said phase difference;

an oscillator coupled to said phase detector for generating said output signal;

a filtering circuit, receiving said phase detecting control signal, for producing a filtered control signal, whereby said filtered control signal is applied to said oscillator to vary the repetition rate of said output signal as a function of the instantaneous value of said filtered control signal;

wherein the filtering circuit further comprises: an adder circuit having first and second inputs, wherein said phase detecting control signal is applied to said first input and said filtered control signal is supplied at an output of said adder;

a storage circuit means connected to said adder output for producing a storage circuit output signal which represents the filtered control signal delayed by a period of said phase detecting control signal; and

a multiplier means coupled to said storage circuit means for producing a multiplier output signal which represents the storage circuit output signal multiplied by a constant factor which is less than unity, wherein the multiplier output signal is applied to the second input of said adder.

4,121,172

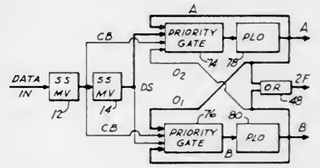
DUAL LOOP PHASE LOCKED OSCILLATOR SYSTEM

Lawrence Garde, Bloomington, Minn., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Nov. 14, 1977, Ser. No. 850,885

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—1 A **16 Claims**

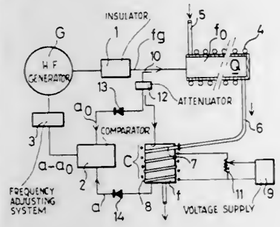


1. A phase locked oscillator system for producing output pulse signals at a frequency locked to an input data rate, comprising: first gate means for producing a first latch signal consisting of a plurality of pulses; second gate means for producing a second latch signal consisting of a plurality of pulses; first phase locked oscillator means responsive to said first latch signal for producing a first output pulse signal having a frequency representative of the pulse frequency of said first latch signal; second phase locked oscillator means responsive to said second latch signal for producing a second output pulse signal having a frequency representative of the pulse frequency of said second latch signal; input circuit means responsive to input data for producing a first input pulse signal; said first gate means being responsive to said first output pulse signal for producing said first latch signal having a first binary value and selectively responsive to said first input pulse signal and said second output pulse signal for producing said first latch signal having a second binary value; and said second gate means being responsive to said second output pulse signal for producing said second latch signal having a first binary value and selectively responsive to said first input pulse signal and said first output pulse signal for producing said second latch signal having a second binary value.

4,121,173
ARRANGEMENT FOR AUTOMATICALLY CONTROLLING THE FREQUENCY OF A HYPERFREQUENCY GENERATOR FEEDING A RESONANT ELEMENT SUBJECTED TO FLUCTUATIONS IN TEMPERATURE

Guy Azam; André Bensussan, and Claude Levaillant, all of Buc, France, assignors to CGR-MeV, Buc, France

Filed Feb. 14, 1977, Ser. No. 768,370
Claims priority, application France, Feb. 17, 1976, 76 04347
Int. Cl.[2] H03B 3/04
U.S. Cl. 331—9 5 Claims

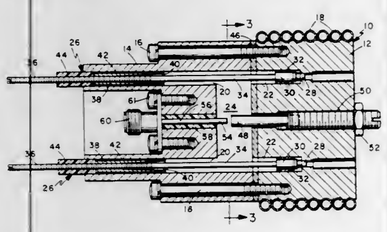


1. An arrangement for automatically controlling the frequency of a hyperfrequency generator feeding a resonant element of which the frequency varies with the temperature of its walls, said resonant element being cooled by means of a cooling fluid, said arrangement comprising at least one reference resonant cavity tuned to a frequency $f = f_0 - \Delta f$, f_0 being the non-operating frequency of the resonant element, said reference cavity being associated with means allowing the circulation of said cooling fluid along the walls of said reference cavity, said reference cavity being associated with a heat supply, for bringing it at any given moment t, to a temperature substantially equal to that of said resonant element, means being provided for measuring the amplitude variation $\Delta a = a - a_0$ of the signal corresponding to the frequency variation of said reference cavity in terms of the temperature variation of said resonant element, a being the amplitude of the resonant cavity signal at a given instant and a_0 being the initial signal amplitude, and means for controlling the frequency of said hyperfrequency generator in dependence upon the amplitude variation of said signal.

4,121,174
ADJUSTABLE MICROWAVE POWER COMBINER FOR PLURALITY OF COAXIAL CIRCUITS

Richard Aston, Claremont, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Oct. 31, 1977, Ser. No. 846,965
Int. Cl.[2] H03B 7/14
U.S. Cl. 331—48 16 Claims



1. A microwave power combiner comprising in combination:

a plurality of co-axial circuits, each having a longitudinal axis and a solid state microwave diode at one end of the axis and a tapered adjustable attenuator at the other end thereof, an impedance transformer connected to said diode and an elongated conductor element extending from said transformer through said attenuator,

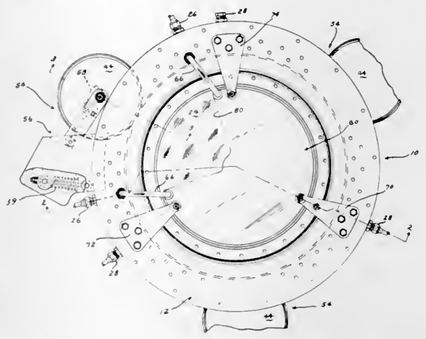
housing means defining an adjustable resonator cavity, said plurality of circuits mounted in said housing means surrounding said cavity,

an output port centrally disposed in said cavity with respect to said circuits for receiving the combined outputs from said circuits.

4,121,175
GAS BEARING SUSPENDED ROTATING LASER WINDOW UNIT

Roy A. Hamil, Kirtland A.F.B., N. Mex., and Alfred L. Johnson, Manhattan Beach, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1977, Ser. No. 756,942
Int. Cl.[2] H01S 3/02
U.S. Cl. 331—94.5 D 17 Claims



1. A laser window unit comprising a supporting structure, means for transmitting a beam of radiation focused thereupon, a gas bearing, said gas bearing rotatably suspending said radiation transmitting means within said supporting structure, means for providing a motive force to said radiation transmitting means thereby causing the rotational movement thereof within said supporting structure and means for cooling said radiation transmitting means during the rotational movement thereof.

4,121,176
ATOMIC AND MOLECULAR RESONANCE LASER

David E. Golden, 3810 Stockwell, Lincoln, Nebr. 68506, and Stephan M. Ormonde, P.O. Box 8575, Albuquerque, N. Mex. 87108

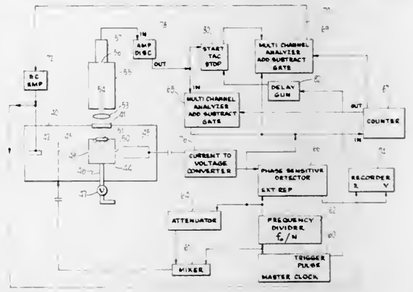
Continuation of Ser. No. 586,690, Jun. 13, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 771,052
Int. Cl.[2] H01S 3/22
U.S. Cl. 331—94.5 G 8 Claims

1. An atomic and molecular resonance laser apparatus for generating electromagnetic energy comprising:

an optically resonant cavity;

a target substance located in said cavity and having a plurality of particles excitable to a relatively short-lived resonant state characterized by a relatively broad resonance of width in the range from about 0.25 to about 5eV and having an upper and lower energy state to which individual particles decay from said resonant state, the rate of decay to said upper state being greater than the rate of decay to said lower state, said particles being capable of transition from said upper to said lower energy states to generate said electromagnetic energy, the mean lifetime of said upper and said lower states being greater than the mean lifetime of said resonant state; and

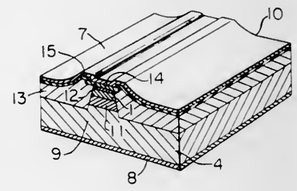
means for exciting said individual particles to said relatively short-lived resonant state at a rate greater than the rate of decay of said particles from said resonant state to produce a population inversion between said upper and lower energy states, said exciting means including an electron beam generator for generating an electron beam having a predetermined energy distribution centered about said resonance characterizing said resonant state with a width no greater than substantially the width of said resonance, and means for directing said electron beam onto said target substance.



4,121,177
SEMICONDUCTOR DEVICE AND A METHOD OF FABRICATING THE SAME

Toshihisa Tsukada, Sekimachi, Japan, assignor to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 474,023, May 28, 1974, abandoned. This application Oct. 31, 1975, Ser. No. 627,863
Claims priority, application Japan, May 28, 1973, 48-58643; May 28, 1973, 48-58644; Mar. 4, 1974, 49-24261
Int. Cl.[2] H01S 3/19; H01L 21/208
U.S. Cl. 331—94.5 H 14 Claims



1. A semiconductor device comprising:

a semiconductor body consisting of a III-V compound semiconductor material not including Al, having a major surface, and having a first conductivity type;

a mesa-shaped multi-layered semiconductor crystal disposed upon a portion of the major surface of said body and including

(i) a laser active layer having two opposite surfaces, a first surface of which faces towards the major surface of said body and a second surface of which faces away from the major surface of said body, a pair of said surfaces and a pair of end surfaces,

(ii) an upper semiconductor layer of a second conductivity type, opposite to said first conductivity type, being a top layer of said mesa-shaped multi-layered semiconductor crystal, consisting of a material including Al and having a broader band gap than that of the material of said laser active layer, and disposed on the second surface of said laser active layer, and

(iii) a lower semiconductor layer of said first conductivity type, consisting of a material different from and having a broader band gap than that of the material of said laser active layer, and disposed on the first surface of said laser active layer;

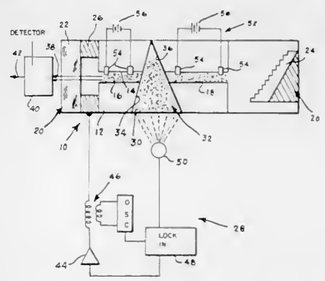
a side semiconductor layer of said first conductivity type consisting of a material different from and having a broader band gap than that of the material of said laser active layer, and disposed on the remainder of said major surface of said body and contiguous with the laser active layer at the side surfaces thereof but not the top surface of said mesa-shaped multi-layered semiconductor crystal; and

first and second layers disposed on said semiconductor body and said upper semiconductor layer, respectively.

4,121,178
LASER CAPABLE OF PRODUCING A FREQUENCY STANDARD

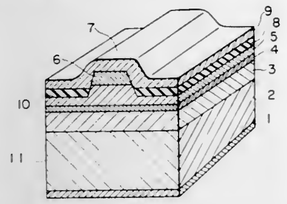
Howard R. Schlossberg, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 5, 1976, Ser. No. 734,842
Int. Cl.[2] H01S 3/13, 3/23
U.S. Cl. 331—94.5 G 8 Claims



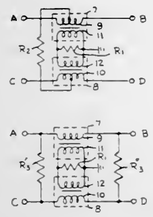
1. A laser capable of producing a stable frequency standard comprising means for containing a pair of different active materials, a pair of active materials located in said containing means, said containing means being configured so as to allow high pressure operation to take place therein, each of said pair of active materials being gaseous and maintained in said containing means under said high pressure, said active materials having close but non-overlapping gain profiles, a resonator enclosing said containing means, means for activating said active materials thereby producing an output in the form of two laser frequencies, means for containing an absorbing gas, an absorbing gas located within said absorbing gas containing means, said absorbing gas having an absorption profile which is overlapped by one of said laser frequencies, means operably connected to said resonator for locking said overlapping laser frequency to the center of said absorption profile of said absorbing gas and means for detecting said two laser frequencies and producing a single output at the difference frequency between said two laser frequencies.

4,121,179
SEMICONDUCTOR INJECTION LASER
Naoki Chinone, Kokubunji; Toshihiro Kawano, Hachioji, and Hisao Nakajima, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Jan. 3, 1977, Ser. No. 755,994
Claims priority, application Japan, Jan. 12, 1976, 51-2072
Int. Cl.[2] H01S *3/19*
U.S. Cl. 331—94.5 H **4 Claims**



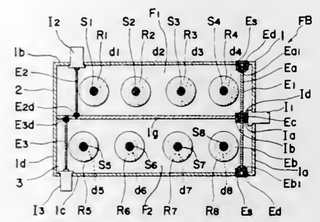
1. In a semiconductor injection laser device including at least one of a p-layer and an n-layer, respectively contiguous to upper and lower surfaces of an active lasing layer, said p-layer and said n-layer being a semicondutor material which has an energy band gap greater than that of the active lasing layer, and electrodes being respectively provided on a semiconductor on the p-layer side and on a semiconductor on the n-layer side, said semiconductor injection laser device comprising that one of said p-layer and said n-layer contiguous to said upper and lower surfaces of said active layer is made of a semiconductor material which has a stripe mesa portion, and which has a base part extending under and out of said stripe mesa portion, said base part being 0.8μ to 1.5μ thick.

4,121,180
BROADBAND DIRECTIONAL COUPLER
Thomas H. Greenway, Londonderry, N.H., assignor to Technical Research and Manufacturing, Inc., Manchester, N.H.
Filed Dec. 27, 1976, Ser. No. 753,987
Int. Cl.[2] H01P *5/12, 5/18, 5/16*
U.S. Cl. 333—10 **10 Claims**



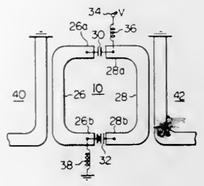
1. A directional coupler having four terminals A, B, C and D comprising,
(a) a first transformer having a primary circuit and a secondary circuit referred to herein as the first primary and first secondary circuits, respectively,
(b) a second transformer having a primary circuit and a secondary circuit referred to herein as the second primary and second secondary circuits, respectively,
(c) said first primary circuit providing terminals A and B, and
(d) said second primary circuit providing terminals C and D,
(e) secondary circuit resistive impedance means connected in parallel with said first and second secondary circuits,
(f) primary circuit resistive impedance means connecting said first and second primary circuits, and
(g) whereby a frequency input signal at A appears at B and C in substantially the same phase and is substantially isolated from D.

4,121,181
ELECTRICAL BRANCHING FILTER
Toshio Nishikawa, Nagaokakyo; Yoji Ito, Takatsuki; Youhei Ishikawa, and Sadahiro Tamura, both of Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan
Filed Jun. 10, 1977, Ser. No. 805,571
Claims priority, application Japan, Jun. 14, 1976, 51-70258; Jun. 14, 1976, 51-70259
Int. Cl.[2] H03H *9/00*
U.S. Cl. 333—73 R **11 Claims**



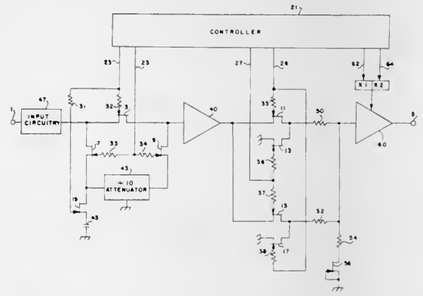
1. An electrical branching filter for use in electrical and electronic equipment which comprises a first dielectric filter and a second dielectric filter each having, in housing means of metallic material, exciting means, exciting rod member and at least one dielectric resonator means disposed between said exciting means and said exciting rod member, said exciting rod member for said first and second dielectric filters being connected to connecting means so as to form coupling means, with input and output being applied to and developed from said connecting means at intermediate portion between said exciting rod members and one end of each of said exciting means.

4,121,182
ELECTRICAL TUNING CIRCUIT
Mitsuo Makimoto, and Sadahiko Yamashita, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Limited, Japan
Filed Feb. 25, 1977, Ser. No. 771,987
Claims priority, application Japan, Feb. 26, 1976, 51/21502; Feb. 26, 1976, 51/21503
Int. Cl.[2] H03H *7/10;* **H03J** *3/18*
U.S. Cl. 333—73 S **15 Claims**



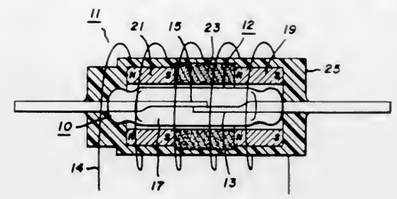
1. An electronic tuning circuit comprising a transmission line having a first section only reactively coupled with an input circuit and a second section only reactively coupled with an output circuit, a voltage-controlled capacitor having first and second terminals respectively having connections to said first and second sections to form with said sections a closed-loop resonant circuit, first and second RF choke coils respectively connected to said first and second terminals of said voltage-controlled capacitor to supply a DC control potential between said first and second terminals, and a DC blocking capacitor having a low impedance to a radio-frequency current and electrically connected in said resonance circuit to prevent said DC control potential from being supplied to said second terminal of said voltage-controlled capacitor.

4,121,183
PROGRAMMABLE ATTENUATOR APPARATUS EMPLOYING ACTIVE FET SWITCHING
Desmond Lewis Murphy, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Oct. 29, 1976, Ser. No. 736,929
Int. Cl.[2] H03H *7/26*
U.S. Cl. 333—81 R **6 Claims**



1. An attenuator apparatus, comprising:
an input terminal and an output terminal;
a high-impedance attenuator section and a low-impedance attenuator section serially disposed between said input terminal and said output terminal, said attenuator sections including impedance means;
a buffer amplifier interposed between said high-impedance attenuator section and said low-impedance attenuator section; and
programmable switch means including a plurality of field-effect transistors for selecting said impedance means to provide selectable attenuator networks having predetermined attenuation values;
said high-impedance attenuator section including a hybrid attenuator device having a predetermined attenuation value serially disposed between a pair of field-effect transistors, said high-impedance attenuator section further including a bypass field-effect transistor in parallel with the serial combination of said hybrid attenuator device and said pair of field-effect transistors, said field-effect transistors being adapted to be selectively switched on and off to provide a selectable signal path therethrough.

4,121,184
ELECTROMAGNETICALLY CONTROLLED, TEMPERATURE-SENSITIVE (ECTS) REED SWITCH WITH SUBSTANTIALLY HYSTERSIS FREE OPERATION
Leonard R. Dinkler, Gainesville, and Jerry Herrin, Alachua, both of Fla., assignors to General Electric Company, Gainesville, Fla.
Continuation-in-part of Ser. No. 623,780, Oct. 20, 1975. This application Dec. 27, 1976, Ser. No. 754,196
Int. Cl.[2] H01H *9/54, 51/28*
U.S. Cl. 335—179 **6 Claims**

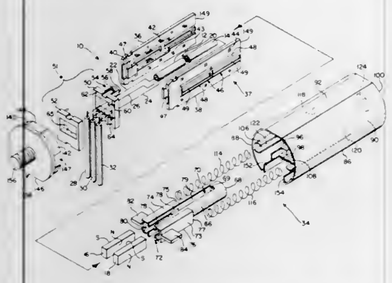


1. An electrically operable low hysteresis switching device comprising:
(a) a reed switch having a pair of electrical contacts;
(b) permanent magnetic means disposed adjacent said reed switch for establishing a magnetic field in the vicinity of the reed switch contacts;
(c) ferrite means, disposed adjacent to said reed switch and said permanent magnetic means, for normally altering said magnetic field at ferrite temperatures equal to the Curie point of said ferrite, thereby to cause said reed switch normally to assume first and second switch positions at ferrite temperatures below and above said Curie point, respectively, under the influence of said magnetic field;
(d) an electromagnetic coil means disposed adjacent said reed switch, permanent magnetic means and said ferrite means and in magnetic circuit therewith, said coil having input terminals for supplying electrical current to alter said magnetic field by an amount sufficient to cause the position of said reed switch to change from one of said positions to the other of said positions at a constant ferrite temperature different from said Curie point; and
(e) temperature control means disposed adjacent said ferrite means for maintaining said ferrite means at a substantially constant temperature below said Curie point upon the application and removal of electrical current at the input terminal to said coil.

4,121,185
LINEAR POSITION SENSOR
Earl James Genz, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jul. 18, 1977, Ser. No. 816,552
Int. Cl.[2] H01F *21/06*
U.S. Cl. 336—110 **12 Claims**

1. A linear position sensor comprising a pair of elongated magnetically affected sensing means, each having an elongated axis, a generally rectangular-shaped support means which supports said sensing means so that said axes are aligned with each other, a pair of elongated permanent magnets, an elongated control means which holds said magnets, said control means having a centrally located slot that runs part way therethrough in the direction of its elongated dimension and said support means is received therein so that opposite magnetic poles of said magnets face each other and said sensing means are received intermediate said poles and adjacent thereto, said control means further comprising a sensing end that extends from said control means at the end of said slot in said control member, a housing which receives said support means and said

control means therein so that said control means is movable relative to said support means, having a closure wall with an aperture therein through which said sensing end projects and



an elongated side wall which extends from said closure wall, and bias means in said housing for biasing said control means in a predetermined direction with respect to said closure wall.

4,121,186

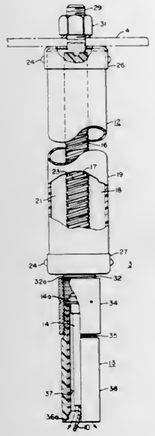
INDICATING SECTIONAL COMPOSITE FUSE CONSTRUCTION USING STANDARD-TYPE FUSE LINK

James N. Santilli, Bloomington, Ind., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 633,189, Nov. 19, 1975, abandoned, which is a continuation of Ser. No. 519,724, Oct. 31, 1974, abandoned, which is a continuation of Ser. No. 67,183, Aug. 26, 1970, abandoned. This application Oct. 6, 1976, Ser. No. 730,097

Int. Cl.[2] H01H *85/04*

U.S. Cl. 337—161 **29 Claims**



1. An indicating-type fusible device comprising a first high-current current-limiting section and a second relatively low-current expulsion section mechanically connected together in electrical series relation, the second relatively low-current expulsion section accommodating a standard-type fuse link, which may readily be replaced following fusing of the second relatively low-current expulsion section whereby changeable minimum-melt fuse characteristics are possible, and said first and second fusible sections remaining electrically and mechanically interconnected following any type of fuse rupture.

4,121,187

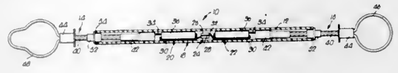
HIGH SPEED RATIO, DUAL FUSE LINK

William R. Mahieu, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Jun. 21, 1977, Ser. No. 808,656

Int. Cl.[2] H01H *71/10, 71/20*

U.S. Cl. 337—171 **21 Claims**



1. A dual element, high speed ratio fuse link including:
a pair of spaced conductors,
a solder junction intermediate said conductors;
a pair of heat-generating fusible elements each extending from said junction to a respective one of said conductors;
at least one of said elements having a non-linear stretch comprising a series of arcuate segments connected end-to-end; and
a thermal-insulative member disposed along the length of said non-linear stretch in substantially surrounding engagement with the latter for providing structural support to said one element and for more efficient heat transfer from said one element to said solder junction thereby causing melting of the junction at lower current values.

4,121,188

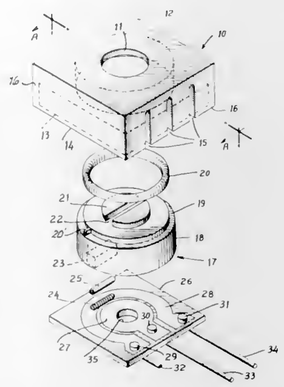
CLOSED FRAME SINGLE TURN POTENTIOMETER WITH HELICAL COIL SPRING WIPER ADJUSTABLE THROUGH SUBSTRATE

Randall C. Ragan, Rancho Santa Fe, Calif., assignor to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 642,328, Dec. 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 452,130, Mar. 18, 1974, Pat. No. 3,964,011. This application Sep. 16, 1976, Ser. No. 723,932

Int. Cl.[2] H01C *10/34*

U.S. Cl. 338—174 **14 Claims**



1. A single turn variable resistance device comprising:
a ceramic substrate having a central collector ring and an arcuate resistance element;
a housing having a front wall and side walls, said front wall having an opening therein; the inner portion of said housing having a first interior wall portion for receiving said substrate, a second interior wall portion surrounding said opening in said front wall, and a third interior wall portion intermediate said first and said second interior wall portions,
a rotor in said housing having side walls engaging said third interior wall portion of said housing as a bearing surface, and including a helical coil spring wiper facing said substrate for making electrical contact between said collector ring and said resistance element, and a cylindrical resilient support contacting said wiper for biasing said wiper against said substrate; and
means mechanically holding said substrate and said rotor in said housing.

4,121,189

ELECTRICAL RESISTOR AND METHOD OF MAKING SAME

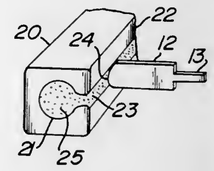
Karl-Heinz Kuhl, Tornesch; Eberhard Muranka, Hamburg; Bernhard Schulz, Kl. Nordende, and Asmund Tielens, Pinneberg, all of Fed. Rep. of Germany, assignors to TRW Inc., Cleveland, Ohio

Filed Mar. 8, 1977, Ser. No. 775,723

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613677

Int. Cl.[2] H01C *1/02*

U.S. Cl. 338—226 **17 Claims**



1. An electrical resistor comprising an elongated resistor element having end sections and a resistance material extending therebetween, and a connecting part which is pressed onto at least one end section of the resistor for being bonded with the resistor element, the connecting part comprising a terminal lug of electrically conductive material having a first end section along and contacting an end of the resistor element and a second terminal end, and a cap of mechanically firm, easily workable material received over and securing together the first end section of the terminal lug and the end of the resistor element contacted by said first end section, the cap being composed of deep-drawn steel and the terminal lug being of a high-percentage copper alloy.

4,121,190

METHOD OF AND APPARATUS FOR SONAR DETECTION AND THE LIKE WITH PLURAL SUBSTANTIALLY ORTHOGONAL RADIATION BEAMS

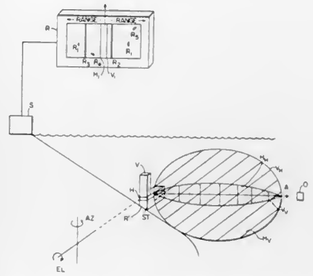
Harold Eugene Edgerton, Cambridge; Charles W. Wyckoff, Needham, both of Mass., and Robert Harvey Rines, Concord, N.H., assignors to The Academy of Applied Science, Inc., Boston, Mass.

Filed Jul. 20, 1976, Ser. No. 707,051

Int. Cl.[2] G01S *9/68, 7/56*

U.S. Cl. 340—3 R **18 Claims**

1. A method of sonar location and the like, that comprises, transmitting and receiving sonar energy in a fan-shaped acoustic beam along a predetermined axis underwater from a predetermined location, the beam having a narrow beam angle in one plane and a relatively wide beam angle in a substantially orthogonal plane, to provide wide-angle echo-detection in the orthogonal plane with narrow-angle discrimination in the said one plane; substantially simultaneously transmitting and receiving sonar energy in a further fan-shaped acoustic beam substantially along said axis underwater from substantially the same location, said further beam having a narrow beam angle in the said orthogonal plane and a relatively wide beam angle in the said one plane, to enable wide-angle echo-discrimination in the said one plane with narrow-angle discrimination in the said orthogonal plane; simultaneously displaying the received echo signals of both beams; and indicating when an echo signal is displayed from both beams at precisely the same range, thus



to pin-point the position of the echoing objects as directly along said axis and at said range.

4,121,191

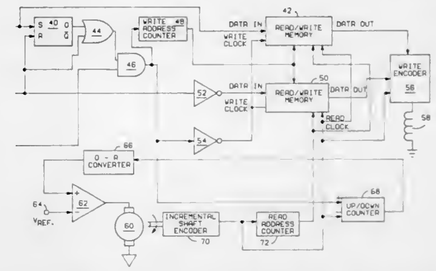
SEISMIC DATA TAPE RECORDING SYSTEM

David P. Corkhill, St. Albans, England, assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 5, 1976, Ser. No. 673,329

Int. Cl.[2] G01V *1/40*

U.S. Cl. 340—15.5 DP **4 Claims**



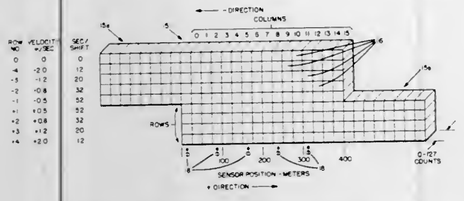
1. In a seismic data recording system of the class wherein analog electrical signals are generated by a seismometer in response to acoustic waves in the earth, said electrical signals are sequentially converted to digital words at a fixed rate of conversions per second, and said digital words are coupled to a magnetic tape recorder to be written onto magnetic tape, the improvement comprising the combination of:
gating means having an input for receiving a digital word and a data output for providing the digital word one bit at a time, beginning with the most significant bit and ending with the least significant bit;
bit comparator means coupled to said gating means output for detecting the first bit which has a value of "1" and for coupling that bit and all lower value bits to an output;
a data buffer memory coupled to the bit comparator output for storing the bits coupled to the comparator output;
a variable speed magnetic tape recorder coupled to said buffer memory for writing the bits stored in the buffer memory onto magnetic tape at an essentially constant bits per inch rate; and
control means coupled to the buffer memory and said variable speed tape recorder for controlling the speed of said variable speed tape recorder in response to the difference between the number of bits written into said buffer memory and the number written on said magnetic tape.

4,121,192

SYSTEM AND METHOD FOR DETERMINING POSITION AND VELOCITY OF AN INTRUDER FROM AN ARRAY OF SENSORS

Dennis L. Wilson, Palo Alto, Calif., assignor to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Jan. 31, 1974, Ser. No. 438,268
Int. Cl.[2] G01D *21/04;* **G08B** *13/00*
U.S. Cl. 340—16 R **12 Claims**



1. A method of automatically determining velocity and direction of movement of target passing an array of sensors, comprising the steps of

spacing said sensors at predetermined distances along an area under surveillance,

operatively connecting said sensors to correspondingly spaced columns of a plurality of data storage cells arranged in a matrix comprising said columns and transverse rows of said cells,

increasing the counts in the cells of each column associated with a sensor that detects a target within a predetermined interval,

decreasing the counts in cells of each column associated with a sensor that does not detect a target within said interval,

periodically shifting the counts in one direction from each cell to the cell in the adjacent column at different shift rates for different rows corresponding to different target velocities and repeating the count increasing and decreasing steps after each shifting step,

periodically determining the row having the maximum sum of counts and identifying the shift rate of that row with the target velocity,

scanning in one direction the cells in the target velocity row and determining the cell having a count not less than a predetermined number whereby to establish the location of the target relative to the sensor array.

4,121,193

KELLY AND KELLY COCK ASSEMBLY FOR HARD-WIRED TELEMETRY SYSTEM

Early B. Denison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 23, 1977, Ser. No. 809,259
Int. Cl.[2] G01V *1/40;* **H01R** *3/04*
U.S. Cl. 340—18 CM **8 Claims**

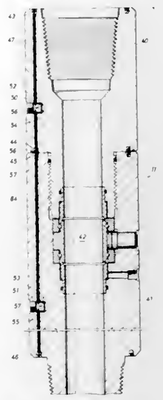
1. A kelly cock for use with a drill string that includes a hard-wired telemetering system, said telemetering system terminating at the upper end of the drill string in an annular contact ring disposed in the sealing shoulder of the tool joint on said drill string; said kelly cock comprising:

first and second tubular members, said first tubular member having a pin joint at one end and said second tubular member having a box joint at one end, the other ends of said first and second tubular members having parallel non-sealing shoulders, said first and second tubular members being joined together; a valve means, said valve means being disposed between said first and second tubular members and held in place when said first and second tubular members are jointed together;

an annular groove formed in the sealing shoulder of both the pin end of said one tubular member the box end of said second tubular member and both of said parallel non-sealing shoulders;

a plurality of contact rigns, one of said contact rings being disposed in each annular groove of each of said tubular members, each of said contact rings having a pigtail;

a passageway formed in the wall of said first and second tubular members, said passageway communicating at



opposite ends with the annular grooves in said first and second tubular members, the pigtails of each contact ring extruding into one of said passageway; and

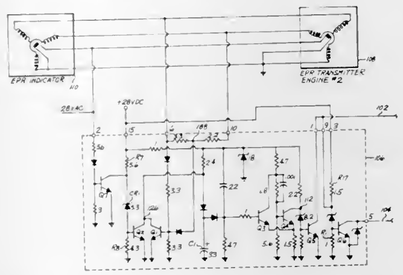
a port opening formed in each of said tubular members, said ports communicating with the passageways formed in said tubular members and removable means for closing said ports whereby said pigtails may be connected adjacent said ports and replaced in said passageways.

4,121,194

TAKE-OFF WARNING SYSTEM FOR AIRCRAFT

Thomas James Downey, Seattle; Peter Dennis Turnbull, Renton, and James Walter Gayther, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1976, Ser. No. 728,357
Int. Cl.[2] G08B *29/00*
U.S. Cl. 340—27 R **6 Claims**



1. In combination in a multi-engine jet transport:

first means associated with a first engine for providing first signals representative of the thrust of said first engine;

second means associated with a second engine for providing second signals representative of the trust of said second engine;

logic controlled take-off warning circuit means for providing warning signals in the event one or more logical conditions required for take-off configuration of the aircraft are not satisfied;

first signal generating means including a phase detection circuit responsive to said first signals for providing third signals representative of thrust levels referenced to a predetermined value equal to or less than required for take-off of said multi-engine jet transport but greater than required for other ground operations of said multi-engine jet transport;

second signal generating means including a phase detection circuit responsive to said second signals for providing fourth signals representative of thrust levels referenced to said predetermined value;

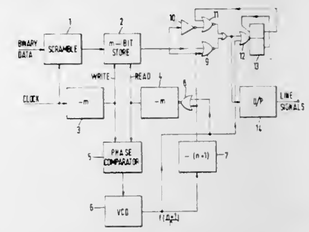
circuit means responsive to said third and fourth signals for enabling said logic controlled take-off warning circuit to develop warning signals when said third and fourth signals are both representative of thrust levels exceeding said predetermined value and one or more of said logical conditions required for take-off configuration of the aircraft is not satisfied; and said circuit means including thrust reverser sensing circuit means for preventing nuisance warnings in said logic controlled take-off warning circuit means at high levels of reverse thrust.

4,121,195

ERROR DETECTION IN DIGITAL SYSTEMS

Anthony Jessop, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 19, 1977, Ser. No. 798,504
Claims priority, application United Kingdom, Jun. 2, 1976, 22849/76
Int. Cl.[2] G06F *11/10;* **G08C** *25/00*
U.S. Cl. 340—146.1 AB **4 Claims**



1. An error detecting arrangement for a digital transmission line system over which constant accumulated disparity signals are transmitted comprising:

a transmitter including

first means for modifying the line signals at intervals to introduce into the line signals control signals the digital values of which reflect the parity of predetermined digital signal events in the immediately preceding intervals, said control signals themselves having values which maintain the overall constant accumulated disparity of transmitted signals; and

a subsequent point in the system including

second means coupled to said first means, said second means responding to said predetermined digital signal events in said transmitted signals, and

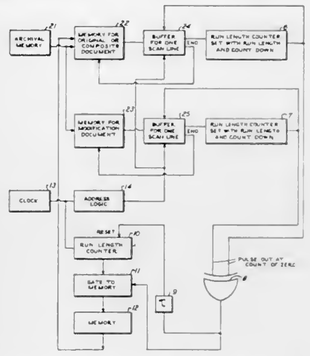
third means coupled to said second means, said third means determining a change in the d.c. content of the output of said second means.

4,121,196

DATA BASE UPDATE SCHEME

Richard N. Johnson, and Marvin J. Schneider, both of Adelphi, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 2, 1977, Ser. No. 792,832
Int. Cl.[2] G02B *5/00;* **G03B** *21/14;* **G06K** *9/00*
U.S. Cl. 340—146.3 P **4 Claims**



1. An apparatus for modifying the contents of a storage memory which stores original picture information which is encoded in the memory in accordance with the run length encoding compaction algorithm, said picture information being delineated by picture line in said memory, for each picture line said stored information comprising a group of numbers which locate the relative positions of picture elements along the line, comprising,

a modification memory having picture modification information stored therein in accordance with the run length encoding compaction algorithm, said modification information being delineated by picture lines in said memory which correspond to said picture lines in said storage memory, said modification information for each line comprising a group of numbers which locate the relative positions along that line at which picture elements are to be either added or deleted to said original picture information,

means for extracting the information from the respective memories on a line by line basis,

means responsive to said information extracted for modifying the group of numbers stored in said storage memory for each line by 1) adding numbers which are indicative of positions along that line at which the numbers in said storage memory do not locate a picture element but the numbers in said modification means do locate a picture element, and, 2) deleting numbers which are indicative of positions at which both the numbers in said storage memory and the numbers in said modification memory locate picture elements.

4,121,197

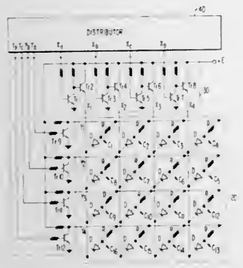
MATRIX CIRCUIT FOR AN ELECTROSTATIC RECORDING DEVICE COMPRISING CROSS-POINT ELEMENTS FOR DRIVING EACH PAIR OF CONTROL ELECTRODES ON A COMMON MATRIX CONDUCTOR

Takashi Ogawa, and Kazunori Kimura, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1977, Ser. No. 774,563
Int. Cl.[2] H04G *5/00*
U.S. Cl. 340—166 R **4 Claims**

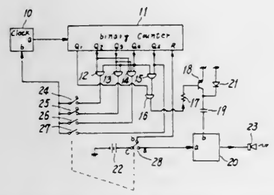
1. In a matrix circuit to be used in an electrostatic recording device comprising a multiplicity of aligned stylus electrodes and a sequence of control electrodes along said stylus electrodes for cyclically driving said control electrodes at succes-

sive time slots, with two consecutive control electrodes in said sequence driven at each of said time slots and with one of the two consecutive control electrodes next following in said sequence the other of the two consecutive control electrodes continuously driven at the next succeeding time slot together with the control electrode next following in said sequence said one of the two consecutive control electrodes, said matrix circuit comprising a plurality of conductors of a first set, a plurality of conductors of a second set successively crossing said first set of conductors without ohmic contact therewith to form a plurality of cross points, and a plurality of cross-point elements adjacent the respective cross points in one-to-one



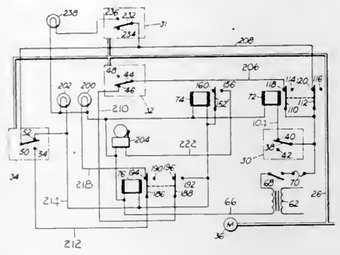
correspondence with said control electrodes, each of said cross-point elements bridging one each of said first and second set of conductors crossing at one of said cross points adjacent to said each cross-point element, said matrix circuit further comprising means for supplying selection signals selectively to said first and second set of conductors to select a pair of said cross-point elements at each of said time slots, said cross-point elements driving the corresponding control electrodes when selected, the improvement wherein all of said cross-point elements to be selected in pair are arranged to bridge one of the conductors of one of said first and second sets and two respective ones of the conductors of the other of said sets.

4,121,198
REMOTE CONTROL SYSTEM
Yoshikazu Tsuboi, Takatsuki, and Yoshitomo Uzu, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 6, 1976, Ser. No. 747,988
Claims priority, application Japan, Dec. 17, 1975, 50-151024; Dec. 29, 1975, 50-158817; Jan. 20, 1976, 51-5618; Feb. 13, 1976, 51-15022
Int. Cl.² H04Q *9/10*; H04B *1/06*
U.S. Cl. 340—171 R **7 Claims**



1. A remote control system including a transmitter and a receiver,
said transmitter comprising a means for transmitting controlling signals corresponding to selected control functions, each of said controlling signals containing first frequency portions disposed in time sequences in accordance with a pulse code modulation, second frequency portions disposed to fill time spaces between parts of said first frequency, a last second frequency part disposed immediately to follow the coded first frequency part and a control retention signal part of the first frequency disposed after said last second frequency part, length of time of said retention signal part being controlled by means of a switch for controlling analog means; and
said receiver comprising a means to decode said controlling signal to produce output signals corresponding to said selected items and a means to control said output signal in a manner to continue for the retention signal part.

4,121,199
SENTINEL SYSTEM FOR GREASE EXTRACTING VENTILATORS
Hurshel F. Young, 20280 SW. Jaylee St., Aloha, Oreg. 97005
Continuation of Ser. No. 611,238, Sep. 8, 1975, abandoned. This application Sep. 8, 1976, Ser. No. 721,517
Int. Cl.² G08B *21/00*
U.S. Cl. 340—611 **9 Claims**

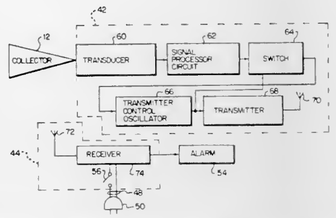


1. A sentinel system for sensing fluid pressure in a stack of the type having a fan developing static pressure, said system comprising,
(a) first and second pressure operated switches,
(b) means arranged to connect said switches in communication with the interior of said stack,
(c) said two switches having different static operating pressures with said second switch being set to operate at a lower static pressure than said first switch,
(d) an electric circuit,
(e) an electrically operated warning indicating means in said circuit having on and off conditions,
(f) said indicating means being controlled in its operation by said second switch and indicating undesirable static pressure in the stack,
(g) and holding means in said circuit controlled in its operation by said first switch for holding said warning indicating means in on position even though the static pressure varies above and below the setting of said second switch.

4,121,200
SWIMMING POOL ALARM SYSTEM
Gustavo T. Colmenero, 2624 Walnut La., Plano, Tex. 75074
Filed Jul. 22, 1976, Ser. No. 707,670
Int. Cl.² G08B *13/16*
U.S. Cl. 340—539 **11 Claims**

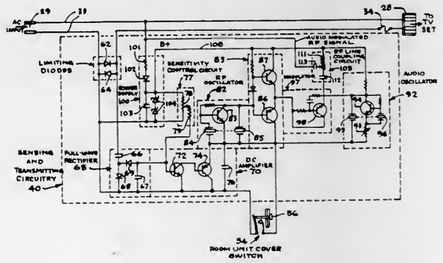
1. Apparatus for monitoring a swimming pool comprising:
transducer means for converting ambient air pressure changes into electrical signals;
water displacement collector means positioned below the surface of the water in the pool and coupled to said transducer means for receiving water displacement information in said pool and transmitting said water displacement information to said transducer means, said water displacement collector means including a conduit having water of the pool in a lower portion thereof, and air in the portion of the conduit above the water, said portion with air being coupled to said transducer means and having sufficiently low air leakage to transmit, to the transducer means, air

pressure changes resulting from motion of water in the lower portion having frequencies in the 0.5 Hz to 5 Hz range;



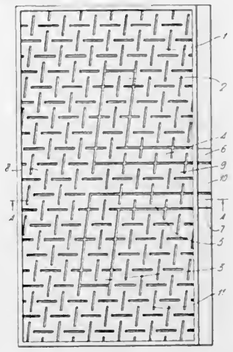
detector means coupled to said transducer means for providing an output signal when said transducer means electrical signals are within a selected frequency range; and
utilization means for receiving and utilizing said output signal.

4,121,201
CARRIER CURRENT APPLIANCE THEFT ALARM
Paul Weathers, Haddon Heights, N.J., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Mar. 22, 1974, Ser. No. 454,033
The portion of the term of this patent subsequent to Sep. 17, 1994, has been disclaimed.
Int. Cl.² G08B *13/14*
U.S. Cl. 340—524 **18 Claims**



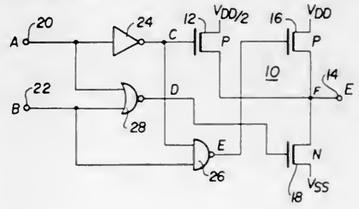
1. In a monitoring system for monitoring conditions occurring at a large plurality of remote locations,
sensing and transmitting means located at each remote location and being operative to sense the occurrence of an undesired condition and in response thereto to transmit a modulated signal,
a plurality of receiving means for receiving said modulated signals, each of said receiving means being operative to detect the modulation of a received signal and to produce a detected output signal corresponding thereto, and
monitoring means connected to said receiving means and responsive to said detected output signals said monitoring means including a frequency-sensitive indicating means for each remote location tuned to the corresponding modulating frequency thereof, for providing an indication of the corresponding remote location,
each of said sensing and transmitting means including an RF oscillator having a tuned reed vibrating system for generating a carrier signal, and an audio oscillator having a tuned vibrating reed system for generating a modulating signal, each of said receiving means including tuned input means having a vibrating reed system tuned to provide a flat-topped pass band, the pass band being centered at the respective carrier frequency and having sufficient bandwidth to accommodate the modulation components of the carrier signal, and each of said frequency-sensitive indicating means including a tuned input circuit having a vibrating reed system sharply tuned to the modulating frequency of its corresponding sensing and transmitting means.

4,121,202
DISPLAY DEVICE HAVING VISIBLE PATTERN
William James Mason Gissane, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Oct. 22, 1976, Ser. No. 735,123
Claims priority, application United Kingdom, Oct. 31, 1975, 45326/75
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 M **10 Claims**



1. A display device comprising at least a pair of electrodes chargeable to opposite polarities from each other, said electrodes having a first degree of contrast when charged and a different degree when not charged, said electrodes located relative to a background, and means for forming a regular visible pattern comprising insulating sections extending over at least a portion of the said electrodes and the background to reduce the discernability of said electrodes in one of said degrees of contrast, the said visible pattern maintaining electrical insulation between electrodes of different polarity from each other.

4,121,203
METHOD OF MULTIPLEXING LIQUID CRYSTAL DISPLAYS
Wales Dale Edwards, Satellite Beach, and William Harold White, Indialantic, both of Fla., assignors to Harris Corporation, Cleveland, Ohio
Filed Mar. 11, 1977, Ser. No. 776,818
Int. Cl.² G02F *1/13*; H03K *1/12*
U.S. Cl. 340—336 **4 Claims**



1. A circuit for alternating a data signal from between a first and second voltage level to between a second and third voltage level at an output comprising:
a data input,

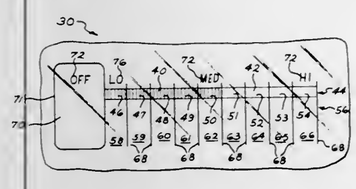
an alternating signal input,
a first switch means for providing said first voltage level at said output,
a second switch means for providing said second voltage level at said output,
a third switch means for providing said third voltage level at said output,
an inverter means between said data input and said second switch means,
a NOR gate means for receiving said data and alternating signal inputs and producing an output coupled to said third switch means, and
a NAND gate means for receiving said alternating signal input and the output of said inverter and producing an output coupled to said first switch means.

4,121,204

BAR GRAPH TYPE TOUCH SWITCH AND DISPLAY DEVICE

Stanley B. Welch; Juan de J. Serrano, and David Y. Chen, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 14, 1976, Ser. No. 750,559
Int. Cl.[2] G08B 5/36
U.S. Cl. 340—337 **4 Claims**



1. A touch switch and display device comprising:
a linear array of display segments strung out such that each segment is adjacent to no more than two other segments, said display segments adapted to be progressively energized to form a bar graph type display to represent a numerical quantity;
a linear array of light transmitting touch sensitive areas superimposed over said linear array of display segments; and
circuit means responsive to said touch sensitive areas and connected for energizing said display segments such that when any one of said touch sensitive areas is touched, a corresponding display segment and all display segments to one side are energized, and the remaining display segments are de-energized.

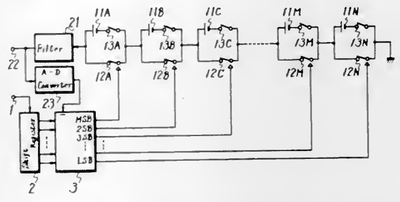
4,121,205

DIGITAL TO ANALOG CONVERTER WITH POWER AMPLIFICATION

Akira Iga, Tokyo, and Toshitada Doi, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 31, 1977, Ser. No. 764,526
Claims priority, application Japan, Feb. 6, 1976, 51-11905
Int. Cl.[2] H03K 13/05
U.S. Cl. 340—347 DA **8 Claims**

1. A power amplifier comprising:
an input terminal supplied with a PCM input signal;
an output terminal;
a reference voltage terminal;
plural power sources each having a voltage value weighted according to an order of bits of said PCM input signal;
plural switching circuit means controlled by said PCM input signal to connect said power sources selectively between said output terminal and said reference terminal in response to said PCM input signal to produce an analog output signal at said output terminal in response to said PCM input signal;
an analog-to-digital converter connected to said output terminal for converting said analog output signal to a digital signal; and



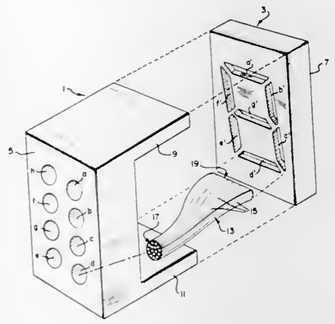
a digital subtraction circuit having inputs connected to said input terminal and said analog-to-digital converter and outputs connected to said plural switching circuit means for producing a feedback effect to compensate for losses due to resistance in said plural switching circuit means.

4,121,206

FIBER OPTIC MESSAGE CHARACTER DISPLAY DEVICE AND METHOD OF MAKING SAME

Paul R. LeMire, Yonkers, N.Y., assignor to Ackerman Bodnar Corporation, New Rochelle, N.Y.

Filed Jan. 14, 1977, Ser. No. 759,472
Int. Cl.[2] G02B 5/16; G08B 5/00
U.S. Cl. 340—380 **5 Claims**



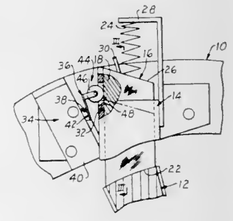
1. A visual message character display device comprising, in combination:
(a) a light guide support member having
(i) a light receiving surface with a plurality of openings and
(ii) a visual message character display surface separate and spaced apart from the light receiving surface and having a plurality of bar-shaped openings arranged to provide arrays of a plurality of bar segments of predetermined visual message characters; and
(b) a plurality of groups of light guiding optic fibers disposed within the space between the light receiving and visual message character display surfaces of the light guide support member, each light guiding optic fiber having a light admitting end and light emitting end, said device being further characterized in that the light admitting ends of the fibers of each group of light guiding optic fibers are bundled together in one opening in and terminate at the light receiving surface thereby defining and occupying essentially the entire surface area of said opening, the light emitting ends of the fibers of each group of light guiding optic fibers are bundled together in one opening in and terminate at the visual message character display surface thereby defining and occupying essentially the entire surface area of a visual message character bar segment, and the space between the light receiving surface and the visual message character display surface containing the groups of light guiding optic fibers is filled with a potting compound whereby the message character display device has a solid block configuration.

4,121,207

SWITCH FOR INDICATING BRUSH WEAR

Francis L. Jones, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Jul. 18, 1977, Ser. No. 816,633
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—648 **8 Claims**



1. In a brush wear indicator for a machine having a rotating commutator, a yoke surrounding said commutator, a brush holder on said yoke and carbon brush means mounted on said brush holder for translatory movement relative to said commutator, said brush means having a contact face spring-pressed against said commutator, an end opposite the contact face, and a generally straight side interconnecting the contact face and end opposite the contact face, the improvement comprising:
switch means including arm means movable generally toward and away from the brush means to determine respective closed and open states of the switch means, and resilient spring means operatively connected with the arm means, for urging the arm means toward the brush means, the arm means including an arm means portion in contact with the generally straight side of the brush means, whereupon with sufficient wear of the brush means, the end of the brush means opposite the contact face reaches the arm means portion in contact with the generally straight side of the brush means, allowing the resilient spring means to move the arm means to provide a closed state of the switch means.

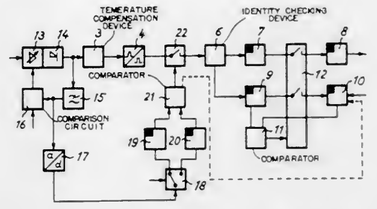
4,121,208

DEVICE FOR INCREASING THE SAFETY WITH RESPECT TO TRANSMISSION FAULTS IN AN INFORMATION TRANSMISSION SYSTEM

Friedbert Becker; Wilhelm Grafinger, both of Munich, and Bernhard Hildebrandt, Hochbrück, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 11, 1977, Ser. No. 776,766
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612968
Int. Cl.[2] G01S 9/56
U.S. Cl. 343—6.5 R **8 Claims**

1. In a device for increasing security with respect to transmission faults in an information-transmission system, particularly for the railroad field, in which an interrogation device and a passive response device are movable relative to one another; the interrogation device transmitting an interrogation signal, which can be periodically swept through a predetermined frequency band, preferably in the microwave range; the interrogation device receiving, during a read operation of at least two periods from the passive response device, a frequency-selectively reflected interrogation signal, in accordance with a k-digit information item to be transmitted; the combination of means for amplifying such a reflected interrogation signal received by the interrogation device; means for monitoring the level of the low-frequency portions of such a reflected interrogation signal lying below the sweep frequency of the interrogation device and for reducing the amplification of said amplifying means if the level of such low frequency portions



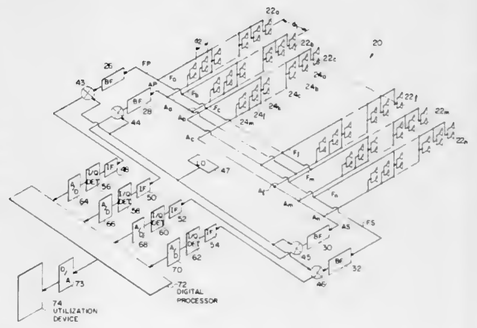
reaches a predetermined threshold value, whereby such low frequency portions do not undesirably exceed such threshold value; switch means for controlling the through-connection of the response signal to subsequent devices; and control means connecting said monitoring and switch means, for controlling the latter to prevent passage of a transmitted information item in the presence of a decreasing and/or increasing level of such low frequency portion.

4,121,209

TWO-AXIS MOTION COMPENSATION FOR AMTI

Tomos L. ap Rhys, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 20, 1977, Ser. No. 843,905
Int. Cl.[2] G01S 9/42, 9/02
U.S. Cl. 343—7.7 **11 Claims**



1. An antenna system for use with a pulse-type airborne moving-target-indication radar system comprising:
means for producing a first receive beam FP, a second receive beam AP, a third receive beam FS, and a fourth receive beam AS, the lines of center of said first receive beam FP, said second receive beam AP, said third receive beam FS, and said fourth receive beam AS being parallel, the lines of center of said first receive beam FP and said second receive beam AP being coincident, the lines of center of said third receive beam FS and said fourth receive beam AS being coincident, the lines of center of said first receive beam FP and said second receive beam AP being separated from the lines of center of said third receive beam FS and said fourth receive beam AS, the phase center of said first receive beam FP being forward of the

phase center of said second receive beam AP, and the phase center of said third receive beam FS being forward of the phase center of said fourth receive beam AS:

means for varying the phase centers of said first receive beam FP and said second receive beam AP to effectively provide a new first receive beam and a new second receive beam;

means for varying the phase centers of said third receive beam FS and said fourth receive beam AS to effectively provide a new third receive beam and a new fourth receive beam;

means for combining said new first receive beam and said new third receive beam to provide a resultant receive beam R_2; and

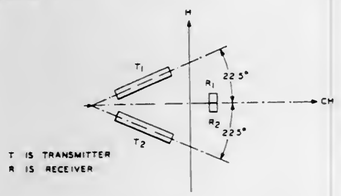
means for combining said new second receive beam and said new fourth receive beam to provide a resultant receive beam R_1.

4,121,210

TWO DIMENSIONAL MIPS

Lester Irving Goldfischer, New Rochelle, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Jun. 29, 1977, Ser. No. 811,109
Int. Cl.[2] G01S *9/46*
U.S. Cl. 343—8 **7 Claims**



5. A velocity sensor comprising:

a pair of transmitting antennas mounted in a predetermined position relative to the heading axis of the vehicle upon which said velocity sensor is mounted for illuminating an area on the ground with a source of radar energy so that the backscattered return signals have elliptically shaped speckles,

a pair of receiving antennas having the line connecting their centers aligned parallel to the heading axis of said vehicle and oriented so as to bisect the obtuse angle formed by the long axis of said pair of transmitting antennas,

means for alternately activating each of said pair of transmitting antennas,

means responsive to said received speckle signals for deriving first and second frequency signals indicative of velocity, and

means responsive to said first and second frequency signals for computing heading velocity and cross-heading velocity.

4,121,211

METHOD AND APPARATUS FOR DETERMINING A SIGNAL OF UNIFORM PERIOD

Joseph Martin Cusack, Plainsboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 5, 1977, Ser. No. 822,210
Claims priority, application United Kingdom, Nov. 22, 1976, 48630/76; Jul. 26, 1977, 31377/77
Int. Cl.[2] G01S *9/24*
U.S. Cl. 343—14 **6 Claims**

1. Apparatus responsive to any input alternating signal having at least N periods to determine whether said signal has portions consisting essentially of an alternating signal of substantially uniform period, where N is an integer greater than one, comprising in combination:

means responsive to said input signal for determining the values, X_i corresponding respectively to the lengths of said periods where $i = 1, 2, \ldots N$;

means for determining a value, Y, corresponding to the variance of the N values of X_i; and

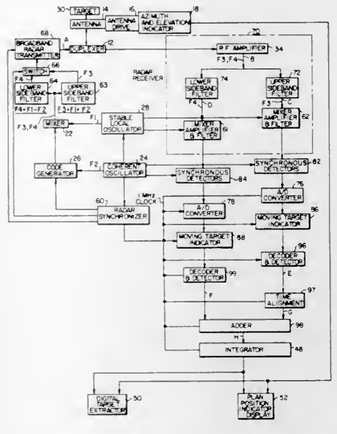
means comparing said value Y with a preselected value Z representing the maximum variance of said uniform period alternating signal for producing a first signal indicative of Z being the greater number manifesting thereby that said input signal consists essentially of an alternating signal of substantially uniform period and for producing a second signal indicative of Y being the greater number manifesting thereby that said input signal does not consist essentially of said substantially uniform period signal.

4,121,212

DOUBLE SIDEBAND PULSE RADAR

John W. Taylor, Jr., Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 634,210, Nov. 21, 1975, abandoned.
This application Oct. 3, 1977, Ser. No. 838,697
Int. Cl.[2] G01S *7/28*
U.S. Cl. 343—17.1 R **25 Claims**



21. A method for operating a pulse radar system comprising the steps of:

transmitting spaced apart radar pulses of length T, said pulses being composed of a first component having a frequency F3 and a second component having a frequency F4,

receiving target reflected pulses between said spaced apart radar pulses and processing said pulses,

said frequencies F3 and F4 differing by an amount which causes the relative phase of the target reflected pulses reflected from significant scattering sources on a desired target over a range extent ΔR to differ by at least 360°,

said step of transmitting includes transmitting said first and second components of said radar pulse sequentially in time,

said step of processing said pulses includes the steps of detecting targets in each of said first and second components of said radar pulse, time aligning the outputs of said detecting means, and mathematically combining the time aligned outputs of said step of detecting targets, and wherein

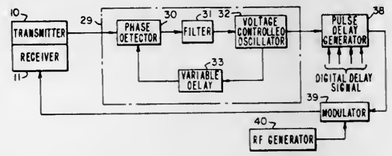
said step of transmitting radar pulses include the steps of transmitting with a single transmitter of sufficient bandwidth for radiating said pulses, generating a first frequency signal, generating a second frequency signal, and mixing said first and second frequency signals to generate said frequencies F3 and F4.

4,121,213

RADAR ALTIMETER SIMULATOR

Louis W. Bush, Baltimore, and Allen R. Cumming, Towson, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 31, 1977, Ser. No. 846,944
Int. Cl.[2] G01S *7/40*
U.S. Cl. 343—17.7 **10 Claims**



1. An altitude simulator comprising:

(a) a phase detector circuit having first and second input terminals and an output terminal, said first terminal being coupled to receive a trigger signal;

(b) a voltage controlled oscillator circuit having an input terminal and an output terminal, the input terminal of said voltage controlled oscillator circuit being coupled to the output terminal of said phase detector circuit such that the output frequency of said oscillator circuit is a function of the output voltage of said phase detector circuit;

(c) first delay means having an input and an output terminal, said input terminal being coupled to receive as an input the output signal of said voltage controlled oscillator to generate a signal having the same frequency as the output signal of said voltage controlled oscillator but delayed therefrom by a time interval determined by said first delay means, said delayed signal being coupled to said second input of said phase detector circuit to complete a phase locked loop;

(d) pulse delay generator means having at least one input terminal and at least one output terminal, said input terminal being coupled to receive as an input signal the output signal of said voltage controlled oscillator and producing at said output terminal a signal having the same frequency as the output signal of said voltage controlled oscillator but delayed therefrom a predetermined time interval;

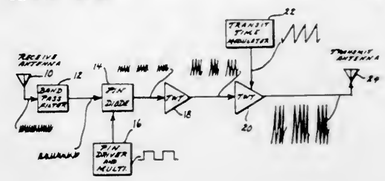
(e) a modulator circuit having first and second input terminals and an output terminal, said first and second input terminals being respectively coupled to receive the output signal of said pulse delay generator means and the output signal of an RF generator to produce at said output terminal of said modulator circuit a pulse modulated RF signal.

4,121,214

PROXIMITY FUZE JAMMER

Richard E. Marinaccio, Crofton, and Ward M. Meier, Ellicott City, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 16, 1969, Ser. No. 889,868
Int. Cl.[2] G01S *7/38*; H04K *3/00*
U.S. Cl. 343—18 E **2 Claims**



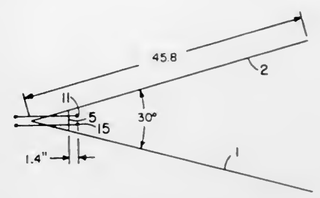
1. A method for predetonating missiles having proximity fuzes which radiate and receive electromagnetic energy comprising the steps of: receiving the electromagnetic radiation radiating from a fuze at a distance beyond the missile's effective warhead range; filtering the received signal to limit the signal to the fuze carrier and its modulated sidebands; square wave modulating the filtered signal; amplifying the modulated signal a first time; amplifying the modulated signal a second time, linearly varying the phase of the second amplified signal, and retransmitting the signal to the fuze at a distance beyond the missile's effective warhead range.

4,121,215

CORNER REFLECTOR ANTENNA FOR DF AND TRACKING APPLICATIONS

Normand Barbano, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 4, 1972, Ser. No. 278,493
Int. Cl.[2] H01Q *15/18*
U.S. Cl. 343—18 C **3 Claims**



1. A corner reflector comprising first and second sides connected together at one end to form a throat of the corner reflector; a reflector plate mounted to said first and second sides near said throat and parallel to a line formed by the junction of said first and second sides to each other; and at least first and second dipoles mounted in front of the reflector plate.

4,121,216

DIRECTION FINDER ANTENNA AND SYSTEM

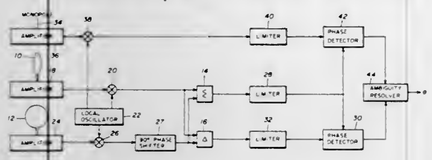
Carroll S. Bunch, Dallas, Tex.; Jerry L. Perry, Huntsville, Ala., and Robert L. Marcucci, San Jose, Calif., assignors to E-Systems, Inc., Dallas, Tex.

Filed Feb. 18, 1972, Ser. No. 227,544
Int. Cl.[2] G01S *5/02, 5/04*
U.S. Cl. 343—113 R **11 Claims**

1. A system for determining the location of a source of emitting radiation with respect to an energy receiving antenna having two orthogonally mounted directional antennas, a

nondirectional antenna, and means responsive to the signals from the directional antennas to generate sum and difference signals and to one of the directional antennas and the nondirectional antenna to generate a coarse direction signal, the improvement comprising:

a first phase detector responsive to the sum signal and the difference signal displaced by 90 electrical degrees from the sum signal for generating a quadrature related voltage;



a second phase detector responsive to sum and difference signals to generate an inphase reference voltage;

means responsive to the quadrature voltage and the inphase reference voltage to generate a multiple of the bearing angle to the emitting source; and

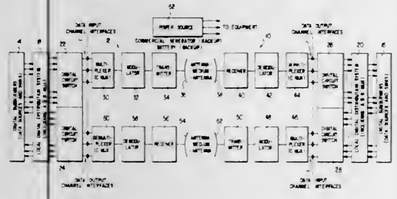
means responsive to the multiple of the bearing angle signal and the coarse direction signal for generating a bearing angle signal.

4,121,217

DATA TRANSMISSION NETWORK INTERFACE UNIT

Frank T. Chen, Reston, Va., assignor to Southern Pacific Communications Company (SPCC), Burlingame, Calif.

Filed Aug. 6, 1976, Ser. No. 712,154
Int. Cl.[2] H04J *3/00*
U.S. Cl. 343—204 **13 Claims**



9. A data transmission network comprising a plurality of local distribution channels, a microwawe backbone trunk, a multiplexer hierarchy coupling said local distribution channels to said backbone trunk, said hierarchy comprising first, second and third level combination multiplexer/demultiplexers, a time division switch coupled between said second and third level multiplexer/demultiplexers, at least some of said local distribution channels including modems, an interface unit coupling said modem channels to said first level multiplexer/demultiplexer, said interface unit comprising a channel logic circuit for each modem channel and a common logic circuit for all said modem channels coupled to said channel logic circuits, and a supervisory input/output module coupling said common logic circuit to said first level multiplexer/demultiplexer.

4,121,218

ADJUSTABLE ANTENNA ARRANGEMENT FOR A PORTABLE RADIO

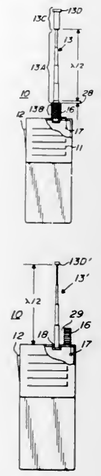
James Stuart Irwin, Ft. Lauderdale, and Francis Robert Steel, Parkland, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1977, Ser. No. 821,453
Int. Cl.[2] H01Q *1/24, 9/00, 1/36*
U.S. Cl. 343—702 **9 Claims**

1. An antenna arrangement as for a hand-held transceiver and comprising in combination:

a helical antenna means mounted on the transceiver and coupled to be driven by the circuitry of the transceiver; and

an extendable half-wave antenna means, mounted on the transceiver and adapted to be capacitively coupled to said helical antenna means when in the extended position and



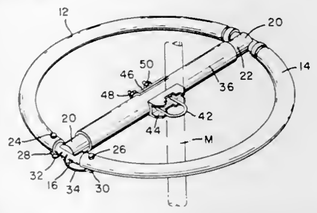
to be substantially decoupled therefrom when in the retracted position.

4,121,219

DIPOLE RESONENT LOOP ANTENNA

Gerald O'Connor, 1711 19th Ave. SE., Puyallup, Wash. 98371

Continuation-in-part of Ser. No. 675,791, Apr. 12, 1976, abandoned. This application May 5, 1977, Ser. No. 793,927
Int. Cl.[2] H01Q *9/26*
U.S. Cl. 343—741 **3 Claims**



1. A half-wave dipole resonant loop antenna, comprising:

a pair of semi-circular, spaced apart, quarter-wave antenna elements;

a pair of generally T-shaped insulative couplers each of which has a pair of opposed legs extending away from each other and a center leg projecting perpendicularly away from said opposed legs, each of said opposed legs being secured to respective antenna elements with said center legs extending toward each other such that said elements curve away from each other in a generally circular configuration;

an upstanding, elongated, electrically conductive support mast; and

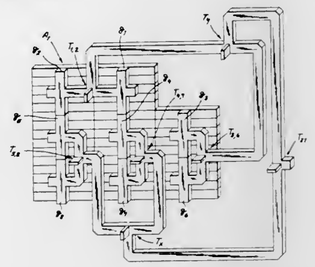
an electrically non-conductive elongated boom positioned diametrically within said circular configuration, said boom having its ends secured to the respective center legs of said couplers and its mid-portion secured to said support mast.

4,121,220

FLAT RADAR ANTENNA EMPLOYING CIRCULAR ARRAY OF SLOTTED WAVEGUIDES

Antoine Scillieri, Houilles, and Alain Caillaud, St.-Germain-En-Laye, both of France, assignors to Electronique Marcel Dassault, Paris, France

Continuation-in-part of Ser. No. 651,787, Jan. 23, 1976, abandoned. This application Feb. 2, 1977, Ser. No. 764,991
Claims priority, application France, Jan. 31, 1975, 75 03132
Int. Cl.[2] H01Q *13/10*
U.S. Cl. 343—768 **8 Claims**



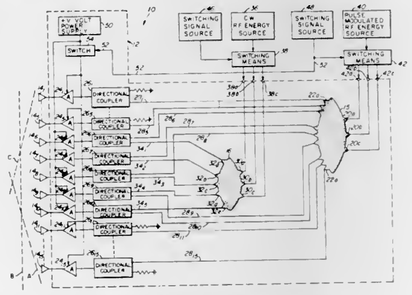
1. In a radar system including a transmit/receive unit of high-frequency waves, the combination therewith of an antenna comprising a planar array of juxtaposed radiators in the form of mutually parallel slotted waveguides, said array being divided into four quadrants each composed of a multiplicity of substantially square radiator groups, and feed means forming paths of identical electrical lengths extending from said unit to all the radiator groups of each quadrant, the radiator groups of each quadrant being arrayed symmetrically about a quadrantal bisector.

4,121,221

RADIO FREQUENCY ARRAY ANTENNA SYSTEM

Lee A. Meadows, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 14, 1977, Ser. No. 777,484
Int. Cl.[2] H01Q *3/26, 21/00*
U.S. Cl. 343—854 **5 Claims**



1. A multibeam array antenna comprising:

(a) an array of antenna elements;

(b) a first beam forming network coupled to each of the antenna elements in the array;

(c) a second beam forming network coupled to a portion of the antenna elements;

(d) a plurality of radio frequency amplifiers, each one of the antenna elements in the array being coupled to the first beam forming network through a corresponding one of such plurality of radio frequency amplifiers and each one of the antenna elements in the portion of the antenna elements being coupled to the second beam forming network through a corresponding one of the portion of the plurality of radio frequency amplifiers;

(e) means for coupling a power supply to the portion of the plurality of radio frequency amplifiers;

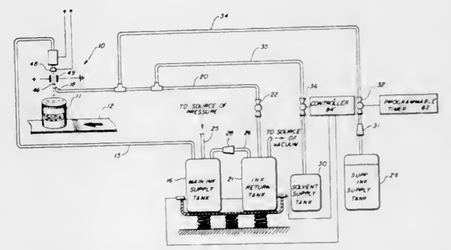
(f) switching means for coupling the remaining ones of the plurality of radio frequency amplifiers to the power supply selectively in accordance with a control signal such switching means including means for coupling the plurality of amplifiers to the power supply during transmission of one type of modulated radio frequency energy and for coupling only the portion of radio frequency amplifiers to the power supply during transmission of a different type of modulated radio frequency energy.

4,121,222

DROP COUNTER INK REPLENISHING SYSTEM

Joseph M. Diebold, Schaumburg; George Arway, River Grove, and Joseph James Stone, Northbrook, all of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Sep. 6, 1977, Ser. No. 830,636
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **11 Claims**



1. In a drop writing system for projecting ink droplets toward a print target which has a main ink supply as the source for ink and in which certain of the droplets are selected to strike the print target while the remaining ink droplets are returned to the ink reservoir, the combination comprising:

(a) a print head connected to receive ink from the main ink supply and having an orifice of predetermined cross-sectional area for forming and projecting toward the print target ink droplets having a known quantity of ink;

(b) means for characterizing said droplets to select certain droplets to strike the print target;

(c) counting means responsive to said characterizing means for producing a count signal indicating that a number of droplets constituting a predetermined quantity of ink were selected to strike the print target;

(d) a supply of supplemental ink;

(e) flow control means responsive to said count signal for directing from said supplemental ink supply to the main ink supply a quantity of ink substantially equal to said predetermined quantity of ink.

4,121,223

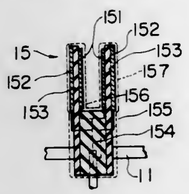
INK JET RECORDING APPARATUS WITH AN IMPROVED INK SENSOR

Hideyuki Omori; Osamubo Otubo, both of Ibaraki, and Yoshio Ohuchi, Hori, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 10, 1976, Ser. No. 722,031
Claims priority, application Japan, Sep. 19, 1975, 50-112609
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **11 Claims**

1. In an ink jet recording apparatus having means for emitting a series of ink droplets with a constant interval, means for charging the ink droplets in accordance with electric signals including electric signals for detecting disorder in recording,

means for deflecting charged droplets in accordance with charges on the charged ink droplets, a recording medium, and sensor means disposed between the deflecting means and the recording medium for sensing the charges on the droplets for detecting disorder in recording and producing electric signals, the improvement on said sensor means comprising induction means including a pair of separated parallel induction plates



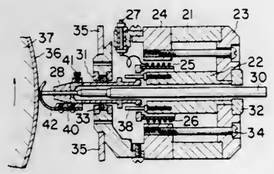
defining a space through which the ink droplets to be detected pass between in nonimpinging relation with the sensor means, said space having an open portion in a direction perpendicular to the flying path of said ink droplets, means for electrically connecting said pair of induction plates, and means mounted through insulating means at opposite sides of said induction plates from said space for shielding electric noise.

4,121,224

RECORDING MECHANISM USING BALL-POINT-PEN

Jikko Takeuchi, 6-434, Honcho 4-chome, Koganei-City, Tokyo, and Masaya Mizuno, 476-74, Hodokubo, Hino-City, Tokyo, both of Japan

Filed Feb. 9, 1977, Ser. No. 767,040
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—139 C **6 Claims**



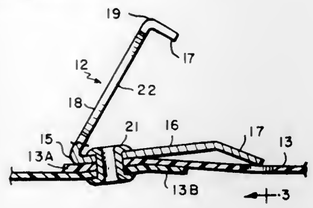
1. A recording mechanism using a ball-point pen, comprising:
a shaft having a ball-point pen fixed in the center thereof and a movable coil wound around the outer periphery of said shaft;
a mechanism for supporting said shaft in a freely slidable manner such that said ball-point pen, said shaft and said movable coil are substantially free to move within a certain range in the axial direction of said pen;
an elastic strip fixed to said shaft, said strip projecting a little distance beyond the writing tip of said pen when said pen is at its free non-recording condition, and said strip contacting a recording paper concurrently with said pen at the recording condition; and
a gap having a uniform magnetic field in which said movable coil is set such that said coil moves in said axial direction with said shaft and said pen in said magnetic field when a varying electric current passes through said coil.

4,121,225

FACSIMILE RECORDING STYLUS

Kestutis E. Bliudnikas, North Grafton, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed Mar. 14, 1977, Ser. No. 777,044
Int. Cl.[2] G01D *15/06*
U.S. Cl. 346—139 C **9 Claims**



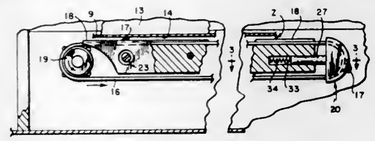
1. A stylus for a facsimile recorder scanning belt comprising:
a foot portion of springy sheet metal for attachment to a scanning belt, a metal sheet leg integral with and extending from the foot at an angle thereto a scanning surface,
wherein the leg has an area of reduced cross section intermediate the foot and the scanning surface.

4,121,226

IDLER GUIDE FOR FACSIMILE SCANNING BELT

John M. Alden, Needham, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed Mar. 25, 1977, Ser. No. 781,114
Int. Cl.[2] G01D *15/24*
U.S. Cl. 346—139 A **9 Claims**



1. Guide means for a stylus-supporting scanning belt orbitting through a recording zone on the frame of a graphic signal recorder, the guide means comprising:
a cylindrical body of low friction, molded material, and
a plunger portion integral with the cylindrical body and extending radially therefrom, the plunger being adapted to be slidingly supported on the recorder frame.

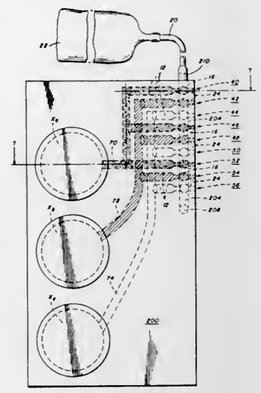
4,121,227

INK JET ARRAY WITH ISOLATED FLUID RECTIFIER LAYERS

Kenneth H. Fischbeck, Dallas, and Richard H. Vernon, Richardson, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 14, 1977, Ser. No. 777,272
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—140 R **4 Claims**

1. A multiple ink jet assembly comprising:
a plurality of orifices arranged adjacent each other in a longitudinal array, inlet passage means for each jet adjacent a respective orifice, a fluid reservoir, fluid supply passage means communicated with said fluid reservoir and extending in a longitudinal direction across said jets, a plurality of fluid rectifier passage means spaced from one another and extending in a direction generally transverse to and communicating with said fluid supply passage means, each said fluid rectifier passage means being in communication with a respective jet at a location between its respective orifice and a respective inlet passage means



to provide a fluid layer therebetween communicated to said reservoir.

4,121,228

PHOTOCOMPOSITION MACHINE WITH KEYBOARD ENTRY AND CRT DISPLAY

Alan B. Cowe, Towpath Rd., Denville, N.J. 07834; Ronald A. Kubinak, 6 Tyroler Ct., Edison, N.J. 08817; George G. Pick, 23 Brockden Dr., Mendham, N.J. 07945; Richard M. Flanagan, 23 Sagamore Dr., Murray Hill, N.J. 07974, and Francis S. Szabo, 605 Lindsley Arms, Morristown, N.J. 07960

Continuation of Ser. No. 613,161, Sep. 15, 1975, abandoned, which is a continuation of Ser. No. 523,558, Nov. 14, 1974, abandoned. This application Apr. 14, 1977, Ser. No. 787,727
Int. Cl.[2] B41B *17/00*
U.S. Cl. 354—7 **28 Claims**



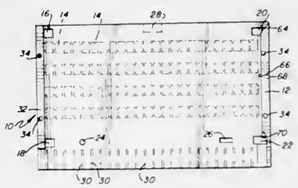
1. In a photocomposition machine for recording type characters on a photosensitive member in accordance with type characters, values, and commands entered from an operator input station, the improvement comprising:
random access memory means for storing type character information data, value data and command data,
data input peripheral means inlcuding keyboard means at the operator station for providing data representative of input commands, values and type characters selected by the operator, said input commands comprising function commands including point size, font and line length selected by the operator,
control means for entering said command, value and type character data into said memory means,
means for generating a line completion signal,
display means at the operator station for visually displaying data stored in said memory in first, second and third predetermined viewing areas,
said first viewing area displaying symbols representative of selected commands and values associated therewith,
said second viewing area displaying finished data entered into said memory prior to the generation of the last preceding line completion signal,
said third viewing area displaying data entered into said memory subsequent to the generator of the last preceding line completion signal,
a phototypesetting unit, and
means for sequentially reading finished data from said meory to control the operation of said phototypesetting unit at the same time said finished data is being displayed in said second viewing area for reference by the operator.

4,121,229

FONT ELEMENT FOR PHOTOCOMPOSING MACHINE

Ronald D. Edhlund, Mount Prospect, Ill., assignor to American Photo-Graphics Corporation, Elk Grove Village, Ill.

Filed Mar. 21, 1977, Ser. No. 779,468
Int. Cl.[2] G03B *17/06, 17/10*
U.S. Cl. 354—15 **8 Claims**



1. A font element for use in a photocomposing machine having a rotatable drum, the drum defining light-transmissive portions and having a pair of hooks for coupling to one edge of the font element and a pair of stationary buttons for coupling to the opposite edge of the font element, the font element comprising a flexible sheet on which character images are arranged, the font element defining apertures for receiving said hooks and apertures for receiving said buttons, and a reinforcing member secured to said one edge of the font element and adapted to underlie the hooks, the improvement comprising a second reinforcing member extending alongside the button-receiving apertures, said second reinforcing member having a main body portion and an angled portion adjacent the top of the font element and located to engage snugly the stationary button received by said one aperture, said angled portion extending from said main body portion and continously tapering toward a corner of the font element that is closest to the stationary button, the other portion of said second reinforcing member being located to engage the stationary button received by the other button-receiving aperture.

4,121,230

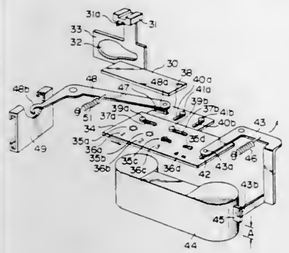
EXPOSURE CONTROL DEVICE FOR PHOTOGRAPHIC CAMERA

Hiroshi Ohmura, Yokohama, and Akira Kohashi, Chigasaki, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Filed Feb. 22, 1977, Ser. No. 770,650
Int. Cl.[2] G03B *7/00, 15/03, 17/26, 17/00*
U.S. Cl. 354—21 **10 Claims**

9. An exposure control device for a photographic camera comprising an exposure control means for changing an aperture size or a shutter speed, a mark indicating plate bearing thereon a plurality of exposure condition marks such as weather marks arranged in a line movable in the direction in which the exposure condition marks are lined, and a manually operable exposure control knob connected with said exposure control means, said exposure control knob having an index to be selectively aligned with one of said exposure condition marks and a film sensitivity sensing means which senses the

sensitivity of a film loaded in a film cartridge charged in the camera body, said film sensitivity sensing means being connected with said mark indicating plate to move the mark indicating plate in the direction in which said marks are lined.

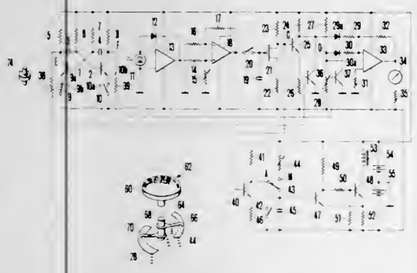


4,121,231

EXPOSURE FACTOR SETTING DEVICE FOR A CAMERA

Tatsuya Taguchi, Tokyo, and Nobuaki Date, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1977, Ser. No. 771,385
Claims priority, application Japan, Mar. 1, 1976, 51/21910
Int. Cl.[2] **C03B** *7/08*
U.S. Cl. 354—38 **16 Claims**



1. An exposure factors setting device for a camera having a manual exposure mode for controlling exposure time and an aperture size in accordance with a shutter speed and a diaphragm aperture which are manually adjusted, the exposure factor setting device comprising:

(a) light sensitive means for producing a first electrical signal corresponding to the brightness of a scene being photographed;

(b) first exposure factor setting means for producing a second electrical signal corresponding a first exposure factor manually set;

(c) a computer circuit response to said first and said second electrical signals for producing a third electrical signal corresponding to a second exposure factor capable of providing a correct exposure;

(d) second variable exposure factor setting means for producing a changeable fourth electrical signal corresponding to an exposure factor to be manually set and of the same kind as that of said second exposure factor;

(e) exposure factor indicating means; and

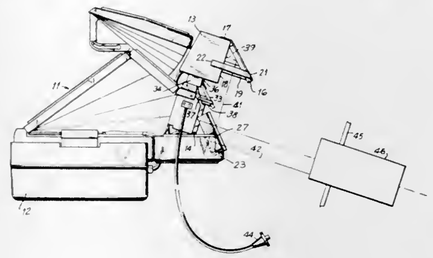
(f) first means for transferring the third electrical signal from said computer circuit and the fourth electrical signal from said second variable exposure factor setting means to said exposure factor indicating means during manual adjustment of the shutter speed and the diaphragm aperture in the manual exposure mode so said second variable exposure factor setting means may be varied until coincidence of the display content of the exposure factor indicating means is attained.

4,121,232

CIRCUMLENS CAMERA ILLUMINATION SYSTEM

Kenneth Malcolm Jones, P.O. Box 45, West Tisbury, Mass. 02575

Filed Nov. 5, 1976, Ser. No. 739,153
Int. Cl.[2] **G03B** *15/02*
U.S. Cl. 354—126 **19 Claims**



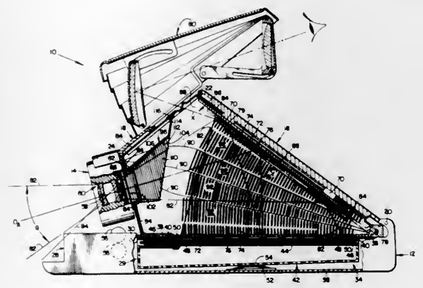
1. Apparatus for directing light from a flash source associated with a camera proximate to and approximately parallel to a line from the lens of said camera to selected subject matter, said flash source including a light source and a mounting, comprising a first mirror, first holding means for attaching said first mirror to said mounting, spacer means for orienting said first mirror at a selected first angle in relation to said light source, and at least a second mirror positioned adjacent said lens, said first angle being such that light from said light source is directed to said at least second mirror, said at least second mirror being oriented for making a second angle with the light reflected from said first mirror such that a substantial portion of said reflected light is again reflected proximate to and approximately parallel to said line joining said camera lens and said subject matter, said at least second mirror being positioned for allowing ready access to said camera lens and attachment of a close-up lens.

4,121,233

COLLAPSIBLE FLARE BAFFLE FOR FOLDING CAMERA

William Hudspeth, Norwell, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 27, 1977, Ser. No. 809,987
Int. Cl.[2] **G03B** *17/04, 17/50, 15/00, 17/02*
U.S. Cl. 354—150 **18 Claims**



1. A folding photographic camera comprising:

a plurality of housing sections interconnected for relative movement with respect to one another to define a housing for said camera having a folded position wherein said housing sections are spatially arranged in a compact manner suitable for transporting said camera and an extended operative position wherein said housing sections are spatially arranged in a predetermined manner to define a space between them for facilitating exposure of a photographic film;

means within a first one of said housing sections for defining an exposure area at a focal plane and for facilitating the positioning of a photographic film in alignment with said exposure area;

optical means, including an objective taking lens mounted within a second one of said housing sections, for defining an optical path between said exposure area and said objective taking lens so that a real image of a photographic scene may be formed by said optical means on said focal plane when said camera housing is in said extended operative position, said optical means and the peripheral edges of said exposure area cooperating to provide said camera with a field of view which defines the area in object space that said camera will image on said focal plane during a photographic exposure cycle;

selectively actuable exposure means for defining a predetermined exposure cycle during which cycle, light from a photographic scene is imaged on said focal plane by said optical means;

a thin-walled opaque envelope configured and arranged between at least said first and second housing sections for movement in correspondence therewith between a collapsed state corresponding to said folded position of said camera housing wherein said envelope assumes a compact shape to facilitate the folding of said camera housing and an extended state corresponding to said extended position of said camera housing wherein said envelope is extended to define a light-tight exposure chamber of predetermined dimensions and shape extending between at least said first and second housing sections; and

means positioned within said exposure chamber for intercepting light from outside of said field of view of said camera to prevent such intercepted light from impinging on said focal plane during said exposure cycle, said intercepting means comprising a collapsible open ended light baffle adapted to assume an extended predetermined configuration when said camera housing is in its said extended position and a compact collapsed configuration when said camera housing is in said folded position, said light baffle having inlet and outlet openings aligned along said optical path with its said outlet opening positioned internally of and spaced from the interior surfaces of said thin-walled opaque envelope when said light baffle is in its said extended position to permit light from within said field of view of said camera to pass through said light baffle and proceed toward said focal plane and portions intermediate said inlet and outlet openings arranged along said optical path to intercept light originating from outside of said field of view of said camera thus preventing such intercepted light from adversely affecting the quality of the image of the photographic scene formed on said focal plane during said exposure cycle.

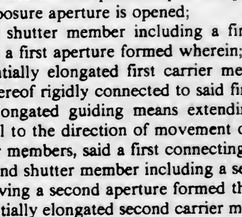
4,121,234

FOCUSING AND PROJECTION SCREEN

Richard M. Altman, Woodland Hills, and Thomas D. McLaughlin, Thousand Oaks, both of Calif., assignors to Vivitar Corporation, Santa Monica, Calif.

Continuation of Ser. No. 606,350, Aug. 21, 1975, abandoned. This application Apr. 5, 1977, Ser. No. 784,711
Int. Cl.[2] **G03B** *13/02, 19/12;* **G02B** *5/14*
U.S. Cl. 354—201 **15 Claims**

7. In a camera of the type arranged to mount interchangeable lens where the lens is focusable to create an image of an object in a depth of focus, means defining a focal plane, and a viewing system including a focusing screen subtending a plane that is the same distance from the exit pupil of a lens as the focal plane and is a continuation of the optical axis of the lens; said focusing screen comprising a multiplicity of light transmitting elements of finite length essentially uniformly arranged and closely spaced together, each element surrounded by a light absorbing and non-light transmissive material, said elements being of a length which resides within the focal range of a lens mounted to the camera and of a predetermined cross-sectional shape and dimension whereby only light of a predetermined angle of incidence or less is passed by said elements so that when the lens is focused such that its focus range includes the elements of said screen an image from said lens comes into sharp focus and bright illumination on said screen.

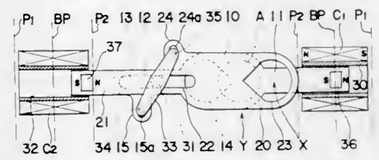


4,121,235

ELECTROMAGNETICALLY OPERATED SHUTTER MECHANISM

Susumu Fujita, Kobe; Seijiro Kushibe, Nishinomiya, and Hiroshi Shimizu, Matsubara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 22, 1976, Ser. No. 725,201
Claims priority, application Japan, Sep. 29, 1975, 50-118093; Sep. 29, 1975, 50-118094; Sep. 23, 1975, 50-115249
Int. Cl.[2] **G03B** *9/08*
U.S. Cl. 354—234 **6 Claims**



1. A shutter mechanism for selectively closing and opening an exposure aperture through which, during opening of the aperture, the incoming light is allowed to pass therethrough, which comprises, in combination:

first and second shutter members supported in position for movement in opposite directions between their respective inoperative positions, in which the exposure aperture is closed, and their respective operative positions, in which the exposure aperture is opened;

said first shutter member including a first blade member having a first aperture formed wherein;

a substantially elongated first carrier member having one end thereof rigidly connected to said first blade member;

a first elongated guiding means extending in a direction parallel to the direction of movement of any one of said shutter members, said a first connecting member;

said second shutter member including a second blade member having a second aperture formed therein;

a substantially elongated second carrier member having one end thereof rigidly connected to said second blade member;

a substantially elongated bar member having one end thereof rigidly connected to said second blade member on an opposite side to the side where said second carrier member is connected;

a second elongated guiding means extending in a direction

parallel to the direction of movement of any one of said shutter members, and a second connecting member;

means connecting either one of said first and second shutter members to the other of said first and second shutter members for transmitting a movement of said first shutter member to said second shutter member, said transmitting means including an elongated link having one end pivotally connected to said first connecting member and the other end pivotally connected to said second connecting member;

first and second permanent magnet members rigidly mounted on respective free end portions of said first and second carrier members;

a first solenoid coil support in position to surround said elongated first carrier member in said first shutter member;

a second solenoid coil supported in position to surround said second elongated carrier member in said second shutter member; and

push-pull circuit means including first and second circuit components operable in opposed phase relationship to each other and electrically connected to said first and second solenoid coils, said first circuit component during its operation feeding an electric current from a D.C. power source so as to flow through at least one of said first and second solenoid coils in one direction while said second circuit component during its operation feeding the electric current so as to flow through at least one of said first and second solenoid coils in the opposite direction;

said first and second permanent magnet members being so positioned that, during the operation of the first circuit component, said first shutter member is moved from the inoperative position towards the operative position by the effect of a magnetic force developed between at least one of said first and second permanent magnets and at least one of said first and second solenoid coils then energized by the current flowing therethrough in said one direction while said link is rotated about a substantially intermediate portion thereof to transmit the movement of the first shutter member to the second shutter member to move the latter from the inoperative position towards the operative position in the direction opposed to the direction of movement of the first shutter member, and, during the operation of the second circuit component, said first shutter member is moved from the operative position towards the inoperative position by the effect of a magnetic force developed between at least one of said first and second permanent magnets and at least one of said first and second solenoid coils then energized by the current flowing therethrough in said opposite direction while said link is rotated about the substantially intermediate portion thereof to transmit the movement of the first shutter member to the second shutter member to move the latter from the operative position towards the inoperative position in the direction opposed to the direction of movement of the first shutter member.

4,121,236

APERTURE CARD CAMERA WITH DEVICE FOR SPRAYING THE EXPOSED FILM

Ulrich Welp, and Gero Sellien, both of Bad Nauheim, Fed. Rep. of Germany, assignors to Microbox Dr. Welp GmbH & Co., Bad Nauheim, Fed. Rep. of Germany

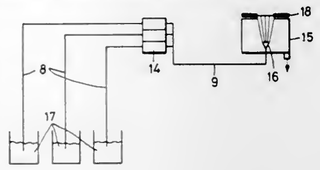
Filed Jun. 28, 1976, Ser. No. 700,388

Claims priority, application Austria, Jul. 4, 1975, 5190/75; Apr. 15, 1976, 2816/76

Int. Cl.² G03D *3/06*

U.S. Cl. 354—323 **9 Claims**

1. An apparatus for spraying an exposed film with processing liquid under pressure, said processing liquid including developer, fixer and water or fixer-developer and water, comprising container means for said processing liquid, processing means including a developing chamber and spraying nozzle means in said developing chamber, pump means including constant volume pump chamber means, suction pipe means operatively interconnecting said container means to said constant volume pump chamber means, pressure pipe means operatively connecting said nozzle means to said constant volume pump chamber means for conveying processing liquid under pressure from said container means to said nozzle means, said pump means further comprising first cover plate means, and second cover plate means as well as intermediate pump disc means operatively held in position between said first and second cover plate means to form said constant volume pump chamber means, first membrane means operatively clamped in position between said first cover plate means and said intermediate pump disc means, second membrane means operatively clamped between the intermediate pump disc means and said second cover plate means, pump operating conduit means, and controllable valve means operatively connecting said pump operating conduit means to said pump means for operating the pump means.



4,121,237

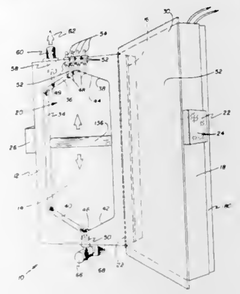
METHOD AND APPARATUS FOR PROCESSING PHOTOGRAPHIC FILM

Theodore F. Schwartz, Scottsdale, Ariz., assignor to The Scott & Fetzer Company, Fort Wayne, Ind.

Filed Jan. 21, 1977, Ser. No. 761,434

Int. Cl.² G03D *3/04*

U.S. Cl. 354—323 **13 Claims**



1. A photographic film processor comprising: a processing chamber including a peripheral wall, a resilient membrane forming another wall of said chamber, means for removably supporting a photographic exposure against said peripheral wall with the emulsion surface thereof disposed in parallel and closely spaced apart relationship to said membrane and closing said chamber, means for introducing and removing photographic processing chemistry components into and from said chamber individually and in sequence, and means for repetitively deforming said membrane to thereby agitate said chemistry components when in said chamber and develop said photographic exposure.

4,121,238

METAL OXIDE/INDIUM PHOSPHIDE DEVICES

Klaus Jurgen Bachmann, Piscataway; Paul Herman Schmidt, Chatham; Edward Guerrant Spencer, Murray Hill, and Karnamadakala Sreenivasasacharlu Sree Harsha, North Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 16, 1977, Ser. No. 769,107

Int. Cl.² H01L *27/14*

U.S. Cl. 357—16 **10 Claims**

1. A device comprising a p-type direct gap semiconductor material in intimate contact with a conducting transparent material characterized in that said conducting transparent material is chosen from the group consisting of indium oxide, and indium tin oxide, and said p-type direct gap semiconductor material is p-type InP whereby a rectifying junction is formed.

4,121,239

CONTROLLABLE SEMICONDUCTOR COMPONENT FOR TWO CURRENT DIRECTIONS

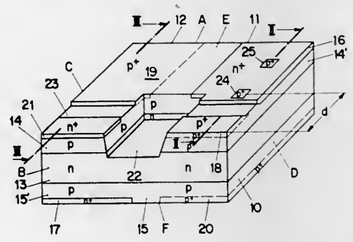
Günter Berndes, Heppenheim, and Eckhard Meyer, Lampertheim, both of Germany, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 12, 1977, Ser. No. 814,919

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1976, 2636234

Int. Cl.² H01L *29/747*

U.S. Cl. 357—39 **5 Claims**



1. A controllable semiconductor device for two current directions comprising:

a semiconductor wafer having a middle zone of a first conductivity type extending throughout the wafer plane, an upper zone of a second conductivity type adjoining the middle zone from above, a lower zone of the second conductivity type adjoining the middle zone from below, a first main electrode zone of the first conductivity type adjoining a first partial zone of the upper zone, a second main electrode zone of the first conductivity type adjoining a first partial zone of the lower zone and laterally separated from a second partial zone of the lower zone, a first control-electrode zone of the second conductivity type on the upper side of the upper zone at a lateral distance from the first main-electrode zone and separated therefrom by a channel, a second control-electrode zone of the first conductivity type on the upper side of the upper zone at a lateral and diagonal distance from the first main-electrode zone and laterally separated by the channel from a second partial zone of the upper zone, and a notch between the control-electrode zones which extends laterally partway between the first partial zone with the first main-electrode zone, on the one hand, and the second partial zone of the upper zone, on the other hand, and in its depth going from the upper towards the lower side of the semiconductor wafer partway into the middle zone;

a first main electrode contacting the first main-electrode zone and the second partial zone of the upper zone;

a second main electrode contacting the second main-electrode zone and the second partial zone of the lower zone;

a control-electrode arrangement for separate contacting of the two control electrode zones; and

a case enclosing the wafer, wherein the two control-electrode leads are brought out electrically separated through the case from their separate control electrodes on the semiconductor wafer.

4,121,240

SEMICONDUCTOR DEVICE HAVING A DISCHARGE-FORMED INSULATING FILM

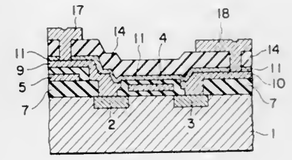
Hisao Katto, Hinode, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 26, 1976, Ser. No. 670,831

Claims priority, application Japan, Mar. 26, 1975, 50-35568

Int. Cl.² H01L *29/34, 29/04, 29/46*

U.S. Cl. 357—52 **4 Claims**



1. A semiconductor device comprising

a semiconductor body including a semiconductor circuit element therein;

an insulating layer selectively disposed on the surface of said body and having at least one opening therethrough so as to expose at least one surface portion of said body;

a conductive layer selectively disposed on the surface of said insulating layer so as to expose at least one surface portion of said insulating layer, said conductive layer extending through said at least one opening through said insulating layer and contacting said at least one exposed surface portion of said body;

a protection layer disposed on both said conductive layer and said insulating layer, said protection layer including a semiconductor film overlying each portion of said conductive layer and said insulating layer on which said protection layer is disposed; and

a discharge-formed insulating film disposed on said semiconductor film,

wherein each of said protection layer and said insulating film has at least one aperture therethrough exposing at least one surface portion of said conductive layer, and further including a conductive contact layer disposed on said insulating film and extending through an aperture in each of said protection layer and said insulating film to contact said conductive layer.

4,121,241

MULTILAYER INTERCONNECTED STRUCTURE FOR SEMICONDUCTOR INTEGRATED CIRCUIT

Jerry W. Drake, Brookdale, and Peter J. Portesi, Mt. View, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 3, 1977, Ser. No. 756,509

Int. Cl.² H01L *23/48, 29/46, 29/54*

U.S. Cl. 357—71 **1 Claim**

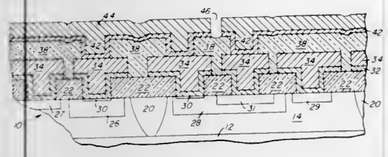
1. A semiconductor integrated circuit comprising:

(a) a first aluminum lead metal interconnecting system formed over a surface of a semiconductor body of such circuit;

(b) an insulating layer on the first lead metal interconnecting layer, such insulating layer having apertures formed in selected regions thereof;

(c) a titanium-tungsten mixture refractory metal layer deposited on the insulating layer and through the apertures onto

selected regions of the first lead metal interconnecting system; and



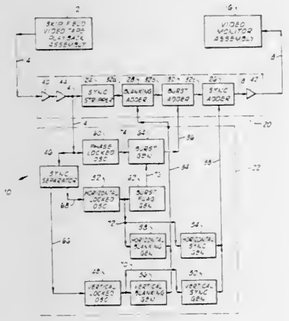
(d) a second aluminum lead metal deposited directly on the refractory metal layer.

4,121,242

VIDEO PROCESSOR PROVIDING SYNC STRIPPING AND REINSERTION

Mike A. Janko, 2616 N. Ann Arbor, Apt. 117, Oklahoma City, Okla. 73127

Filed Apr. 20, 1976, Ser. No. 678,556
Int. Cl.[2] H04N *5/76, 9/46, 5/04, 5/78*
U.S. Cl. 358—4 **5 Claims**



1. A video processor for processing a video input signal provided by a skip-field video tape playback assembly and providing a video output signal having interlaced vertical sync signals, the processor comprising:

a video processing circuit connected to the skip-field video tape playback assembly, the video processing circuit receiving the video input signal and interlaced vertical sync pulses, and replacing the vertical sync pulses of the received video input signal with the received interlaced vertical sync pulses to provide the video output signal having interlaced vertical sync pulses; and

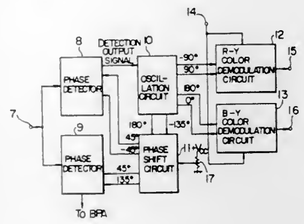
a sync generator connected to the skip-field video tape playback assembly and to the video processing circuit, the sync generator receiving the video input signal, detecting the vertical sync pulses of the received video input signal and providing the interlaced vertical sync pulses in response to detecting the vertical sync pulses of the received video input signal.

4,121,243

COLOR SUBCARRIER GENERATOR

Namio Yamaguchi, Ibaragi, and Yasuyuki Sato, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 28, 1977, Ser. No. 782,245
Claims priority, application Japan, Apr. 16, 1976, 51-43846; Aug. 9, 1976, 51-95283; Sep. 10, 1976, 51-109047; Sep. 13, 1976, 51-110237
Int. Cl.[2] H04N *9/46, 9/50*
U.S. Cl. 358—19 **10 Claims**



1. A color signal processing circuit for a color television receiver comprising:

a color demodulation circuit;

an oscillator circuit comprising:

a first, second, third and fourth differential amplifiers,

means for coupling a pair of outputs from said second differential amplifier respectively with said third and fourth differential amplifiers,

means for combining the outputs of said first, third and fourth differential amplifier,

a resonator coupled to the output of said combining means,

first means for phase shifting the output of said resonator,

means for coupling the output of said first phase shifting means to the inputs of said first and second differential amplifiers, and

means for taking from the outputs of said first and second differential amplifiers four output signals at a frequency of a color subcarrier wave but differing from one another by 90° and supplying these four signals to said color demodulation circuit;

a phase shifter circuit comprising:

fifth and sixth differential amplifier circuits,

means for coupling two phase displaced signals from said oscillation circuit to the inputs of said fifth and sixth differential amplifier circuits,

means responsive to the outputs of said fifth and sixth differential amplifiers for producing a pair of output signals at a frequency of said color subcarrier wave but phase displaced, and

means for adjusting the bias voltages of said fifth and sixth differential amplifier circuits for changing the phase of said pair of output signals;

a phase detecting circuit comprising:

a seventh differential amplifier,

a switching device connected in series with said seventh differential amplifier,

means for supplying a color burst signal to the input of said switching device,

means coupling said pair of output signals from said phase shifter circuit to respective inputs of said seventh differential amplifier,

means for filtering the outputs of said seventh differential amplifier, and

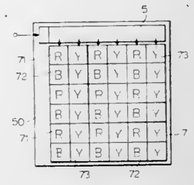
means for coupling the outputs of said seventh differential amplifier corresponding to the phase difference between said color burst signal and said color subcarrier wave signal to bias adjusting inputs of said third and fourth differential amplifiers to control the phase of said oscillation circuit.

4,121,244

SOLID STATE COLOR IMAGING APPARATUS

Ryuhei Nakabe; Yoshio Ohta, both of Hirakata, and Toshiro Matsuura, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 27, 1976, Ser. No. 736,186
Claims priority, application Japan, Oct. 24, 1975, 50-128752
Int. Cl.[2] H04N *9/07*
U.S. Cl. 358—44 **26 Claims**



1. A solid state color imagining apparatus for producing a color signal representing a color image of an object, said apparatus comprising:

photosensitive means including a plurality of pairs of lines of photosensitive elements with the lines in each pair being different from each other and the pairs of lines being positioned one above the other with the different kinds of lines in alternating sequence in the direction of a vertical scan of said photosensitive means, each of said photosensitive element lines having light sensitivity elements of two kinds in alternating sequence in the direction of a horizontal scan of said photosensitive means;

clock signal generating means for generating a clock signal;

signal reading means coupled to said photosensitive means and said clock signal generating means for operating said photosensitive means for reading out in synchronism with said clock signal charge signals from said photosensitive means for producing a first signal and a second signal alternately in successive horizontal scans; said first signal including portions representative of a first light component and of a second light component in alternating sequence and said second signal including portions representative of a third light component and of a fourth light component in alternating sequence; and

circuit means coupled to said photosensitive means for receiving the first and second signals and deriving a modulated component therefrom which represents the color difference of the image and modulated with the repetition frequency of said photosensitive elements; and

demodulating circuit means coupled to said filter circuit means and said clock signal generating means for receiving the modulated component and demodulating the color difference signals in synchronism with said clock signal.

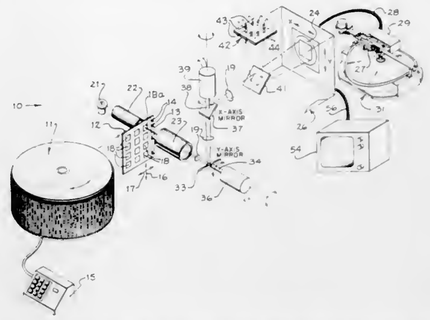
4,121,245

IMAGE REGISTRATION SYSTEM FOR VIDEO CAMERA

Earl R. Hibbard, Berkeley, Calif., assignor to Teknekron, Inc., Berkeley, Calif.

Filed Apr. 11, 1977, Ser. No. 786,448
Int. Cl.[2] H04N *7/18;* **G01B** *11/26;* **G06K** *9/04*
U.S. Cl. 358—102 **6 Claims**

1. In a system for accurately projecting an image of a prerecorded image upon light responsive means of a T.V. camera comprising a light source projecting light along a predetermined path, means for supporting a prerecorded image of a document in a plane disposed across said path, said light path transmitting an image of said prerecorded image therealong to the camera, movable mirror means in said light path for deflecting the light path and image, positioning means for moving said mirror means to displace the light path to move the image with respect to said light responsive means, means including at most one partially silvered mirror in said light path for detecting inaccurate registration of said image relative to said light responsive means along each of two mutually perpendicular axes and serving to operate said positioning means to move said mirror means to cause the image to be moved into predetermined registration with respect to said light responsive means, the last named means comprising first and second circuit means and an array of light responsive elements disposed in a configuration coextensive with the bounds of the image, those of said elements disposed on opposite sides of said configuration being paired to form portions of an associated one of said first or second circuit means to provide signals from said first or second circuit representing the degree and direction of misregistration between the image and said light responsive means with respect to an associated one of said pairs of elements.

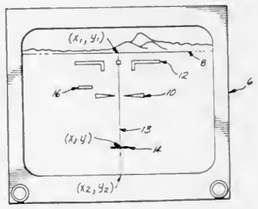


4,121,246

GROUND IMPACT POINT PREDICTION SYSTEM CONCEPT FOR AIRDROPS

Delmar McLean Fadden, Kent; Alvin Richard Habbestad, Seattle, and James Edwin Veitengruber, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 726,870, Sep. 27, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,753
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—103 **3 Claims**



1. A method for tracking and displaying an airdrop target point to the crew of an aircraft which comprises:

(a) displaying an image of the terrain ahead of an aircraft including the airdrop target point on an apparatus showing the aircraft flight path characteristics;

(b) generating a line representing the locus of instantaneous impact points of an airdrop load along the terrain and superimposing said line on said image;

(c) generating a line representing the instantaneous impact point of an airdrop load on the terrain and superimposing said line on said image; and,

(d) aligning the flight path of the aircraft with said line

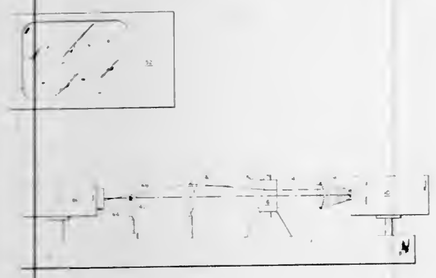
representing the locus of instantaneous impact points until said line representing the instantaneous impact point overlays said airdrop target at which point an airdrop load is released.

4,121,247

POPULATION AND PROFILE DISPLAY OF TRANSPARENT BODIES IN A TRANSPARENT MASS

James W. Henry, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 21, 1977, Ser. No. 790,792
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—107 **12 Claims**



1. Method of displaying population and profile data of transparent bodies contained within a transparent mass wherein said bodies are not distinguishable from said mass by the unaided eye and said bodies and said mass have different indexes of refraction comprising

(a) moving a specimen of the mass containing said bodies into an optical viewing position wherein said specimen is intercepted by a columned beam of parallel light rays of a schlieren optical system whereby rays penetrating said mass continue in substantially the same columned state and rays penetrating said bodies are deviated from said columned beam of light to form an image of the profile of said bodies within said mass,

(b) detecting at least a portion of said deviated rays by a television camera, and converting the image into a video signal, and

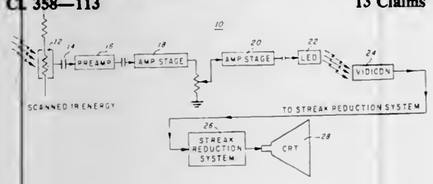
(c) using said video signal as the input to a kinescope display device having amplifier means, whereby the image of said bodies is amplified with respect to size and contrast to display said population and profile data.

4,121,248

STREAK REDUCTION SYSTEM FOR FLIR DISPLAY

Cecil R. Coale, Jr., McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 7, 1977, Ser. No. 774,839
Int. Cl.[2] H04N *5/33*
U.S. Cl. 358—113 **13 Claims**



1. A forward looking infrared system comprising:

(a) a detector array having a plurality of detector elements for producing a plurality of electrical scan lines responsive to infrared energy emanating from a scene;

(b) an a.c. coupling means for each detector element of the array of detectors for coupling the electrical energy for each scan line to an amplifier stage;

(c) a light emitting array means having a plurality of light emitting elements, each light emitting element connected to a corresponding detector element amplifying stage for producing a visible image of the electrical representations of each detector element line scan for producing a visible display representative of the infrared energy emanating from the scene;

(d) a scanning means, in the path of said light emitting array, said light emitting array writing its light scan lines on the scanning means for conversion by the scanning means to electrical video signals;

(e) a streak reduction means connected to the output of said scanning means for producing streak reduction signals from the probability density function of a video scan line and applying the streak reduction signal to the video signal, said streak reduction means including:

(i) a delay means for delaying one scan line of video signals;

(ii) means for locating the mean voltage of a succeeding scan line of video signals;

(iii) means for locating the mode voltage of the probability density function for the succeeding scan line of video signals;

(iv) comparing means for comparing the mean voltage and the mode voltage for producing a streak correction signal for the video signals;

(v) means for applying the streak correction signal to the video signals of the display means; and

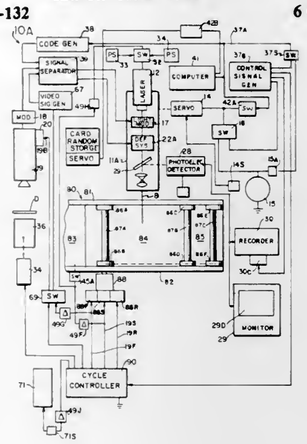
(f) a display for displaying the video signal.

4,121,249

CARD RECORDING AND REPRODUCTION APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 474,392, May 30, 1974, abandoned, which is a continuation-in-part of Ser. No. 277,401, Aug. 2, 1972, Pat. No. 3,818,500, and Ser. No. 277,402, Aug. 2, 1972, abandoned. This application Feb. 3, 1976, Ser. No. 654,939
Int. Cl.[2] H04N *5/86*
U.S. Cl. 358—132 **6 Claims**



4. Document storage apparatus for generating visual picture images of information recorded as a plurality of separate optically scannable video recordings wherein each of said separate video recordings occupies a respective elongated narrow strip portion of a record card and wherein said narrow strip portions of each card define record tracks which are parallel to each other, said apparatus comprising:

first means for generating a beam of reading radiation,

second means for prepositioning a record card with respect to said radiation beam generating means,

third means for effecting movement of said card in a manner to cause said beam to scan a selected video recording extending along a selected of said record tracks to cause radiation of said beam to be modulated in scanning the narrow strip portion of said card containing the selected video recording, and

fourth means for receiving the radiation of said beam after it has been modulated by the selected video recording scanned by said beam, said fourth means including light sensitive electrical signal generating means operable to generate a full-frame video picture signal on its output in accordance with the characteristics of the video recording of the track scanned,

fifth means for receiving the signal output of said fourth means, said fifth means including a video monitor having a viewing screen and electronic writing means responsive to said full-frame video signal generated on the output of said fourth means for generating a visually monitorable image on said screen which image is a pictorial representation of the recording on the track of said card scanned, and

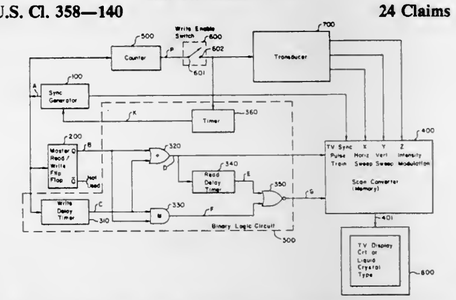
means for retaining said image on said screen for an extended period of time to permit it to be viewed by a person and to be monitored.

4,121,250

FLICKER FREE SCAN CONVERSION SYSTEM

Kenneth A. Huelsman, Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 26, 1976, Ser. No. 708,677
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—140 **24 Claims**



19. A flicker-free visual display system having a transducer feeding a scan converter memory and utilizing two fields per raster frame readout, comprising the combination:

first means for writing odd and even number of segmentary portions of lines in alternation for each repetition period of output from said transducer; and

second means comprising a TV type viewer and said scan converter memory feeding said viewer for inhibiting the display of alternate lines of each of the raster fields.

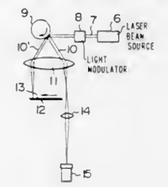
4,121,251

METHOD OF DETECTING A SYNCHRONIZING LIGHT BEAM

Noboru Arai, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Filed Apr. 27, 1977, Ser. No. 791,404
Claims priority, application Japan, Apr. 28, 1976, 51-49085
Int. Cl.[2] H04N *5/84, 5/06, 5/08, 5/74*
U.S. Cl. 358—150 **5 Claims**

1. A method of detecting a synchronizing light beam in a light beam scanning system for recording or displaying information by use of a light beam modulated by a video signal wherein the scanning light beam is detected at a predetermined position while the light beam is scanning a line, said light beam being focused to form a light spot on the line wherein the improvement comprises the steps of enlarging the diameter of



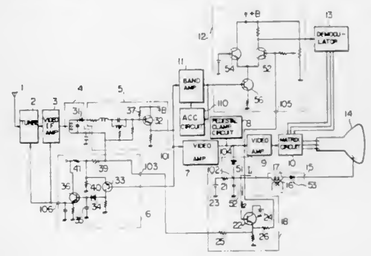
the light beam after the light beam has passed through a plane including said line before the light beam is modulated in each line, and detecting the light beam where the diameter of the light beam is larger than that of said light spot.

4,121,252

AUTOMATIC BRIGHTNESS LIMITER CIRCUIT

Yukimi Saiki; Masanori Oguino, both of Yokohama, and Shutoku Watanabe, Ashiya, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 7, 1976, Ser. No. 703,235
Claims priority, application Japan, Jul. 9, 1975, 50/83504; Apr. 26, 1976, 51/46568
Int. Cl.[2] H04N *5/14, 5/68*
U.S. Cl. 358—169 **6 Claims**



1. A television receiver comprising:

an amplifier adapted to receive a television signal including a composite video signal component having a first predetermined level which is a carrier zero level and a second predetermined level which is a synchronizing signal peak value, for amplifying said television signal;

a detector for detecting the amplified television signal to produce a composite video signal;

an automatic gain control circuit for comparing said second predetermined level in the detected composite video signal with a preset level while fixing said first predetermined level in the detected composite video signal at a first fixed level and controlling the gain of said amplifier in the direction to cause said second predetermined level to coincide with said preset level;

a CRT adapted to receive the detected composite video signal;

a power supply for supplying a beam current to the CRT; and

beam current limiting means connected to the CRT and the power supply for reducing the beam current when it exceeds a predetermined level to prevent the increase of the beam current;

said beam current limiting means including:

detection means for detecting the change in the beam current; and

control means for receiving an output signal from said detection means and causing said first predetermined level to approach toward said second predetermined level when the beam current exceeds said predetermined level so that the composite video signal having its first and second predetermined levels closer to each other is produced at the output of the of the detection means;

whereby the automatic gain control circuit causes the gain of said amplifier to reduce.

4,121,253

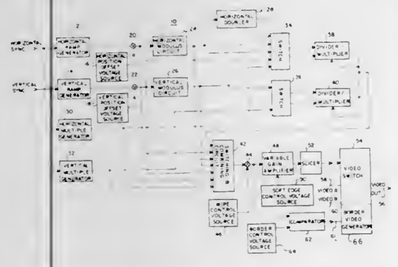
VIDEO SPECIAL EFFECTS GENERATOR

Reginald F. H. McCoy, Gainesville, Fla., assignor to Vital Industries, Inc., Gainesville, Fla.

Filed Aug. 20, 1976, Ser. No. 716,217

Int. Cl.[2] H04N *5/22*

U.S. Cl. 358—181 **25 Claims**



1. A video special effects generator for generating a complex switching signal for controlling the combining of video input signals into a video output signal comprising:

means for generating a time varying first switching signal which when used to control the switching of said video input signals is effective to produce a first predetermined video pattern;

means for generating a time varying second switching signal which when used to control the switching of said video input signals is effective to produce a second predetermined video pattern; and

means for combining said time varying first and second switching signals in predetermined proportions to provide said complex switching signal to provide a more complex video pattern.

4,121,254

AUTOMATIC FINE TUNING CIRCUIT

Kouji Morita, Kodaira, and Katsuo Isono, Kawagoe, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 27, 1976, Ser. No. 754,167

Claims priority, application Japan, Dec. 26, 1975, 51-157207; Dec. 26, 1975, 51-157208

Int. Cl.[2] H04N *5/50;* **H04B** *1/26*

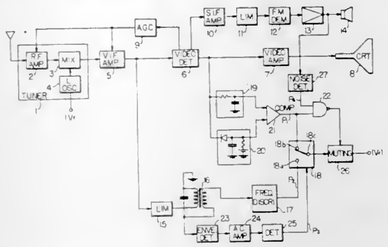
U.S. Cl. 358—195 **5 Claims**

1. An automatic fine tuning circuit for controlling the frequency to which the tuner of a television receiver is tuned, said receiver comprising a video IF amplifier, a video detector to detect the envelope of the video IF signal, and an audio circuit, said automatic fine tuning circuit comprising:

first means for forming a first detecting signal, said first means comprising a source of reference voltage and a comparator connected to said video detector to compare the average voltage level of the output signal of said video detector with said reference voltage and to provide said first detecting signal in dependence on such comparison;

second means for forming a second detecting signal comprising a frequency discriminator and means connecting said video IF amplifier to said frequency discriminator so that the output of the latter constitutes said second detecting signal; and

third means for selectively controlling the tuning of said tuner in response to one of said first and second detecting signals, said third means including means responsive to the output of said video IF amplifier to select said second



detecting signal for control of said tuner when the latter is tuned to a frequency within a predetermined frequency band that includes a television channel signal and to select said first detecting signal for control of the tuner when the latter is tuned to a frequency outside of said frequency band.

4,121,255

TELEVISION CAMERA APPARATUS

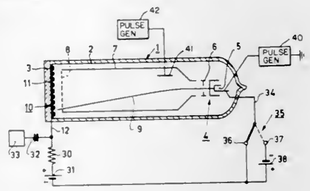
Paulus Philippus Maria Schampers; Marino Giuseppe Carasso, and Frits Theodoor Klostermann, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1976, Ser. No. 663,269

Claims priority, application Netherlands, Mar. 24, 1975, 7503462

Int. Cl.[2] H04N *5/34*

U.S. Cl. 358—223 **8 Claims**



1. In a television camera apparatus including a television camera tube comprising an evacuated envelope having an optically transmissive window at one end, an electrically continuous transparent signal electrode supported by said window, a target of photoconductive material having regularly spaced and discrete portions in contact with said signal electrode, and an electron gun for scanning the surface of said target with an electron beam, the improvement wherein regularly spaced and discrete portions of the photoconductive material and portions of the signal electrode substantially intermediate said spaced portions are accessible to the electron beam, the apparatus further including means for scanning the electron beam across the target and means for applying first and second voltages between the signal electrode and the electron source respectively during scanning and during flyback, the first voltage applied during scanning being such that a portion of the electron beam current dependent on the local degree of illumination of the photoconductive material flows into the signal electrode without the potential of a free surface of the photoconductive material being stabilized, and the second voltage being applied during flyback being such that the potential of said surface is stabilised by the electron beam.

4,121,256

COLUMN ELECTRODE DRIVE FOR GAS DISCHARGE DISPLAY DEVICE

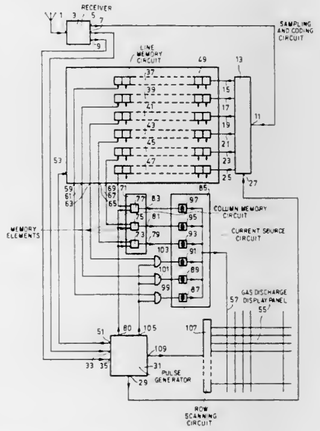
Jean Hubertus Josef Lorteije, and Geert Warrink, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 10, 1977, Ser. No. 776,253

Claims priority, application Netherlands, Mar. 24, 1976, 7603056

Int. Cl.[2] H04N *3/12;* **H05B** *41/00*

U.S. Cl. 358—240 **3 Claims**



1. A display device comprising

a plurality of display elements arranged in rows and columns, including row conductors and column conductors;

a row scanning circuit connected to said display elements for scanning said rows of said display element;

a digital line memory circuit for storing digital video information to be displayed during a line period of said row scanning circuit;

a column memory circuit connected to said line memory circuit for acquiring a first portion of video information therefrom, and to said column conductors, for controlling activation of said column conductors; and

means connecting said digital line memory circuit and said column conductors, by passing said column memory circuit, for providing a second portion of said digital video information stored in said memory circuit to said column conductors during the line blanking period, the display of said first and second portions of said video information taking place during the same line period.

4,121,257

CATHODE-RAY TUBE WITH DOUBLE TENSION BAND

Varahur Ramaswamy Krishnamurthy, Penetang, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,998

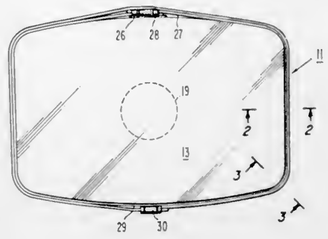
Int. Cl.[2] H01J *29/87*

U.S. Cl. 358—246 **10 Claims**

1. A cathode-ray tube comprising an evacuated glass bulb comprising a faceplate panel joined to a funnel, said tube having an improved implosion-protection system consisting essentially of

(a) a first smooth-plastic-coated steel band laid directly on and encircling said panel and tensed to provide hoop compression in said bulb, the ends of said first tension band being secured together,

(b) and a second smooth-plastic-coated steel band laid directly on and encircling said first steel band and tensed to



provide hoop compression in said bulb, the ends of said second tension band being secured together.

4,121,258

METHOD FOR CODING FACSIMILE SIGNAL

Yukio Nakagome, Yokohama; Hiroichi Teramura, Tokyo; Yasuhiro Yamazaki, Hiratsuka, and Yasushi Wakahara, Tokyo, all of, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Nov. 8, 1976, Ser. No. 740,073

Claims priority, application Japan, Nov. 7, 1975, 50-133745

Int. Cl.[2] H04N *1/40*

U.S. Cl. 358—260 **4 Claims**

1. A method for coding a facsimile signal comprising the steps of:

first coding, for each scanning line, addresses of information change picture elements each having information different from the immediately preceding picture element on the same scanning line of a facsimile signal to develop a first coded output; and

receiving said first coded output and secondly coding the relative distance of each of said information change picture elements to a final reference change point which is selected from information change picture elements on at least one scanning line including the instant scanning line having an instant information change picture element to be coded to develop a second coded output.

4,121,259

METHOD FOR DIGITAL RUN-LENGTH CODING WITH REDUNDANCE REDUCTION FOR TRANSMISSION OF BINARILY CODED PICTURE INFORMATIONS

Dieter Preuss, Berenbostel, and Peter Segin, Hanover, both of Germany, assignors to Dr.-Ing. Rudolf Hell GmbH, Germany

Filed Nov. 23, 1976, Ser. No. 744,341

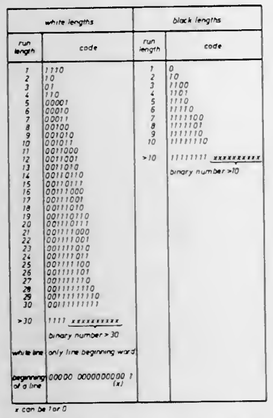
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1975, 2552751

Int. Cl.[2] H03K *13/24;* **H04L** *3/00;* **H04N** *1/40, 7/12*

U.S. Cl. 358—261 **17 Claims**

1. The method for digital run-length coding with redundancy reduction for the transmission of binary coded picture information which is derived by electro-optically scanning a picture original line by line converting the derived picture signals in run-lengths of black and white picture information, assigning to said run-lengths binary code words of different lengths which are transmitted over a transmission channel and

are decoded at the receiver, obtaining the transmitted code words by searching in a code word table in which all occurring code words are stored and where short code words are assigned to frequently occurring run-lengths, and longer code words are assigned to rarely occurring run-lengths, assigned from a predetermined run-length a prefix word to the respective run-length and transmitting the combination of the prefix and the respective run-length as a binary number, the improvement comprising the steps of choosing different predetermined



run-lengths for the black and white run-length from which the black and white run-lengths are transmitted as bit combination of two different prefix words and the respective black and white run-lengths, transmitting at the beginning of a line an individual code word which differs from the code words for the individual run-lengths, the word combination resulting from the prefix words and the respective run-length and which does not appear in the transmission data flow as a bit combination of several words or partial words, respectively.

4,121,260

TRANSCEIVER SYSTEM FOR VISIBLE IMAGES

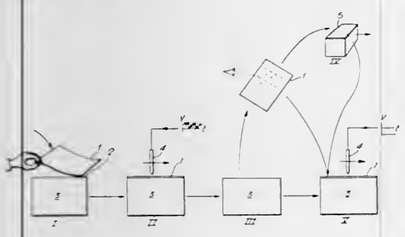
Malcolm Stuart Dye, Biggleswade; Michael James Redman, Datchworth, and David W. Satchell, Welwyn Garden City, all of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1977, Ser. No. 784,490

Claims priority, application United Kingdom, Oct. 14, 1976, 42635/76

Int. Cl.[2] **H04N** *1/02, 1/12, 1/24*

U.S. Cl. 358—295 **4 Claims**



1. A transceiver system for graphical information comprising a recording sheet having at least a layer of an electrochromic material, a conductive support platen for said recording sheet, and a stylus array comprising a plurality of styli for scanning the sheet supported on the platen, the stylus array and the platen being mounted for relative movement, the system including receive means for selectively applying electrical potentials to individual ones of said styli during scanning so as to cause selective coloration of the electrochromic material in accordance with received electrical signals representing incoming graphical information, and transmit means, responsive to electrical potentials corresponding to outgoing graphical information and detected by individual ones of said styli, for transmitting electrical signals representing said outgoing graphical information.

4,121,261

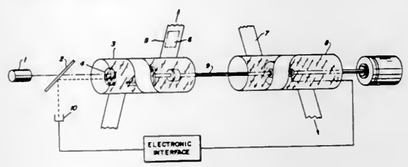
SYNCHRONOUS HELICAL SCAN-HELICAL RECORD MAGNETIC IMAGING

Daniel F. Blossey, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1977, Ser. No. 791,892

Int. Cl.[2] **H04N** *1/24;* **G11B** *5/43*

U.S. Cl. 358—301 **4 Claims**



1. A magnetic recorder for optically scanning an original document and for producing a latent magnetic image thereof, comprising: a transparent cylinder within which is located an optical scanning element positioned to optically scan an original document transported around the circumference of said transparent cylinder in helical-wrap configuration; a second cylinder in substantial longitudinal alignment with said transparent cylinder and within which is located a rotational member having at least one magnetic record head mounted thereon, said rotational member positioned within said second cylinder to magnetically record a magnetizable member transported around the circumference of said second cylinder in helical-wrap configuration; means for rotating said optical scanning element and said rotational member without substantial translation thereof; and, means for converting signals from said optical scanning element into reversals of electric current flow through said at least one record head including deskew circuit means and a data buffer for said magnetic record head, said deskew circuit means electrically connected to provide a signal to initiate the unloading of each data buffer at a time effective to substantially align pixels recorded in adjacent tracks.

4,121,262

MAGNETIC RECORDING/REPRODUCING DEVICE

Yoji Ushio, Tokyo; Chiaki Taketomi, Yono, and Tutomu Asaga, Tokyo, all of Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1977, Ser. No. 791,694

Claims priority, application Japan, Apr. 30, 1976, 51-49659

Int. Cl.[2] **G11B** *27/02, 15/12*

U.S. Cl. 360—13 **1 Claim**

1. A magnetic recording/reproducing device in the form of a double cassette deck comprising:

a first tape transporting portion for a first cassette tape,

a second tape transporting portion for a second cassette tape,

a recording/reproducing head in relation to said first tape transporting portion,

a reproducing head in relation to said second tape transporting portion,

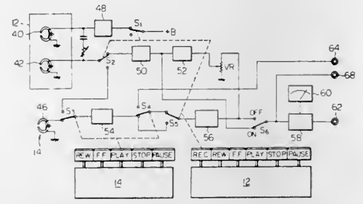
a single recording system,

a single reproducing system,

a first switching means for electrically coupling said recording/reproducing head from said reproducing system to said recording system in response to the operation of an REC button on said first tape transporting portion, and

a second switching means for electrically coupling said reproducing head from said recording system to said reproducing system in response to the operation of a PLAY button on said second tape transporting portion

whereby, when both of said PLAY button and said REC button are simultaneously operated, said reproducing head is coupled with said reproducing system and, at the



same time, said recording/reproducing head is coupled with said recording system so that the signal in said second cassette is reproduced and then recorded on said first casette tape, while, on the other hand, when both of said PLAY button and a different PLAY button on said first tape transporting portion are simultaneously operated, said reproducing head is coupled with said reproducing system prior to said recording/reproducing head so that the signal in said second cassette tape and the signal in the first cassette tape are successively reproduced in order.

4,121,263

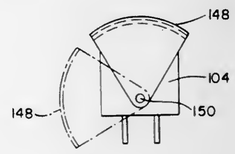
METHOD AND APPARATUS FOR CONTROL SIGNAL SEPARATION TO REGAIN SYNCHRONIZATION BETWEEN A VISUAL IMAGE PROJECTOR AND AN AUDIO PROGRAM

Arthur B. Price, Byron, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Jul. 27, 1977, Ser. No. 819,430

Int. Cl.[2] **G11B** *5/43, 5/22*

U.S. Cl. 360—27 **46 Claims**



1. Apparatus for a magnetic tape playback machine to attenuate recorded audio signals relative to super-imposed control signals during fast forward or fast rewind of said magnetic tape where the audio signals have been recorded in a first frequency range and the control signals have been recorded in a second frequency range and where the second frequency range is less than the first frequency range comprising:

a playback head having a sensing surface for sensing signals recorded on said magnetic tape;

magnetic tape transport means for supporting and transporting said magnetic tape past said sensing surface of said playback head in said fast forward or said fast rewind direction;

a spacer having a thickness dimension mounted on said sensing surface of said playback head to space the magnetic tape from said sensing surface of said playback head during said fast forward or fast rewind motion;

whereby the frequency response versus the playback head to magnetic tape spacing characteristic attenuates said higher frequency audio signals relative to said lower frequency control signals.

4,121,264

METHOD FOR RECORDING INFORMATION SIGNAL AND CONTROL SIGNAL

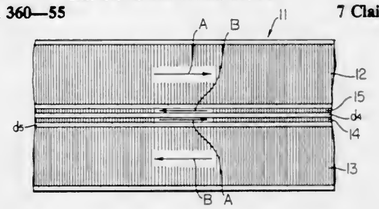
Yoshio Kishi, Tokyo, and Masaru Nagami, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 26, 1977, Ser. No. 762,767

Claims priority, application Japan, Jan. 26, 1976, 51-7428[U]

Int. Cl.[2] **G11B** *15/02, 23/18*

U.S. Cl. 360—55 **7 Claims**



1. The method of recording a plurality of main signals and a corresponding plurality of secondary signals of a control nature related to said main signals, said main signals and said secondary signals being recorded in parallel tracks on a recording medium, said method comprising the steps of:

recording at least one first main track and a corresponding first secondary track spaced apart from each other, said first main track being wider than said corresponding secondary track; and

recording at least one second main track and a second secondary track also spaced apart from each other, said second main track being wider than said second secondary track, said first secondary track being recorded in the space between said second secondary track and said second main track and said second secondary track being recorded in the space between said first secondary track and said first main track, with all of said tracks being separated from each other by guardbands.

4,121,265

TEMPERATURE COMPENSATION FOR DATA STORAGE APPARATUS

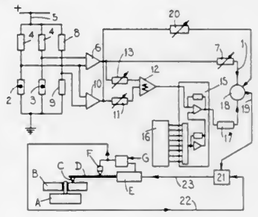
Roman Derc, Bracknell, England, assignor to Data Recording Instrument Co., Ltd., Staines, England

Filed Jan. 26, 1977, Ser. No. 762,744

Claims priority, application United Kingdom, Feb. 6, 1976, 4686/76

Int. Cl.[2] **G11B** *5/56*

U.S. Cl. 360—78 **5 Claims**



1. In a disc drive system of the type having a movable head positioning mechanism which is servoed to position a head to a desired track of a disc pack located in an environment in which the disc file in the region of the head mechanism is likely

to have a temperature which is different from that of the discs, which comprises

(a) means for generating a first voltage proportional to the difference between the temperature of the disc file in the region of the head mechanism and the disc pack;

(b) means for separatly generating a second voltage proportional to the difference between the voltage related to the temperature of the disc file in the region of the head mechanism and a reference voltage;

(c) means for comparing a signal proportional to the first and second voltages with a further signal proportional to the address of the track to which the head is to be positioned thereby to produce an additional voltage which is compared with the first and second voltages to provide a head position correcting signal; and

(d) means for comparing the correcting signal with an instantaneous head position signal to provide a drive control signal for positioning the head to the desired track irrespective of overall temperature variations or differences in said temperatures.

4,121,266

POLYAMIDE-IMIDE PRECONDENSATES

Jenoe Kovacs, Bobenheim-Roxheim; Hans Jung, Ludwigshafen; Matthias Marx, Bad Durkheim, and Herbert Spoor, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jun. 7, 1976, Ser. No. 693,351

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1975, 2528251

Int. Cl.[2] **C08G** *69/26, 73/14*

U.S. Cl. 528—288 **2 Claims**

1. A process for the manufacture of polyamide-imide precondensate, which is solid at room temperature but is fusible and soluble in polar solvents, by reacting an aromatic tricarboxylic acid anhydride with a diprimary aromatic amine in the presence of an aliphatic diol, in which reaction first 1 mole of diamine is condensed with 2 moles of tricarboxylic acid anhydride in the diol as the solvent, at below 150° C., to give a diimide-dicarboxylic acid, the latter is then esterified

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4,121,267

HIGH SPEED FEEDING AND REWINDING MECHANISM IN A MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

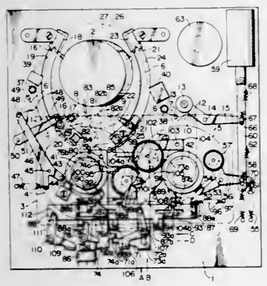
Yoshiaki Hayashi, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 28, 1977, Ser. No. 791,685

Claims priority, application Japan, May 4, 1976, 51-51030

Int. Cl.[2] **G11B** *15/66*

U.S. Cl. 360—85 **7 Claims**



1. In a magnetic tape recording and reproducing apparatus comprising:

(i) a head cylinder accommodating therein a plurality of magnetic heads;

(ii) tape lead-out means for drawing out a magnetic tape from a tape cassette accommodating therein a supply reel and a winding reel, and for winding the magnetic tape drawn out around the peripheral wall of said head cylinder,

said tape lead-out means having tape lead-out pins which move, when a recording or reproducing button is actuated, from a non-operative position where the tape lead-out pins are within the tape cassette to an operative position where the tape lead-out pins are in the vicinity of said head cylinder;

(iii) a supply reel supporting disc on which the supply reel of the magnetic tape cassette rests;

(iv) a winding reel supporting disc on which the winding reel of the magnetic tape cassette rests;

(v) a tape feed means for feeding a magnetic tape from the supply reel to the winding reel by way of said head cylinder at a recording or reproducing speed when said magnetic tape recording and reproducing apparatus operates in a recording or reproducing mode;

(vi) a first driving means for driving said supply reel supporting disc so as to rewind a magnetic tape onto the supply reel, said first driving means operating at a low speed when the tape lead-out pins return from the operative position to the non-operative position upon an actuation of a stop button or upon a detection of one end of a magnetic tape in a recording or reproducing mode, and operating at a high speed when said magnetic tape recording and reproducing apparatus operates in a rewinding mode upon actuation of a rewind button;

(vii) a second driving means for driving said winding reel supporting disc so as to feed a magnetic tape from the supply reel to the winding reel at a higher speed than the recording or reproducing speed when a high speed feed button is actuated;

(viii) a switch means for switching the speed of said first driving means from the low speed to the high speed when the rewind button is actuated;

the improvement being a high speed feeding and rewinding mechanism comprising:

(i) a first actuating member moving from its rest position to its active position when the recording or reproducing button is actuated and returning to the rest position when the stop button is actuated or when one end of a magnetic tape is detected in a recording or reproducing mode, said first actuating member when in the active position holding said first driving means so as to prevent said supply reel supporting disc from being driven;

(ii) a second actuating member moving from its original position to a locking position in association with the movement of said first actuating member, said second actuating member when in its locking position holding said second driving means so as to prevent said winding reel supporting disc from being driven at said higher speed, said second actuating member when in its original position being adapted to be engaged with said switch means so as to switch said first driving means to the high speed operating state;

(iii) a locking means for holding said second actuating member in said locking position when said tape lead-out pins move away from their non-operative position;

(iv) a high speed feed means which holds said second driving means so as to prevent said winding reel supporting disc from being driven, said high speed feed means being adapted to release said second driving means in response to actuation of said high speed feed button so that said second driving means promptly engages with said winding reel supporting disc whenever said second actuating member is released from the locking position;

(v) a first rewind means adapted to be actuated in response to the movement of said second actuating member from the original position to the locking position so as to engage said first driving means with said supply reel supporting disc whenever said first actuating member returns from the active position; and

(vi) a second rewind means adapted to be operated in response to actuation of said rewind button so as to actuate said first rewind means.

4,121,268

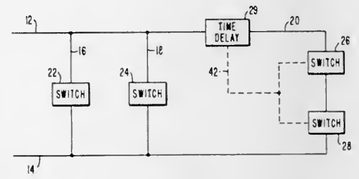
ELECTROLYTIC CELL VACUUM SWITCHING SYSTEM

Robert M. Hruda, Horseheads, and Paul O. Wayland, Montour Falls, both of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 10, 1977, Ser. No. 776,326

Int. Cl.[2] **H01H** *33/66*

U.S. Cl. 361—3 **6 Claims**



3. A vacuum switch system for interrupting low DC voltage, high current circuits, which low DC voltage exceeds the cathode drop potential for the vacuum switch contact material used comprising:

(a) plural parallel electrical circuit paths, with a first path including a single vacuum switch, with at least one other such path including at least two serially connected vacuum switches;

(b) operating means for opening and closing the vacuum switches including means responsive to the opening of the vacuum switch in the first path for simultaneously opening the two serially connected vacuum switches a predetermined time after the vacuum switch in the first path is opened.

4,121,269

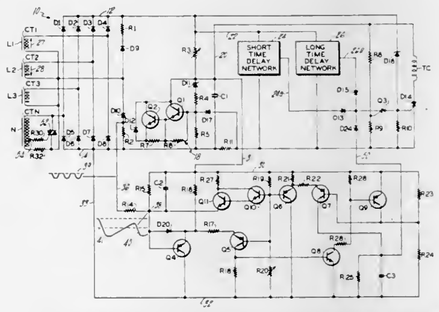
GROUND FAULT SIGNAL CIRCUIT FOR CIRCUIT BREAKER TRIP UNIT

Charles F. Hobson, Jr., Southington, Conn., assignor to General Electric Company, New York, N.Y.

Filed May 6, 1977, Ser. No. 794,700

Int. Cl.[2] **H02H** *3/28*

U.S. Cl. 361—44 **4 Claims**



1. An electronic trip unit for a circuit breaker operating to protect a distribution circuit against both overcurrent and ground fault conditions, said trip unit comprising, in combination:

A. a current transformer linked to each conductor of the distribution circuit and having a secondary winding in which is developed a current signal proportional to the current flowing in the conductor;

B. first and second buses;

C. a full wave rectifying network including plural pairs of like poled, series diodes connected in parallel between said first and second buses, one corresponding side of each transformer winding connected to the junction between a different diode pair;

D. an additional pair of like poled diodes and a single burden resistor connected in series between said first and second buses, the corresponding other sides of said transformer secondary windings connect in common to the junction between said additional diode pair,

1. whereby, in the event of a ground fault on the distribution circuit, a component of the currents developed in said secondary windings flows through said burden resistor to develop a half-wave rectified signal voltage thereacross directly proportional in magnitude to the distribution circuit current flowing through the ground fault; and

E. ground fault circuitry having its input connected directly across said burden resistor for processing said signal voltage.

4,121,270

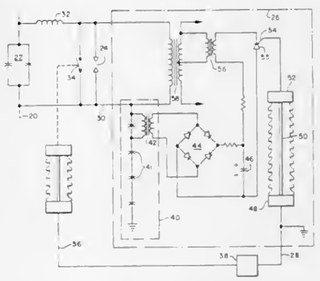
SERIES CAPACITOR SYSTEM WITH FORCE FIRING OF PROTECTIVE BYPASS DEVICE

Charles A. Peterson, Bloomington, Ind., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 9, 1977, Ser. No. 767,185

Int. Cl.[2] **H02H** *7/06*

U.S. Cl. 361—54 **3 Claims**



1. A series capacitor transmission system, with the capability of rapidly bypassing the series capacitor for avoiding subsynchronous oscillation effects on generating equipment connected with the transmission system, comprising:

a capacitor connected in series in an alternating current transmission line;

a bypass device connected in a circuit branch across said capacitor;

means for firing said bypass device including

(a) voltage supply means,

(b) a bypass device firing control circuit for permitting application of energy from said voltage supply means to said bypass device, and

(c) signal initiating means for selectively energizing said firing control circuit;

said voltage supply means comprises an inverted capacitive potential device having a series stack of capacitor sections connected between the transmission line and ground potential with one of said capacitor sections proximate the transmission line having a potential transformer primary winding connected in parallel therewith, said potential transformer having a secondary winding connected for

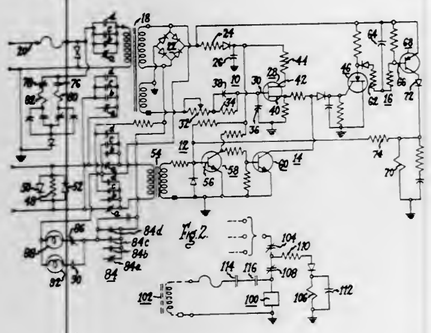
supplying stepped down voltage at line frequency to said firing control circuit.

4,121,271

REVERSE POWER FLOW DETECTOR AND CONTROL CIRCUIT

Reysen Tsai, Houston, Tex., assignor to General Electric Company, Philadelphia, Pa.

Filed Dec. 26, 1973, Ser. No. 427,511
Int. Cl.² H02H *3/26*
U.S. Cl. 361—82 **2 Claims**



1. A reverse power flow detector and control circuit utilizing solid state components comprising:
   a. a voltage sampling circuit for generating a voltage signal including a voltage reference pulse generator connected to the line to be monitored,
   b. a current sampling circuit for generating a current signal,
   c. an output circuit, said output circuit including a control circuit, said control circuit having a time delay relay to delay connection of said control circuit in a reverse mode until contacts in said forward mode have stopped arcing,
   d. a gate including a transistor operative to short said pulses from said pulse generator when said current signal indicates forward power flow, operative between said voltage pulse generator and said output circuit,
      1. said gate actuated by a current signal indicating forward power flow to prevent pulses generated by said pulse generator from activating said output circuit and
      2. said gate actuated by a current signal indicating reverse power flow to allow pulses generated by said pulse generator to activate said output circuit.

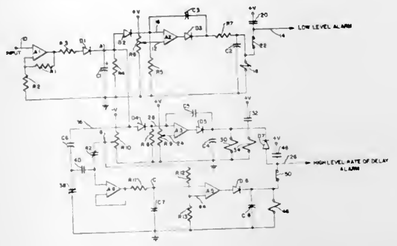
4,121,272

TORSIONAL OSCILLATION ALARM SYSTEM

John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 2, 1977, Ser. No. 792,661
Int. Cl.² G01H *1/10*
U.S. Cl. 361—236 **5 Claims**

1. An alarm system for generating alarms when torsional oscillations of a rotating shaft exceed predetermined limits comprising:
   (a) means for providing a torsional oscillation voltage signal representative of the magnitude of oscillation of said shaft;
   (b) means for providing a first reference voltage representative of a first maximum magnitude of oscillation;
   (c) first comparing means for comparing said torsional oscillation voltage signal against said first reference voltage and for generating a low level alarm signal when said torsional oscillation signal exceeds said first reference voltage for a predetermined length of time;
   (d) means for providing a second reference voltage representative of a second maximum magnitude of oscillation;
   (e) second comparing means for comparing said torsional oscillation signal against said second reference voltage and for generating an output signal when said torsional oscillation signal exceeds said second reference voltage;
   (f) means activated by said output signal for generating a signal representative of the rate of decay of said torsional oscillation signal;
   (g) means for providing a third reference voltage representative of a minimum required rate of decay; and



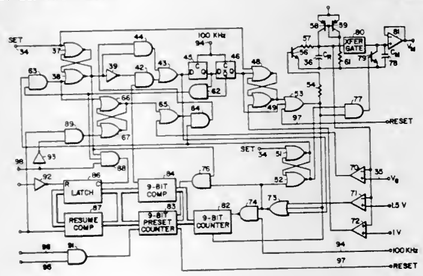
   (h) third comparing means for comparing said signal representative of the rate of decay of said torsional oscillation signal against said third reference voltage and for generating a high level alarm signal when the rate of decay is less than a predetermined value as set by said third reference voltage.

4,121,273

CRUISE CONTROL METHOD AND APPARATUS

Robert Benjamin Jarrett; Wilson David Pace, both of Tempe, and Howard Fredrick Weber, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 14, 1977, Ser. No. 759,516
Int. Cl.² B60K *31/00*
U.S. Cl. 361—239 **12 Claims**



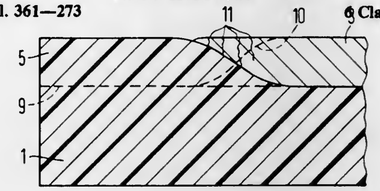
11. A speed control system having means to provide a signal indicative of speed of a device and a servo control to control the speed of the device, comprising: means for storing a voltage which corresponds to speed of the device; means for incrementing a first counter until the voltage stored in the means for storing substantially equals in magnitude the signal indicative of speed of the device; means for saving a count accumulated in the first counter; means for allowing the means for storing a voltage to be repeatedly charged for a period of time corresponding to the count saved in the means for saving a count; and means for comparing the stored voltage against a signal indicative of present speed of the device so that a correction can be made to speed of the device if the present speed of the device is different from a predetermined speed.

4,121,274

SELF-HEALING ELECTRICAL CAPACITOR AND METHOD FOR ITS PRODUCTION

Reiner Simson, Heidenheim; Karl-Heinz Schindhelm, Herbrechtingen, and Werner Vogel, Heidenheim, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 18, 1977, Ser. No. 788,313
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619260
Int. Cl.² H01G *4/24*
U.S. Cl. 361—273 **6 Claims**



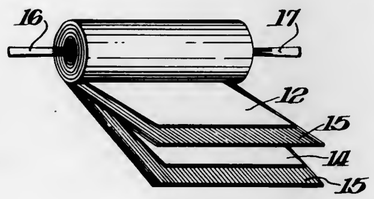
1. A self-healing AC electrical coiled capacitor comprising coiled layers of polypropylene films provided with metallizations applied onto the films such that exposed margins result along longitudinal edges of the films, the exposed margins being impregnated by a liquid, and the polypropylene films being swelled only in the region of the impregnated exposed margins, the swelled exposed margins preventing access of air to the metallizations in the finished coiled capacitor.

4,121,275

ESTER DIELECTRIC FLUID CONTAINING TERT-BUTYL ANTHRAQUINONE

Sidney D. Ross, Williamstown, and Raynor Linzey, Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jun. 27, 1977, Ser. No. 810,131
Int. Cl.² H01B *3/20*; C10M *3/20, 3/14*
U.S. Cl. 361—319 **2 Claims**



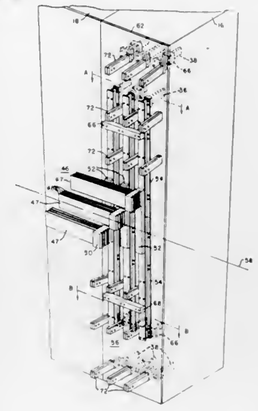
1. An AC capacitor comprising a plurality of electrodes separated by a dielectric spacer and a dielectric fluid composition impregnating said spacer and consisting of diisononylphthalate, up to 1% of 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexanecarboxylate as stabilizer, and up to 2% tert-butylanthraquinone to increase corona start voltage.

4,121,276

ELECTRICAL SWITCHBOARD APPARATUS WITH CENTER FED VERTICAL RISER BUS

George N. Kovatch, Monroeville Borough, and Richard Rosey, Plum Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1976, Ser. No. 755,705
Int. Cl.² H02B *1/04*
U.S. Cl. 361—342 **13 Claims**



1. Electrical power distribution apparatus comprising:
   a cabinet structure;
   a multiphase horizontal main bus disposed within said structure and having a plurality of individual horizontal phase conductors vertically spaced one above the other;
   a multiphase vertical riser bus disposed within said structure and having a plurality of individual vertical phase conductors horizontally spaced one beside the other;
   circuit interrupter apparatus having its input connected to said multiphase vertical riser bus and its output connected to an electrical load;
   a plurality of tie members, one tie member being connected to each vertical phase conductor; and
   means for connecting each horizontal phase conductor to the tie member of its associated vertical phase conductor, so as to symmetrically locate each tie member with respect to the horizontal centerline of said horizontal main bus.

4,121,277

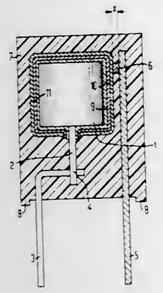
HIGH CURRENT PROTECTION IN A SOLID ELECTROLYTIC CAPACITOR

Ferdinand Hilbert, Heidenheim, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jun. 28, 1976, Ser. No. 700,533
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1975, 2531438
Int. Cl.² H01G *9/00*
U.S. Cl. 361—433 **8 Claims**

1. A solid electrolytic capacitor comprising:
   (a) an anode;
   (b) an oxide layer on said anode as a dielectric;
   (c) a semiconductive electrolyte on said oxide layer as a cathode;
   (d) a cathode contacting layer on said electrolyte;
   (e) an anode terminal connected to said anode;
   (f) a cathode terminal;
   (g) a plastic case with said anode, said cathode, and said cathode contacting layer mounted therein as a central member, said cathode terminal being spaced from said central member to form a spacing therebetween;

(h) a meltable circuit breaker bridged between said cathode terminal and said cathode contacting layer in said spacing; and



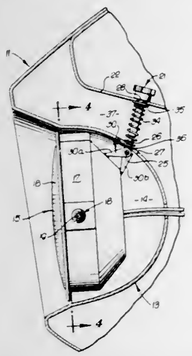
(i) a diameter of said meltable circuit breaker approximately corresponding to said spacing bridged by said circuit breaker between said cathode terminal and said cathode contacting layer.

4,121,278

MOTORCYCLE HEADLIGHT TILT CONTROL

Ronald L. Doll, Santa Monica, Calif., assignor to Spirit of America, Inc., Gardena, Calif.

Filed Apr. 4, 1977, Ser. No. 784,034
Int. Cl.[2] B62J 5/00
U.S. Cl. 362—72 **7 Claims**



1. In combination with motorcycle headlight structure and wind deflecting fairing,

(a) support means supporting the headlight structure to the fairing so that the headlight is tiltable to tilt the headlight forward beam up and down, said structure including a lamp casing,

(b) a manual control on the fairing, and

(c) other means connected with the headlight structure and the manual control to controllably tilt the headlight in response to manual operation of said control,

(d) there being a spring acting to transmit force biasing said headlight structure in a tilt direction,

(e) said other means including interconnection structure including first and second parts that are interconnected so that rotation of the manual control displaces said parts to tilt the headlight as aforesaid,

(f) the fairing including a re-entrant portion receiving the headlight structure, and a shelf spaced above the level of said re-entrant portion, said manual control located above said shelf, there being openings in the shelf and re-entrant portion of the fairing to receive said interconnection structure,

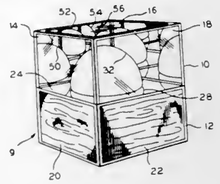
(g) said other means including multi-legged brackets integral with the casing and supporting said first part to swivel about a lateral axis as the headlight is tilted, there being trunnion means on said first part and received in at least one bracket carried opening, the trunnion means having an edge to frictionally engage a bore defining said opening in response to force exertion by the spring, thereby to hold the casing in selected tilt position.

4,121,279

LAMP MODULE

J. Eric Whitesel, 5313 Grand Ave., Western Springs, Ill. 60558

Filed Dec. 29, 1976, Ser. No. 755,490
Int. Cl.[2] F21V 7/00
U.S. Cl. 362—297 **7 Claims**



1. A household type of lamp for internal lighting within a building, said lamp comprising a primary light source having first and second sections, the first of said sections including means for supporting the base of a light bulb with its dome projecting upwardly above said first section and into said second section, said second section comprising partially light-transmitting mirror means surrounding the dome of said bulb for reflecting ambient light outwardly and the light of said bulb inwardly and for transmitting light outwardly, the area between said dome and said mirror means being free of image-blocking structures, whereby said dome is not easily seen when said bulb is not lit and the image of said dome is internally reflected without distortion and the ambient area is lit, when the bulb lit, the lit bulb being reflected inwardly without image distortion an infinite number of times within said second section, said first and second sections have a common image-reflecting panel which closely surrounds the circumference of said dome, conceals the base of said light bulb and reflects the image of said dome without image distortion into said second section.

4,121,280

ARTICULATED LIGHT FIXTURE

Earle F. Chapman, Summer St., Marshfield, Mass. 02051, and Bernard J. Ruskin, 17 Sheldon Rd., Marblehead, Mass. 01945

Filed Oct. 28, 1976, Ser. No. 736,557
Int. Cl.[2] F21S 1/02
U.S. Cl. 362—418 **10 Claims**

1. An extensible light fixture comprising:

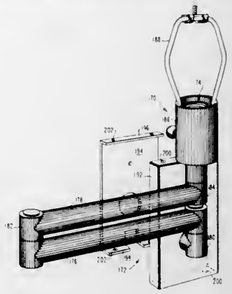
(a) a base configured to be mounted on a wall;

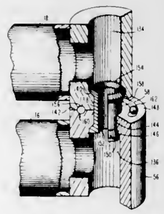
(b) first and second arm means, one end of said first arm means connected to said base;

(c) socket means operatively connected to one end of said second arm means, said socket means configured to receive a lamp; and

(d) a first rotatable swivel joint having a pair of cooperating rotatable members that are juxtaposed in mating relationship and are constrained for maximum relative rotation of 360°, one of said members operatively connected to the other end of said first arm means and the other of said members connected to the other end of said second arm means, each said member having an internal shoulder, a first pin engaging each said interval shoulder of each said

member, said members constrained for free rotational movement and fixed against vertical separation relative to one another by said first pin, one face of said one member adjacent one face of said other member, said one face of said one member formed with a first race and said one face of said other member formed with a second race, said first and second races of substantially equal length and disposed in congruent arcuate paths that are coaxial with a rotational axis of said first swivel joint, portions of said





first race aligned with portions of said second race, a first channel formed between said aligned portions of said races, a first slidable member received in said first channel, said first and second races having an approximate length of the sum of pi multiplied by a radius of said first race and the arcuate length of said first slidable member, the relative rotation of said one member and said other member limited to a maximum of one complete revolution, said slidable member moved a maximum distance of 180° as said members are relatively rotated 360°.

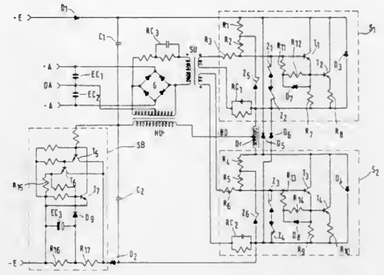
4,121,281

DIRECT CURRENT CONVERTER

Julius Banga, Munich, Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Germany

Filed Oct. 3, 1977, Ser. No. 838,455
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648030
Int. Cl.[2] H02M 3/335
U.S. Cl. 363—17 **5 Claims**

1. In a dc converter with a push-pull oscillator in a bridge connection of a design symmetrical to the bridge diagonal, wherein each symmetrical half in one bridge branch includes a capacitor and in the other bridge branch includes a transistor switch stage, the control path of which is inductively fed back from the bridge diagonal, said converter being equipped with a transformer having a rectifier on the output side, the improvement being that between transistor switching stages of



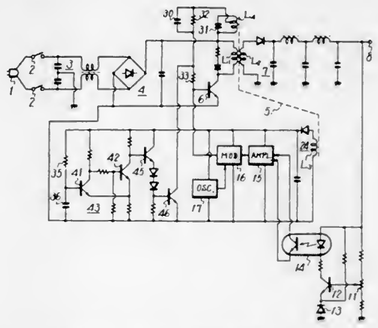
the symmetrical halves, a choke with a center tap is arranged, the bridge diagonal extending from the choke center tap.

4,121,282

POWER SUPPLY CIRCUIT

Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1977, Ser. No. 759,650
Claims priority, application Japan, Jan. 21, 1976, 51-6129; Jan. 21, 1976, 51-6130
Int. Cl.[2] H02M 3/335
U.S. Cl. 363—21 **7 Claims**



1. A power supply circuit comprising:

a first rectifying circuit for producing a first DC voltage when AC power is supplied thereto;

a transformer having primary, secondary, tertiary and fourth windings, said primary winding being connected to said first rectifying circuit;

a second rectifying circuit connected to said secondary winding so as to produce a DC output voltage in response to an output voltage generated on said secondary winding;

a detecting circuit for detecting said DC output voltage;

modulating means for generating a modulated signal in response to an output signal of said detecting circuit;

an active switching element connected in series with said primary winding of said transformer and controlled by said modulated signal so as to chop said first DC voltage applied to said transformer;

an oscillation circuit connected to said fourth winding of said transformer and to said active switching element for generating an oscillation signal in said transformer, said oscillation circuit further including means for feeding back a signal produced in said fourth winding to said active switching element to cause self oscillation of the latter; and

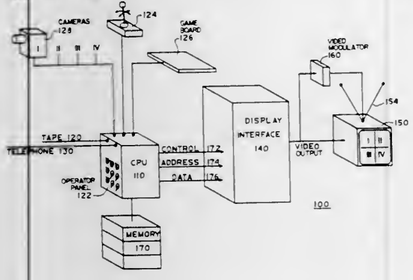
a third rectifying circuit connected to said tertiary winding of said transformer for receiving said oscillation signal and converting the same to a DC voltage which is supplied to said modulating means as an operating voltage thereof.

4,121,283

INTERFACE DEVICE FOR ENCODING A DIGITAL IMAGE FOR A CRT DISPLAY

James Terrell Walker, Palo Alto, Calif., assignor to Cromemco Inc., Mountain View, Calif.

Filed Jan. 17, 1977, Ser. No. 760,106
Int. Cl.[2] G06F *3/14*
U.S. Cl. 364—200 **31 Claims**



1. An interface device for connection between a computer and a CRT device for processing predetermined blocks of display data from predetermined locations in a memory in the computer to form pixels having predetermined characteristics in the display fields of the CRT device, the interface device comprising:

means for storing format data which defines the dimensions and number of fields displayed, and the characteristics of the pixels displayed therewithin;

control means responsive to the format when read out from the means for storing for coordinating the data processing cycle of the computer memory and the data display cycle of the CRT device;

pixel controller responsive to the read out format data for controlling the pixel characteristics and responsive to the control means for processing the display data;

video means for converting the processed display data from the pixel controller into analog signals and adapted to apply the analog signals to the video circuit of the CRT device; and

memory address means for addressing blocks of display data corresponding to the display fields of the CRT device, having a first address counter responsive to the format data for incrementing the least significant bit (LSB) portion of the memory address to the computer memory which defines the first dimension of each field displayed on the CRT device, and a second address counter responsive to the format data for incrementing the next LSB portion of the memory address to the computer memory which defines the second dimension of each field displayed on the CRT device.

4,121,284

COMPUTERIZED SYSTEM FOR OPERATOR INTERACTION

Gilbert P. Hyatt, 11101 Amigo Ave., Northridge, Calif. 91324

Filed Sep. 11, 1972, Ser. No. 288,247
Int. Cl.[2] G06F *3/02, 11/00, 7/00;* **G08C** *1/00*
U.S. Cl. 364—200 **38 Claims**

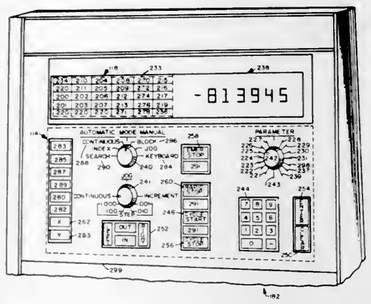
1. An operator control system comprising:

a switch for generating a switch signal having a switch bounce signal portion and a switch information signal portion;

a command memory for storing commands related to processing of the switch signal;

an information memory for storing processed information related to the switch information signal portion; and

processing means for processing information in respone to said stored commands; said processing means including means for receiving the switch signal, means for processing the received switch signal under control of said stored commands to separate the switch information signal portion from the switch bounce signal portion, and storing means for storing information related to said separated switch information signal portion in said information memory in response to the processing of said received switch signal by said received switch signal processing means.

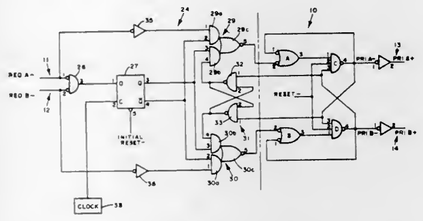


4,121,285

AUTOMATIC ALTERNATOR FOR PRIORITY CIRCUIT

Frank K. Chen, Santa Ana, Calif., assignor to Ultronic Systems Corporation, Mount Laurel, N.J.

Filed Apr. 1, 1977, Ser. No. 783,868
Int. Cl.[2] G06F *9/18*
U.S. Cl. 364—200 **8 Claims**



1. In a data processing device having at least two service requesting ports and a like number of service answering ports, said device having a priority circuit with first and second channels connected to said answering ports, respectively, each of said channels having an AND gate with a plurality of input lines and an output line connected to an answering port, the output line of each of said gates being connected to one of the input lines of the AND gate of the other channel whereby the enablement of one of said gates disables the other, reset means connected to an input line of each of said gates for cyclically resetting the latter, the improvement of a circuit for distributing successive simultaneous service requests at said requesting ports to different channels of said priority circuit comprising

first AND gate means having input terminals connected to said requesting ports, respectively, and having an output terminal, said first gate means being responsive to simultaneous signals at said requesting ports for producing a signal at said output terminal,

second and third AND gate means, each having a plurality of input terminals and an output terminal, the output terminals of said second and third gate means being connected to the inputs, respectively, of said priority circuit channels, said requesting ports being connected to inputs of said second and third gate means, respectively,

bistable means having a plurality of input and output terminal means and first and second operating states,

said input terminal means of said bistable means being operatively connected to the outputs of said first gate means and said output terminal means of the bistable means being connected to the input terminals of said second and third and gate means, said bistable means being responsive to simultaneous signals in the outputs of said first AND gate means to change from the first operating state to the second operating state, and

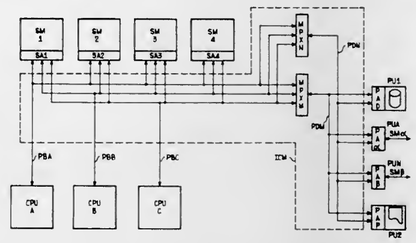
means responsive to the outputs of said first and second priority circuit channels and operatively connected to the inputs of said second and third gate means for blocking the input from the requesting port to the immediately previously served priority channel when successive service requests are simultaneously applied to said requesting ports.

4,121,286

DATA PROCESSING MEMORY SPACE ALLOCATION AND DEALLOCATION ARRANGEMENTS

Peter Charles Venton, Wimborne; Michael Blench, Maidenhead; Anthony Keith Sutherland, Reading, and Kenneth James Hamer Hodges, Wimborne, all of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Oct. 8, 1976, Ser. No. 730,840
Claims priority, application United Kingdom, Oct. 8, 1975, 41139/75
Int. Cl.[2] G06F *11/00*
U.S. Cl. 364—200 **6 Claims**



1. A process for controlling the allocation and deallocation of memory space in a data processing system of the type including a plurality of processor units and at least one memory for holding information in segments, each segment including data, program code or lists of segments and each processing unit including a plurality of capability registers each arranged to store segment descriptor information indicative of the base and limit addresses in the memory of a segment and each processing unit further including capability register loading means and first means for addressing at a defined entry an information segment which contains a master capability table having an entry for each segment in the system, each entry including information defining the base and limit addresses of a corresponding segment together with a first and a second indicator bit and second means for reading the base and limit information from the defined entry addressed by said first means into the capability register to be loaded and third means for setting the first and second indicators in the defined entry addressed by said first means and, fourth means for testing the state of the first and second indicators wherein one of the processing units in the data processing system is arranged to perform periodically a sequence of operational steps to detect segments which are no longer being used, wherein said sequence comprises:

a first step in which the first indicator and the second indicator of all master capability table entries are set to be a second state by said third means;

a second step in which each master capability table entry is read in sequence by said second means and the state of the first indicator is tested by said fourth means and if the first indicator is in the first state the second indicator in the same status word is tested and if the second indicator is in the second state;

a third step is performed in which each second indicator found by said fourth means, in the second step, to be in the second state is set by said third means to the first state and when the master capability table entry read is relative to a segment storing a list of segments the first indicator of the status word of each of those segments listed is set to the first state and

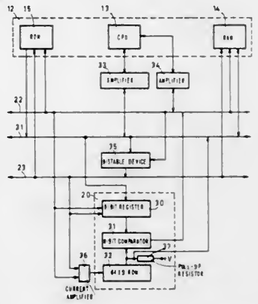
a fourth step performed only when all entries in the master capability table have been processed by the second step and in which each master capability table entry is tested by said fourth means and a segment is indicated as suitable for release only if the first indicator thereof is in the second state.

4,121,287

ALARM FILTERING IN A GROUND PROXIMITY WARNING SYSTEM

Jean-Claude Leal, Versailles; Henri Vannetzei, Bourg la Reine; Jean-Claude Grima, Chatillon, and Guy Albert Jules David, Thiais, all of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Jun. 28, 1977, Ser. No. 810,896
Claims priority, application France, Jul. 1, 1976, 76 20044
Int. Cl.[2] G01C *5/00*
U.S. Cl. 364—461 **7 Claims**



1. A ground proximity warning system for determining the proximity of an aircraft with respect to the ground utilizing flight positional input parameters, comprising:

means for calculating the position of the aircraft with respect to a plurality of specified flight warning mode envelopes;

means for providing information on the aircraft's actual position;

means for comparing said calculated position with said information on the aircraft's actual position during successive sampling periods, and producing predetermined alarm condition signals if the aircraft has penetrated a respective one of said flight warning mode envelopes constituting an alarm condition; and

filter means connected to said comparing means for filtering said alarm condition signals and for generating a plurality of alarm generating signals depending upon the alarm condition signal during the continuing flight of the aircraft in comparison with predetermined maximum and

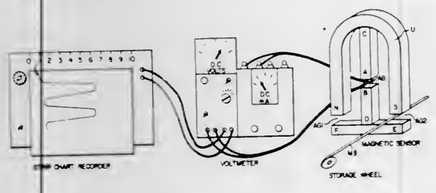
minimum alarm condition signal levels; including means for incrementing each flight warning mode alarm condition signal by a constant during each sampling period when said alarm condition is present; means for producing a predetermined one of said alarm generating signals when the predetermined maximum level of said alarm condition signal is reached by the incremented value; means for decrementing said alarm condition signal by a constant during each sampling period when its magnitude is between said maximum and minimum levels and the corresponding alarm condition ceases to exist; and means for resetting said alarm condition signal to zero instantaneously when its magnitude is below said minimum level and said alarm condition ceases to exist.

4,121,288

MAGNETIC TAPE TYPE SENSORS, METHOD AND APPARATUS USING SUCH MAGNETIC TAPE SENSORS

William M. Hickam, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 5, 1976, Ser. No. 655,349
Int. Cl.[2] G06F *15/20*; G01N *27/00*
U.S. Cl. 364—497 **27 Claims**



18. A method of recording as a function of time the magnitude of a process variable involving an industrial process and a chemical agent generated thereby in amount related to said process variable magnitude, comprising:

selecting a tape of material having an inorganic constituent susceptible of forming reacted material by chemical reaction with said agent, the reacted material having magnetic properties different from said constituent;

exposing successive portions of said tape to said industrial process to cause the formation of variable amounts of reacted material thereon; and

retrieving successively the exposed portions of said tape from said industrial process.

4,121,289

METHOD INVOKING TABLETTING COMPRESSION FORCE CONTROL FOR OPTIMIZING TABLETTED FORMULATION PARAMETERS

Donald Melvyn Stiel, Pine Brook, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 581,459, May 28, 1975, abandoned.
This application Dec. 14, 1976, Ser. No. 750,490
Int. Cl.[2] G06F *15/46*
U.S. Cl. 364—552 **1 Claim**

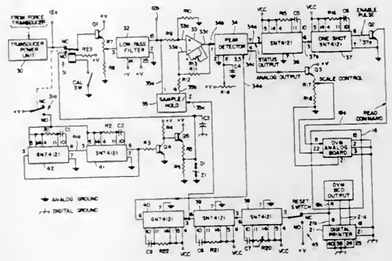
1. A method for establishing, within pre-established limits of a desired value, tablet-to-tablet and batch-to-batch consistency of a particular physio-chemical parameter of a tabletted formulation, said parameter being release rate of drug substance relative to desired biological response and having a dependency on tablet hardness, said formulation being particulate material intended to be compacted into tablets on a suitable tablet press, comprising:

(a) preliminarily compressing on the tablet press from a first batch of said formulation at least one tablet of the formulation at each of a plurality of different selected tabletting compression forces and obtaining from the tabletting events of said at least one tablets respective electrical signals representative of tablet formation force information and including maximum compression force information;

(b) isolating from said tablet formation force information the maximum compression force information associated to each preliminarily compressed tablet;

(c) analyzing at least one tablet preliminarily compressed at each of the selected compression forces to derive the respective values of the physio-chemical parameter thereof and relating said values of the parameter respectively to the corresponding maximum compression force of those tablets analyzed;

(d) selecting from said values of the physio-chemical parameter a value within said pre-established limits which approximates the desired value of said parameter;



(e) setting the tablet press at that compression force setting which corresponds to the selected value of said physio-chemical parameter and compressing the remainder of the first batch of the formulation at that setting of the tablet press; and

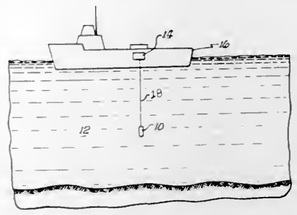
(f) performing (a) – (e) for a second batch of the formulation, the maximum compression force setting of the tablet press selected thereby for said second batch which corresponds to said parameter of the tablets compacted from the second batch being within said pre-established limits and approximating that of the tablets compacted from the first batch.

4,121,290

ANALOG SOUND VELOCITY CALCULATOR

Royce Allen, Centerville, Utah; Jerry L. Sutton, San Diego, Calif.; Dan M. Griffin, San Diego, Calif.; Hal W. Frye, San Diego, Calif., and Joseph G. Colborn, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1977, Ser. No. 788,371
Int. Cl.[2] G06G *7/78*; G01H *5/00*; H04B *13/00*
U.S. Cl. 364—565 **12 Claims**



1. Apparatus for enabling the passive determination of the velocity of sound at various levels in a liquid media comprising:

means for passively sensing the temperature, conductivity, and depth of the liquid media at various levels;

means for representing said sensed temperature in the form of a first voltage, for representing said sensed conductivity in the form of a second voltage, and for representing said sensed depth in the form of a third voltage;

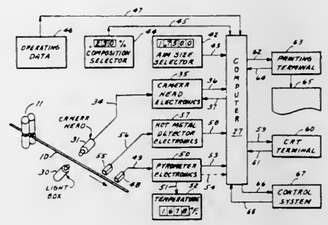
analog calculating means receiving said first, second, and third voltages for providing an analog output voltage in real time which represents the velocity of sound at said levels.

4,121,291

LINEARITY CORRECTION SYSTEM FOR ELECTRO-OPTICAL GAGE

Joel L. Hoffner, and Tom L. Galanis, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 17, 1977, Ser. No. 778,513
Int. Cl.[2] B21B *37/00*; G06F *15/46*
U.S. Cl. 364—571 **18 Claims**



1. A linearity correction system for an electro-optical system which gages a dimension of a moving bar, comprising:

(a) electronic camera head means aimed to receive an image of the moving bar and generate a raw camera signal, said raw camera signal requiring linearity correction for one or more linear and/or nonlinear errors from optical and/or electronic sources, excluding linear optical errors;

(b) electronic circuit means including means for processing the raw camera signal to produce a bar size pulse having a corresponding one or more of said errors;

(c) calculator means assimilating the bar size pulse and a corresponding one or more error-compensating signals for:

.1 compensating the bar size pulse for one or more of said optical and/or electronic errors in response to a corresponding one or more of said error-compensating signals, thereby producing a corrected bar size pulse, and

.2 storing the corrected bar size data; and

(d) means for utilizing the stored data to indicate and/or record corrected bar size.

4,121,292

ELECTRO-OPTICAL GAGING SYSTEM HAVING DUAL CAMERAS ON A SCANNER

Tom L. Galanis, Bethlehem; Joel L. Hoffner, Johnstown; John C. Clymer, Bethlehem, all of Pa.; Richard S. Hostetter, Jr., Orchard Park, N.Y.; Duane T. Jones, Coopersburg, Pa., and Ronald W. Yerkes, Orchard Park, N.Y., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 17, 1977, Ser. No. 778,809
Int. Cl.[2] B21B *37/00*; G06F *15/46*
U.S. Cl. 364—571 **24 Claims**

1. An electro-optical system for gaging two dimensions of a moving bar at various peripheral positions of the bar, comprising:

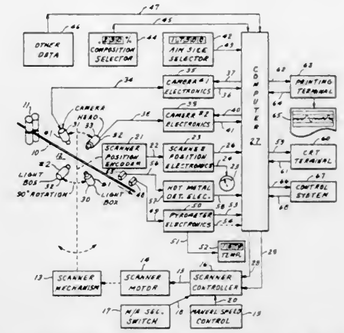
(a) first and second electronic camera head means aimed to receive first and second images of the moving bar and generate corresponding first and second raw camera signals, each raw camera signal having at least one error;

(b) scanner means adapted to scan the first and second electronic camera head means about the lateral profile of the bar a prescribed angular displacement while generating a scanner position signal;

(c) means for controlling movement of the scanner means;

(d) electronic circuit means including means for processing the first and second raw camera signals to produce corresponding first and second bar size pulses, each first and second bar size pulse having at least one said error;

(e) calculator means assimilating the first and second bar size pulses, the scanner position signal and at least one corresponding error-compensating signal for:



1. compensating each bar size pulse for one or more sources of error as a function of a corresponding one or more error-compensating signals, thereby to produce corresponding first and second corrected bar size pulses,

2. plotting bar profile using corrected first and second bar size pulses and scanner position signals, and

3. storing the bar profile data and optionally the corrected first and second bar size data; and

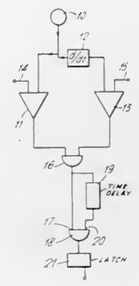
(f) means for utilizing the stored data to indicate and/or record a corrected bar profile and, if desired, each bar size measurement.

4,121,293

INDICATION MEANS FOR INDICATING SUITABLE CONDITIONS FOR THE TRANSFER OF LOADS BETWEEN TWO STATIONS MOVABLE RELATIVE TO EACH OTHER IN A VERTICAL PLANE

Andrew Guy Kerr, Edinburgh, Scotland, and Robert Arthur Morley, Southport, England, assignors to Ferranti Limited, Hollinwood, England

Filed Feb. 25, 1977, Ser. No. 772,254
Claims priority, application United Kingdom, Feb. 28, 1976, 07939/76
Int. Cl.[2] B66C *15/06*
U.S. Cl. 364—463 **6 Claims**



1. Indication means for indicating conditions suitable for

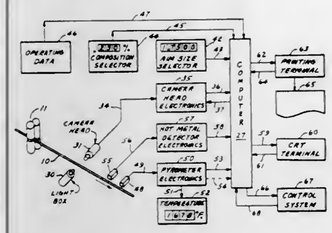
lifting a load from a first of two stations, movable relative to each other in at least a vertical plane, by a crane carried by the second station, the crane being adapted to permit a hook assembly, when attached to the load on the first station, to follow the motion of the first station prior to lifting of the load, said indication means comprising sensing means for sensing relative movement between the stations to produce signals representative of the values of relative velocity and relative acceleration of the stations, and means responsive to the magnitude and sense of said signals to provide an indication signal when the relative velocity of approach of the stations is between a maximum positive value and a negative value and when the relative acceleration of the stations is in a direction away from the direction of approach, said means to provide an indication signal including threshold means operable to compare the signal representing the relative velocity of approach of the stations with a first reference value to produce the signal when said velocity reaches a predetermined value and operable to compare a signal representing the relative acceleration of the stations with a second reference value to provide a signal when the acceleration in the direction of approach of the stations has a negative value.

4,121,294

ELECTRO-OPTICAL GAGING SYSTEM

Tom L. Galanis, Bethlehem; Joel L. Hoffner, Johnstown; John C. Clymer, Bethlehem, and Duane T. Jones, Coopersburg, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 17, 1977, Ser. No. 778,810
Int. Cl.[2] B21B *37/00*; G06F *15/46*
U.S. Cl. 364—571 **21 Claims**



1. An electro-optical system for gaging a dimension of a moving bar, comprising

(a) electronic camera head means aimed to receive an image of the moving bar and generate a raw camera signal having at least one error;

(b) electronic circuit means including means for processing the raw camera signal to produce a bar size pulse having at least one said error;

(c) calculated means assimilating the bar size pulse and at least one corresponding error-compensating signal for:

1. compensating the bar size pulse for one or more sources of error as a function of a corresponding one or more error-compensating signals, thereby to produce a corresponding corrected bar size pulse,

2. storing the corrected bar size pulse; and

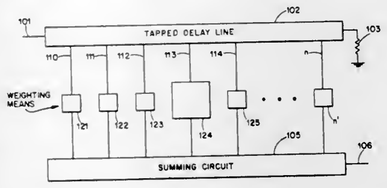
(d) means for utilizing the stored data to indicate and/or record a corrected bar size.

4,121,295

INTEGER WEIGHTED IMPULSE EQUIVALENT CODED SIGNAL PROCESSING APPARATUS

Richard P. Witt, Weston, Mass., assignor to Wittronics, Inc., Weston, Mass.

Filed Apr. 7, 1977, Ser. No. 785,331
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—724 **17 Claims**



1. A system for processing an input signal comprising coding means responsive to said input signal for linearly transforming said input signal in accordance with a selected time distribution and selected multi-level, integer related weighting functions to produce a plurality of weighted signals, the weighting functions being selected so as to provide a reasonably uniform power distribution of the larger amplitude ones of said plurality of weighted signals and so as to provide a ratio of the peak amplitude of the autocorrelation function of said plurality of weighted signals to the sum of the non-peak amplitudes thereof which is greater than $n/(n-1)$ where n is the number of terms in said plurality of weighted signals; and

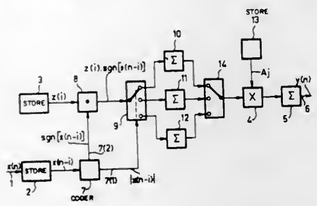
means responsive to said coding means for combining said weighted signals to produce a coded output signal.

4,121,296

DIGITAL SIGNAL PROCESSING ARRANGEMENT

Wilfred André Maria Snijders; Nicolaas Alphonsus Maria Verhoeckx; Petrus Josephus Van Gerwen, and Hendrik Arie Van Essen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 20, 1977, Ser. No. 808,095
Claims priority, application Netherlands, Jul. 12, 1976, 7607682
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—724 **1 Claim**



1. A digital signal processing arrangement for generating digital output signal samples $y(n)$ which are each formed by the sum of a given plurality of first signal samples $x(n)$ which are each modified by one of a plurality of second signal samples $z(n)$, comprising:

first means for serially supplying first signal samples $x(n)$;

second means for serially supplying second signal samples $z(n)$;

multiplying means having an input circuit and an output circuit;

first coupling means for coupling the input circuit of the multiplying means to the first and second means comprising: means coupled to said first and second means for modifying each of the second signal samples $z(n)$ by an algebraic coefficient sgn $[x(n)]$ which represents the polarity of the first signal sample $x(n)$ associated with the signal sample $z(n)$, for generating signal samples of the form $z(n) \cdot \text{sgn}\,[x(n)]$; a plurality of auxiliary accumulators which each correspond to one of the magnitudes $[x(n)]$ of the first signal samples $x(n)$ and whose outputs are coupled to the input circuit of the multiplying means for multiplying the contents of each of the auxiliary accumulators by the algebraic factor $[x(n)]$ corresponding therewith;

adder means coupled to said multiplying means; and

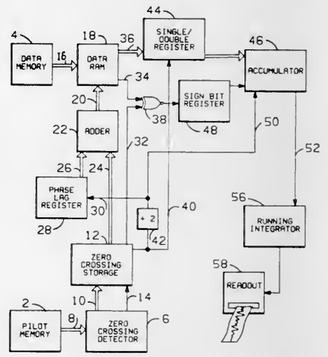
second coupling means which are controlled by said first signal samples $x(n)$ for applying the signal sample $z(n) \cdot \text{sgn}\,[x(n)]$ to that auxiliary accumulator which corresponds with the magnitude $[x(n)]$ of the first signal sample $x(n)$ associated with the second signal sample $z(n)$.

4,121,297

APPARATUS FOR CORRELATING TWO TIME SERIES

James W. Smith, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 691,927, Jun. 1, 1976, abandoned. This application Jun. 15, 1977, Ser. No. 806,784
Int. Cl.[2] G06F *15/34*; G01V *1/36*
U.S. Cl. 364—728 **9 Claims**



1. Electronic apparatus for correlating two time series of sampled quantities comprising:

sign bit series means having an input for receiving a first of said two time series of sampled quantities and having an output for providing a sign bit representation of said first series, said representation including addresses of zero crossings of said first series and indications of direction of each zero crossing;

data input means having first input for receiving a second of said two time series of sampled quantities, a second input coupled to the sign bit series means output for receiving zero crossing addresses, and an output for providing sampled quantities of said second series which correspond to zero crossings of said first series;

sign modifying means having a first input coupled to said data input means for receiving the sign portion of sampled quantities of said second series, a second input coupled to the sign bit series means for receiving zero crossing direction indications, and an output for providing a modified sign portion; and

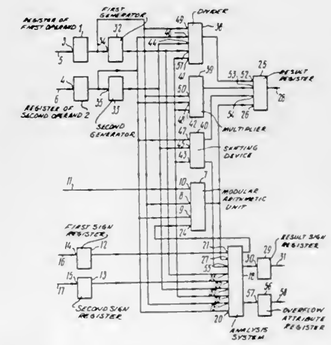
summing means coupled to said data input means' output and to said sign modifying means' output for algebraically summing sampled quantities of said second series which correspond to zero crossings of said first time series.

4,121,298

CENTRAL PROCESSING UNIT FOR NUMBERS REPRESENTED IN THE SYSTEM OF RESIDUAL CLASSES

Izrail Yakovlevich Akushsky; Vladimir Mikhailovich Burtsev, both of Moscow; Bulat Esenovich Duisenov, Alma-Ata; Ivan Timofeevich Pak, Alma-Ata, and Anurbek Orymbekovich Zhautykov, Alma-Ata, all of U.S.S.R., assignors to Institut Matematiki i Mekhaniki Akademii Nauk Kazakhskoi SSR, Alma-Ata, U.S.S.R.

Filed Oct. 15, 1976, Ser. No. 732,922
Int. Cl.[2] G06F *7/54*
U.S. Cl. 364—746 **25 Claims**



1. A central processing unit for numbers represented in the system of residual classes, comprising:

first and second input buses of first and second operands, respectively;

a control bus;

first and second input sign buses of signs of said first and second operands, respectively;

an output result bus;

an output result sign bus;

an output overflow attribute bus;

first and second operand registers for storing the first and second operands, respectively, each of said operand registers having an input and an output,

said inputs of said first and second registers being connected to said first and second buses, respectively;

a modular arithmetic unit, to perform operations of multiplication, subtraction and addition within the range of the system of residual classes, having

first, second, third, and fourth inputs and an output,

said first and second inputs of said modular arithmetic unit being connected to said outputs of said first and second operand registers, respectively,

said third input of said modular arithmetic unit being connected to said control bus;

first and second sign registers, to store the signs of the first and second operands, respectively, each of said sign registers having an

input and an output,

said inputs of said first and second sign registers being connected to said first and second input sign buses, respectively;

an analysis system, to determine the sign of the result of an operation and the overflow attribute, having

first, second, third, fourth, fifth, sixth, seventh, eighth and ninth inputs and first, second and third outputs,

said first and second inputs of said analysis system being connected to said outputs of said first and second operand registers, respectively,

said third and fourth inputs of said analysis system being connected to said outputs of said first and second sign registers, respectively,

said fifth input of said analysis system being connected to said control bus,

said first output of said analysis system being connected to said fourth input of said modular arithmetic unit;

a result register to store the result of operations having first, second, third and fourth inputs and an output,

said first input of said result register being combined with said sixth input of said analysis system and being connected to said output of said modular arithmetic unit,

said output of said result register being connected to said output result bus;

a result sign register to store the sign of the result having an input and an output,

said input of said result sign register being connected to said second output of said analysis system,

said output of said result sign register being connected to said output result sign bus;

a first generator and a second generator to calculate the position attributes of the first and second operands, respectively, each of said generators having an input and an output,

said inputs of said first and second generators being connected to said outputs of said first and second operand registers, respectively,

said outputs of said first and second generators being connected to said seventh and eighth inputs, respectively, of said analysis system;

a multiplier having first, second and third inputs and an output, said output being connected to said third input of said result register, said first input being connected to said control bus, said second input being connected to said output of said second operand register, and said third input being connected to said output of said first operand register;

a divider having first, second, third, fourth and fifth inputs and an output, said output being connected to said second input of said result register, said first input being connected to said control bus, said second input being connected to said output of said second generator, said third input being connected to said output of said second operand register, said fourth input being connected to said output of said first operand register, and said fifth input being connected to said output of said first generator;

a shifting device to shift one of the operands having first, second and third inputs and first and second outputs,

said first input being connected to said control bus,

said second input being connected to said output of said second generator,

said third input being connected to said output of said second operand register,

said first output being connected to said fourth input of said result register, and

said second output being connected to said ninth input of said analysis system;

an overflow attribute register, to store the overflow attribute when adding and subtracting the first and second operands, having an input and an output,

said input being connected to said third output of said analysis system,

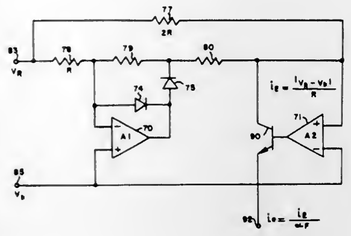
said output being connected to said output overflow attribute bus.

4,121,299

CONSTANT VELOCITY VECTOR GENERATOR EMPLOYING ABSOLUTE VALUE AMPLIFIER CIRCUITS

Michael Lawrence Rieger, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 625,609, Oct. 24, 1975, Pat. No. 4,032,768.
This application Mar. 4, 1977, Ser. No. 774,711
Int. Cl.[2] G06G *7/12, 7/14*
U.S. Cl. 364—807 **1 Claim**



1. A circuit for generating a unipolar output current proportional to the absolute value of the difference between a pair of input voltage signals, comprising:

a first operational amplifier having − and + terminals, and a feedback network including a full-wave rectifier connected from the output to the − terminal thereof;

a second operational amplifier having − and + terminals, said + terminal connected to the output of said full-wave rectifier;

first and second input terminals coupled to − said first and second operational amplifiers for receiving first and second input signals;

transistor means having the collector and base thereof connected to the + input and output respectively of said second operational amplifier; and

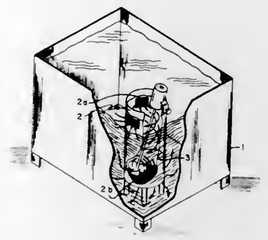
a utilization circuit connected to the emitter of said transistor means, wherein the current flowing through the emitter junction of said transistor is proportional to the absolute value of the difference between said first and second input signals.

4,121,300

BRINE MIXING APPARATUS

Earl Jesse Cosma, Chesterfield, and William Bayard Tuley, Ballwin, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Aug. 25, 1977, Ser. No. 827,522
Int. Cl.[2] B10F *7/16*
U.S. Cl. 366—251 **1 Claim**



1. An apparatus for dispersing powdery solids into a large reservoir of liquid; said apparatus comprising:

a. a holding tank;

b. a smaller tank disposed upright within the holding tank and said smaller tank having an open end and an opposite end covered with screen; said open end being directed upwardly and said screen covered end being directed downwardly; the walls of the smaller tank also having at least one strip of screen placed near but not touching the open end of the smaller tank;

c. the apparatus further comprising an agitating means disposed within the smaller container;

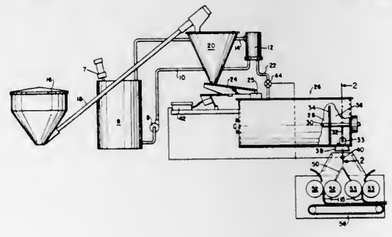
whereby the apparatus once filled with liquid and the agitating means once actuated will create a vortex mixing action which upon the solids being poured into the open end of the smaller container will disperse the solids and draw the liquid through the strip of screen and down through the bottom screen which catches all lumps while permitting the dispersed ingredients to flow throughout the volume of the larger container.

4,121,301

CONTINUOUS-FEED ALIMENTARY PASTE MIXER AND IMPROVED NOODLE-MAKING MACHINE

Leonard De Francisci, New York, N.Y., assignor to De Francisci Machine Corporation, Brooklyn, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,679
Int. Cl.[2] A47J *37/00*
U.S. Cl. 99—353 **8 Claims**



1. A continuous-feed alimentary paste mixer for mixing and continuously delivering alimentary paste made from at least a fluid ingredient and a flour ingredient, said mixer comprising:

a mixing vat defining a mixing chamber for receiving ingredients for making alimentary paste, said mixing chamber including an exit port for discharge of alimentary paste;

rotatable mixing means disposed within said mixing chamber for blending alimentary paste ingredients placed within said mixing chamber;

an alimentary paste sensor positioned proximate said exit port and in the flow path of discharging paste for sensing the presence or absence of alimentary paste;

a fluid feeder communicating with said mixing chamber for holding and delivering fluid ingredients of alimentary paste;

fluid control means cooperating with said fluid feeder and responsive to said paste sensor for interrupting the flow of fluid to said mixing chamber unless said paste sensor detects the presence or absence of alimentary paste;

a flour feeder communicating with said mixing chamber for holding and delivering flour ingredients of alimentary paste;

flour control means cooperating with said flour feeder and responsive to said paste sensor for interrupting the flow of flour ingredients to said mixing chamber unless said paste sensor determines the presence or absence of alimentary paste;

means for delivering the fluid and flour to said mixing chamber at a constant predetermined rate;

said fluid feeder comprising:

a first fluid chamber having an exit port communicating with said mixing chamber, an entry port communicating with a second fluid chamber, and overflow removal means for removing fluids exceeding a predetermined level within said first fluid chamber;

a second fluid chamber communicating with said first fluid chamber for holding an excess quantity of fluid ingredients to fill said first fluid chamber to said predetermined level; and

fluid delivery means for delivering fluid from said second fluid chamber to said first fluid chamber at a rate sufficient to maintain said first fluid chamber substantially at said predetermined level.

DESIGN PATENTS

GRANTED OCT. 17, 1978

ERRATA

For CLASS	See PATENT NO.
D13–012	249,943
D13–024	249,944
D99–028	249,970

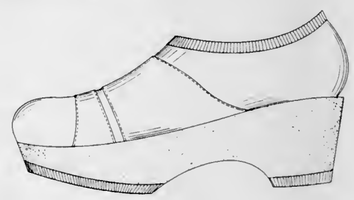
DESIGNS

OCTOBER 17, 1978

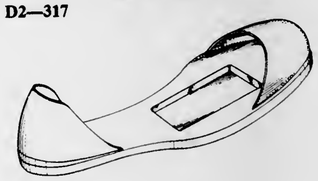
249,906
DRESS FOR NON-AMBULATORY INDIVIDUALS
Eileen Kohutis, and Ann S. Kohutis, both of 834 Terrace Ave., Woodbridge, N.J. 07095
Filed Apr. 6, 1976, Ser. No. 674,145
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—74



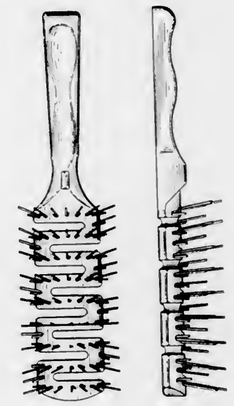
249,907
SHOE
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, Houston, Tex.
Filed Apr. 12, 1976, Ser. No. 676,161
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—292



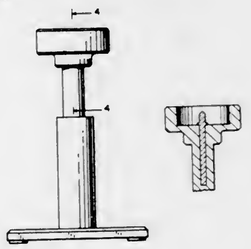
249,908
WALKING SOLE FOR ATTACHMENT TO A CLEATED SHOE
Robert H. Meinhart, 354 Wilbur Rd., Thousand Oaks, Calif. 91360
Filed Oct. 29, 1976, Ser. No. 737,050
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—317



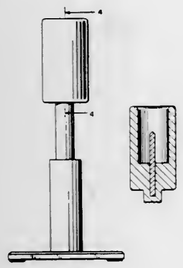
249,909
VENTED HAIR BRUSH
Carl Epstein, Teaneck, N.J., assignor to All American Brush Mfg. Corporation, Newark, N.J.
Filed Nov. 17, 1976, Ser. No. 749,181
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35



249,910
COMBINED STICK INSERTER AND DISPLAY STAND FOR A FOOD PRODUCT
Edward D. Cottrell, 45 Gail Dr., Cattaraugus, N.Y. 14719
Filed Jul. 12, 1976, Ser. No. 704,346
Term of patent 14 years
Int. Cl. D6—*99*; D20—*02*
U.S. Cl. D6—25



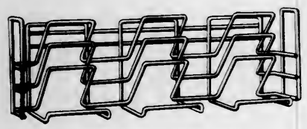
249,911
COMBINED STICK INSERTER AND DISPLAY STAND FOR A FOOD PRODUCT
Edward D. Cottrell, 45 Gail Dr., Cattaraugus, N.Y. 14719
Filed Jul. 12, 1976, Ser. No. 704,431
Term of patent 14 years
Int. Cl. D6—*99*; D20—*02*
U.S. Cl. D6—25



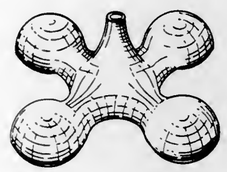
249,912
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,909
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



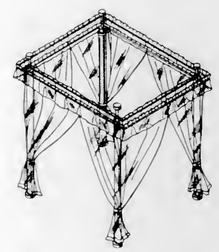
249,913
FILE SHELF
Charles W. Nicely, Wilkes-Barre, Pa., assignor to Metropolitan Wire Corporation, Wilkes-Barre, Pa.
Filed Oct. 26, 1976, Ser. No. 735,163
Term of patent 14 years
Int. Cl. D6—*04*; D19—*02*
U.S. Cl. D6—188



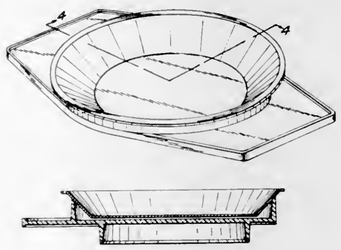
249,914
PEDESTAL
Denis Cairnes, and Derrick John Maltby, both of London, England, assignors to Cairnes Maltby Associates Limited, London, England
Filed Nov. 5, 1976, Ser. No. 739,294
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



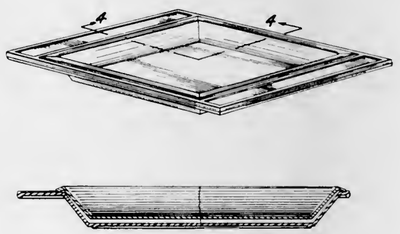
249,915
BED CANOPY OR SIMILAR ARTICLE
Joe M. Vargas, Alameda, Calif., assignor to John A. Buitrago, Hayward, Calif.
Filed Apr. 22, 1976, Ser. No. 679,159
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198



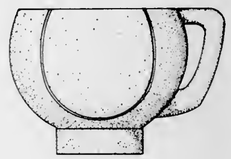
249,916
COMBINED HOLDER-SERVER TRAY AND COOKING PAN
Harry F. Collins, Golden Valley, Minn., assignor to Service Ideas, Inc.
Filed Oct. 12, 1976, Ser. No. 731,631
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—3



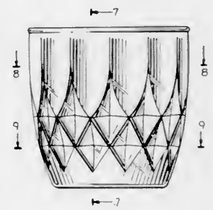
249,917
COMBINED HOLDER TRAY AND COOKING PAN
Harry F. Collins, Golden Valley, Minn., assignor to Service Ideas, Inc.
Filed Oct. 15, 1976, Ser. No. 733,008
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—3



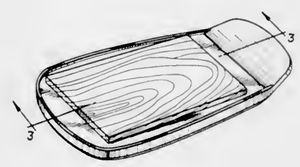
249,918
MUG
Robert S. Block, 8620 N. Pelham Pkwy., Village of Bayside, Wis. 53024, and John F. Krieger, Grafton, Wis., assignors to Robert S. Block, Village of Bayside, Wis.
Continuation-in-part of Ser. No. 673,131, Apr. 2, 1976, abandoned, which is a division of Ser. No. 416,349, Nov. 16, 1973, Pat. No. D. 239,588. This application Jul. 6, 1976, Ser. No. 702,619
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



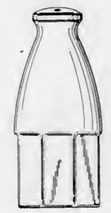
249,919
TUMBLER OR SIMILAR ARTICLE
James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Continuation-in-part of Ser. No. 744,458, Nov. 24, 1976, Pat. No. Des. 247,867. This application Jan. 13, 1977, Ser. No. 759,064
The portion of the term of this patent subsequent to May 16, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—14



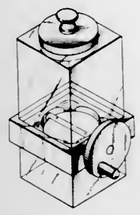
249,920
SERVING BOARD
Friedrich Ernest Frieser, 5, Rodney Close, Glen Waverley, Victoria 3150, Australia
Filed Jun. 15, 1976, Ser. No. 696,472
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—19



249,921
CONDIMENT DISPENSER
Don Schreckengost, East Liverpool, Ohio, assignor to The Salem China Company, Salem, Ohio
Filed Dec. 13, 1976, Ser. No. 749,976
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—54



249,922
HERB SEPARATOR
Stewart Hall, 138-10 Jewel Ave., Flushing, N.Y. 11367, and Harley R. Goldman, 417 Roslyn Rd., Roslyn Heights, N.Y. 11577
Filed Dec. 6, 1976, Ser. No. 747,435
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—53



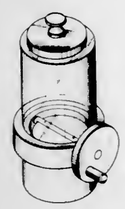
249,923
SCABBARD FOR A KNIFE
Peter K. Bayly, Eltham North, Australia, assignor to Wiltshire Cutlery Company Proprietary Limited, South Melbourne, Australia
Filed May 24, 1976, Ser. No. 689,250
Claims priority, application Australia, Dec. 4, 1975, 68248/75
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74



249,924
BASKET INSERT FOR A FRYING PAN
Karl Fischer, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Geraete Blanc und Fischer
Filed May 25, 1976, Ser. No. 689,826
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



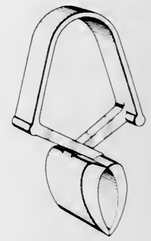
249,925
COMBINED CLOSURE DISPENSER AND BATTERY POWERED DRINK MIXER FOR A CONTAINER
Harold W. Rice, Hartsburg, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Jun. 30, 1976, Ser. No. 701,087
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—131



249,926
COMBINED KNIFE, FORK AND SPOON
Woon-Tong Wong, 14 Upton St., Boston, Mass. 02118
Filed Jan. 14, 1977, Ser. No. 759,321
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—149



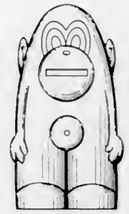
249,927
BIASED CUP CLAMP
Kiyoshi Takahashi; Akira Takahashi; Kazuo Takahashi, and Takeshi Takahashi, all of Tokyo, Japan, assignors to Polachek, Saulsbury & Hough, New York, N.Y.
Filed Aug. 20, 1976, Ser. No. 716,167
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—395



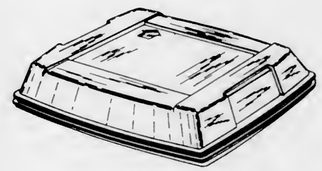
249,928
AEROSOL CONTAINER
Maximiliaan de Nijs, Pollux 377, Veenendall, Netherlands
Continuation-in-part of Ser. No. 486,862, Jul. 9, 1974. This application Jul. 19, 1976, Ser. No. 706,150
Claims priority, application Switzerland, May 10, 1974, 58621/74
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—9



249,929
CANDY DISPENSER
Frank Russert, Palos Heights, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,398
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—32



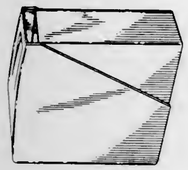
249,930
COMBINED INSULATED FOOD SERVICE TRAY AND COVER THEREFOR
Richard H. Seager, Manchester, Conn., assignor to King-Seeley Thermos Company
Filed Oct. 18, 1976, Ser. No. 733,044
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



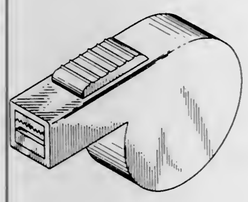
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CANDY DISPENSER
Frank Russert, Palos Heights, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,395
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



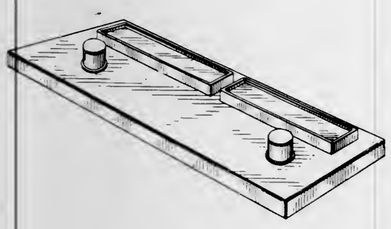
249,932
CANDY DISPENSER
Frank Russert, Palos Heights, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,397
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



249,933
CANDY DISPENSER
Walter Stern, Wilmette, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,404
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



249,934
COVER FOR A FOOD CONTAINER OR THE LIKE
Vincent T. Cullers, Chicago, Ill., assignor to Vince Cullers Advertising, Inc.
Filed Oct. 4, 1976, Ser. No. 729,133
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



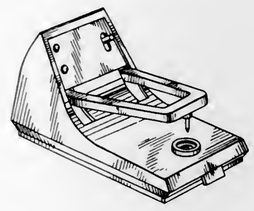
249,935
CONTAINER LID
Robert G. Williams, Graham Dr., Shelbyville, Ind. 46176
Filed Oct. 18, 1976, Ser. No. 733,129
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



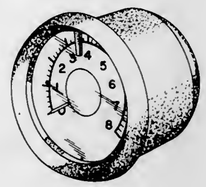
249,936
ELECTRONIC METRONOME
Takeshi Ishida, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan
Filed Dec. 13, 1976, Ser. No. 749,961
Claims priority, application Japan, Jun. 11, 1976, 51/22439
Term of patent 3½ years
Int. Cl. D10—*03*
U.S. Cl. D10—43



249,937
ELECTRICAL BATTERY TEST INSTRUMENT
David J. Jacobson, 811 The Parkway, Mamaroneck, N.Y. 10243, and Marvin Zaro, 405 E. 63rd St., New York, N.Y. 10021
Filed Dec. 28, 1976, Ser. No. 754,974
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—77



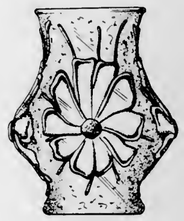
249,938
TACHOMETER
James R. Shaffer, Mt. Prospect, Ill., and Ronald L. Carlson, Marshalltown, Iowa, assignors to Sun Electric Corporation, Chicago, Ill.
Filed Nov. 19, 1976, Ser. No. 743,217
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—98



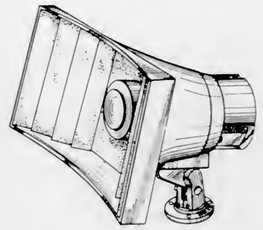
249,939
WRIST STRAP FOR A WATCH AND WRITING IMPLEMENTS
Donald P. Dammons, 11020 S. Eberhart Ave., Chicago, Ill. 60638
Filed Oct. 18, 1976, Ser. No. 733,067
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—2



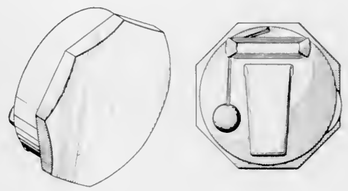
249,940
VASE OR SIMILAR ARTICLE
Frank J. Benes, and James Lloyd Thrush, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 487,456, Jul. 11, 1974, Pat. No. Des. 243,463. This application Jan. 5, 1976, Ser. No. 646,509
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—151



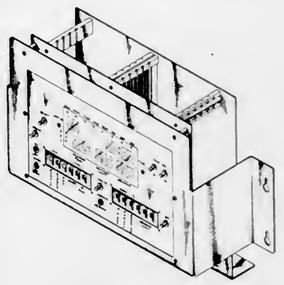
249,941
LOUDSPEAKER
Gerald B. Bremseth, Oklahoma City, Okla., assignor to Altec Corporation, Anaheim, Calif.
Filed Sep. 17, 1976, Ser. No. 725,089
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—35



249,942
RADIO
Neil William Speakman, G/F, 120 Pokfulam Rd., Hong Kong
Filed Sep. 22, 1976, Ser. No. 725,608
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—79



249,943
DEMAND CONTROLLER COMPONENT
Peter G. Bartlett, Davenport, Iowa, assignor to Automation Systems, Inc., Eldridge, Iowa
Filed Mar. 23, 1976, Ser. No. 669,503
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



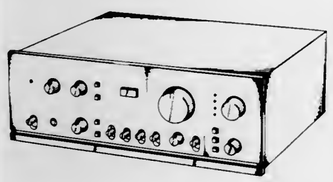
249,944
BATTERY TERMINAL CONNECTOR
Gordon Roy Frank Smith, Newcastle-under-Lyme, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Sep. 22, 1976, Ser. No. 725,916
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



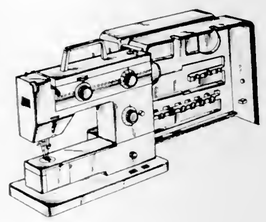
249,945
FRONT PANEL FOR COMPUTER OR SIMILAR ARTICLE
Sven Ingvar Werner Freijd, Linkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Dec. 27, 1976, Ser. No. 754,695
Claims priority, application Sweden, Jul. 6, 1976, 76-1414
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—40

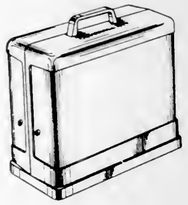


249,946
AMPLIFIER
Kazuhito Ohtomo, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Sep. 13, 1976, Ser. No. 722,459
Claims priority, application Japan, Mar. 27, 1976, 51-11075
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96

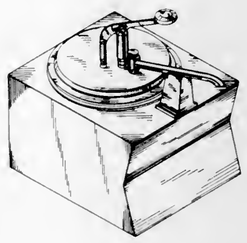


249,947
COMBINED SEWING MACHINE AND CASE THEREFOR
Fritz Gegauf, Steckborn, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina-Nähmaschinenfabrik, Steckborn, Switzerland
Filed Feb. 2, 1976, Ser. No. 654,105
Term of patent 14 years
Int. Cl. D15—*06;* D3—*02*
U.S. Cl. D15—68

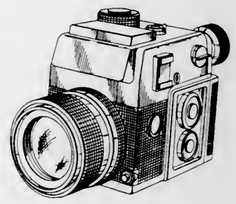




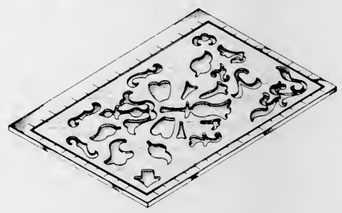
249,948
HOT TOPPING DISPENSER
James W. Brutsman, Cheyenne, Wyo., assignor to Wyott Corporation, Cheyenne, Wyo.
Filed Sep. 20, 1976, Ser. No. 724,903
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—111



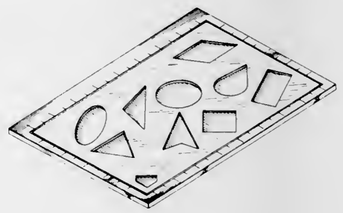
249,949
MIRROR REFLEX CAMERA
Bodo Mielke, Wolfenbüttel; Dieter Mankau, and Friedrich Papke, both of Brunswick, all of Germany, assignors to Rollei-Werke Franke & Heidecke, Brunswick, Germany
Filed Sep. 8, 1976, Ser. No. 721,331
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1976, MR1101
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—01



249,950
COMBINED TEMPLATE AND FRAME
Age Stein, 6609 - 224th Southwest, Mountlake Ter., Wash. 98043
Filed Jan. 3, 1977, Ser. No. 755,999
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D19—39

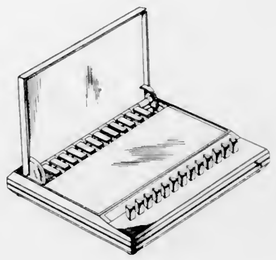


249,951
COMBINED TEMPLATE AND FRAME
Age Stein, 6609 224th Southwest, Mountlake Terrace, Wash. 98043
Filed Jan. 3, 1977, Ser. No. 755,958
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D19—39



249,952
TELEPHONE INDEX
Se-Kit Yuen, 46 Hoi Yuen Rd., 4th Floor, Kwun Tong, Kowloon, Hong Kong
Filed Jul. 19, 1976, Ser. No. 706,520
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

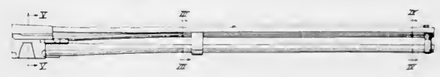




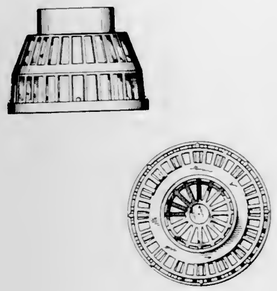
249,953
COMBINED BOOKHOLDER AND BOOKMARK
James Drake, 212 S. Brighton St., Burbank, Calif. 94706
Filed Sep. 27, 1976, Ser. No. 727,017
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—91



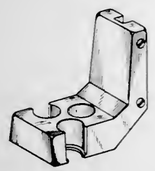
249,954
SHOTGUN BARREL
Donald E. Stark, Olathe, Kans., assignor to Simmons Gun Specialties, Inc., Olathe, Kans.
Filed Apr. 30, 1976, Ser. No. 681,918
Term of patent 3½ years
Int. Cl. D22—*01*
U.S. Cl. D22—7



249,955
PUMP STRAINER
John E. Vogelsang, Milwaukee, Wis., assignor to Steel Products Manufacturing Co. Inc., Milwaukee, Wis.
Filed Jul. 1, 1976, Ser. No. 701,552
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—42



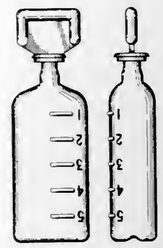
249,956
ELECTRODE HOLDER FOR pH METERS AND THE LIKE
Robert S. Potts, Sherborn, Mass., assignor to Corning Glass Works
Filed Feb. 7, 1977, Ser. No. 765,924
Term of patent 14 years
Int. Cl. D24—*01, 99*
U.S. Cl. D24—29



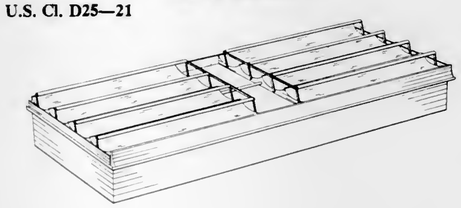
249,957
HIP CUP PROSTHESIS
Palmer O. Eicher, Indianapolis, and Dennert O. Ware, Warsaw, both of Ind., assignors to Bio-Dynamics Inc., Indianapolis, Ind.
Filed Oct. 4, 1976, Ser. No. 729,471
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—33



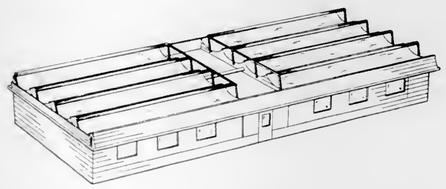
249,958
DISPENSING CONTAINER FOR PHARMACEUTICAL DILUENTS
Eugene J. Meierhoefer, Hackettstown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jan. 10, 1977, Ser. No. 758,266
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—56



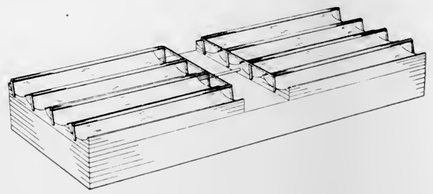
249,959
BUILDING
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Feb. 8, 1977, Ser. No. 766,842
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—21



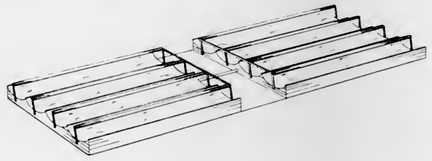
249,960
BUILDING
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Feb. 8, 1977, Ser. No. 766,843
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—21



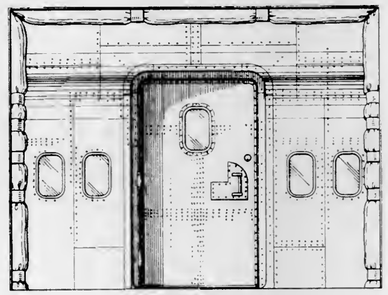
249,961
BUILDING
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Feb. 8, 1977, Ser. No. 766,845
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—21



249,962
REFLECTOR CONCENTRATOR USEFUL FOR SOLAR ENERGY
Irwin R. Barr, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Feb. 8, 1977, Ser. No. 766,844
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—56



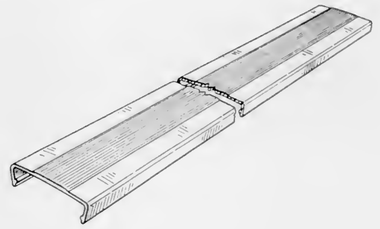
249,963
BUILDING PORTAL
James A. Cosentino, Cheektowaga, N.Y., assignor to The Executive, A Motor Hotel of Buffalo, Inc., Buffalo, N.Y.
Filed Dec. 5, 1975, Ser. No. 637,943
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—59



249,964
ADJUSTABLY LOUVERED ROOF PLATE
Nobujiro Isono, Sano, Japan, assignor to Shin Nippon Kinzoku Co., Ltd.
Filed Dec. 6, 1976, Ser. No. 748,043
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



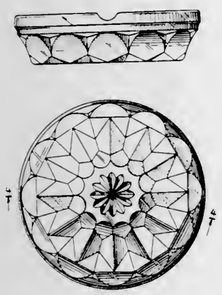
249,965
TRIM STRIP FOR PARTITION WALL
Richard A. Cooper, 58 Bridley Dr., Agincourt, Ontario, Canada
Filed Sep. 1, 1976, Ser. No. 719,563
Claims priority, application Canada, Jun. 29, 1976, 290676
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—76



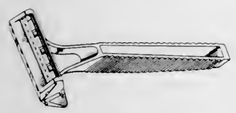
249,966
WALL TILE
Georges Marquis, 12010 Langelier, App. 302, Montreal-Nord, Quebec, Canada
Filed Mar. 15, 1976, Ser. No. 666,978
Claims priority, application Canada, Jan. 9, 1976, 090176
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—92



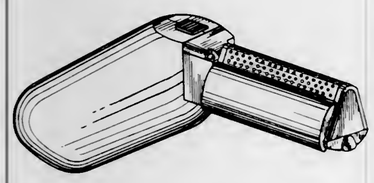
249,967
ASHTRAY OR SIMILAR ARTICLE
Frank J. Benes, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 545,621, Jan. 30, 1975, which is a division of Ser. No. 397,062, Sep. 13, 1973, abandoned. This application Sep. 2, 1976, Ser. No. 719,719
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—27



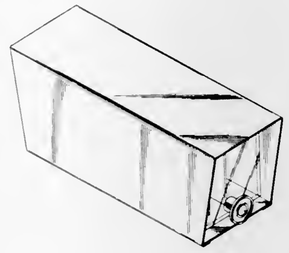
249,968
RAZOR
Ernest F. Kiraly, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Aug. 23, 1976, Ser. No. 716,608
Int. Cl. D28—*03*
U.S. Cl. D28—46



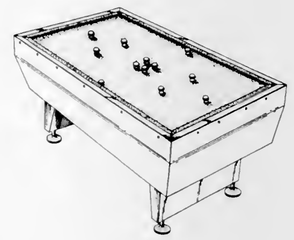
249,969
SHAVER
Knut Benny Weideskog, Fredsgatan 2, S-222 20 Lund, Sweden
Filed May 14, 1976, Ser. No. 686,535
Claims priority, application Sweden, Nov. 25, 1975, 752339
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—49



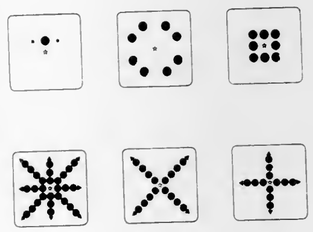
249,970
RECEPTACLE FOR HOLDING DOCUMENTS OR THE LIKE
Donald C. J. Wetzel, 12830 Hillcrest, Suite 111, Dallas, Tex. 75230
Filed Feb. 7, 1977, Ser. No. 766,203
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—28



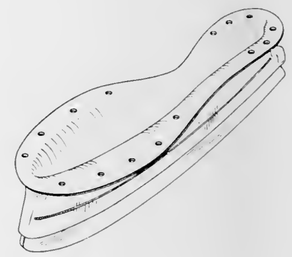
249,971
GAME TABLE
James A. Fields, Jr., 3245 Corey Dr., Jackson, Miss. 39212
Filed Sep. 2, 1976, Ser. No. 719,712
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—3



249,972
CHESS PIECE SET
Granville P. Murphy, P.O. Box 27724, Los Angeles, Calif. 90027
Filed Oct. 1, 1976, Ser. No. 728,889
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH



249,973
ICE SKATE
Ian F. Norton, Toronto, and Gerald Beekenkamp, Etobicoke, both of Canada, assignors to Greb Industries Limited, Kitchener, Canada
Filed Jul. 6, 1976, Ser. No. 702,407
Claims priority, application Canada, May 31, 1976, 3105762
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 B



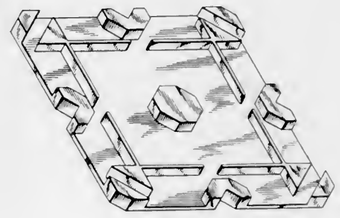
249,974
SKI
Anton Arnsteiner, Mittersill, Austria, assignor to Blizzard Gesellschaft m.b.H., Mittersill, Austria
Filed Jan. 10, 1977, Ser. No. 758,173
Claims priority, application Austria, Jul. 12, 1976, 12215
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



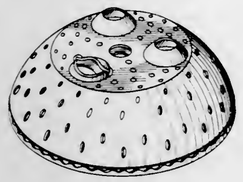
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SKI
Anton Arnsteiner, Mittersill, Austria, assignor to Blizzard Gesellschaft m.b.H., Mittersill, Austria
Filed Jan. 10, 1977, Ser. No. 758,174
Claims priority, application Austria, Jul. 12, 1976, 12262
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



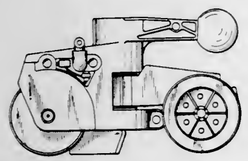
249,976
CONSTRUCTION PIECE
Ronald Gronert, Willem de Rijkelaan 76, Hillegom, Netherlands
Filed Dec. 2, 1975, Ser. No. 637,099
Claims priority, application Benelux, Jun. 2, 1975, 50336
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



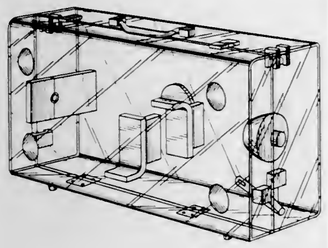
249,977
WATER TOY
Holger F. Kilander, Hackensack, Minn., assignor to Gabriel Industries, Inc., New York, N.Y.
Filed May 12, 1976, Ser. No. 685,863
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



249,978
TOY ROLLER-GRADER
Jeffrey T. Samson, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Oct. 29, 1976, Ser. No. 737,177
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



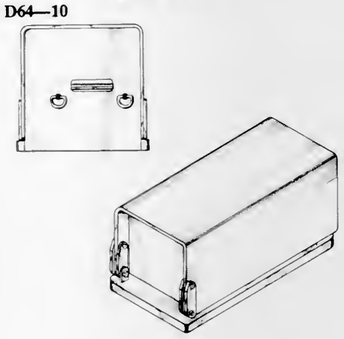
249,979
MUSIC INSTRUMENT CASE
Carlos Fernandez, 943 W. 34th St., Chicago, Ill.
Filed Dec. 30, 1975, Ser. No. 645,317
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D56—1 B



249,980
STRINGED MUSICAL INSTRUMENT
Frank Eventoff, 2351 Lakeview Ave., Los Angeles, Calif. 90039
Filed Jan. 27, 1976, Ser. No. 652,834
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A



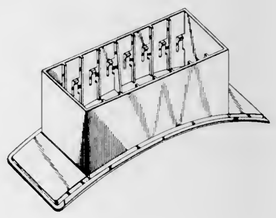
249,981
LABEL PRINTER
Edward C. Karp, Belvidere, Ill., assignor to Sanitary Scale Company
Filed Jan. 21, 1977, Ser. No. 761,356
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—10

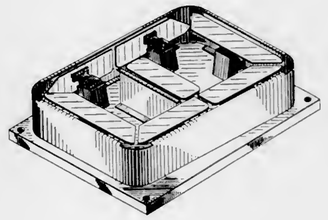


249,982
COVER FOR A TISSUE DISPENSER
Kitty K. Kubusheski, 5041 NE. 14th Ave., Pompano Beach, Fla. 33064
Filed Apr. 21, 1976, Ser. No. 678,766
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D87—1 R

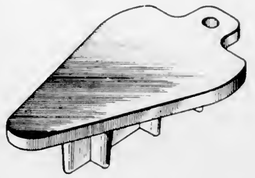


249,983
TAPE CARTRIDGE CADDY FOR A CAR
Gerald J. Niles, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company
Filed Jan. 17, 1977, Ser. No. 760,119
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 D





249,984
COMBINED KEY CHAIN FOB AND TAB CAN OPENER
Lynn V. Parker, 409 Browning Dr., Arlington, Tex. 76010
Filed Jan. 31, 1977, Ser. No. 764,047
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—8.3



249,985
VARIABLE CHARACTER DISPLAY
Alfred Skrobisch, Huntington Station, N.Y., assignor to The Staver Company, Incorporated, Bay Shore, N.Y.
Filed Oct. 12, 1976, Ser. No. 731,849
Term of patent 14 years
Int. Cl. D20—*03;* D14—*02*
U.S. Cl. D96—12 K



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF OCTOBER, 1978

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AB ID-kort: *See—*
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AB Turn-O-Matic: *See—*
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AMSTED Industries Incorporated: *See—*
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Armor, Anthony F.; Barton, Sterling C.; Chari, Madabushi V.; Collings, Harold E.; and Turnbull, George W., 4,121,126, Cl. 310-59.000.

Bartsch, Wolfgang: *See—*
Kampe, Wolfgang; Senn, Martin; Thiel, Max; Bartsch, Wolfgang; and Dietmann, Karl, 4,120,963, Cl. 424-256.000.

BASF Aktiengesellschaft: *See—*
Gettert, Hans; Fromm, Hermann Dieter; Molzahn, Martin; Schier, Ernst-Juergen; and Schneehage, Hans Henning, 4,120,667, Cl. 55-48.000.
Jaedicke, Hagen; and Paust, Joachim, 4,120,868, Cl. 260-340.700.
Kovacs, Jenoe; Jung, Hans; Marx, Matthias; and Spoor, Herbert, 4,121,266, Cl. 528-288.000.
Martin, Wolfgang; Bauer, Wolfgang; Herion, Dieter; Linge, Hermann; and Knopp, Hans, 4,120,078, Cl. 28-252.000.
Mueller-Tamm, Heinz; Schick, Hans; Jaggard, James F. R.; and Nickl, Johann, 4,120,823, Cl. 252-442.000.
Pohlemann, Heinz; Naarmann, Herbert; and Seebach, Dieter, 4,121,027, Cl. 526-29.000.
Woerner, Frank Peter; Kan, Peter T.; and Falkenstein, Georg, 4,120,884, Cl. 260-453.0SP.

BASF Wyandotte Corporation: *See—*
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,120,799, Cl. 252-8.600.
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,120,802, Cl. 252-8.750.
Kappler, Frank Robert; Killian, Roma Jean; and Cramer, John Joseph, 4,120,650, Cl. 8-109.000.

Baskall, William C. Traction device for power driven vehicles. 4,120,336, Cl. 152-216.000.

Bastenhof, Dirk, to Societe d'Etudes de Machines Thermiques-S.E.M.T. Device for injecting water into the cylinders of an internal combustion engine, particularly for reducing the degree of pollution of the latter. 4,120,268, Cl. 123-25.00C.

Battelle Memorial Institute: *See—*
Breda, Frederic; and Jonville, Pierre, 4,120,763, Cl. 204-73.00R.
Trojer, Felix; O'Connor, Grahame Paul; and Tannenberger, Helmut, 4,120,730, Cl. 106-39.600.

Bauer, Wilfried; and Pless, Janos, to Sandoz Ltd. Organic compounds. 4,120,852, Cl. 260-112.50S.

Bauer, Wolfgang: *See—*
Martin, Wolfgang; Bauer, Wolfgang; Herion, Dieter; Linge, Hermann; and Knopp, Hans, 4,120,078, Cl. 28-252.000.

Baues, Peter; and Winzer, Gerhard, to Siemens Aktiengesellschaft. Optical waveguide network. 4,120,560, Cl. 350-96.140.

Baummer, George P. Apparatus and process for ordinary and submarine mineral beneficiation. 4,120,783, Cl. 209-18.000.

Baur, Leslie L.; and Hajduk, Thaddeus J., to Zenith Radio Corporation. Space-conservative apparatus with mechanical memory for holding and cataloging shadow masks. 4,120,407, Cl. 214-6.0BA.

Baxter Travenol Laboratories, Inc.: *See—*
Brown, Richard I.; and Boggs, Daniel R., 4,120,449, Cl. 233-23.00R.
Cullis, Herbert M., 4,120,448, Cl. 233-22.000.
Lessner, David L., 4,120,586, Cl. 356-100.000.
Range, Richard J.; and Soodak, Charles I., 4,120,202, Cl. 73-421.00R.

Bayer Aktiengesellschaft: *See—*
Baatz, Gunther; Dahm, Manfred; and Triebeneck, Kurt, 4,120,518, Cl. 282-27.500.
Kloker, Werner; Bovender, Franz; Gromping, Franz; Goerden, Leonhard; and Niesel, Harald, 4,120,923, Cl. 264-45.300.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,120,956, Cl. 424-200.000.
Paulus, Wilfried; and Genth, Hermann, 4,120,686, Cl. 71-67.000.
Winkler, Adolf, 4,120,866, Cl. 260-315.000.

BBC Brown, Boveri & Company Limited: *See—*
Bachmann, Robert, 4,121,107, Cl. 250-455.000.
Berndes, Gunter; and Meyer, Eckhard, 4,121,239, Cl. 357-39.000.

Bearden, Roby, Jr.: *See—*
Baird, William Chalmers, Jr.; Bearden, Roby, Jr.; and Bollinger, Ralph Louis, Jr., 4,120,779, Cl. 208-108.000.

Beasom, James D., to Harris Corporation. Process of fabricating junction isolated IGFET and bipolar transistor integrated circuit by diffusion. 4,120,707, Cl. 148-186.000.

Bebrueder Ahle: *See—*
Borlinghaus, Arthur, 4,120,489, Cl. 267-61.00R.

Beck, Otto; and Hamm, Klaus, to Robert Bosch GmbH. Apparatus for transversely sealing a wrapping tube. 4,120,235, Cl. 93-33.00H.

Beck, Robert E.: *See—*
Gardner, Jeffrey M.; and Beck, Robert E., 4,120,443, Cl. 229-42.000.

Becker, Dale F.; Samuel, Trevor N.; and Sangamo Electric Company. Electric meter for mounting with a standard watthour meter. 4,121,147, Cl. 324-104.000.

Becker, Friedbert; Grafinger, Wilhelm; and Hildebrandt, Bernhard, to Siemens Aktiengesellschaft. Device for increasing the safety with respect to transmission faults in an information transmission system. 4,121,208, Cl. 343-6.50R.

Becker, Herbert, to Metallwerk Max Brose GmbH & Co. Lifting arrangement for a window of a vehicle and the like. 4,120,120, Cl. 49-351.000.

Beckman Instruments, Inc.: *See—*
Nielsen, Steven Thomas, 4,120,927, Cl. 264-98.000.
Pierre, Kenneth J.; and Tung, Ker-Kong, 4,120,755, Cl. 195-103.50C.

Becton, Dickinson & Company: *See—*
Akerkar, Anandrao S.; and Rutner, Herman, 4,120,867, Cl. 260-326.400.
Gutcho, Sidney; and McCarter, Henry, 4,120,945, Cl. 424-1.000.

Bednarski, John R.; and Russell, David B., to M&T Chemicals Inc. Biologically active triorganotin copolymers. 4,121,034, Cl. 526-240.000.

Behnke, Wallace Peery; Chapin, Robert Stuart; and Fierro, John Francis, to Du Pont de Nemours, E. I., and Company. Aromatic polyamide fiber blend for protective clothing. 4,120,914, Cl. 260-857.0TW.

Behrenz, Wolfgang: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,120,956, Cl. 424-200.000.

Bel, Jean-Pierre L.: *See—*
Rabischong, Pierre; and Bel, Jean-Pierre L., 4,120,297, Cl. 128-78.000.

Belcher, Charles Brian: *See—*
Hodges, Raymond John; and Belcher, Charles Brian, 4,120,584, Cl. 356-36.000.

Belco Pollution Control Corporation: *See—*
Lanese, Philip M., 4,120,672, Cl. 55-112.000.

Bell & Howell Company: *See—*
Flint, John R.; Erikson, Rolf B.; and Rabindran, George, 4,121,138, Cl. 318-7.000.

Johnston, Robert F.; and Wells, Thomas R., 4,120,573, Cl. 353-27.00A.

Bell Industries: *See—*
Kaye, Peter D., 4,120,215, Cl. 76-25.00A.

Bell Telephone Laboratories, Incorporated: *See—*
Bachmann, Klaus Jurgen; Schmidt, Paul Herman; Spencer, Edward Guerrant; and Harsha, Karnamadakala Sreenivasaacharlu Sree, 4,121,238, Cl. 357-16.000.
Gibbs, Hyatt McDonald; McCall, Samuel Leverte, Jr.; and Venkatesan, Thirumalai Nallan Chakravarthy, 4,121,167, Cl. 330-4.300.

Beloit Corporation: *See—*
Alheid, Robert J., 4,120,349, Cl. 165-89.000.

Bendix Corporation, The: *See—*
Bridges, Robert M., 4,120,519, Cl. 285-3.000.
Carp, Ralph W.; Ang, Leoncio T.; Leadbetter, Laurence D.; and Cornell, Grant Arthur, 4,120,539, Cl. 503-103.000.
Waldron, Clifford R.; Yonkers, Karl W.; and Uhlig, Herbert K., 4,120,556, Cl. 339-142.000.

Benjamin, Milton L., to Erickson Tool Company. Spade drill. 4,120,601, Cl. 408-226.000.

Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; and Benkoe, Erwin, 4,120,497, Cl. 273-95.00B.

Bennett, James Vine: *See—*
Pamplin, John Warner; Bennett, James Vine; and Elson, Peter Fred, 4,120,186, Cl. 72-278.000.

Benoit, Michel, to Delattre-Levivier. Method of regulating the process of agglomeration of a mineral on an endless chain. 4,120,643, Cl. 432-36.000.

Bensussan, Andre: *See—*
Azam, Guy; Bensussan, Andre; and Levaillant, Claude, 4,121,173, Cl. 331-9.000.

Berendt, Hans-Ulrich: *See—*
Lauton, Alain; and Berendt, Hans-Ulrich, 4,120,647, Cl. 8-17.000.

Berg, Keith E.: *See—*
Tinker, Donald; and Berg, Keith E., 4,120,790, Cl. 210-65.000.

Berg, Marvin I.: *See—*
Pasic, James A.; and Berg, Marvin I., 4,120,239, Cl. 100-26.000.

Bernardi, Dario. Wheel equipped with brake, particularly for motorcycles. 4,120,536, Cl. 301-6.00E.

Berndes, Gunter; and Meyer, Eckhard, to BBC Brown, Boveri & Company Limited. Controllable semiconductor component for two current directions. 4,121,239, Cl. 357-39.000.

Bernhardt, Wolfgang: *See—*
Heiser, Joachim; Bernhardt, Wolfgang; and Schempp, Roland, 4,120,233, Cl. 91-511.000.

Bernstein, Seymour: *See—*
Conrow, Ransom Brown; and Bernstein, Seymour, 4,120,894, Cl. 260-507.00R.
Conrow, Ransom Brown; Poletto, John Frank; and Bernstein, Seymour, 4,120,895, Cl. 562-457.000.
Conrow, Ransom Brown; and Bernstein, Seymour, 4,120,896, Cl. 562-430.000.
Joseph, Joseph Peter; and Bernstein, Seymour, 4,120,954, Cl. 424-180.000.
Nair, Vijay Gopalan; and Bernstein, Seymour, 4,120,953, Cl. 424-180.000.
Poletto, John Frank; and Bernstein, Seymour, 4,120,891, Cl. 260-506.000.
Poletto, John Frank; Conrow, Ransom Brown; and Bernstein, Seymour, 4,120,892, Cl. 260-506.000.
Poletto, John Frank; Conrow, Ransom Brown; and Bernstein, Seymour, 4,120,893, Cl. 260-506.000.

Berrie, John Sorbie; and Woolley, Graham Edward, to Imperial Chemical Industries Limited. Manufacture of calcium sulphate alpha hemihydrate. 4,120,737, Cl. 106-109.000.

Bertelmann, Gunter: *See—*
Schwarzmann, Gunter; Holtschmidt, Ulrich; and Bertelmann, Gunter, 4,120,979, Cl. 424-325.000.

Berthold, Richard: *See—*
Bormann, Gerhard; and Berthold, Richard, 4,120,965, Cl. 424-258.000.

Bethlehem Steel Corporation: *See—*
Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; Hostetter, Richard S., Jr.; Jones, Duane T.; and Yerkes, Ronald W., 4,121,292, Cl. 364-571.000.
Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; and Jones, Duane T., 4,121,294, Cl. 364-571.000.
Hoffner, Joel L.; and Galanis, Tom L., 4,121,291, Cl. 364-571.000.
Webster, Geoffrey R., 4,120,921, Cl. 264-23.000.

Bethurum, George M., to Champagne Machine Inc., The. Apparatus for dispensing sparkling wines. 4,120,425, Cl. 222-146.00C.

Bettis Corporation: *See—*
Thompson, Richard L.; Hubbert, Murray J.; and Wade, Vernon J., 4,120,479, Cl. 251-56.000.

Bezold, Helmut, to Kraftwerk Union Aktiengesellschaft. Fuel element skeleton. 4,120,751, Cl. 176-78.000.

Bezstarosti, Ladislav; Lzicar, Josef; Lanta, Jiri; and Kriz, Vladimir, to Vyzkumny ustav bavlnarsky. Shed forming device for looms. 4,120,126, Cl. 139-55.100.

Bhateja, Chander Prakash; Alling, Richard Lassen; and Johnston, Dean Edward, to Torrington Company, The. Cageless thrust bearing with unguided rollers. 4,120,542, Cl. 308-219.000.

Bianchi, Edward Armond; and Forney, Edger Wilmot, Jr., to AMP Incorporated. Coaxial cable connector. 4,120,554, Cl. 339-97.00R.

Bice, John R.; and Lewis, Philip J., to Brogdex Company. Composition for preventing decay of fruit and inhibiting sporulation thereon. 4,120,970, Cl. 424-270.000.

Bicosa Societe de Recherches: *See—*
de Mere, Henri Courier, 4,121,115, Cl. 307-150.000.

Bieringer, Robert J.; and Ringlien, James A., to Owens-Illinois, Inc. Method for measuring the thickness of transparent articles. 4,120,590, Cl. 356-161.000.

Bileski, Thomas; Crawford, Joe W.; Blanton, Bobby D.; Johnson, Carl N.; Garcia, Felix; Orcutt, John W.; Shepherd, Glen C.; and Oursler, James A., to Texas Instruments Incorporated. Condition responsive electrical switch having improved bridging contact means. 4,121,073, Cl. 200-83.00P.

Bilibina, Galina Vladimirovna: *See—*
Kuznetsova, Nadezhda Nikolaevna; Samsonov, Georgy Vasilievich; Papukova, Klavdia Pavlovna; Bilibina, Galina Vladimirovna; Shataeva, Larisa Konstantinovna; Selezneva, Aida Alexandrovna; Kuznetsova, Nina Petrovna; Vitols, Oyar Ansovich; Shtrausa, Anite Ansovna; Gudkin, Lev Romanovich; Mishaeva, Rimma Nikodimovna; and Rozhetskaya, Karina Moiseevna, 4,120,831, Cl. 521-38.000.

Bingham, Elena Maria; and Middleton, William Joseph, to Du Pont de Nemours, E. I., and Company. Process for the preparation of 3-fluorobenzodiazepines. 4,120,856, Cl. 260-239.30D.

Birkelbach, Donald F., to Dow Chemical Company, The. High efficiency catalyst for polymerizing olefins. 4,120,820, Cl. 252-429.00B.

Birnbaum, George: *See—*
Malmuth, Norman D.; Birnbaum, George; and Iceland, William F., 4,121,087, Cl. 219-121.00L.

Bishop, Robert Eugene, to International Business Machines Corporation. Apparatus for the reversal of a hot roll in a fusing assembly. 4,121,089, Cl. 219-216.000.

Bittenson, Steven N.; and Houston, Paul L., to Cornell Research Foundation, Inc. Photochemical method for carbon isotopic enrichment. 4,120,767, Cl. 204-158.00R.

Bjelkhagen, Hans: *See—*
Abramson, Nils; and Bjelkhagen, Hans, 4,120,559, Cl. 350-3.600.

Blackband, Trevor William, to Sterling-Winthrop Group Limited. Reciprocating pumps for dispensing pastes, liquids and other substances. 4,120,619, Cl. 417-511.000.

Blair, Thomas O. Tubular loop forming tool for sewing machines. 4,120,253, Cl. 112-151.000.

Blakeslee, Edward A.: *See—*
Schoeneberger, Ernest A.; and Blakeslee, Edward A., 4,120,137, Cl. 56-226.000.

Blanton, Bobby D.: *See—*
Bileski, Thomas; Crawford, Joe W.; Blanton, Bobby D.; Johnson, Carl N.; Garcia, Felix; Orcutt, John W.; Shepherd, Glen C.; and Oursler, James A., 4,121,073, Cl. 200-83.00P.

Blench, Michael: *See—*
Venton, Peter Charles; Blench, Michael; Sutherland, Anthony Keith; and Hodges, Kenneth James Hamer, 4,121,286, Cl. 364-200.000.

Blink, Robert O.; and Lutzke, William C., to Mitchell Manufacturing Company. Folding table equipped with improved latch mechanism that holds table top sections coplanar and prevents accidental injury during unfolding. 4,120,249, Cl. 108-113.000.

Bliudnikas, Kestutis E., to Alden Research Foundation. Facsimile recording stylus. 4,121,225, Cl. 346-139.00C.

Blomberg, James K., to Popper's Choice Company, The. Corn popper. 4,120,236, Cl. 99-323.900.

Blossey, Daniel F., to Xerox Corporation. Synchronous helical scan-helical record magnetic imaging. 4,121,261, Cl. 358-301.000.

Blount, David H. Process for the production of halosilicon acids and organic silicon acid compounds and resinous products. 4,120,937, Cl. 423-325.000.

Blum, Helmut; and Worms, Karl-Heinz, to Henkel Kommanditgesellschaft auf Aktien. Diphosphonoalkane carboxylic acids, process of preparation and methods of use. 4,120,890, Cl. 260-502.40P.

Blumbergs, John H.: *See—*
Erickson, Clifford A.; Finley, Joseph H.; Blumbergs, John H.; and Scholer, Fred R., 4,120,651, Cl. 8-111.000.
Scholer, Fred R.; and Blumbergs, John H., 4,120,652, Cl. 8-111.000.

Blunier, Dennis L.: *See—*
Roley, Robert D.; Haslett, Glenn M.; and Blunier, Dennis L., 4,120,537, Cl. 305-14.000.

BMR Security Products Corp.: *See—*
Walters, Russell W., 4,120,183, Cl. 70-159.000.

Bober, Peter: *See—*
Krause, Walter; Bober, Peter; and Haas, Eckhard, 4,120,273, Cl. 123-122.00G.

BOC Limited: *See—*
English, James, 4,121,097, Cl. 250-202.000.

Bockno, Gregory C., to Avtex Fibers Inc. Crimped, high-strength rayon yarn and method for its preparation. 4,121,012, Cl. 428-369.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Braun, Klaus Joachim, 4,120,200, Cl. 73-355.00R.

Bodor, Nicolae S., to Interx Research Corporation. Labile quaternary ammonium salts useful in binding bile acids in warm-blooded animals. 4,120,959, Cl. 424-238.000.

Boehringer Mannheim GmbH: *See—*
Kampe, Wolfgang; Senn, Martin; Thiel, Max; Bartsch, Wolfgang; and Dietmann, Karl, 4,120,963, Cl. 424-256.000.

Boeing Company, The: *See—*
Devlieg, Garrett Howard, 4,120,540, Cl. 303-117.000.
Downey, Thomas James; Turnbull, Peter Dennis; and Gayther, James Walter, 4,121,194, Cl. 340-27.00R.

Fadden, Delmar McLean; Habbestad, Alvin Richard; and Veitengruber, James Edwin, 4,121,246, Cl. 358-103.000.
Sindt, Melvin R., 4,120,712, Cl. 156-71.000.
Wagner, David Lee, 4,120,367, Cl. 173-137.000.
Whitener, Philip Charles, 4,120,470, Cl. 244-213.000.

Bogachenko, Alexei Georgievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Stupak, Leonid Mikhailovich; Baglai, Viktor Mikhailovich; Bogachenko, Alexei Georgievich; Kazakov, Sergei Sergeevich; and Tsykulenko, Anatoly Konstantinovich, 4,120,695, Cl. 75-10.00C.

Boggs, Daniel R.: *See—*
Brown, Richard I.; and Boggs, Daniel R., 4,120,449, Cl. 233-23.00R.

Bohnhoff, Alan Earl, to Lanier Business Products, Inc. Touch button switch for dictation handset. 4,121,060, Cl. 179-100.1DR.

Bolanos, Jaime A. Guitar with keyboard plucking means. 4,120,227, Cl. 84-320.000.

Boliden Aktiebolag: *See—*
Mioen, Thomas K., 4,120,934, Cl. 423-18.000.

Bollinger, Ralph Louis, Jr.: *See—*
Baird, William Chalmers, Jr.; Bearden, Roby, Jr.; and Bollinger, Ralph Louis, Jr., 4,120,779, Cl. 208-108.000.

Bollman, James E.: *See—*
Mailloux, Louis D.; and Bollman, James E., 4,120,580, Cl. 355-14.000.

Bolth, Franklin Anderson, to Minerec Corporation. Preparation of chlorine-substituted chloroformates. 4,120,888, Cl. 260-463.000.

Bolton, Theodore S.: *See—*
Whitwell, Robert J.; and Bolton, Theodore S., 4,120,170, Cl. 62-91.000.

Bond, William L. Universal drive shaft service kit. 4,120,082, Cl. 29-254.000.

Bondavalli, Francesco: *See—*
Longobardi, Mario; Schenone, Pietro; and Bondavalli, Francesco, 4,120,857, Cl. 260-293.540.

Bonet, Robert Andre, to W. R. Grace & Co. Method of applying printed labels to flexible envelopes using corona discharge treatment. 4,120,716, Cl. 156-272.000.

Bongartz, Paul: *See—*
Haag, Franz; and Bongartz, Paul, 4,120,674, Cl. 55-302.000.

Boos, Charles John; Hausler, Elwood Benjamin; Hirsch, James Arthur; Kasprzyk, Martin Richard; and Smith, Elmer Gene, to Carborundum Company, The. Fuel igniter comprising a novel silicon carbide composition and process for preparing the composition. 4,120,827, Cl. 252-512.000.

Boots Company Limited, The: *See—*
Bristow, Norman W.; Macey, Peter E.; Nichol, Kenneth J.; and Sim, Malcolm F., 4,120,960, Cl. 424-250.000.

Boram, Frank. Hand tools for dispensing particulate matter. 4,120,428, Cl. 222-201.000.

Borden, Inc.: *See—*
Warneke, William Carl, 4,120,940, Cl. 423-490.000.

Borg, Arthur C.; and Zletz, Alex, to Standard Oil Company (Indiana). Method of continuous casting tellurium containing steels. 4,120,344, Cl. 164-73.000.

Borg-Warner Corporation: *See—*
Kimpel, Francis Alfred, 4,120,173, Cl. 62-181.000.
Showalter, Dan Joseph, 4,120,211, Cl. 74-473.00R.

Borgato, Augusto. Device for estimated air navigation, obtained through the combination of various measuring and calculating instruments. 4,120,091, Cl. 33-15.00B.

Borlinghaus, Arthur, to Bebrueder Ahle. Double truncoconical spring of wire with circular cross section. 4,120,489, Cl. 267-61.00R.

Bormann, Gerhard; and Berthold, Richard, to Sandoz Ltd. Octahydro-1,4-diazepino[1,7-b]isoquinolines. 4,120,965, Cl. 424-258.000.

Borner, Alfred. Vegetable and fruit-slicing utensils. 4,120,089, Cl. 30-278.000.

Boschet, Vittorino, to Grafosol S.p.A. Matrix supporting devices in electrostatic development apparatus. 4,120,263, Cl. 118-657.000.

Bosse, Frank, to Windmoller & Holscher. Apparatus for making tapes. 4,120,223, Cl. 83-425.300.

Bosson, Jorgen; and Cragfors, Gunnar, to Asea Aktiebolag. Weighing equipment. 4,120,370, Cl. 177-185.000.

Bottum, Edward W. Refrigerant charged solar water heating structure and system. 4,120,289, Cl. 126-271.000.

Bouder, Paul C., to Etablissements Poutrait-Morin S.A. Hand bicycle pump with pressure preselection and display means. 4,120,614, Cl. 417-63.000.

Bourassa, Joseph R.; and Lopez, Manuel, to Parker-Hannifin Corporation. Vehicle rear view mirror mounting. 4,120,476, Cl. 248-486.000.

Bovender, Franz: *See—*
Kloker, Werner; Bovender, Franz; Gromping, Franz; Goerden, Leonhard; and Niesel, Harald, 4,120,923, Cl. 264-45.300.

Bowen, Leon O., Jr.; and McVean, Michael T., to Rangaire Corporation. Venting and recirculating vent kitchen hood. 4,120,290, Cl. 126-299.00D.

Bowles, Romald E. Hydro-fluidic temperature sensor and control system. 4,120,322, Cl. 137-842.000.

Boyles, Tonnie M.; and Hunter, Hubert E., to Taylor Machine Works, Inc. Air cleaner. 4,120,675, Cl. 55-431.000.

Braddon, George Dayman, Sr., to Mobil Oil Corporation. Packaging support structure. 4,120,398, Cl. 206-408.000.

Braitinger, Helmut: *See—*
Schneider, Franz; Braitinger, Helmut; and Schumann, Burkhard, 4,120,185, Cl. 72-24.000.

Brantl, Victor; and Seeger, Wolfgang. Hand operated device for producing tobacco articles low in noxious substances. 4,120,309, Cl. 131-170.00R.

Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; and Snyder, David E., to Textron, Inc. Helicopter blade structure. 4,120,610, Cl. 416-226.000.

Brattesani, Donald N., to Dow Chemical Company, The. Use of copper halide catalysts and certain epoxy compounds to oxidize nitro-substituted Schiff bases to benzoxazoles. 4,120,862, Cl. 260-307.00D.

Braun, Klaus Joachim, to Bodenseewerk Perkin-Elmer & Co., GmbH. Method and device for pyrometric temperature measurements. 4,120,200, Cl. 73-355.00R.

Brecht, William Buttfield. Disk tracking and support apparatus. 4,120,504, Cl. 274-23.00A.

Breda, Frederic; and Jonville, Pierre, to Battelle Memorial Institute. Hydrogen transfer by metal hydride between aqueous medium and organic compound. 4,120,763, Cl. 204-73.00R.

Brehm, Gustav, to Heberlein Maschinenfabrik AG. Device for friction false-twisting of textile yarns of synthetic material. 4,120,144, Cl. 57-77.400.

Breitschaft, Siegfried; and Holtermann, Rolf, to Hoechst Aktiengesellschaft. Process for crystallizing and drying polyethylene terephthalate and apparatus to carry out said process. 4,120,849, Cl. 528-502.000.

Brelen, Hans Erik Osborn: *See—*
Otteblad, Sven Ivar Arne; Brelen, Hans Erik Osborn; Wistrand, Per Folke Magnus; and Samuelson, Svante Ragnar, 4,120,387, Cl. 192-3.00S.

Brematex S.p.A.: *See—*
Micheletti, Fabrizio, 4,120,177, Cl. 66-40.000.
Micheletti, Fabrizio, 4,120,179, Cl. 66-145.00R.

Bremer, Noel J.; White, James F.; and Milberger, Ernest C., to Standard Oil Company. Preparation of maleic anhydride from four-carbon hydrocarbons. 4,120,876, Cl. 260-346.750.

Breuer Electric Manufacturing Company: *See—*
Dwyer, Niles M.; and Rasins, Janis A., 4,120,616, Cl. 417-373.000.

Bridges, Robert M., to Bendix Corporation, The. Collet type cylinder separation device. 4,120,519, Cl. 285-3.000.

Bridgestone Tire Company Limited: *See—*
Soma, Akiro; Kawashima, Haruro; Yamauchi, Makoto; and Tanaka, Shoji, 4,120,337, Cl. 152-353.00R.

Briggs, Peter James: *See—*
Ockwell, Malcolm Charles; McLeod, Patrick Hugh; and Briggs, Peter James, 4,120,715, Cl. 156-252.000.

Brinkman, Willem, to Holec N.V. Pump device for supplying fuel to a combustion engine. 4,120,617, Cl. 417-410.000.

Brissette, William P.: *See—*
Epstein, James; and Brissette, William P., 4,121,020, Cl. 429-162.000.

Bristow, Norman W.; Macey, Peter E.; Nichol, Kenneth J.; and Sim, Malcolm F., to Boots Company Limited, The. Therapeutic agents. 4,120,960, Cl. 424-250.000.

British Steel Corporation: *See—*
Kirkwood, Philip R.; and Clark, Allan, 4,120,440, Cl. 228-231.000.

Broach, Ronald. Illuminated decorative tables. 4,120,248, Cl. 108-23.000.

Broacha, Firoze H.: *See—*
Sivachenko, Eugene W.; Broacha, Firoze H.; and Larkin, Artemas M., 4,120,065, Cl. 14-6.000.

Brockett, Bruce W.: *See—*
Miller, Robert E.; and Brockett, Bruce W., 4,121,013, Cl. 428-411.000.

Brogdex Company: *See—*
Bice, John R.; and Lewis, Philip J., 4,120,970, Cl. 424-270.000.

Brooks, Fred A., Jr., to Exxon Production Research Company. Cement monitoring method. 4,120,166, Cl. 405-225.000.

Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; Neidermyer, Robert W.; and Crittendon, Charles E., to Uniroyal, Inc.; and Uniroyal Ltd. 2-(5-Phenyl-1,3,4-thiadiazol-2-yl)benzoic acid. 4,120,861, Cl. 260-302.00D.

Brown, John S.: *See—*
Hillard, Thomas Gerald, 4,120,510, Cl. 280-87.04A.

Brown, John Steven; and Hillard, Thomas Gerald. Wheeled skateboards. 4,120,508, Cl. 280-11.280.

Brown, Kenard D. Automatic pump for deep wells. 4,120,612, Cl. 417-53.000.

Brown, Ray D.: *See—*
Oloff, Clarence M.; Karl, Alva A.; Wolff, Walter M.; Halbrook, Lloyd W.; Brown, Ray D.; and Dickey, Raymond G., 4,120,266, Cl. 119-103.000.

Brown, Richard I.; and Boggs, Daniel R., to Baxter Travenol Laboratories, Inc. Centrifugal processing apparatus using tube drive. 4,120,449, Cl. 233-23.00R.

Brown & Sharpe Manufacturing Company: *See—*
Headen, William E., 4,120,538, Cl. 308-6.00C.

Brown, Thomas Henry; Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, to Smith Kline & French Laboratories Limited. Heterocyclic-methylthioethyl-dithiocarbamates and isothioureas. 4,120,966, Cl. 424-263.000.

Brown, Thomas Henry; Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, to Smith Kline & French Laboratories Limited. Imidazolylmethylthio-ethyl isothiourea compounds. 4,120,972, Cl. 424-273.00R.

Bruhn, Esben: *See—*
Jensen, Finn Ulrik Hansen; Nielsen, Per Drengsgaard; and Bruhn, Esben, 4,120,713, Cl. 156-72.000.

Brunet, Maurice: *See—*
Habermann, Helmut; Brunet, Maurice; and Joly, Pierre, 4,121,143, Cl. 318-629.000.
Bruttig, Stephen P. Method and apparatus for determination of dissociation of oxygen from blood. 4,120,658, Cl. 23-230.00B.
Brychta, Katharyn M.: *See—*
Bapatla, Krishna M.; and Brychta, Katharyn M., 4,120,949, Cl. 424-80.000.
Bschorr, Oskar, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Wide-band vibration damper. 4,120,382, Cl. 188-1.00B.
Buchholz, Alexander: *See—*
Stascavage, John A.; Rawls, William W.; and Buchholz, Alexander, 4,120,340, Cl. 160-133.000.
Buck, Elwood W., Jr., to D G Shelter Products Company. Device for opening, closing and latching a vent closure member. 4,120,524, Cl. 292-263.000.
Buckley, Janette A.: *See—*
French, John Barry; Reid, Neil M.; and Buckley, Janette A., 4,121,099, Cl. 250-296.000.
Budker, Gersh Itskovich: *See—*
Auslender, Vadim Leonidovich; Budker, Gersh Itskovich; Glagolev, Georgy Borisovich; Livshits, Anatoly Alexandrovich; Perepelkin, Vitaly Petrovich; Polyakov, Vladimir Arkhipovich; Chepel, Lev Vladimirovich; Chertok, Ilya Lvovich; and Cheskidov, Vladimir Georgievich, 4,121,086, Cl. 219-121.0EM.
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Sie, Swan T.; and Bukkems, Franciscus H. J., 4,120,781, Cl. 28-251.00R.
Bukowsky, Michael P. Telephone bracket for holding advertising and writing instrument. 4,120,107, Cl. 40-336.000.
Bunch, Carroll S.; Perry, Jerry L.; and Marcucci, Robert L., to E-Systems, Inc. Direction finder antenna and system. 4,121,216, Cl. 343-113.00R.
Bunker Ramo Corporation: *See—*
Weathers, Paul, 4,121,201, Cl. 340-524.000.
Bunyan, Thomas Walter, to Pilgrim Engineering Developments Limited. Self-straining bolts. 4,120,230, Cl. 85-1.00T.
Burch, Delwin L., to Raymond Lee Organization, Inc., The, a part interest. Gun rack for a vehicle. 4,120,436, Cl. 224-42.10C.
Bureau, Harvey Lee. Sheet metal tool chest support with sliding work shelf. 4,120,549, Cl. 312-253.000.
Burkhart, William H. Method of cooking food. 4,120,981, Cl. 426-231.000.
Burkholder, Clinton M. Light reflective signaling and warning device. 4,120,561, Cl. 350-99.000.
Burn, Ian, to Sprague Electric Company. Method for making a glass-reacted-ceramic. 4,120,677, Cl. 65-18.000.
Burr-Brown Research Corporation: *See—*
Stitt, Robert M., 4,121,168, Cl. 330-265.000.
Burroughs Corporation: *See—*
Maloney, Thomas C., 4,121,129, Cl. 313-221.000.
Burton, Robert S., III: *See—*
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Akushsky, Izrail Yakovlevich; Burtsev, Vladimir Mikhailovich; Duisenov, Bulat Esenovich; Pak, Ivan Timofeevich; and Zhautykov, Anurbek Orymbekovich, 4,121,298, Cl. 364-746.000.
Bush, Louis W.; and Cumming, Allen R., to Westinghouse Electric Corp. Radar altimeter simulator. 4,121,213, Cl. 343-17.700.
Butler, Carl D., to Royal Textile Mills, Inc. Cushioned protector. 4,120,052, Cl. 2-16.000.
Butterfield, James L.: *See—*
Wright, George C.; and Butterfield, James L., 4,121,035, Cl. 542-417.000.
Wright, George C.; and Butterfield, James L., 4,121,036, Cl. 542-417.000.
Byrum, Bernard W., Jr.; Ernsthausen, Roger E.; and Fein, Michael E., to Owens-Illinois, Inc. Gas discharge dielectric containing a source of boron, gallium, indium, or thallium. 4,120,808, Cl. 252-63.200.
Caglieto, Germano, to Marxer, S.p.A. Method of and feed for farming meat poultry especially chickens and guinea fowl. 4,120,977, Cl. 424-285.000.
Cahoy, Roger P., to Gulf Oil Corporation. 2-Acylaminothiazol-4-ylacetamides as post-emergent selective herbicides. 4,120,690, Cl. 71-90.000.
Caillaud, Alain: *See—*
Scillieri, Antoine; and Caillaud, Alain, 4,121,220, Cl. 343-768.000.
Calgon Corporation: *See—*
Raman, Manjeri S., 4,120,815, Cl. 252-341.000.
Calhoun, Fredrick L., to Industrial Dynamics Company, Ltd. Caustic detection system. 4,121,103, Cl. 250-343.000.
Calspan Corporation: *See—*
DePalma, Vito A.; and King, Raymond W., 4,120,585, Cl. 356-71.000.
Campbell, Dudley H.; and Overton, Arthur W., to Stackpole Components Company. Electric switch. 4,121,071, Cl. 200-67.00G.
Campos, Adolph J.; and Michele, Joseph V., to Campos Associates. Rotary internal combustion engine. 4,120,620, Cl. 418-61.00A.
Campos Associates: *See—*
Campos, Adolph J.; and Michele, Joseph V., 4,120,620, Cl. 418-61.00A.
Canadian General Electric Company, Limited: *See—*
Sherburn, Raymond Robert, 4,120,550, Cl. 312-296.000.
Candlin, John Paton; Wilson, Keith Collier; and Pearce, Ronald, to Imperial Chemical Industries Limited. Transition metal composition. 4,121,030, Cl. 526-119.000.
Cannon, William N.; and Eizember, Richard F., to Eli Lilly and Company. Removal of nitrosating agents. 4,120,905, Cl. 260-646.000.
Canon Kabushiki Kaisha: *See—*
Sakaguchi, Keiichi; Komine, Yoshio; Ichiyanagi, Toshikazu; Shimazaki, Mamoru; and Hosoe, Kazuya, 4,120,571, Cl. 352-27.000.
Taguchi, Tatsuya; and Date, Nobuaki, 4,121,231, Cl. 354-38.000.
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Schampers, Paulus Philippus Maria; Carasso, Marino Giuseppe; and Klostermann, Frits Theodoor, 4,121,255, Cl. 358-223.000.
Carborundum Company, The: *See—*
Boos, Charles John; Hausler, Elwood Benjamin; Hirsch, James Arthur; Kasprzyk, Martin Richard; and Smith, Elmer Gene, 4,120,827, Cl. 252-512.000.
Myles, Thomas Aquinas, 4,120,641, Cl. 432-3.000.
Cardon, Bartley P., to Arizona Feeds. Method for the treatment of diarrhea in monogastric animals. 4,120,952, Cl. 424-180.000.
Carl Krasny & Associates, Inc.: *See—*
Kaplan, Irving Leonard, 4,120,243, Cl. 100-212.000.
Carman, Vincent E. Method for purifying a liquid by pressure distillation. 4,120,756, Cl. 203-11.000.
Carossino, Andre. Clamping device for a machine tool. 4,120,490, Cl. 269-94.000.
Carp, Ralph W.; Ang, Leoncio T.; Leadbetter, Laurence D.; and Cornell, Grant Arthur, to Bendix Corporation, The. Adaptive braking system with special control for slippery surfaces. 4,120,539, Cl. 503-103.000.
Carpenter, Leon G.: *See—*
Carrier, Lee A.; and Carpenter, Leon G., 4,120,445, Cl. 229-53.000.
Carrier Corporation: *See—*
Herb, Carl C.; and Rose, Robert A., 4,120,453, Cl. 236-49.000.
Hopkins, Donald J.; Salyers, John C.; and Goranson, Paul L., 4,120,415, Cl. 220-1.00T.
Whitwell, Robert J.; and Bolton, Theodore S., 4,120,170, Cl. 62-91.000.
Carrier, Lee A.; and Carpenter, Leon G., to Ludlow Corporation. Information-bearing article for conveying information which cannot be surreptitiously detected. 4,120,445, Cl. 229-53.000.
Carroll, Frank E., to Carroll Research, Inc. Building structure. 4,120,131, Cl. 52-310.000.
Carroll, Mark T.: *See—*
Weltman, Henry J.; Carroll, Mark T.; Halkias, John E.; Kaarlela, William T.; and Reynolds, Jack D., 4,121,157, Cl. 324-216.000.
Carroll Research, Inc.: *See—*
Carroll, Frank E., 4,120,131, Cl. 52-310.000.
Cars & Concepts, Inc.: *See—*
Chrysler, Richard R., 4,120,529, Cl. 296-137.00B.
Carter, Joseph M. Sanitary facility for pets. 4,120,264, Cl. 119-1.000.
Carter, Samuel E. Tree stand and seat. 4,120,379, Cl. 182-187.000.
Carter, Thomas P., Jr.: *See—*
Marchessault, Richard G.; Carter, Thomas P., Jr.; and Williams, Martin M., 4,121,028, Cl. 526-48.100.
Cascade Industries, Inc.: *See—*
West, Robert E., 4,120,126, Cl. 52-169.700.
Castellucci, Nicholas T., to PPG Industries, Inc. Method of providing corrosion resistance to metal surfaces. 4,120,996, Cl. 427-318.000.
Cataldo, Thomas R. Switch means for radio alarm device. 4,121,160, Cl. 340-321.000.
Caterpillar Tractor Co.: *See—*
Allen, Royce D.; and Easter, Rollen G., 4,120,511, Cl. 280-795.000.
Diemer, Donald P.; Hafele, Joseph C.; Hawkins, Robert H.; and Simmons, Gerald P., 4,121,085, Cl. 219-121.00L.
Goloff, Alexander; and Ballard, Charles E., 4,120,622, Cl. 418-142.000.
Hafele, Joseph C.; Richards, Thomas J.; and Wright, Paul L., 4,120,261, Cl. 118-630.000.
Lawrence, Dean M., 4,120,527, Cl. 296-28.00C.
Philipsen, R. Dale, 4,120,212, Cl. 74-476.000.
Roley, Robert D.; Haslett, Glenn M.; and Blunier, Dennis L., 4,120,537, Cl. 305-14.000.
Stepe, Visvaldis A., 4,120,105, Cl. 37-142.00R.
Vinton, David S., 4,120,515, Cl. 280-678.000.
Cavaler, Paul. Furniture spring assembly and method for manufacture thereof. 4,120,059, Cl. 5-256.000.
CBS Inc.: *See—*
Finch, Robert A., 4,120,226, Cl. 84-1.030.
Ceintrey, Marcel, to Screg Routes et Travaux Publics. Process for the preparation of a coating composition for roads, airports and industrial floorings. 4,120,832, Cl. 260-2.300.
Celanese Polymer Specialties Company: *See—*
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Centre de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie: *See—*
Wilmotte, Stephan Hubert; Nautet, Jean Adolphe; and Economopoulos, Marios, 4,120,455, Cl. 239-429.000.
Centronics Data Computer Corp.: *See—*
Howard, Robert, 4,120,594, Cl. 400-697.000.
Cerny, Arnost, to Adamovske strojirny, narodni podnik. Gripper mechanism. 4,120,492, Cl. 271-277.000.
CGR-MeV: *See—*
Azam, Guy; Bensussan, Andre; and Levaillant, Claude, 4,121,173, Cl. 331-9.000.
Chakrabarti, Paritosh Mohan, to GAF Corporation. Anti-static fabric softening compositions and processes for drying and softening textiles therewith. 4,121,009, Cl. 428-260.000.
Chambley, Phillip W.; and Norris, Alan H., to Champion International Corporation. Fluid self-twist spinning apparatus. 4,120,143, Cl. 57-34.0AT.
Champagne Machine Inc., The: *See—*
Bethurum, George M., 4,120,425, Cl. 222-146.00C.
Champion International Corporation: *See—*
Chambley, Phillip W.; and Norris, Alan H., 4,120,143, Cl. 57-34.0AT.
Tate, Dan C., 4,120,738, Cl. 106-288.00Q.
Champion Spark Plug Company: *See—*
Dulin, Francis H., 4,120,829, Cl. 252-516.000.
Knapp, Randy O., 4,120,733, Cl. 106-48.000.
Chamuel, Jacques R., to Charles Stark Draper Laboratory, Inc., The. Position readout device. 4,121,155, Cl. 324-207.000.
Channon Corporation: *See—*
Mama, Kelly D.; and Roller, Otto C., 4,120,342, Cl. 160-310.000.
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Behnke, Wallace Peery; Chapin, Robert Stuart; and Fierro, John Francis, 4,120,914, Cl. 260-857.0TW.
Chapman, Earle F.; and Ruskin, Bernard J. Articulated light fixture. 4,121,280, Cl. 362-418.000.
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Armor, Anthony F.; Barton, Sterling C.; Chari, Madabushi V.; Collings, Harold E.; and Turnbull, George W., 4,121,126, Cl. 310-59.000.
Charles, Edward David; and Charles, Edward H. Tree-climbing kit. 4,120,377, Cl. 182-3.000.
Charles, Edward H.: *See—*
Charles, Edward David; and Charles, Edward H., 4,120,377, Cl. 182-3.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Chamuel, Jacques R., 4,121,155, Cl. 324-207.000.
Hamilton, Dean Elwyn; Gaudreau, Marcel Pierre Joseph; and Wu, Alan Leo, 4,120,196, Cl. 73-104.000.
Chateau, Georges M.; and Falkner, Chester B., Jr., to Societe Nationale Elf Aquitaine (Production). Apparatus and method of connecting a flexible line to a subsea station. 4,120,171, Cl. 405-169.000.
Chateau, Georges M.; and Falkner, Chester B., Jr., to Societe Nationale Elf Aquitaine (Production). Subsea station. 4,120,362, Cl. 166-339.000.
Chaum, Erik. Multiple path configuration for a laser interferometer. 4,120,588, Cl. 356-106.0LR.
Chen, Catherine S. H.; Schwab, Frederick C.; and Sheppard, Edward W., to Mobil Oil Corporation. Waterflooding process employing anionic-nonionic copolymer. 4,120,801, Cl. 252-8.55D.
Chen, David Y.: *See—*
Welch, Stanley B.; Serrano, Juan de J.; and Chen, David Y., 4,121,204, Cl. 340-337.000.
Chen, Frank K., to Ultronic Systems Corporation. Automatic alternator for priority circuit. 4,121,285, Cl. 364-200.000.
Chen, Frank T., to Southern Pacific Communications Company (SPCC). Data transmission network interface unit. 4,121,217, Cl. 343-204.000.
Chenel, Pierre; and Moncheaux, Michel Jean, to Saint-Gobain Industries. Multiple pane windows with improved seals. 4,120,999, Cl. 428-34.000.
Cheng, William J.; and Guthrie, David B., to Petrolite Corporation. Copolymers of alpha-olefins and maleic anhydride reacted with amines in the presence of Lewis acids. 4,121,026, Cl. 526-15.000.
Chepel, Lev Vladimirovich: *See—*
Auslender, Vadim Leonidovich; Budker, Gersh Itskovich; Glagolev, Georgy Borisovich; Livshits, Anatoly Alexandrovich; Perepelkin, Vitaly Petrovich; Polyakov, Vladimir Arkhipovich; Chepel, Lev Vladimirovich; Chertok, Ilya Lvovich; and Cheskidov, Vladimir Georgievich, 4,121,086, Cl. 219-121.0EM.
Chertok, Ilya Lvovich: *See—*
Auslender, Vadim Leonidovich; Budker, Gersh Itskovich; Glagolev, Georgy Borisovich; Livshits, Anatoly Alexandrovich; Perepelkin, Vitaly Petrovich; Polyakov, Vladimir Arkhipovich; Chepel, Lev Vladimirovich; Chertok, Ilya Lvovich; and Cheskidov, Vladimir Georgievich, 4,121,086, Cl. 219-121.0EM.
Cheskidov, Vladimir Georgievich: *See—*
Auslender, Vadim Leonidovich; Budker, Gersh Itskovich; Glagolev, Georgy Borisovich; Livshits, Anatoly Alexandrovich; Perepelkin, Vitaly Petrovich; Polyakov, Vladimir Arkhipovich; Chepel, Lev Vladimirovich; Chertok, Ilya Lvovich; and Cheskidov, Vladimir Georgievich, 4,121,086, Cl. 219-121.0EM.
Chevron Research Company: *See—*
Anderson, Donald J., 4,120,357, Cl. 166-272.000.
Davidson, James Melvin, 4,120,911, Cl. 260-674.00A.
Chi, Henry K.; and Higgins, Alton L., to Monsanto Company. Process for polymerizing high nitrile ABS polyblends. 4,120,851, Cl. 260-880.00R.
Chiappetta, Ferdinand; Dykeman, Fred Edgar; and Turner, Paul Allen, to AMSTED Industries Incorporated. Lubricated plastic impregnated wire rope. 4,120,145, Cl. 57-149.000.
Chierici, Osvaldo F.; and Murphy, Richard F., to Holland Company. Coupler shank bearing arrangement for supporting railroad car couplers on coupler carriers. 4,120,404, Cl. 213-61.000.
Childs, Jerry D.; and Love, Roosevelt, to Halliburton Company. Oil well cementing process and composition. 4,120,736, Cl. 106-90.000.
Chinone, Naoki; Kawano, Toshihiro; and Nakajima, Hisao, to Hitachi, Ltd. Semiconductor injection laser. 4,121,179, Cl. 331-94.50H.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Morimoto, Tatsuo; Nakamura, Munekazu; Inooka, Masayoshi; and Yawata, Teizaburo, 4,120,780, Cl. 208-211.000.
Chojnacki, Dennis A.: *See—*
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Chou, Cheng-Chien; and Yee, Clifford Sau Leong, to Wallace Murray Corporation. Sheet metal fan. 4,120,609, Cl. 416-223.00R.
Choy, Kim L. Shopping cart braking apparatus. 4,120,384, Cl. 188-32.000.
Christian, John B.: *See—*
Tamborski, Christ; and Christian, John B., 4,120,863, Cl. 260-307.00D.
Christian, John Hunt; and Overacker, James Leroy, to International Business Machines Corporation. Production control apparatus. 4,120,629, Cl. 425-135.000.
Chrysler, Richard R., to Cars & Concepts, Inc. Removable roof panels for vehicles. 4,120,529, Cl. 296-137.00B.
Chu, Pochen, to Mobil Oil Corporation. Aromatization of ethane. 4,120,910, Cl. 260-673.000.
Ciba-Geigy AG: *See—*
Smith, Norman Alfred; and Kitzing, Rainer, 4,120,898, Cl. 260-561.00S.
Ciba-Geigy Corporation: *See—*
Agarwal, Suresh C.; and Koci, Zdenek, 4,120,648, Cl. 8-85.00R.
Lauton, Alain; and Berendt, Hans-Ulrich, 4,120,647, Cl. 8-17.000.
Spivack, John D.; and Luzzi, John J., 4,120,846, Cl. 260-45.85B.
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Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., to BASF Wyandotte Corporation. Compositions for souring and softening laundered textile materials, method of preparing the same, and stock solutions prepared therefrom. 4,120,799, Cl. 252-8.600.
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Cilag-Chemie A.G.: *See—*
Pluss, Kurt; and De Martin, Bruno Romano, 4,120,859, Cl. 260-294.80R.
Cincinnati Milacron Chemicals, Inc.: *See—*
Kugele, Thomas G., 4,120,845, Cl. 260-45.75S.
Cincinnati Milacron Inc.: *See—*
Morser, Alfred Harold; Gibson, Roy; Szekely, Paul; and Parker, Bruce Trayton, 4,121,142, Cl. 318-345.00C.
Cipkowski, Jerome T.: *See—*
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Citizen Watch Company Limited: *See—*
Murakami, Tomomi, 4,120,147, Cl. 58-50.00R.
City of Hope National Medical Center: *See—*
Tiep, Brian L., 4,120,300, Cl. 128-203.000.
Clampitt, Richard L.: *See—*
Threlkeld, Curtis B.; Hessert, James E.; and Clampitt, Richard L., 4,120,361, Cl. 166-294.000.
Clanan, Wayne N. Snap-on swing-away foot rest for wheel chairs. 4,120,532, Cl. 297-429.000.
Clarion Co., Ltd.: *See—*
Ushio, Yoji; Taketomi, Chiaki; and Asaga, Tutomu, 4,121,262, Cl. 360-13.000.
Clark, Allan: *See—*
Kirkwood, Philip R.; and Clark, Allan, 4,120,440, Cl. 228-231.000.
Clark, Dwight P.; and Wagner, William F., to Thiokol Corporation. Combined filter and incinerator. 4,120,792, Cl. 210-152.000.
Clark, Harold E. Pneumatic mattress with valved cylinders of variable diameter. 4,120,061, Cl. 5-350.000.
Clarke, John W., to Eli Lilly and Company. Refillable tablet package. 4,120,399, Cl. 206-474.000.
Clarke, Peter Alec: *See—*
Molins, Desmond Walter; Hinchcliffe, Dennis; and Clarke, Peter Alec, 4,120,391, Cl. 198-347.000.
Clauder, Otto; Kokosi, Jozsef; Szporny, Laszlo; and Karpati, Egon, to Richter Gedeon Vegyeszeti Gyar Rt. 14-Substituted vincanes. 4,120,858, Cl. 260-293.550.
Clemar Manufacturing Corporation: *See—*
Ruggles, Richard L., 4,121,114, Cl. 307-141.000.
Clements, George William; and Wenshau, Hugo, to Gustafson, Inc. Crosscut sampler for pneumatic conveying systems. 4,120,203, Cl. 73-422.00R.
Clymer, John C.: *See—*
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Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; and Jones, Duane T., 4,121,294, Cl. 364-571.000.
CMI Corporation: *See—*
Smith, Donald Wayne; Swisher, George W., Jr.; and Teel, Larry W., 4,120,106, Cl. 37-190.000.
Coach and Car Equipment Corporation: *See—*
Harder, Arthur J., Jr., 4,120,533, Cl. 297-451.000.
Coal Industry (Patents) Limited: *See—*
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Tomlin, Malcolm George, 4,120,164, Cl. 405-289.000.
Coale, Cecil R., Jr., to Texas Instruments Incorporated. Streak reduction system for FLIR display. 4,121,248, Cl. 358-113.000.
Coaltex, Inc.: *See—*
Delli-Gatti, Frank A., Jr., 4,120,535, Cl. 299-18.000.

Codling, Daryl O., to Colt Industries Operating Corp. Tamper proof idle adjusting screws. 4,120,918, Cl. 261-41.00D.
Coffin, Lamar D.; and Opie, William R., to Amax Inc. Segregation-separation of copper from nickel in copper-nickel sulfide concentrates. 4,120,697, Cl. 75-72.000.
Coker, William P.; and Lane, Robert E., Jr., to Dow Chemical Company, The. Oxidation of olefins to oxirane compounds with periodate compounds. 4,120,877, Cl. 260-348.230.
Colborn, Joseph G.: *See—*
Allen, Royce; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,121,290, Cl. 364-565.000.
Colby, Robert D. Disposable bowling shoe. 4,120,103, Cl. 36-97.000.
Colgate-Palmolive Company: *See—*
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Collings, Harold E.: *See—*
Armor, Anthony F.; Barton, Sterling C.; Chari, Madabushi V.; Collings, Harold E.; and Turnbull, George W., 4,121,126, Cl. 310-59.000.
Collins, Michael H.; and Le Hardy Guiton, Jeremy D., to Shell Internationale Research Maatschappij B.V. Method of producing a barrier in a thermally insulated container. 4,120,418, Cl. 220-444.000.
Colmenero, Gustavo T. Swimming pool alarm system. 4,121,200, Cl. 340-539.000.
Colombani, Bruno; and Pacciarini, Antonio, to Industrie Pirelli S.p.A. Apparatus for setting bead rings on the carcass of a vehicle tire. 4,120,714, Cl. 156-131.000.
Colt Industries Operating Corp.: *See—*
Codling, Daryl O., 4,120,918, Cl. 261-41.00D.
Columbia Chase Corporation: *See—*
Barrett, Walter H., 4,120,288, Cl. 126-271.000.
Combustion Engineering, Inc.: *See—*
Prestridge, Floyd Leon, 4,120,769, Cl. 204-186.000.
Combustion Unlimited Incorporated: *See—*
Straitz, John F., III, 4,120,638, Cl. 431-15.000.
Compagnie General d'Electricite S.A.: *See—*
Fally, Jacques, 4,120,663, Cl. 422-198.000.
Compagnie Generale d'Electricite: *See—*
Dick, Richard; Feuillade, Georges; Gadessaud, Robert; and Nicolas, Louis, 4,121,022, Cl. 429-204.000.
Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris": *See—*
Lamy, Jacques Edouard, 4,120,168, Cl. 405-170.000.
Compagnie Nationale du Rhone: *See—*
Megnint, Lucien, 4,120,602, Cl. 415-1.000.
Computer Identics Corporation: *See—*
Gabeler, Stephen Chester, 4,121,121, Cl. 307-358.000.
Conrow, Ransom Brown; and Bernstein, Seymour, to American Cyanamid Company. Sulfo-m-phenylenebis(sulfonylimino)diisophthalic acid salts. 4,120,894, Cl. 260-507.00R.
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Container Corporation of America: *See—*
Gardner, Jeffrey M.; and Beck, Robert E., 4,120,443, Cl. 229-42.000.
Skaggs, Boyd T., 4,120,442, Cl. 229-15.000.
Continental Group, Inc., The: *See—*
Mascia, Carmen T.; and Hasegawa, Gary K., 4,120,396, Cl. 206-151.000.
Roth, Donald J., 4,120,932, Cl. 264-292.000.
Continental Oil Company: *See—*
Starks, Charles M.; Jackson, Robert G.; Porchey, David V.; and Royer, Dennis J., 4,120,881, Cl. 260-449.60R.
Control Data Corporation: *See—*
Olson, Arthur Barnhart, 4,121,156, Cl. 324-210.000.
Control Devices, Incorporated: *See—*
Krechel, Joseph L.; and Purvis, Michael J., 4,120,319, Cl. 137-583.000.
Cooper France S. A.: *See—*
Villa-Massone, Rene; and Divaret, Michel, 4,120,303, Cl. 128-330.000.
Cooper Laboratories, Inc.: *See—*
Bapatla, Krishna M.; and Brychta, Katharyn M., 4,120,949, Cl. 424-80.000.
Diamond, Julius; and Wohl, Ronald A., 4,120,860, Cl. 260-296.00R.
Diamond, Julius, 4,120,947, Cl. 424-45.000.
Coplin, John Frederick, to Rolls-Royce Limited. Rotor blade for a gas turbine engine. 4,120,607, Cl. 416-2.000.
Corkhill, David P., to Standard Oil Company (Indiana). Seismic data tape recording system. 4,121,191, Cl. 340-15.5DP.
Cornelius Company, The: *See—*
Zygiel, Alfred E., deceased, 4,120,424, Cl. 222-133.000.
Cornell, Grant Arthur: *See—*
Carp, Ralph W.; Ang, Leoncio T.; Leadbetter, Laurence D.; and Cornell, Grant Arthur, 4,120,539, Cl. 503-103.000.
Cornell Iron Works, Inc.: *See—*
Stascavage, John A.; Rawls, William W.; and Buchholz, Alexander, 4,120,340, Cl. 160-133.000.
Cornell Research Foundation, Inc.: *See—*
Bittenson, Steven N.; and Houston, Paul L., 4,120,767, Cl. 204-158.00R.
Correct Count Company Inc.: *See—*
Zohn, Robert Allen; and Zohn, Carole, 4,120,371, Cl. 177-262.000.
Cortex Research Corporation: *See—*
Fosslien, Egil, 4,120,662, Cl. 73-425.600.
Cosma, Earl Jesse; and Tuley, William Bayard, to Ralston Purina Company. Brine mixing apparatus. 4,121,300, Cl. 366-251.000.
Coste, Jean-Francois: *See—*
de Lautrec, Jacques; and Coste, Jean-Francois, 4,120,816, Cl. 252-361.000.
Cotsworth, John L.; and Ilich, Daniel F. Clip for clinching a heat exchange conduit with a solar heat absorber. 4,120,284, Cl. 126-270.000.
Cougoul, Pierre; Saunier, Marc; and Tranchant, Jean Lucien, to Societe Nationale des Poudres et Explosifs. Process for extrusion of pyrotechnical compositions. 4,120,920, Cl. 264-3.00R.
Covington, Cecil E.: *See—*
Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; and Snyder, David E., 4,120,610, Cl. 416-226.000.
Cowe, Alan B.; Kubinak, Ronald A.; Pick, George G.; Flanagan, Richard M.; and Szabo, Francis S. Photocomposition machine with keyboard entry and CRT display. 4,121,228, Cl. 354-7.000.
Cox, Allen Ronald; Hatchett, Michael Robert; and Rigbey, Leonard John, to International Business Machines Corporation. Stabilizing backing plate for a flexible disk store. 4,120,505, Cl. 274-39.00R.
Cox, Derek Michael. Fluid seal. 4,120,482, Cl. 251-306.000.
Cragfors, Gunnar: *See—*
Bosson, Jorgen; and Cragfors, Gunnar, 4,120,370, Cl. 177-185.000.
Crambes, Michel; Grangette, Henri; Pivette, Pierre; and Haicour, Philippe, to Societe Nationale Elf Aquitaine. Method for the inhibition of corrosion of ferrous metals in an aqueous medium. 4,120,655, Cl. 422-15.000.
Cramer, John J.: *See—*
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,120,799, Cl. 252-8.600.
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,120,802, Cl. 252-8.750.
Cramer, John Joseph: *See—*
Kappler, Frank Robert; Killian, Roma Jean; and Cramer, John Joseph, 4,120,650, Cl. 8-109.000.
Crandell, Walter R., to Fast Heat Element Manufacturing Co. Method of making electrically heated nozzle. 4,120,086, Cl. 29-611.000.
Crandon, Harry D.: *See—*
Laurin, Bernard L.; Rotenberg, Don H.; and Crandon, Harry D., 4,120,992, Cl. 427-164.000.
Crawford, Joe W.: *See—*
Bileski, Thomas; Crawford, Joe W.; Blanton, Bobby D.; Johnson, Carl N.; Garcia, Felix; Orcutt, John W.; Shepherd, Glen C.; and Oursler, James A., 4,121,073, Cl. 200-83.00P.
Credelca A.G.: *See—*
Rodgers, Franklin Bartlett; and Grassl, Herbert, 4,120,133, Cl. 52-745.000.
Credelle, Thomas Lloyd, to RCA Corporation. System for achieving image uniformity in display devices. 4,121,137, Cl. 315-366.000.
Crescenzi, Donald C., to Stewart-Warner Corporation. Dual wheel caster. 4,120,071, Cl. 16-37.000.
Crisafulli, George A., to Gould Inc. Apparatus for detection of synchronism by means of vector difference measurement. 4,121,111, Cl. 307-87.000.
Crittendon, Charles E.: *See—*
Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; Neidermyer, Robert W.; and Crittendon, Charles E., 4,120,861, Cl. 260-302.00D.
Crolius, Richard L., to United States of America, Air Force. Explosively driven plasma current generator. 4,121,123, Cl. 310-10.000.
Cromemco Inc.: *See—*
Walker, James Terrell, 4,121,283, Cl. 364-200.000.
Cropper, Wendell P., to Standard Oil Company (Indiana). Sulfur analysis. 4,120,659, Cl. 23-230.0PC.
Cross, Raymond Peter, to Pilkington Brothers Limited. Method of heat treating glass in a fluidized bed and apparatus therefore. 4,120,680, Cl. 65-114.000.
Cross, Raymond Peter; and Thomas, Derek Edward, to Pilkington Brothers Limited. Method of thermal treatment of glass in a fluidized bed. 4,120,681, Cl. 65-114.000.
Crucible Inc: *See—*
Strange, Robert R.; and Zimmer, James M., 4,120,345, Cl. 164-92.000.
Crutchfield, Marvin M.; and Lannert, Kent P., to Monsanto Company. Diesters of 6-cyano-2,2-tetrahydropyrandicarboxylates. 4,120,874, Cl. 260-345.80R.
CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Dogliotti, Renato; Mazzei, Umberto; and Mengali, Umberto, 4,121,165, Cl. 329-50.000.
CSR Limited: *See—*
Gotthard, Detre, 4,120,745, Cl. 159-27.00B.
Culbertson, Harry M., to Monsanto Company. High ortho etherified resole resins. 4,120,847, Cl. 528-140.000.
Cullis, Herbert M., to Baxter Travenol Laboratories, Inc. Centrifugal liquid processing apparatus with automatically positioned collection port. 4,120,448, Cl. 233-22.000.

Cumming, Allen R.: *See—*
Bush, Louis W.; and Cumming, Allen R., 4,121,213, Cl. 343-17.700.
Cuniberti, Mario: *See—*
Mallory, James D.; Fleck, John F.; and Cuniberti, Mario, 4,120,684, Cl. 65-302.000.
Cure, Omer P., to Electro-Nite Co. Device for collecting samples of molten metals. 4,120,204, Cl. 73-425.40R.
Curran, Roger, to Bangor Punta Operations, Inc. Gun with intermediate support for barrel thereof. 4,120,276, Cl. 124-85.000.
Cusack, Joseph Martin, to RCA Corporation. Method and apparatus for determining a signal of uniform period. 4,121,211, Cl. 343-14.000.
Cutler-Hammer, Inc.: *See—*
Hults, Harold W., 4,121,072, Cl. 200-67.00A.
Long, Eric L., 4,121,069, Cl. 200-67.00A.
Woodard, Tony O., 4,121,065, Cl. 200-42.00T.
Cvetan, Joseph. Post support. 4,120,125, Cl. 52-156.000.
Czaja, Robert F.; and Grabowski, Edward J. J., to Merck & Co., Inc. 7-(Amidinothio)acetamido-7-methoxy cephalosporins. 4,121,041, Cl. 544-21.000.
Czuba, Leonard J.: *See—*
Althuis, Thomas H.; Czuba, Leonard J.; Hess, Hans-Jurgen E.; and Kadin, Saul B., 4,120,962, Cl. 424-251.000.
D G Shelter Products Company: *See—*
Buck, Elwood W., Jr., 4,120,524, Cl. 292-263.000.
Dahlberg, Harry R.: *See—*
Fountain, Gerald F.; Veloz, Jaime; and Dahlberg, Harry R., 4,120,935, Cl. 423-41.000.
Dahm, Manfred: *See—*
Baatz, Gunther; Dahm, Manfred; and Triebeneck, Kurt, 4,120,518, Cl. 282-27.500.
Daicel Ltd.: *See—*
Harada, Yuichi; Ishihara, Tetsuo; and Takahashi, Shigeyuki, 4,121,006, Cl. 428-172.000.
Daimler-Benz Aktiengesellschaft: *See—*
von Koch, Arwed, 4,120,481, Cl. 251-129.000.
Dalrymple, Earl E.: *See—*
Winkler, Edward D.; and Dalrymple, Earl E., 4,120,552, Cl. 339-90.00R.
Daniels, Raymond Alex; Gibson, David Kent; Kummli, Paul; Snell, Spencer Allan; and Ulrich, Michael Henry, to International Business Machines Corporation. Continuously variable reduction scanning optics drive. 4,120,578, Cl. 355-8.000.
Danjo, Hiroyuki: *See—*
Iizuka, Motohiko; Danjo, Hiroyuki; Ikeda, Kazuo; and Yoshimura, Masatoshi, 4,120,488, Cl. 266-281.000.
DAS Design Corporation: *See—*
Seltzer, Daniel A., 4,121,149, Cl. 323-19.000.
Data Recording Instrument Co., Ltd.: *See—*
Derc, Roman, 4,121,265, Cl. 360-78.000.
Date, Nobuaki: *See—*
Taguchi, Tatsuya; and Date, Nobuaki, 4,121,231, Cl. 354-38.000.
David, Guy Albert Jules: *See—*
Leal, Jean-Claude; Vannetzel, Henri; Grima, Jean-Claude; and David, Guy Albert Jules, 4,121,287, Cl. 364-461.000.
Davidson, James Melvin, to Chevron Research Company. Method for concentrating a slurry containing a solid particulate component. 4,120,911, Cl. 260-674.00A.
Davis, Elisha C. Automatic detachable charging head for pressure tank. 4,120,332, Cl. 141-197.000.
Davis, Rock. Power generation system. 4,120,160, Cl. 60-670.000.
Davis, Thomas E. Aquarium divider. 4,120,265, Cl. 119-5.000.
De Francisci Machine Corporation: *See—*
De Francisci, Leonard, 4,121,301, Cl. 99-353.000.
Deb, Satyendra Kumar; and Witzke, Horst, to Optel Corporation. Electrochromic cell with protective overcoat layer. 4,120,568, Cl. 350-357.000.
De Borst, Cornelis: *See—*
Barendsz, Anton Willem; De Borst, Cornelis; Post, Alfred Johannes Antonius; and Schimmel, Joannes, 4,120,754, Cl. 195-99.000.
De Croix, Charles Emile: *See—*
Karp, Edward C.; and De Croix, Charles Emile, 4,120,245, Cl. 101-288.000.
De Francisci, Leonard, to De Francisci Machine Corporation. Continuous-feed alimentary paste mixer and improved noodle-making machine. 4,121,301, Cl. 99-353.000.
De Lancey, Warren H. Carburetors or fuel mixing systems. 4,120,274, Cl. 123-139.00E.
Delattre-Levivier: *See—*
Benoit, Michel, 4,120,643, Cl. 432-36.000.
de Lautrec, Jacques; and Coste, Jean-Francois, to Societe Nationale Elf Aquitaine (Production). Defoaming apparatus. 4,120,816, Cl. 252-361.000.
Dellantonio, Ezio F., to Autovox S.p.A. Keyboard for the preselection of electromagnetic signals. 4,120,207, Cl. 74-10.330.
Delli-Gatti, Frank A., Jr., to Coaltex, Inc. Scoop-belt miner. 4,120,535, Cl. 299-18.000.
DeLuca, John P.; and Maas, Edward T., Jr., to Exxon Research & Engineering Co. Process for conversion of UF_6 to UO_2. 4,120,936, Cl. 423-261.000.
del Valle, Frank; Tuschhoff, John V.; and Streaty, Charles E., to A. E. Staley Manufacturing Company. Hydroxypropylated, epichlorohydrin crosslinked tapioca and corn starch derivatives. 4,120,983, Cl. 426-405.000.
del Valle, Frank: *See—*
Eastman, James E.; and del Valle, Frank, 4,120,982, Cl. 426-405.000.
De Martin, Bruno Romano: *See—*
Pluss, Kurt; and De Martin, Bruno Romano, 4,120,859, Cl. 260-294.80R.
de Mere, Henri Courier, to Bicosa Societe de Recherches. D. C. Power packs, inter alia of the disposable king, for providing a predetermined rated voltage. 4,121,115, Cl. 307-150.000.
Denison, Early B., to Shell Oil Company. Kelly and kelly cock assembly for hard-wired telemetry system. 4,121,193, Cl. 340-18.0CM.
Denka Chemical Corporation: *See—*
Edmondson, Morris S., 4,121,033, Cl. 526-223.000.
Denman, Lee Richard; and Abrams, William Randolph. Offshore pipe laying. 4,120,167, Cl. 405-157.000.
DePalma, Vito A.; and King, Raymond W., to Calspan Corporation. Fingerprint identification system using a pliable optical prism. 4,120,585, Cl. 356-71.000.
de Putter, Warner Jan, to Wavin B.V. Electrically conducting plastic pipe system. 4,120,325, Cl. 138-145.000.
Derc, Roman, to Data Recording Instrument Co., Ltd. Temperature compensation for data storage apparatus. 4,121,265, Cl. 360-78.000.
Dernedde, Robert, to Klein, Schanzlin & Becker Aktiengesellschaft. Flexible shaft coupling. 4,120,175, Cl. 64-15.00B.
Deutschmann, Herbert, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Propulsion arrangement. 4,120,155, Cl. 60-599.000.
Dev Choudhury, Rathindra N., to NCR Corporation. Multiple shift electronic keyboard. 4,121,048, Cl. 178-17.00C.
Devlieg, Garrett Howard, to Boeing Company, The. Aircraft automatic braking system. 4,120,540, Cl. 303-117.000.
De Vries, Martin; Fitzgerald, Harold A., II; Nyhof, Eldon J.; and van Putten, James D., Jr., to Donnelly Mirrors, Inc. Light reflectivity and transmission testing apparatus and method. 4,120,582, Cl. 356-73.000.
Dewallens, Leon, to Fabrication Belge de Disques "Fabeldis". Device for manufacturing substantially flat dies. 4,120,771, Cl. 204-225.000.
Diamond, Julius; and Wohl, Ronald A., to Cooper Laboratories, Inc. 3-Aryl-1-(2- or 4-iminodihydro-1-pyridyl)-2-propanol antiarrhythmic compounds. 4,120,860, Cl. 260-296.00R.
Diamond, Julius, to William H. Rorer, Inc. Ethynylbenzene compounds and derivatives thereof. 4,120,885, Cl. 260-455.00R.
Diamond, Julius, to William H. Rorer, Inc. Cyano ethynylbenzene compounds. 4,120,889, Cl. 260-465.00K.
Diamond, Julius, to Cooper Laboratories, Inc. Xanthine compounds and method of treating bronchospastic and allergic diseases. 4,120,947, Cl. 424-45.000.
Dick, Richard; Feuillade, Georges; Gadessaud, Robert; and Nicolas, Louis, to Compagnie Generale d'Electricite; and Institut National de Recherche Chimique Appliquee Ircha. Poly (2-hydroxyethylmethacrylate) membranes for electrochemical use. 4,121,022, Cl. 429-204.000.
Dick, William J. Telephone command apparatus. 4,121,053, Cl. 179-2.00A.
Dickey-john Corporation: *See—*
Funk, David B.; and Midden, William E., 4,121,151, Cl. 324-61.00R.
Dickey, Raymond G.: *See—*
Oloff, Clarence M.; Karl, Alva A.; Wolff, Walter M.; Halbrook, Lloyd W.; Brown, Ray D.; and Dickey, Raymond G., 4,120,266, Cl. 119-103.000.
Diebold, Joseph M.; Arway, George; and Stone, Joseph James, to A. B. Dick Company. Drop counter ink replenishing system. 4,121,222, Cl. 346-75.000.
Diemer, Donald P.; Hafele, Joseph C.; Hawkins, Robert H.; and Simmons, Gerald P., to Caterpillar Tractor Co. Gas nozzle for laser welding. 4,121,085, Cl. 219-121.00L.
Diesel Kiki Co., Ltd.: *See—*
Isobe, Hiroshi; Koyanagi, Toru; and Sakuranaka, Toru, 4,120,275, Cl. 123-140.0MC.
Kimura, Takeo; and Tomita, Hitoshi, 4,120,456, Cl. 239-464.000.
Dietmann, Karl: *See—*
Kampe, Wolfgang; Senn, Martin; Thiel, Max; Bartsch, Wolfgang; and Dietmann, Karl, 4,120,963, Cl. 424-256.000.
Dietrich, Ralph Nowack; and Robinson, John William, to Kimball International, Inc. Method and apparatus for automatically producing in an electronic organ rhythmic accompaniment manual note patterns. 4,120,225, Cl. 84-1.030.
Di Mauro, Innocenzio: *See—*
Sanci, Salvatore; and Di Mauro, Innocenzio, 4,120,566, Cl. 350-302.000.
Dimensional Development Corporation: *See—*
Lo, Allen Kwok Wah; and Nims, Jerry Curtis, 4,120,562, Cl. 350-130.000.
Dinkler, Leonard R.; and Herrin, Jerry, to General Electric Company. Electromagnetically controlled, temperature-sensitive (ECTS) reed switch with substantially hystersis free operation. 4,121,184, Cl. 335-179.000.
Dipl.-Ing. Hitzinger & Co.: *See—*
Platzer, Hubert, 4,121,148, Cl. 322-59.000.
Director Ing. Fritz Loertscher: *See—*
Mehnert, Walter, 4,120,486, Cl. 254-150.00R.
Dirksing, Robert S., to Procter & Gamble Company, The. Lined parallelepipedal package for dispensing flowable materials. 4,120,420, Cl. 220-416.000.
Divaret, Michel: *See—*
Villa-Massone, Rene; and Divaret, Michel, 4,120,303, Cl. 128-330.000.
DiVito, Ronald J.; and Steck, Howard A., to Driomi, Inc. System for detecting, indicating and regulating the level of semi-solid matter in a reservoir. 4,121,094, Cl. 235-92.0FL.

Dobrosielski, Stephen S.: *See—*
Taylor, Glenn R.; Mullen, John H.; and Dobrosielski, Stephen S., 4,121,076, Cl. 200-280.000.
Dr.-Ing. Rudolf Hell GmbH: *See—*
Preuss, Dieter; and Segin, Peter, 4,121,259, Cl. 358-261.000.
Dr. Johannes Heidenhain GmbH: *See—*
Spies, Alfons, 4,120,093, Cl. 33-174.00P.
Doering, John Peter, to Union Carbide Corporation. Greenhouse door assembly. 4,120,341, Cl. 160-213.000.
Dogliotti, Renato; Mazzei, Umberto; and Mengali, Umberto, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Digital demodulator with interpolation for linearly amplitude-modulated data signals. 4,121,165, Cl. 329-50.000.
Doherty, Michael J., to Microcom Corporation. Integrated programmable commutation and signal conditioning circuit. 4,121,055, Cl. 179-15.00A.
Doi, Toshitada: *See—*
Iga, Akira; and Doi, Toshitada, 4,121,205, Cl. 340-347.0DA.
Doll, Ronald L., to Spirit of America, Inc. Motorcycle headlight tilt control. 4,121,278, Cl. 362-72.000.
Dolz, Heinrich. Plunger compressor. 4,121,125, Cl. 310-27.000.
Donaldson, Robert G., to Raymond Lee Organization, Inc., The. Telephone holder. 4,121,061, Cl. 179-156.00R.
Donnelly Mirrors, Inc.: *See—*
De Vries, Martin; Fitzgerald, Harold A., II; Nyhof, Eldon J.; and van Putten, James D., Jr., 4,120,582, Cl. 356-73.000.
Doremus, John A.; and Kirkpatrick, William R., to Rosemount Inc. Electrically heated air data sensing device. 4,121,088, Cl. 219-201.000.
Dotson, James M.: *See—*
Petersen, George E.; and Dotson, James M., 4,120,786, Cl. 209-454.000.
Douaud, Andre; and Rialan, Joseph, to Institut Francais du Petrole. Device for optimum control of the sparking time of a spark ignition engine, during its operation. 4,120,272, Cl. 123-117.00D.
Dougherty, Thomas John; and Hennen, Roy Erving, to Globe-Union Inc. Portable rechargeable lead-acid battery. 4,121,017, Cl. 429-7.000.
Dow Chemical Company, The: *See—*
Birkelbach, Donald F., 4,120,820, Cl. 252-429.00B.
Brattesani, Donald N., 4,120,862, Cl. 260-307.00D.
Coker, William P.; and Lane, Robert E., Jr., 4,120,877, Cl. 260-348.230.
French, Floyd R., 4,120,430, Cl. 222-324.000.
Heckeroth, Earl T., 4,120,625, Cl. 425-71.000.
Smith, William L.; Kelyman, Jacqueline S.; and Jones, Ladell, 4,120,804, Cl. 252-47.500.
Dowa Mining Co., Ltd.: *See—*
Watanabe, Yasuo; and Isoyama, Seizi, 4,120,806, Cl. 252-62.540.
Watanabe, Yasuo; and Isoyama, Seizi, 4,120,807, Cl. 252-62.620.
Downey, Thomas James; Turnbull, Peter Dennis; and Gayther, James Walter, to Boeing Company, The. Take-off warning system for aircraft. 4,121,194, Cl. 340-27.00R.
Downing, Noel L., to General Motors Corporation. Jet flap controlled fuel pump. 4,120,603, Cl. 415-11.000.
Doyle, Ross L.: *See—*
Harrison, Thomas S.; and Doyle, Ross L., 4,120,414, Cl. 215-307.000.
Drake, Jerry W.; and Portesi, Peter J., to Raytheon Company. Multilayer interconnected structure for semiconductor integrated circuit. 4,121,241, Cl. 357-71.000.
Dresser Industries, Inc.: *See—*
Roesner, Raymond Earl, 4,120,353, Cl. 166-65.00R.
Drew, John Alan. Orthopaedic footwear. 4,120,101, Cl. 36-4.000.
Driomi, Inc.: *See—*
DiVito, Ronald J.; and Steck, Howard A., 4,121,094, Cl. 235-92.0FL.
Duffy, Richard Joseph; and Rodden, Philip James, to USM Corporation. Method of making self-locking fasteners. 4,120,993, Cl. 427-195.000.
Dugan, Judith A., to Magee, David S., a part interest. Educational book. 4,120,100, Cl. 35-73.000.
Duikers, Marcel: *See—*
Michel, Edmond; Duikers, Marcel; and Poty, Andre, 4,120,634, Cl. 425-525.000.
Duisenov, Bulat Esenovich: *See—*
Akushsky, Izrail Yakovlevich; Burtsev, Vladimir Mikhailovich; Duisenov, Bulat Esenovich; Pak, Ivan Timofeevich; and Zhautykov, Anurbek Orymbekovich, 4,121,298, Cl. 364-746.000.
Dulin, Francis H., to Champion Spark Plug Company. Electrically semi-conducting ceramic body. 4,120,829, Cl. 252-516.000.
Dulux Australia Ltd.: *See—*
Gibson, David Vincent; and Leary, Bruce, 4,120,768, Cl. 204-181.00C.
Dunham, Charles L.; and Kiernan, Thomas H., to Gravel-Vac Service Co., Inc. Vacuum operated debris removal apparatus and method for a power broom. 4,120,311, Cl. 134-6.000.
Du Pont de Nemours, E. I., and Company: *See—*
Behnke, Wallace Peery; Chapin, Robert Stuart; and Fierro, John Francis, 4,120,914, Cl. 260-857.0TW.
Bingham, Elena Maria; and Middleton, William Joseph, 4,120,856, Cl. 260-239.30D.
Ehlig, William Hollis, 4,120,939, Cl. 423-483.000.
Fleming, Sydney Winn; and Weeks, Gregory Paul, 4,120,592, Cl. 356-201.000.
Garrison, William Emmett, Jr., 4,121,016, Cl. 428-483.000.
Goddard, Steven Jerome; and Levitt, George, 4,120,693, Cl. 71-96.000.
Goodell, Carol Eve, 4,120,835, Cl. 260-15.000.
Levitt, George, 4,120,691, Cl. 71-93.000.
Manos, Philip, 4,120,098, Cl. 34-9.000.
Pechhold, Engelbert, 4,120,850, Cl. 528-66.000.
Potter, Jerry Fuller, 4,120,222, Cl. 83-99.000.
Pruckmayr, Gerfried; and Weir, Robert H., 4,120,903, Cl. 260-615.00B.
Schwing, Gregory Wayne, 4,120,897, Cl. 260-543.00R.
Trizisky, Joseph Donnelly, 4,120,660, Cl. 23-230.00R.
Wald, David K., 4,121,000, Cl. 428-35.000.
Whitehead, Thomas Wilson, 4,120,450, Cl. 233-26.000.
Durant, Graham John: *See—*
Brown, Thomas Henry; Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, 4,120,966, Cl. 424-263.000.
Brown, Thomas Henry; Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, 4,120,972, Cl. 424-273.00R.
Durnig, Herbert, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Apparatus for forming a stack composed of layers of round-section elongated items. 4,120,406, Cl. 214-6.00N.
Dutra, Gerard A., to Monsanto Company. Benzyl and aryl esters of N-phosphonomethyl glycines, herbicidal compositions and use thereof. 4,120,689, Cl. 71-86.000.
Dwyer, Niles M.; and Rasins, Janis A., to Breuer Electric Manufacturing Company. Vacuum cleaner-blower assembly with sound absorbing arrangement. 4,120,616, Cl. 417-373.000.
Dye, Malcolm Stuart; Redman, Michael James; and Satchell, David W., to Xerox Corporation. Transceiver system for visible images. 4,121,260, Cl. 358-295.000.
Dykeman, Fred Edgar: *See—*
Chiappetta, Ferdinand; Dykeman, Fred Edgar; and Turner, Paul Allen, 4,120,145, Cl. 57-149.000.
Dynacon Industries, Inc.: *See—*
Michalchik, Michael, 4,120,828, Cl. 252-513.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Haase, Rainer; Hunger, Volker; and Lenz, Arnold, 4,120,938, Cl. 423-332.000.
Titz, Siegfried, 4,120,926, Cl. 264-89.000.
E. Merck: *See—*
Seubert, Jurgen; Pohlke, Rolf; Thomas, Herbert; and Andrews, Peter, 4,120,961, Cl. 424-250.000.
E-Systems, Inc.: *See—*
Bunch, Carroll S.; Perry, Jerry L.; and Marcucci, Robert L., 4,121,216, Cl. 343-113.00R.
Jusko, Stephen C.; and Tillotson, Thomas C., 4,121,058, Cl. 179-15.55T.
Easter, Rollen G.: *See—*
Allen, Royce D.; and Easter, Rollen G., 4,120,511, Cl. 280-795.000.
Eastman, James E.; and del Valle, Frank, to A. E. Staley Manufacturing Company. Hydroxypropylated, epichlorohydrin crosslinked tapioca starch derivative for acid retort media. 4,120,982, Cl. 426-405.000.
Eastman Kodak Company: *See—*
Henry, James W., 4,121,247, Cl. 358-107.000.
Meyer, Max F., Jr.; and McConnell, Richard L., 4,120,916, Cl. 260-897.00A.
Ebbinghaus, Alfred. Universal joint. 4,120,176, Cl. 64-21.000.
Ebel, Robert H.; Spitzer, Donald P.; and Bambrick, William Edward, to American Cyanamid Company. Hydrodesulfurization catalysts based on supports prepared from rehydratable alumina. 4,120,826, Cl. 252-465.000.
Eby, George W. Emergency light bar. 4,120,435, Cl. 224-42.10F.
Echols, Marvin C., to Zap-Lok Systems International, Inc. Method of pipe joining. 4,120,083, Cl. 29-458.000.
Eckels, Phillip William, to Electric Power Research Institute. Multiphasic pump for rotating cryogenic machinery. 4,120,169, Cl. 62-55.000.
Economopoulos, Marios: *See—*
Wilmotte, Stephan Hubert; Nautet, Jean Adolphe; and Economopoulos, Marios, 4,120,455, Cl. 239-429.000.
Eder, Anton Allen, to Idaho Research Foundation, Inc. Solar heat collector. 4,120,283, Cl. 126-270.000.
Edgerton, Harold Eugene; Wyckoff, Charles W.; and Rines, Robert Harvey, to Academy of Applied Science, Inc., The. Method of and apparatus for sonar detection and the like with plural substantially orthogonal radiation beams. 4,121,190, Cl. 340-3.00R.
Edhlund, Ronald D., to American Photo-Graphics Corporation. Font element for photocomposing machine. 4,121,229, Cl. 354-15.000.
Edmaier, Franz, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Ventilating arrangement for an engine compartment. 4,120,271, Cl. 123-41.490.
Edmondson, Morris S., to Denka Chemical Corporation. Chloroprene-sulfur polymerization with di(O-alkylthionothiolcarbonoxy)sulfides. 4,121,033, Cl. 526-223.000.
Edwards, Wales Dale; and White, William Harold, to Harris Corporation. Method of multiplexing liquid crystal displays. 4,121,203, Cl. 340-336.000.
EGYT Gyogyszervegyeszeti Gyar: *See—*
Nagy, Geza; Pungor, Erno; Toth, Klara; Havas, Jeno; and Feher Zsofia, 4,120,657, Cl. 23-230.00R.
Ehlen, Jack W., to McCulloch Corporation. Breakerless magneto device. 4,120,277, Cl. 123-148.0CC.
Ehlig, William Hollis, to Du Pont de Nemours, E. I., and Company Hydrogen fluoride process. 4,120,939, Cl. 423-483.000.
Ehrlund, Ake, to AB Turn-O-Matic. Strip roll for use in dispensing tickets. 4,121,004, Cl. 428-43.000.

Eiwa Confectionary Co.: *See—*
Abe, Minoru, 4,120,627, Cl. 425-92.000.
Eizember, Richard F.: *See—*
Cannon, William N.; and Eizember, Richard F., 4,120,905, Cl. 260-646.000.
Electric Power Research Institute: *See—*
Eckels, Phillip William, 4,120,169, Cl. 62-55.000.
Electric Power Research Institute, Inc.: *See—*
Ocken, Howard, 4,120,752, Cl. 176-73.000.
Electro-Nite Co.: *See—*
Cure, Omer P., 4,120,204, Cl. 73-425.40R.
Electronique Marcel Dassault: *See—*
Scillieri, Antoine; and Caillaud, Alain, 4,121,220, Cl. 343-768.000.
Elger, Gerald W.; Stadler, Ruth A.; and Sanker, Philip E., to United States of America, Interior. Process for purifying a titanium-bearing material and upgrading ilmenite to synthetic rutile with sulfur trioxide. 4,120,694, Cl. 75-1.00T.
Eli Lilly and Company: *See—*
Cannon, William N.; and Eizember, Richard F., 4,120,905, Cl. 260-646.000.
Clarke, John W., 4,120,399, Cl. 206-474.000.
Ellis, Ralph J.: *See—*
Baghdadi, Aslan; and Ellis, Ralph J., 4,120,743, Cl. 156-620.000.
Ellis, Robert D. Oil slick removal and recovery system. 4,120,788, Cl. 210-30.00A.
Elmore, Glenn V.: *See—*
Ameen, Joseph G.; Elmore, Glenn V.; and Peter, Anthony E., 4,120,843, Cl. 260-33.80R.
Elson, Peter Fred: *See—*
Pamplin, John Warner; Bennett, James Vine; and Elson, Peter Fred, 4,120,186, Cl. 72-278.000.
Eltra Corporation: *See—*
Shiflett, Ned H.; and Seybert, William J., 4,120,555, Cl. 339-126.00R.
Emhart Industries, Inc.: *See—*
Gerlach, John R., 4,120,184, Cl. 70-389.000.
Emmons, William D.; and Stevens, Travis E., to Rohm and Haas Company. Oligomeric amino-containing aminolysis products of polymethacrylates or polyacrylates, and epoxy resin coating compositions containing such aminolysis products as curing agents. 4,120,839, Cl. 260-29.2EP.
Endersz, Gyorgy Geza; and Forsberg, Gunnar Stefan, to Telefonaktiebolaget L M Ericsson. Optical receiver. 4,121,095, Cl. 250-199.000.
Energy Development Associates: *See—*
Hart, Thomas Gordon, 4,120,774, Cl. 204-294.000.
Energy Modification, Inc.: *See—*
Gleim, William K. T., 4,120,664, Cl. 44-1.00R.
Engel, Hugo George, to Superior Tool & Manufacturing Company. Elbow planter box. 4,120,119, Cl. 47-66.000.
Engel, Stephen August, to Union Carbide Corporation. Method and apparatus for reducing smoke and preventing secondary fins during scarfing. 4,120,703, Cl. 148-9.500.
English, Alan: *See—*
Atchison, Walter D.; English, Alan; and Halter, Donald, 4,120,698, Cl. 75-82.000.
English, James, to BOC Limited. Photoelectrically controlled line follower apparatus. 4,121,097, Cl. 250-202.000.
Epstein, James; and Brissette, William P., to GTE Laboratories Incorporated. Ultra-thin button-type primary electrochemical cell. 4,121,020, Cl. 429-162.000.
Erickson, Clifford A.; Finley, Joseph H.; Blumbergs, John H.; and Scholer, Fred R., to FMC Corporation. Disulfones as peroxygen activators. 4,120,651, Cl. 8-111.000.
Erickson, Clifford W., to Honeywell Inc. Proximity sensor. 4,120,389, Cl. 192-129.00A.
Erickson Tool Company: *See—*
Benjamin, Milton L., 4,120,601, Cl. 408-226.000.
Erikson, Rolf B.: *See—*
Flint, John R.; Erikson, Rolf B.; and Rabindran, George, 4,121,138, Cl. 318-7.000.
Ernst, Arnold E., to Ernst, Arnold E. Root crop harvester. 4,120,363, Cl. 171-58.000.
Ernsthausen, Roger E., to Owens-Illinois, Inc. Dielectric for multiple gaseous discharge display/memory panel having improved voltage characteristics. 4,121,133, Cl. 313-518.000.
Ernsthausen, Roger E.: *See—*
Byrum, Bernard W., Jr.; Ernsthausen, Roger E.; and Fein, Michael E., 4,120,808, Cl. 252-63.200.
ESB Corporation: *See—*
Turillon, Pierre Paul; Hull, Michael Neill; and Nordblom, George Frederick, 4,121,024, Cl. 429-245.000.
Espy, Patrick N. Solar radiation reflector and collector array. 4,120,282, Cl. 126-270.000.
Etablissements Francois Salomon et Fils: *See—*
Salomon, Georges Pierre Joseph, 4,120,064, Cl. 12-142.00R.
Etablissements Poutrait-Morin S.A.: *See—*
Bouder, Paul C., 4,120,614, Cl. 417-63.000.
Etat Francais: *See—*
Fournier, Jean-Claude; and Hermitte, Albert, 4,121,136, Cl. 315-205.000.
Eterno, John R.: *See—*
Grindstaff, Donald A.; and Eterno, John R., 4,120,989, Cl. 426-577.000.
Ethicon, Inc.: *See—*
Mandel, Harvey B.; and Thyen, Eberhard H., 4,120,395, Cl. 206-63.300.
Ethyl Corporation: *See—*
Malec, Robert E., 4,120,803, Cl. 252-51.50A.
Evers, Robert C.; and Abraham, Tonson, to United States of America, Air Force. Fluorocarbon bis(o-aminophenol) compounds containing a hydrocarbon moiety. 4,120,900, Cl. 260-571.000.
Exxon Production Research Company: *See—*
Brooks, Fred A., Jr., 4,120,166, Cl. 405-225.000.
Exxon Research & Engineering Co.: *See—*
Baird, William Chalmers, Jr.; Bearden, Roby, Jr.; and Bollinger, Ralph Louis, Jr., 4,120,779, Cl. 208-108.000.
DeLuca, John P.; and Maas, Edward T., Jr., 4,120,936, Cl. 423-261.000.
Hulme, Roger, 4,120,912, Cl. 260-683.470.
Fa Alfred Hansel, Nieten-Und Metallwarenfabrik: *See—*
Schwab, Manfred, 4,120,188, Cl. 72-391.000.
Fabrication Belge de Disques "Fabeldis": *See—*
Dewallens, Leon, 4,120,771, Cl. 204-225.000.
Fadden, Delmar McLean; Habbestad, Alvin Richard; and Veitengruber, James Edwin, to Boeing Company, The. Ground impact point prediction system concept for airdrops. 4,121,246, Cl. 358-103.000.
Fahey, Darryl R.; and Mahan, John E., to Phillips Petroleum Company. Bis(μ-diphenylphosphido)tris(triethylphosphine)dinickel oligomerization of 1,3 butadiene. 4,120,907, Cl. 260-666.00B.
Fairchild Camera and Instrument Corporation: *See—*
Frazee, Jerome A., 4,121,141, Cl. 318-326.000.
Falkenstein, Georg: *See—*
Woerner, Frank Peter; Kan, Peter T.; and Falkenstein, Georg, 4,120,884, Cl. 260-453.0SP.
Falkner, Chester B., Jr.: *See—*
Chateau, Georges M.; and Falkner, Chester B., Jr., 4,120,171, Cl. 405-169.000.
Chateau, Georges M.; and Falkner, Chester B., Jr., 4,120,362, Cl. 166-339.000.
Fally, Jacques, to Compagnie General d'Electricite S.A. Hydrogen generating device. 4,120,663, Cl. 422-198.000.
Farber, Joseph. Ridged surface solar heater. 4,120,286, Cl. 126-271.000.
Fast Heat Element Manufacturing Co.: *See—*
Crandell, Walter R., 4,120,086, Cl. 29-611.000.
Fatutto, Pierluigi, to Montedison S.p.A. Modified polyols. 4,120,834, Cl. 521-164.000.
Fayos, D. Jose Antonio Navarro, to Montajes Electronicos Dorcas S.A. Safety fastening. 4,120,523, Cl. 292-268.000.
Fedorovskaya, Elena Alexeevna: *See—*
Liverant, Vladimir Leibovich; Yagupolsky, Lev Moiseevich; Ilichenko, Andrei Yakovlevich; Timashpolskaya, Faina Borisovna; Fedorovskaya, Elena Alexeevna; Petrik, Lidia Ivanovna; Kalantarov, Iosif Yakubovich; Kopylova, Mira Semenovna; and Meitus, Idima Evgenievna, 4,120,855, Cl. 260-153.000.
Fefferman, Frank J., to Stylar Industries, Inc. Vehicle chair and seat belt arrangement for chair. 4,120,531, Cl. 297-349.000.
Feher, Zsofia: *See—*
Nagy, Geza; Pungor, Erno; Toth, Klara; Havas, Jeno; and Feher, Zsofia, 4,120,657, Cl. 23-230.00R.
Fein, Michael E.: *See—*
Byrum, Bernard W., Jr.; Ernsthausen, Roger E.; and Fein, Michael E., 4,120,808, Cl. 252-63.200.
Ferranti Limited: *See—*
Kerr, Andrew Guy; and Morley, Robert Arthur, 4,121,293, Cl. 364-463.000.
Fett, Helmut. Apparatus for training the telecontrol of a model helicopter or the like. 4,120,099, Cl. 35-12.00K.
Feucht, Dennis LeRoy, to Tektronix, Inc. Automatic trigger circuit. 4,121,164, Cl. 328-181.000.
Feuerherm, Harald. Extrusion press head for the extrusion of tubular strands of plastic material. 4,120,633, Cl. 425-462.000.
Feuillade, Georges: *See—*
Dick, Richard; Feuillade, Georges; Gadessaud, Robert; and Nicolas, Louis, 4,121,022, Cl. 429-204.000.
Fierro, John Francis: *See—*
Behnke, Wallace Peery; Chapin, Robert Stuart; and Fierro, John Francis, 4,120,914, Cl. 260-857.0TW.
Fikart, Josef L., to GTE Lenkurt Electric (Canada) Ltd. Low-noise microwave signal generator. 4,121,163, Cl. 328-16.000.
Finch, Robert A., to CBS Inc. Circuit for reiterating percussive sounds in electronic musical instrument. 4,120,226, Cl. 84-1.030.
Fink, William F., to Roberton & Schwartz. Tie-down tensioning device. 4,120,077, Cl. 24-130.000.
Finley, Joseph H.: *See—*
Erickson, Clifford A.; Finley, Joseph H.; Blumbergs, John H.; and Scholer, Fred R., 4,120,651, Cl. 8-111.000.
Firestone Tire & Rubber Company, The: *See—*
Vicic, John Charles; and Reynard, Kennard Anthony, 4,120,838, Cl. 260-29.1SB.
Firmenich SA: *See—*
Renold, Walter; Skorianetz, Werner; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 4,120,830, Cl. 252-522.000.
Fischbeck, Kenneth H.; and Vernon, Richard H., to Xerox Corporation. Ink jet array with isolated fluid rectifier layers. 4,121,227, Cl. 346-140.00R.
Fischer, Gunther: *See—*
Hanisch, Gerhard; Fischer, Gunther; Gahler, Seigfried; Franz, Udo; Kuschel, Karl; Mayer, Roland; Bach, Gunther; and Junge, Karl-Wilhelm, 4,120,726, Cl. 96-107.000.
Fischer, Hans-Otto, to Rhein-Flugzeugbau GmbH. Remotely piloted vehicle. 4,120,468, Cl. 244-13.000.

Fischer, Paul W.; Pye, David S.; and Gallus, Julius P., to Union Oil Company of California. Method for drilling a well through unconsolidated dolomite formations. 4,120,369, Cl. 175-72.000.

Fisons Limited: *See—*
Gates, Peter Stuart; Gillon, John; and Saggers, David Thomas, 4,120,871, Cl. 260-343.30R.
Orr, Thomas Samuel Campbell; and Kingsley, Patrick John, 4,120,975, Cl. 424-283.000.

Fitzgerald, Harold A., II: *See—*
De Vries, Martin; Fitzgerald, Harold A., II; Nyhof, Eldon J.; and van Putten, James D., Jr., 4,120,582, Cl. 356-73.000.

Fitzgerald, Maurice J., to Polaroid Corporation. Polymeric cyanoalkyl acrylate silver halide peptizer. 4,120,727, Cl. 96-114.000.

Fixel, Irving E. Implant to secure the greater trochanter. 4,120,298, Cl. 128-92.00D.

Flanagan, Joseph E., to Rockwell International Corporation. Nonmetallized solid fluorine oxidizer gas generator. 4,120,708, Cl. 149-17.000.

Flanagan, Richard M.: *See—*
Cowe, Alan B.; Kubinak, Ronald A.; Pick, George G.; Flanagan, Richard M.; and Szabo, Francis S., 4,121,228, Cl. 354-7.000.

Fleck, John F.: *See—*
Mallory, James D.; Fleck, John F.; and Cuniberti, Mario, 4,120,684, Cl. 65-302.000.

Fleischer, Helmut, to Robert Bosch GmbH. Vehicle speed control system with dual interrupt safety circuit. 4,120,373, Cl. 180-105.00E.

Fleming, Sydney Winn; and Weeks, Gregory Paul, to Du Pont de Nemours, E. I., and Company. Multiplex optical analyzer apparatus. 4,120,592, Cl. 356-201.000.

Flint, John R.; Erikson, Rolf B.; and Rabindran, George, to Bell & Howell Company. Servo system. 4,121,138, Cl. 318-7.000.

Flippin, James S.: *See—*
Nissen, Roland N.; and Flippin, James S., 4,120,366, Cl. 172-805.000.

Flottweg-Werk Dr. Georg Bruckmayer GmbH & Co. KG: *See—*
Jager, Ernst Adolf, 4,120,447, Cl. 233-7.000.

Fly, James Alan; and Slonaker, Robert O., to Owens-Corning Fiberglas Corporation. Quality control for fibrous mats. 4,120,191, Cl. 73-9.000.

FMC Corporation: *See—*
Erickson, Clifford A.; Finley, Joseph H.; Blumbergs, John H.; and Scholer, Fred R., 4,120,651, Cl. 8-111.000.
Lutz, Charles William, 4,120,812, Cl. 252-186.000.
Scholer, Fred R.; and Blumbergs, John H., 4,120,652, Cl. 8-111.000.

Fodor, Lawrence M.; and Kitchen, Alonzo G., to Phillips Petroleum Company. Styrene-diene-diene block terpolymer with improved thermal stability. 4,120,915, Cl. 260-880.00B.

Fontenelle, James Francis. Rotatable multiple filament lamp and socket adapter. 4,121,134, Cl. 315-64.000.

Ford Motor Company: *See—*
Meyer, Fred J.; and Newman, Seymour, 4,120,844, Cl. 260-42.000.

Forney, Edger Wilmot, Jr.: *See—*
Bianchi, Edward Armond; and Forney, Edger Wilmot, Jr., 4,120,554, Cl. 339-97.00R.

Forsberg, Gunnar Stefan: *See—*
Endersz, Gyorgy Geza; and Forsberg, Gunnar Stefan, 4,121,095, Cl. 250-199.000.

Forster, Siegfried; Quell, Peter; and Sack, Berthold, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Nuclear energy plant with closed working gas circuit. 4,120,750, Cl. 176-60.000.

Fosslien, Egil, to Cortex Research Corporation. Specimen sampling apparatus. 4,120,662, Cl. 73-425.600.

Fountain, Gerald F.; Veloz, Jaime; and Dahlberg, Harry R., to Inspiration Consolidated Copper Company. Dump leaching of copper. 4,120,935, Cl. 423-41.000.

Four Star, Inc.: *See—*
Jones, John B.; and Upton, Robert W., 4,120,405, Cl. 214-1.0HH.

Fournier, Jean-Claude; and Hermitte, Albert, to Etat Francais. Apparatus for feeding discharge lamps from a direct current source. 4,121,136, Cl. 315-205.000.

Fraley, Lowell David, to Pullman Incorporated. Method for removing entrained melt from a gaseous stream. 4,120,668, Cl. 55-72.000.

Francel, Josef; King, James E.; and Woulbroun, John M., to Owens-Illinois, Inc. Sealing glass vehicle and composition and method for making same. 4,120,678, Cl. 65-32.000.

Frank L. Wells Company: *See—*
Sturm, Helmut, 4,120,392, Cl. 198-451.000.

Franks, Lawrence L.; and Gomersall, David W., to Inland Steel Company. Process for producing one-side galvanized sheet material. 4,120,997, Cl. 427-367.000.

Franz, Udo: *See—*
Hanisch, Gerhard; Fischer, Gunther; Gahler, Seigfried; Franz, Udo; Kuschel, Karl; Mayer, Roland; Bach, Gunther; and Junge, Karl-Wilhelm, 4,120,726. Cl. 96-107.000.

Franzen, Gustav, to Palitex Project Company GmbH. Yarn injection mechanism for cooperation with pneumatic yarn threading devices of a textile yarn processing machine. 4,120,142, Cl. 57-34.00R.

Frater, Georg; Pfiffner, Albert; Suchy, Milos; and Zurfluh, Rene, to Hoffmann-La Roche Inc. Certain epoxy compounds in admixture as insect regulating agents. 4,120,974, Cl. 424-278.000.

Frazee, Jerome A., to Fairchild Camera and Instrument Corporation. D.C. motor speed control circuitry. 4,121,141, Cl. 318-326.000.

French, Floyd R., to Dow Chemical Company, The. Pump dispensing package. 4,120,430, Cl. 222-324.000.

French, John Barry; Reid, Neil M.; and Buckley, Janette A., to University of Toronto, The Governing Council of the. Method and apparatus for focussing and declustering trace ions. 4,121,099, Cl. 250-296.000.

Fromm, Hermann Dieter: *See—*
Gettert, Hans; Fromm, Hermann Dieter; Molzahn, Martin; Schier, Ernst-Juergen; and Schneehage, Hans Henning, 4,120,667, Cl. 55-48.000.

Fruhwirth, Rudolf. Cigarette dispenser. 4,120,423, Cl. 221-115.000.

Frye, Hal W.: *See—*
Allen, Royce; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,121,290, Cl. 364-565.000.

Fuchs, Dieter. Castor. 4,120,432, Cl. 222-565.000.

Fuemmeler, Vincent F. Newspaper delivery receptacle. 4,120,446, Cl. 232-17.000.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Noboru, 4,121,251, Cl. 358-150.000.
Fujita, Susumu; Kushibe, Seijiro; and Shimizu, Hiroshi, 4,121,235, Cl. 354-234.000.
Hara, Hiroshi; and Nakamura, Kotaro, 4,120,723, Cl. 96-74.000.
Ikenoue, Shinpei; and Masuda, Takao, 4,120,728, Cl. 96-114.100.
Matsumoto, Seiji; Takahashi, Isoji; Komaki, Takao; Ishida, Masamitsu; Kozeki, Tomotaka; Horikawa, Kazuo; and Shimanuki, Kozi, 4,121,101, Cl. 250-315.00A.
Nakazyo, Kiyoshi; Sakaguchi, Shinji; and Tsuji, Nobuo, 4,120,725, Cl. 96-97.000.
Ohmura, Hiroshi; and Kohashi, Akira, 4,121,230, Cl. 354-21.000.
Okamoto, Yoshihiko; and Ohta, Takahiro, 4,120,722, Cl. 96-49.000.
Takahashi, Koji; Akimoto, Taizo; Watanabe, Shigeru; and Terashita, Takaaki, 4,120,581, Cl. 355-38.000.
Tatsuta, Sumitaka; Yamamoto, Nobuo; and Tsuji, Nobuo, 4,120,724, Cl. 96-87.00A.
Yamashita, Hiroshi; Osawa, Sadao; Saida, Takashi; and Sakasai, Yutaka, 4,120,805, Cl. 252-62.10L.

Fujikura, Yoshiaki: *See—*
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Ikeda, Hiroshi; and Fujikura, Yoshiaki, 4,120,906, Cl. 260-648.00C.

Fujino, Hitoshi, to Alps Electric Co., Ltd. Change-over slide switch with grounding spring member. 4,121,062, Cl. 200-16.00F.

Fujishiro, Takeshi, to Nissan Motor Company, Limited. Compensation for inherent fluctuation in output level of exhaust sensor in air-fuel ratio control system for internal combustion engine. 4,120,269, Cl. 123-32.0EE.

Fujita, Hiroshi; and Kato, Kazuhisa, to NGK Insulators, Ltd. Corona shield for tension insulator assembly. 4,121,046, Cl. 174-141.00R.

Fujita, Hiroshi: *See—*
Yamada, Mankichi; and Fujita, Hiroshi, 4,121,045, Cl. 174-141.00R.

Fujita, Masayuki: *See—*
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, 4,120,260, Cl. 118-317.000.

Fujita, Susumu; Kushibe, Seijiro; and Shimizu, Hiroshi, to Fuji Photo Film Co., Ltd. Electromagnetically operated shutter mechanism. 4,121,235, Cl. 354-234.000.

Fujiwara, Akira: *See—*
Ogawa, Hiromichi; Inoue, Kenji; and Fujiwara, Akira, 4,121,021, Cl. 429-162.000.

Fukushima, Nobuo; Uemura, Yukikazu; Okumura, Takuzo; and Hayashida, Haruo, to Sumitomo Chemical Company, Limited. Method of manufacturing oriented amorphous aromatic polymeric films. 4,120,931, Cl. 264-288.000.

Fukuyama, Yosinobu: *See—*
Takatori, Osho; Nishikawa, Etsuo; and Fukuyama, Yosinobu, 4,120,251, Cl. 112-121.150.

Funk, David B.; and Midden, William E., to Dickey-john Corporation. Analysis instrument. 4,121,151, Cl. 324-61.00R.

Furukawa, Hiroshi: *See—*
Kamiyama, Setsuo; Kaneko, Katsumi; Nagashima, Yukio; Furukawa, Hiroshi; and Wada, Shozo, 4,120,908, Cl. 260-668.00A.

Furukawa, Kaoru; Matsunami, Koichi; Ota, Toshihiko; Murakami, Tetsushi; Nagai, Hiroshi; and Tamaki, Kazuo, to Toyo Boseki Kabushiki Kaisha. Production of biaxially stretched film of polyamide blend. 4,120,928, Cl. 264-171.000.

Furusato, Masayasu: *See—*
Sakurai, Hisaya; Morita, Hideo; Ikegami, Tadashi; Maeda, Katsuaki; and Furusato, Masayasu, 4,120,883, Cl. 260-448.00A.

Fusco, Raffaele, to ANIC, S.p.A. Method for the purification of sewage waters which contain organic compounds of an anionic nature. 4,120,789, Cl. 210-54.000.

Futaba Denshi Kogyo Kabushiki Kaisha: *See—*
Morimoto, Kiyoshi, 4,120,700, Cl. 148-1.500.

Gabeler, Stephen Chester, to Computer Identics Corporation. Follower response control circuit. 4,121,121, Cl. 307-358.000.

Gadessaud, Robert: *See—*
Dick, Richard; Feuillade, Georges; Gadessaud, Robert; and Nicolas, Louis, 4,121,022, Cl. 429-204.000.

GAF Corporation: *See—*
Chakrabarti, Paritosh Mohan, 4,121,009, Cl. 428-260.000.
Parthasarathy, R.; and Hort, Eugene Victor, 4,121,039, Cl. 560-244.000.

Gahler, Seigfried: *See—*
Hanisch, Gerhard; Fischer, Gunther; Gahler, Seigfried; Franz, Udo; Kuschel, Karl; Mayer, Roland; Bach, Gunther; and Junge, Karl-Wilhelm, 4,120,726, Cl. 96-107.000.

Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; Hostetter, Richard S., Jr.; Jones, Duane T.; and Yerkes, Ronald W., to Bethlehem Steel Corporation. Electro-optical gaging system having dual cameras on a scanner. 4,121,292, Cl. 364-571.000.

Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; and Jones, Duane T., to Bethlehem Steel Corporation. Electro-optical gaging system. 4,121,294, Cl. 364-571.000.

Galanis, Tom L.: *See—*
Hoffner, Joel L.; and Galanis, Tom L., 4,121,291, Cl. 364-571.000.

Galanti, Maurice R. G., to Institut National du Verre. Installation for superficially treating the outer surfaces of bottles. 4,120,682, Cl. 65-181.000.

Gallus, Julius P.: *See—*
Fischer, Paul W.; Pye, David S.; and Gallus, Julius P., 4,120,369, Cl. 175-72.000.

Gamewell Corporation, The: *See—*
Solomon, Elias E., 4,121,105, Cl. 250-381.000.

Ganellin, Charon Robin; and Young, Rodney Christopher, to Smith Kline & French Laboratories Limited. Heterocyclic alkylaminocyclobutenediones. 4,120,968, Cl. 424-263.000.

Ganellin, Charon Robin; and Young, Rodney Christopher, to Smith Kline & French Laboratories Limited. Imidazolyl alkylaminocyclobutenediones. 4,120,973, Cl. 424-273.00R.

Ganellin, Charon Robin: *See—*
Brown, Thomas Henry; Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, 4,120,966, Cl. 424-263.000.
Brown, Thomas Henry; Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, 4,120,972, Cl. 424-273.00R.

Gange, Robert Allen, to RCA Corporation. Cathode structure and method of operating the same. 4,121,130, Cl. 313-302.000.

Garcia, Felix: *See—*
Bileski, Thomas; Crawford, Joe W.; Blanton, Bobby D.; Johnson, Carl N.; Garcia, Felix; Orcutt, John W.; Shepherd, Glen C.; and Oursler, James A., 4,121,073, Cl. 200-83.00P.

Garde, Lawrence, to Magnetic Peripherals Inc. Dual loop phase locked oscillator system. 4,121,172, Cl. 331-1.00A.

Gardner, Jeffrey M.; and Beck, Robert E., to Container Corporation of America. Cushioning insert. 4,120,443, Cl. 229-42.000.

Garofalo, Nicholas J. Portable pneumatic nut running tool having air shut-off controls. 4,120,604, Cl. 415-25.000.

Garrett Corporation, The: *See—*
McInerney, Charles E., 4,120,156, Cl. 60-602.000.

Garrett, Nelson Lee, Jr., to Garrett Plante Corporation. Lead-acid storage battery. 4,121,019, Cl. 429-94.000.

Garrett Plante Corporation: *See—*
Garrett, Nelson Lee, Jr., 4,121,019, Cl. 429-94.000.

Garrison, William Emmett, Jr., to Du Pont de Nemours, E. I., and Company. Composition of vinyl chloride polymer and two acrylic polymers which can be reinforced with polyester. 4,121,016, Cl. 428-483.000.

Gates, Peter Stuart; Gillon, John; and Saggers, David Thomas, to Fisons Limited. 5-Organosulfonyl, 5-organosulfinyl or 5-haloalkanoyl-benzofuran-2-ones. 4,120,871, Cl. 260-343.30R.

Gaudreau, Marcel Pierre Joseph: *See—*
Hamilton, Dean Elwyn; Gaudreau, Marcel Pierre Joseph; and Wu, Alan Leo, 4,120,196, Cl. 73-104.000.

Gaylord, Norman G., to Syntex (U.S.A.) Inc. Method for correcting visual defects, compositions and articles of manufacture useful therein. 4,120,570, Cl. 351-40.000.

Gayther, James Walter: *See—*
Downey, Thomas James; Turnbull, Peter Dennis; and Gayther, James Walter, 4,121,194, Cl. 340-27.00R.

Geck, Gunther; and Langhammer, Jurgen, to Klockner-Werke AG. Process for the production of steel. 4,120,696, Cl. 75-13.000.

Gedeit, Reinhold C. External heat engine. 4,120,161, Cl. 60-682.000.

Gehring, Karl; and Kamm, Kurt, to Pohlig-Heckel-Bleichert Vereinigte Maschinen-Fabriken. Bridge scraper. 4,120,408, Cl. 214-10.000.

General Binding Corporation: *See—*
Staats, Henry N., 4,120,517, Cl. 281-19.00R.

General Dynamics Corporation: *See—*
Aston, Richard, 4,121,174, Cl. 331-48.000.
Mullen, Roger F., 4,120,187, Cl. 72-342.000.
Weltman, Henry J.; Carroll, Mark T.; Halkias, John E.; Kaarlela, William T.; and Reynolds, Jack D., 4,121,157, Cl. 324-216.000.

General Electric Company: *See—*
Armor, Anthony F.; Barton, Sterling C.; Chari, Madabushi V.; Collings, Harold E.; and Turnbull, George W., 4,121,126, Cl. 310-59.000.
Dinkler, Leonard R.; and Herrin, Jerry, 4,121,184, Cl. 335-179.000.
Harmon, Larry R., 4,121,079, Cl. 219-10.55B.
Hillig, William B.; and Morelock, Charles R., 4,120,731, Cl. 106-44.000.
Hobson, Charles F., Jr., 4,121,269, Cl. 361-44.000.
Kelley, Fred William, Jr., 4,121,150, Cl. 323-102.000.
LeBlanc, Oliver H., Jr.; Niedrach, Leonard W.; and Stoddard, William H., Jr., 4,120,292, Cl. 128-2.00E.
Petersen, George E.; and Dotson, James M., 4,120,786, Cl. 209-454.000.
Terhune, James H.; and Neissel, John P., 4,121,106, Cl. 250-390.000.
Tsai, Reysen, 4,121,271, Cl. 361-82.000.
Welch, Stanley B.; Serrano, Juan de J.; and Chen, David Y., 4,121,204, Cl. 340-337.000.
Wolfinger, John F., 4,121,272, Cl. 361-236.000.

General Enterprises Corp., Ltd.: *See—*
Simos, Rigas Christos, 4,120,628, Cl. 425-131.100.

General Motors Corporation: *See—*
Downing, Noel L., 4,120,603, Cl. 415-11.000.
Greene, Pliney O., Jr.; and Pendleton, Darrell D., 4,120,543, Cl. 308-233.000.

General Signal Corporation: *See—*
Auer, John H., Jr., 4,120,471, Cl. 246-128.000.

Genth, Hermann: *See—*
Paulus, Wilfried; and Genth, Hermann, 4,120,686, Cl. 71-67.000.

Genz, Earl James, to Illinois Tool Works Inc. Linear position sensor. 4,121,185, Cl. 336-110.000.

Gerlach, John R., to Emhart Industries, Inc. Lock with normally non-removable key and auxiliary key removal device for use in interior locksets. 4,120,184, Cl. 70-389.000.

Germeraad, Paul B.: *See—*
Gotcher, Alan J.; Germeraad, Paul B.; and Jansons, Viktors, 4,121,001, Cl. 428-35.000.

Gertz, Wilhelm: *See—*
Adelski, Hans-Joachim; and Gertz, Wilhelm, 4,121,127, Cl. 310-67.00R.

Gettert, Hans; Fromm, Hermann Dieter; Molzahn, Martin; Schier, Ernst-Juergen; and Schneehage, Hans Henning, to BASF Aktiengesellschaft. Isolation of pure ammonia from gas mixtures containing ammonia and carbon dioxide. 4,120,667, Cl. 55-48.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Stuckmann, Dieter; and Jutte, Hans, 4,120,165, Cl. 405-145.000.

Gibbs, Hyatt McDonald; McCall, Samuel Leverte, Jr.; and Venkatesan, Thirumalai Nallan Chakravarthy, to Bell Telephone Laboratories, Incorporated. Amplifying characteristics of a cavity-enclosed nonlinear medium. 4,121,167, Cl. 330-4.300.

Gibson, David Kent: *See—*
Daniels, Raymond Alex; Gibson, David Kent; Kummli, Paul; Snell, Spencer Allan; and Ulrich, Michael Henry, 4,120,578, Cl. 355-8.000.

Gibson, David Vincent; and Leary, Bruce, to Dulux Australia Ltd. Process for electrocoating aqueous coating composition comprising dispersion in water of ionizable salt of epoxy amine adduct. 4,120,768, Cl. 204-181.00C.

Gibson, Roy: *See—*
Morser, Alfred Harold; Gibson, Roy; Szekely, Paul; and Parker, Bruce Trayton, 4,121,142, Cl. 318-345.00C.

Gikis, Benjamin J.: *See—*
Murray, Robert G.; and Gikis, Benjamin J., 4,120,775, Cl. 208-11.00E.

Gilbert Associates, Inc.: *See—*
Smith, Robert H., 4,120,735, Cl. 106-84.000.

Gildemeister Corpoplast GmbH: *See—*
Appel, Adolf; and Reymann, Wolfgang, 4,120,636, Cl. 425-541.000.

Giles, Richard F.: *See—*
LaSpisa, Ronald J.; and Giles, Richard F., 4,120,630, Cl. 425-142.000.

Gillon, John: *See—*
Gates, Peter Stuart; Gillon, John; and Saggers, David Thomas, 4,120,871, Cl. 260-343.30R.

Gingrich, Reynard W., to Hooker Chemicals & Plastics Corp. Multiple steam chest series flow evaporator. 4,120,746, Cl. 159-47.00R.

Gissane, William James Mason, to Imperial Chemical Industries Limited. Display device having visible pattern. 4,121,202, Cl. 340-324.00M.

Glagolev, Georgy Borisovich: *See—*
Auslender, Vadim Leonidovich; Budker, Gersh Itskovich; Glagolev, Georgy Borisovich; Livshits, Anatoly Alexandrovich; Perepelkin, Vitaly Petrovich; Polyakov, Vladimir Arkhipovich; Chepel, Lev Vladimirovich; Chertok, Ilya Lvovich; and Cheskidov, Vladimir Georgievich, 4,121,086, Cl. 219-121.0EM.

Glassman, Aaron, to Pennsylvania Sewing Research Corp. Hemmer attachment for a sewing machine. 4,120,252, Cl. 112-143.000.

Gleim, William K. T., to Energy Modification, Inc. Production of low-sulfur coal powder from the disintegration of coal. 4,120,664, Cl. 44-1.00R.

Glitsch, Inc.: *See—*
McClain, Robert W., 4,120,919, Cl. 261-114.0TC.

Globe-Union Inc.: *See—*
Dougherty, Thomas John; and Hennen, Roy Erving, 4,121,017, Cl. 429-7.000.

Globus, Alfred R., to Guardian Chemical Corporation. Process for recovery of bituminous material from tar sands. 4,120,777, Cl. 208-11.0LE.

Glover, Leon C.; and Lopez, Eugene F., to Raychem Corporation. Polymeric article coated with a thermochromic paint. 4,121,011, Cl. 428-347.000.

Goddard, Steven Jerome; and Levitt, George, to Du Pont de Nemours, E. I., and Company. Substituted isoindoles. 4,120,693, Cl. 71-96.000.

Godtschalck, Lucien Joseph, to Krieg & Zivy Industries. Interlocking drawer assembly. 4,120,551, Cl. 312-330.00R.

Goerden, Leonhard: *See—*
Kloker, Werner; Bovender, Franz; Gromping, Franz; Goerden, Leonhard; and Niesel, Harald, 4,120,923, Cl. 264-45.300.

Goldberg, Norton Robert. Can opener for use with ring-type opener tabs. 4,120,216, Cl. 81-3.46A.

Golden, David E.; and Ormonde, Stephan M. Atomic and molecular resonance laser. 4,121,176, Cl. 331-94.50G.

Goldfarb, Adolph E.; and Benkoe, Erwin. Target game with releasable objects and rotating target member. 4,120,497, Cl. 273-95.00B.

Goldfischer, Lester Irving, to Singer Company, The. Two dimensional MIPS. 4,121,210, Cl. 343-8.000.

Goldstein, Gideon, to Sloan-Kettering Institute for Cancer Research. Polypeptide hormones of the thymus. 4,120,951, Cl. 424-177.000.

Goldstein, Raymond: *See—*
Vali, Victor; Shorthill, Richard W.; Goldstein, Raymond; and Krogstad, Reuben S., 4,120,587, Cl. 356-106.0LR.

Goloff, Alexander; and Ballard, Charles E., to Caterpillar Tractor Co. Static oil seal assembly. 4,120,622, Cl. 418-142.000.

Gomersall, David W.: *See—*
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Goodell, Carol Eve, to Du Pont de Nemours, E. I., and Company. Thermosetting acrylic enamel containing iron pyrophosphate. 4,120,835, Cl. 260-15.000.
Goodman, Lawrence Alan; Levine, Aaron William; and Meyerhofer, Dietrich, to RCA Corporation. Electro-optic device. 4,120,567, Cl. 350-350.000.
Goranson, Paul L.: *See—*
Hopkins, Donald J.; Salyers, John C.; and Goranson, Paul L., 4,120,415, Cl. 220-1.00T.
Gordon, Abraham: *See—*
Adler, Stanford L.; and Gordon, Abraham, 4,120,262, Cl. 118-642.000.
Gotcher, Alan J.; Germeraad, Paul B.; and Jansons, Viktors, to Raychem Corporation. Crosslinking agent for polymers and wire construction utilizing crosslinked polymers. 4,121,001, Cl. 428-35.000.
Gotthard, Detre, to CSR Limited. Semi-continuous vacuum pan system. 4,120,745, Cl. 159-27.00B.
Goudriaan, Frans; and Van Klinken, Jakob, to Shell Oil Company. Process for the conversion of hydrocarbons in atmospheric crude residue. 4,120,778, Cl. 208-80.000.
Gould Inc.: *See—*
Crisafulli, George A., 4,121,111, Cl. 307-87.000.
Parkinson, David B.; and Parkinson, Truman D., 4,121,023, Cl. 429-211.000.
Uritis, Joseph M., 4,120,464, Cl. 242-72.00R.
Grabowski, Edward J. J.: *See—*
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Grafinger, Wilhelm: *See—*
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Grafosol S.p.A.: *See—*
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Graham, James: *See—*
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Grallert, Michael; and Moschner, Jorg, to Rollei-Werke Franke & Heidecke. Multiple film type motion picture projection. 4,120,572, Cl. 352-92.000.
Grangette, Henri: *See—*
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Grant, Louis R., Jr.: *See—*
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Grant, R. Peter: *See—*
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Grassl, Herbert: *See—*
Rodgers, Franklin Bartlett; and Grassl, Herbert, 4,120,133, Cl. 52-745.000.
Gravel-Vac Service Co., Inc.: *See—*
Dunham, Charles L.; and Kiernan, Thomas H., 4,120,311, Cl. 134-6.000.
Gray, Lionel Cedric Nall. Securing devices. 4,120,444, Cl. 229-49.000.
Gray, William R.: *See—*
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Greater Glasgow Health Board: *See—*
Paton, John Stewart; and Shaw, Alexander, 4,120,291, Cl. 128-2.00V.
Grecksch, Hans: *See—*
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Green Cross Corporation, The: *See—*
Homma, Yuzuru, 4,120,950, Cl. 424-87.000.
Greene, Pliney O., Jr.; and Pendleton, Darrell D., to General Motors Corporation. Unitized sealed ball thrust bearing. 4,120,543, Cl. 308-233.000.
Greenfield, Stanley A.: *See—*
Seidel, Michael C.; von Meyer, William C.; and Greenfield, Stanley A., 4,120,864, Cl. 260-308.00R.
Greenway, Thomas H., to Technical Research and Manufacturing, Inc. Broadband directional coupler. 4,121,180, Cl. 333-10.000.
Griffin, Dan M.: *See—*
Allen, Royce; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,121,290, Cl. 364-565.000.
Grima, Jean-Claude: *See—*
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Grindstaff, Donald A.; and Eterno, John R., to Stauffer Chemical Company. High protein pasta formulation. 4,120,989, Cl. 426-577.000.
Groeber, Alfred: *See—*
Hadersbeck, Hans; Andrascek, Ernst; and Groeber, Alfred, 4,121,044, Cl. 174-68.500.
Groff, Edwin I.; and Groff, Edwin Terry. Oven heating system. 4,120,646, Cl. 432-121.000.
Groff, Edwin Terry: *See—*
Groff, Edwin I.; and Groff, Edwin Terry, 4,120,646, Cl. 432-121.000.
Gromping, Franz: *See—*
Kloker, Werner; Bovender, Franz; Gromping, Franz; Goerden, Leonhard; and Niesel, Harald, 4,120,923, Cl. 264-45.300.
Gross, Frank C., to Scott Paper Company. Combined means for accurately positioning electrostatographic recording members during imaging and means for establishing electrical connection with the intermediate conductive layer thereof. 4,120,720, Cl. 96-1.50N.
Grossman, Eugene L.: *See—*
Knepper, Jay C.; and Grossman, Eugene L., 4,120,355, Cl. 166-259.000.
Groupement Atomique Alsacienne Atlantique: *See—*
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Grubbs, William J. Liquid carrier and dispenser apparatus for vehicles. 4,120,426, Cl. 222-183.000.
GTE Laboratories Incorporated: *See—*
Epstein, James; and Brissette, William P., 4,121,020, Cl. 429-162.000.
GTE Lenkurt Electric (Canada) Ltd.: *See—*
Fikart, Josef L., 4,121,163, Cl. 328-16.000.
GTE Sylvania Incorporated: *See—*
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Guardian Chemical Corporation: *See—*
Globus, Alfred R., 4,120,777, Cl. 208-11.0LE.
Gudeman, William J., to Universal Water Systems, Inc. Process for sealing end caps to filter cartridges. 4,120,711, Cl. 156-69.000.
Gudkin, Lev Romanovich: *See—*
Kuznetsova, Nadezhda Nikolaevna; Samsonov, Georgy Vasilievich; Papukova, Klavdia Pavlovna; Bilibina, Galina Vladimirovna; Shataeva, Larisa Konstantinovna; Selezneva, Aida Alexandrovna; Kuznetsova, Nina Petrovna; Vitols, Oyar Ansovich; Shtrausa, Anite Ansovna; Gudkin, Lev Romanovich; Mishaeva, Rimma Nikodimovna; and Rozhetskaya, Karina Moiseevna, 4,120,831, Cl. 521-38.000.
Gulf Oil Corporation: *See—*
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Gustafson, Inc.: *See—*
Clements, George William; and Wenshau, Hugo, 4,120,203, Cl. 73-422.00R.
Gustav Weyland KG: *See—*
Lang, Hans Friedrich, 4,120,491, Cl. 271-64.000.
Gutcho, Sidney; and McCarter, Henry, to Becton, Dickinson & Company. Substrate coated with receptor and labeled ligand for assays. 4,120,945, Cl. 424-1.000.
Guthrie, David B.: *See—*
Cheng, William J.; and Guthrie, David B., 4,121,026, Cl. 526-15.000.
Haag, Franz; and Bongartz, Paul, to Motan Gesellschaft mit beschrankter Haftung. Filtering arrangement for vacuum loaders. 4,120,674, Cl. 55-302.000.
Haans, Petrus Franciscus Antonius: *See—*
van Esdonk, Johannes; and Haans, Petrus Franciscus Antonius, 4,121,131, Cl. 313-402.000.
Haas, Eckhard: *See—*
Krause, Walter; Bober, Peter; and Haas, Eckhard, 4,120,273, Cl. 123-122.00G.
Haase, Rainer; Hunger, Volker; and Lenz, Arnold, to Dynamit Nobel Aktiengesellschaft. Aqueous solutions of alkali polysilicates. 4,120,938, Cl. 423-332.000.
Habbestad, Alvin Richard: *See—*
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Haber, David A. Snap-locking hinge. 4,120,074, Cl. 16-171.000.
Habermann, Helmut; Brunet, Maurice; and Joly, Pierre, to Societe Anonyme dite: Societe Europeene de Propulsion. Device for compensating synchronous disturbances in the magnetic suspension of a rotor. 4,121,143, Cl. 318-629.000.
Habib, Robert. Control stepping device. 4,120,208, Cl. 74-128.000.
Hadersbeck, Hans; Andrascek, Ernst; and Groeber, Alfred, to Siemens Aktiengesellschaft. Flexible through-contacted printed circuits. 4,121,044, Cl. 174-68.500.
Hafele, Joseph C.; Richards, Thomas J.; and Wright, Paul L., to Caterpillar Tractor Co. Electrostatic coating system. 4,120,261, Cl. 118-630.000.
Hafele, Joseph C.: *See—*
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Haga, Yukio: *See—*
Miyauchi, Kohichiroh; Ohsumi, Atsushi; Haga, Yukio; Izumi, Tsutomu; Tsuru, Masahiro; Kunioka, Kazuo; and Sugiyama, Shunichi, 4,120,642, Cl. 432-12.000.
Hahn, David T., to Ralston Purina Company. Protein snack product of improved structural integrity. 4,120,988, Cl. 426-573.000.
Hahn, William Peter; Hite, Edward Lee; Shisler, Donald Eugene; and Simmers, Charles Donald, to Johns-Manville Corporation. Method and apparatus for producing blankets of mineral fibers. 4,120,676, Cl. 65-4.00R.
Haicour, Philippe: *See—*
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Halbrook, Lloyd W.: *See—*
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Hale, Edgar C.; and Troy, Stephen R. Method and apparatus for tracing electrical cables. 4,121,152, Cl. 324-66.000.
Halkias, John E.: *See—*
Weltman, Henry J.; Carroll, Mark T.; Halkias, John E.; Kaarlela, William T.; and Reynolds, Jack D., 4,121,157, Cl. 324-216.000.

Hall, John B.: *See—*
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Halomet AG: *See—*
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Halter, Donald: *See—*
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Hamil, Roy A.; and Johnson, Alfred L., to United States of America, Air Force. Gas bearing suspended rotating laser window unit. 4,121,175, Cl. 331-94.50D.
Hamilton, Dean Elwyn; Gaudreau, Marcel Pierre Joseph; and Wu, Alan Leo, to Charles Stark Draper Laboratory, Inc., The. Production tool wear detector. 4,120,196, Cl. 73-104.000.
Hamilton, Floyd E.: *See—*
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Hamm, Klaus: *See—*
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Hammann, Ingeborg: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,120,956, Cl. 424-200.000.
Hamner, James W.; Hightower, James O.; and Rector, Carl M., to Thiokol Corporation. Technique for improving processibility of certain composite propellants by calcining the iron oxide burning rate catalyst. 4,120,709, Cl. 149-19.920.
Hanisch, Gerhard; Fischer, Gunther; Gahler, Seigfried; Franz, Udo; Kuschel, Karl; Mayer, Roland; Bach, Gunther; and Junge, Karl-Wilhelm, to VEB Filmfabrik Wolfen. Silver-halide emulsion sensitized with an asymmetrical disulfide. 4,120,726, Cl. 96-107.000.
Hanna Mining Company, The: *See—*
Atchison, Walter D.; English, Alan; and Halter, Donald, 4,120,698, Cl. 75-82.000.
Hanni, Manfred, to Siemens Aktiengesellschaft. Radio system. 4,121,158, Cl. 325-55.000.
Hanning Elektro-Werke Robert Hanning: *See—*
Neumann, Gernot, 4,120,057, Cl. 5-66.000.
Hans, Richard G.: *See—*
Richardson, Donald G.; and Hans, Richard G., 4,120,984, Cl. 426-412.000.
Hanson, Goodwin F. Plastic injection molded bow compass. 4,120,092, Cl. 33-27.00B.
Happak, Heinz; and Wittmann, Alfred, to Siemens Aktiengesellschaft. Housing for an electrical or electronic apparatus. 4,120,545, Cl. 312-7.00R.
Hara, Akio: *See—*
Nomura, Toshio; Asai, Tsuyoshi; Yamamoto, Takaharu; and Hara, Akio, 4,120,719, Cl. 75-238.000.
Hara, Clarence M. Carrier for skis and ski poles. 4,120,437, Cl. 224-45.00S.
Hara, Hiroshi; and Nakamura, Kotaro, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive element. 4,120,723, Cl. 96-74.000.
Harada, Yuichi; Ishihara, Tetsuo; and Takahashi, Shigeyuki, to Daicel Ltd. Coated polyolefin film. 4,121,006, Cl. 428-172.000.
Harder, Arthur J., Jr., to Coach and Car Equipment Corporation. Cantilevered supporting shell for seat. 4,120,533, Cl. 297-451.000.
Harmon, Larry R., to General Electric Company. Minimizing lamp flicker and blower speed variation in a microwave oven employing duty cycle power level control. 4,121,079, Cl. 219-10.55B.
Harnsberger, Bobby G., to Texaco Inc. Method for forming a non-dissoluble sand control pack and a sand control pack made thereby. 4,120,359, Cl. 166-278.000.
Harnsberger, Bobby G., to Texaco Inc. Sand consolidation composition. 4,120,842, Cl. 260-33.6UA.
Harrington, John H.; Smyth, Richard T.; and Weir, John D., to Metco, Inc. Method and apparatus for shielding the effluent from plasma spray gun assemblies. 4,121,082, Cl. 219-76.160.
Harris Corporation: *See—*
Beasom, James D., 4,120,707, Cl. 148-186.000.
Edwards, Wales Dale; and White, William Harold, 4,121,203, Cl. 340-336.000.
Mason, Donald R., 4,120,706, Cl. 148-175.000.
Harris, William G.; and Cipkowski, Jerome T., to United States of America, Army. Self load/unload transporter. 4,120,413, Cl. 214-394.000.
Harrison, Thomas S.; and Doyle, Ross L., to Sterling Drug Inc. Self-venting cap. 4,120,414, Cl. 215-307.000.
Harsha, Karnamadakala Sreenivasaacharlu Sree: *See—*
Bachmann, Klaus Jurgen; Schmidt, Paul Herman; Spencer, Edward Guerrant; and Harsha, Karnamadakala Sreenivasaacharlu Sree, 4,121,238, Cl. 357-16.000.
Hart, Thomas Gordon, to Energy Development Associates. Reduction of electrode overvoltage. 4,120,774, Cl. 204-294.000.
Hartenstein, Johannes; and Satzinger, Gerhard, to Warner-Lambert Company. Aporphine derivatives. 4,120,964, Cl. 424-258.000.
Hartig, Gunter Fritz. Pulse generator. 4,121,112, Cl. 307-106.000.
Hartmann, Heribert; and Wess, Guenter, to Siemens Aktiengesellschaft. Tunable oscillator with high stability and accurate frequency. 4,121,170, Cl. 331-1.00A.
Hartwich, Siegfried, to Massey-Ferguson Services N.V. Joints. 4,120,372, Cl. 180-9.500.
Hasbrouck, Gene B.: *See—*
Temple, Philip A.; Hasbrouck, Gene B.; and Howe, Stanley M., 4,120,124, Cl. 52-122.000.
Hasegawa, Akira, to Japan Steel Works, Ltd., The. Gas-hydraulic pressure type actuator for pipeline valve. 4,120,478, Cl. 251-31.000.
Hasegawa, Gary K.: *See—*
Mascia, Carmen T.; and Hasegawa, Gary K., 4,120,396, Cl. 206-151.000.
Hashiguchi, Soichi: *See—*
Taniguchi, Taizo; Iwasaki, Itsutoshi; Takeshige, Toshihiko; Onizuka, Koji; and Hashiguchi, Soichi, 4,120,734, Cl. 106-67.000.
Hashimoto, Yoshio: *See—*
Nakamura, Toshio; Hoshide, Yasuo; Hashimoto, Yoshio; Suzuki, Kenichi; and Yoshida, Yohji, 4,121,037, Cl. 544-313.000.
Haslett, Glenn M.: *See—*
Roley, Robert D.; Haslett, Glenn M.; and Blunier, Dennis L., 4,120,537, Cl. 305-14.000.
Hassall, Anthony George, to N. Greening Limited. Screening apparatus. 4,120,784, Cl. 209-399.000.
Hatanaka, Hideo; Murakami, Yoshinobu; and Morimoto, Kazuhisa, to Matsushita Electric Industrial Co., Ltd. Hygroscopic resin and humidity sensor using the same. 4,120,813, Cl. 252-194.000.
Hatchett, Michael Robert: *See—*
Cox, Allen Ronald; Hatchett, Michael Robert; and Rigbey, Leonard John, 4,120,505, Cl. 274-39.00R.
Hauni-Werke Korber & Co. K.G.: *See—*
Reuland, Joachim, 4,120,194, Cl. 73-45.200.
Hausler, Elwood Benjamin: *See—*
Boos, Charles John; Hausler, Elwood Benjamin; Hirsch, James Arthur; Kasprzyk, Martin Richard; and Smith, Elmer Gene, 4,120,827, Cl. 252-512.000.
Havas, Jeno: *See—*
Nagy, Geza; Pungor, Erno; Toth, Klara; Havas, Jeno; and Feher, Zsofia, 4,120,657, Cl. 23-230.00R.
Hawkins, Robert H.: *See—*
Diemer, Donald P.; Hafele, Joseph C.; Hawkins, Robert H.; and Simmons, Gerald P., 4,121,085, Cl. 219-121.00L.
Hayashi, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. High speed feeding and rewinding mechanism in a magnetic tape recording and reproducing apparatus. 4,121,267, Cl. 360-85.000.
Hayashi, Yoshimasa: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; and Waku, Makio, 4,121,064, Cl. 200-19.00A.
Hayashida, Haruo: *See—*
Fukushima, Nobuo; Uemura, Yukikazu; Okumura, Takuzo; and Hayashida, Haruo, 4,120,931, Cl. 264-288.000.
Hazen Research, Inc.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,120,665, Cl. 44-1.00R.
Headen, William E., to Brown & Sharpe Manufacturing Company. Pillow block including plurality of self-aligning linear motion bearings. 4,120,538, Cl. 308-6.00C.
Heat Trace Limited: *See—*
Wainwright, Geoffrey Hugh, 4,121,093, Cl. 219-528.000.
Heberlein Maschinenfabrik AG.: *See—*
Brehm, Gustav, 4,120,144, Cl. 57-77.400.
Heckeroth, Earl T., to Dow Chemical Company, The. Die face cutter. 4,120,625, Cl. 425-71.000.
Heeren, Hermann, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Plant comprising a power station and a cooling tower. 4,120,162, Cl. 60-690.000.
Heeres, Jan, to Janssen Pharmaceutica N.V. 2-Aryl-1,3-dioxolanes. 4,120,869, Cl. 260-340.90R.
Heian, Glenn A.; and Kohl, Robert F., to Allis-Chalmers Corporation. System for handling high sulfur materials. 4,120,645, Cl. 432-106.000.
Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Wirz, Arno, 4,120,244, Cl. 101-230.000.
Hein, Paul Richard: *See—*
Ketley, Arthur Donald; Hein, Paul Richard; and Yang, Michael Wen-Chien, 4,120,721, Cl. 96-36.300.
Heiser, Joachim; Bernhardt, Wolfgang; and Schempp, Roland, to Robert Bosch GmbH. Hydraulic control system for at least two consumers. 4,120,233, Cl. 91-511.000.
Heisig, Charles P., to Allis-Chalmers Corporation. Safety start switch and power takeoff control valve arrangement. 4,120,374, Cl. 180-53.00R.
Hellgren, Hans Arthur; and Marklund, Karl Georg Erhard, to Renholmens Mekaniska Verkstad AB. Method and apparatus for trimming timber. 4,120,333, Cl. 144-312.000.
Hemsath, Klaus H.: *See—*
Thekdi, Arvind C.; Chojnacki, Dennis A.; and Hemsath, Klaus H., 4,120,639, Cl. 431-158.000.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Blum, Helmut; and Worms, Karl-Heinz, 4,120,890, Cl. 260-502.40P.
Smolka, Heinz, 4,120,653, Cl. 8-137.000.
Hennen, Roy Erving: *See—*
Dougherty, Thomas John; and Hennen, Roy Erving, 4,121,017, Cl. 429-7.000.
Henningsen, Bent Aage, to Novo Industri A/S. Method and apparatus for collecting mucosa. 4,120,656, Cl. 422-28.000.
Henry, James W., to Eastman Kodak Company. Population and profile display of transparent bodies in a transparent mass. 4,121,247, Cl. 358-107.000.
Herb, Carl C.; and Rose, Robert A., to Carrier Corporation. Air distribution unit. 4,120,453, Cl. 236-49.000.

Herbemont, Francoise: *See—*
Queuille, Andre; and Herbemont, Francoise, 4,120,946, Cl. 424-4.000.

Hercules Incorporated: *See—*
Amirnazmi, Ali, 4,120,909, Cl. 260-668.00R.

Herion, Dieter: *See—*
Martin, Wolfgang; Bauer, Wolfgang; Herion, Dieter; Linge, Hermann; and Knopp, Hans, 4,120,078, Cl. 28-252.000.

Herman Miller, Inc.: *See—*
Propst, Robert L.; and Propst, Paul L., 4,120,422, Cl. 221-88.000.

Hermitte, Albert: *See—*
Fournier, Jean-Claude; and Hermitte, Albert, 4,121,136, Cl. 315-105.000.

Herr, John A.; and Transue, James A., to Singer Company, The. Direct drive feed system for sewing machines. 4,120,254, Cl. 112-158.00E.

Herrin, Jerry: *See—*
Dinkler, Leonard R.; and Herrin, Jerry, 4,121,184, Cl. 335-179.000.

Hess, Hans-Jurgen E.: *See—*
Althuis, Thomas H.; Czuba, Leonard J.; Hess, Hans-Jurgen E.; and Kadin, Saul B., 4,120,962, Cl. 424-251.000.

Hessert, James E.: *See—*
Threlkeld, Curtis B.; Hessert, James E.; and Clampitt, Richard L., 4,120,361, Cl. 166-294.000.

Heuer-Leonidas S.A.: *See—*
Prinz, Francois, 4,120,296, Cl. 128-2.05T.

Hewes, Donald R. Belt supported camera caddy. 4,120,434, Cl. 224-5.00V.

Hibbard, Earl R., to Teknekron, Inc. Image registration system for video camera. 4,121,245, Cl. 358-102.000.

Hickam, William M., to Westinghouse Electric Corp. Magnetic tape type sensors, method and apparatus using such magnetic tape sensors. 4,121,284, Cl. 364-497.000.

Higashi, Fukuji: *See—*
Yamazaki, Noboru; and Higashi, Fukuji, 4,120,853, Cl. 260-112.50R.

Higashi, Toshihiko: *See—*
Matsumoto, Hiroshi; Nakano, Yoshiyuki; Higashi, Toshihiko; and Yasumoto, Akihiro, 4,120,159, Cl. 60-667.000.

Higgins, Alton L.: *See—*
Chi, Henry K.; and Higgins, Alton L., 4,120,851, Cl. 260-880.00R.

Hightower, James O.: *See—*
Hamner, James W.; Hightower, James O.; and Rector, Carl M., 4,120,709, Cl. 149-19.920.

Hilbert, Ferdinand, to Siemens Aktiengesellschaft. High current protection in a solid electrolytic capacitor. 4,121,277, Cl. 361-433.000.

Hildebrandt, Bernhard: *See—*
Becker, Friedbert; Grafinger, Wilhelm; and Hildebrandt, Bernhard, 4,121,208, Cl. 343-6.50R.

Hill, Thomas A. Apparatus for integration of fluid dilution curves. 4,120,295, Cl. 128-2.05F.

Hill, William Frank, to Lucas Industries Limited. Battery charging systems for road vehicles. 4,121,146, Cl. 320-48.000.

Hillard, Thomas Gerald, to Brown, John S., a part interest. Wheeled skateboards. 4,120,510, Cl. 280-87.04A.

Hillard, Thomas Gerald: *See—*
Brown, John Steven; and Hillard, Thomas Gerald, 4,120,508, Cl. 280-11.280.

Hillig, William B.; and Morelock, Charles R., to General Electric Company. Method of making molten silicon infiltration reaction products and products made thereby. 4,120,731, Cl. 106-44.000.

Hilliker, Stephen Earl: *See—*
Albertrack, Jade Henry; and Hilliker, Stephen Earl, 4,121,162, Cl. 325-421.000.

Hinchcliffe, Dennis: *See—*
Molins, Desmond Walter; Hinchcliffe, Dennis; and Clarke, Peter Alec, 4,120,391, Cl. 198-347.000.

Hintsch, Otto; and Stauner, Rudolf, to Sulzer Brothers Limited. Gripper shuttle for picking in weaving machines. 4,120,329, Cl. 139-196.200.

Hirai, Seizaburo: *See—*
Takahashi, Hiroshi; Hirai, Seizaburo; and Abo, Toshio, 4,120,841, Cl. 260-29.60H.

Hirooka, Masaaki: *See—*
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, 4,121,032, Cl. 526-197.000.

Hirsch, James Arthur: *See—*
Boos, Charles John; Hausler, Elwood Benjamin; Hirsch, James Arthur; Kasprzyk, Martin Richard; and Smith, Elmer Gene, 4,120,827, Cl. 252-512.000.

Hirshman, Justin L.; and Russo, Robert V., to M&T Chemicals Inc. Novel curing agents derived from organothiostannoic acids. 4,120,875, Cl. 260-346.110.

Hitachi Denshi Kabushiki Kaisha: *See—*
Mima, Yoshitada; Kubushiro, Naoaki; and Kojima, Koji, 4,120,589, Cl. 356-121.000.

Hitachi, Ltd.: *See—*
Chimone, Naoki; Kawano, Toshihiro; and Nakajima, Hisao, 4,121,179, Cl. 331-94.50H.
Katto, Hisao, 4,121,240, Cl. 357-52.000.
Kubozoe, Morioki; Minamikawa, Yoshihisa; and Katagiri, Shinjiro, 4,121,100, Cl. 250-311.000.
Matsumoto, Hiroshi; Nakano, Yoshiyuki; Higashi, Toshihiko; and Yasumoto, Akihiro, 4,120,159, Cl. 60-667.000.
Omori, Hideyuki; Otubo, Osamubo; and Ohuchi, Yoshio, 4,121,223, Cl. 346-75.000.
Saiki, Yukimi; Oguino, Masanori; and Watanabe, Shutoku, 4,121,252, Cl. 358-169.000.
Tsukada, Toshihisa, 4,121,177, Cl. 331-94.50H.

Hite, Edward Lee: *See—*
Hahn, William Peter; Hite, Edward Lee; Shisler, Donald Eugene; and Simmers, Charles Donald, 4,120,676, Cl. 65-4.00R.

Hobbs, Charles F.; and McMackins, Dudley E., to Monsanto Company. Production of primary and secondary amines by reaction of ammonia with conjugated diene in the presence of Pd/phosphine catalyst and primary or secondary aliphatic alcohol solvent medium. 4,120,901, Cl. 260-585.00D.

Hobson, Charles F., Jr., to General Electric Company. Ground fault signal circuit for circuit breaker trip unit. 4,121,269, Cl. 361-44.000.

Hodges, Kenneth James Hamer: *See—*
Venton, Peter Charles; Blench, Michael; Sutherland, Anthony Keith; and Hodges, Kenneth James Hamer, 4,121,286, Cl. 364-200.000.

Hodges, Raymond John; and Belcher, Charles Brian, to Australian Wire Industries (Pty.) Limited. Method of preparing small samples including linishing an area of the samples. 4,120,584, Cl. 356-36.000.

Hoechst Aktiengesellschaft: *See—*
Breitschaft, Siegfried; and Holtermann, Rolf, 4,120,849, Cl. 528-502.000.

Hoffman, Charles R., Jr., to United States of America, Air Force. Socket lug assembly for aircraft stores. 4,120,232, Cl. 89-1.50R.

Hoffmann, Kurt; and Wotruba, Gottfried, to Siemens Aktiengesellschaft. Regenerator circuit for CCD arrangements. 4,121,117, Cl. 307-221.00D.

Hoffmann-La Roche Inc.: *See—*
Frater, Georg; Pfiffner, Albert; Suchy, Milos; and Zurfluh, Rene, 4,120,974, Cl. 424-278.000.
Stiel, Donald Melvyn, 4,121,289, Cl. 364-552.000.
Townsend, John Melvin; and Valentine, Donald Herman, Jr., 4,120,870, Cl. 260-340.90R.

Hoffner, Joel L.; and Galanis, Tom L., to Bethlehem Steel Corporation. Linearity correction system for electro-optical gage. 4,121,291, Cl. 364-571.000.

Hoffner, Joel L.: *See—*
Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; Hostetter, Richard S., Jr.; Jones, Duane T.; and Yerkes, Ronald W., 4,121,292, Cl. 364-571.000.
Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; and Jones, Duane T., 4,121,294, Cl. 364-571.000.

Hofmann, Wilfried; Lueder, Guenther; Rauffer, Walter; Krueger, John; and Koopmann, Adolf, to Agfa-Gevaert Aktiengesellschaft. Portable microfilm reader. 4,120,574, Cl. 353-27.00R.

Holec N.V.: *See—*
Brinkman, Willem, 4,120,617, Cl. 417-410.000.

Holland Company: *See—*
Chierici, Osvaldo F.; and Murphy, Richard F., 4,120,404, Cl. 213-61.000.

Holland, Gerhard: *See—*
Nowak, Rudolf; and Holland, Gerhard, 4,120,941, Cl. 423-592.000.

Holtermann, Rolf: *See—*
Breitschaft, Siegfried; and Holtermann, Rolf, 4,120,849, Cl. 528-502.000.

Holtschmidt, Ulrich: *See—*
Schwarzmann, Gunter; Holtschmidt, Ulrich; and Bertelmann, Gunter, 4,120,979, Cl. 424-325.000.

Holtzen, Larry D. Center pivot irrigation apparatus. 4,120,454, Cl. 239-177.000.

Homma, Yuzuru, to Green Cross Corporation, The. Medicament for preventing and treating pseudomonas aeruginosa infections and method of its preparation. 4,120,950, Cl. 424-87.000.

Hon Industries Inc.: *See—*
Temple, Philip A.; Hasbrouck, Gene B.; and Howe, Stanley M., 4,120,124, Cl. 52-122.000.

Hone, George D.; Noall, Kenneth L.; and Saunders, Robert L., to Abex Corporation. Articulated closure for a passenger loading bridge. 4,120,067, Cl. 14-71.500.

Honeywell Inc.: *See—*
Erickson, Clifford W., 4,120,389, Cl. 192-129.00A.

Hooker Chemicals & Plastics Corp.: *See—*
Gingrich, Reynard W., 4,120,746, Cl. 159-47.00R.
Ridgway, John E., 4,120,773, Cl. 204-252.000.

Hoover Universal, Inc.: *See—*
Kitchen, John P.; and Mandusky, Jack C., 4,120,058, Cl. 5-247.000.

Hopkins, Donald J.; Salyers, John C.; and Goranson, Paul L., to Carrier Corporation. Refuse container. 4,120,415, Cl. 220-1.00T.

Horikawa, Kazuo: *See—*
Matsumoto, Seiji; Takahashi, Isoji; Komaki, Takao; Ishida, Masamitsu; Kozeki, Tomotaka; Horikawa, Kazuo; and Shimanuki, Kozi, 4,121,101, Cl. 250-315.00A.

Hormann KG Amshausen: *See—*
Hormann, Michael, 4,120,072, Cl. 16-87.00R.

Hormann, Michael, to Hormann KG Amshausen. Combined supporting roller-friction drive arrangement for overhead single-panel doors. 4,120,072, Cl. 16-87.00R.

Horowitz, Charles, to Sloan Valve Company. Circuit breaker adapter. 4,121,066, Cl. 200-51.00R.

Horrocks, Raymond G., to Scott & Fetzer Company, The. Electrical connector. 4,120,557, Cl. 339-252.00R.

Hort, Eugene Victor: *See—*
Parthasarathy, R.; and Hort, Eugene Victor, 4,121,039, Cl. 560-244.000.

Hoshide, Yasuo: *See—*
Nakamura, Toshio; Hoshide, Yasuo; Hashimoto, Yoshio; Suzuki, Kenichi; and Yoshida, Yohji, 4,121,037, Cl. 544-313.000.

Hosick, Thomas A. Treatments for arthritis and cast dermatitis. 4,120,976, Cl. 424-282.000.

Hosoe, Kazuya: *See—*
Sakaguchi, Keiichi; Komine, Yoshio; Ichiyanagi, Toshikazu; Shimazaki, Mamoru; and Hosoe, Kazuya, 4,120,571, Cl. 352-27.000.

Hostetter, Richard S., Jr.: *See—*
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Houston, Paul L.: *See—*
Bittenson, Steven N.; and Houston, Paul L., 4,120,767, Cl. 204-158.00R.

Howard, Robert, to Centronics Data Computer Corp. Correction device for typewriters and the like. 4,120,594, Cl. 400-697.000.

Howe, Stanley M.: *See—*
Temple, Philip A.; Hasbrouck, Gene B.; and Howe, Stanley M., 4,120,124, Cl. 52-122.000.

Hoya Corporation: *See—*
Izumitani, Tetsuro; and Tsutome, Michitaka, 4,120,814, Cl. 252-301.40P.

Hruda, Robert M.; and Wayland, Paul O., to Westinghouse Electric Corp. Electrolytic cell vacuum switching system. 4,121,268, Cl. 361-3.000.

Hruza, Denis E., Sr.: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,120,308, Cl. 131-17.00R.

Hubbard, S. Eugene, to Kawneer Company, Inc. Double glazed wall structure. 4,120,127, Cl. 52-172.000.

Hubbert, Murray J.: *See—*
Thompson, Richard L.; Hubbert, Murray J.; and Wade, Vernon J., 4,120,479, Cl. 251-56.000.

Huber, Wolfgang, to SKF Kugellagerfabriken GmbH. Self-pressurizing radial friction bearing. 4,120,544, Cl. 308-240.000.

Hudalla, Mark G., to Minnesota Mining and Manufacturing Company. Applicator for heat-activatable tape. 4,120,718, Cl. 156-499.000.

Hudson Pulp & Paper Corp.: *See—*
Zucker, Jerry, 4,120,748, Cl. 162-242.000.

Hudspeth, William, to Polaroid Corporation. Collapsible flare baffle for folding camera. 4,121,233, Cl. 354-150.000.

Huebner, Werner P. E. Vertical flow inclined plate clarifier. 4,120,796, Cl. 210-522.000.

Huebner, Werner P. E. Cross-flow inclined plate clarifier. 4,120,797, Cl. 210-522.000.

Huelsman, Kenneth A., to Hughes Aircraft Company. Flicker free scan conversion system. 4,121,250, Cl. 358-140.000.

Huff, Joel R.: *See—*
Saari, Walfred S.; and Huff, Joel R., 4,120,971, Cl. 424-272.000.

Hufken, Kurt: *See—*
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Hughes Aircraft Company: *See—*
Huelsman, Kenneth A., 4,121,250, Cl. 358-140.000.
Moyer, Norman E., 4,120,148, Cl. 58-85.500.

Hughes, John H., to J. H. Hughes, Inc. One operator shake splitting apparatus. 4,120,334, Cl. 144-326.00R.

Hughes, John H., to J. H. Hughes, Inc. Rotary wood waste grinder. 4,120,458, Cl. 241-186.00R.

Hull, Michael Neill: *See—*
Turillon, Pierre Paul; Hull, Michael Neill; and Nordblom, George Frederick, 4,121,024, Cl. 429-245.000.

Hulme, Roger, to Exxon Research & Engineering Co. Recovery of Lewis acid/Bronsted acid catalyst with hydrogen at elevated temperatures and pressures. 4,120,912, Cl. 260-683.470.

Hults, Harold W., to Cutler-Hammer, Inc. Snap-action overcenter switch having an apexed plunger depressible in a rockable actuator block. 4,121,072, Cl. 200-67.00A.

Hummelstedt, Leif Erik Ingmar; Nyman, Bror Goran; and Leimala, Raimo Juhani, to Outokumpu Oy. Extraction agent composition. 4,120,817, Cl. 252-364.000.

Humphrey, Richard V. Method of making fiber-reinforced plastic unitized boat hull frame. 4,120,749, Cl. 156-245.000.

Hunger, Volker: *See—*
Haase, Rainer; Hunger, Volker; and Lenz, Arnold, 4,120,938, Cl. 423-332.000.

Hunt, Frederick C. Electrodynamic force generator. 4,121,124, Cl. 310-13.000.

Hunt, Raymond L.; Lin, Ben H.; Ream, Thomas A.; Robertson, Gene D.; and Young, John H., to Magnavox Company, The. Apparatus for interfacing with plasma type display panels. 4,121,135, Cl. 315-169.00R.

Hunter, Hubert E.: *See—*
Boyles, Tonnie M.; and Hunter, Hubert E., 4,120,675, Cl. 55-431.000.

Hurley, Glen A., to Hurley's Concepts, Inc. Drapery support assembly. 4,120,474, Cl. 248-263.000.

Hurley, Richard D. Angle edge guard. 4,120,441, Cl. 206-586.000.

Hurley's Concepts, Inc.: *See—*
Hurley, Glen A., 4,120,474, Cl. 248-263.000.

Hurlock, John R.; and Ballweber, Edward G., to Nalco Chemical Company. Phosphorus acid to stabilize quaternized polyacrylamide. 4,120,840, Cl. 260-29.4UA.

Hurst, George P., to Skega Aktiebolag. Wear liners for abrasive-material handling equipment. 4,120,605, Cl. 415-170.00R.

Hurt, Henry Wayne, to Lubbock Manufacturing Company. Implement trailer. 4,120,513, Cl. 280-423.00B.

Hussain, Anwar A., to Interx Research Corporation. Novel 2-acetoxybenzoic acid-nicotinamide complexes. 4,120,958, Cl. 424-232.000.

Husson, Jean, to S.E.R.A. Husson Societe d'Etudes et Realisations Aerodynamiques. Device for connecting exchanger tubes to perforated plates. 4,120,352, Cl. 165-173.000.

Hyatt, Gilbert P. High registration photomask method and apparatus. 4,120,583, Cl. 355-86.000.

Hyatt, Gilbert P. Computerized system for operator interaction. 4,121,284, Cl. 364-200.000.

Iceland, William F.: *See—*
Malmuth, Norman D.; Birnbaum, George; and Iceland, William F., 4,121,087, Cl. 219-121.00L.

Ichikawa, Kiyoshi: *See—*
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,120,516, Cl. 280-728.000.

Ichiyanagi, Toshikazu: *See—*
Sakaguchi, Keiichi; Komine, Yoshio; Ichiyanagi, Toshikazu; Shimazaki, Mamoru; and Hosoe, Kazuya, 4,120,571, Cl. 352-27.000.

ICI Americas Inc.: *See—*
Kruse, Walter M., 4,120,824, Cl. 252-447.000.

Idaho Research Foundation, Inc.: *See—*
Eder, Anton Allen, 4,120,283, Cl. 126-270.000.

Ife, Robert John: *See—*
Brown, Thomas Henry; Durant, Graham John; Ganellin, Charon Robin; and Ife, Robert John, 4,120,966, Cl. 424-263.000.
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Iga, Akira; and Doi, Toshitada, to Sony Corporation. Digital to analog converter with power amplification. 4,121,205, Cl. 340-347.0DA.

Iizuka, Akio; Taguchi, Michiichi; and Kubo, Muneyuki, to Nissan Motor Company, Limited. Catalyst for conversion of engine exhaust gas. 4,120,821, Cl. 252-432.000.

Iizuka, Motohiko; Danjo, Hiroyuki; Ikeda, Kazuo; and Yoshimura, Masatoshi, to Shinagawa Shirorenga Kabushiki Kaisha; Nippon Kokan Kabushiki Kaisha; Kabushiki Kaisha Ikeda Kikai Seisakusho; and Shinagawa Roko Kabushiki Kaisha. Stamping apparatus for applying lining material to iron runners. 4,120,488, Cl. 266-281.000.

Ikawa, Kazuo: *See—*
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,120,516, Cl. 280-728.000.

Ikeda, Hiroshi: *See—*
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Ikeda, Hiroshi; and Fujikura, Yoshiaki, 4,120,906, Cl. 260-648.00C.

Ikeda, Kazuo: *See—*
Iizuka, Motohiko; Danjo, Hiroyuki; Ikeda, Kazuo; and Yoshimura, Masatoshi, 4,120,488, Cl. 266-281.000.

Ikegami, Tadashi: *See—*
Sakurai, Hisaya; Morita, Hideo; Ikegami, Tadashi; Maeda, Katsuaki; and Furusato, Masayasu, 4,120,883, Cl. 260-448.00A.

Ikenoue, Shinpei; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Thermally developable light-sensitive material. 4,120,728, Cl. 96-114.100.

Ilich, Daniel F.: *See—*
Cotsworth, John L.; and Ilich, Daniel F., 4,120,284, Cl. 126-270.000.

Ilichenko, Andrei Yakovlevich: *See—*
Liverant, Vladimir Leibovich; Yagupolsky, Lev Moiseevich; Ilichenko, Andrei Yakovlevich; Timashpolskaya, Faina Borisovna; Fedorovskaya, Elena Alexeevna; Petrik, Lidia Ivanovna; Kalantarov, Iosif Yakubovich; Kopylova, Mira Semenovna; and Meitus, Idima Evgenievna, 4,120,855, Cl. 260-153.000.

Illinois Tool Works Inc.: *See—*
Genz, Earl James, 4,121,185, Cl. 336-110.000.

Imbro, Michael. Invalid chairs. 4,120,530, Cl. 297-337.000.

Imperial Chemical Industries Limited: *See—*
Berrie, John Sorbie; and Woolley, Graham Edward, 4,120,737, Cl. 106-109.000.
Candlin, John Paton; Wilson, Keith Collier; and Pearce, Ronald, 4,121,030, Cl. 526-119.000.
Gissane, William James Mason, 4,121,202, Cl. 340-324.00M.

Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Ikeda, Hiroshi; and Fujikura, Yoshiaki, to Kao Soap Co., Ltd. 1-Halogenotricyclo [4.3.1.1^{2,5}] undecane and process for the preparation thereof. 4,120,906, Cl. 260-648.00C.

Industrial Dynamics Company, Ltd.: *See—*
Calhoun, Fredrick L., 4,121,103, Cl. 250-343.000.

Industrie Pirelli S.p.A.: *See—*
Colombani, Bruno; and Pacciarini, Antonio, 4,120,714, Cl. 156-131.000.

Infern-O-Therm Corporation: *See—*
Martin, Charles K., 4,120,640, Cl. 431-353.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Roano, Domenico, 4,120,593, Cl. 400-549.000.

Ingenjorsfirman R. Ohrnell AB: *See—*
Johansson, Kurt E., 4,120,197, Cl. 73-144.000.

Inland Steel Company: *See—*
Franks, Lawrence L.; and Gomersall, David W., 4,120,997, Cl. 427-367.000.
Inooka, Masayoshi: *See—*
Morimoto, Tatsuo; Nakamura, Munekazu; Inooka, Masayoshi; and Yawata, Teizaburo, 4,120,780, Cl. 208-211.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,120,994, Cl. 427-239.000.
Inoue, Kenji: *See—*
Ogawa, Hiromichi; Inoue, Kenji; and Fujiwara, Akira, 4,121,021, Cl. 429-162.000.
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Inspiration Consolidated Copper Company: *See—*
Fountain, Gerald F.; Veloz, Jaime; and Dahlberg, Harry R., 4,120,935, Cl. 423-41.000.
Institut Francais du Petrole: *See—*
Douaud, Andre; and Rialan, Joseph, 4,120,272, Cl. 123-117.00D.
Institut Matematiki i Mekhaniki Akademii Nauk Kazakhskoi SSR: *See—*
Akushsky, Izrail Yakovlevich; Burtsev, Vladimir Mikhailovich; Duisenov, Bulat Esenovich; Pak, Ivan Timofeevich; and Zhautykov, Anurbek Orymbekovich, 4,121,298, Cl. 364-746.000.
Institut National de la Sante Et de la Recherche Medicale: *See—*
Rabischong, Pierre; and Bel, Jean-Pierre L., 4,120,297, Cl. 128-78.000.
Institut National de Recherche Chimique Appliquee Ircha: *See—*
Dick, Richard; Feuillade, Georges; Gadessaud, Robert; and Nicolas, Louis, 4,121,022, Cl. 429-204.000.
Institut National du Verre: *See—*
Galanti, Maurice R. G., 4,120,682, Cl. 65-181.000.
International Business Machines Corporation: *See—*
Ameen, Joseph G.; Elmore, Glenn V.; and Peter, Anthony E., 4,120,843, Cl. 260-33.80R.
Bishop, Robert Eugene, 4,121,089, Cl. 219-216.000.
Christian, John Hunt; and Overacker, James Leroy, 4,120,629, Cl. 425-135.000.
Cox, Allen Ronald; Hatchett, Michael Robert; and Rigbey, Leonard John, 4,120,505, Cl. 274-39.00R.
Daniels, Raymond Alex; Gibson, David Kent; Kummli, Paul; Snell, Spencer Allan; and Ulrich, Michael Henry, 4,120,578, Cl. 355-8.000.
Phipps, Peter Beverley; Sharma, Bhim Sain; and Wu, Anthony Wai, 4,120,995, Cl. 427-248.00A.
International Flavors & Fragrances Inc.: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,120,308, Cl. 131-17.00R.
International Nickel Company, Inc., The: *See—*
Turillon, Pierre Paul; Hull, Michael Neill; and Nordblom, George Frederick, 4,121,024, Cl. 429-245.000.
International Shoe Machine Corporation: *See—*
Vornberger, Walter; and Vornberger, Karl F., 4,120,063, Cl. 12-12.000.
International Standard Electric Corporation: *See—*
Jessop, Anthony, 4,121,195, Cl. 340-146.1AB.
International Telephone and Telegraph Corporation: *See—*
Auerbach, Andrew B.; Thelman, John P.; and Turbak, Albin F., 4,120,836, Cl. 260-15.000.
Place, Harry, 4,121,051, Cl. 179-1.0SM.
Intera Research Corporation: *See—*
Bodor, Nicolae S., 4,120,959, Cl. 424-238.000.
Hussain, Anwar A., 4,120,958, Cl. 424-232.000.
Intraub, Julius: *See—*
Ornstein, Leonard; Williams, Hazel Elizabeth; and Intraub, Julius, 4,120,991, Cl. 427-2.000.
Irvin, Howard B.; and Sherk, Fred T., to Phillips Petroleum Company. Polyolefin reactor system. 4,121,029, Cl. 526-64.000.
Irwin, George W., to Owens-Illinois, Inc. Funnel arm operating mechanism. 4,120,683, Cl. 65-207.000.
Irwin, James Stuart; and Steel, Francis Robert, to Motorola, Inc. Adjustable antenna arrangement for a portable radio. 4,121,218, Cl. 343-702.000.
Ishida, Masamitsu: *See—*
Matsumoto, Seiji; Takahashi, Isoji; Komaki, Takao; Ishida, Masamitsu; Kozeki, Tomotaka; Horikawa, Kazuo; and Shimanuki, Kozi, 4,121,101, Cl. 250-315.00A.
Ishida, Takashi: *See—*
Minekawa, Saburo; Yonekawa, Sigeru; Tabata, Haruro; Ishida, Takashi; Tsuchida, Satoshi; and Yamada, Kiyoshi, 4,121,031, Cl. 526-173.000.
Ishihara, Tetsuo: *See—*
Harada, Yuichi; Ishihara, Tetsuo; and Takahashi, Shigeyuki, 4,121,006, Cl. 428-172.000.
Ishikawa, Youhei: *See—*
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Ishimoto, Tasuku: *See—*
Kimura, Atsushi; and Ishimoto, Tasuku, 4,120,452, Cl. 235-381.000.
Isobe, Hiroshi; Koyanagi, Toru; and Sakuranaka, Toru, to Diesel Kiki Co., Ltd. Engine fuel injection pump governor. 4,120,275, Cl. 123-140.0MC.
Isono, Katsuo: *See—*
Morita, Kouji; and Isono, Katsuo, 4,121,254, Cl. 358-195.000.
Isoyama, Seizi: *See—*
Watanabe, Yasuo; and Isoyama, Seizi, 4,120,806, Cl. 252-62.540.
Watanabe, Yasuo; and Isoyama, Seizi, 4,120,807, Cl. 252-62.620.
Ito, Sakae: *See—*
Kobayashi, Hidehiko; Arakawa, Tatsumi; Shiga, Tetsuo; Ohmura, Kaoru; and Ito, Sakae, 4,121,007, Cl. 428-201.000.
Ito, Yoji: *See—*
Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, 4,121,181, Cl. 333-73.00R.
Ito, Yoshinobu: *See—*
Iwaisako, Toshiyuki; Yamaguchi, Naomi; Yomogida, Hisao; and Ito, Yoshinobu, 4,120,943, Cl. 423-628.000.
IU Conversion Systems, Inc.: *See—*
Wright, Francis C., 4,120,791, Cl. 210-84.000.
Iverson, Harold L.; and Lemley, Robert M., to Iverson, Harold L., a part interest. Adjustable grill device. 4,120,280, Cl. 126-30.000.
Iwaisako, Toshiyuki; Yamaguchi, Naomi; Yomogida, Hisao; and Ito, Yoshinobu, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing pseudo-boehmite. 4,120,943, Cl. 423-628.000.
Iwamatsu, Masayuki, to Nippon Gakki Seizo Kabushiki Kaisha. Amplifier device. 4,121,169, Cl. 330-296.000.
Iwasa, Yoshio: *See—*
Toda, Yoshio; and Iwasa, Yoshio, 4,120,214, Cl. 74-860.000.
Iwasaki, Itsutoshi: *See—*
Taniguchi, Taizo; Iwasaki, Itsutoshi; Takeshige, Toshihiko; Onizuka, Koji; and Hashiguchi, Soichi, 4,120,734, Cl. 106-67.000.
Izumi, Tsutomu: *See—*
Miyauchi, Kohichiroh; Ohsumi, Atsushi; Haga, Yukio; Izumi, Tsutomu; Tsuru, Masahiro; Kunioka, Kazuo; and Sugiyama, Shunichi, 4,120,642, Cl. 432-12.000.
Izumitani, Tetsuro; and Tsutome, Michitaka, to Hoya Corporation. Fluorophosphate-base laser glasses. 4,120,814, Cl. 252-301.40P.
J. H. Hughes, Inc.: *See—*
Hughes, John H., 4,120,334, Cl. 144-326.00R.
Hughes, John H., 4,120,458, Cl. 241-186.00R.
J. I. Case Company: *See—*
Nissen, Roland N.; and Flippin, James S., 4,120,366, Cl. 172-805.000.
Jackson, Eugene D., III, to Rockwell International Corporation. Anti-vortex pintle. 4,120,152, Cl. 60-221.000.
Jackson, Robert G.: *See—*
Starks, Charles M.; Jackson, Robert G.; Porchey, David V.; and Royer, Dennis J., 4,120,881, Cl. 260-449.60R.
Jaedicke, Hagen; and Paust, Joachim, to BASF Aktiengesellschaft. Cyclic 2-methyl-2,4-dialkoxy-3-buten-1-al-acetals, their preparation and use. 4,120,868, Cl. 260-340.700.
Jager, Ernst Adolf, to Flottweg-Werk Dr. Georg Bruckmayer GmbH & Co. KG. Pressure-tight solid bowl screw centrifuge. 4,120,447, Cl. 233-7.000.
Jaggard, James F. R.: *See—*
Mueller-Tamm, Heinz; Schick, Hans; Jaggard, James F. R.; and Nickl, Johann, 4,120,823, Cl. 252-442.000.
Jagoutz, Emil; and Palme, Christl, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Radiation analysis apparatus and method utilizing multi-channel pulse peak voltage discriminator. 4,121,098, Cl. 250-273.000.
Jakob Muller, Forschungs-und Finanz AG: *See—*
Speich, Francisco, 4,120,221, Cl. 83-62.100.
James, Harry K.: *See—*
Payne, Thomas R.; James, Harry K.; and Judy, Millard M., 4,120,744, Cl. 156-653.000.
Jameson, Melvin Neil; Klicker, James Donald; Krulik, Gerald Albert; and York, James Farnsworth, to McGean Chemical Co. Catalytically active composition for electroless plating. 4,120,822, Cl. 252-441.000.
Jamieson, Geoffrey A.: *See—*
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,120,799, Cl. 252-8.600.
Ciko, John D.; Cramer, John J.; and Jamieson, Geoffrey A., 4,120,802, Cl. 252-8.750.
Janicke, Johann, to Ateliers des Charmilles, S.A. Wire electrode vibration damper. 4,121,080, Cl. 219-69.00W.
Janko, Mike A. Video processor providing sync stripping and reinsertion. 4,121,242, Cl. 358-4.000.
Jansons, Viktors: *See—*
Gotcher, Alan J.; Germeraad, Paul B.; and Jansons, Viktors, 4,121,001, Cl. 428-35.000.
Janssen Pharmaceutica N.V.: *See—*
Heeres, Jan, 4,120,869, Cl. 260-340.90R.
Japan Steel Works, Ltd., The: *See—*
Hasegawa, Akira, 4,120,478, Cl. 251-31.000.
Jarrett, Robert Benjamin; Pace, Wilson David; and Weber, Howard Fredrick, to Motorola, Inc. Cruise control method and apparatus. 4,121,273, Cl. 361-239.000.
Jedora, John J. Machine for cleaning a fabric workpiece. 4,120,180, Cl. 68-20.000.
Jejina, Filip, to Siemens Aktiengesellschaft. Circuit arrangement for the switching on and off of a teleprinter PBX exchange. 4,121,047, Cl. 178-3.000.
Jensen, Finn Ulrik Hansen; Nielsen, Per Drengsgaard; and Bruhn, Esben, to A/S Weston Taeppefabrik. Process and apparatus for the continuous production of a fibrous web-like pile product. 4,120,713, Cl. 156-72.000.
Jessop, Anthony, to International Standard Electric Corporation. Error detection in digital systems. 4,121,195, Cl. 340-146.1AB.
Jeter, John Doise. Pulse transmitter. 4,120,097, Cl. 33-307.000.

JGC Corporation: *See—*
Numasaki, Kouichi; Sakai, Yoshihisa; Nawa, Takehiko; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,120,644, Cl. 432-99.000.
Jirak, Thomas L.; and Mulier, Pieter M. J., to Medtronic, Inc. Cardiac pacemaker. 4,120,307, Cl. 128-419.0PT.
Joelson, Karl Evert Anders, to AB Vabyma. Device for distributing a fluid flow in fixed proportions. 4,120,234, Cl. 91-518.000.
Johansson, Kurt E., to Ingenjorsfirman R. Ohrnell AB. Device for sensing exerted load on a rope, wire, or the like. 4,120,197, Cl. 73-144.000.
Johansson, Sven Halvor. Supplying motive fluid to below ground tool drive from a pressurized bore hole. 4,120,368, Cl. 175-71.000.
John Zink Company: *See—*
Reed, Robert D., 4,120,637, Cl. 431-5.000.
Johns-Manville Corporation: *See—*
Hahn, William Peter; Hite, Edward Lee; Shisler, Donald Eugene; and Simmers, Charles Donald, 4,120,676, Cl. 65-4.00R.
Johnson, Alfred L.: *See—*
Hamil, Roy A.; and Johnson, Alfred L., 4,121,175, Cl. 331-94.50D.
Johnson, Bobby L. Portable battery cart. 4,120,411, Cl. 214-38.0BA.
Johnson, Carl N.: *See—*
Bileski, Thomas; Crawford, Joe W.; Blanton, Bobby D.; Johnson, Carl N.; Garcia, Felix; Orcutt, John W.; Shepherd, Glen C.; and Oursler, James A., 4,121,073, Cl. 200-83.00P.
Johnson & Johnson: *See—*
Smyth, Milagros B.; and Lee-You, James, 4,120,729, Cl. 106-35.000.
Johnson, Richard N.; and Schneider, Marvin J., to United States of America, Army. Data base update scheme. 4,121,196, Cl. 340-146.30P.
Johnston, Dean Edward: *See—*
Bhateja, Chander Prakash; Alling, Richard Lassen; and Johnston, Dean Edward, 4,120,542, Cl. 308-219.000.
Johnston, Robert F.; and Wells, Thomas R., to Bell & Howell Company. Microfiche reader. 4,120,573, Cl. 353-27.00A.
Johnston, William C., to Kysor Industrial Corporation. Air defrost display case. 4,120,174, Cl. 62-256.000.
Joly, Pierre: *See—*
Habermann, Helmut; Brunet, Maurice; and Joly, Pierre, 4,121,143, Cl. 318-629.000.
Jones, Duane T.: *See—*
Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; Hostetter, Richard S., Jr.; Jones, Duane T.; and Yerkes, Ronald W., 4,121,292, Cl. 364-571.000.
Galanis, Tom L.; Hoffner, Joel L.; Clymer, John C.; and Jones, Duane T., 4,121,294, Cl. 364-571.000.
Jones, Francis L., to Towmotor Corporation. Switch for indicating brush wear. 4,121,207, Cl. 340-648.000.
Jones, Garland, Jr. Pulling hook apparatus. 4,120,189, Cl. 72-457.000.
Jones, John B.; and Upton, Robert W., to Four Star, Inc. Spear-type tractor-attached hay bale pickup device. 4,120,405, Cl. 214-1.0HH.
Jones, Kenneth Malcolm. Circumlens camera illumination system. 4,121,232, Cl. 354-126.000.
Jones, Ladell: *See—*
Smith, William L.; Kelyman, Jacqueline S.; and Jones, Ladell, 4,120,804, Cl. 252-47.500.
Jones, Melvin L., to Overhead Door Corporation. Motor control circuit. 4,121,140, Cl. 318-221.00R.
Jonville, Pierre: *See—*
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Joseph, Joseph Peter; and Bernstein, Seymour, to American Cyanamid Company. 2,2',2''-[s-Phenenyltris(carbonylimino)]tris-2-deoxy-D-glucopyranose and salts thereof. 4,120,954, Cl. 424-180.000.
Joseph Lucas (Batteries) Limited: *See—*
McEwan, Keith John Bruce, 4,120,087, Cl. 29-623.200.
Jourdan, Jerry W., to ACF Industries, Incorporated. Dampening means for swing check valve. 4,120,318, Cl. 137-527.400.
Judy, Millard M.: *See—*
Payne, Thomas R.; James, Harry K.; and Judy, Millard M., 4,120,744, Cl. 156-653.000.
Jung, Hans: *See—*
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Junge, Karl-Wilhelm: *See—*
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Jusko, Stephen C.; and Tillotson, Thomas C., to E-Systems, Inc. Voice processor. 4,121,058, Cl. 179-15.55T.
Justamante, Juan, to Suave Shoe Corporation. Mold and method for injection molding a sole onto a shoe upper. 4,120,477, Cl. 249-109.000.
Jutte, Hans: *See—*
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Kaarlela, William T.: *See—*
Weltman, Henry J.; Carroll, Mark T.; Halkias, John E.; Kaarlela, William T.; and Reynolds, Jack D., 4,121,157, Cl. 324-216.000.
Kabushiki Kaisha Banzai: *See—*
Mima, Yoshitada; Kubushiro, Naoaki; and Kojima, Koji, 4,120,589, Cl. 356-121.000.
Kabushiki Kaisha Ikeda Kikai Seisakusho: *See—*
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Kabushiki Kaisha Ohara Kogaku Garasu Seizosho: *See—*
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Shinoda, Akibumi; and Kido, Noriyoshi, 4,120,375, Cl. 180-89.140.
Kaczmarek, Philip Michael. Rally wheel cleaning implement. 4,120,068, Cl. 15-160.000.
Kadija, Igor V., to Olin Corporation. Cell for electrolyzing aqueous solutions using a porous anode separator. 4,120,772, Cl. 204-252.000.
Kadin, Saul B.: *See—*
Althuis, Thomas H.; Czuba, Leonard J.; Hess, Hans-Jurgen E.; and Kadin, Saul B., 4,120,962, Cl. 424-251.000.
Kagoura, Tetsuro, to Yoshida Kogyo K.K. Latch assembly. 4,120,525, Cl. 292-336.300.
Kaimins, Laimons: *See—*
Keem, Phillip William; Kaimins, Laimons; and Graham, James, 4,120,615, Cl. 417-360.000.
Kaji, Masao: *See—*
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Kalalian, John R.: *See—*
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Kalantarov, Iosif Yakubovich: *See—*
Liverant, Vladimir Leibovich; Yagupolsky, Lev Moiseevich; Ilichenko, Andrei Yakovlevich; Timashpolskaya, Faina Borisovna; Fedorovskaya, Elena Alexeevna; Petrik, Lidia Ivanovna; Kalantarov, Iosif Yakubovich; Kopylova, Mira Semenovna; and Meitus, Idima Evgenievna, 4,120,855, Cl. 260-153.000.
Kalfoglou, George, to Texaco Inc. Surfactant oil recovery method for use in high temperature formations containing water having high salinity and hardness. 4,120,358, Cl. 166-275.000.
Kaltenbach & Voigt GmbH & Co.: *See—*
Lohn, Gerd, 4,120,623, Cl. 418-173.000.
Kamath, Venkatesh: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,120,308, Cl. 131-17.00R.
Kamegai, Tsuneteru: *See—*
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,120,516, Cl. 280-728.000.
Kamiyama, Setsuo; Kaneko, Katsumi; Nagashima, Yukio; Furukawa, Hiroshi; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the conversion of C_8 aromatic hydrocarbons. 4,120,908, Cl. 260-668.00A.
Kamm, Kurt: *See—*
Gehring, Karl; and Kamm, Kurt, 4,120,408, Cl. 214-10.000.
Kampe, Wolfgang; Senn, Martin; Thiel, Max; Bartsch, Wolfgang; and Dietmann, Karl, to Boehringer Mannheim GmbH. Certain pyrido[3,4-b]indole-1-ones. 4,120,963, Cl. 424-256.000.
Kan, Peter T.: *See—*
Woerner, Frank Peter; Kan, Peter T.; and Falkenstein, Georg, 4,120,884, Cl. 260-453.0SP.
Kanamori, Katsuo; Sakurai, Nobuo; and Arai, Ryozo, to Mitsuboshi Belting Limited. Rubber screens for vibratory screening apparatus. 4,120,785, Cl. 209-401.000.
Kaneko, Katsumi: *See—*
Kamiyama, Setsuo; Kaneko, Katsumi; Nagashima, Yukio; Furukawa, Hiroshi; and Wada, Shozo, 4,120,908, Cl. 260-668.00A.
Kao Soap Co., Ltd.: *See—*
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Ikeda, Hiroshi; and Fujikura, Yoshiaki, 4,120,906, Cl. 260-648.00C.
Yagi, Kouichi; and Nakagawa, Yunosuke, 4,120,811, Cl. 252-186.000.
Kaplan, Irving Leonard, to Carl Krasny & Associates, Inc. Bundle compactor. 4,120,243, Cl. 100-212.000.
Kappler, Frank Robert; Killian, Roma Jean; and Cramer, John Joseph, to BASF Wyandotte Corporation. Laundering process for dual bleaching stained fabrics. 4,120,650, Cl. 8-109.000.
Karku-Titan Oy: *See—*
Lasmo, Raimo Juhani, 4,120,104, Cl. 36-117.000.
Karl, Alva A.: *See—*
Oloff, Clarence M.; Karl, Alva A.; Wolff, Walter M.; Halbrook, Lloyd W.; Brown, Ray D.; and Dickey, Raymond G., 4,120,266, Cl. 119-103.000.
Karll, Robert E.: *See—*
Valcho, Joseph J.; and Karll, Robert E., 4,120,800, Cl. 252-8.55D.
Karp, Edward C.; and De Croix, Charles Emile, to Sanitary Scale Company. Label printer. 4,120,245, Cl. 101-288.000.
Karpati, Egon: *See—*
Clauder, Otto; Kokosi, Jozsef; Szporny, Laszlo; and Karpati, Egon, 4,120,858, Cl. 260-293.550.
Kasprzyk, Martin Richard: *See—*
Boos, Charles John; Hausler, Elwood Benjamin; Hirsch, James Arthur; Kasprzyk, Martin Richard; and Smith, Elmer Gene, 4,120,827, Cl. 252-512.000.
Katagiri, Shinjiro: *See—*
Kubozoe, Morioki; Minamikawa, Yoshihisa; and Katagiri, Shinjiro, 4,121,100, Cl. 250-311.000.
Kato, Kazuhisa: *See—*
Fujita, Hiroshi; and Kato, Kazuhisa, 4,121,046, Cl. 174-141.00R.
Katow, Keigo: *See—*
Ando, Masahisa; Katow, Keigo; and Yamazaki, Masami, 4,120,480, Cl. 251-61.500.
Katto, Hisao, to Hitachi, Ltd. Semiconductor device having a discharge-formed insulating film. 4,121,240, Cl. 357-52.000.
Kawamoto, Tamio, to Nissan Motor Company, Limited. Parking brake

mechanism for motor vehicle equipped with automatic transmission. 4,120,383, Cl. 188-31.000.
Kawano, Toshihiro: *See—*
Chinone, Naoki; Kawano, Toshihiro; and Nakajima, Hisao, 4,121,179, Cl. 331-94.50H.
Kawashima, Haruro: *See—*
Soma, Akiro; Kawashima, Haruro; Yamauchi, Makoto; and Tanaka, Shoji, 4,120,337, Cl. 152-353.00R.
Kawasumi, Shohachi: *See—*
Nataguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, 4,121,032, Cl. 526-197.000.
Kawneer Company, Inc.: *See—*
Hubbard, S. Eugene, 4,120,127, Cl. 52-172.000.
Kaye, Peter D., to Bell Industries. Saw chain grinder. 4,120,215, Cl. 76-25.00A.
Kazakov, Sergei Sergeevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Stupak, Leonid Mikhailovich; Baglai, Viktor Mikhailovich; Bogachenko, Alexei Georgievich; Kazakov, Sergei Sergeevich; and Tsykulenko, Anatoly Konstantinovich, 4,120,695, Cl. 75-10.00C.
Keating, Charles M., to United States of America, Interior. Alternating current potential measuring device. 4,121,154, Cl. 324-126.000.
Keem, Phillip William; Kaimins, Laimons; and Graham, James, to Allware Agencies Limited. Box fans. 4,120,615, Cl. 417-360.000.
Keio Giken Kogyo Kabushiki Kaisha: *See—*
Ota, Kyozo, 4,120,229, Cl. 84-454.000.
Keller, Charles R. Bow sight. 4,120,096, Cl. 33-265.000.
Keller, Heinrich, to Maschinenfabrik Hennecke GmbH. Device for the continuous production of foam blocks of rectangular cross-section. 4,120,626, Cl. 425-89.000.
Kelley, Fred William, Jr., to General Electric Company. Gain compensation for power factor in line current regulating systems involving reactive power. 4,121,150, Cl. 323-102.000.
Kelyman, Jacqueline S.: *See—*
Smith, William L.; Kelyman, Jacqueline S.; and Jones, Ladell, 4,120,804, Cl. 252-47.500.
Kendrick, John W. Metal roofing shingle and holding strip therefor. 4,120,132, Cl. 52-478.000.
Kenigson, Robert H. Heel pad with radial ribs. 4,120,102, Cl. 36-71.000.
Kennedy, Alvin B., Jr.; Shirey, Lawrence E.; Sharp, Harper Eugene; Trowbridge, Lawrence E.; and Magee, Robert L., to Kennedy, Alvin B., Jr. Method for acoustical cleaning. 4,120,699, Cl. 134-1.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Forster, Siegfried; Quell, Peter; and Sack, Berthold, 4,120,750, Cl. 176-60.000.
Kerr, Andrew Guy; and Morley, Robert Arthur, to Ferranti Limited. Indication means for indicating suitable conditions for the transfer of loads between two stations movable relative to each other in a vertical plane. 4,121,293, Cl. 364-463.000.
Kesling, Peter C. Orthodontic band with identification and method of making the identification. 4,120,090, Cl. 32-14.00A.
Kessler, Manfred, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Apparatus for the polarographic measurement of oxygen. 4,120,770, Cl. 204-195.00R.
Ketley, Arthur Donald; Hein, Paul Richard; and Yang, Michael Wen-Chien, to W. R. Grace & Co. Radiation curable compositions for coating and imaging processes and method of use. 4,120,721, Cl. 96-36.300.
Kido, Noriyoshi: *See—*
Shinoda, Akibumi; and Kido, Noriyoshi, 4,120,375, Cl. 180-89.140.
Kiernan, Thomas H.: *See—*
Dunham, Charles L.; and Kiernan, Thomas H., 4,120,311, Cl. 134-6.000.
Killian, Roma Jean: *See—*
Kappler, Frank Robert; Killian, Roma Jean; and Cramer, John Joseph, 4,120,650, Cl. 8-109.000.
Kilo Corporation: *See—*
Wilson, Stephen S., 4,121,102, Cl. 250-341.000.
Kimball International, Inc.: *See—*
Dietrich, Ralph Nowack; and Robinson, John William, 4,120,225, Cl. 84-1.030.
Kimpel, Francis Alfred, to Borg-Warner Corporation. Head pressure control system for refrigeration apparatus. 4,120,173, Cl. 62-181.000.
Kimura, Atsushi; and Ishimoto, Tasuku, to Matsushita Electric Industrial Co., Ltd. Automatic vending system. 4,120,452, Cl. 235-381.000.
Kimura, Kazunori: *See—*
Ogawa, Takashi; and Kimura, Kazunori, 4,121,197, Cl. 340-166.00R.
Kimura, Takeo; and Tomita, Hitoshi, to Diesel Kiki Co., Ltd. Fuel injection valve with vortex chamber occupying auxiliary valve. 4,120,456, Cl. 239-464.000.
Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for improving coal. 4,120,665, Cl. 44-1.00R.
King, Arthur Shelley. Method and apparatus for producing foam. 4,120,765, Cl. 204-149.000.
King, James E.: *See—*
Francel, Josef; King, James E.; and Woulbroun, John M., 4,120,678, Cl. 65-32.000.
King, Raymond W.: *See—*
DePalma, Vito A.; and King, Raymond W., 4,120,585, Cl. 356-71.000.
Kingsley, Patrick John: *See—*
Orr, Thomas Samuel Campbell; and Kingsley, Patrick John, 4,120,975, Cl. 424-283.000.
Kirkpatrick, William R.: *See—*
Doremus, John A.; and Kirkpatrick, William R., 4,121,088, Cl. 219-201.000.
Kirkwood, Philip R.; and Clark, Allan, to British Steel Corporation. Welding, a steel suitable for use therein. 4,120,440, Cl. 228-231.000.
Kishi, Yoshio; and Nagami, Masaru, to Sony Corporation. Method for recording information signal and control signal. 4,121,264, Cl. 360-55.000.
Kitagawa Iron Works Co., Ltd.: *See—*
Shiraki, Hisashi, 4,120,163, Cl. 405-264.000.
Kitchen, Alonzo G.: *See—*
Fodor, Lawrence M.; and Kitchen, Alonzo G., 4,120,915, Cl. 260-880.00B.
Kitchen, John P.; and Mandusky, Jack C., to Hoover Universal, Inc. Low profile box spring assembly. 4,120,058, Cl. 5-247.000.
Kitzing, Rainer: *See—*
Smith, Norman Alfred; and Kitzing, Rainer, 4,120,898, Cl. 260-561.00S.
Klaus, Franz. Permanent magnetic centrifugal pump. 4,120,618, Cl. 417-420.000.
Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Dernedde, Robert, 4,120,175, Cl. 64-15.00B.
Reiss, Karl, 4,120,606, Cl. 415-199.100.
Kleinberg, Marvin H.: *See—*
Richards, Chester L., Jr., 4,120,569, Cl. 350-3.680.
Kleine, Charles A.; and Middleton, Verne L., to Olin Corporation. Heat exchange panel with improved header. 4,120,351, Cl. 165-170.000.
Kleinschmidt, David Charles: *See—*
Sarge, Henry David, III; and Kleinschmidt, David Charles, 4,120,747, Cl. 162-117.000.
Klepper-Werke Kommanditgesellschaft: *See—*
Stoeberl, Helmut, 4,120,632, Cl. 425-405.00R.
Klicker, James Donald: *See—*
Jameson, Melvin Neil; Klicker, James Donald; Krulik, Gerald Albert; and York, James Farnsworth, 4,120,822, Cl. 252-441.000.
Klimas, Mary G.: *See—*
Swindells, Frank E.; and Klimas, Mary G., 4,120,818, Cl. 116-114.00V.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Krause, Walter; Bober, Peter; and Haas, Eckhard, 4,120,273, Cl. 123-122.00G.
Nieden, Achim zur, 4,120,673, Cl. 55-205.000.
Klockner-Werke AG: *See—*
Geck, Gunther; and Langhammer, Jurgen, 4,120,696, Cl. 75-13.000.
Togel, Kurt; Warnke, Hans; and Westerfeld, Horst, 4,120,218, Cl. 81-57.380.
Kloker, Werner; Bovender, Franz; Gromping, Franz; Goerden, Leonhard; and Niesel, Harald, to Bayer Aktiengesellschaft. Process for manufacturing foamed materials involving contacting a thin unbroken film of liquid resin with a gaseous blowing agent under pressure. 4,120,923, Cl. 264-45.300.
Klostermann, Frits Theodoor: *See—*
Schampers, Paulus Philippus Maria; Carasso, Marino Giuseppe; and Klostermann, Frits Theodoor, 4,121,255, Cl. 358-223.000.
Knapp, Randy O., to Champion Spark Plug Company. Lead-free glaze for alumina bodies. 4,120,733, Cl. 106-48.000.
Knepper, Jay C.; and Grossman, Eugene L., to Standard Oil Company (Indiana). Method for providing fluid communication for in situ shale retort. 4,120,355, Cl. 166-259.000.
Knopp, Hans: *See—*
Martin, Wolfgang; Bauer, Wolfgang; Herion, Dieter; Linge, Hermann; and Knopp, Hans, 4,120,078, Cl. 28-252.000.
Knorr-Bremse GmbH: *See—*
Roider, Willibald, 4,120,385, Cl. 188-181.00R.
Knudson, Gary A. Structural cap and composite structure for buildings and the like. 4,120,123, Cl. 52-86.000.
Kobayashi, Hidehiko; Arakawa, Tatsumi; Shiga, Tetsuo; Ohmura, Kaoru; and Ito, Sakae, to Asahi Kasei Kogyo Kabushiki Kaisha. Printed circuit board made by dispersion imaging. 4,121,007, Cl. 428-201.000.
Koch, Friedhelm: *See—*
Merget, Norbert; and Koch, Friedhelm, 4,120,980, Cl. 426-69.000.
Kocherginsky, Meer Danilovich; Penkova, Lidia Fedorovna; and Naumenko, Viktor Arsenievich. Positive electrode for air-depolarized alkaline primary cell with thickened electrolyte. 4,121,018, Cl. 429-27.000.
Koci, Zdenek: *See—*
Agarwal, Suresh C.; and Koci, Zdenek, 4,120,648, Cl. 8-85.00R.
Kohashi, Akira: *See—*
Ohmura, Hiroshi; and Kohashi, Akira, 4,121,230, Cl. 354-21.000.
Kohl, Robert F.: *See—*
Heian, Glenn A.; and Kohl, Robert F., 4,120,645, Cl. 432-106.000.
Kojima, Koji: *See—*
Mima, Yoshitada; Kubushiro, Naoaki; and Kojima, Koji, 4,120,589, Cl. 356-121.000.
Kokosi, Jozsef: *See—*
Clauder, Otto; Kokosi, Jozsef; Szporny, Laszlo; and Karpati, Egon, 4,120,858, Cl. 260-293.550.
Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,121,258, Cl. 358-260.000.
Komaki, Takao: *See—*
Matsumoto, Seiji; Takahashi, Isoji; Komaki, Takao; Ishida, Masamitsu; Kozeki, Tomotaka; Horikawa, Kazuo; and Shimanuki, Kozi, 4,121,101, Cl. 250-315.00A.

Komine, Yoshio: *See—*
Sakaguchi, Keiichi; Komine, Yoshio; Ichiyanagi, Toshikazu; Shimazaki, Mamoru; and Hosoe, Kazuya, 4,120,571, Cl. 352-27.000.
Komorita, Fujio; and Nakahara, Muneo, to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho. Optical glass. 4,120,732, Cl. 106-47.00Q.
Kondo, Shinichi: *See—*
Umezawa, Hamao; and Kondo, Shinichi, 4,120,955, Cl. 424-180.000.
Konig, Johann: *See—*
Kurvers, Kurt; and Konig, Johann, 4,120,613, Cl. 417-53.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Watanabe, Koji; Ohta, Mitsunori; and Tomono, Makoto, 4,120,577, Cl. 355-4.000.
Koopmann, Adolf: *See—*
Hofmann, Wilfried; Lueder, Guenther; Rauffer, Walter; Krueger, John; and Koopmann, Adolf, 4,120,574, Cl. 353-27.00R.
Kopylova, Mira Semenovna: *See—*
Liverant, Vladimir Leibovich; Yagupolsky, Lev Moiseevich; Ilichenko, Andrei Yakovlevich; Timashpolskaya, Faina Borisovna; Fedorovskaya, Elena Alexeevna; Petrik, Lidia Ivanovna; Kalantarov, Iosif Yakubovich; Kopylova, Mira Semenovna; and Meitus, Idima Evgenievna, 4,120,855, Cl. 260-153.000.
Kotyuk, Bernard, to Primary Design Group, Inc. Pill package. 4,120,400, Cl. 206-528.000.
Kovacs, Jenoe; Jung, Hans; Marx, Matthias; and Spoor, Herbert, to BASF Aktiengesellschaft. Polyamide-imide precondensates. 4,121,266, Cl. 528-288.000.
Kovatch, George N.; and Rosey, Richard, to Westinghouse Electric Corp. Electrical switchboard apparatus with center fed vertical riser bus. 4,121,276, Cl. 361-342.000.
Koyanagi, Toru: *See—*
Isobe, Hiroshi; Koyanagi, Toru; and Sakuranaka, Toru, 4,120,275, Cl. 123-140.0MC.
Kozeki, Tomotaka: *See—*
Matsumoto, Seiji; Takahashi, Isoji; Komaki, Takao; Ishida, Masamitsu; Kozeki, Tomotaka; Horikawa, Kazuo; and Shimanuki, Kozi, 4,121,101, Cl. 250-315.00A.
Kraftwerk Union Aktiengesellschaft: *See—*
Bezold, Helmut, 4,120,751, Cl. 176-78.000.
Krause, Walter; Bober, Peter; and Haas, Eckhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Starting aid for internal combustion engines. 4,120,273, Cl. 123-122.00G.
Krauss-Maffei Austria Gesellschaft m.b.H.: *See—*
Bacher, Helmuth, 4,120,460, Cl. 241-278.00R.
Krechel, Joseph L.; and Purvis, Michael J., to Control Devices, Incorporated. Manifold assembly for compressed air storage tank or the like. 4,120,319, Cl. 137-583.000.
Krieg & Zivy Industries: *See—*
Godtschalck, Lucien Joseph, 4,120,551, Cl. 312-330.00R.
Kriegbaum, Ernst: *See—*
Ripphahn, Johannes; and Kriegbaum, Ernst, 4,120,205, Cl. 73-425.600.
Krishnamurthy, Varahur Ramaswamy, to RCA Corporation. Cathode-ray tube with double tension band. 4,121,257, Cl. 358-246.000.
Krivanek, Charles S., III. Low pressure gas regulator. 4,120,331, Cl. 141-66.000.
Kriz, Vladimir: *See—*
Bezstarosti, Ladislav; Lzicar, Josef; Lanta, Jiri; and Kriz, Vladimir, 4,120,326, Cl. 139-55.100.
Krogstad, Reuben S.: *See—*
Vali, Victor; Shorthill, Richard W.; Goldstein, Raymond; and Krogstad, Reuben S., 4,120,587, Cl. 356-106.0LR.
Krol, Johannes Wilhelmus Antonius; Lersmacher, Bernhard; and Seifert, Horst, to U.S. Philips Corporation. Method of manufacturing grid electrodes for electron tubes. 4,120,080, Cl. 29-25.180.
Krueger, John: *See—*
Hofmann, Wilfried; Lueder, Guenther; Rauffer, Walter; Krueger, John; and Koopmann, Adolf, 4,120,574, Cl. 353-27.00R.
Krulik, Gerald Albert: *See—*
Jameson, Melvin Neil; Klicker, James Donald; Krulik, Gerald Albert; and York, James Farnsworth, 4,120,822, Cl. 252-441.000.
Kruse, Walter M., to ICI Americas Inc. Tetravalent manganese-carbon oxidation catalysts and methods of their preparation. 4,120,824, Cl. 252-447.000.
Kubicek, Donald H., to Phillips Petroleum Company. Preparation of carbonyl sulfide and production of methyl mercaptan therefrom. 4,120,944, Cl. 423-416.000.
Kubinak, Ronald A.: *See—*
Cowe, Alan B.; Kubinak, Ronald A.; Pick, George G.; Flanagan, Richard M.; and Szabo, Francis S., 4,121,228, Cl. 354-7.000.
Kubo, Muneyuki: *See—*
Iizuka, Akio; Taguchi, Michiichi; and Kubo, Muneyuki, 4,120,821, Cl. 252-432.000.
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, to Kurosaki Refractories Co., Ltd. Apparatus for applying refractory material onto the inner surface of a furnace. 4,120,260, Cl. 118-317.000.
Kubozoe, Morioki; Minamikawa, Yoshihisa; and Katagiri, Shinjiro, to Hitachi, Ltd. Electron microscope. 4,121,100, Cl. 250-311.000.
Kubushiro, Naoaki: *See—*
Mima, Yoshitada; Kubushiro, Naoaki; and Kojima, Koji, 4,120,589, Cl. 356-121.000.
Kuenzli, Albert, to Sulzer Brothers Limited. Water-jet electrode steam generator. 4,121,090, Cl. 219-284.000.
Kugele, Thomas G., to Cincinnati Milacron Chemicals, Inc. Sulfide containing tin stabilizers. 4,120,845, Cl. 260-45.75S.
Kuhl, Karl-Heinz; Muranka, Eberhard; Schulz, Bernhard; and Tielens, Asmund, to TRW Inc. Electrical resistor and method of making same. 4,121,189, Cl. 338-226.000.
Kuhn, Leo A. Track eliminator apparatus. 4,120,365, Cl. 172-488.000.
Kuhnert, Gottfried, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Knitting machine. 4,120,178, Cl. 66-63.000.
Kummli, Paul: *See—*
Daniels, Raymond Alex; Gibson, David Kent; Kummli, Paul; Snell, Spencer Allan; and Ulrich, Michael Henry, 4,120,578, Cl. 355-8.000.
Kuna, Wayne A.: *See—*
Terzian, Rouben T.; Morrison, Howard J.; Schoenfield, Palmer J.; and Kuna, Wayne A., 4,120,117, Cl. 46-130.000.
Kunioka, Kazuo: *See—*
Miyauchi, Kohichiroh; Ohsumi, Atsushi; Haga, Yukio; Izumi, Tsutomu; Tsuru, Masahiro; Kunioka, Kazuo; and Sugiyama, Shunichi, 4,120,642, Cl. 432-12.000.
Kunkle, Timothy Edward, to Rockwell International Corporation. Valve-actuator coupling. 4,120,596, Cl. 403-14.000.
Kurata, Noboru: *See—*
Takano, Teruhisa; Kurata, Noboru; Kusunoki, Shigeru; and Yoshimura, Hirofumi, 4,121,078, Cl. 219-10.55F.
Kurosaki Refractories Co., Ltd.: *See—*
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, 4,120,260, Cl. 118-317.000.
Kurvers, Kurt; and Konig, Johann, to Accumulatorenfabrik Sonnenschein GmbH. Pump for molten lead, particularly injection pump used in the manufacture of storage battery plates. 4,120,613, Cl. 417-53.000.
Kuschel, Karl: *See—*
Hanisch, Gerhard; Fischer, Gunther; Gahler, Seigfried; Franz, Udo; Kuschel, Karl; Mayer, Roland; Bach, Gunther; and Junge, Karl-Wilhelm, 4,120,726, Cl. 96-107.000.
Kushibe, Seijiro: *See—*
Fujita, Susumu; Kushibe, Seijiro; and Shimizu, Hiroshi, 4,121,235, Cl. 354-234.000.
Kusunoki, Shigeru: *See—*
Takano, Teruhisa; Kurata, Noboru; Kusunoki, Shigeru; and Yoshimura, Hirofumi, 4,121,078, Cl. 219-10.55F.
Kuznetsova, Nadezhda Nikolaevna; Samsonov, Georgy Vasilievich; Papukova, Klavdia Pavlovna; Bilibina, Galina Vladimirovna; Shataeva, Larisa Konstantinovna; Selezneva, Aida Alexandrovna; Kuznetsova, Nina Petrovna; Vitols, Oyar Ansovich; Shtrausa, Anite Ansovna; Gudkin, Lev Romanovich; Mishaeva, Rimma Nikodimovna; and Rozhetskaya, Karina Moiseevna. Process for producing carboxyl cationites. 4,120,831, Cl. 521-38.000.
Kuznetsova, Nina Petrovna: *See—*
Kuznetsova, Nadezhda Nikolaevna; Samsonov, Georgy Vasilievich; Papukova, Klavdia Pavlovna; Bilibina, Galina Vladimirovna; Shataeva, Larisa Konstantinovna; Selezneva, Aida Alexandrovna; Kuznetsova, Nina Petrovna; Vitols, Oyar Ansovich; Shtrausa, Anite Ansovna; Gudkin, Lev Romanovich; Mishaeva, Rimma Nikodimovna; and Rozhetskaya, Karina Moiseevna, 4,120,831, Cl. 521-38.000.
Kysor Industrial Corporation: *See—*
Johnston, William C., 4,120,174, Cl. 62-256.000.
L. Schuler GmbH: *See—*
Schneider, Franz; Braitinger, Helmut; and Schumann, Burkhard, 4,120,185, Cl. 72-24.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Prost, Roger, 4,120,421, Cl. 220-423.000.
Lampert, Ernst, to Siemens Aktiengesellschaft. Method for the synchronization of a transmission path. 4,121,159, Cl. 325-65.000.
Lamy, Jacques Edouard, to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris". Apparatus for laying a pipeline in a body of water. 4,120,168, Cl. 405-170.000.
Lane, Robert E., Jr.: *See—*
Coker, William P.; and Lane, Robert E., Jr., 4,120,877, Cl. 260-348.230.
Lanese, Philip M., to Belco Pollution Control Corporation. Rapper assembly for electrostatic precipitators. 4,120,672, Cl. 55-112.000.
Lang, Hans Friedrich, to Gustav Weyland KG. Sheet stacking apparatus. 4,120,491, Cl. 271-64.000.
Lange, Steven R. Hollow core synthetic fireplace log and method and apparatus for producing same. 4,120,666, Cl. 44-10.00R.
Langecker, Erhard. Blow mold for the production of bellows made of a highly elastic plastic. 4,120,635, Cl. 425-535.000.
Langhammer, Jurgen: *See—*
Geck, Gunther; and Langhammer, Jurgen, 4,120,696, Cl. 75-13.000.
Lanier Business Products, Inc.: *See—*
Bohnhoff, Alan Earl, 4,121,060, Cl. 179-100.1DR.
Lannert, Kent P.: *See—*
Crutchfield, Marvin M.; and Lannert, Kent P., 4,120,874, Cl. 260-345.80R.
Lanta, Jiri: *See—*
Bezstarosti, Ladislav; Lzicar, Josef; Lanta, Jiri; and Kriz, Vladimir, 4,120,326, Cl. 139-55.100.
Larkin, Artemas M.: *See—*
Sivachenko, Eugene W.; Broacha, Firoze H.; and Larkin, Artemas M., 4,120,065, Cl. 14-6.000.
Lasky, Jerome B.; and Moran, Paul R., to United States of America, Energy. Thermoluminescent phosphor. 4,121,010, Cl. 428-403.000.

Lasmo, Raimo Juhani, to Karku-Titan Oy. Shoe for cross-country skiing. 4,120,104, Cl. 36-117.000.
LaSpisa, Ronald J.; and Giles, Richard F., to Phillips Petroleum Company. Automatic control of extrusion rate. 4,120,630, Cl. 425-142.000.
Lauer, George E.: *See—*
Stephanos, Stephen P., 4,120,403, Cl. 209-564.000.
Laurin, Bernard L.; Rotenberg, Don H.; and Crandon, Harry D., to American Optical Corporation. Abrasion-resistant optical element. 4,120,992, Cl. 427-164.000.
Lauton, Alain; and Berendt, Hans-Ulrich, to Ciba-Geigy Corporation. Process for the dyeing of wool-containing fibre materials. 4,120,647, Cl. 8-17.000.
Laval, Claude C., Jr. Device for separating a plural phase fluid system into its constituent phases. 4,120,795, Cl. 210-512.00R.
Lawrence, Dean M., to Caterpillar Tractor Co. Cab design. 4,120,527, Cl. 296-28.00C.
Leadbetter, Laurence D.: *See—*
Carp, Ralph W.; Ang, Leoncio T.; Leadbetter, Laurence D.; and Cornell, Grant Arthur, 4,120,539, Cl. 503-103.000.
Leal, Jean-Claude; Vannetzel, Henri; Grima, Jean-Claude; and David, Guy Albert Jules, to Telecommunications Radioelectriques et Telephoniques T.R.T. Alarm filtering in a ground proximity warning system. 4,121,287. Cl. 364-461.000.
Leang, William N. C.: *See—*
Otto, Paul R.; and Leang, William N. C., 4,120,381, Cl. 187-29.00R.
Leary, Bruce: *See—*
Gibson, David Vincent; and Leary, Bruce, 4,120,768, Cl. 204-181.00C.
LeBlanc, Oliver H., Jr.; Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Implantable electrochemical sensor having an external reference electrode. 4,120,292, Cl. 128-2.00E.
Lebourg, Maurice P. Method and apparatus for determining the spatial relationship between two misaligned tubular members. 4,120,095, Cl. 33-180.00R.
Lebre, Charles Jean-Pierre. System employing a strap for stowing containers against a wall. 4,120,076, Cl. 24-68.0CD.
Lednicer, Daniel, to Upjohn Company, The. Polycycloanilines. 4,120,199, Cl. 260-562.00R.
Lee, Cheuk Man; and Michaels, Raymond John, to Sharps Associates. 9-Hydroxy-7,8,9,10-tetrahydro-6H-dibenzo]B][D]pyranones. 4,120,873, Cl. 260-343.210.
Lee, Choon Bae; and Lim, Byung Chul. Filter for cigarettes, cigars and the like. 4,120,310, Cl. 131-261.00B.
Lee-You, James: *See—*
Smyth, Milagros B.; and Lee-You, James, 4,120,729, Cl. 106-35.000.
Leeming, Harold, to United States of America, Air Force. Method of using embedded normal stress sensors in propellant grains. 4,120,195, Cl. 73-768.000.
Leenhouts, Albert C., to Superior Electric Company, The. Stepping motor energizing circuit and method for minimizing step position error. 4,121,144, Cl. 318-696.000.
Le Hardy Guiton, Jeremy D.: *See—*
Collins, Michael H.; and Le Hardy Guiton, Jeremy D., 4,120,418, Cl. 220-444.000.
Leimala, Raimo Juhani: *See—*
Hummelstedt, Leif Erik Ingmar; Nyman, Bror Goran; and Leimala, Raimo Juhani, 4,120,817, Cl. 252-364.000.
Leising, Larry J.: *See—*
Tanguy, Denis R.; and Leising, Larry J., 4,120,198, Cl. 73-151.000.
Lemelson, Jerome H. Button assembly for textile material. 4,120,054, Cl. 2-265.000.
Lemelson, Jerome H. Method for molding. 4,120,922, Cl. 264-40.700.
Lemelson, Jerome H. Method of coating a composite mold. 4,120,930, Cl. 264-225.000.
Lemelson, Jerome H. Card recording and reproduction apparatus and method. 4,121,249, Cl. 358-132.000.
LeMire, Paul R., to Ackerman Bodnar Corporation. Fiber optic message character display device and method of making same. 4,121,206, Cl. 340-380.000.
Lemley, Robert M.: *See—*
Iverson, Harold L.; and Lemley, Robert M., 4,120,280, Cl. 126-30.000.
Lenz, Arnold: *See—*
Haase, Rainer; Hunger, Volker; and Lenz, Arnold, 4,120,938, Cl. 423-332.000.
LeRoch, Jacques. Stop valve. 4,120,483, Cl. 251-229.000.
Leroux, Yves Gerald. Expansion joint for roadway sections. 4,120,066, Cl. 14-16.500.
Lersmacher, Bernhard: *See—*
Krol, Johannes Wilhelmus Antonius; Lersmacher, Bernhard; and Seifert, Horst, 4,120,080, Cl. 29-25.180.
Lessner, David L., to Baxter Travenol Laboratories, Inc. Method and means for aligning focusing mirrors in an optical spectrometer. 4,120,586, Cl. 356-100.000.
Leutner, Volkmar; and Romes, Roman, to Robert Bosch GmbH. Injection-molding machine for synthetic plastic material. 4,120,631, Cl. 425-145.000.
Levaillant, Claude: *See—*
Azam, Guy; Bensussan, Andre; and Levaillant, Claude, 4,121,173, Cl. 331-9.000.
Levine, Aaron William: *See—*
Goodman, Lawrence Alan; Levine, Aaron William; and Meyerhofer, Dietrich, 4,120,567, Cl. 350-350.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,120,691, Cl. 71-93.000.
Levitt, George: *See—*
Goddard, Steven Jerome; and Levitt, George, 4,120,693, Cl. 71-96.000.
Levy, Abraham. Self-balancing continuous power transmission system and method. 4,120,213, Cl. 74-688.000.
Lewin, Menachem: *See—*
Lopatin, George; and Lewin, Menachem, 4,120,141, Cl. 57-34.0HS.
Lewis, Harvey L. Coupon holder. 4,120,313, Cl. 137-268.000.
Lewis, Philip J.: *See—*
Bice, John R.; and Lewis, Philip J., 4,120,970, Cl. 424-270.000.
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Substituted norbornane derivatives used in the process of flavoring tobacco and the product thereof. 4,120,308, Cl. 131-17.00R.
Lim, Byung Chul: *See—*
Lee, Choon Bae; and Lim, Byung Chul, 4,120,310, Cl. 131-261.00B.
Lin, Ben H.: *See—*
Hunt, Raymond L.; Lin, Ben H.; Ream, Thomas A.; Robertson, Gene D.; and Young, John H., 4,121,135, Cl. 315-169.00R.
Lindemann Maschinenfabrik GmbH: *See—*
Schafer, Anton; Probst, Karl; and Hufken, Kurt, 4,120,238, Cl. 100-11.000.
Linge, Hermann: *See—*
Martin, Wolfgang; Bauer, Wolfgang; Herion, Dieter; Linge, Hermann; and Knopp, Hans, 4,120,078, Cl. 28-252.000.
Link, Donald F., to Recovery Systems, Inc. Pulverizer. 4,120,457, Cl. 241-46.00R.
Linner, Hans Rolf Ingemar, to AB Akerlund & Rausing. Carton sealing strip applicator. 4,120,741, Cl. 156-522.000.
Linzey, Raynor: *See—*
Ross, Sidney D.; and Linzey, Raynor, 4,121,275, Cl. 361-319.000.
Lissau, Frederic, to Sloan Valve Company. Remote actuated flush valve. 4,120,314, Cl. 137-329.400.
Litch, Ivan J. Nail driver. 4,120,438, Cl. 227-147.000.
Little, Donald H.; and Spector, George. Fly swatter with extendable handle. 4,120,114, Cl. 43-137.000.
Liverant, Vladimir Leibovich; Yagupolsky, Lev Moiseevich; Ilichenko, Andrei Yakovlevich; Timashpolskaya, Faina Borisovna; Fedorovskaya, Elena Alexeevna; Petrik, Lidia Ivanovna; Kalantarov, Iosif Yakubovich; Kopylova, Mira Semenovna; and Meitus, Idima Evgenievna. Bactericidally active monochlorotriazine dyes. 4,120,855, Cl. 260-153.000.
Livshits, Anatoly Alexandrovich: *See—*
Auslender, Vadim Leonidovich; Budker, Gersh Itskovich; Glagolev, Georgy Borisovich; Livshits, Anatoly Alexandrovich; Perepelkin, Vitaly Petrovich; Polyakov, Vladimir Arkhipovich; Chepel, Lev Vladimirovich; Chertok, Ilya Lvovich; and Cheskidov, Vladimir Georgievich, 4,121,086, Cl. 219-121.0EM.
Lo, Allen Kwok Wah; and Nims, Jerry Curtis, to Dimensional Development Corporation. Stereoscopic picture. 4,120,562, Cl. 350-130.000.
Lohn, Gerd, to Kaltenbach & Voigt GmbH & Co. Pneumatic vane-type motor with bearing ring for vane tips. 4,120,623, Cl. 418-173.000.
Long, Eric L., to Cutler-Hammer, Inc. Snap-action electric switch with fulcrum means for limited contact sliding and positive-off torque. 4,121,069, Cl. 200-67.00A.
Longobardi, Mario; Schenone, Pietro; and Bondavalli, Francesco. Derivatives of 1,2,3,3-tetramethyl-2-azabicyclo[2.2.2]octan-5-endo-ol. 4,120,857, Cl. 260-293.540.
Lopatin, George; and Lewin, Menachem, to State of Israel Ministry of Commerce and Industry, The. Process and apparatus for the production of textured polyester yarn. 4,120,141, Cl. 57-34.0HS.
Lopez, Eugene F.: *See—*
Glover, Leon C.; and Lopez, Eugene F., 4,121,011, Cl. 428-347.000.
Lopez, Manuel: *See—*
Bourassa, Joseph R.; and Lopez, Manuel, 4,120,476, Cl. 248-486.000.
Lorteije, Jean Hubertus Josef; and Warrink, Geert, to U.S. Philips Corporation. Column electrode drive for gas discharge display device. 4,121,256, Cl. 358-240.000.
Love, Roosevelt: *See—*
Childs, Jerry D.; and Love, Roosevelt, 4,120,736, Cl. 106-90.000.
Lovendahl, Norman H. Boring tool. 4,120,599, Cl. 408-150.000.
Lovick, James Shepperd. Apparatus for surgical procedures involving animals. 4,120,301, Cl. 128-303.00R.
Lowe, Keith B.; and Gray, William R., to Allis-Chalmers Corporation. Impact crusher with retractable and tiltable feed chute. 4,120,459, Cl. 241-186.200.
Lubbock Manufacturing Company: *See—*
Hurt, Henry Wayne, 4,120,513, Cl. 280-423.00B.
Lucas Industries Limited: *See—*
Hill, William Frank, 4,121,146, Cl. 320-48.000.
Luder, Jacques, to Societe Anonyme dite Compagnie Industrielle des Telecommunications Cit-Alcatel. Frame synchronizing device. 4,121,057, Cl. 179-15.0BS.
Ludlow Corporation: *See—*
Carrier, Lee A.; and Carpenter, Leon G., 4,120,445, Cl. 229-53.000.
Lueder, Guenther: *See—*
Hofmann, Wilfried; Lueder, Guenther; Rauffer, Walter; Krueger, John; and Koopmann, Adolf, 4,120,574, Cl. 353-27.00R.
Lush, Richard C. Mattress construction. 4,120,060, Cl. 5-345.00R.
Lutz, Charles William, to FMC Corporation. Polyethylene glycol-stabilized peroxygens. 4,120,812, Cl. 252-186.000.

Lutzke, William C.: *See—*
Blink, Robert O.; and Lutzke, William C., 4,120,249, Cl. 108-113.000.
Luzzi, John J.: *See—*
Spivack, John D.; and Luzzi, John J., 4,120,846, Cl. 260-45.85B.
Lynn, Charles Carl, to Stauffer Chemical Company. Whole egg replacer. 4,120,986, Cl. 426-549.000.
Lzicar, Josef: *See—*
Bezstarosti, Ladislav; Lzicar, Josef; Lanta, Jiri; and Kriz, Vladimir, 4,120,326, Cl. 139-55.100.
M&T Chemicals Inc.: *See—*
Bednarski, John R.; and Russell, David B., 4,121,034, Cl. 526-240.000.
Hirshman, Justin L.; and Russo, Robert V., 4,120,875, Cl. 260-346.110.
Maas, Edward T., Jr.: *See—*
DeLuca, John P.; and Maas, Edward T., Jr., 4,120,936, Cl. 423-261.000.
Macey, Peter E.: *See—*
Bristow, Norman W.; Macey, Peter E.; Nichol, Kenneth J.; and Sim, Malcolm F., 4,120,960, Cl. 424-250.000.
MacPherson, Edwin J.: *See—*
Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; Neidermyer, Robert W.; and Crittendon, Charles E., 4,120,861, Cl. 260-302.00D.
Macrory, Richard Brabazon; and Young, Nicholas Gordon. Chase-type board game. 4,120,503, Cl. 273-244.000.
Maeda, Katsuaki: *See—*
Sakurai, Hisaya; Morita, Hideo; Ikegami, Tadashi; Maeda, Katsuaki; and Furusato, Masayasu, 4,120,883, Cl. 260-448.00A.
Magee, David S.: *See—*
Dugan, Judith A., 4,120,100, Cl. 35-73.000.
Magee, Robert L.: *See—*
Kennedy, Alvin B., Jr.; Shirey, Lawrence E.; Sharp, Harper Eugene; Trowbridge, Lawrence E.; and Magee, Robert L., 4,120,699, Cl. 134-1.000.
Magnavox Company, The: *See—*
Hunt, Raymond L.; Lin, Ben H.; Ream, Thomas A.; Robertson, Gene D.; and Young, John H., 4,121,135, Cl. 315-169.00R.
Magnetic Peripherals Inc.: *See—*
Garde, Lawrence, 4,121,172, Cl. 331-1.00A.
Rodd, Charles R.; and Scheuerman, Richard L., 4,120,217, Cl. 81-9.510.
Mahan, John E.: *See—*
Fahey, Darryl R.; and Mahan, John E., 4,120,907, Cl. 260-666.00B.
Mahieu, William R., to A. B. Chance Company. High speed ratio, dual fuse link. 4,121,187, Cl. 337-171.000.
Mailloux, Louis D.; and Bollman, James E., to Xerox Corporation. Collating system for slide reproduction. 4,120,580, Cl. 355-14.000.
Maiorano, Dominick J., to Xerox Corporation. Imaging system for a photocopying device. 4,120,579, Cl. 355-11.000.
Majcher, John P.: *See—*
Rexroad, James O.; and Majcher, John P., 4,121,067, Cl. 200-50.0AA.
Makimoto, Mitsuo; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Limited. Electrical tuning circuit. 4,121,182, Cl. 333-73.00S.
Malaval, Claude, to Groupement Atomique Alsacienne Atlantique. Solid absorbant safety device for a nuclear reactor. 4,120,753, Cl. 176-86.00R.
Malec, Robert E., to Ethyl Corporation. Lubricant composition containing a dispersant which is a condensation product of a copolymer, polyamine and a polycarboxylic acid. 4,120,803, Cl. 252-51.50A.
Mallory, James D.; Fleck, John F.; and Cuniberti, Mario, to Owens-Illinois, Inc. Mold ring transfer apparatus. 4,120,684, Cl. 65-302.000.
Malmuth, Norman D.; Birnbaum, George; and Iceland, William F., to Rockwell International Corporation. Method and apparatus for controlling laser welding. 4,121,087, Cl. 219-121.00L.
Maloney, Thomas C., to Burroughs Corporation. Display panel and method of manufacture thereof. 4,121,129, Cl. 313-221.000.
Mama, Kelly D.; and Roller, Otto C., to Channon Corporation. Aircraft hanger door. 4,120,342, Cl. 160-310.000.
Mandel, Harvey B.; and Thyen, Eberhard H., to Ethicon, Inc. Package for double-armed sutures. 4,120,395, Cl. 206-63.300.
Mandusky, Jack C.: *See—*
Kitchen, John P.; and Mandusky, Jack C., 4,120,058, Cl. 5-247.000.
Mann, David R. Oiler for motorcycle drive chains. 4,120,380, Cl. 184-15.00R.
Manor, George H. X-ray film marking device and methods of making and using the same. 4,121,108, Cl. 250-476.000.
Manor, Nathan. Displaceable garbage bin holder. 4,120,548, Cl. 312-249.000.
Manos, Philip, to Du Pont de Nemours, E. I., and Company. Solvent exchange drying of membranes for gas separation. 4,120,098, Cl. 34-9.000.
Marchessault, Richard G.; Carter, Thomas P., Jr.; and Williams, Martin M., to Celanese Polymer Specialties Company. Pressure sensitive adhesive composition. 4,121,028, Cl. 526-48.100.
Marcucci, Robert L.: *See—*
Bunch, Carroll S.; Perry, Jerry L.; and Marcucci, Robert L., 4,121,216, Cl. 343-113.00R.
Marinaccio, Richard E.; and Meier, Ward M., to United States of America, Air Force. Proximity fuze jammer. 4,121,214, Cl. 343-18.00E.
Marklund, Karl Georg Erhard: *See—*
Hellgren, Hans Arthur; and Marklund, Karl Georg Erhard, 4,120,333, Cl. 144-312.000.
Marles, Kevin C.; Spencer, Brian W.; and Spencer, Raymond, to Solar Apparatus & Equipment Limited. Solar heating panels. 4,120,287, Cl. 126-271.000.
Marshall Richards Barcro Limited: *See—*
Pamplin, John Warner; Bennett, James Vine; and Elson, Peter Fred, 4,120,186, Cl. 72-278.000.
Martin, Charles K., to Infern-O-Therm Corporation. Burner for liquid fuel. 4,120,640, Cl. 431-353.000.
Martin Marietta Corporation: *See—*
Popkin, Philip, 4,121,054, Cl. 179-15.0BD.
Martin, William H., to Raymond Lee Organization, Inc., The, a part interest. Golf game apparatus. 4,120,502, Cl. 273-176.00R.
Martin, Wolfgang; Bauer, Wolfgang; Herion, Dieter; Linge, Hermann; and Knopp, Hans, to BASF Aktiengesellschaft. Simultaneous texturizing and entangling of filament bundles. 4,120,078, Cl. 28-252.000.
Marvin Glass & Associates: *See—*
Schlau, Floyd E.; and Morrison, Howard J., 4,120,190, Cl. 72-458.000.
Terzian, Rouben T.; Morrison, Howard J.; Schoenfield, Palmer J.; and Kuna, Wayne A., 4,120,117, Cl. 46-130.000.
Marx, Matthias: *See—*
Kovacs, Jenoe; Jung, Hans; Marx, Matthias; and Spoor, Herbert, 4,121,266, Cl. 528-288.000.
Marxer, S.p.A.: *See—*
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Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Heeren, Hermann, 4,120,162, Cl. 60-690.000.
Maschinenfabrik Hennecke GmbH: *See—*
Keller, Heinrich, 4,120,626, Cl. 425-89.000.
Mascia, Carmen T.; and Hasegawa, Gary K., to Continental Group, Inc., The. Reusable can carrier with can enlocking means on opposite surfaces. 4,120,396, Cl. 206-151.000.
Mason, Donald R., to Harris Corporation. Heteroepitaxial deposition of gap on silicon substrates. 4,120,706, Cl. 148-175.000.
Massey-Ferguson Inc.: *See—*
Rose, Jack Howard, 4,120,136, Cl. 56-17.100.
Massey-Ferguson Services N.V.: *See—*
Hartwich, Siegfried, 4,120,372, Cl. 180-9.500.
Masuda, Takao: *See—*
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Matburn (Holdings) Limited: *See—*
Ockwell, Malcolm Charles; McLeod, Patrick Hugh; and Briggs, Peter James, 4,120,715, Cl. 156-252.000.
Mathews, Lorraine: *See—*
Mathews, Richard; and Mathews, Lorraine, 4,120,118, Cl. 46-201.000.
Mathews, Richard; and Mathews, Lorraine. Semi-disassemblable toy vehicle. 4,120,118, Cl. 46-201.000.
Matsumoto, Hiroshi; Nakano, Yoshiyuki; Higashi, Toshihiko; and Yasumoto, Akihiro, to Hitachi, Ltd. Steam turbine control system and method of controlling the ratio of steam flow between under full-arc admission mode and under partial-arc admission mode. 4,120,159, Cl. 60-667.000.
Matsumoto, Seiji; Takahashi, Isoji; Komaki, Takao; Ishida, Masamitsu; Kozeki, Tomotaka; Horikawa, Kazuo; and Shimanuki, Kozi, to Fuji Photo Film Co., Ltd. Method of recording radiographic images. 4,121,101, Cl. 250-315.00A.
Matsumoto, Youichi; and Tagashira, Yoshimi, to Nippon Electric Co., Ltd. Phase synchronizing circuit for demodulation of multi-phase PSK signals. 4,121,166, Cl. 329-122.000.
Matsumoto, Zenji: *See—*
Numasaki, Kouichi; Sakai, Yoshihisa; Nawa, Takehiko; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,120,644, Cl. 432-99.000.
Matsunami, Koichi: *See—*
Furukawa, Kaoru; Matsunami, Koichi; Ota, Toshihiko; Murakami, Tetsushi; Nagai, Hiroshi; and Tamaki, Kazuo, 4,120,928, Cl. 264-171.000.
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Matsushita Electric Industrial Co., Limited: *See—*
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Hatanaka, Hideo; Murakami, Yoshinobu; and Morimoto, Kazuhisa, 4,120,813, Cl. 252-194.000.
Hayashi, Yoshiaki, 4,121,267, Cl. 360-85.000.
Kimura, Atsushi; and Ishimoto, Tasuku, 4,120,452, Cl. 235-381.000.
Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,121,182, Cl. 333-73.00S.
Nakabe, Ryuhei; Ohta, Yoshio; and Matsuura, Toshiro, 4,121,244, Cl. 358-44.000.
Ogawa, Hiromichi; Inoue, Kenji; and Fujiwara, Akira, 4,121,021, Cl. 429-162.000.
Takano, Teruhisa; Kurata, Noboru; Kusunoki, Shigeru; and Yoshimura, Hirofumi, 4,121,078, Cl. 219-10.55F.
Tsuboi, Yoshikazu; and Uzu, Yoshitomo, 4,121,198, Cl. 340-171.00R.
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Matucheski, Joseph Victor, to Wallace Murray Corporation. Sheet metal fan blade forming process. 4,120,257, Cl. 113-116.00D.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, In-

geborg, Behrenz, Wolfgang; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating arthropods with 3-alkoxymethyl- and-alkylthiomethyl-pyrazol(5)yl(thiono)(thiol)-phosphoric(phosphonic) acid esters and ester-amides. 4,120,956, Cl. 424-200.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Jagoutz, Emil; and Palme, Christl, 4,121,098, Cl. 250-273.000.
Kessler, Manfred, 4,120,770, Cl. 204-195.00R.

Mayer, Roland: *See*—
Hanisch, Gerhard; Fischer, Gunther; Gahler, Seigfried; Franz, Udo; Kuschel, Karl; Mayer, Roland; Bach, Gunther; and Junge, Karl-Wilhelm, 4,120,726, Cl. 96-107.000.

Mazzei, Umberto: *See*—
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Mazzoleni, Giorgio: *See*—
Vargiu, Silvio; Mazzoleni, Giorgio; and Pezzoli, Silvestro, 4,120,685, Cl. 71-30.000.

McBain, Alexander J. Apparatus for agitating a fishing line. 4,120,112, Cl. 43-19.200.

McBride, Richard D.: *See*—
Quinlan, Patrick M.; and McBride, Richard D., 4,120,654, Cl. 422-16.000.

McCall, Samuel Leverte, Jr.: *See*—
Gibbs, Hyatt McDonald; McCall, Samuel Leverte, Jr.; and Venkatesan, Thirumalai Nallan Chakravarthy, 4,121,167, Cl. 330-4.300.

McCarter, Henry: *See*—
Gutcho, Sidney; and McCarter, Henry, 4,120,945, Cl. 424-1.000.

McClain, Robert W., to Glitsch, Inc. Quick opening removable tray sections for fluid contact. 4,120,919, Cl. 261-114.0TC.

McConnell, Joseph W. Folding rack and work table. 4,120,485, Cl. 254-88.000.

McConnell, Richard L.: *See*—
Meyer, Max F., Jr.; and McConnell, Richard L., 4,120,916, Cl. 260-897.00A.

McCoy, Reginald F. H., to Vital Industries, Inc. Video special effects generator. 4,121,253, Cl. 358-181.000.

McCulloch Corporation: *See*—
Ehlen, Jack W., 4,120,277, Cl. 123-148.0CC.

McEwan, Keith John Bruce, to Joseph Lucas (Batteries) Limited. Method of securing a battery terminal to an external wall. 4,120,087, Cl. 29-623.200.

McGean Chemical Co.: *See*—
Jameson, Melvin Neil; Klicker, James Donald; Krulik, Gerald Albert; and York, James Farnsworth, 4,120,822, Cl. 252-441.000.

McGrath-Hamin, Inc.: *See*—
Newman, Thomas A., 4,120,401, Cl. 206-566.000.

McInerney, Charles E., to Garrett Corporation, The. Turbocharger control. 4,120,156, Cl. 60-602.000.

McLain, Philippe Hardy-The, to Shakespeare Company. Monofilament sewing thread. 4,120,255, Cl. 112-222.000.

McLaughlin, Thomas D.: *See*—
Altman, Richard M.; and McLaughlin, Thomas D., 4,121,234, Cl. 354-201.000.

McLeod, Patrick Hugh: *See*—
Ockwell, Malcolm Charles; McLeod, Patrick Hugh; and Briggs, Peter James, 4,120,715, Cl. 156-252.000.

McMackins, Dudley E.: *See*—
Hobbs, Charles F.; and McMackins, Dudley E., 4,120,901, Cl. 260-585.00D.

McPherson, Charles Allen, to Western Electric Company, Inc. Cured epoxy polymer having improved adhesive properties. 4,121,015, Cl. 428-418.000.

McRoskey, John W.; McRoskey, Leonard H.; and Swartz, Delbert D., to Republic Tool & Manufacturing Corp. Powder gun. 4,120,427, Cl. 222-193.000.

McRoskey, Leonard H.: *See*—
McRoskey, John W.; McRoskey, Leonard H.; and Swartz, Delbert D., 4,120,427, Cl. 222-193.000.

McVean, Michael T.: *See*—
Bowen, Leon O., Jr.; and McVean, Michael T., 4,120,290, Cl. 126-299.00D.

Meadows, Lee A., to Raytheon Company. Radio frequency array antenna system. 4,121,221, Cl. 343-854.000.

Mecherlen, Otto, to Raymond Lee Organization, Inc., The. Vertical barbecue. 4,120,237, Cl. 99-340.000.

Meckstroth, Alan F. Hanger for supporting pants and the like. 4,120,433, Cl. 223-95.000.

Medovar, Boris Izrailevich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Stupak, Leonid Mikhailovich; Baglai, Viktor Mikhailovich; Bogachenko, Alexei Georgievich; Kazakov, Sergei Sergeevich; and Tsykulenko, Anatoly Konstantinovich, 4,120,695, Cl. 75-10.00C.

Medtronic, Inc.: *See*—
Jirak, Thomas L.; and Mulier, Pieter M. J., 4,120,307, Cl. 128-419.0PT.

Megnint, Lucien, to Neyrpic - Creusot Loire; and Compagnie Nationale du Rhone. Method and apparatus for controlling a water turbine. 4,120,602, Cl. 415-1.000.

Mehnert, Walter, to Director Ing. Fritz Loertscher. Method and apparatus for the slip-free hauling of a rope or the like. 4,120,486, Cl. 254-150.00R.

Meier, Ward M.: *See*—
Marinaccio, Richard E.; and Meier, Ward M., 4,121,214, Cl. 343-18.00E.

Meigs, Gordon Wallace; and Thomas, Wayne Donald, to Tektronix, Inc. Pulse peak detector. 4,121,119, Cl. 307-351.000.

Meisinger, Robert H. Benzophenones and benzhydrols. 4,120,687, Cl. 71-78.000.

Meister, John J., to Phillips Petroleum Company. Well-cleaning process using viscosified surfactant solutions. 4,120,356, Cl. 166-267.000.

Meitus, Idima Evgenievna: *See*—
Liverant, Vladimir Leibovich; Yagupolsky, Lev Moiseevich; Ilichenko, Andrei Yakovlevich; Timashpolskaya, Faina Borisovna; Fedorovskaya, Elena Alexeevna; Petrik, Lidia Ivanovna; Kalantarov, Iosif Yakubovich; Kopylova, Mira Semenovna; and Meitus, Idima Evgenievna, 4,120,855, Cl. 260-153.000.

Mengali, Umberto: *See*—
Dogliotti, Renato; Mazzei, Umberto; and Mengali, Umberto, 4,121,165, Cl. 329-50.000.

Merck & Co., Inc.: *See*—
Czaja, Robert F.; and Grabowski, Edward J. J., 4,121,041, Cl. 544-21.000.
Saari, Walfred S.; and Huff, Joel R., 4,120,971, Cl. 424-272.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Ripphahn, Johannes; and Kriegbaum, Ernst, 4,120,205, Cl. 73-425.600.

Merezhkin, Vasily Grigorievich. System for automatic control of object by contrast program. 4,121,096, Cl. 250-202.000.

Merget, Norbert; and Koch, Friedhelm, to Veba Chemie Aktiengesellschaft. Protein-rich foodstuffs for ruminants. 4,120,980, Cl. 426-69.000.

Merritt, John H.: *See*—
Smith, Charles A.; and Merritt, John H., 4,120,241, Cl. 100-142.000.

Messenger, Joseph U., to Mobil Oil Corporation. Treating wells to mitigate flow-after-cementing. 4,120,360, Cl. 166-293.000.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See*—
Banga, Julius, 4,121,281, Cl. 363-17.000.
Bschorr, Oskar, 4,120,382, Cl. 188-1.00B.

Metallwerk Max Brose GmbH & Co.: *See*—
Becker, Herbert, 4,120,120, Cl. 49-351.000.

Metco, Inc.: *See*—
Harrington, John H.; Smyth, Richard T.; and Weir, John D., 4,121,082, Cl. 219-76.160.
Smyth, Richard T., 4,121,083, Cl. 219-76.160.

Metzeler Kautschuk AG: *See*—
Rost, Harry, 4,120,717, Cl. 156-405.00R.

Meyer, Eckhard: *See*—
Berndes, Gunter; and Meyer, Eckhard, 4,121,239, Cl. 357-39.000.

Meyer, Fred J.; and Newman, Seymour, to Ford Motor Company. Molded calcium carbonate filled propylene resin composites. 4,120,844, Cl. 260-42.000.

Meyer, Max F., Jr.; and McConnell, Richard L., to Eastman Kodak Company. Amorphous and crystalline polyolefin based hot-melt adhesive. 4,120,916, Cl. 260-897.00A.

Meyerhofer, Dietrich: *See*—
Goodman, Lawrence Alan; Levine, Aaron William; and Meyerhofer, Dietrich, 4,120,567, Cl. 350-350.000.

Michael, Harald Richard. Vacuum-type water removal systems for buildings. 4,120,312, Cl. 137-236.00R.

Michaels, Raymond John: *See*—
Lee, Cheuk Man; and Michaels, Raymond John, 4,120,873, Cl. 260-343.210.

Michalchik, Michael, to Dynacon Industries, Inc. Pressure sensitive resistance and process of making same. 4,120,828, Cl. 252-513.000.

Michel, Edmond; Duikers, Marcel; and Poty, Andre, to Solvay & Cie. Apparatus for the continuous production of oriented hollow bodies from a thermoplastic. 4,120,634, Cl. 425-525.000.

Michele, Joseph V.: *See*—
Campos, Adolph J.; and Michele, Joseph V., 4,120,620, Cl. 418-61.00A.

Micheletti, Fabrizio, to Brematex S.p.A. Radially insertable and pivotable cams. 4,120,177, Cl. 66-40.000.

Micheletti, Fabrizio, to Brematex S.p.A. Yarn cutting device for a circular knitting machine. 4,120,179, Cl. 66-145.00R.

Michelman, David L.: *See*—
Michelman, Lionel S.; Michelman, Samuel M.; Michelman, David L.; and Michelman, Milton, 4,120,182, Cl. 70-63.000.

Michelman Iron Works Corp.: *See*—
Michelman, Lionel S.; Michelman, Samuel M.; Michelman, David L.; and Michelman, Milton, 4,120,182, Cl. 70-63.000.

Michelman, Lionel S.; Michelman, Samuel M.; Michelman, David L.; and Michelman, Milton, to Michelman Iron Works Corp. Tamperproof locking device. 4,120,182, Cl. 70-63.000.

Michelman, Milton: *See*—
Michelman, Lionel S.; Michelman, Samuel M.; Michelman, David L.; and Michelman, Milton, 4,120,182, Cl. 70-63.000.

Michelman, Samuel M.: *See*—
Michelman, Lionel S.; Michelman, Samuel M.; Michelman, David L.; and Michelman, Milton, 4,120,182, Cl. 70-63.000.

Microbox Dr. Welp GmbH & Co.: *See*—
Welp, Ulrich; and Sellien, Gero, 4,121,236, Cl. 354-323.000.

Microcom Corporation: *See*—
Doherty, Michael J., 4,121,055, Cl. 179-15.00A.

Midden, William E.: *See*—
Funk, David B.; and Midden, William E., 4,121,151, Cl. 324-61.00R.

Middleton, Verne L.: *See*—
Kleine, Charles A.; and Middleton, Verne L., 4,120,351, Cl. 165-170.000.

Middleton, William Joseph: *See*—
Bingham, Elena Maria; and Middleton, William Joseph, 4,120,856, Cl. 260-239.30D.

Midland-Ross Corporation: *See*—
Suk, Eugene J., 4,120,416, Cl. 220-3.400.
Suk, Eugene J., 4,120,473, Cl. 248-205.00R.
Thekdi, Arvind C.; Chojnacki, Dennis A.; and Hemsath, Klaus H., 4,120,639, Cl. 431-158.000.

Milberger, Ernest C.: *See*—
Bremer, Noel J.; White, James F.; and Milberger, Ernest C., 4,120,876, Cl. 260-346.750.

Millard, Barry John, to Adwest Engineering Limited. Ball joint. 4,120,597, Cl. 403-24.000.

Miller, Charles P., to Miller Formless Co. Inc. Compensated extendable steering means for heavy machines. 4,120,507, Cl. 280-6.00R.

Miller Formless Co. Inc.: *See*—
Miller, Charles P., 4,120,507, Cl. 280-6.00R.

Miller, Jan D.; and Sepulveda, Jaime E., to University of Utah. Separation of bitumen from dry tar sands. 4,120,776, Cl. 208-11.0LE.

Miller, Robert E.; and Brockett, Bruce W., to NCR Corporation. Record material. 4,121,013, Cl. 428-411.000.

Miller, Roy W.; and Nagy, Ernest J., to Pullman Incorporated. Trackside door closing arrangement for railway hopper cars. 4,120,412, Cl. 214-63.000.

Mills, E. Bennett: *See*—
Mills, Ernest E.; Mills, E. Bennett; and Mills, Stanley L., 4,120,378, Cl. 182-14.000.

Mills, Ernest E.; Mills, E. Bennett; and Mills, Stanley L. Movable work support for cylindrical structures. 4,120,378, Cl. 182-14.000.

Mills, James M.: *See*—
Orcutt, John W.; and Mills, James M., 4,121,074, Cl. 200-83.00P.

Mills, Stanley L.: *See*—
Mills, Ernest E.; Mills, E. Bennett; and Mills, Stanley L., 4,120,378, Cl. 182-14.000.

Mima, Yoshitada; Kubushiro, Naoaki; and Kojima, Koji, to Hitachi Denshi Kabushiki Kaisha; and Kabushiki Kaisha Banzai. Method and apparatus for measuring the distribution of a light field about the optical axis of a light source. 4,120,589, Cl. 356-121.000.

Minamikawa, Yoshihisa: *See*—
Kubozoe, Morioki; Minamikawa, Yoshihisa; and Katagiri, Shinjiro, 4,121,100, Cl. 250-311.000.

Minekawa, Saburo; Yonekawa, Sigeru; Tabata, Haruro; Ishida, Takashi; Tsuchida, Satoshi; and Yamada, Kiyoshi. Process for producing random copolymers. 4,121,031, Cl. 526-173.000.

Minerec Corporation: *See*—
Bolth, Franklin Anderson, 4,120,888, Cl. 260-463.000.

Minnesota Mining and Manufacturing Company: *See*—
Hudalla, Mark G., 4,120,718, Cl. 156-499.000.
Roberts, Charles William, 4,121,005, Cl. 428-131.000.

Mioen, Thomas K., to Boliden Aktiebolag. Method for working-up shale. 4,120,934, Cl. 423-18.000.

Mirtain, Henri J. Pneumatic tire having an improved heel structure. 4,120,338, Cl. 152-354.00R.

Mischutin, Vladimir, to White Chemical Corporation. Flame retardants for synethetic materials. 4,120,798, Cl. 252-8.100.

Mishaeva, Rimma Nikodimovna: *See*—
Kuznetsova, Nadezhda Nikolaevna; Samsonov, Georgy Vasilievich; Papukova, Klavdia Pavlovna; Bilibina, Galina Vladimirovna; Shataeva, Larisa Konstantinovna; Selezneva, Aida Alexandrovna; Kuznetsova, Nina Petrovna; Vitols, Oyar Ansovich; Shtrausa, Anite Ansovna; Gudkin, Lev Romanovich; Mishaeva, Rimma Nikodimovna; and Rozhetskaya, Karina Moiseevna, 4,120,831, Cl. 521-38.000.

Mishima, Kiyoshi: *See*—
Torii, Sigeru; Tanaka, Hideo; and Mishima, Kiyoshi, 4,120,764, Cl. 204-78.000.

Mitchell Manufacturing Company: *See*—
Blink, Robert O.; and Lutzke, William C., 4,120,249, Cl. 108-113.000.

Mitchell, Winalee G. Laundry bag. 4,120,335, Cl. 150-7.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Tanaka, Masaharu, 4,121,075, Cl. 200-148.00A.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Ueda, Kenji, 4,120,760, Cl. 204-55.00R.

Mitsuboshi Belting Limited: *See*—
Kanamori, Katsuo; Sakurai, Nobuo; and Arai, Ryozo, 4,120,785, Cl. 209-401.000.

Miyauchi, Kohichiroh; Ohsumi, Atsushi; Haga, Yukio; Izumi, Tsutomu; Tsuru, Masahiro; Kunioka, Kazuo; and Sugiyama, Shunichi, to Nippon Kokan Kabushiki Kaisha. Method for heating ingot in soaking pit. 4,120,642, Cl. 432-12.000.

Miyazaki, Seiichi, to Ohkura Electric Co., Ltd. Bipolar signal generating apparatus. 4,121,118, Cl. 307-262.000.

Mizuno, Masaya: *See*—
Takeuchi, Jikko; and Mizuno, Masaya, 4,121,224, Cl. 346-139.00C.

Mobil Oil Corporation: *See*—
Audeh, Costandi A.; and Yan, Tsoung-Yuan, 4,120,782, Cl. 208-305.000.
Braddon, George Dayman, Sr., 4,120,398, Cl. 206-408.000.
Chen, Catherine S. H.; Schwab, Frederick C.; and Sheppard, Edward W., 4,120,801, Cl. 252-8.55D.
Chu, Pochen, 4,120,910, Cl. 260-673.000.
Messenger, Joseph U., 4,120,360, Cl. 166-293.000.
Schmitt, Kirk D., 4,120,917, Cl. 260-976.000.

Moeckli, David Edward: *See*—
White, Robert Edward; and Moeckli, David Edward, 4,121,113, Cl. 307-140.000.

Molins, Desmond Walter; Hinchcliffe, Dennis; and Clarke, Peter Alec, to Molins Limited. Conveyor systems for cigarettes and other rod-like articles. 4,120,391, Cl. 198-347.000.

Molins Limited: *See*—
Molins, Desmond Walter; Hinchcliffe, Dennis; and Clarke, Peter Alec, 4,120,391, Cl. 198-347.000.

Molnar, Imre. Two-passage pipe, especially for air conditioning installations. 4,120,347, Cl. 165-48.00R.

Molzahn, Martin: *See*—
Gettert, Hans; Fromm, Hermann Dieter; Molzahn, Martin; Schier, Ernst-Juergen; and Schneehage, Hans Henning, 4,120,667, Cl. 55-48.000.

Monarch Marking Systems, Inc.: *See*—
Williams, Frederick P., 4,121,003, Cl. 428-40.000.

Moncheaux, Michel Jean: *See*—
Chenel, Pierre; and Moncheaux, Michel Jean, 4,120,999, Cl. 428-34.000.

Monsanto Company: *See*—
Baldyga, Eugene P., 4,120,135, Cl. 53-473.000.
Chi, Henry K.; and Higgins, Alton L., 4,120,851, Cl. 260-880.00R.
Crutchfield, Marvin M.; and Lannert, Kent P., 4,120,874, Cl. 260-345.80R.
Culbertson, Harry M., 4,120,847, Cl. 528-140.000.
Dutra, Gerard A., 4,120,689, Cl. 71-86.000.
Hobbs, Charles F.; and McMackins, Dudley E., 4,120,901, Cl. 260-585.00D.
Steinmeyer, Daniel E., 4,120,671, Cl. 55-96.000.
White, Donald A., 4,120,761, Cl. 204-59.00R.

Montajes Electronicos Dorcas S.A.: *See*—
Fayos, D. Jose Antonio Navarro, 4,120,523, Cl. 292-268.000.

Montanarello, Benedict. Light image target with elevating and rotating projector. 4,120,500, Cl. 273-101.000.

Montedison S.p.A.: *See*—
Fatutto, Pierluigi, 4,120,834, Cl. 521-164.000.

Montgomery, Warren G. Crossover dump and conveyor advancer. 4,120,390, Cl. 198-309.000.

Mookherjee, Braja Dulal: *See*—
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,120,308, Cl. 131-17.00R.

Moor, Burdette J. Naso-gastric tube holder. 4,120,304, Cl. 128-348.000.

Moore, Carl Orville, to A. E. Staley Manufacturing Company. Aerated confections. 4,120,987, Cl. 426-572.000.

Moran, Paul R.: *See*—
Lasky, Jerome B.; and Moran, Paul R., 4,121,010, Cl. 428-403.000.

Morelock, Charles R.: *See*—
Hillig, William B.; and Morelock, Charles R., 4,120,731, Cl. 106-44.000.

Moreno, Joseph A. Pen for writing a double line. 4,120,595, Cl. 401-35.000.

Morgan, Ronald Wade; and Witherspoon, David Lane. Tape applicator for drapery tabler. 4,120,740, Cl. 156-522.000.

Mori, Yoichi; Ueda, Kanichi; and Takahashi, Masao, to Toray Industries, Inc. Polyurethane spectacle frames or single parts thereof and process for making. 4,120,848, Cl. 528-67.000.

Morimoto, Kazuhisa: *See*—
Hatanaka, Hideo; Murakami, Yoshinobu; and Morimoto, Kazuhisa, 4,120,813, Cl. 252-194.000.

Morimoto, Kiyoshi, to Futaba Denshi Kogyo Kabushiki Kaisha. Method of producing p-n junction type elements by ionized cluster beam deposition and ion-implantation. 4,120,700, Cl. 148-1.500.

Morimoto, Tatsuo; Nakamura, Munekazu; Inooka, Masayoshi; and Yawata, Teizaburo, to Chiyoda Chemical Engineering & Construction Co., Ltd. Catalysts for hydrodemetallization of hydrocarbons containing metallic compounds as impurities and process for hydrotreating such hydrocarbons using such catalysts. 4,120,780, Cl. 208-211.000.

Morita, Akira: *See*—
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, 4,120,260, Cl. 118-317.000.

Morita, Hideo: *See*—
Sakurai, Hisaya; Morita, Hideo; Ikegami, Tadashi; Maeda, Katsuaki; and Furusato, Masayasu, 4,120,883, Cl. 260-448.00A.

Morita, Kouji; and Isono, Katsuo, to Sony Corporation. Automatic fine tuning circuit. 4,121,254, Cl. 358-195.000.

Morley, Robert Arthur: *See*—
Kerr, Andrew Guy; and Morley, Robert Arthur, 4,121,293, Cl. 364-463.000.

Mormile, Paul F. Two-stage toilet flushing apparatus. 4,120,055, Cl. 4-324.000.

Morrison, Howard J.: *See*—
Schlau, Floyd E.; and Morrison, Howard J., 4,120,190, Cl. 72-458.000.
Terzian, Rouben T.; Morrison, Howard J.; Schoenfield, Palmer J.; and Kuna, Wayne A., 4,120,117, Cl. 46-130.000.

Morser, Alfred Harold; Gibson, Roy; Szekely, Paul; and Parker, Bruce Trayton, to Cincinnati Milacron Inc. Full-wave bidirectional DC motor drive circuit. 4,121,142, Cl. 318-345.00C.

Morton, Douglas Ross, Jr., to Upjohn Company, The. 13,14-Dihydro-9β-PGD_2 compounds. 4,120,879, Cl. 260-408.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. 9β-PGD$_1$ Compounds. 4,120,880, Cl. 260-408.000.

Morton-Norwich Products, Inc.: *See—*
Wright, George C.; and Butterfield, James L., 4,121,035, Cl. 542-417.000.
Wright, George C.; and Butterfield, James L., 4,121,036, Cl. 542-417.000.

Moschner, Jorg: *See—*
Grallert, Michael; and Moschner, Jorg, 4,120,572, Cl. 352-92.000.

Motan Gesellschaft mit beschrankter Haftung: *See—*
Hang, Franz; and Bongartz, Paul, 4,120,674, Cl. 55-302.000.

Motooka, Akira; and Yoshida, Takeshi, to Yamato Scale Co. Device of controlling interval of articles on belt conveyer. 4,120,393, Cl. 198-460.000.

Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
Deutschmann, Herbert, 4,120,155, Cl. 60-599.000.
Edmaier, Franz, 4,120,271, Cl. 123-41.490.

Motorola, Inc.: *See—*
Alberkrack, Jade Henry; and Hilliker, Stephen Earl, 4,121,162, Cl. 325-421.000.
Baghdadi, Aslan; and Ellis, Ralph J., 4,120,743, Cl. 156-620.000.
Irwin, James Stuart; and Steel, Francis Robert, 4,121,218, Cl. 343-702.000.
Jarrett, Robert Benjamin; Pace, Wilson David; and Weber, Howard Fredrick, 4,121,273, Cl. 361-239.000.

Mougbler, Joseph R. Billiard hand bridge. 4,120,495, Cl. 273-23.000.

Moyer, Norman E., to Hughes Aircraft Company. Logic circuit for use in two or three button digital watch. 4,120,148, Cl. 58-85.500.

Mrenna, Stephen A.; and Thomas, Glenn R., to Westinghouse Electric Corp. Circuit breaker having improved movable contact position indicator. 4,121,077, Cl. 200-308.000.

Muckerheide, Myron C., to A. Ward Ford Memorial Institute, Inc. Laser system and method. 4,120,293, Cl. 128-2.00A.

Mueller-Tamm, Heinz; Schick, Hans; Jaggard, James F. R.; and Nickl, Johann, to BASF Aktiengesellschaft. Manufacture of a titanium-containing component for catalysts of the Ziegler-Natta type. 4,120,823, Cl. 252-442.000.

Mufti, Irshad R., to Standard Oil Company (Indiana). Hydrocarbon remote sensing by thermal gradient measurement. 4,120,199, Cl. 73-154.000.

Mulier, Pieter M. J.: *See—*
Jirak, Thomas L.; and Mulier, Pieter M. J., 4,120,307, Cl. 128-419.0PT.

Mullen, John H.: *See—*
Taylor, Glenn R.; Mullen, John H.; and Dobrosielski, Stephen S., 4,121,076, Cl. 200-280.000.

Mullen, Roger F., to General Dynamics Corporation. Forming curved segments from metal plates. 4,120,187, Cl. 72-342.000.

Mullen, Wayne C. Glass cutter apparatus. 4,120,220, Cl. 83-886.000.

Muller, Ernst Willi: *See—*
Wilke, Gunther; and Muller, Ernst Willi, 4,120,882, Cl. 260-439.00R.

Muller, Werner A.; and Abegglen, Hans, to Von Roll AG, Department Bahn- und Stahlbau. Clamp coupling on a suspension gear of a circular suspension railway. 4,120,247, Cl. 104-208.000.

Murakami, Tetsushi: *See—*
Furukawa, Kaoru; Matsunami, Koichi; Ota, Toshihiko; Murakami, Tetsushi; Nagai, Hiroshi; and Tamaki, Kazuo, 4,120,928, Cl. 264-171.000.

Murakami, Tomomi, to Citizen Watch Company Limited. Watch module assembly. 4,120,147, Cl. 58-50.00R.

Murakami, Yoshinobu: *See—*
Hatanaka, Hideo; Murakami, Yoshinobu; and Morimoto, Kazuhisa, 4,120,813, Cl. 252-194.000.

Muranka, Eberhard: *See—*
Kuhl, Karl-Heinz; Muranka, Eberhard; Schulz, Bernhard; and Tielens, Asmund, 4,121,189, Cl. 338-226.000.

Murata Manufacturing Co., Ltd.: *See—*
Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, 4,121,181, Cl. 333-73.00R.

Murphy, Desmond Lewis, to Tektronix, Inc. Programmable attenuator apparatus employing active FET switching. 4,121,183, Cl. 333-81.00R.

Murphy, Richard F.: *See—*
Chierici, Osvaldo F.; and Murphy, Richard F., 4,120,404, Cl. 213-61.000.

Murray, Leo Thomas, to Colgate-Palmolive Company. Washing and bleaching with composition containing bleach activator and a nitrilotricarboxylic acid compound. 4,120,809, Cl. 252-102.000.

Murray, Robert G.; and Gikis, Benjamin J., to Natomas Company. Process and apparatus for separating coarse sand particles and recovering bitumen from tar sands. 4,120,775, Cl. 208-11.00E.

Musgrave, Daniel Dennis. Extended magazine holder. 4,120,109, Cl. 42-90.000.

Mushkin, Nicholas M. Switch. 4,120,115, Cl. 43-137.000.

Mutschler, Steven C.; and Randall, Loane J., to Mutschler, Steven C. Amusement system. 4,120,498, Cl. 273-99.000.

Muz, Edwin, to Siemens Aktiengesellschaft. Plug housing for multipolar plug connectors. 4,120,553, Cl. 339-91.00R.

Myles, Thomas Aquinas, to Carborundum Company, The. Ceramic fiber module attachment system. 4,120,641, Cl. 432-3.000.

N. Greening Limited: *See—*
Hassall, Anthony George, 4,120,784, Cl. 209-399.000.

Naarmann, Herbert: *See—*
Pohlemann, Heinz; Naarmann, Herbert; and Seebach, Dieter, 4,121,027, Cl. 526-29.000.

Nadelson, Jeffrey, to Sandox, Inc. Substituted hydroxy pyridones and their use as minor tranquilizers, sleep inducers and neuroleptics. 4,120,967, Cl. 424-263.000.

Nagai, Hiroshi: *See—*
Furukawa, Kaoru; Matsunami, Koichi; Ota, Toshihiko; Murakami, Tetsushi; Nagai, Hiroshi; and Tamaki, Kazuo, 4,120,928, Cl. 264-171.000.

Nagami, Masaru: *See—*
Kishi, Yoshio; and Nagami, Masaru, 4,121,264, Cl. 360-55.000.

Nagashima, Yukio: *See—*
Kamiyama, Setsuo; Kaneko, Katsumi; Nagashima, Yukio; Furukawa, Hiroshi; and Wada, Shozo, 4,120,908, Cl. 260-668.00A.

Nagler, William M.; and Woosley, Vernon Earl, to Pate Company, The. Pipe flashing unit. 4,120,129, Cl. 52-219.000.

Nagy, Ernest J.: *See—*
Miller, Roy W.; and Nagy, Ernest J., 4,120,412, Cl. 214-63.000.

Nagy, Geza; Pungor, Erno; Toth, Klara; Havas, Jeno; and Feher, Zsofia, to EGYT Gyogyszervegyeszeti Gyar. Process of and equipment for the analysis of liquid samples by titration. 4,120,657, Cl. 23-230.00R.

Nair, Vijay Gopalan; and Bernstein, Seymour, to American Cyanamid Company. Novel 2,2', 2"-[s-phenenyltris(sulfonylimino)tris]-[2-deoxy-α-D-glucopyranose], dodecakis (H-sulfate) compounds and their salts. 4,120,953, Cl. 424-180.000.

Nakabayashi, Katsumi, to Nippon Hoso Kyokai. Sound field expanding device. 4,121,059, Cl. 179-100.1TD.

Nakabe, Ryuhei; Ohta, Yoshio; and Matsuura, Toshiro, to Matsushita Electric Industrial Co., Ltd. Solid state color imaging apparatus. 4,121,244, Cl. 358-44.000.

Nakagawa, Yunosuke: *See—*
Yagi, Kouichi; and Nakagawa, Yunosuke, 4,120,811, Cl. 252-186.000.

Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, to Kokusai Denshin Denwa Kabushiki Kaisha. Method for coding facsimile signal. 4,121,258, Cl. 358-260.000.

Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, to Sumitomo Chemical Company, Limited. Process for preparing alternating copolymer of conjugated vinyl compound and olefinic unsaturated compound with oxygen and boron compound. 4,121,032, Cl. 526-197.000.

Nakahara, Muneo: *See—*
Komorita, Fujio; and Nakahara, Muneo, 4,120,732, Cl. 106-47.000Q.

Nakajima, Hisao: *See—*
Chinone, Naoki; Kawano, Toshihiro; and Nakajima, Hisao, 4,121,179, Cl. 331-94.50H.

Nakajima, Yasuo; Hayashi, Yoshimasa; and Waku, Makio, to Nissan Motor Company, Limited. Ignition distributor having independent ignition system breaker arm contacts simultaneously engaging common conductive post. 4,121,064, Cl. 200-19.00A.

Nakamura, Kotaro: *See—*
Hara, Hiroshi; and Nakamura, Kotaro, 4,120,723, Cl. 96-74.000.

Nakamura, Munekazu: *See—*
Morimoto, Tatsuo; Nakamura, Munekazu; Inooka, Masayoshi; and Yawata, Teizaburo, 4,120,780, Cl. 208-211.000.

Nakamura, Toshio; Hoshide, Yasuo; Hashimoto, Yoshio; Suzuki, Kenichi; and Yoshida, Yohji, to Nikken Chemicals Co., Ltd. Process for producing 5-fluorouracil derivative with a calcium chloride catalyst. 4,121,037, Cl. 544-313.000.

Nakano, Yoshiyuki: *See—*
Matsumoto, Hiroshi; Nakano, Yoshiyuki; Higashi, Toshihiko; and Yasumoto, Akihiro, 4,120,159, Cl. 60-667.000.

Nakazyo, Kiyoshi; Sakaguchi, Shinji; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,120,725, Cl. 96-97.000.

Nalco Chemical Company: *See—*
Hurlock, John R.; and Ballweber, Edward G., 4,120,840, Cl. 260-29.4UA.

Naono, Toyohiko, to Nihon Denshi Kabishiki Kaisha. Sampling device. 4,120,661, Cl. 422-68.000.

National Carpet Jobbers: *See—*
Alinder, Gilbert L.; and Anderson, Lloyd E., 4,120,463, Cl. 242-56.00R.

National Steel Corporation: *See—*
Saunders, William T., 4,120,419, Cl. 220-66.000.

Natomas Company: *See—*
Murray, Robert G.; and Gikis, Benjamin J., 4,120,775, Cl. 208-11.00E.

Naumenko, Viktor Arsenievich: *See—*
Kocherginsky, Meer Danilovich; Penkova, Lidia Fedorovna; and Naumenko, Viktor Arsenievich, 4,121,018, Cl. 429-27.000.

Nautet, Jean Adolphe: *See—*
Wilmotte, Stephan Hubert; Nautet, Jean Adolphe; and Economopoulos, Marios, 4,120,455, Cl. 239-429.000.

Nawa, Takehiko: *See—*
Numasaki, Kouichi; Sakai, Yoshihisa; Nawa, Takehiko; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,120,644, Cl. 432-99.000.

NCR Corporation: *See—*
Dev Choudhury, Rathindra N., 4,121,048, Cl. 178-17.00C.
Miller, Robert E.; and Brockett, Bruce W., 4,121,013, Cl. 428-411.000.

Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van de Rijksverdediging: *See—*
Barendsz, Anton Willem; De Borst, Cornelis; Post, Alfred Johannes Antonius; and Schimmel, Joannes, 4,120,754, Cl. 195-99.000.

Neidermeyer, Robert W.: *See—*
Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; Neidermeyer, Robert W.; and Crittendon, Charles E., 4,120,861, Cl. 260-302.00D.

Neissel, John P.: *See—*
Terhune, James H.; and Neissel, John P., 4,121,106, Cl. 250-390.000.

Nelson, Norman A., to Upjohn Company, The. 4α,6-Dihydroxy-2α-hydroxy-methyl-3β-tetrahydropyran acetic acid γ lactone derivatives. 4,120,872, Cl. 260-343.600.

Nemirofsky, Frank R. Object-dispensing wearing apparel. 4,120,053, Cl. 2-115.000.

Neuhaus, Hans Ludwig: *See—*
Raasch, Hans; and Neuhaus, Hans Ludwig, 4,120,462, Cl. 242-45.000.

Neumann, Arthur E., to Richard-Allan Medical Industries, Inc. Unit for accommodating disposable bladelike articles. 4,120,397, Cl. 206-370.000.

Neumann, Gernot, to Hanning Elektro-Werke Robert Hanning. Electromechanical adjusting device. 4,120,057, Cl. 5-66.000.

Neumayer, George A. Hollow wall fastener. 4,120,231, Cl. 85-3.00R.

New Nippon Electric Company, Ltd.: *See—*
Asami, Hiroshi; and Kaji, Masao, 4,120,759, Cl. 204-14.00R.

Newlands, Lawrence A. Saddle pillar clamp for bicycle. 4,120,512, Cl. 280-281.00R.

Newman, Seymour: *See—*
Meyer, Fred J.; and Newman, Seymour, 4,120,844, Cl. 260-42.000.

Newman, Thomas A., to McGrath-Hamin, Inc. Finger ring display. 4,120,401, Cl. 206-566.000.

Neyrpic - Creusot Loire: *See—*
Megnint, Lucien, 4,120,602, Cl. 415-1.000.

NGK Insulators, Ltd.: *See—*
Fujita, Hiroshi; and Kato, Kazuhisa, 4,121,046, Cl. 174-141.00R.
Yamada, Mankichi; and Fujita, Hiroshi, 4,121,045, Cl. 174-141.00R.

Ngu Tung, Pham, to Thomson-CSF. Component for logic circuits and logic circuits equipped with this component. 4,121,116, Cl. 307-213.000.

Nichol, Kenneth J.: *See—*
Bristow, Norman W.; Macey, Peter E.; Nichol, Kenneth J.; and Sim, Malcolm F., 4,120,960, Cl. 424-250.000.

Nickl, Johann: *See—*
Mueller-Tamm, Heinz; Schick, Hans; Jaggard, James F. R.; and Nickl, Johann, 4,120,823, Cl. 252-442.000.

Nicolas, Louis: *See—*
Dick, Richard; Feuillade, Georges; Gadessaud, Robert; and Nicolas, Louis, 4,121,022, Cl. 429-204.000.

Nieden, Achim zur, to Klockner-Humboldt-Deutz Aktiengesellschaft. Apparatus for separating gases from liquids. 4,120,673, Cl. 55-205.000.

Niedrach, Leonard W.: *See—*
LeBlanc, Oliver H., Jr.; Niedrach, Leonard W.; and Stoddard, William H., Jr., 4,120,292, Cl. 128-2.00E.

Nielsen, Per Drengsgaard: *See—*
Jensen, Finn Ulrik Hansen; Nielsen, Per Drengsgaard; and Bruhn, Esben, 4,120,713, Cl. 156-72.000.

Nielsen, Steven Thomas, to Beckman Instruments, Inc. Process for making a one piece rotor liner. 4,120,927, Cl. 264-98.000.

Niesel, Harald: *See—*
Kloker, Werner; Bovender, Franz; Gromping, Franz; Goerden, Leonhard; and Niesel, Harald, 4,120,923, Cl. 264-45.300.

Nihon Denshi Kabishiki Kaisha: *See—*
Naono, Toyohiko, 4,120,661, Cl. 422-68.000.

Niina, Yozo. Golf cup with sound producing device. 4,120,496, Cl. 273-34.00R.

Nikken Chemicals Co., Ltd.: *See—*
Nakamura, Toshio; Hoshide, Yasuo; Hashimoto, Yoshio; Suzuki, Kenichi; and Yoshida, Yohji, 4,121,037, Cl. 544-313.000.

Nims, Jerry Curtis: *See—*
Lo, Allen Kwok Wah; and Nims, Jerry Curtis, 4,120,562, Cl. 350-130.000.

Ninomiya, Nobutaka: *See—*
Numasaki, Kouichi; Sakai, Yoshihisa; Nawa, Takehiko; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,120,644, Cl. 432-99.000.

Nippon Electric Co., Ltd.: *See—*
Matsumoto, Youichi; and Tagashira, Yoshimi, 4,121,166, Cl. 329-122.000.
Ogawa, Takashi; and Kimura, Kazunori, 4,121,197, Cl. 340-166.00R.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Iwamatsu, Masayuki, 4,121,169, Cl. 330-296.000.

Nippon Hoso Kyokai: *See—*
Nakabayashi, Katsumi, 4,121,059, Cl. 179-100.1TD.

Nippon Kokan Kabushiki Kaisha: *See—*
Iizuka, Motohiko; Danjo, Hiroyuki; Ikeda, Kazuo; and Yoshimura, Masatoshi, 4,120,488, Cl. 266-281.000.
Miyauchi, Kohichiroh; Ohsumi, Atsushi; Haga, Yukio; Izumi, Tsutomu; Tsuru, Masahiro; Kunioka, Kazuo; and Sugiyama, Shunichi, 4,120,642, Cl. 432-12.000.

Nippon Paint Co., Ltd.: *See—*
Takahashi, Hiroshi; Hirai, Seizaburo; and Abo, Toshio, 4,120,841, Cl. 260-29.60H.

Nishida, Tadao: *See—*
Terasawa, Shinichi; Okamura, Akitoshi; Okuyama, Shigeru; Nishiyama, Takehiko; and Nishida, Tadao, 4,120,139, Cl. 57-13.000.

Nishikawa, Etsuo: *See—*
Takatori, Osho; Nishikawa, Etsuo; and Fukuyama, Yosinobu, 4,120,251, Cl. 112-121.150.

Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, to Murata Manufacturing Co., Ltd. Electrical branching filter. 4,121,181, Cl. 333-73.00R.

Nishiyama, Takehiko: *See—*
Terasawa, Shinichi; Okamura, Akitoshi; Okuyama, Shigeru; Nishiyama, Takehiko; and Nishida, Tadao, 4,120,139, Cl. 57-13.000.

Nisley, Donald L., to Reliance Electric Company. Dry fluid drive and rotor therefor. 4,120,388, Cl. 192-105.00A.

Nissan Motor Company, Limited: *See—*
Asano, Masaharu; and Anzai, Makoto, 4,120,270, Cl. 123-32.0EE.
Fujishiro, Takeshi, 4,120,269, Cl. 123-32.0EE.
Iizuka, Akio; Taguchi, Michiichi; and Kubo, Muneyuki, 4,120,821, Cl. 252-432.000.
Kawamoto, Tamio, 4,120,383, Cl. 188-31.000.
Nakajima, Yasuo; Hayashi, Yoshimasa; and Waku, Makio, 4,121,064, Cl. 200-19.00A.
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,120,516, Cl. 280-728.000.
Toda, Yoshio; and Iwasa, Yoshio, 4,120,214, Cl. 74-860.000.
Yokota, Akira, 4,120,154, Cl. 60-282.000.

Nissen, Roland N.; and Flippin, James S., to J. I. Case Company. Mounting arrangement for dozer blade. 4,120,366, Cl. 172-805.000.

Nitro Nobel AB: *See—*
Persson, Per Ingemar, 4,120,439, Cl. 228-107.000.

Noall, Kenneth L.: *See—*
Hone, George D.; Noall, Kenneth L.; and Saunders, Robert L., 4,120,067, Cl. 14-71.500.

Noda, Hideo, to Shimano Industrial Company Limited. Fishing reel. 4,120,465, Cl. 242-84.20A.

Noda, Hideyo: *See—*
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,120,516, Cl. 280-728.000.

Nomura, Toshio; Asai, Tsuyoshi; Yamamoto, Takaharu; and Hara, Akio, to Sumitomo Electric Industries, Ltd. Cemented carbonitride alloys containing tantalum. 4,120,719, Cl. 75-238.000.

Nordblom, George Frederick: *See—*
Turillon, Pierre Paul; Hull, Michael Neill; and Nordblom, George Frederick, 4,121,024, Cl. 429-245.000.

Norris, Alan H.: *See—*
Chambley, Phillip W.; and Norris, Alan H., 4,120,143, Cl. 57-34.0AT.

North American Philips Corporation: *See—*
Ragan, Randall C., 4,121,188, Cl. 338-174.000.

North American Specialties Corporation: *See—*
Seidler, Jack, 4,120,558, Cl. 339-275.00T.

Northrop Corporation: *See—*
Olez, Nejat A., 4,120,998, Cl. 428-33.000.

Norton, Frank E., to Babcock & Wilcox Company, The. Tube support structure. 4,120,350, Cl. 165-162.000.

Novo Industri A/S: *See—*
Henningsen, Bent Aage, 4,120,656, Cl. 422-28.000.

Nowak, Rudolf; and Holland, Gerhard, to Halomet AG. Process for the oxidation of halides. 4,120,941, Cl. 423-592.000.

Nugent, Duane C., to Owens-Illinois, Inc. Modular tubular solar energy collector apparatus. 4,120,285, Cl. 126-271.000.

Numasaki, Kouichi; Sakai, Yoshihisa; Nawa, Takehiko; Matsumoto, Zenji; and Ninomiya, Nobutaka, to JGC Corporation; and Takeda Chemical Industries, Ltd. Apparatus for regeneration of spent active carbon. 4,120,644, Cl. 432-99.000.

Nyhof, Eldon J.: *See—*
De Vries, Martin; Fitzgerald, Harold A., II; Nyhof, Eldon J.; and van Putten, James D., Jr., 4,120,582, Cl. 356-73.000.

Nyman, Bror Goran: *See—*
Hummelstedt, Leif Erik Ingmar; Nyman, Bror Goran; and Leimala, Raimo Juhani, 4,120,817, Cl. 252-364.000.

Occidental Oil Shale, Inc.: *See—*
Ridley, Richard D.; and Burton, Robert S., III, 4,120,354, Cl. 166-251.000.

Ocken, Howard, to Electric Power Research Institute, Inc. Mixed oxide fuel pellet for fuel rod of nuclear reactor core. 4,120,752, Cl. 176-73.000.

Ockwell, Malcolm Charles; McLeod, Patrick Hugh; and Briggs, Peter James, to Matburn (Holdings) Limited. Method of manufacturing a filter for use in venting colostomy or ileostomy appliances. 4,120,715, Cl. 156-252.000.

O'Connor, Gerald. Dipole resonent loop antenna. 4,121,219, Cl. 343-741.000.

O'Connor, Grahame Paul: *See—*
Trojer, Felix; O'Connor, Grahame Paul; and Tannenberger, Helmut, 4,120,730, Cl. 106-39.600.

Ogawa, Hiromichi; Inoue, Kenji; and Fujiwara, Akira, to Matsushita Electric Industrial Co., Ltd. Silver oxide primary cell. 4,121,021, Cl. 429-162.000.

Ogawa, Takashi; and Kimura, Kazunori, to Nippon Electric Co., Ltd. Matrix circuit for an electrostatic recording device comprising cross-point elements for driving each pair of control electrodes on a common matrix conductor. 4,121,197, Cl. 340-166.00R.

Oguino, Masanori: *See—*
Saiki, Yukimi; Oguino, Masanori; and Watanabe, Shutoku, 4,121,252, Cl. 358-169.000.

Ohkura Electric Co., Ltd.: *See—*
Miyazaki, Seiichi, 4,121,118, Cl. 307-262.000.

Ohloff, Gunther: *See—*
Renold, Walter; Skorianetz, Werner; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 4,120,830, Cl. 252-522.000.

Ohmura, Hiroshi; and Kohashi, Akira, to Fuji Photo Film Co., Ltd. Exposure control device for photographic camera. 4,121,230, Cl. 354-21.000.
Ohmura, Kaoru: *See—*
Kobayashi, Hidehiko; Arakawa, Tatsumi; Shiga, Tetsuo; Ohmura, Kaoru; and Ito, Sakae, 4,121,007, Cl. 428-201.000.
Ohokubo, Tadashi: *See—*
Yamaguchi, Masataka; Yamaguchi, Saeko; and Ohokubo, Tadashi, 4,120,079, Cl. 28-282.000.
Ohsawa, Mitsuo, to Sony Corporation. AM receiver. 4,121,161, Cl. 325-404.000.
Ohsawa, Mitsuo, to Sony Corporation. Power supply circuit. 4,121,282, Cl. 363-21.000.
Ohsugi, Motoyoshi: *See—*
Inamoto, Yoshiaki; Aigami, Koji; Ohsugi, Motoyoshi; Ikeda, Hiroshi; and Fujikura, Yoshiaki, 4,120,906, Cl. 260-648.00C.
Ohsumi, Atsushi: *See—*
Miyauchi, Kohichiroh; Ohsumi, Atsushi; Haga, Yukio; Izumi, Tsutomu; Tsuru, Masahiro; Kunioka, Kazuo; and Sugiyama, Shunichi, 4,120,642, Cl. 432-12.000.
Ohta, Mitsunori: *See—*
Watanabe, Koji; Ohta, Mitsunori; and Tomono, Makoto, 4,120,577, Cl. 355-4.000.
Ohta, Takahiro: *See—*
Okamoto, Yoshihiko; and Ohta, Takahiro, 4,120,722, Cl. 96-49.000.
Ohta, Yoshio: *See—*
Nakabe, Ryuhei; Ohta, Yoshio; and Matsuura, Toshiro, 4,121,244, Cl. 358-44.000.
Ohuchi, Yoshio: *See—*
Omori, Hideyuki; Otubo, Osamubo; and Ohuchi, Yoshio, 4,121,223, Cl. 346-75.000.
Okamoto, Nobukazu, to Toa Nenryo Kogyo Kabushiki Kaisha. Lubricating oil additive, process for the synthesis thereof and lubricating oil additive composition. 4,120,887, Cl. 260-462.00R.
Okamoto, Yoshihiko; and Ohta, Takahiro, to Fuji Photo Film Co., Ltd. Thermal development of imaged light-sensitive recording material using microwaves. 4,120,722, Cl. 96-49.000.
Okamura, Akitoshi: *See—*
Terasawa, Shinichi; Okamura, Akitoshi; Okuyama, Shigeru; Nishiyama, Takehiko; and Nishida, Tadao, 4,120,139, Cl. 57-13.000.
Okumura, Takuzo: *See—*
Fukushima, Nobuo; Uemura, Yukikazu; Okumura, Takuzo; and Hayashida, Haruo, 4,120,931, Cl. 264-288.000.
Okuyama, Shigeru: *See—*
Terasawa, Shinichi; Okamura, Akitoshi; Okuyama, Shigeru; Nishiyama, Takehiko; and Nishida, Tadao, 4,120,139, Cl. 57-13.000.
Olez, Nejat A., to Northrop Corporation. Composite structure. 4,120,998, Cl. 428-33.000.
Olin Corporation: *See—*
Kadija, Igor V., 4,120,772, Cl. 204-252.000.
Kleine, Charles A.; and Middleton, Verne L., 4,120,351, Cl. 165-170.000.
Schaffling, Otto G., 4,120,153, Cl. 60-255.000.
Oloff, Clarence M.; Karl, Alva A.; Wolff, Walter M.; Halbrook, Lloyd W.; Brown, Ray D.; and Dickey, Raymond G., to United States of America, Air Force. Subhuman primate restraint system. 4,120,266, Cl. 119-103.000.
Olson, Arthur Barnhart, to Control Data Corporation. Rotating spindle and stationary transducer device for sensing the preferred magnetically permeable orientation in magnetic media. 4,121,156, Cl. 324-210.000.
Omori, Hideyuki; Otubo, Osamubo; and Ohuchi, Yoshio, to Hitachi, Ltd. Ink jet recording apparatus with an improved ink sensor. 4,121,223, Cl. 346-75.000.
O'Neil, Charles P., to Amerace Corporation. Timing device for a fluid signal and fluid actuator therefor. 4,120,321, Cl. 137-271.000.
Onizuka, Koji: *See—*
Taniguchi, Taizo; Iwasaki, Itsutoshi; Takeshige, Toshihiko; Onizuka, Koji; and Hashiguchi, Soichi, 4,120,734, Cl. 106-67.000.
Opie, William R.: *See—*
Coffin, Lamar D.; and Opie, William R., 4,120,697, Cl. 75-72.000.
Optel Corporation: *See—*
Deb, Satyendra Kumar; and Witzke, Horst, 4,120,568, Cl. 350-357.000.
Orcutt, John W.; and Mills, James M., to Texas Instruments Incorporated. Condition responsive apparatus with motion transfer member to movable contact arm. 4,121,074, Cl. 200-83.00P.
Orcutt, John W.: *See—*
Bileski, Thomas; Crawford, Joe W.; Blanton, Bobby D.; Johnson, Carl N.; Garcia, Felix; Orcutt, John W.; Shepherd, Glen C.; and Oursler, James A., 4,121,073, Cl. 200-83.00P.
Ormonde, Stephan M.: *See—*
Golden, David E.; and Ormonde, Stephan M., 4,121,176, Cl. 331-94.50G.
Ornstein, Leonard; Williams, Hazel Elizabeth; and Intraub, Julius, to Technicon Instruments Corporation. Process for mounting tissue sections with an U.V. light curable mounting medium. 4,120,991, Cl. 427-2.000.
Orr, Thomas Samuel Campbell; and Kingsley, Patrick John, to Fisons Limited. Method of psychiatric conditions. 4,120,975, Cl. 424-283.000.
Osawa, Sadao: *See—*
Yamashita, Hiroshi; Osawa, Sadao; Saida, Takashi; and Sakasai, Yutaka, 4,120,805, Cl. 252-62.10L.
Ota, Kyozo, to Keio Giken Kogyo Kabushiki Kaisha. Electronic tuner. 4,120,229, Cl. 84-454.000.
Ota, Toshihiko: *See—*
Furukawa, Kaoru; Matsunami, Koichi; Ota, Toshihiko; Murakami, Tetsushi; Nagai, Hiroshi; and Tamaki, Kazuo, 4,120,928, Cl. 264-171.000.
Otteblad, Sven Ivar Arne; Brelen, Hans Erik Osborn; Wistrand, Per Folke Magnus; and Samuelson, Svante Ragnar, to AB Volvo. Foot-operated device for controlling engine power and braking effect in motor vehicles. 4,120,387, Cl. 192-3.00S.
Otten, Geneva Gail, to Proctor & Gamble Company, The. Method of increasing sucrose yield of sugarcane. 4,120,688, Cl. 71-86.000.
Otto, Paul R.; and Leang, William N. C., to Westinghouse Electric Corp. Elevator system. 4,120,381, Cl. 187-29.00R.
Otubo, Osamubo: *See—*
Omori, Hideyuki; Otubo, Osamubo; and Ohuchi, Yoshio, 4,121,223, Cl. 346-75.000.
Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha: *See—*
Torii, Sigeru; Tanaka, Hideo; and Mishima, Kiyoshi, 4,120,764, Cl. 204-78.000.
Oursler, James A.: *See—*
Bileski, Thomas; Crawford, Joe W.; Blanton, Bobby D.; Johnson, Carl N.; Garcia, Felix; Orcutt, John W.; Shepherd, Glen C.; and Oursler, James A., 4,121,073, Cl. 200-83.00P.
Outokumpu Oy: *See—*
Hummelstedt, Leif Erik Ingmar; Nyman, Bror Goran; and Leimala, Raimo Juhani, 4,120,817, Cl. 252-364.000.
Ovalstrapping, Inc.: *See—*
Pasic, James A.; and Berg, Marvin I., 4,120,239, Cl. 100-26.000.
Overacker, James Leroy: *See—*
Christian, John Hunt; and Overacker, James Leroy, 4,120,629, Cl. 425-135.000.
Overhead Door Corporation: *See—*
Jones, Melvin L., 4,121,140, Cl. 318-221.00R.
Overton, Arthur W.: *See—*
Campbell, Dudley H.; and Overton, Arthur W., 4,121,071, Cl. 200-67.00G.
Owens-Corning Fiberglas Corporation: *See—*
Fly, James Alan; and Slonaker, Robert O., 4,120,191, Cl. 73-9.000.
Owens-Illinois, Inc.: *See—*
Bieringer, Robert J.; and Ringlien, James A., 4,120,590, Cl. 356-161.000.
Byrum, Bernard W., Jr.; Ernsthausen, Roger E.; and Fein, Michael E., 4,120,808, Cl. 252-63.200.
Ernsthausen, Roger E., 4,121,133, Cl. 313-518.000.
Francel, Josef; King, James E.; and Woulbroun, John M., 4,120,678, Cl. 65-32.000.
Irwin, George W., 4,120,683, Cl. 65-207.000.
Mallory, James D.; Fleck, John F.; and Cuniberti, Mario, 4,120,684, Cl. 65-302.000.
Nugent, Duane C., 4,120,285, Cl. 126-271.000.
P.F.W. Beheer B.V.: *See—*
van den Bosch, Steven, 4,120,985, Cl. 426-535.000.
Pacciarini, Antonio: *See—*
Colombani, Bruno; and Pacciarini, Antonio, 4,120,714, Cl. 156-131.000.
Pace, Wilson David: *See—*
Jarrett, Robert Benjamin; Pace, Wilson David; and Weber, Howard Fredrick, 4,121,273, Cl. 361-239.000.
Pahl, Karl Heinz, to Pahl'sche Gummi- und Asbestgesellschaft Paguag. High pressure hose composed of elastomers and embedded reinforcements. 4,120,324, Cl. 138-137.000.
Pahl'sche Gummi- und Asbestgesellschaft Paguag: *See—*
Pahl, Karl Heinz, 4,120,324, Cl. 138-137.000.
Pak, Ivan Timofeevich: *See—*
Akushsky, Izrail Yakovlevich; Burtsev, Vladimir Mikhailovich; Duisenov, Bulat Esenovich; Pak, Ivan Timofeevich; and Zhautykov, Anurbek Orymbekovich, 4,121,298, Cl. 364-746.000.
Palitex Project Company GmbH: *See—*
Franzen, Gustav, 4,120,142, Cl. 57-34.00R.
Palme, Christl: *See—*
Jagoutz, Emil; and Palme, Christl, 4,121,098, Cl. 250-273.000.
Palmer, Charles E. Noise control enclosure. 4,120,376, Cl. 181-204.000.
Palmer, David A. Paint remover with improved safety characteristics. 4,120,810, Cl. 252-153.000.
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Sharp, Bernard C.; and Petrik, John T., 4,120,069, Cl. 15-250.320.
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Parmann, Gunnar, to Rieber & Son Plastic-Industri A/S. Combined mould element and sealing ring. 4,120,521, Cl. 285-113.000.
Parthasarathy, R.; and Hort, Eugene Victor, to GAF Corporation. Process for producing an unsaturated glycol diester using a catalyst comprising palladium containing thorium as a promotor. 4,121,039, Cl. 560-244.000.
Partlow Corporation: *See—*
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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Stupak, Leonid Mikhailovich; Baglai, Viktor Mikhailovich; Bogachenko, Alexei Georgievich; Kazakov, Sergei Sergeevich; and Tsykulenko, Anatoly Konstantinovich. Process of the electroslag remelting of consumable electrodes. 4,120,695, Cl. 75-10.00C.
Paton, John Stewart; and Shaw, Alexander, to Greater Glasgow Health Board. Ultrasonic scanning apparatus. 4,120,291, Cl. 128-2.00V.
Pauls, Mathias, to Artur Fischer Forschung. Arrangement for securing objects to support structures with multi-component hardenable binder material. 4,120,128, Cl. 52-173.00R.
Paulus, Wilfried; and Genth, Hermann, to Bayer Aktiengesellschaft. Composition for combating slimes. 4,120,686, Cl. 71-67.000.
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Payne, Thomas R.; James, Harry K.; and Judy, Millard M., to Texas Instruments Incorporated. Method of fabricating a thermal display device. 4,120,744, Cl. 156-653.000.
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Pechhold, Engelbert, to Du Pont de Nemours, E. I., and Company. Polyether urethane polymers prepared from a copolymer of tetrahydrofuran and ethylene oxide. 4,120,850, Cl. 528-66.000.
Peck, Vincent W., to TRW Inc. Polarity reversing electrical switch. 4,121,068, Cl. 200-67.00G.
Peeters, Emiel Adriaan; and Pauwels, Willy Lodewijk, to Agfa-Gevaert, N.V. Butt splicer for butt-joining a fresh web to a progressing web. 4,120,739, Cl. 156-506.000.
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Penner, Peter P. Book holding apparatus. 4,120,475, Cl. 248-451.000.
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Peters, Howard M.; and Simon, Robert L., Jr., to United States of America, Energy. Nitroaliphatic difluoroformals. 4,120,710, Cl. 149-88.000.
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Peterson, Charles A., to Westinghouse Electric Corp. Series capacitor system with force firing of protective bypass device. 4,121,270, Cl. 361-54.000.
Peterson, Robert K., to Texas Instruments Incorporated. Beam type planar array antenna method of fabrication. 4,120,085, Cl. 29-600.000.
Petrie, Edward M., to Westinghouse Electric Corp. Epoxy-amine adhesive compositions. 4,120,913, Cl. 260-830.0TW.
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Pfaelzer, Peter. Measuring device for spaghetti or the like. 4,120,094, Cl. 33-174.00T.
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Barth, Wayne E., 4,121,040, Cl. 544-28.000.
Phelps, Paul S. Key-lock knife. 4,120,088, Cl. 30-160.000.
Philibert, Daniel, to Saint-Gobain Industries. Production of semi-reflecting glass products. 4,120,679, Cl. 65-60.00B.
Philipsen, R. Dale, to Caterpillar Tractor Co. Forward-reverse interlock for a transmission. 4,120,212, Cl. 74-476.000.
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Fodor, Lawrence M.; and Kitchen, Alonzo G., 4,120,915, Cl. 260-880.00B.
Irvin, Howard B.; and Sherk, Fred T., 4,121,029, Cl. 526-64.000.
Kubicek, Donald H., 4,120,944, Cl. 423-416.000.
LaSpisa, Ronald J.; and Giles, Richard F., 4,120,630, Cl. 425-142.000.
Meister, John J., 4,120,356, Cl. 166-267.000.
Threlkeld, Curtis B.; Hessert, James E.; and Clampitt, Richard L., 4,120,361, Cl. 166-294.000.
Tinker, Donald; and Berg, Keith E., 4,120,790, Cl. 210-65.000.
Wu, Yulin, 4,120,902, Cl. 260-586.00R.
Phipps, Peter Beverley; Sharma, Bhim Sain; and Wu, Anthony Wai, to International Business Machines Corporation. Process for bonding a durable low surface energy coating. 4,120,995, Cl. 427-248.00A.
Phripp, Clarence F.; and Preston, Norman R. Flush toilet accessory. 4,120,056, Cl. 4-324.000.
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Pierce, Bill L., to United States of America, Energy. Heat transport system. 4,120,172, Cl. 62-115.000.
Pierre, Kenneth J.; and Tung, Ker-Kong, to Beckman Instruments, Inc. Kinetic method for determination of glucose concentrations with glucose dehydrogenase. 4,120,755, Cl. 195-103.50C.
Pikul, Richard E., to Puritan Bennett Corporation. Oil sealed single stage vacuum pump. 4,120,621, Cl. 418-99.000.
Pilgrim Engineering Developments Limited: *See—*
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Pilipovich, Donald; Grant, Louis R., Jr.; and Wilson, Richard D., to United States of America, Air Force. Synthesis of fluorotrinitromethane. 4,120,904, Cl. 260-644.000.
Pilkington Brothers Limited: *See—*
Cross, Raymond Peter, 4,120,680, Cl. 65-114.000.
Cross, Raymond Peter; and Thomas, Derek Edward, 4,120,681, Cl. 65-114.000.
Pillsbury Company, The: *See—*
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Pircon, Ladislav J. Pollution control apparatus and method. 4,120,670, Cl. 55-90.000.
Pivette, Pierre: *See—*
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Plant, Howard L.; Zukel, John W.; and Ames, Ronald B., to Uniroyal, Inc. Thio pyridine N-oxides and regulation of the natural growth and development of plants therewith. 4,120,692, Cl. 71-94.000.
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Pluss, Kurt; and De Martin, Bruno Romano, to Cilag-Chemie A.G. (N-Substituted-pyridyl)-alkyl sulfonic acid betaines as electroplating additives. 4,120,859, Cl. 260-294.80R.
Pohlemann, Heinz; Naarmann, Herbert; and Seebach, Dieter, to BASF Aktiengesellschaft. Polymerization initiators containing thio bridges. 4,121,027, Cl. 526-29.000.
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Poletto, John Frank; and Bernstein, Seymour, to American Cyanamid Company. Ureylene naphthalene sulfonic acids. 4,120,891, Cl. 260-506.000.
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Popkin, Philip, to Martin Marietta Corporation. Regenerative line access module. 4,121,054, Cl. 179-15.0BD.
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Potomac Applied Mechanics, Inc.: *See—*
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Pouderoux, Pierre, to Stein Industrie S.A. Heat exchanger having a plurality of modules connected in parallel. 4,120,348, Cl. 165-81.000.
PPG Industries, Inc.: *See—*
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Rinehart, Jay Kent, 4,120,886, Cl. 260-455.00A.
Shaffer, Paul E., 4,121,014, Cl. 428-412.000.
Prenn, Otto E., to Steel Company of Canada Limited, The. Composite electrode with non-consumable upper section. 4,121,042, Cl. 13-18.00R.
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Prestridge, Floyd Leon, to Combustion Engineering, Inc. Process for mixing and separation in a solvent extraction system. 4,120,769, Cl. 204-186.000.
Preuss, Dieter; and Segin, Peter, to Dr.-Ing. Rudolf Hell GmbH. Method for digital run-length coding with redundance reduction for transmission of binarily coded picture informations. 4,121,259, Cl. 358-261.000.
Price, Arthur B., to Singer Company, The. Method and apparatus for control signal separation to regain synchronization between a visual image projector and an audio program. 4,121,263, Cl. 360-27.000.
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Seiden, Paul, 4,120,990, Cl. 426-601.000.
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Propst, Robert L.; and Propst, Paul L., to Herman Miller, Inc. System for storing and transporting flat board-like elements. 4,120,422, Cl. 221-88.000.
Prost, Roger, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Containers for cryogenic liquids. 4,120,421, Cl. 220-423.000.
Pruckmayr, Gerfried; and Weir, Robert H., to Du Pont de Nemours, E. I., and Company. Method for preparing poly(tetramethylene ether) glycol. 4,120,903, Cl. 260-615.00B.
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Puritan Bennett Corporation: *See—*
Pikul, Richard E., 4,120,621, Cl. 418-99.000.
Purvis, Marshall T.; and Grant, R. Peter, to Rohm and Haas Company. Modifiers for PVC foam, process for extruding modified PVC foam and modified PVC foam compositions. 4,120,833, Cl. 921-81.000.
Purvis, Michael J.: *See—*
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Puschkarski, Felix. Clamping device. 4,120,130, Cl. 52-285.000.
Putt, J. William. Magnetic apparatus for producing movement. 4,121,139, Cl. 318-134.000.
Pye, David S.: *See—*
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Queuille, Andre; and Herbemont, Francoise. Pharmaceutical compositions for barium opacification and method of preparing them. 4,120,946, Cl. 424-4.000.
Quigley, Richard E., Jr., to United States of America, Air Force. Solid propellant pressurization of monopropellant fuel powered system. 4,120,151, Cl. 60-39.46M.
Quinlan, Patrick M.; and McBride, Richard D., to Petrolite Corporation. Alkynoxymethyl amines as corrosion inhibitors. 4,120,654, Cl. 422-16.000.
Raasch, Hans; and Grecksch, Hans, to W. Schlafhorst & Co. Method and device for joining a thread. 4,120,140, Cl. 57-34.00R.
Raasch, Hans; and Neuhaus, Hans Ludwig, to W. Schlafhorst & Co. Method and device for controlling and/or regulating thread tension during winding of a textile coil. 4,120,462, Cl. 242-45.000.
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Rabl, Arnulf; and Rabl, Veronika, to United States of America, Energy. Prisms with total internal reflection as solar reflectors. 4,120,565, Cl. 350-286.000.
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Ragan, Randall C., to North American Philips Corporation. Closed frame single turn potentiometer with helical coil spring wiper adjustable through substrate. 4,121,188, Cl. 338-174.000.
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Hahn, David T., 4,120,988, Cl. 426-573.000.
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Bowen, Leon O., Jr.; and McVean, Michael T., 4,120,290, Cl. 126-299.00D.
Range, Richard J.; and Soodak, Charles I., to Baxter Travenol Laboratories, Inc. Positive displacement pump. 4,120,202, Cl. 73-421.00R.
Rappinger, Bo Vesteras, to Asea Aktiebolag. Preheating metallurgical enclosures. 4,121,043, Cl. 13-34.000.
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Gotcher, Alan J.; Germeraad, Paul B.; and Jansons, Viktors, 4,121,001, Cl. 428-35.000.
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Reed, Robert D., to John Zink Company. Hot water spray injection for smoke suppression in flares. 4,120,637, Cl. 431-5.000.
Rees, Gordon H. Corner bracket. 4,120,600, Cl. 403-231.000.
Reeve, Richard James; and Shirley, Dennis Raymond. Self-steering tandem axle bogie. 4,120,509, Cl. 280-81.00A.
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Schultz, Robert S., to Risdon Manufacturing Company, The. Tip seal dispenser valve for a pressurized container. 4,120,431, Cl. 222-518.000.
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Schwing, Gregory Wayne, to Du Pont de Nemours, E. I., and Company. 2-Alkyl-1-naphthol-4-sulfonic acids. 4,120,897, Cl. 260-543.00R.
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Robinson, Glen P., Jr.; and Shelton, Samuel V., 4,120,316, Cl. 137-498.000.
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Schwartz, Theodore F., 4,121,237, Cl. 354-323.000.
Scott, Gerald. Polymer compositions. 4,121,025, Cl. 526-4.000.
Scott Paper Company: *See—*
Gross, Frank C., 4,120,720, Cl. 96-1.50N.
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Ceintrey, Marcel, 4,120,832, Cl. 260-2.300.
Seddon, Robert Maxwell, to Unitex Limited. Foam sandwich constructions. 4,121,008, Cl. 428-251.000.
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Seidel, Michael C.; von Meyer, William C.; and Greenfield, Stanley A., to Rohm and Haas Company. 1,2,4-4H-triazole derivatives. 4,120,864, Cl. 260-308.00R.
Seiden, Paul, to Procter & Gamble Company, The. Polyoxyalkylene propylene glycol esters for improved cooking and salad oil. 4,120,990, Cl. 426-601.000.
Seidler, Jack, to North American Specialties Corporation. Solder bearing terminal. 4,120,558, Cl. 339-275.00T.
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Seltzer, Daniel A., to DAS Design Corporation. Timing control for AC power circuit. 4,121,149, Cl. 323-19.000.
Semler, Joel H. Apparatus for sealing flange joints. 4,120,256, Cl. 113-57.000.
Senn, Martin: *See*—
Kampe, Wolfgang; Senn, Martin; Thiel, Max; Bartsch, Wolfgang; and Dietmann, Karl, 4,120,963, Cl. 424-256.000.
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Seubert, Jurgen; Pohlke, Rolf; Thomas, Herbert; and Andrews, Peter, to E. Merck. Ring substituted pyrazino-isoquinoline derivatives and their preparation. 4,120,961, Cl. 424-250.000.
Severin, Hubert J. Cleaning system. 4,120,070, Cl. 15-306.00B.
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Shaffer, Paul E., to PPG Industries, Inc. Haze-free transparent laminate having a plasticized polyvinyl acetal sheet. 4,121,014, Cl. 428-412.000.
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Sharp, Bernard C.; and Petrik, John T., to Parker-Hannifin Corporation. Adapter for coupling windshield wiper blade holder with hooked wiper arm. 4,120,069, Cl. 15-250.320.
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Sheinbaum, Itzhak. Power conversion and systems for recovering geothermal heat. 4,120,158, Cl. 60-641.000.
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Collins, Michael H.; and Le Hardy Guiton, Jeremy D., 4,120,418, Cl. 220-444.000.
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Sherburn, Raymond Robert, to Canadian General Electric Company, Limited. Mullion adjusting device. 4,120,550, Cl. 312-296.000.
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Shichman, Daniel, to Uniroyal, Inc. Pneumatic tire having carcass cords which depart from the radial plane in the tread region. 4,120,339, Cl. 152-354.0RB.
Shiflett, Ned H.; and Seybert, William J., to Eltra Corporation. Connector-terminal assembly for electrical conductors. 4,120,555, Cl. 339-126.00R.
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Shinoda, Akibumi; and Kido, Noriyoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Tiltable cab construction for an industrial vehicle. 4,120,375, Cl. 180-89.140.
Shiraki, Hisashi, to Kitagawa Iron Works Co., Ltd. Soil treatment. 4,120,163, Cl. 405-264.000.
Shirey, Lawrence E.: *See*—
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Sie, Swan T.; and Bukkems, Franciscus H. J., to Shell Oil Company. Process for reducing the level of radioactivity of a stream of light hydrocarbons. 4,120,781, Cl. 28-251.00R.
Siemens Aktiengesellschaft: *See*—
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Hanni, Manfred, 4,121,158, Cl. 325-55.000.
Happak, Heinz; and Wittmann, Alfred, 4,120,545, Cl. 312-7.00R.
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Simson, Reiner; Schindhelm, Karl-Heinz; and Vogel, Werner, 4,121,274, Cl. 361-273.000.
Silbernagel, John P., to Renal Systems, Inc. Enclosed push button type switch. 4,121,070, Cl. 20-67.0DB.
Silver, Gary L., to United States of America, Energy. Decontamination of plutonium from water with chitin. 4,120,933, Cl. 423-6.000.
Sim, Malcolm F.: *See*—
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Simos, Rigas Christos, to General Enterprises Corp., Ltd. Apparatus for manufacturing plastic tubes from plastics of dissimilar properties. 4,120,628, Cl. 425-131.100.
Simson, Reiner; Schindhelm, Karl-Heinz; and Vogel, Werner, to Siemens Aktiengesellschaft. Self-healing electrical capacitor and method for its production. 4,121,274, Cl. 361-273.000.
Sindt, Melvin R., to Boeing Company, The. Method of securing two non-metal surfaces together using a hot melt type fastener heatable by induction heating. 4,120,712, Cl. 156-71.000.
Singer Company, The: *See*—
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Herr, John A.; and Transue, James A., 4,120,254, Cl. 112-158.00E.
Price, Arthur B., 4,121,263, Cl. 360-27.000.
Sivachenko, Eugene W.; Broacha, Firoze H.; and Larkin, Artemas M., to Sivachenko, Eugene W. Lightweight modular, truss-deck bridge system. 4,120,065, Cl. 14-6.000.
Sjogren, Karl-Erik, to American Air Filter Company, Inc. Fume hood for a melt pot. 4,120,487, Cl. 266-158.000.
Skaggs, Boyd T., to Container Corporation of America. Partition arrangement. 4,120,442, Cl. 229-15.000.
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Skoyles, Derek Robert, to U.S. Philips Corporation. Anti-lock vehicle brake systems. 4,120,317, Cl. 137-509.000.
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Small, Robert James, to Ashland Oil, Inc. Method for platinum or palladium catalyst reactivation. 4,120,819, Cl. 252-413.000.
Smith, Charles A.; and Merritt, John H., to Sperry Rand Corporation. Feeder penetration adjustment mechanism. 4,120,241, Cl. 100-142.000.
Smith, Donald Wayne; Swisher, George W., Jr.; and Teel, Larry W., to CMI Corporation. Sidebank excavator with rotating vertical cutter assembly. 4,120,106, Cl. 37-190.000.
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Smith, George L. Container compactor. 4,120,240, Cl. 100-45.000.
Smith, Herman W., to Upjohn Company, The. 3,7-Inter-m-phenylene-3-oxa-13,14-didehydro-11-deoxy-17-phenyl-4,5,6,18,19,20-hexanor-PGE_1 compounds. 4,121,038, Cl. 560-53.000.
Smith, James W., to Standard Oil Company (Indiana). Apparatus for correlating two time series. 4,121,297, Cl. 364-728.000.
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Smith, Norman Alfred; and Kitzing, Rainer, to Ciba-Geigy AG. Sulfur containing vinyl amide cross-linking agents. 4,120,898, Cl. 260-561.00S.
Smith, Robert H., to Gilbert Associates, Inc. Brick and method of making same. 4,120,735, Cl. 106-84.000.
Smith, William L.; Kelyman, Jacqueline S.; and Jones, Ladell, to Dow Chemical Company, The. Ashless oil dispersants. 4,120,804, Cl. 252-47.500.
Smolka, Heinz, to Henkel Kommanditgesellschaft auf Aktien. Method of machine washing of solid soiled materials by contacting the circulating wash liquid with organic cationic exchange resins. 4,120,653, Cl. 8-137.000.
Smyth, Milagros B.; and Lee-You, James, to Johnson & Johnson. Novel low temperature maturing dental glaze. 4,120,729, Cl. 106-35.000.
Smyth, Richard T., to Metco, Inc. Method and apparatus for plasma flame-spraying coating material onto a substrate. 4,121,083, Cl. 219-76.160.
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Snijders, Wilfred Andre Maria; Verhoeckx, Nicolaas Alphonsus Maria; Van Gerwen, Petrus Josephus; and Van Essen, Hendrik Arie, to U.S. Philips Corporation. Digital signal processing arrangement. 4,121,296, Cl. 364-724.000.
Snyder, David E., to U.S. Industries, Inc. Velocity check valve. 4,120,315, Cl. 137-454.600.
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Societe Nationale des Poudres et Explosifs: *See*—
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Solomon, Elias E., to Gamewell Corporation, The. Ionization detector. 4,121,105, Cl. 250-381.000.
Solomon, Elias E. Optically biased smoke detector. 4,121,110, Cl. 340-630.000.
Soltes, Isaac B. Case for carrying pendant and chain. 4,120,394, Cl. 206-45.340.
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Soma, Akiro; Kawashima, Haruro; Yamauchi, Makoto; and Tanaka, Shoji, to Bridgestone Tire Company Limited. Safety pneumatic tire for passenger cars. 4,120,337, Cl. 152-353.00R.
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Kishi, Yoshio; and Nagami, Masaru, 4,121,264, Cl. 360-55.000.
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Spector, George: *See*—
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Spencer, Edward Guerrant: *See*—
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Sperry Rand Corporation: *See*—
Schoeneberger, Ernest A.; and Blakeslee, Edward A., 4,120,137, Cl. 56-226.000.
Smith, Charles A.; and Merritt, John H., 4,120,241, Cl. 100-142.000.
Spurgin, William T., 4,120,258, Cl. 114-144.00E.
Spies, Alfons, to Dr. Johannes Heidenhain GmbH. Planar measuring instrument. 4,120,093, Cl. 33-174.00P.
Spirit of America, Inc.: *See*—
Doll, Ronald L., 4,121,278, Cl. 362-72.000.
Spitzer, Donald P.; and Bambrick, William Edward, to American Cyanamid Company. Staged rehydration of alumina. 4,120,942, Cl. 423-626.000.
Spitzer, Donald P.: *See*—
Ebel, Robert H.; Spitzer, Donald P.; and Bambrick, William Edward, 4,120,826, Cl. 252-465.000.
Spivack, John D.; and Luzzi, John J., to Ciba-Geigy Corporation. Benzoyloxybenzoates and compositions stabilized therewith. 4,120,846, Cl. 260-45.85B.
Spoor, Herbert: *See*—
Kovacs, Jenoe; Jung, Hans; Marx, Matthias; and Spoor, Herbert, 4,121,266, Cl. 528-288.000.
Sprague Electric Company: *See*—
Burn, Ian, 4,120,677, Cl. 65-18.000.
Ross, Sidney D.; and Linzey, Raynor, 4,121,275, Cl. 361-319.000.
Sprecker, Mark A.: *See*—
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,120,308, Cl. 131-17.00R.
Spurgin, William T., to Sperry Rand Corporation. Variable ratio helm. 4,120,258, Cl. 114-144.00E.

Staats, Henry N., to General Binding Corporation. Removable plastic binding. 4,120,517, Cl. 281-19.00R.

Stackpole Components Company: *See—*
Campbell, Dudley H.; and Overton, Arthur W., 4,121,071, Cl. 200-67.00G.

Stadler, Ruth A.: *See—*
Elger, Gerald W.; Stadler, Ruth A.; and Sanker, Philip E., 4,120,694, Cl. 75-1.00T.

Staeubli Ltd.: *See—*
Schwarz, Rudolf, 4,120,327, Cl. 139-71.000.

Standard Oil Company: *See—*
Bremer, Noel J.; White, James F.; and Milberger, Ernest C., 4,120,876, Cl. 260-346.750.
Valcho, Joseph J.; and Karll, Robert E., 4,120,800, Cl. 252-8.55D.

Standard Oil Company (Indiana): *See—*
Borg, Arthur C.; and Zletz, Alex, 4,120,344, Cl. 164-73.000.
Corkhill, David P., 4,121,191, Cl. 340-15.5DP.
Cropper, Wendell P., 4,120,659, Cl. 23-230.0PC.
Knepper, Jay C.; and Grossman, Eugene L., 4,120,355, Cl. 166-259.000.
Mufti, Irshad R., 4,120,199, Cl. 73-154.000.
Smith, James W., 4,121,297, Cl. 364-728.000.

Stapleton, Gerald F. Currency converter for use with pre-established and known conversion data. 4,120,451, Cl. 235-89.00R.

Starks, Charles M.; Jackson, Robert G.; Porchey, David V.; and Royer, Dennis J., to Continental Oil Company. Predominantly aliphatic lower hydrocarbon materials from carbonaceous solids. 4,120,881, Cl. 260-449.60R.

Stascavage, John A.; Rawls, William W.; and Buchholz, Alexander, to Cornell Iron Works, Inc. Closure. 4,120,340, Cl. 160-133.000.

State of Israel Ministry of Commerce and Industry, The: *See—*
Lopatin, George; and Lewin, Menachem, 4,120,141, Cl. 57-34.0HS.

Stauffer Chemical Company: *See—*
Grindstaff, Donald A.; and Eterno, John R., 4,120,989, Cl. 426-577.000.
Lynn, Charles Carl, 4,120,986, Cl. 426-549.000.

Stauner, Rudolf: *See—*
Hintsch, Otto; and Stauner, Rudolf, 4,120,329, Cl. 139-196.200.

Stazzone, Anthony N. Ring toss game device. 4,120,499, Cl. 273-100.000.

Steck, Howard A.: *See—*
DiVito, Ronald J.; and Steck, Howard A., 4,121,094, Cl. 235-92.0FL.

Steel Company of Canada Limited, The: *See—*
Prenn, Otto E., 4,121,042, Cl. 13-18.00R.

Steel, Francis Robert: *See—*
Irwin, James Stuart; and Steel, Francis Robert, 4,121,218, Cl. 343-702.000.

Stefanou, John. Reflecting and magnifying viewing apparatus. 4,120,563, Cl. 350-235.000.

Stein Industrie S.A.: *See—*
Pouderoux, Pierre, 4,120,348, Cl. 165-81.000.

Steinmeyer, Daniel E., to Monsanto Company. Separation of aerosols from gases in a horizontally disposed cylindrical fiber bed. 4,120,671, Cl. 55-96.000.

Stendel, Wilhelm: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,120,956, Cl. 424-200.000.

Stepe, Visvaldis A., to Caterpillar Tractor Co. Bucket adapter with load absorbing means. 4,120,105, Cl. 37-142.00R.

Stephanos, Stephen P., to Lauer, George E. Photoelectric apparatus for sorting variegated articles according to size. 4,120,403, Cl. 209-564.000.

Stephenson, Robert Larry, to Allied Chemical Corporation. Comfort mechanism for seat belt retractor. 4,120,467, Cl. 242-107.000.

Sterling Drug Inc.: *See—*
Harnson, Thomas S.; and Doyle, Ross L., 4,120,414, Cl. 215-307.000.

Sterling-Winthrop Group Limited: *See—*
Blackband, Trevor William, 4,120,619, Cl. 417-511.000.

Stevens, Travis E.: *See—*
Emmons, William D.; and Stevens, Travis E., 4,120,839, Cl. 260-29.2EP.

Steward, William B., Jr.: *See—*
Walker, Clarence H., Jr.; and Steward, William B., Jr., 4,120,701, Cl. 148-4.000.

Stewart-Warner Corporation: *See—*
Crescenzi, Donald C., 4,120,071, Cl. 16-37.000.

Stiel, Donald Melvyn, to Hoffmann-La Roche Inc. Method invoking tabletting compression force control for optimizing tabletted formulation parameters. 4,121,289, Cl. 364-552.000.

Stitt, Robert M., to Burr-Brown Research Corporation. Optically coupled bias circuit for complementary output circuit and method. 4,121,168, Cl. 330-265.000.

Stoddard, William H., Jr.: *See—*
LeBlanc, Oliver H., Jr.; Niedrach, Leonard W.; and Stoddard, William H., Jr., 4,120,292, Cl. 128-2.00E.

Stoeberl, Helmut, to Klepper-Werke Kommanditgesellschaft. Molds for production of plastics material boats. 4,120,632, Cl. 425-405.00R.

Stone, Joseph James: *See—*
Diebold, Joseph M.; Arway, George; and Stone, Joseph James, 4,121,222, Cl. 346-75.000.

Stout, James E., to United States of America, Air Force. Time division digital multiplexer apparatus. 4,121,056, Cl. 179-15.0BM.

Strain, Patrick J. Polluting oil recovery apparatus. 4,120,793, Cl. 210-175.000.

Straitz, John F., III, to Combustion Unlimited Incorporated. Ignition system for flares. 4,120,638, Cl. 431-15.000.

Strange, Robert R.; and Zimmer, James M., to Crucible Inc. Method for ingot mold repair. 4,120,345, Cl. 164-92.000.

Streaty, Charles E.: *See—*
del Valle, Frank; Tuschhoff, John V.; and Streaty, Charles E., 4,120,983, Cl. 426-405.000.

Stubbings, James H., to Potomac Applied Mechanics, Inc. Locking mechanism. 4,120,181, Cl. 70-58.000.

Stuckmann, Dieter; and Jutte, Hans, to Gewerkschaft Eisenhutte Westfalia. Methods of and apparatus for driving tunnels. 4,120,165, Cl. 405-145.000.

Studebaker, Robert L. Detachable holder for beverage cans. 4,120,073, Cl. 16-114.00R.

Studiengesellschaft Kohle m.b.H.: *See—*
Wilke, Gunther; and Muller, Ernst Willi, 4,120,882, Cl. 260-439.00R.

Stupak, Leonid Mikhailovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Stupak, Leonid Mikhailovich; Baglai, Viktor Mikhailovich; Bogachenko, Alexei Georgievich; Kazakov, Sergei Sergeevich; and Tsykulenko, Anatoly Konstantinovich, 4,120,695, Cl. 75-10.00C.

Sturm, Helmut, to Frank L. Wells Company. Coil spring feeding apparatus. 4,120,392, Cl. 198-451.000.

Stylar Industries, Inc.: *See—*
Fefferman, Frank J., 4,120,531, Cl. 297-349.000.

Suave Shoe Corporation: *See—*
Justamante, Juan, 4,120,477, Cl. 249-109.000.

Suchy, Milos: *See—*
Frater, Georg; Pfiffner, Albert; Suchy, Milos; and Zurfluh, Rene, 4,120,974, Cl. 424-278.000.

Sugiyama, Shunichi: *See—*
Miyauchi, Kohichiroh; Ohsumi, Atsushi; Haga, Yukio; Izumi, Tsutomu; Tsuru, Masahiro; Kunioka, Kazuo; and Sugiyama, Shunichi, 4,120,642, Cl. 432-12.000.

Suk, Eugene J., to Midland-Ross Corporation. Mounting bracket for electrical boxes. 4,120,416, Cl. 220-3.400.

Suk, Eugene J., to Midland-Ross Corporation. Mounting bracket for electrical boxes. 4,120,473, Cl. 248-205.00R.

Sulzer Brothers Limited: *See—*
Hintsch, Otto; and Stauner, Rudolf, 4,120,329, Cl. 139-196.200.
Kuenzli, Albert, 4,121,090, Cl. 219-284.000.

Sumitomo Chemical Company, Limited: *See—*
Fukushima, Nobuo; Uemura, Yukikazu; Okumura, Takuzo; and Hayashida, Haruo, 4,120,931, Cl. 264-288.000.
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, 4,121,032, Cl. 526-197.000.
Yamazaki, Noboru; and Higashi, Fukuji, 4,120,853, Cl. 260-112.50R.

Sumitomo Electric Industries, Ltd.: *See—*
Nomura, Toshio; Asai, Tsuyoshi; Yamamoto, Takaharu; and Hara, Akio, 4,120,719, Cl. 75-238.000.

Superior Electric Company, The: *See—*
Leenhouts, Albert C., 4,121,144, Cl. 318-696.000.

Superior Tool & Manufacturing Company: *See—*
Engel, Hugo George, 4,120,119, Cl. 47-66.000.

Surman, Stuart A., to Surman, Stuart A. Method and apparatus for collecting precious metal particles. 4,120,121, Cl. 51-270.000.

Sutherland, Anthony Keith: *See—*
Venton, Peter Charles; Blench, Michael; Sutherland, Anthony Keith; and Hodges, Kenneth James Hamer, 4,121,286, Cl. 364-200.000.

Sutton, Jerry L.: *See—*
Allen, Royce; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,121,290, Cl. 364-565.000.

Suzuki, Kenichi: *See—*
Nakamura, Toshio; Hoshide, Yasuo; Hashimoto, Yoshio; Suzuki, Kenichi; and Yoshida, Yohji, 4,121,037, Cl. 544-313.000.

Sviokla, Sylvester Charles, to Alden Research Foundation. Electrochemical recording medium. 4,120,762, Cl. 204-2.000.

Swanson, Ronald E., to Acurex Corporation. Color sorter including a foreign object reject system. 4,120,402, Cl. 209-75.000.

Swartz, Delbert D.: *See—*
McRoskey, John W.; McRoskey, Leonard H.; and Swartz, Delbert D., 4,120,427, Cl. 222-193.000.

Swindells, Frank E.; and Klimas, Mary G., to United States of America, Army. Irreversible warmup indicator. 4,120,818, Cl. 116-114.00V.

Swisher, George W., Jr.: *See—*
Smith, Donald Wayne; Swisher, George W., Jr.; and Teel, Larry W., 4,120,106, Cl. 37-190.000.

Syntex (U.S.A.) Inc.: *See—*
Gaylord, Norman G., 4,120,570, Cl. 351-40.000.

Szabo, Francis S.: *See—*
Cowe, Alan B.; Kubinak, Ronald A.; Pick, George G.; Flanagan, Richard M.; and Szabo, Francis S., 4,121,228, Cl. 354-7.000.

Szekely, Paul: *See—*
Morser, Alfred Harold; Gibson, Roy; Szekely, Paul; and Parker, Bruce Trayton, 4,121,142, Cl. 318-345.00C.

Szporny, Laszlo: *See—*
Clauder, Otto; Kokosi, Jozsef; Szporny, Laszlo; and Karpati, Egon, 4,120,858, Cl. 260-293.550.

Tabata, Haruro: *See—*
Minekawa, Saburo; Yonekawa, Sigeru; Tabata, Haruro; Ishida, Takashi; Tsuchida, Satoshi; and Yamada, Kiyoshi, 4,121,031, Cl. 526-173.000.

Tagashira, Yoshimi: *See—*
Matsumoto, Youichi; and Tagashira, Yoshimi, 4,121,166, Cl. 329-122.000.

Taguchi, Michiichi: *See—*
Iizuka, Akio; Taguchi, Michiichi; and Kubo, Muneyuki, 4,120,821, Cl. 252-432.000.

Taguchi, Tatsuya; and Date, Nobuaki, to Canon Kabushiki Kaisha. Exposure factor setting device for a camera. 4,121,231, Cl. 354-38.000.

Taiko Rozai Co. Ltd.: *See—*
Taniguchi, Taizo; Iwasaki, Itsutoshi; Takeshige, Toshihiko; Onizuka, Koji; and Hashiguchi, Soichi, 4,120,734, Cl. 106-67.000.

Takahashi, Hiroshi; Hirai, Seizaburo; and Abo, Toshio, to Nippon Paint Co., Ltd. Levelling agent for aqueous paints. 4,120,841, Cl. 260-29.60H.

Takahashi, Isoji: *See—*
Matsumoto, Seiji; Takahashi, Isoji; Komaki, Takao; Ishida, Masamitsu; Kozeki, Tomotaka; Horikawa, Kazuo; and Shimanuki, Kozi, 4,121,101, Cl. 250-315.00A.

Takahashi, Koji; Akimoto, Taizo; Watanabe, Shigeru; and Terashita, Takaaki, to Fuji Photo Film Co., Ltd. Apparatus for automatically printing color photographs. 4,120,581, Cl. 355-38.000.

Takahashi, Masao: *See—*
Mori, Yoichi; Ueda, Kanichi; and Takahashi, Masao, 4,120,848, Cl. 528-67.000.

Takahashi, Shigeyuki: *See—*
Harada, Yuichi; Ishihara, Tetsuo; and Takahashi, Shigeyuki, 4,121,006, Cl. 428-172.000.

Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, to Nissan Motor Company, Limited. Cover member for a safety air-cushion device and a method of producing the same. 4,120,516, Cl. 280-728.000.

Takano, Teruhisa; Kurata, Noboru; Kusunoki, Shigeru; and Yoshimura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Microwave heating apparatus. 4,121,078, Cl. 219-10.55F.

Takao, Hiroyoshi: *See—*
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, 4,121,032, Cl. 526-197.000.

Takatori Machinery Works, Ltd.: *See—*
Takatori, Osho; Nishikawa, Etsuo; and Fukuyama, Yosinobu, 4,120,251, Cl. 112-121.150.

Takatori, Osho; Nishikawa, Etsuo; and Fukuyama, Yosinobu, to Takatori Machinery Works, Ltd. Automatic method and apparatus for closing a toe end of a seamless hose material utilizing a straight line stitching by means of a stationarily disposed sewing machine. 4,120,251, Cl. 112-121.150.

Takeda Chemical Industries, Ltd.: *See—*
Numasaki, Kouichi; Sakai, Yoshihisa; Nawa, Takehiko; Matsumoto, Zenji; and Ninomiya, Nobutaka, 4,120,644, Cl. 432-99.000.

Takeshige, Toshihiko: *See—*
Taniguchi, Taizo; Iwasaki, Itsutoshi; Takeshige, Toshihiko; Onizuka, Koji; and Hashiguchi, Soichi, 4,120,734, Cl. 106-67.000.

Taketomi, Chiaki: *See—*
Ushio, Yoji; Taketomi, Chiaki; and Asaga, Tutomu, 4,121,262, Cl. 360-13.000.

Takeuchi, Jikko; and Mizuno, Masaya. Recording mechanism using ball-point-pen. 4,121,224, Cl. 346-139.00C.

Talmadge, Paul Conway, to Perkin-Elmer Corporation, The. High resolution stepping motor drive. 4,121,145, Cl. 318-696.000.

Tamaki, Kazuo: *See—*
Furukawa, Kaoru; Matsunami, Koichi; Ota, Toshihiko; Murakami, Tetsushi; Nagai, Hiroshi; and Tamaki, Kazuo, 4,120,928, Cl. 264-171.000.

Tamborski, Christ; and Christian, John B., to United States of America, Air Force. Fluorine-containing benzoxazoles. 4,120,863, Cl. 260-307.00D.

Tamura, Sadahiro: *See—*
Nishikawa, Toshio; Ito, Yoji; Ishikawa, Youhei; and Tamura, Sadahiro, 4,121,181, Cl. 333-73.00R.

Tanaka, Hideo: *See—*
Torii, Sigeru; Tanaka, Hideo; and Mishima, Kiyoshi, 4,120,764, Cl. 204-78.000.

Tanaka, Masaharu, to Mitsubishi Denki Kabushiki Kaisha. Double-break puffer-type compressed-gas circuit-breaker. 4,121,075, Cl. 200-148.00A.

Tanaka, Shoji: *See—*
Soma, Akiro; Kawashima, Haruro; Yamauchi, Makoto; and Tanaka, Shoji, 4,120,337, Cl. 152-353.00R.

Tang, Mou-Lin. Power generating and air conditioning system utilizing waste heat. 4,120,157, Cl. 60-618.000.

Tanguy, Denis R.; and Leising, Larry J., to Schlumberger Technology Corporation. Weight-on-bit measuring apparatus. 4,120,198, Cl. 73-151.000.

Taniguchi, Taizo; Iwasaki, Itsutoshi; Takeshige, Toshihiko; Onizuka, Koji; and Hashiguchi, Soichi, to Taiko Rozai Co. Ltd. Monolithic refractory compositions. 4,120,734, Cl. 106-67.000.

Tannenberger, Helmut: *See—*
Trojer, Felix; O'Connor, Grahame Paul; and Tannenberger, Helmut, 4,120,730, Cl. 106-39.600.

Tate, Dan C., to Champion International Corporation. Light weight aggregate and method for making same. 4,120,738, Cl. 106-288.00Q.

Tate, Frank M.: *See—*
Witmer, Clinton C.; and Tate, Frank M., 4,120,624, Cl. 425-71.000.

Tatsuta Densen Kabushiki Kaisha: *See—*
Terasawa, Shinichi; Okamura, Akitoshi; Okuyama, Shigeru; Nishiyama, Takehiko; and Nishida, Tadao, 4,120,139, Cl. 57-13.000.

Tatsuta, Sumitaka; Yamamoto, Nobuo; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Subbing material for styrene bases used in photographic elements. 4,120,724, Cl. 96-87.00A.

Taumann, Leonhard; and Schittenhelm, Rudolf, to Applied Radiation Corporation. Electron accelerator with a target exposed to the electron beam. 4,121,109, Cl. 250-505.000.

Taylor, Bruce George, to AMF Incorporated. Filter cartridge assembly. 4,120,794, Cl. 210-345.000.

Taylor, Glenn R.; Mullen, John H.; and Dobrosielski, Stephen S., to Westinghouse Electric Corp. Convertible switch. 4,121,076, Cl. 200-280.000.

Taylor, Jr. John W., to Westinghouse Electric Corp. Double sideband pulse radar. 4,121,212, Cl. 343-17.10R.

Taylor Machine Works, Inc.: *See—*
Boyles, Tonnie M.; and Hunter, Hubert E., 4,120,675, Cl. 55-431.000.

Teager, Thomas A., to Westinghouse Electric Corp. Automatic centrifugal babbitting apparatus and method. 4,120,346, Cl. 164-105.000.

Technical Research and Manufacturing, Inc.: *See—*
Greenway, Thomas H., 4,121,180, Cl. 333-10.000.

Technicon Instruments Corporation: *See—*
Adler, Stanford L.; and Gordon, Abraham, 4,120,262, Cl. 118-642.000.
Ornstein, Leonard; Williams, Hazel Elizabeth; and Intraub, Julius, 4,120,991, Cl. 427-2.000.

Teel, Larry W.: *See—*
Smith, Donald Wayne; Swisher, George W., Jr.; and Teel, Larry W., 4,120,106, Cl. 37-190.000.

Teknekron, Inc.: *See—*
Hibbard, Earl R., 4,121,245, Cl. 358-102.000.

Tektronix, Inc.: *See—*
Feucht, Dennis LeRoy, 4,121,164, Cl. 328-181.000.
Meigs, Gordon Wallace; and Thomas, Wayne Donald, 4,121,119, Cl. 307-351.000.
Murphy, Desmond Lewis, 4,121,183, Cl. 333-81.00R.
Rieger, Michael Lawrence, 4,121,299, Cl. 364-807.000.
Wetterling, Steven E., 4,121,120, Cl. 307-352.000.
White, Robert Edward; and Moeckli, David Edward, 4,121,113, Cl. 307-140.000.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Leal, Jean-Claude; Vannetzel, Henri; Grima, Jean-Claude; and David, Guy Albert Jules, 4,121,287, Cl. 364-461.000.

Telefonaktiebolaget L M Ericsson: *See—*
Endersz, Gyorgy Geza; and Forsberg, Gunnar Stefan, 4,121,095, Cl. 250-199.000.

Temchulla, Florian O.: *See—*
Van Steenberg, Wade M.; and Temchulla, Florian O., 4,120,224, Cl. 83-666.000.

Temple, Philip A.; Hasbrouck, Gene B.; and Howe, Stanley M., to Hon Industries Inc. Movable wall assembly. 4,120,124, Cl. 52-122.000.

Teramura, Hiroichi: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,121,258, Cl. 358-260.000.

Terasawa, Shinichi; Okamura, Akitoshi; Okuyama, Shigeru; Nishiyama, Takehiko; and Nishida, Tadao, to Tatsuta Densen Kabushiki Kaisha. Cable making apparatus. 4,120,139, Cl. 57-13.000.

Terashita, Takaaki: *See—*
Takahashi, Koji; Akimoto, Taizo; Watanabe, Shigeru; and Terashita, Takaaki, 4,120,581, Cl. 355-38.000.

Terhune, James H.; and Neissel, John P., to General Electric Company. Shielded regenerative neutron detector. 4,121,106, Cl. 250-390.000.

Terzian, Rouben T.; Morrison, Howard J.; Schoenfield, Palmer J.; and Kuna, Wayne A., to Marvin Glass & Associates. Articulated figure toy. 4,120,117, Cl. 46-130.000.

Texaco Inc.: *See—*
Harnsberger, Bobby G., 4,120,359, Cl. 166-278.000.
Harnsberger, Bobby G., 4,120,842, Cl. 260-33.6UA.
Kalfoglou, George, 4,120,358, Cl. 166-275.000.

Texas Instruments Incorporated: *See—*
Bileski, Thomas; Crawford, Joe W.; Blanton, Bobby D.; Johnson, Carl N.; Garcia, Felix; Orcutt, John W.; Shepherd, Glen C.; and Oursler, James A., 4,121,073, Cl. 200-83.00P.
Coale, Cecil R., Jr., 4,121,248, Cl. 358-113.000.
Orcutt, John W.; and Mills, James M., 4,121,074, Cl. 200-83.00P.
Payne, Thomas R.; James, Harry K.; and Judy, Millard M., 4,120,744, Cl. 156-653.000.
Peterson, Robert K., 4,120,085, Cl. 29-600.000.

Textron, Inc.: *See—*
Braswell, James L.; Covington, Cecil E.; Phillips, Nolan B.; and Snyder, David E., 4,120,610, Cl. 416-226.000.
Ripley, Richard Edward, 4,120,149, Cl. 58-88.00R.

Th. Goldschmidt AG: *See—*
Schwarzmann, Gunter; Holtschmidt, Ulrich; and Bertelmann, Gunter, 4,120,979, Cl. 424-325.000.

Thekdi, Arvind C.; Chojnacki, Dennis A.; and Hemsath, Klaus H., to Midland-Ross Corporation. High momentum burners. 4,120,639, Cl. 431-158.000.

Thelman, John P.: *See—*
Auerbach, Andrew B.; Thelman, John P.; and Turbak, Albin F., 4,120,836, Cl. 260-15.000.

Thiel, Max: *See—*
Kampe, Wolfgang; Senn, Martin; Thiel, Max; Bartsch, Wolfgang; and Dietmann, Karl, 4,120,963, Cl. 424-256.000.

Thiokol Corporation: *See—*
Clark, Dwight P.; and Wagner, William F., 4,120,792, Cl. 210-152.000.
Hamuer, James W.; Hightower, James O.; and Rector, Carl M., 4,120,709, Cl. 149-19.920.

Thomas, Derek Edward: *See—*
Cross, Raymond Peter; and Thomas, Derek Edward, 4,120,681, Cl. 65-114.000.

Thomas, Glenn R.: *See—*
Mrema, Stephen A.; and Thomas, Glenn R., 4,121,077, Cl. 200-308.000.

Thomas, Herbert: *See—*
Seubert, Jurgen; Pohlke, Rolf; Thomas, Herbert; and Andrews, Peter, 4,120,961, Cl. 424-250.000.

Thomas, Wayne Donald: *See—*
Meigs, Gordon Wallace; and Thomas, Wayne Donald, 4,121,119, Cl. 307-351.000.

Thompson, Richard L.; Hubbert, Murray J.; and Wade, Vernon J., to Bettis Corporation. Rising stem valve actuator. 4,120,479, Cl. 251-56.000.

Thomson-CSF: *See—*
Ngu Tung, Pham, 4,121,116, Cl. 307-213.000.

Thornburg, David D., to Xerox Corporation. Tapered resistor meter. 4,121,153, Cl. 324-96.000.

Threlkeld, Curtis B.; Hessert, James E.; and Clampitt, Richard L., to Phillips Petroleum Company. Method for reducing the permeability of subterranean formations to brines. 4,120,361, Cl. 166-294.000.

Thyen, Eberhard H.: *See—*
Mandel, Harvey B.; and Thyen, Eberhard H., 4,120,395, Cl. 206-63.300.

Tielens, Asmund: *See—*
Kuhl, Karl-Heinz; Muranka, Eberhard; Schulz, Bernhard; and Tielens, Asmund, 4,121,189, Cl. 338-226.000.

Tiep, Brian L., to City of Hope National Medical Center. Breathing apparatus. 4,120,300, Cl. 128-203.000.

Tillotson, Thomas C.: *See—*
Jusko, Stephen C.; and Tillotson, Thomas C., 4,121,058, Cl. 179-15.55T.

Timashpolskaya, Faina Borisovna: *See—*
Liverant, Vladimir Leibovich; Yagupolsky, Lev Moiseevich; Ilichenko, Andrei Yakovlevich; Timashpolskaya, Faina Borisovna; Fedorovskaya, Elena Alexeevna; Petrik, Lidia Ivanovna; Kalantarov, Iosif Yakubovich; Kopylova, Mira Semenovna; and Meitus, Idima Evgenievna, 4,120,855, Cl. 260-153.000.

Tinker, Donald; and Berg, Keith E., to Phillips Petroleum Company. Synthetic rubber dewatering apparatus and method. 4,120,790, Cl. 210-65.000.

Titz, Siegfried, to Dynamit Nobel Aktiengesellschaft. Process for reducing the shrinkage of extruded profiled elements of thermoplastic synthetic resins. 4,120,926, Cl. 264-89.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Kamiyama, Setsuo; Kaneko, Katsumi; Nagashima, Yukio; Furukawa, Hiroshi; and Wada, Shozo, 4,120,908, Cl. 260-668.00A.
Okamoto, Nobukazu, 4,120,887, Cl. 260-462.00R.

Toda, Yoshio; and Iwasa, Yoshio, to Nissan Motor Company, Limited. Exhaust gas recirculation system. 4,120,214, Cl. 74-860.000.

Togel, Kurt; Warnke, Hans; and Westerfeld, Horst, to Klockner-Werke AG. Arrangement for threading bolts into and out of tapped bores of reactor vessels. 4,120,218, Cl. 81-57.380.

Tokyo Institute of Technology: *See—*
Yamaguchi, Masataka; Yamaguchi, Saeko; and Ohokubo, Tadashi, 4,120,079, Cl. 28-282.000.

Tomita, Hitoshi: *See—*
Kimura, Takeo; and Tomita, Hitoshi, 4,120,456, Cl. 239-464.000.

Tomlin, Malcolm George, to Coal Industry (Patents) Limited. Underground roadway or tunnel support. 4,120,164, Cl. 405-289.000.

Tomono, Makoto: *See—*
Watanabe, Koji; Ohta, Mitsunori; and Tomono, Makoto, 4,120,577, Cl. 355-4.000.

Tomsic, Walter J.; and Hamilton, Floyd E., to Uniroyal, Inc. Leak-detecting apparatus. 4,120,193, Cl. 73-40.000.

Toray Industries, Inc.: *See—*
Mori, Yoichi; Ueda, Kanichi; and Takahashi, Masao, 4,120,848, Cl. 528-67.000.

Torii, Sigeru; Tanaka, Hideo; and Mishima, Kiyoshi, to Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha. Process for producing a tetraalkylthiuram disulfide. 4,120,764, Cl. 204-78.000.

Torrington Company, The: *See—*
Bhateja, Chander Prakash; Alling, Richard Lassen; and Johnston, Dean Edward, 4,120,542, Cl. 308-219.000.

Toth, Klara: *See—*
Nagy, Geza; Pungor, Erno; Toth, Klara; Havas, Jeno; and Feher, Zsofia, 4,120,657, Cl. 23-230.00R.

Towmotor Corporation: *See—*
Jones, Francis L., 4,121,207, Cl. 340-648.000.
Samide, Frank R., 4,120,528, Cl. 296-107.000.

Townsend, John Melvin; and Valentine, Donald Herman, Jr., to Hoffmann-La Roche Inc. Metal phosphine complex. 4,120,870, Cl. 260-340.90R.

Toy Professionals Unlimited, Inc.: *See—*
Sommer, Irving, 4,120,493, Cl. 272-52.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Furukawa, Kaoru; Matsunami, Koichi; Ota, Toshihiko; Murakami, Tetsushi; Nagai, Hiroshi; and Tamaki, Kazuo, 4,120,928, Cl. 264-171.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ando, Masahisa; Katow, Keigo; and Yamazaki, Masami, 4,120,480, Cl. 251-61.500.

Tranchant, Jean Lucien: *See—*
Cougoul, Pierre; Saunier, Marc; and Tranchant, Jean Lucien, 4,120,920, Cl. 264-3.00R.

Transue, James A.: *See—*
Herr, John A.; and Transue, James A., 4,120,254, Cl. 112-158.00E.

Tri/Valley Growers: *See—*
Witmer, Clinton C.; and Tate, Frank M., 4,120,624, Cl. 425-71.000.

Triebeneck, Kurt: *See—*
Baatz, Gunther; Dahm, Manfred; and Triebeneck, Kurt, 4,120,518, Cl. 282-27.500.

Trizisky, Joseph Donnelly, to Du Pont de Nemours, E. I., and Company. Method and apparatus for the determination of oxidative stability of polymers under shear conditions. 4,120,660, Cl. 23-230.00R.

Trojer, Felix; O'Connor, Grahame Paul; and Tannenberger, Helmut, to Battelle Memorial Institute. Biocompatible ceramic glass. 4,120,730, Cl. 106-39.600.

Trowbridge, Lawrence E.: *See—*
Kennedy, Alvin B., Jr.; Shirey, Lawrence E.; Sharp, Harper Eugene; Trowbridge, Lawrence E.; and Magee, Robert L., 4,120,699, Cl. 134-1.000.

Troy, Stephen R.: *See—*
Hale, Edgar C.; and Troy, Stephen R., 4,121,152, Cl. 324-66.000.

TRW Inc.: *See—*
Kuhl, Karl-Heinz; Muranka, Eberhard; Schulz, Bernhard; and Tielens, Asmund, 4,121,189, Cl. 338-226.000.
Peck, Vincent W., 4,121,068, Cl. 200-67.00G.

Tsai, Reysen, to General Electric Company. Reverse power flow detector and control circuit. 4,121,271, Cl. 361-82.000.

Tseng, Ching Y.: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,120,308, Cl. 131-17-00R.

Tsuboi, Yoshikazu; and Uzu, Yoshitomo, to Matsushita Electric Industrial Co., Ltd. Remote control system. 4,121,198, Cl. 340-171.00R.

Tsuchida, Satoshi: *See—*
Minekawa, Saburo; Yonekawa, Sigeru; Tabata, Haruro; Ishida, Takashi; Tsuchida, Satoshi; and Yamada, Kiyoshi, 4,121,031, Cl. 526-173.000.

Tsuji, Nobuo: *See—*
Nakazyo, Kiyoshi; Sakaguchi, Shinji; and Tsuji, Nobuo, 4,120,725, Cl. 96-97.000.
Tatsuta, Sumitaka; Yamamoto, Nobuo; and Tsuji, Nobuo, 4,120,724, Cl. 96-87.00A.

Tsukada, Toshihisa, to Hitachi, Ltd. Semiconductor device and a method of fabricating the same. 4,121,177, Cl. 331-94.50H.

Tsuru, Masahiro: *See—*
Miyauchi, Kohichiroh; Ohsumi, Atsushi; Haga, Yukio; Izumi, Tsutomu; Tsuru, Masahiro; Kunioka, Kazuo; and Sugiyama, Shunichi, 4,120,642, Cl. 432-12.000.

Tsutome, Michitaka: *See—*
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Tsykulenko, Anatoly Konstantinovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Stupak, Leonid Mikhailovich; Baglai, Viktor Mikhailovich; Bogachenko, Alexei Georgievich; Kazakov, Sergei Sergeevich; and Tsykulenko, Anatoly Konstantinovich, 4,120,695, Cl. 75-10.00C.

Tuley, William Bayard: *See—*
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Pierre, Kenneth J.; and Tung, Ker-Kong, 4,120,755, Cl. 195-103.50C.

Turbak, Albin F.: *See—*
Auerbach, Andrew B.; Thelman, John P.; and Turbak, Albin F., 4,120,836, Cl. 260-15.000.

Turillon, Pierre Paul; Hull, Michael Neill; and Nordblom, George Frederick, to International Nickel Company, Inc., The; and ESB Corporation. Negative electrode for lead-acid storage battery. 4,121,024, Cl. 429-245.000.

Turnbull, George W.: *See—*
Armor, Anthony F.; Barton, Sterling C.; Chari, Madabushi V.; Collings, Harold E.; and Turnbull, George W., 4,121,126, Cl. 310-59.000.

Turnbull, Peter Dennis: *See—*
Downey, Thomas James; Turnbull, Peter Dennis; and Gayther, James Walter, 4,121,194, Cl. 340-27.00R.

Turner, Paul Allen: *See—*
Chiappetta, Ferdinand; Dykeman, Fred Edgar; and Turner, Paul Allen, 4,120,145, Cl. 57-149.000.

Turner, Ronald L.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,120,665, Cl. 44-1.00R.

Tuschhoff, John V.: *See—*
del Valle, Frank; Tuschhoff, John V.; and Streaty, Charles E., 4,120,983, Cl. 426-405.000.

Ueda, Kanichi: *See—*
Mori, Yoichi; Ueda, Kanichi; and Takahashi, Masao, 4,120,848, Cl. 528-67.000.

Ueda, Kenji, to Mitsubishi Jukogyo Kabushiki Kaisha. Surface treatment of metals. 4,120,760, Cl. 204-55.00R.

Uemura, Yukikazu: *See—*
Fukushima, Nobuo; Uemura, Yukikazu; Okumura, Takuzo; and Hayashida, Haruo, 4,120,931, Cl. 264-288.000.

Uhlig, Herbert K.: *See—*
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Ulrich, Michael Henry: *See—*
Daniels, Raymond Alex; Gibson, David Kent; Kummli, Paul; Snell, Spencer Allan; and Ulrich, Michael Henry, 4,120,578, Cl. 355-8.000.

Ultronic Systems Corporation: *See—*
Chen, Frank K., 4,121,285, Cl. 364-200.000.

Umezawa, Hamao; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Method for production of kanamycin C and its derivatives. 4,120,955, Cl. 424-180.000.

Undin, Hans, to Pressmaster, Ltd. Electric power apparatus. 4,121,092, Cl. 219-501.000.

Union Carbide Corporation: *See—*
Doering, John Peter, 4,120,341, Cl. 160-213.000.
Engel, Stephen August, 4,120,703, Cl. 148-9.500.

Union Oil Company of California: *See—*
Fischer, Paul W.; Pye, David S.; and Gallus, Julius P., 4,120,369, Cl. 175-72.000.
Ward, John W., 4,120,825, Cl. 252-455.00Z.

Uniroyal, Inc.: *See—*
Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; Neidermyer, Robert W.; and Crittendon, Charles E., 4,120,861, Cl. 260-302.00D.
Plant, Howard L.; Zukel, John W.; and Ames, Ronald B., 4,120,692, Cl. 71-94.000.
Shichman, Daniel, 4,120,339, Cl. 152-354.0RB.
Tomsic, Walter J.; and Hamilton, Floyd E., 4,120,193, Cl. 73-40.000.

Uniroyal Ltd.: *See—*
Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; Neidermyer, Robert W.; and Crittendon, Charles E., 4,120,861, Cl. 260-302.00D.

U.S. Industries, Inc.: *See—*
Snyder, David E., 4,120,315, Cl. 137-454.600.

United States of America
Air Force: *See—*
Baldwin, R. Bruce, 4,121,002, Cl. 428-36.000.
Crolius, Richard L., 4,121,123, Cl. 310-10.000.
Evers, Robert C.; and Abraham, Tonson, 4,120,900, Cl. 260-571.000.
Hamil, Roy A.; and Johnson, Alfred L., 4,121,175, Cl. 331-94.50D.
Hoffman, Charles R., Jr., 4,120,232, Cl. 89-1.50R.
Leeming, Harold, 4,120,195, Cl. 73-768.000.
Marinaccio, Richard E.; and Meier, Ward M., 4,121,214, Cl. 343-18.00E.
Oloff, Clarence M.; Karl, Alva A.; Wolff, Walter M.; Halbrook, Lloyd W.; Brown, Ray D.; and Dickey, Raymond G., 4,120,266, Cl. 119-103.000.
Pilipovich, Donald; Grant, Louis R., Jr.; and Wilson, Richard D., 4,120,904, Cl. 260-644.000.
Quigley, Richard E., Jr., 4,120,151, Cl. 60-39.46M.
Schlossberg, Howard R., 4,121,178, Cl. 331-94.50G.
Stout, James E., 4,121,056, Cl. 179-15.0BM.
Tamborski, Christ; and Christian, John B., 4,120,863, Cl. 260-307.00D.
Wakeman, Thomas G., 4,120,150, Cl. 60-39.09R.
Westermeier, Theodore F., 4,120,469, Cl. 244-194.000.
Witt, Richard P., 4,121,050, Cl. 178-67.000.

Army: *See—*
Barbano, Normand, 4,121,215, Cl. 343-18.00C.
Harris, William G.; and Cipkowski, Jerome T., 4,120,413, Cl. 214-394.000.
Johnson, Richard N.; and Schneider, Marvin J., 4,121,196, Cl. 340-146.30P.
Price, G. Richard; and Plant, Jeffrey N., 4,120,547, Cl. 312-209.000.
Roberts, Thomas G., 4,121,128, Cl. 313-7.000.
Swindells, Frank E.; and Klimas, Mary G., 4,120,818, Cl. 116-114.00V.
Walker, Clarence H., Jr.; and Steward, William B., Jr., 4,120,701, Cl. 148-4.000.

Energy: *See—*
Lasky, Jerome B.; and Moran, Paul R., 4,121,010, Cl. 428-403.000.
Peters, Howard M.; and Simon, Robert L., Jr., 4,120,710, Cl. 149-88.000.
Pierce, Bill L., 4,120,172, Cl. 62-115.000.
Rabl, Arnulf; and Rabl, Veronika, 4,120,565, Cl. 350-286.000.
Silver, Gary L., 4,120,933, Cl. 423-6.000.

Interior: *See—*
Elger, Gerald W.; Stadler, Ruth A.; and Sanker, Philip E., 4,120,694, Cl. 75-1.00T.
Keating, Charles M., 4,121,154, Cl. 324-126.000.

Navy: *See—*
Allen, Royce; Sutton, Jerry L.; Griffin, Dan M.; Frye, Hal W.; and Colborn, Joseph G., 4,121,290, Cl. 364-565.000.
ap Rhys, Tomos L., 4,121,209, Cl. 343-7.700.

U.S. Philips Corporation: *See—*
Krol, Johannes Wilhelmus Antonius; Lersmacher, Bernhard; and Seifert, Horst, 4,120,080, Cl. 29-25.180.
Lorteije, Jean Hubertus Josef; and Warrink, Geert, 4,121,256, Cl. 358-240.000.
Richter, Detlev, 4,121,104, Cl. 250-355.000.
Schampers, Paulus Philippus Maria; Carasso, Marino Giuseppe; and Klostermann, Frits Theodoor, 4,121,255, Cl. 358-223.000.
Skoyles, Derek Robert, 4,120,317, Cl. 137-509.000.
Snijders, Wilfred Andre Maria; Verhoeckx, Nicolaas Alphonsus Maria; Van Gerwen, Petrus Josephus; and Van Essen, Hendrik Arie, 4,121,296, Cl. 364-724.000.
van Esdonk, Johannes; and Haans, Petrus Franciscus Antonius, 4,121,131, Cl. 313-402.000.

United Technologies Corporation: *See—*
Yargeau, Brian A., 4,120,787, Cl. 210-26.000.

Unitex Limited: *See—*
Seddon, Robert Maxwell, 4,121,008, Cl. 428-251.000.

Universal Maschinenfabrik Dr. Rudolf Schieber KG: *See—*
Kuhnert, Gottfried, 4,120,178, Cl. 66-63.000.

Universal Water Systems, Inc.: *See—*
Gudeman, William J., 4,120,711, Cl. 156-69.000.

University of Toronto, The Governing Council of the: *See—*
French, John Barry; Reid, Neil M.; and Buckley, Janette A., 4,121,099, Cl. 250-296.000.

University of Utah: *See—*
Miller, Jan D.; and Sepulveda, Jaime E., 4,120,776, Cl. 208-11.0LE.

University of Utah Research Institute: *See—*
Vali, Victor; Shorthill, Richard W.; Goldstein, Raymond; and Krogstad, Reuben S., 4,120,587, Cl. 356-106.0LR.

Upjohn Company, The: *See—*
Lednicer, Daniel, 4,120,899, Cl. 260-562.00R.
Morton, Douglas Ross, Jr., 4,120,879, Cl. 260-408.000.
Morton, Douglas Ross, Jr., 4,120,880, Cl. 260-408.000.
Nelson, Norman A., 4,120,872, Cl. 260-343.600.
Smith, Herman W., 4,121,038, Cl. 560-53.000.

Upton, Robert W.: *See—*
Jones, John B.; and Upton, Robert W., 4,120,405, Cl. 214-1.0HH.

Uritis, Joseph M., to Gould Inc. Take-up roll mechanism. 4,120,464, Cl. 242-72.00R.

Ushio, Yoji; Taketomi, Chiaki; and Asaga, Tutomu, to Clarion Co., Ltd. Magnetic recording/reproducing device. 4,121,262, Cl. 360-13.000.

USM Corporation: *See—*
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Tsuboi, Yoshikazu; and Uzu, Yoshitomo, 4,121,198, Cl. 340-171.00R.

Valcho, Joseph J.; and Karll, Robert E., to Standard Oil Company. Oil recovery and mobility control using succinamate surfactant systems. 4,120,800, Cl. 252-8.55D.

Valentine, Donald Herman, Jr.: *See—*
Townsend, John Melvin; and Valentine, Donald Herman, Jr., 4,120,870, Cl. 260-340.90R.

Vali, Victor; Shorthill, Richard W.; Goldstein, Raymond; and Krogstad, Reuben S., to University of Utah Research Institute. Double optical fiber waveguide ring laser gyroscope. 4,120,587, Cl. 356-106.0LR.

van den Bosch, Steven, to P.F.W. Beheer B.V. Sulfur-containing flavoring agents. 4,120,985, Cl. 426-535.000.

van der Burgt, Maarten J., to Shell Internationale Research Maatschappij B.V. Apparatus for the supply of fuel powder to a gas-pressurized vessel. 4,120,410, Cl. 214-17.00B.

Van der Horst, Eberhard, to A. Monforts. Turning machine tool. 4,120,219, Cl. 82-2.00R.

vander Werff, Bartele, to A. Vuyk & Zonen's Scheepswerven B.V. Hopper barge having a bottom discharge opening closable by hopper doors. 4,120,409, Cl. 214-15.00R.

van Esdonk, Johannes; and Haans, Petrus Franciscus Antonius, to U.S. Philips Corporation. Color television display tube and method of manufacturing same. 4,121,131, Cl. 313-402.000.

Van Essen, Hendrik Arie: *See—*
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Van Gerwen, Petrus Josephus: *See—*
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Van Klinken, Jakob: *See—*
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Vannetzel, Henri: *See—*
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van Putten, James D., Jr.: *See—*
De Vries, Martin; Fitzgerald, Harold A., II; Nyhof, Eldon J.; and van Putten, James D., Jr., 4,120,582, Cl. 356-73.000.

Van Steenberg, Wade M.; and Temchulla, Florian O. Saw blade mounting arrangement. 4,120,224, Cl. 83-666.000.

van Valkenburg, Ludovicus Petrus Maria. Color detection device. 4,120,591, Cl. 356-178.000.

Vargiu, Silvio; Mazzoleni, Giorgio; and Pezzoli, Silvestro, to Societa'

Italiana Resine S.I.R. S.p.A. Process for the preparation of urea-formaldehyde condensates to be used as fertilizers. 4,120,685, Cl. 71-30.000.

Vassiliou, Eustathios, to Rolls-Royce Limited. Heat-stable polymer coating composition with antioxidant. 4,120,608, Cl. 428-187.000.

VEB Filmfabrik Wolfen: *See—*
Hanisch, Gerhard; Fischer, Gunther; Gahler, Seigfried; Franz, Udo; Kuschel, Karl; Mayer, Roland; Bach, Gunther; and Junge, Karl-Wilhelm, 4,120,726, Cl. 96-107.000.

Veba Chemie Aktiengesellschaft: *See—*
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Veigel, Orin C., to Raymond Lee Organization, Inc., The, a part interest. Rotary file. 4,120,546, Cl. 312-134.000.

Veitengruber, James Edwin: *See—*
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Veloz, Jaime: *See—*
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Venkatesan, Thirumalai Nallan Chakravarthy: *See—*
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Venton, Peter Charles; Blench, Michael; Sutherland, Anthony Keith; and Hodges, Kenneth James Hamer, to Plessey Handel und Investments AG. Data processing memory space allocation and deallocation arrangements. 4,121,286, Cl. 364-200.000.

Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Durnig, Herbert, 4,120,406, Cl. 214-6.00N.

Verhoeckx, Nicolaas Alphonsus Maria: *See—*
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Vetco, Inc.: *See—*
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Vicic, John Charles; and Reynard, Kennard Anthony, to Firestone Tire & Rubber Company, The. Polyphosphazene wire coverings. 4,120,438, Cl. 260-29.1SB.

Vickers, Charles K.; and Vickers, Patricia A. Gun stock covers. 4,120,108, Cl. 42-74.000.

Vickers, Patricia A.: *See—*
Vickers, Charles K.; and Vickers, Patricia A., 4,120,108, Cl. 42-74.000.

Victor Company of Japan, Limited: *See—*
Asano, Akira; and Segawa, Keiji, 4,120,742, Cl. 156-608.000.

Viessmann, Hans. Connecting structure for shelves. 4,120,250, Cl. 108-144.000.

Vignot, Andre, to Societe Prodene. Dispensing pump having bellows metering chamber. 4,120,429, Cl. 222-207.000.

Villa-Massone, Rene; and Divaret, Michel, to Cooper France S. A. Tongs, in particular for mounting ear-buttons on animals. 4,120,303, Cl. 128-330.000.

Vinals, Joaquin: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,120,308, Cl. 131-17.00R.

Vinton, David S., to Caterpillar Tractor Co. Suspension system for tandem axle vehicles. 4,120,515, Cl. 280-678.000.

Vital Industries, Inc.: *See—*
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Vitatron Medical B.V.: *See—*
Renirie, Alexis C. M., 4,120,306, Cl. 128-419.0PT.

Vitols, Oyar Ansovich: *See—*
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Vivitar Corporation: *See—*
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Vock, Manfred Hugo: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,120,308, Cl. 131-17.00R.

Vogel, Werner: *See—*
Simon, Reiner; Schindhelm, Karl-Heinz; and Vogel, Werner, 4,121,274, Cl. 361-273.000.

Vogt, Kurt. Clamping mechanism for temporarily clamping cables and the like. 4,120,209, Cl. 74-230.240.

Von Roll AG, Departement Bahn- und Stahlbau: *See—*
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von Koch, Arwed, to Daimler-Benz Aktiengesellschaft. Electromagnetic control valve, especially for automatically shifting change-speed transmissions. 4,120,481, Cl. 251-129.000.

von Meyer, William C.: *See—*
Seidel, Michael C.; von Meyer, William C.; and Greenfield, Stanley A., 4,120,864, Cl. 260-308.00R.

Vornberger, Karl F.: *See—*
Vornberger, Walter; and Vornberger, Karl F., 4,120,063, Cl. 12-12.000.

Vornberger, Walter; and Vornberger, Karl F., to International Shoe Machine Corporation. Cement side and heel lasting machine. 4,120,063, Cl. 12-12.000.

Vosbikian, Joseph; and Kalalian, John R. Bulky material compacter. 4,120,242, Cl. 100-212.000.

VRL Growth Associates, Inc.: *See—*
Rhoads, Kevin George; and Plotkin, George Michael, 4,120,305, Cl. 128-405.000.

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W. R. Grace & Co.: *See—*
Bonet, Robert Andre, 4,120,716, Cl. 156-272.000.
Ketley, Arthur Donald; Hein, Paul Richard; and Yang, Michael Wen-Chien, 4,120,721, Cl. 96-36.300.

W. Schlafhorst & Co.: *See—*
Raasch, Hans; and Grecksch, Hans, 4,120,140, Cl. 57-34.00R.
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Wada, Shozo: *See—*
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Wade, Vernon J.: *See—*
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Wagner, David Lee, to Boeing Company, The. Pneumatic impact gun. 4,120,367, Cl. 173-137.000.

Wagner, William F.: *See—*
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Wainwright, Geoffrey Hugh, to Heat Trace Limited. Surface heating equipment. 4,121,093, Cl. 219-528.000.

Wakabayashi, Takashi: *See—*
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,120,516, Cl. 280-728.000.

Wakahara, Yasushi: *See—*
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Wakeman, Thomas G., to United States of America, Air Force. Compact fuel-to-air heat exchanger for jet engine application. 4,120,150, Cl. 60-39.09R.

Waku, Makio: *See—*
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Wald, David K., to Du Pont de Nemours, E. I., and Company. Coating composition comprising a polysiloxane resin-forming precondensate, a fluorocarbon polymer, an epoxy resin, a silicone fluid, and an inorganic hardening agent. 4,121,000, Cl. 428-35.000.

Waldron, Clifford R.; Yonkers, Karl W.; and Uhlig, Herbert K., to Bendix Corporation, The. Electrical contact assembly. 4,120,556, Cl. 339-142.000.

Walker, Clarence H., Jr.; and Steward, William B., Jr., to United States of America, Army. Reactant for steel. 4,120,701, Cl. 148-4.000.

Walker, James Terrell, to Cromemco Inc. Interface device for encoding a digital image for a CRT display. 4,121,283, Cl. 364-200.000.

Wallace Murray Corporation: *See—*
Chou, Cheng-Chien; and Yee, Clifford Sau Leong, 4,120,609, Cl. 416-223.00R.
Matucheski, Joseph Victor, 4,120,257, Cl. 113-116.00D.

Wallman, Knut Olof Lennart. Method of making improved lug and hole connection between sheet metal elements. 4,120,084, Cl. 29-509.000.

Walters, Russell W., to BMR Security Products Corp. Lock assembly for high security container. 4,120,183, Cl. 70-159.000.

Ward, Clifford, to Ashland Oil, Inc. Metal complex and method for preparing. 4,120,865, Cl. 260-314.500.

Ward, Gaylan J. Automatic shut-down control system for truck diesel engines equipped with exhaust-driven superchargers. 4,120,278, Cl. 123-198.00D.

Ward, John W., to Union Oil Company of California. Hydrogenative conversion catalyst. 4,120,825, Cl. 252-455.00Z.

Wareham, Richard C. Apparatus for heating eyeglass frames. 4,121,091, Cl. 219-400.000.

Wargo, Thomas J., to Partlow Corporation. Thermocouple temperature measurement circuit having cold junction compensation. 4,120,201, Cl. 73-361.000.

Warneke, William Carl, to Borden, Inc. Direct production of coarse particle inorganic fluorides. 4,120,940, Cl. 423-490.000.

Warner-Lambert Company: *See—*
Hartenstein, Johannes; and Satzinger, Gerhard, 4,120,964, Cl. 424-258.000.

Warnke, Hans: *See—*
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Warrink, Geert: *See—*
Lorteije, Jean Hubertus Josef; and Warrink, Geert, 4,121,256, Cl. 358-240.000.

Wass, Richard. Fireplace heat exchanger. 4,120,281, Cl. 126-121.000.

Watanabe, Koji; Ohta, Mitsunori; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Color transfer copying process and apparatus using charge removing electrodes. 4,120,577, Cl. 355-4.000.

Watanabe, Shigeru: *See—*
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Watanabe, Shutoku: *See—*
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Watanabe, Toshiro: *See—*
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Watanabe, Yasuo; and Isoyama, Seizi, to Dowa Mining Co., Ltd. Hexagonal-system ferrite powder, composite plastic-ferrite magnet comprising same and process for production thereof. 4,120,806, Cl. 252-62.540.

Watanabe, Yasuo; and Isoyama, Seizi, to Dowa Mining Co., Ltd. Process for producing hexagonal-system ferrite powder. 4,120,807, Cl. 252-62.620.

Wavin B.V.: *See—*
de Putter, Warner Jan, 4,120,325, Cl. 138-145.000.

Wayland, Paul O.: *See—*
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Wear, Charles W., to Youngstown Steel Door Company, The. Method and apparatus for welding workpieces. 4,121,084, Cl. 219-91.200.

Weathers, Paul, to Bunker Ramo Corporation. Carrier current appliance theft alarm. 4,121,201, Cl. 340-524.000.

Weber, Howard Fredrick: *See—*
Jarrett, Robert Benjamin; Pace, Wilson David; and Weber, Howard Fredrick, 4,121,273, Cl. 361-239.000.

Webster, Geoffrey R., to Bethlehem Steel Corporation. Method for injection molding plastic. 4,120,921, Cl. 264-23.000.

Weeks, Gregory Paul: *See—*
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Weiler, Ernest D.; Weir, W. David; and Wolfersberger, Martha, to Rohm and Haas Company. Bis-phosphoramidates. 4,120,957, Cl. 424-204.000.

Weir, John D.: *See—*
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Weir, Robert H.: *See—*
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Weir, W. David: *See—*
Weiler, Ernest D.; Weir, W. David; and Wolfersberger, Martha, 4,120,957, Cl. 424-204.000.

Weismann, Victor P. Method for manufacturing a wire matrix. 4,120,330, Cl. 140-112.000.

Welch, Stanley B.; Serrano, Juan de J.; and Chen, David Y., to General Electric Company. Bar graph type touch switch and display device. 4,121,204, Cl. 340-337.000.

Wells, Thomas R.: *See—*
Johnston, Robert F.; and Wells, Thomas R., 4,120,573, Cl. 353-27.00A.

Welp, Ulrich; and Sellien, Gero, to Microbox Dr. Welp GmbH & Co. Aperture card camera with device for spraying the exposed film. 4,121,236, Cl. 354-323.000.

Welstead, William John, Jr., to A. H. Robins Company, Incorporated. Heterocyclic analgetic and antidiarrheal compounds. 4,120,969, Cl. 424-267.000.

Weltman, Henry J.; Carroll, Mark T.; Halkias, John E.; Kaarlela, William T.; and Reynolds, Jack D., to General Dynamics Corporation. Castable magnetic particle flaw detection composition and method using constituents that are non-volatile and resistant to oxidation below 100° F and having a viscosity less than 12,000 centipoises. 4,121,157, Cl. 324-216.000.

Wenshau, Hugo: *See—*
Clements, George William; and Wenshau, Hugo, 4,120,203, Cl. 73-422.00R.

Wess, Guenter: *See—*
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West, Robert E., to Cascade Industries, Inc. Patio pool. 4,120,126, Cl. 52-169.700.

Westerfeld, Horst: *See—*
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Westermeier, Theodore F., to United States of America, Air Force. In-line actuator monitoring and control apparatus. 4,120,469, Cl. 244-194.000.

Western Electric Company, Inc.: *See—*
McPherson, Charles Allen, 4,121,015, Cl. 428-418.000.

Westinghouse Electric Corp.: *See—*
Bush, Louis W.; and Cumming, Allen R., 4,121,213, Cl. 343-17.700.
Hickam, William M., 4,121,288, Cl. 364-497.000.
Hruda, Robert M.; and Wayland, Paul O., 4,121,268, Cl. 361-3.000.
Kovatch, George N.; and Rosey, Richard, 4,121,276, Cl. 361-342.000.
Mrenna, Stephen A.; and Thomas, Glenn R., 4,121,077, Cl. 200-308.000.
Otto, Paul R.; and Leang, William N. C., 4,120,381, Cl. 187-29.00R.
Peterson, Charles A., 4,121,270, Cl. 361-54.000.
Petrie, Edward M., 4,120,913, Cl. 260-830.0TW.
Repsher, Robert W., 4,121,132, Cl. 313-486.000.
Rexroad, James O.; and Majcher, John P., 4,121,067, Cl. 200-50.0AA.
Santilli, James N., 4,121,186, Cl. 337-161.000.
Shirland, Fred A., 4,120,705, Cl. 148-174.000.
Taylor, Glenn R.; Mullen, John H.; and Dobrosielski, Stephen S., 4,121,076, Cl. 200-280.000.
Taylor, Jr. John W., 4,121,212, Cl. 343-17.10R.
Teager, Thomas A., 4,120,346, Cl. 164-105.000.

Wetterling, Steven E., to Tektronix, Inc. Clock driven voltage comparator employing master-slave configuration. 4,121,120, Cl. 307-352.000.

White Chemical Corporation: *See—*
Mischutin, Vladimir, 4,120,798, Cl. 252-8.100.

White, Donald A., to Monsanto Company. Electrochemical process for the preparation of acetals of 2-haloaldehydes. 4,120,761, Cl. 204-59.00R.

White, James F.: *See—*
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White, Robert Edward; and Moeckli, David Edward, to Tektronix, Inc. Electric switch. 4,121,113, Cl. 307-140.000.

White, Von M. Barbecue pit hanger. 4,120,279, Cl. 126-30.000.

White, William Harold: *See—*
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Whitehead, Thomas Wilson, to Du Pont de Nemours, E. I., and Company. High-capacity centrifuge rotor. 4,120,450, Cl. 233-26.000.

Whitener, Philip Charles, to Boeing Company, The. Efficient trailing edge system for an aircraft wing. 4,120,470, Cl. 244-213.000.

Whitesel, J. Eric. Lamp module. 4,121,279, Cl. 362-297.000.

Whitwell, Robert J.; and Bolton, Theodore S., to Carrier Corporation. Apparatus for reducing condensate noise in an air conditioner. 4,120,170, Cl. 62-91.000.

Wicki, Heinz, to Sandoz Ltd. Disazo and trisazo dyes having a 1,3-diamino-, dihydroxy- or amino-hydroxy-benzene nucleus and metal complexes thereof. 4,120,854, Cl. 260-145.00C.

Wilhelm, Max, to Ciba-Geigy Corporation. Pharmaceutical composition for inhibiting and blocking cardioselective beta-receptors. 4,120,978, Cl. 424-322.000.

Wilhelm, Siegfried: *See—*
Schafer, Werner; Scholz, Hans-Albrecht; and Wilhelm, Siegfried, 4,120,837, Cl. 260-22.00S.

Wilke, Gunther; and Muller, Ernst Willi, to Studiengesellschaft Kohle m.b.H. Metal complexes. 4,120,882, Cl. 260-439.00R.

William H. Rorer, Inc.: *See—*
Diamond, Julius, 4,120,885, Cl. 260-455.00R.
Diamond, Julius, 4,120,889, Cl. 260-465.00K.

Williams, Frederick P., to Monarch Marking Systems, Inc. Tamper indicating labels. 4,121,003, Cl. 428-40.000.

Williams, Guy. Optical toy. 4,120,116, Cl. 46-1.00R.

Williams, Hazel Elizabeth: *See—*
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Williams, Martin M.: *See—*
Marchessault, Richard G.; Carter, Thomas P., Jr.; and Williams, Martin M., 4,121,028, Cl. 526-48.100.

Williamson, Lionel Herbert. Gas sampling apparatus. 4,120,192, Cl. 73-19.000.

Wilmotte, Stephan Hubert; Nautet, Jean Adolphe; and Economopoulos, Marios, to Centre de Recherches Metallurgiques-Centrum Voor Research In de Metallurgie. Apparatus for cooling metal sections. 4,120,455, Cl. 239-429.000.

Wilson, Dennis L., to GTE Sylvania Incorporated. System and method for determining position and velocity of an intruder from an array of sensors. 4,121,192, Cl. 340-16.00R.

Wilson, Eunice D. Disposable shower curtain ensemble. 4,120,343, Cl. 160-330.000.

Wilson, Gene W., to Raymond Lee Organization, Inc., The. Visual and radar emergency detection balloon. 4,120,259, Cl. 116-124.00B.

Wilson, Keith Collier: *See—*
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Wilson, Richard D.: *See—*
Pilipovich, Donald; Grant, Louis R., Jr.; and Wilson, Richard D., 4,120,904, Cl. 260-644.000.

Wilson, Stephen S., to Kilo Corporation. Object identification system. 4,121,102, Cl. 250-341.000.

Windmoller & Holscher: *See—*
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Windows, Howard, Jr. Hand held mouthpiece visualizer for interior embouchure. 4,120,228, Cl. 84-453.000.

Winkler, Adolf, to Bayer Aktiengesellschaft. Preparation of arylsulphonium salts. 4,120,866, Cl. 260-315.000.

Winkler, Edward D.; and Dalrymple, Earl E., to Anderson Power Products, Inc. Switchable electrical connector. 4,120,552, Cl. 339-90.00R.

Winzer, Gerhard: *See—*
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Wirz, Arno, to Heidelberger Druckmaschinen Aktiengesellschaft. Gripper movement changeover device on a sheet-turning drum for perfector printing machines. 4,120,244, Cl. 101-230.000.

Wistrand, Per Folke Magnus: *See—*
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Witmer, Clinton C.; and Tate, Frank M., to Tri/Valley Growers. Apparatus for and method of forming food product into a strip or ribbon. 4,120,624, Cl. 425-71.000.
Witt, Richard P., to United States of America, Air Force. Differential tri-phase shift keyed modulation. 4,121,050, Cl. 178-67.000.
Witt, Richard P., to Wittronics, Inc. Integer weighted impulse equivalent coded signal processing apparatus. 4,121,295, Cl. 364-724.000.
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Woerner, Frank Peter; Kan, Peter T.; and Falkenstein, Georg, to BASF Aktiengesellschaft. Storage-stable, liquid polyisocyanates possessing carbodiimide groups, and process for their manufacture. 4,120,884, Cl. 260-453.0SP.
Wohl, Ronald A.: *See*—
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Wolfe, Donna L. Electrode system for acquiring electrical signals from the heart. 4,120,294, Cl. 128-2.05T.
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Wolfinger, John F., to General Electric Company. Torsional oscillation alarm system. 4,121,272, Cl. 361-236.000.
Wood, Michael J. Tube and plate heat exchanger. 4,120,267, Cl. 122-20.00B.
Woodard, Tony O., to Cutler-Hammer, Inc. Toggle switch lever lock. 4,121,065, Cl. 200-42.00T.
Wooldridge, Darrel M., to American Tractor Equipment Corporation. Automatic control device for tractor mounted tools. 4,120,364, Cl. 172-2.000.
Woolley, Graham Edward: *See*—
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Wright, George C.; and Butterfield, James L., to Morton-Norwich Products, Inc. 5-Amino-2-hydrazinopyridine and derivatives thereof. 4,121,035, Cl. 542-417.000.
Wright, George C.; and Butterfield, James L., to Morton-Norwich Products, Inc. 3-Amino-2-Hydrazinopyridine derivatives. 4,121,036, Cl. 542-417.000.
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Yamaguchi, Namio; and Sato, Yasuyuki, to Matsushita Electric Industrial Co., Ltd. Color subcarrier generator. 4,121,243, Cl. 358-19.000.
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Iwaisako, Toshiyuki; Yamaguchi, Naomi; Yomogida, Hisao; and Ito, Yoshinobu, 4,120,943, Cl. 423-628.000.
Yonekawa, Sigeru: *See*—
Minekawa, Saburo; Yonekawa, Sigeru; Tabata, Haruro; Ishida, Takashi; Tsuchida, Satoshi; and Yamada, Kiyoshi, 4,121,031, Cl. 526-173.000.
Yoneya, Kiyoo, to Yoshida Kogyo K.K. Pound fishing net structure. 4,120,113, Cl. 43-100.000.
Yonkers, Karl W.: *See*—
Waldron, Clifford R.; Yonkers, Karl W.; and Uhlig, Herbert K., 4,120,556, Cl. 339-142.000.
York, James Farnsworth: *See*—
Jameson, Melvin Neil; Klicker, James Donald; Krulik, Gerald Albert; and York, James Farnsworth, 4,120,822, Cl. 252-441.000.
Yoshida Kogyo K.K.: *See*—
Kagoura, Tetsuro, 4,120,525, Cl. 292-336.300.
Yoneya, Kiyoo, 4,120,113, Cl. 43-100.000.
Yoshida, Takeshi: *See*—
Motooka, Akira; and Yoshida, Takeshi, 4,120,393, Cl. 198-460.000.
Yoshida, Yohji: *See*—
Nakamura, Toshio; Hoshide, Yasuo; Hashimoto, Yoshio; Suzuki, Kenichi; and Yoshida, Yohji, 4,121,037, Cl. 544-313.000.

Yoshimura, Hirofumi: *See*—
Takano, Teruhisa; Kurata, Noboru; Kusunoki, Shigeru; and Yoshimura, Hirofumi, 4,121,078, Cl. 219-10.55F.
Yoshimura, Masatoshi: *See*—
Iizuka, Motohiko; Danjo, Hiroyuki; Ikeda, Kazuo; and Yoshimura, Masatoshi, 4,120,488, Cl. 266-281.000.
Young, Hurshel F. Sentinel system for grease extracting ventilators. 4,121,199, Cl. 340-611.000.
Young, John H.: *See*—
Hunt, Raymond L.; Lin, Ben H.; Ream, Thomas A.; Robertson, Gene D.; and Young, John H., 4,121,135, Cl. 315-169.00R.
Young, Nicholas Gordon: *See*—
Macrory, Richard Brabazon; and Young, Nicholas Gordon, 4,120,503, Cl. 273-244.000.
Young, Rodney Christopher: *See*—
Ganellin, Charon Robin; and Young, Rodney Christopher, 4,120,968, Cl. 424-263.000.
Ganellin, Charon Robin; and Young, Rodney Christopher, 4,120,973, Cl. 424-273.00R.
Young, Russell L., Jr. Ice-fishing tip-up. 4,120,111, Cl. 43-17.000.
Youngstown Steel Door Company, The: *See*—
Wear, Charles W., 4,121,084, Cl. 219-91.200.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,120,955, Cl. 424-180.000.
Zap-Lok Systems International, Inc.: *See*—
Echols, Marvin C., 4,120,083, Cl. 29-458.000.
Zenith Radio Corporation: *See*—
Baur, Leslie L.; and Hajduk, Thaddeus J., 4,120,407, Cl. 214-6.0BA.
Zernig, Ernst; and Ruther, Manfred, to Richard Heinze GmbH & Co. KG, Firma. Assembly fixture for furniture. 4,120,598, Cl. 403-68.000.
Zhautykov, Anurbek Orymbekovich: *See*—
Akushsky, Izrail Yakovlevich; Burtsev, Vladimir Mikhailovich; Duisenov, Bulat Esenovich; Pak, Ivan Timofeevich; and Zhautykov, Anurbek Orymbekovich, 4,121,298, Cl. 364-746.000.
Ziegler, John S., to American Hospital Supply Corporation. Disposable pads for surgical instruments. 4,120,302, Cl. 128-322.000.
Zimmer, James H. Panel hoisting and positioning device. 4,120,484, Cl. 254-6.00C.
Zimmer, James M.: *See*—
Strange, Robert R.; and Zimmer, James M., 4,120,345, Cl. 164-92.000.
Zimmermann, Rudolf: *See*—
Rosch, Fritz; and Zimmermann, Rudolf, 4,120,081, Cl. 29-156.50R.
Zletz, Alex: *See*—
Borg, Arthur C.; and Zletz, Alex, 4,120,344, Cl. 164-73.000.
Zohn, Carole: *See*—
Zohn, Robert Allen; and Zohn, Carole, 4,120,371, Cl. 177-262.000.
Zohn, Robert Allen; and Zohn, Carole, to Correct Count Company Inc. Load holder extension for beam balance scales. 4,120,371, Cl. 177-262.000.
Zucker, Jerry, to Hudson Pulp & Paper Corp. Digester system for delivering wood chips in an even layer into a digester. 4,120,748, Cl. 162-242.000.
Zukel, John W.: *See*—
Plant, Howard L.; Zukel, John W.; and Ames, Ronald B., 4,120,692, Cl. 71-94.000.
Zurfluh, Rene: *See*—
Frater, Georg; Pfiffner, Albert; Suchy, Milos; and Zurfluh, Rene, 4,120,974, Cl. 424-278.000.
Zygiel, Alfred E., deceased (by Zygiel, Mary E., heiress and devisee), to Cornelius Company, The. Liquid dispensing pump. 4,120,424, Cl. 222-133.000.
Zygiel, Mary E., heiress and devisee: *See*—
Zygiel, Alfred E., deceased, 4,120,424, Cl. 222-133.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Becker, Otto Alfred. Insulating wall unit. Re. 29,804, Cl. 52-172.000.

Breese, Clinton E., to Breese Manufacturing, Inc. Pipe cutting tool. Re. 29,803, Cl. 30-105.000.

Breese Manufacturing, Inc.: *See—*
Breese, Clinton E., Re. 29,803, Cl. 30-105.000.

Eastman Kodak Company: *See—*
Metzger, Lenard M., Re. 29,807, Cl. 358-54.000.

Gibson, Kirkland H.; and Protzmann, Henry E., to H. G. P. Corp. Method of treating yarns to provide kinking and/or mottled effects in fabrics. Re. 29,800, Cl. 28-218.000.

H. G. P. Corp.: *See—*
Gibson, Kirkland H.; and Protzmann, Henry E., Re. 29,800, Cl. 28-218.000.

Ichihara, Mutsuo: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, Re. 29,806, Cl. 418-178.000.

Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao. Rotor housing for a rotary piston type engine and method for manufacturing the same. Re. 29,806, Cl. 418-178.000.

Kavick, Edward M.: *See—*
Whitledge, Jon K.; and Kavick, Edward M., Re. 29,802, Cl. 29-237.000.

Koehnen, Edward L. Loader attachment for handling logs, bales and the like. Re. 29,805, Cl. 214-147.00G.

Masaoka, Hiroshi: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, Re. 29,806, Cl. 418-178.000.

Metzger, Lenard M., to Eastman Kodak Company. Scanning apparatus responsive to the movement of image bearing media. Re. 29,807, Cl. 358-54.000.

Protzmann, Henry E.: *See—*
Gibson, Kirkland H.; and Protzmann, Henry E., Re. 29,800, Cl. 28-218.000.

Samuel Moore And Company: *See—*
Whitledge, Jon K., Re. 29,801, Cl. 29-237.000.

Samuel Moore and Company: *See—*
Whitledge, Jon K.; and Kavick, Edward M., Re. 29,802, Cl. 29-237.000.

Taketomo, Sadao: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, Re. 29,806, Cl. 418-178.000.

Tashiro, Koji: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, Re. 29,806, Cl. 418-178.000.

Uebayashi, Yoshitaka: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, Re. 29,806, Cl. 418-178.000.

Whitledge, Jon K., to Samuel Moore And Company. Swaging apparatus. Re. 29,801, Cl. 29-237.000.

Whitledge, Jon K.; and Kavick, Edward M., to Samuel Moore and Company. Swaging apparatus. Re. 29,802, Cl. 29-237.000.

Yamada, Michinobu: *See—*
Iida, Hirotaka; Masaoka, Hiroshi; Yamada, Michinobu; Ichihara, Mutsuo; Uebayashi, Yoshitaka; Tashiro, Koji; and Taketomo, Sadao, Re. 29,806, Cl. 418-178.000.

LIST OF PLANT PATENTEES

Anderson, Frederic W., to Reedley Nursery, Inc. Plum tree (25-P-40). 4,316, 10-17-78, Cl. 38.000.

Anderson, Frederic W., to Reedley Nursery, Inc. Nectarine tree (44-G-520). 4,318, 10-17-78, Cl. 41.000.

Anderson, Frederic W., to Burchell Nursery, Inc., The. Almond tree (17-J-495). 4,319, 10-17-78, Cl. 30.000.

Anderson, Frederick W. Dwarf peach tree (54-P-455). 4,317, 10-17-78, Cl. 43.000.

Burchell Nursery, Inc., The: *See—*
Anderson, Frederic W., 4,319, Cl. 30.000.

Reedley Nursery, Inc.: *See—*
Anderson, Frederic W., 4,316, Cl. 38.000.
Anderson, Frederic W., 4,318, Cl. 41.000.

LIST OF DESIGN PATENTEES

AAI Corporation: *See—*
Barr, Irwin R., 249,959, Cl. D25-21.000.
Barr, Irwin R., 249,960, Cl. D25-21.000.
Barr, Irwin R., 249,961, Cl. D25-21.000.
Barr, Irwin R., 249,962, Cl. D25-56.000.

All American Brush Mfg. Corporation: *See—*
Epstein, Carl, 249,909, Cl. D4-35.000.

Altec Corporation: *See—*
Bremseth, Gerald B., 249,941, Cl. D14-35.000.

Anchor Hocking Corporation: *See—*
Benes, Frank J.; and Thrush, James Lloyd, 249,940, Cl. D11-151.000.
Benes, Frank J., 249,967, Cl. D27-27.000.
Thrush, James Lloyd, 249,919, Cl. D7-14.000.

Anderson, Victor F., to Shell Oil Company. Shoe. 249,907, 10-17-78, Cl. D2-292.000.

Arnsteiner, Anton, to Blizzard Gesellschaft m.b.H. Ski. 249,974, 10-17-78, Cl. D34-14.00D.

Arnsteiner, Anton, to Blizzard Gesellschaft m.b.H. Ski. 249,975, 10-17-78, Cl. D34-14.00D.

Automation Systems, Inc.: *See—*
Bartlett, Peter G., 249,943, Cl. D13-12.000.

Barr, Irwin R., to AAI Corporation. Building. 249,959, 10-17-78, Cl. D25-21.000.

Barr, Irwin R., to AAI Corporation. Building. 249,960, 10-17-78, Cl. D25-21.000.

Barr, Irwin R., to AAI Corporation. Building. 249,961, 10-17-78, Cl. D25-21.000.

Barr, Irwin R., to AAI Corporation. Reflector concentrator useful for solar energy. 249,962, 10-17-78, Cl. D25-56.000.

Bartlett, Peter G., to Automation Systems, Inc. Demand controller component. 249,943, 10-17-78, Cl. D13-12.000.

Bayly, Peter K., to Wiltshire Cutlery Company Proprietary Limited. Scabbard for a knife. 249,923, 10-17-78, Cl. D7-74.000.

Beekenkamp, Gerald: *See—*
Norton, Ian F.; and Beekenkamp, Gerald, 249,973, Cl. D34-14.00B.

Benes, Frank J.; and Thrush, James Lloyd, to Anchor Hocking Corporation. Vase or similar article. 249,940, 10-17-78, Cl. D11-151.000.

Benes, Frank J., to Anchor Hocking Corporation. Ashtray or similar article. 249,967, 10-17-78, Cl. D27-27.000.

Bio-Dynamics Inc.: *See—*
Eicher, Palmer O.; and Ware, Dennert O., 249,957, Cl. D24-33.000.

Blizzard Gesellschaft m.b.H.: *See—*
Arnsteiner, Anton, 249,974, Cl. D34-14.00D.
Arnsteiner, Anton, 249,975, Cl. D34-14.00D.

Block, Robert S.; and Krieger, John F., to Block, Robert S. Mug. 249,918, 10-17-78, Cl. D7-9.000.

Bremseth, Gerald B., to Altec Corporation. Loudspeaker. 249,941, 10-17-78, Cl. D14-35.000.

Brutsman, James W., to Wyott Corporation. Hot topping dispenser. 249,948, 10-17-78, Cl. D15-111.000.

Buitrago, John A.: *See—*
Vargas, Joe M., 249,915, Cl. D6-198.000.

Cairnes, Denis; and Maltby, Derrick John, to Cairnes Maltby Associates Limited. Pedestal. 249,914, 10-17-78, Cl. D6-196.000.

Cairnes Maltby Associates Limited: *See—*
Cairnes, Denis; and Maltby, Derrick John, 249,914, Cl. D6-196.000.

Carlson, Ronald L.: *See—*
Shaffer, James R.; and Carlson, Ronald L., 249,938, Cl. D10-98.000.

Collins, Harry F., to Service Ideas, Inc. Combined holder-server tray and cooking pan. 249,916, 10-17-78, Cl. D7-3.000.

Collins, Harry F., to Service Ideas, Inc. Combined holder tray and cooking pan. 249,917, 10-17-78, Cl. D7-3.000.

Cooper, Richard A. Trim strip for partition wall. 249,965, 10-17-78, Cl. D25-76.000.

Corning Glass Works: *See—*
Potts, Robert S., 249,956, Cl. D24-29.000.

Cosentino, James A., to Executive, A Motor Hotel of Buffalo, Inc., The. Building portal. 249,963, 10-17-78, Cl. D25-59.000.

Cottrell, Edward D. Combined stick inserter and display stand for a food product. 249,910, 10-17-78, Cl. D6-25.000.

Cottrell, Edward D. Combined stick inserter and display stand for a food product. 249,911, 10-17-78, Cl. D6-25.000.

Cullers, Vincent T., to Vince Cullers Advertising, Inc. Cover for a food container or the like. 249,934, 10-17-78, Cl. D9-254.000.

Dammons, Donald P. Wrist strap for a watch and writing implements. 249,939, 10-17-78, Cl. D11-2.000.

de Nijs, Maximiliaan. Aerosol container. 249,928, 10-17-78, Cl. D9-9.000.

Drake, James. Combined bookholder and bookmark. 249,955, 10-17-78, Cl. D19-91.000.

E.G.O. Elektro-Geraete Blanc und Fischer: *See—*
Fischer, Karl, 249,924, Cl. D7-95.000.

Eicher, Palmer O.; and Ware, Dennert O., to Bio-Dynamics Inc. Hip cup prosthesis. 249,957, 10-17-78, Cl. D24-33.000.

Epstein, Carl, to All American Brush Mfg. Corporation. Vented hair brush. 249,909, 10-17-78, Cl. D4-35.000.

Eventoff, Frank. Stringed musical instrument. 249,980, 10-17-78, Cl. D56-1.00A.

Executive, A Motor Hotel of Buffalo, Inc., The: *See—*
Cosentino, James A., 249,963, Cl. D25-59.000.

Fernandez, Carlos. Music instrument case. 249,979, 10-17-78, Cl. D56-1.00B.

Fields, James A., Jr. Game table. 249,971, 10-17-78, Cl. D34-3.000.

Fischer, Karl, to E.G.O. Elektro-Geraete Blanc und Fischer. Basket insert for a frying pan. 249,924, 10-17-78, Cl. D7-95.000.

Freijd, Sven Ingvar Werner, to Saab-Scania Aktiebolag. Front panel for computer or similar article. 249,945, 10-17-78, Cl. D14-40.000.

Frieser, Friedrich Ernest. Serving board. 249,920, 10-17-78, Cl. D7-19.000.

Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See—*
Gegauf, Fritz, 249,947, Cl. D15-68.000.

Gabriel Industries, Inc.: *See—*
Kilander, Holger F., 249,977, Cl. D34-15.00R.

Gageby, Steven Douglas. Chair. 249,912, 10-17-78, Cl. D6-56.000.

Gegauf, Fritz, to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Combined sewing machine and case therefor. 249,947, 10-17-78, Cl. D15-68.000.

Goldman, Harley R.: *See—*
Hall, Stewart; and Goldman, Harley R., 249,922, Cl. D7-53.000.

Greb Industries Limited: *See—*
Norton, Ian F.; and Beekenkamp, Gerald, 249,973, Cl. D34-14.00B.

Gronert, Ronald. Construction piece. 249,976, 10-17-78, Cl. D34-15.0GG.

Hall, Stewart; and Goldman, Harley R. Herb separator. 249,922, 10-17-78, Cl. D7-53.000.

Ishida, Takeshi, to Kabushiki Kaisha Daini Seikosha. Electronic metronome. 249,936, 10-17-78, Cl. D10-43.000.

Isono, Nobujiro, to Shin Nippon Kinzoku Co., Ltd. Adjustably louvered roof plate. 249,964, 10-17-78, Cl. D25-74.000.

Jacobson, David J.; and Zaro, Marvin. Electrical battery test instrument. 249,937, 10-17-78, Cl. D10-77.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Ishida, Takeshi, 249,936, Cl. D10-43.000.

Karp, Edward C., to Sanitary Scale Company. Label printer. 249,981, 10-17-78, Cl. D64-10.000.

Kilander, Holger F., to Gabriel Industries, Inc. Water toy. 249,977, 10-17-78, Cl. D34-15.00R.

King-Seeley Thermos Company: *See—*
Seager, Richard H., 249,930, Cl. D9-219.000.

Kiraly, Ernest F., to Warner-Lambert Company. Razor. 249,968, 10-17-78, Cl. D28-46.000.

Kohutis, Ann S.: *See—*
Kohutis, Eileen; and Kohutis, Ann S., 249,906, Cl. D2-74.000.

Kohutis, Eileen; and Kohutis, Ann S. Dress for non-ambulatory individuals. 249,906, 10-17-78, Cl. D2-74.000.

Krieger, John F.: *See—*
Block, Robert S.; and Krieger, John F., 249,918, Cl. D7-9.000.

Kubusheski, Kitty K. Cover for a tissue dispenser. 249,982, 10-17-78, Cl. D87-1.00R.

Lucas Industries Limited: *See—*
Smith, Gordon Roy Frank, 249,944, Cl. D13-24.000.

Maltby, Derrick John: *See—*
Cairnes, Denis; and Maltby, Derrick John, 249,914, Cl. D6-196.000.

Mankau, Dieter: *See—*
Mielke, Bodo; Mankau, Dieter; and Papke, Friedrich, 249,949, Cl. D16-01.000.

Marquis, Georges. Wall tile. 249,966, 10-17-78, Cl. D25-92.000.

McGraw-Edison Company: *See—*
Rice, Harold W., 249,925, Cl. D7-131.000.

Meierhoefer, Eugene J., to Warner-Lambert Company. Dispensing container for pharmaceutical diluents. 249,958, 10-17-78, Cl. D24-56.000.

Meinhart, Robert H. Walking sole for attachment to a cleated shoe. 249,908, 10-17-78, Cl. D2-317.000.

Metropolitan Wire Corporation: *See—*
Nicely, Charles W., 249,913, Cl. D6-188.000.

Mielke, Bodo; Mankau, Dieter; and Papke, Friedrich, to Rollei-Werke Franke & Heidecke. Mirror reflex camera. 249,949, 10-17-78, Cl. D16-01.000.

Minnesota Mining and Manufacturing Company: *See—*
Niles, Gerald J., 249,983, Cl. D87-1.00D.

Murphy, Granville P. Chess piece set. 249,972, 10-17-78, Cl. D34-5.0CH.

Nicely, Charles W., to Metropolitan Wire Corporation. File shelf. 249,913, 10-17-78, Cl. D6-188.000.

Niles, Gerald J., to Minnesota Mining and Manufacturing Company. Tape cartridge caddy for a car. 249,983, 10-17-78, Cl. D87-1.00D.

Norton, Ian F.; and Beekenkamp, Gerald, to Greb Industries Limited. Ice skate. 249,973, 10-17-78, Cl. D34-14.00B.

Ohtomo, Kazuhito, to Sansui Electric Co., Ltd. Amplifier. 249,946, 10-17-78, Cl. D14-96.000.

Papke, Friedrich: *See—*
Mielke, Bodo; Mankau, Dieter; and Papke, Friedrich, 249,949, Cl. D16-01.000.

Parker, Lynn V. Combined key chain fob and tab can opener. 249,984, 10-17-78, Cl. D87-8.300.

Polachek, Saulsbury & Hough: *See—*
Takahashi, Kiyoshi; Takahashi, Akira; Takahashi, Kazuo; and Takahashi, Takeshi, 249,927, Cl. D8-395.000.

Potts, Robert S., to Corning Glass Works. Electrode holder for pH meters and the like. 249,956, 10-17-78, Cl. D24-29.000.

Quaker Oats Company, The: *See—*
Samson, Jeffrey T., 249,978, Cl. D34-15.0AJ.

Rice, Harold W., to McGraw-Edison Company. Combined closure dispenser and battery powered drink mixer for a container. 249,925, 10-17-78, Cl. D7-131.000.

Rollei-Werke Franke & Heidecke: *See—*
Mielke, Bodo; Mankau, Dieter; and Papke, Friedrich, 249,949, Cl. D16-01.000.

Russert, Frank, to Warner-Lambert Company. Candy dispenser. 249,929, 10-17-78, Cl. D9-32.000.

Russert, Frank, to Warner-Lambert Company. Candy dispenser. 249,931, 10-17-78, Cl. D9-224.000.

Russert, Frank, to Warner-Lambert Company. Candy dispenser. 249,932, 10-17-78, Cl. D9-224.000.

Saab-Scania Aktiebolag: *See—*
Freijd, Sven Ingvar Werner, 249,945, Cl. D14-40.000.

Salem China Company, The: *See—*
Schreckengost, Don, 249,921, Cl. D7-54.000.

Samson, Jeffrey T., to Quaker Oats Company, The. Toy roller-grader. 249,978, 10-17-78, Cl. D34-15.0AJ.

Sanitary Scale Company: *See—*
Karp, Edward C., 249,981, Cl. D64-10.000.

Sansui Electric Co., Ltd.: *See—*
Ohtomo, Kazuhito, 249,946, Cl. D14-96.000.

Schreckengost, Don, to Salem China Company, The. Condiment dispenser. 249,921, 10-17-78, Cl. D7-54.000.

Seager, Richard H., to King-Seeley Thermos Company. Combined insulated food service tray and cover therefor. 249,930, 10-17-78, Cl. D9-219.000.

Service Ideas, Inc.: *See—*
Collins, Harry F., 249,916, Cl. D7-3.000.
Collins, Harry F., 249,917, Cl. D7-3.000.

Shaffer, James R.; and Carlson, Ronald L., to Sun Electric Corporation. Tachometer. 249,938, 10-17-78, Cl. D10-98.000.

Shell Oil Company: *See—*
Anderson, Victor F., 249,907, Cl. D2-292.000.

Shin Nippon Kinzoku Co., Ltd.: *See—*
Isono, Nobujiro, 249,964, Cl. D25-74.000.

Simmons Gun Specialties, Inc.: *See—*
Stark, Donald E., 249,954, Cl. D22-7.000.

Skrobisch, Alfred, to Staver Company, Incorporated, The. Variable character display. 249,985, 10-17-78, Cl. D96-12.00K.

Smith, Gordon Roy Frank, to Lucas Industries Limited. Battery terminal connector. 249,944, 10-17-78, Cl. D13-24.000.

Speakman, Neil William. Radio. 249,942, 10-17-78, Cl. D14-79.000.

Stark, Donald E., to Simmons Gun Specialties, Inc. Shotgun barrel. 249,954, 10-17-78, Cl. D22-7.000.

Staver Company, Incorporated, The: *See—*
Skrobisch, Alfred, 249,985, Cl. D96-12.00K.

Steel Products Manufacturing Co. Inc.: *See—*
Vogelsang, John E., 249,955, Cl. D23-42.000.

Stein, Age. Combined template and frame. 249,950, 10-17-78, Cl. D19-39.000.

Stein, Age. Combined template and frame. 249,951, 10-17-78, Cl. D19-39.000.

Stern, Walter, to Warner-Lambert Company. Candy dispenser. 249,933, 10-17-78, Cl. D9-224.000.

Sun Electric Corporation: *See—*
Shaffer, James R.; and Carlson, Ronald L., 249,938, Cl. D10-98.000.

Takahashi, Akira: *See—*
Takahashi, Kiyoshi; Takahashi, Akira; Takahashi, Kazuo; and Takahashi, Takeshi, 249,927, Cl. D8-395.000.

Takahashi, Kazuo: *See—*
Takahashi, Kiyoshi; Takahashi, Akira; Takahashi, Kazuo; and Takahashi, Takeshi, 249,927, Cl. D8-395.000.

Takahashi, Kiyoshi; Takahashi, Akira; Takahashi, Kazuo; and Takahashi, Takeshi, to Polachek, Saulsbury & Hough. Biased cup clamp. 249,927, 10-17-78, Cl. D8-395.000.

Takahashi, Takeshi: *See—*
Takahashi, Kiyoshi; Takahashi, Akira; Takahashi, Kazuo; and Takahashi, Takeshi, 249,927, Cl. D8-395.000.

Thrush, James Lloyd, to Anchor Hocking Corporation. Tumbler or similar article. 249,919, 10-17-78, Cl. D7-14.000.

Thrush, James Lloyd: *See—*
Benes, Frank J.; and Thrush, James Lloyd, 249,940, Cl. D11-151.000.

Vargas, Joe M., to Buitrago, John A. Bed canopy or similar article. 249,915, 10-17-78, Cl. D6-198.000.

Vince Cullers Advertising, Inc.: *See—*
Cullers, Vincent T., 249,934, Cl. D9-254.000.

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Ware, Dennert O.: *See—*
Eicher, Palmer O.; and Ware, Dennert O., 249,957, Cl. D24-33.000.

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Kiraly, Ernest F., 249,968, Cl. D28-46.000.
Meierhoefer, Eugene J., 249,958, Cl. D24-56.000.
Russert, Frank, 249,929, Cl. D9-32.000.
Russert, Frank, 249,931, Cl. D9-224.000.
Russert, Frank, 249,932, Cl. D9-224.000.
Stern, Walter, 249,933, Cl. D9-224.000.

Weideskog, Knut Benny. Shaver. 249,969, 10-17-78, Cl. D28-49.000.

Wetzel, Donald C. J. Receptacle for holding documents or the like. 249,970, 10-17-78, Cl. D99-28.000.

Williams, Robert G. Container lid. 249,935, 10-17-78, Cl. D9-254.000.

Wiltshire Cutlery Company Proprietary Limited: *See—*
Bayly, Peter K., 249,923, Cl. D7-74.000.

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Brutsman, James W., 249,948, Cl. D15-111.000.

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Zaro, Marvin: *See—*
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CLASSIFICATION OF PATENTS

ISSUED OCTOBER 17, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
16 4,120,052
115 4,120,053
265 4,120,054

CLASS 4
324 4,120,055
4,120,056

CLASS 5
66 4,120,057
247 4,120,058
256 4,120,059
345 R 4,120,060
350 4,120,061
370 4,120,062

CLASS 8
17 4,120,647
85 R 4,120,648
94.11 4,120,649
109 4,120,650
111 4,120,651
4,120,652
137 4,120,653

CLASS 12
12 4,120,063
142 R 4,120,064

CLASS 13
18 R 4,121,042
34 4,121,043

CLASS 14
6 4,120,065
16.5 4,120,066
71.5 4,120,067

CLASS 15
160 4,120,068
250.32 4,120,069
306 B 4,120,070

CLASS 16
37 4,120,071
87 R 4,120,072
114 R 4,120,073
171 4,120,074

CLASS 17
1 R 4,120,075

CLASS 20
67 DB 4,121,070

CLASS 23
230 B 4,120,658
230 PC 4,120,659
230 R 4,120,657
4,120,660

CLASS 24
68 CD 4,120,076
130 4,120,077

CLASS 28
218 Re.29,800
251 R 4,120,781
252 4,120,078
282 4,120,079

CLASS 29
25.18 4,120,080
156.5 R 4,120,081
237 Re.29,801
Re.29,802
254 4,120,082
458 4,120,083
509 4,120,084
600 4,120,085
611 4,120,086
623.2 4,120,087

CLASS 30
105 Re.29,803
160 4,120,088
278 4,120,089

CLASS 32
14 A 4,120,090

CLASS 33
15 B 4,120,091
27 B 4,120,092
174 P 4,120,093
174 T 4,120,094
180 R 4,120,095
265 4,120,096
307 4,120,097

CLASS 34
9 4,120,098

CLASS 35
12 K 4,120,099
73 4,120,100

CLASS 36
4 4,120,101
71 4,120,102
97 4,120,103
117 4,120,104

CLASS 37
142 R 4,120,105
190 4,120,106

CLASS 40
336 4,120,107

CLASS 42
74 4,120,108
90 4,120,109

CLASS 43
3 4,120,110
17 4,120,111
19.2 4,120,112
100 4,120,113
137 4,120,114
4,120,115

CLASS 44
1 R 4,120,664
4,120,665
10 R 4,120,666

CLASS 46
1 R 4,120,116
130 4,120,117
201 4,120,118

CLASS 47
66 4,120,119

CLASS 49
351 4,120,120

CLASS 51
270 4,120,121

CLASS 52
58 4,120,122
86 4,120,123
122 4,120,124
156 4,120,125
169.7 4,120,126
172 Re.29,804
4,120,127
173 R 4,120,128
219 4,120,129
285 4,120,130
310 4,120,131
478 4,120,132
745 4,120,133

CLASS 53
434 4,120,134
473 4,120,135

CLASS 55
48 4,120,667
72 4,120,668
73 4,120,669
90 4,120,670
96 4,120,671
112 4,120,672
205 4,120,673
302 4,120,674
431 4,120,675

CLASS 56
17.1 4,120,136
226 4,120,137
313 4,120,138

CLASS 57
13 4,120,139
34 AT 4,120,143
34 HS 4,120,141
34 R 4,120,140
4,120,142
77.4 4,120,144
149 4,120,145
162 4,120,146

CLASS 58
50 R 4,120,147
85.5 4,120,148
88 R 4,120,149

CLASS 60
39.09 R 4,120,150
39.46 M 4,120,151
221 4,120,152
255 4,120,153
282 4,120,154
599 4,120,155
602 4,120,156
618 4,120,157
641 4,120,158
667 4,120,159
670 4,120,160
682 4,120,161
690 4,120,162

CLASS 62
55 4,120,169
91 4,120,170
115 4,120,172
181 4,120,173
256 4,120,174

CLASS 64
15 B 4,120,175
21 4,120,176

CLASS 65
4 R 4,120,676
18 4,120,677
32 4,120,678
60 B 4,120,679
114 4,120,680
4,120,681
181 4,120,682
207 4,120,683
302 4,120,684

CLASS 66
40 4,120,177
63 4,120,178
145 R 4,120,179

CLASS 68
20 4,120,180

CLASS 70
58 4,120,181
63 4,120,182
159 4,120,183
389 4,120,184

CLASS 71
30 4,120,685
67 4,120,686
78 4,120,687
86 4,120,688
4,120,689
90 4,120,690
93 4,120,691
94 4,120,692
96 4,120,693

CLASS 72
24 4,120,185
278 4,120,186
342 4,120,187
391 4,120,188
457 4,120,189
458 4,120,190

CLASS 73
9 4,120,191
19 4,120,192
40 4,120,193
45.2 4,120,194
104 4,120,196
144 4,120,197
151 4,120,198
154 4,120,199
355 R 4,120,200
361 4,120,201
421 R 4,120,202
422 R 4,120,203
425.4 R 4,120,204
425.6 4,120,205
4,120,662
718 4,120,206
768 4,120,195

CLASS 74
10.33 4,120,207
128 4,120,208
230.24 4,120,209
242.13 R 4,120,210
473 R 4,120,211
476 4,120,212
688 4,120,213
860 4,120,214

CLASS 75
1 T 4,120,694
10 C 4,120,695
13 4,120,696
72 4,120,697
82 4,120,698
238 4,120,719

CLASS 76
25 A 4,120,215

CLASS 81
3.46 A 4,120,216
9.51 4,120,217
57.38 4,120,218

CLASS 82
2 R 4,120,219

CLASS 83
62.1 4,120,221
99 4,120,222
425.3 4,120,223
666 4,120,224
886 4,120,220

CLASS 84
1.03 4,120,225
4,120,226
320 4,120,227
453 4,120,228
454 4,120,229

CLASS 85
1 T 4,120,230
3 R 4,120,231

CLASS 89
1.5 R 4,120,232

CLASS 91
511 4,120,233
518 4,120,234

CLASS 93
33 H 4,120,235

CLASS 96
1.5 N 4,120,720
36.3 4,120,721
49 4,120,722
74 4,120,723
87 A 4,120,724
97 4,120,725
107 4,120,726
114 4,120,727
114.1 4,120,728

CLASS 99
323.9 4,120,236
340 4,120,237
353 4,121,301

CLASS 100
11 4,120,238
26 4,120,239
45 4,120,240
142 4,120,241
212 4,120,242
4,120,243

CLASS 101
230 4,120,244
288 4,120,245

CLASS 102
24 HC 4,120,246

CLASS 104
208 4,120,247

CLASS 106
35 4,120,729
39.6 4,120,730
44 4,120,731
47 Q 4,120,732
48 4,120,733
67 4,120,734
84 4,120,735
90 4,120,736
109 4,120,737
288 Q 4,120,738

CLASS 108
23 4,120,248
113 4,120,249
144 4,120,250

CLASS 112
121.15 4,120,251
143 4,120,252
151 4,120,253
158 E 4,120,254
222 4,120,255

CLASS 113
57 4,120,256
116 D 4,120,257

CLASS 114
144 E 4,120,258

CLASS 116
114 V 4,120,818
124 B 4,120,259

CLASS 118
317 4,120,260
630 4,120,261
642 4,120,262
657 4,120,263

CLASS 119
1 4,120,264
5 4,120,265
103 4,120,266

CLASS 122
20 B 4,120,267

CLASS 123
25 C 4,120,268
32 EE 4,120,269
4,120,270
41.49 4,120,271
117 D 4,120,272
122 G 4,120,273
139 E 4,120,274
140 MC 4,120,275
148 CC 4,120,277
198 D 4,120,278

CLASS 124
85 4,120,276

CLASS 126
30 4,120,279
4,120,280
121 4,120,281
270 4,120,282
4,120,283
4,120,284
271 4,120,285
4,120,286
4,120,287
4,120,288
4,120,289
299 D 4,120,290

CLASS 128
2 A 4,120,293
2 E 4,120,292
2 V 4,120,291
2.05 F 4,120,295
2.05 T 4,120,294
4,120,296
78 4,120,297
92 D 4,120,298
140 N 4,120,299
203 4,120,300
303 R 4,120,301
322 4,120,302
330 4,120,303
348 4,120,304
405 4,120,305
419 PT 4,120,306
4,120,307

CLASS 131
17 R 4,120,308
170 R 4,120,309
261 B 4,120,310

CLASS 134
1 4,120,699
6 4,120,311

CLASS 137
236 R 4,120,312
268 4,120,313
271 4,120,321
329.4 4,120,314
454.6 4,120,315
498 4,120,316
509 4,120,317
527.4 4,120,318
583 4,120,319
842 4,120,322

CLASS 138
129 4,120,323
137 4,120,324
145 4,120,325

CLASS 139
55.1 4,120,326
71 4,120,327
196.1 4,120,328
196.2 4,120,329

CLASS 140
112 4,120,330

CLASS 141
66 4,120,331
197 4,120,332

CLASS 144
312 4,120,333
326 R 4,120,334

CLASS 148
1.5 4,120,700
4 4,120,701
6.15 R 4,120,702
9.5 4,120,703
103 4,120,704
174 4,120,705
175 4,120,706
186 4,120,707

CLASS 149
17 4,120,708
19.92 4,120,709
88 4,120,710

CLASS 150
7 4,120,335

CLASS 152
216 4,120,336
353 R 4,120,337
354 R 4,120,338
354 RB 4,120,339

CLASS 156
69 4,120,711
71 4,120,712
72 4,120,713
131 4,120,714
245 4,120,749
252 4,120,715
272 4,120,716
405 R 4,120,717
499 4,120,718
506 4,120,739
522 4,120,740
4,120,741
608 4,120,742
620 4,120,743
653 4,120,744

CLASS 159
27 B 4,120,745
47 R 4,120,746

CLASS 160

133 4,120,340
213 4,120,341
310 4,120,342
330 4,120,343

CLASS 162

117 4,120,747
242 4,120,748

CLASS 164

73 4,120,344
92 4,120,345
105 4,120,346

CLASS 165

48 R 4,120,347
81 4,120,348
89 4,120,349
162 4,120,350
170 4,120,351
173 4,120,352

CLASS 166

65 R 4,120,353
251 4,120,354
259 4,120,355
267 4,120,356
272 4,120,357
275 4,120,358
278 4,120,359
293 4,120,360
294 4,120,361
339 4,120,362

CLASS 171

58 4,120,363

CLASS 172

2 4,120,364
488 4,120,365
805 4,120,366

CLASS 173

137 4,120,367

CLASS 174

68.5 4,121,044
141 R 4,121,045
4,121,046

CLASS 175

71 4,120,368
72 4,120,369

CLASS 176

60 4,120,750
73 4,120,752
78 4,120,751
86 R 4,120,753

CLASS 177

185 4,120,370
262 4,120,371

CLASS 178

3 4,121,047
17 C 4,121,048
18 4,121,049
67 4,121,050

CLASS 179

1 SM 4,121,051
2 A 4,121,053
2 DP 4,121,052
15 A 4,121,055
15 BD 4,121,054
15 BM 4,121,056
15 BS 4,121,057
15.55 T 4,121,058
100.1 DR 4,121,060
100.1 TD 4,121,059
156 R 4,121,061

CLASS 180

9.5 4,120,372
53 R 4,120,374
89.14 4,120,375
105 E 4,120,373

CLASS 181

204 4,120,376

CLASS 182

3 4,120,377
14 4,120,378
187 4,120,379

CLASS 184

15 R 4,120,380

CLASS 187

29 R 4,120,381

CLASS 188

1 B 4,120,382
31 4,120,383
32 4,120,384
181 R 4,120,385
218 XL 4,120,386

CLASS 192

3 S 4,120,387
105 A 4,120,388
129 A 4,120,389

CLASS 195

99 4,120,754
103.5 C 4,120,755

CLASS 198

309 4,120,390
347 4,120,391
451 4,120,392
460 4,120,393

CLASS 200

16 F 4,121,062
18 4,121,063
19 A 4,121,064
42 T 4,121,065
50 AA 4,121,067
51 R 4,121,066
67 A 4,121,069
4,121,072
67 G 4,121,068
4,121,071
83 P 4,121,073
4,121,074
148 A 4,121,075
280 4,121,076
308 4,121,077

CLASS 203

11 4,120,756

CLASS 204

2 4,120,762
2.1 4,120,757
10 4,120,758
14 R 4,120,759
55 R 4,120,760
59 R 4,120,761
73 R 4,120,763
78 4,120,764
149 4,120,765
158 R 4,120,766
4,120,767
181 C 4,120,768
186 4,120,769
195 R 4,120,770
225 4,120,771
252 4,120,772
4,120,773
294 4,120,774

CLASS 206

45.34 4,120,394
63.3 4,120,395
151 4,120,396
370 4,120,397
408 4,120,398
474 4,120,399
528 4,120,400
566 4,120,401
586 4,120,441

CLASS 208

11 E 4,120,775
11 LE 4,120,776
4,120,777
80 4,120,778
108 4,120,779
211 4,120,780
305 4,120,782

CLASS 209

18 4,120,783
75 4,120,402
399 4,120,784
401 4,120,785
454 4,120,786
564 4,120,403

CLASS 210

26 4,120,787
30 A 4,120,788
54 4,120,789
65 4,120,790
84 4,120,791
152 4,120,792
175 4,120,793
345 4,120,794
512 R 4,120,795
522 4,120,796
4,120,797

CLASS 213

61 4,120,404

CLASS 214

1 HH 4,120,405
6 BA 4,120,407
6 N 4,120,406
10 4,120,408
15 R 4,120,409
17 B 4,120,410
38 BA 4,120,411
63 4,120,412
147 G Re.29,805
394 4,120,413

CLASS 215

307 4,120,414

CLASS 219

10.55 B 4,121,079
10.55 F 4,121,078
69 E 4,121,081
69 W 4,121,080
76.16 4,121,082
4,121,083
91.2 4,121,084
121 EM 4,121,086
121 L 4,121,085
4,121,087
201 4,121,088
216 4,121,089
284 4,121,090
400 4,121,091
501 4,121,092
528 4,121,093

CLASS 220

1 T 4,120,415
3.4 4,120,416
6 4,120,417
66 4,120,419
416 4,120,420
423 4,120,421
444 4,120,418

CLASS 221

88 4,120,422
115 4,120,423

CLASS 222

133 4,120,424
146 C 4,120,425
183 4,120,426
193 4,120,427
201 4,120,428
207 4,120,429
324 4,120,430
518 4,120,431
565 4,120,432

CLASS 223

95 4,120,433

CLASS 224

5 V 4,120,434
42.1 C 4,120,436
42.1 F 4,120,435
45 S 4,120,437

CLASS 227

147 4,120,438

CLASS 228

107 4,120,439
231 4,120,440

CLASS 229

15 4,120,442
42 4,120,443
49 4,120,444
53 4,120,445

CLASS 232

17 4,120,446

CLASS 233

7 4,120,447
22 4,120,448
23 R 4,120,449
26 4,120,450

CLASS 235

89 R 4,120,451
92 FL 4,121,094
381 4,120,452

CLASS 236

49 4,120,453

CLASS 239

177 4,120,454
429 4,120,455
464 4,120,456

CLASS 241

46 R 4,120,457
186 R 4,120,458
186.2 4,120,459
278 R 4,120,460
283 4,120,461

CLASS 242

45 4,120,462
56 R 4,120,463
72 R 4,120,464
84.2 A 4,120,465
107 4,120,467
107.2 4,120,466

CLASS 244

13 4,120,468
194 4,120,469
213 4,120,470

CLASS 246

128 4,120,471

CLASS 248

205 R 4,120,473
211 4,120,472
263 4,120,474
451 4,120,475
486 4,120,476

CLASS 249

109 4,120,477

CLASS 250

199 4,121,095
202 4,121,096
4,121,097
273 4,121,098
296 4,121,099
311 4,121,100
315 A 4,121,101
341 4,121,102
343 4,121,103
355 4,121,104
381 4,121,105
390 4,121,106
455 4,121,107
476 4,121,108
505 4,121,109

CLASS 251

31 4,120,478
56 4,120,479
61.5 4,120,480
129 4,120,481
229 4,120,483
306 4,120,482

CLASS 252

8.1 4,120,798
8.55 D 4,120,800
4,120,801
8.6 4,120,799
8.75 4,120,802
47.5 4,120,804
51.5 A 4,120,803
62.1 L 4,120,805
62.54 4,120,806
62.62 4,120,807
63.2 4,120,808
102 4,120,809
153 4,120,810
186 4,120,811
4,120,812
194 4,120,813
301.4 P 4,120,814
341 4,120,815
361 4,120,816
364 4,120,817
413 4,120,819
429 B 4,120,820
432 4,120,821
441 4,120,822
442 4,120,823
447 4,120,824
455 Z 4,120,825
465 4,120,826
512 4,120,827
513 4,120,828
516 4,120,829
522 4,120,830

CLASS 254

6 C 4,120,484
88 4,120,485
150 R 4,120,486

CLASS 260

2.3 4,120,832
15 4,120,835
4,120,836
22 S 4,120,837
29.1 SB 4,120,838
29.2 EP 4,120,839
29.4 UA 4,120,840
29.6 H 4,120,841
33.6 UA 4,120,842
33.8 R 4,120,843
42 4,120,844
45.75 S 4,120,845
45.85 B 4,120,846
112.5 R 4,120,853
112.5 S 4,120,852
145 C 4,120,854
153 4,120,855
239.3 D 4,120,856
293.54 4,120,857
293.55 4,120,858
294.8 R 4,120,859
296 R 4,120,860
302 D 4,120,861
307 D 4,120,862
308 R 4,120,863
314.5 4,120,864
315 4,120,865
326.4 4,120,866
340.7 4,120,867
340.9 R 4,120,868
4,120,869
343.21 4,120,870
343.3 R 4,120,873
343.6 4,120,871
345.8 R 4,120,872
346.11 4,120,874
346.75 4,120,875
348.23 4,120,876
408 4,120,877
4,120,878
4,120,879
439 R 4,120,880
448 A 4,120,882
449.6 R 4,120,883
453 SP 4,120,881
455 A 4,120,884
455 R 4,120,886
462 R 4,120,885
463 4,120,887
465 K 4,120,888
502.4 P 4,120,889
506 4,120,890
4,120,891
4,120,892
507 R 4,120,893
543 R 4,120,894
561 S 4,120,897
562 R 4,120,898
571 4,120,899
585 D 4,120,900
586 R 4,120,901
615 B 4,120,902
644 4,120,903
646 4,120,904
648 C 4,120,905
666 B 4,120,906
668 A 4,120,907
668 R 4,120,908
673 4,120,909
674 A 4,120,910
683.47 4,120,911
830 TW 4,120,912
857 TW 4,120,913
880 B 4,120,914
880 R 4,120,915
897 A 4,120,851
976 4,120,916
4,120,917

CLASS 261

41 D 4,120,918
114 TC 4,120,919

CLASS 264

3 R 4,120,920
23 4,120,921
40.7 4,120,922
45.3 4,120,923
45.5 4,120,924
89 4,120,926
98 4,120,927
171 4,120,928
210 R 4,120,929
225 4,120,930
288 4,120,931
292 4,120,932

CLASS 266

158 4,120,487
281 4,120,488

CLASS 267

61 R 4,120,489

CLASS 269

94 4,120,490

CLASS 271

64 4,120,491
277 4,120,492

CLASS 272

52 4,120,493

CLASS 273

2 4,120,494
23 4,120,495
34 R 4,120,496
95 B 4,120,497
99 4,120,498
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101 4,120,500
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	4,121,232		4,121,084		4,120,400		4,120,555		4,120,350		4,120,668
	4,121,233		4,121,176		4,120,453		4,120,557		4,120,416		4,120,699
	4,121,275	32 :	4,120,115		4,120,471		4,120,590		4,120,417		4,120,744
	4,121,280	33 :	4,120,594		4,120,484		4,120,601		4,120,473		4,120,820
	4,121,295		4,121,180		4,120,493		4,120,639		4,120,504		4,120,842
26 :	4,120,059	34 :	4,120,054		4,120,495		4,120,676		4,120,554		4,120,877
	4,120,068		4,120,111		4,120,500		4,120,678		4,120,595		4,120,919
	4,120,103		4,120,119		4,120,556		4,120,683		4,120,596		4,120,939
	4,120,112		4,120,210		4,120,558		4,120,684		4,120,638		4,121,033
	4,120,127		4,120,254		4,120,575		4,120,688		4,120,646		4,121,058
	4,120,136		4,120,284		4,120,576		4,120,698		4,120,687		4,121,073
	4,120,193		4,120,308		4,120,579		4,120,747		4,120,693		4,121,074
	4,120,289		4,120,331		4,120,580		4,120,766		4,120,705		4,121,140
	4,120,311		4,120,381		4,120,585		4,120,808		4,120,735		4,121,149
	4,120,413		4,120,395		4,120,600		4,120,819		4,120,815		4,121,157
	4,120,422		4,120,563		4,120,604		4,120,838		4,120,833		4,121,193
	4,120,430		4,120,567		4,120,608		4,120,845		4,120,839		4,121,200
	4,120,467		4,120,568		4,120,641		4,120,863		4,120,850		4,121,216
	4,120,529		4,120,570		4,120,669		4,120,876		4,120,864		4,121,227
	4,120,532		4,120,620		4,120,703		4,120,886		4,120,903		4,121,248
	4,120,582		4,120,640		4,120,731		4,120,900		4,120,913		4,121,271
	4,120,625		4,120,651		4,120,767		4,120,933		4,120,921	49 :	4,120,067
	4,120,650		4,120,652		4,120,773		4,120,948		4,120,957		4,120,279
	4,120,774		4,120,672		4,120,777		4,120,990		4,120,971		4,120,587
	4,120,799		4,120,697		4,120,827		4,121,003		4,120,996		4,120,776
	4,120,802		4,120,729		4,120,843		4,121,023		4,121,012		4,120,792
	4,120,803		4,120,782		4,120,846		4,121,124		4,121,014		4,121,290
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	4,120,872		4,120,812		4,120,894		4,120,199		4,121,111		4,121,217
	4,120,878		4,120,836		4,120,895		4,120,295		4,121,139	53 :	4,120,145
	4,120,879		4,120,860		4,120,896		4,120,356		4,121,150		4,120,239
	4,120,880		4,120,870		4,120,945		4,120,361		4,121,276		4,120,332
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	4,120,918		4,120,885		4,120,953		4,120,637		4,121,291		4,120,367
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27 :	Re.29,805		4,120,912		4,121,035		4,120,881	44 :	Re.29,800		4,120,470
	4,120,203		4,120,917		4,121,036		4,120,902		4,120,190		4,120,509
	4,120,206		4,120,922		4,121,048		4,120,907		4,120,288		4,120,540
	4,120,217		4,120,924		4,121,053		4,120,915		4,120,401		4,120,664
	4,120,236		4,120,930		4,121,082		4,120,944		4,120,538		4,120,712
	4,120,307		4,120,936		4,121,083		4,121,029	45 :	4,120,255		4,121,194
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	4,120,929		4,120,967		4,121,261		4,120,253		4,120,281		4,120,419
	4,120,984		4,120,978		4,121,263		4,120,259		4,120,405		4,120,535
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28 :	4,120,132		4,121,129		4,120,976		4,120,756		4,120,085		4,120,349
	4,120,675		4,121,130		4,121,065		4,121,113		4,120,095		4,120,374
29 :	4,120,107		4,121,132		4,121,071		4,121,119		4,120,097		4,120,392
	4,120,319		4,121,137	38 :	4,120,365		4,121,120		4,120,166		4,120,459
	4,120,351		4,121,167	39 :	Re.29,801		4,121,154		4,120,167		4,120,645
	4,120,446		4,121,201		Re.29,802		4,121,164		4,120,189		4,121,005
	4,120,469		4,121,211		4,120,150		4,121,183		4,120,198		4,121,010
	4,120,621		4,121,228		4,120,151		4,121,199		4,120,256		4,121,013
	4,120,654		4,121,238		4,120,191		4,121,299		4,120,264		4,121,017
	4,120,671		4,121,249		4,120,243	42 :	4,120,108		4,120,290		4,121,069
	4,120,689		4,121,289		4,120,248		4,120,121		4,120,301		4,121,072
	4,120,761		4,121,175		4,120,266		4,120,124		4,120,315		4,121,091
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09 :	249,968		249,981		249,956		249,909	39 :	249,921	55 :	249,918
12 :	249,982	18 :	249,935	27 :	249,912		249,958		249,940		249,955
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Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 2, 1978.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,009,235, G. De Mestral, SEPARABLE FASTENING DEVICE, **filed** Apr. 14, 1978, D.C., W.D. Tenn. (Memphis), Doc. C-78-2170 *Velcro S.A. and Actief N.V.* v. *Comfort Care Products, Inc.*

3,063,599, F. J. Kestel, SEED-DROP MECHANISM FOR PLANTER, **filed** Dec. 12, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c4586, *Frederick J. Kestel* v. *Decre & Company.*

3,079,903, J. W. Humphreys, HYDRAULIC TAPPET; **3,263,669,** W. H. Ashley, WAFERING MACHINE, **filed** June 21, 1976, D.C. Del. (Wilmington), Doc. 76-200, *Meyer & Burger* v. *Varian Associates, Inc.* Stipulation of dismissal w/o prejudice, Apr. 4, 1978.

3,128,737, E. M. Usab, FLOATING WHARF STRUCTURE, **filed** Apr. 14, 1978, D.C., W.D. Wash. (Seattle), Doc. C78-43M, *Builders Concrete, Inc.* v. *Marine Systems Industries, Inc. and Dean A. Marshall.* **Same, filed** Jan. 20, 1978, D.C., W.D. Wash. (Seattle), Doc. C78-42V, *Builders Concrete, Inc.* v. *North Coast Construction Co.* Consent judgment filed Apr. 11, 1973, re same patent number (with different owners), Apr. 14, 1978.

3,208,165, Johnson and Lowder, EARTH SCRAPPER WITH HYDRAULICALLY OPERATED CONVEYOR, **filed** Apr. 5, 1978, D.C., S.D. Ill. (Peoria), Doc. 78-1076, *Eagle-Picher Industries, Inc.* v. *Westinghouse Air Brake Company.*

3,253,495, F. F. Orloff, HARDENED BLIND BOLT WITH ANNEALED SHANK PORTION, **filed** Sept. 2, 1977, D.C. Del. (Wilmington), Doc. 77-339, *Huck Manufacturing Company* v. *VSI Corporation.* Final consent decree, Latchum J., w/ stipulation of approval of counsel, Apr. 7, 1978.

3,263,669. (See 3,079,903.)

3,303,938, A. Solomon, GARMENT RACK, **filed** Apr. 21, 1978, D.C. Pa. (Philadelphia), Doc. C.A. 78-1331, *Archie Solomon* v. *Fred Hill and Son Co.*

3,321,113, C. R. Conry, ADJUSTABLE CONTROLLED VOLUME LIQUID POURING DEVICE, **filed** Mar. 20, 1978, D.C. Minn. (Minneapolis), Doc. 4-78-112, *Magnuson Industries, Inc.* v. *Co-Rect Products, Inc.*

3,333,373, Taylor and Brigham, PORTABLE FOLDING CAMPING CABIN OR HOUSE, **filed** Apr. 27, 1978, D.C.N.J. (Newark), Doc. 78-882, *Warren E. Avis* v. *Vornado, Inc.*

3,359,661, Speiser and Lindquist and Horner, POWERED IMPLEMENT, **filed** Apr. 4, 1978, D.C. Del. (Wilmington), Doc. CA-78-126, *The Toro Company* v. *Allis-Chalmers Corporation.* **Same, filed** Feb. 8, 1978, D.C. Del. (Wilmington), Doc. 78-50, *The Toro Company* v. *Jacobsen Manufacturing Co.*

3,396,342, A. E. Feinberg, POWER SUPPLY CIRCUIT FOR CONTINUOUS WAVE MAGNETRON OPERATED BY PULSED DIRECT CURRENT, **filed** Jan. 4, 1978, D.C., N.D. Ill. (Chicago), Doc. 77c19, *Advance Transformer Co.* v. *The Tappan Company.* Enter agreed order of dismissal, Mar. 25, 1977.

3,408,086, W. N. Bennett, THREE-DIMENSIONAL SURFACE FOR SKIS AND THE LIKE, **filed** Apr. 4, 1978, D.C. Mass. (Boston), Doc. CA78-0755-MA, *Skisearch, Inc.* v. *Franz Kneissl Skifabrik Gesellschaft mbH.*

3,420,289, A. V. Bejarano, CONCEALED TIE BACK AND RETURN HOLDER FOR DRAPERY, **filed** Apr. 4, 1978, D.C., S.D. Calif. (San Diego), Doc. 78-0210-N *Alexander V. Bejarano and Instrument Systems Corp.* v. *James E. Madeen.*

3,511,233, E. Holy, FOOT PROTECTOR, **filed** Dec. 17, 1976, D.C., N.D. Ga. (Atlanta), Doc. C76-2062A, *Dillon Manufacturing Company, Inc.* v. *Jimmie G. Reagan, doing business as King Manufacturing Co., Inc.* A consent dismissal of the case has been entered, Mar. 17, 1978.

3,521,509, Duke and Hunter, PIPE SPINNER, **filed** Aug. 9, 1976, D.C., S.D. Tex. (Houston), Doc. 76-H-1325, *J. L. H. Roundtree* v. *Varco International, Inc.* Varco International, Inc. has not infringed and is not infringing upon plaintiffs, plaintiff take nothing and case is dismissed, Aug. 10, 1976.

3,535,380, Dudzinski and Wakeman, 2-ALKYL QUATERNARY AMMONIUM COMPOUNDS, **filed** Mar. 10, 1978, D.C., M.D. La. (Baton Rouge), Doc. 78-102, *Kewanee Industries Inc.* v. *Ethyl Corporation.*

3,570,491, V. R. Sneider, DISPOSABLE SANITARY PAD, **filed** Apr. 11, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1361, *Vincent R. Sneider* v. *Kimberly Clark Corporation.*

3,625,793, D. S. Sheridan, BALLOON-TYPE CATHETERS AND METHOD OF MANUFACTURE, **filed** Nov. 1, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-4089-F *Mallinckrodt, Inc.* v. *Shiley Laboratories, Inc.*

3,724,916, E. A. Hirzel, CONTROLLED WHEEL BRAKING SYSTEM; **3,729,234,** same, BRAKE CONTROL MODULATOR, **filed** June 6, 1977, D.C., N.D. Ohio (Akron), Doc. C77-207, *A. Crane Co.* v. *The Goodyear Tire & Rubber Company.*

3,729,234. (See 3,724,916.)

3,772,775, Bonnke and Melcher, METHOD OF MAKING FLAT CONDUCTOR CABLE ASSEMBLIES, **filed** Apr. 7, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1306, *Methode Electronic, Inc.* v. *A. W. Industries, Inc.*

3,779,830, W. E. Reppel, APPARATUS FOR RETREADING TIRES; **3,779,831,** same; **3,779,832,** same, METHOD FOR RETREADING TIRES; **3,779,833,** same, APPARATUS FOR RETREADING TIRES, **filed** Apr. 12, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78-S10WWS, *Vulcan Equipment Co.* v. *Oliver Tire & Rubber Company.*

3,779,831. (See 3,779,830.)

3,779,832. (See 3,779,830.)

3,779,833. (See 3,779,830.)

3,822,494, R. F. Zivica, WALL PLAQUE AND METHOD OF FABRICATING SAME; **D. 234,433,** same, FOOTBALL WALL PLAQUE, **filed** Apr. 10, 1978, D.C., E.D. Mich. (Detroit), Doc. 78-70804, *Robert F. Zivica* v. *S & S Products Engineering Service, Inc.*

3,850,087, Landblom and Mecklenburg, CREPE GRIDDLE FOR MAKING THIN UNIFORM CREPES, **filed** Mar. 21, 1978, D.C. Colo. (Denver), Doc. 78-W-291, *Creative Cookware, Inc.* v. *General Electric Company.*

3,858,855, G. L. Hazen, FOOD PROCESSING VAT, **filed** May 8, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75-257, *Dec International, Inc.* v. *Stoelting Brothers Company.* Stipulation and order dismissing action without prejudice, Mar. 2, 1978.

3,881,207, Jones and Jones, LOADING DOCK, **filed** Apr. 7, 1978, D.C., E.D. Mich. (Flint), Doc. 78-40044, *Lakeside Fabrication & Engineering Co. and Paul Jones Jr.* v. *Spins, Inc.*

3,905,398, Johansen and Phillippi, COMPOSITE REINFORCED HOSE WHEREIN THE REINFORCING MATERIAL IS BRAIDED AROMATIC POLYAMIDE FILAMENT, **filed** Mar. 22, 1978, D.C., S.D. Tex. (Houston), Doc. CA H-78-535, *Samuel Moore & Co.* v. *Gates Rubber Co.*

3,909,839, Inaba, Kashigi, Makara and Nakamura, PHASE LOCKING SYSTEM FOR TELEVISION SIGNALS USING DIGITAL MEMORY TECHNIQUES, **filed** Mar. 20, 1978, D.C., S.D.N.Y. Doc. 78-C-1245 WK. *Nippon Electric Co., Ltd.* v. *American Broadcasting Companies, Inc.*

3,922,876, Wetherington, Goode and Burgess, ENERGY CONSERVATION UNIT, **filed** Nov. 23, 1977, D.C., Fla. (Orlando), Doc. 77-484-Orl-C-R, *Energy Conservation Unlimited, Inc.* v. *William Clark, doing business as HRU and Coast Line Distributing of Orlando, Inc.* Defendant is permanently enjoined from using the mark HRU, or any other colorable imitation of plaintiff's mark ECU, Mar. 28, 1973.

3,928,773, Ogney and Vittoz, LOGICAL CIRCUIT WITH FIELD EFFECT TRANSISTORS, **filed** Mar. 14, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78-967-F(Tx), *Hughes Aircraft Company* v. *Centre Electronique Horloger.*

4,020,848, T. J. DiCicco, EAR LOBE PIERCING APPARATUS, **filed** Jan. 6, 1978, D.C., C.D. Calif. (Los Angeles), Doc. CV78-0062-R, *Roman Research, Inc. et al.* v. *Hewitt Kenny Corporation et al.*

4,023,623, C. W. Anderson, CULTURAL IMPLEMENT WITH FOLDABLE TOOL SUPPORTING FRAME, **filed** Mar. 24, 1978, D.C., S.D. Miss. (Biloxi), Doc. 878-0080(C), *Chromalloy American Corporation* v. *Poplarville Manufacturing Company.*

4,029,250, L. H. Tall, PHOTOGRAPHIC STRIP TRANSPORT INTERVAL CONTROL, **filed** Apr. 11, 1978, D.C., W.D. Wash. (Seattle), Doc. C78-214V, *C. X. Corporation* v. *Pako Corporation.*

4,065,020, J. R. Carson, METER BOX HAVING ROTATABLE COVER AND INTERLOCKING MEANS, **filed** Apr. 4, 1978, D.C., C.D. Calif. (Los Angeles), Doc. CV78-1307-AAH, *Carson Industries, Inc.* v. *Amctek.*

D. 223,046, J. Nance, DESK, **filed** July 8, 1974, D.C., N.D. Ind. (South Bend), Doc. C-74-149, *Quaker Chair Corporation* v. *Do More Office Furniture, Inc.* Upon motion by plaintiff, this case is dismissed with prejudice, Apr. 5, 1978.

D. 226,192, H. E. Boyd, SEWAGE SEPTIC TANK, **filed** Mar. 23, 1978, D.C.S.C. (Columbia), Doc. C/A 78-488, *C & M Fiberglass Septic Tanks, Inc.* v. *T & N Fiberglass Manufacturing Co., Inc. et al.*

D. 234,433. (See 3,822,494.)

D. 242,576, M. H. Shulman, WRAPPER, **filed** Mar. 27, 1978, D.C. W.D. La. (Shreveport), Doc. 780362-S, *Infra-Pak, Inc.* v. *Phoenix Industries, Inc.*

D. 246,874, L. B. Schwartz, HANDBAG, **filed** Mar. 15, 1978, D.C., S.D.N.Y., Doc. 78-C-114, (MP), *Acricite Company* v. *Stupell Industries, Ltd. Inc.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,327,110, Re. S.N. 936,794, Filed Aug. 25, 1978, Cl. 362/296, FILAMENT SHOCK MOUNTING FOR LAMPS, George D. Baldwin, Owner of Record: *Truck-Lite Co., Inc., Falconer, N.Y.,* Attorney or Agent: Thomas B. Van Poole, Ex. Gp.: 221

3,736,107, Re. S.N. 909,699, Filed May 25, 1978, Cl. 428/131, COATED CEMENTED CARBIDE PRODUCT, Thomas E. Hale, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: Howard I. Schlansker, Ex. Gp.: 164

3,739,846, Re. S.N. 936,333, Filed Aug. 24, 1978, Cl. 166/89, HEAD TO HANGER HYDRAULIC CONNECTION, John Beson, Owner of Record: *by mesne assignments to McEvoy Oilfield Equipment Co., Pittsburgh, Pa.,* Attorney or Agent: David M. Ostfeld, et al., Ex. Gp.: 354

3,816,688, Re. S.N. 899,911, Filed Apr. 26, 1978, Cl. 219/10.55, SAFETY INTERLOCK SYSTEM FOR MICROWAVE OVENS, Rex E. Fritts, Owner of Record: *Amana Refrigeration Inc., Amana, Iowa,* Attorney or Agent: M. D. Bartlett, et al., Ex. Gp.: 213

3,834,278, Re. S.N. 916,273, Filed Jun. 16, 1978, Cl. 91/413, POWER STEERING SYSTEM WITH AUXILIARY POWER CAPABILITY, Raymon L. Goff, et al., Owner of Record: *TRW Inc., Cleveland, Ohio,* Attorney or Agent: J. Herman Yount, et al., Ex. Gp.: 341

3,846,600, Re. S.N. 916,992, Filed Jun. 19, 1978, Cl. 200/83 S, MEANS FOR CALIBRATING PRESSURE SWITCHES AT EXTRA-LOW PRESSURE SETTINGS, Lawrence A. Kolze, et al., Owner of Record: *Eaton Corp., Cleveland, Ohio,* Attorney or Agent: Joseph R. Teagno, et al., Ex. Gp.: 213

3,874,733, Re. S.N. 895,695, Filed Apr. 12, 1978, Cl. 299/17, HYDRAULIC METHOD OF MINING AND CONVEYING COAL IN SUBSTANTIALLY VERTICAL SEAMS, William N. Poundstone, et al., Owner of Record: *Continental Oil Co., Ponca City, Okla.,* Attorney or Agent: Joseph C. Kotarski, et al., Ex. Gp.: 354

3,923,301, Re. S.N. 883,033, Filed Mar. 1, 1978, Cl. 272/56.5 R, AMUSEMENT WATER SLIDE AND METHOD, Dwight L. Myers, Owner of Record: *Inventor,* Attorney or Agent: Peter N. Lalos, Ex. Gp.: 354

3,971,901, Re. S.N. 926,716, Filed Jul. 21, 1978, Cl. 179/156 A, COMMUNICATIONS HEADSET WITH REVERSIBLE MOUNTING MEANS, James P. Foley, Owner of Record: *Roanwell Corporation, New York, N.Y.,* Attorney or Agent: Lester W. Clark, Ex. Gp.: 232

3,973,229, Re. S.N. 925,058, Filed Jul. 17, 1978, Cl. 334/86, COMBINED 82-POSITION UHF AND VHF TELEVISION TUNER WITH MEMORY FINE TUNING, Morton L. Weigel, Owner of Record: *Sarkes Tarzian, Inc., Bloomington, Ind.,* Attorney or Agent: Stanley J. Tomsa, Ex. Gp.: 256

4,021,432, Re. S.N. 938,849, Filed Sep. 1, 1978, Cl. 260/293.64, PIPERIDINE DERIVATIVES, Brian Holt, et al., Owner of Record: *Ciba-Geigy Corporation, Ardsley, N.Y.,* Attorney or Agent: None, Ex. Gp.: 121

4,049,647, Re. S.N. 938,974, Filed Sep. 1, 1978, Cl. 542/426, PIPERIDYL CARBOXYLATES, Brian Holt, et al., Owner of Record: *Ciba-Geigy Corporation, Ardsley, N.Y.,* Attorney or Agent: None, Ex. Gp.: 117

4,066,857, Re. S.N. 932,760, Filed Aug. 10, 1978, Cl. 200/61.7, SWITCH ACTIVATING HINGE HAVING RECIPROCATING CAM FOLLOWER SWITCH ACTUATOR, Charles R. Suska, Owner of Record: *Stanley Works, New Britain, Conn.,* Attorney or Agent: Granville M. Brumbaugh, et al., Ex. Gp.: 217

PATENT NOTICES

Certificates of Correction for Week of Oct. 24, 1978

Re. 29,640	4,042,555	4,073,993	4,087,358
Re. 29,650	4,044,000	4,074,103	4,087,388
3,791,238	4,046,101	4,074,492	4,087,481
3,845,034	4,046,515	4,075,452	4,087,528
3,855,299	4,046,763	4,076,570	4,087,618
3,869,923	4,047,677	4,076,719	4,087,645
3,879,574	4,048,071	4,076,733	4,088,130
3,890,059	4,051,105	4,077,793	4,088,676
3,894,009	4,052,374	4,077,850	4,088,735
3,906,139	4,053,208	4,078,146	4,088,892
3,923,671	4,053,657	4,078,276	4,088,980
3,923,752	4,056,210	4,078,539	4,089,190
3,924,011	4,056,567	4,078,789	4,089,225
3,930,266	4,057,647	4,078,946	4,089,365
3,940,328	4,057,862	4,078,988	4,089,399
3,979,405	4,058,714	4,079,699	4,089,640
3,981,693	4,059,833	4,079,746	4,089,693
3,982,146	4,060,323	4,079,755	4,089,878
3,983,775	4,061,476	4,080,174	4,089,998
3,985,120	4,062,729	4,080,188	4,090,048
3,987,010	4,063,289	4,080,271	4,090,141
3,987,382	4,063,505	4,080,465	4,090,450
3,996,069	4,063,944	4,080,720	4,090,518
4,011,367	4,064,357	4,080,778	4,090,961
4,016,715	4,064,753	4,081,367	4,091,347
4,022,892	4,065,696	4,081,400	4,091,381
4,023,392	4,066,208	4,081,464	4,091,516
4,023,457	4,066,844	4,081,767	4,091,625
4,025,791	4,067,508	4,081,999	4,091,751
4,026,119	4,067,634	4,082,352	4,091,818
4,027,967	4,067,836	4,083,260	4,092,174
4,029,693	4,069,415	4,084,102	4,092,299
4,030,868	4,071,242	4,085,567	4,092,318
4,038,293	4,071,483	4,085,734	4,092,624
4,038,652	4,072,252	4,085,824	4,092,713
4,039,180	4,072,536	4,086,070	4,094,720
4,040,259	4,072,809	4,086,882	4,094,802
4,041,666	4,072,925	4,087,181	

Dedications

Design No. 247,054.—*Dietmar Rahmstorf*, Nurnberg, Germany. TOY-FIGURE. Patent dated Jan. 24, 1978. Dedication filed Aug. 25, 1978, by the Messrs. *Big Spielwarenfabrik Dipl.-Ing. Ernst A. Bettag.*

Hereby dedicates to the Public the entire term of said patent.

3,474,098.—*George H. Hitchings*, Yonker and Elvira A. Falco, New Rochelle, N.Y. PYRAZOLO-(3,4-d)pyrimidines. Patent dated Oct. 21, 1969. Dedication filed May 4, 1978, by the assignee, *Burroughs Wellcome Co.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

3,815,166.—*Henry Anton Sygnator*, Arlington Heights, Ill. DIE HOLDER ASSEMBLY. Patent dated June 11, 1974. Disclaimer filed Aug. 16, 1978, by the assignee, *Illinois Tool Works Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,952,347.—*John M. Comerford*, Morganville and Chandra Kaput, East Brunswick, N.J. BIODEGRADABLE BARRIER FILM AND ABSORBENT PAD UTILIZING SAME. Patent dated Apr. 27, 1976. Disclaimer filed July 31, 1978, by the assignee, *Personal Products Company.*

Hereby enters this disclaimer to all claims of said patent.

Erratum

3,994,415.—*Allan M. Hodge*, San Diego, Calif. TRASH CONTAINER LID SYSTEM. In the notice of Disclaimers appearing on page 29 in the Official Gazette of June 27, 1978, the term of said patent was erroneously disclaimed and should be corrected to read as follows: The term of this patent subsequent to Sept. 17, 1991, has been disclaimed.

Disclaimer and Dedication

3,324,326.—*Edward E. Sheldon*, New York, N.Y. ELECTRON DEVICES WITH FIBEROPTIC MEMBERS. Patent dated June 6, 1967. Disclaimer and Dedication filed Nov. 1, 1976, by the assignee, *American Optical Corporation.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Patents Available for Licensing or Sale

4,025,699. MANGANESE STORAGE BATTERY. Lou Silva. 1181½ Bell St., B, Reno, Nev. 89503.

4,040,657. VARIABLE-DENSITY VEHICLE GLARE SHIELD. Joyce P. Penzes, Route 116, Purdys, N.Y. 10578.

4,046,400. BALL SKI BINDING. Felix A. Viletto. 116 Ford City Road, Freeport, Pa. 16229.

4,056,897. PLANTER DESIGN AND CONSTRUCTION. Communicate with: E. Barron Batchelder, Sixbey, Friedman, & Leedom, P.C., Suite 206, 2001 Jefferson Davis Highway, Arlington, Va. 22202.

4,099,286. CLEANERS FOR CHALK ERASERS. Soji Ishikawa. Correspond with: Bernard Kreten, Blair, Brown, & Kreten, 4637 Eastern Ave. NE., Washington, D.C. 20018.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency—sponsors.

Copies of the patents cited are available from the Commissioner of Patents & Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Virginia 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licenses by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE ARMY

Office of Judge Advocate General, Patent Division,
RM. 2C—455, Pentagon, Washington, D.C. 20314

Patent 4,036,142. Obscuration Fuze and Sensor. Filed Jan. 18, 1967. Patented July 19, 1977. Not available NTIS.

Patent 4,036,144. Arming System. Filed Jan. 29, 1959. Patented July 19, 1977. Not available NTIS.

Patent 4,037,782. Engine Condition Calculating Device. Filed July 12, 1976. Patented July 26, 1977. Not available NTIS.

Patent 4,038,742. Method of Making Styrofoam Slotted Plane-Array Antenna. Filed Sept. 15, 1976. Patented Aug. 2, 1977. Not available NTIS.

Patent 4,038,903. Two Stage Telescoped Launcher. Filed Aug. 23, 1976. Patented Aug. 2, 1977. Not available NTIS.

Patent 4,038,904. Cartridge Feed, Positioning and Ejection Control System. Filed June 30, 1976. Patented Aug. 2, 1977. Not available NTIS.

Patent 4,038,905. Compressible Fluid Recoil System. Filed Apr. 29, 1976. Patented Aug. 2, 1977. Not available NTIS.

Patent 4,039,360. Gelled Monomethylhydrazine Thixotropic Fuel. Filed Sept. 9, 1971. Patented Aug. 2, 1977. Not available NTIS.

Patent 4,039,958. Circuits for Decoding Pulse Signals. Filed Jan. 3, 1977. Patented Aug. 2, 1977. Not available NTIS.

Patent 4,039,976. Coaxial Current Probe. Filed Aug. 14, 1975. Patented Aug. 2, 1977. Not available NTIS.

Patent 4,040,332. Variable Spring Rate Equilibrators. Filed May 24, 1976. Patented Aug. 9, 1977. Not available NTIS.

Patent 4,040,356. Converging Wave Detonator. Filed July 6, 1976. Patented Aug. 9, 1977. Not available NTIS.

Patent 4,040,359. Discarding Frangible Rotating Band. Filed May 14, 1976. Patented Aug. 9, 1977. Not available NTIS.

Patent 4,040,577. Lockwood Airfoil Used in Conjunction With Man Transport Device. Filed Jan. 17, 1977. Patented Aug. 9, 1977. Not available NTIS.

Patent 4,040,647. Manual Controller for Vehicle Level Adjustment. Filed Mar. 19, 1976. Patented Aug. 9, 1977. Not available NTIS.

Patent 4,041,488. Doppler Radar System. Filed Apr. 19, 1976. Patented Aug. 9, 1977. Not available NTIS.

Patent 4,041,872. Wrapper, Structural Shielding Device. Filed Sept. 10, 1971. Patented Aug. 16, 1977. Not available NTIS.

Patent 4,042,927. Ability of a Manapulse Radar To Resolve and Track Jammers Passively. Filed June 25, 1971. Patented Aug. 16, 1977. Not available NTIS.

Patent 4,042,946. Radiation Hardened Field Effect Device. Filed Dec. 8, 1976. Patented Aug. 16, 1977. Not available NTIS.

Patent 4,043,177. Method To Observe Damage Induced in Optical Elements by Intense Thermal Radiation. Filed Apr. 22, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,043,204. Magnetic Fluid Bearing Accelerometer. Filed Aug. 16, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,043,249. Ammunition Conveyor Drive Cam. Filed July 6, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,043,250. Recollable Gun Tube Latch. Filed Jan. 28, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,043,687. Latched Telescoping Members. Filed Apr. 12, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,044,620. Transmission. Filed Dec. 10, 1975. Patented Aug. 30, 1977. Not available NTIS.

Patent 4,045,730. Incremental Method and System for Absolute Measurement of Coherent Power at Millimeter and Submillimeter Wavelengths. Filed May 20, 1976. Patented Aug. 30, 1977. Not available NTIS.

Patent 4,047,114. Digital Detector. Filed Aug. 6, 1976. Patented Sept. 6, 1977. Not available NTIS.

Patent 4,047,174. Method of Reducing the Radar Cross-Section of a Dielectric Body. Filed July 7, 1968. Patented Sept. 6, 1977. Not available NTIS.

Patent 4,047,178. Low Loss Top Termination for Short Monopoles. Filed Sept. 22, 1976. Patented Sept. 6, 1977. Not available NTIS.

Patent 4,047,382. Thrust Management Control Propulsion System. Filed Oct. 3, 1975. Patented Sept. 13, 1977. Not available NTIS.

Patent 4,047,484. Fuze With Bimetallic Spring Delay Module. Filed June 29, 1976. Patented Sept. 13, 1977. Not available NTIS.

Patent 4,048,041. Electronic System for Providing Specificity in an Electrochemical Analytical Device. Filed May 24, 1976. Patented Sept. 13, 1977. Not available NTIS.

Patent 4,048,568. Wide Operating Frequency Range Superheterodyne FM Noise Analyzer. Filed Aug. 30, 1976. Patented Sept. 13, 1977. Not available NTIS.

Patent 4,048,580. Apparatus for Detecting a Stable Microwave Discrete Frequency. Filed Oct. 18, 1976. Patented Sept. 13, 1977. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch, General Services, Division, Federal Building, Agricultural Research Service Hyattsville, Md. 20782

Patent application 694,515. A Polyfluorinated Amine Oil-Repellent, Stain-Release Fabric Treatment. Filed June 9, 1976.

Patent application 730,915. Wet-Wall Electroinertial Air Cleaner. Filed Oct. 8, 1976.

Patent application 787,177. Antibacterial Textile Finishes Utilizing Zirconyl Acetate Complexes of Inorganic Peroxides. Filed Apr. 15, 1977.

Patent application 794,597. Clarification of Citrus Juices. Filed May 6, 1977.

Patent application 904,646. Method of Shrinkproofing Animal Fibers With Ozone. Filed May 10, 1978.

Patent 4,068,167. Radial Electrode for Determining the Amount of Moisture in Seed Cotton. Filed Sept. 1, 1976. Patented Jan. 10, 1978. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,915,018. Transition Section for Acoustic Waveguides. Filed Nov. 21, 1974. Patented Oct. 28, 1975.

Patent 3,918,839. Wind Turbine. Nov. 11, 1975.

Patent 3,925,109. Precise Carbon Control of Fabricated Stainless Steel Filed Jan. 29, 1974. Patented Dec. 9, 1975.

Patent 3,925,874. Pipe Gripper. Filed July 9, 1974. Patented Dec. 16, 1975.

Patent 3,934,239. Adjustable Electronic Load-Alarm Relay. Filed Sept. 27, 1974. Patented Jan. 20, 1976.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent 3,977,312. Parachute Stopping for Mine Ventilation Use. Filed Oct. 31, 1975. Patented Aug. 31, 1976.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch, General Services, Division, Federal Building, Agricultural Research Service Hyattsville, Md. 20782

Patent 3,937,724. Organo-Phosphorus Compounds Containing Perfluoroalkyl Radicals and Their Application to Cellulosic Textiles. Filed Mar. 24, 1975. Patented Feb. 10, 1976.

Patent 3,939,883. Machine To Fill Insect Rearing Cells With Diet. Filed Oct. 1, 1974. Patented Feb. 24, 1976.

Patent 3,941,764. Use of Acidic Hexane To Process Oil Seeds for Protein and Oil. Filed May 10, 1974. Patented Mar. 2, 1976.

Patent 3,947,613. Process for Reducing Agent Migration During Treatment of Knitted Cotton Fabric. Filed Aug. 7, 1974. Patented Mar. 30, 1976.

Patent 3,948,600. Selected Ammonium Sulfonate Catalysts for an Improved Process Utilizing Mild Curing Conditions in Durable Press Finishing of Cellulose-Containing Fabrics. Filed Feb. 27, 1975. Patented Apr. 6, 1976.

Patent 3,949,108. Process for Producing Fire Resistant Organic Textile Materials. Filed June 1, 1973. Patented Apr. 6, 1976.

Patent 3,953,166. Flame Resistant Organic Textiles Through Treatment With Phenols and Adduct Polymers. Filed Aug. 22, 1974. Patented Apr. 27, 1976.

Patent 3,954,968. Composition for Attracting the Cotton Boll Weevil. Filed Feb. 27, 1975. Patented May 4, 1976.

Patent 3,958,932. Flame-Resistant Textiles Through Finishing Treatments With Vinyl Monomer Systems. Filed Aug. 28, 1974. Patented May 25, 1976.

Patent 3,959,461. Hair Cream Rinse Formulations Containing Quaternary Ammonium Salts. Filed May 28, 1974. Patented May 25, 1976.

Patent 3,961,110. Treatment of Organic Textiles With Adduct Polymers and Phenols. Filed Aug. 22, 1974. Patented June 1, 1976.

Patent 3,963,111. Full Flow Feeder. Filed Mar. 12, 1975. Patented June 15, 1976.

Patent 3,963,433. Formulation of Urethane Crosslinks in Cellulose Ethers Incorporating Amine Groups by Use of Propylene or Ethylene Carbonate. Filed July 23, 1975. Patented June 15, 1976.

Patent 3,963,435. Polyester Grafts and Crosslinks to Cotton by Reaction With Heterocyclic Carbonate, Glycol, and Dibasic Acid. Filed Sept. 8, 1975. Patented June 15, 1976.

Patent 3,963,570. Ultraviolet-Initiated Preparation of N,N-Dibutyl-9(10)-Dibutylphosphonooctadecanamide. Filed Sept. 26, 1974. Patented June 15, 1976.

Patent 3,963,927. Detection of Hidden Insects. Filed June 18, 1975. Patented June 15, 1976.

Patent 3,970,424. Durable Press Treatment by Addition of Sodium Dihydrogen Phosphate to Aluminum Sulfate Catalyst. Filed Aug. 14, 1975. Patented July 20, 1976.

Patent 3,972,861. Process for Producing and Edible Cottonseed Protein Concentrate. Filed Nov. 26, 1974. Patented Aug. 3, 1976.

Patent 3,975,152. Simultaneous Dyeing and Crosslinking of Cellulosic Fabrics. Filed Jan. 23, 1975. Patented Aug. 17, 1976.

Patent 3,975,343. Solubilization of Protein With Ethanol-Acetonitril-Water Solvent System. Filed June 27, 1975. Patented Aug. 17, 1976.

Patent 3,975,370. Methylolated Reaction Product of a Hydroxy Carbamate and a Cellulose-Dyeing Dyestuff Containing Vinyl Sulfone Groups. Filed Sept. 17, 1974. Patented Aug. 17, 1976.

Patent 3,976,818. Polyfluorinated Amine Oil-Repellent, Stain-Release Fabric Treatment. Filed July 18, 1972. Patented Aug. 24, 1976.

Patent 3,933,782. Repellants for the Confused Flour Beetle. Filed Aug. 14, 1975. Patented Nov. 23, 1976.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,914,732. System for Remote Control of Underground Device. Filed July 23, 1973. Patented Oct. 21, 1975.

Patent 3,927,850. Lifting Parachute. Filed Dec. 31, 1974. Patented Dec. 23, 1975.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,921,562. Self-Depressing Underwater Towable Spread. Filed Oct. 10, 1962. Patented Nov. 25, 1975.

Patent 3,922,630. Automatic Vehicle Positioning System. Filed Dec. 3, 1964. Patented Nov. 25, 1975.

Patent 3,922,631. Underwater Intrusion Detecting System. Filed June 20, 1960. Patented Nov. 25, 1975.

Patent 3,922,632. Automatic Vehicle Positioning System. Filed Dec. 14, 1965. Patented Nov. 25, 1975.

Patent 3,922,633. Insulated Conductor Detector. Filed July 20, 1967. Patented Nov. 25, 1975.

Patent 3,922,634. Sonar System. Filed Sept. 29, 1965. Patented Nov. 25, 1975.

Patent 3,924,069. Helium Speech Decoder. Filed Oct. 15, 1974. Patented Dec. 2, 1975.

Patent 3,928,839. Sonar System. Filed Sept. 5, 1968. Patented Dec. 23, 1975.

Patent 3,933,097. Device To Determine Effective Target Size for Fixed Angle Fuzes. Filed Jan. 4, 1968. Patented Jan. 20, 1976.

Patent 3,933,308. Wound Covering and Method of Application. Filed Aug. 8, 1974. Patented Jan. 27, 1976.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch, General Services, Division, Federal Building, Agricultural Research Service
Hyattsville, Md. 20782

Patent 3,932,390. 2-Thia-1,3,5-Triaza-7-Phosphaadamantane 2,2-Dioxide. Filed Apr. 29, 1975. Patented Jan. 13, 1976.

Patent 3,939,883. Machine To Fill Insect Rearing Cells With Diet. Filed Oct. 1, 1974. Patented Feb. 24, 1976.

Patent 3,953,165. Flameproofing Resins for Organic Textiles From Adduct Polymers. Filed Aug. 22, 1974. Patented Apr. 27, 1976.

Patent 3,954,400. Phosphorus, Nitrogen, Bromine Containing Polymers and Process for Producing Flame Retardant Textiles. Filed Aug. 22, 1974. Patented May 4, 1976.

Patent 3,960,477. Crossdyed Cotton Fabrics. Filed Jan. 11, 1974. Patented June 1, 1976.

Patent 3,963,434. Carboxymethylated Cotton Fabric With Improved Conditioned and Wet Wrinkle Recovery by Reaction With Propylene or Ethylene Carbonate. Filed July 23, 1975. Patented June 15, 1976.

Patent 3,972,924. 1-(1H,1H-Perfluorooctyl)-1, 3-Trimethylenediphosphonic Tetrochloride. Filed Nov. 10, 1975. Patented Aug. 3, 1976.

Patent 3,973,154. Process for Producing and Utilizing Durable Press Fabrics With Strong Acid Grafts. Filed June 9, 1975. Patented Aug. 17, 1976.

Patent 3,976,604. Preparation of Ethylenimine Prepolymer. Filed Jan. 30, 1975. Patented Aug. 24, 1976.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,913,599. Coil Spring Venting Arrangement. Filed Sept. 30, 1974. Patented Oct. 21, 1975.

Patent 3,920,343. Key-and-Keyway Coupling for Transmitting Torque. Filed Nov. 13, 1974. Patented Nov. 18, 1975.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,922,572. Electroacoustical Transducer. Filed Aug. 12, 1974. Patented Nov. 25, 1975.

Patent 3,934,288. Object Release Device. Filed Nov. 18, 1974. Patented Jan. 27, 1976.

Patent 3,934,482. Cable Traction Sheave. Filed Jan. 27, 1975. Patented Jan. 27, 1976.

Patent 3,939,467. Transducer. Filed Apr. 8, 1974. Patented Feb. 17, 1976.

U.S. DEPARTMENT OF THE ARMY
Office of Judge Advocate General, Patent Division, RM. 2C-455, Pentagon, Washington, D.C. 20314

Patent 4,040,896. Chemical Polish for BaF_2 and CaF_2. Filed Nov. 15, 1976. Patented Aug. 9, 1977. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Branch, General Services Administration, Agricultural Research Service
Hyattsville, Md. 20782

Patent application 737,979. Fiber Dispersing and Feeding Method and Apparatus for D. E. Spinning. Filed Nov. 2, 1976.

Patent application 801,273. Quantitative Apparatus for Sampling Arthropods Associates With Field Crops. Filed May 27, 1977.

Patent application 806,571. Lint-Cotton Reclaiming Apparatus for Cotton Gins. Filed June 14, 1977.

Patent application 837,488. Electrostatic Precipitator Apparatus Using Fluid Collection Electrodes. Filed Sept. 28, 1977.

Patent application 844,336. Differential Action Extractor Comb. Filed Oct. 21, 1977.

Patent application 844,418. Furrow Opener and Apparatus for No-Tillage Transplanters and Planters. Filed Oct. 21, 1977.

Patent application 866,077. Lint Cleaning Apparatus for Automatic Control of Cotton Quality. Filed Dec. 30, 1977.

Patent application 893,366. Method of Removing Pigment From Annatto Seed. Filed Apr. 4, 1978.

Patent application 893,367. Cotton Dust Analyzer. Filed Apr. 4, 1978.

Patent application 907,473. Wax Esters of Vegetable Oil Fatty Acids Useful as Lubricants. Filed May 19, 1978.

Patent application 907,474. Method of Applying Herbicide. Filed May 19, 1978.

Patent 4,083,783. Removal of Heavy Metal Ions From Aqueous Solutions With Insoluble Crosslinked-Starch Xanthates. Filed June 3, 1977. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,084,016. Preparation of Legume Chips. Filed Dec. 28, 1976. Patented Apr. 11, 1978. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 879,492. A Cobalt Catalyzed Steroid Synthesis. Filed Feb. 21, 1978.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts., NW., Washington, D.C. 20240

Patent application 960,830. Molybdenite Flotation. Filed Apr. 28, 1978.

Patent application 901,041. Multichannel Infrared Pyrometer. Filed Apr. 28, 1978.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA
Code GP-2, Washington, D.C. 20546

Patent application 896,955. Liquid Metal Slip Ring. Filed Apr. 17, 1978.

Patent application 900,832. Charge Injection Method and Apparatus of Producing Large Area Electrets. Filed Apr. 28, 1978.

Patent application 907,436. Coupling Device for Moving Vehicles. Filed May 19, 1978.

Patent application 910,708. Air Speed and Attitude Probe. Filed May 30, 1978.

Patent application 910,794. Small Air Breathing Launch Vehicle. Filed May 30, 1978.

Patent 4,083,181. Gas Turbine Engine With Recirculating Bleed. Filed June 14, 1976. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,083,620. Tetherline System for Orbiting Satellites. Filed Nov. 8, 1976. Patented Apr. 11, 1978. Not available NTIS.

Patent 4,084,825. Counter Pumping Debris Excluder and Separator. Filed Mar. 31, 1976. Patented Apr. 18, 1978. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

FORM 1

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 23, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Sterolds; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-5-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-30-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-19-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-23-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-28-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-2-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	3-20-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-3-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-6-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-13-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-8-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

REISSUE PATENTS

GRANTED OCTOBER 24, 1978

ERRATA

For CLASS	See PATENT NO.
297–408	29,811
423–242	29,813
424–081	29,814

REISSUES

OCTOBER 24, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,808

HOLLOW BODY GRINDING MATERIALS

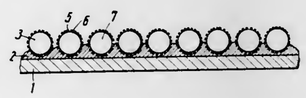
Eckhard Wagner, Elmshorn, Germany, assignor to Norddeutsche Schleifmittel-Indutrie Christiansen & Co., Hamburg, Germany

Original No. 3,928,949, dated Dec. 30, 1975, Ser. No. 465,802, May 1, 1974. Application for reissue Sep. 12, 1977, Ser. No. 832,516

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1973, 2348338; Oct. 5, 1973, 2350139

Int. Cl.[2] **B24D** *3/34*

U.S. Cl. 51—401 **23 Claims**



1. A grinding material comprising a multiplicity of hollow bodies whose walls contain *substantially therein* abrasive grains in an amount of more than 50% of the wall surface and a bonding means selected from the group consisting of a synthetic resin, a ceramic binder and a metallic binder [and are] *for bonding said abrasive grains to each other at said wall surface, said walls being* arranged to be stable in resistance to grinding forces, the mean diameter of said hollow bodies [are] measured parallel to a grinding surface [lies] *lying* between 0.1 and 8 mm and [is] *being* not more than 50 times the mean grain diameter, [and the abrasive grains are contained substantially within the walls of the hollow bodies] *whereby during grinding a multiplicity of fresh abrasive grains become continuously available at the grinding surface wherein the grinding action of the grinding surface depends exclusively on the size of the abrasive grains* .

Re. 29,809

Patent Not Issued For This Number

Re. 29,810

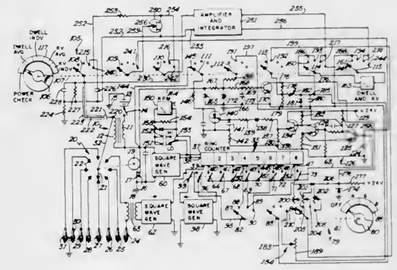
ANALYZER FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE HAVING MEANS FOR IDENTIFYING INDIVIDUAL CYLINDERS

Joseph A. Marino, Eden Prairie, Minn., assignor to Applied Power Inc., Milwaukee, Wis.

Original No. 3,572,103, dated Mar. 23, 1971, Ser. No. 607,820, Jan. 6, 1967. Application for reissue Mar. 20, 1973, Ser. No. 342,966

Int. Cl.[2] **G01M** *19/02*

U.S. Cl. 73—117.3 **25 Claims**



1. An analyzer for multicylinder internal combustion engines of the type having an electrical igniter for each cylinder, electrical ignition pulse generating means and a distributor for sequentially applying each generated ignition pulse to the igniter of a different cylinder in a predetermined sequence, said analyzer being usable with engines having different numbers of cylinders and comprising:

a first coupling circuit for producing discrete pulses at its output coincident with the application thereto of discrete input signals,

a first connector for coupling the input of said first coupling circuit to the electrical ignition pulse generator to receive signals at the frequency of generation of said ignition pulses,

a second coupling circuit producing discrete pulses at its output coincident to the application thereto of discrete input signals,

a second connector for coupling the input of the second coupling circuit to the igniter of an individual cylinder to receive signals at the frequency of firing of said cylinder,

a pulse counter having a plurality of stages corresponding to the maximum number of cylinders of any engine to be tested, each stage having an output connection, said counter having a first input connection and means operative upon successive pulses being applied to said input connection to cause an output signal to appear successively at the output connection of successive stages, said counter having a second intput connection, and means operative when a signal is applied to said second input connection to reset said counter to cause the output signal to appear at the output connection of the first stage regardless of whether an output signal has yet appeared at the output connections of all of said stages,

means for connecting said first input connection to the output of said first coupling circuit to cause said output signal to advance at the frequency of generation of said ignition pulses from one stage to the next stage,

means for connecting said second input connection to the output of said second coupling circuit so that the counter is reset each time that an ignition pulse would normally be applied to the igniter of the individual cylinder to which the input of said second coupling circuit is connected,

electrical testing means adapted to be controlled by the output signal of said counter and effective when a signal is applied thereto to produce an electrical effect useful in the analysis of the performance of the engine,

and switching means for selectively connecting said electrical testing means to the output connection of any one

selected stage of said counter so that said testing means is operative to produce such an electrical effect concurrently with the period during which the generated pulse would normally be applied to the igniter of any selected cylinder.

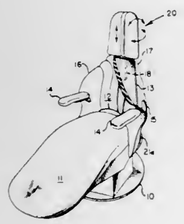
Re. 29,811
DENTAL CHAIR AND ADJUSTABLE HEAD SUPPORT MECHANISM THEREFOR

Floyd E. Norris, 16350 130th Ave. Southeast, Renton, Wash. 98055

Original No. 3,858,937, dated Jan. 7, 1975, Ser. No. 361,591, May 18, 1973. Application for reissue Jan. 6, 1977, Ser. No. 757,328

Int. Cl.[2] A47C *1/10*

U.S. Cl. 297—408 **8 Claims**



1. An adjustment mechanism linking a head support and means for attachment to the back support of a chair comprising:

an elongated linking member having two parallel annular openings extending therethrough near each end,

slots in the linking member extending from the outer surface thereof into communication with each of the annular openings, each of the slots allowing the internal diameter of each of the annular openings to be reduced by compression of the linking member adjacent the slots;

an open-ended channel extending through the linking member essentially transverse to the axis of each of the annular openings and communicating with the slots and a segment of each of the annular openings;

annular pins received in each of the annular openings, each pin having an external diameter slightly less than the internal diameter of the respective annular opening in the uncompressed state, allowing free rotation thereof, each pin having a channel extending around the outer circumference thereof;

means connecting one of the annular pins to the head support and the other annular pin to the means for attachment to the back support;

a pin extending through the open-ended channel of the linking member communicating with the respective channels in the annular pins to retain the annular pins in place in the linking member;

retaining means at one end of the pin to retain the pin in place in the open-ended channel; and

cam means connected to the opposite end of the pin for exerting tension on the pin relative to the linking member to compress the linking member, reducing the diameter of the annular openings and frictionally engaging the annular pins to lock them against rotation.

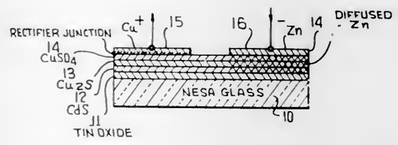
Re. 29,812
PHOTOVOLTAIC CELL

John F. Jordan, and Curtis M. Lampkin, both of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Original No. 3,902,920, dated Sep. 2, 1975, Ser. No. 303,365, Nov. 3, 1972. Application for reissue Apr. 14, 1977, Ser. No. 787,533

Int. Cl.[2] H01L *31/06*

U.S. Cl. 136—89 TF **12 Claims**



8. A solar cell, comprising

a transparent conductive base,

a layer of CdS microcrystals coated on said base,

a layer of Cu_2S coated over said layer of CdS microcrystals and forming a photovoltaic heterojunction therewith,

a metallic positive electrode superposed over a portion of said layer of Cu_2S,

a zinc negative electrode superposed over another portion of said layer of Cu_2S, and

a quantity of zinc diffused under said zinc electrode to provide a conductive path from said zinc electrode to said conductive base.

Re. 29,813
PROCESS FOR THE REMOVAL OF SULFUR OXIDE FROM WASTE GAS

Yoshikazu Yamamichi, and Jun-ichi Nagao, both of Okayama, Japan, assignors to The Dowa-Mining Co., Ltd., Tokyo, Japan

Original No. 3,943,230, dated Mar. 9, 1976, Ser. No. 404,201, Oct. 9, 1973. Application for reissue Dec. 23, 1976, Ser. No. 753,917

Int. Cl.[2] C01B *17/00*

U.S. Cl. 423—242 **3 Claims**

3. A process for removing sulfur oxide from waste gas which comprises

a. subjecting the waste gas to a countercurrent flow of an absorbent solution of 0.05 to 1 mol/liter of basic aluminum sulfate, said solution having a basicity of 0 to 60%, and containing an amount of a manganese salt sufficient to absorb the sulfur oxide into the solution and oxidize the absorbed sulfur oxide by means of the manganese salt; and

b. blowing air through the absorbent solution from step a) to oxidize sulfite ion in the solution to sulfate ion;

c. neutralizing the solution from step a) by adding calcium carbonate or calcium hydroxide whereby gypsum is precipitated; and

d. separating the gypsum and reusing the solution as the absorbent solution in step a).

Re. 29,814
LANOLIN FATTY ACIDS, POLYSILOXANE AND WATER-SOLUBLE POLYMER CONTAINING SKIN CONDITIONING EMULSION

William Earl Snyder, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Original No. 3,953,591, dated Apr. 27, 1976, Ser. No. 464,884, Apr. 29, 1974. Application for reissue May 6, 1977, Ser. No. 794,582

Int. Cl.[2] A61K *7/48*

U.S. Cl. 424—81 **9 Claims**

1. A skin conditioning emulsion composition comprising:

A. [a fatty acid or a mixture of fatty acids having an average carbon chain length of 10 to 31 carbon atoms wherein from about 20% to about 80% of the acid groups are neutralized;] *lanolin fatty acids having from about 20% to about 80% of the acid groups neutralized;*

B. a polysiloxane fluid having the formula — $[R_2SiO]$ — wherein R is C_1–C_4 alkyl or phenyl and wherein said polysiloxane has a viscosity at 25° C of from about 5 to about 2,000 centistokes;

C. a water-soluble polymer having a molecular weight of about 500 to about 5,000,000 selected from the group consisting of quaternary ammonium substituted cellulose ether derivatives, hydroxyethyl cellulose, hydroxypropyl cellulose, a polymer of acrylic acid crosslinked with from 0.75% to 2.00% of a crosslinking agent selected from the group consisting of polyallyl sucrose and polyallyl pentaerythritol, methyl cellulose, sodium carboxymethyl cellulose, polyvinyl pyrrolidone, polyvinyl alcohol and polyvinyl methyl ether maleic anhydride; and

D. water[.];

wherein (A) and (B) are present in a weight ratio of from about 12:1 to about 1:20 and comprise from about 0.35% to about 5.0% by weight of the total skin conditioning composition, and (C) comprises from about 0.015% to about 0.5% and (D) comprises from about 50% to about 94.5% by weight of the total skin conditioning composition.

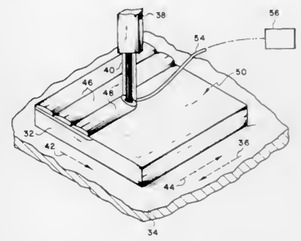
Re. 29,815
CLADDING

Daniel S. Gnanamuthu, Weymouth, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Original No. 3,952,180, dated Apr. 20, 1976, Ser. No. 529,379, Dec. 4, 1974. Application for reissue Jun. 15, 1977, Ser. No. 806,924

Int. Cl.[2] B23K *27/00*

U.S. Cl. 219—121 LM **17 Claims**



1. Cladding method comprising,

continuously scanning a metal substrate surface with a CW operating laser beam having a core power density of [29] *20* to 500 kilowatts per square inch in linear traces with a longitudinal scanning speed along such linear trace of 5–50 inches per minute.

the scanning being carried out in a pattern to incrementally trace the surface with spaced scan line patterns,

simultaneously feeding a cladding metal to the substrate surface to intercept essentially the entire laser beam core and absorb essentially the entire beam energy so that the cladding material is melted and superheated and with application of laser beam power thereto for an essentially continuous period of at least 100 milliseconds and so that the adjacent substrate surface is heat treated at the same time to improve its wettability but melted only to the extent of a superficial surface layer thereof.

PLANT PATENTS

GRANTED OCTOBER 24, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,320

APPLE TREE (COOP 14)

Edwin B. Williams, Lafayette; Jules Janick; Frank H. Emerson, both of West Lafayette, all of Ind.; Daniel F. Dayton, Urbana, Ill.; L. Fredric Hough, Bloomsbury, and Catherine H. Bailey, Englishtown, both of N.J., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 4, 1977, Ser. No. 821,641

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct apple tree substantially as shown and described particularly characterized by resistance to apple scab, very good fresh fruit quality, fine flesh texture, and maturity approximately 6 weeks before 'Delicious' and 2½ weeks before 'Prima'.

4,321

APPLE TREE (COOP 10)

Edwin B. Williams, Lafayette; Jules Janick; Frank H. Emerson, both of West Lafayette, all of Ind.; Daniel F. Dayton, Urbana, Ill.; L. Fredrick Hough, Bloomsbury, and Catherine Bailey, Englishtown, both of N.J., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 4, 1977, Ser. No. 821,642

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct apple tree substantially as shown and described, particularly characterized by resistance to apple scab, good fresh fruit quality, smooth waxy skin, aromatic, ability to maintain quality in storage without shriveling and maturing approximately 1 week after 'Delicious', along with 'Golden Delicious' and 4½ weeks after 'Prima'.

4,322

APPLE TREE (COOP 13)

Edwin B. Williams, Lafayette; Jules Janick; Frank H. Emerson, both of West Lafayette, all of Ind.; Daniel F. Dayton, Urbana, Ill.; L. Fredric Hough, Bloomsbury, and Catherine Bailey, Englishtown, both of N.J., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 4, 1977, Ser. No. 821,644

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct apple tree substantially as shown and described particularly characterized by resistance to apple scab, good fresh fruit quality, smooth waxy skin, ability to maintain quality in storage, and maturity approximately 7 weeks before "Delicious" and 3½ weeks before "Prima".

4,323

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia St., Ontario, Calif. 91761

Filed Sep. 29, 1977, Ser. No. 837,745

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—2 **1 Claim**

1. A new and distinct variety of rose plant of the climbing class, substantially as herein shown and described, characterized particularly as to novelty by the long, strong and vigorous canes which attain an average mature height of 4 to 6 feet, the habit of bearing flowers on stems which grow as laterals from the climbing canes while retaining the desirable characteristics of polyanthas in color and quantity of blooms and foliage.

4,324

CHRYSANTHEMUM NAMED SUN DEVIL

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 17, 1978, Ser. No. 878,939

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new variety of chrysanthemum plant, substantially as herein shown and described, characterized by the clear yellow color of the ray florets of its medium-sized blooms of decorative flower form, by its 7-week flowering response, by its relatively upright plant habit, and by its medium plant height with strong stems and small to medium-sized foliage.

4,325

CHRYSANTHEMUM NAMED AGGIE

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 17, 1978, Ser. No. 878,940

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—80 **1 Claim**

1. A new variety of chrysanthemum plant, substantially as herein shown and described, characterized by the medium pink color of its blooms, its uniform flowering response and its good performance as a potted plant for spring, summer and fall culture and as a natural season garden plant having average garden chrysanthemum vigor.

PATENTS

GRANTED OCTOBER 24, 1978

ERRATA

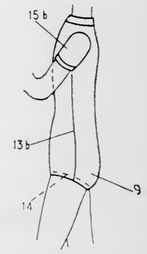
For CLASS	See PATENT NO.
016–066	4,121,319
084–001.01	4,121,348
405–296	4,121,426
405–130	4,121,427
137–101	4,121,602
221–037	4,121,726
526–076	4,121,807
273–249	4,121,823
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521–093	4,122,046
521–106	4,122,047
521–026	4,122,048
521–136	4,122,049
521–095	4,122,050
528–089	4,122,067
528–093	4,122,068
528–093	4,122,069
528–149	4,122,070
526–017	4,122,071
528–289	4,122,072
526–026	4,122,074
528–332	4,122,075
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426–003	4,122,195
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GRANTED OCTOBER 24, 1978

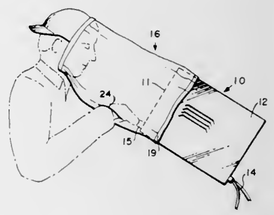
GENERAL AND MECHANICAL

4,121,302
ARTICLES OF CLOTHING
Charles Belpaume, Bouc Bel Air, France, assignor to Innovations pour L'Elegance Masculine, France
Filed Aug. 21, 1975, Ser. No. 606,646
Claims priority, application France, Aug. 21, 1974, 74 29185
Int. Cl.[2] A41B *9/06*
U.S. Cl. 2—113 **3 Claims**



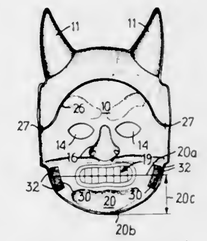
1. An article of clothing for enveloping the upper part of the body comprising; front and rear pieces with said rear piece having an extension in the form of a shaped flap so that said rear piece is longer than said front piece, said shaped flap having a curved lower contour with its concavity facing upwards and configured to fit under the buttocks and possessing sufficient elasticity to assure good holding and support of the buttocks to thereby avoid creeping or riding up of the article bottom along the buttocks, the lower posterior portion of said shaped flap having a pronounced anatomical curvature defined by the combination of the article fabric being comprised of longitudinally and laterally extensible fibers, by said rear piece having two sides defined by straight V-shaped edges when the article is in the non-worn state and each of which defines a substantial opening angle opening towards the outside and both sides being separated from one another at their bottom ends by a curved edge defining said curved lower contour and by an elastic ribbon surrounding the lower portion of the article and which can be extended one-third of its initial relaxed length.

4,121,303
LIGHTSHIELDING HOOD FOR AN ELECTRICAL INSTRUMENT
Lawrence L. Reece, 1480 Merrill Rd., San Juan, Calif. 95045
Filed Oct. 17, 1977, Ser. No. 842,794
Int. Cl.[2] A42B *1/06*
U.S. Cl. 2—205 **4 Claims**



1. A hood for viewing a video display unit or like device having a front screen in a cabinet with controls adjacent the screen for adjusting the device, said hood comprising:
a tubular flexible sleeve of a material that is substantially impervious to light having first and second ends and forming a center opening and having a first opening in said first end communicating with said center opening and of a sufficient diameter and flexibility to fit around the cabinet;
means for holding said sleeve around the cabinet;
said sleeve second end forming a second opening communicating with the sleeve center opening and being of sufficient size for fitting over the face of a person using the video display unit; and
means for maintaining the sleeve over the person's face whereby the user can adjust the sleeve for viewing the oscilloscope screen through the second opening, the center opening and the first opening in the sleeve.

4,121,304
ARTICULATED MASK
Benjamin Cooper, 323 Derby Ave., Woodmere, L.I., N.Y. 11598
Filed Mar. 28, 1977, Ser. No. 782,048
Int. Cl.[2] A41G *7/02*
U.S. Cl. 2—206 **7 Claims**

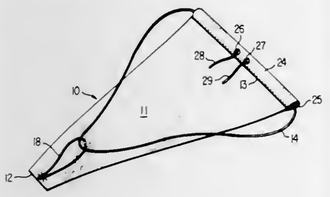


1. An ornamental face mask comprising:
an upper face portion, said upper face portion depicting a face from the top of the head to the upper jaw;
a lower face portion, said lower face portion depicting the lower jaw of a face; and
a plurality of elastic bands suitably attached to the upper and lower face portions for hinging the upper and lower face portions together, said elastic bands and their attachment to the face portions constituting the sole interconnection between said upper and lower face portions, at least one of said bands being located at each side edge of the mask so as to bridge the upper and lower face portions.

4,121,305
PANTIES
Stephen D. Kolker, 124 E. 65th St., New York, N.Y. 10021
Filed Feb. 22, 1977, Ser. No. 770,356
Int. Cl.[2] A41B *9/04*
U.S. Cl. 2—406 **10 Claims**

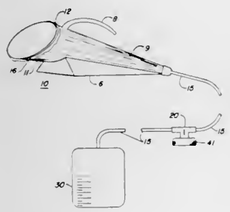
1. A panty comprising:
a triangular shaped crotch-piece having parallel front and rear edges joined by sides which converge from the front edge to the rear edge to form a panel with four corners and four sides;
a first relatively thin string attached to the crotch-piece adjacent the corners of the front edge of the crotch-piece, and
a second string of substantially smaller length than said first string having the free ends thereof attached adjacent one another to a single point adjacent the rear edge of the crotch-piece, said second string forming a loop through

which said first projects wherein when the panty is worn the first string extends over the pelvis of the wearer and



the second string extends along the cleavage between the buttocks of the wearer.

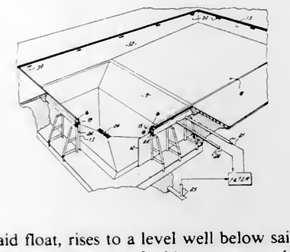
4,121,306
URINAL
Bernard B. Bringman, and Genevieve M. Goodwin, both of 1111 N. 8th St., Boise, Id. 83702
Filed Apr. 15, 1977, Ser. No. 787,892
Int. Cl.[2] A61G 9/00
U.S. Cl. 4—144.2 **6 Claims**



1. A urinal comprising:
a substantially conical shaped cylinder including an integral base portion having a planar undersurface for support, said cylinder having an opening at the terminal apex thereof;
a conduit connected at one end to the terminal apex of said cylinder communicating with the opening and connected at the other end to a remote reservoir;
a three way valve disposed within said conduit, said valve having one inlet and two outlets;
a remote reservoir communicating with one of the outlets; and
a liner having a thin, flexible, substantially conical shaped bag portion for engaging the interior of said cylinder and a flexible hose portion, conical in shape and having a centrally disposed conduit for urine passage, the hose portion adapted to sealingly engage the interior of said cylinder adjacent its terminal apex.

4,121,307
POSITIVE FLOW SWIMMING POOL GUTTER
James A. Patterson, Columbus, Ohio, assignor to Patterson Enterprises, Columbus, Ohio
Continuation-in-part of Ser. No. 592,950, Jul. 3, 1975, and Ser. No. 653,512, Jan. 29, 1976, abandoned, which is a division of Ser. No. 592,950,. This application Feb. 4, 1977, Ser. No. 765,534
Int. Cl.[2] E04H 3/20
U.S. Cl. 4—172.17 **1 Claim**

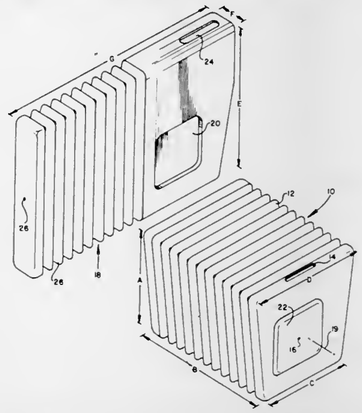
1. In a swimming pool having generally vertical walls and a filter system adjacent said pool, a nonflooding perimeter gutter system for returning water from said pool to said filter system comprising,
an open gutter section located adjacent the top of said vertical walls and extending around the perimeter of said pool and having an inner wall, a back wall and a bottom wall, said upper gutter section being operative to accommodate sudden water surges over said inner wall,
a suction pipe in said gutter adjacent said bottom wall extending around the perimeter of said pool and having passageways connecting said pipe with said gutter, said passageways consisting of a plurality of holes in the wall thereof spaced along its length,
said suction pipe forming a closed lower gutter section around the perimeter of the pool adjacent said upper gutter section, said lower gutter section, at all times during operation, being completely filled with water,
a plurality of skimmer openings spaced around the perimeter of said pool and located in said inner gutter wall adjacent the top of said inner gutter wall,
means independently and automatically closing each said opening, said closing means including a float located in said gutter and associated with each said opening, said float being located well below said skimmer openings but above said lower gutter section, and effecting the closing of said openings when the level of water in said gutter,



lifting said float, rises to a level well below said opening and well above the level of said passageways in said second gutter section,
said skimmer openings and said closing means continuously supplying water from said pool to said upper gutter section at locations spaced around the perimeter of said pool to maintain a constant flow of water to said lower gutter section above said passageways during both periods of quiescence and periods of greater pool activity, and
suction means connected to said lower gutter section for positively withdrawing water therefrom and directing it to said filter system,
thereby continuously withdrawing water simultaneously from all portions of said perimeter gutter through said plural passageways in order to maintain a constant flow of water in said gutters with a constant removal of water from said gutters, without relying on gravity flow to said filter system, thereby creating substantially uniform surge capacity around the perimeter of said pool,
the maintenance of water in said upper section preventing air from flowing into said lower gutter section and into said pump.

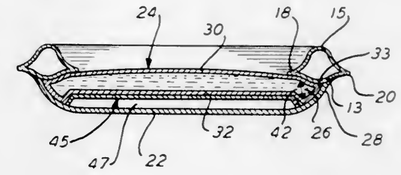
4,121,308
WATER CLOSET WATER SAVING DEVICE
Clifford Raab, Gardena, Calif., assignor to Displacement Systems Corporation, Torrance, Calif.
Filed Apr. 22, 1977, Ser. No. 790,145
Int. Cl.[2] E03D 1/00; A47K 17/00
U.S. Cl. 4—415 **4 Claims**

1. A container for reducing water consumption during the flushing of a water closet having a water inlet valve at one end and a water output valve at the center, said container comprising a pleated hollow and substantially rectangular prism made of impervious flexible material and having the pleats thereof disposed in vertical planes between ends of said container, and an aperture formed at the top of said container to enable water to fill the container when it is placed in said water closet on the bottom thereof with said pleats partially compressed to enable its installation between front and back walls of said water closet at one end thereof remote from said water inlet valve without interfering with operation of the water inlet valve or operation of said water outlet valve said pleated container



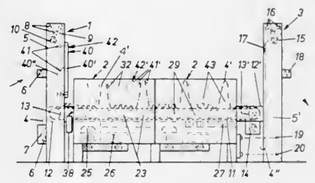
having a demension in a direction normal to the plane of said pleats greater than the distant between said front and back walls to require said pleats to be compressed upon installation of said container, whereby the partially compressed pleated walls will hold said container in place as said water closet empties out and refills during a flushing operation.

4,121,310
FLOTATION SUPPORT SYSTEM WITH FLUID ACCUMULATION MEANS
Jody A. Gorran, East Windsor, N.J., assignor to Medpro, Inc., East Brunswick, N.J.
Continuation-in-part of Ser. No. 696,590, Jun. 16, 1976, Pat. No. 4,065,819. This application Sep. 26, 1977, Ser. No. 836,435
Int. Cl.[2] A47G 9/00; A47C 27/08
U.S. Cl. 5—370 **9 Claims**



1. A flotation support system, comprising in combination:
a perimeter frame surrounding a fluid-tight recessed nesting receptacle:
a liquid-containing envelope being positioned in said nesting receptacle; and
rigid platform means positioned in said nesting receptacle, the top of said platform means supporting said envelope in spaced relationship above the underlying floor of said nesting receptacle, a space being defined between said platform means top and receptacle floor for accumulation of liquid leaking from said envelope.

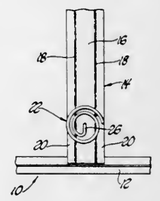
4,121,311
PROCESS AND APPARATUS FOR THE TREATMENT OF LENGTHS OF TEXTILE MATERIAL
Arnfried Meyer, Würzburger Strasse, 7100 Heilbronn, Germany
Filed Oct. 6, 1976, Ser. No. 729,986
Claims priority, application Austria, Oct. 6, 1975, 7617/75
Int. Cl.[2] D06B 5/04
U.S. Cl. 8—149.3 **38 Claims**



1. Process for the continuous, tensionless treatment of textile materials or similar web-shaped flat materials such as drying, shrinking, finishing, or the like, comprising the steps of:
conveying a length of material in gathered form through at least one treatment zone, and
intermittently directing at least one jet of a fluid only from below the length of the material so as to straighten and compress the material at the treatment zone by alternatingly lifting the length of material and permitting the same to fall.

12. An arrangement for the continuous, tensionless treatment of textile materials or similar web-shaped flat materials, the arrangement comprising:
treatment means for treating the materials including a housing having a plurality of spaced partitions arranged therein so as to define with side walls of the housing at least one treatment zone,
means for conveying a gathered length of material through said treatment means.

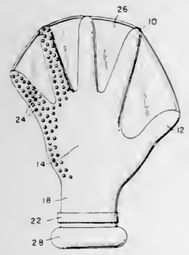
4,121,309
FURNITURE SPRING SUPPORT
William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.
Division of Ser. No. 746,836, Dec. 2, 1976. This application Jan. 9, 1978, Ser. No. 867,988
Int. Cl.[2] A47C 23/02
U.S. Cl. 5—264 R **5 Claims**



1. A furniture assembly comprising: frame means including a plurality of metal slats for supporting coil springs, a plurality of coil springs with each including a tail portion, a plurality of spring retainer means disposed in said slats, each of said retainer means including an aperture and an upset portion disposed about said aperture, a tail portion of a coil spring disposed in said aperture, said aperture being sufficiently large to allow said tail to be withdrawn therefrom.

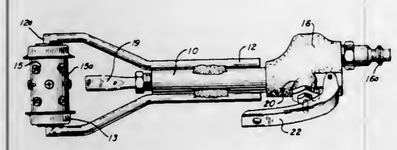
means provided at said treatment zone for intermittently directing at least one jet of a fluid only from beneath the length of material in the at least one treatment zone to alternatingly lift the length of material and permit the same to fall.

4,121,312
SWIM GLOVE
William Hayward Penney, 15 Putnam St., Revere, Mass. 02151
Filed Feb. 7, 1977, Ser. No. 765,878
Int. Cl.[2] A63B *31/02*
U.S. Cl. 9—308 **6 Claims**



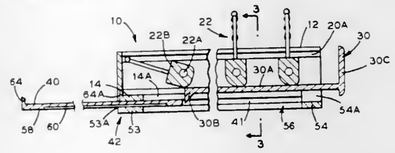
1. A glove for use in connection with swimming, comprising a glove body, said glove body having a plurality of finger stalls and a thumb stall, a plurality of flexible sheets, said plurality of flexible sheets fixedly secured to adjacent said finger stalls and to one of said finger stalls and said thumb stall, said plurality of flexible sheets disposed secured along the entire length of said plurality of finger stalls and the entire length of said thumb stall, a plurality of embossed heads, a portion of said plurality of embossed heads being disposed on at least one side of said glove body and adjacent the palm portion thereof, a hollow walled flotation collar, said flotation collar fixedly secured to said glove body adjacent an open hand receiving end thereof, means to inflate said collar with a gas and releasably contain said gas within said collar whereby said collar provides bouyancy for said glove body, and whereby said collar is disposed located adjacent the wrist portion of a user, wherein said glove body includes a slit therein, said slit being disposed extending substantially transverse to said hand receiving end of said glove body and communicating therewith, said slit being located on a side of said glove body opposite the location of said portion of said plurality of said embossed heads, wherein said flotation collar is split along a line, said line being aligned with said slit, means to secure portions of said glove body disposed adjacent the marginal edges of said slit together thereby securing said glove body about a portion of the wrist of a user.

4,121,313
CLEANING TOOL FOR POLISHING PADS
Frederich K. Mayer, 404 154th Pl., Calumet City, Ill. 60409
Filed May 26, 1977, Ser. No. 800,741
Int. Cl.[2] B08B *11/00*
U.S. Cl. 15—3 **6 Claims**



1. A cleaning tool for rotary polishing pads comprising an elongated shank presenting bearing means at one end, a transverse cylindrical roller journaled on the bearing means, a plurality of studs projecting from the periphery of the roller, and means carried by the shank and operable to direct a jet of compressed air against said periphery.

4,121,314
COLLAPSIBLE BRUSH
Marcus A. Nathe, P.O. Box 854, Kailua, Oahu, Hi. 96734
Filed Apr. 14, 1977, Ser. No. 787,476
Int. Cl.[2] A46B *9/10*
U.S. Cl. 15—203 **7 Claims**

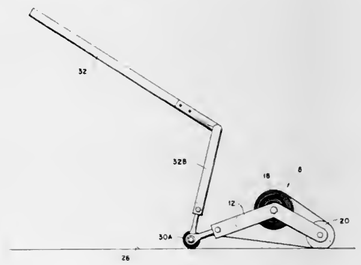


1. In a collapsible brush comprising a housing having a bottom surface, a first and second side surface extending upwardly from said bottom surface at the edges thereof, and a cover member, each of said first and second side surfaces having a first groove and a second groove formed therein facing toward the other side surface, said first groove being spaced from said second groove and positioned near said bottom surface, each of said first and second grooves extending approximately the length of said side surfaces so that said cover member may be slid alternatively through said first grooves or said second grooves, said housing further comprising an open end for the reception therethrough of said cover member and a closed end connecting said first and second side surfaces together at one end thereof, and a plurality of brush members, each of said plurality of brush members being rotatably mounted in said housing and rotated in response to movement of said cover member in said first grooves, each brush member having a plurality of bristles which protrude outwardly of said housing when said cover member is inserted in said first grooves and which are contained within said housing when said slide member is in said second grooves, wherein the improvement comprises: said bristles for each of said plurality of bristle members forming a curved outer combing surface, said curved outer combing surface being formed such that the length of each of said plurality of bristles is shorter the closer it is to one of said first and second side surfaces; and handle means, said handle means comprising a sliding handle, means attached to said bottom surface of said housing for slidably receiving said sliding handle therein for alternate extension and retraction therefrom, said means for slidably receiving said sliding handle comprising an extension having an end wall attached to said bottom surface at one end thereof near said open end of said housing, first and second side walls also attached to said bottom surface, and a bottom wall extending at right angles to said end wall, parallel to and spaced from said bottom surface so that a channel opening is formed between said bottom wall and said bottom surface for the reception therein of said sliding handle and interengaging means between said sliding handle and said cover member whereby when said cover member is inserted in said first groove said sliding handle is propelled to an extended position.

4,121,315
BOWLING LANE DUSTER
Arthur L. Buser, 2419 S. 128 E. Ave., Tulsa, Okla. 74129
Filed May 17, 1977, Ser. No. 797,625
Int. Cl.[2] A47L *13/20*
U.S. Cl. 15—228 **5 Claims**

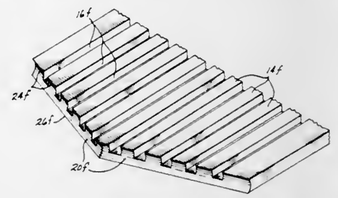
1. A device for cleaning bowling alley lanes comprising:
a frame having parallel end pieces spaced apart wider than the width of a bowling alley lane;
a supply reel having a roll of cleaning paper thereon, the reel being rotatably mounted between said frame end pieces;

an elongated cylindrical pad of resilient material extending between and mounted on said frame end pieces, said pad spaced from and parallel to and below said supply reel;
a takeup reel rotatably mounted between said frame end pieces, parallel to and below said supply reel and parallel to said pad but on the far side of said supply reel, paper from said supply reel being looped over said pad and around the takeup reel whereby said pad holds the paper in contact with the bowling alley lane as the device is pulled over a lane;



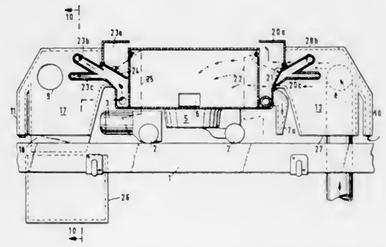
a handle for pulling the device over a bowling alley lane, the handle being pivotally secured to said frame and pivotal about the axis of said takeup reel;
a ratchet gear axially affixed to said takeup reel at one end thereof;
a ratchet tooth pivoted to said handle at one end, the other end slidably engaging said ratchet gear;
whereby each time the device is lifted from a lane and said handle is pivoted relative to said frame, said takeup reel is rotated to advance paper from the supply reel to expose clean paper between said pad and the bowling alley lane being cleaned.

4,121,316
HAND HELD SCRAPER
Michael W. Perry, 2235 S.W. 313, Federal Way, Wash. 98003
Filed Nov. 29, 1976, Ser. No. 745,649
Int. Cl.[2] A47L *1/06, 1/16*
U.S. Cl. 15—236 R **8 Claims**



2. A scraper for removing frozen water from a transparent surface comprising: a hard essentially flat elongated flexible member having a series of recesses extending in a direction essentially perpendicular to one surface of the member, at least one end of the elongated flat member extending laterally with said end having cutting edges to contact and remove frozen water from a transparent surface, the recesses being located to extend longitudinally essentially parallel to each other and to open at the end of the plate that extends laterally, and the laterally extending end being concave in shape.

4,121,317
MOBILE PNEUMATIC APPARATUS FOR SUCKING AND BLOWING FIBER DUST FROM TEXTILE MACHINES
Hubert Sohler, Wangen im Allgäu, Germany, assignor to Hubert Sohler GmbH, Wangen im Allgau, Germany
Filed Apr. 20, 1976, Ser. No. 678,590
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1975, 2518522
Int. Cl.[2] A47L *5/14*
U.S. Cl. 15—312 A **11 Claims**

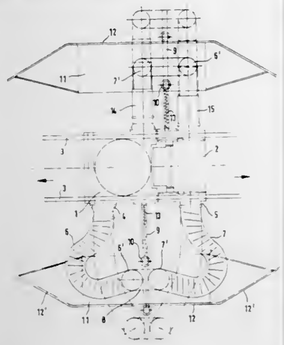


1. In a pneumatic apparatus for removing particulate matter surrounding textile machines comprising, within a housing, a fan having on the suction side (upstream) thereof a first suction member and a second suction member, said housing defining respective passages for each of said suction members to the inlet of said fan, said passages being generally opposed to one another such that air being sucked through one of said passages runs in a generally opposite direction to air being sucked through the other of said passages, said fan having blower members on the pressure side (downstream) of said fan, first and second filter means within each of said respective passages for removing entrained particles from air being sucked through said passages, the improvement which comprises, within the respective passages, first and second shut-off members between said first and second filter means, respectively, and said fan; first and second blow ducts connecting the pressure side of side fan with the upstream said of said first and second shut-off members, respectively, said shut-off members being open and said blow ducts being closed during most of the operating time; and means adapted to alternately close said first shut-off member while simultaneously opening said first blow duct for a brief interval during the operating time, and to close said second shut-off member while simultaneously opening said second blow duct for another brief interval during the operating time, so as to alternately and separately detach said particulate matter from each of said first and second filter means, while simultaneously continuing to pass an air stream through the other of said first and second filter means to thereby continue to pass an air stream free of said particulate matter through said fan and respective blow dust.

4,121,318
TEXTILE MACHINE CLEANING SYSTEM
Ernst Jacobi, Friedberg, Fed. Rep. of Germany, assignor to Ernst Jacobi & Co. KG, Augsburg, Fed. Rep. of Germany
Filed May 7, 1976, Ser. No. 684,375
Claims priority, application Fed. Rep. of Germany, May 7, 1975, 2520306; Jun. 5, 1975, 2525083
Int. Cl.[2] B08B *5/00*
U.S. Cl. 15—312 A **8 Claims**

1. A textile cleaning device which is movable along a textile machine in combination with a yarn-attachment device which is arranged for movement along the textile machine, wherein said cleaning device comprises:
at least one air hose;
a hose-supporting device;
a blower housing with which one end of the hose is in fluid

communication, wherein said hose at least partially overlaps the movement path of the yarn-attachment device, and wherein a portion of said hose is attached to said hose-supporting device, said hose-supporting device having actuator means arranged to cooperate with cooperating means on the yarn-attachment device for moving the hose between a first position in which it is operative to effect cleaning of said textile machine and a second position in which it permits the unimpeded passage of said yarn-attachment device.



4,121,319

RELEASABLE RETAINING MEANS

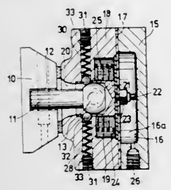
Anthony Harold Ernest Welch, Corsham, England, assignor to Dorgard Limited, Corsham, England

Filed May 3, 1977, Ser. No. 793,433

Claims priority, application United Kingdom, May 11, 1976, 19352/76

Int. Cl.[2] **E05F** *3/00*

U.S. Cl. 16—66 **9 Claims**



1. Retaining means for controlling displacement of an object from a predetermined position relative to another object, comprising a first part for mounting on one of the objects and a second part for mounting on the other object and having gripper means for engagement with the first part, release means spring-biased into a first position in which operation of the gripper means is inhibited and pneumatically operated means for holding the release means in a second position in which operation of the gripper means is not inhibited.

4,121,320

AIR CONTROLLED GUTTER CLEANER

Alexander Feiner, 4 Sailer's Way, Rumson, N.J. 07760

Filed Jun. 27, 1977, Ser. No. 810,298

Int. Cl.[2] **A47L** *5/00*

U.S. Cl. 15—406 **9 Claims**

1. An apparatus for cleaning a gutter affixed to an overhead structure, said gutter having front and rear edges disposed along its length and having generally a U shape with the opening of said U facing upward, said rear edge being the edge affixed nearest said structure, said cleaning apparatus comprising:

a head portion;

means for maintaining said head portion in a relatively fixed position with respect to said open portion of said gutter while still allowing said head portion to move along the length of said gutter;

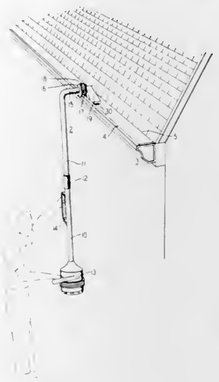
a hollow support arm connected to said head portion;

means for applying forced air to an input end of said hollow support portion so that said air moves through said hollow support portion to an output end of said arm;

said head having an input port adapted for connection to said output end of said support arm and for receiving said forced air moving through said hollow portion of said arm;

said head having an output port with an opening width substantially the same as the width of said gutter and arranged to force said received air into said gutter in a direction along the length of said gutter; and

a baffle connected to said head portion, said baffle connected along a side of said head portion opposite the connection of said support arm and nearest said rear edge of said gutter, said baffle arranged to deflect material forced from said gutter by said forced air movement along said gutter away from said structure.



4,121,321

DEVICE FOR MODELLING POULTRY

Jacob Hendrik Mosterd, Barneveld, Netherlands, assignor to MOBA Holding Barneveld B.V., Barneveld, Netherlands

Filed Apr. 1, 1977, Ser. No. 783,565

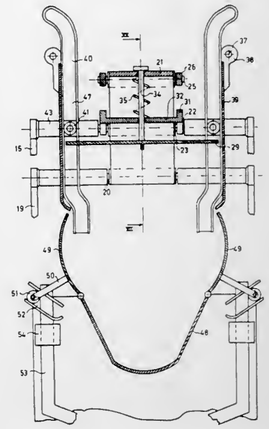
Claims priority, application Netherlands, Apr. 7, 1976, 7603625

Int. Cl.[2] **A22C** *21/00*

U.S. Cl. 17—11 **10 Claims**

1. In a device for modelling poultry, a modelling apparatus including a first shell member, two further shell members each having free edges pivotably connected to opposed end edges of said first shell member, said further shell members being pivotable from an open position, in which the said free ends are spaced from each other towards a closed position in which said free ends substantially engage to form a tube in operable cooperation with said first shell member, and driving means for pivoting said further shell members from the open into the closed position, said device further being provided with pivotably mounted flaps (**39**) having free edges and movable from a first position into a second position, said free edges being spaced apart further in the first than in the second position, and

in the second position at least one edge of the flaps being adjacent to the free edges of the said further shell members when said further shell members are in the open position and means for moving said flaps.



4,121,322

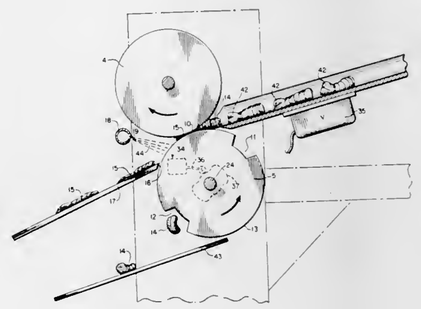
CRUSTACEAN MEAT EXTRACTION MEANS

James E. Rutledge, 13543 Honey Dr., Baton Rouge, La. 70808

Filed Oct. 25, 1977, Ser. No. 845,343

Int. Cl.[2] **A22C** *29/00*

U.S. Cl. 17—73 **9 Claims**



8. An apparatus for extraction of meat from a crayfish which comprises:

(a) a rotatable top roller;

(b) a rotatable bottom roller positioned adjacent and below said top roller to form a nip for receiving said crayfish tail first, said bottom roller having at least one groove at said bottom roller's outer surface, said groove being of sufficient size to hold said meat extracted from said crayfish;

(c) A drive means connected to said bottom roller for rotating said bottom roller; and

(d) a conveyor assembly forward said rollers and positioned to direct said crayfish tail first to said nip.

4,121,323

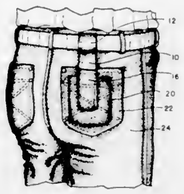
POCKET OBJECT PROTECTING DEVICE

Steve Letostak, South Plainfield, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 17, 1977, Ser. No. 842,918

Int. Cl.[2] **A44B** *21/00*

U.S. Cl. 24—3 H **4 Claims**



1. A pocket object protecting device for an object in a pocket of a pair of pants worn with a belt around the waist, said device comprising

a body member having spaced opposite first and second ends;

clip means at the first end of the body member for releasably clamping a belt of a user; and

a wedge extending from said body member intermediate the clip means and the second end of said body member for abutting an object in a pocket of the pair of pants to releasably secure the object in the pocket.

4,121,324

FASTENING DEVICE

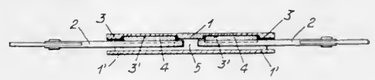
Stephan Marbacher, Schmidgasse 2, 6300 Zug, Switzerland

Filed Jun. 15, 1977, Ser. No. 806,896

Claims priority, application Switzerland, Jun. 16, 1976, 7669/76

Int. Cl.[2] **A44B** *21/00*

U.S. Cl. 24—73 MS **5 Claims**



1. A magnetic fastening device comprising first and second fastening components adapted to be attached respectively to two articles which are to be fastened to one another, said first fastening component comprising a fixed component having a pair of flat planar members and intervening lateral members for holding said pair of flat planar members in superposed, spaced, generally parallel relationship to one another to define an open-ended slideway therebetween, the spacing between said pair of flat planar members defining the height of said slideway and being substantially less than the widths and lengths of said pair of flat planar members, one of said flat planar members having an interior surface which faces the interior of said slideway and which as a recess therein, at least a portion of said recess being bounded by magnetic material, said second fastening component comprising an elongated, movable flat element adapted to be inserted into an open end of said slideway for slidable movement along said slideway in a direction parallel to the planes of said pair of flat planar members, a magnet attached to and upstanding from the one of the flat surfaces of said movable flat element which faces the interior recessed surface of said one of said flat planar members, said magnet being dimensioned to fit into said recess, the combined thickness of said flat movable element and the magnet attached thereto being less than the height of said slideway, whereby said first and second components may be fastened to one another by inserting said movable flat element into the open end

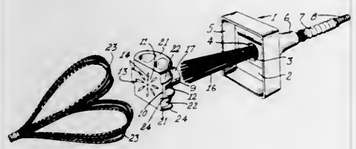
of said slideway and thereafter sliding said movable element along said slideway in a first direction parallel to the planes of said pair of flat planar members until said upstanding magnet on said movable element is positioned in opposing relation to said recess whereafter said flat movable element and its attached magnet are moved in a second direction transverse to said first direction by the magnetic forces existing in said second direction to cause said magnet to enter into said recess and to be magnetically retained therein so as to prevent said first and second components from being detached from one another solely due to forces subsequently applied therebetween in directions parallel to said first direction, and whereby said first and second components may thereafter be unfastened from one another by first moving said movable element against said magnetic forces in a direction opposite to said second direction away from said one of said flat planar members and toward the other of said flat planar members in said slideway and then sliding said movable element along said slideway in a direction opposite to said first direction until said movable element has been withdrawn from the open end of said slideway.

4,121,325

CABLE ANCHORING AND COUPLING EQUIPMENT

Konstant E. Bruinette, Johannesburg, and Ulrich E. O. B. Brand, Verwoerdburg, both of South Africa, assignors to Triple Bee Prestress (Proprietary) Limited, Pretoria, South Africa

Filed Dec. 6, 1976, Ser. No. 747,872
Int. Cl.[2] F16G *11/04, 11/00*
U.S. Cl. 24—122.6 **5 Claims**



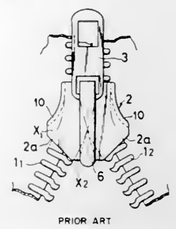
1. An anchor and coupler, for
a first reinforcing cable member which has a plurality of individual cable free ends at one end thereof, and
a second reinforcing cable member which terminates in at least one loop including at least one individual cable therein,
said anchor and coupler comprising:
(a) a base plate having means defining an aperture therethrough, through which said one end of said first reinforcing cable may be passed, so that the individual cable free ends become disposed beyond said base plate; and
(b) a combined anchor and coupler body which includes:
(i) means for anchoring said free ends of said first reinforcing cable member;
(ii) lateral projection means on said anchoring means and including means providing an external surface curved convexly towards said base plate; and
(iii) spacer means on said anchoring means, which, in use, engage axially between said anchoring means and said base plate proximally of said aperture and limit proximity of the lateral projection means to the base plate, so that sufficient space remains axially between said convexly curved external surface and said base plate,
so that said at least one loop of said second reinforcing cable may be looped about said lateral projection means and pulled axially forwards into engagement with said convexly curved external surface within said sufficient space.

4,121,326

SLIDER FOR USE IN SLIDE FASTENER

Minoru Kamiya, 2-46-3, Minami-Otsuka, Toshima-ku, Tokyo, Japan

Filed Jun. 29, 1977, Ser. No. 811,324
Int. Cl.[2] A44G *19/26*
U.S. Cl. 24—205.15 R **9 Claims**



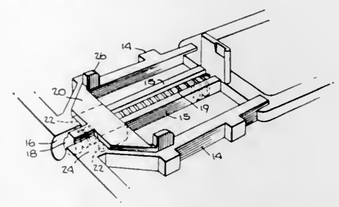
1. A slider, for use in a slide fastener having fastening elements, comprising:
upper and lower flat portions having inturned side flanges;
an interconnecting web which interconnects said upper and lower flat portions; and
a pair of both upper and lower lip portions; wherein said interconnecting web, said upper and lower flat portions and said inturned flanges define two channels at the diverging end of said slider, and said two channels have a pair of both upper and lower open edges at said diverging end which are coated with their respective said lip portions, said lip portions having turned in portions which are turned in from their respective said flat portions at positions slightly outwardly of said open edges and are adapted to introduce into the slide fastener said fastening elements.

4,121,327

CLIP EJECTOR FOR SAFETY SEAT BELT BUCKLE

Gerald Huntley, Colorado Springs, Colo., assignor to Irvin Industries Inc., Stamford, Conn.

Filed Aug. 1, 1977, Ser. No. 820,436
Int. Cl.[2] A44B *11/25*
U.S. Cl. 24—230 R **12 Claims**



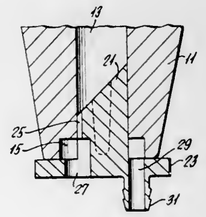
1. A belt buckle having an open front edge adapted to receive a clip and having a clip ejector mechanism comprising:
means to retain and release said clip
a frame on the buckle;
a rail on said frame, said rail having a longitudinal groove;
a movable ejector element having a foot in said groove, said foot being mounted for movement between a protracted position and a retracted position, said movement being parallel to a predetermined axis;
spring means to bias said foot to said protracted position;
a shoulder portion of said ejector element, said shoulder portion facing the open edge of the buckle when said ejector element is in said protracted position to bear against whatever clip is inserted into said open edge;
said ejector element having a body portion, said shoulder portion and said foot extending in substantially opposite directions away from said body portion along a plane substantially perpendicular to said predetermined axis and
a guide member portion of said ejector element, said guide member abutting a wall of said buckle to determine and limit said protracted position.

4,121,328

METHOD OF MANUFACTURING A NEBULIZATION-HUMIDIFICATION NOZZLE

Joseph W. Lindsey, Salt Lake City, Utah, assignor to Arbrook, Inc., Arlington, Tex.

Division of Ser. No. 596,479, Jul. 16, 1975, Pat. No. 3,999,713.
This application May 18, 1976, Ser. No. 687,571
Int. Cl.[2] B23P *15/00*; G01D *15/18*
U.S. Cl. 29—157 C **8 Claims**



1. A method of manufacturing a Venturi-type nozzle having a jet orifice, a Venturi-chamber and an aerosol orifice, comprising the steps of:
forming a housing having a circular passageway including an annular groove at one end thereof said groove end being designated the exit end;
forming a mushroom-shaped insert having a stem and head portions said stem being insertable into said housing passageway within close tolerances and having a longitudinal channel excavated along its outer surface and an enlarged semicircular cavity connected to said channel, said head including a passageway connected to said semicircular cavity, said channel, cavity and head passageway being in alignment; and
inserting said stem into said housing passageway its full measure with said housing groove, said insert channel and head passageway being in alignment and connected, wherein said jet orifice is created at the interface of said insert channel and said housing passageway, said Venturi chamber is created at the interface of said housing groove and said insert stem portion and said aerosol orifice is created by said insert head passageway.

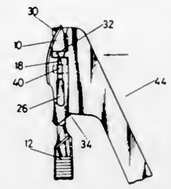
4,121,329

IMPLEMENT FOR ATTACHING AND DETACHING BLADES FROM A BLADED TOOL

Tsuneyoshi Sugiyama, Seki, Japan, assignor to Feather Kogyo Kabushiki Kaisha, Mino, Japan

Filed Feb. 11, 1977, Ser. No. 767,977
Claims priority, application Japan, Dec. 6, 1976, 51-163195
Int. Cl.[2] B25B *27/14*
U.S. Cl. 29—270 **2 Claims**

1. An implement for attaching a blade to and detaching the blade from a bladed tool, comprising: a flat body having an operating edge therealong; and handle extending from said body in the place of the body at an angle to said operating edge; said body having a blade tip holding piece projecting from the operating edge in the plane of the body at the other end of the operating edge from said handle, a blade holding piece projecting from the operating edge in the plane of the body at a point spaced along the operating edge from the blade tip holding piece, a blade base holding piece projecting from the operating edge in the plane of the body and at the end of the operating edge corresponding to the handle and an L-shaped check piece having one leg extending from said operating edge at a point intermediate said blade tip holding piece and said blade base holding piece and substantially perpendicular to the plane of said body and having a second leg extending from the end of the one leg in the same direction and parallel to said holding pieces.

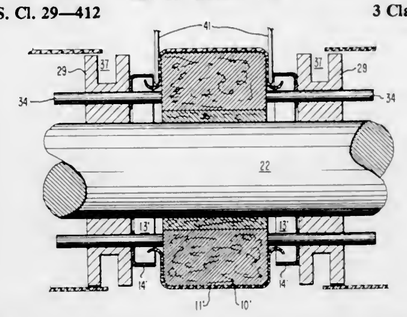


4,121,330

METHOD OF MAKING INK ROLL WITH FABRIC COVER RETENTION AND PROTECTION DEVICE

Russell William Docteur, Canadaigua, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 681,541, Apr. 29, 1976, Pat. No. 4,069,758.
This application Mar. 21, 1977, Ser. No. 782,105
Int. Cl.[2] B23P *17/00*
U.S. Cl. 29—412 **3 Claims**



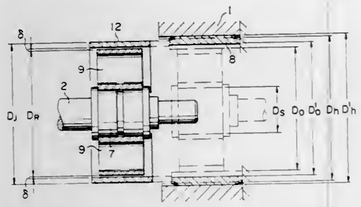
1. A process of manufacturing ink rolls comprising the steps of,
assembling a plurality of ink core roll blanks on an arbor mandrel, with a spacer roller intermediate adjacent core roll blanks and a retaining washer with peripheral clinch lip between the spacer roller and each of the associated blanks,
drawing a sock over the assembled ink rolls while the roll blanks are on the arbor mandrel, and
severing the fabric sock from the length thereof to a length shorter than the original length, and
tucking the shorter length to both sides of the fabric roll, and
pressing each of said retaining washers having a clinch lip into the fabric sock and into the associated core roll to clinch the sock to the original blank core roll to hold the sock taut against the outer surface of the associated core roll.

4,121,331

METHOD FOR MANUFACTURING A FRICTION SPEED CHANGE GEARING

Nobuo Fukuma, Toyota, and Yoshito Katou, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 19, 1977, Ser. No. 760,679
Claims priority, application Japan, Nov. 1, 1976, 51-131536
Int. Cl.[2] B23P *19/00*
U.S. Cl. 29—434 **4 Claims**



1. In a method of manufacturing a friction speed change gearing comprising a housing, first and second rotary shafts rotatably supported in said housing in axial alignment with each other, an inner race supported by said first rotary shaft, an outer race supported by said housing to be co-axial with said inner race, a plurality of cylindrical rollers mounted between said inner and other races and subjected to elastic deformation, a spider member supported by said second rotary shaft to engage said rollers in a manner to allow them to freely rotate around their own axes and to drive or to be driven by said rollers when they make a planetary movement, the improvement comprising the steps of forming a first assembly of said first rotary shaft, inner race, rollers, spider member and second rotary shaft by employing a tubular cylinder member as a means for provisionally enclosing and holding said first assembly therein, forming a second assembly of said housing and outer race, differentiating the temperature of one of said two assemblies relative to that of the other such that the inner diameter of said outer race which is normally smaller than that of the circumcircle of said rollers becomes larger than that of said circumcircle, abutting the end of said provisional cylinder member against the outer race preparatory to inserting said first assembly into said second assembly, inserting said first assembly into said outer race in said second assembly, and removing said temperature differentiation so that said rollers are uniformly compressed between said inner and outer races.

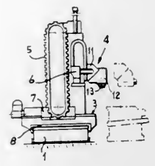
4,121,332

MACHINE TOOL COMPRISING A SINGLE SPINDLE, ADAPTED TO AUTOMATICALLY TAKE UP BOTH THE HORIZONTAL AND THE VERTICAL POSITION, AND A SINGLE DEVICE FOR THE AUTOMATIC CHANGE OF THE TOOLS

Armando Corsi, Piacenza, Italy, assignor to Mandelli S.p.A., Piacenza, Italy

Filed Apr. 12, 1976, Ser. No. 675,803
Claims priority, application Italy, Apr. 14, 1975, 22275 A/75
Int. Cl.[2] B23Q *3/157*
U.S. Cl. 29—568 **4 Claims**

1. A machine tool designed for volume production, comprising a base, a head, means mounting said head on said base for movement relative to said base in a vertical direction and in at least one horizontal direction, said head being in two parts one of which is rotatable on and relative to the other said part about a first axis inclined at an angle of 45 degrees to the horizontal, a single rotatable spindle mounted on said one part of said head for rotation relative to said one part about a second axis inclined at 45 degrees to said first axis, said spindle being parallel to said vertical direction in one rotated position of said one head part and parallel to said horizontal direction in another rotated position of said one head part whereby a tool carried by said spindle may be advanced either horizontally or vertically along the axis of said spindle, means to drive said spindle in rotation both when said spindle is oriented horizontally and when said spindle is oriented vertically thereby to



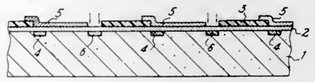
perform machining with the spindle oriented either horizontally or vertically, and means carried by said head for changing tools on said spindle in a said rotated position of said one head part.

4,121,333

METHOD OF MANUFACTURING A TWO-PHASE CHARGE-TRANSFER SEMICONDUCTOR DEVICE AND A DEVICE OBTAINED BY SAID METHOD

Jean Luc Berger; Michel Bourrat; Yves Thenoz, and Daniel Woehrn, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 31, 1977, Ser. No. 801,751
Claims priority, application France, Jun. 4, 1976, 76 17074
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—578 **6 Claims**



1. A method of manufacturing a two-phase charge-transfer semiconductor device operating by charge-coupled techniques, the two said phases respectively comprising a first and a second group of electrodes which on the one hand delimit upon a semiconductor substrate covered with an insulating layer a certain number of MIS capacitors for information storage, and on the other hand serve to control the transfer of information along said device, a single transfer direction being determined by asymmetry means which consist of impurity barriers implanted in the substrate at that start of said capacitors, the word "start" designating the extremity of the MIS capacitors through which the charges arrive on the occasion of a transfer operation whilst the word "end" designating that extremity through which the charges leave, said method comprising the following steps:

(a) on the semiconductor substrate (**1**) a first thin, continuous insulating film (**2**) is formed, itself covered by a second film (**3**) capable of being etched by agents other than those etching the first, and said second film (**3**) is selectively etched in order to remove it from the zones, corresponding to the future zones of asymmetry means belonging to the first group of electrodes;

(b) implantation of impurities constituting the asymmetry means (**4**) belonging to the first group of electrodes is carried out in the free zones of the film (**3**), said second film (**3**) acting as a mask in this context;

(c) said second film (**3**) is then selectively re-etched in order to uncover zones (F) of said first insulating film (**2**), which are located after the end of the zones corresponding to the asymmetry means (**4**) belonging to the first group of electrodes;

(d) conductive zones (**5**) are formed astride the end of the remaining zones of said second thin film (**3**) and a part of the zones of said first insulating film (**2**) uncovered in step (c), said conductive zones cnstituting the electrodes (**5**) of the first group;

(e) implantation of impurities belonging to the second group of asymmetry means (**6**) is carried out, said electrodes (**5**) of the first group and the residual zones of the second film (**3**) constituting a mask in this context;

(f) all of the remaining zones of said second thin film (**3**) are removed, the conductive zones (**5**) which were supported by the thin film (**3**) are also eliminated, this resulting in the automatic alignment of the start of electrodes (**5**) of the first group and their asymmetry means (**4**);

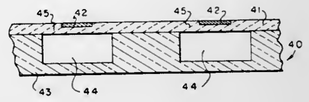
(g) a thin insulating film (**7**) is deposited at least on the electrodes (**5**) of the first group, and, between these electrodes conductive zones (**8**) are formed which ultimately constitute the electrodes of the second group, automatic alignment of the start of the electrodes (**8**) of the second group with their asymmetry means (**6**) being brought about.

4,121,334

APPLICATION OF FIELD-ASSISTED BONDING TO THE MASS PRODUCTION OF SILICON TYPE PRESSURE TRANSDUCERS

George Wallis, Lexington, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 533,716, Dec. 18, 1974, Pat. No. 3,943,398. This application Jan. 14, 1977, Ser. No. 759,521
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—589 **3 Claims**



1. In a method of making a structure containing a plurality of pressure transducers and adapted to be separated into individual pressure transducers, the steps comprising providing a diaphragm comprising a slice of semiconductor containing material having first and second surfaces with a plurality of diffused circuits on said first surface of the slice and a slice of glass containing material having a plurality of cavities formed on one surface and having a substantially equal coefficient of thermal expansion with the semiconductor containing material, and joining the slice of semiconductor containing material at said second surface by field assisted bonding to the slice of glass containing material so as to close the cavities in the slice of glass containing material.

4,121,335

METHOD OF MANUFACTURING BIMETALLIC STRIP

Samuil Izrailevich Berman, ulitsa Polbina 46, kv. 263, and Petr Mikhailovich Nikiforov, 2 Vladimirskaya ulitsa 37, korpus 1, kv. 65, both of Moscow, U.S.S.R.

Continuation of Ser. No. 601,709, Aug. 4, 1975, abandoned, which is a division of Ser. No. 349,666, Apr. 9, 1973, abandoned. This application Mar. 3, 1977, Ser. No. 774,111
Int. Cl.[2] H01R *43/06*
U.S. Cl. 29—597 **2 Claims**

1. A method of manufacturing a bimetallic strip for commutators of electric machines, the strip being characterized by high mechanical strength while retaining high electric conductance, the method comprising the steps of: using a casting mold having a cross-section defined by a rectangle and a contiguous semicircle, the longer side of the rectangle being the diameter of the semicircle, placing a steel core of a substantially round shape, after cleaning from scale and after degreasing, into the mold in such a manner that it is shifted along the axis of symmetry of the mold toward the semicircle, thus defining a space of at least 2 millimeters between the mold walls and the core; subsequently pouring molten copper into the mold in the absence of an oxidizing medium; exposing the mold for 5 to 12 minutes to a temperature which is somewhat higher than the fusion point of the molten copper so as to form a diffusion layer between the steel core and the poured-in copper, with a secure bond between the outer and inner layers; extracting the resulting diffusion-bonded ingot from the mold; and subjecting the



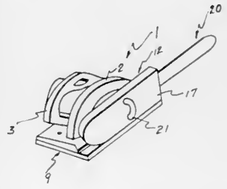
same to press shaping until predetermined dimensions of the bimetallic strip are obtained; cutting said strip into commutation segments of predetermined length; forming said commutator segments to a predetermined shape; assembling a commutator from a plurality of said commutator segments; and smoothing surfaces of adjacent segments for providing a smooth surface to be contacted by electrical commutator brushes.

4,121,336

COMBINATION POWER SAW AND CHAIN SAW AND ADAPTER

Ellis R. Loyd, Rte. 2, Box 474A Shackelford Rd., Florissant, Mo. 63034

Filed Jan. 21, 1977, Ser. No. 761,274
Int. Cl.[2] B27B *17/14*
U.S. Cl. 30—122 **1 Claim**



1. A circular saw adapter to convert a circular saw provided with housing means, and motor means including a motor driven blade supporting shaft and a surface plate substantially parallel to said shaft into a chain saw, comprising,

frame means operably mounted to said surface plate, said frame means comprising,

plate means, and

chain saw housing means mounted on said plate means, and provided with an aperture therein which when said plate is secured to said surface plate in a parallel relationship said aperture will be disposed in alignment with said shaft and said shaft will extend through said aperture, said housing provided with a removable frame plate which when mounted thereon forms a chain saw chamber within said frame means which communicates to the exterior through an opening in said frame means,

guide bar adjustment means operably mounted on said frame plate,

mounting means operably mounted on said shaft,

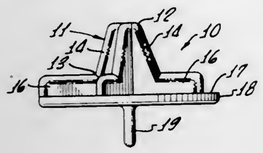
sprocket means operably mounted on said mounting means,

securing means to secure said sprocket and mounting means, to said shaft,

a chain saw guide bar operably mounted to said frame means, and

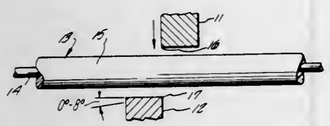
handle means.

4,121,337
CEILING PATCH APPARATUS AND METHOD
Robert W. Parker, Santa Ana, Calif., assignor to Anthony Franklin, Santa Ana, Calif.
Filed Jan. 17, 1977, Ser. No. 759,857
Int. Cl.[2] B26B *3/08*; A47L *13/08*
U.S. Cl. 30—172 7 Claims



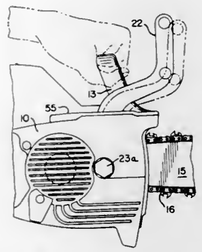
1. A patching tool for preparing an acoustical ceiling having a hole therein to receive an acoustical patch, said tool comprising:
a circular disc of synthetic resin:
a plurality of scraping blades extending radially along one side of said circular disc, said scraping blades comprising ridges of synthetic resin fixedly attached to said circular disc along their radial extension therewith, the outermost edges of said scraping blade ridges scribing a circle equivalent in diameter to the patch to be used for the ceiling;
a plurality of centering ridges disposed about a vertical axis of rotation of said circular disc fixedly attached to and extending upwardly from the scraping blade ridges for insertion into the hole in said acoustical ceiling and guiding the rotational movement of said scraping blade ridges; and
a handle fixedly attached to the disc on the side opposite said scraping blades along a diameter line thereof for permitting the user to rotate said patching tool around its vertical axis and thereby scrape away a portion of the acoustical ceiling to receive the acoustical patch in a mating relationship.

4,121,338
NON-SHORTING WIRE CUTTER
Dennis C. Siden, Portola Valley, and Corey J. McMills, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Continuation-in-part of Ser. No. 616,831, Sep. 25, 1975, Pat. No. 4,023,272. This application Apr. 27, 1977, Ser. No. 791,420
The portion of the term of this patent subsequent to May 17, 1994, has been disclaimed.
Int. Cl.[2] B26B *13/02*
U.S. Cl. 30—257 14 Claims



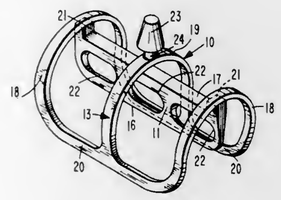
1. A wire cutter comprising a pair of co-acting blades having a blade angle of about 0° to 8°, said blades being offset from each other and at least one of which is movable relative to the other so that their cutting surfaces pass as they move through a substrate from opposite sides, said blades being fabricated from a material having a bulk resistivity greater than about 1 ohm-cm and having sufficient hardness relative to their thickness to prevent substantial deformation when the blades are forced through the substrate.

4,121,339
SAFETY BRAKE MECHANISM FOR CHAIN SAWS
Milovan Nikolich, 4040 N. Central Pk., Chicago, Ill. 60618
Filed Aug. 10, 1977, Ser. No. 823,339
Int. Cl.[2] B23D *57/02*; B27B *17/00*
U.S. Cl. 30—381 12 Claims



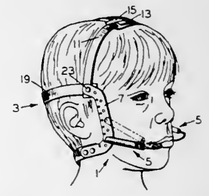
1. In a hand-held power saw of the type including a frame with a pair of handles, a guide bar supporting a cutting chain, and power means for driving the cutting chain, the improvement comprising:
a. brake means operatively associate with said cutting chain for arresting movement of the latter;
b. brake actuating means including a guard structure mounted on the frame for movement between a normal position and an actuate position in response to engagement by the operator's body or to inertia as a consequence of sudden movement of the saw;
c. latch means independent of the brake actuating means and operatively engaged with said brake means and moveable between a latch position to prevent application of the brake means and a release position to permit application of the brake means, said latch means being engaged by the guard structure such that movement of the latter to its actuate position causes movement of the latch means to its release position; and
d. a single spring element operatively engaged with said brake means and said latch means, said spring element serving to apply the braking force for said brake means and also serving to hold said latch means in its latch position, said spring element constituting the sole spring means associated with said latch means.

4,121,340
ORAL IMPLANTOLOGY
Daniel R. Patrick, 5601 Four Mile Dr., Kokomo, Ind. 46901
Filed Dec. 10, 1976, Ser. No. 749,532
Int. Cl.[2] A61C *8/00*
U.S. Cl. 32—10 A 7 Claims



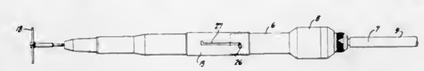
1. An oral implant comprising a bladevent body adapted for insertion bodily into oral bone structure, at least one abutment post external to bone structure and adapted to project into the oral cavity for supporting an artifical tooth therein, and means directly joined to and supporting said abutment post and adapted to lie beneath gingival tissue and the periosteum and external to bone structure and being joined to the bladevent body, said means comprising a downwardly open frame member having sides and a top spaced from and partly surrounding the bladevent body, said frame member being attached at its top and opposite ends only to the top and opposite ends of the bladevent body at a pair of local small regions on the bladevent body and frame member, said abutment post being attached to the top of said frame at a position spaced from said local small regions, whereby the abutment post is isolated from the bladevent body and connected indirectly therewith only through said frame member.

4,121,341
ORTHODONTIC TRACTION APPARATUS
Irvin S. DeWoskin, St. Louis, Mo., assignor to Orthoband Company, Inc., Barnhart, Mo.
Filed Dec. 29, 1976, Ser. No. 755,435
Int. Cl.[2] A61C *7/00*
U.S. Cl. 32—14 D 12 Claims



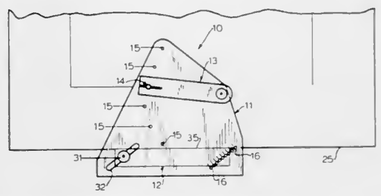
1. Orthodontic traction apparatus for applying traction to the teeth in a patient's mouth via an orthodontic instrumentality on the teeth comprising:
headgear including a pair of side members adapted to be worn on opposite sides of the patient's head adjacent the patient's ears;
each side member having a tensioning assembly associated therewith for attachment to said instrumentality for applying traction to the teeth;
each tensioning assembly comprising:
a generally thin, flat, narrow elongate arm having means at one end constituting its rearward end pivotally mounting it on a respective side member for pivoting relative to said side member about an axis extending generally in side-to-side direction with respect to the patient's head, said arm being adapted to extend forward from the side member on the patient's cheek toward the mouth;
a fitting on the other end of said arm on the outside of the arm;
an elongate tube slidable axially in an opening in the fitting for axial adjustment relative to the fitting, said tube extending longitudinally with respect to said arm;
a rod slidable axially within the tube extending longitudinally of the tube and adapted for attachment at its forward end to said instrumentality;
means for locking said tube in various positions of axial adjustment relative to the fitting; and
an elongate compression spring acting from the tube and extending rearwardly therefrom on the rod for biasing the rod to slide axially and rearwardly within the tube to apply traction to the teeth via said instrumentality, the amount of said traction being adjustable by slidably adjusting the tube relative to said fitting and the arm being pivotable relative to the side member according to the angle at which traction is to be applied.

4,121,342
TELESCOPING HANDPIECE
Lloyd P. Flatland, 15 Quisisana Dr., Kentfield, Calif. 94904
Filed Sep. 13, 1976, Ser. No. 722,482
Int. Cl.[2] A61C *1/10*
U.S. Cl. 32—26 3 Claims



1. A telescoping handpiece adapted interchangeably to engage tools of different lengths and weights comprising a primary housing, a primary shaft, means for mounting said primary shaft in said primary housing for rotation and against translation relative to said primary housing, means associated with said primary housing for rotating said primary shaft, a secondary housing slidably mounted with respect to said primary housing, a secondary shaft including a secondary tube, means for mounting said secondary shaft in said secondary housing for rotation and against translation relative to said secondary housing, inwardly directed longitudinally extending splines in said secondary tube, external splines on said primary shaft engageable with said inwardly directed splines, means for selectively interconnecting said external splines with different axial portions of said internal splines upon relative axial sliding movement of said primary housing and said secondary housing, said internal splines stopping short of the end of said secondary tube to leave an axial gap and said external splines on said primary shaft being movable out of and into said gap for rotatably clutching and declutching said primary shaft and said secondary shaft, a planetary transmission between said primary shaft and said primary housing, said transmission including planet members, a quill surrounding said primary shaft and engaging said planet members for rotation therewith, axial teeth on said quill, axially extended splines on said secondary tube, and means for axially moving said secondary tube for engaging said axially extended splines with said axial teeth and moving said external splines into said gap and alternatively for disengaging said axially extended splines from said axial teeth and engaging said internal and external splines for clutching and declutching said quill and said primary shaft.

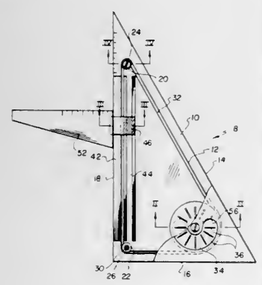
4,121,343
PICTURE FRAME MAT OPENING MARKER
Richard Wayne Duggins, Hillsborough, and James William Rodgers, Durham, both of N.C., assignors to Frameworks, Inc., Hillsborough, N.C.
Filed Jun. 28, 1977, Ser. No. 810,775
Int. Cl.[2] B43L *13/02*
U.S. Cl. 33—42 4 Claims



1. An adjustable marking assembly for laying out openings to be cut in picture frame mats, said marking assembly comprising:
(a) a thin flat plate member having a first set of holes in arcuate arrangement, a second set of holes in an angled linearly aligned arrangement and identified by successive indicia of measurement, and an angled slot having its central linear axis parallel to the central linear axis of said angled holes;

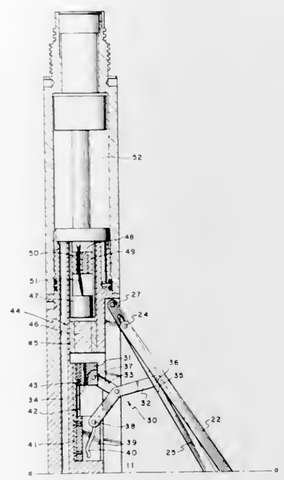
(b) a first pivot means adjustably mounted for slidable movement in said angled slot;
(c) a thin straight edge member having one end thereof pivotally mounted on said first pivot means on the back surface of said plate member and the opposite end free and being adapted for both pivotal and slidably movement, the free end of said straight edge member including pin means adapted to engage any one of said angled linear arranged holes to secure the positioning desired;
(d) a second pivot means, said second pivot means mounted in said plate member and passing therethrough; and
(e) a thin arm member having one end pivotally mounted on said second pivot means on the front surface of said plate member and means at an opposite free end thereof for detachably receiving and securing a disposable surface marking device, said surface marking device being adapted for engagement with and positioning into any one of said arcuately arranged holes.

4,121,344
UNIVERSAL DRAFTING TRIANGLE
Constantine C. Goussios, 37 Chaffee Ave., Albertson, N.Y. 11507
Filed Feb. 9, 1977, Ser. No. 766,877
Int. Cl.[2] B43L *13/24*
U.S. Cl. 33—110 **2 Claims**



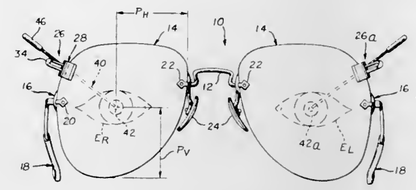
1. A universal drafting triangle comprising a first triangular laminate means having three lateral edges, a second triangular means also having three lateral edges with one edge of said first triangular means movably engaging one edge of said second triangular means whereby the one edge of said first triangular means forms a 90° angle with one other of said edges of said second triangular means, a drive means connected between said first triangular means and said second triangular means for moving one triangular means relative to the other, said drive means including a drive wheel located on said first triangular means for movement of said second triangular means by one hand manipulation of said drive wheel whereby a draftsman may operably draw a set of spaced parallel lines with one hand manipulation of said drive wheel, said drive wheel further including a knurled knob connected to said drive wheel and extending beyond said first triangular means, said drive means further including a guide means connected to said first triangular means for supporting said drive wheel, said drive wheel being provided with through holes accessible from either side of said first triangular means and pin means on said knurled knob for engaging said through holes for securing said knurled knob from either side of said first triangular means for insuring mutual rotation thereof from either side of said first triangular means.

4,121,345
LINEARLY CORRECTED ARTICULATED LINKAGE FOR WELLBORE MEASURING INSTRUMENT
Raymond Earl Roesner, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 13, 1977, Ser. No. 787,200
Int. Cl.[2] G01B *5/12, 7/12*
U.S. Cl. 33—178 F **3 Claims**



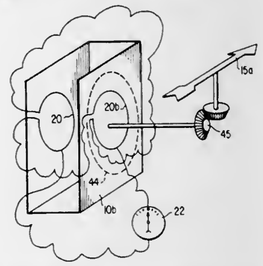
1. In an apparatus having an arm and an elongated body member, said body member having a longitudinal axis, wherein one end of said arm is pivotally attached to said body member and the other end of said arm is radially extendable and retractable with respect to said body member and werein signal means are provided within said body member for indicating the amount of radial extension and retraction of said arm, the improvement comprising:
part of said signal means being slidably mounted within said elongated body member for movement parallel to the longitudinal axis of said body;
linkage means connecting said slidable part of said signal means to said arm, said linkage means being arranged to cause said slidable part to slide within said elongated body member in response to radial extension and retraction of said arm, said linkage means also being slidably connected to said elongated
body member and arranged to linearize the movement of said sliding part of said signal means with respect to the changing perpendicular distance from the longitudinal axis of said elongated body member to a given point on said arm; and,
said linkage means including a linkage arm having first and second ends and an intermediate pivot point between said first and second ends, the said first end being pivotally connected to said extendable and retractable arm and the said second end being slidably mounted to said elongated body member within a linearizing guide channel in said elongated body member, and a link member pivotally connected at one of its ends to said slidable part of said signal means and pivotally connected at its other end to the intermediate pivot point between the said first and second ends of said linkage arm.

4,121,346
OPTICAL CENTER LOCATOR FOR SPECTACLES
Bernard Grolman, Worcester, and William Richards, Medway, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Jun. 17, 1977, Ser. No. 807,469
Int. Cl.[2] A61B *3/10*
U.S. Cl. 33—200 **9 Claims**



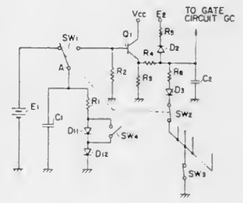
1. An optical center locator comprising,
a main supporting body;
a wand having a distal target;
means for swivel mounting said wand to said main supporting body including a pivot post through which said wand is extended and friction means between said wand and main body permitting manually induced swiveling and longitudinal sliding adjustments of said wand while normally holding said wand against accidental displacement from given positions of said adjustments.

4,121,347
DEVICE FOR SETTING AND RETAINING A FIXED DIRECTION
Gunnar Thele, Koping, Sweden, assignor to Transtronic Ltd., Vesteras, Sweden
Continuation of Ser. No. 585,399, Jun. 9, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,583
Claims priority, application Sweden, Jun. 10, 1974, 7407596; May 28, 1975, 7506069
Int. Cl.[2] G01C *9/06*
U.S. Cl. 33—366 **9 Claims**



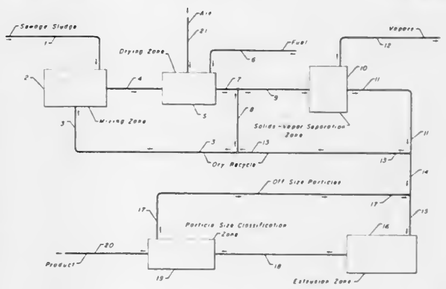
1. An apparatus for sensing and indicating the orientation of relatively movable parts of a object in an approximately horizontal plane, comprising first and second electrical sensors having an electrical resistance varying responsive to their tilt with respect to the vertical force of gravity, said sensors being arranged in approximately parallel mounting planes, means for electrically interconnecting and mounting said sensors on the measured object in such a manner that their said mounting planes are approximately vertical and their tilt responsive variations caused by shared motion with respect to the vertical force of gravity approximately canceling each other and their tilt responsive variations caused by relative motion with respect to each other provide indicia of said relative motion; electrical power supply means for providing power to the sensors; and, first mechanical means, including a rotatable mount and a bevel gear mechanism, for tilting the first sensor in its mounting plane independently of the second sensor and responsive to the movement of a part of the measured object in the approximately horizontal plane.

4,121,348
TOUCH-RESPONSIVE CIRCUIT IN ELECTRONIC MUSICAL INSTRUMENT
Naoyuki Niinomi, and Akiyoshi Oya, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Dec. 16, 1976, Ser. No. 751,323
Claims priority, application Japan, Dec. 29, 1975, 51/177203[U]; Dec. 29, 1975, 51/177205[U]
Int. Cl.[2] G10H *1/00, 3/00, 1/02*
U.S. Cl. 84—1.01 **10 Claims**



1. A touch-responsive circuit adapted for use in an electronic musical instrument provided with a keyboard comprising:
a voltage-controlled circuit means having a threshold voltage for generating an output signal; and
a key depression speed detector for generating a voltage signal having a level corresponding to the depression speed of a key in the keyboard,
said key depression speed detector including a first constant dc voltage source, a first capacitor for storing an electric charge from said first dc voltage source and a discharging circuit means for discharging said first capacitor including a voltage-compensating means comprising a first semiconductor element for generating a voltage drop thereacross at least equal to said threshold voltage.

4,121,349
ORGANIC WASTE DRYING PROCESS
Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 813,578, Jul. 7, 1977, which is a continuation-in-part of Ser. No. 775,673, Mar. 8, 1977. This application Oct. 20, 1977, Ser. No. 844,097
Int. Cl.[2] F26B *7/00*
U.S. Cl. 34—12 **11 Claims**



1. A process for drying organic waste which comprises the steps of:
(a) passing an organic waste stream comprising 20 wt.% water, volatile liquid hydrocarbons, and organic waste

into a drying zone operated at drying conditions and effecting the vaporization of water and hydrocarbons contained in the organic waste stream and the production of a drying zone effluent stream comprising organic waste, water vapor, and vaporized hydrocarbons derived from the organic waste stream;

(b) separating the drying zone effluent stream in a solids-vapor separating zone and producing a vapor stream comprising vaporized hydrocarbons and water vapor and a dry solids stream comprising organic waste;

(c) contacting the vapor stream with a hereinafter described adsorbent at conditions which promote the adsorption of vaporized hydrocarbons by the adsorbent;

(d) separating the dry solids stream into at least two portions, and contacting a first portion of the dry solids stream with the vapor stream as the previously specified adsorbent of step (c); and,

(e) forming a second portion of the dry solids stream into particles having an average bulk density above 30 lb/ft^3.

4,121,350

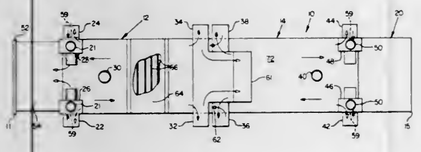
SHEET DRYER APPARATUS USING DEFLECTORS FOR STEAM DRYING

Adolf Buchholz, 11694 SE. Clover La., Portland, Oreg. 97266

Continuation-in-part of Ser. No. 550,573, Feb. 18, 1975, Pat. No. 4,026,037. This application Mar. 28, 1977, Ser. No. 781,936

Int. Cl.^{2} F26B *21/06, 13/30, 25/06*

U.S. Cl. 34—77 **20 Claims**



1. A sheet drying apparatus for removing water absorbed in sheet material comprising:

dryer means having at least one drying chamber for containing said sheet material and including feeder means for moving said material through inlet and outlet ends of said chamber during drying;

heating means for providing a heating fluid within said chamber including water evaporated from said sheet material, said heating fluid flowing through said chamber and consisting of at least a major portion of superheated steam;

deflector means within said chamber for deflecting said heating fluid toward the surface of said sheet material to contact said sheet material with said heating fluid to heat said material and vaporize said water absorbed therein, whereby said water is removed from said material;

means for preventing the entry of ambient air into said chamber through its open ends; and

means for producing a negative internal pressure within the chamber along at least the major portion of its length, said negative pressure being below the ambient pressure of the atmosphere surrounding said chamber.

4,121,351

VENT APPARATUS FOR CLOTHES DRYER

Dwight L. Kapke, 2424 Washington, Lincoln, Nebr. 68502

Filed Jan. 5, 1977, Ser. No. 756,743

Int. Cl.^{2} F26B *19/00*

U.S. Cl. 34—86 **5 Claims**

1. Vent apparatus for a clothes dryer comprising a substantially rigid tube section having an outlet opening at one end and an inlet opening at the opposite end thereof, said outlet opening lying in a plane parallel to the longitudinal axis of said tube, a replaceable filter screen outlet removably secured over said outlet opening, said tube being mounted on tube positioning means for rotating and releasably securing said tube and said outlet opening in a plurality of positions 360° around an axis transverse to the longitudinal axis of said tube and for rotating and releasably securing said tube in a plurality of positions 180° around the longitudinal axis of said tube, said tube positioning means comprising a plate lying in a plane, said

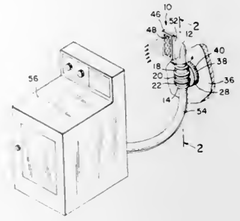


plate being rotatably mounted on a planar base, the plane of said base being substantially parallel to the plane of said plate, stop means secured to said apparatus and positioned for Stoppingly engaging said plate with respect to said base, in an arc 360 degrees around said axis transverse to said longitudinal axis.

4,121,352

APPARATUS FOR DRYING AND DEGASSING OIL

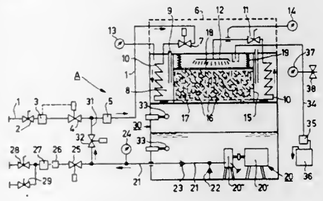
Jan Warmolt Lameris, Nootdorp, Netherlands, assignor to N.K.F. Kabel B.V., Netherlands

Filed Mar. 14, 1977, Ser. No. 777,407

Claims priority, application Netherlands, Mar. 8, 1976, 7602387

Int. Cl.^{2} F26B *13/30*

U.S. Cl. 34—92 **6 Claims**



1. Apparatus for drying and degassing oil, notably cable oil used in oil-filled electric cables, comprising an airtight treatment tank having a bottom region, an inlet, and an outlet extending from said bottom region, a vacuum pump connected to the tank for creating a partial vacuum in the tank, and a circulation circuit for treating oil which includes a pumping means for circulating oil from said bottom region through the tank, heating means for heating the circulating oil, and spraying means for increasing the surface area of the oil circulated by the pumping means in the treatment tank,

wherein the apparatus includes means for maintaining a level of oil in said lower region above a given level; and said pumping means comprises a pump and a motor connected to the pump, disposed in said lower region below said given level, whereby said pump and motor are immersed in the oil.

4,121,353

COLLAPSIBLE, FLEXIBLE HAIR DRYING HOOD

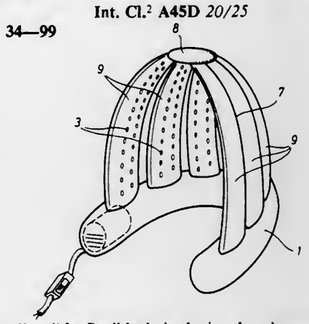
Erich Rudolf Baumgartner, Tiroler Platz 4, and Peter Doehler, Kaulbachstrasse 59, both of Munich, Fed. Rep. of Germany (8000)

Filed Feb. 22, 1977, Ser. No. 770,550

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1976, 2606967

Int. Cl.^{2} A45D *20/25*

U.S. Cl. 34—99 **6 Claims**



1. A collapsible flexible hair drying hood assembly of the type having a blower simultaneously providing a drying air stream directed through nozzle orifices into the interior of a flexible hood member and inflating air chambers of said hood member to erect the hood member, said hood member comprising a flexible base air chamber communicating with said blower and flexible hoselike hood portions communicating with said base air chamber, said flexible hoselike hood portions defining said nozzle orifice, said flexible hose-like hood portions extending upwardly from said base when said hood is in use to define elongated slots communicating the interior of said hood with the free environment and being situated adjacent said nozzle orifices, said slots extending in a manner to subdivide said hood into a plurality of substantially mutually adjacent hoselike hood portions provided with nozzle orifices, said hoselike hood portions running from said hood base to a hood apex.

4,121,354

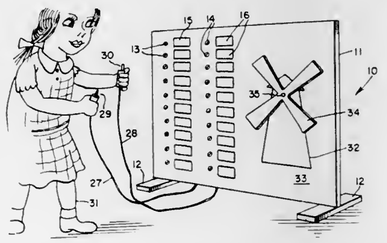
ANIMATED LEARNING AID

Frank Sbarra; Linda J. Velardo, both c/o George Spector, 3615 Woolworth Building, 233 Broadway, and George Spector, 3615 Woolworth Building, 233 Broadway, New York, N.Y. 10007

Filed Apr. 27, 1976, Ser. No. 680,762

Int. Cl.^{2} G09B *7/10*

U.S. Cl. 35—9 C **2 Claims**



1. In an animated learning aid, the combination of a board mounted upon feet, a row of question cards and a row of answer cards mounted on a front side of said board, an electrical contact adjacent each of said cards, each contact comprising a nut on a bolt extending from said front to a rear side of said board, and a plurality of jumper wires each of which is connected at one end to one said contact adjacent one said question card and an opposite end of said jumper wire is detachably connected to one said contact adjacent a correct said answer card; a battery and an electric motor secured to said rear side of said board, said board front side also having a design thereupon, said motor having a motor shaft through said board connected to a movable part in front of said design for giving animation to said design, and a pair of wire leads connected in series with said motor and battery, one end of each said lead having a contact probe for selective engagement with said board contacts, for closing a circuit to said battery and motor, wherein each said card includes a pair of rearward pegs receivable in openings in said board for support therefrom, a rear side of each said card being numerically identified which is visible from the rear through a hole through said board.

4,121,355

LEARNING DEVICE

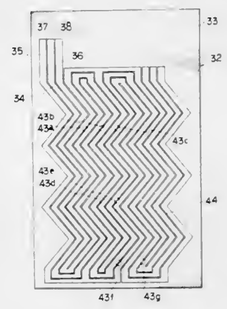
Chisaburo Kimoto; Katsuhiko Itasaka; Ryu Tanaka, and Yoshinobu Kimura, all of Tokyo, Japan, assignors to Gakken Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1977, Ser. No. 774,584

Claims priority, application Japan, Mar. 10, 1976, 51-28329[U]; Apr. 16, 1976, 51-47480[U]

Int. Cl.^{2} G09B *7/06*

U.S. Cl. 35—9 C **13 Claims**



1. A learning device comprising:

a learning reactor having a plurality of substantially parallel conducting bands arranged on a base plate;

a right answer insulating part and a wrong answer insulating part formed between associated bands of said conducting bands;

a learning sheet positioned and mounted on said base plate and on which a plurality of answer holes are provided for each set question to be presented so that a right answer corresponds to said right answer insulating part and a wrong answer corresponds to said wrong answer insulating part;

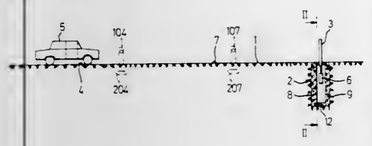
an answer indicating bar provided with a conductor for short-circuiting a selected one of said insulating parts through said answer holes; and

said plurality of conducting bands being tortuous and arranged in a series of continuously repeated regular patterns so that said continuously repeated regular patterns are camouflaged.

4,121,356
DRIVER TRAINING INSTALLATIONS

Albert Gambon, Kirchfeldstrasse 18, 3600 Thun, Switzerland

Filed Jul. 13, 1977, Ser. No. 815,087
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632313
Int. Cl.[2] G09B *9/04*
U.S. Cl. 35—11 R 5 Claims

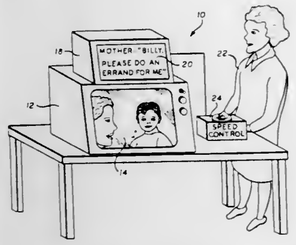


1. An installation for training a driver of a motor vehicle, comprising a roadway, a shaft dug in said roadway, a symbol-bearing member movably disposed in said shaft, operating means for moving said symbol-bearing member partway out of said shaft and for completely returning said symbol-bearing member to within said shaft, at least one signal-generating device disposed in front of said shaft for generating an electric signal when said motor vehicle approaches said shaft, and control means for controlling said operating means as a function of said electric signal, whereby said symbol-bearing member is suddenly caused to move partway out of said shaft and then returned to within said shaft after a period of time corresponding to the time required for said motor vehicle to travel unbraked from said signal-generating device to said shaft.

4,121,357
METHOD OF TEACHING SPEECH READING

Sidney R. Hoffman, 89 Fairview Ave., New York, N.Y. 10040

Filed Apr. 29, 1977, Ser. No. 792,196
Int. Cl.[2] G09B *17/00*
U.S. Cl. 35—35 R 15 Claims

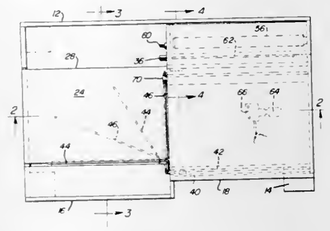


1. A method of teaching speech reading comprising the steps of:
- displaying a first moving image, said first moving image comprising the facial articulatory structures of at least one person;
- displaying a second moving image, said second moving image comprising alphanumeric indicia representing the words spoken by said at least one person; and
- controlling the display of at least one of said first and second moving images for varying the time interval between the display of said facial articulatory structures and the display of the particular alphanumeric indicia corresponding thereto.

4,121,358
WALL COVERING, CARPET AND DRAPERY DISPLAYING ROOM SIMULATOR

John E. Kistner, Austin, Tex., assignor to Kistner Co., Inc., Austin, Tex.

Filed Oct. 21, 1977, Ser. No. 844,506
Int. Cl.[2] G09B *25/00*
U.S. Cl. 35—53 10 Claims

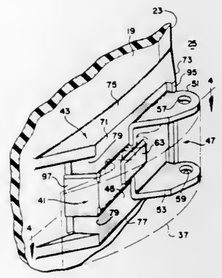


1. Apparatus for simulating the effects of decorative materials in a room-like setting, particularly floor and wall coverings, comprising:
- a base member;
- first and second horizontal rods disposed in surmounting relation to the base member in substantially parallel relation to the plane of the base member, the rods being substantially perpendicular to each other; and,
- means carried by the base member for mounting the rods, decorative materials being suspended from the rods to simulate decoratively covered walls adjacent the base member, a decorative floor covering material being disposed on the base member to simulate a decoratively covered floor, the simulation thereby provided illustrating the effects of a room decorated with the decorative materials carried by said rods and said base member.

4,121,359
APPARATUS FOR RELEASABLY MOUNTING CLOSURE BUCKLES TO SKI BOOTS

Donald W. Bertetto, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Incorporated, Boulder, Colo.

Filed Mar. 17, 1977, Ser. No. 778,751
Int. Cl.[2] A43B *5/04, 21/00, 11/00;* A43C *11/00*
U.S. Cl. 36—117 14 Claims

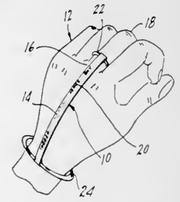


1. Apparatus for releasably mounting a closure buckle to the shell of a plastic ski boot comprising:
- means including a pad integrally molded with said plastic ski boot and having an outwardly directed exterior mounting surface,
- said pad having a forward portion which is undercut during molding to provide an inwardly directed interior surface spaced outwardly from said shell but inwardly of said exterior mounting surface and extending rearwardly into said pad,
- said forward portion having a slot extending rearwardly therein which extends through said forward portion from said exterior mounting surface to said interior surface;
- said pad having an opening which extends through the thickness of the boot wall at the location of said slot; and,
- means including a buckle stand having a base portion and means coupled to said base portion for mounting said buckle,
- said base portion having a pair of first flanges extending inwardly therefrom toward said shell,
- each of said inwardly extending first flanges having a foot portion extending therefrom which is substantially parallel to said base portion,
- said buckle stand being adapted to slidably engage said pad such that said inwardly directed first flanges engage said slot and said foot portions bear against said interior surface to hold and releasably secure said closure member to said pad.

4,121,360
IDENTIFICATION BRACELET

June S. Vlerebome, 574 W. 44 Pl., Hileah, Fla. 33012

Filed Sep. 6, 1977, Ser. No. 830,428
Int. Cl.[2] G09F *7/00*
U.S. Cl. 40—586 5 Claims



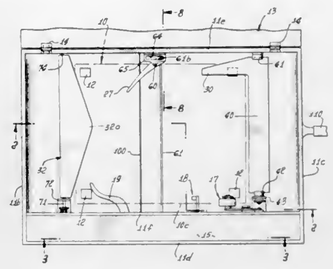
1. An identification apparatus for infants comprising a pair of elastic endless bands, one of said pair of elastic bands having a smaller peripheral length than the other of said pair of elastic bands, an elongated strap, said strap fabricated from a transparent flexible material, one end of said strap fixedly secured to said one of said pair of elastic bands, the other end of said elongated strap fixedly secured to the other of said pair of elastic bands, an elongated sheet, said elongated sheet fabricated from a flexible material, means to secure said elongated sheet to said elongated strap, said elongated sheet for carrying indicia on at least one lateral surface thereof.

4,121,361
APPARATUS FOR AUTOMATICALLY TURNING PAGES

James A. D'Arcy, 2008 Donna Dr., Laguna Beach, Calif. 92651

Continuation-in-part of Ser. No. 669,821, Mar. 24, 1976, abandoned. This application Jan. 10, 1977, Ser. No. 757,958
Int. Cl.[2] G09F *7/00*
U.S. Cl. 40—470 27 Claims

1. In apparatus for sequentially turning stacked pages of a book or the like, the combination comprising
- (a) structure forming a zone to receive said pages,
- (b) a pusher located proximate said zone to engage an exposed page to be turned,
- (c) an electrical actuator and actuator driven means operatively connected with the pusher for bodily displacing same generally linearly and with back and forth reciprocation in the direction of page turning between a first position and a range of subsequent advanced positions, said first position characterized in that the pusher is urged against the exposed page to be turned, and said range of subsequent positions characterized in that the pusher is bodily displaced to frictionally push the exposed page in a turn direction causing its sliding against another page and resulting in progressive upward bulging of that page while sliding over the surface of the next below page beneath the pusher,

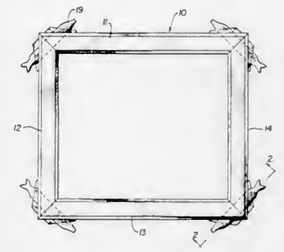


- (d) and a retainer arm yieldably urged against the exposed page to be turned.

4,121,362
KNOCK-DOWN PICTURE FRAME ASSEMBLY

Eugene W. Knuth, Land O Lakes, Wis. 54540

Filed Jul. 6, 1976, Ser. No. 702,923
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—155 3 Claims

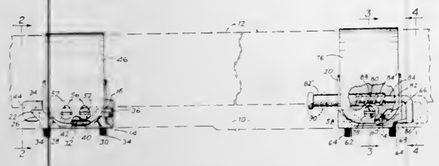


1. A knock-down frame assembly comprising frame members each have mitered ends adapted to have the face of a mitered end thereof abut the face of the mitered end of another, said frame members further including perimetral walls, each said frame member having means defining an opening extending through its mitered end, said opening having its longitudinal axis substantially at right angles to the face of the mitered end thereof, the openings of the abutting mitered ends of said sides registering with one another, a connecting element extending entirely through each of the openings in the abutting faces of said frame sides and said perimetral walls and extending outwardly therefrom whereby a cross section of the connecting element and opening depicts at least one flat side between the connector and opening to resist connecting element rotation and wedge elements which traverse through said outwardly extending portions through apertures on said connecting element and abut against said perimetral walls to allow said frame assembly to be connected and disassembled without the need of tools, and wherein said apertures on said connecting elements have a face which is substantially coplanar with the perimetral walls of said frame.

4,121,363
TELESCOPE SIGHT MOUNT

Ausbie A. York, 339 Arcadia Dr., Eugene, Oreg. 97401

Filed Mar. 17, 1977, Ser. No. 778,490
Int. Cl.[2] F41G *1/38*
U.S. Cl. 42—1 ST 8 Claims

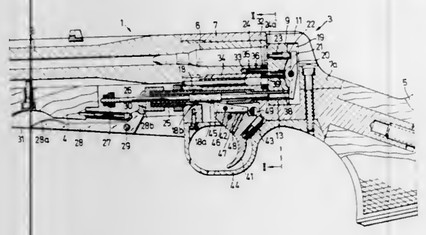


1. A telescope sight mount for rifles, comprising:
a. a base adapted for attachment to a rifle,
b. a coupler body secured detachably to the base and arranged to engage a telescope sight,
c. a coupler strap extending upwardly from the coupler body and defining between them a telescope sight confining space, and
d. cam means interengaging the coupler body and at least one end of the strap for moving said strap end vertically relative to the coupler body for varying the vertical dimension of said confining space for releasably clamping a telescope sight between them, said cam means comprising a cam screw projecting laterally from the coupler body and having a threaded inner portion engaging a threaded bore in the side of the coupler body and an outwardly flared cam head portion extending laterally outward from the side of the coupler body through an upwardly elongated cam opening in the strap.

4,121,364
HAND-HELD FIREARMS

Benno Kaltenegger, Auf dem hohen Ufer 14, 5205 St. Augustin-Meindorf, Fed. Rep. of Germany

Filed Apr. 22, 1977, Ser. No. 790,039
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1976, 2617953
Int. Cl.[2] F41C *11/00*
U.S. Cl. 42—32 21 Claims

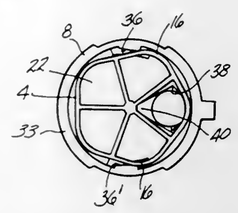


1. A firearm comprising a casing defining a recess, said recess being in part defined by a pair of upper spaced bridge members, a lateral opening below said bridge members opening into said recess, a breech block, means mounting said breech block in said recess for pivotal movement toward and away from said lateral opening, a cartridge chamber opening in a direction toward said recess, means for firing a cartridge located in said cartridge chamber, a trigger mechanism for operating said firing means, an ejector mechanism for ejecting spent cartridges from said cartridge chamber, and said trigger and ejector mechanisms being substantially entirely located beneath said cartridge chamber.

4,121,365
POWER-ACTUATED TOOL LOAD MAGAZINE

Elmer Raleigh Hodil, North Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jun. 16, 1977, Ser. No. 806,984
Int. Cl.[2] F42B *39/06*
U.S. Cl. 42—88 19 Claims

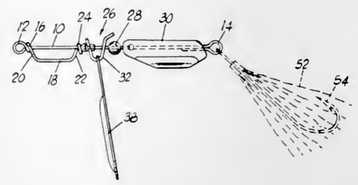


1. In a dispensing device of the type having a plurality of cylindrical storage cells at least partially closed at one end by end closing means and adapted to receive a multiplicity of items for storage therein, and wherein said storage cells are emptied sequentially with the contents of each cell passing serially through a dispensing port in a closure member at a second end of said cells, said closure member being adapted for alternately indexing between one of a first series of positions whereat said port is aligned with one of said cells and one of a second series of positions whereat all of said cells are closed by said closure member; the improvement comprising: improved means for indexing of said closure member including abutment means on an exterior surface of each of said cells and releasable means integrally formed on said closure member, for engagement with said abutment means, said storage cells being defined by a thin-walled tubular member of polygonal cross-section, a central hut extending axially of said tubular member, and a plurality of planar spokes joining said hub and said tubular member, said tubular member comprising a plurality of substantially planar segments merging in radiused corners, and said spokes each joining said tubular member proximate the midpoint of each of said segments, whereby each of said cells includes one of said corners, said corners forming said abutment means.

4,121,366
FISHING LURE WITH INTERCHANGEABLE SPINNER AND HOOK CONNECTIONS

Bingham A. McClellan, Traverse City, Mich., assignor to McClellan Industries, Inc., Traverse City, Mich.

Filed Jul. 25, 1977, Ser. No. 818,551
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.09 13 Claims

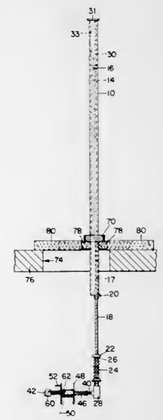


1. A harness for releasably and selectively connecting fish hooks and fish attracting elements to a fishing line comprising:
a relatively stiff wire having a straight center section with permanently curved front and rear eyes at its ends,
an integral spur projecting forwardly from said rear eye and springably openable and closable to permit selective engagement of the eye of a fish hook with said rear eye,
an integral stirrup projecting rearwardly from said front eye and having a hook at its rear end releasably engaged with said wire in rearwardly spaced relation from said front eye,
and a rigid body having a longitudinal bore through its upper portion receiving said wire and being slidable between forward and rearward portions on said wire and having a weight mass eccentric to said wire,
the rear end of said body having surfaces which laterally overlap said spur and prevent rotation of the body on said wire and prevent opening of said rear eye in the rearward position of said body,
said hook on said stirrup blocking forward sliding motion of said body out of nonrotating and nonopening engagement with said spur when said hook is engaged with the center portion of said wire.

4,121,367
AUTOMATIC SIGNAL AND HOOK-SETTING ICE FISHING EQUIPMENT

Lawrence Joseph Gonnello, 27 Lake Dr., Belchertown, Mass. 01007

Filed Mar. 24, 1977, Ser. No. 780,588
Int. Cl.[2] A01K *91/06, 97/12*
U.S. Cl. 43—16 1 Claim

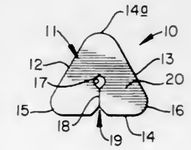


1. In a combination fishing equipment-signal device for ice fishing, the combination of:
a vertically disposed reel supporting tube for extension into the ice hole,
an adjustable bridging means for resting upon the ice surface and bridging the ice hole and supporting the upper portion of the reel supporting tube upwardly of the ice and the lower portion of the reel supporting tube downwardly of the ice,
a rod within the reel supporting tube and extending downwardly therefrom,
a signal means within the reel supporting tube,
the rod and signal means each being movable between a lower set position and an upper released position relative to the reel supporting tube,
spring means within the reel supporting tube and extending between the rod and the signal means,
a stop eccentrically fixed to the rod and selectively engageable with the reel supporting tube,
a threaded guide projecting radially outwardly of the rod at the lower end thereof,
a line carrying reel rotatably mounted upon the threaded guide,
spring means on the threaded guide and bearing on the reel for moving the reel along the threaded guide in an outboard direction as the line is paid out responsive to fish nibbling,
a stop means for precluding reel outboard movement and line pay out beyond a predetermined limit and for effecting horizontal rotative movement of the guide and reel and rod in a plane about the axis of the reel supporting tube for moving the eccentric stop means out of engagement with the reel supporting tube,
whereby the signal means and rod are abruptly actuated upwardly from the lower set position to the upper released position.

4,121,368
POINT PADS FOR TREBLE POINT FISHHOOKS

James R. Norwood, 321 High Brook Dr., Richardson, Tex. 75080

Filed May 27, 1977, Ser. No. 801,024
Int. Cl.[2] A01K *83/00*
U.S. Cl. 43—43.2 8 Claims

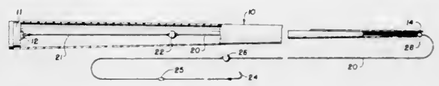


1. A fishhook point cover and guard member comprising a generally equilateral triangular shaped body of uniform thickness, an aperture of predetermined diameter extending between opposed planar face surfaces of said body and centrally disposed with respect to the respective sides of said body; a through-slot formed through said body and extending between respective body face surfaces from the midpoint of one of said body sides into communication with said aperture, and at least a portion of said body, including one face surface thereof, comprising a first resilient material into which a pointed member is selectively embeddable and frictionally retainable; and with the guard member in combination with others of said guard members arranged in contiguous nested relationship; with predetermined extents of side surfaces defined by die-stamped through-cuts, and a commonality of portions of respective side surfaces thereof defined by incomplete die-stamped cuts through a sheet of the body defining material; and with material interconnects between body defining portions of said sheet being rupturable to permit selective removal from said sheet of individual ones and/or groups of contiguous ones of the body defining portions of said sheet.

4,121,369
HOLLOW FISHING ROD WITH ELASTIC LINE

David L. Lopez, 14324 Spring Oaks Dr., Balch Springs, Tex. 75180

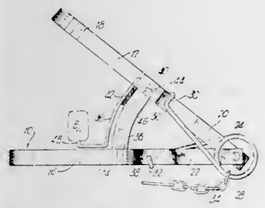
Filed Jan. 24, 1977, Ser. No. 761,677
Int. Cl.[2] A01K *87/00*
U.S. Cl. 43—18 R 6 Claims



1. A fishing rod comprising
an elongated hollow rod having a butt end and a tip end;
an end plug removably secured to said rod at said butt end, having line attachment means extending into said rod;
fishing line including an elongated elastic line disposed within said rod and having one end attached to said plug attachment means, and a nonelastic line extending into

said rod through said tip end and attached to the other end of said elastic line;
said rod and fishing line having coacting limit means to limit maximum extension of said fishing line;
line retaining means fixed to the exterior of said rod at said tip end, for receiving a loop formed in said line to limit withdrawal of line into the rod interior by said elastic line.

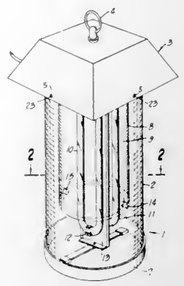
4,121,370
HUMANE ANIMAL TRAP
Michael Benz, 68, 3rd Ave. South, Williams Lake, British Columbia, Canada (V2G 1H9)
Filed Feb. 11, 1977, Ser. No. 767,919
Claims priority, application Canada, Nov. 24, 1976, 266471
Int. Cl.[2] A01M *23/36*
U.S. Cl. 43—83.5 **12 Claims**



1. A humane animal trap comprising:
(a) a pair of generally circular jaws, each jaw having an arm extending outwardly from the outer surface thereof;
(b) said arms being pivotally connected together whereby one of said jaws may be pivotally moved away from the other of said jaws;
(c) spring means positioned about the pivot point of said arms with each end of said spring means being connected to an appropriate one of said arms to bias said jaws to a closed position;
(d) at least one rail member connected at one end to the other jaw and extending through the one jaw, in a plane generally parallel to each said arms;
(e) a sear member pivotally connected to the other end of said rail member, said sear member including locking means therein;
(f) engagement means on said one jaw for engaging said locking means automatically upon moving said one jaw sufficiently away from said other jaw; and
(g) operative means connected to said sear member whereby movement thereof away from said rail member releases said engagement means from said locking means to permit said jaws to close under the influence of said spring means.

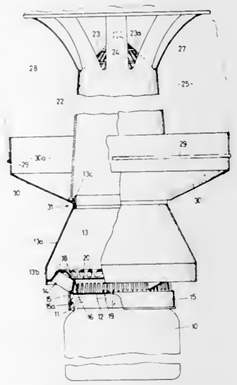
4,121,371
ELECTRICAL INSECT KILLING APPARATUS
Elmer Kaphengst, Burlington, Wis., and Weldon Birdwell, Buffalo Grove, Ill., assignors to Beatrice Foods Co., Bristol, Wis.
Filed Oct. 7, 1976, Ser. No. 730,599
Int. Cl.[2] A01M *1/22*
U.S. Cl. 43—112 **10 Claims**

1. An electrical insect killing apparatus comprising a killing unit including means for attracting insects surrounded at least partially by electrode means, and perforate enclosure means for said killing unit detachably joined to switch housing means including switch means for interrupting electrical flow to said killing unit and removable cover means, said removable cover means and said perforate enclosure means each including means that engage and co-act to close the switch means where



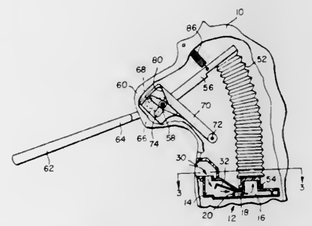
said perforate closure means and said cover means are joined to said apparatus.

4,121,372
INSECT TRAPS
Lionel Ricardo Landaus, Queenstown, New Zealand, assignor to Kenneth James Landaus, Christchurch, New Zealand
Filed May 5, 1977, Ser. No. 794,093
Claims priority, application United Kingdom, Sep. 28, 1976, 40171/76
Int. Cl.[2] A01M *1/02*
U.S. Cl. 43—122 **4 Claims**



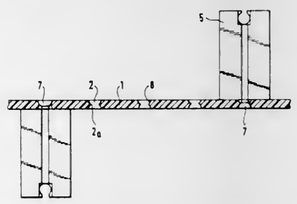
1. A fly trap including a bait jar surmounted by an entry chamber having a wall of generally circular shape in cross section wherein the diameter of the said wall of the entry chamber adjacent the bait jar is greater than the diameter of the mouth of the bait jar and wherein the said entry chamber includes a first annular member which includes a plurality of scent dispersal holes and which is of substantially the same diameter as the said mouth of the bait jar to which it is attachable by screw threads and which includes means for retaining a sheet of gauze to cover said mouth, the said entry chamber also including a second annular member which extends upwardly and outwardly from the said first annular member and which includes a plurality of insect entry holes which communicate the interior of the said entry chamber with the exterior of the fly trap, and wherein the entry chamber is surmounted by and communicates with one end of a tunnel, the other end of which has a closure member which includes an opening to allow the passage of insects therethrough and into a fly collection chamber formed exteriorily of the tunnel by a translucent disposable container which is supported by the said tunnel.

4,121,373
SOUNDING MECHANISM FOR TOY ANIMALS
James E. Slowe, South Wales, and Norman A. Wrigglesworth, Williamsville, both of N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1977, Ser. No. 765,446
Int. Cl.[2] A63H *5/00*
U.S. Cl. 46—180 **10 Claims**



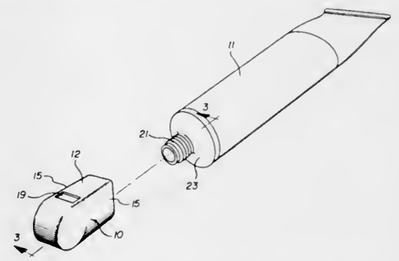
1. A sounding mechanism for a toy animal for producing a continuous animal sound of varying tonal quality such an the whinny of a horse comprising:
a sound housing having an air inlet chamber, an air outlet resonator chamber and an air passage interconnecting said air inlet and air outlet chambers;
vibratory reed means comprising vibratory primary and secondary reeds coupled together and mounted in said inlet chamber and associated with one end of said air passage;
means for initiating vibration of said secondary reed; and
means connected to said air outlet chamber for sucking air into said air inlet chamber and through said air passage for initiating vibration of said primary reed simultaneously with the vibration of said secondary reed, said vibrating secondary reed alternately varying the effective length of said vibrating primary reed whereby said sounding mechanism produces a continuous sound of varying tonal quality.

4,121,374
TOY ASSEMBLY KIT
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3, (Tumlingen), Fed. Rep. of Germany
Filed May 2, 1977, Ser. No. 792,594
Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623615
Int. Cl.[2] A63H *33/08*
U.S. Cl. 46—24 **11 Claims**



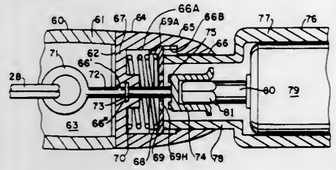
1. A toy assembly kit, comprising a first structural component having an exposed surface and a male coupling element projecting from said exposed surface by a predetermined length and having an undercut portion; and a second structural component connectable with said first structural component and having two substantially parallel major surfaces spaced from one another and an elongated slot extending from one to the other of said major surfaces, said major surfaces of said second structural component being spaced from one another by a distance corresponding to said predetermined length of said male coupling element of said first structural component, and said slot having two portions which diverge from one another in direction towards the respective major surfaces from a location midway between said major surfaces so that said portions of said slot are mirror-symmetrical with reference to one another, each of said portions having a cross-sectional matching the cross-section of said undercut portion of said male coupling element of said first structural component so that said male coupling element can be received into said slot when said first structural component is located at either of said major surfaces of said second structural component without the thickness of the latter exceeding said predetermined length of said male coupling element.

4,121,375
WHISTLE-CAP DEVICE
Wallace A. Erickson, and Dorothea C. Erickson, both of Chicago, Ill., assignors to Wallace A. Erickson & Company, Chicago, Ill.
Filed Feb. 2, 1976, Ser. No. 654,218
Int. Cl.[2] A63H *5/00*
U.S. Cl. 46—175 R **2 Claims**



1. A whistle cap device and a container having a head with an opening therein to said container and fastening means associated with said head, said whistle-cap device comprising:
a body having a top wall, bottom and sides and an end;
said body having space located in said body;
means for permitting the operation of said whistle-cap device only when said device is unfastened from the container, said operating means including a hollow passage extending from said space to said end to form an opening in said device which extends from said end to said space, said passage being located contiguous to said top wall;
said top wall having an opening therein extending through said top wall to said passage; and,
fastening means adapted to be fastened to said container, said fastening means being located adjacent said passage opening in said end;
said body fastening means being removably fastened to said container fastening means, whereby said device end will be positioned contiguous to said container head and said whistle-cap device will be inoperable as a whistle because of the inaccessibility of said passage opening but will be operable when said container is removed from said cap device.

4,121,376
PROPELLER DRIVEN TOY
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 563,365, Mar. 31, 1975, abandoned, which is a continuation-in-part of Ser. No. 361,050, May 17, 1973, Pat. No. 3,878,642. This application Apr. 15, 1977, Ser. No. 787,928
Int. Cl.[2] A63H *23/14*
U.S. Cl. 46—206 **5 Claims**



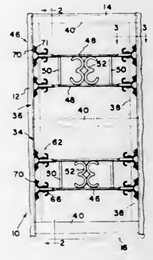
1. A vehicle toy having a rigid body formed of a lightweight hollow shell-like assembly,
said assembly including a lower body portion having wheels rotatably supported thereby for wheeled movement of said toy across a surface,
an upper body portion attached to and projecting above said lower body portion and defining a hollow pod extending at least partly along the length of said lower body portion,
a rubber band motor extending longitudinally through said pod,
means for anchoring one end of said rubber band motor to the front end of said hollow pod upper body portion of said vehicle,
a propeller and a propeller shaft connected to said propeller with which shaft said propeller is rotated,
bearing means at the other end of said pod supporting said propeller,
means attaching said propeller shaft to said rubber band motor,
said propeller having a length such that when it rotates on said bearing means and is driven when said rubber band motor unwinds after being wound up, the propeller will clear the surface along which said vehicle moves as said wheels rotate and will provide sufficient thrust for driving said vehicle toy across said surface.

4,121,377
GREENHOUSE DISPLAY BENCH
Peter A. Allen, and Robert S. Richfield, both of 108 Blossom Rd., Westport, Mass. 02790
Filed Mar. 14, 1977, Ser. No. 777,569
Int. Cl.[2] A01G *9/00*
U.S. Cl. 47—18 **12 Claims**



1. In a greenhouse display bench having a plurality of vertical posts, side rails interconnected between said posts at an angle thereto and a plurality of horizontal shelves supported by said side rails, each of said side shelves comprising a plurality of elongated sections having opposite longitudinal end portions, spacer means disposed in abutment between said sections at the end portions for maintaining the sections assembled in parallel spaced relation to each other, clamp means extending through said sections and the spacer means for holding the sections assembled, at least one of said sections and an abutting one of the spacer means having confronting recesses formed therein, a plug disposed within said recesses extending between said abutting section and spacer means and fastener means extending from one of the side rails between said abutting section and spacer means into the plug for interconnecting the shelf with the side rail.

4,121,378
ANTI-BURGLAR WINDOW GUARD
Arthur A. Wahl, 6205 Broughton Rd., St. Charles, Mich. 48655
Filed Jul. 21, 1977, Ser. No. 817,813
Int. Cl.[2] E06B *3/68*
U.S. Cl. 49—55 **8 Claims**

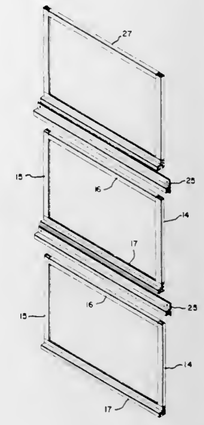


1. In combination with a window structure comprising a generally rectangular window frame having upstanding side frame members spanned by end frame members, said side frame members including inner and intermediate frame portions defining inner and outer generally parallel channels therein, a window sash receivable in each of said channels for sliding movement between vertically spaced positions, the improvement comprising:
a window guard including:
laterally extending barrier means;
mounting bracket means, adjustably movable on said barrier means, for mounting said barrier means;
anchoring means for anchoring said bracket means to said outer frame portion outwardly of said outer channel;
said barrier means including inwardly projecting stop means disposed in the path of said sash mounted on said outer channel to inhibit movement of said sash in said outer channel beyond a predetermined amount;
said barrier means comprising rod means;
said bracket means comprising sleeve means telescopically receiving said rod means;
said sleeve means including a spring detent and said rod means including an elongate recess receiving said detent.

4,121,379
MODULAR STORM WINDOW
William Everson, Perkasie, Pa., assignor to Perkasie Industries Corporation, Perkasie, Pa.
Filed May 19, 1976, Ser. No. 687,878
Int. Cl.[2] E05B *65/04*
U.S. Cl. 49—61 **5 Claims**

1. An auxiliary or storm window closure for window frames

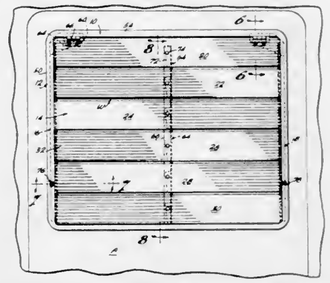
of various sizes mounted in a wall surface, which frames have diverse transverse and longitudinal dimensions, said closure comprising:
a plurality of parallel, rectangular, transparent panels, each having a length which exceeds the transverse dimension of said frames and a width which is less than the longitudinal dimension of said frames,
a plurality of elongated frame members having longitudinal slots which engage the edges of said panels, said frame members being positioned on the sides and along one lengthwise edge of said panels,
said frame members including a longitudinal base with a longitudinal portion thereof defining the bottom of each



slot, walls extending from said base to define the sides of each slot,
gaskets positioned between one of said walls and said window frame to sealingly engage said panels to said frames,
a plurality of track members joining adjacent panels along their length to form a sheet, said track members each having a generally flat, longitudinal surface adapted to be placed across said frame and fastened thereto between adjacent panels and having a horizontal slot with an opening facing vertically for receiving an adjacent panel and a gasket receiving slot,
gaskets positioned in said gasket receiving slots to sealingly engage the track member to an adjacent panel, and
means for attaching said sheet to said frame.

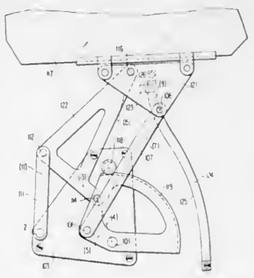
4,121,380
LOUVERED WINDOW SHADE DEVICE
Robert E. Lockshin, 2025 NE. 154th St., North Miami Beach, Fla. 33162
Continuation of Ser. No. 659,599, Feb. 20, 1976, abandoned. This application Mar. 8, 1977, Ser. No. 775,518
Int. Cl.[2] E05C *7/02*
U.S. Cl. 49—67 **8 Claims**

1. A louvered window shade device for mounting relative to the rear window of an automobile comprising:
a main body assembly comprised of a plurality of interconnected, horizontally disposed louvers, each louver including an elongated, transverse top wall and a pair of opposed end walls;
mounting means including means for frictional engagement between the outside surface of the rear window and an existing, resilient trim strip, conventionally disposed about the periphery of the window;
said mounting means comprising a pair of mounting bar assemblies, each including an elongated angle bar providing a first, outwardly extending web for frictional engagement between the outer surface of the rear window and one side run of the resilient trim strip, and a second, upstanding web;
an inwardly angled plate fixed to the top end portion of each of said elongated angle bars for frictional engagement between the outer face of the rear window and the end portion of a top run of the resilient trim strip;



hinge means interconnecting one edge portion of said main body assembly to said mounting means to permit said main body assembly to be pivoted between open and closed positions relative to the rear window;
latch means connecting between said main body assembly and mounting means.

4,121,381
JOINTED WINDOW LIFTER, ESPECIALLY FOR MOTOR VEHICLES
Helmut Grantz, Sindelfingen, and Heinz Faix, Gechingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Filed Apr. 11, 1977, Ser. No. 786,451
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1976, 2616239
Int. Cl.[2] E05F *11/52, 11/44*
U.S. Cl. 49—227 **25 Claims**



1. An articulated window lifter for a windowpane which not only may have to be lowered within predetermined limits but also may have to be laterally displaced and pivoted by reason of vehicle parts by lying along its way and to be by-passed, comprising a base plate means, and a pinion supported in said base plate means and engaging with a toothed means pivotally supported on the base plate means, characterized in that two multi-joint transmission linkage means are used in superposed relationship which include a common fixed pivot point on said base plate means, one of said multi-joint transmission linkage means having a further fixed pivot point on said base plate means and including first and second means, one of said first and second means is pivotally supported in said common fixed pivot point and the other of said first and second means is pivotally supported in said further fixed pivot point and third

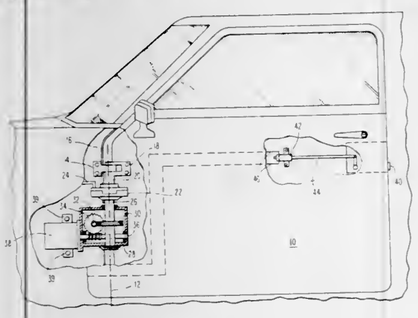
means for operatively connecting said first and second means with each other, the other multi-joint transmission linkage means also including first and second means, the first means of said other linkage transmission means being operatively connected under a fixed angle with one of said first and second means of said one transmission linkage means, fourth means for operatively connecting the first means of said other transmission linkage means with the second means thereof, and fifth means for operatively connecting the second means of said other transmission linkage means with said one of said first and second means and with the third means of the one transmission linkage means, said fifth means being connected with said third means of said one transmission linkage means under a fixed angle, and in that the toothed means is defined at least in part by the first means of said one and other transmission linkage means.

4,121,382

MECHANIZED DOOR OPERATING MEANS FOR A MOTOR VEHICLE

Edward J. Dietrich, 5126 Bond Ave., Drexel Hill, Pa. 19026, and Henry Hoiler, 4635 N. 5th St., Philadelphia, Pa. 19140

Filed Jul. 14, 1977, Ser. No. 815,513
Int. Cl.[2] E05F *15/18*
U.S. Cl. 49—334 **8 Claims**



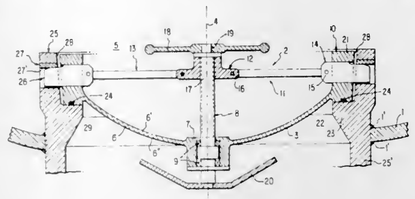
1. In a motor vehicle having a body portion including a doorpost and further including at least one door having a latch, motive apparatus disposed adjacent said doorpost for urging the door from a closed to an open position, comprising:
- an electric motor;
- a compound gear reduction unit drivingly coupled to said motor for multiplying the torque output of said motor;
- a hinge pivotally coupling the door of the vehicle to the doorpost thereof, said hinge defining a pivotal axis about which said door may swing;
- said hinge comprising a stationary portion and a movable section, said stationary portion being secured to said doorpost and said movable section being secured to said door, said movable section comprising a downwardly-depending portion thereof disposed colinearly with said pivotal axis;
- an electromagnetic clutch for selectively coupling said reduction gear unit to said movable section of said hinge for applying torque to said section in a direction for urging the door to an open position;
- said electric motor, compound reduction gear unit and clutch all being disposed adjacent one side of said doorpost, said gear unit and clutch being coupled directly to said movable section and being axially aligned with the pivotal axis of said hinge for transmitting torque directly to said movable section;
- a source of electric current; and
- switch means for selectively applying current to said motor and to said clutch.

4,121,383

CLOSURE MECHANISM FOR A DOOR

Billy H. Holmes, and John B. Schwartz, both of Lake Park, Fla., assignors to Perry Oceanographics, Inc., Riviera Beach, Fla.

Filed Jul. 11, 1977, Ser. No. 814,675
Int. Cl.[2] E05C *9/06*
U.S. Cl. 49—395 **11 Claims**



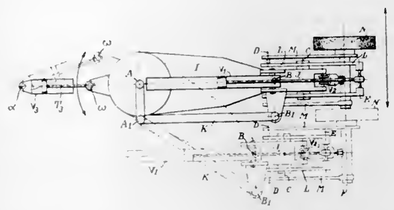
1. In combination with a door mounted in an opening provided in a wall of a vessel to seal the opening against pressure on either side of the door, the door having a dished configuration which is concave toward the inside of the vessel and being provided with a shaft extending axially of the opening when the door is closed and projecting inwardly from the concave side of the door, a door closure mechanism located substantially within the recess defined by the door at its concave side for securing the door in the opening, comprising:
- locking members disposed around the periphery of said door and movable into a position for locking said door to the opening;
- lever arms each having first and second ends, the first end of each said lever arm being connected to a respective one of said locking members;
- a spider hub mounted on and coacting with said axial shaft and connected to the second end of each of said lever arms for retracting said lever arms and locking members inwardly from the door locking position of said members when said hub is adjacent to said door and for extending said arms and members outwardly into the locking position of said members when said hub is away from said door; and
- means for moving said hub axially on said shaft.

4,121,384

GRINDING-PATH COMPENSATING DEVICE FOR CRACK AND FLAW REMOVING MACHINE

Michel Harmant, Neris les Bains, France, assignor to Etablissements Zelant, Gazuit, Montlucon, France

Filed Jun. 24, 1977, Ser. No. 809,809
Claims priority, application France, Jul. 1, 1976, 76 20070
Int. Cl.[2] B24B *7/00*
U.S. Cl. 51—34 D **1 Claim**



1. A machine for removing surface cracks and flaws from steelwork products comprising
- a frame structure;
- a post rotatably mounted on said frame structure about a vertical axis, said post having an integral horizontal radial arm with an outer end;
- a bracket trunnioned about a vertical axis on said outer end of said horizontal radial arm;
- a pair of studs, one of said studs being rigid with said frame structure and the other of said studs being rigid with said bracket;
- a link interconnecting said studs and maintaining said bracket in a fixed direction;
- a lever having an upper end and a lower end;
- a first fluid-actuated double acting cylinder carried by said bracket and connected to said upper end of said lever;
- a second arm having a first end and a second end, said second arm being pivotally carried by its said first end about a horizontal axis by said lower end of said lever;
- means for connecting said second end of said second arm to said bracket;
- a grinding wheel being rotatably mounted on said second end of said second arm; and
- a path compensating device controlling said first fluid-actuated cylinder with respect to a predetermined rotation of said post for imparting a corresponding rectilinear translation movement to said grinding wheel during said rotation, said compensating device comprising a second fluid-actuated double acting cylinder pivotally mounted between a point of said frame structure and a peripheral point of said post and coupled in parallel to said first fluid-actuated cylinder.

4,121,385

CAM GRINDING MACHINE

Hiroaki Asano, Chiryu, Japan, assignor to Toyoda-Koki Kabushiki-Kaisha, Tokyo, Japan

Filed Jun. 28, 1977, Ser. No. 810,804
Claims priority, application Japan, Aug. 12, 1976, 51-95352
Int. Cl.[2] B24B *5/42, 17/02*
U.S. Cl. 51—101 R **7 Claims**

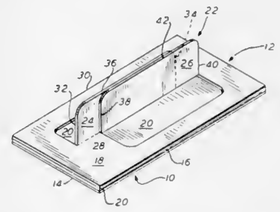
1. In a cam grinding machine having a rocking table pivotably mounted upon a traverse table through a pivot shaft, a work spindle rotatably supported upon said rocking table in parallel relation with said pivot shaft and having a plurality of master cams fixedly carried thereon, one end of said work spindle being adapted to selectively support a cam shaft or a model cam, means for urging said rocking table to pivot so as to contact said master cams with a follower roller, and first and second drive means for respectively rotating said work spindle and a master grinding wheel, the improvement of which comprises:
- a headstock housing fixed on said transverse table for housing said work spindle and formed with a pair of co-axial spaced through bores extending in parallel relation with said work spindle;
- a follower pilot bar capable of being removably held at both ends thereof in engagement with said through bores;
- a follower slider slidably guided by said follower pilot bar in a removable manner and rotatably supporting said follower roller in co-axial alignment with said follower pilot bar;
- a pair of bearing housings being respectively removably receivable in said through bores;
- rotational sleeves respectively rotatably supported within said bearing housings, one of said rotational sleeves being drivingly connectable with said second drive means;
- a wheel pilot bar disconnectably received at both ends thereof within said rotational sleeves in axial alignment with said through bores;
- a wheel slider guided by said wheel pilot bar in a removable manner and carrying said master grinding wheel for rotation together therewith about said wheel pilot bar; and
- shift means selectively engageable with said follower slider or said wheel slider for shifting any one in use of said follower roller and said master grinding wheel on the axis of said through bores;
- said follower pilot bar and said pair of said bearing housings being selectively received within said through bores.

4,121,386

MANUAL SURFACE TREATING DEVICE

Jose L. Perez, 150-A W. Eckerson Rd., Spring Valley, N.Y. 10977

Filed May 12, 1976, Ser. No. 685,655
Int. Cl.[2] B24D *15/04*
U.S. Cl. 51—392 **16 Claims**



1. A hand-held device for treating the surface of a work object comprising:
- (a) at least first and second substantially planar members disposed and secured to one another so as to be parallel to one another;
- (b) means for treating the surfac of the work object secured to the free planar surface of said first member; and
- (c) handle means which comprises at least one tab being defined by apertures formed within said second member, said tab being hingedly secured within said planar surface of said second parallel member, said portion of said second surface surrounding said tab being secured to said first member so as to maintain said parallel relationship.

4,121,387

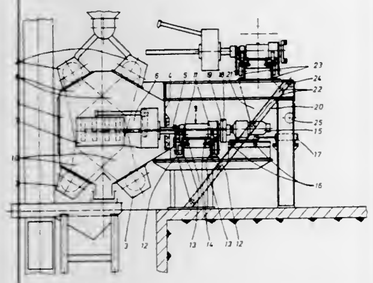
BLASTING MACHINE

Martin Weis, Ettlingen, and Adolf Scholz, Karlsruhe, both of Germany, assignors to Badische Maschinenfabrik G.m.b.H., Germany

Filed Mar. 12, 1976, Ser. No. 666,417
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1975, 2510827
The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.
Int. Cl.[2] B24C *3/14*
U.S. Cl. 51—418 **28 Claims**

1. A blasting machine having a blasting chamber which encloses at least one treatment station, a charging station before and a discharging station after the blasting chamber, and workpiece carriers which are mounted laterally at their one end in overhung relation outside the blasting chamber, the

workpiece carriers being constructed as pairs of tongs and mounted overhung on supporting structures movable laterally



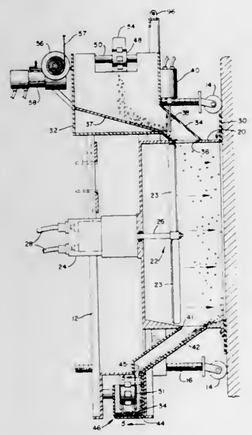
of the blasting chamber, and wherein the tongs are held by a self-locking mechanism comprising a threaded spindle in the closed position.

4,121,388

ABRASIVE SURFACE TREATING DEVICE

Dale Ray Wilson, Comanche, Okla., assignor to Hayden Dillard, Duncan, Okla.

Filed Jul. 8, 1977, Ser. No. 813,987
Int. Cl.[2] B24C *3/06*
U.S. Cl. 51—424 **6 Claims**



1. A mobile device for the abrasive treatment of surfaces, comprising:

a frame assembly movably supported by a plurality of adjustable support means;

a circular housing having an open end portion and supported by said frame assembly such that the open end portion is disposed parallel to the surface to be treated;

a resilient sealing element on the open end portion of said housing and adapted to be positioned in abutting contact with the surface to be treated;

a driven, axial-flow fan disposed within said housing and having a plurality of blades supported on a rotatable shaft, said blades being oriented substantially parallel with the surface to be treated to direct a stream of air substantially parallel to said shaft;

containment means for a supply of abrasive material, including means for directing the abrasive material into said housing, downstream of said fan blades to entrain the abrasive material within the air stream produced by said fan, the flow of entrained abrasive material and air being directed substantially perpendicularly to the surface to be treated;

means for collecting the spent abrasive material, including a collection channel supported on said frame assembly for receiving the spent abrasive material;

means for recycling the spent abrasive material, including a conveyor system cooperating with said collecting means to return the spent abrasive material to said containment means, said conveyor system having a continuous conveyor element passing through said collection channel and passing adjacent to said containment means, a plurality of holding elements spaced along said conveyor element for carrying the spent abrasive material, and drive means operatively connected to said conveyor element for causing movement of said conveyor element;

cover means cooperating with said frame assembly to enclose said collection channel and said conveyor system; and

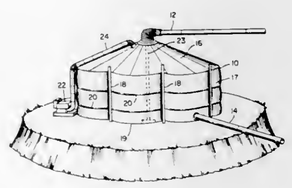
a system for controlling the longitudinal and lateral motions of said frame assembly, said system having a fluid motor and a cooperating winch.

4,121,389

PORTABLE, COLLAPSIBLE STORAGE BINS

Waldemar Ptaszek, 297 Park Slope, Clifton, N.J. 07011

Filed Feb. 2, 1977, Ser. No. 764,757
Int. Cl.[2] B65G *3/08*
U.S. Cl. 52—2 **11 Claims**



1. A portable, erectile, collapsible storage bin for flowable, dry materials comprising:

(a) an integral, flexible, inflatable, moisture-proof membrane, said membrane defining a closed volume, said volume having openings for the in-flow and out-flow of material, and said membrane, when erected also exhibiting a conical portion in which said in-flow opening comprises the apex of said cone and is also disposed upon the axis of radial symmetry thereof;

(b) a plurality of rigid poles for supporting said flexible membrane against lateral forces induced by the dry material therein, each pole being of equal length, each having a height of between two and eight feet, and each disposed normal to the plane of the ground, each pole being equidistantly disposed from each adjacent pole upon a circle defined by one radii of said axis of symmetry of said cone, such that an essentially polygonal cross-section is defined by the placement of said poles, in which said poles are placed exteriorly to said membrane in order to form thereof an essentially polygonal cylindrical surface normal to the plane of the ground, and thus to form a bin structure having a conical top, an essentially cylindrical middle, and a bottom which will conform in both shape and slope to the shape and slope of whatever rigid surface lies, or is placed therebeneath;

(c) a plurality of stress-release cables secured to said rigid poles in circumferential relation about the exterior of said cylindrical surface of said membrane, wherein required lateral support against stresses induced by the dry material, is obtained;

(d) a plurality of circumferential pockets formed within said membrane for securing said stress-release cables about said membrane in a fixed relation; and

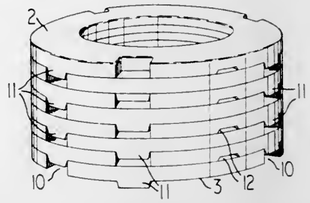
(e) means for volumetrically erecting said membrane prior to its use, said means comprising a center support disposed upon said axis of symmetry for lifting said membrane in a tent-like fashion, wherein said center support is adapted to support said membrane in a partial volumetric condition until said dry material is displaced therein, whereupon a self-sustaining shallow bin having a height of between two and eight feet is obtained.

4,121,390

PRE-CAST UNITS FOR SEWER CONSTRUCTION

Alfred George Hall, London, and Brian E. Brown, Burlington, both of Canada, assignors to Moduloc Concrete Products (London) Ltd., Concord, Canada

Filed May 27, 1977, Ser. No. 801,439
Int. Cl.[2] E02D *29/12*
U.S. Cl. 52—20 **13 Claims**



1. A pre-cast concrete unit for building a manhole by stacking a plurality of generally identical units on each other in an upwardly coaxial fashion; said unit comprising a peripheral member defined by a first generally flat face and a second generally flat face, the faces being each generally coincident with a single plane, said faces being generally parallel with each other and axially spaced from each other and having each an inside edge portion and an outside edge portion; an inside wall and an outside wall extending between said inside edge portions and said outside edge portions, respectively, to define the width of said member; and locking means for maintaining a stack of said units in a vertically coaxially aligned relationship; said locking means comprising male members peripherally spaced from each other, and female members peripherally spaced from each other and from said male members; said female members being a plurality of peripherally spaced cutouts provided in at least one of said walls, the depth of each of said cutouts being less than the width of said peripheral member; said male members being a plurality of protrusions corresponding in peripheral shape to the contour of said cutouts and protruding from at least one of said faces near said at least one of the side walls; whereby each of said faces of the peripheral member is a generally flat planar surface, continuous over generally the entire width of said member.

4,121,391

FASTENING OF CURTAIN WALL TO BUILDING AND CLIP THEREFOR

Donald Earl Schroeder, Brookfield, Wis., assignor to Inryco, Inc., Melrose Park, Ill.

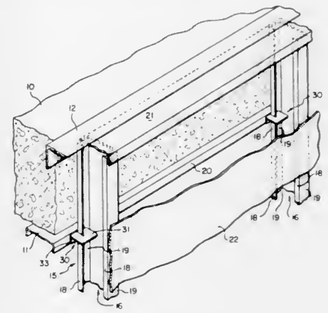
Filed Nov. 26, 1976, Ser. No. 744,974
Int. Cl.[2] E04F *13/00*
U.S. Cl. 52—235 **4 Claims**

1. A metal clip comprising:

a planar metal body of substantially uniform thickness,

a pair of integral planar metal flanges parallel to each other and laterally extending from the metal body with a gap of uniform width between adjacent side edges of the flanges,

an elongated opening of about uniform width in the metal body extending inwardly from, and having about the same width as, the gap, with said opening being adapted to snugly receive a vertical flange of a curtain wall vertical member; and



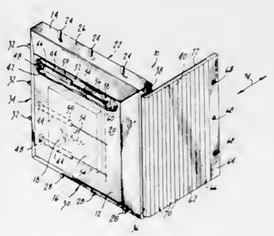
one of the planar metal flanges being located outwardly beyond the other planar metal flange for a distance about equal to the thickness of a curtain wall vertical member flange whereby the outwardly extending planar metal flange can be fastened to a horizontal member on a building with the inner planar metal flange in contact with a flange of the curtain wall vertical member and with a flange of the curtain wall vertical member in the gap and in the elongated opening.

4,121,392

EXTENSIBLE PARTITION

Donald Raymond Plewacki, 940 S. Lake Shore Way #A22, Lake Alfred, Fla. 33850

Filed Oct. 26, 1977, Ser. No. 845,481
Int. Cl.[2] E04B *1/343*
U.S. Cl. 52—64 **8 Claims**



1. An extensible partition comprising

an elongated said rigid member, defined by a pair of rigid panels extending parallel to one another and in spaced apart juxtaposed relationship, means to partially bridge said pair of panels together in spacer like fashion about a portion of the marginal edges of said pair of panels,

a remaining portion of said marginal edges defining a slot, said slot communicating to a cavity located between interior opposed surfaces of said pair of panels,

a flexible element, one end of said flexible element being disposed captured in said cavity and extending through said slot, the other end of said flexible element being disposed outwardly of said cavity,

a rigid elongated strip, said rigid elongated strip fixedly secured to said other end of said flexible element, means to gravity load said one end of said flexible sheet causing said

one end of said flexible sheet to be urged inwardly into said cavity towards a portion of said portion of said marginal edges, said portion of said portion of said marginal edges being disposed oppositely located to said slot and means to spring bias said one end of said flexible element toward said portion of said portion of said marginal edges when said other end of said flexible element is disposed outwardly from said slot.

4,121,393

DEVICE FOR PROTECTING A STRUCTURE AGAINST THE EFFECTS OF HIGH HORIZONTAL DYNAMIC STRESSES

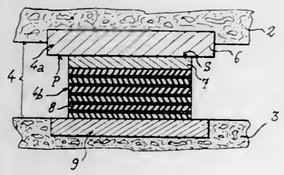
Jean Renault, Crespieres; Francois Jolivet, La Verpilliere; Claude Plichon, Le Pacq, and René Bordet, Courbevoie, all of France, assignors to Spie-Batignolles, Puteaux and Electricite de France, Paris, both of, France

Filed Jun. 18, 1976, Ser. No. 697,632

Claims priority, application France, Jul. 1, 1975, 75 20654; Oct. 31, 1975, 75 33393

Int. Cl.² E04H *9/02*

U.S. Cl. 52—167 **5 Claims**



1. A construction protected against the effects of high horizontal dynamic stresses and vibrations of seismic origin, said construction resting on foundations by a plurality of seating block means each comprising in combination a) friction means for permitting relative horizontal displacement of the construction with respect to the foundations, said friction means absorbing at least part of the energy of said horizontal dynamic stresses, said friction means having two horizontal friction surfaces in contact with each other, said friction surfaces having a predetermined coefficient of static and dynamic friction comprised between a minimum value which is compatible with the permissible displacements of the construction as a function of the structural connections of the construction and a maximum value which is compatible with the threshold value of inherent resistance of said construction, said minimum and maximum values being chosen within the range between 0.08 and 0.5, the nature, the surface treatment and the profile of said friction surfaces being such that said coefficient of friction is stable in time and substantially constant and lies in said range in respect of maximum rates of displacement within the range of 0.20 to 1 m/sec approximately and in respect of bearing pressures within the range of 20 to 200 bars approximately; and b) elastomer blocks supporting the weight of the construction and dimensioned such that the vibration of the different points of the construction is in phase and is maintained below 4 Hz, thereby to prevent resonance of the construction with the frequency of the seismic vibrations.

4,121,394

METHOD OF INSTALLING A PANE TO AN EXISTING GLAZED SYSTEM

Marvin V. Brooks, Kokomo, Ind., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 26, 1977, Ser. No. 828,064

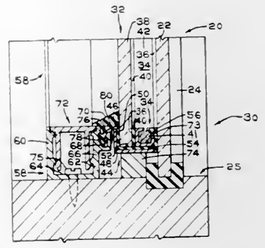
Int. Cl.² E06B *3/28*

U.S. Cl. 52—203 **12 Claims**

1. A method of installing a pane having a first major surface and a second major surface to an existing glazed unit mounted in a fenestration, comprising the steps of:

placing the pane in juxtaposition to the existing glazed unit with an adhesive flowable under a predetermined pressure between the first major surface of the pane and adjacent surface of the existing glazed unit;

securing an elongated member having retaining means on a surface thereof on the fenestration with the surface having the retaining means spaced a predetermined distance from the second major surface of the pane;



providing a resilient biasing means having a biasing pressure when mounted in the retaining means of the secured elongated member at least as great as the predetermined pressure required to flow the adhesive; and

urging the biasing means in the retaining means of the secured elongated member to compress the resilient means and to capture the resilient means in the retaining means which urges the pane toward the existing glazed unit to apply a pressure to the adhesive therebetween greater than the predetermined pressure required to flow the adhesive.

4,121,395

FIBRE REINFORCED PLASTICS PART FOR USE UNDER TRACTION

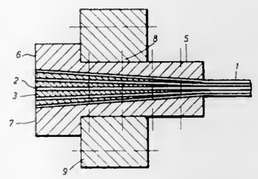
Artur Rudolf, Biebelshofer Weg 2, Hermesdorf-Waldbroel, Germany (5221)

Filed Feb. 25, 1977, Ser. No. 772,361

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1976, 2610915

Int. Cl.² E04C *3/10*

U.S. Cl. 52—230 **8 Claims**



1. A fibre reinforced plastic element for use under traction, comprising a plurality of fibre reinforced layers disposed at least in a zone where the forces of traction are to be introduced and a plurality of metal force transmitting elements each disposed between two adjacent layers and directly bonded thereto with each one of the intermediate layers disposed between two adjacent metal force transmitting elements and directly bonded thereto to effect force transmission from each force transmitting element.

4,121,396

CURTAIN WALL CONSTRUCTION

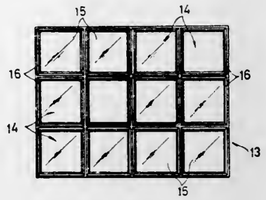
Eiryo Oogami, Kurobe, and Isamu Matsubara, Nyuzen, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 13, 1977, Ser. No. 841,938

Claims priority, application Japan, Oct. 15, 1976, 51-139079[U]

Int. Cl.² E04H *1/00*

U.S. Cl. 52—235 **6 Claims**



1. A curtain wall construction adapted for being mounted on a building framework, comprising:

(a) at least four spaced panel units each having a panel and a frame extending peripherally around said panel, each frame being adapted to be supported on the building framework, the frames of said four panel units jointly providing four intersecting channels along and between side portions of said frames which face one another, said channels extending substantially perpendicularly to adjacent channels and jointly providing a channel crossing where they intersect, said channels having bottom slots;

(b) a backup crossing disposed in said channel crossing, said backup crossing having four integral legs extending at a right angle to adjacent legs, said backup crossing being made of a resilient material and having reinforcing core wires embedded in each of said legs;

(c) backup bars disposed in said channels and having ends held in abutting engagement with the distal ends of said legs of said backup crossing, said backup bars being made of a resilient material;

(d) a caulking compound applied to exposed surfaces of said backup crossing and backup bars and filling said slots in said channels;

(e) each of said channels being provided by a pair of spaced sidewalls on the opposed side portions of said frame, said sidewalls having on their distal edges a pair of retainer flanges directed toward each other, there being grooves in said backup bars and said legs of said backup crossing, and said retainer flanges being received in said grooves; and

(f) there being recesses in said sidewalls, and said legs of said backup crossing having ridges received in said recesses.

4,121,397

WOODEN BUILDING BRICKS

Guy D. Marcocci, Dudley, Pa. 16634, and Peter Yablonski, Saxton, Pa. 16678

Filed May 16, 1977, Ser. No. 797,425

Int. Cl.² E04B *1/54*

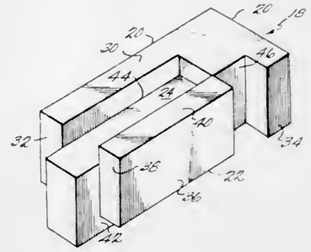
U.S. Cl. 52—286 **1 Claim**

1. An interlocking corner building block comprising a solid body of wood including an exterior portion of generally L-shaped configuration in plan, a spaced interior portion of generally rectangular shape in plan and an intermediate portion rigidly interconnecting said exterior and interior portions,

said exterior portion having generally planar intersecting exterior surfaces of rectangular configuration facing in directions which are perpendicular with respect to each other, said rectangular exterior surfaces having equal coextensive heights measured in the direction of intersection, one of said rectangular exterior surfaces having a length generally twice the length of the other, said exterior portion having parallel planar side surfaces extending inwardly along the length of said exterior surfaces and two planar end surfaces one of which extends inwardly of the free end of said one rectangular exterior surface in parallel relation to the other rectangular exterior surface and the other of which extends inwardly of the free end of the other rectangular exterior surface in parallel relation to said one rectangular exterior surface,

said interior portion having a planar surface disposed within a plane common with said other end surface of said exterior portion, a planar end surface disposed in a plane common to said one end surface of said exterior portion, a first groove side defining surface disposed in parallel relation to said end surface of said interior portion and facing in the opposite direction and parallel side surfaces disposed in parallel planes common to the side surfaces of said exterior portion,

said intermediate portion having parallel rectangular planar surfaces disposed in abuting alignment with said parallel planar side surfaces of said exterior portion, said intermediate portion providing an L-shaped tongue of rectangular cross-sectional configuration between the end surface of said interior portion and said one end surface of said exterior portion and two common adjacent side surfaces of said exterior and interior portions and a first complementary groove of rectangular cross-sectional configuration between the other two common end surfaces of said exterior and interior portions,



said first complementary groove being open at one end and defined at its other end by an end wall disposed in general alignment with one end of said L-shaped tongue and in intersecting relation with the associated rectangular planar surface of said intermediate portion, the bottom of said first complementary groove being defined by a surface disposed in aligned relation with the opposite end of said L-shaped tongue,

said exterior portion having a second groove side defining surface disposed in parallel relation with and facing toward said first groove side defining surface, said intermediate portion having a groove bottom defining surface disposed in parallel relation with the planar surface of said interior portion and intersecting at its ends with the rectangular surfaces of said intermediate portion and at its sides with said first and second groove side defining surfaces so as to define therewith a second complementary groove of rectangular cross-sectional configuration open at both ends,

said exterior portion being formed with a beveled peripheral surface between said exterior surfaces and the end and side surfaces thereof.

4,121,398

SPACE FRAMEWORK

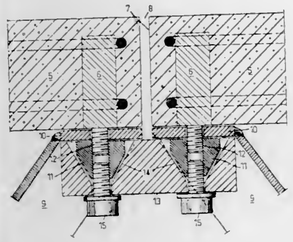
Volker Hahn, Leinfelden, and Werner Fastenau, Esslingen-Rüdern, both of Fed. Rep. of Germany, assignors to Ed. Züblin Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 3, 1976, Ser. No. 682,627

Claims priority, application Fed. Rep. of Germany, May 2, 1975, 2519664

Int. Cl.[2] E04C *3/02*

U.S. Cl. 52—646 **13 Claims**



1. A space framework for building up dismountable ceilings and walls, which includes: pyramid-shaped elements, each of said elements including a reinforced concrete slab with side edges and corners, steel profiles or tubes connected to said corners and adapted to be subjected to tensile and pressure forces, and a joint; the profiles of each of said pyramid-shaped elements coming together at the respective pertaining joint; connecting elements connect said pyramid-shaped elements at the corners of the pertaining reinforced concrete slabs free of side edge connections to form a space-confining surface adapted in its plane to receive pressure forces; and tension members extending substantially parallel to said space confining surfaces; said joints being respectively located at the tips of said pyramid and being connected to said tension members, said connecting elements being located transverse to the plane of the slabs and including pegs set into the reinforced concrete slab very precisely to measurement, said pegs having ends projecting freely underneath the slabs, a strut having a perforated plate portion including openings through which the ends of the pegs extend, said ends defining a connecton, conical centering members secured to the connection of the ends, and a connection plate having cone-shaped bores into which said conical centering members fit which cover the corners of adjoining slabs to hold said connection plate therewith.

4,121,399

METHOD AND APPARATUS FOR PACKAGING COMPRESSIBLE MATERIAL INTO FLEXIBLE-WALLED CONTAINERS

Emile Verville, 429 St-Alfred St., Drummondville, Quebec, Canada (J2C 4A8)

Filed Jun. 21, 1977, Ser. No. 808,714

Int. Cl.[2] B65B *1/24*

U.S. Cl. 53—436 **20 Claims**

1. A method for packaging compressible material into a flexible-walled container on an intermittently rotating support carrying a holding means and an associated, vertically movable loading tube located above the holding means, said support being operable to position said holding means and its associated loading tube at each of a series of four work stations, and said method including the steps of:

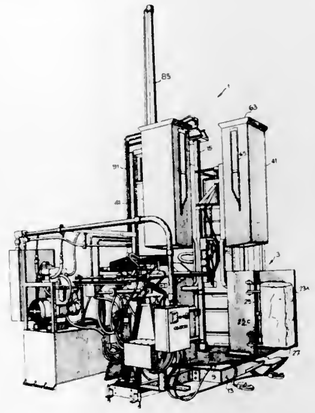
beginning with said holding means and its associated loading tube located at a first of said four work stations and with said loading tube in its lowered position, positioning the container to be filled inside said holding means with a top portion thereof drawn up around the bottom end of the lowered loading tube, said holding means having rigid walls for confining the container to a desired, filled shape;

operating said support to move said holding means and its associated loading tube to a second work station;

delivering a predetermined quantity of said compressible material through said lowered loading tube and into said container said quantity being in excess relative to the container;

operating said support to move said holding means and its associated loading tube to a third work station;

compressing the material down said lowered loading tube and into the container;



operating said support to move said holding means and its associated loading tube to a fourth work station;

raising the loading tube, and thereafter folding the top portion of the filled container over the upper surface of the compressed material to close the container;

operating said support to move said holding means and its associated loading tube back to said first work station; and

removing the closed, filled container from the holding means, after which said loading tube is lowered in preparation for the start of another operating cycle.

4,121,400

APPARATUS FOR AND METHOD OF COMPACTING CONTENTS IN AND FILLING LIQUID INTO CONTAINERS

Donald F. Sohn, Rolling Meadows, and Ernest L. Doering, Arlington Heights, both of Ill., assignors to Standard Metal Products Co., Franklin Park, Ill.

Filed Jun. 30, 1977, Ser. No. 811,872

Int. Cl.[2] B65B *3/04, 3/18, 25/04*

U.S. Cl. 53—436 **22 Claims**

1. Apparatus for packing articles in open top containers and concurrently filling the containers with liquid, comprising, in combination:

a supporting frame structure;

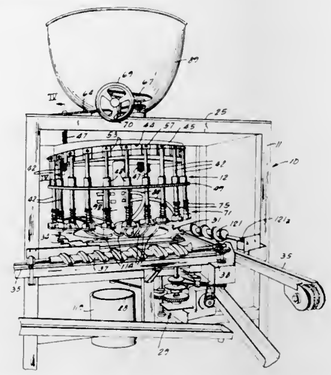
a rotary device having a hollow vertical shaft rotatably journaled on said frame structure;

liquid supply means communicating with the interior of the hollow shaft;

means for supporting and transporting a series of the open top containers between a container infeed station and an adjacent container takeaway station;

an array of vertically reciprocable plungers carried by said device for operation in the course of rotation of the device in alignment with predetermined container supporting positions on said container supporting and transporting means and having lower end presser foot pads and upper end means for effecting cyclical downward pressing strokes of the plungers wherein the presser pads push articles down into aligned containers in said positions, and

reverse retracting strokes wherein the plungers are retracted upwardly and the presser pads withdrawn from the containers;



and means communicating with the hollow shaft for delivering article immersing liquid into the containers while the respective plungers are operated in their pressing strokes.

4,121,401

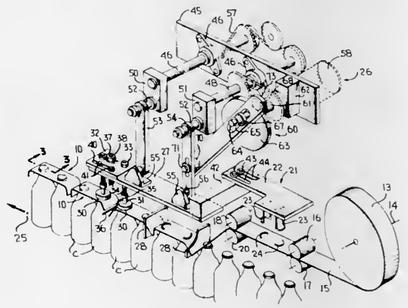
METHOD AND APPARATUS FOR APPLYING REINFORCING STRIPS TO ADJACENT PAIRS OF CONTAINERS

Joseph W. Duerr, Rockleigh, and Robert H. Ganz, Saddle River, both of N.J., assignors to Ganz Brothers, Inc., Bergenfield, N.J.

Filed May 25, 1977, Ser. No. 800,426

Int. Cl.[2] B65B *21/00*

U.S. Cl. 53—398 **23 Claims**



18. A method of reinforcing a pick-up area of a multi-pack of containers, said method comprising the steps of providing a reinforcing strip; and repeatedly and simultaneously perforating the strip at constant intervals, applying the perforated strip into overlying relation relative to pairs of containers, and severing the strip between adjacent pairs of containers.

4,121,402

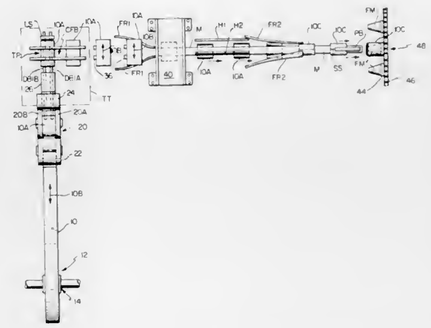
METHODS AND MEANS FOR MANUFACTURING FOAM PLASTIC CONTAINERS AND SIDEWALL BLANKS FOR SAME

Allan K. Cress, Baltimore, and Charles E. Busse, Jarrettsville, both of Md., assignors to Maryland Cup Corporation, Owings Mills, Md.

Filed Mar. 10, 1976, Ser. No. 665,617

Int. Cl.[2] B29C *27/14*

U.S. Cl. 53—452 **35 Claims**



13. The method of forming and filling containers with dispensed products on a continuous in-line basis comprising:

forming said containers from heat shrinkable longitudinally oriented rolled lengths of plastic sheet material as follows:

feeding said length from a roll and cutting same into lfike rectangular blanks having said orientation in the longitudinal direction thereof;

conveying said blanks transversely of said longitudinal direction while progressively folding and advancing said blanks about and along an elongated cylindrical mandrel until the ends of said blanks overlap on said mandrel to form cylindrical blanks each having a longitudinal side seam defined by said overlap and with said orientation directed circumferentially of each said blank;

applying heat to said ends of said blanks during the advancement thereof along said mandrel;

applying pressure along said heated overlapped ends to seal said side seam and complete each said cylindrical blank on said mandrel;

ejecting said finished cylindrical blank from said mandrel subsequent to sealing said side seam;

transferring said cylindrical blanks from the end of said mandrel synchronously onto individual second mandrels having a shape corresponding to that of the sidewall of a desired container configuration;

placing a bottom portion of plastic sheet material on said second mandrels prior to shrinking said cylindrical blanks;

shrinking said blanks onto said second mandrels and over at least the peripheral portion of said bottom portion;

sealing the overlapped areas of said blank and said bottom portion to provide a closed bottom seam;

ejecting said container from said mandrel;

forming an annular rim configuration on said containers;

conveying said containers directly to a filling station;

filling said containers with a measured amount of a product; and

applying a cap to said containers;

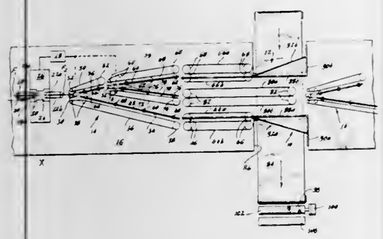
said container forming filling and capping operations all being synchronized to effect continuous forming and filling of said containers without storing same.

4,121,403

FLAT MAIL SORTER AND LOADER

John J. Bogdanski, Stamford; Frank R. Chiappetta, Oxford, and Gerald C. Freeman, Darien, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sep. 6, 1977, Ser. No. 830,934
Int. Cl.[2] B65B *11/00*
U.S. Cl. 53—202 23 Claims



1. Apparatus for loading flat mail pieces bearing corner positioned postage indicia in either of two orientations into receptacles in either of two loading positions and discharging the loaded receptacles with uniformly faced mail therein comprising:

a first loading station;

means for delivering mail pieces edge first to said first loading station with each having its postage indicia positioned on its upper surface adjacent its trailing edge relative to its direction of movement;

means for sequentially supplying said receptacles for loading at said first loading station;

means at said first loading station for inserting said mail pieces in said receptacles in edge-standing relationship with their postage indicia adjacent their upper edges;

means for sequentially discharging loaded receptacles from said first loading station with a preselected orientation relative to the postage indicia locations of the mail pieces therein;

a second loading station;

means for delivering mail pieces edge first to said second loading station with each having its postage indicia positioned on its lower surface adjacent its trailing edge relative to its direction of movement;

means for sequentially supplying said receptacles for loading at said second loading station;

means at said second loading station for inserting said mail pieces in said receptacles in edge-standing relationship with their postage indicia adjacent their upper edges; and,

means for sequentially discharging loaded receptacles from said second loading station with the same orientation as receptacles from said first loading station.

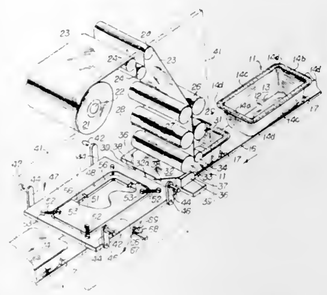
4,121,404

APPARATUS FOR APPLYING FOIL COVERS FOR TRAYS

Raymond A. Davis, 1150 Chula Vista, Belmont, Calif. 94002

Continuation-in-part of Ser. No. 718,465, Aug. 30, 1976, abandoned. This application Jan. 18, 1978, Ser. No. 870,461
Int. Cl.[2] B65B *7/28*
U.S. Cl. 53—329 17 Claims

11. Apparatus for feeding foil for subsequent use in wrapping a tray movable along a continuous conveyor, said tray being of the type having a circumferential peripheral lip comprising sheet feed means for feeding a sheet of foil from a location above said conveyor hanging vertically toward said conveyor with the leading edge of said sheet positioned below the leading edge of the lip of one said tray as said tray advances along said conveyor, a pair of stationary blocks on opposite edges of said conveyor positioned to engage said leading edge of said sheet to turn said sheet to horizontal position and bend the lowermost two corners of said sheet partially inward under the corners of the leading edge of said lip, whereby said sheet



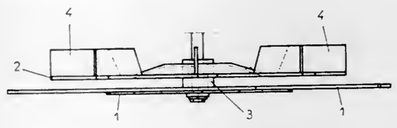
advances with said tray and is held against sliding off said tray and overlies said tray as it advances on said conveyor.

4,121,405

GRASS-CUTTING AND AIR-IMPELLING MEANS FOR A ROTARY SCYTHE LAWN MOWER

Elmar Wolf, Au Wormberg, Wissembourg (Bas-Rhin), France

Filed Nov. 22, 1976, Ser. No. 743,669
Claims priority, application France, Dec. 22, 1975, 75 40182
Int. Cl.[2] A01D *55/18*
U.S. Cl. 56—12.9 3 Claims



1. For use in a rotary scythe lawn mower, means for cutting grass and impelling air for raising grass and transporting grass clippings, said means comprising at least one rotary cutter body having a cutting edge, a disc spaced above said cutter body, and a common shaft carrying said disc and said cutter body for rotation in unison about a substantially vertical axis, said disc having a plurality of upstanding substantially vertical vanes which extend substantially radially with respect to said vertical axis, said disc having also a plurality of suction openings each of which is disposed adjacent to and at the rear, having regard to the direction of rotation, of a respective one of said vanes, said suction openings being in the form of radially elongated slots which open through the periphery of the disc, said disc having a diameter substantially less than the diameter of said cutter body, the width of said vanes being at least as great as the width of said slots, the radial location of at least a portion of said suction openings in respect to the cutter body being between the outermost and innermost ends of the cutting edge to thereby overlie the cutting path of said cutter body.

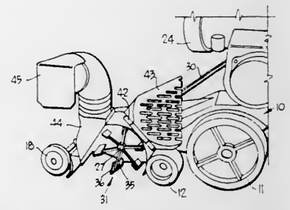
4,121,406

GRASS CUTTING MACHINE

Francis William Quintel, 564 Port Rd., Allenby Gardens, South Australia, Australia

Filed Sep. 15, 1976, Ser. No. 723,519
Claims priority, application Australia, Sep. 19, 1975, PC3246
Int. Cl.[2] A01D *53/14, 55/18*
U.S. Cl. 56—13.4 10 Claims

1. A grass cutting machine comprising a frame, a bearing in the frame, a shaft journalled in the bearing for rotation about a generally transverse axis, power means on the frame, drive means coupling the power means to the shaft for rotationally driving the shaft, a plurality of cutter blades, means securing the cutter blades to the shaft, the cutter blades radiating outwardly from the shaft, each cutter blade having an outer edge which slopes outwardly away from said bearing in both an axial direction and a radial direction, the cutter blades when driven constituting air impellers which cause an air flow axially towards the shaft bearing and radially outwardly past the



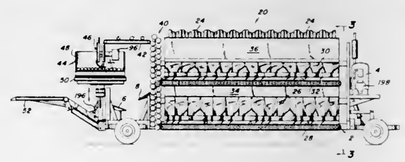
cutter blades, said frame comprising a shroud extending partly around the cutter blades, said shroud defining an access opening in the side of the frame at the location of the cutter blades, a discharge aperture in the shroud, wheels supporting the frame at a sufficient height above the ground that the cutter blades do not encounter the ground upon rotation, and transversely extending axles supporting the wheels for rotation about respective transverse axes.

4,121,407

HIGH CAPACITY HARVESTING APPARATUS

William F. Millier, Ithaca; Gerald E. Rehkugler, Dryden; Roger A. Pellerin, Freeville, and James A. Throop, Brooktondale, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 564,149, Apr. 1, 1975, Pat. No. 4,014,440. This application Mar. 28, 1977, Ser. No. 782,217
Int. Cl.[2] A01D *46/24*
U.S. Cl. 56—329 2 Claims



1. High-capacity multi-level harvesting apparatus, comprising

(a) a vehicle frame adapted for transport relative to a tree to be harvested;

(b) a plurality of catcher means connected with said frame at different elevations thereon for receiving articles harvested from said tree;

(c) bin filling means connected with said frame, said bin filling means including downwardly directed article discharge means rigidly connected with said frame, rotary bin-supporting platform means connected with said frame for vertical displacement beneath said article discharge means, means for raising said platform means to an empty bin filling position relative to said article discharge means, level sensing means responsive to the layers of articles deposited in said bin for incrementally lowering said platform in steps corresponding with the vertical height of said layers, and means for continuously rotatably driving said platform means; and

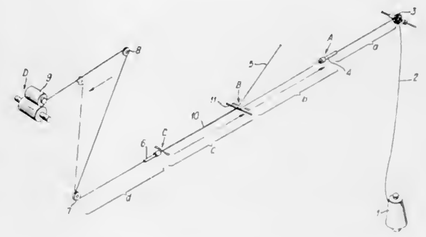
(d) conveyor means for transporting articles from said catcher means to said article discharge means, said conveyor means including padded roller elevator means including a pair of parallel spaced stacks of parallel horizontal rollers, the roller stacks having a greater elevation at one end than at the other, the rollers of one stack being driven in one direction and the rollers of the other stack being driven in the opposite direction, the articles from at least two of said catcher means being introduced between the stacks at locations which are longitudinally spaced along said roller stacks.

4,121,408

DOUBLED-YARN OF ELASTIC AND NON-ELASTIC YARNS AND METHOD AND APPARATUS FOR PRODUCING SAME

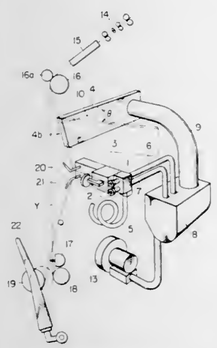
Senichi Maeda, 462 Shinhakusuimarucho, Ichijo Sagaru, Chiekoindori, Kamigyo-ku, Kyoto, Japan

Filed Jul. 20, 1977, Ser. No. 817,180
Claims priority, application Japan, Sep. 9, 1976, 51-108986
Int. Cl.[2] D02G *3/32, 3/26*
U.S. Cl. 57—12 5 Claims



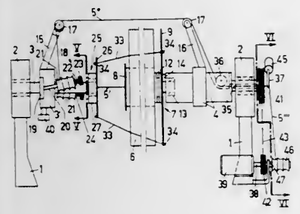
1. A method for producing a doubled-yarn package of elastic and non-elastic yarns, comprising the step of imparting first-twist to a non-elastic yarn alternately in opposite directions at a first operating station, doubling an elastic yarn which is in a stretched condition with said first-twisted non-elastic yarn at a second operating station, and imparting second-twist to the doubled-yarn alternately in opposite directions at a third operating station and then winding it on a winding core such as a cheese or cone, wherein the first twisting of the non-elastic yarn at said first operating station and the second twisting of the doubled yarn at said third operating station are simultaneously effected with the feeding of the respective yarns stopped, the directions of the first twist at said first operating station being opposite to the directions of the second twist at said third operating station, the elastic and non-elastic yarns at said second operating station being held stationary during the twisting operations at said first and third operating stations, and wherein after the first and second twists have been imparted in fixed amounts and in fixed directions on both sides of said second operating station, the first and second twisting operations at said first and third operating stations, respectively are stopped, whereupon the second-twisted doubled yarn and the first-twisted non-elastic yarn are clampld immediately after they leave the second and first operating stations, respectively, whereupon they are forwardly moved until their clamped positions reach the third and second operating stations, respectively.

4,121,409
YARN PIECING AND KNOTTING DEVICE FOR PNEUMATIC SPINNING APPARATUS
Hiroshi Uchida, Kyotoshi; Kunio Umeda, Ohmi Hachimanshi; Zenpei Tachibana, Nishinomiyashi, and Nobunori Kubota, Nagaokakyoshi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan
Filed Jun. 21, 1977, Ser. No. 808,463
Claims priority, application Japan, Jun. 25, 1976, 51-75930
Int. Cl.[2] D01H *15/00*
U.S. Cl. 57—22 **13 Claims**



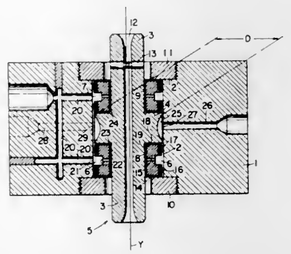
1. A yarn piecing and knotting device for use in piecing broken yarn in a pneumatic spinning apparatus, which is disposed between a take-out roller and a winding package in the pneumatic spinning apparatus, said piecing device comprising a spun yarn sucking pipe for sucking and attracting a yarn spun through the take-out roller, a separate wound yarn sucking pipe for sucking and catching a broken yarn end from the winding package, a knotter for knotting the sucked spun yarn with the sucked wound yarn, and a retaining means for retaining a yarn spun from the spinning apparatus during a period ranging from the time of completion of the operation of the knotter to the time of resumption of the winding operation only, in a slackened U shape configuration by the force of air, said retaining means being disposed between the take-out roller and the spun yarn sucking pipe.

4,121,410
DOUBLE TWISTING MACHINE
Aleidus Gerard Bosman, Van Bergenlaan, 17, Wassenaar, Belgium
Filed Mar. 21, 1977, Ser. No. 779,541
Claims priority, application Belgium, Mar. 22, 1976, 839884
Int. Cl.[2] D01H *7/86, 7/28*
U.S. Cl. 57—58.63 **10 Claims**



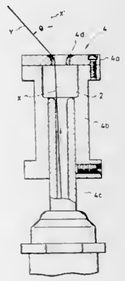
6. A double twisting machine comprising:
a. a frame,
b. a guide with at least two parts laying opposite one another, which guide is rotatably mounted on the frame,
c. means for rotating said guide,
d. a bobbin holder, mounted on one of the guide parts for rotation about an axis extending from said one guide part in the direction of the opposite guide part, said guide being located outside the bobbin holder, said guide guiding the element to be twisted which is unwound from a bobbin on the holder about the bobbin from the part which is free on the bobbin to the opposite part on which the holder is mounted,
e. means for opposing rotation of the bobbin holder with respect to the frame as the guide rotates and consequently for retaining the bobbin holder stationary and,
f. a brake mechanism mounted on the guide to put under tension the element to be twisted and rotating with the guide,
g. a pre-braking mechanism for the element to be twisted, which is located between the braking mechanism and the nearest end of the bobbin holder, said pre-braking mechanism being rotatably supported relative to the guide and comprising a disk provided with an opening for the element to be twisted, and a hairpin spring associated with said disk and pushing resiliently with one leg against the element to be twisted,
h. and means to retain said disk stationary relative to the frame while the guide revolves.

4,121,411
FALSE TWISTING SPINDLE
Noboru Shindo, Maikatashi; Hiroshi Hashizume, Kyotoshi, and Shuichi Kikuchi, Nagaokakyoshi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan
Continuation of Ser. No. 493,508, Aug. 1, 1974, Pat. No. 3,977,171. This application Aug. 30, 1976, Ser. No. 718,919
Claims priority, application Japan, Aug. 8, 1973, 48-89573
The portion of the term of this patent subsequent to Aug. 31, 1993, has been disclaimed.
Int. Cl.[2] D02G *1/04*
U.S. Cl. 57—77.3 **1 Claim**



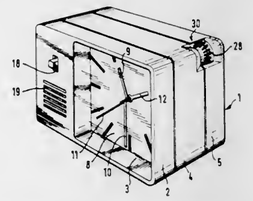
1. A false twisting spindle comprising a turbine having a hollow cylindrical shaft at the axis of rotation thereof and a turbine blade impeller on the outer periphery centrally thereof, the diameter of the turbine blade impeller having a determined relation to the denier of a yarn to be twisted by the spindle, a twister pin extending transversely of the turbine shaft across the opening therein adjacent one end thereof, and mounting means for the turbine including a body member and bearings therefor rotatably mounting the turbine in the body member.

4,121,412
SPUN YARN AND PROCESS FOR MANUFACTURING THE SAME
Teiryo Kojima, and Shin-ichi Kitazawa, both of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Division of Ser. No. 696,708, Jun. 16, 1976, Pat. No. 4,062,177. This application May 10, 1977, Ser. No. 795,529
Int. Cl.[2] D02G *3/00, 3/32*
U.S. Cl. 57—157 R **10 Claims**



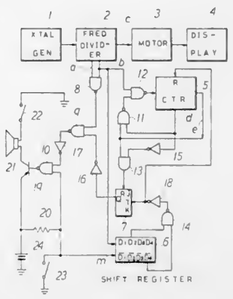
1. A method for manufacturing a spun yarn which comprises contacting substantially non-twisted continuous multi-filament yarn, fed from a feed roller, with a cutter moving approximately at right angles to the yarn axis to cut it into staple fibers while mantaining the continuity of a fiber bundle, the cutter being composed of a hollow cylindrical rotary device and the continuous multi-filament yarn being cut by contacting with the inner surface of the hollow cylindrical rotary device, discharging the cut fiber bundle from a delivery roller rotating at a surface speed approximately equal to the surface speed of the feed roller, and then gathering and taking up the fiber bundle.

4,121,413
BATTERY OPERATED ELECTRIC CLOCK WITH IMPROVED CASING
Heinrich Kissinger, Griesheim, and Franz Gutmann, Frankfurt, both of Germany, assignors to VDO Adolf Schindling AG,, Frankfurt am Main, Germany
Filed Feb. 15, 1977, Ser. No. 768,903
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1976, 2607398
Int. Cl.[2] G04C *21/16, 3/00;* **G04B** *37/00*
U.S. Cl. 58—19 R **12 Claims**



1. In an electric clock, a three-part casing having front and rear parallel walls and divided into front, middle and rear portions with meeting edges lying in first and second discrete planes, front to rear, spaced from and parallel with said walls, means detachably connecting said portions to conjointly form a closed casing, a separating wall detachably secured to said middle casing portion and lying essentially in said first plane, within said casing, a clockwork attached to the rearward side of said separating wall, and including a rearwardly-facing printed circuit board, a battery compartment formed by said middle portion and laterally spaced with respect to said clockwork, time indicating means viewable through an opening in said front wall and connected for operation by said clockwork, and circuit connections for said printed circuit board, including battery contacts in said compartment, said printed circuit board being exposed on detachment of said rear portion from said middle portion.

4,121,414
ALARM TIMEPIECE
Hiroshi Yamazaki, Tokyo, Japan, assignor to Kabushiki Kaisha Seikosha, Japan
Filed Dec. 23, 1976, Ser. No. 753,846
Claims priority, application Japan, Dec. 23, 1975, 50-153728; Dec. 23, 1975, 50-153735
Int. Cl.[2] G04B *23/08*
U.S. Cl. 58—21.11 **4 Claims**

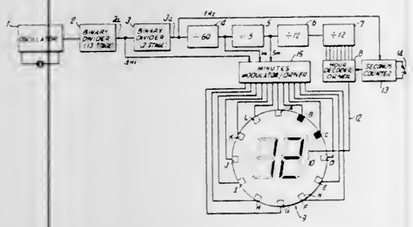


1. In an alarm timepiece:
a manually operable switch operable to three different settings; first means co-operative with said manually operable switch, for producing outputs respectively corresponding to a normal alarm function, a temporal suspension of the alarm function and a complete termination of the alarm function in response to first, second and third setting, respectively, of said manually operable switch; switching means operable at a pre-set time for developing a switching signal; second means reset by at least one output of the first means which is produced in response to the setting of the manually operable switch corresponding to the temporal suspension of the alarm function and which repeatedly counts a predetermined time interval when the reset condition is released; and third means responsive to the switching signal for generating an acoustic alarm when the switching means has been operated when the setting of the manually operable switch corresponds to the normal alarm, and when an output of the second means is produced when the switching means is being operated and the manually operable switch has been set to correspond to the temporal suspension of the alarm function.

4,121,415
HYBRID HOROLOGICAL DISPLAY USING TIME MODULATION
William C. Crutcher, Middlebury, Conn., and Leo Wiesner, Kew Gardens, N.Y., assignors to Timex Corporation, Waterbury, Conn.
Filed Feb. 7, 1977, Ser. No. 766,399
Int. Cl.[2] G04B *19/34*
U.S. Cl. 58—50 R **1 Claim**

1. In an electronic timepiece of the type having a time base, a countdown dividing circuit, and a decoder/driver actuating an electrooptic digit display for the hours, the improvement comprising a minutes display having 12 selectively actuatable marker radially disposed around the digits and located to

indicate 5 minute time intervals when separately actuated, and a modulator/driver for selectively advancing and actuating first and second markers which alternate over timed intervals in varying timed relationship to one another, said modulator/driver having a first circuit for generating and successively advancing a first signal for one of the first markers, a second circuit for generating and successively advancing a second



signal for one of the second markers, and means for alternately applying the first and second signals to said markers over changing periods of time during said interval so as to indicate the degree of passage of time during intervals, wherein a first marker is actuated during shorter and shorter periods during a portion of a five minute interval, and wherein a second marker is actuated at longer and longer periods over said portion of the interval.

4,121,416

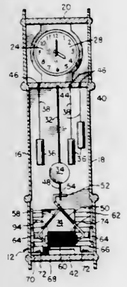
MINIATURE GRANDFATHER CLOCK

Chester Niemczyk, 3508 W. 79th St., Chicago, Ill. 60652

Filed Aug. 17, 1977, Ser. No. 825,233

Int. Cl.² G04B *31/14*

U.S. Cl. 58—88 R **5 Claims**



1. A simulated clock apparatus comprising a housing, said housing having a first and second opening therein, said first opening located above said second opening, said housing having an interior shelf, said interior shelf being disposed intermediate said first opening and said second opening, a pendulum, said pendulum being pivotably secured at one end thereof to said housing, a solenoid coil, said solenoid coil having an opening passing therethrough, a bar, a portion of said bar being fabricated from a steel material, said portion of said bar located intermediate the ends of said bar, said bar having an arcuate shape, said bar being disposed passing through the opening in said solenoid coil, means to secure at least one end of said bar to the other end of said pendulum, means to secure said solenoid coil to said housing, at least a portion of said pendulum being visible through said second opening, at least one battery, said at least one battery being coupled to said solenoid coil, at first switch, said first switch being coupled to said battery and said solenoid coil, said first switch and said at least one battery and said solenoid coil being disposed in a series electrical circuit, said first switch being disposed in a closed circuited condition upon said pendulum being displaced angularly away from the vertical position and when one end of said bar is in touching engagement with an operating lever of said first switch, means to mount a wrist-watch on said interior shelf such that the dial of said wrist-watch is visible through said first opening, a second switch, said second switch being disposed in parallel electrical relationship with said first switch, said second switch and said first switch being fixedly secured to opposed surfaces of said housing wherein the ends of said bar alternately and selectively engage said actuating lever of said first switch and the actuating lever of said second switch as said bar is angularly displaced about a vertical line, and wherein said solenoid coil is periodically de-energized each time said ends of said bar is disengaged from said actuating levers of said first and said second switches and is disposed located thereinbetween.

4,121,417

GAS TURBINE

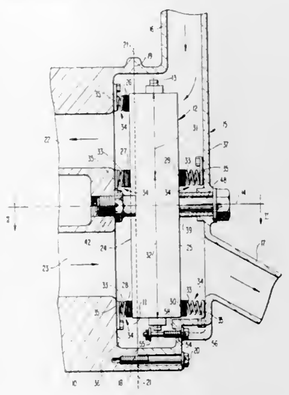
Dietrich Koppenhöfer, Weinstadt-Beutelsbach; Leopold Olbrich, Stuttgart; Friedrich Wefing, Nürtingen-Neckarhausen; Lothar Scholz, Berglen; Horst Bärwaldt, Stuttgart, and Walter Chudaska, Ostfildern, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Feb. 4, 1977, Ser. No. 765,700

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1976, 2604606

Int. Cl.² F02C *7/10*

U.S. Cl. 60—39.51 H **19 Claims**



1. A gas turbine comprising a turbine housing means forming at least one regenerative chamber adapted to be closed off against the outside by a housing cover means, said regenerative chamber accommodating a regenerative heat-exchanger means adapted to be set into rotation relative to an axis of rotation, said turbine housing means having a housing separating surface means and said housing cover means having a cover separating surface means, said separating surface means being adapted to be brought into mutual abutment, at least one slide seal means adapted to be brought into sliding contact with the heat-exchanger means and arranged in the regenerative chamber, mounting means including two fastening members elastic relative to one another essentially in the directions of the axis of rotation, said slide seal means being secured at one of said two fastening members and the other fastening member being anchored at a chamber wall of the turbine housing means, characterized in that:

the housing separating surface means is located in a plane at least approximately perpendicular to the axis of rotation;

the slide seal means, with a relieved mounting means, is located in an assembly position of the heat-exchanger means recessed with respect to the housing separating surface means; and

the heat-exchanger means is operable to be anchored at the cover means by tie rod means cooperating with additional means on the heat-exchanger means in the assembly position recessed relative to the cover separating surface means, said heat-exchanger means and said cover means being removable together as a structural unit from the turbine housing means.

4,121,418

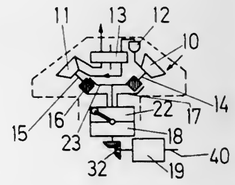
COMPACT VEHICULAR GAS TURBINE POWER PLANT

Sven-Olof Kronogård, Lomma, Sweden, assignor to United Turbine AB & Co. Kommanditbolag, Malmo, Sweden

Division of Ser. No. 510,769, Sep. 30, 1974, Pat. No. 3,997,283. This application Sep. 29, 1976, Ser. No. 727,940

Int. Cl.² F02C *7/00*; F16H *37/12*

U.S. Cl. 60—39.75 **3 Claims**



1. A gas turbine power plant in combination with a vehicle having ground engaging wheels, said power plant operably connected to at least one pair of said wheels by a horizontal drive shaft, said power plant further including:

a turbine having a single rotor mounted upon a first shaft and a compressor having a rotor mounted upon a second shaft, said second shaft separate from said first shaft;

means for mounting said first and second rotors at substantially the same level, with their shafts substantially perpendicular to the horizontal drive shaft, said first and second shafts arranged at an angle to each other, forming a V;

an infinitely variable transmission member for transferring power from said first shaft to said second shaft in response to an occasional load upon the compressor;

means for mounting said variable transmission member and said first reduction gearing below said rotors with their associated shafts parallel to said first and said second rotor shafts; and

angular drive means for transferring power from the shaft of said first reduction gearing to said horizontal drive shaft.

4,121,419

START FLAME IGNITER OF THE COMBUSTION CHAMBER OF A GAS-TURBINE ENGINE

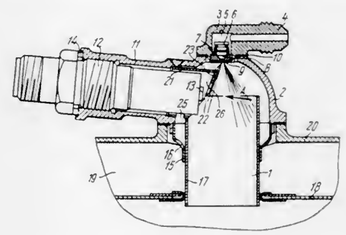
Vladimir Grigorievich Kuznetsov, ulitsa Timiryazeva, 33, kv. 4; Alexandr Grigorievich Tomilin, ulitsa Kalinina, 28, kv. 22, and Igor Anatolievich Shleenkov, ulitsa Timiryazeva, 32, kv. 70, all of Stupino Moskovskoi oblasti, U.S.S.R.

Filed Jan. 26, 1977, Ser. No. 762,956

Int. Cl.² F02C *7/26*

U.S. Cl. 60—39.82 P **2 Claims**

1. A start flame igniter of the combustion chamber of a gas-turbine engine, comprising: a housing with a combustion chamber; an injector installed on said housing to spray fuel supplied to said combustion chamber; a spark plug located inside said housing in such a way that a discharge zone of said spark plug contacts the fuel sprayed by said injector; a hollow cylindrical bushing installed inside said housing coaxially to said spark plug and partially embracing said spark plug at the side where said discharge zone of the spark plug is situated, said bushing having the length sufficient for a direct contact with the fuel sprayed by said injector at a minimum cone of the fuel spray relative to the operation duty of the injector; a butt of said bushing, facing the sprayed fuel and having an inclination which approximately coincides with a generatrix of the minimum cone of the fuel spray; a plate on said butt of the bushing, following the shape of half of butt nearest to said



injector; a recess made on said plate along its axis and embracing said discharge zone of the spark plug; a duct for supplying air to said combustion chamber, said duct installed on said housing; a branch for connecting said combustion chamber with the combustion chamber of the engine, said branch arranged on said housing.

4,121,420

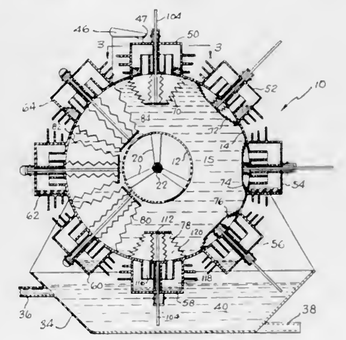
GRAVITY ACTUATED THERMAL MOTOR

George O. Schur, 3775 SW. 108 Ave., Miami, Fla. 33165

Filed Dec. 30, 1976, Ser. No. 755,911

Int. Cl.² F03G *7/06*

U.S. Cl. 60—531 **12 Claims**



1. A gravity actuated motor, which comprises:

rotor means having a closed interior chamber which contains a fixed volume of fluid;

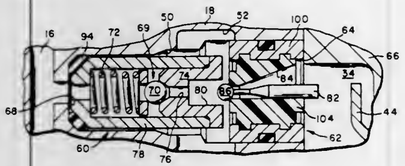
expansible chamber means movably disposed within said chamber for causing said fluid to be shifted to one side of said chamber; and

actuating means disposed exteriorily of said closed interior chamber and in fluid communication with the interior of said expansible chamber means for causing said expansible chamber means to selectively expand and contract within said closed interior chamber.

4,121,421
HYDRAULIC BRAKE BOOSTER HAVING CHARGING AND CHECK VALVES

Bruce B. Myers, and Robert W. Jackson, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jan. 6, 1977, Ser. No. 757,263
Int. Cl.[2] B60T *17/18*
U.S. Cl. 60—582 **1 Claim**

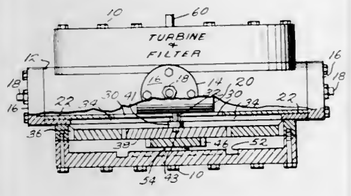


1. In a hydraulic brake booster having a housing defining a pressure chamber, an accumulator, and an inlet port, valve means communicating the inlet port with the pressure chamber and the accumulator, and operator actuating means cooperating with the valve means to communicate the accumulator with the pressure chamber, the improvement wherein said valve means comprises a charging valve means and a check valve means, said housing including a bore extending between the inlet port and the pressure chamber and communicating with the accumulator, said bore receiving said check valve means and said charging valve means, said check valve means comprising a sleeve sealingly engaging the housing bore and an insert, said insert having a passage therethrough communicating the pressure chamber with the accumulator and supporting a stem which normally closes the insert passage and cooperates with the operator actuating means to open the passage, said charging valve means comprising a shell which forms a radial clearance with the housing bore to communicate the inlet port with the accumulator and a plug which is fixedly engaged with the shell, said shell cooperating with said plug to enclose a relief valve which is biased into engagement with said plug, said plug being moveable with said shell to engage said sleeve and having a slot to receive said stem when said plug is engaging said sleeve, and said plug slot providing for communication between the inlet port and the pressure chamber when said plug is engaging said sleeve and said stem extends into said plug slot.

4,121,422
POWER PLANT

Henry I. Flinn, Jr., Rte. 1, Box 170, Pittsboro, N.C. 27312

Continuation-in-part of Ser. No. 725,685, Sep. 23, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 828,105
Int. Cl.[2] F02G *3/00;* **F02B** *75/22*
U.S. Cl. 60—597 **37 Claims**

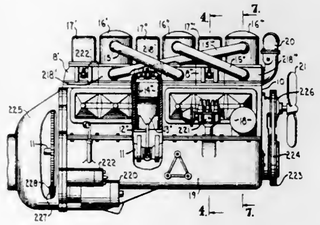


22. A power plant comprising an internal combustion engine operatively related to a gear box, wherein said engine includes:
a cylinder provided with at least one exhaust port;
a piston positioned within said cylinder;
fuel combustion means located at opposite ends of the cylinder and operable to reciprocate the piston within the cylinder;
a valve located proximate the exhaust port;
and
a pin projecting from said piston through a slot in the cylinder which extends in a straight line parallel to the axis of the cylinder said pin interacting with cam means to actuate the valve to thereby selectively open and close said port in accordance with the position of said piston;
and wherein said gear box includes:
a stationary ring gear having teeth along the internal periphery thereof;
an additional gear provided with teeth engaging the teeth of the ring gear, said additional gear having a diameter which is half that of the internal diameter of the ring gear;
means connecting said pin to the periphery of said additional gear; and
rotatable means arranged coaxially with said ring gear and operatively joined to said additional gear whereby reciprocation of said piston is converted by the gear box to rotation of the rotatable means.

4,121,423
COMPOUND INTERNAL-COMBUSTION HOT-GAS ENGINES

Marvin R. Querry, Johnson County, Kans., and William G. Reinschmidt, Clay County, Mo., assignors to Automotive Propulsion Laboratories, Ltd., Gladstone, Mo.

Filed May 31, 1977, Ser. No. 802,254
Int. Cl.[2] F02B *73/00*
U.S. Cl. 60—616 **9 Claims**

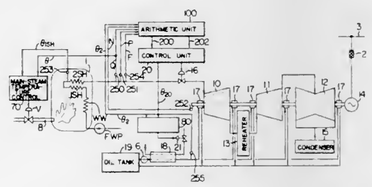


1. An improved compound internal-combustion hot-gas engine having a housing; a crankshaft mounted so as to rotate about its central rotational axis within said housing thus providing an output shaft; an internal-combustion means for combustion of a fuel-air mixture as a source of motivating thermal energy in an open thermodynamic cycle, for delivering a net positive torque to said crankshaft, and for expelling hot exhaust gases s a product of said combustion; the internal-combustion means possessing a set of hollow cylinders, totaling N_{ic} in number, fixed in said housing, where N_{ic} is any one of the integers in the infinite progression **1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12**, etc.; a set of reciprocating pistons, totaling N_{ic} in number, with one each of said set of N_{ic} pistons within each of said set of N_{ic} cylinders therewith defining N_{ic} cyclically variable expansible chambers wherein the fuel-air mixture undergoes combustion; a set of connecting-rod journals, totaling N_{ic} in number, integral to said crankshaft with said connecting-rod journals circularly orbiting the central rotational axis of said crankshaft as said crankshaft rotates; a set of connecting-rod means for mechanically coupling one each of said N_{ic} pistons to one each of said N_{ic} connecting-rod journals, for cyclically and nonlinearly synchronizing the reciprocative positions of said N_{ic} pistons to the orbital angular positions of said N_{ic} connecting-rod journals, for driving said crankshaft about its central rotational axis when each of said N_{ic} pistons moves downward in said N_{ic} cylinders, and for driving each of said N_{ic} pistons upward in said N_{ic} cylinders; at least one recuperator means for receiving the hot exhaust gases expelled from said internal-combustion means, for extracting thermal energy from the hot gases as they flow therethrough, and for conductively and convectively transporting said extracted thermal energy; a hot-gas means for receiving said extracted thermal energy transported by said recuperator means, for utilizing said extracted thermal energy as a source of motivating thermal energy in a closed thermodynamic cycle, and for delivering additional net positive torque to said crankshaft; a liquid coolant for circulating in hollow convection ways within said housing thus removing temperature degraded thermal energy from said internal-combustion means and said hot-gas means; and a radiator for receiving said liquid coolant and wherein said temperature degraded thermal energy is removed from said liquid coolant and is then transported by thermal processes of conduction, convection, and radiation to the ambient atmosphere; wherein said hot gas means further comprising:
at least one set of hollow cylinders totaling N_{hg} in number fixed in said housing, wheren N_{hg} is any one of the integers **3, 4, 5, 6, 7, 8, 9, 10**, etc.;
at least one set of reciprocating double-acting pistons totaling N_{hg} in number, with said double-acting pistons within said N_{hg} cylinders therewith defining an expansible hot expansion space of cyclically variable volume V_e above each of said N_{hg} double-acting pistons and an expansible cool compression space of cyclically variable volume V_c below each of said N_{hg} double-action pistons;
at least one set of connecting-rod journals totaling N_{hg} in number and integral to said crankshaft, and with said set of N_{hg} connecting-rod journals circularly orbiting the central rotational axis of said crankshaft as said crankshaft rotates:
at least one set of connecting-rod means totaling N_{hg} in number for mechanically coupling one each of said N_{hg} double-acting pistons to one each of said N_{hg} connecting-rod journals, for cyclically and nonlinearly synchronizing the reciprocative positions of said N_{hg} double-acting pistons to the orbital angular positions of said N_{hg} connecting-rod journals, and for driving said crankshaft about its central rotational axis as said N_{hg} double-acting pistons move in said N_{hg} cylinders;
at least one set of regenerator means totaling N_{hg} in numbers, with a duct through each of said regenerator means for interconnecting one each of said expansible cool compression spaces of cyclically variable volume V_c below said double-acting pistons to one each of said expansible hot expansion spaces of cyclically variable volume V_e above said double-acting pistons; and
a gaseous working medium enclosed in said expansible cool compression spaces of cyclically variable volume V_c and said expansible hot expansion spaces of cyclically variable volume V_e and communicating therebetween via said ducts through said regenerator means.

4,121,424
METHOD OF STARTING UP TURBINES

Yoshio Sato, and Mistuyo Nishikawa, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 15, 1977, Ser. No. 768,754
Claims priority, application Japan, Feb. 16, 1976, 51-14907
Int. Cl.[2] F01K *13/02*
U.S. Cl. 60—646 **36 Claims**

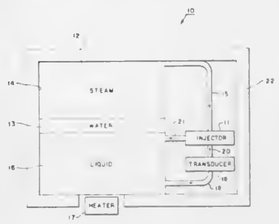


13. A method of running a steam turbine for shifting the mode of running from a first condition to a second condition through controlling the amount of steam supplied to said steam turbine, comprising the steps of estimating thermal stresses expected in said steam turbine when said mode is shifted at each of a plurality of assumed rates, determining for each assumed rate the starting points of time for shifting the running mode such that each of the maximum values of said estimated thermal stresses becomes less than a predetermined limit of thermal stress, finding a sum of a duration of time required for shifting said mode from said first condition to said second condition at each of said assumed rates and a starting point of time for shifting the running mode at each of said assumed rates, and shifting the mode at such rate from such starting point of time that said sum is the smallest one.

4,121,425
THERMODYNAMIC SYSTEM

Carl D. Nicodemus, 176 Meigs St., Rochester, N.Y. 14607

Continuation-in-part of Ser. No. 695,450, Jun. 14, 1976, abandoned. This application Apr. 20, 1977, Ser. No. 789,070
Int. Cl.[2] F01K *21/00, 25/00*
U.S. Cl. 60—670 **13 Claims**



1. A thermodynamic system comprising:
a. a reservoir;
b. a liquid in said reservoir;
c. means for heating a portion of said liquid to vaporize said heated portion of said liquid;
d. an injector;
e. means forming a vapor path for guiding said vaporized liquid from the region of said heating means, through said injector to power said injector, and back to said reservoir;
f. a rotatably driven transducer; and
g. means for forming a liquid path powered by said injector for pumping an unvaporized portion of said liquid from said reservoir through said transducer and back to said reservoir.

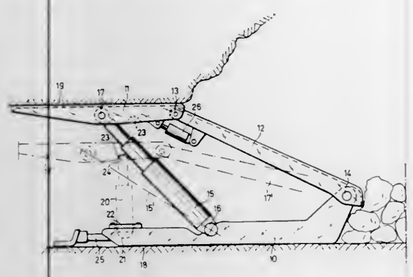
4,121,426
MINE ROOF SUPPORT UNIT AND ASSEMBLY

Willy Heyer, Bochum-Gerthe, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,333
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644649
Int. Cl.[2] E21D *15/44*
U.S. Cl. 405—296 **19 Claims**

1. A mine roof support unit comprising a floor sill, a roof cap, a goaf shield pivotably connected to both the floor sill and the roof cap, and telescopic hydraulic prop means pivotably mounted on the floor sill for supporting the roof cap, wherein the floor sill is provided with at least one auxiliary prop whose length, both in the extended and retracted positions, is smaller

than the length of said telescopic hydraulic prop means, said auxiliary prop being arranged to contact, and provide support



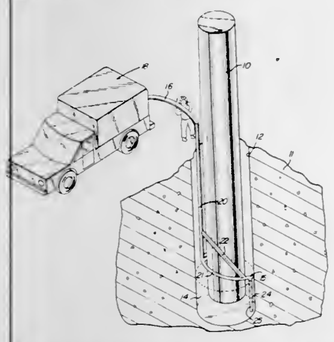
for, the roof cap only when said telescopic hydraulic prop means is retracted by a predetermined amount.

4,121,427

METHOD AND APPARATUS FOR SETTING PILINGS IN FROZEN GROUND

John K. Tuttle, Box 885 Dos Rios Rd., Gunnison, Colo. 81230

Filed Sep. 12, 1977, Ser. No. 832,337
Int. Cl.[2] E02D *5/74*
U.S. Cl. 405—130 **4 Claims**



1. A method for setting pilings comprising the steps of:
drilling a hole for receiving the piling;
placing and holding the piling in the desired position and alignment in the hole;
pouring a freezable water and sand slurry into the hole around the piling to a depth of about two feet;
quick freezing the sand and water slurry to temporarily support the piling;
filling the hole with a settable slurry and allowing the same to set at ambient temperature.

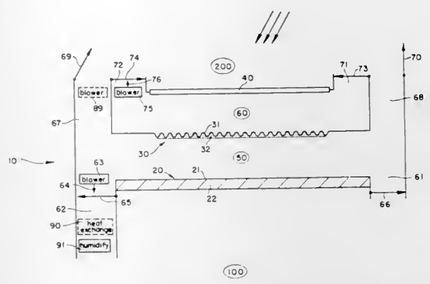
4,121,428

SOLAR AIR CONDITIONING METHOD AND APPARATUS

William E. Glenn, Ft. Lauderdale, and Carl A. Ludeke, Dania, both of Fla., assignors to New York Institute of Technology, Old Westbury, N.Y.

Filed Feb. 14, 1977, Ser. No. 768,058
Int. Cl.[2] F25B *27/00*
U.S. Cl. 62—2 **22 Claims**

1. Apparatus for drying and/or cooling internal environment air using solar energy, comprising:
a central member having top and bottom surfaces, said top surface being radiation-absorbing;
a top member, which is substantially transmissive of solar radiation, disposed above the top surface of said central member and spaced therefrom so as to define a first air chamber as between said central and top members;
a bottom member disposed below the bottom surface of said central member and spaced therefrom so as to form a second chamber;



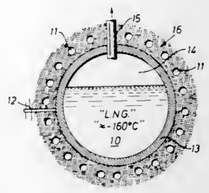
a desiccant disposed on the bottom surface of said central member;
means for circulating internal environment air through said second chamber; and
means for communicating said first chamber with an external environment.

4,121,429

UNDERGROUND STORAGE FOR COLD AND HOT PRODUCTS AND METHODS FOR CONSTRUCTING SAME

Alf H. Grennard, Bergstrasse 21, 6101 Nieder-Ramstadt, Fed. Rep. of Germany

Filed Apr. 8, 1976, Ser. No. 675,210
Claims priority, application Sweden, Apr. 14, 1975, 7504236; Feb. 20, 1976, 7602003
Int. Cl.[2] F17C *7/02*
U.S. Cl. 62—45 **16 Claims**



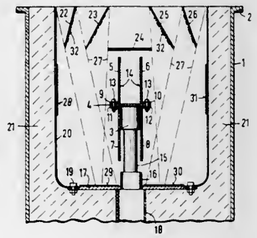
1. A method of storing a product below 0° C in an insulated reservoir at a temperature which differs from natural ambient temperature of the surrounding walls, floor and ceiling forming said reservoir and its environs, said method including the steps of: providing said reservoir with a circulation system employing a plurality of parallel channels formed within and proximate to surrounding wall surfaces about and below said reservoir; introducing a gaseous heat exchange medium under slight vacuum with a capacity of absorbing moisture within said channels and causing said medium to circulate therein for heat transfer from said surfaces surrounding said circulating system; forming a temperature barrier between the wall surfaces of said reservoir and the external environment, by supplying heat through a continuous heat exchange between said medium and the surrounding areas of said circulation system to cause the temperature of said areas to be maintained at a higher level than that of said product in said reservoir; said product within said reservoir below 0° C and varying the temperature gradient level to a value in excess of said product temperature; and continuously removing existing water vapor from sublimated ice and water by means of circulating of said heat exchange medium.

4,121,430

CRYOPUMP HAVING IMPROVED HEAT RADIATION SHIELDING

Werner Bächler, Hoffnungsthal; Hans-Joachim Forth, and Rudiger Frank, both of Cologne, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed May 4, 1977, Ser. No. 793,488
Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620880
Int. Cl.[2] B01D *5/00*
U.S. Cl. 62—55.5 **9 Claims**



1. In a cryopump of a housing presenting an entrance opening defined by a plane for passage of molecules of a gas to be pumped, a member arranged to be brought to low temperature and presenting planar condensation surfaces for molecules of the gas to be pumped, and a thermal radiation shield disposed in the region of the entrance opening, the improvement wherein said member is positioned so that said condensation surfaces are substantially at right angles to the plane of the entrance opening, and said radiation shield comprises a plurality of elongated metal strips so positioned that their longitudinal axes are parallel to the condensation surfaces.

4,121,431

PROCESS FOR THE REPAIR AND RESTORATION OF ICE TRACKS

Henri François Meudec, 36, rue d'Artois, Paris 8, France, and Alain Meudec, Chatou, France, assignors to Henri Francois Meudec, Paris, France

Filed Jul. 11, 1977, Ser. No. 814,689
Claims priority, application France, Jul. 13, 1976, 76 21446
Int. Cl.[2] F25C *3/02*
U.S. Cl. 62—66 **11 Claims**

1. Process for repairing or restoring ice tracks, comprising spreading on the ice an admixture of cold water containing from 0.0025 to 0.1% and, more particularly, from 0.005 to 0.01% by weight of a tensio-active agent miscible in water, and an antifoam agent in quantity sufficient to prevent the formation of any foam during tne mixing of the admixture and the spreading thereof and thereafter freezing the admixture.

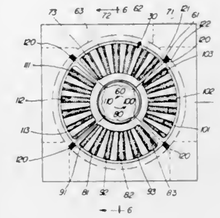
4,121,432

SOLID ADSORPTION AIR CONDITIONING APPARATUS AND METHOD

Sanford A. Weil, Chicago; William F. Rush, Arlington Heights; Jaroslav Wurm, N. Riverside, and Raymond J. Dufour, Wheaton, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Mar. 24, 1977, Ser. No. 780,693
Int. Cl.[2] F25B *7/00, 15/00, 17/02, 17/08*
U.S. Cl. 62—79 **6 Claims**

1. A process for air conditioning comprising the steps: generating water vapor working fluid by desorption from an adsorbent on the interior of a first side of a hermetically sealed module by heating said first side while removing heat from the opposing second side of said hermetically sealed module, both of said sides being internally coated with water vapor adsorbent material and thermally insulated from each other, causing said working fluid to adsorb in a condenser function at said



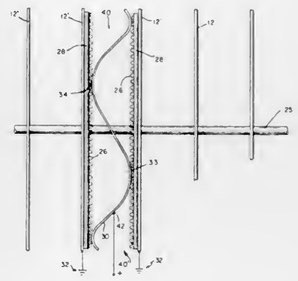
second side; then applying heat to said second side while removing heat from said first side causing the working fluid to desorb from said second side and adsorb at said first side functioning as an adsorber, said second side functioning as an evaporator by desorption of said working fluid from said adsorbent; and recycling said thermal condition sequence to provide desired conditioning to an air conditioned space.

4,121,433

MEANS FOR SENSING FROST ACCUMULATION IN A REFRIGERATION MECHANISM

Daniel I. Pomerantz, Lexington, Mass., assignor to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jan. 26, 1977, Ser. No. 762,678
Int. Cl.[2] F25D *21/02*
U.S. Cl. 62—140 **14 Claims**



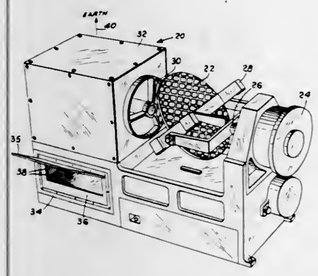
1. In a refrigeration mechanism including a refrigerant and means for vaporizing said refrigerant having at least two metal fins for absorbing heat, the improvement comprising a capacitance sensitive element for sensing actual frost accumulation within said refrigeration mechanism wherein said capacitance sensitive element is disposed within said means for vaporizing said refrigerant, portions of said two metal fins of said means for vaporizing said refrigerant comprise one electrode of said capacitance sensitive element, and two metal plates are frictionally retained between said portions of said two metal fins and separated therefrom by insulating spacers whereby a capacitance may be established between said plates and said portions of said fins.

4,121,434

RADIATION SHIELDING MEANS FOR RADIANT COOLERS

Richard V. Annable, Fort Wayne, Ind., assignor to International Telephone & Telegraph Corp., Nutley, N.J.

Filed Jun. 4, 1976, Ser. No. 693,030
Int. Cl.[2] F25B *19/00*
U.S. Cl. 62—467 R **8 Claims**



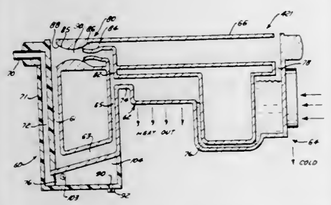
1. Radiation shielding means for passive multiple stage radiant coolers for instruments in a housing comprising radiation shield means for each of said stages having open, externally viewing end areas including at least one shield member having a low emissivity surface evenly spaced from said housing and carried by a plurality of separate low conductive support means attached to said housing.

4,121,435

ROTARY THERMODYNAMIC APPARATUS

Frederick W. Kantor, 23 W. 112th St., New York, N.Y. 10027

Division of Ser. No. 461,452, Apr. 16, 1974, Pat. No. 3,981,627, which is a division of Ser. No. 864,112, Oct. 6, 1969, Pat. No. 3,808,828, which is a continuation-in-part of Ser. No. 608,323, Jan. 10, 1967, Pat. No. 3,470,704. This application Sep. 16, 1976, Ser. No. 723,713
Int. Cl.[2] F25B *3/00*
U.S. Cl. 62—499 **10 Claims**



1. Thermodynamic apparatus comprising, in combination, a rotor, means for rotating said rotor, conduit means in said rotor having a first section for guiding the flow of fluid radially outwardly from the axis of rotation of said rotor, and a second section connected to said first section at a location spaced radially outwardly from said axis for guiding the flow of fluid back towards said axis, further conduit means joining said first and second conduit sections to conduct a fluid therebetween at a second location which is spaced inwardly towards said axis from said first location, means for creating a continuous difference between the average density of a first volume element of fluid in said first section and a second volume element in said second section, said first and second volume elements being equal and being located at equal average radial distances from said axis, combustion chamber means secured to said rotor for burning a combustible fluid and thereby heating the fluid in said second section, and heat exchange means for recovering heat from said fluid at a location located radially inward from that at which said heating was affected.

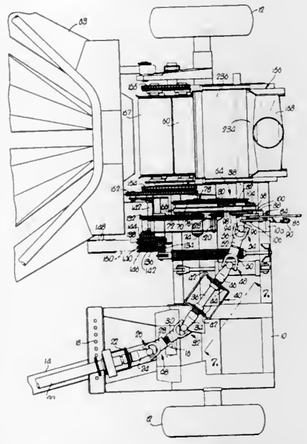
8. Thermodynamic apparatus comprising, in combination, a rotor, means for rotating said rotor, conduit means in said rotor having a first section for guiding the flow of fluid radially outwardly from the axis of rotation of said rotor, and a second section connected to said first section at a location spaced radially outwardly from said axis for guiding the flow of fluid back towards said axis, further conduit means joining said first and second conduit sections to conduct a fluid therebetween at a second location which is spaced inwardly towards said axis from said first location, means comprising heat exchange means for adding heat to said fluid at a first heat exchange location and heat exchange means for removing heat from said fluid radially inwardly of said first heat exchange location for creating a continuous difference between the average density of a first volume element of fluid in said first section and a second volume element of fluid in said second section, said first and second volume elements being equal and being located at equal average radial distances from said axis, and an entrainment jet pump in said further conduit means for pumping the expanded fluid back to said first conduit section.

4,121,436

DRIVE TRAIN AND TRANSMISSION FOR FORAGE HARVESTER

Harold Keith Garrison, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 627,055, Oct. 30, 1975, Pat. No. 4,038,880. This application Sep. 16, 1976, Ser. No. 723,914
Int. Cl.[2] B60D *1/00*
U.S. Cl. 64—2 P **3 Claims**



1. In a mobile machine having a draft tongue swingable horizontally about an upright axis and apparatus rotatable about a transverse horizontal axis disposed at substantially a right angle with the tongue and spaced a fixed distance in one direction from said upright axis, a drive train for the apparatus including:

a rigid drive shaft extending along and supported by said tongue for swinging movement with the latter,

said rigid shaft terminating in an end spaced from said upright axis in the opposite direction but having its longitudinal axis intersecting said upright axis;

a rigid driven shaft defining said axis of rotation; and

a flexible drive line, cutting across said right angle and connected at its opposite ends to said shafts for driving the apparatus in all positions of swinging movement of the tongue,

said drive line including a telescoping section and a non-telescoping section,

said telescoping section leading diagonally in said one direction from said end of said drive shaft to a fixed point spaced in said one direction from and to one side of said upright axis with respect to said longitudinal axis of said drive shaft,

said telescoping section having a first universal joint connection with said end of said drive shaft, said first connection being spaced in said opposite direction from said upright axis, and a second universal joint connection with said non-telescoping section, said section connection being spaced in said one direction from said upright axis,

said non-telescoping section having a third universal joint connection with said driven shaft,

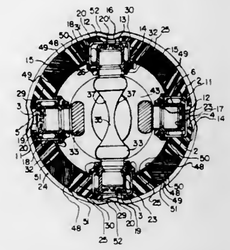
said drive line further including a rigid intermediate shaft interposed between said second connection and a fourth universal joint connection and rotatable therewith.

4,121,437

RING AND YOKE TYPE UNIVERSAL JOINT

Jean Louis Michel, 14, allee des Acacias, 78110 Le Vesinet; Paris, France

Filed Mar. 10, 1977, Ser. No. 776,188
Claims priority, application France, Mar. 12, 1976, 76 07270; Jan. 13, 1977, 77 00937
Int. Cl.[2] F16D *3/26*
U.S. Cl. 64—17 R **27 Claims**



1. Universal joint with annulus comprising two forks provided each with two pivots journalled in bearings engaged in housings formed in the said annulus, it being possible to produce with this universal joint an elastic connection having variable torsional rigidities and limited angular deflections under torsion, between two rotating shafts, and comprising elastic elements for the radial and/or axial filtration of vibrations, characterised in that the said elements are arranged for radial and/or axial deflection limited by means of radial and/or axial shoulders forming positive mechanical abutments, that they cover the pivots integral with the forks and/or an external ring of the bearing, and that in all cases the said radial and/or axial filtering elastic elements comprise a ring coaxial with the external ring of the bearing with at least one radial abutment and/or directed towards the axis of each bearing and at least one axial abutment, the said coaxial ring thus constituting a preregulated radial and axial deflection limiting means.

4,121,438

COUPLING MEMBER FOR ORBITING MACHINERY

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Sep. 13, 1976, Ser. No. 722,713
Int. Cl.[2] F16D *3/04*
U.S. Cl. 64—31 **5 Claims**

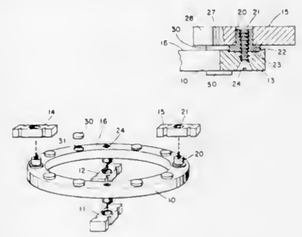
1. A coupling member suitable for coupling two components in angular relationship as one of said components is orbited with respect to the other, comprising in combination

(a) a ring with first and second opposed annular surfaces;

(b) a first pair of oppositely disposed pivot pins attached to said first surface;

(c) a second pair of oppositely disposed pivot pins attached to said second surface and displaced 90° from said first pair of pivot pins;

(d) four keys in the form of rectangular blocks, each of said



keys having (1) a central hole sized to make a sliding fit over one of said pivot pins whereby each of said keys is alignable with respect to a keyway in one of said components, and (2) spaced oil grooves in its larger lateral faces oriented parallel to the axis of said central hole; and

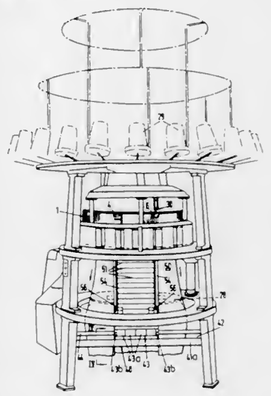
(e) a plurality of axial force-stabilizing disks set in said first and second opposed annular surfaces.

4,121,439

KNITTING MACHINES

Dennis Wright, Aylestone, England, assignor to Wildt, Mellor Bromley Limited, England

Filed Jun. 15, 1976, Ser. No. 696,114
Claims priority, application United Kingdom, Jun. 16, 1975, 25661/75
Int. Cl.[2] D04B *15/60*
U.S. Cl. 66—140 R **8 Claims**



1. In a knitting machine comprising needle beds with needles and yarn feeding means which circulate in relation to one another, the needle beds having a non-knit zone, means for severing the yarn in the non-knit zone, and means for presenting said yarn to the first needle to knit following the non-knit zone, the improvement of:

means to ensure that the majority of courses are knitted with said yarn being severed in the non-knit zone and presented to said first needle to knit following said non-knit zone, thus leaving a fringe of severed portions of said yarn along the edges of the fabric, and means for ensuring that, at spaced intervals, the yarn severing means is rendered ineffective so that said yarn is left unsevered in the non-

knit zone, thus joining the edges of the fabric together at spaced intervals; and

a device for trapping the severed yarns in the region of the non-knit zone.

4,121,440

FABRIC DRAW DOWN DEVICE

René Humbert, Couvet, Switzerland, assignor to Edouard Dubied et Cie. (Societe Anonyme), Switzerland

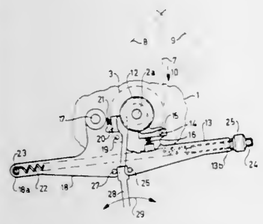
Filed Dec. 7, 1973, Ser. No. 422,718

Claims priority, application Switzerland, Dec. 8, 1972, 17886/72

The portion of the term of this patent subsequent to Oct. 24, 1992, has been disclaimed.

Int. Cl.[2] D04B *15/90*

U.S. Cl. 66—152 **10 Claims**



1. A fabric drawing device for a flat knitting machine comprising a traction roller for tensioning fabric, retaining rollers for pressing against the traction roller and entrainment means for driving the traction roller, the improvement in said entrainment means comprising:

a ratchet wheel mounted on said traction roller;

a pair of levers arranged in opposition to one another, each of said levers being coupled to pivot about an axis, the pivotal axes of said levers being offset one from the other, each of said levers having at least one pawl associated therewith for acting on said ratchet wheel;

spring means for drawing said levers together; and

camming means for moving said pair of opposing levers.

4,121,441

SEALING DEVICE IN A HIGH PRESSURE STEAMER

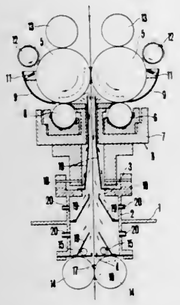
Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works, Co., Ltd, Japan

Continuation of Ser. No. 703,587, Jul. 8, 1976, abandoned. This application Dec. 6, 1977, Ser. No. 857,987

Claims priority, application Japan, Jul. 28, 1975, 50-91802

Int. Cl.[2] D06B *23/18*

U.S. Cl. 68—5 E **1 Claim**



1. A pressure sealing device for a high pressure steamer including a drum body, said device arranged to convey a cloth material between the interior of the drum body and the exterior of the high pressure steamer and comprising walls forming a pressure reducing chamber arranged to be mounted on and extend outwardly from the drum body and forming an axially extending cloth material passageway extending from the drum body to the exterior of the pressure steamer, said chamber having a first opening at one end of the passageway therethrough and arranged to pass the cloth material between the passageway and the drum body and a second opening at the opposite end of the passageway therethrough spaced from the first opening and arranged to open from the cloth material passageway to the exterior of the pressure steamer for passing the cloth material between the passageway and the exterior of the pressure steamer, a high pressure air supply pipe connected to said pressure reducing chamber for supplying high pressure air therein and said pipe located intermediate the opposite ends of the passageway through said chamber, a pair of heat resistant seal rolls arranged to be located exteriorly of said pressure reducing chamber in the drum body at the first opening for preventing steam from the drum body from entering through said first opening into the passageway, a pair of rubber seal rolls located exteriorly of said pressure reducing chamber at the second opening therefrom, a frame mounted on said pressure chamber adjacent the second opening therefrom and located between said pressure chamber and said rubber seal rolls, a pair of metal rolls mounted in said frame each on an opposite side of said passageway and each of said metal rolls disposed in contact with a different one of said rubber rolls, a water reservoir located outwardly from said frame and exteriorly of said pressure reducing chamber, said water reservoir spaced from said metal rolls and enclosing about ¼ of the circumferential periphery of said rubber rolls so that the surfaces of said rubber rolls can be washed clean by water contained in said water reservoir while maintaining said water reservoir clear of said metal rolls, and other cleaning means arranged to clean the circumferential peripheral surfaces of said rubber rolls at a location spaced angularly thereabouts from said water reservoir, air guide means located within the cloth material passageway and dividing the passageway into separate flow conduits extending in the direction between the first and second opening, one of the flow conduits laterally enclosing the cloth material passing through the cloth material passageway and the other flow conduit laterally enclosing the one of the flow conduits, said high pressure air supply pipe supplying air into the other flow conduit at a position spaced from the first opening and said other flow conduit arranged to direct the air toward the second opening for contact with said rubber seal rolls where the air reverses direction entering said one of the flow conduits for flow therethrough toward the first opening, air release ports located in said chamber between said high pressure air supply pipe and the first opening for conveying the high pressure air out of the passageway.

4,121,442

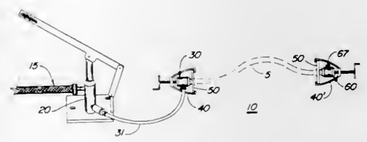
APPARATUS FOR RESTORING CRUSHED TUBES

Louis W. Brooks, 307 S. Kimball Ave., Caldwell, Id. 83605

Filed Sep. 12, 1977, Ser. No. 832,120

Int. Cl.[2] B21D *22/10*

U.S. Cl. 72—54 **5 Claims**



1. Crushed tube restoring apparatus comprising:

hydraulic pump means;

a first plug including a conical portion, the conical portion having resilient tube engaging means disposed on its outer surface operable to sealingly engage one end of a tube, said first plug including a conduit in fluid communication between said hydraulic pump means and the interior of the tube;

a second plug including a conical portion, the conical portion having resilient tube engaging means disposed on its outer surface operable to sealingly engage a second end of the tube, said second plug including a conduit in fluid communication with the interior of the tube; and

a draincock in fluid communication with the conduit of said second plug, said draincock operable to close the conduit.

4,121,443

METHOD OF AND APPARATUS FOR ROLLING LONG WORK PIECES

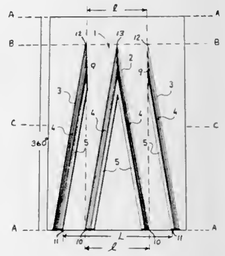
Jiri Talafous, Brno, Czechoslovakia, assignor to Vyzkumny ustav tvarecich stroju a technologie tvareni, Brno, Czechoslovakia

Filed Oct. 20, 1977, Ser. No. 843,884

Claims priority, application Czechoslovakia, Oct. 20, 1976, 6749-76

Int. Cl.[2] B21H *1/18*

U.S. Cl. 72—108 **4 Claims**



1. A method for producing long parts by the cross wedge rolling of billets of selected length, comprising disposing two similar rolls in spaced confronting relationship with their axes parallel, each of the rolls having wedge formations on its periphery, the wedge formations on the respective rolls confronting each other and being spaced from each other, rotating the rolls in the same direction and at the same angular speed, synchronizing the rotation of the two rolls so that the leading ends of the wedge formations on the respective rolls engage the billet at the same time, in one rolling operation rotating the rolls through at least two revolutions, in the first revolution reducing the axially central portion of the billet in diameter and elongating it axially while leaving the end portions of the billet substantially unreduced in diameter and substantially unelongated by engaging the axially central portion of the billet by first wedge formations on the rolls, and in a second, following revolution of the rolls, reducing in diameter and elongating axially the axially inner portions of said end portions of the billet which remained after the first revolution of the rolls by engaging them with a second set of axially outer wedge formations which are oppositely inclined with respect to each other on the rolls.

4,121,444

MANUALLY OPERABLE TOOL FOR INSTALLING BLIND ANCHOR NUTS

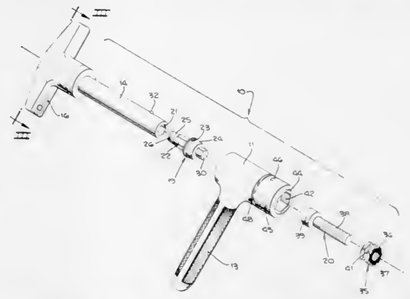
John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Apr. 11, 1977, Ser. No. 786,084

Int. Cl.[2] B21J *15/34*

U.S. Cl. 72—114 **17 Claims**

1. In a manually operable tool for installing blind anchor nuts by pulling an internally threaded part of the nut into a body part of the nut to expand the latter, the tool including a body member having a bore extending therethrough, an anvil at one end of the bore for engaging the body part of an anchor nut, the anvil surrounding an aperture aligned with the bore, a grip by means of which an operator can hold body member to prevent rotation thereof about the bore, an interchangeable mandrel positioned in the aperture in the anvil, the mandrel having an externally threaded portion extending outwardly of the anvil and a socket facing into the bore, a shaft rotatable and reciprocable in the bore of the body member which shaft is provided at one end with an interchangeable key which fits into the socket on the mandrel in driving engagement therewith, the shaft being provided with a handle outside the body member of the tool by means of which the shaft can be both



rotated and reciprocated with respect to the body member, the shaft being reciprocable between a first position in which the key on the shaft engages in the socket on the mandrel thereby allowing rotation of the mandrel by means of the handle, and a second position in which the key disengages from the socket thereby allowing rotation of the handle without rotation of the mandrel, the improvement which comprises the provision of:

disengaging means carried by the tool for disengaging said key from said shaft without the need for external tooling for interchanging the same, said disengaging means including key releasing means on both the shaft and the key for both snap-fitting said key onto said shaft and manually removing the key from said shaft upon the application of a force on said key in a direction away from said shaft.

4,121,445

APPARATUS FOR CONNECTING A COVER TO A CHOCK IN A ROLLING MILL

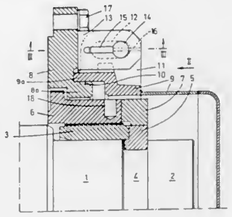
Otto Zimmerman, Musen, and Rolf Gerd Irle, Dahlbruch, both of Fed. Rep. of Germany, assignors to Morgan Construction Company, Worcester, Mass.

Filed Aug. 12, 1977, Ser. No. 824,050

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638241

Int. Cl.[2] B21B *31/08*

U.S. Cl. 72—237 **6 Claims**



1. In a rolling mill having a roll neck bearing contained in a chock, with a cover axially received on the chock in a closed

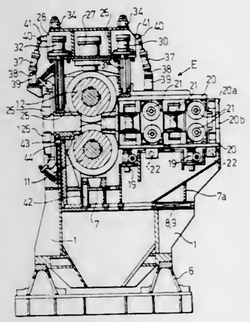
position overlying the roll end and the bearing end, apparatus for connecting the cover to the chock, comprising: spaced supports on the chock; an arm on the cover extending between said supports; a pin extending through communicating openings in said supports and said arm, the said openings being dimensioned in relation to said pin to accommodate axial shifting of the cover between said closed position and an intermediate position from which the cover is free to pivot about said pin to an open position exposing the bearing end; and, disengageable retainer means for holding the cover in the closed position.

4,121,446

HOUSING FOR A ROLLING MILL

Teresio Passoni, Magenta, Italy, and Jean Paul Calmes, Lausanne, Switzerland, assignors to Innocenti Santeu-Stacchio, S.p.a., Brescia, Italy

Filed Jul. 7, 1977, Ser. No. 813,460
Claims priority, application Italy, Jul. 12, 1976, 25221 A/76
Int. Cl.² B21B *31/08*
U.S. Cl. 72—238 **2 Claims**



1. A housing for a rolling mill for producing axially bored cylindrical blooms from square bars, comprising:
a pair of cogging rollers having round grooves and associated bearing chocks mounted in the housing;
an inlet guide for bearing a square bar to be rolled;
an outlet guide for the bored, rolled cylinridical bloom; and
means for adjustably positioning the inlet guide relative to the rolling axis, wherein the pair of cogging rollers, the associated bearing chocks, the inlet guide, the outlet guide and the means for adjustably positioning the inlet guide relative to the rolling axis form a monolithic working unit which can be fitted into and taken out of the housing.

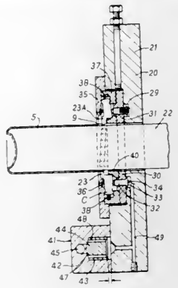
4,121,447

STRIPPING APPARATUS

Henry Sniady, London, England, assignor to Metal Box Limited, England

Filed Jun. 7, 1977, Ser. No. 804,255
Claims priority, application United Kingdom, Jun. 11, 1976, 24189/76
Int. Cl.² B21D *45/00*
U.S. Cl. 72—344 **9 Claims**

1. Apparatus for stripping an article from an axially reciprocal punch, of a kind having a plurality of segments surrounding the punch, each of said segments having a working surface resiliently urged radially inwards towards the punch and having a portion of each segment engagable with a respective piston, each piston being supported by fluid means for limited motion in a piston plate, and disposed parallel to the axis of the punch, to enable said working surface of each segment to contact the edge of an article before stripping, wherein the improvement resides in a fixed guide means having a portion defining a socket to confine a pivot portion of each segment for pivotal movement in a plane radial to the punch, individual biasing means positioned within said socket portion and engaging said pivot portion to resiliently urge each respective segment substantially longitudinally towards the punch, and a cam ring having a surface which engages with a heel portion of each segment to guide said working surface thereof substantially parallel to the punch to engage with the article to be stripped.

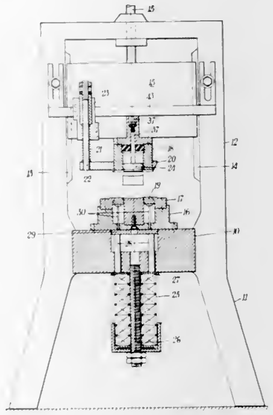


4,121,448

PROCESS AND A DEVICE FOR COLD WORKING METAL SHEET, WITH A DOUBLE ACTION IN A SINGLE OPERATIVE STAGE

Angelo Censuales, No. 19, Via A. Crescenzio, Palermo, Italy (90142)

Filed Sep. 8, 1977, Ser. No. 831,621
Claims priority, application Italy, Sep. 20, 1976, 51357 A/76
Int. Cl.² B21D *22/00*; B21B *25/00*
U.S. Cl. 72—348 **5 Claims**



1. A device for cold working a metal sheet, with double action in a single operative stage, suitable particularly for forming drawn articles in a single body with a shaped and folded bottom, comprising, reciprocating drawing means including a forming punch rigid with a first part of a reciprocating press; a male member arranged for carrying out a conventional drawing operation in co-operation with a sheet-presser; said male member having a bore for receiving said forming punch when forming an article, an auxiliary punch slidably mounted within said bore of the male member, an elastic element biasing said auxiliary punch relative to said male member

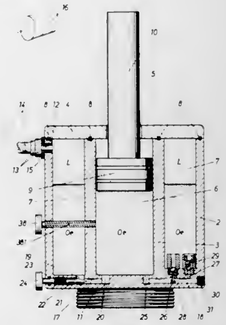
in a direction toward said forming punch, said auxiliary punch being radially smaller than the forming punch and forming an annular space between the bore of the male member and the auxiliary punch whereby at the point of maximum engagement between said forming punch and said male member said auxiliary punch carries out a first shaping operation of the bottom of said drawn article with the contemporaneous storage of deformation power in said elastic element; and means for holding the drawn body staionary relative to the bore of the male member upon commencement of the separation of the male member from the forming punch, enabling said element to release its deformation power to move the auxiliary punch relatively to said male member against the bottom of the drawn body and form a folded rim in said annular space.

4,121,449

HOLDING-DOWN ARRANGEMENT FOR A DEEP-DRAWING PRESS

Antonio M. Celi, Neustadt, Wied, Fed. Rep. of Germany, assignor to Hermann Etscheid OHG, Neustadt, Wied, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,693
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609916; Aug. 26, 1976, 7607297[U]
Int. Cl.² B21D *22/00*
U.S. Cl. 72—500 **16 Claims**



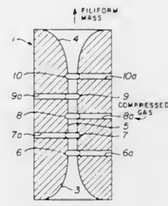
1. In a deep-drawing press of the type in which a pressure force deforms the central portion of a plate, a holding-down apparatus for preventing marginal portions of the plate from undergoing such deformation, comprising a vessel having one chamber filled with hydraulic fluid, and another chamber communicating with said one chamber and being partly filled with hydraulic fluid and having a gas-filled space; means responsive to the pressure force for displacing hydraulic fluid in said one chamber through a restricted path towards said other chamber for thereby translating the pressure force into a holding-down force acting on marginal portions of the plate; adjustable throttling means in said path for adjusting the magnitude of said holding-down force in relation to a pressure force of predetermined magnitude; and means communicating with said gas-filled space for maintaining the adjusted magnitude of the holding-down force substantially constant during such hydraulic fluid displacement.

4,121,450

APPARATUS FOR MEASURING THE DENSITY OF A MOVING ELONGATE MASS OF FILIFORM MATERIAL

Erwin Zurcher, Aire-Geneva, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

Filed Jan. 25, 1977, Ser. No. 762,285
Claims priority, application Switzerland, Jan. 28, 1976, 1053/76
Int. Cl.² G01N *9/26*
U.S. Cl. 73—32 R **1 Claim**



1. An apparatus for the continuous measurement of the instantaneous density of a strand of a compressible mass of filiform particles, said apparatus comprising:
(a) A body formed with a throughgoing bore having a measuring cross section dimensioned to cause compression of said mass upon the passage of said strand through said bore in a direction in advance of said strand, a curved mouth converging in said direction at an inlet end of said bore, a curved discharge end of said bore converging in said direction and opposite said mouth, a first inwardly open annular groove formed at the wall of said bore intermediate said ends thereof, a pair of second inwardly open annular grooves formed in the wall of said bore between said first groove and each of the ends of said bore respectively, and a pair of respective inwardly open annular third grooves disposed between each of said second grooves and respective ends of said bore;
means for advancing said strand into said bore through said mouth whereby said mass is progressively compressed, and thence through said bore to emerge at the end thereof opposite said mouth;
a source of pressurized fluid;
a first conduit connecting said source to said first groove to supply said fluid to said measuring cross section whereby the resistance of flow of the fluid from said first groove into said bore is a function of the instantaneous density of said mass independent of the speed thereof;
means for measuring the pressure in said conduit for producing an indication of said instantaneous density;
second conduits connected to said second grooves and open to the atmosphere; and
third conduits communicating with said third grooves and discharging air from the strand.

4,121,451

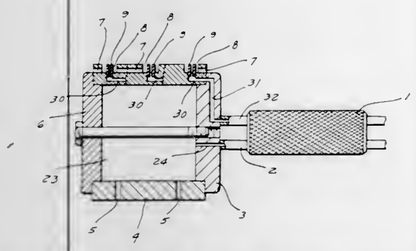
APPARATUS FOR MEASURING NON-CYLINDRICITY OF SURFACES

Hristo Kirilov Radev; Iliya Ivanov Lazarov, and Tzanko Georgiev Grekov, all of Sofia, Bulgaria, assignors to Institute "Lenin" Vish Machinno-Elektrotechnicheski, Sofia, Bulgaria

Filed Jun. 24, 1977, Ser. No. 809,860
Claims priority, application Bulgaria, Jun. 24, 1976, 33574
Int. Cl.² G01B *13/16*
U.S. Cl. 73—37.9 **4 Claims**

1. Apparatus for measuring non-cylindricity of surfaces, comprising a circular cylindrical base element, at least one surface measuring transducer in the form of a pneumatic nozzle mounted in a radial hole in the base element, the outer end of the nozzle and the outer surface of the base element lying on a common circular cylinder, there being a hollow in the outer surface of the base element surrounding the outer end of the

transducer, a channel within the body of the base element connecting the hollow with the atmosphere, and means on the bae element providing at least one aerostatic support between



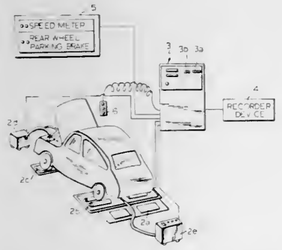
the base element and the surface being measured, the surface being measured is a generally circular cylindrical opening within which the base element is inserted.

4,121,452

INSPECTION AND EXAMINATION APPARATUS FOR MOTOR CARS

Takeshi Wakabayashi, and Hiroshi Umetsu, both of Nagoya, Japan, assignors to Mitsubishi Jukogyo, Tokyo, Japan

Continuation-in-part of Ser. No. 674,311, Apr. 7, 1976, abandoned. This application Jan. 10, 1977, Ser. No. 760,770
Claims priority, application Japan, May 7, 1975, 50-55197
Int. Cl.[2] G01M *17/00*
U.S. Cl. 73—117.3 **3 Claims**



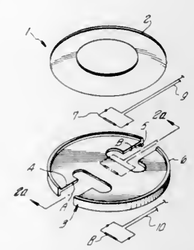
1. An inspection and examination apparatus for motor cars, comprising: car variety number receiver means for receiving a car variety number corresponding to the type and various characteristics of a motor car to be inspected; an inspection type selector means for selecting one of a plurality of types of inspection desired for the motor car to be inspected; an inspection item memory circuit for storing inspection items required for each type of inspection for each car variety number; a central control device to which said car variety number receiver means and said inspection type selector means are connected for supplying to said central control device the car variety number and the type of inspection desired; an inspection item selector circuit connected to said central control device and to said inspection item memory circuit for receiving the car variety number and type of inspection from said central control device and for successively selecting the inspection items corresponding to the car variety number and type of inspection from said inspection item memory circuit and supplying them to said central control device; display means connected to said inspection item selector circuit for displaying the inspection items selected by said inspection item selector circuit; measurement instruments for mesuring the conditions of a motor car corresponding to the inspection items; measurement instrument control means connected between said measuring instruments and said central control device for actuating said measuring instruments for measuring the conditions of a motor car for the selected inspection items and supplying the results of the measurements to said central control device; a reference value memory circuit for storing predetermined reference values for each of said inspection items and connected to said central control device; and a good/bad decision circuit connected to said central control device for receiving reference values corresponding to the selected inspection items and measured values from said measurement instrument control means and comparing them for determining whether the result of the inspection is good or bad.

4,121,453

FOOT FORCE TRANSDUCER

Richard C. Levin, Pasadena, and Allan G. Armstrong, Santa Rosa, both of Calif., assignors to Harvey Mudd College, Claremont, Calif.

Filed Jul. 19, 1976, Ser. No. 706,487
Int. Cl.[2] A61B *5/00*
U.S. Cl. 73—172 **12 Claims**



1. A transducer for measuring the magnitude of an applied force comprising

an arcuate toroidal spring which flattens a predetermined amount in proportion to the magnitude of an applied force,

a circular plate of relatively rigid material having a circumferential lip of a diameter substantially equal to the outer diameter of said spring such that the flattening of said spring upon application of a force causes said plate to flex, that portion of the lower surface of said spring which contacts said plate being polished to reduce hysteresis, and

strain sensing means for indicating the magnitude of flexing of said circular plate.

4,121,454

CLAMP ON ELECTROMAGNETIC FLOW TRANSDUCER

Vincent J. Cushing, Northbrook, Ill., assignor to Monitek, Inc., Redwood City, Calif.

Filed Dec. 3, 1976, Ser. No. 747,276
Int. Cl.[2] G01F *1/58*
U.S. Cl. 73—194 EM **10 Claims**

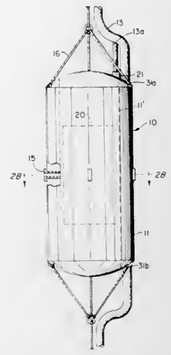
1. An electromagnetic flow transducer adapted to be mounted by clamping onto any selected location of a continuous cable comprising:

a cylindrical housing of hydrodynamic shape appropriate for electromagnetic flow measurements including an outer shroud with first and second separable elements,

a plurality of electrode means mounted within said housing to sense flow induced voltages,

an inner housing and a magnetic field producing means contained within said inner housing and located on an axis of said cylindrical housing for providing uniform fields adjacent said electrode means,

said first and second separable elements of said housing including means for separating to allow insertion and removal of said continuous cable from within said housing,



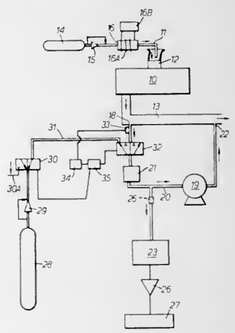
said housing having at least one port to allow said cable to enter or exit therefrom, said port located off a longitudinal axis of said cylindrical housing.

4,121,455

MEASURING A FLOW OF GAS THROUGH A COMBUSTION ENGINE

Robert Alan Haslett, Shoreham by Sea; Charles Peter Howard, Pulborough, and Richard Winston Wheeler, Brighton, all of England, assignors to Ricardo & Co., Engineers (1927) Limited, England

Filed Aug. 2, 1977, Ser. No. 821,196
Claims priority, application United Kingdom, Aug. 6, 1976, 32909/76; Aug. 17, 1976, 34272/76
Int. Cl.[2] G01F *1/70*
U.S. Cl. 73—194 M **16 Claims**



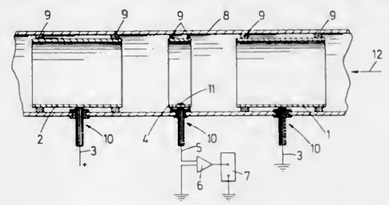
1. A method of measuring the flow rate of gas at a given point in a combustion engine, which comprises introducing a constant metered flow of an inert gas, referred to as a tracer gas, into the inlet gas entering the intake of the combustion engine during the operation of the engine, simultaneously withdrawing a continuous sample flow of the exhaust gas from the engine exhaust system and supplying a constant-rate flow of the sample gas to a mass spectrometer for analysis, and operating the mass spectrometer to provide a measurement of the volumetric proportion of the tracer gas in the exhaust gas sample, and utilizing the said measurement to derive an indication of the transient value of the said flow rate of gas in the engine, oxidizing all residual CO and unburned hydrocarbons by reacting the exhaust gas sample catalytically with oxygen, prior to its supply to the mass spectrometer, and in which the mass spectrometer is adjusted to measure also the concentration of at least one more other component of the exhaust gas sample and to compare each such measurement with the measurement of that of the tracer gas, and in which the measurements provided by the mass spectrometer are utilized to derive an indication of one or more other parameters related to the transient mass flow rate of the exhaust gas leaving the engine, and, wherein, the mass spectrometer is of the quadrupole type, having an electrostatic ion separator comprising four parallel electrode rods, and including the step of adjusting the voltages applied to the four electrode rods in sequence to cause the spectrometer to provide a corresponding sequence of measurements of the concentrations of different constituents of the gas sample, and in which the resultant measurements are fed to a microprocessor programmed to give output readings in terms of the said other parameters, and, further, including the steps of selecting the said other parameters from the group comprising the inlet gas mass flow rate, the fuel mass flow rate, the sum of the inlet gas and fuel mass flow rates, and the ratio of the inlet gas mass flow rate to the fuel mass flow rate, and in which the mass spectrometer measures sequentially the concentrations of CO_2, N_2 and O_2 as well as that of the tracer gas in the exhaust gas sample.

4,121,456

METER FOR THE FLOW RATE OR THE SPEED OF A GAS STREAM

Jacques Depoitier, Wanfercee-Baulet; Ovidio Monaco, Nivelles, and Michel Destabelle, Fleurus, all of Belgium, assignors to Institut National des Radio-Elements - Nationaal Instituut voor Radio-Elementen, en abrege: I.R.E., Brussels, Belgium

Filed Sep. 29, 1977, Ser. No. 837,976
Claims priority, application Belgium, Oct. 5, 1976, 846943
Int. Cl.[2] G01F *1/56*
U.S. Cl. 73—194 F **8 Claims**



1. A meter for measuring the flow rate of a moving gas stream as a function of a sensed electrical potential, comprising:

(a) an elongated gas flow conduit,

(b) a pair of tubular electrodes mounted within the conduit and spaced apart from each other,

(c) means connected to the pair of electrodes for establishing an electrical potential thereacross,

(d) a tubular common electrode mounted within the conduit between the pair of electrodes to form two series-coupled electric fields therewith, the pair of and common electrodes being coaxially aligned,

(e) a source of ionizing radiation mounted within the common electrode, and

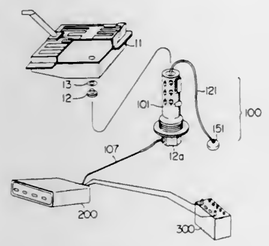
(f) means connected to the common electrode for sensing the electrical potential thereof.

4,121,457

LIQUID SENSOR

Shuzo Yoshida, Chiryu; Sigeyuki Akita, Aichi, and Sotoo Kitamura, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 11, 1977, Ser. No. 795,909
Claims priority, application Japan, Jun. 25, 1976, 51/84274
Int. Cl.[2] G01F *23/00*; G08B *21/00*
U.S. Cl. 73—291 **10 Claims**



1. An apparatus for sensing the level of a liquid having a specific gravity lower than that of water and for sensing the presence or absence of water lying under said liquid comprising:

a container for containing said liquid having a specific gravity lower than that of water;

a level sensor, provided in said container, for generating a first signal which changes as the level of said liquid changes;

a water sensor having a pair of electrodes spaced from each other and provided at the lowermost portion of said container, for generating a second signal when a current flows between said electrodes through water lying under said liquid;

a signal transmitting wire commonly connected to said level sensor and said electrodes, for superposing said second signal on said first signal to produce a superposition signal therein;

a first comparator, provided outside said container and connected to said signal transmitting wire, for generating a first indication signal when the magnitude of said superposition signal changes across a first reference magnitude preset to detect the magnitude change of said first signal;

a second comparator, provided outside said container and connected to said signal transmitting wire, for generating a second indication signal when the magnitude of said superposition signal changes across a second reference magnitude preset to detect the magnitude change of said signal; and

an indicator unit, connected to said first and second comparators, for indicating the level of said liquid and the presence or absence of water lying under said liquid in response to said first and second indication signals.

4,121,458

RELIABLE DYNAMOELECTRIC MACHINE CONDITION MONITOR

Emil M. Fort, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

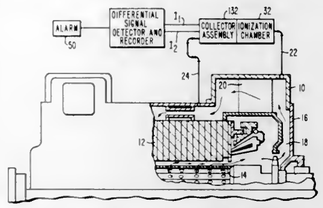
Filed Feb. 24, 1977, Ser. No. 771,713
Int. Cl.[2] G01K *1/02, 3/00*
U.S. Cl. 73—339 R **6 Claims**

3. An apparatus for detecting thermoparticulates in a gaseous carrier, said apparatus comprising:

a gas ionization chamber which includes a source of radiation to effect ionization of the gaseous carrier;

a first detector means comprising a first electrode, a second electrode, an outer shell, and a voltage applied between said electrodes, said detector is operatively joined to said ionization chamber to receive said ionized gas with thermoparticulates dispersed therein;

a second detector means comprising a third electrode, a fourth electrode, an outer shell, and an applied voltage between said electrodes, said second detector is operatively joined to said first detector to receive said gaseous carrier with charged thermoparticulates dispersed therein;



said first detector's voltage is of such a potential to ensure substantial electrodeposition of said gaseous carrier's free ions; and

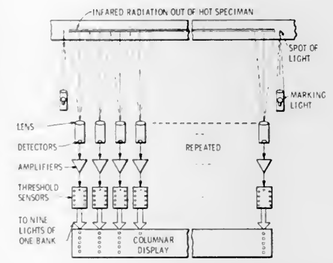
said second detector's voltage is of such a potential to ensure electrodeposition of said charged thermoparticulates and to produce a current flow through a load connected between said third and fourth electrodes whose magnitude is proportional to the quantity of charged thermoparticulates dispersed within said gaseous carrier.

4,121,459

TEMPERATURE PROFILE MEASURING DEVICES

Thomas F. MaCall, 1720 Whitham Ave., Los Altos, Calif. 94022, and Conrad A. Parlanti, 699 Towle Way, Palo Alto, Calif. 94306

Filed Mar. 17, 1976, Ser. No. 667,843
Int. Cl.[2] G01J *5/10*
U.S. Cl. 73—340 **3 Claims**



3. An apparatus for measuring the temperature profile of large areas comprising:

A. a plurality of input channels each channel including

(a) radiometric sensor means;

(b) amplifier means responsive to and connected to said radiometric sensor means;

(c) differential amplifier means, said amplifier means having an output, a reference input, and an unknown input which is connected to the output of said amplifier means;

(d) a group of voltage comparators having reference inputs and unknown inputs compatible with and responsive to the outputs of the differential amplifier and having assigned threshold values and being arranged in accordance with progressively increasing threshold values;

(e) digital logic decoder means for decoding the logic state of the comparator group to provide activation of a single output of the decoder means for each unique state of the comparator group outputs;

B. Reference voltage generator means having a plurality of outputs, said outputs having progressively increasing voltages for providing reference voltage inputs to the comparators in said comparator groups in accordance with the assigned threshold values of each comparator within said comparator group; and,

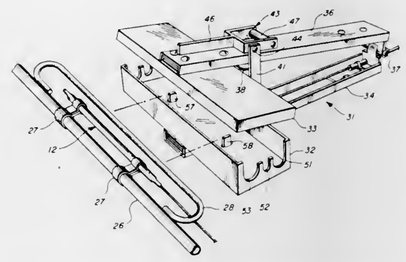
C. Visual indicator means having a plurality of linear columns, said plurality corresponding to the number of input channels, each column including indicator means, said indicator means corresponding to the number of outputs of the digital logic decoder means and responsive to activated outputs from said decoder means, one indicator of each group denominated a nominal condition indicator positioned within each group at a location such that when defined nominal conditions are present at the inputs of the comparator associated with a given group the nominal condition indicator is activated, said indicator also having a unique color and all other indicators within a group having a contrasting color, said columns adjacently arranged to one another and said groups of indicators within each column arranged in accordance with the progressively increasing order of significance of the comparator output states to which they correspond.

4,121,460

THERMOCOUPLE TEMPERATURE MEASURING INSTRUMENT AND METHOD OF MEASURING

Robert E. Ekstrom, 9133 S. Hoyne Ave., Chicago, Ill. 60620

Filed Feb. 22, 1977, Ser. No. 770,528
Int. Cl.[2] G01K *7/02*
U.S. Cl. 73—359 R **6 Claims**



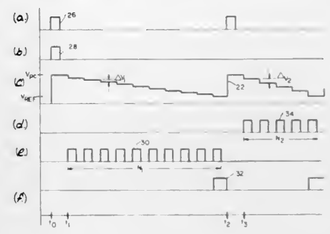
1. A portable instrument for measuring the temperature of an electrically conductive member, comprising a housing including first and second parts, means connecting said parts for relative movement of said parts between an open position where said parts are separated and a closed position where said parts are closely adjacent each other and form a substantially closed interior, two thermocouple conductors, one end of each of said conductors being mounted on said first housing part, said one ends being spaced apart and extending into the interior of said housing, said housing being adapted to receive said member within said interior and to be temporarily attached to said member, means on said second housing part for pressing said member against said ends of said conductors when said housing parts are in said closed position and for holding said one ends in electrically conductive engagement with spaced apart locations of said member, the portion of said member between said locations forming part of a thermocouple junction between said one ends and said junction generating an EMF which is a function of the temperature of said junction, the other ends of said conductors being electrically connected to means which responds to said EMF.

4,121,461

ELECTRONIC TEMPERATURE SENSOR

Walter J. Butler, Scotia, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,241
Int. Cl.[2] G01K *7/16*
U.S. Cl. 73—362 SC **4 Claims**



1. An electronic temperature sensor, comprising:

means for storing charge;

charge supply means for selectively supplying said charge storage means with a plurality of first or a plurality of second charge packets, the magnitude of said second charge packets varying from the magnitude of said first charge packets as a linear function of the temperature to be sensed;

control means for causing said charge supply means to supply said charge storage means with N_1 first charge packets, wherein N_1 is the number of first charge packets required to change the charge stored by said charge storage means from a first to a second value; said control means also for causing said charge supply means to supply said charge storage means with N_2 second charge packets, wherein N_2 is the number of second charge packets required to change the charge stored by said charge storage means from said first to said second value; and

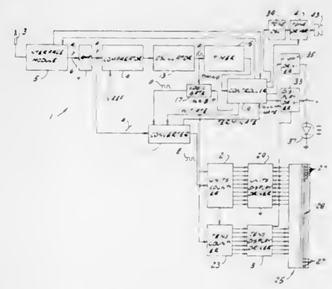
means for generating an output signal which is a function of the difference between N_1 and N_2 and is therefore indicative of the magnitude of said temperature to be sensed.

4,121,462

TEMPERATURE INDICATING APPARATUS

Raymond F. Mohrman, St. Louis, Mo., assignor to La Barge, Inc., St. Louis, Mo.

Filed Feb. 9, 1976, Ser. No. 656,427
Int. Cl.[2] G01K *7/16*
U.S. Cl. 73—362 AR **7 Claims**



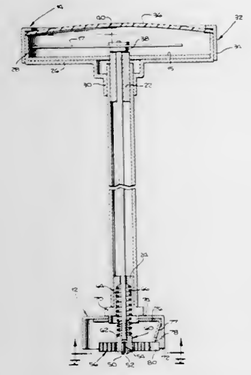
1. Temperature indicating apparatus comprising:

means for sensing the temperature in a region having a temperature to be measured;

interface means responsive to the sensing means for supply-

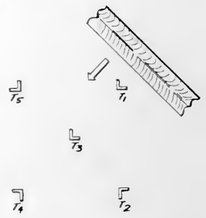
ing an analog signal whose amplitude is a function of the temperature in the region sensed by the sending means;
means responsive to the analog signal for supplying a digital signal representative of the temperature in the region;
display means for providing a visual indication of the temperature in the region, said means including a plurality of temperature indicators each of which represents a discrete temperature level;
means responsive to the digital signal for selectively illuminating at any one time only that indicator which corresponds to the temperature represented by the digital signal at that time;
means for supplying an intermittent signal to the signal responsive means whereby the temperature indicator selectively illuminated flashes on and off; and
means for measuring a predetermined timing interval during which the temperature sensed by the sensing means approaches the temperature in the region, said predetermined timing interval being initiated in response to the sensing by the sensing means of a preselected temperature level;
said digital signal supplying means being responsive to the measurement of the predetermined timing interval to supply said digital signal;
said interface means being one of a group of precalibrated modules, each of which is adapted to be detachably connected to the digital signal means in order to permit removal and replacement of any one module by another module of that group.

4,121,463
PROBE SURFACE THERMOMETER
George A. Argabrite, Malibu, Calif., assignor to Pacific Transducer Corporation, Los Angeles, Calif.
Filed Feb. 22, 1977, Ser. No. 771,611
Int. Cl.[2] G01K *5/62*
U.S. Cl. 73—363.7 **1 Claim**



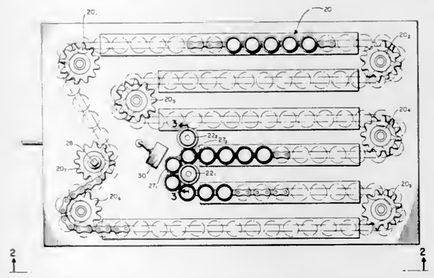
1. In a surface thermometer, in combination:
a body comprising an elongated tubular stem;
a dial plate fixed concentrically to the upper end of the stem and bearing thereon temperature indicia;
a spindle rotatably and axially movably mounted in the stem having fixed to its upper end a pointer spaced above the dial plate and provided with a smooth lower tip for contacting the surface of a sample;
resilient means urging the spindle downwardly relative to the stem;
means for limiting downward axial movement of the spindle relative to the stem;
a downwardly open rigid cup-shaped shield fixed to the lower end of the stem and having a lower annular edge lying in a plane normal to the spindle axis; and
a temperature sensitive bimetallic spiral strip having its inner end fixed to the lower end of the spindle and its outer end contacting the shield for movement relative thereto only axially of the spindle, the strip having a lower edge lying in a plane perpendicular to said axis and slightly above the tip and normally below the plane of the annular edge, the strip being retracted into the shield against the force of the resilient means when the tip and the annular edge are pressed into contact with a sample.

4,121,464
SYSTEM AND METHOD FOR GEOPHYSICAL PROSPECTING BY MEASUREMENT OF EARTH TIDES
Allen R. Geiger, 2600 E. Idaho, Las Cruces, N. Mex.
Filed Oct. 19, 1977, Ser. No. 843,500
Int. Cl.[2] G01V *9/00*
U.S. Cl. 73—382 R **12 Claims**



1. A method of locating potentially hydrocarbon-bearing subsurface formations comprising the steps of:
measuring the time of arrival and apparent direction of tidal wave movements of the earth's surface at each of a plurality of points; and
combining the time and direction measurements to establish the wave shape in the region of interest, said wave shape being indicative of the subsurface viscosity in said region.

4,121,465
AUTOMATIC FLUID INJECTOR, AND MAGAZINE THEREFOR
Rano J. Harris, Sr.; Rano J. Harris, Jr., and Julius P. Averette, Jr., all of Baton Rouge, La., assignors to Precision Sampling Corporation, Baton Rouge, La.
Filed Jul. 21, 1977, Ser. No. 817,818
Int. Cl.[2] G01N *1/14*
U.S. Cl. 73—422 GC **7 Claims**

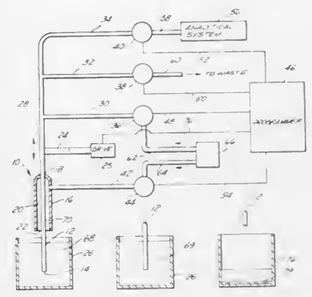


1. In a fluid injector, or apparatus, for withdrawing fluid specimens from fluid specimen containing septum type vials for repetitively measuring and injecting preselected quantities of fluid specimens into a medium such as an inlet to an analytical instrument, the combination comprising
a base plate, constituting a portion of a housing, which can be mounted adjacent the inlet to the analytical instrument,
(a) a fluid injector sub-assembly, inclusive of

a syringe barrel,
a hollow needle mounted on an end of the barrel providing an opening from the dispensing end of said needle through said needle and barrel, and
means for introducing fluid specimen into said barrel and needle, and means for ejection of an accurately measured quantity of said fluid specimen from said barrel through said needle into the inlet of said analytical instrument,
(b) an injector feed sub-assembly, inclusive of
a probe assembly affixed upon said base plate comprising
a gas supply conduit with gas inlet and gas outlet means,
a fluid specimen supply conduit with fluid specimen inlet means, and outlet means operatively associated with the barrel of said fluid injector subassembly for introducing fluid specimen thereto, including means for actuation and reciprocation of said probe assembly, and means for puncturing the septum of the fluid specimen containing vial so that the gas and fluid specimen supply conduits can enter into and lie within the vial, and
(c) a magazine sub-assembly, inclusive of
a floor plate mounted within said housing below said base plate and probe assembly,
a plurality of sprockets, with gear teeth, rotatably mounted upon said floor plate, the plane of rotation of said sprockets being parallel to the plane of orientation of said floor plate,
a flexible closed loop roller chain comprised of a series of links aligned in tandem, each link of the chain including a pair of parallel aligned, spaced apart rollers equal in length and vertically oriented with respect to said floor plate, secured together by a plate mounted on each side of said pair of rollers, the openings in the chain between the rollers being meshed with and guided upon said sprockets,
a plurality of open end vial transport containers, vertically oriented with the open ends facing upwardly, mounted upon upwardly facing plates which form the links of the roller chain,
a motor mounted on said base plate, the output shaft of which is geared to at least one of said sprockets for driving said roller chain through its closed fixed path,
a means for stopping each of said vial transport containers in sequence at a pick-up station below, and in the path of said probe assembly for penetration of the septum of a vial by said probe assembly,
whereby a pressurized fluid can be injected through the probe into the vial to pressurize the fluid specimen contained therein, the fluid specimen then transferred from the vial via the hollow probe to the barrel of said fluid injector with a preselected quantity of the fluid specimen for subsequent injection into the inlet of the analytical instrument.

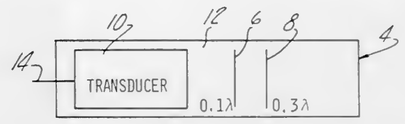
4,121,466
LIQUID DISPENSER WITH AN IMPROVED PROBE
Allen Reichler, Pearl River, N.Y., and Herman Guy Diebler, North Haledon, N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Apr. 19, 1977, Ser. No. 788,943
Int. Cl.[2] G01N *1/14*
U.S. Cl. 73—423 A **19 Claims**

1. A liquid metering system comprising:
a probe having an inlet end for immersion into a receptacle containing a first liquid to be aspirated,
means for coating at least an outer peripheral surface of said probe with a second liquid, said second liquid being immiscible with said first liquid and which preferentially wets said surface of said probe to the substantial exclusion of said first liquid,
means for immersing said probe into said first liquid, and



means connected to an outlet end of said probe and operative while said probe is immersed in said first liquid for aspirating said first liquid.

4,121,467
NON-DESTRUCTIVE TECHNIQUE FOR SURFACE WAVE VELOCITY MEASUREMENT
Grant R. Gerhart, Bloomfield Hills, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 31, 1977, Ser. No. 801,508
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—597 **8 Claims**

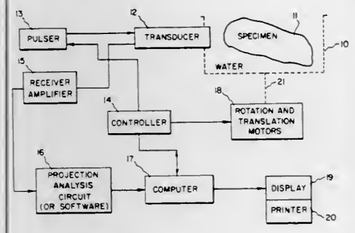


1. A device for measuring absolute and relative USW velocities in a specimen comprising:
a. a specimen sample having a surface with two parallel scratches spaced a precise known distance apart;
b. one only ultrasonic surface wave transducer adapted to be coupled to the scratched surface of the specimen for propagating a succession of pulsed surface waves along the scratched surface across the scratches, whereby the coupling errors between said one only transducer and the scratched surface are substantially the same for the echoes from both of the two scratches;
c. an oscilloscope having a horizontal sweep circuit, and a vertical sweep circuit;
d. means to drive the horizontal sweep circuit at a frequency which is the reciprocal of the difference in arrival times between pulses reflected from the two scratches; and
e. means to transmit the reflected pulse voltages of the transducer to the vertical sweep circuit.

4,121,468
METHOD AND APPARATUS FOR REFLECTIVE ULTRASONIC IMAGING UTILIZING RECONSTRUCTION OF ACOUSTIC IMPEDANCE PROJECTIONS

Gary H. Glover, Waukesha, Wis., and Frank L. Lederman, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 23, 1977, Ser. No. 809,080
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—602 15 Claims



1. A method of producing acoustic impedance projections for computerized reflective ultrasonic imaging comprising the steps of

exciting at least one electroacoustic transducer to generate a series of acoustic pulses directed toward a specimen being examined and propagating along multiple paths sufficient to scan the specimen for a single projection,

detecting for each path the echo pulses reflected at acoustic impedance discontinuities in the specimen to thereby generate a received echo electrical signal,

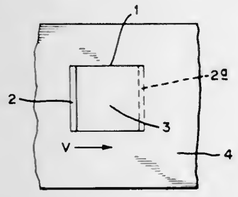
computing impedance projection output data representing the line integral of the acoustic impedance along each path utilizing the amplitude of the received echo signals, and

repeating the foregoing steps at multiple scan angles, with respect to a rotational axis, of the specimen relative to the excited transducer to derive additional sets of impedance projection output data for an ensemble of projections to be used in combination to reconstruct impedance distributions at known coordinates in a specimen layer.

4,121,469
METHOD AND APPARATUS FOR PRODUCING A PULSE TYPE ULTRASONIC WAVE ON A WORKPIECE SURFACE

Walter Kaule, and Erik Primbsch, both of Cologne, Fed. Rep. of Germany, assignors to Krautkramer-Branson, Incorporated, Stratford, Conn.

Filed Dec. 1, 1977, Ser. No. 856,335
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1977, 2707914
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—643 10 Claims



1. The method of producing free of physical contact on the surface of a light absorbing workpiece an ultrasonic pulse wave having a predetermined angle of propagation relative to the workpiece surface comprising:

illuminating a portion of the workpiece surface with a beam of coherent radiation;

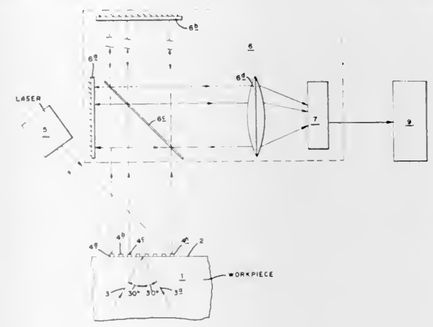
causing such illuminated portion to be moved in uniform motion at a predetermined velocity along a linear axis over a predetermined distance, and

selecting said predetermined velocity to provide said predetermined angle of propagation as determined also by the propagation velocity of said wave in the workpiece.

4,121,470
OPTO-ELECTRIC SENSING MEANS WITH PREDETERMINED DIRECTIONAL CHARACTERISTIC FOR ULTRASONIC WAVES

Walter Kaule, Cologne, Fed. Rep. of Germany, assignor to Krautkramer-Branson, Incorporated, Stratford, Conn.

Filed Dec. 1, 1977, Ser. No. 856,336
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1977, 2707968
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—643 12 Claims



1. The method for determining by opto-electric sensing means the presence of ultrasonic waves at a workpiece surface by sensing the ultrasonic wave responsive localized workpiece surface deformation comprising:

illuminating the surface portion of the workpiece at which ultrasonic waves are to be sensed with coherent light in a pattern to cause a plurality of equidistantly spaced illuminated strips;

disposing opto-electric sensing means for receiving reflected light from said strips;

sensing the changes in illumination manifest at said opto-electric means as the illuminated surface strips are deformed responsive to ultrasonic waves arriving at said surface portion and providing corresponding electrical output signals, and

processing said output signals;

the distance between said strips being selected substantially in accordance with the equation

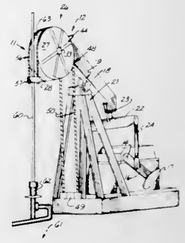
$$d = \lambda/\sin \alpha$$

wherein d is the distance between the center of adjacent strips, λ is the wavelength of the ultrasonic wave, and α the angle of the ultrasonic wave relative to an axis intersecting the workpiece surface portion at a normal angle.

4,121,471
ROTATING HORSEHEAD FOR OILFIELD PUMPING UNIT

Forrest E. Chancellor, P.O. Box 5578, Bakersfield, Calif. 93308

Filed Jul. 5, 1977, Ser. No. 812,903
Int. Cl.[2] F16H *21/32*
U.S. Cl. 74—41 5 Claims



1. A rotating horsehead for an oilfield pumping unit having a polished rod and a walking beam, said rotating horsehead comprising:

a. a generally elliptical wheel rotatably supported at substantially a center thereof at one end of the walking beam, said wheel including a front side and a back side;

b. a fixed anchor below said wheel;

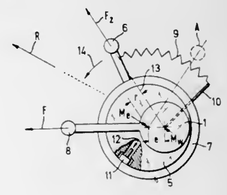
c. an anchor cable sling attached at opposite ends to a first upper portion of said wheel and to said anchor, respectively, said anchor cable sling being trained over said back side of said wheel; and,

d. a polished rod cable sling connected at opposite ends to a second upper portion of said wheel and to a polished rod vertically movable below said wheel, respectively, said polished rod cable sling being trained over said front side of said wheel.

4,121,472
ECCENTRIC DRIVE

Gülertan Vural, Emmelshausen, and Udo Carle, Hohr-Grenzhausen, both of Fed. Rep. of Germany, assignors to Koehring GmbH - Bomag Division, Boppard, Fed. Rep. of Germany

Filed Nov. 26, 1976, Ser. No. 745,452
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1975, 2553800
Int. Cl.[2] F16H *33/10*
U.S. Cl. 74—87 14 Claims

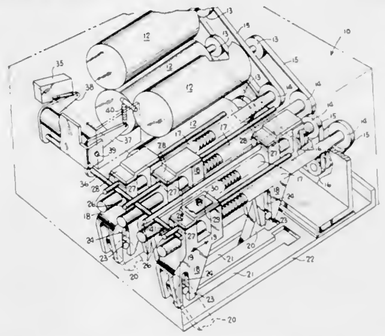


1. In an eccentric drive system including a rotatably mounted driven shaft, at least one primary eccentric mass fixed to the driven shaft for rotation therewith, an additional eccentric mass mounted for rotation with the shaft in a manner to permit adjustment of the angular position of the additional mass relative to that of the primary mass, the improvement wherein: said shaft is provided with a shaft portion presenting an outer periphery which is arranged eccentrically to the axis of rotation of said shaft; said additional mass is mounted on said portion to be angularly movable relative to said portion; and said system comprises spring means connected between said additional mass and said shaft for producing a force about the axis of said shaft urging said additional mass into an initial angular position relative to said shaft, and fastening means disposed between said shaft and said additional mass and actuatable between a released position in which it permits said additional mass to undergo such angular movement relative to said shaft portion and a locking position in which it prevents such movement, said fastening means including actuating means operable during rotation of said shaft for effecting actuation of said fastening means between its said positions.

4,121,473
SIMULTANEOUSLY CONTROLLED POSTAGE METER CONVERSION APPARATUS

Keith E. Schubert, Rowayton, and Philip Pollak, Jr., Westport, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jul. 15, 1976, Ser. No. 705,477
Int. Cl.[2] F16H *27/02;* B65C *11/00*
U.S. Cl. 74—89.15 6 Claims



1. An actuator mechanism adapted to set a postage meter having a plurality of setting levers, each of said postage meter setting levers being movable to a selected one of a plurality of postage value positions: comprising

a frame;

a plurality of lead screws rotatably mounted on said frame;

a plurality of follower members respectively carried by said lead screws, each follower member being adapted to be displaced in response to rotation of its associated lead screw and being adapted to be connected to an associated one of said levers;

a plurality of electric motors mounted on said frame, said motors being respectively connected so as to rotatably drive an associated one of said lead screws;

means for mounting said actuator mechanism on said postage meter; and

means for assuring the positionment of each setting lever in each of its said value positions.

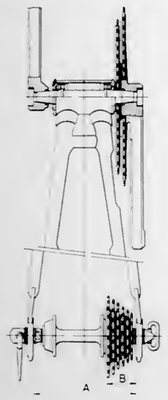
4,121,474
MULTIPLE CROWN FREE WHEEL SYSTEMS FOR BICYCLES

José Domingo Arregui Suinaga, Zubigain 1-2-, Eibar, Spain

Continuation of Ser. No. 295,180, Oct. 5, 1972, abandoned. This application Jul. 19, 1974, Ser. No. 490,107
Claims priority, application Spain, Oct. 23, 1971, 396.325
Int. Cl.[2] F16H *9/24, 11/08, 55/30*
U.S. Cl. 74—217 B 1 Claim

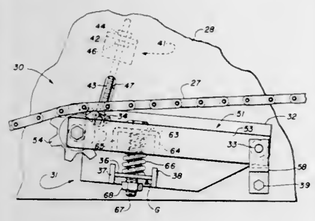
1. A free wheel device for a multiple speed, chain driven bicycle comprising a hub, a plurality of balanced, annular sprockets of different diameters and uniform widths having different numbers of sprocket teeth and adapted to be mounted on said hub by axially sliding them thereon, an end sprocket threaded on an end of said hub in side-by-side relation, and a

plurality of keyed zones connecting the axially slidably mounted sprockets and the hub to prevent the said sprockets from turning on the hub, each keyed zone including a longitudinally extending channel in the hub and a rib formed on the inner periphery of the sprocket and accommodated in said channel, each of the axially slidably mounted sprockets gradually increasing in thickness uniformly on opposite surfaces of a center plane through the sprocket perpendicular to the axis of



the hub from a zone beneath the base of the teeth to a maximum thickness, thereby providing a balanced sprocket having substantially identical oppositely disposed sufaces, which uniform thickness locates the position of the outer periphery of each sprocket in the assembly on the hub and provides the standard separation between the sprockets of a free wheel device for multiple speed bicycles, said distance permitting the chain to be displaced from one sprocket to an adjacent one.

4,121,475
TENSION CONTROL DEVICE
Irwin D. McIlwain, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Jul. 21, 1977, Ser. No. 817,881
Int. Cl.[2] F16H *7/10, 7/12*
U.S. Cl. 74—242.15 R **8 Claims**



1. In a drive system subject to cyclic forces wherein an endless chain is supported in a first plane between at least two spaced apart sprockets, an improved tension control device for said endless chain fixed to a plate-like support having a substantially flat surface in a second plane adjacent to and substantially parallel to said first plane, said control device comprising:

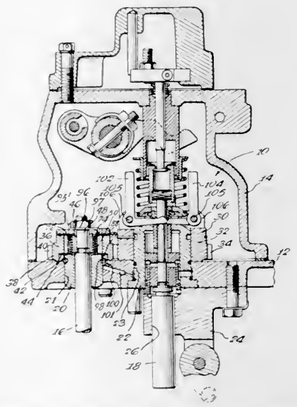
a mounting plate pivotally fixed at a first location to the support by a pivot pin, and adjustably fixed thereto by adjustable holding means at a second location spaced from said first location;

arm means having a first end and a second end, said first end pivotally fixed at said first location by said pivot pin for pivotal movement relative to said support and said mounting plate;

a sprocket fixed to said second end of said arm means and rotatably supported thereby in said first plane for engagement with the endless chain; and

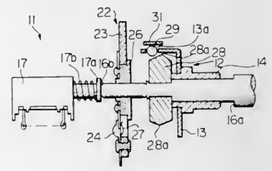
adjustment means fixed between said arm means and said mounting plate for controlling the relative movement therebetween about said pivot pin, said adjustment means including a first bracket fixed to said mounting plate and including a first plate-like portion extending in a direction substantially perpendicularly to said second plane, a second bracket fixed to said arm means and including a second plate-like portion substantially vertically aligned and parallel with said first plate-like portion of said first bracket, a biasing means positioned between said plate-like portions of said first and second brackets urging them away from each other, and adjustable limit means operable to control the maximum separation between said plate-like portions of said first and second brackets.

4,121,476
FLEXIBLE DRIVE
James T. Hammond, San Leandro, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 16, 1977, Ser. No. 797,220
Int. Cl.[2] F16H *57/00;* **F16D** *3/14*
U.S. Cl. 74—411 **14 Claims**



1. A flexible drive having a housing, a pair of shafts rotatably mounted in said housing, one of said shafts being rotatably driven, cam means secured to said rotatably drive shaft, elongate spring means in engagement with a portion of the opposite sides of cam means, gear means encircling said cam means and said spring means, the end portions of said spring means seating in the inner surface of said gear means, a second gear means carried by said other of said shafts, driven means carried by said second gear means and operatively connected with said second shaft whereby said rotatably driven shaft rotates said driven means through said cam means and spring means.

4,121,477
INDEXING MECHANISM
Tadashi Wagatsuma, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan
Filed Feb. 4, 1977, Ser. No. 765,541
Claims priority, application Japan, Feb. 9, 1976, 51-13749[U]
Int. Cl.[2] G05G *5/06*
U.S. Cl. 74—527 **5 Claims**



1. A detent mechanism comprising:

a detent disc adapted to be mounted to a shaft movable rotatably and axially, said detent disc having

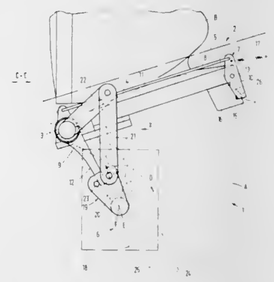
a ridge extending circumferentially about the periphery of said detent disc,

a plurality of first detent recesses spaced circumferentially about the periphery of said detent disc and located on one side of said ridge, and

a plurality of second detent recesses spaced circumferentially about the periphery of said detent disc and located on the other side of said ridge; and

a detent member resiliently urged against the periphery of said detent disc for yieldable engagement in a selected detent recess, whereby said detent disc can hold the shaft in both a rotatable and axial position selected.

4,121,478
RETRACTABLE HEADLIGHT FOR MOTOR VEHICLES
Werner Trenkler, Asperg, Germany, assignor to Porsche AG, Germany
Filed Aug. 9, 1976, Ser. No. 712,799
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1975, 2535677
Int. Cl.[2] G05G *5/06*
U.S. Cl. 74—529 **11 Claims**



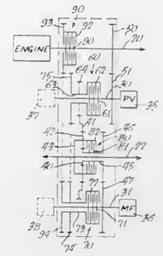
1. In a retractable headlight arrangement for a motor vehicle in which a headlight is mounted on a shaft for rotation by a driving device about an axis between first and second stabilized positions, said arrangement having a locking mechanism for fixing said headlight in one of said stabilized positions, the improvement wherein said driving device comprises

rotatably driven crank means, mechanically coupled to said shaft, for causing rotation of said shaft and consequent displacement of said headlight between said first and second stabilized positions; and

locking engagement means, coupled between said rotatably driven crank means and said locking mechanism, for operating said locking mechanism during rotation of said rotatably driven crank means; and

wherein the mechanical coupling between said rotatably driven crank means and said locking mechanism is such that said rotatably driven crank means causes, during its rotation, operation of said locking engagement means without displacement of said headlight.

4,121,479
POWER TRANSMISSION
George A. Schauer, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.
Filed Mar. 4, 1977, Ser. No. 774,334
Int. Cl.[2] F16H *47/04*
U.S. Cl. 74—687 **16 Claims**



1. A power transmission having three ranges of operation including a low-speed range, an intermediate-speed range and a high-speed range comprising: an input shaft; an output shaft; a planetary differential coaxial with said output shaft including a first gear, a second gear and a third intermediate gear connected to the output shaft; first and second rotatable spaced-apart shafts; a hydrostatic transmission with a pump connected to the first shaft and a motor connected to the second shaft; gear means connecting the input shaft to the first shaft; drive connecting means between said second shaft and the first gear; a first clutch and drive means having one clutch element connected to said first shaft and another clutch element connected to a first sleeve and gear means connecting said first sleeve to the second gear whereby clutch engagement drives the second gear from said first shaft in the intermediate-speed range; a second clutch and drive means having one clutch element on the second shaft and another clutch element connected to a second sleeve and gear means connecting said second sleeve to the first sleeve whereby engagement of the second clutch drives said second gear in the low-speed range; and third clutch means associated with said first gear and the third gear and engageable to lock up said differential for operation in the high-speed range.

3. A power transmission having three ranges of operation including a low-speed range, an intermediate-speed work range and a high-speed range comprising: an output shaft; a planetary differential coaxial with said output shaft including a first gear, a second gear and a third intermediate gear connected to the output shaft; first and second rotatable spaced-apart shafts with the first shaft drivable by a power source; a hydrostatic transmission having a pump connected to the first shaft and a motor connected to the second shaft; a first gear train connected between said second shaft and the first gear; a first clutch and drive means having one clutch element connected to said first shaft and another clutch element connected to a first rotatable member and gear means connecting said first rotatable member to the second gear whereby clutch engagement drives the second gear from said first shaft in the work range; a second clutch and drive means having one clutch element on the second shaft and another clutch element con-

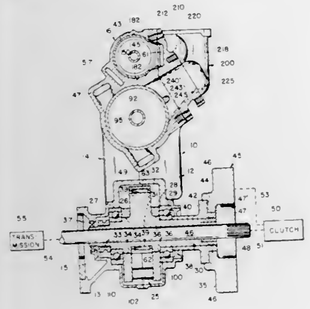
nected to a second rotatable member and gear means connecting said second rotatable member to the first rotatable member whereby engagement of the second clutch drives said second gear in the low speed range; and third clutch means associated with said first gear and the third gear and engageable to lock up said differential for operation in the high speed range.

4,121,480

INTERNAL COMBUSTION ENGINE AND TRANSMISSION COUPLING

John F. Andreen, R.R. #3, Cadillac, Mich. 49601

Division of Ser. No. 582,242, May 30, 1975, Pat. No. 3,999,523.
This application Nov. 15, 1976, Ser. No. 741,936
Int. Cl.[2] F16H *37/08;* **F02B** *75/32*
U.S. Cl. 74—700 **5 Claims**



1. An improved drive means for coupling an engine including a piston driven connecting rod to a transmission comprising:

an elongated hollow drive shaft and eccentric drive means coupling said drive shaft to the connecting rod of the engine for rotation of said drive shaft by said engine;

a transmission shaft extending through said hollow drive shaft and coextensive with said drive shaft and means for supporting said transmission shaft in spaced relationship within said drive shaft;

means for coupling a clutch to said drive shaft and to said transmission shaft at one end thereof; and

housing means for coupling a transmission to said transmission shaft at an end remote from said one end whereby the clutch and transmission are located at opposite sides of said engine.

5. An internal combustion engine and drive means comprising:

an engine housing;

an elongated hollow drive shaft rotatably mounted to said housing and including eccentric drive means;

a connecting rod having one end coupled to said eccentric drive means;

a rocker arm having one end pivotally coupled to an end of said connecting rod remote from said eccentric drive means and coupling means extending between said engine housing and said rocker arm spaced from the connection of said rocker arm to said connecting rod for pivotally and slidably coupling said rocker arm to said housing;

piston means including a piston rod pivotally coupled to an end of said rocker arm remote from said one end such that movement of said piston means is translated through said rocker arm, said connecting rod and said eccentric drive to rotate said drive shaft during engine operation;

a transmission shaft extending through said hollow drive shaft and coextensive with said drive shaft and means for supporting said transmission shaft in spaced relationship within said drive shaft;

means for coupling a clutch to said drive shaft and to said transmission shaft at one end thereof; and

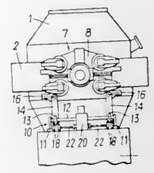
housing means for coupling a transmission to said transmission shaft at an end remote from said one end whereby the clutch and transmission are located at opposite sides of said engine.

4,121,481

DEVICE AT A CONVERTER WITH A TILTING DRIVE

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Dec. 10, 1976, Ser. No. 749,238
Claims priority, application Austria, Dec. 17, 1975, 9571/75
Int. Cl.[2] F16H *57/00*
U.S. Cl. 74—410 **6 Claims**



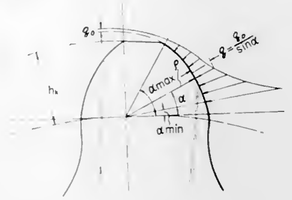
1. In a converter tilting device with a tilting drive, a tilting trunnion connected to the converter and having the tilting drive suspended thereon, and a torque support resiliently supporting the tilting drive on a base, the improvement comprising an adjustment means for fixing the tilting drive relative to the base during blowing.

4,121,482

W-N GEAR HAVING A MAXIMUM SURFACE STRENGTH

Shoichi Ishikawa, Yokohama; Kiyoshi Kotake, Tokyo, and Seishi Honma, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Hasegawa Haguruma, Tokyo, Japan

Filed Aug. 10, 1977, Ser. No. 823,467
Claims priority, application Japan, Aug. 24, 1976, 51-100203
Int. Cl.[2] F16H *55/06*
U.S. Cl. 74—462 **2 Claims**



1. A W-N gear having a basic rack tooth profile, taken in a normal or transverse reference plane, which has a mean radius, ρ, of inter-meshing convex and concave circular arcs selected in the range

$$0.8 \times \frac{h_k}{e \sin\gamma} \leqq \rho \leqq 1.2 \times \frac{h_k}{e \sin\gamma}$$

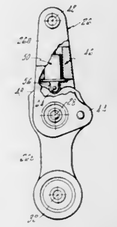
where h_k represents the addendum, γ the minimum pressure angle and e the Napierian log base, so that the surface strength is at least nearly maximized for the given values of addendum and minimum pressure angle.

4,121,483

AIRCRAFT FLIGHT CONTROL SYSTEM

Albert Raymond Sedlock, Shelton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 10, 1977, Ser. No. 767,275
Int. Cl.[2] G05G *11/00*
U.S. Cl. 74—479 **6 Claims**



1. An aircraft flight control system having a linkage system including:

(A) a pivotally supported walking beam,

(B) control output means operatively connected to said walking beam so as to be actuated by pivot motion of said walking beam,

(C) first control input means operatively connected to impart motion input to said walking beam to cause said walking beam to pivot and thereby actuate said output means,

(D) second control input means operatively connected to impart motion input to said walking beam to cause said walking beam to pivot and thereby actuate said output means,

(E) said walking beam being of two-piece construction with each piece pivotally supported about the walking beam pivot axis and including:

(1) a shear pin operative to join the two pieces of the walking beam so as to operate as a unitary walking beam during normal operation and so that when one of said input means is jammed to thereby prevent pivot motion of the unitary walking beam, increased input force from the other input means will cause said shear pin to shear and free said walking beam pieces so that the other input means can impart pivot motion to one of said walking beam pieces and thereby actuate said output means, and

(2) over-control abatement means operative to resist motion input to said walking beam from said other input means after said shear pin shears so as to prevent excessive actuation of said output means.

4,121,484

APPLIANCE FOR THE SHARPENING OF THE EDGES OF SKIS

Hans Görlach, Lerchenfelstr. 14, D.8950 Kaufbeuren-Neugablonz, and Heinz Nolte, D-8939 Jengen,uber Buchloc., both of Germany

Filed May 3, 1977, Ser. No. 793,382
Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620504
Int. Cl.[2] B21K *17/00;* **B23D** *67/12*
U.S. Cl. 76—83 **6 Claims**

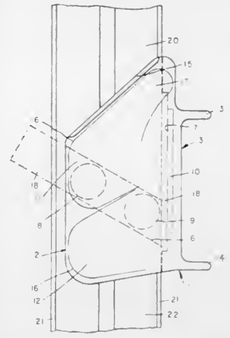
1. An appliance for sharpening the longitudinal edges of skis, wherein said edges are comprised essentially of a right angle connecting the bottom of the ski to the side of the ski, said appliance comprising, a body made up of a part of plate-form which is shaped in conformity with the surface of the hand of a user and having a major surface extending parallel to the bottom of the ski and a minor surface extending at right angles to the major surface and essentially parallel to the side of the ski, the improvement comprising:

first recess means for defining a recess in said major surface for retaining a file therein and preventing movement of said file relative to said body in the longitudinal direction with respect to said edges;

second recess means for defining a recess in said minor surface for retaining a file therein and preventing movement of said file relative to said body in the longitudinal direction of said edges;

a first file disposed in said first recess means;

a second file disposed in said second recess means;



magnetic retention means, recessed in each of said recess means, for removably retaining said files therein; and

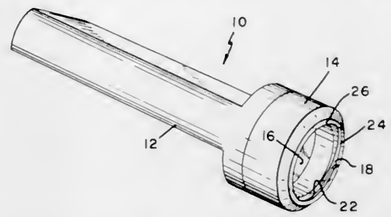
said recess means having a depth less than a thickness of said files such that said files protrude above said major and minor surfaces, said recesses and files arranged such that said first file projects at least to said minor surface and said second file projects at least to said major surface, forming an angle corresponding to said right angle of said edges.

4,121,485

TOOL FOR REMOVING A WATCH CASE BACK

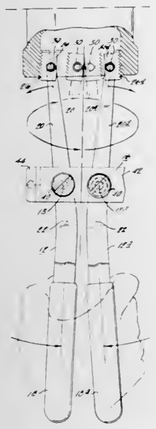
Carl G. Braun, 64 Orchard Ave., Woodbury, Conn. 06798, and William S. Dolan, Straits Turnpike, Middlebury, Conn. 06762

Filed Jun. 7, 1976, Ser. No. 693,547
Int. Cl.[2] G04D *1/10*
U.S. Cl. 81—6 **3 Claims**



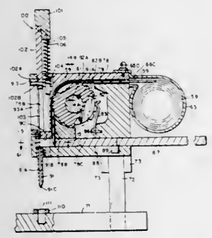
1. A tool for removing watch backs from watch cases, suitable for use with watch backs having a peripheral edge projection, comprising a cylindrical cavity having a side wall a relatively closed bottom wall and a relatively open top forming a mouth portion for encompassing a watch back, the side wall of said cylindrical cavity having a top edge about said mouth portion for engaging the watch case, an inclined camming surface in said side wall peripheral of said cavity and an entry passage in said top edge for admitting said edge projection of said watch back to said inclined camming surface.

4,121,486
INTERNAL THREAD CLEANER AND RESTORER
Edward Joseph Frank, R.D. #1, Box 325A, Oxford, Pa. 19363
Filed Aug. 8, 1977, Ser. No. 822,810
Int. Cl.[2] B23B *3/22;* **B23G** *1/00;* **A47L** *14/02*
U.S. Cl. 82—4 C **8 Claims**



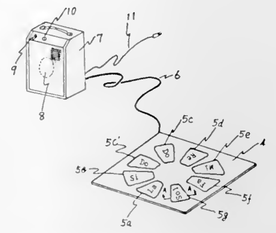
1. A tool for cutting and restoring internal threads of a connecting element or the like comprising a pair of elongated levers each lever having a hand grip portion at one end, at least one link member pivotally connected to each of the levers at predetermined locations spaced longitudinally from opposite terminal ends thereof, a die block having a serrated face pivotally connected to the terminal end of each lever at a point remote from the hand grip portion.

4,121,487
CONTINUOUSLY CONNECTED FASTENER ATTACHMENT STOCK
Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Continuation-in-part of Ser. No. 594,736, Jul. 10, 1975, Pat. No. 4,039,078, which is a division of Ser. No. 347,678, Apr. 4, 1973, abandoned. This application Jul. 5, 1977, Ser. No. 812,875
The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.
Int. Cl.[2] B65C *7/00;* **B25C** *1/00*
U.S. Cl. 83—23 **10 Claims**



10. The method of providing individual fasteners from fastener stock comprising the steps of
(a) Feeding fastener stock formed by two continuous and elongated plastic side members that are cross coupled by a plurality of cross links;
(b) Separating an individual fastener from the fastener stock to provide a cross link with one end bar formed from a portion of one of said side members and an opposite end bar from a portion of the other of said side members;
(c) Feeding at least one of the end bars through the bore of a hollow needle having a longitudinal slot for the passage of the associated cross link.

4,121,488
STEP-ON TYPE TONE SCALE PLAY DEVICE
Kakunosuke Akiyama, Musashino, Japan, assignor to Nep Company, Ltd., Tokyo, Japan
Filed Feb. 24, 1977, Ser. No. 771,663
Claims priority, application Japan, Mar. 8, 1976, 51-27256[U]; May 22, 1976, 51-65773[U]
Int. Cl.[2] G10H *1/00, 5/06*
U.S. Cl. 84—1.01 **7 Claims**

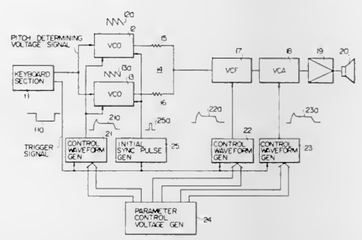


1. A step-on type tone scale play device comprising
a flexible mat,
a plurality of switch elements arranged on said mat and representing the notes of a musical scale, said switch elements including
oppositely disposed flexible conductive sheets forming at least a part of said mat,
a flexible and resilient insulating cushion interposed in the space between said sheets, said cushion having means defining a plurality of holes, there being at least one such hole associated with each of said switch elements,
means defining at least one conductive member extending into each said hole forming between said sheets a normally open pair of contacts,
said mat further having means defining markings on a surface thereof corresponding to the positions of said switch elements,
an electronic control circuit adapted to produce an audible sound,
said switch elements being connected to said circuit and adapted to close the respective contacts and produce a discrete sound when the mat is stepped on at a position corresponding to one of said markings.

4,121,489
ELECTRONIC MUSICAL INSTRUMENT HAVING PLURAL OSCILLATORS STARTING IN PHASE
Takeshi Adachi, and Masahiko Koike, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Jul. 26, 1976, Ser. No. 708,300
Claims priority, application Japan, Jul. 29, 1975, 50-92287; Jul. 29, 1975, 50-92288
Int. Cl.[2] G10H *1/04*
U.S. Cl. 84—1.24 **8 Claims**

1. An electronic musical instrument comprising:
a keyboard having keys;
a plurality of tone generators each having an output and a control input, and producing, upon key depression on said keyboard, tone signals corresponding to the note of a key depressed which have at said outputs slightly different frequencies from each other; and

means operatively coupled to said keyboard for producing and applying a control pulse, at the moment a key is



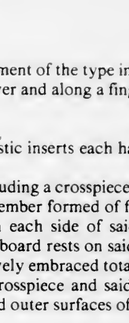
depressed, to said control inputs of said tone generators to compel said tone signals to always start from substantially the same phase position.

4,121,490
TOUCH RESPONSIVE ELECTRONIC PIANO
Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan
Filed Apr. 20, 1977, Ser. No. 789,063
Int. Cl.[2] G10H *1/00*
U.S. Cl. 84—1.27 **9 Claims**

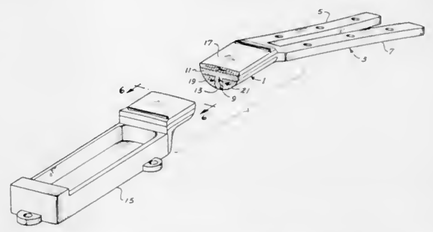
1. A touch responsive transducer for an electronic music system, such as a piano or the like having a keyboard, comprising a pneumatic cylinder including a piston adapted to be connected to a key, the cylinder having an orifice discharging gas from the cylinder under compression by the piston when the associated key is actuated, and means sensing the velocity of the gas escaping through the orifice and generating an output signal where the magnitude varies in direct relation to the velocity of the escaping gas, said output signal controlling a characteristic of the electronic music system.

4,121,491
SOLENOID MOUNTING PLATE FOR MUSICAL KEYBOARD
Thomas Jewel Wilkes, Lewisburg, Tenn., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 681,095, Apr. 28, 1976, Pat. No. 4,031,797. This application Jun. 24, 1977, Ser. No. 809,732
Int. Cl.[2] G10F *5/02*
U.S. Cl. 84—20 **2 Claims**

1. In an extruded metal key solenoid actuator mounting rack for the piano keyboard wherein a plurality of key solenoid actuators are aligned in at least two parallel rows for operative actuation of the keys of the piano keyboard upon selective energization thereof, and each said key solenoid actuator is carried by said mounting rack, said mounting rack having a longitudinal planar surface and a plurality of longitudinal parallel locking nut slots proximate the edges of said mounting rack for receiving locking nuts for threaded fastener members, the improvement which comprises,
a pair of longitudinal actuator alignment ribs integrally formed with said planar surface and defining the boundaries thereof, respectively, one rib for commonly aligning every other actuator, and one rib for commonly aligning the remaining alternate ones of said actuators, each said rib being adjacent one of said longitudinal parallel locking nut slots,
a central longitudinal locking nut slot in said planar surface parallel to said pair of longitudinal actuator ribs and said plurality of longitudinal parallel locking nut slots proximate the edges of said mounting rack, each said longitudinal parallel locking nut slot receiving a locking nut in each slot for each actuator, respectively, and
at least a pair of threaded fastener means, one at each end of an actuator, cooperating with locking nuts in each slot adapted to secure said key actuators flush against said planar locking surface and in abuttment with their respective alignment ribs without distorting the mounting frame for any of said actuators.



4,121,492
REINFORCED NECK FOR STRINGED MUSICAL INSTRUMENTS
Dennis A. Berardi, 38 Rogers Ave., Manasquan, N.J. 08736, and Phillip J. Petillo, 1206 Herbert Ave., Ocean, N.J. 07712
Filed Jul. 15, 1976, Ser. No. 705,552
Int. Cl.[2] G10D *3/00*
U.S. Cl. 84—293 **2 Claims**



1. In a stringed instrument of the type in which a plurality of strings are suspended over and along a fingerboard, the combination comprising
a fingerboard,
a pair of wood or plastic inserts each having a curved outer surface,
a reinforced neck including a crosspiece and leg combined to form a T-shaped member formed of forged aluminum and having a recess on each side of said T-shaped member wherein said fingerboard rests on said crosspiece and said inserts are respectively embraced totally within said recesses between said crosspiece and said leg to form a neck wherein said curved outer surfaces of said inserts are flush

with the ends of said T-shaped member to form a generally smooth semicircular neck cross section, the ends of said T-shaped member being exposed to enhance the sound produced, and the entire side walls of said inserts engaging said T-shaped member to prevent warpage or twisting of said inserts, and

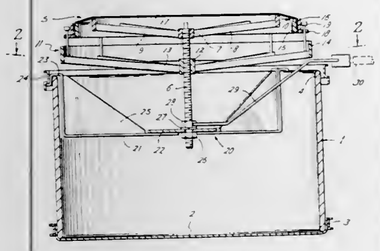
a forked head forming an integral extension of said T-shaped member and formed of said forged aluminum, said integral head and said T-shaped member having substantially the same height, and said aluminum head being totally exposed, whereby weight and distortion of said neck and head are reduced and machining and playing characteristics are enhanced.

4,121,493

ADJUSTABLE PITCH DRUM

Randall L. May, 7726 Dawnridge, Houston, Tex. 77071

Continuation-in-part of Ser. No. 731,361, Oct. 12, 1976, Pat. No. 4,048,895. This application Sep. 8, 1977, Ser. No. 831,686
The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.
Int. Cl.[2] G10D *13/02*
U.S. Cl. 84—411 A **10 Claims**



1. An adjustable musical drum assembly comprising

a threaded supporting rod,

drum head tuning means comprising a drum head mounted on supporting means rotatably threaded on said rod and tension means non-rotatably mounted on one end of said rod, said drum head being stretched over said tension means, whereby rotation of said drum head supporting means varies the tension of the drum head to tune the same,

a hollow drum shell having an open end, and

means operatively securing said drum shell open end to said drum head tuning means.

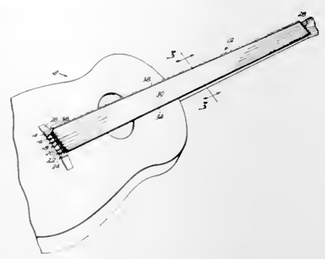
4,121,494

PROTECTIVE COVER FOR THE STRINGS OF A MUSICAL INSTRUMENT

David L. Reno, 3724 NE. 18 Ter., Pompano Beach, Fla. 33064, and Keith W. Donovan, 2570 NE. 22nd St., Pompano Beach, Fla. 33062

Filed Dec. 22, 1977, Ser. No. 863,488
Int. Cl.[2] G10G *7/00*
U.S. Cl. 84—453 **8 Claims**

1. A protective cover for the strings of a musical instrument of the type having a plurality of relatively closely spaced apart strings including functional string lengths longitudinally spanning the distance between a bridge and a nut comprising, a shield including top and bottom spaced apart, generally parallel confronting walls with an interconnecting closure web along a first longitudinal side edge thereof, said top and bottom walls defining an elongated open mouth along a second longitudinal side edge thereof, said shield having a length substantially equal to said distance between said bridge and said nut and a width sufficient to extend across said plurality of strings,



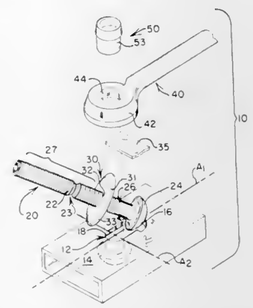
and lining means in said space between said top and bottom walls.

4,121,495

CAR KEY HOLE BOLT FASTENING ASSEMBLY

Lowell L. Malo, St. Peters, and James R. Zimmerle, Florissant, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 1, 1976, Ser. No. 662,598
Int. Cl.[2] B61C *17/04;* **B61D** *23/00;* **F16B** *1/00, 3/00*
U.S. Cl. 85—1 H **21 Claims**



1. A railway freight car bind hole mounting assembly comprising:

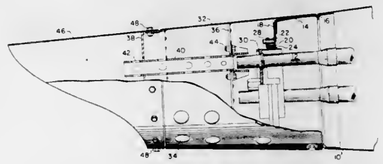
at least one key hole slot formed in the mounting surface of the car where an external appurtenance is to be mounted; said slot including a generally segmental arcuate head receiving portion for inserting a generally arcuate, complementary head of a fastening bolt, and a key portion of smaller size forming a continuation of said head receiving portion, for retaining the fastening bolt in the slot; said fastening bolt including a shank portion and a generally arcuate, complementary bolt head portion slightly smaller than said head receiving portion and contoured to mate with said head receiving portion, the relative dimensions between said head receiving portion and said bolt head being such that the bolt head can only be inserted into said head receiving portion edgewise, when said shank portion is generally parallel to said mounting surface, by rotating said bolt head into said head receiving portion; said bolt head portion being sufficiently large that when said bolt head is moved into said key portion, with the shank portion of the bolt extending outwardly through said key portion, said key portion will retain the fastening bolt in the slot; said shank portion including means for maintaining a plastic retainer in place on said shank; a plastic retainer, separate from said fastening bolt, mounted on said shank portion of a size sufficient to prevent said fastening bolt from dropping through said key slot while said bolt head is inserted into said head receiving portion, and is moved into said key portion; an external appurtenance to be mounted including at least one opening of sufficient size to receive said shank portion; at least one bolt fastener on said shank maintaining said external appurtenance against said retainer and said retainer against said mounting surface.

4,121,496

GUN POD STATIONARY BLAST DIFFUSER

Arthur E. Clayson, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1977, Ser. No. 792,948
Int. Cl.[2] B64D *7/06;* **F41F** *17/12*
U.S. Cl. 89—37.5 R **1 Claim**



1. A gun pod stationary blast diffuser for deflecting gun blasts from an aircraft mounted gun having a plurality of rotating barrels comprising;

a barrel clamp assembly affixed to the forward end of the plurality of rotating barrels and adapted to recoil and rotate with the barrels;

support means fixed to the forward end of the gun pod;

bearing means intermediate said support means and said barrel clamp assembly to allow said barrel clamp assembly to rotate and reciprocate with respect to said support means;

a blast tube in firing communication with a gun barrel when a barrel is in firing position and having an inner diameter approximating the outer diameter of the barrel;

said blast tube extending forwardly of the gun barrel in firing position and having holes therein spaced about the periphery and longitudinally thereof;

a blast shield extending forwardly of said blast tube;

perforations in an intermediate portion of the blast shield at the lower portion thereof remote from the aircraft skin;

a forward plate interior of said blast shield and supporting the forward end of the blast tube;

a ram air opening in the lower portion of said forward blast to allow ram air to enter the intermediate portion of the blast shield;

the interaction of said blast tube, blast shield and ram air being such that muzzle blast gas is stripped from the blast tube and dissipated in the open air so that the blast diffuser functions to protect the aircraft skin from overpressure and decrease the fireball.

4,121,497

APPARATUS FOR TRIGGERING RAPID INDIVIDUAL FIRING

Robert Gantin, Douvaine, France, assignor to Werkzeugmaschinenfabrik Oerlikon Bührle AG, Zürich, Switzerland

Filed Aug. 18, 1977, Ser. No. 825,839
Claims priority, application Switzerland, Oct. 27, 1976, 013524/76
Int. Cl.[2] F41D *11/02*
U.S. Cl. 89—129 R **4 Claims**

1. In an apparatus for triggering rapid individual firing at an automatic firing weapon mounted for return and forward movements and having a trigger rod means for actuating the trigger means of the firing weapon by a handgrip, the improvement which comprises:

toggle lever means arranged at the trigger rod means;

a piston displaceable into two positions;

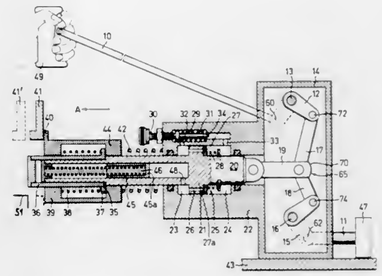
means for hingedly connecting said piston with the toggle lever means;

said piston, upon return movement of the firing weapon, being displaceable into a first one of said two positions and during forward movement of the firing weapon being displaceable into the other one of said two positions;

said piston in one position extending said toggle lever means;

said piston in the other position collapsing said toggle lever means; and

hydraulic dampening means for controlling the movement of said toggle lever means.

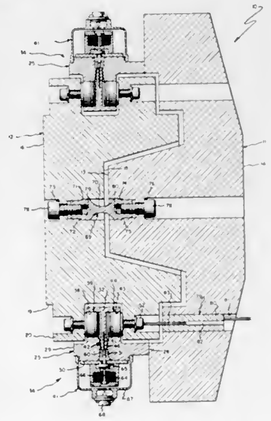


4,121,498

PIVOTAL POSITIONING SERVOACTUATOR

Leonard J. Williams, East Aurora, and Leon W. Blank, Grand Island, both of N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Feb. 3, 1977, Ser. No. 765,253
Int. Cl.[2] F15B *9/03, 9/09;* **F01B** *1/00*
U.S. Cl. 91—186 **8 Claims**



1. In positioning apparatus having a support member and a movable member arranged adjacent said support member, the improvement which comprises:

means providing a pivotal axis about which said movable member is pivotal relative to said support member; and

at least one positioning means operatively arranged to cause said movable member to pivot about said pivotal axis, each of said positioning means including

a first cylinder means fixed to one of said members and arranged with its longitudinal axis offset with respect to said pivotal axis,

a first piston means fixed to the other of said members, said first piston means being sealingly arranged in said first cylinder means for movement relative thereto along a first circular path about said pivotal axis, said first piston means defining with said first cylinder means a first operating chamber, and

valve means selectively operable to control the flow of fluid with respect to said first chamber;

whereby movement of said first piston means relative to said first cylinder means along said first path effects pivotal movement of said movable member relative to said support member about said pivotal axis.

4,121,499

SWITCHING MECHANISM

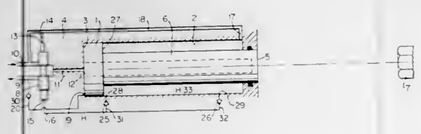
Andrew George Hay, Hamilton, Scotland, assignor to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 21, 1977, Ser. No. 760,953

Claims priority, application United Kingdom, Jan. 29, 1976, 3555/76

Int. Cl.[2] F01L *25/06;* **F01B** *7/18*

U.S. Cl. 91—282 **9 Claims**



1. A reciprocatory device comprising:

a piston and a body defining a cylinder within which the piston can reciprocate along an axis, the piston having a shoulder in fluid-tight contact with the cylinder, and the cylinder defining first and second ports spaced from one another in the axial direction;

a first fluid enclosure capable of being maintained at a relatively high pressure on one side of the shoulder and a second fluid enclosure capable of being maintained at a relatively low pressure on the other side of the shoulder, each enclosure being defined by the piston and cylinder, the arrangement of ports and shoulder being such that each of the ports can communicate, at one relative position of the piston and cylinder, with the first fluid enclosure only, and at a different relative position of the piston and cylinder, with the second fluid enclosure only;

a signal line in fluid communication with the first port through a first fluid passage which includes a non-return valve arranged to prevent flow of fluid along the passage to the first port, and being in fluid communication with the second port through a second fluid passage which includes a non-return valve arranged to prevent flow of fluid along the passage away from the second port; and

a main control valve having a supply inlet for connection to a high pressure fluid source and a supply outlet for draining fluid at low pressure, and a drive connection isolated in fluid tight manner from the first and second enclosures, the said main control valve having a signal input to which the signal line is connected and being actuable by changes in fluid pressure in the signal line to connect alternately the supply inlet and the supply outlet to the drive connection;

the piston having a blind bore into which a part of the body projects, the said projecting part of the body having a duct through which the force generated by the presence of high pressure fluid in the drive connection can be transmitted to act on the end of the blind bore.

4,121,500

HYDRAULIC AMPLIFIER

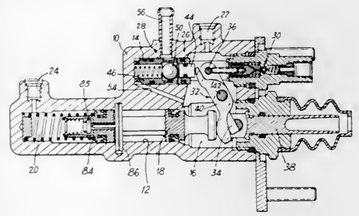
Jean-Jacques Carré, Montreuil, and Yves Meyer, Taverny, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jan. 7, 1977, Ser. No. 757,730

Claims priority, application France, Jan. 16, 1976, 76 01076

Int. Cl.[2] F15B *13/10*

U.S. Cl. 91—391 R **7 Claims**



1. A hydraulic amplifier comprising a housing containing a pressure chamber, a servo piston slidable in a bore opening to the pressure chamber, a set of control valves connectible to a pressure fluid source and a low pressure reservoir, respectively, a control rod which is operated by an operator and which projects into the chamber, a lever mechanism situated in the pressure chamber and comprising a lever of which one end is pivoted on a pin associated with the housing and the other end is moved by the control rod and a rocker member which is pivoted on the lever and of which respective ends can bear on the servo piston and can move at least one valve in the control valve set, the pin being slidable relative to the housing and being urged by resilient means into an idle position which is fixed relative to the housing, the control valve set comprising an exhaust valve operated by the rocker member and a high pressure valve separate from the exhaust valve, said high pressure valve being movable with and operable in response to the movements of the pin from its idle position.

4,121,501

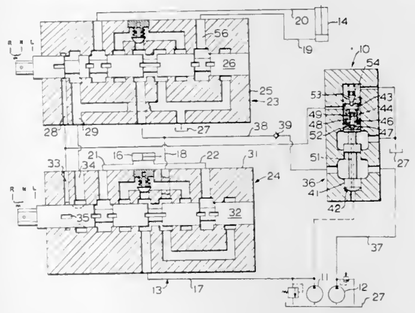
FLOW COMBINING SYSTEM FOR DUAL PUMPS

Lloyd D. Finley, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 11, 1977, Ser. No. 814,379

Int. Cl.[2] F15B *13/09*

U.S. Cl. 91—519 **8 Claims**



1. A flow combining system for dual pumps, comprising:

a first pump;

a first double acting fluid motor;

a fluid circuit connecting the first pump to the first motor, said fluid circuit having a first control valve for controlling fluid flow therethrough to the first motor, said first control valve being movable between a first position at which the first pump is blocked from communication with the first motor, a second position at which fluid flow through the first control valve is controllably modulated and a third position at which substantially the total output of the first pump is directed through the first control valve to the first motor;

a second pump; and

valve means connected to said second pump and to said fluid circuit, said valve means being movable between a first position at which the second pump is in communication with a tank and a second position at which the second pump is blocked from communication with the tank and the output of the second pump is combined with the output of the first pump, said valve means being moved to the second position in response to the first control valve being moved from said second position toward said third position.

4,121,502

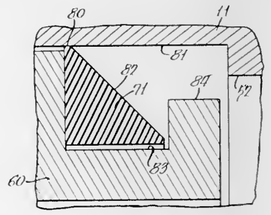
HYDRAULIC UNIT AND TRANSFER TUBE AND SEAL STRUCTURE THEREFOR

George A. Schauer, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 17, 1977, Ser. No. 778,368

Int. Cl.[2] F01B *13/04*

U.S. Cl. 91—487 **10 Claims**



1. A transfer tube and seal structure for use in hydraulic devices comprising, a transfer tube with a central flow passage and at least one outwardly opening groove extending circumferentially therearound, a seal member of generally triangular cross-section surrounding said tube and positioned in said groove and having a width to provide an inner face extending along a base of said groove, and an outer face with a small section of the member width providing a seal area and a major section of the outer face tapering from the seal area toward said inner face.

4,121,503

VARIABLE DISPLACEMENT PUMP

Nicholas Antony James, Wotton-under-Edge, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

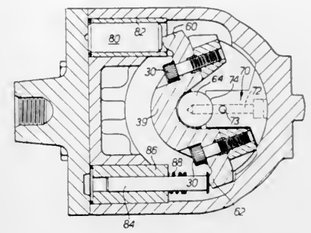
Filed Feb. 11, 1977, Ser. No. 767,821

Claims priority, application United Kingdom, Feb. 14, 1976, 5891/76

Int. Cl.[2] F01B *3/02*

U.S. Cl. 91—505 **2 Claims**

1. A variable displacement pump comprising a housing, a pair of removable side plates forming part of the housing, a pair of pins, a pair of support members each of which forms part of one of the side plates and each of which has a recess formed in an upper surface for receiving the whole length of one of the pins, and a swash plate which is adapted to pivot about the pins, the pump being such that a load on the swash plate is transmitted through the pins to the support members and through the support members to the housing, and each pin being subjected solely to in-line compressive loads between its



said support member and the swash plate since each pin is supported over its whole length in the recess in its said support member.

4,121,504

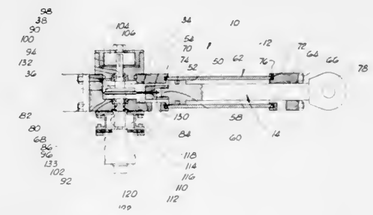
CYLINDER POSITIONING SYSTEMS

Andrew Nowak, Portland, Oreg., assignor to Inovec, Inc., Portland, Oreg.

Filed Jan. 21, 1977, Ser. No. 760,865

Int. Cl.[2] F01B *9/00;* **F15B** *9/03, 9/09;* **F01B** *31/12*

U.S. Cl. 92—137 **1 Claim**



1. In a positioning system,

a cylinder,

piston means having a piston, a work piston rod at one end of the piston and coupling means at the other end of the piston, and

block means sealed to a cylinder end closest to said one end of said piston

housing block means sealed to the end of the cylinder closest to said other end of the piston,

a cable having an end portion secured to the coupling means,

a capstan pulley around which the cable extends,

a rotary shaft mounting the pulley,

a pair of bearing means in the housing block means mounting the shaft in a position in which the pulley is tangential to a line parallel to the centerline of the piston and spaced one-half the diameter of the cable from said centerline,

a pair of seals in the housing block means journalling the shaft,

a coil spring connected to the housing block means and one end portion of the shaft outside one of the seals,

first port means at one end of the cylinder,

second port means at the other end of the cylinder,

and rotary transducer means mounted on the housing block means in a position at the other end of the shaft outside the other seal and coupled to the shaft, said housing block means including a housing block mounting one of the bearing means and one of the seals, and also including a spring housing means housing the spring means and the other bearing means and the other seal.

4,121,505

MAKING PAPER CYLINDERS FOR NURSING SEEDLINGS

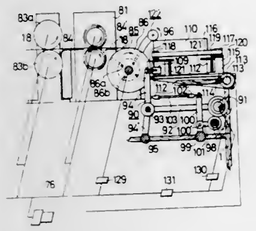
Kiyotaka Tanaka, Yokohama; Isao Gentsu, and Mamoru Sunaga, both of Hokkaido, all of Japan, assignors to Nippon Tensai Seito Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1976, Ser. No. 746,131

Claims priority, application Japan, Dec. 3, 1975, 50-142906; Mar. 8, 1976, 51-24242

Int. Cl.² B31D *3/04*

U.S. Cl. 93—1 H **1 Claim**



1. An apparatus for making paper cylinders for nursing seedlings in which pasted cut pieces are transferred, piled and stuck together by pressing, the apparatus comprising:

transfer means positioned to receive cut pieces, said transfer means including a rotary cylinder having a surface provided with a plurality of grooves and a plurality of air passageways which open to said surface and extend from air holes in said cylinder for removably attracting the cut pieces;

a lamination table positioned in the vicinity of said rotary cylinder;

pressing means positioned in the vicinity of said lamination table, said pressing means including a pressing member fixed to a bell crank shaft in correspondence to said grooves so as to be reciprocated between said grooves and said table by motion of said bell crank shaft to press the cut pieces on said table; and

edge aligning means mounted on ends of said bell crank shaft for aligning both side portions of the cut pieces by rocking motion thereof, said pressing member and said edge aligning means being connected integrally through a bell crank mechanism and arranged opposite said lamination table.

4,121,506

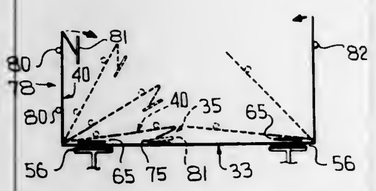
CARTON FORMING APPARATUS

John Van Grouw, Franklin Lakes, N.J., assignor to The Continental Group, Inc., New York, N.Y.

Filed Mar. 23, 1977, Ser. No. 780,487

Int. Cl.² B31B *1/36*

U.S. Cl. 93—52 **14 Claims**



1. Apparatus for automatically folding a prescored carton blank and forming a carton therefrom wherein the carton is of the type having a longitudinal sleeve at one edge thereof, said apparatus comprising feed means for continuously feeding a prescored carton blank longitudinally along a predetermined path, said feed means extends longitudinally along said path, first folder means along one side of said path for engaging an edge flap and a first score line of a carton blank progressively to effect the folding of the edge flap along the first score line to produce an overlapping spaced relation between the edge flap and an adjacent panel of the blank, adhesive applying means positioned along said path for applying a stripe of adhesive to an adjacent portion of the carton blank lying transversely inwardly of the adjacent panel, second folder means for folding the adjacent panel along a second score line to progressively effect the adjacent panel to move into overlying relation to the adjacent carton blank portion and to bring a portion of the edge flap into engagement with the adhesive stripe while holding the edge flap in its overlapping spaced relation to the adjacent flap.

4,121,507

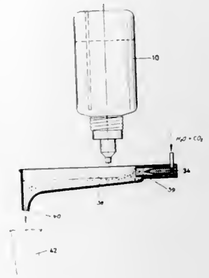
APPARATUS FOR MIXING A CARBONATED BEVERAGE

Alexander Kückens, Hamburg, Fed. Rep. of Germany, assignor to Dagma GmbH & Co. Deutsche Automaten-und Getränke Maschinen, Reinfeld, Fed. Rep. of Germany

Division of Ser. No. 667,681, Mar. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 560,797, Mar. 21, 1975, Pat. No. 3,991,219, which is a continuation-in-part of Ser. No. 536,583, Dec. 26, 1974, abandoned. This application Sep. 29, 1976, Ser. No. 728,015

Int. Cl.² A23L *2/00*

U.S. Cl. 99—275 **6 Claims**



1. In a carbonated beverage dispensing apparatus, a combination comprising means for carbonating a body of water; means for conducting a stream of the carbonated water having large and small bubbles therein at atmospheric pressure and in streamlined flow, including a receptacle open to the ambient atmosphere and having an inlet and an outlet which are spaced from each other by a distance that is sufficient to permit the large bubbles to escape from the stream between said inlet and said outlet, and means for admitting the carbonated water from the body at atmospheric pressure into said receptacle through said inlet thereof to form said stream in said receptacle; means for confining a liquid flavoring agent, including a container; and means for discharging the flavoring agent at atmosphereic pressure into the stream, including a bottom dispensing valve of said container and means for maintaining the pressure within said container at such a value that the flavoring agent is substantially at atmospheric pressure in the region of said bottom dispensing valve, said bottom dispensing valve being arranged at a location of said receptacle which is spaced downstream from said inlet by a distance sufficient for the large bubbles to substantially escape intermediate said inlet and said location while the flavoring agent is mixed with the carbonated water with the aid of residual escaping large bubbles whereby a homogeneous mixture of the flavoring agent with the carbonated water is obtained downstream of said location and is dispensed from said receptacle through said outlet thereof in the form of a mixed carbonated beverage suited for consumption.

4,121,508

AUTOMATIC COFFEE PERCOLATOR

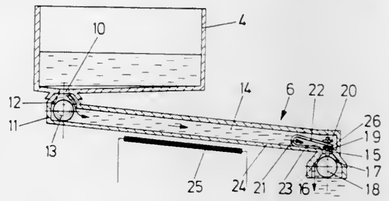
Hans Walter Hartkorn, Munich, Germany, assignor to Ritterwerk GmbH, Munich, Germany

Filed May 18, 1977, Ser. No. 798,103

Claims priority, application Fed. Rep. of Germany, May 18, 1976, 2622067

Int. Cl.² A47J *31/00*

U.S. Cl. 99—283 **18 Claims**



1. An automatic coffee-percolator of the type having a freshwater reservoir; a continuous-flow heater below said freshwater reservoir, said heater having an entry side and a discharge side; a completely closing valve under control of a temperature sensor mounted at the discharge side of said continuous-flow heater; a percolator element with a filter underneath said continuous-flow heater; and a receptacle below said percolator element, wherein the improvement comprises: said valve at the discharge side of said continuous-flow heater is a pressure-responsive and thermally operating valve which opens in the water discharge direction; and further comprising a valve mounted at the entry side of said continuous-flow heater, said valve being of the check type and being open when said freshwater reservoir contains water.

4,121,509

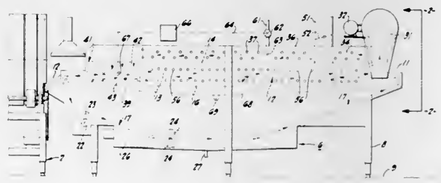
CONTROLLED ATMOSPHERE BROILER

Edward D. Baker, San Francisco; John S. Brown, Half Moon Bay; Robert B. Forney, Sausalito, and Nils Lang-Ree, Los Altos, all of Calif., assignors to N.P.I. Corporation, Burlingame, Calif.

Filed Jan. 10, 1977, Ser. No. 758,025

Int. Cl.² A47J *37/04, 37/08*

U.S. Cl. 99—386 **3 Claims**



1. A controlled atmosphere broiler comprising an elongated frame; means on said frame and including a first elongated, heat conducting common wall and a second elongated, heat conducting common wall defining a substantially closed, elongated cooking tunnel open at an inlet end and at an outlet end; a continuous conveyor having an upper run and a lower run; means mounting said conveyor on said frame for movement of said upper run of said conveyor through said tunnel from said inlet end toward said outlet end; a plurality of infrared heating elements in said tunnel above and below said upper run and between said upper run and said common walls, respectively, whereby said walls will reflect heat from said elements toward said upper run; an elongated supply air duct extending longitudinally of said cooking tunnel, one longitudinal side wall of said duct being said first common wall whereby heat may be transferred and conserved by condution through said first common wall between said cooking tunnel and said air duct; air heaters in said supply air duct; air jet nozzles adjacent said outlet end communicating with said supply air duct and with said tunnel and directed toward said upper run; a fan on said frame; means connecting said fan to discharge air into said supply air duct and to aspirate air from said tunnel adjacent said inlet end; and means for introducing moisture into said supply air duct in the vicinity of said air heaters therein.

4,121,510

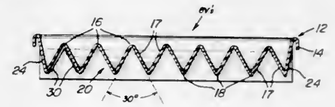
COMBINATION COOKING RACK AND PAN

Louis J. Frederick, Louisville, Ky., assignor to Frank R. Jarnot, Huntington, Conn., a part interest

Filed Feb. 17, 1977, Ser. No. 769,467

Int. Cl.² A47J *37/01*

U.S. Cl. 99—425 **3 Claims**



1. A one piece, low cost and disposable non-metallic combination food support tray and cooking pan assembly for use in cooking food within a microwave oven, said assembly including a panel-like body including two pairs of interconnected opposite side and upwardly extending integral side walls extending peripherally thereabout, the upper marginal portions of said side walls terminating in reversely outwardly and downwardly directed integral reinforcing flange portions extending about said assembly, said body defining a plurality of side-by-side imperforate integral parallel V-shaped panel members extending between one pair of said opposite side walls and spaced between the other pair of opposite side walls with one pair of side walls closing the corresponding ends of said V-shaped panel members, said panel members, side walls and reinforcing flange portions being constructed of molded fiber pulp fluid absorptive material, said assembly further including, spaced between said one pair of side walls, parallel integral reinforcing and support ribs integral with said V-shaped panel members, extending between said other pair of side walls and depending downwardly from and below said V-shaped members, said ribs being longitudinally continuous between their opposite ends with the lower marginal edge portions of said ribs projecting slightly below the lowermost portions of said V-shaped members, the outer surfaces, only, of said V-shaped members and said pairs of opposite side walls including a fluid impervious coating, said ribs providing reinforcing for said assembly extending transverse to said V-shaped members and the latter providing reinforcing for said assembly extending transverse to said ribs.

4,121,511

AUTOMATIC MACHINE FOR CUTTING AND PITTING FRUIT, ESPECIALLY PEACHES

Jose Maria Casanova Valero, Murcia, Spain, assignor to Chaconsa. Compania Hispanoamericana de Construcciones Conserveras S.A., Murcia, Spain

Filed Feb. 3, 1976, Ser. No. 654,874

Claims priority, application Spain, Feb. 11, 1975, 209874[U]; Feb. 11, 1975, 209876[U]; Sep. 25, 1975, 215445[U]

Int. Cl.² A23N *4/04;* **B65G** *15/00*

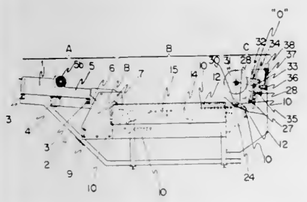
U.S. Cl. 99—550 **6 Claims**

1. A machine for cutting and pitting fruit, particularly fruit

such as peaches having therein a cleft extending in a direction of the line of suture of the fruit, said machine comprising:

a feeding device including an inclined hopper to which fruit is to be fed, means for vibrating said hopper to cause fruit therein to move along the inclination thereof, said hopper having a plurality of first channels to align the fruit in a plurality of rows, a plurality of second more inclined channels, one each aligned with one of said first channels, a plurality of upwardly inclined ramps, one each having a lower end aligned with one of said second channels and an upper end forming an outlet of said feeding device, fruit supplied along each said second channel abutting the respective said ramp, and means for intermittently moving said fruit abutting each said ramp upwardly therealong and over said outlet of said feeding device;

a fruit positioning device including an endless conveyor intermittently movable in synchronization with said fruit moving means in a direction substantially parallel to said channels, a plurality of receptacles mounted on said conveyor for receiving fruit from said outlet of said feeding



device, said receptacles being arranged in columns extending transverse to said direction, each column having a plurality of receptacles equal to said plurality of channels, and means fixedly and permanently positioned within each said receptacle for aligning said fruit therein in a desired orientation; and

a fruit cutting and pitting device including a plurality of gripping assemblies intermittently operable in synchronization with said endless conveyor, each said gripping assembly being positioned to grip a fruit aligned in one of said receptacles and remove said fruit therefrom, said gripping assembly being movable about a fixed stationary axis through a circular sector from a first position adjacent the discharge end of said conveyor to a second position spaced from said discharge end, a plurality of circular knives positioned between said first and second positions, one each for cutting in half a fruit gripped by a respective said gripping assembly, and a plurality of ovoidal pitting knifes, each said pitting knife being positioned at a stationary location to remove the pit halves from the fruit cut by a respective of said circular knives.

4,121,512

FLUID SYSTEM FOR COMPACTING AND SQUEEZING APPARATUS

Joseph M. Valdespino, 5023 Golf Club Pkwy., Orlando, Fla. 32808

Filed Jun. 13, 1977, Ser. No. 805,895
Int. Cl.[2] B30B *15/22*
U.S. Cl. 100—52 **14 Claims**

1. A fluid system comprising in combination:

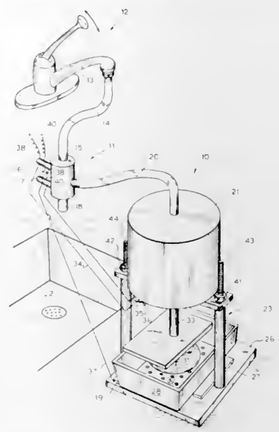
a cylinder;

a piston slidably mounted in said cylinder for driving a piston rod extending through said cylinder;

a control system having: a casing, a fluid input in said casing, a fluid output from said casing, and a first passageway through said casing connecting said input and output, said passageway forming a venturi in said casing and a second passageway in said casing connecting with said first passageway adjacent said venturi formed in said first passageway, said second passageway being operatively connected to said cylinder;

a first valve connected to said fluid input for turning said input on and off; and

a second valve connected to said fluid outut for opening and



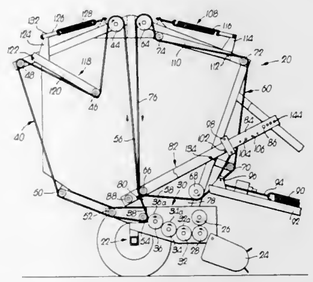
closing said output whereby fluid can be directed through said first passageway into said cylinder for driving said piston when said first valve is open and said second valve is closed and a fluid can be directed through said first passageway to said fluid output when said second valve is open thereby returning said piston in said cylinder.

4,121,513

MACHINE FOR ROLLING CROPS INTO ROUND BALES

Arnold F. Kopaska, Guthrie Center, Iowa 50115

Filed Jul. 12, 1976, Ser. No. 704,173
Int. Cl.[2] B30B *5/06*
U.S. Cl. 100—88 **18 Claims**



14. In a machine for rolling crop materials into a cylindrical bale and having an expandable baling chamber wherein said rolling takes place, the improvement comprising:

said chamber being at least partially defined circumferentially by a pair of web stretches engageable with the materials and movable in directions disposed to effect said rolling; and

means for controlling the size of said chamber as the bale grows therein including guide means at the periphery of the chamber engaging said stretches,

said guide means being shiftable during bale growth from a first position corresponding to minimum chamber size to a second position corresponding to maximum chamber size,

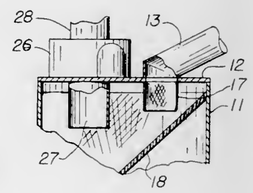
said chamber having a bottom entrance thereto and said stretches extending upwardly from said entrance on opposite sides of the latter, said guide means overlying said entrance and converging said stretches toward one another above said entrance, said guide means being disposed to exert its weight downwardly against a bale forming in said chamber so as to assist in compressing the bale, and said guide means traveling upwardly away from said entrance against the force of gravity during said movement so as to progressively lengthen said stretches and increase the size of said chamber.

4,121,514

MACHINE FOR COLLECTING, SHREDDING AND COMPACTING CANS

Raymond M. Nickaloff, 20004 Stanton Ave., Castro Valley, Calif. 94546

Filed Mar. 4, 1976, Ser. No. 663,721
Int. Cl.[2] B30B *15/08, 15/32*
U.S. Cl. 100—91 **4 Claims**



1. A machine for collecting metal cans and the like comprising a housing, a housing intake opening in said housing, a vacuum fan having its fan intake to draw air out of said housing and having its discharge remote from said housing, an elongated first screen within said housing below said housing intake, a housing discharge, a cylindrical second screen in said housing in registry with said housing intake to deflect cans away from said fan intake, a shredder positioned below and offset relative to said second screen, said shredder comprising a chute, a shaft, a plurality of saw blades on said shaft and a motor to drive said shaft, said housing discharge being in alignment with said chute, and a compactor to receive the discharge of said shredder, said compactor comprising a compactor housing having an opening receiving the discharge of said first-mentioned housing, a ram reciprocable in said compactor housing, and fluid actuated means to reciprocate said ram, said housing intake and said first screen being spaced from each other and remote from said housing discharge.

4,121,515

BALER FOR UNSHREDDED MATERIAL

Frank C. Tea, Bellevue, Ohio, assignor to The American Baler Company, Bellevue, Ohio

Filed Oct. 31, 1977, Ser. No. 846,901
Int. Cl.[2] B30B *15/08*
U.S. Cl. 100—98 R **16 Claims**

1. Apparatus for baling unshredded material comprising:

a charging inlet for receiving loose material;

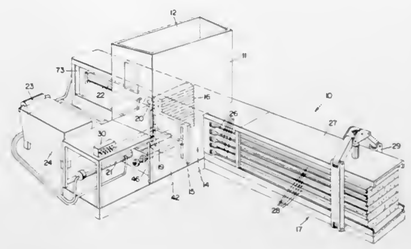
a baling chamber into which material is delivered from said inlet, said chamber having a fixed sidewall with shearing means attached to said sidewall adjacent to said inlet;

a discharge outlet from said baling chamber;

a first reciprocal baling head adapted to move toward and away from said fixed sidewall between a retracted position for receiving loose material through said inlet and an advanced position spaced from said fixed sidewall, said first baling head having shearing means attached thereto adjacent to said inlet;

means for reciprocating said first baling head;

a second reciprocal baling head adapted to move in a direction generally perpendicular to the direction of movement of said first baling head between a retracted position for receiving loose material and an advanced position for compacting material into said outlet, said second baling head having shearing means mounted thereon adjacent to



said inlet, said shearing means on said second baling head adapted to engage the shearing means on said fixed sidewall and on said first baling head to shear off material extending from said chamber through said inlet; and

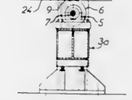
means for reciprocating said second baling head.

4,121,516

SHEET-METAL MARKING PRESS

Bernard Amelot, 26 Avenue des Adages, 95220 Herblay; Roger Batard, 6 rue de la Porte des Pres, 95100 Argenteuil; Claude Bimbert, 8 Allee des Jonquilles, 93360 Neuilly-Plaisance; Georges Boulvard, 17 rue Alfred de Musset, 93290 Tremblay les Gonnesse, and Alain Leclert, 13 Avenue des Sablons, 91350 Grigny 2, all of France

Filed Jan. 3, 1977, Ser. No. 756,352
Int. Cl.[2] B44B *5/00*
U.S. Cl. 101—23 **7 Claims**



1. A press for marking sheet-metal articles and stock, comprising a frame structure having a pair of lateral uprights and a vertically movable cross member, slideways on said uprights, said cross member having its ends adapted to slide vertically in said slideways, a roller for driving the sheets to be marked mounted on said frame structure and having the same peripheral velocity as the linear velocity of said sheets, an oscillatable embosser freely pivotable about a shaft supported by a pair of bearings secured to the bottom surface of said cross member for co-action with said roller, said embosser comprising a part-cylindrical segment carrying marking punch means on its outer periphery, means for adjusting the position of said cross member and thereby the position of said embosser in relation to the position of said roller according to the thickness of the sheet to be marked, said embosser having an upstream end position and a downstream end position in which it is out of contact with the sheet to be marked, means for retaining said embosser in said end positions, means for releasing said embosser from said upstream end position to permit it to contact a passing sheet and mark same, said embosser being driven by its contact with the sheet toward said downstream end position to be retained therein, and means for returning said embosser

from said downstream end position to said upstream end position before the passage of the next sheet to be marked.

4,121,517

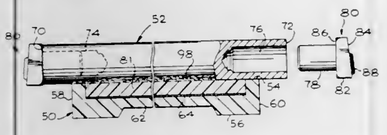
TYPE BEARING BAND ASSEMBLY

Thomas A. Dobson, Canoga Park, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 597,391, Jul. 18, 1975, abandoned. This application Nov. 24, 1976, Ser. No. 744,599

Int. Cl.[2] B41J *9/08, 1/20*

U.S. Cl. 101—93.14 **5 Claims**



1. An assembly suitable for use in a printing apparatus for successively presenting type characters to a print station, said assembly comprising:

an endless band formed of plastic material having first and second edges spaced by a width dimension and inner and outer peripheral surfaces extending between said edges, said band being relatively flexible about an axis in the plane of said band parallel to said width dimension and relatively rigid about an axis in the plane of said band perpendicular to said width dimension;

low friction bearing means engaging said band inner surface and supporting said band thereon;

a plurality of elongated metal slugs, each having an end face opening into an axially directed cavity;

adhesive means fixing said metal slugs to the outer surface of said plastic band with the length of said slugs extending across the width of said band;

a plurality of metal type modules, each comprised of a head having front and rear faces;

a shank extending from the rear face of each of said type module heads, said shanks extending fully into said slug cavities to abut said slug end faces against said type module head rear faces;

at least one raised type character formed on the front face of each of said type module heads;

a heat soluble adhesive securing each type module shank within the cavity of one of said elongated metal slugs whereby heat can be applied to a selected module to dissolve said adhesive to enable the type module shank to be withdrawn from said slug cavity; and

means for driving said endless band around said low friction bearing means.

4,121,518

HIGH SPEED PRINTER HAMMER ASSEMBLY

Arthur D. Prior; Leonard G. Ward, both of Melbourne, and Silas Ray Halbert, Indiatlantic, all of Fla., assignors to Documation Incorporated, Melbourne, Fla.

Filed Oct. 12, 1976, Ser. No. 731,653

Int. Cl.[2] B41U *9/30*

U.S. Cl. 101—93.33 **19 Claims**

1. In a high speed printer, having a plurality of aligned hammer assemblies for directing hammers at a moving character band for printing characters responsive to said hammers driving against said character band, a hammer assembly comprising in combination:

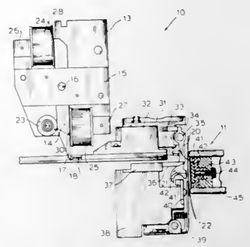
a striker assembly frame;

an armature striker arm attached at a pivot point to said striker assembly frame to pivot thereon;

a pair of magnets attached to said striker assembly frame, at least one said magnet being attached on each side of said armature striker arm and on each side of said pivot point for simultaneously actuating said armature striker arm,

each said magnet having a single coil, wrapped on a magnetic core; and

one said magnet having a polarity opposite that of each adjacent one said magnet of each said adjacent hammer



assembly, while each of said other magnets of said pair of magnets of said plurality of aligned hammer assemblies has the same polarity as each adjacent other magnet of each adjacent hammer assembly, thereby providing a high speed armature striker for a printer hammer assembly.

4,121,519

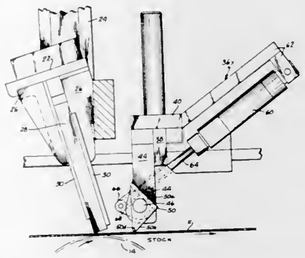
SQUEEGEE AND SCOOPING FLOW COATER

Frank L. Porth, Morley, Mich., assignor to James A. Black, Kent City, Mich.

Filed Mar. 18, 1977, Ser. No. 778,882

Int. Cl.[2] B41F *15/42*

U.S. Cl. 101—124 **1 Claim**



1. A stencil fluid scoop and flow coating device for stencilling apparatus having a stencil screen and stencil screen supporting frame, both said screen and frame being reciprocable in one direction for a stencilling stroke and in an opposite return direction for a return stroke, and a squeegee support mount and squeegee extending transversely of said one direction, said mount and squeegee being vertically shiftable between a lowered stencilling position at said screen and an elevated nonstencilling position spaced above said screen;

said scoop and flow coating device comprising a trough extending parallel to and spaced from said squeegee to the rear of said squeegee relative to said one direction;

said trough being mounted independently of said squeegee;

said trough having walls forming a cavity, and having an edge forming a flow coater for stencil fluid on said screen;

said trough being pivotally shiftable independent of and spaced from said squeegee, to shift from a first flow coating position spaced from said squeegee with said cavity facing laterally and forwardly toward said squeegee in a fluid nonretention position and said edge forming a flow coater, through a fluid scooping motion with said trough edge serving as a fluid scooping edge when said squeegee is vertically elevated above said screen and said screen is moving in said one direction to scoop up excess fluid from

the stencil screen and retain it in said cavity for the return stroke, to a second position spaced from said squeegee and with said cavity oriented upwardly to retain stencilling fluid therein as a vessel.

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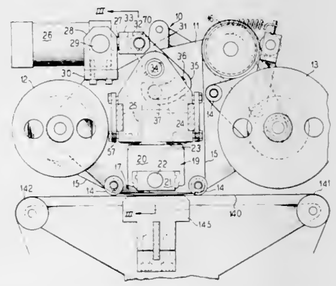
LARGE AREA IMPRINTING DEVICE

James L. Shenoha, Lockport, Ill., assignor to Norwood Marking & Equipment Co., Downers Grove, Ill.

Filed Mar. 4, 1977, Ser. No. 774,439

Int. Cl.[2] B41F *1/06*

U.S. Cl. 101—316 **5 Claims**



1. An imprinting device comprising: a main frame having spaced apart film tape supply and take-up supports and a marker head support portion, guide means on said main frame guiding tape from a tape supply reel carried on the supply support past the marker head support portion below a marker head carried thereby to a tape take-up reel carried on the take-up support, a marker head member having a head portion carrying a printing block with raised printing indicia thereon projecting beyond one side of the head portion, a shaft portion projecting from an opposite side of the head portion, the shaft portion reciprocatingly journalled in a bore in the marker head support portion of the main frame, a power member carried by the main frame having a powered moving portion, a force transmitting member having a first end portion connected to the powered moving portion, an intermediate portion carried by the main frame and a second end portion, a cam and follower connection between the second end portion and the shaft portion transmitting movement of the powered moving portion to movement of the head portion, a tape drive carried by the main frame, a drive connection between the powered moving portion and the tape drive for moving tape from the supply to the take-up reel in dependent response to movement of the power member, the main frame having means rotatably supporting a second shaft with portions of the second shaft in axially spaced relationship to the shaft portion of the marker head member, the force transmitting member carried by said second shaft portions and movable therewith, bracket means attached to said main frame pivotably supporting the power member, the powered moving portion of the power member extending from the power member and being movable towards and away therefrom to pivot the force transmitting member with respect to the main frame on the second shaft, the said second end portion has a closed slot therethrough, the slot having a major dimension transverse of an axial line of the shaft portion of the marker head member, the marker head member having a cam wheel member received in said slot and engaging peripheral edges of said slot whereby pivotable movement of the force transmitting member on the second shaft causes said slot to move relative to said cam wheel.

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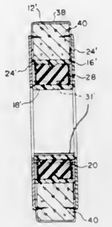
INKING WHEEL HAVING RESILIENT INKER SUPPORT

Bernard J. Gill, Dundee, Ill., assignor to Kiwi Coders Corporation, Wheeling, Ill.

Filed Jun. 29, 1977, Ser. No. 811,166

Int. Cl.[2] B41L *27/28*

U.S. Cl. 101—348 **16 Claims**



1. An inking wheel for transferring ink to a printing member in a rolling contact engagement comprising an outer ring of ink absorbent material, and a support for receiving said ring in coaxial frictional engagement therewith, said support comprising a pair of concentrically arranged cylindrical rigid sleeves and a resilient annular member formed of a sponge-like resilient material disposed between said sleeves, said support being capable of limited radial movement relative to the axial center of said wheel, said support being capable of being engaged upon a hub for rotation therewith.

4,121,522

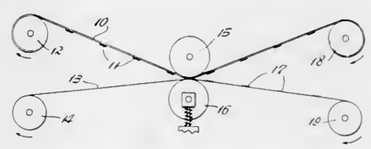
CONTINUOUS DUPLICATING PROCESS

Melvin Sharkey, 1614 Hereford Rd., Hewlett, N.Y. 11557, and Douglas A. Newman, Soundside La., Glen Cove, N.Y. 11542

Division of Ser. No. 387,532, Aug. 10, 1973, Pat. No. 4,018,162. This application Nov. 8, 1976, Ser. No. 739,680

Int. Cl.[2] B41M *5/02;* **B32B** *33/00*

U.S. Cl. 101—463 **8 Claims**



1. Continuous copying process comprising the steps of:

(a) providing a continuous master web comprising a paper foundation which is normally absorbent of liquid oils, having on the working surface thereof a continuous oil-barrier layer of synthetic thermoplastic resin which is applied as a dispersion of thermoplastic resin particles and dried on the web to form a layer which is receptive to pressure-applied, oil-containing images and inert to the oil thereof, the opposite surface of said paper foundation also being treated so as to be non-absorptive of said oil and inert with respect thereto,

(b) pressure-applying master images to said oil-barrier layer on said master web, said images comprising a pressure-non-transferable microporous structure of solid binder material containing pressure-exudable liquid ink comprising liquid oil and coloring matter within the pores thereof,

(c) collecting the imaged master web in a roll wherein said master images are in contact with said opposite surface of the master web,

(d) unwinding the imaged master web into registration with a web of copy paper, the images on the master web contacting the surface of the copy paper, and pressing the webs together with sufficient force to exude a portion of

the liquid ink from the master images onto the surface of the web of copy paper to form a copy of the master images, the microporous structure of said master images remaining on said master web under the effects of said pressure, and

(e) collecting the used master web in a roll for reuse to produce additional copies by repetition of steps (d) and (e) supra.

4,121,523

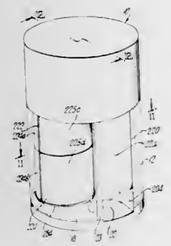
TRANSACTION SECURITY SYSTEM AND MODULAR TRANSACTION PROCESSING CENTER

Otis H. Hastings, 130 E. Crescent Ave., Mahwah, N.J. 07430

Continuation-in-part of Ser. No. 602,404, Aug. 7, 1975, abandoned, and a continuation-in-part of Ser. No. 825,174, Aug. 17, 1977. This application Aug. 25, 1977, Ser. No. 827,593

Int. Cl.[2] E05G *5/02*

U.S. Cl. 109—2 **18 Claims**



7. A secured transaction processing system comprising, in combination: an outer security enclosure, a booth housing, an interior within said housing, entrance means thereto, internally positioned transaction interface means and closure means positioned substantially within said booth housing to cooperate with said entrance means and providing a closed security enclosure having occupancy entrance capability, said closure means being generally arcuate in shape, of diameter smaller than the width of said booth housing and being slidably mounted and arcuately movable from one to another position with respect to said entrance means, orientation in one position of said closure means providing an occupancy entrance to said booth housing and orientation in another position closing said occupancy entrance with said closure means while providing accessibility to said transaction interface means positioned in said security booth housing; and control means interacting between said security booth and said closure means and adapted to move said closure means from said one position to another position to provide such occupancy entrance and transaction interface accessibility within said closed security booth, and encapsulated within the interior thereof at least one transaction processing enclosure for the housing of electronic data processing equipment and the like comprising, in combination, at least one access means to the interior of said enclosure; secondary closure means having outer surface conformance in size and shape with and registrable with said access means, said secondary closure means being slidably mounted and arcuately movable with respect to said access means to effect the opening and closing thereof; turntable means mounted independently with respect to said secondary closure means, rotatably secured within said enclosure and capable of supporting said equipment thereon so that the entire periphery of said turntable means and supported equipment is accessible through said access means; control means interacting with said secondary closure means to alternatively provide access or non-accessibility to the equipment disposed within said enclosure from the exterior of said enclosure; and means associated with said enclosure for providing controlled environmental conditions within the interior of said enclosure.

4,121,524

METHOD OF AND APPARATUS FOR TREATING REFUSE

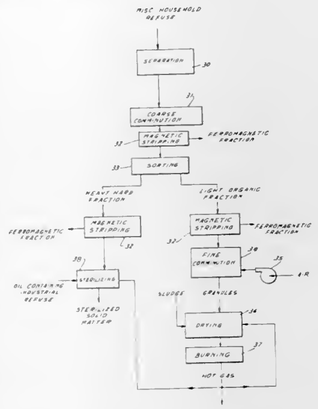
Peter Voelskow, Bad Kreuznach; Horst Rother, Berlin; Gustav Schlotterer, Dusseldorf, and Hermann Pfeiffer, Eschenburg-Wissenbach, all of Germany, assignors to Fritz Aurel Goergen, Cologny, Switzerland

Filed Oct. 29, 1976, Ser. No. 737,085

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1975, 2548760

Int. Cl.[2] F23G *5/02, 5/04*

U.S. Cl. 110—220 **28 Claims**



1. An apparatus for treating refuse containing heavy and light components, bundles and ferromagnetic articles, said apparatus comprising means for breaking up said bundles; a coarse comminuter including a pair of rolls rotatable about respective axes and formed with circumferential interengaging formations having a predetermined peripheral speeds differing by a predetermined difference for coarsely comminuting said refuse with the broken-up bundles; means including a sieve connected to said coarse comminuter for separating the coarsely comminuted refuse with the coarsely comminuted broken-up bundles into a heavy fraction and a light fraction, said sieve comprising an outer perforated cylindrical drum having and rotatable about a horizontal drum axis, an auger closely juxtaposed with and inside said drum and having and rotatable about an auger axis generally parallel to said drum axis and means connected to said drum and said auger for relatively rotating the same about their respective axes; a fine comminuter connected to said sieve and receiving only said light fraction, said fine comminuter including at least one pair of rolls rotatable about respective axes and formed with circumferential interengaging formations having a spacing smaller than said predetermined spacing and means for rotating said rolls of said fine comminuter at peripheral speeds differing by a difference greater than said predetermined difference for finaly comminuting said light fraction only into granules; a combustion chamber; means for blowing said granules into said chamber and for suspending said granules on a gas in said chamber; and means for combusting said granules in said chamber.

3. A method of treating refuse containing heavy and light components, bundles and ferromagnetic articles, said method comprising the steps of breaking up said bundles; thereafter coarsely comminuting said refuse with the broken-up bundles without substantial size reduction of said light components; thereafter separating the coarsely comminuted refuse with the brokenup bundles into a heavy fraction and a light fraction; finely comminuting only said light fraction into granules, sieving particles from said light fraction; thereafter drying said granules; blowing the dried granules into a burning chamber and suspending said dried granules on a gas in said chamber; and combusting said granules in said chamber while forming a hot gas.

4,121,525

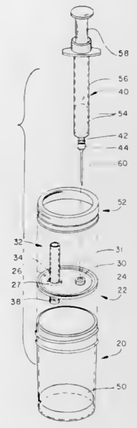
METHOD AND APPARATUS FOR ASEPTICALLY SOWING SMALL SEED OR SPORES

William S. Courtis, 5801 Sunset La., Indianapolis, Ind. 46208

Filed Apr. 1, 1977, Ser. No. 783,679

Int. Cl.[2] A01G *1/00*

U.S. Cl. 111—1 **13 Claims**



1. The method of aseptically sowing small seeds and spores of green plants, comprising the steps of preparing a sterile flask with a growth medium therein and closed by a closure having a puncturable, resealing membrane, placing a quantity of the seeds or green-plant spores in a syringe barrel, treating the seeds or spores in the barrel with a surface sterilizing fluid adapted to destroy bacteria and fungal spores, injecting the so sterilized seeds or green-plant spores from the syringe barrel directly into the flask through a sterile needle attached to the syringe barrel and passed through the puncturable membrane.

4,121,526

ELECTRONICALLY CONTROLLED SEWING MACHINE WITH CAM CONTROLLED FEED

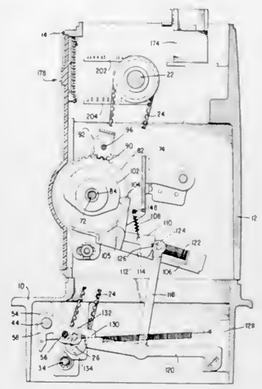
Lionel J. Coulombe, Matawan, N.J., assignor to The Singer Company, New York, N.Y.

Filed Sep. 30, 1977, Ser. No. 838,418

Int. Cl.[2] D05B *27/00, 3/02, 3/04*

U.S. Cl. 112—158 E **11 Claims**

1. In a sewing machine having stitch forming instrumentalities for producing successive stitches in a variety of stitch patterns including a needle supported for endwise reciprocating and relative lateral jogging movements, a work feed means including mechanism for feeding a fabric relative to said needle between needle penetrations, a needle jogging mechanism for initiating relative jogging movement of said needle, electric motor means operably connected to said jogging means and responsive to stitch position coordinate signals for initiating relative lateral jogging movement of said needle to stitch position coordinates corresponding to preselected stitch position coordinate signals, memory means for storing stitch position coordinate data, means for extracting stitch position coordinate data from said memory means and for converting data from said memory means into stitch position coordinate signals at least some of which are fed to said electric motor means for controlling said electric motor means, and said work feed mechanism including cam feed means having at least one cam with said cam having a cam surface with work feed pattern information thereon, cam follower means disposed for selective operative engagement with said cam surface, means connecting the cam follower means with the feed regulator means effective to transmit said work feed pattern information to the feed regulator means whenever the said cam surface is engaged by the follower means, work feed electric motor means operably connected to said cam follower means and being responsive to stitch position coordinate signals extracted from said memory means for initiating operative engagement between said cam follower means and said cam feed means such that said cam follower means will be operative for transmitting work feed pattern information in accordance with pattern information extracted from said memory means.



4,121,527

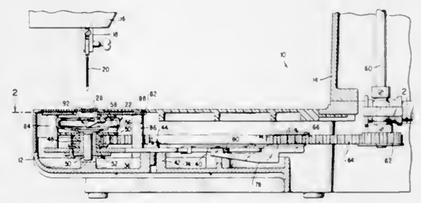
HOOK DRIVE FOR SEWING MACHINES

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, New York, N.Y.

Filed Aug. 23, 1976, Ser. No. 717,054

Int. Cl.[2] D05B *57/14*

U.S. Cl. 112—182 **11 Claims**



1. A hook drive mechanism for a sewing machine including a frame having a bed portion, a reciprocating needle mechanism, a hook mechanism disposed in said bed portion for cooperation with said needle mechanism for forming stitches, said hook drive mechanism comprising a hook support plate disposed in said bed portion and including a hook drive mechanism bearing means, a hook member having a hook body portion and shaft portion depending therefrom, said shaft portion being freely supported by said bearing means, a hook drive member freely supported by said bearing means, means for initiating rotation of said drive member, interdigitation means on said hook member and said hook drive member freely shiftable into and out of drivingly interconnecting said drive member with said hook member, said hook member and said drive member being freely removable from said bearing means and from each other.

4,121,528

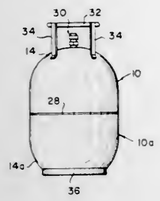
METHOD OF CONSTRUCTION OF A CONTAINER WITH INTEGRAL VALVE BOSS

Juan Jose Amado, Jr., Aptdo. 4241, Panama 5, Panama

Division of Ser. No. 405,853, Oct. 11, 1973, abandoned. This application Feb. 2, 1977, Ser. No. 764,951

Int. Cl.[2] **B21D** *51/24*

U.S. Cl. 113—120 S **3 Claims**



1. A method of forming a container for a pressurized gas cylinder which comprises the steps of

(a) forming a pair of substantially similar half containers by a deep drawing operation from a substantially circular blank so that each of said half containers has a substantially straight cylindrical body wall portion and an outwardly extending dome-shaped end portion,

(b) subsequently forming an integral, non-protruding boss on one of said half containers by the steps of

(1) forming an outwardly extending bulge in the center of the outwardly extending dome-shaped end thereof,

(2) reversely bending said outwardly extending bulge to extend entirely within said dome-shaped end,

(3) reshaping said reversely bent bulge to deepen it and diminish its size,

(4) piercing said reversely bent bulge and internally threading said bulge,

(c) and securing said pair of half containers together by means of welding to provide a hollow container having a horizontally extending circumferential weld.

4,121,529

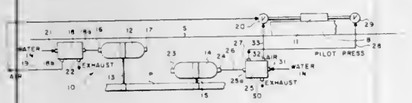
BUOYANCY SYSTEMS

Egmont S. Smith, McQueeny; Earl N. Doyle, and Kenneth E. Baughman, both of Houston, all of Tex., assignors to B & B Insulation, Inc., Houston, Tex.

Filed Sep. 20, 1976, Ser. No. 725,098

Int. Cl.[2] **B63G** *8/00*

U.S. Cl. 114—331 **28 Claims**



1. A submersible buoy for use in controlling the descent or ascent in an object in a body of water, comprising, in combination:

an inflatable, collapsible buoy member including an inlet for receipt and discharge of an inflating medium, said buoy member capable of being inflated from a collapsed state of minimum buoyancy to a fully inflated state of maximum buoyancy,

and valve means connected to said inlet and adapted to be connected to a source of inflating medium, said valve means being responsive to variations in the hydrostatic pressure about said buoy when submersed in a body of water to control the amount of inflation of said buoy member by the addition or removal of inflating medium in said buoy member in response to changes in the depth of submergence of said buoy member, while maintaining a relatively small pressure differential between the pressure of said inflating medium and said hydrostatic pressure throughout the depths of submergence of said buoy member in said body of water.

4,121,530

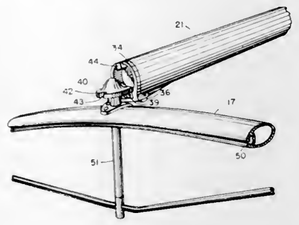
MAST BASE HINGE FOR A SAILBOAT

Henry Leyva Arce, San Juan Capistrano, Calif., assignor to Coast Catamaran Corp., Irvine, Calif.

Filed Jun. 13, 1977, Ser. No. 805,809

Int. Cl.[2] **B63B** *15/00*

U.S. Cl. 114—91 **9 Claims**



1. Apparatus for removably mounting the mast of a sailboat comprising: a hinge member pivotally mounted to the bottom of said mast and rotatable between a first position in which said hinge member engages the bottom of said mast and a second position in which said hinge member is spaced from the bottom of said mast; a mast step rigidly mounted to said sailboat; and coupling means for removably coupling said hinge member to said mast step, whereby when said hinge member and mast step are coupled together, said mast may be raised while coupled to said hinge member, said hinge member and said mast step defining complementary bearing surfaces, at least a portion of said bearing surfaces being smoothly curved, whereby said mast may rotate and rake relative to said mast step when said mast is raised.

4,121,531

BOAT POLE

Donald S. Norton, Clinton, Miss., assignor to Johnny Reb Lure Company, Miss.

Filed May 25, 1977, Ser. No. 800,439

Int. Cl.[2] **B63B** *21/54;* **A47K** *13/06*

U.S. Cl. 114—221 R **6 Claims**

1. A boat pole, comprising:

a first tubular section having a lumen opening through the forward end thereof;

a second, elongated section having a head at the forward end thereof and having a rear end telescopically received in the lumen of said first section;

adjustable securement means for securing the first and second sections together with each of a plurality of degress of telescopic extension of the second section relative to the first section;

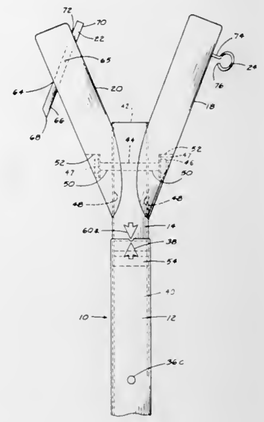
means providing a hollow, sealed chamber within the second section for providing buoyancy for the pole;

the securement means comprising:

a transversally directed opening through the second section, isolated from said chamber; a series of axially spaced, transversally extending openings through the first section; and pin means insertable through the opening in said second section and any chosen one of said openings through said first section, when aligned with the opening in said second section, for pinning these two sections together, and

said boat pole further comprising:

a marker exteriorly provided on said first section and a series of axially spaced markers exteriorly provided on the second section, at such locations that the marker on the first section is juxtaposed with a respective marker on the second section when the opening on the second section is aligned with a respective opening on the first section to facilitate insertion of said pin means.



4,121,532

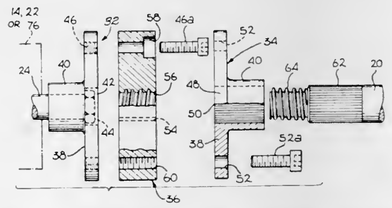
SPEEDBOAT SAFETY DRIVELINE COUPLING

William Harlan Coryell, III, 11931 Gothic Ave., Granada Hills, Calif. 91344

Filed Jan. 6, 1977, Ser. No. 757,315

Int. Cl.[2] **B63H** *5/06;* **F16C** *3/02;* **F16D** *1/02*

U.S. Cl. 115—34 R **9 Claims**



4. A safety coupling device for use in coupling a power shaft to a transmitting shaft, said coupling device comprising (i) a flange member with one end of said transmitting shaft passing through said flange member and being matingly engaged therein, said shafts and said flange member arranged so as to be in axial alignment, (ii) a coupling plate selectively connected to and abuting against said flange member sandwiched between said flange member and said power shaft, and having a threaded hole extending therethrough, said end of said transmitting shaft disposed in said threaded hole and retained therein, and (iii) means for securing said coupling plate to said power shaft and to said flange member such that said coupling plate is independently coupled to both said flange member and to said power shaft.

4,121,533

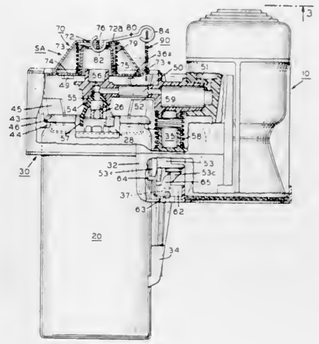
THERMALLY RESPONSIVE ACOUSTIC FIRE ALARM ASSEMBLY

Michael Pappas, Irvington; Paul A. Witte, Hopewell, and Christopher N. Severud, Jr., Summit, all of N.J., assignors to Falcon Safety Products, Inc., Mountainside, N.J.

Continuation-in-part of Ser. No. 754,752, Dec. 27, 1976. This application May 12, 1977, Ser. No. 796,156

Int. Cl.[2] **B67D** *5/32;* **G08B** *7/00, 17/04*

U.S. Cl. 116—5 **48 Claims**



1. An alarm assembly comprising a supporting housing for mounting said assembly,

an acoustic device,

a container of compressed gas operatively connected to said supporting housing,

closure means normally maintaining said gas under pressure in said container,

a coupler assembly supported upon said housing for movement with respect thereto,

means on said coupler assembly coacting with said acoustic device and with said container for connecting said acoustic device and said container to said coupler assembly for movement of said acoustic device and container with said coupler assembly as a unit,

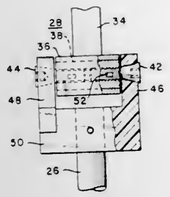
a biased thermally responsive assembly mounted on said housing,

means on said coupler assembly having a portion cooperating with said closure means for conducting gas from said container to said acoustic device,

and means responsive to activation of said thermally responsive assembly, actuating said gas-conducting means for causing opening of said closure means and actuation of said acoustic device.

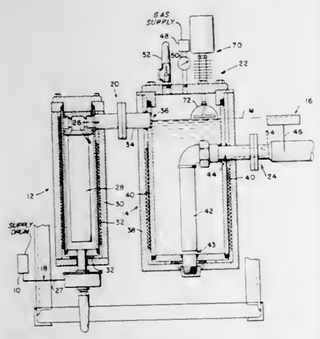
46. An alarm comprising a horn operable by compressed gas, a container of compressed gas, a valve maintaining the compressed gas in said container, means providing a passage for gas from said container to said horn, heat-responsive means operable to cause valve opening and gas release and operation of said horn, a movable guard member normally positioned to prevent access of airborne contaminants or insects into said horn, weight-responsive means between said container and said horn, and means holding said guard member in said normal position, said holding means being released by said weight-responsive means whenever a predetermined light-weight condition exists due to insufficient contents or partial loss of contents from the container, whereby a signal is given by the change of position of the guard member of said condition.

4,121,534
ADJUSTMENT MEANS FOR HANDBELLS
Jacob H. Malta, 207 Decatur St., Doylestown, Pa. 18901
Filed May 18, 1977, Ser. No. 798,165
Int. Cl.[2] G10K *1/071*
U.S. Cl. 116—171 **6 Claims**



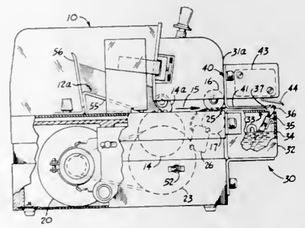
1. A handbell comprising in combination, a bell housing, a handle connected with said bell housing; a clapper carried centrally within said bell housing and swingable in one plane only into contact with opposed portions of said housing; (a journal) bearing means for said clapper carried by said bell housing; and adjustment means operatively coacting with said (journal) bearing means for varying end play between said clapper and said (journal) bearing means and for simultaneously maintaining said clapper in centered relation to said bell housing, said adjustment means being carried by said clapper and being manually adjustable while said clapper is in its assembled position within said bell housing for adjusting the end play between said bell housing, bearing means and (said) clapper.

4,121,535
HOT MELT PUMPING APPARATUS
Arthur W. Roberts, Jr., Colonial Heights, and George Kesler, Richmond, both of Va., assignors to Inta-Rota, Incorporated, Richmond, Va.
Filed Mar. 16, 1977, Ser. No. 778,330
Int. Cl.[2] B05C *5/02, 11/10*
U.S. Cl. 118—5 **14 Claims**



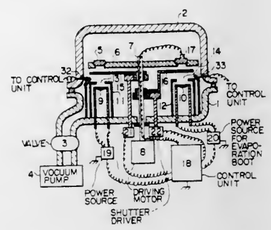
1. Apparatus for supplying liquid material to coat a web, comprising a closed system including
a source of heated liquid material,
filtering means,
a tank,
an extrusion head having a substantially horizontal forming lip and a substantially vertical elongated supply opening,
means for supplying liquid material from said source to said filtering means,
means for supplying liquid material from said filtering means to said tank and for isolating the material pressure at said source from the pressure at said extrusion head,
means for heating said liquid material in said filtering means, tank, and extrusion head,
means for pumping said liquid material from said tank to said extrusion head, said pumping means consisting of means for providing gas at slightly more than one atmosphere pressure over the material in said tank, and
means for transporting said pumped liquid from said tank to said extrusion head substantially vertical elongated supply opening, said means including an elongated conduit.

4,121,536
LABEL DISPENSING DEVICE
Ray Chamberlain, Stamford, and Richard B. Smith, Ridgefield, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 10, 1976, Ser. No. 749,453
Int. Cl.[2] B05C *1/02, 13/02*
U.S. Cl. 118—6 **3 Claims**



1. A gummed label dispensing and moistening apparatus comprising:
a label separating and feeding device adapted to serially separate gummed labels from a stack and to feed the same along a predetermined feed path to a ready position at a label dispensing station;
a fluid container tank mounted and disposed adjacent to said label dispensing station;
label wetting means received within said tank, a portion of said wetting means being disposed along said feed path so as to moisten one side of a label that is moved along said feed path and through said dispensing station; and
control means including a pair of electrical switching means connected in series with one another that are mounted in spaced relation along said feed path for normally controlling the operation of said separating and feeding device so as to feed a label toward said ready position, and for interrupting the operation of said separating and feeding device when a label reaches said ready position, a label when in said ready position being capable of being manually removed therefrom and thereby moistened on one side thereof preparatory to being applied to an item that is to be labeled, and for reestablishing operation of said separating and feeding device when a label is so removed from said ready position said label separating and feeding device being disabled only when both of said switching means are operated and enabled when either one of said switching means is restored to its normally open condition.

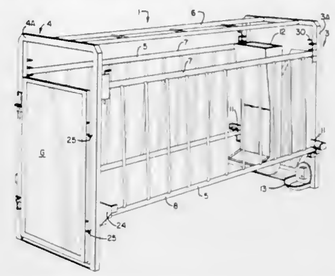
4,121,537
APPARATUS FOR VACUUM DEPOSITION
Eiichi Maruyama, Kodaira; Tadaaki Hirai, Koganei; Sachio Ishioka, Tokyo; Hideaki Yamamoto, and Kiyohisa Inao, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Mar. 21, 1977, Ser. No. 779,795
Claims priority, application Japan, Mar. 19, 1976, 51/29234
Int. Cl.[2] B05C *11/00;* **C23C** *13/08*
U.S. Cl. 118—7 **6 Claims**



1. An apparatus for vacuum deposition, comprising:
a vacuum chamber which is connected to a vacuum pump,
a turn-table which is mounted in said vacuum chamber and which is rotated by a driving motor,
substrates for deposition which are arranged at a circumferential part of said turn-table,
a plurality of evaporation boats which are disposed so as to oppose said substrates for deposition,
means for heating said evaporation boats,
at least one film-thickness monitor which is fixed to said turn-table and which detects a quantity of a substance deposited onto it every time it passes-over each of said plurality of evaporation boats, said substrates and said film-thickness monitor passing-over each of said plurality of evaporation boats during rotation of said turn-table, and
means to receive a signal from said film-thickness monitor and divide said signal in time sequence, thereby detecting a value for at least one of a deposition rate and a total amount of a vapor from each of said boats, and to control a quantity of the vapor arriving to said substrates for deposition from each of said boats while comparing the detected value with a predetermined value given by a preset deposition program,
whereby the vapors from the respective boats are cyclically accumulated and stuck onto said substrates for deposition so as to conform with said preset deposition program.

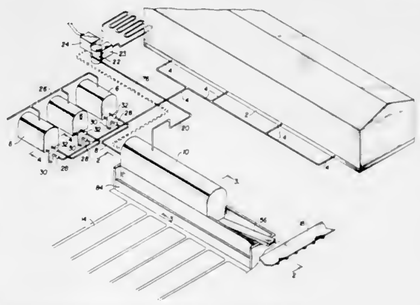
4,121,538
FARROWING CRATE
Carl Van Gilst, and Jack Devos, both of Goshen, Ind., assignors to AG Best Corporation, Napanee, Ind.
Filed Jan. 11, 1977, Ser. No. 758,430
Int. Cl.[2] A01K *1/02*
U.S. Cl. 119—20 **19 Claims**

1. Farrowing crate apparatus or the like having a front wall, a rear wall, first and second side walls extending between the front and rear walls, relatively fixed support structure disposed adjacent the respective ends of said side walls, and connecting means connecting said side walls to said fixed support structure to form a farrowing crate enclosure for a sow or the like, which enclosure is bounded at the front and rear by the front and rear walls and is bounded at the sides by the side walls,
wherein the connecting means includes:
lower connecting means adjustably connecting a lower part of said first side wall to said support structure,
and upper connecting means adjustably connecting an upper part of said first side wall to said support structure,
said lower connecting means including laterally outwardly and upwardly stepped detent means having a plurality of step detents located at respective different vertical and horizontal positions and lower locking detent means selectively lockingly engageable with said step detents, said stepped detent means being connected to one of said first side wall and said support structure, said lower locking detent means being connected to the other of said first side wall and said support structure,
said lower stepped detent means and locking detent means being configured to accommodate manual vertical and lateral adjusting movement of said first side wall between



respective adjusted positions with portions of said stepped detent means limiting lateral outward movement of said first side wall with respect to said support structure during said adjusting movement such that manual adjustment of said side wall can be carried out simply and without tools and with minimal danger that a sow inside of the crate will substantially disrupt the adjustment process even if she presses laterally outwardly against the side wall during said adjusting movement.

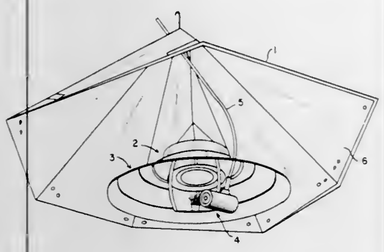
4,121,539
ANIMAL ENCLOSURE SYSTEM WITH WASTE TREATMENT MEANS
Joseph Terrell Moore, Rte. #1, Dixie, Ga. 31629
Filed Feb. 14, 1977, Ser. No. 768,320
Int. Cl.[2] A01K *1/00*
U.S. Cl. 119—28 **13 Claims**



1. An animal enclosure system, comprising,
a platform for supporting animals and for receiving solid waste excreted by said animals,
a gas enclosing chamber means for containing in a lower portion thereof a mixture of said waste and a carrier liquid,
means for conducting waste from said platform to said chamber means,
a gas outlet opening located in an upper portion of said chamber means above said mixture,
said chamber means having an inlet end and an outlet end,
overflow means in communication with said chamber means

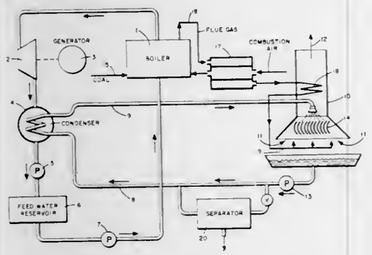
for maintaining the mixture undergoing treatment in the chamber means at a given liquid level,
a liquid outlet passage leading downwardly from the overflow means and then upwardly to a discharge point located outside said chamber means,
a solids outlet opening located at the outlet end of the chamber means below the liquid level,
conveyor means for moving solids through the bottom of the chamber from said inlet end to said solids outlet opening and then upwardly from the solids outlet opening to a discharge point outside the chamber means and above the liquid level.

4,121,540
AIR-RETENTION SHELL
Michael V. Beebe, 507 Robin Rd., El Dorado, Ark. 71730
Filed Nov. 11, 1977, Ser. No. 850,633
Int. Cl.[2] A01K *31/18*
U.S. Cl. 119—32 **9 Claims**



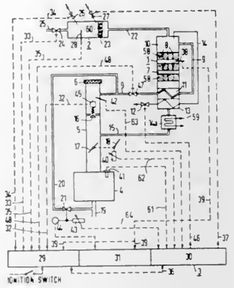
1. A heating system comprising:
(a) a generally conical heat-retention shell having a single open end, said open end facing downwardly, said shell being made of a highly heat-retentive material;
(b) means for suspending said shell above the ground; and
(c) a brooder removably suspended below said shell and spaced from said shell, said brooder comprising a heater and a hover, whereby said shell retains heat lost from the top and heat passing the outer perimeter of said hover.

4,121,541
PROCESS FOR PURIFYING FLUE GASES
Hannes Kneissl, and Alexander Uebbing, both of Saarbrucken, Fed. Rep. of Germany, assignors to Saarbergwerke Aktiengesellschaft, Saarbrucken, Fed. Rep. of Germany
Filed Mar. 28, 1977, Ser. No. 782,071
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1976, 2613205; Mar. 8, 1977, 2709900
Int. Cl.[2] F22B *33/18*
U.S. Cl. 122—1 R **6 Claims**



1. A process for removing pollutants contained in flue gases from a steam generating power plant wherein the waste heat of the generated steam is removed in a waste heat condenser, comprising removing said waste heat by indirect heat exhange contact in said condenser with cooling water from a circulating cooling water system, partially cooling said flue gases, directly contacting said partially cooled flue gases with said circulating cooling water which has passed through said condenser, whereby said pollutants are washed out of said flue gases and into said cooling water.

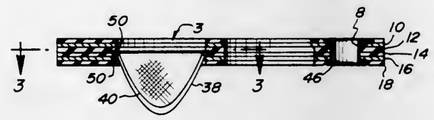
4,121,542
METHOD AND APPARATUS FOR OPERATING AN INTERNAL COMBUSTION ENGINE
Wolfgang Frie; Hans-Joachim Henkel, both of Erlangen; Paul Hini, Erlangen-Kosbach; Christian Koch, Nurnberg-Grossgrundlach, and Eugen Szabo De Bucs, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Continuation-in-part of Ser. No. 439,870, Feb. 6, 1974, abandoned. This application Nov. 20, 1975, Ser. No. 633,609
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1973, 2306026
Int. Cl.[2] F02B *43/08*
U.S. Cl. 123—3 **21 Claims**



1. A method for operating an internal combustion engine which includes a reformed gas generator for converting liquid fuel to fuel gas for the engine by admixing the liquid fuel with a gas containing a predetermined amount of oxygen selected from the group consisting of air, containing oxygen in free form, the exhaust gas of the engine, containing bound oxygen, and a mixture of air and exhaust gas, the gas containing oxygen having an air component of between 0 and 100% and an exhaust gas component complementary thereto, comprising the steps of:
(a) injecting an amount of the liquid fuel into the gas generator proportional to a predetermined relationship which is in part a function of the fuel gas requirements of the engine;
(b) supplying the gas containing a predetermined amount of oxygen to said generator such that it contains a total amount of oxygen, which may be in free or bound form, equivalent to an air number λ_{12}, for a 100% air component in the range of 0.009 to 0.2;
(c) supplying said fuel gas to said engine; and
(d) mixing a quality of air to said fuel gas such that the air number, λ_{23}, for combustion of said fuel gas in said engine is at least equal to 1.

4,121,543
PRECOMBUSTION IONIZATION DEVICE
Jarvis Byron Hicks, Jr., and Damon John Hicks, both of 48 Glenwood Rd., Colts Neck, N.J. 07722
Filed Jan. 12, 1976, Ser. No. 648,406
Int. Cl.[2] F02B *43/08*
U.S. Cl. 123—3 **23 Claims**

1. A precombustion ionization device for interposition between the carburetor and the engine intake of an internal combustion engine employing a vaporizable liquid fuel, said device comprising at least one foraminous member including a catalytic metal thereon, and an oxide coating of said catalytic



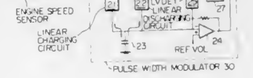
metal on its surface so as to promote reduction of said liquid fuel, and thereby improve the octane rating of said engine, and a gasket supporting said foraminous member so that said foraminous member is in spaced relationship from said carburetor and said engine intake.

4,121,544
INTERNAL COMBUSTION ENGINE
Michael G. May, CH 1180 Rolle, Bel Air, Switzerland
Continuation-in-part of Ser. No. 630,624, Nov. 10, 1975, Pat. No. 4,094,272. This application Feb. 9, 1977, Ser. No. 767,188
Claims priority, application Italy, Jan. 24, 1975, 19596; Fed. Rep. of Germany, Apr. 5, 1976, 2614595; United Kingdom, Feb. 13, 1976, 05787/76
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—30 D **8 Claims**



1. A 4-cycle, externally ignited internal combustion engine comprising:
cylinder means;
cylinder head means attached to said cylinder means;
a piston moving reciprocatingly within said cylinder, thereby defining a combustion chamber of varying geometry;
an overhead intake valve for closing an inlet opening having a valve seat and which admits a substantially homogeneous combustible charge and is the only inlet means for said engine;
a chamber in said cylinder head extending said combustion chamber into said cylinder head, said chamber having a depth of penetration into said cylinder head which is less than the lateral extent of said chamber and said chamber having continuous curved walls defining the lateral extent thereof;
an overhead exhaust valve whose valve disc defines the vertical extent of said chamber in said cylinder head and whose valve seat lies in a plane which is displaced from the plane which includes the seat of said inlet valve;
and said piston and said cylinder head are disposed to cooperate so that, at top dead center of said piston, said piston head and said inlet valve disc are substantially parallel and so near each other that, during the end of the compression stroke, the top of said piston and said cylinder head cooperate to define a guide channel originating in the vicinity of said inlet valve disc and leading to said chamber and terminating in said chamber in a substantially tangential manner; whereby gaseous charge is accelerated through said guide channel to thereby enter said chamber substantially tangentially and induce therein a substantially unique vortex flow whose axis of rotation is substantially parallel to the longitudinal cylinder axis; said piston and said cylinder head further cooperating in such a manner that, at top dead center, the combustible charge is substantially confined to said chamber and to said guide channel only; and the engine further comprising a spark plug for each of said cylinder means so disposed that the sparking electrodes are located in said turbulence chamber near an edge which is adjacent to the top of the piston at TDC.

4,121,545
ELECTRONIC FUEL INJECTION CONTROL APPARATUS USING VARIABLE RESISTANCE FOR RELATING INTAKE AIR SPEED TO ENGINE SPEED
Masanori Mizote, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan
Filed Feb. 3, 1976, Ser. No. 654,913
Claims priority, application Japan, Feb. 6, 1975, 51-15812; Oct. 21, 1975, 50-126503
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—32 EJ **10 Claims**



1. An electronic fuel injection control apparatus for an internal combustion engine including means defining an air intake passage, a throttle valve therein and a fuel injector for discharging fuel to the cylinder of said engine in response to an injection pulse applied thereto, comprising:
means disposed upstream of the throttle valve and sensitive to the speed of air inducted through said air intake passage for translating the volume of air inducted per unit time into a corresponding mechanical movement;
means sensitive to the speed of the engine to produce an engine speed related electrical signal;
a resistance element connected to receive said electrical signal to develop thereacross an engine speed related voltage;
a contactor movable with said means sensitive to said air volume and in electrical slidable contact with said resistance element to extract a variable fraction of said voltage therefrom depending upon said mechanical movement, whereby the extracted voltage fraction is a modulation of said engine speed related voltage in accordance with said sensed air volume; and
means for generating an injection pulse per revolution of the engine the pulse duration of which is variable in accordance with said modulated voltage.

4,121,546

AIR-FUEL RATIO ADJUSTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

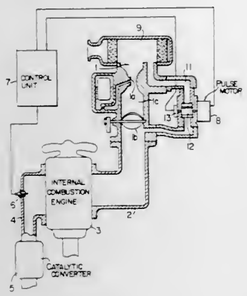
Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Aichi, and Takamichi Nakase, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 13, 1976, Ser. No. 723,050

Claims priority, application Japan, Oct. 28, 1975, 50/130154

Int. Cl.² F02B *3/08;* **F02M** *7/12;* **F01N** *3/08*

U.S. Cl. 123—32 EE **11 Claims**



1. An air-fuel ratio adjusting apparatus for an internal combustion engine comprising:

a carburetor connected to an intake manifold of an internal combustion engine and including a main passage and a bypass passage for supplying air-fuel mixture to said intake manifold, said main passage being provided with a throttle valve for controlling the amount of intake air, and said bypass passage being communicated with the downstream portion of said main passage and provided with a bypass valve for adjusting the air-fuel ratio of said air-fuel mixture by controlling the amount of additional intake air flowing therethrough;

gas sensing means mounted in an exhaust pipe of said engine for sensing the oxygen content of exhaust gases to produce a sensed electrical signal;

a control unit electrically connected to said gas sensing means for selectively producing forward and reverse shift signals in accordance with said sensed signal, said control unit including a comparator electrically connected to said gas sensing means for comparing whether said sensed signal is greater than or less than a predetermined preset value and producing the corresponding comparison signal, a pulse generating circuit for generating first and second pulse signals, the frequency of said first pulse signal being higher than that of said second pulse signal, a command circuit electrically connected to said comparator and said pulse generating circuit for delivering one of said first and second pulse signals in accordance with the comparison signal from said comparator, a reversible shift register electrically connected to said command circuit, said shift register being responsive to said first pulse signals to be sequentially shifted in one direction to produce said forward shift signals, said shift register being responsive further to said second pulse signals to be sequentially shifted in the other direction to produce said reverse shift signals, and a switching circuit electrically connected to said reversible shift register for selectively delivering said forward and reverse shift signals; and

a pulse motor rotatable at a speed proportional to the frequency of said forward and reverse shift signals, respectively, said pulse motor being coupled to said bypass valve and electrically connected to said control unit for selectively receiving said forward and reverse shift signals to selectively operate said bypass valve in one direction which opens said by-pass valve and in the other direction which closes said bypass valve, the operating speed of said bypass valve in said valve opening direction being faster than that of said bypass valve in said valve closing direction.

4,121,547

CLOSED LOOP AIR-FUEL RATIO CONTROL SYSTEM FOR USE WITH INTERNAL COMBUSTION ENGINE

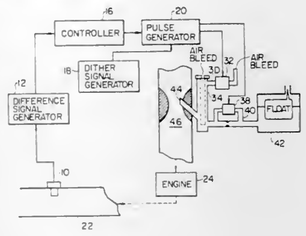
Masaharu Asano, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Nov. 26, 1975, Ser. No. 635,701

Claims priority, application Japan, Nov. 29, 1974, 49-137545

Int. Cl.² F02B *3/10*

U.S. Cl. 123—32 EA **9 Claims**



1. A closed loop fuel control system for a multi-cylinder internal combustion engine including an intake passage leading to the cylinders, air fuel supply conduit means for supplying air and fuel to said intake passage in variable ratio, and exhaust means, the system comprising:

an exhaust gas sensor provided in said exhaust means for generating a first signal representing the concentration of a composition of gases in said exhaust means;

means for generating a second signal representing the deviation of said first signal from a reference level indicating a desired air-fuel ratio;

a variable frequency oscillator for generating a third signal of which the frequency is variable in dependence upon the speed of said engine;

a pulse width converter responsive to said second and to said third signal for generating a train of pulses of which the duration is dependent upon the magnitude of said second signal and the frequency is dependent upon the frequency of said third signal from said variable frequency oscillator; and

electromechanical flow control means disposed in said air fuel supply conduit means and responsive to said train of pulses for controlling the air-fuel ratio to said desired value.

4,121,548

DETERIORATED CONDITION DETECTING APPARATUS FOR AN OXYGEN SENSOR

Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Aichi, and Takamichi Nakase, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 8, 1977, Ser. No. 814,122

Claims priority, application Japan, Aug. 8, 1976, 51-94119; Aug. 8, 1976, 51-94123

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EE **5 Claims**

1. A deteriorated condition detecting apparatus for oxygen sensors comprising:

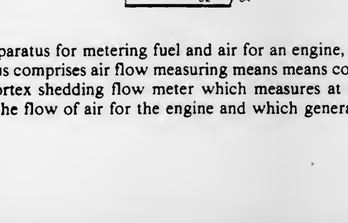
an oxygen sensor, positioned to be tested in a gaseous atmosphere in which oxygen concentration changes, for detecting the presence and the absence of oxygen in said gaseous atmosphere;

a reference sensor, positioned near said oxygen sensor and adapted to be correctly responsive to the oxygen concentration in said gaseous atmosphere, for detecting the presence and the absence of oxygen in said gaseous atmosphere;

first comparing means, connected to said oxygen sensor, for generating a first comparison signal which changes the signal level thereof between two constant levels, one and the other thereof being indicative of the presence and the absence of oxygen respectively;

second comparing means, connected to said reference oxygen sensor, for generating a second comparison signal which changes the signal level thereof in the same manner as said first comparison signal;

first integrating means, connected to said first comparing means, for generating a first integration signal which increases as the duty factor of said first comparison signal increases;



second integrating means, connected to said second comparing means, for generating a second integration signal which increases as the duty factor of said second comparison signal increases;

differential means, connected to said first and second integrating means, for generating a differential signal proportional to the difference between said first and second integration signals;

third comparing means, connected to said differential means, for generating a third comparison signal when said differential signal deviates from a predetermined reference level by more than a predetermined value; and

warning means, connected to said third comparing means, for warning the deteriorated condition of said oxygen sensor in response to said third comparison signal.

4,121,549

APPARATUS FOR METERING FUEL AND AIR FOR AN ENGINE

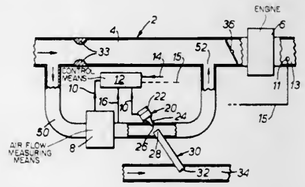
Barrie James Martin, Shenfield; Michael John Broad, Lyng, and Samuel Stewart Hall, Hornchurch, all of Great Britain, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jan. 14, 1977, Ser. No. 759,475

Claims priority, application United Kingdom, Jan. 14, 1976, 1473/76

Int. Cl.² F02B *3/00;* **F02M** *7/00*

U.S. Cl. 123—32 EA **11 Claims**



1. Apparatus for metering fuel and air for an engine, which apparatus comprises air flow measuring means means comprising a vortex shedding flow meter which measures at least a part of the flow of air for the engine and which generates an electrical output that is proportional to the measured air flow, control means which receives the output from the vortex shedding flow meter and which generates electrical output signals which vary in dependence upon the received signals, and an injector which injects fuel in response to the signals from the control means, means for interconnecting said control means with said injector for activating the injector by a number of times in any given period directly proportional to the number of vortices shed by the vortex shedding flow meter, and fuel dissipating means for dissipating at least a part of the injected fuel.

4,121,550

LIQUID-COOLED CYLINDER HEAD

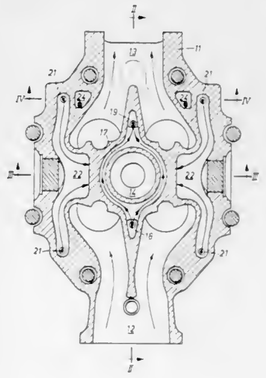
Norbert Wand, Friedrichshafen, and Wolfgang Rudert, Langenargen, both of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Jul. 21, 1975, Ser. No. 597,489

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1974, 2437965

Int. Cl.² F01P *1/06*

U.S. Cl. 123—41.31 **18 Claims**



1. A liquid-cooled cylinder head for an internal combustion engine with inlet and exhaust channel means, a central chamber means and several inlet bore means for the cooling liquid in the cylinder head bottom which are arranged approximately at the cylinder circumference, characterized by two ring-shaped cooling channel means disposed one above the other and substantially surrounding the central chamber means, said two ring-shaped channel means being in communication with each other by way of two overflow aperture means, said two overflow aperture means being disposed completely above the lower of the two ring-shaped cooling channel means so that the cooling liquid is forced to flow through the ring-shaped cooling channel means one after the other in the circumferential direction with respect to the central chamber means, and bore means connecting the lower ring-shaped channel means with further cooling channel means located along the longitudinal sides of the cylinder head.

4,121,551

DRAIN RECYCLE SYSTEM FOR TWO-CYCLE ENGINE

Robert K. Turner, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

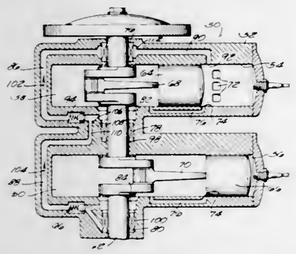
Filed Jul. 28, 1976, Ser. No. 709,390

Int. Cl.² F02B *75/20*

U.S. Cl. 123—59 B **5 Claims**

1. A two-cycle internal combustion engine including a pair of generally closed, separate crankcases, each having an area in

which drains collect, separate cylinders extending from each of said crankcases, separate oppositely acting pistons reciprocally movable in each of said cylinders whereby there is alternately developed in said crankcases a low pressure condition as the associated one of said pistons approaches top dead center and a high pressure condition as the associated one of said piston approaches bottom dead center, a separate intake port in each of said cylinders for admitting a fuel-lubricant mixture thereinto when the associated one of said pistons is adjacent bottom dead center, an exhaust port in each of said cylinders for exhausting combustion products therefrom as the associated one of said pistons approaches bottom dead center, an inlet port located in one of said cylinders between said intake port and said exhaust port thereof, first conduit means connected in



communication with said drains collecting area associated with said one of said cylinders and with said inlet port, second conduit means connected in communication with said first conduit means and with said drains collecting area associated with the other of said cylinders, whereby the drains are recirculated from said drain collecting areas to said one of said cylinders through said inlet port in reponse to cyclical variation in said crankcases and in said one of said cylinders, and check valve means in each of said first and second conduit means for permitting flow from the associated one of said drain collecting areas toward said inlet port during a high pressure condition in the associated one of said crankcases and for preventing flow from the associated one of said first and second conduit means into the associated one of said drains collecting areas during a low pressure condition in the associated one of said crankcases.

4,121,552

EXHAUST MEANS FOR TWO CYCLE ENGINES

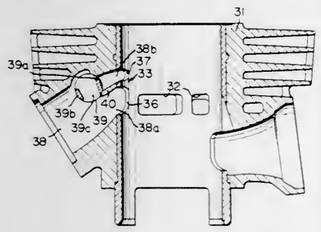
Nagahama Mithuo, Hamamatsu; Aoi Kazuo, Iwata, and Hirano Seiji, Hamamatsu, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 612,863, Sep. 12, 1975, abandoned. This application Mar. 25, 1977, Ser. No. 781,429

Claims priority, application Japan, Sep. 17, 1974, 49-111838[U]

Int. Cl.² F02B *75/02*

U.S. Cl. 123—65 PE **2 Claims**



1. Two cycle internal combustion engines including cylinder means for defining working chamber means therein, piston means disposed in the cylinder means for slidable movement, exhaust port means formed in the cylinder means so as to open into the working chamber means and adapted to be cyclically closed by said piston means during the slidable movement of the piston means, exhaust passage means connected with the exhaust port means, and valve means provided in said exhaust passage means in the vicinity of the exhaust port means, said valve means comprising at least one rotatable member disposed at an upper portion of the exhaust passage means for partly closing the exhaust port means in closed position so as to advance exhaust port closing timing and retard exhaust port opening timing, wherein said exhaust port means comprises at least one upper port and at least one lower port, and the exhaust passage means includes a portion which is located in the vicinity of the exhaust port means and divided into upper and lower passage portions respectively connected with the upper and lower exhaust ports, said valve means being provided in the upper passage portions, further wherein said upper exhaust passage portion terminates at the valve means and the upper and lower exhaust passage portions merge into a single passage immediately behind the valve means, further wherein said upper exhaust passage is provided, at its end adjacent to the valve means, valve seat surface means for cooperating with the valve means, further wherein said valve means is interconnected with engine throttle valve means in such a manner that it is fully closed when the engine throttle valve is in full close position and fully opened when the engine throttle valve is in full open position, and further wherein said valve means comprising at least one rotary member includes a passage defined by a first wall portion and a second wall portion, wherein said first wall portion is dimensioned to block said upper passage portion of said exhaust passage means when said valve means is closed, and said second wall portion is dimensioned to stiffen said valve means without blocking said upper passage portion of said exhaust passage means.

4,121,553

ELECTRIC IGNITION ADVANCE SYSTEM

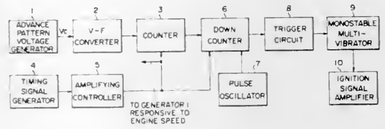
Takashi Hasegawa, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 7, 1977, Ser. No. 766,617

Claims priority, application Japan, Mar. 12, 1976, 51-27390

Int. Cl.² F02P *5/08;* **F02B** *3/10*

U.S. Cl. 123—117 D **3 Claims**



1. An electric ignition advance system for internal combustion engines comprising:

a plurality of parameter voltage generators for generating respectively parameter voltage signals indicative of operating parameters of an engine, said operating parameters including at least a rotational speed of the engine;

a plurality of advance pattern voltage generators each connected to corresponding one of said plurality of parmeter voltage generators for generating an advance voltage signal varying in accordance with a corresponding one of said parameter voltage signals, each said advance voltage signal representing a predetermined ingition advance with respect to the corresponding operating parameter of said engine;

a voltage-to-frequency converter, connected to said plurality of advance pattern voltage generators, for generating a frequency signal, the frequency thereof being varied in accordance with combined advance voltage signals;

a timing signal generator for generating a timing signal at a predetermined rotational reference position of said engine;

a first counter, connected to said voltage-to-frequency converter and said timing signal generator, for counting said frequency signal during one cycle period of said timing signal;

an oscillator for generating an oscillation signal of a fixed frequency;

a second counter, connected to said oscillator and said timing signal generator, for counting said oscillation signal in response to said timing signal;

a trigger circuit, connected to said second counter, for generating a trigger signal at the time when a count value of said second counter becomes equal to the one of said first counter; and

an ignition device, connected to said trigger circuit, for firing said engine in response to said trigger signal.

4,121,554

AIR-FUEL RATIO FEEDBACK CONTROL SYSTEM

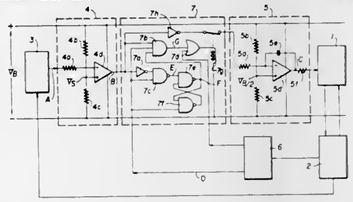
Motoharu Sueishi; Katsushi Kato, and Yoshiaki Sato, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

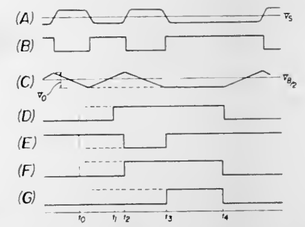
Filed Jul. 5, 1977, Ser. No. 812,955

Claims priority, application Japan, Jul. 2, 1976, 51/79095

Int. Cl.² F02B *33/00*

U.S. Cl. 123—119 EC **4 Claims**





1. In combination with a fuel supply system for an internal combustion engine, said fuel supply system controlling the amount of air-fuel mixture to be supplied to an engine in accordance with preset air-fuel ratio characteristic of the fuel supply system, and an air-fuel ratio sensing means for sensing the oxygen concentration of the exhaust gas of an engine and generating an output signal which is of inverted polarity and corresponds to the air-fuel ratio of the air-fuel mixture supplied by the fuel supply system, the improvement comprising an air-fuel ratio feedback control system including:

(a) an integrating circuit connected to the fuel supply system; and

(b) a correction control circuit connected to the air-fuel ratio sensing means and to the integrating circuit, whereby the integrating circuit integrates the output of the air-fuel ratio sensing means and applies an integrated output signal to the fuel supply system in order to correct the air-fuel ratio of the supplied air-fuel mixture in accordance with the integrated output signal, said correction control circuit including means for disconnecting the air-fuel ratio sensing means from the integrating circuit in response to certain predetermined operating conditions of an engine, thereby holding the output from the integrator circuit constant.

4,121,555

TRANSMISSION LINKAGE

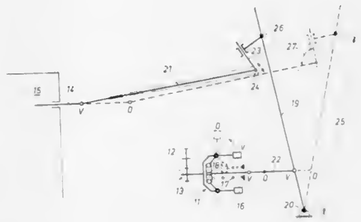
Gerhard Zbikowski, Friedrichshafen, and Salahaddin Geafer, Markdorf, both of Germany, assignors to Motoren-und Turbinen-Union Friedrichshafen GmbH, Germany

Filed Jun. 14, 1976, Ser. No. 695,557

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1975, 2526662

Int. Cl.² F02D *1/04*

U.S. Cl. 123—140 R **17 Claims**



1. A transmission linkage construction arranged between a universal speed governor and a fuel metering means of an internal combustion engine, the linkage construction selectively positioning a control rod of the fuel metering means in response to predetermined speeds of the internal combustion engine sensed by the governor, the control rod being positionable at a plurality of positions defined between a maximum fuel filling position and a zero fuel filling position, the transmission linkage construction comprising:

a transmission lever means pivotally mounted about a fixed pivot point,

means for connecting the governor to said transmission lever means,

a first connecting linkage arranged between the control rod and the transmission lever means,

means for connecting a first end of the first connecting linkage to the control rod,

arm means for connecting a second end of the first connecting linkage to said transmission lever means,

means for variably connecting a first portion of said arm means to said transmission lever means,

means for connecting a second portion of said arm means to the second end of said first connecting linkage, and

means provided at said transmission lever means for permitting an adjustment of the distance between the fixed pivot point of the transmission lever means and the point of connection of said arm means with the transmission lever means,

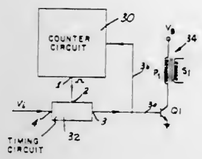
said arm means and said first connecting linkage being arranged with respect to one another such that, in a zero fuel filling position, a longitudinal axis of the arm means subtends an approximately right angle with a line extending through the points of connection of said first connecting linkage with said control rod and with said arm means.

4,121,556

SPARK ADVANCE SYSTEM FOR INTERNAL COMBUSTION ENGINES COMPRISING A DEVICE FOR CONTROLLING THE CHARGE CURRENT IN THE IGNITION COIL IN CONNECTION WITH SIGNIFICANT PARAMETERS

Umberto Bigliani, Collegno (Turin), and Mauro Maioglio, Turin, both of Italy, assignors to Fabbrica Italiana Magneti Marelli, S.p.A., Milan, Italy

Filed Mar. 1, 1976, Ser. No. 662,353
Claims priority, application Italy, May 13, 1975, 23259 A/75; Jul. 4, 1975, 25084 A/75
Int. Cl.² F02P *5/04, 5/00*
U.S. Cl. 123—148 E **12 Claims**



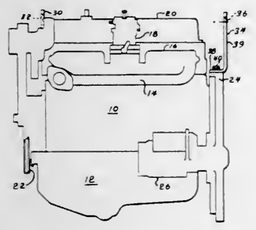
1. An ignition timing system for use in an internal combustion engine of the type having in combination a cylinder, a piston and a spark plug, said system comprising:
(1) charge storage means for storing electrical energy and for discharging said electrical energy across the spark gap of said spark plug;
(2) ignition control means for serially charging and discharging said charge storage means so as to serially ignite said spark plug, said ignition control means to;
(a) discharge said charge storage means at instants determined by the speed of the engine; and
(b) charge said charge storage means for periods which vary in length as an inverse function of the magnitude of a power source supplying charge to said charge storage means such that said charge storage means charges to a constant, predetermined value just prior to each said discharge instant irrespective of variations in the magnitude of said power source.

4,121,557

COMBINED LIFTING EYE AND FLYWHEEL HOUSING OPENING COVER

Sam R. Congram, Peoria, and Carl L. McClung, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 8, 1977, Ser. No. 822,848
Int. Cl.² F02F *7/00*
U.S. Cl. 123—195 R **4 Claims**



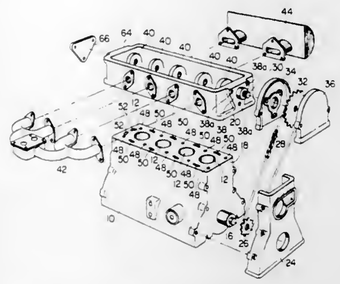
1. In an engine having an elongated block mounting at one end a flywheel housing, a flywheel with at least one timing mark on its periphery rotatable within the housing, and spaced lifting eyes secured to said engine whereby the engine may be lifted from a support, the improvement wherein said flywheel housing has an opening in its generally uppermost surface through which said timing mark may be viewed, and wherein one of said lifting eyes includes a base defining a closure for said opening, and means removably securing said base to said flywheel housing about said opening to (a) close said opening and (b) secure said one lifting eye to said engine.

4,121,558

INTERNAL COMBUSTION ENGINE ASSEMBLY

Yūji Sakakibara, Koganei, and Yoshikazu Ishikawa, Chofie, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 29, 1976, Ser. No. 709,642
Claims priority, application Japan, Jul. 30, 1975, 50-93347
Int. Cl.² F01M *11/00*; F02F *1/02*
U.S. Cl. 123—196 R **2 Claims**



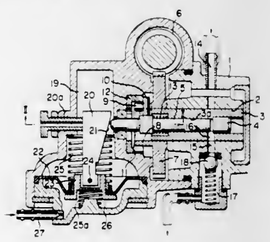
1. An internal combustion engine assembly, comprising:
a cylinder block having a plurality of cylinders, each having a reciprocating piston therein, and a crank shaft rotatably supported therein and operatively connected with said pistons, said plurality of cylinders being arranged with their cylinder axes lying on a longitudinal line of said cylinder block;
said cylinder block having first and second end faces which are spaced apart a distance along said longitudinal line thereof, said crank shaft having one end projected outwardly from said cylinder block through said first end face of said cylinder block, said cylinder block having a plurality of lubricating oil ports formed within an area adjacent to said second end face thereof;
a chain cover secured to said first end face of said cylinder block, said chain cover and said first end face cooperating to form a chamber;
a cylinder head having a plurality of combustion recesses corresponding in number to said plurality of cylinders and arranged along a longitudinal line thereof;
said cylinder head having first and second end faces which are spaced a distance along said longitudinal line thereof, said cylinder head being hollow and provided with a first set of oil lubricating ports corresponding in number to said plurality of lubricating oil ports of said cylinder block and disposed within an area adjacent to said first end face of said cylinder head, and also provided with a second set of oil lubricating ports corresponding in number to said plurality of lubricating oil ports of said cylinder block and within an area adjacent to said second end face of said cylinder head;
a cam shaft adapted to be rotatably journalled within said cylinder head, said cam shaft having a first end and a second end, one of said ends projecting outwardly from said cylinder head;
drive means for connecting said crank shaft and said cam shaft, said drive means including a pair of sprockets adapted to be mounted on the projected end of said crank shaft and on either end of said cam shaft, respectively, and a timing chain adapted to cooperate with said sprockets;
a casing adapted to be mounted on either end face of said cylinder head for closing the chamber of said chain cover;
said cylinder head having first and second assembled positions on said cylinder block, said first and second positions being located 180° apart, said combustion recesses closing said cylinders in either of said assembled positions;
said cylinder head, in said first assembled position, having its first end face aligned with said second end face of said cylinder block, said first set of lubricating oil ports in said cylinder head mating with said plurality of oil ports in said cylinder block and said second set of lubricating oil ports opening to the chamber of said chain cover, said cam shaft being journalled in said cylinder head with its first end projecting outwardly from said second end face of said cylinder head and said casing being mounted on said second end face of said cylinder head and cooperating with said chain cover to form a closed chamber for lubricating said sprockets and said timing chain;
said cylinder head, in said second assembled position, having its second end face aligned with said second end face of said cylinder block, said second set of lubricating oil ports in said cylinder head mating with said plurality of oil ports in said cylinder block and said first set of lubricating oil ports opening to the chamber of said chain cover, said cam shaft being journalled in said cylinder head with its first end projecting outwardly from said first face of said cylinder head and said casing being mounted on said first end face of said cylinder head and cooperating with said chain cover to form a closed chamber for lubricating said sprockets and said timing chain.

4,121,559

LUBRICANT OIL PUMP FOR TWO-CYCLE ENGINES

Seiichiro Yamada, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 27, 1976, Ser. No. 754,404
Claims priority, application Japan, Dec. 29, 1975, 50-158839
Int. Cl.² F01M *1/00*
U.S. Cl. 123—196 R **5 Claims**



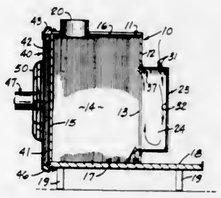
1. In internal combustion engines comprising cylinder means, piston means disposed in said cylinder means for reciprocating movement, intake means including throttle valve means for introducing combustible air-fuel mixture to said cylinder means, exhaust means including exhaust port means and exhaust passage means for exhausting combustion gas from the cylinder means as exhaust gas; lubricant oil pump means comprising plunger means provided for axial reciprocating movement to displace lubricant oil in accordance with stroke of the axial reciprocating movement, means for effecting said axial reciprocating movement of the plunger means, and control means responsive to a pressure of the combustion gas in said exhaust for controlling the stroke of said plunger means whereby supply of lubricant oil for each engine stroke is increased in response both to an increase in the engine speed and to an increase in the engine throttle valve opening.

4,121,560

FREESTANDING FIREPLACE AND ROOM HEATER

Galeon Knight, 811 Snake River Ave., Lewiston, Id. 83501

Filed Apr. 4, 1977, Ser. No. 784,079
Int. Cl.² F17C *1/14*
U.S. Cl. 126—63 **10 Claims**



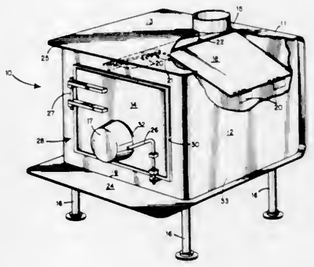
1. A freestanding fireplace and room heater, comprising:
a firebox having a front opening and a top opening;
said top opening being adapted to receive a chimney pipe;
said firebox having a flat top surface and upright sidewalls joined by upright front and back walls;
a door;
hinge means mounting the door to the front wall of the firebox for pivotal movement about a vertical axis between a closed position completely covering the front opening and an open position adjacent one sidewall of the firebox;
latch means for tightly securing the door to the firebox in the closed position;
a baffle plate mounted in spaced relation to the back wall of the firebox to create an open air space across the back of the firebox;
fins on outside edges of the baffle plate that extend fowardly to deflect air forwardly over the firebox;
blower means on the baffle for forcing air through the air space to be heated by the firebox and exhausted in a forward direction over the firebox;
wherein the door includes a door frame supporting a pane of glass and wherein the door frame is situated between the glass pane and front firebox wall such that in the closed position, the pane is spaced forwardly of the front firebox wall; and
wherein the door includes a draft means along an upper horizontal surface thereof for receiving outside air and directing it along an inside surface of the glass pane.

4,121,561

STOVE

Richard G. Cote, R.F.D. #2, Concord, N.H. 03301

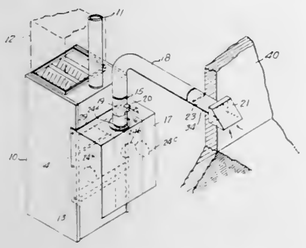
Filed Mar. 28, 1977, Ser. No. 781,782
Int. Cl.² F24B *3/00*
U.S. Cl. 126—65 **7 Claims**



1. A heating stove of the box type having a body welded from two sheets of metal comprising:

(a) a first sheet of metal bent in the shape of a "U" having a closed end and two sides;
(b) a second sheet of metal bent in the shape of a "U" having a closed end, a top at least as long as one of said two sides, a bottom longer than any of said top and two sides and interlocking with said first sheet to form an enclosed firebox;
(c) a door in the closed end of said first sheet of metal;
(d) a flue opening in said top of said second sheet of metal;
(e) a solid, roof-shaped baffle plate inside said firebox extending to and slidable supported from said two sides; and
(f) support means attached to said bottom of said second sheet of metal, whereby a box stove is provided having an extended hearth formed from the bottom of said second sheet.

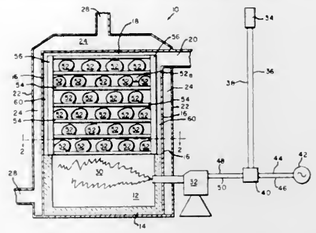
4,121,562
ENERGY CONSERVATION KIT FOR HOUSEHOLD FURNACES
Frank S. Grott, 3401 Fielding Rd., Baltimore, Md. 21208
Filed Jun. 6, 1975, Ser. No. 584,657
Int. Cl.[2] F24C *3/00*
U.S. Cl. 126—85 B **7 Claims**



7. A kit for converting fossil fuel type heating furnaces disposed within a structure and having a combustion chamber air inlet and a draft diverter air inlet, to more efficient operation with respect to fuel consumption, comprising:
(a) integral structural means having one open side, dimensioned so as to fit over both said air inlets and seal said air inlets from the ambient air surrounding said furnace;
(b) means for attaching said structural means to said furnace in said sealing relationship;
(c) at least one section of duct adapted to be attached at one end to said structural means in communication with the interior thereof; and
(d) air intake means for bringing in air from outside said structure to the end of said section of duct removed from the end adapted to be attached to said structural means.

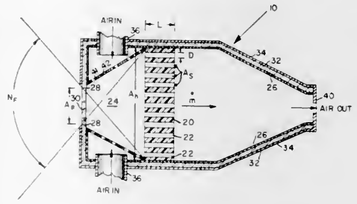
4,121,563
FUEL SAVING FURNACE IMPROVEMENT
Paul B. Gold, Newton, Mass., assignor to Walter J. Kreske, Newton, Mass., a part interest
Filed Feb. 22, 1977, Ser. No. 771,017
Int. Cl.[2] F24H *3/12*
U.S. Cl. 126—116 A **10 Claims**

1. In a furnace for heating a building, the furnace being of the type having a combustion chamber for a heating flame therein, a substantial amount of normally unoccupied space above the combustion chamber and a flue opening for coupling to a chimney, means for carrying a fluid medium about the walls of said space for receiving through the walls heat from said heating flame for heating said building, and means for causing said heating flame to go "ON" and "OFF" in said combustion chamber in accordance with selected heating needs of said building; the improvement comprising the inclusion of refractory type heat absorbing members in said normally unoccupied space, said heat absorbing members being in sufficient quantity for substantially filling said normally unoccupied space; and means for carrying said heat absorbing members in spaced relation to each other and in spaced relation to said walls for permitting substantially free passage of products of combustion from said heating flame about each of said heat



absorbing members and between said heat absorbing members and said walls, and positioned in the path of products of combustion from said heating flame as said products of combustion pass from said heating flame to said flue opening for thereby reducing loss of heat to said flue opening.

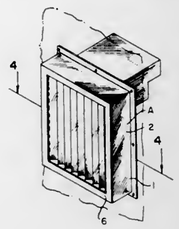
4,121,564
SOLAR ENERGY RECEIVER
Jacob Schwartz, Arlington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Feb. 4, 1977, Ser. No. 765,461
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **21 Claims**



1. A method of providing an optimally designed long life solar energy receiver, comprising:
providing a receiver having a face adapted to be exposed to focused solar radiation, said face having an aperture therethrough, a heat exchanger positioned within the receiver so as to be illuminated by focused solar radiation passing through said aperture, said heat exchanger having channels, and means for providing a working fluid to said channels at a predetermined rate; and
setting the convective and flow indices for the receiver so as to minimize the face temperature of the heat exchanger in the receiver.

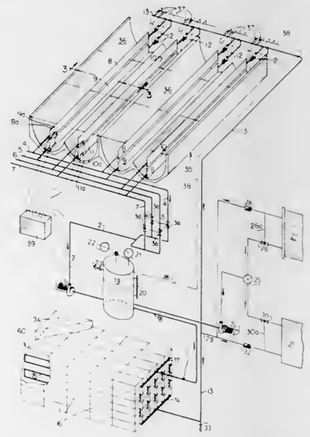
4,121,565
SOLAR HEATING UNIT
Robert B. Grisbrook, 594 Gederson La., St. Louis County, Mo. 63122
Filed Apr. 4, 1977, Ser. No. 784,135
Int. Cl.[2] F24D *3/02*
U.S. Cl. 126—270 **17 Claims**

1. A solar heating unit for disposition exteriorly of a building window comprising means defining a casing having top and bottom walls, a pair of side walls, a front wall and a rear wall, said casing being provided internally with first and second vertically presented passages, means connecting said first and second passages at their lower ends, said casing having first duct-forming means extending rearwardly from the upper portion of the rear wall thereof and being in communication with said first passage in its upper portion, said casing also having second duct-forming means extending rearwardly from the rear wall thereof communicating with said second passage in the upper portion thereof, said first and second duct-forming means constituting a casing support extension being located in



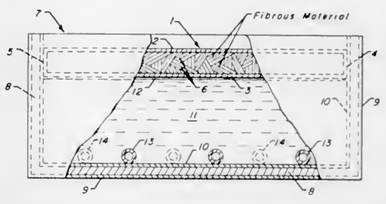
relatively remote, elevated relationship to the lower portion of said casing rear wall, there being a fluid inlet at the end of said first duct-forming means remote from the communication thereof with said first passage, there being a fluid outlet in the portion of said second duct-forming means remote from the communication thereof with said second passage, a heat pervious component provided in said front wall and substantially defining one portion of said second passage, and heat exchanging means provided within said second passage.

4,121,566
SONIA SYSTEM
Ljubomir Radenkovic, P.O. Box 3068, Kano, Nigeria
Filed Apr. 7, 1975, Ser. No. 565,863
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **20 Claims**



1. A solar energy collecting device comprising a trough having internal reflective surfaces for reflecting sun rays and including:
(A) two parallel concavely shaped floors, each having a bottom-most portion, an outer side portion and an inner side portion;
(B) solar energy collecting means extending vertically from each of said bottom-most portions and of predetermined height;
(C) said trough having exterior side walls extending from each of said outer side portions of said floors and having an intermediate portion and an upper portion, said intermediate portion being outwardly curved and said upper portion being inwardly curved, said upper portion and at least a segment of said intermediate portion extending beyond the height of said collecting means; and
(D) said trough having an internal wall positioned between said collecting means and terminating below the height of said collection means.

4,121,567
SOLAR ENERGY COLLECTING POND AND COVERING THEREFOR
Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 744,062, Nov. 22, 1976, abandoned, and a continuation-in-part of Ser. No. 744,063, Nov. 22, 1976, Pat. No. 4,072,579, and a continuation-in-part of Ser. No. 744,064, Nov. 22, 1976, Pat. No. 4,046,640, and a continuation-in-part of Ser. No. 744,065, Nov. 22, 1976, Pat. No. 4,046,639. This application Apr. 4, 1977, Ser. No. 784,217
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **7 Claims**

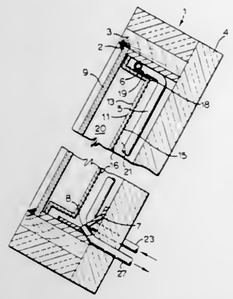


1. A solar energy collecting pond which comprises, in cooperative relationship:
(a) an insulated water-containing reservoir having at least one water-inlet conduit and at least one water-outlet conduit;
(b) a buoyant solar radiation-transparent covering having vertically spaced upper and lower horizontal surfaces and vertical side walls forming an enclosed chamber floating on the surface of the water in said reservoir and substantially coextensive in area with the water surface in the reservoir, the upper surface of said chamber being formed of a continuous sheet of radiation-transparent material; and
(c) a fibrous, solar radiation-transparent substance disposed between said horizontal surfaces and substantially filling said enclosed chamber.

4,121,568
SOLAR PANEL FLAT PLATE COLLECTOR
James Percival Olsen, 829 Bon Accord St., Fergus, Ontario, Canada (N1M 3A3)
Filed Apr. 20, 1976, Ser. No. 678,616
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **14 Claims**

1. In a solar radiation collector which collects heat energy to heat a liquid medium, a support frame, pane means, a solar radiation collector plate supported by said support frame, means for supplying a liquid medium to the upper end of said collector plate and means extending completely across the lower end of said collector plate for collecting a liquid medium as it flows from said collector plate; said plate having a front face and a rear face; said rear face being provided with a liquid absorbent material which, due to its absorbent properties, causes a liquid medium which is in direct thermal contact with

said rear face to spread across and cover essentially all of said rear face, whereby as a liquid medium gravitates along said

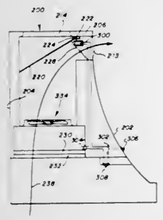


rear face, it collects heat energy conducted through said collector plate from essentially all of said rear face.

4,121,569
VENTING AND RECIRCULATING VENT KITCHEN HOOD

Leon O. Bowen, Jr., and Michael T. McVean, both of Cleburne, Tex., assignors to Rangaire Corporation, Cleburne, Tex.

Division of Ser. No. 700,216, Jun. 28, 1976, Pat. No. 4,088,123. This application Sep. 23, 1977, Ser. No. 836,213
Int. Cl.[2] F24C *15/08*; F23J *11/00*
U.S. Cl. 126—299 D **2 Claims**



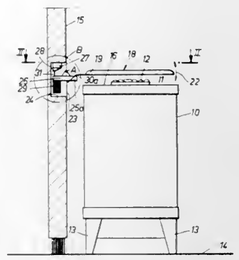
1. A kitchen stove hood for selectively providing air ventilation or recirculation in a kitchen area comprising:
- a hood dimensioned to be disposed in the kitchen area over a stove and having top, bottom, sides, back and front portions;
- said hood including an air intake opening at said bottom portion;
- a fan for causing air from the kitchen area to flow through said air intake opening;
- an air recirculation outlet in said hood for recirculating air to the kitchen;
- an air vent outlet in said hood for venting air from the kitchen;
- a damper blade mounted for movement between a first position adjacent said recirculation outlet and a second position adjacent said vent outlet for selectively opening and closing said outlets;
- spring means for normally biasing said damper blade in said first position adjacent said recirculation outlet;
- a solenoid operable between an extended and retracted position to relatively extend and retract said spring, such that upon energization said solenoid is extended to extend said spring and to move said damper blade to said second position and upon deenergization said solenoid is retracted to compress said spring and to move said damper blade to said first position; and

means for actuating said solenoid.

4,121,570
SAUNA STOVE

Wolfgang Schneider; Dieter Wieland, and Günter Rennecke, all of Schwäbisch Hall, Fed. Rep. of Germany, assignors to Klafs-Saunabau KG, Medizinische Technik, Schwabisch Hall, Fed. Rep. of Germany

Filed Jan. 12, 1977, Ser. No. 758,649
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1976, 2601173
Int. Cl.[2] F24H *1/22*
U.S. Cl. 126—374 **13 Claims**

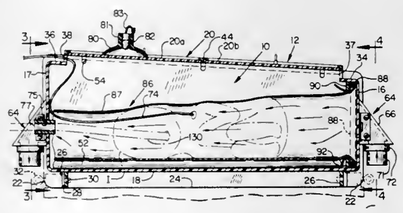


1. A sauna stove comprising: stove housing means; heater means in said stove housing means and having on and off operating positions; said stove housing means having exit opening means for hot air heated by said heater means; a pivotably mounted protective cover above said exit opening means and spaced therefrom; said pivotably mounted cover having a free end; trigger release means connected to said cover and having a path of motion; and switch means located in said path of motion and connected to said heater means; said switch means being actuated by said trigger release means for switching said heater means to said off operating position when the free end of said cover moves vertically downward; and spring means linked to said protective cover, said free end of said cover being movable downward against the action of said spring means.

4,121,571
TRANSPORTABLE LIFE SUPPORT CHAMBER, METHOD AND SYSTEM

Donald E. Pickering, 890 Mill St. - Suite 400, Reno, Nev. 89502

Filed Jan. 28, 1977, Ser. No. 763,312
Int. Cl.[2] A61G *11/00*
U.S. Cl. 128—1 B **44 Claims**



26. A device for maintaining high-risk infants and other medical patients in a controlled environment while at rest and during medical procedures comprising:
- a thin, flexible transparent impervious tubular membrane enclosure sized to enclose the patient full length,

said tubular membrane being open at its opposite ends to enable maintenance of a continuous flow of life-sustaining gas through the interior of said tubular membrane from one open end thereof to the other,
- a rigid outer enclosure defining an environmental chamber for receiving said membrane enclosure and a patient enclosed therein, said outer enclosure including a closable access opening and an end wall portion having a gas intake opening, and means for attaching one open end of said tubular membrane enclosure to said end wall portion in surrounding relationship to said gas intake opening, whereby a life-sustaining gas can be supplied to said chamber and membrane enclosure with said access opening closed,
- said access opening comprising a top access opening and said outer enclosure including opposite sidewall portions joining at one set of ends thereof said end wall portion and joining at an opposite set of ends thereof a second end wall portion, a flat rigid transparent lid for closing said top access opening and providing a removable top wall portion of said enclosure, said lid being slidable along opposite upper side edges of said sidewall portions to variable open positions to provide top access to said chamber and membrane enclosure.

4,121,572
UTERINE SOUND

Melvin L. Krzeminski, Palatine, Ill., assignor to G.D. Searle & Co., Chicago, Ill.

Filed Feb. 7, 1977, Ser. No. 766,316
Int. Cl.[2] A61B *5/10*
U.S. Cl. 128—2 S **7 Claims**

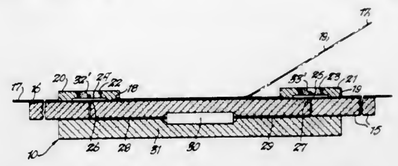


1. A uterine sound comprising:
- an elongated probe having a distal end and a proximal end, measuring indicia scribed thereon between said distal and proximal ends and an integral, raised first rib extending substantially the length thereof; and
- an elongated body having a distal end and a proximal end mounted on said probe, said body being of horseshoe-shaped cross-section and having inwardly curved sides, at least one of said sides encompassing said first rib and cooperating therewith to retain said body on said probe at a first position whereat said body is parallel to the longitudinal axis of said probe and is slidably moveable along said probe, and said cooperating side being adapted to engage said first rib and cooperate therewith to hold said body on said probe at a second position whereat the proximal end of said body is displaced from said probe and said body is restrained from slidably moving along said probe.

4,121,573
WIRELESS CARDIAC MONITORING SYSTEM AND ELECTRODE-TRANSMITTER THEREFOR

Edward A. Crovella, Snyder, and Frederick R. Mellon, Clarence, both of N.Y., assignors to Goebel Fixture Co., Hutchinson, Minn.

Continuation of Ser. No. 403,497, Oct. 4, 1973, abandoned, which is a continuation of Ser. No. 152,516, Jun. 14, 1971, abandoned. This application Jan. 13, 1976, Ser. No. 648,778
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—2.1 A **5 Claims**

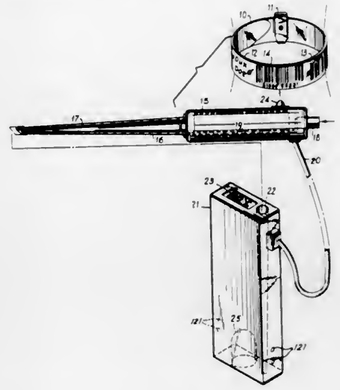


1. An electrode transmitter combination for monitoring the heartbeat of a cardiac patient comprising base means including first and second pad means, first and second surfaces on said first pad means, third and fourth surfaces on said second pad means, said first and second pad means being oriented with said second and third surfaces in contiguous relationship, spaced electrode means proximate said first surface for engagement with the chest of said patient, self-contained transmitter means positioned between said second and third surfaces, lead means coupling said transmitter means to said electrode means, and means for adhesively securing said base means to the chest of said patient.

4,121,574
METHOD AND APPARATUS FOR MEASURING AND RECORDING VITAL SIGNS OF A PATIENT

Robert W. Lester, Manhasset, N.Y., assignor to Medigraph Systems, Inc., New York, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,706
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—2.05 R **15 Claims**



1. An apparatus for measuring and displaying the vital signs of a patient having an alpha-numeric identification device, comprising:
- a temperature sensing probe for making body contact with the patient, said temperature sensing probe comprising an elongated, cylindrical rod having a thermister sensing element for contact with the patient's body;
- a portable, data-gathering acquisition unit;
- electronic anticipation circuitry disposed in said acquisition

unit and coupled to said probe for sensing the change in patient temperature and predicting the stabilized temperature of the patient;

digital indication means coupled to said anticipation circuitry for indicating the predicted stabilized temperature of the patient;

alpha-numeric sensing means mounted on said probe and coupled to said acquisition unit and responsive to a printed or magnetic code for reading said code to identify the patient;

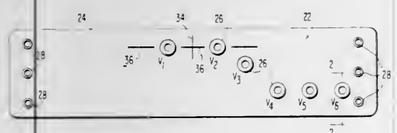
data storage means coupled to said digital indication means and said anticipation circuitry for storing the predicted stabilized temperature and the identification of the patient.

4,121,575

DEVICES FOR RAPID PLACEMENT AND RECORDING OF ECG PRECORDIAL LEADS IN PATIENTS

Harold Mills, 1049 Hillcrest Rd., Beverly Hills, Calif. 90210, and Herbert Stein, 238 S. McCarty Dr., Beverly Hills, Calif. 90212

Filed Oct. 5, 1976, Ser. No. 729,797
Int. Cl.² A61B 5/04
U.S. Cl. 128—2.06 E **19 Claims**



1. An electrocardiograph electrode assembly device for automatically positioning a plurality of electrodes in the correct anatomical position on the chests of patients having significant differences in size comprising:

a chest piece including a strip of stretchable, non-conductive material, a plurality of electrodes each adapted for making an electrical connection with an electrocardiograph and each carried by said strip in a position to contact a precordial anatomic position for electrocardiograph monitoring when the strip is disposed in a substantially unstretched condition on the chest of a first patient with the ends thereof in a predetermined position relative to his chest, and first connecting means carried by said strip adjacent each end thereof, said non-conductive material having sufficient stretch between said electrodes to automatically position each of said electrodes in the correct anatomical position for electrocardiograph monitoring when said strip is stretched over a chest larger than the chest of the first patient to position the ends thereof in a predetermined position relative to the chest of the patient; and,

a holder adapted to be positioned behind a patient and having second connecting means for engaging said first connecting means on said chest piece to hold said strip in a predetermined position relative to the chest of a patient when said first and second connecting means are engaged.

4,121,576

METHOD AND APPARATUS FOR PROCESSING VECTORCARDIOGRAPHIC SIGNALS FOR ENABLING QUANTITATIVE DETERMINATION OF THE PERCENTAGE OF HEART MUSCLE TISSUE AFFECTED BY AN INTERVENTION

Fred Samuel Greensite, 122 - 24th St., Del Mar, Calif. 92014

Filed Feb. 9, 1977, Ser. No. 766,932
Int. Cl.² A61B 5/04
U.S. Cl. 128—2.06 V **13 Claims**

1. A method of determining the percentage of heart muscle tissue affected by an intervention, comprising

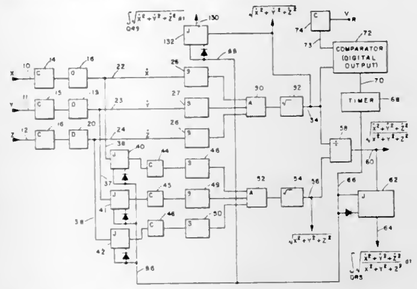
both before and after intervention,

receiving vectorcardiogram signals during a QRS wave interval in which a sheet of depolarization traverses a heart muscle, and

processing said vectorcardiogram signals to determine the relative volume of heart muscle tissue functioning during said QRS wave interval; and

relating the relative volumes determined both before and after said intervention;

wherein the processing step comprises



providing a first signal proportional to the product of the area of the depolarization sheet and the average curvature of the depolarization sheet as a function of time, in response to said vectorcardiogram signals;

providing a second signal related to the volume of heart muscle tissue functioning during said QRS interval, in response to the said first signal; and

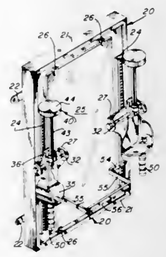
providing a third signal proportional to the volume of heart muscle tissue functioning during said QRS interval, in response to said second signal.

4,121,577

METHOD AND APPARATUS FOR AIDING CONDITIONING OF AN ERECT SPINAL COLUMN AND ADVANTAGEOUS MUSCLE CONTROL

Timothy A. Binder, 3704 Wonderland Hill, Boulder, Colo. 80302

Filed Jan. 3, 1977, Ser. No. 755,998
Int. Cl.² A61F 5/00
U.S. Cl. 128—69 **21 Claims**



1. Apparatus for aiding conditioning of muscles in the head, neck, shoulder girdle and pelvic girdle of an individual person to obtain an erect and aligned spinal column, comprising:

elbow cup means adapted for supporting the bent elbows of an erect person with the arms extended forward and each hand touching the elbow of the opposite hand, said elbow cup means also comprising means for operatively connecting the elbow cup means to an upright wall-like surface;

shoulder positioning means adapted for engaging the shoulder fronts of the erect person a predetermined distance outward from said elbow cup means and away from the upright surface, said shoulder positioning means also comprising means for operatively connecting the shoulder positioning means to the upright surface at a position generally above said elbow cup means; and

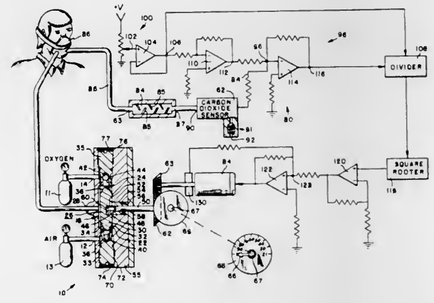
handgrip means adapted for gripping by the hand of the erect person below the elbow cup means when said elbow cup means are not being used and with the shoulder fronts abutted against said shoulder positioning means and with the upper arm of the gripping hand extending generally downward from the shoulder, and the lower arm of the gripping hand extending generally forward from the elbow, said handgrip means also comprising means operatively connecting the handgrip means to the upright surface at a position generally below said elbow cup means.

4,121,578

PHYSIOLOGICAL RESPONSIVE CONTROL FOR AN OXYGEN REGULATOR

Terence August Torzala, Davenport, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 4, 1976, Ser. No. 729,580
Int. Cl.² A61M 16/00
U.S. Cl. 128—142 R **2 Claims**



1. A control means for regulating a mixing apparatus which supplies a breathable fluid to a recipient in response to changes in the physiological needs of the recipient, said control means comprising:

means for retaining a reference signal corresponding to the recipient's normal use of oxygen;

adjustment means for changing said reference signal to provide different operational parameters for a recipient;

a housing having a chamber therein and including means for receiving and retaining breathed fluid from the recipient for a predetermined time period to permit the carbon dioxide present in a single exhalation to be averaged with several exhalations and thereby establish a mean carbon dioxide level with respect to the predetermined time period;

sensor means responsive to said mean carbon dioxide level in said chamber for creating a utilization signal corresponding to the recipient's use of oxygen;

computation means connected to said sensor means for combining said reference signal with said utilization signal to develop an output signal;

servomotor means responsive to said output signal for adjusting the mixing apparatus to match the oxygen component in said breathing fluid with that used by the recipient;

means for modifying said output signal to account for changes in the fractional concentration of oxygen in the blood of the recipient due to changes in the minute ventilation associated with an inhalation period of the recipient;

amplifier means responsive to said modified output signal for driving said servomotor in a direction which changes the proportion of oxygen in the breathable fluid communicated from the mixing apparatus to sustain the optimum physiological breathable fluid for said recipient; and

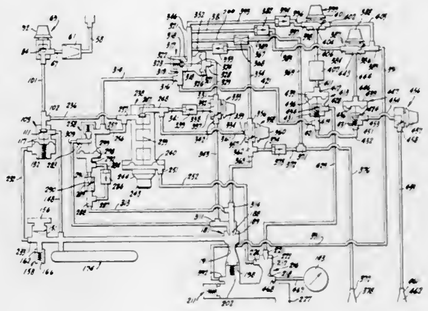
indicator means connected to said servomotor for informing an operator of the percentage of oxygen in said breathing fluid supplied to the recipient.

4,121,579

VENTILATOR AND METHOD

Forrest M. Bird, Palm Springs, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 544,505, Jan. 27, 1975, Pat. No. 3,974,828.
This application Aug. 9, 1976, Ser. No. 712,677
Int. Cl.² A61M 16/00
U.S. Cl. 128—145.8 **1 Claim**



1. In a method for ventilating a patient through the use of a patient adapter from a source of gas under pressure, supplying a main flow of inspiratory gas through an inspiratory flow rate control valve assembly to the patient adapter during the inspiratory phase, adjusting the inspiratory flow rate control valve assembly to adjust the main flow of gas, supplying after a predetermined period of time dependent on the insufficiency of the main flow of gas to meet the requirements of the patient, additional inspiratory gas through a flow accelerator cartridge movable between open and closed positions to the patient adapter, supplying gas from the main flow of gas to the flow accelerator cartridge to cause the flow accelerator cartridge to move from a closed position to an open position after said predetermined period of time, adjusting the flow accelerator cartridge so that it only augments the main flow of gas after elapse of said predetermined period of time whereby prior to the elapse of said predetermined period of time the inspiratory flow rate will be determined exclusively by the inspiratory flow rate control valve assembly, entraining source gas during the expiratory phase in an entrainment reservoir for a predetermined time as determined by demand until the entrained gas reaches a predetermined pressure and utilizing the entrained gas during the inspiratory phase to form a portion of the main flow of gas to the patient adapter.

4,121,580

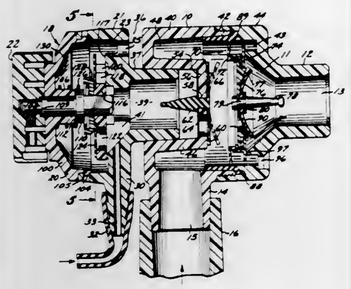
SQUEEZE BAG RESUSCITATOR WITH AIR-OXYGEN PROPORTIONATING CONTROL

Donald Clayton Fabish, Anaheim, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 7, 1977, Ser. No. 766,184
Int. Cl.² A61M 16/00
U.S. Cl. 128—145.7 **17 Claims**

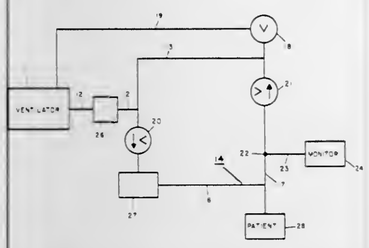
1. A squeeze bag resuscitating device comprising an assembly of a resuscitating valve housing having a squeeze bag connected thereto and containing an inhalation-exhalation valve means with mask attachment means for connection of said valve housing to a breathing mask and the like and gas inlet means including check valve means within said housing to close said gas inlet means under positive pressure in said squeeze bag, proportionating valve means detachably secured to said resuscitating valve housing and having means to receive

separate flows of oxygen and air thereto, proportionating means to blend said oxygen and air flows to a preselected proportional gas mixture and discharge means to discharge



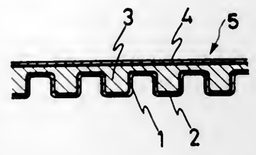
said gas mixture to said gas inlet means of said valve housing said gas inlet means defining a socket, said discharge means defining an extension complementally and removably fitted within said socket.

4,121,581
PATIENT VENTILATOR MONITOR
Ronald G. Schmader, Hoffman Estates, Ill., assignor to Sandoz, Inc., E. Hanover, N.J.
Filed Nov. 1, 1976, Ser. No. 737,212
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—145.8 **11 Claims**



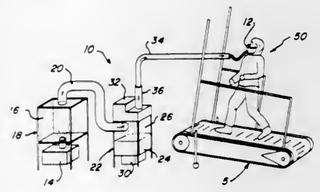
1. A ventilator monitoring system comprising a patient circuit, an exhaust circuit and ventilator means adapted for an inhalation cycle, an exhalation cycle and for an intermittent mandatory ventilation cycle, said ventilator means being in simultaneous fluid communication with patient circuit and said exhaust circuit having an expiration valve;
the patient circuit comprising in fluid communication an inspiratory branch and an expiratory branch;
a first valve means in the patient circuit inspiratory branch in fluid communication with the exhaust circuit for permitting ingress only of a gas from the ventilator to the patient circuit;
a second valve means in the patient circuit expiratory branch in fluid communication with the exhaust circuit and the expiration valve; the second valve means permitting egress only of a patient exhaust gas to the expiration valve;
said ventilator means maintaining said expiratory valve closed only during an intermittent mandatory ventilation cycle; and
monitoring means comprising a gas flow monitor upstream of the second valve means in fluid communication with the patient circuit expiratory branch for monitoring the gas volume expired by the patient.

4,121,582
DIRECT BODY COVERING SHEET HAVING A CORRECTING AND/OR THERAPEUTIC ACTION
Jose Maria Massó Remiro, c/10 Granduxer, Barcelona, Spain
Filed Nov. 29, 1976, Ser. No. 745,924
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—157 **3 Claims**



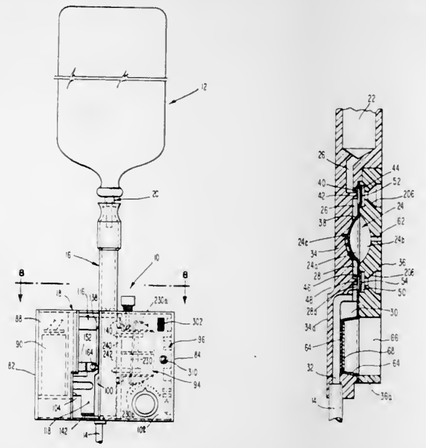
1. A fabricated sheet structure for use in covering portions of the anatomy, said structure comprising:
a first fabric sheet which is flexible in all directions, said first fabric sheet having a corrugated configuration such that first and second opposite surfaces thereof are provided with alternate recesses and ribs;
a latex layer having a first relatively smooth surface and a second surface having therein alternate ribs and recesses which are complementary to and in contiguous contact with said recesses and ribs, respectively, in said first surface of said first fabric sheet;
a second fabric sheet is flexible in all directions, said second fabric sheet having first and second opposite relatively smooth surfaces, said first surface of said second fabric sheet being fixed to said smooth surface of said latex layer; and
said second surface of said second fabric sheet comprising a first, relatively smooth surface of said structure, and said second surface of said first fabric sheet comprising a second, ribbed surface of said structure.

4,121,583
METHOD AND APPARATUS FOR ALLEVIATING ASTHMA ATTACKS
Wen Yuan Chen, 770 Jersey St., Denver, Colo. 80220
Filed Jul. 13, 1976, Ser. No. 704,762
Int. Cl.[2] A61M *15/00*
U.S. Cl. 128—192 **13 Claims**



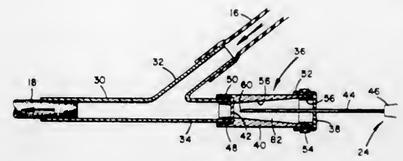
1. Respirator apparatus adapted for use by an asthma sufferer in alleviating asthma attacks, said apparatus comprising:
an elongated tubular body defining a central passage extending axially through the body including air intake means at one end of said central passage and means for storing air within said central passage,
means including a water absorbent layer disposed in outer concentric relation to said central passage cooperative with said storing means for passing vaporized water from said absorbent layer, through said tubular body and into the air stored within said central passage,
heating means interposed between said water absorbent layer and said central passage for heating and vaporizing water adapted to be stored in said absorbent layer to a predetermined temperature and humidity level for intermixture with the air stored in the central passage, and
delivery means at the end of said central passage opposite to said intake means being operative in response to inhalation by the asthma sufferer for delivering the intermixture of vaporized water and air into the respiratory tract.

4,121,584
METHOD AND APPARATUS FOR CONTROLLING THE DISPENSING OF FLUID
Roger Scott Turner, 620 Carpenter La., Philadelphia, Pa. 19119, and Charles Roger Turner, Philadelphia, Pa., assignors to R. Scott Turner, Philadelphia, Pa.
Filed Oct. 15, 1976, Ser. No. 732,946
Int. Cl.[2] A61M *5/14*
U.S. Cl. 128—214 E **62 Claims**



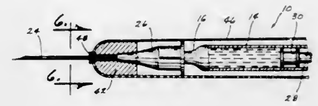
1. Apparatus for controlling the intravenous adimistration of fluid to a patient, comprising:
(a) conduit means for delivering fluid at a hydrostatic pressure from a source of fluid, the source of fluid having a supply of predetermined increments of fluid;
(b) metering means for receiving a predetermined increment of fluid from the conduit means and for emptying the predetermined increment of fluid without adding substantial pressure to the hydrostatic pressure, the metering means having a metering chamber with movable means in the metering chamber for varying the size of the metering chamber so that the metering means is operable in receiving and emptying the increments of fluid without air passing through the metering chamber; and
(c) control means for actuating the metering means between a first condition for receiving one predetermined increment of fluid and a second condition for emptying the one predetermined increment of fluid, said control means being separate from the metering means and operating without contacting the fluid, said control means providing a first time interval for the metering means in its first condition receiving fluid at the hydrostatic pressure to fill the metering means with the predetermined increment of fluid and providing a second time interval for the metering means in its second condition to allow administration of the predetermined increment of fluid from the metering means for having a desired dose of fluid administered to the patient at a predetermined rate.

4,121,585
ANTI BACKFLOW INJECTION DEVICE
Karl E. Becker, Jr., 4247 Crane Blvd., Jackson, Miss. 39216
Filed Jan. 24, 1977, Ser. No. 761,989
Int. Cl.[2] A61M *5/14*
U.S. Cl. 128—214 R **9 Claims**



1. A device for facilitating the infusion of a drug and the like into a patient through the primary flow path of an IV administration set, the device comprising: a proximal inlet for receiving parenteral solution from a source; a distal outlet for delivering said parenteral solution to a patient; an injection site intermediate and in fluid communication with said inlet and said outlet; said proximal inlet, said distal outlet and the distal end of said injection site defining a junction region; a first piercable diaphragm at the proximal end of said injection site for supporting a syringe in a stand-by state when the needle thereof has pierced said first diaphragm; and a second piercable diaphragm spaced from said first diaphragm and at the distal end of said injection site, said second diaphragm arranged to be pierced by said needle in an injection state thereby permitting the flow of fluid from said syringe to said junction, said second diaphragm preventing the flow of parenteral solution from said junction to said syringe when said needle is in said stand-by state.

4,121,586
BLOW GUN INNOCULATING DART
Edward M. Lawrence, and Brian E. Lawrence, both of 5146 NE. 78th Ave., Bondurant, Iowa 50035
Filed May 2, 1977, Ser. No. 792,889
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—215 **6 Claims**



1. An innoculating dart for blow guns, comprising
a hollow syringe barrel having forward and rearward ends, and having near its rearward end, an alignment aperture, a tubular needle in communication with said syringe barrel positioned at the forward end of said syringe barrel, and a plunger having front and back ends, reciprocally mounted within the rearward end of said barrel, a power head sealer mounted on said dart, biasing means associated with said plunger to normally urge
said plunger to a closed forward position in said barrel, and
a plurality of spaced apart transverse openings extending through said plunger, for mating alignment with the alignment aperture of said syringe barrel, and
an easy break-away shear pin which may be extended through said alignment aperture of said syringe barrel and any one of said transverse opening at least partially across the rearward end of said syringe barrel to releasably hold said plunger in a cocked, rearward position.

4,121,587

ROOT CANAL DELIVERY SYRINGE

Joseph H. Kronman, Canton, and Melvin Goldman, Worcester, both of Mass., assignors to National Patent Development Corporation, New York, N.Y.

Filed Mar. 3, 1977, Ser. No. 773,895
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—218 P **4 Claims**



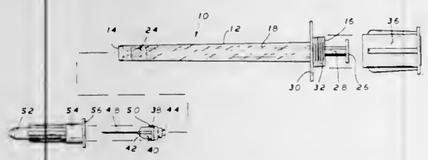
1. A syringe which comprises, in combination, an elongated hollow body having interiorly threaded proximal end; a plunger which is at least substantially coextensive in length with said elongated hollow body and is adapted to slide therethrough, said plunger having a reduced distal end and an exteriorly threaded proximal end for threaded engagement with the interiorly threaded proximal end of said elongated hollow body, means secured to the proximal end of said plunger for rotatably turning said plunger into said elongated body; a hub-like member containing root canal filling material, said hub-like member having an externally threaded central tubular extension adapted to threadedly engage with the interiorly threaded distal end of said plunger, and an integral, generally frusto-conical hollow member, and a needle regidly secured to said frusto-conical member.

4,121,588

DISPOSABLE HYPODERMIC SYRINGE AND METHOD OF MANUFACTURE

Kenneth E. Geiger, Palisades Park, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.

Filed May 16, 1977, Ser. No. 797,069
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—218 R **3 Claims**



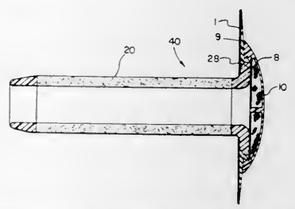
1. A disposable, hypodermic syringe, which comprises:
- a syringe barrel having inner and outer surfaces and open first and second ends;
- a piston-plunger slidably mounted in said barrel and forming a seal with the inner surface of said barrel;
- a handle;
- a shank connecting said handle to said piston-plunger and extending with the handle out of said first end of said barrel;
- a removable cap attached to said first end of said barrel, in a protective position over the handle, extending shank and open first end;
- a hub which comprises a central body portion, first and second ends and a bore through said body communicating between the first and second ends of said hub, said hub being spin welded to the second open end of said barrel so as to partially close that end with the first end of said hub at a welding zone formed at the mating surfaces of the barrel and the hub;
- a hypodermic needle mounted and firmly adhered in the bore of said hub with the cutting end thereof extended distally from the second end of said hub, the bore of said needle being in open communication with the bore of said barrel;
- a removable needle shield mounted on the second end of said hub in a protective position over said needle, said shield having a skirt extending over and removably fixed to the outer surface of the second end of said barrel; and
- a weakened zone of said barrel, in a line circumscribing said barrel at the junction of said barrel and said hub.

4,121,589

OSTOMY APPLIANCE

Roy Edward McDonnell, 15 Miller St., O'Connor, A.C.T., Australia

Filed Jul. 28, 1976, Ser. No. 708,852
Claims priority, application Australia, Aug. 6, 1975, 2671/75
Int. Cl.[2] A61F *5/44*
U.S. Cl. 128—283 **15 Claims**



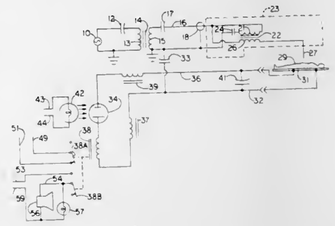
1. An appliance for receiving drainage and discharge from an opening in the body of a patient, comprising:
- attachment means having two opposite faces and an aperture therethrough adapted to register with said opening and having adhesive means on one face thereof adapted to secure said attachment means to the body of the patient surrounding said opening, said attachment means being provided on the opposite face thereof with means for securing a cap member in sealing relationship thereto over said aperture;
- a cap member comprising a generally concave body member of semi-rigid material, said body member containing absorbent material for absorbing drainage and discharge from said opening and being provided with means engaging said attachment means for securing said cap member to said attachment means;
- and an absorber member adapted to be inserted into said opening through said aperture in said attachment means, said absorber member comprising a generally tubular absorption and storage member having inner and outer walls of fluid pervious material, said inner and outer walls being separated by absorbent material, and a flange at one end of said tubular member to retain said absorber member in position in said opening on securing said cap member to said attachment means.

4,121,590

SYSTEM FOR MONITORING INTEGRITY OF A PATIENT RETURN CIRCUIT

Donald I. Gonser, York, Pa., assignor to Dentsply Research and Development Corporation, Milford, Del.

Filed Mar. 14, 1977, Ser. No. 777,330
Int. Cl.[2] A61N *3/00*
U.S. Cl. 128—303.13 **11 Claims**



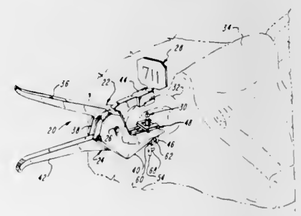
1. A system for monitoring the integrity of a patient intended return of a radiofrequency electrosurgical device including a passive electrode and a return lead means attached to the passive electrode, said system comprising a monitoring circuit including said passive electrode, said return lead means, a photovoltaic cell, and current sensing means, said passive electrode, said return lead means, said photovoltaic cell, and said current sensing means being connected in series, means for illuminating the photovoltaic cell, and means actuated by the current sensing means for indicating a discontinuity in the monitering circuit, the voltage in the monitoring circuit being limited by the limiting voltage of the photovoltaic cell.

4,121,591

ANIMAL IDENTIFICATION TAG APPLICATION TOOL

Norman J. Hayes, P.O. Box 618, Cody, Wyo. 82414

Filed Feb. 7, 1977, Ser. No. 765,908
Int. Cl.[2] G09F *3/12*; A61B *17/00*
U.S. Cl. 128—330 **23 Claims**



1. In an animal identification tag applicator tool device for applying and assembling two tag members of an animal identification tag assembly; the tag assembly comprising one tag member with a retaining head portion on a shaft portion extending transversely from a base portion and another tag member having a retaining hole in a base portion for receiving the retaining head portion; the applicator tool device comprising first and second relatively movable jaw portions each having opposed tag member mounting and abutment means engageable with and holding one or the other of the base portions of the tag members during an assembly operation whereby the head portion of the one tag member is forced through the animal ear and then through the retaining hole of the other tag member; the invention wherein the tag member mounting and abutment means for the one tag member comprising:
- a flat rigid force transfer surface means for continuous abutting engagement with and continuous application of assembly force to the entire base portion of the one tag member during passage of the retaining head portion through the animal ear and through the retaining hole in the base portion of the other tag member;
- rigid retaining surface means spaced from and overlying the peripheral portions of said flat rigid force transfer surface means for limiting movement of the base portion of the one tag member relative to the flat rigid force transfer surface means; and
- movable detent means extending through said flat rigid force transfer surface means for resiliently engaging the base portion of the one tag member and moving the base portion away from the flat rigid force transfer means toward and into engagement with said rigid retaining surface means prior to contact of the head portion with the animal ear and thereafter enabling movement of the base portion into full abutting force transfer engagement with said flat rigid force transfer surface means during movement of the head portion through the animal ear and through the retaining hole.

4,121,592

APPARATUS FOR HEATING TISSUE

Wilfrid B. Whalley, Palo Alto, Calif., assignor to Critical Systems, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 643,515, Dec. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 601,257, Aug. 4, 1975, abandoned. This application Jul. 20. 1976, Ser. No. 705,524
Int. Cl.[2] A61N *1/40*
U.S. Cl. 128—413 **10 Claims**



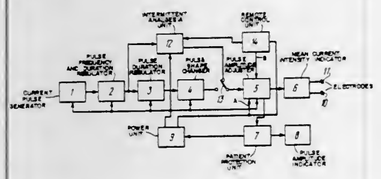
1. Apparatus for treating tumors in humans and animals, comprising, radio frequency oscillator means for producing a radio frequency output signal, amplifier means coupled to the output of said radio frequency oscillator means for producing an amplified radio frequency output signal, electrode means coupled to said amplifier means, said electrode means including at least one capacitive electrode having a configuration adapted to pass an electric field through both the tumor and the surrounding tissue, and means for controlling the power of said amplifier means to avoid heating the surrounding tissue beyond a preselected temperature level while allowing the tumor to heat beyond the preselected temperature level, said controlling means including direct current inverse feedback means connected from said amplifier means to said oscillator means for stabilizing output current, said feedback means including means for adjusting the voltage of the direct current feedback to adjust the power level of the output of said amplifier means.

4,121,593

APPARATUS FOR CURRENT PULSES ACTION UPON CENTRAL NERVOUS SYSTEM

Eduard Mikhailovich Kastrubin, Frunzenskaya naberezhnaya, 36, kv. 105, and Valentin Matveevich Nozhnikov, Krasnodarskaya ulitsa, 33, kv. 82, both of Moscow, U.S.S.R.

Filed Jan. 21, 1977, Ser. No. 761,254
Claims priority, application U.S.S.R., Jan. 21, 1976, 2307051
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—421 **4 Claims**



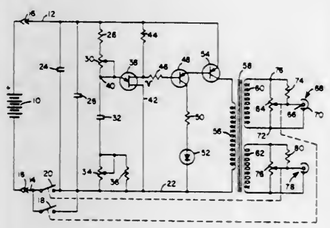
1. In an apparatus for providing current pulse action on the central nervous system including a current pulse generating means, electrode means for delivering the current pulses to a patient, intermediate means connected between said generating means and electrode means for regulating the current pulses with respect to factors such as the frequency and duration thereof, said intermediate means including an amplitude adjusting means for adjusting the amplitude of the current pulses, intermittent analgesia means electrically connected to said intermediate means for controlling the repetition frequency of current pulses, and power means operatively connected to said current pulse generator means, said intermediate means and said intermittent analgesia means for delivering electrical power thereto with the latter power including an additional direct component, the improvement wherein a remote control means for remote control of the autoelectroanalgesia level is available to a patient for manual control by the patient and is electrically connected with said intermittent analgesia means, said amplitude adjusting means, and said power means for regulating the latter three means to control the repetition of the pulses regulated by said intermittent analgesia means, the amplitude of current pulses regulated by said amplitude adjusting means, and the level of the additional direct component provided by said power means, as by increasing the repetition frequency of pulses, the amplitude of current pulses, and the level of the additional direct component in response to an increase of pain experienced by the patient.

4,121,594

TRANSCUTANEOUS ELECTRICAL NERVE STIMULATOR

Curtis H. Miller, Burnsville; Mark R. Kaldun, St. Paul, and Robert A. Arp, Eden Prairie, all of Minn., assignors to Med General, Inc., Minneapolis, Minn.

Filed Sep. 26, 1977, Ser. No. 836,703
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—422 **2 Claims**



1. A portable transcutaneous electrical nerve stimulator adapted to apply electrical stimulating pulses to the body of a patient by way of body contacting surface electrodes, comprising in combination:

(a) a source of direct current potential having first and second terminals;

(b) oscillator means including

(1) a unijunction transistor having first and second base electrodes respectively coupled to said first and second terminals of said source of direct current potential and an emitter electrode,

(2) a timing circuit including first and second variable resistors and a capacitor connected between said first and second variable resistors, said timing circuit connected in series between said first and second terminals of said source of direct current potential, and

(3) means connecting said emitter electrode of said unijunction transistor to the connection between said first variable resistor and said capacitor;

(c) semiconductor amplifier means including

(1) first and second transistors, each having an emitter electrode, a collector electrode and a base electrode, the base electrode of said second transistor being connected to the emitter electrode of said first transistor and the emitter electrode of said second transistor being coupled to said first terminal of said source of direct current potential,

(2) a light emitting diode coupled between said collector electrode of said first transistor and said second terminal of said source of direct current potential, and

(3) means coupling the base electrode of said first transistor to said second base electrode of said unijunction transistor; and

(d) output means including,

(1) a pulse transformer having a primary winding and at least one secondary winding,

(2) means connecting said primary winding of said pulse transformer between said collector electrode of said second transistor and said second terminal of said source of direct current potential,

(3) jack means adapted to be connected to said surface electrodes, and

(4) a variable voltage divider coupled between said secondary winding of said pulse transformer and said jack means,

the arrangement being such that biphasic, asymmetrical pulses of adjustable frequency, pulse width and pulse amplitude may be applied to the body of the patient, said frequency being determined by said first variable resistor, said pulse width being determined by said second variable resistor and said pulse amplitude being determined by said variable voltage divider.

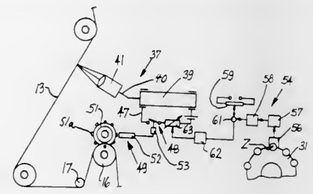
4,121,595

APPARATUS FOR INCREASING THE PERMEABILITY OF WRAPPING MATERIAL FOR ROD-SHAPED SMOKERS PRODUCTS

Uwe Heitmann, Schwarzenbek, Fed. Rep. of Germany, and Joachim Buchegger, Richmond, Va., assignors to Hauni-Werke Körber & Co. Kg., Fed. Rep. of Germany

Filed Feb. 9, 1977, Ser. No. 766,927
Int. Cl.[2] A24B *7/14*
U.S. Cl. 131—21 R **11 Claims**

1. In a machine for the production and/or processing of rod-shaped articles which constitute or form part of smokers' products and wherein a wrapper surrounds a rod-like filler, a combination comprising drive means for moving a succession of wrappers along a predetermined path; at least one source of coherent radiation operable to emit at least one beam of coherent radiation; means for directing said beam against successive wrappers in said path whereby the wrappers are perforated at the points of impingement of said beam; means for operating said source in synchronism with said drive means to cause said beam to perforate selected portions of successive wrappers; means for adjusting the intensity of said beam at said points of impingement to thereby vary the size of perforations of said wrapper; means for monitoring the permeability of wrappers



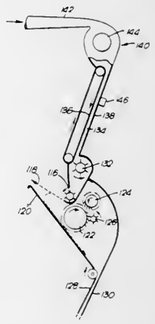
downstream of said points of impingement; and means for actuating said adjusting means when the monitored permeability deviates from a predetermined value.

4,121,596

CIGARETTE MAKING MACHINES

Francis A. M. Labbe, Neuilly-sur-Seine, France, and Robert E. Williams, London, England, assignors to Molins Limited, London, England

Filed Aug. 26, 1975, Ser. No. 607,974
Int. Cl.[2] A24B *1/02, 3/06, 7/14*
U.S. Cl. 131—109 B **23 Claims**



1. A hopper for a cigarette making machine and adapted for feeding a stream of tobacco therethrough, said hopper comprising a downwardly extending ramp adapted to allow tobacco to slide freely along said ramp; means for feeding tobacco onto said downwardly extending ramp; a spiked conveyor which is mounted below said feeding means and adjacent to but slightly spaced from the ramp so that it allows loose particles of tobacco to continue to slide past it down the ramp, but picks up lumps of tobacco; and means for opening up the lumps of tobacco picked up by said spiked conveyor and for then delivering that opened up tobacco into said stream of tobacco fed through the hopper.

4,121,597

FILTERING PIPE WITH EXTINGUISHER FOR CIGARETTES

Suck Kyun Shin, 107-80, Hyunju-dong, Sudaemoon-ku, Seoul, Korea

Filed Feb. 23, 1977, Ser. No. 771,275
Claims priority, application Rep. of Korea, Aug. 21, 1976, 2053
Int. Cl.[2] A24D *1/10;* **A24F** *13/08*
U.S. Cl. 131—190 **9 Claims**

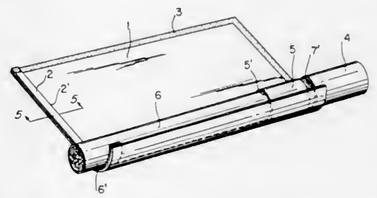
1. A filtering pipe with extinguisher for cigarettes comprising:

(A) an elongated housing, defining a mouthpiece end and a cigarette supporting end said housing being of tubular configuration and having an inner diameter approximating the outer diameter of a cigarette;

(B) an inner collar supported within said mouthpiece end, so as to engage the outer diameter of a cigarette wedged therein, while serving as a locking abutment with an annular ring of non-flammable extinguishing material as a cigarette is withdrawn from said housing;

(C) a filter supported within said mouthpiece end;

(D) a non-flammable extinguishing material supported upon said annular ring mounted within the inside of said cigarette supporting end.

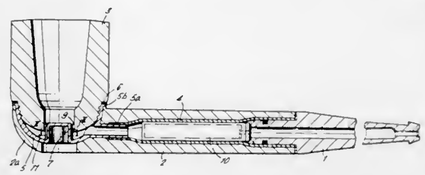


4,121,598

SMOKERS' PIPES

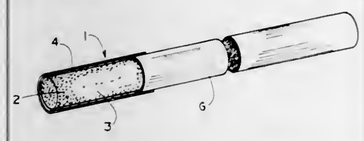
Jack Hornsby, 74 Park Crescent, Elstree, Herts., England

Continuation of Ser. No. 612,553, Sep. 11, 1975, abandoned. This application Jun. 14, 1977, Ser. No. 806,346
Claims priority, application United Kingdom, Sep. 17, 1974, 40448/74; Sep. 24, 1974, 41480/74
Int. Cl.[2] A24F *1/22, 1/32*
U.S. Cl. 131—194 **5 Claims**



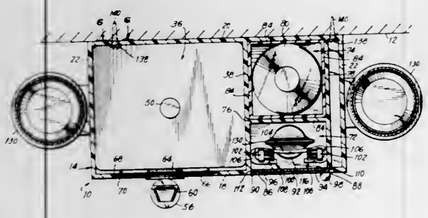
1. A smoker's pipe comprising a stem unit made of non-metallic plastics material and integrally formed at one end with a cup-shaped bowl base, a metal bowl liner member within said bowl base, means on said bowl liner member providing a hollow lateral spigot-like extension open to the interior of said bowl liner member near the bottom of said bowl base, a metal stem liner tube secured at one end to said extension and extending within and through said stem unit for providing a continuous fixed metal lined smoke passage from the interior of said liner member through said stem unit, said stem unit being integrally moulded to said bowl liner member and around said extension and said stem liner tube, means providing a filter space within said tube, and a pipe bowl formed of briar detachably secured to said bowl liner member and having a bottom opening in communication with said interior of said bowl liner member, whereby smoke and other tobacco products pass from said bowl through said bowl liner member and extension and through the stem unit without contacting the plastics material of said stem unit.

4,121,599
FILTER
Richard Paul Newton, and Lawrence Edmond Gravely, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Sep. 1, 1976, Ser. No. 719,631
Int. Cl.[2] A24B *15/027*
U.S. Cl. 131—261 R **16 Claims**



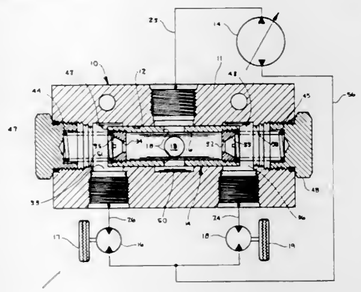
1. An improved tobacco smoke filter useful in the filtration of a gaseous fluid comprised of a container and a filter media in particulate form within said container, said filter media being selected from the group consisting essentially of fungal mycelia and yeast.

4,121,600
ORAL HYGIENE DISPENSER
William E. Riddick, and Patricia R. Riddick, both of 144-46 77th Rd., Queens, N.Y. 11367
Filed Nov. 17, 1976, Ser. No. 742,644
Int. Cl.[2] A45D *40/08*
U.S. Cl. 132—79 R **40 Claims**



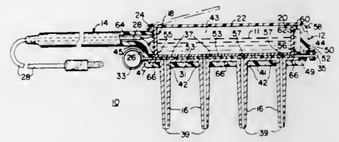
1. An oral hygiene dispenser comprising
a housing having a bottom wall, oppositely disposed upstanding front and rear walls and a pair of spaced apart upstanding end walls intermediate said front wall and said rear wall, said upstanding walls joined to said bottom wall at one end thereof and terminating in an open upper end,
a cover adapted to enclose said open end of said housing,
a first partition in said housing extending between said front wall and said rear wall for forming a fluid compartment to dispense fluid therefrom,
a viewing aperture operatively associated with said front wall in overlapping position to said fluid compartment such that the level of fluid in said fluid compartment may be immediately obtained by visual means,
a spigot mounted on said front wall in communicating relationship with said fluid compartment so as to permit manual control for the dispensing of selected amounts of fluid therefrom,
a second partition extending between said first partition and one of said end walls so as to obtain a toothbrush and toothpaste containing compartment adjacent said front wall and a storage compartment adjacent said rear wall,
a door hingeably mounted on said front wall to gain access to said toothbrush and toothpaste compartment,
a rack extending transversely across said toothbrush and toothpaste compartment, said rack adapted to releasably retain a toothbrush at substantially each end thereof,
supporting means in said toothbrush and toothpaste compartment for maintaining a tube of toothpaste in a vertically extending position by means of the cap on the tube, and
a cup dispenser secured to one of said end walls for retaining a supply of disposable cups, such that the user of the oral hygiene dispenser has ready access to the necessary implements required to properly maintain the oral cavity.

4,121,601
FLOW COMPENSATED DIVIDER VALVE
Glen T. Presley, Wichita, Kans., assignor to Cross Manufacturing, Inc., Lewis, Kans.
Filed Aug. 18, 1976, Ser. No. 715,442
Int. Cl.[2] G05D *11/02*
U.S. Cl. 137—101 **5 Claims**



1. A flow compensated divider valve permitting non-restrictive reverse flow therethrough used in reversible hydrostatic drive systems for supplying a pair of wheel motors in parallel from a single pump source comprising:
a valve body;
a bore in the body;
first and second outlet cavities intersecting the bore longitudinally thereof and connecting with the first and second motors respectively;
an inlet cavity intersecting the bore intermediate the first and second outlet cavities and connecting with the pump discharge;
a shuttle spool positioned in the valve bore having a longitudinal passage therein;
biasing means on opposite ends of the spool urging the spool toward a neutral non-restrictive position;
a centrally disposed lateral passage through said spool intersecting the longitudinal passage connecting the inlet cavity to the longitudinal spool passage;
a pair of tapered fixed orifice means shaped to provide a greater pressure drop thereacross for flow in one direction than in the other, positioned in the longitudinal spool passage, each orifice means being on opposite sides from the lateral passage providing a greater pressure drop for fluid flow from the lateral passage across said orifice means;
a pair of variable orifices each being downstream of a fixed orifice means, each variable orifice being alternately rstrictive by movement of the shuttle spool against the force of the biasing means; and
servo means acting on opposite ends of the shuttle spool against the forces of the biasing means, sensing the pressure drop across each of the fixed orifice means and moving the shuttle spool to restrict flow across one of the variable orifices when the combined pressure differential downstream of the two fixed orifice means exceeds a prearranged level.

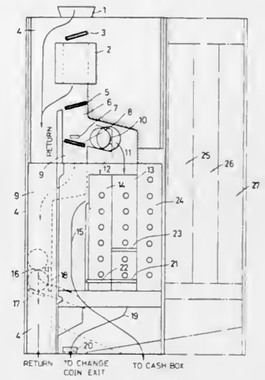
4,121,602
HAIR OIL APPLICATOR
Joseph Young, 534 E. 37th St., Chicago, Ill. 60653
Filed Aug. 3, 1977, Ser. No. 821,387
Int. Cl.[2] A45D *24/22*
U.S. Cl. 132—113 **4 Claims**



1. An applicator for guiding a heated treating material to the person of the user, comprising:
an elongated hollow body member generally circular in cross-section throughout its length;
a handle portion fixed to said body member;
container means defining a chamber for confining the treating material, said container means composed of heat conducting material to permit the material to be heated in said chamber;
up to four hollow tube-like teeth being connected in fluid communication with the interior of said container means in a widely spaced apart manner by more than twice the thickness of one of said teeth and depending from said body member terminating in an opposite open distal end for flowing the heated material from said container means through the hollow interior of said tooth and out its open distal end, said container means having an open mouth at the top side thereof, said hollow body includes means defining an access opening therein opposite said mouth of said container means for permitting access to the container means so that the material can be inserted through said access opening and said open mouth into said container means, a door being movably mounted on said body portion to move between an open position and a closed position over said access opening;
electrical heating means mounted in said body member for heating said container means, said heating means including resistance heating wires positioned in engagement with the outer walls of said container means, said outer walls being composed of metal material, said hollow body member being composed of plastic material;
said container means having a slidably mounted bottom wall, said wall including holes extending therethrough corresponding to said teeth, said wall being slidable laterally to move said holes out of axial alignment with the teeth to retain the material in said container means and to move said holes into axial alignment with the teeth to permit the material to flow from said container means through said holes and into the hollow interiors of said teeth;
said slidably mounted wall including a pull member fixed to it externally of said body member; and
said slidably mounted wall including a single stop member removably fixed thereto externally to said body member and adapted to be removed to free said slidably mounted wall from said hollow body member.

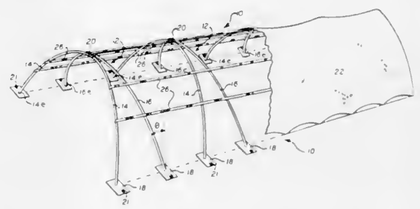
4,121,603
CONTROL SYSTEM FOR A VENDING MACHINE
Yukichi Hayashi, Sakado, Japan, assignor to Nippon Coinco Co. Ltd., Japan
Filed Dec. 2, 1976, Ser. No. 746,802
Claims priority, application Japan, Dec. 5, 1975, 50-145276
Int. Cl.[2] G07D *1/06*
U.S. Cl. 133—2 **3 Claims**

1. In a control system for a vending machine of a type wherein an amount of change which has been actually paid out is subtracted from a set amount of change to be paid until the set amount of change is reduced to zero, the improvement comprising:
a main counter for successively performing the subtraction of an amount of change which has been actually paid out from the set amount of change, said main counter having an output;
a timer which operates during a predetermined period of time;
means for applying the output of said main counter to said timer for starting the operation of said timer when there is an amount to be cleared from the main counter;



means for applying the output of said main counter to a change payout motor as a drive signal;
a paid out coin detection switch positioned for actuation by a paid out change coin and having a coin detection output;
a memory circuit settable by the coin detection output of said coin detection switch and resettable by ending of the operation time of said timer; and
a circuit for producing a pay-out confirmation signal representing that the change coin has been actually paid out when said memory circuit is set during the operation time of said timer.

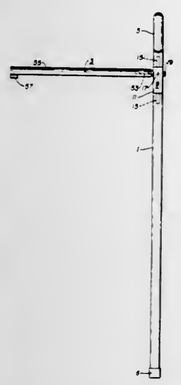
4,121,604
RIGID FRAME STRUCTURE WITH TENSIONED MEMBRANE CLADDING
Lloyd Howard Rain, Lexington, Ky., assignor to Irvin Industries Inc., Stamford, Conn.
Filed Jun. 17, 1977, Ser. No. 807,503
Int. Cl.[2] A45F *1/16*
U.S. Cl. 135—4 R **13 Claims**



1. A shelter comprising:
a flexible membrane and a frame underneath said membrane supporting said membrane, said membrane cladding said frame.
said frame including a plurality of arched pairs, each of said pairs having first and second arched hollow structural

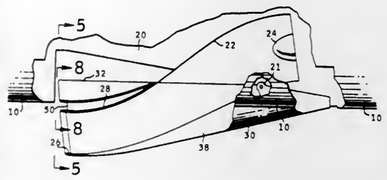
sections, each of said arched sections having first and second base ends and a crest intermediate said ends,
in each of said arched pairs, said base ends of said first section being spaced from said base ends of said second section, said crest of said first section being adjacent to and hinged to said crest of said second section, said crests of the first and second sections being substantially closer to one another than are said base ends of said first and second sections,
said plurality of arched pairs being aligned to form said frame having a convex outer envelope, said crests of each arched sections of all of said pairs being substantially aligned to define a longitudinal crest of said shelter,
a plurality of longitudinal flexible support bands extending across said arched pairs substantially parallel to said longitudinal crest and deployed beneath said membrane to provide for said membrane, said support bands being connected solely to said arched pairs,
said arched pairs and said longitudinal bands providing substantially the sole support for said membrane,
a base, said base ends of said arched sections being supported on said base,
coupling means connecting said membrane to said base and holding said membrane in tension over said arched sections, said coupling means providing the sole connection between said membrane and the structural elements of said shelter.

4,121,605
WALKING CANE ASSEMBLY
Egon F. Schmerl, 333 Scenic Ave., Piedmont, Calif. 94611
Filed Aug. 12, 1977, Ser. No. 823,964
Int. Cl.² A45B *1/00*
U.S. Cl. 135—65 **8 Claims**



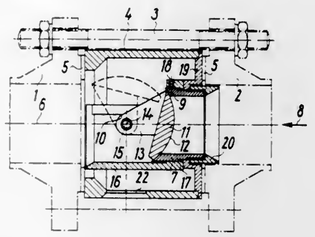
1. A cane assembly comprising a cane having at one extremity, a ground engaging end and at its opposite extremity, a manually engageable end for grasping with one's hand; a cane stabilizing lever arm; means attaching said stabilizing lever arm at said manually engageable cane end at a location thereon abutting said hand grasping end, with said stabilizing lever arm extending laterally from said cane in functional position, said stabilizing lever arm terminating in a free end within convenient reach of one's other hand when said cane is in use.

4,121,606
INFLATABLE AIR INLET DUCT
Charles L. Holland, Escondido, and George B. Nicoloff, San Diego, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.
Filed Oct. 25, 1977, Ser. No. 845,172
Int. Cl.² B64D *33/02*
U.S. Cl. 137—15.1 **3 Claims**



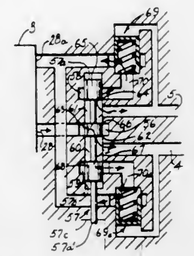
1. A deployable air inlet duct having a scoop shape with an inlet opening for receiving air and an outlet opening for directing air to a jet engine, which comprises:
a surface closure plate movable between a housed position within a vehicle skin surface and a deployed position substantially flush with said skin surface;
an inner duct plate secured to the outer side of said surface closure plate and substantially parallel thereto;
means for moving said surface closure plate from said housed position to said deployed position;
an outer duct wall comprising two spaced sheets of flexible material;
a plurality of drop threads extending between said spaced sheets;
a flexible leading edge partially surrounding the inlet opening and secured to said outer duct wall and said inner duct plate; and
means to admit gas under pressure between said sheets whereby said outer duct wall is inflated and a rigid duct between said inlet and outlet openings is formed.

4,121,607
CONTROL VALVE FOR INSTALLATION INTO A PIPELINE
Horst Bader, Stuttgart, Germany, assignor to J. C. Eckardt AG, Germany
Filed Sep. 6, 1974, Ser. No. 503,872
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1973, 2344911
Int. Cl.² F16K *1/20*
U.S. Cl. 137—454.5 **33 Claims**



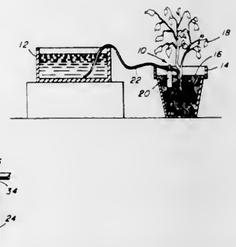
1. A fluid control valve comprising:
a housing,
a valve duct arranged in the interior of the housing and extending in a predetermined flow direction, said duct including a mouth fashioned as a valve seat with a curved valve seat surface in the shape of a portion of a cylinder curving convexly against the flow direction with a center of curvature at an axis of the cylinder,
a valve body provided with a curved valve body surface conforming in shape to said curved valve seat surface,
valve body pivot means supporting said valve body for movement about a pivot axis in such a manner that said valve seat surface and valve body surface sealingly engage one another when said valve body is in a closed position, said pivot axis extending parallel to the axis of the cylinder and being spaced from the center of curvature of said valve seat surface, said pivot axis being at a fixed position during movements of said valve body from said closed position to an open position out of sealing engagement with said valve seat surface, said valve body pivot means being mounted in an extension of the valve duct which is spaced from the valve seat surface such that said valve duct and valve body form a valve unit, and
mounting means for exchangeably attaching said valve unit to said housing,
wherein said pivot axis intersects a centerline of said valve duct.

4,121,609
HYDRAULIC SPEED GOVERNOR
Harold Gold, 3645 Tolland Rd., Shaker Heights, Ohio 44122
Continuation of Ser. No. 29,373, Apr. 7, 1970, abandoned, which is a division of Ser. No. 525,687, Feb. 7, 1966, Pat. No. 3,523,742. This application Aug. 31, 1973, Ser. No. 393,639
Int. Cl.² F16K *11/00*
U.S. Cl. 137—115 **4 Claims**



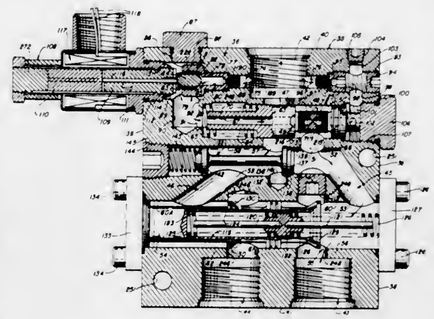
3. A valve assembly comprising a housing having a fluid inlet chamber, a fluid load chamber, a fluid outlet chamber, and a fluid exhaust means, first valve means for selectively interconnecting said load chamber with said inlet chamber and said outlet chamber to meter fluid flow to and from said load chamber, and second valve means interconnecting said outlet chamber and said exhaust means operable to maintain a constant pressure difference between said load chamber and said outlet chamber when said load and outlet chambers are interconnected and said load chamber is pressurized.

4,121,608
LIQUID METERING DEVICE
Edward MacLeod, 143 Park Dr., Apt. 26, Boston, Mass. 02215
Filed Feb. 14, 1977, Ser. No. 768,401
Int. Cl.² A01G *27/00*
U.S. Cl. 137—78 **5 Claims**



1. A device for delivering a liquid such as water from a source to a site such as a potted plant, comprising
(a) a valve adapted to be positioned at said site and responsive to the moisture level thereof,
(b) said valve including a first member formed of a material having a relatively high coefficient of expansion in the presence of moisture and a second member formed of a material that is essentially stable in the presence of moisture,
(c) said members being operatively connected to one another and defining a nipping joint therebetween subject to the relative movement between said members according to the moisture level at said site, and
(d) an elongated flexible tube passing through said joint and adapted to be extended between said site and said source.
(e) said first member being an elongated tubular sleeve and said second member being an elongated core restrained at one end to one end of said sleeve and said other end being formed with a transverse opening adjacent the other end of said sleeve, said tube passing through said opening.

4,121,610
ELECTRICALLY OPERATED PROPORTIONAL FLOW CONTROL HYDRAULIC VALVE AND MANUALLY OPERABLE REMOTE CONTROL DEVICE THEREFOR
Louis C. Harms, Evanston, and Raymond R. O'Toole, Jr., Deerfield, both of Ill., assignors to AMBAC Industries Incorporated, Carle Place, N.Y.
Continuation of Ser. No. 654,703, Feb. 2, 1976, abandoned. This application Aug. 4, 1977, Ser. No. 821,785
Int. Cl.² F15B *13/02*
U.S. Cl. 137—117 **23 Claims**



9. A proportional flow valve, comprising: a valve body having an inlet port, a bypass outlet port, and a regulated flow outlet port therein; a first valve chamber in the valve body; and inlet passage extending from the inlet port to the valve chamber; a bypass flow passage extending from the valve chamber to the bypass flow outlet port; a regulated flow passage extending from the valve chamber to the regulated flow outlet port; a flow regulating valve member movable in the valve chamber and having portions to control flow from the inlet passage to

the regulated flow passage; an auxiliary passage from the inlet passage to the bypass passage in bypassing relation to the valve member, whereby flow is enabled from the inlet past the valve member to the bypass passage in all positions of the valve member; a second valve chamber; said outlet passages communicating with the second valve chamber; a pressure compensating valve means movable in the second valve chamber and having portions arranged to control flow through each of the respective outlet passages dependent upon the position of the pressure compensating valve means, said pressure compensating valve means movable to different positions in response to predetermined pressure differences between the outlet passages; and pilot means for positioning said flow regulating valve member to divert more or less flow from the bypass passage to the regulated flow passage, whereby a regulated flow is obtained from the valve over a wide range of inlet pressure and flow fluctuations, said regulated flow being proportional to the position of the regulating valve member, said pilot means including pilot flow passages communicating with different portions of the flow regulating valve member and conveying pressure fluid to said different portions, said regulating valve member being balanced in a neutral position by the pressure fluid acting on said different portions, and a pilot valve means operable to control flow through one of said pilot flow passages to control the pilot pressure acting on said flow regulating valve member to thus cause an unbalance and thereby control the position of the flow regulating valve member, and pilot valve operating means operable from a remote location to operate the pilot valve means.

4,121,611

JET PIPE FOR CONDUCTING HOT GASES

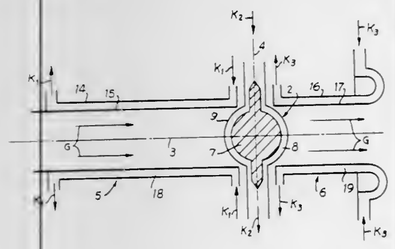
Hermann Bayerl, Karlsfeld, Germany, assignor to MtU-Motoren-und Munchen GmbH, Munich, Germany

Filed Feb. 8, 1977, Ser. No. 766,778

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1976, 2606005

Int. Cl.² F16K *49/00*

U.S. Cl. 137—340 **7 Claims**



1. A jet pipe for the supply of hot gases formed with a double wall for the passage of cooling means, the jet pipe having a longitudinal axis, comprising: a throttle valve rotatable about an axis transverse to the jet pipe longitudinal axis, said jet pipe being partitionable along a plane including said axis transverse to the longitudinal axis, the jet pipe including a first segment disposed ahead of the partition plane, a second segment disposed behind the partition plane, said first and second segments serving for circulation of the cooling means, said segments being separated from one another, said throttle valve comprising a core, an outer shell uniformly surrounding said core, a gap being formed between said outer shell and said core for receiving the cooling means, and first and second hollow trunnions attached to said core, said hollow trunnions communicating with said gap for the cooling means, said core of said throttle valve having a plurality of guidance ribs extending substantially over the whole surface of said core, said guidance ribs subdividing said core into a plurality of substantially longitudinal cooling means sectors, said first and second segments being formed with longitudinal ducts, respectively, a gas stream being passable through said ducts in a predetermined direction, the longitudinal direction of said sectors being substantially transverse to the gas stream direction, said outer shell of said throttle valve being disposed loosely on said trunnions, said trunnions being attached to said core in a rotation-secure manner.

4,121,612

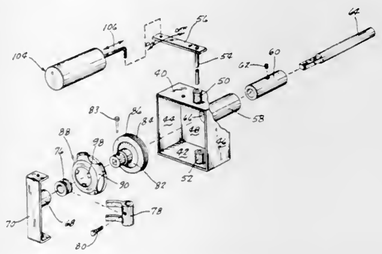
BRAKE MEANS FOR A CENTER PIVOT IRRIGATION SYSTEM

John D. Conrad, Box 328, Ogallala, Nebr. 69153

Filed Apr. 15, 1977, Ser. No. 787,949

Int. Cl.² B05B *3/00*

U.S. Cl. 137—344 **4 Claims**



1. A brake means for a center pivot irrigation system having an overhead irrigation pipe extending outwardly from a central pivot, a plurality of spaced-apart drive towers supporting said pipe, said drive towers including tower wheels, at least one of said tower wheels being driven by one of air, water or oil drive system,

a support means secured to at least one of said towers and having a brake surface provided thereon,

an output shaft operatively rotatably mounted on said support means, means operatively connecting said output shaft to at least one of said tower wheels,

a disc clutch means mounted on said output shaft for rotation therewith and adapted to be moved into frictional engagement with said brake surface,

a pressure plate means connected to said support means for moving said clutch means into said frictional engagement, said pressure plate means normally urging said clutch means into frictional engagement with said brake surface,

throwout means operatively connected to said pressure plate means to permit said clutch means to move out of frictional engagement with said brake surface whereby said output shaft may freely rotate,

a control means operatively connected to one of said air, water or oil drive systems,

said control means being operatively connected to said irrigation pipe adjacent said tower whereby predetermined forward misalignment of said tower caused by wind or terrain will cause said control means to be actuated,

and actuator means operatively connected to said control means and said throwout means whereby actuation of said control means, by said misalignment, will cause said clutch means to engage said brake surface so that rotation of said output shaft is prevented to brake said one wheel.

4,121,613

VEHICLE ESPECIALLY MOTOR VEHICLE WITH OPERATIONALLY CONDITIONED VACUUM LOADS AND COMFORT VACUUM LOADS

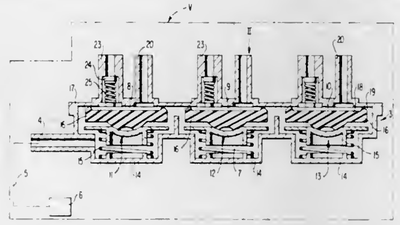
Theodor Reinhard, Boblingen; Rudiger Hoffmann, and Ernst Haug, both of Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Apr. 14, 1977, Ser. No. 787,442

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 2617132

Int. Cl.² F16K *17/04;* **B60K** *25/04*

U.S. Cl. 137—351 **14 Claims**



5. A central distributor box for a vacuum system of vehicles with operationally conditioned vacuum loads and comfort vacuum loads, the central distributor box comprising:

a distributor chamber means,

a feed connection means for connecting the distributor chamber means with a vacuum source,

at least two load chamber means provided in the distribution chamber means,

a spring-loaded protective valve means provided in each of the load chamber means for controlling a communication between each of the load chamber means and the distributor chamber means, each of said protective valve means opening in a direction toward the distributor chamber means against a spring force,

at least one load connection means provided at each load chamber means for permitting a connection of a load to the distributor box, and

a test connection means provided at each of the load chamber means in communication with the load connection means for permitting a testing of a load associated with the load chamber means to determine if a defect has occurred in the load or a system associated with the load.

4,121,614

VALVE GUARD FOR BOTTOM OPERATED TANK CAR VALVE

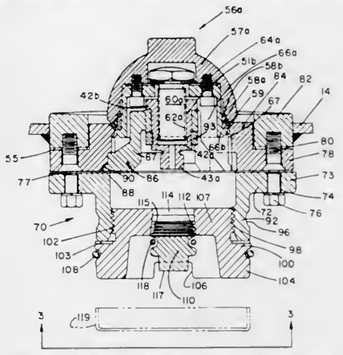
Charles E. Reedy, Bridgeton, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 10, 1977, Ser. No. 776,450

Int. Cl.² F16K *27/03, 27/08*

U.S. Cl. 137—382.5 **7 Claims**

1. A bottom operable tank car loading and unloading valve assembly including a valve body attached to an opening in the bottom of the tank having a valve body opening; a valve closure movable between a closed position closing said valve body opening, and an open position allowing lading to flow in or out of the tank; an operating stem depending from said valve closure; a valve closure operator spaced from the walls of the valve body, engaging said depending operating stem; said closure operator including a lower connection portion adapted to be engaged by a bottom operated connector; a retainer including means for engaging said valve body and at least one retainer rib extending radially inwardly and terminating in a generally circular hub; said hub slidingly engaging said valve closure operator to maintain the same spaced from the walls of said valve body and vertically fixed but rotatable; a valve guard assembly including a valve guard attached to said valve body with fastening means defining a shear plane, said valve closure connection portion being located above said shear plane, said valve guard being hollow and extending entirely below said connection portion; said valve guard having a transverse portion extending below and vertically spaced from said valve closure connection portion, the space between said transverse portion and said closure connection portion being unobstructed, said transverse portion including a removable cap; said assembly including a depending protrusion which extends below said transverse portion; said cap further including a cap opening located radially inwardly and above said



protrusion; a plug removably mounted in said cap opening, whereby said protrusion protects said plug from impact forces applied to said protrusion whereby said plug can be quickly removed to check for lading leakage and/or unload the lading in an emergency situation, and whereby impact forces applied to said depending protrusion are transmitted vertically into said valve guard and into said valve body and/or said shear plane, and whereby said valve closure operator, said depending operating stem, and said valve closure, are substantially prevented from receiving said impact forces.

4,121,615

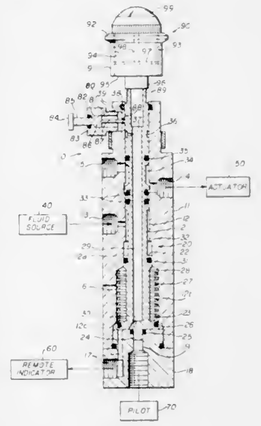
VALVE CONTROL WITH INDICATOR

Ned A. Bergeron, Houma, La., assignor to B. W. B. Controls, Inc., Houma, La.

Filed Apr. 27, 1977, Ser. No. 791,378

Int. Cl.² F16K *11/07*

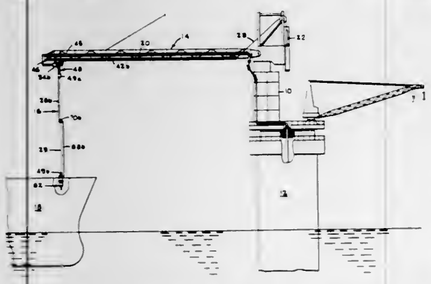
U.S. Cl. 137—555 **2 Claims**



1. In a valve control device having:

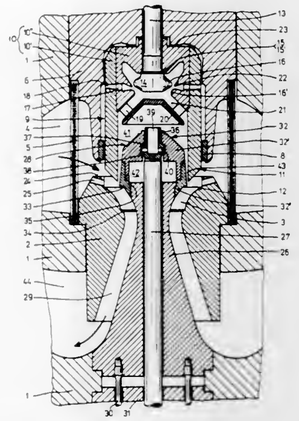
(a) a cylindrical housing which housing includes an axial bore therethrough, a first fluid entry port, a second fluid entry port, a first fluid exit port, an exhaust port, all such ports being in communication with said axial bore;
(b) a slide valve member extending substantially through said axial bore and movable between a first position permitting fluid communication between said first fluid entry port and said first fluid exit port to a second position blocking fluid communication between said first fluid entry port and said first fluid exit port;
(c) means preventing fluid pressure entering said second fluid entry port from moving said slide valve member from said second position to said first position; and
(d) manually operable means for moving said slide valve member from said second position to said first position, the improvement comprising:
(a) an axial fluid passageway extending substantially through the length of said slide valve member;
b. combination upper lateral fluid passageway and detent pin receiving means through said slide valve member communicating between said axial bore and the exterior of said slide valve member;
c. detent housing laterally extending from said housing;
d. detent member laterally movable within said detent housing, said detent member having a pin portion depending therefrom;
e. detent pin passageway laterally extending through a wall of said cylindrical housing in communication with said combination passageway and receiving means only when said slide valve member is in said first position,
whereby on said slide valve member being manually moved from said second to said first position, and said detent pin being caused to extend within said combination passageway and receiving means, fluid pressure from said second fluid entry port may cause extraction of said detent pin from said combination passageway and receiving means.

4,121,616
ARTICULATED FLUID LOADING ARM
Glen E. Lochte, Cypress, Tex., and Cryssis N. Pashalis, Soucy, France, assignors to FMC Corporation, San Jose, Calif.
Filed Mar. 4, 1977, Ser. No. 774,573
Int. Cl.[2] B67D *5/00;* **F16L** *3/00*
U.S. Cl. 137—615 **20 Claims**



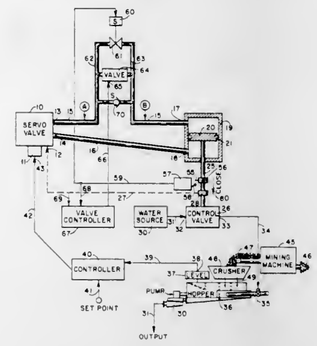
1. An articulated loading arm for transferring fluid from one fluid handling means to another and to provide for relative movement between the different handling means, said arm comprising:
a support structure for mounting on a first fluid handling means;
a support boom having an inboard end connected to the support structure;
a drop-pipe assembly suspended generally vertically from said support boom, said drop-pipe assembly including
(a) a plurality of rigid upper conduit members,
(b) means for pivotally connecting the upper end of each of said upper conduit members to said support boom,
(c) a plurality of rigid lower conduit members,
(d) means for pivotally connecting the upper end of each of said lower conduit members to the lower end of a corresponding one of said upper conduit members, said pivotal connecting means facilitating diverging movement of the lower ends of said upper conduit members, and likewise of the upper ends of said lower conduit members, when the lower ends of said lower conduit members move toward the upper ends of said upper conduit members; and
means for transporting fluid between said first fluid handling means and the upper end of each of said upper conduit members.

4,121,617
COMBINED STOP AND CONTROL VALVE
Jaroslav Masek, Wettingen, and Arthur Oberle, Ennetbaden, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland
Filed Apr. 13, 1976, Ser. No. 676,409
Claims priority, application Switzerland, Apr. 30, 1975, 5562/75
Int. Cl.[2] F16K *1/00*
U.S. Cl. 137—630.14 **2 Claims**



1. In a combined stop and control valve for mounting in a pipe carrying a working medium of a turbo machine, in particular a steam turbine machine, having a stop valve body and a control valve body which are arranged independently of each other in a common valve housing and having coaxial valve seats provided in a valve seat body and located next to each other, the coaxial valve seats being provided immediately at a flow opening of the valve seat body, the control valve body being in the form of a bell having a hollow cavity, the stop valve body being slidable coaxially into the hollow cavity, both the control valve body and the stop valve body being rigidly supported when in their respective end positions against the valve housing, the valve seat body being provided with a throttle collar having slots distributed around the circumference of the throttle collar, an inner diameter of the throttle collar being approximately equal to the inner diameter of a circle formed by a control edge of the control valve body, the improvement wherein ejector nozzles are provided around the circumference of the control valve body providing communication between the interior of the control valve body and upstream working medium pressure, the nozzles discharging above a seat of a pilot valve provided in the control valve body to induce a pressure drop in a space in the housing above the control valve body, said space receiving the control valve body in the open position thereof and having communication with the interior of the control valve body on initial opening of the pilot valve whereby the force required for actuating the control valve is reduced.

4,121,618
HYDRAULIC RAMPING CIRCUIT FOR CONTROL VALVE
William T. Sweeney, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Dec. 13, 1976, Ser. No. 749,848
Int. Cl.[2] F16K *31/18;* **F15B** *15/22, 13/16, 13/04*
U.S. Cl. 137—412 **11 Claims**



1. In a control valve actuated by a hydraulic system which includes a cylinder having first and second ports on each side of the piston which is slidably mounted therein, a shaft attached to said piston and mechanically connected to said control valve, an electro-hydraulic servo-control valve having an electrical and mechanical input and first and second hydraulic output ports and means for hydraulically coupling said first and second output ports to each of said first and second cylinder ports, respectively, a mechanical feedback operatively coupled from said shaft to the mechanical input of said servo-control valve, and an electrical control apparatus connected to the electrical input of said servo-valve, apparatus for controlling the rate of movement of said shaft comprising:
control valve closure sensing means responsive to a preselected closure of said control valve and developing an output signal when said preselected closure is realized;
a solenoid controlled valve and a controllable valve connected in parallel said solenoid controlled valve and said controllable valve connected in series with one of said means for hydraulically coupling said first or second output ports to said first and second cylinder ports, respectively;
a valve controller having an input and an output, and means for coupling said valve controller input to said sensing means and means for coupling the output of said valve controller to said controllable valve; and
means having an input responsive to said sensing means output signal for operating said solenoid controlled valve.

4,121,619
TAPERED VALVES WITH CONICAL SEATS
Richard S. Pauliukonis, 6660 Greenbrier Dr., Cleveland, Ohio 44130
Continuation of Ser. No. 312,888, Dec. 7, 1972, abandoned. This application Jul. 30, 1975, Ser. No. 600,515
Int. Cl.[2] F16K *15/00, 17/26*
U.S. Cl. 137—469 **5 Claims**

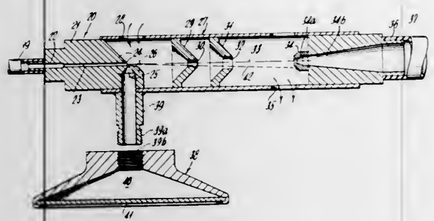
1. A fluid valve for selectively porting pressurized fluid between a source and a receiver comprising:
a valve housing having first and second ends interconnected by a bore extending therethrough including at least a pair of interconnecting ports, one of said bore ends comprising at least one of said ports, a valving means in said housing movable between a first position blocking fluid communication between said ports and a second position allowing fluid communication between said ports, a fluid operable means urging said valving means to assume at least one of said positions therein, said valving means including a linearly extending valve seat which tapers inwardly from its smaller diameter to larger diameter at an angle inside said housing bore adjacent a first of said ports comprising a part thereof, said valving means further including an axially movable tapered plug cone having a linearly extending surface between smaller and larger diameters thereof on an angle, including plug sealing means when said valving means is in said first position, said angle between said smaller and larger taper diameters of said valve seat and said tapered plug cone selected from a group of self-holding tapers, said sealing means including a taper small enough to hold said tapered plug in said valve seat purely by friction necessitating said fluid operable means to exert a pressure force larger than the friction force of said self-holding tapers, resulting in sudden popping of said tapered plug cone to enable said valving means to assume said second position allowing fluid communication between said ports at full rated capacity, including means for selectively opening and closing fluid flow therethrough by application of substantially equal predetermined pressure to opposite ends of said valve housing comprising the first and the second interconnecting ports thereof while said valving means located therebetween is movable from said second position when pressure is applied through said second interconnecting port to said first position and vice versa whereas a first valve closed position is attainable when said tapered plug cone is moved to be seated inside said valve seat causing said self-holding tapers to engage frictionally while a second valve open position is attainable only when flow direction reverses and the pressure force magnitude increases to correspond to the force that moved said tapered plug to engage said valve seat while acting from the opposite direction, until said tapered plug cone is forced to pop open allowing fluid communication between said ports at full rated capacity providing thereby means for a directional flow control, wherein said valving means manifest purely friction dependent operation in which a resistance developed between mating surfaces of said valve seat and said tapered plug cone provides a force balanced self-regulated plug shifting from one of said positions to another of said positions when pressure force and the direction of fluid flow changes therein, affording fluid checking in one direction and fluid relieving in another direction.

4,121,620

DEVICE FOR SIMULTANEOUS MODULATION AND AMPLIFICATION OF LOW FREQUENCY SOUNDS

Charles G. Pickett, and Ronald S. Pickett, both of Fort Lee, N.J., assignors to L.P.S. Incorporated, Jersey City, N.J.

Division of Ser. No. 622,458, Oct. 15, 1975, Pat. No. 3,999,625.
This application Dec. 17, 1976, Ser. No. 755,267
Int. Cl.[2] F15C *1/18*
U.S. Cl. 137—828 6 Claims



1. A device for simultaneous modulation and ampliication of low frequency sounds which comprises:
   a. a first tubular member having an inlet end for receiving gaseous flow and an outlet end;
   b. an axial bore through said tubular member extending a distance interiorly of the inlet end thereof, said axial bore tapering into a reduced axial bore defined by a top wall and a bottom wall;
   c. a passageway disposed generally perpendicularly to said reduced axial bore, said passageway being adapted to communicate with an external signal input source, said top wall of said reduced axial bore terminating adjacent to said passageway and said bottom wall of said reduced axial bore extending a distance past said passageway, said extended portion being deflected a finite angle relative to the longitudinal axis of said tubular member;
   d. a first baffle flared in the direction of the gaseous flow, said baffle being angularly disposed relative to said tubular member and defining a first passageway therein;
   e. a second baffle flared in the direction of the gaseous flow, said baffle being angularly disposed relative to said tubular member and defining a second passageway therein, said second passageway having larger passage area than said first passageway;
   f. a receptor tube at the outlet end of said tubular member, said receptor tube being generally flared in the direction of the gaseous flow and communicating with a signal output transmitting member, and
   g. a second tubular member for receiving said first tubular member, said second tubular member having an orifice intermediate said second baffles and said receptor tube.

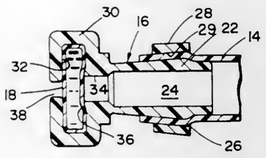
4,121,621

PILOT OPERATED FLUSHING VALVE

Harry M. Zimmerman, La Mesa, Calif., assignor to Reed Irrigation Systems, El Cajon, Calif.

Filed Dec. 2, 1976, Ser. No. 746,699
Int. Cl.[2] F16K *7/07*
U.S. Cl. 137—863 5 Claims

1. A pilot operated flushing valve for installation on the end of a branch fluid conduit of a drip irrigation system, comprising:
   a tubular body portion having one end including means for connection onto the end of a branch fluid conduit;
   an enlarged head portion extending from the other end of the tubular body portion, having a passage therethrough transverse to the tubular body portion, with a port connecting the transverse passage with the interior of the tubular body portion; and
   a flexible, pressure-expandable pilot line conduit extending into and passing longitudinally through the transverse passge, transverse and adjacent to the port, and adapted for connection to a remote, regulable source of pilot pressure;
   whereby the flexible pilot line may be pressurized from said remote source to expand it against the port to seal off the port and maintain the flushing valve closed, and may be selectively relaxed from said remote source to release pressure on the port and permit flushing of the branch fluid conduit through the port.



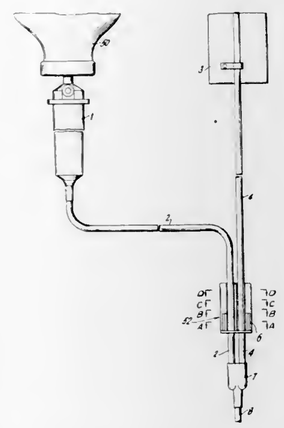
4. A drip irrigation system including a plurality of branch fluid conduits, a source of pressurized irrigation fluid feeding the branch fluid conduits, a flushing valve as described in claim 1 at the end of each branch fluid conduit, said flexible, pressure-expandable pilot line conduit extending through the transverse passage of each flushing valve, and means connected to said source of pressurized irrigation fluid for selectively pressurizing and relaxing said pilot line conduit, serving as said regulable source of pilot pressure.

4,121,622

MULTITUBE VALVE

Hans-Jürgen Forberg, Lensahn, Holst, Fed. Rep. of Germany, assignor to Transcodan, Sven Husted-Andersen, Fed. Rep. of Germany

Division of Ser. No. 662,591, Mar. 1, 1976, Pat. No. 4,051,867.
This application Jul. 19, 1977, Ser. No. 816,925
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1975, 2509485
Int. Cl.[2] F16L *55/14*
U.S. Cl. 137—863 2 Claims



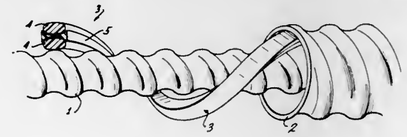
1. A multiway valve for medical, chemical and similar devices such as an infusion and transfusion apparatus, comprising a housing having first and second clamping surfaces disposed side by side, first and second flexible tubes placed side by side and extending through said housing over respective ones of said clamping surfaces, a clamp mounted over said surfaces in said housing and having a portion overlying both surfaces which is movable in a path on said housing overlying at least a portion of the length of both said first and second clamping surfaces and during the movement along said path being also displaceable in the direction of respective ones of the clamping surfaces both in sucession and simultaneously, a distributor phase interconnecting said tubes to each other outside of said housing, said clamping surfaces being of a construction so that in a respective first position of said clamping means at least one of said tubes is clamped off and in a second position both of said tubes are open and in a third position both of said tubes are shut off.

4,121,623

SPACER FOR CONCENTRIC TUBES

Peter Rhone, Berlin, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte, Hanover, Fed. Rep. of Germany

Filed Jul. 2, 1976, Ser. No. 702,325
Int. Cl.[2] F16L *9/18, 11/12, 59/14*
U.S. Cl. 138—114 4 Claims



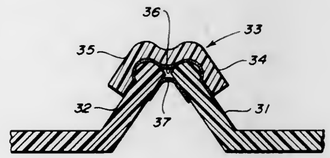
1. A spacer for a coaxial tube system having an inner tube and an outer tube, the spacer being helically wound on the inner tube for holding the inner tube in and concentric to the outer tube, comprising:
   a plurality of superposed elongated members adjacent ones of which have different cross-sections defining pairs of engaging, differently contoured, non-mating surfaces which are shaped to permit a stable engagement between pairs with a minimum of contact therebetween, and wherein at least one of said pairs is formed by cross-sections defining a convex surface facing and in engagement with at least two spaced points of a concave surface.

4,121,624

ELECTRICALLY CONDUCTIVE FLEXIBLE TUBE

Chi Y. Chen, Maspeth, N.Y., assignor to Fabricated Plastics, Inc., Morristown, N.J.

Filed May 23, 1975, Ser. No. 580,491
Int. Cl.[2] F16L *11/11, 11/12*
U.S. Cl. 138—122 1 Claim



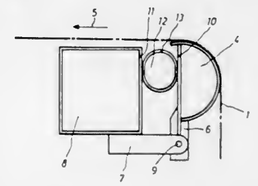
1. In a flexible tube comprising an inner electrically conductive plastic strip having:
   a channel shaped cross-section including a relatively wide flat web and angularly flexible flanges bordering the margins of said web, said inner strip being helically wound to form a tube with the flexible flanges directed radially outward and arranged in contiguous pairs with each succeeding convolution; and
   an outer nonconductive plastic cap section having a relatively narrow web section and angularly flexible flanges bordering its margins, said outer plastic cap section being helically wound over said inner plastic strip with the web section overlying the contiguous pairs of radially outward directed flanges and the flexible flanges on said outer plastic strip being directed radially inwardly for overlying the flanges on the inner plastic strip,
   the improvement for making said flexible tube electrically conductive under axial tension which comprises:
   an electrically conductive adhesive located on the flanges and across the web of the nonconductive cap and disposed between (1) the contiguous pairs of flanges of the inner conductive plastic strip and (2) the outer nonconductive plastic cap section providing continuous electrical communication from one flange to the next of a contiguous pair of flanges on said inner plastic strip, said adhesive being primarily disposed between (1) the narrow web section of said outer plastic cap section and (2) said flanges of said inner strip, and wherein a flexible conductive adhesive is disposed between the flanges forming the contiguous pairs of said inner liner strip.

4,121,625

DEVICE FOR EQUALIZING THE WARP YARN TENSION IN A LOOM

Allan William Porter, Lustmühle, and Anton Lucian, Arbon, both of Switzerland, assignors to Adolph Saurer, Arbon, Switzerland

Filed Jul. 29, 1977, Ser. No. 820,370
Claims priority, application Switzerland, Aug. 13, 1976, 10334/76
Int. Cl.[2] D03D *49/12*
U.S. Cl. 139—114 8 Claims



1. A device for equalizing the warp yarn tension in a loom having a movable back rest and a fixed member spaced therefrom in the direction of the movement of the back rest during the normal weaving operation, said back rest moving to and fro during the weaving operation with said warp yarns extending thereover, said device comprising:
   means for pivotally mounting said back rest relative to said fixed member,
   a pressure cushion carried between said back rest and said fixed member parallel to said back rest and said fixed member,
   said pressure cushion being compressed and relaxed as said back rest moves to and fro said fixed member during the weaving operation for equalizing the warp yarn tension.

4,121,626

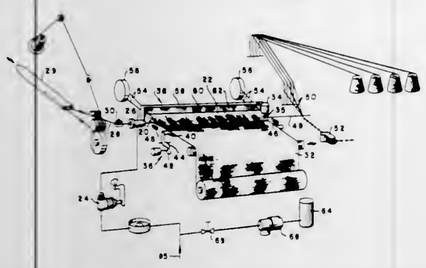
WATER JET LOOM

Robert Saul Brown, and James Roy Johnson, both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 5, 1977, Ser. No. 857,084
Int. Cl.[2] D03D *47/32*
U.S. Cl. 139—435 5 Claims

1. In a method of weaving in which the weft is fed by a water

jet and wherein the alkalinity of the water is normally below a pH of 8.0, the improvement comprising increasing the alkalinity of the water a pH of at least 8.0 prior to its passage through the jet.



4,121,627

WIRE HANDLING APPARATUS FOR AN ELECTRIC COIL FORMING MACHINE

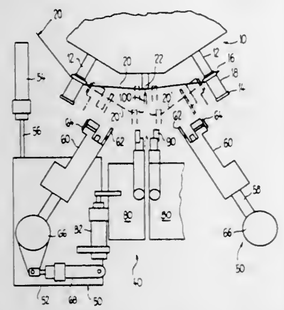
Hans Schmid, Rüschlikon, Switzerland, assignor to Meteor AG, Rüschlikon, Switzerland

Filed Jun. 7, 1977, Ser. No. 804,241

Claims priority, application Switzerland, Jun. 9, 1976, 7242/76

Int. Cl.² B21F *15/00*

U.S. Cl. 140—92.1 **7 Claims**



1. In apparatus for handling an end of wire wrapped on a spool having a peg projecting from the spool, said apparatus being of a type having a turret head including a plurality of spool carriers spaced apart on the head, said head being movable between a plurality of operating stations with one of said stations being a spool winding station and one being a terminal station having at least one peg winding means, the improvement comprising:

said terminal station further including two wire clamping means each mounted for movement between a rest position and a wire clamping position between two adjacent spool carriers on said turret head and cutting means mounted for movement between said two adjacent spool carriers to cut wire clamped by said two wire clamping means.

4,121,628

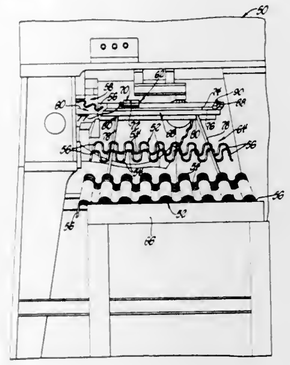
SPRING FORMING MACHINE

Edward James Waligore, Walled Lake, Mich., and Francis X. Schuler, Freehold, N.J., assignors to Lear Siegler, Inc., Berkley, Mich.

Filed Apr. 25, 1977, Ser. No. 790,374

Int. Cl.² B21F *35/04*

U.S. Cl. 140—105 **9 Claims**



1. In a machine for forming wire from a continuous wire coil to include oppositely disposed loops and having a cut-off mechanism for cutting the wire to provide springs of a selected length and a width which is determined by the size of the loops, the improvement comprising: a holder for locating the springs during operation of the cut-off mechanism to prevent spring deflection and consequent movement as the wire is cut; the holder including upper and lower spaced surfaces between which the spring loops are slidably received; the lower surface including at least a portion which is inclined so that the cut spring slides down under gravity from between the upper and lower surfaces; and a guide for receiving the cut springs from the holder to orient and deliver the springs to a location remote from the machine cut-off mechanism.

4,121,629

MULTISPOT WELDING MACHINE

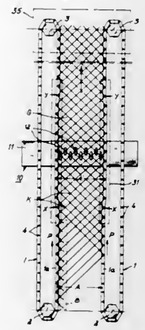
Alois Sackl, Liezen; Josef Ritter; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs- u. Verwertungs GmbH., Graz, Austria

Filed Feb. 23, 1977, Ser. No. 771,267

Claims priority, application Austria, Feb. 24, 1976, 1326/76

Int. Cl.² B21F *27/10*

U.S. Cl. 140—112 **6 Claims**



1. In a multispot welding machine for producing an elongated wire mesh web, the machine being of the type having means for forming and longitudinally advancing the mesh web in a production plane, including two circulating endless feeders having operating runs defining respective longitudinally extending margins of the wire mesh web, a plurality of deflector-pins respectively connected to the feeders for circulation therewith, and a wire-layer mounted for reciprocation transversely of the elongation of the wire mesh web between, and adapted to so lay a plurality of wires around the deflector-pins during their circulation with the operating runs of the feeders, that the respective wires extend in two arrays askew to the elongation of the wire mesh web and cross each other at a multitude of crossing points, and means for welding the wires to one another at their crossing points at a welding zone, the improvement

comprising, in combination:

means for mounting the feeders for circulation along the production plane of the wire mesh web,

means for so supporting the deflector-pins on the feeders as to extend substantially normal to the production plane of the wire mesh web, and

two guiding arrangements, each of which guides at least the operating run of one of the feeders for movement in a path which has a greater transverse spacing from the path of movement of the operating run of the other feeder in the vicinity of the welding zone, than ahead and behind the welding zone, as defined in the direction of advancement of the wire mesh web.

4,121,630

METHOD AND APPARATUS FOR HANDLING CONTAINERS

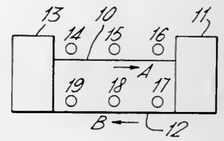
John Anthony Feasby, Nottingham, England, assignor to Imperial Group Limited, England

Continuation of Ser. No. 610,830, Sep. 5, 1975, abandoned. This application Oct. 20, 1977, Ser. No. 844,047

Claims priority, application United Kingdom, Sep. 27, 1974, 42122/74

Int. Cl.² B65B *1/04*

U.S. Cl. 141—1 **8 Claims**



7. A method of operating apparatus comprising a filling machine for filling empty containers and an apparatus comprising an input conveyor for conveying empty containers into the filling machine; an output conveyor, extending parallel to and in a vertical relationship to the input conveyor, for conveying said containers, when filled, from the filling machine, a first indexing conveyor for feeding empty containers onto the input conveyor; a second indexing conveyor for receiving filled containers from the output conveyor; and elevator means for continuously transferring filled containers from the second indexing conveyor onto the first indexing conveyor, said method comprising the steps of:

(a) placing empty containers in serial array on the first and second indexing conveyors means,

(b) conveying empty containers from the first indexing conveyor onto the input conveyor and thence to the container filling machine,

(c) filling said empty containers in the container filling machine,

(d) transferring filled containers from the container filling machine onto the output conveyor,

(e) conveying said filled containers from the output conveyor onto the second indexing conveyor,

(f) transferring containers from the second indexing conveyor to the first indexing conveyor by means of the elevator means until all the containers on the first and second indexing conveyors are filled containers, and

(g) removing the filled containers from the first and second indexing conveyors.

4,121,631

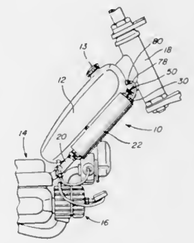
OIL INJECTOR FOR TWO-CYCLE ENGINES

J. David Jones, 1317 Canary Dr., West Columbia, S.C. 29169

Filed Feb. 18, 1977, Ser. No. 770,065

Int. Cl.² B65B *3/10*

U.S. Cl. 141—27 **6 Claims**



1. An oil injector for two-cycle engines comprising an oil tank adapted to be mounted adjacent a gasoline tank for the engine, a cyclically operated, positive displacement pump including an inlet communicating with said oil tank and a discharge communicated with the gasoline tank, said pump being calibrated whereby each cycle of operation will discharge an accurate prededetermined quantity of oil into the gasoline tank thereby enabling an appropriate quantity of oil to be injected into the gasoline tank whenever a known quantity of gasoline is dispensed into the gasoline tank, said pump being mounted interiorly of said oil tank and including an operating means disposed externally thereof, said pump including a cylinder and reciprocal piston therein, said piston having a piston rod connected thereto and extending from one end of said cylinder and externally of the oil tank, said operating means being in the form of a knob on said piston rod, said pump cylinder including a closure plug in opposed relation to the piston, said plug including an inlet passageway and an outlet passageway therein, check valve means associated with said inlet passageway and check valve means associated with said outlet passageway, said check valve means associated with the inlet passageway including a disc of resilient material oriented with a portion overlying the inlet passageway, means anchoring the disc to the plug in spaced relation to the inlet passageway whereby inflow of oil when pressure is reduced between the plug and piston will swing the portion of the disc overlying the inlet passageway away from the inlet passageway, said disc closing the inlet passageway whenever pressure is not reduced between the plug and piston.

4,121,632

FIRE EXTINGUISHER CYLINDER FILLING STATION

William J. Zehr, Des Plaines, Ill., assignor to The Protectoseal Company, Bensonville, Ill.

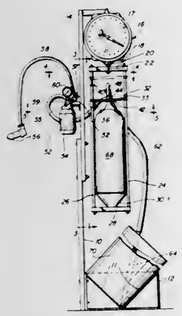
Filed Sep. 23, 1977, Ser. No. 836,132

Int. Cl.² B65B *1/32, 31/00*

U.S. Cl. 141—59 **5 Claims**

1. A fire extinguishing cylinder filling station comprising a vertical standard having a base, a cylinder support means to support an empty cylinder in a vertical position adjacent said standard, means on said support means to retain the cylinder thereon, a weighing scale, said supporting means depending

from said scale, a source of fire extinguishing powder, conduit means connected between said source of powder and said cylinder, a vacuum pump for evacuating the interior of said empty cylinder and creating a vacuum therein, conduit means between said pump and said cylinder, said pump evacuating the air in said cylinder and creating a vacuum therein whereby to withdraw said powder from said source and fill said cylinder wherein the supporting means comprises a spaced pair of vertical elongated tension rods anchored together at the upper and lower ends by cross bars, and an inverted conical-shaped seat anchored to the lower bar to seat the lower end of the cylinder, and wherein the means to support said cylinder in



vertical position comprises a flat bar perforated at its end to slidably shift on said rods, a connector bored axially on the bar medially its ends, a tube anchored to and extending above and below said bar, said bore being larger in diameter than the diameter of said tube whereby a hollow space is formed between the walls of said bore and the tube, nipple means on the exterior wall of said connector communicating with said hollow space, the lower end of said tube insertable in the cylinder, wherein said tube has fluid connection with said source of fire extinguishing powder to fill said cylinder and a conduit is connected to said vacuum pump and to said nipple means to create a vacuum in said cylinder to draw said powder from said source to fill said cylinder.

4,121,633

TRANSFER DEVICE FOR HEAT SENSITIVE MATERIAL

Jerry Diez, 120 Park Dr., Gonzales, La. 70737

Continuation-in-part of Ser. No. 733,079, Oct. 18, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,283

Int. Cl.[2] B65B *3/04*

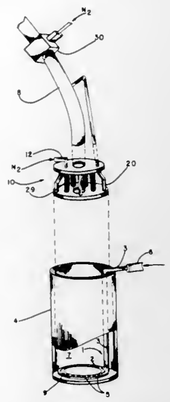
U.S. Cl. 141—69 **7 Claims**

1. A device for use in reducing contact of heat sensitive material with oxygen during transfer of said material from a first container to a second container having an opening to receive said material, which comprises:

(a) a covering plate shaped to fit into said second container opening, said covering plate having an inert gas receiving passageway opening into said second container and having a material receiving passageway opening into said second container;

(b) an inert gas distribution assembly comprising an enclosed structure having a cavity, a first opening for receiving said inert gas into said cavity, hollow connecting means attached at one end to a second opening leading to said cavity and attached at its other end to said inert gas receiving passageway to form a passageway for said inert gas to pass from said cavity to said inert gas receiving passageway; and

(c) a hollow tubing having means to receive said material from said first container and having one end attached to said material receiving passageway to form a passageway



for said material to pass from said first container to said second container.

4,121,634

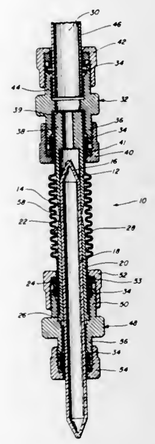
GLASS-SEALED VESSEL OPENING DEVICE AND METHOD

John Michael Hayes, Bloomington, Ind., and David John Des Marais, Menlo Park, Calif., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Aug. 29, 1977, Ser. No. 828,428

Int. Cl.[2] B65B *3/04*

U.S. Cl. 141—98 **5 Claims**



1. A device for opening glass-sealed vessels comprising:

means defining a confined space;

first vessel receiving means communicating with the confined space and adapted removably to receive therein a projecting end of the glass-sealed vessel;

second vessel receiving means adapted removably to receive therein the projecting end of the glass-sealed vessel, the proximal ends of the first and second vessel receiving means being spaced from and positioned adjacent each other;

flexible tubing means adapted removably to receive the proximal ends of the first and second vessel receiving means therein;

first sealing means for effecting a vacuum tight seal between the flexible tubing means and the confined space; and

second sealing means for effecting a vacuum tight seal between the flexible tubing means and the glass-sealed vessel;

whereby application of a flexing force to the glass-sealed vessel, second sealing means and second vessel receiving means as a unit permits the projecting end of the glass-sealed vessel to be ruptured adjacent the proximal ends of the first and second vessel receiving means thereby to release the contents of the glass-sealed vessel into the confined space.

4,121,635

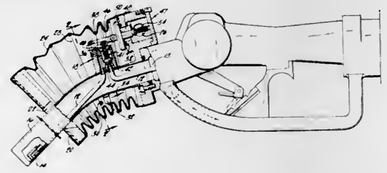
INTERLOCK SYSTEM FOR A GASOLINE DISPENSING NOZZLE

William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Jun. 13, 1977, Ser. No. 805,776

Int. Cl.[2] B65B *3/18, 57/14*

U.S. Cl. 141—207 **1 Claim**



1. In a vapor recovery nozzle for dispensing fuel into a fillpipe of a motor vehicle fuel tank and having a vapor receiving system for receiving vapors displaced from a fuel tank during dispensing, a system for shutting off the fuel being dispensed when fuel backs up into a fillpipe, a discharge spout for insertion into a fillpipe of a motor vehicle fuel tank, a shut-off valve for shutting off fuel being dispensed by the nozzle, and actuating means for closing said shut-off valve in response to fuel backed up into a fillpipe, the improvement of providing a vent line running inside said discharge spout having an open end at the discharge end of the discharge spout, and having a section of said vent line positioned outside said discharge spout, said vent line being supplied with a vacuum such that when gasoline covers the open end of the vent line, the pressure in the vent line drops and the pressure drop may be sensed to close said shut-off valve; and an interlock system which prevents the dispensing of liquid through the nozzle until the discharge spout of the nozzle is properly inserted in a fillpipe, and comprising an interlock valve means coupled to the vent line at said outside portion of the vent line, whereby the interlock valve means is not subject to the flow of fuel through the nozzle, said interlock valve means having a closed position wherein the vent line is closed to close said shut-off valve and an open position which permits normal operation of the nozzle, and means, responsive to the nozzle being properly inserted in a fillpipe, for opening said interlock valve means, whereby normal operation of the nozzle is permitted when the nozzle is properly inserted in a fillpipe and a second interlock valve for closing off said vapor receiving system, said second interlock valve being coupled to and actuated by said means responsive to the nozzle being properly inserted in the fillpipe.

4,121,636

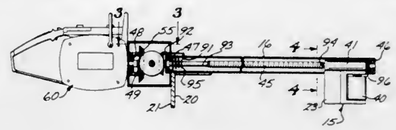
ADAPTOR FOR SPLITTING LOGS

Robert G. James, 3509 Janene Way, Bakersfield, Calif. 93306

Filed Jul. 21, 1977, Ser. No. 817,561

Int. Cl.[2] B27L *7/00*

U.S. Cl. 144—193 R **9 Claims**



1. Apparatus for splitting wood and comprising:

power means including a housing and an output for producing rotary power;

an elongate support member adapted for operative attachment to said housing of said power means at one end thereof;

a threaded advancing shaft supported for rotating between the ends of said support member;

gearing means deployed between said advancing shaft and said power means for selective coupling therebetween;

stopping means attached to said support member proximate said one end thereof and extending along said threaded shaft; and

a wedge threadably engaged to said advancing shaft and disposed to radially project therefrom in longitudinal alignment, the apex of said wedge forming the leading edge thereof being aligned towards said stopping means, said wedge being threadably translated along said shaft upon coupling thereof to said power means by gearing means, said wedge further including a rotary spreader cam within the trailing edge thereof spring biased to a first rotary position and actuatable by said stopping means towards a second rotary position upon the advance of said wedge along said shaft towards said stopping means.

4,121,637

TOTE BOARD

Russell A. Jennings, P.O. Box 1408, Wichita Falls, Tex. 76306

Filed Jul. 19, 1977, Ser. No. 816,939

Int. Cl.[2] A45C *3/02*

U.S. Cl. 150—1.6 **7 Claims**



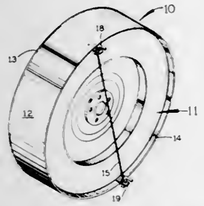
1. A portable device comprising a combined clipboard including a flexible clip on its outer face and a storage pouch secured to the rear of said clipboard, said pouch including closure means and access into the storage area of said pouch, a coplanar slightly smaller member secured to the rear of said clipboard, the periphery of said pouch sandwiched and secured between the peripheries of said clipboard and said coplanar member, handle means for carrying the device, the ends of said handle sandwiched and secured between said clipboard and said coplanar member.

4,121,638

LOCKING ARRANGEMENT FOR VEHICLE-MOUNTED WHEEL COVER

Charles W. Phillips, 1405 SW. 8 St., Pompano Beach, Fla. 33060

Filed Feb. 28, 1978, Ser. No. 882,106
Int. Cl.[2] B65D *85/06*
U.S. Cl. 150—54 A **10 Claims**



1. In combination with a wheel cover shaped and dimensioned to receive a vehicle spare wheel and tire, said wheel cover being open at its axially inward side for slidable assembly thereat with the spare wheel and tire, the improvement which comprises:

a pair of locking plates attached to said wheel cover and projecting axially from the wheel cover at its open axially inward side, said plates being spaced apart circumferentially around the wheel cover, each of said plates having a slot therein;

a rigid bar extending between said plates across the open axially inward side of the wheel cover and having its opposite ends slidably received in said slots in the respective plates;

and a padlock coacting with said bar at one end to retain the bar engaged in the slot in the adjoining plate;

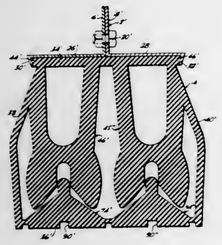
said bar having a transverse segment at its opposite end extending closely outside the plate thereat for retaining said opposite end of the bar against withdrawal longitudinally through the slot in said last-mentioned plate.

4,121,639

CUSHION TIRE AND WHEEL CONSTRUCTION

Avelino Fernandez, 211 Collins Ave., Miami Beach, Fla. 33139

Continuation of Ser. No. 668,691, Mar. 19, 1976, abandoned.
This application Aug. 15, 1977, Ser. No. 824,402
Int. Cl.[2] B60C *7/00*
U.S. Cl. 152—329 **2 Claims**



1. A vehicle tire and wheel construction for use in combination comprising,

a wheel including inner and outer disc portions and nut and bolt means connecting the portions in face-to-face relation, each disc having a rim portion formed about the periphery of said disc portions, a central hub opening and a plurality of spaced apart lug apertures in said disc portions and each of said disc portions having an outer edge of said rim portions and clamp means formed about said rim portions,

a tire including an annular inner wall, an annular outer, tread wall and opposed side walls integrally connecting between said inner and outer walls, and defining an inner annular chamber;

a pair of opposed, laterally extending side ribs from said inner wall in mating clamped engagement in said clamp means;

a first annular rib within said chamber formed integral with said annular inner wall and extending radially outwardly therefrom toward said tread wall;

a second radially extending annular rib within said chamber, formed integral with said tread wall and extending inwardly therefrom to within a normally, relatively close proximity to said first annular rib;

said rim comprising two annular half sections extending outwardly in opposed directions from said outer edge portions of the respective disc portions;

said clamp means comprising a pair of opposed, inwardly angled flanges from respective outer annular edges of said two half sections;

said pair of side ribs each having an outer face complementarily angled to said flanges and in mating clamped engagement therewith;

said first annular rib including a pair of spaced apart downwardly diverging annular leg portions integral with said inner annular wall defining a secondary annular chamber therebetween, said annular leg portions merging at their outer ends to an enlarged outer, annular head portion;

said annular head portion having a peripheral, outwardly extending generally Y-shaped annular groove;

said Y-shaped groove including a central groove portion providing parallel side walls connecting with a pair of outwardly angled diverging walls which terminate in more sharply, outwardly angled outer wall portions connecting at their outer extremeties with respective arcuate outer side walls of said head portion;

said second radially extending annular rib is generally Y-shaped in cross section, providing a pair of inwardly converging walls, companionately angled to said more sharply, outwardly angled outer wall portions, and a central inwardly extending annular leg, sized for free reception in said central groove portion; and

said wheel and tire construction including a pair of side-by-side first annular ribs and a pair of side-by-side second annular ribs in respective alignment with said pair of first annular ribs.

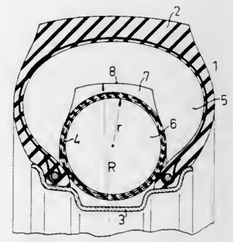
4,121,640

PNEUMATIC TIRE FOR A VEHICLE WHEEL

Hermann Henning, Hanover; Johannes Kosanke, Letter; Henryk Pakur, Bückeburg; Hermann Wittneben, Arpke, and Reinhard Tiemann, Hemmingen, all of Fed. Rep. of Germany, assignors to Continental Cummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 31, 1976, Ser. No. 719,188
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1975, 2538948
Int. Cl.[2] B60C *17/04*
U.S. Cl. 152—340 **7 Claims**

1. A pneumatic vehicle tire with a tread area, which includes in combination: an inflatable emergency tube arranged inwardly of said pneumatic tire with that outer peripheral portion of said emergency tube which is adjacent to the tread area of said tire radially spaced from the inner periphery of said tire, said tire when deflated and contacting the ground under load being adapted to rest on said emergency tube while depressing the respective adjacent peripheral surface of said emergency tube so as to form a temporary flattened surface portion on said tube, said emergency tube comprising at least one peripheral protrusion with a running-up flank, said running-up flank when about suddenly to move noisily into said flattened surface being purposely located substantially in the elongation of an imaginary secant defined by said flattened surface portion, the tangent to the emergency tube through the root of the running-up flank forming with said running-up flank an angle A ranging from 20° to 50°, when viewing the cross section of said emergency tube the radius of said emergency tube being considerably less than the radius of the outer surface of said at least one protrusion.

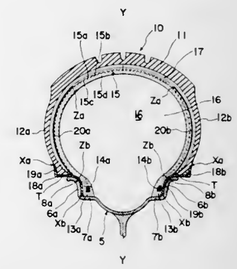


4,121,641

PNEUMATIC TIRE FOR MOTORCYCLE

Eiji Nakasaki, Kakogawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Aug. 4, 1976, Ser. No. 711,594
Claims priority, application Japan, Nov. 29, 1975, 50-143096
The portion of the term of this patent subsequent to Sep. 14, 1993, has been disclaimed.
Int. Cl.[2] B60C *9/02*
U.S. Cl. 152—353 R **10 Claims**



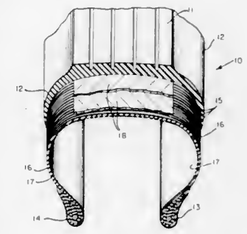
1. A pneumatic tire for use on a motorcycle, which comprises a tire cover made of a rubber material and having a tread portion, a pair of opposed side walls integrally extending from respective side edges of the tread portion, and a pair of opposed bead portions integrally extending from respective free ends of the individual side walls, said bead portions being adapted to firmly engage with associated rim flanges of a wheel rim, said tire cover including bead cores embedded respectively in the bead portions and a reinforcing structure for preventing the tire from collapsing when it is at least partially deflated which comprises a carcass structure embedded in the tire cover adjacent the inner surface thereof, said carcass structure having a plurality of plies of textile cords which are alternately disposed on a bias with respect to each other and at a predetermined cord angle relative to the midcircumferential plane of the tire, said carcass structure having both ends turned up around the respective bead cores and secured in position adjacent the free ends of the side walls, and at least one reinforcement layer substantially forming a part of the carcass structure and made of a plurality of cords of textile material, said reinforcement layer being laid down on a bias relative to the carcass structure and at a cord angle within the range of from 20° to 45° relative to the midcircumferential plane of the tire and having both ends terminating adjacent respective boundaries between the side walls and the bead portions without being turned up around the associated bead cores, said reinforcing structure representing the principal reinforcing portion of the tire.

4,121,642

PNEUMATIC TIRE

Harold Gordon Schwartz, Akron, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 4, 1977, Ser. No. 774,434
Int. Cl.[2] B60C *9/14*
U.S. Cl. 152—354 R **10 Claims**



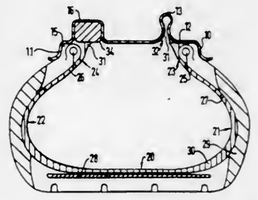
1. A pneumatic tire comprising an annular body of an elastomeric material having a central tread portion, a belt positioned under the tread, and bead rings connected by sidewalls to the tread, a carcass extending toroidally between bead rings, and an inner liner disposed within the carcass to contain compressed air, characterized in that said carcass is a one-piece cordless carcass of a thermoplastic elastomer having a multiplicity of closely placed slits that completely cut through said carcass and extend from about bead ring to about bead ring, said slits being in a direction approximately perpendicular to the median plane of the tire.

4,121,643

TIRE AND WHEEL ASSEMBLIES

Thomas Holmes, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed May 11, 1976, Ser. No. 685,304
Claims priority, application United Kingdom, May 22, 1975, 22114/75; Feb. 5, 1976, 4547/76
Int. Cl.[2] B60B *21/12*
U.S. Cl. 152—366 **14 Claims**



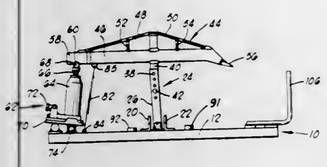
1. A pneumatic tire and wheel rim assembly comprising a pneumatic tire having inboard and outboard tire beads having toe portions, a one-piece wheel rim comprising annular inboard and outboard rim flanges, an outboard bead seat disposed inwardly of the outboard rim flange, a radially inwardly extending radially outwardly open circumferential notch defined by only said one-piece wheel rim and disposed adjacent and axially inwardly of the outboard bead seat, a center portion of diameter substantially equal to the diameter of the bead seat and a well wide enough to accept a single tire bead adjacent the inboard rim flange, said toe portion of said outboard bead extending radially inwardly into said notch, and a blanking member blanking off said well and acting as at least a part of a bead seat for the inboard bead of the tire.

4,121,644

TIRE REMOVAL TOOL

Elbert I. Boyle, Rte. 1, Ripley, Okla. 74062, and John H. Robertson, P.O. Box 1256, Cushing, Okla. 74023

Filed Mar. 22, 1976, Ser. No. 668,850
Int. Cl.[2] B60C *25/06*
U.S. Cl. 157—1.17 **14 Claims**



1. A tire removal tool comprising:
a horizontally extending base frame adapted to rest flatly and immovably on a floor or the like;
an elongated lever arm spaced from the base frame and extending generally parallel with respect to the base frame;
an articulated fulcrum post structure pivotally supporting the lever arm on the base frame and including at least one lower post member pivotally connected to the base frame for pivotation about a horizontal axis at the level of the base frame, and an upper post member having a lower end pivotally connected to said lower post member for pivotation about a horizontal axis spaced upwardly from the point of pivotal connection of the lower post member to the base frame, and having an upper end connected to said elongated lever arm at a location spaced upwardly from said last-mentioned horizontal axis of pivotation;
an arcuate tire bead engaging plate on one end of said lever arm;
a hydraulic jack pivotally supported on the base frame beneath the opposite end of the lever arm from that which carries said bead engaging plates for pivotation about a horizontal axis, said hydraulic jack being positionable on the base frame relative to said lever arm for contacting at its upper end, the lower side of the end of said elongated lever arm opposite the end carrying said bead engaging plate; and
a wheel positioning subassembly slidably mounted on said base frame for horizontal sliding movement thereon, said subassembly including means for automatically engaging said horizontally extending base frame and arresting said wheel positioning subassembly at a fixed location on said base frame when said lever arm is pivoted to force said arcuate tire bead plate against the bead of a tire positioned beneath said lever arm and tire bead engaging plate by said wheel positioning subassembly.

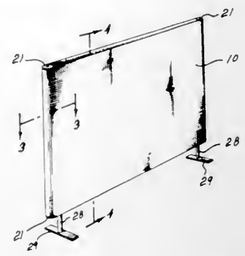
4,121,645

ROOM DIVIDER PANEL ASSEMBLY

Joseph Henry Behr, 4000 deMaisonneuve, Westmount, Quebec, Canada (H3Z 1J9)

Filed May 6, 1977, Ser. No. 794,373
Int. Cl.[2] A47G *5/00*
U.S. Cl. 160—135 **11 Claims**

1. A room divider panel unit comprising a load bearing rectangular frame with a horizontal top member, horizontal bottom member, and two vertical side members, all members having a common cross section of hollow double channel press formed sheet steel rigidly joined together, two vertical caps of semi-circular cross section, one of the vertical caps attached to an edge of one of the vertical side members and the other vertical cap attached to the other vertical side member, extending from a top edge to a bottom edge, link connecting means located at the semi-circular centre of the two vertical caps at the top edge and the bottom edge, and a pair of legs adapted to



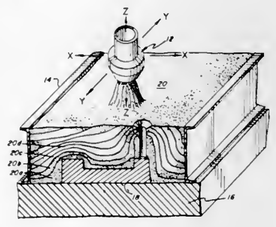
support the panel unit, both legs extending downwards and connected inside a respective vertical side member.

4,121,646

METHOD AND APPARATUS FOR MAKING MOLDS

Leslie D. Rikker, Oak Forest, Ill., assignor to National Engineering Company, Chicago, Ill.

Filed Oct. 13, 1976, Ser. No. 731,930
Int. Cl[2] B22C *3/00*
U.S. Cl. 164—4 **62 Claims**



1. A process for making molds comprising the steps of:
dispensing a layer of molding material including a mixture of sand and binder over mold forming pattern means with relative movement between a dispensing device and said pattern means, and
selectively controlling the ratio of sand to binder in said mixture as it is dispensed in accordance with the relative position of said dispensing device and said pattern means.

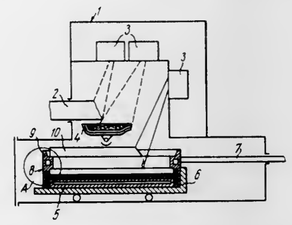
4,121,647

METHOD OF PRODUCING A MULTILAYER METAL INGOT BY THE ELECTRO-BEAM REMELTING OF BILLETS

Boris Evgenievich Paton, ulitsa Chkalova, 41a, kv. 26; Boris Alexeevich Movchan, ulitsa Darvina, 7, kv. 7; Jury Anatolievich Kurapov, ulitsa Semashko, 8, kv. 44; Rostislav Spiridonovich Misjura, ulitsa Chudnovskogo, 2, kv. 22, all of Kiev; Igor Stepanovich Pryanishnikov, ulitsa Koreshkova, 12, kv. 8, Elektrostal Moskovskoi oblasti; Vladimir Nikiforovich Zhuchin, ulitsa Pervomaiskaya, 48, kv. 43, Elektrostal Moskovskoi oblasti; Valentin Vasilievich Topilin, ulitsa Mira, 6, kv. 29, Elektrostal Moskovskoi oblasti, and Igor Vasilievich Perepelitsa, ulitsa Tevosiana, 37, kv. 39, Elektrostal Moskovskoi oblasti, all of U.S.S.R.

Filed May 14, 1976, Ser. No. 686,514
Claims priority, application U.S.S.R., May 22, 1975, 2136106[I]; May 22, 1975, 2136107[I]
Int. Cl.[2] B22D *27/02*
U.S. Cl. 164—50 **3 Claims**

1. A method of producing a multilayer ingot in an electron beam-installation, comprising the steps of remelting a first metal billet, positioned directly in a base plate, by means of electron-beams for producing a first layer of said multilayer ingot, said billet being arranged with a clearance with respect to the bottom of said base plate; reciprocating said base plate as said billet is being melted and collected therein so as to form said first layer of said ingot; electron-beam remelting another metal billet above an intermediate vessel disposed above said reciprocating base plate and pouring accumulated molten



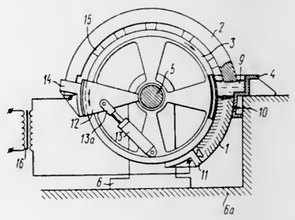
metal thereoff into said base plate so as to form and shape one or more additional layers of said multi-layer ingot therein, and reciprocating said base plate in a horizontal direction with respect to said intermediate vessel at a speed that is inversely proportional to the cooling rate of the ingot metal in a longitudinal direction, whereby the surface quality is improved, the thickness of said layers along the length of said ingot are uniform, and distortion of said layers is avoided, thereby precluding the need for additional processing of said ingot prior to rolling.

4,121,648

APPARATUS FOR ELECTROSLAG CASTINGS OF SEMICIRCULAR BLANKS

Boris Izrailevich Medovar, ulitsa Anri Barbjusa, 22/26, kv. 109; Valery Alexandrovich Prikhodko, bulvar Davydova, 7, kv. 158; Jury Fedorovich Alferov, bulvar Lepse, 29, kv. 64; Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51, and Alexandr Petrovich Beloglazov, prospekt Voroshilova, 17a, kv. 16, all of Kiev, U.S.S.R.

Filed Mar. 7, 1977, Ser. No. 774,733
Int. Cl.[2] B22D *27/02*
U.S. Cl. 164—252 **3 Claims**



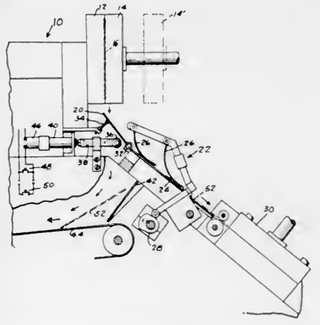
1. In an improved apparatus for the electroslag casting of semicircular blanks by remelting a consumable electrode shaped as a half-ring and having a cross-section area substantially equal to that of a blank being cast, comprising a separable mould, said mould having a melting chamber and a blank-forming chamber and consisting of a stationary part and a movable part, said parts being in conjunct relation with each other, said movable part being a power-driven drum indirectly carrying an electrode holder with a horizontal axis of rotation; a drive for rotation of said drum; a consumable electrode placed on said drum, said electrode being insulated from the surface of said drum; said holder being used for fixing said consumable electrode and for conducting electric current from a power supply thereto, a bottom plate mounted on said drum for stripping said blank from the blank-forming chamber of said mould; the improvement comprising carriage means adapted for the displacement of said consumable electrode relative to said drum; said carriage means being rotatably mounted about said axis of rotation of said drum; and a separate drive operatively associated with said carriage means for rotating said carriage means positively or negatively relative to said movable part of said mould in accordance with the difference between the electrode's and blank's cross-sectional areas whenever such a difference occurs during operation of said apparatus, whereby the disruption of a casting process is precluded.

4,121,649

BY-PASS ARRANGEMENT FOR BATTERY GRID CASTING MACHINE

John W. Wirtz, and Jack E. McLane, both of Port Huron, Mich., assignors to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

Filed Jun. 15, 1977, Ser. No. 806,722
Int. Cl.[2] B22D *45/00*
U.S. Cl. 164—269 **8 Claims**



1. A battery grid casting machine comprising a mold having separable mold half sections which, when closed, define a cavity adapted to be filled with molten metal to form a cast grid, said mold sections being separable to eject the cast grid from the mold cavity and permit it to drop by gravity, grid conveying means located at a level below the mold for conveying grids ejected from the mold toward a grid trimming die on the machine adjacent the downstream end of the conveyor and means for avoiding the necessity of stopping the grid casting and ejecting operations at the mold while the machine is being serviced to correct a malfunction downstream of the mold that requires stopping the flow of grids to the trim die which comprises, a grid receiving plate at the upstream end of the conveying means normally positioned in a downwardly inclined attitude to receive each grid as it is ejected from the mold and direct it downstream to a guide mechanism for feeding the successive grids to the trim die, said grid receiving plate being movable upon the occurence of such malfunction from said grid receiving position to a bypass position wherein it provides a clearance path for the ejected grids which permits them to drop downwardly to a location below said guide mechanism and means for moving said receiving plate between said grid receiving and grid bypassing positions.

4,121,650

FOUNDRY CASTING MACHINES

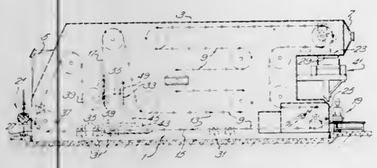
George Terah Gough, Newcastle, England, assignor to Gough & Company (Hanley) Limited, Stoke on Trent, England

Filed Apr. 29, 1977, Ser. No. 792,248

Claims priority, application United Kingdom, Jan. 15, 1976, 24734/76

Int. Cl.[2] B22D *5/04;* B65G *47/02*

U.S. Cl. 164—329 14 Claims



1. A foundry casting machine comprising a frame, means supporting an endless conveyor on said frame, for movement in a vertical plane through a sinuous path, an overall casing surrounding said frame and endless conveyor, means supporting a plurality of suspended trays on said endless conveyor, three openings in the exterior of said casing, drive means for driving said conveyor, and hence said trays, successively past said openings, said openings comprising a first opening providing access to successive trays for the assembly of one or more moulds therein from two mould parts, a second opening at a pouring station providing access to the trays for the pouring of molten metal into the moulds, a third opening through which the contents of the trays may be removed, air extraction means adapted to withdraw air and air-borne particles from the interior of said casing and from the vicinity of the second and third openings for passage through a filtration plant, means including at least one weight to hold together said mould parts prior to a pouring operation, a forklift type unit for placing a weight on said moulds on the trays as they pass along a lower conveyor run prior to a pouring operation and for subsequently removing said weight from the moulds as they enter a section of the conveyor run which continues vertically upwards subsequent to said pouring operation, said forklift type unit having a horizontal guide track, a horizontally movable carriage supported on said guide track, a vertically extending mast supported by said carriage, a vertically movable carriage movable along said mast, and lifting means supported on said vertically movable carriage for engaging said weight.

4,121,651

CASTING RECEPTACLE OR LADLE FOR MOULDED CASTINGS OR VARIOUS MATERIALS

Dino Marco Zeppellini, 2 Ave. F.-Roosevelt, Fontenay-sous-Bois, France (94120)

Filed Apr. 25, 1977, Ser. No. 790,794

Claims priority, application France, May 10, 1976, 76 13963

Int. Cl.[2] B22D *37/00*

U.S. Cl. 164—337 5 Claims

1. A casting device comprising:

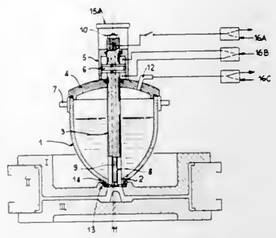
(a) a receptacle having an exit orifice at its lower end;

(b) a hollow stem arranged in said receptacle with its lower end closably fitting said exit orifice;

(c) a rod within said stem, said rod being of smaller diameter than the internal diameter of the stem so as to leave an annular space between the rod and the stem;

(d) a valve member on the lower end of the rod adapted to close the lower end of the stem;

(e) means acting on the rod to move it axially in relation to the stem to cause the valve member to open and close the lower end of the stem; and



(f) gas inlet means at the upper part of said stem for the supply of inert gas under pressure to said annular space.

4,121,652

APPARATUS FOR SEPARATING A STARTER BAR HAVING A STARTER BAR HEAD FROM A HOT STRAND CROP-END IN A CONTINUOUS CASTING PLANT

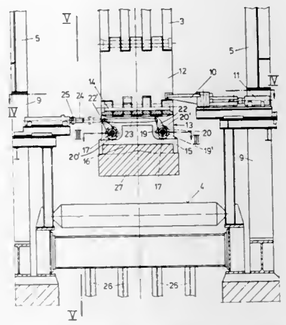
Lorenz Loibl, Baden, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Feb. 18, 1977, Ser. No. 770,099

Claims priority, application Austria, Feb. 26, 1976, 1416/76

Int. Cl.[2] B22D *11/08*

U.S. Cl. 164—446 6 Claims



1. In apparatus for separating a starter bar having a starter bar head from a hot strand crop-end in a continuous casting plant of the type including a lifting mechanism, such as a chain hoist or a cable pull, a stationary vertical guide and an opening mechanism for releasing the starter bar head from the crop-end, the starter bar head having two lockable nippers to give it a tong-shaped configuration and being liftable by said lifting mechanism in said stationary vertical guide, the opening mechanism opening the two lockable nippers of the starter bar head, the improvement comprising:

a centering means in the stationary vertical guide for holding the starter bar in a separating position,

at least one bayonet closing means for locking the two lockable nippers of the starter bar head,

a displaceable pin acting on the at least one bayonet closing means in the opening direction when the starter bar is in the separating position for opening the at least one bayonet closing means, and

a conveying means arranged below the centering means and the displaceable pin for transporting off the hot strand crop-end.

4,121,653

METHOD OF CONSTRUCTING ROOMS WITH RADIANT HEATING OR WITH COOLING

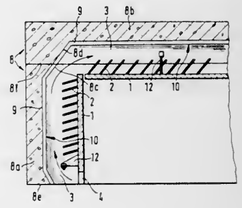
Siegfried Vinz, Neuwiesenrebenstrasse 44, D-7505 Ettlingen, Fed. Rep. of Germany

Filed Jan. 14, 1977, Ser. No. 759,414

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1976, 2601258

Int. Cl.[2] F24H *9/08*

U.S. Cl. 165—1 9 Claims



1. A method of constructing rooms each having a floor, walls, and a ceiling and being provided with a radiant heating system or a cooling system which comprises radiant or cooling panels, respectively, connected to the walls, the ceiling, or the floor of that room and forming a thermal medium cavity wherein there may circulate a thermal medium which transmits heat to the radiant panels or which receives heat from the cooling panels, in which method at least the walls and the ceiling are pre-fabricated components capable of bearing static loads and the interiors of the walls and the ceiling, which interiors face the remainder of the room and the radiant or cooling panels, contain respective pairs of adjacent parallel troughs or curved or part-polygonal cross-section, the troughs in the walls being vertical and the ceiling being applied so that they merge in streamlined manner with the troughs in the ceiling, and the panels are suspended from supports on the walls and the ceiling with interposition of a resilient packing.

4,121,654

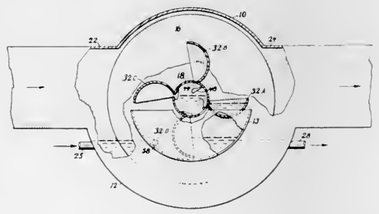
DRY COOLING TOWER

Richard Franklin Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Jul. 28, 1977, Ser. No. 819,914

Int. Cl.[2] F28D *19/00*

U.S. Cl. 165—6 11 Claims



1. A cooling tower for the transfer of heat between a hot liquid and a cool gas including a housing having inlet and outlet ports for the hot liquid, gas inlet and outlet ports in the housing spaced above the ports for the hot liquid, bearing means supported by said housing that defines an axis of rotation lying above the surface of the liquid, a horizontal tubular shaft mounted on said bearing means, a series of disc members axially apertured to receive the horizontal shaft and thus rotate between the liquid and the gas, and drive means connected to said horizontal shaft rotated by the force of gravity acting upon the hot liquid as it passes from the inlet to the outlet of the housing.

4,121,655

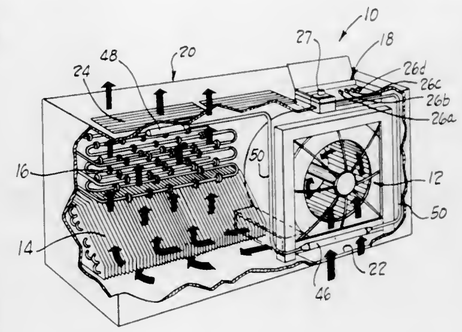
AIR-CONDITIONING SYSTEM

Edward F. Hart, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed May 9, 1977, Ser. No. 795,324

Int. Cl.[2] F25B *29/00*

U.S. Cl. 165—27 7 Claims



1. A heating and cooling unit for an air conditioned space comprising:

(a) air heating and cooling means;

(b) an air blower for directing air from the space into heat exchange relationship with the heating and cooling means;

(c) a return air passage through which air from the space flows to the heating and cooling means;

(d) a discharge passage through which the air is discharged to the space; and,

(e) a control for governing operation of the heating and cooling means at least in part as a function of sensed air temperatures comprising:

(i) a thermostatic actuator having an expansible and contractible bellows defining a chamber communicating with first and second fixed volume bulbs via capillary tubing, said bulb, chamber and capillary tubing filled with a thermally expansible and contractible liquid, one bulb disposed in heat transfer relationship with air which flows through said air return passage and a second bulb disposed in heat exchange relationship with air which flows through said discharge passage, said first bulb defining a substantially larger volume than said second bulb, and said bellows chamber volume determined by the heat content of said liquid;

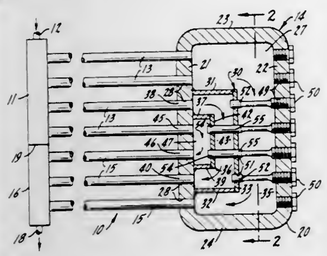
(ii) a linkage member moved in response to expansion and contraction of said bellows with the linkage member position determined by the heat content of the fill liquid as reflected by expansion or contraction of said bellows volume;

(iii) a cooling control switch means having a first condition in which cooling of the air is effected and a second condition in which cooling of the air is terminated, said cooling control switch means operated to said first condition in response to a linkage member position indicative of a first heat content of said liquid and operated to said second condition in response to a linkage member position indicative of a second heat content of said liquid which is less than the first heat content; and

(iv) a heating control switch means having a first condition in which air heating is initiated and a second condition in which air heating is terminated, said heating control switch means operated to said first condition in response to said linkage member being positioned at a location indicative of a third heat content of said liquid and operated to said second condition in response to a

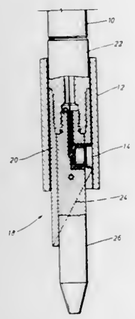
linkage member position indicative of a fourth heat content of said liquid greater than said third heat content and less than said first heat content.

4,121,656
HEADER
Ferdinand Vincent Huber, Canton, Ohio, assignor to Ecodyne Corporation, Lincolnshire, Ill.
Filed May 27, 1977, Ser. No. 801,198
Int. Cl.[2] F28F *9/22*
U.S. Cl. 165—72 **12 Claims**



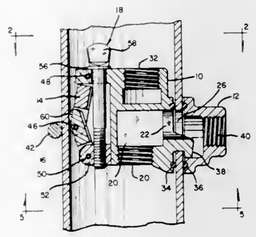
1. A heat exchanger comprising a fluid inlet header; an outlet header; a return header; a first series of elongated, vertically spaced, parallel upper condensing tubes connecting said inlet header to the upper portion of said return header; and a second series of elongated vertically spaced, parallel lower heat exchange tubes connecting the lower portion of said return header to said outlet header; said return header comprising an enclosed housing having a pair of opposite sides; said upper and lower tubes having ends terminating in openings passing through one of said sides; and a plurality of separated baffle means dividing the space in said housing into a plurality of isolated fluid flow channels one of which connects tubes adjacent the center of said heat exchanger, another of which connects tubes adjacent the outer edges of said heat exchanger without permitting mixing of the fluid in the respective channels, the baffle means connecting tubes adjacent the center of said heat exchanger being smaller than and nested within the baffle means connecting tubes adjacent the outer edges of said heat exchanger.

4,121,657
POSITION INDICATOR FOR DOWNHOLE TOOL
Tommy L. McClure, Houston, Tex., assignor to Eastman Whipstock, Inc., Houston, Tex.
Filed May 16, 1977, Ser. No. 797,253
Int. Cl.[2] E21B *43/00*
U.S. Cl. 166—66 **5 Claims**



1. Apparatus for indicating at the surface when a downhole tool is properly oriented in a housing provided in the well bore to receive the tool, comprising orienting means on the housing and the tool for orienting the tool in the desired position in the housing when the tool moves into position in the housing, said orienting means including a key slot on said tool and a key on the housing for engaging the key slot on the tool, a guide surface for engaging the key to guide the key into the slot, and electrical circuit means carried by the tool for transmitting a signal to the surface to indicate at the surface when the key is seated in the key slot.

4,121,658
PITLESS WELL ADAPTER
Bernice Benjamin Penrod, Tipp City, Ohio, assignor to Dayton Precision Manufacturing Company, Dayton, Ohio
Filed Jul. 14, 1977, Ser. No. 815,573
Int. Cl.[2] E21B *33/03*
U.S. Cl. 166—85 **7 Claims**



1. A pitless well adapter for securement in a well casing to provide a sealed connection to a pipe through a hole in the side of said casing, comprising:

a main body portion having a downwardly directed opening and a laterally directed opening with a fluid passage through said body portion connecting said openings;

an outer connector member having an opening disposable in registry with said laterally directed opening in alignment with said hole in said casing, said outer connector member being adapted for receiving said pipe in communication with the opening in said connector member;

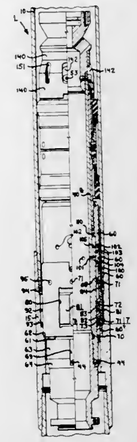
means for securing said outer connector member to said casing in registry with said hole;

a pair of lever arms disposed alongside said main body portion opposite said lateral opening therein and having one end portion of each pivotally interconnected; and

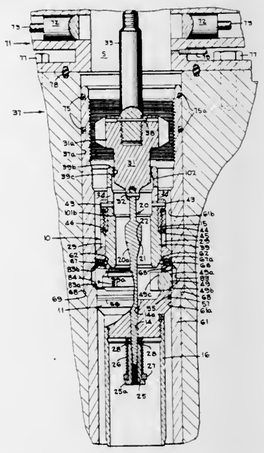
means connecting said pair of levers to said main body portion and pivotally secured to other end portions of said lever arms for causing relative pivotal movement between said lever arms so that said interconnected end portions will move away from said body portion and at least one of said lever arms will engage said casing opposite said hole so as to maintain said adapter in position in said casing, said connecting means being adjustably positionable to provide for variation of the position of the lever arms and the engagement force thereof on the casing.

4,121,659
COLLAR LOCK AND SEAL ASSEMBLY FOR WELL TOOLS
Donald F. Taylor, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Sep. 12, 1977, Ser. No. 832,559
Int. Cl.[2] E21B *33/129*
U.S. Cl. 166—129 **15 Claims**

1. A collar lock and seal assembly for releasably engaging a flow conductor inner wall and sealing with said wall comprising: a body mandrel; seal means on said body mandrel for sealing around said mandrel with said flow conductor wall surface; locking key means on said body mandrel supported for radial expansion and contraction between the locking and release positions; a locking key retainer sleeve mounted for sliding movement on said mandrel supporting said key means, said retainer sleeve being provided with a no-go shoulder surface for engagement with a support surface along said flow conductor; and means on said mandrel and within said key means permitting said key means to collapse inwardly to said release position at a first relative longitudinal position of said mandrel within said retainer sleeve and for holding said key means outwardly at said locking position at a second relative longitudinal position of said mandrel within said retainer sleeve.



4,121,660
WELL PRESSURE TEST PLUG
Bashir M. Koleilat, Spring, Tex., assignor to FMC Corporation, San Jose, Calif.
Filed Aug. 22, 1977, Ser. No. 826,805
Int. Cl.[2] E21B *33/03*
U.S. Cl. 166—135 **8 Claims**



1. A test plug for use in pressure testing a blowout preventer and/or a Christmas tree on a wellhead having an annular groove in the inside wall thereof, said test plug comprising:

a cylindrical body having an outer diameter slightly smaller than the bore of said wellhead;

a plurality of expandable dogs connected to said cylindrical body;

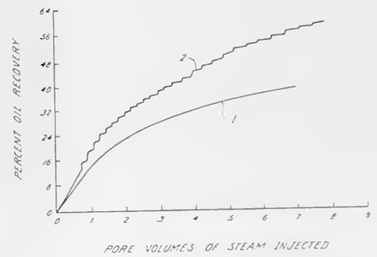
stop means for positioning said dogs adjacent said annular groove when said plug is moved into said wellhead;

cam means on said dogs for cooperation with said annular groove to lift said plug off said stop means when said dogs are expanded into said groove;

means for expanding said dogs into said annular groove when said cylindrical body is in a testing position adjacent said annular groove, said dogs and said groove locking said plug in said testing position; and

means for sealing the space between said cylindrical body and said wellhead bore when said plug is in said testing position so that the space above said plug can be pressurized.

4,121,661
VISCOUS OIL RECOVERY METHOD
David A. Redford, Ft. Saskatchewan, Canada, assignor to Texas Exploration Canada, Ltd., Canada
Filed Sep. 28, 1977, Ser. No. 837,077
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—252 **21 Claims**



1. A method for recovering viscous petroleum from a subterranean, viscous petroleum-containing, permeable formation including a tar sand deposit, said formation being penetrated by at least one injection well and by at least one production well, comprising:

(a) injecting a thermal recovery fluid comprising steam into the formation via the injection well, at an injection pressure less than the fracture pressure of the overburden above the viscous petroleum formations, and at a determinable flow rate;

(b) recovering liquid from the production well until vapor phase steam production at the production well occurs;

(c) thereafter restricting the flow rate of fluids from the production well to a value less than 50 percent of the flow rate of the thermal recovery fluid being injected into the injection well;

(d) determining the formation pressure in the vicinity of the production well;

(e) continuing injecting the thermal recovery fluid into the injection well and producing fluids from the production well at a restricted value until the formation pressure adjacent the production well is equal to a value between about 60 and 95 percent of the fluid injection pressure at the injection well;

(f) thereafter increasing the fluid production to the maximum safe value and simultaneously reducing the injection rate of thermal recovery fluid into the injection well to a value less than 50 percent of the original injection rate at which thermal recovery fluid was injected into the injection well; and

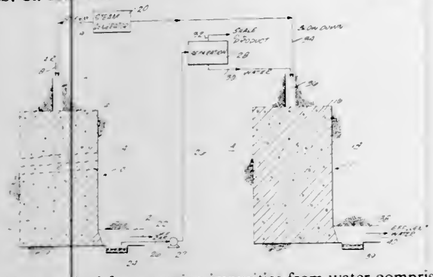
(g) continuing production of fluids from the production well at a high rate and injecting thermal recovery fluid into the injection well at a reduced rate until the flow rate of fluids from the production well drops to a value below 50 percent of the initial fluid flow rate of step (f).

4,121,662

WATER PURIFICATION WITH FRAGMENTED OIL SHALE

James S. Kilburn, 3060 B-1/2 Rd., Grand Junction, Colo. 81501

Filed Jun. 3, 1977, Ser. No. 803,049
Int. Cl.[2] E21B *43/24;* B01D *17/02*
U.S. Cl. 166—259 26 Claims



11. A method for removing impurities from water comprising the steps of:

(a) introducing water having a relatively higher hydrocarbon impurity concentration into a fragmented permeable mass of particles containing raw oil shale; and

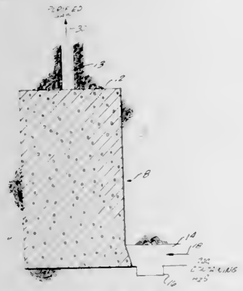
(b) withdrawing water of relatively lower hydrocarbon impurity concentration from the mass of particles.

4,121,663

REMOVING HYDROGEN SULFIDE FROM A GAS

Leslie E. Compton, Claremont, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Mar. 24, 1977, Ser. No. 780,926
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—259 15 Claims



2. A method of decreasing the hydrogen sulfide concentration of a gas comprising the steps of:

introducing a gas containing relatively higher hydrogen sulfide concentration to a fragmented permeable mass of raw oil shale for contacting the raw oil shale in the substantial absence of free oxygen, wherein a gas having a hydrogen sulfide concentration relatively lower than the hydrogen sulfide concentration of the introduced gas is produced; and

withdrawing such gas with relatively lower hydrogen sulfur concentration from the fragmented permeable mass of raw oil shale.

4,121,664

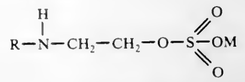
BIODEGRADABLE FOAMING AGENT IN DRILLING AND WORKOVER OPERATIONS

Paul W. Fischer, Whittier, and David S. Pye, Brea, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

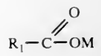
Filed Oct. 17, 1977, Ser. No. 842,497
Int. Cl.[2] E21B *21/00;* C09K *7/02, 7/08*
U.S. Cl. 166—309 12 Claims

1. In the method of conducting foam drilling and workover operations in a bore hole penetrating a subterranean reservoir, wherein foam is generated by contacting an aqueous solution of a foaming agent with a gas, and said foam is caused to flow upwardly through the bore hole to carry solid and liquid materials out of the bore hole, the improvement which comprises using as said foaming agent a mixture comprising:

about 0.1 to 1 part by weight of a foaming agent characterized by the formula:



wherein R is a straight chain alkyl radical having 10 to 16 carbon atoms and M is alkali metal or ammonium cation, per part by weight of a foaming agent characterized by the formula:



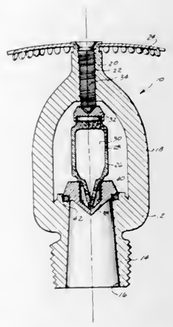
wherein R_1 is a straight chain alkyl radical having 9 to 15 carbon atoms and M_1 is an alkali metal or ammonium cation.

4,121,665

AUTOMATIC SPRINKLER HEAD

John E. Woycheese, Charlotte, N.C., assignor to Standard Fire Protection Equipment Co., Charlotte, N.C.

Filed Mar. 20, 1975, Ser. No. 560,553
Int. Cl.[2] A62C *37/14*
U.S. Cl. 169—38 7 Claims



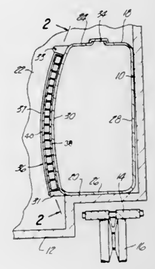
1. An automatic sprinkler head including a frame provided with a bore connectable to a supply line containing a fire extinguishing fluid, said frame being formed with a seat having a flat continuous surface portion extending around the periphery of said bore, a frangible bulb member, retaining means associated with said frame and engaging one end of said bulb member, a valve member engaging said bulb member at the other end thereof, said valve member having formed with a flat continuous surface portion located in said bore at said seat with said corresponding flat surface portions of said valve member and said seat being disposed in facing relation, the portion of said valve member disposed at said frame seat having a width that is less than the width of said seat to provide peripheral clearance therebetween, whereby said valve member is freely movable with relation to said seat, and a shock absorbing ring element formed of resilient material and disposed in said bore directly between and in contact with said facing flat surface portions of said valve member and said seat, said ring element being the sole connection between said frame and said valve member to provide a seal therebetween and to provide a yieldable shock absorbing support for said valve member and bulb member.

4,121,666

FUEL (FLAMMABLE LIQUID) TANK FIRE EXTINGUISHER

Edward J. Rozniecki, St. Clair Shores, Mich., assignor to The United States Government as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 11, 1977, Ser. No. 786,737
Int. Cl.[2] A62C *35/12*
U.S. Cl. 169—62 1 Claim



1. In a military vehicle equipped with a rectangular fuel tank having an outboard major wall (**28**) and an inboard major wall (**30**), said inboard wall being bowed so that its external surface has a convex curvature; a hollow panel (**36**) containing highly pressurized fire-suppressant material; said hollow panel being located against the inboard major wall of the tank in the path that an enemy projectile would take during passage through the tank major walls, whereby an opening formed in the panel by the projectile discharges pressurized suppressant out of the panel: the improvement wherein the hollow panel comprises first and second parallel bowed walls (**38** and **40**) connected at their peripheries by an endless strip (**42**) that seals the circumscribed space between said bowed walls; said first and second walls being bowed along the minor axis dimension (**48**) and being flat along the major axis dimension (**46**); a number of regularly spaced partitions (**50**) extending between the bowed walls in directions paralleling the major axis dimension; each partition having its edges welded to the bowed walls; each partition having ports (**52**) spaced therealong for passing pressurized suppressant to the openings formed by the enemy projectile; the bowed nature of the parallel walls (**38** and **40**) being such that one external face of the panel has a concave curvature and the other external face of the panel has a convex curvature; said panel being oriented so that its concave face mates against the convex surface of the fuel tank; the bowed walls of the panel being spaced apart approximately 1 inch; said partitions (**50**) being spaced apart about 1½ inch; the panel being formed of stainless steel that is precipitation hardened to have a yield strength of approximately 200,000 p.s.i.; tensioned steel strap means (**37**) extending along the convex face of the panel; and means anchoring the ends of the steel strap means to the fuel tank so that the panel is restrained against separation from the tank.

4,121,667

POTATO HARVESTER

Robert B. Curl, 1960 Floral Ave., P.O. Box 562, Twin Falls, Id. 83301

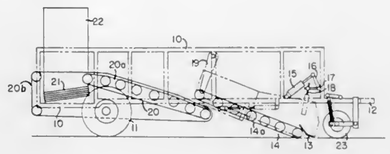
Filed Oct. 4, 1976, Ser. No. 729,394
Int. Cl.[2] A01D *13/00, 17/04, 33/14*
U.S. Cl. 171—110 10 Claims

1. A multirow root crop harvester having shovel means for unearthing the root crop and having a plurality of conveyors to convey said root crop to hauling means comprising:

(a) a primary bed having conveyor means thereon with said shovels attached thereto;

(b) a secondary bed having one end contiguous to and slightly below the upper end of said primary bed;

(c) lift means attached to the shovel end of said primary bed adapted to lift said shovels above ground level;



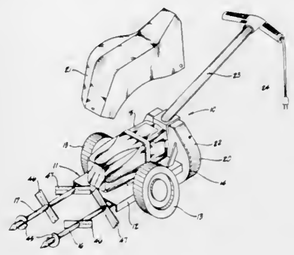
(d) shock absorbing shift means attached to said primary bed adapted to release the primary bed, to allow said primary bed to shift rearward upon the shovels striking a rigid object and to activate automatic lift means to lift said shovels from ground level.

4,121,668

MOTOR-DRIVEN CULTIVATOR WITH COUNTER-ROTATING AUGER SHAFTS

Earl L. Miner, Long Lane, Mo., assignor to Detroit Tool & Engineering Co., Lebanon, Mo.

Filed Jun. 29, 1976, Ser. No. 700,760
Int. Cl.[2] A01B *33/04*
U.S. Cl. 172—42 10 Claims



1. A cultivator device comprising:

(a) base means including a lower portion having front and rear ends,

(b) a pair of ground wheels operatively carrying the base means and having an axis of rotation disposed intermediate said front and rear ends,

(c) motor means carried by the base means and including a rearwardly extending drive shaft means,

(d) auger means including a pair of sleeves means attached to said lower portion in side-by-side relation and a pair of shaft means disposed below and parallel to the driveshaft means and above the ground engaging wheel surface when said auger shaft means are horizontal, each of said shaft means including a forward portion having cutting means and a rearward portion rotatively mounted in said sleeve means, said sleeve means supporting said rearward portion both forwardly and rearwardly of said ground wheel axis,

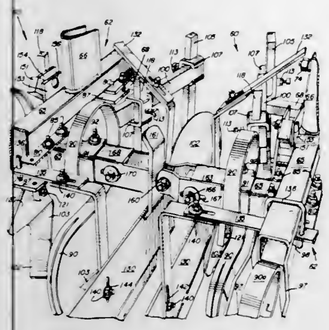
(e) drive means at the rear end of the base means connecting the motor drive shaft means to the rearward end of each auger shaft means for counter rotational movement of said auger shaft means, and

(f) handle means substantially non-hingedly operatively connected to the base means in rearwarldy extending relation for pivoting said base means about said ground wheels tending to lower said cutting means toward ground engagement and raise said drive means away from ground engagement when said handle means is raised.

4,121,669
FLOATING ROW-CROP CULTIVATOR

Harry Sosalla, Sac City, Iowa, assignor to Royal Industries, Inc., Sac City, Iowa

Filed Apr. 29, 1977, Ser. No. 792,353
Int. Cl.[2] A01B *39/24*
U.S. Cl. 172—181 24 Claims

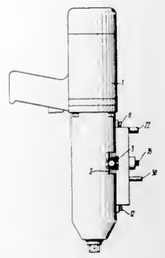


1. A row-crop cultivator for tilling the soil between adjacent rows of crops adapted for connection to a prime mover for travel over the ground in a forward direction comprising a drawbar assembly operatively connected to the prime mover, a plurality of laterally adjacent cultivating gang assemblies adapted to till the soil between adjacent crop rows, and connecting means for coupling each gang assembly to said drawbar assembly so as to permit each gang assembly to travel on the ground under its own weight and move independently in a vertical direction relative to an adjacent gang assembly as the cultivator travels forwardly along the ground, each gang assembly including a frame assembly coupled to the drawbar assembly by said connecting means, guide means carried by said frame assembly for following a path defined in the ground indicating the direction of movement for the gang assembly between adjacent crop rows, earthworking tools carried by said frame assembly to loosen or break up the soil between adjacent crop rows with ground opening means positioned at opposite lateral sides of the gang assembly for penetrating the ground along a line generally adjacent the respective crop rows, the ground opening means at the respective opposing lateral sides of adjacent gang assemblies being spaced apart to flank the crop row which passes between the adjacent gang assemblies as the cultivator travels along the ground, the respective ground opening means separating a block of soil from which the crops grow from the surrounding ground, and cooperating bearing means carried by said frame assembly including a first bearing member adjacent one lateral side of the gang assembly and a second bearing member adjacent the opposite lateral side of the gang assembly, the first bearing member of one gang assembly being cooperatively engaged and in contact with the second bearing member of an adjacent gang assembly and said bearing members being configured such that engagement of the respective bearing members prevents relative lateral movement between adjacent gang assemblies and permits relative vertical movement therebetween, each gang assembly thereby being operative to till soil between adjacent crop rows and is free to float along the ground by the connecting means.

4,121,670
IMPACT WRENCH

Georgy Afanasievich Antipov, Moscow; Vitaly Alexandrovich Berezhnoi, Rostov-na-Donu; Mikhail Lvovich Gelfand, Moscow; Boris Grigorievich Goldshtein, Moscow; Leonid Avrumovich Gornik, Moscow; Nikolai Stanislavovich Lavnikov, Rostov-na-Donu; Leonid Nikolaevich Teres, Rostov-na-Donu; Ivan Ivanovich Urazhdin, Rostov-na-Donu; Yakov Isaakovich Tsipenjuk, Solntsevo Moskovskoi oblasti, and Petr Stepanovich Yakubovsky, Rostov-na-Donu, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledova-Telsky I Proektno-Konstruktorsky Institut Mekhanizirovannogo I Ruchnogo Stroitelno-Montazhnogo Instrumenta, Vibratorov I Stroitelno-Otdelochnykh Mashin, U.S.S.R.

Filed Feb. 25, 1977, Ser. No. 772,147
Int. Cl.[2] B21J *11/02*
U.S. Cl. 173—20 2 Claims



1. A hand-held impact wrench comprising: a housing; an elongated rotatable hammer driven axially reciprocably in said housing for effecting axial displacement for imparting blows; a settable device on said housing settable to limit the number of axial displacements of said hammer thereby to limit the number of impact blows to a pre-set number; a latch means cooperative with said hammer and displaced to an unlatching position in response to each axial movement of said hammer and operable automatically to a latching position for mounting said hammer in an initial position for travel of the hammer in an impact direction for impa ing a pre-set number of impact blows upon restoration of the . ammer to said initial position after each impact; said settable evice having means manually settable to determine a pre-set number of impacts having counting means cooperative with said hammer mechanically detecting and counting axial displacements of said hammer and having mechanical means effective to lock the hammer upon the number count of detections corresponding with said pre-set number.

4,121,671
PILE DRIVING

Joe Edward West, 11426 Goodnight La., Dallas, Tex. 75229

Filed May 10, 1977, Ser. No. 795,489
Int. Cl.[2] B25D *9/00*
U.S. Cl. 173—131 8 Claims

1. Apparatus for increasing the effectiveness of a hammer-type pile driver comprising:

a first cylinder of selected diameter alignable with a pile to be driven and with the path of travel of a pile driving hammer;

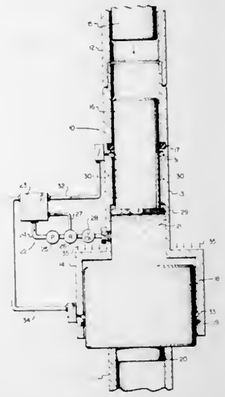
a second cylinder of selected diameter larger than that of said first cylinder, said cylinders being axially aligned and in communication with each other;

an anvil piston mounted for reciprocation in said first cylinder in position to be struck by the hammer of said pile driver;

a driving piston mounted for reciprocation in said second cylinder;

a pile cap connected to said driving piston and engageable with a pile to be driven;

means for applying a selected deadweight load for urging said second cylinder toward said pile to be driven;

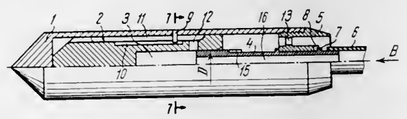


and means for maintaining the volume in said cylinders lying between said pistons filled with liquid.

4,121,672
REVERSING PNEUMATIC PERCUSSIVE DEVICE

Khaim Berkovich Tkach, ulitsa Gogolya, 17, kv. 49; Alexander Dmitrievich Kostylev, ulitsa Derzhavina, 19, kv. 44; Konstantin Stepanovich Gurkov, ulitsa Derzhavina, 19, kv. 13; Boris Nikolaevich Smolyanitsky, ulitsa O.Dundicha, 27, kv. 18; Vladimir Dmitrievich Plavskikh, ulitsa Gogolya, 233/1, kv. 34, and Vladimir Vasilievich Klimashko, ulitsa Novogodnaya, 44, kv. 24, all of Novosibirsk, U.S.S.R.

Filed Jun. 23, 1977, Ser. No. 809,312
Int. Cl.[2] E21B *11/02*
U.S. Cl. 175—19 1 Claim

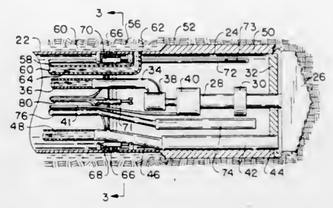


1. A reversible pneumatic percussive device comprising: a hollow cylindrical housing pointed at a front end, in the direction of hole formation; a hammer piston accommodated in said housing so as to prevent rotation about its axis and mounted for reciprocation to impart blows to the front end portion and a rear end portion of said housing, the hammer piston defining with said housing a front end work chamber and having, at a rear end part, a cylindrical space and at least one open-ended radial passage for establishing communication between said front end work chamber and the atmosphere and said cylindrical space at regular intervals; a stepped pipe having a large portion received in said cylindrical space of said hammer piston to define a rear end work chamber, a small portion of said pipe being received in the rear end portion of said housing for rotation about its axis within limits define by locking members, the pipe providing for permanent supply to said rear end work chamber of compressed air, said pipe opening the radial passage of said hammer piston at regular intervals to establish communication between said front end work chamber and said rear end work chamber, said pipe having at least one recess at a front end face of the large portion and a projection at a rear end face of the large portion which is located in alignment with said recess, the lengths of said recess and said projection being such that, when they are located opposite the radial passage of said hammer piston, air escapes from said front end work chamber at the position of said hammer piston which provides for imparting a blow to the rear end portion of said housing and compressed air is admitted to said front end work chamber at the position of said hammer piston to prevent a blow from being imparted to the front end portion of said housing, thereby reversing the movement of the device.

4,121,673
DRILLING AND INSTALLATION SYSTEM

Martin Dee Cherrington, 5147 Whitney Ave., Carmichael, Calif. 95608

Filed Nov. 10, 1976, Ser. No. 740,573
Int. Cl.[2] E21B *7/04*
U.S. Cl. 175—61 9 Claims



1. Apparatus for drilling and simultaneously installing a relatively large production casing along an invert underground arcuate path beneath an obstacle from a first position at or near ground level on one side of the obstacle to a second position at or near ground level at the other side of the obstacle comprising: a plurality of production casing segments each having preformed curvature corresponding to the radius of curvature of said arcuate path, said casing segments adapted to be joined end to end to form a continuous production casing; means for advancing said casing along said path from said first position; a drill head located in front of the leading end of the casing; means for mounting the drill head to the casing so that the angular orientation of the drill head relative to the axis of the leading end of the casing is at least partially adjustable; a drill bit located in front of the drill head and mounted thereto; means within the drill head for driving the drill bit to excavate a passageway along said path in advance of the casing; and means for controlling the angular orientation of the drill head relative to the axis of the leading end of the casing so that the passageway is excavated along said path from said first position to a second position and the casing is installed therealong; a conduit for lubricating mud within the casing fluidly communicated to the exterior of the casing proximate the leading end thereof; and means for injecting lubricating mud through the lubricating mud conduit so that the lubricating mud is expelled proximate the leading end of the casing to lubricate the casing as it is advanced along the excavated passageway.

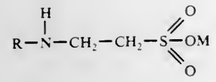
4,121,674
METHOD FOR FOAM DRILLING USING A BIODEGRADABLE FOAMING AGENT

Paul W. Fischer, Whittier, and David S. Pye, Brea, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

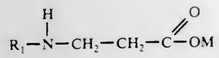
Filed Oct. 17, 1977, Ser. No. 842,663
Int. Cl.[2] E21B *21/00*; C09K *7/02, 7/08*
U.S. Cl. 175—66 12 Claims

1. In the method of conducting foam drilling and workover operations in a bore hole penetrating a subterranean reservoir, wherein foam is generated by contacting an aqueous solution of a foaming agent with a gas, and said form is caused to flow upwardly through the bore hole to carry solid and liquid materials out of the bore hole, the improvement which comprises using as said foaming agent a mixture comprising:

about 0.3 to 3 parts by weight of a foaming agent characterized by the formula:



per part by weight of a foaming agent characterized by the formula:



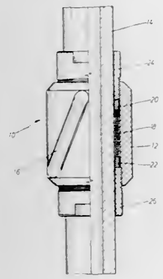
wherein R and R_1 are straight chain alkyl radicals having 10 to 16 carbon atoms and M and M_1 are alkali metal or ammonium cations.

4,121,675

APPARATUS FOR GRIPPING A SHAFT OR THE LIKE

Jeddy D. Nixon, Houston, Tex., assignor to Maurer Engineering, Inc., Houston, Tex.

Filed Oct. 4, 1976, Ser. No. 729,819
Int. Cl.[2] E21B *17/00*; E21C *9/00*
U.S. Cl. 175—325 **6 Claims**



1. Apparatus for gripping the surface of a shaft or the like comprising a housing through which the shaft extends, a body of wire mesh carried by the housing, and means to compress the body in a direction parallel to the shaft to move the wire mesh into engagement with the shaft and the housing to hold the shaft and housing from relative movement.

4,121,676

METHOD OF REDUCING HYSTERESIS IN A SPRING SCALE

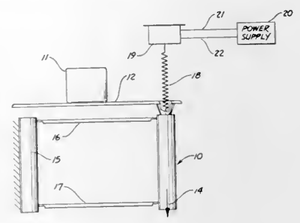
Daniel F. Dlugos, Huntington; John L. Lorenzo, Southbury, both of Conn.; Frederick J. Staudinger, North Salem, N.Y., and John F. Zettler, Stowe, Mass., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 12, 1977, Ser. No. 859,821
Int. Cl.[2] G01G *3/00*; G01L *5/12*
U.S. Cl. 177—225 **5 Claims**

1. A method of reducing the molecular effects causing hysteresis, creep and/or drift of a spring means used for supporting a load in a weighing scale, said method being practiced for the purpose of obtaining more accurate weight readings, said method comprising the steps of:

creating a varying magnetic field; and

inducing said varying magnetic field in said spring means for causing said spring means to reach a stable state of stress more quickly in response to said load being weighed upon said weighing scale and being supported by said spring means, whereby a more accurate weight reading will be obtained for said load.

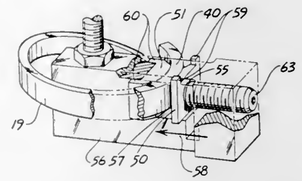


4,121,677

CLAMPING DEVICE FOR A COIL SPRING OF A WEIGHING SCALE

Leonard J. Macari, Stamford, Conn.; Frederick J. Staudinger, North Salem, N.Y., and Paul M. Kasarauskas, Stamford, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 12, 1977, Ser. No. 859,865
Int. Cl.[2] G01G *3/00*; F16F *1/12*
U.S. Cl. 177—225 **6 Claims**



1. A clamping device for a coil spring of a weighing scale, said clamping device comprising:

a block member having an opening for receiving a coil of a coil spring;

a pair of shims disposed in the opening of said block member, said pair of shims sandwiching said coil therebetween, each shim having an arcuate surface conforming to an arcuate surface of said coil, and each shim having means for preventing transverse movement of said respective shim with respect to said coil of said coil spring; and

locking means for locking said pair of shims and said coil of a fixed location with respect to said block member.

4,121,678

WEIGHING SCALE WITH CORRECTION FOR NON-LINEAR SPRING

Anthony Storace, Tarrytown, N.Y., and Samuel G. Taylor, Darien, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Aug. 29, 1877, Ser. No. 828,413
Int. Cl.[2] G01G *23/26, 3/00*
U.S. Cl. 177—230 **12 Claims**

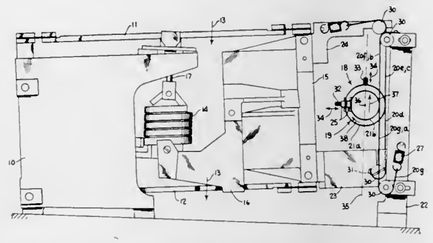
1. A weighing scale, comprising:

a frame;

a load support means being movable with respect to the frame and in response to a load being weighed;

biasing means disposed between said frame and said load support means, said biasing means supporting said load being weighed, and having a non-linear load supporting response to said load;

a non-linearity compensating means operatively connected between said movable load support and said frame for compensating for the non-linear response of said biasing means, said compensating means including a rotatable drum having means supported by the drum for adjusting the rotational moment of said drum, and at least one pair of drum supporting bands, a first band of which is operatively connected between the load support means and the drum, and a second band of which is operatively connected between the frame and the drum, whereby as the load support means moves in response to the load, the drum will be caused to rotate in response to the movement of the load support means, the rotational moment of the drum causing a balancing non-linear response of said biasing means, thus tending to cancel the non-linearity of said biasing means.

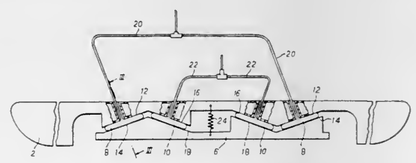


4,121,679

SELF-TRANSPORTING SUPPORT ARRANGEMENT

Adrian Anthony Cecil March, High Beeches, Swaineshill, Alton, Hampshire, GU34 4DP, England

Filed May 18, 1977, Ser. No. 798,252
Claims priority, application United Kingdom, May 20, 1976, 20853/76
Int. Cl.[2] B62D *57/02*
U.S. Cl. 180—8 C **14 Claims**



1. A helicopter undercarriage comprising

a pair of spaced apart generally parallel ground-contacting skids,

two transport shoes respectively associated with said skids, and movable horizontally and vertically with respect to the associated skid,

on each said skid, at least two downwardly facing surfaces both generally inclined to the horizontal, and relatively spaced apart longitudinally of the skid,

on each said shoe, at least two upwardly facing surfaces generally inclined to the horizontal and respectively opposed to said at least two downwardly facing surfaces of the associated skid,

an inflatable flexible bag located between each said downwardly facing surface and the respective opposed upwardly facing surface, each said bag being capable of rolling on said surfaces when they move horizontally relative to each other, the said bags when inflated applying horizontal and vertical force simultaneously so as to urge the skids and transport shoes apart, so that when friction between the skids and the ground is overcome the skids slide across the ground thereby transporting the helicopter across the ground, while each bag rolls on the said surfaces between which it is located, each said bag comprising an inner inflatable chamber and an outer inflatable chamber in the form of a tube extending around said inner chamber and lying between the inner chamber and the said surfaces between which the bag is located, and

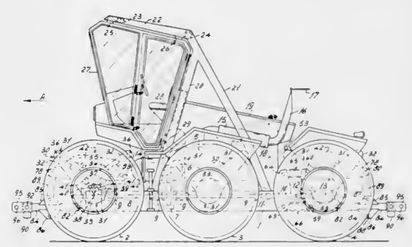
means for returning the transport shoes to their initial positions with respect to the skids when the bags are deflated following their inflation and the consequent sliding movement of the skids.

4,121,680

VEHICLES

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 540,824, Jan. 14, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,950
Claims priority, application Netherlands, Jan. 15, 1974, 7400508
Int. Cl.[2] B62D *61/10*
U.S. Cl. 180—24 **11 Claims**



1. A tractor comprising first and second frame parts supported on wheels, said wheels including three ground engaging wheels positioned one behind the other when the vehicle is seen from the side, an engine mounted on said first frame part, the overall length of said first frame part being substantially greater than that of said second frame part and being supported by two of said ground wheels, said first and second frame parts being interconnected with coupling means, a pivoted quadrangular structure included in said coupling means, said quadrangular structure having two pivotal axes vertically spaced apart on each said frame part, the upper and lower of said pivotal axes being respectively connected by substantially horizontal coupling elements when said wheels are supported on a horizontal surface with the tractor in an unloaded condition whereby said first frame part is adapted to move freely within limits in substantially vertical directions relative to said second frame part adjacent said coupling means, the length of the upper coupling element being smaller than the length of the lower coupling element whereby when said frame parts move relative to each other in substantially vertical directions within the limits of said quadrangular structure they are also tilted relative to each other about further axes which are substantially horizontal and transverse to the longitudinal axis of the tractor, and a lifting means connected to said second frame part at a location opposite to said coupling means relative to a said ground engaging wheel supporting said second frame part.

4,121,681

TRACTOR WITH DEMOUNTABLE COMPONENTS

John C. Jensen, 70 van Buren St., P.O. Box 271, South Haven, Mich. 49090

Filed Nov. 24, 1976, Ser. No. 744,614
Int. Cl.[2] B60K *5/10*
U.S. Cl. 180—54 D **7 Claims**

1. In a tractor assembly, the combination comprising:

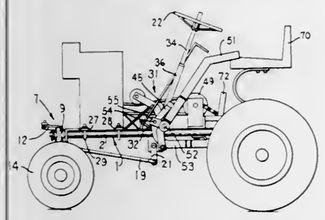
a frame structure comprising a pair of generally parallel side members and means holding same in fixed relationship with respect to each other;

a unitary front end assembly including wheels and steering means therefor and means removably fixing said front end assembly in operable relationship to said frame;

an engine having an output and means removably fixing said engine onto said frame;

a rear end assembly including drive wheels, axles, a transmission and means conducting output power from said transmission to said axles, and a means removably fixing said rear end assembly onto said frame, means on said rear end assembly also providing for affixing thereto of suitable draw bar means;

a unitary control assembly including clutch means, steering wheel means and brake means all carried by a single plate which is in turn removably mountable onto said frame;



drive means connecting the output of said engine to the input of said transmission and means operatively connecting said clutch means into said drive means and other means operatively connecting said steering wheel means to the steering means on the front end assembly;

whereby each of the frame, front end assembly, rear end assembly, engine and control assembly can be manufactured and shipped as separate units and same may then be assembled easily and quickly and by the use of only simple tools.

4,121,682

RADIATOR MOUNTING OF A VEHICLE, ESPECIALLY OF A MOTOR VEHICLE

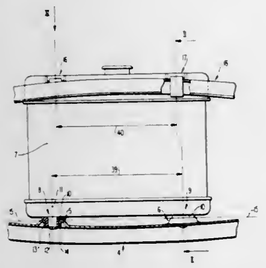
Hans Schaal; Wolf-Dieter Kurz, both of Stuttgart, and Ulrich Breitling, Esslingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 21, 1976, Ser. No. 752,987

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2557967

Int. Cl.[2] B60K *11/02*

U.S. Cl. 180—68 R **48 Claims**



1. A radiator mounting of a vehicle, comprising mounting support means fixed on the radiator and on the vehicle, the radiator resting by means of at least one mounting support means fixed on the radiator on a corresponding mounting support means fixed on the vehicle, mutually cooperating means secured on a relatively fixed vehicle part and on the radiator and operable as hold-down means and counter-support means for preventing the lifting of the mounting support means fixed on the radiator from the respective mounting support means fixed on the vehicle, and means for preventing the tilting of the radiator in both circumferential directions relative to a reference axis including abutment means fixed on the vehicle and cooperating with counter-abutment means fixed on the radiator for preventing the tilting of the radiator relative to said reference axis in one circumferential direction, and elastic connecting means operatively connected on the radiator and on a relatively fixed vehicle part for preventing the tilting in the other circumferential direction, characterized in that the connecting means additionally cooperates with one of said mutually cooperating means to effectively perform the hold-down function preventing the lifting of the mounting support means on the radiator from the mounting support means on the vehicle.

4,121,683

NOISE SILENCER ASSEMBLY

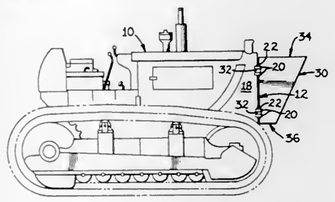
Yoshimasa Kohriyama, Tsukui, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Oct. 26, 1977, Ser. No. 845,763

Claims priority, application Japan, Feb. 28, 1977, 52-023508

Int. Cl.[2] B60K *11/04*

U.S. Cl. 180—68 P **6 Claims**



1. In a noise silencer assembly for noise control for use in an earthmoving vehicle provided with a cooling fan, a radiator, an engine enclosure, and an air discharge opening in said engine enclosure and which is open forwardly thereof; the improvement comprising a radiator grill removably attached to said engine enclosure and positioned in front of said air discharge opening, and a noise silencer positioned in front of said radiator grill and removably attached to said engine enclosure, said noise silencer having an inner surface, sound absorbing material attached to said inner surface, an upper air discharge opening and a lower air discharge opening, said upper air discharge opening having an open area larger than that of said lower air discharge passage, said noise silencer having an inner space diverging from the bottom toward the top, and includes a forward plate, a pair of side plates, and a bottom plate, said forward plate being inclined at an angle selected from the range of about 20° to 30° to the vertical.

4,121,684

TRUCK WITH TILTING CAB AND NON-TILTING SEPARATED SLEEPING COMPARTMENT

Donald L. Stephens, Los Gatos, and Herbert H. Izuno, Fremont, both of Calif., assignors to PACCAR Inc., Bellevue, Wash.

Filed Feb. 17, 1977, Ser. No. 769,794

Int. Cl.[2] B62D *33/06*

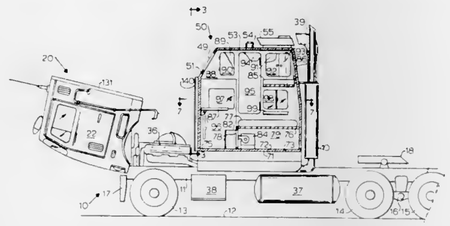
U.S. Cl. 180—89.14 **21 Claims**

1. A motor truck for hauling large payload trailers and having a truck tractor with a wheel supported chassis, an internal combustion engine mounted to said chassis at a front portion thereof and in driving connection with at least some of said supporting wheels, and a fifth wheel at the rear end of said chassis for connection to a said trailer, said tractor including in combination:

a tilting operator's cab normally over said engine in an operating position and hinged transversely to the front of said chassis for forward and upward tilting to provide access to said engine, said cab including a back wall defining an opening for a passageway,

a unitary sleeping compartment secured fixedly and non-tiltably to said chassis forward of said fifth wheel, with a front wall defining an opening for said passageway, said sleeping compartment being in longitudinal alignment with said cab so that said opening in the front wall of said sleeping compartment is in substantial registration with said opening of said back wall when said cab is in its untilted operating position,

said compartment having interior vertical space to provide at least partial standing headroom in a portion thereof, and



having interior horizontal space to provide area for at least one sleeping cot,

gap closing means mounted to said cab to the outer periphery of said back wall for closing a gap existing between said cab in said operating position and said compartment, and

releasable sealing means between said cab in said operating position and said compartment about the periphery of said passageway for sealing together interiors of said cab and said compartment when said cab is in said operating position without impairing the tilting of said cab.

4,121,685

APPARATUS FOR CONTROLLING THE TRAVELING SPEED OF A MOTOR VEHICLE

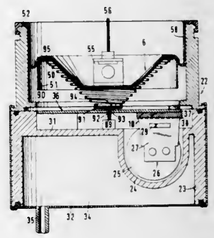
Arnold Mann, Bieber, Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Germany

Filed Aug. 1, 1977, Ser. No. 820,712

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636540

Int. Cl.[2] B60K *31/00*

U.S. Cl. 180—108 **8 Claims**



1. An apparatus for controlling the traveling speed of a motor vehicle with an electric control unit acted upon by a speed dependent signal, which unit compares the actual traveling speed with a predetermined desired traveling speed and upon a deviation transmits a signal which is dependent on the size of the deviation to a control stage which acts on an element, preferably a throttle valve, which influences the ratio of a fuel-air mixture fed to a motor of the vehicle, comprising

a control stage including an actuator means performing a stroke and for actuating the element,

two electromagnetically actuatable valve means operatively coordinated to said actuator means for admitting said actuator means with reduced- and above atmospheric-pressure, respectively, or reduced- and normal pressure, respectively,

said control stage further comprising an electromagnetic system comprising a U-shaped yoke having legs, an excitation coil carried by said yoke and an armature means operatively cooperating therewith immerging between said legs,

spring means for biasing said armature means and having a spring force dependent on the stroke of said actuator means,

said armature means being pivotally mounted for smooth pivoting from a rest position in which both of said two valve means are closed, against the force of said spring means into operating positions, respectively, in which one of said two valve means is opened and the other of said two valve means is closed,

a stationary bearing surface,

two axially adjustable pivot pins supporting said armature means on said stationary bearing surface,

said armature means has at least one free end and is guided on said at least one free end, and

means for limiting the movement of said armature means opposite to a direction of the spring force.

4,121,686

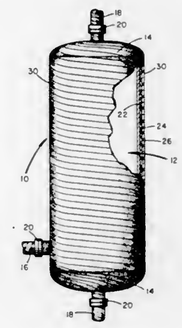
HOLLOW SOUND-DAMPENED STRUCTURE

Moreau A. Keller, Jr., Rte. 1, Box 242, Milton, Del. 19968

Filed Jun. 9, 1977, Ser. No. 805,012

Int. Cl.[2] F01N *1/24*

U.S. Cl. 181—233 **17 Claims**



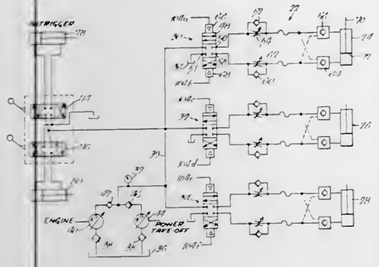
1. A hollow sound-dampened structure for reducing propagation of high frequency sound waves through its wall of at least 500 Hz when fluent material is flowing in said structure, comprising a hollow walled body, a covering of a high frequency sound-transmission barrier material loaded with solids to produce a material having at least one pound per square foot total weight, said sound-transmission barrier material surrounding the outer surface of said walled body and positioned adjacent to it, and a spiral outer wrapping of thin flexible plastic material covering said sound-transmission barrier material and maintaining it firmly about said body, whereby high frequency sound waves of at least 500 Hz produced by high velocity flow of fluent material in said hollow body are dampened.

4,121,687

CONTROL SYSTEM FOR HYDRAULIC LIFTS

Roy E. Ulrich, II, Lancaster, and Gerard Engel, Parksburg, both of Pa., assignors to Ulrich Supply Company, Inc., Lancaster, Pa.

Filed Nov. 8, 1976, Ser. No. 740,122
Int. Cl.[2] B66F *11/04*
U.S. Cl. 182—2 **14 Claims**



1. In a system for operating a hydraulic cylinder of a hydraulic lift, said cylinder having first and second fluid inlets thereto, a closed center hydraulic circuit in which hydraulic fluid flows only upon operation of said cylinder and including pump means for providing hydraulic fluid under pressure to said circuit; motor means for driving said pump means, said motor means operating continuously during operation of said system and said pump means operating to provide fluid only upon operation of said cylinder and when the pressure of fluid in said circuit is less than a predetermined value, whereby said pump means and motor means maintain the pressure of fluid in said circuit at the predetermined value; directional valve means for receiving the fluid under pressure, said valve means being connected with said cylinder inlets, and means for controlling said valve means to selectively apply the fluid under pressure therethrough to one or the other of said inlets to operate said cylinder in a first or a second direction.

4,121,688

SAFETY HARNESS FOR LIMITED MOBILITY

Warren Stephen Lirakis, Moorland Farm, Newport, R.I. 02840

Continuation-in-part of Ser. No. 621,635, Oct. 8, 1975, abandoned. This application Nov. 1, 1976, Ser. No. 737,393
Int. Cl.[2] A62B *1/16*; A47L *3/04*
U.S. Cl. 182—3 **2 Claims**



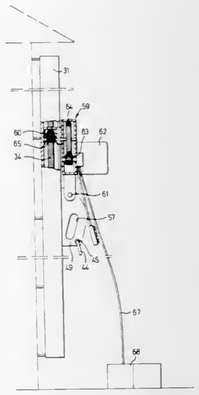
1. A safety harness for limited mobility of the person wearing the same comprising strap portions of a width greater than their thickness arranged in crossing relation for positioning against the back of the user and each of a length from the point of crossing to extend in one direction from said point of crossing about the body of the user and approach each other in opposite directions in the front of the user, loops at the frontal portion of each said strap portion, said strap portions extending from the point of crossing in the opposite directions, each of a length to extend over one shoulder of the user to a point adjacent one of said loops, means to secure the ends of said strap portions together at a point adjacent at least one of said loops, means to secure the loops to each other comprising a tether of extended length having one end secured adjacent one of said loops with the other end free and an attaching device secured to the free end, said loops and the free end of said tether being so relatively sized that the free end of the tether may be passed through said loops whereby the tether is passed through the other of said loops and thence through said one loop in a sufficient number of times to provide a selected length adapted to be fastened to an object.

4,121,689

ESCAPE MECHANISM

François Bonvin, Rue du Lac 19, 3960 Sierre (Canton of Valais), Switzerland

Filed Apr. 12, 1977, Ser. No. 786,964
Int. Cl.[2] A62B *1/00*
U.S. Cl. 182—3 **8 Claims**



1. An escape mechanism comprising:
a vertically disposed hollow rail (**1**; **31**),
at least one rack (**4**; **34**) disposed within said rail, and
at least one running and suspension apparatus (**19**; **49**) equipped with support means (**5,5'**; **35,44**) and including an engagement portion (**20**; **50**) comprising at least one pinion (**8**; **38**) and adapted to be introduced within said rail in such a way that said pinion engages said rack for allowing said apparatus to move along said rail only upon rotation of said pinion, said engagement portion comprising impeding means having inertial escapement members (**53,52'**) for hindering said rotation and for slowing the descent by gravity of said apparatus while said engagement portion is engaged within said rail.

4,121,690

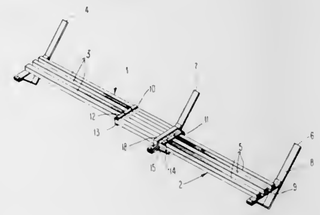
ROOFER'S STAGING

Eugene Rawlings, 1319 Lincoln Ave., Prospect Park, Pa. 19076, and Frederick J. Olsson, 212 Spruce Tree Rd., Radnor, Pa. 19087

Filed Sep. 1, 1977, Ser. No. 829,660
Int. Cl.[2] E04G *5/08, 3/12*
U.S. Cl. 182—45 **13 Claims**

1. A roofer's staging comprising:
a first platform including a plurality of first beams spaced apart and extending parallel to and co-extensive with one another, the beams constituting a platform for a roofer;
a first support adjacent one end of said first beams and having a roof section and a platform section, the roof section being adapted to engage a roof for mounting the staging thereon and the platform section being fixedly connected to and supporting said first beams;

a second platform including a plurality of second beams spaced apart and extending parallel and co-extensive with one another, the beams constituting a platform for a roofer;
a second support adjacent one end of the second beams and having a roof section and a platform section, the roof section being adapted to engage a roof for mounting the staging thereon and the platform section being fixedly connected to and supporting said second beams;
said first and second beams being telescoped together and the respective beams and their supports being longitudinally slidable relative to one another as between a closed position and an open position, in the closed position the respective beams forming a unitary pack for a roofer to carry up a ladder and deposit on a roof, the length of the pack being substantially less than the length of the staging and in the open position the beams being longitudinally spaced whereby one platform is an extension of the other and an expanded staging is formed;
first means disposed adjacent the opposite end of said first beams and operatively, slidably connected between the first and second beams and maintaining the beams in telescoped condition;



second means disposed adjacent the opposite end of said second beams and operatively, slidably connected between the first and second beams and maintaining the beams in telescoped condition;
an intermediate support disposed between said first and second means, the support having a roof section and a platform section, the roof section being adapted to engage a roof for mounting the staging thereon and the platform section supporting and having a sliding engagement with said first and second beams;
the intermediate support also having keeper means fixed to the support and having a sliding engagement with said first and second beams; and
the keeper means and the platform section holding the intermediate support and beams together and providing for the intermediate support and the beams to be relatively longitudinally slidable whereby when either one of said first or second supports and its beams are fixed to the roof and the other support and its beams are not fixed to the roof, said other support and beams can be moved as between said closed and open positions.

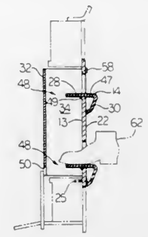
4,121,691

COMPOSITE INSPECTION PLATE-STEP

Eugene M. Poplawski, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 17, 1977, Ser. No. 842,817
Int. Cl.[2] B60R *3/00*
U.S. Cl. 182—90 **10 Claims**

1. A composite inspection plate-step, comprising:
a first member having a middle portion, inner and outer surfaces, and at least one opening of preselected configuration through said middle portion, said opening being defined by a lower edge;
a step member having first and second portions and being of a general "J" configuration, said first portion extending substantially completely across and a preselected distance through the first member opening and being fixedly connected to and oriented generally normal to the lower edge and generally horizontal in the installed position of the first member, and said second portion having at least one



opening being of a size sufficient for receiving the fingers of a man's hand being fixedly connected to the outer surface of said first member; and
means for releasably connecting the first member over an inspection port of associated structure.

4,121,692

LADDER TRAY

Janus Morawski, 368 Spadina Rd., Toronto, Canada

Filed Apr. 4, 1977, Ser. No. 784,063
Int. Cl.[2] E06C *7/14, 7/48*
U.S. Cl. 182—129 **3 Claims**

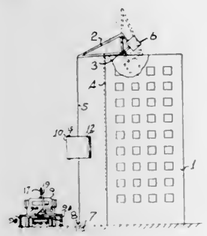
1. A ladder support of the type adapted to be attached to the upper end of a ladder having hollow tubular rungs to hold the same away from a wall or the like and comprising;
an integral one-piece supporting frame having a central cross-member and two side members formed integrally from a single length of material, with the side members making acute angles relative to the cross member and converging towards one another from their junction with said cross member;
two free ends on said side members angled relative thereto whereby to lie parallel and spaced apart from one another whereby to receive the upper end of a ladder therebetween and having holes therethrough;
tray means fastened between said cross-member and said side members and supporting the same;
through bolt fastening means at said free ends of said frame for passing completely through said holes and through a said hollow rung and securely fastening said free ends of said frame on either side of said ladder said bolt fastening means being undersize relative to said rung thereby permitting a floating action between the ladder support, and ladder, in use, and,
bracing means attached to said frame adapted for connection with said ladder to brace said supporting frame while permitting said floating action.

4,121,693

METHOD AND MEANS RELATING TO HIGH RISE BUILDING ACCESS FOR FIRE FIGHTING PURPOSES

Philip W. Fry, 7 Culford Ave., Klemzig, South Australia, Australia (5087)

Filed Dec. 22, 1976, Ser. No. 753,590
Claims priority, application Australia, Dec. 24, 1975, PC4405
Int. Cl.[2] A62B *1/02*
U.S. Cl. 182—131 1 Claim



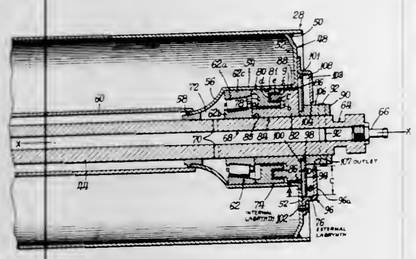
1. An arrangement for assisting access to a high rise building in the event of fire within the building, characterized by including a support frame secured to the structure of the building, and positioned at or toward an uppermost part of the building, and having at least one position in which a portion of the frame extends outwardly past the side of the building, at least two chains each having an upper end supported by the said support frame, and each hanging downwardly from the supported end, so that, with the frame in the stated position, each chain hangs substantially away from the face of the building, each chain being at least substantially of a length of the height of the building and having free lower ends, and anchor means situated below each chain and adapted to engage therewith and provide reaction for stabilizing means to engage and hold the said chains under applied stabilizing tension, the support frame being secured to the building by support means such that the support frame can assume a retracted position in which the supported chains are hanging in a position adjoining the face of the building, and a cabin supported by engagement with said chains and the cabin has an extendable walkway, said walkway being pivotally secured to a side end of said cabin and being pivotal in a horizontal plane to provide access to the building at an area spaced from the retracted positions of said chains.

4,121,694

LABYRINTH LUBRICANT SEAL FOR BELT CONVEYOR ROLL

Robert C. Nelson, Bluefield, W. Va., assignor to New River Manufacturing Company, Inc., Glen Lyn, Va.

Filed Oct. 28, 1975, Ser. No. 625,917
Int. Cl.[2] F16N *17/06*
U.S. Cl. 184—6 6 Claims



1. In a conveyor roll having a shaft, a cylindrical shell concentric with the shaft and having at each end an end cap closing the shell, with anti-friction bearing means at each end supporting the shell and end caps for rotation about the shaft, an improved labyrinth seal comprising:

an internal labyrinth and an external labyrinth at each end of said shaft;

each said internal labyrinth including a rotatable bushing carried by said sheel axially outwardly of the corresponding bearing means and a non-rotatable collar carried by said shaft, said bushing and collar having a series of facing cylindrical and annular surfaces providing a labyrinthine passageway of restricted cross-section extending from the bearing means to an annular outlet at the end of the shell;

each said external labyrinth including a first radially extending annular flange having a central opening, the wall of said opening being secured about the shaft, the flange being spaced axially outwardly of said cap a predetermined distance, a second annular flange having a first outer marginal edge portion secured to the cap, a second portion overlying but spaced from the outer edge of the first annular flange and a third portion extending from the second portion in a direction parallel to said first annular flange and spaced axially outwardly thereof by a distance greater than said predetermined distance;

said first annular flange overlying the end cap and having its free outer edge extending radially outwardly beyond the wall of said annular outlet and spaced axially therefrom to provide an inner radial passage normal to the rotational axis of the shell;

said second annular flange having its free inner edge extending radially inwardly beyond the wall of said annular outlet to provide an outer radial passage normal to the rotational axis of the shell;

said inner and outer radial passages being interconconnected around the free outer edge of said first annular flange;

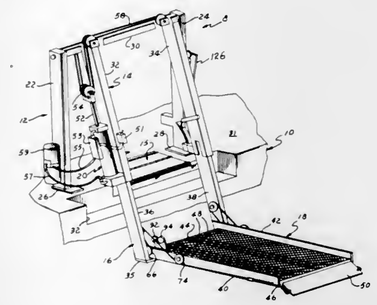
whereby said outer radial passage has a longer lubricant containing dimension than said inner radial passage, measured radially from the shell axis, and whereby further centrifugal force tending to retain lubricant in said other radial passage counteracts centrifugal force tending to move lubricant outwardly in said inner radial passage.

4,121,695

HYDRAULIC WHEELCHAIR LIFT

Robert M. Carpenter, Indian Harbor Beach, Fla., assignor to Target Industries, Inc., West Springfield, Mass.

Filed Mar. 24, 1977, Ser. No. 781,032
Int. Cl.[2] B60P *1/44*
U.S. Cl. 187—9 R 10 Claims



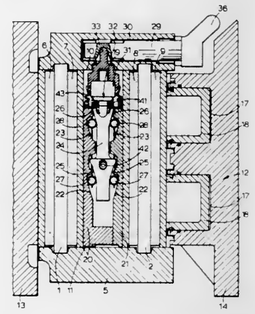
1. Wheelchair lift for installation in van-type vehicles comprising a swing frame pivotable adjacent its upper end for movement from a position within the body of the van to a position extending outwardly of the van, a slide frame carried by said swing frame and movable upwardly and downwardly relative to the lower end of said swing frame, a wheelchair supporting platform carried adjacent the lower end of said slide frame and pivotable to and from a horizontal position and a folded upright position generally coplanar within the swing frame, drive means for raising and lowering said slide frame relative to the swing frame and for pivoting said platform to and from its horizontal position, said drive means including an hydraulic ram, a flexible drive operable in response to said ram connected with said platform for pivoting the same between its horizontal and upright positions and with said slide frame for moving the same upwardly and downwardly relative to the lower end of said swing frame, said lift including means for guiding said flexible drive means from said hydraulic ram to points of engagement with the swing frame and the pivotable platform.

4,121,696

DISC BRAKES FOR VEHICLES

Hugh Grenville Margetts, Leamington Spa, England, assignor to Girling Limited, Birmingham, England

Filed May 4, 1977, Ser. No. 793,890
Claims priority, application United Kingdom, May 5, 1976, 18324/76
Int. Cl.[2] F16D *55/08, 55/10, 55/228*
U.S. Cl. 188—71.3 16 Claims



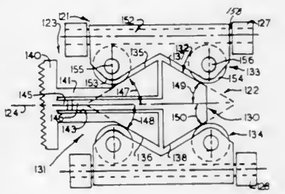
1. A disc brake assembly for a vehicle comprising a first inboard axially fixed disc, a second outboard axially fixed disc spaced axially from said first disc, each disc having an inner face and an outer face, said inner faces being adjacent to each other, a drag-taking member extending over the peripheral edges of both said discs, first and second friction pads for engagement with said inner and outer faces of said inboard disc, third and fourth pads for engagement with said inner and outer faces of said outboard disc, a mechnical expander mechanism housed in said drag-taking member between and acting directly upon said first and third friction pads, a mechanical actuating mechanism for operating said expander mechanism, said actuating mechanism comprising an axially extending actuating rod journalled for rotation in an axially extending bore in said stationary member and extending over the perpheral edge of one of said discs, means to effect actuation of said expander mechanism in response to rotation of said rod, and operating means for rotating said rod located adjacent to said outer face of the said one disc over the peripheral edge of which said rod extends, and a clamp assembly extending over said peripheral edges of both said discs, said clamp assembly comprising coupled first and second beams and incorporating an actuator acting between said first beam and said second friction pad to apply that pad to said outer face of said first inboard disc, and said second beam acting on said fourth friction pad to apply thereto a reaction force to apply that pad to said outer face of said second outboard pad.

4,121,697

CAM ACTUATED CALIPER BRAKE ASSEMBLY

Jacob Kobelt, 6100 Oak St., Vancouver, B. C., Canada (V6M 2W2), and Helmut Edward Fandrich, Vancouver, Canada, assignors to Jacob Kobelt, Vancouver, Canada

Filed Sep. 29, 1976, Ser. No. 727,688
Int. Cl.[2] F16D *65/16*
U.S. Cl. 188—72.7 7 Claims



1. A caliper brake cam means for use in a caliper brake assembly in which the assembly includes: a frame; a pair of arms hinged to the frame for rotation about parallel hinge axes; a pair of opposed brake shoes hinged adjacent opposed inner ends of the arms and adapted to brake a braked member sandwiched between the shoes; and a brake actuator mounted on the frame and having a cylinder portion having a hollow strut with a passage extending therefrom, and a complementary rod portion having a connecting rod passing through the passage of the hollow strut; the caliper brake cam means being characterized by:

(a) a cam member having two cam elements including first and second wedge portions each with respective pairs of cam surfaces, a pair of cam surfaces of the first wedge portion being inclined oppositely and at equal angles to adjacent pairs of cam surfaces of the second wedge portion so that the wedge portions are effectively disposed back-to-back, the cam surfaces being inclined at equal but opposite angles to the direction of displacement of the cam members; the first wedge portion being connected to the connecting rod and the second wedge portion being connected to the cylinder portion of the actuator, so that when the actuator is actuated the wedge portions move in opposite directions, the direction of displacement of the cam member being parallel to the hinge axis,

(b) each cam follower includes a roller mount and a pair of rollers, each roller mount being journalled for rotation about an axis disposed parallel to the hinge axis, and each roller contacting a respective cam surface of the respective wedge portion, the pair of rollers of each cam follower being journalled for rotation in the roller mount about roller axes disposed normally to the hinge axis of the respective arm,

so that as the wedge portions move relative to each other the rollers concurrently roll on the adjacent cam surfaces to actuate the brake.

4,121,698

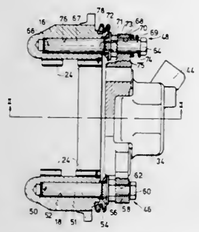
SLIDING CALIPER DISC BRAKE

Heinz Willi Baum, Dudweiler, Fed. Rep. of Germany, assignor to Girling Limited, Birmingham, England

Filed May 31, 1977, Ser. No. 801,919
Claims priority, application United Kingdom, Jun. 1, 1976, 22498/76
Int. Cl.[2] F16D *65/02, 55/224*
U.S. Cl. 188—73.3 6 Claims

1. In a sliding caliper disc brake of the type comprising a torque member, a caliper member slidably mounted on the torque member for straddling a minor portion of the periphery of a rotatable disc, and an actuator for directly urging a friction pad against one side of the disc to cause the caliper member to slide relative to the torque member to apply by reaction an

opposite friction pad onto the other side of the disc, the caliper member being slidably mounted on the torque member by a sliding connection which includes a pin element having a portion slidably received in one of said members, said pin element being connected to the other of said members by means permitting lateral displacement of said pin element with respect to said other of said members, the improvement comprising means defining laterally extending first friction surfaces on the pin element and on said other of said members and



means axially biassing said first friction surfaces towards each other so as to provide frictional resistance to said lateral displacement, said axial biassing means comprising a metallic spring means disposed around the pin element between opposed second friction surfaces on the pin and on said other of said members, respectively, said spring means being laterally slidable in relation to said second friction surfaces in response to relative lateral displacement of the pin and said other of said members.

4,121,699

DISK BRAKE ASSEMBLY FOR AUTOMOTIVE VEHICLES

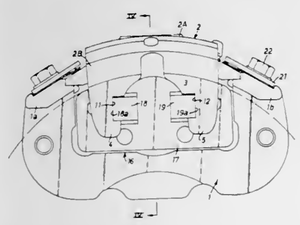
Matsuhisa Tsuruta; Masatada Yokoi; Juichi Shibatani; Harumi Ohori, and Yuichiro Obu, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of, Japan

Filed Jun. 21, 1977, Ser. No. 808,610

Claims priority, application Japan, Jun. 23, 1976, 51-82236[U]

Int. Cl.[2] F16D *65/02*

U.S. Cl. 188—73.3 **4 Claims**



1. In a disk brake assembly comprising a stationary support member having a pair of support shoulders extending in an axial direction; a rotary disk; a caliper member slidably movable on the shoulders of said stationary support member in the axial direction and straddling a portion of said rotary disk; first and second brake shoes respectively including a backing plate with a brake lining fixed thereto; said caliper member having a fluid actuator on one side thereof to press the lining of said first brake shoe against one face of said disk and a reaction portion on the opposite side thereof to press the lining of said second brake shoe against the other face of said disk due to reaction force caused by application of said fluid actuator, said reaction portion having a pair of spaced support legs to support the backing plate of said second brake shoe thereon;

the improvement comprising the backing plate of said second brake shoe being located between said shoulders of said stationary support member and smaller in length dimension than the spacing between the two shoulders of said stationary support member, and a rectangular shaped notched recess being formed on the inside surface of each said support leg and opposing each other, said recesses being opened at their inner sides respectively; and wherein the backing plate of said second brake shoe is provided thereon with a rectangular shaped abutment means engaged within said recesses to hold said second brake shoe in place against circumferential movements, said caliper member and said second brake shoe being movable radially of said stationary support member thereby allowing said abutment means to be movable in said recesses in the axial direction toward said fluid actuator for replacement of said second brake shoe.

4,121,700

DISC BRAKES FOR VEHICLES

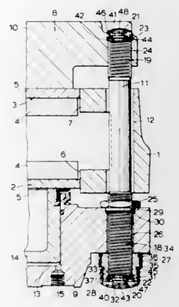
Hugh Grenville Margetts, Leamington Spa, and Peter Charles Knight, Birmingham, both of England, assignors to Girling Limited, Birmingham, England

Filed Jun. 22, 1977, Ser. No. 808,958

Claims priority, application United Kingdom, Sep. 3, 1976, 36561/76

Int. Cl.[2] F16D *55/224*

U.S. Cl. 188—73.4 **14 Claims**



1. A disc brake comprising first and second friction pad assemblies for engagement with opposite faces of a rotatable disc, a relatively stationary carrier member, actuating means for urging said first friction pad assembly directly into engagement with a first face of said disc, a clamping member straddling a portion of the periphery of said disc, said clamping member comprising first and second pressure plates which are chordal to said disc and are located on opposite sides thereof with said first pressure plate located adjacent to said first friction pad assembly, said second pressure plate acting on said second friction pad assembly, and circumferentially spaced draw-bars which interconnect said pressure plates at the outermost ends thereof and determine the axial spacing between said pressure plates, the reaction of said actuating means acting indirectly on said second friction pad assembly through said second pressure plate such that said second friction pad assembly is applied to a second face of said disc opposite said first face, at least one of said draw-bars having first and second opposite ends of which said first end includes a threaded portion and one of said pressure plates has a clearance bore through which said threaded portion is passed, and a pair of axially spaced inner and outer nuts are both axially adjustably screwed onto said threaded portion on opposite sides of said one pressure plate and between which said one pressure plate is clamped.

4,121,701

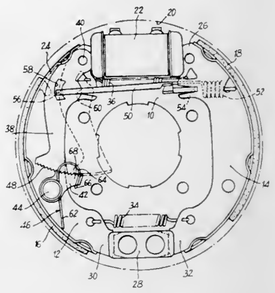
ADJUSTING ASSEMBLY FOR A DRUM BRAKE

Nicolas Gestkoff, Asnieres, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Jun. 30, 1977, Ser. No. 811,518

Int. Cl.[2] F16D *65/54*

U.S. Cl. 188—79.5 GE **2 Claims**



1. In a drum brake having a pair of brake shoes which are engageable with actuating means situated between adjacent ends of the pair of brake shoes, and an adjusting means comprising a lever pivotally mounted on one of said pair of brake shoes, a pawl pivotally mounted on the one brake shoe and engageable with the lever, an operating member cooperating with the lever to provide for rotation of the lever upon movement of the pair of brake shoes and a spring biasing the pawl into engagement with the lever, the improvement wherein said spring includes a first arm engaging the one brake shoe and a second arm, said second arm substantially forming a semicircle engageable with said pawl and said lever at the engagement therebetween to retain said pawl in alignment with said lever, said semicircle terminating in an end which is engageable with said pawl to bias the latter into engagement with said lever.

4,121,702

EMERGENCY BRAKE FOR RAIL CARS

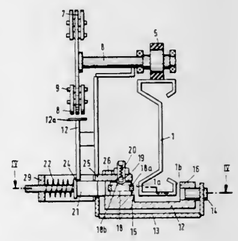
Karl Ernst Kaufmann, Wetter, Germany, assignor to Demag, A.G., Duisburg, Germany

Filed Jul. 14, 1977, Ser. No. 815,604

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632244

Int. Cl.[2] B60T *8/16*

U.S. Cl. 188—187 **9 Claims**



1. An emergency brake for a railway car traveling on a rail, comprising

(a) a brake housing;

(b) a brake antifriction body disposed in said housing for engaging the rail;

(c) a brake shoe disposed in said housing adjacent the rail surface and defining a braking surface; characterized by

(d) a brake tappet normally held in a retracted position in said housing and mounted for movement toward and away from the rail surface;

(e) one end of said brake tappet engageable with said brake antifriction body upon movement of said brake tappet toward said rail surface to thereby effect engagement between said antifriction body and said rail surface;

(f) a centrifugal speed governor associated with the end of said brake tappet opposite said brake antifriction body;

(g) said governor engaging the rail to monitor the speed of said railway car attached to said brake housing, and operable to allow release of said brake tappet from said retracted position for movement into engagement with said brake antifriction body at a preset speed;

(h) said brake shoe having extensions with tapered surfaces extending at each end thereof in directions of movement of said railway car attached to said brake housing;

(i) said tapered surfaces defining a space of gradually decreasing cross section between said braking surface and said rail for wedging said brake antifriction body therebetween upon engagement of said antifriction body and said rail thereby braking said railway car;

(j) a cam surface in said brake antifriction body;

(k) a locking detent extending into said cam surface for holding said brake antifriction body in non-braking position spaced from said rail surface; and

(l) a lock spring engaging said detent for urging said detent against said cam surface.

4,121,703

AUTOMATIC SLACK ADJUSTERS FOR VEHICLE BRAKE LINKAGES

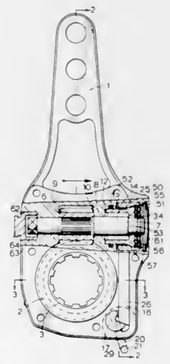
Norman Sydney Moss, West Midlands, England, assignor to Girling Limited, Birmingham, England

Filed Jul. 11, 1977, Ser. No. 814,733

Claims priority, application United Kingdom, Jul. 13, 1976, 29040/76

Int. Cl.[2] F16D *65/56*

U.S. Cl. 188—196 BA **4 Claims**



3. An automatic slack adjuster for a vehicle brake applying linkage of the type comprising a shaft mounted for rotation about its longitudinal axis for applying or releasing the brake, and a housing which constitutes a lever in the linkage and is mounted for rocking movement about said axis of said shaft and with respect to a relatively stationary part, wherein said adjuster comprises a worm wheel mounted on and secured against rotation relative to said shaft, a worm mounted in said housing and meshing with said worm wheel to transmit angular movement of said lever to said shaft, and automatic worm driving means for rotating said worm with respect to said housing to compensate for slack in said linkage in response to relative movement between said lever and said relatively stationary part, said automatic worm driving means incorporating

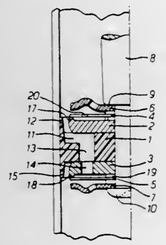
a connection having a degree of lost-motion equivalent to a desired braking clearance, said connection including a clutch comprising first clutch means coupled to said worm, second clutch means, and resilient means for urging said second clutch means normally into driving engagement with said first clutch means, and a linearly slidable pawl acting between said second clutch means and said stationary part to effect rotation to said second clutch means after relative movement between said lever and said stationary part has exceeded a value equivalent to said degree of lost-motion, and wherein said clutch is of the cone type comprising a single first and a second interengaging clutch members.

4,121,704

VALVE ASSEMBLY FOR A PISTON OF A TELESCOPIC DAMPER

Lawrence George Nicholls, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 21, 1977, Ser. No. 779,483
Int. Cl.² F16F *9/348*
U.S. Cl. 188—282 **5 Claims**



1. A valve assembly for a telescopic damper, comprising a piston member, first and second flow channels extending through said piston member between opposite axial sides of said piston member, said first and second flow channels having inlet and outlet ends respective at one side of said piston member and outlet and inlet ends respectively at the other side of said piston member, a pair of separate valve seat members located one on each side of said piston member in face-to-face abutment with a respective opposide side of said piston, said seat members having flow apertures therethrough and each valve seat member presenting an annular seat axially directed away from said piston, and a pair of flexibly resilient annular valve members, each valve member having an inner periphery secured with respect to a respective seat member and a portion adjacent the outer periphery thereof bearing against said annular seat of the associated seat member, said seat and valve members permitting flow through said first and second channels in opposite respective directions through said piston member.

4,121,705

WEAR RING FOR SPRING OF FRICTION COUPLING

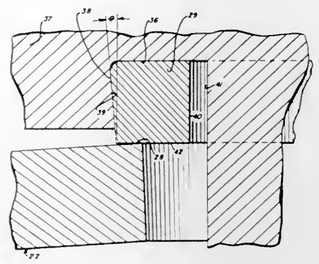
Richard L. Hedgcock, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 29, 1977, Ser. No. 820,175
Int. Cl.² F16D *13/44*
U.S. Cl. 192—89 B **11 Claims**

1. In a power drive assembly having a housing, a drive mechanism removably installed in said housing, and an annular biasing spring installed in said housing for biasing said mechanism, an improved wear ring arrangement comprising:

means on said mechanism defining an undercut annular groove opening coaxially toward an end of the biasing spring; and

a wear ring removably installed in said groove to engage said end of the biasing spring in the assembled arrangement of the power drive assembly, said wear ring having a cross section complementary to the undercut groove cross section whereby the mechanism may be installed in



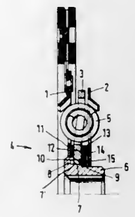
the housing with the groove opening downwardly and the wear ring maintained therein to removably engage said end of the biasing spring.

4,121,706

HUB, ESPECIALLY FOR CLUTCH DISKS OF MOTOR VEHICLES

Egon Zapf, Bühlertal, Germany, assignor to LuK Lamellen und Kupplungsbau GmbH, Buhl, Baden, Germany

Filed Feb. 17, 1977, Ser. No. 769,781
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1976, 2606373
Int. Cl.² F16D *3/14*
U.S. Cl. 192—106.2 **6 Claims**



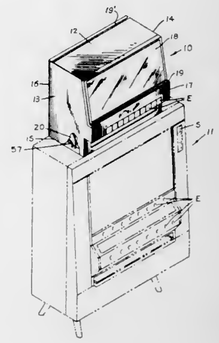
1. A hub comprising a cylindrical hub body and means comprising a flange member for flanging the hub body, said flanging means being slidably mounted on and fastened to said hub body and extending in radial direction, at least one of said hub body and said flanging means being formed with profiling for effecting a form lock against relative movement thereof at least in circumferenctial direction, a respective abutment formed on said hub body on each side of said flanging means, at least one of the abutments being a wedged-over portion of the hub body received in a channel formed in said flanging means, said channel being formed in a radially extending surface region of said flanging means, and said wedged-over portion of the hub body being received in said channel flush with said surface region so as to form with said surface region a continuous annular surface extending radially from the cylindrical hub body, both the surface of the wedged-over hub body portion and the flanging means surface region being engageable by a friction ring mountable on said cylindrical hub body.

4,121,707

SATELLITE VENDING MACHINE

Philip F. Jacobs; Evelyn Friedman; Peter Southall, all of Whitehall, N.Y.; Cyrus A. Alldred, Sherrills Ford, and Frank M. Kecseti, Winston-Salem, both of N.C., assignors to E. B. Metal & Rubber Industries, Inc., Whitehall, N.Y.

Filed Feb. 23, 1977, Ser. No. 771,377
Claims priority, application Sweden, Mar. 2, 1976, 7602950
Int. Cl.² G07F *5/16*
U.S. Cl. 194—10 **30 Claims**



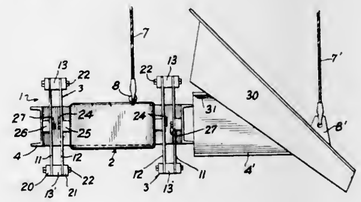
1. The combination of a first vending machine with a second vending machine having a cabinet and therewithin a coin mechanism, said first vending machine comprising (a) a frame within a cabinet attached atop the cabinet of said second machine, (b) an article storing assembly carried by said frame and defining a plurality of compartments for storing articles to be dispensed, (c) a plurality of pull-out ejector means for predeterminedly positioning and for ejecting positioned articles from said compartments on pull-out movement of said ejector means from a normal rest position and return thereto, respectively, (d) means operatively interconnecting said pull-out ejector means in said first machine with said coin mechanism in the second machine for enabling pull-out movement of said ejector means in the first machine under control of the coin mechanism in the second machine and for clearing said coin mechanism incident to pull-out movement of said ejector means whereby to dispense articles from the first machine as a function of coin deposit in the second machine, and (e) means for returning said pull-out ejector means to its normal rest position for dispensing selected articles.

4,121,708

FOLDED SPRINGS FOR VIBRATORY FEEDERS AND CONVEYORS

William H. Benson, 2421 Plum St., Erie, Pa. 16502, and Thomas H. Falconer, 2421 Brentwood Cir., Erie, Pa. 16506

Continuation of Ser. No. 573,667, May 1, 1975, abandoned. This application May 20, 1977, Ser. No. 798,752
Int. Cl.² B65G *27/00*
U.S. Cl. 198—766 **2 Claims**



1. A vibratory conveyor comprising,

a frame,

a conveyor member fixed to said frame,

said frame having two spaced parts,

a motor between said two spaced parts of said frame,

means suspending said motor and said frame,

a first spring on one side of said motor between said motor and said frame and a second spring at the second side of said motor between said motor and said frame,

said springs each comprising a first leaf having a first end and a second end and a second leaf having a first and a second end,

first spacer means between said first end of said first leaf and said first end of said second leaf rigidly connecting said first ends together, the ends of said springs being free to vibrate with each other,

second spacer means between said second ends of said first leaf and said second end of said second leaf rigidly connecting said second end of said first leaf and said second end of said second leaf in spaced relation to each other,

third spacer means between the mid-points of said first leaves and said motor,

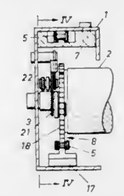
fourth spacer means rigidly connecting said mid-points of said second leaves to said frame.

4,121,709

STOW ROLLER TRAIN ARRANGEMENT

Richard Gebhardt, H. Thomastrasse 10, 6920 Sinsheim, Germany

Filed Apr. 19, 1976, Ser. No. 678,257
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1975, 2517015
Int. Cl.² B65G *13/02*
U.S. Cl. 198—781 **6 Claims**



1. A stow roller train arrangement which includes a plurality of rotatably mounted conveyor roller means disposed transversely of a conveying direction, a conveyor roller means drive means, and intermediate roller means associated with each conveyor roller means for transmitting a drive force from the drive means to the conveyor roller means, characterized in that a positive drive transmission is provided at the drive force transmission occurring between the drive means and the intermediate roller means and the drive force transmission occurring between the intermediate roller means and the conveyor roller means and a mounting means is provided to mount said intermediate roller means for movement to and from a drive position and an idle position, said movement of each of the intermediate roller means being about an axis parallel to the conveyor roller means and above the conveyor roller means drive means and further characterized in that a means is provided for interconnecting a plurality of intermediate roller means and means are connected to said interconnecting means for selectively displacing said interconnecting means and said intermediate roller means to and from said drive position and said idle position in response to the presence or absence of articles at said displacing means, and wherein said positive drive transmission includes a gear means securely mounted on each of said intermediate roller means, a further gear means securely mounted to each conveyor roller means, said gear means and said further gear means being respectively engageable with said drive means and with each other when said interconnecting means are displaced by said displacing means

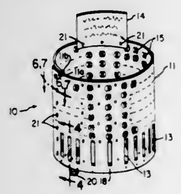
into the drive position, and wherein said mounting means for mounting each of the intermediate roller means includes a pivot means for mounting said intermediate roller means so as to be pivotable about an associated conveyor roller means, and wherein said mounting means further includes a first lever means having a first end pivotally connected to an associated conveyor roller means, a second lever means having a first end pivotally connected to a second end of said first lever means, an intermediate roller means being arranged at said first end of said second lever means, and in that means are provided for pivotally connecting a second end of said second lever means at said interconnecting means such that said gear means is brought into and out of engagement with the drive means in a substantially perpendicular manner.

4,121,710

DISPLAY BIN

Thomas V. Murphy, P.O. Box 156, Oradell, N.J. 07649

Continuation-in-part of Ser. No. 733,096, Oct. 18, 1976, abandoned. This application Jun. 20, 1977, Ser. No. 808,035
Int. Cl.[2] B65D *3/14, 3/04*
U.S. Cl. 206—45.16 **12 Claims**



1. A display bin for displaying and storing articles which comprises

(a) a molded, initially flat, flexible, generally rectangular wall sheet of plastic material, having side edge portions and end edge portions,

(b) said flexible wall sheet being deformable into a three-dimensional wall body whereby the opposite side edge portions of the wall sheet are in a contacting relation,

(c) fastening means operable to secure said side edge portions together thereby maintaining said wall sheet in the three-dimensional wall body form,

(d) a plurality of spaced, integrally molded, axially elongated ribs projecting from the surface of said wall sheet internally to the volume defined by said three-dimensional wall body and extending vertically and generally parallel to the side edge portions of the wall sheet and generally perpendicular to the end edge portions of the wall sheet to from an annular array of vertical ribs within the confines of said three-dimensional wall body,

(e) at least two of said ribs including at least a portion thereof extending substantially parallel to the end edge portions of the wall sheet,

(f) a bottom plate received in said three-dimensional wall body and supported by said substantially parallel portions of said at least two ribs, whereby the weight of said bottom plate and said display articles is distributed into said wall body through said vertical ribs when the display articles are supported by the bottom plate, and

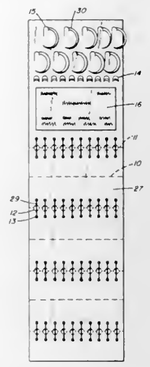
(g) said bottom plate serving to form and retain the cross-sectional configuration of the three-dimensional wall body.

4,121,711

PACKAGE FOR A MULTIPLE OF STERILE SURGICAL SUTURES WITH OR WITHOUT NEEDLES ATTACHED

Lelia Bolanowski, Bethel, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 23, 1977, Ser. No. 799,640
Int. Cl.[2] A61L *17/02;* **B65D** *85/24*
U.S. Cl. 206—63.3 **8 Claims**



1. A surgical suture card consisting of an upper panel having a series of needle retention slits or a layer of foam near the top of said panel; a series of suture retention slits near the middle of said panel and a series of suture loading openings near the bottom of said panel, equal in number and parallel to said needle slits; a score line along the diameter of said openings and parallel to the top of said panel; a series of suture retaining holes adjacent the top and bottom of said openings; and a series of slits initiating from said openings and terminating in said holes,

a series of lower panels having parallel score lines separating each panel and said upper panel; a series of suture loading openings near the middle of said lower panels equal in number and parallel to said needle slits; a series of score lines along the diameter of said openings and parallel to the tops of said lower panels; a series of suture retaining holes adjacent the top and bottom of said openings; and a series of slits initiating from said openings and terminating in said holes,

whereby when the needle ends of surgical sutures are contained in said needle slits or placed on said layer of foam, and the suture strands are loaded onto said card through said openings and are contained in said holes, the needle end of an individual suture is independently dispensed from said card.

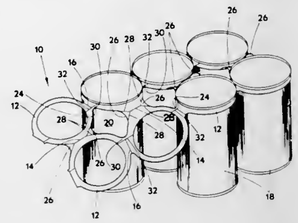
4,121,712

PLASTIC SHEET BAND MULTI-PACKAGING DEVICE AND METHOD OF ASSEMBLING SAME TO CONTAINERS

Ernest Ray Cunningham, Libertyville, Ill., assignor to Grip-Pak Systems, Inc., Cape Girardeau, Mo.

Filed Oct. 27, 1977, Ser. No. 845,895
Int. Cl.[2] B65D *75/00, 85/62*
U.S. Cl. 206—150 **11 Claims**

1. A stretchable and elastic plastic sheet multi-packaging device for assembly to containers to form a package, said multi-packaging device comprising a plurality of laterally connected pairs of generally ring-shaped sheet material bands arranged in longitudinal rows, adjacent sheet material bands in each longitudinal row being longitudinally connected to one another, the area between the lateral and longitudinal connections of two adjacent pairs of sheet material bands defining a generally diamond-shaped opening with rounded concave marginal end portions of said sheet material bands in the vicinity of the lateral and longitudinal connections, the rounded concave marginal end portions and immediately adjacent portions of said sheet material bands in the vicinity of said lateral connections defining central web sections which are exposed for gripping on opposite sides of adjacent containers arranged in said longitudinal rows when said multi-packaging device is assembled to a corresponding number of containers, each



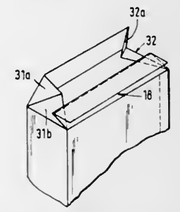
lateral connection being provided with a longitudinal fold-line, and fold lines impressed in said central web sections on opposite sides of the longitudinal fold line in each lateral connection to facilitate deflection thereof and provide gripping by a user on opposite sides of adjacent containers arranged in said longitudinal rows along associated rounded concave marginal end portions of said central web sections and across surface areas of said central web sections which are substantially greater than the thickness of said multi-packaging device.

4,121,713

PACK MADE FROM LAMINATED SHEETING

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Pfuhl, Verden, Fed. Rep. of Germany

Filed Nov. 4, 1976, Ser. No. 738,984
Int. Cl.[2] B65D *85/10*
U.S. Cl. 206—274 **6 Claims**



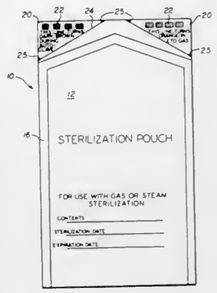
1. A parallelopiped-shaped package for contents such as cigarettes, comprising: a blank with thermally weldable compound foil in partial areas of said blank, said blank enclosing the contents of the package in a closed tubular manner, said thermally weldable foil of the blank being located exclusively on the inside of the blank, said blank having a top-side closing of the package formed on a top surface by end portions of said blank comprising inner and outer lengthwise end flaps and side end flaps that are folded into the plane of the top side, said inner lengthwise end flap folded against the contents of the package, said outer lengthwise end flap holohedrally overlapping the top surface of the package connected to said inner lengthwise end flap, and side flaps folded in under the outer lengthwise end flap, said inner lengthwise end flap, being folded upon itself to form a closing strip with said thermally weldable foil facing outwardly, and said outer lengthwise end flap folded downward against said closing strip and thereto by thermal welding.

4,121,714

STERILIZABLE PACKAGE WITH TEAR-OFF INDICATORS

William P. Daly, White Plains, N.Y.; Robert P. Lewis, Oceanport, and Oliver L. Pouliot, Oradell, both of N.J., assignors to Faser Industries, Saddle Brook, N.J.

Filed Mar. 23, 1977, Ser. No. 780,399
Int. Cl.[2] B65D *85/54*
U.S. Cl. 206—363 **7 Claims**



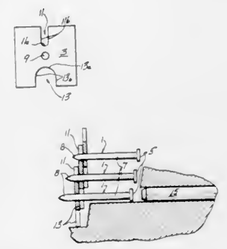
1. Sterilizable package comprising a plastic member marginally heat sealed around three sides to a first portion of a paper member so as to leave an opening at one end for inserting the package contents, said paper member being sufficiently porous to permit gas or steam sterilization but impervious to bacteria and having a second portion extending beyond the area to be enclosed by the marginal heat seal when completed, said second portion bearing indicia that changes color upon sterilization and means releasably joining said first and second portions for separating said second portion from said first portion for insertion together with the package contents into the package prior to completing the marginal heat seal and sterilization of the package contents to indicate that the package contents have been subjected to sterilization.

4,121,715

STACKABLE FASTENER ASSEMBLY

Elmer Raleigh Hodil, Jr., Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Sep. 19, 1977, Ser. No. 834,088
Int. Cl.[2] B65D *85/24*
U.S. Cl. 206—347 **7 Claims**



1. A washer adapted for stacking fasteners, of the type having enlarged heads and depending shanks, for use in fastener driving apparatus of the type including a piston, said washer consisting of a generally rectangular member having an aperture proximate the center thereof, sized to retainingly admit a fastener shank, and first and second recesses, formed proximate the midpoints of opposing edges of said member; said first recess having a width permitting passage of a fastener shank, said second recess having a width greater than the width of

said first recess for permitting passage of the larger of a fastener head and the piston, whereby said washer permits stacking of fasteners in the driving apparatus such that the bottom fastener of a stack may be fired therefrom while the remaining fasteners in the stack remain substantially undisturbed.

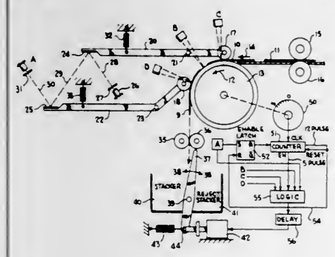
3. A stackable fastener assembly for use in fastener driving apparatus of the type including a piston, said fastener assembly consisting of a fastener and a washer; said fastener having a shank with an enlarged head at one end thereof; said washer being a generally rectangular member having an aperture proximate the center thereof and first and second recesses formed proximate the midpoints of opposing edges of said member, said first recess having a width in excess of the width of said fastener shank, said second recess having a width in excess of the width of the larger of said fastener head and the piston, said fastener shank being retainly held in said aperature, whereby a plurality of said fastener assemblies may be stacked one atop the next in overlapping relation, with said fastener shanks lying in a common plane, such that the bottom fastener of a stack may be fired from the tool while the remaining fasteners in the stack remain substantially undisturbed.

4,121,716

DOUBLES AND THICKNESS DETECTOR AND SORTER

Harry E. Laperti, Wilton; Robert Irvine, Riverside, and Robert S. Salzman, Stamford, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 12, 1977, Ser. No. 859,867
Int. Cl.[2] B07C 5/09
U.S. Cl. 209—564 **20 Claims**



1. A double or thickness detecting sheet handling apparatus, comprising:

means for delivering consecutive sheet materials to a drum;

a rotatable drum for receiving and discharging each sheet material as the drum is caused to rotate;

first and second pivotable, elongated, spaced apart arms disposed adjacent the rotatable drum, each arm having a mirror supported on a distal end thereof and a roller carried on an opposite end thereof, each arm being pivotably mounted between the mirror and roller ends, each respective roller being in biased contact with said drum and being respectively movable with respect to said drum in response to sheet material passing between said drum and said respective roller;

a light source mounted to project a light beam at the mirror carried by said first arm, said arms being arranged such that the light beam projected at said first arm mirror will reflect off said first arm mirror towards the mirror carried by said second arm, and reflect off said second arm mirror towards a photodetector; and

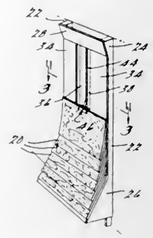
a photodetector mounted to receive the light beam reflected off said second arm mirror and provide an indicator signal in response thereto, whereby as consecutive sheets pass between said respective rollers, a double or thicker sheet disposed between one of said respective rollers and said drum will cause that roller to move a greater distance than the other respective roller with a single sheet of proper thickness disposed between it and the drum, thereby causing one of said arms to pivot a greater amount than the other respective arm, thereby causing the light beam to reflect off said respective first and second mirrors such that said photodetector will not receive said light beam, thereby indicating a double or thicker sheet disposed between one of said rollers and said drum.

4,121,717

SLIDE BRACKET SUPPORTING ASSEMBLY

Alden C. Hensel, Jr., 1127 Donwayne Dr., Lapeer, Mich. 48446

Filed Dec. 16, 1976, Ser. No. 751,175
Int. Cl.[2] A47F 7/16
U.S. Cl. 211—46 **7 Claims**



1. In a slide bracket supporting assembly the combination comprising a framework including generally upright track means thereon comprised of a pair of opposed members having a front face and a back face and disposed with the opposed edges thereof in spaced substantially parallel relationship defining therebetween an elongated slot, at least one slide bracket removably engaged in said track means for sliding movement therealong, said slide bracket comprising an elongated body including a flange projecting rearwardly thereof and adapted to be removably disposed in said slot preventing inadvertent rotary movement of said body relative to the axis of said track means, mounting means on said body projecting forwardly of said track means for securing an article thereto, a T-shaped dog including a transverse engaging bar connected to the upper portion of and projecting rearwardly of said body, said bar having a thickness in its minor dimension less than the width of said slot and a transverse length greater than the width of said slot such that its projecting end portions overlie and engage said back face of said opposed members adjacent to the edges thereof, stop means on said body restricting movement of said body inwardly of said slot beyond a preselected depth, said slide bracket supported from said engaging bar on said track means for outward tilting movement of said body enabling withdrawal of said flange from said slot and rotation of said body to align said engaging bar with said slot enabling disengagement and extraction of said slide bracket from said track means, and engaging means on the lower portion of said body for removably engaging said track means preventing inadvertent tilting movement of said body about the transverse axis of said engaging bar outwardly of said slot.

4,121,718

DISPLAY RACKS

Alfred Bannister, St. Helens, England, assignor to Eric Slinn & Son Limited, St. Helens, England

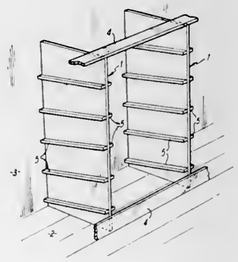
Filed Mar. 4, 1974, Ser. No. 447,834
Claims priority, application United Kingdom, Mar. 3, 1973, 10430/73
Int. Cl.[2] A47F 7/00
U.S. Cl. 211—49 R **5 Claims**

1. A display rack for displaying elongated articles, said rack having a front and a back and comprising in combination:

a plurality of rolls of wallpaper;

at least two spaced apart side-by-side upright support structures, each support structure having opposite planar surfaces and each having defined in each of said planar surfaces a plurality of spaced apart slots arranged in substantially coplanar relationship with corresponding slots on the other support structure and inclined in a common direction to the horizontal, with the direction of inclination of said slots being such that the upper ends of said slots are positioned at the front of the display rack;

a plurality of elongated rails, each rail having one longitudinal side edge which is engaged in a cooperating slot, said each rail being supported by the engagement of said one longitudinal edge in said cooperating slot, said rails being mounted in vertically spaced disposition in said slots with corresponding rails on adjacent support structures arranged in substantially coplanar relationship with one another to define opposed pairs of spaced apart rails, the rails of each pair inclined in a common direction to the



horizontal and each having an upper end and a lower end and having upwardly facing freely exposed support surfaces for supporting opposite end portions of elongated articles thereon, the direction of inclination of the rails being such that the upper ends of the rails are positioned at the front of the rack, said spaced slots on said support structures being spaced apart a distance greater than the combined diameter of several rolls of said plurality of rolls of wallpaper so that a plurality of rolls of wallpaper can be stacked on top of each other on each pair of rails;

an end abutment surface adjacent the lower end of each rail to prevent the articles from rolling off of said rails; and

a side abutment surface alongside each rail for retaining said elongated articles endwise on said support surfaces, thus resulting in a display rack for elongate, cylindrical articles, wherein an article may be removed from the tracks without disturbing or displacing adjacent articles on the tracks.

4,121,719

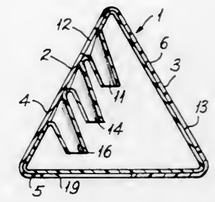
HOLDER FOR WRITING INSTRUMENTS

Claus Wilhelm, Lahr, Fed. Rep. of Germany, assignor to The Parker Pen Company, Janesville, Wis.

Filed Nov. 16, 1976, Ser. No. 742,231
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1975, 7537302[U]
Int. Cl.[2] A47F 7/00
U.S. Cl. 211—69.5 **3 Claims**

1. A holder for writing instruments especially for ballpoint pens comprising:

a main body provided with a plurality of hollow sockets extending inwardly of the body and tapering toward the inside of each socket for unassistedly holding and fixing the writing ends of said writing instruments, and a relatively movable casing portion, said casing portion being movable to different positions with respect to said main body and having at least two windows of different sizes to completely expose selected ones of the sockets for use,



wherein by the windows having different sizes a selected number of sockets are exposed for use.

4,121,720

APPARATUS FOR DISPLAYING JEWELRY

Doris A. Hayes, 2714 S. Zurich Ct., Denver, Colo. 80236

Filed Jan. 21, 1977, Ser. No. 761,550
Int. Cl.[2] A47F 5/08
U.S. Cl. 211—113 **3 Claims**



1. Apparatus for displaying articles of jewelry including rings, necklaces, bracelets and earrings comprising in combination:

an elongated central support member;

means operatively associated with said support member for positioning said support member in a substantially vertically extending position,

a disc member of substantially solid construction connected to the upper end of said support member and extending substantially transversely from the upper end thereof, the outer edge of said disc member being substantially circular;

a plurality of fingers connected to the outer circular edge of said disc member and angled upwardly with respect to said disc member and with respect to a horizontal reference, said fingers being of a size adapted to receive and removably retain ring-type jewelry;

a plurality of vertically spaced display rings, each display ring being a circular band of rectangular cross-section which defines an opening within the center of the circular band, each display ring being disposed with the circular band lying essentially in a horizontal plane and with said central support member extending vertically through the opening within the center of the circular band, at least one of said display rings having circumferentially spaced openings formed through the circular band adapted to receive and removably retain earrings, and at least one of said display rings having hooks attached to the circular

band adapted to receive and removably support elongated flexible articles of jewelry;

a first plurality of elongated flexible connecting members extending downwardly from the outer circular edge of said disc member to the circular band of the upper one of said display rings, said first plurality of connecting members operatively suspending the upper one of said display rings in a vertically spaced relationship below said disc member;

a second plurality of elongated flexible connecting members extending between the circular bands of adjacent vertically spaced display rings to operatively suspend the others of said display rings below and from the upper one of said display rings;

a third plurality of elongated flexible connecting members extending substantially transversely from said central support member to the lower one of said display rings; and

said first, second and third pluralities of connecting members being connected at equally circumferentially spaced intervals to said display rings.

4,121,721

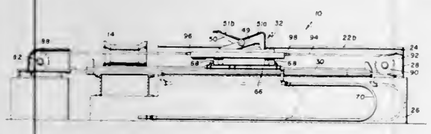
APPARATUS FOR HANDLING AND STORING ELONGATED ARTICLES

William J. Hill, Holden, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Jan. 24, 1977, Ser. No. 761,834

Int. Cl.[2] B65G *37/00*

U.S. Cl. 214—1 P **6 Claims**



1. Apparatus for handling elongated articles comprising: a plurality of laterally spaced fixed article support members defining a storage area, the upper surfaces of said support members being arranged in a common plane; fixed rails parallel to said support members, said rails being located beneath said plane and between said support members; a plurality of transfer cars carried on said rails, said transfer cars being aligned laterally in a direction perpendicular to said support members and being located beneath said plane; first and second pivotally interconnected levers on the chassis of each of said transfer cars; a single drive means connected to a plurality of said transfer cars for moving said transfer cars simultaneously along said fixed rails, and, separately operable elevating means for vertically adjusting the first and second levers of each transfer car between lowered inoperative positions at which said levers are essentially parallel and beneath said plane and raised operative positions at which said levers are arranged angularly to each other to form an upwardly facing notch in which an elongated article is supported at a level above that of said plane.

4,121,722

UNIT COUNTER FOR PILLS, TABLETS, SPHERES, COINS AND THE LIKE

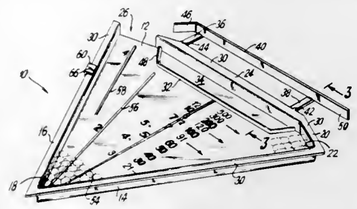
Meyer Sussman, 190 Beach 149th St., Rockaway Park, N.Y. 11694

Filed Dec. 6, 1976, Ser. No. 748,102

Int. Cl.[2] B65B *67/02*

U.S. Cl. 214—1 C **11 Claims**

3. A unit counter comprising a polygonal tray having a bottom and two adjoining upstanding sides secured thereto providing an included angle of 60° defining a first corner in which a plurality of generally round units may be nested, a third upstanding side secured to said bottom and adjoining one of said two sides to provide an included angle of 90° defining a second corner in which a plurality of generally oblong units may be nested, a fourth upstanding side secured to said bottom, said fourth side adjoining said third side and converging towards but terminating a spaced distance from the other of said two sides to provide an opening between said other and said fourth sides through which the round and oblong units



contained within said tray may be poured therefrom, slide means for sliding along one of said two sides, said slide means including a presettable indicator identifying a desired amount of row of round units nested in said first corner, said upstanding sides each including outwardly extending flanged edges, and said slide means being a U-shaped member having its legs slidably secured to the flanged edge of one of said two sides.

4,121,723

INSTALLATION FOR STACKING SHEET METAL PLATES INTO PACKETS AND FOR SUPPLYING THE PACKETS TO A BINDING STATION

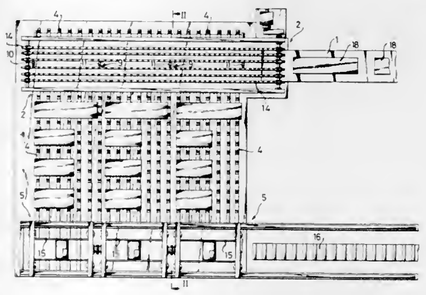
Wilhelm Nellen; Theodor Sevenich, both of Dortmund; Konrad Klein, Dortmund-Wambel, and Ladislav Gregorec, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Nov. 26, 1976, Ser. No. 745,125

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1975, 2552995

Int. Cl.[2] B65G *57/00*

U.S. Cl. 214—6 D **9 Claims**



1. A device for preparing metal sheets for transport wherein the sheets are delivered individually from a shearing region to a stacking region on sheet transporting means which comprises in combination: a stacking station comprising a stacking bridge having a first conveyor therein at the discharge end of the sheet transporting means adapted supportingly to engage the sheets from above and to convey the sheets longitudinally in the bridge, receiving table means beneath said first conveyor, means for releasing sheets from said first conveyor to said table means to build a stack of sheets thereon, means for moving the stack of sheets built up on said table means in the lateral direction from beneath said first conveyor, a lift station spaced laterally from said bridge for receiving said stack of sheets for intermediate storage and comprising crane means for engaging said stack of sheets from above and lifting said stack of sheets,

and means for moving said crane means out of said lift station and into a binding station for binding of the stack of sheets, said table means comprising a plurality of tables in end to end complementary relation and said means for releasing sheets from said first conveyor comprises means to quietly release sheets independently to respective ones of said tables, the space between said stacking station and said lift station being sufficiently long to receive a plurality of stacks of sheets, and transversely extending means extending transversely from said stacking station to said lift station for each table to support stacks of sheets formed on the respective table and moved out of said stacking station but not supplied to said lift station.

4,121,724

APPARATUS FOR REMOVING BULK MATERIAL FROM A DUMP OR STOCKPILE

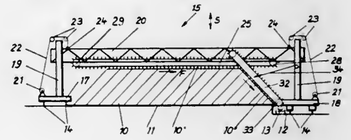
Gerhard Fischer, Dortmund-Kirchhorde, Fed. Rep. of Germany, assignor to Gustav Schade Maschinenfabrik, Dortmund, Fed. Rep. of Germany

Filed Jan. 17, 1977, Ser. No. 760,055

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601592

Int. Cl.[2] B65G *65/28*

U.S. Cl. 214—10 **19 Claims**



1. Apparatus for progressively removing bulk material from a dump or stockpile having a generally trapezoidal cross-section and a straight or annular axis, the apparatus comprising: a gantry having a bridging girder spanning the dump or stockpile and extending between a pair of end support structures, at least one of said support structures being movable along a track extending alongside the base of said dump or stockpile so that, in operation, said gantry may move in the direction of said axis and substantially transverse to said bridging girder; scraper means supported by said gantry for scraping bulk material from the top of said dump or stockpile in the longitudinal direction of said bridging girder, said scraper means including an endless scraper chain assembly driven by and about driving and return sprocket means mounted on said bridging girder; means for jointly raising or lowering said scraper means and said bridging girder as a single structure with respect to said support structures; each said support structure including guide means which laterally support and guide said bridging girder perpendicular to its longitudinal axis while permitting free vertical movement of said bridging girder; a first of said support structures including means for supporting the bridging girder at its adjacent end against movement in its longitudinal direction, whereas the guide means at the other support structure permits longitudinal movement of said bridging girder.

4,121,725

TRUCK BODY

Claude L. Demenais, Breuillet, France, assignor to Societe Industrielle de Transports Automobiles, Paris, France

Continuation of Ser. No. 656,187, Feb. 9, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,756

Int. Cl.[2] B60P *1/04*; B65F *3/00*

U.S. Cl. 214—83.3 **3 Claims**

1. Truck body, comprising:

(a) a receptacle having bottom, top, and side walls with rear edges defining a rearwardly-directed opening,

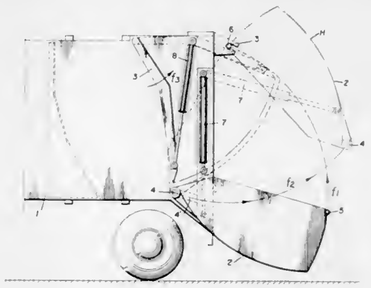
(b) a charging bin with a curved bottom wall and with side walls of generally crescent shape having straight edges joining the ends of the bottom wall and having a first set of hydraulic cylinders connecting the bin to the receptacle side walls,

(c) a first pivot shaft extending from each side wall at one end of the bin,

(d) a second pivot extending from each side wall at the other end of the bin,

(e) complementary bearing means located adjacent the top and bottom portions of the rear edges of the side walls of the receptacle, the bearing means being vertically spaced to receive the first and second pivot shafts simultaneously on occasion in a travel mode, in which travel mode the bin closes the said receptacle opening,

the upper bearing means and the second pivot shaft being disengageable by the said first set of hydraulic cylinders to move the bin to an upwardly-facing load mode, the lower bearing means and the first pivot shaft being disengage-



able by the said first set of hydraulic cylinders to move the bin to a downwardly-facing unload mode, and

(f) a swingably shutter operative to swing through the bin and having a second set of hydraulic cylinders connecting the shutter to the receptacle wall, the first set of hydraulic cylinders consisting of a cylinder connected at one end to each side wall of the receptacle in the upper part thereof and connected at its other end to the bin adjacent the first pivot shaft, the cylinder being shortest in the travel mode and being extended in the load mode or the unload mode, and

(g) locking means associated with the bearing means to release selectively the first pivot shaft or the second pivot shaft from its bearing to permit movement of the bin from the travel mode to either the unload mode or the load mode, respectively.

4,121,726

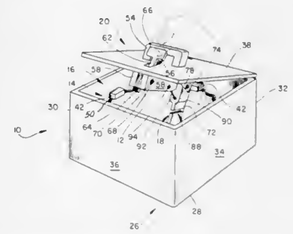
APPARATUS FOR DISPENSING PAPER ARTICLES

Carl J. Pemberton, 2060 N. Livingston Ave., Indianapolis, Ind. 46222

Filed Apr. 27, 1977, Ser. No. 791,374

Int. Cl.[2] B65H *3/00*

U.S. Cl. 221—37 **19 Claims**



10. Apparatus for dispensing a paper article from the top of

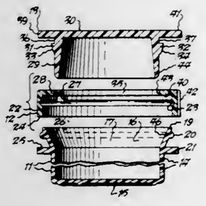
a stack of such articles comprising a box for retaining the stack, the box having a bottom wall upon which the stack rests and a plurality of side walls, at least one of the side walls including a stop for limiting upward movement of a portion of the top article of the stack, means for engaging the top article, the engaging means projecting toward the top article, means for moving the engaging means away from the vertical axis of the stack, means for stripping the top article from the next adjacent article in the stack as the engaging means pulls the top article away from the stack axis, and a hinged lid on the box for imparting an upward axial component to the motion of the engaging means to lift the top article from the stack as the engaging means is moved away from the stack axis, the engaging means being mounted on the lid for movement therewith, the lid being opened as the engaging means is moved away from the stack axis to provide the axial component of motion.

4,121,727

VIAL CONSTRUCTION HAVING SAFETY CLOSURE

Douglas R. Robbins, and Samuel B. Robbins, Jr., both of Jamestown, N.Y., assignors to Mark IV Industries, Inc., Williamsville, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,333
Int. Cl.[2] B65D *55/00*
U.S. Cl. 215—211 **17 Claims**



1. A container construction comprising a container body portion having inner and outer surfaces, an open end on said body portion, an annular rim surrounding said open end and having an inner surface and an outer surface, an extreme end portion on said annular rim, annular ridge means on said outer surface of said annular rim and spaced from said extreme end portion, a ring having an internal surface and an external surface, annular flange means on said ring for placement in contiguous relationship relative to said extreme end portion of said annular rim, and groove means on said internal surface of said ring for mating engagement with said annular ridge means with a snap fit.

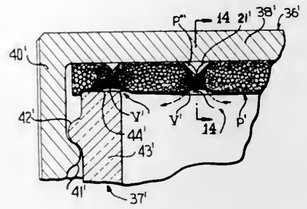
4,121,728

VENTING LINERS

Peter Tagalakis, Villa Park, and James K. Woods, Oswego, both of Ill., assignors to Selig Sealing Products, Forest, Ill.

Continuation-in-part of Ser. No. 749,371, Dec. 10, 1976, Pat. No. 4,089,434. This application Jul. 5, 1977, Ser. No. 812,661
The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.
Int. Cl.[2] B65D *51/16*
U.S. Cl. 215—260 **32 Claims**

11. A combined container and closure comprising a container body including an opening circumscribed by a circumferential sealing lip, a closure including an end panel and a peripheral skirt, means removably securing said closure to said container body in closed relationship to said opening, a venting liner disposed between said end panel and said sealing lip, said venting liner comprising a disc-shaped member, said disc-shaped member being defined by at least two plies of polymeric or copolymeric plastic material, the plastic material of a first of said plies being impermeable, the plastic material of a second of said plies being deformable when subject to a compressive force, said second ply including a plurality of indentations opening in a direction away from said second ply, first areas of said second ply between said indentations being generally uncompressed relative to second areas of said second ply generally at said indentations or less compressed relative to second areas of said second ply generally at said indentations, said indentations open in a direction toward said end panel, said second ply being in hermetic sealing engagement with said sealing lip over the entire circumferential sealing area of the



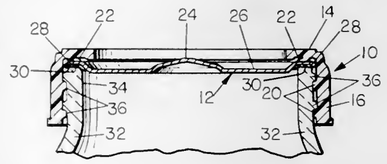
latter, said closure being secured to said container body under moderate axial load whereby portions of said indentations with said circumferential sealing area are open and upon excessive internal pressure within said container body said second ply of at least one of said second areas within said circumferential sealing area raises to break the hermetic seal and permit venting to atmosphere of the internal pressure.

4,121,729

HOME CANNING CLOSURE SYSTEM

Charles W. Husum, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 7, 1977, Ser. No. 840,193
Int. Cl.[2] B65D *45/02*
U.S. Cl. 215—276 **2 Claims**



1. An improved home canning closure system provided for a container having a threaded neck portion terminating in an annular rim defining the periphery of an open mouth, said closure system including:

a metal lid covering and closing the open mouth of said container and having a sealant means positioned around the periphery of its lower surface and adapted to sealingly engage the annular rim defining the open mouth of said container; and

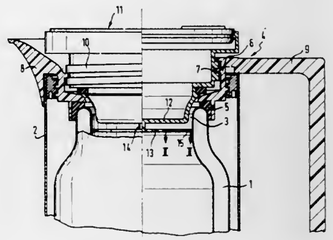
a plastic ring adapted to be placed over the metal lid and including an annular top panel portion and a skirt portion depending therefrom, the skirt portion incorporating threads adapted to engage the threaded neck portion on said container neck, the annular top panel portion including a downwardly and inwardly depending annular biasing flange which cooperates with the threaded engagement between the plastic ring and the container to form a spring means to maintain a uniform force on said metal lid to bias the metal lid into sealing engagement with the annular rim on said container, said annular biasing flange allowing the metal lid to flex out of sealing engagement with said container when the force on said metal lid due to the pressure within said container exceeds the uniform force of said spring means on said metal lid to thereby vent said excess pressure from said container.

4,121,730

SCREW CLOSURES FOR THERMALLY-INSULATING CONTAINERS

Horst Dammer, Schlitz-Unterschwarz, Germany, assignor to Dr. Anso Zimmermann Isolierflaschen, Niederaula, Germany

Filed Oct. 12, 1976, Ser. No. 731,836
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1975, 2548199
Int. Cl.[2] B65D *51/16*
U.S. Cl. 215—310 **23 Claims**



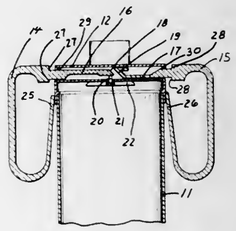
1. A screw closure for a container to seal the contents thereof, the closure having a portion adapted to project into an opening of an inner, thermally-insulating vessel of the container, said portion being provided with a flexible part intended to occupy the cross-section of said opening substantially completely when the screw closure is introduced into said opening.

4,121,731

TOP ENCLOSURE FOR CHILDREN'S DRINKING VESSELS

Scott Okerstrum, 379 Hampton Rd., Hoffman Estates, Ill. 60195

Filed May 23, 1977, Ser. No. 799,394
Int. Cl.[2] A47G *19/22*
U.S. Cl. 220—90.4 **3 Claims**



2. A top enclosure for drinking vessels used by children, said top enclosure comprising a body portion with an opening therein, said body portion having a vessel engaging portion for engaging and sealing it about the top of a vessel, a closure for the opening in the body portion, handles depending from opposing sides of the body portion, and means for opening the closure when both and only both of the handles are depressed.

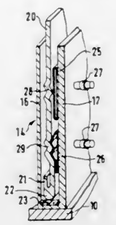
4,121,732

CONTAINER HAVING SEAL MEANS

Christopher Daniel Dowling Hickey, Esher, England, assignor to Airflex Containers Limited, Ashford, England

Filed Feb. 2, 1978, Ser. No. 874,478
Claims priority, application United Kingdom, May 2, 1977, 18377/77
Int. Cl.[2] B65D *39/00, 41/00, 3/12*
U.S. Cl. 220—232 **10 Claims**

1. A container comprising a rigid impermeable base having an endless groove extending around an area of the base on which goods are to be placed, a rigid air-impermeable cover having a lower periphery shaped to fit in said groove, elastomeric material forming a seal between the base of the groove and the periphery of the cover, said groove furthermore containing an inflatable sealing tube extending along the whole



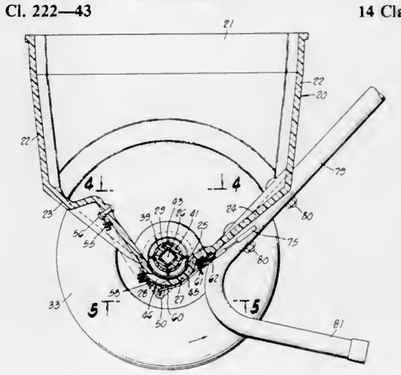
length of the endless groove with means for inflating said tube to effect thereby a seal between the side wall of the groove and a peripheral portion of the cover surface around the whole periphery, and means for evacuating air from within the region between the cover and the base.

4,121,733

SPREADER HAVING AN ANTICLOGGING MECHANISM

John W. McRoskey; Leonard H. McRoskey, both of Los Angeles, and Delbert D. Swartz, Torrance, all of Calif., assignors to Republic Tool & Manufacturing Corp., Los Angeles, Calif.

Filed Jan. 21, 1977, Ser. No. 760,868
Int. Cl.[2] A01C *15/12*
U.S. Cl. 222—43 **14 Claims**



13. In a wheeled spreader for dropping divided material on a surface, the combination comprising:

(a) a hopper providing containment of a granular material to be applied to a surface, said hopper having a vertical center line and a horizontal center line;

(b) opening means in the lower part of the wall of said hopper through which granular material is fed for application to said surface, said feed opening means being positioned forwardly of the vertical center line of said hopper and below said hopper horizontal center line so that said opening extends forwardly and upwardly toward the front of said spreader, said feed opening means including a plurality of openings, each being formed by side walls, a forwardly positioned and forwardly extending forward wall and a rearward wall, said forward wall being essentially horizontal to open outwardly of said hopper, said rearward wall being slanted with respect to the horizontal and with respect to said forward wall so the effects of said forward and rearward walls on said each opening are essentially eliminated;

(c) metering gate means engageable with a lower wall of said

hopper and slidably movable between closed and opened positions;

(d) stop means on one side of said metering gate means against which said metering gate means is pulled when in a closed position;

(e) spring means connected to said metering gate means on the side opposite to said stop means for holding same in closed position and against said stop means, said spring and said stop means holding said gate snugly against said hopper wall at all times, including during movement of said metering gate to prevent material from lodging between said hopper wall and said metering gate;

(f) a partition in said hopper near an end wall thereof to form a separate compartment for marker material; and

(g) agitation means positioned in the main part of said hopper and said separate compartment of said hopper for agitating the granules in said main part of said hopper and the marker material in said separate compartment of said hopper whereby a granular material will be distributed to the surface to be treated, and whereby the marker material will be delivered to said surface to form a marker line at the edge of the area where said granular material is distributed.

4,121,734
PLANT WATERER

Tsai C. Soong, and Jeanne F. Soong, both of 1839 Jackson Rd., Penfield, N.Y. 14526

Filed Oct. 29, 1976, Ser. No. 736,700
Int. Cl.[2] B67D *5/30*
U.S. Cl. 222—54 **3 Claims**



1. A plant waterer for automatically and periodically watering a plant, said plant waterer comprising:

a. a container for holding a volume of water;

b. means for mounting said container of water in the region of said plant;

c. said container having a plurality of water outlet openings disposed at different heights above an area to be watered;

d. a plurality of plugs respectively closing each of said openings;

e. at least a portion of each of said plugs being formed of a water-soluble material disposed in contact with said water;

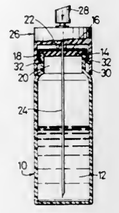
f. said water-soluble material being configured and composed so that after a predetermined interval, said water-soluble material in any one of said plugs dissolves sufficiently to open a passageway through said one plug to let said water flow from said container through the one of said openings closed by said one plug and onto said area to be watered; and

g. said predetermined interval for dissolving said water-soluble material for each of said plugs for said openings is longer for each successively lower one of said openings.

4,121,735
SYSTEM FOR QUANTITY-CONTROLLED SPRAYING OF A LIQUID ACTIVE INGREDIENT

Adam Wittersheim, Ramstadt-Trautheim, Germany, assignor to Goldwell GmbH, Chemische Fabrik H.E.Dotter, Darmstadt-Eberstadt, Germany

Filed Sep. 17, 1975, Ser. No. 613,986
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1974, 2444790
Int. Cl.[2] B67B *7/28*
U.S. Cl. 222—83.5 **9 Claims**

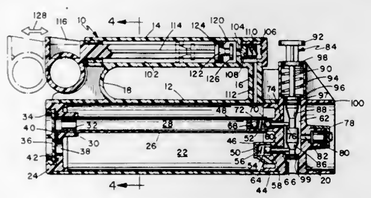


1. In combination: a container filled only partially with a pre-measured, exactly apportioned quantity of a liquid active ingredient, for one-time use, and with an aerosol propellant of a type incompatible with said active ingredient after a relatively short time when intermixed with said active ingredient, a closure closing said container in a pressure-tight manner and being made at least in part of a resilient material having self-resealing characteristics after piercing with a needle, and a spray head detachably secured to said container and having a discharge valve and also having a hollow needle pushed through said closure into the liquid active ingredient in said container and held by said material in a fluid-tight manner, said hollow needle being connected to said discharge valve, whereby said entire quantity of liquid active ingredient and aerosol propellant can be sprayed relatively shortly after introduction of said aerosol into said container by actuating said discharge valve.

4,121,736
HAND HELD ATOMIZER WASHING DEVICE

Wilbert Hersman McGaw, Jr., 2103 Murcia Ct., La Jolla, Calif. 92037

Filed Aug. 23, 1976, Ser. No. 716,652
Int. Cl.[2] B05B *7/32*
U.S. Cl. 222—94 **7 Claims**



1. A hand held multi-liquid atomizing dispenser, said dispenser comprising in combination,

a housing,

an atomizing nozzle on said housing,

a first liquid reservoir for containing a first liquid defined by said housing,

a second liquid reservoir defined by said housing for containing a second liquid,

means for pressurizing both of said reservoirs,

valve means for selectively communicating one of said reservoirs with said atomizing nozzle and for selectively communicating both of said reservoirs with said nozzle,

said first reservoir comprising a fluid tight container,

said second reservoir comprising a flexible container disposed in said fluid tight container,

said housing includes a handle,

said means for pressurizing said reservoir includes a manual pump mounted in said handle and communicating with said first reservoir,

a bore extending transverse to the axis of said fluid tight container,

a first passageway communicating said first reservoir with said bore,

a second passageway communicating said second reservoir with said bore,

a first valve member disposed in said first bore,

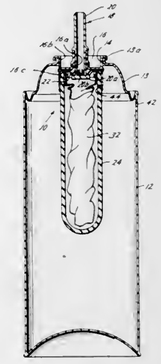
a second valve member disposed in said second bore, and

actuating means reciprocably mounted in said bore for actuating said first and said second valve members for controlling communicating of liquid via said bore to said atomizing nozzle.

4,121,737
APPARATUS FOR PRESSURE DISPENSING OF FLUIDS

Calvin L. Kain, Bartlesville, Okla., assignor to Kain's Research and Development Co., Inc., Gretna, La.

Filed Nov. 24, 1975, Ser. No. 634,500
Int. Cl.[2] B65D *35/28*
U.S. Cl. 222—95 **3 Claims**



1. An apparatus for pressure dispensing fluid products comprising:

a valve support;

normally closed valve means carried by said valve support for providing a fluid passageway therethrough;

a flexible liner sealably engaged with said valve support for containing the fluid product to be dispensed;

an expandable and contractible pressure unit of elastomeric material disposed in surrounding relationship to at least a portion of said liner;

a rigid crown surrounding the upper inside and outside circumference of said elastomeric pressure unit and attached to said pressure unit;

means for attaching said crown to said valve support to thereby sealably engage said elastomeric pressure unit with said valve support;

said liner including an upper neck portion disposed within said crown;

a retaining ring disposed within the neck of said liner to frictionally confine the neck of said liner between said retaining ring and said crown to thereby sealably engage said liner with said valve support;

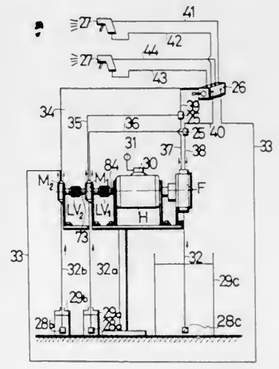
said liner being relatively thin-walled as compared to said pressure unit and being of a material compatible with the fluid product to be dispensed,

whereby, fluid product contained within said liner when said pressure unit is in an expanded position is subjected to the inherent contracting force of the elastomeric material of said pressure unit and may be selectively expelled through said valve means by such force.

4,121,738
APPARATUS FOR THE CONTINUOUS FEEDING OF PLURAL LIQUIDS IN SEPARATE STREAMS OF ADJUSTABLE QUANTITY AND RATIO

Gyorgy Virag, Budapest, Hungary, assignor to Muanyagipari Kutato Intezet, Budapest, Hungary

Filed Feb. 9, 1977, Ser. No. 767,141
Claims priority, application Hungary, Feb. 17, 1976, MU 556
Int. Cl.[2] B67D *5/44;* **F15B** *15/24*
U.S. Cl. 222—134 **6 Claims**



1. Apparatus for the continuous feeding of plural liquids in separate streams of adjustable quantity and ratio, comprising a plurality of pumps one individual to each of said liquids, drive means common to all said pumps for driving said pumps with to-and-fro strokes, means between said drive means and at least one of said pumps for selectively individually altering the length of said strokes of said at least one pump while maintaining constant the frequency of said strokes of said at least one pump, said pumps being reciprocatory piston pumps and said stroke varying means comprising mans for limiting the length of the stroke of a piston of at least one said pump relative to the length of the stroke of the piston of at least one other said pump, said stroke length altering means comprising abutment means selectively movable into different positions to engage said piston of said at least one pump, a lost motion connection between said pistons, and spring means acting between said pistons to urge said pistons apart.

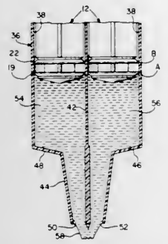
4,121,739
DISPENSER WITH UNITARY PLUNGER AND SEAL CONSTRUCTION

William David Devaney, Methuen, and Robert Francis Call, Hamilton, both of Mass., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 20, 1977, Ser. No. 789,049
Int. Cl.[2] B67D *5/52*
U.S. Cl. 222—137 **2 Claims**

1. A dispenser for precisely and substantially simultaneously metering small quantities of a plurality of viscous fluids stored therein with segregated compartments comprising a unitary

cartridge body including a plurality of adjacent, parallel compartments with adjoining walls, a first extremity of said cartridge body including a flange extending outwardly of annular openings communicating with and of a diameter equal to the diameter of the respective compartment, the second extremity of said cartridge body including a plurality of nozzles creating closely adjacent aperture means communicating with respective compartments through channels of transverse dimensions less than the diameter of the respective compartment, a one-piece piston unit telescopically associated with said cartridge body, the unit comprising a plurality of piston shafts integrally joined at one end with a piston activating bight portion, the opposite ends of each piston shaft forming a piston head including integral seal means configured thereon, the seal means on each piston head including a pair of axially spaced seal rings having sharp edges at their outer peripheries, a first of said pair of spaced seal rings nearest the free extremity of each piston head including a frustoconical surface at the outer peripheral region thereof forming one side of the sharp edge, the frusto-



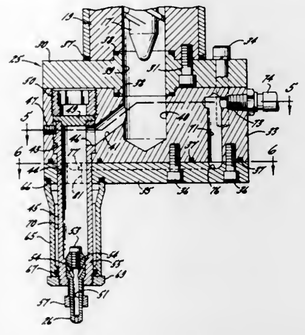
conical surface tapering backwards from said free extremity, the free extremity of each piston head further including a central, substantially frustoconical region representing a major portion of the frontal area and which is interconnected to the outer peripheral region by a short cylindrical surface region substantially about the axis of the piston shaft presenting a step-like piston head surface and defining the outer extremity of a primary liquid contacting surface, a second of said pair of seal rings which is disposed farthest from the free extremity of each piston head including a frustoconical surface at the outer peripheral region thereof forming one side of the sharp edge, the frustoconical surface on said second ring tapering forward toward the free extremity, the surface of the opposing sides of each frustoconical seal ring surface extending substantially perpendicular to the axis of the piston shaft, the diameter of each of the seal rings being substantially equal to one another and at least slightly greater than the inner diameter of the respective compartment so as to effect a resilient, wiping, press-fit with the inner walls of the compartments at two axial spaced regions of each compartment.

4,121,740
INJECTOR HEAD FOR INJECTION MOLDING MACHINE

Kenneth F. Gabrys, Streamwood, Ill., assignor to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed Aug. 19, 1977, Ser. No. 826,034
Int. Cl.[2] B67D *5/62;* **B29F** *1/03*
U.S. Cl. 222—146 H **4 Claims**

1. A machine for injecting molding material simultaneously into the upper ends of a plurality of molds, said machine comprising a head, mechanism connected to said head for moving the latter between raised and lowered positions relative to such molds, a plurality of sleeves depending from and spaced angularly around said head and corresponding in number to the number of such molds, a substantially centrally located passage leading into said head and adapted to receive a shot of pressurized molding material, a plurality of angularly spaced passages extending between said centrally located passage and said sleeves to deliver said molding material from said centrally located passage to said sleeves, a nozzle telescoped slidably within the lower end portion of each of said sleeves, each of said nozzles being positioned to engage a mold and being adapted to be forced to a raised position within the respective sleeve when said head is moved to its lowered position, each of said nozzles moving to a lowered position within the respective sleeve when said head is moved to its raised position, a passage in each nozzle and establishing communication between the interior of the nozzle and the interior of the respective sleeve when said nozzle is moved to its raised position whereby the molding material in the sleeve flows through the nozzle means in the lower end portion of each sleeve for blocking communication between the interior of the sleeve and the interior of the respective nozzle when the nozzle is in its lowered position within the sleeve, said head comprising a block and further comprising a lower plate secured to the lower side of said block, said lower plate having openings which receive said sleeves, upright inlet and outlet passages formed in said block and disposed in side-by-side relation, said inlet and outlet



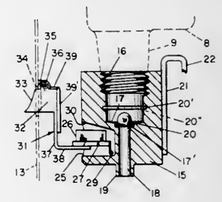
passages opening out of the lower side of said block, a first groove formed in the upper side of said lower plate and establishing communication between said inlet passage and a first one of said openings, a second groove formed in the upper side of said lower plate and establishing communication between said outlet passage and a second one of said openings, groove means in the upper side of said lower plate and establishing communication between said first and second openings, a tubular jacket surrounding each sleeve and spaced radially from said sleeve, each of said jackets communicating at its upper end with the opening which receives the respective sleeve, and means connected to said inlet passage for delivering a heat exchange fluid into said inlet passage whereby said fluid flows through said first groove to said first opening, circulates through the jacket which communicates with said first opening, flows through said groove means to said second opening, circulates through the jacket which communicates with said second opening, and then flows through said second groove to said outlet passage.

4,121,741
LIQUID DISPENSER WITH MAGNETICALLY OPERABLE VALVE

Jane E. Adamson, 3238 W. Parade Cir., Colorado Springs, Colo. 80917

Filed Jul. 21, 1977, Ser. No. 817,568
Int. Cl.[2] B67D *3/00*
U.S. Cl. 222—181 **10 Claims**

1. In a dispenser, a canister having a lower discharge spout, a cylindrical valve body including a valve chamber therein for vertically receiving said spout, a reduced discharge bore extending below said chamber, a valve seat at the upper end of said discharge bore, a metal ball valve and attaching means for coupling the valve body to said canister, a recess in said valve body with a magnetic disc pivotally arranged therein, a cover for enclosing said canister and valve body, a lever pivoted to said cover and having finger engaging means thereon at its upper end, an inturned lower end on said lever underlying said



disc, whereby when said lever is depressed and pivoted said disc will be tilted upwardly into engagement with said valve body to magnetically attract and displace said ball from its seat and discharge canister contents therethrough.

4,121,743
BOW TRANSPORT HOLSTER

Glenn A. Burton, 1103 Biscayne Dr., Little Rock, Ark. 72207

Filed Jun. 20, 1977, Ser. No. 808,155
Int. Cl.[2] F41C *33/00*
U.S. Cl. 224—1 R **1 Claim**

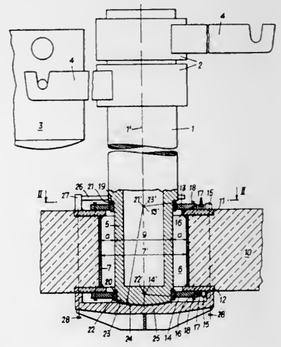


1. A bow holster comprising a base member, a first interlock member carried by said base member having a portion thereof in spaced relation to a surface of the base member, said portion having a top edge, the portion raised from and lying at an angle to said surface, a second interlock member adapted to be securely affixed to a bow transverse the length of the bow, said first and second interlock members being respectively female and male slot and head elongated members selectively indexable with one another providing a substantially secure joinder when indexed, the female slot being through the portion and open to the top edge of the portion, the angulation of the first member with respect to the base effective to angle the bow affixed to the second interlock member inwardly towards the body of an archer wearing the holster with the bow string maintained close to the body, means on the base member for attaching said base member to a belt of an archer using said holster.

4,121,742
LADLE-ROTATING TURRET ARRANGEMENT

Stefan Biricz, and Alois Scheinecker, both of Linz, Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Mar. 16, 1977, Ser. No. 777,892
Claims priority, application Austria, Mar. 26, 1976, 2217/76
Int. Cl.[2] B22D *41/12*
U.S. Cl. 222—591 **7 Claims**

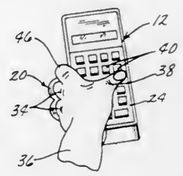


1. A ladle-rotating turret arrangement to be used in a continuous casting plant, comprising:
a concrete base block having a hole through it;
a central column inserted in said hole with play and having an axis;
carrier arms provided on said central column;
a bottom part covering the hole in the base block from below and supporting the central column;
two annular discs arranged at said hole at a distance from each other, at least one of said two annular discs being movable relative to the other one approximately perpendicular to the axis of the central column and being fixable relative to the concrete base block; and
annular ledges provided on said central column at the levels of the two annular discs, the annular ledges having spherical faces which rest against the annular discs.

4,121,744
HAND HELD CADDY FOR CALCULATORS

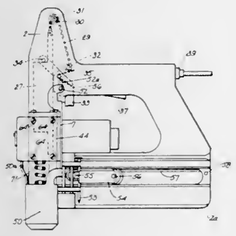
Jerry A. Minear, 3603 Annear, Ames, Iowa 50010

Filed Aug. 12, 1977, Ser. No. 824,170
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 R **12 Claims**



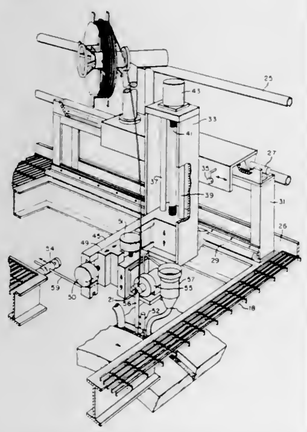
1. A hand held caddy for calculators comprising a caddy member having a first portion adapted to be secured to a calculator and a second portion adapted to extend outwardly of the side of the calculator, said second portion having finger openings adapted to receive the operator's fingers, said first and second portions being foldably connected together for said second portion to pivot relative to said first portion, and a calculator adapted to be connected to the first portion.

4,121,745
ELECTRO-MECHANICAL IMPACT DEVICE
James E. Smith, Boulder, Colo., and Carl T. Becht, Cincinnati, Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio
Filed Jun. 28, 1977, Ser. No. 810,903
Int. Cl.[2] B25C *1/06*
U.S. Cl. 227—8 **30 Claims**



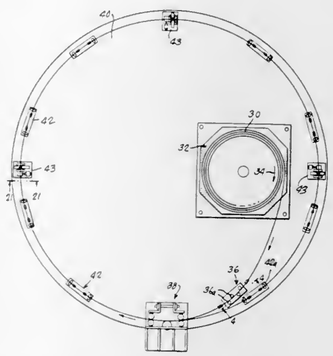
1. An impact tool comprising:
(a) an impact member;
(b) counter-rotating flywheels spaced apart by less than the thickness of the impact member;
(c) means for introducing the impact member between the flywheels; and
(d) means permitting at least one of the flywheels to yield with respect to the other to permit the impact member to pass between the flywheels, while maintaining force against the impact member.

4,121,746
APPARATUS FOR FORMING A CIRCUMFERENTIAL WELD
Richard L. Frohlich, Tampa, and William E. Bitzer, Tarpon Springs, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 2, 1977, Ser. No. 802,935
Int. Cl.[2] B23K *9/18, 37/02, 37/04*
U.S. Cl. 228—9 **9 Claims**



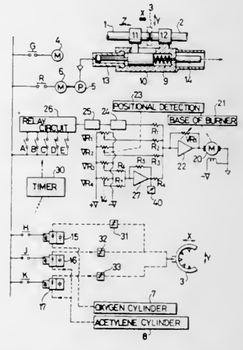
1. Apparatus for forming a circumferential weld in a circumferential groove on a cylindrical member disposed at a predetermined position within said apparatus, said apparatus comprising:
a plurality of A-frame structures;
a bridge disposed between said A-frame structures;
a welding head for laying a weld bead in said circumferential groove;
means for rotating said cylindrical member about its longitudinal axis;
means for moving said welding head horizontally in a plane generally parallel to a plane passing through said circumferential groove, said means for moving the welding head horizontally in a plane generally parallel to a plane passing through said circumferential groove comprises a first bar rigidly mounted on the bridge and a second bar rigidly mounted on said bridge and generally parallel to said first bar, said bars being disposed in a plane forming an acute angle with said plane passing through the circumferential groove, means for sliding said welding head longitudinally along said bars and means for locking said weld head in any longitudinal position with respect to said bars;
means for moving said welding head vertically in a plane generally parallel to a plane passing through said circumferential groove;
means for moving said welding head horizontally in a plane generally perpendicular to a plane passing through said circumferential groove; and,
a probe which is disposed to run in said circumferential groove and respond to vertical and horizontal variations in the circumferential groove to signal the means for moving said welding head vertically and to move said welding head horizontally in a plane perpendicular to a plane passing through said circumferential groove to compensate for variations in said groove and said cylindrical member to automatically provide a high circumferential weld.

4,121,747
STORAGE TANK CONSTRUCTION PROCEDURES
Myron L. McFatter, Texas City, Tex., assignor to Anchortank, Inc., Seabrook, Tex.
Filed Feb. 9, 1976, Ser. No. 656,252
Int. Cl.[2] B23K *31/02, 37/04;* **E04H** *7/30*
U.S. Cl. 228—17.7 **7 Claims**



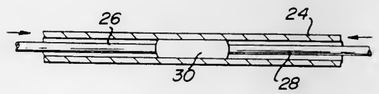
6. Apparatus for producing a large diameter storage tank from strip metal, comprising a support assembly arranged circularly on a base for supporting strip metal vertically in a helical path, means for feeding strip metal to said support assembly, means for aligning the upper edge portion of the strip fed to the support assembly with the lower edge portion of the helical turn immediately thereabove so that said edge portions may be joined together, said support assembly comprising groups of rollers arranged circularly on said base, each group comprising a plurality of support rollers supporting the lower edge of said strip, and a plurality of side support rollers positioned against the inside and outside surfaces of said strip, at least some of said support rollers being mounted on a support bracket which is pivotable about horizontal and vertical axes to provide for varying degrees of orientation of said rollers.

4,121,748
GAS PRESSURE WELDING PROCESS
Takao Yokokawa, Tokyo; Shigeo Takano, Machida; Yasuaki Ichinose, Sayama; Toshiyuki Kasahara, Hino, and Fumiaki Ikeda, Nishinomiya, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Apr. 7, 1976, Ser. No. 674,558
Claims priority, application Japan, Apr. 7, 1975, 50-62615; May 26, 1975, 50-42074
Int. Cl.[2] B23K *19/00, 5/00*
U.S. Cl. 228—102 **11 Claims**



1. An automatic gas pressure welding process, comprising:
positioning two reenforcing solid-steel bars such that opposite end-portions of said bars face each other;
conducting a plurality of sequential stages, including a preliminary pressing stage, a primary pressing stage, a secondary pressing stage and a tertiary pressing stage, during which stages said opposite end-portions are acted upon by heat or pressure;
continuously detecting an upset amount of the end-portions of the bars, the width of the end-portions subjected to heating being expanded step by step while carrying out the sequence in going from stage to stage;
selectively controlling the changeover from one stage to the other in accordance with the following: said preliminary pressing stage and said secondary pressing stage being terminated at the expiration of a respective predetermined time; said primary pressing stage and said tertiary pressing stage being terminated at the time said upset amount of the heated end-portions becomes equal to a respective predetermined value and wherein a maximum constant pressure is employed during said primary pressing stage and said tertiary pressing stage which decreases due to the occurrence of said upset of said heated end-portions during the secondary pressing stage.

4,121,749
METHOD OF MAKING THERMOCOUPLE
Omer P. Cure, Diepenbeek, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.
Division of Ser. No. 672,100, Mar. 31, 1976, Pat. No. 4,056,407. This application Jun. 10, 1977, Ser. No. 805,362
Int. Cl.[2] B23K *31/00;* **B01J** *17/00*
U.S. Cl. 228—173 A **3 Claims**

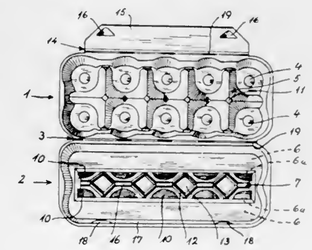


1. A method of making a thermocouple assembly comprising inserting dissimilar metal thermocouple wires into a tubular shield transparent to radiation, maintaining the juxtaposed ends of the wire in contact within said shield while applying heat through said shield to weld said wire ends in situ to form a hot junction whose diameter is greater than the diameter of the wires and wherein said hot junction is in contact with substantially the entire inner circumference of the shield.

4,121,750
PROCESSES FOR SOLDERING ALUMINUM-CONTAINING WORKPIECES
Heinz Schoer, Alfter, and Werner Schultze, Bonn, both of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany
Continuation of Ser. No. 368,627, Jun. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 98,173, Dec. 14, 1970, abandoned. This application Oct. 4, 1976, Ser. No. 729,039
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1969, 1962760; Jun. 11, 1970, 2028683
Int. Cl.[2] B23K *31/02*
U.S. Cl. 228—219 **16 Claims**

1. A method of joining aluminum workpieces bearing an aluminum oxide surface layer which comprises:
interposing between said workpieces an aluminum-silicon filler material consisting essentially of aluminum containing from 6 to 20% by weight of silicon and from 0.01 to 10.0% by weight of an aluminum wetting agent selected from the group consisting of bismuth, antimony, strontium and barium,
heating said workpieces in contact with said filler material with a heating device to a temperature in the range from about 590° C. to about 605° C. wherein the resulting viscosity and surface tension of said filler material at said temperature is less than the viscosity and surface tension of said filler material in the absence of said wetting agent and the interfacial tension between said filler material and said workpieces is lower than the interfacial tension in the absence of said wetting agent and,
performing said heating step in a substantially non-oxidizing atmosphere and in the absence of a flux.

4,121,751
PACKING CARTON FOR BREAKABLE ARTICLES
Bent Möller, Vaerlose, Denmark, assignor to Aktieselskabet Brodrene Hartmann, Lyngby, Denmark
Continuation of Ser. No. 499,646, Aug. 22, 1974. This application Mar. 22, 1977, Ser. No. 780,055
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1973, 2344096
The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.
Int. Cl.[2] B65D *1/36*
U.S. Cl. 229—2.5 EC **4 Claims**



1. A packing carton for breakable articles such as eggs comprising a container member, a lid member, and a closing flap; said members and flap being screen molded from pulp as a unit to provide said container; a hinge line securing said lid member

to said container member; a hinge line securing said closing flap to one of said members; said flap, when said lid member is in closed position on said container member, engaging the other of said members; the outside surface of said flap in said closed position lying against the inside surface of one side wall of said other member; at least one fastener projection projecting outwardly from the outside surface of said flap; at least one cooperating fastener opening in said side wall of said other member; said projection, when said flap is in said closed position, being engaged in said fastener opening to maintain the carton closed; one of said hinge lines having a plurality of slot-shaped elongated blind apertures spaced along the length thereof; the distance between adjacent apertures being greater than the length of an aperture; said one hinge line terminating at each of its ends in one of said plurality of slot-shaped blind apertures; said blind apertures each extending inwardly from the outer surface of said carton; each of said blind apertures presenting, on the inner side of said carton, its blind end in the form of projections extending inwardly along said hinge line; said projections being substantially "U" shaped in cross-section and substantially completely within said hinge line; and the interior of said carton being free of any other projections for cooperation with said first named projections.

4,121,752

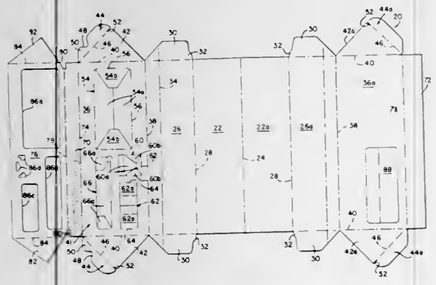
SELF-OPENABLE DEVICE AND BLANK THEREFOR

Richard Albert Ravotto, Greenbrook Estates, N.J., and Charles Warner Rosenburg, Jr., Tonawanda, N.Y., assignors to J. C. Penney Company, Incorporated, New York and F. N. Burt Co., Inc., Buffalo, both of, N.Y., a part interest to each

Filed Jun. 17, 1977, Ser. No. 807,495

Int. Cl.[2] B65D *5/48*

U.S. Cl. 229—27 **12 Claims**



1. A blank of foldable material for forming a self-openable carton, which comprises in integral combination, a pair of first sidewall panels hingedly connected to each other by a hinge crease; a pair of remote foldable sidewall panels, each one of which is respectively connected to corresponding ones of said first pair of sidewall panels wherein said remote sidewall panels have connected at opposite ends thereof foldable reinforcing end tabs; first and second interior retaining wall panels, each one being foldably connected to corresponding ones of said remote panels, at least one of said retaining wall panels being formed with at least one article receiving compartment; said retaining panels also including at opposite ends thereof foldable end flaps having locking tab means which enable slidable cooperation with corresponding ones of said reinforcing end tabs to position and support each of said end flaps and said retaining wall panels to corresponding ones of said remote sidewall panels, foldable connecting strip means foldably connected adjacent each of said retaining walls and being adapted to be directly connected to interior surfaces of corresponding ones of said first pair of sidewall panels longitudinally adjacent said hinge crease, and an intermediate supporting wall foldably connected adjacent one of the connecting strip means and having at least an appropriately formed opening alignable with the compartment of one of said retaining walls to facilitate retention of the storable item through the opening in the compartment, said intermediate supporting wall having foldable supporting end flaps configurated and dimensioned such that whenever the carton is in the assembled condition the supporting end flaps enhance the strength and rigidity of a carton which is formed by being positionable between one of the retaining walls and corresponding ones of said end flaps.

4,121,753

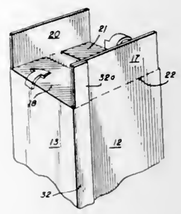
SHIPPING CONTAINER AND BLANK THEREFOR

Jackie R. Westfall, Vincennes, Ind., assignor to Packaging Corporation of America, Evanston, Ill.

Filed Jan. 12, 1977, Ser. No. 758,572

Int. Cl.[2] B65D *5/02*

U.S. Cl. 229—37 R **2 Claims**



1. A shipping container formed from a blank of foldable sheet material having a first surface and a second surface, said container comprising a plurality of upright side wall panels foldably connected to one another; closure flaps foldably connected to the upper and lower edges of said side wall panels and forming a closed top and a closed bottom, said top and bottom being substantially horizontally disposed relative to said side wall panels; an elongated first joint flap foldably connected to and projecting laterally from an upright edge of a first joint-forming side wall panel and having a length substantially coextensive with said upright edge, said first joint flap being adhesively secured to a portion of a second joint-forming side wall panel disposed adjacent an upright edge thereof and forming the blank first surface; an elongated second joint flap foldably connected to and projecting laterally from the upright edge of said second joint-forming side wall panel and having a length substantially coextensive therewith, said second joint flap being adhesively secured to a portion of said first joint-forming side wall panel disposed adjacent the upright edge thereof and forming the blank second surface, the foldline connections of the first and second joint flaps being disposed in substantially superposed coextensive relation; and elongated extensions foldably connected to opposite ends of said second joint flap and extending longitudinally therefrom, said extensions being adhesively secured to the surfaces of the closure flaps connected to the first joint-forming side wall panel and forming the blank second surface, the foldline connection of each extension being in substantially aligned overlying relation with the foldline connection of the closure flap to which it is secured, said extensions being in spaced substantially parallel relation to each other and transversely disposed with respect to said second joint flap; the adhesive securing said first joint flap and said second joint flap to the respective joint-forming side wall panels and said extensions to the respective closure flaps being in the form of a continuous stripe of adhesive having been applied only to the blank second surface of said first joint flap, of said first joint-forming side wall panel, and of the closure flaps connected to said first joint-forming side wall panel.

4,121,754

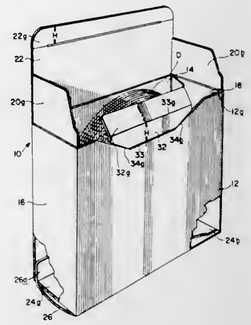
EASY-FILL BOX

Robert A. Hackenberg, East Lyme, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Jan. 23, 1978, Ser. No. 871,560

Int. Cl.[2] B65D *5/10*

U.S. Cl. 229—38 **3 Claims**



1. A box having a closure on at least one end of the box of the type including a cover flap hinged to one wall of the box and arranged to be folded down with its edge margin opposite the hinge tucked in adjacent to the opposite wall of the box to close that end of the box and which is intended to contain one or more articles having a relatively stiff planar portion lying flush against said opposite box wall, the improvement comprising a tab hinged to said opposite box wall near said one end of the box,

A. the height of said tab between said hinge and its opposite edge being at least equal to the height of the cover flap margin that is tucked in adjacent said opposite wall when the cover flap is closed,

B. the width of said tab being less than the full width of said opposite wall so that when said cover flap is closed, its said edge margin interfits between said tab and said opposite wall,

C. said tab being defined by a pair of slits extending from the adjacent edge of said opposite wall to the opposite ends of said hinge, said slits being angled with respect to said hinge.

4,121,755

DISPOSABLE COLLECTING CONTAINER FOR SMALL USED ARTICLES AND WASTE

Curt Th. Meseke, Leer, Ostfriesland, and Winfried Winkler, Aachen, both of Fed. Rep. of Germany, assignors to Hammer-Lit GmbH, Leer, Ostfriesland, Fed. Rep. of Germany

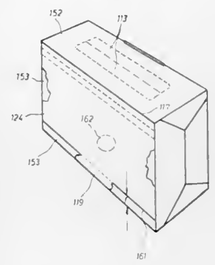
Filed Jul. 11, 1977, Ser. No. 814,426

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1976, 7621822[U]; Jul. 5, 1977, 2720591

Int. Cl.[2] B65D *5/10, 81/00*

U.S. Cl. 229—38 **12 Claims**

1. A disposable container which is adapted from a primarily double-layer collapsed and substantially flat condition to be folded up into its form of use as a safely closed receptacle for medical articles free of danger of pointed, sharp and contaminated parts of articles otherwise projecting therefrom, which includes in combination: a first wall adapted in condition of use of said container to form the longitudinal top wall of said container, said first wall having an insert opening, side walls of which one comprises two layers respectively forming an outer layer and an inner layer, said outer layer included as a fifth sidewall at least with one section as a closure flap serving as an additional cover for insert opening when the container is full and being foldable about a longitudinal edge onto said longitudinal top container wall, said insert opening extending over a



portion of the container length and symmetrically to the edges of the upper longitudinal container wall.

4,121,756

PACKAGE WITH A HINGED LID

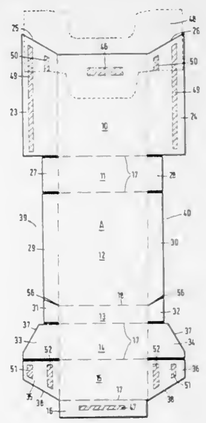
Heinz Focke, and Kurt Liedtke, both of Verden, Germany, assignors to Focke & Pfuhl, Verden, Germany

Filed Sep. 20, 1977, Ser. No. 834,945

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1976, 2642708; Dec. 15, 1976, 2656702

Int. Cl.[2] B65D *5/66, 85/10*

U.S. Cl. 229—44 CB **17 Claims**



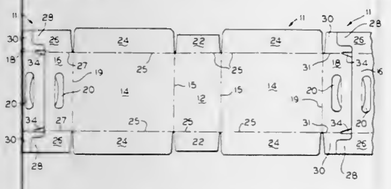
1. A package with closable lid including a collar made from a separate blank, especially to enclose cigarettes, and a blank with successive portions thereof for the front wall, bottom, back wall, lid back wall, lid top surface and lid front wall, each with side flap strips to form side walls and lid side walls, which lie along a separating line that runs at an angle from the front side of the package to the back side, characterized in that the outer side flaps (**23**, **24**) i.e. lid side flaps (**33**, **34**; **35**, **36**) that join the front wall (**10**), lid front wall (**15**) and lid top surface (**14**) are formed with dimensions that correspond with the dimensions of the side walls (**19**, **20**) i.e. lid side walls (**21**, **22**), and the inner side flaps (**29**, **30**) i.e. corner flaps (**27**, **28**) as well as center flaps (**31**, **32**) that join the back wall (**12**), the bottom (**11**) and the lid back wall (**13**) having a smaller width than the side walls (**19**, **20**) i.e. the lid side walls (**21**, **22**).

4,121,757

FLAP ARRANGEMENT FOR A CARRIER CARTON

John R. Hamlin, Orange, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 24, 1978, Ser. No. 871,922
Int. Cl.[2] B65D *5/46, 25/22*
U.S. Cl. 229—52 B **3 Claims**



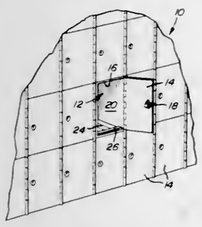
1. A carton formed from a cut and scored, nestable blank of paperboard, comprising:
(a) a bottom main wall and a pair of side main walls hinged to said bottom main wall along opposite side edges thereof;
(b) end walls formed from a plurality of end wall forming panels hinged to the end edges of at least certain of said main walls and forming therewith a structure open at its top;
(c) a top wall formed from first and second top wall forming sections;
(d) said top wall forming sections having carton carrying means formed therein and providing a carrying handle at said manufacturer's joint;
(e) each of said top wall forming sections having a flap foldably hinged along a hinge line to each end thereof, including:
(i) a first flap hinged to said first section and having an outwardly extending projection;
(ii) a second flap hinged to said second section and having a portion thereof corresponding in configuration to said projection removed therefrom;
(iii) said projection overlapping an area of said second flap and being secured thereto forming a continuous flap;
(f) said continuous flap being folded inwardly to form a partial interior end wall of said carton.

4,121,758

MAILBOX LINER WITH MAIL REMOVAL SLIDE

Emerson Bonner, 413 S. Elm, Lusk, Wyo. 82225

Filed Feb. 23, 1977, Ser. No. 771,368
Int. Cl.[2] B65D *91/00*
U.S. Cl. 232—17 **9 Claims**



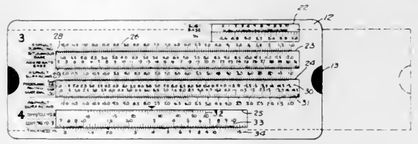
1. A mail receptacle accessory for facilitating removal of mail or similar items from a mail receptacle having at least one access opening, comprising slidable means disposable in the lower portion of the mail receptacle for engaging mail in the receptacle, the slidable means comprising:
a central support member having its longitudinal axis extending perpendicular to the nominal plane of the access opening;
handle means connected to the anterior end of the support member and adapted to be grasped by a user for withdrawing the slidable means from the interior of the mail receptacle;
scoop means connected to the posterior end of the support member for engaging posterior end portions of mail or similar items disposed in the receptacle and withdrawing said items at least partially from the receptacle on withdrawal of the slidable means at least partially therefrom; and,
means for lining the mail receptacle and adapted to be fitted into said receptacle, exterior wall surfaces of the liner means fitting substantially flushly with interior wall surfaces of the mail receptacle, one lower wall portion of the liner means comprising a floor, the floor having a groove formed therein to receive the central support member of the slidable mail engaging means therein, the support member being slidable longitudinally within the groove and forming a portion of said floor.

4,121,759

PAVEMENT SYSTEM CALCULATOR

Richard T. Merkel, and William R. Markin, both of Toledo, Ohio, assignors to Nicholson Concrete Company, Toledo, Ohio

Filed Dec. 27, 1976, Ser. No. 754,419
Int. Cl.[2] G06G *1/02*
U.S. Cl. 235—70 A **5 Claims**



1. A pavement system calculator for use in determining optimum pavement design by determining a structural design coefficient for a particular application expressed as an SN number utilizing a reasonable prediction of the traffic load that the pavement will be subjected to per unit time expressed as Design Traffic Number (DTN) and the properties of the soil on which the pavement is constructed expressed as a California Bearing Number (CBR) comprising
a fixed member,
a slide member associated for movement with respect to said fixed member,
a first scale on said slide member having indicia corresponding to quantity of vehicles moving along the pavement per unit time (DTN),
a first index on said fixed member associated with said first scale,
a second scale and a third scale on said slide member including indicia corresponding to the DTN,
and second and third indexes on said fixed member associated with said last-mentioned second and third scales and corresponding to the type of vehicle,
a fourth index on said fixed member,
a fourth scale on said slide member associated with said fourth index and having indicia corresponding to CBR,
a fifth scale on said slide member associated with said fourth index and having indicia corresponding to SN,
and a sixth scale on said fixed member corresponding to DTN and associated with said fourth and fifth scales,
said first scale on said slide member and said second and third scales on said slide member being interrelated and positioned such that the DTN number can be determined by moving the slide member to bring the scale reading for the daily quantity of vehicles adjacent the first index and reading the index number on the second scale at one of the second or third indexes adjacent the second and third scales,
said fourth and fifth scales being interrelated and positioned such that the SN number can be determined by moving the slide member to set the CBR number at the fourth index, locating the previously determined DTN number on the sixth scale and reading the SN number on the slide member.

4,121,760

ELECTRONIC MULTIBASE CALCULATOR

Michael J. Cochran, Richardson, and Leonard J. Donohoe, Irving, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 429,256, Dec. 28, 1973, abandoned.
This application May 10, 1976, Ser. No. 684,612
Int. Cl.[2] H03K *13/24*
U.S. Cl. 235—311 **7 Claims**



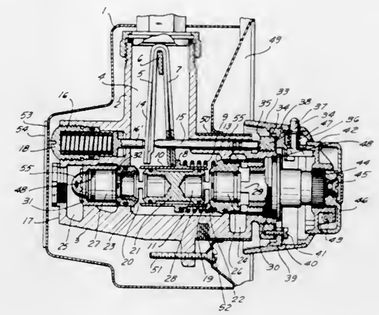
1. A multiple base calculator system comprising:
(a) keyboard entry means for entering function commands, numeric data in a plurality of different number bases, and a decimel point key for separating the integer and fractional parts of said numeric data;
(b) display means for visually displaying numeric data in said plurality of different number bases, and
(c) semiconductor integrated calculator circuit means including:
(i) memory means for storing said numeric data in the inputted number base, said memory means being coupled to said keyboard entry means for receiving numeric data entered by said keyboard means;
(ii) an arithmetic unit coupled to said memory means for performing arithmetic operations on both the integer and fractional parts of said numeric data only in a first number base in response to instruction commands;
(iii) an addressable permanent store read-only-memory means coupled to said arithmetic unit and having stored therein a plurality of groups of instruction commands for controlling the operation of said arithmetic unit, at least one of said groups being arranged to control said arithmetic unit to change the number base of the data stored in said memory means from said inputted number base to said first number base for performing arithmetic operations thereon and at least another of said groups being arranged to change the number base from said first number base to said inputted number base for displaying numeric data in said inputted number base, whereby numeric data is enterable in a selected one of said number bases and numeric data displayed in a selected one of said number bases;
(iv) keyboard selection means for indicating to said calculator system the particular one of said plurality of number bases of said numeric data entering said system by means of said keyboard means; and
(v) control means coupled to said keyboard selection means and to said addressable read-only-memory-means for addressing at least one of said groups in response to the base selection indicated by said keyboard selection means.

4,121,761

THERMOSTATICALLY CONTROLLED MIXING VALVE FOR SANITARY DEVICES

Werner Nolden, Wittlich, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

Continuation of Ser. No. 677,574, Apr. 16, 1976, abandoned.
This application Sep. 16, 1977, Ser. No. 833,931
Int. Cl.[2] G05D *23/00*
U.S. Cl. 236—12 R **1 Claim**



1. In a thermostatically controlled mixing valve, a cartridge adapted to be removably insertable into the valve body so as to provide either an individual or a central type thermostatically controlled mixing valve for use in sanitary installations, said valve comprising:
said valve body having hot and cold water inlet openings, an outlet opening and having a first chamber in fluid communication with said first chamber and said first chamber serving as a hot and cold water mixing chamber;
a temperature sensing and thermostat control assembly mounted in said first chamber;
said second chamber being selectively in fluid communication with said hot and cold water inlet openings, said second chamber being disposed normal to said first chamber so as to removably receive a cartridge in liquid tight engagement;
said cartridge comprising a temperature control sleeve and collar assembly operatively coupled to and engaged with said temperature sensing and thermostat control assembly, said cartridge including automatic one way back flow prevention valve means, said sleeve being slidably mounted on said cartridge and adapted to move against the resistance of a first independent spring provided on said cartridge when a change in water temperature in said first chamber is sensed by said temperature sensing and thermostat control assembly;
said temperature sensing and thermostat control assembly having a U-shaped bimetallic element mounted in said first chamber; a first arm of said bimetallic element forming a stop for a first plunger; a second arm of said bimetallic element biasing against a shoulder on said sleeve;
a second plunger in said value body which moves axially in response to a temperature setting of the thermostat in said temperature sensing and thermostat control assembly;
a second independent spring mounted in said valve body which is displaceable against the action of said first plunger to thereby cause said sleeve to shift to or away from the hot and cold water outlet opening of said cartridge in response to a temperature change in the water in said first chamber; said back flow prevention means being

normally closed by the action of independent springs therein, said back flow valve means being mounted in fluid communication with said hot and cold water inlet openings so that water flowing into said second chamber cannot flow back through said cartridge and into said hot and cold water supply; and

said cartridge assembly having its external dimensions identical to the space in said second chamber so as to be insertable alternately, into said second chamber of said value body of either an individual or central type thermostatically controlled mixing valve.

4,121,762

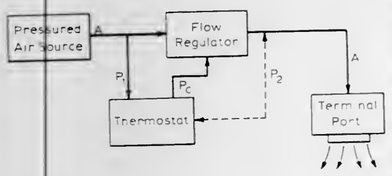
AUTOMATIC FLUID FLOW REGULATOR

Edward E. Modes, Deerfield, Ill., assignor to Powers Regulator Co., Skokie, Ill.

Division of Ser. No. 454,720, Mar. 25, 1974, Pat. No. 3,955,595, which is a continuation-in-part of Ser. No. 416,202, Nov. 15, 1973, abandoned. This application Mar. 8, 1976, Ser. No. 664,507

Int. Cl.² F24F *11/04*

U.S. Cl. 236—49 **12 Claims**



1. A device for regulating the air flow rate in an air distribution system and for adjusting said air flow in response to ambient temperature, comprising:

temperature sensing and signal generating means for sensing the ambient temperature and for generating a signal corresponding to the sensed temperature;

a housing having a first end defining an air inlet passageway and a second end sealably engaging a discharge duct, said duct having a lateral wall with at least one aperture therein;

flow restricting means mounted within said duct adjacent said aperture and axially displaceable therein in response to pressure differentials in said distribution system between upstream and downstream from said regulating device and in response to said temperature signal, said flow restricting means including an axially extending shaft and a piston slideably mounted on said shaft and axially displaceable coincident with said aperture in response to said pressure differentials;

spring means mounted on said shaft downstream from said piston and having a predetermined nonlinear coefficient of stiffness for yieldably resisting downstream displacement of said flow restricting means;

said aperture and said flow restricting means together comprising means for forming a variable area air flow passage through which substantially all the air must flow in passing through said regulating device;

said aperture having a size and shape including axial continuity and a continuously decreasing traverse dimension along the entire length of travel of said flow restricting means and said spring coefficient of stiffness having a nonlinear value, making the displacement of said flow restricting means inversely proportional to the logarithm of the area of said fluid flow passageway continuously along the entire length of travel of said flow restricting means.

4,121,763

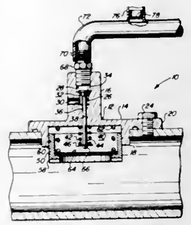
FLUID TEMPERATURE TRANSDUCER

Frank L. Roberge, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 7, 1977, Ser. No. 813,606

Int. Cl.² G05D *23/10;* **G01K** *5/58*

U.S. Cl. 236—87 **14 Claims**



1. A fluid temperature transducer, comprising:

(a) a housing having first and second housing members, said first housing member defining a passageway, said second housing member disposed on said first member;

(b) first and second valve elements cooperatively disposed in said passageway of said first member, one of said valve elements being movable with respect to the other for controlling the flow of a fluid through said passageway;

(c) a fluid temperature sensitive member disposed on said second housing member; and

(d) valve element actuating means disposed between said one of said valve elements and said fluid temperature sensitive member for actuation of said one of said valve elements when the temperature of the fluid sensed by said sensitive member changes between a crack point and a set point,

said sensing means being spaced apart from said actuating means when said fluid temperature is outside the range between said crack point and set point,

said second housing member adjustably disposed on said first housing member.

4,121,764

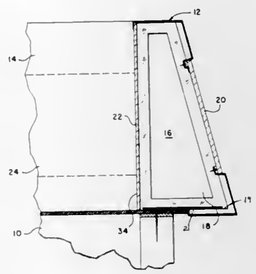
SOLAR HEATING SYSTEM

Henry F. Hopé, 3192 Huntingdon Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2421 Wyandotte Rd., Willow Grove, Pa. 19090

Filed Aug. 18, 1975, Ser. No. 605,713

Int. Cl.² F24J *3/02*

U.S. Cl. 237—1 A **37 Claims**



1. An architectural parapet-like component for solar heating a building which component is multi-functional and particularly adapted to attract solar heat for heating the interior of the building, decrease sun glare, allow the viewing of the outside from the inside of the building and allow for daylight to provide light into the building, which component comprises an endless plenum chamber defining an endless air space, the plenum comprising a first panel permitting passage of a predetermined amount of natural light and of solar energy to heat the air within the air space, the first panel being positioned towards the exterior of the building, a second panel being positioned closer to the interior of the building than the first panel and permitting passage of a predetermined amount of natural light and of solar energy, the first panel being darker than the second panel and having a greater absorption for solar energy than the second panel, the panels thereby allowing passage of heat and light to the interior of the building and providing a clear and unobstructed view of the outside from the inside of the building.

4,121,765

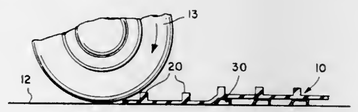
ICE MAT

Stelian Fosteris, 40-35 Ithaca St. 4B, Elmhurst, N.Y. 11373

Filed Sep. 8, 1976, Ser. No. 721,539

Int. Cl.² E01B *23/00*

U.S. Cl. 238—14 **5 Claims**



1. An ice mat, which comprises;

a. an elongated flexible mat member of a rectangular shape having a pair of sides and a pair of ends, said flexible mat member fabricated from a rubber-like material;

b. a pair of elongated flexible strap members, each strap member longitudinally embedded in said mat, said pair of elongated strap members being disposed in spaced apart parallel relationship parallel to said pair of sides;

c. a plurality of elongated rib members, said elongated rib members fabricated from a rubber-like material;

d. means for mounting each said rib member transversely across an upper surface of said mat, said rib member extending between said pair of sides;

e. a plurality of elongated ice gripping elements, said plurality of elongated ice gripping elements being less in number than the number of said elongated rib members; and

f. means for securing each said gripping element transversely across a lower surface of said mat, wherein said each gripping element is disposed beneath a sub-plurality of said elongated rib members and parallel thereto, the remaining quantity of said plurality of elongated rib members being disposed adjacent one of said pair of ends of said flexible mat member, wherein each of said ice gripping elements includes an elongated flat center portion having a forward and a rear edge, said each ice gripping element including a first flange element affixed perpendicularly to said rear edge of said center portion and extending downwardly therefrom, said each ice gripping element including a second flange element affixed at an obtuse angle to said forward edge of said center portion and extending forwardly and downwardly therefrom, said second flange element being disposed intermediate said first flange element and said one of said pair of ends of said flexible mat member.

4,121,766

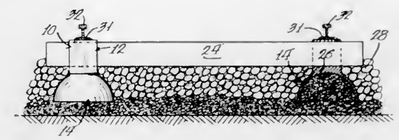
RAILWAY TIE COLLAR

Rudolph F. Wiatr, 5525 N. Chester, Chicago, Ill. 60656, and John R. Sigle, R.R. 1, Pawnee, Ill. 62558

Continuation-in-part of Ser. No. 708,201, Jul. 23, 1976, abandoned. This application Feb. 10, 1978, Ser. No. 876,755

Int. Cl.² E01B *3/24*

U.S. Cl. 238—110 **11 Claims**



1. A railway tie collar for supporting a rail over spaced ties and ballast, said tie collar comprising a unitary rigid structure having an upper portion and lower portion, said upper portion comprising an upper wall for supporting a rail and a pair of side walls extending between said top wall and said lower portion, and a cavity through said upper portion between said top and side walls, said cavity being dimensioned to loosely and slidably receive each tie near each end portion thereof, whereby vertical forces on the tie collar are substantially borne by the tie collar, thereby minimizing wear and stress on said tie, said lower portion being flared outwardly from the upper portion and being of sufficient length to engage within said ballast.

4,121,767

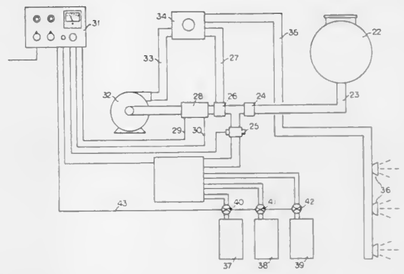
MOBILE AGRICULTURAL SPRAYER WITH ADDITIVE CONCENTRATION CONTROL

Richard Jensen, Star Rte. 176, McCammon, Id. 83250

Filed Jul. 26, 1976, Ser. No. 708,544

Int. Cl.² B05B *7/26;* **G05D** *11/08*

U.S. Cl. 239—71 **13 Claims**



1. A chemical concentration control unit for a mobile agricultural sprinkler having a storage tank and sprinkling heads comprising:

(a) a pump having an inlet connectable to said storage tank and an outlet connectible to said sprinkling heads;

(b) liquid conduit means connecting said pump to said storage tank and said sprinklers;

(c) at least one chemical additive tank communicating with said liquid conduit at a point between said storage tank and said pump;

(d) a concentration cell in said liquid conduit means located between the junction where said chemical additive tank communicates with said liquid conduit means and said pump, said concentration cell providing electrical signals in response to changes of concentration of liquids within the cell;

(e) a chemical concentration monitoring device which monitors the concentration of liquids flowing through said

concentration cell and in response to changes in said concentration generates control signals;

(f) a chemical additive control valve means to control flow from said chemical additive tank into said liquid conduit means, said control valve opening and closing in response to signals from said monitoring device.

4,121,768

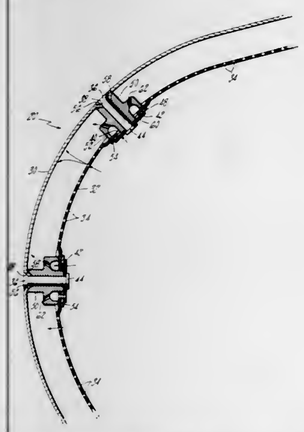
ATTACHMENT FOR A NOZZLE CENTERBODY

John H. Young, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 27, 1977, Ser. No. 791,351

Int. Cl.[2] F16B *5/04*

U.S. Cl. 239—127.3 **8 Claims**



1. Means for constructing a wall subjected to high temperature differentials comprising an outer sheath subjected to a high temperature environment, an inner spaced sheath coextensive with the outer sheath and having a plurality of apertures for directing a cooling medium to impinge on the inner surface of said outer sheath, said means including an attachment means extending through aligned openings formed on the inner sheath and the outer sheath, a flat plate-like member shouldered between said attachment means and the inner sheath, a collar surrounding said attachment means and extending between said flat plate-like member and the outer sheath, bearing means carried by said collar bearing against the inner surface of said inner sheath and the diameter opening of said inner sheath being sufficiently larger than the diameter of said collar defining a space to allow thermal growth of said outer sheath to minimize thermal stresses and the force exerted by said bearing means against said inner sheath allowing relative movement therebetween.

4,121,769

ROTARY SPRAYING DEVICE PARTICULARLY USEFUL FOR WATER IRRIGATION

Mordeki Drori, 89 Zahal St., Kiron, Israel

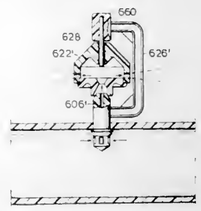
Filed Sep. 16, 1976, Ser. No. 724,007

Claims priority, application Israel, Apr. 14, 1976, 49414; Apr. 26, 1976, 49472; May 20, 1976, 49615

Int. Cl.[2] B05B *3/06*

U.S. Cl. 239—222.17 **12 Claims**

1. A rotary liquid spraying device particularly useful for water irrigation, comprising: a nozzle connectable to a pressurized water source; a nozzle support for supporting the nozzle to issue a jet along a substantially vertical axis; a water spraying head; and a rotatable mounting for the head to enable same to rotate about said vertical axis; said head including an inlet orifice having a mouth vertically aligned with said nozzle to intercept the jet from the nozzle, an internal chamber communicating with said inlet orifice, and a plurality of outlet orifices communicating with said internal chamber and having substantially horizontal axes each laterally of said vertical axis to issue jets therealong and to produce a reaction force rotating the head about the vertical axis; said internal chamber being of substantially larger cross-sectional area than either the inlet



orifice, or all of the outlet orifices together, to define a reservoir in which the velocity of the incoming liquid is reduced and is utilized to pressurize the liquid before issuing as jets through the outlet orifices, said inlet orifice including side walls converging towards each other from its mouth towards the internal chamber and terminating in a narrow diameter throat at the mouth of said chamber.

4,121,770

WEAR-RESISTANT ROTOR WHEEL

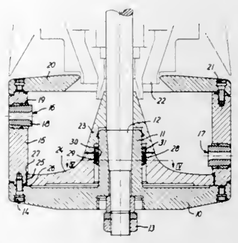
Orla Straarup, Copenhagen; Max Fowler Petersen, Havndal, and Klaus Erik Gude, Vedbaek, all of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

Filed Jan. 21, 1977, Ser. No. 761,033

Claims priority, application Denmark, Jan. 26, 1976, 294/76; Dec. 2, 1976, 5434/76

Int. Cl.[2] B05B *3/10*

U.S. Cl. 239—224 **7 Claims**



1. In a wear-resistant rotor wheel, particularly for use as an atomizer wheel for the atomization of slurries of highly abrasive materials or as a rotor wheel for an agitator pump of the centrifugal type, and including a central hub, a wheel bottom fixedly connected with said hub, a body of revolution symmetrically surrounding said hub to form a guide surface for said slurry, an annular plate of a wear-resistant sintered material covering said wheel bottom, a substantially cylindrical side wall formed with a number of ejection orifices, the annular plate having an inner circumference disposed adjacent the central hub and an outer circumference disposed adjacent the cylindrical side wall, a number of wear-resistant bushings individually lining each of said orifices, said body of revolution, said annular plate and the inner side of said side wall defining an annular bowl-shaped space concentric with said hub, and inlet means for feeding a slurry into said bowl-shaped space, the improvements comprising: the annular plate being spaced from said wheel bottom to provide a clearance therebetween, and means for sealing the outer circumference of the annular plate relative to the lower part of the inner side of said side wall to prevent solid particles contained in said slurry

from penetrating between said annular plate and said side wall and to simultaneously allow said side wall to follow any operational deflections of said wheel bottom without subjecting said annular plate to deformation forces, one of said inner circumference and said outer circumference of said annular plate being displaceable with respect to the central hub and the cylindrical side wall, respectively, and the other of said inner circumference and said outer circumference of said annular plate being fixed with respect to the central hub and to the cylindrical side wall, respectively.

4,121,771

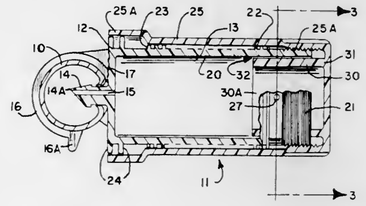
DRIP IRRIGATION EMITTER

Ralph L. Hendrickson, 3649 Noble Ave., North, Robbinsdale, Minn. 55422

Filed Jan. 17, 1977, Ser. No. 759,646

Int. Cl.[2] B05B *1/30*

U.S. Cl. 239—272 **10 Claims**



1. A device for providing a restricted flow of a liquid from a conduit carrying said liquid comprising a body member, means to attach said body member to a conduit, said body member comprising a peripheral wall defining an interior cavity open to a conduit attached to the means to attach, means defining a restricted flow path on the exterior of said peripheral wall, an orifice through said peripheral wall leading from the interior cavity to said restricted flow path, said orifice being spaced from the means to attach whereby liquid passing from the conduit to the orifice flows through portions of said cavity, said restricted flow path defining a liquid outlet adjacent to said means to attach, a cover member adapted to be mounted on the exterior of said peripheral wall in position covering said orifice and said restricted flow path to force liquid passing through said orifice to flow through said flow path from the orifice to the liquid outlet, and means positioned on the interior of said peripheral wall defining a particle restriction passage between the cavity and said orifice to limit the size of particles that are carried by flow from the conduit to the orifice to particles which are smaller than the size of the orifice.

4,121,772

PORTABLE SPRAY CAN FOR DUAL LIQUIDS

Philip J. Cronan, Los Angeles, Calif., assignor to Rubin Mandrell, Los Angeles, Calif., a part interest

Filed Aug. 17, 1977, Ser. No. 825,296

Int. Cl.[2] B05B *7/26*

U.S. Cl. 239—304 **1 Claim**

1. A portable spray can for dual liquids comprising in combination:

(a) an elongated cylindrical can having spray means including an elongated tube passing into said can and extending downwardly therein;

(b) an elongated cylindrical secondary container of frangible material in the interior of said can with its longitudinal axis running substantially longitudinally in said can, one end of said secondary container being open and its other end closed;

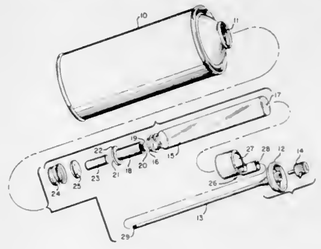
(c) a cylindrical plastic cartridge member having flexible fingers transversely extending across one end and its other end open and defining an annular flange about said open end, said one end of said cartridge being received in said one end of said secondary container with said annular flange seating on the periphery of the open end of said secondary container;

(d) a weight received in said cartridge;

(e) a cap threadedly receivable over the open end of said secondary container;

(f) a sealing disc inside said cap of plastic material for seating on said annular flange to provide a seal when said cap is in place;

(g) an integral plastic member defining a first collar surrounding said secondary container and a second collar surrounding said elongated tube to thereby mount said secondary container to said spray means so that the tube and secondary container can be received in said can as a unit, said weight being retained in said cartridge by said



flexible fingers, said fingers being biased apart to release said weight for movement along said secondary container in response to a given inertial force generated by shaking said can back and forth generally in the direction of said longitudinal axis said weight having sufficient mass to shatter said secondary container when it impacts the closed end thereof, said secondary container including a catalyst and said can containing a resinous liquid and gas propellant to be mixed with said catalyst

whereby shaking of the can back and forth causes said weight to be released and shatter said secondary container and place said catalyst into communication with said resinous liquid and gas propellant; and

(h) a screen at the lower end of said elongated tube for blocking any fragments of said secondary container from passing up through said tube during a spray operation.

4,121,773

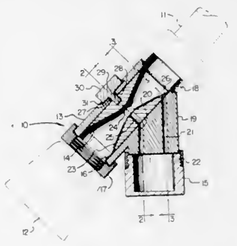
SHOWER HEAD DISPENSER

James J. Headen, 1337 Juniper Lane, Lewisville, Tex. 75067, and Reginald H. Fowler, 2113 Milpond, Garland, Tex. 75242

Filed Mar. 28, 1977, Ser. No. 781,773

Int. Cl.[2] B05B *7/30*

U.S. Cl. 239—317 **1 Claim**



1. A shower head dispenser for bath oil or the like comprising:

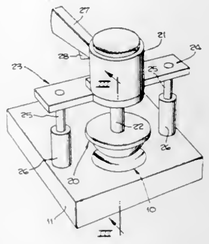
a body member having a cylindrical bore therethrough, said body member being adapted for insertion in a shower system between a shower line and a shower head;
said body member having a pair of longitudinally spaced apertures in the side wall thereof, one of said apertures being located a spaced distance upstream of the other;
fitting means on said body member encircling said apertures;
an oil container detachably engaged with said fitting means;
a cylindrical plug rotatably mounted in the cylindrical bore of said body member;
said plug having a single axial venturi bore therethrough;
said plug being provided with a first transverse bore intercepting said axial bore at the throat of the venturi, said first transverse bore being registrable with the downstream aperture in the side wall of said body member;
said plug further being provided with a second transverse bore intercepting said axial bore upstream from the throat of the venturi, said second transverse bore being registrable with the upstream aperture in the side wall of said body member, said second transverse bore further having a longitudinal portion lying parallel to the axis of said axial venturi bore and intercepting said axial venturi bore upstream of said upstream aperture;
means for rotating said plug in said body member to bring said bores and said apertures into and out of registry, said plug rotating means comprising a slot in said body member, a button slidingly overlying said slot, said button having a shaft extending through said said slot and engaging said plug, and a guide groove in said body member slidingly engaging said button; and
said body member being generally cylindrical in shape and being provided with an oil container receiving projection extending from the side thereof at an angle of about 45° to the axis of said body member.

4,121,774
SPREADING IMPLEMENTS
Ary van der Lely, 10, Weverskade, Maasland, and Cornelis J. G. Bom, 36, Esdoorniaan, Rozenburg, both of Netherlands
Filed Mar. 25, 1976, Ser. No. 670,440
Claims priority, application Netherlands, Mar. 26, 1975, 7503609
Int. Cl.² A01C *15/00*
U.S. Cl. 239—664 **79 Claims**



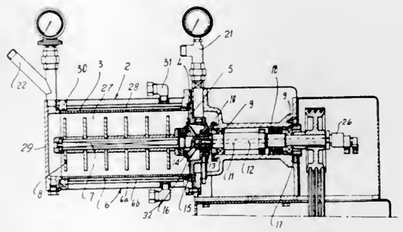
1. A spreading implement movable over the ground comprising a frame and a material container supported on said frame, at least two outlet ports adjacent the bottom of said container and conveying means being positioned below said container, said conveying means being mounted on an elongated spreading boom that is supported on said implement and said boom with said conveying means being positionable to extend laterally from said container with respect to the normal direction of movement of said implement, at least one rotatable spreading implement being mounted on an upwardly extending shaft adjacent the longitudinal center line of said conveying means, said conveyor means comprising at least two spaced apart conveyor members adapted to receive material from said ports and move same in the same direction along said boom, at least one guide member being located to bridge the space between said ports under said ports and above said conveying means, said guide member being positioned to direct material from said ports towards said conveying means, said guide member also being adapted to guide material from said ports into said conveyor members and away from said space between said conveyor members, and driving means connected to rotate said rotatable spreading implement and move said conveying means.

4,121,775
PULVERIZER
Harry G. Roseberg, 3101 S. Barrington St., Los Angeles, Calif. 90066, and Bernard Levine, 2233 Lomita Blvd., Lomita, Calif. 90717
Continuation-in-part of Ser. No. 701,104, Jun. 30, 1976, abandoned. This application Oct. 12, 1977, Ser. No. 841,367
Int. Cl.² B02C *19/08*
U.S. Cl. 241—30 **19 Claims**



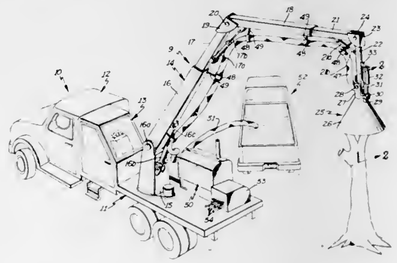
11. In a pulverizer comprising a bowl for receiving an object to be pulverized, a pestle movable into the bowl for pulverizing the object and means to rotate the pestle relative to the bowl, the improvement comprising the provision of:
the pestle comprising a generally convex, truncated downwardly facing surface which conforms to the upper surface of the bowl over the major portion of its exterior with the bottom of the pestle being truncated so that the bottom of the pestle is spaced from the bottom surface of the bowl, the pestle further comprises projection means extending from the bottom of the pestle for localizing force from the pestle for initially cracking hard objects.

4,121,776
COOLED HORIZONTAL-AXLE GRINDER
Carlos Oliver Pujol, Marina St. No. 51, Badalona (Barcelona), Spain
Continuation-in-part of Ser. No. 729,298, Oct. 4, 1976, abandoned. This application Sep. 9, 1977, Ser. No. 831,763
Claims priority, application Spain, Jul. 20, 1976, 449.976
Int. Cl.² B02C *23/36*
U.S. Cl. 241—46.11 **7 Claims**



1. In a cooled horizontal-axle grinder, such as for the predispersion of solids in liquids, which grinder includes a housing, a double-wall jacket structure defining therein both a grinding chamber and a cooling chamber, grinding bodies such as balls positioned within said grinding chamber, a rotatable agitator shaft extending through said grinding chamber and supported for rotation about a substantially horizontal axis, a plurality of agitator discs mounted on the shaft for rotation therewith, and a filter structure for straining the treated material which is withdrawn from the grinding chamber, comprising the improvement wherein said jacket structure includes an inner sleeve member defining said grinding chamber in the interior thereof and an outer sleeve member spaced outwardly from and disposed in surrounding relationship to the inner sleeve member, said inner and outer sleeve members defining the cooling chamber therebetween, one end of said inner sleeve member and the adjacent end of said outer sleeve member being fixedly mounted on said housing, and the other ends of said inner and outer sleeve members being relatively mounted in an unconstrained manner so as to be capable of absorbing and compensating for the differential axial expansion which may be produced between the inner and outer sleeve members due to the different temperatures which exist in the grinding and cooling chambers.

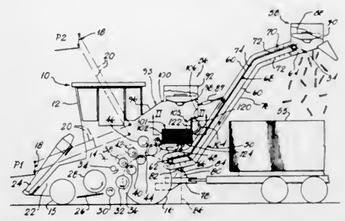
4,121,777
MOBILE TREE REMOVING APPARATUS
Richard M. Kolstad, Rte. 2, and Robert V. Anderson, Box 66, Hwy. 60 East, both of, St. James, Minn. 56081
Filed Sep. 15, 1977, Ser. No. 833,575
Int. Cl.² B02C *4/30*
U.S. Cl. 241—58 **5 Claims**



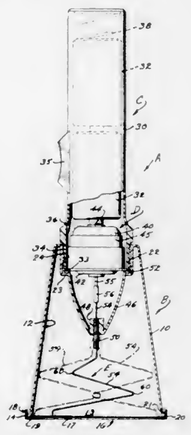
1. A mobile tree removing apparatus comprising: a vehicle,
an elongate extensible and retractable boom structure mounted on said vehicle and including a plurality of elongate boom sections each having an outer end and an inner end, certain sections engaging the next adjacent section in telescoping relation and being longitudinally shiftable relative to each other, other boom sections being pivotally connected to the next adjacent section,
a cutting device including a housing,
means shiftably mounting said housing on the outer end of the outer section to permit shifting movement of the house relative to said outer section,
revolvable cutter members in said housing for engaging and cutting the limbs and trunks of trees into chips,
power means for revolving said cutter members,
means defining an elongate conduit having one end thereof communicating with said housing,
a vacuum pump connected to the other end of said conduit and being operable for removing chips from said housing through the conduit by means of a vacuum.

4,121,778
HARVESTER FOR SUGAR CANE
Donald J. Quick, Bundaberg, Australia, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Jan. 10, 1977, Ser. No. 758,104
Claims priority, application United Kingdom, Jan. 17, 1976, 01843/76
Int. Cl.² B02C *23/10*
U.S. Cl. 241—79 **12 Claims**

1. A harvester for sugar cane or similar crops comprising:
a frame; supported on ground engaging means;
stick cutting means operative to cut harvested crop sticks into two or more pieces mounted on the frame;
trash removal apparatus mounted on the frame operative to pass air through said stick pieces produced by the stick cutting means and to cause trash to become entrained with the air;
structure defining an air intake for said trash removal apparatus;
a conveyor mounted on the frame for pivotal movement about an upwardly extending axis and about a horizontal axis with a lower end located adjacent to and below said air intake to receive said stick pieces from the trash removal apparatus; and
a hopper mounted on the lower end portion of the conveyor for receiving said stick pieces and guiding them toward the conveyor;
characterized in that said structure defining an air intake comprises a deflectible air-permeable curtain positioned to guide said stick pieces into said hopper and towards the conveyor.



4,121,779
MECHANICAL SEPARATOR FOR PLANT MATERIAL
Peter B. Mills, 2495 Northlake Ct., and R. Stephen Morgan, 2399 Northlake Ct., both of Atlanta, Ga. 30345
Filed Sep. 2, 1977, Ser. No. 830,383
Int. Cl.² A47J *42/30*
U.S. Cl. 241—79.2 **13 Claims**



1. In a mechanical separator for thrashing plant material such as herb plants, spice plants and the like to separate and sort intrinsic parts such as the dry leaves thereof from waste portions such as the seeds and stems thereof, the combination of container means for providing a chamber enclosure for receiving plant material to be treated and including perforate

means for inhibiting egress of other than intrinsic parts of plant material from said chamber, a substantially flexible member extending within said chamber, and drive means operably interconnected to said substantially flexible member for rotation of said substantially flexible member within and about said chamber, said substantially flexible member depending and having an untethered and unconnected terminus within said chamber and being of a configuration and flexure to follow an irregular and random path of free form thrashing movement within and substantially throughout the plant material receiving confines of said chamber enclosure on rotation thereof by said drive means in juxtaposition for engaging, fragmenting and separating intrinsic parts of plant material in said chamber from the waste portions thereof, said perforate means being of a mesh size to act to permit such fragmented and separated intrinsic parts of plant material to be discharged therethrough from said chamber and to act to retain the waste portions of plant material within said chamber.

4,121,780

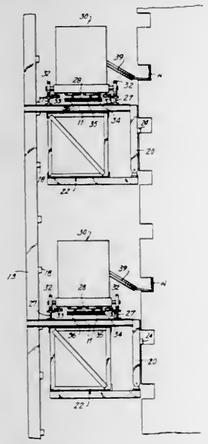
PRE-STRESSING OF CONCRETE PRESSURE VESSELS

Reginald Sidney Taylor, Gerrards Cross; Reginald Edwin Downton Burrow, Bassett; John Morton Mason, High Wycombe; John Richard Portas, Ruislip, and William David Thomas, Hounslow, all of England, assignors to Taylor Woodrow Construction Limited, Southall, England

Continuation-in-part of Ser. No. 534,850, Dec. 23, 1974, abandoned, which is a continuation of Ser. No. 128,592, Mar. 26, 1971, abandoned, which is a continuation of Ser. No. 659,924, Aug. 11, 1967, abandoned. This application Sep. 12, 1975, Ser. No. 613,023

Int. Cl.[2] B65H *81/06*

U.S. Cl. 242—7.21 **18 Claims**



1. Apparatus for winding prestressing wire around a cylindrical vessel, said apparatus comprising a platform surrounding the vessel, means for supporting said platform in part from said vessel and in part directly on the ground surrounding the vessel, means for moving said platform vertically upwards and downwards with respect to said vessel, means for locking the platform at a selected height for the winding of wire around the vessel at such height, a track on said platform, a mobile unit supported on said track for movement thereon and around the vessel, means for moving the mobile unit along the track and around the vessel, means on said unit for holding a supply of wire, wire guiding means on said unit for guiding the wire from said supply and winding the wire around the vessel as the unit travels along said track, tensioning means on said unit for engaging the wire as it passes from said supply to produce a given tension in the wire as it is wound around said vessel, means on said unit supporting the wire guiding means for adjusting the position of the latter, in the course of travel of the mobile unit on said track, and thereby the position where the wire is wound on the vessel such that the wire can be wound thereon in superposed rows, and fixed support means adjacent the inner and outer peripheries of the platform, said means for locking the platform comprising means on said platform at angularly spaced locations around both its inner and outer peripheries to engage said support means whereby said platform may be positively locked in place.

4,121,781

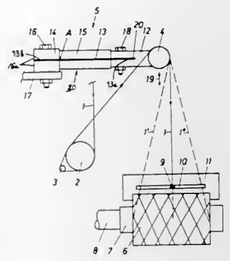
YARN TENSION COMPENSATING APPARATUS

Kurt Angst, Wängi, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Sweden

Filed Feb. 10, 1978, Ser. No. 876,631

Int. Cl.[2] B65H *59/10*

U.S. Cl. 242—45 **11 Claims**



1. A yarn tension compensating apparatus for use with a textile machine, especially a winding device of a winding machine having a yarn take-off roll and a take-up bobbin with which there is operatively associated a yarn traversing device, the yarn tension compensating apparatus being arranged between the take-off roll and the take-up bobbin, comprising, in combination:

lever means equipped with a yarn deflecting roll for compensating variations in the yarn tension generated during the yarn traversing movement;

said lever means comprising:

a flat spring;

two resilient elements between which there is embedded said flat spring at an intermediate section of said lever means;

said flat spring having opposed ends;

a roll support carrying said yarn deflecting roll and at which there is clamped one end of said flat spring; and

a support member at which there is clamped the other end of said flat spring.

4,121,782

YARN STORAGE FEEDERS

William Ewart Alan Shelton, Oadby, England, assignor to Alan Shelton Limited and The Bentley Engineering Group Limited, both of, England

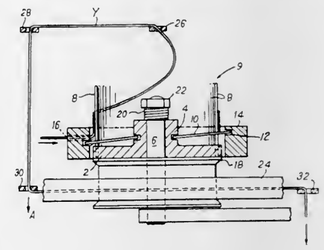
Filed May 16, 1977, Ser. No. 797,440

Claims priority, application United Kingdom, May 22, 1976, 21289/76; Feb. 17, 1977, 06595/77

Int. Cl.[2] B65H *51/20, 51/22*

U.S. Cl. 242—47.12 **11 Claims**

1. A yarn feed device comprising a storage drum defining means for accommodating a plurality of wound turns of yarn in a single layer, said storage drum including a plurality of longitudinally disposed members arranged in a circular formation around the periphery of the drum, longitudinally extending paths defined by said longitudinally disposed members, a continuous cam surface adjacent said longitudinally disposed members, yarn displacing means movable within said paths to displace wound turns of yarn progressively in a direction longitudinally of said drum and comprising individually movable yarn displacing members, the yarn displacing members extending generally radially of the drum to pass between and protrude radially beyond said longitudinally disposed members, said yarn displacing members having portions engaging



said continuous cam surface, and drive means for causing relative rotary movement between said drum and said continuous cam surface, said drive means including frictional contact of a driven member with a driving member, and frictional contact interrupting means for temporarily interrupting said frictional contact when the number of turns on the drum has reached a predetermined maximum.

4,121,783

SUPPORT MEANS

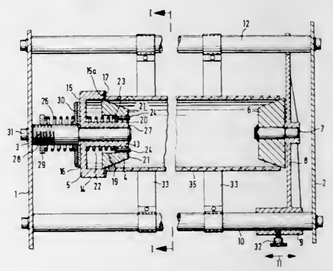
Arthur Wölfinger, Wiesbaden, and Klaus Nicolay, Massenheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 21, 1976, Ser. No. 752,991

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 7540882[U]

Int. Cl.[2] B65H *19/02, 75/24*

U.S. Cl. 242—68.4 **16 Claims**



1. A support for a roll of web material, comprising first and second support element means,

means whereby the spacing between said element means is variable, said element means having opposed stop faces which in use determine the position of a roll supported between said element means,

the stop face of the first element means comprising a planar surface adapted to abut on the front side of said roll and a member resiliently urged toward the second element means through a polygonal aperture in said surface, at least the portion of the member passing through the aperture being a frustum of a pyramid tapering in the direction of the second element means, the basal surface of which frustum is similar to and larger than the polygon of the aperture, and the stop face of the second element means tapering in the direction of the first.

4,121,784

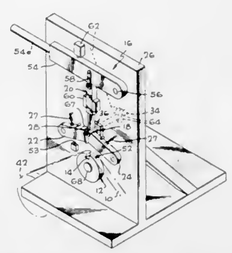
LEADER TO HUB LOCKING DEVICE

Vern R. Schwartz, and Bernard D. Benz, both of Sunnyvale, Calif., assignors to Information Terminals Corporation, Sunnyvale, Calif.

Division of Ser. No. 765,130, Feb. 3, 1977. This application Aug. 25, 1977, Ser. No. 827,465

Int. Cl.[2] B65H *15/28*

U.S. Cl. 242—74 **7 Claims**



1. A tape hub assembly comprising:

a hub having an undercut slot in its periphery;

a locking member disposed in said slot; and

a tape leader having a portion disposed within said hub slot between said locking member and the walls of said slot;

said locking member being formed of resilient material and having an uncompressed width greater than the width of said slot, so that the locking member by itself can firmly press the tape leader against the slot walls.

4,121,785

TAPE MEASURE BRAKE

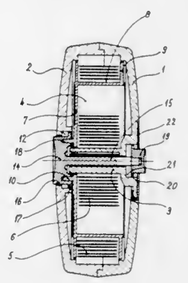
Michel Quenot, Besancon, France, assignor to Stanley-Mabo S.A., Besancon, France

Filed Mar. 7, 1977, Ser. No. 774,926

Claims priority, application France, Mar. 18, 1976, 76 08605

Int. Cl.[2] B65H *75/48;* **G01B** *3/10*

U.S. Cl. 242—84.8 **6 Claims**



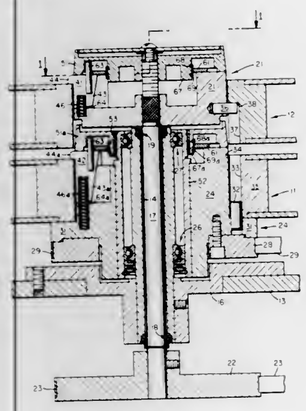
1. A tape rule or the like linear measuring instrument including a casing having a central orifice, a tape winding drum rotatably mounted in the casing about an axis of rotation, and a drum locking device; said drum locking device comprising a push button non-rotatably mounted by the casing in the central orifice thereof adjacent a face of the drum, one of the push button and the adjacent face of the drum having a circular recess concentric with said axis comprising at least one radially rigid conical wall and the other of the push button and the adjacent face of the drum having a complementary mating projection comprising at least one radially rigid conical wall facing the recess, the push button being axially movable between a locking position in which the conical wall of the

projection frictionally engages the conical wall of the recess to lock the drum and an unlocking position in which the projection is disengaged from the wall of the recess.

4,121,786
COAXIAL REEL SYSTEM

Richard A. Hathaway, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jun. 2, 1977, Ser. No. 802,840
Int. Cl.[2] G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—193 **8 Claims**



1. In reel and spindle means of the type mounting a pair of reels coaxially on a tape deck with one reel inboard adjacent the deck and the other reel outboard remote from the deck, the outboard reel spindle being mounted for independent rotation with a shaft extending coaxially within journal bearing means attached to the tape deck, and the inboard reel spindle being mounted for independent rotation exteriorally and peripherally upon the same journal bearing means, the improvement comprising:

means on said spindles for securing said respective reels to said spindles for rotation therewith, said means including key means on at least said outboard spindle;

said inboard reel having a central hub opening with a first type keyway formed therein for passage over said outboard spindle and key means to a position of rotationally-secured impalement upon said inboard spindle;

said outboard reel having a central hub opening with a second type truncated keyway formed therein, permitting keyed impalement of said outboard reel upon said outboard spindle, and conjoint support of the outboard reel upon the outboard spindle in axially spaced relation to said inboard reel and inboard spindle;

turntable means being provided on said inboard spindle for conjoint support of said inboard reel in axially spaced relation to said tape deck;

said outboard key means comprising three angularly equi-spaced studs extending radially from said outboard spindle; and

said first type keyway being formed as three angularly equi-spaced grooves extending axially along the inner face of said inboard reel hub opening for the full axial dimension of said inboard reel;

whereby said inboard reel is adapted to pass freely over and axially inboard of said outboard spindle with said grooves mated with said studs and passing freely slidingly thereover.

4,121,787
AIRCRAFT

Peter Glover Wilby, Weybridge, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, England

Filed Jun. 29, 1976, Ser. No. 700,956
Claims priority, application United Kingdom, Jun. 12, 1975, 25272/75
Int. Cl.[2] B64C *3/26*
U.S. Cl. 244—35 R **3 Claims**

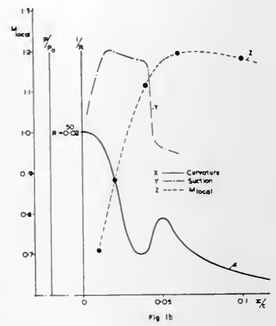


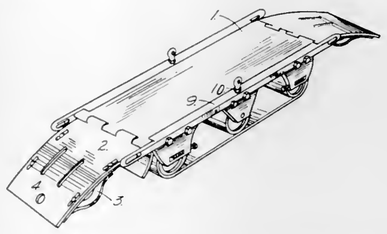
Fig 1b

1. In a supercritical wing having a large leading edge radius of curvature directly followed chordwise on the upper surface by a curvature transition region and then a directly following low positive curvature region extending for 30% to 90% of the chord, and on the lower surface by a forward region of curvature generally larger than that of the upper surface low curvature region, a transition region characterised by an inflexion and occurring between 50% and 70% chord, and then a rearward region of concave curvature, the improvement comprising a knee in said upper surface curvature transition region, located at between 3% and 13% chord and extending continuously over a substantial portion of the span of the wing, said knee being characterised by a curvature which is positively greater than that immediately forward and that immediately rearward thereof, and said knee being operative to contain the peak velocity and suction at low speeds and thereby to delay the onset of stall, to minimise local supersonic expansion at intermediate speeds, and to create a region of high expansion stabilised over the knee at supercritical speeds.

4,121,788
AIRCRAFT MOBILE CHOCK

Robert F. McMahon, Denver, Colo., assignor to Base Movement Incorporated, Denver, Colo.

Continuation-in-part of Ser. No. 596,844, Jul. 17, 1975, abandoned. This application May 2, 1977, Ser. No. 792,968
Int. Cl.[2] B64F *1/12, 1/04*
U.S. Cl. 244—50 **4 Claims**

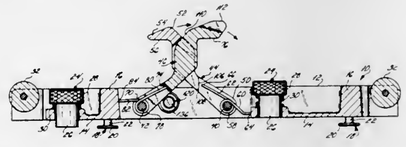


1. A mobile platform unit for separate selective engagement with components of aircraft inclusive of wheels and tires for distributing the usual highly concentrated loadings thereof over a greater ground contact area when the aircraft is to be moved over otherwise inadequate ground support surfaces comprising a platform adapted to receive at least one of said aircraft components, an axle element engaged and supported by said platform, rolling support components on said axle element for extension past lower surfaces of said platform for contact with the ground support surface whereby movement of said mobile platform unit and attached aircraft is facilitated and further comprising a ramp therefor at an end of said platform, said ramp being movable to an up position where said ramp is engaged against the at least one aircraft component being carried and to an alternate down position providing an inclined approach surface facilitating movement of said at least one aircraft component to its carry position on said platform, and primary lock means associated with said ramp for engagement with said rolling support components for preventing movement thereof when the ramp is in the down position wherein said primary lock means comprises an extension element attached to said ramp and positioned adjacent said rolling support components wherein said ramp and extension element are formed integrally as parts of said ramp and further comprising a hinge for mounting said extension element and ramp to said platform with said ramp and extension element being on opposite sides of said hinge.

4,121,789
CARGO LATCH

Russell J. Lent, 10407 SE. 174th St., Apt. 1301, Renton, Wash. 98055, and Ermainio Facchini, 2101 Lincoln Ave., East Meadow, N.Y. 11554

Filed Aug. 17, 1977, Ser. No. 825,360
Int. Cl.[2] B64D *9/00;* **B61D** *45/00*
U.S. Cl. 244—118 R **2 Claims**

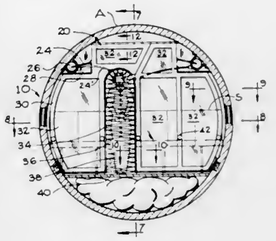


1. A cargo latch of the kind comprising a frame, a first latch arm having means for engaging at item of cargo, said first latch-arm being pivoted to said frame for movement between an erect, operative position and a collapsed, inoperative position, means biasing said first latch-arm towards said collapsed position, a second latch-arm pivoted to said frame and moveable between an erect, operative position in which said second latch arm engages said first latch-arm and holds said first latch-arm in an erect position and a collapsed, inoperative position in which said second latch-arm frees said first latch-arm for movement from said operative to said inoperative position under the influence of said biasing means, wherein a safety catch is provided, said safety catch being mounted on and fixed to said frame and having a catch element movable between a projecting attitude in the path of movement of one of said latch-arms between said operative position and said inoperative position and a retracted attitude in which said catch element is removed from said path of movement, said catch element comprising a bolt member, means biasing said bolt member toward said projecting attitude and a cam-action operating element, said cam-action operating element being movable between a bolt member releasing position in which said bolt member is freed to move to said projecting attitude and a bolt member withdrawn position in which said bolt member is held in said retracted attitude, said bolt member being so positioned in said frame that one of said latch-arms constitutes means, in said collapsed position thereof, preventing movement of said bolt member to said projecting attitude and freeing said bolt member to move to said projecting attitude as said latch-arm moves to said erect position.

4,121,790
COMBUSTION-PRODUCT RETARDANT BARRIER SYSTEM FOR AIDING PASSENGER ESCAPE FROM AIRCRAFT FUSELAGE STRUCTURE

Edward F. Graham, 349 Rosebank Ave., Baltimore, Md. 21212

Filed Jun. 22, 1977, Ser. No. 808,740
Int. Cl.[2] B64D *11/00*
U.S. Cl. 244—118 P **20 Claims**

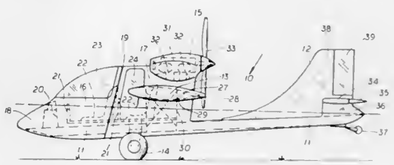


1. A combustion-product retardant barrier system for aiding passenger escape from aircraft fuselage structure, comprising: a curtain assembly, means for storing the curtain assembly collapsed, means for deploying the curtain assembly across a passage in aircraft fuselage structure, and means for providing unobstructed passenger access but retarding passage of combustion products through said curtain assembly upon deployment.

4,121,791
AIRCRAFT BUILT UP FROM INDIVIDUAL READILY ASSEMBLED AND DISASSEMBLED SEGMENTS OR COMPONENTS

Bruce G. Taylor, 2040 N. Belmar Ct., Simi Valley, Calif. 93063, and C. Gilbert Taylor, 5255 North St., Somis, Calif. 93066

Filed Jul. 27, 1977, Ser. No. 819,265
Int. Cl.[2] B64C *1/00*
U.S. Cl. 244—120 **14 Claims**



1. A segmented, easily assembled aircraft comprising:

a hollow, straight, one-piece fuselage tube extending uninterrupted the entire length of the aircraft,

a cockpit and a fore shell supported by and mounted upon a fore section of said hollow fuselage tube,

a main wing pylon and a main landing gear,

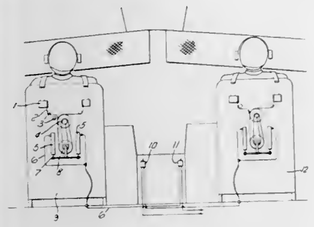
and support means supported by and mounted upon said hollow fuselage tube, said support means surrounding said tube, extending laterally from said fuselage tube and securing said landing gear and said main wing pylon to said tube,

an empennage assembly supported by and mounted upon the aft section of said hollow fuselage tube, and

an engine compartment, a wing, and an aft shell supported by and mounted upon said main pylon.

4,121,792
ROLLER HARNESS ARRANGEMENT FOR AIRPLANE PILOT SEATS

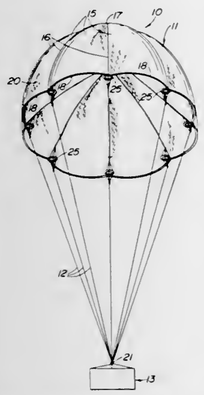
Sverre Danielsen, Skoleveien 1, Sande, 4050 Sola, Norway
Continuation of Ser. No. 764,905, Feb. 1, 1977, abandoned. This application Jan. 30, 1978, Ser. No. 873,480
Claims priority, application Norway, Feb. 12, 1976, 760458
Int. Cl.[2] B64D *25/06*
U.S. Cl. 244—122 B 5 Claims



1. In a harness arrangement for airplane pilot seats arranged side by side, each of said seats having fitted thereto a pilot harness which includes roller means for rolling up the respective harness, the improvement which comprises a system which enables each of two pilots to wind up the other pilot's harness so that the other pilot will be moved away from the aircraft controls, said system comprising a winding mechanism for each roller means operable to wind up the respective roller means so as to wind up the respective harness and thereby move the respective pilot away from the airplane controls and control means operable by a pilot in either seat for controlling the winding mechanism for the other seat.

4,121,793
OPENING PARACHUTE

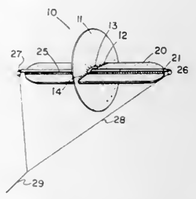
George T. Cavage, 8116 Old Lindbergh Blvd., Philadelphia, Pa. 19153
Filed Nov. 14, 1977, Ser. No. 850,895
Int. Cl.[2] B64D *17/52*
U.S. Cl. 244—149 5 Claims



1. A parachute comprising a canopy of flexible sheet material having a circumferential margin, shroud lines extending from said margin to a load, a plurality of substantially rigid centrally open distender members each attached to said margin for free swinging movement between a collapsed position along and generally parallel to said margin and a distending position generally normal to and extending inwardly from said margin, and flexible elongate tension members extending between each of said distender members and one of said shroud lines and canopy, said elongate tension members being configured to hold said distender members in their distending positions when a load is applied to said shroud lines.

4,121,794
FLYING TOY

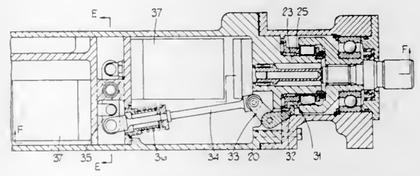
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Filed Jun. 24, 1977, Ser. No. 809,781
Int. Cl.[2] B64C *31/06*
U.S. Cl. 244—153 A 5 Claims



1. A kite toy comprising an elongated wing portion molded of lightweight cellular plastic, one surface of said wing portion having a channel retaining means molded integrally therein and extending spanwise along the central portion of the wing and a pair of raised portions extending in a chordwise direction and forming a chordwise shallow channel, an elongated dowel secured to said wing portion and supported within said channel retaining means, rotatable fitting means supported at each end of said dowel, a loop of flexible string secured to said rotatable fitting means, a kite string connected to the center of said loop, a disc-shaped molding having a radially extending slotted opening in the central portion thereof, said wing portion passing through said slotted opening so that said disc-shaped molding is supported by said chordwise shallow channel against lateral movement, said dowel extending through said slotted opening and said disc-shaped molding having a greater thickness at the slotted opening than the periphery of said molding.

4,121,795
BRAKE DEVICE FOR USE IN A REMOTE ACTUATION SYSTEM

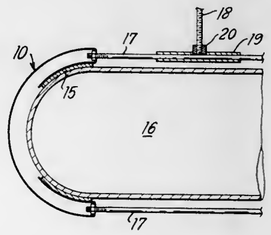
Donald Craven, Wolverhampton, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Mar. 22, 1977, Ser. No. 779,997
Claims priority, application United Kingdom, Mar. 25, 1976, 12070/76
Int. Cl.[2] B64C *13/28*
U.S. Cl. 244—213 6 Claims



1. A braking device for use in a remote actuation system comprising a housing, a rotary member journaled in the housing, a plurality of balls or rollers interposed between a surface on said rotary member and a surface on said housing, said surface on said housing being formed with a plurality of notches with which the balls or rollers are respectively associated, a cage for said balls or rollers, friction means acting between the cage and the rotary member tending to cause the cage to rotate with the rotary member and electromagnetically operable means engageable and disengageable with said cage so as to hold the cage against rotation relative to said rotary member in a position such that the balls or rollers are centrally disposed in their associated notches whereby the rotary member is free to rotate relative to the housing when the electromagnetically operable means engages said cage, but serving to free the cage when the electromagnetically operated means disengages said cage to permit turning of the cage under the influence of said friction means to a position in which the balls or rollers jam between said surfaces and prevent rotation of the rotary member.

4,121,796
SUPPORTING ELEMENTS FOR DUCTING

George Alfred Forbes, 75 Ellerby St., London S.W. 6, England
Filed Aug. 30, 1977, Ser. No. 829,201
Claims priority, application United Kingdom, Sep. 4, 1976, 36744/76; May 21, 1977, 21546/77
Int. Cl.[2] F16L *3/00*
U.S. Cl. 248—62 5 Claims



1. A supporting element for use in supporting air ducting and comprising a metal strip having a major central portion of its length formed into an at least approximate semi-circular shape and its two end portions turned back on the inside of the semi-circular central portion in spaced parallel relationship thereto, whereby to provide the supporting element with two spaced hollow limbs, two intermediate portions of the strip between the central portion and the respective end portions each being substantially flat and connected to said central portion and the respective end portion through right-angled bends, whereby to form flat ends on said hollow limbs constituting fastening flanges.

4,121,797
CHILDREN'S BOTTLE AND TOY HOLDER

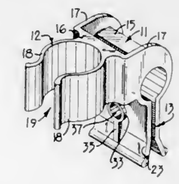
Thomas R. MacNeil, 43D Memorial Dr., Weymouth, Mass 02188
Filed Jul. 5, 1977, Ser. No. 812,714
Int. Cl.[2] A47D *15/00*
U.S. Cl. 248—102 2 Claims



1. A device for holding a child's feeding bottle, the device comprising a support having two upstanding walls spaced from each other, an end member extending upwardly from each of the walls and a substantially rigid, rod-like holder having terminal ends, a circumferential, first attachment groove formed proximate one terminal end and a circumferential second attachment groove forward proximate the other terminal end, and having a depressed area located between the terminal ends forming a saddle providing the means of engaging the feeding bottle, each of the end members having an upper portion, and one of the end members having its upper portion including a first recess having flexible spaced opposed walls and the upper portion of the other end member including a second recess having flexible spaced walls, the first attachment groove adapted to removeably engage the first recess and the second attachment groove adapted to removeably engage the second recess thereby providing a removeable engagement between the holder and the end members.

4,121,798
UTENSIL HANDLE HOLDER

Donavon J. Schumacher, 421-13th Ave. West, and Francis C. Hoffelt, 710-12th St. West, both of Williston, N. Dak. 58801
Filed Jun. 16, 1977, Ser. No. 806,995
Int. Cl.[2] A46B *17/02*
U.S. Cl. 248—113 2 Claims



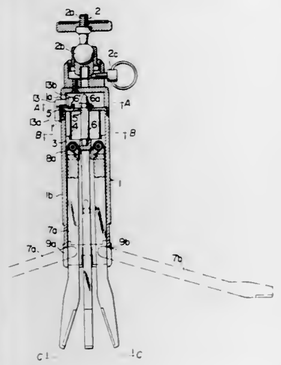
1. A utensil handle holder including:
(a) a rigid main body portion;
(b) a handle supporting clip portion comprising a pair of laterally spaced jaws projecting generally horizontally outwardly from said main body portion, at least one of said jaws being resilient;
(c) a mounting portion comprising a pair of mounting flanges extending downwardly from said body portion, said mounting flanges being spaced apart in a direction generally normal to the direction of spacing of said jaws;
(d) an abutment portion comprising a boss on one of said flanges, said boss having an opening therethrough transversely of said one of said flanges and an outer surface disposed in a common generally vertical plane with a surface of said body portion opposite said clip portion;
(e) and a second boss on the other of said flanges aligned with said first mentioned boss, said second boss having an axial opening therethrough aligned with said first mentioned opening.

4,121,799
TRIPOD FOR A CAMERA

Kawazoe Michio, 30-11 5 chome, Narita Higashi Suginami-ku, Tokyo, Japan
Filed Aug. 15, 1977, Ser. No. 824,354
Claims priority, application Japan, Dec. 30, 1976, 52-176061[U]; Apr. 12, 1977, 52-045988[U]
Int. Cl.[2] F16M *11/38*
U.S. Cl. 248—171 11 Claims

1. A tripod for a camera comprising;
a casing which is provided with a mounting part of a camera,
a slider which is slidably provided within the casing,
a depressing spring which is interposed between the slider and a fixed frame in an upper section of the casing,
a locked member which extends above the slider,
legs which are respectively hinged to three forked parts of the slider, and which are respectively spring-loaded with springs for opening the legs,

a locking member being hinged to the frame through a pin, which engages the locked member when the legs are thrusted into the casing against the depressing spring, and



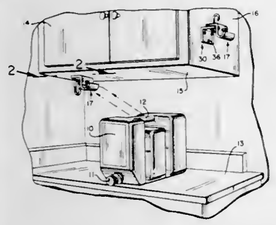
a leg-opening control element including a push rod which has one end coming in contact with the locking member, and another end projecting from within the upper section of the casing.

4,121,800

SUPPORTING BRACKET FOR DRINKING WATER CONTAINERS

Edward L. McClellan, 2302 Oak St., Santa Monica, Calif. 90405

Filed Dec. 27, 1977, Ser. No. 864,660
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—207 **3 Claims**



1. A supporting bracket including, in combination:

(a) a first plate member having a flat horizontal section merging into a downwardly extending vertical section and thence into an outwardly and upwardly extending curved section defining a U-shaped cradle, said flat horizontal section having parallel spaced cuts extending inwardly from one edge and terminating in the central portion of said flat section, the portion of said section between said cuts being bent downwardly to define a tongue generally parallel to and spaced from said downwardly extending vertical section, said tongue and vertical section having aligned bores therethrough and said flat horizontal section having first and second screw holes for receiving fastening screws so that it can be secured to the underside of a cabinet; and,

(b) a rod member longitudinally slidable through said aligned bores in said tongue and vertical section to pass across the top of said U-shaped cradle

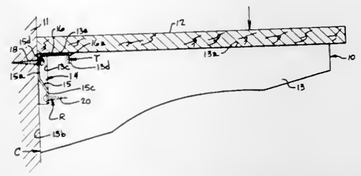
whereby said rod can be retracted and the handle of a drinking water container placed in said U-shaped cradle and said rod then moved to overlie the top of said handle to retain it in said U-shaped cradle so that said drinking water container can be supported on the underside of said cabinet.

4,121,801

SHELF BRACKET

Harlan F. Kellogg, 1611 Sprucewood, Rockford, Ill. 61107

Filed Sep. 12, 1977, Ser. No. 833,252
Int. Cl.[2] A47G *29/02*
U.S. Cl. 248—235 **9 Claims**



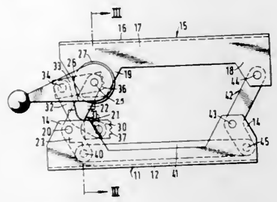
1. A shelf bracket adapted for mounting at the rear end thereof on an upright surface comprising, an elongated shelf bracket member having a top shelf supporting surface and a rear abutment surface extending perpendicular to the top shelf supporting surface adjacent the lower rear portion of the shelf bracket member, said shelf bracket member having a rear recessed surface above and offset forwardly from said rear abutment surface, said shelf bracket member having a notch extending downwardly from the top shelf supporting surface and spaced forwardly from said rear recessed surface, and a generally L-shaped shelf bracket attaching member including a rear leg and an upper leg, the rear leg having an upper mounting plate portion spaced rearwardly from said rear recessed surface and a keyhole shaped opening in said upper mounting plate portion for receiving a headed mounting fastener, said upper leg extending forwardly from the upper end of the rear leg in overlying relation to the bracket member and having a depending tongue at its forward end extending into the notch in the shelf bracket member, and anchor means adjacent the lower end of said rear leg extending forwardly into the shelf bracket member.

4,121,802

ADJUSTABLE SEAT WITH CONSTANT TORQUE

Bernd Klüting, Radevormwald, and Hans Werner Voss, Wuppertal, both of Fed. Rep. of Germany, assignors to Keiper KG, Remscheid, Fed. Rep. of Germany

Filed May 31, 1977, Ser. No. 801,738
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626441
Int. Cl.[2] A47C *3/20*
U.S. Cl. 248—421 **7 Claims**



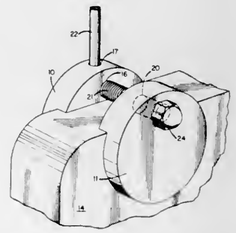
1. An arrangement for lifting loads, particularly an adjustable seat, comprising a base member; a carrier member adapted to support a load; means for mounting said carrier member on said base member for movement in a range between a lowered and a raised position, including at least one support member pivotally connected to said base and carrier members; and means for moving said carrier member through said range, including an acutator mounted on one of said members for turning about a pivot axis relative thereto and having an actuating portion, and a connecting link so pivotally connected to said actuator at a distance from said pivot axis and to another of said members that the force which is to be applied to said actuating portion to subject said actuator to a torque counteracting the torque with which said carrier member acts on said actuator remains substantially constant for a given load throughout said range.

4,121,803

FLAGHOLDER

John S. Garrick, Mayhew's Trailer Park, West Campton, N.H. 03228

Filed Mar. 17, 1977, Ser. No. 778,629
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—536 **1 Claim**



1. A flagholder for clamping to an upright structure of limited thickness comprising:

(a) a first support member having a portion with a single horizontal threaded aperture;

(b) a second support member similar to said first support member having a single horizontal aperture in the place of said threaded aperture;

(c) a single vertical aperture intersecting said threaded aperture in said first support member for receiving a flagstaff; and,

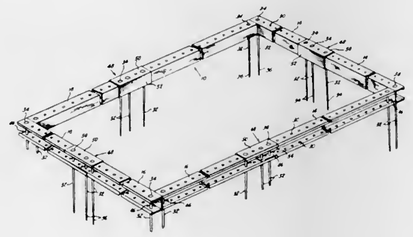
(d) a threaded bolt interconnecting said first and second support members by passing through the aperture in said second support member and being threaded into the aperture in said first support member for both drawing said first support member and said second support member together about said upright structure and pinning said flagstaff in said vertical aperture.

4,121,804

ADJUSTABLE CONCRETE FORM

Thomas J. O'Leary, P.O. Box 1490, Iowa City, Iowa 52240

Filed Jul. 15, 1977, Ser. No. 815,793
Int. Cl.[2] B28B *7/02*
U.S. Cl. 249—187 R **6 Claims**



1. An adjustable concrete form construction, comprising:

a plurality of like length channel shaped sections similarly oriented in telescopic arrangement to define a form unit,

each section including vertically spaced horizontal upper and lower arms and a vertical side connecting corresponding ends of said arms,

each upper and lower arm on each section being provided with a plurality of longitudinally like spaced openings so that each opening in each upper arm is in register with an opposed opening in the corresponding lower arm,

said form unit susceptible of manual telescopic extension to any precise selected length within the length limits of said sections up to a point where at least one pair of opposed openings in each section is in register with at least one pair of opposed openings in at least one other section,

a respective stake member disposed through selected opposed openings in said upper and lower arms in each section and into a supporting surface,

each stake member being provided with a pair of longitudinally spaced transverse openings disposed to be intermediate said upper and lower arms when said stake members are positioned in said supporting surface,

the axes of said stake member openings being angularly disposed to the longitudinal axis of said respective stake members and angularly disposed relative to each other, and

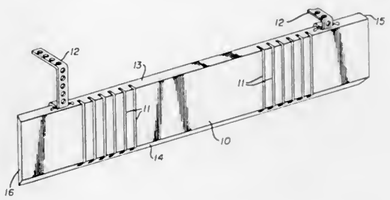
a respective elongated stop member frictionally but removably journalled through said respective stake member openings so that one end of one stop member bears against a respective upper arm and one end of the other stop bears against a respective lower arm.

4,121,805

SELF ADJUSTING CONSUMABLE HOT TOP FOR INGOT MOLDS

Micheal Donald La Bate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Dec. 22, 1976, Ser. No. 753,313
Int. Cl.[2] B22D *7/10*
U.S. Cl. 249—197 **3 Claims**



1. A consumable hot top for installation in the upper end of an ingot mold and comprising a pair of elongated rectangular portions of combustible consumable resilient material, each of said elongated rectangular portions having an outer surface and an inner surface with a pair of spaced groups of corner forming transversely extending deep grooves defined in said inner surfaces, each group of corner forming grooves including a plurality of grooves formed therein inwardly of the ends thereof, and each group being located near an end of said each rectangular portion to be positioned adjacent a corner of an ingot mold thereby forming a corner in said each rectangular portion which corresponds to an ingot mold corner with said each portion assuming the shape of a U, bendable hangers attached to one of the longitudinal edges of each of said elongated rectangular portions adjacent the ends thereof and located between said corner forming grooves and the rectangular portion ends, and one of the ends of each of said elongated rectangular portions being formed at a first angle and the other end of said each rectangular portion being formed at a second angle, said second angle being other than a right angle, said first and second angles being selected so that an angle formed when said one end of one rectangular portion is adjacent another end of another rectangular portion an angle formed by said ends opens toward said outer surfaces, said portions arranged to be positioned in oppositely disposed relation to one another in said ingot mold to form said hot top so that the one end of one portion is opposed with said second angle to form a triangular wedge receiving area between opposed ends of

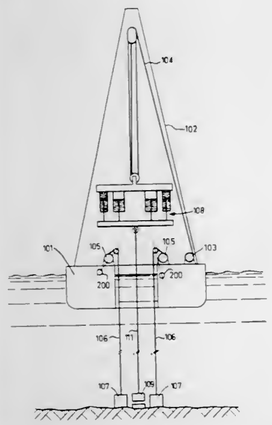
said elongated rectangular portions, said triangular areas being located between the corners of a mold and forming a triangular volume with an inner surface of the mold, and elongated cross sectionally triangular members located in said triangular volumes and contacting the opposite angularly disposed ends of said U-shaped portions for shaping and holding the resilient portions of the hot top in contact with the walls of said ingot mold.

4,121,806

APPARATUS FOR COMPENSATING VARIATIONS OF DISTANCE

Michel Iato, Pau; Andre Gaston Julien Bourgeois, and Jean-Paul Marcel Francois Gaudin, both of Nantes, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Mar. 18, 1977, Ser. No. 778,942
Claims priority, application France, Mar. 18, 1976, 76 07913
Int. Cl.[2] B66D *1/48*
U.S. Cl. 254—172 **4 Claims**



1. Apparatus for compensating for variations in the distance between an object suspended from a floating support and a sea floor therebelow in order to control the movement of the object with respect to the sea floor, comprising:

passive compensation means including a passive cylinder and piston assembly connected to a first pressure accumulator and functioning as a spring, a further pressure accumulator operative at a pressure different from said first pressure accumulator, and means for selectively connecting said passive cylinder and piston assembly to said pressure accumulators, thereby providing two different compensation levels, whereby said means for selectively connecting said passive cylinder and piston assembly to said pressure accumulators is operative during the descent of said object toward the sea floor to provide powerful compensation and to provide slight compensation after said object reaches the sea floor;

active compensation means including an inactive double-action cylinder and piston assembly arranged in parallel with said passive cylinder and piston assembly, the piston of said active cylinder and piston assembly dividing its cylinder into two variable chambers, said active cylinder and piston assembly compensating for residual vertical oscillations and operating as a function of a first parameter defined by the position of the piston rod of said active cylinder and piston assembly relative to its cylinder and a second parameter defined by the velocity of the floating support with respect to the sea floor; and

hydraulic control means operative in accordance with both said parameters and connected to said chambers for varying the direction and flow rate of hydraulic fluid to said active cylinder and piston assembly as a function of said parameters.

4,121,807

PROCESS FOR PREPARING LOW-COST COPOLYMERS FROM ACRYLONITRILE AND CRUDE INDENE

Gary W. Dirks, Scottsdale, Ariz.; George S. Li, Aurora, and Irving Rosen, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 25, 1977, Ser. No. 790,344
Int. Cl.[2] C08F *2/00, 244/00, 32/08*
U.S. Cl. 526—76 **7 Claims**

1. The process for preparing copolymers comprising polymerizing in the presence of a free-radical generating polymerization initiator at a temperature in the range of from about 0° to 100° C. in the substantial absence of molecular oxygen (A) from 50 to 90% by weight of an olefinic nitrile having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-CN$$

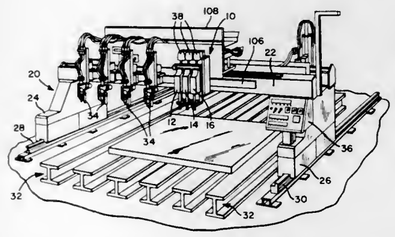
wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and (B) from 10 to 50% by weight based on the combined weight of (A) plus (B) of indene wherein indene is in a crude-hydrocarbon solution containing from about 5 to 50% by weight of indene and wherein said crude-hydrocarbon solution contains no significant amounts of readily polymerizable monomers including styrene, butadiene, isoprene, isobutylene, propylene, and ethylene.

4,121,808

HOLE CUTTING METHOD AND APPARATUS

Jerry F. Cardea, Huntington, W. Va., assignor to Terrell Tool and Die Corporation, Huntington, W. Va.

Filed Jul. 25, 1977, Ser. No. 818,567
Int. Cl.[2] B23K *7/02*
U.S. Cl. 266—58 **5 Claims**



1. A drilling attachment for a numerically controlled flame cutting apparatus having a plurality of flame cutting assemblies mounted in spaced relation for controlled lateral movement along a horizontally translationally movable beam for cutting intricate patterns from a sheet metal workpiece, said attachment comprising:

a mounting member adapted to be secured to said beam for controlled lateral movement therealong in like manner to said cutting heads;

a support plate carried by said mounting member and vertically movable relative thereto;

motor means for moving said support plate vertically between a drilling position near the surface of the workpiece and a storage position remote from the surface of the workpiece;

at least one drill motor secured to said support plate for

movement therewith for rotatably driving a cutting head to drill a hole in said workpiece; and

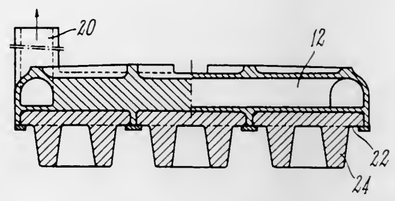
at least one drill feed rate control means associated with said at least one drill motor for controlling the advancement of the cutting head into the workpiece.

4,121,809

COOLING PLATE FOR SHAFT FURNACES

Patrick Dhelft, Paris, France, assignor to Sofresid, Societe Francaise d'Etude d'Installations Siderurgiques, Montreuil-sous-Bois, France

Filed Aug. 31, 1977, Ser. No. 829,465
Claims priority, application France, Nov. 23, 1976, 76 35207
Int. Cl.[2] C21B *7/10*
U.S. Cl. 266—193 **3 Claims**



1. A cooling plate for circulating fluid for cooling the walls of shaft furnaces and particularly blast furnaces, the plate being placed between the refractory material to be cooled and the facing of the furnace to be protected, said cooling plate comprising:

a flat thin-walled panel forming a tightly sealed enclosure through which passes a single independent stream of cooling fluid, said enclosure being divided by partitions into tubular passages which together define a single sinusoidal circulatory path for the cooling fluid, said panel and said partitions being formed as a single integral member from cast steel;

fluid inlet means at the bottom of said panel and fluid outlet means at the top of said panel for circulating cooling fluid in a vertical upward sinusoidal movement through said path; and

that face of said panel which faces the interior of the furnace to be protected being lined with a lining of high-strength refractory material, said lining comprising refractory plates arranged in a honeycomb formation, each said refractory plate having in the side thereof facing the furnace a deep recess defined by refractory walls.

4,121,810

ALUMINIUM DROSS TREATMENT APPARATUS

Ming-Wah Lui, and Yung-Shu Wang, both of Kowloon, Hong Kong, assignors to Meyer Aluminium Ltd., Kowloon, Hong Kong

Filed Jul. 22, 1977, Ser. No. 818,129
Int. Cl.[2] C22B *21/00*
U.S. Cl. 266—201 **9 Claims**

1. An aluminum/dross separator apparatus comprising

a container, said container defining an outlet adjacent the floor thereof for draining separated liquid aluminum from said container,

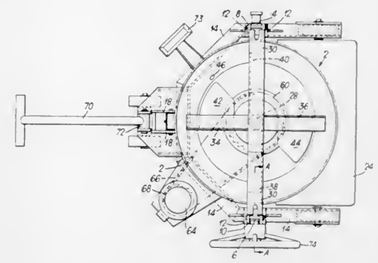
at least one mixer blade inside said container, said blade being mounted on a vertically arranged rotatable shaft,

upper and lower bearings for said shaft,

drive means located beneath said container for rotating said shaft and blade relative to said container,

an annular shield for said lower bearing secured to said shaft at a location vertically above said outlet, said shield extending down to a position adjacent the floor of said container, and said shield being positioned to encompass said lower bearing, and

an annular stationary member corresponding in shape to said shield, said stationary member being secured to and upstanding from said floor of said container, said stationary member supporting said lower bearing, and said shield and



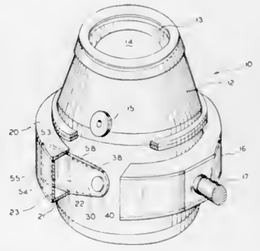
said stationary member being spaced one from another so as to define a nominal clearance between said shield and said stationary member, said clearance being such as to prevent dross from passing therethrough but being such as to not hinder rotation of said shaft relative to said container.

4,121,811

METALLURGICAL VESSEL SUSPENSION SYSTEM

Howard M. Fisher, New Castle, and Rashed N. Nagati, Mars, both of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Jul. 25, 1977, Ser. No. 818,557
Int. Cl.[2] C21C *5/46*
U.S. Cl. 266—246 **8 Claims**



1. The combination comprising:

a metallurgical vessel,

tiltable support means encompassing at least a portion of the vessel and being spaced therefrom to define a gap therebetween,

a plurality of beam means each of which extend into said gap at substantially the same angle and each of which are attached at one end to said support means,

each of said beam means having a corresponding portion extending toward said vessel in a common direction, and

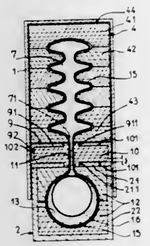
a plurality of pins affixed to said vessel and extending generally radially therefrom,

an aperture formed in the other end portion of each said beam,

one of said pins extending through each aperture whereby said vessel is supported on said support means,

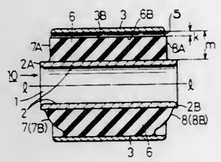
each said beam means being pivotable about its respective pin, said pins supporting said vessel on said beam means which provide the sole support for said vessel.

4,121,812
ELASTOMER STRESS DAMPER WITH CONSTRUCTABLE ORIFICE
Rémy Dousset, 100B Cours Lafayette, 69003 Lyons, France
Filed Apr. 18, 1977, Ser. No. 788,646
Claims priority, application France, Apr. 20, 1976, 76 11539
Int. Cl.[2] B60G *11/62*
U.S. Cl. 267—35 **11 Claims**



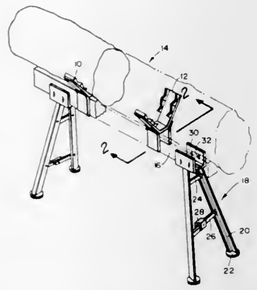
1. A stress damper comprising a hydraulic accumulator including a case defining an expansible cavity which is filled with hydraulic fluid; a body of elastomer provided with at least one internal cavity which is filled with hydraulic liquid; an intermediate element of elastomer which is arranged between said accumulator and said body of elastomer and defines at least one duct through which said cavity in said body and said cavity in said accumulator communicate; and means substantially enclosing said intermediate element all around the outside surface thereof such that a compressive stress applied to said damper will cause a constriction in the cross-section of said duct by inward deformation of said intermediate element said means enclosing said intermediate element including a bell-shaped portion, said intermediate element having the form of a disc with parallel opposite surfaces, and a cylindrical peripheral surface and a rigid, second disc on said case, said intermediate element being interposed between said bell-shaped portion and said second disc with said opposite surfaces in respective contact therewith, said bell-shaped portion having one face resting on one surface of said intermediate element and including a cylindrical sheath having an internal surface in contact with the cylindrical peripheral surface of said intermediate element, said sheath having a lower edge spaced from said second disc to define a gap therewith, said intermediate element being confined by said bell-shaped portion and second disc to undergo deformation until said gap is taken-up.

4,121,813
VIBRATION CONTROL BUSH ASSEMBLY
Yutaka Inuzuka, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Mar. 24, 1977, Ser. No. 780,821
Claims priority, application Japan, Mar. 24, 1976, 51-35533[U]
Int. Cl.[2] F16F *1/38*
U.S. Cl. 267—57.1 A **2 Claims**



1. A cylindrical bush assembly for vibration control comprising an inner cylinder; an outer cylinder coaxially encircling said inner cylinder and radially spaced apart therefrom to define a cylindrical clearance space encircling said inner cylinder, said inner cylinder being greater in length than said outer cylinder; a generally cylindrical impact absorbing member of elastic material secured in said cylindrical clearance space and having at least a pair of diametrically opposite recesses facing the inner peripheral surface of said outer cylinder, each of said recesses having an arcuate transverse cross section and extending along substantially the full length of said outer cylinder, said impact absorbing member having a rectangular longitudinal cross section in a portion between each of said recesses and said inner cylinder, and a trapezoidal longitudinal cross section in a portion between said recesses, said last mentioned portion being radially outwardly tapered and having an inner peripheral portion substantially equal in length to said inner cylinder and an outer peripheral portion smaller in length than said outer cylinder, said arcuate transverse cross section having a circumferential width at least equal to the outside diameter of said inner cylinder and a varying radial width narrowest at the middle portion of said arcuate section thereof, said middle portion having an axial length substantially equal to the length of said outer cylinder, whereby said middle portion is engageable with said outer cylinder upon loaded conditions of said assembly to produce a non-linear spring rate for said assembly.

4,121,814
SAWBUCK
Herbert E. Prior, 6786 Barbara Dr., Sebastopol, Calif. 95472
Filed Jan. 30, 1978, Ser. No. 873,556
Int. Cl.[2] B25B *1/20*
U.S. Cl. 269—98 **5 Claims**

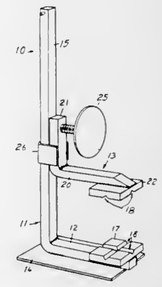


1. A device for supporting a generally cylindrical length of wood and gripping it against dislodgement by transverse sawing forces comprising:
a pair of V-shaped members;
each leg of said V-shaped members being of a rolled steel shape;
at least one pointed tooth secured on the inside of each leg of each of said V-shaped members; and
a channel member rigidly secured to and depending from each of said V-shaped members;
said channel members being of an inside width approximately equal to the thickness of a standard cut of lumber to fit snugly over the beam of a sawhorse.

4,121,815
CLAMPS
Roy Alan Paterson, Princes Highway, Littlehampton, S.A., Australia
Filed Nov. 3, 1977, Ser. No. 848,274
Claims priority, application Australia, Nov. 5, 1976, 8029/76
Int. Cl.[2] B25B *1/02*
U.S. Cl. 269—203 **6 Claims**

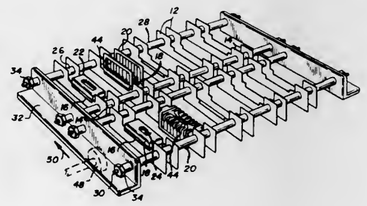
1. A clamp comprising a fixed member having a fixed arm and a post defining an L-shape,

a sliding member having a slide bar and a movable arm extending away from said slide bar in the same direction as said fixed arm, said sliding member defining an L-shape, said slide bar being shorter than said post and extending in a direction away from said fixed arm,
a loop secured to said slide bar near said movable arm extending around said post and retaining a surface of said slide bar in sliding engagement with a surface of said post



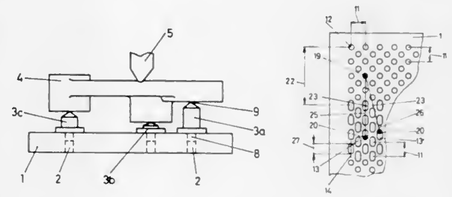
with said movable arm in the same plane as said fixed arm and,
a clamping screw in said plane threadably engaging said slide bar between its end and said loop, said clamping screw extending in the same direction as said movable arm from said slide bar, and arranged, upon tightening, to bear against said surface of said post so as to tilt said movable arm towards said fixed arm.

4,121,816
WORKPIECE HOLDER FOR HIGH VOLUME MANUFACTURING OPERATIONS
Donald Everett Eads, P.O. Box 690, Cupertino, Calif. 95014
Filed May 31, 1977, Ser. No. 802,028
Int. Cl.[2] B23Q *3/00*
U.S. Cl. 269—296 **9 Claims**



1. A workpiece holder for supporting a plurality of semiconductor device package parts for heating, comprising:
a plurality of essentially flat workpiece supports vertically disposed with edges facing upward, said edges being grooved to form recesses for supporting said package parts, said recesses having a dimension in a first direction corresponding to a dimension of the package parts and preventing the package parts from moving laterally in the first direction and said recesses having a projecting surface displaced to one side of said recesses in a second direction to prevent said package parts from moving in the second direction, said workpiece supports being spaced to allow said package parts to rest within the recesses on the upward facing edges of said workpiece supports,
a plurality of spacers for spacing said workpiece supports in accordance with a predetermined dimension in the second direction of said package parts, and
means for supporting said flat workpiece supports and said spacers in fixed position relative to each other.

4,121,817
ARRANGEMENT FOR CLAMPING WORKPIECES
Rudolf Pavlovsky, Plattenweg 53, CH-8200 Schaffhausen, Switzerland
Filed Sep. 21, 1977, Ser. No. 835,324
Claims priority, application Switzerland, Oct. 27, 1976, 13522/76
Int. Cl.[2] B23G *3/00*
U.S. Cl. 269—296 **7 Claims**



1. An apparatus for supporting workpieces of various shapes and sizes on a platform for clamping with a clamping shoe comprising
a substantially planar horizontal plate having a plurality of apertures therein in a predetermined array, said array including a plurality of rows and columns of apertures the centers of which lie along orthogonally disposed lines, the apertures in a first predetermined number of said rows being circular holes and the apertures in a second equal number of rows being elongated holes, the centers of the apertures in each of said rows and columns being uniformly spaced apart, the holes in alternating ones of said rows and columns being offset from the holes in adjacent rows and columns by one-half of the center-to-center spacing; and
a plurality of workpiece support members each having two pegs insertable into selected ones of said apertures, downwardly facing shoulder means for resting on said plate adjacent the selected apertures, and an upwardly facing support portion for contacting and supporting a portion of the workpiece, the spacing between the centers of said pegs being greater than the center-to-center distance between the first circular hole and the first elongated hole in a column.

4,121,818
SIGNATURE COLLATING AND BINDING SYSTEM
Wayne A. Riley, Hazelcrest; Melinda S. Ingebretsen, Downers Grove; Robert I. Rodig, Barrington; David V. Krapf, South Holland; Donald E. Hagenbart, Oak Forest, and Charles H. Williams, Chicago, all of Ill., assignors to R. R. Donnelley & Sons Co., Chicago, Ill.
Continuation of Ser. No. 709,492, Jul. 28, 1976, abandoned. This application Dec. 2, 1977, Ser. No. 856,911
Int. Cl.[2] B65H *39/02*
U.S. Cl. 270—54 **31 Claims**

1. A collating system for gathering groups of signatures with internal signatures of the groups having customized printing, comprising:
a collating conveyor having spaced stations which sequentially receive signatures to progressively build the groups of signatures,
a plurality of feeder means spaced along the collating conveyor for delivering signatures to adjacent stations of the collating conveyor,
signature printer means located intermediate of the plurality of feeder means and having a printer head adjacent the collating conveyor for printing information on the signature fed from a preceeding feeder means, the printed

information being covered by the signature fed by a subsequent feeder means, and

source means synchronized with operation of the collating conveyor for sequentially coupling to the signature printer means information which is to be printed on the signatures fed from said preceeding feeder means.

20. A collating system comprising:

a plurality of feeder means for delivering signatures to adjacent stations spaced along a conveyor,

one of the plurality of feeder means including a hopper for storing a plurality of signatures and delivery means selectively actuable to feed signatures from the hopper to the conveyor,

diverter means selectively actuable to divert signatures from the conveyor into the hopper, and

control means for selectively actuating the diverter means to automatically refill the hopper with signatures from the conveyor.

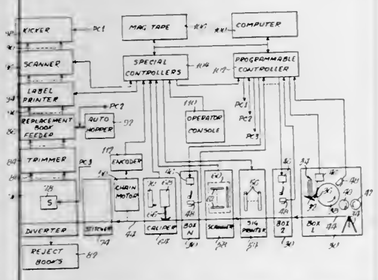
25. A collating system comprising:

a plurality of feeder means selectively actuable to deliver signatures to a conveyor to progressively build groups of signatures,

source means for establishing coded data which controls actuation of the feeder means to build different groups of signatures in response to different coded data,

reject means for rejecting a defective group of signatures,

reorder means for selectively actuating the feeder means under control of the coded data corresponding to a rejected group of signatures to progressively rebuild the same group of signatures as rejected,



logic means coupled to the source means for analyzing the coded data to determine whether certain digits of the mailing address of a rejected group of signatures have preselected relationships to corresponding digits of the mailing address of the groups of signatures then being delivered by the plurality of feeder means, including

first decision means responsive to a match of the digits for actuating the reorder means during the existence of the match, and

second decision means responsive to a match with only a predetermined lesser portion of the digits for actuating the reorder means at a later time prior to a change in the predetermined lesser portion of the corresponding digits.

28. In a collating system having a plurality of feeder means each actuable to deliver signatures to a collating conveyor to progressively build groups of signatures, source means for establishing different coded data representing different groups of signatures which are to be progressively built, control means for selectively actuating the plurality of feeder means in response to the different coded data to progressively build the different groups of signatures, the different groups having different thicknesses depending on the different combinations of signatures therein, caliper means for measuring the thickness of each group of signatures on the collating conveyor, calculation means for calculating a thickness for each group of signatures which were to be built in reponse to the coded data, and comparing means for comparing the calculated thickness with the caliper thickness to generate a difference, the improvement comprising:

compensation means responsive to the caliper means and the calculation means for generating a thickness correction,

tolerance means for establishing a tolerance level for the caliper thickness, and

error means for indicating an error when the difference is more than the tolerance level adjusted by the thickness correction.

4,121,819

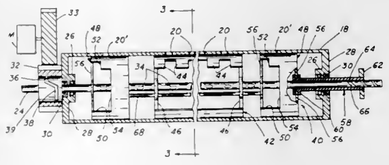
ROTARY VACUUM FEEDER/TRANSPORTER

Alphonse Benjamin DiFrancesco, Penfield, and John Charles Shear, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1977, Ser. No. 807,992

Int. Cl.[2] B65H *3/10*

U.S. Cl. 271—96 **8 Claims**



1. Apparatus for feeding and transporting sheets of a stack seriatim from stack supporting means to a remote location, said apparatus comprising:

a housing defining a chamber, at least a portion of said housing being cylindrical having an external peripheral surface for receiving sheets and an internal surface, said housing including a first series of ports arranged along an element of the said cylindrical portion of said housing providing fluid communication between said chamber and external peripheral surface, and a second series of ports arranged along another element of said cylindrical portion angularly spaced from said element along which said first series of ports are arranged;

means for mounting said housing to rotate about a longitudinal axis of said cylindrical portion of said housing, said axis being spaced from the stack supporting means a distance such that at least a portion of the external peripheral surface of said housing defines a travel path for sheets, received on said external peripheral surface, from the stack supporting means to said remote location;

means for establishing a reduced pressure atmosphere within said chamber of said housing;

valve means mounted within said housing for reciprocating movement in sliding contact with said internal surface of said cylindrical portion of said housing to selectively open and close said ports; and

means for rotating said housing and for reciprocating said valve means in timed relationship to open said first series of ports at such time as such ports are adjacent to the stack supporting means to tack a sheet to said external peripheral surface of said cylindrical portion of said housing, and to close said second series of ports at such time such ports are adjacent to the stack supporting means so that sheets tacked to the external peripheral surface are not subjected to increased friction drag forces caused by sliding contact with other sheets in the stack supporting means.

4,121,820

CONTROL SYSTEM FOR THE SHEET-FEEDING UNIT AND SHEET-PRESENTING UNIT OF A PRINTING MACHINE

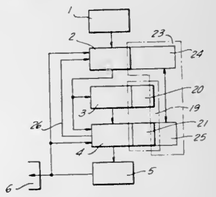
Karl-Heinz Förster, Dresden; Werner Lein, Radebeul, and Henner Hettmann, Coswig, all of German Democratic Rep., assignors to Veb Polygraph Leipzig Kombinat für Polygraphische Maschinen und Ausrüstungen, Leipzig, German Democratic Rep.

Continuation of Ser. No. 777,922, Mar. 15, 1977, abandoned. This application Apr. 7, 1977, Ser. No. 785,359

Claims priority, application German Democratic Rep., Mar. 15, 1976, 191835

Int. Cl.[2] B65H *7/02*

U.S. Cl. 271—259 **9 Claims**



1. In a printing machine of the type including a sheet-presenting unit which presents received sheets to the printing means of the machine, a sheet-feeding unit which feeds sheets to the sheet-presenting unit, and enableable activating means for the sheet-feeding and sheet-presenting units, a sheet transportcontrol system comprising, in combination, user-activatable starter means operative when activated for generating a start signal; sheet-detecting means operative for determining whether a missing sheet or a skew sheet is present at the sheet-presenting unit and generating corresponding missing sheet and skew sheet sheet-condition signals; enablement storage means operative when activated for enabling the activating means of the sheet-feeding and sheet-presenting units; means automatically operative for terminating the start signal when the enablement storage means is activated; and logic circuit means connected to receive the start and sheet-condition signals and having a pre-start-up and a post-start-up mode of operation corresponding to generation and termination of the start signal, operative in the pre-start-up mode for activating the enablement storage means in response to the presence of a missing-sheet signal and in response to the concurrent absence of missing-sheet and skew-sheet signals, and operative in the post-start-up mode for maintaining the enablement storage means activated in response to the concurrent absence of missing-sheet and skew-sheet signals.

4,121,821

SKATEBOARD RINK AND METHOD

Alton J. Graham, 181 W. 42nd St., Los Angeles, Calif. 90037

Filed Mar. 25, 1977, Ser. No. 781,152

Int. Cl.[2] A63K *1/00;* **A63G** *7/00*

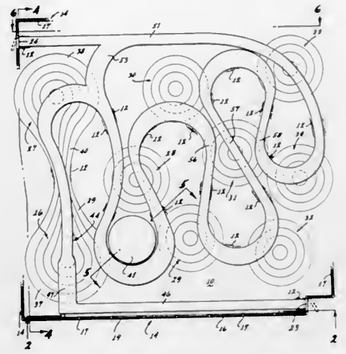
U.S. Cl. 272—3 **10 Claims**

1. A skateboard rink comprising:

a substantially planar lot defining a ground level;

a plurality of spaced mounds in the form of substantially rounded cones having a generally randomly spaced relationship on said lot, at least one of said mounds being higher than the others and corresponding to a starting mound; and

a continuous track for a skateboarder extending over said lot, said track being an elongated artificial surfacing which the skateboarder must follow, said track including a relatively straight section extending from the top of said starting mound down to ground level and curved sections passing from ground level over said other mounds at



different height portions thereof and back down to ground level as the track continues along its course.

4,121,822

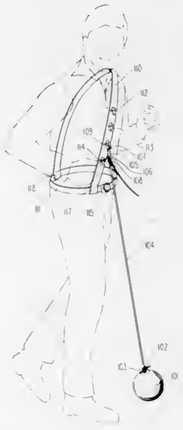
EXERCISE AND GAME APPARATUS

Bernard A. DiSabatino; Joan K. DiSabatino; Bernard A. DiSabatino, Jr., and Craig D. DiSabatino, all of 506 Bayard Ave., Rehoboth Beach, Del. 19971

Filed Jun. 7, 1977, Ser. No. 804,402

Int. Cl.[2] A63B *69/26*

U.S. Cl. 272—78 **4 Claims**



1. Exercise and game apparatus comprising:

a belt having a first portion, adjustable to be carried about the waist of the user, and a second portion connected to said first portion at respective front and back locations on one side of the body of the user, said second portion extending generally diagonally upwardly between said front and back locations and adapted to be worn diagonally across the trunk of the user and over the shoulder opposite said one side, said first and second portions each having a flat web cross section;

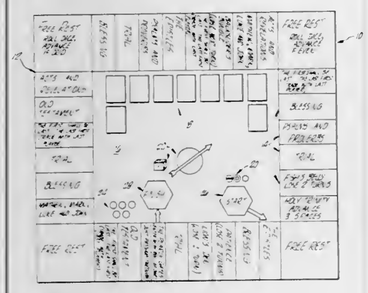
a plurality of loop members secured each at a different location along said belt second portion, each being at different heights when said belt's second portion is worn over the shoulder of the user;

a resilient ball; and

a line of predetermined length, connected at one end to said

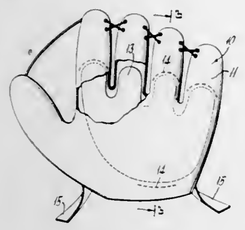
ball and at an opposite end to one of said plurality of loop members.

4,121,823
EDUCATIONAL DEVICE EMPLOYING A GAME SITUATION
Tarrie A. McBride, 1109 W. 24th, No. 3, San Pedro, Calif. 90731
Filed Dec. 22, 1976, Ser. No. 753,230
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—249 **5 Claims**



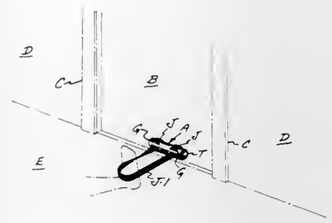
1. An educational device comprising
a game board having thereon a continuous plurality of contiguous areas, said continuous plurality of contiguous areas being divided into a plurality of categories,
a first of said categories having associated therewith a preselected subject matter and a deck of cards, each card in said deck of cards having thereon a question relating to said subject matter and indicia for directing a player's movement about the board upon properly answering said question, wherein said indicia for directing a player's movement about the board upon properly answering a question reflects the degree of difficulty of said question, and
chance means for directing a player's movement about the board.

4,121,824
BASEBALL TRAINING GLOVE
Robert K. Hirschfield, 25 Maryland Ave., Freeport, N.Y. 11520
Filed Jan. 25, 1977, Ser. No. 762,313
Int. Cl.[2] A63B *71/02*
U.S. Cl. 273—26 C **11 Claims**



1. A baseball training device to be worn on a hand of a user comprising a palm portion connected to a thumb portion and four finger portions, a web extending between said thumb portion and the nearest of said finger portions, wherein said palm portion is made of inflexible material which extends at least one-third of the way up each of the finger portions and substantially covers the entire palm of the hand of a user when said device is in use, and fastening means for removably securing said device to a hand of a user, and whereby said device prevents said user from catching a ball only with the hand on which the device is worn.

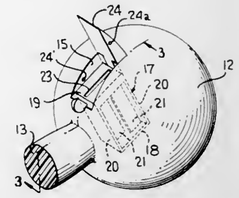
4,121,825
PORTABLE FOOT ANCHOR FOR EXERCISING
Richard Thomas Hult, Apt. 92, 10345 S. Western Ave., Downey, Calif. 90241
Filed Sep. 26, 1977, Ser. No. 836,562
Int. Cl.[2] A63B *23/00*
U.S. Cl. 272—93 **5 Claims**



1. In combination with a closable hinged vertically extending door supported in a door frame leading into a room, said frame preventing said door being pivoted beyond a closed position, said door having first and second sides and a lower edge that cooperates with the floor beneath said door to define a transverse space, said first side of said door exteriorly disposed to said room when said door is in a closed position a foot anchor for exercising, said foot anchor including:
a. an elongate rigid tube of less length than the width of said door, which tube has first and second sets of longitudinally spaced slots defined therein, with each of said sets including first, second and third longitudinal slots that are circumferentially spaced from one another, and said tube of a diameter greater than the height of said transverse space;
b. an elongate pliable member disposed in the form of a loop that has first and second free end portions that extend inwardly into said tube through said first slots of said first and second sets, outwardly from said tube through said second slots of said first and second sets, and inwardly into said tube through said third slots of said first and second sets; and
c. means in said tube on the extremities of said first and second end portions that prevent said means being withdrawn from said tube through said third slots, with said tube when resting on said floor and in abutting contact with said first side of said door when the latter is in a closed position and said loop extending through said space and outwardly from said second side of said door into said room providing said anchor that may be engaged by a foot of a user when said user is exercising.

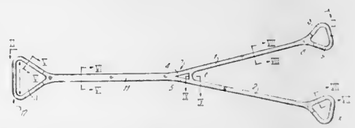
4,121,826
EXERCISING DEVICE WITH BANK
Victor Liberatore, #4 W. Mid Ave., Midland, Pa. 15059
Filed Nov. 17, 1976, Ser. No. 742,470
Int. Cl.[2] A63B *21/06*
U.S. Cl. 272—117 **9 Claims**

1. A weight receiving means comprising a hollow housing, a recessed opening provided in said housing, an integral, unitary, removable means press fitted in said recessed opening for guiding material therethrough into the interior of the housing after being placed in said opening, said means including a top wall having an opening therein, a bottom wall and end walls connecting the top wall to the bottom wall, said topwall being flush with the top portion of the recessed opening and closing the same with the bottom wall being disposed within the hollow housing and a side wall extending from each of said end walls and terminating short of the opposite end wall, said side walls being spaced from one another and forming a passage-



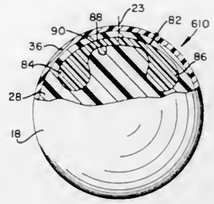
way through which material is guided therein from said top wall opening and into the interior of the housing.

4,121,827
ELASTIC TYPE EXERCISING DEVICE
Benjamin D. Weider, 165 Finchley Rd., Hampstead, P.Q., Canada
Filed Apr. 6, 1977, Ser. No. 785,171
Int. Cl.[2] A63B *21/02*
U.S. Cl. 272—137 **6 Claims**



1. An exerciser comprising, in combination:
(a) a first elongated elastic strap section and a second elongated elastic strap section;
(b) said first elongated elastic strap section and said second elongated elastic strap section being of the same length and being molded integrally with a centrally located joinder section such that said first elongated strap section and said second elongated strap section are normally disposed at an acute angle relative to each other and forms a continuous uninterrupted member;
(c) a first handle loop means and a second handle loop means integral with the free ends of said first and second elongated strap sections, respectively, said first and second handle loop means being of identical shape and size relative to each other;
(d) only one unitary, third elastic strap section protruding from and molded with said joinder section and being integral with same, said third strap section being disposed such that it normally forms the leg of one generally uninterrupted unitary Y-shaped configuration whose arms are defined by said first and second elongated strap section, the cross-sectional area of said third strap section being generally equal to the sum of cross-sectional area of said first elongated strap section and of cross-sectional area of said second elongated strap section;
(e) a third loop means integral with the free end of said third strap section remote from said joinder section, said third loop means being about twice the size of any of said first and second handle loop means, the size of the third loop means being in the range sufficient to accommodate within said third loop means at least two human feet of an average size in a side-by-side disposition.

4,121,828
BOWLING BALL
Jay Dee Amburgey, 1710 N. Dotsy, Odessa, Tex. 79761
Continuation-in-part of Ser. No. 649,054, Jan. 4, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,566
Int. Cl.[2] A63B *37/10*
U.S. Cl. 273—63 E **10 Claims**



1. A solid bowling ball having a main body of a relatively low density, means forming indicia on the outer surface of said ball at a location which describes the vertical axial centerline of the ball, a top weight underlying said indicia which offsets the loss in weight resulting from the subsequent formation of finger holes;
the mass of said top weight being distributed along a weight plane which intersects the geometrical center of the ball, said indicia indicates the location of the center of mass of said top weight and the relative position of said weight plane;
the equatorial plane of the ball intersects the geometrical center thereof and is circumscribed equidistant from said indicia and from the center of mass of said top weight; all of said top weight being located above said equatorial plane and being divided into two major spaced apart masses with each of the spaced apart masses lying equidistant from said vertical axis and from said equatorial plane; with most of the top weight being distributed circumferentially about said weight plane as compared to the distribution of said top weight in a direction normal to said weight plane such that when the ball is rolled to describe a rolling plane which is parallel to said weight plane, the top weight produces a gyroscopic effect.

4,121,829
KICK BALL GAME
Victor Petrusek, 18511 Gottschalk St., Homewood, Ill. 60430
Filed Apr. 11, 1977, Ser. No. 786,106
Int. Cl.[2] A63B *67/10, 69/26*
U.S. Cl. 273—95 A **10 Claims**



1. A kick ball amusement device for children, comprising a lightweight highly resilient ball and a tether securely anchored at one end to said ball, said ball being inflatable and being formed of thin elastomeric material, said tether including a substantially nonstretchable cord constituting a major portion of the length thereof and a stretchable elastic segment interposed between said cord and said ball, and clamping means

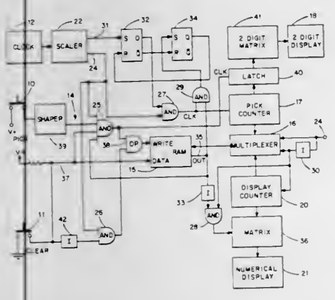
provided by said cord at the free end thereof for releasably clamping a selected intermediate portion of said cord to form a neckreceiving loop, said clamping means comprising a pair of pivotally-connected jaws and a spring urging said jaws into closed condition for releasably clamping said intermediate portion of said stretchable cord, said jaws being self-releasing upon exertion of a force of predetermined magnitude exerted upon said cord.

4,121,830

BINGO COMPUTER APPARATUS AND METHOD

Dennis J. Buckley, Nashua, N.H., assignor to Random Electronic Games Co., Merrimack, N.H.

Filed Aug. 29, 1977, Ser. No. 828,645
Int. Cl.² A63F 9/00; G06F 7/00
U.S. Cl. 273—138 A **8 Claims**



1. A random number selector for games comprising:
(a) a memory having an addressable storage location for each number in a game;
(b) means to sequentially address each said storage location;
(c) random selection means to selectively record a pick at a storage location when it is addressed and including means for picking a number;
(d) first clock means operating at a first cyclical rate for clocking said means to sequentially address through each said storage location;
(e) gate means for blocking said clocking;
(f) second clock means operating at a second cyclical rate connected to enable said gate means at the beginning of each cycle of said second cyclical rate;
(g) disabling means connected from said memory for disabling said gate after each unpicked number location in said memory has been addressed, the frequency of said first cyclical rate being greater than the frequency of said second cyclical rate by at least the number of said addressable storage locations whereby unpicked number locations are addressed consistently at said second cyclical rate irrespective of the sequential addressing of already picked number locations.

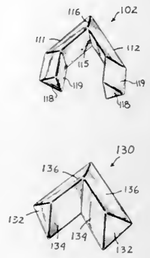
8. A method of sequencing selections through a fixed number of digital storage locations in which picked selections are deleted from further selection without loss of randomness comprising:
(a) addressing said digital storage locations by a counter;
(b) sequencing said counter at a first clock rate when the locations addressed have not been previously selected;
(c) sequencing said counter at a second clock rate faster than said first clock rate by enough to address every location of said digital storage locations during a single cycle at said first clock rate when the location addressed have been previously selected; and,
(d) inhibiting selection when said counter addresses locations previously selected.

4,121,831

GEOMETRICAL CONSTRUCTIONS

E. Colton Greene, c/o Prof. John C. Greene, 10 Thompson Rd., Storrs, Conn. 06268

Filed May 12, 1977, Ser. No. 796,265
Int. Cl.² A63F 9/12
U.S. Cl. 273—160 **15 Claims**



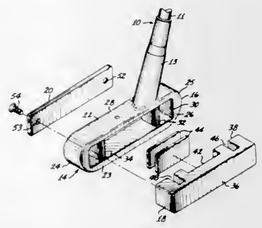
6. A unitary three dimensional U-shaped or V-shaped constructional element comprising a plurality of substantially planar surfaces which include four surfaces having the same relative angular dispositions to each other as the faces which meet at one vertex of a regular octahedron.

4,121,832

GOLF PUTTER

Raymond A. Ebbing, 2615 E. Cinnabar St., Phoenix, Ariz. 85028

Filed Mar. 3, 1977, Ser. No. 773,907
Int. Cl.² A63B 53/06
U.S. Cl. 273—171 **10 Claims**



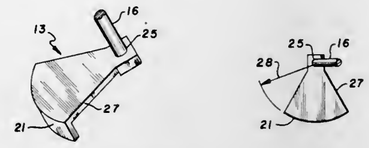
1. A golf club for putting comprising:
a. an elongated carrier body with an integral hosel and having parallel opposite first and second side surfaces extending longitudinally thereof, said carrier body having a passage formed therethrough so as to extend between the first and second side surfaces thereof with the passage of uniform cross section to form an identically configured opening in each of the first and second side surfaces;
b. a shaft affixed on one of its ends to the hosel of said carrier body and extending therefrom;
c. an insert assembly having an impact face formed thereon said insert assembly demountably affixed in the passage of said carrier body with the impact face thereof protruding from the passage of said carrier body; and
d. said insert assembly having an exterior configuration which substantially matches the interior configuration of the passage of said carrier body so that said insert assembly is reversibly and invertibly positionable in the passage of said carrier body to allow optional orientation of the impact face relative to said carrier body.

4,121,833

GOLF CLUB PUTTER

John L. Prueter, 1415 Toledo Ave. North, Minneapolis, Minn. 55422

Filed Mar. 31, 1977, Ser. No. 784,120
Int. Cl.² A63B 53/04
U.S. Cl. 273—175 **1 Claim**



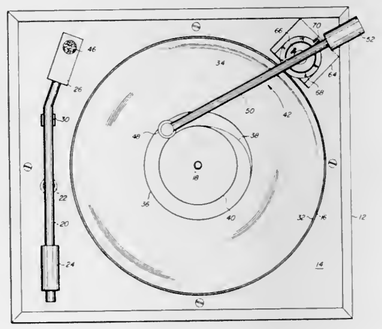
1. A golf putter comprising:
(a) a shaft with a gripping handle at one end thereof;
(b) a ball striking head having a ball striking surface at a lateral edge thereof, said ball striking surface having the general configuration of a segment of a right circular cylinder;
(c) said ball striking head further including a web portion integrally connected to said ball striking surface and at least partially offset from the plane of the lower base of said cylindrical segment;
(d) a bore formed in said web portion at a point coaxial with the longitudinal axis of said cylindrical segment; and
(e) means for securing the other end of said shaft in said bore such that the axis of said shaft is coaxial with the longitudinal axis of said cylindrical segment.

4,121,834

PICK-UP DEVICE FOR A PHONOGRAPH TONE ARM

Ron B. Yestrebi, 19½ Main St., Webster, N.Y. 14580

Filed Nov. 9, 1977, Ser. No. 849,774
Int. Cl.² G11B 17/06
U.S. Cl. 274—1 R **3 Claims**



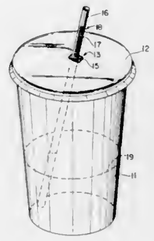
1. A lifting apparatus for use with a phonograph having a tone arm provided with a stylus adapted to engage the sound groove in a record, said apparatus comprising:
(a) a base member having a central cut-out portion including at least one key slot;
(b) means for mounting said base member on said phonograph adjacent said record;
(c) a boom arm having a member slidably mounted in said central cut-out portion so that one end of said arm extends inwardly of said phonograph to a position above the run-out groove of said record;
(d) a magnet carried on said end of said arm; and
(e) a magnetically attractive member mounted on said tone arm facing said magnet, said magnet exerting a force on said magnetically attractive member which lifts said tone arm after said stylus has moved past the end of the sound groove of said record.

4,121,835

SOUND PRODUCING STRAW

George V. Garabedian, P.O. Box One, Anaheim, Calif. 92805

Filed Aug. 26, 1977, Ser. No. 828,098
Int. Cl.² G11B 1/04, 3/00, 7/24; A47G 21/18
U.S. Cl. 274—1 R **1 Claim**



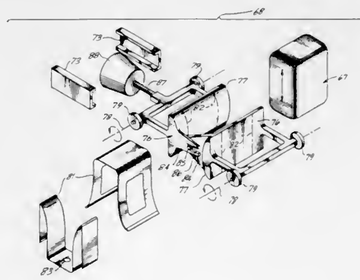
1. A sound producing device comprising, in combination,
an open topped container having a closed bottom and sidewall forming a cup shape for holding liquid,
a lid retained on said open top of said container,
said lid having an aperture therein,
a hollow elongate substantially rigid member adaped to be passed through the aperture in said lid,
means comprising embossed ridges on the external surface of said rigid member representing a recorded intelligible sound track,
means formed on said lid adjacent said aperture for engaging said embossed ridge means so as to vibrate upon relative movement between said rigid member and said lid so that the recorded sound track is reproduced with said container providing a sound reproducing box, and
means for reproducing the recorded sound track successively at varying pitches.

4,121,836

STYLUS CARTRIDGE SUSPENSION FOR RECORD PLAYERS

Robert G. Cheeseboro, 3650 Somerset Dr., Los Angeles, Calif. 90016

Filed Mar. 16, 1977, Ser. No. 778,027
Int. Cl.² G11B 3/10
U.S. Cl. 274—23 A **18 Claims**



1. A suspension for mounting a phonograph transducer cartridge, having a stylus engageable in the groove of a phonograph record disc, the suspension comprising
(1) a support positionable in an operating position above a

plane of rotation of the disc proximately above the operating position of the plane,

(2) a pair of carrier members disposed on opposite sides of the position of a cartridge in the suspension and cooperatively defining a pair of parallel convexly curved cylindrical surfaces facing each other,

(3) means mounting the carrier members to the support for rotation of each carrier member relative to the support about a respective pivot axis which is

(a) spaced from the respective cylindrical surface in a direction away from the other carrier member,

(b) parallel to the respective cylindrical surface directrix, and

(c) parallel to the disc plane of rotation in the operating position of the support,

(4) flexible strap means connected to the carrier members

(a) for holding a cartridge between the cylindrical surfaces in substantially frictionless rolling contact with the cylindrical surfaces, and

(b) for constraining a held cartridge to move relative to the support, in response to loads applied to a held cartridge in a direction normal to the disc plane of rotation, without rotation along a line which is normal to said plane when the support is in its operating position, and

(5) link means coupled between the carrier members for causing both carrier members to move in synchronism in opposite directions about their respective pivot axes in response to said loads.

4,121,837

RECORD PLAYER HAVING A DEVICE FOR DAMPING VIBRATIONS OF A TONE ARM

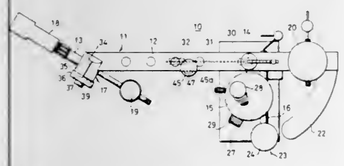
Noboru Tominari, Tokyo, and Hiroshi Takahashi, Yokohama, both of Japan, assignors to Onlife Research, Inc., Tokyo, Japan

Filed Jun. 8, 1977, Ser. No. 804,818

Claims priority, application Japan, Jun. 11, 1976, 51-75139[U]; Jun. 11, 1976, 51-75140[U]

Int. Cl.[2] G11B *3/10*

U.S. Cl. 274—23 R **5 Claims**



1. A record player comprising:

a tone arm having a main arm and a sub-arm, said sub-arm being pivotably mounted with a shaft on a forward end of the main arm to rotate in swinging movement in a vertical plane and having a pickup cartridge mounted thereon;

pivoting means for pivoting the main arm with a pivot shaft to rotate in swinging movement in a horizontal plane;

a damping plate made of an electrically conductive material having a substantially arcuate shape and secured to said main arm projecting in a lateral direction thereof;

a damping unit having a pair of permanent magnets with a gap therebetween for insertion therein of said damping plate to form a magnetic field within said gap, said damping plate being displacable in the gap between the permanent magnets with swinging motion of the main arm; support means for supporting the damping unit in a position whereby the damping plate being insertable into the gap between the permanent magnets;

a leaf spring supported at a first end thereof at said main arm whereby a second free end being adapted to vibrate in a horizontal plane and extends in a longitudinal direction of the main arm; and

a weight being secured to said second end of said leaf spring.

4. A record player comprising:

a tone arm having a main arm and a sub-arm; said sub-arm being pivotably mounted with a shaft on a forward end of the main arm to rotate in swinging movement in a vertical plane and having a pickup cartridge mounted thereon;

pivoting means for pivoting the main arm with a pivot shaft to rotate in swinging movement in a horizontal plane;

a damping plate formed of an electrically conductive material secured to said sub-arm to project in a vertical direction thereof;

a damping unit formed of a pair of permanent magnets having a gap therebetween for insertion therein of said damping plate to form a magnetic field within said gap, said damping plate being displacable in the gap between the permanent magnets with swinging motion of the sub-arm, and said damping unit being supported by the main arm.

4,121,838

SHAFT SEAL STRUCTURE

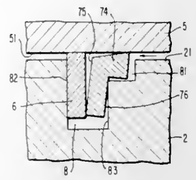
Hiroshi Sakamaki, Utsunomiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 524,908, Nov. 18, 1974, abandoned. This application Jan. 8, 1976, Ser. No. 647,482

Claims priority, application Japan, Nov. 17, 1973, 48-128794

Int. Cl.[2] F16J *9/02*

U.S. Cl. 277—176 **1 Claim**



1. In an improved shaft seal structure for a shaft coaxially mounted within a cylinder and movable relative to the cylinder, and wherein the shaft includes an annular carrier fixedly mounted to the shaft with its outer periphery spaced from and facing the inner wall of the cylinder and being subjected on one end to a pressurized fluid medium within the cylinder, the improvement comprising:

an annular seal groove of inverted L-shaped cross section extending circumferentially within the carrier on its outer periphery, said groove comprising a base portion extending axially towards one end of the annular carrier and an axially narrower, radially inward extension portion defining axially opposed radial sidewalls,

a first, radially expandable seal ring of rectangular cross section positioned within the annular seal groove with its periphery contacting the inner wall of said cylinder,

a second radially expandable seal ring of inverted L-shaped cross section complementary with that of said groove and positioned within said groove adjacent said first seal ring with said second seal ring including a base portion carrier within the base portion of the annular seal groove and a radially inwardly projecting portion positioned within the radial extension portion of said inverted L-shaped cross sectional grove, said second seal ring being provided with a peripheral sliding surface facing the inner wall of the cylinder and sliding thereon, said sliding surface being inclined toward a normal side face of said second seal ring which faces the radial side face of said adjacently positioned first seal ring, at an angle at least equal to the angular deflection of the sliding surface towards the inner wall of the cylinder due to deflection of the seal ring about its circumference during seal ring radial expansion and under applied fluid pressure such that the inclinded sliding surface of said inverted L-shaped seal ring is pressed into sliding contact with the inner wall of the cylinder and the

radial projecting portion of said inverted L-shaped annular seal ring is pressed on opposite sides respectively against a radial side wall of said inverted L-shaped groove and a radial side face of said first seal ring to reliably block fluid passage past said shaft seal structure.

4,121,839

SEALING SYSTEM FOR USE IN COMPOSITE MULTI-STAGE PUMP

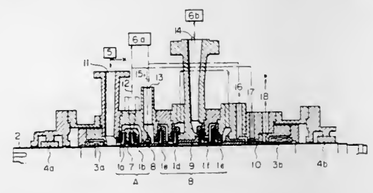
Shiro Takano; Toshio Jojima, both of Tokyo; Hajime Oshida, Funabashi; Tadashi Yokoi, Chiba; Muneo Kato, Kitaminemachi, and Tadashi Koizumi, Kawasaki, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc.; Toyo Engineering Corporation and Ebara Corporation, all of Tokyo, Japan

Filed Aug. 9, 1977, Ser. No. 823,100

Claims priority, application Japan, Aug. 18, 1976, 51-97670; Aug. 18, 1976, 51-97671; Aug. 18, 1976, 51-97672; Aug. 27, 1976, 51-101541

Int. Cl.[2] F16J *15/40;* **F01D** *11/02*

U.S. Cl. 277—3 **9 Claims**



1. A sealing system for use in a composite multistage pump wherein a plurality of impellers are serially and securely mounted on a shaft so as to form at least two pump sections, the temperature of the liquid passing through the pump sections being raised sequentially at each of said pump sections, said sealing system comprising:

sealing means disposed at the opposite end portions of the shaft where said shaft extends through the pump casing;

pressure reduction means disposed around said shaft at a place between the last pump section and one of said sealing means;

a pipe line coupling the outlet port of the first pump section with the inlet port of the last pump section;

temperature detector means for sensing the temperature of liquid flowing through the last pump section; and

a control valve disposed in said pipe line and operated in response to the temperature sensed by said temperature detector means.

4,121,840

SEAL ASSEMBLY

David W. Berg, Wayzata, Minn., assignor to Tol-O-Matic Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 758,043, Jan. 10, 1977, Pat. No. 4,057,257. This application Nov. 4, 1977, Ser. No. 848,466

Int. Cl.[2] F01B *9/00;* **F16J** *15/18*

U.S. Cl. 277—4 **10 Claims**

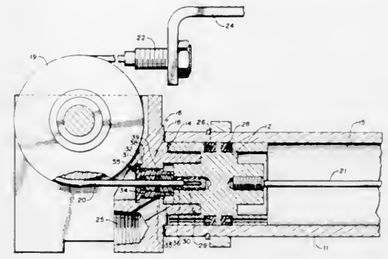
1. A seal assembly for use in a cable cylinder to form an effective seal about a generally cylindrical cable, said seal assembly comprising:

a gland having a centrally located bore extending around said generally cylindrical cable;

first and second seal members disposed within the central bore of said gland for forming an effective seal with the inner surface of said central bore and the outer surface of said generally cylindrical cable;

an alignment sleeve having a center opening extending around said generally cylindrical cable and disposed within the central bore of said gland between said first and second seal members; and

a retaining sleeve member having a center opening extending around said generally cylindrical cable and mechanical lock means cooperating with corresponding mechanical lock means of said gland for forming a mechanical lock between said retaining sleeve member and said gland upon



insertion of said retainer sleeve into a portion of the central bore of said gland for retaining said seal members and said alignment sleeve in operative position within the central bore of said gland.

4,121,841

DRIVE SHAFT SEAL FOR COMPRESSOR HOUSING

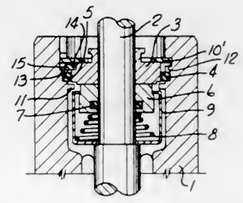
Masaharu Hiraga, Isesaki, Japan, assignor to Sankyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 541,078, Jan. 15, 1975, abandoned. This application Jun. 4, 1976, Ser. No. 693,216

Claims priority, application Japan, Jan. 17, 1974, 49-8717; Jan. 17, 1974, 49-8718

Int. Cl.[2] F16J *15/34*

U.S. Cl. 277—38 **2 Claims**



1. A shaft seal arrangement at a bore of a compressor housing through which a drive shaft extends, which comprises

a compressor housing having an annular bore therethrough of uniform diameter which opens at one end thereof externally of said housing,

a drive shaft extending through said bore to the outside of said housing,

a first seal sheet in said bore and having a central opening through which said drive shaft extends,

a first O-ring disposed between a peripheral surface of said first seal sheet and the internal surface of said bore to prevent leakage therebetween,

a second seal sheet mounted internally of said first seal sheet on said drive shaft with said second seal sheet pressed in contact with said first seal sheet to prevent leakage between said first and second seal sheets,

a second O-ring disposed between an inner surface of said second seal sheet and said drive shaft to prevent leakage therebetween,

a snap ring fitted into an annular groove formed in the internal surface of said bore with said first seal sheet pressed in contact with said snap ring to retain said seal sheets in said bore,

a projection on said snap ring extending in the axial direction and received in a corresponding depression in said first seal sheet to prevent relative rotation between said first seal sheet and said snap ring, and

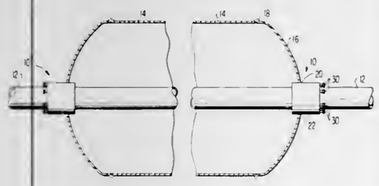
two pawls projecting radially outward from said snap ring and engaging the bottom of said annular groove under bias of said snap ring to prevent rotation of said snap ring and in turn rotation of said first seal sheet.

4,121,842

EXPANSION SEAL

Thomas H. Lacy, 3079 Myrtle Ave., Baton Rouge, La. 70806, assignor to Thomas H. Lacy, Baton Rouge, La.

Filed Dec. 29, 1976, Ser. No. 755,350
Int. Cl.[2] B65D *53/02*
U.S. Cl. 277—112 **3 Claims**



1. An expansion seal for a product pipe line which extends through a casing of greater diameter which may be adapted to couple said pipeline and said casing if said pipeline leaks and causes failure of said seal comprising:

a convex cap adapted to be welded at the periphery thereof around the circumference of an end of said casing to rigidly attach said cap and said casing, said cap having a central opening therethrough;

a hollow cylindrical sleeve extending through said opening, the circumference of said sleeve adjacent the circumference of said opening being welded thereto to rigidly attach said cap and said sleeve, said sleeve defining an internal circumferential recess therein, said sleeve adapted to receive said product pipeline therethrough;

a ring assembly slidably received within the recess defined within said sleeve and adapted to surround said pipeline when said pipeline extends through said sleeve;

compression means carried by said sleeve including a plurality of bolts threadably received in a plurality of mutually spaced openings extending axially into the recess in said cylinder, the ends thereof abutting a face of said ring adjacent thereto so that when said bolts are advanced into said sleeve, the ends thereof will abut a face of said ring assembly;

means carried by said sleeve for admitting a liquid deformable packing into said recess adjacent the face of said ring assembly opposite the face disposed abutting the ends of said bolts whereby when said pipeline extends through said sleeve said packing will form a toroidal seal between said sleeve and said pipeline when said bolts are advanced into said recess urging said ring assembly against said packing;

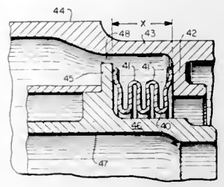
bleed means carried by said sleeve means for depressurizing the interior of said sleeve between said recess and the end thereof mounting said bolts so that when said pipeline extends through said sleeve means, and said compression means and packing seal said sleeve and pipeline, and subsequently said pipeline developes a leak within said casing which causes said seal to fail, the interior of said sleeve behind said packing may be depressurized so that said sleeve may be welded to said pipeline to couple said pipeline and casing.

4,121,843

MULTIPLE CONVOLUTION SEALING RING

Horace P. Halling, Laurel, Md., assignor to Pressure Science, Incorporated, Beltsville, Md.

Filed Oct. 4, 1977, Ser. No. 839,187
Int. Cl.[2] F16J *15/08*
U.S. Cl. 277—200 **9 Claims**



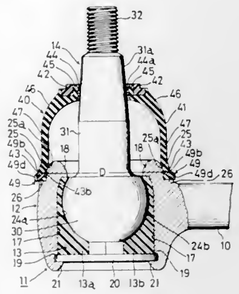
1. A sealing ring comprising an integral piece of resilient metal formed into at least three U-shaped annular convolutions including two end convolutions and at least one inner convolution between said end convolutions, the outermost parts of the end convolutions forming legs which extend in a direction essentially parallel to but leading slightly away from the center line of symmetry of the ring cross-section; said outer legs having a sinuous configuration and terminating in convex portions which define, at each side of the seal, a singular sealing line when the seal is installed.

4,121,844

BALL JOINT SEALS

Akira Nemoto; Yasunori Hamaguchi, both of Toyohashi, and Kenichi Terai, Yokohama, all of Japan, assignors to Musashieimitsukogyo Kabushikikaisha, Toyohashi and Nippon Oil Seal Industry Co. Ltd., Tokyo, both of, Japan

Filed Aug. 12, 1977, Ser. No. 824,328
Claims priority, application Japan, Oct. 15, 1976, 51-124151
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—212 FB **6 Claims**



1. A dust sealing cover for a pivotal ball joint assembly including a housing having an open end and a ball stud extending outwardly from said housing through said open end thereof, said cover comprising:

an inverted cup-shaped body formed of elastic material and having a pair of opposite marginal portions each defining an opening, said opening of one of said marginal portions being smaller in diameter than that of the other marginal portion and adapted to receive said ball stud therethrough, said other marginal portion being flared to be fitted over said open end of said housing, said body including an intermediate portion extending between said smaller opening and said flared portion; and

a ring having inner and outer circumferential edge portions, said inner edge portion including a continuously centrally

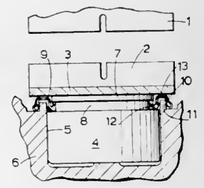
inclined face forming a sharp-cornered innermost circumferential edge, said innermost circumferential edge having a continuous circumference of constant diameter lying in a plane vertically spaced from said outer edge portion, and having a diameter slightly smaller than the maximum diameter of said housing at said open end thereof, said ring, including said sharp-cornered innermost circumferential edge, being embedded in said flared portion, the gripping force of said ring through said flared portion against said housing being entirely through said sharp-cornered innermost circumferential edge.

4,121,845

BOOT FOR SLIDABLY GUIDED MEMBER

Desmond Henry James Reynolds, West Midlands, and Kenneth Maurice Quiney, Birmingham, both of England, assignors to Girling Limited, Birmingham, England

Continuation of Ser. No. 701,187, Jun. 30, 1976, abandoned.
This application Nov. 30, 1977, Ser. No. 856,203
Claims priority, application United Kingdom, Jul. 1, 1975, 27628/75
Int. Cl.[2] F16D *55/00;* **F16J** *15/32*
U.S. Cl. 277—212 FB **14 Claims**



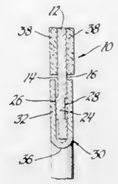
1. The combination of a disc brake and a boot assembly, said disc brake being of the type having a guided member axially slidable in a bore of a guide member during the application and release of the brake, said boot assembly preventing ingress of dirt or fluid into one end of the bore and comprising a first annular portion sealing against an annular surface of the guide member adjacent to said one end of the bore, a second annular portion sealing against the guided member, and a flexible impermeable web connecting said first and second portions to accommodate relative axial movement of the guided and guide members, wherein said surface of the guide member is a plain surface extending parallel to the axis of said bore and facing outwardly of the guide member, the first annular portion of the boot assembly comprising an annular rigid carrier carrying an elastomeric seal, a first annular part of the seal being permanently secured to a first annular portion of the carrier, and being spaced radially outwardly from said surface of said guide member and a second annular part of the seal spaced axially outwardly relative to the bore from said first part and located internally of the carrier, said second part being trapped between a second annular portion of the carrier and said surface of the guide member to form a seal therebetween, and said second part of the seal being unattached to said second portion of the carrier, the arrangement being such that during assembly of the first portion of the boot assembly onto the guide member by application of an axial force to the carrier member said first part of the seal passes with clearance over said surface, and friction between said second part of the seal and said surface results in axial elongation of said second part of the seal to enable the seal to be pulled into position on said surface by said axial force on the carrier.

4,121,846

GASKET ASSEMBLY

Robert R. Skrycki, Grosse Ile, Mich., assignor to McCord Corporation, Detroit, Mich.

Filed Dec. 20, 1974, Ser. No. 535,034
Int. Cl.[2] F16J *15/06*
U.S. Cl. 277—235 R **8 Claims**



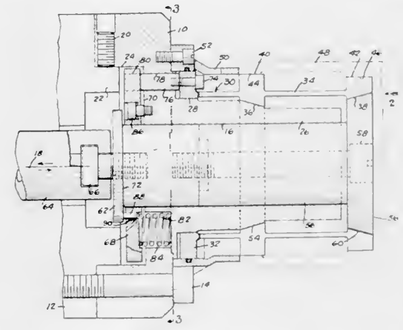
1. A preformed gasket assembly for sealing between two planar surfaces comprising; a metal core member having spaced parallel first and second faces and an opening therein, said core member having an offset portion extending about the periphery of said opening, said offset portion having a first surface raised above said first face and a second surface recessed below said second face, said offset portion being integrally formed with the remainder of said core member and connected thereto through a planar section having shear stresses therein and extending between and transversely to said first and second surfaces of said offset portion so that said gasket assembly may be clamped between two planar sealing surfaces with the clamping forces extending through said planar section whereby the shear stresses respond to the clamping force.

4,121,847

COLLET CHUCK

London T. Morawski, 11487 E. Nine Mile Rd., Warren, Mich. 48090

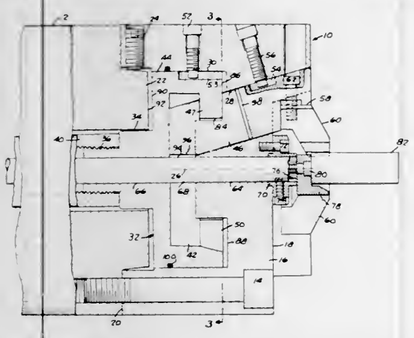
Filed Oct. 28, 1977, Ser. No. 846,513
Int. Cl.[2] B23B *5/22, 5/34, 31/14*
U.S. Cl. 279—2 R **13 Claims**



1. A collet chuck for gripping a tubular workpiece at two axially spaced cylindrical surfaces comprising a body having a central axis and a cylindrical guide surface thereon concentric with said central axis, a collet sleeve axially slideable on said guide surface, said collet sleeve being resiliently flexible in a radial direction and having first and second work-gripping surfaces thereon spaced axially apart to correspond with the axial spacing of said cylindrical surfaces on the workpiece, said work-gripping surfaces being adapted to be radially displaced to grip and release the workpiece, said collet sleeve having first and second opposed conical surfaces thereon aligned generally radially with the first and second work-gripping surfaces on

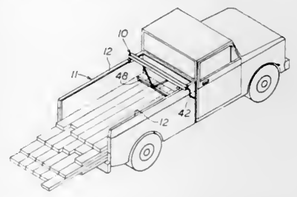
the collet sleeve, said body having a conical surface thereon adapted to be engaged by the first conical surface on the collet sleeve to displace said first work-gripping surface radially in the work-gripping direction in response to axial movement of the collet sleeve in one direction, means biasing the collet sleeve axially in said one direction, a collet actuator mounted on said body for axial movement thereon, said actuator having a conical surface thereon adapted to engage the second conical surface on the collet sleeve and displace the second work-gripping surface in the work-engaging direction in response to movement of the actuator on the body in said one direction, abutment means on said actuator engageable with the collet sleeve to shift it axially in a direction opposite that in which it is biased when the actuator is shifted axially opposite to said one direction, the radial dimensions of said conical surfaces being such that, upon initial movement of said actuator in said one direction, said abutment means releases said collet sleeve and the collet sleeve is shifted axially in said one direction under the influence of said biasing means to interengage said first conical surface on the collet sleeve with the conical surface on said body and, upon continued axial movement of the actuator in said one direction, the second conical surface on the collet sleeve is engaged by the conical surface of the actuator whereby the clamping force exerted on the workpiece by the first work-gripping surface is determined by the force of said biasing means and the clamping force exerted on the workpiece by the second work-gripping surface is determined by the axial force on the actuator.

4,121,848
CHUCK
London T. Morawski, 11487 E. Nine Mile Rd., Warren, Mich. 48090
Filed Oct. 28, 1977, Ser. No. 846,514
Int. Cl.[2] B23B *5/22, 5/34, 31/12*
U.S. Cl. 279—60 **12 Claims**



1. A chuck having a body adapted to be mounted on the front end of a rotary spindle of a machine tool, said body having a cylindrical chamber therein concentric with the central axis of the chuck, said chuck body having a front face and a central axial passageway extending from said chamber through said front face, said chuck body also having a plurality of circumferentially spaced bores extending axially rearwardly from said front face to said chamber in a direction inclined radially inwardly, a jaw rod slideably arranged in each of said inclined bores and extending from said front face into said chamber, a radially extending jaw mounted on the outer end of each of the jaw rods such that the jaws are displaced radially in response to axial movement of the jaw rods, each of said jaw rods having a chordal slot in the radially outer side thereof, means for sliding the jaw rods axially simultaneously in their respective bores comprising an actuator axially slideable in said chamber, said actuator having a passageway therethrough communicating with the central axial passageway in said body, said actuator having means thereon for connection with an axially slideable drawbar at the axis of the machine spindle, said actuator at its forward end extending around the inner ends of said jaw rods and having radially inwardly extending flange means thereon having a close sliding fit with the chordal slots in said jaw rods, the inner ends of the jaw rods terminating radially outwardly of said central axial passageway in said body.

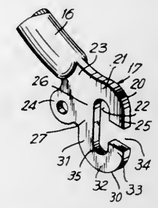
4,121,849
STABILIZER FOR ARTICLES CARRIED WITHIN A VEHICLE BED
Robert E. Christopher, 1014 Walnut St., Gadsden, Ala. 35901
Filed Jul. 28, 1977, Ser. No. 819,663
Int. Cl.[2] B60P *7/00*
U.S. Cl. 280—179 R **4 Claims**



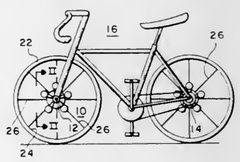
1. A stabilizer for an article carried within a vehicle bed having upstanding walls, comprising:
(a) an elongated support member extending transversely of said vehicle bed and over at least one article carried therein,
(b) means for attaching said elongated support member to said vehicle bed,
(c) a movable member beneath said support member of a length to move inwardly of said vehicle bed and extend across said article carried within said vehicle bed,
(d) a pair of actuator members carried by said elongated support member and adapted for movement longitudinally of said elongated support member toward and away from each other to selected positions, and
(e) an elongated link-like member pivotally connected adjacent one end to each of said actuator members with the other end of each said link-like member being pivotally connected to a central portion of said movable member so that upon movement of said actuator members in one direction relative to each other said movable member is moved away from said article carried within said vehicle bed and upon movement of said actuator members in the other direction relative to each other said movable member is moved toward said article carried within said vehicle bed to stabilize said article.

4,121,850
BICYCLE FORK END CONSTRUCTION
Sherwood B. Ross, Woodmere, N.Y., assignor to Chain Bike Corporation, Rockaway Beach, N.Y.
Filed May 5, 1977, Ser. No. 793,781
Int. Cl.[2] B62K *25/00*
U.S. Cl. 280—279 **9 Claims**

1. In a bicycle the combination comprising a front wheel fork having a pair of spaced depending legs; a pair of generally downwardly facing receivers on the lower region of said legs; a wheel hub axle extending between and having its opposite ends received in respective receivers; releasable fastener means on said axle ends for releasably securing the latter in said downwardly facing receivers; a retaining portion depending from each downwardly facing receiver; and a generally upwardly facing receiver depending from each retaining portion in facing spaced relation with an associated downwardly facing receiver to form a passageway for intentional insertion and removal of said wheel hub axle from said receivers, said wheel hub axle normally being positioned and retained by said fastener means within said downwardly facing receivers generally on one side of said passageway, said upwardly facing receivers being arranged to receive said wheel hub axle generally on the other side of said passageway during riding over rough terrain on accidental loosening of said fastener means to thereby prevent said wheel hub axle from unintended exit from said receivers through said passageway.

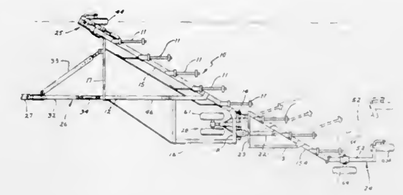


4,121,851
SPINNER FOR BIKE HUB
Kenneth N. Finkenbiner, Dallas, Tex., assignor to Ken-Neil Inc., Dallas, Tex.
Filed Feb. 22, 1977, Ser. No. 770,855
Int. Cl.[2] B62J *5/20;* **G02B** *5/12*
U.S. Cl. 280—289 R **9 Claims**



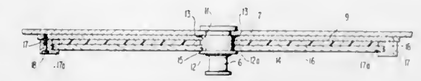
1. A spinner for attachment to the hub of a bicycle wheel comprising:
a resilient band having first and second end portions capable of being opened by the application of a spreading force between the end portions to permit the band to be placed around the hub, said band assuming a generally circular configuration of a fixed diameter in the absence of the spreading force;
first and second curved coupling members each having a radius of curvature less than the radius of said circular band but large enough to permit the curved coupling members to fit in friction engagement around a portion of the hub;
first means connecting said first curved coupling member to the inner periphery of said band and in concentric relation with respect to the longitudinal axis of said band;
second means connecting said second curved coupling member to the inner periphery of said band and in concentric relation with respect to the longitudinal axis of said band, said first and second curved coupling members being spaced apart one from another; and,
a member having a display surface secured to the outer periphery of the band and projecting radially with respect thereto.

4,121,852
RELEASABLY RETAINED HINGED PLOW
Sherman H. Quanbeck, Aneta, N. Dak. 58212
Filed Sep. 16, 1976, Ser. No. 724,086
Int. Cl.[2] A01B *73/00*
U.S. Cl. 280—411 C **9 Claims**



1. In a hinged plow assembly including a forward frame section and a rear frame section, means to permit the forward end of the forward frame section to be connected to a prime mover for movement over the ground with the rear frame section trailing the forward frame section, hinge means connecting said forward frame section and rear frame section together and permitting hinging movement about a generally horizontal transversely extending axis as the assembly is moved, said frame sections each carrying a plurality of earth working tools, said rear frame section having rear portions which are offset from said forward frame section in transverse direction when in use, so that rear portions of the rear frame section extend beyond the side of said forward frame section on at least one side in transverse direction as the plow assembly is moved along the ground, means to pivotally connect a forward end portion of said rear frame section to a rear end portion of the forward frame section about an upright axis, and means to releasably retain said rear frame section selectively in at least two separate positions about said upright axis relative to said forward frame section, one of which is a working position and the other is a position wherein rear portions of the rear frame section are moved transversely to reduce the overall transverse width of the plow assembly from the width in working position as the plow assembly is moved along the ground.

4,121,853
FIFTH WHEEL BEARING ATTACHMENT
Roy H. McKay, 6305 Mahoning Ave., Youngstown, Ohio 44515
Filed Jun. 22, 1977, Ser. No. 808,796
Int. Cl.[2] B62D *53/08*
U.S. Cl. 280—433 **4 Claims**



1. In a fifth wheel assembly including a bottom wall of a trailer mounting a king pin and a lower slotted tractor plate adapted for locking engagement with said king pin, the improvement comprising a pre-assembled anti-friction device for detachably mounting, as a unit, on said trailer bottom wall, said device comprising a bushing, a flange provided on one end of said bushing, a first bearing plate supported by said flange and rotatably mounted thereon, a second bearing plate, said second bearing plate being centrally apertured for receiving the other end of said bushing, said second bearing plate being rigidly connected to the other end of the bushing, and a third plate positioned between said first and second bearing plates and mounted for free rotation about the bushing, said third plate being formed from anti-friction material; said king pin being freely insertable into said bushing, said second bearing plate being detachably secured to the bottom wall of the trailer, and

said first bearing plate being frictionally engageable with and by said tractor plate and rotatable therewith.

4,121,854

ELECTRO-PYROTECHNIC UNLOCKING DEVICE, IN PARTICULAR FOR A SAFETY FIXTURE FOR A SKI

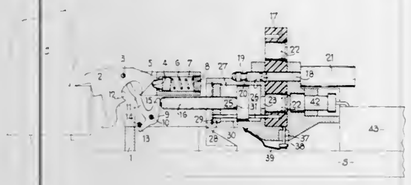
Julien Cornu, Toulouse, France, assignor to Etablissements Ruggieri, Monteux, France

Filed Apr. 21, 1977, Ser. No. 789,592

Claims priority, application France, Apr. 23, 1976, 76 12085; Sep. 9, 1976, 76 27147

Int. Cl.[2] A63C *9/00*

U.S. Cl. 280—612 **27 Claims**



1. An automatically re-armed and reloaded electro-pyrotechnic unlocking device in particular for a safety ski binding, comprising a body, at least one gas operated mechanical assembly for unlocking said binding, a loader movably mounted relative to said body, a plurality of pyrotechnic charges for actuating said assembly in succession and carried by the loader, means for igniting the charges, and means for automatically positioning the charges of the loader with respect to said assembly and with respect to said means for igniting the charges, wherein said mechanical assembly comprises a piston and cylinder unit associated with one of the charges carried by the loader and provided with a push-member which when actuated by the gas releases the binding.

4,121,855

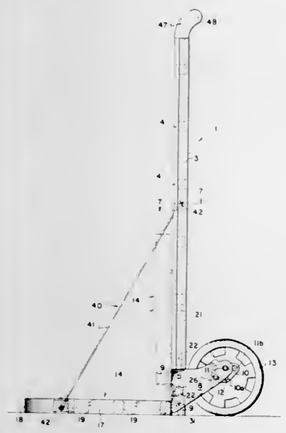
HAND TRUCK CONSTRUCTION

Carl N. Mortenson, Midland, Mich., assignor to Magline, Inc., Pinconning, Mich.

Filed May 11, 1977, Ser. No. 797,501

Int. Cl.[2] B62B *11/00*

U.S. Cl. 280—654 **21 Claims**



1. In a hand truck construction comprising an upright frame including a pair of spaced apart upright rails; bracket means at the lower end of said frame extending rearwardly therefrom and having axle means spaced rearward of the lower end of said frame for supporting ground engaging wheels; wheels thereon; and a nose member; the improvement wherein a sub-frame, including leg parts received by the rails and spanned by a brace part, is spaced vertically from the upper end of the upright frame and nests between said rails in the plane of said upright frame to brace the rails in spaced apart relation and to provide increased load carrying strength for the lower end of the frame, the brace part being spaced forwardly of and below the axle means, and the nose member being mounted for pivotal movement on the brace part for swinging movements between a raised position and a lowered position in which it extends along the ground at the level of the lower periphery of the wheels.

4,121,856

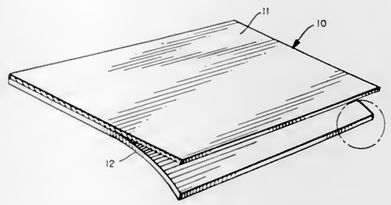
IDENTIFICATION ASSEMBLY AND METHOD

Jerome J. Brunette, 911 Cambridge Dr., Libertyville, Ill. 60048

Filed Jun. 22, 1977, Ser. No. 808,829

Int. Cl.[2] G09F *3/10;* **B41L** *1/00*

U.S. Cl. 282—1 R **2 Claims**



1. A label assembly comprising a self contained carbonless sheet having a multitude of minute, liquid containing capsules and adapted to provide an image when pressure is applied thereto to rupture selected ones of said capsules, said sheet having first and second sides, an adhesive on said first side, and a transparent film overlying and attached to said second side said film being a member selected from the class consisting of ethylene-terrephthalate, polyvinyl acetate, polyvinyl chloride, polyethylene and polypropylene and having a thickness of the order of about 0.0005 inch to about 0.005 inch whereby indicia may be inscribed on said carbonless sheet through said film and said carbonless sheet applied to an object to be labeled to provide a relatively tamperproof label.

4,121,857

CONTINUOUS STATIONERY ASSEMBLIES

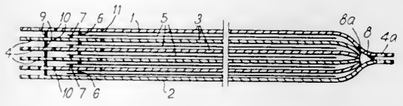
Per Weien Halse, Oslo, Norway, assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 727,518, Sep. 28, 1976. This application Jul. 21, 1977, Ser. No. 817,859

Claims priority, application United Kingdom, Jul. 21, 1976, 30407/76

Int. Cl.[2] B41L *1/20*

U.S. Cl. 282—11.5 A **4 Claims**



1. A series-connected business form adapted to be fed through the printing means of a business machine, comprising, a continuous pair of superimposed outer webs having aligned opposed marginal edges, said webs having longitudinal feed strips extending along each of said marginal edges, said feed strips including spaced feed holes for engaging the feed means of the business machine so that the business form may be thereby advanced into and past the printing means, said webs being directly connected together along longitudinal first connecting means lying adjacent said feed holes of one of said strips extending along one of said marginal edges, one of said webs having a longitudinal first line of weakening spaced inwardly of said first connecting means, at least one intermediate web disposed between said outer webs, said intermediate web having a free marginal edge lying adjacent said first line of weakening and having an opposite free marginal edge in alignment with the other of said opposed marginal edges of said outer webs, said one outer web having a longitudinal second line of weakening adjacent said other marginal edge, said intermediate web being connected to both said outer webs along longitudinal second connecting means disposed between said other marginal edge of said outer webs and said second line of weakening, said intermediate web having a longitudinal third line of weakening in alignment with said second line of weakening, and said webs having spaced transverse lines of weakening in superimposed relationship for separating the form therealong into individual units, whereby upon the printing of a number of said units, the next to the last of said units so printed may be separated along said transverse lines of weakening whereafter said one web and said intermediate web connected thereto of the last of said units so printed may be removed by separation along said first and second lines of weakening from said other outer web thereby leaving said other web of said last unit together with said feed strips thereon available as a drive web for initiating the feed of the remaining units to be advanced into and past the printing means.

4,121,858

FLANGED PIPE JOINTS

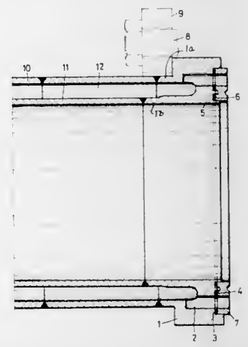
Wilhelm Schulz, Kuhleshutte 85, 4150 Krefeld, Fed. Rep. of Germany

Filed Feb. 24, 1977, Ser. No. 771,691

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607505; Oct. 22, 1976, 2647782

Int. Cl.[2] F16L *39/00*

U.S. Cl. 285—13 **3 Claims**



1. A combination of pipe joint components for use in forming a flanged joint between heated or cooled lengths of piping of a kind comprising inner and outer tubes defining between them a passageway through which fluid heating or cooling medium can be passed; said combination comprising: an annular pipe flange component which can be connected to a first length of such piping and to a similar flange component of a second length of such piping, which pipe flange component defines a central aperture for passing material flowing along the piping inner tube, and outer apertures, angularly spaced around said central aperture, for conducting heating or cooling medium flowing along said passageway; and a sealing gasket component which is interposable between said flange component and another like flange component, which gasket has a central annular portion for providing a continuous seal around the central pipe flange aperture, outer annular portions angularly spaced around said central annular portion for providing continuous seals around said outer pipe flange apertures, and web portions joining said inner and outer annular portions, which web portions have a thickness which is less than said annular portions and, when the gasket is in operative position between two said flange components, cooperate with faces of such components to define on each side of the gasket open-ended channels which lie between the inner and each of the outer annular seals and from which fluid leaking into such channels can escape to the periphery of the flange/gasket joint via the spaces beween the angularly spaced outer annular portions of the gasket.

4,121,859

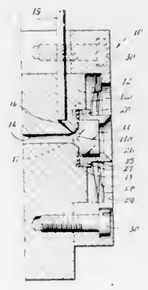
PRESSURE TIGHT SEAL

Charles F. DeMey, II, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 547,380, Feb. 6, 1975, abandoned. This application Sep. 8, 1976, Ser. No. 721,657

Int. Cl.[2] F16L *35/00*

U.S. Cl. 285—93 **9 Claims**



1. A seal between opposing surfaces of two joined members where one said joined member has a surface disposed around a cavity opening and the other joined member has no cavity opening, the seal comprising, in combination:

a projecting portion disposed on the opposed surface around said cavity opening which projects therefrom in a direction toward the other joined member, said projecting portion forming a ring around said cavity opening comprising the points of farthest projection toward the other member;

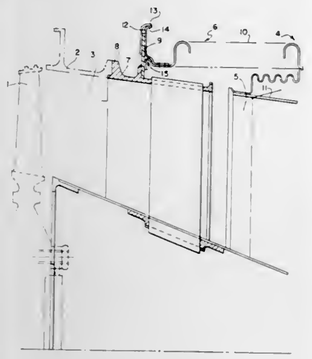
a gasket of resilient material disposed between said opposing surfaces to overlay said ring and at least a portion of said projecting portion on either side of said ring;

a retainer member attached by attachment means to the joined member having a cavity opening;

pressure exerting means comprising a spring member disposed between said retainer member and the joined member without a cavity opening, said pressure exerting means for urging the other joined member toward said gasket to produce substantially uniform compression of said gasket adjacent said ring;

said projecting portion being shaped cooperatively with said joined member without a cavity opening to provide maximum compression of said gasket of said gasket between said ring and the other joined member and compression of a lesser degree between said other joined member and points on the joined member with a cavity opening both radially outward and radially inward of said ring.

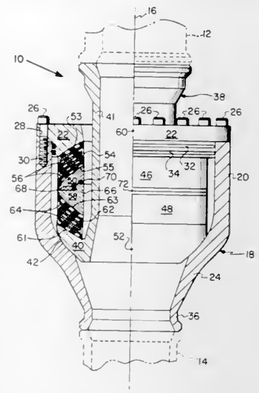
4,121,860
BELLOWS WITH ROTATIONAL JOINTS
Paul Leslie Hoffman, Stratford, Conn., assignor to Avco Corporation, Wilmington, Mass.
Filed May 27, 1977, Ser. No. 801,419
Int. Cl.[2] F16L *21/00*
U.S. Cl. 285—226 **3 Claims**



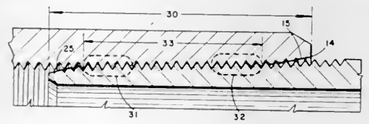
1. A device for interconnecting first and second ducts which are defined respectively by first and second housings wherein the housings are subjected to relative movement comprising:
- a substantially cylindrical shroud attached to the first housing and having an annular flange extending radially outward; said shroud having a connecting duct formed therein;
- a resilient cylindrical bellows shaped member, having a connecting duct formed therein, attached to the second housing, said bellows member having an end portion extending toward the first housing;
- a connecting element fixed to the bellows at the end portion extending toward the first housing, having an annular socket constructed therein to receive the shroud flange in sliding engagement, thereby forming a continuous connecting duct between the bellows and the shroud and interconnecting the first and second ducts while allowing for relative rotational movement between the housings.

4,121,861
FLEXIBLE SEALING JOINT
John H. Gorndt, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed Apr. 29, 1977, Ser. No. 792,431
Int. Cl.[2] F16L *27/10*
U.S. Cl. 285—223 **9 Claims**

1. In a joint assembly for interconnecting two conduits that receive fluid under a pressure different from an external ambient pressure on the conduits, said assembly comprising
- a hollow annular housing having an opening at each end and first and second annular flanges that extend radially inwardly relative to a maximum internal diameter of the housing, the two flanges being spaced apart along a longitudinal axis of the housing so that one end of the housing is closer to the first flange than to the second flange,
- a tubular member of smaller external diameter than said maximum internal diameter of the housing, the tubular member having adjacent one end an annular flange which extends radially outwardly of said member and which is disposed between the two flanges of the housing, the other end of the tubular member projecting through the opening at the one end of the housing for attachment to a fluid conduit,
- means defining a rigid annulus which encircles the tubular member within the housing and which is disposed between the first flange of the housing and the flange of the tubular member, and
- means defining two annular flexible elements, each flexible element including at least one body of elastomer and having a pair of annular exposed side surfaces, a first flexible element encircling the tubular member and being disposed between the first flange of the housing and the rigid annulus, the second flexible element also encircling the tubular member and being disposed between the rigid annulus and the flange of the tubular member, the two flexible elements and the rigid annulus defining at least part of a fluid-tight seal and load-bearing connection between the tubular member and the housing,
- the improvement wherein each flexible element has a pair of opposed annular end surfaces each of which extends generally from one side surface to the other side surface of the flexible element, each end surface when viewed in radial section being defined by an arc generated about a point located generally on the longitudinal axis of the housing, the end surfaces of the first flexible element when viewed in radial section being defined by first arcs which are generated about first points disposed relative to the first flexible element in a direction toward the other end of the housing, the end surfaces of the second flexible element when viewed in radial section being defined by second arcs which are generated about second points disposed relative to the second flexible element in a direction toward the one end of the housing, the second points being located closer to the one end of the housing than the first points.

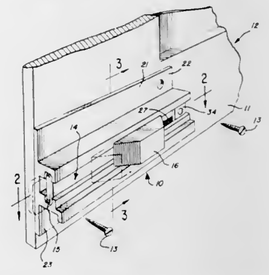


4,121,862
PIPE CONNECTION
James B. Greer, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.
Filed Apr. 6, 1977, Ser. No. 785,158
Int. Cl.[2] F16L *15/00*
U.S. Cl. 285—333 **12 Claims**



1. A tubular connection comprising
- a threaded cylindrical pin member having a curved thread pitch line;
- a threaded cylindrical box member having a curved thread pitch line, the threads on said pin and box members being capable of mating with each other;
- the curvatures of said pitch lines of said pin and box members being selected such that lead threads on said pin and box members do not engage when said pin and box members are made up and the pressure due to thread interference in the madeup connection is built up in a smooth fashion over several threads; and
- the pitch diameters of said threads of said pin and box members being tapered, said pitch diameters being selected such that makeup of the threads of said pin and box members occurs only on full height threads.

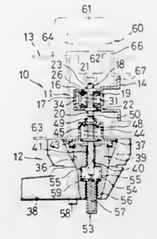
4,121,863
LATCH ASSEMBLY
Dean M. Lawrence, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 14, 1977, Ser. No. 851,008
Int. Cl.[2] E05C *9/04*
U.S. Cl. 292—175 **10 Claims**



1. In a latch mechanism having a latch member defining an edge slide portion, and a track member defining an open channel of substantially constant cross section slidably receiving said slide portion for guiding the latch member between a latching position and a retracted position, improved biasing means for biasing the latch member to the latching position comprising:
- a helical compression spring having an end portion juxtaposed to said latch member slide portion in said channel; and
- a force transfer member disposed between the spring end portion and said latch member slide portion in said channel and defining means for preventing catching of said spring end portion between said latch member slide portion and said track member in said channel, said force transfer element being complementary to said channel to have a movable centered fit therein and said spring having a transverse section smaller than that of said channel, said force transfer element defining means for centering said spring end portion in the channel.

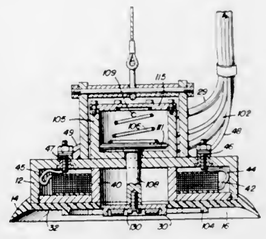
4,121,864
LATCH ASSEMBLY
Tetsuro Kagoura, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Mar. 29, 1977, Ser. No. 782,518
Claims priority, application Japan, Apr. 3, 1976, 51-41105[U]
Int. Cl.[2] E05C *13/00*
U.S. Cl. 292—202 **11 Claims**

1. A latch assembly for use on a closure frame member, comprising:
- (a) a support frame having means by which it may be attached to the closure frame member;
- (b) a shaft mounted in said support frame and rotatable about a longitudinal axis thereof;
- (c) a latch bolt having means in one end thereof coupled with said shaft for effecting corotation therewith, said latch bolt extending radially from said shaft, said latch bolt being angularly movable about said axis between a first position in which said bolt is retracted within said support frame and a second position in which said bolt has the opposite end projecting outwardly from said support frame;
- (d) a casing having means by which it may be attached to the closure frame member, said casing having a bore and fixed engaging means carried thereon;
- (e) a handle having a cylinder shaft rotatably disposed in said bore;



- (f) a driver torque bar having one end mounted coaxially in said cylinder shaft and corotatable therewith and axially movable therein, said driver torque bar having a driver fixed on its inner ends, said driver being normally held in an axially fixed position in response to said driver's being engaged with said fixed engaging means, and said driver being shiftable out of engagement with said fixed engaging means into rotational driving engagement with said first-named shaft in response to axial movement of said driver torque bar toward said shaft; and
- (g) means in said handle for enabling pushing said driver torque bar axially for engaging said driver with said first-named shaft.

4,121,865
PICKUP METHOD AND APPARATUS
Robert L. Littwin, Sr., 1200 Granville Ave., Park Ridge, Ill. 60068
Filed Dec. 9, 1976, Ser. No. 748,816
Int. Cl.[2] B66C *1/00*
U.S. Cl. 294—2 **15 Claims**



1. A lifting device for sheet material, comprising a vertically suspended body, a suction cup depending from said body having a fixed sealing surface engageable with said sheet material, flexible means for cushioning engagement of the sealing surface with the sheet material and suction chamber means rendered effective in response to said engagement of the sealing surface for holding the sheet material on the body with a predetermined holding force, a permanent magnet, means mounting the permanent magnet in the body for exerting a

magnetic holding force on the sheet material while in contact with the sealing surface and movable mechanical means connected to the permanent magnet for rendering the same ineffective in a standby condition by reducing the magnetic holding force applied to the sheet material.

4,121,866
SANITARY DISPOSAL APPARATUS

Diane S. Schall, and Karen A. Symmes, both of 15225 Devonshire St., Mission Hills, Calif. 91345

Continuation-in-part of Ser. No. 681,162, Apr. 28, 1976, abandoned. This application Mar. 14, 1977, Ser. No. 777,625
Int. Cl.[2] A01K *29/00*
U.S. Cl. 294—19 R **9 Claims**

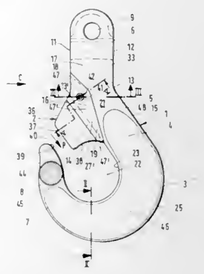


1. An apparatus to facilitate picking up and disposing of animal feces which are located on the ground comprising:
an elongated handle;
a thin ring-shaped supporting device defining an annular wall, said supporting device having an upper end and a lower end, a front side and a back side and an enlarged internal opening therein, said annular wall being substantially planar resulting in the width of said annular wall being significantly greater than the thickness, said handle being connected to said upper end of said ring-shaped supporting device;
a thin-walled plastic bag being adapted to be inserted through said enlarged opening with the portion of the bag around the mouth of the bag being draped over across said width of said annular wall and around said handle, said bag to connect with a bag securing means mounted on said back side of said annular wall directly adjacent said handle, said annular wall is then to be placed against the ground and the animal feces being scooped up to within the plastic bag, whereby the bag can be removed and disposed of without any feces having come into direct contact with said annular wall.

4,121,867
HOOKS, ESPECIALLY FOR CHAINS

Anton Müller, Aalen-Unterkochen, Fed. Rep. of Germany, assignor to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen-Württ, Fed. Rep. of Germany

Filed Jun. 15, 1977, Ser. No. 806,812
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626920
Int. Cl.[2] B66C *1/14*
U.S. Cl. 294—82 R **6 Claims**



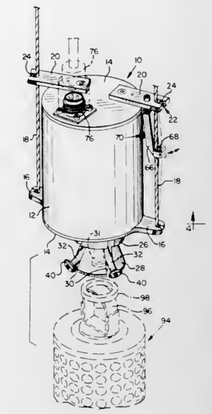
1. A dragging hook for forestry chains, especially for engaging chain links, which comprises:
a hook body having a receiving opening adapted to receive said chain links; and
a closure piece detachably and rigidly fastened in a cap-manner to said hook body and including a blocking part in the form of a forward nose body projecting at least partially into said receiving opening, said hook body having a portion thereof located opposite the free end of that portion of said closure piece which projects into said receiving opening so as to form therewith an entrance passage to said receiving opening having an inlet, said free end of said closure piece being spaced from said oppositely located portion of said hook body by a distance corresponding to the cross sectional dimension of that portion of said chain link which is to be engaged by said hook, said cross sectional dimension being taken perpendicular to the annular plane of said chain link.

4,121,868
CAM ACTUATED PIVOTAL JAW GRIPPING APPARATUS

Ray E. Pierce, 7770 SW. 89th, Portland, Oreg. 97223; Gary J. Shaffer, 6825 SW. Wilson St., Beaverton, Oreg. 97005, and Roger L. Belanger, 5 Clearwater Crescent., Apt. 104 Snow Bird Manor, Fort McMurray, Alberta, Canada (T9H 2B7)

Filed Mar. 14, 1977, Ser. No. 777,145
Int. Cl.[2] B66C *1/42*
U.S. Cl. 294—116 **12 Claims**

1. A gripping apparatus comprising:
(a) a mounting platform;
(b) a plurality of gripping arms each connected pivotally at a location intermediate their ends to the mounting platform;
(c) each of the gripping arms having a grasping means located at one of its extremities and a cam follower located at its opposite extremity;
(d) a cam mounted rotatably on the mounting platform and having respective multiple track means formed therein, each for engaging a respective one of said cam followers in a manner such that rotation of the cam in one direction causes simultaneous outward spreading of the grasping means and rotation of the cam in the opposite direction causes simultaneous inward closing of the grasping means respectively; and

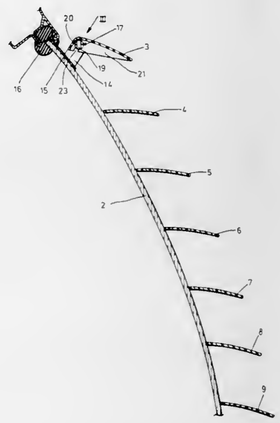


(e) motor means on the mounting platform for rotating the cam selectively in either of the two rotational directions.

4,121,869
APPARATUS FOR PREVENTING DUST FROM SETTLING ON OR BEING BLOWN AGAINST A REAR WINDOW OF A VEHICLE

Hermann Hablitzel, and Friedrich Goes, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 30, 1975, Ser. No. 591,718
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1974, 2432114
Int. Cl.[2] B60J *3/00*
U.S. Cl. 296—97 R **3 Claims**

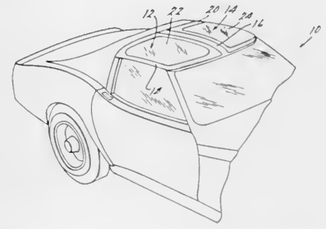


1. An apparatus for preventing dust and dirt from settling on or being blown against a rear window of a vehicle, such as an automobile, the vehicle being equipped with an inside rear view mirror, and the apparatus comprising strip members extending across the outside of the rear window and a frame extending between the strip members, the planes of the strip members substantially meeting on the mirror, the improvement comprising holding means, cooperating with an uppermost strip member for detachably supporting the frame and the strip members over the rear window, said holding means having at least one horizontally extending pivot with a key portion having a non-round cross section, the uppermost strip member having an eye with a slot for accommodating the key portion of the pivot, the slot releasing the pivot only after the apparatus is swung out of its position over the rear window.

4,121,870
REMOVABLE TRANSPARENT ROOF PANEL FOR MOTOR VEHICLES

Edwin James Oakey, 16288 Forestview, Fraser, Mich. 48026

Filed Oct. 22, 1976, Ser. No. 734,719
Int. Cl.[2] B60J *7/02*
U.S. Cl. 296—137 B **20 Claims**



1. A removable roof panel having a transparent portion adapted for use on a motor vehicle comprising:
a supporting frame having an opening therein and adapted to be installed in and sealingly engage a roof portion of a motor vehicle, said supporting frame being fabricated from a plastic composition;
latching means attached to said frame for removably securing said frame in operative relationship to said roof portion;
a transparent member overlying said opening having a contour substantially corresponding to the contour of said motor vehicle roof portion and adapted to cooperate with said frame so as to form a substantially smooth continuous roof surface when said panel is installed on said motor vehicle;
said latch means being positioned on said frame member so as to be disposed below the outer surface of said roof portion thereby providing a substantially smooth continuous roof surface when said panel is installed in operative relationship on a motor vehicle;
adhesive means fixedly securing said transparent member to said supporting frame; and
gasket means secured to said frame and adapted to engage portions of said motor vehicle to create a sealing relationship between said frame and said motor vehicle.

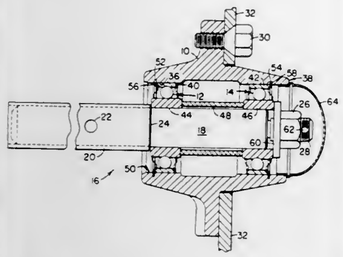
4,121,871
WHEEL MOUNTING

Thomas Burton Adams, Jr., Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed May 19, 1977, Ser. No. 798,322
Int. Cl.[2] B60B *27/02*
U.S. Cl. 301—105 R **4 Claims**

1. Means positioning a pair of anti-friction ball bearings on a wheel spindle, each bearing having an inner and outer race ring, comprising: a spacer sleeve supported by the spindle and having opposite ends abutting the axial inner radial faces of the inner race rings; a radial abutment carried by and spaced from one end of said spindle, against which the axial outer radial face of one inner race ring abuts; means axially adjustable and carried by the spindle for bearing against the axial outer radial face of the other inner race ring; a wheel hub having an inner cylindrical wall encasing the bearings and permitting, unless restricted, free axial movement of the bearings, said hub fur-

ther including axially spaced apart outer race ring support surfaces having respective diameters less than the diameter of



said wall, and a pair of removable retaining rings carried by said hub and bearing against the axial outer faces of the outer race rings for restricting axial movement of the latter.

4,121,872

PRESSURE CONTROL UNIT FOR VEHICULAR HYDRAULIC BRAKE SYSTEMS

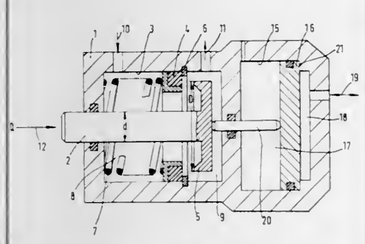
Jochen Burgdorf, Offenbach, and Dieter Kircher, Frankfurt am Main, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 8, 1977, Ser. No. 813,928

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638190

Int. Cl.[2] B60T *13/00*

U.S. Cl. 303—6 C **4 Claims**



1. An improvement in a braking pressure control unit for a vehicular hydraulic brake system including a brake force distributor having a housing with a longitudinal axis; a piston arrangement disposed coaxially of said axis within said housing; said piston arrangement being prestressed by a control force on one end thereof into its rest position; a valve element disposed within said housing coaxial of said axis and encircling said piston arrangement adjacent the other end thereof; and a valve member secured to said other end of said piston arrangement; said valve member defining an input chamber adjacent said piston arrangement and an ouptut chamber adjacent a surface of said valve member remote from said piston arrangement; said surface of said valve member being acted upon by an output pressure in said output chamber counteracting said control force; said valve member being movable to enlarge said output chamber and to block a connection between said input chamber and said output chamber when said piston arrangement is moved out of said rest position against said control force, said improvement comprising:

a secondary piston disposed coaxial of said axis within said housing in a spaced relationship with said surface of said valve member and said piston arrangement, said secondary piston being acted upon by an auxiliary pressure which acts against said control force, said auxiliary pressure being provided by an antiskid system;

4,121,873

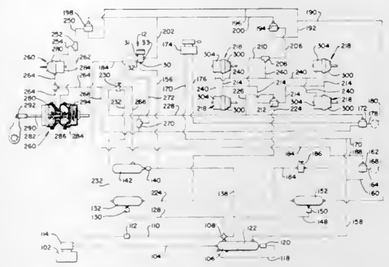
VEHICLE AIR BRAKE SYSTEM WITH EMERGENCY FEATURES

Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 3, 1976, Ser. No. 738,351

Int. Cl.[2] B60T *13/44*

U.S. Cl. 303—7 **4 Claims**



1. An air brake system for a vehicle comprising; front service and parking brakes, rear service and parking brakes, separate front service, rear service and parking air systems which respectively include front, rear and parking air reservoirs, a sensing air reservoir through which air is supplied from a compressor to said front, rear and parking air reservoirs, check valves between said sensing air reservoir and said front, rear and parking air reservoirs for preventing air flow in a direction from said front, rear and parking air reservoirs back to said sensing air reservoir, said sensing air reservoir being at a predetermined pressure during normal operation of said air brake system and being bled to a substantially lower pressure by a failure in either of said front or rear service air systems, selectively operable service control means for simultaneously operating said front and rear service brakes off said front and rear service air systems respectively during normal operation of said air brake system, a single parking brake control valve connected for sensing the pressure in said sensing reservoir and being movable between passive and actuated modes, said parking brake control valve being in said passive mode during normal operation of said air brake system and being automatically moved to said actuated mode in response to lowering of the pressure in said sensing air reservoir from said predetermined pressure to said substantially lower pressure due to a failure in either of said front or rear service air systems, said parking brake control valve in said passive mode being ineffective to operate said parking brakes in response to operation of said service control means, said parking brake control valve in said actuated mode being effective, in response to operation of said service control means, to operate off said parking air system in a controlled manner of application and release, the parking brakes associated with the service brakes normally operated by the failed service air system.

4,121,874

HYDRAULIC BRAKING SYSTEM

Kilbourne H. Knox, Woodland Hills, and Stanley R. Bluhm, Manhattan Beach, both of Calif., assignors to Crane Co., New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 346,742

Int. Cl.[2] B60T *8/02*

U.S. Cl. 303—10 **9 Claims**

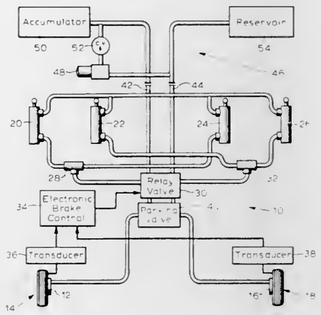
1. A hydraulic braking system for a vehicle comprising:

braking means responsive to hydraulic pressure for decelerating the vehicle;

master cylinder means for generating a master cylinder hydraulic pressure to control said braking means;

a powered hydraulic pressure source for supplying a system hydraulic pressure; and

conversion means for amplifying the master cylinder hydraulic pressure generated by said master cylinder means, said conversion means receiving system hydraulic pressure from said powered hydraulic pressure source, said conversion means including means for generating a braking hydraulic pressure for transmission to said braking means, said means for generating said braking hydraulic pressure applying an amplified master cylinder hydraulic pressure to said braking means in the presence of system



hydraulic pressure and applying the master cylinder hydraulic pressure to said braking means in the absence of system hydraulic pressure, and said conversion means including mode control means for enabling said conversion means to amplify the hydraulic pressure generated by said master cylinder means, said mode control means being responsive to system hydraulic pressure from said powered hydraulic source.

4,121,875

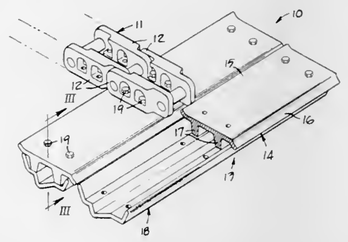
TWO-COMPONENT TRACK SHOE

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 26, 1977, Ser. No. 827,901

Int. Cl.[2] B62D *55/28*

U.S. Cl. 305—39 **15 Claims**



1. An endless track assembly for a track-type vehicle comprising

an articulated link assembly including a plurality of pivotally interconnected links,

a track shoe releasably connected to each pair of laterally spaced links of said link assembly comprising

a base having a pair of laterally spaced supports disposed in upstanding relationship thereon, each of said supports extending at least substantially the full width of said track shoe,

a track plate disposed on said supports, and

a lug disposed on each lateral side of said track shoe and extending outwardly therefrom, and

fastening means extending through said track plate, each of said supports and said base and each of said pair of links for releasably securing said track shoe to said link assembly.

4,121,876

TELESCOPIC GUIDE FOR DRAWERS IN PARTICULAR METAL DRAWERS

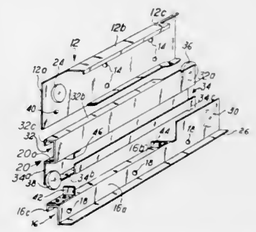
Mario Ratti, Bresso (Milan), Italy, assignor to S.U.S.T.A. S.p.A., Milan, Italy

Filed Mar. 1, 1977, Ser. No. 773,404

Claims priority, application Italy, Mar. 22, 1976, 21014/76[U]

Int. Cl.[2] F16C *21/00*

U.S. Cl. 308—3.8 **3 Claims**



1. A telescopic guide of the type to be positioned between opposite sides of a drawer and a piece of furniture so that the drawer may be slidingly pulled from and pushed into the piece of furniture, said telescopic guide comprising:

a first guideway comprising a single integral member including a first vertical portion adapted to be directly attached to the piece of furniture, a first planar horizontal portion extending horizontally outwardly from the top of said first vertical portion, and a first retaining guide portion extending vertically downwardly from the outer edge of said first planar horizontal portion;

a first roller mounted on the forward end of said first vertical portion to be rotatable about a horizontal axis;

a second guideway comprising a single integral member including a second vertical portion adapted to be directly attached to the drawer, a second planar horizontal portion extending outwardly from the top of said second vertical portion, and a second retaining guide portion extending vertically downwardly from the outer edge of said second planar horizontal portion;

a second roller mounted on the rearward end of said second vertical portion to be rotatable about a horizontal axis;

an intermediate component formed of a single integral member having a substantially S-shaped cross-sectional configuration, thereby forming a first recessed guide seat adapted to face said first guideway and a second recessed guide seat adapted to face said second guideway, said first guide seat being positioned vertically above said second guide seat, said first guide seat comprising a third vertical portion, a third planar horizontal portion extending outwardly from the top of said third vertical portion and a third retaining guide portion extending vertically downwardly from the outer edge of said third planar horizontal portion, said second guide seat comprising a fourth vertical portion, a fourth planar horizontal portion extending outwardly from the bottom of said fourth vertical portion, and a fourth retaining guide portion extending vertically upwardly from the outer edge of said fourth planar horizontal portion, and a fifth planar horizontal portion integrally connecting the bottom of said third vertical position with the top of said fourth vertical portion;

a third roller mounted on the rearward end of said third vertical portion to be rotatable about a horizontal axis;

a fourth roller mounted on the forward end of said fourth vertical portion to be rotatable about a horizontal axis; and

said first and second guideways and said intermediate component being assembled such that said first roller rolls

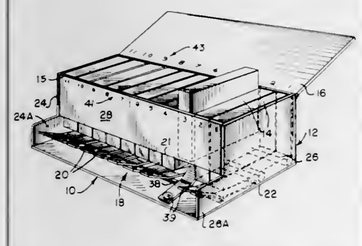
along the bottom surface of said third planar horizontal portion, said third roller rolls along the bottom surface of said first planar horizontal portion, said second roller rolls along the top surface of said fourth planar horizontal portion, and said fourth roller rolling on the bottom surface of said second planar horizontal portion.

4,121,877

MAGNETIC TAPE CASSETTE STORAGE CASE

James L. Brown, 1227 W. Cabrini, Apt. 901, Chicago, Ill. 60607

Filed Mar. 21, 1977, Ser. No. 779,869
Int. Cl.[2] A47B *81/06*
U.S. Cl. 312—19 **8 Claims**



1. A case for storing a group of magnetic tape units comprising:

a container for receiving the units in a side-by-side arrangement in the interior thereof, said container having bottom and side walls and having an open mouth, said container having an opening in one of its walls;

said opening being in the lower front portion of said container near said bottom wall, said units extending entirely across said interior to engage opposite ones of said walls;

a keyboard for elevating selectively and individually the units through said open mouth;

said keyboard including a plurality of pivotally mounted keys extending under the units through said opening and outwardly from the interior of said container, keys having an inner unit engageable portion and having an outer forwardly disposed distal end portion;

each one of said keys including one of said unit engageable portions disposed within the interior of said container below the units, said opening being disposed in the bottom portion of said front wall;

support means projecting from said bottom wall of said container near the rear portion thereof for supporting from below the units and for providing a space to the rear of said opening for receiving said inner unit engageable portions of said keys, the unit engageable portion of said keys being disposed under the front portions of said containers entirely within said space defined by said support means;

wherein said bottom wall includes a portion extending forwardly beyond the plane of the side walls, said opening being disposed above the forwardly extending portion, said keyboard being mounted adjacent said bottom wall and disposed at least a partially above the forwardly extending portion thereof; and

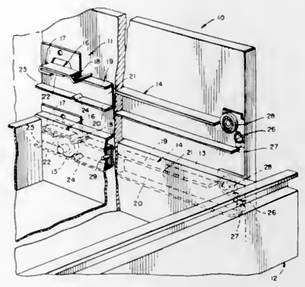
means defining indicia on the finger engageable portions of said keys to distinguish visually between the keys, means defining corresponding indicia on said container to enable the user to locate one of said keys corresponding to a desired one of the units.

4,121,878

CABINET DRAWER RESTRAINER

Gene B. Lokken, Mishicot, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 20, 1977, Ser. No. 789,112
Int. Cl.[2] A47B *88/16*
U.S. Cl. 312—341 R **13 Claims**



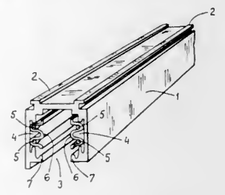
1. In a cabinet having a drawer, and including a rail provided by said drawer, a run secured to said cabinet and a roller secured to said drawer, said run being generally in the form of a C-shaped channel having spaced top and bottom members joined by a side member, said top member being interrupted along its length to define a detent-receiving opening, the improvement comprising a resilient restraining member having a spring clip portion joined to said run and a spring detent portion normally extending into said run, said roller being disposed to travel along said run and to urge said spring detent portion out of its path of travel as said drawer is moved toward a closed position, said spring detent portion thereafter returning to its normal position extending into said run to cooperate with said roller to releasably retain said drawer in said closed position, said roller again being disposed to travel along said run and to urge said spring detent portion out of its path of travel as said drawer is later moved toward an open position, said bottom member including a reverse indent extending into said run in the path of travel of said roller below and spring detent portion, whereby, said resilient restraining member and said reverse indent prevent unintentional movement of said drawer from said closed position to said open position that might otherwise be caused by movement of said cabinet or its environment.

4,121,879

CONNECTOR ARRANGEMENT FOR CONDUCTOR RAILS

Kolbjorn Olsen, Harstad, Norway, assignor to Bjorn Kokvik, Oslo, Norway

Filed May 18, 1977, Ser. No. 798,143
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 R **4 Claims**



1. In a connector adapted to be locked into place at any desired location along a conductor rail having fastening flanges and which supplies current for electrical equipment,

wherein said connector is comprised of an insulated member and contacts operable to be brought into contact with non-insulated conductors in the rail, the improvement comprising:

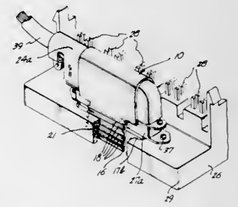
flexible spring means mounting said contacts for movement in both horizontal and vertical directions whereby said contacts may be brought into contact with differently positioned, non-insulated conductors of differently constructed rails.

4,121,880

ELONGATE ELECTRICAL CONNECTOR RETAINING DEVICE

David M. Rollins, Monroe, and Scott P. Masonholder, Everett, both of Wash., assignors to Tel-Tone Corporation, Kirkland, Wash.

Filed May 12, 1977, Ser. No. 796,236
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—119 R **33 Claims**



1. A retaining device for elongate electrical cable connectors comprising:

a. a strap formed of a semi-rigid, non-conductive material, said strap including a planar region having two opposing edges, integral anchoring means located along one of said opposing edges, and an integral ridged coupling means located along the other of said opposing edges; and,

b. a rigid frame including an elongate aperture suitable for receiving one element of an elongate electrical cable connector, said rigid frame also including receiving means located on one side of said elongate aperture for receiving said anchoring means of said strap, said anchoring and said receiving means formed such that when said anchoring means is mounted in said receiving means said strap is affixed to said rigid frame, said rigid frame also including cross-bar coupling means located on the side of said aperture opposed to the side on which said receiving means is located for receiving and engaging said ridged coupling means of said strap.

4,121,881

DUPLICATING A HOLOGRAPHIC RECORD BY USING TWO REFERENCE BEAMS

Robert Alfred Bartolini, Trenton, and John Patrick Russell, Pennington, both of N.J., assignors to RCA Corporation, New York, N.Y.

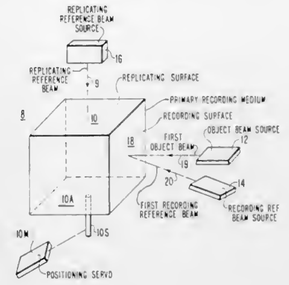
Filed Jul. 2, 1976, Ser. No. 702,196
Int. Cl.[2] G02B *27/00*
U.S. Cl. 350—3.67 **5 Claims**

1. In a method of holographically recording interference patterns formed by beams of light that are mutually coherent and of a given wavelength, the steps of:

transmitting a replicating reference beam to a replicating surface of a primary recording medium at a fixed angle of incidence therewith;

concurrently transmitting a first object beam and a recording reference beam at first object and first reference angles of incidence, respectively, to said primary medium, both of which beams interact therein with said replicating reference beam to form an interference pattern that is recorded as a first volume hologram; and

concurrently transmitting a second object beam and said recording reference beam at second object and second reference angles of incidence, respectively, to said primary medium, said first and second reference angles differing from each other, said second object, recording reference and replicating reference beams interacting



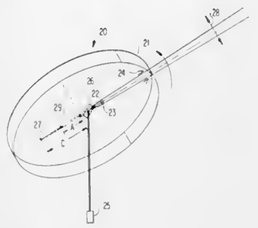
within said primary medium to form an interference pattern that is recorded as a second volume hologram, a primary record being formed by said primary medium after the recording of said first and second holograms.

4,121,882

FLAT SCAN HOLOGRAPHIC LASER BEAM DEFLECTOR

James M. White, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,292
Int. Cl.[2] G03H *1/04;* **G02B** *27/17*
U.S. Cl. 350—3.71 **13 Claims**



1. A flat field scanning device to provide an essentially flat field scan comprising:

a circular cylindrical drum having at least a transparent segment and means for rotating said drum about its central axis,

a hologram mounted on each said transparent segment of said drum, and

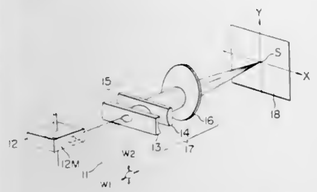
light source means of wavelength equal to wavelength of beams employed to produce said hologram for illuminating said hologram, said light source means having a virtual source within said drum located on a line perpendicular to, and intersecting said axis, said virtual source spaced on said line from said axis.

4,121,883

SCANNING DEVICE FOR RADIATION BEAMS

Takeshi Goshima, and Fujio Iwatate, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 569,608, Apr. 21, 1975, abandoned.
This application Jan. 6, 1977, Ser. No. 757,286
Claims priority, application Japan, Apr. 22, 1974, 49-45284
Int. Cl.[2] G02B *27/17*
U.S. Cl. 350—6.8 10 Claims



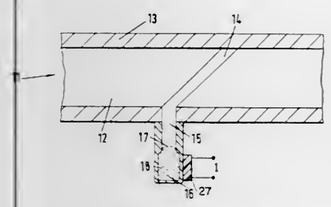
8. A scanning device for a radiation beam, comprising:
a radiation beam source;
scanning means for receiving the radiation beam from said source, and for deflecting the beam along a scanning surface in a predetermined scanning direction; and
converging optical means interposed between said scanning means and the scanning surface to converge the scanning light beam from said scanning means onto said scanning surface, said converging optical means comprising an afocal anamorphic optical system comprising a plurality of prisms and a light beam converging optical device, wherein each prism has an edge line defined by planar surfaces thereof through which the radiation beam passes, and wherein said edge lines extend in the same direction as the scanning direction.

4,121,884

OPTICAL FIBER SWITCH

John Christopher Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 8, 1976, Ser. No. 731,055
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.15 2 Claims



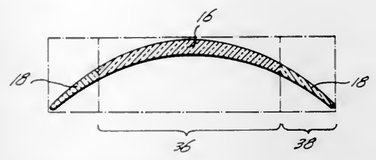
1. An optical switch to control light passing along a solid state guide, comprising:
a parallel-sided cell formed in a light guide at an angle to the axis of the light guide sufficient to cause internal reflection; and
means for filling the cell selectively with a liquid, or the vapor of the liquid, said liquid having a refractive index similar to that of the light guide materials such that when the cell is filled with the liquid, the cell is substantially transparent to said light, and when the cell is filled with the vapor, the cell is totally internally reflective to said light said means for filling including a liquid containing reservoir communicating with the cell and having means for heating and cooling the liquid so as to expand or contract the liquid.

4,121,885

METHOD TO PRODUCE A COMPOSITE CONTACT LENS

Charles E. Erickson, and Amar N. Neogi, both of Seattle, Wash., assignors to Precision Cosmet Co., Inc., Minneapolis, Minn.

Division of Ser. No. 464,734, Apr. 29, 1974, Pat. No. 4,093,361, which is a continuation of Ser. No. 198,544, Nov. 15, 1971, abandoned. This application Sep. 16, 1976, Ser. No. 723,944
Int. Cl.[2] G02C *7/04*
U.S. Cl. 351—177 3 Claims



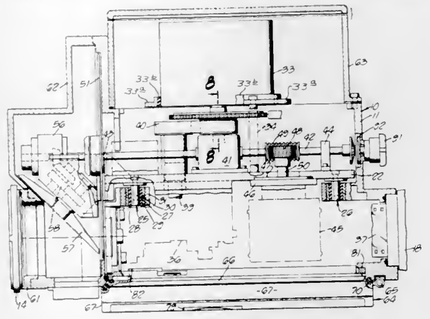
1. A method for making a composite contact lens comprising the steps of:
forming a contact lens having a relatively hard center portion and a soft peripheral skirt portion, said peripheral skirt portion comprising a relatively soft, hydrophilic, water swellable polymer compatible with said center portion,
before forming said skirt portion, dispersing a water soluble, solid, inert substance throughout the monomer from which said hydrophilic polymer is formed,
machining said lens while said water soluble, solid, inert substance is present in said skirt portion, and
thereafter hydrating said lens to remove said water soluble, solid, inert substance and substitute water therefor to yield a composite lens relatively free of stress and distortion after hydration.

4,121,886

QUIET MOTION PICTURE CAMERA

Robert E. Gottschalk, Los Angeles, Calif., assignor to Panavision, Incorporated, Tarzana, Calif.

Continuation of Ser. No. 388,630, Aug. 15, 1973, abandoned. This application Jun. 2, 1975, Ser. No. 582,698
Int. Cl.[2] G03B *31/00*
U.S. Cl. 352—35 4 Claims



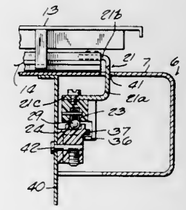
1. In a motion picture camera, the combination of: a housing, a camera movement assembly and a film strip feeding device both enclosed within said housing, support means, means for mounting the camera movement assembly and film strip feeding device on said support means within said housing, sound-absorbing connector means securing said support means to said housing, a hinged double door forming a part of said housing, said double door comprising an inner door and an outer door each having separate sealing means with respect to a stationary portion of said housing, sound-insulating means for mounting the outer door on the inner door, means accessible exteriorly of the outer door for releasably locking the inner door with respect to the housing, said camera movement assembly and the film strip feeding device being spaced from the enclosing housing and without any contact therewith, and a lens mount fixed on the housing and without contact with said support means.

4,121,887

MICROFICHE READER WITH IMPROVED CARRIAGE MOUNTING

Roger A. Gross, Hartford, Wis., assignor to Micron Corporation, Hartford, Wis.

Filed May 23, 1977, Ser. No. 799,151
Int. Cl.[2] G03B *23/08;* F16C *29/04*
U.S. Cl. 353—27 R 5 Claims



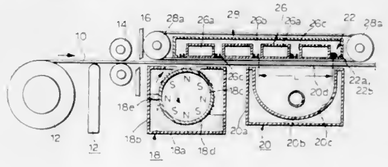
1. A microfiche reader in which the microfiche is carried by a table consisting of a transparent plate in a rectangular upper frame having front and rear parallel cross members connected at their ends by parallel side members, characterized by
an improved mounting for the microfiche carrying table by which said table is freely movable horizontally in any direction across a supporting structure which has spaced apart side edges and front and rear edges, to enable any selected area of a microfiche on the table to be brought into intersecting relation with a vertical light beam that has a fixed positional relationship to the supporting structure,
said improved mounting comprising:
A. laterally spaced parallel track members on the supporting structure adjacent to the side edges thereof and in fixed fore and aft extending relation thereto, said track members having upwardly opening longitudinally extending grooves which form the lower one of paired upper and lower tracks of fore and aft extending ball bearing slideways;
B. a lower rectangular frame consisting of front and rear parallel rails rigidly connected at their ends to parallel side members, said front and rear parallel rails being identical with one another and having a uniform cross section shaped to provide upwardly opening longitudinally extending grooves that form the lower one of paired upper and lower tracks of laterally extending ball bearing slideways;
C. an upper track for each of said ball bearing slideways, all of said upper tracks having identically the same inverted U-shaped cross section to form a downwardly opening longitudinally extending groove with parallel uniformly spaced inner edges that form the upper track of said fore and aft and of said laterally extending ball bearing slideways;
D. means securing the upper tracks of the fore and aft extending ball bearing slideways to the underside of the side members of the lower rectangular frame;
E. means securing the upper tracks of the laterally extending ball bearing slideways to the underside of the front and rear cross members of the upper frame;
F. an elongated ball retainer longitudinally movably received in each of said ball bearing slideways with a part thereof in each of the upwardly opening and downwardly opening grooves that define the upper and lower tracks of said slideways, each of said ball retainers having top, bottom and side surfaces and each having at least two ball cages with mouths that open at least through the side surfaces thereof;
G. a ball freely rotatably confined in each of said cages and protruding from the mouths thereof, the protruding portions of the balls having rolling engagement with both the upper and the lower tracks of their respective slideways; and
H. retaining means for each of said ball bearing slideways by which their respective paired upper and lower tracks are held against vertical displacement from cooperative rolling engagement with the balls therebetween.

4,121,888

TONER IMAGE-FIXING DEVICE

Kouichi Tomura, and Hiroshi Maekawa, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1977, Ser. No. 811,981
Claims priority, application Japan, Jun. 29, 1976, 51-77477; Jul. 19, 1976, 51-86208; Jul. 21, 1976, 51-87577
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 8 Claims



1. A fixing device for fixing toner image on a record medium, comprising feed means for intermittently feeding a record medium bearing toner images at different speeds along a run thereof, a fixing unit including a source of flash light for fixing said toner images on said record medium over a predetermined effective fixing section of said run, a sensor unit for sensing the movement of said record medium equal in distance to said effective fixing section within said section to produce a sensed signal, and a control circuit responsive to said sensed signal to control the lighting of said source of flash light thereby to successively and continuously fix said toner images and said record medium in such a manner that the toner images on each portion of the record medium equal in length to said effective fixing section are fixed at a time.

4,121,889

CLOUD ALTITUDE MEASURING MEANS

Sven-Erik Söderström, Vësteräs, Sweden, assignor to Asea AB, Vësteräs, Sweden

Filed Feb. 23, 1977, Ser. No. 771,261
Claims priority, application Sweden, Feb. 27, 1976, 7602617
Int. Cl.[2] G01C *3/08*
U.S. Cl. 356—5 4 Claims

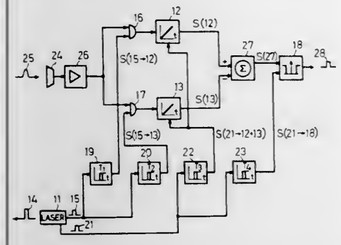
1. Means for determining the existence of an object within a predetermined range interval, said means including:
a signal emitter for emitting a series of signal pulses for each range interval;
a detector for receiving echo signal pulses originating from said emitted signal pulses;
first and second integrators respectively responsive to an echo signal pulse and to noise and connectable to said detector for integrating the power of the received echo signal pulses;
control devices for connecting said first integrator to said detector during a first control pulse time and for connect-

ing said second integrator to said detector during a second control pulse time;

comparing means connected to said first and second integrator to determine the difference between the power of the echo signal pulses integrated by the first integrator and the power of the echo signal pulses integrated by the second integrator;

a level detector connectable to said comparing means and arranged to deliver an indicating pulse when said difference exceeds a predetermined value;

a first time delay circuit for controlling the connection of said first integrator to said detector a first time interval after each emitted signal pulse in said series of signal pulses;



a second time delay circuit for controlling the connection of said second integrator to said detector a second time interval after each emitted signal pulse in said series of signal pulses, and said second time interval being longer than said first time interval;

a third time delay circuit for controlling the resetting of the integrators by transmitting a control pulse to said integrators a third time interval after the last signal pulse in each series of signal pulses; and

a fourth time delay circuit for controlling the connection of said level detector to said comparing means a fourth time interval after the last pulse in said series of signal pulses is emitted, said fourth time interval being shorter than said third time interval.

4,121,890

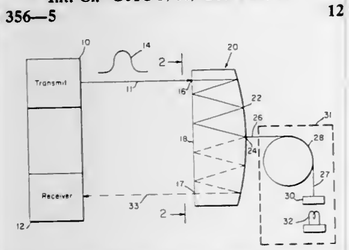
LASER RANGEFINDER TESTER

Leroy O. Braun, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 17, 1977, Ser. No. 825,338

Int. Cl.[2] **G01C** *3/08;* **G01N** *21/00*

U.S. Cl. 356—5 **12 Claims**



1. A laser rangefnder tester having a signal transmission path and a signal reception path comprising:

(a) optical means having at least first and second surfaces, the first surface having a first and a second end position, the second surface being spherically curved;

(b) signal transmission means positioned to direct energy in said signal transmission path to said first end position of said first surface;

(c) an optical waveguide having a first and second end, the first end receiving said energy from the center of said second surface;

(d) reflecting means positioned at the second end of said optical waveguide for reflecting said signal transmission energy back to the center of said second surface;

(e) a light source positioned behind said reflecting means to provide a fiducial mark to align the relative positions of the laser rangefinder and said optical means; and

(f) signal reception means positioned to receive said energy from said second end position of the first surface of said optical means.

4,121,891

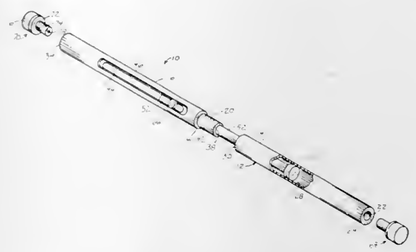
TAPE PLAYER CLEANING DEVICE

Guy W. Barron, 3189 Monticello Dr., Jackson, Miss. 39212

Filed Jan. 26, 1977, Ser. No. 762,510

Int. Cl.[2] **A47L** *13/26;* **B43K** *5/10;* **B05C** *21/00*

U.S. Cl. 401—37 **1 Claim**



1. A tape player cleaning device, comprising:

an elongated barrel having two ends and including means defining a threaded socket at each end thereof;

a liquid-absorbent pad secured on each end of the barrel, each pad is incorporated in a pad assembly which includes a threaded shank which is removably threaded in the respective of said threaded sockets;

means defining a cleaning liquid reservoir within the elongated barrel;

conduit means communicating the liquid reservoir to only one of said liquid-absorbent pads, the other being isolated from said liquid reservoir;

the threaded shank of the pad being communicated with the liquid reservoir is tubular to facilitate such communication therethrough;

said elongated barrel being constituted by two telescopically screwed-together sections each providing a respective portion of said cleaning liquid reservoir including a first cleaning liquid reservoir portion of larger diameter inner peripheral surface proximate the said tubular-shanked pad, and a second cleaning liquid reservoir portion of smaller diameter inner peripheral surface distally of the said tubular-shanked pad;

a plunger including an enlarged head having an outer peripheral surface in sliding, sealing engagement with said larger diameter inner peripheral surface cleaning liquid reservoir portion, and a rod extending coaxially therefrom in sliding engagement with said smaller diameter inner peripheral surface cleaning liquid reservoir portion;

means defining a longitudinally extending slot through the barrel into said smaller diameter inner peripheral surface cleaning liquid reservoir portion, said barrel further including outwardly opening recess means surrounding said slot at least along the laterally opposite flanks of said slot; and

a button having a head received in said recess means and a shank extending from said head through said slot and connecting with said plunger rod within said cleaning liquid reservoir, so that, upon temporary removal of said tubular-shanked pad, said plunger may be axially retracted by sliding said button along said slot from outside the barrel in a sense to draw cleaning liquid into the cleaning liquid reservoir through the respective end of said barrel for providing and replenishing the supply of cleaning liquid in the reservoir,

whereby, in use, the barrel may be hand-held and manipulated with the pad that is communicated with the liquid reservoir against parts of the tape player to be cleaned, for applying cleaning liquid and for scrubbing said parts, and for drying said parts, the barrel may be reversed end-for-end in the hand and the liquid-absorbent pad that is isolated from the liquid reservoir rubbed against said parts to absorb the applied cleaning liquid.

4,121,892

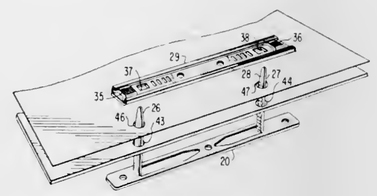
HOLDER FOR LOOSE FILING SHEETS

Per Sigurd Nes, Akerbyvagen 308, S-183 35 Täby, Sweden

Filed Oct. 8, 1976, Ser. No. 730,992

Int. Cl.[2] **B42F** *1/10, 13/10*

U.S. Cl. 402—17 **1 Claim**



1. A holder for punched sheets, comprising a plastic strip, slits in the plastic strip that define integral tongues adapted to be bend up out of the plane of the strip to enter the punched sheets, a locking strip having a bottom wall and side walls and holes through said bottom wall for receiving said tongues, ridlers that are slidable along the locking strip between said side walls and above said bottom wall to retain said tongues in bent down position over said bottom wall and between said side walls, said locking strip having a plurality of parallel elongated slots therethrough that extend perpendicular to the length of the strip and that are spaced apart from each other between said holes, each said tongue having a plurality of locking teeth on the underside thereof, each said tooth extending transversely of its associated said tongue, said teeth being spaced apart from each other at the same interval as said slots, each said tooth having a locking shoulder substantially perpendicular to the plane of the tongue facing the base of its said tongue and a clearance side forming a relatively small angle with the plane of the tongue and extending from the base of the tooth toward the base of its said tongue thereby to permit free movement of each tongue through its associated hole and along said locking strip with said clearance sides sliding over said bottom wall of said locking strip in a direction toward the other said tongue, but to prevent return movement of each tongue through said associated hole when a said rider overlies a said tongue and forces said teeth into said slots, the distance between the bottom wall of the locking strip against which the tongue engages and the underside of the rider that contacts the tongue being approximately equal to the thickness of the tongue to maintain engagement between said teeth and said slots, each said rider having an underside whose profile in longitudinal section is slightly V-shaped having a lowest point at the middle thereof, whereby the greatest compressive force is exerted by the rider on the tongue adjacent the midpoint of the rider, each said tongue having a transverse groove therein that extends full width of the tongue at the base of the tongue, whereby the thickness of the tongue at the base of the tongue is less than the thickness of the plastic strip with which the tongue is integral, thereby to facilitate bending of the tongue at the base thereof.

4,121,893

BALL AND SOCKET COUPLING

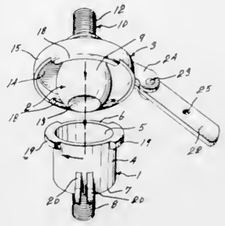
Gilles Morissette, 9555 - 5th St., Rivière des Prairies, Canada (H1E 1K4)

Filed Apr. 26, 1977, Ser. No. 791,039

Claims priority, application United Kingdom, Apr. 28, 1976, 17223/76

Int. Cl.[2] **F16C** *11/00*

U.S. Cl. 403—143 **2 Claims**



1. A ball and socket coupling comprising a ball member having a stem adapted to be secured to one of two parts to be coupled, a socket member having a hemispherical cavity with an open end for receiving said ball member in sliding contact with said cavity and having means for securing said socket member to the other of said two parts, a cap, securing means to removably secure said cap to said socket in a position to close said open end of said socket, said cap having a central hole of a size greater than the cross-sectional size of said stem but smaller than that of said ball member, said stem extending through said cap hole, said cap having an inner surface adjacent and surrounding said hole, in sliding contact with said ball, whereby said cap forms an abutment for said ball member all around said stem and prevents disengagement of said ball from within said socket, while allowing pivoting of said ball in all planes within said socket, said securing means including a first set of complementary circular flanges on said cap and on said socket, said flanges being inter-digitated and clearing one another in one angular position of said cap relative to said socket and being in overlapped cap-securing engagement in another angular position of said cap relative to said socket, and a second set of flanges on said socket arranged in register with the respective spacings between the socket flanges of the first set and at a level inwardly from said flanges of the first set relative to the open end of the socket, said flanges of said second set protruding outwardly from the side wall of the socket a greater distance than the flanges of the first set, said cap having skirt portions between the cap flanges of the first set extended further away than said cap flanges of said first set, said extended skirt portions carrying radially inwardly protruding additional flanges having an outer edge lying on a circle, the diameter of which is slightly greater than the diameter of the circle circumscribing the outer edges of the socket flanges of the first set, whereby said additional cap flanges can clear said first set of socket flanges, and when said cap is in secured position, said first set of cap flanges overlaps said first set of socket flanges and said additional cap flanges overlap said socket flanges of the second set.

4,121,894

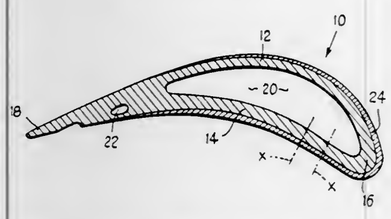
REFURBISHED TURBINE COMPONENTS, SUCH AS VANES OR BLADES

Salvatore J. Cretella, 180 Fitch St., North Haven, Conn. 06515; Matthew Bernardo, 62 Lee St., West Haven, Conn. 06516, and Ralph T. DeMusis, 547 Foxon Rd., North Branford, Conn. 06513

Division of Ser. No. 613,479, Sep. 15, 1975, Pat. No. 4,028,787. This application Nov. 26, 1976, Ser. No. 745,165

Int. Cl.[2] F01D *5/28*

U.S. Cl. 416—213 R **5 Claims**



1. A refurbished turbine component comprising, in combination:
(a) a component structure having opposite contoured convex and concave airfoil faces, said component structure including mounting flanges at opposite ends of said airfoil faces,
(b) said component structure having welded-over portions at places where cracks have appeared along the trailing edge,
(c) the leading edge of said component structure and said convex and concave airfoil faces having a plasma-sprayed, build-up metal overlay which tapers in thickness as the trailing edge of the component is approached.

4,121,895

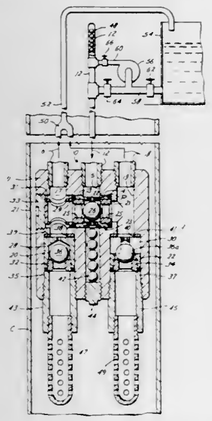
KINETIC ENERGY TYPE PUMPING SYSTEM

John P. Watson, P.O. Box 711, Luling, Tex. 78648

Filed Jan. 17, 1977, Ser. No. 759,959

Int. Cl.[2] F04F *7/00*

U.S. Cl. 417—104 **4 Claims**



1. In a kinetic energy type pumping system,
a circulation system including an input line and two return lines, the input line and the return lines having first and second ends,
a double acting valve having a horizontal passageway,
the first ends of the input and the return lines being in fluid communication with the passageway, the first end of the input line being in fluid communication with the passageway between the first ends of the return lines,
horizontally aligned and opposed valve seats in the passageway between each of the first ends of the return lines and the first end of the input line,
a valve ball positioned between the valve seats, the first end of the input line arranged to introduce circulating liquid around the valve ball,
first and second pipes having first and second ends, each of the first ends thereof being in fluid communication with the horizontal passageway and one each of the first ends of the return lines, the second ends of the pipes adapted to be in fluid communication with fluid to be pumped,
a check valve positioned in each of the pipes adjacent their upstream portions effective to permit inflow of pumped fluid into the return lines through the check valves but preventing flow therefrom into the pipes,
a discharge line in fluid communication with the circulation system,
circulating liquid input means operable to introduce the circulating liquid into the input line,
whereby the circulation system operates to cause a pumping action by the circulating liquid from the input line entering the passageway of the double acting valve thereby causing alternate seating of the valve ball on the opposed valve seats, thus alternate flow through the return lines thereby producing alternate suction in the pipes and corresponding opening and closing of the check valves, opening of each of the check valves permitting the produced suction through the opened check valve into its pipe to thereby pump fluid through the open check valve from its pipe into its return line, and to pump the circulating liquid and pumped liquid from the return line into the discharge line, and
pressure dampening means in extensions of the input line below the double acting valve and at the top of the input line operable to dampen instantaneous pressure rises and drops caused by opening and closing of the double acting valve.

4,121,896

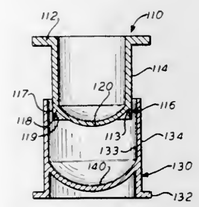
APPARATUS FOR THE PRODUCTION OF CONTACT LENSES

Thomas H. Shepherd, 12 N. Greenwood Ave., Hopewell, N.J. 08525

Filed Mar. 24, 1976, Ser. No. 670,031

Int. Cl.[2] B29C *3/00*

U.S. Cl. 425—412 **18 Claims**



1. A mold for producing a contact lens comprising:
a male portion including a substantially cylindrical support portion and a first molding surface having a principal longitudinal axis, said molding surface having a pre-determined curvature to form a first surface of said desired contact lens;
a female portion including a second molding surface having a principal longitudinal axis having a pre-determined curvature to form a second surface of said desired contact lens, said female portion comprising a hollow cylindrical portion having an open upper end and a closed lower end; and,
a flexible rim portion being attached circumferentially to one of said molding surfaces and having an axis common with the principal longitudinal axis of the mold portion.

4,121,897

PROCESS FOR PRINTING ON SOLID MOLDED ARTICLES MADE FROM UREA FORMALDEHYDE RESIN OR MELAMINE FORMALDEHYDE RESIN

George Bliss Duhnkrack, Suffern, and Joseph M. Madeira, Spring Valley, both of N.Y., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 3, 1977, Ser. No. 848,263

Int. Cl.[2] D06P *5/00, 3/00*

U.S. Cl. 8—2.5 A **12 Claims**

1. A transfer printing process for printing designs, patterns, decorations, symbols, words and the like on solid molded polymeric articles made of urea formaldehyde resin or melamine formaldehyde resin, comprising:
(a) applying to a porous support a printing ink containing one or more dichlorotriazinyl dyes in an amount of about 10 weight percent to about 40 weight percent to print a design, pattern, decoration, symbol or word on the porous support; and
(b) contacting the printed porous support with said solid molded polymeric article made of urea formaldehyde resin or melamine formaldehyde resin in a transfer press at a temperature in the range of about 90° C. to about 250° C. in the presence of steam to transfer the printing ink containing the dye or dyes to said molded article.

4,121,898

PROCESS FOR DYEING SYNTHETIC POLYAMIDE FIBRE MATERIALS

Helmut Kirschnek, Leverkusen, and Karlhans Jakobs, Bergisch-Gladbach, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

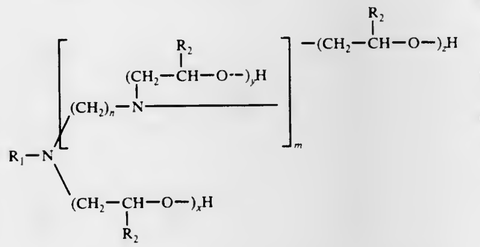
Filed Jul. 25, 1977, Ser. No. 818,599

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1976, 2633615

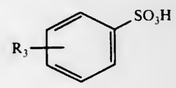
Int. Cl.[2] D06P *1/39, 1/645, 5/06*

U.S. Cl. 8—25 **6 Claims**

1. Process for producing uniform, level dyeings of increased fastness and reduced drain effect in the dyeing of synthetic polyamide fibre materials with two or more metal-free acid dyestuffs which have different rates of absorption into said polyamide fiber material comprising dyeing said polyamide materials in an aqueous dye liquor consisting essentially of water, said metal-free acid dyestuffs, a cationic compound of the formula:



wherein
R_1 represents alkyl or alkenyl with 12-22 carbon atoms;
R_2 represents hydrogen or methyl;
m represents 0 or 1;
n represents 2 or 3; and
the sum of $x + y + z$ represents a number from 10-30; and an anionic compound of the formula:



wherein
R_3 represents an substituted alkyl radical with 10–14 C atoms;
said cationic and anionic compounds being present in the dye liquor in a molar ratio of 0.6:1 to 1:0.6.

4,121,899

CONDENSATION DYEING

Thomas Van Chambers, Inman, S.C., and Julian J. Hirshfeld, Gastonia, N.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 4, 1977, Ser. No. 774,778

Int. Cl.[2] C09B *67/00;* **D06P** *1/64*

U.S. Cl. 8—94 A **35 Claims**

1. A method of dyeing fibers, which comprises the steps of:
applying an aqueous dyeing formulation containing a dyestuff which is suitable for dyeing said fibers to the fibers;
cooling the fibers while still wet to a first temperature;
exposing the cooled, undried fibers to vapors of a halogenated hydrocarbon having a boiling point which is higher than said first temperature, the boiling point of said halogenated hydrocarbon being between 25° C. and 65° C.; and
condensing said halogenated hydrocarbon on the fibers to promote dyeing; and
removing said halogenated hydrocarbon from the fibers.

26. A method of dyeing fabrics which are blends of polyester and another fiber, comprising the steps of:
applying an aqueous dyeing formulation to the fabric, said dyeing formulation containing a first dyestuff which is suitable for dyeing polyester and a second dyestuff which is suitable for dyeing the other fiber; and a coacervating agent;
cooling the wet fabric to a first temperature;
exposing the cooled, undried fabric to vapors of a halogenated hydrocarbon having a boiling point which is higher than said first temperature, the boiling point of said halogenated hydrocarbon being between 25° C. and 65° C. and condensing said halogenated hydrocarbon on the fabric to promote dyeing; and
removing said halogenated hydrocarbon from the fabric.

4,121,900

METHOD FOR MODIFYING FIBERS OF A FABRIC BY ELECTROLYSIS AND THE PRODUCTS SO PRODUCED

Wolfgang K. F. Otto, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 23, 1977, Ser. No. 799,619

Int. Cl.[2] D06Q *1/02;* **C25B** *1/14*

U.S. Cl. 8—115 **12 Claims**

1. A method for modifying at least a portion of the fibers of one surface of a fabric which comprises:
a. applying an effective amount of an aqueous salt solution to the fabric to sufficiently wet all of the fibers of the fabric with said salt solution, said salt solution containing a water-soluble salt constituent in which the cation moiety of said salt constituent is selected from the group consisting of Na^+ and K^+ and the anion moiety of said salt constituent is selected from the group consisting of an organic anion of an organic acid having a pk value of from about 3 to about 5, CO_3^{--} and HCO_3^-;
b. removing excess solution from the fabric to provide a resulting wet fabric;
c. contacting said wet fabric with a pair of electrodes, one of said electrodes, the cathode, contacting the surface of said wet fabric where fiber modification is desired and the other of said electrodes, the anode, contacting the surface of said wet fabric opposite the surface to be modified;
d. applying a sufficient D.C. electromotoric force to said pair of electrodes for a period of time of from about 1 second to about 60 seconds, said period of time being sufficient to generate an alkaline solution on the surface of said wet fabric in contact with said cathode and an acidic

solution on the surface of said wet fabric in contact with said anode;

e. heating the fabric containing fibers wet with said alkaline solution for a period of time effective to produce a chemical reaction between said fibers wet with said alkaline solution and the alkaline constituent of said alkaline solution;

f. quenching the chemical reaction after the desired fiber modification has occurred; and

g. recovering a resulting product.

10. A method for modifying at least a portion of the fibers of two opposing surfaces of a fabric which comprises:

a. applying an effective amount of an aqueous salt solution to the fabric to sufficiently wet all of the fibers of the fabric with said salt solution, said salt solution containing a water-soluble salt constituent in which the cation moiety of said salt constituent is selected from the group consisting of Na^+ and K^+ and the anion moiety of said salt solution is selected from the group consisting of SO_4^{--} and PO_4^{---};

b. removing excess solution from the fabric to provide a resulting wet fabric;

c. contacting said wet fabric with a pair of electrodes, one of said electrodes, contacting one surface of said wet fabric and the other of said electrodes, contacting the opposite surface of said wet fabric;

d. applying a sufficient D.C. electromotoric force to said pair of electrodes for a period of time of from about 1 second to about 60 seconds, said period of time being sufficient to generate an alkaline solution on the surface of said wet fabric in contact with the cathode of said electrodes and an acidic solution on the opposing surface of said wet fabric in contact with the anode of said electrodes;

e. heating the fabric for a period of time effective to produce a chemical reaction between said fibers wet with said alkaline solution and the alkaline constituent of said alkaline solution and a chemical reaction between said fiber wet with said acidic solution and the acid constituent of said acid solution;

f. quenching the chemical reaction after the desired fiber modification has occurred;

g. recovering a resulting product.

4,121,901

SIZE COMPOSITION FOR IMPROVING THE ADHERENCE OF MULTIFILAMENT POLYMERIC YARNS TO SUBSTRATES SUCH AS RUBBER, AND METHODS USING SAME

Paul Bourrain, Ecully, and Andre Pesson, Lyons, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

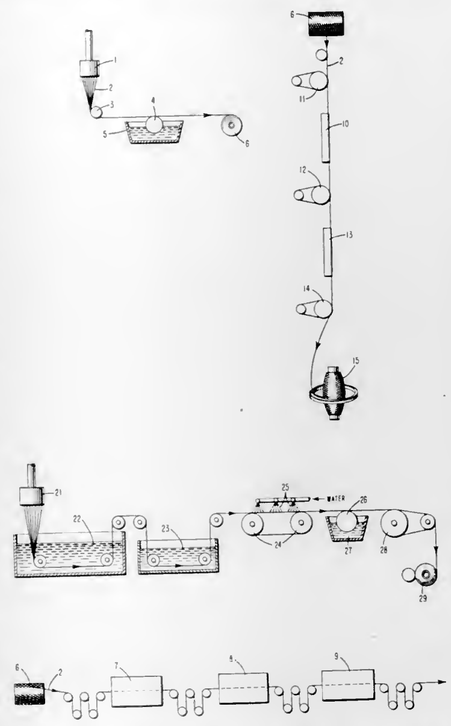
Filed Jan. 26, 1976, Ser. No. 652,330

Claims priority, application France, Jan. 27, 1975, 75 02684; Nov. 26, 1975, 75 36426

Int. Cl.[2] **D06M** *13/10, 13/34;* **B32B** *25/08, 25/10*

U.S. Cl. 8—115.6 **6 Claims**

1. A size composition capable of increasing the adherence, and particularly the adherence to rubber, of yarns having a base of polyester, a base of polymers of high modulus of elasticity, or a base of thermostable polymers, wherein said size



composition contains tris(epoxy-propoxy 2,3)3-propionyl 1,3,5-hexahydro-s-triazine as preadhering agent.

4,121,902

STABLE CONCENTRATED POLYMER MIXTURES FOR THE TREATMENT OF TEXTILE MATERIALS

Geoffrey Bruce Guise, Highton, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australia

Filed Dec. 1, 1975, Ser. No. 636,599

Claims priority, application Australia, Dec. 4, 1974, PB9898

Int. Cl.[2] **C08F** *6/00;* **C08L** *33/08, 33/10;* **D06M** *15/38*

U.S. Cl. 8—128 A **14 Claims**

1. A composition which is prepared by mixing together:

A. an aqueous dispersion, emulsion, or latex of at least one water-insoluble polymer obtained by the polymerization of a mixture of ethylenically unsaturated monomers containing at least 20% by weight of esters of acrylic or methacrylic acid with lower alphatic alcohols which contains more than 20% by weight of said polymer or polymers;

B. a solution in water or in a mixture of water and a water miscible organic solvent of at least one polymer containing on average per molecule two or more carbamoyl sulphonate salt groups of the type $—NHCOSO_3^{\ominus}X^{\oplus}$ (where $X^{\oplus}$ is a monovalent cation or one equivalent of a polyvalent cation) attached to aliphatic carbon atoms; said polymer being freely water-soluble and being present in said solution in an amount of at least 10% by weight; and

C. one or more stabilizers drawn from either or both of the following classes:

(a) hindered phenolic antioxidants

(b) compounds with an average of two or more carbamoyl sulphonate groups, attached to an atomatic ring or rings, per molecule.

2. A composition as claimed in claim **1**, and further comprising:

D. one or more polycationic materials containing an average of two or more amino and/or quanternary ammonium salt groups per molecule.

4,121,903

METHOD OF MACHINE WASHING OF SOLID SOILED MATERIALS BY CONTACTING THE CIRCULATING WASH LIQUID WITH ALUMINOSILICATES

Heinz Smolka, Langenfeld, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

Filed Nov. 2, 1977, Ser. No. 847,791

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1976, 2650278

Int. Cl.[2] **B08B** *3/00*

U.S. Cl. 8—137 **12 Claims**

1. A method for machine washing and cleaning of solid materials utilizing washing and cleaning solutions in the presence of water-insoluble cation exchange agents which are capable of binding the hardness components of the water and the soil, comprising withdrawing and recycling the tap water having a hardness of more than 80 mg CaO/liter in contact with said solid soiled materials through a silicate cation exchange compound having some combined water and a particle size of between 10μ and 100μ of the formula

$$(M_{2/n}O)_x \cdot Me_2O_3 \cdot (SiO_2)_y$$

wherein M is a cation of valence n exchangeable with calcium, Me is a member selected from aluminum and boron, x is a number from 0.7 to 1.5 and y is a number from 0.8 to 6, said agent having a calcium binding power of at least 50 mg of CaO per gram, said silicate cation exchange compound being maintained out of contact with said solid soiled materials in a separate area from the washing area, for such time until the water has a hardness of not more than 70 mg CaO/liter, then adding other soluble washing and cleaning compounds to said softened tap water and washing said solid materials while continuing the recycling of the wash solution through said silicate cation exchange compound, wherein the total amount of washing solution is continuously or intermittently cyclically circulated from the washing area through the separate area with the cation exchange compound and then back to the washing area at least five times during the cleaning process, and where the amount of the cation exchange compound is 0.2 gm to 10 gm per liter of washing solution, and said washing solution contains from 0.2 to 10 gm per liter of other soluble washing and cleaning compounds.

4,121,904

DEPILATORY COMPOSITION FOR REMOVING HAIR FROM LIVE HUMAN SKIN

Thomas J. Schamper, Chicago, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.

Filed Oct. 26, 1976, Ser. No. 735,741

Int. Cl.[2] **A61K** *7/155*

U.S. Cl. 8—161 **25 Claims**

1. A process of preparing a cream or paste depilatory composition which comprises (a) providing a first heated dilute aqueous solution containing sodium hydroxide; (b) providing a heated second mixture containing (i) a cream or paste-forming nonionic surfactant, and (ii) a soap-forming C_{12}-C_{22} aliphatic monocarboxylic acid; admixing said first solution and said second mixture; incorporating therewith an additional amount of aqueous sodium hydroxide and incorporating thioglycolic acid, under conditions of mixing, the total amount of sodium hydroxide being at least sufficient to form a soap with said monocarboxylic acid and to convert the thioglycolic acid to sodium thioglycolate; and adding an alkaline earth metal thioglycolate to produce a final composition having a pH in the range of about 10 to about 12.5.

13. A cream or paste depilatory composition having a pH in the range from about 10 to 12.5 said composition containing a major proportion of water; and minor proportions of sodium thioglycolate, an alkaline earth metal thioglycolate as the active depilating agents, and a sodium soap of a C_{12}-C_{22} aliphatic monocarboxylic acid, said composition having a greater speed of depilation than said composition without said soap.

4,121,905

PROCESS FOR PREPARING BIOLOGICAL COMPOSITIONS FOR USE AS REFERENCE CONTROLS IN DIAGNOSTIC ANALYSES

Jonas Maurukas, 6823 W. Lake Ave., Elyria, Ohio 44035

Filed Aug. 22, 1977, Ser. No. 826,973

Int. Cl.[2] **G01N** *33/16*

U.S. Cl. 23—230 B **13 Claims**

1. A process for preparing stable, liquid, biological reference control compositions for use in analysis of naturally occurring biologically similar unknowns, said compositions being stable at temperatures of about 8° to −20° C. and capable of extended storage in the liquid state at said temperature, comprising

A. obtaining a portion of biological materials similar in composition to and containing the same component materials as the unknown to be analyzed;

B. freezing said biological material over a period of about 10 to about 24 hours;

C. removing from about 98 to about 99 weight percent water therefrom to obtain dehydrated solid;

D. storing said dehydrated solid until it is to be used in analysis; and

E. reconstituting said freeze-dried dehydrated solid with an aqueous composition containing from about 20 to about 50 wt. % of at least one alkylene polyol containing from about 2 to about 5 carbon atoms in a concentration substantially equal to the water removed therefrom in C.

4,121,906

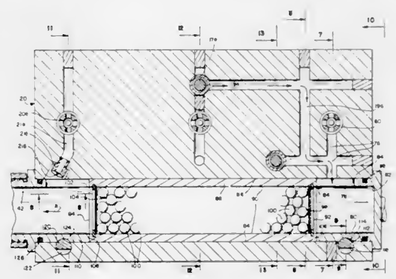
RESIN MIXING AND DELIVERY DEVICE

Dale R. Oldham, 7028 N. 11th St., Phoenix, Ariz. 85020, and James F. Peterson, Jr., 2502 E. North La., Phoenix, Ariz. 85028

Filed Nov. 1, 1976, Ser. No. 737,661

Int. Cl.[2] **B01F** *3/08;* **B01J** *8/00, 13/00*

U.S. Cl. 422—133 **13 Claims**



1. In a foam resin mixing and delivery device,

(a) a block housing;

(b) conduit means formed in said block housing and including:

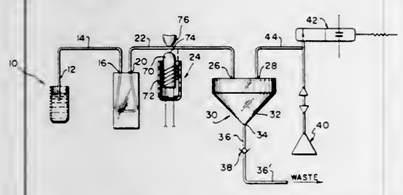
(i) compressed air inlet means substantially midway of said block housing,

(ii) resin inlet means at one end of said block housing, and

(iii) foaming agent inlet means at the other end of said block housing;

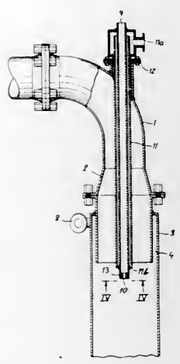
(c) delivery conduit means connected to said housing;
(d) an air flow control valve operatively associated with said compressed air inlet means;
(e) a foaming agent valve associated with said foaming agent inlet means,
a mixing chamber having:
(i) an outlet communicating with said delivery conduit,
(ii) an inlet receiving compressed air and foaming agent from said compressed air inlet means and said foaming agent inlet means via said air and foaming agent flow control valves;
a removable cartridge having means for mixing said compressed air and said foaming agent;
(g) a resin flow control valve operatively associated with said resin inlet means and controlling the flow of resin to said outlet of said mixing chamber;
said air, resin and foaming agent inlet means; said mixing chamber and outlet thereof; and said valves all being disposed within said block housing; and
(h) a manually operable camshaft rotably mounted in said block housing and having cam portions for concurrently opening and closing said compressed air flow control valve, said resin flow control valve and said foaming agent flow control valve.

4,121,907
SAMPLE HANDLING SYSTEM
Leonard Roque, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed Jun. 13, 1977, Ser. No. 805,715
Int. Cl.[2] G01N *1/14*
U.S. Cl. 356—246 **15 Claims**



1. A sample handling system for drawing successive aliquot volumes from a source of liquid sample, moving said aliquots singly to and through a test cell and thence to a waste depositary subsequent to the completion of the test, said system comprising:
a hydraulic liquid flow system for defining a flow path,
a pneumatic system operable upon said hydraulic system for moving the liquid along said flow path,
an isolation chamber intermediate said hydraulic and pneumatic systems and having a pair of inlet ports respectively coupled to said hydraulic and pneumatic systems and an outlet port coupled to a waste depositary,
said pneumatic system including means for generating periodic alternating pressure and vacuum, and means coupling said generating means to said isolation chamber, means coupled communicatively between said generating means and said isolation chamber for establishing an atmospheric pressure condition in said isolation chamber between each application of pressure and vacuum to said isolation chamber, and
control circuit means for operating said systems according to a programmed sequence.

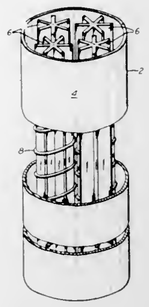
4,121,908
APPARATUS FOR THE COOLING OF A CRACKING-GAS STREAM
Markus Raab, Munich; Peter Langebach, Pullach, and Heiner Dittmann, Munich, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed Apr. 22, 1977, Ser. No. 790,079
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617772
Int. Cl.[2] B01J *10/00;* **C10G** *9/00*
U.S. Cl. 422—207 **12 Claims**



1. An apparatus for the cooling of a cracking-gas stream which comprises:
a vertically disposed pipe having an axially open outlet;
a vertically disposed duct connected to and coaxially surrounding said pipe in the region of said outlet and extending axially downstream therefrom, said duct defining an annular gap upstream of said outlet;
feed means opening into said annular gap for admitting cooling oil to same;
means for passing a cracking-gas stream axially through said pipe and said duct;
a cylindrical pipe section connected to and coaxially surrounding a lower portion of said duct and defining a further annular gap therewith; and
a transition piece connected to said pipe section, the last-mentioned annular gap being provided with a plurality of oil inlets opening tangentially into same.

4,121,909
CATALYTIC REACTOR
Donald C. Cronauer, and Harold E. Swift, both of Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 704,352, Jul. 12, 1976, Pat. No. 4,080,282. This application Nov. 30, 1977, Ser. No. 855,992
Int. Cl.[2] B01J *8/00;* **C10G** *1/08*
U.S. Cl. 422—222 **3 Claims**

1. A catalytic reactor comprising an elongated vertical reaction vessel and elongated, catalytic elements vertically disposed within said reaction vessel, said elements being composed of alumina and a hydrogenation catalyst, said hydrogenation catalyst being substantially distributed throughout said alumina, said alumina having a surface area of about 70 to about 150 square meters per gram, the pore diameter size is such that at least about 60 volume percent of the pores fall in the range of about 160 to about 600 A, the pore volume is in the range of about 0.4 to about 0.8 cubic centimeters per gram and the average pore diameter is in the range of about 100 to about 275 A, said catalytic elements having a thickness of about 1/32 to about ½ inch, said catalytic elements being disposed within said vessel at least 1/32 inch from another of said catalytic elements and from the interior surface of said vessel, the void



volume within said vessel being in the range of about 40 to about 90 percent.

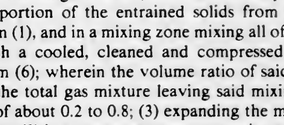
4,121,910
TREATING CARBONACEOUS MATERIAL
Edgel P. Stambaugh, Worthington, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio
Filed Jul. 18, 1977, Ser. No. 816,397
Int. Cl.[2] C10L *9/10;* **C10G** *1/00*
U.S. Cl. 44—1 B **19 Claims**

1. A method of treating a solid carbonaceous material comprising essentially lignite or bituminous or subbituminous coal to provide therefrom finely dispersed solid particles substantially free of ash and sulfur, comprising
mixing the solid material with a liquid aqueous alkaline solution comprising essentially a sodium, potassium, or ammonium hydroxide, hydrosulfide, or carbonate, or a plurality thereof,
dissolving the material by heating the resulting mixture to a temperature in the range of about 125° C to the critical temperature, at a pressure of at least about 25 psig, while maintaining a substantial portion of the mixture in the liquid state,
separating from the resulting solution any undissolved coal, ash, and other solids,
reducing the pH of the solution to less than about 9 to precipitate therefrom a powder comprising the carbonaceous material, with a substantial proportion of the ash and sulfur that had been in the starting material now remaining in solution, and
separating the precipitated powder from the solution.

17. A method as in claim 1, wherein the precipitated powder is liquefied by mixing with a liquid carbonaceous material; heating the mixture to a temperature in the range of about 250° C. to the critical temperature, at a pressure of at least about 100 psig, provided in part by carbon monoxide or carbon monoxide and hydrogen; and separating the liquid product from any unreacted solids; the liquid product providing a fuel usable in combustion engines, furnaces, or other combustion devices.

4,121,911
MANNICH BASES CONTAINING TERTIARY AMINES
Bruce Hollis Garth, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 612,726, Sep. 12, 1975, Pat. No. 4,054,422. This application Jun. 6, 1977, Ser. No. 803,943
Int. Cl.[2] C10L *1/22;* **C07D** *295/12*
U.S. Cl. 44—73 **9 Claims**

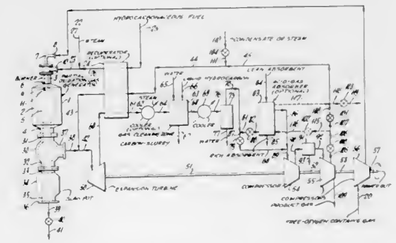
1. A composition of the formula



wherein Z is an alkyl- and hydroxy-substituted benzyl group wherein the alkyl has 20 to 1000 carbon atoms; n is 2; x and c are each 0 or 1; with the provisos that when $x = 0$, then $c = 0$; and when $x = 1$, then $c = 1$.

7. A gasoline composition containing from 0.006 to 0.06 weight percent of the composition according to claim 1.

4,121,912
PARTIAL OXIDATION PROCESS WITH PRODUCTION OF POWER
Everett M. Barber, Wappingers Falls; James R. Muenger, Beacon; David L. Alexander, Fishkill, all of N.Y., and Warren G. Schlinger, Pasadena, Calif., assignors to Texaco Inc., New York, N.Y.
Filed May 2, 1977, Ser. No. 793,008
Int. Cl.[2] C10J *3/00, 3/16;* **C01B** *2/14*
U.S. Cl. 48—197 R **22 Claims**

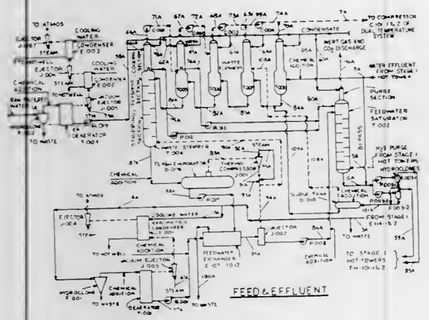


1. A process for the production of a product gas stream comprising H_2 and CO along with power comprising; (1) producing a raw gas stream comprising H_2, CO, CO_2, H_2O, and at least one member of the group H_2S, COS, CH_4, N_2, and A, and containing entrained particulate carbon and other solids in the reaction zone of a free-flow gas generator by the partial oxidation of a hydrocarbonaceous fuel with a free-oxygen containing gas and with or without a temperature moderator, at a temperature in the range of about 1800° to 3000° F. and a pressure in the range of about 10 to 200 atmospheres; (2) removing a portion of the entrained solids from the raw gas stream from (1), and in a mixing zone mixing all of said raw gas stream with a cooled, cleaned and compressed recycle gas stream from (6); wherein the volume ratio of said recycle gas stream to the total gas mixture leaving said mixing zone is in the range of about 0.2 to 0.8; (3) expanding the mixture of gas streams from (2) in a power recovery expansion turbine means at an inlet temperature in the range of about 1000° to 2400° F., and above the dew point and at an inlet pressure in the range of about 10 to 200 atm. abs.; (4) removing a stream of gas from said turbine means in (3) at a pressure in the range of about 2 to 15 atm. abs. and a temperature in the range of about 350° to 1000° F., and cooling said gas stream; (5) cleaning any remaining entrained particulate solids from the cooled gas stream from (4), and condensing and removing water; (6) compressing the gas stream from (5) to a pressure greater than the pressure in said gas generator in a gas compression zone comprising at least one gas compressor operated from power produced by said expansion turbine, and passing a portion of the compressed gas stream into said mixing zone in (2) as said recycle gas stream; and (7) removing the remainder of said compressed gas stream from said compression zone in (6) as said product gas stream.

4,121,913
PROCESS FEED AND EFFLUENT TREATMENT SYSTEMS

Jerome S. Spevack, New Rochelle, N.Y., assignor to Deuterium Corporation, White Plains, N.Y.

Division of Ser. No. 489,449, Jul. 17, 1974, Pat. No. 3,984,518, which is a continuation of Ser. No. 126,498, Mar. 22, 1971, abandoned. This application Feb. 13, 1976, Ser. No. 658,057
Int. Cl.[2] B01D *47/00*
U.S. Cl. 55—89 **8 Claims**



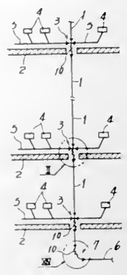
1. In a gas-liquid contact process operating at an elevated temperature, utilizing as a first process fluid a flow of water from an external source containing non-volatile solubles and as another process fluid a flow of gas, and wherein said gas is heated to said elevated temperature and saturated with water vapor at said elevated temperature prior to said contact and cooled and dehumidified with formation of a quantity of water condensate therefrom after said contact, the improvement which comprises:
(1) separating said contact system into first, second, and third zones,
(2) passing portions of said flows of heated and saturated gas to said first and second zones in parallel and thence through said third zone,
(3) effecting contact between said gas and said first process fluid in said first zone,
(4) maintaining a circulation of water essentially free of non-volatile solubles through cooling means and through said third zone,
(5) effecting said dehumidification and formation of a quantity of said condensate by contact between said flow of gas and said cooled circulation in said third zone,
(6) delivering from said third zone to said second zone for contact with the gas therein water contacted in said third zone in a quantity essentially equivalent to the quantity of said water condensate in step (5), and
(7) withdrawing from said second zone as by-product water contacted therein essentially free of non-volatile solubles.

4,121,914
PIPING SYSTEMS FOR DRAINAGE AND PIPING MEMBERS THEREFOR

Tomio Kigawa, Matsubara, and Takeshi Ishihara, Kawachi-Nagane, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Feb. 23, 1977, Ser. No. 771,255
Claims priority, application Japan, Feb. 25, 1976, 51-20393; Aug. 18, 1976, 51-99172; Aug. 31, 1976, 51-104763
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—191 **7 Claims**

1. In a piping system for drainage including a vertical main pipe having at least one twisted portion therein for forming an air column extending centrally through the vertical main pipe, a horizontal main pipe, and a bend connecting the lowermost end of the vertical main pipe to the horizontal main pipe; the improvement wherein said bend is formed with a twisted upper portion having an axis deviating helically from a normal axis

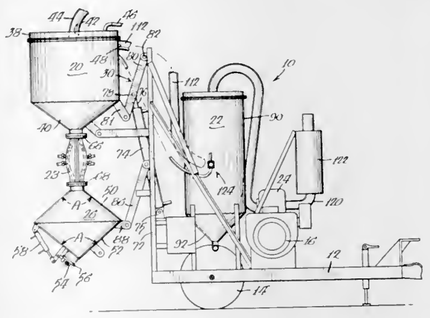


extending between the axes of said main pipes, and with a lower portion having a diameter which progressively increases toward the horizontal main pipe.

4,121,915
VACUUM CLEANING APPARATUS

Andrew A. Anderson, 11700 S. Mayfield, Worth, Ill. 60482

Filed Aug. 16, 1976, Ser. No. 714,647
Int. Cl.[2] B01D *47/00*
U.S. Cl. 55—227 **9 Claims**

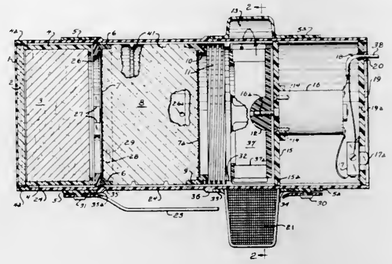


1. An industrial vacuum cleaning apparatus for removing gravel and the like from a roof comprising: upper container means having an inlet into which particulate materials may be sucked; lower container means, communicating through a passageway with said upper container means, into which contaminants may be dumped from the upper container means; air pump means for creating a suction in said upper container means; pneumatically operated valve means positioned in said passageway between the upper and lower container means for controlling the release of contaminants from the upper container means to the lower container means; pneumatically operated valve means connected to the lower container means for releasing collected particulate material therefrom; and pneumatic control means for alternatively and intermittently opening the first valve means when the second valve means is closed, and for opening the second valve means when the first valve means is closed, to prevent a significant amount of backflow through the valves into the first container when the air pump means is operating; an air suction line leading from said upper container to a water filter unit through which contaminated air from the upper container means may be purified before being exhausted to the atmosphere; water hose means leading to said upper container and said water filter means to permit the flow of water from said water filter means to said upper container to wet solids therein; and water level maintaining means in said water filter means for removing water from the container, to maintain said predetermined water level.

4,121,916
PORTABLE AIR PURGE

Roy A. Fricke, 1034 Ashland Ave., River Forest, Ill. 60305

Filed Oct. 26, 1976, Ser. No. 735,497
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—316 **4 Claims**



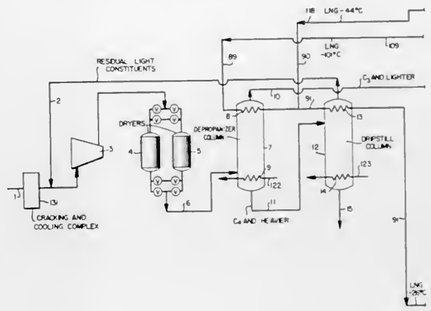
1. A portable air purifying filter suitable for personal use comprising a tubular shell which includes two longitudinally matching half-tubes having registering longitudinal offset joints, said joints comprising a longitudinal parallel planar flange on both outer edges of one half tube and planar edge on each outer edge of the second half tube whereby when the edges of both half tubes are assembled and registered with each other, the exterior and interior surfaces of the resulting unitary tube are substantially cylindrical, axially spaced circumferential bands embracing said assembled half tubes to hold the same together in register, a carrying strap attached at its ends to said bands, a screened inlet at one end of the shell and a tangential outlet connected to and positioned adjacent the other end of the shell and a rotary blower with operating motor positioned in the other end of the shell and a filtering medium between the inlet and the said rotary blower.

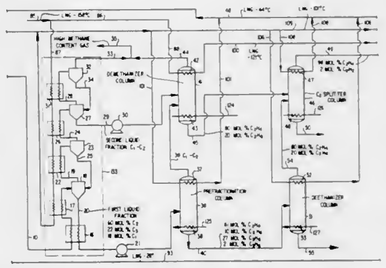
4,121,917
ETHYLENE PRODUCTION WITH UTILIZATION OF LNG REFRIGERATION

Charles Richard Baker, and Harry Cheung, both of Kenmore, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 611,704, Sep. 9, 1975, abandoned. This application Oct. 6, 1976, Ser. No. 730,290
Int. Cl.[2] F25J *3/02*
U.S. Cl. 62—28 **20 Claims**

1. A process for separating a hydrocarbon feed gas mixture comprising at least C_1–C_4 constituents including ethylene to produce a separated ethylene product while simultaneously warming liquefied natural gas for regasification thereof, comprising the steps of:
(a) providing said hydrocarbon feed gas mixture at superatmospheric pressure and fractionating same in a depropanizer column to recover overhead gas comprising C_3 and lighter constituents and bottoms comprising C_4 and heavier constituents;
(b) cooling the overhead gas recovered from the depropanizer column to condense a liquid fraction comprising at least C_1–C_2 constituents by heat exchange with externally supplied liquefied natural gas for warming thereof, and separating said liquid fraction from the cooled overhead gas;
(c) pressurizing the separated liquid fraction to a superatmospheric pressure higher than the pressure of said feed gas mixture;
(d) fractionating the pressurized liquid fraction in a demethanizer column to recover a demethanizer overhead comprising methane and a demethanizer bottoms comprising at least C_2 constituents, and heat exchanging externally supplied liquefied natural gas with the demethanizer overhead to condense same and provide reflux for said demethanizer while warming the liquefied natural gas; and
(e) further fractionating said demethanizer bottoms for the production of said separated ethylene product, said further fractionating including fractionation in a C_2 splitter



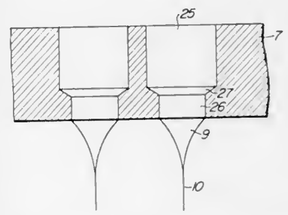


column to recover ethylene as overhead product and ethane bottoms, and heat exchanging externally supplied liquefied natural gas with the C_2 splitter column overhead to condense same and provide reflux for said C_2 splitter column while warming the liquefied natural gas.

4,121,918
ORIFICE PLATE FOR USE IN GLASS-FIBER SPINNING HEARTH

Hiroaki Shono; Toshio Noji; Isao Wakasa, and Shinzo Ishikawa, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Jul. 11, 1977, Ser. No. 814,436
Claims priority, application Japan, Jul. 23, 1976, 51-87797
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—1 **4 Claims**



1. An orifice plate for use in glass-fiber spinning hearth having a flat undersurface and a plurality of orifices arranged therein at a high density, in which each of said orifices has a ratio of a diameter at its glass-inlet side to that at the glass-outlet side between 1:0.4 and 1:0.9.

4,121,919

METHOD OF PRODUCING AN OPTICAL FIBRE BLANK

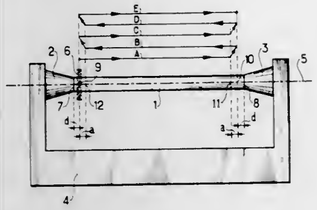
Christian Le Sergent, Marcoussis; Michel Liegois, Paris, and Robert Pascal, Montlhery, all of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Feb. 9, 1978, Ser. No. 876,371

Claims priority, application France, Feb. 18, 1977, 77 04820

Int. Cl.[2] C03C *25/02*; C03B *37/00*

U.S. Cl. 65—3 A **3 Claims**



1. A method of producing an optical fibre blank, comprising successively:

depositing a layer of one type of glass on the interior surface of a cylindrical tube constituted by another type of glass, the glass of said layer including a doping material suitable for increasing the refractive index of said layer;

and reducing the tube by rotating it about its axis while heating an annular zone of the rotating tube so as to soften it, and moving the heated zone progressively back and forth along the tube between its ends in successive strokes of opposite directions, thereby reducing the tube to obtain said blank in the form of a rod whose diameter is smaller than the initial outside diameter of the tube to the extent that the axial cavity of the tube disappears; said movement of the heated zone comprising at least two strokes with a reversing operation between successive strokes, the improvement wherein said movement is performed as follows:

stopping the movement of the heated zone during the "old" stroke short of the end to which it was moving at a stopping point situated near said end at a predetermined distance therefrom so that the last part of the tube beyond the stopping point is maintained during the "old" stroke at a temperature below the evaporation temperature of the doping material and beginning the "new" stroke from said end with said last part of the tube becoming the first part for the "new" stroke and being heated and softened during the "new" stroke; and

continuing the last stroke un-interrupted to the end of the tube and not stopping short at a stopping point.

4,121,920

GLASS FIBER DRAWING MACHINE

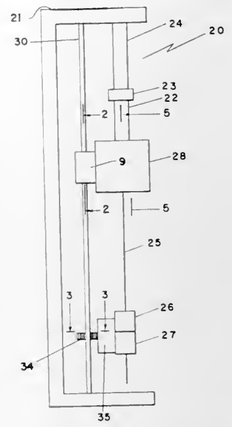
John T. Balkwill, Saugus, Calif., assignor to International Telephone & Telegraph Corp., Nutley, N.J.

Filed Apr. 6, 1970, Ser. No. 32,498

Int. Cl.[2] C03B *23/04, 37/02*

U.S. Cl. 65—13 **3 Claims**

1. A glass fiber drawing machine comprising: a first rigid frame; support means to hold a body of glass in a vertical position rigid relative to said frame and with a free end extending downwardly; a hollow oven to heat said body; first reversible power means to move said oven upwardly around said free end; and second power means to draw glass downwardly from said free end, said support means including a chuck fixed to said frame to hold the upper end of said body, said body extending in a downward vertical direction from said chuck, said oven being cylindrical and having a bracket fixed thereto, said bracket having guide hole means and a threaded hole extending vertically therethrough, a guide rod in each of said guide hole means fixed to said frame, a lead screw meshed in said threaded hole and rotatable in a fixed vertical position on said frame about a vertical axis the same as its symmetrical axis, said first power means coupled to said lead screw to turn said lead screw at a constant velocity in a direction to cause said bracket to be raised, said oven being fixed to said bracket in a position



to cause said oven to rise so that its hollow interior surrounds said body in a uniformly spaced relationship, the axes of said oven and said body being the same vertical axis, said second power means being adapted to draw glass at a constant rate from said body at a position therebelow on the axis thereof.

4,121,921

METHODS FOR INCREASING RICE CROP YIELDS

Henry Kuratle, III, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

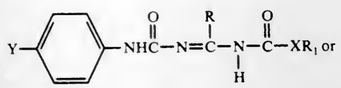
Continuation of Ser. No. 55,998, Mar. 6, 1975, abandoned.

Filed Aug. 24, 1976, Ser. No. 717,284

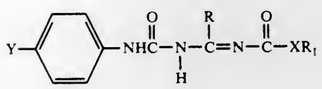
Int. Cl.[2] A01N *21/02, 9/12, 9/20*

U.S. Cl. 71—77 **20 Claims**

1. A method for increasing the yield of rice crops which comprises applying an effective amount of an allophanimidate to rice seeds, seedlings, or to soil in which rice seeds or seedlings are planted, not later than 65 days after planting, the allophanimidate being a compound of the formula



I



wherein

Y is chlorine, bromine or iodine;

R is SR_2 or OR_2;

R_2 is methyl or ethyl;

R_1 is methyl or ethyl; and

X is oxygen or sulfur.

4,121,922

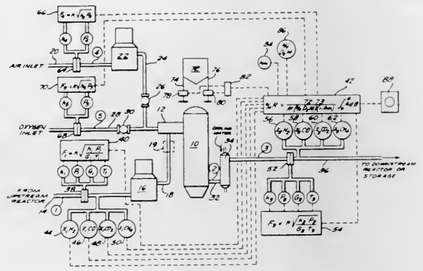
METHOD AND APPARATUS FOR MEASURING PERCENTAGE REDUCTION IN A METAL ORE REDUCTION REACTOR

Patrick W. MacKay; Enrique Martinez Vera, and Ramón de la Peña, all of Monterrey, Mexico, assignors to Fierro Esponja, S.A., Monterrey, Mexico

Continuation-in-part of Ser. No. 698,001, Jun. 21, 1976, abandoned. This application Dec. 17, 1976, Ser. No. 751,997

Int. Cl.[2] C21B *13/02*

U.S. Cl. 75—34 **21 Claims**



1. The method of determining the percentage reduction that has occurred in a reactor of a multi-stage, gaseous reduction system for reducing an oxidic metal ore to sponge metal, said system being of the type in which a reducing gas largely composed of carbon monoxide and hydrogen and which may also contain methane and carbon dioxide flows sequentially through fixed beds of metal-bearing material in a series of functionally interchangeable reactors, and the effluent gas from said beds is cooled to remove water therefrom, said method comprising the steps of (1) determining as a first value the amount of oxygen initially present in the metal-bearing bed of one of said reactors, (2) measuring the flow of reducing gas fed to said one reactor at a first location before said gas enters said reactor, (3) effectively determining the concentrations of carbon monoxide, hydrogen, methane and carbon dioxide in said reducing gas at said first location, (4) measuring the flow of effluent reducing gas from said one reactor at a second location after the effluent gas has been cooled, (5) effectively determining the concentration of carbon monoxide, hydrogen, methane and carbon dioxide in said effluent gas at said second location, (6) determining the difference between (a) the sum of the change in molar flow of hydrogen and twice the change in molar flow of methane between said two locations and (b) the sum of the change in molar flow of carbon monoxide and twice the change in molar flow of carbon dioxide between said two locations as a second value indicative of the rate of removal of oxygen from said ore, (7) integrating said second value with respect to time to obtain a third value indicative of the amount of oxygen that has been removed from the metal-bearing bed in said one reactor and (8) comparing said first and third values to obtain a fourth value indicative of the percentage reduction of the sponge metal in said one reactor.

4,121,923

CRYSTALLINE STRUCTURE IN CONTINUOUSLY CAST STEEL INGOT

Hans Gruner; Hans Schrewe, both of Duisburg, and Fritz Peter Pleschiutschnigg, Dusseldorf, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 12, 1977, Ser. No. 823,945

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1976, 2636400

Int. Cl.[2] C21C *7/00*

U.S. Cl. 75—53 **6 Claims**

1. Method of improving the crystallization and grain structure and texture in continuously cast steel ingots to enhance globulitic solidification therein and wherein the steel is poured from a tundish into at least one mold, comprising the step of treating the steel in the tundish under pressure, at about 2 atmospheres, with fast-evaporating, oxide forming additives, vaporizing at a temperature of 1500° C. or below, so that the resulting seeds enhance globulitic solidification.

4,121,924

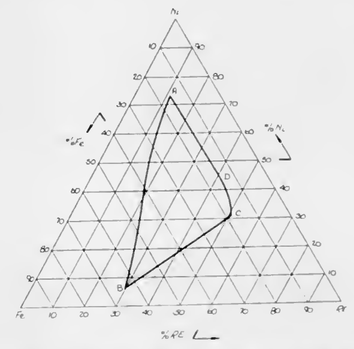
ALLOY FOR RARE EARTH TREATMENT OF MOLTEN METALS AND METHOD

John Joseph de Barbadillo, II, Warwick, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Sep. 16, 1976, Ser. No. 723,886

Int. Cl.[2] C22C *33/06*

U.S. Cl. 75—129 **14 Claims**



1. An alloy consisting essentially of nickel, iron and rare earth metal from the group consisting of cerium, lanthanum, neodymium, praseodymium and mixtures thereof in amounts totaling at least 90% of the alloy and in proportions correlated to each other in a ternary percentage on area ABCDA in the triaxial ternary percentage diagram of the accompanying drawing, up to 2% carbon, up to 5% manganese and up to 5% silicon, and further characterized by the following combination of characteristics: (i) good castability in air, (ii) a density of about 7.3 or greater to promote sinking, (iii) good dispersibility promoted by a melting temperature of 2500° F. or lower, (iv) good durability by reason of the ability to resist shock, both thermal and mechanical, (v) good compatability with steel, and (vi) a peritectic microstructure having (a) a dendritic lattice of an iron-rich nickel-iron solid solution phase comprising at least 10 volume-percent of the as-cast structure together with (b) at least one nickel-rich phase containing iron and rare earth metals.

6. A process for rare-earth metal treatment of a high melting temperature iron-group metal containing a major proportion of metal from the iron-group consisting of iron, nickel, cobalt and mixtures thereof and characterized by melting temperatures of about 2000° F. or higher comprising establishing a molten bath of the iron-group metal at a treatment temperature of about 2100° F. or higher and introducing into the bath while at a temperature of at least 2100° F. a previously solidified, rare earth-containing alloy as set forth in claim 1 and maintaining the bath temperature sufficiently to result in dispersion of the rare earth metal throughout the bath.

4,121,925

METHOD OF PRODUCING GREY CAST IRON BRAKE ROTORS WITH UNIFORM FRICTION AND WEAR CHARACTERISTICS

Barbara Jean Chapman, Chinley, by Stockport, and Donald Hatch, Stockport, both of England, assignors to Ferodo Limited, Manchester, England

Continuation of Ser. No. 534,097, Dec. 18, 1974, abandoned. This application Aug. 11, 1977, Ser. No. 823,707

Claims priority, application United Kingdom, Jan. 15, 1974, 1861/74

Int. Cl.[2] C22C *33/08*

U.S. Cl. 75—130 R **4 Claims**

1. In a method of producing grey cast iron brake rotors, having a predetermined coefficient of friction and wear rate, the improvement which comprises the steps of:

(i) determining the total content in a grey cast iron melt of the metals titanium, vanadium, niobium and mixtures thereof;

(ii) determining the total content of said metals in said melt which will result in a desired coefficient friction and wear rate in a grey cast iron rotor cast from said melt and;

(iii) adjusting the total content of said metals in said melt to the level determined in (ii) which will result in said desired coefficient of friction and wear rate on casting of the melt, said adjusted total content being below 0.15% by weight.

4,121,926

SQUIRREL-CAGE ROTOR

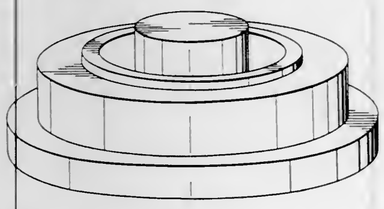
Kazuhiko Ogawa, and Masanori Ohara, both of Nagoya, Japan, assignors to Sumitomo Aluminum Smelting Company, Limited, Japan

Filed Nov. 4, 1976, Ser. No. 739,013

Claims priority, application Japan, Nov. 18, 1975, 50-138835

Int. Cl.[2] C22C *21/00*

U.S. Cl. 75—138 **10 Claims**



1. A rotor conductor of a squirrel-cage induction motor made of an aluminum-base alloy consisting essentially of 0.3 to 4% by weight of manganese, 0.15 to 0.9% by weight of chromium, 0.05 to 0.6% by weight of titanium, 0.01 to 0.12% by weight of boron, not more than 0.3% by weight of iron and not more than 0.3% by weight of silicon, the balance being aluminum, said alloy preventing hot tear cracks and reducing the electrical conductivity of said rotor conduction thereby providing a motor having a high starting torque.

4,121,927

METHOD OF PRODUCING HIGH CARBON HARD ALLOYS

Gordon Russell Lohman, Glen Ellyn, and James E. Hansen, Elmwood Park, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 454,601, Mar. 25, 1974, abandoned. This application Jan. 22, 1976, Ser. No. 651,554

Int. Cl.[2] B22F *3/16*

U.S. Cl. 75—201 **11 Claims**

1. The method of producing a high carbon, heat and abrasion resistant alloy having a final composition including at least 1% of at least one of the elements of the group consisting of chromium, vanadium, molybdenum and tungsten, the elements of this group being characterized by a major portion of the carbides thereof remaining undissolved at elevated temperatures, said method comprising the steps of:

atomizing a melt having an initial composition which includes at least 1% of one of the elements of the group consisting of chromium, vanadium, molybdenum and tungsten and a carbon content of less than 0.2% thereby to limit the formation of the carbides of said elements of said group to a level substantially below that present in said final composition and thereby to form a cold compactible powder,

blending said cold compactible powder with carbon particles of sufficient quantity to form a blend which has a final composition of at least about 0.6% carbon,

without further treatment compressing said blend into a green compact blank at a pressure in excess of 20 tsi; and

heating said green compact blank at a temperature and for a time sufficient to cause carbon diffusion and thus to provide carbides of at least some of the elements of said group of a quantity sufficient to impart hardness and abrasion resistance to said final composition.

4,121,928

METHOD FOR THE MANUFACTURE OF MULTI-LAYER SLIDING MATERIAL

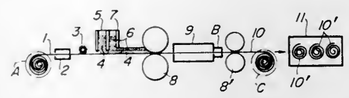
Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Filed Jul. 9, 1976, Ser. No. 704,034

Claims priority, application Japan, Aug. 8, 1975, 50-96325

Int. Cl.[2] B21D *53/10*

U.S. Cl. 75—208 CS **12 Claims**



1. A method of manufacturing multi-layer sliding material, which comprises following the steps in the sequence set forth:

(a) preparing a surface of a steel plate to make said surface suitable for adhering a coating;

(b) preparing two kinds of powder mixtures, one for a first, boundary layer and the other for a second, alloy layer, the first powder mixture consisting of aluminum alone or aluminum with at least one powder additive selected from the group consisting of strengthening elements, solid lubricants and lubricants of metal powder of low melting point; the second powder mixture consisting of aluminum powder as a main component and 2 to 40 percent by weight of at least one powder additive selected from the group consisting of metal powder lubricants of low melting point, solid lubricants and strengthening elements, the amount of additives being adjusted to have more weight percent than that added to the first powder mixture;

(c) laying and distributing by gravity said first powder mixture as a first layer on the surface of said steel plate;

(d) laying and distributing by gravity the second powder mixture as a second layer on said steel plate over said first layer;

(e) passing the steel plate and two layers of powder mixtures loosely laid thereon together through a cold rolling mill and rolling down the metal powder loaded steel plate at room temperature so as to compact it until the average density of the distributed metal powder mixture reaches at least 90% of the theoretical density of said metal powder and to bond said powder mixture to said steel plate;

(f) and sintering the rolled and compacted steel plate and powder mixtures at a temperature range of from 280° to 520° C.

4,121,929

NITROGEN CONTAINING HIGH SPEED STEEL OBTAINED BY POWDER METALLURGICAL PROCESS

Nobuyasu Kawai; Katuhiko Honma, both of Kobe; Hirofumi Fujimoto, Ono; Hiroshi Takigawa, Kobe; Minoru Hirano, Kobe, and Masaru Ishii, Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Feb. 11, 1977, Ser. No. 767,900

Claims priority, application Japan, Feb. 12, 1976, 51-14440

Int. Cl.[2] B22F *3/00*

U.S. Cl. 75—238 **7 Claims**

1. A nitrogen containing high speed steel produced by the powder metallurgical process from a prealloyed powder which is then nitrided and hot isostatically pressed, wherein said high speed steel comprises: at least 0.40% N, 3.0–15% V, C in an amount satisfying the relationship of $1.0 + 0.2V(\%) \leq (C + N) \leq 1.5 + 02.V(\%)$, at least one element selected from the group consisting of up to 15% Cr, up to 10% Mo, up to 20% W and up to 15% Co and the balance iron.

4,121,930

NITROGEN CONTAINING HIGH SPEED STEEL OBTAINED BY POWDER METALLURGICAL PROCESS

Toru Yukawa; Nobuyasu Kawai; Katuhiko Honma, all of Kobe; Hirofumi Fujimoto, Ono; Hiroshi Takigawa, Kobe; Minoru Hirono, Kobe; Masaru Ishii, Kobe, and Tsuneo Tatsuno, Akashi, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Dec. 29, 1976, Ser. No. 755,141

Claims priority, application Japan, Dec. 29, 1975, 50–155984

Int. Cl.[2] B22F *3/00*

U.S. Cl. 75—238 **4 Claims**

1. A nitrogen containing high speed steel which comprises, after being formed by powder metallurgical processing, at least 0.40% of N, 1.6 to 15% of V, C in an amount satisfying the relation of $0.5 + 0.2\ V\ (\%) \leqq (C + N) \leqq 0.8 + 0.2V\ (\%)$ and at least one member selected from the group consisting of up to 15% of Cr, up to 10% of Mo, up to 20% of W and up to 15% of Co.

4,121,931

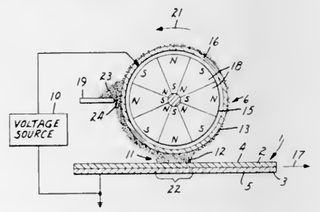
ELECTROGRAPHIC DEVELOPMENT PROCESS

Kerry S. Nelson, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 30, 1976, Ser. No. 701,113

Int. Cl.[2] G03G *13/09*

U.S. Cl. 96—1 SD **19 Claims**



1. A process for selectively depositing toner particles on one surface of a layer of material in accordance with an electrical potential pattern presented at said surface, including the steps of:

1. positioning an electrode-developer transport means a short and relatively uniform distance from and in opposing relationship to said one surface of said layer of material, said electrode-developer transport means including at least one electrically conductive portion;

2. establishing a unidirectional electrical potential difference between said electrically conductive portion of said electrode-developer transport means and said one surface with an electrical means connected between the surface of said layer of material opposite said one surface and said conductive portion;

3. providing a relatively uniform magnetic force of attraction at said electrode-developer transport means in the region adjacent to said one surface;

4. providing a physically continuous path of one-component developer of magnetically attractable, electrically insulating toner particles between said one surface and said electrically conductive portion while imparting a rapid, turbulent physical mixing action to said toner particles for bringing said toner particles into repetitive electrical contact with said electrically conductive portion and for providing random relative motion and physical contact between said toner particles to produce an electrical charge on said toner particles of a polarity and of an amount sufficient to cause such charged toner particles to be attracted to said layer of material with a force sufficient to overcome the counterforce provided by said magnetic force of attraction; and

5. progressively presenting said one surface to said toner particles during step **4**) whereby said charged toner is deposited on said one surface of said layer of material in accordance with the electrical potential pattern presented at said one surface.

4,121,932

ELECTROPHOTOGRAPHIC PROCESS INVOLVING DYE TRANSFER IMAGEWISE

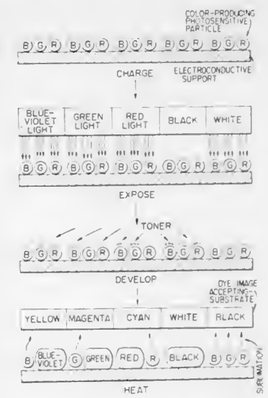
Eisuke Ishida, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Continuation-in-part of Ser. No. 614,414, Sep. 18, 1975, abandoned. This application Apr. 6, 1977, Ser. No. 785,125

Claims priority, application Japan, Sep. 28, 1974, 49-111957; Sep. 28, 1974, 49-111958; Jun. 2, 1975, 50-66831

Int. Cl.[2] G03G *13/01, 13/30*

U.S. Cl. 96—1.2 **7 Claims**



1. An electrophotographic process of forming a dye image comprising the steps of: (1) charging a photosensitive element formed on an electroconductive support by electrical charging, said photosensitive element consisting essentially of a mixture of photoconductive powders and sublimable dyes, (2) exposing the charged photosensitive element to a light image to form an electrostatic latent image, (3) developing the photosensitive element with an acidic toner, (4) heating the photosensitive element to form a dye image, and (5) transferring the dye image to a dye image-accepting substrate with the aid of a solvent.

4,121,933

X-RAY ELECTROPHOTOGRAPHIC RECORDING MATERIAL AND METHOD OF MANUFACTURING SAME

Horst Dannert, Aachen-Walheim; Hans-Jürgen Hirsch, Selfkant-Tüddern; Ewald Klein, and Karl-Heinz Panstruga, both of Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1977, Ser. No. 827,366

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 2641018

Int. Cl.[2] G03G *5/08*

U.S. Cl. 96—1.5 R **5 Claims**

1. A method of manufacturing a recording material comprising the steps of

(A) forming orthorhombic lead monoxide from pure lead acetate and pure ammonia solution in pure deionized water in a vessel of silicate-free material,

(B) stirring the orthorhombic lead monoxide in a solution of 1.5 to 18% by weight of ammonia in water for 2 to 2000 hours at a temperature between 0° and 80° C while keeping the reaction mixture in motion,

(C) washing the so-formed powdered tetragonal lead monoxide with a 2*n* ammonia solution and drying the powdered tetragonal lead monoxide at 100° to 120° C,

(a) heating the lead monoxide thus obtained at normal pressure in air at a temperature between 100° and 350° C for 15 to 120 hours, and

(b) after (a), heating it at 420° to 440° C in an argon flow, keeping it at this temperature for 1 to 5 hours and cooling it to room temperature in a period of 5 to 10 hours,

(D) sedimenting the powdered tetragonal lead monoxide so obtained in a 2 to 25% by weight solution of the binder which is selected from the group consisting of lacquer synthetic resins and polyvinyl carbazole, in an organic solvent, on a layer carrier without stirring or grinding, the supernatent binder solution and the solvent being evaporated to form a recording material, and

(E) heating the recording material thus obtained for 1 to 2000 hours, in air at 150° to 250° C, after which it is stored for at least 20 to 30 hours under the influence of ambient illumination.

4. Recording material manufactured in accordance with the method as claimed in claim 1, in which at least one photoconductive coating of tetragonal lead monoxide with a grain size range of 1 - 50 μm and a binding material is disposed on a substrate.

4,121,934

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Mitsugu Tanaska; Toshiaki Aono, and Takeshi Hirose, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 7, 1977, Ser. No. 813,608

Claims priority, application Japan, Jul. 7, 1976, 51-81141

Int. Cl.[2] G03C *7/16, 1/76*

U.S. Cl. 96—22 **33 Claims**

9. A method of forming a color photographic image comprising developing a multilayer color photographic light-sensitive material comprising a support having thereon at least one blue-sensitive silver halide emulsion layer containing a yellow color-forming coupler, at least one green-sensitive silver halide emulsion layer containing a magenta color-forming coupler and at least one red-sensitive silver halide emulsion layer containing a cyan color-forming coupler and said material having at least one silver halide emulsion layer containing a coupling compound which forms a colorless compound with oxidized developer, said coupling compound being represented by the following general formula (I):



(I)

wherein

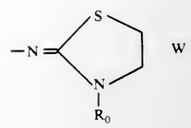
R represents a hydrogen atom; an alkyl group; an aryl group; a halogen atom; an —O—Z group in which Z represents an alkyl group, an aryl group, a 5- or 6-membered heterocyclic group containing one or more nitrogen, oxygen or sulfur atoms as a hetero atom, an acyl group or an $-SO_2R_2$ group in which R_2 represents an alkyl group, an aryl group, a pyridine group, a furan group, a thiophene group, a phthalimide group, a succinimide group or Y;

X represents



wherein R_1 represents an aryl group which is unsubstituted or substituted with one or more monovalent substituents selected from the group consisting of a halogen atom, a nitro group, a cyano group, a thiocyano group, a hydroxy group, an alkoxy group, an aryloxy group, an alkyl group, an alkenyl group, an aryl group, an amino group, a carboxy group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an acylamino group, a sulfo group, an alkylsulfonyl group, an arylsulfonyl group, an alkoxysulfonyl group, an aryloxysulfonyl group, a sulfamoyl group, a sulfonamido group and a divalent substituent forming a condensed ring with said aryl group; and

Y represents (i) a benzotriazolyl group substituted with one or more substituents selected from the group consisting a benzyloxy group or a thiazolinylidenamino group represented by the following general formula (IV):



(IV)

wherein W represents a condensed aromatic ring which is unsubstituted or substituted with one or more of an alkyl group, an alkoxy group or a halogen atom; and R_O represents an aliphatic group or an aryl group, or (ii) a 1,2,4-triazolyl group substituted with a thiazolinylidenamino group of general formula (IV) defined above, wherein said benzotriazolyl group or 1,2,4-triazolyl group represented by Y is bonded to the coupling position of said coupler through the nitrogen atom at the 1-position of the triazole ring thereof.

4,121,935

LITH-TYPE SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yoshio Nishina; Teiji Habu; Tomio Nakajima; Akio Oshima; Eiichi Sakamoto; Noboru Fujimori; Kiyomitsu Mine, and Hiroo Toya, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

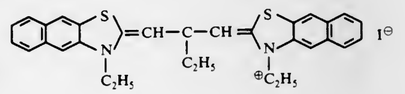
Continuation of Ser. No. 613,628, Sep. 15, 1975, abandoned. This application Aug. 8, 1977, Ser. No. 822,601

Claims priority, application Japan, Sep. 24, 1974, 49-107314

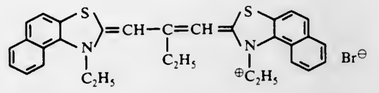
Int. Cl.[2] G03C *5/04, 1/18, 1/06*

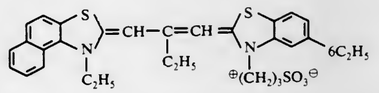
U.S. Cl. 96—27 E **1 Claim**

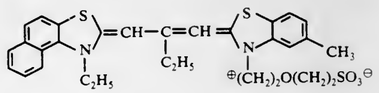
1. A method of forming halftone dot images comprising imagewise exposing a photographic light sensitive material with neon helium laser beams, and developing said exposed photographic light sensitive material with an infectious developer, said photographic light sensitive material comprising a silver halide emulsion wherein said silver halide contains 60 to 90 mole percent of silver chloride, 10 to 40 mole percent of silver bromide and less than 5 mole percent of silver iodide, and a sensitizing dye selected from the group consisting of:

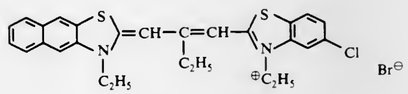


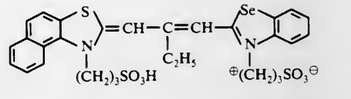
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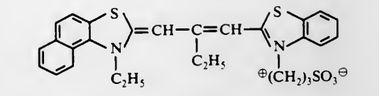


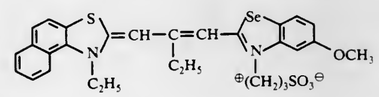


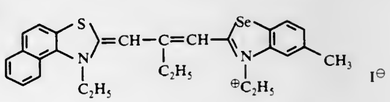


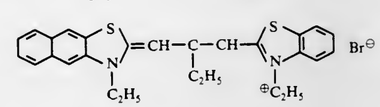


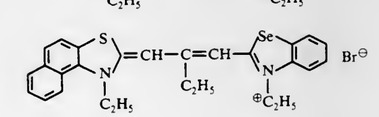


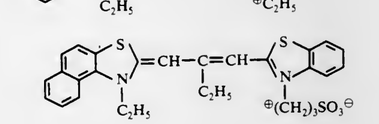


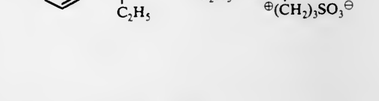




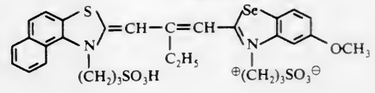




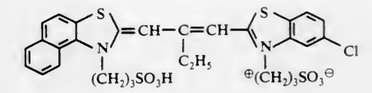




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(13)



(14)

4,121,936

POSITIVE RESIST FOR HIGH ENERGY RADIATION

Shunsuke Matsuda; Soji Tsuchiya; Masami Honma, all of Kawasaki, and Gentaro Nagamatsu, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka and Fuji Chemicals Industrial Co. Ltd., Tokyo, both of, Japan

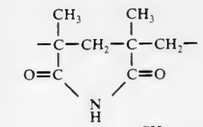
Filed Jun. 13, 1977, Ser. No. 805,907

Claims priority, application Japan, Jun. 16, 1976, 51-71536

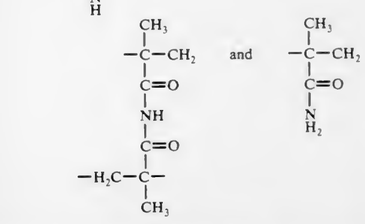
Int. Cl.[2] G03C *1/68*

U.S. Cl. 96—35.1 **24 Claims**

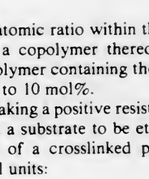
1. A resist material capable of forming a positive image by application of radiation, said material comprising a crosslinked polymer including the following structural units:



(5)



(6)



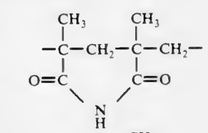
(7)

and having a C/N atomic ratio within the range of more than 4 and up to 6, or a copolymer thereof with another vinyl monomer, said copolymer containing the vinyl monomer units in an amount of up to 10 mol%.

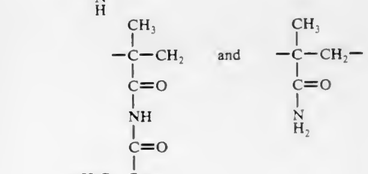
(8)

6. A method of making a positive resist image comprising the steps of forming on a substrate to be etched a film of a resist material composed of a crosslinked polymer including the following structural units:

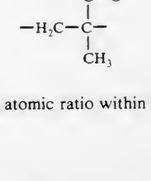
(9)



(10)



(11)



(12)

and having a C/N atomic ratio within the range of more than

4 and up to 6, or a copolymer thereof with another vinyl monomer, said copolymer containing the vinyl monomer units in an amount of up to 10 mol%, exposing said film to radiation through a predetermined pattern to form a latent image, and then dissolving away the exposed portion with a solvent.

4,121,937

PHOTOGRAPHIC PROCESS FOR THE PRODUCTION OF PICTURES OF INCREASED CONTRAST

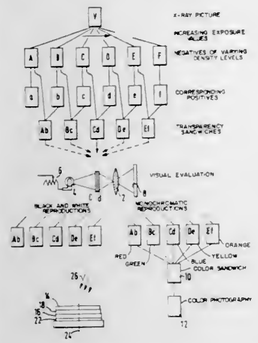
Karl Heinz Lohse, Costa Mesa, Calif., assignor to STB Strahlentechnische Bilddiagnostik Heinz Fleck, Fed. Rep. of Germany

Filed Feb. 18, 1977, Ser. No. 770,118

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1976, 2607482

Int. Cl.² G03C *5/06, 7/04*

U.S. Cl. 96—44 **23 Claims**



1. A process for providing photographic images of increased contrast in a selected density range, said images being carried by a transparent original, said process comprising the steps of:

photographically applying the image to a transparent photographic material having sharp contrast properties for a graduated series of increasing exposure values to provide a series of negative transparencies having images of varying densities;

selecting that pair of negative transparencies having image densities which correspond approximately to the upper and lower limits of the selected density range, the contrast of which is to be increased;

producing a corresponding positive transparency from the one of the selected negatives produced by the greater exposure value;

superimposing, in proper registration the positive transparency on the other negative transparency of the selected pair to provide a transparency sandwich; and

exposing a receiver through the transparency sandwich to reproduce the original with the increased contrast images.

4,121,938

PHOTOGRAPHIC MATERIAL CONTAINING TiO_2, SOLUBLE CU(II) SALT, AND SOLUBLE SILVER SALT AND THE USE THEREOF IN PHYSICAL DEVELOPMENT

Keiji Takeda, and Kenji Matsumoto, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 7, 1977, Ser. No. 813,739

Claims priority, application Japan, Jul. 7, 1976, 51-81139

Int. Cl.² G03C *1/00, 5/24*

U.S. Cl. 96—48 PD **13 Claims**

1. A photographic material comprising a support having thereon a light-sensitive layer containing (a) powdered titanium dixode, (b) a soluble silver salt soluble to an extent of at least about 10 mg in 100 ml of water or a polar organic solvent, (c) a soluble copper (II) salt soluble to an extent of at least about 0.1 g in 100 ml of water or a polar organic solvent and (d) a hydrophilic binder, wherein the amount of the soluble silver salt ranges from about 0.1 g to about 0.001 g, as metallic silver, per m^2 of said light-sentive layer.

4,121,939

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING +-ALKYL SUBSTITUTED HYDROQUINONE

Keiichi Adachi, and Akio Mitsui, both of Minami-ashigara, Japam, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

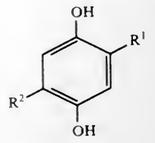
Filed Jul. 14, 1977, Ser. No. 815,753

Claims priority, application Japan, Jul. 14, 1976, 51-84321

Int. Cl.² G03C *1/48, 1/10, 1/06, 1/40*

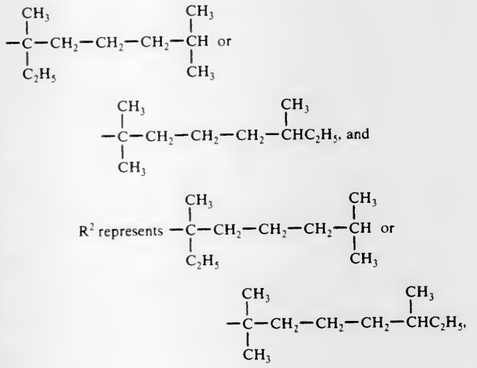
U.S. Cl. 96—77 **16 Claims**

1. A color photographic light-sensitive material comprising a support having thereon at least one layer of a silver halide photographic emulsion with the light-sensitive material containing at least one hydroquinone compound represented by the following general formula (I):



(I)

wherein R^1 represents a hydrogen atom,



or a precursor thereof.

2. The color photographic light-sensitive material of claim 1, wherein the silver halide photographic emulsion contains a dye image-forming coupler or is associated with a dye image-providing compound for use in the color diffusion transfer processes.

4,121,940

ENDODONTIC FORMULA FOR TREATMENT OF ROOT CANAL

George H. Michel, 343 Oak Knoll Dr., Glendora, Calif. 91740, and Donald J. Sabol, 9204 Burnet Ave., Sepulveda, Calif. 91343

Filed Feb. 24, 1977, Ser. No. 771,527

Int. Cl.² A61K *5/08*

U.S. Cl. 106—35 **4 Claims**

1. A formula for endodontic treatment of a root canal comprising a mixture by weight of:

0.5% to 30% of titanium oxide, 0.05% to 84.00% of zinc oxide, 0% to 8% of hydrocortisone, 0% to 8% of prednisolone, 5% to 25% of paraformaldehyde, and 0.2% to 30% of vitreous carbon.

4,121,941

LOW MICROWAVE LOSS CERAMICS AND METHOD OF MANUFACTURING THE SAME

Syunichiro Kawashima, Katano; Masamitsu Nishida; Ichiro Ueda, both of Osaka; Hiromu Ouchi, Toyonaka, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 10, 1977, Ser. No. 850,486

Int. Cl.² C04B *35/00*

U.S. Cl. 106—39.5 **10 Claims**

1. A low microwave loss ceramic consisting essentially of a solid solution represented by the formula

$$w(3BaO.ZnO.Nb_2O_5)\text{-}x(3BaO.ZnO.Ta_2O_5)$$

where w and x represent mole fraction and $0.01 \leqq w \leqq 0.99$, $0.01 \leqq x \leqq 0.99$ and $w + x = 1$, said ceramic having an unloaded Q value higher than that of each of the individual components in the solid solution.

5. A low microwave loss ceramic consisting essentially of a solid solution represented by the formula

$$w(3BaO.ZnO.Nb_2O_5)\text{-}x(3BaO.ZnO.Ta_2O_5)\text{-}y(3BaO.MgO.Nb_2O_5)-z(3BaO.MgO.Ta_2O_5)$$

where w, x, y and z represent mole fractions and $0.01 \leqq w \leqq 0.97$, $0.01 \leqq x \leqq 0.97$, $0.01 \leqq y \leqq 0.97$ and $0.01 \leqq z \leqq 0.97$ and $w + x + y + z = 1$, said ceramic having an unloaded Q value higher than that of each of the individual components in the solid solution.

4,121,942

MOLDING METHOD

Asamichi Kato, 7020 Oaza Koga, Koga-City, Ibaragi-Pref., Japan

Filed Aug. 17, 1976, Ser. No. 715,058

Claims priority, application Japan, Aug. 20, 1975, 50-100766; Apr. 14, 1976, 51-042086; Apr. 15, 1976, 51-042765

Int. Cl.² C04B *31/00*

U.S. Cl. 106—74 **15 Claims**

1. In a C_2- molding process which comprises the steps of

(a) preparing a molding composition by admixing an alkali silicate binder to a refractory material;

(b) forming the molding composition in a mold; and,

(c) hardening the molding composition by applying CO_2 thereto, the improvement which comprises the alkali silicate binder comprising at least one alkali silicate selected from the group consisting of

a sodium silicate having a molecular ratio SiO_2/alkali metal oxide of from 2.7 to 4.5

a potassium silicate having a molecular ratio SiO_2/alkali metal oxide of from 2.5 to 5.0

a lithium silicate having a molecular ratio SiO_2/alkali metal oxide of from 2.0 to 5.5, and

an alkali metal-ammonium silicate having a molecular ratio SiO_2/alkali metal oxide of from 2 to 9 and the hardening step which comprises gassing the molding composition with a dilute CO_2 -gas essentially consisting of CO_2 and a gas which is inert towards alkali silicate wherein the CO_2-concentration is not more than 20 v/v%.

4,121,943

METHOD FOR MIXING STEEL FIBER IN CONCRETE OR MORTAR

Haluichi Akazawa, c/o Isaku Nishi, 5, Higashifukonokawa-cho, and Kiyoshi Okada, 22-5, Yoshidakonoe-cho, both of Sakyo-ku, Kyoto-shi, Japan, assignors to Haluichi Akazawa; Kiyoshi Okada and Yoshiro Mizoguchi, all of, Japan

Filed Jul. 11, 1977, Ser. No. 814,546

Claims priority, application Japan, Jul. 24, 1976, 51-088466

Int. Cl.² C04B *7/02*

U.S. Cl. 106—99 **2 Claims**

1. A method for mixing steel fiber in concrete or mortar comprising, in combination, the following steps:

rotating a disc having a plurality of radial bosses on one surface thereof;

feeding a mass of steel fibers to the central part of the boss side of said rotating disc whereby the radial bosses will act to disentangle the steel fibers of said mass and the rotating action of the disc will impart centrifugal force to the steel fibers, thereby spreading them apart;

discharging said fibers from said disc, under the influence of said centrifugal force; and

disposing said concrete or mortar in an unset state in a position as to receive the steel fibers as they are discharged from the rotating disc.

4,121,944

PRESERVATIVE FOR BIOLOGICAL SPECIMENS

John W. VanLandingham, 3751 SW. 124 Ct., Miami, Fla. 33165

Continuation of Ser. No. 312,882, Dec. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 60,649, Aug. 3, 1970, abandoned, and Ser. No. 158,136, Jun. 23, 1971, abandoned. This application Jan. 19, 1976, Ser. No. 650,445

Int. Cl.² C08J *3/02*

U.S. Cl. 106—213 **12 Claims**

1. A process of preparing a preservative composition comprising dissolving a starch in a solvent selected from the group consisting of dihydric alcohol, trihydric alcohol or a low molecular weight polypropylene and reacting this mixture at a temperature between 130° C. and a temperature below the carmelization temperature of the starch to produce a slightly turbid colloidal hypertonic reaction product which has a ketonoid odor.

4,121,945

FLY ASH BENIFICIATION PROCESS

Vernon J. Hurst, Athens, and Robert W. Styron, Atlanta, both of Ga., assignors to Amax Resource Recovery Systems, Inc., Atlanta, Ga.

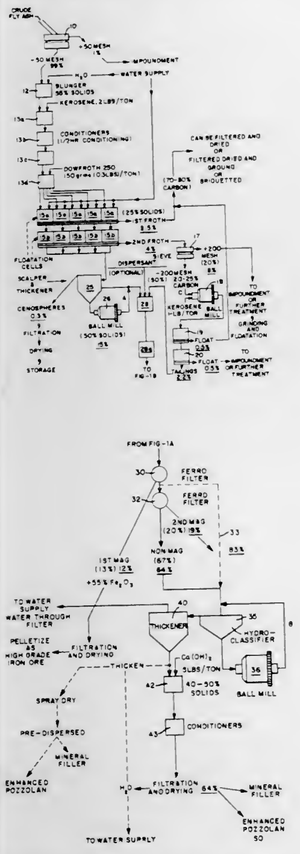
Filed Apr. 16, 1976, Ser. No. 677,511

Int. Cl.² C04B *31/10*

U.S. Cl. 106—288 B **11 Claims**

10. An enhanced pozzolan for use as a replacement for

Portland cement in cementatious mixtures comprising water conditioned fly ash having less than 1 percent carbon, less than



6 percent magnetic iron, and a size so that about 100 percent thereof passes a 325 mesh screen by wet analysis.

4,121,946

METHOD OF PRODUCING AMINATED SILICA COMPOUNDS

Alexei Alexeevich Chuiko, Prospekt Nauki 99, kv. 48; Valentin Anatolfevich Tertykh, ulitsa Sapernoe pole, 9/21, kv. 40, both of Kiev; Nikolai Vasilievich Khaber, ulitsa Sevastopolskaya, 4, kv. 6, Kalush, Ivano-Frankovskoi oblasti, and Elena Alexandrovna Chuiko, Prospekt Nauki, 99, kv. 48, Kiev, all of U.S.S.R.

Filed Aug. 13, 1976, Ser. No. 714,265
Int. Cl.² C09C *1/28*
U.S. Cl. 106—308 N **5 Claims**

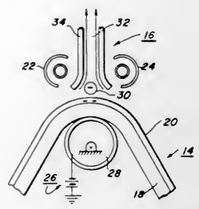
1. A method of producing aminated silica compounds, which consists essentially in the following sequence of steps: a) heating silica at a temperature of 200° to 500° C. for from 2 to 4 hours in vacuo in the absence of oxygen and moisture; b) cooling the silica down to temperatures within the range from 100° to 250° C.; and c), treating the silica with amino alcohols at a temperature from 100° to 250° C.

4,121,947

METHOD OF CLEANING A PHOTORECEPTOR

Kent W. Hemphill, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 5, 1977, Ser. No. 812,871
Int. Cl.² B08B *1/04, 5/04, 6/00*
U.S. Cl. 134—1 **5 Claims**



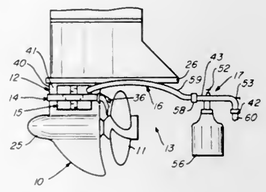
1. In a cleaning method for removing electrostatically charged residual toner from a photoreceptor having a substrate and a photoconductive layer, the improvement comprising the steps of:
(a) electrostatically charging the photoconductive layer to the same polarity as that of the toner,
(b) rotating a roller about an eccentric axis with the photoreceptor entrained about the roller to induce vibrations in the photoreceptor,
(c) exposing the photoconductive layer to light, and
(d) removing the toner from the photoreceptor.

4,121,948

UNIVERSAL FLUSHING APPARATUS

Kjall G. Guhlin, 11727 Sheridan, Houston, Tex. 77050

Filed Mar. 3, 1977, Ser. No. 773,902
Int. Cl.² B08B *3/02, 9/00*
U.S. Cl. 134—100 **10 Claims**



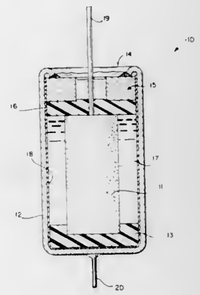
1. An apparatus adopted for adjustable mounting on motors having different size and location of cooling intakes for flushing and controllably introducing fluids into the cooling system of said motors, comprising
(a) conducting means for providing a stream of fluid for introduction into said motor;
(b) fluid introducing pad means releasably attached to the cooling intakes of said motor for forming a seal for the introduction of fluid into said cooling intakes of said motor;
(c) readily releasable fastener means connected to said fluid introducing pad means for securing said fluid introducing pad means over the cooling intakes of said motor;
(d) a dispenser means connected to said fluid introducing pad means for controllably dispensing fluid; and
(e) a control valve means connected to said dispenser means in fluid communication with said conducting means for controllably introducing fluid into the cooling system of said motor.

4,121,949

METHOD OF MAKING A CATHODE ELECTRODE FOR AN ELECTROLYTIC CAPACITOR

Charles W. Walters, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Division of Ser. No. 681,924, Apr. 30, 1976, Pat. No. 4,016,465.
This application Jan. 6, 1977, Ser. No. 757,339
Int. Cl.² H01G *9/24*
U.S. Cl. 148—6.14 R **3 Claims**



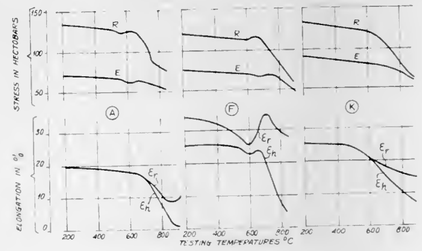
1. A method of coating a cathode electrode for an electrolytic capacitor, consisting of the steps of: providing a copper-based cathode electrode and forming a layer of a compound of copper on a surface of the cathode electrode by contacting the surface with an electrolyte containing at least one compound reactive with copper, the reactive compound being selected from the group consisting of tellurium dioxide and selenium dioxide whereby the layer of the compound of copper is formed from the group consisting of copper telluride and copper selenide respectively.

4,121,950

FORGED NICKEL ALLOY PRODUCT AND METHOD

Alain R. Guimier, Versailles, and Jean-Loup B. V. Strudel, Mennecy, both of France, assignors to Association pour la Recherche et le Developpement des Methods et Processus Industriels (A.R.M.I.N.E.S.), Paris, France

Filed Oct. 28, 1976, Ser. No. 736,324
Claims priority, application France, Oct. 31, 1975, 75 33888
Int. Cl.² C22F *1/10*
U.S. Cl. 148—12.7 N **10 Claims**



1. A process for the thermal treatment of forged nickel-cobalt-chrome alloys characterized by the presence of a gamma prime phase having a molecular structure of cubic arrangement and consisting essentially of, in percentage parts by weight:

cobalt	13–20%
chrome	13–19%
a metal selected from the group consisting of molydbedum, tungsten and mixtures thereof	13–6%
carbon	0.01–0.20%
aluminum	2–4%
titanium	0.10–3%
hafnium	0.30–1.50%
nickel	remainder

which process comprises the steps of:
(a) placing at least a portion of the gamma prime phase back into solution,
(b) effecting the coalescence of carbides and the initiation of the reprecipitation of the gamma prime phase, and
(c) completing the reprecipitation of the gamma prime phase.

4,121,951

ALUMINUM ALLOY ELECTRICAL CONDUCTOR AND METHOD THEREFOR

Paul Emile Fortin, and Fred Howitt, both of Kingston, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Mar. 5, 1976, Ser. No. 664,306
Int. Cl.² C22F *1/04*
U.S. Cl. 148—12.7 A **4 Claims**

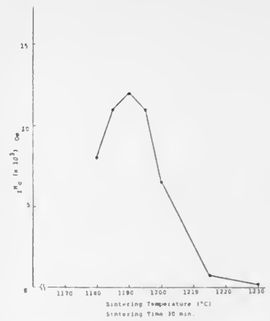
1. A method of making an electrical conductor comprising working an alloy consisting essentially of 0.07 – 0.2% Mg, 0.02 – 0.05% Zr, not more than 0.15% Si, not more than 1.0% Fe, not more than a minor amount of Cu, not more than 0.2% Zn, not more than 0,05% each of B and Ga, not more than 0.01% each of Ti, V, Mn and Cr, other elements not more than 0.03% each, 0.10% total, said minor amount of Cu not exceeding [0.05 + 2(0.2 − m)]% where *m* is the percent content of Mg in said alloy, balance aluminum to produce a conductor, and annealing the produced conductor at a temperature between about 200° and about 300° C. for precipitating sufficient $ZrAl_3$ to impart to said conductor an electrical conductivity of at least 60% IACS.

4,121,952

HARD MAGNETIC MATERIALS

Harufumi Senn, Yamato-Kouriyama, and Yoshio Tawara, Shijyonawate, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 651,596, Jan. 22, 1976, abandoned. This application Oct. 7, 1977, Ser. No. 840,481
Claims priority, application Japan, Oct. 9, 1975, 50-122693
Int. Cl.² H01F *1/04*
U.S. Cl. 148—31.57 **1 Claim**



1. A sintered magnetic material consisting essentially of

samarium, cobalt, iron and copper, said composition being expressed by the formula $Sm(Co_{1-x-y}Fe_xCu_y)_z$, in which x is 0.01 to 0.15, y is 0.05 to 0.15 and z is 7.8 to 8.2, said sintered material having an average grain size less than 10 microns and exhibiting a coercive force of at least about 10,600 Oe.

4,121,953

HIGH STRENGTH, AUSTENITIC, NON-MAGNETIC ALLOY

Frederick C. Hull, Penn Hills Township, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 2, 1977, Ser. No. 765,029

Int. Cl.[2] C22C *38/38, 38/58*

U.S. Cl. 148—38 **17 Claims**

1. Parts for use in electrical generators, said parts having been subjected to a high degree of work hardening in the solution-treated condition, said parts being substantially austenitic and non-ferromagnetic, both as quenched during said solution treatment and after cold working, and having high resistance to stress-corrosion cracking and hydrogen embrittlement, said parts being composed of an alloy consisting essentially of the following compositions in weight percent:

Manganese	17–23
Chromium	>6–<9
Carbon	up to 0.8
Silicon	up to 1.5
Nitrogen	up to 0.8
Nickel	up to 2.75
Molybdenum	up to 3.5
Vanadium	up to 1.7
Columbium	up to 0.45
Iron	Balance,

the manganese plus chromium being greater than 24 and less than 31.5 and the carbon plus nitrogen being between 0.35 and 0.8.

4,121,954

COOLING METHOD FOR METAL ARTICLES

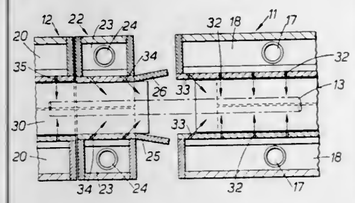
Ronald F. Dewsnap; Andrew D. Higgins, and David E. Beard, all of Sheffield, England, assignors to British Steel Corporation, London, England

Division of Ser. No. 611,081, Sep. 8, 1975, Pat. No. 4,084,798. This application Dec. 28, 1976, Ser. No. 755,020

Claims priority, application United Kingdom, Sep. 10, 1974, 39446/74

Int. Cl.[2] C21D *9/00*

U.S. Cl. 148—153 **6 Claims**



1. A method for cooling hot-rolled rod, billet or bar articles including passing the articles through a trough having generally vertical sides and open at its ends to permit entry and exit of the articles, directing water under pressure into the trough through a first set of inlets in the form of vertical slots positioned along opposite sides of the trough, the water streams flowing through said first inlets being directed against each other and perpendicular to the direction of movement of said articles, and directing fluid through a second set of inlets in the form of vertical slots located on opposite sides of the trough adjacent the article exit end thereof, the fluid being directed through said second set of inlets in an angular upstream direction relative to the direction of travel of said articles through the trough, whereby water streams from the first inlets impinge against each other and against the sides and the upper surface at least of the articles passing through the trough.

4,121,955

TREATMENT OF ELECTRODES

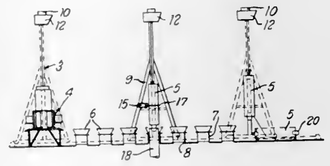
Helmut Jaunich; Dietger Dunkelmann, and Josef Schiffarth, all of Postfach, Germany, assignors to Foseco Trading A.G., Chur, Switzerland

Filed Sep. 7, 1976, Ser. No. 720,662

Claims priority, application United Kingdom, Sep. 5, 1975, 36696/75

Int. Cl.[2] H05B *7/10*

U.S. Cl. 156—71 **7 Claims**



1. In the method of treating an electrode used in an electric arc furnace at a steel plant, which comprises locating the electrode to be treated in a holder therefor by bringing the electrode to the holder using the main crane at the steel plant, the improvement which comprises bringing to the electrode in the holder a carriage on which is mounted a crane of a relatively low lifting capacity relative to the main crane and an applicator for applying a coating in the form of a set of preformed tiles to the electrode, causing the applicator to apply the coating to the electrode while holding the electrode in the crane of relatively low lifting capacity, and removing the crane and the applicator from the area of the holder.

4,121,956

METHOD FOR LABELLING A PACKAGE

Paul Edward Sample, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 15, 1977, Ser. No. 816,016

Int. Cl.[2] C09J *5/06*

U.S. Cl. 156—80 **6 Claims**

1. A method for labelling a package having contents at a temperature below 0° C. and a wrapping of ionomer film adjacent to the contents comprising cooling the package and its contents to a temperature below 0° C.

heating a label having a label face and an ionomer adhesive layer to a temperature adequate to melt the ionomer adhesive layer

contacting the ionomer adhesive layer of the heated label with the wrapping of the cooled package to fuse the ionomer adhesive layer with the wrapping.

4,121,957

METHOD AND APPARATUS FOR PRODUCING PLASTIC FOAM BOARDSTOCK AND PRODUCT THEREOF

Samuel B. Allen, 126 King William Dr., Newark, Del. 19711

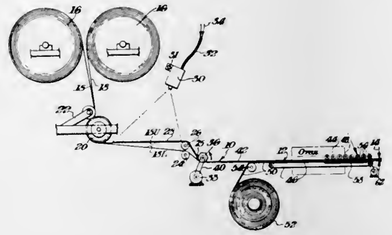
Filed May 27, 1977, Ser. No. 801,073

Int. Cl.[2] B32B *31/12*

U.S. Cl. 156—79 **5 Claims**

1. A method of producing boardstock of plastic foam composition comprising the steps of depositing an uncured liquid composition of the plastic foam of the pour type on one surface of an elongated porous sheet, beating the applied liquid composition against the surface of the porous sheet upon which it is deposited, maintaining the other surface of the porous sheet

free of pressure opposite the area at which the liquid composition is beated against the first-mentioned surface of the porous sheet, whereby a controlled amount of liquid composition is driven through the porous sheet, supplying a lower sheet



under the porous sheet whereby the thickness of a layer of foam plastic driven through the porous sheet is defined, and curing the plastic foam to adhere the components together in a boardstock.

4,121,958

INSULATION BOARD

Lamonte R. Koonts, Newton, N.J., assignor to United States Mineral Products Company, Stanhope, N.J.

Continuation of Ser. No. 554,814, Mar. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 518,111, Oct. 25, 1974, abandoned. This application Sep. 21, 1977, Ser. No. 835,235

Int. Cl.[2] B32B *5/18*; B05D *3/02*; B29H *7/20*

U.S. Cl. 156—79 **10 Claims**



1. A process for making a thermal insulating laminate capable of passing the Humid Aging Test, which laminate has (i) a rigid closed-cell foam core, the cells of said core containing a fluorocarbon gas, and (ii) a porous sheet of paper adhered to a first face of said core, comprising the steps in order:

(a) applying liquid polyurethane or polyisocyanurate-based polymer chemicals at a temperature of about 23° C. to the porous sheet at a temperature of from 25° to 35° C. in a process area at a temperature of from 20° to 24° C., said liquid chemicals having sufficiently long cream time and low enough viscosity to impregnate said porous sheet prior to foaming;

(b) allowing the liquid chemicals to foam to produce the rigid core, said core being allowed to rise to at least approximately 90% of full rise before applying any external heat to it; and

(c) curing the laminate at a temperature in the range of from 120° to 150° F.

4,121,959

TARGET PARTICULARLY FOR ARCHERY AND TECHNIQUE FOR MAKING TARGET COMPONENTS

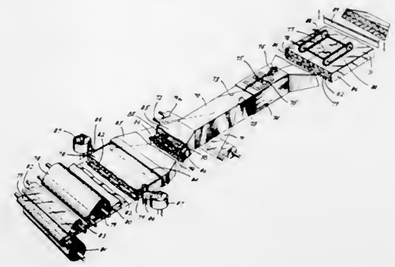
Leonard S. Meyer, 6449 Bridgewood Rd., Columbia, S.C. 29206

Continuation-in-part of Ser. No. 631,893, Nov. 14, 1975, Pat. No. 4,076,246, which is a continuation-in-part of Ser. No. 533,942, Dec. 18, 1974, abandoned. This application Sep. 24, 1976, Ser. No. 726,201

Int. Cl.[2] B29C *17/02*; B29D *23/10*

U.S. Cl. 156—201 **3 Claims**

1. A method for making a board like element comprising a core assembly of resilient and porous layers with a surrounding envelope of flexible sheeting material, comprising feeding a web of sheeting material of greater width than the cross sectional perimeter of the core assembly, as the sheeting is fed laterally folding the sheeting to bring the opposite edges of the web adjacent to each other, progressively interconnecting said opposite edges as they are brought together to form an enve-



lope, feeding the core assembly in confined laterally folded condition into said envelope, and advancing the envelope and the core assembly downstream of the point of interconnection of the edges of the sheeting with the core assembly in unconfined condition.

4,121,960

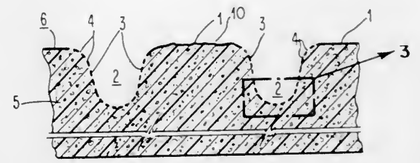
PERFORATED, EMBOSSED FILM TO FOAM LAMINATES

Bruce E. Focht, Trainer, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 583,799, Jun. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 476,216, Jun. 4, 1974, abandoned. This application Nov. 19, 1976, Ser. No. 743,416

Int. Cl.[2] B32B *3/24*

U.S. Cl. 156—219 **5 Claims**



1. A method of producing a film-to-foam laminate comprising: contacting a deformable film material with a surface of an open-cell, flexible, acoustical, polyurethane foam, said film having a thickness of from 1/10 mil to 20 mils;

adhesively activating with heat the film material or the surface of the foam;

mechanically pressing and embossing the deformable film, at an elevated temperature and pressure, into the surface of the foam with a heated embossing roll having a predetermined embossing pattern of crowns, sidewalls and valleys;

controlling the duration of mechanical embossing, the elevated temperature and the elevated pressure to result in perforations through the film in the sidewalls and valleys caused by pressing the film into the surface of the foam, said controlling being achieved by maintaining the heated embossing roll at a temperature of from about 400° F to about 600° F and operating the roll at a peripheral speed of from about 8 ft/min. to about 100 ft/min., to result in perforations through the film material having a width of from about 1/50 of an inch to about 1/400 of an inch; and

setting the adhesively activated material to result in the film-to-foam laminate.

4,121,961

METHOD OF LABEL INSTALLATION

Jerome J. Brunette, 911 Cambridge Dr., Libertyville, Ill. 60048, and William G. Fogleson, 5098 Deep Point Dr., Kalamazoo, Mich. 49002

Filed Apr. 18, 1977, Ser. No. 788,457
Int. Cl.² B32B *31/20;* B41M *5/22*
U.S. Cl. 156—249 **2 Claims**

1. A method of label installation comprising

disposing two sheets in face-to-face relation with the upper of said sheets being generally transparent plastic film and having on the underside a coating containing an image precursor, the lower of said sheets being paper and having on the top side thereof a coating containing an image developer,

applying pressure to said sheets to create an image on said upper sheet,

separating said sheets, and

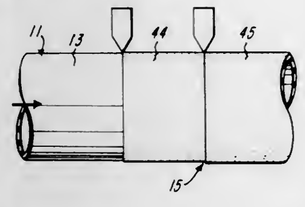
applying said upper sheet to a label receiving surface whereby said label is essentially unalterable.

4,121,962

METHOD OF MAKING A HOSE

Carl E. Hopkins, Dover, N.J., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 584,448, Jun. 6, 1975, Pat. No. 4,102,360, which is a continuation-in-part of Ser. No. 426,986, Dec. 20, 1973, abandoned. This application Sep. 7, 1976, Ser. No. 721,134
Int. Cl.² B32B *7/10;* C09J *3/00;* F16L *11/11*
U.S. Cl. 156—272 **10 Claims**



1. A method of making a hose construction comprising the steps of irradiating an uncured polyethylene tube to crosslink the molecules thereof and thereby cure said tube, applying a layer of a halogenated elastomeric based primer to the outer surface of said tube, applying a layer of an ethylene propylene copolymer based adhesive over said primer, applying a tubular reinforcing layer around said adhesive layer, applying a layer of unvulcanized rubber around said reinforcing layer, applying a second tubular reinforcing layer around said layer of unvulcanized rubber, and subjecting said tube and layers to a controlled temperature environment to vulcanize said rubber and complete said hose construction.

4,121,963

BONDING POLYAMIDE PLASTICS TO RUBBER COMPOSITIONS

James Frank Yardley, Shenston near Lichfield, and Allen Frederick Nightingale, Birmingham, both of England, assignors to Dunlop Limited, London, England

Division of Ser. No. 362,211, May 21, 1973, abandoned. This application Nov. 5, 1974, Ser. No. 521,152
Claims priority, application United Kingdom, Jun. 15, 1972, 27939/72; Jan. 20, 1973, 03056/73
Int. Cl.² B29C *27/00;* C09J *5/02*
U.S. Cl. 156—308 **3 Claims**

1. A method of bonding a substantially crystalline thermoplastic polyamide plastics material selected from the group consisting of nylon 4, nylon 5, nylon 6, nylon 6/6, nylon 6/10, nylon 7, nylon 8, nylon 9, nylon 10, nylon 11, nylon 12, and nylon 13 to a prevulcanized rubber composition, which is the vulcanizate of a rubber containing in excess of 5 unsaturated bonds for every 100 main chain carbon atoms, consisting essentially of

heating said polyamide plastics material to fuse at least its surface, then

contacting the fused surface with said prevulcanized rubber composition, which when based on a nonpolar rubber has had its surface pretreated by a chemical reagent selected from the group consisting of acidified sodium hypochlorite, concentrated nitric acid, an aqueous solution of trichloroisocyanuric acid, and sodium dichloroisocyanurate or UV radiation prior to bringing the surface of said prevulcanized rubber composition into contact with the fused polyamide plastics surface, and

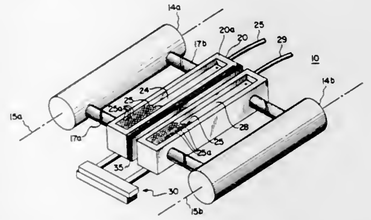
allowing the polyamide plastics material to cool in contact with said prevulcanized rubber composition.

4,121,964

APPARATUS AND METHODS FOR FABRICATION OF MAGNETIC PRINTING BELT

Ami E. Berkowitz, Schenectady; John O. Fielding, Ballston Lake, both of N.Y., and Joseph A. Lahut, Waynesboro, Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 10, 1977, Ser. No. 823,384
Int. Cl.² G03D *15/04;* B29C *27/08*
U.S. Cl. 156—507 **6 Claims**



1. Apparatus for fabrication of a continuous loop from a sheet of material, comprising:

first and second cylindrical members;

means for rigidly positioning said first and second cylindrical members in spaced-apart relationship with their axes of rotation essentially parallel each to the other;

an anvil member having a top surface;

first means fixedly positioned between said cylindrical members for holding a first end of said sheet of material, said first means having a surface to which said anvil member is attached with said anvil member top surface underlying and supporting said first sheet end;

second means positioned between said cylindrical members for holding a remaining end of said sheet of material after said sheet has been passed from said first means and about opposing circumferential half-surfaces of said cylindrical members;

means coupled to said first and second means for varying the distance between said anvil member and said second means to adjust the amount of overlap of said first and remaining ends of said sheet; and

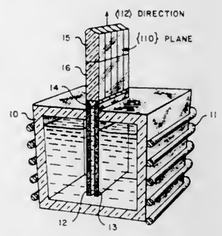
means positioned adjacent to said anvil member for cutting the overlapped edges along a line of splice and for joining the adjacent cut ends to form a splice therebetween.

4,121,965

METHOD OF CONTROLLING DEFECT ORIENTATION IN SILICON CRYSTAL RIBBON GROWTH

Martin H. Leipold, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Jul. 16, 1976, Ser. No. 706,073
Int. Cl.² B01J *17/18;* C01B *33/02*
U.S. Cl. 156—608 **1 Claim**



1. In a film-fed process of growing crystalline silicon in a ribbon form by drawing molten silicon through a die, starting crystallization of silicon thus fed through said die as it cools with a seed crystal, and continuing to pull the crystal ribbon thus formed from said die as crystallization continues, the improvement consisting of using as said seed crystal a rectangular crystalline silicon of appropriate dimensions having a {110} crystallographic plane parallel to the broad surfaces of the seed and the ribbon grown, a <112< crystallographic direction parallel to the direction of growth of said crystal ribbon, and {111} twinning planes parallel to said growth direction and normal to said broad surfaces.

4,121,966

METHOD FOR PRODUCING FIBROUS SHEET

Masahiro Amano, and Takashi Koike, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 640,211, Dec. 12, 1975, abandoned. This application Feb. 4, 1977, Ser. No. 765,752
Claims priority, application Japan, Feb. 13, 1975, 50-18254
Int. Cl.² D21D *3/00*
U.S. Cl. 162—164 R **8 Claims**

1. A method for producing a fibrous sheet which consists of adding zinc white to a carboxyl modified anionic latex to disperse the zinc white in the latex, adjusting pH of the dispersion to at least 7, adding a water soluble cationic polymer to the dispersion at said pH while stirring to produce a latex flocculate having a particle size of 100μ–500μ, adding said latex flocculate to a fiber slurry, producing a sheet therefrom by wet paper making process and drying the resultant sheet.

4,121,967

SCREW CONVEYOR IN PULP-MAKING EQUIPMENT

Per Gustaf Reinhall, 834 171st Pl. NE., Bellevue, Wash. 98008

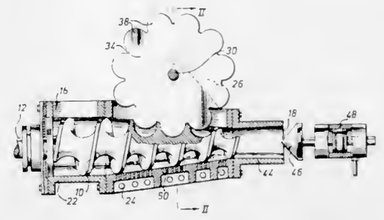
Filed Dec. 21, 1976, Ser. No. 752,749
Claims priority, application Sweden, Sep. 7, 1976, 7609879
Int. Cl.² B30B *9/12;* D21C *7/06*
U.S. Cl. 162—246 **4 Claims**

1. A screw conveyor for use in pulp making equipment for advancing a mass of pulp material from a material-supply station to a further-processing station, in an environment of pressurized steam while being gradually compressed into a steam-tight plug by the progressively increasing force of the advancing material, comprising:

(a) a horizontal casing having a conical bore tapering from a material inlet end to a material outlet end;

(b) said casing being split vertically into two equal components clamped together along their bottom portions, the top portions each having an upwardly flange defining a slot therebetween;

(c) a rotatable screw feeder extending through the conical bore of the casing, comprising helical flights and an intervening spiral groove and conforming to the inner diameter of said conical bore for advancing the material from the material inlet to the material outlet while being gradually compressed into a steam-tight plug;



(d) a sprocket wheel having teeth contoured to conform to the profile of said spiral groove for successively engaging the spiral groove synchronously with the screw feeder and mounted rotatably in said slot in frictional contact with said flanges for preventing the material from turning with the screw feeder during the advancement and compression thereof; and

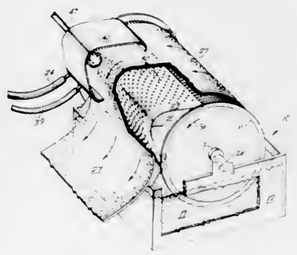
(e) means for maintaining said flanges in frictional contact with said sprocket wheel.

4,121,968

SECONDARY VACUUM BOX FOR A ROTARY VACUUM FILTER

Roger Wells, Mercer Island, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jan. 3, 1977, Ser. No. 757,793
Int. Cl.² D21F *1/48*
U.S. Cl. 162—290 **5 Claims**



1. A modified rotary drum vacuum filter, having improved dewatering capability over an existing unmodified filter, of the type wherein a drum is supported horizontally and rotated about its axis, has closed ends, a substantially open lateral surface area supporting a foraminous cloth and a first vacuum means evacuating the interior of the drum, wherein the lower portion of the drum is adapted to be submerged in a slurry of substantially insoluble material which, upon contact with said foraminous cloth, adheres to and is partially dewatered in response to the first vacuum means operating upon the drum, the improvement comprising:

a suction box, substantially crescent-shaped in cross-section, suspended independently of the drum so that the drum is free to rotate without contacting said box, said box having an inner surface, with respect to the drum, that substantially conforms to the curved surface of the drum, and a smoothly contoured outer surface of the suction box, said

outer surface terminating in the same plane as the inner surface but having a greater arc length in cross-section than the inner surface in cross-section, said outer surface being apertured;

a second vacuum means operating upon the suction box; and

an endless foraminous bet, encompassing only the apertured surface of the suction box and the lateral surface of the drum not adjacent the suction box, wherein rotation of the drum causes said belt to rotate with the drum as a result of friction forces between said belt and drum, sliding over the suction box outer surface, whereby a slurry of a substantially insoluble material in contact with the foraminous belt is partially dewatered by the first vacuum means evacuating the drum, in the area where the belt contacts the drum surface, and by the second vacuum means evacuating the suction box, in the area where the belt contacts the apertured suction box surface.

4,121,969

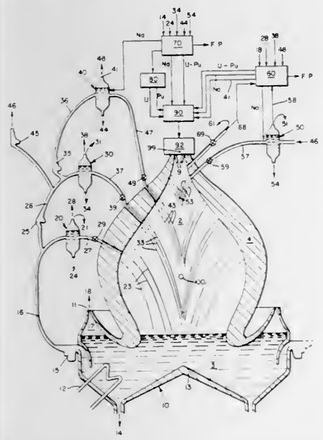
CONTAINED FISSIONLY VAPORIZED IMPLODED FISSION EXPLOSIVE BREEDER REACTOR

Edward F. Marwick, 5149 W. Morse, Skokie, Ill. 60076

Continuation-in-part of Ser. No. 355,016, Apr. 27, 1973. This application Sep. 13, 1976, Ser. No. 722,728

Int. Cl.[2] G21C *1/02*

U.S. Cl. 176—18 **26 Claims**



24. Apparatus for the production of useful energy, said apparatus comprising:

a chamber having walls of sufficient strength to contain a series of explosions;

slug means;

apparatus for introducing a plurality of slug means seriatim into said chamber, each slug comprising first shell means containing fissile actinides surrounding a substantially void central region and a second shell means including a pressure forming means, said second shell completely surrounding said first shell tamping means surrounding said second shell means; and

spray means within said chamber walls for producing a predetermined configuration of liquid spray in said chamber upon introduction of each of said slug means into said chamber;

said liquid spray comprising a slurry of molten alkalai metal and fissile and fertile actinides;

said slug means having a "*k*" which is less than one prior to introduction into said chamber and increases to be greater than one within said chamber due to reflection of neutrons by, and fission-produced neutrons from, said liquid spray; and

said increase in "k" resulting in heating and change in state of said pressure forming means to vapor and/or gas in said second shell means within said tamping means, implosion of said second shell means into said central region, and explosion of slug means, and means for recovering useful energy

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4,121,970

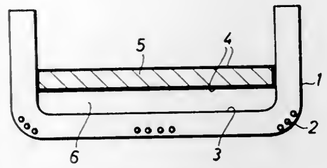
NUCLEAR REACTOR INSTALLATION INCLUDING A CORE CATCHING APPARATUS

Helmut Albrecht; Leopold Barleon, both of Karlsruhe; Stefan Dorner, Pforzheim; Manfred Fischer, Leopoldshafen, and Juergen Wilhelm, Hochstetten, all of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Continuation-in-part of Ser. No. 533,251, Dec. 16, 1974, abandoned. This application Apr. 22, 1976, Ser. No. 679,221

Int. Cl.[2] G21C *9/00*

U.S. Cl. 176—38 **7 Claims**



1. A nuclear reactor installation having an H_2O containing coolant associated therewith and comprising: a nuclear core vessel; a nuclear core enclosed within said vessel and including structural metallic components and nuclear fuel; and a core catching apparatus disposed below the nuclear core, said core catching apparatus consisting of a container of highly temperature resistant materials and forming a pan-like melt-through barrier for receiving and containing the components of the nuclear core including the nuclear fuel during a core-melt-down accident; and a protective top layer disposed within the container and supported in spaced relationship above the floor of said container, and adapted to be penetrated by the molten core components flowing from the nuclear core during a core melt-down accident, said top layer being chemically inactive with regard to H_2O, and having a lower density than the metallic components of the core, so as to overlay, during such core melt-down accident, the metallic portion of the molten core but having a higher density than water and being present in an amount sufficient to isolate the metallic components of the core melt in the container and protect them from being connected by water thereby preventing the formation of hydrogen.

4,121,971

PULSED NEUTRON SOURCE

Edward F. Marwick, 5149 W. Morse, Skokie, Ill. 60076

Continuation-in-part of Ser. No. 544,178, Jan. 27, 1975. This application Jun. 28, 1977, Ser. No. 810,894

Int. Cl.[2] G21C *1/00*

U.S. Cl. 176—39 **14 Claims**

6. Apparatus for producing intense neutron pulses seriatim, said apparatus comprising:

a containing chamber;

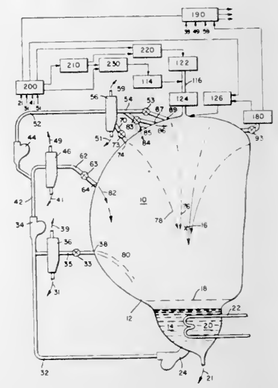
less than critical target mass means of fissile and fertile actinides with a cavity therein having a segment of concentrated fissile materials;

less than critical slug means formed of fissile and fertile actinides for interference fit in said target mass means cavity and having a segment of concentrated fissile materials in an end portion thereof; means for injecting separately at two different predetermined times said target mass means and said slug means, respectively;

means for dropping target mass means seriatim into said containing chamber with the cavity being upwardly directed;

means for downwardly propelling slug means seriatim toward each of said target mass means for insertion in the cavity for bringing said segments in close proximity such that the combined masses become more than prompt critical; and

spray means for protecting said chamber and absorbing debris and thermal energy.



4,121,972

NUCLEAR REACTOR FUEL ROD

Josef Steven, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim (Ruhr), Germany

Filed Sep. 21, 1976, Ser. No. 725,197

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1975, 2543462

Int. Cl.[2] G21C *3/02*

U.S. Cl. 176—68 **5 Claims**



1. A nuclear reactor fuel rod formed of a cladding tube, end caps hermetically sealing the tube at both ends thereof, the tube being divided transversely so as to form two longitudinally-extending zones located one behind the other for receiving therein, respectively, a charge of nuclear fuel and a charge of gas-adsorbing material free of nuclear fuel, comprising means disposed in the zone wherein a charge of gas-adsorbing material is receivable for simultaneously supporting the tube and for receiving gas-adsorbing material therein, said means comprising a capsule having an open end facing toward the zone wherein a charge of nuclear fuel is receivable, a gas-permeable member closing off said open end of said capsule, a charge of gas-adsorbing material that has been dried and degassed in high vacuum at temperatures of from 500° to 1000° C. being received in said capsule, said capsule having an interior space between the gas-adsorbing material received therein and said gas-permeable member, and a metallic foil destructible by a given internal pressure of the fuel rod gas-tightly closing said interior space from the adsorber material received in said capsule.

4,121,973

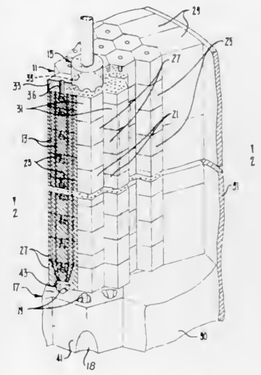
NUCLEAR REACTOR WITH FUEL COLUMN COOLANT REGULATION

Karol J. Mysels, La Jolla, and Arkal S. Shenoy, San Diego, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Dec. 17, 1975, Ser. No. 641,646

Int. Cl.[2] G21C *15/08*

U.S. Cl. 176—84 **5 Claims**



1. A nuclear reactor comprising a core having a plurality of columnar fuel regions, each of said fuel regions being comprised of a plurality of columns of disengageably assembled fuel elements having aligned passages therein for conducting fluid coolant through said columns, a plurality of flow regulating means, one for each of said columnar fuel regions for separately regulating the flow of coolant passing through said passages therein, each of said columns having a reflector block at the downstream end thereof, each of said reflector blocks having a single discharge orifice and having manifolding passages therein for collecting the coolant from all of said passages in a respective one of said columns into said single discharge orifice, and a plurality of support blocks for said core, said support blocks having discharge orifices and manifolding ducts therein, each of said support block manifolding ducts communicating between a single support block discharge orifice and a group of said reflector block discharge orifices distributed among different ones of said fuel regions, whereby coolant from several of said fuel regions is discharged from each of said support block discharge orifices, and temperature measuring means positioned in each of said support block manifolding ducts.

4,121,974

PREPARATION OF RETROGRADATION-RESISTANT STARCHES WITH IMMOBILIZED AMYLASES

Bernard T. Hofreiter, Peoria; Karl L. Smiley, Morton, and Joyce A. Boundy, East Peoria, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 29, 1977, Ser. No. 811,398

Int. Cl.[2] C12D *13/02*

U.S. Cl. 195—7 **11 Claims**

1. A method for producing a retrogradation-resistant starch comprising the following steps:

a. providing a dispersion of a gelatinized starch substrate comprising amylose and amylopectin;
b. providing an amylase immobilized on an insoluble porous carrier having pore structures preferentially sorptive to amylose over amylopectin wherein said amylase immobilized on an insoluble porous carrier hydrolyzes amylose without significant degradation of amylopectin;
c. contacting said starch substrate dispersion with said immobilized amylase, under relatively mild hydrolyzing conditions, thereby preferentially hydrolyzing said amylose over said amylopectin, and thereby converting said starch substrate to a retrogradation-resistant starch; and
d. recovering said retrogradation-resistant starch prepared in step (c).

4,121,975

PRETREATMENT OF SAMPLES FOR POLYIODOTHYRONINE ASSAYS

Edwin F. Ullman, Atherton, and Joel E. Lavine, Mountain View, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Aug. 20, 1976, Ser. No. 716,032
Int. Cl.[2] G01N *33/00, 31/00, 31/14*
U.S. Cl. 195—99 **11 Claims**

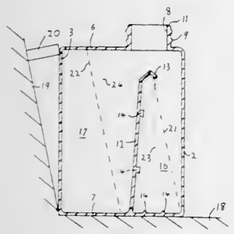
1. A composition useful for the treatment of serum prior to thyroxine determination comprising an alkaline aqueous solution having α-cyclodextrin and salicylate in a weight ratio of about 5-20:1.

4,121,976

CULTURING BOTTLE AND METHOD OF MAKING

Christopher Michael Gleeson, 140 Railway Ave., Ringwood East, Victoria, Australia (3135)

Filed Jun. 15, 1976, Ser. No. 696,215
Claims priority, application Australia, Jun. 20, 1975, 2060/75; Aug. 29, 1975, 2972/75
Int. Cl.[2] C12B *1/00*
U.S. Cl. 195—104 **28 Claims**



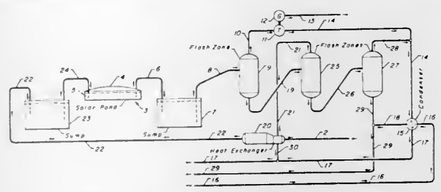
1. A bottle for growing microbiological cultures comprising:
a plurality of contiguous side walls each having a pair of edges, one of which is joined to said base, said plurality of side walls extending away from said base to form a container, one of said side walls being formed for supporting the bottle in a stable condition on a surface when the bottle is in a second position, angularly displaced from said first position.
a cover joined to the other edges of said side walls for completing the closure of the container, said cover having an access opening therein permitting communication with the interior of the container;
a partition wall means within said bottle joined to said base and extending therefrom, said partition wall means joined to said side walls and spanning the interior of said container and oriented with respect to said one side wall for forming a material retaining dish when said bottle is supported by said one side wall, said partition wall means dividing said bottle into a first compartment on one side thereof for providing material to said dish and a second compartment on the other side thereof when said bottle is supported by said base; and
culturing base material in at least one of said first compartment or dish.

4,121,977

POWER GENERATION AND POTABLE WATER RECOVERY FROM SALINOUS WATER

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 16, 1976, Ser. No. 751,427
Int. Cl.[2] B01D *3/06*
U.S. Cl. 203—11 **10 Claims**



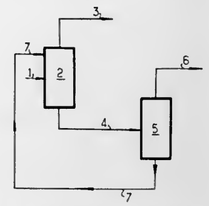
1. A process for simultaneously generating power and recovering potable water from a source of salinous water, which process comprises the sequential steps of:
(a) increasing the temperature of a first salinous water portion, obtained from a first depth proximate to the surface of said source, via indirect contact with a vaporous phase which is (i) derived from said first salinous water portion and, (ii) obtained at an elevated temperature;
(b) introducing said first salinous water portion into a solar radiation heat sink;
(c) exposing said first salinous water portion, within said solar radiation heat sink, to radiant solar energy for a time sufficient to further increase its temperature to a level of at least about 135° F.;
(d) introducing the thus-heated first salinous water portion into a first flash separation zone, maintained at a subatmospheric pressure, to provide a substantially non-salinous first vaporous phase and a salinous first liquid phase, and (i) passing said first vaporous phase through a turbine, (ii) generating power from the resulting motion of said turbine and, (iii) condensing the turbine exit vapors, via indirect contact with a second salinous water portion, obtained from a second depth substantially lower than the surface of said source, to recover potable liquid water;
(e) introducing said salinous first liquid phase into a second flash separation zone, maintained at a subatmospheric pressure lower than said first flash separation zone, to provide a substantially non-salinous second vaporous phase and a salinous second liquid phase;
(f) indirectly contacting said first salinous water portion with said second vaporous phase, to increase the temperature of said first water portion prior to the introduction thereof into said solar radiation heat sink, and recovering additional potable liquid water from said second vaporous phase;
(g) introducing said salinous second liquid phase into a third flash separation zone, maintained at a subatmospheric pressure lower than said second flash separation zone, to provide a substantially non-salinous third vaporous phase and a salinous third liquid phase; and,
(h) condensing said third vaporous phase, via indirect contact with said second salinous water portion, to recover additional liquid potable water.

4,121,978

METHOD OF SEPARATING CHLORINATED ALIPHATIC HYDROCARBONS FROM MIXTURES THEREOF, BY EXTRACTIVE DISTILLATION

Jacques Becuwe, Fontenay-sous-Bois, France, assignor to Rhone-Progil, Courbevoie, France

Continuation of Ser. No. 564,328, Apr. 2, 1975, abandoned, which is a continuation of Ser. No. 437,370, Jan. 28, 1974, abandoned. This application Oct. 20, 1976, Ser. No. 734,083
Claims priority, application France, Jan. 30, 1973, 73.03178
Int. Cl.[2] B01D *3/34*
U.S. Cl. 203—58 **4 Claims**



1. A method for at least partial separation of chlorinated aliphatic hydrocarbons having from 1—3 carbon atoms from mixtures consisting essentially of two or more of said chlorinated hyrocarbon by extractive distillation, comprising distilling the mixture of said chlorinated hydrocarbons with an organic compound having a boiling temperature which is higher than the C_1-C_3 chlorinated hydrocarbon to be separated, and selected from the group consisting of diethylene glycol, triethylene glycol, tetraethylene glycol, dipropylene glycol and propanediols, ethylene carbonate, propylene carbonate, dimethylformamide, furfural, N-methylpyrrolidone, cyclohexanone, dimethylsulfoxide, and sulfolane and alkylsulfolanes in which the alkyl group has from 1-2 carbon atoms, and in which the mixture of chlorinated aliphatic hydrocarbons comprises trichloroethylene and 1,2-dichloroethane.

4,121,979

METAL TREATMENT

Simon John Wake, s'Hertogenbosch, Netherlands, assignor to Oxy Metal Industries Corporation, Warren, Mich.

Division of Ser. No. 608,486, Aug. 28, 1975, abandoned. This application Sep. 27, 1976, Ser. No. 727,326
Int. Cl.[2] C25F *3/06, 1/06;* **C25D** *3/12;* **B32B** *13/06*
U.S. Cl. 204—34 **7 Claims**

1. An electrolytic etching process for steel which does not result in objectionable formation of mercaptans in which the workpiece is made the anode and is immersed in a composition comprising from 20 to 600 g/l of sulfuric acid, from 0.01 to 10 g/l of an organic compound of up to 10 carbon atoms containing an alcoholic hydroxyl group and having aliphatic unsaturation and a d.c. current is passed through the workpiece using insoluble cathodes at a current density of 1–100 amps per sq. ft. to remove 0.1–10 grams per sq. ft. of metal from the workpiece surface.

4,121,980

METHOD OF SEALING OXIDIZED ALUMINUM SURFACES WITH AQUEOUS SOLUTIONS OF POLYCARBOXYLIC ACIDS

Hans Jürgen Göhausen, Hilden; Winfried Kirchhoff, Düsseldorf, and Jürgen Lindener, Monheim, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Germany

Filed Nov. 2, 1977, Ser. No. 847,773
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1976, 2650989
Int. Cl.[2] C25D *11/24*
U.S. Cl. 204—35 N **11 Claims**

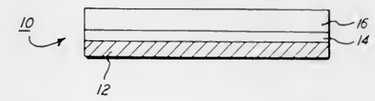
1. In the process of treating surfaces of aluminum or aluminum alloys which comprises anodic oxidation and subsequent sealing of the surface, the improvement consisting of sealing the surface in an aqueous solution at a temperature between 90° C. and the boiling temperature of the solution, said aqueous solution having a pH value of from 4 to 8, and containing from 0.0005 to 0.2 gm per liter of an additive selected from the group consisting of a cycloaliphatic polycarboxylic acid, an aromatic polycarboxylic acid, a water-soluble salt of said polycarboxylic acids, and mixtures thereof, said cycloaliphatic or aromatic polycarboxylic acid having 4 to 6 carboxyl groups in the molecule and optionally containing a heteroatom or heteroatoms in the ring.

4,121,981

ELECTROCHEMICAL METHOD FOR FORMING A SELENIUM-TELLURIUM LAYER IN A PHOTORECEPTOR

Anthony T. Ward, Webster; James M. Ishler, Ontario, both of N.Y., and Aleksandar Damjanovic, Morristown, N.J., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 23, 1977, Ser. No. 836,124
Int. Cl.[2] C25D *5/48;* **G03G** *5/04*
U.S. Cl. 204—38 R **5 Claims**



1. A process for forming an electrophotographic photoreceptor comprising:
(a) providing a substrate comprising a conductive layer which is capable of forming a blocking contact with selenium;
(b) cathodically depositing a layer of an amorphous selenium-tellurium alloy on a surface of said substrate from an aqueous electrolyte solution containing Se^{iv} and Te^{iv} ions whereby the portion of said alloy in contact with said surface of said substrate comprises from about 5 atomic percent to about 17 atomic percent tellurium; and
(c) overcoating said selenium-tellurium layer with a layer of a charge carrier transport material which is capable of transporting at least one species of charge carrier.

4,121,982

GOLD ALLOY PLATING BATH AND METHOD

William L. Moriarty, South Meriden, and Augustus Fletcher, Bristol, both of Conn., assignors to American Chemical & Refining Company Incorporated, Waterbury, Conn.

Filed Feb. 3, 1978, Ser. No. 874,893
Int. Cl.[2] C25D *3/62, 3/64*
U.S. Cl. 204—43 G **19 Claims**

1. In a bath for electroplating a gold/silver alloy, the combination comprising an aqueous solution of:
(a) at least one water soluble electrolyte selected from the class consisting of alkali metal salts of boric acid, citric acid, phosphoric acid, pyrophosphoric acid and tartaric acid present in a quantity at least sufficient to render the bath electrically conductive for electroplating gold and silver therefrom;
(b) gold ion provided by an alkali metal gold cyanide, said gold being present in an amount from 1 gram per liter up to that provided by saturation of said bath with said alkali metal gold cyanide; and
(c) silver ion provided by an alkali metal silver cyanide, said silver being present in an amount from ½ gram per liter up to that provided by saturation of said bath with said alkali metal silver cyanide; and
(d) a water soluble brightener system comprising selenium

ion provided by a water soluble selenium compound containing selenium in the −2 oxidation state and a water soluble ethyleneimine compound, said selenium ion being present in the amount of about 0.1 to 0.5 ppm selenium for each gram per liter of silver ion, and said ethyleneimine compound being present in the amount of about 4 to 75 ppm ethyleneimine compound for each gram per liter of gold ion;

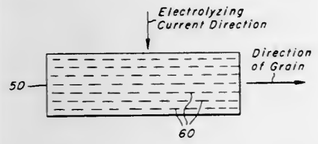
said bath having a pH of about 8 to 10.

4,121,983

METAL PRODUCTION

Donald L. Kinosz, Arnold; Subodh K. Das, Apollo, and Robert L. Coffman, Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 21, 1977, Ser. No. 862,829
Int. Cl.[2] C25C *3/06, 3/04;* **C25B** *11/12*
U.S. Cl. 204—67 **11 Claims**



1. A process for producing metal in an electrolytic cell containing metal halide dissolved in a molten solvent of higher decomposition potential, the cell having a terminal anode, a terminal cathode and at least one bipolar electrode arranged to operate with the anode and the cathode providing inter-electrode spaces therebetween, the process which comprises the steps of:

(a) providing at least one electrode comprised of carbonaceous material;

(b) determining the direction of grain flow in the carbonaceous material constituting the electrode;

(c) arranging said electrode in said cell such that the direction of electrolyzing current flow through the cell is in a direction substantially perpendicular to the direction of grain flow in the electrode; and

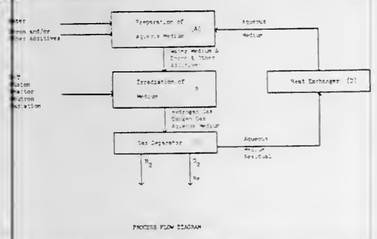
(d) electrolyzing the cell, thereby producing halogen gas on each anode surface thereof and metal on each cathode surface.

4,121,984

PRODUCTION OF HYDROGEN BY RADIOLYSIS

Henry J. Gomberg, and Robert J. Teitel, both of Ann Arbor, Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Filed Nov. 9, 1973, Ser. No. 414,370
Int. Cl.[2] B01J *1/10;* **G21G** *1/00*
U.S. Cl. 204—157.1 H **13 Claims**



3. A process for producing hydrogen by exposure of a water medium to neutrons which comprises:

1. providing a water medium for exposure to neutron radiation,

2. incorporating an additive selected from boron, lithium and compounds thereof in said water medium,

3. exposing said medium and incorporated additive to neutron radiation, and

4. separating hydrogen gas from said exposed materials.

4,121,985

PHOTOCROSSLINKED INNERLAYER

Joseph Cherenko, Valencia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 3, 1976, Ser. No. 682,426
Int. Cl.[2] C08F *8/00, 8/18*
U.S. Cl. 204—159.14 **7 Claims**

1. In a method for crosslinking a thermoplastic polymer which is essentially free of ethylenic unsaturation and selected from the group consisting of polyurethanes and polyvinyl acetals by physically treating the polymer with a composition comprising a photoinitiator and irradiating said polymer with actinic radiation in the presence of said photoinitiator, the improvement which comprises treating said polymer, prior to irradiating, with a composition comprising a photoinitiator and a compound selected from the group consisting of 1,4 dioxane, dimethyl formamide, tetrahydrofuran, methylene chloride, morpholine, diethanolamine, diethylamine, dipropylamine, triethylamine, tripropylamine and tributylamine which enhances the solvent-abrasion resistance of a polymer surface crosslinked by said photoinitiator.

4,121,986

PROCESS FOR THE POLYMERIZATION OF POLYALLYLAMINES IN THE PRESENCE OF A MINERAL ACID SOLUTION

Hendrick Adriaan Jacobus Battaerd, North Clayton, Australia, assignor to ICI Australia Limited and Commonwealth Scientific and Industrial Research Organization, both of Melbourne, Australia

Filed Apr. 21, 1976, Ser. No. 678,878
Claims priority, application Australia, May 7, 1975, 1511/75
Int. Cl.[2] C08J *5/20;* **C08F** *2/46*
U.S. Cl. 204—159.22 **11 Claims**

1. A process of polymerizing a monomer mixture containing from 3 to 100% of amines comprising at least two allyl groups which method comprises reacting a solution of the monomer mixture in concentrated phosphoric acid of concentration not less than 40% w/w and wherein the molar ratio of acid to amine is greater than 2:1, and in the presence of a polymerization inhibitor and isolating the polymer salt so formed.

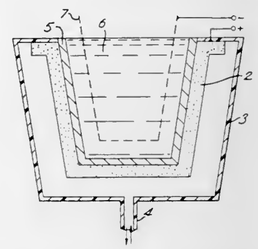
4,121,987

ELECTROPHORETIC SLIP CASTING

William Ryan, and Ebrahim Massoud, both of Stoke-on-Trent, England, assignors to National Research Development Corporation, London, England

Filed Oct. 19, 1977, Ser. No. 843,735
Int. Cl.[2] C25D *1/14, 1/20*
U.S. Cl. 204—181 F **5 Claims**

1. In a method of slip casting an article, comprising placing an aqueous suspension of a ceramic material in a mould having an electrically conductive porous carbonaceous opeative surface conforming to the desired surface of the article, electrically charging the operative surface of the mould in the opposite sense to the charge carried by the material in the opposite sense to the charge carried by the material in the suspension, removing the reamining suspension after the material has built up to a desired thickness in the mould and removing the material in the form of the desired article from the mould, the improvement consisting in that the carbonaceous component of the surface region of the mould, before firing or curing of



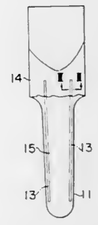
the mould, is particles of maximum diameter from 70μm to 200μm.

4,121,988

OXYGEN SENSOR

Hiromi Sano, Nagoya, and Masatosi Suzuki, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Japan

Filed Dec. 1, 1976, Ser. No. 746,632
Claims priority, application Japan, Dec. 19, 1975, 50-152337; Sep. 8, 1976, 51-108105
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 S **16 Claims**



1. An oxygen sensor for sensing an oxygen content in exhaust gas exhausted from a combustion apparatus comprising:

a solid electrolyte made of an oxygen ion conducting metal oxide, said solid electrolyte having a first surface which is to be subjected to said exhaust gas and a second surface which is to be subjected to reference gas including oxygen gas and generating an e.m.f. corresponding to a difference between oxygen concentration in said reference gas;

a first electrode means disposed on said second surface of said solid electrolyte which is to be subjected to said reference gas;

a second electrode means of conductive wire-shaped member firmly bonded to said first surface of said solid electrolyte which is to be subjected to said exhaust gas; and

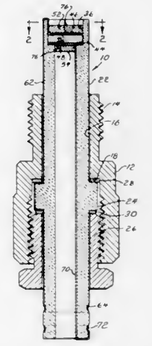
a third electrode means of thin film disposed on those areas of said first surface of said solid electrolyte on which said second electrode means is not disposed and on an outer surface of said second electrode means.

4,121,989

METHOD OF MAKING OXYGEN SENSOR

Ming S. Shum, Des Plaines; Roy E. Svacha, North Barrington; Kenneth R. Janowski, Wheaton, all of Ill., and Anthony V. Fraioli, East Selauket, N.Y., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 775,078, Mar. 7, 1977. This application Dec. 2, 1977, Ser. No. 856,825
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 S **2 Claims**



1. A method of making an oxygen sensor comprising the steps of taking a pre-fired non-electrically conducting hollow ceramic tube and forming a reduced diameter recess in the inner or sensing end thereof; placing a coating of glass sealing material at the bottom of the recess; applying a coating of a platinum paste electrode to each side of a disc of an oxygen ion conducting solid electrolyte; placing said electrolyte disc in said recess with its outer reference surface in contact with said glass sealing material; applying a stripe of platinum paste to the outer reference electrode on said disc and along the internal surface of the tube to the outer or reference end thereof; applying a stripe of platinum paste to the inner sensing electrode on said disc, around the inner end of said ceramic tube and along the outer surface thereof to a location adjacent the reference end of said tube; pressing a ceramic fiber filter disc into the platinum paste electrodes on each side of said electrolyte disc; firing said tube in air at a temperature of at least about 1850° F.; and impregnating said electrodes with a platinum group metal component from a solution of a soluble precursor compound thereof applied to said filters and then firing at conditions to effect the reduction of said platinum group metal component.

4,121,990

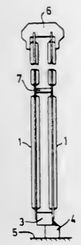
ELECTROLYTIC CELL

Thomas Wesley Boulton, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 25, 1977, Ser. No. 818,862
Claims priority, application United Kingdom, Sep. 20, 1976, 38879/76
Int. Cl.[2] C25B *1/46, 11/03, 11/10*
U.S. Cl. 204—258 **24 Claims**

1. An anode comprising a pair of slotted plates of a film-forming meal or alloy thereof mounted on a support and carrying on at least part of their surfaces an electrocatalytically active coating, the slots extending lengthwise from the point of mounting, a removable spacer adapted to engage the plates at their unsupported ends so as to maintain the plates substantially parallel to one another and at a fixed distance apart, and one or more spacing studs located between the plates and attached to the back surface of one of the plates and adapted to engage the

back surface of the other plate when the two plates are at their fixed distance apart.



13. An electrolytic cell comprising a plurality of anodes, a plurality of cathodes and diaphragms separating the anodes and cathodes and wherein each anode is as claimed in claim 1.

4,121,991

ELECTROLYTIC CELL FOR TREATMENT OF WATER

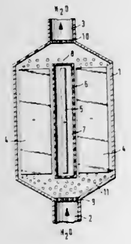
Jorge Miller, and Franz Stummer, both of Noham, Fed. Rep. of Germany, assignors to Firma Hans Einhell GmbH Industriegelande, Landau, Fed. Rep. of Germany

Filed Jul. 15, 1976, Ser. No. 705,710

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1976, 2607906

Int. Cl.[2] C02B *1/82;* C02C *5/12;* B01D *13/02*

U.S. Cl. 204—260 **6 Claims**



1. Electrolytical cell for the treatment of water which comprises a closed container with a lower inlet opening and an upper outlet opening for the water, negative electrodes therein at least one of which is radially disposed which are adapted to be connected with the negative pole of a DC source, freely movable non-conductive particles whose density is higher than that of the water to be treated positioned within said container and contacting said water and said negative electrodes on all sides, means for retaining the particles within the container and a closed cylindrical positive electrode compartment defined by an electrodialysis diaphragm and a concentrical pipe with said positive electrode provided therein connectable with the positive pole of said DC source, said compartment having a small upper aperture.

4,121,992

ELECTROLYTIC CELL

Frank E. Towsley, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 691,692, Jun. 1, 1976, Pat. No. 4,053,371. This application Oct. 11, 1977, Ser. No. 841,179

Int. Cl.[2] C25B *1/16, 11/03*

U.S. Cl. 204—265 **16 Claims**

1. In an electrolytic cell having an anode positioned within an anode chamber and an oxidizing gas depolarized cathode positioned within a cathode chamber adapted to contain a catholyte, said cathode chamber spaced apart from the anode chamber by a cation-permeable partition, the improved cell comprising the cathode having a cellular metal structure comprising a continuous interconnected network of electrolytically deposited metal defining therebetween a plurality of substantially convex and substantially electrically nonconductive cellular compartments adapted to permit passage of the oxidizing gas to the catholyte, said cellular metal structure further characterized in that the deposited metal interfaces the cellular compartments within the cellular metal structure.

4,121,993

PROCESS FOR TREATING SEWAGE, PARTICULARLY ON SHIPS

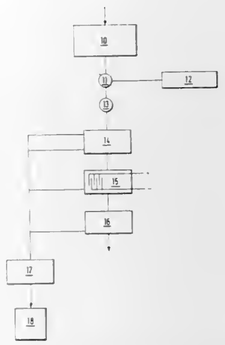
Hans G. Krugmann, Moosrosenweg 17, D-2000 Hamburg 71, Fed. Rep. of Germany

Filed Sep. 17, 1976, Ser. No. 724,452

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1975, 2543353; Apr. 24, 1976, 2617996

Int. Cl.[2] C02C *5/12*

U.S. Cl. 204—275 **5 Claims**



1. An apparatus for the purification of sewage on ships by electrolysis comprising:

(a) an enclosed chamber having a sewage inlet in its side wall at about the midpoint of the chamber, a clarified water exit at the bottom of the chamber, and a scum overflow discharge at the top;

(b) a plurality of electrodes within the chamber positioned between said exit and discharge, adpated to electrolytically treat the incoming sewage; and

(c) baffle means positioned between the bottom of the electrodes and the clarified water exist to prevent the entry of electrolytically untreated water into the clarified water exit.

4,121,994

ANODE SUPPORT MEANS FOR AN ELECTROLYTIC CELL

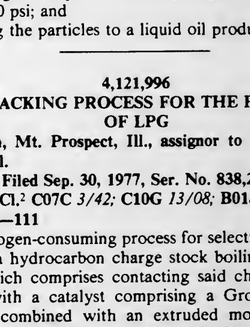
Monte Dennis Crippen, Kennewick, Wash.; Cyril James Harke, Burnaby, and Bernardus Johannes Mentz, Maple Ridge, both of Canada, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,429

Int. Cl.[2] C25B *11/00*

U.S. Cl. 204—286 **4 Claims**

1. In a method of rigidly mounting an electrically conductive anode support member to a metallic wall of an electrolytic cell to prevent leakage of anolyte from the cell, said anode support member having connected means at one end for engaging with an opening in the cell wall, the improvement comprising the steps of (a) surrounding the support member with a metallic plate at a position proximal to the connecting means of said support member, (b) rigidly coupling by welding the plate to the support member, (c) mounting the support member in



the cell wall opening whereby the plate fits flush against the cell wall making electrical contact with said wall, and (d) welding the plate to the cell wall.

4,121,995

SURFACTANT-ASSISTED LIQUEFACTION OF PARTICULATE CARBONACEOUS SUBSTANCES

George C. Hsu, La Crescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 7, 1976, Ser. No. 730,468

Int. Cl.[2] C10G *1/04, 1/08;* C10L *1/32;* B65G *53/04*

U.S. Cl. 208—8 **14 Claims**

1. In a method of liquefying a particulate, carbonaceous substance at high temperature and under hydrogen pressure in organic liquid reaction media to form a polar, partially hydrogenated asphaltene intermediate, the improvement comprising:

forming a suspension containing 5% to 50% by weight of the particulate substance suspended in organic liquid reaction media consisting essentially of a non-polar, organic solvent for the liquefied, asphaltene conversion products and 0.1% to 10% based on the substance of an oil soluble, organic surfactant having a molecular weight from 300 to 5,000 and containing from 1 to 15% by weight of a polar group;

heating the suspension to a temperature above 300° C.;

pressurizing the suspension with hydrogen at a pressure of at least 500 psi; and

converting the particles to a liquid oil product.

4,121,996

HYDROCRACKING PROCESS FOR THE PRODUCTION OF LPG

Lee Hilfman, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 30, 1977, Ser. No. 838,268

Int. Cl.[2] C07C *3/42;* C10G *13/08;* B01J *29/22*

U.S. Cl. 208—111 **6 Claims**

1. A hydrogen-consuming process for selectively producing LPG from a hydrocarbon charge stock boiling below about 600° F., which comprises contacting said charge stock and hydrogen with a catalyst comprising a Group VIII metal component combined with an extruded mordenite-alumina carrier material containing a uniform distribution of about 15 to about 40 weight percent of finely divided alumina particles, said mordenite being present in the range of about 85 to about 60 weight percent based on the total weight of said carrier material and having been treated to reduce the sodium content to less than about 5 weight percent Na_2O and subsequently having been treated with an aqueous ammoniacal solution at a pH of at least about 9.5, at hydrocracking conditions including a pressure of about 300 to about 1800 psig., a temperature of about 600° F. to about 850° F., a LHSV of about 1 to about 60 $hr.^{-1}$ and a hydrogen circulation rate of about 5000 SCFB to about 15,000 SCFB based on fresh charge stock.

4,121,997

TREATING A PETROLEUM DISTILLATE WITH A SUPPORTED METAL PHTHALOCYANINE AND AN ALKALINE REAGENT CONTAINING ALKANOLAMINE HALIDE

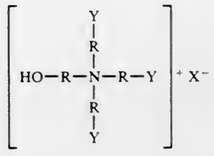
Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 11, 1978, Ser. No. 868,599

Int. Cl.[2] C10G *27/06*

U.S. Cl. 208—206 **13 Claims**

1. A process for treating a mercaptan-containing sour petroleum distillate which comprises passing said distillate in admixture with an oxidizing agent through a fixed bed of a supported metal phthalocyanine catalyst in the presence of an alkanolamine halide comingled with an alkaline reagent to oxidize the mercaptan present in said distillate, said alkanolamine halide having the structural formula



wherein R is an alkylene radical containing up to about 3 carbon atoms, Y is a hydroxyl radical or hydrogen, and X is chloride, bromide, fluoride or iodide.

4,121,998

TREATING A PETROLEUM DISTILLATE WITH A SUPPORTED METAL PHTHALOCYANINE AND A POLYNUCLEAR AROMATIC SULFONIC ACID

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 756,578, Jan. 3, 1977. This application Jan. 18, 1978, Ser. No. 870,388

Int. Cl.[2] C10G *27/06*

U.S. Cl. 208—206 **11 Claims**

1. A process for treating a mercaptan-containing sour petroleum distillate which comprises contacting said distillate with a catalytic composite in the presence of an alkaline reagent at oxidation conditions to oxidize the mercaptan present in said distillate, said catalytic composite comprising a solid adsorptive support impregnated with from about 0.1 to about 25 wt. % polynuclear aromatic sulfonic acid and from about 0.1 to about 10 wt. % metal phthalocyanine.

4,121,999

CATALYTIC OXIDATION OF PETROLEUM DISTILLATES WITH CHARCOAL AND WITH SUPPORTED METAL PHTHALOCYANINE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 8, 1977, Ser. No. 822,962

Int. Cl.[2] C10G *27/06*

U.S. Cl. 208—206 **10 Claims**

1. A catalytic process for treating a sour petroleum distillate containing mercaptans, phenolic catalyst toxins and toxin precursors which comprises:

(a) treating said distillate in contact with an oxidizing agent and an adsorbent consisting essentially of charcoal at conditions to oxidize a portion of the mercaptan content of said distillate to disulfides, and to adsorb substantially

all of the phenolic toxins and toxin precursors from said distillate;

(b) recovering said distillate from step (a) and contacting said distallate in an alkaline solution with an oxidizing agent and a supported metal phthalocyanine catalyst to oxidize the residual mercaptans contained therein to disulfides.

4,122,000

METHOD FOR REJUVENATING CATALYSTS IN HYDRODESULFURIZATION OF HYDROCARBON FEEDSTOCK

Daniel R. Farrell, Anaheim, and John W. Ward, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 783,666, Apr. 1, 1977. This application Jan. 5, 1978, Ser. No. 867,193
Int. Cl.² C10G *23/02*
U.S. Cl. 208—210 **4 Claims**

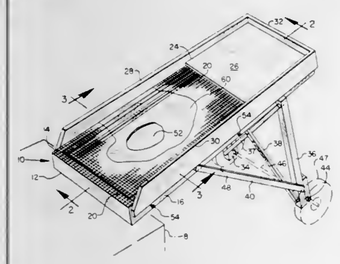
4. In a process for hydrodesulfurizing a hydrocarbon feedstock containing at least 50 wppm of vanadium plus nickel components (calculated as the metals) wherein said feedstock is passed at an elevated temperature and pressure and in the presence of hydrogen serially through a plurality of catalytic reactors and wherein each of said reactors contains a bed of hydrodesulfurization catalyst particles comprising a Group VIB and/or Group VIII metal oxide and/or sulfide supported on an inorganic refractory oxide, the improvement comprising using as a catalyst in any of said catalytic reactors through which said feedstock is passing at least some catalyst particles previously deactivated during said hydrodesulfurization and subsequently rejuvenated by contacting said deactivated catalyst particles with an aqueous solution comprising oxalic acid and at least one inorganic component selected from the class consisting of nitric acid and water-soluble nitrate salts.

4,122,001

WORM-HARVESTING METHOD AND APPARATUS

Lester E. Snyder, Rte. 1, Box 1206, Bandon, Oreg. 97411

Filed Mar. 16, 1977, Ser. No. 777,948
Int. Cl.² B07C *1/10*
U.S. Cl. 209—675 **11 Claims**



1. A worm harvester comprising:

means defining a frame bounding a frame opening,

a screen carried by said frame and spanning said frame opening to define a planar screen surface, said screen having screen openings of a size such as to enable worms to be harvested to pass therethrough and to support worm bedding material thereon,

and means defining a removable tray positionable within said frame opening below said screen surface for receiving worms passing through said screen,

said tray having a dark-colored inside bottom surface,

said inside bottom surface being planar, generally parallel to said screen surface, and positioned below said screen surface a distance no greater than the minimum length of worms desired to be harvested,

means defining a breaking board within said frame along a boundary edge of said screen, said breaking board having an upper surface along said boundary edge at a level no lower than the level of said screen surface,

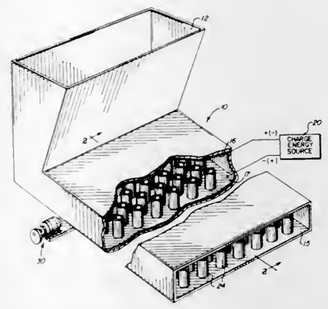
said frame including opposite sidewall portions bordering and extending above the levels of said screen and breaking board surfaces and an endwall portion at one end of said frame bordering said breaking board and extending above said breaking board surface, the opposite end of said frame having an endwall with an upper edge bordering said screen and terminating at a level no higher than said screen surface.

4,122,002

METHOD AND APPARATUS FOR ELECTROSTATICALLY SEPARATING PARTICLES FROM A MIXTURE OF PARTICLES

John B. Hauskins, Jr., 5738 N. Central Ave., Phoenix, Ariz. 85012

Filed May 9, 1977, Ser. No. 794,828
Int. Cl.² B03C *7/04*
U.S. Cl. 209—129 **7 Claims**



7. A method for separating predetermined electrostatically chargeable particles from a mixture of particles comprising steps of:

(a) passing said mixture of particles through an electric field between two vertically separated plates, having opposite potentials thereon, in contact with the lower of said plates to cause repulsion of said particles from said lower plate;

(b) adjusting said potentials to cause the predetermined electrostatically chargeable particles in said mixture of particles to be repelled from said lower plate and travel to said upper plate and then be repelled downwardly therefrom; and

(c) intercepting said predetermined electrostatically chargeable particles as they are repelled downwardly from said upper plate and directing them out of said electric field through said lower plate while continuing to pass said mixture of particles through said electric field in contact with said lower plate.

4,122,003

METERING SURGE BIN AIRLOCK

Frank G. Hamilton, Memphis, Tenn., assignor to Rader Companies, Inc., Portland, Oreg.

Filed Nov. 10, 1976, Ser. No. 740,363
Int. Cl.² B07B *4/00*
U.S. Cl. 209—147 **5 Claims**

1. In an airlock feeder apparatus for metering and feeding particulate material through a wall of a chamber the improvement comprising:

a trough;

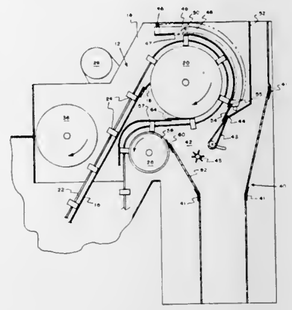
an endless chain extending slidably through said trough;

a plurality of flights attached to said chain for carrying particulate material through said trough, said chain extending between a position on one side of a wall and a position on the other side of the wall;

a surge bin located on said one side for receiving and holding a supply of the material, said bin communicating with said trough so that said flights can continuously carry a portion of the material out of said bin and through the wall;

drive means operable to move said chain;

a head drum carrying said flights;



airlock inlet means for admitting said flights to said other side so that the particulate material may be carried to said other side, including a movable jaw member having an arcuate surface shaped and normally positioned to be disposed concentrically about said drum and biased toward said drum to form a seal with the material carried by said conveyor so that air cannot flow between said material and said jaw member; and

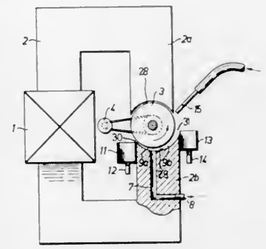
airlock outlet means for discharging said flights from said other side after the material carried by said flights is deposited on said other side.

4,122,005

MAGNETIC SEPARATOR

Knut Sven Erik Forssberg, Gammelstad, and Karl Dieter Kopp, Enebyberg, both of Sweden, assignors to Mineral Processing Development & Innovation AB, Gammelstad, Sweden

Filed Jun. 13, 1977, Ser. No. 806,190
Claims priority, application Sweden, Jun. 11, 1976, 7606706
Int. Cl.² B03C *1/02*
U.S. Cl. 209—232 **5 Claims**



1. A magnetic separator comprising:

an iron cylinder rotatable around a horizontal axis,

means for rotating said cylinder,

a magnet having a first pole face situated substantially below said cylinder, and a second pole face situated substantially above said cylinder, said first pole face and said cylinder defining a separator chamber,

said separator chamber having a first opening where the surface of the cylinder enters the separator chamber, and a second opening where the surface of the cylinder leaves the separator chamber,

channels for supplying a suspension of magnetizable and non-magnetic particles in a liquid to an intermediate zone of said separator chamber, said channels extending through said magnet, and said first pole face said first opening being situated lower than the second opening to facilitate a flow of said suspension countercurrent to the movement of the surface of said cylinder in at least a portion of said chamber,

means adjacent said first opening for collecting the suspension depleted of magnetizable particles, and

means adjacent said second opening for removing magnetizable particles from the surface of the cylinder and for collecting such particles.

4,122,004

FROTH FLOTATION PROCESS

Guy H. Harris, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 754,765, Dec. 27, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,280
Int. Cl.² B03D *1/02*
U.S. Cl. 209—166 **11 Claims**

1. In a process for collecting mineral values from an ore which comprises mixing ground ore with water to form an ore pulp and aerating said pulp in the presence of an effective amount of a frother, the improvement which comprises carrying out said process with a frother of the formula:

$$H(BO)_x(PO)_y(EO)_xS(EO)_x(PO)_y(BO)_zH$$

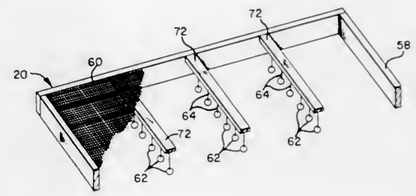
wherein, in said formula, EO = C_2H_4O, PO = C_3H_6O and BO = C_4H_8O, x and x' are each 0–2, y and y' each are 0–7 and z and z' each are 0–2, $x+x'+y+y'+z+z'$ being an average of from 4 to about 14, with the proviso that at least one of x, y or z and at least one of x', y' or z' is always at least 1 and with the further proviso that when y and y' are each 0, of z or z' is always at least 1.

4,122,006

SCREENING APPARATUS

Elmer Christensen, Kirkland, and Kenneth M. Cage, Marysville, both of Wash., assignors to Black Clawson, Inc., Everett, Wash.

Filed Sep. 28, 1977, Ser. No. 837,376
Int. Cl.² B07B *1/54*
U.S. Cl. 209—382 **12 Claims**



1. In screening apparatus for separating particles of a desired size from other, smaller particles, including screening means

and means for oscillating said screening apparatus with a gyratory movement, the improvement comprising:

a plurality of impacting members,

means fixed with respect to and extending beneath surfaces of said screening apparatus,

strand means suspending said impacting members from said means extending beneath said surfaces of said screening apparatus with said strand means disposed substantially vertically when said screening apparatus is not oscillating,

said strand means suspending said impacting members from said means extending beneath said surfaces of said screening apparatus such that said impacting members are free to swing from a position of rest into contact with said surfaces when said screening apparatus is oscillated with said gyratory movement, and

the length of said strand means and the mass of said impacting members being dimensioned with respect to the amplitude and frequency of said gyratory movement such that each of said impacting members swings in a plane in response to said gyratory movement of said screening apparatus.

4,122,007

RECLAIMING PROCESS FOR ZEOLITE SERVED FOR ADSORBING AMMONIACAL NITROGEN CONTAINED IN SEWAGE

Tamechika Yamamoto, Zushi; Yoichi Nishimura, Komae, and Seiji Sanga, Toyonaka, all of Japan, assignors to Catalysts & Chemicals Industries Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1976, Ser. No. 677,159
Claims priority, application Japan, Apr. 30, 1975, 50-51475
Int. Cl.² B01J *1/09*
U.S. Cl. 210—32 **2 Claims**

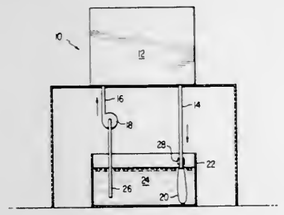
1. A process for reclaiming spent zeolite containing ammonium cations, said spent zeolite having been obtained by treating water containing ammonia with zeolite to effect cation exchange, which comprises the step of contacting said spent zeolite with an aqueous solution of sodium carbonate having a pH of 11.0±1.0 to effect removal of said ammonium cations from said spent zeolite and thereby restore the ammonium cation exchanging ability of said zeolite.

4,122,008

FILTRATION PROCESS FOR SEPARATING PARTICLES FROM LIQUID COOLANTS IN LENS GRINDING DEVICES

Eddy Allen, 640 Willow Heights, Atlanta, Ga. 30328

Filed Feb. 10, 1977, Ser. No. 767,631
Int. Cl.² B01D *29/12*
U.S. Cl. 210—65 **7 Claims**



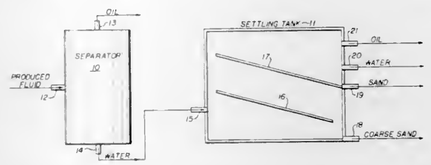
1. In a lens generating or edging process for shaping transparent plastic or glass lens material wherein the transparent plastic or glass lens is contacted with a rotating abrasive disc in the presence of a liquid coolant applied to the surface of a lens being ground by the abrasive disc to shape the lens and wherein as a result of said grinding fine particles of the transparent plastic or glass lens material are formed and are introduced into the liquid coolant, said fine transparent plastic or glass particles being objectionable because of their capability to scratch the lens material when the liquid coolant containing said fine particles comes into contact with a lens being formed by the abrasive disc and wherein the fine transparent glass or plastic particles are therefore subjected to filtration to separate the particles from the liquid coolant prior to the return of the liquid coolant to the grinding chamber, the improvement comprising removing substantially all of the fine transparent plastic or glass particles from the liquid coolant with improved efficiency to substantially completely eliminate the risk of scratching a lens during forming by passing the fine transparent plastic or glass particle-containing coolant through a filter bag made of a non-woven fabric comprising synthetic polyester or polyamide filaments having a denier of from about 3.5 to about 5.0, the fabric having a density of from about 0.3 to about 2.0 ounces per square yard, the reduction in the liquid coolant flow rate caused by the filter material being less than about 1.0%, wherein a cake of the fine particles is formed on the surface of the filter medium, into which the coolant flows, to provide an effective filter system, said filter bag being effective to remove at least about 97% of said fine transparent plastic or glass particles having a size of 5 microns and larger and about 75–80% of fine particles smaller than 5 microns initially after the first passage of the coolant through the filter medium and after build-up of said cake of fine particles on the filter medium the removal of particles smaller than 5 microns approaches 97% to 99%.

4,122,009

METHOD OF RESOLVING A MIXTURE OF OIL, WATER, AND SOLIDS

Fan-sheng Tao, Morro Bay, Calif., and John E. Warner, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 710,075, Jul. 30, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 827,915
Int. Cl.² B01D *21/02*
U.S. Cl. 210—84 **12 Claims**



1. A method for resolving a mixture of oil, water, and solids comprising,

(a) injecting the mixture of oil, solids, and water into the lower back side of a tank,

(b) flowing the mixture under a lower baffle declined forwardly for coalescing drops of oil that have separated from the mixture into larger globs under the declined baffle for flowing rearwardly under the baffle,

(c) flowing the mixture up through an opening in the lower end of the lower declined baffle and then back rearwardly under an upper forwardly declined baffle, which vertically arranged baffles form lower, intermediate, and upper compartments,

(d) collecting the solids on the bottom of the tank that have settled out of the mixture as it flows under and over the lower baffle,

(e) flowing the mixture up through an opening in the upper end of the upper baffle and then forwardly over the upper forwardly declined baffle,

(f) collecting the solids on the upper baffle as the mixture flows over the upper baffle,

(g) drawing off the solids at the lower end of the upper baffle,

(h) drawing off the oil from a surface outlet that has coalesced as water-free and solids-free oil, and

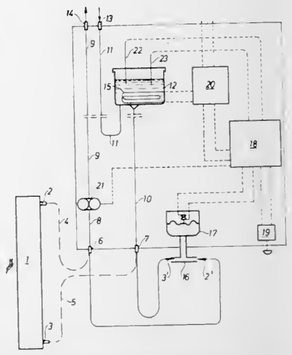
(i) drawing off clean water from between the upper solids outlet and the oil outlet as oil-free and solids-free water.

4,122,010

APPARATUS FOR TREATING BLOOD

Gerhard Riede, Vellinge, and Roland Johan Edvin Andersson, Bjarred, both of Sweden, assignors to Gambro AB, Lund, Sweden

Filed Feb. 23, 1977, Ser. No. 771,257
Claims priority, application Sweden, Feb. 26, 1976, 024553/76
Int. Cl.² B01D *35/00, 35/14*
U.S. Cl. 210—90 **4 Claims**



1. Apparatus for treating blood, comprising:

a dialyzer for treating said blood by dialysis with a treatment liquid;

a circulating system operative to circulate said treatment liquid through said dialyzer;

said circulating system comprising heating means for heating said treatment liquid to a predetermined treatment temperature and for heating said treatment liquid to a cleaning temperature higher than said treatment temperature such that said treatment liquid when circulated through said circulating system at said cleaning temperature will effect cleaning thereof;

actuating means for actuating said heating means to heat said treatment liquid to said cleaning temperature;

communicating means for placing said circulating system in fluid communication with one of said dialyzer and said actuating means; and

said actuating means being operative to actuate said heating means to heat said treatment liquid to said cleaning temperature only when said communicating means have been utilized to place said circulating system in fluid communication with said actuating means, whereby said actuating means cannot actuate said heating means to heat said treatment liquid to said cleaning temperature while said circulating system is in fluid communication with said dialyzer.

4,122,011

TRICKLING FILTER MEDIA FOR BIOLOGICAL FILTERS

Ralph F. Strigle, Jr., Akron, Ohio, assignor to Norton Company, Worcester, Mass.

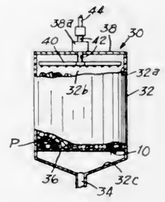
Continuation-in-part of Ser. No. 579,666, May 21, 1975, abandoned. This application Mar. 9, 1977, Ser. No. 775,908
Int. Cl.² C02B *1/04*
U.S. Cl. 210—150 **20 Claims**

20. A packing for an effluent treatment vessel comprising:

a plurality of packing elements adapted to be randomly dumped into a vessel and have a majority of their surfaces inclined at an angle to an axis of the vessel and each of the elements comprising:

a plurality of tubes situated circumferentially within and connected to one another and at least two of the tubes being tapered and each having

an inclined wall including inclined surfaces extending around and inclined at an angle to a central axis of the element and oppositely inclined relative to the inclined wall and inclined surfaces of the other tapered tube.

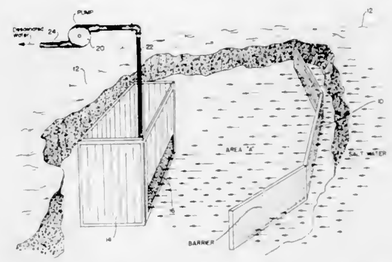


4,122,012

SEA WATER DESALINIZATION SYSTEM

Lincoln A. Vlasnik, 1422 Beckwith Ave., Los Angeles, Calif. 90049

Filed Jul. 27, 1977, Ser. No. 819,580
Int. Cl.² E02B *11/00*
U.S. Cl. 210—170 **9 Claims**



1. A system of the desalinization of salt water, the system being installed in a sandy beach adjacent to a body of salt water, said system including: a barrier imbedded in the beach at a depth corresponding to the changing levels of salt water in the beach; a vault installed in the beach behind the barrier to receive water which has passed through the barrier; selected filter materials contained in the barrier; and a selected water purifying material positioned between the vault and the barrier.

4,122,013

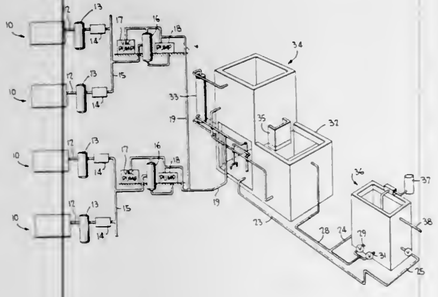
SEWAGE TREATMENT SYSTEM

John W. Greenleaf, Jr., 1451 Brickell Ave., Miami, Fla. 33131, and Harold E. Schmidt, 641 W. 53rd St., Hialeah, Fla. 33012

Filed Nov. 15, 1977, Ser. No. 851,771
Int. Cl.² C02C *1/08*
U.S. Cl. 210—195 S **1 Claim**

1. A sewage transport and treatment system, comprising a first sewage treatment station including an anoxic unit having first and second compartment with removable covers, said first compartment having an inlet for receiving residential or commercial sewage and having upper and lower portions for respectively accumulating scum and settleable solids, said compartments being separated by means of a vertical partition having ports near the bottom thereof for the passage of settled sewage into said second compartment, an outlet on said second compartment, a coarse media filling said second compartment to provide a large surface area for the attachment of anaerobic slime, said media defining free flowing spaces in the interstices thereof to provide intimate and prolonged contact of the settled sewage on its passage through said unit to said outlet whereby the treated sewage is anaerobically stabilized before

its conveyance through the transport system, a vacuum transport system for collecting the anaerobically stabilized sewage from the first sewage treatment station and delivering it to a second sewage treatment station, the second sewage treatment station including a mixing tank for mixing the anaerobically stabilized sewage with pumped recirculated oxidation tank effluent containing dissolved oxygen and activated sludge under pressure, an open equilization tank for receiving discharge from said mixing tank and being fluidly interconnected therewith, a float control outlet valve on said equalization tank including a float disposed in a flow control chamber for maintaining a constant level of the discharge in said chamber, an outlet on said chamber controlled by an adjustable gate valve for controlling the rate of flow of the discharge, an oxidation tank having an air distribution manifold and a compressor for aerating and mixing the contents thereof, said oxidation tank being located below said control chamber and having an outlet weir extending the length thereof, a filter tank fluidly connected to said oxidation tank for filtering out activated sludge for the effluent, said filter tank including a pair of upflow filter units containing filter media and independent compartments



lying therebeneath for accumulating activated sludge from the effluent passing upwardly therethrough, piping for conducting the discharge from said outlet weir to said compartments and further piping to return the discharge containing both dissolved oxygen and activated sludge from said compartments at a constant rate through a pump to said mixing tank to be mixed with incoming anaerobically treated sewage and reintroduced into said second station, said filter units serving to filter aerobically treated sewage in excess of that recirculated through the mixing tank and aerobic treatment system at the rate of flow established at said control chamber, said filter tank including a chlorine contact chamber located above said filter units for effluent sterilization, said rate of flow establishing a discharge rate and a detention time in said chamber which is provided for the disinfection of the plant effluent before discharge, a constant head tank having distributing means extending into said contact chamber, and including a float valve control and a valve outlet for determining the rate of flow of disinfecting solution from a storage tank fluidly connected therewith, and means for backwashing the filter units to remove sludge accumulation therefrom.

4,122,014

CENTRIFUGE FOR REMOVING LIQUID MEDIA ADHERING TO CHIPS, TURNINGS, BORINGS OR THE LIKE

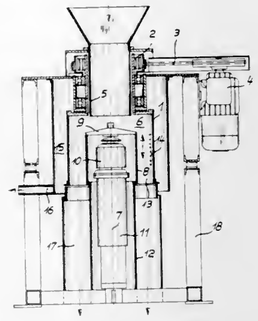
Lothar Weininger, Windeck, and Alois Muller, Hennef-Happerschloss, both of Fed. Rep. of Germany, assignors to WMV-Apparatebau, Windeck, Fed. Rep. of Germany

Filed Mar. 29, 1977, Ser. No. 782,405

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613429

Int. Cl.[2] **B01D** *33/02;* **B04B** *7/00*

U.S. Cl. 210—377 **1 Claim**



1. A centrifuge having an axis and provided for separating liquid from solid material covered by said liquid supplied to said centrifuge from above, said centrifuge comprising an outer rotatable sieve drum including a drive means therewith; distributing means rotatably and reciprocally mounted within said outer sieve drum coaxially therewith and in radially spaced relationship thereto; an inner drum having a drive system and provided with said distributing means connected at the upper end of said inner drum; auxiliary means operable to simultaneously rotate and reciprocate said distributing means together with said inner drum to and fro along said axis of said centrifuge; and means for supplying said liquid covered solid material to said distributing means.

4,122,015

FORTIFIED METAL FILTER AND ITS PREPARATIVE PROCEDURE

Takashi Oda, Hirakata, and Kaoru Kokubu, Sakai, both of Japan, assignors to Nippon Seisen Co., Ltd., Japan

Filed Jun. 6, 1977, Ser. No. 803,664

Int. Cl.[2] **B01D** *39/14*

U.S. Cl. 210—496 **8 Claims**



1. In a method of preparing a filter of the type comprising a plurality of fine wires having a polygonal cross-section with an area of fusion between the wires at the points of contact therebetween, the improvement which comprises:

(a) heating the plurality of wires in a furnace,

(b) simultaneously with the heating, compressing the wires to create a fusion between the wires at the points of contact therebetween, and

(c) thereafter, cooling the heated and compressed wires.

4,122,016

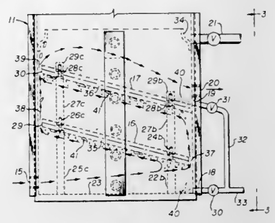
SETTLING TANK

Fan-sheng Tao, Morro Bay, Calif., and John E. Warner, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 710,076, Jul. 30, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 827,914

Int. Cl.[2] **B01D** *11/02*

U.S. Cl. 210—521 **13 Claims**



1. Apparatus for resolving a mixture of solids, water and oil comprising,

(a) a tank, at least two compartmenting baffles mounted in the tank above the bottom thereof in spaced conformance at an incline from the horizontal,

(b) said baffles having port means in each for guiding the mixture under and over the lower and upper compartmenting baffles consecutively,

(c) an inlet line adjacent the bottom of the tank beneath the high edge of said lower baffle for charging the mixture to said lower compartment,

(d) a clean water drawoff line intermediate horizontal planes through said upper and lower ends of the upper baffle in the tank for said upper compartment,

(e) an oil drawoff line above said water drawoff line thereby permitting the withdrawal of essentially oil-free water and water-free oil from said tank, and (f) a solids draw-off port positioned to withdraw solids from the lowest point of the upper of said baffles.

2. A settling tank for resolving a mixture of oil, solids, and water comprising,

(a) a tank having an inlet means on the lower back side thereof for injecting a mixture of oil, solids, and water adjacent its bottom,

(b) two spaced apart baffles mounted in said tank declined forwardly for forming lower, intermediate, and upper compartments, and having port means in each for guiding the mixture through said three compartments consecutively,

(c) upper solids outlet means in said tank at the lower edge of said declined upper baffle for disposal of all solids collected on said upper baffle,

(d) lower solids outlet means in the lower front portion of said tank for disposal of all solids collected on said tank bottom,

(e) clean water outlet means in the lower end of said upper compartment for discharge of solids-free and oil-free water, and

(f) oil outlet means for said upper compartment being above said water outlet means for drawing off of solids-free and water-free oil.

12. A settling tank for resolving a mixture of oil, solids, and water comprising,

(a) a tank comprising vertical walls having an inlet means on the lower back side thereof for injecting a mixture of oil, solids, and water,

(b) two spaced apart baffle means mounted in said tank declined forwardly for forming lower, intermediate, and upper compartments,

(c) longitudinal V-shaped groove means formed fore and aft in the under surface of each of said upper and lower declined baffles for the full length of said baffles for guiding the droplets of oil that have separated from the mixture rearwardly and upwardly as it flows in said groove means,

(d) said V-shaped groove means coalesces the droplets of oil that have separated from the mixture rearwardly and upwardly as it flows in said groove means,

(e) clean water outlet means for the lower end of said upper compartment for discharge of oil-free water,

(f) said oil outlet means being above said water outlet means for drawing off from said upper compartment a water-free oil, and

(g) a solids draw-off port positioned to withdraw solids from the lowest point of the upper of said baffles.

4,122,017

DEVICE FOR SEPARATING SUSPENDED MATERIAL FROM A FLUID STREAM BY SPECIFIC GRAVITY DIFFERENCE

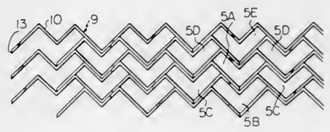
Kaichi Tanabe, Tondabayashi; Shigeto Koga, and Yoshinori Maeda, both of Kobe, all of Japan, assignors to Shinko-Pfaudler Company, Ltd., Kobe, Japan

Filed Sep. 6, 1977, Ser. No. 830,697

Claims priority, application Japan, Dec. 28, 1976, 52/160692

Int. Cl.[2] **B01D** *21/00*

U.S. Cl. 210—522 **6 Claims**



1. In a multitube separator wherein a tube-nest assembly comprising a multiplicity of long and narrow tubular passages of a certain cross-sectional configuration arranged compactly and parallel to one another under a certain systematic cross-sectional alignment is positioned in an inclined relation to the horizontal and wherein a fluid being treated is passed through said tube-nest assembly, a device for separating suspended material from a fluid stream by specific gravity difference wherein said tubular passages are of an approximate boomerang cross-sectional configuration, said boomerang configuration comprising two long sides of equal length butted end-to-end so as to define a certain included angle, said two long sides forming a bottom wall, two inclined sides of equal length, each extending from the other end of one of said long sides in parallel relation to the other of said long sides and in a direction in which an extension of each said inclined side intersects an extension of the other inclined side, said two inclined sides forming side walls, two short sides of equal length, each extending downwardly on an inclined plane from the other end of one of said inclined sides in parallel relation to one of said long sides and butted with the other said short side end-to-end, said two short sides forming a top wall.

4,122,018

SMOOTHING AGENTS FOR TREATING TEXTILE FIBER MATERIAL

Peter Waltenberger, Hilden; Günter Uphues, Dusseldorf, and Manfred Petzold, Dusseldorf-Holthausen, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

Filed May 16, 1977, Ser. No. 797,045

Claims priority, application Fed. Rep. of Germany, May 17, 1976, 2621881

Int. Cl.[2] **D06M** *13/46*

U.S. Cl. 252—8.6 **12 Claims**

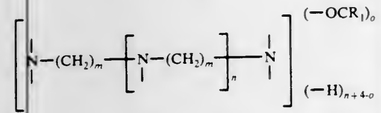
1. A smoothing agent for the treatment of textile fiber material consisting essentially of:

(I) from 5 to 20% by weight of a fatty acid ester from 1 mol

of a fatty acid having from 14 to 18 carbon atoms and 1 mol of an alcohol selected from the group consisting of alkanols having from 1 to 8 carbon atoms and alkanepolyols having from 2 to 8 carbon atoms,

(II) from 15 to 35% by weight of paraffin having a melting range of from 40° C. to 60° C., where the total of components (I) and (II) is from 20 to 50% by weight,

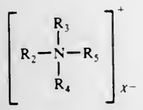
(III) from 1% to 10% by weight of at least one fatty acid amidopolyamine having the formula



wherein $-OCR_1$ is the acyl of a fatty acid having from 14 to 22 carbon atoms, m is an integer from 2 to 6, and n and o are numbers from 1 to 3,

(IV) from 0 to 5% by weight of a fatty acid alkanolamide from 1 mol of a fatty acid having from 12 to 18 carbon atoms and an alkanolamine selected from the group consisting of 1 mol of a monoalkanolamine having from 2 to 3 carbon atoms and 1 to 2 mols of a dialkanolamine having from 4 to 6 carbon atoms,

(V) from 0 to 5% by weight of at least one quaternary ammonium salt having the formula



wherein R_2 is an aliphatic hydrocarbon having from 12 to 18 carbon atoms, R_3 is a member selected from the group consisting of aliphatic hydrocarbons having from 1 to 18 carbon atoms, phenylalkyl having from 7 to 18 carbon atoms and alkylphenylalkyl having from 8 to 18 carbon atoms, R_4 and R_5 are alkyl having 1 to 2 carbon atoms, and X^- is a salt-forming anion,

(VI) from 0 to 5% by weight of an ethylene oxide adduct to a compound having a replaceable hydrogen selected from the group consisting of aliphatic hydrocarbon alcohols having 9 to 22 carbon atoms, alkylphenols having from 12 to 20 carbon atoms, fatty acids having from 12 to 22 carbon atoms, higher fatty acid amides with alkylene diamines and dialkylene triamines having a total of from 12 to 22 carbon atoms, and alkylamines having from 12 to 22 carbon atoms, having from 35 to 85% by weight of ethylene oxide, where the total of components (III), (IV), (V) and (VI) is from 1 to 12% by weight,

(VII) from 0 to 1% by weight of a protective colloid,

(VIII) from 0 to 10% by weight of a water-immiscible organic solvent,

(IX) from 1 to 10% by weight of an acid selected from the group consisting of alkanoic acids having from 1 to 4 carbon atoms and hydroxyalkanoic acids having from 2 to 4 carbon atoms, and

(X) the remainder to 100% by weight, water.

4,122,019

METHOD AND APPARATUS FOR CRIMPING SYNTHETIC THERMOPLASTIC FIBERS

James K. Hughes, Bartlesville, Okla., and Wayne K. Erickson, Seneca, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 607,972, Aug. 26, 1975, which is a division of Ser. No. 319,136, Dec. 29, 1972, Pat. No. 3,911,539. This application May 25, 1977, Ser. No. 800,363

Int. Cl.[2] D06M *13/46*

U.S. Cl. 252—8.8 **7 Claims**

1. A method for improving the processability of polyolefin fibers in fiber processing equipment comprising applying to said fibers a composition comprising, on a dry solids basis, from about 86 to about 98 weight percent of a surface-active material having softening properties for polyolefin fibers, from about 0.3 to about 2 weight percent of a nonionic wetting agent; from about 0.7 to about 4 weight percent of a buffering agent, and from about 1 to about 8 weight percent of a corrosion inhibitor, with the amounts of said components being adjusted within said ranges relative to each other so that when said composition is dispersed in water to provide an aqueous dispersion containing from about 1 to about 4 weight percent solids, said dispersion has a pH within the range of from 6 to 8, said composition being applied to said fibers in an amount sufficient to improve the processability of said fibers; and passing said treated fibers through said processing equipment.

4,122,020

OIL RECOVERY AND MOBILITY CONTROL USING SUCCINATE SURFACTANT SYSTEMS

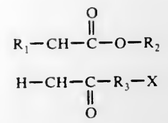
Joseph J. Valcho, Naperville, and Robert E. Karll, Batavia, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 25, 1977, Ser. No. 827,550

Int. Cl.[2] E21B *43/22*

U.S. Cl. 252—8.55 D **27 Claims**

1. A method for recovering oil from and oil-bearing formation which comprises injecting into the formation an aqueous fluid to displace the oil in the formation containing from 1 to 15 weight percent based on the aqueous fluid of a water soluble succinate surface-active agent having the following general formula:



wherein R_1 is alkenyl having an average molecular weight in the range of from about 150 to about 600; R_2 is selected from the group consisting NH_4, metal cations, lower alkyls, hydroxyl-substituted lower alkyls and hydroxyl-substituted ethoxylated lower alkyls; R_3 is selected from the group consisting of O or $O—SO_3$; and X is a cation.

4,122,021

ANTIOXIDANT STABILIZED LUBRICATING OILS

Frederick Charles Loveless, Cheshire, and Walter Nudenberg, Newtown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 16, 1977, Ser. No. 796,957

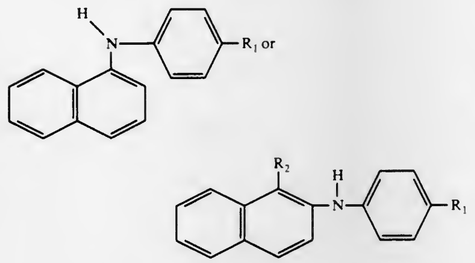
Int. Cl.[2] 252 *50;* **C10M** *3/02, 1/38, 3/32*

U.S. Cl. 252—26 **15 Claims**

1. An antioxidant stabilized oil comprising:

(a) an oil selected from the group consisting of (1) synthetic hydrocarbon oils produced from alpha-olefins having 3 to 14 carbon atoms, and having an average molecular weight between about 280 and 2000, and having less than about 0.25 moles of unsaturation per 1000 grams of oil, (2) hydrocarbon-based mineral oils which are substantially acid-free and which possess less than 0.15 moles of unsaturation per 1000 grams of oil, and (3) ester oils;

(b) a phenylated naphthylamine of the formula



wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen, alkyls having 1 to 12 carbon atoms, aryls having 6 to 20 carbon atoms, and aralkyls and alkaryls having 7 to 20 carbon atoms, said phenylated naphthylamine being present in an amount equal to about 15×10^2 to 30×10^3 parts by weight per million parts by weight of oil; and

(c) an oil-soluble diaryl sulfoxide or arylalkyl sulfoxide wherein the alkyl group is free of hydrogen atoms in the beta position to the sulfoxide group, the weight ratio of sulfoxide in the oil to phenylated naphthylamine in the oil being from 1/10 to 1/1.

2. The antioxidant stabilized oil of claim **1**, wherein there are first and second groups attached to the sulfoxide radical, wherein said first group is phenyl, substituted phenyl, or naphthyl, and said second group is phenyl, substituted phenyl, naphthyl, or methyl, and the substituents on the substituted phenyl groups are independently selected from the group consisting of halogen, alkanoyloxy, nitro, nitrile, alkyl, alkoxy, a derivative of a carboxy group, amino, aryl, aryloxy, keto, or aldehydo.

3. The stabilized oil of claim **1**, further comprising up to about 25 parts of copper by weight per million parts by weight of oil.

4,122,022

METHOD FOR PREPARING CLAY-BASED GREASE COMPOSITIONS

Kenneth A. MacKenzie, Burlington, and Abraham Verhoeff, Toronto, both of Canada, assignors to Shell Internationale Research Maatschap IIJ B.V., The Hague, Netherlands

Filed Jul. 14, 1977, Ser. No. 815,691

Claims priority, application Canada, Aug. 3, 1976, 258332

Int. Cl.[2] C10M *1/10, 3/02, 5/02, 7/04*

U.S. Cl. 252—28 **19 Claims**

1. In the method for preparing a clay-bearing grease which comprises mixing an aqueous clay hydrogel and a conjugate acid surfactant formed from an acid and an organic amine, which mixture is combined, with mixing, with a major proportion of a lubricating oil to result in a pre-grease phase containing the oil, clay and surfactant and a water phase; followed by separating the pre-grease phase from the water phase; the improvement which comprises:

(a) mixing with the pre-grease, from about 0.1 to about 20 weight percent of an epoxide, based upon the weight of the pre-grease before or after a dehydration step;

(b) heating the mixture to a temperature not greater than 250° F. to cure the epoxide; and

(c) milling the dried and cured mixture to form a clay-bearing grease.

15. A clay-bearing grease composition prepared by the method which comprises:

(a) forming a clay hydrogel of clay of sufficient ion exchange capacity and water;

(b) intimately mixing therewith a conjugate acid surfactant formed from an acid and an organic amine compound;

(c) intimately mixing with the mixture formed in step (b) a major proportion of lubricating oil whereby a water phase and pre-grease phase comprising curds of oil, clay, surfactant and minor amounts of water are formed;

(d) separating the water phase from the wet pre-grease phase;

(e) mixing and reacting with the amine groups of the amine in the pre-grease from about 0.1 to about 20 weight percent of an epoxide, based upon the weight of the pre-grease;

(f) heating the mixture to a temperature not greater than 250° to cure the epoxide; and

(g) milling the dried and cured mixture to form the clay-bearing grease.

4,122,023

SYNTHETIC SATURATED OILS, AND THEIR PRODUCTION AND USE

Seimei Yasui, Takarazuka, and Hiroshi Sato, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 689,689, May 25, 1976, Pat. No. 4,060,492. This application Oct. 13, 1977, Ser. No. 841,669

Claims priority, application Japan, May 26, 1975, 50-63266; Jun. 4, 1975, 50-67764; Nov. 5, 1975, 50-133268

The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.

Int. Cl.[2] C10M *1/18*

U.S. Cl. 252—59 **13 Claims**

1. A method for preparation of synthetic saturated oils, which comprises hydrogenation of low molecular weight polyisoprene having the 1,4 structure of at least 70% in the main chains and a number average molecular weight of about 290 to 3,000.

4,122,024

CLASSIFIED TONER MATERIALS

Lewis O. Jones, Webster, and Robert Mermelstein, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1974, Ser. No. 474,487

Int. Cl.[2] G03G *9/02*

U.S. Cl. 252—62.1 P **16 Claims**

1. An electrostatographic toner material for a high-speed magnetic brush development copying and/or duplicating device comprising toner particles classified as to particle size wherein the improvement comprises said toner particles have a particle size number distribution fine index ratio of less than about 2.50, a particle size volume distribution coarse index ratio of less than about 1.50, a particle size distribution wherein less than about 30.0 percent by number of the particles have an average particle size diameter of less than about 5 microns, about 25 percent by number of the particles have a diameter between about 8 microns and about 12 microns, and less than about 5 percent by number of the toner particles have an average particle diameter greater than about 20 microns, said toner particles being further characterized as providing improved copy quality, lower rate of photoreceptor filming, and lower rate of impaction in an electrostatographic development system.

4,122,025

LIQUID SCOURING CLEANING COMPOSITIONS CONTAINING CRISTOBALITE

Eva Kiewert, Dusseldorf, and Karlheinz Disch, Haan, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

Filed Apr. 27, 1977, Ser. No. 791,225

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1976, 2618977

Int. Cl.[2] C11D *1/66, 3/14, 3/37, 17/08*

U.S. Cl. 252—173 **6 Claims**

1. A liquid scouring cleaning composition consisting essentially of

(a) from 30% to 60% by weight of cristobalite having a grain size of less than 150 μ and without a substantial proportion of particles having a grain size of less than 5 μ,

(b) from 1% to 10% by weight of at least one non-ionic surface-active compound

(c) from 0.1% to 2% by weight of a water-soluble polycarboxylate polymeric thickening agent, and

(d) from 27% to 68.9% by weight of a predominantly aqueous liquid carrier, said liquid composition having a pH of between 9 and 11.

4,122,026

LIQUID CRYSTAL MIXTURES

Maged A. Osman, Zurich, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

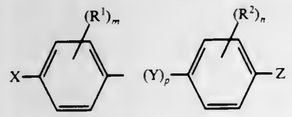
Filed May 4, 1977, Ser. No. 793,773

Claims priority, application Switzerland, May 4, 1976, 5548/76

Int. Cl.[2] C09K *3/34;* **G02F** *1/13*

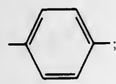
U.S. Cl. 252—299 **16 Claims**

1. A nematic liquid crystal mixture comprising at least one nematic liquid crystal compound and an amount, sufficient to impart a positive Dielectric Constant anisotropy of at least about 15 to said mixture, of at least one liquid crystalline or potentially liquid crystalline compound of the formula (1)



(1)

wherein X is a monovalent radical of the formula —NHR^4 or —$N(R^5)$ (CHO); Y is a bivalent radical of the formula —CH=N—, —N=CH—, —N=N—, —CH=CH—, —C(O)O—, —O(O)C—, —C(O)S—, —S(O)C—, —C≡C— or



Z is a monovalent radical of the formula —CN, —NO_2, —SO_2CH_3, —SO_2CF_3 or —$NHCOR^5$; R^1 and R^2 are the same or different and each is fluorine, chlorine, bromine, methyl or hydroxyl; R^4 is an alkyl group containing from 1 to 8 carbon atoms; R^5 is an alkyl group containing from 1 to 8 carbon atoms; *p* is zero or 1; and *m* and *n* are the same or different integers from zero to 4.

4,122,027

DICHROIC LIQUID CRYSTAL COMPOSITION WITH 4,4-BIS (SUBSTITUTED NAPHTHYLAZO)AZOBENZENE DICHROIC DYES

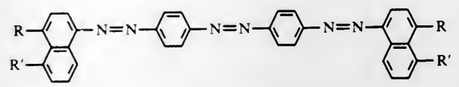
Herbert S. Cole, Jr., Scotia, and Siegfried Aftergut, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 8, 1976, Ser. No. 739,629

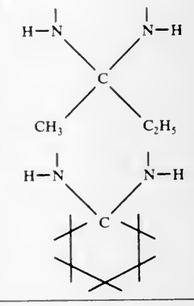
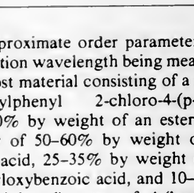
Int. Cl.[2] C09K *3/34;* **G02F** *1/13*

U.S. Cl. 252—299 **2 Claims**

1. A dichroic dye dissolved in a nematic liquid crystal host material of positive dielectric anisotropy and imparting a blue color thereto, said dichroic dye-nematic liquid crystal mixture having a high degree of photostability; said dye being a 4,4′-Bis-(substituted naphthylazo)azobenzene with a general chemical formula:



wherein the substituents at bonds R and R′, are coordinately selected for a desired set of an approximate order parameter (S) and an approximate wavelength ($\lambda_{Max.}$) of maximum absorption in accordance with the following table:

Dye	R	R′	S	$\lambda_{max.}$ (nm.)
a	$NHCH_3$	H	0.75	595
b	NHC_2H_5	H	0.72	598
c	NH_2	NH_2	0.74	595
d			0.72	610
e			0.72	605

the approximate order parameter and approximate maximum absorption wavelength being measured with said dye dissolved in a host material consisting of a mixture of 70% by weight of p-pentylphenyl 2-chloro-4-(p-pentyl-benzoyloxy)benzoate, and 30% by weight of an ester mixture composed approximately of 50–60% by weight of 4′-n-pentylphenyl ester of anisic acid, 25–35% by weight of 4′-n-pentylphenyl ester of 4-hexyloxybenzoic acid, and 10–15% by weight of (2′-cyano-4′-butylphenyl) ester of 4-(hexanoyloxybenzoyloxy)benzoic acid.

4,122,028

PROCESS FOR SOLIDIFYING AND ELIMINATING RADIOACTIVE BORATE CONTAINING LIQUIDS

Norbert Iffland, Freigericht; Hans-Jörg Isensee, Bruchköbel; Gerhard Wagner, Rodenbach, and Hartmut Witte, Bruchköbel, all of Germany, assignors to Nukem Nuklear-Chemie und Metallurgie GmbH, Hanau, Germany

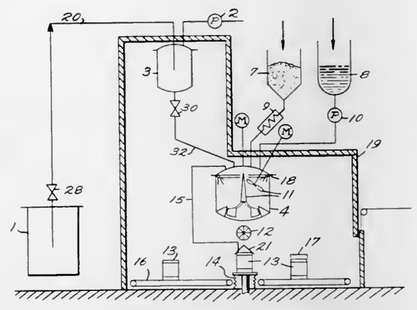
Filed Jan. 25, 1977, Ser. No. 762,793

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1976, 2603116

Int. Cl.[2] G21F *9/16*

U.S. Cl. 252—301.1 W **8 Claims**

1. A process for the solidification of radioactive boron containing aqueous solutions or suspensions containing more than 5% of boric acid or borate and more than 5% solids to form a solid, transportable, storage stable block by adding suitable



compounds in the correct sequence comprising adding to 100 parts by weight of said radioactive solution first 5–30 parts by weight of quick lime and then adding 30 to 80 parts by weight of cement.

4,122,029

EMULSION COMPOSITIONS COMPRISING A SILOXANE-OXYALKYLENE COPOLYMER AND AN ORGANIC SURFACTANT

Ronald P. Gee, and Joseph W. Keil, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 27, 1977, Ser. No. 819,210

Int. Cl.[2] B01J *13/00*

U.S. Cl. 252—309 **6 Claims**

1. An emulsion composition consisting essentially of

(a) 1 to 70 percent by weight of a polar liquid as a dispersed phase,

(b) 17 to 97.5 percent by weight of a non-polar base liquid as a continuous phase, said base liquid having a viscosity at 25° C. of up to 100 millipascal-seconds and being selected from the group consisting of methylsiloxane fluids having the average unit formula $(CH_3)_aSiO_{(4-a)2}$ wherein *a* has an average value of from approximately 2 to 3 inclusive and mixtures thereof with paraffinic hydrocarbon fluids,

(c) 0.5 to 3 percent by weight of an organic water-in-oil surfactant having an HLB value of from 2 to 10 inclusive, and

(d) 1 to 10 percent by weight of a polydiorganosiloxanepolyoxalkylene copolymer containing at least one polydiorganosiloxane segment consisting essentially of $R_bSiO_{(4-b)2}$ siloxane units wherein *b* has a value of from 0 to 3, inclusive, there being an average value of approximately 2 R groups per silicon for all siloxane units in the copolymer, and R denotes a radical selected from the group consisting of methyl, ethyl, vinyl, phenyl, and a divalent radical bonding a polyoxyalkylene segment to the polydiorganosiloxane segment, at least 95 percent of all R being methyl; and at least one polyoxyalkylene segment having an average molecular weight of at least 1000 and consisting of from 0 to 50 mol percent polyoxypropylene units and from 50 to 100 mol percent polyoxyethylene units, at least one terminal portion of said polyoxyalkylene segment being bonded to said polydiorganosiloxane segment, any terminal portion of said polyoxyalkylene segment not bonded to said polydiorganosiloxane segment being satisfied by a terminating radical; the weight ratio of polydiorganosiloxane segments to polyoxyalkylene segments in said copolymer having a value of from 2 to 8 and the total of (a) plus (b) plus (c) plus (d) being 100 percent by weight.

4,122,030

FORMATION OF COLLOIDAL DISPERSIONS OF SELENIUM BY THE LOCUS CONTROL METHOD

Thomas W. Smith, Penfield, and Wolfgang H. H. Gunther, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 19, 1977, Ser. No. 834,611

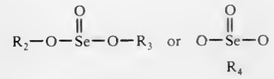
Int. Cl.[2] B01J *13/00*

U.S. Cl. 252—313 R **6 Claims**

1. A method of forming a stable, colloidal dispersion of selenium which comprises:

(a) providing a solution of a solvent containing submicron domains of a soluble second phase, the domains being comprised of a hydrazine substituted poly (acrylic acid) and being capable of reducing selenous acid or alkyl selenite to selenium;

(b) adding selenous acid or an alkyl selenite corresponding to the following formula:



wherein R_2 and R_3 are independently H or alkyl of 1 to 20 carbon atoms and R_4 is an alkylene radical of 1 to 20 carbon atoms, to the solution to reduce the selenium in the selenous acid or alkyl selenite to zero valent selenium and thereby form the colloidal dispersion of selenium.

4,122,031

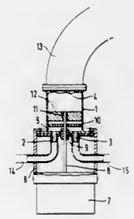
COMPLEX ALKALI METAL-METAL SILICATE MATERIAL

Fred Smith, Norwich, England, assignor to Anglian Water Authority, Huntingdon, England

Continuation-in-part of Ser. No. 624,817, Oct. 22, 1975, abandoned. This application Jun. 15, 1977, Ser. No. 807,932

Int. Cl.[2] B01J *13/00*

U.S. Cl. 252—313 S **10 Claims**



1. A particulate, uncharged, complex alkali metal-metal silicate material which is insoluble in hydrochloric acid and in which the amount of silicate, measured as SiO_2, is about 30% by weight, when produced by a process comprising continuously introducing, into separate inlets of a vessel, a concentrated aqueous solution of alkali metal silicate and a concentrated aqueous solution of a salt of a metal other than an alkali or alkaline earth metal, substantially immediately mixing said concentrated solutions in said vessel under high shear with a rotor having blades that rotate at a speed of at least 1,000 rpm, and continuously forcing the reaction product out of an outlet in said vessel, by the action of the rotor blades the proportions of alkali metal silicate, metal salt and water which are introduced into said vessel being such that the product which is forced out of said vessel has a pH of from 2 to 7.5, contains said particulate complex alkali metal-metal-silicate material dispersed in from 0 to 10 parts by weight of water per part by weight of silicate, measured as SiO_2, and has a total silicate content of from 20 to about 30% by weight, measured as SiO_2.

3. The complex alkali metal-metal-silicate material of claim 1 in which the product which is forced out of the vessel is dispersed in from 1 to 10 parts by weight of water per part by weight of silicate, measured as SiO_2.

4,122,032

DEFOAMING AGENT

August Höllerich, Kelheim, Fed. Rep. of Germany, assignor to PWA Papierwerke Waldhof-Aschaffenburg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1977, Ser. No. 782,710

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613810

Int. Cl.² B01D *19/04*

U.S. Cl. 252—321 **43 Claims**

1. Defoaming agent comprising

(a) from 1 to 100 parts by weight of at least one alkali-metal salt of an oxy-acid of sulphur, nitrogen or phosphorous selected from the group consisting of neutral or acidic alkali-metal salts of sulphurous acid, dithionous acid, thiosulphuric acid, pyrosulphuric acid, or of nitric acid or nitrous acid, or of phosphoric acid, phosphorous acid, diphosporous acid, hypophosphorous acid and hypodiphosphorous acid,

(b) from 20 to 1 parts by weight of at least one aliphatic hydrocarbon having up to about 60 carbon atoms or a derivative thereof having up to 26 carbon atoms selected from the group consisting of fatty acids, a fatty acid ester, fatty acid salts, fatty acid amides, alcohols, amines, aldehydes and ketones,

(c) from 0 to 5 parts by weight, based on 100 parts by weight of (a + b), an additive or processing aid, and

(d) from 0 to 1000 parts by weight, based on 100 parts by weight of (a + b), water.

4,122,033

OXIDATION INHIBITOR AND COMPOSITIONS CONTAINING THE SAME

James F. Black, 45 Hall Rd., Chatham, N.J. 07928

Filed Nov. 26, 1976, Ser. No. 745,388

Int. Cl.² C09K *15/02, 15/18, 15/18;* **C08K** *3/10*

U.S. Cl. 252—400 A **43 Claims**

1. A method for stabilizing an organic material against autoxidation comprising the steps of:

(a) adding about 100 to about 20,000 ppm by weight of a compound capable of reducing the peroxide content and compatible with the other components of the system, said compound selected from the group consisting of:

(i) aliphatic amines,

(ii) alkyl selenides, and

(iii) alkyl phosphines and phosphites; wherein the aliphatic and alkyl portions of said compound each contain from about 1 to about 50 carbon atoms;

(b) adding at least about 100 ppm by weight of a transition metal containing compound which is compatible with the other components of the system; and

(c) recovering a stabilized organic material.

4,122,034

ANTIMICROBIAL COMPOSITIONS

Martin Steinman, Livingston, N.J., assignor to Schering Corporation, Kenilworth, N.J.

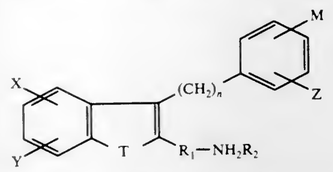
Division of Ser. No. 636,517, Dec. 1, 1975, Pat. No. 3,996,159, and a continuation-in-part of Ser. No. 314,899, Dec. 13, 1972, abandoned, said Ser. No. 636,517, is a division of Ser. No. 475,625, May 28, 1974, Pat. No. 3,944,672, which is a continuation-in-part of Ser. No. 314,899,. This application Sep. 13, 1976, Ser. No. 722,974

Claims priority, application Canada, May 22, 1975, 227576

Int. Cl.² A61K *31/38*

U.S. Cl. 252—402 **1 Claim**

1. A method for preserving a compound from microbial contamination, which comprises incorporating, in a composition in which preservation is desired, about 0.1 to 0.5% by weight of a compound of the formula:



wherein n is 0 or 1; R_2 is hydrogen, or lower amino alkylene having 1 to 3 carbon atoms; R_1 is carbonyl or lower alkylene having 1 to 3 carbon atoms with the provisio that when R_2 is hydrogen, R_1 is lower alkylene; T is S; M is hydrogen, halogen, methyl or trifluoromethyl; X is halogen, nitro, methoxy or trifluoromethyl; Y is hydrogen, halogen or methyl with the provisio that when X is nitro, Y is halogen; Z is hydrogen, halogen, nitro or methyl; and the non-toxic acid addition salts thereof.

4,122,035

PROCESS FOR RECLAIMING SYNTHETIC MAGNESIUM SILICATE OR ALUMINUM SILICATE ADSORBENTS EMPLOYED IN THE PURIFICATION OF POLYETHER POLYOLS

Carl Casimer Cislo, Wyandotte, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 17, 1976, Ser. No. 751,736

Int. Cl.² B01J *21/20;* **C07H** *15/08;* **C07C** *43/00*

U.S. Cl. 252—414 **5 Claims**

1. A process for recovering the synthetic magnesium silicate or aluminum silicate adsorbent from a residue resulting from the treatment of crude polyether polyol to remove alkaline catalyst therefrom, comprising the steps of

(a) washing spent adsorbent residue by slurrying said adsorbent residue with a solvent which is miscible with said polyol and is inert with respect to said polyol, catalyst, and absorbent, wherein said solvent is selected from the group consisting of aliphatic, alicyclic and aromatic hydrocarbons, dialkyl ketones, alkanols, dialkyl ethers, cyclic ethers, hydroxyalkyl ethers and halogenated hydrocarbons, and

(b) removing said solvent from said adsorbent, whereby said adsorbent is reactivated to a condition suitable for treatment of further crude polyether polyol.

2. The process of claim 1 wherein the adsorbent residue is washed with solvent a plurality of times.

4,122,036

METHOD OF PYROLYZING SEWAGE SLUDGE TO PRODUCE ACTIVATED CARBON

Frederick Michael Lewis, Mountain View, Calif., assignor to Waterfront N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 683,011, May 12, 1976, abandoned. This application Jan. 7, 1977, Ser. No. 757,661

Int. Cl.² C01B *31/10;* **B01J** *21/18;* **C01B** *31/08;* **C10B** *51/00*

U.S. Cl. 252—421 **6 Claims**

1. A method of transforming wet sewage sludge to a solid carbonaceous material that is at least partially activated carbon which includes the steps of:

a. providing an elongate first confined space within a rotatable cylindrical shell that has first and second ends and a longitudinal axis, said shell defined by a rigid material that has substantial heat conductivity;

b. rotating said cylindrical shell about said longitudinal axis;

c. initially heating said cylindrical shell from a first source to a first temperature at which a mixture of said wet sewage sludge and hot carbonaceous material will be transformed to char in traversing the length of said first confined space;

d. delivering a mixture of wet sewage sludge and hot carbonaceous material to said first confined space adjacent said first end of said shell;

e. moving said mixture longitudinally through said first confined space at such a rate that said sewage sludge is transformed to char prior to reaching said second end of said cylindrical shell;

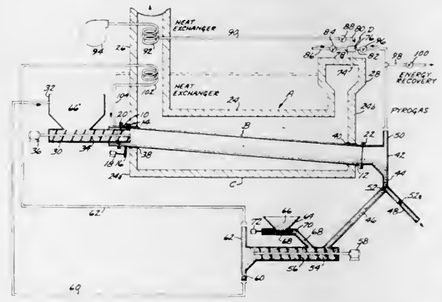
f. continuously discharging wet sewage sludge at a first rate into a second confined space;

g. continuously mixing said hot char and wet sewage sludge in said second confined space to obtain a substantially dry mixture thereof, with a substantial portion of the water in said wet sewage sludge being transformed to water vapor;

h. discharging said water vapor from said second confined space;

i. heating said water vapor to transform the latter to steam that is directed into said first confined space;

j. continuously discharging said dry mixture from said second confined space to said first confined space adjacent said first end of said shell at a second rate that is so selected that said dry mixture is substantially transformed to



pyrogas and char that is at least partially activated carbon in traversing the length of said confined space;

k. continuing to discharge a first portion of said char from said second end of said cylindrical shell into said second confined space;

l. recovering a second portion of said char from said second end of said cylindrical shell, which char is at least partially in the form of activated carbon for use apart from said method;

m. providing a source of air under pressure;

n. mixing said pyrogas with said air under pressure, and burning said air-pyrogas mixture to heat, said shell and first confined space to provide a second source of heat; and

o. using said heat from said second source of such heat as may be necessary from said first source to maintain said shell and first confined space at a temperature to transform said dry mixture from said second confined space to pyrogas and to char at least partially in the form of activated carbon as said dry mixture traverses the length of said first confined space.

4,122,037

PREPARATION OF AN AQUEOUS SOLUTION CONTAINING IONS OF AT LEAST MANGANOUS AND BROMIDE IONS FROM A WATER SOLUBLE MANGANOUS SALT AND ELEMENTAL BROMINE

Joseph D. Fox, Joliet; George E. Kuhlmann, Lisle, and Ricky L. Wittman, Montgomery, all of Ill., assignors to Standard Oil Company a corporation of Indiana, Chicago, Ill.

Filed Dec. 16, 1977, Ser. No. 861,457

Int. Cl.² B01J *27/08, 31/32;* **C07C** *63/02*

U.S. Cl. 252—429 R **9 Claims**

1. The method of preparation of an aqueous solution containing at least manganous and bromide ions from elemental bromine and a manganous compound other than manganous bromide which method comprises first dissolving at least 0.5 gram mole of an alcohol or at least one gram mole of an aldehyde or their proportionate equivalents as a mixture of alcohol or aldehyde per gram mole of elemental bromine to be dissolved, then dissolving the elemental bromine and thereafter adding to the resulting solution the non-bromide manganous salt.

3. The method of claim 1 wherein the alcohol is ethanol.

6. The method of claim 1 wherein the aldehyde is acetaldehyde.

8. The method of claim 6 wherein the solution is also to contain cobaltous ion in addition to manganous and bromide ions, the cobaltous salt source of cobaltous ion is dissolved in water containing at least one weight percent acetic acid before dissolving acetaldehyde.

9. The method of claim 3 wherein the solution is also to contain cobaltous ion in addition to manganous and bromide ions the cobaltous salt source of cobaltous ion is dissolved in water containing at least one weight percent acetic acid before dissolving ethanol.

4,122,038

CATALYST SYSTEMS CONTAINING DIMETHYLAMINO ETHER MONO-OLS FOR POLYURETHANE FOAM FORMATION

Michael Ray Sandner, Chappaqua, N.Y., and Robert Donovan Duffy, Summersville, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

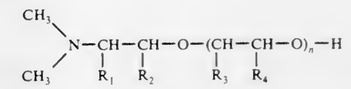
Division of Ser. No. 581,745, May 29, 1975, Pat. No. 4,049,931. This application Jul. 27, 1977, Ser. No. 819,331

Int. Cl.² B01J *27/24, 27/26*

U.S. Cl. 252—431 C **7 Claims**

1. A catalyst combination for cellular urethane formation which comprises:

(1) a total of from about 10 to about 95 weight percent of at least one dimethylamino ether mono-ol having the formula,



wherein n has an average value of at least one and no more than five, and each of R_1, R_2, R_3 and R_4 represents hydrogen, methyl or ethyl with the proviso that, R_1 and R_2 cumulatively, and R_3 and R_4 cumulatively, have no more than two carbon atoms;

(2) a total of from about 5 to about 90 weight percent of at least one other tertiary-amine component selected from the group consisting of bis[2-(N,N-dimethylamino)ethyl]ether, 3-dimethylamino-N,N-dimethylpropionamide, 3-dimethylaminopropionitrile, triethylenediamine, N,N,N',N'-tetramethyl-1,3-butanediamine and N,N-dimethylethanolamine; and

(3) zero or up to 15 weight percent of an organic compound of tin selected from the group consisting of a stannous salt of a carboxylic acid, a dialkyltin dicarboxylate, a dialkyltin oxide, a trialkyltin oxide and a tin mercaptide;

said weight percentages being based on the combined total weight of components (1), (2) and (3).

4,122,039

PROCESS FOR PREPARING CATALYST

Thaddeus P. Kobylinski; Brian Taylor, both of Gibsonia, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 711,854, Aug. 5, 1976. This application May 12, 1977, Ser. No. 796,145

The portion of the term of this patent subsequent to Jun. 22, 1993, has been disclaimed.

Int. Cl.[2] B01J *27/14*

U.S. Cl. 252—435 19 Claims

1. A process for preparing a catalyst consisting essentially in coating a support having a surface area of about 1 to about 500 square meters per gram with a first solution consisting essentially of a first metal salt selected from the group consisting of a salt of platinum and palladium and a salt of rhodium, calcining, further coating the calcined base with a second solution consisting essentially of a salt of ruthenium and a phosphorus compound selected from the group consisting of a phosphorus oxide, a phosphorus salt and a phosphorus acid and then further calcining to produce a support containing from about 0.001 to about 2 weight per cent of platinum or palladium, about 0.005 to about 1 weight per cent of rhodium and about 0.03 to about 2 weight per cent of combined ruthenium and phosphorus.

4,122,040

PLATINUM GROUP METAL CATALYST

John James McCarroll, Camberley; John Trevor Kent Clark, Weybridge, and Stephen Robert Tennison, New Haw, all of England, assignors to The British Petroleum Company Limited, London, England

Continuation-in-part of Ser. No. 606,420, Aug. 21, 1975, abandoned. This application Sep. 22, 1976, Ser. No. 725,587

Claims priority, application United Kingdom, Sep. 2, 1974, 38182/74; Sep. 2, 1974, 38183/74

Int. Cl.[2] B01J *21/18*

U.S. Cl. 252—447 10 Claims

1. A catalyst comprising (a) as support, a graphite-containing carbon having (1) a basal plane surface area of at least 100 m^2/g, (2) a ratio of BET surface area to basal plane surface area of not more than 5:1 and (3) a ratio of basal plane surface area to edge surface area of at least 5:1 and (b) as active component, 0.01 to 10% by weight of a platinum group metal disposed thereon.

4,122,041

SILICEOUS FIBERS AND METHOD OF PREPARING THEM

Walter Mahler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 720,848, Sep. 7, 1976, abandoned. This application Jul. 1, 1977, Ser. No. 812,404

Int. Cl.[2] B01J *21/08*

U.S. Cl. 252—449 15 Claims

1. A porous, water-insoluble siliceous fiber characterized by having a cross-sectional diameter of 0.001 to 0.5 mm, and a cross-sectional shape in the form of a five to seven-sided polygon in which at least one side is concave, and an essential chemical composition corresponding to the formula

$$(SiO_2)_3 \cdot (H_2O)_x$$

in which x is a fractional or whole number from 0 to 6.

4,122,042

COMPOSITE BODY USEFUL IN GAS DISCHARGE LAMP

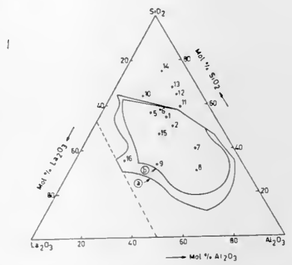
Gertraud Agnes Anna Meden-Piesslinger; Johannes Theodorus Klomp, and Joris Jan Cornelis Oomen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 28, 1977, Ser. No. 819,711

Claims priority, application Netherlands, Aug. 5, 1976, 7608688

Int. Cl.[2] H01B *1/02*

U.S. Cl. 252—513 6 Claims



1. A composite body comprising two parts formed of a material selected from the group consisting of (1) densely sintered aluminum oxide, (2) sapphire, (3) one of the metals tantalum, niobium, tungsten, molybdenum, (4) an alloy having as the main component a metal selected from the group consisting of tantalum, niobium, tungsten, iron, nickel and cobalt and (5) a material consisting of a mixture of a metal oxide and a metal, said parts being joined together in gas and vacuum-tight relationship by means of sealing material which results in a joint which is resistant to the action of iodide, bromide and chloride vapours and liquid at temperatures up to approximately 1350° C, said sealing material including aluminum oxide and an oxide of a rare earth metal, wherein said joint comprises at least two of the oxides SiO_2, Al_2O_3 and B_2O_3 and at least one of the trivalent oxides La_2O_3 and Y_2O_3 in quantities which in mole % have at the utmost the following value: SiO_2 66.6, La_2O_3 50, B_2O_3 50, Y_2O_3 50 and Al_2O_3 70, the sealing material for obtaining the joint being applied at a temperature of not more than 1700° C and the material of the joint obtained therewith being located in a composition range within a tetrahedron formed by the components Al_2O_3-La_2O_3-SiO_2-B_2O_3, whose limits in the side planes of the tetrahedron are shown in the accompanying FIGS. **1**, area *a*, **2**, area *a* and **3**, area *a* and which are further defined by the cross-sections in FIG. **8**, area *a*, FIGS. **9**, area *a* and FIG. **10**, area *a*, or in a composition range located within a tetrahedron formed by the components Al_2O_3-La_2O_3-SiO_2-Y_2O_3, whose limits in the side planes of the tetrahedron are shown in the FIGS. **1**, area *a* and **4**, area *a*, **6** area *a* and **7**, area *a*.

4,122,043

AMIDOBETAINE CONTAINING DETERGENT COMPOSITION NON-TOXIC TO AQUATIC LIFE

Paul Kersnar, San Mateo, and Robert Joseph O'Connor, Palo Alto, both of Calif., assignors to Polytrol Chemical Corporation, Oakland, Calif.

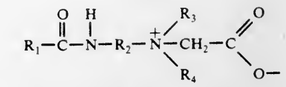
Continuation-in-part of Ser. No. 426,182, Dec. 19, 1973, abandoned. This application Oct. 2, 1975, Ser. No. 619,049

Int. Cl.[2] C11D *1/90, 3/06, 3/10, 3/33*

U.S. Cl. 252—527 37 Claims

1. A heavy-duty detergent for cleaning fabrics while providing a wash-water effluent which is nontoxic to aquatic or marine life other than microorganisms, consisting essentially of:

(a) from 10 to 25% by weight of at least one amido betaine of the formula



in which R_1 is an alkyl radical containing from 12 to 16 carbon atoms, R_2 is selected from the group consisting of a cycloalkyl ammonium radical and an alkyl radical containing from 2 to 4 carbon atoms, and R_3 and R_4 are each a radical selected from the group consisting of methyl, hydroxyethyl and alkali metal substituted glycidyl radicals,

(b) from 20 to 60% by weight of a detergency builder selected from the group consisting of sodium hydroxide, sodium carbonate, sodium bicarbonate, sodium potassium carbonate and trisodium phosphate,

(c) from 20 to 55% by weight of a chelating or sequestering agent selected from the group consisting of sodium tripolyphosphate, tetrasodium pyrophosphate, sodium salt of ethylene diamine tetraacetic acid, and the sodium salt of nitrilo-triacetic acid, and

(d) from 0 to 2% of an optical brightener,

the sodium to potassium ratio in said detergent being in the range of from 1:1 to 1:0.

4,122,044

GRANULAR DETERGENT COMPOSITION

Masayoshi Nakamura, Koshigaya; Toshiaki Ogoshi, Funabashi, and Mitsuyoshi Yazaki, Yachiyo, all of Japan, assignors to The Lion Fat and Oil Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1977, Ser. No. 791,877

Claims priority, application Japan, May 18, 1976, 51/56829

Int. Cl.[2] C11D *1/12, 3/08, 3/10*

U.S. Cl. 252—532 8 Claims

1. A phosphate-free granular detergent composition which comprises

(a) 20 to 35 wt.% of a surfactant comprising a C_{12}-C_{22}-α-olefinsulfonate and a C_9-C_{18}-alkyl ether sulfate at a ratio of the α-olefinsulfonate to the alkyl ether sulfate of 1:1 to 5:1 by weight; and

(b) 40 to 70 wt.% of a builder comprising a water soluble carbonate and a water soluble silicate at a ratio of the carbonate to the silicate of 2:1 to 5:1 by weight.

4,122,045

NON-PUNKING NON-CORROSIVE PHENOLIC FOAM CONTAINING SODIUM TETRABORATE

William L. Garrett, Lancaster; Roy G. Grube, Millersville, and Wayne C. Kennedy, Lititz, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed May 24, 1976, Ser. No. 689,686

Int. Cl.[2] C08J *9/00*

U.S. Cl. 521—103 9 Claims

1. In a process for the manufacture of phenolic resin foams wherein a mixture of a phenol-aldehyde resole resin, a blowing agent, an acid catalyst, and an effective amount of a surface active agent are caused to form a solid foam, the improvement resulting in a heat-resistant, non-corrosive foam comprising adding to said mixture, prior to foaming, anhydrous sodium tetraborate of 12–200 mesh.

4,122,046

ELASTOMERIC AND FIBROUS POLYMERIC MATERIALS

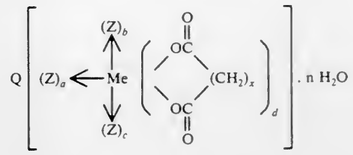
John Joseph Waldmann, 220 E. Drewry La., Raleigh, N.C. 27609

Filed Jun. 17, 1975, Ser. No. 587,685

Int. Cl.[2] C08F *4/16, 22/38*

U.S. Cl. 521—93 40 Claims

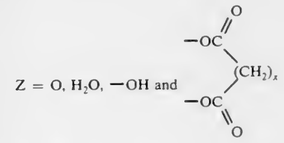
1. A method for the production of an elastomeric, chemically stable polymer which consists essentially of polymerizing in a liquid medium a member of the group selected from acrylamide and mixtures of acrylamide and at least one ethylenically unsaturated monomer copolymerizable therewith in the presence of a catalyst having the structure:



wherein:

Q = NH_4, or metals of group IA and IIA

n = 2 to 5



Z = O, H_2O, —OH and

Me = Ti, Mn, Mo, Zr or W

x = 0 to 1

a,b,c each = 0 to 1

a+b+c+d = valence of Me.

4,122,047

PRODUCTION OF POLYESTER FOAM

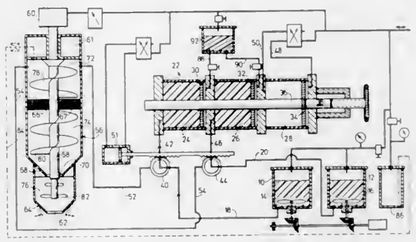
Stanislaw Franz Filip, and Alexander Miutel, both of Toronto, Canada, assignors to Isaac Meisels; Stanislaw F. Filip and Alexander Miutel, all of Toronto, Canada

Filed Apr. 5, 1977, Ser. No. 784,708

Claims priority, application United Kingdom, Mar. 4, 1977, 9339/77

Int. Cl.[2] C08J *9/08*

U.S. Cl. 521—106 7 Claims



1. A method for forming a foam of a cross-linkable unsaturated water immiscible polyester resin, which comprises

forming a first reaction mixture containing part of said resin, a cross-linking monomer for the resin, a carbonate material which will release carbon dioxide when contacted by acid and selected from calcium carbonate and sodium bicarbonate and a catalyst promoter for a cross-linking initiating catalyst,

forming a second reaction mixture containing the remainder of said resin, a cross-linking monomer for the resin, an acid capable of reacting with said carbonate to form carbon

dioxide and selected from phosphoric acid, hydrochloric acid and mixtures thereof and a cross-linking initiating catalyst which is activatable by said catalyst promoter,

said resin and said cross-linkable monomer being used as a mixture characterized by the properties:

Brookfield viscosity (at 25° C)	about 2000 to about 3000 cps
Acid value	about 25 to about 35
Monomer content	about 25 to about 30 wt %,

and wherein said first and second reaction mixtures have substantially the same volume,

and blending said first and second reaction mixtures simultaneously to cross-link said resin with said cross-linking monomer to a cured form and generate carbon dioxide as a blowing agent by reaction between said carbonate and said acid.

4,122,048

PROCESS FOR CONDITIONING CONTAMINATED ION-EXCHANGE RESINS

Michel Buchwalder, Seloncourt; Roger Perrin, Charost, and Daniel Thiéry, Saint Martin D'Heres, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 5, 1977, Ser. No. 822,319

Claims priority, application France, Aug. 12, 1976, 76 24624

Int. Cl.² C08F *8/32, 8/42;* C08J *3/00*

U.S. Cl. 521—26 **16 Claims**

1. A process for conditioning contaminated ion-exchange resins selected from the group consisting of cationic or a mixture of cationic and anionic resins, wherein the contaminated ion-exchange resin or resins are brought into contact with a basic compound in a sufficient quantity to block the active sites of the cationic resin or resins, the thus treated ion-exchange resin or resins are incorporated into an ambient temperature-thermosetting resin and the latter is cross-linked.

4,122,049

PROCESS FOR THE PRODUCTION OF POLYURETHANE FOAM

Kuno Wagner, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 667,324, Mar. 16, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,084

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1975, 2514633

Int. Cl.² C08G *18/54, 18/14*

U.S. Cl. 521—136 **4 Claims**

1. In a process for the production of foams comprising reacting polyisocyanates with compounds containing at least two isocyanate-reactive hydrogen atoms and having molecular weights of from 400 to 10,000 in the presence of blowing agents, the improvement wherein the polyisocyanates and/or the compounds having at least two isocyanate-reactive hydrogen atoms and molecular weights of from 400 to 10,000 are in the form of sedimenting, redispersible dispersions containing homogeneous aminoplasts as disperse phase, said dispersions having a solids content of from 5 to 45%.

4. Foams obtainable by the process claimed in claim 1.

4,122,050

FOAMABLE POLYMER COMPOSITIONS

Johann G. D. Schulz, Pittsburgh, and Edward T. Sabourin, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 29, 1978, Ser. No. 891,170

Int. Cl.² C08J *9/14;* C07C *63/33*

U.S. Cl. 521—95 **17 Claims**

1. A foamable polymer composition comprising a gas-expandable organo plastic resinous polymer and a foaming agent comprising a mixture of polycyclic aromatic polycarboxylic acids carrying nuclear nitro groups that is substantially soluble in acetone and soluble in water which is prepared by subjecting a slurry containing coal to reaction with aqueous nitric acid having a concentration of about 5 to about 90% at a temperature of about 15° to 200° C. for about 0.5 to about 15 hours, mechanically separating the solids in the resulting slurry, removing nitric acid and water from the resulting filtrate, and then extracting the resulting solids with a polar solvent to recover said foaming agent.

4,122,051

AQUEOUS MICROEMULSION OF ALKYD, MODIFIED ALKYD, OR POLYESTER BINDER AND EMULSIFIER

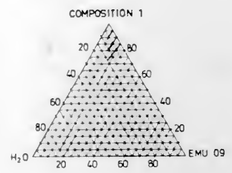
Stig Erik Friberg, Saltsjö-Boo; Elsa Gunilla Gillberg-La Force, Stockholm, and Karl-Henry Falklin, Perstorp, all of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Aug. 11, 1975, Ser. No. 603,685

Claims priority, application Sweden, Apr. 4, 1975, 7503893

Int. Cl.² C08J *3/06*

U.S. Cl. 260—22 A **7 Claims**



1. A water-dilutable binder for lacquers and paints based on synthetic resins, consisting essentially of a resin which is selected from the group consisting of alkyd, polyester and modified alkyd and which is soluble in organic solvents and which has an acid number of between 5 and 30 mg KOH/g, water forming with the resin a colloidal, thermo-dynamically stable solution in the form of a microemulsion, and at least one emulsifier having a hydrophile-lipophile balance such that the solubilizing power of the solution is such that the microemulsion forms spontaneously with a dispersed phase having a particle size less than 0.1 μ.

4,122,052

EMULSION COMPOSITION

Tetsuo Aihara; Yasuharu Nakayama; Yoshio Yamashita; Tadashi Watanabe, and Isao Toyomoto, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Mar. 4, 1977, Ser. No. 774,549

Claims priority, application Japan, Mar. 9, 1976, 51-25408, Mar. 16, 1976 51-28732

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23 EM **6 Claims**

1. An emulsion composition prepared by the emulsion polymerization of a polymerizable vinyl monomer in the presence of an emulsifier characterized in that the emulsifier is a neutralized copolymer having an acid value of about 40 to 180 and an average molecular weight of about 500 to 50,000 comprising

(A) 7.5 to 90 wt.% of a monomer prepared by reacting at least one glycidyl ester of acrylic acid and methacrylic acid with at least one fatty acid of drying oil fatty acid and semi-drying oil fatty acid in a mole ratio of said fatty acid to said glycidyl ester of from 0.8 to 1.2:1,

(B) 8 to 30 wt.% of an α, β-ethylenically unsaturated acid and

(C) 2 to 87.5 wt.% of an unsaturated monomer containing substantially no carboxyl group and having a Q value of at least 0.1 as determined by Q-e theory, said polymerizable vinyl monomer being free from active radicals reactive with drying oil fatty acid or semi-drying oil fatty acid, and

said emulsifier and said polymerizable vinyl monomer being used in such proportions that the total solid content of the resulting emulsion has an acid value of about 3 to about 150.

4,122,053

ELECTRODEPOSITABLE MICELLAR DISPERSIONS

Edward J. Murphy, Pittsburgh, and Ivan G. Troup, Sarver, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 170,805, Aug. 11, 1971, abandoned. This application Sep. 24, 1973, Ser. No. 399,912

Int. Cl.² C08K *5/04;* C08L *61/28;* C25D *13/06, 13/10*

U.S. Cl. 260—29.4 UA **10 Claims**

1. An electrodeposition bath feed composition comprising a partially-neutralized micellar aqueous dispersion having a particle size of from approximately 0.1–0.2 microns of an aqueous, electrodepositable, base solubilized, resinous vehicle containing a dispersant which has a solubility of 50 percent by weight or less in water at 20° C. and has a limited affinity for the resinous vehicle in that the dispersant has a swelling effect upon the resinous vehicle; the degree of neutralization of said dispersion being from about 5 to 80 percent of the total theoretical neutralization.

4,122,054

HIGH ORTHO ETHERIFIED RESOLE RESINS

Harry M. Culbertson, Belchertown, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 647,958, Jan. 9, 1976. This application Jan. 31, 1977, Ser. No. 763,959

Int. Cl.² C08L *61/14*

U.S. Cl. 260—29.3 **27 Claims**

1. An aqueous emulsion of a high ortho etherified phenol-formaldehyde resole resin said resin being characterized by:

A. having a reacted formaldehyde to phenol mol ratio of 1.10 to 2.0, said formaldehyde reacting with said phenol, forming methylol groups taking a final orientation of about 90% to 100% in the ortho position,

B. having said phenol selected from the group consisting of phenol, meta-substituted phenols and mixtures of phenol and substituted phenols,

C. having condensed phenol-aldehyde linkages wherein 25 to 90% of said linkages are benzyl ether linkages having a final orientation essentially in the ortho position and 10 to 75% are methylene linkages taking a final orientation of about 70 to 90% in the ortho position and about 10 to 30% in the para position,

D. having an average degree of polymerization of less than 4.0, and

E. having said methylol groups partially etherified with monohydric alcohols, said aqueous emulsion comprising about 20 to 50 percent by weight of said etherified phenol-formaldehyde resole resin solids contained in said aqueous emulsion, said solids being emulsified with an nonionic emulsifier, said etherified resoles being prepared by an improved process by first reacting said phenol and said formaldehyde in an aqueous reaction mixture under reflux at about 80° C., in the presence of a divalent electropositive metal ion, while maintaining the pH in the range of about 4 to 7, wherein said pH is controlled by having a sufficient amount of an organic acid present, forming said resole in said reaction mixture, the improvement comprising, etherifying said resole with a monohydric alcohol at a temperature of 65° to 100° C. in said reaction mixture and dehydrating the resultant aqueous reaction mixture to a water content of less than about 1 weight percent and an alcohol content of less than about 5% by weight providing an etherified high ortho resole resin as a single phase clear liquid resole resin.

4,122,055

AQUEOUS DISPERSION TYPE THERMOSETTING COATING COMPOSITION

Hideyoshi Tugukuni, Izumi; Masafumi Kano, Nagaokakyo, and Yoshihiko Nishimura, Toyonaka, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Japan

Filed Dec. 16, 1976, Ser. No. 751,077

Claims priority, application Japan, Dec. 26, 1975, 50-155965; Mar. 3, 1976, 51-22906; Mar. 6, 1976, 51-24526

Int. Cl.² C08L *61/28, 63/00*

U.S. Cl. 260—29.4 UA **11 Claims**

1. An aqueous dispersion type thermosetting coating composition comprising

(A) 100 parts by weight of a thermosetting resin powder having an average particle size of 5 to 50μ comprising

(i) the thermosetting resin having an acid value of 5 to 30,

(ii) a crosslinking agent,

(iii) 1 to 8% by weight based on the thermosetting resin of at least one reactive flow adjusting agent selected from the group consisting of

(I) compounds having an average molecular weight of 1,000 to 2,500 and represented by the following general formula:

$$HO-(CH_2)_xO]_mH$$

wherein n is an integer of from 2 to 40 and m is an integer of from 2 to 55, and (II)

$$R[(O-CH_2-CH_2-CH_2-CH_2-CH_2)_xOH]_y$$

wherein x is an integer of from 2 to 10, y is an integer of from 2 to 4, and R stands for an aliphatic polyhydric alcohol residue, cyclic aliphatic polyhydric alcohol residue or aromatic polyhydric alcohol residue having 2 to 16 carbon atoms, and

(iv) a pigment,

(B) 60 to 200 parts by weight based on the thermosetting resin (A) of water,

(C) 0.1 to 0.5 parts by weight based on the thermosetting resin (A) of a carboxyl group-containing organic polymeric thickener having an acid value of 200 to 500, and

(D) at least one member selected from the group consisting of organic amines having a boiling point higher than 100° C. and alkali metal hydroxide,

the pH of the composition being in the range of from 7.5 to 9.0.

4,122,056

EMULSION POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS IN HYDROXY-TERMINATED ORGANIC COMPOUNDS

Gerhard Gustav Ramlow, Grosse Ile; Louis Celeste Pizzini, Trenton; John Thomas Patton, Jr., Wyandotte; John Richard Murphy, Trenton, and John Eugene Davis, Woodhaven, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 722,043, Sep. 10, 1976, abandoned. This application Feb. 23, 1978, Ser. No. 880,691

Int. Cl.² C08F *216/02, 276/06, 2/12*

U.S. Cl. 260—29.6 NR **18 Claims**

1. An aqueous emulsion of finely-divided hydroxy-containing polymeric solids prepared by polymerizing, at a temperature between −5° C. and 130° C. in the presence of a catalytically sufficient amount of a free radical catalyst and water in an amount of from about one part to four parts per part of (a) below,

(a) a major amount of an ethylenically unsaturated monomer or mixture of monomers and

(b) a minor amount of a hydroxy-terminated organic compound having an acid number of one or less, from one to eight hydroxyl groups, an oxyethylene content of from about 15 to 80 weight percent, a hydroxyl equivalent

weight of from 250 to 10,000 and containing a polymerizable carbon-to-carbon double bond.

4,122,057

MIXED-TERMINATED POLYESTER PLASTICIZERS

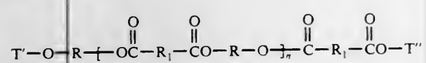
James Lamont; Robert D. Aylesworth, both of Cincinnati, Ohio, and Bruce J. Beimesch, Crescent Springs, Ky., assignors to Emery Industries, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 510,337, Sep. 3, 1974, abandoned. This application Apr. 5, 1976, Ser. No. 673,570

Int. Cl.[2] **C07C** *69/34, 69/90;* **C08K** *5/11, 5/12*

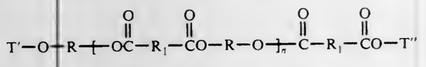
U.S. Cl. 260—31.6 **9 Claims**

1. A mixed-terminated polyester plasticizer characterized by having improved low temperature properties and having an average molecular weight between 500 and 5000, an acid value less than 10, hydroxyl value less than 20 and corresponding to the formula



wherein R is a bivalent hydrocarbon radical containing from 2 to 6 carbon atoms, R_1 is a bivalent hydrocarbon radical containing from 2 to 10 carbon atoms, T′ is an acyl radical containing 4 to 18 carbon atoms, T″ is an alkyl radical containing from 4 to 18 carbon atoms, *n* is a positive integer from 1 to 9 and consisting essentially of the reaction product of 2 to 10 moles of (a) an aliphatic glycol containing 2 to 6 carbon atoms, with an equimolar amount of (b) an aliphatic dibasic acid containing 4 to 12 carbon atoms or a mixture of C_4-C_{12} aliphatic dibasic acid and aromatic dibasic acid or anhydride thereof, and terminated with (c) a mixture of an aliphatic monobasic acid containing 4 to 18 carbon atoms and an aliphatic monofunctional alcohol containing 4 to 18 carbon atoms, the molar ratio of said monobasic and monofunctional alcohol in the mixture ranging between 0.5:1.5 and 1.5:0.5.

9. A plasticized vinyl resin composition comprising a polyvinyl chloride homopolymer or copolymer and 10 to 110 parts, per 100 parts resin, of a mixed-terminal polyester plasticizer corresponding essentially to the formula



wherein R is a bivalent hydrocarbon radical containing from 2 to 6 carbon atoms, R_1 is a bivalent hydrocarbon radical containing from 2 to 10 carbon atoms, T′ is an acyl radical containing 4 to 18 carbon atoms, T″ is an alkyl radical having from 4 to 18 carbon atoms, *n* is a positive integer from 1 to 9 and consisting essentially of the reaction product of 2 to 10 moles of (a) an aliphatic glycol containing 2 to 6 carbon atoms, with an equimolar amount of (b) an aliphatic dibasic acid containing 4 to 12 carbon atoms or a mixture of C_4-C_{12} aliphatic dibasic acid and aromatic dibasic acid or anhydride thereof, and terminated with (c) a mixture of an aliphatic monobasic acid containing 4 to 18 carbon atoms and an aliphatic monofunctional alcohol containing 4 to 18 carbon atoms, the molar ratio of said monobasic acid and monofunctional alcohol in the mixture ranging between 0.5:1.5 and 1.5:0.5.

4,122,058

RAPID-SETTING POLYURETHANES PREPARED IN THE PRESENCE OF A CYCLIC UNSATURATED ALIPHATIC HYDROCARBON

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 768,134, Feb. 14, 1977, abandoned. This application Nov. 14, 1977, Ser. No. 850,887

Int. Cl.[2] **C08G** *18/02;* **C08K** *5/01*

U.S. Cl. 260—33.6 UB **8 Claims**

1. A solid, rigid, non-cellular polyurethane having a density of at least about 1 g/cc, a percent elongation of less than 100, resulting from the admixture of the components of a polyurethane-forming composition, which can be demolded within 5 minutes after admixture of said components said polyurethane-forming composition comprising

(A) a polyol or mixture of polyols having a functionality of from 2 to about 8 and an average hydroxyl equivalent weight of from about 30 to less than about 250;

(B) an organic polyisocyanate;

(C) as a modifier, a cyclic unsaturated aliphatic hydrocarbon having a boiling point of at least about 140° C.;

(D) an organo-metallic catalyst for urethane formation;

wherein Components (A) and (B) are present in quantities so as to provide an NCO:OH ratio of from about 0.8:1 to about 2:1; Component (C) is present in quantities of from about 15 to about 50 percent by weight of the sum of Components (A), (B) and (C); Component (D) is present in quantities of from about 0.1 to about 10 percent by weight of the sum of the weights of Components (A), (B) and (C); with the proviso that when Component (A) is an amine initiated polyol, the quantity of Component (D) may be zero and when Component (A) is a difunctional polyol, then the average NCO-functionality of Component (B) is at least about 2.5.

4,122,059

REFRACTORY COMPOSITIONS

Lars J. Hansen, Clayton, Del., assignor to World Chemical Industry, Inc., Wilmington, Del.

Filed Mar. 10, 1976, Ser. No. 665,561

Int. Cl.[2] **C08L** *63/02*

U.S. Cl. 260—37 EP **20 Claims**

1. As a new composition of matter, a mixture of fire-resistant materials which mixture comprises a hydraulic cement and an inorganic salt hydrate selected from the group consisting of aluminum sulfate hydrate and ferrous sulfate hydrate and which mixture has been uniformly distributed in a synthetic, organic polymer and which mixture comprises from about 5% to about 80% by weight of said hydrated salt, from about 1% to about 10% by weight of a hydraulic cement, and about 1% to about 10% of aluminum silica, said percentages being based upon the total weight of said mixture.

4,122,060

EPOXY RESIN POWDER COATING COMPOSITION

Michael Dimitri Yallourakis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

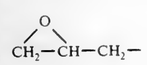
Continuation-in-part of Ser. No. 807,058, Jun. 16, 1977, abandoned. This application Feb. 15, 1978, Ser. No. 877,997

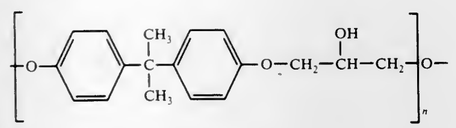
Int. Cl.[2] **C08L** *63/04, 63/02*

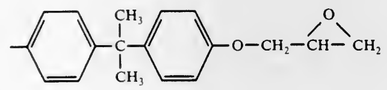
U.S. Cl. 260—37 EP **13 Claims**

1. A powder coating composition which consists essentially of finely divided particles at least 90 percent by weight of which have a maximum dimension not exceeding 150 microns wherein the particles are a blend of:

(A) 9–25 parts by weight of an epoxy resin of the formula



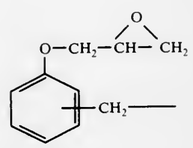


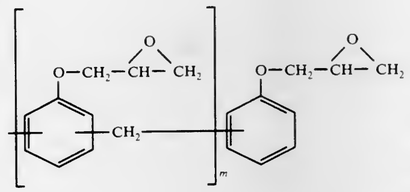


where *n* is sufficiently large to provide a resin having a Gardner-Holdt Viscosity of H-L measured at 40 percent polymer solids in diethylene glycol n-butyl ether at 25° C. and having an epoxide equivalent weight of 575–700;

(B) 0.9–3 parts by weight of an epoxy resin having the same general formula as (A) but having a value for *n* sufficiently large to provide a resin having a Gardner-Holdt Viscosity of K-P measured as above and having an epoxide equivalent weight of 660–810;

(C) 20–38 parts by weight of an expoy/epoxy novolac resin which is an epoxy resin of the formula of (A) modified with an epoxy novolac resin of the formula





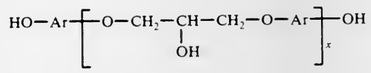
where *n* of the epoxy resin and *m* of the epoxy novolac resin have values sufficiently large to provide an epoxy/epoxy novolac resin having a Gardner-Holdt Viscosity of W-Z measured as in (A) and having an epoxide equivalent weight of 750–860;

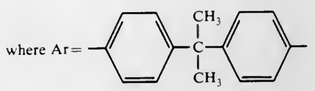
(D) 0–25 parts by weight of an epoxy/epoxy novolac resin of the formula of (C) but having values for *n* and *m* sufficiently large to provide an epoxy/epoxy novolac resin having a Gardner-Holdt Viscosity of O-S measured as in (A) and having an epoxide equivalent weight of 500–575, wherein the parts by weight of components (C) and (D) total at least 34;

(E) 10–20 parts by weight of filler particles having a maximum dimension of 10 microns; and

(F) 18–25 parts by weight of a resinous curing agent consisting essentially of:

(1) 68–81 parts by weight of a compound of the formula





and where *x* is a positive number sufficiently large to provide a compound with a weight average molecular weight of 1250–1600, as determined by Gel Permeation Chromatography based on a linear calibration curve obtained from narrow molecular weight polystyrene standards;

(2) 17–30 parts by weight of bisphenol-A; and

(3) 0.6–2.0 parts by weight of an alkylimidazole in which the alkyl group contains 1–4 carbon atoms.

4,122,061

IMPACT MODIFIED POLYESTER COMPOSITIONS

Frederick Frank Holub, Schenectady, N.Y., and Phillip Steven Wilson, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 23, 1976, Ser. No. 753,880

Int. Cl.[2] **C08K** *3/32, 3/36;* **C08L** *67/02*

U.S. Cl. 260—40 R **13 Claims**

1. A thermoplastic composition having improved impact strength after molding, said composition comprising:

(a) a thermoplastic polyester composition comprising, in intimate admixture, a poly(1,4-butylene terephthalate) resin, a poly(ethylene terephthalate) resin and a reinforcing amount of a reinforcing agent therefor comprising fibrous glass alone or in combination with a mineral reinforcing filler, and

(b) a minor amount of up to 5% by weight of (a) and (b) an impact modifier therefor comprising a polyolefin or olefin based copolymer resin, said resin being present in an amount at least sufficient to provide improved impact strength in comparison with a corresponding composition which does not contain said polyolefinic resin.

4,122,062

ALKOXY TITANATE SALTS USEFUL AS COUPLING AGENTS

Salvatore J. Monte, Staten Island, N.Y., and Gerald Sugerman, Allendale, N.J., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

Continuation-in-part of Ser. No. 577,922, May 15, 1975. This application Sep. 30, 1975, Ser. No. 618,224

Int. Cl.[2] **C08K** *9/04*

U.S. Cl. 260—42.14 **47 Claims**

1. An organo-titanate having the formula $(RO)_zTi(A)_x(B)_y$ wherein R is a monovalent alkyl, alkenyl, alkynyl, or aralkyl group having from 1 to 30 carbon atoms or substituted derivatives thereof; A is a thioaroxy, sulfinic, diester pyrophosphate, diester phosphate, or a substituted derivative thereof; B is OCOR′ or aroxy; R′ is hydrogen or a monovalent organic group having from 1 to 100 carbon atoms; $x + y + z = 4$; *x* and *z* may be 1, 2 or 3; and *y* may be 0, 1 or 2.

4,122,063

TREATING POLYETHYLENE TEREPHTHALATE WITH 1,2-EPOXY-3-PHENOXYPROPANE AND TRIPHENYL-PHOSPHITE

William Alexander, Kingston, Canada; Alfredo Guillermo Causa, Akron, Ohio, and James Girvan Fraser, Kingston, Canada, assignors to Millhaven Fibres, Ltd., Canada

Division of Ser. No. 592,967, Nov. 9, 1966, Pat. No. 4,016,142. This application Nov. 2, 1970, Ser. No. 86,300

Claims priority, application United Kingdom, Nov. 29, 1965, 50540/65

Int. Cl.[2] **C08G** *63/46*

U.S. Cl. 260—45.7 PH **1 Claim**

1. In a process for the production of fiber forming polyethylene terephthalate comprising a polycondensation step, the improvement which comprises treating the polyethylene terephthalate melt during the polymerization after an intrinsic viscosity of 0.75 determined at 25° C in orthochlorophenol is attained with from about 0.45 up to about 0.9% by weight, based upon the polyethylene terephthalate melt, of 1,2-epoxy-3-phenoxypropane and from about 5 ppm up to about 1000 ppm, based upon the polyethylene terephthalate melt of triphenyl phosphite as a stabilizer.

4,122,064

NOVEL ORGANO-TIN COMPOUNDS AND THEIR USE AS STABILIZERS

Franz Scheidl, Gersthofen; Hans Huber, Burgkirchen, Alz; Klaus Ulm, Burghausen, Salzach; Harald Haberlein, Gersthofen, and Gerhard Pfahler, Augsburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

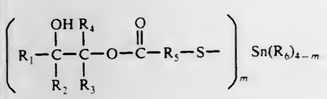
Filed Dec. 20, 1976, Ser. No. 752,428

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1975, 2559201

Int. Cl.[2] **B01F** *7/02*

U.S. Cl. 260—45.75 S **4 Claims**

1. Organo-tin compounds of the formula



wherein R_1 through R_4, being identical or different, each represent

(a) from 0 to 3 hydrogen atoms,

(b) a phenyl radical or a cycloalkyl or cycloalkylene radical having from 5 to 12 carbon atoms, these radicals optionally being substituted by alkyl group having from 1 to 9 carbon atoms, halogen or -OH,

(c) a linear or branched alkyl radical having from 1 to 100 carbon atoms, optionally substituted by a phenyl, a C_1-C_9-alkylphenyl, a cycloalkyl or cycloalkylene group having from 5 to 12 carbon atoms;

the radicals cited sub b) and c) optionally containing ether, thioether, carboxylic acid ester or epoxide groups, halogen substituents and C=C bonds in addition, and/or R_2 and R_3 being common members of a saturated or unsaturated, optionally alkyl- or aryl-substituted alkylene chain having from 3 to 10 carbon atoms; and the sum of all carbon atoms contained in the radicals R_1 through R_4 being superior to 2 and up to 100;

R_5 is an arylene group or a saturated or unsaturated, optionally alkyl- or phenyl-substituted alkylene group having from 1 to 12 carbon atoms in the alkylene chain, the alkyl substituents possibly present in the alkylene chain optionally containing carboxylic acid ester groups,

R_6 is a linear or branched alkyl radical having from 1 to 30 carbon atoms, a vinyl, allyl, aralkyl, aryl or cycloalkyl radical having from 5 to 8 carbon atoms, and

m is 1, 2 or 3.

4. Plastics compositions on the basis of chlorine containing polymers which contain organo-tin compounds as claimed in claim **1** as stabilizers, the amount of said organo-tin compounds being 0.05 to 5 weight parts per 100 weight parts of said polymers.

4,122,065

TIN SALTS OF DIMERCAPTOETHYL FORMAL, RELATED COMPOUNDS AND PVC RESINS STABILIZED THEREWITH

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Filed Dec. 23, 1977, Ser. No. 863,754

Int. Cl.[2] **C07F** *7/22;* **C08K** *5/58*

U.S. Cl. 260—45.75 S **13 Claims**

1. A compound of the formula:



wherein R is

$$-(CH_2)_m-(OCH_2)_p-O-(CH_2)_m-(OCH_2)_p-O]_n$$
$$(CH_2)_m-$$

wherein p is 0 to 1, m is 2 to about 6 and n is 0 to about 6; and R′ is lower alkyl of up to about 10 carbon atoms, or carbocyclic aryl containing 1 or 2 aromatic rings.

12. A light and heat stabilized composition based on poly(vinyl chloride) which comprises:

(a) a poly(vinyl chloride) resin; and

(b) a compound of the formula:



wherein R and R′ are as defined in claim **1**.

4,122,066

FLAME RETARDANT PROPYLENE COMPOSITIONS CONTAINING TRITYL COMPOUND SYNERGISTS

George M. Nichols, Evanston, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 810,697, Jun. 28, 1977, abandoned. This application Dec. 8, 1977, Ser. No. 858,756

Int. Cl.[2] **C08K** *5/17, 5/13, 5/01, 5/10*

U.S. Cl. 260—45.85 R **3 Claims**

1. In a flame retardant polypropylene composition comprising polypropylene and an organic bromine flame retardant compound, the improvement wherein from 0.1 to 10 parts by weight of a trityl synergist per hundred parts of final composition is included therein, said synergist being a compound of the formula $(C_6H_5)_3C-A$ wherein A is selected from the group consisting of lower alkyl, aminophenylene, hydroxyphenylene, and $(CH_2)_nCO_2H$ wherein n is an integer from 0 to 4.

4,122,067

PROCESS OF REACTING A POLYEPOXIDE COMPOUND WITH A PHENOL IN AQUEOUS MEDIUM

Terry Leroy Anderson, Louisville, Ky., assignor to Celanese Polymer Specialties Company, Louisville, Ky.

Filed Oct. 7, 1977, Ser. No. 840,360

Int. Cl.[2] **C08G** *59/02*

U.S. Cl. 528—89 **15 Claims**

1. In a process for preparing higher molecular weight polyhydroxypolyether resins by the reaction of an epoxide compound which contains more than one 1,2-epoxy groups per molecule with a dihydric phenol in the molar ratio of 2:1 to 1:2 using as a catalyst an organic phosphine, a tertiary amine, or a quaternary ammonium or phosphonium compound, the improvement which comprises conducting the reaction in water at a temperature of about 80° C. to about 100° C. and, in the presence of a nonionic dispersant, recovering the polyhydroxypolyether resin in the form of solid granules of as a stable dispersion.

4,122,068

POLYETHER DIHYDROXYALKYL CARBAMATE EPOXY ADDITIVE FOR EPOXY RESINS

Lee G. Meyer, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,749

Int. Cl.[2] **C08G** *59/42*

U.S. Cl. 528—93 **14 Claims**

1. An epoxy resin composition having superior resistance to thermal shock and being the cured product of a curable admixture which comprises:

a vicinal polyepoxide having an epoxide equivalency of greater than 1.8;

a curing amount of a substituted bicyclic vicinal dicarboxylic anhydride curing agent; and,

an effective amount of an additive consisting essentially of a polyoxyalkylene dicarbamate having terminal hydroxyalkyl carbamate groups and a molecular weight of from about 2000 to about 3000.

4,122,069

POLYETHER DIHYDROXYALKYL CARBAMATE EPOXY ADDITIVE FOR EPOXY RESINS

Lee G. Meyer, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,751

Int. Cl.[2] **C08G** *59/56*

U.S. Cl. 528—93 **17 Claims**

1. An epoxy resin composition having superior adhesion properties and being the cured product of a curable admixture which comprises:

a vicinal polyepoxide having an epoxide equivalency of greater than 1.8;

a curing amount of a polyamine curing agent having at least 3 reactive amino hydrogens; and,

an effective amount of an additive consisting essentially of a polyoxyalkylene dicarbamate having terminal dihydroxyalkyl carbamate groups and a molecular weight from about 2000 to about 3000.

4,122,070

FIBERS AND ANISOTROPIC MELTS OF POLYAZOMETHINES

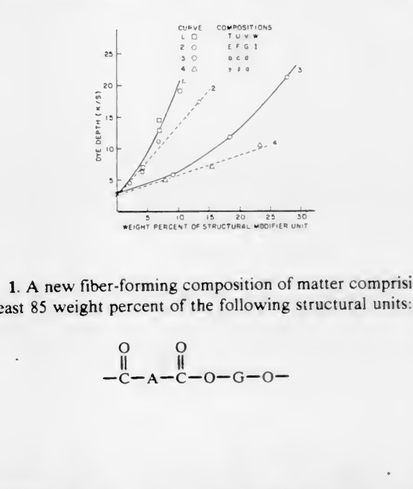
Paul Winthrop Morgan, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 667,431, Mar. 19, 1976, Pat. No. 4,048,148, which is a continuation-in-part of Ser. No. 576,236, May 9, 1975, abandoned. This application Jun. 14, 1977, Ser. No. 806,517

Int. Cl.[2] **C08L** *61/02, 61/20*

U.S. Cl. 528—149 **4 Claims**

1. A (co)polyazomethine fiber consisting essentially of the following recurring structural unit



wherein:

R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen and a methyl group,

R_4 and R_5 are each an alkyl group having 1 to 3 carbon atoms,

A is an alkylene group having 2 to 6 carbon atoms,

X is selected from the group consisting of chlorine, bromine and iodine,

Y is an anion selected from the group consisting of nitrate ion, chlorine ion, sulfate ion and phosphate ion,

p, q, r and s are molar ratios of the recurring units arranged linearly and irregularly, and are the whole numbers which are $q/(p+q) = 0.1$–1.0, $r/(p+q+r+s) = 0.001$–0.05 and $s/r = 0.5$–1.5; or $s = 0$, $q/(p+q) = 0.1$–1.0, $r/(p+q+r) = 0.001$–0.05, and n is about 100 to about 1000.

4,122,071

WATER-SOLUBLE THERMOSETTING RESINS AND USE THEREOF

Koichi Moriya, Shibukawa, and Iwao Honda, Maebashi, both of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1977, Ser. No. 833,048

Claims priority, application Japan, Sep. 17, 1976, 51-110745

Int. Cl.[2] **C08B** *11/00, 15/00*

U.S. Cl. 526—17 **12 Claims**

1. A thermosetting resin of the formula

wherein Z_3 is selected from the group of a hydrogen atom or a methyl or ethyl radical and R_3 is selected from the group consisting of 1) single and fused 6-membered carbocyclic ring systems in which one of the ring carbons of an aromatic ring, if present, may be replaced by nitrogen and wherein the chain extending bonds of the ring system, if attached to a single ring, are positioned 1,4- to each other, and if attached to different rings, are in positions parallel and oppositely directed, and 2) multiple ring systems in which the individual rings are joined by a chemical bond or a bridging unit not exceeding fourteen atoms in length and in which the chain extending bonds of each ring are in the 1,4-positions.

4,122,072

POLYESTER AND PROCESS FOR MAKING SAME

Ernest L. Lawton, II, Durham, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 1, 1976, Ser. No. 691,659

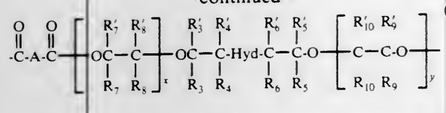
Int. Cl.[2] **C08G** *63/12*

U.S. Cl. 528—289 **20 Claims**

1. A new fiber-forming composition of matter comprising at least 85 weight percent of the following structural units:

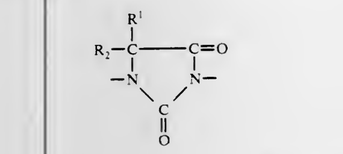
(I)

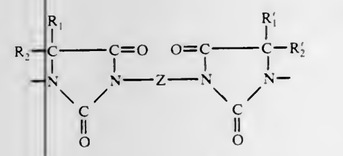
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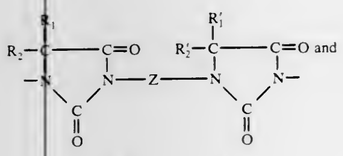


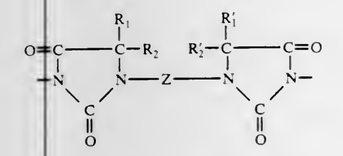
(II)

wherein "Hyd" is selected from the group consisting of



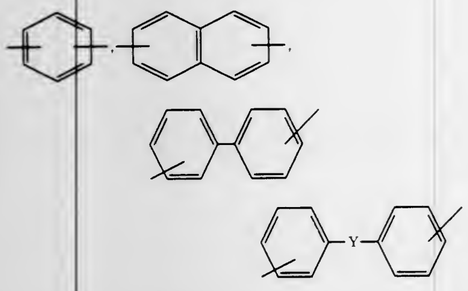






wherein Z is a radical individually selected from the group consisting of bivalent alkyls containing from 1-20 carbon atoms, bivalent aryls containing from 6-10 carbon atoms, bivalent alkyl-aryls containing from 6-20 carbon atoms and cycloalkyls containing from 5-12 carbon atoms;

wherein A is individually selected from the group of aromatic divalent radicals consisting of



and branched or linear alkylene radicals containing from 4 to 10 carbon atoms, wherein Y is selected from the group of difunctional radicals consisting of a branched or linear C_1-C_4 alkylene, —O—, —S—, and $—SO_2—$;

wherein

G is selected from the group of divalent radicals consisting of a branched or linear C_2-C_{10} alkylene and C_5-C_{10} cycloalkylene; R_1, R_2, R_1' and R_2' are individually selected from the group of radicals consisting of hydrogen, aryls containing from 6-10 carbon atoms, alkyls containing from 1-20 carbon atoms, and cycloalkyls containing from 5-10 carbon atoms;

R_1 and R_2 may be cojointly a tetramethylene radical or a pentamethylene radical, R_3, R_3', R_5, R_5', R_7, R_7' and R_9, R_9' are individually selected from the group of radicals consisting of hydrogen, methyl, ethyl and saturated cycloalkyls containing from 5-10 carbon atoms; R_4, R_4', R_6, R_6', R_8, R_8' and R_{10}, R_{10}' is hydrogen and R_3 and R_4, R_5 and R_6, R_7 and R_8, R_9 and R_{10} may be cojointly a tetramethylene radical; wherein x is an integer from 0-20, y is an integer from 0-20 and the sum of $x+y$ is at least 1 and the weight percent of units II is not more than 20.

4,122,073

THERMOPLASTIC COPOLYESTERS PREPARED FROM AROMATIC DICARBOXYLIC ACID, SUBSTITUTED SUCCINIC ACID OR ANHYDRIDE, A GLYCOL AND A POLYMERIC POLYOL AND THE USE THEREOF IN ADHESIVES

Paul C. Georgoudis, Dunellen, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Aug. 1, 1977, Ser. No. 820,452

Int. Cl.[2] C08L *67/02*

U.S. Cl. 260—873 **48 Claims**

1. A copolyester of

A. at least one aromatic dicarboxylic acid member selected from the group consisting of aromatic dicarboxylic acids and the acid functioning derivatives thereof;

B. at least one aliphatic dicarboxylic acid member selected from the group consisting of substituted succinic acids and the anhydrides thereof, said succinic acids having alkyl or alkenyl C_4-C_{36} group substituents;

C. at least one C_2-C_{10} glycol;

D. at least one polymeric polyol member selected from the group consisting of

(i) a polymeric polyol having a molecular weight of about 300-3,000 and a hydroxyl functionality greater than 2, said polymeric polyol being present in an amount of 0.1-6.0 mole percent of the total dicarboxylic acid members in said copolyester, and

(ii) a mixture of a polymeric diol having a molecular weight of about 300-3,000, and a nonpolymeric polyol having a hydroxyl functionality greater than 2, said polymeric diol and said non-polymeric polyol each being present in an amount of about 0.1-6.0 mole percent of the total dicarboxylic acid members in said copolyester; and optionally

E. a polymeric polycarboxylic acid member selected from the group consisting of polymeric polycarboxylic acids having a carboxyl functionality greater than 2 and the acid-functioning derivatives thereof.

4,122,074

POLYESTER AMINOALKYLALKOXYSILANES

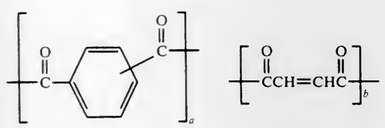
Enrico James Pepe, and James Glenn Marsden, both of Amawalk, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 5, 1977, Ser. No. 813,074

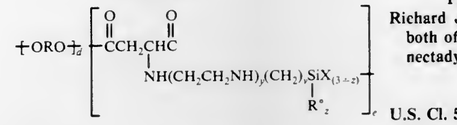
Int. Cl.[2] C08G *63/68, 63/54, 63/20*

U.S. Cl. 526—26 **8 Claims**

1. A polymer having a molecular weight of greter than 1000 and comprising units of the formula

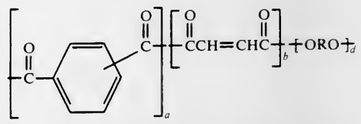


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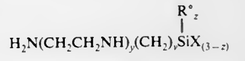


wherein R is a divalent hydrocarbon radical; R° is a monovalent alkyl, aryl or aralkyl group; X is a monovalent alkoxy, hydroxy or oxy- group; y is 0 or 1; v is an integer of 1 to 6; z is 0, 1 or 2; a is a mole fraction of 0 or 0.004 to 0.6; and b, d and e are mole fractions ranging from about 0.004 to about 0.6 with the proviso that d is greater than, equal to or slightly less than the sum of a, b and e.

2. A process for preparing a polyester aminoalkylalkoxysilane by the Michael addition reaction which comprises reacting an unsaturated conjugated polyester having a molecular weight of at least 1000 and comprising units of the formula



wherein R is a divalent hydrocarbon radical; a is a mole fraction of 0 or 0.004 to 0.6; and b and d are mole fractions ranging from about 0.004 to about 0.6; with an aminoalkylalkoxysilane of the formula



wherein R° is a monovalent alkyl, aryl or aralkyl group; X is a monovalent alkoxy group; y is 0 or 1; v is an integer of 1 to 6; and z is 0, 1 or 2; at a temperature of from about 0° C to about 235° C to produce the polyester aminoalkylalkoxysilane.

4,122,075

METHOD OF PREVENTING DEPOSIT OF POLYMER IN REACTOR VENT LINE DURING PREPARATION OF NYLON

Joseph Jaeger, and Robert D. Sauerbrunn, both of Seaford, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 670,879, Mar. 26, 1976, abandoned. This application Jun. 29, 1977, Ser. No. 811,284

Int. Cl.[2] C08G *69/28*

U.S. Cl. 528—332 **2 Claims**

1. In a process for producing poly(hexamethylene adipamide) from an aqueous solution of a salt of hexamethylenediamine and adipic acid wherein the aqueous solution of salt is heated under pressure in a reactor and steam is released at pressure of 180 to 275 pounds per square inch gauge pressure through a pressure-control valve into a vent pipe; the improvement for preventing deposition of polymer entrained in the steam vented at 180 to 275 pounds per square inch gauge pressure which comprises injecting water into said steam at the low pressure side of the valve or adjacent thereto in the vent pipe, at least sufficient water being injected to cause a substantial decrease in vent-pipe pressure and to wet the walls of the vent pipe.

4,122,076

PROCESS OF PREPARING MALEIMIDES

Richard J. Jablonski, Scotia, and Daniel Kruh, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,436

Int. Cl.[2] C08G *73/12*

U.S. Cl. 528—322 **8 Claims**

1. The process of preparing a maleimide which consists essentially of reacting the Diels-Alder reaction product of furan and maleic anhydride with amine using a solvent reaction medium and heating the resultant amic acid to produce the maleimide of the amine and furan, said process taking place entirely in the reaction medium.

4,122,077

SOMATOSTATIN ANALOGS

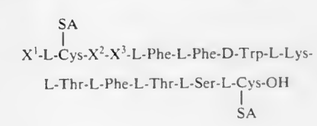
Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 751,914, Dec. 17, 1976, abandoned, and a continuation-in-part of Ser. No. 751,915, Dec. 17, 1976, abandoned. This application Dec. 13, 1977, Ser. No. 860,279

Int. Cl.[2] C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 S **7 Claims**

1. A chemical compound of the structure:



wherein A is hydrogen or the two A groups form a direct bond between the sulfur atoms; X^1 is H, Gly, L-Ala-Gly, L-Ala-L-Ala, or Gly-Gly-Gly; X^2 and X^3 may be the same or different and are chosen from Gly, D-Leu, D-Phe, D-Tyr, D-Trp, D-Met, D-His, D-Arg, D-Lys, D-Ser, D-Asp, or D-Asn, with the proviso that both may not simultaneously be Gly; and the pharmacologically acceptable addition salts thereof.

4,122,078

ANTIGENS AND ANTIBODIES OF CATECHOLAMINES

Masanori Yoshioka, Tokyo; Akira Miwa, Chiba, and Zenzo Tamura, Tokyo, all of Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1976, Ser. No. 659,588

Claims priority, application Japan, Feb. 28, 1975, 50-24605

Int. Cl.[2] C07G *7/00*

U.S. Cl. 260—121 **6 Claims**

1. An antigen prepared by a process, consisting essentially of: reacting a catecholamine with a protein or polypeptide carrier and an aldehyde via the Mannich reaction such that said catecholamine is attached through a substituted or unsubstituted methylene linkage to an amine group of said carrier at an unsubstituted position on the phenyl nucleus of said catecholamine.

4,122,079

REACTIVE AZO DYESTUFFS FROM DIAZOTIZED SULFO-AMINO NAPHTHALENES AND DIAMINOSULFOBENZENES

Karl-Heinz Schundehutte, Opladen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

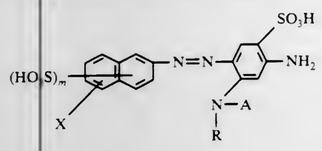
Continuation of Ser. No. 61,804, Aug. 6, 1970, abandoned, which is a continuation of Ser. No. 686,816, Nov. 30, 1967, abandoned. This application Apr. 2, 1973, Ser. No. 346,899

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1966, 6650891[U]

Int. Cl.[2] **C09B** *62/02, 62/08, 62/24, 62/70*

U.S. Cl. 260—153 **23 Claims**

1. A reactive azo dyestuff of the formula



wherein

X stands for hydrogen, halogen, nitro, monosulfonaphth-triazolyl or disulfonaphth-triazolyl

m stands for the number 2 or 3;

A is a group adapted to react with the OH groups of cellulose with the formation of covalent bonds,

wherein A is bonded to



via a carbon atom of the group A; and R stands for hydrogen or C_{1-3} alkyl.

4,122,080

PROCESS FOR PRODUCING 17-ACETALS OF 3-ALKOXYESTRA-2,5(10)-DIEN-17-ONES

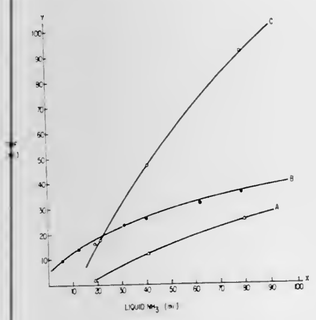
Hideo Nagoshi, Yokohama; Susumu Kanno, Machida; Tadashi Oohama, and Ryozo Yamaguchi, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,933

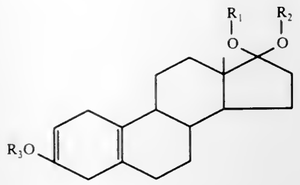
Claims priority, application Japan, Apr. 19, 1976, 51-44295

Int. Cl.[2] **C07J** *21/00*

U.S. Cl. 260—239.55 C **14 Claims**



1. In a process for producing a 17-acetal of a 3-alkoxyestra-2,5(10)-dien-17-one having the formula (I):



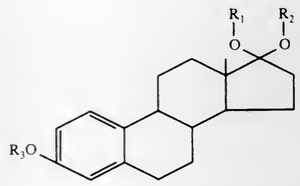
(I)

wherein

R_1 and R_2 when considered separately are C_1–C_{10} alkyl;

R_1 and R_2 when taken together are C_2–C_{10} alkylene; and

R_3 is C_1–C_{10} alkyl; which comprises reacting a 17-acetal of a 3-alkoxyestra-1,3,5(10)-trien-17-one having the formula (II):



(II)

wherein R_1, R_2 and R_3 are as defined herein above, with sodium or potassium, liquid ammonia and a tertiary alcohol in the presence of a solvent selected from the group consisting of tetrahydrofuran, dioxane and tetrahydropyran, the improvement which comprises: conducting said reaction with not more than 90 ml (measured at the boiling point of the system) of liquid ammonia per gram of sodium or potassium, not more than 100 ml (measured at 15° C) of said solvent per gram of sodium or potassium, said sodium or potassium and said 17-acetal of the 3-alkoxyestra-1,3,5(10)-trien-17-one being present in such proportions that said 17-acetal of the 3-alkoxyestra-1,3,5(10)-trien-17-one is substantially dissolved in the reaction system and that two liquid phases are formed in the reaction system, the upper phase of which consists essentially of sodium or potassium and liquid ammonia and the colored lower phase consisting mainly of said solvent, liquid ammonia and said 17-acetal of the 3-alkoxyestra-1,3,5(10)-trien-17-one.

4,122,081

5'-HYDROXYLEUROSINE AND RELATED COMPOUNDS

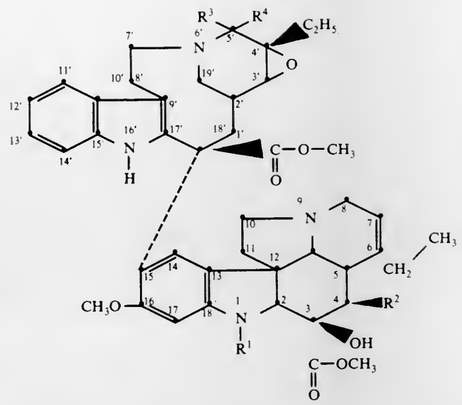
Gerald L. Thompson; Gloria C. Paschal, and Robert A. Conrad, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 8, 1977, Ser. No. 822,466

Int. Cl.[2] **C07D** *519/04*

U.S. Cl. 260—287 B **5 Claims**

1. A dimeric indole-dihydroindole alkaloid of the formula:



wherein R^1 is CH_3 or CHO, R^2 is OH or acetoxy, and, when taken singly, one of R^3 and R^4 is hydrogen and the other is OH or CH_2COCH_3 and, when taken together, R^3 and R^4 form an oxygen atom, and pharmaceutically-acceptable acid addition salts thereof.

4,122,082

4-DESACETOXY-4-OXOVINBLASTINE

Ian G. Wright, Greenwood, and Norbert Neuss, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

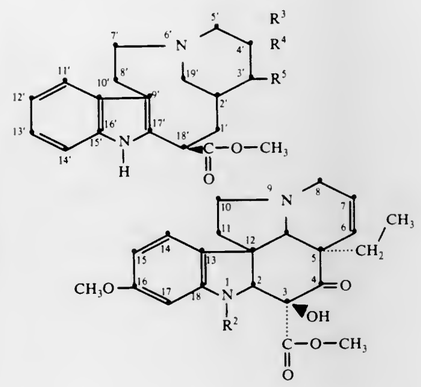
Filed Nov. 7, 1977, Ser. No. 848,837

Int. Cl.[2] **C07D** *519/04*

U.S. Cl. 260—287 B **2 Claims**

1. An alkaloidal base of the formula

III



wherein R^2 is CH_3 or CHO and when taken singly, R^5 is H and one of R^3 and R^4 is OH or H and the other C_2H_5 and when R^4 and R^5 are taken together, they form an α-epoxide ring and R^3 is C_2H_5.

4,122,083

1,2,3,4-TETRAHYDROPYRIDO[4',3':4.5]THIAZOLO-[3,2-A]BENZIMIDAZOLES

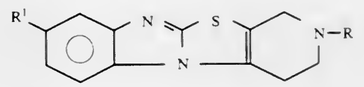
Joseph E. Sundeen, Yardley, Pa., and Tamara Dejneka, Skillman, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 16, 1978, Ser. No. 869,737

Int. Cl.[2] **C07D** *513/14*

U.S. Cl. 260—294.8 A **10 Claims**

1. A compound of the formula



wherein

R is hydrogen, lower alkanoyl, lower alkyl, lower alkenyl, lower alkynyl, phenyl-lower alkyl, substituted lower alkyl bearing cyano, hydroxy, carbo-lower alkoxy or trifluoromethyl, or substituted phenyl-lower alkyl bearing halogen, lower alkyl, lower alkoxy or nitro;

R^1 is hydrogen, halo, nitro or lower alkoxy;

and acid addition salts thereof.

4,122,084

DISULFIDES OF AMINO-SUBSTITUTED MERCAPTOPYRIDINE-1-OXIDE

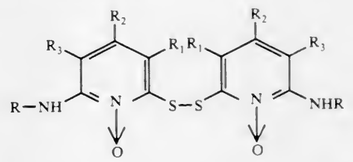
Miriam L. Douglass, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 629,436, Nov. 6, 1975, Pat. No. 4,048,181. This application Apr. 27, 1977, Ser. No. 791,612

Int. Cl.[2] **C07D** *213/02*

U.S. Cl. 260—294.8 J **6 Claims**

1. A disulfide of mercaptopyridine-1-oxide having the following structural formula:



wherein R is selected from the group consisting of the acyl radical R_oC═O and the alkoxycarbonyl radical R_o—OC═O, where R_o is a C_1–C_6 alkyl, aryl selected from the class consisting of phenyl or naphthyl, or aralkyl, said alkyl portion having 1–6 carbons, or halobenzyl, the C_1–6 alkane sulfonyl radical, the aralkanesulfonyl radical, and the arenesulfonyl radical $ArSO_2$ wherein the aryl radical may be substituted by a C_1–C_6 alkyl, alkoxy and/or a halo-radical; R_1, R_2 and R_3 are each independently selected from the group consisting of hydrogen, methyl, two of said terms may represent methoxy and the other hydrogen, and one of said terms may represent ethyl, n-butyl, methoxy, ethoxy, phenyl, bromophenyl, chlorophenyl, trichlorophenyl, naphthyl, chlorobenzyl, dichlorobenzyl or furyl and the other two terms represent hydrogen.

4,122,085

DERIVATIVES OF MERCAPTOPYRIDINE-1-OXIDE

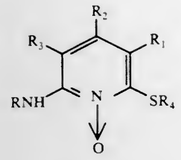
Miriam Lois Douglass, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 629,436, Nov. 6, 1975, Pat. No. 4,048,181. This application Apr. 27, 1977, Ser. No. 791,613

Int. Cl.[2] **C07D** *213/04*

U.S. Cl. 260—294.8 G **4 Claims**

1. A mercaptopyridine-1-oxide compound having the following structural formula:



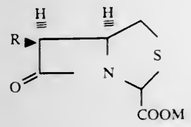
wherein R is selected from the group consisting of the acyl radical $R_6C{=}O$ and the alkoxycarbonyl radical $R_6{-}OC{=}O$, where R_6 is a C_1–C_6 alkyl, aryl selected from the class consisting of phenyl or naphthyl or aralkyl, said alkyl portion having 1-6 carbons, or halobenzyl; R_1, R_2 and R_3 are each independently selected from the group consisting of hydrogen, methyl, two of said terms may represent methoxy and the other hydrogen, one of said terms may represent ethyl, n-butyl, methoxy, ethoxy, phenyl, bromophenyl, chlorophenyl, trichlorophenyl, naphthyl, chlorobenzyl, dichlorobenzyl or furyl and the other two terms represent hydrogen; and R_4 is selected from the group consisting of a quaternary ammonium ion and benzyl.

4,122,086
ISOPENICILLINS

Ralph Floyd Hall, Cranbury, N.J., and William Francis Huffman, Malvern, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Jul. 26, 1977, Ser. No. 819,197
Int. Cl.[2] C07D *513/04*
U.S. Cl. 260—306.7 R **15 Claims**

1. A compound of the formula



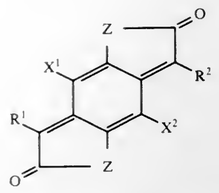
wherein
R is acylamino, azido, or amino;
acyl is a pharmaceutically acceptable acyl group known to be useful to impart antibacterial activity when used as a substituent on the 7 or 6 position amino group of cephalosporins or penicillins; and
M is hydrogen, a pharmaceutically acceptable cation or a removable carboxylic acid protecting ester.

4,122,087
BENZODIPYRROLE DYESTUFFS

Colin William Greenhalgh; John Laurence Carey, and David Francis Newton, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 773,229, Mar. 1, 1977. This application Mar. 15, 1978, Ser. No. 887,201
Claims priority, application United Kingdom, Mar. 10, 1976, 9513/76
Int. Cl.[2] C07D *487/04*
U.S. Cl. 260—325 R **2 Claims**

1. A dyestuff which contains a chromophoric system of the formula:



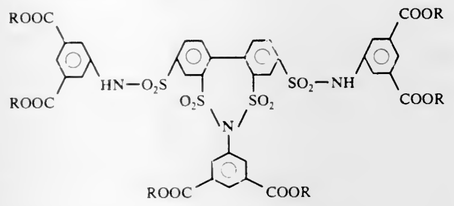
wherein each Z is $-\overset{1}{N}Y$ in which Y is hydrogen or a group selected from the class consisting of lower alkyl, acetyl, n- and iso-butyryl, benzoyl, p-toluenesulphonyl, methylsulphonyl, phenylacetyl and chloroacetyl; R^1 and R^2 each independently represent a radical selected from the class consisting of naphthyl, unsubstituted phenyl and phenyl having at least one substituent selected from the class consisting of sulphonic acid, sulphonyl chloride, phenylaminosulphonyl, nitro, lower alkyl, lower alkoxy, halogeno, lower alkoxyphenyl, lower alkoxycarbonyl, amino, lower alkylamino and acetylamino; and X^1 and X^2 each independently represent a hydrogen atom or a substituent selected from the class consisting of chlorine and bromine atoms and lower alkyl groups.

4,122,088
DICARBOXYPHENYL SUBSTITUTED BIS-SULFONYLIMINO DIBENZODITHIAZEPINE TETROXIDES

Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 1, 1977, Ser. No. 812,013
Int. Cl.[2] C07D *285/36*
U.S. Cl. 260—327 B **3 Claims**

1. A compound of the formula:



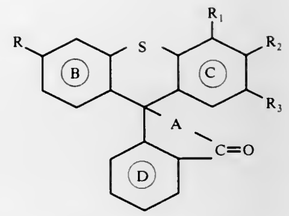
wherein R is selected from the group consisting of alkali metal; or a pharmaceutically acceptable salt thereof.

4,122,089
AMINOTHIOFLUORAN COMPOUNDS, PROCESS FOR THE PRODUCTION THEREOF, AND RECORDING ELEMENTS CONTAINING THE SAME

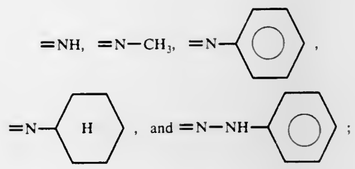
Shiro Kimura, Odawara; Yasuyoshi Nakamura, Hiratsuka; Shigeki Kurimoto, Hiratsuka, and Katuhiro Motouchi, Hiratsuka, all of Japan, assignors to Sankio Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1977, Ser. No. 771,857
Claims priority, application Japan, Feb. 23, 1976, 51-18003; Feb. 23, 1976, 51-18004; Feb. 23, 1976, 51-18005; Dec. 24, 1976, 51-155124
Int. Cl.[2] C07D *497/10*
U.S. Cl. 260—328 **19 Claims**

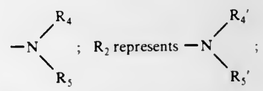
1. A compound represented by the general formula (I)



wherein A represents an oxygen atom or a group selected



and when A is an oxygen atom, R represents amino, methylamino, ethylamino, dimethylamino, diethylamino, N-acetyl-N-ethyl-amino, naphthalenemethyl amino, N-ethyl-N-benzylamino, N-benzylamino, anilino, N-ethylanilino, N-acetylanilino, N,N-diphenylamino, N-methyltoluidino, carboxyanilino, carboxynaphthylamino, phenylanilino, N-benzylanilino, pyrrolidino, piperidino, morpholino, cyclohexylamino, N-ethyl-N-cyclohexylamino, dibenzylamino, phenylacetamido, toluoylamino, acetamido, N-benzyl-N-phenylsulfonamido, toluene sulfonamido or phenylsulfonamido; R_1 and R_3, which may be the same or different, each represents a hydrogen atom, a lower alkyl group, a nitro group, amino, methylamino, ethylamino, dimethylamino, diethylamino, N-acetyl-N-ethyl-amino, naphthalenemethyl amino, N-ethyl-N-benzylamino, N-benzylamino, anilino, N-ethylanilino, N-acetylanilino, N,N-diphenylamino, N-methyltoluidino, carboxyanilino, carboxynaphthylamino, phenylanilino, N-benzylanilino, pyrrolidino, piperidino, morpholino, cyclohexylamino, N-ethyl-N-cyclohexylamino, dibenzylamino, phenylacetamido, toluoylamino, acetamido, N-benzyl-N-phenylsulfonamido, toluene sulfonamido or phenylsulfonamido; and R_2 represents a hydrogen atom or a lower alkyl group; wherein R_1 and R_2 or R_2 and R_3 may combine with benzene ring C to form a naphthalene nucleus, indole or carbazole; and when A is not an oxygen atom, R represents



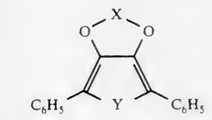
R_4, R_5, R_4' and R_5', which may be the same or different, each represents a hydrogen atom or a lower alkyl group; and R_1 and R_3 each represents a hydrogen atom.

4,122,090
CYCLIC ESTERS OF 3,4-DIHYDROXY-THIOPHENE-1,1-DIOXIDE COMPOUNDS AND 3,4-DIHYDROXY-CYCLOPENTADIENONE COMPOUNDS

Wolfgang Steglich, Bonn; Oswald Hollitzer, and Alfred Seewald, both of Berlin, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed May 31, 1977, Ser. No. 801,560
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625539
Int. Cl.[2] C07D *333/48;* **C07C** *103/52*
U.S. Cl. 260—332.1 **4 Claims**

1. Cyclic esters of 3,4-dihydroxy-2,5-diphenylthiophene-1,1-dioxide of the formula (1)



(1)

where X is $>C{=}O$, $>C{=}S$, or



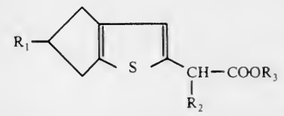
and Y is $>SO_2$.

4,122,091
CYCLOPENTA[B]THIOPHENE DERIVATIVES

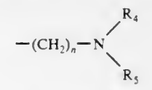
Jean-Marie Teulon, La Celle Saint Cloud, France, assignor to Hexachimie, Rueil-Malmaison, France

Filed Mar. 8, 1977, Ser. No. 775,534
Claims priority, application United Kingdom, Mar. 12, 1976, 10049/76
Int. Cl.[2] C07D *333/24;* **A01N** *9/00*
U.S. Cl. 260—332.2 A **6 Claims**

1. Cyclopenta[b]thiophene derivatives of the formula:



in which R_1 represents straight-chain or branched-chain alkyl of 1 to 4 carbon atoms, R_2 represents hydrogen or alkyl of 1 to 4 carbon atoms, and R_3 represents hydrogen, alkyl of 1 to 4 carbon atoms, or aminoalkyl of the formula:



where n is 2 or 3 and R_4 and R_5 each denote alkyl of 1 to 4 carbon atoms or cycloalkyl, and the non-toxic, pharmaceutically acceptable inorganic salts and acid addition salts of the said derivatives.

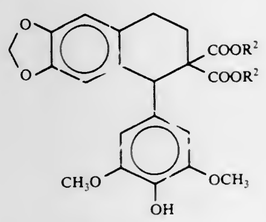
4,122,092

TOTAL SYNTHESIS OF (±)-PICROPODOPHYLLONE AND (±)-4'-DEMETHYLPICROPODOPHYLLONE

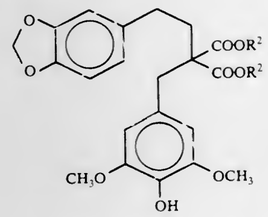
Andrew S. Kende, Pittsford, and Peter S. Rutledge, Rochester, both of N.Y., assignors to University of Rochester, Rochester, N.Y.

Filed Aug. 25, 1977, Ser. No. 827,487
Int. Cl.[2] C07D *317/44*
U.S. Cl. 260—340.5 R **7 Claims**

1. The process for the preparation of a compound of the formula



wherein R^2 is (lower)alkyl, which comprises treating a compound of the formula



in which R^2 is as defined above, in an inert organic solvent, with from about 1 to about 2 molar equivalents of thallium (III) trifluoroacetate in the presence of an excess of a Lewis acid, at a temperature of from about 10° to about 35°, reducing the excess thallium (III) trifluoroacetate with a mild reducing agent and recovering the desired product from the reaction mixture.

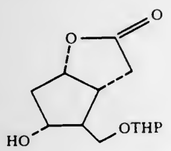
4,122,093

PROCESS FOR PREPARING A LACTONE

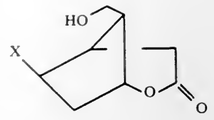
Elias J. Corey, Cambridge, Mass.; Jasjit S. Bindra, Groton, and Thomas K. Schaaf, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 720,239, Sep. 3, 1976, abandoned, which is a division of Ser. No. 633,222, Nov. 19, 1975, Pat. No. 3,992,438, which is a division of Ser. No. 409,068, Oct. 24, 1973, Pat. No. 3,943,151. This application Apr. 14, 1977, Ser. No. 787,593
Int. Cl.[2] C07D *307/77*
U.S. Cl. 260—343.3 P **6 Claims**

1. A process for the preparation of a lactone of the structure:



wherein THP is tetrahydropyranyl which comprises contacting a halo lactone of the formula



wherein X is halogen with an equimolar amount of dihydropyran in presence of a catalytic amount of a strong acid and contacting the resulting ether with an equimolar amount of alkali metal hydroxide and twenty times its weight of 30% hydrogen peroxide in aqueous tetrahydrofuran at a temperature of from about −10° to 30° C until reaction is substantially complete and isolation of product.

4,122,094

SEPARATION OF THE ISOMERS OF TOCOPHEROL BY LIQUID/SOLID CHROMATOGRAPHY

Hiltrud E. Woziwodzki, North Bergen, N.J., assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 694,104, Jun. 9, 1976, abandoned. This application May 13, 1977, Ser. No. 796,642
Int. Cl.[2] C07D *311/72*
U.S. Cl. 260—345.6 **18 Claims**

1. In a method for separating the alpha-, beta-, gamma- and delta-tocopherol isomers from mixtures thereof employing High-Performance Liquid Chromatography,

the improvement comprises using chloroform as the chromatographic liquid phase, wherein said chloroform is substantially free of highly polar adjuvants or contaminants.

4,122,095

ACTINIDE NITRATE DITETRAHYDROFURANATE AND METHOD OF PRODUCTION

George W. Watt, Austin, Tex., and Daniel W. Baugh, Jr., Baton Rouge, La., assignors to Exxon Nuclear Company, Inc., Bellevue, Wash.

Division of Ser. No. 579,495, May 21, 1975, Pat. No. 4,003,980. This application Oct. 19, 1976, Ser. No. 733,875
Int. Cl.[2] C07D *307/08*
U.S. Cl. 260—346.11 **10 Claims**

1. A composition of matter comprising an actinide nitrate ditetrahydrofuranate selected from the group consisting of uranyl nitrate ditetrahydrofuranate, plutonyl nitrate ditetrahydrofuranate and neptunyl nitrate ditetrahydrofuranate.

5. A process for preparing an actinide nitrate ditetrahydrofuranate selected from the group consisting of uranyl nitrate ditetrahydrofuranate, plutonyl nitrate ditetrahydrofuranate and neptunyl nitrate ditetrahydrofuranate which comprises reacting the corresponding potassium actinide nitrate with at least about 2 moles of tetrahydrofuran per mole of the corresponding potassium actinide nitrate and thereafter recovering the resultant corresponding actinide nitrate ditetrahydrofuranate.

4,122,096

MALEIC ANHYDRIDE PRODUCTION

Ralph J. Bertolacini, Chesterton, Ind., and Robert M. Koca, Glen Ellyn, Ill., assignors to Standard Oil Company a corporation of Indiana, Chicago, Ill.

Division of Ser. No. 685,716, May 12, 1976, Pat. No. 4,062,802. This application Jul. 22, 1977, Ser. No. 817,986
Int. Cl.[2] C07D *307/60*
U.S. Cl. 260—346.75 **10 Claims**

1. A method for the production of oxygenated derivatives of lower aliphatics comprising maleic anhydride which comprises reacting molecular oxygen and a lower aliphatic selected from the group consisting of butane, butene, and mixtures thereof in a reaction zone at a temperature of from about 300°

to about 600° C. in contact with a catalyst comprising a phosphorus-vanadium-oxygen complex having an atomic ratio of phosphorus to vanadium in the range of about 0.5–5 to 1; wherein the catalyst is produced by

(A) reacting a mixture comprising vanadium oxide compound, a pentavalent phosphorus compound and hydrogen halide in an aqueous solution;

(B) removing liquid from the mixture to form a solid; wherein the improvement comprises:

(1) heating the solid to a temperature of less than about 470° C. to effect removal of water of hydration;

(2) contacting solid from step (1) with a reducing material comprising a gas selected from the group consisting of CO, H_2, H_2S and mixtures thereof at a temperature of from about 300° to about 600° C. and in the absence of added molecular oxygen.

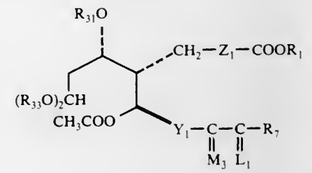
4,122,097

THROMBOXANE B DIALKYLACETAL INTERMEDIATES

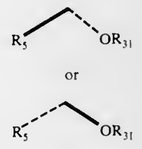
William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 716,473, Aug. 20, 1976, Pat. No. 4,070,384, which is a continuation-in-part of Ser. No. 676,894, Apr. 14, 1976, Pat. No. 4,018,804. This application Sep. 6, 1977, Ser. No. 830,541
Int. Cl.[2] C07C *69/66*; C11C *3/00*
U.S. Cl. 260—405 **1 Claim**

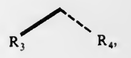
1. A thromboxane intermediate of the formula



wherein R_{31} is a hydroxy hydrogen replacing group;
wherein Z is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—$CH_2(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—, or
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
wherein g is one, 2, or 3;
wherein R_1 is alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one or two chloro, fluoro, or alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation;
wherein Y_1 is trans—CH=CH— or —CH_2CH_2—;
wherein M_3 is



wherein R_5 is hydrogen or methyl and R_{31} is a hydroxy-hydrogen replacing group;
wherein L_1 is



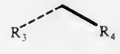
-continued



or a mixture of



and



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; and
wherein R_7 is
—$(CH_2)_m$—CH_3,
wherein *m* is one to 5, inclusive; and
wherein R_{33} is alkyl of one to 5 carbon atoms, inclusive.

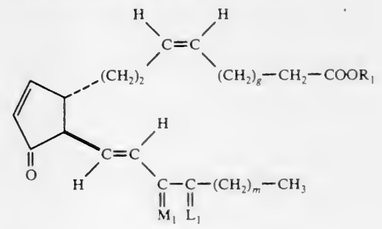
4,122,098

CIS-4,5-DIDEHYDRO-9-DEOXY-9,10-DIDEHYDRO-PGD$_1$ COMPOUNDS

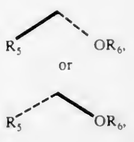
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application Jan. 3, 1977, Ser. No. 756,095
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 **16 Claims**

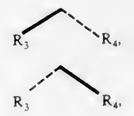
1. A prostaglandin analog of the formula



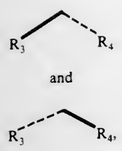
wherein g is 1, 2, or 3;
wherein *m* is 1 to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

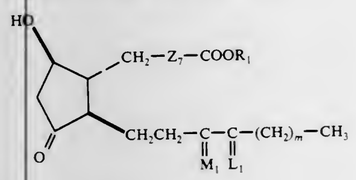
4,122,099

13,14-DIHYDRO-9β-RGD, COMPOUNDS

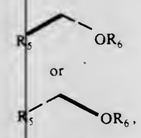
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184.
This application Dec. 30, 1976, Ser. No. 756,106
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 **25 Claims**

1. A prostaglandin analog of the formula

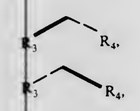


wherein *m* is one to 5, inclusive;
wherein M_1 is

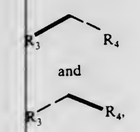


or

wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_7 is
(1) $-(CH_2)_3-(CH_2)_g-CF_2-$, or
(2) $-(CH_2)_3-(CH_2)_6-CH_2-$,
wherein *g* is one, 2, or 3.

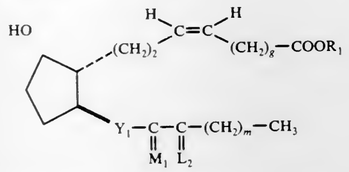
4,122,100

CIS-4,5-DIDEHYDRO-11-DEOXY-PGF$_1$ ANALOGS

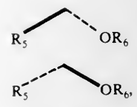
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909.
This application Mar. 3, 1977, Ser. No. 774,085
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 **18 Claims**

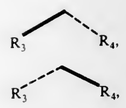
1. A compound of the formula



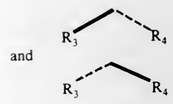
wherein Y_1 is cis-CH=-CH—; wherein *g* is 2, 3, or 4;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_2 is



or a mixture of



wherein R_3 and R_4 are hydrogen or fluoro, being the same or different, with the proviso that at least one of R_3 and R_4 is fluoro;
wherein *m* is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with 1, 2, or 3 chloro or alkyl of 1 to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

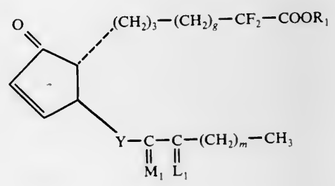
4,122,101

CIS-13-PGA$_1$ ANALOGS

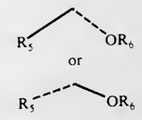
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909.
This application Mar. 3, 1977, Ser. No. 774,178
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—408 **49 Claims**

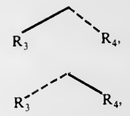
1. A compound of the formula



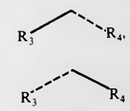
wherein Y is cis—CH=CH—;
wherein *g* is 2, 3, or 4;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is

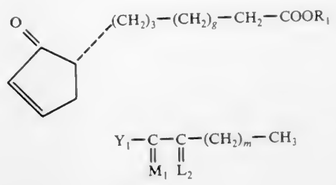


or a mixture of

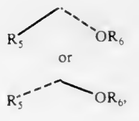


wherein R_3 and R_4 are hydrogen, methyl, fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein m is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

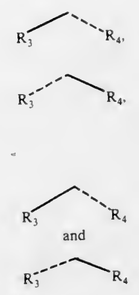
19. A compound of the formula



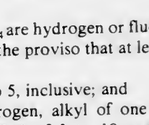
wherein Y_1 is cis—CH=CH—;
wherein *g* is 2, 3, or 4;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_2 is

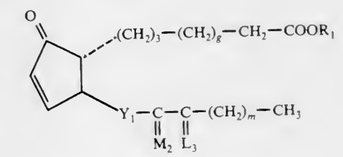


or a mixture of

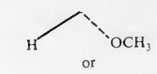


wherein R_3 and R_4 are hydrogen or fluoro, being the same or different, with the proviso that at least one of R_3 and R_4 is fluoro;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

30. A compound of the formula

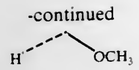


wherein Y is cis—CH=CH—;
wherein *g* is 2, 3, or 4;
wherein M_2 is

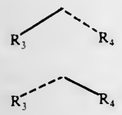


or

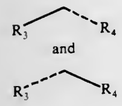
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wherein L_3 is

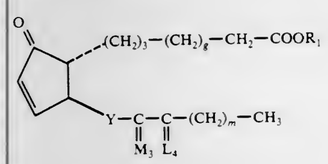


or a mixture of

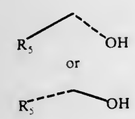


wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

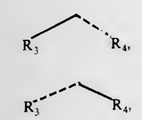
37. A compound of the formula



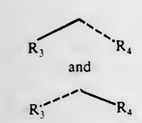
wherein Y is cis—CH=CH—;
wherein M_3 is



wherein R_5 is hydrogen or methyl;
wherein L_4 is

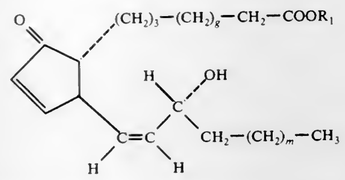


or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different, with the proviso that one of R_3 and R_4 is methyl;
wherein *m* is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

48. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof;
wherein *g* is 2 to 4;
wherein *m* is 1 to 5; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

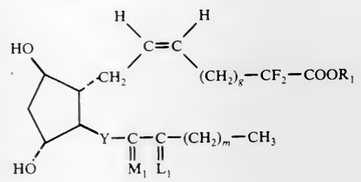
4,122,102

CIS-13 $PGE_2\beta$ ANALOGS

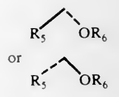
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,185
Int. Cl.[2] **C07C** *177/00*
U.S. Cl. 260—408 **49 Claims**

1. A compound of the formula



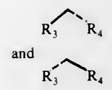
wherein Y is cis—CH=CH—;
wherein *g* is 2, 3, or 4;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is

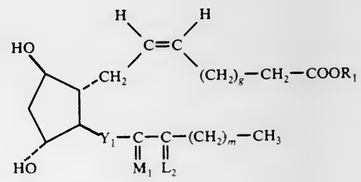


or a mixture of

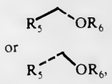


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein *m* is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

19. A compound of the formula



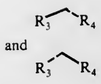
wherein Y_1 is cis—CH=CH—;
wherein *g* is 2, 3, or 4;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_2 is

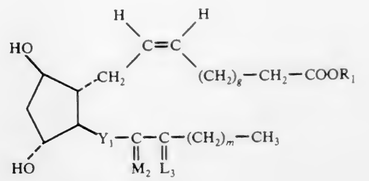


or a mixture of

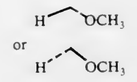


wherein R_3 and R_4 are hydrogen or fluoro, being the same or different, with the proviso that at least one of R_3 and R_4 is fluoro;
wherein *m* is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

30. A compound of the formula



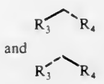
wherein Y is cis—CH=CH—;
wherein *g* is 2, 3, or 4;
wherein M_2 is



wherein L_3 is

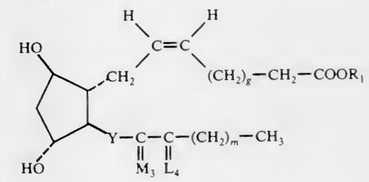


or a mixture of

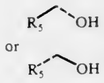


wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein *m* is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

37. A compound of the formula



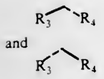
wherein Y is Cis—CH=CH—;
wherein M_3 is



wherein R_5 is hydrogen or methyl;
wherein L_4 is

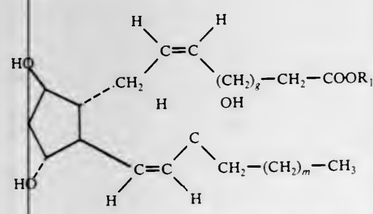


or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different, with the proviso that one of R_3 and R_4 is methyl;
wherein m is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

48. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof;
wherein g is 2 to 4;
wherein m is 1 to 5; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

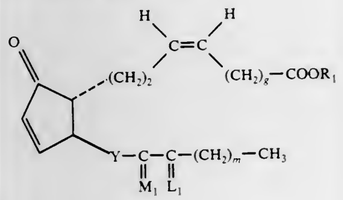
4,122,103

CIS-4,5-DIDEHYDRO-CIS-13-PGA$_1$ COMPOUNDS

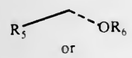
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,086
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 260—408 **25 Claims**

1. A compound of the formula

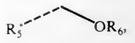


wherein g is 2, 3, or 4;
wherein Y is cis-CH=CH-;
wherein M_1 is

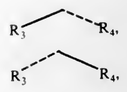


or

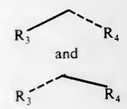
-continued



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



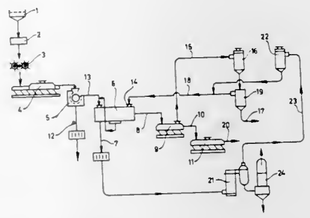
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein m is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, phenyl, phenyl substituted with 1, 2, or 3 chloro or alkyl of 1 to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,122,104

PROCESS FOR EXTRACTING OILS FROM OIL CONTAINING RAW MATERIALS

Johan Frederik Witte, Amsterdam-Nieuwendam, Netherlands, assignor to Stork Amsterdam B.V., Netherlands

Filed Sep. 15, 1976, Ser. No. 723,559
Claims priority, application Netherlands, Sep. 19, 1975, 7511125
Int. Cl.^{2} C09F *5/02*
U.S. Cl. 260—412.4 **7 Claims**



1. Process for extracting oils or fats from vegetable material containing the same without flaking the material which comprises first coarsely crushing the material; then conditioning the coarsely crushed material by subjecting it to heat in the presence of moisture; then pressing the conditioned coarsely crushed material in a rotary press whose pressing area has a cross-section which decreases in the direction of the outlet; then extracting the pressed, conditioned, coarsely crushed material by contact with a solvent for the oil or fat; and then recovering the oil or fat.

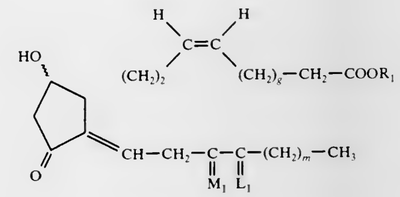
4,122,105

CIS-4,5-DIDEHYDRO-12,13(e)DIDEHYDRO-13,14-DIHYDRO-PGD$_1$ COMPOUNDS

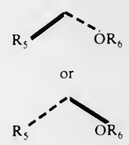
David C. Peterson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,244, Sep. 17, 1975. This application Jun. 23, 1977, Ser. No. 809,222
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 260—413 **12 Claims**

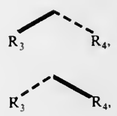
1. A prostaglandin analog of the formula



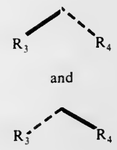
wherein m is 1 to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein g is 1, 2, or 3.

4,122,106

PROCESS FOR PREPARING THALLIC BENZOATE

William F. Brill, Skillman, N.J., assignor to Halcon International, Inc., New York, N.Y.

Division of Ser. No. 740,150, Nov. 8, 1976, abandoned, which is a division of Ser. No. 679,584, Apr. 23, 1976, Pat. No. 4,021,453. This application Jun. 6, 1977, Ser. No. 804,028
Int. Cl.^{2} C07F *5/00*
U.S. Cl. 260—429 R **2 Claims**

1. A process for the preparation of thallic benzoate, which comprises reacting benzoic acid with thallic nitrate in an alcoholic solution.

4,122,107

REACTION PRODUCTS OF SPECIFIC ANTIMONY COMPOUNDS WITH A CARBOXYLATE OF ZINC CALCIUM OR MANGANESE AND AN ALCOHOL OR GLYCOL

James F. Kenney, Mendham, N.J., assignor to M&T Chemicals Inc., Stamford, Conn.

Filed Mar. 26, 1976, Ser. No. 670,654
Int. Cl.^{2} C07F *7/00*
U.S. Cl. 260—429.3 **6 Claims**

1. A novel compound obtained by reacting (1) a first compound selected from the group consisting of antimony trioxide, antimony (III) salts of monocarboxylic acids and antimony (III) alkoxides wherein the alkyl residues of said alkoxides contain from 1 to 12 carbon atoms, (2) a second compound selected from the group consisting of zinc, calcium, and manganese salts of monocarboxylic acids, the molar ratio of said first to said second compound being from 1:1 to 1:6, respectively, and (3) at least a stoichiometric amount of a third compound selected from the group consisting of alcohols containing from 1 to 20 carbon atoms and glycols containing from 2 to 20 carbon atoms, wherein each of said monocarboxylic acids corresponds to the general formula



each R being individually selected from the group consisting of alkyl containing from 1 to 7 carbon atoms.

4,122,108

METHOD FOR THE PREPARATION OF ORGANIC ALUMINUM-IMIDES AND PRODUCTS OBTAINED THEREBY

Salvatore Cucinella; Tito Salvatori, and Alessandro Mazzei, all of San Donato Milanese, Milan, Italy, assignors to Snamprogetti, S.p.A., San Donato Milanese, Italy

Filed Jan. 6, 1977, Ser. No. 757,228
Claims priority, application Italy, Jan. 9, 1976, 19094 A/76; Apr. 22, 1976, 22546 A/76
Int. Cl.^{2} C07F *5/06*
U.S. Cl. 260—448 A **13 Claims**

7. A method for the preparation of organic aluminum imides, having the formula:

$$((R\ Al\ NR')_m(H\ Al\ NR')_x)$$

wherein R and R′ are the same or are different and are selected from the group consisting of alkyl, aryl and cycloalkyl; the sum of $m + x$ is equal to n, and n being a number equal to 4 or higher with m being variable between 1 and n; x is variable between $n-1$ and 0 said method comprising the step of reacting a poly(N-alkyliminoalane) of the formula $(HAlNR')_n$, wherein n is a number equal to 4 or higher, and R′ is selected from the group consisting of alkyl, aryl and cycloalkyl, with a compound of the formula AlR_3 wherein R is selected from the group consisting of alkyl, aryl and cycloalkyl.

13. A method for the preparation of organic aluminum imides having the formula:

$(HAlNR')_{n-p}(RAlNR')_{x'}(XAlNR')_{p-x'}$

wherein R and R′ are the same or are different and are selected from the group consisting of alkyl, aryl and cycloalkyl; p is the number of moles employed and is equal to or lower than the degree of oligomerization n; and n is equal to 4 or higher, X is halogen, x' is between 1 and n said method comprising the steps of reacting polyiminoalanes of the formula $(HAlNR)_n$ with a halogen acid to obtain an intermediate product; contacting said intermediate product with an alkyl derivative of an alkali metal to obtain the product.

4,122,109

METHOD FOR PREPARING A THERMAL-STABILITY ADDITIVE AND A THERMALLY STABILIZED METHYLPOLYSILOXANE AND COMPOSITIONS THEREFROM

Roland L. Halm, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 2, 1977, Ser. No. 821,251
Int. Cl.² C07F *7/08*
U.S. Cl. 260—448.2 S **28 Claims**

1. A method for preparing a methylpolysiloxane thermal-stability additive, said method comprising

(A) mixing components consisting essentially of

(i) an endblocked methylpolysiloxane fluid having an average of from 1.9 to less than 3.0 methyl groups per silicon, and

(ii) an organometallic compound in sufficient amount to provide from more than 0.1 to 10.0 parts by weight of the metal per 100 parts by weight of the mixture of (i) plus (ii), said organometallic compound being selected from the group consisting of organotitanium, organozirconium and organohafnium compounds wherein each organic group consists of carbon, oxygen and hydrogen atoms and which is bonded to the metal by at least one metal-oxygen-carbon linkage, and

(B) heating the mixture of (i) plus (ii) in an inert atmosphere to decompose the organometallic compound.

4,122,110

PROCESS FOR MANUFACTURING ALCOHOLS, PARTICULARLY LINEAR SATURATED PRIMARY ALCOHOLS, FROM SYNTHESIS GAS

André Sugier, and Edouard Freund, both of Rueil Malmaison, France, assignors to Institut Francais du Petrole, France

Filed Oct. 28, 1977, Ser. No. 846,486
Claims priority, application France, Oct. 29, 1976, 76 33046
Int. Cl.² C07C *29/00, 31/06, 31/08*
U.S. Cl. 260—449.5 **12 Claims**

1. A process for manufacturing linear saturated primary alcohols, by reacting carbon monoxide with hydrogen at a pressure between 20 and 250 bars and a temperature between 150° and 400° C., in the presence of a catalyst, characterized in that the catalyst contains at least 4 essential elements:

(a) copper

(b) cobalt

(c) at least one element M selected from chromium, iron, vanadium and manganese, and

(d) at least one alkali metal A, in the following atomic proportions: $Cu_xCo_yM_zA_v$, where x is from 0.1 to 1, y from 0.1 to 1, z from 0.2 to 1 and v from 0.001 to 0.25 times the sum $(x + y + z)$.

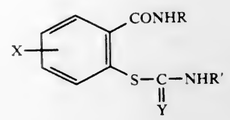
4,122,111

CARBAMOYLTHIOBENZAMIDES AND COMPOSITIONS COMPRISING SAME

Carlo Scavino, Milan, Italy, assignor to ISF Spa, Milan, Italy

Filed May 4, 1977, Ser. No. 793,543
Claims priority, application Italy, May 7, 1976, 23066 A/76
Int. Cl.² C07C *153/09;* **A61K** *31/27*
U.S. Cl. 424—300 **10 Claims**

1. Process for the preparation of compounds having the general formula:



wherein:

R is a hydrogen or a saturated or unsaturated alkyl radical containing 1 through 6 carbon atoms;

R′ is:

a saturated or unsaturated alkyl radical containing 1 through 6 carbon atoms,

a cycloalkyl radical containing 5 or 6 carbon atoms,

a phenyl, benzyl, or naphthyl radical that is mono- or bis-substituted with an alkyl or alkoxy radical containing 1 through 3 carbon atoms,

a nitro group, or

a halogen;

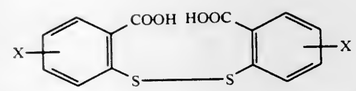
X is:

hydrogen,

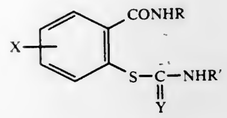
an alkyl radical containing 1 through 3 carbon atoms, or

a halogen; and

Y is an oxygen or sulfur atom, characterized by heating a dithiodiphenylcarboxylic acid, having the general formula:



wherein X is said X, in anhydrous conditions and in an aprotic solvent with a suitable chlorinating agent to form a dithiodiphenyl acid chloride, reacting said dithiodiphenyl acid chloride in an aqueous aprotic polar solvent with an amine RNH_2, wherein R is said R, to form a dithiodiphenylamide, reducing said dithiodiphenylamide in aqueous alcoholic ambient to form a thioamide, and reacting said thioamide in a warm anhydrous aprotic solvent with the compound R′ -NCY, wherein R′ is said R′ and Y is said Y, to form said compounds having the general formula:



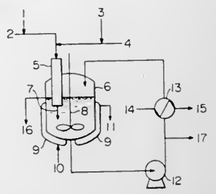
wherein R, R′, X, and Y are said R, R′, X, and Y.

4,122,112

PROCESS FOR PRODUCING POLYCARBONATE OLIGOMERS

Hiroyuki Koda, Toyonaka; Takeaki Megumi, Sakai, and Hiroyuki Yoshizaki, Toyonaka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Jun. 6, 1977, Ser. No. 804,169
Claims priority, application Japan, Jun. 9, 1976, 51-67451
Int. Cl.² C08G *17/13, 63/62*
U.S. Cl. 260—463 **5 Claims**



1. A process for producing polycarbonate oligomers by the reaction of dihydroxy compounds with phosgene, which comprises contacting a mixture of a dihydroxy compound and an aqueous alkali solution with phosgene in the presence of an organic solvent in a tubular reactor to perform a first-stage reaction wherein the reaction time is from 0.5 to 15 seconds, introducing the first-stage reaction mixture into a tank-type reactor equipped with a stirrer and containing the aqueous alkali solution and a solution in the organic solvent of a polycarbonate oligomer formed by the reaction of the first-stage reaction product in a second stage, and performing the second-stage reaction, wherein the reaction time is from 5 to 20 minutes, while stirring the reaction mixture in the tank-type reactor and maintaining it at a predetermined temperature by sufficient removal of the heat of reaction.

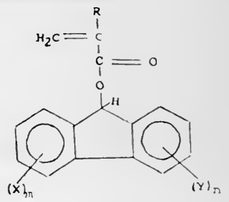
4,122,113

9-FLUORENYL ACRYLATES

Sam R. Turner, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 596,689, Jul. 16, 1975, Pat. No. 4,046,564. This application Apr. 20, 1977, Ser. No. 789,173
Int. Cl.² C07C *69/54, 121/64*
U.S. Cl. 260—465 D **1 Claim**

1. Monomers of the formula



where

R is hydrogen or methyl;

X and Y are independently selected from the group consisting of NO_2, halogen, —CN and $—CF_3$; and

m and n can range from 0 to 3.

4,122,114

1-TRICYANOINYLPYRENE

James M. Pearson, Webster; David J. Williams, Fairport, and William W. Limburg, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 548,452, Feb. 10, 1975, Pat. No. 4,046,563, which is a continuation-in-part of Ser. No. 454,487, Mar. 25, 1974, abandoned. This application Apr. 20, 1977, Ser. No. 789,170
Int. Cl.² C07C *121/70*
U.S. Cl. 260—465 H **1 Claim**

1. The compound, 1-tricyanovinylpyrene.

4,122,115

PREPARATION OF CHLORO- AND BROMO-FLUOROACETYL CHLORIDE

William Joseph Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 7, 1977, Ser. No. 849,023
Int. Cl.² C07C *51/58*
U.S. Cl. 260—544 Y **7 Claims**

1. The process of heating a compound of the formula

CHFXCOOR

wherein

X = Cl or Br and

R = alkyl of 1–4 carbons

with chlorosulfonic acid at a temperature of 70°–250° C. and recovering a compound of the formula CHFXCOCl.

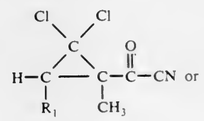
4,122,116

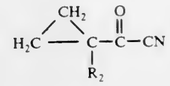
SUBSTITUTED CYCLOPROPYL GLYOXYLNITRILES

Herbert Klenk; Heribert Offermanns, both of Hanau, and Werner Schwarze, Frankfurt, all of Germany, assignors to Deutsche Gold- und Silber- Scheideanstalt vormals Roessler, Frankfurt, Germany

Continuation-in-part of Ser. No. 802,944, Jun. 2, 1977. This application Feb. 23, 1978, Ser. No. 880,483
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708183
Int. Cl.² C07C *61/00, 51/00, 121/46*
U.S. Cl. 260—545 R **6 Claims**

1. A compound having the formula


(a)


(b)

where R_1 is hydrogen or methyl and R_2 is alkyl of 1 to 3 carbon atoms.

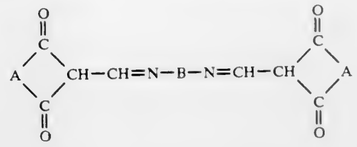
4,122,117

INDANDIONE BIS-AZOMETHINE PIGMENTS

Hirohito Ando, Hazaki; Kouichi Takagi, Nishinomiya, and Masao Shukuya, Hazaki, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Filed Jan. 18, 1977, Ser. No. 760,389
Int. Cl.² C09B *55/00;* **C07C** *119/06;* **C07D** *239/72, 283/02*
U.S. Cl. 260—566 R **5 Claims**

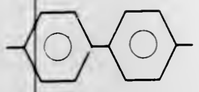
1. An indandione pigment of the formula



wherein

A is a phenylene or naphthylene group and

B is a phenylene group or the group



4,122,118
COPPER-N-METHYLPYRROLIDONE CATALYST USEFUL IN THE PRODUCTION OF NITRODIPHENYL AMINES

Joachim George, Leverkusen, and Joachim Repplinger, Koenigsdorf, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jul. 22, 1977, Ser. No. 818,205
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1976, 2633811
Int. Cl.[2] C07C *85/04;* C07D *207/26;* B01J *31/02*
U.S. Cl. 260—576 3 Claims

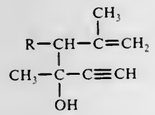
1. In the process of producing a nitrodiphenyl amine by reacting a nitrochlorobenzene with an aromatic amine in the presence of a copper containing catalyst and, as halogen acceptor, potassium carbonate, the improvement which comprises utilizing, as the copper containing catalyst, the reaction product of a copper compound with N-methylpyrrolidone.

4,122,119
PROCESS FOR THE PRODUCTION OF UNSATURATED KETONES

Takashi Ohnishi; Yoshiji Fujita; Fumio Wada; Takashi Nishida, all of Kurashiki; Yoshiaki Omura, Mitsu; Fumio Mori, Kurashiki; Takeo Hosogai, Kurashiki, and Sukeji Aihara, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

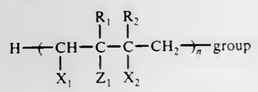
Filed Feb. 11, 1977, Ser. No. 767,801
Claims priority, application Japan, Feb. 12, 1976, 51/15045; Jun. 23, 1976, 51/75311; Nov. 8, 1976, 51/134300; Nov. 12, 1976, 51/136712
Int. Cl.[2] C07C *45/00, 49/61*
U.S. Cl. 260—586 C 28 Claims

1. A process for preparing unsaturated ketones which comprises the step of subjecting a substituted propargyl alcohol of formula (III)

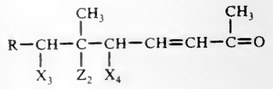


(II)

wherein R represents a



wherein one of the substituents X_1 and X_2 is hydrogen and the other and Z_1 together form a bond or both X_1 and X_2 are hydrogen and Z_1 represents hydrogen, hydroxyl or lower alkoxy having 1 to 4 carbon atoms, R_1 represents a hydrogen or lower alkyl having 1 to 5 carbon atoms, R_2 represents hydrogen or lower alkyl and *n* represents 1 or 2 whereby if *n* is 2, the substituents X_1, X_2, Z_1, R_1 and R_2 within the 2 units are alike or different from each other, to a thermal treatment at a temperature of 100° to 400° C. sufficient to rearrange its structure to obtain a rearranged ketone product containing structurally isomeric unsaturated ketones of formula (I)



(I)

wherein one of the substituents X_3 and X_4 is hydrogen and the other and Z_2 together form a bond and R is as defined above.

4,122,120
DERIVATIVES OF 1-ACETYL-3,3-DIMETHYLCYCLOHEXANE

Mark A. Sprecker, Sea Bright; Manfred Hugo Vock, Locust; Frederick Louis Schmitt, Holmdel; John B. Hall, Rumson, and James Milton Sanders, Eatontown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 713,357, Aug. 11, 1976, Pat. No. 4,062,894.
This application Jul. 28, 1977, Ser. No. 819,960
Int. Cl.[2] C07C *49/61*
U.S. Cl. 260—586 R 2 Claims

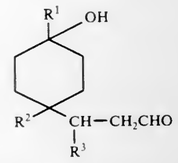
1. A mixture of 1-(3,3-dimethylcyclohexyl)-4-methyl-cis-2-pentene-1-one, 1-(3,3-dimethylcyclohexyl)-4-methyl-trans-2-pentene-1-one, and 1-(3,3-dimethylcyclohexyl)-4-methyl-3-pentene-1-one.

4,122,121
CYCLOHEXANE DERIVATIVES

Robin Th. Gray, and Aaldert J. De Jong, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 22, 1977, Ser. No. 818,262
Claims priority, application United Kingdom, Aug. 9, 1976, 33050/76
Int. Cl.[2] C07C *47/32*
U.S. Cl. 260—598 5 Claims

1. Cyclohexane derivative to the formula:



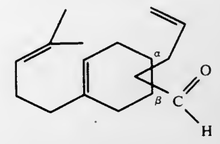
wherein R^1 represents an alkyl group, of 1 to 4 carbon atoms R^2 and R^3 each represents a hydrogen atom or an alkyl group of 1 to 4 carbon atoms.

4,122,122
MIXTURE OF 1-(2-PROPENYL)-3-(4-METHYL-3-PENTENYL)-Δ^3-CYCLOHEXENE-1-CARBOXALDEHYDE AND 1-(2-PROPENYL)-4-(4-METHYL-3-PENTENYL)-Δ^3-CYCLOHEXENE-1-CARBOXALDEHYDE AND PROCESS FOR PRODUCING SAME

John B. Hall, Rumson; Mark A. Sprecker, Sea Bright; Manfred Hugo Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, and Robert M. Novak, Fords, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

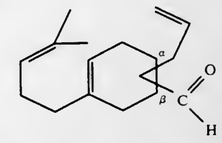
Division of Ser. No. 741,088, Nov. 11, 1976, Pat. No. 4,068,012.
This application Aug. 24, 1977, Ser. No. 827,202
The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.
Int. Cl.[2] C07C *47/38*
U.S. Cl. 260—598 2 Claims

1. A mixture of the compounds 1-(2-propenyl)-3-(4-methyl-3-pentenyl)-Δ^3-cyclohexene-1-carboxaldehyde and 1-(2-propenyl)-4-(4-methyl-3-pentenyl)-Δ^3-cyclohexene-1-carboxaldehyde defined by the structure:



wherein the carboxaldehyde moiety is bonded either at the alpha-carbon atom or the beta-carbon atom of the cyclohexenyl moiety.

2. A process for producing a mixture of the compounds 1-(2-propenyl)-3-(4-methyl-3-pentenyl)-Δ^3-cyclohexene-1-carboxaldehyde and 1-(2-propenyl)-4-(4-methyl-3-pentenyl)-Δ^3-cyclohexene-1-carboxaldehyde defined by the structure:



defined according to claim 1, wherein the carboxaldehyde moiety is bonded either at the alpha-carbon atom or the beta-carbon atom of the cyclohexenyl moiety, comprising the step of intimately admixing an allylic halide with myrac aldehyde in the presence of a phase transfer agent and an alkali metal hydroxide, said phase transfer agent being selected from the group consisting of quarternary ammonium salts, tertiary amines and crown ethers, said reaction being carried out in a solvent inert to the reaction system at a temperature of from about 10° C. up to about 150° C., the mole ratio of myrac aldehyde:allylic halide being in the range of from 0.5:1.5 up to 1.5:0.5, the mole ratio of base:allylic halide in the reaction mass being in the range of from about 0.75:1 up to about 1.5:1 and the quantity of phase transfer agent in the reaction mass, based on the amount of myrac aldehyde in the reaction mass, being in the range of from 0.5 grams/mole of myrac aldehyde up to 25 grams/mole of myrac aldehyde.

4,122,123
PRODUCTION OF QUATERNARY PHOSPHONIUM HALIDES

Klaus Hestermann, Erftstadt Bliesheim; Horst Staendeke, Bruhl, and Bernd Lippsmeier, Hurth-Knapsack, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 28, 1975, Ser. No. 635,587
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1974, 2457442; Mar. 19, 1975, 2511933; May 17, 1975, 2522021
Int. Cl.[2] C07F *9/54*
U.S. Cl. 260—606.5 F 13 Claims

1. In the process for making quaternary phosphonium halides of the general formula:

$[R_4P]\ X$

in which R is identical or different alkyls having from 1 to 4 carbons and X is chlorine or bromine, the improvement which comprises reacting hydrogen phosphide as starting material with an alkyl halide RX, R and X having the meaning given above in a molar ratio from 0.02 to 10, at a temperature from 100° to 500° C, within a gas atmosphere inert to the reaction mixture, under a pressure of up to 10 atmospheres gauge and for a period of time of about 210 seconds by flowing the gaseous reactants over a catalyst selected from the group consisting of active carbon, a finely divided metal from the first or eighth subgroup of the Periodic System of the elements and mixture of such metals; and separating the resulting quaternary phosphonium halides from the reaction gas.

4,122,124
PRODUCTION OF TRINITROMETHANE

Milton B. Frankel, Tarzana; Frank C. Gunderloy, Jr., Santa Susana, and Dean O. Woolery, II, Reseda, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 5, 1977, Ser. No. 857,055
Int. Cl.[2] C07C *76/02*
U.S. Cl. 260—644 6 Claims

1. A method of producing trinitromethane comprising reacting isopropyl alcohol with nitric acid, said reaction being maintained with a temperature range of from about 25° to 85° C. to produce trinitromethane and recovering the trinitromethane so produced.

4,122,125
HYDROALKYLATION USING MULTIMETALLIC ZEOLITE CATALYST

Timothy P. Murtha; William A. Jones; Ernest A. Zuech, and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 8, 1976, Ser. No. 739,766
Int. Cl.[2] C07C *15/00*
U.S. Cl. 260—668 R 12 Claims

1. A process for producing monocycloalkyl aromatic hydrocarbons and substituted monocycloalkyl aromatic hydrocarbons which comprises:

contacting a monocyclic aromatic hydrocarbon or an alkyl substituted monocyclic aromatic hydrocarbon under hydroalkylation conditions and in the presence of hydrogen with a catalyst consisting essentially of at least one ruthenium compound and at least one nickel compound supported on a calcined, acidic, rare earth-treated crystalline zeolite selected from the group consisting of Type X and Type Y zeolites.

4,122,126
METHOD FOR REMOVING ALUMINUM HALIDE CATALYST FROM POLYMERIZATION PRODUCT

Ryozo Taniyasu, Yokohama; Hideo Kurokawa, Kawasaki, and Takeshi Saito, Chiba, all of Japan, assignors to The Lion Fat and Oil Co. Ltd., Tokyo, Japan

Filed May 4, 1977, Ser. No. 793,548
Claims priority, application Japan, May 7, 1976, 51-51369
Int. Cl.[2] C07C *7/00*
U.S. Cl. 260—677 A 4 Claims

1. A method for removing an aluminum halide or its complex catalyst from a polymerization product prepared by employing said catalyst comprising the steps of:

(a) adding to the polymerization product an aprotic polar solvent in an amount of 1.0 through 6.0 mols based upon one mol of the aluminum halide in the catalyst present in the polymerization product;

(b) sufficiently mixing the polymerization product and the solvent at a temperature within the range of from 70° to 120° C., and

(c) then, filtering the mixture at a temperature within said range.

4,122,127
ORGANOPOLYSILOXANE RESIN COMPOUNDS AS ADHESION PROMOTERS

Ryuzo Mikami, and Katsutoshi Mine, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Dec. 16, 1976, Ser. No. 751,281
Claims priority, application Japan, Jan. 16, 1976, 51-3183
Int. Cl.[2] C08L *83/06*
U.S. Cl. 260—825 **2 Claims**

1. A composition of matter which is useful as an adhesion promoter for silicone rubbers which consists of a mixture of 100 parts of

(A) an organopolysiloxane resin which has the general formula

$$[R'_nX_mSiO_{\frac{4-m-n}{2}}]_p$$

in which formula,

R' is a monovalent hydrocarbon radical containing 1–8 carbon atoms,

n has an average value of 0.90–1.80,

X is a hydroxyl group or an alkoxy group,

m is such to give a value of not less than 0.1 weight percent of X based on the weight of (A), the sum of $m + n$ does not exceed 3,

p has a value greater than 1, and 0.1 to 20 parts of

(B) an organopolysiloxane represented by the general formula

$$[R^2_aSiO_{\frac{4-a-b-c}{2}}]_q[R^5_dSiO_{\frac{4-d-e-f}{2}}]_r$$
$$(OR^3)_b \qquad (OR^3)_e$$

wherein

R^2 is a monovalent organic group containing at least one epoxy group,

R^3 and R^4 are independently hydrogens or monovalent hydrocarbon radicals,

R^5 is a monovalent hydrocarbon radical containing at least one unsaturated group,

a, b, c, d, e and f each have the value of 0–3 and the sum of a, b and c is 3 and the sum of d, e and f is 3,

q is 0 or a positive integer and

r has a value of 2 or more.

4,122,128
STORABLE RAPIDLY HARDENING EPOXY RESIN ADHESIVE

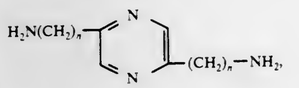
Hans Lehmann, Aesch, and Helmut Zondler, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,284
Claims priority, application Switzerland, Jan. 7, 1977, 173/77
Int. Cl.[2] C08L *63/00*
U.S. Cl. 260—837 R **6 Claims**

1. A storable, rapidly hardening epoxy resin adhesive which comprises

a. a polyglycidyl compound containing an average more than one glycidyl group in the molecule and having a softening temperature between 40° and 90° C.,

b. a 2,5-di-(ω-aminoalkyl-1')-pyrazine of the general formula I



(I)

wherein n is an integer from 3 to 6, and

c. a copolymer of ethylene, acrylic acid and acrylate having a melting range from 70° to 110° C., said epoxy resin adhesive comprises, per 1 equivalent of glycidyl groups, 0.5 to 1.5 equivalents of hydrogen atoms bonded to nitrogen of the 2,5-di(ω-aminoalkyl-1')-pyrazine of the formula I, and, per 100 parts by weight of the polyglycidyl compound, 3 to 20 parts by weight of the copolymer of ethylene, acrylic acid and acrylate, and is in the form of a fine heterogeneous powder.

4,122,129
NORMALLY-SOLID, BIOABSORBABLE, HYDROLYZABLE, POLYMERIC REACTION PRODUCT

Donald James Casey, Ridgefield, and Martin Epstein, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 691,749, Jun. 1, 1976, Pat. No. 4,048,256. This application May 5, 1977, Ser. No. 793,987
Int. Cl.[2] C08G *63/12, 63/52*
U.S. Cl. 260—860 **1 Claim**

1. A process for producing a normally solid, bioabsorbable, hydrolyzable polymeric reaction product comprising heating at its melting point (A) a polyglycolic acid composition having a molecular weight of at least 30,000; adding to the molten polyglycolic acid composition (B) from about 2% to about 50%, by weight, based on the total weight of (A) and (B) of a polyester of diglycolic acid and an unhindered glycol having a molecular weight sufficiently high so as to provide a polymeric material possessing self-supporting film-forming properties, and continuing the heating of the mixture at or above the melting temperature of the polyglycolic acid until the transesterification reaction is substantially completed.

4,122,130
MOLDABLE BLEND OF POLYCARBONATE AND TERPOLYMER OF RUBBER STYRENE-MALEIMIDE

Ronald Anthony Fava, Monroeville, Pa., assignor to Arco Polymers Inc., Philadelphia, Pa.

Filed May 6, 1977, Ser. No. 794,496
Int. Cl.[2] C08G *63/62;* C08L *67/06*
U.S. Cl. 260—873 **5 Claims**

1. A thermoplastic molding composition which comprises:

A. from about 10% to about 90% by weight of a predominantly aromatic polycarbonate;

B. from about 10% to about 90% by weight of a copolymer of three components:

(aa) a rubbery block polymer prepared in a stereospecific system using from 5 to 35% vinyl aromatic compound and from 65 to 95% conjugated alkyldiene, said rubbery block copolymer constituting from 5% to 35% of the copolymer of three components,

(bb) an amine nitrogen derivative of an ethylenically unsaturated dicarboxylic acid constituting from 5% to 35% of the copolymer of three components, and

(cc) vinyl aromatic composition constituting from 60% to 90% of the copolymer of three components.

4,122,131
POLYBLEND COMPOSITION COMPRISING AROMATIC POLYCARBONATE, POLYOLEFIN, SELECTIVELY HYDROGENATED BLOCK COPOLYMER AND OLEFINIC COPOLYMER

Jan Bussink, Bergen Op Zoom; Johannes Wilhelmus Jacobus De Munck, Huybergen, and Petrus Cornelius Aloysius Maria van Abeelen, Gilze, all of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 14, 1977, Ser. No. 833,365
Int. Cl.[2] C08L *67/06*
U.S. Cl. 260—873 **10 Claims**

1. A high impact strength thermoplastic composition comprising an intimate blend of:

(a) an aromatic polycarbonate resin; and

(b) a precompounded composition comprising from 80 to 20

parts by weight of an olefinic resin comprising polyethylene or a poly-α-olefin resin, alone or in further combination with an aromatic polycarbonate resin or a styrene resin, and correspondingly from 20 to 80 parts by weight of a selectively hydrogenated linear, sequential or radial teleblock copolymer of a vinyl aromatic compound $(A)_n$ and $(A)_n^1$ and an olefinic eastomer (B), of the A—B—A^1; A-(B-A-B)$_n$-A; $A(BA)_nB$; $(A)_4B$; $B(A)_4$; or $B[(AB)_nB]_4$ type, wherein n is an integer of from 1 to 10; and optionally,

(c) a selectively hydrogenated elastomeric block copolymer of one of the types set forth in (b).

4,122,132
DISPERSION STABILIZER

Yoshifumi Murata, and Yoshio Ohfuji, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jun. 28, 1976, Ser. No. 700,167
Claims priority, application Japan, Jul. 8, 1975, 50-83852
Int. Cl.[2] C08L *67/06;* C08G *63/02*
U.S. Cl. 260—873 **6 Claims**

1. A dispersion stabilizer for imparting dispersion stability to an alkenyl aromatic polymer in an unsaturated polyester resin to which said alkenyl aromatic polymer is added so as to reduce the shrinkage property of said resin, said dispersion stabilizer comprising a comb-like copolymer having an alkenyl aromatic trunk polymer and saturated polyester branch polymer segments; said trunk and branch polymers being copolymerized by reacting a terminal reactable group on said saturated polyester with a corresponding reactable group from the monomers forming said alkenyl aromatic polymer.

4,122,133
MATERIAL FOR AN ALKALINE CELL SEPARATOR AND A PROCESS OF MAKING

Philip Bernstein, Yardley; James P. Coffey, Hatboro, and Alan E. Varker, Philadelphia, all of Pa., assignors to ESB Incorporated, Phildelphia, Pa.

Filed Mar. 23, 1977, Ser. No. 780,579
Int. Cl.[2] C08F *255/00, 8/34*
U.S. Cl. 260—878 R **7 Claims**

1. A material comprised of a polyolefin having ethylenically unsaturated ionogenic monomers grafted thereon and cross-linked with sulfur.

5. A separator for an alkaline cell comprised of a film of a polyolefin having grafted thereto side chains of ethylenically unsaturated ionogenic monomers and cross-linked with sulfur.

4,122,134
METHOD FOR PRODUCING TRANSPARENT BLOCK COPOLYMER RESIN

Tamotsu Miki; Shizuo Narisawa; Ichiro Ichikawa, and Hideki Horiike, all of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 721,809, Sep. 9, 1976, abandoned, which is a continuation of Ser. No. 548,788, Feb. 10, 1975, abandoned. This application Aug. 23, 1977, Ser. No. 827,079
Claims priority, application Japan, Feb. 13, 1974, 49-18018, June. 12, 1974, 49-67377
The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.
Int. Cl.[2] C08F *297/04*
U.S. Cl. 260—880 B **31 Claims**

1. In a process for forming a block copolymer having in the molecule at least one plastic block composed of a homopolymer of a vinyl aromatic compound and at least one elastomeric block composed of a vinyl aromatic compound and a conjugated diene by block-copolymerizing 90 to 65 parts by weight of a vinyl aromatic compound monomer and 10 to 35 parts by weight of a conjugated diene monomer in a hydrocarbon as solvent with an organolithium compound as initiator in the presence or absence of 0.01 to 5 mole-% based on total monomer of a Lewis base compound, the improvement whereby a transparent block copolymer is formed, which comprises

forming a block copolymer which has a plastic block formed by homopolymerizing 50 to 90% by weight of total vinyl aromatic compound monomer and an elastomeric block composed of (1) a random copolymer segment formed by continuously feeding to the polymerization system a monomer mixture of a vinyl aromatic compound and a conjugated diene in a fixed weight ratio in the range from 0.1 to 3.0, (2) a segment formed by homopolymerizing a conjugated diene, and/or (3) a random copolymer segment formed by feeding a monomer mixture of a vinyl aromatic compound and a conjugated diene in a fixed weight ratio of less than 0.1 continuously to the polymerization system; said segment (1) occupying 50 to 90% by weight of said elastomeric block; said block copolymer having a structure represented by any of the following formulae:

$$S_1 - (S/B)_1 - B_1 \quad (1)$$

$$S_1 - B_1 - (S/B)_1 \quad (2)$$

$$S_1 - (S/B)_1 - B_1 - S_2 \quad (3)$$

$$S_1 - (S/B)_1 - B_1 - (S/B)_2 - S_2 \quad (4)$$

$$S_1 - B_1 - (S/B)_1 - B_2 - S_2 \quad (5)$$

$$S_1 - (S/B)_1 - (S/B)_2 - B_1 - S_2 \quad (6)$$

$$S_1 - (S/B)_1 - B_1 - (S/B)_2 - B_2 - (S/B)_3 - S_2 \quad (7)$$

$$S_1 - (S/B)_1 - S_2 - (S/B)_2 - B_1 - S_3 \quad (8)$$

$$S_1 - (S/B)_1 - B_1 - S_2 - B_2 - (S/B)_2 - S_3 \quad (9)$$

$$S_1 - (S/B)_1 - S_2 - B_1 - (S/B)_2 \quad (10)$$

$$S_1 - (S/B)_1 - S_2 - (S/B)_2 - B_1 \quad (11)$$

wherein S_1, S_2, and S_3 represent homopolymerized vinyl aromatic compound blocks, $(S/B)_1$, $(S/B)_2$, and $(S/B)_3$ represent randomly copolymerized vinyl aromatic and conjugated diene segments or segments formed by feeding a vinyl aromatic compound and a conjugated diene in a weight ratio in the range from 0.001 to 0.1; said block copolymer having an average molecular weight of 0.35 to 1.8 dl/g in terms of intrinsic viscosity as measured in toluene at 30° C.

4,122,135
SINTERED GRANULATE PRODUCED FROM ACRYLONITRILE-BUTADIENE-STYRENE COPOLYMER POWDERS

GianFranco Valoti, Sesto S. Giovanni (Milan), and Giancarlo Antonini, Macherio (Milan), both of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Continuation of Ser. No. 580,270, May 23, 1975, abandoned, and Ser. No. 398,508, Sep. 18, 1973, abandoned. This application Dec. 28, 1976, Ser. No. 755,097
Claims priority, application Italy, Sep. 20, 1972, 29428 A/72
Int. Cl.[2] C08L *9/00*
U.S. Cl. 260—880 R **5 Claims**

1. A sintered granulate produced by exposing acrylonitrile-butadiene-styrene copolymer powder to a pressure of about 300 to 500 atmospheres and a temperature below the melting point of said powder of about 120° to 150° C., extruding the product of said pressure and heat treatment through nozzles and chopping the product into a granulate.

4,122,136

ACRYLONITRILE CONTAINING COPOLYMERS BLENDS AND PROCESS FOR THEIR PREPARATION

Siegfried Korte, Leverkusen, and Carlhans Süling, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 18, 1977, Ser. No. 788,294

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1976, 2617570

Int. Cl.² C08L *33/20*

U.S. Cl. 260—898 **1 Claim**

1. Mixtures of acrylonitrile/vinyl acetate/styrene terpolymers comprising

(A) 10 to 30% by weight of a terpolymer of copolymerised units of acrylonitrile, vinyl acetate and styrene with weight averages of the composition Ew, standard deviation δw and skewness of distribution Ωw as follows:

	Ew	δw	Ωw
Acrylonitrile	50–85% by wt.	6–20% by wt.	−0.8 to 0.5
Vinyl acetate	10–26% by wt.	3–10% by wt.	−0.5 to 0.4
Styrene	5–24% by wt.	5–30% by wt.	−0.5 to 0.8

and a K-value of 50 to 70 measured at 25° C. in a 0.5% by weight dimethylformamide solution, and

(B) 70 to 90% by weight of a terpolymer of copolymerised units of acrylonitrile, vinyl acetate and styrene with weight averages of the composition E'w, standard deviation δ'w and skewness of distribution Ω'w as follows

	E'w	δ'w	Ω'w
Acrylonitrile	50–85% by wt.	0–2.0% by wt.	0
Vinyl acetate	6–30% by wt.	0–1.0% by wt.	0
Styrene	9–20% by wt.	0–1.0% by wt.	0

and a K-value of 55–70 measured at 25° C. in a 0.5% by weight dimethylformamide solution,

with the proviso that the difference between the styrene contents Ew and E'w does not exceed 4% by weight and the K-values of the terpolymers A and B differ from each other by at the most 10.

4,122,137

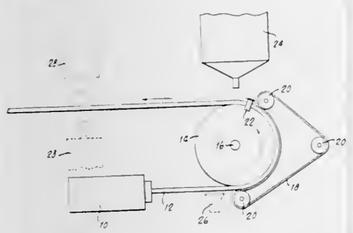
RADIATION CURE OF RUBBER SHEETS

Georg G. A. Bohm, Akron, and William W. Barbin, Massillon, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 15, 1975, Ser. No. 641,150

Int. Cl.² B29H *17/16*

U.S. Cl. 264—22 **11 Claims**



1. A continuous process for the production of cured rubber strips with a surface design comprising the steps of:

(a) continuously extruding and advancing a soft viscous rubber strip;

(b) pressing said advancing rubber strip into the recesses of a moving mold, said recesses being on the surface of the mold and formed into the selected design;

(c) partially heat curing the rubber throughout the strip while maintaining it under pressure in the mold;

(d) stripping the partially cured rubber strip with the selected design from the mold without distorting the design formed on the surface of the rubber; and,

(e) completing the curing of the partially-cured rubber throughout the strip after removing it from the mold by exposure to high-energy ionizing radiation.

4,122,138

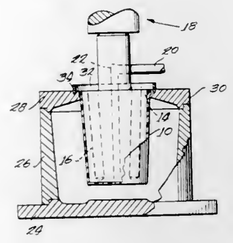
METHOD OF PREPARING BLOWN THERMOPLASTIC ARTICLES HAVING MULTIAXIAL ORIENTATION

Kenneth J. Cleereman, Midland; Walter J. Schrenk, Bay City, and Grant W. Cheney, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 330,999, Feb. 9, 1973, abandoned, which is a continuation of Ser. No. 124,552, Mar. 15, 1971, abandoned, which is a continuation of Ser. No. 740,008, Apr. 4, 1968, abandoned, which is a division of Ser. No. 381,086, Jul. 8, 1964, abandoned. This application Jan. 6, 1975, Ser. No. 538,850

Int. Cl.² B29C *17/07*

U.S. Cl. 264—25 **6 Claims**



1. A method for preparing a blown thermoplastic article of significantly improved properties comprising the steps of:

(i) preparing from a molecular orientatable thermoplastic, a hollow parison preform, the molecules of which possess multiaxial orientation, the preform being prepared in an injection mold with a rotatable element and being characterized by exhibiting generally helicoidal shrinkage of strips cut from the side wall of the preform;

(ii) removing the preform from the injection mold and thereafter applying heat to condition the preform for blow molding, such conditioning step being of sufficiently short duration and under a temperature condition which maintains the preform sufficiently cool to prevent substantial relaxation of the molecular orientation imparted to the preform in the injection molding step (i);

(iii) simultaneously with said heat conditioning step (ii), restraining said preform from substantial shrinkage in the hoop and axial directions, said restraining step comprising supporting the preform on a mandrel generally intimately contacting the interior of the hollow preform;

(iv) containing the preform in a hollow blow mold, the preform being supported on said mandrel;

(v) and before the multiaxial orientation substantially relaxes out of the preform, expanding the oriented preform to the configuration of the blow mold, the process being characterized by the blown article prepared thereby possessing a significantly higher magnitude of molecular orientation than the molecular orientation possessed by the preform.

4,122,139

METHOD FOR PRODUCING SILICON CARBIDE SINTERED MOLDINGS CONSISTING MAINLY OF SIC

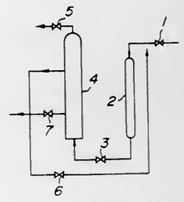
Seishi Yajima; Josaburo Hayashi, and Mamoru Omori, all of Ohnuki, Japan, assignors to The Research Institute for Special Inorganic Materials, Asahi, Japan

Filed Feb. 22, 1977, Ser. No. 770,715

Claims priority, application Japan, Feb. 26, 1976, 51/19379

Int. Cl.² C04B *35/64*

U.S. Cl. 264—44 **12 Claims**



1. In a method for producing SiC sintered moldings, which comprises mixing SiC powders with an organosilicon high molecular weight compound as a binder, molding the mixture into a desired shape and heating the molding at high temperatures sufficient to sinter SiC powders and to decompose the above described organosilicon high molecular weight compound under a non-oxidizing atmosphere to form SiC sintered molding, an improvement comprises using organosilicon high molecular weight compounds having carbon and silicon as the main skeleton components and containing at least one foreign element other than silicon, carbon, hydrogen and oxygen, which are obtained by subjecting a mixture of at least one organosilicon compound selected from the group consisting of

(1) compounds having only Si—C bond,

(2) compounds having Si—H bond in addition to Si—C bond,

(3) compounds having Si—Hal bond,

(4) Si—OR organoalkoxy (or aroxy) silanes,

(5) compounds having Si—OH bond,

(6) compounds having Si—Si bond,

(7) compounds having Si—O—Si bond,

(8) esters of organosilicon compounds, and

(9) peroxides of organosilicon compounds, with at least one organometallic compound selected from the group consisting of

(10) organometallic compounds containing nitrogen,

(11) organometallic compounds containing a metal of Group I (inclusive coordination compounds),

(12) organometallic compounds containing a metal of Group II (inclusive coordination compounds),

(13) organometallic compounds containing a metal of Group II (inclusive coordination compounds),

(14) ortanometallic compounds containing a metal of Group IV (inclusive coordination compounds),

(15) organometallic compounds containing a metal of Group V (inclusive coordination compounds),

(16) organometallic compounds containing a metal of Group VI (inclusive coordination compounds),

(17) organometallic compounds containing a metal of Group VII (inclusive coordination compounds), and

(18) organometallic compounds containing a metal of Group VIII (inclusive coordination compounds), to polycondensation by at least one process of addition of a polycondensation catalyst, irradiation and heat treatment, as the binder.

4,122,140

HOT PRESSING OF SILICON NITRIDE USING BERYLLIUM ADDITIVE

Charles D. Greskovich, Schenectady; Svante Prochazka, Ballston Lake, and Chester R. O'Clair, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,084

Int. Cl.² C04B *33/32, 35/64, 35/58*

U.S. Cl. 264—65 **4 Claims**

1. A method of producing a hot-pressed polycrystalline silicon nitride body having a density of at least 80% of the theoretical density of silicon nitride which consists essentially of providing a significantly homogeneous powder dispersion having an average particle size which is submicron of silicon nitride and a beryllium additive, and based on the total composition of the starting silicon nitride powder said silicon nitride powder containing up to about 0.1% by weight of metallic impurities which react with SiO_2 or Si and O_2 to form low melting intergranular silicate glassy phase, up to about 3% by weight of oxygen, up to about 4% by weight of elemental silicon, and up to about 1% by weight of halogen, said beryllium additive being selected from the group consisting of beryllium, beryllium nitride, beryllium fluoride, beryllium silicon nitride and mixtures thereof, said beryllium additive being used in an amount wherein the beryllium component is equivalent to about 0.1% by weight to about 2% by weight of elemental beryllium based on the amount of silicon nitride, and hot-pressing said dispersion in an atmosphere of nitrogen at a temperature ranging from about 1600° C. to about 1850° C. under a pressure of at least about 2000 psi, said nitrogen being free of oxygen or substantially free of oxygen so that there is no significant oxygen pickup by said hot-pressed body, said body being at least substantially free of an intergranular silicate glassy phase at its grain boundaries and substantially retaining its room temperature mechanical properties at elevated temperatures ranging up to about 1400° C. in air.

4,122,141

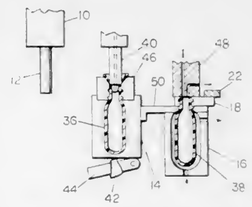
METHOD FOR FORMING ARTICLES FROM THERMOPLASTIC MATERIAL

Thomas J. Krall, and Albert R. Uhlig, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 23, 1977, Ser. No. 809,509

Int. Cl.² B29C *17/07*

U.S. Cl. 264—89 **11 Claims**



1. A process for the manufacture of hollow articles which comprises the steps of:

extruding a tubular length of a thermoplastic material;

moving an open preform mold from a first location remote from said tubular length of material to a second location surrounding said tubular length of material;

closing said preform mold around said tubular length of material;

severing said tubular length of material;

moving said preform mold containing said severed tubular length of thermoplastic material to said first location for said preform mold;

conforming said tubular length of thermoplastic material to the interior contours of said preform mold to thereby define a preform shape;

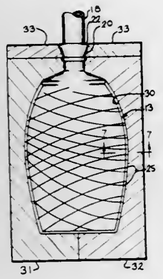
opening said preform mold;
moving said preform mold to said second location from said first location to obtain another tubular length of thermoplastic material;
retaining said preform shape at said second location during said movement of said preform mold;
grasping said preform shape with a finish holder at said second location;
transferring said preform shape to an open conditioning mold;
closing said conditioning mold around said preform shape;
grasping said preform shape with a finish clamp;
thermally conditioning said preform shape in said conditioning mold;
opening said conditioning mold;
releasing said preform shape from said finish holder;
indexing said preform shape carried by said finish clamp to an open final shape mold;
closing said final shape mold;
conforming said preform shape to the interior contours of said final shape mold to define a finished article;
opening said final shape mold;
indexing said finished article to a location over a moving, removal conveyor; and
releasing said finished article from said finish clamp to allow its removal by said conveyor.

4,122,142

METHOD FOR BLOW MOLDING A REINFORCED PLASTIC BOTTLE

Don L. Lawrence, and Albert R. Uhlig, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 5, 1977, Ser. No. 822,142
Int. Cl.² B29C *17/07;* **B29D** *3/02*
U.S. Cl. 264—97 **2 Claims**



1. A method for blow molding a reinforced bottle from a heated thermoplastic material comprising the steps of: performing a hollow parison of the heated material into a shape only slightly smaller than and of the same general contour as said bottle; positioning a reinforcing netting over and in conforming contact with said preformed parison; and while the material is still heated blowing said preformed parison into conformance with a final blow mold to form said bottle and to embed said netting into the walls of said bottle.

4,122,143

PROCESS FOR PRODUCING CURED PRODUCTS

Yoshitaka Momotari, Yokohama; Junji Hara, Kamakura; Tadashi Kitamura, Hiratsuka, and Shigeo Iiyama, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 24, 1976, Ser. No. 689,658
Int. Cl.² H01B *1/02*
U.S. Cl. 264—104 **7 Claims**

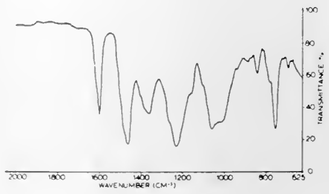
1. A process for producing a conductive cured product which comprises reacting a copper compound which is in the cuprous and/or cupric state with a reducing substance capable of reducing said copper compound to metallic copper, in the presence of both a metallic copper powder and a resinous curable component on a substrate, the amount of said copper compound being not more than 20% by weight calculated as cuprous and/or cupric copper based on the weight of said metallic copper powder, to reduce said copper compound to metallic copper which precipitates on said metallic copper powder to link the particles of said metallic copper powder to form a conductive connected unit of said metallic copper powder, and cure molding said resinous curable component during the reduction of said copper compound to integrate said connected unit and said resinous curable component into said conductive cured product.

4,122,144

PRODUCTION OF RIGID SHAPED ARTICLES USING PHENOL-FORMALDEHYDE RESINS

Ramesh C. Vasishth, Delta, and Pitchaiya Chandramouli, Richmond, both of Canada, assignors to Cor Tech Research Ltd., Richmond, Canada

Division of Ser. No. 567,864, Apr. 14, 1975, Pat. No. 4,045,411, which is a continuation-in-part of Ser. No. 421,068, Dec. 9, 1973, abandoned. This application Jun. 30, 1977, Ser. No. 811,782
Claims priority, application United Kingdom, Apr. 17, 1974, 16860/74
Int. Cl.² B29C *27/00;* **C09J** *5/04*
U.S. Cl. 264—123 **12 Claims**



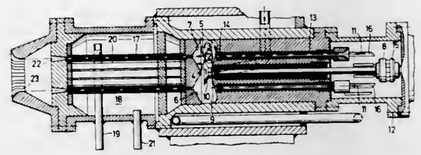
1. A method of forming a rigid shaped article, which comprises:
reacting phenol with formaldehyde in an aqueous reaction medium in the presence of a metal carboxylate catalyst therefor to form a thermosetting phenol-formaldehyde resin having benzyl ether linkages and hemiformal groups ortho to the phenolic hydroxyl groups and an infra-red spectrum which displays large absorption at wave numbers of approximately 1230 cm^{-1}, 1060 cm^{-1} and 1010 cm^{-1},
contacting said resin with at least one strong acid to cause a decrease of at least 35% in the ratio of absorbance at 1010 cm^{-1}, measured from a base line drawn between the wave numbers of 1030 cm^{-1} and 950 cm^{-1}, to that at 1230 cm^{-1}, measured from a base line drawn between wave numbers of 1130 cm^{-1} and 1310 cm^{-1}, to a value less than about 0.1, while leaving substantially unaffected the absorption at wave numbers of 1230 cm^{-1} and 1060 cm^{-1},
providing the resin resulting from said contacting with acid as a coating over at least part of the surface of each member of a plurality of individual elements,
forming said coated plurality of elements into a shape, and
thermosetting the resin of said coating to provide said rigid shape article.

4,122,145

PROCESS AND APPARATUS FOR THE PRODUCTION OF ELONGATED STRUCTURES

Werner Hartmann, Spiegelberg 1, 7759 Immenstaad, Germany

Filed Jan. 21, 1977, Ser. No. 760,923
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1976, 2602312
Int. Cl.² B29F *3/10*
U.S. Cl. 264—174 **10 Claims**



1. A method of continuously coating an elongated core with a plastic comprising:
introducing said core into the bore of an elongated heated guide tube having an inside diameter greater than the outside diameter of said core;
introducing said plastic in liquid condition into a heated mixing chamber in communication with and surrounding the exit end of said guide tube to cause intimate contact of said plastic with said core in heated condition;
introducing a flowing stream of heated plastic containing said core from said mixing chamber into a mold tube having an elongated bore in substantial axial alignment with the bore of said guide tube;
the velocity of said flowing stream of plastic and its frictional forces on said core being sufficient to convey and simultaneously center said core therein;
maintaining said mold tube at a temperature sufficient to initiate solidification of said plastic whereby to encapsulate said core with a solid plastic coating; and
continuously recovering said plastic coated core.

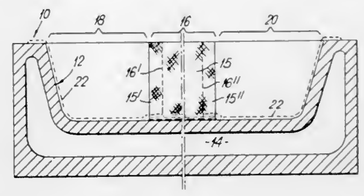
7. An apparatus for continuously coating an elongated core including:
a housing member having an inlet end and an outlet end;
a mixing zone defined by said housing intermediate said inlet and outlet ends;
pump means for introducing liquid plastic into said mixing zone;
at least one guide tube supported within said housing having a bore with its inlet port in communication with said inlet end of said housing and its exit port in communication with said mixing zone;
at least one mold tube supported within said housing having its inlet port in communication with the outlet end of said housing;
said mixing zone having a volume larger than said guide and mold tubes and defined by a continuing wall having an off-center convolution about the exit port of said guide tube and a coaxial conical exit port converging into the inlet port of said mold tube; and
heat transfer means for said housing member for heating said guide tube and cooling said mold tube;
whereby an elongated core having an outside diameter less than the inside diameters of said tubes is drawn through said guide tube and said mixing zone by the flow of plastic in said mold tube and is simultaneously coated with a plastic layer.

4,122,146

FLEXIBLE SHELL OF PLASTICIZED POLYVINYL CHLORIDE

Luigi Bertrandi, Torino, Italy, assignor to ITT Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 352,416, Apr. 19, 1973, abandoned. This application Jan. 9, 1975, Ser. No. 539,917
Int. Cl.² B29C *5/12, 13/00*
U.S. Cl. 264—245 **9 Claims**



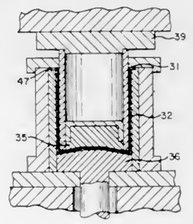
1. A method for producing a three-dimensional shell of plasticized PVC comprising
preparing a polyvinyl chloride plastigel comprising a dispersion of polyvinyl chloride in a plasticizer,
spraying a thin layer of said plastigel onto the surface of a three-dimensional mold while the mold surface is maintained between room temperature and 100° C.,
said plastigel having during use of viscosity of 20,000 to 50,000 cps, the viscosity of said plastigel being at least 100,000 cps after 48 hours rest, said plastigel containing no particles which are sedimentable at said viscosity levels,
heating said layer to a temperature substantially above 100° C. in order to cure said layer of plastigel thereby forming a three-dimensional PVC shell, and
removing said shell from said mold.

4,122,147

METHOD OF MAKING MULTILAYER CONTAINERS

Mihailo J. Vrcelj, Countryside, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Mar. 23, 1978, Ser. No. 889,479
Int. Cl.² B29C *3/00;* **B29D** *9/00;* **B29F** *5/00*
U.S. Cl. 264—255 **7 Claims**



1. A process for the manufacture of a thermoplastic container having integral multilayer bottom and sidewalls, the top of the sidewalls being circumferentially provided with a single layer flange portion adapted to be interfolded with a metal closure for seaing, the process comprising:
preparing a multilayer billet having a first layer and a second layer, both of the layers being initially coextensive, each of said layers having an integral structure, the composition of said layers being such that when the layers are heated to a heat softened state and a compressive force is imposed thereon by a pair of dies the first layer is extruded from between faces of said dies at a faster flow rate than that of the second layer;

disposing said billet between upper and lower said dies, said layers being arranged one above the other between the dies;

heating the billet between said dies to cause the extrusion of the heat softened layers into a mold cavity surrounding one of said dies whereby the faster moving layer forms the flange and exterior surface portions of the container and the slower of the layers forms the interior surface portion of the container.

4,122,148

SULFUR DIOXIDE REMOVAL PROCESS

Norman E. Nicholson, Stockton-on-Tees, and John Scarlett, Spennymoor, both of England, assignors to Davy Powergas Inc., Lakeland, Fla.

Filed Apr. 20, 1976, Ser. No. 678,606

Int. Cl.² C01B *17/00*; C01D *7/00*; C01B *15/08, 17/64*

U.S. Cl. 423—242 **29 Claims**

1. In a process for the removal of sulfur dioxide from gas in which sulfur dioxide is absorbed from the gas in an aqueous absorption solution of sodium sulfite to form the corresponding bisulfite, resulting bisulfite-containing absorption solution is desorbed to form sulfur dioxide and precipitate at least about 25 weight percent of sodium sulfite-containing solids in a desorption zone containing the resulting slurry, and a sulfite-containing absorption solution is regenerated for recycling, and in which sodium thiosulfate is in the absorption-desorption system, the improvement for removing thiosulfate from the system comprising withdrawing a portion of the desorption zone slurry from the desorption zone, separating sodium sulfite-containing solids from liquid of said slurry, said separated desorption zone liquid having in solution a major amount of sodium bisulfite, and minor amounts of sodium thiosulfate and sodium sulfite, based on the total weight of these salts, evaporating water from said withdrawn aqueous desorption zone liquid to precipitate at least about 15% solids from said liquid to at least about double the sodium thiosulfate content of the liquid phase on a total salt basis, separating precipitated solids from sodium thiosulfate-containing solution, and passing separated solids to the absorption-desorption system.

4,122,149

PROCESS FOR REMOVING SO_2 FROM EFFLUENT GASES AND FOR REMOVING HEAT STABLE SALTS FROM SYSTEMS IN WHICH THEY ACCUMULATE

David Arthur Dunnery, New York; Joseph Edmund Sokolik, Jr., Tarrytown; Gilbert Richard Atwood, Briarcliff Manor, and Alexander Jean-Marie Kosseim, Yorktown Heights, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 25, 1977, Ser. No. 781,175

Int. Cl.² C01B *17/00*

U.S. Cl. 423—242 **16 Claims**

1. In a process for the selective removal of sulfur dioxide with respect to carbon dioxide from a gas mixture containing same wherein

(a) said gas mixture is contacted with an aqueous absorbent solution containing as an absorbent an alkanolamine, an alkali metal hydroxide, ammonium hydroxide, an alkanolamine sulfite, an alkali metal sulfite or ammonium sulfite to remove sulfur dioxide from said gas mixture and form a rich aqueous absorbent solution enriched in sulfur dioxide removed from the gas mixture,

(b) said rich aqueous absorbent solution is moved to a stripping zone where sulfur dioxide is removed to form a lean aqueous absorbent solution depleted in sulfur dioxide content, and

(c) said lean aqueous absorbent solution is recycled and re-contacted with said gas mixture,

the improvement comprising, contacting said aqueous absorbent solution with an anion exchange resin having bisulfite anions displaceable by said divalent sulfur oxyanions of heat stable salts to remove same from said aqueous absorbent solution whereby the bisulfite anions of the resin are replaced by said divalent sulfur oxyanions of heat stable salts.

4,122,150

PROCESS FOR ELIMINATING DILUTED SULFUR OXIDES IN COMBUSTION EXHAUST GASES

Shin Hori, Tokyo; Tomiyoshi Inoue, Fujisawa; Shozo Yamamoto, Mitaka; Kazuo Tatara, Kashiwa; Masahiro Kitagawa, Yokohama; Masaru Watanabe, Tokyo; Yukihiko Okada, Musashino, and Naoki Negishi, Tokyo, all of Japan, assignors to Kogyo Kaihatsu Kenkyusho, Tokyo, Japan

Continuation-in-part of Ser. No. 550,374, May 16, 1966, abandoned. This application Oct. 27, 1969, Ser. No. 869,786

Int. Cl.² C01B *17/00*

U.S. Cl. 423—242 **10 Claims**

1. A process for eliminating sulphur oxide from combustion exhaust gases, comprising the steps of

first, dividing said combustion exhaust gases into a first stream and a second stream,

second, passing said first stream through a first activated carbon which has been previously washed with water, thereby drying said activated carbon, cooling said first stream, and removing a substantial portion of said sulphur oxides from said first stream by adsorption in said activated carbon,

third, mixing the treated first stream with said second stream,

fourth, passing said mixed streams through a second activated carbon which was previously dried by said second step, thereby removing sulphur oxides from said mixture by a dry adsorption and producing a mist free low sulphur oxide concentration gas,

fifth, passing said mist free, low sulphur oxide concentration gas to the atmosphere,

sixth, washing a third activated carbon which was previously used in said fourth step with water, and removing the previously adsorbed sulphur oxides therefrom, and

seventh, cyclically treating each of said first, second and third activated carbons by said second, fourth and sixth steps.

4,122,151

PROCESS OF STABILIZATION OF DIBASIC CALCIUM PHOSPHATE DIHYDRATE AGAINST HYDROLYSIS WITH CYCLIC AMINOPHOSPHONIC ACIDS

Walter Plöger, Hilden, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Germany

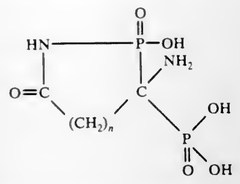
Filed Dec. 1, 1975, Ser. No. 636,731

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1974, 2456787

Int. Cl.² C01B *15/16, 25/26*

U.S. Cl. 423—265 **5 Claims**

1. A process for stabilizing dibasic calcium phosphate dihydrate against hydrolysis consisting essentially of suspending dibasic calcium phosphate dihydrate in an aqueous medium at a pH of from 5 to 10, containing from 0.01% to 5% by weight based on the content of said dibasic calcium phosphate dihydrate of a cyclic aminophosphonic compound selected from the group consisting of (A) compounds of the formula



wherein n is an integer from 1 to 3, and (B) water-soluble salts thereof, and separating said stabilized dibasic calcium phosphate dihydrate.

4,122,152

PROCESS FOR PREPARING SILICON NITRIDE POWDER HAVING A HIGH α-PHASE CONTENT

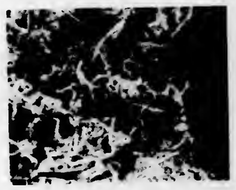
Masaaki Mori, Hadano, and Norihira Takai, Yamato, both of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1977, Ser. No. 763,094

Claims priority, application Japan, Jan. 27, 1976, 51-7694

Int. Cl.² C01B *33/06*

U.S. Cl. 423—344 **9 Claims**



1. A process for preparing silicon nitride powder having a high α-phase content which comprises the steps of (a) providing a blended powder material composed of silica powder and amorphous carbon powder having an oil absorption of not less than 100 ml/100g, the weight ratio of said carbon powder to said silica powder being from 1 to 3, and then (b) nitriding and burning said blended powder material by heating it at a temperature of from 1300° to 1700° C. in the presence of a nitrogen-containing, non-oxidizing gas.

4,122,153

RECYCLING METHOD FOR THE PREPARATION AND PROCESSING OF A HYDROXYL AMMONIUM SALT SOLUTION

Nicolaas F. Haasen, Heerlen; Cornelis G. M. Van de Moesdijk, Elsloo, and Gerardus M. C. Wagemans, Neer, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 27, 1977, Ser. No. 864,223

Claims priority, application Netherlands, Dec. 28, 1976, 7614456

Int. Cl.² C07C *131/04*

U.S. Cl. 423—387 **2 Claims**

1. In a recycling method for the preparation and processing of a hydroxyl ammonium salt solution, in which an aqueous acid reaction medium is continuously recycled between a zone for the synthesis of hydroxyl ammonium salt and a zone for the synthesis of cyclohexanone oxime and in which nitrogen monoxide is added to the recycled liquid and catalytically reduced to hydroxyl amine by means of hydrogen, and the ammonium ions formed as a by-product in the reduction of the nitrogen monoxide are removed by contacting the recycling liquid containing ammonium ions with a gas flow substantially consisting of nitrogen monoxide and containing nitrogen dioxide to nitrogen, the improvement consisting essentially in that the recycling liquid is contacted with said gas flow containing nitrogen dioxide at a pressure of over 1 atmosphere, a temperature of from 85° to 165° C., and with the use of a gas flow which has a molar NO_2/NO ratio measured after said contact that ranges between $10^{-4}/1$ and $10^{-1}/1$.

4,122,154

TREATMENT OF ALKALI RICH SILICATE GLASS BATCH

Frank J. Lazet, Media, Pa., assignor to PQ Corporation, Valley Forge, Pa.

Filed Sep. 20, 1977, Ser. No. 834,950

Int. Cl.² C01B *33/32*

U.S. Cl. 423—334 **4 Claims**

1. In the process of preparing silicate glasses by feeding agglomerated glass-forming materials including sand and soda ash (sodium carbonate) to a furnace wherein the materials are melted thereby forming molten glass which is then drawn from the furnace, the improvement comprising:

(a) preparing a raw material batch of sand and soda ash, said batch containing more than 30% soda ash;

(b) agitating said batch, thereby blending it;

(c) contacting the agitating batch with 0.2 to 1.5% of the weight of the batch of sodium silicate solution containing more than 30% total solids and a viscosity of 1.6 poises or more, thereby immediately forming hard, free-flowing, agglomerates; and

(d) feeding said agglomerates to the furnace.

4,122,155

PREPARATION OF SILICON NITRIDE POWDER

Svante Prochazka, Ballston Lake, and Charles D. Greskovich, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,241

Int. Cl.² C01B *33/06*

U.S. Cl. 423—344 **6 Claims**

1. A process for producing an amorphous silicon nitride powder free of metallic and non-metallic impurities except for oxygen, which consists essentially of reacting a gaseous mixture of silane and anhydrous ammonia at a reaction temperature ranging from about 600° C. to about 1000° C. producing an amorphous powdery reaction product in an amount of at least about 90% of theoretical yield based on silane, said anhydrous ammonia being used in an amount ranging from about 15 times to about 25 times in excess of the stoichiometric amount, calcining said amorphous powdery reaction product at a temperature ranging from about 1100° C. to 1480° C. for a period of time sufficient to convert at least a substantial amount thereof to amorphous, stoichiometric Si_3N_4 powder ranging in surface area from about $5m^2/g$ to about $20m^2/g$, said calcining being carried out in an atmosphere selected from the group consisting of argon, helium, nitrogen, hydrogen and mixtures thereof.

3. A process according to claim 1 wherein said reaction temperature ranges from about 650° C. to 850° C.

4,122,156

PROCESS FOR THE PRODUCTION OF CARBON DISULFIDE FROM SULFUR DIOXIDE REMOVED FROM A FLUE GAS

James R. Kittrell, Amherst, Mass., and Charles W. Quinlan, Houston, Tex., assignors to New England Power Company, Westborough, Mass. and Northeast Utilities Service Company, Newington, Conn.

Continuation of Ser. No. 604,091, Aug. 13, 1975, abandoned. This application Aug. 12, 1977, Ser. No. 824,186

Int. Cl.² C01B *31/26*

U.S. Cl. 423—443 **4 Claims**

1. A method for the production of carbon disulfide from sulfur dioxide removed from a gaseous effluent which includes:

(a) removing sulfur dioxide as a stream from a flue gas;

(b) compressing the stream of step (a) and subsequently removing water from said stream;

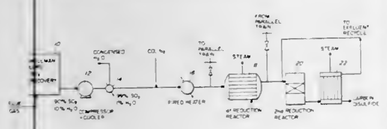
(c) blending carbon monoxide and nitrogen with the stream of step (b); the sulfur dioxide in the stream being between about 5–33%;

(d) introducing the stream of step (c) which consists essen-

tially of nitrogen, carbon monoxide and sulfur dioxide at a temperature between about 500° F. to 900° F. into a first reduction reactor containing a chromium-promoted iron oxide catalyst;

(e) reducing between 60 to 99+% of the sulfur dioxide to carbonyl sulfide, the remainder being reduced to sulfur;

(f) discharging a stream from the first reduction reactor, which stream consists essentially of carbonyl sulfide, sulfur, nitrogen and carbon dioxide;



(g) introducing the stream of step (f) into a second reduction reactor which contains a catalysts of the group consisting of silica-alumina, faujasties and active alumina to decompose a portion of the carbonyl sulfide to form carbon disulfide at a temperature between about 400° F. to 800° F.; and

(h) recovering the carbon disulfide formed.

4,122,157

NITROFURANTOIN SUSTAINED RELEASE TABLET

Harold E. Huber, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Mar. 4, 1977, Ser. No. 774,279

Int. Cl.² A61K *9/24*

U.S. Cl. 424—21 **5 Claims**

1. A compressed pharmaceutical tablet in dosage unit form for oral administration comprising:

a. a rapid release portion comprising from 3 to 9% of total tablet weight of micronized nitrofurantoin and from 8 to 46% of total tablet weight of inert pharmaceutical excipients; and

b. a slow release portion comprising from 9 to 27% of total tablet weight of micronized nitrofurantoin, from 14 to 42% of total tablet weight of hydroxypropyl methylcellulose having a viscosity of from 90 to 120 cps, and from 8 to 42% of total tablet weight of inert pharmaceutical excipients.

4,122,158

TOPICAL THERAPEUTIC PREPARATIONS

Edward Emil Schmitt, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

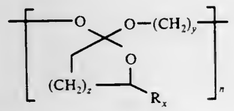
Continuation of Ser. No. 725,765, Sep. 23, 1976, abandoned, which is a continuation of Ser. No. 544,807, Jan. 28, 1975, Pat. No. 3,983,209. This application Jun. 27, 1977, Ser. No. 809,963

The portion of the term of this patent subsequent to Sep. 28, 1993, has been disclaimed.

Int. Cl.² A61K *9/70, 31/765, 31/77*

U.S. Cl. 424—27 **6 Claims**

1. A therapeutic preparation for topical application comprising an absorbent carrier containing a composition, which composition comprises an effective amount of a polymer of the general formula:



wherein R is a lower alkyl of 1 to 7 carbons, *x* is 0 or 1, *y* is 4 to 10, *z* is 1 to 3 and *n* is 10 to 1000; said polymer having mixed therein from 0.001 to 30% of a chemotherapeutic selected from the group consisting of sodium sulfacetamide, silver sulfadiazine, sulfadimethoxine, sulfaethidole, sulfamethazine, sulfamethizole, sulfamethoxazole, sulfapyridine, homosulfamilamide, sulfamylon acetate, sulfamylon hydrochloride, aminosalicyclic acid, cetylpyridinium chloride, silver nitrate, 5-chloro-3-tri-fluoromethyl salicyclanilide, 4-methyl-benzinidazolone, chlorohexidine, and hexachlorophene, and wherein the carrier is a member selected from the group consisting of fabrics, plastic fibers, porous foam rubber and paper.

4,122,159

AEROSOL FOAMING COMPOSITIONS

Anne Madrange, Saint Germain en Laye; Jean Maës, Vitry sur Seine, and Pierre Meurice, L'Isle Adam, all of France, assignors to L'Oreal, Paris, France

Filed May 23, 1977, Ser. No. 799,689

Claims priority, application France, Feb. 24, 1977, 77 05350

Int. Cl.² A61K *7/00, 7/09;* **C09K** *3/30*

U.S. Cl. 424—45 **18 Claims**

1. An improved foaming composition in a pressurized container of the aerosol bomb type, to be dispensed in the form of a foam, said composition comprising from 2% to 14% propellant and a foaming product including from 0.2 to 6% of at least one amphoteric tensio-active agent and from 0.2 to 3% of at least one tertiary amino oxide, all the percentages above mentioned being expressed by weight in relation to the weight of the nonpropulsive part of the composition, the propellant used containing a mixture of liquified gas and of nitrous oxide saturating the aggregate of the liquid phase.

4,122,160

TOOTHPASTE COMPOSITIONS CONTAINING IMPROVED AMORPHOUS PRECIPITATED SILICAS

Satish K. Wason, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 519,736, Oct. 31, 1974, which is a division of Ser. No. 286,655, Sep. 6, 1972, Pat. No. 3,893,840. This application Oct. 4, 1976, Ser. No. 729,448

Int. Cl.² A61K *7/16;* **C01B** *33/12;* **C09G** *1/02;* **C09K** *3/14*

U.S. Cl. 424—49 **2 Claims**

1. A toothpaste comprising a binder effective to prevent separation of the solid and liquid phases, a particulate solid polishing agent and an aqueous liquid phase containing a humectant, characterized in that the polishing agent consists essentially of an amorphous precipitated silicic acid having a wet cake moisture content of less than 70%, an oil absorption of less than about 125 ccs/100 grams, a surface area of less than 300 m^2/g, a pack density of greater than about 12 lb./cu.ft., and a valley abrasion of greater than about 5 mg. wire loss, said precipitated silicic acid being non-opalescent silica aggregates grown to a larger controlled particle size and being present in an amount of from about 15 to about 50 percent by weight of the toothpaste and effective to function to remove stains, food, debris and plaque from the human tooth surface by providing ideal cleaning action at acceptable abrasion levels without thickening said toothpaste, said controlled larger particle size of said silica aggregates being thereby free of precipitated silicas which have substantially no cleaning ability on human teeth, have initially small particle sizes, and are free of the ease of breakdown into small particle sizes thus resulting in full cleaning ability.

4,122,161

AMORPHOUS PRECIPITATE SILICA COMPOSITIONS

Satish K. Wason, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 402,928, Oct. 3, 1973, Pat. No. 3,960,586. This application Mar. 18, 1975, Ser. No. 559,476

Int. Cl.² A61K *7/16*

U.S. Cl. 424—49 **6 Claims**

1. A toothpaste composition containing an abrasive or polishing agent ingredient, humectant materials, binders and carri-

ers, the composition comprising as the polishing and abrasive ingredient, an amorphous, low structure, precipitated silica having a surface area of from 30 m^2/g to 340 m^2/g, a wet cake moisture of less than 75%, a valley abrasion wire loss of 10 mg to 168 mg, pack density in excess of 25 lbs./cu.ft. and an oil absorption of less than 110 cc/100 g.

4,122,162

ORAL COMPOSITION FOR PLAQUE AND CARIES INHIBITION

Hans R. Muehlemann, Beustweg 8, CH-8032 Zurich, and Hans Schmid, Andlauerstrasse 4, CH-4132 Muttenz, both of Switzerland

Division of Ser. No. 583,125, Jun. 2, 1975, Pat. No. 4,088,752. This application Jun. 14, 1976, Ser. No. 695,930

Claims priority, application Switzerland, May 31, 1974, 7516/74

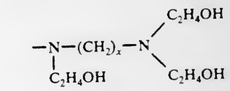
Int. Cl.² A61K *7/18, 7/16*

U.S. Cl. 424—52 **8 Claims**

1. An oral composition selected from the group consisting of toothpastes, transparent toothpastes, gels, mouth rinses, sprays, and chewing gum for plaque and caries inhibition by topical application, said composition containing a water soluble mixed salt formed by reaction of an oxo-acid of phosphorus with a highly basic organic amine base and hydrofluoric acid, said mixed salt being present in sufficient amounts to be effective in inhibition of plaque and caries in said composition; and said organic amine base being of the formula R–X, where R is selected from the group consisting of an alkyl group having 6 to 30 carbon atoms, an alkenyl group having 6 to 30 carbon atoms, an alkoxy group having 2 to 30 carbon atoms, an alkylol group having 2 to 30 carbon atoms, an aralkyl group which may be substituted with an alkyl group having a chain length of 2 to 30 carbon atoms, and X is selected from the group consisting of:

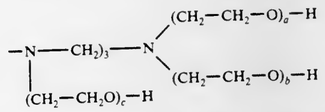
(a) $(NH_2)_y$ where *y* is an integer from 2 to 3;

(b) the grouping



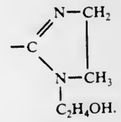
where *x* is an integer from 1 to 3;

(c) the grouping



where *a*, *b*, and *c* are the same or different numbers with a mean value such that the sum $a + b + c = 3$ to 36; and

(d) the grouping



4,122,163

DENTIFRICE PREPARATION COMPRISING PURIFIED, CALCINED KAOLIN ABRASIVES

Joseph C. Muhler, Howe, and Mark S. Putt, Ft. Wayne, both of Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Aug. 2, 1976, Ser. No. 710,444

Int. Cl.² A61K *7/18*

U.S. Cl. 424—52 **11 Claims**

1. A method for reducing the incidence of enamel abrasion and gingival disease with increased fluoride availability comprising the application to the teeth of a fluoride-containing dentifrice preparation comprising a cleaning and polishing agent consisting essentially of purified, calcined kaolin particles predominantly of the gamma alumina or mullite form, not more than a minor amount of titanium-containing and other impurities being present and the particles being at least predominantly less than about 10 microns in diameter, a major proportion of the particles being less than 2 microns in diameter and a minor proportion lying in the range of about 2–10 microns, said agent having a brightness of at least about 93.0 and a whiteness index of not more than about 10.0.

4,122,164

DENTAL CREAM COMPOSITION

Robert Lee Mitchell, Somerset, and William John Chung, Spotswood, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 618,855, Oct. 2, 1975, Pat. No. 4,075,317, which is a continuation-in-part of Ser. No. 464,898, Apr. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 369,730, Jun. 13, 1973, abandoned. This application Aug. 15, 1977, Ser. No. 824,996

Int. Cl.² A61K *7/16, 7/18;* **B65D** *85/14, 81/26*

U.S. Cl. 424—52 **10 Claims**

1. A dental cream suitable for compatible incorporation into an unlined aluminum container comprising a dental cream vehicle consisting essentially of as components dispersed or dissolved therein a water-soluble monofluorophosphate salt selected from the group consisting of alkali metal, calcium, magnesium and aluminum monofluorophosphates in an amount which provides between about 0.01% and 1% fluoride to said dental cream, about 35% to 60% by weight of abrasive which abrasive consists essentially of alumina in excess of calcium carbonate, said calcium carbonate being in amount of at least about 2% up to 5% by weight of the total dental cream, and between about 0.05% and 0.25% by weight of a dissolved or dispersed alkali metal silicate or fumed silica; which calcium carbonate and silicate or fumed silica stabilize said dental cream against unlined aluminum container corrosion caused by the presence of said alumina.

4,122,165

INSECTICIDAL COMPOSITION CONTAINING CIS-9-TRICOSENE AND METHOMYL

David R. Kinzer, Louisville, and Joe D. McDaniel, Dallas, both of Tex., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Sep. 15, 1977, Ser. No. 833,402

Int. Cl.² A01N *17/14, 9/12*

U.S. Cl. 424—84 **9 Claims**

1. An insecticidal composition comprising a mixture of cis-9-tricosene, methomyl and a suitable carrier substance.

4,122,166

INJECTABLE CONTRACEPTIVE AND METHOD

Ronald L. Tribble, Savannah, and Charles M. Stagg, St. Joseph, both of Mo., assignors to Philips Roxane, Inc., St. Joseph, Mo.

Continuation of Ser. No. 715,164, Aug. 17, 1976, abandoned. This application Feb. 23, 1978, Ser. No. 880,508

Int. Cl.[2] A61K *37/24, 39/00*

U.S. Cl. 424—88 **8 Claims**

1. A method of causing a delay or bypass of estrus in a female canine having a known reproductive history consisting of either at least one previous estrus cycle, a previously successful pregnancy or both which comprises parenterally administering to said canine, during late anestrus to mid-proestrus, at least 15,000 picogram equivalent antibody units per pound of body weight of a contraceptive antiserum that has been prepared by a process of:

(a) preparing an antigen which is capable of stimulating the immunological system of a female canine to form antibodies against estradiol-17 beta by the esterification of the hydroxyl groups of estradiol-17 beta with succinic anhydride to form the estradiol-17 beta hemisuccinate and coupling said hemisuccinate to the amino groups of a protein selected from the group consisting of keyhole limpet hemocyanin, bovine serum albumin and human serum albumin in an amount such that to each molecule of protein there is attached 500–5000 molecules of the estradiol-17 beta.

(b) initially parenterally administrating to a female canine donor at intramuscular sites and multi-intradermal sites 1 mg of said antigen emulsified in 2 ml of an adjuvant therefor, parenterally administering additional doses of said emulsified antigen at periodic intervals to cause the production of a desired level of antibodies to said antigen by the immunological system of said donor;

(c) collecting blood from said female canine donor in a manner to prevent coagulation of said collected blood, recovering the plasma of said blood by centrifugation, defibrinating said plasma to obtain antiserum containing said antibodies; and

(d) diluting said antiserum in a buffered solution of a preservative therefor to a desired concentration.

4,122,167

RESPIRATORY SYNCTIAL VACCINE

Eugene B. Buynak, North Wales, and Maurice R. Hilleman, Lafayette Hill, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 766,995, Feb. 9, 1977, abandoned. This application Aug. 17, 1977, Ser. No. 825,520

Int. Cl.[2] A61K *39/12;* **C12B** *3/00*

U.S. Cl. 424—89 **9 Claims**

1. A live respiratory syncytial vaccine comprising an attenuated yet antigenic and immunogenic respiratory syncytial virus having been attenuated by serial passage in human diploid lung fibroblasts.

4,122,168

ANTIBIOTIC A-35512 AND PROCESS FOR PRODUCTION THEREOF

Karl H. Michel, and Calvin E. Higgens, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 689,274, May 24, 1976, abandoned. This application May 23, 1977, Ser. No. 799,902

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—118 **9 Claims**

1. Antibiotic A-35512 factor A which is a white, amorphous, basic compound, having an approximate elemental composition of 54.29 percent carbon, 5.19 percent hydrogen, 5.58 percent nitrogen, 33.76 percent oxygen, and 1.69 percent chlorine; and which in its dihydrochloride form is a white amorphous compound which has these characteristics:

(a) an approximate elemental composition of 51.03 percent carbon, 5.10 percent hydrogen, 4.75 percent nitrogen, 34.20 percent oxygen, and 4.80 percent chlorine;

(b) an infrared absorption spectrum in KBr pellet with significant absorption maxima at the following frequencies (cm^{-1}) : 3405 (strong), 3300 (shoulder), 2950 (weak), 1750 (weak), 1670 (strong), 1625 (shoulder), 1602 (strong), 1520 (strong), 1470 (weak), 1440 (weak), 1405 (weak), 1345 (shoulder), 1312 (medium), 1225 (medium), 1180 (weak), 1130 (weak), 1080 (strong), and 1020 (shoulder);

(c) ultraviolet absorption spectra, in acidic and neutral methanol, with an absorption maximum at 282 nm (ϵ 11,700), and, in basic methanol, an absorption maximum at 292 nm (ϵ 14,000), and with end absorption at 225 nm;

(d) a molecular weight of about 2106, as determined by titration;

(e) four titratable groups in 66% aqueous dimethylformamide with pK_a values of approxiamtely 7.35, 9.09, 10.49, and 12.44;

(f) the following specific rotations:

, $[\alpha]_D^{25} - 100$ (c 1, H_2O)

, $[\alpha]_{365}^{25} - 400$ (c 1, H_2O)

(g) is soluble in water, partially soluble in methanol and ethanol, and insoluble in benzene, chloroform, acetone, diethyl ether, ethyl acetate, toluene, hexane, acetonitrile and dioxane;

(h) an amino-acid analysis indicating the presence of at least five amino-acid residues, one of which is glycine;

(i) an R_f value of approxiamtely 0.21 on paper chromatography in a 1-butanol:pyridine:acidic acid:water (15:10:3:12) solvent system, using *Sarcina lutea* as the detection organism;

(j) a ^{13}C nuclear-magnetic-resonance spectrum in D_2O with the following characteristics:

No.	PPM	Height (%)
3	175.3	0.8
4	173.0	2.1
5	172.1	2.0
6	171.4	1.5
7	170.9	2.7
8	170.5	2.3
9	169.5	1.6
10	159.0	1.3
11	157.9	2.3
12	156.2	2.6
13	155.6	2.3
14	155.3	2.4
15	154.4	1.1
16	136.3	1.4
17	136.0	1.0
18	135.1	1.4
19	133.5	1.2
20	129.6	1.6
21	129.1	1.7
22	128.7	1.8
23	127.5	1.0
24	126.0	1.4
25	124.3	2.8
26	122.1	1.6
27	109.9	1.3
28	107.4	1.6
29	101.7	0.9
30	77.6	3.8
31	76.3	4.6
32	75.5	2.6
33	74.8	2.5
34	74.5	2.4
35	73.4	3.7
36	72.8	6.0
37	72.0	4.4
38	70.9	7.0
39	69.6	2.8
40	67.4	90.9*
41	65.4	1.7
42	61.7	3.1
43	56.7	1.7
44	55.5	1.3
45	54.7	0.8
46	24.6	0.9
47	19.1	1.7

-continued

No.	PPM	Height (%)
48	17.9	2.0
49	17.2	1.9
50	16.7	3.2
51	16.2	3.0

(k) is stable for 72 hours in aqueous solutions having a pH of from about 3 to about 10; or a pharmaceutically-acceptable acid-addition salt of A-35512 factor A.

4,122,169

ACTIVATED CARBON-SORBITAL COMPOSITION AND ADSORPTION-EXPULSION TREATMENT THEREWITH

John H. Geils, 180 Old Mill Rd., Greenwich, Conn. 06830

Filed Apr. 27, 1976, Ser. No. 680,853

Int. Cl.[2] A61K *33/44*

U.S. Cl. 424—125 **6 Claims**

1. A composition of matter for removing undesirable materials from the gastrointestinal tract of humans or animals comprising 10 to 30% water, 40 to 80% sorbitol and 20 to 40% powdered activated carbon.

4,122,170

PHYSIOLOGICAL VEHICLE COMPOSITIONS CONTAINING HIGHER ALKYL SUBSTITUTED AZACYCLOPENTAN-2-ONES

Vithal Jagannath Rajadhyaksha, Mission Viejo, Calif., assignor to Nelson Research & Development Company, Irvine, Calif.

Continuation of Ser. No. 588,234, Jun. 19, 1975, abandoned. This application Jun. 6, 1977, Ser. No. 803,716

Int. Cl.[2] A61K *31/70*

U.S. Cl. 424—180 **6 Claims**

1. A method for enhancing the penetration of physiologically active agents selected from the group consisting of steroids, antibacterials and antifungals through human and animal skin and membranes comprising topically administering to a human or animal a composition comprising an effective physiological amount of said agent and an effective, penetrating amount of a compound selected from the group consisting of 1-n-octylazacyclopentan-2-one and 1-n-nonylazacyclopentan-2-one.

4,122,171

AGENT FOR PROTECTING AGAINST RENAL FAILURE

Tetsutaro Niizato; Takashi Tsuruoka, both of Kawasaki; Shigeharu Inouye, Yokohama; Takemi Koeda, Yokohama, and Taro Niida, Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Apr. 11, 1977, Ser. No. 786,468

Claims priority, application Japan, Apr. 16, 1976, 51-42380

Int. Cl.[2] A61K *31/70, 31/71*

U.S. Cl. 424—180 **8 Claims**

6. A process for protecting against renal failure induced by the administration of an aminoglycosidic antibiotic selected from the group consisting of kanamycin A, kanamycin B, 3',4'-dideoxykanamycin, gentamycin, neomycin, ribostamycin and the pharmaceutically acceptable salts thereof to humans or animals, which comprises orally or parenterally administering to said human or animal a safe and effective dosage of D-glucaro-1,5-lactam or a pharmaceutically acceptable salt thereof in an amount sufficient to prevent said renal failure immediately after, simultaneously with or within an appropriate period of time before administration of said aminoglycosidic antibiotic.

4,122,172

β-D-1-(6-AMINO-9H-PURIN-9-YL)-1-DEOXY-2,3-DI-O-NITRORIBOFURANURONETHYLAMIDE

Erhard Langenscheid, deceased, late of Karlsruhe, Fed. Rep. of Germany (by Ursula Sickelmann, guardian of sole heir Markus Langenscheid), and Kurt Klemm, Allensbach, Fed. Rep. of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik GmbH, Fed. Rep. of Germany

Division of Ser. No. 666,311, Mar. 12, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,381

Claims priority, application Luxembourg, Mar. 18, 1975, 72078

Int. Cl.[2] A61K *31/70;* **C07H** *19/06*

U.S. Cl. 424—180 **6 Claims**

1. The compound which is β-D-1-(6-amino-9H-purin-9-yl)-1-deoxy-2,3-di-O-nitroribofuranuronethylamide.

5. A process which comprises administering to a mammal, enterally or parenterally, an amount of the compound of claim 1 sufficient to induce coronary dilation or to increase coronary blood flow.

4,122,173

PHARMACEUTICAL COMPOSITION CONTAINING 2-DIMETHYLAMINO-6-DIETHYLENEIMIDOPHOSPHAMIDO-7-METHYL-PURINE

Elena Semenovna Golovchinskaya, B. Cherkizovskava ulitsa, 5, korpus 1, kv. 283; Vladimir Alexandrovich Chernov, Komsomolsky prospekt, 44, kv. 72; Elena Silvestrovna Chaman, Leninsky prospekt, 70/11, kv. 300; Ljudmila Alexandrovna Nikolaeva, ulitsa Vinokurova 12, korpus 2, kv. 15, and Vyacheslav Sergeevich Korsunsky, I Kozhukhovsky proezd 19, kv. 56, all of Moscow, U.S.S.R.

Continuation of Ser. No. 654,772, Feb. 3, 1976, abandoned, which is a continuation of Ser. No. 538,521, Jan. 6, 1975, abandoned, which is a continuation of Ser. No. 339,346, Mar. 8, 1973, abandoned. This application Nov. 29, 1976, Ser. No. 745,547

Int. Cl.[2] A61K *31/675*

U.S. Cl. 424—200 **3 Claims**

1. A pharmaceutical composition for use in the treatment of acute leukemia, said composition consisting essentially of a therapeutically effective amount of 2-dimethylamino-6-diethylenimidophosphamido-7-methylpurine as the active principle in combination with a pharmaceutical carrier.

4,122,174

COMBATING PESTS WITH O-ALKYL-N-SULFAMYL-PHOSPHORAMIDOTHIOLATES

Junichi Saito; Akio Kudamatsu; Kozo Shiokawa; Yoshio Kurahashi, and Shinichi Tsuboi, all of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

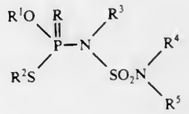
Filed Sep. 16, 1977, Ser. No. 833,924

Claims priority, application Japan, Sep. 20, 1976, 51-111745

Int. Cl.[2] A01N *9/36;* **C07F** *9/24*

U.S. Cl. 424—211 **11 Claims**

1. An O-alkyl-N-sulfamyl-phosphoramidothiolate of the formula



in which

R^1 is alkyl with 1–6 carbon atoms,

R^2 is alkyl or alkenyl with up to 6 carbon atoms,

R^3 is alkyl with 1–6 carbon atoms or phenyl,

R^4 is alkyl with 1–6 carbon atoms,

R^5 is alkyl with 1–6 carbon atoms or phenyl, and

X is oxygen or sulfur.

2. A method of combating arthropods, nematodes or fungi, which comprises applying to the arthropods, nematodes or fungi, or to a habitat thereof, an arthropodicidally, nematicidally or fungicidally effective amount of a compound according to claim 1.

4,122,175

MORPHOLINE CONTAINING BENZIMIDAZOLES

Bernard Schweisguth, Meudon, France, assignor to Hexachimie, Rueil Malmaison, France

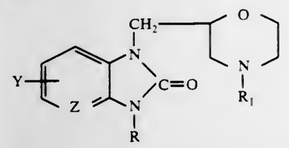
Filed Apr. 21, 1977, Ser. No. 789,674

Claims priority, application United Kingdom, Apr. 22, 1976, 16235/76

Int. Cl.[2] **C07D** *265/28;* **A61K** *31/535*

U.S. Cl. 424—248.54 **10 Claims**

1. Morpholine derivatives of the formula:



in which Z is CH, Y is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, R is hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, benzyl, or phenyl, and R_1 is hydrogen or benzyl, and their non-toxic pharmaceutically acceptable acid addition salts.

9. A pharmaceutical composition comprising, in association with a therapeutically administrable vehicle or excipient a compound as claimed in claim 1 in an amount effective as an anti-depressant.

4,122,176

3-(PIPERAZINOALKYL)-BENZ-2,1-ISOXAZOLES

Junki Katsube, Toyonaka; Tsuyoshi Kobayashi, Nakakubiki; Katsumi Tamoto; Yoshiaki Takebayashi, both of Takarazuka; Kikuo Sasajima, Toyonaka; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

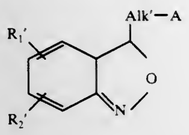
Continuation-in-part of Ser. No. 590,149, Jun. 25, 1975, abandoned. This application Dec. 29, 1976, Ser. No. 755,139

Claims priority, application Japan, Jul. 1, 1974, 49-75544; Jul. 31, 1974, 49-88556

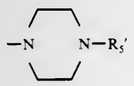
Int. Cl.[2] **A61K** *31/495;* **C07D** *413/06, 413/14*

U.S. Cl. 424—250 **8 Claims**

1. A compound of the formula:



wherein R_1' and R_2' are each hydrogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, phenyl(C_1-C_3)alkoxy or halogen or, when taken together, R_1' and R_2' form C_1-C_2 alkylenedioxy, Alk' is alkylene having 1 to 4 carbon atoms and A is a group of the formula:



wherein R_5' is an alkyl group having 1 to 4 carbon atoms, phenyl or phenyl substituted with C_1-C_4alkyl, C_1-C_4alkoxy or halogen.

6. A pharmaceutical composition consisting essentially of an effective central nervous system depressing or bronchodilating amount of the compound of claim 1, and at least one pharmaceutically acceptable inert carrier or diluent.

4,122,177

METHOD OF TREATING OLIGOSPERMIA AND ASTHENOSPERMIA

Hans Ulrich Fehr, Bischofszell, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 1, 1977, Ser. No. 829,854

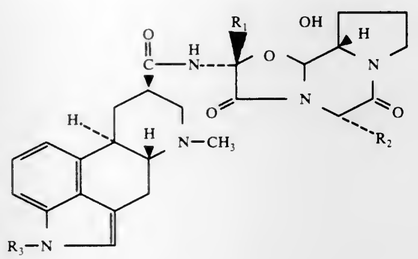
Claims priority, application United Kingdom, Sep. 2, 1976, 36366/76

Int. Cl.[2] **A61K** *31/495, 31/48*

U.S. Cl. 424—250 **8 Claims**

1. A method of treating a male animal suffering from oligospermia or asthenospermia which comprises administering a therapeutically effective amount of an active agent which consists of a compound or compounds of formula I,

I



wherein

R_1 is hydrogen or alkyl of 1 to 5 carbon atoms,

R_2 is hydrogen, alkyl of 1 to 5 carbon atoms or benzyl, and

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms,

to a male animal in need of such treatment.

4,122,178

PIPERAZINE COMPOUNDS

Gen Hasegawa, Tokyo; Takanori Oe, Oita, and Chiaki Kitami, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

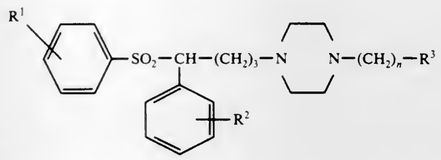
Filed Jun. 3, 1976, Ser. No. 692,395

Claims priority, application Japan, Jun. 3, 1975, 50-67324

Int. Cl.[2] **C07D** *295/04*

U.S. Cl. 424—250 **12 Claims**

1. A piperazine compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein each of R^1 and R^2 is a hydrogen atom, a halogen atom, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or a trifluoromethyl group; R^3 is an unsubstituted phenyl group or a phenyl group substituted by a halogen atom, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or a trifluoromethyl group; and *n* is 0, 1 or 2.

9. A pharmaceutical composition comprising at least one compound defined in claim 1 in combination with a pharmaceutically acceptable inert carrier or adjuvant, said compound being present in an analgetically effective amount.

4,122,179

ACID ADDITION SALTS OF VINCAMINE AND APOVINCAMINE

Davide Vegezzi, Massagno (Lugano), Switzerland, assignor to Enrico Corvi Mora, Piacenza, Italy

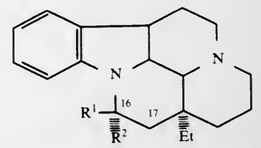
Filed May 27, 1977, Ser. No. 801,209

Claims priority, application Switzerland, Jun. 3, 1976, 7039/76; Jun. 3, 1976, 7040/76

Int. Cl.[2] **C07D** *519/04;* **A61K** *31/725;* **C08B** *37/06*

U.S. Cl. 424—180 **37 Claims**

1. A derivative of vincamine and apovincamine, having the therapeutical activity of these substances combined with an extended effect, characterized by having the following formula:



wherein, if R_1 is OH, R_2 is MeOOC, or, if R_1 is MeOOC, a double bond is present in the position $\Delta^{16,17}$, and X represents a group selected from the class comprising glucose-1-phosphate (neutral and acid salt), glucose-1-phosphate disodium, glucose-6-phosphate (neutral and acid salt and disodium adduct), 2,6-, 2,5-, 2,4-, 3,5-dihydroxybenzoic, p-toluensulfonic, clofibric, pivalic, 4-acetamido-butyric, 2-furoic, camphor-sulfonic, L(+)-O,O-dibenzoyltartaric, nicotinic, acetylsalicyclic, methylsulfuric, enanthic, p-chloro-phenoxyacetic, theophylline-7-acetic, caproic, capric, alginic, tannic, (D, L)-mandelic, indolyl-3-acetic, salicylic acid, hydroquinone, dihydroxyphenyl-alanine and pectin.

36. Pharmaceutical composition for treating cerebral arteriosclerosis having an extended effect in time and containing 40–120 mg per unit-dose of a vincamine derivative according to claim 1 with a nontoxic pharmaceutically acceptable carrier.

4,122,180

ISOQUINOLINES AND ANTI-DEPRESSANTS CONTAINING THEM

Rolf Pohlke; Wighard Strehlow; Helmut Mueller-Calgan, and Christoph Seyfried, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschraenkter Haftung, Fed. Rep. of Germany

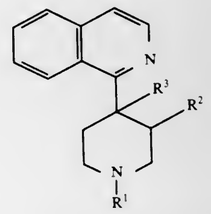
Filed Jun. 13, 1977, Ser. No. 806,240

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626629

Int. Cl.[2] **A61K** *31/47;* **C07D** *401/04*

U.S. Cl. 424—258 **12 Claims**

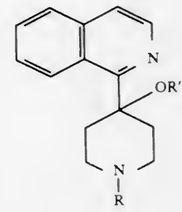
1. A compound of the formula



wherein R^1 is H or alkyl of 1–4 carbon atoms; R^2 is H and R^3 is OH or R^2 and R^3 collectively are a C—C bond; or a physiologically acceptable acid addition salt thereof.

10. A pharmaceutical composition comprising an amount per unit dosage effective to evoke a CNS antidepressant effect of a compound of claim 1, in admixture with a pharmaceutically acceptable carrier.

12. A compound of the formula



wherein R is H, alkyl of 1–4 carbon atoms or R''; R'' is alkanoyl or aroyl of up to 10 carbon atoms or benzyl; and R' is R'', Li or MgHal and Hal is Cl, Br or I.

4,122,181

ANALGESIC (3-MICOTINAMIDO-N(QUINOLYL) ANTHRANILATES AND METHOD OF USE

Henri Cousse, and Gilbert Mouzin, both of Castres, France, assignors to Pierre Fabre S.A., France

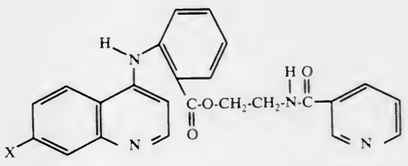
Filed Dec. 10, 1976, Ser. No. 749,230

Claims priority, application France, Dec. 19, 1975, 75 39410

Int. Cl.[2] **A61K** *31/47;* **C07D** *215/44*

U.S. Cl. 424—258 **9 Claims**

1. A compound selected from the group consisting of (a) a β-nicotinamido-ethyl-N-(4-quinolyl)anthranilate of the formula:



in which X in 7 position is a halogen atom or a trifluoromethyl group, and (b) a pharmaceutically acceptable acid addition salts thereof.

8. A pharmaceutical composition, suitable for use in the alleviation of pain, comprising a compound of claim 1, in an amount effective for said purpose, in association with a pharmaceutical carrier.

9. Method for the treatment of a patient suffering from pain, comprising administering to the patient a compound of claim 1 in an amount effective for the alleviation of said condition.

4,122,182

SUBSTITUTED HYDROXY PYRIDONES

Jeffrey Nadelson, Denville, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

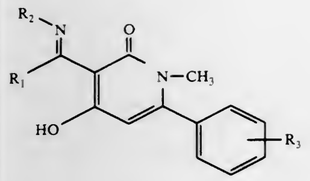
Continuation-in-part of Ser. No. 693,703, Jun. 7, 1976, abandoned. This application Feb. 22, 1977, Ser. No. 771,006

The portion of the term of this patent subsequent to May 17, 1994, has been disclaimed.

Int. Cl.[2] **C07D** *213/69;* **A61K** *31/44*

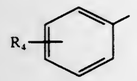
U.S. Cl. 424—263 **10 Claims**

1. A compound of the formula



where

R_1 represents straight chain lower alkyl or



where

R_4 represents hydrogen or halo having an atomic weight of about 19 to 36, and

R_2 represents lower alkyl, and

R_3 represents hydrogen or halo as defined above,

or a pharmaceutically acceptable salt thereof.

8. A method of treating tension which comprises administering to a mammal in need of said treatment a tranquilizing effective amount of a compound according to claim **1**.

4,122,183

OXAZOLE DERIVATIVES

Martin C. Neville, Tadley, and John P. Verge, Henley-on-Thames, both of England, assignors to Lilly Industries Limited, London, England

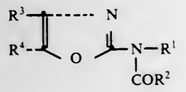
Division of Ser. No. 533,427, Dec. 16, 1974, abandoned. This application Feb. 9, 1977, Ser. No. 767,088

Claims priority, application United Kingdom, Dec. 17, 1973, 58351/73

Int. Cl.[2] **C07D** *413/04;* **A61K** *31/42, 31/55, 31/445*

U.S. Cl. 424—272 **9 Claims**

1. An oxazole of the formula

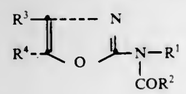


wherein:

R^1 and R^2 together are an alkylene group which with the carboxamido group to which they are attached complete a lactam ring having 5 to 7 ring atoms, and

R^3 and R^4 are independently hydrogen, C_{1-4} alkyl, C_{1-4} hydroxyalkyl, C_{3-8} cycloalkyl, C_{3-6} alkanoyloxyalkyl, phenyl, or phenyl substituted with one or two groups selected from halogen, trifluoromethyl, methyl, methoxy and nitro.

8. A method of treating an animal suffering from asthma which comprises administering to the afflicted animal a chemotherapeutically effective amount of an oxazole of the formula



wherein

R^1 and R^2 together are an alkylene group which with the carboxamido group to which they are attached complete a lactam ring having 5 to 7 ring atoms, and

R^3 and R^4 are independently hydrogen, C_{1-4} alkyl, C_{1-4} hydroxyalkyl, C_{3-8} cycloalkyl, C_{3-6} alkanoyloxyalkyl, phenyl or phenyl substituted with one or two groups selected from halogen, trifluoromethyl, methyl, methoxy and nitro.

4,122,184

BENZIMIDAZOLE INSECTICIDES

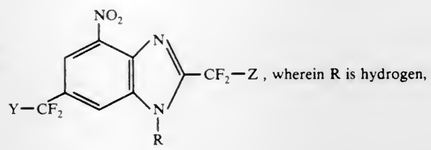
Quentin F. Soper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 397,496, Sep. 14, 1973, abandoned, which is a division of Ser. No. 190,294, Nov. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 812,449, Apr. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 726,540, May 3, 1968, abandoned. This application Dec. 21, 1977, Ser. No. 862,890

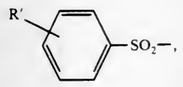
Int. Cl.[2] **A01N** *9/22*

U.S. Cl. 424—273 R **8 Claims**

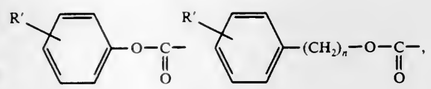
1. A method for killing insects of the order Coleoptera comprising the application to an insect habitat insecticidally effective amount of a benzimidazole represented by the following formula:



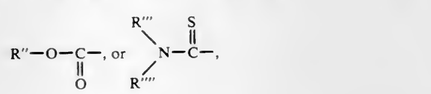
, wherein R is hydrogen,



,



,



wherein R′ is hydrogen, fluorine, chlorine, bromine, C_1-C_5 alkoxy, C_1-C_5 alkyl or nitro; and R″ is C_1-C_8 alkyl, halo-substituted C_1-C_5 alkyl, halo-substituted C_2-C_5 alkynyl or C_2-C_5 alkenyl; R‴ and R⁗ individually are hydrogen, C_1-C_5 alkyl or phenyl, and when taken together a pentamethylene or tetramethylene chain; and Y is F or H; Z is F, H, Cl, $-CF_3$ or $-CF_2-CF_3$; *n* is 1–3; and halo is a halogen having an atomic number below 36.

4,122,185

2-PHENYL- AND 2-BENZYL-N-[(TRICHLOROMETHYL)THIO]SUCCINIMIDES, AND FUNGICIDAL COMPOSITIONS THEREOF

Wilhelm Sandermann, Donaustauf; Heinz Eggensperger, Hamburg, and Karl-Heinz Diehl, Norderstedt, all of Germany, assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 1, 1977, Ser. No. 820,635

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1976, 2636076

Int. Cl.[2] **A01N** *9/12;* **C07D** *207/40*

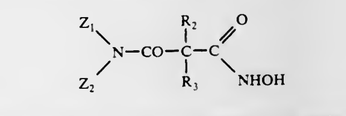
U.S. Cl. 424—274 **21 Claims**

1. An N-[(trichloromethyl)thio]succinimide having the structural formula



where R_1, R_2 and R_3 independently are hydrogen or alkyl having from 1 to 6 carbon atoms, and *n* is zero or the integer 1.

8. A fungicidal composition consisting of a fungicidally effective amount of at least one N-[(trichloromethyl)thio]succinimide having the structural formula



where R_1, R_2 and R_3 independently are hydrogen or alkyl having from 1 to 6 carbon atoms, and *n* is zero or the integer 1, and a carrier therefor.

4,122,186

ACETOHYDROXAMIC ACIDS

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Filed Mar. 17, 1977, Ser. No. 778,543

Claims priority, application United Kingdom, Mar. 23, 1976, 11710/76; Mar. 15, 1977, 06298/77

Int. Cl.[2] **A61K** *31/185;* **C07C** *83/10*

U.S. Cl. 424—315 **7 Claims**

1. An acetohydroxamic acid of the formula:

(in which R_2 and R_3, which may be identical or different, each represent the hydrogen atom or a C_1-C_6 alkyl group, Z_1 and Z_2, which may be identical or different, each represent a C_5-C_6 cycloalkyl group, a phenyl group or a phenyl group substituted by one or more C_1-C_4-alkyl groups, C_1-C_4-alkoxy groups, halogen, CF_3, NO_2 or NH_2 groups), its metal salts and acid addition salts when one or both of Z_1 and Z_2 contains a basic group.

7. A pharmaceutical composition, comprising, in association with a pharmaceutically acceptable excipient, at least one compound according to claim **1**, or one of its non-toxic metal salts or addition salts with acids.

4,122,187

SORBIC ACID COMPOSITION HAVING IMPROVED QUALITY

Yasuo Kotani, Hirakata, and Masayasu Hasegawa, Kyoto, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 30, 1977, Ser. No. 838,379

Claims priority, application Japan, Oct. 5, 1976, 51-120538; Jul. 1, 1977, 52-79325

Int. Cl.[2] **A01N** *9/24*

U.S. Cl. 424—317 **3 Claims**

1. A sorbic acid composition comprising (a) sorbic acid or a double salt thereof and (b) 0.05 to 5 parts by weight of glycerin to 100 parts by weight of said (a).

4,122,188

TREATMENT OF HYPERLIPOPROTEINEMIA WITH A DICHLOROACETATE SALT

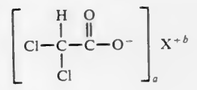
Peter W. Stacpoole, Nashville, Tenn., assignor to Vanderbilt University, Nashville, Tenn.

Continuation-in-part of Ser. No. 754,966, Dec. 28, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,677

Int. Cl.[2] **A61K** *31/19*

U.S. Cl. 424—317 **6 Claims**

1. The method of treating hyperlipoproteinemia in human patients in need of such treatment comprising adminstering orally to the patient-subject from 240 mgs. to 4000 mgs. per day a non-toxic, non-corrosive salt having the formula:



wherein:

X is any mono or divalent metallic cation;

a is an integer from 1 to 2, inclusive; and

b is an integer from 1 to 2, inclusive.

4,122,189

MEDICINE FOR RENAL DISEASES

Hidehumi Kurosawa, Toride, and Yoshiaki Tanaka, Sakado, both of Japan, assignors to Kaken Chemical Co., Ltd., Tokyo, Japan

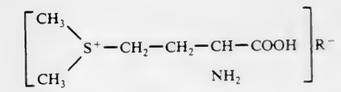
Filed Mar. 21, 1977, Ser. No. 779,778

Claims priority, application Japan, Mar. 31, 1976, 51-34364

Int. Cl.[2] **A61K** *31/195*

U.S. Cl. 424—319 **4 Claims**

1. A method for treating a human exhibiting at least one of the disorders of excessive urinary protein and secondary hyper lipoidemia due to a renal disease which comprises internally administering to said human a methyl methionine sulfonium salt having the formula



where R^- represents the chloride or iodide anion in an amount effective to produce at least one of anti-excessive urinary protein therapy and anti-hyper lipoidemia therapy during the course of said renal diseases.

4,122,190

TREATING ACROMEGALY

Ioana Lancranjan, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Oct. 3, 1977, Ser. No. 838,631

Claims priority, application United Kingdom, Oct. 4, 1976, 41072/76

Int. Cl.[2] **A61K** *31/165, 31/415*

U.S. Cl. 424—324 **9 Claims**

1. A method of treating acromegaly in animals which comprises administering an anti-acromegalic effective amount of an α-adrenoceptor agonist selected from the group consisting of N-amidino-2-(2,6-dichlorophenyl) acetamide and clonidine to an animal in need of such treatment.

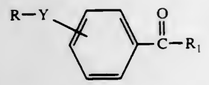
4,122,191

ANTIRHINOVIRUS AGENTS

Roger Alan Parker, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Dec. 20, 1976, Ser. No. 751,140
Int. Cl.[2] A61K *31/12*
U.S. Cl. 424—331 **15 Claims**

1. A method for prophylaxis or treatment of a rhinovirus infection which comprises administering to a host susceptible to a rhinovirus infection an antirhinovirus effective amount of a compound of the formula



wherein Y is oxygen or divalent sulfur; R_1 is hydrogen or a straight or branched lower alkyl group having from 1 to 4 carbon atoms; and R is a straight or branched saturated hydrocarbon group having from 6 to 20 carbon atoms or a straight or branched unsaturated hydrocarbon group having from 6 to 20 carbon atoms and 1 to 4 double bonds when R has from 10 to 20 carbon atoms and 1 or 2 double bonds when R has from 6 to 9 carbon atoms.

4,122,192

DISINFECTANT AND STERILIZING PREPARATIONS

Adrian Neville Fellows, 48 Bury New Rd., Ramsbottom, Bury, Lancashire, England

Filed Apr. 26, 1977, Ser. No. 790,981
Claims priority, application United Kingdom, Apr. 26, 1976, 16887/76; Jan. 17, 1977, 1747/77
Int. Cl.[2] A01N *9/24*
U.S. Cl. 424—333 **57 Claims**

1. A solid composition suitable for preparing a microbiocidal solution or dispersion, which comprises:

(a) about 5–30% by weight of an active monomeric saturated dialdehyde having from 2 to 6 carbon atoms sorbed on at least one particulate carrier material, and

(b) an effective amount of a dry alkalinating agent or an agent capable of yielding an alkalinating agent on admixture with a solvent for the dialdehyde, the carrier material being capable of sorbing the dialdehyde to give a substantially dry, free-flowing particulate material that on subsequent admixture with a solvent for the dialdehyde releases substantially all of the dialdehyde.

4,122,193

DRUGS OR MEDICINES FOR INFLUENCING THE CENTRAL NERVOUS SYSTEM

Arthur Scherm, Bad Homburg, and Dezsö Peteri, Hammersbach, Marköbel, both of Germany, assignors to Merz & Co., Germany

Filed Apr. 20, 1973, Ser. No. 352,893
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1972, 2219256; Apr. 12, 1973, 2318461
Int. Cl.[2] A01N *9/20, 9/24*
U.S. Cl. 424—330 **4 Claims**

1. A composition which influences the central nervous system and is especially useful in the treatment of hyperkinesis, having an active ingredient an effective antihyperkinesic amount of 1-amino-3, 5-dimethyl-adamantane or a pharmaceutically acceptable salt thereof, together with a pharmaceutically-acceptable carrier therefor.

3. A method of treating a living mammalian body suffering from hyperkinesis comprising the step of administering an anti-hyperkinesically effective amount of a composition of claim 1 to said mammalian body.

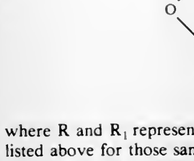
4,122,194

ARYL SULPHUR COMPOUNDS AS ANTIASTHMATICS

Delme Evans, Chalfont St. Peter; John Christopher Saunders, Maidenhead, and William Robert Nigel Williamson, Slough, all of England, assignors to Lilly Industries Limited, London, England

Filed Sep. 30, 1977, Ser. No. 838,276
Claims priority, application United Kingdom, Oct. 14, 1976, 42683/76
Int. Cl.[2] A61K *31/10*
U.S. Cl. 424—337 **14 Claims**

2. A method of treating a mammal susceptible to asthma which comprises administering a therapeutically effective amount of a compound of formula (I),



(I)

wherein R^1 is C_{1-4} alkyl; Ar is a phenyl group optionally substituted by halogen or C_{1-4} alkyl and Z is S or SO, or a pharmaceutically acceptable salt thereof, to the mammal.

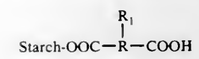
4,122,195

FIXATION OF APM IN CHEWING GUM

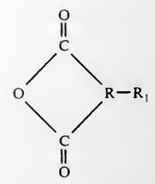
Bernard Joseph Bahoshy, Mahopac, and Robert Edward Klose, West Nyack, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 24, 1977, Ser. No. 761,836
Int. Cl.[2] A23G *3/30*
U.S. Cl. 426—3 **7 Claims**

1. A chewing gum composition which comprises gum base, flavor, a bulking agent and L-aspartyl-L-phenylalanine methyl ester wherein the L-aspartyl-L-phenylalanine methyl ester is fixed in an encapsulating agent and the ratio of encapsulating agent to L-aspartyl-L-phenylalanine methyl ester is between 10:1 to about 2:1 and the encapsulating agent consists of the reaction product of a compound containing a polyvalent metallic ion, with an ungelatinized starch acid-ester of a substituted dicarboxylic acid, such starch acid-esters represented diagrammatically by the following formula:



where R is a radical selected from the class consisting of dimethylene and trimethylene radicals, and R_1 is a hydrocarbon constituent selected from the class consisting of alkyl, alkenyl, aralkyl or aralkenyl groups, the above-described ungelatinized starch acid-esters are prepared by reacting an ungelatinized starch, in an alkaline medium, with a substituted cyclic dicarboxylic acid anhydride having the following formula:



where R and R_1 represent the same substituent groups as are listed above for those same symbols, substituted cyclic dicarboxylic anhydrides falling within this formula are the substituted succinic and glutaric acid anhydrides whereby the conversion of L-aspartyl-L-phenylalanine methyl ester to diketopiperazine is greatly reduced.

4,122,196

PROCESS FOR THE MANUFACTURE OF YEAST GLYCAN

Ernest Aleck Robbins, High Ridge, and Robert Dudley Seeley, Crestwood, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Continuation-in-part of Ser. No. 524,653, Nov. 18, 1974, abandoned. This application Aug. 2, 1976, Ser. No. 710,783
Int. Cl.[2] A23J *1/18*
U.S. Cl. 426—60 **14 Claims**

1. A process for the production of yeast glycan comprising the steps of:

A. autolyzing live yeast cells,

B. separating the autolyzed yeast cells into solubles fraction and an insoluble cellular debris fraction which contains unwanted constituents whereby the debris fraction does not have the desired ability to thicken food systems and is highly flavored,

C. comminuting the insoluble cellular debris fraction in an aqueous system,

D. extracting said unwanted constituents from the comminuted cellular debris fraction in an aqueous system at a pH from about 3 to about 12, a temperature of about 10° to about 80° C for up to about 60 minutes to yield a solubles portion and an insolubles portion from which said unwanted constituents have been released,

E. separating the solubles portion from the insolubles portion of the extracted cellular debris fraction, and

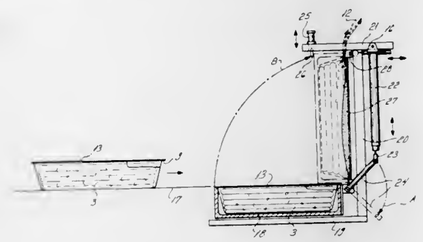
F. recovering the insolubles portion as yeast glycan.

4,122,197

METHOD AND APPARATUS FOR PACKAGING FOOD

Alfred Robert Krugmann, Borsigstrasse 9, Reinbek, Germany (2057)

Filed Jul. 14, 1977, Ser. No. 815,625
Int. Cl.[2] B65B *55/00*
U.S. Cl. 426—232 **20 Claims**



1. A method of packaging foodstuff which includes a liquid constituent comprising: placing the foodstuff in a tray means which is in a horizontal position with its open face upwards; applying a flexible cover to the tray means; sealing the cover to the edge of the tray means but leaving a gap between that edge and the cover, the gap extending over only a limited part of the periphery of the tray means; turning the tray means from the horizontal position into an at least substantially vertical position, with the tray means so positioned that said gap is uppermost; when the tray means is in said at least substantially vertical position pressing the cover inwardly of the tray means such that the level of liquid in the tray means rises towards said gap and gas in the tray means is displaced therefrom through said gap; sensing the arrival of said liquid level at said gap; and, in response to said sensing, sealing said gap to completely close the tray means.

4,122,198

PROCESS FOR PREPARING A COOKED DOUGH PRODUCT

Lawrence W. Wisdom, Dallas, and Ray M. Trinidad, Arlington, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Mar. 16, 1976, Ser. No. 667,458
Int. Cl.[2] A21D *6/00*
U.S. Cl. 426—439 **9 Claims**

1. A method for making edible dough products from a farinaceous dough containing from about 10 to about 60 weight percent water formed into a sheet which comprises selectively applying heat to a minor portion of the surface of said dough without significantly heating or cooking the remaining, major portion of the surface of said dough, said heating being sufficient to toast said minor portion of the surface without the heat used for toasting reducing the total moisture content of the dough by more than about 10 weight percent, and said minor portion being sufficient to impart a toasted flavor to the dough when subsequently fried or baked, and subsequently frying or baking said dough having said major portion of the surface which is not significantly heated or cooked, to provide a cooked dough product having said minor portion of the surface toasted such that in the final cooked product, the toasted area gives the entire cooked product a toasted flavor, when the product is consumed.

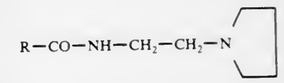
4,122,199

AMIDES OF PYRROLIDINOETHYLAMINE WHICH CAN BE USED IN TREATMENT OF COUGHS

Henri Cousse; Bernard Bonnaud; Jean-Pierre Tarayre, and Silvano Casadio, all of Castres, France, assignors to Pierre Fabre S.A., France

Filed Aug. 16, 1976, Ser. No. 714,764
Claims priority, application France, Apr. 9, 1976, 76 10754
Int. Cl.[2] A61K *31/40*
U.S. Cl. 424—274 **17 Claims**

1. Method for the treatment of a patient suffering from cough, comprising administering to the patient a compound selected from the group consisting of (a) a pyrrolidinoethylamine amide of the formula:



wherein



is an acyl radical of a phenylacetic, α-phenyl-α-lower-alkyl (1–5 carbon atoms) acetic, diphenylacetic, benzilic, diphenyl-α-chloroacetic, and α-lower-alkoxy-α,α-diphenylacetic, and (b) a pharmaceutically acceptable acid addition salt thereof, in an amount effective for the alleviation of said condition.

4,122,200

6',2-(2'ARYLCHROMONYL) PROPIONIC ACIDS, AND ANALGESIC AND ANTI-INFLAMMATORY DERIVATIVES THEREOF

Philippe Briet; Jean-Jacques Berthelon; Jean-Claude Depin, all of Lyons, and Eugéne Boschetti, Venissieux, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyons, France

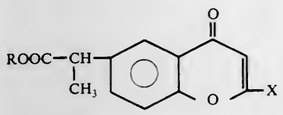
Division of Ser. No. 631,401, Nov. 12, 1975, Pat. No. 4,097,582. This application Aug. 9, 1977, Ser. No. 823,144

Claims priority, application France, Nov. 20, 1974, 74 38080; Oct. 10, 1975, 75 31024

Int. Cl.[2] **A01N** *9/00;* **C07D** *333/24*

U.S. Cl. 424—275 **8 Claims**

1. A carboxychromonyl compound having the formula



in which X is thienyl and R is selected from the group consisting of hydrogen, lower alkyl, lower omega-hydroxyalkyl, and lower dialkylaminoalkyl, together with (a) salts of said compound with pharmaceutically acceptable acids when R is lower dialkylaminoalkyl and (b) salts of said compound with pharmaceutically acceptable mineral and organic bases when R is hydrogen.

6. An analgesic and anti-inflammatory pharmaceutical composition which comprises (a) the carboxychromonyl compound claimed in claim 1 in an amount sufficient to provide analgesic and anti-inflammatory activity together with (b) a pharmaceutically acceptable diluent therefor.

4,122,201

METHOD OF TREATING ASTHMA WITH 4,6-DIHYDROXY-2H-PYRAN-2-ONES

Lawrence William Chakrin, Haddonfield, N.J.; Kenneth Means Snader, Hatboro, Pa., and Chester Rhodes Willis, Kingston, Jamaica, assignors to SmithKline Corporation, Philadelphia, Pa.

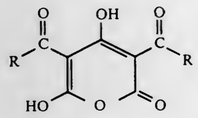
Continuation-in-part of Ser. No. 522,837, Nov. 11, 1974, abandoned. This application Feb. 19, 1976, Ser. No. 659,307

Claims priority, application United Kingdom, Oct. 13, 1975, 41844/75

Int. Cl.[2] **A61K** *31/365*

U.S. Cl. 424—279 **3 Claims**

1. The method of inhibiting the symptoms of asthma which comprises administering to an animal in need thereof a therapeutically effective amount for producing said inhibition of a compound of the formula:



wherein R is lower alkyl, straight or branched chain, of from 1 to 6 carbon atoms, the R's being identical.

4,122,202

AMINO-3H-ISOBENZOFURANONES N-SUBSTITUTES AND THEIR THERAPEUTIC APPLICATION

Francois Fauran, Castanet-Tolosan; Claude Feniou, Pessac; Annie Thibault, Le Bouscat, and Gisele Prat, Talence, all of France, assignors to Societe Cortial, Paris, France

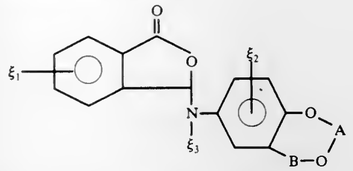
Filed Jul. 8, 1976, Ser. No. 703,602

Claims priority, application France, Jul. 9, 1975, 75 21504; Jul. 1, 1976, 76 20048; Jul. 1, 1976, 76 20049

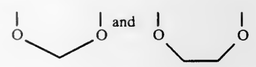
Int. Cl.[2] **A61K** *31/335;* **C07D** *319/08, 317/44;* **A61K** *31/36*

U.S. Cl. 424—278 **9 Claims**

1. A compound of the formula:



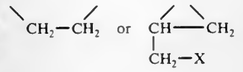
wherein ξ_1 is H or at least one substituent selected from the group consisting of OH, OMe, and $OCOCH_3$, and



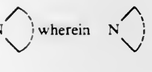
which are attached to two contiguous carbons of the benzene ring; ξ_2 is H or at least one substituent selected from the group consisting of C_1-C_4 lower alkyl, $COOCH_3$, COOH and the salts thereof of pharmacologically compatible bases; ξ_3 is H, C_1-C_4 lower alkyl, benzyl; A is



and R_1 and R_2 can be the same or different and are selected from the group consisting of hydrogen, C_1-C_4 lower alkyl, carbocyclic aryl, carbocyclicarylalkyl, and cycloalkyl and wherein R_1 and R_2 form, with the contiguous carbon atom, an alicyclic ring comprising at most 7 carbon atoms or A is



wherein X is halogen, OH, $OCOCH_3$, CH_2CH_2N 

NH_2, $NH-\overset{\overset{O}{\|}}{C}-NH_2$, or  wherein

represents a secondary or tertiary acyclicamine or cyclicamine function; and B is a single bond or

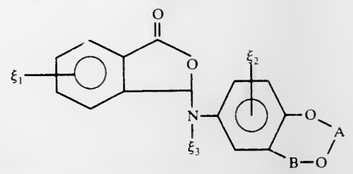


wherein R_1 and R_2 are as defined above with the proviso in the last case that ξ_2 be selected from the group consisting of H, C_1-C_4 lower alkyl and that A is

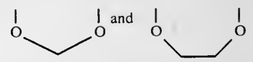


wherein R_1 and R_2 are as defined above.

4. A compound of the formula



wherein ξ_1 is H or at least one substituent selected from the group consisting of OH, OMe and $OCOCH_3$, and



which are attached to two contiguous carbons of the benzene ring;

ξ_2 is H or at least one substituent selected from the group consisting of C_1-C_4 lower alkyl, $COOCH_3$, COOH and the salts thereof of pharmacologically compatible bases;

ξ_3 is H, C_1-C_4 lower alkyl, or benzyl; A is



and R_1 and R_2 can be the same or different and are selected from the group consisting of hydrogen, C_1-C_4 lower alkyl, carbocyclicaryl, carbocyclicarylalkyl, and cycloalkyl and wherein R_1 and R_2 form, with the contiguous carbon atom, an alicyclic ring comprising at most 7 carbon atoms;

and B is a single bond.

6. A composition for the treatment of pain, which comprises: an analgesically effective amount of the compound of claim combined with a pharmaceutically acceptable vehicle.

7. A composition for the treatment of inflammation, which comprises:

an anti-inflammatory effective amount of the compound of claim **1** combined with a pharmaceutically acceptable vehicle.

8. A composition for the treatment of pain, which comprises: an analgesically effective amount of the compound of claim **4** combined with a pharmaceutically acceptable vehicle.

4,122,203

FIRE PROTECTIVE THERMAL BARRIERS FOR FOAM PLASTICS

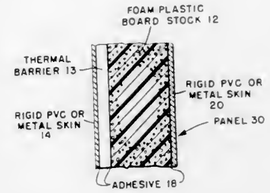
Joel S. Stahl, 746 Golfview Ave., Youngstown, Ohio 44512

Filed Jan. 9, 1978, Ser. No. 868,198

Int. Cl.[2] **B32B** *5/16, 5/18*

U.S. Cl. 428—309 **23 Claims**

8. A fire-protective insulating laminate comprising a foam plastic and bonded thereto a thermal barrier comprising a cured thermosetting synthetic resinous material having dispersed therein an effective amount of a finely divided, crystalline, hydrated inorganic salt extender, sufficient to provide a predetermined level of fire resistance as determined specifically by a testing procedure designated ASTM E-119-76, or other fire resistance testing procedures, said hydrated extender being characterized by having at least 35% by weight water of crystallization, the major portion of which is released upon



heating to a temperature in the range from about 200° F. but below 600° F.

4,122,204

N-(4-TERT-BUTYLPHENYLTHIOSULFENYL)-N-ALKYL ARYL CARBAMATE COMPOUNDS

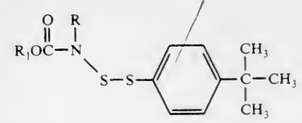
Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jul. 9, 1976, Ser. No. 703,822

Int. Cl.[2] **C07D** *307/86;* **A01N** *9/12;* **C07D** *149/43*

U.S. Cl. 424—285 **15 Claims**

1. A compound of the formula:



wherein:

R is alkyl of 1–8 carbon atoms;

R_1 is 2,3-dihydro-7-benzofuranyl, 2,2-dimethyl-2, 3-dihydro-7-benzofuranyl, 2-methyl-2,3-dihydro-7-benzofuranyl or phenyl substituted with one or more alkoxy groups of 1–8 carbon atoms.

6. A miticidal and insecticidal composition comprising an acceptable carrier and as the active toxicant an insecticidally or miticidally effective amount of a compound according to claim **1**.

4,122,205

SWEETENING COMPOSITIONS CONTAINING PROTEIN SWEETENERS

Malcolm Leonard Ernest Burge, Thatcham, and Zdenek Nechutny, Reading, both of England, assignors to Tate & Lyle Ltd., London, England

Filed Jul. 2, 1976, Ser. No. 702,199

Claims priority, application United Kingdom, Jul. 4, 1975, 28234/75; Jul. 4, 1975, 28218/75; Jul. 4, 1975, 28216/75

Int. Cl.[2] **A23L** *1/236*

U.S. Cl. 426—548 **19 Claims**

1. A sweetening composition comprising a protein sweetener selected from the group consisting of thaumatin and monellin together with a protein sweetener after-taste reducing amount at which there is no significant contribution to the sweetness of the composition of at least one modifier selected from the group consisting of L-gulose, D-fucose, xylitol, D-arabitol, lactulose, glucoheptose, D(+)-galactose, D(+)-galactosamine or salt thereof.

4,122,206

CORN, GRAIN SORGHUM AND MILLET PREMIX AND METHOD OF PREPARING SAME

Russell C. Hoseney, 852 Church, Manhattan, Kans. 66502

Filed Aug. 12, 1976, Ser. No. 713,700
Int. Cl.[2] A21D *10/00, 2/32*
U.S. Cl. 426—555 11 Claims

1. A method of preparing an uncooked premix for incorporation into chemically leavened doughs or batters in lieu of at least a portion of flour conventionally used therein, said method comprising the steps of:

providing a quantity of milled grain taken from the group consisting of corn, grain sorghum, millet and mixtures thereof, the starch content of said quantity of grain being substantially unmodified and ungelatinized;

hydrating said grain with an agent consisting essentially of water to provide a substantially homogenous, hydrated mixture thereof;

removing at least a portion of the moisture from said homogenous mixture, such that the total moisture level of said grain ranges from about 5 to 20% by weight,

said hydrating and moisture removal steps being carried out at temperature levels below that sufficient to substantially gelatinize the starch content of said grain; and

adding from about 0.1 to 1.5% by weight of unrefined soybean lecithin to the mixture, based upon the quantity of the mixture taken as 100%.

4,122,207

FLAVOR EXHANCER AND METHOD OF PREPARING THE SAME

Vincent Nicolosi, 17552 Ventura Blvd., Encino, Calif. 91316

Filed Nov. 29, 1976, Ser. No. 746,053
Int. Cl.[2] A23L *1/221, 1/223*
U.S. Cl. 426—615 6 Claims

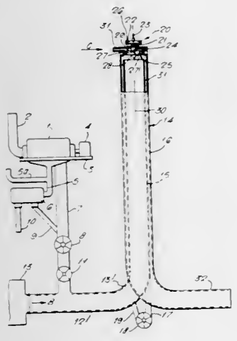
1. A food flavor enhancing composition comprising cooked, dried and ground artichoke pulp in the range of 90 to 98 percent by weight; cooked, dried and ground escarole in the range of 5 to 1 percent by weight; and cooked, dried and ground fava beans in the range of 5 to 1 percent by weight.

4,122,208

METHOD AND AN APPARATUS FOR PRODUCING AND DRYING A MEAL OF COOKED ANIMAL MATERIAL, ESPECIALLY FISH AND FISH PULP

Inge Magnus Tronstad, Asker, Norway, assignor to Myrens Verksted A/S, Oslo, Norway

Filed Apr. 12, 1977, Ser. No. 786,856
Claims priority, application Norway, Apr. 14, 1976, 761323
Int. Cl.[2] A22C *25/00, 17/00*
U.S. Cl. 426—641 9 Claims



5. A method of treating cooked animal material which is pressed for separation of liquid therefrom, comprising the steps of:

(a) disintegrating the cooked and pressed material into meal particles,

(b) transporting the disintegrated material through a drying tower, consisting of vertically extending riser and down pipes, in a stream of hot drying air having a temperature of approximately 200°-300° C. so that the material enters the riser and exits from the down pipes.

(c) introducing concentrated stick-water into the stream at the top of the drying tower, where the stream is subjected to a change of direction from a rising condition to a sinking condition,

(d) conveying the resultant mixture of meal, stick-water and hot air through remaining parts of the drying tower for further drying of the meal particles and the stick-water, the meal and air leaving the drying tower at a temperature of approximately 100° C., and

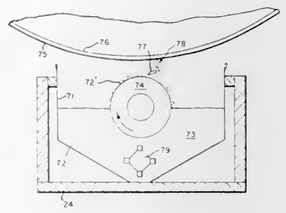
(e) separating the meal and the air in a cyclone connected to an outlet of the drying tower.

4,122,209

MAGNETIC IMAGE DECORATOR

Richard Dale Kinard, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1977, Ser. No. 788,669
Int. Cl.[2] G03G *13/09*
U.S. Cl. 427—18 8 Claims



5. A process of applying magnetically attractable toner particles to a surface containing a latent magnetic image comprising supplying said toner particles to a rotating magnetic roll, and causing said toner particles to flow in a stable constant cross section fluidized wave which wave is uniform in height without significant oscillation or undulation, over a knife blade the knife edge of which is facing into the direction of flow of the toner disposed between said magnetic roll and said surface containing a latent magnetic image whereby a portion of said magnetically attractable toner particles come into contact with and are magnetically held by said surface containing a latent magnetic image.

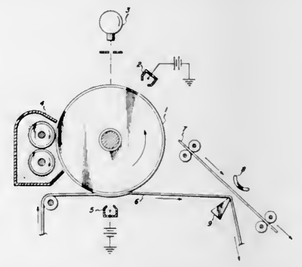
4,122,210

ELECTROSTATIC POWDER IMAGE TRANSFER USING PAIR OF ELECTRODES, ONE POINTED, ONE BLUNT

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 11, 1977, Ser. No. 840,890
Int. Cl.[2] B05D *1/06*
U.S. Cl. 427—24 13 Claims

1. A method for transferring a charged particulate image from a non-absorbent dielectric transfer sheet to an absorbent receiver sheet comprising placing said transfer sheet and receiver sheet between a pair of electrodes having a potential difference sufficient to transfer said charged particulate image from said transfer sheet to said receiver sheet, one of said electrodes being a pointed electrode positioned behind said transfer sheet having an emitting angle of between 0 degrees and about 90 degrees so as to provide high fields at the emitting surface of said electrode and a second blunt electrode positioned behind said receiver sheet having an emitting angle of between about 90° degrees and 180° degrees so as to provide low voltage gradients at the emitting surface of said electrode.



3. The method of claim 1 wherein the pointed electrode has an angle of from about 5° to about 20°.

4,122,211

PROCESS FOR COATING ELECTRIC OR ELECTRONIC ELEMENTS

Toyoji Kikuga; Masayuki Nakamura; Tateo Goto, and Tosaku Amakawa, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Dec. 17, 1976, Ser. No. 751,627
Claims priority, application Japan, Dec. 25, 1975, 50/153958
Int. Cl.[2] B05D *1/04*
U.S. Cl. 427—27 9 Claims

1. An improved coating process for electronic elements which comprises the steps of:

(1) forcibly impregnating the element with a liquid thermosetting resin,

(2) applying a powdered resin to the element before the liquid thermosetting resin is dry by electrostatic fluidized bed dip coating, and

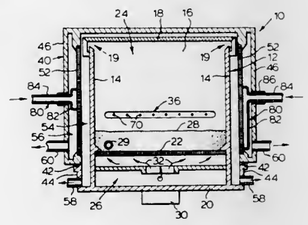
(3) heating the element to cure the liquid thermosetting resin.

4,122,212

ELECTROSTATIC POWDER COATING

Jorg-Hein Walling, St. Hubert, and John Alan Jukes, Pierrefonds, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 677,222, Apr. 15, 1976, Pat. No. 4,073,265.
This application Nov. 28, 1977, Ser. No. 855,311
Int. Cl.[2] B05D *1/00*
U.S. Cl. 427—27 3 Claims



1. A method of operating an electrostatic fluidized bed coater, comprising the steps of:

passing the air from the cloud chamber of the coater into an inner exhaust chamber adjacent thereto;

thereafter passing the air into an outer exhaust chamber separated from the inner exhaust chamber by a porous wall plate; and

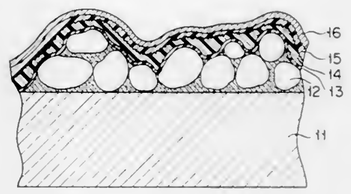
removing the powder collected in the inner exhaust chamber.

4,122,213

METHOD FOR METALLIZING A PHOSPHOR SCREEN FOR A CATHODE RAY TUBE

Takeo Ito, Kumagaya, and Hatsuo Tsukagoshi, Fukaya, both of Japan, assignors to Tokyo Shibaura Electric Company, Limited, Tokyo, Japan

Filed Feb. 26, 1976, Ser. No. 661,720
Claims priority, application Japan, Mar. 3, 1975, 50/25816; Mar. 31, 1975, 50/37826
Int. Cl.[2] B05D *5/12*
U.S. Cl. 427—64 6 Claims



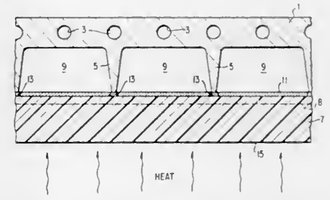
2. A method of metallizing a phosphor screen for a cathode ray tube including the steps of forming a volatizable substrate on the surface of the phosphor screen and depositing a metal layer upon the substrate, followed by heating for volatilizing the substrate, characterized in that the substrate consists of a layer of a silane compound, a layer of acrylic resin formed on the silane compound layer and a layer of a water-soluble polymer formed on the acrylic resin layer, the silane compound being selected from the group consisting of glycidoxypropyltrimethoxy silane, γ-aminopropyl triethyoxy silane andd γ-methacryloxy propyl trimethoxy silane.

4,122,214

SOLAR CELL COLLECTOR AND METHOD FOR PRODUCING SAME

John C. Evans, Jr., North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 770,869, Feb. 22, 1977, Pat. No. 4,082,569.
This application Oct. 21, 1977, Ser. No. 844,346
Int. Cl.[2] B05D *5/12;* H01L *31/18*
U.S. Cl. 427—75 7 Claims



1. A method of establishing a transparent current collector system on the surface of a photovoltaic device, which comprises:

coating a photovoltaic substrate with a conductive mixed metal layer;

attaching a heat sink having portions protruding from one of its surfaces which define a continuous pattern in combination with recessed regions among said protruding portions

to said substrate such that said protruding portions of said heat sink are in contact with the conductive layer of said substrate; and

heating said substrate while simultaneously oxidizing the portions of the conductive layer exposed to a gaseous oxidizing substance forced into said recessed regions of said heat sink, thereby creating a transparent metal oxide layer on said substrate containing a continuous pattern of highly conductive metal channels in said layer.

4,122,215

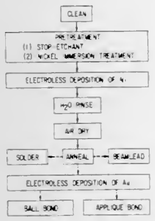
ELECTROLESS DEPOSITION OF NICKEL ON A MASKED ALUMINUM SURFACE

Frederick Vratny, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1976, Ser. No. 754,124

Int. Cl.[2] C23C *3/02*

U.S. Cl. 427—92 **10 Claims**



1. A process for pretreating a body prior to electroless deposition of nickel, said body having a surface of aluminum or aluminum alloy patterned with a mask, said aluminum or aluminum alloy having aluminum oxide thereof, said process comprising:

(a) cleaning said surface;

(b) subjecting said surface to a stop-etchant which removes substantially only said aluminum oxide from said aluminum or aluminum alloy and simultaneously activates said surface for subsequent deposition of nickel thereon; and

(c) without rinsing, subjecting said surface to a nickel immersion treatment which further activates said aluminum or aluminum alloy for subsequent deposition of nickel thereon and deactivates said mask against subsequent deposition of nickel thereon.

4,122,216

FERRO-MAGNETIC ACICULAR PARTICLES FOR RECORDING MEDIUM AND PROCESS FOR PREPARING THE SAME

Akira Okazoe, Ibaragi, Japan, assignor to Hitachi Maxell, Ltd., Japan

Continuation of Ser. No. 633,365, Nov. 19, 1975, abandoned, which is a continuation of Ser. No. 551,651, Feb. 21, 1975, abandoned, which is a continuation of Ser. No. 273,165, Jul. 19, 1972, abandoned. This application Jun. 30, 1977, Ser. No. 811,951

Claims priority, application Japan, Oct. 19, 1971, 46-83071; Feb. 21, 1975, 50-53786

Int. Cl.[2] C01G *49/08;* **C04B** *35/26*

U.S. Cl. 427—128 **8 Claims**

3. A process for preparing ferro-magnetic, acicular particles for a recording medium which comprises introducing an oxidizing gas into a dispersion containing metal hydroxides, the metal component of said metal hydroxides consisting essentially of ferrous iron and cobalt in a molar ratio of from 2:1 to 2.7:0.3, an aqueous alkaline solution and dispersed magnetic, acicular particles of γ-Fe_2O_3 or Fe_3O_4, not less than about 0.5 mole equivalent of an alkali being added to said solution per mole of metal ion in said solution and epitaxially crystallizing metal oxides resulting from the oxidation of said metal hydroxides on surfaces of the magnetic, acicular particles of γ-Fe_2O_3 or Fe_3O_4.

4,122,217

PREVENTION OF WATER STAINING OF ALUMINUM

Robert J. Sturwold; Walter Earl Utz, both of Cincinnati, Ohio; Nicholas Christ, Richmond, Va.; William R. Ford, Jr., Richmond, Va., and George P. Koch, Richmond, Va., assignors to Emery Industries, Inc., Cincinnati, Ohio and Reynolds Metals Co., Richmond, Va.

Continuation of Ser. No. 602,816, Aug. 7, 1975, abandoned. This application Sep. 12, 1977, Ser. No. 832,258

Int. Cl.[2] C21D *1/00*

U.S. Cl. 427—156 **15 Claims**

1. A method in the manufacture, transportation or storage of aluminous metal sheet, wherein water staining of such sheet is prevented by applying to the surface of the sheet, in neat form, a continuous film of at least 0.5 milligram per square foot of a protective composition having a hydroxyl value greater than 15 and consisting essentially of a product derived from:

(a) an aliphatic or cycloaliphatic polybasic acid containing from 18 to 72 carbon atoms and 2 to 4 carboxyl groups, and

(b) a polyol partial ester derived from a C_{12}-C_{22} aliphatic monocarboxylic acid and a polyol selected from the group consisting of aliphatic polyols and ether polyols obtained by the condensation of two or more aliphatic polyol molecules or by ethoxylation of an aliphatic polyol, said polyols containing from 3 to 30 carbon atoms and 3 to 22 hydroxyl groups, with not more than 70% of the available hydroxyl groups esterified, the weight ratio of (a) to (b) ranging from 20:1 to 1:4.

4,122,218

METHOD AND APPARATUS FOR COATING A WEB

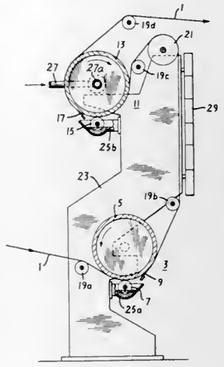
Mats Gustav Daniel Boström; Gösta Hudson Hansson, and Hans-Erik Lind, all of Karlstad, Sweden, assignors to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Dec. 23, 1974, Ser. No. 515,984

Claims priority, application Sweden, May 16, 1974, 74965111

Int. Cl.[2] B05C *13/02*

U.S. Cl. 427—209 **9 Claims**



1. A method of continuously coating both sides of a traveling web with at least one aqueous coating composition comprises the steps of:

(a) bringing one side of the web into contact with a first backing roll at a first coating station;

(b) applying an aqueous coating composition to the other side of the web at the first coating station;

(c) passing the web between the first backing roll and a first means for smoothing the coating at the first coating station, while maintaining the first backing roll in contact with the web and the first smoothing means in contact with the coating composition applied to the other side of the web;

(d) juxtaposing the other side of the web with a surface of a second backing roll at a second coating station;

(e) applying an aqueous coating composition to the one side of the web at the second coating station;

(f) passing the web between the second backing roll and a second means for smoothing the coating at the second coating station, while maintaining the other side of the web in juxtaposition with the surface of the second backing roll and the second smoothing means in contact with the coating composition applied to the one side of the web; and

cooling the surface of the second backing roll so that moisture in the aqueous coating composition applied to the web at the first coating station forms at least a part of a film of condensate maintained on the surface of the second backing roll, the coating composition applied to the web at the first coating station being in contact with the film of condensate when the other side of the web is juxtaposed with the surface of the second backing roll.

3. An apparatus for continuously coating both sides of a traveling web with at least one aqueous coating composition comprising:

(a) a first coating station including

(i) a first backing roll,

(ii) first means for smoothing a coating, and

(iii) first means for applying an aqueous coating composition to a side of the traveling web, the first backing roll and the first smoothing means being arranged so that the traveling web passes between them with the backing roll contacting the web and the smoothing means contacting the aqueous coating composition applied to the web by the first applying means; and

(b) a second coating station spaced from the first coating station in the direction of travel of the web including

(i) a second backing roll,

(ii) second means for smoothing a coating,

(iii) second means for applying an aqueous coating composition to a side of the traveling web, and

(iv) means for cooling a surface of the second backing roll so that moisture in the aqueous coating composition applied to the web at the first coating station forms at least a part of a film of condensate maintained on the cooled surface of the second backing roll,

the second backing roll and the second smoothing means being arranged so that the traveling web passes between them with the second smoothing means contacting the aqueous coating composition applied to the web by the second applying means,

the coating stations being arranged so that the aqueous coating composition applied at the first coating station is applied to one side of the web and the aqueous coating composition applied at the second coating station is applied to the other side of the web, the one side of the web being juxtaposed with the cooled surface of the second backing roll at the second coating station so that the coating composition on the one side of the web is in contact with the film of condensate on the cooled surface of the second backing roll.

4,122,219

FLOCKING OF TEXTILE SHEET MATERIALS

Peter Fickeisen, Dirmstein; Gert Elschnig, Ludwigshafen; Hanns-Dietmar Haertl, Bruehl; Kurt Wendel, and Klaus Eisentraeger, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 5, 1975, Ser. No. 574,231

Claims priority, application Fed. Rep. of Germany, May 14, 1974, 2423284

Int. Cl.[2] B05D *1/14, 1/16, 1/36*

U.S. Cl. 427—206 **6 Claims**

1. In a process for flocking textile substrate by applying a thin layer of an aqueous polymer emulsion to the substrate, flocking, and subsequently drying the flocked substrate at an elevated temperature of up to 200° C, the improvement which comprises applying a thin layer of a heat-sensitized aqueous polymer emulsion to the textile substrate and, simultaneously with its application or immediately thereafter, gelling the emulsion coat in its zone adjoining the textile substrate by heat applied from the textile substrate, in such a way that the zone remote from the textile substrate does not gel, and then flocking the substrate and subsequently drying the flocked substrate at elevated temperatures.

4,122,220

METHOD FOR REDUCING THE GAS PERMEABILITY OF A SINTERED POROUS SILICON NITRIDE BODY

Godehard Sussmuth, Selb, Bayern, Germany, assignor to Rosenthal Aktiengesellschaft, Germany

Filed Sep. 6, 1977, Ser. No. 830,807

Int. Cl.[2] C01B *21/06*

U.S. Cl. 427—243 **8 Claims**

1. A method of reducing the gas permeability of a sintered porous silicon nitride body, the method including the steps of impregnating said body with a silicon tetrahalide selected from the group consisting of silicon tetrachloride and silicon tetrabromide, precipitating silicon imide in the pores of said body by contacting the impregnated body with ammonia, and converting the silicon imide into silicon nitride by firing the body in a nitrogen atmosphere.

4,122,221

ORBITING AND ROTATING SUBSTRATE

Glen R. Scheuermann, Oakland, Calif., assignor to Airco, Inc., Montvale, N.J.

Division of Ser. No. 672,691, Apr. 1, 1976. This application Aug. 19, 1977, Ser. No. 825,888

Int. Cl.[2] B05D *1/00*

U.S. Cl. 427—251 **10 Claims**

1. A method of coating at least two substrates by vapor deposition in an evacuated chamber containing a coating source, comprising:

placing the substrates in the evacuated chamber;

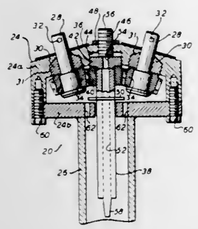
supporting each substrate for rotation about a separate individual axis;

selectively but simultaneously rotating each said substrate about its individual axis from a centrally located drive shaft;

associating a main shaft concentrically with said centrally

located driveshaft and therewith selectively but simultaneously orbiting each said substrate about said central drive shaft;

effecting said orbiting while the substrates are exposed to said vapor from the source;



effecting said rotating to reorient said substrates with respect to said source without removing the substrates from the chamber; and

again effecting said orbiting while the substrates are exposed to said vapor from the source.

4,122,222

LAMINATE AND METHOD FOR DRYWALL HOLES AND JOINTS

Robert Franklin Parker, Rte. 5, Box 350, Wilmington, N.C. 28401

Filed Apr. 4, 1977, Ser. No. 784,327
Int. Cl.[2] B32B *13/04*
U.S. Cl. 428—66 **10 Claims**



1. A preformed laminate structure for finishing or repairing operations on previously installed drywalls comprising a single backing member made from thin sheet material shaped to cover a selected area of previously installed drywall to be finished or repaired and a body portion made from a thin layer of rigidified plaster-like material adhered on one side to a front face of said backing member and having an opposite uncovered side providing a surface for receipt of a finishing compound thereon, said body portion having its greatest thickness in the inner portion thereof and with said thickness tapering toward at least one edge portion thereof to a minimum thickness with at least some of the minimum thickness portion thereof spaced from an uncovered edge portion of said sheet material to provide a flat surface on such uncovered edge portion of sheet material for receipt of finishing compound to blend with the adjoining tapered body portion to hide said edge portion and its edge in the finished work.

4,122,223

TREATED FABRIC STRUCTURE

Frank P. Civardi, Wayne, and Frederic C. Loew, Ridgewood, both of N.J., assignors to Inmont Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 474,406, May 30, 1974, abandoned, and a continuation-in-part of Ser. No. 398,696, Sep. 19, 1973, abandoned, said Ser. No. 474,406, is a continuation-in-part of Ser. No. 398,696,. This application Jan. 30, 1975, Ser. No. 545,548
Claims priority, application Canada, Sep. 13, 1974, 209186; United Kingdom, Sep. 19, 1974, 40901/74
Int. Cl.[2] D06C *11/00*
U.S. Cl. 428—91 **24 Claims**



1. An artificial leather sheet material for lasted shoe uppers comprising a backing layer of permeable fabric of interlaced multifilament yarns and a continuous microporous elastomeric polymer layer on its upper face wherein the improvement comprises that the lower face of said fabric has a nap of fibers teasted from said yarns and bonded together, said bonded nap being open and compressible, having a void volume above 50% and a thickness of about 0.1 to 1 mm, said shoe upper sheet material having a thickness of at least about 1.2 mm, said bonded nap comprising said teased-out fibers and an elastomeric bonding agent.

4,122,224

WALL AND FLOOR COVERINGS

Douglas M. Brewer, Broughty Ferry; Alan Mawson, Leslie, and William S. Carter, Kirkcaldy, all of Scotland, assignors to Nairn Floors Limited, Lune Mills, England

Continuation-in-part of Ser. No. 639,519, Dec. 10, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,195
Claims priority, application United Kingdom, Dec. 12, 1974, 53709/74
Int. Cl.[2] B32B *5/16, 5/18*
U.S. Cl. 428—159 **9 Claims**

1. Floor or wall covering comprising a decorative opaque surface layer bonded to a backing sheet consisting essentially of a sheeted mass of particles of a sheet material, said sheet material comprising a foamed layer of vinyl resin, pigmented decoration and a wear layer over the foamed layer, and reinforcement selected from reinforcing fibres in the foamed layer and fibrous support beneath the foamed layer.

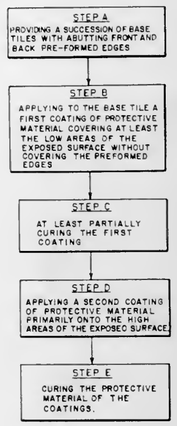
9. A covering according to claim **1** in the form of tiles comprising an embossed foamed vinyl surface layer covering carrying a pigmented decoration bonded to a backing sheet that consists essentially of a sheeted mass of communited particles of a sheet material and 5 to 30% by weight additional polymeric material, the said sheet material comprising a foamed layer of vinyl resin, pigmented decoration and a wear layer over the foamed layer, and reinforcement selected from reinforcing fibres in the foamed layer and a fibrous support beneath the foamed layer.

4,122,225

METHOD AND APPARATUS FOR COATING TILE

Ernest R. Holmstrom; Merrill M. Smith, both of Morrisville, Pa., and Donald C. Ferguson, Trenton, N.J., assignors to American Biltrite, Inc., Cambridge, Mass.

Filed Jun. 10, 1976, Ser. No. 694,692
Int. Cl.[2] B05D *3/06, 1/36, 5/00*
U.S. Cl. 428—172 **28 Claims**



1. A method for coating tile having an exposed decorative surface subject to wear including high areas subject to greater than average wear and low areas subject to less than average wear comprising the steps of:

providing a plurality of base tiles, each tile having preformed front, back, and side edges, in a continuous succession with the front and back edges of adjacent tiles abutting one another;

while said front and back edges are abutting, spraying a first coating of protective material onto said exposed surface from one or more points vertically within said pre-formed side edges so that the exposed surface shadows said side edges from the spray;

at least partially curing said first coating;

applying a second coating of protective material primarily onto the high areas of said exposed surface; and

curing the protective material.

4,122,226

HEAT-STABLE POLYMER COATING COMPOSITION WITH OXIDATION CATALYST

Eustathios Vassiliou, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 606,297, Aug. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,939, Sep. 27, 1974, abandoned, and a continuation-in-part of Ser. No. 552,871, Feb. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,939,. This application Mar. 24, 1977, Ser. No. 780,906
The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.
Int. Cl.[2] B05D *3/02;* **B32B** *3/10, 27/00*
U.S. Cl. 428—187 **17 Claims**

1. A process for producing decorative patterns within a baked coating composition on a substrate; said coating composition consisting essentially of

(a) heat-stable polymer stable at temperatures above 300° C.,

(b) colorant,

(c) oxidation catalyst, and

(d) liquid carrier; said process consisting essentially of applying the coating composition either as a subsequent coat over or directly under an antioxidant composition which is arranged in a decorative pattern on a substrate and baking the coating; wherein said antioxidant or its decomposition products diffuse into the coating composition and hinder oxidation of the colorant, thereby rendering, upon baking, the decorative pattern visible with the coating produced by the coating composition.

8. The process of claim **1** wherein the oxidation catalyst composition contains a compound or mixture of compounds of one or more of the metals:

Chromium	Cerium	Lithium
Cobalt	Thorium	Sodium
Iron	Manganese	Potassium
Nickel	Bismuth	Lead
Cadmium		or
		Molybdenum

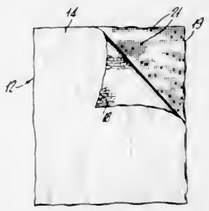
which compound decomposes in the temperature range of about 100°-500° C. to give at least 0.2%, by weight of the metal in the compound, of an oxide or hydroxide, in adequate quantity so as to provide at least about 0.005 parts of metal per hundred parts of heat-stable polymer.

4,122,227

STABILIZED LAMINATED KNIT UPHOLSTERY FABRIC

William Bruce Dean, Cornelia, Ga., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 12, 1976, Ser. No. 685,858
Int. Cl.[2] B32D *7/14*
U.S. Cl. 428—197 **8 Claims**



1. A stabilized laminated knit fabric for use as upholstery material comprising: a face fabric consisting of yarns in a knitted construction, said face fabric having a weight of at least 8 ounces per square yard, said yarns having a denier of at least 250 and having sufficient characteristics to be suitable for use in upholstery purposes; and a lightweight, substantially non-extensible flexible back fabric, said face fabric and said back fabric being laminated and held together by adhesive means, whereby the laminated knit fabric is stabilized and is generally non-extensible.

4,122,228

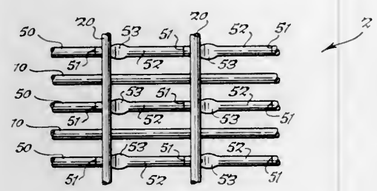
STIRRUP FABRIC

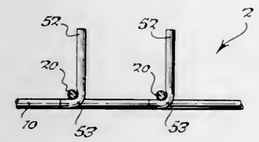
Wilbur E. Tolliver, Holland, and Daniel J. Borodin, Detroit, both of Mich., assignors to New York Wire Mills Corp., Tonawanda, N.Y.

Filed Apr. 13, 1977, Ser. No. 787,104
Int. Cl.[2] B32B *3/06, 5/12;* **E04C** *5/16;* **B21F** *27/00*
U.S. Cl. 428—101 **14 Claims**

1. In a reinforcing wire fabric including a network of generally parallel first strands extending in one direction and generally parallel second strands extending in a direction generally transverse to that of the first strands, the improvement in said fabric comprising: at least one stirrup member; joining means joining said stirrup member to said fabric with said stirrup member lying generally in the plane of said fabric; said joining

means being generally rigid whereby said stirrup member tends to be held in position thereby; and said joining means





being bendable whereby said stirrup member can be rotated to an erect position projecting away from the plane of said fabric by effecting bending of said joining means.

4,122,229

THERMOPLASTIC REINFORCING ADHESIVES AND SUBSTRATES COATED THEREWITH

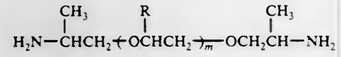
Mark L. Mitchell, III, and Hubert J. Sbarkey, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 747,771, Dec. 6, 1976, Pat. No. 4,062,820. This application Jun. 6, 1977, Ser. No. 803,800

Int. Cl.[2] B32B *27/06, 27/34;* **C08L** *91/00;* **A43C** *13/14*

U.S. Cl. 428—261 **4 Claims**

1. A reinforced box-toe construction comprising a flexible substrate selected from leather, fabric or vinyl polymer and having applied thereto an adherent copolyamide resin consisting essentially of the reaction product of (a) a mixture of a polymeric fatty acid, obtained from the polymerization of an olefinically unsaturated monocarboxylic acid containing from 16 to 20 carbon atoms, and a saturated aliphatic dicarboxylic acid having from 7 to 12 carbon atoms, the equivalents ratio of the respective acid components ranging from about 0.95:0.05 to about 0.7:0.3, with (b) a mixture of a saturated aliphatic diamine having from 2 to 6 carbon atoms and a polyoxyalkylene diamine of the formula



where R is hydrogen or a methyl group and *m* is a positive integer so that the average molecular weight of the polyoxyalkylene diamine is between 600 and 5000, the equivalents ratio of said aliphatic diamine to said polyoxyalkylene diamine ranging from about 0.92:0.08 to 0.995:0.005, said resin having a softening point in the range 140°–190° C., 190° C. viscosity less than 150 poise, compression strength greater than 85 grams and brittleness temperature less than −10° C., and said adherent copolyamide resin present on the substrate to a thickness of 1 to 50 mils.

4,122,230

FLASHING ARTICLE COMPRISING A CHLORINATED POLYETHYLENE LAYER ADHERED TO AN ASPHALT-SATURATED FELT LAYER PRODUCED BY JOINING THE TWO LAYERS UNDER PRESSURE AT ELEVATED TEMPERATURE

Ben T. Lowell, 4728 Brafferton Rd., Bloomfield Hills, Mich. 48013

Filed Apr. 22, 1977, Ser. No. 789,806

Int. Cl.[2] B32B *11/04;* **D06N** *5/00;* **E04D** *13/04, 13/08*

U.S. Cl. 428—280 **1 Claim**

1. Roof drain flashing material characterized by capacity to be hot mopped into a bonded relationship with asphalt-saturated felt roofing membranes, nontearing, noncracking, flexible, and tough, comprising:

nonplasticized chlorinated polyethylene material which has been integrally bonded under elevated temperatures and pressures with asphalt-saturated felt into a unitized, inseparable, stretchable roof drain flashing structure.

4,122,231

NONCOMBUSTIBLE, SMOKELESS BUILDING COMPOSITE MATERIAL AND ITS METHOD OF MANUFACTURE

Ken Kishi, Tokyo, Japan, assignor to Showa Vermiculite Kabushiki Kaisha, Japan

Division of Ser. No. 719,502, Sep. 1, 1976. This application Jun. 24, 1977, Ser. No. 809,720

Int. Cl.[2] B32B *3/26*

U.S. Cl. 428—310 **12 Claims**

2. A noncombustible, smokeless composite material which absorbs moisture and is water-insoluble, comprising,

(A) as base material, a composite material comprising a substantially uniform mixture of an inorganic adhesive and a foamed inorganic material firmly bonded together, the weight ratio of the foamed inorganic material to the inorganic adhesive being 1:1 to 1:0.5, wherein the foamed inorganic material is selected from the group consisting of vermiculite, perlite, silas balloon, alumina pulp, carnamite, amosphur, silica balloon, dia balloon, micro balloon and glass micro balloon, and the inorganic adhesive is a mixture of 2–6 parts by weight of sodium silicate and one part by weight of an additive substance selected from the group consisting of (1) lithium silicate, (2) denatured silica sol, (3) aluminium phosphate and (4) a mixture of 1.6 parts by weight of condensed aluminium phosphate, 104 parts by weight of non-colloidal silica, 4 parts by weight of titanium dioxide, 100 parts by weight of colloidal silica, 0.4 part by weight of gel-forming agent extracted from bentonite and 5 parts by weight of acrylic acid ester, and

(B) a baked coating of glaze material on the surface of said base material, wherein said glaze coating contains about 600–675 micropores/mm^2 of surface area.

4,122,232

AIR FIRABLE BASE METAL CONDUCTORS

Charles Y. Kuo, Bayside, N.Y., assignor to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Apr. 21, 1975, Ser. No. 570,231

Int. Cl.[2] H01B *1/02*

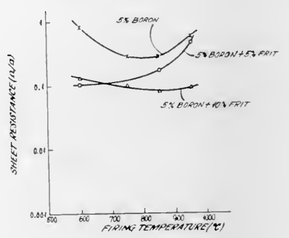
U.S. Cl. 428—323 **6 Claims**

6. A base metal thick film conductor on a non-conductive substrate characterized by having a sheet resistance less than about 1 ohm/square and formed from:

(a) between 40 and 80 percent by dry weight of a base metal powder relative to the total of base metal and boron which oxidizes upon firing in the presence of air and becomes substantially electrically non-conductive and selected from the group consisting of nickel, copper, cobalt and mixtures thereof;

(b) between 4 and 50 percent by dry weight of boron powder relative to the total of base metal and boron; and

(c) up to about 20 percent by dry weight of glass frit relative to the total of base metal, boron and glass frit; said conductor formed by firing in the presence of air a paste comprising powders having particles less than 325 mesh of said base metal powder, boron and glass frit mixed with a suitable vehicle to produce a conductor having a sheet resistance less than about 1 ohm/square.



4,122,233

ULTRAVIOLET SCREENING AGENTS AND COATING MATERIALS CONTAINING ORGANOSILANE ESTER GROUPS

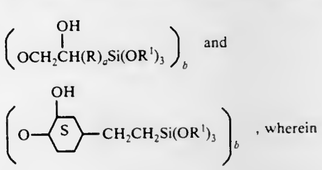
Stephen Proskow, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 575,795, May 8, 1975, Pat. No. 4,051,161, which is a continuation of Ser. No. 289,459, Sep. 15, 1972, abandoned. This application Jun. 24, 1977, Ser. No. 809,702

Int. Cl.[2] B32B *27/36;* **C07F** *7/18;* **C08K** *5/54*

U.S. Cl. 428—412 **14 Claims**

3. In a coating composition formed from 10–90% by weight of polysilicic acid and/or a hexa(alkoxyalkyl)melamine and 10–90% by weight of a 1:1 copolymer of chlorotrifluoroethylene or tetrafluoroethylene and an ω-hydroxyalkyl vinyl ether, all based on the combined weight of polysilicic acid, calculated as silica, and/or hexa(alkoxyalkyl)melamine and copolymer, the improvement which comprises increasing resistance to ultraviolet light by incorporating in the composition, 0.5–35% by weight, based on the combined weight of polysilicic acid, calculated as silica, and/or hexa(alkoxyalkyl)melamine and copolymer, of an added compound of one of the formulas



R is a divalent hydrocarbon or hydrocarbon ether radical of up to 10 carbons;

R^1 is an aliphatic hydrocarbon radical of less than 5 carbon atoms, an acyl radical of less than 5 carbon atoms, or a radical of the formula $(CH_2CH_2O)_nZ$ in which *n* is an integer of 1 to 8 and Z is an aliphatic hydrocarbon radical of less than 5 carbon atoms;

R^2 is a stable, monovalent or divalent hydroxyl-aromatic radical, containing up to 4 aromatic rings joined to oxygen through an aromatic carbon, of the type which absorbs light in the region of 2500–4000 A in an amount effective for stabilizing polymers against ultraviolet light;

a is 0 or 1; and

b is 1 or 2.

4,122,234

ARTICLE EMPLOYING A HEAT HARDENABLE LIQUID FILM FORMING COMPOSITION WITH PARTICLES DISPERSED THEREIN AND METHOD FOR MAKING SAME

Virgil Allan Lohoff, Santa Clara, Calif., assignor to Dysan Corporation, Santa Clara, Calif.

Filed Aug. 8, 1977, Ser. No. 822,771

Int. Cl.[2] H01F *10/02;* **B32B** *5/16, 27/38*

U.S. Cl. 428—413 **21 Claims**



1. A heat hardenable liquid magnetic film forming composition comprising:

an epoxy resin having an epoxide equivalent weight lying in the range from about 185 to about 6,000 a cellulose acetate butyrate resin having a butyral content of at least 17%, an amine catalyst having at least one primary amine group, the amount of cellulose acetate butyrate lying in the range from about 5 to about 30 weight percent of the combined weights of said epoxy resin, said cellulose acetate butyrate resin and said amine, the ratio of epoxy equivalents to amine equivalents lying in the range from about ¼ to about 4/1, a solvent blend providing a viscosity for said composition lying in the range from about 150 to about 600 centipoise at 24° Centrigrade, and magnetizable particles dispersed within said composition, said composition having the above ingredients in the following proportionate ranges:

Ingredient	Parts By Weight	Weight % Solids
Magnetizable particles	50–60	50–60
Epoxy resin plus solvent	40–65	30–40
Cellulose acetate butyrate plus solvent	30–190	3–6
Amine catalyst	2–5	2–5
Remaining solvent	135–190	

11. A method of making a heat hardenable liquid film-forming composition with particles dispersed therein, said method comprising the steps of:

(a) providing an epoxy resin having epoxy equivalent weights in the range from about 185 to about 6,000, a cellulose acetate butyrate resin having a butyral content of at least 17 percent, an amine catalyst with at least one primary amine group, magnetizable particulate material and a solvent blend; the amount of said cellulose acetate butyrate lying in the range from about 5 to about 30 weight percent of the combined weights of said epoxy resin, said cellulose acetate butyrate and said amine; and

(b) mixing the ingredients of step (a) together in the following proportions to form said composition:

Ingredient	Parts By Weight	Weight % Solids
Magnetizable particles	50–60	50–60
Epoxy resin plus solvent	40–65	30–40
Cellulose acetate butyrate plus solvent	30–190	3–6
Amine catalyst	2–5	2–5
Remaining solvent	135–190	

4,122,235

RESOLE RESIN BINDER COMPOSITION

Ronald H. Dahms, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 634,395, Nov. 24, 1978, Pat. No. 4,043,970.
This application Feb. 25, 1977, Ser. No. 772,177
Int. Cl.[2] B32B *17/04, 27/42*
U.S. Cl. 428—436 9 Claims

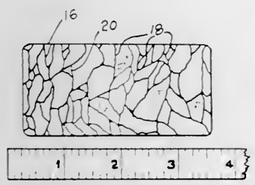
1. A laminate comprising a substrate sheet structure of fibers selected from the group consisting of cellulosic, asbestos, glass, nylon and cellulosic modified with a synthetic, impregnated and bonded with about 15 to 65 percent of a cured resole resin solids containing about 0.5 to 5 parts of a metal salt curing accelerator based on 100 parts of said resole resin solids, the remainder up to 100 percent by weight of said laminate being substrate, said salt being soluble in said resole resin, having a metal ion selected from the group consisting of barium (Ba^{++}), magnesium (Mg^{++}), manganese (Mn^{++}), chromium (Cr^{+++}), zinc (Zn^{++}), aluminum (Al^{+++}), dibasic aluminum ($Al(OH)^{+}_{2}$), cobalt (Co^{++}) and mixtures thereof and having an organic acid salt radical selected from the group consisting of formate, acetate, propionate, benzoate, lactate and mixtures thereof.

4,122,236

ARTIFICIAL BOARD OF LUMBER AND METHOD FOR MANUFACTURING SAME

John A. Holman, 1206 Rutledge Way, Anderson, S.C. 29621

Filed May 9, 1977, Ser. No. 795,203
Int. Cl.[2] B32B *9/04*
U.S. Cl. 428—453 9 Claims



1. An elongated board of artificial lumber having a length greater than the width and thickness comprising:
- a mixture of irregularly shaped elongated splinters of wood substantially aligned along the length of said board,
- a substantial portion of said splinters being from about two to eight inches long,
- a sealant coating the surface of said splinters,
- an adhesive coating carried on said irregularly shaped elongated splinters with said sealant restricting the penetration of said adhesive into said splinters,
- said splinters being compressed into an interlocking configuration, with said adhesive coating forming hardened longitudinally extending layers between said splinters holding said splinters in said interlocking configuration.

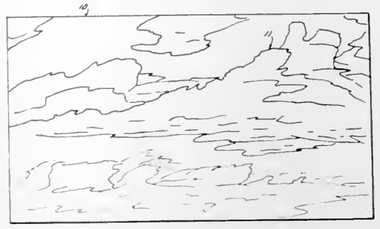
4,122,237

DOUBLE IMAGE PRINTED MEMBER

Terrance Z. Kaiserman, 3725 NW. 41st St., Miami, Fla. 33142

Filed May 12, 1977, Ser. No. 796,406
Int. Cl.[2] G09F *13/20;* B05B *5/00;* B32B *3/00*
U.S. Cl. 428—195 3 Claims

1. A double image printed member comprising, in combination, a panel of sheet material, a first scene or artistic representation printed upon one face of said sheet material panel in ordinary ink for ordinary viewing under natural or artificial visible lighting conditions, and a second scene or artistic representation printed over said first scene or artistic representation and printed in inks comprising light-activated phosphors in a clear vehicle for viewing in total darkness after first having been exposed to visible light, said phosphorescent ink comprising zinc sulphide pigmented with organic pigments, and calcium sulphide pigmented with organic pigments, said organic pigments being of such slight color when observed in ordinary



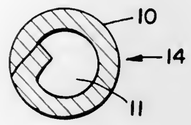
light as to be substantially invisible, whereby said overprint will be substantially invisible when said double image printed panel is viewed under visible light.

4,122,238

WELDING FLUX FORMULATION AND PROCESS FOR FUME REDUCTION

John G. Frantzerb, Sr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 19, 1976, Ser. No. 687,727
Int. Cl.[2] B32B *15/16;* B23K *35/22*
U.S. Cl. 428—558 15 Claims



1. A welding flux composition which produces a reduced amount of particulate matter, comprising:
- a first distinct alloy having at least four metals, said first alloy including iron, at least two metals reactive with oxygen under welding conditions selected from a group consisting of aluminum, titanium, zirconium and boron and a weld improving metal selected from a group consisting of magnesium and manganese, said first alloy comprising from about 1 percent to about 4.5 percent of said flux composition.

6. A process for reducing particulate matter produced during a welding operation, comprising including in a welding flux used in said operation from about 1 percent to about 4.5 weight percent based on the total weight of said flux of a first distinct alloy having at least four metals, said first alloy including iron, at least two metals reactive with oxygen under welding conditions selected from the group consisting of aluminum, titanium, zirconium and boron and a weld improving metal selected from the group consisting of magnesium and manganese.

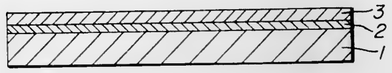
11. A weld forming electrode comprising a metal tube having therewithin a compacted welding flux comprising:
- a first distinct alloy having at least four metals, said first alloy including:
- iron;
- at least two metals reactive with oxygen under welding conditions selected from the group consisting aluminum, titanium, zirconium and boron; and
- a weld improving metal selected from the group consisting of magnesium and manganese, said first alloy comprising from about 1 percent to about 5 percent by weight of said flux composition.

4,122,239

SOLAR ABSORBERS WITH LAYERS OF NICKEL/CHROMIUM ALLOY AND DIELECTRIC MATERIAL

Michel Jean Riboulet, Calmont, and Jacques Yves Louis Georges Simon, Toulouse, both of France, assignors to Centre National d'Etudes Spatiales, Paris, France

Filed Jan. 12, 1977, Ser. No. 758,753
Claims priority, application France, Jan. 19, 1976, 76 01297
Int. Cl.[2] B32B *15/04*
U.S. Cl. 428—621 6 Claims



1. A solar absorber for collecting solar energy comprising, a metallic or metallized substrate having a weak hemispherical emission factor in the infra-red range, a semi-transparent metallic layer adhering to the substrate, and an outer dielectric interference layer adhering to said semi-transparent layer to form a composite structure, the metallic layer being a layer of nickel/chromium alloy consisting of 60 to 85% by weight of nickel and of 40 to 15% by weight of chromium, and the dielectric layer being a layer of a material selected from the group comprising silicon monoxide, zinc sulphide and silicon dioxide, said solar absorber composite structure having a solar absorption factor/hemispherical emission ratio greater than 10.

4,122,240

SKIN MELTING

Conrad Martin Banas, Bolton; Edward Mark Breinan, Glastonbury; Bernard Henry Kear, Madison, and Anthony Francis Giamei, Middletown, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 658,547, Feb. 17, 1976, abandoned. This application Mar. 2, 1977, Ser. No. 773,889
Int. Cl.[2] C21D *1/06;* H05B *7/00*
U.S. Cl. 428—655 23 Claims

1. A surface treatment for metallic articles including the steps of:
- a. providing the article surface to be treated on an integral metallic substrate said surface having a substantially eutectic composition;
- b. providing a high density energy source, said energy being of a type which is transformed to heat when it strikes a metallic surface;
- c. heating the metallic surface to a temperature between the surface melting temperature and the surface vaporization temperature within a time of about 10^{-2} to about 10^{-7} seconds;
- d. allowing the melted surface layer to cool at a rate in excess of $10^{5°}$ C/sec. by conduction into the unmelted substrate.

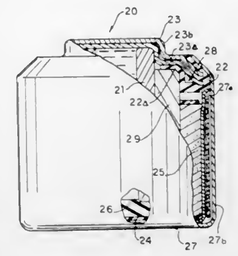
4,122,241

MODIFIED GROMMET FOR LONG TERM USE CELLS

Frank L. Ciliberti, Jr., and Franklin G. Fagan, Jr., both of Ossining, N.Y., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 11, 1977, Ser. No. 776,680
Int. Cl.[2] H01M *2/18*
U.S. Cl. 429—133 8 Claims

1. A cylindrical electrochemical cell comprising an anode, a cathode, a separator having structural integrity therebetween, and an electrolyte, with said anode, cathode and separator being concentrically longitudinally axially disposed within a cell container having a closed bottom and an open top, said open top being closed by a cell top and an electronically insulative grommet positioned and compressively held between said cell container and said cell top, said cell top exerting a compressive force on an upper edge of said separator characterized by said grommet having an integral, radially inwardly directed



portion compressively held between said separator upper edge and said cell top with a seal formed thereby.

4,122,242

PROCESS FOR SEALING ELECTROCHEMICAL CELLS

Ralph H. Feldhake, Verona, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Filed May 9, 1977, Ser. No. 794,895
Int. Cl.[2] B29C *25/00;* H01M *1/02*
U.S. Cl. 429—174 12 Claims

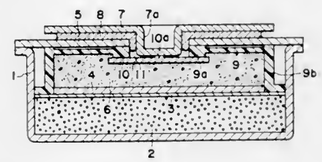
1. A process for manufacturing an improved grommet and metal cover for use in a galvanic cell; the process comprising:
- (A) swelling the grommet, which has been injected molded around the periphery of the metal cover, until the grommet is loose upon the metal cover, wherein a liquid is used to swell the grommet;
- (B) forcing a bitumen solution between the swollen grommet and metal cover, the bitumen solution being comprised of bitumen and solvent; wherein the liquid and the solvent are the same and the swelling of the grommet and forcing of the bitumen solution are done simultaneously; and
- (C) shrinking the grommet by drying to substantially its original size to trap bitumen between the grommet and metal cover.

4,122,243

SEALED ALKALINE BATTERY

Takashi Tsuchida, Oksai; Kenichi Shinoda, Toyohashi, and Noriaki Sakamoto, Shizuoka, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed May 31, 1977, Ser. No. 802,196
Claims priority, application Japan, Feb. 10, 1977, 52-12990
Int. Cl.[2] H01M *2/04*
U.S. Cl. 429—174 6 Claims



1. A sealed alkaline battery comprising:
- a metal case connected to one electrode of the battery;
- an annular metal cover connected to an open edge of said metal case;
- a metal member connected to the other electrode of the battery;
- an insulator containing silicon oxide therein and joined by fusion thereof to said annular metal cover and said metal member at the interspace therebetween;

an annular packing disposed inside said annular metal cover in abutment therewith; and

a dish-shaped metal collector plate connected to said metal member and disposed below said insulator in such a manner that the peripheral edge of said metal collector plate is pressed into the inner periphery of said packing to define a closed space between said insulator and said metal collector plate.

4,122,244

ELECTRIC STORAGE BATTERY

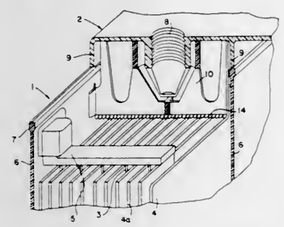
Gerhard Kämmerer, Eilvese, and Friedrich Bohne, Springe, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 17, 1977, Ser. No. 825,489

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 7626233

Int. Cl.[2] H01M *10/16*

U.S. Cl. 429—186 **14 Claims**



1. An electric storage battery having a plate block comprising positive and negative electrodes and separators positioned in a block case with a lid, the battery comprising:

a synthetic plastic insert positioned between the lid and the top of the plate block,

the insert being permanently attached at one end to the top of the plate block and bearing at the other end against the lid of the block case,

the attachment of the insert to the top of the plate block being by means of an adhesive strip interposed between the insert and the plate block and compensating by its presence for variations in height tolerances or play between the top of the plate block and the height of the block case.

4,122,245

$ALCL_3$/1-ALKYL PYRIDINIUM CHLORIDE ROOM TEMPERATURE ELECTROLYTES

John C. Nardi, Colorado Springs; Charles L. Hussey, USAF Academy, and Lowell A. King, Colorado Springs, all of Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 19, 1977, Ser. No. 826,223

Int. Cl.[2] H01M *6/16*

U.S. Cl. 429—194 **5 Claims**

1. A room temperature molten, fused salt electrolytic composition comprising a mixture of; (1) aluminum trichloride and (2) a 1-alkyl pyridinium chloride wherein said alkyl radical is selected from the group consisting of methyl, ethyl, 1-propyl and 1-butyl.

4,122,246

METHOD OF PREVENTING DISCOLORATION OF PLATINUM CONTAINING SILICONE GELS

David A. Sierawski, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 21, 1977, Ser. No. 835,119

Int. Cl.[2] C08G *77/04*

U.S. Cl. 528—15 **7 Claims**

1. A method for preventing discoloration of a silicone gel comprising mixing

(A) vinyl-containing polyorganosiloxane having an average of about two silicon-bonded vinyl radicals per molecule, an average ratio of organo radicals per silicon atom within a range greater than 2 up to and including 2.03, and each organo radical of the polyorganosiloxane being a monovalent radical selected from the group consisting of hydrocarbon radicals and fluorinated alkyl radicals both having less than 7 carbon atoms per radical,

(B) an organosilicon compound having an average of at least 3 silicon-bonded hydrogen atoms per organosilicon compound molecule and valences of any silicon atom in the organosilicon compound not satisfied by a hydrogen atom is satisfied by a divalent oxygen atom or an organo radical wherein each organo radical is a monovalent radical selected from the group consisting of hydrocarbon radicals and fluorinated alkyl radicals both having less than 7 carbon atoms per radical, the organosilicon compound having no more than one silicon-bonded hydrogen atom on any one silicon atom,

(C) polysiloxane having at least one silicon-bonded hydroxyl radical per molecule and at least two silicon-bonded vinyl radicals per molecule, the polysiloxane having siloxane units bonded through silicon-oxygen-silicon bonds and valences of each silicon atom in the polysiloxane are satisfied by at least one of monovalent alkyl radical having less than 7 carbon atoms per radical, divalent oxygen, phenyl radical, vinyl radical and hydroxyl radical, the polysiloxane having an average of less than 15 silicon atoms per molecule,

(D) a silane having at least one epoxy-containing organo group, at least one silicon-bonded alkoxy group having less than 5 carbon atoms per group, and any remaining valences of the silane not satisfied by an epoxy-containing organo group or an alkoxy group is satisfied by a monovalent hydrocarbon radical or a fluorinated alkyl radical both having less than 7 carbon atoms per radical, and

(E) a platinum catalyst,

(A) and (B) being present in amounts sufficient to provide a mol ratio of silicon-bonded hydrogen atoms in (B) to silicon-bonded vinyl radical in (A) of less than one, the combined weight of (C) and (D) is less than 1.5 weight percent of the total composition, (C) being present in an amount of from 75 to 350 parts by weight per one part by weight of platinum and (D) being present in an amount of from 50 to 300 parts by weight per one part by weight platinum,

said mixing of ingredients is such that (C) and (D) are separately combined with a part of (A) before the remainder of the ingredients are combined, after the ingredients are combined, the resulting composition cures to a silicone gel which has a penetration of from 2 to 60 millimeters.

4,122,247

PROCESS FOR THE POLYMERIZATION OF CYCLIC DIORGANOPOLYSILOXANES WITH CATION-COMPLEX CATALYSTS

Edwin Robert Evans, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 716,623, Aug. 23, 1976, abandoned. This application Jun. 22, 1977, Ser. No. 808,930

Int. Cl.[2] C08G *77/04*

U.S. Cl. 528—14 **15 Claims**

1. A process for producing a diorganopolysiloxane having a viscosity of from 50 to 200,000,000 centipoise at 25° C., comprising (A) reacting a compositon comprising

(i) a cyclic polysiloxane of the formula,

$$(R\ R^1\ SiO)_x$$

or a mixed such plysiloxane wherein R is selected from the class consisting of methyl, ethyl, vinyl or phenyl and R^1 is selected from the class consisting of alkyl radicals of 3 to 8 carbon atoms, halogenated alkyl radicals of 3 to 8 carbon atoms and cycloalkyl radicals of 3 to 8 carbon atoms and x is from 3 to 6, and

(ii) a cyclic polysiloxane of the formula,

$$R_2^2\ SiO)_y$$

wherein R^2 is, independently, selected from the class consisting of methyl, ethyl, vinyl or phenyl and y is from 3 to 6 or a mixed such polysiloxane, (i) being present in an amount of from 30 to 100 mol % of the composition, at a temperature in the range of 20° C. to 160° C. in the presence of 5 to 500 parts per million, as alkali metal hydroxide, of a catalyst comprising (a) alkali metal hydroxide complexed with a low molecular weight polymer of ethylene oxide, or (b) a silanolate of alkali metal hydroxide complexed with a low molecular weight polymer of ethylene oxide, and (B) neutralizing the catalyst in the reaction mixture after equilibrium has been reached.

4,122,248

MANUFACTURE OF HOMOGENEOUS ETHYLENE/TERT-BUTYL ACRYLATE/ACRYLIC ACID TERPOLYMERS

Klaus Pfleger; Klaus Boettcher; Wieland Zacher, and Dirk Juza, all of Wesseling, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation-in-part of Ser. No. 687,869, May 19, 1976, abandoned. This application Nov. 1, 1976, Ser. No. 737,719

Claims priority, application Fed. Rep. of Germany, May 31, 1975, 2524274

Int. Cl.[2] C08F *8/00, 8/06*

U.S. Cl. 528—481 **1 Claim**

1. A process for the manufacture of ternary copolymers of ethylene which contain, as copolymerized units, more than 60 percent by weight of ethylene, from 1 to 20 percent by weight of tert.-butyl acrylate and from 1 to 10 percent by weight of acylic acid, by copolymerization of ethylene and tert.-butyl acrylate at from 200° to 350° C at pressures of from 800 to 3,000 atmospheres using mean residence times of from 40 to 100 seconds in the reaction zone, wherein the reaction mixture obtained after the polymerization is passed into a cooling zone to cool the reaction mixture to from 200° to 250° C and then into an isolation zone which is at a pressure from 1 to 500 atmospheres and at a temperature of from 200° to 250° C, which temperature varies by at most ±2° C, the mean residence time of the reaction mixture in the product isolation zone being from 2 to 10 minutes.

4,122,249

SOLVENT REMOVAL FROM CHLORINATED POLYMERS

John Christopher Padget, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 21, 1976, Ser. No. 752,919

Claims priority, application United Kingdom, Jan. 30, 1976, 3790/76

Int. Cl.[2] C08F *8/20, 8/22;* **C08C** *3/02, 11/12*

U.S. Cl. 528—486 **9 Claims**

1. In a process for the preparation of a chlorinated polymer product wherein a solution obtained by chlorination of an aliphatic polymer in a chlorine-resistant solvent is treated with steam or hot water, thereby separating a chlorinated polymer product in solid form, the improvement which comprises carrying out the treatment with steam or hot water in the presence of a minor proportion of at least 0.5 part by weight per 100 parts by weight of the chlorinated polymer of a polymer lubricant from the group consisting of aliphatic monocarboxylic acids and alcohols having at least 8 carbon atoms and esters and amides of the said monocarboxylic acids, the said polymer lubricant being compatible with the chlorinated polymer in the proportions employed.

4,122,250

SEPARATION OF HIGH-ACTIVITY HEPARIN BY AFFINITY CHROMATOGRAPHY

Gottfried Schmer, 4944 NE. 85th St., Seattle, Wash. 98115

Filed Aug. 22, 1977, Ser. No. 826,676

Int. Cl.[2] C08B *37/10*

U.S. Cl. 536—21 **8 Claims**

1. An affinity chromatography method for the separation of heparin of relatively high specific activity from a mixture thereof with heparin of relatively low specific activity, comprising the steps of:

(a) preparing a solution of said heparin mixture in a solvent of about 0.5 molar sodium chloride buffered with about 0.01–0.03 molar imidazole to pH 6.5–7.5;

(b) applying said heparin solution onto an affinity column of packed gel comprising the diethylaminoethyl ether of cross-linked polydextran; and

(c) successively eluting a plurality of heparin fractions from said affinity column with a series of elution buffers of successively increasing molarity of sodium chloride buffered with about 0.01–0.03 molar imidazole to pH 6.5–7.5, said elution buffers having a sodium chloride molarity ranging from about 0.5 to about 1.0, so as to effect a stepwise removal from said affinity column of first the heparin of relatively low specific activity and finally the heparin of relatively high specific activity.

4,122,251

PROCESS FOR PRODUCTION OF 5-FLUOROURACIL AND ITS DERIVATIVES

Susumu Misaki, Mino; Sadamu Ishii, Osaka; Nobuyuki Suzuki, Nobeoka; Mikio Wakabayashi, Nobeoka, and Tsuneo Sowa, Nobeoka, all of Japan, assignors to Daikin Kogyo Co., Ltd. and Asahi Chemical Industry Co., Ltd., both of, Japan

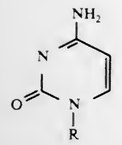
Filed Jun. 9, 1977, Ser. No. 805,031

Claims priority, application Japan, Jun. 11, 1976, 51-69003

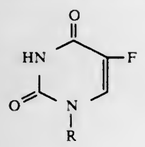
Int. Cl.[2] C07D *239/54;* **C07H** *19/06*

U.S. Cl. 536—23 **19 Claims**

1. A process for the production of 5-fluorouracil and derivatives thereof which comprises the step of reacting a cytosine compound of the formula:



wherein R is a hydrogen atom or a saccharide residue with fluorine in the presence of a hydrogen sulfite or with fluorine fluorosulfonate in an aqueous medium to give the corresponding 5-fluorouracil compound of the formula:



wherein R is as defined above.

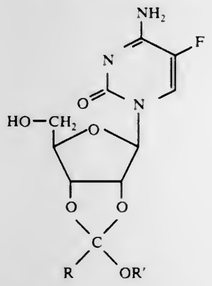
4,122,252

PROCESS FOR THE PREPARATION OF ESTERS

Richard D'Souza, and Pierre-Charles Wyss, both of Muttenz, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 30, 1977, Ser. No. 855,857
Claims priority, application Switzerland, Dec. 2, 1976, 15185/76
Int. Cl.² C07H *17/00*
U.S. Cl. 536—23 **2 Claims**

1. A mixed orthoester of the formula



(III)

wherein R is alkyl containing from 1 to 6 carbon atoms and R^1 is alkyl containing from 1 to 3 carbon atoms.

4,122,253

AMINATED STARCH DERIVATIVES

Lewis W. Watts, Jr., and Ernest L. Yeakey, both of Austin, Tex., assignors to Texaco Development Corporation, New York, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,720
Int. Cl.² C08B *31/08*
U.S. Cl. 536—50 **6 Claims**

1. An aminated starch derivative prepared by the reductive amination of an oxidized starch by reaction with a dialkyl amine at 160°–250° C. and under pressure of 750–4000 psig in presence of a reductive amination catalyst being selected from the group consisting of copper, nickel, cobalt, chromium, aluminum, maganese, platinum, palladium, and rhodium, oxides of said metals and mixtures thereof.

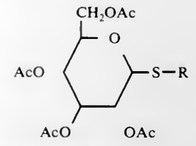
4,122,254

PROCESS FOR PREPARING AURANOFIN

David T. Hill, North Wales, Pa.; Ivan Lantos, Blackwood, N.J., and Blaine M. Sutton, Hatboro, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Jun. 30, 1977, Ser. No. 811,670
Int. Cl.² C07H *23/00*
U.S. Cl. 536—121 **5 Claims**

1. The method of preparing auranofin comprising reacting a compound of the structure:



in which Ac is acetyl and **R** is benzyl, p-methoxybenzyl, o,p-dimethoxybenzyl, p-bromobenzhydryl, benzhydryl, triphenylmethyl, lower alkanoyl of 1–6 carbons or methoxymethyl; with a compound of the structure

$$[(C_2H_5)_3P]_n\,AuX$$

in which n is 1 or 2 and X is Cl, I, Br or, only when R is lower alkanoyl, $(C_2H_5)_3PAuS$— in an inert aprotic organic solvent in which the reactants are soluble at from about room temperature up to the boiling point of the reaction mixture.

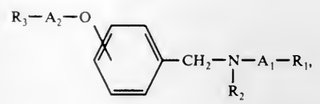
4,122,255

SUBSTITUTED AMIDES AND SULFONAMIDES CONTAINING A HETEROCYCLIC GROUP HAVING ANTIINFLAMMATORY ACTIVITY

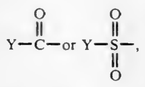
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 736,990, Oct. 29, 1976, Pat. No. 4,064,125. This application Sep. 21, 1977, Ser. No. 835,099
Int. Cl.² C07D *207/20, 211/70, 295/08*
U.S. Cl. 542—421 **9 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein R_1 is alkyl, cycloalkyl or aryl; R_2 is



wherein Y is styryl or styryl substituted in the phenyl ring with a halogen, alkyl, alkoxy, trifluoromethyl, nitro or amino group; R_3 ia 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, or 4-alkyl-1-piperazinyl; A_1 is a saturated bond or an alkylene group having 1 to 4 carbon atoms; and A_2 is an alkylene group having 2 to 5 carbon atoms; and wherein aryl is phenyl or phenyl substituted with a halogen, alkyl, alkoxy, trifluoromethyl, nitro, or amino group; alkyl and alkoxy are groups having 1 to 6 carbon atoms; and cycloalkyl is a group having 3 to 7 carbon atoms.

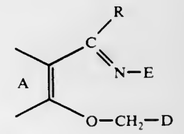
4,122,256

HETEROCYCLIC AZOMETHINES

Wilfried Sahm, Kelkheim, Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 721,811, Sep. 9, 1976, Pat. No. 4,052,433, which is a division of Ser. No. 567,357, Apr. 11, 1975, Pat. No. 3,994,819, which is a division of Ser. No. 427,016, Dec. 13, 1973, Pat. No. 3,892,807. This application Jul. 22, 1977, Ser. No. 818,073
Claims priority, application Switzerland, Dec. 18, 1972, 18397/72
Int. Cl.² C07D *263/28, 407/00;* **C09B** *55/00*
U.S. Cl. 542—423 **5 Claims**

1. A compound of the formula



in which A is phenyl or naphthyl which is unsubstituted or substituted by halogen, lower alkyl, lower alkoxy, lower alkylene forming an annellated ring, or phenyl, R is hydrogen, lower alkyl or phenyl, E is lower tertiary alkyl, phenyl chlorophenyl, lower alkyl phenyl, lower hydroxyalkyl phenyl or naphthyl and D is benzofuranyl, naphthofuranyl, benzoxazolyl, mono- or di(lower alkyl)-benzoxazolyl, or naphthoxazolyl or phenyl, naphthyl, styryl substituted by benzofuryl.

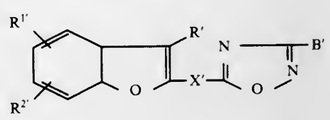
4,122,257

BENZOFURAN-OXADIAZOLE COMPOUNDS

Günter Prossel, Kelkheim; Erich Schinzel, Hofheim am Taunus, and Günter Rösch, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 2, 1977, Ser. No. 802,366
Claims priority, application Switzerland, Jun. 4, 1976, 7119/76
Int. Cl.² C07D *407/04, 407/06, 407/10, 407/14*
U.S. Cl. 542—432 **2 Claims**

1. A compound of the formula



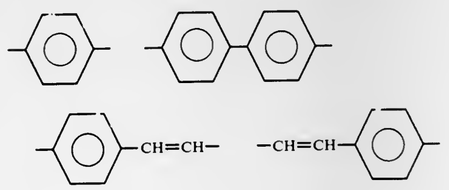
(2)

in which $R^{1'}$ and $R^{2'}$ is H, lower alkyl, lower alkoxy, halogen, carboxy, cyano, carbo lower alkoxy, carbamido, mon- or di-lower alkyl carbonamido, sulfo, sulfonamido-, mono- or di-lower sulfonamido, sulfonic acid lower alkyl ester or phenyl, or

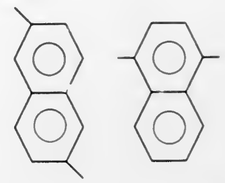
$R^{1'}$ and $R^{2'}$ together represent a fused benzene nucleus

R' represents H or lower alkyl

X' represents one of the following divalent groups

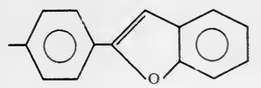


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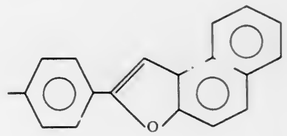


and

B' is C_1–C_6 alkyl, lower alkoxy lower alkyl, phenyl, alkyl phenyl, lower alkoxy phenyl, cyano phenyl, halophenyl, carbo lower alkoxy phenyl, styrylphenyl or a group of the formula



or



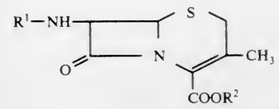
4,122,258

PROCESS FOR PRODUCING DESACETOXYCEPHALOSPORIN DERIVATIVES BY HEATING A PENICILLIN-1-OXIDE IN PRESENCE OF AN ORGANIC SULFIDE

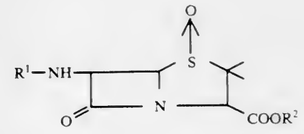
Shoichiro Fujii, Kyoto; Michiyuki Sendai, Osaka; Kenzo Naito, Kyoto, and Masayasu Kato, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 13, 1973, Ser. No. 340,892
Claims priority, application Japan, Mar. 23, 1972, 47-29459
Int. Cl.² C07D *501/10*
U.S. Cl. 544—18 **35 Claims**

1. In a process for producing a 3-desacetoxycephalosporin of the formula



wherein R^1 represents a protective group for the amino group and R^2 represents hydrogen or a protective group for the carboxyl group, by heating a penicillin-1-oxide of the formula



wherein R^1 and R^2 have the same meanings as above, in the presence of an acid catalyst selected from the group consisting of phosphoric acid, orthophosphoric acid, polyphosphoric acid, pyrophosphoric acid, methanephosphonic acid, ethanephosphonic acid, trichloromethanes-

phosphonic acid, iodomethanephosphonic acid, benzenephosphonic acid, bromobenzenephosphonic acid, nitrobenzenephosphonic acid, β-iodoethyl phosphate, β-bromoethyl phosphate, β-methoxyethyl phosphate, β,β,β-trichloroethyl phosphate, 2-chloroethyl phosphate, benzyl phosphate, p-tolyl phosphate, methyl phosphate, ethyl phosphate, phenyl phosphate, 1-naphthyl phosphate, 2-naphthyl phosphate, 10-D-camphorsulfonic acid, methanesulfonic acid, p-toluenesulfonic acid, silicaalumina, silica-boria, silica-magnesia, silica-zirconia, aluminaboria, thoria-silica, thoria-alumina, silica-alumina-zirconia, silica-alumina-magnesia, silica-alumina-thoria, natural zeolite, acid clay, kaolin, bentonite and silica phosphate, in an inert organic solvent, the improvement wherein the heating is carried out in the presence of an organic sulfide, having a molecular weight of up to 500, selected from the group consisting of diethyl sulfide, ethyl n-propyl sulfide, ethyl isopropyl sulfide, di-n-propyl sulfide, di-n-butyl sulfide, n-butyl ethyl sulfide, dodecyl methyl sulfide, di-tert-butyl sulfide, 1,2-di(methylmercapto)ethane, 1,2-di(n-dodecylmercapto)ethane, tetramethylene sulfide, pentamethylene sulfide, 1,4-dithiane, s-trithiane, phenylmethyl sulfide, 2-thienylethyl sulfide, diphenyl sulfide, dibenzyl sulfide, β-hydroxyethylmethyl sulfide, γ-hydroxypropylethyl sulfide, thiodiglycol, γ,γ′-dihydroxypropyl sulfide, 1,2-di(2-hydroxyethylthio)ethane, δ-hydroxypentylethyl sulfide, 2-hydroxypropylethyl sulfide, β,β′-diethoxyethyl sulfide, ethylethoxymethyl sulfide, β-hydroxyethylphenyl sulfide, β-ethylmercaptoethyl methyl ketone, dimethyl thiodiglycollate, diethyl thiodiglycollate, 2,2′-dicyanoethyl sulfide and polypropylene sulfide.

4,122,259

7β-[2-ARYL-2-(ETHERIFIED OXIMINO)ACETAMIDO]-3-N-SUBSTITUTED CARBAMOYLOXYMETHYLCEPH-3-EM-4-CARBOXYLIC ACIDS

David C. Humber, London, England, assignor to Glaxo Laboratories Limited, Greenford, England

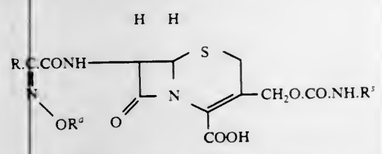
Continuation of Ser. No. 603,815, Aug. 12, 1975, abandoned. This application Dec. 10, 1976, Ser. No. 749,299

Claims priority, application United Kingdom, Aug. 23, 1974, 37197/74

Int. Cl.[2] C07D *501/20*

U.S. Cl. 544—22 **13 Claims**

1. A compound selected from the group consisting of a cephalosporin antibiotic of the formula



(I)

where R represents furyl, thienyl or phenyl; R^a represents C_1–C_4 alkyl, C_2–C_4 alkenyl or alkynyl, C_3–C_7 cycloalkyl or phenyl and R^z represents C_1–C_4 alkyl, C_2–C_4 alkenyl or alkynyl, C_3–C_7 cycloalkyl, benzyl or phenyl and a physiologically acceptable salt or oxide thereof.

4,122,260

CEPHALOSPORIN DERIVATIVES

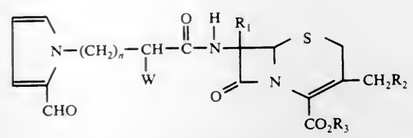
Abraham Nudelman, Rehovot, and Abraham Patchornik, Ness Ziona, both of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Oct. 4, 1977, Ser. No. 839,165

Int. Cl.[2] C07D *501/36*

U.S. Cl. 544—27 **13 Claims**

1. A compound selected from the base of the formula



wherein *n* is 0, 1, 2 or 3; W is hydrogen, a straight or branched alkyl group of from 1 to 4 carbon atoms, a sulfonic acid group, or a $-(CH_2)_p-CO_2R_4$ group wherein *p* has a value of 0 or an integer of from 1 to 10 and R_4 is hydrogen, a pharmaceutically acceptable non-toxic cation selected from the alkali metal group, the alkaline earth metal group, ammonium, or organic ammonium compounds derived from a primary, a secondary or a tertiary amine, a straight or branched alkyl group of from 1 to 4 carbon atoms; R_1 is hydrogen or methoxy; R_2 is 1,3,4-thiadiazol-2-ylthio; 5-methyl-1,3,4-thiadiazol-2-ylthio; tetrazol-5-ylthio; 1-methyl-tetrazol-5-ylthio; 1,3,4-oxadiazol-2-ylthio; 5-methyl-1,3,4-oxadiazol-2-ylthio; 1,2,3-triazol-5-ylthio or 1-methyl-1,2,3-triazol-5-ylthio; R_3 is hydrogen, a pharmaceutically acceptable non-toxic cation; a straight or branched alkyl group of from 1 to 4 carbon atoms, an alkanoyloxymethyl group in which the alkanoyl portion is straight or branched and has from 2 to 5 carbon atoms, an alkanoylaminomethyl group in which the alkanoyl portion is straight or branched and has from 2 to 5 carbon atoms and the amine nitrogen may be substituted with a straight or branched alkyl group having 1 to 4 carbon atoms, an alkoxycarbonylaminomethyl group in which the alkoxy portion is straight or branched and has from 1 to 4 carbon atoms and the amine nitrogen may be substituted with a straight or branched alkyl group of from 1 to 4 carbon atoms, p-(alkanoyloxy)benzyl groups in which the alkanoyl portion is straight or branched and has from 2 to 5 carbon atoms, an aminoalkanoyloxymethyl group in which the alkanoyl portion has from 2 to 15 carbon atoms and the amino nitrogen may be mono- or di-substituted with a straight or branched alkyl group having from 1 to 4 carbon atoms; and with the further proviso that when R_3 is other than hydrogen or a cation and W is $-(CH_2)_p-CO_2R_4$ with *p* being from 1 to 10, then R_4 is other than hydrogen or a cation; and pharmaceutically acceptable salts thereof.

4,122,261

POLYCYCLIC IMINOISOINDOLINE CHELATES

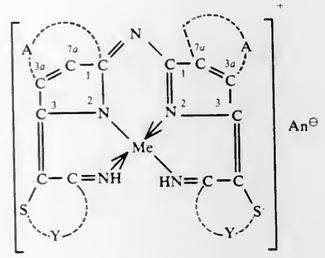
Nathan N. Crounse, and Nicholas A. Ambrosiano, both of Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 691,637, Jun. 1, 1976, Pat. No. 4,066,653, which is a continuation-in-part of Ser. No. 564,725, Apr. 3, 1975, Pat. No. 3,993,658, which is a continuation-in-part of Ser. No. 308,163, Nov. 20, 1972, Pat. No. 3,919,235. This application Jul. 5, 1977, Ser. No. 812,834

Int. Cl.[2] C07F *15/00, 15/04, 15/06*

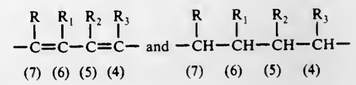
U.S. Cl. 544—64 **18 Claims**

1. A compound of the formula



wherein:

A is a divalent radical combining with the —C=C— portion of the molecule to which it is attached to form a six-membered carbocyclic ring and is selected from the class having the formulas

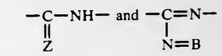


(7) (6) (5) (4) and (7) (6) (5) (4)

where in each instance C(7) and C(4) are bonded to C(7*a*) and C(3*a*) respectively, and in which R, R_1, R_2 and R_3 are the same or different and are selected from the class consisting of hydrogen, alkyl having one to three carbon atoms, alkoxy having one to three carbon atoms, halo, trifluoromethyl, phenyl and phenyl substituted by alkyl having one to three carbon atoms, alkoxy having one to three carbon atoms and halogen;

Me is a metal selected from the class consisting of copper, cobalt and nickel;

Y is a divalent radical combining with the —S—C—C— portion of the molecule to form a five-membered heterocyclic ring having the same orientation as a thiazole ring and selected from the group consisting



in which Z is NH, O or S, and N=B is lower-alkylamino, di-lower-alkylamino, pyrrolidino, morpholino, phenylamino, (lower-alkyl)-(phenyl)amino, phenyl-lower-alkylamino or (lower-alkyl)-(phenyl-lower-alkyl)amino; and An is a soluble colorless anion.

4,122,262

INTERMEDIATES AND METHODS FOR PREPARING 7-ACYLAMINO-8-OXO-OXA-1-AZABICYCLO[4.2.0]OCTANE-2-CARBOXYLIC ACID DERIVATIVES

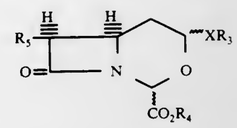
Thomas Francis Buckley, Albany, Calif., and John Gerald Gleason, Delran, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 721,251, Sep. 8, 1976, Pat. No. 4,089,956. This application Aug. 8, 1977, Ser. No. 822,774

Int. Cl.[2] C07D *265/04*

U.S. Cl. 544—90 **6 Claims**

1. A compound of the formula:



in which:

R_4 is hydrogen or a carboxy protective group susceptible to removal by hydrogenation or hydrolysis with an alkali metal carbonate;

R_3 is a saturated or unsaturated, substituted or unsubstituted lower alkyl of 1–4 carbons;

X is thio or oxy; and

R_5 is amino or blocked amino.

4,122,263

PRODUCTION OF 2-(O-ALKYLTHIOPHENYL)-1,3-DIAZOCYCLOALKENE HYDROHALIDES

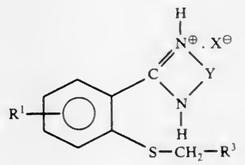
Helmut Hagen, Frankenthal; August Amann, Ludwigshafen, and Hubert Giertz, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 349,915, Apr. 11, 1973, abandoned. This application Jun. 17, 1977, Ser. No. 807,673

Int. Cl.[2] C07D *239/26*

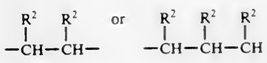
U.S. Cl. 544—114 **7 Claims**

1. A process for the production of a 2-(o-alkylthiophenyl)-1,3-diazacycloalkene hydrohalide of the formula

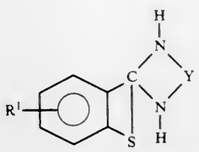


(I)

in which R^1 is hydrogen, bromo, iodo, chloro or alkyl of one to seven carbon atoms, Y is the divalent radical



wherein each R^2 is hydrogen or alkyl of one to four carbon atoms, R^3 is hydrogen, alkyl of one to seven carbon atoms, alkenyl or alkynyl of two to seven carbon atoms each, cyclohexyl, aralkyl of seven to twelve carbon atoms, phenyl or a heterocyclic member selected from the group consisting of pyrryl-(2); imidazolyl-(2); pyridinyl-(2); morpholinyl-(2); oxazolyl-(5); furfuryl-(2); piperazinyl-(2); pyrimidinyl-(6); 1,2,3-oxadiazolyl-(4) or -(5), 1,2,4-oxadiazolyl-(3) or -(5), or 1,2,5-oxadiazolyl-(3) or -(4), and the same oxadiazolyl rings substituted once by methyl, ethyl, phenyl or pyridyl; with the proviso that phenyl may further bear an inert substituent selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chloro or bromo, and X is bromo, iodo or chloro, which comprises: reacting a benzothiethane-2-spiro-2′-(1′,3′-diazacycloalkane) of the formula



(II),

in which R^1 and Y have the meanings given above, with an alkyl halide of the formula:

$$X - CH_2 - R^3 \qquad \text{(III)}$$

in which R^3 and X have the meanings given above, at a temperature of from 10° to 150° C.

4,122,264

PYRIDINE CONTAINING MORPHOLINES

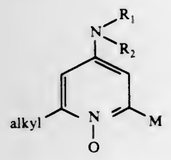
Joseph J. Ursprung, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 588,749, Jun. 20, 1975, Pat. No. 4,067,874, which is a continuation of Ser. No. 165,723, Jul. 23, 1971, abandoned. This application Sep. 9, 1977, Ser. No. 831,754

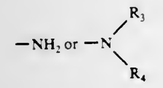
Int. Cl.[2] **C07D** *413/04*

U.S. Cl. 544—124 **5 Claims**

1. A compound of the formula



wherein alkyl is from one to six carbon atoms, inclusive; M is



wherein R_3 is hydrogen, alkyl of one to six carbon atoms, inclusive, or alkenyl of from three to six carbon atoms, inclusive, and R_4 is alkyl of one to six carbon atoms, inclusive, or alkenyl of three to six carbon atoms, inclusive, and R_3 and R_4 taken together are alkylene of five to seven carbon atoms, inclusive, said alkylene unsubstituted or substituted with one or more alkyl groups having one to six carbon atoms, inclusive, the total number of carbon atoms in the ring and alkyl groups not to exceed fifteen, morpholino, thiamorpholino and N-alkyl piperazino, said alkyl having one to three carbon atoms, inclusive; R_1 and R_2 taken together with the nitrogen atom to which they are attached are morpholino or thiamorpholino; or an acid addition salt thereof.

4,122,265

DERIVATIVES OF 3-PHENYLISOINDOLE-1-CARBOXYLIC ACID

Roland Jaunin, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

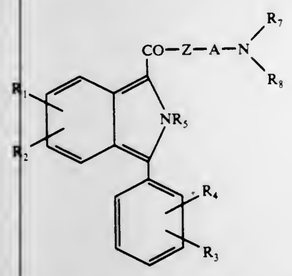
Filed Apr. 22, 1977, Ser. No. 789,905

Claims priority, application Switzerland, May 21, 1976, 6454/76; Mar. 8, 1977, 2876/77

Int. Cl.[2] **C07D** *413/12*

U.S. Cl. 544—143 **37 Claims**

1. A compound of the formula I



wherein A is alkylene of 2–8 carbon atoms; Z is a group of the formula $—NR_6—$; R_1, R_2, R_3 and R_4, independently, are hydrogen, halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or trifluoromethyl; R_5 and R_6, independently, are hydrogen or alkyl of 1 to 6 carbon atoms; and R_7 and R_8, independently, are hydrogen, alkyl of 1 to 6 carbon atoms, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms-alkyl of 1 to 6 carbon atoms, phenyl, halophenyl or methoxyphenyl, or R_7 and R_8, when taken together, are a group of the formula $—(CH_2)_n—$, wherein n is an integer of from 2–7, or $—NR_7R_8$ is 1-pyrrolidinyl, piperidono, morpholino or piperazino which may be substituted with alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 1 to 6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

4,122,266

REACTION OF ARYL SULFONIC ACID ESTER AND AMINES

Louis de Vries, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 585,281, Jun. 9, 1975, abandoned. This application Dec. 29, 1975, Ser. No. 644,474

Int. Cl.[2] **C07D** *295/22;* **C07C** *143/74;* **C10M** *1/38*

U.S. Cl. 544—158 **3 Claims**

1. A process for preparing an oil-soluble, nitrogen-containing composition comprising combining, at a temperature from about 50° C. to about 250° C., an aryl ester of a substantially saturated hydrocarbylethylsulfonic acid, the substantially saturated hydrocarbyl substitutent containing at least 20 aliphatic carbon atoms, with from 0.1 to 15 mols, per equivalent of said ester, of a nitrogen-containing compound containing at least one—NH function.

4,122,267

CHLORINATED S-TRIAZINE TRIONE COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

George D. Nelson, St. Louis; Kenneth J. Nissing, St. Charles, and William F. Symes, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 25, 1976, Ser. No. 670,294

Int. Cl.[2] **C07D** *251/36*

U.S. Cl. 544—190 **18 Claims**

1. A reaction product consisting essentially of at least one chlorinated s-triazine trione and byproduct alkali metal chloride formed in producing said trione, said byproduct alkali metal chloride being present in an amount of from about 20% weight to about 75% weight of the amount of chlorinated s-triazine trione present.

4,122,268

TETRACHLOROAMMELIDE AND PROCESS FOR MAKING SAME

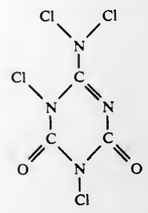
Sidney Berkowitz, Highland Park, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 745,146, Nov. 26, 1976, abandoned. This application Aug. 22, 1977, Ser. No. 826,440

Int. Cl.[2] **C07D** *251/46*

U.S. Cl. 544—194 **9 Claims**

1. Tetrachloroammelide of the formula:



4,122,269

1,3,6-TRIS(4,6-DIAMINO-1,3,5-TRIAZINE-2-YL)HEXANE

Masazumi Chono, Yokohama; Hideo Ai, Fuji; Michihiro Aboshi; Yoshikazu Suda, both of Tokyo, and Naoji Yoshii, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1977, Ser. No. 819,134

Claims priority, application Japan, Jul. 28, 1976, 51-89064; Aug. 11, 1976, 51-94943

Int. Cl.[2] **C07D** *251/48*

U.S. Cl. 544—207 **1 Claim**

1. 1,3,6-Tris(4,6-diamino-1,3,5-triazine-2-yl)hexane.

4,122,270

PHENOXY-S-TRIAZINES

Cornelis Reinier Heinrich De Jonge, De Steeg, and Egenius Arnoldus Giezen, Rheden, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

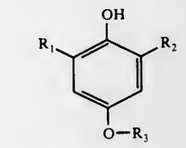
Filed Oct. 4, 1976, Ser. No. 729,497

Claims priority, application Netherlands, Oct. 4, 1975, 7511698

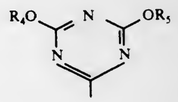
Int. Cl.[2] **C07D** *251/30*

U.S. Cl. 544—219 **9 Claims**

1. A composition comprising,



wherein R_1 is selected from the group consisting of tertiary butyl, isopropyl, cyclohexyl, and phenyl, R_2 is selected from the group consisting of cyclohexyl and phenyl, and R_3 is a substituted triazine of the formula,



wherein R_4 and R_5 independently are selected from the group consisting of alkyl groups containing 8 to 20 carbon atoms.

4,122,271

PIPERAZINYL-N,N'-BIS(DITHIOTINCARBAMATES)

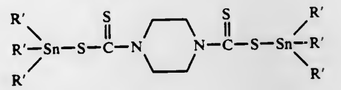
John Wesley Williams, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 14, 1977, Ser. No. 772,184

Int. Cl.[2] **C07D** *295/18;* **A61K** *31/495*

U.S. Cl. 544—225 **3 Claims**

1. A compound of the formula



wherein each R' is an alkyl group of 1–4 carbon atoms or phenyl.

4,122,272

QUATERNARY 6,7-DIHYDRO-[5H]-THIAZOLO[3,2-A]PYRIMIDINIUM SALTS

Richard M. Acheson, Oxford; Ian R. Cox, North Harrow; John K. Stubbs, and Alexander B. Penrose, both of Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

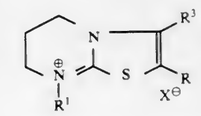
Division of Ser. No. 738,382, Nov. 2, 1976, Pat. No. 4,076,817. This application Jul. 1, 1977, Ser. No. 812,171

Claims priority, application United Kingdom, Nov. 5, 1975, 45961/75; Nov. 5, 1975, 45962/75

Int. Cl.[2] **C07D** *513/04*

U.S. Cl. 544—278 **8 Claims**

1. A compound of the formula:



wherein $X^{\ominus}$ is a pharmaceutically acceptable anion; R^1 is an alkyl group having from 10 to 20 carbon atoms; when taken separately, each of R^2 and R^3 is selected from the group consisting of hydrogen, alkyl having from one to six carbon atoms, phenyl and phenyl substituted by up to two members which may be the same or different and are selected from the group consisting of fluoro, chloro, bromo, hydroxy, alkyl having from one to three carbon atoms, alkoxy having from one to three carbon atoms, cyano, nitro and trifluoromethyl, and when R^2 and R^3 are taken together they form a tetramethylene group.

4,122,273

BICYCLO [2.2.1]-HEPTANE-2,3-DI-ENDO-CARBOXYLIC ACID IMIDE ESTERS

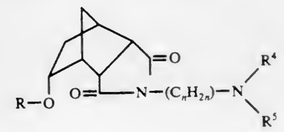
Ronald Leslie Buchanan, Fayetteville; John Theodore Woolever, Chittenango, both of N.Y., and Alex Michael Jelenevsky, Nashville, N.C., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 715,951, Aug. 19, 1976. This application Feb. 13, 1978, Ser. No. 877,521

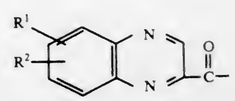
Int. Cl.[2] **C07D** *403/12*

U.S. Cl. 544—355 **16 Claims**

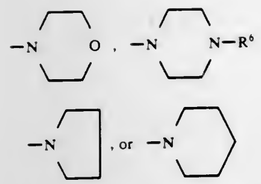
1. A compound having the formula I



wherein R is a group of the formula



in which R^1 and R^2 are alike or different and are each hydrogen, chloro, bromo, fluoro, (lower)alkyl, nitro, trifluoromethyl, hydroxy or (lower)alkoxy, n is an integer of 2 to 4 inclusive and R^4 and R^5 are alike or different and each is hydrogen, (lower)alkyl or, when taken together with the nitrogen, a heterocyclic ring of the formula



in which R^6 is (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

4,122,274

3-TETRAZOLO-5,6,7,8-SUBSTITUTED-PYRIDO[1,2-a]PYRIMIDIN-4-ONES

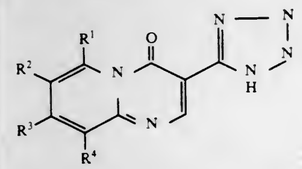
Peter Frederick Juby, Jamesville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed May 25, 1977, Ser. No. 800,264

Int. Cl.[2] C07D *471/04*; A61K *33/505*

U.S. Cl. 544—282 **27 Claims**

1. A compound of the formula



wherein R^1, R^2, R^3 and R^4 which may be the same or different are each hydrogen, halogen, (lower)alkyl, cyclo(lower)alkyl, cyclo(lower)alkyl(lower)alkyl, (lower)alkenyl, (lower)alkynyl, (lower)alkoxy, (lower)alkoxy(lower)alkyl, —O—(lower-)alkenyl,

$$-O-(CH_2)_mCH(CH_2)_n$$

in which *m* is 0 or an integer from 1 to 6 and *n* is an integer from 2 to 7, $-OCH_2(CH_2)_xO(CH_2)_yCH_3$ in which *x* and *y* are each independently 0 or an integer from 1 to 6, CF_3, hydroxy, hydroxymethyl, (lower)alkylthio, amino, nitro,

$$-N(CH_2)_r$$

in which *r* is 4 or 5, (lower)alkylamino, di(lower)alkylamino, carboxyl, $-CO_2$-(lower)alkyl, phenyl, phenyl substituted by one or two (lower)alkyl, (lower)alkoxy or halogen radicals, benzyl, (lower)alkylsulfinyl, R^c—CO— in which R^c is (lower-)alkyl, R^c—COO— in which R^c is (lower)alkyl, $-O(CH_2)_kOH$ in which *k* is an integer from 2 to 6,

$$-OCH_2-\underset{\underset{OH}{|}}{CH}-CH_2OH,\quad -OCH_2-\underset{\underset{OH}{|}}{CH}-CH_2OCH_3$$

or $-OCH_2C_6H_5$, or a pharmaceutically acceptable salt thereof, with the provisos that (1) when two or more of R^1, R^2, R^3 and R^4 are tertiary alkyl groups, they are located on non-adjacent positions and (2) no more than two of R^1, R^2, R^3 and R^4 may be nitro groups.

4,122,275

IMIDAZOLINYL BENZAMIDES AS HERBICIDAL AGENTS

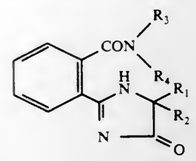
Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 8, 1977, Ser. No. 822,459

Int. Cl.[2] C07D *233/70*

U.S. Cl. 548—301 **8 Claims**

1. A compound having the structure:



wherein R_1 is alkyl C_1–C_4; R_2 is alkyl C_1–C_6, cycloalkyl C_3–C_6, alkenyl C_2–C_4, phenyl, halophenyl or benzyl, and when R_1 and R_2 are taken together with the carbon to which they are attached they may form cycloalkyl C_3–C_6 optionally substituted with methyl; R_3 and R_4 each individually represent hydrogen, alkyl C_1–C_4, alkenyl C_3–C_5, alkynyl C_3–C_5, or benzyl; and the optical isomers thereof.

4,122,276

DICARBOXYLIC ACIDS AND DICARBOXYLIC ACID ESTERS CONTAINING A HETEROCYCLIC RADICAL

Jürgen Habermeier, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

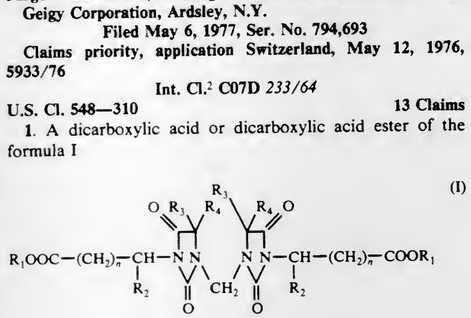
Filed May 6, 1977, Ser. No. 794,693

Claims priority, application Switzerland, May 12, 1976, 5933/76

Int. Cl.[2] C07D *233/64*

U.S. Cl. 548—310 **13 Claims**

1. A dicarboxylic acid or dicarboxylic acid ester of the formula I



(I)

wherein both R_1 independently of one another each denote hydrogen, alkyl with 1 to 4 C atoms or phenyl, both R_2 each denote hydrogen or alkyl with 1 to 10 C atoms and, if the two R_2 each denote hydrogen, the two *n* represent identical or different numbers from 2 to 12 and, if the two R_2 each denote an alkyl group with 1 to 10 C atoms, the two *n* represent identical or different numbers from 1 to 12, R_3 denotes hydrogen, methyl or ethyl and R_4 denotes methyl, ethyl, propyl or isopropyl.

4,122,277

2-TOLYL-4,5-DIHYDROXYMETHYL IMIDAZOLE

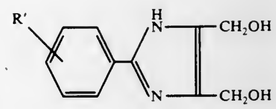
Natsuo Sawa, Nakatado, and Kyoko Gohda, Kanonji, both of Japan, assignors to Shikoku Chemicals Corporation, Japan

Division of Ser. No. 679,663, Apr. 23, 1976. This application Jun. 2, 1977, Ser. No. 802,972

Int. Cl.[2] C07D *233/64*

U.S. Cl. 548—342 **1 Claim**

1. A compound of the formula



wherein R' represent a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms.

4,122,278

3-TRIFLUOROMETHYL-4-ARYL-5-AMINOPYRAZOLES

Gérard Emile Edgard Coispeau, Soisy-Sous-Montmorency, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

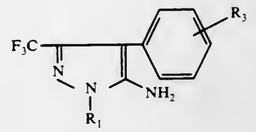
Division of Ser. No. 724,488, Sep. 20, 1976. This application Aug. 31, 1977, Ser. No. 829,402

Claims priority, application France, Sep. 30, 1975, 75 29873; Sep. 30, 1975, 75 29874

Int. Cl.[2] C07D *231/38*

U.S. Cl. 548—362 **2 Claims**

1. A compound which is a 3-trifluoromethyl-4-aryl-5-aminopyrazole represented by the formula:



in which

R_1 represents hydrogen, alkyl containing 1 to 4 carbon atoms or phenyl which may be substituted with halogen, nitro, alkoxy containing 1 or 2 carbon atoms or alkyl containing 1 to 4 carbon atoms, and

R_3 represents hydrogen or halogen.

4,122,279

PYRAZOLE DERIVATIVES

Eike Möller; Karl Meng, both of Wuppertal; Egbert Wehinger, Neviges, and Harald Horstmann, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

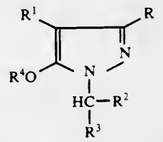
Division of Ser. No. 672,302, Mar. 31, 1976, which is a division of Ser. No. 619,891, Oct. 6, 1975, Pat. No. 4,096,152, which is a division of Ser. No. 532,311, Dec. 13, 1974, Pat. No. 4,002,641. This application Apr. 11, 1977, Ser. No. 786,340

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1973, 2363511

Int. Cl.[2] C07D *231/22*

U.S. Cl. 548—375 **10 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein

R is hydrogen or lower alkyl;

R^1 is hydrogen or lower alkyl;

R^2 is lower alkyl;

R^3 is phenyl substituted by:

(a) one or two of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, and alkoxy of 1 to 6 carbon atoms;

(b) one substituent selected from the group consisting of cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms and nitro; or

(c) one substituent selected from the group consisting of cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms and nitro and one or two substituents selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, alkoxy of 1 to 6 carbon atoms, halogen and trifluoromethyl; or

R^3 is naphthyl; and

R^4 is R^5CO wherein R^5 is lower alkoxy; or dialkylamino of 1 to 4 carbon atoms in each alkyl moiety

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4,122,280

PYRAZOLE DERIVATIVES

Eike Möller; Karl Meng, both of Wuppertal; Egbert Wehinger, Neviges, and Harald Horstmann, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

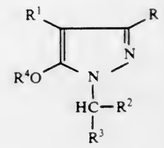
Division of Ser. No. 619,891, Oct. 6, 1975, which is a division of Ser. No. 532,311, Dec. 13, 1974, Pat. No. 4,002,641. This application Mar. 31, 1976, Ser. No. 672,302

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1973, 2363511

Int. Cl.[2] C07D *231/20*

U.S. Cl. 548—377 **13 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein

R is hydrogen or lower alkyl;

R^1 is hydrogen or lower alkyl;

R^2 is lower alkyl;

R^3 is phenyl substituted by:

(a) one or two of the same or different substituents selected from the group consisting of halogen, trifluromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, and alkoxy of 1 to 6 carbon atoms;

(b) one substituent selected from the group consisting of cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms and nitro; or

(c) one substituent selected from the group consisting of cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms and nitro and one or two substituents selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, alkoxy of 1 to 6 carbon atoms, halogen and trifluoromethyl; or

R^3 is naphthyl; and

R^4 is R^5CO wherein R^5 is phenyl unsubstituted or substituted by 1 or 2 members selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, nitro and halogen.

4,122,281

5-SULPHONYLOXY PYRAZOLE DERIVATIVES

Eike Moller; Karl Meng, both of Wuppertal; Egbert Wehinger, Neviges, and Harald Horstmann, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

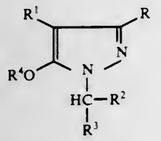
Division of Ser. No. 672,302, Mar. 31, 1976, which is a division of Ser. No. 619,891, Oct. 6, 1975, Pat. No. 4,096,152, which is a division of Ser. No. 532,311, Dec. 13, 1974, Pat. No. 4,002,641. This application Jan. 10, 1977, Ser. No. 757,872

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1973, 2363511

Int. Cl.² C07D *231/20*

U.S. Cl. 548—377 **11 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein
R is hydrogen or lower alkyl;
R^1 is hydrogen or lower alkyl;
R^2 is lower alkyl;
R^3 is phenyl substituted by:
(a) one or two of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, and alkoxy of 1 to 6 carbon atoms;
(b) one substituent selected from the group consisting of cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms and nitro; or
(c) one substituent selected from the group consisting of cycloalkyl of 5 to 7 carbon atoms, cycloalkenyl of 5 to 7 carbon atoms and nitro, and one or two substituents selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, alkoxy of 1 to 6 carbon atoms, halogen and trifluoromethyl; or
R^3 is naphthyl; and
R^4 is $Z\text{-}SO_2$ wherein Z is lower alkyl, or phenyl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, halogen, nitro, trifluoromethyl and trifluoromethylsulphonyl.

4,122,282

2-DECARBOXY-2-CARBOXYAMINO-METHYL-PGFα COMPOUNDS

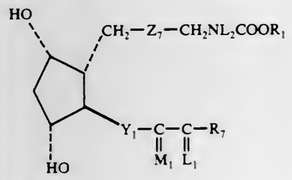
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 645,276, Dec. 29, 1975, abandoned. This application Aug. 30, 1976, Ser. No. 719,056

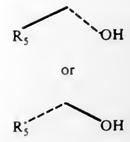
Int. Cl.² C07C *177/00*

U.S. Cl. 560—115 **146 Claims**

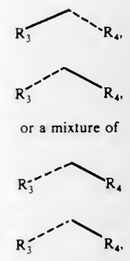
1. A prostaglandin analog of the formula:



wherein Y_1 is
(1) trans-CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—,
(4) $—CH_2CH_2—$;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein L_1 is



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_7 is
(1) cis-CH=CH-CH_2-$(CH_2)_g$-CH_2—,
(2) cis-CH=-CH-CH_2-$(CH_2)_g$-CF_2—,
(3) cis-CH_2-CH=CH-$(CH_2)_g$-CH_2—,
(4) —$(CH_2)_3$-$(CH_2)_g$-CH_2—,
(5) —$(CH_2)_3$-$(CH_2)_g$-CF_2—,
(6) —CH_2-O-CH_2-$(CH_2)_g$-CH_2—,
(7) —$(CH_2)_2$-O-$(CH_2)_g$—CH_2—, or
(8) —$(CH_2)_3$-O-$(CH_2)_g$—,
wherein *g* is zero, one, 2, or 3;
wherein Z_7 is
(1) —$(CH_2)_m$-CH_3 or
(2) cis-CH=CH-CH_2CH_3,
wherein *m* is one to 5, inclusive;
wherein L_2 is hydrogen or alkyl of one to 4, carbon atoms, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,122,283

11-DEOXY-CIS-13-PGF$_2$ ANALOGS

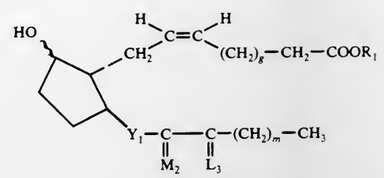
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,182

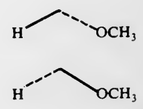
Int. Cl.² C07C *177/00*

U.S. Cl. 560—121 **7 Claims**

1. A compound of the formula

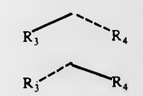


wherein Y_1 is cis—CH=CH—; wherein *g* is 2, 3, or 4; wherein M_2 is

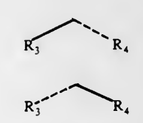


or

wherein L_3 is



or a mixture of



and



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein *m* is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,122,284

11-DEOXY-CIS-13-PFG, 15 METHYL ETHERS

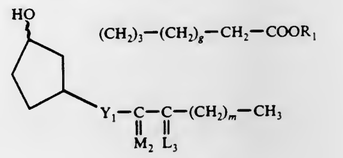
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,177

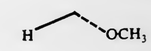
Int. Cl.² C07C *177/00*

U.S. Cl. 560—121 **7 Claims**

1. A compound of the formula

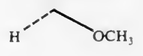


wherein Y_1 is cis—CH=CH—; wherein *g* is 2, 3, or 4; wherein M_2 is

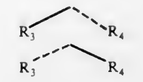


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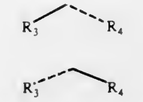
or



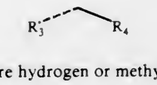
wherein L_3 is



or a mixture of



and



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein *m* is 1 to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,122,285

MANUFACTURE OF BUTENEDIOL DIACETATE

Hans-Martin Weitz, Bad Durkheim; Ludwig Vogel, Frankenthal; Juergen Hartig, Ludwigshafen, and Eckhard Hetzel, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 13, 1976, Ser. No. 714,003

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 2542925

Int. Cl.² C07C *67/05*

U.S. Cl. 560—244 **7 Claims**

1. In a liquid state process for the manufacture of but-2-ene-1,4-diol diacetate and/or but-1-ene-3,4-diol diacetate in which butadiene, oxygen and acetic acid are reacted in a reaction chamber over a solid catalyst which contains palladium and/or platinum as well as tellurium and/or antimony, the improvement which comprises: dissolving all of the gaseous reactant in the liquid reactant in a mixing apparatus separate from the reaction chamber and thereafter passing the reactants into a reaction chamber which is filled with liquid whereby the reaction takes place in the absence of a gas phase.

4,122,286

MANUFACTURE OF GLYCOL ESTERS

Juergen Hartig, Ludwigshafen, and Hans-Martin Weitz, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,697

Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620444; Aug. 14, 1976, 2636670

Int. Cl.² C07C *67/05*

U.S. Cl. 560—246 **3 Claims**

1. In a process for the manufacture of a 1,2-glycol ester by reacting an olefin selected from the groups consisting of ethylene and propylene with molecular oxygen and a carboxylic acid selected from the groups consisting of fatty acids, dibasic carboxylic acids and olefinically unsaturated carboxylic acids in the presence of an effective amount of catalyst, the improvement which comprises: using a catalyst selected from the group consisting of a compound of the formula $Ti(OR^1)_m(OAc)_n$, where R^1 is alkyl of 1 to 20 carbon atoms, or a pair of

R^1 radicals for an alkylene radical, *m* and *n* are integers from 1 to 3, the sum of $m + n$ being 4, and Ac is an acyl radical of a carboxylic acid of 1 to 20 carbon atoms, a compound of the formula $Ti(OR^1)_4$, where R^1 is alkyl of 1 to 20 carbon atoms, or one to two pairs of R^1 radicals form an alkylene radical of 2 to 20 carbon atoms, and a compound of the formula $Ti_2O(OAc)_6$, where Ac is an acyl radical of a carboxylic acid of 1 to 20 carbon atoms.

4,122,287

METHOD OF PREPARING 2,6-DI-TERT.BUTYL-4-METHYLPHENOL

Nina Vasilievna Zakharova; Alexandr Grigorievich Liakumovich, both of ulitsa Galeeva, 10, kv. 8, Kazan; Jury Ivanovich Michurov, prospekt Lenina, 13, kv. 4, and Zoya Stepanovna Shalimova, ulitsa Druzhby, 19, kv. 56, both of Sterlitamak, all of U.S.S.R.

Filed Feb. 16, 1977, Ser. No. 769,116
Int. Cl.² C07C *39/06*
U.S. Cl. 568—784 **4 Claims**

1. A method of preparing 2,6-di-tert.butyl-4-methylphenol which comprises reacting 2,6-di-tert.butylphenol with formaldehyde and dimethylamine in a medium of an alcohol selected from the group consisting of methanol and ethanol at a temperature ranging from 80° to 90° C. with the formation of a reaction mass containing N,N-dimethyl-3,5-di-tert.butyl-4-hydroxybenzylamine and readily-volatile products, viz. an alcohol selected from the group containing methanol and ethanol, water and bis-amine; removing said readily-volatile products from the resulting reaction mass by heating thereof to a temperature ranging from 110° to 140° C. simultaneously with purging said reaction mass with an inert gas containing a secondary amine in an amount ranging from 5 to 50% by volume; contacting the remaining N,N-dimethyl-3,5-di-tert.butyl-4-hydroxybenzylamine with hydrogen at a molar ratio therebetween of 1:4–10 respectively on a hydrogenation catalyst at a temperature ranging from 120° to 160° C. with the formation of the desired product; and isolation of the latter.

4,122,288

HYDROLYSIS OF ALKYL SUBSTITUTED DIHALOBENZENE COMPOUNDS

Nils J. Christensen, Palatine, and Joseph Levy, Northbrook, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 16, 1977, Ser. No. 852,018
Int. Cl.² C07C *39/26*
U.S. Cl. 568—775 **6 Claims**

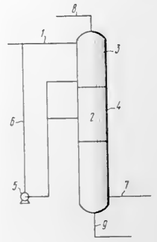
1. A process for the preparation of 5-t-butyl-2-fluorophenol which comprises treating 4-t-butyl-2-bromofluorobenzene with water and a salt of a strong base and a weak acid at a temperature of from about 100° C. to about 300° C., a pressure of from about atmospheric to about 2000 pounds per square inch and a time period of from about 0.5 to about 10 hours.

4,122,289

METHOD FOR PREPARING 2,6-DITERT.BUTYLPHENOL

Jury Ivanovich Michurov, prospekt Lenina, 13, kv. 4, Bashkirskaya ASSR, Sterlitamak; Vladimir Avgustovich Yanshevsky, ulitsa Kommunisticheskaya, 42, kv. 12; Rufina Alexandrovna Filippova, prospekt Uspenskogo, 3, kv. 19, both of Novokuibyshevsk; Yakov Abramovich Gurvich, Sretensky bulvar, 8, kv. 61, Moscow; Igor Jurievich Logutov, ulitsa Druzhby, 47, kv. 50; Sofya Alexandrovna Egoricheva, ulitsa Nagumanova, 56-a, kv. 23, both of Bashkirskaya ASSR, Sterlitamak; Izrail Markovich Belgorodsky, ulitsa Karla Marxa, 50, kv. 25, and Sergei Gerasimovich Vyborov, ulitsa Karla Marxa, 66, kv. 24, both of Tolyatti, all of U.S.S.R.

Filed Aug. 5, 1977, Ser. No. 822,376
Claims priority, application U.S.S.R., Aug. 11, 1976, 2409070
Int. Cl.² C07C *39/06*
U.S. Cl. 568—789 **2 Claims**



1. A method for preparing 2,6-ditert.butylphenol which comprises alkylating phenol with a mixture of isomeric butenes in the presence of monotert.-butylphenol and as catalyst, aluminum dissolved in phenol, the concentration of aluminum being 0.1–5% by weight of the phenol with gradual lowering of the temperature from 120° to 50° C., with concurrent reduction of the concentration of isobutylene in the mixture of isomeric butenes from 80 to 1.5 mol.%, followed by isolating the desired product.

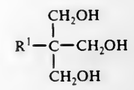
4,122,290

PROCESS FOR THE PREPARATION OF TRIMETHYLOLALKANES

Otto Immel; Hans-Helmut Schwarz; Oskar Weissel, and Heinrich Krimm, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 16, 1977, Ser. No. 861,472
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1977, 2702582
Int. Cl.² C07C *29/14*
U.S. Cl. 568—853 **7 Claims**

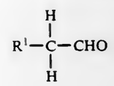
1. A process for the preparation of a trimethylolalkane of the formula



(I)

wherein

R^1 represents an aliphatic radical which comprises contacting an aldehyde of the formula



(II)

wherein

R^1 has the meaning indicated above with formaldehyde employing a mol ratio of formaldehyde to aldehyde of at least 8:1 in the presence of an aldol condensation base at a temperature between −20° and 5° C. and thereafter hydrogenating the resultant 2,2-dimethylolalkanal.

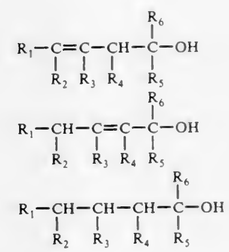
4,122,291

METHOD FOR THE PRODUCTION OF ALKEN-2-OL-1 OR OF ALKEN-2-OL-1 AND ALKANOL-1

Sunao Kyo; Tsumoru Renge, and Hidetsugu Tanaka, all of Kashima, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

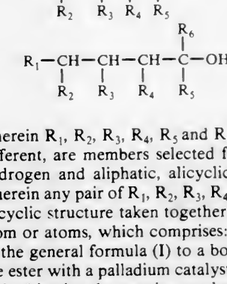
Filed Jun. 6, 1977, Ser. No. 803,889
Claims priority, application Japan, Jun. 8, 1976, 51-67920; Sep. 30, 1976, 51-117984
Int. Cl.² C07C *29/12*; C07F *5/04*; C07D *309/06, 309/18*
U.S. Cl. 568—887 **40 Claims**

1. A method of producing alcohols selected from the group consisting of alken-2-ol-1 of general formula (II) and alkanol-1 of general formula (III) and mixtures thereof, from an alken-3-ol-1 of general formula (I):



(I)

(II)



(III)

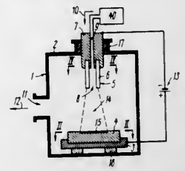
wherein R_1, R_2, R_3, R_4, R_5 and R_6, which may be the same or different, are members selected from the group consisting of hydrogen and aliphatic, alicyclic and aromatic residues and wherein any pair of R_1, R_2, R_3, R_4, R_5 and R_6 may constitute an alicyclic structure taken together with the intervening carbon atom or atoms, which comprises: converting said alken-3-ol-1 of the general formula (I) to a boric acid ester and contacting the ester with a palladium catalyst in the presence of hydrogen and subjecting the reaction product thus obtained to solvolysis.

4,122,292

ELECTRIC ARC HEATING VACUUM APPARATUS

Viktor Nikolaevich Karinsky, bulvar Novoselovoi, 10, kv. 43, Odintsovo Moskovskoi oblasti, U.S.S.R.

Filed Sep. 13, 1976, Ser. No. 722,655
Int. Cl.[2] H05H *1/26*
U.S. Cl. 13—2 P **23 Claims**



1. An electric arc heating vacuum apparatus for treating a workpiece made of an electrically conducting material, comprising an evacuated chamber; electrically conducting support means on which the workpiece is mounted within said chamber; a hollow hot cathode made of a thermionic alloy, mounted within said chamber and in spacial relationship with said electrically conducting support means, a cathode inner space within said hollow hot cathode facing said electrically conducting support means within said chamber; rods forming said hollow hot cathode and defining said cathode inner space, said rods having a side surface, upper ends and lower ends, said cathode inner space defined by said rods having a longitudinal dimension at least 1.5 times greater than the its smallest cross-section dimension; a cathode support, made of an electrically conducting material, secured fast with said hollow hot cathode formed of said rods within said evacuated chamber; means for delivering a flow of gas into said cathode inner space; a D.C. power source, a negative terminal of said D.C. power source being connected to said cathode support, a positive terminal of said D.C. power source being connected to said electrically conducting support means of said workpiece being treated, to initiate and sustain an electric arc between said hollow hot cathode and said workpiece being treated.

4,122,293

FEED SYSTEM FOR PLASMA-ARC FURNACE

Georgy Mikhailovich Grigorenko, ulitsa Frolovskaya, 1, kv. 5; Ivan Vasilievich Sheiko, ulitsa Schuseva, 36, kv. 52, both of Kiev; Konstantin Sergeevich Eltsov, ulitsa 40 let Sovetskoi Ukrainy, 6, kv. 7, Zaporozhie; Albert Nikitovich Korotkov, prospekt Lenina, 228, kv. 2, Zaporozhie; Alexei Ivanovich Pakhomov, ulitsa Pravdy, 25, kv. 48, Zaporozhie; Sergei Arsentievich Kanibolotsky, ulitsa Rizhskaya, 69, kv. 1, Kiev; Viktor Iosifovich Lakomsky, ulitsa Tbilisskaya, 21, kv. 32, Zaporozhie; Vladimir Denisovich Shevchenko, ulitsa Latinskaya, 17, kv. 120, Zaporozhie; Nikolai Mikhailovich Kiselev, pereulok Zhdanova, 30, Zaporozhie, and Gennady Fedorovich Torkhov, ulitsa Dobrokhotova, 28, kv. 6, Kiev, all of U.S.S.R.

Filed Apr. 19, 1977, Ser. No. 788,764
Int. Cl.[2] H05H *1/26*
U.S. Cl. 13—2 P **7 Claims**

1. A feed system for a plasma-arc furnace provided with an electrode having an axial opening and used as the low-temperature plasma generating means, said feed system comprising:

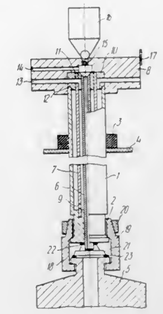
a gas conduit coaxially aligned with said electrode;

a current-conducting element coaxially aligned with said gas conduit;

a shell housing said current-conducting element and said gas conduit;

a fixing assembly for coupling said electrode to said gas conduit, said fixing assembly including two connecting pieces and a clamping ring, said connecting pieces being fitted around said shell and said electrode, and said clamping ring being secured around said connecting pieces;

a means for the delivery of flux to a melting zone of said plasma-arc furnace;



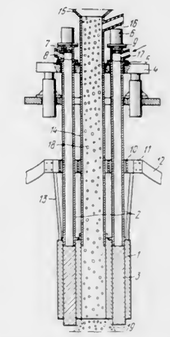
a flange having secured to it said shell and said flux delivery means, said flange having a duct for delivering gas, a duct for supplying water and a duct for feeding flux.

4,122,294

METHOD OF AND DEVICE FOR FORMING SELF-BAKING ELECTRODE

Jury Fedorovich Frolov, M. Muranouskaya ulitsa, 11, korpus 1, kv. 29, Moscow, U.S.S.R.

Filed Dec. 28, 1976, Ser. No. 755,041
Int. Cl.[2] H05B *7/09*
U.S. Cl. 13—18 R **8 Claims**



4. A device for forming a self-baking electrode, comprising;

a permanent current-carrying mold for forming and baking said electrode;

a mass-feeding passage, for feeding electrode mass, communicating with said permanent current-carrying mold;

a drive means, for shifting the electrode being formed, coupled to a side surface of a top part of said mass feeding passages with electrical insulation;

presses coupled with electrical insulation to a top surface of the top part of said mass-feeding passages;

a current distribution ring coupled with heat and electrical insulation to said mass-feeding passages;

a current lead from a power supply coupled to said current distribution ring;

water-cooled tubular busbars through which said current distribution ring is coupled with said permanent current-carrying mold;

a charge-loading means having a top part secured to said drive means and a bottom part communicating with said permanent current-carrying mold and around which said mass-feeding pipes are arranged, said part of said charge-loading means being fitted with a gas offtake; and

thermoelements for measuring the temperature of said electrode being formed.

4,122,295

FURNACE WALL STRUCTURE CAPABLE OF TOLERATING HIGH HEAT LOAD FOR USE IN ELECTRIC ARC FURNACE

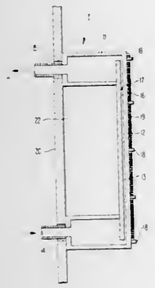
Toshio Nanjyo, Yokohama, and Akinori Nakamura, Kamakura, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Ote, Japan

Filed Jan. 4, 1977, Ser. No. 756,710

Claims priority, application Japan, Jan. 17, 1976, 51/4529; Nov. 11, 1976, 51/151316[U]

Int. Cl.² F27D *1/12*

U.S. Cl. 13—32 **10 Claims**



1. A high-heat-load furnace wall structure for an electric arc furnace wherein a cooling water passage is provided at the rear surface of a front plate of a main body which is made of copper or copper alloy and which is exposed in the furnace, and cooling water is circulated through said cooling water passage.

4,122,296

DISTRIBUTING AND POKING MACHINE FOR METALLURGICAL FURNACES

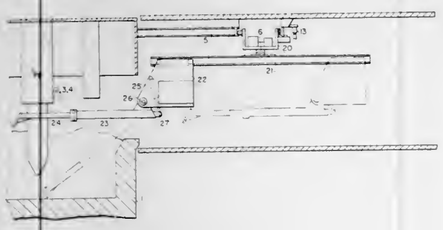
Otto Hümmler, Siegen, Fed. Rep. of Germany, and Bo Christer Welander, Ljungaverk, Sweden, assignors to Dango & Dienenthal, Siegen, Fed. Rep. of Germany and KemaNobel AB, Stockholm, Sweden

Filed May 23, 1977, Ser. No. 799,612

Claims priority, application Sweden, May 21, 1976, 7605823

Int. Cl.² F27D *23/02*

U.S. Cl. 13—33 **8 Claims**



1. In the known combination of
(1) a furnace,
(2) a plurality of vertical electrodes, and
(3) a mechanism for distributing and stirring the contents of said furnace,
the improvement consisting of a distributing and stirring mechanism that includes in combination,
(a) a circular track disposed adjacent the upper perimeter of said furnace,
(b) a first transport carriage that is supported by said circular track,
(c) motor means for moving said first transport carriage from one position to another in said circular track
(d) an elongated non-circular trackway supported by said first transport carriage, said non-circular trackway extending in a generally radial direction with respect to said circular track,
(e) a second transport carriage supported by said elongated non-circular trackway,
(f) means to move said second transport carriage back and forth within said elongated non-circular trackway,
(g) a furnace contents working device connected to said second transport carriage, and
(h) means to vary the angular disposition of said furnace contents working device.

4,122,297

ELECTRICAL BUSHING

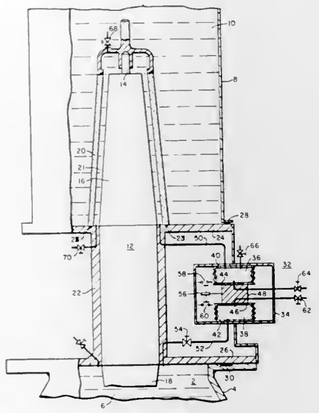
Antoine G. Mercier, Tassin la Demi Lune, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Oct. 27, 1977, Ser. No. 846,044

Claims priority, application France, Oct. 28, 1976, 76 32555

Int. Cl.² H01B *17/26;* H02H *5/08;* H01F *27/00*

U.S. Cl. 174—11 BH **3 Claims**



3. A safety device for a dielectric fluid-filled electrical bushing having one end disposed in a dielectric fluid-filled transformer and another end disposed in another dielectric fluid-filled enclosure, comprising:
first and second coaxial deformable capsules;
a movable plate disposed between and connecting said first and second capsules;
said first capsule being disposed in fluid communication with said dielectric fluid in said electrical bushing for exerting a first pressure on one side of said plate;
said second capsule being disposed in fluid communication with said dielectric fluid in said transformer for exerting a second pressure on the other side of said plate;
said plate being movable in first and second axial directions in response to the difference between said first and second pressures acting thereon; and
an electrical circuit having first and second electrical contacts;
said plate closing said first electrical contact when said second pressure exceeds said first pressure acting thereon and closing said second electrical contact when said first pressure exceeds the second pressure acting thereon.

4,122,298

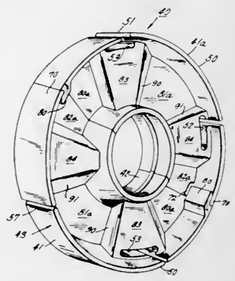
OFFSET CONSTANT THICKNESS WEB FOR INSULATOR SUPPORT DISK

Thomas F. Brandt, Swarthmore, Pa., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Jun. 21, 1977, Ser. No. 808,709

Int. Cl.² H01B *9/04*

U.S. Cl. 174—28 **11 Claims**



1. An insulator support disk for supporting the central conductor of a gas-insulated transmission line within an outer grounded housing which is coextensive with said central conductor; said insulator support disk consisting of at least first and second identical segments which fit over the central conductor of a transmission line and define a continuous disk therearound; each of said segments having a central axially extending rim for gripping a central conductor and an axially extending outer rim for gripping the interior of an outer housing; each of said segments having a central web extending between said outer rim and said central rim; and means for securing said at least first and second segments to one another to define a continuous support disk; said central web for each of said segments having at least first and second flat sections each extending between said central rim and said outer rim; and being displaced relative to one another in the direction of the axis of said disk, thereby to increase the stiffness modulus of said central web.

4,122,299

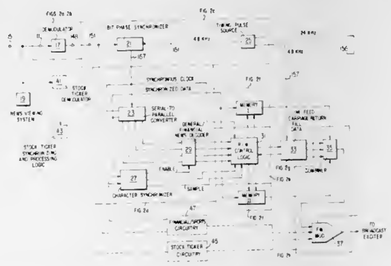
DATA OUTPUT FORMAT MODIFYING SYSTEM

Robert S. Cannon, Jupiter, Fla., assignor to Palm Beach Cable Television Company, Palm Beach Gardens, Fla.

Filed Feb. 8, 1977, Ser. No. 766,707

Int. Cl.² H04L *17/00;* H04N *7/18*

U.S. Cl. 178—26 A **11 Claims**



1. A system for placing a stream of data signals representing characters arranged for a television display into a format for acceptance by a communications printer for printing out of the data with a selected number of characters per line, comprising:
a data adapter member including: signal storage means composed of two memory units connected for receiving and temporarily storing successive portions of the stream of character data signals; output means; control signal generating means for generating signals required to instruct a communications printer to begin printing out a new line of characters; and control means connected to said memory units and generating means for causing successive data signal portions to be written into alternate ones of said memory units and to be read out from said memory units in alternation, each data signal stream portion being read out in successive segments to said output means, each segment containing signals representing such selected number of characters, and for supplying to said output means, during intervals between read out of successive segments, the signals required to instruct the printer to begin a new line of characters, said output means emitting signals corresponding to the signals supplied thereto; and
a printer controller member connected to receive the signals emitted by said output means and to supply the information contained in those signals to a communications printer.

4,122,300

DATA TRANSMISSION SYSTEM AND APPLICATION THEREOF TO THE TRANSMISSION OF ANALOG SIGNALS AND OF DATA IN A NETWORK WITH DELTA MODULATION

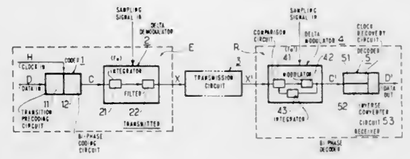
René Busigny, Gif sur Yvette, and Pierre H. Fuerxer, Paris, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Mar. 15, 1977, Ser. No. 777,824

Claims priority, application France, Mar. 19, 1976, 76.08052

Int. Cl.² H04L *25/00*

U.S. Cl. 178—68 **16 Claims**



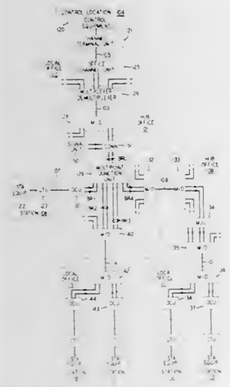
1. A data transmission system for transmitting a digital signal D from a first to a second location over an analog transmission channel, said system comprising:
at said first location:
a source of a system clock signal H of frequency F;
a coder, connected to and synchronized with said system clock signal, for coding said digital signal D into a bivalent signal C, said bivalent signal having no D.C. component, the transitions in said bivalent signal being separated by intervals of time given by the formula k/Fc, $Fc = 2F$, and where k is an integer, $1 \leqq k < K$, and K is a predetermined upper limit;
a source of a first sampling signal Fe, $Fe >> Fc$; and
a delta modulator, connected to said first sampling signal source and to the output of said coder, for processing said bivalent signal C with said sampling C with said sampling frequency Fe, the analog output of said delta demodulator comprising the input to said analog transmission channel; and
at said second location:
a source of a second sampling signal $F'e$, $F'e >> Fc$;
a delta modulator, connected to the output of said analog transmission channel and to said second sampling signal source, for processing the analog signal from said analog transmission channel with said sampling frequency $F'e$, said delta modulator delivering a train of delta bits forming a bivalent signal C'; and
a decoder, connected to the output of said delta modulator, for decoding said bivalent signal C', said decoder providing a conversion which is the inverse of that provided by the coder at said first location.

4,122,301

SELECTION OF BRANCH LINES OF MULTIPOINT JUNCTION CIRCUITS

Leo Michael Kolensky, Irvington; Walter Rudolph Schaefer, Wall Township, Monmouth County; Gabriel Gary Schlanger, West Orange, and Allan Howard Willand, Loch Arbour, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1977, Ser. No. 865,432
Int. Cl.[2] H04H *9/00;* **H04L** *25/20*
U.S. Cl. 178—73 **7 Claims**



1. A data switching unit including means effective when the switching unit is in a normal state for interchanging signals between a main line and a plurality of branch lines and means responsive to an initial appearance of an address signal on the main line for placing the switching unit in a test mode state, said placing means including means for precluding the interchange of signals with all but a selected one of the branch lines identified by the address signal characterized by

cancelling and blocking means effective when the switching unit is in the test mode state and responsive to an appearance of a control signal on the main line for cancelling the interchange preclusion with the branch lines and for blocking interchange of signals with the selected branch line whereby signals are interchanged between the main line and all but the selected branch line.

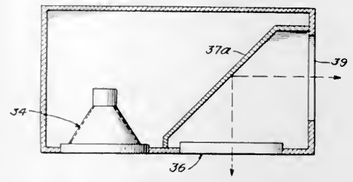
4,122,302

TWO WAY DYNAMIC AND ELECTROSTATIC SPEAKER ENCLOSURE WITH SIDE VENT FOR GREATER HIGH FREQUENCY DISPERSION

Lloyd J. Bobb, Glenside, Pa., assignor to Chester C. Pond, Doylestown, Pa., a part interest

Continuation of Ser. No. 705,129, Jul. 14, 1976, abandoned, which is a continuation of Ser. No. 476,893, Jun. 6, 1974, abandoned, which is a division of Ser. No. 79,488, Oct. 9, 1970, Pat. No. 3,821,490. This application Jul. 7, 1977, Ser. No. 813,666
Int. Cl.[2] H04R *1/20*
U.S. Cl. 179—1 E **3 Claims**

1. A speaker system comprising a cabinet having enclosing wall structure including front and side walls, lower frequency range dynamic and higher frequency range electrostatic speakers mounted in the cabinet in spaced edge-to-edge relation, with the front face of each exposed for sound radiation through a separate opening in the front wall thereof, a sound radiating opening through at least one side wall of the cabinet adjacent to the electrostatic speaker, the wall structure of the cabinet further including a back wall extended from one side wall to the opposite side wall behind the dynamic speaker, the wall structure of the cabinet including the front, side and back walls of the cabinet defining a volumetrically rectangular enclosure within which the rear face of each speaker is exposed, and baffle structure within the cabinet dividing the rectangular volume within the speaker enclosure into separate portions in which the rear faces of the dynamic and electrostatic speakers are respectively exposed, the baffle structure



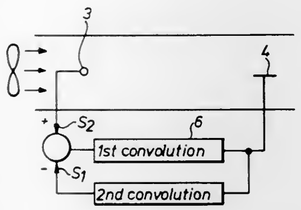
including a baffle wall dividing said separate portions of said volume from each other, said baffle wall being positioned behind the electrostatic speaker at an oblique angle providing for reflection of sound from the back of the electrostatic speaker through the opening in the side wall of the cabinet.

4,122,303

IMPROVEMENTS IN AND RELATING TO ACTIVE SOUND ATTENUATION

George Brian Barrie Chaplin, and Roderick Alan Smith, both of Colchester, England, assignors to Sound Attenuators Limited, Colchester, England

Filed Dec. 10, 1976, Ser. No. 749,472
Int. Cl.[2] H04R *1/28*
U.S. Cl. 179—1 P **10 Claims**



1. Apparatus for achieving attenuation of a primary wave in a system by a specially generated secondary wave comprising first transducer means for deriving a first electrical signal representing, in a time-related manner, the primary wave to be attenuated, second tranducer means for generating the secondary wave from a second electrical signal, storage means in which a programme of time-related operational steps characterizing the system is contained and means for convolving the first electrical signal with the programme to produce the second electrical signal.

4,122,304

CONTROL CIRCUITRY FOR A RADIO TELEPHONE

Thomas Owen Mallien, II, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 1, 1977, Ser. No. 783,888
Int. Cl.[2] H04M *11/00, 1/27*
U.S. Cl. 179—2 EB **30 Claims**

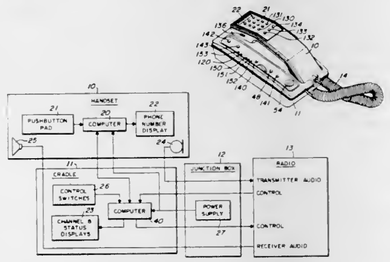
1. A control circuitry for a radio telephone transceiver including a transmitter, a receiver, a supervisory unit for providing supervisory signalling between the radio telephone transceiver and a base station, a cradle, and a handset having a pushbutton dial for entering the digits of a telephone number, said control circuitry comprising:

a first computer having a first read-only memory for storing a first control program and a first read-write memory, said first computer being disposed in the handset, said first computer receiving the entered telephone number, converting the received telephone number to a related coded telephone number and storing the related coded telephone number in the first read-write memory;

a second computer having a second read-only memory for storing a second control program, and a second read-write memory, said second computer being disposed in the cradle;

a bidirectional data bus having a plurality of data lines for coupling said first computer to said second computer;

a data-bus control line from said first computer for controlling the direction of data carried on said bidirectional data bus; and



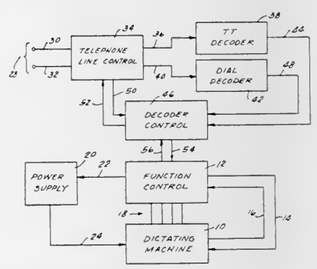
a second pushbutton located on the pushbutton dial, said first computer responsive to an activation of said send pushbutton for reading out from the first read-write memory the stored related coded telephone number, providing a predetermined first binary state on said data-bus control line for directing data from said first computer to said second computer, and coupling in succession the digits of the read-out related coded telephone number to said bidirectional data bus, said second computer responsive to the predetermined first binary state on said data-bus control line for successively receiving the digits of the related coded telephone number from said bidirectional data bus and outpulsing the received digits of the related coded telephone number to the supervisory unit.

4,122,305

DICTATING MACHINE CONTROL UNIT

Leonard A. Fish, 21 West Goethe, Chicago, Ill. 60601; Harvey A. Brodsky, 9440 Lincolnwood Dr., Evanston, Ill. 60203, and Bruce Weitzel, 8315 Rte. 53, Woodridge, Ill. 60615

Filed Aug. 17, 1973, Ser. No. 389,341
Int. Cl.[2] H04M *11/10*
U.S. Cl. 179—6 E **4 Claims**



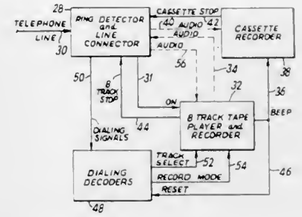
1. A dictating machine control unit adapted to control operation of a dictating machine connected therewith, said control unit comprising ring detector means for detecting a ringing condition on a telephone transmission line, generating means responsive to said ring detector means for generating a guard tone for a predetermined time interval, recording means responsive to said generating means for recording said guard tone on the recording medium of the dictating machine, means operative subsequent to the generation of said guard tone for receiving signals from said transmission line and recording them on said recording medium, first means responsive to control signals generated by a coded tone handset and transmitted over said transmission line for causing said dictating machine to execute an operational function, and second means responsive to control signals generated by a dial type handset and transmitted over said transmission line for causing said dictating machine to execute an operational function.

4,122,306

TELEPHONE ANSWERING APPARATUS PROVIDING SELECTIVE MESSAGE COMMUNICATION

Jacob Friedman, 130 Clymer St., Brooklyn, N.Y. 11211; Sandor Goldner, 4308 10th Ave., Brooklyn, N.Y. 11219, and Jacob Lax, 850 44th St., Brooklyn, N.Y. 11220

Filed Nov. 24, 1975, Ser. No. 634,402
Int. Cl.[2] H04M *1/64, 1/65;* **G11B** *15/02*
U.S. Cl. 179—6 E **26 Claims**



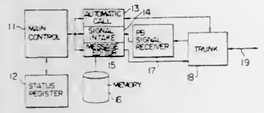
1. In a telephone answering apparatus for interconnection to a telephone line comprising coupling means for seizing the telephone line in response to an incoming telephone call and recording means operatively communicating with said telephone line through said coupling means for recording and playing back messages, the improvement comprising decoding means interconnected to said telephone line through said coupling means for decoding numbers entered onto said telephone line by the caller after the recording means is in communication with said telephone line, recording control means responsive to the numbers decoded for controling the operation of said recording means, and recording means comprising means for recording and playing back a plurality of recording tracks, recording-mode-signal-detecting means coupled between said decoding means and said recording means for detecting a particular decoded number entered onto the same telephone line as is seized, and in response thereto switching said recording means to a record mode, whereby incoming messages can be recorded on the particular track selected, wherein said recording control means further includes track selecting means for selecting a particular one of the recording tracks corresponding to the number decoded whereby that track is placed in communication with the telephone line, wherein the recording medium includes a plurality of recording levels, each level having a left and right audio channel, and wherein said recording means further comprises right and left audio-channel-selectors responsive to said decoded number for selecting the audio channel corresponding to the decoded number.

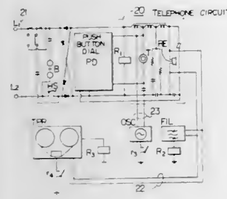
4,122,307

TELEPHONE VOICE FREQUENCY RESPONSE SYSTEM FOR MESSAGE RECORDING

Akio Suehiro, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 10, 1977, Ser. No. 823,427
Claims priority, application Japan, Aug. 13, 1976, 51-96029
Int. Cl.[2] H04M *1/64*
U.S. Cl. 179—6 R **3 Claims**





1. A voice frequency response system consisting of a central voice frequency response device and a terminal unit, said central voice frequency response device including means for confirming a specific code allotted to said terminal unit, and said terminal unit including means for recording voice information transmitted from said central voice frequency response device, and means for applying said specific code to said central voice frequency response device, said system comprising means disposed in said central voice frequency response device for receiving said specific code, memory means disposed in said central voice frequency response device for storing, in addition to voice information, an actuating signal of voice frequency band in a portion thereof, means disposed in said terminal unit for detecting said actuating signal, means disposed in said central voice frequency response device for selectively reading out said actuating signal from said memory means to apply said actuating signal to said terminal unit prior to transmission of required voice information to said terminal unit upon confirmation of said specific code of said terminal unit by said confirming means in said central voice frequency response device, means disposed in said terminal unit for automatically starting the operation of said recording means upon detection of said actuating signal, and means disposed in said central voice frequency response device for detecting the commencement of the operation of said recording means in said terminal unit, whereby the required voice information is transmitted to said terminal unit after the commencement of the operation of said recording means in said terminal unit has been detected in said central voice frequency response device.

4,122,308

TELEPHONE CALL METERING DEVICE

Gerald J. Weinberger, Commack, and Stanley F. Miller, Rocky Point, both of N.Y., assignors to Utility Verification Corp., Commack, N.Y.

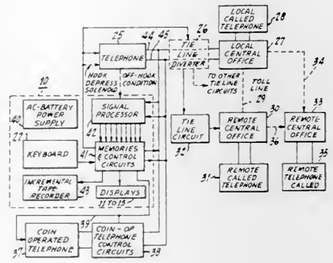
Filed Jun. 3, 1977, Ser. No. 803,203
Int. Cl.[2] H04M *15/18, 17/00*
U.S. Cl. 179—7.1 R **45 Claims**

1. A telephone call cost determining device for determining the cost of a telephone call from a first telephone of a calling party having a corresponding first telephone number and a first area code associated therewith, to a selected one of a multiplicity of second telephones each having a corresponding second telephone number which may include an area code, said cost being dependent upon a predetermined billing rate schedule and the duration of the call, said device being situate at and operatively associated with said first telephone, comprising:

a first memory for storing a first coded signal corresponding to said first telephone number;

telephone rate memory means for storing coded rate signals corresponding to a billing rate schedule for telephone calls initiated from a calling telephone having a number within said first area code, said stored rate signals comprising rate information for telephone calls to each of said multiplicity of second telephones from any telephone having a number within said first area code;

said memory means having means for determining rate information for local calls within defined local rate zones, (ii) non-local calls having distance-dependent rates, and (iii) non-local calls having fixed rates for calls between predetermined rate centers;



a keyboard for generating a second coded signal corresponding to said second telephone number of said selected telephone;

addressing means responsive to said first and second coded signals for addressing said telephone rate memory means to select a third coded signal corresponding to rate information stored therein respecting the cost of said call;

telephone call timing means responsive to a call connection signal and a call termination signal for providing a coded call duration signal corresponding to the time interval between said connection and termination signals;

cost determination means responsive to said third coded signal and said coded call duration signal for generating a fourth coded signal corresponding to the cost of said call between said first and second telephone; and

means responsive to said fourth coded signal for displaying the cost of said call to the calling party.

4,122,309

SEQUENCE GENERATION BY READING FROM DIFFERENT MEMORIES AT DIFFERENT TIMES

Christian Carl Jacobsen, Norwalk, Conn., assignor to General Datacomm Industries, Inc., Wilton, Conn.

Filed May 26, 1977, Ser. No. 800,808
Int. Cl.[2] H04J *3/16*
U.S. Cl. 179—15 BA **25 Claims**

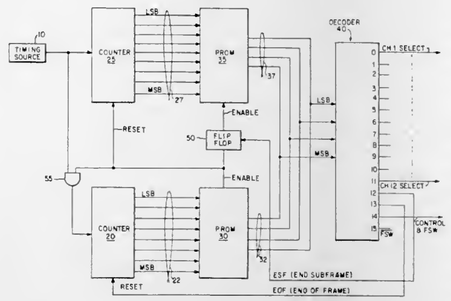
10. In a data communication system for multiplexing or demultiplexing a plurality of communication channels, a method of generating a sequence of channel select signals in which said sequence has a first portion and a second portion, said method comprising the steps of:

providing first and second memories, each of which produces at least some different output signals in response to at least some different input signals, the output signals from said first memory being related to the signals in the first portion of said sequence and the output signals from said second memory being related to the signals in the second portion of said sequence, said first and second portions being generated at different times,

producing a series of input signals to each of said first and second memories,

enabling output signal generation from the first memory in response to a control signal from the second memory and enabling output signal generation from the second memory in response to a control signal from the first memory,

said input signals to the first memory being generated once for each entire sequence so that the first portion of the



entire sequence is generated only once during the generation of the entire sequence,

said input signals to the second memory being generated a plurality of times during the generation of an entire sequence so that the second portion of the entire sequence is generated a plurality of times during the generation of the entire sequence; and

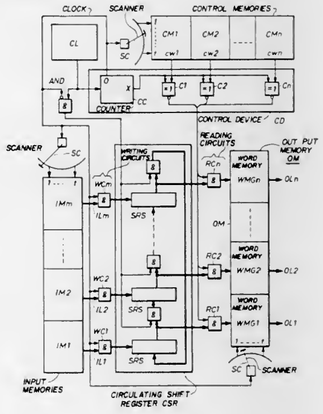
decoding the output signals from said first and second memories to produce channel select signals.

4,122,310

SPACE STAGE IN A PCM-EXCHANGE

Lars Ola Rydén, Johanneshov, and Karl Olof Ingmar Andersson, Ektorp, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 7, 1977, Ser. No. 785,415
Claims priority, application Sweden, Apr. 30, 1976, 7605008
Int. Cl.[2] H04J *3/00*
U.S. Cl. 179—15 AT **3 Claims**



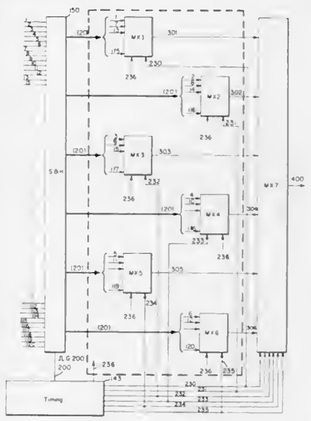
1. In a PCM-exchange including incoming links and outgoing links wherein PCM-words arrive on the incoming links and depart on outgoing links in a fixed-cycle operation during time slots in a time-division multiplex system under control of control words indicating desired outgoing links arriving in synchronism with the PCM-words, the improvement comprising: a space stage for connecting the incoming links to the outgoing links comprising: a recirculating shift register having a plurality of shift register stages, each of said stages having an internal input and an internal output, the internal output of each shift register stage being connected to the internal input of an adjacent shift register stage whereby the recirculating shift register stages form a closed loop, and each of said stages having an external input and an external output; a plurality of controllably operated writing circuits, each of said writing circuits having an input connected to one of the incoming links and an output connected to the external input of one of the stages of said recirculating shift register; a plurality of controllably operated reading circuits, each of said reading circuits having an input connected to the external output of one of the stages of said recirculating shift register and an output; connecting means for connecting the outputs of said reading circuits to the outgoing links; a clock pulse means for generating shift pulses for stepping said recirculating shift register with a frequency such that every PCM-word in a time slot can be shifted through a plurality of stages of said recirculating shift register during the elapsed time for the time slot; means for connecting said writing circuits to said clock pulse means so that one of the pulses generated by said clock pulse means during each time slot activates said writing circuits to write PCM-words from the incoming links into the associated stages of the recirculating shift register; control means connected to said clock pulse means and receiving the control words of the time slot for selectively activating each of said writing circuits during particular shift pulses occurring during the time slot as indicated by the control words whereby the PCM-words in the stages of the recirculating shift register are transferred via said connecting means to the desired outgoing links.

4,122,311

ELECTRONIC MULTIPLEXER FOR PARALLEL, BI-DIRECTIONAL SCANNING THERMAL IMAGING SYSTEM

Robert W. Klatt, and Preben B. Jensen, both of Rancho Palos Verdes, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 13, 1977, Ser. No. 841,612
Int. Cl.[2] H03K *17/04*
U.S. Cl. 179—15 BL **3 Claims**



1. A multiplexing circuit for responding to a plurality of applied-in-parallel analog input signals to produce a serial output signal which is indicative of the simultaneously sampled value of each of said analog input signals, said circuit comprising:

(a) sample-and-hold means responsive to sampling enable

signals for periodically sampling all of the analog input signals simultaneously and holding each resultant sample value on a sample-and-hold means output channel;

(b) first multiplex means comprising a first group of multiplexers each having a plurality of input channels coupled to a mutually exclusive subset of sample-and-hold means output channels and a single multiplexer output channel, each multiplexer of said first group including gating means, which responds to gating signals, for sequentially gating therethrough the resulting signal samples on said subset of sample-and-hold means output channels to said single multiplexer output channel so as to form a first serial signal;

(c) second multiplex means having a plurality of input channels each coupled to a different one of said output channels of said first group of multiplexers and including a plurality of gating means, which respond to gating signals, for intermittently and sequentially gating therethrough the plurality of first serial signals from the first group of multiplexers so as to form a second serial signal which comprises a defined sequence of signal samples from said input channels; and

(d) timing means for providing said gating signals and said sampling enable signals which are so timed relative to one another that all of said resultant sample values are held until each resultant sample value has been gated through said first and second multiplex means to form said second serial output signal.

4,122,312

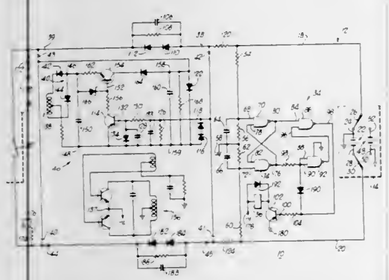
LOOP EXTENDER

Frederick J. Glenn, Arlington Heights, Ill., assignor to Cook Electric Company, Morton Grove, Ill.

Continuation of Ser. No. 681,232, Apr. 28, 1976, abandoned. This application Jan. 31, 1978, Ser. No. 873,849

Int. Cl.[2] H04Q *1/30*

U.S. Cl. 179—16 F **11 Claims**



1. A loop extender for a pair of telephone lines extending from a telephone central office having a central office DC power supply adapted to be connected to said telephone lines with at least first and second modes, said telephone lines having thereon a plurality of DC potential states including at least first and second DC potential states indicative of said first and second modes of said central office DC power supply, said loop extender comprising:

a control circuit means coupled to said telephone lines so as to continuously monitor the DC potential states of said telephone lines to detect changes in said DC potential states, said control circuit means having a first output whenever said first DC potential state is detected on said telephone lines and maintaining said first output until said second DC potential state is detected on said telephone lines, at which time said control circuit means has a second output which is maintained by said control circuit means until said first DC potential state is detected on said telephone lines,

a DC booster power supply having a source of DC potential, and

a switching means controlled by said first and second outputs of said control circuit means and coupling said DC booster power supply into one of said telephone lines in response to said first output and into the other of said telephone lines in response to said second output such that said DC booster power supply is maintained in series aiding polarity with said central office DC power supply.

4,122,313

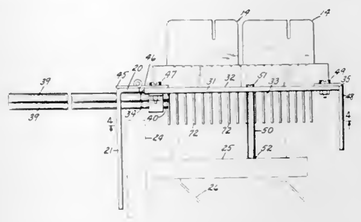
TELEPHONE CONNECTOR CUTOVER BLOCK

Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,680

Int. Cl.[2] H05K *1/07*

U.S. Cl. 179—98 **4 Claims**



1. An auxiliary telephone connector block for use in changing the connection of individual telephone subscriber circuits from one switching equipment location to another switching equipment location, said block comprising: a generally planar frame element including a main wall, a plurality of elongated circuit board engaging means mounted upon a surface of said main wall, a corresponding plurality of planar circuit boards, each having first and second oppositely disposed surfaces, each of said first and second surfaces having differing circuits thereon; said circuit boards being selectively engaged in either of two orientations relative to a respective circuit board engaging means; first, second and third pluralities of terminals carried by said main wall adjacent each of said circuit board engaging means in such positions as to establish electrical communication with corresponding terminals on said circuit boards upon the engagement thereof; the circuits on said first and second surfaces of each of said circuit boards being so configured as to establish communication between said first and second pluralities of terminals when engaged in one of said orientations, and establish communication between said first and third pluralities of terminals when in the other of said orientations.

4,122,314

LOUDSPEAKER HAVING A LAMINATE DIAPHRAGM OF THREE LAYERS

Atsushi Matsuda, Tokyo; Jun Kishigami, Urawa, and Masaaki Nishimura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1977, Ser. No. 863,426

Claims priority, application Japan, Dec. 23, 1976, 51-155239

Int. Cl.[2] H04R *7/10, 7/20, 9/06*

U.S. Cl. 179—115.5 R **14 Claims**

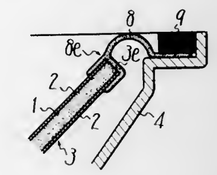
1. A loudspeaker comprising:

a diaphragm including first and second layers and a core sandwiched between said layers, said core being secured to an inner surface of each of said layers to form a unitary structure therewith;

means for vibrating said diaphragm in accordance with a varying electrical signal supplied thereto; and

support means for supporting both said diaphragm and said

means for vibrating; the improvement wherein each of said layers is formed of materials through which the velocity of propagation of a longitudinal wave is greater



than 5000 m/sec. and wherein said core is formed of materials having a shearing elastic modulus G_{co} which exceeds the value

$$G_{co} > \frac{12\,E_f t_f (t_c + 2t_f)}{l^2}$$

where

E_f is the longitudinal elasticity of each of said layers,

t_f is the thickness of each of said layers,

t_c is the thickness of said core, and

l is the length across the surface of said diaphragm.

4,122,315

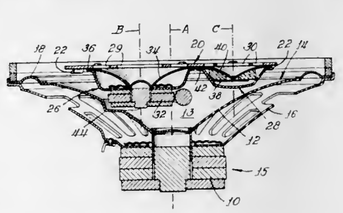
COMPACT, MULTIPLE-ELEMENT SPEAKER SYSTEM

Donald S. Schroeder, Barrington, and James F. Novak, La Grange Park, both of Ill., assignors to Pemcor, Inc., Westchester, Ill.

Filed Jun. 13, 1977, Ser. No. 805,819

Int. Cl.[2] H04R *1/26*

U.S. Cl. 179—115.5 PS **9 Claims**



1. An improvement in a compact, multiple-element high-fidelity speaker system, each element including an independent driver and a limited frequency range speaker cone associated with the river, the plurality of elements collectively providing a speaker system which is responsive to electrical signals to produce a substantially level audio signal over the high-fidelity sound spectrum, the system being of the type having a circumferential support frame having a central axis, a low-range frequency responsive cone and driver element supported by and mounted in coaxial relationship with the circumferential support frame, and a transverse support frame supported by the circumferential support frame at right angles to and intersecting the central axis, said transverse support frame with said low-range cone defining a generally conical volume but leaving a gap between said frame and said cone, the improvement comprising:

a. A mid-range frequency responsive cone and driver element mounted on said transverse frame within said conical volume on an axis parallel to said central axis, and

b. a high-range frequency responsive cone and driver element mounted on said transverse frame adjacent said mid-range cone and driver within said conical volume on an axis parallel to said central axis,

c. said low-range element cone having a generally conical diaphragm, said diaphragm having therein at least one integral recess for ensuring clearance at all times between said diaphragm and at least one of said drivers,

d. said transverse frame being ported at the mouths of said mid-range and said high-range cones.

4,122,316

PUSH BUTTON SWITCH ASSEMBLY HAVING INDEPENDENT OPERATOR INTERLOCK IN AT LEAST TWO ROWS LATCHING AT LEAST ONE OPERATOR

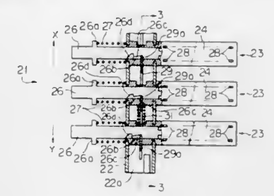
Sadayoshi Iwasaki, and Shinya Naganuma, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

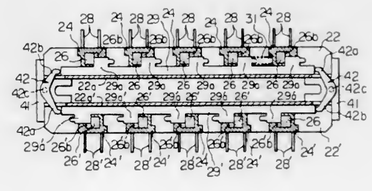
Filed Jan. 12, 1977, Ser. No. 758,592

Claims priority, application Japan, Jan. 28, 1976, 51-8245[U]; Jan. 28, 1976, 51-8246[U]

Int. Cl.[2] H01H *9/26;* **G05G** *11/00*

U.S. Cl. 200—5 B **15 Claims**





1. A switch assembly comprising:

a first switch block including a first frame member, a plurality of first push button switches supported by said first frame member, a first latch member common to and engaging said first switches and a first spring operatively associated with said first latch member for urging said first latch member toward a position latching said first switches;

a second switch block arranged generally parallel to said first switch block, said second switch block including a second frame member, a plurality of second push button switches supported by said second frame member and a second latch member common to and engaging said second switches, said second latch member being adapted to move into a position latching said second switches;

means for detachably connecting the end portions of said first frame member to adjacent end portions of said second frame member, said connecting means including first and second connector members each comprised of a resilient material and including portions detachably and resiliently interfitting with respective adjacent end portions of said frame members; and

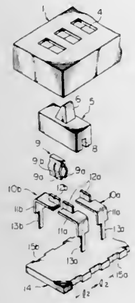
a first lever pivotally connected to one of said connector members and having generally opposing end portions thereof engaging with first adjacent ends of said first and second latch members respectively in such a manner that movement of said second latch member in one direction away from a latching position is transmitted through said first lever by a pivotal movement thereof to said first latch member causing said first latch member to move in the other direction away from the latching position thereof against the force of said first spring.

4,122,317

MULTI-CIRCUIT SWITCH

Shoji Shimamune, and Yoshimi Kamijo, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 13, 1977, Ser. No. 786,981
Claims priority, application Japan, Apr. 14, 1976, 51-42270
Int. Cl.[2] H01H *15/02*
U.S. Cl. 200—16 F **1 Claim**



1. A multi-circuit switch assembly suitable for use with a printed circuit board or the like, comprising

a housing comprised of an electrically insulating material and divided into a predetermined number of chambers, said housing being open at one end thereof and having a cover member at the other end thereof, said cover member having a number of openings each being associated with a respective chamber;

a number of sliders each adapted to be disposed in a respective chamber for sliding movement therewithin, said sliders each having a button member adapted to extend through a respective opening in said cover member and operable for actuation of said slider;

movable contact elements attached to respective sliders, each said movable contact element having clip-like portions having opposing inner contact surfaces;

a base member comprised of an electrically insulating material and adapted to be affixed to said open end of said housing, said base member having a number of recesses along opposing sides thereof; and

stationary contact members carried by said base member and each integrally formed with

main portions adapted to lie upon said base,

contact portions upturned from respective main portions and adapted to be engaged by movable contact elements, said contact portions having opposing outer surfaces each adapted to be engaged by the corresponding inner contact surfaces of respective clip-like portions,

terminal portions extending downwardly from respective main portions to terminal end portions, said terminal portions each extending within a respective one of said recesses, and

a lead frame interconnecting terminal end portions; whereby

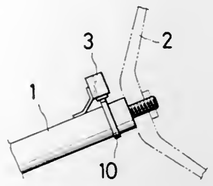
said assembly may be assembled by disposing said sliders and associated movable contact elements into respective chambers with said button members extending through respective ones of said openings in said cover member, fitting said base member carrying said stationary contact member into said open end of said housing, and then separating said lead frame from said terminals end portions.

4,122,318

SWITCH DEVICE ADAPTED TO RESPOND TO OPERATION OF STEERING HANDLE

Manabu Tashiro, Wako, and Akinori Sato, Machida, both of Japan, assignors to Stanley Electric Co., Ltd. and Honda Motor Co., Ltd., both of Tokyo, Japan

Filed May 12, 1977, Ser. No. 796,138
Claims priority, application Japan, May 20, 1976, 51-58050
Int. Cl.[2] H01H *3/16;* **B60Q** *1/00*
U.S. Cl. 200—61.54 **20 Claims**



1. A switch device adapted to respond to operation of a steering handle which is operatively connected to a steering shaft for rotating the steering shaft about its longitudinal axis, the switch device comprising:

actuating means fixed on a steering shaft for rotation in cooperation with operation of the steering handle, said actuating means having a plurality of actuating members;

a rotatable member having means engageable with said actuating members of said actuating means and which is rotatable over a given angle upon engagement with at least one of said actuating members, said rotatable member including a contactor; and

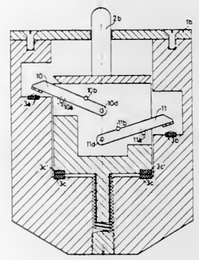
a contact member disposed in opposed relationship with said contactor so as to selectively contact with the said contactor upon rotation of said rotatable member.

4,122,319

ELECTRICAL SWITCH AND ITS USE FOR THE CONTROL OF MACHINES

Michel Jamet, Sesto-Calende, France, assignor to Euratom, Luxembourg

Filed Mar. 24, 1977, Ser. No. 780,803
Int. Cl.[2] H01H *3/00*
U.S. Cl. 200—153 J **10 Claims**



1. An electrical switch having a plurality of positions comprising

a housing having a control chamber including a plurality of recesses therein;

a plurality of first abutment means and a plurality of second abutment means located within said housing in said recesses, one of said first abutment means and one of said second abutment means being spaced apart within each of said recesses;

a linearly movable spring-loaded control element located within the control chamber of said housing and movable with respect thereto; and

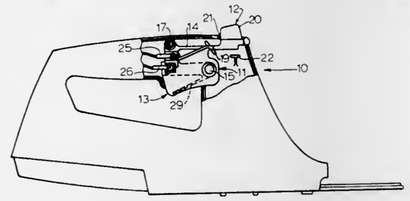
a plurality of arms pivotably attached to said control element and extending into corresponding recesses in said housing, each of said arms extending between the first and second abutments within its associated recess in an initial position of said switch, engaging a corresponding one of said first abutment means when said control element is displaced a predetermined amount to a corresponding operative position of said switch and being pivoted away from said first abutment means toward said second abutment means when said control element is displaced a further amount, each of said arms being returned to its nonpivoted position by cooperation with said second abutment means when said control element is restored to said initial position without again contacting said first abutment means.

4,122,320

HAND-OPERATED DOUBLE-ACTING TRIGGER SWITCH

James Ensign Edgell, Senatobia, Miss., and Charles Franklin Sherrill, Danville, Va., assignors to Disston, Inc., Danville, Va.

Continuation of Ser. No. 714,911, Aug. 16, 1976, abandoned.
This application May 9, 1977, Ser. No. 795,076
Int. Cl.[2] H01H *9/06, 13/08, 21/10*
U.S. Cl. 200—157 **5 Claims**



1. A safety trigger for a hand-held electric power tool including an electric power source and apparatus operated by said source and a hollow handle adapted for being gripped and encircled by the fingers of the operator's hand, comprising:

(a) a manually operable trigger member mounted within the handle including a finger engageable surface extending through a first opening provided in the handle proximate a finger position, said trigger being mounted for pivotal movement about a fixed axis transverse to the longitudinal axis of the handle from an inoperative position to an operative position, said trigger having a hollow portion providing a slide surface for engaging a leaf member to normally bias the trigger outwardly to the inoperative position;

(b) an integrally molded, manually operable safety button member mounted within the handle and including a body portion and a first resilient leaf member extending therefrom and terminating in a thumb engageable button extending through a second opening in said handle proximate a thumb position and being normally biased outwardly through said second opening by said first leaf member and being manually movable within said second opening against the resistance of said first leaf member, and a second leaf member extending from said body portion outwardly into contact with said slide surface of said trigger member for normally biasing said trigger outwardly through said first opening, said body portion being fixedly mounted within the tool housing with said leaf members depending therefrom;

(c) cooperative abutting surface formations on said trigger and button members enabling said safety button member to block rotation of said trigger member except when said button is moved some predetermined amount into said second opening;

(d) cooperative interlocking means on said trigger and button members defining said transverse axis of trigger rotation and serving to join said trigger member to said button member body portion for rotation of said trigger member about said axis; and

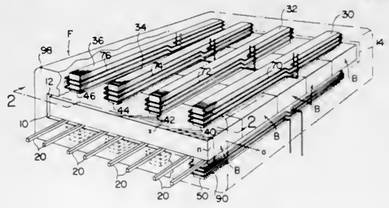
(e) cooperative electrical contact means carried on said trigger member and said button carrying member for making an electrical connection between the power source and apparatus upon rotation of said trigger member to the operating position.

4,122,321

INDUCTION HEATING FURNACE

John F. Cachat, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Feb. 16, 1977, Ser. No. 768,985
Int. Cl.[2] H05B *5/06*
U.S. Cl. 219—10.41 **2 Claims**



1. A furnace for heating a series of elongated workpieces each having an elongated axis and moving in axially parallel relationship along a heating path in a selected linear direction generally transverse to said workpieces and generally parallel with said path, said furnace comprising: a plurality of upper and lower, elongated, high permeability flux directing elements, said elements being independent of each other, each of said elements having an elongated generally flat pole surface extending in a direction parallel to said linear direction and facing said heating path; means for mounting said upper elements above said path at selected first locations spaced selected distances in a direction axially of said workpieces; means for mounting said lower elements below said path at selected second locations spaced selected distances in a direction axially of said workpieces; separate coil means encircling each of said elements in the longitudinal direction thereof; alternating current power means for energizing each of said coil means independently to cause separate mangetic flux fields for each of said pole surfaces, said fields extending from said pole surfaces of said elements perpendicularly into said path and each field entering and leaving the workpieces from one side of said path independently of the other flux fields; and, means for independently controlling said power means for each of said coil means and thereby the flux field thereof.

4,122,322

TEMPERATURE DETECTING UNIT EMPLOYED IN A MICROWAVE OVEN

Masaru Ohkubo, Yamatokoriyama, and Akihiko Ueno, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

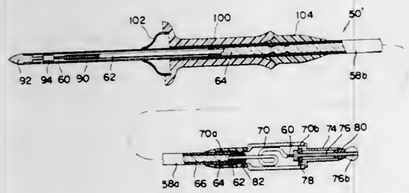
Filed Jul. 15, 1977, Ser. No. 816,196
Claims priority, application Japan, Jul. 20, 1976, 51-97159[U]; Jul. 20, 1976, 51-97160[U]
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 R **11 Claims**

1. A temperature detecting unit for use in a microwave oven incorporated with a control system for controlling energized

time thereof with respect to the temperature of an object to be heated placed inside a heating cavity, said control system connected to said temperature detecting unit through at least one pair of terminal means presented in a form of at least one pin-jack formed on a wall of said heating cavity, said temperature detecting unit comprising;

(a) a plug member having at least one projection provided with a first and second terminal means which are connectable to said pair of terminal means upon insertion of said projection into said pin-jack, a cylindrical casing having one end thereof connected to said projection and an other end portion being formed with a reduced diameter portion with an end thereof opened;

(b) an coaxial cable including an inner lead line, an inner insulating tube covered on the inner lead line, an outer lead line formed with a plurality of wires provided outside said inner insulating tube and a outer insulating tube covered on the outer lead line, and provided with a ring member slidably mounted on said inner insulating tube, said coaxial cable having one end inserted into said opening formed in said casing, said inner lead line loosely



extended to firmly contact with said first terminal, and said outer lead line being bared and extended along said reduced diameter portion, said ring member provided between said inner insulating tube and said outer lead line at said reduced diameter portion, said reduced diameter portion further formed with a further reduced diameter portion for tightly holding said outer lead line between said further reduced diameter portion and said ring member; and

(c) a probe member including an elongated tube member provided therein with a temperature detecting element, said elongated tube member having one end thereof formed in a shape capable of inserting the tube member into said object and an other end of said elongated tube member connected with an other end of said cable so as to connect said temperature detecting element with said inner and outer lead lines, said other end of said cable firmly connected with said other end of said elongated tube member by at least one reduced diameter portion formed in other end portion of said elongated tube member.

4,122,323

PHASE SHIFT DEVICE FOR MICROWAVE OVEN DOOR SEAL

James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 22, 1977, Ser. No. 835,950
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 D **14 Claims**

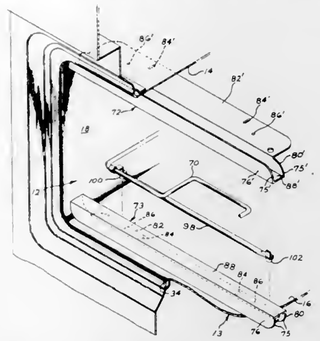
1. In a microwave oven having a cooking cavity with a rectangular door opening, cavity walls extending to the edge of the door opening, and a door, a phase shift device serving to prevent the escape of microwave energy past the interface between the cavity walls and the door, and comprising:

an electrically conductive generally U-shaped channel member having a length sufficient to extend across a substantial portion of one dimension of the cavity opening;

the parallel sides of said channel member being of unequal width; and

the wider channel side having a mounting flange along substantially the entire length thereof and extending perpendicularly thereto in a direction away from the open side of the channel;

said phase shift device mounted by means of said mounting flange to one of the cavity walls with the mounting flange extending away from the door opening, the channel sides



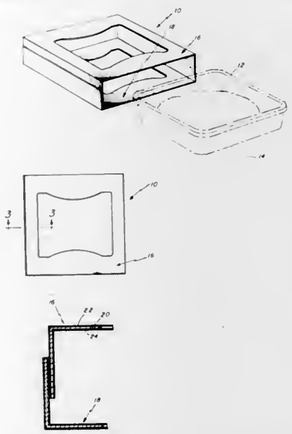
perpendicular to the one cavity wall, and the narrower channel side spaced a predetermined distance from an inner surface of the door.

4,122,324

SHIELDING DEVICE FOR MICROWAVE COOKING

Stephen A. Falk, Sherborn, Mass., assignor to Teckton, Inc., Wellesley, Mass.

Filed Jan. 5, 1977, Ser. No. 757,076
Int. Cl.[2] H05B *9/00*
U.S. Cl. 219—10.55 E **3 Claims**



1. A shielding package for use in the controlled heating of foods by microwave energy comprising:

a container formed from a dielectric sheet of material, said container having inner and outer surfaces;

one of said inner or outer surfaces being provided with a film of conductive material, opaque to microwave energy, said film covering the full area of said surface;

the other of said surfaces being coated with a heat-resistant, high temperature film over its entire surface;

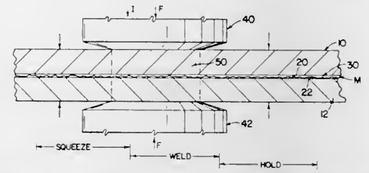
said container having, in its assembled state, at least one aperture formed therein to selectively control the extent of microwave energy which passes into the container.

4,122,325

METHOD OF JOINING TWO SHEET METAL PARTS

Harry Edwin Featherstone, Wooster, and Walter Grant Sniff, Jr., Smithville, both of Ohio, assignors to Orrville Products, Inc., Orrville, Ohio

Filed Jan. 21, 1977, Ser. No. 760,919
Int. Cl.[2] B23K *11/10*
U.S. Cl. 219—86.1 **11 Claims**



1. A method of joining first and second sheet metal parts along a common seam formed by a first surface on said first part and a second surface on said second part, said surfaces being in abutting relationship and having a corrosion resistant layer therebetween, said method comprising the steps of:

(a) providing a thixotropic, non-hardening corrosion resistant material including a solvent and having negligible gravity flow at temperatures less than 400° F. to 440° F. and forming a heat insulating, coherent gel when said solvent is burnt;

(b) applying a layer of said material of at least about 6 mils over said first surface;

(c) clamping said first and second surfaces together to form a common seam;

(d) placing spot welding electrodes on opposite sides of said seam and engaging said clamped metal parts at a weld zone extending through said parts;

(e) forcing said electrodes together at a selected pressure until the rate of change in the thickness of said layer per time is substantially zero, said selected pressure being greater than the electrode pressure necessary for spot welding third and fourth parts, respectively identical to said first and second parts at said seam and without said material therebetween;

(f) then passing a welding current of a selected amperage between said electrodes for a weld time sufficient to melt the metal of said parts at said surfaces and in said weld zone while continuing said forcing step at said selected pressure; and,

(g) after discontinuing said current, continuing said forcing step for a time sufficient to allow cooling and solidification of the melted metal of said parts in said weld zone.

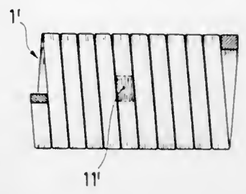
4,122,326

METHOD OF WELDING A SPIRAL SPRING TO PRODUCE A TOROIDAL RING

Bernard Mercier, Houilles, France, assignor to Le Joint Francais S.A., Paris, France

Filed Oct. 20, 1976, Ser. No. 734,274
Claims priority, application France, Oct. 24, 1975, 75 32617
Int. Cl.[2] B23K *11/02*
U.S. Cl. 219—104 **5 Claims**

1. A method for producing a toroidal ring from a spiral spring with contiguous turns by joining together the two ends of said spring, said method comprising positioning the two ends of the spring so that the respective end turns face each other in exact alignment with an overlap between a small end portion of said turns, pressing said end turns against each other with only their respective small end portions in contact, and simultaneously welding said small end portions together by passing a current therethrough and controlling the duration and intensity of the current so that the wire of the spring becomes continuous throughout the toroidal ring and all the turns of the toroidal ring are in a contiguous configuration with



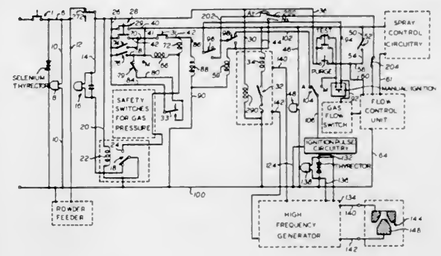
the geometric shape of the region of the weld being the same as the other portions of the turns of the spring.

4,122,327

AUTOMATIC PLASMA FLAME SPRAYING PROCESS AND APPARATUS

William A. Vogts, Middle Village, N.Y., and Horace S. Daley, Clifton, N.J., assignors to Metco Inc., Westbury, N.Y.

Continuation of Ser. No. 596,771, Jul. 17, 1975, Pat. No. 3,988,566, which is a continuation of Ser. No. 259,987, Jun. 5, 1972, abandoned. This application Aug. 4, 1976, Ser. No. 711,348
The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 P **8 Claims**



1. On a plasma flame-spraying apparatus having a source of a primary plasma gas, a source of a secondary plasma gas, a first conduit from said source of primary gas and a second conduit from said secondary gas to a plasma flame spraying nozzle, the plasma flame spraying nozzle having a gas inlet, a gas outlet and a passage therethrough between said gas inlet and said gas outlet, an electrode of negative potential juxtaposed to said passage, the wall of said nozzle being an electrode of opposite potential, a source of electrical current in an electrical circuit containing said two electrodes of sufficient power to maintain an electrical arc between said electrodes within said passage, and means for feeding a material to be sprayed into a gas passing through said nozzle or into gas passing out of said gas outlet, the improvement wherein

(a) said apparatus includes current determining means for measuring the current through said circuit containing said electric arc

(b) said second conduit includes an electrically responsive valve means for increasing or decreasing over a period of time the amount of secondary plasma gas flow through said second conduit and into said nozzle

(c) said valve means electrically connected to said current determining means, said valve means operative to compensatingly increase or decrease a plasma flow rate to compensate for an increase or decrease in the current through said arc.

4,122,328

DEVICE AND WELDING TORCH FOR PLASMA-MIG-WELDING

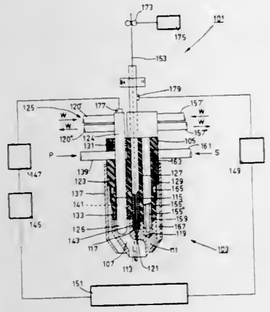
Wilhelmus Gerardus Essers; Gerardus Jelmorini, and Gerrit Willem Tichelaar, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 17, 1977, Ser. No. 778,603

Claims priority, application Netherlands, Mar. 31, 1976, 7603318

Int. Cl.² B23K *9/00*

U.S. Cl. 219—121 P **4 Claims**



1. A plasma-MIG welding torch, which comprises a housing provided with a nozzle and having a first passage; a contact tube positioned in said first passage and electrically connected directly to said nozzle, said contact tube being electrically insulated with respect to said housing and serving to continuously direct a consumable electrode into said nozzle; first means associated with said contact tube to supply power thereto and to the consumable electrode; a non-consumable electrode mounted in a second passage separated from said first passage and electrically insulated with respect to said housing and with respect to said contact tube; second means associated with said non-consumable electrode to separately supply power thereto; and a third passage in said housing for flowing a plasma gas through said nozzle.

4,122,329

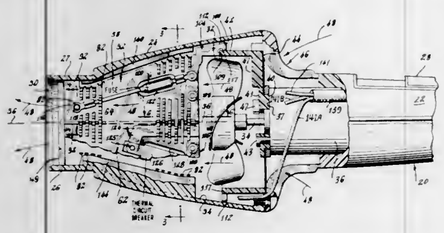
ELECTRICAL AIR HEATING APPLIANCE

Siegfried Godel, Norwalk, Conn., assignor to Palmor International Corporation, Newark, N.J.

Filed Jun. 21, 1976, Ser. No. 698,273

Int. Cl.² H05B *3/06;* **F24H** *3/04;* **A45D** *20/10;* **H01C** *1/142*

U.S. Cl. 219—370 **10 Claims**



1. In a heater for an electrical appliance comprising an elongated heater support means, formed of an electrically and thermally insulative material, having a longitudinal axis and a plurality of heater element support members extending radially from said axis, said members having elongated distal edges extending in the direction of said axis, a resistance wire heater element having a length thereof, said element wound in a helical configuration about said support members at said edges and extending in the direction of said axis, the improvement comprising means for providing an electrical connection at a location along the length of said element intermediate the ends thereof comprising an open terminal slot formed in a support member and extending inwardly from an edge thereof toward said longitudinal axis, a strip of electrically conductive material positioned in juxtaposed relationship with said support member and having an open slot formed therein which conforms with and is positioned in alignment with said open terminal slot in said support member, a segment of said wound heater element positioned in said aligned slots, and means for securing said segment in said slots and in electrical connection with said electrically conductive strip.

4,122,330

ELECTRIC HOT PLATE ASSEMBLIES

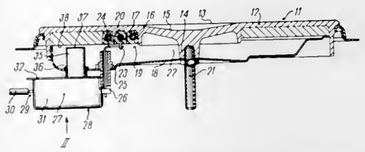
Karl Fischer, am Gaensberg, D - 7519 Oberderingen, Fed. Rep. of Germany, and Felix Schreder, Oberderdingen, Fed. Rep. of Germany, assignors to Karl Fischer, Fed. Rep. of Germany

Filed May 5, 1977, Ser. No. 794,207

Claims priority, application Fed. Rep. of Germany, May 6, 1976, 2620004

Int. Cl.² H05B *3/68*

U.S. Cl. 219—449 **25 Claims**



1. An electric hot plate assembly including an electrically heated hot plate having at least one electrical conductor disposed therewithin for heating an annular zone of the plate when energised, cover means defining an enclosed space located immediately beneath said hot plate and secured thereto, and a device for limiting the operating temperature of the hot plate, the temperature limiting device comprising a housing, a bimetallic element disposed in a first portion of said housing which projects into said enclosed space at a location beneath said annular zone, said first portion of the housing having a low thermal capacity, the housing having a base portion disposed externally of said enclosed space, means thermally insulating said base portion from said first housing portion, connecting terminals located in the base portion of the housing for connecting said at least one hot plate conductor to an electrical supply, and switch means located in said base portion of the housing and adapted to be actuated by the bimetallic element.

4,122,331

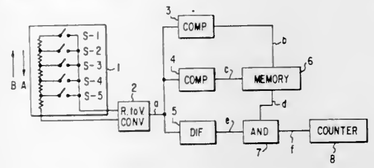
PASSER COUNTER

Naoki Tsubota, and Shibuya Satoru, both of Kyoto, Japan, assignors to Giken Trading Company, Kyoto, Japan

Filed Jun. 1, 1977, Ser. No. 802,568

Int. Cl.² G07C *9/00*

U.S. Cl. 235—92 PK **7 Claims**



1. A device for counting the number of persons communicating within a given area comprising:

a mat switch having a plurality of switches and a plurality of serially coupled resistors forming a series of nodes, each said switch having a first terminal coupled to one of said nodes and a second terminal coupled to a common output node, said switches and said resistors configured such that an output resistance of said mat switch undergoes a monotonic change as the switches are successively actuation by pressure of a person's foot on said mat switch as said person to be counted moves in a predetermined direction across said mat switch; and

first means for converting the changes in said output resistance into a signal to be counted, said first means coupled to said output node and one of said resistors; and

second means for counting said signals to obtain a cumulative sum.

4,122,332

BUNKER CONTENTS INDICATION EQUIPMENT

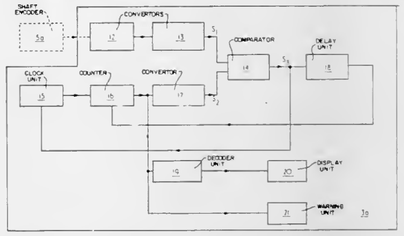
John Joseph Wilkinson, Burton upon Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed May 27, 1977, Ser. No. 801,427

Claims priority, application United Kingdom, Jun. 11, 1976, 24290/76

Int. Cl.² G06M *3/06*

U.S. Cl. 235—92 CA **8 Claims**



1. An apparatus for indicating the contents of a container having at least one mechanical component moving in proportion to the contents of said container comprising:

sensor means attached to said mechanical component for providing a first electrical signal proportional to movement of said mechanical component; and, indicator means for receiving said first electrical signal and displaying its magnitude, said indicator means comprising:

clock means for generating a pulsed electrical signal;

means for counting the pulses in said pulsed electrical signal and providing a second electrical signal representative of said counted pulses;

means for comparing said first and second electrical signals and for providing an output control signal when said first and second electrical signals represent equal values, said clock means being responsive to said output control signal to stop providing pulses;

time delay means responsive to said output control signal for providing a reset pulse to said counter a predetermined period of time after said output control signal appears; said clock means being further responsive to said reset pulse to recommence generating said pulsed electrical signals; and,

visual display means for displaying a value represented by said second electrical signal.

4,122,333

REFLECTIVE DEVICE AND METHOD FOR ILLUMINATING A SCENE

Paton B. Crouse, 1238 111th Ave., NE., Bellevue, Wash. 98004

Filed Jun. 28, 1976, Ser. No. 700,550

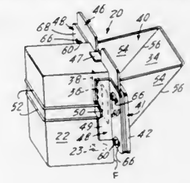
Int. Cl.² G03B *15/02*

U.S. Cl. 362—18 **39 Claims**

1. A reflective device for use with a source of illumination for illuminating a scene to be reproduced by a camera, which comprises:

reflective means including a reflective member having side edge portions and upwardly-disposed sidewalls each having an angularly-extending longitudional edge which communicates with a reflective member side edge portion, and

mounting means for mounting the reflective means on a support such that the reflective member is interposed at an angle between the source and the scene and intercepts the



source-directed illumination from its source-directed path and reflectively redirects at least a percentage of it to provide indirect illumination of the scene to be reproduced.

4,122,334

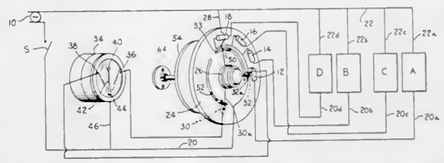
ILLUMINATION CONTROL APPARATUS FOR COMPENSATING SOLAR LIGHT

Lester J. Owens, Titusville, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 23, 1976, Ser. No. 753,977

Int. Cl.² H01J *39/12;* **H05B** *37/02*

U.S. Cl. 250—214 R **11 Claims**



1. Illumination control apparatus for supplementing light from solar radiation with light from an artificial light source to compensate for periods of insufficient levels of solar light to maintain a desired illumination level within an interior space comprising:

(a) a plurality of artificial light sources connected to an electrical power source;

(b) switch means connected between each said artificial light source and said power source for selectively energizing said light sources;

(c) movable actuator means operatively connected to said switch means for sequentially actuating and deactuating said switch means and controlling the on-off operation thereof;

(d) reversible motorized drive means connected to said power source and operatively connected to said actuator means for effecting movement thereof so as to cause sequential actuation of said switch means when said actuator is moved in one direction and sequential deactuation when said actuator means is moved in a reverse direction;

(e) light sensor means connected between said power source and said reversible drive means for detecting the illumination level of said interior space and controlling the operation of said drive means and the movement of said actuator means in response to said illumination level so that said switch means selectively controls said artificial light sources to maintain said desired illumination level over said interior space in combination with said solar light,

(f) limit means carried adjacent said actuator means for limiting the operation of said actuator means within a predetermined range of movement so as to prevent further movement thereof under detection of erroneous illumination levels; and

(g) said limit means including electrical limit switch means connected between said power source and said drive means being opened in response to movement of said

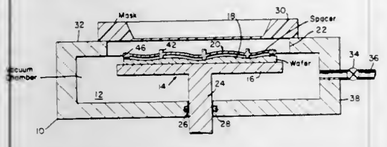
actuator means outside said predetermined range of movement to denergize said drive means.

4,122,335

METHOD AND APPARATUS FOR MASK TO WAFER GAP CONTROL IN X-RAY LITHOGRAPHY

Paul A. Sullivan, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 17, 1977, Ser. No. 807,707
Int. Cl.[2] G03B *41/16, 27/02*
U.S. Cl. 250—491 **6 Claims**



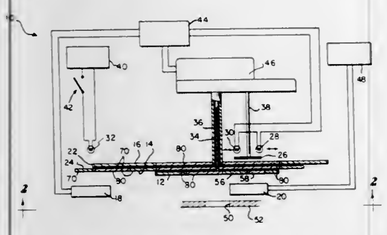
3. A process for aligning a mask and a wafer which comprises:
(a) inserting a flexible spacer between said mask and wafer and having a plurality of studs thereon extending substantially normal to said mask and wafer for receiving same in intimate contact at predetermined locations;
(b) aligning a pattern on said mask with chosen areas on said wafer to be developed;
(c) bringing said mask, wafer and spacer into contact with one another while maintaining an evacuated condition on both sides of said wafer; and
(d) removing the evacuated condition from one side of said wafer, whereby the differential pressure created on opposite sides of the wafer urges said wafer and spacer against said mask to tend to make the mask surface conform to the facing wafer surface, maintains a constant distance between said mask and wafer and thereby improves the resolution of resist patterns replicated thereon.

4,122,336

PROGRAMMABLE LIGHT ACTIVATED TIMING DEVICE

Daniel I. Pomerantz, Lexington, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Apr. 22, 1977, Ser. No. 789,811
Int. Cl.[2] G01D *5/34*
U.S. Cl. 250—229 **33 Claims**



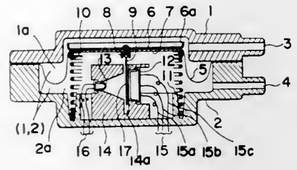
1. A programmable timing device for an appliance and the like comprising a plurality of elements each having substantially opaque and transparent portions for precluding and permitting the passage of light respectively, a means for rotating at least three of said elements in substantially dissimilar cycles, at least two light sources wherein each of said light sources is masked by an opaque portion of at least one of said elements and each of said light sources is at least periodically exposed by another element through a transparent portion of said one element in a programmed sequence of at least two time intervals, and a means responsive to each exposed light source for actuating a machine function of said appliance in said programmed sequence of time intervals at at least one power level.

4,122,337

PRESSURE-ELECTRICAL SIGNAL CONVERSION MEANS

Isamu Okuda, Yamatokoriyama; Hiroshi Horii, Kashihara, and Keijiro Mori, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadomashi, Japan

Filed Feb. 24, 1977, Ser. No. 771,675
Claims priority, application Japan, Feb. 26, 1976, 51-21501; Jul. 1, 1976, 51-78708
Int. Cl.[2] G01D *5/34*
U.S. Cl. 250—231 P **23 Claims**



1. A pressure-electrical signal conversion means comprising;
a main housing enclosing an interior space and having at least one inlet port adopted for admitting a fluid at a pressure to be measured;
a diaphram constituted by a flexible sheet element for dividing said interior space into first and second compartments, said inlet port communicating with only said first compartment and for being moved by the force resulting from a pressure difference in said compartments;
a pressure receiving plate attached to a central portion of said diaphram;
a biasing means in one of said separate compartments for applying a force to said pressure receiving plate in a direction to vary the volume ratio of said two separate compartments whose magnitude is proportioned to the position of said pressure receiving plate; and
pressure receiving plate position determining means located in one of said compartments including a light source for emitting light, a photosensitive unit for converting light impinging thereon to an electrical output having a pair of adjacent photosensitive elements of the same photosensitive material and a light image forming means coupled to said pressure receiving plate for receiving the light emitted by said light source and forming a light image on said photosensitive unit whose position its responsive to the position of said pressure receiving plate, in which the photoelectrical characteristics of each of said photosensitive elements vary complementarily in a direction parallel to the movement of said light image, whereby said photosensitive unit produces an electrical output which varies in proportion to the position of said pressure receiving plate.

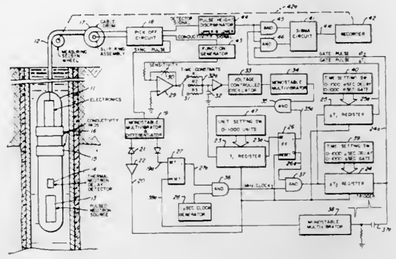
4,122,338

THERMAL NEUTRON DIE AWAY LOGGING SYSTEM WITH OPTIMIZED GATING

Harry D. Smith, Jr., and Robert W. Pitts, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,574
Int. Cl.[2] G01V *5/00*
U.S. Cl. 250—262 **10 Claims**

1. A system for measuring the rate of decrease of the thermal neutron population in earth formations in the vicinity of a fluid filled well borehole, comprising:
means for repetitively generating bursts of fast neutrons which are slowed down to thermal energy and captured by the nuclei of materials in earth formations in the vicinity of a well borehole;
means for detecting radiations indicative of the population of thermal neutrons in the vicinity of the borehole in at least two discrete time intervals subsequent to said repetitive bursts of fast neutrons;
means for measuring the electrical conductivity of the borehole fluid and for generating a signal representative thereof;



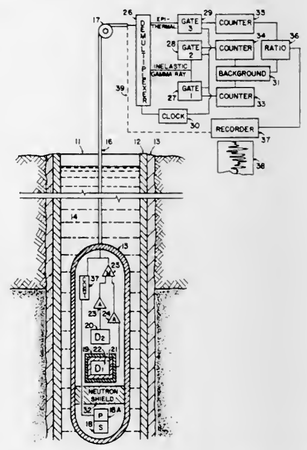
means responsive to said representative signal for adjusting a time delay relative to said repetitive bursts as a function thereof for establishing said time delay to the beginning of said at least two discrete time intervals for detecting said radiations indicative of the population of thermal neutrons in the vicinity of the borehole; and
means for determining as a function of said detected radiations in said at least two discrete time intervals following said repetitive bursts, the rate of decrease of the thermal neutron population in earth formations in the vicinity of the borehole.

4,122,339

EARTH FORMATION PULSED NEUTRON POROSITY LOGGING SYSTEM UTILIZING EPITHERMAL NEUTRON AND INELASTIC SCATTERING GAMMA RAY DETECTORS

Harry D. Smith, Jr., Houston; Michael P. Smith, Bellaire, and Ward E. Schultz, Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Apr. 20, 1977, Ser. No. 789,057
Int. Cl.[2] G01V *5/00*
U.S. Cl. 250—264 **8 Claims**



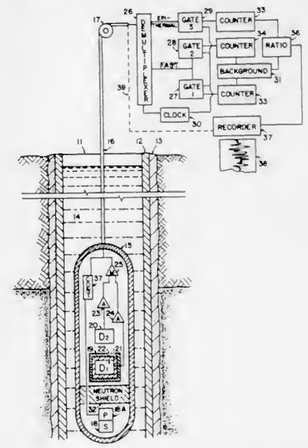
1. A method for determining the porosity of earth formations in the vicinity of a cased well borehole, comprising the steps of:
repetitively irradiating earth formations in the vicinity of a cased well borehole with relatively short duration bursts of fast neutrons from a pulsed neutron source;
detecting essentially only during said repetitive neutron bursts at a spaced distance from said neutron source, inelastic gamma radiation produced by the scattering of fast neutrons, said inelastic gamma radiation being representative of the fast neutron population in the vicinity of the borehole and generating a signal representative thereof;
detecting essentially only during the intervals between said neutron bursts at a spaced distance from said neutron source, the epithermal neutron population in the borehole and generating signals representative thereof; and
combining said inelastic scattering gamma radiation and said epithermal neutron representative signals to derive a measurement signal functionally related to the porosity of earth formations in the vicinity of the borehole.

4,122,340

PULSED NEUTRON POROSITY LOGGING SYSTEM

Harry D. Smith, Jr., Houston; Michael P. Smith, Bellaire, and Ward E. Schultz, Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Apr. 20, 1977, Ser. No. 789,059
Int. Cl.[2] G01V *5/00*
U.S. Cl. 250—264 **8 Claims**



1. A method for determining the porosity of earth formations in the vicinity of a cased well borehole comprising the steps of:
repetitively irradiating earth formations in the vicinity of a cased well borehole with relatively short duration bursts of fast neutrons from a pulsed neutron source;
detecting essentially only during said repetitive neutron bursts at a spaced distance from said neutron source, the fast neutron population in the borehole and generating signals representative thereof;
detecting essentially only during the intervals between said neutron bursts at a spaced distance from said neutron source, the epithermal neutron population in the borehole and generating signals representative thereof; and
combining said fast and epithermal neutron population representative signals to derive a measurement signal functionally related to the porosity of earth formations in the vicinity of the borehole.

4,122,341

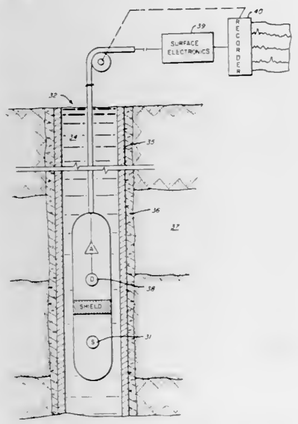
CEMENTING METHOD TO IMPROVE WELL LOGGING MEASUREMENTS IN CASED WELL BOREHOLES

Harry D. Smith, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 689,442, May 24, 1976, abandoned. This application May 31, 1977, Ser. No. 801,677

Int. Cl.² G01V *5/00*

U.S. Cl. 250—267 **3 Claims**



1. A method for improving the quality of neutron well logs by increasing the depth of investigation of such logs in a cased well borehole, comprising the steps of:

cementing the casing in a cased wellbore by the distribution of a cement slurry having a large thermal neutron capture cross section in the annulus between the casing and the wall of the wellbore, said slurry being given a large thermal neutron capture cross section by virtue of mixing dry cement with a water medium having distributed therein a fractional part of a soluble chlorine compound chosen for having a large thermal capture cross section;

filling the interior of the casing in a cased well borehole with a borehole fluid medium having a large thermal neutron capture cross section and comprising a water medium having distributed therein a fractional part of a preselected material chosen for having a large thermal neutron capture cross section; and

moving a well logging instrument through the well borehole thereby displacing a portion of said large thermal neutron capture cross section fluid and making measurements with said instrument of earth formations in the vicinity of the borehole.

4,122,342

X-RAY AND GAMMA RAY WAVEGUIDE, CAVITY AND METHOD

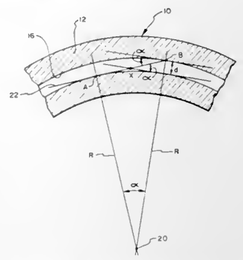
Victor Vali, Salt Lake City, Utah; Reuben S. Krogstad, and H. Robert Willard, both of Seattle, Wash., assignors to University of Utah Research Institute, Salt Lake City, Utah

Filed Apr. 13, 1977, Ser. No. 787,172

Int. Cl.² G03B *41/16*

U.S. Cl. 250—272 **11 Claims**

1. A waveguide for electromagnetic radiation of the X-ray and Gamma ray wavelength ranges comprising a waveguide having a hollow core, the material of construction adjacent the



hollow core having an index of refraction less than unity for said electromagnetic radiation.

4,122,343

METHOD TO GENERATE CORRELATIVE DATA FROM VARIOUS PRODUCTS OF THERMAL DEGRADATION OF BIOLOGICAL SPECIMENS

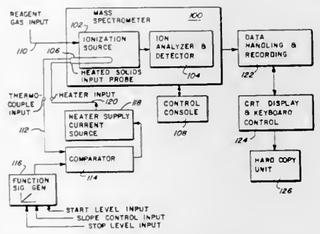
Terence H. Risby, State College, Pa., and Alfred L. Yergey, III, Columbia, Md., assignors to Chemetron Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 682,781, May 3, 1976, Pat. No. 4,075,475. This application Mar. 14, 1977, Ser. No. 777,366

The portion of the term of this patent subsequent to Feb. 21, 1995, has been disclaimed.

Int. Cl.² H01J *39/34*; B01D *59/44*

U.S. Cl. 250—282 **10 Claims**



1. In a method generating correlative data from various products, either known or unknown products, of thermal degradation of biological specimens and comprising sequential steps for each specimen of:

(a) degrading such specimen by heating such specimen so as to cause such products of thermal degradation of such specimen to be evolved;

(b) ionizing such products of thermal degradation of such specimen by a technique causing negligible fragmentation;

(c) detecting ion currents corresponding to different mass-to-charge ratios among the products of thermal degradation of such specimen, and

(d) recording such detected ion currents for such specimen;

as improvement wherein:

(e) each specimen is heated in an identical non-isothermal time-dependent heating sequence;

(f) a three-dimensional array comprising a large and sufficient number of ion currents, which correspond to substantially all detectible ratios of mass-to-charge within a range at a large and sufficient number of successive instants during the respective time-dependent heating sequences, are detected and recorded for each specimen,

wherein one dimension of each three-dimensional array represents ion currents, another dimension of such three-dimensional array represents mass-to-charge ratios, and another dimension of such three-dimensional array represents specimen temperatures as a function of process time; and

(g) representative data from the three-dimensional array thus recorded for each one of such specimens are correlated to representative data from the three-dimensional array thus recorded for each other of such specimens.

4,122,344

THERMAL IMAGING SYSTEM

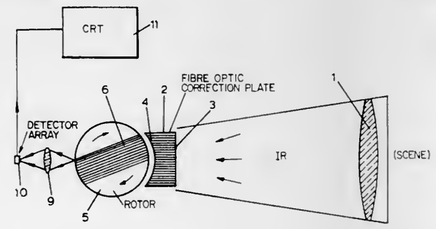
Alan Harold Lettington, and James Anthony Savage, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jun. 29, 1977, Ser. No. 811,415

Claims priority, application United Kingdom, Jul. 1, 1976, 27358/76

Int. Cl.² H01J *31/49*

U.S. Cl. 250—334 **8 Claims**



1. A thermal imaging system comprising means for focusing infra red radiation of a scene as a two dimensional image onto a rotor, said rotor being of circular cross section and having at least one bundle of infra red transmitting fibres arranged with the ends of the bundle at different parts of the curved surface of the rotor, a detector of infra red radiation disposed adjacent said rotor, said detector being capable of providing an electrical signal output representative of infra red energy incident thereon, means for rotating said rotor to sweep the image of said scene onto said detector, and means responsive to the electrical signal from said detector for displaying a two dimensional visible image representative of the scene.

4,122,345

SEMICONDUCTOR DETECTOR FOR DETECTING IONIZING RADIATION

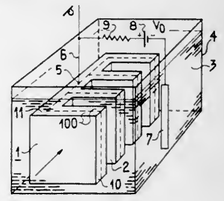
Henri Rougeot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 2, 1977, Ser. No. 773,834

Claims priority, application France, Mar. 9, 1976, 76 06717

Int. Cl.² G01T *1/22*

U.S. Cl. 250—370 **9 Claims**



1. A semiconductor detector for detecting ionizing radiation using a semiconductor body comprising surface barriers on certain of its faces and means for creating from these faces field zones where an electrical field prevails in operation, said detector additionally comprising means for detecting the signal resulting, in operation, from the movement in said field zones of free charges produced in the semiconductor by the incident ionizing radiation, wherein said surface barriers are those created at the interface between said semiconductor and an electrolyte bath with which it is in contact, wherein a scintillator which converts the incident ionizing radiation into a luminous radiation absorbed by said semiconductor body and producing ionization therein is dissolved in said electrolyte bath, and wherein said semiconductor body is in the form of a block formed with a series of indentations bathed by said electrolyte bath.

4,122,346

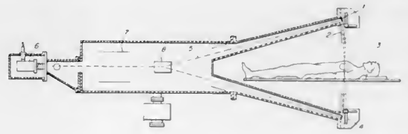
OPTICAL DEVICES FOR COMPUTED TRANSAXIAL TOMOGRAPHY

Harald Anton Enge, Winchester, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Filed Mar. 23, 1977, Ser. No. 780,492

Int. Cl.² H01J *3/14*

U.S. Cl. 250—398 **6 Claims**



1. Deflector-focuser comprising means for producing a charged-particle beam along an axis and means for directing said beam onto a target lying in a planar section perpendicular to said axis and symmetrically disposed about said axis, said directing means comprising means for producing a magnetic field perpendicular to said axis adapted to deflect said beam through an angle ϕ in a trajectory having a radius of curvature R, said magnetic field havng an exit effective boundary whose normal is disposed at an angle β with respect to said beam after it leaves said magnetic field, whereby an azimuthal focusing action is produced, said magnetic field being so disposed that the focusing action for azimuthal focusing is as close to the target as possible, and means for rotating said uniform magnetic field about said axis.

4,122,347

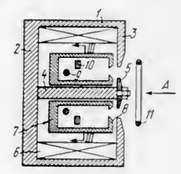
ION SOURCE

Georgy Alexandrovich Kovalsky, ulitsa Stroitelei, 4, korpus 7, kv. 6; Jury Petrovich Maishev, Sumskoi proezd, 21, korpus 1, kv. 43, and Jury Akimovich Dmitriev, ulitsa Kakhovka, 21, korpus 1, kv. 10, all of Moscow, U.S.S.R.

Filed Mar. 21, 1977, Ser. No. 779,524

Int. Cl.² H01J *27/00*

U.S. Cl. 250—423 R **7 Claims**



1. A tubular ion beam source, comprising: a cylindrical shell of a magnetically soft material having axially opposite butt ends, one of said butt ends being provided with an axial hole and the other being solid; a rod having one of its ends made of a magnetically soft material, said rod being secured rigidly to said solid butt end of said cylindrical shell coaxially thereto; a disc made of a magnetically soft material, said disc being se-

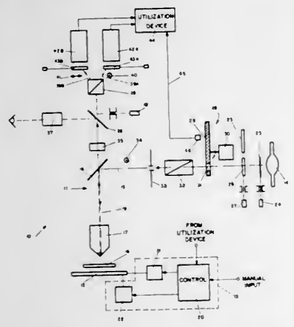
cured to the free end of said rod and disposed in said axial hole of said butt end of said cylindrical shell to form a circular gap with the periphery or edge of said axial hole; an electromagnetic coil placed inside said cylindrical shell coaxially thereto to produce, when energized with a voltage, a magnetic field whose magnetic lines of force in the area of said rod are directed parallel thereto and, in the area of said circular gap, directed normally to the axis of said cylindrical shell; a hollow annular shell of a non-magnetic material disposed coaxially in said cylindrical shell and electrically insulated therefrom and adapted to form an electric discharge therein, said hollow annular shell having a circular gap provided in its butt end facing said circular gap of said butt end of said cylindrical shell to draw ions produced during discharge; an annular cathode disposed coaxially inside said hollow annular shell and adapted to be heated to emit electrons; an annular anode disposed coaxially inside said hollow annular shell; a thermoelectronic cathode placed outside said cylindrical shell close to said butt end thereof having said axial hole and adapted to be heated to emit electrons; means to draw and accelerate ions produced in said hollow annular shell, said means being arranged at the outlet of the ions; a voltage supply source to generate an electric field between said butt ends which have said axial holes in said cylindrical shell and said hollow annular shell.

4,122,348

METHOD OF AND APPARATUS FOR CLASSIFYING BIOLOGICAL CELLS

Abraham Bruck, Haifa, Israel, assignor to Elscint, Ltd., Haifa, Israel

Filed Mar. 29, 1977, Ser. No. 782,320
Claims priority, application Israel, May 21, 1976, 49622
Int. Cl.² G01N *21/38*
U.S. Cl. 250—461 B **30 Claims**



1. In a method for classifying biological cells which have been labelled with a lipid soluble fluorescent dye and deposited in a region so that they can be examined one-at-a-time, and which are excited with a beam of polarized light, the improvement comprising determining the state of polarization of the fluorescence emitted by each individual cell in a population by simultaneously measuring the intensities of fluorescence polarized in directions parallel and perpendicular to the direction of polarization of the excitation beam.

4,122,349

NOVEL LUMINOPHORES EMITTING ULTRAVIOLET RADIATION, AND USES THEREOF

Claude Fouassier, Gradignan, and Bertrand Latourette, Merignac, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jan. 26, 1977, Ser. No. 762,473
Claims priority, application France, Feb. 5, 1976, 76 03176
Int. Cl.² C09K *11/46*
U.S. Cl. 250—504 **6 Claims**

1. A luminescent fluosilicate of the formula

$$M_{1-x}Eu_x^{2+}SiF_6$$

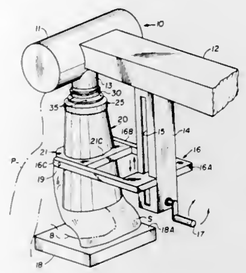
wherein $O < x \leqq .2$ and M represents at least one alkaline earth metal selected from the group consisting of barium and strontium, said fluosilicate emitting an intense line emission at about 3600A when excited by ultraviolet radiation of a wavelength between about 2300A and 3200A.

4,122,350

ADJUSTABLE COLLIMATOR FOR MAMMOGRAPHY

Julius Lipthay, 171 Biltmore Blvd., and Dogan Kizilay, 310 Bayview Ave., both of Massapequa, N.Y. 11758

Filed Nov. 21, 1977, Ser. No. 853,131
Int. Cl.² G21F *5/04*
U.S. Cl. 250—505 **14 Claims**



1. An adjustable collimator for use with an x-ray apparatus for the production of images of a female breast, said collimator comprising:

connecting means for securing said collimator to an apparatus having an x-ray source;

a collimator cone having a plurality of longitudinally extending leaves, each of said leaves secured at one end thereof to said connecting means and positioned along their longitudinal extent in overlapping relationship to one another in order to define at their opposite end an exit opening shaped substantially to that of a female breast and through which x-rays may be restricted toward a female breast;

a collar positioned about the leaves of said collimator cone to be raised and lowered along the longitudinal extent thereof to adjust the size of said opening without affecting the shape thereof;

and urging means normally applying a separating force to certain of said leaves to enlarge said exit opening.

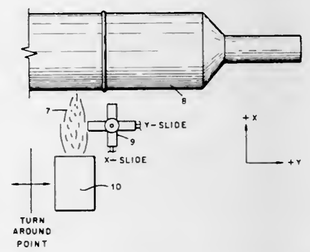
4,122,351

AUTOMATIC TARGETING OF PLASMA SPRAY GUN

Leonard A. Abbatiello, Oak Ridge, and Richard E. Neal, Heiskell, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 30, 1977, Ser. No. 829,123
Int. Cl.² G01N *21/58*
U.S. Cl. 250—554 **3 Claims**

1. A method for monitoring the material pattern of the flame of a plasma spray gun and automatically aligning said gun and thus said flame during the coating of a rotating sample part, said gun having a digital control means, comprising the steps of detecting said material pattern of said flame with a light detection means located in a direction normal to said flame during gun travel to provide an output that is a qualitative indication of the presence of said material in said flame, converting said detection means output with an analog-to-digital converter to a digital control signal; regulating the detection means output to the converter with a gating means to provide a plurality of pulses to the converter for conversion to said digital control



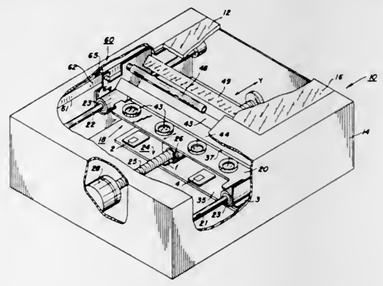
signal during a predetermined time interval each time the gun passes in range of said detection means; controlling said gating means with a marker signal from said digital control means; comparing said digital control signal from said converter each time it occurs with a desired maximum response signal stored in said digital control means; and utilizing any difference in said digital control signal and said maximum response signal for automatically adjusting the position of said gun and thus the material pattern of said flame until said difference is nulled for each occurence of said digital control signal, whereby said sample part is provided with a uniform coating.

4,122,352

SCANNING ARRAY CONFIGURATION

Peter A. Crean, and Pierre A. Lavallee, both of Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 2, 1977, Ser. No. 793,009
Int. Cl.² G06K *7/10*
U.S. Cl. 250—566 **3 Claims**



1. An array for use in scanning apparatus of the type employing plural arrays disposed so that the viewing area of one array partially overlaps the viewing area of an adjoining array to provide an uninterrupted viewing area, comprising

a. an array substrate, said substrate being generally rectangular in shape;

b. a multiplicity of photosensitive elements on said substrate, said photosensitive elements being disposed on said substrate in succession to form a row of photosensitive elements along said substrate;

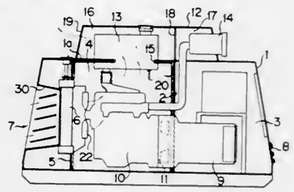
c. the center-to-center distances between the photosensitive elements at at least one end of said row of photosensitive elements being different than the center-to-center distances between the remainder of said photosensitive elements in said row of photosensitive elements to facilitate alignment of one photosensitive element in said array one end with a photosensitive element in an adjoining array.

4,122,353

BONNET STRUCTURE FOR GENERATOR

Tetsuo Noguchi, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 16, 1977, Ser. No. 769,103
Claims priority, application Japan, Feb. 25, 1976, 51/20411[U]; Feb. 25, 1976, 51/20412[U]; Feb. 25, 1976, 51/20413[U]; Feb. 25, 1976, 51/20414[U]
Int. Cl.² H02P *9/04*
U.S. Cl. 290—1 A **4 Claims**



1. A bonnet structure for a generator including an engine for driving the generator, a radiator having guide means for supplying water therein, and a muffler having an exhaust nozzle means mounted thereon, said generator having a rotor-fan for air intake wherein said bonnet structure comprises a main wall for enclosing the engine and the generator, said main wall having a first air intake means for cooling the engine, a second air intake means for cooling the generator and an outlet means, a partition wall provided within said main wall so as to define first and second chambers, said first chamber enclosing the engine and said second chamber enclosing the generator, the rotor-fan of said generator being located within said first chamber enclosing the engine, a sound absorption plate means covering the entire inner walls of said first chamber and a cover wall for covering said muffler wherein cooling air introduced through said second air intake means flows inside of said second chamber before it joins cooling air introduced through said first air intake means.

4,122,354

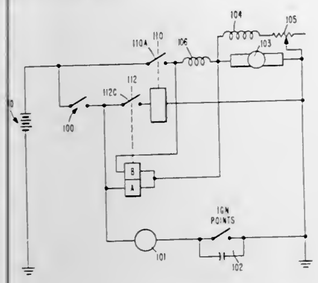
INTERNAL COMBUSTION ENGINE STARTING CIRCUIT

Leland L. Howland, Belle Plaine, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Apr. 6, 1977, Ser. No. 785,272
Int. Cl.² H02K *23/52*
U.S. Cl. 290—31 **4 Claims**

1. An internal combustion engine starting circuit for a system having a combination direct current electric starting motor generator unit comprising, a starter solenoid switch, an ignition switch, a dual coil starting relay switch, a series field coil connected in series with the armature coil of said motor generator unit, a source of direct current, said solenoid switch having a normally open contact to be closed to connect said motor generator series connected field and armature coil to said source when its coil is energized, one coil of said dual relay switch being connected in series with said ignition switch and said motor generator armature to said source when said ignition switch is closed to thereby close the relay switch, and the other coil of said relay being connected in parallel with said series field of said motor generator and to said one coil in a manner to buck the field of said one coil and open said relay switch when the voltage across said series generator field

increases as the engine starts and the motor generator unit reaches generating speed to thus open its contact and de-ener-



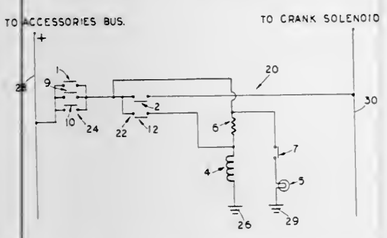
gize said starter solenoid with the generator field and armature remaining in circuit with the source through the closed ignition switch and the coils of said relay.

4,122,355

VEHICLE ENGINE AUTOMATIC RESTART CIRCUIT

John J. Turbitt, 53 Byron Blvd., Warwick, R.I. 02888

Filed May 11, 1977, Ser. No. 795,750
Int. Cl.[2] F02N *17/00*
U.S. Cl. 290—38 C **4 Claims**



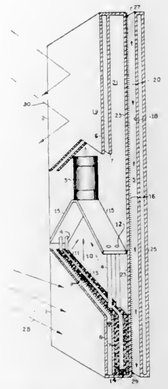
1. A vehicle engine restart switching circuit comprising:
- first lead means adapted to be connected to a cranking solenoid of a vehicle engine,
- second lead means adapted to be connected to a source of electrical energy in said vehicle,
- a normally open vacuum relay having a pair of contact elements adapted to close in response to stalling of a vehicle engine,
- normally open switch means in series with said first lead means, one of said contact elements of said vacuum relay, and said second lead means adapted to be closed in response to forward or reverse movement of said vehicle, whereby upon stalling of said engine said cranking solenoid is electrically connected to said source of electrical energy through said contact elements and switch means, and
- a solenoid-operated fuel valve element adapted to be located between a vehicle fuel tank and fuel pump having a coil in series with the second contact element of said vacuum relay, whereby upon stalling of said engine said coil is simultaneously activated to supply fuel to said engine to prime the same.

4,122,356

SOLAR HEAT PIPE FEEDBACK TURBOGENERATOR

Bert J. Decker, 136 Copen Blvd., Buffalo, N.Y. 14226

Filed Jul. 13, 1976, Ser. No. 704,970
Int. Cl.[2] F03G *7/02*; F24J *3/02*
U.S. Cl. 290—52 **29 Claims**



1. A solar heat pipe electric generator for converting radiant solar heat to electric power which comprises a heat pipe having a vaporizable liquid therein and including a walled evaporating section and a condensing section, with a wall of the evaporating section being transmissive of radiant solar energy and being positioned so that such solar energy is directed onto it, a wicking material adjacent such wall and within the heat pipe for sorbing solar heat, with connecting means between the evaporating and condensing sections, through one of which the vaporizable liquid, on heating by the solar heat, passes as a gas from the evaporating section to the condensing section and through another of which condensed liquid from said gas passes from the condensing section to the evaporating section, with means in such first connecting section for converting the energy of the moving gas to electricity, said condensing section having with it means for cooling gas therein to condense it.

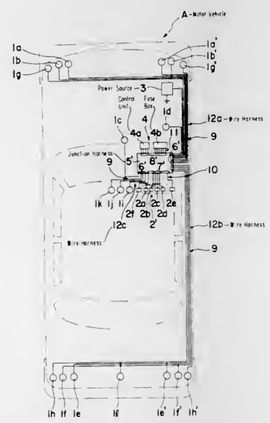
4,122,357

WIRING SYSTEM FOR MOTOR VEHICLE

Shizuo Sumida, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Feb. 7, 1977, Ser. No. 766,510
Claims priority, application Japan, Feb. 13, 1976, 51/15036
Int. Cl.[2] H02G *3/00*
U.S. Cl. 307—10 R **2 Claims**

1. A wiring system for a motor vehicle comprising:
- a vehicle body having a front end portion and a rear end portion;
- an instrument panel provided in a predetermined portion of said vehicle body;
- a first plurality of electrical load means provided in said front end portion of said vehicle body;
- a second plurality of electrical load means provided in said rear end portion of said vehicle body;
- a third plurality of electrical load means selectively provided on and near said instrument panel;
- a plurality of electrical switch means selectively provided on and near said insrument panel;
- an electrical power source provided in said vehicle body;
- a control unit means provided in said vehicle body including a plurality of control means each adapted for controlling at least one load means of said first, second and third plurality of electrical load means;
- a first connecting means including a plurality of simple wires each connected only to a corresponding one of said first plurality of electrical load means;
- a second connecting means including a plurality of simple wires each connected only to a corresponding one of said second plurality of electrical load means;
- a third connecting means including a plurality of simple wires each connected only to a corresponding one of said third plurality of electrical load means;
- a fourth connecting means including a plurality of pairs of simple wires each pair connected only to opposite ends of a corresponding one of said plurality of electrical switch means;
- a fifth connecting means connected to said electrical power source;
- a sixth connecting means including a plurality of groups of simple wires each simple wire of each group connected only to a corresponding terminal of a corresponding one of said plurality of control means of said control unit means;
- a junction means including
- a first plurality of terminal means each connected to a corresponding one of said plurality of simple wires of said first connecting means;



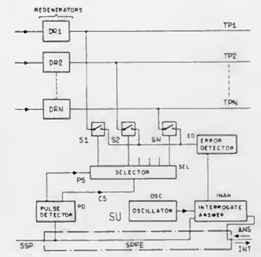
- a second plurality of terminal means each connected to a corresponding one of said plurality of simple wires of said second connecting means;
- a third plurality of terminal means each connected to a corresponding one of said plurality of simple wires of said third connecting means;
- a fourth plurality of terminal means associated in pairs, each terminal means of each pair connected to a corresponding simple wire of a corresponding pair of said plurality of pairs of simple wires of said fourth connecting means;
- a fifth terminal means connected to said fifth connecting means;
- a sixth plurality of terminal means associated in groups, each terminal means of each group connected to a corresponding simple wire of a corresponding group of said plurality of groups of simple wires of said sixth connecting means,
- a complex-crossed wire harness connected between said terminal means for connecting each electrical load means of said first, second and third plurality of electrical load means to said electrical power source through a corresponding one of said plurality of electrical switch means and a corresponding control means of said control unit means to define an effective circuit.

4,122,358

SUPERVISORY SYSTEM FOR A DATA TRANSMISSION SYSTEM

William Altmann, Maidenhead, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Apr. 27, 1977, Ser. No. 791,532
Claims priority, application United Kingdom, Apr. 29, 1976, 17560/76
Int. Cl.[2] H04B *3/46*
U.S. Cl. 340—146.1 C **4 Claims**



1. A supervisory system for fault location during transmission of data in a digital data transmission system, the transmission system including a plurality of separate data transmission paths connecting two terminal stations with each transmission path incorporating a plurality of repeaters connected therein, and each repeater including at least one regenerator, and the supervisory system, which is provided in common to serve corresponding repeaters in separate transmission paths, comprises in combination;
- selection means including a selector and a plurality of remotely-controllable switch means for each transmission path, the selection means being controlled by at least one command signal from the terminal station at one or other of the ends of the transmission paths;
- an error detecting means for detecting the absence of an output from the regenerators, and when an error-rate-limit has been reached in respect of digital transmission code violations;
- separate supervisory path means provided for the transmission of interrogation and answer signals for determining the status of the error detector means; and
- the supervisory system being such that the selection means is controlled by an appropriate command signal to selectively operate one of the switch means to connect one of the data transmission paths exclusively to the error detecting means.

4,122,359

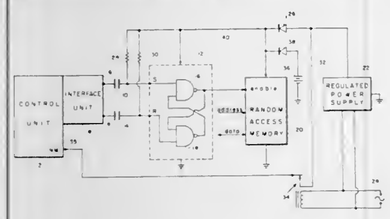
MEMORY PROTECTION ARRANGEMENT

Ivars P. Breikss, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 27, 1977, Ser. No. 791,652
Int. Cl.[2] H02J *9/00*
U.S. Cl. 307—64 **4 Claims**

1. In a computer control system including a random access memory means, said memory means having address and data communication terminals and an enable terminal whereby to selectively enable the input to said address and data terminals, a protection means for protecting the input and content of said memory means, said protection means comprising:
- a primary power supply means connected to supply energizing power to said memory means,
- a back-up power supply means,
- means directly responsive to a fault condition in said primary power supply means for transferring energization of said memory means from said primary power supply means to said back-up power supply means, and
- control signal means for producing a control signal represen-

tative of the operating condition of said primary power supply means,
said control signal means including a flip-flop circuit having an output terminal connected to said enable terminal of said memory means,
said flip-flop circuit being responsive to a first signal derived from said primary power supply means indicative that said primary power supply means is operational to produce an



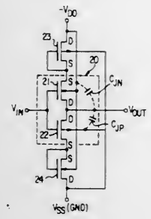
enable signal for said memory means to enable said memory means to respond to signals applied to said address and data terminals,
said flip-flop circuit being further responsive to a second signal derived from said primary power supply means indicative that said primary power supply means is not operational to produce a disable signal for said memory means to prevent said memory means from responding to signals applied to said address and data terminals.

4,122,360

LOGIC CIRCUIT USING CMOS TRANSISTORS

Kenji Kawagai, and Shigeki Yoshida, both of Kawasaki, Japan, assignors to Tokyo Shibaura Electric Company, Limited, Tokyo, Japan

Filed Jul. 29, 1977, Ser. No. 820,118
Claims priority, application Japan, Aug. 3, 1976, 51-92453
Int. Cl.[2] H03K *19/08, 19/40, 19/20, 17/04*
U.S. Cl. 307—205 **7 Claims**



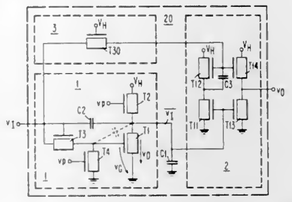
1. A logic circuit using MOS transistors comprising:
(a) input and output terminals, said input terminal for receiving binary coded signals,
(b) first and second power sources,
(c) an inverter circuit element including at least one complementary pair of N-channel type and P-channel type MOS transistors, the gate electrodes of said MOS transistors being mutually connected together to the input terminal, the drain electrodes of said MOS transistors being connected together to the output terminal.
(d) a first P-channel depletion-type MOS transistor connected between the first power source and the N-channel type MOS transistor, and
(e) a second N-channel depletion type MOS transistor connected between the second power source and the P-channel type MOS transistor,
the substrate electrodes of the P-channel MOS transistor and the first depletion-type MOS transistor being directly connected to the second power source, and the substrate electrodes of the N-channel type MOS transistor and the second depletion-type MOS transistor being directly connected to the first power source.

4,122,361

DELAY CIRCUIT WITH FIELD EFFECT TRANSISTORS

Rainer Clemen, Stuttgart; Werner Haug, Boblingen, and Robert Schnadt, Stuttgart, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1976, Ser. No. 740,456
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1975, 2553517
Int. Cl.[2] H03K *17/60, 17/28, 5/13, 5/159*
U.S. Cl. 307—208 **25 Claims**



1. A delay circuit with field effect transistors which is based on the discharge of a first capacitive element caused by an input signal to be delayed;
at least one input switching stage representing the actual delay device, said first capacitive element being effective at the output of said switching stage;
a second switching stage in series with said input switching stage acting as a voltage sensing device and as an output driver of the input signal to be delayed, being coupled to said first capacitive element;
a second capacitive element in the first switching stage coupling the input signal to be delayed to the previously charged first capacitive element to thus increase its precharge value;
and means for the constant current discharge of said first capacitive element to at least the switching threshold of said series arranged second switching stage.

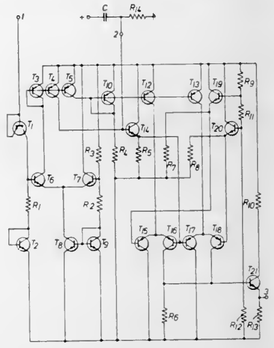
4,122,362

STEPPED PULSE GENERATOR CIRCUIT

Gerhard Hofmann, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 9, 1977, Ser. No. 767,029
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1976, 2605498
Int. Cl.[2] H03K *4/02*
U.S. Cl. 307—227 **7 Claims**

1. A circuit for producing a stepped pulse, comprising: at least two differential amplifiers each composed of a first transistor and a second transistor, with the bases of said first transistors of said at least two differential amplifiers being connected together; means connected for supplying to said bases of said first transistors a sawtooth voltage which varies between end potential values; means connected to the bases of said second transistors of said at least two differential amplifier for supplying to each said second transistor base a respectively different potential having a value between said sawtooth voltage end potential values; a common collector resistor connected to the collector of said first transistor of one said amplifier and to the collector of said second transistor of the other



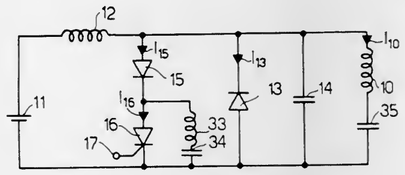
said amplifier; and means connected for supplying operating current of identical value to both said amplifiers.

4,122,363

CIRCUIT ARRANGEMENT FOR OBTAINING A SAWTOOTH CURRENT IN A COIL

Giuseppe Zappala', and Attilio Farina, both of Turin, Italy, assignors to Indesit Industria Elettrodomestici Italiana S.p.A., Italy

Filed Feb. 1, 1977, Ser. No. 764,612
Claims priority, application Italy, May 14, 1976, 68178 A/76; May 14, 1976, 69179 A/76
Int. Cl.[2] H03K *4/83*
U.S. Cl. 307—228 **9 Claims**



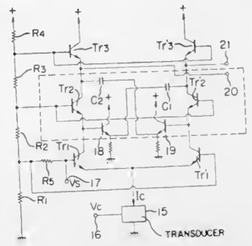
1. Circuit arrangement for obtaining a periodic sawtooth current in a coil (**10**), particularly in a deflection coil of a kinescope, comprising:
(a) a first diode (**13**) connected in parallel to a first circuit branch including said coil;
(b) a controllable switching device (**16**) having a control electrode (**17**) coupled to a source of periodic pulses which render said switching device conductive in a given conductive direction during a portion of the trace period of said sawtooth current;
(c) a second diode (**15**) connected in series with said switching device (**16**) with a conductive direction the same as said given conductive direction to form a second circuit branch connected in parallel to said first diode (**13**) with a conductive direction opposite to said given conductive direction;
(d) a resonant series circuit (**33, 34**; **43, 45**) connected in parallel to said switching device (**16**); and
(e) means (**11**) for supplying electrical energy, said energy supplying means having a first connection to the side of said switching device (**16**) remote from said second diode (**15**) and a second connection through a first receive means (**12**) to one side of said second diode (**15**).

4,122,364

VOLTAGE-CONTROLLED PHASE SHIFTER CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Daihachiro Yano, Higashi-Kurume, Japan, assignor to Hillwood Electronic Musical Instruments Corporation, Higashi-Kurume, Japan

Filed Apr. 5, 1977, Ser. No. 784,936
Claims priority, application Japan, Apr. 12, 1976, 51-40989
Int. Cl.[2] H03K *1/12;* **G10H** *5/04*
U.S. Cl. 307—262 **6 Claims**



1. A voltage-controlled phase shifter circuit for an electronic musical instrument comprising:
a plurality of stages of cascode-connected transistor pairs, each stage of transistor pair consisting of a pair of transistors each of which has its collector connected to the emitter of each corresponding transistor in the following stage of transistor pair and has its base maintained at a constant potential;
means connected to the emitter of each transistor in the first stage of transistor pair of said a plurality of stages of cascode-connected transistor pairs for changing the emitter-collector current of said each transistor in said first stage of transistor pair in relation of opposite phase to each other with respect to the signal to be transferred; and
means for changing the emitter-collector current of each transistor in each stage of transistor pair in relation of same phase to each other with respect to the control voltage for amount of phase shift,
one of a pair of transistors in each stage of transistor pair having its emitter connected through an impedance conversion circuit and a capacitor to the collector of the other of the pair of transistors in the same stage of transistor pair and said other of the pair of transistors having its emitter connected through an impedance conversion circuit and a capacitor to the collector of said one of the pair of transistors, whereby the signal derived at the final stage of transistor pair of said at least one stage of transistor pair cascode-connected is shifted from the signal applied to said first stage of transistor pair.

4,122,365

PIEZOELECTRIC BUZZER DEVICE

Gerald D. Stephens, Vandalia, Ohio, assignor to Projects Unlimited, Inc., Dayton, Ohio

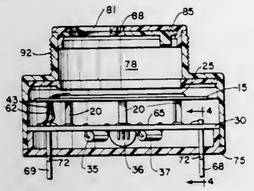
Filed Jan. 26, 1976, Ser. No. 652,285
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—324 **2 Claims**

1. A piezoelectric sonic transducer device comprising
a metallic disc element,
supporting struts having a thickness substantially the same as that of the metallic disc element and integrally connected to said metallic disc element on the nodal circle of the transducer device, said disc element defining radially extending openings therein from which said struts have been punched but which do not substantially affect vibration of said disc element,
a piezoelectric disc element, having a diameter less than that of said metallic disc element but greater than that of said

nodal circle of the transducer device mounted on said metallic disc element such that said radially extending openings defined therein are covered,

circuit board means providing a base to which said struts are attached,

first electrode means positioned on the surface of said piezo-



electric disc element opposite said metallic disc element, and

oscillator circuit means, electrically connected to said first electrode and to one of said struts, for impressing an alternating potential across said piezoelectric disc element to cause said piezoelectric disc element and said metallic disc element to vibrate.

4,122,366

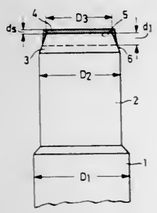
SPARK PLUG

Friedrich von Stutterheim, Adenauer Allee 7, 6370 Oberursel, and Jörg Wurm, Kantstrasse 19, 8755 Alzenau-Kälberau, both of Fed. Rep. of Germany

Filed Jan. 3, 1977, Ser. No. 756,363

Int. Cl.² H01T *13/20*

U.S. Cl. 313—141 **10 Claims**



1. A spark plug for internal combustion engines, having a center electrode coated at least on its ignition area with a metal or metal alloy having an average atomic weight above 100 and a melting point above 1500° C., said metal or metal alloy coating on the ignition area being deposited by crystalline growth using molten salt electrolysis in a thickness d_s in the range of 5 to 100 microns.

4,122,367

ELECTRIC INCANDESCENT LAMP HAVING A CENTERING RING

Peter Esklavon, Aachen; Georg Zander, Stolberg, both of Fed. Rep. of Germany, and Jozef Goebbels, Kerkrade, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1977, Ser. No. 762,108

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1976, 2605433

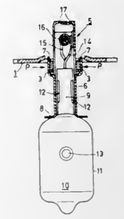
Int. Cl.² H01J *5/48, 5/50*

U.S. Cl. 313—318 **4 Claims**

1. An electric incandescent lamp which comprises:

a metallic lamp cap having a portion having a generally rectangular cross-section and having first and second upstanding flaps disposed proximate and parallel to opposed sides of said generally rectangular cross-section, and

a metal centering ring having a generally rectangular aperture dimensioned and configured for engagement with said generally rectangular cross-section of said cap, said ring including third and fourth flaps depending from said



ring and disposed respectively proximate and parallel to opposed sides of said rectangular aperture,

said first and second flaps respectively engaging the outer surfaces of said third and fourth flaps, said third and fourth flaps being disposed with their inner surfaces abutting said generally rectangular cross-section of said cap.

4,122,368

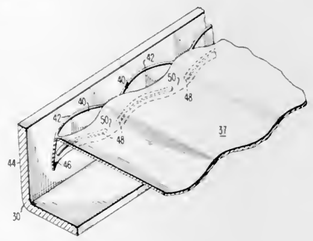
CATHODE RAY TUBE WITH A CORRUGATED MASK HAVING A CORRUGATED SKIRT

Walter David Masterton, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 8, 1977, Ser. No. 813,858

Int. Cl.² H01J *29/02, 29/07*

U.S. Cl. 313—403 **6 Claims**



1. In a shadow mask type cathode ray tube having an envelope the improvement comprising,

a shadow mask having a corrugated apertured active portion of slit-shaped apertures aligned in columns wherein the peak-to-peak wavelength dimension of corrugations in the mask is at least twice as great as the spacing between aperture columns, and an integral bent-over corrugated skirt attached to the active portion only at peak regions of the corrugations of the active portion, the intersection of said skirt and active portion having slits between the peak regions of attachment, said skirt interconnecting the active portion to the envelope.

4,122,369

MAGNETIC DEFLECTION APPARATUS POSITIONED BEHIND TARGET

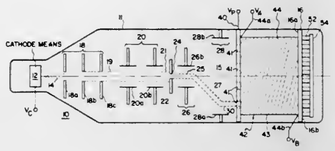
William C. Hughes, and Harold G. Parks, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 679,245, Apr. 22, 1976, Pat. No. 4,070,597.

This application Oct. 4, 1977, Ser. No. 839,331

Int. Cl.² H01J *29/72, 29/80*

U.S. Cl. 313—430 **3 Claims**



1. In an electron beam optical system of the type having an electron gun means for focussing a collimated electron beam upon one of a plurality of lenslets, and a planar target spaced from the electron gun and having a surface disposed essentially transverse to the direction of travel of the electron beam prior to deflection, which target surface is to be selectably illuminated by said electron beam, and improved fine deflection apparatus comprising:

first means for producing a magnetic field parallel to said target surface and having an equimagnetic surface of selectively variable magnitude in a plane parallel to said target surface and disposed between said plurality of lenslets and said target surface;

second means for producing another magnetic field parallel to said target surface and having an equimagnetic surface of magnitude selectively variable independent of the magnitude of the equimagnetic surface produced by said first means, the selectively variable field of said second means being produced in said plane; said first and second magnetic fields being substantially perpendicular to each other and to a normal to said target surface; said first and second means both being positioned entirely beyond the plane of said target surface with respect to said electron gun means and said plurality of lenslets.

4,122,370

CATHODE RAY TUBE CONTAINING A MANGANESE ACTIVATED RARE EARTH FLUORIDE LUMINESCENT MATERIAL

Roderick Gordon Lester Barnes, Royston, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Aug. 31, 1977, Ser. No. 829,502

Claims priority, application United Kingdom, Feb. 9, 1976, 36401/76; Jan. 19, 1977, 2108/77

Int. Cl.² C09K *11/46;* **H01J** *29/20*

U.S. Cl. 313—468 **1 Claim**

1. A cathode ray tube including a face plate coated with a luminescent material comprising a rare earth fluoride host selected from Sc, Y, La, Gd and Lu flouride, activated with manganese and at least one of the elements titanium, zirconium, hafnium, cerium, silicon, germanium and tin, said material having the formula:

$RE_{(1-x-y)}F_3:xMn,yM$ in which RE represents one or more of Sc, Y, La, Gd and Lu, M represents at least one of Ti, Zr, Hf, Ce, Si, Ge and Sn, F is a fluoride, x has a value between 0.001 and 0.05 and y has a value $0 \leqq y \leqq 0.1$

said luminescent material emitting radiation predominantly in the green or yellow-green regions of the spectrum when excited by cathode rays.

4,122,371

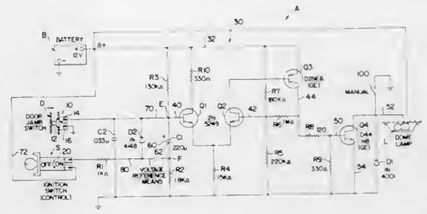
CONTROL CIRCUIT FOR VEHICLE COMPARTMENT LIGHT

Dennis D. Talmage, Canton, and James C. Byrne, Farmington Hills, both of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Jul. 21, 1977, Ser. No. 817,709

Int. Cl.² B60Q *7/00*

U.S. Cl. 315—84 **24 Claims**



1. A control circuit for shifting a compartment light of a vehicle having a door, a manually actuated door switch with a door open position and a door closed position and a control switch having an actuated position and a non-actuated position, said shifting being between an illuminating position of said light and a non-illuminating position of said light, said control circuit including an operating circuit having a voltage responsive input and an output having first and second output conditions, means responsive to the voltage at said input exceeding a predetermined general level in a first polarity direction for causing said first output condition and responsive to the voltage at said input exceeding said predetermined general level in a second polarity direction opposite to said first polarity direction for causing said second output condition; means responsive to said first output condition for shifting said light into said non-illuminating condition and responsive to said second output condition for shifting said light into said illuminating condition; a capacitor having first and second electrodes; means connecting said first electrode to said input for controlling the voltage at said input; time constant means for causing said capacitor to change its voltage between said first and second electrodes in a change direction from said second polarity direction to said first polarity direction at a given rate; means responsive to shifting said door switch into said door open position for immediately causing said first electrode to have a ground, causing a voltage at said input exceeding said general level in said second polarity direction; means responsive to shifting said door switch into said door closed position for causing operation of said time constant means whereby said capacitor changes its charge at said rate and the voltage at said first electrode changes from said first control voltage to a voltage causing said input to have a voltage exceeding said general level in said first polarity direction in a first preselected time substantially greater than instantaneously; voltage reference means for controlling the voltage on said second electrode; and said voltage reference means includes means responsive to manually shifting said control switch to said actuated position for immediately shifting said second electrode in a first polarity direction a first reference voltage amount assuming that said input has a voltage exceeding said given level at least after said preselected time, means responsive to manually shifting said control switch to said non-actuated position for shifting said second electrode in said second polarity direction a second reference voltage amount causing said first electrode to have a second control voltage causing a voltage at said input exceeding said general level in said second polarity direction and means for then allowing operation of said time constant means whereby said capacitor changes its charge at said rate and the voltage at said first electrode changes from said second control voltage to a voltage causing said input to have a voltage exceeding said general level in said first polarity direction

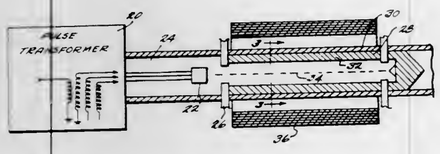
in a second preselected time substantially greater than instantaneous.

4,122,372

DIELECTRICALLY LOADED WAVEGUIDE FOR PRODUCING HIGH POWER COHERENT MICROWAVE RADIATION

John E. Walsh, Bradford, Vt., assignor to Dartmouth College, Hanover, N.H., a part interest

Filed Oct. 11, 1977, Ser. No. 840,719
Int. Cl.[2] H01J *25/02*
U.S. Cl. 315—5 **16 Claims**



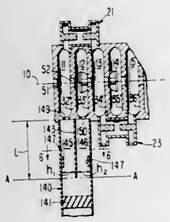
1. A device for producing high power, coherent radiation comprising:
a source of a beam of electrons having a speed greater than 0.5 light speed;
a waveguide tube having an internal path along which electrons travel, said waveguide tube including low dielectric constant material having a dielectric constant of four or less adjacent said path, electromagnetic radiation propagating in said material and being slowed by said dielectric material for coupling said beam to said electro-magnetic radiation; and
means for focussing and guideing said beam to destabilize the guided electro-magnetic modes, and to convert the electron beam energy into high power, millimeter wavelength, coherent radiation.

4,122,373

STANDING WAVE LINEAR ACCELERATOR AND INPUT COUPLING

Victor A. Vaguine, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 546,379, Feb. 3, 1975, Pat. No. 4,024,426, which is a continuation of Ser. No. 420,754, Nov. 30, 1973, abandoned. This application Dec. 27, 1976, Ser. No. 754,650
Int. Cl.[2] H01J *25/10*
U.S. Cl. 315—5.41 **12 Claims**



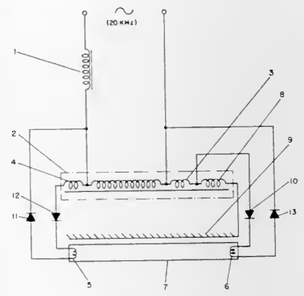
1. A standing wave accelerator for charged particle beams comprising wall means forming a plurality of accelerating cavities, each of said accelerating cavities being adapted to support a standing wave therein, beam passage apertures formed in said wall means between adjacent accelerating cavities, resonant coupling means displaced from said apertures and interconnecting accelerating cavities which are not adjacent to each other to form a substructure which will support a standing wave independent from a standing wave in an adjacent accelerating cavity, all of said accelerating cavities having substantially the same resonant frequency, wall means forming an input waveguide connected to said accelerator, said waveguide having internal dividing wall means for dividing the input waveguides into a plurality of separate waveguide passages, one of the accelerating cavities in said substructure having a coupling iris communicating with one of said separate waveguide passages, and one of said accelerating cavities not in said substructure having a coupling iris communicating with another of said separate waveguide passages.

4,122,374

CIRCUIT ARRANGEMENT FOR INCREASING THE LUMINUOUS FLUX IN FLUORESCENT TUBE HAND LAMPS

Rudolf Stüdli, Burggrabenstrasse 24, CH-8280 Kreuzlingen, Switzerland

Filed Feb. 4, 1977, Ser. No. 765,514
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1976, 2604730
Int. Cl.[2] H05B *41/14*
U.S. Cl. 315—98 **3 Claims**



1. A circuit arrangement for increasing the luminous flux in a hand lamp having a fluorescent tube, characterized in that each of the four contact pins of said fluorescent tube has a suitably poled diode connected in series therewith, the polarity of the diodes being different within each pair of pins.

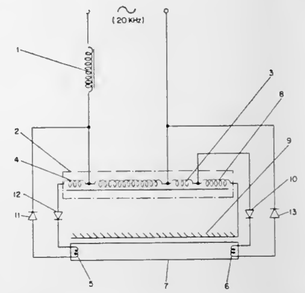
4,122,375

CIRCUIT ARRANGEMENT FOR INCREASING THE LUMINOUS FLUX IN FLUORESCENT TUBE HAND LAMPS

Rudolf Stüdli, Burggrabenstrasse 24, CH-8280 Kreuzlingen, Switzerland

Continuation-in-part of Ser. No. 765,514, Feb. 4, 1977. This application Feb. 7, 1977, Ser. No. 766,154
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1976, 2604730
Int. Cl.[2] H05B *41/29*
U.S. Cl. 315—98 **2 Claims**

1. A circuit arrangement for increasing the luminous flux in a hand lamp having a fluorescent tube, characterized in that each of the four contact pins of the fluorescent tube has a suitably poled diode connected in series therewith, the polarity of the diodes being different within each pair of pins, and wherein a high frequency operating voltage is coupled to said fluorescent tube through a transformer having its primary windings adapted to be coupled to a transistorized direct current converter and its secondary windings adapted to be coupled to said fluorescent tube.

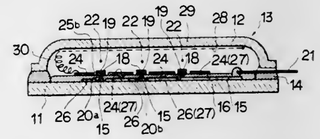


4,122,376

MULTI-INDICIA FLUORESCENT DISPLAY TUBE

Yoichi Mera; Takao Kishino, and Tsutomu Morooka, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Tokyo, Japan

Filed Dec. 9, 1976, Ser. No. 748,877
Claims priority, application Japan, Dec. 11, 1975, 50-146884
Int. Cl.[2] H01J *1/72, 63/06;* **H05B** *37/00*
U.S. Cl. 315—167 **4 Claims**



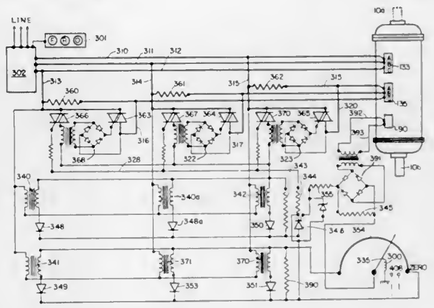
1. In a multi-indicia fluorescent display tube for use with a static driving circuit, having a casing formed of a base plate and a cover plate airtightly bonded to each other, said casing containing therein at least a plurality of pattern display sections provided on said base plate in a row for displaying patterns such as characters, figures and symbols and each composed of a plurality of segment anodes each having a fluorescent material layer thereon and a cathode stretched opposite to said pattern display sections, the base plate being insulating to electrically isolate the plurality of segment anodes thereon, the cover plate being light transparent in order to permit viewing of the display, an evacuated environment between the cover plate and the base plate to permit electrons from the cathode to be accelerated toward the segment anodes relatively unimpeded; the improvement which comprises shield electrode layers for at least preventing electrification, provided on the portions of said base plate in the vicinity of said segment anodes, and a diffusion electrode electrically connected to said shield electrode layer for levelling the density of electron current flowing from said cathode to each of said segment anodes during operation by the influence of a positive potential applied thereto with respect to the potential of said cathode, said positive potential maintained between the anode potential and the average of said cathode and anode potentials, said diffusion electrode being provided on the portion of the inside surface of said cover plate opposite to said pattern display sections or in the vicinity of the inside surface of said cover plate.

4,122,377

VARIABLE SPEED, ALTERNATING CURRENT MOTOR UNIT AND METHODS AND APPARATUS FOR SPEED CONTROL OF SAME

Ralph S. Drummond, 2916 Erie Ave., Cincinnati, Ohio 45208

Continuation-in-part of Ser. No. 787,642, Apr. 14, 1977, abandoned, which is a continuation of Ser. No. 688,768, May 21, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,403
Int. Cl.[2] H02P *7/68;* **H02K** *37/00*
U.S. Cl. 318—45 **14 Claims**



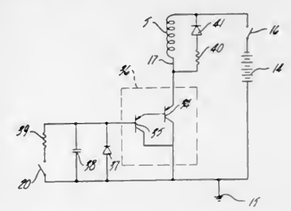
1. In a variable speed, alternating current motor unit including two induction motors rotatably mounted in a housing so that the stator elements of the induction motors buck one another to induce torque in the rotor elements of the induction motors when both of the induction motors are energized and further including a speed control circuit for energizing the induction motors, the improvement comprising:
structure defining a housing including support means for rotatably mounting the induction motors in side-by-side relation,
a first gear train interconnecting the stator elements so that the stator elements of the induction motors buck one another to induce torque in the rotor elements when both of the induction motors are energized,
a common output shaft, and
a second gear train interconnecting the rotor elements to the common output shaft,
whereby when both of the induction motors are energized additive torque is imparted to the common output shafts.

4,122,378

SOLID STATE SWITCHING CIRCUIT FOR AN ELECTROMAGNETIC PUMP

Ralph V. Brown, Cayuta, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Dec. 16, 1976, Ser. No. 751,417
Int. Cl.[2] H02K *33/02*
U.S. Cl. 318—128 **12 Claims**



1. A reciprocating piston electromagnetic pump comprising:
a pump housing having a fluid inlet chamber and an outlet chamber;
a non-magnetic cylinder centrally disposed in said pump

housing, connecting said inlet chamber with said outlet chamber;

a solenoid coil surrounding a portion of said non-magnetic cylinder for generating a magnetic field in response to a current flow therethrough;

a magnetically susceptable reciprocating piston member disposed in said non-magnetic cylinder movable in response to the magnetic field generated by said solenoid coil;

valve means for providing a unidirectional fluid flow through said pump housing from said inlet chamber to said outlet chamber in response to the reciprocating movement of said piston member;

switch means for generating a signal when said pistion member is at the end of its reciprocating motion towards said inlet chamber;

solid state switch means in series circuit relationship with said solenoid coil for controlling the current flow therethrough in response to said signal, said solid state switch means having an emitter connected to one end of said solenoid coil, a base connected to said switch means through a resistance and a collector; and

a Zener diode connected between said base and said collector, said Zener diode causing said solid state switch to function as a Zener amplifier when the potential between said emitter and said collector exceeds a predetermined value; and p1 a capacitance connected between said bsse and said collector in parallel with said Zener diode.

4,122,379

ANALOGUE CONTROL DEVICE FOR ABUTMENT-FREE STROKE LIMITATION OF MACHINE TOOLS

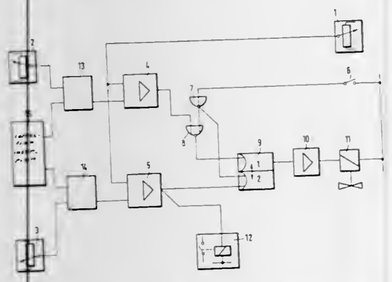
Günter Richter, Nabern, and Reinhard Fröschle, Ostfildern, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Gehring Gesellschaft mit beschränkter Haftung & Co. Kommanditgesellschaft, Ostfildern-Nellingen, Fed. Rep. of Germany

Filed Nov. 12, 1976, Ser. No. 742,412

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1975, 2550770

Int. Cl.[2] G05D *23/275*

U.S. Cl. 318—634 **7 Claims**



1. An analogue control device for the stroke control of a reciprocable member especially of a honing machine tool, which includes in combination: a stroke control emitter formed by an electrical resistor adjustable in conformity with the machining movement of said reciprocable member and adapted to be passed through by electric current, means operatively connected to said electrical resistor for employing a pre-set value of the current or voltage generated by said electric current on said resistor for limiting the stroke of said reciprocable member, and conditioning control means operatively connected to said stroke control emitter for causing said reciprocable member automatically to carry out a predetermined number of working strokes of changed stroke length, the number of said strokes being adjustable.

4,122,380

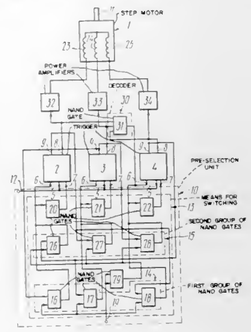
STEP MOTOR CONTROL SYSTEM

Evgeny Grigorievich Zhukovsky, ulitsa Rumyantseva, 7, kv. 69; Vyacheslav Mikhailovich Lobanov, ulitsa Przhevalskogo, 2, kv. 28; Vladimir Danilovich Rozgon, ulitsa Krasnogvardeiskaya, 26, kv. 31, and Dmitry Leonidovich Roitman, ulitsa Rumyantseva, 13, kv. 53, all of Smolensk, U.S.S.R.

Filed May 4, 1977, Ser. No. 793,713

Int. Cl.[2] G05B *19/40*

U.S. Cl. 318—696 **2 Claims**



1. A step motor control system for controlling a step motor having a shaft and a plurality of windings, comprising:

power amplifiers having an input and an output, there being the same number of power amplifiers as there are windings, the output of each power amplifier being connected to a respective winding of said step motor; triggers having a timing input, a first data input, a second data input, a first output and a second output, there being the same number of triggers as there are windings, the first output of each trigger being connected to the input of a respective power amplifier; a trigger starting and switching sequence preselection unit for setting up the rotational direction and the amount of rotation of said step motor shaft having a starting circuit and means for switching; said starting circuit sets up the amount of rotation of said step motor shaft in said unit, said starting circuit having an individual bus which is connected to the timing input of each of said triggers; said means for switching switches the sequence preselection of said triggers for setting up the rotational direction of said step motor shaft in said unit; a bus for setting up the rotational direction of said step motor shaft of said means for switching; a first group of NAND gates of said means for switching said NAND gates of said first group of NAND gates effecting a direct sequence of switching of said windings of said step motor, said first group having the same number of NAND gates as there are triggers, said NAND gates of said first group each having a first input, a second input and an output, the first input of each NAND gate being connected to the first output of one of the triggers, the second input being connected to said bus for setting up the rotational direction of said step motor shaft, and the output being connected to the second data input of one of the remaining triggers; a second group of NAND gates of said means for switching for effecting a reverse sequence of switching of said windings of said step motor, said second group having the same number of NAND gates as there are triggers, said NAND gates of said second group having a first input, a second input and an output, the first input of each NAND gate being connected to the first output of one of said triggers, the output being connected to the second data input of one of the remaining triggers; a first individual NAND gate of said means for switching having an input and an output, the input being connected to said bus for setting up the rotational direction of said step motor shaft, and the output being connected to the second input of each of said NAND gates of said second group of NAND gates; a set of individual NAND gates of said means for switching, said set having the same number of NAND gates as there are triggers, each individual NAND gate of said set having an input and an output, the input of each individual NAND gate being connected to the output of one of the NAND gates of said first group of NAND gates and to the output of one of the NAND gates of said second group of the NAND gates and the output of each individual NAND gate being connected to the second data input of said trigger having the first data input thereof directly connected to said NAND gates of said first group of NAND gates and of said second group of NAND gates connected to the respective individual NAND gates; a decoder of inoperative states of said triggers having inputs and an output, its inputs being connected to the first outputs of said triggers, and its output being connected to the first data input of one of said triggers.

4,122,381

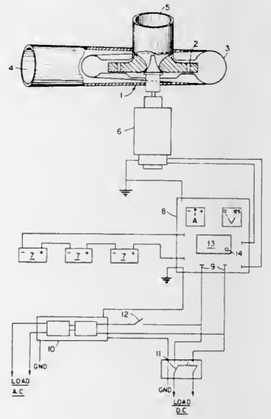
HOME POWER STATION

Zeynab Edda Sturm, P.O. Box 202, Vanderveer Station, Brooklyn, N.Y. 11210

Filed Mar. 4, 1977, Ser. No. 774,532

Int. Cl.[2] H02J *7/32*

U.S. Cl. 320—48 **6 Claims**



1. A home power station comprising:

means for generating electricity;

means connected to said generating means for storing electricity generated by said generating means;

means for connecting said storing means to a load; and

means for indicating the amount of electricity stored in said storing means, said indicating means including an available energy conversion table having numbers and activating means for making one of said numbers more visible than another of said numbers, such more visible number corresponding to the amount of electricity stored in said storing means.

4,122,382

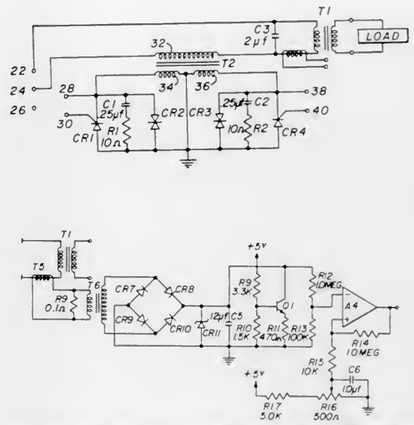
LOAD-RESPONSIVE TREATER CONTROLLER

John L. Bernstein, Palo Alto, Calif., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 20, 1977, Ser. No. 789,042

Int. Cl.[2] G05F *1/30*

U.S. Cl. 323—4 **8 Claims**



1. An apparatus for controlling the average amount of power applied by a source of AC power to a load comprising:

a. means connected between the source and the load for connecting and disconnecting the source to and from the load;

b. means for sensing the peak amount of current applied to the load and storing a signal representative of it;

c. means for reducing the stored signal linearly with time; and

d. means for receiving the stored signal from the signal-storing means and causing the connection means to connect the source to the load when the stored signal is below a predetermined level.

4,122,383

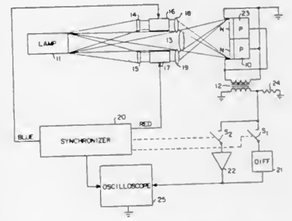
METHOD AND APPARATUS FOR MEASURING MINORITY CARRIER LIFETIMES AND BULK DIFFUSION LENGTH IN P-N JUNCTION SOLAR CELLS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Oldwig H. von Roos, South Pasadena, Calif.

Filed Dec. 16, 1977, Ser. No. 861,391

Int. Cl.[2] G01R *31/024*

U.S. Cl. 324—20 R **9 Claims**



1. A method for qualitatively measuring minority carrier lifetimes and bulk diffusion length of a P-N junction solar cell by irradiating the cell with light from a solar simulator, alter-

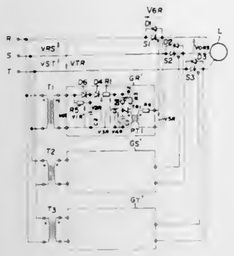
nately applying low-frequency monochromatic light pulses and high frequency monochromatic light pulses, and synchronously displaying the derivative of the output voltage of the cell on an oscilloscope as said light pulses are applied at spaced intervals, where the interval between pulses is equal to or greater than about 1 millisecond and the low-frequency and high-frequency pulses are about 10^{-7} and 10^{-8} seconds, respectively.

4,122,384

THREE-PHASE AC VOLTAGE CONTROL CIRCUIT

Shigehiko Suzuki, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1977, Ser. No. 790,819
Claims priority, application Japan, Apr. 27, 1976, 51/48066
Int. Cl.[2] G05F *1/56*
U.S. Cl. 323—24 **4 Claims**



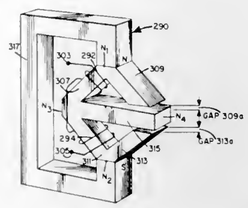
1. A three-phase AC voltage control circuit comprising:
a three-phase AC power source having three line terminals;
a load;
a plurality of thyristors, each thyristor shunted by an oppositely poled diode and connected between a line terminal and the load;
a plurality of polarized delay circuits, each delay circuit corresponding to a respective thyristor and connected across two line terminals for receiving a voltage having 30° of phase lead from a phase voltage of the power source connected to the corresponding thyristor and for converting the voltage having 30° of phase lead to an asymmetrical AC voltage, each delay circuit having two output terminals;
a plurality of firing angle control circuits, each firing angle control circuit having two input terminals connected respectively to the two output terminals of a corresponding polarized delay circuit and two output terminals connected respectively to the gate and cathode of a corresponding thyristor, each firing angle control circuit including
a first diode connected to one of the two input terminals of the firing angle control circuit for converting the asymmetrical AC voltage from the corresponding delay circuit to a half-wave rectified voltage wave;
a zener diode connected between the first diode and the other of the two input terminals of the firing angle control circuit for clipping the half-wave rectified voltage wave to convert the rectified wave to a trapezoidal wave;
a series combination of a timing capacitor and a timing resistor connected across the zener diode, the timing capacitor charging in response to the trapezoidal voltage wave with a speed determined by the timing resistor;
a pulse transformer having a primary winding and a secondary winding, the primary winding of the pulse transformer and a unijunction transistor connected across the zener diode, the unijunction transistor having its emitter connected to the junction of the timing capacitor and the timing resistor, the timing capacitor discharging through the unijunction transistor and the primary winding of the pulse transformer when the charged voltage in the timing capacitor reaches the breakover voltage of the transistor to generate a pulse output, the secondary winding of the pulse transformer connected across the two output terminals of the firing angle control circuit, the transformed pulse output in the secondary winding firing the corresponding thyristor;
whereby the control range of the firing angle of the thyristor is 0° to 210° so that the output voltage to the load can be controlled from zero to the full voltage.

4,122,385

SATURABLE REACTOR CURRENT LIMITER

George A. Oberbeck, Belmont, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 635,895, Nov. 28, 1975, Pat. No. 4,031,457, which is a continuation-in-part of Ser. No. 614,773, Sep. 19, 1975, abandoned. This application Jun. 16, 1977, Ser. No. 807,190
Int. Cl.[2] G05F *1/32, 1/70*
U.S. Cl. 323—92 **1 Claim**



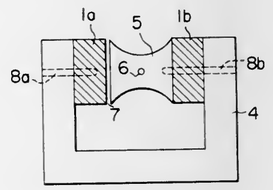
1. A device for limiting current in an electrical circuit comprising:
A. a multiple branch element magnetic circuit including:
i. a bridge network having at least four nodes and a pair of upper leg elements joined at one end at a first of said nodes, a pair of lower leg elements joined at one end at a second of said nodes, and a cross element having one of its ends joined to one of said lower and upper leg elements at a third node, said cross element having the other of its ends joined to the other lower and upper leg elements at a fourth node,
wherein said upper and lower leg elements joining said third node are characterized by non-linear permeances P_A and P_B, respectively, and have saturated and non-saturated states, P_A and P_B being greater when the corresponding one of said third node leg elements is in its non-saturated state than when in its saturated state, and the magnetic flux density in one of said third node leg elements being equal to a saturation flux density which is relatively invarient with respect to magneto-motive force applied
across that element when in said saturated state and said magnetic flux density being less than said saturated flux density otherwise, and
wherein the flux path between said first and third nodes along said cross-element and said upper leg element joining said fourth nodes is characterized by a permeance P_C, and the flux path between said second and third nodes along said cross element and said lower leg element joining said fourth node is characterized by a permeance P_D,
ii. a magnetic bias element connected between said first and second nodes, said bias element being characterized by a permeance P_E and including a magneto-motive force (mmf) bias means for establishing a substantially constant magnetic flux density in said bias element, and
B. an input coil including means for electrically coupling said device to said electrical circuit so that said current passes therethrough, said coil having a plurality of windings extending about said upper and lower leg elements joining said third node so that mmf is induced across those elements in response to said current, said windings being adapted so that said mmf is directed away from said third node when said current is one polarity and is directed toward said third node when said current is the other polarity,
wherein said elements are magnetically coupled at said nodes, and
wherein P_C and P_D are relatively high with respect to the medium external to said device, P_A and P_B are greater than P_C and P_D and are relatively high with respect to the medium external to said device when the respective third node leg elements are non-saturated, and P_E is relatively low with respect to P_C and P_D and with respect to P_A and P_B when the respective third node leg elements are non-saturated,
wherein further the net magnetic flux density in one of said third node leg elements is equal to the saturation flux density for that element when said current is of a first polarity and has a magnitude less than a first threshold value or when said current is of the other polarity, and said net flux density is below said saturation flux density when said current is of said first polarity and has a magnitude in a predetermined range greater than and extending from said first threshold value, and wherein further the net magnetic flux density in the other of said third node leg elements is equal to the saturation flux density for that element when said current is of said first polarity, or when said current is of said other polarity and has a magnitude less than a second threshold value, and said net flux density is below said saturation flux density when said current is of said second polarity and has a magnitude in a predetermined range greater than and extending from said second threshold value.

4,122,386

UNIFORM MAGNETIC FIELD GENERATING DEVICE

Sadami Tomita, Katsuta; Akio Chiba, Hitachi, and Yoshiharu Utsumi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 5, 1976, Ser. No. 683,280
Claims priority, application Japan, May 12, 1975, 50-54577
Int. Cl.[2] G01R *33/08*
U.S. Cl. 324—0.5 H **33 Claims**



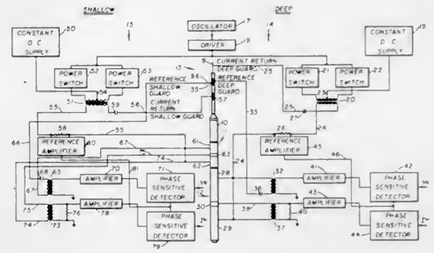
1. A magnetic field generating device for generating a uniform magnetic field in a space comprising:
a pole block of ferromagnetic material delimiting a sample space within said pole block configured for receiving a sample inserted through an insertion port of said pole block;
a yoke of magnetic material; and
means for generating a magnetic field including first and second magnetic poles disposed between opposite ends of said pole block and said yoke, said pole block being fixedly secured to the first magnetic pole and spaced from the second magnetic pole to define a gap between said second magnetic pole and said pole block,
said magnetic field generating means, said pole block and said yoke being coupled together to form a magnetic circuit for establishing a unidirectional magnetic field of uniform strength at least in an area of said sample space on which the sample lies.

4,122,387

APPARATUS AND METHOD FOR SIMULTANEOUSLY LOGGING AN ELECTRICAL CHARACTERISTIC OF A WELL FORMATION AT MORE THAN ONE LATERAL DISTANCE FROM A BOREHOLE

Sami O. Ajam, and Benjiman R. McCarty, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 24, 1977, Ser. No. 827,283
Int. Cl.[2] G01V *3/18*
U.S. Cl. 324—10 **13 Claims**



1. A well logging apparatus for measuring electrical properties of a formation intersected by a well bore wherein the electrical properties of the formation at a shallow distance and a deep distance from the borehole are simultaneously measured for display, comprising:
an armored logging cable;
a logging sonde connected to the logging cable and arranged for movement in a borehole for logging the formation adjacent said borehole;
a first investigating guard electrode system on said sonde having guard electrodes for focusing current to flow through the formation at a first lateral distance from the borehole, and a first alpha ring between said guard electrodes for emitting said current into said formation;
a second investigating guard electrode system on said sonde, longitudinally spaced from said first investigating guard electrode system having guard electrodes for focusing current to flow through the formation at a second distance from the borehole, and a second alpha ring between said guard electrodes for emitting said current into said formation;
a first electrical current source means for supplying a first formation current to said first alpha ring;
a second electrical current source means for supplying a second formation current to said second alpha ring;
said first and second formation currents being emitted simultaneously from said first and second alpha rings;
oscillator means for controlling both said first electrical current source means and said second electrical current source means for imparting the same frequency to both of said first and said second formation currents;
a cable electrode on said armored logging cable and insulated from said logging cable for providing a current return for current emitted from the alpha ring of one of said investigating guard electrode systems; and
wherein said armored logging cable provides a current return for current emitted from the alpha ring of the other of said investigating guard electrode systems and flowing in a path separate from the path of the current emitted from said one electrode system alpha ring.

4,122,388

APPARATUS FOR TESTING THE SHAFT/BEARING INSULATION OF A TURBO-MACHINE

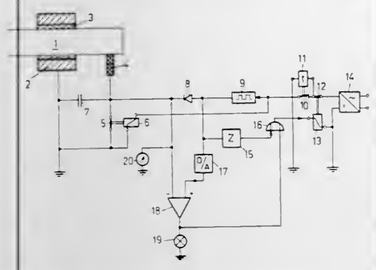
Felix R. Bernasconi, Zollikerberg, and Max Salm, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Apr. 13, 1977, Ser. No. 787,214

Claims priority, application Switzerland, Apr. 22, 1976, 5029/76

Int. Cl.[2] G01R *31/12*

U.S. Cl. 324—54 **10 Claims**



1. Apparatus for testing the shaft/bearing insulation characteristic of a rotary machine and wherein the shaft is normally earthed by means of an earthing brush on the shaft and connected to ground, comprising a first circuit arrangement for breaking said shaft-earthing connection, a second circuit arrangement for applying an increasing test voltage between te shaft bearing which is grounded and said earthing brush while said shaft-earthing connection remains broken, and a third circuit arrangement for measuring the voltage difference existing between the earthing brush and ground to detect a breakdown in the insulation between the shaft and its bearing.

4,122,389

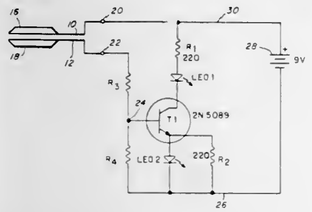
MOISTURE SENSOR

Peter H. Haagen, Arlington, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Filed May 23, 1977, Ser. No. 799,225

Int. Cl.[2] G01R *27/02*

U.S. Cl. 324—65 R **12 Claims**



1. A soil moisture indicator device for connection to a probe having electrodes across which the variable resistance of the soil is impressed, said device comprising; a transistor means having an input control electrode and a pair of output electrodes, means providing power to the circuit, means coupling one electrode of the probe to the control electrode of the transistor means to vary the conduction of the transistor means as a function of soil resistance, first light indicating means coupled in series with one output electrode of the transistor means and being illuminated upon at least a first partial conduction of said transistor means, and second light indicating means and resistor means connected in parallel and together coupled in series with the other output electrode of the transistor means, both said first and second light indicating means being illuminated upon conduction of said transistor means at a level of conduction greater than the first partial conduction level.

4,122,390

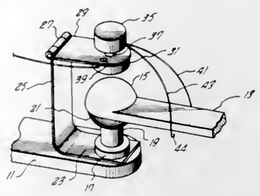
APPARATUS FOR SENSING AND INDICATING THE ANGULAR RELATIONSHIP BETWEEN A TOWING AND A TOWED VEHICLE

Gerhard Kollitz, 7535 Marilyn Dr., Corona, Calif. 91720, and Frank L. Trapschuh, 9191 Cecilia, Downey, Calif. 90241

Continuation-in-part of Ser. No. 736,432, Oct. 28, 1976. This application Feb. 6, 1978, Ser. No. 875,184

Int. Cl.[2] G01R *27/02*

U.S. Cl. 324—65 R **2 Claims**



1. Apparatus for sensing and indicating the angular relationship between a towing and a towed vehicle, wherein the towing vehicle includes a ball hitch assembly comprising a ball connected to a shaft which is attached to the towing vehicle, said apparatus comprising:

a variable resistor having a body portion, a shaft rotatably mounted to said body portion so that the resistance of the variable resistor is varied as the shaft is turned;

a plate having an orthogonal portion and an aperture, the body part of the variable resistor being rigidly attached to said plate, said shaft protruding through the aperture therein;

a second plate having a circular aperture, said second plate being mounted to the towing vehicle by sliding the shaft of the ball hitch assembly of the towing vehicle through said circular aperture, said second plate also having an orthogonal portion, said orthogonal portion having an aperture into which is placed the orthogonal portion of said first plate so as to form a hinge;

a feeler rigidly connected to the shaft of the variable resistor;

means for fixedly but removably attaching said feeler to the towed vehicle thereby providing for rotational movement of the shaft in relation to the body portion of said variable resistor as the towed vehicle moves in relation to the towing vehicle; and

an indicator means electrically responsive to the movement between the shaft and body portions of said variable resistor for representatively indicating the angular relationship between the towing and towed vehicle.

4,122,391

FREQUENCY DEVIATION MEASURING AND ADJUSTING SYSTEM

Maurice C. Harp, Belmont, and Terry R. Seaver, Mountain View, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 19, 1977, Ser. No. 834,754

Int. Cl.[2] G01R *23/02*

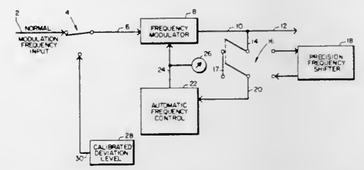
U.S. Cl. 324—78 Z **11 Claims**

1. Apparatus for checking the frequency deviation Δf of a carrier frequency f_c in a frequency modulation system comprising:

frequency modulator means, including an adjustable modulation amplifier for adjusting the modulation sensitivity and a voltage controlled frequency modulated oscillator operating at the carrier frequency f_c, said frequency modulator means having a modulation frequency input path, an oscillator frequency control input and having an output, whereby frequency deviation of the carrier f_c is obtained at said output when a modulation frequency is applied to the modulation frequency input;

means for applying to said modulation frequency input path a calibrated modulation frequency f_s having an amplitude such that a predetermined peak frequency deviation Δf will be obtained at the output of said frequency modulator means if the modulation sensitivity is properly adjusted;

means for changing the frequency of the frequency deviated signal said predetermined amount, but in the opposite direction so that the original diviation will be effectively



cancelled if the modulation sensitivity is properly adjusted, said changing means having an input connected to the output of said frequency modulator means and having an output;

means for automatically controlling the frequency of the voltage controlled oscillator by supplying from an output a control signal to the oscillator frequency control input of the frequency modulator means, said controlling means having an input connected to the output of said changing means; and

measuring means having an input connected to the output of said automatic controlling means, for providing an indication of the frequency diviation.

4,122,392

SYSTEM OF DETECTING A CHANGE IN THE CHARGE PUT IN A METALLURGICAL FURNACE OR THE LIKE

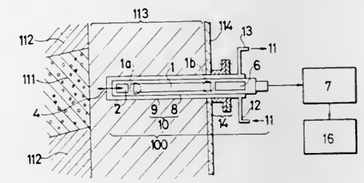
Shinjiro Takeuchi, Toda; Tosiro Kikuchi, Urawa; Koosuke Harada, Fukuoka; Tokuji Shokyu, and Yoshihiro Fujii, both of Sakai, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Mishima Kosan Co. Ltd., Kitakyushu, both of, Japan

Filed Aug. 16, 1976, Ser. No. 714,788

Claims priority, application Japan, Aug. 20, 1975, 50-100995; Aug. 20, 1975, 50-10996

Int. Cl.[2] G01R *33/12*

U.S. Cl. 324—208 **14 Claims**



1. In a method for detecting behavior of charges including velocity, thickness of layer and distribution of the charges, in a furnace such as a metallurgical furnace by sensing magnetic fluctuations due to movement and differences in magnetic characteristics of said charges by utilizing magnetic sensing means provided in walls of the furnace, the improvement comprising the steps of:

inserting at least one magnetic sensing section of a magnetometer and at least one magnetic field generating means having a forward end into at least one hole provided in the wall of the furnace in such a way that said magnetic sensing section precedes said magnetic field generating means into the wall, said forward end being an end of the magnetic field generating means positioned closer to said charges;

arranging said magnetic sensing section of said magnetometer in the vicinity of said forward end of said magnetic field generating means and along the central axis direction in which the magnetic field is generated so that said magnetic sensing section is positioned within said magnetic field, said magnetic sensing section being utilized under the condition in which it is not magnetically saturated by said magnetic field;

detecting fluctuations in a constituent of a vector of the magnetic field, said constituent being one having a direction which is the same as that of a magnetism detecting axis of the magnetic sensing section, said fluctuations being caused by movement of the charges and differences in the permeability of said charges; and

treating output signals of said magnetic sensing section by utilizing a signal treatment circuit, said output signals occurring in response to said fluctuations which indicate the behavior of the charges.

4,122,393

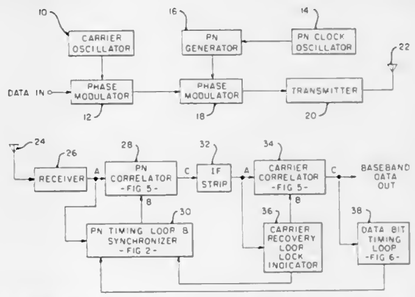
SPREAD SPECTRUM DETECTOR

Robert S. Gordy, Largo; David E. Sanders, St. Petersburg, and Ramon P. Chambers, Clearwater, all of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed May 11, 1977, Ser. No. 795,697

Int. Cl.[2] H04B *1/10*

U.S. Cl. 325—324 **17 Claims**



1. A detector for use in a communication receiver in which a received coded signal is to be detected utilizing a locally generated similarly coded signal, comprising:

a first channel and a second channel;

means for applying said received coded signal to said first channel and to said second channel;

first correlation means included in said first channel for correlating said received coded signal with a generated coded signal received from said second channel to provide a detected received coded signal;

means responsive to said detected received coded signal for providing a lock indication signal when the degree of synchronization between said generated coded signal and said received coded signal is within a desired range;

local means included in said second channel for generating a coded signal and a dithered coded signal in response to a control signal;

second correlation means adapted to receive said received coded signal and said generated dithered coded signal, said second correlation means providing a signal indicative of the degree of synchronization between said received coded signal and said generated dithered coded signal; and

means responsive to said provided signal from said second correlation means for generating said control signal and for providing said control signal to said local means so as

to drive said dithered coded signal into synchronization with said received coded signal.

4,122,394

PHASE-SHIFTING MULTIPLICATION TYPE FM SIGNAL DEMODULATION CIRCUIT

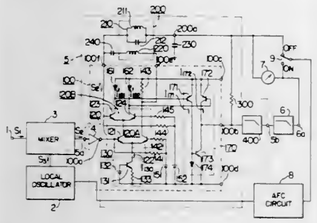
Isao Fukushima, Fujisawa; Yoshimi Iso, and Issao Akitake, both of Toyokawa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 14, 1977, Ser. No. 759,444

Claims priority, application Japan, Jan. 19, 1976, 51-4107; May 21, 1976, 51-57777

Int. Cl.² H04B *1/16*

U.S. Cl. 325—344 **17 Claims**



1. A phase-shifting multiplication type FM signal demodulator circuit, comprising an input terminal for an FM signal, a demodulation output terminal, a gate circuit in the form of an integrated circuit including a first and second switching circuits for switching said FM signal, said gate circuit being opened to produce an output only during the time duration in which both of said first and second switching circuits are simultaneously in the conductive state, a circuit for feeding said FM signal from said input terminal to said first switching circuit of said gate circuit, a phase-shifter device for phase-shifting said FM signal from said first switching circuit and, after frequency-to-phase conversion of the phase-shifted FM signal, feeding the resulting signal to said second switching circuit, said phase-shifter device including an element for shifting the phase of said FM signal and a resonance circuit adapted to be resonated with the FM signal phase-shifted by said phase-shifting element and to perform phase-conversion of the resonance frequency of said FM signal, a voltage source for generating a reference voltage, a resistor serving as a resonance resistor of said resonance circuit, a detector circuit for detecting the gated output signal appearing at the output stage of said gate circuit and applying its output to said demodulation output terminal, and an output resistor for determining magnitude of the signal at said demodulation output terminal, said resonance resistor being connected between said reference voltage generating source and a junction point of said second switching circuit and said resonance circuit and implemented in the integrated circuit of said gate circuit, while said output resistor is provided as an external element independently from said integrated circuit.

4,122,395

RADIO CONTROL CIRCUIT WITH MICROPROCESSOR

Larry A. Schotz, Glendale, and Thomas W. Wiesmann, Milwaukee, both of Wis., assignors to Draco Laboratories, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 684,523, May 10, 1976, abandoned. This application Mar. 23, 1977, Ser. No. 780,391

Int. Cl.² H04B *1/26*

U.S. Cl. 325—453 **19 Claims**

12. A radio receiver comprising:

a digital microprocessor,

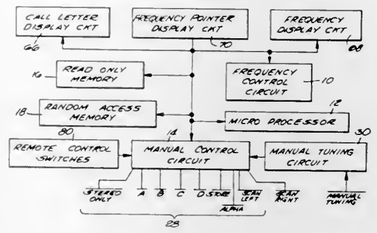
program memory means coupled to said microprocessor, said memory means being for storing instructions for said microprocessor,

random-access memory means coupled to said microprocessor for storing digital data produced with and used by said microprocessor,

one of said memory means storing numbers in binary digital form corresponding respectively with station frequencies to which said receiver is tunable,

tuning means responsive to digital signals by tuning said radio to frequencies of respective stations,

means for controlling said microprocessor means to select one of said numbers and produce a corresponding digital tuning signal for causing a response by said tuning means, and



call letter display circuit means and call letter display means, said display circuit means being responsive to the input of a digital signal by controlling said display means to display the call letters of a station to which said receiver is tuned, data corresponding with the call letters of stations, respectively, being stored in said random-access memory means, and

said microprocessor using said data to produce a digital signal in response to selection of one of said numbers, said last named signal being coupled to said display circuit means for causing said display of said call letters.

4,122,396

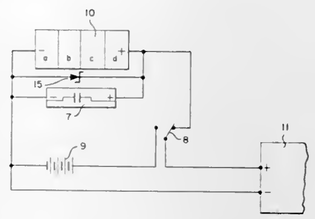
STABLE SOLAR POWER SOURCE FOR PORTABLE ELECTRICAL DEVICES

James A. Grazier, and Leonard F. Grazier, both of P.O. Box 382, Berlin, Md. 21811

Continuation-in-part of Ser. No. 493,910, Aug. 1, 1974, abandoned. This application Feb. 18, 1976, Ser. No. 658,861

Int. Cl.² H01L *31/00*

U.S. Cl. 325—492 **13 Claims**



9. A stable solar power source adapted to supply power directly to the input terminals of a radio receiver which is normally operative by a first input current level, but which periodically requires peak input current levels which exceed said first input current levels, said stable solar power source including a plurality of interconnected solar cells which convert sunlight into direct current electrical energy and supply said direct current electrical energy to an output, the plurality of interconnected solar cells providing said output with said first input current level subject to periodic fluctuations due to blockage of incident sunlight by clouds, said stable solar power source also including a voltage limiting device connected in parallel with said plurality of interconnected solar cells and said radio receiver, and a capacitive means connected in parallel with said plurality of interconnected solar cells and said radio receiver, said capacitive means having a large capacity in excess of 500 microfarads sufficient to permit said capacitive means to supply the peak input current levels required by the radio receiver and to operate as a ballast for the plurality of interconnected solar cells to offset said fluctuations in current supplied by a said solar cells.

4,122,397

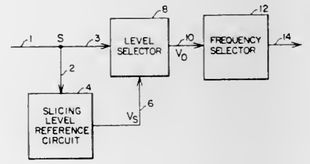
APPARATUS AND METHOD FOR TIMING RECOVERY FROM A PSEUDO-TERNARY SIGNAL

Jay A. Thomas, Mountain View, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 17, 1977, Ser. No. 769,827

Int. Cl.² H03K *9/04*

U.S. Cl. 328—139 **12 Claims**



1. Apparatus for recovering timing information from a pseudo-ternary signal which comprises:

means for establishing a reference voltage having an amplitude slightly greater than the individual signal pulses;

level selecting means having an input coupled to receive said reference voltage, having a second input coupled to receive the pseudo-ternary signal, and providing at an output the peaks of the pseudo-ternary signal which have an amplitude greater than the reference voltage; and

frequency selecting means, having an output, having an input connected to the output of said level selector, and providing a timing signal at the output.

4,122,398

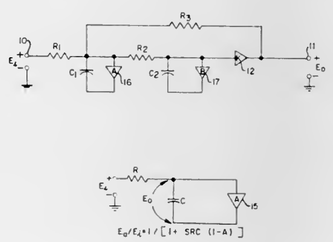
ELECTRONICALLY CONTROLLABLE FILTER

Gerald A. Dunn, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 28, 1977, Ser. No. 837,499

Int. Cl.² H03F *1/36*

U.S. Cl. 330—107 **15 Claims**



1. An electronically controllable filter comprising:

a first amplifier having input and output terminals;

at least one passive element-multiplier, frequency-determining network connected to the input terminal of said first amplifier, said passive element-multiplier network comprising at least two passive elements connected together and having a variable gain second amplifier connected in series with one of said passive elements; and

a feedback path connected between the output terminal of said first amplifier and said passive element-multiplier network, for feeding back a portion of the output from said first amplifier to said passive element-multiplier network.

4,122,399

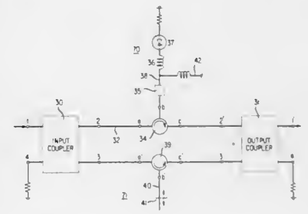
DISTORTION GENERATOR

George Ludwig Heiter, Andover; Hotze Miedema, Boxford, both of Mass., and Edwin Charles Moore, Windham, N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1977, Ser. No. 858,118

Int. Cl.² H03F *1/32*

U.S. Cl. 330—149 **5 Claims**



1. A distortion compensating circuit for generating selected nonlinear amplitude and nonlinear phase distortion comprising:

an input coupler (**30**) having an input port (**1**) and two output ports (**2**, **3**);

an output coupler (**31**) having two input ports (**2'**, **3'**) and an output port (**1'**);

a first wavepath (**32**), coupled to a nonlinear circuit (**70**), connecting an output port (**2**) of said input coupler (**20**) and an input port (**2'**) of said output coupler (**31**);

and a second wavepath (**33**), coupled to a linear phase shifter (**71**), connecting the other output port (**3**) of said input coupler (**30**) and the other input port (**3'**) of said output coupler (**32**);

CHARACTERIZED IN THAT:

said nonlinear circuit (**70**) is solely a phase modulator;

and in that the phase shift produced by said phase modulator is a function of the power of the signal in said first wavepath.

4,122,400

AMPLIFIER PROTECTION CIRCUIT

Dale Frederick Medendorp, Bethel Park, and Paul Charles Schwabel, Pittsburgh, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,200

Claims priority, application United Kingdom, Nov. 8, 1976, 46462/76

Int. Cl.² H03G *3/20*

U.S. Cl. 330—207 P **5 Claims**

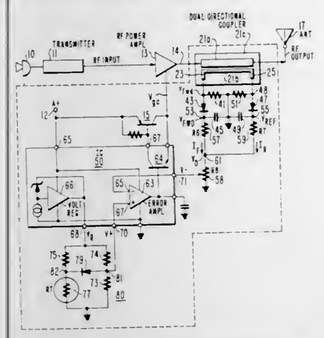
1. The protection circuit for controlling the power of a transmitter amplifier which produces an output varying with a control signal applied thereto comprising:

first sensing means coupled to said transmitter amplifier for sensing the forward power provided therefrom,

second sensing means coupled to said transmitter amplifier for sensing the reflected power thereto, and

means coupled to said first and second sensing means for providing a control signal which varies in relation to only said forward power below a fixed predetermined threshold ratio of reflected power to forward power and which

varies in relation to reflected power above said fixed predetermined threshold ratio regardless of temperature change unless the temperature at said amplifier exceeds a predetermined threshold considered alone to be an unsafe



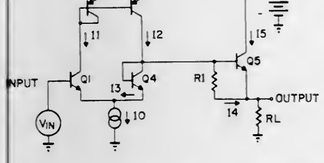
heat condition of said amplifier, whereby the power output from the transmitter amplifier is maximized until the ratio of reflected power to forward power exceeds said given threshold ratio.

4,122,401

HIGH EFFICIENCY POWER AMPLIFIER CIRCUIT

Donald Roy Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 14, 1977, Ser. No. 815,734
Int. Cl.[2] H03F *3/45*
U.S. Cl. 330—257 **25 Claims**



1. A high efficiency power amplifier circuit comprising input transistor means for selectively turning the circuit on and off depending upon the voltage level of the input signal, and current gain transistor means coupled to said input transistor means for amplifying the input signal by at least 100,000, said current gain transistor means comprising a PNP current amplifier transistor and a NPN output transistor connected together as a composite pair, said input transistor means being coupled to the base of said NPN output transistor, a first diode connected transistor connected to the collector of said input transistor means, one of said composite pair of transistors of said current gain transistor means having at least 30 times the current capacity of said first diode connected transistor.

4,122,402

BUFFER AMPLIFIER CIRCUIT SUITABLE FOR MANUFACTURE IN MONOLITHIC INTEGRATED CIRCUIT FORM

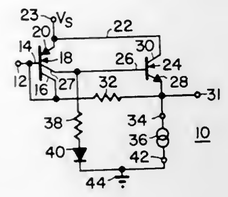
William Eric Main, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1977, Ser. No. 812,935
Int. Cl.[2] H03F *3/04*
U.S. Cl. 330—288 **16 Claims**

1. An amplifier circuit having an output terminal and including in combination:

first electron control means for providing an output current having a magnitude which is a known function of the input current, said first electron control means having a power input electrode, a control electrode and a plurality of power output electrodes, said control electrode being adapted to receive the signal to be amplified;

second electron control means for isolating said first electron control means from an electrical load, said second electron control means having a power input electrode, a control electrode and a power output electrode, said control electrode of said second electron control means being connected to one of said plurality of output electrodes of said first electron control means, and said output electrode of said second electron control means being coupled to the output terminal of the amplifier circuit;



negative feedback means coupling said output electrode of said second electron control means to said control electrode and to another of said output electrodes of said first electron control means for stabilizing the magnitude of the quiescent output voltage at the output terminal of the amplifier circuit; and

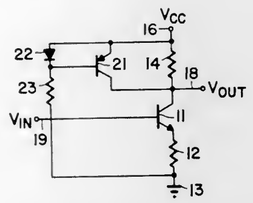
bias means for said second electron control means connected to said one of said output electrodes of said first electron control means and to said control electrode of said second electron control means for establishing a bias potential of a predictable magnitude at the output terminal of the amplifier circuit.

4,122,403

TEMPERATURE STABILIZED COMMON EMITTER AMPLIFIER

David L. Cave, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 13, 1977, Ser. No. 806,035
Int. Cl.[2] H03F *1/32*
U.S. Cl. 330—289 **7 Claims**



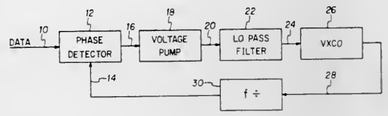
1. An amplifier having an input and an output for amplifying electrical signals, comprising: a first transistor having a base, emitter, and collector, the base being coupled to the input; a first resistor having a first and a second end, the first end being connected to the emitter of the first transistor, the second end being connected to a common reference; a second resistor having a first and a second end, the first end being connected to the collector of the first transistor, the second end of the second resistor being for connecting to a power source, the first end of the second resistor also being connected to the output; a second transistor for providing a current source in parallel with the second resistor, the second transistor having a base, emitter, and collector wherein the collector and emitter are connected to the first and second ends of the second resistor; a biasing source for providing bias to the base of the second transistor thereby providing an amplifier being temperature stabilized and having a closely controlled gain; and a third transistor in cascode with the second transistor and a fourth transistor in cascode with the first transistor.

4,122,404

COMBINATION PHASE DETECTOR VOLTAGE DOUBLER AND LOW-PASS FILTER FOR USE ON A PHASE-LOCK LOOP

James L. Fuhrman, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 23, 1978, Ser. No. 871,655
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—1 A **8 Claims**



1. The method of increasing the phase detector output voltage in a phase-lock incorporating a phase detector, a filter and a voltage sensitive variable frequency oscillator in a feedback configuration comprising the steps of:

pumping the peak-to-peak (p-p) voltage amplitude of the output signal from the phase detector to an increased value greater than the power supply voltage used by said detector; and

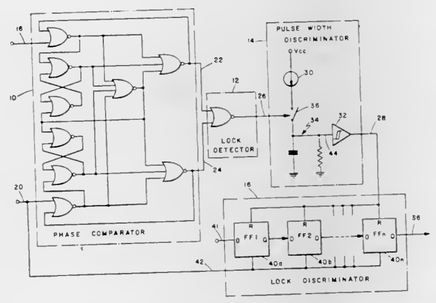
controlling the oscillator with the increased signal.

4,122,405

DIGITAL LOGIC LEVEL SIGNAL INDICATION OF PHASE AND FREQUENCY LOCK CONDITION IN A PHASE-LOCKED LOOP

Gary William Tietz, and Keith James Mueller, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 21, 1977, Ser. No. 844,409
Int. Cl.[2] H03D *3/04;* **H03K** *5/20*
U.S. Cl. 331—1 A **4 Claims**



1. A system for providing a digital logic level signal that indicates whether a first signal in a phase-locked loop is locked in phase and frequency to a second signal provided to the loop, comprising:

a phase comparator coupled to the phase locked loop for providing a first correction signal when the first and second signals are out of phase in one direction, and a second correction signal when the first and second signals are out of phase in the opposite direction;

a lock detector coupled to the phase comparator for providing a first digital logic level signal having a first state whenever either the first correction signal or the second correction signal is provided from the phase comparator, and having a second state whenever neither the first correction signal nor the second correction signal is provided from the phase comparator, the second state thereby indicating that the first signal is locked in phase to the second signal;

a pulse width discriminator coupled to the lock detector for providing a reset signal pulse having a first predetermined duration when the digital logic level signal from the lock detector is in said first state for at least a second predetermined duration; and

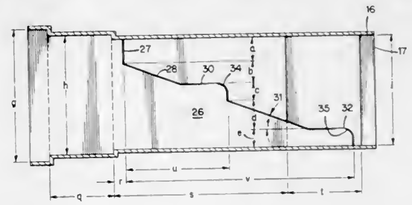
a lock discriminator coupled to the pulse width discriminator and responsive to one of the first signal and the second signal as an input signal for providing a second digital logic level signal that indicates that the loop is in lock when a predetermined number of input signal cycles occur without said reset signal pulse being provided by the pulse width discriminator.

4,122,406

MICROWAVE HYBRID POLARIZER

Edward Salzberg, 19 Black Oak Rd., Wayland, Mass. 01778

Filed May 12, 1977, Ser. No. 796,319
Int. Cl.[2] H01P *1/16, 5/18*
U.S. Cl. 333—10 **8 Claims**



1. A microwave hybrid polarizer comprising:

(a) a dual port section consisting of first and second ports of rectangular waveguide on either side of a common wide wall septum;

(b) a coupling section from said ports of rectangular waveguide to square waveguide in which said septum is successively reduced in height with a first step, a first slope, a second step, a second slope and a final step terminating said septum;

(c) a square waveguide section connected to said coupling section; and,

(d) a constriction transverse to the plane of said septum in said coupling section to a width less than that of said square waveguide section by enough to provide two zero ellipticity points separated in frequency in the polarization response curve of said polarizer.

4,122,407

HETEROSTRUCTURE JUNCTION LIGHT EMITTING OR RESPONDING OR MODULATING DEVICES

James Alden Van Vechten, Basking Ridge, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

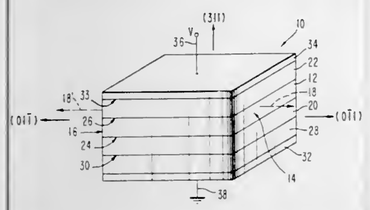
Filed Apr. 6, 1976, Ser. No. 674,190
Int. Cl.[2] H01S *3/19;* **H01L** *27/14, 29/04, 27/14*
U.S. Cl. 331—94.5 H **57 Claims**

1. A single crystalline semiconductor heterostructure injection laser comprising:

a monocrystalline substrate;

an active layer of a first composition of single crystalline

material, wherein radiative recombination of injected carriers primarily occurs;
a carrier and light confiming layer on one of the two sides respectively of said active layer, having a second compositin of single crystalline material, the respective interface between each confining layer and the active layer being a crystalline plane which does not reconstruct;
an additional single crystal transition layer adjacent to said confining layer, the planar interface therebetween being a crystalline plane which does not reconstruct, the several



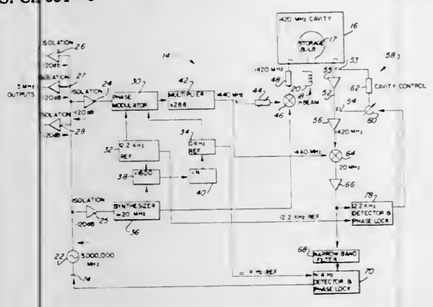
said layers being disposed in epitaxial relationship from said monocrystalline substrate which is so oriented that its normal surface on which the several said layers are disposed in epitaxial relationship is a non-reconstructing crystalline surface;
electrical contact means for causing suitable injection current of electrons and holes to be injected into the active layer to produce recombination therein; and
feedback means to produce laser oscillations in the structure when an injection current exceeding a threshold is applied thereto.

4,122,408

FREQUENCY STABILIZATION UTILIZING MULTIPLE MODULATION

Fred Lexes Walls, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Nov. 14, 1977, Ser. No. 851,326
Int. Cl.² H03B *3/12*
U.S. Cl. 331—3 **33 Claims**



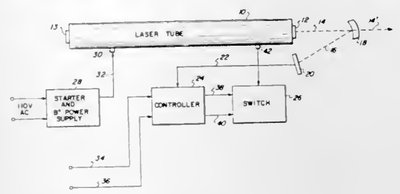
1. In a device for providing a frequency maintained electrical output signal with said device including a tunable element and frequency reference receiving a probe signal from probe means connected therewith with said probe means including frequency adjustable carrier signal generating means, a multiple modulation signal maintaining system, comprising:
modulating means for modulating said probe signal coupled to said tunable element and frequency reference with at least first and second modulating signals of different modulating frequencies; and
detecting means for detecting the modulation of said different modulating frequencies on the output signal from said tunable element and frequency reference and coupling signals indicative thereof to said tunable element and said signal generating means for controlling tuning of said tunable element and adjustment of the frequency of said signal generating means to thus accurately maintain the frequency of said electrical output signal in a predetermined relationship with respect to said frequency reference.

4,122,409

METHOD AND APPARATUS FOR CONTROLLING THE INTENSITY OF A LASER OUTPUT BEAM

Calvin J. Marlett, La Crescenta; Edwin A. Reed, Upland, and Richard C. Johnson, Pasadena, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 10, 1976, Ser. No. 665,594
Int. Cl.² H01S *3/10*
U.S. Cl. 331—94.5 M **30 Claims**



1. Apparatus for controlling the intensity of the light output from a laser comprising:
laser means having a light output which varies as a function of a current therethrough for providing a light output which can be intensity modulated between first and second intensities by controlling said current between first and second levels;
switch means coupled to said laser means and responsive to first and second control signals for controlling the current flowing through said laser means;
means for applying said first control signal to said switch means, said switch means responding to said first control signal by causing said current to be at said first level when said first control signal is at a first value, and at said second level when said first control signal is at a second value; and
means for applying said second control signal to said switch means when said first control signal of said second value is applied to said switch means for causing said switch means to modulate said current between said first and second levels.

4,122,410

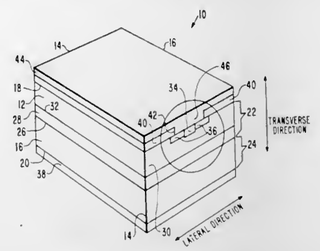
LATERAL MODE CONTROL IN SEMICONDUCTOR LASERS

Henry Kressel, Elizabeth, and Frank Zgymunt Hawrylo, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 16, 1977, Ser. No. 797,402
Int. Cl.² H01S *3/19*
U.S. Cl. 331—94.5 H **8 Claims**

1. A semiconductor laser device comprising:
a body of semiconductor material capable of emitting coherent electro-magnetic radiation having opposed first and second contact surfaces, opposed side surfaces extending to said first and second contact surfaces, opposed facet surfaces extending to said side surfaces and said first and second contact surfaces, a first region of one conductivity type extending along said first contact surface, a second region of the opposite conductivity type extending along said second contact surface and contiguous to said first region, said first region including an active portion extending along the second region, said active portion being

of a material which forms a heterojunction with each of the second region and the remaining portion of the first region;
a third region at said first contact surface and extending into said first region toward but being spaced from the active portion of said first region, said third region extending from one facet surface to said opposite facet surface and spaced from said side surfaces, said third region of the same conductivity type and of a higher degree of conductivity than said first region;
a pair of spaced regions at said first contact surface and extending into said first region toward but being spaced from the active portion of said first region, said pair of spaced regions extending from one facet surface to said



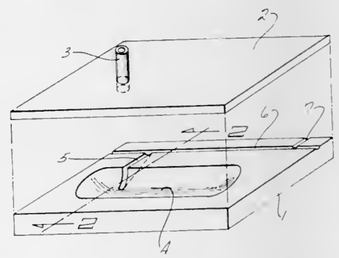
opposite facet surface with said third region between and contiguous to said pair of spaced regions, said pair of spaced regions being of the same conductivity type and a lower degree of conductivity than said third region, said pair of spaced regions being of a higher degree of conductivity than said first region;
a layer of electrically insulating material on said first contact surface, said layer having a stripe opening extending from one facet surface to said opposite facet surface, said third region and at least portions of said pair of spaced regions at said first contact surface being at said opening; and
an electrically conductive layer on said insulating layer and in said stripe opening forming a stripe electrical contact to said third region and said pair of spaced regions.

4,122,411

GAS LASER WITH IMPROVED CATHODE LIFE

Michael E. Fein, Toledo, and Charles W. Salisbury, Rising Sun, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 546,240, Feb. 3, 1975. This application Jul. 16, 1976, Ser. No. 705,853
Int. Cl.² H01S *3/00*
U.S. Cl. 331—94.5 G **1 Claim**



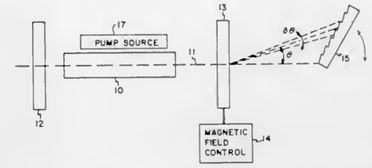
1. In combination with a laser which includes a laser bore containing a lasing gaseous medium, a cathode volume having walls defining the boundaries thereof and a metallization on the cathode walls to serve as a cathode for said laser, and a connecting channel volume connecting said cathode volume to said laser bore, the improvement in said cathode metallization wherein the edge of the metallization proximate the discharge entry to said cathode volume is generally curved concavely with respect to the discharge entry, whereby the discharge as it emerges from said connecting channel volume spreads out to fill a cross-section greater than the cross-section of the cathode end of the connecting channel volume before striking the edge of said metallization to thereby reduce the density of current striking the metallization and thus prolong the life of the cathode.

4,122,412

MAGNETO-OPTICALLY TUNED LASERS

Richard Swart Hughes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1977, Ser. No. 788,168
Int. Cl.² H01S *3/10*
U.S. Cl. 331—94.5 C **6 Claims**



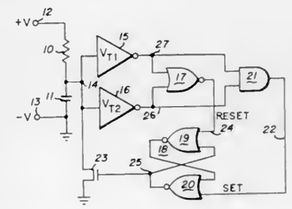
1. A rapidly tunable monochromatic laser comprising:
a resonant cavity with a total reflection end and a partially reflective end so as to define an optical path between said ends;
a lasing element with an axis which is placed in said resonant cavity such that said axis is along said optical path for emitting predetemined light waves along said axis;
a pump source in proximity to said lasing element for driving said lasing element to emit light;
a stripe-domain light deflector, SDLD, located in the optical path between said lasing element and said total reflection end for directing said emitting light by interaction with the magnetic field in said SDLD as it passes through said SDLD; and
electrical means operatively attached to said SDLD for varying said magnetic field of said SDLD so as to tune said emitted light.

4,122,413

ACCURATE SINGLE PIN MOS RC OSCILLATOR

Carson L. Chen, San Bruno, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 26, 1976, Ser. No. 735,913
Int. Cl.² H03K *3/353*
U.S. Cl. 331—108 D **5 Claims**



1. An integrated circuit oscillator for use with an externally connected resistor-capacitor combination, said integrated circuit including a plurality of package pins, two of which are adapted for coupling to the terminals of a source of supply potential, said resistor-capacitor combination being adapted

for series connection across said two pins with the juncture therebetween adapted for coupling to an integrated circuit package input pin, said integrated circuit comprising:

a pair of inverters having their inputs coupled to said input pin, said inverters being constructed to have similar but different threshold values;

switch means coupled to said package pins adapted for connection to said capacitor, said switch means when on being capable of discharging said capacitor; and

logic means comprising a two input AND gate having its inputs coupled to the outputs of said inverters, a two input NOR gate having its inputs coupled to the outputs of said inverters, and a latch having an output coupled to said switch means, a reset input coupled to the output of said NOR gate and a set input coupled to the output of said AND gate, said logic means acting to turn said switch means on when the potential on said input pin exceeds the thresholds of both of said inverters and to turn said switch means off when the potential on said input pin is less than the thresholds of both of said inverters.

4,122,414

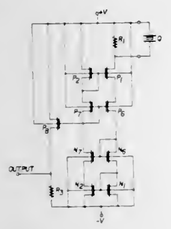
CMOS NEGATIVE RESISTANCE OSCILLATOR

Raymond B. Patterson, III, Melbourne, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Oct. 11, 1977, Ser. No. 841,250

Int. Cl.[2] H03B *5/36, 7/06*

U.S. Cl. 331—116 R **14 Claims**



1. A CMOS oscillator comprising:

a first pair of CMOS devices having their source-drain paths connected in series to a voltage supply;

a second pair of CMOS devices having their source-drain paths connected in series to said voltage source;

gates of N channel devices being connected to the junction of said first pair;

gates of P channel devices being connected to the junction of said second pair;

a first resistance connected in series with the source of one of said MOS devices;

a frequency determining network connected across said first resistance, said first resistance being greater than the resistance of said frequency determining network; and

the width to length ratio of said one MOS device being greater than the width to length ratio of corresponding channel device of the other pair whereby said first resistance and the variance of the width to length ratio determine the steady state operating current.

4,122,415

AM TRANSMITTER WITH AN OFFSET VOLTAGE TO THE RF STAGE TO COMPENSATE FOR SWITCHING TIME OF THE MODULATORS

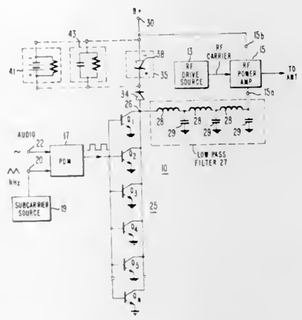
Arch Clinton Luther, Jr., Woodstown, N.J., and David Arthur Sauer, McMurray, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1977, Ser. No. 859,189

Claims priority, application United Kingdom, Mar. 21, 1977, 11901/77

Int. Cl.[2] H03C *1/02*

U.S. Cl. 332—37 R **7 Claims**



1. In an AM transmitter of the type including a pulse width modulator responsive to a local subcarrier and intelligence signals for producing pulse width modulated rectangular waves with the width of the waves dependent on the amplitude of the intelligence signals, amplifying means including active devices switched "on" and "off" in accordance with the width of said waves, an RF carrier stage, a source of biasing potential coupled to said RF carrier stage and said amplifying means, a low pass filter including series connected coils coupled between said amplifying means and said RF carrier stage for removing the subcarrier and applying high level DC varying at the audio rate to said carrier stage for modulating same, the improvement therewith for preventing distortion when the pulse width approaches zero width and the finite switch time of the amplifying means becomes significant comprising:

coupling means coupled between the amplifying means and said source of potential for coupling energy in the series connected coils of the filter when the amplifying means is in the "off" state, and

means coupled between said coupling means and said source of potential for providing a back biasing voltage to said RF carrier stage so that the carrier output goes to zero as the pulse width reaches a relatively small finite value.

4,122,416

SHIELDED, D.C. ISOLATED RF CONNECTOR ASSEMBLY

John Stewart Oblak, Belle Vernon, and Peter Joseph Schmalz, Washington, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 2, 1976, Ser. No. 710,742

Int. Cl.[2] H01P *1/04;* **H01R** *17/08;* **H05K** *9/00;* **H03H** *7/04*

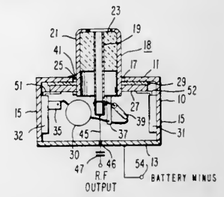
U.S. Cl. 333—24 C **2 Claims**

1. A shielded D.C. isolated RF connector assembly for radio frequency signals comprising:

a conductive enclosure having an aperture in one wall thereof,

a coaxial connector having an inner and outer conductor with the inner conductor spaced from the outer conductor by a dielectric member, one end of said coaxial connector extending in a spaced manner through said aperture into said enclosure with the inner conductor of said connector extending beyond said outer conductor within said enclosure, and

a conductive flange electrically connected to and extending sufficient radial distance from said outer conductor at said one end of said connector to cover the opening of said aperture from within said enclosure with said flange being spaced from but secured in an insulated manner to the inside of said one wall to provide D.C. isolation while preventing leakage of radio frequency energy external to said assembly.



4,122,417

VARIABLE EQUALIZER

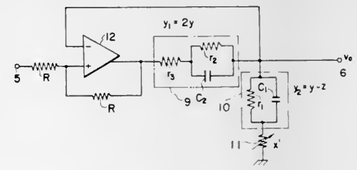
Yoshitaka Takasaki, Tokorozawa; Kohei Ishizuka; Yasuhiro Kita, both of Hachioji; Yoshinori Nagoya, Yokohama, and Takeo Kusama, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 13, 1977, Ser. No. 796,539

Claims priority, application Japan, May 24, 1976, 51-59122

Int. Cl.[2] H03H *7/14*

U.S. Cl. 333—28 R **6 Claims**



1. A variable equalizer which cmprises

(a) an input terminal of the equalizer to which an input signal to be equalized is applied;

(b) an output terminal of the equalizer from which an equalized output signal is derived;

(c) an adder circuit having first and second input terminals, the first input terminal being connected to said input terminal of the equalizer;

(d) an amplifier to which the output signal of said adder is applied;

(e) a first impedance circuit through which the output signal of said amplifier is applied to said output terminal of the equalizer, said first impedance circuit having a predetermined frequency characteristic;

(f) a series circuit connected between said output terminal and ground including a second impedance circuit and a variable resistor connected in series, said second impedance circuit having a predetermined frequency characteristic; and

(g) a feedback circuit connected between said second input terminal of the adder and said output terminal of the equalizer, and having feedback coefficient that is independent of frequency.

4,122,418

COMPOSITE RESONATOR

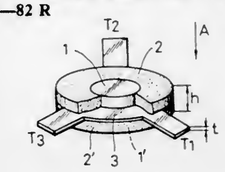
Tsukasa Nagao, 4-75,, Mabori, Yokosuka-shi, Kanagawa-ken, Japan

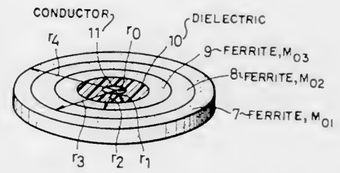
Filed May 4, 1976, Ser. No. 683,143

Claims priority, application Japan, Apr. 19, 1976, 51-44760

Int. Cl.[2] H01P *7/00, 1/34*

U.S. Cl. 333—82 R **8 Claims**





1. A composite resonator comprising a composite made of a centrally disposed conductor puck, a solid dielectric layer disposed concentrically with and adjacent to said conductor puck and a ferrite layer disposed concentrically with and adjacent externally to said dielectric layer, and an external magnetic field source for applying an external magnetic field of predetermined intensity to said composite so that at least two circulation modes perpendicular to said magnetic field can coexist, said ferrite layer being a multi-layer composite made of a plurality of directly contacting concentric layers having mutually different saturation magnetizations for utilizing at least one subsidiary circulation mode produced in said multi-layer composite.

4,122,419

TUNABLE RESONANT CAVITIES HAVING PARTICULAR ISOLATING CHOKE

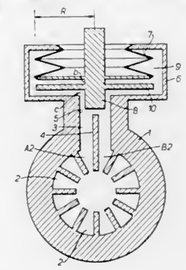
Michael Barry Clive Brady, Maldon, and David William Bennett, Writtle, all of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Apr. 1, 1977, Ser. No. 783,621

Claims priority, application United Kingdom, Apr. 9, 1976, 14704/76

Int. Cl.[2] H01P *7/06;* **H01J** *25/50*

U.S. Cl. 333—83 R **9 Claims**



1. A resonant cavity device having at least one resonant cavity and including a tuning plunger and sealing bellows associated therewith wherein a volume defined by at least in part said bellows, and producing a range of spurious resonances as said tuning plunger is moved, is isolated from said at least one resonant cavity of the said resonant device by means

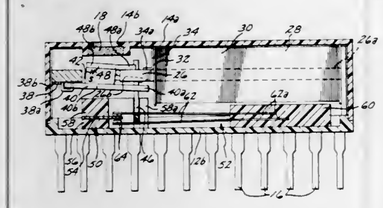
of an isolating choke comprising an annulus extending transversely to the direction of movement of said tuning plunger.

4,122,420

PERMISSIVE-MAKE ELECTROMAGNETIC SWITCH

Jack M. Brown, Costa Mesa, Calif., assignor to Esterline Electronics Corporation, Costa Mesa, Calif.

Filed Jan. 13, 1977, Ser. No. 758,933
Int. Cl.² H01H *51/22*
U.S. Cl. 335—80 **7 Claims**



1. A permissive-make double throw electromagnetic switch comprising in combination,
- at least one stationary contact and a pair of movable contacts on opposite sides thereof individually biased toward engagement with said stationary contact,
- an actuator operatively interposed between said movable contacts to alternatively move said movable contacts to disengagement with said stationary contacts against the respective bias,
- an electromagnetic assembly comprising a winding and flux-conducting means associated therewith,
- an armature operatively connected to said actuator and having a first portion pivotally mounted on one end of said flux-conducting means and a second portion movable from retracted to attracted postion on one side of the other end of said flux-conducting means upon energization of said winding,
- and auxilliary magnet means on said armature having a pole piece on the side of said flux-conducting means opposite said one side to move said armature to retracted position upon de-energization of said winding.

4,122,421

DEVICE FOR THE CONTROL OF ELECTRON BEAMS OF A CATHODE RAY TUBE

Mario Malerba, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Turin, Italy

Filed Nov. 15, 1976, Ser. No. 741,839
Claims priority, application Italy, Nov. 21, 1975, 69871 A/75
Int. Cl.² H01F *5/00*
U.S. Cl. 335—213 **24 Claims**



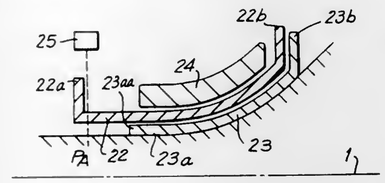
1. A device for adjusting the convergence of the side beams of a colour television picture tube of a type having:
- a neck portion,
- three in-line electron guns located in said neck portion of the picture tube and operating to produce three electron beams one of which is substantially coincident, in the absence of any deflecting forces, with the longitudinal axis of said neck portion of the picture tube and the other two of which are substantially symmetrically disposed on opposite sides of said axis,
- a region within said neck of said picture tube which is free of magnetisable structures, said three electron beams passing through said region, said device including
- a first unit adapted to be mounted on said neck portion of said picture rube and operating to generate a plurality of magnetic fields, which combine together to produce a selectively controllable magnetic field in the region of one of two side beams and a magnetic field practically null in the region of the other two beams, so that it is possible to cause controlled displacement in one predetermined direction of only one of said side beams without appreciably altering the path of said other two beams.

4,122,422

DEFLECTION DEVICE FOR USE WITH IN-LINE TYPE COLOR CATHODE RAY TUBES

Yoshikazu Hasegawa, Tokyo; Yasuyuki Ohmichi, Yokohama, and Koichi Sakai, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 26, 1977, Ser. No. 762,766
Claims priority, application Japan, Jan. 26, 1976, 51/7357
Int. Cl.² H01F *5/00*
U.S. Cl. 335—213 **6 Claims**



1. In a deflection yoke for use with an in-line color cathode ray tube in which a plurality of electron beams originating in a common plane within a tube envelope are directed forwardly along converging paths through the deflection yoke to impinge on a screen at the front of the tube envelope, said deflection yoke comprising first and second deflection windings for producing magnetic fields by which the electron beams are deflected in respective directions at right angles and parallel to said common plane in which the beams originate; the improvement of each of said first and second deflection windings being of saddle form so as to have side portions connected by bent front and back end portions, said first deflection winding being disposed against the tube envelope and having its bent back end portion shaped to closely conform to the surface of the tube envelope, said second deflection winding being disposed outside of said first deflection winding, and said bent back end portion of said first deflection winding being spaced apart from, and closer to the screen at the front of the tube than, the bent back end portion of the second deflection winding.

4,122,423

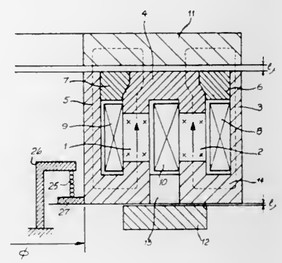
PERMANENT MAGNET MAGNETIC CONTROL DEVICE HAVING TWO CONTROL AIR GAPS

Michel Cotton de Bennetot, Brest, France, assignor to Le Material Magnetique, France

Filed Apr. 27, 1977, Ser. No. 791,635
Claims priority, application France, May 14, 1976, 76 14569
Int. Cl.² H01H *47/00*
U.S. Cl. 335—234 **4 Claims**

1. A magnetic control device comprising first and second permanent magnets, each having first and second pole ends, an intermediate armature member magnetically connecting the first pole ends of the respective permanent magnets, first and second armature yoke members each having a second end portion which is in contact with the second pole end of the respective permanent magnet and a first end portion; first and second amagnetic zones respectively separating the first end

portions of the first and second armature yoke members from the intermediate armature; a first pole piece forming a first air gap with the intermediate armature and with the said first end portions; a third amagnetic zone separating the second end portions of said armature yoke members from each other; a



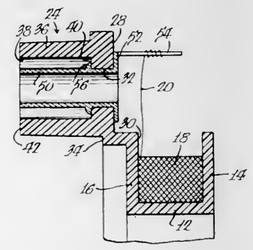
second pole piece forming a second air gap with the said second end portions, the second air gap being substantially smaller than the first air gap and means adapted to reverse the direction of magnetic polarization of one of said first and second permanent magnets.

4,122,424

BOBBIN ASSEMBLY

James P. Plunkett, West Dundee, Ill., assignor to Coils, Inc., Huntley, Ill.

Filed Dec. 29, 1977, Ser. No. 865,734
Int. Cl.² H01F *15/10*
U.S. Cl. 336—107 **7 Claims**



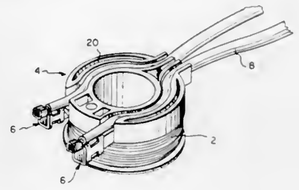
1. In an electrical coil having a bobbin including a central portion and at least one flange extending from said central portion and having a nonconductive terminal block integral with a peripheral portion thereof, said terminal block having opposed surfaces, a coil of fine wire wound about said central portion and having exposed free ends, a lead wire having a central conductive core and insulation surrounding said conductive core, and connection means between said conductive core and a free end of said fine wire, the improvement of said connection means including a conductive tubular member having an enlarged head at one end and an opening therethrough, said terminal block having an opening between said surfaces and receiving said tubular member with said enlarged head engaging one of said surfaces of said terminal block adjacent said central portion, said opening in said terminal block having an enlarged portion extending from the other of said surfaces to define a space around a portion of said tubular member, first means forming part of said tubular member permanently connecting said tubular member to said terminal block, second means defining a conductive connection between one end of said fine wire and said tubular member, and third means defining a conductive connection between said conductive core and said tubular member.

4,122,425

ELECTRICAL CONNECTIONS FOR EXTREMELY FINE WIRES

Donald Wayne Kent Hughes, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 31, 1977, Ser. No. 829,550
Int. Cl.² H01F *15/10*
U.S. Cl. 336—192 **10 Claims**



1. A stamped and formed terminal which is intended to be crimped onto a terminal post to establish electrical contact with a wire which has been wrapped around said post;
- said terminal being generally U-shaped in cross section and comprising a web portion and sidewalls,
- side-by-side slots in each of said sidewalls extending from a location adjacent to each end of said terminal, each of said slots being at the base of its respective sidewall so that a central portion of said web is isolated from said sidewalls, said central portion of said web being inwardly deformed with respect to said sidewalls along the axis of said terminal whereby,

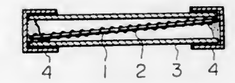
upon crimping said terminal onto said post, said web is partially straightened with accompanying compressive resilient deformation thereof, and said web is thereby resiliently urged against said wire thereby to establish electrical contact with said wire.

4,122,426

TIME-LAG FUSE

Masaya Maruo, Yokohama, Japan, assignor to San-O Industrial Corp., Tokyo, Japan

Filed Jan. 24, 1977, Ser. No. 762,183
Claims priority, application Japan, Feb. 3, 1976, 51-10034
Int. Cl.² H01H *85/04*
U.S. Cl. 337—163 **3 Claims**



1. A time-lag fuse comprising an insulated tubular member having two ends, sealing means at both said ends, an elongated core member disposed in said tubular member in contact with said sealing means, and a fuse element wound on said core member and fixed at both ends thereof, said core member being a ceramic material consisting of from about 85 to about 100 weight percent aluminum oxide.

4,122,427

MOTION MONITOR

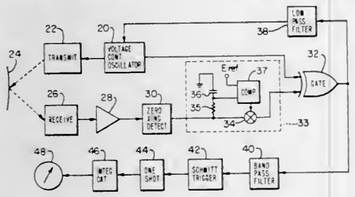
Herbert Karsh, 2955 Chillon Way, Laguna Beach, Calif. 92651

Filed Jun. 24, 1976, Ser. No. 699,539
Int. Cl.² G01S *9/66*
U.S. Cl. 340—1 R **15 Claims**

1. Apparatus for monitoring substantially cyclic movement of a subject, and comprising, in combination:
- generating means including a voltage controlled oscillator, for generating a substantially continuous ultrasonic wave and for directing said wave in a beam toward said subject;

detecting means for detecting the reflection of said ultrasonic wave from said subject; and

means for measuring the path length of said ultrasonic wave from said generating means to said subject and thence to said detection means as a function of the phase difference



between the ultrasonic wave generated by said generating means and the ultrasonic wave detected by said detecting means so that substantially cyclic movement of said subject provides phase modulation of the detected ultrasonic wave upon corresponding changes in said path length.

4,122,428

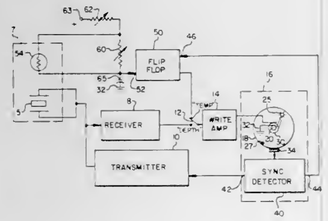
MARINE DETECTION APPARATUS

Ray E. Morrow, Jr., 1210 Rafael St., Salem, Oreg. 97303

Filed Nov. 22, 1976, Ser. No. 743,590

Int. Cl.[2] G01S *9/70, 7/56;* **G01K** *1/02, 7/24*

U.S. Cl. 340—3 C **4 Claims**



1. Marine detection apparatus comprising:

transducer means including a sound emitting and a receiving means and temperature sensitive means for mounting on a vessel under the water line thereof,

a sound transmitter and receiver coupled to said transducer means for alternately causing the emission of sound waves in response to transmitter operation and detection of sound waves by said receiver,

display means with which the operation of said transmitter is synchronized and for receiving the output of said receiver for displaying a depth reading in accordance with the elapsed time between transmission and reception of sound via said transducer means, said display means comprising a rotatable scanner having a light source mounted thereupon which is selectively illuminated in response to the output of said receiver, said scanner being provided with positional detector means for synchronizing operation of said transmitter,

a switching device including an R-C time constant circuit for determining the duration of the device's output, said time constant circuit including said temperature sensitive means, so that said switching device has an output with a duration indicative of the temperature measured by said temperature sensitive means,

means for synchronizing the operation of said switching device with rotation of said scanner in response to said positional detector means to initiate operation of said switching device for the production of an output when said light source is in a given rotational position,

and means for selectively causing energization of said light source in response to the output of said switching device, causing said light source to maintain an on-condition and produce an arcuate column of light over a predetermined portion of its cycle of rotation in accordance with the duration of output of said switching device which in turn is responsive to the time constant thereof as affected by said temperature sensitive means.

4,122,429

APPARATUS FOR MEASURING WATER DEPTH

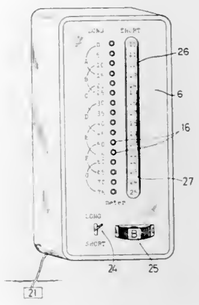
Akira Hatai, Osaka, Japan, assignor to Tashiro Fukumoto, Kobe, Japan

Continuation-in-part of Ser. No. 644,413, Dec. 24, 1975, abandoned. This application Feb. 24, 1977, Ser. No. 771,676

Claims priority, application Japan, Dec. 25, 1974, 50-3426

Int. Cl.[2] G01S *9/68*

U.S. Cl. 340—3 R **9 Claims**



1. An electronic underwater depth gauge comprising:

unit pulse generating means for generating a unit pulse;

divider means connected to said unit pulse generating means for frequency dividing the pulse units generated by said pulse generating means;

first binary counter means connected at the inlet thereto to said divider means for further frequency dividing the pulses divided by said divider means;

sound wave generating and receiving means connected to said first binary counter means for generating and converting high frequency impulses from pulses from said first binary counter means into sound waves and for receiving and converting reflected sound waves into high frequency impulses;

a voltage source;

double switching means connected to said voltage source for directing the voltage from said voltage source, said switching means having first and second positions;

a first AND gate connected at the input thereinto to said first position of said double switching means and to said divider means;

an OR gate connected at the input thereto to said first AND gate;

binary counting and decoding means connected to said OR gate and to said wave generating and receiving means for counting pulses through said OR gate, for comparing said counted pulses from said OR gate and said wave generating and receiving means, and for converting said binary pulses to decimal signals and storing said decimal signals, said binary counting and decoding means further being connected to said first binary counter means for being reset by the pulses therefrom;

visual display means connected to said binary counting and decoding means for visually displaying the decimal signals stored therein;

a second AND gate connected at the input thereinto to said second position of said double switching means and at the outlet therefrom to said OR gate, said second AND gate further being connected to said unit pulse generating means;

second binary to decimal decoder means connected to said first binary counter means for converting the binary input signals from said counter means to a series of delayed decimal output pulses, said second decoder means having a plurality of outlets therefrom for said delayed pulses;

switching means connected to said second binary to decimal decoder means for selecting an output terminal from said decoder means; and

pulse setting means connected between said second AND gate and said switching means and further having pulse input from said unit pulse generating means for producing and directing a regulated pulse to said second AND gate based on said selected decimal output signals from said second binary to decimal decoder, whereby when said second AND gate receives in unison a voltage from said double switching means, and appropriate signals from said unit pulse generating means and said pulse setting means, and said second AND gate is opened to said OR gate.

4,122,430

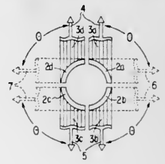
SONAR SYSTEM

Reinhard Leisterer, Bremen, and Dietrich Müller, Achim, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed Aug. 25, 1971, Ser. No. 174,958

Int. Cl.[2] G01S *9/66;* **H04B** *11/00*

U.S. Cl. 340—5 R **7 Claims**



1. In a sonar system having a transmitting arrangement for the simultaneous sweeping of a plurality of transmitting directional characteristics in respective adjacent sectors of an observation area, the improvement comprising: means for causing the transmitting directional characteristics in each pair of adjacent sectors to sweep over their respective sectors in a continuous manner and in opposite directions so that the respective transmitting directional characteristics leave and reach the common borderline of the sectors at the same time.

4,122,431

METHOD OF SEISMIC SURVEY

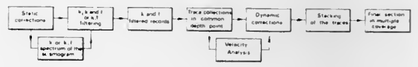
René Peraldi, Billere, France, Assignor to Societe Nationale Elf Aquitaine (Production), Paris, France

Continuation of Ser. No. 505,939, Sep. 13, 1974, abandoned. This application Sep. 1, 1976, Ser. No. 719,418

Claims priority, application France, Sep. 14, 1973, 73 33177; Aug. 27, 1974, 74 29256

Int. Cl.[2] G01V *1/36*

U.S. Cl. 340—15.5 MC **30 Claims**



1. A method of seismic surveying of a given medium comprising the steps of:

aligning a multiplicity of substantially punctual receiving devices in the vicinity of the surface of the medium to by surveyed each receiving device comprising at least one geophone, the number of geophones being sufficient to provide adequate surface coupling;

spacing the receiving devices so that the distance between any two adjacent receiving devices is not greater than the reciprocal of twice the maximum space frequency of the waves to be detected;

emitting mechanical waves into said medium by transmitting successive energy pulses from an emission source associated with the receiving devices;

detecting independently and simultaneously on the receiving devices the waves transmitted through the medium and recording for the various positions of the receiving devices signals comprising at least **100** seismic traces representing the variations of amplitude of the detected waves as a function of time said step of recording including individually recording the output of each of said receiving devices, the recorded traces including surface waves and organized noise from a majority of the receiving devices;

forming a seismogram including at least about 100 of such traces with an interval between any two consecutive traces corresponding to a distance in the medium not greater than the reciprocal of twice the maximum space frequency of the waves to be detected; and

treating the seismogram thus formed to produce a seismic section therefrom, said treatment including analyzing the seismogram and submitting the seismogram to filtering to remove the space frequencies corresponding to undesired phenomena, the characteristics of the applied filter being determined from the analysis of the space time frequency characteristics of the seismogram so that removal of the space frequencies is effected primarily during the step of treating the seismogram.

4,122,432

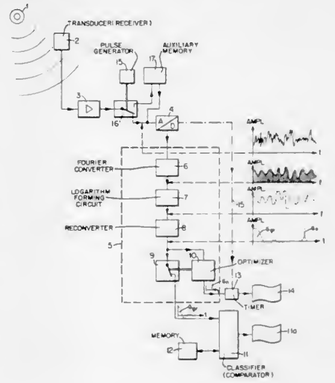
DEVICE FOR IDENTIFYING NOISE SOURCES

Karl Friedrich Triebold; Sigmar Myrzik, and Johann Friedrich Böhme, all of Bremen, Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung Atlas Elektronik Bremen, Bremen, Germany

Filed Mar. 30, 1971, Ser. No. 129,584

Int. Cl.[2] G08B *13/00*

U.S. Cl. 340—15 **6 Claims**



1. In an apparatus for identifying acoustical noise sources, and in particular vehicular noise sources, including means for detecting the noise signal and converting same to an electrical signal of the noise spectrum, means for converting said electrical signal to a classifying electrical vector signal V_k, and means for storing and/or comparing said vector signal V_k with previously stored vector signals V_k to identify same, the improvement wherein said means for converting said electrical signal to a classifying electrical vector signal V_k comprises:

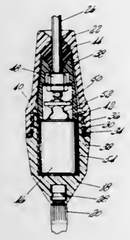
means for sampling said electrical signal of the noise spectrum at equidistant sampling intervals;
first circuit means for converting the signal sampled during a time interval into its orthogonal components in the frequency domain;
second circuit means responsive to the output signal of said first circuit means for forming the signal containing the logarithms of the vector components of the noise spectrum;
means for reconverting said logarithms containing signal into a signal of the noise spectrum in the time domain to form said classifying vector signal V_k;
a gating means passing the output signal from said reconverting means to said means for comparing said vector signal V_k with previously stored vector signals V_k; and
means responsive to the classifying vector signal V_k appearing at the output of said reconverting means for controlling the condition of said gating means.

4,122,433

FLUID TIGHT GEOPHONE CASE

William O. McNeel, Houston, Tex., assignor to Geo Space Corporation, Houston, Tex.

Filed May 23, 1977, Ser. No. 799,360
Int. Cl.² G01V *1/16*
U.S. Cl. 340—17 R **8 Claims**



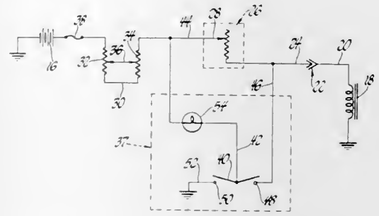
1. A fluid tight sensor case comprising
means defining a housing having an opening at one end thereof and a central open area communicating with said opening for receiving a sensor, said housing including a ring-shaped collar affixed to the periphery of said opening, said collar having an annular-shaped indentation around the outer edge surface thereof and including threading means extending axially around the exterior surface of the collar, said housing means further including serrated teeth mounted in a circular pattern around the periphery of said opening on the edge of said housing adjacent the exterior surface of said collar, said serrated teeth having points directed toward the selected direction of rotation;
a cover having an opening at one end thereof, a small passageway axially aligned with the opening at the other end thereof and an axially extending hollowed-out central area extending between said opening and said passageway, said cover having the passageway formed by means defining a conical-shaped interior surface wherein the sloping wall thereof extends interior from the passageway, said cover including means for defining a slotted ridge in the interior surface of the outer wall at the inner end defining the opening and threading means extending axially around the interior surface adjacent the opening adapted to engage and cooperate with the threading means on the exterior surface of said collar to advance and form a threaded integral unit therebetween as the housing and cover are rotated relative to each other in a selected direction, said cover further including serrated teeth mounted in a circular pattern around the periphery of the edge of the cover located adjacent the threading means, said serrated teeth having points directed toward the selected direction of rotation, said serrated teeth on said housing being operative to slideably engage and slide over the teeth on said cover as said housing and cover are rotated relative to each other in the selected direction and to lock against each other as the housing and cover are rotated relative to each other in a direction other than in said selected direction;
a compression cone positioned within the hollowed-out central area of said cover and having a large end, a small end and means defining a shaped cavity extending from the small end to the large end, said compression cone including means defining an aperture at said small end and a conical-shaped surface therearound with the sloping wall thereof positioned in a spaced opposed relation to the conical shape inner surface of said cover defining an interior grommet cavity having a shape generally in the form of a double ended cone;
a yieldable grommet having an aperture extending axially through the center thereof and a natural shape generally in the form of a double ended cone positioned in the grommet cavity formed between the cover and compression cone; and
an O-ring seal located between the annular-shaped indentation of the housing and slotted ridge of said cover; said grommet being responsive to the threading and advancing of said teeth means of said cover and said housing as the same are rotated in said selected direction to compress said grommet between the conically-shaped side walls.

4,122,434

TEST SYSTEM FOR TRAILER BRAKE MECHANISM

William K. Jensen, Royal Oak, Mich., assignor to O.E.M. Technical Sales, Inc., Southfield, Mich.

Filed Sep. 26, 1977, Ser. No. 836,334
Int. Cl.² B60T *17/22*
U.S. Cl. 340—52 B **3 Claims**



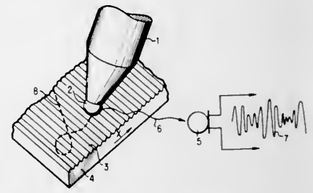
1. A control circuit for a towed vehicle brake system of the type wherein the brake system of a towing vehicle controls the actuation of the braking of the towed vehicle, said control circuit including
(1) battery means (**16**) disposed in the towing vehicle,
(2) solenoid actuated brake means (**18**) associated with each wheel of the towed vehicle,
(3) first conductor means (**44, 24**) leading from said battery means,
(4) second conductor means (**20**) leading from said brake solenoids,
(5) means (**22**) for disconnectably coupling said first and second conductor means,
(6) a towing vehicle operator actuated voltage divider (**26**) for regulating the current flow through said first and second conductor means, and
a secondary test circuit (**37**) connected in series-parallel between said battery means and said brake solenoids, said test circuit including
(1) third and fourth conductor means (**42** and **46**) respectively connected at one end to said first conductor means,
(2) switch means adapted to interconnect said third and fourth conductor means, said switch means including
(a) a first grounded contact,
(b) a second contact connected to the other end of said fourth conductor means, and
(c) a movable contact connected to the other end of said third conductor means,
(3) monitoring lamp means adapted to be connected in series with said movable contact,
said movable contact being engageable with said grounded contact to energize said lamp means when the circuits are conductive between said battery means and said grounded contact, said movable contact being engageable with said second contact to energize said lamp means when the circuits are conductive between said battery means and said second contact.

4,122,435

APPARATUS AND METHOD FOR PRODUCING AN ELECTRICAL SIGNAL RESPONSIVE TO HANDWRITING CHARACTERISTICS

David Leslie Greenaway, Birchwil, Switzerland, assignor to LGZ Landis & GYR Zug Ag, Zug, Switzerland

Continuation of Ser. No. 672,309, Mar. 31, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 841,013
Claims priority, application Switzerland, May 6, 1975, 5790/75
Int. Cl.² G06K *9/00*
U.S. Cl. 340—146.3 SY **29 Claims**



1. A method comprising the steps of:
writing with a writing instrument on a writing surface having regular generally parallel ridges spaced apart a distance sufficiently small with respect to the tip of the writing instrument so as to prevent contact by the tip of the writing instrument with the bottom of the valleys between the ridges of the writing,
producing a signal related to a characteristic of handwriting responsive to variations in contact pressure between the writing instrument and the writing surface.

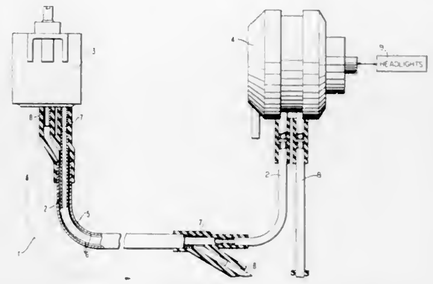
4,122,436

INSTALLATION FOR THE PROTECTION OF A LINE

Günter Gmeiner, Sindelfingen, and Hermann Möller, Aidlingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 10, 1976, Ser. No. 749,422
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1975, 2555421
Int. Cl.² G08B *21/00*
U.S. Cl. 340—605 **9 Claims**

1. An installation for the protection of a line of an adjusting means, characterized in that the line is surrounded at least within its area endangered by external influences by a tubular member located substantially coaxially thereto, said line and said tubular member forming therebetween an annular space containing a control medium under a predetermined pressure with a lead-out line leading away from said annular space at least at one point, so that the control medium passes from the line into said lead-out line and is conducted to the adjusting means by way of said lead-out line and in that a predetermined control of the adjusting means is triggered in case of damage of the outer tubular member causing an unusual pressure change



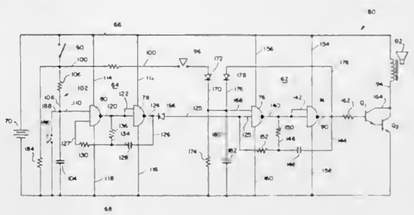
on the part of the control medium within said annular space as a warning indication.

4,122,437

INTRUSION ALARM CONTROL SYSTEM

Christian C. Petersen, Westwood, Mass., assignor to Cegg, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 554,717, Mar. 3, 1975, Pat. No. 4,012,611. This application Dec. 15, 1976, Ser. No. 750,667
Int. Cl.² G08B *13/02*
U.S. Cl. 340—528 **10 Claims**



1. An alarm system comprising:
alarm means drivable from a power supply to provide a perceptible alarm;
means deriving a short, transient sensor signal in response to a sense externally generated phenomena;
arm switch means actuable from a first to a second orientation to enable said system;
first oscillator network means having input and output stages, said input stage being responsive to said arm switch means actuation into said second orientation to derive an output signal oscillating, at a first frequency, between one condition and another at said output stage;
first circuit means having an input for detecting said transient sensor signal and deriving a predetermined input condition in response thereto for a predetermined interval;
second oscillator network means having input and output stages, the said input stage of which is arranged for response to one said output signal condition of said first oscillator network means and to said first circuit means predetermined input condition for deriving an output signal oscillating, at a second frequency, between one condition and another at the said output stage thereof for effecting said driving of said alarm means at said second frequency intermittently at said first frequency; and
second circuit means connected between said second oscillator network means output stage and said first circuit means input for effecting the maintenance of said predetermined input condition simultaneously with said deriva-

tion of said output signal oscillation at said second frequency.

4,122,438

POSITION ENCODING ARRANGEMENTS

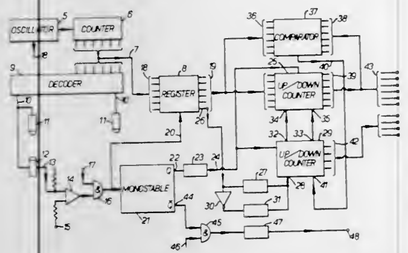
Peter Frank Bird, Chelmsford, England, assignor to The Marconi Company Limited, England

Filed Jan. 19, 1977, Ser. No. 760,554

Claims priority, application United Kingdom, Jan. 21, 1976, 02269/76

Int. Cl.² G06K *15/20*

U.S. Cl. 340—337 **14 Claims**



1. A position encoding arrangement comprising means defining a position locating area; means for providing an at least approximate indication of the value of at least one positional co-ordinate of a probe introduced into the area, and means for changing the magnification of the arrangement to improve the accuracy of the positional co-ordinate whereby a movement of the probe over the area produces a scaled down change in the indicated positional co-ordinate value to produce a fine adjustment of said positional co-ordinate.

4,122,439

SERIAL PARALLEL TYPE ANALOG TO DIGITAL CONVERTING DEVICE

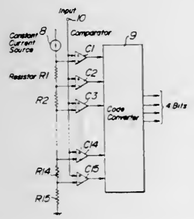
Yuichi Ninomiya, Kawasaki, Japan, assignor to Nippon Hoso Kyokai, Japan

Filed Jan. 16, 1976, Ser. No. 649,731

Claims priority, application Japan, Jan. 23, 1975, 50-9238

Int. Cl.² H03K *13/175*

U.S. Cl. 340—347 AD **10 Claims**



1. A serial parallel type analog to digital converting device comprising:

a preceding converting stage including;

a first analog to digital converter for producing a first digital signal having a plurality of bits as a result of comparison between an input analog signal and a plurality of reference signals,

a digital to analog converter for converting said first digital signal to a corresponding analog signal,

a differential amplifier for producing a differential analog signal between said input analog signal and said corresponding analog signal, said preceding converting stage including means for producing a uniform level offset in said differential analog signal corresponding to the order of the lowest bit of said first digital signal, and

an arithmetic circuit, and

a succeeding converting stage including;

a second analog to digital converter having a normal dynamic range and an additional dynamic range expanded from said normal dynamic range in only one direction, said one direction corresponding to said uniform level offset produced in said differential analog signal by said preceding converting stage, for converting said differential analog signal to a second digital signal having a plurality of lower bits representing analog values residing in either one of said normal dynamic range and said additional dynamic range and for producing a correction signal used for correcting said first digital signal in said only one direction when the level of said differential analog signal provided with said uniform level offset is within said additional dynamic range of said second analog to digital converter, said arithmetic circuit arithmetically combining said first digital signal and said correction signal to produce a corrected first digital signal having a plurality of upper bits.

4,122,440

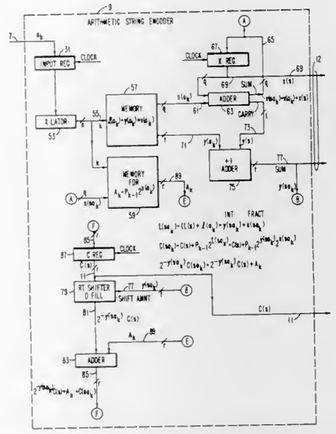
METHOD AND MEANS FOR ARITHMETIC STRING CODING

Glenn George Langdon, Jr., and Jorma Johannen Rissanen, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 4, 1977, Ser. No. 774,365

Int. Cl.² H03K *13/24*

U.S. Cl. 340—347 DD **13 Claims**



1. An apparatus for arithmetically encoding successive symbols in a symbol string from a finite source alphabet, said apparatus comprising:

means including means responsive to each symbol for deriving a length indication therefrom and means for adding said length indication to a prior length attribute for recursively calculating a new length attribute for each string segment of arithmetically encoded data, each such new length attribute consisting of an integer y and fractional part;

means for generating an r digit value A_k indicative of each particular new length attribute and the cumulative probability occurrence of an arbitrary ordering of the symbols;

means for recursively computing the new string segment of arithmetically encoded data by adding the r digit value A_k to a predetermined number r of digits of the prior string segment; and

means responsive to the integer part of the new length attribute for shifting out of the apparatus y of the least significant digits of the prior string segment of encoded data.

4,122,441

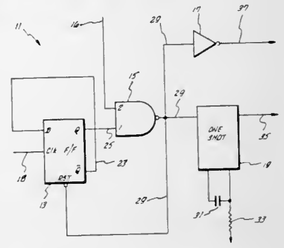
ERROR DETECTION AND INDICATION SYSTEM FOR BI-PHASE ENCODED DIGITAL DATA

Robert Lee Robinson, Covina, and David Casper Hoff, Temple City, both of Calif., assignors to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed Oct. 5, 1977, Ser. No. 839,406

Int. Cl.² G08C *25/00*

U.S. Cl. 340—146.1 AB **14 Claims**



1. A real-time error detection system for bi-phase or similarly encoded binary data wherein a binary "1" and binary "0" clock signal is generated during the decoding of said data, said error detection system comprising:

means for storing the transitions of the binary values (either "1" or "0") which are represented by an even number of transitions per bit cell;

means for interrogating said storing means upon the occurrence of the other binary values (either "1" or "0") which are represented by an odd number of transitions per bit cell; and

means for indicating an error if said storing means contains an odd number of transitions when interrogated.

4,122,442

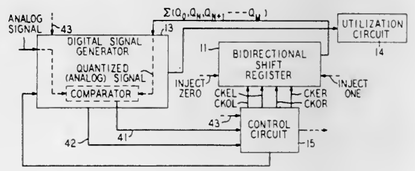
INTEGRABLE BIDIRECTIONAL SHIFT REGISTER IN ANALOG-TO-DIGITAL CONVERTER

James Lowell Henry, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 20, 1977, Ser. No. 817,174

Int. Cl.² H03K *13/22*

U.S. Cl. 340—347 AD **6 Claims**



1. An analog-to-digital encoding system including means responsive to an analog input signal for generating first pulses indicative of the instantaneous value of that signal, said means comprising a shift register, a clock circuit and a digital signal generator including a digital-to-analog converter and a comparator, said comparator having first and second inputs, said shift register including pluralities of even and odd stages and first and second terminal stages, said first and second terminal stages having first and second information inputs respectively, said even and odd stages and said first and second terminal stages having first and second clock inputs for shifting information therein in first and second directions respectively, and means for inputting information to said first and second information inputs selectively, said shift register being operative to apply to said digital-to-analog converter a quantized signal representative of the information in the stages therein, said converter being responsive to said quantized signal to apply a quantized analog signal to said first inputs of said comparator, means for applying analog signals to said first and second inputs, said comparator being responsive to said analog input signal and said quantized analog signal to generate a direction-control signal, said clock circuit being adapted only for moving a transition between a sequence of binary ones and a sequence of binary zeros to apply clock pulses alternately to said clock inputs of said even and odd stages or said odd and said even stages respectively under the control of said direction-control signal.

4,122,443

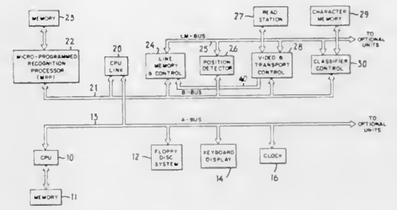
CHARACTER POSITION DETECTOR

Michael Thaler, and Stephen Jackson, both of East Hartford, Conn., assignors to Scan Optics, Inc., East Hartford, Conn.

Filed Jun. 24, 1977, Ser. No. 809,695

Int. Cl.² G06K *9/04*

U.S. Cl. 340—146.3 H **5 Claims**



1. A character position detector of a character recognition system for locating the left, right, top and bottom margins of character fields stored within a line memory provided with a line memory bus capable of receiving and transmitting data independent of a system controller and controller bus, comprising:

decoder means for decoding a request for character position information supplied over the controller bus and for requesting a two-dimensional array of line memory data over the line memory bus;

multiplexer means for sequentially selecting various sub-sets of the two-dimensional array, the form of the sub-sets being determined by information supplied over the controller bus and decoded in said decoder means;

latch means for sequentially storing the various sub-sets of the two-dimensional array;

programmable read only memory for producing transition outputs related to whether the sub-sets contain transitions from the background to the character and vise versa according to a prearranged convention;

a state counter for controlling the selection process by said multiplexer means; and

a timing chain for clocking said state counter and for the loading of said latch means.

4,122,444

APPARATUS FOR DISPLAYING NUMERICAL VALUE INFORMATION IN ALTERNATIVE FORMS

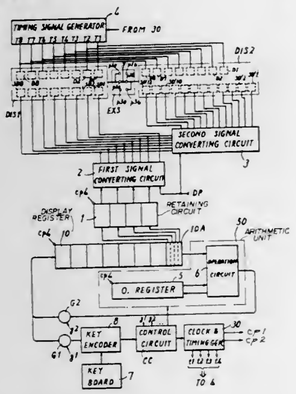
Kenichi Kitajima; Akira Nagano, both of Nagaokakyo, and Kazuaki Urasaki, Muko, all of Japan, assignors to Omron Tateisi Electronics Co., Japan

Filed Feb. 10, 1976, Ser. No. 656,923

Claims priority, application Japan, Feb. 20, 1975, 50-22996; Feb. 20, 1975, 50-22997

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—324 R **30 Claims**



1. An apparatus responsive to encoded signals representing numerical value information for displaying said numerical value information selectively in one of a plurality of different sets of numeral characters, said apparatus comprising

means for receiving said encoded signals,

converting means connected to said receiving means for converting said encoded signals into a plurality of different kinds of element select signals respectively corresponding to said different sets of numeral characters, and

display means comprising a plurality of sets of different display elements corresponding respectively to said different sets of numeral characters, said display means being connected to said converting means for receiving said different kinds of element select signals and responsive to each different kind of element select signal for activating at least one selected display element from a respective one of said corresponding sets of different display elements.

4,122,445

BREAKAGE DETECTOR HAVING A CONDUCTIVE BENT METALLIC LEAF SPRING THEREIN

Kohji Orita, Utsunomiya, Japan, assignor to Hokuseki Sangyo Kabushiki Kaisha, Japan

Filed Jun. 18, 1976, Ser. No. 697,693

Claims priority, application Japan, Jun. 18, 1975, 50-84126[U]

Int. Cl.[2] G08B *13/02, 13/04*

U.S. Cl. 340—566 **4 Claims**

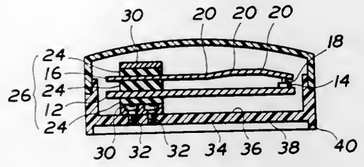
1. A device for detecting breakage of a solid material, said device comprising;

a cylindrical casing fixed on one area of said material for establishing a loop with a monitor, said cylindrical casing comprising an upper cylindrical casing and a lower cylindrical casing inserted and hermetically sealed into said upper casing;

a first straight conductive metallic leaf spring having an electrode on an upper face at one end thereof;

a second conductive metallic leaf spring having an electrode on the lower face at one end thereof and a plurality of bends therein along its longitudinal direction;

insulator means positioned between the other ends of said first and second leaf springs and on the lower surface of the other end of said first leaf spring and on the upper surface of the other end of said second leaf spring wherein said insulator means and said first and second leaf springs are mounted within said lower casing and wherein said first and second leaf springs are biased such that said electrodes thereon are normally in contact;



lead wires connecting said leaf springs to said monitor;

wherein upon the occurrence of a break in said solid material said electrodes are separated causing a breakage signal to be transmitted to said monitor through said lead wires.

4,122,446

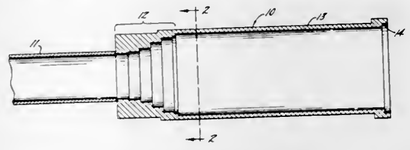
DUAL MODE FEED HORN

Laurence H. Hansen, Oak Lawn, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Apr. 28, 1977, Ser. No. 791,831

Int. Cl.[2] H01Q *13/02*

U.S. Cl. 343—786 **5 Claims**



1. A dual-mode feed horn for microwave antennas, said horn comprising

a multi-step microwave transformer having a series of at least three serially connected abrupt steps with progressively increasing radial dimensions, said transformer being selected from the group consisting of binomial transformers, Tchebyscheff transformers, cosine transformers, and exponential transformers,

a plurality of said steps having dimensions sufficiently large to convert TE_{11} mode energy passing therethrough to TM_{11} mode energy,

and a pair of waveguides connected to opposite ends of said transformer for transmitting microwaves through said transformer, the waveguide connected to the larger-diameter end of said transformer having an inside diameter at least as large as the maximum inside diameter of said transformer and a length sufficient to produce a predetermined phase relationship between the TE_{11} mode energy and the TM_{11} mode energy.

4,122,447

ENDFIRE-TYPE PHASED ARRAY ANTENNA

Yumio Kawai, Hirakata; Michio Ikenishi, Osaka, and Hiroshi Ohyama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

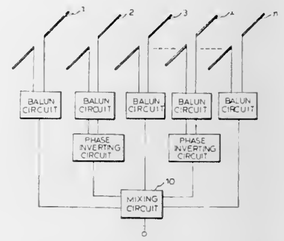
Filed Oct. 26, 1976, Ser. No. 735,411

Claims priority, application Japan, Oct. 31, 1975, 50-131585; Nov. 4, 1975, 50-132606

Int. Cl.[2] H01Q *21/12, 21/00*

U.S. Cl. 343—814 **9 Claims**

1. An endfire-type phased array antenna comprising *n* dipole antenna elements wherein *n* is an integer greater than 2 arranged in parallel to each other on the same plane each of said *n* antenna elements having a feeding means connected thereto said feeding means having a pre-determined length, respectively, a mixing and distributing circuit connected to each of said feeding means for mixing the currents flowing through said feeding means with a pre-determined current amplitude ratio into said mixing circuit in the case when said antenna is used as a receiving antenna, said circuit being one for distributing the currents into said feeding means with said predetermined current amplitude ratio in the case when said antenna is used as a transmitting antenna for causing the direction of maximum response of said antenna to lie along the plane of the array, said antenna containing also phase inverting circuits, wherein alternating antenna elements from among said *n* antenna elements are connected directly to each of said *n* feeding means and the remaining alternating elements are coupled to the said mixing circuit through said phase inverting circuits.



4,122,448

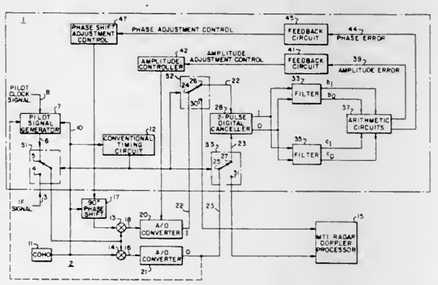
AUTOMATIC PHASE AND GAIN BALANCE CONTROLLER FOR A BASEBAND PROCESSOR

Raymond G. Martin, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 21, 1977, Ser. No. 817,759

Int. Cl.[2] G01S *9/42;* **H03G** *5/16*

U.S. Cl. 343—7.7 **22 Claims**



1. An automatic gain and phase balance controller for nulling phase and amplitude imbalance which may be present between the in-phase and quadrature signal generation channels of a baseband processor, said controller comprising:

means for generating a pilot signal;

means for conducting said pilot signal to said in-phase and quadrature signal generation channels of said baseband processor, said channels being governed by said pilot signal to generate composite in-phase and quadrature signals including phase and amplitude error signals representative of the imbalance between said in-phase and quadrature signal generation channels;

means for sensing and isolating said phase and amplitude error signals from said composite in-phase and quadrature signals; and

feedback circuit means governed by said isolated amplitude and phase error signals to correct for the imbalance between the in-phase and quadrature channels by adjusting amplitude and phase parameters associated with the signal generation of said channels.

4,122,449

DEVICE FOR MEASURING A VEHICLE SPEED BY UTILIZING THE DOPPLER EFFECT

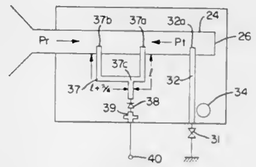
Akira Endo, Ibaraki, Japan, assignor to Hitachi, Ltd., Japan

Filed May 16, 1977, Ser. No. 796,868

Claims priority, application Japan, May 17, 1976, 51-55403

Int. Cl.[2] G01S *9/44;* **H01P** *3/08;* **H04B** *1/30*

U.S. Cl. 343—8 **6 Claims**



6. A device for measuring a speed of a vehicle by utilizing the Doppler effect comprising:

a wave guide with an opening which is directed to an object,

an oscillating means for radiating a microwave into the wave guide such that the radiated microwave is radiated to the object from the opening of the wave guide after travelling therethrough and is reflected by the object back into said wave guide; and

a receiving means for receiving both the radiated microwave and the reflected microwave and generating therefrom an output component in accordance with the difference in frequencies of both of the microwaves, said receiving means including two branches each having a first end portion located within said wave guide such that there is a predetermined distance therebetween, and connecting means for combining the signals obtained from said two first end portions such that the microwave signals from said oscillating means propagating in said wave guide are added out of phase to obtain a substantially reduced radiated signal at the output of said connecting means and such that signals reflected from said object propagating in said wave guide are added in phase to substantially increase the reflected signal level at the output of said connecting means so that the radiated and reflected signals are of approximately the same level, and said receiving means further including means for generating an output signal in accordance with the difference in frequencies between said radiated and reflected microwaves.

4,122,450

INFINITE RATIO CLUTTER DETECTING SYSTEM

Francis W. Kowalski, Fullerton, and Richard D. Wilmot, Buena Park, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 16, 1975, Ser. No. 587,176

Int. Cl.[2] G01S *7/30*

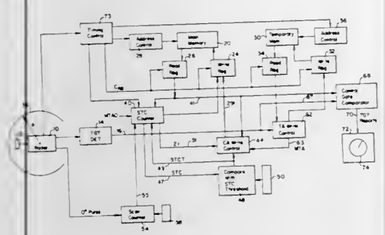
U.S. Cl. 343—17.1 R **13 Claims**

1. A target detection system operating with a surveillance radar providing target signals, said target detection system detecting the presence of clutter in each of a plurality of quantum areas in the surveillance area comprising

a main memory for storing a clutter count and a reject code for each quantum area,

clutter counter means coupled to said main memory and

responsive to said target signals for incrementing the clutter count for the presence of target signals from a quantum area and inhibiting any change of the clutter count in the absence of a target signal from said quantum area, said clutter counter including means for providing said reject code when the clutter count reaches a threshold,



scan counting means, and

reset means coupled to said scan counting means and to said clutter counter means for resetting said clutter count if said count does not reach the threshold in a selected number of scans.

4,122,451

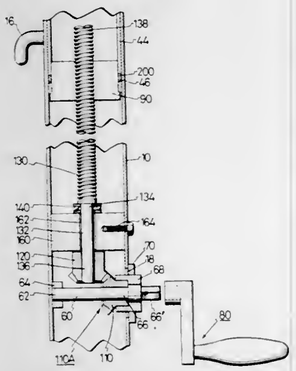
NET POST SUITABLE FOR USE IN BALL GAMES

Yoshimasa Senoh, Tokyo, Japan, assignor to Senoh Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1976, Ser. No. 736,935

Int. Cl.[2] A63B *61/00*

U.S. Cl. 273—29 BF **3 Claims**



1. A net post for use in ball games comprising an upstanding hollow cylindrical support, a hollow cylindrical slider telescopically disposed in said support for upward and downward movement, a screw rod coaxially disposed within said support for driving said slider, first and second toothed bevelled wheels for transmitting a rotational force to said screw rod, a handle for imparting said rotational force to the first said toothed bevelled wheel, a block fixed in said slider and threadedly engaged with an upper portion of said screw rod, a shaft portion integrally formed at the lower end of said screw rod and extending downwards, a first bearing plate fixed in the inner circumferential surface of said support and having a bore through which said shaft portion extends, a first bearing mounted on said first bearing plate rotatably supporting said shaft portion, said second toothed bevelled wheel being mounted on the lower end of said shaft portion, said first toothed bevelled wheel being perpendicularly engaged with said second toothed bevelled wheel, a handle axle transversely extending in said support and supporting said first toothed bevelled wheel, said handle axle having an extended end positioned outside said support, a second bearing disposed in an opening provided in said support, said handle axle having one end rotatably supported in said second bearing, a third bearing secured at the internal circumferential surface of said support, said handle axle having a second end rotatably supported in said third bearing, a second bearing plate mounted on the outer surface of said support and supporting said second bearing, said handle being removably connected to said extended end of said handle axle, a guide wheel rotatably mounted at the top end of said slider and a hook secured on the support for the attachment of one end of a rope on which a net is hung, said rope extending on said guide wheel.

4,122,452

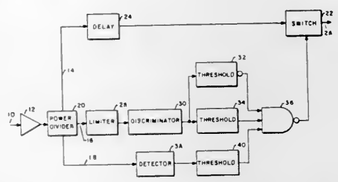
JAMMING SIGNAL CANCELLATION SYSTEM

Martin R. Richmond, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 451,324, Mar. 12, 1974, abandoned. This application Jul. 22, 1974, Ser. No. 491,587

Int. Cl.[2] G01S *7/36*

U.S. Cl. 343—18 E **22 Claims**



1. Apparatus for receiving desired signals from an output signal which includes interfering signals of higher intensity, comprising:

switching means for coupling the input signal to a receiver;

means for applying the input signal to said switching means;

means for measuring the absolute instantaneous frequency of the interfering signal;

means coupled to said measuring means for determining if the measured absolute instantaneous frequency of the interfering signal is within prescribed limits; and

means for "opening" said switching means when the frequency of the interfering signal is within said prescribed limits.

4,122,453

ANTENNA FEED NETWORK

Charles Edward Profera, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 8, 1977, Ser. No. 858,854

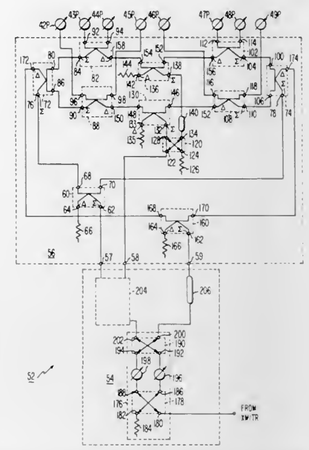
Int. Cl.[2] H04B *7/00*

U.S. Cl. 343—100 SA **3 Claims**

1. In an antenna feed system where an orthogonal beam matrix connected to a plurality of radiators provides excitation signals thereto representative of a discrete Fourier transform of an even function in response to inverse transform signals representative of said function, the improvement comprising:

circuit means for providing a group of signals representative of values of the amplitude of said function as approximated by the first three terms of a Fourier cosine series in response to a signal from a transmitter; and

phase shifting means for causing signals of said group to have phase shifts relative to each other that correspond to



phase shifts of said values, whereby said phase shifting means provides said inverse transform signals.

4,122,454

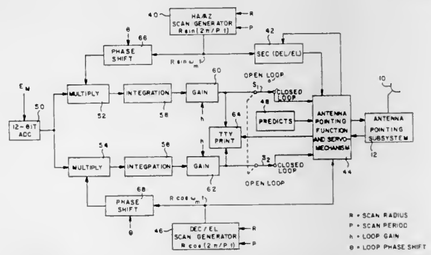
CONICAL SCAN TRACKING SYSTEM EMPLOYING A LARGE ANTENNA

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of John E. Ohlson, Marina, and MacGregor S. Reid, La Canada, both of Calif.

Filed Jul. 25, 1977, Ser. No. 818,917

Int. Cl.[2] G01S *3/42, 3/56*

U.S. Cl. 343—117 R **10 Claims**



1. In a conical scan system tracking spacecraft and radio sources, said system having a large antenna for detecting small sinusoidal signal modulation, E_M, in received power from a source that is off boresight axis with a frequency equal to a very low scan rate, an amplitude proportional to angular deviation of the source from the boresight axis, and a phase directly related to the direction the source is off the boresight axis, the combination comprising

means for continually converting said signal modulations to digital form,

a source of inphase reference scan sinusoidal values,

means for digitally correlating said signal modulations in digital from with said inphase reference scan sinusoid values to obtain inphase correlation signals in digital form,

a source of out-of-phase reference scan sinusoidal values 90° out of phase with said inphase reference scan sinusoidal values,

means for digitally correlating said signal modulations in digital form with said out-of-phase reference scan sinusoidal values to obtain out-of-phase correlation signals in digital form, and

means for separately integrating said inphase and out-of-phase correlation signals in digital form over exactly one scan period to obtain correlation signals for said antenna pointing subsystem.

4,122,455

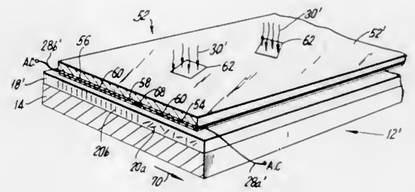
MAGNETIC IMAGING FOR PHOTOCOPYING

Sidney Levy, 145 W. Cuthbert Blvd., Oaklyn, N.J. 08107

Division of Ser. No. 544,814, Jan. 28, 1975, Pat. No. 4,005,439. This application Jan. 24, 1977, Ser. No. 761,767

Int. Cl.[2] G03G *19/00*

U.S. Cl. 346—74.1 **6 Claims**



1. A magnetic imaging apparatus comprising a layer of magnetic material, selected surface portions of which may be magnetized and demagnetized upon local application of corresponding magnetic fields; a photoconductive layer selected surface portions of which exhibit changes in resistivity as a function of light intensity of an image impinging thereon; a source of electrical potential applied to said photoconductive layer to permit the generation of a current density over said photoconductive layer which corresponds to an image intensity distribution impinging on said photoconductive layer, said current density generating a magnetic field having a distribution over said photoconductive layer which corresponds to said current intensity distribution, a pair of spaced electrical conductive electrodes connected to said source of electrical potential, said photoconductive layer being disposed between said spaced electrodes, said photoconductive layer being positionable proximate to successive portions of said layer of magnetic material where selected portions of said magnetizable layer may be magnetized and demagnetized by said magnetic field distribution, whereby causing an optical image to be directed at said photoconductive layer permits the flow of current densities through the latter, the resulting magnetic fields modifying the magnetized conditions of portions of said magnetic layer; magnetic ink supply means for imparting magnetic ink to said magnetic layer at the magnetized portions thereof; and means for transferring said ink from said magnetic layer to a surface on which the image is to be reproduced.

4,122,456

PRINTING HEAD AND BRUSH CONFIGURATION FOR A MAGNETIC PRINTER

Ami E. Berkowitz, Schenectady, and Joseph A. Lahut, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 5, 1977, Ser. No. 794,066

Int. Cl.[2] G03G *19/00*

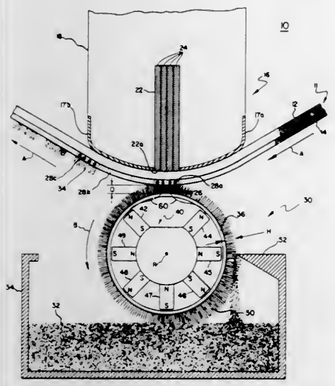
U.S. Cl. 346—74.1 **9 Claims**

1. In a magnetic printer having a belt of magnetizable recording media moving in a first direction, the combination comprising:

a recording head generating selected ones of a plurality of magnetic writing fields each in a direction substantially transverse to said first direction and in the plane of said belt to selectively magnetize each of a plurality of magnetizable regions of said belt, said recording head including

means for supporting a first surface of the belt during belt movement; and

magnetic brush means for transferring a toner material to those of said plurality of belt regions magnetized by said recording head, said brush means being positioned opposite said recording head with respect to said moving belt



and adjacent a second surface, opposite said first surface of said belt;

said brush means generating magnetic fields aligned substantially transverse to the magnetic fields generated by said recording head at least in the region of said belt being selectively magnetized by said recording head.

4,122,457

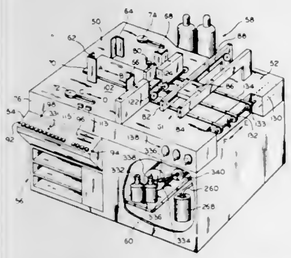
INK JET PRINTER WITH DEFLECTED NOZZLES

Rolf B. Erikson, Lincolnwood; Edward H. Zemke, Chicago, and Kenneth L. Guenther, Park Ridge, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 13, 1976, Ser. No. 722,899

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **26 Claims**



1. An ink jet printer comprising repertoire data storage means, means for repeatedly reading data out of said storage means, ink jet means responsive to each readout of said data for printing a plurality of characters, said ink jet means comprising means for mechanically oscillating a jet nozzle over a cyclically repetitive path, means for off/on modulating a stream from said ink jet simultaneously coordinated with said mechanical oscillations, a media pickup gate means for selecting and delivering one media at a time from a stacked plurality of media, vacuum means next to said gate means for sucking downwardly the bottom one of said stacked media, shuttle means supporting both said stacked media and said vacuum means for reciprocally moving the downwardly-sucked media toward and away from said gate means, the mechanical disposition of said gate means being such that said sucked down media passes under said gate means at one extremity of said shuttle movement, at least two guides on opposite sides of said stacked media, said guides being spaced slightly further apart than the width of said media, textured fibrous material lining said guides on sides thereof facing said media whereby said textured material fans said media as it settles between said guides, and means for successively transporting said plurality of media, one at a time, into the path, of said ink jet stream at a fixed speed relative to the oscillation cycle of said jet nozzle.

4,122,458

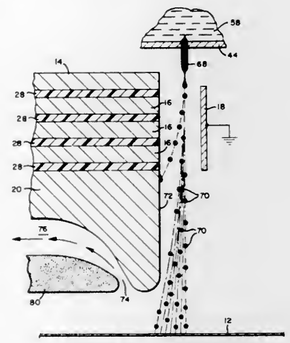
INK JET PRINTER HAVING PLURAL PARALLEL DEFLECTION FIELDS

Suresh C. Paranjpe, Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 19, 1977, Ser. No. 825,975

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 **23 Claims**



1. An ink jet printer for printing a print image defined by print data signals supplied thereto, comprising:

means for generating a row of drop streams,

means for transporting a print receiving medium in a direction which is oblique to said row,

means for charging the drops in said drop streams,

deflection electrode means for generating a plurality of parallel electrical deflection fields extending in the same direction substantially perpendicular to said row of drop streams, said drops passing successively through said parallel deflection fields,

catcher means extending parallel to said row for catching drops which are in catch trajectories, and

control means for controlling the deflection fields generated by said deflection electrode means in response to print data signals such that selected ones of said drops will be directed into catch trajectories and other ones of said drops will be directed into print trajectories, the ones of said drops in said print trajectories striking said medium and forming a print image thereon.

4,122,459

INK FEED SYSTEM

Ernst F.R.A. Schloemann, Weston, Mass., and Fred M. Howell, Barrington, R.I., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 18, 1977, Ser. No. 816,554

Int. Cl.² G01D *15/12*

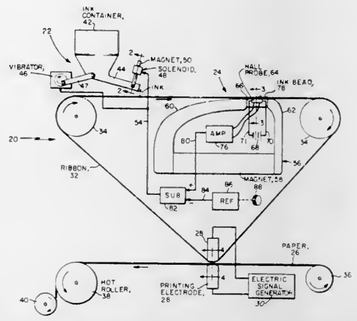
U.S. Cl. 346—140 R **7 Claims**

1. An ink feed system for ink having a magnetic constituent comprising:

carrier means for transporting said ink;

means positioned alongside said carrier means for directing a magnetic field in a plane parallel to a surface of said carrier means to secure said ink to said carrier means; and

means positioned alongside said carrier means for detecting a component of a perturbation of said magnetic field normal to a surface of said carrier means, said perturbation being due to the presence of said ink, said detecting means signaling an amount of said ink being transported by said carrier means.



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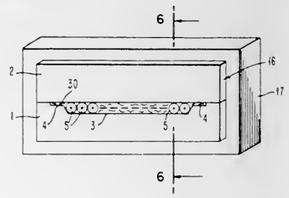
INK JET NOZZLE STRUCTURES

James N. Humenik, LaGrangeville; Jimmie L. Powell, and Rao R. Tummala, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1977, Ser. No. 823,253

Int. Cl.² G01D *15/18;* **C03C** *27/00, 13/00*

U.S. Cl. 346—140 R **5 Claims**



1. A multiple nozzle assembly for use in ink-jet printers comprising a plurality of coextending glass nozzles embedded in a glass mass, with the composition of said nozzles comprising, by weight

40–60%: SiO_2

12–20%: ZrO_2

12–17%: Na_2O

0–2.3%: K_2O and

0–6%: MgO

4,122,461

EXPOSURE APPARATUS AND METHOD FOR MANUFACTURING A CATHODE RAY TUBE DISPLAY SCREEN

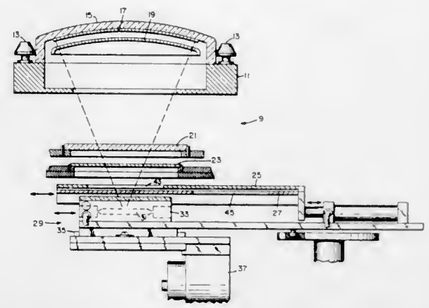
James E. Morean, Coudersport, Pa., and Carl W. Penird, Waterloo, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jul. 11, 1977, Ser. No. 814,146

Int. Cl.² G03B *41/00;* **G03C** *5/00;* **G03B** *9/40*

U.S. Cl. 354—1 **10 Claims**

1. In an exposure chamber for exposing specific portions of a layer of photosensitive coating affixed to the inner surface of a cathode ray tube face panel having an apertured mask attached thereto and spaced from the photosensitive coating layer wherein the face panel is spaced from a direct source of actinic energy directing light rays toward the photosensitive coating on the face panel, the improvement comprising a shutter means disposed intermediate the photosensitive coating on the face panel and the direct source of actinic energy, said shutter means being in the form of first and second shutter members and movable in one given direction substantially normal to the direction of said light rays to effect both initial impingement and initial interruption of impingement of the same portion of said photosensitive coating on said face panel by said light rays.



4,122,462

IMAGE INFORMATION RECORDING APPARATUS

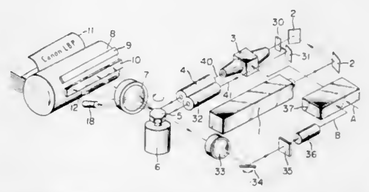
Kazuhiro Hirayama, Yokohama; Yasushi Sato, Kawasaki; Noritaka Mochizuki, Yokohama, and Katsumi Masaki, Kodaira, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 611,783, Sep. 9, 1975, abandoned. This application Nov. 10, 1977, Ser. No. 850,384

Claims priority, application Japan, Sep. 11, 1974, 49-104738; Sep. 13, 1974, 49-105631; Oct. 1, 1974, 49-112925; Jan. 24, 1975, 50-10286

Int. Cl.² B41B *13/00;* **G03G** *15/00;* **G01D** *9/42*

U.S. Cl. 354—5 **29 Claims**



1. An image information recording apparatus, in which a modulated light beam formed in accordance with an information signal is utilized to effect recording on a recording medium, said apparatus comprising:

a plurality of light beam forming means;

a single modulator means for modulating at least one light beam from its associated light beam forming means in response to an image information signal;

means for producing a combined electrical image information signal of a first image information signal and a second image information signal, and for applying the thus combined electrical signal to said modulator;

image-forming lens means for focussing the modulated light beam upon said recording medium;

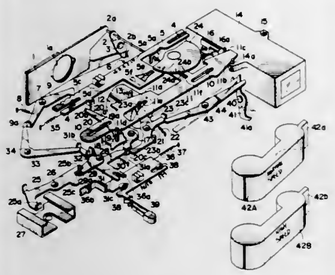
means for sensitizing the recording medium; and
means for causing the modulated light beam to scan over the recording medium.

4,122,463

AUTOMATIC DIAPHRAGM ADJUSTING DEVICE FOR CAMERA HAVING FLASHMATIC MECHANISM

Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 3, 1977, Ser. No. 821,346
Claims priority, application Japan, Aug. 13, 1976, 51-97294
Int. Cl.[2] G03B *7/00, 15/03, 13/14, 17/00*
U.S. Cl. 354—21 **8 Claims**



1. A camera, comprising in combination:
a diaphragm aperture setting mechanism mounted on a body of the camera for manual movement to set the diaphragm aperture;
a diaphragm mechanism engageable with said setting mechanism for determining the diaphragm aperture in accordance with the setting thereof;
manually operable distance setting means;
an objective lens mounted on the camera body for movement along its optical axis in accordance with the setting by said distance setting means;
means for adjusting said diaphragm aperture in accordance with a set position of said distance setting means, said adjusting means including a movable control member engageable with said diaphragm mechanism to control same as a function of the position of said control member, and further including means for interlocking said control member with said distance setting means;
biasing means connected to said diaphragm setting mechanism for urging same in a direction to engage said control member;
means for restraining said diaphragm mechanism in a position determined by said diaphragm aperture setting mechanism; and
exposure control mode selecting means movable between a first position for rendering said restraining means ineffective and said adjusting means effective, and a second position for rendering said restraining means and said adjusting means to be of opposite condition to that at said first position of said selecting means.

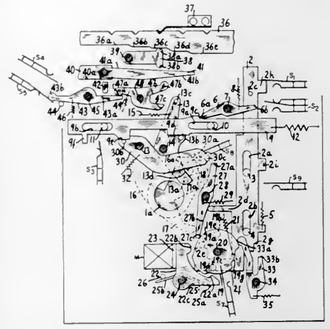
4,122,464

DIAPHRAGM CONTROL DEVICE FOR FLASH PHOTOGRAPHY

Tomoo Yonemoto; Hiroaki Ishida; Yukio Morino; Masanori Watanabe, and Eiichi Onda, all of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Jul. 7, 1977, Ser. No. 813,768
Claims priority, application Japan, Jul. 9, 1976, 51-91546[U]
Int. Cl.[2] G03B *7/14, 9/02*
U.S. Cl. 354—29 **1 Claim**

1. A diaphragm control device for flash photography incorporable in a programming electric eye camera, the camera including an exposure control circuit and capable of automatically setting exposure time and diaphragm aperture according to the light of subject, the exposure control circuit having a photoconductive element and adapted for controlling an electromagnet, comprising a turnable diaphragm operating lever actuated by the release operation and operating in a fixed manner by the action of a spring to define diaphragm aperture, a control arm of a distance setting member, a diaphragm regulation lever controlled by said control arm and a change lever for interchanging first and second positions, at respective positions said diaphragm regulation lever being out of or in the turnable area of the diaphragm operating lever, wherein for



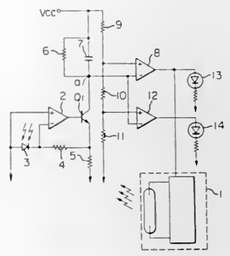
daylight photography, the diaphragm regulation lever is forced by said change lever to be in said first position, and the diaphragm operating lever is controlled by an exposure control circuit to form a programming shutter adapted for automatically setting exposure time and diaphragm aperture according to the light of subject, and for flash photography, said diaphragm regulation lever is forced by said change lever to be in said second position, and the diaphragm operating lever is controlled alternatively either by said diaphragm regulation lever or by said exposure control circuit dependent on the light of subject to define diaphragm aperture for an actual exposure.

4,122,465

DEVICE FOR INDICATING CONDITION OF EXPOSURE IN AN AUTOMATIC CONTROL TYPE ELECTRONIC FLASH UNIT FOR FLASH PHOTOGRAPHY

Hiroshi Hasegawa, Tokyo; Yoshiaki Ohtsubo, Kawasaki; Sakuji Watanabe, Yono, all of Japan, and Kouichi Takahata, deceased, late of Tokyo (by Kosaku Takahata, legal successor), assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 21, 1977, Ser. No. 808,536
Claims priority, application Japan, Jun. 23, 1976, 51-73101; Jun. 23, 1976, 51-73102
Int. Cl.[2] G03B *15/05*
U.S. Cl. 354—32 **5 Claims**



1. In an automatic control type electronic flash unit including:

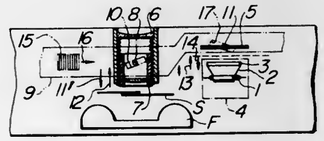
(a) flashlight generating means;
(b) metering means for measuring the quantity of light emitted from said flashlight generating means and reflected by an object to be photographed;
(c) first detector means for detecting the output of said metering means and generating a proper output when said output corresponds to a quantity of light which provides a proper exposure; and
(d) means for discontinuing the flashlight generation of said flashlight generating means in response to said proper output; the improvement comprising:
(e) second detector means for generating an overexposure signal as its output when the output of said metering means related to the quantity of the reflection, by said object, of the flashlight generated during the time from the generation of said proper output until the discontinuation of the flashlight generation of said flashlight generating means reaches a predetermined value; and
(f) indicating means operable by the over-exposure signal to indicate an over-exposure.

4,122,466

ZOOM LENS CAMERA EQUIPPED WITH FLASH UNIT

Hiroshi Iwata, Osaka, Japan, assignor to West Electric Co. Ltd., Japan

Filed Feb. 15, 1977, Ser. No. 768,873
Claims priority, application Japan, Feb. 19, 1976, 51-17654
Int. Cl.[2] G03B *7/16, 15/03*
U.S. Cl. 354—32 **8 Claims**



1. A camera comprising:
a zoom lens including a movable focusing ring;
a flash unit including a flash light source means, and a light sensing means for sensing the light reflected from an object to be photographed;
means for changing the magnification of said zoom lens;
means for adjusting both the illuminating angle of said flash light source means and the light sensing angle of said light sensing means; and
a linking member operatively connecting said magnification changing means with said adjusting means so that the illuminating angle of said flash light source means and the light sensing angle of said light sensing means vary in correspondence with the variation of the magnification of said zoom lens.

4,122,467

CAMERA WITH THE SHUTTER TIME CONTROL CIRCUIT FOR THE FLASH LIGHT PHOTOGRAPHY

Tokuichi Tsunekawa, Yokohama; Zenzo Nakamura, Urawa; Shohei Ohtaki; Nobuaki Sakurada, both of Yokohama; Masayuki Suzuki, Kawasaki, and Takashi Uchiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1976, Ser. No. 739,097
Claims priority, application Japan, Nov. 11, 1975, 50-135403
Int. Cl.[2] G03B *7/08, 15/05*
U.S. Cl. 354—33 **18 Claims**

1. A camera for flash photography with a flash device delivering a flash preparation completion signal comprising:
(a) a daylight photography shutter time signal forming circuit for forming a first electrical signal corresponding to the shutter time for the the daylight photography,
(b) memory means for memorizing the first electrical signal of said daylight photography shutter time signal forming circuit,
(c) a control circuit for changing the first electrical signal memorized in the memory means to a second electrical signal corresponding to a shutter time value suitable for flash photography in response to the flash preparation completion signal, and
(d) a shutter time control circuit coupled to the memory means for controlling the shutter time in accordance with the electrical signal in the memory means.

18. A camera system with a shutter time control circuit for the flash light photography comprising:
(A) a flash light device, said flash light device including:
(a) a flash light means for producing a flash light
(b) a storing means for storing the flash light energy for the flash light means
(c) a store completion signal forming means connected to the storing means so as to form the store completion signal when a certain determined amount of the flash light energy has been stored in the storing means
(B) a camera, said camera including:
(a) a daylight photography shutter time signal forming circuit for forming a first electrical signal corresponding to the daylight photography
(b) a first flash light photography shutter time signal forming circuit for forming a second electrical signal corresponding to a certain determined flash light photography shutter time in response to the store completion signal
(c) a second flash light photography shutter time signal forming circuit for forming a third electrical signal corresponding to a shutter time longer than the flash light photography shutter time corresponding to the second electrical signal in response to the store completion signal
(d) a comparison circuit connected to the daylight photography shutter time signal forming circuit, the first and the second flash light photography shutter time signal forming circuit so as to compare the outputs of the circuits with each other to deliver the second electrical signal when the shutter time corresponding to the first electrical signal is shorter than the shutter time corresponding to the second electrical signal, to deliver the third electrical signal when the shutter time corresponding to the first electrical signal is longer than the shutter time corresponding to the third electrical signal and to deliver the first electrical signal when the shutter time corresponding to the first electrical signal is between the shutter time corresponding to the second electrical signal and the shutter time corresponding to the third electrical signal
(e) a memory means for memorizing the output of the comparison circuit
(f) a shutter time control means for controlling the shutter time in accordance with the electrical signal memorized in the memory means
the first flash light photography shutter time signal forming circuit comprising a switching circuit operating in

response to the store completion signal, a constant current circuit operating by means of the operation of the switching circuit and a resistance means connected to the constant current circuit.

4,122,468

MIRROR DEVICE IN A SINGLE LENS REFLEX CAMERA OR THE TTL METERING TYPE

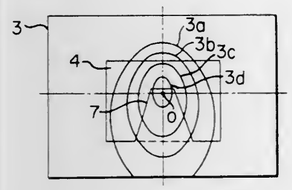
Toru Fukuhara, Fujisawa, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 10, 1977, Ser. No. 776,363

Claims priority, application Japan, Mar. 16, 1976, 51-27740; Mar. 16, 1976, 51-27741

Int. Cl.² G03B *7/00*

U.S. Cl. 354—59 **5 Claims**



1. In a single lens reflex camera of the TTL metering type comprising a mirror device having a semi-transparent area through which effective light flux coming from the exit pupil of the picture-taking lens is partly passed and a reflecting area surrounding said semi-transparent area, said mirror device being disposed in intersecting relationship with the optial axis of said picture-taking lens; and a light receiving element disposed behind the mirror device to measure the quantity of light passed through said semi-transparent area, wherein the size of said semi-transparent area is smaller than the maximum of an intersecting area of the light flux from said exit pupil to said light receiving element with said mirror device, the improvement comprising a light intercepting area formed in the neighborhood of, or on and in the neighborhood of the optical axis of said picture-taking lens and surrounded by said semi-transparent area, the average transmission factor of said light intercepting area being lower than that of said semi-transparent area, and said light intercepting area being formed to be always within said intersecting area so that the ratio of the quantity of said transmitting light to the light quantity of said effective light flux may be constant notwithstanding variations in size of said intersecting area.

4,122,469

PHOTOGRAPHIC APPARATUS WITH IMPROVED CONTROL OF CAMERA VIBRATION

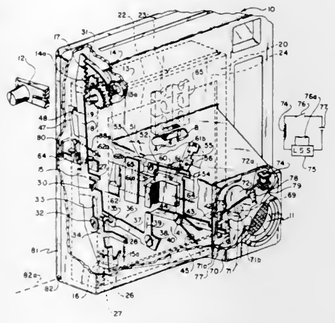
Guilford Edwin Kindig, and Chester William Michatek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1977, Ser. No. 780,148

Int. Cl.² G03B *17/50*

U.S. Cl. 354—83 **9 Claims**

1. Photographic apparatus for effecting exposure and initiating removal of a film unit from an exposure position in the apparatus, the apparatus comprising a shutter, a shuttle including film unit engaging means for at least partially removing the film unit from the exposure position, spring means coupled to the shuttle for biasing the shuttle for movement towards a first position in which position the film unit engaging means is located adjacent an edge of the film unit, means for moving the shuttle from the first position to at least partially remove the film unit from the exposure position, restraining means for preventing the return of the shuttle to the first position after movement of the shuttle from the first position and for supporting the shuttle in an inactive but energized condition in a second position under the bias of the spring means, body release means movable from and returnable to an initial rest position for initiating an exposure of a film unit and for removing the restraint upon the shuttle to permit the shuttle to translate towards the first position under the bias of said spring means, means responsive to translational movement of the shuttle from the second position towards the first position and operatively associated with the shutter for effecting commencement of the exposure of the film unit; and the improvement which comprises:



means for blocking the shuttle from returning to the first position after translational movement of the shuttle a sufficient distance from the second position to effect commencement of the exposure of the film unit, the sufficient distance being a minor portion of the distance between the second and first positions, and the blocking means being cooperable with the body release means to permit the shuttle to again translate towards the first position in response to movement of the body release means to its initial position.

4,122,470

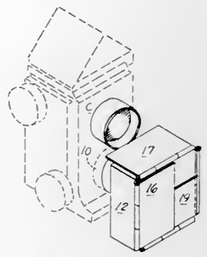
HINGED MULTIPLE EXPOSURE MATBOX ATTACHMENT FOR CAMERAS

Robert C. Loranger, 7426 E. Parkway, Sacramento, Calif. 95823, and Marvin E. Sackett, 5430-A Garfield Ave., Sacramento, Calif. 95841

Filed Apr. 28, 1976, Ser. No. 681,142

Int. Cl.² G03B *11/00*

U.S. Cl. 354—122 **5 Claims**



1. An attachment for a camera for making plural photographs on a single exposure film roll element in a camera by taking multiple exposures comprising a cylindrical socket element of a dimension suitable to overlie and snugly engage a lens mount on the exterior of the camera, a substantially rectangular box, a tapering portion connecting said socket to said box comprising four sides which connect to said tapering portion and have an open front face and rear face whereby said tapering portion connects to said rear face along its outer periphery, and a plurality of mask elements disposed on hinges about at least a portion of an outer periphery of said open front face so that when at least one mask element is disposed along the open front face of said box, a portion of the picture then taken will be similarly masked and unexposed, said masks comprised of sufficient dimension such that when all masks are disposed over the front face the front face is completely shielded and when the mask elements are not disposed over the front face they can be moved to overlie the outer portion of the sides of said box so as to provide a ready externally visible indication of which masks are being utilized.

4,122,471

AUTOMATIC STOP MOTION DEVICE IN A MOTOR DRIVE CAMERA

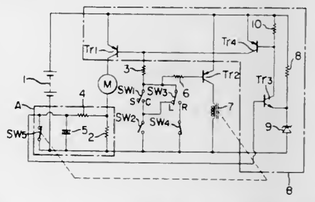
Kouichi Takahata, deceased, late of Tokyo, Japan (by Kosaku Takahata, father and legal successor), assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 21, 1977, Ser. No. 789,694

Claims priority, application Japan, Apr. 30, 1976, 51-48472

Int. Cl.² G03B *1/18*; H02P *5/36*

U.S. Cl. 354—173 **8 Claims**



1. An automatic stop motion device in a motor drive camera comprising:

(a) a motor for effecting film winding;

(b) current supply means for supplying a current to said motor, said current supply means including a power supply;

(c) a charging circuit which is charged by a voltage corresponding to the current running through said motor during the supply of the current to said motor; and

(d) detector means for detecting when the charging voltage of said charging circuit has reached a predetermined value, thereby determining the condition of impossibility of film winding and cutting off the supply of current to said motor.

4,122,472

PHOTOGRAPHIC CAMERA

Fumio Ito, and Mutsunobu Yazaki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1977, Ser. No. 812,846

Claims priority, application Japan, Jul. 7, 1976, 51-80539; Apr. 28, 1977, 52-49126

Int. Cl.² G03B *17/04*

U.S. Cl. 354—187 **13 Claims**

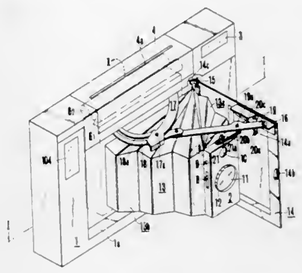
1. A foldable photographic camera, comprising:

(a) a rear housing having a photosensitive material housing chamber into which said material is loaded;

(b) a front housing having a device which can selectively expose said photosensitive material within the rear housing;

(c) a folding means which can bring the rear housing and the front housing from a state in which they are largely separated from each other to a folded state in which they are placed very close to each other and at least a portion of the front housing is placed within the rear housing; and

(d) a photosensitive material retaining means which holds said photosensitive material being loaded into the housing chamber of the rear housing and can shift said photosensitive material from an exposure position within the rear housing which is desirable for exposure by said exposure device when the rear housing and the front housing are



placed close to each other, to form a space to contain said portion of the front housing within the rear housing at said exposure position.

4,122,473

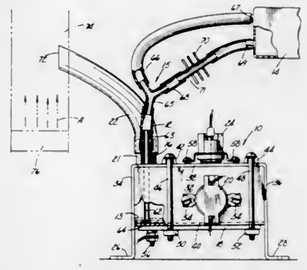
DEVELOPER RESIDUE WASTE ELIMINATOR FOR DIAZO MACHINES

Stephen Ernohazy, Mt. Prospect; Larry Allen Songer, Schaumburg; Thomas Vernon DeRyke, Libertyville, and Eugene Peter Oddo, Mt. Prospect, all of Ill., assignors to Addressograph-Multigraph Corporation, Los Angeles, Calif.

Filed Jun. 28, 1976, Ser. No. 700,408

Int. Cl.² G03D *7/00*

U.S. Cl. 354—299 **12 Claims**



1. A device for eliminating gaseous developer residue waste from a developer system of an ammonia type diazo copying machine, in which the gaseous residue waste includes a first portion of ammonia gas and a second portion of steam, comprising:

inlet duct means for receiving gaseous residue waste from the developer system of the copying machine;

heat sink means associated with the inlet duct means for separating the first and second portions of gaseous residue waste by converting the second portion to liquid;

evaporator means for receiving the liquid;

heater means for heating the evaporator means to an elevated temperature to vaporize the liquid therein; and

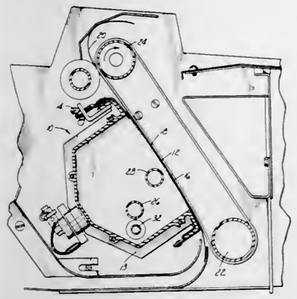
orifice means extending from a position below the level of the liquid in the evaporator means to the inlet duct means to prevent flow of the vaporized liquid from the evaporator means to the developer system.

4,122,474

PHOTOCOPY DEVELOPING APPARATUS FOR DIAZO FILM

Larry Allen Songer, Schaumburg, and Thomas Vernon DeRyke, Libertyville, both of Ill., assignors to Addressograph-Multigraph Corporation, Los Angeles, Calif.

Filed Nov. 29, 1976, Ser. No. 745,622
Int. Cl.² G03D *7/00*
U.S. Cl. 354—300 **12 Claims**



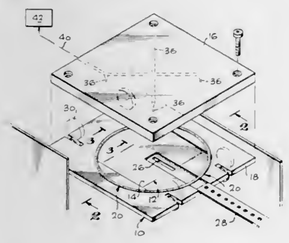
1. An apparatus for developing sensitized copy sheets, comprising:
a substantially closed developer tank;
duct means positioned wholly within the developer tank for receiving and conveying aqueous ammonia;
means for supplying aqueous ammonia to the duct means;
heating means positioned wholly within the developer tank for raising the duct means to an elevated temperature to separate the aqueous ammonia in the duct means into a first portion of residue waste and a second portion of ammonia gas;
distribution means positioned wholly within the developer tank for receiving and conveying the second portion; and
means for expelling the second portion from the distribution means to generate a gaseous ammonia atmosphere within the developer tank.

4,122,475

MICROFICHE DEVELOPER

William E. Roberts, Palos Verdes Penn., Calif., assignor to Addressograph-Multigraph Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 652,635, Jan. 26, 1976. This application Aug. 12, 1977, Ser. No. 823,930
Int. Cl.² G03D *7/00*
U.S. Cl. 354—300 **3 Claims**



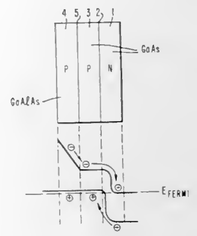
1. A microfiche developer comprising:
a developing chamber having first and second closely spaced walls for receiving a microfiche between them at a predetermined microfiche position therein;
means for coupling a source of pressured developing fluid to said chamber;
developer absorber means; and
at least two air outlets formed in said first wall at positions near opposite sides of said predetermined microfiche position; said outlets being connected together and coupled through said developer absorber means to the atmosphere, whereby to draw the microfiche against said first wall.

4,122,476

SEMICONDUCTOR HETEROSTRUCTURE

Harold John Hovel, Katonah, and Jerry MacPherson Woodall, Mt. Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1976, Ser. No. 744,012
Int. Cl.² H01L *27/14, 31/06, 29/201*
U.S. Cl. 357—16 **4 Claims**



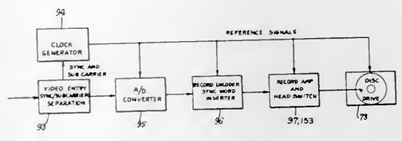
1. A semiconductor structure of the type comprising in combination a first conductivity type region of a first semiconductor material joined to an opposite conductivity type region of said first semiconductor material at a p-n junction and having a region of a second semiconductor material epitaxially contiguous to said second opposite conductivity type region of said first semiconductor material and characterized by the bandgap gradient wider at the surface located in said second semiconductor material region.

4,122,477

METHOD AND APPARATUS FOR INSERTING SYNCHRONIZING WORDS IN A DIGITALIZED TELEVISION SIGNAL DATA STREAM

Luigi C. Gallo, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 28, 1977, Ser. No. 763,463
Int. Cl.² H04N *9/44, 5/78, 5/06*
U.S. Cl. 358—4 **38 Claims**



1. Apparatus for inserting a digital synchronization word in a generally continuously clocked digitally encoded data stream comprising at least one digital component of a video signal having a horizontal blanking interval separating successive lines of video information and a vertical blanking interval separating successive fields of video information, said horizontal blanking interval having horizontal synchronization signals removed therefrom, said apparatus having an input for receiving said data stream and an output upon which said data stream selectively appears with said synchronization word inserted therein, said apparatus comprising:

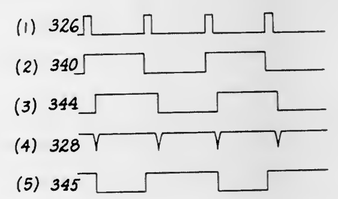
means for generating said digital synchronization word;
means for selectively switching said data stream so that said data stream is blocked from said output, the information contained in said data stream being discarded when said switching means is switched to said blocking condition;
means for operating said switching means so that said data stream is blocked from appearing at said output for a first time period at least during alternate ones of successive horizontal blanking intervals;
means for operating said switching means so that said data stream is blocked from appearing at said output for a second time period during said vertical blanking interval, said second time period extending through a plurality of successive horizontal blanking intervals during said vertical blanking interval; and,
means for controlling said synchronization word generating means for activating the same to inject said synchronization word onto said output during alternate ones of successive horizontal blanking intervals including during the vertical blanking interval, so that said synchronization word appears in said data stream on alternate successive horizontal blanking intervals throughout each field of video information and during said vertical blanking intervals.

4,122,478

CLOCK SIGNAL GENERATOR PROVIDING NON-SYMMETRICAL ALTERNATING PHASE INTERVALS

Luigi C. Gallo, Redwood City, and Daniel A. Beaulier, Menlo Park, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jan. 28, 1977, Ser. No. 763,792
Int. Cl.² H04N *5/78, 9/02*
U.S. Cl. 358—4 **7 Claims**



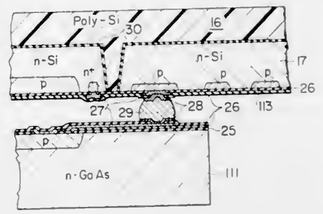
1. Apparatus for providing a square wave output signal for use in apparatus for alternating the phase of successive video lines of a video signal having a horizontal blanking interval between successive video lines and a color burst signal in each of said horizontal blanking intervals, said output signal having a first or a second level, and switching from one of said levels to the other on alternate video lines, the output signal always being at said first level during said color burst, said apparatus comprising:
means for producing a first symmetrical square wave having a period of two video lines, so that the level of said first square wave changes on successive video lines, said square wave being generally synchronized to the beginning of said horizontal blanking interval;
means for producing a second symmetrical square wave having a period of two video lines, so that the level of said second square wave changes on successive lines, said second square wave being generally synchronized with said first square wave, but delayed relative thereto so that one of said level changes occurs generally immediately after the occurrence of said color burst;
means for combining said first and second square waves to provide said square wave output signal, said output signal being at said first level except when both of said first and second square waves are at the same selected level.

4,122,479

OPTOELECTRONIC DEVICE HAVING CONTROL CIRCUIT FOR LIGHT EMITTING ELEMENT AND CIRCUIT FOR LIGHT RECEIVING ELEMENT INTEGRATED IN A SEMICONDUCTOR BODY

Yoshitaka Sugawara, and Tatsuya Kamei, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 1, 1976, Ser. No. 737,267
Claims priority, application Japan, Nov. 7, 1975, 50-13294
Int. Cl.² H01L *31/12*
U.S. Cl. 357—19 **18 Claims**



1. An optoelectronic device comprising:
a discrete semiconductor light emitting element having a pn-junction and a light emitting surface for emitting a light signal in response to an electric signal applied thereto;
first electric circuit means, integrated in a single semiconductor body, for applying said electric signal to said light emitting element;
a semiconductor light receiving element having an pn-junction, integrated in said semiconductor body, having a surface which faces said light emitting surface of said light emitting element in parallel thereto and is optically coupled thereto through a medium substantially transparent to said light signal, whereby said light signal is converted into an electric current signal by said pn-junction of said light receiving element; and
second electric circuit means, integrated in said semiconductor body, for obtaining an output signal as the electric current signal from said light receiving element in response to said light signal;
said first circuit means being electrically isolated from both said light receiving element and said second circuit means in said semiconductor body; and
wherein said light emitting element has, on the same surface as said light emitting surface, a pair of leads to which said first circuit means is bonded by means of an electro-conductive connection to define said medium between the surface of said light receiving element and said light emitting surface.

4,122,480

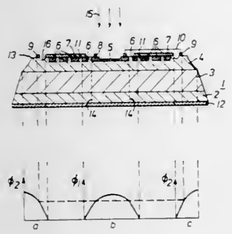
LIGHT FIRED THYRISTOR WITH FAULTY FIRING PROTECTION

Dieter Silber, Hausen; Karl-Julius Finck, Frankfurt; Marius Füllmann, Neu-Isenburg, and Wolfgang Winter, Eschborn, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,363
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1975, 2549563; Nov. 5, 1975, 7535173
Int. Cl.² H01L *29/74*
U.S. Cl. 357—38 **9 Claims**

1. In a light fired thyristor including: a semiconductor body having four zones of alternatingly opposite conductivity types including a first emitter zone, a control base zone adjacent thereto, a main base zone adjacent said control base zone and a second emitter zone adjacent said main base zone, said first emitter zone being formed within said control base zone at one

major surface of said semiconductor body and being divided into a plurality of laterally spaced separate regions, so that said control base zone extends to said one major surface between said regions of said emitter zone and adjacent the edges of said semiconductor body; an ohmic contact for said second emitter zone; a first ohmic contact on said one major surface and contacting only a portion of the surface of one of said regions of said first emitter zone, a further portion of said surface of said one of said regions of said first emitter zone being exposed to provide a radiation receiving surface so that said one region serves to fire the thyristor in response to impinging radiation energy; and a second ohmic cathode contact on said major surface ohmically contacting the remaining regions of said first emitter zone and the portions of said control base zone extending therebetween to said one major surface to form short



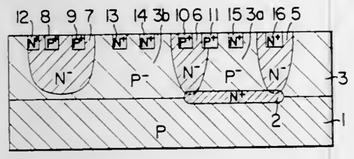
circuits with said control base zone the improvement comprising: means for providing compensation for an increased potential in said control base zone below said one region of said first emitter zone caused by an interfering potential due to the dv/dt loading or the higher blocking current resulting from higher temperature, said means including a third ohmic contact on said major surface near the edge of said semiconductor body and contacting said control base zone and positioned so that a compensation potential of at least 50% of said interfering potential, and in the same direction, is produced at said third ohmic contact, and means for ohmically connecting said first and third ohmic contacts, whereby said compensation potential is applied to said one region of said first emitter zone so that its potential is raised to approximately the interfering potential of said control base one beneath said one region of said first emitter zone.

4,122,481

SEMICONDUCTOR IC STRUCTURE INCLUDING ISOLATED DEVICES IN A SINGLE SUBSTRATE AND METHOD FOR FABRICATING SAME

Noboru Horie, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Filed Jun. 22, 1977, Ser. No. 809,105
Claims priority, application Japan, Jun. 23, 1976, 51-73180
Int. Cl.² H01L *27/02*
U.S. Cl. 357—43 **2 Claims**



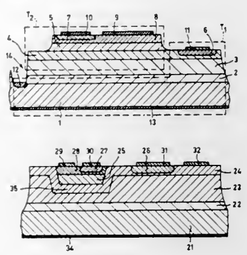
1. A semiconductor IC structure including a pluralty of devices formed in a substrate and isolated from one another, comprising:
a semiconductor base layer for a first conductivity type;
a semiconductor substrate of the first conductivity type epitaxially formed on said base layer;
a buried layer of a second conductivity type formed in the boundary between said substrate and said base layer;
first and second wells of the second conductivity type extending from one surface of said substrate to reach different edges of said buried layer to define an isolated first zone of the first conductivity type in said substrate;
at least one third well of the second conductivity type extending from said one surface of said substrate;
an emitter- and base-contact region of the second conductivity type formed in said first well;
a collector region of the second conductivity type formed in said first zone, said buried layer and said first zone serving as emitter and base regions, respectively;
a base-contact and collector region of the first conductivity type formed in said second well;
an emitter region of the first conductivity type formed in said second well, said second well serving as a base region;
a drain region and a source region both of the first conductivity type formed in a spaced relation in one of said at least one third well; and
a first gate formed on a first insulating layer on the surface of said one third well;
whereby at least an IIL device and a first conductivity type channel MOS device are constituted in said substrate.

4,122,482

VERTICAL COMPLEMENTARY BIPOLAR TRANSISTOR DEVICE WITH EPITAXIAL BASE ZONES

Maurice Bonis, Herouville, and Bernard Roger, Carpiquet, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 640,707, Dec. 15, 1975, abandoned, which is a division of Ser. No. 438,292, Jan. 31, 1974, Pat. No. 3,959,039. This application Aug. 5, 1977, Ser. No. 821,997
Claims priority, application France, Feb. 2, 1973, 73.03748
Int. Cl.² H01L *27/04*
U.S. Cl. 357—46 **15 Claims**



1. A semiconductor device having vertical complementary bipolar transistors each with epitaxial base zone, comprising:
a. a semiconductor body having a substrate region of a first type conductivity;
b. a first epitaxial layer of a second type conductivity opposite to that of said first type conductivity, overlying said substrate region;
c. a second epitaxial layer portion of said first conductivity type overlying only the surface of a first portion of said first epitaxial layer;
d. a first transistor comprising:
i. an emitter zone of said first type conductivity in a second portion of said first epitaxial layer, an emitter connection at the top surface of said first epitaxial layer, said second portion of said first epitaxial layer being adjacent to said first portion,
ii. a collector connection to the substrate region adjoining said second portion of said first epitaxial layer,
iii. the base zone of said first transistor being constituted by said second portion of said first epitaxial layer, and
e. a second transistor complementary to said first transistor comprising:

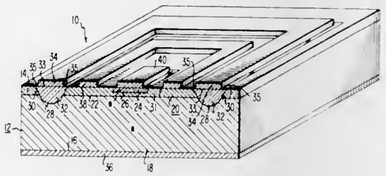
i. a base connection at the top surface of said second epitaxial layer, the base zone of said second transistor being constituted by said second epitaxial layer,
ii. said first portion of said first epitaxial layer constituting the collector of said second transistor and being internally connected to the adjoining second portion of said first epitaxial layer constituting said base zone of said first transistor, and
iii. an emitter zone of said second type conductivity in said second epitaxial layer portion and an emitter connection thereto at the top surface of said second epitaxial layer portion. pg,27

4,122,483

SEMICONDUCTOR DEVICE HAVING REDUCED LEAKAGE CURRENT

William Hulstrunk, Millburn, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1977, Ser. No. 838,168
Int. Cl.² H01L *27/12*
U.S. Cl. 357—49 **6 Claims**



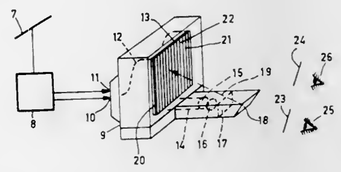
1. A bipolar semiconductor device comprising:
a body of semiconductor material having first and second major surfaces, said first surface having a moat therein, said moat having a sidewall, said moat being substantially completely filled with passivating material;
a first region having a one type conductivity adjacent said second surface and a second region having another type conductivity adjacent said first surface and said first region; said first and second regions defining a first PN junction at the interface therebetween, said first PN junction terminating at said sidewall;
a layer of conductive material overlying and contacting only said passivating material in said moat, said layer being spaced apart from said second region by a rim of said passivating material.

4,122,484

DISPLAY DEVICE FOR THREE-DIMENSIONAL TELEVISION

Sing Liong Tan, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1976, Ser. No. 730,004
Claims priority, application Netherlands, Oct. 16, 1975, 7512131
Int. Cl.² H04N *9/58, 9/60*
U.S. Cl. 358—3 **10 Claims**



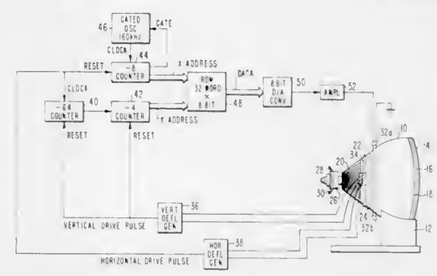
1. In a dispaly device for three-dimensional television provided with two display tubes for producing two images, with light-selecting means for making the light from the two images different and with super-position means for forming a composite image from the two images; the improvement wherein the display device comprises a projection display tube and a direct-view display tube, a first filter having alternatingly light-reflecting and light-dispersing areas and light transmissive, light-selecting areas positioned in front of the display screen of the direct-view display tube, the display device including light projection means having a second light selecting filter for projecting the image produced by the projection display tube by way of the light-refleting and light-dispersing areas of said first filter.

4,122,485

METHOD AND APPARATUS FOR SIMULATING MAGNETIC ENVIRONMENT OF TELEVISION RECEIVERS

William Arthur Sonntag, and Theodore Frederick Simpson, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1977, Ser. No. 783,215
Claims priority, application United Kingdom, Sep. 30, 1976, 40696/76
Int. Cl.² H04N *9/62*
U.S. Cl. 358—10 **8 Claims**



1. A method of simulating effects of magnetic field environment of a television receiver on a color television picture tube having at least two electron beams and a mosaic of recurring groups of luminescent deposits disposed on a screen, each of said deposits being located at a nominal landing site of an associated electron beam on said screen, said method comprising the steps of:
(a) placing a set of auxiliary deflection coils in predetermined spaced relation to said beams;
(b) operating said tube to cause a raster to be scanned on said screen by at least one of said beams; and
(c) energizing said auxiliary coils to cause said beam to be deflected from its nominal beam landing site by a predetermined amount in a predetermined direction within each of at least two predetermined regions of said raster, during at least one vertical field, said predetermined amount being selected in accordance with said magnetic field.

4,122,486

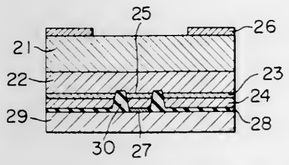
SEMICONDUCTOR LIGHT-EMITTING ELEMENT

Yuichi Ono; Makoto Morioka; Kazuhiro Ito, all of Tokyo; Mitsuhiro Mori, Kokubunji; Masahiko Kawata, and Kazuhiro Kurata, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 24, 1977, Ser. No. 771,576
Claims priority, application Japan, Feb. 27, 1976, 51-20007
Int. Cl.² H01L *33/00*
U.S. Cl. 357—17 **10 Claims**

1. In a semiconductor light emitting device having a hetero-junction and a p-n junction, wherein light is emitted from one side of said p-n junction, said p-n junction exhibiting character-

istics of a hetero-junction, the improvement comprising a first semiconductor layer of p-type conductivity and a second semiconductor layer of n-type conductivity defining a p-n junction from which said light is emitted, said first semiconductor layer having a band gap smaller than that of said second semicon-



ductor layer, wherein said first semiconductor layer has a band gap Ep, said second semiconductor layer has a band gap En, and wherein $(E_n - E_p)$ — (twice the energy step of the conduction band) $\geqq 3kT$, where k is Boltzmann's constant and T is absolute temperature.

4,122,487

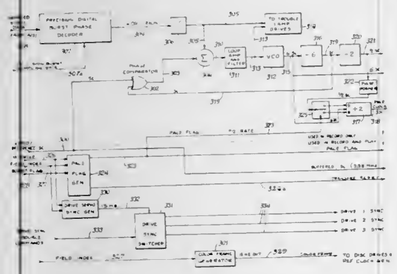
PRECISION PHASE CONTROLLED CLOCK FOR SAMPLING TELEVISION SIGNALS

Daniel A. Beaulier, Menlo Park, and Luigi C. Gallo, Redwood City, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jan. 28, 1977, Ser. No. 763,453

Int. Cl.[2] H04N *5/78, 9/02;* **H04B** *1/04;* **H03B** *3/04*

U.S. Cl. 358—13 **25 Claims**



1. Apparatus for sampling an analog information signal having an associated carrier signal at desired precise phase positions with respect to said carrier signal to provide discrete samples of said information signal with reference to said desired precise phase positions, comprising:

means for sampling said information signal and providing said discrete samples in response to receiving clock signals applied thereto;

means for generating clock signals at the output thereof for application to said sampling means, said output being phase adjustable in response to a phase control signal applied thereto;

control signal means for providing said phase control signal for controlling the phase of the output of said clock signal generating means to sample the information signal with reference to said desired precise phase positions;

said control signal means including means for comparing the phase of said carrier signal and the phase of the output of said clock generating means and providing a first error signal for controlling the phase of said clock generating means for maintaining the phase of the output of said generating means generally in phase locked relation with said carrier signal; and,

said control signal means further including means for producing a second phase error between the actual phase position of said discrete samples of said carrier signal and said desired precise phase position, said control signal means applying the second phase error signal to said generating means for adjusting the phase of said clock signal generating means output signal to reduce said second phase error to approximately zero so that said discrete samples of said information signal are taken substantially with reference to said desired precise phase positions.

4,122,488

SYNC SIGNAL GENERATOR WITH MEMORIZATION OF PHASE DETECTION OUTPUT

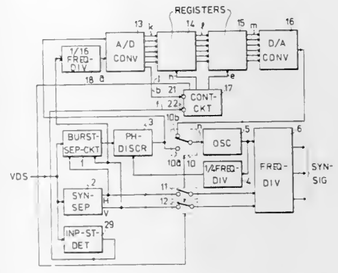
Tsuneo Mikado, Hachioji, Japan, assignor to Nippon Television Industry Corporation, Tokyo, Japan

Filed Apr. 1, 1977, Ser. No. 783,773

Claims priority, application Japan, May 10, 1976, 51-53072; Aug. 23, 1976, 51-100368

Int. Cl.[2] H04N *9/46, 5/06;* **H03B** *3/06*

U.S. Cl. 358—19 **9 Claims**



1. A synchronizing signal generator comprising:

(A) a synchronizing signal separator circuit for separating a synchronizing signal from a video signal;

(B) an oscillator the oscillatory frequency of which is controllable;

(C) a phase discriminator for discriminating outputs of said synchronizing signal separator circuit and said oscillator;

(D) a memory for memorizing an output of said phase discriminator;

(E) a switching circuit for applying alternatively the output of said phase discriminator and the output of said memory, as a control signal, to said oscillator to control the oscillatory frequency of said oscillator; and

(F) an input state detector for detecting the input amplitude and noise state of said video signal, the switching action of said switching circuit being controlled in accordance with the output of said input state detector.

4,122,489

SIGNAL DEFECT COMPENSATOR

Thomas Vincent Bolger, Pennsauken, and Robert Adams Dischert, Burlington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1977, Ser. No. 780,333

Claims priority, application United Kingdom, Nov. 15, 1976, 47548/76

Int. Cl.[2] H04N *5/78, 9/535*

U.S. Cl. 358—21 **3 Claims**

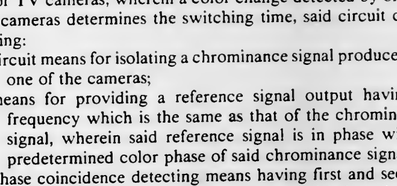
1. A video signal processing system for providing dropout compensation for a color video signal by substituting a replacement color signal for the color video signal during the period of the dropout, said replacement signal consisting of video information from the television lines before and after said dropout, said system comprising:

a source of video signals;

first delay means responsive to said video signals for delaying said video signals by at least one television line to provide a first information signal;

second delay means coupled to said first delay means, said first and second delay means responsive to said video signals for delaying said video signals by at least two television lines to provide a second information signal;

first combining means responsive to said video signals and said second information signal to provide a third information signal at a line time intermediate said video signals and said second information signals;



signal processing means responsive to said third information signal for developing a replacement signal equal in subcarrier phasing to said first information signal; and

switch means coupled to said first information signal and said replacement signal being responsive to a dropout signal for substituting one of said first information signal or said second video output signals for the other in the presence of said dropout signal.

4,122,490

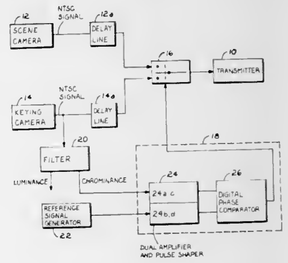
DIGITAL CHROMA-KEY CIRCUITRY

Charles A. Lish, 930 Madison St., Woodmere, N.Y. 11598

Filed Nov. 9, 1976, Ser. No. 739,849

Int. Cl.[2] H04N *5/22*

U.S. Cl. 358—22 **6 Claims**



1. A chroma-keying circuit for generating a switching control signal for use in alternately selecting the outputs of two color TV cameras, wherein a color change detected by one of the cameras determines the switching time, said circuit comprising:

circuit means for isolating a chrominance signal produced by one of the cameras;

means for providing a reference signal output having a frequency which is the same as that of the chrominance signal, wherein said reference signal is in phase with a predetermined color phase of said chrominance signal;

phase coincidence detecting means having first and second inputs coupled to receive respectively said chrominance signal and said reference signal and for providing an output when said first and second inputs are received coincident;

pulse generating means having an input coupled to the output of said phase coincidence detecting means and having an output for providing a signal of predetermined duration; and

timing circuit means having inputs coupled respectively to said coincidence detecting means and said pulse generating means for providing a switching control signal when the duration of said pulse generator means output exceeds that of said coincidence detecting means.

4,122,491

COLOR DEMODULATION APPARATUS

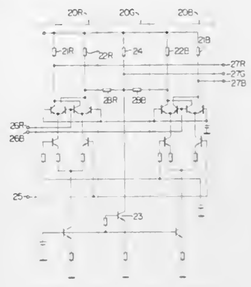
Namio Yamaguchi, Ibaraki, and Yasuyuki Sato, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 26, 1977, Ser. No. 791,002

Claims priority, application Japan, May 10, 1976, 51-53453; Jul. 2, 1976, 51-79235

Int. Cl.[2] H04N *9/50*

U.S. Cl. 358—23 **11 Claims**



1. A color demodulation apparatus comprising;

first and second differential amplifiers;

a matrix circuit including a constant current circuit;

means connecting output terminals of said first and second differential amplifiers and an output terminal of said matrix circuit to a power supply through load resistors, respectively, having the same resistance;

means for passing D.C. currents of the same magnitude through said load resistors;

synthesizing resistors connected between said load resistors of said first and second differential amplifiers, respectively, and said load resistor of said matrix circuit;

means for applying a common chroma signal to said first and second differential amplifiers while applying sub-carriers of different phases to said first and second differential amplifiers to effect synchronous detection;

whereby color difference signals of different axes are produced across said load resistors of said first and second differential amplifiers and said load resistor of said matrix circuit, respectively.

4,122,492

DC RESTORATION UTILIZING THE COLOR BURST SIGNAL

Luigi C. Gallo, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 28, 1977, Ser. No. 763,461

Int. Cl.[2] H04N *9/535*

U.S. Cl. 358—34 **19 Claims**

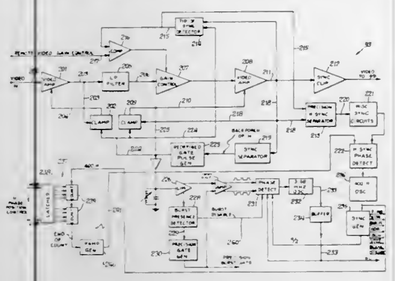
1. Apparatus for restoring the d.c. level of a composite video signal having a plurality of cycles of chrominance subcarrier occurring subsequently of the horizontal synchronization pulse within the horizontal blanking interval, comprising:

means for adjusting the d.c. level of said video signal in response to a correcting signal applied thereto;

means for integrating said video signal to determine the average value of said signal, and for providing said correcting signal to said adjusting means, said integrating means being operative when an enabling signal is applied thereto;

means for producing said enabling signal, said enabling signal producing means being responsive to the presence

of said horizontal synchronization pulse and providing said enabling signal for a predetermined time period occurring when said cycles of chrominance subcarrier are



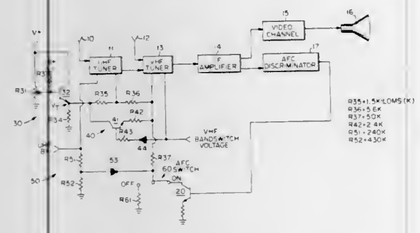
present, said time period corresponding to a whole number of selected cycles of said chrominance subcarrier intermediate of its interval.

4,122,493

ADAPTIVE WIDEBAND AFC SYSTEM

Rangaswamy Arumugham, Batavia, and George Hager Kam, Tonawanda, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Sep. 16, 1977, Ser. No. 833,759
Int. Cl.[2] H04N *5/50;* **H04B** *1/16*
U.S. Cl. 358—195 **16 Claims**



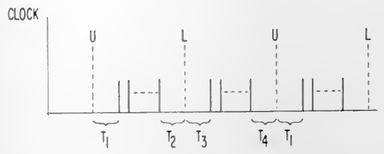
1. In a television receiver having a radio frequency tuner including a UHF tuner and a VHF tuner, said tuners having respective UHF and VHF tuning control terminals for the application of respective tuning voltages for establishing the frequency of operation of said tuners, said receiver further including a source of tuning voltage coupled to said UHF tuning control terminal through a series-connected first resistance and to said VHF tuning control terminal through a series-connected second resistance and an automatic frequency control system for effecting an error-corrected voltage at said tuning control terminals so as to compensate for errors in the frequency of operation of said tuners, an adaptive wideband AFC circuit comprising a gain switch means for varying the range of said error-corrected voltage which is applied to at least a selected one of said tuning control terminals, said gain switch means operating in response to a signal indicative of operation on a channel included in a predetermined band of channels.

4,122,494

SYNCHRONIZATION FOR OSCILLATING OPTICAL BEAM DEFLECTING DEVICE

James L. Levine, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1977, Ser. No. 810,839
Int. Cl.[2] H04N *1/24, 3/08*
U.S. Cl. 358—208 **18 Claims**



1. In a beam scanning system in which modulated energy is scanned across a given area by means of an oscillating beam deflecting means said given area included within a larger area scanned by said beam deflecting means within a pair of travel end points of said beam deflecting means, an improved synchronizing system to assist in superimposing an image created by a beam scanned in one direction with an image created by a beam scanned in another direction, opposite to said one direction, said improved synchronizing system comprising:

means for producing first and second signals, respectively, at first and second travel end points of said beam deflecting means,

a source of modulated energy enabled responsive to said first signal,

means for disabling said source when said beam deflecting means has travelled through an arc sufficient for said deflected modulated energy to scan through said given area,

means for measuring a first period of time between operation of said means for disabling and said second signal,

timing means for measuring a second period of time, equal to said first period of time, and

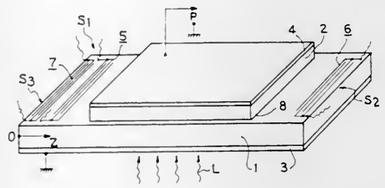
means for enabling said source at the conclusion of said second time period.

4,122,495

METHOD AND A DEVICE FOR AN ELECTRO-ACOUSTIC READING OF AN OPTICAL DEVICE IMAGE

Philippe Defranould, and Charles Maerfeld, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 26, 1977, Ser. No. 791,016
Claims priority, application France, Apr. 30, 1976, 76 13001
Int. Cl.[2] H04N *5/30, 3/14*
U.S. Cl. 358—213 **9 Claims**



1. A method for reading of an optical image by means of an electro-acoustic device, said device being of a type that comprises a piezoelectric medium and a semiconductive and photosensitive medium coupled with the piezoelectrid medium, said image being projected onto said semiconductive medium over an interaction surface and producing a modulation of conductivity therein by photo-electric effect, at least one first electromechanical transducer generating from electrical signals elastic waves propagated at the surface of the piezoelectric medium, and means for extracting an electrical output signal, said method comprising the following steps:

in the first step, a first interaction is produced between a first elastic wave occupying said interaction surface and a second wave having the same frequency, said first interaction producing a stationary and spatially periodic distribution of electrical charges representing said image;

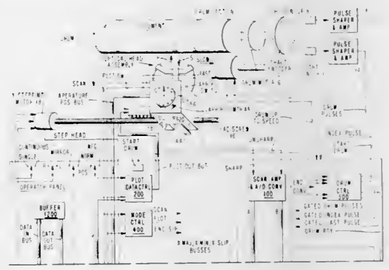
in the second step, a second interaction is obtained between said charge distribution and a third elastic wave of which the frequency corresponds to the spatial periodicity of said charge distribution, said second interaction producing a spatially uniform electrical reading signal representing said charge distribution modulated by said image during the time separating the two phases, said reading signal constituting said output signal.

4,122,496

APPARATUS AND METHOD FOR DIGITAL HALFTONE REPRODUCTION

Lorenza Steward Childress, New Paltz; Thomas Edward Gagnon, Kingston; Donald Russell Thompson, Woodstock, and Larry Reed Zucker, Saugerties, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1977, Ser. No. 771,271
Int. Cl.[2] H04N *1/40*
U.S. Cl. 358—298 **20 Claims**



1. Apparatus for producing a halftone image reproduction of a continuous tone original image comprising:

means scanning said original image along a series of scan lines to provide reflected light from continuous sets of concentric sharp and unsharp areas of said image,

means responsive to said reflected light from said concentric areas to produce continuous sets of corresponding sharp and unsharp analog signals proportional to the light reflective density of said concentric areas,

analog to digital conversion means receiving said sharp and unsharp analog signals,

means providing a first set of incremental control parameter signals in accordance with a predetermined one of a series of reproduction ratios which vary from an enlargement to a reduction of said original image to define scan sample points on said series of scan lines,

means responsive to said first set of incremental control parameter signals for controlling said analog to digital conversion means to produce successive sets of digital sharp and unsharp gray level data signals at said scan sample points proportional to the light reflective density of successive sets of concentric sharp and unsharp areas of said image at said scan sample points with the sharp area at each scan sample point corresponding to the general area of a predetermined portion of a halftone cell,

means providing a second set of incremental control parameter signals in accordance with said predetermined one of said reproduction ratios to define the distance between succeeding scan lines,

means responsive to said second set of incremental control parameter signals for positioning said scanning means to succeeding scan lines,

means combining said successive sets of digital sharp and unsharp gray level data signals in a predetermined manner to produce a succession of digital resultant gray level data signals,

means converting said succession of digital resultant gray level data signals to a succession of digital halftone data signals, and

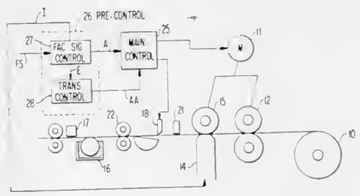
means responsive to said succession of digital halftone data signals for producing a halftone image reproduction corresponding to said continuous tone original image.

4,122,497

FACSIMILE RECEIVER CAPABLE OF BACKWARDLY FEEDING A CONTINUOUS RECORDING MEDIUM AFTER A SEPARATE SHEET IS CUT THEREFROM

Etsuo Suzuki, and Hidekazu Sakurai, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1977, Ser. No. 787,116
Int. Cl.[2] H04N *1/22*
U.S. Cl. 358—304 **11 Claims**



1. In a facsimile receiver comprising controllable feeding means for feeding when put into operation a continuous recording medium along a path of preselected direction in a predetermined one of the two senses of said direction, recording means responsive to facsimile signals representative of figures for successively recording said figures on the continuous recording medium fed by said feeding means, signal producing means responsive to said facsimile signals for producing a cutter drive signal in timed relation to recording by said recording means of each of said figures, a cutter responsive to said cutter drive signal for cutting from said continuous recording medium a separate sheet on which said each figure is recorded, and coupling means between said recording means, signal producing means, and feeding means for controllably putting said feeding means into operation, the improvement wherein said coupling means comprises first means connected to said recording means for producing a first control signal during recording by said recording means of said each figure, second means connected to said recording means and signal producing means for producing a second control signal of a first predetermined duration after recording by said recording means of said each figure and before production by said signal producing means of said cutter drive signal, third means connected to said second means and signal producing means for producing a third control signal of a second predetermined duration after production by said signal producing means of said cutter drive signal, and drive means connected to said first through third means and feeding means for putting said feeding means into a first, a second, and a third phase of operation, said first phase being that of feeding in response to said first control signal said continuous recording medium in said predetermined sense, said second phase being that of further feeding in response to said second control signal said continuous recording medium in said predetermined sense, and said third phase being that of feeding in response to said third control signal in the other of said senses the continuous recording medium from which said separate sheet is cut, respectively, said second

predetermined duration being not longer than said first predetermined duration, said feeding means being capable of feeding the continuous recording medium in whichever of said two senses.

4,122,498

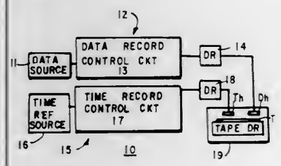
EVENT DATA RECORDING APPARATUS WITH DIGITALLY ENCODED TIME AND DATE

Robert E. Dyer, Springfield, Ill., assignor to Sangamo Electric Company, Springfield, Ill.

Continuation of Ser. No. 610,155, Sep. 4, 1975, abandoned. This application May 11, 1977, Ser. No. 795,906

Int. Cl.[2] G11B *5/00*

U.S. Cl. 360—6 **31 Claims**



1. In a data recording apparatus having a data recording means for recording event data provided by a data source on a recording medium, a time reference recording means for recording a time reference for said event data on said recording medium comprising time reference data source means including digital clock means operable to provide coded data words representing time of day information and calendar date information, said digital clock means being operable in a first mode to provide a first plurality of code words representing the coding for the time of day that the time reference is being recorded and operable in a second mode to provide a second plurality of code words representing the calendar date that the time reference is being recorded, and output means for receiving the code words and for providing signals representing said time and date information for recording on said recording medium, including select means operable to normally maintain said digital clock means operable in said first mode, and control means enabled in response to code words provided while said digital clock means is operable in said first mode to permit said time of day information to be recorded on said recording medium during a first time interval, said select means periodically enabling said digital clock means to be operable in said second mode to permit said calendar date information to be recorded on said recording medium during a second time interval.

4,122,499

VIDEO SIGNAL RECORDING AND REPRODUCING SYSTEM FOR SPECIAL MOTION EFFECTS

Hiroshi Sugaya, Suita, and Kenji Kanai, Higashiosaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

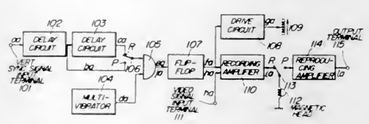
Filed Nov. 27, 1967, Ser. No. 685,855

Claims priority, application Japan, Dec. 6, 1966, 41-80499; Dec. 6, 1966, 41-80500; Dec. 20, 1966, 41-85096; Dec. 20, 1966, 41-85097; Dec. 27, 1966, 42-904; May 12, 1967, 42-30484; Jul. 7, 1967, 42-44922

Int. Cl.[2] H04N *5/79, 5/795*

U.S. Cl. 360—10 **5 Claims**

1. A magnetic recording and reproducing system comprising a magnetic recording medium of a discal or cylindrical shape adapted to rotate in a synchronous relation with the vertical synchronizing signal in a continuous video signal, at least one magnetic head arranged for making an intermittent movement over said magnetic recording medium while engaging therewith, means for skippingly deriving a series of signal portions which are each *n* times (*n* is an integer) the length of one field of said continuous video signal and are derived in such a manner that said signal portions are spaced from each other by a time which is *p* times (*p* is an integer) the length of one field, means for successively applying the derived signal portions to said magnetic head, means for generating a pulse signal having a pulse width which is larger than the period of but smaller than two times the period of the vertical synchronizing signal, an AND circuit, and means for causing the intermittent movement of said magnetic head so that, during the record mode, said magnetic head is intermittently moved in synchronism



with the vertical synchronizing signal in order to successively record said derived signal portions on said magnetic recording medium on circular tracks about the center of rotation of said recording medium, and during the playback mode, the vertical synchronizing signal derived from the signal reproduced from said recorded tracks and said pulse signal are supplied to said AND circuit, the output from said AND circuit being used to successively move said magnetic head from track to track for thereby successively reproducing said recorded tracks while repeating a plurality of reproductions on each said track--.

4,122,500

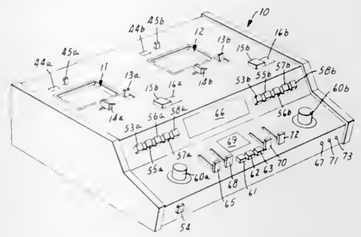
COMPILING DEVICE WITH MANUALLY VARIED AUTOMATIC LOCATION DETERMINATION

Robert S. Bradford, Woodland Hills, and Richard D. Ebbinga, Camarillo, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 11, 1977, Ser. No. 776,586

Int. Cl.[2] G11B *27/02*

U.S. Cl. 360—13 **8 Claims**



1. A device for compiling signals from one or more master lengths of recording tape onto a single length of recording tape, said device comprising:

first and second stations, said first station comprising means for playing the signals on a said master tape including a playback head and drive means for driving the master tape in either a forward or reverse direction past said playback head, said second station comprising means for playing the signals on a said single tape including a playback head, means coupled to said means for playing at said first station for recording signals from the master tape at said first station on the single tape at said second station including a record head, and drive means for driving the tape in either a forward or reverse direction past said heads at said second station; and each of said stations further comprising:

means for automatically and repetitively cycling said drive means between forward and reverse to repetitively play a short segment of that tape adjacent the station;

manually actuated means for incrementally changing the short tape segment played by said means for automatically and repetitively cycling to afford selection of a desired beginning point on the master tape and selection of a desired ending point on the single tape; and

means for activating said drive means and for activating said means for recording to record signals from the master tape at said first station onto the single tape at said second station with the signal at the desired beginning point on the master tape being recorded at the desired ending point for the single tape.

4,122,501

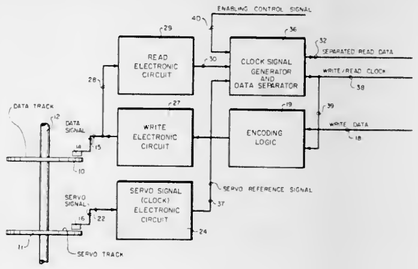
SYSTEM FOR RECORDING AND READING BACK DATA ON A RECORDING MEDIA

Frank J. Sordello, Los Gatos, and Robert L. Cloke, Santa Clara, both of Calif., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 13, 1976, Ser. No. 750,204

Int. Cl.[2] G11B *5/09*

U.S. Cl. 360—51 **2 Claims**



1. A system for reading data from a recording media, comprising in combination:

data readback means for reading data from the recording media;

clocking signal generating means for generating a clocking signal for data read from the recording media, said clocking signal having a frequency responsive to an input signal supplied to the generating means;

means to regulate the input signal responsive to the frequency of the data recorded on the recording media;

means to momentarily stop the clocking signal generating means when said data readback means is energized to read data from the media and when data is detected from the media by the readback means; and

means to start the clocking signal generating means with the phase of the clocking signal corresponding to the phase of the data signal whereby the clocking signal will be set at a frequency corresponding to that of the data signal with the setting of the input signal as previously determined.

4,122,502

PLAYBACK SYSTEM FOR A MAGNETIC TAPE RECORDER

Kozo Kobayashi, Kodaira, Japan, assignor to Nakamichi Research Inc., Kodaira, Japan

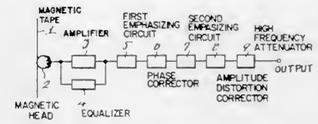
Filed Mar. 3, 1977, Ser. No. 774,141

Claims priority, application Japan, Mar. 5, 1976, 51-23908

Int. Cl.[2] G11B *5/45*

U.S. Cl. 360—65 **4 Claims**

1. A playback system for a magnetic tape recorder comprising a high frequency emphasizer means for receiving the playback signal having an emphasizing circuit section having predetermined frequency characteristics to emphasize predetermined frequencies in the playback signal; an amplitude distortion corrector receiving the output of said high frequency emphasizing means having an input versus output characteristic such that when the input level is less than the playback saturation signal level, which is the start of non-linear characteristics of the playback signal produced from a recorded signal at more than the recording saturation level due to saturation of the magnetic tape, the output level is proportional to the input level, and when the input level is more than the playback saturation level, the output level is complementary to the out level of the magnetic tape at corresponding signal levels above the recording saturation level for correcting the frequency dependent variations in the non-linear characteris-



tics of the playback signal corresponding to a recorded signal of high level which occur due to saturation of the magnetic tape; and a high frequency attenuator receiving the output of said amplitude distortion corrector and having frequency characteristics complementary to that of said emphasizing circuit section of said high frequency emphasizer so as to attenuate the frequencies emphasized by said emphasizing circuit section of said high frequency emphasizer.

4,122,503

POSITIONING SYSTEM AND METHOD PARTICULARLY USEFUL FOR MAGNETIC DISK DRIVES

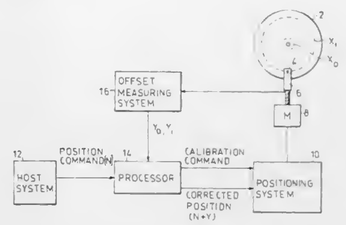
James Clark Allan, Kinross-Shire, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 27, 1977, Ser. No. 810,447

Claims priority, application United Kingdom, Dec. 9, 1976, 51340/76

Int. Cl.[2] G11B *21/08;* **G05D** *23/275*

U.S. Cl. 360—78 **12 Claims**



1. A system for accurately positioning a device at various locations with respect to a reference on a body in accordance with a command position signal, despite temperature and humidity variations, comprising:

measuring means for measuring the actual dimensional deviation of said body from its true dimension over a predetermined distance therealong and for producing a cumulative offset signal indicative of the cumulative deviation over said predetermined distance;

computing means effective, upon the reception of a command position signal specifying a commanded displacement of said device for producing a corrected position signal specifying said commanded displacement corrected by the deviation of said cumulative offset signal prorated over the distance of said commanded displacement including means for computing from said cumulative offset signal a gradient offset signal corresponding to the linear variation of said cumulative offset signal over said predetermined distance;

means effective, upon the reception of a command position signal specifying a commanded displacement to multiply same by said gradient offset signal and to add the product

so obtained to the commanded displacement to produce said corrected position signal; and

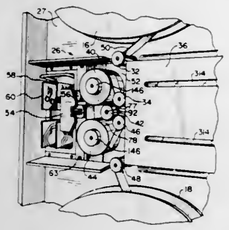
positioning means for positioning said device in accordance with said corrected position signal.

4,122,504

TAPE TRANSPORT WITH DRIVE DRUMS SURFACE DRIVEN WITH THE SAME CAPSTAN AT A CONSTANT TANGENTIAL VELOCITY

George P. Prozzo, Rochester, and Ellis Speicher, Petersburg, both of Ill., assignors to Sangamo Weston, Inc., Springfield, Ill.

Filed Apr. 18, 1977, Ser. No. 788,443
Int. Cl.² G11B *15/26, 15/60, 15/43, 15/18*
U.S. Cl. 360—90 **35 Claims**



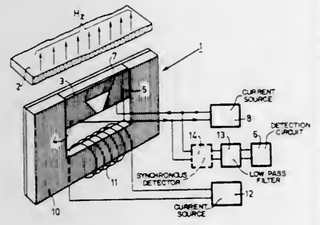
1. A short loop tape transport for use with a tape supply source, transducer means and a tape take-up source, comprising: first and second drum members, each having a tape-carrying surface and a friction drive surface, said drum members being mounted for rotation about respective laterally spaced, substantially coplanar axes in the proximity of said transducer means, said tape extending in partial wrapping engagement about said tape-carrying surfaces of said drum members; a driven capstan having a peripheral drive surface; means for mounting said capstan between said drum members with the drive surface thereof in driving engagement with the friction drive surfaces of said drum members, whereby said drums are directly driven by the same drive element and said tape-carrying surfaces of said drums have the same tangential velocity.

4,122,505

MAGNETO-RESISTIVE READING HEAD WITH SUPPRESSION OF THERMAL NOISE

Karel Elbert Kuijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 11, 1977, Ser. No. 840,760
Claims priority, application Netherlands, Oct. 19, 1976, 7611522
Int. Cl.² G11B *5/30*
U.S. Cl. 360—113 **4 Claims**



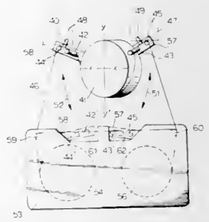
1. A magnetoresistive transducer head with thermal noise suppression comprising: a generally planar thin film magnetoresistive element having an easy axis of magnetization in a major plane of said element; a source of alternating measuring current having means for connecting said source at least indirectly to said element; bias means which induce the measuring current to flow through said element at an angle of at least 35° and at most 55° with said easy axis of magnetization; means to produce a magnetic field the direction of which is parallel to said easy axis of magnetization; means for reversing the polarity of said magnetic field at a frequency f_1; means for reversing the polarity of the measuring current at a frequency f_1 simultaneously and in phased relationship with the polarity reversals of the magnetic field; a low-pass filter which cuts off signals of a frequency f_1; and a sensing device to which said element is connected via said filter.

4,122,506

MAGNETICALLY RECORDING AND REPRODUCING APPARATUS

Kanji Kubo, Katano, and Osahiko Yano, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 27, 1977, Ser. No. 791,469
Int. Cl.² G11B *15/66*
U.S. Cl. 360—130 **5 Claims**



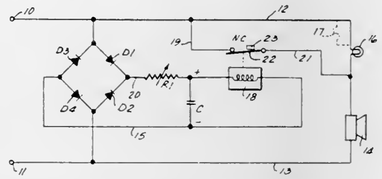
1. A tape guiding means for a magnetic recording and reproducing apparatus comprising: a cylindrical tape guide drum around which a tape is to be helically wrapped, said guide drum containing two diametrically opposed magnetic transducing heads rotating in a plane normal to the axis of said guide drum, said guide drum being tilted with respect to a predetermined datum plane, the angle of contact of said tape around said guide drum being an angle at least exceeding 180°; a pair of support members adjacent to and on diametrically opposite sides of said drum; a pair of first entrance and exit guide posts for guiding the tape onto the guide drum and guiding the tape off the guide drum; a pair of second entrance and exit guide posts mounted perpendicular to said datum plane for guiding said tape to said first entrance guide post and away from said first exit guide post; said first and second entrance guide posts being mounted on one of said support members and said first and second exit guide posts being mounted on the other one of said support members; said first entrance guide post being tilted at an angle to said datum plane such that a resultant vector which is the vector sum of a vector component parallel to the direction of tape movement in the path between said guide drum and said first entrance guide post and a vector component of the angle of inclination of said guide drum is parallel to the direction of movement of the tape in the path between said first and second entrance guide posts, and said first exit guide post being tilted at an angle to said datum plane in the same relation to said second exit guide post as the relation between said first and second entrance guide posts, and said guide drum being inclined at an angle such that a second plane defined by the points at which the longitudinal center line of a tape extending over said guide posts and around said drum engages said first entrance guide post and at which it leaves said first exit guide post and the midpoint of the angle of engagement of the tape around said guide drum is substantially parallel to said datum plane, and limiter means between said first and second entrance and exit guide posts or on one of said guide posts for positioning the height of the tape with respect to said datum plane.

4,122,507

LOUDSPEAKER OVERLOAD CIRCUIT

Daniel L. Queen, Chicago, Ill., assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed May 12, 1977, Ser. No. 796,393
Int. Cl.² H02H *3/08*
U.S. Cl. 361—94 **6 Claims**



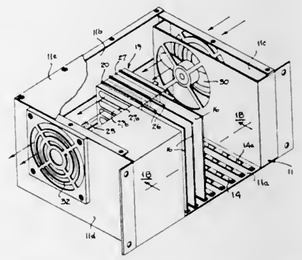
1. An overload protective circut for a loudspeaker comprising a pair of input terminals to which an input audio signal can be applied, a resistor means connected in series with said loudspeaker across said pair of input terminals, a normally closed switch connected in parallel with said resistor means, a detector circuit connected across said input terminals wherein said detector circuit is configured to provide mre sensitivity to low frequencies which cause excursion overloads than to high frequencies which causes thermal overload, and switch actuating means connected to said detector circuit and to said normally closed switch to open it under overload conditions, wherein said resistor means comprises an incandescent lamp, wherein said switch and said switch actuating means comprise a magnetically operated reed switch and wherein said detector circuit comprises a rectifier and a smoothing circuit connected to the output of said rectifier.

4,122,508

MODULAR PRINTED CIRCUIT BOARD ASSEMBLY HAVING COOLING MEANS INCORPORATED THEREIN

Paul S. Rumbaugh, Garden Grove, Calif., assignor to Altec Corporation, Anaheim, Calif.

Filed Sep. 6, 1977, Ser. No. 831,066
Int. Cl.² H05K *7/20*
U.S. Cl. 361—384 **7 Claims**



1. A modular printed circuit board assembly comprising:

a plurality of similar modular units, each of said units including a heat sink element having a main body portion in the form of a plurality of cooling fins between which openings are formed and a flange portion in the form of a plate which extends from the main body portion; and a printed circuit board attached to the flange portion to form an integral unit with the heat sink element,

a housing having a base and top cover for said modular units, means for removably supporting said modular units in said housing in side by side relationship to form a stack with corresponding openings in said modular units aligned with each other in series to form a plurality of parallel unimpeded channels extending through said stack from one side to the opposite side thereof, and

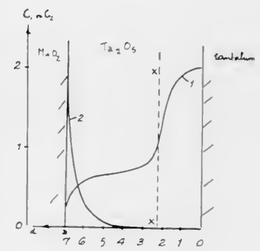
means for circulating ambient air through said channels comprising a blower mounted in a wall of said housing at one end of said channels and a vent mounted in a wall of said housing opposite said first mentioned wall at the other end of said channels, whereby air streams are flowed in substantially straight lines from outside said housing across the fins and out from the housing through the vent.

4,122,509

SOLID ELECTROLYTE TANTALUM CAPACITORS

Gilbert Frade; Balint Escher, and Dominique Prince, all of Paris, France, assignors to Lignes Telegraphiques et Telephoniques, Paris, France

Filed Dec. 6, 1976, Ser. No. 747,905
Claims priority, application France, Dec. 12, 1975, 75 38035
Int. Cl.² H01G *9/00*
U.S. Cl. 361—433 **8 Claims**



1. In a solid electrolyte capacitor comprising a sintered tantalum anode, a dielectric consisting of a tantalum oxide layer of a thickness D obtained by anodic oxidation of said tantalum anode and a cathode comprising manganese dioxide and a conductive layer, the improvement which comprises having said layer of tantalum oxide contain a first impurity consisting of a hexavalent metallic ion whose concentration C_1 varies as a function of the distance d from said tantalum anode, from a maximum value when d is zero to a minimum value when d equals D, and a second impurity selected from the group consisting of trivalent ions and tetravalent ions whose concentration C_2 tends towards zero when d is zero and increases monotonically with d.

4,122,510

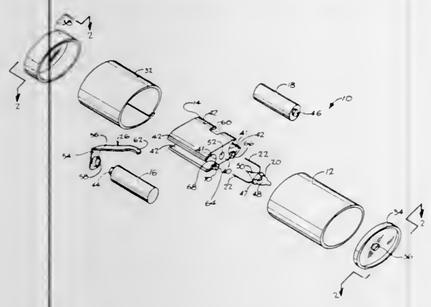
FLASHLIGHT

Richard L. Halliday, Jr., Fountainville, Pa., assignor to S. Harry Fazzina and Roberta A. Fazzina, both of Wyndmoor, Pa.

Filed Dec. 1, 1976, Ser. No. 746,637
Int. Cl.² F21V *9/16*
U.S. Cl. 362—189 **7 Claims**

1. A flashlight comprising a housing having a generally flexible side wall, a first end wall and a second end wall having a central opening therein; an insulating battery retaining member including resilient arm members retaining a pair of batteries having exposed conductive surfaces, one end of one of said batteries projecting beyond the end of said battery retaining member adjacent said second end wall with its positive post extending beyond the end of said battery retaining member adjacent said first end wall, one end of the other of said batteries projecting beyond the end of the battery retaining member adjacent the first end wall with the positive post thereof projecting beyond the end of said battery retaining member adja-

cent said first end wall whereby, the positive post of said one battery and the end of said other battery bear on said first end wall; a light bulb at the end of said housing adjacent said second end wall with a portion of said light bulb extending through said central opening, said light bulb being electrically connected to said batteries; a pair of stop members formed on said battery retaining member at the end thereof adjacent said second end wall, each stop member bearing on the end of a battery member for preventing movement of said battery members toward said second end wall; and a conductive switch member frictionally retained on said positive post of said one of said batteries, said switch member including a portion extending between said flexible side wall and said battery retaining member and terminating adjacent a cutout portion of said battery retaining member exposing a conductive portion of the other of said batteries whereby said switch member completes a circuit between said batteries and said light bulb when force is applied to the flexible side wall.

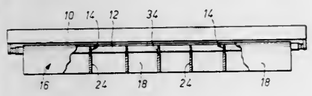


4,122,511

LAMP-SHADE FOR TUBULAR LAMPS

Jann Petersen, Rytterbakken 34, Greve Strand, Denmark

Filed Feb. 22, 1977, Ser. No. 770,936
Claims priority, application Denmark, Feb. 20, 1976, 703/76
Int. Cl.[2] F21V *1/00*
U.S. Cl. 362—351 **8 Claims**





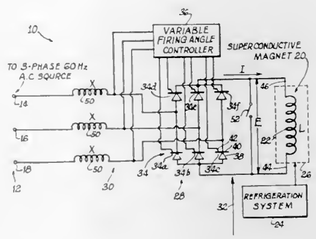
1. In a lamp shade adapted for being mounted directly on a tubular lamp having an outer diameter *d*, said lamp shade comprising a housing defining two longitudinally extending, in cross sections concavely curved, light reflecting side shade-faces facing each other and arranged on each side of a middle plane of the shade, said middle plane containing, when the shade is arranged on a horizontally disposed tubular lamp, the longitudinal axis of the lamp, a number of cross-plates extending between said two side shade-faces and each being light reflecting on each surface of same facing another one of said cross-plates, said cross-plates together with said side shade faces defining free openings opposite the lamp for light emission from the shade, and retaining means for retaining the lamp shade directly on a tubular lamp in such a position that when the lamp shade is mounted on a horizontally disposed tubular lamp the uppermost portions of said two side shade-faces are situated at a level higher than that of the uppermost part of the lamp; the improvement wherein: the height of the shade is such that when the shade is mounted on a horizontally disposed tubular lamp, the distance between the lowermost part of the outer face of the lamp and a plane through the longitudinally extending lower edges of said two side shade-faces is between 1.7 *d* and 3 *d;* and each said side shade-face follows a smooth curve having at levels above said lamp a minimum distance from said middle plane not exceeding 0.6 *d* and touching at its lower part a plane parallel to said middle plane and having a distance therefrom of between 1.3 *d* and 3 *d*.

4,122,512

SUPERCONDUCTIVE ENERGY STORAGE FOR POWER SYSTEMS

Harold A. Peterson, and Roger W. Boom, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 350,794, Apr. 13, 1973, abandoned. This application Oct. 2, 1974, Ser. No. 511,210
Int. Cl.[2] H02J *15/00*
U.S. Cl. 363—14 **6 Claims**



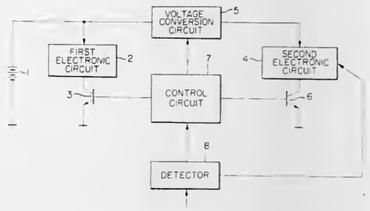
1. An energy storage and recovery device,
comprising a superconducting magnet including a coil having a conductor made of a superconductive material,
refrigeration means for maintaining said conductor of said coil in a superconductive state,
reversible alternating-direct current converter means having a direct current interface connected to said coil of said superconducting magnet,
said converter means having an alternating current interface including three lines for connection to a three phase alternating current power system,
said converter means including an inverter-rectifier system having a plurality of controlled rectifiers connected between said alternating current interface and said direct current interface,
and control means including a variable firing angle controller connected between said alternating current interface and said controlled rectifiers to fire said rectifiers with variable phase angle signals,
said control means thereby being operative to adjust said converter means between an alternating-to-direct current conversion mode, in which energy derived from said alternating current power system causes the buildup of a direct current in said coil so that such energy is stored in said super-conducting magnet, and a direct-to-alternating current conversion mode in which the direct current in said coil is converted into alternating current which is returned to said power system so that energy is recovered from said superconducting magnet and returned to said power system.

4,122,513

POWER CONTROL DEVICE

Hiroshi Takahashi, Yokohama, and Shinichi Nakata, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1976, Ser. No. 705,799
Claims priority, application Japan, Jul. 23, 1975, 50-89830
Int. Cl.[2] H02M *3/335*
U.S. Cl. 363—21 **8 Claims**



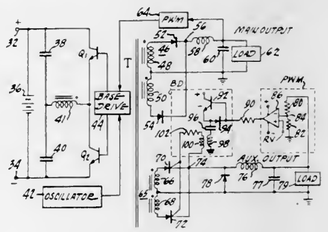
1. In an electrical apparatus including a load which is required to be energized only intermittently during operation of the apparatus, an improvement which comprises a power control circuit device for intermittently supplying power from a power source to the load, said power control circuit device comprising:
a voltage conversion circuit for converting a voltage supplied from the power source, and having an output for applying the converted voltage to the load;
detector means for providing an output signal when power should be supplied from said power source to energize said load;
a control circuit responsive to the signal from said detector means for producing a control signal; and
switch means responsive to the control signal from said control circuit for enabling the operation of said voltage conversion circuit to provide the converted voltage at said output for application to the load.

4,122,514

DIRECT CURRENT POWER SUPPLY

Dilip A. Amin, Parsippany, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 1, 1976, Ser. No. 737,636
Int. Cl.[2] H02M *3/335*
U.S. Cl. 363—21 **2 Claims**



1. A power supply for providing regulated direct current voltages from a source of unregulated direct current voltage, comprising
a pair of input terminals between which the unregulated direct current voltage may be applied,
a pair of capacitors connected in series between said terminals,
a pair of switches connected in series between said terminals,
a transformer having a primary winding and first and second secondary windings, said primary winding being connected between the junction of said capacitors and the junction of said switches,
a first output capacitor,
rectifiers respectively coupled from opposite ends of said first secondary winding to one side of said first output capacitor and a direct current connection between the other side of said first output capacitor and a center point on said first secondary winding,
means for alternately closing said switches for predetermined spaced periods of time,
means for changing the time during which said switches are closed inwardly with the variation in voltage across said first output capacitor,
a second output capacitor,
SCR devices having gate electrodes and having their source-to-drain paths respectively coupled between opposite ends of said second secondary winding and one side of said second output capacitor and a direct current connection between the other side of said second output capacitor and a center point on said second secondary winding,
a comparator having first and second inputs and an output,
means coupling the voltage across said second output capacitor to one of said inputs,
means coupling a reference potential to the other of said inputs,
a pulse transformer having primary and secondary windings,
a diode, a capacitor and said primary winding of said pulse transformer being connected in series between the output of said comparator and a point of said reference potential,
a transistor having a base, collector and emitter, said base being coupled to the output of said comparator, said emitter being connected to the junction between said diode and said capacitor, and means applying an operating potential to said collector,
a connection between said gate electrodes and one side of said secondary winding of said pulse transformer, and
a connection between the other side of the secondary winding of said pulse transformer and points respectively between said SCR devices and said second output capacitor.

4,122,515

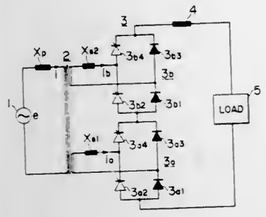
HIGH HARMONIC CURRENT REDUCING APPARATUS IN POWER CONVERTER

Kyozo Tachibana, Ibaraki; Takashi Tsuboi, Katsuta; Yutaka Suzuki, Hitachi; Mitsugu Matsutake, Hitachi; Shozuchi Miura, Hitachi; Shigeru Hatano, Hitachi; Takao Goto, and Yoshio Nozaki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 11, 1976, Ser. No. 657,270
Claims priority, application Japan, Feb. 15, 1975, 50-19346
Int. Cl.[2] H02M *1/12*
U.S. Cl. 363—45 **5 Claims**

1. A high harmonic current reducing apparatus in a power converter comprising:
a single phase AC power source;
a transformer having a primary winding connected to said AC power source and a plurality of secondary windings;
converting means comprising a plurality of single phase bridge rectifier circuits each including at least a plurality of controlled rectifiers, said rectifier circuits having AC input terminals connected with said secondary windings respectively and DC output terminals connected in series with each other;
wherein an AC reactance of at least one of said rectifier circuits, as viewed from the DC output terminal thereof to

the secondary winding, is different in value from AC reactances of the remaining rectifier circuits, as viewed



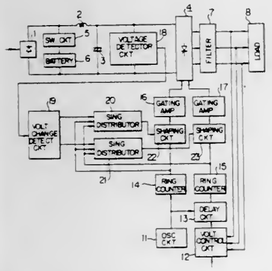
from the DC output terminals thereof to the secondary windings, thereby reducing high harmonic currents.

4,122,516

INVERTER CONTROL APPARATUS

Norikazu Tokunaga, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Jun. 29, 1977, Ser. No. 811,259
Claims priority, application Japan, Jul. 14, 1976, 51-82955
Int. Cl.[2] H02M 7/00
U.S. Cl. 363—79 21 Claims



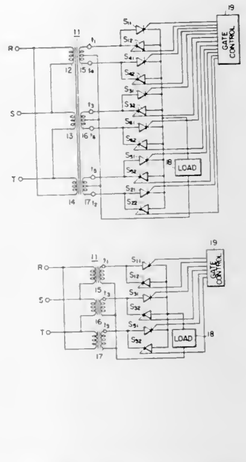
1. An inverter control apparatus comprising:
first DC power supply means for rectifying an input AC power so as to produce a DC output;
second DC power supply means including a battery and actuated to produce a DC output when said first DC power supply means is inoperative;
a thyristor inverter device for converting the DC input power applied from the actuated one of said first and second DC power supply means into an AC output power;
thyristor conduction control means for performing the on-off operation of the thyristors making up said inverter device, in a predetermined sequence;
first control means for detecting the AC output voltage of said inverter device and for controlling the on-off operation of said thyristors performed by said thyristor conduction control means in accordance with the detected value of said AC output voltage, thereby regulating said AC output voltage at a given level;
input voltage detector means for detecting the DC input voltage applied to said inverter device; and
second control means responsive to said input voltage detector means for controlling the thyristor on-off operation performed by said thyristor conduction control means in accordance with the variations in said DC input voltage so as to dampen the variations in said AC output voltage attributable to the variations in said DC input voltage.

4,122,517

THYRISTOR CONTROL METHOD FOR THYRISTOR AC-DC CONVERTER

Shigeki Hayashi, Tokyo, and Takemitsu Okamoto, Yokohama, both of Japan, assignors to Nusco Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1977, Ser. No. 852,008
Claims priority, application Japan, Nov. 22, 1976, 51-140987
Int. Cl.[2] H02M 7/155
U.S. Cl. 363—85 6 Claims



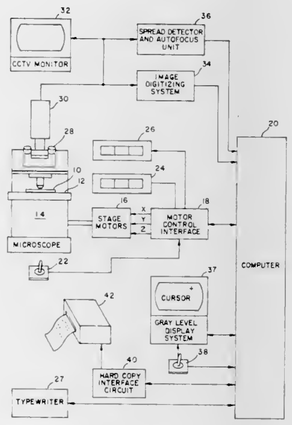
1. A thyristor control method for a thyristor AC-DC converter in which six pairs of opposite-polarity thyristors are respectively connected at one end to both ends of first, second and third secondary windings of a three-phase transformer and at the other end to one end of a load, the other end of the load being connected to the mid point of end of the first, second and third secondary windings, and in which the gates of the six pairs of thyristors are controlled by a control device to convert an AC power from the three-phase transformer into a DC power for input to the load,
wherein, in a small current region in which the current to the load is small, the three pairs of thyristors connected to the corresponding ends of the first, second and third secondary windings are controlled to supply a current to the load by a three-phase, half-wave back-to-back connection bridge AC-DC converting operation of a main output bridge formed with the three pairs of thyristors but an auxiliary output bridge formed with the three pairs of thyristors connected to the other ends of the secondary windings is not controlled;
wherein, in a large current region in which the current to the load is large, the main and auxiliary output bridges are both similarly controlled to supply therefrom currents of substantially the same magnitude to the load, thereby to achieve an AC-DC converting operation of a balanced six-phase, half-wave back-to-back thyristor bridge as a whole; and
wherein, in an intermediate current region in which the current to the load is intermediate between the small and large currents, the main and auxiliary output bridge are both actuated but the current from the former is made larger than that of the latter and the both currents are applied to the load, thereby to achieve an AC-DC converting operation of an unbalanced six-phase, half-wave back-to-back connection thyristor bridge as a whole.

4,122,518

AUTOMATED CLINICAL SYSTEM FOR CHROMOSOME ANALYSIS

Kenneth R. Castleman, Glendale; Howard J. Frieden, Pasadena; Elbert T. Johnson, La Crescenta; Paul A. Rennie, Pasadena, and Raymond J. Wall, Glendale, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed May 17, 1976, Ser. No. 687,251
Int. Cl.[2] G06F 15/42
U.S. Cl. 364—300 15 Claims



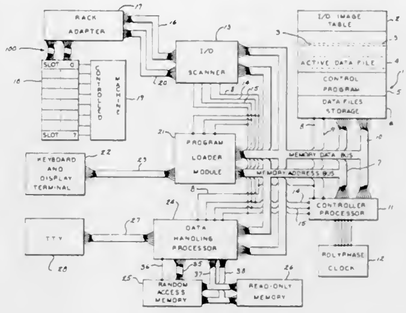
1. An operator assisted system using a programmed computer for producing karyotype images from a slide mounted on the stage of a microscope, said slide having a plurality of dispersed metaphase chromosome spreads, comprising
moving said stage under instructions of said programmed computer connected to control said microscope to successively present said plurality of dispersed metaphase chromosome spreads to the optics of said microscope,
storing the location of each spread, thereby automatically prescanning said slide for chromosome spreads,
moving said stage under instructions of said programmed computer to place the slide motionless on said stage at each successive chromosome spread location, thereby enabling an operating to view each successive chromosome spread to inspect the chromosome spread and determine whether it is acceptable for the purpose of analysis or not,
deleting under operator control the location of each spread determined not to be acceptable thereby establishing a list by location of which the chromosome spreads are acceptable,
again moving said stage under instructions of said programmed computer for generating a digital picture of each of said acceptable chromosome spreads,
arranging the chromosomes in the digital picture of an acceptable chromosome spread in a karyotype format, and
producing a visible image of the karyotype format for each acceptable chromosome spread.

4,122,519

DATA HANDLING MODULE FOR PROGRAMMABLE CONTROLLER

Timothy Bielawski, Maple Heights; Odo J. Struger, Chagrin Falls, and Lawrence W. DeLong, Stow, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Dec. 14, 1976, Ser. No. 750,572
Int. Cl.[2] G06F 13/08, 9/19, 15/46
U.S. Cl. 364—200 4 Claims

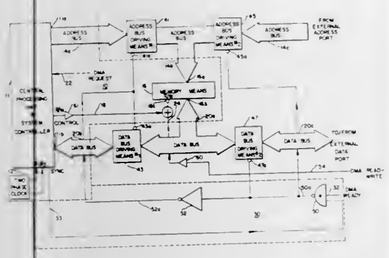


1. In a programmable controller having a memory which stores a control program and a processor which sequentially and continuously reads out instructions that comprise the control program and executes them to control a machine, the combination comprising:
an active data file storage which is coupled to said processor and which stores a data file that is operated upon by said processor in response to control program instructions which it executes to control said machine;
a data file storage which stores a plurality of data files, each of which is suitable for storage in said active data file storage and each of which includes data to be operated upon by said processor to control said machine;
a control status register, coupled to said processor and including a first storage location which may be set to a selected state by said processor in response to the execution of a control program instruction to indicate that the transfer of a particular data file from said data file storage to said active data file storage is to occur, file identification storage locations which may be set to a selected state by said processor to identify the particular data file to be transferred, and a second storage location which may be examined by said processor in response to the execution of another control program instruction to indicate whether or not said transfer has been completed; and
a data handling module coupled to said control status register, said active data file storage and said data file storage, said data handling module including:
(a) examining means, coupled to said control status register, for periodically examining said first storage location therein and indicating when a transfer is to occur;
(b) selecting means, coupled to said control status register and being responsive to the contents of said file identification storage locations therein, for selecting the data file to be transferred;
(c) transferring means, coupled to said selecting means, said active data file storage and said data file storage, for tranferring said particular data file from said data file storage to said active data file storage when the transfer is indicated by said examining means; and
(d) means responsive to said transfer means and coupled to said control status register, for setting the state of said second storage location therein to indicate that the transfer has been completed.

4,122,520
MICROCOMPUTER CONTROLLER AND DIRECT MEMORY ACCESS APPARATUS THEREFOR

John T. Adamchick, Amsterdam; John C. Sicko, and Edwin C. Underkoffler, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 23, 1977, Ser. No. 799,299
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—200 10 Claims



1. Direct memory access apparatus for a microcomputer controller including a central processing unit (CPU) having an address port and a data port and having a known synchronization time interval, during which a synchronization signal is generated, at the beginning of each of a plurality of CPU machine cycles necessary to execute each of a plurality of instructions, and non-interleaved memory means having a single address port and a single data port for sequentially storing each of a plurality of individually addressable sequential data words therein, said apparatus comprising:

direct memory access (DMA) address, data and control ports;

first means for coupling the address port of said memory means to the address port of said CPU responsive only to the presence of a first signal;

second means for coupling the data port of said memory means to the data port of said CPU responsive only to the presence of said first signal;

third means for coupling said DMA address port to said memory means address port responsive only to the presence of a second signal present only when said first signal is not present;

fourth means for coupling said DMA data port to said memory means data port responsive only to the presence of said second signal; and

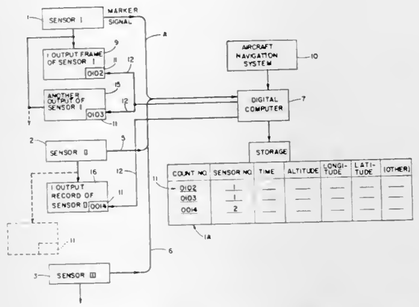
control means for recognizing the synchronization signal from the central processing unit to provide said second signal to said first through fourth means only if a direct memory access is requested at said DMA control port, said control means normally providing said first signal to said first through fourth means;

each of said plurality of sequentially addressable data words stored in said memory means being singly time-accessible to at least said DMA data port during each machine cycle and in a time interval less than, and only during, said synchronization time interval of said CPU after the address of the associated data word is transmitted to said memory means address port during the same synchronization time interval of said CPU.

4,122,521
CORRELATION SYSTEM FOR MULTIPLE-SENSOR RECONNAISSANCE VEHICLE

Horst Rick, Torrance; Richard A. Keppel, Long Beach; Harvey A. Mitchell, Harbor City; Lowell V. Olsen, Gardena; James K. Colas, Running Springs, and Robert E. Tracy, Rialto, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 624,116, Oct. 20, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 787,270
Int. Cl.[2] G06F *15/50*
U.S. Cl. 364—424 10 Claims



1. A multiple-sensor reconnaissance system for an aircraft having a navigation system and a digital computer therein, said computer continually carrying present navigation parameters from said navigation system, comprising:

a. a plurality of sensors each capable of making frames of intelligence according to the type of energy sensed thereby;

b. first trigger means in each of said sensors for generating and passing a marker signal to said computer each time a sensor frame of information is to be taken;

c. means in said computer responsive to each said marker signal for identifying the sensor, producing a new respective frame count number and sending said number back to the originating sensor;

d. number recording means in each sensor for indicating said frame count number on said intelligence frame corresponding to the said marker signal;

e. information collecting means in said computer for producing a block of digital information signals containing said frame count number, sensor identification and existing navigation parameters from said navigation system including geographical location of said aircraft; and

f. information recording means for recording said computer-produced information signals essentially simultaneously with each time a marker signal is sent to said computer.

4,122,522
AIRCRAFT GROUND MONITORING SYSTEM

Gerald R. Smith, 2845 Clearview Pl., Atlanta, Ga. 30341

Continuation of Ser. No. 471,609, May 20, 1974, abandoned. This application Jun. 2, 1977, Ser. No. 802,662
Int. Cl.[2] G06F *15/50*; B64C *13/18*
U.S. Cl. 364—427 11 Claims

1. The method of predicting the performance of a specific aircraft of determinable certain type which is presently attempting to accomplish a particular flight operation along a runway, comprising the steps of:

prior to the present flight operation, measuring the actual velocities typically attained by aircraft of several types including said certain type, at particular distances while traveling along a runway in the successful accomplishment of a plurality of said particular flight operation, and then obtaining for each such type of aircraft an initial correlation signal between the distances which the aircraft have traveled with respect to a certain reference location of the runway and the typical velocities attained at such distances within a range of possible operating conditions during said plural flight operations, without regard to aircraft operating factors which may have affected the performance of said aircraft while traveling such distances to attain such velocities;

said initial correlation signals for each type of aircraft being represented by the equation:

$$V = B_0 + B_1 d + B_2 d^2 + B_3 d^3$$

where:

V is the average velocity at any distance d along the runway, and

B_0, B_1, B_2, and B_3 are constants determined from said typical velocity-distance information; and then

at the time when said specific aircraft is attempting to accomplish said flight operation, identifying the aircraft type externally of said specific aircraft while said specific aircraft is traveling along the runway;

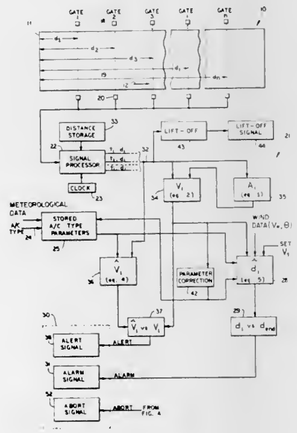
selecting said initial correlation signal which corresponds to said identified type of aircraft;

determining a signal which corresponds to the actual velocity of said specific aircraft at least at one known location of travel along the runway;

using said selected initial correlation signal to determine a signal corresponding to the anticipated velocity which an aircraft of said identified type should attain at said known location while attempting said flight operation;

comparing said anticipated velocity signal for said certain type of aircraft with said actual velocity signal of the specific aircraft to determine whether the normal velocity bears a predetermined relation to the actual velocity; and

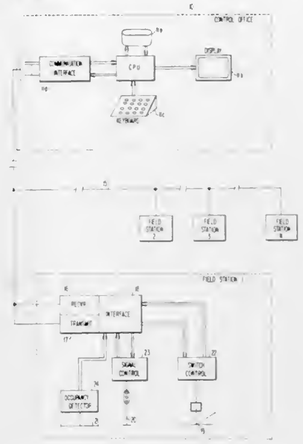
providing a signal condition apparent to the operator of the specific aircraft if the anticipated velocity signal does not have said predetermined relationship with the known velocity signal.



4,122,523
ROUTE CONFLICT ANALYSIS SYSTEM FOR CONTROL OF RAILROADS

Charles W. Morse; John P. Walker, and Chan-Yong Chew, all of Rochester, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,498
Int. Cl.[2] G06F *15/48*; B61L *27/00*
U.S. Cl. 364—436 11 Claims



1. Conflict-resolving train control apparatus for a railroad, which railroad includes a plurality of potentially conflicting routes and railroad traffic controlling equipment, said equipment operating in response to signals communicated thereto by a central station, said equipment further communicating information respecting the condition of said equipment and the location of railroad traffic thereon to said central station, said conflict-resolving apparatus comprising:

storage means for storing information as to the railroad configuration, status of traffic controlling equipment, location of traffic, nominal schedule of said traffic, and for further storing of information respecting potential conflicts which require resolution in light of actual railroad traffic on said railroad,

processor means operating in response to said storage means for initiating a heuristic search for resolution of said conflicts,

said processor assigning to each potential conflict resolution, a cost related to the delay required by said resolution, said processor searching for a successful resolution through a path of potential conflict resolution on the basis of said cost, and

means responsive to discovery of a successful resolution for storing a desired order of conflicting railroad traffic to eliminate said conflicts, said equipment for controlling said railroad traffic being responsive to said order of trains to control said traffic to eliminate said conflicts.

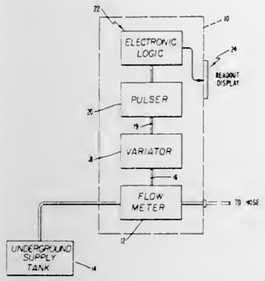
4,122,524
SALE COMPUTING AND DISPLAY PACKAGE FOR GASOLINE-DISPENSING APPARATUS

Rollin J. McCrory; Ronald S. Harmon, and Gordon S. Vaughan, all of Greensboro, N.C., assignors to Gilbert & Barker Manufacturing Company, Greensboro, N.C.

Filed Nov. 3, 1976, Ser. No. 738,562
Int. Cl.[2] G01F *1/00*; G02F *1/13*
U.S. Cl. 364—465 44 Claims

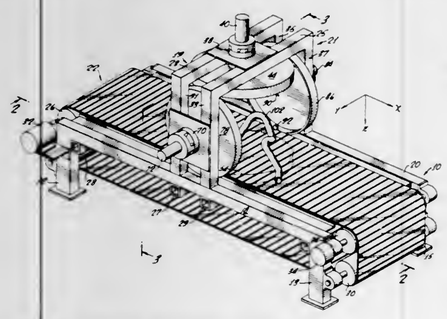
1. In an apparatus for monitoring the revolutions of a shaft, the improvement comprising:

(a) pulser means for providing pulses proportional to the rotations of the shaft;
(b) display means, including a light-transmissive liquid crystal display panel and a prism for back-lighting said display panel; and



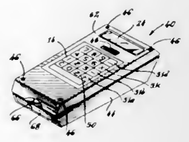
(c) electronic logic means for receiving pulses from said pulser means and supplying signals for actuating said display panel,
wherein said liquid crystal display panel includes a plurality of segmented characters and means for blocking "blue" light from transmission through unactivated segments of said segmented characters.

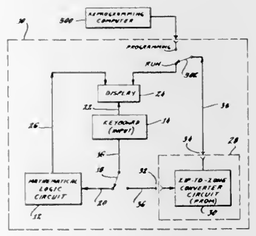
4,122,525
METHOD AND APPARATUS FOR PROFILE SCANNING
Homer L. Eaton, Balboa, Calif., assignor to Eaton-Leonard Corporation, Santa Ana, Calif.
Filed Jul. 12, 1976, Ser. No. 704,408
Int. Cl.[2] G01N *21/22*
U.S. Cl. 364—560 **48 Claims**



22. Profile scanning apparatus comprising:
carrier means for supporting an object of which the profile is to be scanned,
a scanning device comprising means for generating an energy beam moving in a scan pattern across an object supported by said carrier means, said object being opaque to said beam,
means for effecting relative motion of said carrier means and said scanning device to thereby move said scan pattern over said object,
means for generating a first signal representing position of said carrier means with respect to said scanning device, and
means responsive to occlusion of said beam by said object for generating a second signal representing an intersection of said energy beam with a boundary of said object.

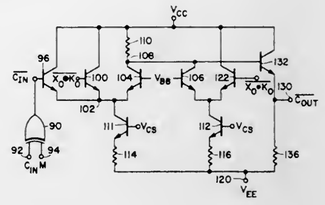
4,122,526
CALCULATING AND POSTAL ZIP CODE-TO-POSTAL ZONE CONVERTING APPARATUS
Daniel F. Dlugos, Huntington, and Flavio M. Manduley, Seymour, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 20, 1976, Ser. No. 752,012
Int. Cl.[2] G06F *15/20*
U.S. Cl. 364—705 **11 Claims**

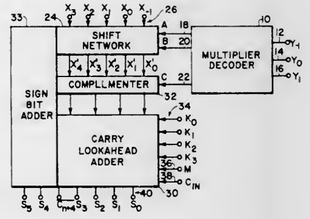




1. An apparatus for converting postal zip code information into postal zone information and for performing mathematical calculations, said apparatus comprising:
A. mathematical logic means for performing mathematical calculations and for operating said apparatus in a calculator mode;
B. converter means for determining postal destination zone as a function of the postal destination zip code and for operating said apparatus in a zip code-to-zone conversion mode;
C. switching means operatively connected between said logic means and said converter means for selectively
1. enabling said logic means to operate said apparatus in a calculator mode; and
2. enabling said converter means to operate said apparatus in a zip code-to-zone conversion mode;
D. jack means for removably connecting said converter means and said apparatus to permit replacement of said converter means with another programmed for determination of postal destination zone as a function of postal destination zip code from a different postal origination location;
E. a housing for supporting said mathematical logic means and said switching means; and
F. a converter module for supporting said converter means, and further wherein said jack means comprises a jack plug and a jack plug receptacle for connecting said housing and said module, said module being connected with said housing when said jack plug is received in said jack plug receptacle.

4,122,527
EMITTER COUPLED MULTIPLIER ARRAY
Frank J. Swiatowiec, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 628,634, Nov. 4, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 784,486
Int. Cl.[2] G06F *7/50, 7/52*
U.S. Cl. 364—787 **5 Claims**

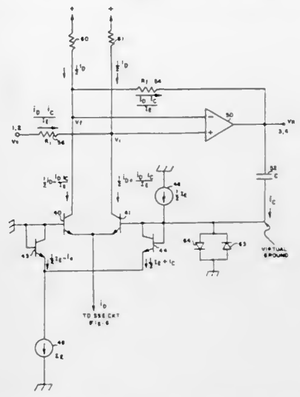




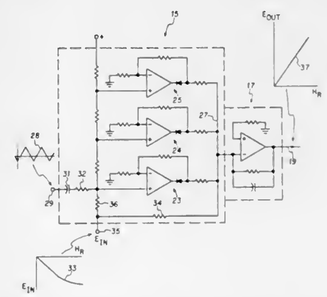
1. A multiplier circuit comprising:
a. a carry lookahead added circuit including a first cell comprising input means for receiving a carry-in signal C_{IN} and for receiving a first control signal for selectively transmitting either a true or inverted signal C_{IN} of the carry-in signal C_{IN}, a cell output terminal, and an emitter-coupled-logic circuit coupled between said input means and the said cell output terminal for receiving a first logic signal $X \oplus K$ and a second logic signal $X \cdot K$, and being responsive to said transmitted true or inverted signal C_{IN} for generating a first internal carry-out signal C_{OUT} at said cell output terminal.

4,122,528
INTEGRATOR CIRCUITS FOR A CONSTANT VELOCITY VECTOR GENERATOR
Michael Lawrence Rieger, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Division of Ser. No. 625,609, Oct. 24, 1975, Pat. No. 4,032,768. This application Mar. 4, 1977, Ser. No. 774,712
Int. Cl.[2] G06G *7/18*
U.S. Cl. 364—829 **1 Claim**

1. An integrating circuit, comprising:
differential amplifier means including differentially connected first and second transistors and a pair of input elements coupled to the bases of said transistors respectively for converting a difference current to a difference voltage for application to said bases, said input elements having logarithmic conduction characteristics substantially corresponding to that of a semiconductor junction;
operational amplifier means having − and + terminals and an output terminal, said − and + terminals connected to the collectors of said first and second transistors respectively;
an input terminal for receiving step voltage signals, said input terminal coupled to said + input terminal of said operational amplifier;
feedback means including a resistive element connected from said output terminal of said operational amplifier means to the − input terminal of said operational amplifier, said feedback means further including a capacitive element connected from said output terminal of said operational amplifier means to the base of said second transistor; and
current source means connected to the emitters of said differentially connected first and second transistors.



4,122,529
METHOD AND APPARATUS FOR PROVIDING A CIRCUIT WITH A SMOOTH TRANSFER FUNCTION
Gary F. Hoech, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Dallas, Tex.
Filed Jul. 25, 1977, Ser. No. 818,380
Int. Cl.[2] G06G *7/28*
U.S. Cl. 364—852 **13 Claims**



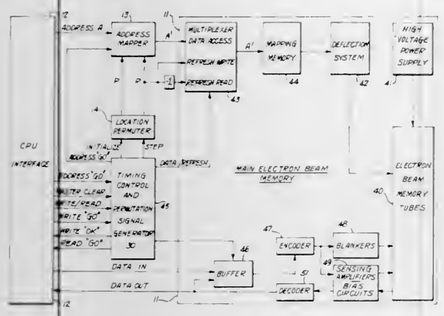
5. A circuit for modifying a signal in accordance with a smooth transfer function, comprising:
(a) a source providing a periodic signal,
(b) means for adding said periodic signal to said signal to be modified to produce an input signal,
(c) a circuit having a transfer function represented by a plurality of piecewise linear segments, having an input to which said input signal is applied to produce a transformed output signal, and
(d) means for filtering said periodic signal from said transformed output.

4,122,530

DATA MANAGEMENT METHOD AND SYSTEM FOR RANDOM ACCESS ELECTRON BEAM MEMORY

Donald O. Smith, Lexington; Kenneth J. Harte, Carlisle, both of Mass., and Hollister B. Sykes, Cranford, N.J., assignors to Control Data Corporation, Minneapolis, Minn.

Filed May 25, 1976, Ser. No. 689,831
Int. Cl.[2] G06F *13/06, 9/10;* **G11C** *7/00*
U.S. Cl. 364—900 **9 Claims**



4. In a data recording and readback system for a random access electron beam memory having an electron beam write/-read apparatus for recording data to be stored on a recording member that is subject to fatique in the eventuality of excessive write/read storage accesses to any given physical location on the recording member, said system including a central processing unit; the improvement comprising location permuting means for systematically permuting the physical location of data stored on the recording member, permutation recording means responsive to said location permuting means for recording the total number of permutations of the data physical locations, and address mapping means responsive to input addresses of requests for data and to said permutation recording means and connected to control the operation of said electron beam write/read apparatus for translating input addresses for requested data from the central processing unit to the address of the physical location where the requested data actually is physically recorded on the recording member for retrieval.

4,122,531

MEMORY AND CONTROL CIRCUIT FOR THE MEMORY

Keikichi Tamaru, Fujisawa, and Yukimasa Uchida, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Company, Limited, Kawasaki, Japan

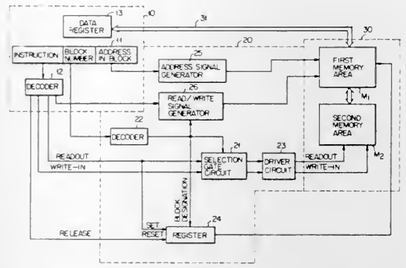
Filed Dec. 21, 1976, Ser. No. 753,020
Claims priority, application Japan, Dec. 25, 1975, 50-156941
Int. Cl.[2] G11C *9/06*
U.S. Cl. 364—900 **13 Claims**

1. A memory and control circuit for the memory comprising:

a memory including a first memory plane area having a plurality of semiconductor memory cell elements and a second memory plane area superimposed on said first memory plane area and having a plurality of non-volatile memory cell elements formed of insulated gate field effect semiconductor devices each having a gate electrode, said first and second memory plane areas being each divided into a plurality of blocks and the memory cell elements of the first memory plane area being respectively connected to the corresponding memory cell elements of the second memory plane area in one-to-one correspondence to permit data transfer between the memory cell element of the first memory plane area and the corresponding memory cell element of the second memory plane area;

address designating means connected to the first memory plane area to designate an address of the memory cell element of the first memory plane area;

a control signal generator for generating a read/write control signal to cause the first memory plane area to be set to a write or readout mode; and



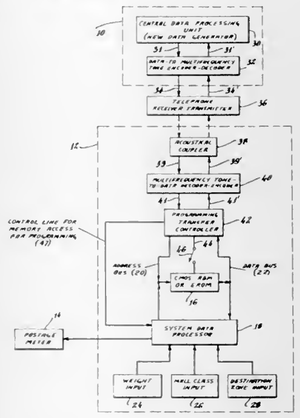
control means connected to the gate electrodes of said non-volatile memory cell elements for initiating data transfer between that memory cell element in the first memory plane area which is addressed by said address designating means and the corresponding memory cell element in the second memory plane area, said blocks being controlled independently from each other.

4,122,532

SYSTEM FOR UPDATING POSTAL RATE INFORMATION UTILIZED BY REMOTE MAIL PROCESSING APPARATUS

Daniel F. Dlugos, Huntington, and Flavio M. Manduley, Seymour, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 31, 1977, Ser. No. 763,998
Int. Cl.[2] G06F *3/04, 15/20*
U.S. Cl. 364—900 **3 Claims**



1. A system for replacing obsolete postal rate data with revised postal rate data carried in a mail processing apparatus adapted to calculate postage charges, said system comprising:

(a) central data processing means adapted to generate revised postal rate data in binary format;

(b) encoder means comprising a modem receiving the revised postal rate data in binary format and being adapted to convert such revised postal rate data into tone signals;

(c) means receiving the tone signals and adapted to transmit the tone signals from the encoder to the mail processing apparatus, the transmitting means comprising telephone lines;

(d) decoder means comprising a modem receiving the telephone line transmitted tone signals and adapted to translate said tone signals back into revised postal rate data in binary format;

(e) the mail processing apparatus including a memory and a data processor, the memory being adapted for sequentially storing postal rate data at a plurality of storage locations, the data processor accessing the postal rate data stored in the memory for the purpose of calculation of postage charges;

(f) the remote mail processing apparatus further including a programming transfer controller, the controller interconnecting the decoder means and the memory, the controller receiving the revised postal rate data in binary format from the decoder means and being adapted to:

(1) sequentially address storage locations in the memory,

(2) erase the data from the addressed storage location, and

(3) load revised postal rate data into each sequentially addressed location; and

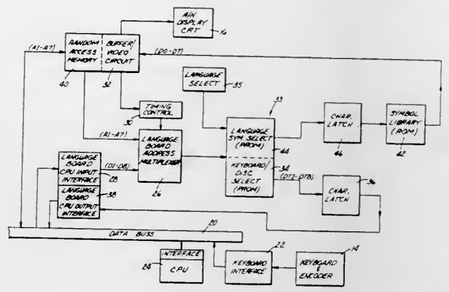
(g) means to prevent the data processor from accessing the memory when the controller receives the revised postal rate data and for permitting the data processor to access the memory after the revised postal rate data has been loaded into the memory.

4,122,533

MULTIPLE LANGUAGE CHARACTER GENERATING SYSTEM

Ronald Arthur Kubinak, Edison, N.J., assignor to Addressograph-Multigraph Corporation, Los Angeles, Calif.

Filed Jun. 2, 1977, Ser. No. 802,895
Int. Cl.[2] G03B *15/00*
U.S. Cl. 364—900 **17 Claims**



1. A display system for a plurality of individually selectable languages, wherein each language has a set of alpha/numeric character symbols, said system comprising

means for selecting any one of a plurality of languages and providing corresponding language input signals,

keyboard means comprising a plurality of individually operable keys, each providing a corresponding key code,

a plurality of symbol generating means, each for producing output signals representative of a corresponding symbol, at least one of said symbol generating means providing output signals for a symbol common to two or more of said plurality of languages,

control means including first means for selecting a predetermined set of said symbol generating means in accordance with said language input signals and second means responsive to said key codes for causing operation of the corresponding symbol generating means of the selected set, and

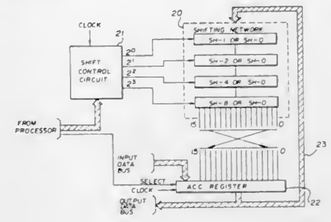
display means responsive to said output signals from said symbol generating means, when operated, for providing images of corresponding symbols, whereby symbols for the selected language are displayed in accordance with said operated keys.

4,122,534

PARALLEL BIDIRECTIONAL SHIFTER

Caesar Cesaratto, Alymer, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 17, 1977, Ser. No. 807,429
Int. Cl.[2] G11C *19/00;* **G06F** *1/00*
U.S. Cl. 364—900 **6 Claims**



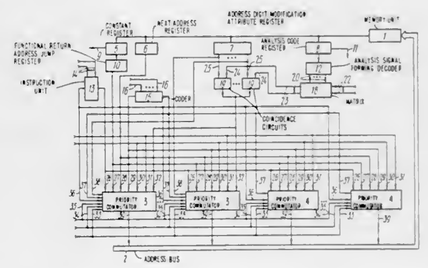
1. A parallel bidirectional shifter circuit for shifting a binary data word having N-bits any number up to N-1 positions left or right, comprising, a shifting network for shifting a binary data word any number up to N-1 positions in one predetermined direction, the shifting network having N output leads; and a data register having N storage locations and N input leads, the output leads of the shifting network being cross-connected to the input leads of the register such that a binary word loaded therein from the shifting network is the mirror image of the binary word appearing at the output of the network, the ouput of the register being connected back to the input of the shifting network.

4,122,535

STORAGE DEVICE

Valery Fedorovich Gusev, ulitsa Karbysheva, 13a, kv. 35; Gennady Nikolaevich Ivanov, ulitsa Dekabristov, 184-a, kv. 22, both of Kazan; Vladimir Yakovlevich Kontarev, ploschad Junosti, 4, kv. 3, Moscow; Genrikh Isaevich Krengel, ulitsa Ibragimova, 45, kv. 49, Kazan; Vyacheslav Yakovlevich Kremlev, Berezovaya alleya, korpus 423, kv. 81, Moscow; Mansur Zakirovich Shagivaleev, ulitsa Karbysheva, 17, kv. 75, Kazan; Jury Ivanovich Schetinin, 103536, korpus 503, kv. 106, Moscow, and Azat Usmanovich Yarmukhametov, ulitsa Adelya Kutuya, 12, kv. 23, Kazan, all of U.S.S.R.

Filed Jun. 30, 1977, Ser. No. 811,788
Claims priority, application U.S.S.R., Jul. 7, 1976, 2379679
Int. Cl.[2] G06F *9/20*
U.S. Cl. 364—900 **6 Claims**

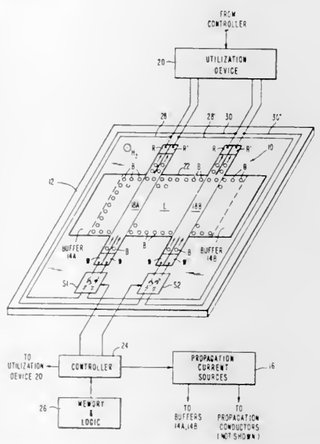


1. A storage device using addresses having a number of modifiable address digits and a number of non-modifiable address digits comprising:

a memory unit for storing control information having an input and an output;

an address bus connected to said input of said memory unit for storing control information;
a constant register having an input connected to said output of said memory unit for storing control information, a first output connected to a first output of said storage device, and a second output;
a functional return address jump register having an input connected to said second output of said constant register, and an output;
a next address register having an input connected to said output of said memory unit for storing control information, and an output;
an address digit modification attribute register having an input connected to said output of said memory unit for storing control information, and a group of outputs;
an analysis code register having an input connected to said output of said memory unit for storing control information, a first output connected to a second output of said storage device, and a second output;
an analysis signal forming decoder having an input connected to said second output of said analysis code register, and a group of outputs;
a plurality of coincidence circuits combined into a matrix having
columns equal in number to the number of modifiable address digits of said memory unit for storing control information and
lines equal in number to the digit capacity of said analysis code register,
each coincidence circuit of said plurality of coincidence circuits having a first input electrically coupled to a respective output of said analysis signal forming decoder, a second input, and an output;
a group of additional coincidence circuits equal in number to the number of modifiable address digits of said memory unit for storing control information, each of additional coincidence circuits having a first input connected to a respective output of said group of outputs of said address digit modification attribute register, a second input electrically coupled to said output of a respective coincidence circuit of said plurality of coincidence circuits, and an output;
priority commutators for commutating modifiable address digits of said memory unit for storing control information equal in number to the number of modifiable address digits of said memory unit for storing control information, each of said priority commutators having first, second, third, fourth, fifth, sixth and seventh information inputs, first, second, third, fourth, fifth and sixth control inputs, and an output connected to said address bus;
priority commutators for commutating non-modifiable address digits of said memory unit for storing control information equal in number to the number of non-modifiable address digits of said memory unit for storing control information, each of said commutators having first, second, third, fourth, fifth and sixth information inputs, first, second, third, fourth, and fifth control inputs, and an output connected to said address bus;
an instruction unit having a group of inputs, a first output connected to said first information input of each of said priority commutators, and a second output connected to said fourth control input of each of said priority commutators;
a coder having a group of inputs, a first output connected to said fourth information input of each of said priority commutators, and a second output connected to said fifth control input of each of said priority commutators;
said second information input of each of said priority commutators being connected to said output of said functional return address jump register;
said third information input of each of said priority commutators being connected to said output of said next address register;
said fifth and sixth information inputs and said first, second and third control inputs of each of said priority commutators, said group of inputs of said instruction unit, said group of inputs of said coder, and said second input of each coincidence circuit of said plurality of coincidence circuits being connected to respective inputs of said storage device;
said seventh information input of said priority commutators for commutating modifiable address digits of said memory unit for storing control information being connected to said outputs of said additional coincidence circuits;
said sixth control input of said priority commutators for commutating modifiable address digits of said memory unit for storing control information being connected to a respective output of said address digit modification attribute register.

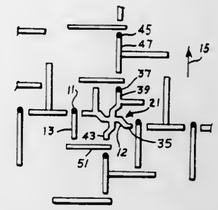
4,122,536
SELF-ORGANIZING MAGNETIC BUBBLE LATTICE FILE
Chak-Kuen Wong, Briarcliff Manor, and Po Cheung Yue, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 5, 1976, Ser. No. 739,233
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—3 **16 Claims**



1. A magnetic bubble lattice file capable of rearranging bubble domains in said lattice of interacting domains, comprising:
a lattice of interacting magnetic bubble domains arranged in rows and columns,
translation means for translating said domains to access means,
column access means for removing two of said bubble domain columns at the same time from said lattice, said access means including read means for reading information in said removed columns of bubble domains and write means for writing information into said lattice in place of said removed columns, there being a read means and a write means associated with each of said two columns,
transposition means for interchanging the positions of said two removed columns of bubble domains when said two columns are reinserted into said lattice, said transposition means being connected between each of said read means and said write means for controllably connecting each of said read means to a selected one of said write means, in response to a control signal applied thereto, said transposition means including means for controlling the write means of each column access means by the output of the read means of the other column access means, and

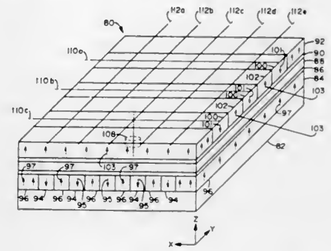
control means for applying said control signal to said transposition means.

4,122,537
MAGNETIC BUBBLE CROSSOVER CIRCUIT
Christopher T. Chang, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 5, 1976, Ser. No. 729,634
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—13 **2 Claims**



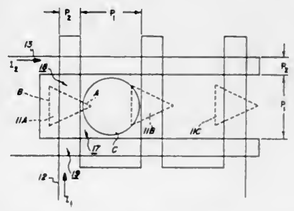
1. A magnetic bubble crossover circuit comprising:
a. a substrate for propagating magnetic bubbles;
b. means for generating a rotating magnetic field in the plane of the substrate;
c. a plurality of magnetic elements positioned on the substrate to propagate magnetic bubbles across the substrate from different directions when driven by the rotating magnetic field;
d. a common magnetic element positioned on the substrate to provide a crossover pattern for bubbles from different directions, the common magnetic element including,
(1) a first vertical element,
(2) a first horizontal element connected to the first vertical element at a connection point forming an L configuration,
(3) a first inclined element connected to the connection point of the first vertical and the first horizontal elements,
(4) a second horizontal element connected to the first inclined element,
(5) a second vertical element intersecting the second horizontal element,
(6) a second inclined element connected to the second vertical element,
(7) a third vertical element connected to the second inclined element;
(8) a third horizontal element connected to the second inclined element and the third vertical element with the third horizontal and third vertical elements forming an L configuration;
(9) a third inclined element connected to the second horizontal element,
(10) a fourth horizontal element connected to the third inclined element,
(11) a fourth inclined element connected to the second vertical element, and
(12) a fourth vertical element connected to the fourth inclined element.

4,122,538
SINGLE WALL DOMAIN, STRIPE DOMAIN MEMORY PLANE
Stanley James Lins, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Aug. 2, 1976, Ser. No. 710,773
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—29 **4 Claims**



1. A bubble domain memory plane comprising:
a first stripe domain layer having a plurality of stripe domains formed therein;
a bubble domain layer having a plurality of bubble domains formed therein;
a second stripe domain layer having a plurality of stripe domains formed therein, the stripe domains associated with said second stripe domain layer aligned substantially perpendicular with the stripe domains associated with said first stripe domain layer for forming a plurality of stripe domain intersections therebetween; and,
the magnetization M orientations in said first and second stripe domain layers, in alternate ones of said stripe domain intersections, vectorially aligned with the magnetization M orientations in consecutive ones of said bubble domains for forming a structural orientation of said bubble domains in only alternate ones of said stripe domain intersections and between the associated stripe domain walls in said first and second stripe domain layers.

4,122,539
MAGNETIC BUBBLE ELEMENT
Yoshiki Kikuchi, Tokyo, Japan, assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 12, 1977, Ser. No. 786,929
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—42 **9 Claims**



1. A magnetic bubble element comprising:
a plurality of wedge-formed patterns having apex and bottom portions formed of a magnetic thin film material on a surface of a material which is capable of supporting magnetic bubbles therein, and
a conductor grating associated with said supporting material comprising first and second undulating conductor patterns, each cycle of the undulation in said first and second conductor patterns defining a wider pitch and a narrower pitch, the superposition of a substantial portion of each of

the wedge-formed patterns being disposed over a corresponding part of the first conductor pattern which defines the narrower pitch in a manner such that the apex portion and the bottom portion of each wedge shaped pattern extends into the portions of said second conductor which forms the wider pitch and the superposition of the apex portion and the bottom portion of each wedge shaped pattern extending into the portion of said first conductor which forms the wider pitch.

4,122,540

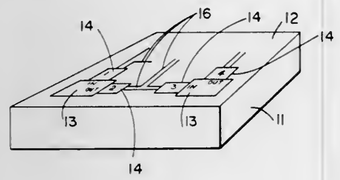
MASSIVE MONOLITHIC INTEGRATED CIRCUIT

Lewis K. Russell, San Jose, and David Kleitman, Los Altos Hills, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 452,195, Mar. 18, 1974, abandoned. This application Apr. 12, 1976, Ser. No. 675,776

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—104 **7 Claims**



1. In an integrated circuit, a semiconductor body having a major surface;

an array of semiconductor circuits formed in said major surface, a plurality of said semiconductor circuits being assigned a functional status and the remainder thereof being assigned a non-functional status;

a pattern of conductive paths of extended length provided over said body surface interlaced with the semiconductor circuit array; and

a plurality of individually switchable semiconductor intercoupling means formed in surface regions of said body adjacent to each of said semiconductor circuits and disposed between adjacent ones of said semiconductor circuits and adjacent ones of said conductive paths, each of said intercoupling means having a high impedance state from which it is selectively switchable to a low impedance state by the application thereto of electrical energy, and from which low impedance state it is selectively switchable to said high impedance state by the application thereto of radiant energy, said plurality of functional semiconductor circuits being coupled to the adjacent conductive paths by means of connection to semiconductor intercoupling means that are in their low impedance state, and said non-functional semiconductor circuits being decoupled from the adjacent conductive paths by means of connection to semiconductor intercoupling means that are in their high impedance state.

4,122,541

NON-VOLATILE MEMORY DEVICE

Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Electric Company, Limited, Kawasaki, Japan

Filed Aug. 25, 1976, Ser. No. 717,668

Claims priority, application Japan, Aug. 29, 1975, 50-104076

Int. Cl.[2] G11C *11/40, 8/00*

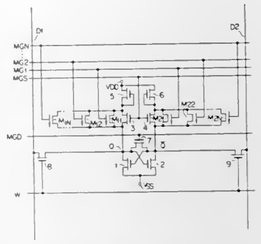
U.S. Cl. 365—154 **4 Claims**

1. A nonvolatile memory device comprising:

an array of nonvolatile memory cells each including a bistable circuit including a power supply terminal, a pair of output terminals, a pair of resistive means connected at one end to said power supply terminal, a pair of driven field effect transistors whose drains are connected to said pair of output terminals, respectively to perform a flip-flop function, and first and second switching field effect transistors respectively connected between said pair of output terminals and said pair of corresponding resistive means;

a plurality of first variable threshold field effect transistors each connected in parallel with said first switching field effect transistors; and

a plurality of second variable threshold field effect transistors each connected in parallel with said second switching field effect transistors, said plurality of second variable threshold field effect transistors being the same in number as said plurality of first variable threshold field effect transistors;



a pair of transfer field effect transistors respectively connected at drains to sid output terminals;

a plurality of word lines each connected to the gate of said pair of transfer field effect transistors in each row;

a plurality of paired digit lines each pair of which are connected to the respective sources of said pair of transfer field effect transistors in each column; and

a plurality of control lines provided in the same number as said plurality of first variable threshold field effect transistors and each connected to the gate of one of said plurality of first variable threshold field effect transistors in each of said nonvolatile memory cells and to the gate of one of said plurality of second variable threshold field effect transistors in each of said nonvolatile memory cells.

4,122,542

MEMORY ARRAY

Ferdinand Camerik; Cornelis Maria Hart, and Arie Slob, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 614,252, Sep. 17, 1975, abandoned, which is a continuation of Ser. No. 484,123, Jun. 28, 1974, abandoned. This application Mar. 10, 1977, Ser. No. 776,252

Claims priority, application Netherlands, Jul. 6, 1973, 7309453

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—156 **3 Claims**

1. An integrated circuit memory array comprising:

a substrate;

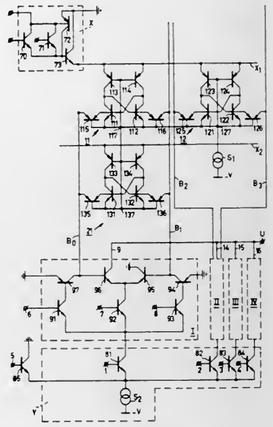
a surface layer of first conductivity type overlying said substrate and divided into a plurality of discrete areas;

a plurality of memory cells defined and adjacently disposed in associated rows and columns in a single one of said areas of first conductivity type, each cell comprising two cross-coupled transistors of one conductivity type, each of said transistors having base, emitter and collector regions, and load transistors of the other conductivity type having base, emitter, and collector regions; said base regions of said cross-coupled transistors being surface regions of the second conductivity type, extending in said one area of said surface layer, and separating said collector regions of said cross-coupled transistors from said one area which

defines a common emitter region of said cross-coupled transistors; said memory cells in adjacent rows being directly adjacent;

a bit line, connected to said base region of at least one of said cross-coupled transistors through a bit line transistor;

said one area of said surface layer of first conductivity type forming a common node, directly interconnecting each of said base regions of said load transistors and each of said emitter regions of said cross-coupled transistors, for each of said memory cells;



means connected to said node, for supplying a constant current to said memory array, connected to a point of constant potential;

a row selection line connected to said emitter regions of said load transistors in an associated row of memory cells;

a column selection circuit connected to said bit line for selecting a predetermined column of said memory array; and

selection means for controlling the level of array current which flows to respective selected and unselected ones of said cells.

4,122,543

NON-VOLATILE MEMORY FOR FAST SIGNALS

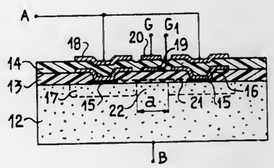
Alain Bert, and Gérard Kantorowicz, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 20, 1977, Ser. No. 835,009

Claims priority, application France, Sep. 24, 1976, 76 28766

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—182 **19 Claims**



1. A non-volatile memory for recording a fast signal, comprising:

a first storage stage comprising a semiconductor substrate on which is made at least one junction with two branches, to which is applied the signal to be recorded, each of said branches producing in the substrate a depletion zone, the two depletion zones thus produced providing a channel between them, the width of said channel being a function of said signal;

a second storage stage comprising an MIIS type element whose electric charge is controlled by the width of said channel, said electric charge being stored by the MIIS elements and representing said signal.

4,122,544

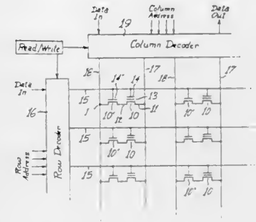
ELECTRICALLY ALTERABLE FLOATING GATE SEMICONDUCTOR MEMORY DEVICE WITH SERIES ENHANCEMENT TRANSISTOR

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1976, Ser. No. 754,207

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—185 **16 Claims**



11. An electrically programmable, non-volatile, floating gate, semiconductor memory cell comprising: a first MOS transistor having a source, a drain, a floating gate, and a control gate; a second MOS transistor having a source integral with the drain of the first MOS transistor, having a gate which is connected to said control gate, and having a drain; an insulating layer separating the floating gate and the control gate; a gate insulator separating the floating gate from a channel region between the source and drain of the first MOS transistor; means for selectively applying high voltage to the control gate while applying reference potential to the source of the first MOS transistor and high voltage to the drain of the second MOS transistor to program the cell by charging the floating gate via electrons traversing the gate insulator.

4,122,545

MEMORY ARRAY OF INVERSION CONTROLLED SWITCHES

Robert J. Lodi, Tewksbury, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,573

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—186 **4 Claims**

1. A memory circuit, comprising:

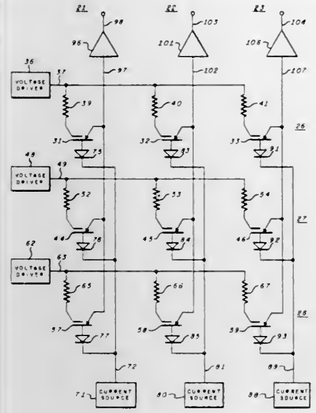
an array of inversion controlled switch means of N rows by M columns, each said switch means having emitter, base and collector terminals, and characerized by first and second discrete impedance states between the emitter and collector terminals thereof;

voltage means coupled with said switch means for applying a selectably controllable voltage level across the emitter and collector terminals of said switch means in selected ones of said rows thereof;

a plurality of rectifier means each coupled with the base terminal of a respective switch means;

current means coupled with said rectifier means for applying a selectably controllable current level to the base terminals of said switch means in selected ones of said columns through said rectifier means; and

data sensing means coupled with said switch means in individual ones of said columns thereof for sensing the impe-



dance state of a selected one of said switch means in a respective one of said columns.

4,122,546

MOS SEMICONDUCTOR STORAGE MODULE

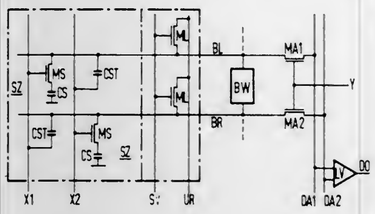
Paul-Werner von Basse, Wolfratshausen, and Ruediger Hofmann, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 27, 1977, Ser. No. 837,201

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647394

Int. Cl.[2] G11C *7/00, 11/40*

U.S. Cl. 365—189 **10 Claims**



1. A MOS semiconductor module comprising:
a plurality of word lines and a plurality of bit lines intersecting said word lines;
a plurality of MOS transistor storage cells arranged at the bit and word line intersections; and
a plurality of weighting networks arranged on the module in a column, each of said weighting networks including first and second inputs connected to a pair of associated bit lines,
the storage cells which are connected via bit lines to said first inputs of said weighting networks defining a first storage cell field,
the storage cells which are connected via bit lines to said second inputs of said weighting networks defining a second storage cell field, and
all storage cell fields of said module disposed on one side of said column of weighting network.

4,122,547

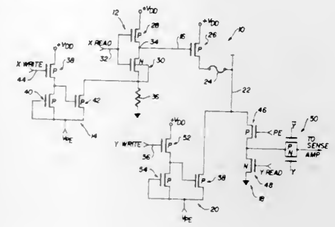
COMPLEMENTARY FET DRIVERS FOR PROGRAMMABLE MEMORIES

James E. Schroeder, Indialantic, and Richard L. Goslin, Melbourne, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Aug. 9, 1977, Ser. No. 823,071

Int. Cl.[2] G11C *7/00*

U.S. Cl. 365—189 **25 Claims**



1. A memory matrix comprising:
complementary field effect transistor means for enabling a row in said matrix for reading;
complementary field effect transistor means for enabling a column in said matrix for reading;
single channel field effect transistor means for enabling a row in said matrix for writing;
single channel field effect transistor means for enabling a column in said matrix for writing;
each of said field effect transistor writing means having a capacity to operate for writing potentials higher than reading potentials.

4,122,548

MEMORY STORAGE ARRAY WITH RESTORE CIRCUIT

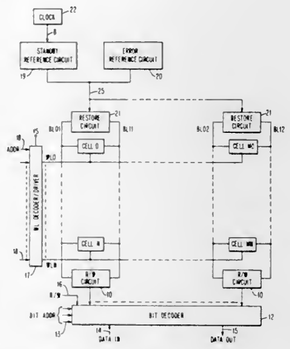
Klaus Heuber, Boeblingen; Wilfried Klein, Holzgerlingen; Knut Najmann, Gartringen; Friedrich Wernicke, Boeblingen, and Siegfried Kurt Wiedmann, Stuttgart, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1977, Ser. No. 840,457

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657561

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—203 **10 Claims**



1. A memory circuit comprising
a pair of bit lines,
bipolar memory cells coupled between the bit lines through semiconductor devices, and
means for maintaining information stored in said cells,

said maintaining means comprising
a standby reference circuit, controlled by a clock, coupled to a reference line,
an error reference circuit coupled to said standby reference circuit and to said reference line, and
a restore circuit coupled to said reference line,
said restore circuit comprising two current sources each of which are coupled to a respective one of said pair of bit lines and to said reference line through a respective one of a pair of semiconductor devices.

4,122,549

DYNAMIC RANDOM ACCESS MEMORY HAVING SENSE AMPLIFIER CIRCUITS AND DATA REGENERATION CIRCUIT FOR INCREASED SPEED

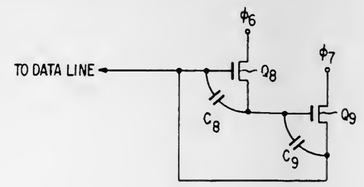
Hiroyuki Kinoshita, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Limited, Kawasaki, Japan

Filed Feb. 24, 1977, Ser. No. 771,792

Claims priority, application Japan, Feb. 24, 1976, 51-19178

Int. Cl.[2] G11C *7/00*

U.S. Cl. 365—222 **1 Claim**



1. A dynamic Random Access Memory comprising:
a sense amplifier circuit consisting of a flip-flop circuit having two nodes and a ground terminal, and a voltage setting circuit for setting the voltage at the ground terminal of the flip-flop circuit;
two data lines each respectively connected to one of two nodes of the flip-flop circuit;
a first memory cell array connected to one of the data lines and having a plurality of memory cells;
a second memory cell array connected to the other data line and having the same number of memory cells as the first memory cell array;
two dummy cells each respectively conected between the sense amplifier circuit and one of the first and second memory cell arrays, for writing an intermediate potential between the "1" and "0" states into the two nodes of the flip-flop circuit,
whereby when data is being read out, the two data lines are charged to the "1" state, and minute voltage changes read out into the data lines from a selected memory cell and a dummy cell are sensed by the flip-flop circuit, after which the voltage at the ground terminal of the flip-flop circuit is gradually discharged to the "0" state,
a "1" voltage regeneration circuit connected to one of the data lines and consisting of first and second transistors having source, gate and drain electrodes, and first and second capacitors respectively connected between the gate electrodes and source electrodes of the transistors, the source electrode of the first transistor being connected with the gate electrode of the second transistor, the gate electrode of the first transistor and the source electrode of the second transistor being commonly connected with one of the data lines, and input terminals for supplying various clock pulses to the drain electrodes of the first and second transistors.

4,122,550

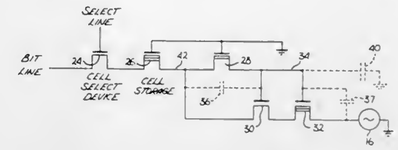
LOW POWER RANDOM ACCESS MEMORY WITH SELF-REFRESHING CELLS

John M. Caywood, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 8, 1978, Ser. No. 876,005

Int. Cl.[2] G11C *7/00, 7/06*

U.S. Cl. 365—222 **16 Claims**



7. In a semiconductor memory device having a storage capacitor for storing electrical charge and an electrical network for refreshing said charge where said electrical network includes a first and a second transistor, each of which having a control electrode and a pair of terminals, one terminal of each of said transistors coupled to one terminal of the said storage capacitor, another terminal of said storage capacitor coupled to said control electrode of said first transistor, and said control electrode of said second transistor coupled to the other terminal of said first transistor, an improvement comprising:
a variable capacitor coupled between the other terminals of said first and second transistors, said variable capacitor for providing a larger capacitance when said first transistor is in a non-conductive state and a smaller capacitance when said first transistor is in a conductive state;
whereby, by the application of varying signals to said variable capacitor, the charge on said storage capacitor is refreshed.

4,122,551

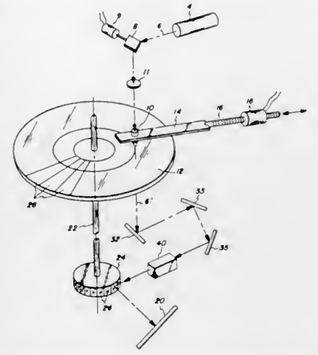
OPTICAL DATA STORAGE AND RETRIEVAL SYSTEM

John C. Urbach, Portola Valley, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 8, 1977, Ser. No. 785,884

Int. Cl.[2] G11C *13/04*

U.S. Cl. 365—234 **2 Claims**



1. An optical data storage and retrieval system comprising:
a photosensitive surface;
an optical data storage disk having at least one data storage track divided into a plurality of data sectors, said data sectors being characterized by areas of different optical characteristics;
an optical scanner having a plurality of reflective surfaces;
said optical storage disk and said optical scanner being mounted on a common rotatable shaft, said optical storage

disk and said optical scanner being mounted on said shaft such that at least some of said track sectors correspond geometrically with at least some of said reflective surfaces;

means for providing a light beam of high intensity;

means for projecting said light beam to a focused spot on said areas of a selected one of said data sectors whereby said light beam is amplitude modulated directly in accordance with the different optical characteristics of said areas; and

means for projecting said amplitude modulated light beam onto the reflective surface of said scanner having a geometric correspondence to said selected one of said data sectors to thereby provide for scanning of said amplitude modulated light beam across said photosensitive surface.

DESIGN PATENTS

GRANTED OCTOBER 24, 1978

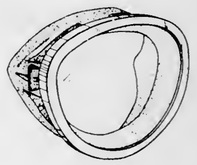
ERRATA

For CLASS	See PATENT NO.
D14-082	250,000
D28-008	250,047

DESIGNS

OCTOBER 24, 1978

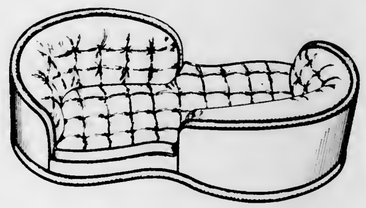
249,986
DIVING MASK
Simon C. Fireman, 79 Dimmock St., Quincy, Mass. 02169
Filed Feb. 4, 1977, Ser. No. 765,544
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



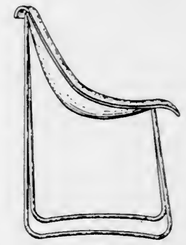
249,987
WEARABLE CHAIR
Darcy Robert Bonner, 4700 Royal La., Dallas, Tex. 75229
Filed Mar. 7, 1977, Ser. No. 775,377
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



249,988
TETE-A-TETE
Roger L. Sprunger, Berne, Ind., assignor to Berne Furniture Company, Berne, Ind.
Filed Feb. 11, 1977, Ser. No. 767,947
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—61



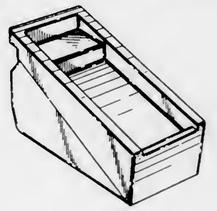
249,989
CHAIR
Ernesto Radaelli, Varese, Italy, assignor to Fratelli Saporiti
Division of Ser. No. 559,446, Mar. 18, 1975. This application Oct. 27, 1976, Ser. No. 735,971
Claims priority, application Italy, Sep. 19, 1974, 60917/74[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



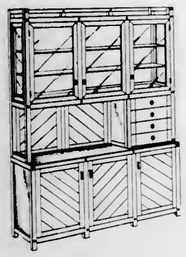
249,990
EXTENSIBLE SUPPORT FOR HANGING POTTED PLANTS
Sol Ehrlich, 49 W. 53rd St., New York, N.Y. 10019
Filed Feb. 10, 1977, Ser. No. 767,526
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—113



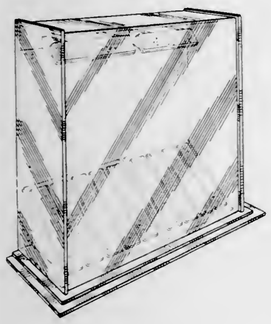
249,991
WALL MOUNTED MODULAR TRAY
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.
Filed Jan. 17, 1977, Ser. No. 760,090
Term of patent 14 years
Int. Cl. D6—*04*; D20—*02*
U.S. Cl. D6—136



249,992
CONTEMPORARY BREAKFRONT
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,687
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—172



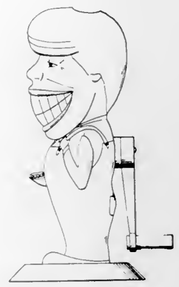
249,993
JEWELRY DISPLAY CASE
Maxine Kelly, New York, N.Y., assignor to Ciani, Inc., New York, N.Y.
Filed Mar. 21, 1977, Ser. No. 779,397
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—172



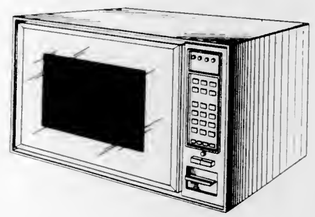
249,994
PIZZA CUTTER
Ronald Dale Hall, 2816 Ellsworth Ave., Erie, Pa. 16508
Filed Jun. 30, 1976, Ser. No. 701,405
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—106



249,995
FOOD GRINDER
William C. Marcellus, 8220 Park La., #512, Dallas, Tex. 75231
Filed Feb. 14, 1977, Ser. No. 768,210
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—155



249,996
ELECTRONIC COOKING RANGE
Yoshio Suganoya, and Takao Miyake, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 14, 1977, Ser. No. 777,070
Claims priority, application Japan, Oct. 4, 1976, 51-39353
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



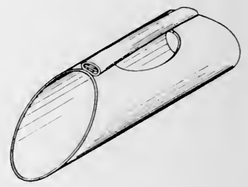
249,997
FUNNEL
Charles W. Lindquist, P.O. Box 133, Harvey, Ill. 60426
Filed Jun. 9, 1977, Ser. No. 804,913
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—68



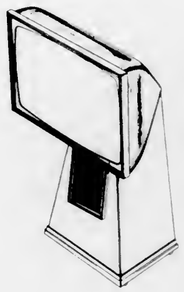
249,998
STORAGE JAR OR SIMILAR ARTICLE
Peter A. Gobleck, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 659,966, Feb. 20, 1976. This application Mar. 17, 1977, Ser. No. 778,450
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—79



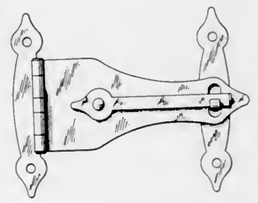
249,999
SCOOP
Johnson R. Burns, 502 Roosevelt Rd., Pittsburgh, Allegheny County, Pa. 15237
Filed Jan. 7, 1977, Ser. No. 757,642
Term of patent 14 years
Int. Cl. D8—*05*; D7—*04*
U.S. Cl. D8—16



250,000
PROJECTION TELEVISION SET
Daniel Quentin Boje, Palisades Park, N.J., assignor to Agar International Ltd., Englewood Cliffs, N.J.
Filed Mar. 29, 1977, Ser. No. 782,549
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—82



250,001
LATCH
John Shenuski, Terryville, Conn., assignor to Woodland Machine & Die Company, Pequabuck, Conn.
Filed May 5, 1977, Ser. No. 794,122
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—338



250,002
KEY
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.
Filed Mar. 14, 1977, Ser. No. 777,084
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—347



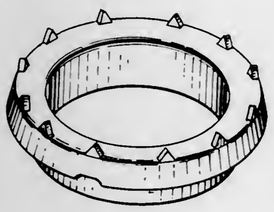
250,003
SUSPENSION HOOK
Harry Waldemar Thomasson, Paarp, Sweden, assignor to Osmos Plast Aktiebolag, Helsingborg, Sweden
Filed Feb. 24, 1977, Ser. No. 771,585
Claims priority, application Sweden, Aug. 25, 1976, 761633
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367



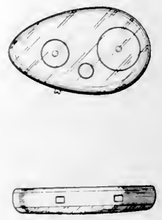
250,004
BEZEL FOR A DIAL INDICATOR
Richard J. Quigley, 25538 Adobe La., Los Altos Hills, Calif. 94022, and Clarke Reynolds, 535 Hilary Dr., Tiburon, Calif. 94920
Filed Feb. 14, 1977, Ser. No. 768,429
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—74



250,005
FINGER RING
Enoch L. Christoffersen, P.O. Box 31, Turlock, Calif. 95380
Filed Apr. 4, 1978, Ser. No. 784,951
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—38



250,006
ILLUMINABLE PENDANT
Carl J. Kleiner, 2302 Beach, Cisco, Tex. 76437
Filed Feb. 22, 1977, Ser. No. 770,666
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79



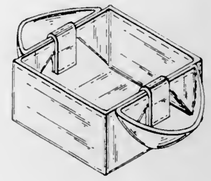
250,007
ILLUMINABLE PENDANT
Carl J. Kleiner, 2302 Beach, Cisco, Tex. 75437
Filed Feb. 22, 1977, Ser. No. 770,668
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79



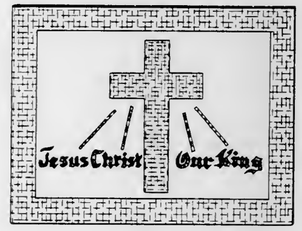
250,008
MEDAL OR SIMILAR ARTICLE
Marion Zelenko, and Frank Granat, both of 240 E. 61st. St., New York, N.Y. 10021
Filed Sep. 3, 1976, Ser. No. 720,222
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D11—102



250,009
FLOWER POT
Charles Karotseris, 18 Roderick Ct., East Northport, N.Y. 11731
Filed Jul. 22, 1977, Ser. No. 818,150
Term of patent 3½ years
Int. Cl. D11—*02*
U.S. Cl. D11—143



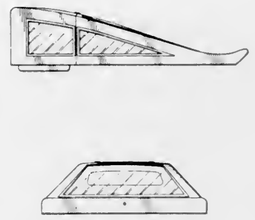
250,010
FLAG
Elizabeth R. Starr, 615 S. Manhattan Pl., Los Angeles, Calif. 90005
Continuation-in-part of Ser. No. 681,427, Apr. 29, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,784
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—175



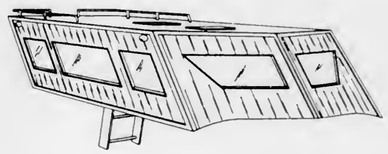
250,011
CART
Virgil O. Rink, 5033 E. 7th St., Kansas City, Mo. 64124
Filed Jun. 3, 1977, Ser. No. 803,060
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—32



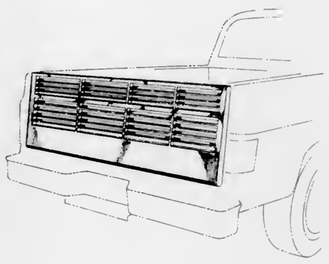
250,012
FAST-BACK COVER FOR THE BED OF A PICKUP TRUCK
Robert J. Windecker, and Theodore R. Windecker, both of P.O. Box 6187 A.T.S., Midland, Tex. 79701
Filed Sep. 12, 1977, Ser. No. 832,511
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



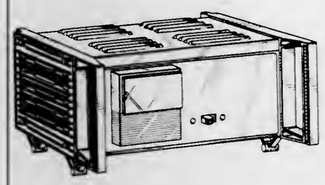
250,013
CAMPER TOP
Paul A. Siciliano, P.O. Box 226, Newtonville, Mass. 02160
Filed Dec. 1, 1977, Ser. No. 856,305
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



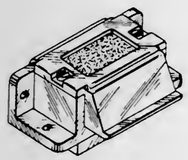
250,014
LOUVERED TAILGATE FOR PICKUP TRUCKS
Edward A. Jensen, 231 E. Lincoln, Salem, S. Dak. 57058
Filed Apr. 18, 1977, Ser. No. 788,648
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—196



250,015
BATTERY CHARGER
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.
Filed Aug. 26, 1977, Ser. No. 828,438
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—5



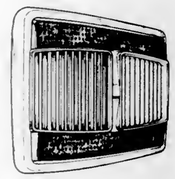
250,016
ELECTRICAL CONNECTOR
Arthur Thomas Spencer, Biggleswade, and Paul Robert Hardy, Upper Caldecote, both of England, assignors to Pye (Electronic Products) Ltd.
Filed Apr. 18, 1977, Ser. No. 788,120
Claims priority, application United Kingdom, Oct. 19, 1976, 977568/76
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



250,017
ELECTRICAL CONNECTOR
Arthur Thomas Spencer, Biggleswade, and Paul Robert Hardy, Upper Caldecote, both of England, assignors to Pye (Electronic Products) Ltd.
Filed Apr. 18, 1977, Ser. No. 788,123
Claims priority, application United Kingdom, Oct. 19, 1976, 977569/76
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24

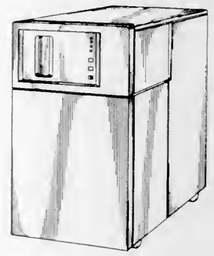


250,018
SPEAKER GRILL OR THE LIKE
Charles Barbera, 303 E. Elk St., Glendale, Calif. 91205
Filed Apr. 18, 1977, Ser. No. 788,359
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D14—39

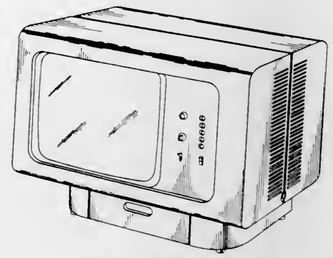




250,019
CENTRAL PROCESSOR UNIT FOR A DATA PROCESSING SYSTEM
Charles Anthony Pycha, Rochester, Minn., and Joseph Frederick Talerico, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 13, 1977, Ser. No. 787,400
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42



250,020
DISPLAY STATION FOR A DATA PROCESSING SYSTEM
Charles Anthony Pycha, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 7, 1977, Ser. No. 785,575
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—43

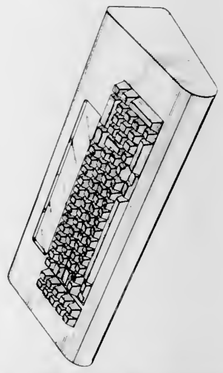


250,021
SPEAKER GRILL OR THE LIKE
Charles Barbera, 303 E. Elk St., Glendale, Calif. 91205
Filed Apr. 18, 1977, Ser. No. 788,551
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D14—39

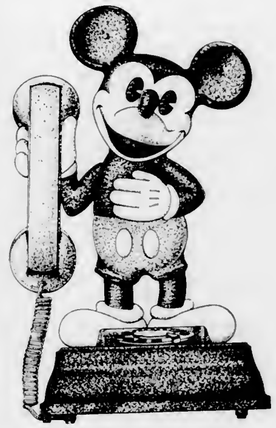


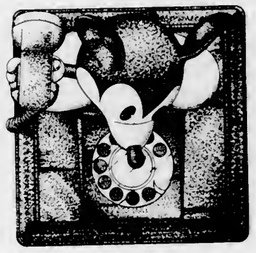


250,022
KEYBOARD ENCLOSURE FOR DATA PROCESSING EQUIPMENT
Charles Anthony Pycha, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 7, 1977, Ser. No. 785,701
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45

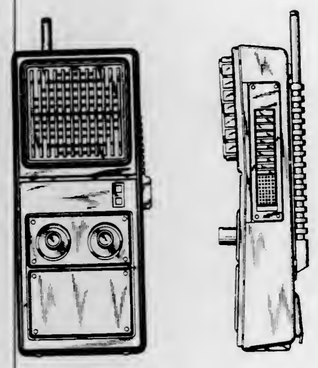


250,023
ANIMATED TELEPHONE
George Donald Perkins, Laguna Niguel, and Donald Albert Winton, Corona del Mar, both of Calif., assignors to American Telecommunications Corp., El Monte, Calif.
Filed Jan. 21, 1977, Ser. No. 760,943
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—03

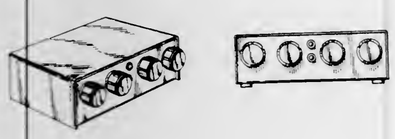




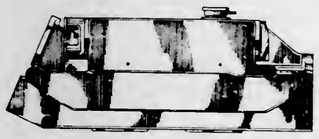
250,024
WALKIE TALKIE TRANSCEIVER
Morris Fink, Floral Park, N.Y., assignor to Windsor Industries Inc., Melville, N.Y.
Filed Mar. 9, 1977, Ser. No. 776,026
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



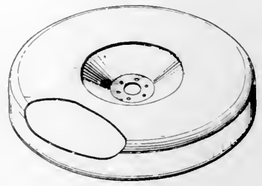
250,025
DYNAMIC SIGNAL EXPANDER
James E. Stout, 500 Webb Rd., Raymore, Mo. 64083
Filed Apr. 2, 1976, Ser. No. 673,128
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96



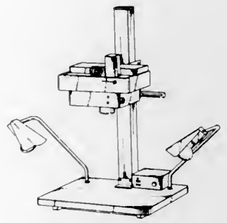
250,026
COMBINED INDUCTION AND EXHAUST MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE
Frederik Jacob Herenius, Peterborough, England, assignor to Perkins Engines Limited, London, England
Filed Nov. 5, 1976, Ser. No. 739,135
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



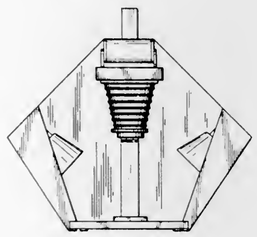
250,027
BLADE HOUSING FOR A LAWN MOWER
Harold P. Jackson, McDonough, Ga., assignor to McDonough Power Equipment, Inc., McDonough, Ga.
Filed May 9, 1977, Ser. No. 795,325
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—17



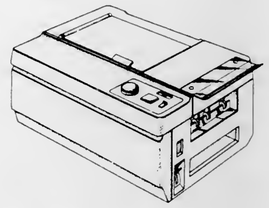
250,028
SLIDE PROCESSOR CAMERA
Daisuke Kajiwara, Ohnojo, and Haruji Nakamura, Kasuga, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jan. 10, 1977, Ser. No. 758,383
Claims priority, application Japan, Jul. 9, 1976, 51/26595
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—02



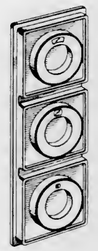
250,029
PHOTOGRAPHIC REDUCING DEVICE
Harold R. Miller, 2520 NE. Center Ave., Fort Lauderdale, Fla. 33305
Filed Mar. 30, 1977, Ser. No. 783,044
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—02



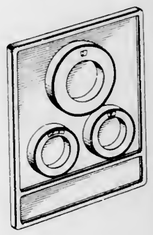
250,030
ELECTROSTATIC COPIER
Masatoshi Mikami, Machida, Japan, assignor to Ricoh Company, Ltd., Japan
Filed May 12, 1977, Ser. No. 796,331
Claims priority, application Japan, Dec. 8, 1976, 51/47798
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



250,031
PERPETUAL DIGITAL CALENDAR
Eli Sasson, 605 N. Bedford, Beverly Hills, Calif. 90210
Filed Aug. 23, 1976, Ser. No. 713,079
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—25



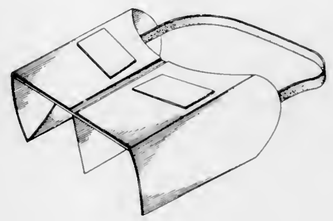
250,032
PERPETUAL CALENDAR
Eli Sasson, 605 N. Bedford, Beverly Hills, Calif. 90210
Filed Aug. 23, 1976, Ser. No. 713,744
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—25



250,033
COMBINED TEMPLATE AND FRAME
Age Stein, 6609 - 224th Southwest, Mountlake Terrace, Wash. 98043
Filed Jan. 3, 1977, Ser. No. 755,957
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D19—39



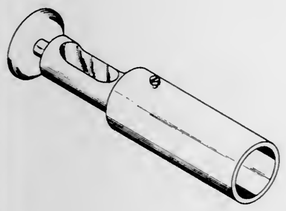
250,034
FOLDING FLIGHT TRAINING HOOD
Alan A. Aden, 750 W. 9th, Sanford, Fla. 32771
Filed Jan. 31, 1977, Ser. No. 763,887
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—63



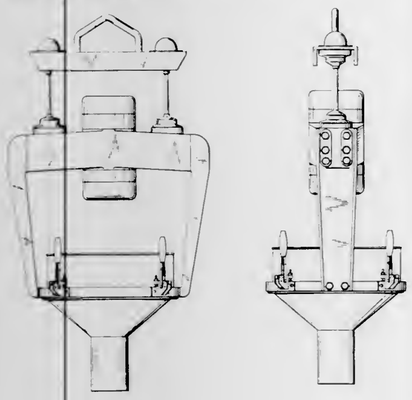
250,035
ELECTRIC PENCIL SHARPENER
Daisuke Kajiwara, Onojo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Feb. 24, 1977, Ser. No. 771,825
Claims priority, application Japan, Sep. 2, 1976, 51/34834
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—73



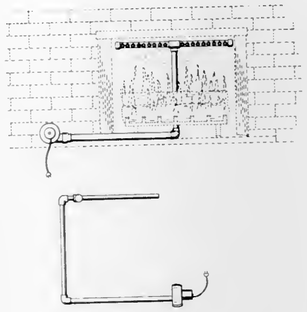
250,036
SHOTGUN SHELL CUTTER
Tomoyasu Kagami, 2-8-19, Chuo, Kofu, Yamanashi, Japan
Filed Nov. 22, 1976, Ser. No. 743,751
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—99



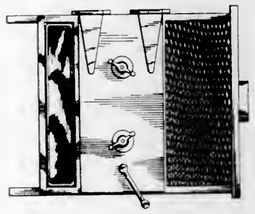
250,037
SUSPENDED STRAINER
Reginald Wilfred Chapple, Ashstead, England, assignor to Russell Finex Limited, London, England
Filed Sep. 22, 1976, Ser. No. 725,531
Claims priority, application United Kingdom, Jul. 13, 1976, 97645/76
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



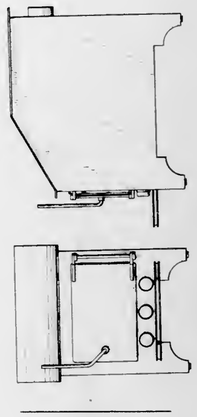
250,038
FIREPLACE HEAT AMPLIFIER
David J. Bohnen, 6112 Monteveroe Dr., San Jose, Calif. 95120
Filed Mar. 30, 1977, Ser. No. 782,719
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



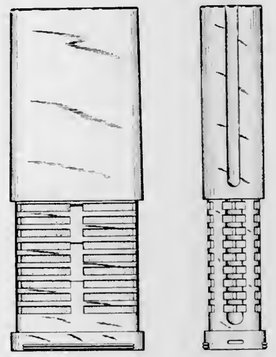
250,039
STOVE FOR BURNING WOOD AND FOSSIL FUEL
John M. Carroll, 239 Esther St., Minoa, N.Y. 13116
Filed Apr. 19, 1977, Ser. No. 788,907
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

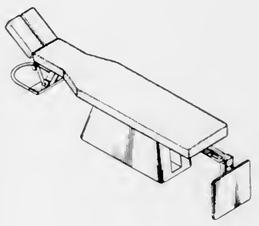


250,040
WOOD STOVE
Robert K. Sebastian, Rte. 1, Box 329, North Wilkesboro, N.C. 29659
Filed Nov. 4, 1977, Ser. No. 848,760
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

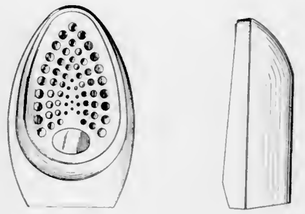


250,041
AIR FRESHENER
Georg Schimanski, Breckerfeld, Germany, assignor to Firma Globol-Werk GmbH, Nerburg, Germany
many
Filed Jan. 28, 1977, Ser. No. 763,661
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



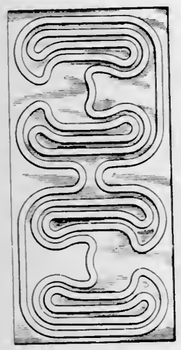


250,042
AIR FRESHENER DISPENSER
John Pardo, Yonkers, N.Y., and David A. Jones, Kettering, Ohio, assignors to The Drackett Company
Filed Dec. 19, 1977, Ser. No. 861,813
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

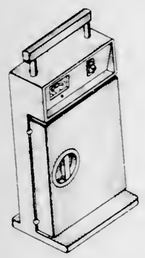


250,043
THERAPEUTIC TABLE
Alfred C. Shine, North Hollywood, Calif., assignor to Daniel J. Clinton, Hollywood, Calif.
Filed Nov. 12, 1976, Ser. No. 741,305
Term of patent 14 years
Int. Cl. D24—*01*; D6—*01*
U.S. Cl. D24—3

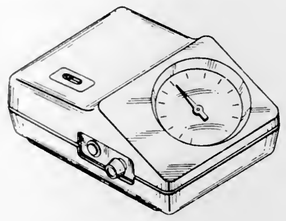
250,044
MODULAR TRACK ASSEMBLY FOR A 300-UNIT BIOLOGICAL SAMPLE CHANGER
Anthony A. Mueller, Florence, Ky., assignor to Actus, Inc., Florence, Ky.
Filed Jul. 12, 1977, Ser. No. 815,198
Term of patent 14 years
Int. Cl. D24—*01, 99*
U.S. Cl. 24—7

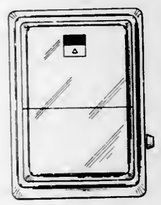


250,045
BLOOD WARMING APPARATUS
Daniel B. Granzow, Jr., 503 W. Cedar St., Arlington Heights, Ill. 60005, and Robert J. Froehlich, 210 S. Louis St., Mount Prospect, Ill. 60056
Filed Jan. 24, 1977, Ser. No. 761,923
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—8

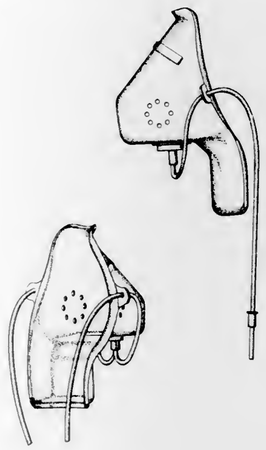


250,046
SPHYGMOMANOMETER
Yoshihisa Ohie; Junichi Sakamoto, and Shinichi Yokoyama, all of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 22, 1977, Ser. No. 770,945
Claims priority, application Japan, Aug. 20, 1976, 51-32965
Term of patent 14 years
Int. Cl. D24—*02;* D10—*04*
U.S. Cl. D24—21

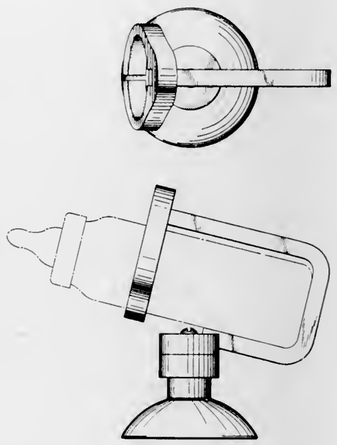




250,047
BREATHING MASK
George Tom Lewis, Fallbrook, and John Hamilton Price, La Jolla, both of Calif., assignors to Chemetron Corporation, Chicago, Ill.
Filed Oct. 18, 1976, Ser. No. 733,624
Term of patent 14 years
Int. Cl. D29—*02;* D24—*02*
U.S. Cl. D28—8



250,048
BABY BOTTLE HOLDER
Edward Sussman, 166-25 Powells Cove Blvd., Beechhurst, Queens, N.Y. 11427
Filed Jan. 21, 1977, Ser. No. 761,439
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—48



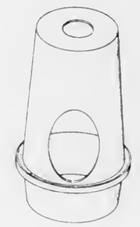
250,049
OUTER TUBE FOR A TAMPON INSERTER
Howard Eugene Hite, Jr., Deerfield Township, Warren County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 5, 1977, Ser. No. 822,295
Term of patent 14 years
Int. Cl. D24—*99;* D28—*01*
U.S. Cl. D24—99



250,050
HEAD FOR AN ELECTRIC CATTLE PROD
Daniel M. Bros, Edina, Minn., assignor to Hot Shot Products Co.
Filed Dec. 12, 1977, Ser. No. 859,439
Term of patent 14 years
Int. Cl. D30—*05*
U.S. Cl. D30—32



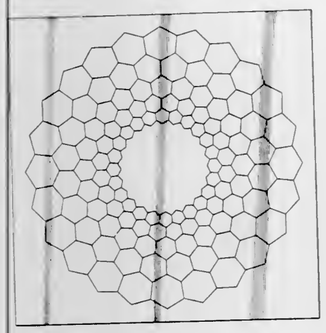
250,051
CAT LITTER ENCLOSURE
Charles W. Spinks, 201 Frontenac St., Chicopee, Mass. 01020
Filed Dec. 29, 1977, Ser. No. 865,864
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



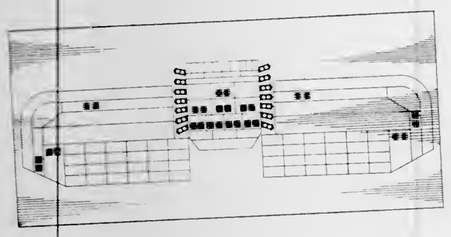
250,052
DOLL
John B. Salt, and David J. Salt, both of 237 Dickenson Rd., Longsight, Manchester M13 OYW, England
Filed Jan. 6, 1977, Ser. No. 757,320
Claims priority, application United Kingdom, Jul. 13, 1976, 976452/76
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4R



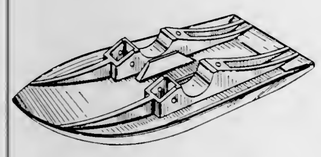
250,053
GAME BOARD
Richard H. Recard, Jr., Chevy Chase, Md. 20015
Filed Sep. 24, 1976, Ser. No. 726,158
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



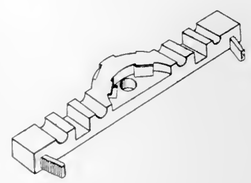
250,054
GAMING LAYOUT MAT
John R. L. Crawford, 351 Seneca Ave., Burlington, Ontario, Canada
Filed May 13, 1976, Ser. No. 686,066
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



250,055
SKI RUNNER FOR SKATEBOARD OR THE LIKE
Donald R. Dotson, 1837 Wallace Ave., Costa Mesa, Calif. 92627, and Ronald R. Smith, 318 E. Berkeley St., Santa Ana, Calif. 92707
Filed Mar. 7, 1977, Ser. No. 775,291
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



250,056
ELEMENT OF FLEXIBLE TOY TRACK
John Henry Heim, Barrington, R.I., assignor to Hasbro Development Corp., Pawtucket, R.I.
Filed Jan. 3, 1977, Ser. No. 756,476
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 K



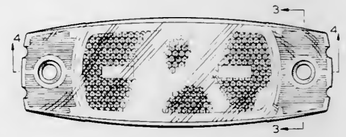
250,057
TOY HOUSE
Howard J. Morrison, Deerfield, Ill., and Palmer J. Schoenfield, Evanston, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 21, 1977, Ser. No. 761,389
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



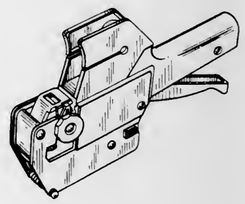
250,058
COMBINED LAMP AND RADIO
A. Michael Lorenz, 421 55th St., Downers Grove, Ill. 60515
Filed Aug. 22, 1977, Ser. No. 826,775
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 D



250,059
COMBINED REFLEX AND SIDE MARKER LENS
Arthur F. Bleiweiss, Toronto, Canada, and Richard Ball, Orchard Lake, Mich., assignors to Dominion Auto Accessories Limited, Toronto, Canada
Filed Sep. 14, 1977, Ser. No. 833,393
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 A



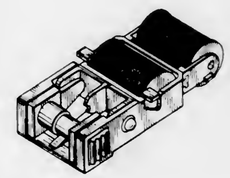
250,060
HAND OPERATED LABELING MACHINE
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan
Filed Feb. 7, 1977, Ser. No. 765,916
Claims priority, application Japan, Aug. 12, 1976, 51-31446
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



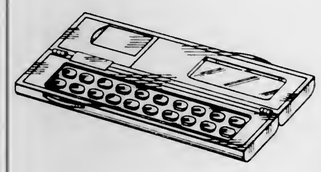
250,061
COMBINED INK ROLLER AND HOLDER THEREFOR
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan
Filed Feb. 10, 1977, Ser. No. 767,450
Claims priority, application Japan, Nov. 26, 1976, 51-45972; Nov. 26, 1976, 51-45973
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



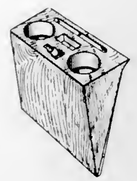
250,062
COMBINED INK ROLLER AND HOLDER THEREFOR
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan
Filed Feb. 10, 1977, Ser. No. 767,452
Claims priority, application Japan, Nov. 26, 1976, 51-45974
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



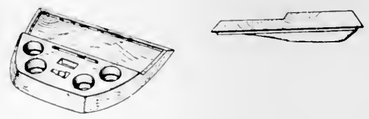
250,063
ELECTRONIC CALCULATING MACHINE
Masaki Nishino, and Yoshihisa Ohie, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 7, 1977, Ser. No. 804,457
Claims priority, application Japan, Dec. 8, 1976, 51-47981
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B



250,064
AUTOMOTIVE CONSOLE TRAY
Daniel M. Monopoli, 65 E. Palatine Rd., Wheeling, Ill. 60090
Filed Sep. 20, 1976, Ser. No. 725,040
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D87—1 R



250,065
AUTOMOTIVE CONSOLE TRAY
Daniel M. Monopoli, 65 E. Palatine Rd., Wheeling, Ill. 60090
Filed Sep. 20, 1976, Ser. No. 725,041
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D87—1 R



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TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Abbatiello, Leonard A.; and Neal, Richard E., to United States of America, Energy. Automatic targeting of plasma spray gun. 4,122,351, Cl. 250-554.000.

Abbott Laboratories: *See—*
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Acheson, Richard M.; Cox, Ian R.; Stubbs, John K.; and Penrose, Alexander B., to Pfizer Inc. Quaternary 6,7-dihydro-[5H]-thiazolo[3,2-a]pyrimidinium salts. 4,122,272, Cl. 544-278.000.

Adachi, Keiichi; and Mitsui, Akio, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material containing +-alkyl substituted hydroquinone. 4,121,939, Cl. 96-77.000.

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Adamson, Jane E. Liquid dispenser with magnetically operable valve. 4,121,741, Cl. 222-181.000.

Addressograph-Multigraph Corporation: *See—*
Ernohazy, Stephen; Songer, Larry Allen; DeRyke, Thomas Vernon; and Oddo, Eugene Peter, 4,122,473, Cl. 354-299.000.
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Ai, Hideo: *See—*
Chono, Masazumi; Ai, Hideo; Aboshi, Michihiro; Suda, Yoshikazu; and Yoshii, Naoji, 4,122,269, Cl. 544-207.000.

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Aihara, Tetsuo; Nakayama, Yasuharu; Yamashita, Yoshio; Watanabe, Tadashi; and Toyomoto, Isao, to Kansai Paint Company, Limited. Emulsion composition. 4,122,052, Cl. 260-23.0EM.

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Stockman, Richard Franklin, 4,121,654, Cl. 165-6.000.

Airco, Inc.: *See—*
Scheuermann, Glen R., 4,122,221, Cl. 427-251.000.

Airflex Containers Limited: *See—*
Hickey, Christopher Daniel Dowling, 4,121,732, Cl. 220-232.000.

Aisin Seiki Kabushiki Kaisha: *See—*
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Akita, Sigeyuki: *See—*
Yoshida, Shuzo; Akita, Sigeyuki; and Kitamura, Sotoo, 4,121,457, Cl. 73-291.000.

Akitake, Isao: *See—*
Fukushima, Isao; Iso, Yoshimi; and Akitake, Isao, 4,122,394, Cl. 325-344.000.

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Akzona Incorporated: *See—*
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Alberto-Culver Company: *See—*
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Albrecht, Helmut; Barleon, Leopold; Dorner, Stefan; Fischer, Manfred; and Wilhelm, Juergen, to Kernforschungszentrum Karlsruhe GmbH. Nuclear reactor installation including a core catching apparatus. 4,121,970, Cl. 176-38.000.

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Alferov, Jury Fedorovich: *See—*
Medovar, Boris Izrailevich; Prikhodko, Valery Alexandrovich; Alferov, Jury Fedorovich; Kumysh, Ilya Iosifovich; and Beloglazov, Alexandr Petrovich, 4,121,648, Cl. 164-252.000.

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Allen-Bradley Company: *See—*
Bielawski, Timothy; Struger, Odo J.; and DeLong, Lawrence W., 4,122,519, Cl. 364-200.000.

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Alps Electric Co., Ltd.: *See—*
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Wagatsuma, Tadashi, 4,121,477, Cl. 74-527.000.

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Rumbaugh, Paul S., 4,122,508, Cl. 361-384.000.

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Aluminum Company of America: *See—*
Kinosz, Donald L.; Das, Subodh K.; and Coffman, Robert L., 4,121,983, Cl. 204-67.000.

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Amann, August: *See—*
Hagen, Helmut; Amann, August; and Giertz, Hubert, 4,122,263, Cl. 544-114.000.

Amano, Masahiro; and Koike, Takashi, to Mitsubishi Paper Mills, Ltd. Method for producing fibrous sheet. 4,121,966, Cl. 162-164.00R.

Amax Resource Recovery Systems, Inc.: *See—*
Hurst, Vernon J.; and Styron, Robert W., 4,121,945, Cl. 106-288.00B.

AMBAC Industries Incorporated: *See—*
Harms, Louis C.; and O'Toole, Raymond R., Jr., 4,121,610, Cl. 137-117.000.

Ambrosiano, Nicholas A.: *See—*
Crounse, Nathan N.; and Ambrosiano, Nicholas A., 4,122,261, Cl. 544-64.000.

Amburgey, Jay Dee. Bowling ball. 4,121,828, Cl. 273-63.00E.

Amelot, Bernard; Batard, Roger; Bimbert, Claude; Boulvard, Georges; and Leclert, Alain. Sheet-metal marking press. 4,121,516, Cl. 101-23.000.

American Baler Company, The: *See—*
Tea, Frank C., 4,121,515, Cl. 100-98.00R.

American Biltrite, Inc.: *See—*
Holmstrom, Ernest R.; Smith, Merrill M.; and Ferguson, Donald C., 4,122,225, Cl. 428-172.000.
American Chemical & Refining Company Incorporated: *See—*
Moriarty, William L.; and Fletcher, Augustus, 4,121,982, Cl. 204-43.00G.
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Lokken, Gene B., 4,121,878, Cl. 312-341.00R.
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American Standard Inc.: *See—*
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Amin, Dilip A., to Hewlett-Packard Company. Direct current power supply. 4,122,514, Cl. 363-21.000.
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Gallo, Luigi C.; and Beaulier, Daniel A., 4,122,478, Cl. 358-4.000.
Gallo, Luigi C., 4,122,492, Cl. 358-34.000.
Hathaway, Richard A., 4,121,786, Cl. 242-193.000.
AMSTED Industries Incorporated: *See—*
Lohman, Gordon Russell; and Hansen, James E., 4,121,927, Cl. 75-201.000.
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Andreen, John F. Internal combustion engine and transmission coupling. 4,121,480, Cl. 74-700.000.
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Barleon, Leopold: *See—*
Albrecht, Helmut; Barleon, Leopold; Dorner, Stefan; Fischer, Manfred; and Wilhelm, Juergen, 4,121,970, Cl. 176-38.000.
Barnes, Roderick Gordon Lester, to Johnson, Matthey & Co., Limited. Cathode ray tube containing a manganese activated rare earth fluoride luminescent material. 4,122,370, Cl. 313-468.000.
Barron, Guy W. Tape player cleaning device. 4,121,891, Cl. 401-37.000.
Bartolini, Robert Alfred; and Russell, John Patrick, to RCA Corporation. Duplicating a holographic record by using two reference beams. 4,121,881, Cl. 350-3.670.
Barwaldt, Horst: *See—*
Koppenhofer, Dietrich; Olbrich, Leopold; Wefing, Friedrich; Scholz, Lothar; Barwaldt, Horst; and Chudaska, Walter, 4,121,417, Cl. 60-39.51H.

Base Movement Incorporated: *See—*
McMahon, Robert F., 4,121,788, Cl. 244-50.000.
BASF Aktiengesellschaft: *See—*
Fickeisen, Peter; Elschnig, Gert; Haertl, Hanns-Dietmar; Wendel, Kurt; and Eisentraeger, Klaus, 4,122,219, Cl. 427-206.000.
Hagen, Helmut; Amann, August; and Giertz, Hubert, 4,122,263, Cl. 544-114.000.
Hartig, Juergen; and Weitz, Hans-Martin, 4,122,286, Cl. 560-246.000.
Pfleger, Klaus; Boettcher, Klaus; Zacher, Wieland; and Juza, Dirk, 4,122,248, Cl. 528-481.000.
Steglich, Wolfgang; Hollitzer, Oswald; and Seewald, Alfred, 4,122,090, Cl. 260-332.100.
Weitz, Hans-Martin; Vogel, Ludwig; Hartig, Juergen; and Hetzel, Eckhard, 4,122,285, Cl. 560-244.000.
BASF Wyandotte Corporation: *See—*
Cislo, Carl Casimer, 4,122,035, Cl. 252-414.000.
Ramlow, Gerhard Gustav; Pizzini, Louis Celeste; Patton, John Thomas, Jr.; Murphy, John Richard; and Davis, John Eugene, 4,122,056, Cl. 260-29.6NR.
Batard, Roger: *See—*
Amelot, Bernard; Batard, Roger; Bimbert, Claude; Boulvard, Georges; and Leclert, Alain, 4,121,516, Cl. 101-23.000.
Battaerd, Hendrick Adriaan Jacobus, to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Process for the polymerization of polyallylamines in the presence of a mineral acid solution. 4,121,986, Cl. 204-159.220.
Battelle Memorial Institute: *See—*
Stambaugh, Edgel P., 4,121,910, Cl. 44-1.00B.
Baugh, Daniel W., Jr.: *See—*
Watt, George W.; and Baugh, Daniel W., Jr., 4,122,095, Cl. 260-346.110.
Baughman, Kenneth E.: *See—*
Smith, Egmont S.; Doyle, Earl N.; and Baughman, Kenneth E., 4,121,529, Cl. 114-331.000.
Baum, Heinz Willi, to Girling Limited. Sliding caliper disc brake. 4,121,698, Cl. 188-73.300.
Baumgartner, Erich Rudolf; and Doehler, Peter. Collapsible, flexible hair drying hood. 4,121,353, Cl. 34-99.000.
Bayer Aktiengesellschaft: *See—*
George, Joachim; and Repplinger, Joachim, 4,122,118, Cl. 260-576.000.
Immel, Otto; Schwarz, Hans-Helmut; Weissel, Oskar; and Krimm, Heinrich, 4,122,290, Cl. 568-853.000.
Kirschnek, Helmut; and Jakobs, Karlhans, 4,121,898, Cl. 8-25.000.
Korte, Siegfried; and Suling, Carlhans, 4,122,136, Cl. 260-898.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,122,279, Cl. 548-375.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,122,280, Cl. 548-377.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,122,281, Cl. 548-377.000.
Schundehutte, Karl-Heinz, 4,122,079, Cl. 260-153.000.
Wagner, Kuno, 4,122,049, Cl. 521-136.000.
Bayerl, Hermann, to MtU-Motoren-und Munchen GmbH. Jet pipe for conducting hot gases. 4,121,611, Cl. 137-340.000.
BBC Brown, Boveri & Company Limited: *See—*
Bernasconi, Felix R.; and Salm, Max, 4,122,388, Cl. 324-54.000.
Masek, Jaroslav; and Oberle, Arthur, 4,121,617, Cl. 137-630.140.
Osman, Maged A., 4,122,026, Cl. 252-299.000.
Beard, David E.: *See—*
Dewsnap, Ronald F.; Higgins, Andrew D.; and Beard, David E., 4,121,954, Cl. 148-153.000.
Beatrice Foods Co.: *See—*
Kaphengst, Elmer; and Birdwell, Weldon, 4,121,371, Cl. 33-112.000.
Beaulier, Daniel A.; and Gallo, Luigi C., to Ampex Corporation. Precision phase controlled clock for sampling television signals. 4,122,487, Cl. 358-13.000.
Beaulier, Daniel A.: *See—*
Gallo, Luigi C.; and Beaulier, Daniel A., 4,122,478, Cl. 358-4.000.
Becht, Carl T.: *See—*
Smith, James E.; and Becht, Carl T., 4,121,745, Cl. 227-8.000.
Becker, Karl E., Jr. Anti backflow injection device. 4,121,585, Cl. 128-214.00R.
Becton, Dickinson and Company: *See—*
Geiger, Kenneth E., 4,121,588, Cl. 128-218.00R.
Becuwe, Jacques, to Rhone-Progil. Method of separating chlorinated aliphatic hydrocarbons from mixtures thereof, by extractive distillation. 4,121,978, Cl. 203-58.000.
Beebe, Michael V. Air-retention shell. 4,121,540, Cl. 119-32.000.
Behr, Joseph Henry. Room divider panel assembly. 4,121,645, Cl. 160-135.000.
Beimesch, Bruce J.: *See—*
Lamont, James; Aylesworth, Robert D.; and Beimesch, Bruce J., 4,122,057, Cl. 260-31.600.
Belanger, Roger L.: *See—*
Pierce, Ray E.; Shaffer, Gary J.; and Belanger, Roger L., 4,121,868, Cl. 294-116.000.
Belgorodsky, Izrail Markovich: *See—*
Michurov, Jury Ivanovich; Yanshevsky, Vladimir Avgustovich; Filippova, Rufina Alexandrovna; Gurvich, Yakov Abramovich; Logutov, Igor Jurievich; Egoricheva, Sofya Alexandrovna; Belgorodsky, Izrail Markovich; and Vyborov, Sergei Gerasimovich, 4,122,289, Cl. 568-789.000.
Bell & Howell Company: *See—*
Erikson, Rolf B.; Zemke, Edward H.; and Guenther, Kenneth L., 4,122,457, Cl. 346-75.000.
Bell Telephone Laboratories, Incorporated: *See—*
Heiter, George Ludwig; Miedema, Hotze; and Moore, Edwin Charles, 4,122,399, Cl. 330-149.000.
Henry, James Lowell, 4,122,442, Cl. 340-347.0AD.
Kolensky, Leo Michael; Schaefer, Walter Rudolph; Schlanger, Gabriel Gary; and Willand, Allan Howard, 4,122,301, Cl. 178-73.000.
Vratny, Frederick, 4,122,215, Cl. 427-92.000.
Beloglazov, Alexandr Petrovich: *See—*
Medovar, Boris Izrailevich; Prikhodko, Valery Alexandrovich; Alferov, Jury Fedorovich; Kumysh, Ilya Iosifovich; and Beloglazov, Alexandr Petrovich, 4,121,648, Cl. 164-252.000.
Belpaume, Charles, to Innovations pour L'Elegance Masculine. Articles of clothing. 4,121,302, Cl. 2-113.000.
Bendix Corporation, The: *See—*
Myers, Bruce B.; and Jackson, Robert W., 4,121,421, Cl. 60-582.000.
Torzala, Terence August, 4,121,578, Cl. 128-142.00R.
Bennett, David William: *See—*
Brady, Michael Barry Clive; and Bennett, David William, 4,122,419, Cl. 333-83.00R.
Benson, William H.; and Falconer, Thomas H. Folded springs for vibratory feeders and conveyors. 4,121,708, Cl. 198-766.000.
Bentley Engineering Group Limited, The: *See—*
Shelton, William Ewart Alan, 4,121,782, Cl. 242-47.120.
Benz, Bernard D.: *See—*
Schwartz, Vern R.; and Benz, Bernard D., 4,121,784, Cl. 242-74.000.
Benz, Michael. Humane animal trap. 4,121,370, Cl. 43-83.500.
Berardi, Dennis A.; and Petillo, Phillip J. Reinforced neck for stringed musical instruments. 4,121,492, Cl. 84-293.000.
Berezhnoi, Vitaly Alexandrovich: *See—*
Antipov, Georgy Afanasievich; Berezhnoi, Vitaly Alexandrovich; Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Lavnikov, Nikolai Stanislavovich; Teres, Leonid Nikolaevich; Urazhdin, Ivan Ivanovich; Tsipenjuk, Yakov Isaakovich; and Yakubovsky, Petr Stepanovich, 4,121,670, Cl. 173-20.000.
Berg, David W., to Tol-O-Matic Inc. Seal assembly. 4,121,840, Cl. 277-4.000.
Berger, Jean Luc; Bourrat, Michel; Thenoz, Yves; and Woehrn, Daniel, to Thomson-CSF. Method of manufacturing a two-phase charge-transfer semiconductor device and a device obtained by said method. 4,121,333, Cl. 29-578.000.
Bergeron, Ned A., to B. W. B. Controls, Inc. Valve control with indicator. 4,121,615, Cl. 137-555.000.
Berkowitz, Ami E.; Fielding, John O.; and Lahut, Joseph A., to General Electric Company. Apparatus and methods for fabrication of magnetic printing belt. 4,121,964, Cl. 156-507.000.
Berkowitz, Ami E.; and Lahut, Joseph A., to General Electric Company. Printing head and brush configuration for a magnetic printer. 4,122,456, Cl. 346-74.100.
Berkowitz, Sidney, to FMC Corporation. Tetrachloroammelide and process for making same. 4,122,268, Cl. 544-194.000.
Berman, Samuil Izrailevich; and Nikiforov, PetrMikhailovich. Method of manufacturing bimetallic strip. 4,121,335, Cl. 29-597.000.
Bernardo, Matthew: *See—*
Cretella, Salvatore J.; Bernardo, Matthew; and DeMusis, Ralph T., 4,121,894, Cl. 416-213.00R.
Bernasconi, Felix R.; and Salm, Max, to BBC Brown, Boveri & Company Limited. Apparatus for testing the shaft/bearing insulation of a turbo-machine. 4,122,388, Cl. 324-54.000.
Bernstein, John L., to Combustion Engineering, Inc. Load-responsive treater controller. 4,122,382, Cl. 323-4.000.
Bernstein, Philip; Coffey, James P.; and Varker, Alan E., to ESB Incorporated. Material for an alkaline cell separator and a process of making. 4,122,133, Cl. 260-878.00R.
Bernstein, Seymour: *See—*
Conrow, Ransom Brown; and Bernstein, Seymour, 4,122,088, Cl. 260-327.00B.
Bert, Alain; and Kantorowicz, Gerard, to Thomson-CSF. Non-volatile memory for fast signals. 4,122,543, Cl. 365-182.000.
Bertetto, Donald W.; and Hanson, Chris A., to Hanson Industries Incorporated. Apparatus for releasably mounting closure buckles to ski boots. 4,121,359, Cl. 36-117.000.
Berthelon, Jean-Jacques: *See—*
Briet, Philippe; Berthelon, Jean-Jacques; Depin, Jean-Claude; and Boschetti, Eugene, 4,122,200, Cl. 424-275.000.
Bertolacini, Ralph J.; and Koca, Robert M., to Standard Oil Company a corporation of Indiana. Maleic anhydride production. 4,122,096, Cl. 260-346.750.
Bertozzi, Eugene R., to Thiokol Corporation. Tin salts of dimercaptoethyl formal, related compounds and PVC resins stabilized therewith. 4,122,065, Cl. 260-45.75S.
Bertrandi, Luigi, to ITT Industries, Inc. Flexible shell of plasticized polyvinyl chloride. 4,122,146, Cl. 264-245.000.
Bielawski, Timothy; Struger, Odo J.; and DeLong, Lawrence W., to Allen-Bradley Company. Data handling module for programmable controller. 4,122,519, Cl. 364-200.000.
Bigliani, Umberto; and Maioglio, Mauro, to Fabbrica Italiana Magneti Marelli, S.p.A. Spark advance system for internal combustion engines comprising a device for controlling the charge current in the ignition

coil in connection with significant parameters. 4,121,556, Cl. 123-148.00E.
Bimbert, Claude: *See*—
Amelot, Bernard; Batard, Roger; Bimbert, Claude; Boulvard, Georges; and Leclert, Alain, 4,121,516, Cl. 101-23.000.
Binder, Timothy A. Method and apparatus for aiding conditioning of an erect spinal column and advantageous muscle control. 4,121,577, Cl. 128-69.000.
Bindra, Jasjit S.: *See*—
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,122,093, Cl. 260-343.30P.
Bird, Forrest M., to Minnesota Mining and Manufacturing Company. Ventilator and method. 4,121,579, Cl. 128-145.800.
Bird, Peter Frank, to Marconi Company Limited, The. Position encoding arrangements. 4,122,438, Cl. 340-337.000.
Birdwell, Weldon: *See*—
Kaphengst, Elmer; and Birdwell, Weldon, 4,121,371, Cl. 43-112.000.
Biricz, Stefan; and Scheinecker, Alois, to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft. Ladle-rotating turret arrangement. 4,121,742, Cl. 222-591.000.
Bitzer, William E.: *See*—
Frohlich, Richard L.; and Bitzer, William E., 4,121,746, Cl. 228-9.000.
Black Clawson, Inc.: *See*—
Christensen, Elmer; and Cage, Kenneth M., 4,122,006, Cl. 209-382.000.
Black, James A.: *See*—
Porth, Frank L., 4,121,519, Cl. 101-124.000.
Black, James F. Oxidation inhibitor and compositions containing the same. 4,122,033, Cl. 252-400.00A.
Blank, Leon W.: *See*—
Williams, Leonard J.; and Blank, Leon W., 4,121,498, Cl. 91-186.000.
Bluhm, Stanley R.: *See*—
Knox, Kilbourne H.; and Bluhm, Stanley R., 4,121,874, Cl. 303-10.000.
Bobb, Lloyd J., to Pond, Chester C., a part interest. Two way dynamic and electrostatic speaker enclosure with side vent for greater high frequency dispersion. 4,122,302, Cl. 179-1.00E.
Boettcher, Klaus: *See*—
Prieger, Klaus; Boettcher, Klaus; Zacher, Wieland; and Juza, Dirk, 4,122,248, Cl. 528-481.000.
Bogdanski, John J.; Chiappetta, Frank R.; and Freeman, Gerald C., to Pitney-Bowes, Inc. Flat mail sorter and loader. 4,121,403, Cl. 53-202.000.
Bohm, Georg G. A.; and Barbin, William W., to Firestone Tire & Rubber Company, The. Radiation cure of rubber sheets. 4,122,137, Cl. 264-22.000.
Bohme, Johann Friedrich: *See*—
Triebold, Karl Friedrich; Myrzik, Sigmar; and Bohme, Johann Friedrich, 4,122,432, Cl. 340-15.000.
Bohne, Friedrich: *See*—
Kammerer, Gerhard; and Bohne, Friedrich, 4,122,244, Cl. 429-186.000.
Bolanowski, Lelia, to American Cyanamid Company. Package for a multiple of sterile surgical sutures with or without needles attached. 4,121,711, Cl. 206-63.300.
Bolger, Thomas Vincent; and Dischert, Robert Adams, to RCA Corporation. Signal defect compensator. 4,122,489, Cl. 358-21.000.
Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,121,774, Cl. 239-664.000.
Bone, Arnold R., to Dennison Manufacturing Company. Continuously connected fastener attachment stock. 4,121,487, Cl. 83-23.000.
Bonis, Maurice; and Roger, Bernard, to U.S. Philips Corporation. Vertical complementary bipolar transistor device with epitaxial base zones. 4,122,482, Cl. 357-46.000.
Bonnaud, Bernard: *See*—
Cousse, Henri; Bonnaud, Bernard; Tarayre, Jean-Pierre; and Casadio, Silvano, 4,122,199, Cl. 424-274.000.
Bonner, Emerson. Mailbox liner with mail removal slide. 4,121,758, Cl. 232-17.000.
Bonvin, Francois. Escape mechanism. 4,121,689, Cl. 182-3.000.
Boom, Roger W.: *See*—
Peterson, Harold A.; and Boom, Roger W., 4,122,512, Cl. 363-14.000.
Bordet, Rene: *See*—
Renault, Jean; Jolivet, Francois; Plichon, Claude; and Bordet, Rene, 4,121,393, Cl. 52-167.000.
Borg-Warner Corporation: *See*—
Nichols, George M., 4,122,066, Cl. 260-45.85R.
Borodin, Daniel J.: *See*—
Tolliver, Wilbur E.; and Borodin, Daniel J., 4,122,228, Cl. 428-101.000.
Boschetti, Eugene: *See*—
Briet, Philippe; Berthelon, Jean-Jacques; Depin, Jean-Claude; and Boschetti, Eugene, 4,122,200, Cl. 424-275.000.
Bosman, Aleidus Gerard. Double twisting machine. 4,121,410, Cl. 57-58.630.
Bostrum, Mats Gustav Daniel; Hansson, Gosta Hudson; and Lind, Hans-Erik, to Aktiebolaget Karlstads Mekaniska Werkstad. Method and apparatus for coating a web. 4,122,218, Cl. 427-209.000.
Boulton, Thomas Wesley, to Imperial Chemical Industries Limited. Electrolytic cell. 4,121,990, Cl. 204-258.000.
Boulvard, Georges: *See*—
Amelot, Bernard; Batard, Roger; Bimbert, Claude; Boulvard, Georges; and Leclert, Alain, 4,121,516, Cl. 101-23.000.
Boundy, Joyce A.: *See*—
Hofreiter, Bernard T.; Smiley, Karl L.; and Boundy, Joyce A., 4,121,974, Cl. 195-7.000.
Bourgeois, Andre Gaston Julien: *See*—
Iato, Michel; Bourgeois, Andre Gaston Julien; and Gaudin, Jean-Paul Marcel Francois, 4,121,806, Cl. 254-172.000.
Bourrain, Paul; and Pesson, Andre, to Rhone-Poulenc-Textile. Size composition for improving the adherence of multifilament polymeric yarns to substrates such as rubber, and methods using same. 4,121,901, Cl. 8-115.600.
Bourrat, Michel: *See*—
Berger, Jean Luc; Bourrat, Michel; Thenoz, Yves; and Woehrn, Daniel, 4,121,333, Cl. 29-578.000.
Bowen, Leon O., Jr.; and McVean, Michael T., to Rangaire Corporation. Venting and recirculating vent kitchen hood. 4,121,569, Cl. 126-299.00D.
Boyle, Elbert I.; and Robertson, John H. Tire removal tool. 4,121,644, Cl. 157-1.170.
Bradford, Robert S.; and Ebbinga, Richard D., to Minnesota Mining and Manufacturing Company. Compiling device with manually varied automatic location determination. 4,122,500, Cl. 360-13.000.
Brady, Michael Barry Clive; and Bennett, David William, to English Electric Valve Company Limited. Tunable resonant cavities having particular isolating choke. 4,122,419, Cl. 333-83.00R.
Brand, Ulrich E. O. B.: *See*—
Bruinette, Konstant E.; and Brand, Ulrich E. O. B., 4,121,325, Cl. 24-122.600.
Brandt, Thomas F., to Electric Power Research Institute. Offset constant thickness web for insulator support disk. 4,122,298, Cl. 174-28.000.
Braun, Carl G.; and Dolan, William S. Tool for removing a watch case back. 4,121,485, Cl. 81-6.000.
Braun, Leroy O., to Hughes Aircraft Company. Laser rangefinder tester. 4,121,890, Cl. 356-5.000.
Breikss, Ivars P., to Honeywell Inc. Memory protection arrangement. 4,122,359, Cl. 307-64.000.
Breinan, Edward Mark: *See*—
Banas, Conrad Martin; Breinan, Edward Mark; Kear, Bernard Henry; and Giamei, Anthony Francis, 4,122,240, Cl. 428-655.000.
Breitling, Ulrich: *See*—
Schaal, Hans; Kurz, Wolf-Dieter; and Breitling, Ulrich, 4,121,682, Cl. 180-68.00R.
Brewer, Douglas M.; Mawson, Alan; and Carter, William S., to Nairn Floors Limited. Wall and floor coverings. 4,122,224, Cl. 428-159.000.
Briet, Philippe; Berthelon, Jean-Jacques; Depin, Jean-Claude; and Boschetti, Eugene, to Lipha, Lyonnaise Industrielle Pharmaceutique. 6',2-(2'Arylchromonyl) propionic acids, and analgesic and anti-inflammatory derivatives thereof. 4,122,200, Cl. 424-275.000.
Brill, William F., to Halcon International, Inc. Process for preparing thallic benzoate. 4,122,106, Cl. 260-429.00R.
Bringman, Bernard B.; and Goodwin, Genevieve M. Urinal. 4,121,306, Cl. 4-144.200.
Bristol-Myers Company: *See*—
Buchanan, Ronald Leslie; Woolever, John Theodore; and Jelenevsky, Alex Michael, 4,122,273, Cl. 544-355.000.
Juby, Peter Frederick, 4,122,274, Cl. 544-282.000.
British Petroleum Company Limited, The: *See*—
McCarroll, John James; Clark, John Trevor Kent; and Tennison, Stephen Robert, 4,122,040, Cl. 252-447.000.
British Steel Corporation: *See*—
Dewsnap, Ronald F.; Higgins, Andrew D.; and Beard, David E., 4,121,954, Cl. 148-153.000.
Broad, Michael John: *See*—
Martin, Barrie James; Broad, Michael John; and Hall, Samuel Stewart, 4,121,549, Cl. 123-32J0EA.
Brodsky, Harvey A.: *See*—
Fish, Leonard A.; Brodsky, Harvey A.; and Weitzel, Bruce, 4,122,305, Cl. 179-6.00E.
Brooks, Louis W. Apparatus for restoring crushed tubes. 4,121,442, Cl. 72-54.000.
Brooks, Marvin V., to PPG Industries, Inc. Method of installing a pane to an existing glazed system. 4,121,394, Cl. 52-203.000.
Brown, Brian E.: *See*—
Hall, Alfred George; and Brown, Brian E., 4,121,390, Cl. 52-20.000.
Brown, Jack M., to Esterline Electronics Corporation. Permissive-make electromagnetic switch. 4,122,420, Cl. 335-80.000.
Brown, James L. Magnetic tape cassette storage case. 4,121,877, Cl. 312-19.000.
Brown, John S.: *See*—
Baker, Edward D.; Brown, John S.; Forney, Robert B.; and Lang-Ree, Nils, 4,121,509, Cl. 99-386.000.
Brown, Ralph V., to Facet Enterprises, Inc. Solid state switching circuit for an electromagnetic pump. 4,122,378, Cl. 318-128.000.
Brown, Robert Saul; and Johnson, James Roy, to Milliken Research Corporation. Water jet loom. 4,121,626, Cl. 139-435.000.
Brown & Williamson Tobacco Corporation: *See*—
Newton, Richard Paul; and Gravely, Lawrence Edmond, 4,121,599, Cl. 131-261.00R.
Bruck, Abraham, to Elscint, Ltd. Method of and apparatus for classifying biological cells. 4,122,348, Cl. 250-461.00B.
Bruinette, Konstant E.; and Brand, Ulrich E. O. B., to Triple Bee Prestress (Proprietary) Limited. Cable anchoring and coupling equipment. 4,121,325, Cl. 24-122.600.

Brunette, Jerome J. Identification assembly and method. 4,121,856, Cl. 282-1.00R.
Brunette, Jerome J.; and Fogleson, William G. Method of label installation. 4,121,961, Cl. 156-249.000.
Buchanan, Ronald Leslie; Woolever, John Theodore; and Jelenevsky, Alex Michael, to Bristol-Myers Company. Bicyclo [2.2.1]-heptane-2,3-di-endo-carboxylic acid imide esters. 4,122,273, Cl. 544-355.000.
Buchegger, Joachim: *See*—
Heitmann, Uwe; and Buchegger, Joachim, 4,121,595, Cl. 131-21.00R.
Buchholz, Adolf. Sheet dryer apparatus using deflectors for steam drying. 4,121,350, Cl. 34-77.000.
Buchwalder, Michel; Perrin, Roger; and Thiery, Daniel, to Commissariat a l'Energie Atomique. Process for conditioning contaminated ion-exchange resins. 4,122,048, Cl. 521-26.000.
Buckley, Dennis J., to Random Electronic Games Co. Bingo computer apparatus and method. 4,121,830, Cl. 273-138.00A.
Buckley, Thomas Francis; and Gleason, John Gerald, to SmithKline Corporation. Intermediates and methods for preparing 7-acylamino-8-oxo-oxa-1-azabicyclo[4.2.0]octane-2-carboxylic acid derivatives. 4,122,262, Cl. 544-90.000.
Burgdorf, Jochen; and Kircher, Dieter, to ITT Industries, Inc. Pressure control unit for vehicular hydraulic brake systems. 4,121,872, Cl. 303-6.00C.
Burge, Malcolm Leonard Ernest; and Nechutny, Zdenek, to Tate & Lyle Ltd. Sweetening compositions containing protein sweeteners. 4,122,205, Cl. 426-548.000.
Burroughs Corporation: *See*—
Allan, James Clark, 4,122,503, Cl. 360-78.000.
Docteur, Russell William, 4,121,330, Cl. 29-412.000.
Burrow, Reginald Edwin Downton: *See*—
Taylor, Reginald Sidney; Burrow, Reginald Edwin Downton; Mason, John Morton; Portas, John Richard; and Thomas, William David, 4,121,780, Cl. 242-7.210.
Burton, Glenn A. Bow transport holster. 4,121,743, Cl. 224-1.00R.
Buser, Arthur L. Bowling lane duster. 4,121,315, Cl. 15-228.000.
Busigny, Rene; and Fuerxer, Pierre H., to Compagnie Industrielle des Telecommunications Cit-Alcatel. Data transmission system and application thereof to the transmission of analog signals and of data in a network with delta modulation. 4,122,300, Cl. 178-68.000.
Busse, Charles E.: *See*—
Cress, Allan K.; and Busse, Charles E., 4,121,402, Cl. 53-452.000.
Bussink, Jan; De Munck, Johannes Wilhelmus Jacobus; and van Abeelen, Petrus Cornelius Aloysius Maria, to General Electric Company. Polyblend composition comprising aromatic polycarbonate, polyolefin, selectively hydrogenated block copolymer and olefinic copolymer. 4,122,131, Cl. 260-873.000.
Butler, Walter J.; and Eichelberger, Charles W., to General Electric Company. Electronic temperature sensor. 4,121,461, Cl. 73-362.0SC.
Buynak, Eugene B.; and Hilleman, Maurice R., to Merck & Co., Inc. Respiratory synctial vaccine. 4,122,167, Cl. 424-89.000.
Byk Gulden Lomberg Chemische Fabrik GmbH: *See*—
Langenscheid, Erhard, deceased; and Klemm, Kurt, 4,122,172, Cl. 424-180.000.
Byrne, James C.: *See*—
Talmage, Dennis D.; and Byrne, James C., 4,122,371, Cl. 315-84.000.
Cachat, John F., to Park-Ohio Industries, Inc. Induction heating furnace. 4,122,321, Cl. 219-10.410.
Cage, Kenneth M.: *See*—
Christensen, Elmer; and Cage, Kenneth M., 4,122,006, Cl. 209-382.000.
Call, Robert Francis: *See*—
Devaney, William David; and Call, Robert Francis, 4,121,739, Cl. 222-137.000.
Calmes, Jean Paul: *See*—
Passoni, Teresio; and Calmes, Jean Paul, 4,121,446, Cl. 72-238.000.
Camerik, Ferdinand; Hart, Cornelis Maria; and Slob, Arie, to U.S. Philips Corporation. Memory array. 4,122,542, Cl. 365-156.000.
Cannon, Robert S., to Palm Beach Cable Television Company. Data output format modifying system. 4,122,299, Cl. 178-26.00A.
Canon Kabushiki Kaisha: *See*—
Goshima, Takeshi; and Iwatate, Fujio, 4,121,883, Cl. 350-6.800.
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,122,462, Cl. 354-5.000.
Ito, Fumio; and Yazaki, Mutsunobu, 4,122,472, Cl. 354-187.000.
Takahashi, Hiroshi; and Nakata, Shinichi, 4,122,513, Cl. 363-21.000.
Tsunekawa, Tokuichi; Nakamura, Zenzo; Ohtaki, Shohei; Sakurada, Nobuaki; Suzuki, Masayuki; and Uchiyama, Takashi, 4,122,467, Cl. 354-33.000.
Cardea, Jerry F., to Terrell Tool and Die Corporation. Hole cutting method and apparatus. 4,121,808, Cl. 266-58.000.
Carey, John Laurence: *See*—
Greenhalgh, Colin William; Carey, John Laurence; and Newton, David Francis, 4,122,087, Cl. 260-325.00R.
Carle, Udo: *See*—
Vural, Gulertan; and Carle, Udo, 4,121,472, Cl. 74-87.000.
Carlson, David H. J., to UOP Inc. Catalytic oxidation of petroleum distillates with charcoal and with supported metal phthalocyanine. 4,121,999, Cl. 208-206.000.
Carpenter, Robert M., to Target Industries, Inc. Hydraulic wheelchair lift. 4,121,695, Cl. 187-9.00R.
Carre, Jean-Jacques; and Meyer, Yves, to Societe Anonyme D.B.A. Hydraulic amplifier. 4,121,500, Cl. 91-391.00R.
Carson, Don B., to UOP Inc. Solar energy collecting pond and covering therefor. 4,121,567, Cl. 126-271.000.
Carson, Don B., to UOP Inc. Power generation and potable water recovery from salinous water. 4,121,977, Cl. 203-11.000.
Carter, William S.: *See*—
Brewer, Douglas M.; Mawson, Alan; and Carter, William S., 4,122,224, Cl. 428-159.000.
Casadio, Silvano: *See*—
Cousse, Henri; Bonnaud, Bernard; Tarayre, Jean-Pierre; and Casadio, Silvano, 4,122,199, Cl. 424-274.000.
Casanova Valero, Jose Maria, to Chaconsa. Compania Hispanoamericana de Construcciones Conserveras S.A. Automatic machine for cutting and pitting fruit, especially peaches. 4,121,511, Cl. 99-550.000.
Casey, Donald James; and Epstein, Martin, to American Cyanamid Company. Normally-solid, bioabsorbable, hydrolyzable, polymeric reaction product. 4,122,129, Cl. 260-860.000.
Castleman, Kenneth R.; Frieden, Howard J.; Johnson, Elbert T.; Rennie, Paul A.; and Wall, Raymond J., to United States of America, National Aeronautics & Space Administration. Automated clinical system for chromosome analysis. 4,122,518, Cl. 364-300.000.
Catalysts & Chemicals Industries Co., Ltd.: *See*—
Yamamoto, Tamechika; Nishimura, Yoichi; and Sanga, Seiji, 4,122,007, Cl. 210-32.000.
Caterpillar Mitsubishi Ltd.: *See*—
Kohriyama, Yoshimasa, 4,121,683, Cl. 180-68.00P.
Caterpillar Tractor Co.: *See*—
Congram, Sam R.; and McClung, Carl L., 4,121,557, Cl. 123-195.00R.
Finley, Lloyd D., 4,121,501, Cl. 91-519.000.
Frantzerb, John G., Sr., 4,122,238, Cl. 428-558.000.
Hammond, James T., 4,121,476, Cl. 74-411.000.
Hedgcock, Richard L., 4,121,705, Cl. 192-89.00B.
Lawrence, Dean M., 4,121,863, Cl. 292-175.000.
Poplawski, Eugene M., 4,121,691, Cl. 182-90.000.
Stedman, Robert N., 4,121,875, Cl. 305-39.000.
Causa, Alfredo Guillermo: *See*—
Alexander, William; Causa, Alfredo Guillermo; and Fraser, James Girvan, 4,122,063, Cl. 260-45.7PH.
Cavage, George T. Opening parachute. 4,121,793, Cl. 244-149.000.
Cave, David L., to Motorola, Inc. Temperature stabilized common emitter amplifier. 4,122,403, Cl. 330-289.000.
Caywood, John M., to Intel Corporation. Low power random access memory with self-refreshing cells. 4,122,550, Cl. 365-222.000.
Cegg, Inc.: *See*—
Petersen, Christian C., 4,122,437, Cl. 340-528.000.
Celanese Polymer Specialties Company: *See*—
Anderson, Terry Leroy, 4,122,067, Cl. 528-89.000.
Celi, Antonio M., to Hermann Etscheid OHG. Holding-down arrangement for a deep-drawing press. 4,121,449, Cl. 72-500.000.
Censuales, Angelo. Process and a device for cold working metal sheet, with a double action in a single operative stage. 4,121,448, Cl. 72-348.000.
Centre National d'Etudes Spatiales: *See*—
Riboulet, Michel Jean; and Simon, Jacques Yves Louis Georges, 4,122,239, Cl. 428-621.000.
Cesaratto, Caesar, to Northern Telecom Limited. Parallel bidirectional shifter. 4,122,534, Cl. 364-900.000.
Chaconsa. Compania Hispanoamericana de Construcciones Conserveras S.A.: *See*—
Casanova Valero, Jose Maria, 4,121,511, Cl. 99-550.000.
Chain Bike Corporation: *See*—
Ross, Sherwood B., 4,121,850, Cl. 280-279.000.
Chakrin, Lawrence William; Snader, Kenneth Means; and Willis, Chester Rhodes, to SmithKline Corporation. Method of treating asthma with 4,6-dihydroxy-2H-pyran-2-ones. 4,122,201, Cl. 424-279.000.
Chaman, Elena Silvestrovna: *See*—
Golovchinskaya, Elena Semenovna; Chernov, Vladimir Alexandrovich; Chaman, Elena Silvestrovna; Nikolaeva, Ljudmila Alexandrovna; and Korsunsky, Vyacheslav Sergeevich, 4,122,173, Cl. 424-200.000.
Chamberlain Manufacturing Corporation: *See*—
Queen, Daniel L., 4,122,507, Cl. 361-94.000.
Chamberlain, Ray; and Smith, Richard B., to Pitney-Bowes, Inc. Label dispensing device. 4,121,536, Cl. 118-6.000.
Chambers, Ramon P.: *See*—
Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., 4,122,393, Cl. 325-324.000.
Chambers, Thomas Van; and Hirshfeld, Julian J., to Milliken Research Corporation. Condensation dyeing. 4,121,899, Cl. 8-94.00A.
Chancellor, Forrest E. Rotating horsehead for oilfield pumping unit. 4,121,471, Cl. 74-41.000.
Chandramouli, Pitchaiya: *See*—
Vasishth, Ramesh C.; and Chandramouli, Pitchaiya, 4,122,144, Cl. 264-123.000.
Chang, Christopher T., to United States of America, Air Force. Magnetic bubble crossover circuit. 4,122,537, Cl. 365-13.000.
Chaplin, George Brian Barrie; and Smith, Roderick Alan, to Sound Attenuators Limited. Improvements in and relating to active sound attenuation. 4,122,303, Cl. 179-1.00P.
Chapman, Barbara Jean; and Hatch, Donald, to Ferodo Limited. Method of producing grey cast iron brake rotors with uniform friction and wear characteristics. 4,121,925, Cl. 75-130.00R.
Charles Stark Draper Laboratory, Inc., The: *See*—
Oberbeck, George A., 4,122,385, Cl. 323-92.000.
Cheeseboro, Robert G. Stylus cartridge suspension for record players. 4,121,836, Cl. 274-23.00A.

Chemetron Corporation: *See—*
Risby, Terence H.; and Yergey, Alfred L., III, 4,122,343, Cl. 250-282.000.
Chen, Carson L., to National Semiconductor Corporation. Accurate single pin MOS RC oscillator. 4,122,413, Cl. 331-108.00D.
Chen, Chi Y., to Fabricated Plastics, Inc. Electrically conductive flexible tube. 4,121,624, Cl. 138-122.000.
Chen, Wen Yuan. Method and apparatus for alleviating asthma attacks. 4,121,583, Cl. 128-192.000.
Cheney, Grant W.: *See—*
Cleereman, Kenneth J.; Schrenk, Walter J.; and Cheney, Grant W., 4,122,138, Cl. 264-25.000.
Cherenko, Joseph, to PPG Industries, Inc. Photocrosslinked innerlayer. 4,121,985, Cl. 204-159.140.
Chernov, Vladimir Alexandrovich: *See—*
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Cherrington, Martin Dee. Drilling and installation system. 4,121,673, Cl. 175-61.000.
Cheung, Harry: *See—*
Baker, Charles Richard; and Cheung, Harry, 4,121,917, Cl. 62-28.000.
Chevron Research Company: *See—*
de Vries, Louis, 4,122,266, Cl. 544-158.000.
Chew, Chan-Yong: *See—*
Morse, Charles W.; Walker, John P.; and Chew, Chan-Yong, 4,122,523, Cl. 364-436.000.
Chiappetta, Frank R.: *See—*
Bogdanski, John J.; Chiappetta, Frank R.; and Freeman, Gerald C., 4,121,403, Cl. 53-202.000.
Chiba, Akio: *See—*
Tomita, Sadami; Chiba, Akio; and Utsumi, Yoshiharu, 4,122,386, Cl. 324-0.50H.
Chicago Rawhide Manufacturing Company: *See—*
Gabrys, Kenneth F., 4,121,740, Cl. 222-146.00H.
Childress, Lorenza Steward; Gagnon, Thomas Edward; Thompson, Donald Russell; and Zucker, Larry Reed, to International Business Machines Corporation. Apparatus and method for digital halftone reproduction. 4,122,496, Cl. 358-298.000.
Chono, Masazumi; Ai, Hideo; Aboshi, Michihiro; Suda, Yoshikazu; and Yoshii, Naoji, to Asahi Kasei Kogyo Kabushiki Kaisha. 1,3,6-Tris(4,6-diamino-1,3,5-triazine-2-yl)hexane. 4,122,269, Cl. 544-207.000.
Christ, Nicholas: *See—*
Sturwold, Robert J.; Utz, Walter Earl; Christ, Nicholas; Ford, William R., Jr.; and Koch, George P., 4,122,217, Cl. 427-156.000.
Christensen, Elmer; and Cage, Kenneth M., to Black Clawson, Inc. Screening apparatus. 4,122,006, Cl. 209-382.000.
Christensen, Nils J.; and Levy, Joseph, to UOP Inc. Hydrolysis of alkyl substituted dihalobenzene compounds. 4,122,288, Cl. 568-775.000.
Christopher, Robert E. Stabilizer for articles carried within a vehicle bed. 4,121,849, Cl. 280-179.00R.
Chudaska, Walter: *See—*
Koppenhofer, Dietrich; Olbrich, Leopold; Wefing, Friedrich; Scholz, Lothar; Barwaldt, Horst; and Chudaska, Walter, 4,121,417, Cl. 60-39.51H.
Chuiko, Alexei Alexeevich; Tertykh, Valentin Anatolievich; Khaber, Nikolai Vasilievich; and Chuiko, Elena Alexandrovna. Method of producing aminated silica compounds. 4,121,946, Cl. 106-308.00N.
Chuiko, Elena Alexandrovna: *See—*
Chuiko, Alexei Alexeevich; Tertykh, Valentin Anatolievich; Khaber, Nikolai Vasilievich; and Chuiko, Elena Alexandrovna, 4,121,946, Cl. 106-308.00N.
Chung, William John: *See—*
Mitchell, Robert Lee; and Chung, William John, 4,122,164, Cl. 424-52.000.
Ciba-Geigy Corporation: *See—*
Habermeier, Jurgen, 4,122,276, Cl. 548-310.000.
Lehmann, Hans; and Zondler, Helmut, 4,122,128, Cl. 260-837.00R.
Ciliberti, Frank L., Jr.; and Fagan, Franklin G., Jr., to P. R. Mallory & Co. Inc. Modified grommet for long term use cells. 4,122,241, Cl. 429-133.000.
Cislo, Carl Casimer, to BASF Wyandotte Corporation. Process for reclaiming synthetic magnesium silicate or aluminum silicate adsorbents employed in the purification of polyether polyols. 4,122,035, Cl. 252-414.000.
Civardi, Frank P.; and Loew, Frederic C., to Inmont Corporation. Treated fabric structure. 4,122,223, Cl. 428-91.000.
Clark, John Trevor Kent: *See—*
McCarroll, John James; Clark, John Trevor Kent; and Tennison, Stephen Robert, 4,122,040, Cl. 252-447.000.
Clayson, Arthur E., to United States of America, Navy. Gun pod stationary blast diffuser. 4,121,496, Cl. 89-37.50R.
Cleereman, Kenneth J.; Schrenk, Walter J.; and Cheney, Grant W., to Dow Chemical Company, The. Method of preparing blown thermoplastic articles having multiaxial orientation. 4,122,138, Cl. 264-25.000.
Clemen, Rainer; Haug, Werner; and Schnadt, Robert, to International Business Machines Corporation. Delay circuit with field effect transistors. 4,122,361, Cl. 307-208.000.
Cloke, Robert L.: *See—*
Sordello, Frank J.; and Cloke, Robert L., 4,122,501, Cl. 360-51.000.
Coal Industry (Patents) Limited: *See—*
Wilkinson, John Joseph, 4,122,332, Cl. 235-92.0CA.
Coast Catamaran Corp.: *See—*
Arce, Henry Leyva, 4,121,530, Cl. 114-91.000.
Cochran, Michael J.; and Donohoe, Leonard J., to Texas Instruments Incorporated. Electronic multibase calculator. 4,121,760, Cl. 235-311.000.
Coffey, James P.: *See—*
Bernstein, Philip; Coffey, James P.; and Varker, Alan E., 4,122,133, Cl. 260-878.00R.
Coffman, Robert L.: *See—*
Kinosz, Donald L.; Das, Subodh K.; and Coffman, Robert L., 4,121,983, Cl. 204-67.000.
Coils, Inc.: *See—*
Plunkett, James P., 4,122,424, Cl. 336-107.000.
Coispeau, Gerard Emile Edgard, to Produits Chimiques Ugine Kuhlmann. 3-Trifluoromethyl-4-aryl-5-aminopyrazoles. 4,122,278, Cl. 548-362.000.
Colas, James K.: *See—*
Rick, Horst; Keppel, Richard A.; Mitchell, Harvey A.; Olsen, Lowell V.; Colas, James K.; and Tracy, Robert E., 4,122,521, Cl. 364-424.000.
Cole, Herbert S., Jr.; and Aftergut, Siegfried, to General Electric Company. Dichroic liquid crystal composition with 4,4-bis (substituted naphthylazo)azobenzene dichroic dyes. 4,122,027, Cl. 252-299.000.
Colgate-Palmolive Company: *See—*
Douglass, Miriam L., 4,122,084, Cl. 260-294.80J.
Douglass, Miriam Lois, 4,122,085, Cl. 260-294.80G.
Mitchell, Robert Lee; and Chung, William John, 4,122,164, Cl. 424-52.000.
Combustion Engineering, Inc.: *See—*
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Buchwalder, Michel; Perrin, Roger; and Thiery, Daniel, 4,122,048, Cl. 521-26.000.
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Battaerd, Hendrick Adriaan Jacobus, 4,121,986, Cl. 204-159.220.
Guise, Geoffrey Bruce, 4,121,902, Cl. 8-128.00A.
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Le Sergent, Christian; Liegois, Michel; and Pascal, Robert, 4,121,919, Cl. 65-3.00A.
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Busigny, Rene; and Fuerxer, Pierre H., 4,122,300, Cl. 178-68.000.
Compton, Leslie E., to Occidental Oil Shale, Inc. Removing hydrogen sulfide from a gas. 4,121,663, Cl. 166-259.000.
Congram, Sam R.; and McClung, Carl L., to Caterpillar Tractor Co. Combined lifting eye and flywheel housing opening cover. 4,121,557, Cl. 123-195.00R.
Conrad, John D. Brake means for a center pivot irrigation system. 4,121,612, Cl. 137-344.000.
Conrad, Robert A.: *See—*
Thompson, Gerald L.; Paschal, Gloria C.; and Conrad, Robert A., 4,122,081, Cl. 260-287.00B.
Conrow, Ransom Brown; and Bernstein, Seymour, to American Cyanamid Company. Dicarboxyphenyl substituted bis-sulfonylimino dibenzodithiazepine tetroxides. 4,122,088, Cl. 260-327.00B.
Container Corporation of America: *See—*
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Continental Cummi-Werke Aktiengesellschaft: *See—*
Henning, Hermann; Kosanke, Johannes; Pakur, Henryk; Wittneben, Hermann; and Tiemann, Reinhard, 4,121,640, Cl. 152-340.000.
Continental Group, Inc., The: *See—*
Van Grouw, John, 4,121,506, Cl. 93-52.000.
Vrcelj, Mihailo J., 4,122,147, Cl. 264-255.000.
Continental Oil Company: *See—*
Sweeney, William T., 4,121,618, Cl. 137-412.000.
Control Data Corporation: *See—*
Smith, Donald O.; Harte, Kenneth J.; and Sykes, Hollister B., 4,122,530, Cl. 364-900.000.
Cook Electric Company: *See—*
Glenn, Frederick J., 4,122,312, Cl. 179-16.00F.
Cooper, Benjamin. Articulated mask. 4,121,304, Cl. 2-206.000.
Cor Tech Research Ltd.: *See—*
Vasishth, Ramesh C.; and Chandramouli, Pitchaiya, 4,122,144, Cl. 264-123.000.
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., to Pfizer Inc. Process for preparing a lactone. 4,122,093, Cl. 260-343.30P.
Cornell Research Foundation, Inc.: *See—*
Millier, William F.; Rehkugler, Gerald E.; Pellerin, Roger A.; and Throop, James A., 4,121,407, Cl. 56-329.000.
Cornu, Julien, to Etablissements Ruggieri. Electro-pyrotechnic unlocking device, in particular for a safety fixture for a ski. 4,121,854, Cl. 280-612.000.
Corsi, Armando, to Mandelli S.p.A. Machine tool comprising a single spindle, adapted to automatically take up both the horizontal and the vertical position, and a single device for the automatic change of the tools. 4,121,332, Cl. 29-568.000.
Coryell, William Harlan, III. Speedboat safety driveline coupling. 4,121,532, Cl. 115-34.00R.
Cote, Richard G. Stove. 4,121,561, Cl. 126-65.000.
Coulombe, Lionel J., to Singer Company, The. Electronically controlled sewing machine with cam controlled feed. 4,121,526, Cl. 112-158.00E.
Coulter Electronics, Inc.: *See—*
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Courtis, William S. Method and apparatus for aseptically sowing small seed or spores. 4,121,525, Cl. 111-1.000.
Cousse, Henri; and Mouzin, Gilbert, to Pierre Fabre S.A. Analgesic (3-micotinamido-N(quinolyl) anthranilates and method of use. 4,122,181, Cl. 424-258.000.
Cousse, Henri; Bonnaud, Bernard; Tarayre, Jean-Pierre; and Casadio, Silvano, to Pierre Fabre S.A. Amides of pyrrolidinoethylamine which can be used in treatment of coughs. 4,122,199, Cl. 424-274.000.
Cox, Ian R.: *See—*
Acheson, Richard M.; Cox, Ian R.; Stubbs, John K.; and Penrose, Alexander B., 4,122,272, Cl. 544-278.000.
Crane Co.: *See—*
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Craven, Donald, to Lucas Industries Limited. Brake device for use in a remote actuation system. 4,121,795, Cl. 244-213.000.
Crean, Peter A.; and Lavallee, Pierre A., to Xerox Corporation. Scanning array configuration. 4,122,352, Cl. 250-566.000.
Cress, Allan K.; and Busse, Charles E., to Maryland Cup Corporation. Methods and means for manufacturing foam plastic containers and sidewall blanks for same. 4,121,402, Cl. 53-452.000.
Cretella, Salvatore J.; Bernardo, Matthew; and DeMusis, Ralph T. Refurbished turbine components, such as vanes or blades. 4,121,894, Cl. 416-213.00R.
Crippen, Monte Dennis; Harke, Cyril James; and Mentz, Bernardus Johannes, to Hooker Chemicals & Plastics Corp. Anode support means for an electrolytic cell. 4,121,994, Cl. 204-286.000.
Critical Systems, Inc.: *See—*
Whalley, Wilfrid B., 4,121,592, Cl. 128-413.000.
Cronan, Philip J., to Mandrell, Rubin, a part interest. Portable spray can for dual liquids. 4,121,772, Cl. 239-304.000.
Cronauer, Donald C.; and Swift, Harold E., to Gulf Research & Development Company. Catalytic reactor. 4,121,909, Cl. 422-222.000.
Cross Manufacturing, Inc.: *See—*
Presley, Glen T., 4,121,601, Cl. 137-101.000.
Crounse, Nathan N.; and Ambrosiano, Nicholas A., to Sterling Drug Inc. Polycyclic iminoisoindoline chelates. 4,122,261, Cl. 544-64.000.
Crouse, Paton B. Reflective device and method for illuminating a scene. 4,122,333, Cl. 362-18.000.
Crovella, Edward A.; and Mellon, Frederick R., to Goebel Fixture Co. Wireless cardiac monitoring system and electrode-transmitter therefor. 4,121,573, Cl. 128-2.10A.
Crutcher, William C.; and Wiesner, Leo, to Timex Corporation. Hybrid horological display using time modulation. 4,121,415, Cl. 58-50.00R.
Cucinella, Salvatore; Salvatori, Tito; and Mazzei, Alessandro, to Snamprogetti, S.p.A. Method for the preparation of organic aluminum-imides and products obtained thereby. 4,122,108, Cl. 260-448.00A.
Culbertson, Harry M., to Monsanto Company. High ortho etherified resole resins. 4,122,054, Cl. 260-29.300.
Cunningham, Ernest Ray, to Grip-Pak Systems, Inc. Plastic sheet band multi-packaging device and method of assembling same to containers. 4,121,712, Cl. 206-150.000.
Cure, Omer P., to Electro-Nite Co. Method of making thermocouple. 4,121,749, Cl. 228-173.00A.
Curl, Robert B. Potato harvester. 4,121,667, Cl. 171-110.000.
Cushing, Vincent J., to Monitek, Inc. Clamp on electromagnetic flow transducer. 4,121,454, Cl. 73-194.0EM.
Dagma GmbH & Co. Deutsche Automaten-und Getranke Maschinen: *See—*
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Dahms, Ronald H., to Monsanto Company. Resole resin binder composition. 4,122,235, Cl. 428-436.000.
Dai Nippon Toryo Co., Ltd.: *See—*
Tugukuni, Hideyoshi; Kano, Masafumi; and Nishimura, Yoshihiko, 4,122,055, Cl. 260-29.4UA.
Daido Metal Company Ltd.: *See—*
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Daikin Kogyo Co., Ltd.: *See—*
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Koppenhofer, Dietrich; Olbrich, Leopold; Wefing, Friedrich; Scholz, Lothar; Barwaldt, Horst; and Chudaska, Walter, 4,121,417, Cl. 60-39.51H.
Reinhard, Theodor; Hoffmann, Rudiger; and Haug, Ernst, 4,121,613, Cl. 137-351.000.
Schaal, Hans; Kurz, Wolf-Dieter; and Breitling, Ulrich, 4,121,682, Cl. 180-68.00R.
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Daley, Horace S.: *See—*
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Daly, William P.; Lewis, Robert P.; and Pouliot, Oliver L., to Faser Industries. Sterilizable package with tear-off indicators. 4,121,714, Cl. 206-363.000.
Damjanovic, Aleksandar: *See—*
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Dammer, Horst, to Dr. Anso Zimmermann Isolierflaschen. Screw closures for thermally-insulating containers. 4,121,730, Cl. 215-310.000.
Dango & Dienenthal: *See—*
Hummler, Otto; and Welander, Bo Christer, 4,122,296, Cl 13-33.000.
Danielsen, Sverre. Roller harness arrangement for airplane pilot seats. 4,121,792, Cl. 244-122.00B.
Dannert, Horst; Hirsch, Hans-Jurgen; Klein, Ewald; and Panstruga, Karl-Heinz, to U.S. Philips Corporation. X-ray electrophotographic recording material and method of manufacturing same. 4,121,933, Cl 96-1.50R.
D'Arcy, James A. Apparatus for automatically turning pages. 4,121,361, Cl. 40-470.000.
Dartmouth College: *See—*
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Davis, Raymond A. Apparatus for applying foil covers for trays. 4,121,404, Cl. 53-329.000.
Davy Powergas Inc.: *See—*
Nicholson, Norman E.; and Scarlett, John, 4,122,148, Cl 423-242.000.
Dayco Corporation: *See—*
Hopkins, Carl E., 4,121,962, Cl. 156-272.000.
Dayton Precision Manufacturing Company: *See—*
Penrod, Bernice Benjamin, 4,121,658, Cl. 166-85.000.
de la Pena, Ramon: *See—*
MacKay, Patrick W.; Vera, Enrique M.; and de la Pena, Ramon, 4,121,922, Cl. 75-34.000.
Dean, William Bruce, to Johnson & Johnson. Stabilized laminated knit upholstery fabric. 4,122,227, Cl. 428-197.000.
de Barbadillo, John Joseph, II, to International Nickel Company, Inc., The. Alloy for rare earth treatment of molten metals and method. 4,121,924, Cl. 75-129.000.
de Bennetot, Michel Cotton, to Le Material Magnetique. Permanent magnet magnetic control device having two control air gaps. 4,122,423, Cl. 335-234.000.
De Bucs, Eugen Szabo: *See—*
Frie, Wolfgang; Henkel, Hans-Joachim; Hini, Paul; Koch, Christian; and De Bucs, Eugen Szabo, 4,121,542, Cl. 123-3.000.
Decker, Bert J. Solar heat pipe feedback turbogenerator. 4,122,356, Cl. 290-52.000.
Deere & Company: *See—*
Adams, Thomas Burton, Jr., 4,121,871, Cl. 301-105.00R.
Defranould, Philippe; and Maerfeld, Charles, to Thomson-CSF. Method and a device for an electro-acoustic reading of an optical device image. 4,122,495, Cl. 358-213.000.
Dejneka, Tamara: *See—*
Sundeen, Joseph E.; and Dejneka, Tamara, 4,122,083, Cl. 260-294.80A.
De Jong, Aaldert J.: *See—*
Gray, Robin Th.; and De Jong, Aaldert J., 4,122,121, Cl. 260-598.000.
De Jonge, Cornelis Reinier Heinrich; and Giezen, Egenius Arnoldus, to Akzona Incorporated. Phenoxy-s-triazines. 4,122,270, Cl. 544-219.000.
DeLong, Lawrence W.: *See—*
Bielawski, Timothy; Struger, Odo J.; and DeLong, Lawrence W., 4,122,519, Cl. 364-200.000.
De Luca, Paul V., to Porta Systems Corp. Telephone connector cut-over block. 4,122,313, Cl. 179-98.000.
Demag, A.G.: *See—*
Kaufmann, Karl Ernst, 4,121,702, Cl. 188-187.000.
Demenais, Claude L., to Societe Industrielle de Transports Automobiles. Truck body. 4,121,725, Cl. 214-83.300.
DeMey, Charles F., II, to Perkin-Elmer Corporation, The. Pressure tight seal. 4,121,859, Cl. 285-93.000.
De Munck, Johannes Wilhelmus Jacobus: *See—*
Bussink, Jan; De Munck, Johannes Wilhelmus Jacobus; and van Abeelen, Petrus Cornelius Aloysius Maria, 4,122,131, Cl. 260-873.000.
DeMusis, Ralph T.: *See—*
Cretella, Salvatore J.; Bernardo, Matthew; and DeMusis, Ralph T., 4,121,894, Cl. 416-213.00R.
Dennison Manufacturing Company: *See—*
Bone, Arnold R., 4,121,487, Cl. 83-23.000.
Dentsply Research and Development Corporation: *See—*
Gonser, Donald I., 4,121,590, Cl. 128-303.130.
Depin, Jean-Claude: *See—*
Briet, Philippe; Berthelon, Jean-Jacques; Depin, Jean-Claude; and Boschetti, Eugene, 4,122,200, Cl. 424-275.000.
Depoitier, Jacques; Monaco, Ovidio; and Destabelle, Michel, to Institut National des Radio-Elements - Nationaal Instituut voor Radio-Elementen, en abrege: I.R.E. Meter for the flow rate or the speed of a gas stream. 4,121,456, Cl. 73-194.00F.
DeRyke, Thomas Vernon: *See—*
Ernohazy, Stephen; Songer, Larry Allen; DeRyke, Thomas Vernon; and Oddo, Eugene Peter, 4,122,473, Cl. 354-299.000.

Songer, Larry Allen; and DeRyke, Thomas Vernon, 4,122,474, Cl. 354-300.000.

Des Marais, David John: *See—*
Hayes, John Michael; and Des Marais, David John, 4,121,634, Cl. 141-98.000.

Destabelle, Michel: *See—*
Depoitier, Jacques; Monaco, Ovidio; and Destabelle, Michel, 4,121,456, Cl. 73-194.00F.

Detroit Tool & Engineering Co.: *See—*
Miner, Earl L., 4,121,668, Cl. 172-42.000.

Deuterium Corporation: *See—*
Spevack, Jerome S., 4,121,913, Cl. 55-89.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co. Ltd. Touch responsive electronic piano. 4,121,490, Cl. 84-1.270.

Deutsche Gold- und Silber- Scheideanstalt vormals Roessler: *See—*
Klenk, Herbert; Offermanns, Heribert; and Schwarze, Werner, 4,122,116, Cl. 260-545.00R.

Devaney, William David; and Call, Robert Francis, to Illinois Tool Works Inc. Dispenser with unitary plunger and seal construction. 4,121,739, Cl. 222-137.000.

Devos, Jack: *See—*
Van Gilst, Carl; and Devos, Jack, 4,121,538, Cl. 119-20.000.

de Vries, Louis, to Chevron Research Company. Reaction of aryl sulfonic acid ester and amines. 4,122,266, Cl. 544-158.000.

DeWoskin, Irvin S., to Orthoband Company, Inc. Orthodontic traction apparatus. 4,121,341, Cl. 32-14.00D.

Dewsnap, Ronald F.; Higgins, Andrew D.; and Beard, David E., to British Steel Corporation. Cooling method for metal articles. 4,121,954, Cl. 148-153.000.

Dhelft, Patrick, to Sofresid, Societe Francaise d'Etude d'Installations Siderurgiques. Cooling plate for shaft furnaces. 4,121,809, Cl. 266-193.000.

Diebler, Herman Guy: *See—*
Reichler, Allen; and Diebler, Herman Guy, 4,121,466, Cl. 73-423.00A.

Diehl, Karl-Heinz: *See—*
Sandermann, Wilhelm; Eggensperger, Heinz; and Diehl, Karl-Heinz, 4,122,185, Cl. 424-274.000.

Dietrich, Edward J.; and Hoiler, Henry. Mechanized door operating means for a motor vehicle. 4,121,382, Cl. 49-334.000.

Diez, Jerry. Transfer device for heat sensitive material. 4,121,633, Cl. 141-69.000.

DiFrancesco, Alphonse Benjamin; and Shear, John Charles, to Eastman Kodak Company. Rotary vacuum feeder/transporter. 4,121,819, Cl. 271-96.000.

Dillard, Hayden: *See—*
Wilson, Dale Ray, 4,121,388, Cl. 51-424.000.

Dirks, Gary W.; Li, George S.; and Rosen, Irving, to Standard Oil Company, The. Process for preparing low-cost copolymers from acrylonitrile and crude indene. 4,121,807, Cl. 526-76.000.

DiSabatino, Bernard A.; DiSabatino, Joan K.; DiSabatino, Bernard A., Jr.; and DiSabatino, Craig D. Exercise and game apparatus. 4,121,822, Cl. 272-78.000.

DiSabatino, Bernard A., Jr.: *See—*
DiSabatino, Bernard A.; DiSabatino, Joan K.; DiSabatino, Bernard A., Jr.; and DiSabatino, Craig D., 4,121,822, Cl. 272-78.000.

DiSabatino, Craig D.: *See—*
DiSabatino, Bernard A.; DiSabatino, Joan K.; DiSabatino, Bernard A., Jr.; and DiSabatino, Craig D., 4,121,822, Cl. 272-78.000.

DiSabatino, Joan K.: *See—*
DiSabatino, Bernard A.; DiSabatino, Joan K.; DiSabatino, Bernard A., Jr.; and DiSabatino, Craig D., 4,121,822, Cl. 272-78.000.

Disch, Karlheinz: *See—*
Kiewert, Eva; and Disch, Karlheinz, 4,122,025, Cl. 252-173.000.

Dischert, Robert Adams: *See—*
Bolger, Thomas Vincent; and Dischert, Robert Adams, 4,122,489, Cl. 358-21.000.

Displacement Systems Corporation: *See—*
Raab, Clifford, 4,121,308, Cl. 4-415.000.

Disston, Inc.: *See—*
Edgell, James Ensign; and Sherrill, Charles Franklin, 4,122,320, Cl. 200-157.000.

Dittmann, Heiner: *See—*
Raab, Markus; Langebach, Peter; and Dittmann, Heiner, 4,121,908, Cl. 422-207.000.

Dlugos, Daniel F.; Lorenzo, John L.; Staudinger, Frederick J.; and Zettler, John F., to Pitney-Bowes, Inc. Method of reducing hysteresis in a spring scale. 4,121,676, Cl. 177-225.000.

Dlugos, Daniel F.; and Manduley, Flavio M., to Pitney-Bowes, Inc. Calculating and postal zip code-to-postal zone converting apparatus. 4,122,526, Cl. 364-705.000.

Dlugos, Daniel F.; and Manduley, Flavio M., to Pitney-Bowes, Inc. System for updating postal rate information utilized by remote mail processing apparatus. 4,122,532, Cl. 364-900.000.

Dmitriev, Jury Akimovich: *See—*
Kovalsky, Georgy Alexandrovich; Maishev, Jury Petrovich; and Dmitriev, Jury Akimovich, 4,122,347, Cl. 250-423.00R.

Dobson, Thomas A., to Dataproducts Corporation. Type bearing band assembly. 4,121,517, Cl. 101-93.140.

Docteur, Russell William, to Burroughs Corporation. Method of making ink roll with fabric cover retention and protection device. 4,121,330, Cl. 29-412.000.

Dr. Anso Zimmermann Isolierflaschen: *See—*
Dammer, Horst, 4,121,730, Cl. 215-310.000.

Documation Incorporated: *See—*
Prior, Arthur D.; Ward, Leonard G.; and Halbert, Silas Ray, 4,121,518, Cl. 101-93.330.

Doehler, Peter: *See—*
Baumgartner, Erich Rudolf; and Doehler, Peter, 4,121,353, Cl. 34-99.000.

Doering, Ernest L.: *See—*
Sohn, Donald F.; and Doering, Ernest L., 4,121,400, Cl. 53-436.000.

Dolan, William S.: *See—*
Braun, Carl G.; and Dolan, William S., 4,121,485, Cl. 81-6.000.

Donohoe, Leonard J.: *See—*
Cochran, Michael J.; and Donohoe, Leonard J., 4,121,760, Cl. 235-311.000.

Donovan, Keith W.: *See—*
Reno, David L.; and Donovan, Keith W., 4,121,494, Cl. 84-453.000.

Dorgard Limited: *See—*
Welch, Anthony Harold Ernest, 4,121,319, Cl. 16-66.000.

Dorner, Stefan: *See—*
Albrecht, Helmut; Barleon, Leopold; Dorner, Stefan; Fischer, Manfred; and Wilhelm, Juergen, 4,121,970, Cl. 176-38.000.

Douglass, Miriam L., to Colgate-Palmolive Company. Disulfides of amino-substituted mercaptopyridine-1-oxide. 4,122,084, Cl. 260-294.80J.

Douglass, Miriam Lois, to Colgate-Palmolive Company. Derivatives of mercaptopyridine-1-oxide. 4,122,085, Cl. 260-294.80G.

Dousset, Remy. Elastomer stress damper with constructable orifice. 4,121,812, Cl. 267-35.000.

Dow Chemical Company, The: *See—*
Cleereman, Kenneth J.; Schrenk, Walter J.; and Cheney, Grant W., 4,122,138, Cl. 264-25.000.
Harris, Guy H., 4,122,004, Cl. 209-166.000.
Olstowski, Franciszek, 4,122,058, Cl. 260-33.6UB.
Towsley, Frank E., 4,121,992, Cl. 204-265.000.

Dow Corning Corporation: *See—*
Gee, Ronald P.; and Keil, Joseph W., 4,122,029, Cl. 252-309.000.
Halm, Roland L., 4,122,109, Cl. 260-448.20S.
Sierawski, David A., 4,122,246, Cl. 528-15.000.

Doyle, Earl N.: *See—*
Smith, Egmont S.; Doyle, Earl N.; and Baughman, Kenneth E., 4,121,529, Cl. 114-331.000.

Draco Laboratories, Inc.: *See—*
Schotz, Larry A.; and Wiesmann, Thomas W., 4,122,395, Cl. 325-453.000.

Dresser Industries, Inc.: *See—*
Roesner, Raymond Earl, 4,121,345, Cl. 33-178.00F.

Drori, Mordeki. Rotary spraying device particularly useful for water irrigation. 4,121,769, Cl. 239-222.170.

Drummond, Ralph S. Variable speed, alternating current motor unit and methods and apparatus for speed control of same. 4,122,377, Cl. 318-45.000.

D'Silva, Themistocles D. J., to Union Carbide Corporation. N-(4-tert-butylphenylthiosulfenyl)-N-alkyl aryl carbamate compounds. 4,122,204, Cl. 424-285.000.

D'Souza, Richard; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Process for the preparation of esters. 4,122,252, Cl. 536-23.000.

Duerr, Joseph W.; and Ganz, Robert H., to Ganz Brothers, Inc. Method and apparatus for applying reinforcing strips to adjacent pairs of containers. 4,121,401, Cl. 53-398.000.

Duffy, Robert Donovan: *See—*
Sandner, Michael Ray; and Duffy, Robert Donovan, 4,122,038, Cl. 252-431.00C.

Dufour, Raymond J.: *See—*
Weil, Sanford A.; Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., 4,121,432, Cl. 62-79.000.

Duggins, Richard Wayne; and Rodgers, James William, to Frameworks, Inc. Picture frame mat opening marker. 4,121,343, Cl. 33-42.000.

Duhnkrack, George Bliss; and Madeira, Joseph M., to Koppers Company, Inc. Process for printing on solid molded articles made from urea formaldehyde resin or melamine formaldehyde resin. 4,121,897, Cl. 8-2.50A.

Dunkelmann, Dietger: *See—*
Jaunich, Helmut; Dunkelmann, Dietger; and Schiffarth, Josef, 4,121,955, Cl. 156-71.000.

Dunlop Limited: *See—*
Holmes, Thomas, 4,121,643, Cl. 152-366.000.
Yardley, James Frank; and Nightingale, Allen Frederick, 4,121,963, Cl. 156-308.000.

Dunn, Gerald A., to United States of America, Army. Electronically controllable filter. 4,122,398, Cl. 330-107.000.

Dunnery, David Arthur; Sokolik, Joseph Edmund, Jr.; Atwood, Gilbert Richard; and Kosseim, Alexander Jean-Marie, to Union Carbide Corporation. Process for removing SO_2 from effluent gases and for removing heat stable salts from systems in which they accumulate. 4,122,149, Cl. 423-242.000.

Du Pont de Nemours, E. I., and Company: *See—*
Garth, Bruce Hollis, 4,121,911, Cl. 44-73.000.
Jaeger, Joseph; and Sauerbrunn, Robert D., 4,122,075, Cl. 528-332.000.
Kinard, Richard Dale, 4,122,209, Cl. 427-18.000.
Kuratle, Henry, III, 4,121,921, Cl. 71-77.000.
Mahler, Walter, 4,122,041, Cl. 252-449.000.
Middleton, William Joseph, 4,122,115, Cl. 260-544.00Y.
Morgan, Paul Winthrop, 4,122,070, Cl. 528-149.000.
Proskow, Stephen, 4,122,233, Cl. 428-412.000.
Sample, Paul Edward, 4,121,956, Cl. 156-80.000.

Schwartz, Harold Gordon, 4,121,642, Cl. 152-354.00R.
Vassiliou, Eustathios, 4,122,226, Cl. 428-187.000.
Yallourakis, Michael Dimitri, 4,122,060, Cl. 260-37.0EP.

Duran, John A., to Avibank Mfg., Inc. Manually operable tool for installing blind anchor nuts. 4,121,444, Cl. 72-114.000.

Durling, Harold, to Midland-Ross Corporation. Vehicle air brake system with emergency features. 4,121,873, Cl. 303-7.000.

Dyer, Robert E., to Sangamo Electric Company. Event data recording apparatus with digitally encoded time and date. 4,122,498, Cl. 360-6.000.

Dysan Corporation: *See—*
Lohoff, Virgil Allan, 4,122,234, Cl. 428-413.000.

E. B. Metal & Rubber Industries, Inc.: *See—*
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; Alldred, Cyrus A.; and Kecseti, Frank M., 4,121,707, Cl. 194-10.000.

E. R. Squibb & Sons, Inc.: *See—*
Krapcho, John, 4,122,255, Cl. 542-421.000.
Sundeen, Joseph E.; and Dejneka, Tamara, 4,122,083, Cl. 260-294.80A.

Eads, Donald Everett. Workpiece holder for high volume manufacturing operations. 4,121,816, Cl. 269-296.000.

Eastman Kodak Company: *See—*
DiFrancesco, Alphonse Benjamin; and Shear, John Charles, 4,121,819, Cl. 271-96.000.
Kindig, Guilford Edwin; and Michatek, Chester William, 4,122,469, Cl. 354-83.000.

Eastman Whipstock, Inc.: *See—*
McClure, Tommy L., 4,121,657, Cl. 166-66.000.

Eaton, Homer L., to Eaton-Leonard Corporation. Method and apparatus for profile scanning. 4,122,525, Cl. 364-560.000.

Eaton-Leonard Corporation: *See—*
Eaton, Homer L., 4,122,525, Cl. 364-560.000.

Ebara Corporation: *See—*
Takano, Shiro; Jojima, Toshio; Oshida, Hajime; Yokoi, Tadashi; Kato, Muneo; and Koizumi, Tadashi, 4,121,839, Cl. 277-3.000.

Ebbing, Raymond A. Golf putter. 4,121,832, Cl. 273-171.000.

Ebbinga, Richard D.: *See—*
Bradford, Robert S.; and Ebbinga, Richard D., 4,122,500, Cl. 360-13.000.

Ecodyne Corporation: *See—*
Huber, Ferdinand Vincent, 4,121,656, Cl. 165-72.000.

Ed. Zublin Aktiengesellschaft: *See—*
Hahn, Volker; and Fastenau, Werner, 4,121,398, Cl. 52-646.000.

Edgell, James Ensign; and Sherrill, Charles Franklin, to Disston, Inc. Hand-operated double-acting trigger switch. 4,122,320, Cl. 200-157.000.

Edouard Dubied et Cie. (Societe Anonyme): *See—*
Humbert, Rene, 4,121,440, Cl. 66-152.000.

Eggensperger, Heinz: *See—*
Sandermann, Wilhelm; Eggensperger, Heinz; and Diehl, Karl-Heinz, 4,122,185, Cl. 424-274.000.

Egoricheva, Sofya Alexandrovna: *See—*
Michurov, Jury Ivanovich; Yanshevsky, Vladimir Avgustovich; Filippova, Rufina Alexandrovna; Gurvich, Yakov Abramovich; Logutov, Igor Jurievich; Egoricheva, Sofya Alexandrovna; Belgorodsky, Izrail Markovich; and Vyborov, Sergei Gerasimovich, 4,122,289, Cl. 568-789.000.

Eichelberger, Charles W.: *See—*
Butler, Walter J.; and Eichelberger, Charles W., 4,121,461, Cl. 73-362.0SC.

Eisen- und Drahtwerk Erlau Aktiengesellschaft: *See—*
Muller, Anton, 4,121,867, Cl. 294-82.00R.

Eisentraeger, Klaus: *See—*
Fickeisen, Peter; Elschnig, Gert; Haertl, Hanns-Dietmar; Wendel, Kurt; and Eisentraeger, Klaus, 4,122,219, Cl. 427-206.000.

Ekstrom, Robert E. Thermocouple temperature measuring instrument and method of measuring. 4,121,460, Cl. 73-359.00R.

Electric Power Research Institute: *See—*
Brandt, Thomas F., 4,122,298, Cl. 174-28.000.

Electricite de France: *See—*
Renault, Jean; Jolivet, Francois; Plichon, Claude; and Bordet, Rene, 4,121,393, Cl. 52-167.000.

Electro-Nite Co.: *See—*
Cure, Omer P., 4,121,749, Cl. 228-173.00A.

Eli Lilly and Company: *See—*
Michel, Karl H.; and Higgens, Calvin E., 4,122,168, Cl. 424-118.000.
Soper, Quentin F., 4,122,184, Cl. 424-273.00R.
Thompson, Gerald L.; Paschal, Gloria C.; and Conrad, Robert A., 4,122,081, Cl. 260-287.00B.
Wright, Ian G.; and Neuss, Norbert, 4,122,082, Cl. 260-287.00B.

Elschnig, Gert: *See—*
Fickeisen, Peter; Elschnig, Gert; Haertl, Hanns-Dietmar; Wendel, Kurt; and Eisentraeger, Klaus, 4,122,219, Cl. 427-206.000.

Elscint, Ltd.: *See—*
Bruck, Abraham, 4,122,348, Cl. 250-461.00B.

Eltsov, Konstantin Sergeevich: *See—*
Grigorenko, Georgy Mikhailovich; Sheiko, Ivan Vasilievich; Eltsov, Konstantin Sergeevich; Korotkov, Albert Nikitovich; Pakhomov, Alexei Ivanovich; Kanibolotsky, Sergei Arsentievich; Lakomsky, Viktor Iosifovich; Shevchenko, Vladimir Denisovich; Kiselev, Nikolai Mikhailovich; and Torkhov, Gennady Fedorovich, 4,122,293, Cl. 13-2.00P.

Emery Industries, Inc.: *See—*
Lamont, James; Aylesworth, Robert D.; and Beimesch, Bruce J., 4,122,057, Cl. 260-31.600.

Mitchell, Mark L., III; and Sharkey, Hubert J., 4,122,229, Cl. 428-261.000.
Sturwold, Robert J.; Utz, Walter Earl; Christ, Nicholas; Ford, William R., Jr.; and Koch, George P., 4,122,217, Cl. 427-156.000.

Endo, Akira, to Hitachi, Ltd. Device for measuring a vehicle speed by utilizing the doppler effect. 4,122,449, Cl. 343-8.000.

Enge, Harald Anton, to High Voltage Engineering Corporation. Optical devices for computed transaxial tomography. 4,122,346, Cl. 250-398.000.

Engel, Gerard: *See—*
Ulrich, Roy E., II; and Engel, Gerard, 4,121,687, Cl. 182-2.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Kuo, Charles Y., 4,122,232, Cl. 428-323.000.

English Electric Valve Company Limited: *See—*
Brady, Michael Barry Clive; and Bennett, David William, 4,122,419, Cl. 333-83.00R.

Epstein, Martin: *See—*
Casey, Donald James; and Epstein, Martin, 4,122,129, Cl. 260-860.000.

Eric Slinn & Son Limited: *See—*
Bannister, Alfred, 4,121,718, Cl. 211-49.00R.

Erickson, Charles E.; and Neogi, Amar N., to Precision Cosmet Co., Inc. Method to produce a composite contact lens. 4,121,885, Cl. 351-177.000.

Erickson, Dorothea C.: *See—*
Erickson, Wallace A.; and Erickson, Dorothea C., 4,121,375, Cl. 46-175.00R.

Erickson, Wallace A.; and Erickson, Dorothea C., to Wallace A. Erickson & Company. Whistle-cap device. 4,121,375, Cl. 46-175.00R.

Erickson, Wayne K.: *See—*
Hughes, James K.; and Erickson, Wayne K., 4,122,019, Cl. 252-8.800.

Erikson, Rolf B.; Zemke, Edward H.; and Guenther, Kenneth L., to Bell & Howell Company. Ink jet printer with deflected nozzles. 4,122,457, Cl. 346-75.000.

Ernohazy, Stephen; Songer, Larry Allen; DeRyke, Thomas Vernon; and Oddo, Eugene Peter, to Addressograph-Multigraph Corporation. Developer residue waste eliminator for diazo machines. 4,122,473, Cl. 354-299.000.

Ernst Jacobi & Co. KG: *See—*
Jacobi, Ernst, 4,121,318, Cl. 15-312.00A.

ESB Incorporated: *See—*
Bernstein, Philip; Coffey, James P.; and Varker, Alan E., 4,122,133, Cl. 260-878.00R.
Feldhake, Ralph H., 4,122,242, Cl. 429-174.000.

Escher, Balint: *See—*
Frade, Gilbert; Escher, Balint; and Price, Dominique, 4,122,509, Cl. 361-433.000.

Esklavon, Peter; Zander, Georg; and Goebbels, Jozef, to U.S. Philips Corporation. Electric incandescent lamp having a centering ring. 4,122,367, Cl. 313-318.000.

Essers, Wilhelmus Gerardus; Jelmorini, Gerardus; and Tichelaar, Gerrit Willem, to U.S. Philips Corporation. Device and welding torch for plasma-mig-welding. 4,122,328, Cl. 219-121.00P.

Esterline Electronics Corporation: *See—*
Brown, Jack M., 4,122,420, Cl. 335-80.000.

Etablissements Ruggieri: *See—*
Cornu, Julien, 4,121,854, Cl. 280-612.000.

Etablissements Zelant, Gazuit: *See—*
Harmant, Michel, 4,121,384, Cl. 51-34.00D.

Euratom: *See—*
Jamet, Michel, 4,122,319, Cl. 200-153.00J.

Evans, Delme; Saunders, John Christopher; and Williamson, William Robert Nigel, to Lilly Industries Limited. Aryl sulphur compounds as antiasthmatics. 4,122,194, Cl. 424-337.000.

Evans, Edwin Robert, to General Electric Company. Process for the polymerization of cyclic diorganopolysiloxanes with cation-complex catalysts. 4,122,247, Cl. 528-14.000.

Evans, John C., Jr., to United States of America, National Aeronautics and Space Administration. Solar cell collector and method for producing same. 4,122,214, Cl. 427-75.000.

Everson, William, to Perkasie Industries Corporation. Modular storm window. 4,121,379, Cl. 49-61.000.

EVG Entwicklungs- u. Verwertungs GmbH.: *See—*
Sackl, Alois; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,121,629, Cl. 140-112.000.

Exxon Nuclear Company, Inc.: *See—*
Watt, George W.; and Baugh, Daniel W., Jr., 4,122,095, Cl. 260-346.110.

Exxon Production Research Company: *See—*
Greer, James B., 4,121,862, Cl. 285-333.000.

F. N. Burt Co., Inc.: *See—*
Ravotto, Richard Albert; and Rosenburg, Charles Warner, Jr., 4,121,752, Cl. 229-27.000.

Fabbrica Italiana Magneti Marelli, S.p.A.: *See—*
Bigliani, Umberto; and Maioglio, Mauro, 4,121,556, Cl. 123-148.00E.

Fabish, Donald Clayton, to Robertshaw Controls Company. Squeeze bag resuscitator with air-oxygen proportionating control. 4,121,580, Cl. 128-145.700.

Fabricated Plastics, Inc.: *See—*
Chen, Chi Y., 4,121,624, Cl. 138-122.000.

Facchini, Ermainio: *See—*
Lent, Russell J.; and Facchini, Ermainio, 4,121,789, Cl. 244-118.00R.

Facet Enterprises, Inc.: *See—*
Brown, Ralph V., 4,122,378, Cl. 318-128.000.
Fagan, Franklin G., Jr.: *See—*
Ciliberti, Frank L., Jr.; and Fagan, Franklin G., Jr., 4,122,241, Cl. 429-133.000.
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Falk, Stephen A., to Teckton, Inc. Shielding device for microwave cooking. 4,122,324, Cl. 219-10.55E.
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Farrell, Daniel R.; and Ward, John W., to Union Oil Company of California. Method for rejuvenating catalysts in hydrodesulfurization of hydrocarbon feedstock. 4,122,000, Cl. 208-210.000.
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Daly, William P.; Lewis, Robert P.; and Pouliot, Oliver L., 4,121,714, Cl. 206-363.000.
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Fauran, Francois; Feniou, Claude; Thibault, Annie; and Prat, Gisele, to Societe Cortial. Amino-3H-isobenzofuranones N-substitutes and their therapeutic application. 4,122,202, Cl. 424-278.000.
Fava, Ronald Anthony, to Arco Polymers Inc. Moldable blend of polycarbonate and terpolymer of rubber styrene-maleimide. 4,122,130, Cl. 260-873.000.
Fazzina, Roberta A.: *See—*
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Feasby, John Anthony, to Imperial Group Limited. Method and apparatus for handling containers. 4,121,630, Cl. 141-1.000.
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Featherstone, Harry Edwin; and Sniff, Walter Grant, Jr., to Orrville Products, Inc. Method of joining two sheet metal parts. 4,122,325, Cl. 219-86.100.
Fehr, Hans Ulrich, to Sandoz Ltd. Method of treating oligospermia and asthenospermia. 4,122,177, Cl. 424-250.000.
Fein, Michael E.; and Salisbury, Charles W., to Owens-Illinois, Inc. Gas laser with improved cathode life. 4,122,411, Cl. 331-94.50G.
Feiner, Alexander. Air controlled gutter cleaner. 4,121,320, Cl. 15-406.000.
Feldhake, Ralph H., to ESB Incorporated. Process for sealing electrochemical cells. 4,122,242, Cl. 429-174.000.
Fellows, Adrian Neville. Disinfectant and sterilizing preparations. 4,122,192, Cl. 424-333.000.
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Fernandez, Avelino. Cushion tire and wheel construction. 4,121,639, Cl. 152-329.000.
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Fickeisen, Peter; Elschnig, Gert; Haertl, Hanns-Dietmar; Wendel, Kurt; and Eisentraeger, Klaus, to BASF Aktiengesellschaft. Flocking of textile sheet materials. 4,122,219, Cl. 427-206.000.
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Filip, Stanislaw Franz; and Miutel, Alexander, to Meisels, Isaac; Filip, Stanislaw F.; and Miutel, Alexander. Production of polyester foam. 4,122,047, Cl. 521-106.000.
Filippova, Rufina Alexandrovna: *See—*
Michurov, Jury Ivanovich; Yanshevsky, Vladimir Avgustovich; Filippova, Rufina Alexandrovna; Gurvich, Yakov Abramovich; Logutov, Igor Jurievich; Egoricheva, Sofya Alexandrovna; Belgorodsky, Izrail Markovich; and Vyborov, Sergei Gerasimovich, 4,122,289, Cl. 568-789.000.
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Finkenbiner, Kenneth N., to Ken-Neil Inc. Spinner for bike hub. 4,121,851, Cl. 280-289.00R.
Finley, Lloyd D., to Caterpillar Tractor Co. Flow combining system for dual pumps. 4,121,501, Cl. 91-519.000.
Firestone Tire & Rubber Company, The: *See—*
Bohm, Georg G. A.; and Barbin, William W., 4,122,137, Cl. 264-22.000.
Fischer, Artur. Toy assembly kit. 4,121,374, Cl. 46-24.000.
Fischer, Gerhard, to Gustav Schade Maschinenfabrik. Apparatus for removing bulk material from a dump or stockpile. 4,121,724, Cl. 214-10.000.
Fischer, Karl; and Schreder, Felix, to Fischer, Karl. Electric hot plate assemblies. 4,122,330, Cl. 219-449.000.
Fischer, Manfred: *See—*
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Fischer, Paul W.; and Pye, David S., to Union Oil Company of California. Biodegradable foaming agent in drilling and workover operations. 4,121,664, Cl. 166-309.000.
Fischer, Paul W.; and Pye, David S., to Union Oil Company of California. Method for foam drilling using a biodegradable foaming agent. 4,121,674, Cl. 175-66.000.
Fish, Leonard A.; Brodsky, Harvey A.; and Weitzel, Bruce. Dictating machine control unit. 4,122,305, Cl. 179-6.00E.
Fisher, Howard M.; and Nagati, Rashed N., to Pennsylvania Engineering Corporation. Metallurgical vessel suspension system. 4,121,811, Cl. 266-246.000.
Flatland, Lloyd P. Telescoping handpiece. 4,121,342, Cl. 32-26.000.
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Moriarty, William L.; and Fletcher, Augustus, 4,121,982, Cl. 204-43.00G.
Flinn, Henry I., Jr. Power plant. 4,121,422, Cl. 60-597.000.
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Koleilat, Bashir M., 4,121,660, Cl. 166-135.000.
Lochte, Glen E.; and Pashalis, Cryssis N., 4,121,616, Cl. 137-615.000.
Focht, Bruce E., to Scott Paper Company. Perforated, embossed film to foam laminates. 4,121,960, Cl. 156-219.000.
Focke, Heinz; and Liedtke, Kurt, to Focke & Pfuhl. Pack made from laminated sheeting. 4,121,713, Cl. 206-274.000.
Focke, Heinz; and Liedtke, Kurt, to Focke & Pfuhl. Package with a hinged lid. 4,121,756, Cl. 229-44.0CB.
Focke & Pfuhl: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,121,713, Cl. 206-274.000.
Focke, Heinz; and Liedtke, Kurt, 4,121,756, Cl. 229-44.0CB.
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Forberg, Hans-Jurgen, to Transcodan, Sven Husted-Andersen. Multitube valve. 4,121,622, Cl. 137-863.000.
Forbes, George Alfred. Supporting elements for ducting. 4,121,796, Cl. 248-62.000.
Ford, William R., Jr.: *See—*
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Forssberg, Knut Sven Erik; and Kopp, Karl Dieter, to Mineral Processing Development & Innovation AB. Magnetic separator. 4,122,005, Cl. 209-232.000.
Forster, Karl-Heinz; Lein, Werner; and Hettmann, Henner, to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Control system for the sheet-feeding unit and sheet-presenting unit of a printing machine. 4,121,820, Cl. 271-259.000.
Fort, Emil M., to Westinghouse Electric Corp. Reliable dynamoelectric machine condition monitor. 4,121,458, Cl. 73-339.00R.
Forth, Hans-Joachim: *See—*
Bachler, Werner; Forth, Hans-Joachim; and Frank, Rudiger, 4,121,430, Cl. 62-55.500.
Fortin, Paul Emile; and Howitt, Fred, to Alcan Research and Development Limited. Aluminum alloy electrical conductor and method therefor. 4,121,951, Cl. 148-12.70A.
Foseco Trading A.G.: *See—*
Jaunich, Helmut; Dunkelmann, Dietger; and Schiffarth, Josef, 4,121,955, Cl. 156-71.000.
Fosteris, Stelian. Ice mat. 4,121,765, Cl. 238-14.000.
Fouassier, Claude; and Latourette, Bertrand, to Rhone-Poulenc Industries. Novel luminophores emitting ultraviolet radiation, and uses thereof. 4,122,349, Cl. 250-504.000.
Fowler, Reginald H.: *See—*
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Fox, Joseph D.; Kuhlmann, George E.; and Wittman, Ricky L., to Standard Oil Company a corporation of Indiana. Preparation of an aqueous solution containing ions of at least manganous and bromide ions from a water soluble manganous salt and elemental bromine. 4,122,037, Cl. 252-429.00R.
Frade, Gilbert; Escher, Balint; and Price, Dominique, to Lignes Telegraphiques et Telephoniques. Solid electrolyte tantalum capacitors. 4,122,509, Cl. 361-433.000.
Fraioli, Anthony V.: *See—*
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Frame, Robert R., to UOP Inc. Treating a petroleum distillate with a supported metal phthalocyanine and an alkaline reagent containing alkanolamine halide. 4,121,997, Cl. 208-206.000.

Frame, Robert R., to UOP Inc. Treating a petroleum distillate with a supported metal phthalocyanine and a polynuclear aromatic sulfonic acid. 4,121,998, Cl. 208-206.000.
Frameworks, Inc.: *See—*
Duggins, Richard Wayne; and Rodgers, James William, 4,121,343, Cl. 33-42.000.
Frank, Edward Joseph. Internal thread cleaner and restorer. 4,121,486, Cl. 82-4.00C.
Frank, Rudiger: *See—*
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Frankel, Milton B.; Gunderloy, Frank C., Jr.; and Woolery, Dean O., II, to Rockwell International Corporation. Production of trinitromethane. 4,122,124, Cl. 260-644.000.
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Frantzerb, John G., Sr., to Caterpillar Tractor Co. Welding flux formulation and process for fume reduction. 4,122,238, Cl. 428-558.000.
Fraser, James Girvan: *See—*
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Freeman, Gerald C.: *See—*
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Friberg, Stig Erik; Gillberg-La Force, Elsa Gunilla; and Falklin, Karl-Henry, to Perstorp AB. Aqueous microemulsion of alkyd, modified alkyd, or polyester binder and emulsifier. 4,122,051, Cl. 260-22.00A.
Fricke, Roy A. Portable air purge. 4,121,916, Cl. 55-316.000.
Frie, Wolfgang; Henkel, Hans-Joachim; Hini, Paul; Koch, Christian; and De Bucs, Eugen Szabo, to Siemens Aktiengesellschaft. Method and apparatus for operating an internal combustion engine. 4,121,542, Cl. 123-3.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
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Fried. Krupp Gesellschaft mit beschrankter Haftung Atlas Elektronik Bremen: *See—*
Triebold, Karl Friedrich; Myrzik, Sigmar; and Bohme, Johann Friedrich, 4,122,432, Cl. 340-15.000.
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Friedman, Jacob; Goldner, Sandor; and Lax, Jacob. Telephone answering apparatus providing selective message communication. 4,122,306, Cl. 179-6.00E.
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Frohlich, Richard L.; and Bitzer, William E., to Westinghouse Electric Corp. Apparatus for forming a circumferential weld. 4,121,746, Cl. 228-9.000.
Frolov, Jury Fedorovich. Method of and device for forming self-baking electrode. 4,122,294, Cl. 13-18.00R.
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Fry, Philip W. Method and means relating to high rise building access for fire fighting purposes. 4,121,693, Cl. 182-131.000.
Fuerxer, Pierre H.: *See—*
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Fuji Electrochemical Co., Ltd.: *See—*
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Yagihara, Morio; Tanaka, Mitsugu; Aono, Toshiaki; and Hirose, Takeshi, 4,121,934, Cl. 96-22.000.
Fujii, Shoichiro; Sendai, Michiyuki; Naito, Kenzo; and Kato, Masayasu, to Takeda Chemical Industries, Ltd. Process for producing desacetoxycephalosporin derivatives by heating a penicillin-1-oxide in presence of an organic sulfide. 4,122,258, Cl. 544-18.000.
Fujii, Yoshihiro: *See—*
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Fukuhara, Toru, to Nippon Kogaku K.K. Mirror device in a single lens reflex camera or the TTL metering type. 4,122,468, Cl. 354-59.000.
Fukuma, Nobuo; and Katou, Yoshito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method for manufacturing a friction speed change gearing. 4,121,331, Cl. 29-434.000.
Fukumoto, Tashiro: *See—*
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Fukushima, Isao; Iso, Yoshimi; and Akitake, Isao, to Hitachi, Ltd. Phase-shifting multiplication type FM signal demodulation circuit. 4,122,394, Cl. 325-344.000.
Fullmann, Marius: *See—*
Silber, Dieter; Finck, Karl-Julius; Fullmann, Marius; and Winter, Wolfgang, 4,122,480, Cl. 357-38.000.
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Gabrys, Kenneth F., to Chicago Rawhide Manufacturing Company. Injector head for injection molding machine. 4,121,740, Cl. 222-146.00H.
Gagnon, Thomas Edward: *See—*
Childress, Lorenza Steward; Gagnon, Thomas Edward; Thompson, Donald Russell; and Zucker, Larry Reed, 4,122,496, Cl. 358-298.000.
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Kimoto, Chisaburo; Itasaka, Katsuhiko; Tanaka, Ryu; and Kimura, Yoshinobu, 4,121,355, Cl. 35-9.00C.
Gallo, Luigi C., to Ampex Corporation. Method and apparatus for inserting synchronizing words in a digitalized television signal data stream. 4,122,477, Cl. 358-4.000.
Gallo, Luigi C.; and Beaulier, Daniel A., to Ampex Corporation. Clock signal generator providing non-symmetrical alternating phase intervals. 4,122,478, Cl. 358-4.000.
Gallo, Luigi C., to Ampex Corporation. DC restoration utilizing the color burst signal. 4,122,492, Cl. 358-34.000.
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Gantin, Robert, to Werkzeugmaschinenfabrik Oerlikon Buhrle AG. Apparatus for triggering rapid individual firing. 4,121,497, Cl. 89-129.00R.
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Ganz, Robert H.: *See—*
Duerr, Joseph W.; and Ganz, Robert H., 4,121,401, Cl. 53-398.000.
Garabedian, George V. Sound producing straw. 4,121,835, Cl. 274-1.00R.
Garrett Corporation, The: *See—*
Roberge, Frank L., 4,121,763, Cl. 236-87.000.
Garrett, William L.; Grube, Roy G.; and Kennedy, Wayne C., to Armstrong Cork Company. Non-punking non-corrosive phenolic foam containing sodium tetraborate. 4,122,045, Cl. 521-103.000.
Garrick, John S. Flagholder. 4,121,803, Cl. 248-536.000.
Garrison, Harold Keith, to Hesston Corporation. Drive train and transmission for forage harvester. 4,121,436, Cl. 64-2.00P.
Garth, Bruce Hollis, to Du Pont de Nemours, E. I., and Company. Mannich bases containing tertiary amines. 4,121,911, Cl. 44-73.000.
Gaudin, Jean-Paul Marcel Francois: *See—*
Iato, Michel; Bourgeois, Andre Gaston Julien; and Gaudin, Jean-Paul Marcel Francois, 4,121,806, Cl. 254-172.000.
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Gebhardt, Richard. Stow roller train arrangement. 4,121,709, Cl. 198-781.000.
Gee, Ronald P.; and Keil, Joseph W., to Dow Corning Corporation. Emulsion compositions comprising a siloxane-oxyalkylene copolymer and an organic surfactant. 4,122,029, Cl. 252-309.000.
Geiger, Allen R. System and method for geophysical prospecting by measurement of earth tides. 4,121,464, Cl. 73-382.00R.
Geiger, Kenneth E., to Becton, Dickinson and Company. Disposable hypodermic syringe and method of manufacture. 4,121,588, Cl. 128-218.00R.
Geils, John H. Activated carbon-sorbital composition and adsorption-expulsion treatment therewith. 4,122,169, Cl. 424-125.000.
Gelfand, Mikhail Lvovich: *See—*
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General Datacomm Industries, Inc.: *See*—
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General Electric Company: *See*—
Adamchick, John T.; Sicko, John C.; and Underkoffler, Edwin C., 4,122,520, Cl. 364-200.000.
Berkowitz, Ami E.; Fielding, John O.; and Lahut, Joseph A., 4,121,964, Cl. 156-507.000.
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Butler, Walter J.; and Eichelberger, Charles W., 4,121,461, Cl. 73-362.0SC.
Cole, Herbert S., Jr.; and Aftergut, Siegfried, 4,122,027, Cl. 252-299.000.
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Glover, Gary H.; and Lederman, Frank L., 4,121,468, Cl. 73-602.000.
Greskovich, Charles D.; Prochazka, Svante; and O'Clair, Chester R., 4,122,140, Cl. 264-65.000.
Holub, Frederick Frank; and Wilson, Phillip Steven, 4,122,061, Cl. 260-40.00R.
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General Foods Corporation: *See*—
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General Signal Corporation: *See*—
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McNeel, William O., 4,122,433, Cl. 340-17.00R.
George, Joachim; and Repplinger, Joachim, to Bayer Aktiengesellschaft. Copper-N-methylpyrrolidone catalyst useful in the production of nitrodiphenyl amines. 4,122,118, Cl. 260-576.000.
Georgoudis, Paul C., to National Starch and Chemical Corporation. Thermoplastic copolyesters prepared from aromatic dicarboxylic acid, substituted succinic acid or anhydride, a glycol and a polymeric polyol and the use thereof in adhesives. 4,122,073, Cl. 260-873.000.
Gerhart, Grant R., to United States of America, Army. Non-destructive technique for surface wave velocity measurement. 4,121,467, Cl. 73-597.000.
Gestkoff, Nicolas, to Societe Anonyme D.B.A. Adjusting assembly for a drum brake. 4,121,701, Cl. 188-79.5GE.
Gewerkschaft Eisenhutte Westfalia: *See*—
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Giken Trading Company: *See*—
Tsubota, Naoki; and Satoru, Shibuya, 4,122,331, Cl. 235-92.0PK.
Gilbert & Barker Manufacturing Company: *See*—
Harmon, Ronald S.; McCrory, Rollin J..; and Vaughan, Gordon S., 4,122,524, Cl. 364-465.000.
Gill, Bernard J., to Kiwi Coders Corporation. Inking wheel having resilient inker support. 4,121,521, Cl. 101-348.000.
Gillberg-La Force, Elsa Gunilla: *See*—
Friberg, Stig Erik; Gillberg-La Force, Elsa Gunilla; and Falklin, Karl-Henry, 4,122,051, Cl. 260-22.00A.
Girling Limited: *See*—
Baum, Heinz Willi, 4,121,698, Cl. 188-73.300.
Margetts, Hugh Grenville, 4,121,696, Cl. 188-71.300.
Margetts, Hugh Grenville; and Knight, Peter Charles, 4,121,700, Cl. 188-73.400.
Moss, Norman Sydney, 4,121,703, Cl. 188-196.0BA.
Nicholls, Lawrence George, 4,121,704, Cl. 188-282.000.
Reynolds, Desmond Henry James; and Quiney, Kenneth Maurice, 4,121,845, Cl. 277-212.0FB.
Glaxo Laboratories Limited: *See*—
Humber, David C., 4,122,259, Cl. 544-22.000.
Gleason, John Gerald: *See*—
Buckley, Thomas Francis; and Gleason, John Gerald, 4,122,262, Cl. 544-90.000.
Gleeson, Christopher Michael. Culturing bottle and method of making. 4,121,976, Cl. 195-104.000.
Glenn, Frederick J., to Cook Electric Company. Loop extender. 4,122,312, Cl. 179-16.00F.
Glenn, William E.; and Ludeke, Carl A., to New York Institute of Technology. Solar air conditioning method and apparatus. 4,121,428, Cl. 62-2.000.
Glover, Gary H.; and Lederman, Frank L., to General Electric Company. Method and apparatus for reflective ultrasonic imaging utilizing reconstruction of acoustic impedance projections. 4,121,468, Cl. 73-602.000.
Gmeiner, Gunter; and Moller, Hermann, to Daimler-Benz Aktiengesellschaft. Installation for the protection of a line. 4,122,436, Cl. 340-605.000.
Godel, Siegfried, to Palmor International Corporation. Electrical air heating appliance. 4,122,329, Cl. 219-370.000.
Goebbels, Jozef: *See*—
Esklavon, Peter; Zander, Georg; and Goebbels, Jozef, 4,122,367, Cl. 313-318.000.
Goebel Fixture Co.: *See*—
Crovella, Edward A.; and Mellon, Frederick R., 4,121,573, Cl. 128-2.10A.
Goergen, Fritz Aurel: *See*—
Voelskow, Peter; Rother, Horst; Schlotterer, Gustav; and Pfeiffer, Hermann, 4,121,524, Cl. 110-220.000.
Goes, Friedrich: *See*—
Hablitzel, Hermann; and Goes, Friedrich, 4,121,869, Cl. 296-97.00R.
Gohausen, Hans Jurgen; Kirchhoff, Winfried; and Lindener, Jurgen, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Method of sealing oxidized aluminum surfaces with aqueous solutions of polycarboxylic acids. 4,121,980, Cl. 204-35.00N.
Gohda, Kyoko: *See*—
Sawa, Natsuo; and Gohda, Kyoko, 4,122,277, Cl. 548-342.000.
Gold, Harold. Hydraulic speed governor. 4,121,609, Cl. 137-115.000.
Gold, Paul B., to Kreske, Walter J., a part interest. Fuel saving furnace improvement. 4,121,563, Cl. 126-116.00A.
Goldman, Melvin: *See*—
Kronman, Joseph H.; and Goldman, Melvin, 4,121,587, Cl. 128-218.00P.
Goldner, Sandor: *See*—
Friedman, Jacob; Goldner, Sandor; and Lax, Jacob, 4,122,306, Cl. 179-6.00E.
Goldshtein, Boris Grigorievich: *See*—
Antipov, Georgy Afanasievich; Berezhnoi, Vitaly Alexandrovich; Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Lavnikov, Nikolai Stanislavovich; Teres, Leonid Nikolaevich; Urazhdin, Ivan Ivanovich; Tsipenjuk, Yakov Isaakovich; and Yakubovsky, Petr Stepanovich, 4,121,670, Cl. 173-20.000.
Goldwell GmbH, Chemische Fabrik H.E.Dotter: *See*—
Wittersheim, Adam, 4,121,735, Cl. 222-83.500.
Golovchinskaya, Elena Semenovna; Chernov, Vladimir Alexandrovich; Chaman, Elena Silvestrovna; Nikolaeva, Ljudmila Alexandrovna; and Korsunsky, Vyacheslav Sergeevich. Pharmaceutical composition containing 2-dimethylamino-6-diethyleneimidophosphamido-7-methyl-purine. 4,122,173, Cl. 424-200.000.
Gomberg, Henry J.; and Teitel, Robert J., to Texas Gas Transmission Corporation. Production of hydrogen by radiolysis. 4,121,984, Cl. 204-157.10H.
Gonnello, Lawrence Joseph. Automatic signal and hook-setting ice fishing equipment. 4,121,367, Cl. 43-16.000.
Gonser, Donald I., to Dentsply Research and Development Corporation. System for monitoring integrity of a patient return circuit. 4,121,590, Cl. 128-303.130.
Goodwin, Genevieve M.: *See*—
Bringman, Bernard B.; and Goodwin, Genevieve M., 4,121,306, Cl. 4-144.200.
Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., to NCR Corporation. Spread spectrum detector. 4,122,393, Cl. 325-324.000.
Gorlach, Hans; and Nolte, Heinz. Appliance for the sharpening of the edges of skis. 4,121,484, Cl. 76-83.000.
Gorndt, John H., to Lord Corporation. Flexible sealing joint. 4,121,861, Cl. 285-223.000.
Gornik, Leonid Avrumovich: *See*—
Antipov, Georgy Afanasievich; Berezhnoi, Vitaly Alexandrovich; Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Lavnikov, Nikolai Stanislavovich; Teres, Leonid Nikolaevich; Urazhdin, Ivan Ivanovich; Tsipenjuk, Yakov Isaakovich; and Yakubovsky, Petr Stepanovich, 4,121,670, Cl. 173-20.000.
Gorran, Jody A., to Medpro, Inc. Flotation support system with fluid accumulation means. 4,121,310, Cl. 5-370.000.
Goshima, Takeshi; and Iwatate, Fujio, to Canon Kabushiki Kaisha. Scanning device for radiation beams. 4,121,883, Cl. 350-6.800.
Goslin, Richard L.: *See*—
Schroeder, James E.; and Goslin, Richard L., 4,122,547, Cl. 365-189.000.
Goto, Takao: *See*—
Tachibana, Kyozo; Tsuboi, Takashi; Suzuki, Yutaka; Matsutake, Mitsugu; Miura, Shozuchi; Hatano, Shigeru; Goto, Takao; and Nozaki, Yoshio, 4,122,515, Cl. 363-45.000.
Goto, Tateo: *See*—
Kikuga, Toyoji; Nakamura, Masayuki; Goto, Tateo; and Amakawa, Tosaku, 4,122,211, Cl. 427-27.000.
Gottschalk, Robert E., to Panavision, Incorporated. Quiet motion picture camera. 4,121,886, Cl. 352-35.000.
Gough & Company (Hanley) Limited: *See*—
Gough, George Terah, 4,121,650, Cl. 164-329.000.

Gough, George Terah, to Gough & Company (Hanley) Limited. Foundry casting machines. 4,121,650, Cl. 164-329.000.
Goussios, Constantine C. Universal drafting triangle. 4,121,344, Cl. 33-110.000.
Graham, Alton J. Skateboard rink and method. 4,121,821, Cl. 272-3.000.
Graham, Edward F. Combustion-product retardant barrier system for aiding passenger escape from aircraft fuselage structure. 4,121,790, Cl. 244-118.00P.
Grantz, Helmut; and Faix, Heinz, to Daimler-Benz Aktiengesellschaft. Jointed window lifter, especially for motor vehicles. 4,121,381, Cl. 49-227.000.
Gravely, Lawrence Edmond: *See*—
Newton, Richard Paul; and Gravely, Lawrence Edmond, 4,121,599, Cl. 131-261.00R.
Gray, Robin Th.; and De Jong, Aaldert J., to Shell Oil Company. Cyclohexane derivatives. 4,122,121, Cl. 260-598.000.
Grazier, James A.; and Grazier, Leonard F. Stable solar power source for portable electrical devices. 4,122,396, Cl. 325-492.000.
Grazier, Leonard F.: *See*—
Grazier, James A.; and Grazier, Leonard F., 4,122,396, Cl. 325-492.000.
Greenaway, David Leslie, to LGZ Landis & GYR Zug Ag. Apparatus and method for producing an electrical signal responsive to handwriting characteristics. 4,122,435, Cl. 340-146.3SY.
Greene, E. Colton. Geometrical constructions. 4,121,831, Cl. 273-160.000.
Greenhalgh, Colin William; Carey, John Laurence; and Newton, David Francis, to Imperial Chemical Industries Limited. Benzodipyrrole dyestuffs. 4,122,087, Cl. 260-325.00R.
Greenleaf, John W., Jr.; and Schmidt, Harold E. Sewage treatment system. 4,122,013, Cl. 210-195.00S.
Greensite, Fred Samuel. Method and apparatus for processing vectorcardiographic signals for enabling quantitative determination of the percentage of heart muscle tissue affected by an intervention. 4,121,576, Cl. 128-2.06V.
Greenwood, John Christopher, to International Standard Electric Corporation. Optical fiber switch. 4,121,884, Cl. 350-96.150.
Greer, James B., to Exxon Production Research Company. Pipe connection. 4,121,862, Cl. 285-333.000.
Gregorec, Ladislav: *See*—
Nellen, Wilhelm; Sevenich, Theodor; Klein, Konrad; and Gregorec, Ladislav, 4,121,723, Cl. 214-6.00D.
Grekov, Tzanko Georgiev: *See*—
Radev, Hristo Kirilov; Lazarov, Iliya Ivanov; and Grekov, Tzanko Georgiev, 4,121,451, Cl. 73-37.900.
Grennard, Alf H. Underground storage for cold and hot products and methods for constructing same. 4,121,429, Cl. 62-45.000.
Greskovich, Charles D.; Prochazka, Svante; and O'Clair, Chester R., to General Electric Company. Hot pressing of silicon nitride using beryllium additive. 4,122,140, Cl. 264-65.000.
Greskovich, Charles D.: *See*—
Prochazka, Svante; and Greskovich, Charles D., 4,122,155, Cl. 423-344.000.
Grigorenko, Georgy Mikhailovich; Sheiko, Ivan Vasilievich; Eltsov, Konstantin Sergeevich; Korotkov, Albert Nikitovich; Pakhomov, Alexei Ivanovich; Kanibolotsky, Sergei Arsentievich; Lakomsky, Viktor Iosifovich; Shevchenko, Vladimir Denisovich; Kiselev, Nikolai Mikhailovich; and Torkhov, Gennady Fedorovich. Feed system for plasma-arc furnace. 4,122,293, Cl. 13-2.00P.
Grip-Pak Systems, Inc.: *See*—
Cunningham, Ernest Ray, 4,121,712, Cl. 206-150.000.
Grisbrook, Robert B. Solar heating unit. 4,121,565, Cl. 126-270.000.
Grolman, Bernard; and Richards, William, to American Optical Corporation. Optical center locator for spectacles. 4,121,346, Cl. 33-200.000.
Gross, Roger A., to Micron Corporation. Microfiche reader with improved carriage mounting. 4,121,887, Cl. 353-27.00R.
Grott, Frank S. Energy conservation kit for household furnaces. 4,121,562, Cl. 126-85.00B.
Grube, Roy G.: *See*—
Garrett, William L.; Grube, Roy G.; and Kennedy, Wayne C., 4,122,045, Cl. 521-103.000.
Gruner, Hans; Schrewe, Hans; and Pleschiutschnigg, Fritz Peter, to Mannesmann Aktiengesellschaft. Crystalline structure in continuously cast steel ingot. 4,121,923, Cl. 75-53.000.
GTE Automatic Electric Laboratories Incorporated: *See*—
Harp, Maurice C.; and Seaver, Terry R., 4,122,391, Cl. 324-78.00Z.
Thomas, Jay A., 4,122,397, Cl. 328-139.000.
GTE Sylvania Incorporated: *See*—
Arumugham, Rangaswamy; and Kam, George Hager, 4,122,493, Cl. 358-195.000.
Morean, James E.; and Penird, Carl W., 4,122,461, Cl. 354-1.000.
Gude, Klaus Erik: *See*—
Straarup, Orla; Petersen, Max Fowler; and Gude, Klaus Erik, 4,121,770, Cl. 239-224.000.
Guenther, Kenneth L.: *See*—
Erikson, Rolf B.; Zemke, Edward H.; and Guenther, Kenneth L., 4,122,457, Cl. 346-75.000.
Guhlin, Kjall G. Universal flushing apparatus. 4,121,948, Cl. 134-100.000.
Guimier, Alain R.; and Strudel, Jean-Loup B. V., to Association pour la Recherche et le Developpement des Methods et Processus Industriels (A.R.M.I.N.E.S.). Forged nickel alloy product and method. 4,121,950, Cl. 148-12.70N.
Guise, Geoffrey Bruce, to Commonwealth Scientific and Industrial Research Organization. Stable concentrated polymer mixtures for the treatment of textile materials. 4,121,902, Cl. 8-128.00A.
Gulf Research & Development Company: *See*—
Cronauer, Donald C.; and Swift, Harold E., 4,121,909, Cl. 422-222.000.
Kobylinski, Thaddeus P.; Taylor, Brian; and Vogel, Roger F., 4,122,039, Cl. 252-435.000.
Schulz, Johann G. D.; and Sabourin, Edward T., 4,122,050, Cl. 521-95.000.
Gulf & Western Manufacturing Company: *See*—
Talmage, Dennis D.; and Byrne, James C., 4,122,371, Cl. 315-84.000.
Gunderloy, Frank C., Jr.: *See*—
Frankel, Milton B.; Gunderloy, Frank C., Jr.; and Woolery, Dean O., II, 4,122,124, Cl. 260-644.000.
Gundlach, Robert W., to Xerox Corporation. Electrostatic powder image transfer using pair of electrodes, one pointed, one blunt. 4,122,210, Cl. 427-24.000.
Gunther, Wolfgang H. H.: *See*—
Smith, Thomas W.; and Gunther, Wolfgang H. H., 4,122,030, Cl. 252-313.00R.
Gurkov, Konstantin Stepanovich: *See*—
Tkach, Khaim Berkovich; Kostylev, Alexander Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Klimashko, Vladimir Vasilievich, 4,121,672, Cl. 175-19.000.
Gurvich, Yakov Abramovich: *See*—
Michurov, Jury Ivanovich; Yanshevsky, Vladimir Avgustovich; Filippova, Rufina Alexandrovna; Gurvich, Yakov Abramovich; Logutov, Igor Jurievich; Egoricheva, Sofya Alexandrovna; Belgorodsky, Izrail Markovich; and Vyborov, Sergei Gerasimovich, 4,122,289, Cl. 568-789.000.
Gusev, Valery Fedorovich; Ivanov, Gennady Nikolaevich; Kontarev, Vladimir Yakovlevich; Krengel, Genrikh Isaevich; Kremlev, Vyacheslav Yakovlevich; Shagivaleev, Mansur Zakirovich; Schetinin, Jury Ivanovich; and Yarmukhametov, Azat Usmanovich. Storage device. 4,122,535, Cl. 364-900.000.
Gustav Schade Maschinenfabrik: *See*—
Fischer, Gerhard, 4,121,724, Cl. 214-10.000.
Gutmann, Franz: *See*—
Kissinger, Heinrich; and Gutmann, Franz, 4,121,413, Cl. 58-19.00R.
Haagen, Peter H., to Tandy Corporation. Moisture sensor. 4,122,389, Cl. 324-65.00R.
Haasen, Nicolaas F.; Van de Moesdijk, Cornelis G. M.; and Wagemans, Gerardus M. C., to Stamicarbon, B.V. Recycling method for the preparation and processing of a hydroxyl ammonium salt solution. 4,122,153, Cl. 423-387.000.
Haberlein, Harald: *See*—
Scheidl, Franz; Huber, Hans; Ulm, Klaus; Haberlein, Harald; and Pfahler, Gerhard, 4,122,064, Cl. 260-45.75S.
Habermeier, Jurgen, to Ciba-Geigy Corporation. Dicarboxylic acids and dicarboxylic acid esters containing a heterocyclic radical. 4,122,276, Cl. 548-310.000.
Hablitzel, Hermann; and Goes, Friedrich, to Volkswagenwerk Aktiengesellschaft. Apparatus for preventing dust from settling on or being blown against a rear window of a vehicle. 4,121,869, Cl. 296-97.00R.
Habu, Teiji: *See*—
Nishina, Yoshio; Habu, Teiji; Nakajima, Tomio; Oshima, Akio; Sakamoto, Eiichi; Fujimori, Noboru; Mine, Kiyomitsu; and Toya, Hiroo, 4,121,935, Cl. 96-27.00E.
Hackenberg, Robert A., to Robertson Paper Box Co., Inc. Easy-fill box. 4,121,754, Cl. 229-38.000.
Haertl, Hanns-Dietmar: *See*—
Fickeisen, Peter; Elschnig, Gert; Haertl, Hanns-Dietmar; Wendel, Kurt; and Eisentraeger, Klaus, 4,122,219, Cl. 427-206.000.
Hagen, Helmut; Amann, August; and Giertz, Hubert, to BASF Aktiengesellschaft. Production of 2-(o-alkylthiophenyl)-1,3-diazocycloalkene hydrohalides. 4,122,263, Cl. 544-114.000.
Hagenbart, Donald E.: *See*—
Riley, Wayne A.; Ingebretsen, Melinda S.; Rodig, Robert I.; Krapf, David V.; Hagenbart, Donald E.; and Williams, Charles H., 4,121,818, Cl. 270-54.000.
Hahn, Volker; and Fastenau, Werner, to Ed. Zublin Aktiengesellschaft. Space framework. 4,121,398, Cl. 52-646.000.
Halbert, Silas Ray: *See*—
Prior, Arthur D.; Ward, Leonard G.; and Halbert, Silas Ray, 4,121,518, Cl. 101-93.330.
Halcon International, Inc.: *See*—
Brill, William F., 4,122,106, Cl. 260-429.00R.
Hall, Alfred George; and Brown, Brian E., to Moduloc Concrete Products (London) Ltd. Pre-cast units for sewer construction. 4,121,390, Cl. 52-20.000.
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., to International Flavors & Fragrances Inc. Mixture of 1-(2-propenyl)-3-(4-methyl-3-pentenyl)-Δ^3-cyclohexene-1-carboxaldehyde and 1-(2-propenyl)-4-(4-methyl-3-pentenyl)-Δ^3-cyclohexene-1-carboxaldehyde and process for producing same. 4,122,122, Cl. 260-598.000.
Hall, John B.: *See*—
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,122,120, Cl. 260-586.00R.
Hall, Ralph Floyd; and Huffman, William Francis, to SmithKline Corporation. Isopenicillins. 4,122,086, Cl. 260-306.70R.

Hall, Samuel Stewart: *See—*
Martin, Barrie James; Broad, Michael John; and Hall, Samuel Stewart, 4,121,549, Cl. 123-32.0EA.

Halliburton Company: *See—*
Ajam, Sami O.; and McCarty, Benjiman R., 4,122,387, Cl. 324-10.000.

Halliday, Richard L., Jr., to Fazzina, S. Harry; and Fazzina, Roberta A. Flashlight. 4,122,510, Cl. 362-189.000.

Halling, Horace P., to Pressure Science, Incorporated. Multiple convolution sealing ring. 4,121,843, Cl. 277-200.000.

Halm, Roland L., to Dow Corning Corporation. Method for preparing a thermal-stability additive and a thermally stabilized methylpolysiloxane and compositions therefrom. 4,122,109, Cl. 260-448.20S.

Halse, Per Weien, to Moore Business Forms, Inc. Continuous stationery assemblies. 4,121,857, Cl. 282-11.50A.

Hamaguchi, Yasunori: *See—*
Nemoto, Akira; Hamaguchi, Yasunori; and Terai, Kenichi, 4,121,844, Cl. 277-212.0FB.

Hamilton, Frank G., to Rader Companies, Inc. Metering surge bin airlock. 4,122,003, Cl. 209-147.000.

Hamlin, John R., to Container Corporation of America. Flap arrangement for a carrier carton. 4,121,757, Cl. 229-52.00B.

Hammer-Lit GmbH: *See—*
Meseke, Curt Th.; and Winkler, Winfried, 4,121,755, Cl. 229-38.000.

Hammond, James T., to Caterpillar Tractor Co. Flexible drive. 4,121,476, Cl. 74-411.000.

Hans Einhell GmbH Industriegelande, Firma: *See—*
Miller, Jorge; and Stummer, Franz, 4,121,991, Cl. 204-260.000.

Hansel, William B., to Sun Oil Company of Pennsylvania. Interlock system for a gasoline dispensing nozzle. 4,121,635, Cl. 141-207.000.

Hansen, James E.: *See—*
Lohman, Gordon Russell; and Hansen, James E., 4,121,927, Cl. 75-201.000.

Hansen, Lars J., to World Chemical Industry, Inc. Refractory compositions. 4,122,059, Cl. 260-37.0EP.

Hansen, Laurence H., to Andrew Corporation. Dual mode feed horn. 4,122,446, Cl. 343-786.000.

Hanson, Chris A.: *See—*
Bertetto, Donald W.; and Hanson, Chris A., 4,121,359, Cl. 36-117.000.

Hanson Industries Incorporated: *See—*
Bertetto, Donald W.; and Hanson, Chris A., 4,121,359, Cl. 36-117.000.

Hansson, Gosta Hudson: *See—*
Bostrum, Mats Gustav Daniel; Hansson, Gosta Hudson; and Lind, Hans-Erik, 4,122,218, Cl. 427-209.000.

Hara, Junji: *See—*
Momotari, Yoshitaka; Hara, Junji; Kitamura, Tadashi; and Iiyama, Shigeo, 4,122,143, Cl. 264-104.000.

Harada, Koosuke: *See—*
Takeuchi, Shinjiro; Kikuchi, Tosiro; Harada, Koosuke; Shokyu, Tokuji; and Fujii, Yoshihiro, 4,122,392, Cl. 324-208.000.

Harke, Cyril James: *See—*
Crippen, Monte Dennis; Harke, Cyril James; and Mentz, Bernardus Johannes, 4,121,994, Cl. 204-286.000.

Harmant, Michel, to Etablissements Zelant, Gazuit. Grinding-path compensating device for crack and flaw removing machine. 4,121,384, Cl. 51-34.00D.

Harmon, Ronald S.; McCrory, Rollin J..; and Vaughan, Gordon S., to Gilbert & Barker Manufacturing Company. Sale computing and display package for gasoline-dispensing apparatus. 4,122,524, Cl. 364-465.000.

Harms, Louis C.; and O'Toole, Raymond R., Jr., to AMBAC Industries Incorporated. Electrically operated proportional flow control hydraulic valve and manually operable remote control device therefor. 4,121,610, Cl. 137-117.000.

Harp, Maurice C.; and Seaver, Terry R., to GTE Automatic Electric Laboratories Incorporated. Frequency deviation measuring and adjusting system. 4,122,391, Cl. 324-78.00Z.

Harris Corporation: *See—*
Patterson, Raymond B., III, 4,122,414, Cl. 331-116.00R.
Schroeder, James E.; and Goslin, Richard L., 4,122,547, Cl. 365-189.000.

Harris, Guy H., to Dow Chemical Company, The. Froth flotation process. 4,122,004, Cl. 209-166.000.

Harris, Rano J., Jr.: *See—*
Harris, Rano J., Sr.; Harris, Rano J., Jr.; and Averette, Julius P., Jr., 4,121,465, Cl. 73-422.0GC.

Harris, Rano J., Sr.; Harris, Rano J., Jr.; and Averette, Julius P., Jr., to Precision Sampling Corporation. Automatic fluid injector, and magazine therefor. 4,121,465, Cl. 73-422.0GC.

Hart, Cornelis Maria: *See—*
Camerik, Ferdinand; Hart, Cornelis Maria; and Slob, Arie, 4,122,542, Cl. 365-156.000.

Hart, Edward F., to Ranco Incorporated. Air-conditioning system. 4,121,655, Cl. 165-27.000.

Harte, Kenneth J.: *See—*
Smith, Donald O.; Harte, Kenneth J.; and Sykes, Hollister B., 4,122,530, Cl. 364-900.000.

Hartig, Juergen; and Weitz, Hans-Martin, to BASF Aktiengesellschaft. Manufacture of glycol esters. 4,122,286, Cl. 560-246.000.

Hartig, Juergen: *See—*
Weitz, Hans-Martin; Vogel, Ludwig; Hartig, Juergen; and Hetzel, Eckhard, 4,122,285, Cl. 560-244.000.

Hartkorn, Hans Walter, to Ritterwerk GmbH. Automatic coffee percolator. 4,121,508, Cl. 99-283.000.

Hartmann, Werner. Process and apparatus for the production of elongated structures. 4,122,145, Cl. 264-174.000.

Harvey Mudd College: *See—*
Levin, Richard C.; and Armstrong, Allan G., 4,121,453, Cl. 73-172.000.

Hasegawa, Gen; Oe, Takanori; and Kitami, Chiaki, to Yoshitomi Pharmaceutical Industries, Ltd. Piperazine compounds. 4,122,178, Cl. 424-250.000.

Hasegawa, Hiroshi; Ohtsubo, Yoshiaki; Watanabe, Sakuji; and Takahata, Kouichi, deceased (by Takahata, Kosaku, legal successor), to Nippon Kogaku K.K. Device for indicating condition of exposure in an automatic control type electronic flash unit for flash photography. 4,122,465, Cl. 354-32.000.

Hasegawa, Masayasu: *See—*
Kotani, Yasuo; and Hasegawa, Masayasu, 4,122,187, Cl. 424-317.000.

Hasegawa, Takashi, to Nippondenso Co., Ltd. Electric ignition advance system. 4,121,553, Cl. 123-117.00D.

Hasegawa, Yoshikazu; Ohmichi, Yasuyuki; and Sakai, Koichi, to Sony Corporation. Deflection device for use with in-line type color cathode ray tubes. 4,122,422, Cl. 335-213.000.

Hashizume, Hiroshi: *See—*
Shindo, Noboru; Hashizume, Hiroshi; and Kikuchi, Shuichi, 4,121,411, Cl. 57-77.300.

Haslett, Robert Alan; Howard, Charles Peter; and Wheeler, Richard Winston, to Ricardo & Co., Engineers (1927) Limited. Measuring a flow of gas through a combustion engine. 4,121,455, Cl. 73-194.00M.

Hastings, Otis H. Transaction security system and modular transaction processing center. 4,121,523, Cl. 109-2.000.

Hatai, Akira, to Fukumoto, Tashiro. Apparatus for measuring water depth. 4,122,429, Cl. 340-3.00R.

Hatano, Shigeru: *See—*
Tachibana, Kyozo; Tsuboi, Takashi; Suzuki, Yutaka; Matsutake, Mitsugu; Miura, Shozuchi; Hatano, Shigeru; Goto, Takao; and Nozaki, Yoshio, 4,122,515, Cl. 363-45.000.

Hatch, Donald: *See—*
Chapman, Barbara Jean; and Hatch, Donald, 4,121,925, Cl. 75-130.00R.

Hathaway, Richard A., to Ampex Corporation. Coaxial reel system. 4,121,786, Cl. 242-193.000.

Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, to Nippon Soken, Inc. Air-fuel ratio adjusting apparatus for an internal combustion engine. 4,121,546, Cl. 123-32.0EE.

Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, to Nippon Soken, Inc. Deteriorated condition detecting apparatus for an oxygen sensor. 4,121,548, Cl. 123-32.0EE.

Haug, Ernst: *See—*
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Haug, Werner: *See—*
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Hauskins, John B., Jr. Method and apparatus for electrostatically separating particles from a mixture of particles. 4,122,002, Cl. 209-129.000.

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Kressel, Henry; and Hawrylo, Frank Zgymunt, 4,122,410, Cl. 331-94.50H.

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Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; Ouchi, Hiromu; and Hayakawa, Shigeru, 4,121,941, Cl. 106-39.500.

Hayashi, Josaburo: *See—*
Yajima, Seishi; Hayashi, Josaburo; and Omori, Mamoru, 4,122,139, Cl. 264-44.000.

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Heiter, George Ludwig; Miedema, Hotze; and Moore, Edwin Charles, to Bell Telephone Laboratories, Incorporated. Distortion generator. 4,122,399, Cl. 330-149.000.

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Hemphill, Kent W., to Xerox Corporation. Method of cleaning a photoreceptor. 4,121,947, Cl. 134-1.000.

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Henkel, Hans-Joachim: *See—*
Frie, Wolfgang; Henkel, Hans-Joachim; Hini, Paul; Koch, Christian; and De Bucs, Eugen Szabo, 4,121,542, Cl. 123-3.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Kiewert, Eva; and Disch, Karlheinz, 4,122,025, Cl. 252-173.000.
Ploger, Walter, 4,122,151, Cl. 423-265.000.
Smolka, Heinz, 4,121,903, Cl. 8-137.000.
Waltenberger, Peter; Uphues, Gunter; and Petzold, Manfred, 4,122,018, Cl. 252-8.600.

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Gohausen, Hans Jurgen; Kirchhoff, Winfried; and Lindener, Jurgen, 4,121,980, Cl. 204-35.00N.

Henning, Hermann; Kosanke, Johannes; Pakur, Henryk; Wittneben, Hermann; and Tiemann, Reinhard, to Continental Cummi-Werke Aktiengesellschaft. Pneumatic tire for a vehicle wheel. 4,121,640, Cl. 152-340.000.

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Celi, Antonio M., 4,121,449, Cl. 72-500.000.

Hesston Corporation: *See—*
Garrison, Harold Keith, 4,121,436, Cl. 64-2.00P.

Hestermann, Klaus; Staendeke, Horst; and Lippsmeier, Bernd, to Hoechst Aktiengesellschaft. Production of quaternary phosphonium halides. 4,122,123, Cl. 260-606.50F.

Hettmann, Henner: *See—*
Forster, Karl-Heinz; Lein, Werner; and Hettmann, Henner, 4,121,820, Cl. 271-259.000.

Hetzel, Eckhard: *See—*
Weitz, Hans-Martin; Vogel, Ludwig; Hartig, Juergen; and Hetzel, Eckhard, 4,122,285, Cl. 560-244.000.

Heuber, Klaus; Klein, Wilfried; Najmann, Knut; Wernicke, Friedrich; and Wiedmann, Siegfried Kurt, to International Business Machines Corporation. Memory storage array with restore circuit. 4,122,548, Cl. 365-203.000.

Hewlett-Packard Company: *See—*
Amin, Dilip A., 4,122,514, Cl. 363-21.000.

Hexachimie: *See—*
Schweisguth, Bernard, 4,122,175, Cl. 424-248.540.
Teulon, Jean-Marie, 4,122,091, Cl. 260-332.20A.

Heyer, Willy, to Gewerkschaft Eisenhutte Westfalia. Mine roof support unit and assembly. 4,121,426, Cl. 405-296.000.

Hickey, Christopher Daniel Dowling, to Airflex Containers Limited. Container having seal means. 4,121,732, Cl. 220-232.000.

Hicks, Damon John: *See—*
Hicks, Jarvis Byron, Jr.; and Hicks, Damon John, 4,121,543, Cl. 123-3.000.

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Higgens, Calvin E.: *See—*
Michel, Karl H.; and Higgens, Calvin E., 4,122,168, Cl. 424-118.000.

Higgins, Andrew D.: *See—*
Dewsnap, Ronald F.; Higgins, Andrew D.; and Beard, David E., 4,121,954, Cl. 148-153.000.

High Voltage Engineering Corporation: *See—*
Enge, Harald Anton, 4,122,346, Cl. 250-398.000.

Hilfman, Lee, to UOP Inc. Hydrocracking process for the production of LPG. 4,121,996, Cl. 208-111.000.

Hill, David T.; Lantos, Ivan; and Sutton, Blaine M., to SmithKline Corporation. Process for preparing auranofin. 4,122,254, Cl. 536-121.000.

Hill, William J., to Morgan Construction Company. Apparatus for handling and storing elongated articles. 4,121,721, Cl. 214-1.00P.

Hilleman, Maurice R.: *See—*
Buynak, Eugene B.; and Hilleman, Maurice R., 4,122,167, Cl. 424-89.000.

Hillwood Electronic Musical Instruments Corporation: *See—*
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Hini, Paul: *See—*
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Hiraga, Masaharu, to Sankyo Electric Co., Ltd. Drive shaft seal for compressor housing. 4,121,841, Cl. 277-38.000.

Hirai, Tadaaki: *See—*
Maruyama, Eiichi; Hirai, Tadaaki; Ishioka, Sachio; Yamamoto, Hideaki; and Inao, Kiyohisa, 4,121,537, Cl. 118-7.000.

Hirano, Minoru: *See—*
Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirano, Minoru; and Ishii, Masaru, 4,121,929, Cl. 75-238.000.

Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, to Canon Kabushiki Kaisha. Image information recording apparatus. 4,122,462, Cl. 354-5.000.

Hirono, Minoru: *See—*
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Hirose, Takeshi: *See—*
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Hirsch, Hans-Jurgen: *See—*
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Hirschfield, Robert K. Baseball training glove. 4,121,824, Cl. 273-26.00C.

Hirshfeld, Julian J.: *See—*
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Hitachi, Ltd.: *See—*
Endo, Akira, 4,122,449, Cl. 343-8.000.
Fukushima, Isao; Iso, Yoshimi; and Akitake, Isao, 4,122,394, Cl. 325-344.000.
Horie, Noboru, 4,122,481, Cl. 357-43.000.
Maruyama, Eiichi; Hirai, Tadaaki; Ishioka, Sachio; Yamamoto, Hideaki; and Inao, Kiyohisa, 4,121,537, Cl. 118-7.000.
Ono, Yuichi; Morioka, Makoto; Ito, Kazuhiro; Mori, Mitsuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,122,486, Cl. 357-17.000.
Sato, Yoshio; and Nishikawa, Mistuyo, 4,121,424, Cl. 60-646.000.
Suehiro, Akio, 4,122,307, Cl. 179-6.00R.
Sugawara, Yoshitaka; and Kamei, Tatsuya, 4,122,479, Cl. 357-19.000.
Tachibana, Kyozo; Tsuboi, Takashi; Suzuki, Yutaka; Matsutake, Mitsugu; Miura, Shozuchi; Hatano, Shigeru; Goto, Takao; and Nozaki, Yoshio, 4,122,515, Cl. 363-45.000.
Takasaki, Yoshitaka; Ishizuka, Kohei; Kita, Yasuhiro; Nagoya, Yoshinori; and Kusama, Takeo, 4,122,417, Cl. 333-28.00R.
Tokunaga, Norikazu, 4,122,516, Cl. 363-79.000.
Tomita, Sadami; Chiba, Akio; and Utsumi, Yoshiharu, 4,122,386, Cl. 324-0.50H.

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Hodil, Elmer Raleigh, to Olin Corporation. Power-actuated tool load magazine. 4,121,365, Cl. 42-88.000.

Hodil, Elmer Raleigh, Jr., to Olin Corporation. Stackable fastener assembly. 4,121,715, Cl. 206-347.000.

Hoech, Gary F., to Rockwell International Corporation. Method and apparatus for providing a circuit with a smooth transfer function. 4,122,529, Cl. 364-852.000.

Hoechst Aktiengesellschaft: *See—*
Hestermann, Klaus; Staendeke, Horst; and Lippsmeier, Bernd, 4,122,123, Cl. 260-606.50F.
Prossel, Gunter; Schinzel, Erich; and Rosch, Gunter, 4,122,257, Cl. 542-432.000.
Sahm, Wilfried, 4,122,256, Cl. 542-423.000.
Scheidl, Franz; Huber, Hans; Ulm, Klaus; Haberlein, Harald; and Pfahler, Gerhard, 4,122,064, Cl. 260-45.75S.
Wolfinger, Arthur; and Nicolay, Klaus, 4,121,783, Cl. 242-68.400.

Hoesch Werke Aktiengesellschaft: *See—*
Nellen, Wilhelm; Sevenich, Theodor; Klein, Konrad; and Gregorec, Ladislav, 4,121,723, Cl. 214-6.00D.

Hoff, David Casper: *See—*
Robinson, Robert Lee; and Hoff, David Casper, 4,122,441, Cl. 340-146.1AB.

Hoffelt, Francis C.: *See—*
Schumacher, Donavon J.; and Hoffelt, Francis C., 4,121,798, Cl. 248-113.000.

Hoffman, Paul Leslie, to Avco Corporation. Bellows with rotational joints. 4,121,860, Cl. 285-226.000.

Hoffman, Sidney R. Method of teaching speech reading. 4,121,357, Cl. 35-35.00R.

Hoffmann-La Roche Inc.: *See—*
D'Souza, Richard; and Wyss, Pierre-Charles, 4,122,252, Cl. 536-23.000.
Jaunin, Roland, 4,122,265, Cl. 544-143.000.

Hoffmann, Rudiger: *See—*
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Hofmann, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Stepped pulse generator circuit. 4,122,362, Cl. 307-227.000.

Hofmann, Ruediger: *See—*
von Basse, Paul-Werner; and Hofmann, Ruediger, 4,122,546, Cl. 365-189.000.

Hofreiter, Bernard T.; Smiley, Karl L.; and Boundy, Joyce A., to United States of America, Agriculture. Preparation of retrogradation-resistant starches with immobilized amylases. 4,121,974, Cl. 195-7.000.

Hoiler, Henry: *See—*
Dietrich, Edward J.; and Hoiler, Henry, 4,121,382, Cl. 49-334.000.

Hokuseki Sangyo Kabushiki Kaisha: *See—*
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Holland, Charles L.; and Nicoloff, George B., to General Dynamics Corporation. Inflatable air inlet duct. 4,121,606, Cl. 137-15.100.

Hollerich, August, to PWA Papierwerke Waldhof-Aschaffenburg Aktiengesellschaft. Defoaming agent. 4,122,032, Cl. 252-321.000.

Hollitzer, Oswald: *See—*
Steglich, Wolfgang; Hollitzer, Oswald; and Seewald, Alfred, 4,122,090, Cl. 260-332.100.

Holman, John A. Artificial board of lumber and method for manufacturing same. 4,122,236, Cl. 428-453.000.

Holmes, Billy H.; and Schwartz, John B., to Perry Oceanographics, Inc. Closure mechanism for a door. 4,121,383, Cl. 49-395.000.

Holmes, Thomas, to Dunlop Limited. Tire and wheel assemblies. 4,121,643, Cl. 152-366.000.

Holmstrom, Ernest R.; Smith, Merrill M.; and Ferguson, Donald C., to

American Biltrite, Inc. Method and apparatus for coating tile. 4,122,225, Cl. 428-172.000.
Holub, Frederick Frank; and Wilson, Phillip Steven, to General Electric Company. Impact modified polyester compositions. 4,122,061, Cl. 260-40.00R.
Honda, Iwao: *See—*
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Honma, Katuhiko: *See—*
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Crippen, Monte Dennis; Harke, Cyril James; and Mentz, Bernardus Johannes, 4,121,994, Cl. 204-286.000.
Hope, Henry F.; and Hope, Stephen F. Solar heating system. 4,121,764, Cl. 237-1.00A.
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Hopkins, Carl E., to Dayco Corporation. Method of making a hose. 4,121,962, Cl. 156-272.000.
Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Masahiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, to Kogyo Kaihatsu Kenkyusho. Process for eliminating diluted sulfur oxides in combustion exhaust gases. 4,122,150, Cl. 423-242.000.
Horie, Noboru, to Hitachi, Ltd. Semiconductor IC structure including isolated devices in a single substrate and method for fabricating same. 4,122,481, Cl. 357-43.000.
Horii, Hiroshi: *See—*
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Hornsby, Jack. Smokers' pipes. 4,121,598, Cl. 131-194.000.
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Howeney, Russell C. Corn, grain sorghum and millet premix and method of preparing same. 4,122,206, Cl. 426-555.000.
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Hovel, Harold John; and Woodall, Jerry MacPherson, to International Business Machines Corporation. Semiconductor heterostructure. 4,122,476, Cl. 357-16.000.
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Howland, Leland L., to Thermo King Corporation. Internal combustion engine starting circuit. 4,122,354, Cl. 290-31.000.
Hsu, George C., to United States of America, National Aeronautics and Space Administration. Surfactant-assisted liquefaction of particulate carbonaceous substances. 4,121,995, Cl. 208-8.000.
Huber, Ferdinand Vincent, to Ecodyne Corporation. Header. 4,121,656, Cl. 165-72.000.
Huber, Hans: *See—*
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Kowalski, Francis W.; and Wilmot, Richard D., 4,122,450, Cl. 343-17.10R.
Sullivan, Paul A., 4,122,335, Cl. 250-491.000.
Hughes, Donald Wayne Kent, to AMP Incorporated. Electrical connections for extremely fine wires. 4,122,425, Cl. 336-192.000.
Hughes, James K.; and Erickson, Wayne K., to Phillips Petroleum Company. Method and apparatus for crimping synthetic thermoplastic fibers. 4,122,019, Cl. 252-8.800.
Hughes, Richard Swart, to United States of America, Navy. Magneto-optically tuned lasers. 4,122,412, Cl. 331-94.50C.
Hughes, William C.; and Parks, Harold G., to General Electric Company. Magnetic deflection apparatus positioned behind target. 4,122,369, Cl. 313-430.000.
Hull, Frederick C., to Westinghouse Electric Corp. High strength, austenitic, non-magnetic alloy. 4,121,953, Cl. 148-38.000.
Hulstrunk, William, to RCA Corporation. Semiconductor device having reduced leakage current. 4,122,483, Cl. 357-49.000.
Hult, Richard Thomas. Portable foot anchor for exercising. 4,121,825, Cl. 272-93.000.
Humber, David C., to Glaxo Laboratories Limited. 7β-[2-Aryl-2-(etherified oximino)acetamido]-3-N-substituted carbamoyloxymethyleeph-3-em-4-carboxylic acids. 4,122,259, Cl. 544-22.000.
Humbert, Rene, to Edouard Dubied et Cie. (Societe Anonyme). Fabric draw down device. 4,121,440, Cl. 66-152.000.
Humenik, James N.; Powell, Jimmie L.; and Tummala, Rao R., to International Business Machines Corporation. Ink jet nozzle structures. 4,122,460, Cl. 346-140.00R.
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Huntley, Gerald, to Irvin Industries Inc. Clip ejector for safety seat belt buckle. 4,121,327, Cl. 24-230.00R.
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Iffland, Norbert; Isensee, Hans-Jorg; Wagner, Gerhard; and Witte, Hartmut, to Nukem Nuklear-Chemie und Metallurgie GmbH. Process for solidifying and eliminating radioactive borate containing liquids. 4,122,028, Cl. 252-301.10W.
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Imperial Chemical Industries Limited: *See—*
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Greenhalgh, Colin William; Carey, John Laurence; and Newton, David Francis, 4,122,087, Cl. 260-325.00R.
Padget, John Christopher, 4,122,249, Cl. 528-486.000.
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Belpaume, Charles, 4,121,302, Cl. 2-113.000.
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Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Masahiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, 4,122,150, Cl. 423-242.000.
Inouye, Shigeharu: *See—*
Niizato, Tetsutaro; Tsuruoka, Takashi; Inouye, Shigeharu; Koeda, Takemi; and Niida, Taro, 4,122,171, Cl. 424-180.000.
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Nowak, Andrew, 4,121,504, Cl. 92-137.000.
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Schroeder, Donald Earl, 4,121,391, Cl. 52-235.000.
Institut Francais du Petrole: *See—*
Sugier, Andre; and Freund, Edouard, 4,122,110, Cl. 260-449.500.
Institut National des Radio-Elements - Nationaal Instituut voor Radio-Elementen, en abrege: I.R.E.: *See—*
Depoitier, Jacques; Monaco, Ovidio; and Destabelle, Michel, 4,121,456, Cl. 73-194.00F.
Institute "Lenin" Vish Machinno-Elektrotechnicheski: *See—*
Radev, Hristo Kirilov; Lazarov, Iliya Ivanov; and Grekov, Tzanko Georgiev, 4,121,451, Cl. 73-37.900.
Institute of Gas Technology: *See—*
Weil, Sanford A.; Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., 4,121,432, Cl. 62-79.000.
Inta-Rota, Incorporated: *See—*
Roberts, Arthur W., Jr.; and Kesler, George, 4,121,535, Cl. 118-5.000.
Intel Corporation: *See—*
Caywood, John M., 4,122,550, Cl. 365-222.000.
International Business Machines Corporation: *See—*
Childress, Lorenza Steward; Gagnon, Thomas Edward; Thompson, Donald Russell; and Zucker, Larry Reed, 4,122,496, Cl. 358-298.000.
Clemen, Rainer; Haug, Werner; and Schnadt, Robert, 4,122,361, Cl. 307-208.000.
Heuber, Klaus; Klein, Wilfried; Najmann, Knut; Wernicke, Friedrich; and Wiedmann, Siegfried Kurt, 4,122,548, Cl. 365-203.000.
Hovel, Harold John; and Woodall, Jerry MacPherson, 4,122,476, Cl. 357-16.000.
Humenik, James N.; Powell, Jimmie L.; and Tummala, Rao R., 4,122,460, Cl. 346-140.00R.
Langdon, Glenn George, Jr.; and Rissanen, Jorma Johannen, 4,122,440, Cl. 340-347.0DD.
Levine, James L., 4,122,494, Cl. 358-208.000.
Van Vechten, James Alden, 4,122,407, Cl. 331-94.50H.
White, James M., 4,121,882, Cl. 350-3.710.
Wong, Chak-Kuen; and Yue, Po Cheung, 4,122,536, Cl. 365-3.000.
International Flavors & Fragrances Inc.: *See—*
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., 4,122,122, Cl. 260-598.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,122,120, Cl. 260-586.00R.
International Nickel Company, Inc., The: *See—*
de Barbadillo, John Joseph, II, 4,121,924, Cl. 75-129.000.
International Standard Electric Corporation: *See—*
Greenwood, John Christopher, 4,121,884, Cl. 350-96.150.
International Telephone & Telegraph Corp.: *See—*
Annable, Richard V., 4,121,434, Cl. 62-467.00R.
Balkwill, John T., 4,121,920, Cl. 65-13.000.
Inuzuka, Yutaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vibration control bush assembly. 4,121,813, Cl. 267-57.10A.
Irle, Rolf Gerd: *See—*
Zimmerman, Otto; and Irle, Rolf Gerd, 4,121,445, Cl. 72-237.000.
Irvin Industries Inc.: *See—*
Huntley, Gerald, 4,121,327, Cl. 24-230.00R.
Rain, Lloyd Howard, 4,121,604, Cl. 135-4.00R.
Irvine, Robert: *See—*
Luperti, Harry E.; Irvine, Robert; and Salzman, Robert S., 4,121,716, Cl. 209-564.000.
Isensee, Hans-Jorg: *See—*
Iffland, Norbert; Isensee, Hans-Jorg; Wagner, Gerhard; and Witte, Hartmut, 4,122,028, Cl. 252-301.10W.
ISF Spa: *See—*
Scavino, Carlo, 4,122,111, Cl. 424-300.000.
Ishida, Eisuke, to Matsushita Electric Industrial Co., Ltd. Electrophotographic process involving dye transfer imagewise. 4,121,932, Cl. 96-1.200.
Ishida, Hiroaki: *See—*
Yonemoto, Tomoo; Ishida, Hiroaki; Morino, Yukio; Watanabe, Masanori; and Onda, Eiichi, 4,122,464, Cl. 354-29.000.
Ishidoshiro, Hiroshi: *See—*
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Ishihara, Takeshi: *See—*
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Ishii, Masaru: *See—*
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Yukawa, Toru; Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirono, Minoru; Ishii, Masaru; and Tatsuno, Tsuneo, 4,121,930, Cl. 75-238.000.
Ishii, Sadamu: *See—*
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Ishikawa, Shinzo: *See—*
Shono, Hiroaki; Noji, Toshio; Wakasa, Isao; and Ishikawa, Shinzo, 4,121,918, Cl. 65-1.000.
Ishikawa, Shoichi; Kotake, Kiyoshi; and Honma, Seishi, to Kabushiki Kaisha Hasegawa Haguruma. W-N gear having a maximum surface strength. 4,121,482, Cl. 74-462.000.
Ishikawa, Yoshikazu: *See—*
Sakakibara, Yuji; and Ishikawa, Yoshikazu, 4,121,558, Cl. 123-196.00R.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Nanjyo, Toshio; and Nakamura, Akinori, 4,122,295, Cl. 13-32.000.
Ishioka, Sachio: *See—*
Maruyama, Eiichi; Hirai, Tadaaki; Ishioka, Sachio; Yamamoto, Hideaki; and Inao, Kiyohisa, 4,121,537, Cl. 118-7.000.
Ishizuka, Kohei: *See—*
Takasaki, Yoshitaka; Ishizuka, Kohei; Kita, Yasuhiro; Nagoya, Yoshinori; and Kusama, Takeo, 4,122,417, Cl. 333-28.00R.
Ishler, James M.: *See—*
Ward, Anthony T.; Ishler, James M.; and Damjanovic, Aleksandar, 4,121,981, Cl. 204-38.00R.
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Fukushima, Isao; Iso, Yoshimi; and Akitake, Isao, 4,122,394, Cl. 325-344.000.
Itasaka, Katsuhiko: *See—*
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Ito, Fumio; and Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Photographic camera. 4,122,472, Cl. 354-187.000.
Ito, Kazuhiro: *See—*
Ono, Yuichi; Morioka, Makoto; Ito, Kazuhiro; Mori, Mitsuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,122,486, Cl. 357-17.000.
Ito, Takeo; and Tsukagoshi, Hatsuo, to Tokyo Shibaura Electric Company, Limited. Method for metallizing a phosphor screen for a cathode ray tube. 4,122,213, Cl. 427-64.000.
ITT Industries, Inc.: *See—*
Bertrandi, Luigi, 4,122,146, Cl. 264-245.000.
Burgdorf, Jochen; and Kircher, Dieter, 4,121,872, Cl. 303-6.00C.
Ivanov, Gennady Nikolaevich: *See—*
Gusev, Valery Fedorovich; Ivanov, Gennady Nikolaevich; Kontarev, Vladimir Yakovlevich; Krengel, Genrikh Isaevich; Kremlev, Vyacheslav Yakovlevich; Shagivaleev, Mansur Zakirovich; Schetinin, Jury Ivanovich; and Yarmukhametov, Azat Usmanovich, 4,122,535, Cl. 364-900.000.
Iwasaki, Sadayoshi; and Naganuma, Shinya, to Alps Electric Co., Ltd. Push button switch assembly having independent operator interlock in at least two rows latching at least one operator. 4,122,316, Cl. 200-5.00B.
Iwata, Hiroshi, to West Electric Co. Ltd. Zoom lens camera equipped with flash unit. 4,122,466, Cl. 354-32.000.
Iwatate, Fujio: *See—*
Goshima, Takeshi; and Iwatate, Fujio, 4,121,883, Cl. 350-6.800.
Izuno, Herbert H.: *See—*
Stephens, Donald L.; and Izuno, Herbert H., 4,121,684, Cl 180-89.140.
J. C. Eckardt AG: *See—*
Bader, Horst, 4,121,607, Cl. 137-454.500.
J. C. Penney Company, Incorporated: *See—*
Ravotto, Richard Albert; and Rosenburg, Charles Warner, Jr., 4,121,752, Cl. 229-27.000.
J. M. Huber Corporation: *See—*
Wason, Satish K., 4,122,160, Cl. 424-49.000.
Wason, Satish K., 4,122,161, Cl. 424-49.000.
Jablonski, Richard J.; and Kruh, Daniel, to General Electric Company. Process of preparing maleimides. 4,122,076, Cl. 528-322.000.
Jackson, Robert W.: *See—*
Myers, Bruce B.; and Jackson, Robert W., 4,121,421, Cl. 60-582.000.
Jackson, Stephen: *See—*
Thaler, Michael; and Jackson, Stephen, 4,122,443, Cl. 340-146.30H.
Jacobi, Ernst, to Ernst Jacobi & Co. KG. Textile machine cleaning system. 4,121,318, Cl. 15-312.00A.
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; Alldred, Cyrus A.; and Kecseti, Frank M., to E. B. Metal & Rubber Industries, Inc. Satellite vending machine. 4,121,707, Cl. 194-10.000.
Jacobsen, Christian Carl, to General Datacomm Industries, Inc. Sequence generation by reading from different memories at different times. 4,122,309, Cl. 179-15.0BA.
Jaeger, Joseph; and Sauerbrunn, Robert D., to Du Pont de Nemours, E. I., and Company. Method of preventing deposit of polymer in reactor vent line during preparation of nylon. 4,122,075, Cl. 528-332.000.
Jakobs, Karlhans: *See—*
Kirschnek, Helmut; and Jakobs, Karlhans, 4,121,898, Cl. 8-25.000.
James, Nicholas Antony, to Plessey Handel und Investments AG. Variable displacement pump. 4,121,503, Cl. 91-505.000.
James, Robert G. Adaptor for splitting logs. 4,121,636, Cl. 144-193.00R.
Jamet, Michel, to Euratom. Electrical switch and its use for the control of machines. 4,122,319, Cl. 200-153.00J.

Janowski, Kenneth R.: *See—*
Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., 4,121,989, Cl. 204-195.00S.
Japan Carlit Co., Ltd., The: *See—*
Moriya, Koichi; and Honda, Iwao, 4,122,071, Cl. 526-17.000.
Jarnot, Frank R.: *See—*
Frederick, Louis J., 4,121,510, Cl. 99-425.000.
Jaunich, Helmut; Dunkelmann, Dietger; and Schiffarth, Josef, to Foseco Trading A.G. Treatment of electrodes. 4,121,955, Cl. 156-71.000.
Jaunin, Roland, to Hoffmann-La Roche Inc. Derivatives of 3-phenylisoindole-1-carboxylic acid. 4,122,265, Cl. 544-143.000.
Jelenevsky, Alex Michael: *See—*
Buchanan, Ronald Leslie; Woolever, John Theodore; and Jelenevsky, Alex Michael, 4,122,273, Cl. 544-355.000.
Jelmorini, Gerardus: *See—*
Essers, Wilhelmus Gerardus; Jelmorini, Gerardus; and Tichelaar, Gerrit Willem, 4,122,328, Cl. 219-121.00P.
Jennings, Russell A. Tote board. 4,121,637, Cl. 150-1.600.
Jensen, John C. Tractor with demountable components. 4,121,681, Cl. 180-54.00D.
Jensen, Preben B.: *See—*
Klatt, Robert W.; and Jensen, Preben B., 4,122,311, Cl. 179-15.0BL.
Jensen, Richard. Mobile agricultural sprayer with additive concentration control. 4,121,767, Cl. 239-71.000.
Jensen, William K., to O.E.M. Technical Sales, Inc. Test system for trailer brake mechanism. 4,122,434, Cl. 340-52.00B.
Jeumont-Schneider: *See—*
Mercier, Antoine G., 4,122,297, Cl. 174-11.0BH.
Johnny Reb Lure Company: *See—*
Norton, Donald S., 4,121,531, Cl. 114-221.00R.
Johnson, Elbert T.: *See—*
Castleman, Kenneth R.; Frieden, Howard J.; Johnson, Elbert T.; Rennie, Paul A.; and Wall, Raymond J., 4,122,518, Cl. 364-200.000.
Johnson, James Roy: *See—*
Brown, Robert Saul; and Johnson, James Roy, 4,121,626, Cl. 139-435.000.
Johnson & Johnson: *See—*
Dean, William Bruce, 4,122,227, Cl. 428-197.000.
Johnson, Marvin M.: *See—*
Murtha, Timothy P.; Jones, William A.; Zuech, Ernest A.; and Johnson, Marvin M., 4,122,125, Cl. 260-668.00R.
Johnson, Matthey & Co., Limited: *See—*
Barnet, Roderick Gordon Lester, 4,122,370, Cl. 313-468.000.
Johnson, Ralph E., to Singer Company, The. Hook drive for sewing machines. 4,121,527, Cl. 112-182.000.
Johnson, Richard C.: *See—*
Marlett, Calvin J.; Reed, Edwin A.; and Johnson, Richard C., 4,122,409, Cl. 331-94.50M.
Jojima, Toshio: *See—*
Takano, Shiro; Jojima, Toshio; Oshida, Hajime; Yokoi, Tadashi; Kato, Muneo; and Koizumi, Tadashi, 4,121,839, Cl. 277-3.000.
Jolivet, Francois: *See—*
Renault, Jean; Jolivet, Francois; Plichon, Claude; and Bordet, Rene, 4,121,393, Cl. 52-167.000.
Jones, J. David. Oil injector for two-cycle engines. 4,121,631, Cl. 141-27.000.
Jones, Lewis O.; and Mermelstein, Robert, to Xerox Corporation. Classified toner materials. 4,122,024, Cl. 252-62.10P.
Jones, William A.: *See—*
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Juby, Peter Frederick, to Bristol-Myers Company. 3-Tetrazolo-5,6,7,8-substituted-pyrido[1,2-a]pyrimidin-4-ones. 4,122,274, Cl. 544-282.000.
Jukes, John Alan: *See—*
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Kabushiki Kaisha Hasegawa Haguruma: *See—*
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha Seikosha: *See—*
Yamazaki, Hiroshi, 4,121,414, Cl. 58-21.110.
Kagoura, Tetsuro, to Yoshida Kogyo K.K. Latch assembly. 4,121,864, Cl. 292-202.000.
Kain, Calvin L., to Kain's Research and Development Co., Inc. Apparatus for pressure dispensing of fluids. 4,121,737, Cl. 222-95.000.
Kain's Research and Development Co., Inc.: *See—*
Kain, Calvin L., 4,121,737, Cl. 222-95.000.
Kaiserman, Terrance Z. Double image printed member. 4,122,237, Cl. 428-195.000.
Kaken Chemical Co., Ltd.: *See—*
Kurosawa, Hidehumi; and Tanaka, Yoshiaki, 4,122,189, Cl. 424-319.000.
Kaldun, Mark R.: *See—*
Miller, Curtis H.; Kaldun, Mark R.; and Arp, Robert A., 4,121,594, Cl. 128-422.000.
Kaltenegger, Benno. Hand-held firearms. 4,121,364, Cl. 42-32.000.
Kam, George Hager: *See—*
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Kamei, Tatsuya: *See—*
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Kamijo, Yoshimi: *See—*
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Kamiya, Minoru. Slider for use in slide fastener. 4,121,326, Cl. 24-205.15R.
Kammerer, Gerhard; and Bohne, Friedrich, to Varta Batterie Aktiengesellschaft. Electric storage battery. 4,122,244, Cl. 429-186.000.
Kanai, Kenji: *See—*
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Kanibolotsky, Sergei Arsentievich: *See—*
Grigorenko, Georgy Mikhailovich; Sheiko, Ivan Vasilievich; Eltsov, Konstantin Sergeevich; Korotkov, Albert Nikitovich; Pakhomov, Alexei Ivanovich; Kanibolotsky, Sergei Arsentievich; Lakomsky, Viktor Iosifovich; Shevchenko, Vladimir Denisovich; Kiselev, Nikolai Mikhailovich; and Torkhov, Gennady Fedorovich, 4,122,293, Cl. 13-2.00P.
Kanno, Susumu: *See—*
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Kansai Paint Company, Limited: *See—*
Aihara, Tetsuo; Nakayama, Yasuharu; Yamashita, Yoshio; Watanabe, Tadashi; and Toyomoto, Isao, 4,122,052, Cl. 260-23.0EM.
Kantor, Frederick W. Rotary thermodynamic apparatus. 4,121,435, Cl. 62-499.000.
Kantorowicz, Gerard: *See—*
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Kaphengst, Elmer; and Birdwell, Weldon, to Beatrice Foods Co. Electrical insect killing apparatus. 4,121,371, Cl. 43-112.000.
Kapke, Dwight L. Vent apparatus for clothes dryer. 4,121,351, Cl. 34-86.000.
Karinsky, Viktor Nikolaevich. Electric arc heating vacuum apparatus. 4,122,292, Cl. 13-2.00P.
Karll, Robert E.: *See—*
Valcho, Joseph J.; and Karll, Robert E., 4,122,020, Cl. 252-8.55D.
Karsh, Herbert. Motion monitor. 4,122,427, Cl. 340-1.00R.
Kasahara, Toshiyuki: *See—*
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Kasarauskas, Paul M.: *See—*
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Kastrubin, Eduard Mikhailovich; and Nozhnikov, Valentin Matveevich. Apparatus for current pulses action upon central nervous system. 4,121,593, Cl. 128-421.000.
Kato, Asamichi. Molding method. 4,121,942, Cl. 106-74.000.
Kato, Katsushi: *See—*
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Fujii, Shoichiro; Sendai, Michiyuki; Naito, Kenzo; and Kato, Masayasu, 4,122,258, Cl. 544-18.000.
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Katsube, Junki; Kobayashi, Tsuyoshi; Tamoto, Katsumi; Takebayashi, Yoshiaki; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. 3-(Piperazinoalkyl)-benz-2,1-isoxazoles. 4,122,176, Cl. 424-250.000.
Kaufmann, Karl Ernst, to Demag, A.G. Emergency brake for rail cars. 4,121,702, Cl. 188-187.000.
Kaule, Walter; and Primbsch, Erik, to Krautkramer-Branson, Incorporated. Method and apparatus for producing a pulse type ultrasonic wave on a workpiece surface. 4,121,469, Cl. 73-643.000.
Kaule, Walter, to Krautkramer-Branson, Incorporated. Opto-electric sensing means with predetermined directional characteristic for ultrasonic waves. 4,121,470, Cl. 73-643.000.
Kawagai, Kenji; and Yoshida, Shigeki, to Tokyo Shibaura Electric Company, Limited. Logic circuit using CMOS transistors. 4,122,360, Cl. 307-205.000.
Kawai Musical Instrument Mfg. Co. Ltd.: *See—*
Deutsch, Ralph, 4,121,490, Cl. 84-1.270.
Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirano, Minoru; and Ishii, Masaru, to Kobe Steel, Ltd. Nitrogen containing high speed steel obtained by powder metallurgical process. 4,121,929, Cl. 75-238.000.
Kawai, Nobuyasu: *See—*
Yukawa, Toru; Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirono, Minoru; Ishii, Masaru; and Tatsuno, Tsuneo, 4,121,930, Cl. 75-238.000.
Kawai, Yumio; Ikenishi, Michio; and Ohyama, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Endfire-type phased array antenna. 4,122,447, Cl. 343-814.000.
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; Ouchi, Hiromu; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Low microwave loss ceramics and method of manufacturing the same. 4,121,941, Cl. 106-39.500.

Kawata, Masahiko: *See—*
Ono, Yuichi; Morioka, Makoto; Ito, Kazuhiro; Mori, Mitsuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,122,486, Cl. 357-17.000.
Kazuo, Aoi: *See—*
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Kecseti, Frank M.: *See—*
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Keiper KG: *See—*
Kluting, Bernd; and Voss, Hans Werner, 4,121,802, Cl. 248-421.000.
Keller, Moreau A., Jr. Hollow sound-dampened structure. 4,121,686, Cl. 181-233.000.
Kellogg, Harlan F. Shelf bracket. 4,121,801, Cl. 248-235.000.
KemaNobel AB: *See—*
Hummler, Otto; and Welander, Bo Christer, 4,122,296, Cl. 13-33.000.
Ken-Neil Inc.: *See—*
Finkenbiner, Kenneth N., 4,121,851, Cl. 280-289.00R.
Kende, Andrew S.; and Rutledge, Peter S., to University of Rochester. Total synthesis of (±)-picropodophyllone and (±)-4'-demethylpicropodophyllone. 4,122,092, Cl. 260-340.50R.
Kennedy, Wayne C.: *See—*
Garrett, William L.; Grube, Roy G.; and Kennedy, Wayne C., 4,122,045, Cl. 521-103.000.
Kenney, James F., to M&T Chemicals Inc. Reaction products of specific antimony compounds with a carboxylate of zinc calcium or manganese and an alcohol or glycol. 4,122,107, Cl. 260-429.300.
Kenrich Petrochemicals, Inc.: *See—*
Monte, Salvatore J.; and Sugerman, Gerald, 4,122,062, Cl. 260-42.140.
Keppel, Richard A.: *See—*
Rick, Horst; Keppel, Richard A.; Mitchell, Harvey A.; Olsen, Lowell V.; Colas, James K.; and Tracy, Robert E., 4,122,521, Cl. 364-424.000.
Kernforschungszentrum Karlsruhe GmbH: *See—*
Albrecht, Helmut; Barleon, Leopold; Dorner, Stefan; Fischer, Manfred; and Wilhelm, Juergen, 4,121,970, Cl. 176-38.000.
Kersnar, Paul; and O'Connor, Robert Joseph, to Polytrol Chemical Corporation. Amidobetaine containing detergent composition nontoxic to aquatic life. 4,122,043, Cl. 252-527.000.
Kesler, George: *See—*
Roberts, Arthur W., Jr.; and Kesler, George, 4,121,535, Cl. 118-5.000.
Khaber, Nikolai Vasilievich: *See—*
Chuiko, Alexei Alexeevich; Tertykh, Valentin Anatolievich; Khaber, Nikolai Vasilievich; and Chuiko, Elena Alexandrovna, 4,121,946, Cl. 106-308.00N.
Kiewert, Eva; and Disch, Karlheinz, to Henkel Kommanditgesellschaft auf Aktien. Liquid scouring cleaning compositions containing cristobalite. 4,122,025, Cl. 252-173.000.
Kigawa, Tomio; and Ishihara, Takeshi, to Kubota, Ltd. Piping systems for drainage and piping members therefor. 4,121,914, Cl. 55-191.000.
Kikuchi, Shuichi: *See—*
Shindo, Noboru; Hashizume, Hiroshi; and Kikuchi, Shuichi, 4,121,411, Cl. 57-77.300.
Kikuchi, Tosiro: *See—*
Takeuchi, Shinjiro; Kikuchi, Tosiro; Harada, Koosuke; Shokyu, Tokuji; and Fujii, Yoshihiro, 4,122,392, Cl. 324-208.000.
Kikuchi, Yoshiki, to Xerox Corporation. Magnetic bubble element. 4,122,539, Cl. 365-42.000.
Kikuga, Toyoji; Nakamura, Masayuki; Goto, Tateo; and Amakawa, Tosaku, to Sumitomo Durez Company, Ltd. Process for coating electric or electronic elements. 4,122,211, Cl. 427-27.000.
Kilburn, James S. Water purification with fragmented oil shale. 4,121,662, Cl. 166-259.000.
Kimoto, Chisaburo; Itasaka, Katsuhiko; Tanaka, Ryu; and Kimura, Yoshinobu, to Gakken Co., Ltd. Learning device. 4,121,355, Cl. 35-9.00C.
Kimura, Shiro; Nakamura, Yasuyoshi; Kurimoto, Shigeki; and Motouchi, Katuhiro, to Sankio Chemical Co., Ltd. Aminothiofluoran compounds, process for the production thereof, and recording elements containing the same. 4,122,089, Cl. 260-328.000.
Kimura, Yoshinobu: *See—*
Kimoto, Chisaburo; Itasaka, Katsuhiko; Tanaka, Ryu; and Kimura, Yoshinobu, 4,121,355, Cl. 35-9.00C.
Kinard, Richard Dale, to Du Pont de Nemours, E. I., and Company. Magnetic image decorator. 4,122,209, Cl. 427-18.000.
Kindig, Guilford Edwin; and Michatek, Chester William, to Eastman Kodak Company. Photographic apparatus with improved control of camera vibration. 4,122,469, Cl. 354-83.000.
King, Lowell A.: *See—*
Nardi, John C.; Hussey, Charles L.; and King, Lowell A., 4,122,245, Cl. 429-194.000.
Kinoshita, Hiroyuki, to Tokyo Shibaura Electric Company, Limited. Dynamic random access memory having sense amplifier circuits and data regeneration circuit for increased speed. 4,122,549, Cl. 365-222.000.
Kinosz, Donald L.; Das, Subodh K.; and Coffman, Robert L., to Aluminum Company of America. Metal production. 4,121,983, Cl. 204-67.000.
Kinzer, David R.; and McDaniel, Joe D., to Zoecon Corporation. Insecticidal composition containing cis-9-tricosene and methomyl. 4,122,165, Cl. 424-84.000.
Kircher, Dieter: *See—*
Burgdorf, Jochen; and Kircher, Dieter, 4,121,872, Cl. 303-6.00C.
Kirchhoff, Winfried: *See—*
Gohausen, Hans Jurgen; Kirchhoff, Winfried; and Lindener, Jurgen, 4,121,980, Cl. 204-35.00N.
Kirschnek, Helmut; and Jakobs, Karlhans, to Bayer Aktiengesellschaft. Process for dyeing synthetic polyamide fibre materials. 4,121,898, Cl. 8-25.000.
Kiselev, Nikolai Mikhailovich: *See—*
Grigorenko, Georgy Mikhailovich; Sheiko, Ivan Vasilievich; Eltsov, Konstantin Sergeevich; Korotkov, Albert Nikitovich; Pakhomov, Alexei Ivanovich; Kanibolotsky, Sergei Arsentievich; Lakomsky, Viktor Iosifovich; Shevchenko, Vladimir Denisovich; Kiselev, Nikolai Mikhailovich; and Torkhov, Gennady Fedorovich, 4,122,293, Cl. 13-2.00P.
Kishi, Ken, to Showa Vermiculite Kabushiki Kaisha. Noncombustible, smokeless building composite material and its method of manufacture. 4,122,231, Cl. 428-310.000.
Kishigami, Jun: *See—*
Matsuda, Atsushi; Kishigami, Jun; and Nishimura, Masaaki, 4,122,314, Cl. 179-115.50R.
Kishino, Takao: *See—*
Mera, Yoichi; Kishino, Takao; and Morooka, Tsutomu, 4,122,376, Cl. 315-167.000.
Kissinger, Heinrich; and Gutmann, Franz, to VDO Adolf Schindling AG,. Battery operated electric clock with improved casing. 4,121,413, Cl. 58-19.00R.
Kistner Co., Inc.: *See—*
Kistner, John E., 4,121,358, Cl. 35-53.000.
Kistner, John E., to Kistner Co., Inc. Wall covering, carpet and drapery displaying room simulator. 4,121,358, Cl. 35-53.000.
Kita, Yasuhiro: *See—*
Takasaki, Yoshitaka; Ishizuka, Kohei; Kita, Yasuhiro; Nagoya, Yoshinori; and Kusama, Takeo, 4,122,417, Cl. 333-28.00R.
Kitagawa, Masahiro: *See—*
Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Masahiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, 4,122,150, Cl. 423-242.000.
Kitajima, Kenichi; Nagano, Akira; and Urasaki, Kazuaki, to Omron Tateisi Electronics Co. Apparatus for displaying numerical value information in alternative forms. 4,122,444, Cl. 340-324.00R.
Kitami, Chiaki: *See—*
Hasegawa, Gen; Oe, Takanori; and Kitami, Chiaki, 4,122,178, Cl. 424-250.000.
Kitamura, Sotoo: *See—*
Yoshida, Shuzo; Akita, Sigeyuki; and Kitamura, Sotoo, 4,121,457, Cl. 73-291.000.
Kitamura, Tadashi: *See—*
Momotari, Yoshitaka; Hara, Junji; Kitamura, Tadashi; and Iiyama, Shigeo, 4,122,143, Cl. 264-104.000.
Kitazawa, Shin-ichi: *See—*
Kojima, Teiryo; and Kitazawa, Shin-ichi, 4,121,412, Cl. 57-157.00R.
Kittrell, James R.; and Quinlan, Charles W., to New England Power Company; and Northeast Utilities Service Company. Process for the production of carbon disulfide from sulfur dioxide removed from a flue gas. 4,122,156, Cl. 423-443.000.
Kiwi Coders Corporation: *See—*
Gill, Bernard J., 4,121,521, Cl. 101-348.000.
Kizilay, Dogan: *See—*
Lipthay, Julius; and Kizilay, Dogan, 4,122,350, Cl. 250-505.000.
Klafs-Saunabau KG, Medizinische Technik: *See—*
Schneider, Wolfgang; Wieland, Dieter; and Rennecke, Gunter, 4,121,570, Cl. 126-374.000.
Klatt, Robert W.; and Jensen, Preben B., to Hughes Aircraft Company. Electronic multiplexer for parallel, bi-directional scanning thermal imaging system. 4,122,311, Cl. 179-15.0BL.
Klein, Ewald: *See—*
Dannert, Horst; Hirsch, Hans-Jurgen; Klein, Ewald; and Panstruga, Karl-Heinz, 4,121,933, Cl. 96-1.50R.
Klein, Konrad: *See—*
Nellen, Wilhelm; Sevenich, Theodor; Klein, Konrad; and Gregorec, Ladislav, 4,121,723, Cl. 214-6.00D.
Klein, Wilfried: *See—*
Heuber, Klaus; Klein, Wilfried; Najmann, Knut; Wernicke, Friedrich; and Wiedmann, Siegfried Kurt, 4,122,548, Cl. 365-203.000.
Kleitman, David: *See—*
Russell, Lewis K.; and Kleitman, David, 4,122,540, Cl. 365-104.000.
Klemm, Kurt: *See—*
Langenscheid, Erhard, deceased; and Klemm, Kurt, 4,122,172, Cl. 424-180.000.
Klenk, Herbert; Offermanns, Heribert; and Schwarze, Werner, to Deutsche Gold- und Silber- Scheideanstalt vormals Roessler. Substituted cyclopropyl glyoxylnitriles. 4,122,116, Cl. 260-545.00R.
Klimashko, Vladimir Vasilievich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexander Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Klimashko, Vladimir Vasilievich, 4,121,672, Cl. 175-19.000.

Klomp, Johannes Theodorus: *See—*
Meden-Piesslinger, Gertraud Agnes Anna; Klomp, Johannes Theodorus; and Oomen, Joris Jan Cornelis, 4,122,042, Cl. 252-513.000.

Klose, Robert Edward: *See—*
Bahoshy, Bernard Joseph; and Klose, Robert Edward, 4,122,195, Cl. 426-3.000.

Kluting, Bernd; and Voss, Hans Werner, to Keiper KG. Adjustable seat with constant torque. 4,121,802, Cl. 248-421.000.

Kneissl, Hannes; and Uebbing, Alexander, to Saarbergwerke Aktiengesellschaft. Process for purifying flue gases. 4,121,541, Cl. 122-1.00R.

Knight, Galeon. Freestanding fireplace and room heater. 4,121,560, Cl. 126-63.000.

Knight, Peter Charles: *See—*
Margetts, Hugh Grenville; and Knight, Peter Charles, 4,121,700, Cl. 188-73.400.

Knox, Kilbourne H.; and Bluhm, Stanley R., to Crane Co. Hydraulic braking system. 4,121,874, Cl. 303-10.000.

Knuth, Eugene W. Knock-down picture frame assembly. 4,121,362, Cl. 40-155.000.

Kobayashi, Kozo, to Nakamichi Research Inc. Playback system for a magnetic tape recorder. 4,122,502, Cl. 360-65.000.

Kobayashi, Tsuyoshi: *See—*
Katsube, Junki; Kobayashi, Tsuyoshi; Tamoto, Katsumi; Takebayashi, Yoshiaki; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 4,122,176, Cl. 424-250.000.

Kobe Steel, Ltd.: *See—*
Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirano, Minoru; and Ishii, Masaru, 4,121,929, Cl. 75-238.000.
Yukawa, Toru; Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirono, Minoru; Ishii, Masaru; and Tatsuno, Tsuneo, 4,121,930, Cl. 75-238.000.

Kobelt, Jacob; and Fandrich, Helmut Edward, to Kobelt, Jacob. Cam actuated caliper brake assembly. 4,121,697, Cl. 188-72.700.

Kobylinski, Thaddeus P.; Taylor, Brian; and Vogel, Roger F., to Gulf Research & Development Company. Process for preparing catalyst. 4,122,039, Cl. 252-435.000.

Koca, Robert M.: *See—*
Bertolacini, Ralph J.; and Koca, Robert M., 4,122,096, Cl. 260-346.750.

Koch, Christian: *See—*
Frie, Wolfgang; Henkel, Hans-Joachim; Hini, Paul; Koch, Christian; and De Bucs, Eugen Szabo, 4,121,542, Cl. 123-3.000.

Koch, George P.: *See—*
Sturwold, Robert J.; Utz, Walter Earl; Christ, Nicholas; Ford, William R., Jr.; and Koch, George P., 4,122,217, Cl. 427-156.000.

Koda, Hiroyuki; Megumi, Takeaki; and Yoshizaki, Hiroyuki, to Mitsubishi Gas Chemical Company, Inc. Process for producing polycarbonate oligomers. 4,122,112, Cl. 260-463.000.

Koeda, Takemi: *See—*
Niizato, Tetsutaro; Tsuruoka, Takashi; Inouye, Shigeharu; Koeda, Takemi; and Niida, Taro, 4,122,171, Cl. 424-180.000.

Koehring GmbH - Bomag Division: *See—*
Vural, Gulertan; and Carle, Udo, 4,121,472, Cl. 74-87.000.

Koga, Shigeto: *See—*
Tanabe, Kaichi; Koga, Shigeto; and Maeda, Yoshinori, 4,122,017, Cl. 210-522.000.

Kogyo Kaihatsu Kenkyusho: *See—*
Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Masahiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, 4,122,150, Cl. 423-242.000.

Kohriyama, Yoshimasa, to Caterpillar Mitsubishi Ltd. Noise silencer assembly. 4,121,683, Cl. 180-68.00P.

Koike, Masahiko: *See—*
Adachi, Takeshi; and Koike, Masahiko, 4,121,489, Cl. 84-1.240.

Koike, Takashi: *See—*
Amano, Masahiro; and Koike, Takashi, 4,121,966, Cl. 162-164.00R.

Koizumi, Tadashi: *See—*
Takano, Shiro; Jojima, Toshio; Oshida, Hajime; Yokoi, Tadashi; Kato, Muneo; and Koizumi, Tadashi, 4,121,839, Cl. 277-3.000.

Kojima, Teiryo; and Kitazawa, Shin-ichi, to Toray Industries, Inc. Spun yarn and process for manufacturing the same. 4,121,412, Cl. 57-157.00R.

Kokubu, Kaoru: *See—*
Oda, Takashi; and Kokubu, Kaoru, 4,122,015, Cl. 210-496.000.

Kolvik, Bjorn: *See—*
Olsen, Kolbjorn, 4,121,879, Cl. 339-14.00R.

Kolcilat, Bashir M., to FMC Corporation. Well pressure test plug. 4,121,660, Cl. 166-135.000.

Kolensky, Leo Michael; Schaefer, Walter Rudolph; Schlanger, Gabriel Gary; and Willand, Allan Howard, to Bell Telephone Laboratories, Incorporated. Selection of branch lines of multipoint junction circuits. 4,122,301, Cl. 178-73.000.

Kolker, Stephen D. Panties. 4,121,305, Cl. 2-406.000.

Kolitz, Gerhard; and Trapschuh, Frank L. Apparatus for sensing and indicating the angular relationship between a towing and a towed vehicle. 4,122,390, Cl. 324-65.00R.

Kolstad, Richard M.; and Anderson, Robert V. Mobile tree removing apparatus. 4,121,777, Cl. 241-58.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Nishina, Yoshio; Habu, Teiji; Nakajima, Tomio; Oshima, Akio; Sakamoto, Eiichi; Fujimori, Noboru; Mine, Kiyomitsu; and Toya, Hiroo, 4,121,935, Cl. 96-27.00E.

Kontarev, Vladimir Yakovlevich: *See—*
Gusev, Valery Fedorovich; Ivanov, Gennady Nikolaevich; Kontarev, Vladimir Yakovlevich; Krengel, Genrikh Isaevich; Kremlev, Vyacheslav Yakovlevich; Shagivaleev, Mansur Zakirovich; Schetinin, Jury Ivanovich; and Yarmukhametov, Azat Usmanovich, 4,122,535, Cl. 364-900.000.

Koonts, Lamonte R., to United States Mineral Products Company. Insulation board. 4,121,958, Cl. 156-79.000.

Kopaska, Arnold F. Machine for rolling crops into round bales. 4,121,513, Cl. 100-88.000.

Kopp, Karl Dieter: *See—*
Forssberg, Knut Sven Erik; and Kopp, Karl Dieter, 4,122,005, Cl. 209-232.000.

Koppenhofer, Dietrich; Olbrich, Leopold; Wefing, Friedrich; Scholz, Lothar; Barwaldt, Horst; and Chudaska, Walter, to Daimler-Benz Aktiengesellschaft. Gas turbine. 4,121,417, Cl. 60-39.51H.

Koppers Company, Inc.: *See—*
Duhnkrack, George Bliss; and Madeira, Joseph M., 4,121,897, Cl. 8-2.50A.

Korotkov, Albert Nikitovich: *See—*
Grigorenko, Georgy Mikhailovich; Sheiko, Ivan Vasilievich; Eltsov, Konstantin Sergeevich; Korotkov, Albert Nikitovich; Pakhomov, Alexei Ivanovich; Kanibolotsky, Sergei Arsentievich; Lakomsky, Viktor Iosifovich; Shevchenko, Vladimir Denisovich; Kiselev, Nikolai Mikhailovich; and Torkhov, Gennady Fedorovich, 4,122,293, Cl. 13-2.00P.

Korsunsky, Vyacheslav Sergeevich: *See—*
Golovchinskaya, Elena Semenovna; Chernov, Vladimir Alexandrovich; Chaman, Elena Silvestrovna; Nikolaeva, Ljudmila Alexandrovna; and Korsunsky, Vyacheslav Sergeevich, 4,122,173, Cl. 424-200.000.

Korte, Siegfried; and Suling, Carlhans, to Bayer Aktiengesellschaft. Acrylonitrile containing copolymers blends and process for their preparation. 4,122,136, Cl. 260-898.000.

Kosanke, Johannes: *See—*
Henning, Hermann; Kosanke, Johannes; Pakur, Henryk; Wittneben, Hermann; and Tiemann, Reinhard, 4,121,640, Cl. 152-340.000.

Kosseim, Alexander Jean-Marie: *See—*
Dunnery, David Arthur; Sokolik, Joseph Edmund, Jr.; Atwood, Gilbert Richard; and Kosseim, Alexander Jean-Marie, 4,122,149, Cl. 423-242.000.

Kostylev, Alexander Dmitrievich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexander Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Klimashko, Vladimir Vasilievich, 4,121,672, Cl. 175-19.000.

Kotake, Kiyoshi: *See—*
Ishikawa, Shoichi; Kotake, Kiyoshi; and Honma, Seishi, 4,121,482, Cl. 74-462.000.

Kotani, Yasuo; and Hasegawa, Masayasu, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Sorbic acid composition having improved quality. 4,122,187, Cl. 424-317.000.

Kovalsky, Georgy Alexandrovich; Maishev, Jury Petrovich; and Dmitriev, Jury Akimovich. Ion source. 4,122,347, Cl. 250-423.00R.

Kowalski, Francis W.; and Wilmot, Richard D., to Hughes Aircraft Company. Infinite ratio clutter detecting system. 4,122,450, Cl. 343-17.10R.

Kraftwerk Union Aktiengesellschaft: *See—*
Steven, Josef, 4,121,972, Cl. 176-68.000.

Krall, Thomas J.; and Uhlig, Albert R., to Owens-Illinois, Inc. Method for forming articles from thermoplastic material. 4,122,141, Cl. 264-89.000.

Krapcho, John, to E. R. Squibb & Sons, Inc. Substituted amides and sulfonamides containing a heterocyclic group having antiinflammatory activity. 4,122,255, Cl. 542-421.000.

Krapf, David V.: *See—*
Riley, Wayne A.; Ingebretsen, Melinda S.; Rodig, Robert I.; Krapf, David V.; Hagenbart, Donald E.; and Williams, Charles H., 4,121,818, Cl. 270-54.000.

Krautkramer-Branson, Incorporated: *See—*
Kaule, Walter; and Primbsch, Erik, 4,121,469, Cl. 73-643.000.
Kaule, Walter, 4,121,470, Cl. 73-643.000.

Kremlev, Vyacheslav Yakovlevich: *See—*
Gusev, Valery Fedorovich; Ivanov, Gennady Nikolaevich; Kontarev, Vladimir Yakovlevich; Krengel, Genrikh Isaevich; Kremlev, Vyacheslav Yakovlevich; Shagivaleev, Mansur Zakirovich; Schetinin, Jury Ivanovich; and Yarmukhametov, Azat Usmanovich, 4,122,535, Cl. 364-900.000.

Krengel, Genrikh Isaevich: *See—*
Gusev, Valery Fedorovich; Ivanov, Gennady Nikolaevich; Kontarev, Vladimir Yakovlevich; Krengel, Genrikh Isaevich; Kremlev, Vyacheslav Yakovlevich; Shagivaleev, Mansur Zakirovich; Schetinin, Jury Ivanovich; and Yarmukhametov, Azat Usmanovich, 4,122,535, Cl. 364-900.000.

Kreske, Walter J.: *See—*
Gold, Paul B., 4,121,563, Cl. 126-116.00A.

Kressel, Henry; and Hawrylo, Frank Zgymunt, to RCA Corporation. Lateral mode control in semiconductor lasers. 4,122,410, Cl. 331-94.50H.

Krimm, Heinrich: *See—*
Immel, Otto; Schwarz, Hans-Helmut; Weissel, Oskar; and Krimm, Heinrich, 4,122,290, Cl. 568-853.000.

Krogstad, Reuben S.: *See—*
Vali, Victor; Krogstad, Reuben S.; and Willard, H. Robert, 4,122,342, Cl. 250-272.000.

Kronman, Joseph H.; and Goldman, Melvin, to National Patent Development Corporation. Root canal delivery syringe. 4,121,587, Cl. 128-218.00P.

Kronogard, Sven-Olof, to United Turbine AB & Co. Kommanditbolag. Compact vehicular gas turbine power plant. 4,121,418, Cl. 60-39.750.

Krugmann, Alfred Robert. Method and apparatus for packaging food. 4,122,197, Cl. 426-232.000.

Krugmann, Hans G. Process for treating sewage, particularly on ships. 4,121,993, Cl. 204-275.000.

Kruh, Daniel: *See—*
Jablonski, Richard J.; and Kruh, Daniel, 4,122,076, Cl. 528-322.000.

Krzeminski, Melvin L., to G.D. Searle & Co. Uterine sound. 4,121,572, Cl. 128-2.00S.

Kubinak, Ronald Arthur, to Addressograph-Multigraph Corporation. Multiple language character generating system. 4,122,533, Cl. 364-900.000.

Kubo, Kanji; and Yano, Osahiko, to Matsushita Electric Industrial Co., Ltd. Magnetically recording and reproducing apparatus. 4,122,506, Cl. 360-130.000.

Kubota, Ltd.: *See—*
Kigawa, Tomio; and Ishihara, Takeshi, 4,121,914, Cl. 55-191.000.

Kubota, Nobunori: *See—*
Uchida, Hiroshi; Umeda, Kunio; Tachibana, Zenpei; and Kubota, Nobunori, 4,121,409, Cl. 57-22.000.

Kuckens, Alexander, to Dagma GmbH & Co. Deutsche Automaten- und Getranke Maschinen. Apparatus for mixing a carbonated beverage. 4,121,507, Cl. 99-275.000.

Kudamatsu, Akio: *See—*
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; Kurahashi, Yoshio; and Tsuboi, Shinichi, 4,122,174, Cl. 424-211.000.

Kuhlmann, George E.: *See—*
Fox, Joseph D.; Kuhlmann, George E.; and Wittman, Ricky L., 4,122,037, Cl. 252-429.00R.

Kuijk, Karel Elbert, to U.S. Philips Corporation. Magneto-resistive reading head with suppression of thermal noise. 4,122,505, Cl. 360-113.000.

Kumysh, Ilya Iosifovich: *See—*
Medovar, Boris Izrailevich; Prikhodko, Valery Alexandrovich; Alferov, Jury Fedorovich; Kumysh, Ilya Iosifovich; and Beloglazov, Alexandr Petrovich, 4,121,648, Cl. 164-252.000.

Kuo, Charles Y., to Engelhard Minerals & Chemicals Corporation. Air firable base metal conductors. 4,122,232, Cl. 428-323.000.

Kurahashi, Yoshio: *See—*
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; Kurahashi, Yoshio; and Tsuboi, Shinichi, 4,122,174, Cl. 424-211.000.

Kurapov, Jury Anatolievich: *See—*
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; and Perepelitsa, Igor Vasilievich, 4,121,647, Cl. 164-50.000.

Kuraray Co., Ltd.: *See—*
Kyo, Sunao; Renge, Tsumoru; and Tanaka, Hidetsugu, 4,122,291, Cl. 568-887.000.
Murata, Yoshifumi; and Ohfuji, Yoshio, 4,122,132, Cl. 260-873.000.
Ohnishi, Takashi; Fujita, Yoshiji; Wada, Fumio; Nishida, Takashi; Omura, Yoshiaki; Mori, Fumio; Hosogai, Takeo; and Aihara, Sukeji, 4,122,119, Cl. 260-586.00C.

Kurata, Kazuhiro: *See—*
Ono, Yuichi; Morioka, Makoto; Ito, Kazuhiro; Mori, Mitsuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,122,486, Cl. 357-17.000.

Kuratle, Henry, III, to Du Pont de Nemours, E. I., and Company. Methods for increasing rice crop yields. 4,121,921, Cl. 71-77.000.

Kurimoto, Shigeki: *See—*
Kimura, Shiro; Nakamura, Yasuyoshi; Kurimoto, Shigeki; and Motouchi, Katuhiro, 4,122,089, Cl. 260-328.000.

Kurokawa, Hideo: *See—*
Taniyasu, Ryozo; Kurokawa, Hideo; and Saito, Takeshi, 4,122,126, Cl. 260-677.00A.

Kurosawa, Hidehumi; and Tanaka, Yoshiaki, to Kaken Chemical Co., Ltd. Medicine for renal diseases. 4,122,189, Cl. 424-319.000.

Kurz, Wolf-Dieter: *See—*
Schaal, Hans; Kurz, Wolf-Dieter; and Breitling, Ulrich, 4,121,682, Cl. 180-68.00R.

Kusama, Takeo: *See—*
Takasaki, Yoshitaka; Ishizuka, Kohei; Kita, Yasuhiro; Nagoya, Yoshinori; and Kusama, Takeo, 4,122,417, Cl. 333-28.00R.

Kuznetsov, Vladimir Grigorievich; Tomilin, Alexandr Grigorievich; and Shleenkov, Igor Anatolievich. Start flame igniter of the combustion chamber of a gas-turbine engine. 4,121,419, Cl. 60-39.82P.

Kyo, Sunao; Renge, Tsumoru; and Tanaka, Hidetsugu, to Kuraray Co., Ltd. Method for the production of alken-2-ol-1 or of alken-2-ol-1 and alkanol-1. 4,122,291, Cl. 568-887.000.

L.P.S. Incorporated: *See—*
Pickett, Charles G.; and Pickett, Ronald S., 4,121,620, Cl. 137-828.000.

La Barge, Inc.: *See—*
Mohrman, Raymond F., 4,121,462, Cl. 73-362.0AR.

La Bate, Micheal Donald. Self adjusting consumable hot top for ingot molds. 4,121,805, Cl. 249-197.000.

Labbe, Francis A. M.; and Williams, Robert E., to Molins Limited. Cigarette making machines. 4,121,596, Cl. 131-109.00B.

Laboratoire L. Lafon: *See—*
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Lacy, Thomas H., to Lacy, Thomas H. Expansion seal. 4,121,842, Cl. 277-112.000.

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Lamont, James; Aylesworth, Robert D.; and Beimesch, Bruce J., to Emery Industries, Inc. Mixed-terminated polyester plasticizers. 4,122,057, Cl. 260-31.600.

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Landaus, Kenneth James: *See—*
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Baker, Edward D.; Brown, John S.; Forney, Robert B.; and Lang-Ree, Nils, 4,121,509, Cl. 99-386.000.

Langdon, Glenn George, Jr.; and Rissanen, Jorma Johannen, to International Business Machines Corporation. Method and means for arithmetic string coding. 4,122,440, Cl. 340-347.0DD.

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Lawrence, Don L.; and Uhlig, Albert R., to Owens-Illinois, Inc. Method for blow molding a reinforced plastic bottle. 4,122,142, Cl. 264-97.000.

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Lawton, Ernest L., II, to Monsanto Company. Polyester and process for making same. 4,122,072, Cl. 528-289.000.

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Lehmann, Hans; and Zondler, Helmut, to Ciba-Geigy Corporation. Storable rapidly hardening epoxy resin adhesive. 4,122,128, Cl. 260-837.00R.

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Leipold, Martin H., to United States of America, National Aeronautics & Space Administration. Method of controlling defect orientation in silicon crystal ribbon growth. 4,121,965, Cl. 156-608.000.
Leisterer, Reinhard; and Muller, Dietrich, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Sonar system. 4,122,430, Cl. 340-5.00R.
Lemelson, Jerome H. Propeller driven toy. 4,121,376, Cl. 46-206.000.
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Le Sergent, Christian; Liegois, Michel; and Pascal, Robert, to Compagnie Generale d'Electricite. Method of producing an optical fibre blank. 4,121,919, Cl. 65-3.00A.
Lester, Robert W., to Mediegraph Systems, Inc. Method and apparatus for measuring and recording vital signs of a patient. 4,121,574, Cl. 128-2.05R.
Letostak, Steve, to Raymond Lee Organization, Inc., The, a part interest. Pocket object protecting device. 4,121,323, Cl. 24-3.00H.
Lettington, Alan Harold; and Savage, James Anthony, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Thermal imaging system. 4,122,344, Cl. 250-334.000.
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Levin, Richard C.; and Armstrong, Allan G., to Harvey Mudd College. Foot force transducer. 4,121,453, Cl. 73-172.000.
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Lewis, Frederick Michael, to Waterfront N.V. Method of pyrolyzing sewage sludge to produce activated carbon. 4,122,036, Cl. 252-421.000.
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Lins, Stanley James, to Sperry Rand Corporation. Single wall domain, stripe domain memory plane. 4,122,538, Cl. 365-29.000.
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Nakamura, Masayoshi; Ogoshi, Toshiaki; and Yazaki, Mitsuyoshi, 4,122,044, Cl. 252-532.000.
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Lipthay, Julius; and Kizilay, Dogan. Adjustable collimator for mammography. 4,122,350, Cl. 250-505.000.
Lirakis, Warren Stephen. Safety harness for limited mobility. 4,121,688, Cl. 182-3.000.
Lish, Charles A. Digital chroma-key circuitry. 4,122,490, Cl. 358-22.000.
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Lockshin, Robert E. Louvered window shade device. 4,121,380, Cl. 49-67.000.
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Lohman, Gordon Russell; and Hansen, James E., to AMSTED Industries Incorporated. Method of producing high carbon hard alloys. 4,121,927, Cl. 75-201.000.
Lohoff, Virgil Allan, to Dysan Corporation. Article employing a heat hardenable liquid film forming composition with particles dispersed therein and method for making same. 4,122,234, Cl. 428-413.000.
Lohse, Karl Heinz, to STB Strahlentechnische Bilddiagnostik Heinz Fleck. Photographic process for the production of pictures of increased contrast. 4,121,937, Cl. 96-44.000.
Loibl, Lorenz, to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft. Apparatus for separating a starter bar having a starter bar head from a hot strand crop-end in a continuous casting plant. 4,121,652, Cl. 164-446.000.
Lokken, Gene B., to American Hospital Supply Corporation. Cabinet drawer restrainer. 4,121,878, Cl. 312-341.00R.
Lopez, David L. Hollow fishing rod with elastic line. 4,121,369, Cl. 43-18.00R.
Loranger, Robert C.; and Sackett, Marvin E. Hinged multiple exposure matbox attachment for cameras. 4,122,470, Cl. 354-122.000.
Lord Corporation: *See—*
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Los, Marinus, to American Cyanamid Company. Imidazolinyl benzamides as herbicidal agents. 4,122,275, Cl. 548-301.000.
Loveless, Frederick Charles; and Nudenberg, Walter, to Uniroyal, Inc. Antioxidant stabilized lubricating oils. 4,122,021, Cl. 252-26.000.
Lowell, Ben T. Flashing article comprising a chlorinated polyethylene layer adhered to an asphalt-saturated felt layer produced by joining the two layers under pressure at elevated temperature. 4,122,230, Cl. 428-280.000.
Loyd, Ellis R. Combination power saw and chain saw and adapter. 4,121,336, Cl. 30-122.000.
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Craven, Donald, 4,121,795, Cl. 244-213.000.
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Luperti, Harry E.; Irvine, Robert; and Salzman, Robert S., to Pitney-Bowes, Inc. Doubles and thickness detector and sorter. 4,121,716, Cl. 209-564.000.
Luther, Arch Clinton, Jr.; and Sauer, David Arthur, to RCA Corporation. AM transmitter with an offset voltage to the RF stage to compensate for switching time of the modulators. 4,122,415, Cl. 332-37.00R.
M&T Chemicals Inc.: *See—*
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MaCall, Thomas F.; and Parlanti, Conrad A. Temperature profile measuring devices. 4,121,459, Cl. 73-340.000.
Macari, Leonard J.; Staudinger, Frederick J.; and Kasarauskas, Paul M., to Pitney-Bowes, Inc. Clamping device for a coil spring of a weighing scale. 4,121,677, Cl. 177-225.000.
MacKay, Patrick W.; Vera, Enrique M.; and de la Pena, Ramon, to Fierro Esponja, S.A. Method and apparatus for measuring percentage reduction in a metal ore reduction reactor. 4,121,922, Cl. 75-34.000.
MacKenzie, Kenneth A.; and Verhoeff, Abraham, to Shell Internationale Research Maatschap IIJ B.V. Method for preparing clay-based grease compositions. 4,122,022, Cl. 252-28.000.
MacLeod, Edward. Liquid metering device. 4,121,608, Cl. 137-78.000.
MacNeil, Thomas R. Children's bottle and toy holder. 4,121,797, Cl. 248-102.000.
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Maeda, Senichi. Doubled-yarn of elastic and non-elastic yarns and method and apparatus for producing same. 4,121,408, Cl. 57-12.000.
Maeda, Yoshinori: *See—*
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Maekawa, Hiroshi: *See—*
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Maffet, Vere, to UOP Inc. Organic waste drying process. 4,121,349, Cl. 34-12.000.
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Mahler, Walter, to Du Pont de Nemours, E. I., and Company. Siliceous fibers and method of preparing them. 4,122,041, Cl. 252-449.000.
Main, William Eric, to Motorola, Inc. Buffer amplifier circuit suitable for manufacture in monolithic integrated circuit form. 4,122,402, Cl. 330-288.000.
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Malerba, Mario, to Indesit Industria Elettrodomestici Italiana S.p.A. Device for the control of electron beams of a cathode ray tube. 4,122,421, Cl. 335-213.000.
Mallien, Thomas Owen, II, to Motorola, Inc. Control circuitry for a radio telephone. 4,122,304, Cl. 179-2.0EB.
Malo, Lowell L.; and Zimmerle, James R., to ACF Industries, Incorporated. Car key hole bolt fastening assembly. 4,121,495, Cl. 85-1.00H.
Malta, Jacob H. Adjustment means for handbells. 4,121,534, Cl. 116-171.000.
Mandelli S.p.A.: *See—*
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Dlugos, Daniel F.; and Manduley, Flavio M., 4,122,532, Cl. 364-900.000.
Mann, Arnold, to VDO Adolf Schindling AG. Apparatus for controlling the traveling speed of a motor vehicle. 4,121,685, Cl. 180-108.000.
Mannesmann Aktiengesellschaft: *See—*
Gruner, Hans; Schrewe, Hans; and Pleschiutschnigg, Fritz Peter, 4,121,923, Cl. 75-53.000.
Marbacher, Stephan. Fastening device. 4,121,324, Cl. 24-73.0MS.
March, Adrian Anthony Cecil. Self-transporting support arrangement. 4,121,679, Cl. 180-8.00C.
Marcocci, Guy D.; and Yablonski, Peter. Wooden building bricks. 4,121,397, Cl. 52-286.000.
Marconi Company Limited, The: *See—*
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Margetts, Hugh Grenville, to Girling Limited. Disc brakes for vehicles. 4,121,696, Cl. 188-71.300.
Margetts, Hugh Grenville; and Knight, Peter Charles, to Girling Limited. Disc brakes for vehicles. 4,121,700, Cl. 188-73.400.
Mark IV Industries, Inc.: *See—*
Robbins, Douglas R.; and Robbins, Samuel B., Jr., 4,121,727, Cl. 215-211.000.
Markin, William R.: *See—*
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Marlett, Calvin J.; Reed, Edwin A.; and Johnson, Richard C., to Xerox Corporation. Method and apparatus for controlling the intensity of a laser output beam. 4,122,409, Cl. 331-94.50M.
Marsden, James Glenn: *See—*
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Martin, Barrie James; Broad, Michael John; and Hall, Samuel Stewart, to Plessey Handel und Investments AG. Apparatus for metering fuel and air for an engine. 4,121,549, Cl. 123-32.0EA.
Martin, Raymond G., to Westinghouse Electric Corp. Automatic phase and gain balance controller for a baseband processor. 4,122,448, Cl. 343-7.700.
Maruo, Masaya, to San-O Industrial Corp. Time-lag fuse. 4,122,426, Cl. 337-163.000.
Maruyama, Eiichi; Hirai, Tadaaki; Ishioka, Sachio; Yamamoto, Hideaki; and Inao, Kiyohisa, to Hitachi, Ltd. Apparatus for vacuum deposition. 4,121,537, Cl. 118-7.000.
Marwick, Edward F. Contained fissionly vaporized imploded fission explosive breeder reactor. 4,121,969, Cl. 176-18.000.
Marwick, Edward F. Pulsed neutron source. 4,121,971, Cl. 176-39.000.
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Masek, Jaroslav; and Oberle, Arthur, to BBC Brown, Boveri & Company Limited. Combined stop and control valve. 4,121,617, Cl. 137-630.140.
Mason, John Morton: *See—*
Taylor, Reginald Sidney; Burrow, Reginald Edwin Downton; Mason, John Morton; Portas, John Richard; and Thomas, William David, 4,121,780, Cl. 242-7.210.
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Quick, Donald J., 4,121,778, Cl. 241-79.000.
Masso Remiro, Jose Maria. Direct body covering sheet having a correcting and/or therapeutic action. 4,121,582, Cl. 128-157.000.
Massoud, Ebrahim: *See—*
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Matsubara, Isamu: *See—*
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Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, to Matsushita Electric Industrial Co., Inc.; and Fuji Chemicals Industrial Co. Ltd. Positive resist for high energy radiation. 4,121,936, Cl. 96-35.100.
Matsumoto, Kenji: *See—*
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Matsushita Electric Industrial Co., Inc.: *See—*
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Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; Ouchi, Hiromu; and Hayakawa, Shigeru, 4,121,941, Cl. 106-39.500.
Kubo, Kanji; and Yano, Osahiko, 4,122,506, Cl. 360-130.000.
Ohkubo, Masaru; and Ueno, Akihiko, 4,122,322, Cl. 219-10.55R.
Okuda, Isamu; Horii, Hiroshi; and Mori, Keijiro, 4,122,337, Cl. 250-231.00P.
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Yamaguchi, Namio; and Sato, Yasuyuki, 4,122,491, Cl. 358-23.000.
Matsutake, Mitsugu: *See—*
Tachibana, Kyozo; Tsuboi, Takashi; Suzuki, Yutaka; Matsutake, Mitsugu; Miura, Shozuchi; Hatano, Shigeru; Goto, Takao; and Nozaki, Yoshio, 4,122,515, Cl. 363-45.000.
Maurer Engineering, Inc.: *See—*
Nixon, Jeddy D., 4,121,675, Cl. 175-325.000.
Maurukas, Jonas. Process for preparing biological compositions for use as reference controls in diagnostic analyses. 4,121,905, Cl. 23-230.00B.
Mawson, Alan: *See—*
Brewer, Douglas M.; Mawson, Alan; and Carter, William S., 4,122,224, Cl. 428-159.000.
May, Michael G. Internal combustion engine. 4,121,544, Cl. 123-30.00D.
May, Randall L. Adjustable pitch drum. 4,121,493, Cl. 84-411.00A.
Mayer, Frederich K. Cleaning tool for polishing pads. 4,121,313, Cl. 15-3.000.
Mazzei, Alessandro: *See—*
Cucinella, Salvatore; Salvatori, Tito; and Mazzei, Alessandro, 4,122,108, Cl. 260-448.00A.
McBride, Tarrie A. Educational device employing a game situation. 4,121,823, Cl. 273-249.000.
McCarroll, John James; Clark, John Trevor Kent; and Tennison, Stephen Robert, to British Petroleum Company Limited, The. Platinum group metal catalyst. 4,122,040, Cl. 252-447.000.
McCarty, Benjiman R.: *See—*
Ajam, Sami O.; and McCarty, Benjiman R., 4,122,387, Cl. 324-10.000.
McClellan, Bingham A., to McClellan Industries, Inc. Fishing lure with interchangeable spinner and hook connections. 4,121,366, Cl. 43-42.090.

McClellan, Edward L. Supporting bracket for drinking water containers. 4,121,800, Cl. 248-207.000.
McClellan Industries, Inc.: *See—*
McClellan, Bingham A., 4,121,366, Cl. 43-42.090.
McClung, Carl L.: *See—*
Congtam, Sam R.; and McClung, Carl L., 4,121,557, Cl. 123-195.00R.
McClure, Tommy L., to Eastman Whipstock, Inc. Position indicator for downhole tool. 4,121,657, Cl. 166-66.000.
McCord Corporation: *See—*
Skrycki, Robert R., 4,121,846, Cl. 277-235.00R.
McCrory, Rollin J..: *See—*
Harmon, Ronald S.; McCrory, Rollin J..; and Vaughan, Gordon S., 4,122,524, Cl. 364-465.000.
McCullough, John E., to Arthur D. Little, Inc. Coupling member for orbiting machinery. 4,121,438, Cl. 64-31.000.
McDaniel, Joe D.: *See—*
Kinzer, David R.; and McDaniel, Joe D., 4,122,165, Cl. 424-84.000.
McDonnell, Roy Edward. Ostomy appliance. 4,121,589, Cl. 128-283.000.
McElroy, David J., to Texas Instruments Incorporated. Electrically alterable floating gate semiconductor memory device with series enhancement transistor. 4,122,544, Cl. 365-185.000.
McFatter, Myron L., to Anchortank, Inc. Storage tank construction procedures. 4,121,747, Cl. 228-17.700.
McGaw, Wilbert Hersman, Jr. Hand held atomizer washing device. 4,121,736, Cl. 222-94.000.
McIlwain, Irwin D., to Sperry Rand Corporation. Tension control device. 4,121,475, Cl. 74-242.15R.
McKay, Roy H. Fifth wheel bearing attachment. 4,121,853, Cl. 280-433.000.
McLane, Jack E.: *See—*
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McMahon, Robert F., to Base Movement Incorporated. Aircraft mobile chock. 4,121,788, Cl. 244-50.000.
McMills, Corey J.: *See—*
Siden, Dennis C.; and McMills, Corey J., 4,121,338, Cl. 30-257.000.
McNeel, William O., to Geo Space Corporation. Fluid tight geophone case. 4,122,433, Cl. 340-17.00R.
McRoskey, John W.; McRoskey, Leonard H.; and Swartz, Delbert D., to Republic Tool & Manufacturing Corp. Spreader having an anti-clogging mechanism. 4,121,733, Cl. 222-43.000.
McRoskey, Leonard H.: *See—*
McRoskey, John W.; McRoskey, Leonard H.; and Swartz, Delbert D., 4,121,733, Cl. 222-43.000.
McVean, Michael T.: *See—*
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Mead Corporation, The: *See—*
Paranjpe, Suresh C., 4,122,458, Cl. 346-75.000.
Med General, Inc.: *See—*
Miller, Curtis H.; Kaldun, Mark R.; and Arp, Robert A., 4,121,594, Cl. 128-422.000.
Meden-Piesslinger, Gertraud Agnes Anna; Klomp, Johannes Theodorus; and Oomen, Joris Jan Cornelis, to U.S. Philips Corporation. Composite body useful in gas discharge lamp. 4,122,042, Cl. 252-513.000.
Medendorp, Dale Frederick; and Schwabel, Paul Charles, to RCA Corporation. Amplifier protection circuit. 4,122,400, Cl. 330-207.00P.
Medicgraph Systems, Inc.: *See—*
Lester, Robert W., 4,121,574, Cl. 128-2.05R.
Medovar, Boris Izrailevich; Prikhodko, Valery Alexandrovich; Alferov, Jury Fedorovich; Kumysh, Ilya Iosifovich; and Beloglazov, Alexandr Petrovich. Apparatus for electroslag castings of semicircular blanks. 4,121,648, Cl. 164-252.000.
Medpro, Inc.: *See—*
Gorran, Jody A., 4,121,310, Cl. 5-370.000.
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Mellon, Frederick R.: *See—*
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Meng, Karl: *See—*
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,122,279, Cl. 548-375.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,122,280, Cl. 548-377.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, 4,122,281, Cl. 548-377.000.
Mentz, Bernardus Johannes: *See—*
Crippen, Monte Dennis; Harke, Cyril James; and Mentz, Bernardus Johannes, 4,121,994, Cl. 204-286.000.
Mera, Yoichi; Kishino, Takao; and Morooka, Tsutomu, to Futaba Denshi Kogyo K.K. Multi-indicia fluorescent display tube. 4,122,376, Cl. 315-167.000.
Mercier, Antoine G., to Jeumont-Schneider. Electrical bushing. 4,122,297, Cl. 174-11.0BH.
Mercier, Bernard, to Le Joint Francais S.A. Method of welding a spiral spring to produce a toroidal ring. 4,122,326, Cl. 219-104.000.
Merck & Co., Inc.: *See—*
Buynak, Eugene B.; and Hilleman, Maurice R., 4,122,167, Cl. 424-89.000.
Merck Patent Gesellschaft mit Beschraenkter Haftung: *See—*
Pohlke, Rolf; Strehlow, Wighard; Mueller-Calgan, Helmut; and Seyfried, Christoph, 4,122,180, Cl. 424-258.000.
Merkel, Richard T.; and Markin, William R., to Nicholson Concrete Company. Pavement system calculator. 4,121,759, Cl. 235-70.00A.
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Jones, Lewis O.; and Mermelstein, Robert, 4,122,024, Cl. 252-62.10P.
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Scherm, Arthur; and Peteri, Dezso, 4,122,193, Cl. 424-330.000.
Meseke, Curt Th.; and Winkler, Winfried, to Hammer-Lit GmbH. Disposable collecting container for small used articles and waste. 4,121,755, Cl. 229-38.000.
Metal Box Limited: *See—*
Sniady, Henry, 4,121,447, Cl. 72-344.000.
Metco Inc.: *See—*
Vogts, William A.; and Daley, Horace S., 4,122,327, Cl. 219-121.00P.
Meteor AG: *See—*
Schmid, Hans, 4,121,627, Cl. 140-92.100.
Meudec, Alain: *See—*
Meudec, Henri Francois; and Meudec, Alain, 4,121,431, Cl. 62-66.000.
Meudec, Henri Francois; and Meudec, Alain, to Meudec, Henri Francois. Process for the repair and restoration of ice tracks. 4,121,431, Cl. 62-66.000.
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Meyer Aluminium Ltd.: *See—*
Lui, Ming-Wah; and Wang, Yung-Shu, 4,121,810, Cl. 266-201.000.
Meyer, Arnfried. Process and apparatus for the treatment of lengths of textile material. 4,121,311, Cl. 8-149.300.
Meyer, Lee G., to Texaco Development Corporation. Polyether dihydroxyalkyl carbamate epoxy additive for epoxy resins. 4,122,068, Cl. 528-93.000.
Meyer, Lee G., to Texaco Development Corporation. Polyether dihydroxyalkyl carbamate epoxy additive for epoxy resins. 4,122,069, Cl. 528-93.000.
Meyer, Leonard S. Target particularly for archery and technique for making target components. 4,121,959, Cl. 156-201.000.
Meyer, Yves: *See—*
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Michel, George H.; and Sabol, Donald J. Endodontic formula for treatment of root canal. 4,121,940, Cl. 106-35.000.
Michel, Jean Louis. Ring and yoke type universal joint. 4,121,437, Cl. 64-17.00R.
Michel, Karl H.; and Higgens, Calvin E., to Eli Lilly and Company. Antibiotic A-35512 and process for production thereof. 4,122,168, Cl. 424-118.000.
Michio, Kawazoe. Tripod for a camera. 4,121,799, Cl. 248-171.000.
Michurov, Jury Ivanovich; Yanshevsky, Vladimir Avgustovich; Filippova, Rufina Alexandrovna; Gurvich, Yakov Abramovich; Logutov, Igor Jurievich; Egoricheva, Sofya Alexandrovna; Belgorodsky, Izrail Markovich; and Vyborov, Sergei Gerasimovich. Method for preparing 2,6-ditert.butylphenol. 4,122,289, Cl. 568-789.000.
Michurov, Jury Ivanovich: *See—*
Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; and Shalimova, Zoya Stepanovna, 4,122,287, Cl. 568-784.000.
Micron Corporation: *See—*
Gross, Roger A., 4,121,887, Cl. 353-27.00R.
Middleton, William Joseph, to Du Pont de Nemours, E. I., and Company. Preparation of chloro- and bromo-fluoroacetyl chloride. 4,122,115, Cl. 260-544.00Y.
Midland-Ross Corporation: *See—*
Durling, Harold, 4,121,873, Cl. 303-7.000.
Miedema, Hotze: *See—*
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Mikado, Tsuneo, to Nippon Television Industry Corporation. Sync signal generator with memorization of phase detection output. 4,122,488, Cl. 358-19.000.
Mikami, Ryuzo; and Mine, Katsutoshi, to Toray Silicone Company, Ltd. Organopolysiloxane resin compounds as adhesion promoters. 4,122,127, Cl. 260-825.000.
Miki, Tamotsu; Narisawa, Shizuo; Ichikawa, Ichiro; and Horiike, Hideki, to Sumitomo Chemical Company, Limited. Method for producing transparent block copolymer resin. 4,122,134, Cl. 260-880.00B.
Miller, Curtis H.; Kaldun, Mark R.; and Arp, Robert A., to Med General, Inc. Transcutaneous electrical nerve stimulator. 4,121,594, Cl. 128-422.000.
Miller, Jorge; and Stummer, Franz, to Hans Einhell GmbH Industriegelande, Firma. Electrolytic cell for treatment of water. 4,121,991, Cl. 204-260.000.
Miller, Stanley F.: *See—*
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Millhaven Fibres, Ltd.: *See—*
Alexander, William; Causa, Alfredo Guillermo; and Fraser, James Girvan, 4,122,063, Cl. 260-45.7PH.
Millier, William F.; Rehkugler, Gerald E.; Pellerin, Roger A.; and Throop, James A., to Cornell Research Foundation, Inc. High capacity harvesting apparatus. 4,121,407, Cl. 56-329.000.
Milliken Research Corporation: *See—*
Brown, Robert Saul; and Johnson, James Roy, 4,121,626, Cl. 139-435.000.
Chambers, Thomas Van; and Hirshfeld, Julian J., 4,121,899, Cl. 8-94.00A.
Otto, Wolfgang K. F., 4,121,900, Cl. 8-115.000.
Mills, Harold; and Stein, Herbert. Devices for rapid placement and recording of ECG precordial leads in patients. 4,121,575, Cl. 128-2.06E.
Mills, Peter B.; and Morgan, R. Stephen. Mechanical separator for plant material. 4,121,779, Cl. 241-79.200.
Mine, Katsutoshi: *See—*
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Minear, Jerry A. Hand held caddy for calculators. 4,121,744, Cl. 224-45.00R.
Miner, Earl L., to Detroit Tool & Engineering Co. Motor-driven cultivator with counter-rotating auger shafts. 4,121,668, Cl. 172-42.000.
Mineral Processing Development & Innovation AB: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
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Misaki, Susumu; Ishii, Sadamu; Suzuki, Nobuyuki; Wakabayashi, Mikio; and Sowa, Tsuneo, to Daikin Kogyo Co., Ltd.; and Asahi Chemical Industry Co., Ltd. Process for production of 5-fluorouracil and its derivatives. 4,122,251, Cl. 536-23.000.
Mishima Kosan Co. Ltd.: *See—*
Takeuchi, Shinjiro; Kikuchi, Tosiro; Harada, Koosuke; Shokyu, Tokuji; and Fujii, Yoshihiro, 4,122,392, Cl. 324-208.000.
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Rick, Horst; Keppel, Richard A.; Mitchell, Harvey A.; Olsen, Lowell V.; Colas, James K.; and Tracy, Robert E., 4,122,521, Cl. 364-424.000.
Mitchell, Mark L., III; and Sharkey, Hubert J., to Emery Industries, Inc. Thermoplastic reinforcing adhesives and substrates coated therewith. 4,122,229, Cl. 428-261.000.
Mitchell, Robert Lee; and Chung, William John, to Colgate-Palmolive Company. Dental cream composition. 4,122,164, Cl. 424-52.000.
Mithuo, Nagahama; Kazuo, Aoi; and Seiji, Hirano, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust means for two cycle engines. 4,121,552, Cl. 123-65.0PE.
Mitsubishi Chemical Industries Limited: *See—*
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Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsubishi Gas Chemical Company, Inc.: *See—*
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Mitsubishi Jukogyo: *See—*
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Mitsubishi Paper Mills, Ltd.: *See—*
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Takano, Shiro; Jojima, Toshio; Oshida, Hajime; Yokoi, Tadashi; Kato, Muneo; and Koizumi, Tadashi, 4,121,839, Cl. 277-3.000.
Miura, Shozuchi: *See—*
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Mizoguchi, Yoshiro: *See—*
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Mizote, Masanori, to Nissan Motor Company, Limited. Electronic fuel injection control apparatus using variable resistance for relating intake air speed to engine speed. 4,121,545, Cl. 123-32.0EJ.
MOBA Holding Barneveld B.V.: *See—*
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Mochizuki, Noritaka: *See—*
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Modes, Edward E., to Powers Regulator Co. Automatic fluid flow regulator. 4,121,762, Cl. 236-49.000.
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Hall, Alfred George; and Brown, Brian E., 4,121,390, Cl. 52-20.000.
Mohrman, Raymond F., to La Barge, Inc. Temperature indicating apparatus. 4,121,462, Cl. 73-362.0AR.
Molins Limited: *See—*
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Moller, Bent, to Aktieselskabet Brodrene Hartmann. Packing carton for breakable articles. 4,121,751, Cl. 229-2.5EC.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, to Bayer Aktiengesellschaft. Pyrazole derivatives. 4,122,279, Cl. 548-375.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, to Bayer Aktiengesellschaft. Pyrazole derivatives. 4,122,280, Cl. 548-377.000.
Moller, Eike; Meng, Karl; Wehinger, Egbert; and Horstmann, Harald, to Bayer Aktiengesellschaft. 5-Sulphonyloxy pyrazole derivatives. 4,122,281, Cl. 548-377.000.
Moller, Hermann: *See—*
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Momotari, Yoshitaka; Hara, Junji; Kitamura, Tadashi; and Iiyama, Shigeo, to Mitsui Toatsu Chemicals, Inc. Process for producing cured products. 4,122,143, Cl. 264-104.000.
Monaco, Ovidio: *See—*
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Lawton, Ernest L., II, 4,122,072, Cl. 528-289.000.
Nelson, George D.; Nissing, Kenneth J.; and Symes, William F., 4,122,267, Cl. 544-190.000.
Monte, Salvatore J.; and Sugerman, Gerald, to Kenrich Petrochemicals, Inc. Alkoxy titanate salts useful as coupling agents. 4,122,062, Cl. 260-42.140.
Moog Inc.: *See—*
Williams, Leonard J.; and Blank, Leon W., 4,121,498, Cl. 91-186.000.
Moore Business Forms, Inc.: *See—*
Halse, Per Weien, 4,121,857, Cl. 282-11.50A.
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Heiter, George Ludwig; Miedema, Hotze; and Moore, Edwin Charles, 4,122,399, Cl. 330-149.000.
Moore, Joseph Terrell. Animal enclosure system with waste treatment means. 4,121,539, Cl. 119-28.000.
Mora, Enrico Corvi: *See—*
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Morawski, Janus. Ladder tray. 4,121,692, Cl. 182-129.000.
Morawski, London T. Collet chuck. 4,121,847, Cl. 279-2.00R.
Morawski, London T. Chuck. 4,121,848, Cl. 279-60.000.
Morean, James E.; and Penird, Carl W., to GTE Sylvania Incorporated. Exposure apparatus and method for manufacturing a cathode ray tube display screen. 4,122,461, Cl. 354-1.000.
Morgan Construction Company: *See—*
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Morgan, Paul Winthrop, to Du Pont de Nemours, E. I., and Company. Fibers and anisotropic melts of polyazomethines. 4,122,070, Cl. 528-149.000.
Morgan, R. Stephen: *See—*
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Mori, Fumio: *See—*
Ohnishi, Takashi; Fujita, Yoshiji; Wada, Fumio; Nishida, Takashi; Omura, Yoshiaki; Mori, Fumio; Hosogai, Takeo; and Aihara, Sukeji, 4,122,119, Cl. 260-586.00C.
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Mori, Masaaki; and Takai, Norihira, to Toshiba Ceramics Co., Ltd. Process for preparing silicon nitride powder having a high α-phase content. 4,122,152, Cl. 423-344.000.
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Mori, Sanae, to Daido Metal Company Ltd. Method for the manufacture of multi-layer sliding material. 4,121,928, Cl. 75-208.0CS.
Moriarty, William L.; and Fletcher, Augustus, to American Chemical & Refining Company Incorporated. Gold alloy plating bath and method. 4,121,982, Cl. 204-43.00G.
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Morioka, Makoto: *See*—
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Morissette, Gilles. Ball and socket coupling. 4,121,893, Cl. 403-143.000.

Moriya, Koichi; and Honda, Iwao, to Japan Carlit Co., Ltd., The. Water-soluble thermosetting resins and use thereof. 4,122,071, Cl. 526-17.000.

Morooka, Tsutomu: *See*—
Mera, Yoichi; Kishino, Takao; and Morooka, Tsutomu, 4,122,376, Cl. 315-167.000.

Morrow, Ray E., Jr. Marine detection apparatus. 4,122,428, Cl. 340-3.00C.

Morse, Charles W.; Walker, John P.; and Chew, Chan-Yong, to General Signal Corporation. Route conflict analysis system for control of railroads. 4,122,523, Cl. 364-436.000.

Mortenson, Carl N., to Magline, Inc. Hand truck construction. 4,121,855, Cl. 280-654.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. cis-4,5-Didehydro-9-deoxy-9,10-didehydro-PGD$_1$ compounds. 4,122,098, Cl. 260-408.000.

Morton, Douglas Ross, Jr., to Upjohn Company, The. 13,14-Dihydro-9β-PGD, compounds. 4,122,099, Cl. 260-408.000.

Moss, Norman Sydney, to Girling Limited. Automatic slack adjusters for vehicle brake linkages. 4,121,703, Cl. 188-196.0BA.

Mostert, Jacob Hendrik, to MOBA Holding Barneveld B.V. Device for modelling poultry. 4,121,321, Cl. 17-11.000.

Motoren-und Turbinen-Union Friedrichshafen GmbH: *See*—
Wand, Norbert; and Rudert, Wolfgang, 4,121,550, Cl. 123-41.310.
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Main, William Eric, 4,122,402, Cl. 330-288.000.
Mallien, Thomas Owen, II, 4,122,304, Cl. 179-2.0EB.
Swiatowiec, Frank J., 4,122,527, Cl. 364-787.000.

Motouchi, Katuhiro: *See*—
Kimura, Shiro; Nakamura, Yasuyoshi; Kurimoto, Shigeki; and Motouchi, Katuhiro, 4,122,089, Cl. 260-328.000.

Mouzin, Gilbert: *See*—
Cousse, Henri; and Mouzin, Gilbert, 4,122,181, Cl. 424-258.000.

Movchan, Boris Alexeevich: *See*—
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; and Perepelitsa, Igor Vasilievich, 4,121,647, Cl. 164-50.000.

MtU-Motoren-und Munchen GmbH: *See*—
Bayerl, Hermann, 4,121,611, Cl. 137-340.000.

Muanyagipari Kutato Intezet: *See*—
Virag, Gyorgy, 4,121,738, Cl. 222-134.000.

Muehlemann, Hans R.; and Schmid, Hans. Oral composition for plaque and caries inhibition. 4,122,162, Cl. 424-52.000.

Mueller-Calgan, Helmut: *See*—
Pohlke, Rolf; Strehlow, Wighard; Mueller-Calgan, Helmut; and Seyfried, Christoph, 4,122,180, Cl. 424-258.000.

Mueller, Keith James: *See*—
Tietz, Gary William; and Mueller, Keith James, 4,122,405, Cl. 331-1.00A.

Muenger, James R.: *See*—
Barber, Everett M.; Muenger, James R.; Alexander, David L.; and Schlinger, Warren G., 4,121,912, Cl. 48-197.00R.

Muhler, Joseph C.; and Putt, Mark S., to Indiana University Foundation. Dentifrice preparation comprising purified, calcined kaolin abrasives. 4,122,163, Cl. 424-52.000.

Muller, Alois: *See*—
Weininger, Lothar; and Muller, Alois, 4,122,014, Cl. 210-377.000.

Muller, Anton, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Hooks, especially for chains. 4,121,867, Cl. 294-82.00R.

Muller, Dietrich: *See*—
Leisterer, Reinhard; and Muller, Dietrich, 4,122,430, Cl. 340-5.00R.

Murata Kikai Kabushiki Kaisha: *See*—
Shindo, Noboru; Hashizume, Hiroshi; and Kikuchi, Shuichi, 4,121,411, Cl. 57-77.300.
Uchida, Hiroshi; Umeda, Kunio; Tachibana, Zenpei; and Kubota, Nobunori, 4,121,409, Cl. 57-22.000.

Murata, Yoshifumi; and Ohfuji, Yoshio, to Kuraray Co., Ltd. Dispersion stabilizer. 4,122,132, Cl. 260-873.000.

Murphy, Edward J.; and Troup, Ivan G., to PPG Industries, Inc. Electrodepositable micellar dispersions. 4,122,053, Cl. 260-29.4UA.

Murphy, John Richard: *See*—
Ramlow, Gerhard Gustav; Pizzini, Louis Celeste; Patton, John Thomas, Jr.; Murphy, John Richard; and Davis, John Eugene, 4,122,056, Cl. 260-29.6NR.

Murphy, Thomas V. Display bin. 4,121,710, Cl. 206-45.160.

Murtha, Timothy P.; Jones, William A.; Zuech, Ernest A.; and Johnson, Marvin M., to Phillips Petroleum Company. Hydroalkylation using multimetallic zeolite catalyst. 4,122,125, Cl. 260-668.00R.

Mussshieimitsukogyo Kabushikikaisha: *See*—
Nemoto, Akira; Hamaguchi, Yasunori; and Terai, Kenichi, 4,121,844, Cl. 277-212.0FB.

Myers, Bruce B.; and Jackson, Robert W., to Bendix Corporation, The. Hydraulic brake booster having charging and check valves. 4,121,421, Cl. 60-582.000.

Myrens Verksted A/S: *See*—
Tronstad, Inge Magnus, 4,122,208, Cl. 426-641.000.

Myrzik, Sigmar: *See*—
Triebold, Karl Friedrich; Myrzik, Sigmar; and Bohme, Johann Friedrich, 4,122,432, Cl. 340-15.000.

Mysels, Karol J.; and Shenoy, Arkal S., to General Atomic Company. Nuclear reactor with fuel column coolant regulation. 4,121,973, Cl. 176-84.000.

N.K.F. Kabel B.V.: *See*—
Lameris, Jan Warmolt, 4,121,352, Cl. 34-92.000.

N.P.I. Corporation: *See*—
Baker, Edward D.; Brown, John S.; Forney, Robert B.; and Lang-Ree, Nils, 4,121,509, Cl. 99-386.000.

Nadelson, Jeffrey, to Sandoz, Inc. Substituted hydroxy pyridones. 4,122,182, Cl. 424-263.000.

Nagamatsu, Gentaro: *See*—
Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, 4,121,936, Cl. 96-35.100.

Nagano, Akira: *See*—
Kitajima, Kenichi; Nagano, Akira; and Urasaki, Kazuaki, 4,122,444, Cl. 340-324.00R.

Naganuma, Shinya: *See*—
Iwasaki, Sadayoshi; and Naganuma, Shinya, 4,122,316, Cl. 200-5.00B.

Nagao, Tsukasa. Composite resonator. 4,122,418, Cl. 333-82.00R.

Nagati, Rashed N.: *See*—
Fisher, Howard M.; and Nagati, Rashed N., 4,121,811, Cl. 266-246.000.

Nagoshi, Hideo; Kanno, Susumu; Oohama, Tadashi; and Yamaguchi, Ryozo, to Mitsubishi Chemical Industries Limited. Process for producing 17-acetals of 3-alkoxyestra-2,5(10)-dien-17-ones. 4,122,080, Cl. 260-239.55C.

Nagoya, Yoshinori: *See*—
Takasaki, Yoshitaka; Ishizuka, Kohei; Kita, Yasuhiro; Nagoya, Yoshinori; and Kusama, Takeo, 4,122,417, Cl. 333-28.00R.

Nairn Floors Limited: *See*—
Brewer, Douglas M.; Mawson, Alan; and Carter, William S., 4,122,224, Cl. 428-159.000.

Naito, Kenzo: *See*—
Fujii, Shoichiro; Sendai, Michiyuki; Naito, Kenzo; and Kato, Masayasu, 4,122,258, Cl. 544-18.000.

Najmann, Knut: *See*—
Heuber, Klaus; Klein, Wilfried; Najmann, Knut; Wernicke, Friedrich; and Wiedmann, Siegfried Kurt, 4,122,548, Cl. 365-203.000.

Nakajima, Tomio: *See*—
Nishina, Yoshio; Habu, Teiji; Nakajima, Tomio; Oshima, Akio; Sakamoto, Eiichi; Fujimori, Noboru; Mine, Kiyomitsu; and Toya, Hiroo, 4,121,935, Cl. 96-27.00E.

Nakamichi Research Inc.: *See*—
Kobayashi, Kozo, 4,122,502, Cl. 360-65.000.

Nakamura, Akinori: *See*—
Nanjyo, Toshio; and Nakamura, Akinori, 4,122,295, Cl. 13-32.000.

Nakamura, Masayoshi; Ogoshi, Toshiaki; and Yazaki, Mitsuyoshi, to Lion Fat and Oil Co., Ltd., The. Granular detergent composition. 4,122,044, Cl. 252-532.000.

Nakamura, Masayuki: *See*—
Kikuga, Toyoji; Nakamura, Masayuki; Goto, Tateo; and Amakawa, Tosaku, 4,122,211, Cl. 427-27.000.

Nakamura, Yasuyoshi: *See*—
Kimura, Shiro; Nakamura, Yasuyoshi; Kurimoto, Shigeki; and Motouchi, Katuhiro, 4,122,089, Cl. 260-328.000.

Nakamura, Zenzo: *See*—
Tsunekawa, Tokuichi; Nakamura, Zenzo; Ohtaki, Shohei; Sakurada, Nobuaki; Suzuki, Masayuki; and Uchiyama, Takashi, 4,122,467, Cl. 354-33.000.

Nakasaki, Eiji, to Sumitomo Rubber Industries, Ltd. Pneumatic tire for motorcycle. 4,121,641, Cl. 152-353.00R.

Nakase, Takamichi: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, 4,121,546, Cl. 123-32.0EE.
Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, 4,121,548, Cl. 123-32.0EE.

Nakata, Shinichi: *See*—
Takahashi, Hiroshi; and Nakata, Shinichi, 4,122,513, Cl. 363-21.000.

Nakayama, Yasuharu: *See*—
Aihara, Tetsuo; Nakayama, Yasuharu; Yamashita, Yoshio; Watanabe, Tadashi; and Toyomoto, Isao, 4,122,052, Cl. 260-23.0EM.

Nanjyo, Toshio; and Nakamura, Akinori, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Furnace wall structure capable of tolerating high heat load for use in electric arc furnace. 4,122,295, Cl. 13-32.000.

Nardi, John C.; Hussey, Charles L.; and King, Lowell A., to United States of America, Air Force. $AlCl_3$/1-alkyl pyridinium chloride room temperature electrolytes. 4,122,245, Cl. 429-194.000.

Narisawa, Shizuo: *See*—
Miki, Tamotsu; Narisawa, Shizuo; Ichikawa, Ichiro; and Horiike, Hideki, 4,122,134, Cl. 260-880.00B.

Nathe, Marcus A. Collapsible brush. 4,121,314, Cl. 15-203.000.

National Engineering Company: *See*—
Rikker, Leslie D., 4,121,646, Cl. 164-4.000.

National Patent Development Corporation: *See*—
Kronman, Joseph H.; and Goldman, Melvin, 4,121,587, Cl. 128-218.00P.

National Research Development Corporation: *See*—
Ryan, William; and Massoud, Ebrahim, 4,121,987, Cl. 204-181.00F.

National Semiconductor Corporation: *See*—
Chen, Carson L., 4,122,413, Cl. 331-108.00D.
Sauer, Donald Roy, 4,122,401, Cl. 330-257.000.

Tietz, Gary William; and Mueller, Keith James, 4,122,405, Cl. 331-1.00A.

National Starch and Chemical Corporation: *See*—
Georgoudis, Paul C., 4,122,073, Cl. 260-873.000.

NCR Corporation: *See*—
Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., 4,122,393, Cl. 325-324.000.

Neal, Richard E.: *See*—
Abbatiello, Leonard A.; and Neal, Richard E., 4,122,351, Cl. 250-554.000.

Nechutny, Zdenek: *See*—
Burge, Malcolm Leonard Ernest; and Nechutny, Zdenek, 4,122,205, Cl. 426-548.000.

Negishi, Naoki: *See*—
Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Masahiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, 4,122,150, Cl. 423-242.000.

Neiji Seika Kaisha, Ltd.: *See*—
Nitajima, Tetsutaro; Tsuruoka, Takashi; Inouye, Shigeharu; Koeda, Takemi; and Niida, Taro, 4,122,171, Cl. 424-180.000.

Nellen, Wilhelm; Sevenich, Theodor; Klein, Konrad; and Gregorec, Ladislav, to Hoesch Werke Aktiengesellschaft. Installation for stacking sheet metal plates into packets and for supplying the packets to a binding station. 4,121,723, Cl. 214-6.00D.

Nelson, George D.; Nissing, Kenneth J.; and Symes, William F., to Monsanto Company. Chlorinated s-triazine trione compositions and process for their preparation. 4,122,267, Cl. 544-190.000.

Nelson, Kerry S., to Minnesota Mining and Manufacturing Company. Electrographic development process. 4,121,931, Cl. 96-1.0SD.

Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-carboxyamino-methyl-PGFα compounds. 4,122,282, Cl. 560-115.000.

Nelson Research & Development Company: *See*—
Rajadhyaksha, Vithal Jagannath, 4,122,170, Cl. 424-180.000.

Nelson, Robert C., to New River Manufacturing Company, Inc. Labyrinth lubricant seal for belt conveyor roll. 4,121,694, Cl. 184-6.000.

Nemoto, Akira; Hamaguchi, Yasunori; and Terai, Kenichi, to Musashieimitsukogyo Kabushikikaisha; and Nippon Oil Seal Industry Co. Ltd. Ball joint seals. 4,121,844, Cl. 277-212.0FB.

Neogi, Amar N.: *See*—
Erickson, Charles E.; and Neogi, Amar N., 4,121,885, Cl. 351-177.000.

Nep Company, Ltd.: *See*—
Akiyama, Kakunosuke, 4,121,488, Cl. 84-1.010.

Nes, Per Sigurd. Holder for loose filing sheets. 4,121,892, Cl. 402-17.000.

Neuss, Norbert: *See*—
Wright, Ian G.; and Neuss, Norbert, 4,122,082, Cl. 260-287.00B.

Neville, Martin C.; and Verge, John P., to Lilly Industries Limited. Oxazole derivatives. 4,122,183, Cl. 424-272.000.

New England Power Company: *See*—
Kittrell, James R.; and Quinlan, Charles W., 4,122,156, Cl. 423-443.000.

New River Manufacturing Company, Inc.: *See*—
Nelson, Robert C., 4,121,694, Cl. 184-6.000.

New York Institute of Technology: *See*—
Glenn, William E.; and Ludeke, Carl A., 4,121,428, Cl. 62-2.000.

New York Wire Mills Corp.: *See*—
Tolliver, Wilbur E.; and Borodin, Daniel J., 4,122,228, Cl. 428-101.000.

Newman, Douglas A.: *See*—
Sharkey, Melvin; and Newman, Douglas A., 4,121,522, Cl. 101-463.000.

Newton, David Francis: *See*—
Greenhalgh, Colin William; Carey, John Laurence; and Newton, David Francis, 4,122,087, Cl. 260-325.00R.

Newton, Richard Paul; and Gravely, Lawrence Edmond, to Brown & Williamson Tobacco Corporation. Filter. 4,121,599, Cl. 131-261.00R.

Nicholls, Lawrence George, to Girling Limited. Valve assembly for a piston of a telescopic damper. 4,121,704, Cl. 188-282.000.

Nichols, George M., to Borg-Warner Corporation. Flame retardant propylene compositions containing trityl compound synergists. 4,122,066, Cl. 260-45.85R.

Nicholson Concrete Company: *See*—
Merkel, Richard T.; and Markin, William R., 4,121,759, Cl. 235-70.00A.

Nicholson, Norman E.; and Scarlett, John, to Davy Powergas Inc. Sulfur dioxide removal process. 4,122,148, Cl. 423-242.000.

Nickaloff, Raymond M. Machine for collecting, shredding and compacting cans. 4,121,514, Cl. 100-91.000.

Nicodemus, Carl D. Thermodynamic system. 4,121,425, Cl. 60-670.000.

Nicolay, Klaus: *See*—
Wolfinger, Arthur; and Nicolay, Klaus, 4,121,783, Cl. 242-68.400.

Nicoloff, George B.: *See*—
Holland, Charles L.; and Nicoloff, George B., 4,121,606, Cl. 137-15.100.

Nicolosi, Vincent. Flavor exhancer and method of preparing the same. 4,122,207, Cl. 426-615.000.

Niemczyk, Chester. Miniature grandfather clock. 4,121,416, Cl. 58-88.00R.

Nightingale, Allen Frederick: *See*—
Yardley, James Frank; and Nightingale, Allen Frederick, 4,121,963, Cl. 156-308.000.

Nihon Tokushu Noyaku Seizo K.K.: *See*—
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; Kurahashi, Yoshio; and Tsuboi, Shinichi, 4,122,174, Cl. 424-211.000.

Niida, Taro: *See*—
Niizato, Tetsutaro; Tsuruoka, Takashi; Inouye, Shigeharu; Koeda, Takemi; and Niida, Taro, 4,122,171, Cl. 424-180.000.

Niinomi, Naoyuki; and Oya, Akiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Touch-responsive circuit in electronic musical instrument. 4,121,348, Cl. 84-1.010.

Niizato, Tetsutaro; Tsuruoka, Takashi; Inouye, Shigeharu; Koeda, Takemi; and Niida, Taro, to Neiji Seika Kaisha, Ltd. Agent for protecting against renal failure. 4,122,171, Cl. 424-180.000.

Nikiforov, PetrMikhailovich: *See*—
Berman, Samuil Izrailevich; and Nikiforov, PetrMikhailovich, 4,121,335, Cl. 29-597.000.

Nikolaeva, Ljudmila Alexandrovna: *See*—
Golovchinskaya, Elena Semenovna; Chernov, Vladimir Alexandrovich; Chaman, Elena Silvestrovna; Nikolaeva, Ljudmila Alexandrovna; and Korsunsky, Vyacheslav Sergeevich, 4,122,173, Cl. 424-200.000.

Nikolich, Milovan. Safety brake mechanism for chain saws. 4,121,339, Cl. 30-381.000.

Ninomiya, Yuichi, to Nippon Hoso Kyokai. Serial parallel type analog to digital converting device. 4,122,439, Cl. 340-347.0AD.

Nippon Coinco Co. Ltd.: *See*—
Hayashi, Yukichi, 4,121,603, Cl. 133-2.000.

Nippon Electric Co., Ltd.: *See*—
Suzuki, Etsuo; and Sakurai, Hidekazu, 4,122,497, Cl. 358-304.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Adachi, Takeshi; and Koike, Masahiko, 4,121,489, Cl. 84-1.240.
Niinomi, Naoyuki; and Oya, Akiyoshi, 4,121,348, Cl. 84-1.010.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Kotani, Yasuo; and Hasegawa, Masayasu, 4,122,187, Cl. 424-317.000.

Nippon Hoso Kyokai: *See*—
Ninomiya, Yuichi, 4,122,439, Cl. 340-347.0AD.

Nippon Kogaku K.K.: *See*—
Fukuhara, Toru, 4,122,468, Cl. 354-59.000.
Hasegawa, Hiroshi; Ohtsubo, Yoshiaki; Watanabe, Sakuji; and Takahata, Kouichi, deceased, 4,122,465, Cl. 354-32.000.
Takahata, Kouichi, deceased, 4,122,471, Cl. 354-173.000.

Nippon Oil Seal Industry Co. Ltd.: *See*—
Nemoto, Akira; Hamaguchi, Yasunori; and Terai, Kenichi, 4,121,844, Cl. 277-212.0FB.

Nippon Piston Ring Co., Ltd.: *See*—
Sakamaki, Hiroshi, 4,121,838, Cl. 277-176.000.

Nippon Seisen Co., Ltd.: *See*—
Oda, Takashi; and Kokubu, Kaoru, 4,122,015, Cl. 210-496.000.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, 4,121,546, Cl. 123-32.0EE.
Hattori, Tadashi; Yamaguchi, Hiroaki; and Nakase, Takamichi, 4,121,548, Cl. 123-32.0EE.
Yoshida, Shuzo; Akita, Sigeyuki; and Kitamura, Sotoo, 4,121,457, Cl. 73-291.000.

Nippon Steel Corporation: *See*—
Takeuchi, Shinjiro; Kikuchi, Tosiro; Harada, Koosuke; Shokyu, Tokuji; and Fujii, Yoshihiro, 4,122,392, Cl. 324-208.000.
Yokokawa, Takao; Takano, Shigeo; Ichinose, Yasuaki; Kasahara, Toshiyuki; and Ikeda, Fumiaki, 4,121,748, Cl. 228-102.000.

Nippon Television Industry Corporation: *See*—
Mikado, Tsuneo, 4,122,488, Cl. 358-19.000.

Nippon Tensai Seito Kabushiki Kaisha: *See*—
Tanaka, Kiyotaka; Gentsu, Isao; and Sunaga, Mamoru, 4,121,505, Cl. 93-1.00H.

Nippondenso Co., Ltd.: *See*—
Hasegawa, Takashi, 4,121,553, Cl. 123-117.00D.
Sano, Hiromi; and Suzuki, Masatosi, 4,121,988, Cl. 204-195.00S.
Sueishi, Motoharu; Kato, Katsushi; and Sato, Yoshiaki, 4,121,554, Cl. 123-119.0EC.

Nishida, Masamitsu: *See*—
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; Ouchi, Hiromu; and Hayakawa, Shigeru, 4,121,941, Cl. 106-39.500.

Nishida, Takashi: *See*—
Ohnishi, Takashi; Fujita, Yoshiji; Wada, Fumio; Nishida, Takashi; Omura, Yoshiaki; Mori, Fumio; Hosogai, Takeo; and Aihara, Sukeji, 4,122,119, Cl. 260-586.00C.

Nishikawa, Mistuyo: *See*—
Sato, Yoshio; and Nishikawa, Mistuyo, 4,121,424, Cl. 60-646.000.

Nishimura, Masaaki: *See*—
Matsuda, Atsushi; Kishigami, Jun; and Nishimura, Masaaki, 4,122,314, Cl. 179-115.50R.

Nishimura, Yoichi: *See*—
Yamamoto, Tamechika; Nishimura, Yoichi; and Sanga, Seiji, 4,122,007, Cl. 210-32.000.

Nishimura, Yoshihiko: *See*—
Tugukuni, Hideyoshi; Kano, Masafumi; and Nishimura, Yoshihiko, 4,122,055, Cl. 260-29.4UA.

Nishina, Yoshio; Habu, Teiji; Nakajima, Tomio; Oshima, Akio; Sakamoto, Eiichi; Fujimori, Noboru; Mine, Kiyomitsu; and Toya, Hiroo, to Konishiroku Photo Industry Co., Ltd. Lith-type silver halide photographic light-sensitive material. 4,121,935, Cl. 96-27.00E.

Nissan Motor Company, Limited: *See*—
Asano, Masaharu, 4,121,547, Cl. 123-32.0EA.
Mizote, Masanori, 4,121,545, Cl. 123-32.0EJ.
Sakakibara, Yuji; and Ishikawa, Yoshikazu, 4,121,558, Cl. 123-196.00R.

Nissing, Kenneth J.: *See—*
Nelson, George D.; Nissing, Kenneth J.; and Symes, William F., 4,122,267, Cl. 544-190.000.

Nitto Boseki Co., Ltd.: *See—*
Shono, Hiroaki; Noji, Toshio; Wakasa, Isao; and Ishikawa, Shinzo, 4,121,918, Cl. 65-1.000.

Nixon, Jeddy D., to Maurer Engineering, Inc. Apparatus for gripping a shaft or the like. 4,121,675, Cl. 175-325.000.

Noguchi, Tetsuo, to Kabushiki Kaisha Komatsu Seisakusho. Bonnet structure for generator. 4,122,353, Cl. 290-1.00A.

Noji, Toshio: *See—*
Shono, Hiroaki; Noji, Toshio; Wakasa, Isao; and Ishikawa, Shinzo, 4,121,918, Cl. 65-1.000.

Nolden, Werner, to American Standard Inc. Thermostatically controlled mixing valve for sanitary devices. 4,121,761, Cl. 236-12.00R.

Nolte, Heinz: *See—*
Gorlach, Hans; and Nolte, Heinz, 4,121,484, Cl. 76-83.000.

Northeast Utilities Service Company: *See—*
Kittrell, James R.; and Quinlan, Charles W., 4,122,156, Cl. 423-443.000.

Northern Telecom Limited: *See—*
Cesaratto, Caesar, 4,122,534, Cl. 364-900.000.
Walling, Jorg-Hein; and Jukes, John Alan, 4,122,212, Cl. 427-27.000.

Northrop Corporation: *See—*
Rick, Horst; Keppel, Richard A.; Mitchell, Harvey A.; Olsen, Lowell V.; Colas, James K.; and Tracy, Robert E., 4,122,521, Cl. 364-424.000.

Norton Company: *See—*
Strigle, Ralph F., Jr., 4,122,011, Cl. 210-150.000.

Norton, Donald S., to Johnny Reb Lure Company. Boat pole. 4,121,531, Cl. 114-221.00R.

Norwood, James R. Point pads for treble point fishhooks. 4,121,368, Cl. 43-43.200.

Norwood Marking & Equipment Co.: *See—*
Shenoha, James L., 4,121,520, Cl. 101-316.000.

Novak, James F.: *See—*
Schroeder, Donald S.; and Novak, James F., 4,122,315, Cl. 179-115.5PS.

Novak, Robert M.: *See—*
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., 4,122,122, Cl. 260-598.000.

Novak, Andrew, to Inovec, Inc. Cylinder positioning systems. 4,121,504, Cl. 92-137.000.

Nozaki, Yoshio: *See—*
Tachibana, Kyozo; Tsuboi, Takashi; Suzuki, Yutaka; Matsutake, Mitsugu; Miura, Shozuchi; Hatano, Shigeru; Goto, Takao; and Nozaki, Yoshio, 4,122,515, Cl. 363-45.000.

Nozhnikov, Valentin Matveevich: *See—*
Kastrubin, Eduard Mikhailovich; and Nozhnikov, Valentin Matveevich, 4,121,593, Cl. 128-421.000.

Nudelman, Abraham; and Patchornik, Abraham, to Yeda Research and Development Co., Ltd. Cephalosporin derivatives. 4,122,260, Cl. 544-27.000.

Nudenberg, Walter: *See—*
Loveless, Frederick Charles; and Nudenberg, Walter, 4,122,021, Cl. 252-26.000.

Nukem Nuklear-Chemie und Metallurgie GmbH: *See—*
Ifland, Norbert; Isensee, Hans-Jorg; Wagner, Gerhard; and Witte, Hartmut, 4,122,028, Cl. 252-301.10W.

Nusco Kabushiki Kaisha: *See—*
Hayashi, Shigeki; and Okamoto, Takemitsu, 4,122,517, Cl. 363-85.000.

O.E.M. Technical Sales, Inc.: *See—*
Jensen, William K., 4,122,434, Cl. 340-52.00B.

Oakey, Edwin James. Removable transparent roof panel for motor vehicles. 4,121,870, Cl. 296-137.00B.

Oberbeck, George A., to Charles Stark Draper Laboratory, Inc., The. Saturable reactor current limiter. 4,122,385, Cl. 323-92.000.

Oberle, Arthur: *See—*
Masek, Jaroslav; and Oberle, Arthur, 4,121,617, Cl. 137-630.140.

Oblak, John Stewart; and Schmalz, Peter Joseph, to RCA Corporation. Shielded, D.C. isolated RF connector assembly. 4,122,416, Cl. 333-24.00C.

Obu, Yuichiro: *See—*
Tsuruta, Matsuhisa; Yokoi, Masatada; Shibatani, Juichi; Ohori, Harumi; and Obu, Yuichiro, 4,121,699, Cl. 188-73.300.

Occidental Oil Shale, Inc.: *See—*
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De Luca, Paul V., 4,122,313, Cl. 179-98.000.
Portas, John Richard: *See—*
Taylor, Reginald Sidney; Burrow, Reginald Edwin Downton; Mason, John Morton; Portas, John Richard; and Thomas, William David, 4,121,780, Cl. 242-7.210.
Porter, Allan William; and Lucian, Anton, to Adolph Saurer. Device for equalizing the warp yarn tension in a loom. 4,121,625, Cl. 139-114.000.
Porth, Frank L., to Black, James A. Squeegee and scooping flow coater. 4,121,519, Cl. 101-124.000.
Pouliot, Oliver L.: *See—*
Daly, William P.; Lewis, Robert P.; and Pouliot, Oliver L., 4,121,714, Cl. 206-363.000.
Powell, Jimmie L.: *See—*
Humenik, James N.; Powell, Jimmie L.; and Tummala, Rao R., 4,122,460, Cl. 346-140.00R.
Powers Regulator Co.: *See—*
Modes, Edward E., 4,121,762, Cl. 236-49.000.
PPG Industries, Inc.: *See—*
Brooks, Marvin V., 4,121,394, Cl. 52-203.000.
Cherenko, Joseph, 4,121,985, Cl. 204-159.140.
Murphy, Edward J.; and Troup, Ivan G., 4,122,053, Cl. 260-29.4UA.
PQ Corporation: *See—*
Lazet, Frank J., 4,122,154, Cl. 423-334.000.
Prat, Gisele: *See—*
Fauran, Francois; Feniou, Claude; Thibault, Annie; and Prat, Gisele, 4,122,202, Cl. 424-278.000.
Precision Cosmet Co., Inc.: *See—*
Erickson, Charles E.; and Neogi, Amar N., 4,121,885, Cl. 351-177.000.
Precision Sampling Corporation: *See—*
Harris, Rano J., Sr.; Harris, Rano J., Jr.; and Averette, Julius P., Jr., 4,121,465, Cl. 73-422.0GC.
Presley, Glen T., to Cross Manufacturing, Inc. Flow compensated divider valve. 4,121,601, Cl. 137-101.000.
Pressure Science, Incorporated: *See—*
Halling, Horace P., 4,121,843, Cl. 277-200.000.
Price, Dominique: *See—*
Frade, Gilbert; Escher, Balint; and Price, Dominique, 4,122,509, Cl. 361-433.000.
Prikhodko, Valery Alexandrovich: *See—*
Medovar, Boris Izrailevich; Prikhodko, Valery Alexandrovich; Alferov, Jury Fedorovich; Kumysh, Ilya Iosifovich; and Beloglazov, Alexandr Petrovich, 4,121,648, Cl. 164-252.000.
Primbsch, Erik: *See—*
Kaule, Walter; and Primbsch, Erik, 4,121,469, Cl. 73-643.000.

Pringle, William L., to United States Steel Corporation. Furniture spring support. 4,121,309, Cl. 5-264.00R.
Prior, Arthur D.; Ward, Leonard G.; and Halbert, Silas Ray, to Documation Incorporated. High speed printer hammer assembly. 4,121,518, Cl. 101-93.330.
Prior, Herbert E. Sawbuck. 4,121,814, Cl. 269-98.000.
Prochazka, Svante; and Greskovich, Charles D., to General Electric Company. Preparation of silicon nitride powder. 4,122,155, Cl. 423-344.000.
Prochazka, Svante: *See—*
Greskovich, Charles D.; Prochazka, Svante; and O'Clair, Chester R., 4,122,140, Cl. 264-65.000.
Produits Chimiques Ugine Kuhlmann: *See—*
Coispeau, Gerard Emile Edgard, 4,122,278, Cl. 548-362.000.
Profera, Charles Edward, to RCA Corporation. Antenna feed network. 4,122,453, Cl. 343-100.0SA.
Projects Unlimited, Inc.: *See—*
Stephens, Gerald D., 4,122,365, Cl. 310-324.000.
Proskow, Stephen, to Du Pont de Nemours, E. I., and Company. Ultraviolet screening agents and coating materials containing organosilane ester groups. 4,122,233, Cl. 428-412.000.
Prossel, Gunter; Schinzel, Erich; and Rosch, Gunter, to Hoechst Aktiengesellschaft. Benzofuran-oxadiazole compounds. 4,122,257, Cl. 542-432.000.
Protectoseal Company, The: *See—*
Zehr, William J., 4,121,632, Cl. 141-59.000.
Prozzo, George P.; and Speicher, Ellis, to Sangamo Weston, Inc. Tape transport with drive drums surface driven with the same capstan at a constant tangential velocity. 4,122,504, Cl. 360-90.000.
Prueter, John L. Golf club putter. 4,121,833, Cl. 273-175.000.
Pryanishnikov, Igor Stepanovich: *See—*
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; and Perepelitsa, Igor Vasilievich, 4,121,647, Cl. 164-50.000.
Ptaszek, Waldemar. Portable, collapsible storage bins. 4,121,389, Cl. 52-2.000.
Pujol, Carlos Oliver. Cooled horizontal-axle grinder. 4,121,776, Cl. 241-46.110.
Putt, Mark S.: *See—*
Muhler, Joseph C.; and Putt, Mark S., 4,122,163, Cl. 424-52.000.
PWA Papierwerke Waldhof-Aschaffenburg Aktiengesellschaft: *See—*
Hollerich, August, 4,122,032, Cl. 252-321.000.
Pye, David S.: *See—*
Fischer, Paul W.; and Pye, David S., 4,121,664, Cl. 166-309.000.
Fischer, Paul W.; and Pye, David S., 4,121,674, Cl. 175-66.000.
Quaker Oats Company, The: *See—*
Slowe, James E.; and Wrigglesworth, Norman A., 4,121,373, Cl. 46-180.000.
Quanbeck, Sherman H. Releasably retained hinged plow. 4,121,852, Cl. 280-411.00C.
Queen, Daniel L., to Chamberlain Manufacturing Corporation. Loudspeaker overload circuit. 4,122,507, Cl. 361-94.000.
Quenot, Michel, to Stanley-Mabo S.A. Tape measure brake. 4,121,785, Cl. 242-84.800.
Querry, Marvin R.; and Reinschmidt, William G., to Automotive Propulsion Laboratories, Ltd. Compound internal-combustion hot-gas engines. 4,121,423, Cl. 60-616.000.
Quick, Donald J., to Massey-Ferguson Services N.V. Harvester for sugar cane. 4,121,778, Cl. 241-79.000.
Quiney, Kenneth Maurice: *See—*
Reynolds, Desmond Henry James; and Quiney, Kenneth Maurice, 4,121,845, Cl. 277-212.0FB.
Quinlan, Charles W.: *See—*
Kittrell, James R.; and Quinlan, Charles W., 4,122,156, Cl. 423-443.000.
Quintel, Francis William. Grass cutting machine. 4,121,406, Cl. 56-13.400.
R. R. Donnelley & Sons Co.: *See—*
Riley, Wayne A.; Ingebretsen, Melinda S.; Rodig, Robert I.; Krapf, David V.; Hagenbart, Donald E.; and Williams, Charles H., 4,121,818, Cl. 270-54.000.
Raab, Clifford, to Displacement Systems Corporation. Water closet water saving device. 4,121,308, Cl. 4-415.000.
Raab, Markus; Langebach, Peter; and Dittmann, Heiner, to Linde Aktiengesellschaft. Apparatus for the cooling of a cracking-gas stream. 4,121,908, Cl. 422-207.000.
Radenkovic, Ljubomir. Sonia system. 4,121,566, Cl. 126-271.000.
Rader Companies, Inc.: *See—*
Hamilton, Frank G., 4,122,003, Cl. 209-147.000.
Radev, Hristo Kirilov; Lazarov, Iliya Ivanov; and Grekov, Tzanko Georgiev, to Institute "Lenin" Vish Machinno-Elektrotechnicheski. Apparatus for measuring non-cylindricity of surfaces. 4,121,451, Cl. 73-37.900.
Rain, Lloyd Howard, to Irvin Industries Inc. Rigid frame structure with tensioned membrane cladding. 4,121,604, Cl. 135-4.00R.
Rajadhyaksha, Vithal Jagannath, to Nelson Research & Development Company. Physiological vehicle compositions containing higher alkyl substituted azacyclopentan-2-ones. 4,122,170, Cl. 424-180.000.
Ramlow, Gerhard Gustav; Pizzini, Louis Celeste; Patton, John Thomas, Jr.; Murphy, John Richard; and Davis, John Eugene, to BASF Wyandotte Corporation. Emulsion polymerization of ethylenically unsaturated monomers in hydroxy-terminated organic compounds. 4,122,056, Cl. 260-29.6NR.
Ranco Incorporated: *See—*
Hart, Edward F., 4,121,655, Cl. 165-27.000.
Random Electronic Games Co.: *See—*
Buckley, Dennis J., 4,121,830, Cl. 273-138.00A.
Rangaire Corporation: *See—*
Bowen, Leon O., Jr.; and McVean, Michael T., 4,121,569, Cl. 126-299.00D.
Ratti, Mario, to S.U.S.T.A. S.p.A. Telescopic guide for drawers in particular metal drawers. 4,121,876, Cl. 308-3.800.
Ravotto, Richard Albert; and Rosenburg, Charles Warner, Jr., to J. C. Penney Company, Incorporated; and F. N. Burt Co., Inc., a part interest to each. Self-openable device and blank therefor. 4,121,752, Cl. 229-27.000.
Rawlings, Eugene; and Olsson, Frederick J. Roofer's staging. 4,121,690, Cl. 182-45.000.
Raychem Corporation: *See—*
Siden, Dennis C.; and McMills, Corey J., 4,121,338, Cl. 30-257.000.
Raymond Lee Organization, Inc., The: *See—*
Letostak, Steve, 4,121,323, Cl. 24-3.00H.
Raytheon Company: *See—*
Schloemann, Ernst F.R.A.; and Howell, Fred M., 4,122,459, Cl. 346-140.00R.
RCA Corporation: *See—*
Bartolini, Robert Alfred; and Russell, John Patrick, 4,121,881, Cl. 350-3.670.
Bolger, Thomas Vincent; and Dischert, Robert Adams, 4,122,489, Cl. 358-21.000.
Hulstrunk, William, 4,122,483, Cl. 357-49.000.
Kressel, Henry; and Hawrylo, Frank Zgymunt, 4,122,410, Cl. 331-94.50H.
Luther, Arch Clinton, Jr.; and Sauer, David Arthur, 4,122,415, Cl. 332-37.00R.
Masterton, Walter David, 4,122,368, Cl. 313-403.000.
Medendorp, Dale Frederick; and Schwabel, Paul Charles, 4,122,400, Cl. 330-207.00P.
Oblak, John Stewart; and Schmalz, Peter Joseph, 4,122,416, Cl. 333-24.00C.
Profera, Charles Edward, 4,122,453, Cl. 343-100.0SA.
Sonntag, William Arthur; and Simpson, Theodore Frederick, 4,122,485, Cl. 358-10.000.
Redford, David A., to Texas Exploration Canada, Ltd. Viscous oil recovery method. 4,121,661, Cl. 166-252.000.
Reece, Lawrence L. Lightshielding hood for an electrical instrument. 4,121,303, Cl. 2-205.000.
Reed, Edwin A.: *See—*
Marlett, Calvin J.; Reed, Edwin A.; and Johnson, Richard C., 4,122,409, Cl. 331-94.50M.
Reed Irrigation Systems: *See—*
Zimmerman, Harry M., 4,121,621, Cl. 137-863.000.
Reedy, Charles E., to ACF Industries, Incorporated. Valve guard for bottom operated tank car valve. 4,121,614, Cl. 137-382.500.
Rehkugler, Gerald E.: *See—*
Millier, William F.; Rehkugler, Gerald E.; Pellerin, Roger A.; and Throop, James A., 4,121,407, Cl. 56-329.000.
Reichler, Allen; and Diebler, Herman Guy, to Technicon Instruments Corporation. Liquid dispenser with an improved probe. 4,121,466, Cl. 73-423.00A.
Reid, MacGregor S.: *See—*
United States of America, National Aeronautics and Space Administration; Ohlson, John E.; and Reid, MacGregor S., 4,122,454, Cl. 343-117.00R.
Reinhall, Per Gustaf. Screw conveyor in pulp-making equipment. 4,121,967, Cl. 162-246.000.
Reinhard, Theodor; Hoffmann, Rudiger; and Haug, Ernst, to Daimler-Benz Aktiengesellschaft. Vehicle especially motor vehicle with operationally conditioned vacuum loads and comfort vacuum loads. 4,121,613, Cl. 137-351.000.
Reinschmidt, William G.: *See—*
Querry, Marvin R.; and Reinschmidt, William G., 4,121,423, Cl. 60-616.000.
Renault, Jean; Jolivet, Francois; Plichon, Claude; and Bordet, Rene, to Spie-Batignolles; and Electricite de France. Device for protecting a structure against the effects of high horizontal dynamic stresses. 4,121,393, Cl. 52-167.000.
Renge, Tsumoru: *See—*
Kyo, Sunao; Renge, Tsumoru; and Tanaka, Hidetsugu, 4,122,291, Cl. 568-887.000.
Rennecke, Gunter: *See—*
Schneider, Wolfgang; Wieland, Dieter; and Rennecke, Gunter, 4,121,570, Cl. 126-374.000.
Rennie, Paul A.: *See—*
Castleman, Kenneth R.; Frieden, Howard J.; Johnson, Elbert T.; Rennie, Paul A.; and Wall, Raymond J., 4,122,518, Cl. 364-300.000.
Reno, David L.; and Donovan, Keith W. Protective cover for the strings of a musical instrument. 4,121,494, Cl. 84-453.000.
Repplinger, Joachim: *See—*
George, Joachim; and Repplinger, Joachim, 4,122,118, Cl. 260-576.000.
Republic Tool & Manufacturing Corp.: *See—*
McRoskey, John W.; McRoskey, Leonard H.; and Swartz, Delbert D., 4,121,733, Cl. 222-43.000.
Research Institute for Special Inorganic Materials, The: *See—*
Yajima, Seishi; Hayashi, Josaburo; and Omori, Mamoru, 4,122,139, Cl. 264-44.000.
Reynolds, Desmond Henry James; and Quiney, Kenneth Maurice, to

Girling Limited. Boot for slidably guided member. 4,121,845, Cl. 277-212.0FB.

Reynolds Metals Co.: *See—*
Sturwold, Robert J.; Utz, Walter Earl; Christ, Nicholas; Ford, William R., Jr.; and Koch, George P., 4,122,217, Cl. 427-156.000.

Rhone, Peter, to Kabel-und Metallwerke Gutehoffnungshutte. Spacer for concentric tubes. 4,121,623, Cl. 138-114.000.

Rhone-Poulenc Industries: *See—*
Fouassier, Claude; and Latourette, Bertrand, 4,122,349, Cl. 250-504.000.

Rhone-Poulenc-Textile: *See—*
Bournain, Paul; and Pesson, Andre, 4,121,901, Cl. 8-115.600.

Rhone-Progil: *See—*
Becuwe, Jacques, 4,121,978, Cl. 203-58.000.

Riboulet, Michel Jean; and Simon, Jacques Yves Louis Georges, to Centre National d'Etudes Spatiales. Solar absorbers with layers of nickel/chromium alloy and dielectric material. 4,122,239, Cl. 428-621.000.

Ricardo & Co., Engineers (1927) Limited: *See—*
Haslett, Robert Alan; Howard, Charles Peter; and Wheeler, Richard Winston, 4,121,455, Cl. 73-194.00M.

Richards, William: *See—*
Grolman, Bernard; and Richards, William, 4,121,346, Cl. 33-200.000.

Richardson-Merrell Inc.: *See—*
Huber, Harold E., 4,122,157, Cl. 424-21.000.
Parker, Roger Alan, 4,122,191, Cl. 424-331.000.

Richfield, Robert S.: *See—*
Allen, Peter A.; and Richfield, Robert S., 4,121,377, Cl. 47-18.000.

Richmond, Martin R., to Sanders Associates, Inc. Jamming signal cancellation system. 4,122,452, Cl. 343-18.00E.

Richter, Gunter; and Froschle, Reinhard, to Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Analogue control device for abutment-free stroke limitation of machine tools. 4,122,379, Cl. 318-634.000.

Rick, Horst; Keppel, Richard A.; Mitchell, Harvey A.; Olsen, Lowell V.; Colas, James K.; and Tracy, Robert E., to Northrop Corporation. Correlation system for multiple-sensor reconnaissance vehicle. 4,122,521, Cl. 364-424.000.

Riddick, Patricia R.: *See—*
Riddick, William E.; and Riddick, Patricia R., 4,121,600, Cl. 132-79.00R.

Riddick, William E.; and Riddick, Patricia R. Oral hygiene dispenser. 4,121,600, Cl. 132-79.00R.

Riede, Gerhard; and Andersson, Roland Johan Edvin, to Gambro AB. Apparatus for treating blood. 4,122,010, Cl. 210-90.000.

Rieger, Michael Lawrence, to Tektronix, Inc. Integrator circuits for a constant velocity vector generator. 4,122,528, Cl. 364-829.000.

Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft. Device at a converter with a tilting drive. 4,121,481, Cl. 74-410.000.

Rieter Machine Works Ltd.: *See—*
Angst, Kurt, 4,121,781, Cl. 242-45.000.

Rikker, Leslie D., to National Engineering Company. Method and apparatus for making molds. 4,121,646, Cl. 164-4.000.

Riley, Wayne A.; Ingebretsen, Melinda S.; Rodig, Robert I.; Krapf, David V.; Hagenbart, Donald E.; and Williams, Charles H., to R. R. Donnelley & Sons Co. Signature collating and binding system. 4,121,818, Cl. 270-54.000.

Risby, Terence H.; and Yergey, Alfred L., III, to Chemetron Corporation. Method to generate correlative data from various products of thermal degradation of biological specimens. 4,122,343, Cl. 250-282.000.

Rissanen, Jorma Johannen: *See—*
Langdon, Glenn George, Jr.; and Rissanen, Jorma Johannen, 4,122,440, Cl. 340-347.0DD.

Ritter, Gerhard: *See—*
Sackl, Alois; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,121,629, Cl. 140-112.000.

Ritter, Josef: *See—*
Sackl, Alois; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,121,629, Cl. 140-112.000.

Ritter, Klaus: *See—*
Sackl, Alois; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 4,121,629, Cl. 140-112.000.

Ritterwerk GmbH: *See—*
Hartkorn, Hans Walter, 4,121,508, Cl. 99-283.000.

Robbins, Douglas R.; and Robbins, Samuel B., Jr., to Mark IV Industries, Inc. Vial construction having safety closure. 4,121,727, Cl. 215-211.000.

Robbins, Ernest Aleck; and Seeley, Robert Dudley, to Anheuser-Busch, Incorporated. Process for the manufacture of yeast glycan. 4,122,196, Cl. 426-60.000.

Robbins, Samuel B., Jr.: *See—*
Robbins, Douglas R.; and Robbins, Samuel B., Jr., 4,121,727, Cl. 215-211.000.

Roberge, Frank L., to Garrett Corporation, The. Fluid temperature transducer. 4,121,763, Cl. 236-87.000.

Roberts, Arthur W., Jr.; and Kesler, George, to Inta-Rota, Incorporated. Hot melt pumping apparatus. 4,121,535, Cl. 118-5.000.

Roberts, William E., to Addressograph-Multigraph Corporation. Microfiche developer. 4,122,475, Cl. 354-300.000.

Robertshaw Controls Company: *See—*
Fatish, Donald Clayton, 4,121,580, Cl. 128-145.700.

Robertson, John H.: *See—*
Boyle, Elbert I.; and Robertson, John H., 4,121,644, Cl. 157-1.170.

Robertson Paper Box Co., Inc.: *See—*
Hackenberg, Robert A., 4,121,754, Cl. 229-38.000.

Robinson, Robert Lee; and Hoff, David Casper, to Lockheed Electronics Company, Inc. Error detection and indication system for bi-phase encoded digital data. 4,122,441, Cl. 340-146.1AB.

Rockwell International Corporation: *See—*
Frankel, Milton B.; Gunderloy, Frank C., Jr.; and Woolery, Dean O., II, 4,122,124, Cl. 260-644.000.
Fuhrman, James L., 4,122,404, Cl. 331-1.00A.
Hoech, Gary F., 4,122,529, Cl. 364-852.000.

Rodgers, James William: *See—*
Duggins, Richard Wayne; and Rodgers, James William, 4,121,343, Cl. 33-42.000.

Rodig, Robert I.: *See—*
Riley, Wayne A.; Ingebretsen, Melinda S.; Rodig, Robert I.; Krapf, David V.; Hagenbart, Donald E.; and Williams, Charles H., 4,121,818, Cl. 270-54.000.

Roesner, Raymond Earl, to Dresser Industries, Inc. Linearly corrected articulated linkage for wellbore measuring instrument. 4,121,345, Cl. 33-178.00F.

Roger, Bernard: *See—*
Bonis, Maurice; and Roger, Bernard, 4,122,482, Cl. 357-46.000.

Roitman, Dmitry Leonidovich: *See—*
Zhukovsky, Evgeny Grigorievich; Lobanov, Vyacheslav Mikhailovich; Rozgon, Vladimir Danilovich; and Roitman, Dmitry Leonidovich, 4,122,380, Cl. 318-696.000.

Rollins, David M.; and Masonholder, Scott P., to Tel-Tone Corporation. Elongate electrical connector retaining device. 4,121,880, Cl. 339-119.00R.

Roque, Leonard, to Coulter Electronics, Inc. Sample handling system. 4,121,907, Cl. 356-246.000.

Rosch, Gunter: *See—*
Prossel, Gunter; Schinzel, Erich; and Rosch, Gunter, 4,122,257, Cl. 542-432.000.

Roseberg, Harry G.; and Levine, Bernard. Pulverizer. 4,121,775, Cl. 241-30.000.

Rosen, Irving: *See—*
Dirks, Gary W.; Li, George S.; and Rosen, Irving, 4,121,807, Cl. 526-76.000.

Rosenburg, Charles Warner, Jr.: *See—*
Ravotto, Richard Albert; and Rosenburg, Charles Warner, Jr., 4,121,752, Cl. 229-27.000.

Rosenthal Aktiengesellschaft: *See—*
Sussmuth, Godehard, 4,122,220, Cl. 427-243.000.

Ross, Sherwood B., to Chain Bike Corporation. Bicycle fork end construction. 4,121,850, Cl. 280-279.000.

Rother, Horst: *See—*
Voelskow, Peter; Rother, Horst; Schlotterer, Gustav; and Pfeiffer, Hermann, 4,121,524, Cl. 110-220.000.

Rougeot, Henri, to Thomson-CSF. Semiconductor detector for detecting ionizing radiation. 4,122,345, Cl. 250-370.000.

Royal Industries, Inc.: *See—*
Sosalla, Harry, 4,121,669, Cl. 172-181.000.

Rozgon, Vladimir Danilovich: *See—*
Zhukovsky, Evgeny Grigorievich; Lobanov, Vyacheslav Mikhailovich; Rozgon, Vladimir Danilovich; and Roitman, Dmitry Leonidovich, 4,122,380, Cl. 318-696.000.

Rozniecki, Edward J., to United States of America, Army. Fuel (flammable liquid) tank fire extinguisher. 4,121,666, Cl. 169-62.000.

Rudert, Wolfgang: *See—*
Wand, Norbert; and Rudert, Wolfgang, 4,121,550, Cl. 123-41.310.

Rudolf, Artur. Fibre reinforced plastics part for use under traction. 4,121,395, Cl. 52-230.000.

Rumbaugh, Paul S., to Altec Corporation. Modular printed circuit board assembly having cooling means incorporated therein. 4,122,508, Cl. 361-384.000.

Rush, William F.: *See—*
Weil, Sanford A.; Rush, William F.; Wurm, Jaroslav; and Dufour, Raymond J., 4,121,432, Cl. 62-79.000.

Russell, John Patrick: *See—*
Bartolini, Robert Alfred; and Russell, John Patrick, 4,121,881, Cl. 350-3.670.

Russell, Lewis K.; and Kleitman, David, to Signetics Corporation. Massive monolithic integrated circuit. 4,122,540, Cl. 365-104.000.

Rutledge, James E. Crustacean meat extraction means. 4,121,322, Cl. 17-73.000.

Rutledge, Peter S.: *See—*
Kende, Andrew S.; and Rutledge, Peter S., 4,122,092, Cl. 260-340.50R.

Ryan, William; and Massoud, Ebrahim, to National Research Development Corporation. Electrophoretic slip casting. 4,121,987, Cl. 204-181.00F.

Ryden, Lars Ola; and Andersson, Karl Olof Ingmar, to Telefonaktiebolaget L M Ericsson. Space stage in a PCM-exchange. 4,122,310, Cl. 179-15.0AT.

S.U.S.T.A. S.p.A.: *See—*
Ratti, Mario, 4,121,876, Cl. 308-3.800.

Saarbergwerke Aktiengesellschaft: *See—*
Kneissl, Hannes; and Uebbing, Alexander, 4,121,541, Cl. 122-1.00R.

Sabol, Donald J.: *See—*
Michel, George H.; and Sabol, Donald J., 4,121,940, Cl. 106-35.000.

Sabourin, Edward T.: *See—*
Schulz, Johann G. D.; and Sabourin, Edward T., 4,122,050, Cl. 521-95.000.

Sackett, Marvin E.: *See—*
Loranger, Robert C.; and Sackett, Marvin E., 4,122,470, Cl. 354-122.000.

Sackl, Alois; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwicklungs- u. Verwertungs GmbH. Multispot welding machine. 4,121,629, Cl. 140-112.000.

Sahm, Wilfried, to Hoechst Aktiengesellschaft. Heterocyclic azomethines. 4,122,256, Cl. 542-423.000.

Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; Kurahashi, Yoshio; and Tsuboi, Shinichi, to Nihon Tokushu Noyaku Seizo K.K. Combating pests with O-alkyl-N-sulfamyl-phosphoramidothiolates. 4,122,174, Cl. 424-211.000.

Saito, Takeshi: *See—*
Taniyasu, Ryozo; Kurokawa, Hideo; and Saito, Takeshi, 4,122,126, Cl. 260-677.00A.

Sakai, Koichi: *See—*
Hasegawa, Yoshikazu; Ohmichi, Yasuyuki; and Sakai, Koichi, 4,122,422, Cl. 335-213.000.

Sakakibara, Yuji; and Ishikawa, Yoshikazu, to Nissan Motor Company, Limited. Internal combustion engine assembly. 4,121,558, Cl. 123-196.00R.

Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Shaft seal structure. 4,121,838, Cl. 277-176.000.

Sakamoto, Eiichi: *See—*
Nishina, Yoshio; Habu, Teiji; Nakajima, Tomio; Oshima, Akio; Sakamoto, Eiichi; Fujimori, Noboru; Mine, Kiyomitsu; and Toya, Hiroo, 4,121,935, Cl. 96-27.00E.

Sakamoto, Noriaki: *See—*
Tsuchida, Takashi; Shinoda, Kenichi; and Sakamoto, Noriaki, 4,122,243, Cl. 429-174.000.

Sakurada, Nobuaki: *See—*
Tsunekawa, Tokuichi; Nakamura, Zenzo; Ohtaki, Shohei; Sakurada, Nobuaki; Suzuki, Masayuki; and Uchiyama, Takashi, 4,122,467, Cl. 354-33.000.

Sakurai, Hidekazu: *See—*
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Salisbury, Charles W.: *See—*
Fein, Michael E.; and Salisbury, Charles W., 4,122,411, Cl. 331-94.50G.

Salm, Max: *See—*
Bernasconi, Felix R.; and Salm, Max, 4,122,388, Cl. 324-54.000.

Salvatori, Tito: *See—*
Cucinella, Salvatore; Salvatori, Tito; and Mazzei, Alessandro, 4,122,108, Cl. 260-448.00A.

Salzberg, Edward. Microwave hybrid polarizer. 4,122,406, Cl. 333-10.000.

Salzman, Robert S.: *See—*
Luperti, Harry E.; Irvine, Robert; and Salzman, Robert S., 4,121,716, Cl. 209-564.000.

Sample, Paul Edward, to Du Pont de Nemours, E. I., and Company. Method for labelling a package. 4,121,956, Cl. 156-80.000.

San-O Industrial Corp.: *See—*
Maruo, Masaya, 4,122,426, Cl. 337-163.000.

Sandermann, Wilhelm; Eggensperger, Heinz; and Diehl, Karl-Heinz, to Sterling Drug Inc. 2-Phenyl- and 2-benzyl-N-[(trichloromethyl)thio]-succinimides, and fungicidal compositions thereof. 4,122,185, Cl. 424-274.000.

Sanders Associates, Inc.: *See—*
Richmond, Martin R., 4,122,452, Cl. 343-18.00E.
Schwartz, Jacob, 4,121,564, Cl. 126-270.000.

Sanders, David E.: *See—*
Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., 4,122,393, Cl. 325-324.000.

Sanders, James Milton: *See—*
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,122,120, Cl. 260-586.00R.

Sandner, Michael Ray; and Duffy, Robert Donovan, to Union Carbide Corporation. Catalyst systems containing dimethylamino ether mono-ols for polyurethane foam formation. 4,122,038, Cl. 252-431.00C.

Sando Iron Works, Co., Ltd: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,121,441, Cl. 68-5.00E.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works, Co., Ltd. Sealing device in a high pressure steamer. 4,121,441, Cl. 68-5.00E.

Sandoz, Inc.: *See—*
Nadelson, Jeffrey, 4,122,182, Cl. 424-263.000.
Schmader, Ronald G., 4,121,581, Cl. 128-145.800.

Sandoz Ltd.: *See—*
Fehr, Hans Ulrich, 4,122,177, Cl. 424-250.000.
Lancranjan, Ioana, 4,122,190, Cl. 424-324.000.

Sanga, Seiji: *See—*
Yamamoto, Tamechika; Nishimura, Yoichi; and Sanga, Seiji, 4,122,007, Cl. 210-32.000.

Sangamo Electric Company: *See—*
Dyer, Robert E., 4,122,498, Cl. 360-6.000.

Sangamo Weston, Inc.: *See—*
Prozzo, George P.; and Speicher, Ellis, 4,122,504, Cl. 360-90.000.

Sankio Chemical Co., Ltd.: *See—*
Kimura, Shiro; Nakamura, Yasuyoshi; Kurimoto, Shigeki; and Motouchi, Katuhiro, 4,122,089, Cl. 260-328.000.

Sankyo Electric Co., Ltd.: *See—*
Hiraga, Masaharu, 4,121,841, Cl. 277-38.000.

Sano, Hiromi; and Suzuki, Masatosi, to Nippondenso Co., Ltd. Oxygen sensor. 4,121,988, Cl. 204-195.00S.

Sarantakis, Dimitrios, to American Home Products Corporation. Somatostatin analogs. 4,122,077, Cl. 260-112.50S.

Sasajima, Kikuo: *See—*
Katsube, Junki; Kobayashi, Tsuyoshi; Tamoto, Katsumi; Takebayashi, Yoshiaki; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 4,122,176, Cl. 424-250.000.

Sato, Akinori: *See—*
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Sato, Yasushi: *See—*
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,122,462, Cl. 354-5.000.

Sato, Yasuyuki: *See—*
Yamaguchi, Namio; and Sato, Yasuyuki, 4,122,491, Cl. 358-23.000.

Sato, Yoshiaki: *See—*
Sueishi, Motoharu; Kato, Katsushi; and Sato, Yoshiaki, 4,121,554, Cl. 123-119.0EC.

Sato, Yoshio; and Nishikawa, Mistuyo, to Hitachi, Ltd. Method of starting up turbines. 4,121,424, Cl. 60-646.000.

Satoru, Shibuya: *See—*
Tsubota, Naoki; and Satoru, Shibuya, 4,122,331, Cl. 235-92.0PK.

Sauer, David Arthur: *See—*
Luther, Arch Clinton, Jr.; and Sauer, David Arthur, 4,122,415, Cl. 332-37.00R.

Sauer, Donald Roy, to National Semiconductor Corporation. High efficiency power amplifier circuit. 4,122,401, Cl. 330-257.000.

Sauerbrunn, Robert D.: *See—*
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Saunders, John Christopher: *See—*
Evans, Delme; Saunders, John Christopher; and Williamson, William Robert Nigel, 4,122,194, Cl. 424-337.000.

Savage, James Anthony: *See—*
Lettington, Alan Harold; and Savage, James Anthony, 4,122,344, Cl. 250-334.000.

Sawa, Natsuo; and Gohda, Kyoko, to Shikoku Chemicals Corporation. 2-Tolyl-4,5-dihydroxymethyl imidazole. 4,122,277, Cl. 548-342.000.

Sbarra, Frank; Velardo, Linda J.; and Spector, George. Animated learning aid. 4,121,354, Cl. 35-9.00C.

Scan Optics, Inc.: *See—*
Thaler, Michael; and Jackson, Stephen, 4,122,443, Cl. 340-146.30H.

Scarlett, John: *See—*
Nicholson, Norman E.; and Scarlett, John, 4,122,148, Cl. 423-242.000.

Scavino, Carlo, to ISF Spa. Carbamoylthiobenzamides and compositions comprising same. 4,122,111, Cl. 424-300.000.

Schaaf, Thomas K.: *See—*
Corey, Elias J.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,122,093, Cl. 260-343.30P.

Schaal, Hans; Kurz, Wolf-Dieter; and Breitling, Ulrich, to Daimler-Benz Aktiengesellschaft. Radiator mounting of a vehicle, especially of a motor vehicle. 4,121,682, Cl. 180-68.00R.

Schaefer, Walter Rudolph: *See—*
Kolensky, Leo Michael; Schaefer, Walter Rudolph; Schlanger, Gabriel Gary; and Willand, Allan Howard, 4,122,301, Cl. 178-73.000.

Schall, Diane S.; and Symmes, Karen A. Sanitary disposal apparatus. 4,121,866, Cl. 294-19.00R.

Schamper, Thomas J., to Alberto-Culver Company. Depilatory composition for removing hair from live human skin. 4,121,904, Cl. 8-161.000.

Schauer, George A., to Sundstrand Corporation. Power transmission. 4,121,479, Cl. 74-687.000.

Schauer, George A., to Sundstrand Corporation. Hydraulic unit and transfer tube and seal structure therefor. 4,121,502, Cl. 91-487.000.

Scheidl, Franz; Huber, Hans; Ulm, Klaus; Haberlein, Harald; and Pfahler, Gerhard, to Hoechst Aktiengesellschaft. Novel organo-tin compounds and their use as stabilizers. 4,122,064, Cl. 260-45.75S.

Scheinecker, Alois: *See—*
Biricz, Stefan; and Scheinecker, Alois, 4,121,742, Cl. 222-591.000.

Schering Corporation: *See—*
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Scherm, Arthur; and Peteri, Dezso, to Merz & Co. Drugs or medicines for influencing the central nervous system. 4,122,193, Cl. 424-330.000.

Schetinin, Jury Ivanovich: *See—*
Gusev, Valery Fedorovich; Ivanov, Gennady Nikolaevich; Kontarev, Vladimir Yakovlevich; Krengel, Genrikh Isaevich; Kremlev, Vyacheslav Yakovlevich; Shagivaleev, Mansur Zakirovich; Schetinin, Jury Ivanovich; and Yarmukhametov, Azat Usmanovich, 4,122,535, Cl. 364-900.000.

Scheuermann, Glen R., to Airco, Inc. Orbiting and rotating substrate. 4,122,221, Cl. 427-251.000.

Schiffarth, Josef: *See—*
Jaunich, Helmut; Dunkelmann, Dietger; and Schiffarth, Josef, 4,121,955, Cl. 156-71.000.

Schinzel, Erich: *See—*
Prossel, Gunter; Schinzel, Erich; and Rosch, Gunter, 4,122,257, Cl. 542-432.000.

Schlanger, Gabriel Gary: *See—*
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Schlinger, Warren G.: *See—*
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Schloemann, Ernst F.R.A.; and Howell, Fred M., to Raytheon Company. Ink feed system. 4,122,459, Cl. 346-140.00R.

Schlotterer, Gustav: *See—*
Voelskow, Peter; Rother, Horst; Schlotterer, Gustav; and Pfeiffer, Hermann, 4,121,524, Cl. 110-220.000.

Schmader, Ronald G., to Sandoz, Inc. Patient ventilator monitor. 4,121,581, Cl. 128-145.800.

Schmalz, Peter Joseph: *See—*
Oblak, John Stewart; and Schmalz, Peter Joseph, 4,122,416, Cl. 333-24.00C.

Schmer, Gottfried. Separation of high-activity heparin by affinity chromatography. 4,122,250, Cl. 536-21.000.

Schmerl, Egon F. Walking cane assembly. 4,121,605, Cl. 135-65.000.

Schmid, Hans, to Meteor AG. Wire handling apparatus for an electric coil forming machine. 4,121,627, Cl. 140-92.100.

Schmid, Hans: *See—*
Muehlemann, Hans R.; and Schmid, Hans, 4,122,162, Cl. 424-52.000.

Schmidt, Harold E.: *See—*
Greenleaf, John W., Jr.; and Schmidt, Harold E., 4,122,013, Cl. 210-195.00S.

Schmidt, Manfred: *See—*
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Schmitt, Edward Emil, to Alza Corporation. Topical therapeutic preparations. 4,122,158, Cl. 424-27.000.

Schmitt, Frederick Louis: *See—*
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,122,120, Cl. 260-586.00R.

Schnadt, Robert: *See—*
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Schneider, William P., to Upjohn Company, The. Thromboxane B dialkylacetal intermediates. 4,122,097, Cl. 260-405.000.

Schneider, Wolfgang; Wieland, Dieter; and Rennecke, Gunter, to Klafs-Saunabau KG, Medizinische Technik. Sauna stove. 4,121,570, Cl. 126-374.000.

Schoer, Heinz; and Schultze, Werner, to Vereinigte Aluminium-Werke Aktiengesellschaft. Processes for soldering aluminum-containing workpieces. 4,121,750, Cl. 228-219.000.

Scholz, Adolf: *See—*
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Scholz, Lothar: *See—*
Koppenhofer, Dietrich; Olbrich, Leopold; Wefing, Friedrich; Scholz, Lothar; Barwaldt, Horst; and Chudaska, Walter, 4,121,417, Cl. 60-39.51H.

Schotz, Larry A.; and Wiesmann, Thomas W., to Draco Laboratories, Inc. Radio control circuit with microprocessor. 4,122,395, Cl. 325-453.000.

Schreder, Felix: *See—*
Fischer, Karl; and Schreder, Felix, 4,122,330, Cl. 219-449.000.

Schrenk, Walter J.: *See—*
Cleereman, Kenneth J.; Schrenk, Walter J.; and Cheney, Grant W., 4,122,138, Cl. 264-25.000.

Schrewe, Hans: *See—*
Gruner, Hans; Schrewe, Hans; and Pleschiutschnigg, Fritz Peter, 4,121,923, Cl. 75-53.000.

Schroeder, Donald Earl, to Inryco, Inc. Fastening of curtain wall to building and clip therefor. 4,121,391, Cl. 52-235.000.

Schroeder, Donald S.; and Novak, James F., to Pemcor, Inc. Compact, multiple-element speaker system. 4,122,315, Cl. 179-115.5PS.

Schroeder, James E.; and Goslin, Richard L., to Harris Corporation. Complementary FET drivers for programmable memories. 4,122,547, Cl. 365-189.000.

Schubert, Keith E.; and Pollak, Philip, Jr., to Pitney-Bowes, Inc. Simultaneously controlled postage meter conversion apparatus. 4,121,473, Cl. 74-89.150.

Schuler, Francis X.: *See—*
Waligore, Edward James; and Schuler, Francis X., 4,121,628, Cl. 140-105.000.

Schultz, Ward E.: *See—*
Smith, Harry D., Jr.; Smith, Michael P.; and Schultz, Ward E., 4,122,339, Cl. 250-264.000.
Smith, Harry D., Jr.; Smith, Michael P.; and Schultz, Ward E., 4,122,340, Cl. 250-264.000.

Schultze, Werner: *See—*
Schoer, Heinz; and Schultze, Werner, 4,121,750, Cl. 228-219.000.

Schulz, Johann G. D.; and Sabourin, Edward T., to Gulf Research & Development Company. Foamable polymer compositions. 4,122,050, Cl. 521-95.000.

Schulz, Wilhelm. Flanged pipe joints. 4,121,858, Cl. 285-13.000.

Schumacher, Donavon J.; and Hoffelt, Francis C. Utensil handle holder. 4,121,798, Cl. 248-113.000.

Schundehutte, Karl-Heinz, to Bayer Aktiengesellschaft. Reactive azo dyestuffs from diazotized sulfo-amino naphthalenes and diaminosulfobenzenes. 4,122,079, Cl. 260-153.000.

Schur, George O. Gravity actuated thermal motor. 4,121,420, Cl. 60-531.000.

Schwabel, Paul Charles: *See—*
Medendorp, Dale Frederick; and Schwabel, Paul Charles, 4,122,400, Cl. 330-207.00P.

Schwartz, Harold Gordon, to Du Pont de Nemours, E. I., and Company. Pneumatic tire. 4,121,642, Cl. 152-354.00R.

Schwartz, Jacob, to Sanders Associates, Inc. Solar energy receiver. 4,121,564, Cl. 126-270.000.

Schwartz, John B.: *See—*
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Schwartz, Vern R.; and Benz, Bernard D., to Information Terminals Corporation. Leader to hub locking device. 4,121,784, Cl. 242-74.000.

Schwarz, Hans-Helmut: *See—*
Immel, Otto; Schwarz, Hans-Helmut; Weissel, Oskar; and Krimm, Heinrich, 4,122,290, Cl. 568-853.000.

Schwarze, Werner: *See—*
Klenk, Herbert; Offermanns, Heribert; and Schwarze, Werner, 4,122,116, Cl. 260-545.00R.

Schweisguth, Bernard, to Hexachimie. Morpholine containing benzimidazoles. 4,122,175, Cl. 424-248.540.

Scott Paper Company: *See—*
Focht, Bruce E., 4,121,960, Cl. 156-219.000.

Seaver, Terry R.: *See—*
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Sedlock, Albert Raymond, to United Technologies Corporation. Aircraft flight control system. 4,121,483, Cl. 74-479.000.

Seeley, Robert Dudley: *See—*
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Seewald, Alfred: *See—*
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Seiji, Hirano: *See—*
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Seiko Koki Kabushiki Kaisha: *See—*
Yonemoto, Tomoo; Ishida, Hiroaki; Morino, Yukio; Watanabe, Masanori; and Onda, Eiichi, 4,122,464, Cl. 354-29.000.

Selig Sealing Products: *See—*
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Senco Products, Inc.: *See—*
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Sendai, Michiyuki: *See—*
Fujii, Shoichiro; Sendai, Michiyuki; Naito, Kenzo; and Kato, Masayasu, 4,122,258, Cl. 544-18.000.

Senn, Harufumi; and Tawara, Yoshio, to Matsushita Electric Industrial Co., Ltd. Hard magnetic materials. 4,121,952, Cl. 148-31.570.

Senoh Kabushiki Kaisha: *See—*
Senoh, Yoshimasa, 4,122,451, Cl. 273-29.0BF.

Senoh, Yoshimasa, to Senoh Kabushiki Kaisha. Net post suitable for use in ball games. 4,122,451, Cl. 273-29.0BF.

Sevenich, Theodor: *See—*
Nellen, Wilhelm; Sevenich, Theodor; Klein, Konrad; and Gregorec, Ladislav, 4,121,723, Cl. 214-6.00D.

Severud, Christopher N., Jr.: *See—*
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Seyfried, Christoph: *See—*
Pohlke, Rolf; Strehlow, Wighard; Mueller-Calgan, Helmut; and Seyfried, Christoph, 4,122,180, Cl. 424-258.000.

Shaffer, Gary J.: *See—*
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Shagivaleev, Mansur Zakirovich: *See—*
Gusev, Valery Fedorovich; Ivanov, Gennady Nikolaevich; Kontarev, Vladimir Yakovlevich; Krengel, Genrikh Isaevich; Kremlev, Vyacheslav Yakovlevich; Shagivaleev, Mansur Zakirovich; Schetinin, Jury Ivanovich; and Yarmukhametov, Azat Usmanovich, 4,122,535, Cl. 364-900.000.

Shalimova, Zoya Stepanovna: *See—*
Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; and Shalimova, Zoya Stepanovna, 4,122,287, Cl. 568-784.000.

Sharkey, Hubert J.: *See—*
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Sharkey, Melvin; and Newman, Douglas A. Continuous duplicating process. 4,121,522, Cl. 101-463.000.

Shear, John Charles: *See—*
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Shell Internationale Research Maatschap IIJ B.V.: *See—*
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Shell Oil Company: *See—*
Gray, Robin Th.; and De Jong, Aaldert J., 4,122,121, Cl. 260-598.000.

Shelton, William Ewart Alan, to Alan Shelton Limited; and Bentley Engineering Group Limited, The. Yarn storage feeders. 4,121,782, Cl. 242-47.120.

Shenoha, James L., to Norwood Marking & Equipment Co. Large area imprinting device. 4,121,520, Cl. 101-316.000.

Shenoy, Arkal S.: *See—*
Mysels, Karol J.; and Shenoy, Arkal S., 4,121,973, Cl. 176-84.000.

Shepherd, Thomas H. Apparatus for the production of contact lenses. 4,121,896, Cl. 425-412.000.

Sherrill, Charles Franklin: *See—*
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Shevchenko, Vladimir Denisovich: *See—*
Grigorenko, Georgy Mikhailovich; Sheiko, Ivan Vasilievich; Eltsov, Konstantin Sergeevich; Korotkov, Albert Nikitovich; Pakhomov, Alexei Ivanovich; Kanibolotsky, Sergei Arsentievich; Lakomsky, Viktor Iosifovich; Shevchenko, Vladimir Denisovich; Kiselev, Nikolai Mikhailovich; and Torkhov, Gennady Fedorovich, 4,122,293, Cl. 13-2.00P.

Shibatani, Juichi: *See—*
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Shikoku Chemicals Corporation: *See—*
Sawa, Natsuo; and Gohda, Kyoko, 4,122,277, Cl. 548-342.000.

Shimamune, Shoji; and Kamijo, Yoshimi, to Alps Electric Co., Ltd. Multi-circuit switch. 4,122,317, Cl. 200-16.00F.

Shin, Suck Kyun. Filtering pipe with extinguisher for cigarettes. 4,121,597, Cl. 131-190.000.

Shindo, Noboru; Hashizume, Hiroshi; and Kikuchi, Shuichi, to Murata Kikai Kabushiki Kaisha. False twisting spindle. 4,121,411, Cl. 57-77.300.

Shinko-Pfaudler Company, Ltd.: *See—*
Tanabe, Kaichi; Koga, Shigeto; and Maeda, Yoshinori, 4,122,017, Cl. 210-522.000.

Shinoda, Kenichi: *See—*
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Shiokawa, Kozo: *See—*
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Shleenkov, Igor Anatolievich: *See—*
Kuznetsov, Vladimir Grigorievich; Tomilin, Alexandr Grigorievich; and Shleenkov, Igor Anatolievich, 4,121,419, Cl. 60-39.82P.

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Takeuchi, Shinjiro; Kikuchi, Tosiro; Harada, Koosuke; Shokyu, Tokuji; and Fujii, Yoshihiro, 4,122,392, Cl. 324-208.000.

Shono, Hiroaki; Noji, Toshio; Wakasa, Isao; and Ishikawa, Shinzo, to Nitto Boseki Co., Ltd. Orifice plate for use in glass-fiber spinning hearth. 4,121,918, Cl. 65-1.000.

Showa Vermiculite Kabushiki Kaisha: *See—*
Kishi, Ken, 4,122,231, Cl. 428-310.000.

Shukuya, Masao: *See—*
Ando, Hirohito; Takagi, Kouichi; and Shukuya, Masao, 4,122,117, Cl. 260-566.00R.

Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., to UOP Inc. Method of making oxygen sensor. 4,121,989, Cl. 204-195.00S.

Shuster, Edward J.: *See—*
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., 4,122,122, Cl. 260-598.000.

Sickelmann, Ursula, guardian of sole heir Markus Langenscheid: *See—*
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Sicko, John C.: *See—*
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Siden, Dennis C.; and McMills, Corey J., to Raychem Corporation. Non-shorting wire cutter. 4,121,338, Cl. 30-257.000.

Siemens Aktiengesellschaft: *See—*
Frie, Wolfgang; Henkel, Hans-Joachim; Hini, Paul; Koch, Christian; and De Bucs, Eugen Szabo, 4,121,542, Cl. 123-3.000.
von Basse, Paul-Werner; and Hofmann, Ruediger, 4,122,546, Cl. 365-189.000.

Sierawski, David A., to Dow Corning Corporation. Method of preventing discoloration of platinum containing silicone gels. 4,122,246, Cl. 528-15.000.

Sigle, John R.: *See—*
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Signetics Corporation: *See—*
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Silber, Dieter; Finck, Karl-Julius; Fullmann, Marius; and Winter, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. Light fired thyristor with faulty firing protection. 4,122,480, Cl. 357-38.000.

Simon, Jacques Yves Louis Georges: *See—*
Riboulet, Michel Jean; and Simon, Jacques Yves Louis Georges, 4,122,239, Cl. 428-621.000.

Simpson, Theodore Frederick: *See—*
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Singer Company, The: *See—*
Coulombe, Lionel J., 4,121,526, Cl. 112-158.00E.
Johnson, Ralph E., 4,121,527, Cl. 112-182.000.

Skrycki, Robert R., to McCord Corporation. Gasket assembly. 4,121,846, Cl. 277-235.00R.

Slob, Arie: *See—*
Camerik, Ferdinand; Hart, Cornelis Maria; and Slob, Arie, 4,122,542, Cl. 365-156.000.

Slowe, James E.; and Wrigglesworth, Norman A., to Quaker Oats Company, The. Sounding mechanism for toy animals. 4,121,373, Cl. 46-180.000.

Smiley, Karl L.: *See—*
Hofreiter, Bernard T.; Smiley, Karl L.; and Boundy, Joyce A., 4,121,974, Cl. 195-7.000.

Smith, Donald O.; Harte, Kenneth J.; and Sykes, Hollister B., to Control Data Corporation. Data management method and system for random access electron beam memory. 4,122,530, Cl. 364-900.000.

Smith, Egmont S.; Doyle, Earl N.; and Baughman, Kenneth E., to B & B Insulation, Inc. Buoyancy systems. 4,121,529, Cl. 114-331.000.

Smith, Fred, to Anglian Water Authority. Complex alkali metal-metal silicate material. 4,122,031, Cl. 252-313.00S.

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Smith, James E.; and Becht, Carl T., to Senco Products, Inc. Electromechanical impact device. 4,121,745, Cl. 227-8.000.

Smith, Merrill M.: *See—*
Holmstrom, Ernest R.; Smith, Merrill M.; and Ferguson, Donald C., 4,122,225, Cl. 428-172.000.

Smith, Michael P.: *See—*
Smith, Harry D., Jr.; Smith, Michael P.; and Schultz, Ward E., 4,122,339, Cl. 250-264.000.
Smith, Harry D., Jr.; Smith, Michael P.; and Schultz, Ward E., 4,122,340, Cl. 250-264.000.

Smith, Richard B.: *See—*
Chamberlain, Ray; and Smith, Richard B., 4,121,536, Cl. 118-6.000.

Smith, Roderick Alan: *See—*
Chaplin, George Brian Barrie; and Smith, Roderick Alan, 4,122,303, Cl. 179-1.00P.

Smith, Thomas W.; and Gunther, Wolfgang H. H., to Xerox Corporation. Formation of colloidal dispersions of selenium by the locus control method. 4,122,030, Cl. 252-313.00R.

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Buckley, Thomas Francis; and Gleason, John Gerald, 4,122,262, Cl. 544-90.000.
Chakrin, Lawrence William; Snader, Kenneth Means; and Willis, Chester Rhodes, 4,122,201, Cl. 424-279.000.
Hall, Ralph Floyd; and Huffman, William Francis, 4,122,086, Cl. 260-306.70R.
Hill, David T.; Lantos, Ivan; and Sutton, Blaine M., 4,122,254, Cl. 536-121.000.

Smolka, Heinz, to Henkel Kommanditgesellschaft auf Aktien. Method of machine washing of solid soiled materials by contacting the circulating wash liquid with aluminosilicates. 4,121,903, Cl. 8-137.000.

Smolyanitsky, Boris Nikolaevich: *See—*
Tkach, Khaim Berkovich; Kostylev, Alexander Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Klimashko, Vladimir Vasilievich, 4,121,672, Cl. 175-19.000.

Snader, Kenneth Means: *See—*
Chakrin, Lawrence William; Snader, Kenneth Means; and Willis, Chester Rhodes, 4,122,201, Cl. 424-279.000.

Snamprogetti, S.p.A.: *See—*
Cucinella, Salvatore; Salvatori, Tito; and Mazzei, Alessandro, 4,122,108, Cl. 260-448.00A.

Sniady, Henry, to Metal Box Limited. Stripping apparatus. 4,121,447, Cl. 72-344.000.

Sniff, Walter Grant, Jr.: *See—*
Featherstone, Harry Edwin; and Sniff, Walter Grant, Jr., 4,122,325, Cl. 219-86.100.

Snyder, Lester E. Worm-harvesting method and apparatus. 4,122,001, Cl. 209-675.000.

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Valoti, GianFranco; and Antonini, Giancarlo, 4,122,135, Cl. 260-880.00R.

Societe Anonyme D.B.A.: *See—*
Carre, Jean-Jacques; and Meyer, Yves, 4,121,500, Cl. 91-391.00R.
Gestkoff, Nicolas, 4,121,701, Cl. 188-79.5GE.

Societe Cortial: *See—*
Fauran, Francois; Feniou, Claude; Thibault, Annie; and Prat, Gisele, 4,122,202, Cl. 424-278.000.

Societe Industrielle de Transports Automobiles: *See—*
Demenais, Claude L., 4,121,725, Cl. 214-83.300.

Societe Nationale Elf Aquitaine (Production): *See—*
Iato, Michel; Bourgeois, Andre Gaston Julien; and Gaudin, Jean-Paul Marcel Francois, 4,121,806, Cl. 254-172.000.
Peraldi, Rene, 4,122,431, Cl. 340-15.5MC.

Soderstrom, Sven-Erik, to Asea AB. Cloud altitude measuring means. 4,121,889, Cl. 356-5.000.

Sofresid, Societe Francaise d'Etude d'Installations Siderurgiques: *See—*
Dhelft, Patrick, 4,121,809, Cl. 266-193.000.

Sohler, Hubert, to Hubert Sohler GmbH. Mobile pneumatic apparatus for sucking and blowing fiber dust from textile machines. 4,121,317, Cl. 15-312.00A.

Sohn, Donald F.; and Doering, Ernest L., to Standard Metal Products

Co. Apparatus for and method of compacting contents in and filling liquid into containers. 4,121,400, Cl. 53-436.000.
Sokolik, Joseph Edmund, Jr.: *See*—
Dunnery, David Arthur; Sokolik, Joseph Edmund, Jr.; Atwood, Gilbert Richard; and Kosseim, Alexander Jean-Marie, 4,122,149, Cl. 423-242.000.
Songer, Larry Allen; and DeRyke, Thomas Vernon, to Addressograph-Multigraph Corporation. Photocopy developing apparatus for diazo film. 4,122,474, Cl. 354-300.000.
Songer, Larry Allen: *See*—
Ernohazy, Stephen; Songer, Larry Allen; DeRyke, Thomas Vernon; and Oddo, Eugene Peter, 4,122,473, Cl. 354-299.000.
Sonntag, William Arthur; and Simpson, Theodore Frederick, to RCA Corporation. Method and apparatus for simulating magnetic environment of television receivers. 4,122,485, Cl. 358-10.000.
Sony Corporation: *See*—
Hasegawa, Yoshikazu; Ohmichi, Yasuyuki; and Sakai, Koichi, 4,122,422, Cl. 335-213.000.
Matsuda, Atsushi; Kishigami, Jun; and Nishimura, Masaaki, 4,122,314, Cl. 179-115.50R.
Soong, Jeanne F.: *See*—
Soong, Tsai C.; and Soong, Jeanne F., 4,121,734, Cl. 222-54.000.
Soong, Tsai C.; and Soong, Jeanne F. Plant waterer. 4,121,734, Cl. 222-54.000.
Soper, Quentin F., to Eli Lilly and Company. Benzimidazole insecticides. 4,122,184, Cl. 424-273.00R.
Sordello, Frank J.; and Cloke, Robert L., to Sperry Rand Corporation. System for recording and reading back data on a recording media. 4,122,501, Cl. 360-51.000.
Sosalla, Harry, to Royal Industries, Inc. Floating row-crop cultivator. 4,121,669, Cl. 172-181.000.
Sound Attenuators Limited: *See*—
Chaplin, George Brian Barrie; and Smith, Roderick Alan, 4,122,303, Cl. 179-1.00P.
Southall, Peter: *See*—
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Sowa, Tsuneo: *See*—
Misaki, Susumu; Ishii, Sadamu; Suzuki, Nobuyuki; Wakabayashi, Mikio; and Sowa, Tsuneo, 4,122,251, Cl. 536-23.000.
Spector, George: *See*—
Sbarra, Frank; Velardo, Linda J.; and Spector, George, 4,121,354, Cl. 35-9.00C.
Speicher, Ellis: *See*—
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Sperry Rand Corporation: *See*—
Lins, Stanley James, 4,122,538, Cl. 365-29.000.
Lodi, Robert J., 4,122,545, Cl. 365-186.000.
Mollwain, Irwin D., 4,121,475, Cl. 74-242.15R.
Sordello, Frank J.; and Cloke, Robert L., 4,122,501, Cl. 360-51.000.
Spevack, Jerome S., to Deuterium Corporation. Process feed and effluent treatment systems. 4,121,913, Cl. 55-89.000.
Spie-Batignolles: *See*—
Renault, Jean; Jolivet, Francois; Plichon, Claude; and Bordet, Rene, 4,121,393, Cl. 52-167.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, to International Flavors & Fragrances Inc. Derivatives of 1-acetyl-3,3-dimethylcyclohexane. 4,122,120, Cl. 260-586.00R.
Sprecker, Mark A.: *See*—
Hall, John B.; Sprecker, Mark A.; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; and Novak, Robert M., 4,122,122, Cl. 260-598.000.
Staats, James E., to General Electric Company. Phase shift device for microwave oven door seal. 4,122,323, Cl. 219-10.55D.
Stacpoole, Peter W., to Vanderbilt University. Treatment of hyperlipoproteinemia with a dichloroacetate salt. 4,122,188, Cl. 424-317.000.
Staendeke, Horst: *See*—
Hestermann, Klaus; Staendeke, Horst; and Lippsmeier, Bernd, 4,122,123, Cl. 260-606.50F.
Stagg, Charles M.: *See*—
Tribble, Ronald L.; and Stagg, Charles M., 4,122,166, Cl. 424-88.000.
Stahl, Joel S. Fire protective thermal barriers for foam plastics. 4,122,203, Cl. 428-309.000.
Stambaugh, Edgel P., to Battelle Memorial Institute. Treating carbonaceous material. 4,121,910, Cl. 44-1.00B.
Stamicarbon, B.V.: *See*—
Haasen, Nicolaas F.; Van de Moesdijk, Cornelis G. M.; and Wagemans, Gerardus M. C., 4,122,153, Cl. 423-387.000.
Standard Fire Protection Equipment Co.: *See*—
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Standard Metal Products Co.: *See*—
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Standard Oil Company, The: *See*—
Dirks, Gary W.; Li, George S.; and Rosen, Irving, 4,121,807, Cl. 526-76.000.
Standard Oil Company a corporation of Indiana: *See*—
Bertolacini, Ralph J.; and Koca, Robert M., 4,122,096, Cl. 260-346.750.
Fox, Joseph D.; Kuhlmann, George E.; and Wittman, Ricky L., 4,122,037, Cl. 252-429.00R.
Valcho, Joseph J.; and Karll, Robert E., 4,122,020, Cl. 252-8.55D.
Stanley Electric Co., Ltd.: *See*—
Tashiro, Manabu; and Sato, Akinori, 4,122,318, Cl. 200-61.540.
Stanley-Mabo S.A.: *See*—
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Staudinger, Frederick J.: *See*—
Dlugos, Daniel F.; Lorenzo, John L.; Staudinger, Frederick J.; and Zettler, John F., 4,121,676, Cl. 177-225.000.
Macari, Leonard J.; Staudinger, Frederick J.; and Kasarauskas, Paul M., 4,121,677, Cl. 177-225.000.
STB Strahlentechnische Bilddiagnostik Heinz Fleck: *See*—
Lohse, Karl Heinz, 4,121,937, Cl. 96-44.000.
Stedman, Robert N., to Caterpillar Tractor Co. Two-component track shoe. 4,121,875, Cl. 305-39.000.
Steglich, Wolfgang; Hollitzer, Oswald; and Seewald, Alfred, to BASF Aktiengesellschaft. Cyclic esters of 3,4-dihydroxy-thiophene-1,1-dioxide compounds and 3,4-dihydroxy-cyclopentadienone compounds. 4,122,090, Cl. 260-332.100.
Stein, Herbert: *See*—
Mills, Harold; and Stein, Herbert, 4,121,575, Cl. 128-2.06E.
Steinman, Martin, to Schering Corporation. Antimicrobial compositions. 4,122,034, Cl. 252-402.000.
Stephens, Donald L.; and Izuno, Herbert H., to PACCAR Inc. Truck with tilting cab and non-tilting separated sleeping compartment. 4,121,684, Cl. 180-89.140.
Stephens, Gerald D., to Projects Unlimited, Inc. Piezoelectric buzzer device. 4,122,365, Cl. 310-324.000.
Sterling Drug Inc.: *See*—
Crounse, Nathan N.; and Ambrosiano, Nicholas A., 4,122,261, Cl. 544-64.000.
Sandermann, Wilhelm; Eggensperger, Heinz; and Diehl, Karl-Heinz, 4,122,185, Cl. 424-274.000.
Steven, Josef, to Kraftwerk Union Aktiengesellschaft. Nuclear reactor fuel rod. 4,121,972, Cl. 176-68.000.
Stockman, Richard Franklin, to Air Preheater Company, Inc., The. Dry cooling tower. 4,121,654, Cl. 165-6.000.
Storace, Anthony; and Taylor, Samuel G., to Pitney-Bowes, Inc. Weighing scale with correction for non-linear spring. 4,121,678, Cl. 177-230.000.
Stork Amsterdam B.V.: *See*—
Witte, Johan Frederik, 4,122,104, Cl. 260-412.400.
Straarup, Orla; Petersen, Max Fowler; and Gude, Klaus Erik, to A/S Niro Atomizer. Wear-resistant rotor wheel. 4,121,770, Cl. 239-224.000.
Strehlow, Wighard: *See*—
Pohlke, Rolf; Strehlow, Wighard; Mueller-Calgan, Helmut; and Seyfried, Christoph, 4,122,180, Cl. 424-258.000.
Strigle, Ralph F., Jr., to Norton Company. Trickling filter media for biological filters. 4,122,011, Cl. 210-150.000.
Strudel, Jean-Loup B. V.: *See*—
Guimier, Alain R.; and Strudel, Jean-Loup B. V., 4,121,950, Cl. 148-12.70N.
Struger, Odo J.: *See*—
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Stubbs, John K.: *See*—
Acheson, Richard M.; Cox, Ian R.; Stubbs, John K.; and Penrose, Alexander B., 4,122,272, Cl. 544-278.000.
Studli, Rudolf. Circuit arrangement for increasing the luminuous flux in fluorescent tube hand lamps. 4,122,374, Cl. 315-98.000.
Studli, Rudolf. Circuit arrangement for increasing the luminous flux in fluorescent tube hand lamps. 4,122,375, Cl. 315-98.000.
Stummer, Franz: *See*—
Miller, Jorge; and Stummer, Franz, 4,121,991, Cl. 204-260.000.
Sturm, Zeynab Edda. Home power station. 4,122,381, Cl. 320-48.000.
Sturwold, Robert J.; Utz, Walter Earl; Christ, Nicholas; Ford, William R., Jr.; and Koch, George P., to Emery Industries, Inc.; and Reynolds Metals Co. Prevention of water staining of aluminum. 4,122,217, Cl. 427-156.000.
Styron, Robert W.: *See*—
Hurst, Vernon J.; and Styron, Robert W., 4,121,945, Cl. 106-288.00B.
Suda, Yoshikazu: *See*—
Chono, Masazumi; Ai, Hideo; Aboshi, Michihiro; Suda, Yoshikazu; and Yoshii, Naoji, 4,122,269, Cl. 544-207.000.
Suehiro, Akio, to Hitachi, Ltd. Telephone voice frequency response system for message recording. 4,122,307, Cl. 179-6.00R.
Sueishi, Motoharu; Kato, Katsushi; and Sato, Yoshiaki, to Nippondenso Co., Ltd. Air-fuel ratio feedback control system. 4,121,554, Cl. 123-119.0EC.
Sugawara, Yoshitaka; and Kamei, Tatsuya, to Hitachi, Ltd. Optoelectronic device having control circuit for light emitting element and circuit for light receiving element integrated in a semiconductor body. 4,122,479, Cl. 357-19.000.
Sugaya, Hiroshi; and Kanai, Kenji, to Matsushita Electric Industrial Co., Ltd. Video signal recording and reproducing system for special motion effects. 4,122,499, Cl. 360-10.000.
Sugerman, Gerald: *See*—
Monte, Salvatore J.; and Sugerman, Gerald, 4,122,062, Cl. 260-42.140.
Sugier, Andre; and Freund, Edouard, to Institut Francais du Petrole. Process for manufacturing alcohols, particularly linear saturated primary alcohols, from synthesis gas. 4,122,110, Cl. 260-449.500.
Sugiyama, Tsuneyoshi, to Feather Kogyo Kabushiki Kaisha. Implement for attaching and detaching blades from a bladed tool. 4,121,329, Cl. 29-270.000.
Suling, Carlhans: *See*—
Korte, Siegfried; and Suling, Carlhans, 4,122,136, Cl. 260-898.000.
Sullivan, Paul A., to Hughes Aircraft Company. Method and apparatus for mask to wafer gap control in X-ray lithography. 4,122,335, Cl. 250-491.000.
Sumida, Shizuo, to Toyo Kogyo Co., Ltd. Wiring system for motor vehicle. 4,122,357, Cl. 307-10.00R.
Sumitomo Aluminum Smelting Company, Limited: *See*—
Ogawa, Kazuhiko; and Ohara, Masanori, 4,121,926, Cl. 75-138.000.
Sumitomo Chemical Company, Limited: *See*—
Katsube, Junki; Kobayashi, Tsuyoshi; Tamoto, Katsumi; Takebayashi, Yoshiaki; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 4,122,176, Cl. 424-250.000.
Miki, Tamotsu; Narisawa, Shizuo; Ichikawa, Ichiro; and Horiike, Hideki, 4,122,134, Cl. 260-880.00B.
Yasui, Seimei; and Sato, Hiroshi, 4,122,023, Cl. 252-59.000.
Sumitomo Durez Company, Ltd.: *See*—
Kikuga, Toyoji; Nakamura, Masayuki; Goto, Tateo; and Amakawa, Tosaku, 4,122,211, Cl. 427-27.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Nakasaki, Eiji, 4,121,641, Cl. 152-353.00R.
Sun Oil Company of Pennsylvania: *See*—
Hansel, William B., 4,121,635, Cl. 141-207.000.
Sunaga, Mamoru: *See*—
Tanaka, Kiyotaka; Gentsu, Isao; and Sunaga, Mamoru, 4,121,505, Cl. 93-1.00H.
Sundeen, Joseph E.; and Dejneka, Tamara, to E. R. Squibb & Sons, Inc. 1,2,3,4-Tetrahydropyrido[4',3':4.5]thiazolo-[3,2-a]benzimidazoles. 4,122,083, Cl. 260-294.80A.
Sundstrand Corporation: *See*—
Schauer, George A., 4,121,479, Cl. 74-687.000.
Schauer, George A., 4,121,502, Cl. 91-487.000.
Sussman, Meyer. Unit counter for pills, tablets, spheres, coins and the like. 4,121,722, Cl. 214-1.00C.
Sussmuth, Godehard, to Rosenthal Aktiengesellschaft. Method for reducing the gas permeability of a sintered porous silicon nitride body. 4,122,220, Cl. 427-243.000.
Sutton, Blaine M.: *See*—
Hill, David T.; Lantos, Ivan; and Sutton, Blaine M., 4,122,254, Cl. 536-121.000.
Suzuki, Etsuo; and Sakurai, Hidekazu, to Nippon Electric Co., Ltd. Facsimile receiver capable of backwardly feeding a continuous recording medium after a separate sheet is cut therefrom. 4,122,497, Cl. 358-304.000.
Suzuki, Masatosi: *See*—
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Suzuki, Nobuyuki: *See*—
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Suzuki, Shigehiko, to Mitsubishi Denki Kabushiki Kaisha. Three-phase AC voltage control circuit. 4,122,384, Cl. 323-24.000.
Suzuki, Yutaka: *See*—
Tachibana, Kyozo; Tsuboi, Takashi; Suzuki, Yutaka; Matsutake, Mitsugu; Miura, Shozuchi; Hatano, Shigeru; Goto, Takao; and Nozaki, Yoshio, 4,122,515, Cl. 363-45.000.
Svacha, Roy E.: *See*—
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Swartz, Delbert D.: *See*—
McRoskey, John W.; McRoskey, Leonard H.; and Swartz, Delbert D., 4,121,733, Cl. 222-43.000.
Sweeney, William T., to Continental Oil Company. Hydraulic ramping circuit for control valve. 4,121,618, Cl. 137-412.000.
Swiatowiec, Frank J., to Motorola, Inc. Emitter coupled multiplier array. 4,122,527, Cl. 364-787.000.
Swift, Harold E.: *See*—
Cronauer, Donald C.; and Swift, Harold E., 4,121,909, Cl. 422-222.000.
Sykes, Hollister B.: *See*—
Smith, Donald O.; Harte, Kenneth J.; and Sykes, Hollister B., 4,122,530, Cl. 364-900.000.
Symes, William F.: *See*—
Nelson, George D.; Nissing, Kenneth J.; and Symes, William F., 4,122,267, Cl. 544-190.000.
Symmes, Karen A.: *See*—
Schall, Diane S.; and Symmes, Karen A., 4,121,866, Cl. 294-19.00R.
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Tachibana, Kyozo; Tsuboi, Takashi; Suzuki, Yutaka; Matsutake, Mitsugu; Miura, Shozuchi; Hatano, Shigeru; Goto, Takao; and Nozaki, Yoshio, to Hitachi, Ltd. High harmonic current reducing apparatus in power converter. 4,122,515, Cl. 363-45.000.
Tachibana, Zenpei: *See*—
Uchida, Hiroshi; Umeda, Kunio; Tachibana, Zenpei; and Kubota, Nobunori, 4,121,409, Cl. 57-22.000.
Tagalakis, Peter; and Woods, James K., to Selig Sealing Products. Venting liners. 4,121,728, Cl. 215-260.000.
Takagi, Kouichi: *See*—
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Takahashi, Hiroshi; and Nakata, Shinichi, to Canon Kabushiki Kaisha. Power control device. 4,122,513, Cl. 363-21.000.
Takahashi, Hiroshi: *See*—
Tominari, Noboru; and Takahashi, Hiroshi, 4,121,837, Cl. 274-23.00R.
Takahata, Kosaku, father and legal successor: *See*—
Takahata, Kouichi, deceased, 4,122,471, Cl. 354-173.000.
Takahata, Kosaku, legal successor: *See*—
Hasegawa, Hiroshi; Ohtsubo, Yoshiaki; Watanabe, Sakuji; and Takahata, Kouichi, deceased, 4,122,465, Cl. 354-32.000.
Takahata, Kouichi, deceased (by Takahata, Kosaku, father and legal successor), to Nippon Kogaku K.K. Automatic stop motion device in a motor drive camera. 4,122,471, Cl. 354-173.000.
Takahata, Kouichi, deceased: *See*—
Hasegawa, Hiroshi; Ohtsubo, Yoshiaki; Watanabe, Sakuji; and Takahata, Kouichi, deceased, 4,122,465, Cl. 354-32.000.
Takai, Norihira: *See*—
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Takano, Shigeo: *See*—
Yokokawa, Takao; Takano, Shigeo; Ichinose, Yasuaki; Kasahara, Toshiyuki; and Ikeda, Fumiaki, 4,121,748, Cl. 228-102.000.
Takano, Shiro; Jojima, Toshio; Oshida, Hajime; Yokoi, Tadashi; Kato, Muneo; and Koizumi, Tadashi, to Mitsui Toatsu Chemicals, Inc.; Toyo Engineering Corporation; and Ebara Corporation. Sealing system for use in composite multi-stage pump. 4,121,839, Cl. 277-3.000.
Takasaki, Yoshitaka; Ishizuka, Kohei; Kita, Yasuhiro; Nagoya, Yoshinori; and Kusama, Takeo, to Hitachi, Ltd. Variable equalizer. 4,122,417, Cl. 333-28.00R.
Takebayashi, Yoshiaki: *See*—
Katsube, Junki; Kobayashi, Tsuyoshi; Tamoto, Katsumi; Takebayashi, Yoshiaki; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 4,122,176, Cl. 424-250.000.
Takeda Chemical Industries, Ltd.: *See*—
Fujii, Shoichiro; Sendai, Michiyuki; Naito, Kenzo; and Kato, Masayasu, 4,122,258, Cl. 544-18.000.
Takeda, Keiji; and Matsumoto, Kenji, to Fuji Photo Film Co., Ltd. Photographic material containing TiO_2, soluble Cu(II) salt, and soluble silver salt and the use thereof in physical development. 4,121,938, Cl. 96-48.0PD.
Takeuchi, Shinjiro; Kikuchi, Tosiro; Harada, Koosuke; Shokyu, Tokuji; and Fujii, Yoshihiro, to Nippon Steel Corporation; and Mishima Kosan Co. Ltd. System of detecting a change in the charge put in a metallurgical furnace or the like. 4,122,392, Cl. 324-208.000.
Takigawa, Hiroshi: *See*—
Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirano, Minoru; and Ishii, Masaru, 4,121,929, Cl. 75-238.000.
Yukawa, Toru; Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirono, Minoru; Ishii, Masaru; and Tatsuno, Tsuneo, 4,121,930, Cl. 75-238.000.
Talafous, Jiri, to Vyzkumny ustav tvarecich stroju a technologie tvareni. Method of and apparatus for rolling long work pieces. 4,121,443, Cl. 72-108.000.
Talmage, Dennis D.; and Byrne, James C., to Gulf & Western Manufacturing Company. Control circuit for vehicle compartment light. 4,122,371, Cl. 315-84.000.
Tamaru, Keikichi; and Uchida, Yukimasa, to Tokyo Shibaura Electric Company, Limited. Memory and control circuit for the memory. 4,122,531, Cl. 364-900.000.
Tamoto, Katsumi: *See*—
Katsube, Junki; Kobayashi, Tsuyoshi; Tamoto, Katsumi; Takebayashi, Yoshiaki; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 4,122,176, Cl. 424-250.000.
Tamura, Zenzo: *See*—
Yoshioka, Masanori; Miwa, Akira; and Tamura, Zenzo, 4,122,078, Cl. 260-121.000.
Tan, Sing Liong, to U.S. Philips Corporation. Display device for three-dimensional television. 4,122,484, Cl. 358-3.000.
Tanabe, Kaichi; Koga, Shigeto; and Maeda, Yoshinori, to Shinko-Pfaudler Company, Ltd. Device for separating suspended material from a fluid stream by specific gravity difference. 4,122,017, Cl. 210-522.000.
Tanaka, Harumi, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm adjusting device for camera having flashmatic mechanism. 4,122,463, Cl. 354-21.000.
Tanaka, Hidetsugu: *See*—
Kyo, Sunao; Renge, Tsumoru; and Tanaka, Hidetsugu, 4,122,291, Cl. 568-887.000.
Tanaka, Kiyotaka; Gentsu, Isao; and Sunaga, Mamoru, to Nippon Tensai Seito Kabushiki Kaisha. Apparatus for producing paper cylinders for nursing seedlings. 4,121,505, Cl. 93-1.00H.
Tanaka, Mitsugu: *See*—
Yagihara, Morio; Tanaka, Mitsugu; Aono, Toshiaki; and Hirose, Takeshi, 4,121,934, Cl. 96-22.000.
Tanaka, Ryu: *See*—
Kimoto, Chisaburo; Itasaka, Katsuhiko; Tanaka, Ryu; and Kimura, Yoshinobu, 4,121,355, Cl. 35-9.00C.
Tanaka, Yoshiaki: *See*—
Kurosawa, Hidehumi; and Tanaka, Yoshiaki, 4,122,189, Cl. 424-319.000.
Tandy Corporation: *See*—
Haagen, Peter H., 4,122,389, Cl. 324-65.00R.
Taniyasu, Ryozo; Kurokawa, Hideo; and Saito, Takeshi, to Lion Fat and Oil Co. Ltd., The. Method for removing aluminum halide catalyst from polymerization product. 4,122,126, Cl. 260-677.00A.
Tao, Fan-sheng; and Warner, John E., to Texaco Inc. Method of resolving a mixture of oil, water, and solids. 4,122,009, Cl. 210-84.000.
Tao, Fan-sheng; and Warner, John E., to Texaco Inc. Settling tank. 4,122,016, Cl. 210-521.000.

Tarayre, Jean-Pierre: *See—*
Cousse, Henri; Bonnaud, Bernard; Tarayre, Jean-Pierre; and Casadio, Silvano, 4,122,199, Cl. 424-274.000.

Target Industries, Inc.: *See—*
Carpenter, Robert M., 4,121,695, Cl. 187-9.00R.

Tashiro, Manabu; and Sato, Akinori, to Stanley Electric Co., Ltd.; and Honda Motor Co., Ltd. Switch device adapted to respond to operation of steering handle. 4,122,318, Cl. 200-61.540.

Tatara, Kazuo: *See—*
Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Masahiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, 4,122,150, Cl. 423-242.000.

Tate & Lyle Ltd.: *See—*
Burge, Malcolm Leonard Ernest; and Nechutny, Zdenek, 4,122,205, Cl. 426-548.000.

Tatsuno, Tsuneo: *See—*
Yukawa, Toru; Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirono, Minoru; Ishii, Masaru; and Tatsuno, Tsuneo, 4,121,930, Cl. 75-238.000.

Tawara, Yoshio: *See—*
Senn, Harufumi; and Tawara, Yoshio, 4,121,952, Cl. 148-31.570.

Taylor, Brian: *See—*
Kobylinski, Thaddeus P.; Taylor, Brian; and Vogel, Roger F., 4,122,039, Cl. 252-435.000.

Taylor, Bruce G.; and Taylor, C. Gilbert. Aircraft built up from individual readily assembled and disassembled segments or components. 4,121,791, Cl. 244-120.000.

Taylor, C. Gilbert: *See—*
Taylor, Bruce G.; and Taylor, C. Gilbert, 4,121,791, Cl. 244-120.000.

Taylor, Donald F., to Otis Engineering Corporation. Collar lock and seal assembly for well tools. 4,121,659, Cl. 166-129.000.

Taylor, Reginald Sidney; Burrow, Reginald Edwin Downton; Mason, John Morton; Portas, John Richard; and Thomas, William David, to Taylor Woodrow Construction Limited. Pre-stressing of concrete pressure vessels. 4,121,780, Cl. 242-7.210.

Taylor, Samuel G.: *See—*
Storace, Anthony; and Taylor, Samuel G., 4,121,678, Cl. 177-230.000.

Taylor Woodrow Construction Limited: *See—*
Taylor, Reginald Sidney; Burrow, Reginald Edwin Downton; Mason, John Morton; Portas, John Richard; and Thomas, William David, 4,121,780, Cl. 242-7.210.

Tea, Frank C., to American Baler Company, The. Baler for unshredded material. 4,121,515, Cl. 100-98.00R.

Technicon Instruments Corporation: *See—*
Reichler, Allen; and Diebler, Herman Guy, 4,121,466, Cl. 73-423.00A.

Teckton, Inc.: *See—*
Falk, Stephen A., 4,122,324, Cl. 219-10.55E.

Teitel, Robert J.: *See—*
Gomberg, Henry J.; and Teitel, Robert J., 4,121,984, Cl. 204-157.10H.

Tektronix, Inc.: *See—*
Rieger, Michael Lawrence, 4,122,528, Cl. 364-829.000.

Tel-Tone Corporation: *See—*
Rollins, David M.; and Masonholder, Scott P., 4,121,880, Cl. 339-119.00R.

Teledyne Industries, Inc.: *See—*
Wilkes, Thomas Jewel, 4,121,491, Cl. 84-20.000.

Telefonaktiebolaget L M Ericsson: *See—*
Ryden, Lars Ola; and Andersson, Karl Olof Ingmar, 4,122,310, Cl. 179-15.0AT.

Tennison, Stephen Robert: *See—*
McCarroll, John James; Clark, John Trevor Kent; and Tennison, Stephen Robert, 4,122,040, Cl. 252-447.000.

Terai, Kenichi: *See—*
Nemoto, Akira; Hamaguchi, Yasunori; and Terai, Kenichi, 4,121,844, Cl. 277-212.0FB.

Teres, Leonid Nikolaevich: *See—*
Antipov, Georgy Afanasievich; Berezhnoi, Vitaly Alexandrovich; Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Lavnikov, Nikolai Stanislavovich; Teres, Leonid Nikolaevich; Urazhdin, Ivan Ivanovich; Tsipenjuk, Yakov Isaakovich; and Yakubovsky, Petr Stepanovich, 4,121,670, Cl. 173-20.000.

Terrell Tool and Die Corporation: *See—*
Cardea, Jerry F., 4,121,808, Cl. 266-58.000.

Tertykh, Valentin Anatolievich: *See—*
Chuiko, Alexei Alexeevich; Tertykh, Valentin Anatolievich; Khaber, Nikolai Vasilievich; and Chuiko, Elena Alexandrovna, 4,121,946, Cl. 106-308.00N.

Teulon, Jean-Marie, to Hexachimie. Cyclopenta[B]thiophene derivatives. 4,122,091, Cl. 260-332.20A.

Texaco Development Corporation: *See—*
Meyer, Lee G., 4,122,068, Cl. 528-93.000.
Meyer, Lee G., 4,122,069, Cl. 528-93.000.
Watts, Lewis W., Jr.; and Yeakey, Ernest L., 4,122,253, Cl. 536-50.000.

Texaco Inc.: *See—*
Barber, Everett M.; Muenger, James R.; Alexander, David L.; and Schlinger, Warren G., 4,121,912, Cl. 48-197.00R.
Smith, Harry D., Jr.; and Pitts, Robert W., Jr., 4,122,338, Cl. 250-262.000.
Smith, Harry D., Jr.; Smith, Michael P.; and Schultz, Ward E., 4,122,339, Cl. 250-264.000.
Smith, Harry D., Jr.; Smith, Michael P.; and Schultz, Ward E., 4,122,340, Cl. 250-264.000.
Smith, Harry D., Jr., 4,122,341, Cl. 250-267.000.
Tao, Fan-sheng; and Warner, John E., 4,122,009, Cl. 210-84.000.
Tao, Fan-sheng; and Warner, John E., 4,122,016, Cl. 210-521.000.

Texas Exploration Canada, Ltd.: *See—*
Redford, David A., 4,121,661, Cl. 166-252.000.

Texas Gas Transmission Corporation: *See—*
Gomberg, Henry J.; and Teitel, Robert J., 4,121,984, Cl. 204-157.10H.

Texas Instruments Incorporated: *See—*
Cochran, Michael J.; and Donohoe, Leonard J., 4,121,760, Cl. 235-311.000.
McElroy, David J., 4,122,544, Cl. 365-185.000.

Thaler, Michael; and Jackson, Stephen, to Scan Optics, Inc. Character position detector. 4,122,443, Cl. 340-146.30H.

Thele, Gunnar, to Transtronic Ltd. Device for setting and retaining a fixed direction. 4,121,347, Cl. 33-366.000.

Thenoz, Yves: *See—*
Berger, Jean Luc; Bourrat, Michel; Thenoz, Yves; and Woehrn, Daniel, 4,121,333, Cl. 29-578.000.

Thermo King Corporation: *See—*
Howland, Leland L., 4,122,354, Cl. 290-31.000.

Thibault, Annie: *See—*
Fauran, Francois; Feniou, Claude; Thibault, Annie; and Prat, Gisele, 4,122,202, Cl. 424-278.000.

Thiery, Daniel: *See—*
Buchwalder, Michel; Perrin, Roger; and Thiery, Daniel, 4,122,048, Cl. 521-26.000.

Thiokol Corporation: *See—*
Bertozzi, Eugene R., 4,122,065, Cl. 260-45.75S.

Thomas, Jay A., to GTE Automatic Electric Laboratories Incorporated. Apparatus and method for timing recovery from a pseudo-ternary signal. 4,122,397, Cl. 328-139.000.

Thomas, William David: *See—*
Taylor, Reginald Sidney; Burrow, Reginald Edwin Downton; Mason, John Morton; Portas, John Richard; and Thomas, William David, 4,121,780, Cl. 242-7.210.

Thompson, Donald Russell: *See—*
Childress, Lorenza Steward; Gagnon, Thomas Edward; Thompson, Donald Russell; and Zucker, Larry Reed, 4,122,496, Cl. 358-298.000.

Thompson, Gerald L.; Paschal, Gloria C.; and Conrad, Robert A., to Eli Lilly and Company. 5'-Hydroxyleurosine and related compounds. 4,122,081, Cl. 260-287.00B.

Thomson-CSF: *See—*
Berger, Jean Luc; Bourrat, Michel; Thenoz, Yves; and Woehrn, Daniel, 4,121,333, Cl. 29-578.000.
Bert, Alain; and Kantorowicz, Gerard, 4,122,543, Cl. 365-182.000.
Defranould, Philippe; and Maerfeld, Charles, 4,122,495, Cl. 358-213.000.
Rougeot, Henri, 4,122,345, Cl. 250-370.000.

Throop, James A.: *See—*
Millier, William F.; Rehkugler, Gerald E.; Pellerin, Roger A.; and Throop, James A., 4,121,407, Cl. 56-329.000.

Tichelaar, Gerrit Willem: *See—*
Essers, Wilhelmus Gerardus; Jelmorini, Gerardus; and Tichelaar, Gerrit Willem, 4,122,328, Cl. 219-121.00P.

Tiemann, Reinhard: *See—*
Henning, Hermann; Kosanke, Johannes; Pakur, Henryk; Wittneben, Hermann; and Tiemann, Reinhard, 4,121,640, Cl. 152-340.000.

Tietz, Gary William; and Mueller, Keith James, to National Semiconductor Corporation. Digital logic level signal indication of phase and frequency lock condition in a phase-locked loop. 4,122,405, Cl. 331-1.00A.

Timex Corporation: *See—*
Crutcher, William C.; and Wiesner, Leo, 4,121,415, Cl. 58-50.00R.

Tkach, Khaim Berkovich; Kostylev, Alexander Dmitrievich; Gurkov, Konstantin Stepanovich; Smolyanitsky, Boris Nikolaevich; Plavskikh, Vladimir Dmitrievich; and Klimashko, Vladimir Vasilievich. Reversing pneumatic percussive device. 4,121,672, Cl. 175-19.000.

Tokunaga, Norikazu, to Hitachi, Ltd. Inverter control apparatus. 4,122,516, Cl. 363-79.000.

Tokyo Shibaura Electric Company, Limited: *See—*
Ito, Takeo; and Tsukagoshi, Hatsuo, 4,122,213, Cl. 427-64.000.
Kawagai, Kenji; and Yoshida, Shigeki, 4,122,360, Cl. 307-205.000.
Kinoshita, Hiroyuki, 4,122,549, Cl. 365-222.000.
Tamaru, Keikichi; and Uchida, Yukimasa, 4,122,531, Cl. 364-900.000.
Uchida, Yukimasa, 4,122,541, Cl. 365-154.000.

Tol-O-Matic Inc.: *See—*
Berg, David W., 4,121,840, Cl. 277-4.000.

Tolliver, Wilbur E.; and Borodin, Daniel J., to New York Wire Mills Corp. Stirrup fabric. 4,122,228, Cl. 428-101.000.

Tomilin, Alexandr Grigorievich: *See—*
Kuznetsov, Vladimir Grigorievich; Tomilin, Alexandr Grigorievich; and Shleenkov, Igor Anatolievich, 4,121,419, Cl. 60-39.82P.

Tominari, Noboru; and Takahashi, Hiroshi, to Onlife Research, Inc. Record player having a device for damping vibrations of a tone arm. 4,121,837, Cl. 274-23.00R.

Tomita, Sadami; Chiba, Akio; and Utsumi, Yoshiharu, to Hitachi, Ltd. Uniform magnetic field generating device. 4,122,386, Cl. 324-0.50H.

Tomura, Kouichi; and Maekawa, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Toner image-fixing device. 4,121,888, Cl. 355-14.000.

Topilin, Valentin Vasilievich: *See—*
Paton, Boris Evgenievich; Movchan, Boris Alexeevich; Kurapov, Jury Anatolievich; Misjura, Rostislav Spiridonovich; Pryanishnikov, Igor Stepanovich; Zhuchin, Vladimir Nikiforovich; Topilin, Valentin Vasilievich; and Perepelitsa, Igor Vasilievich, 4,121,647, Cl. 164-50.000.

Toray Industries, Inc.: *See—*
Kojima, Teiryo; and Kitazawa, Shin-ichi, 4,121,412, Cl. 57-157.00R.

Toray Silicone Company, Ltd.: *See—*
Mikami, Ryuzo; and Mine, Katsutoshi, 4,122,127, Cl. 260-825.000.

Torkhov, Gennady Fedorovich: *See—*
Grigorenko, Georgy Mikhailovich; Sheiko, Ivan Vasilievich; Eltsov, Konstantin Sergeevich; Korotkov, Albert Nikitovich; Pakhomov, Alexei Ivanovich; Kanibolotsky, Sergei Arsentievich; Lakomsky, Viktor Iosifovich; Shevchenko, Vladimir Denisovich; Kiselev, Nikolai Mikhailovich; and Torkhov, Gennady Fedorovich, 4,122,293, Cl. 13-2.00P.

Torzala, Terence August, to Bendix Corporation, The. Physiological responsive control for an oxygen regulator. 4,121,578, Cl. 128-142.00R.

Toshiba Ceramics Co., Ltd.: *See—*
Mori, Masaaki; and Takai, Norihira, 4,122,152, Cl. 423-344.000.

Towsley, Frank E., to Dow Chemical Company, The. Electrolytic cell. 4,121,992, Cl. 204-265.000.

Toya, Hiroo: *See—*
Nishina, Yoshio; Habu, Teiji; Nakajima, Tomio; Oshima, Akio; Sakamoto, Eiichi; Fujimori, Noboru; Mine, Kiyomitsu; and Toya, Hiroo, 4,121,935, Cl. 96-27.00E.

Toyo Engineering Corporation: *See—*
Takano, Shiro; Jojima, Toshio; Oshida, Hajime; Yokoi, Tadashi; Kato, Muneo; and Koizumi, Tadashi, 4,121,839, Cl. 277-3.000.

Toyo Kogyo Co., Ltd.: *See—*
Sumida, Shizuo, 4,122,357, Cl. 307-10.00R.

Toyoda-Koki Kabushiki-Kaisha: *See—*
Asano, Hiroaki, 4,121,385, Cl. 51-101.00R.

Toyomoto, Isao: *See—*
Aihara, Tetsuo; Nakayama, Yasuharu; Yamashita, Yoshio; Watanabe, Tadashi; and Toyomoto, Isao, 4,122,052, Cl. 260-23.0EM.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Fukuma, Nobuo; and Katou, Yoshito, 4,121,331, Cl. 29-434.000.
Inuzuka, Yutaka, 4,121,813, Cl. 267-57.10A.
Tsuruta, Matsuhisa; Yokoi, Masatada; Shibatani, Juichi; Ohori, Harumi; and Obu, Yuichiro, 4,121,699, Cl. 188-73.300.

Tracy, Robert E.: *See—*
Rick, Horst; Keppel, Richard A.; Mitchell, Harvey A.; Olsen, Lowell V.; Colas, James K.; and Tracy, Robert E., 4,122,521, Cl. 364-424.000.

Transcodan, Sven Husted-Andersen: *See—*
Forberg, Hans-Jurgen, 4,121,622, Cl. 137-863.000.

Transtronic Ltd.: *See—*
Thele, Gunnar, 4,121,347, Cl. 33-366.000.

Trapschuh, Frank L.: *See—*
Kollitz, Gerhard; and Trapschuh, Frank L., 4,122,390, Cl. 324-65.00R.

Trenkler, Werner, to Porsche AG. Retractable headlight for motor vehicles. 4,121,478, Cl. 74-529.000.

Tribble, Ronald L.; and Stagg, Charles M., to Philips Roxane, Inc. Injectable contraceptive and method. 4,122,166, Cl. 424-88.000.

Triebold, Karl Friedrich; Myrzik, Sigmar; and Bohme, Johann Friedrich, to Fried. Krupp Gesellschaft mit beschrankter Haftung Atlas Elektronik Bremen. Device for identifying noise sources. 4,122,432, Cl. 340-15.000.

Trinidad, Ray M.: *See—*
Wisdom, Lawrence W.; and Trinidad, Ray M., 4,122,198, Cl. 426-439.000.

Triple Bee Prestress (Proprietary) Limited: *See—*
Bruinette, Konstant E.; and Brand, Ulrich E. O. B., 4,121,325, Cl. 24-122.600.

Tronstad, Inge Magnus, to Myrens Verksted A/S. Method and an apparatus for producing and drying a meal of cooked animal material, especially fish and fish pulp. 4,122,208, Cl. 426-641.000.

Troup, Ivan G.: *See—*
Murphy, Edward J.; and Troup, Ivan G., 4,122,053, Cl. 260-29.4UA.

Tsipenjuk, Yakov Isaakovich: *See—*
Antipov, Georgy Afanasievich; Berezhnoi, Vitaly Alexandrovich; Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Lavnikov, Nikolai Stanislavovich; Teres, Leonid Nikolaevich; Urazhdin, Ivan Ivanovich; Tsipenjuk, Yakov Isaakovich; and Yakubovsky, Petr Stepanovich, 4,121,670, Cl. 173-20.000.

Tsuboi, Shinichi: *See—*
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; Kurahashi, Yoshio; and Tsuboi, Shinichi, 4,122,174, Cl. 424-211.000.

Tsuboi, Takashi: *See—*
Tachibana, Kyozo; Tsuboi, Takashi; Suzuki, Yutaka; Matsutake, Mitsugu; Miura, Shozuchi; Hatano, Shigeru; Goto, Takao; and Nozaki, Yoshio, 4,122,515, Cl. 363-45.000.

Tsubota, Naoki; and Satoru, Shibuya, to Giken Trading Company. Passer counter. 4,122,331, Cl. 235-92.0PK.

Tsuchida, Takashi; Shinoda, Kenichi; and Sakamoto, Noriaki, to Fuji Electrochemical Co., Ltd. Sealed alkaline battery. 4,122,243, Cl. 429-174.000.

Tsuchiya, Soji: *See—*
Matsuda, Shunsuke; Tsuchiya, Soji; Honma, Masami; and Nagamatsu, Gentaro, 4,121,936, Cl. 96-35.100.

Tsukagoshi, Hatsuo: *See—*
Ito, Takeo; and Tsukagoshi, Hatsuo, 4,122,213, Cl. 427-64.000.

Tsunekawa, Tokuichi; Nakamura, Zenzo; Ohtaki, Shohei; Sakurada, Nobuaki; Suzuki, Masayuki; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Camera with the shutter time control circuit for the flash light photography. 4,122,467, Cl. 354-33.000.

Tsuruoka, Takashi: *See—*
Niizato, Tetsutaro; Tsuruoka, Takashi; Inouye, Shigeharu; Koeda, Takemi; and Niida, Taro, 4,122,171, Cl. 424-180.000.

Tsuruta, Matsuhisa; Yokoi, Masatada; Shibatani, Juichi; Ohori, Harumi; and Obu, Yuichiro, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Disk brake assembly for automotive vehicles. 4,121,699, Cl. 188-73.300.

Tugukuni, Hideyoshi; Kano, Masafumi; and Nishimura, Yoshihiko, to Dai Nippon Toryo Co., Ltd. Aqueous dispersion type thermosetting coating composition. 4,122,055, Cl. 260-29.4UA.

Tummala, Rao R.: *See—*
Humenik, James N.; Powell, Jimmie L.; and Tummala, Rao R., 4,122,460, Cl. 346-140.00R.

Turbitt, John J. Vehicle engine automatic restart circuit. 4,122,355, Cl. 290-38.00C.

Turner, Charles Roger: *See—*
Turner, Roger Scott; and Turner, Charles Roger, 4,121,584, Cl. 128-214.00E.

Turner, R. Scott: *See—*
Turner, Roger Scott; and Turner, Charles Roger, 4,121,584, Cl. 128-214.00E.

Turner, Robert K., to Outboard Marine Corporation. Drain recycle system for two-cycle engine. 4,121,551, Cl. 123-59.00B.

Turner, Roger Scott; and Turner, Charles Roger, to Turner, R. Scott. Method and apparatus for controlling the dispensing of fluid. 4,121,584, Cl. 128-214.00E.

Turner, Sam R., to Xerox Corporation. 9-Fluorenyl acrylates. 4,122,113, Cl. 260-465.00D.

Tuttle, John K. Method and apparatus for setting pilings in frozen ground. 4,121,427, Cl. 405-130.000.

Uchida, Hiroshi; Umeda, Kunio; Tachibana, Zenpei; and Kubota, Nobunori, to Murata Kikai Kabushiki Kaisha. Yarn piecing and knotting device for pneumatic spinning apparatus. 4,121,409, Cl. 57-22.000.

Uchida, Yukimasa, to Tokyo Shibaura Electric Company, Limited. Non-volatile memory device. 4,122,541, Cl. 365-154.000.

Uchida, Yukimasa: *See—*
Tamaru, Keikichi; and Uchida, Yukimasa, 4,122,531, Cl. 364-900.000.

Uchiyama, Takashi: *See—*
Tsunekawa, Tokuichi; Nakamura, Zenzo; Ohtaki, Shohei; Sakurada, Nobuaki; Suzuki, Masayuki; and Uchiyama, Takashi, 4,122,467, Cl. 354-33.000.

Uebbing, Alexander: *See—*
Kneissl, Hannes; and Uebbing, Alexander, 4,121,541, Cl. 122-1.00R.

Ueda, Ichiro: *See—*
Kawashima, Syunichiro; Nishida, Masamitsu; Ueda, Ichiro; Ouchi, Hiromu; and Hayakawa, Shigeru, 4,121,941, Cl. 106-39.500.

Ueno, Akihiko: *See—*
Ohkubo, Masaru; and Ueno, Akihiko, 4,122,322, Cl. 219-10.55R.

Uhlig, Albert R.: *See—*
Krall, Thomas J.; and Uhlig, Albert R., 4,122,141, Cl. 264-89.000.
Lawrence, Don L.; and Uhlig, Albert R., 4,122,142, Cl. 264-97.000.

Ullman, Edwin F.; and Lavine, Joel E., to Syva Company. Pretreatment of samples for polyiodothyronine assays. 4,121,975, Cl. 195-99.000.

Ulm, Klaus: *See—*
Scheidl, Franz; Huber, Hans; Ulm, Klaus; Haberlein, Harald; and Pfahler, Gerhard, 4,122,064, Cl. 260-45.75S.

Ulrich, Roy E., II; and Engel, Gerard, to Ulrich Supply Company, Inc. Control system for hydraulic lifts. 4,121,687, Cl. 182-2.000.

Ulrich Supply Company, Inc.: *See—*
Ulrich, Roy E., II; and Engel, Gerard, 4,121,687, Cl. 182-2.000.

Umeda, Kunio: *See—*
Uchida, Hiroshi; Umeda, Kunio; Tachibana, Zenpei; and Kubota, Nobunori, 4,121,409, Cl. 57-22.000.

Umetsu, Hiroshi: *See—*
Wakabayashi, Takeshi; and Umetsu, Hiroshi, 4,121,452, Cl. 73-117.300.

Underkoffler, Edwin C.: *See—*
Adamchick, John T.; Sicko, John C.; and Underkoffler, Edwin C., 4,122,520, Cl. 364-200.000.

Union Carbide Corporation: *See—*
Baker, Charles Richard; and Cheung, Harry, 4,121,917, Cl. 62-28.000.
D'Silva, Themistocles D. J., 4,122,204, Cl. 424-285.000.
Dunnery, David Arthur; Sokolik, Joseph Edmund, Jr.; Atwood, Gilbert Richard; and Kosseim, Alexander Jean-Marie, 4,122,149, Cl. 423-242.000.
Pepe, Enrico James; and Marsden, James Glenn, 4,122,074, Cl. 526-26.000.
Sandner, Michael Ray; and Duffy, Robert Donovan, 4,122,038, Cl. 252-431.00C.

Union Oil Company of California: *See—*
Farrell, Daniel R.; and Ward, John W., 4,122,000, Cl. 208-210.000.
Fischer, Paul W.; and Pye, David S., 4,121,664, Cl. 166-309.000.
Fischer, Paul W.; and Pye, David S., 4,121,674, Cl. 175-66.000.

Uniroyal, Inc.: *See—*
Loveless, Frederick Charles; and Nudenberg, Walter, 4,122,021, Cl. 252-26.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Lettington, Alan Harold; and Savage, James Anthony, 4,122,344, Cl. 250-334.000.
Wilby, Peter Glover, 4,121,787, Cl. 244-35.00R.
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Valdespino, Joseph M. Fluid system for compacting and squeezing apparatus. 4,121,512, Cl. 100-52.000.
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Vasishth, Ramesh C.; and Chandramouli, Pitchaiya, to Cor Tech Research Ltd. Production of rigid shaped articles using phenol-formaldehyde resins. 4,122,144, Cl. 264-123.000.
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Vinz, Siegfried. Method of constructing rooms with radiant heating or with cooling. 4,121,653, Cl. 165-1.000.
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Weis, Martin; and Scholz, Adolf, to Badische Maschinenfabrik G.m.b.H. Blasting machine. 4,121,387, Cl. 51-418.000.

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Whalley, Wilfrid B., to Critical Systems, Inc. Apparatus for heating tissue. 4,121,592, Cl. 128-413.000.

Wheeler, Richard Winston: *See—*
Haslett, Robert Alan; Howard, Charles Peter; and Wheeler, Richard Winston, 4,121,455, Cl. 73-194.00M.

White, James M., to International Business Machines Corporation. Flat scan holographic laser beam deflector. 4,121,882, Cl. 350-3.710.

Wiatr, Rudolph F.; and Sigle, John R. Railway tie collar. 4,121,766, Cl. 238-110.000.

Wiedmann, Siegfried Kurt: *See—*
Heuber, Klaus; Klein, Wilfried; Najmann, Knut; Wernicke, Friedrich; and Wiedmann, Siegfried Kurt, 4,122,548, Cl. 365-203.000.

Wieland, Dieter: *See—*
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Wiesmann, Thomas W.: *See—*
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Wiesner, Leo: *See—*
Crutcher, William C.; and Wiesner, Leo, 4,121,415, Cl. 58-50.00R.

Wilby, Peter Glover, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Aircraft. 4,121,787, Cl. 244-35.00R.

Wildt, Mellor Bromley Limited: *See—*
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Wilhelm, Claus, to Parker Pen Company, The. Holder for writing instruments. 4,121,719, Cl. 211-69.500.

Wilhelm, Juergen: *See—*
Albrecht, Helmut; Barleon, Leopold; Dorner, Stefan; Fischer, Manfred; and Wilhelm, Juergen, 4,121,970, Cl. 176-38.000.

Wilkes, Thomas Jewel, to Teledyne Industries, Inc. Solenoid mounting plate for musical keyboard. 4,121,491, Cl. 84-20.000.

Wilkinson, John Joseph, to Coal Industry (Patents) Limited. Bunker contents indication equipment. 4,122,332, Cl. 235-92.0CA.

Willand, Allan Howard: *See—*
Kolensky, Leo Michael; Schaefer, Walter Rudolph; Schlanger, Gabriel Gary; and Willand, Allan Howard, 4,122,301, Cl. 178-73.000.

Willard, H. Robert: *See—*
Vali, Victor; Krogstad, Reuben S.; and Willard, H. Robert, 4,122,342, Cl. 250-272.000.

Williams, Charles H.: *See—*
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Williams, David J.: *See—*
Pearson, James M.; Williams, David J.; and Limburg, William W., 4,122,114, Cl. 260-465.00H.

Williams, John Wesley, to Abbott Laboratories. Piperazinyl-N,N'-bis(-dithiotincarbamates). 4,122,271, Cl. 544-225.000.

Williams, Leonard J.; and Blank, Leon W., to Moog Inc. Pivotal positioning servoactuator. 4,121,498, Cl. 91-186.000.

Williams, Robert E.: *See—*
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Williamson, William Robert Nigel: *See—*
Evans, Delme; Saunders, John Christopher; and Williamson, William Robert Nigel, 4,122,194, Cl. 424-337.000.

Willis, Chester Rhodes: *See—*
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Wilmot, Richard D.: *See—*
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Wilson, Dale Ray, to Dillard, Hayden. Abrasive surface treating device. 4,121,388, Cl. 51-424.000.

Wilson, Phillip Steven: *See—*
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Winter, Wolfgang: *See—*
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Wirtz, John W.; and McLane, Jack E., to Wirtz Manufacturing Company, Inc. By-pass arrangement for battery grid casting machine. 4,121,649, Cl. 164-269.000.

Wirtz Manufacturing Company, Inc.: *See—*
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Wisconsin Alumni Research Foundation: *See—*
Peterson, Harold A.; and Boom, Roger W., 4,122,512, Cl. 363-14.000.

Wisdom, Lawrence W.; and Trinidad, Ray M., to Frito-Lay, Inc. Process for preparing a cooked dough product. 4,122,198, Cl. 426-439.000.

Witte, Hartmut: *See—*
Iffland, Norbert; Isensee, Hans-Jorg; Wagner, Gerhard; and Witte, Hartmut, 4,122,028, Cl. 252-301.10W.

Witte, Johan Frederik, to Stork Amsterdam B.V. Process for extracting oils from oil containing raw materials. 4,122,104, Cl. 260-412.400.

Witte, Paul A.: *See—*
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Wittersheim, Adam, to Goldwell GmbH, Chemische Fabrik H.E.Dotter. System for quantity-controlled spraying of a liquid active ingredient. 4,121,735, Cl. 222-83.500.

Wittman, Ricky L.: *See—*
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Woehrn, Daniel: *See—*
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Wolf, Elmar. Grass-cutting and air-impelling means for a rotary scythe lawn mower. 4,121,405, Cl. 56-12.900.

Wolfinger, Arthur; and Nicolay, Klaus, to Hoechst Aktiengesellschaft. Support means. 4,121,783, Cl. 242-68.400.

Wong, Chak-Kuen; and Yue, Po Cheung, to International Business Machines Corporation. Self-organizing magnetic bubble lattice file. 4,122,536, Cl. 365-3.000.

Woodall, Jerry MacPherson: *See—*
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Woycheese, John E., to Standard Fire Protection Equipment Co. Automatic sprinkler head. 4,121,665, Cl. 169-38.000.

Woziwodzki, Hiltrud E., to Lever Brothers Company. Separation of the isomers of tocopherol by liquid/solid chromatography. 4,122,094, Cl. 260-345.600.

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Wright, Ian G.; and Neuss, Norbert, to Eli Lilly and Company. 4-Desacetoxy-4-oxovinblastine. 4,122,082, Cl. 260-287.00B.

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Yagihara, Morio; Tanaka, Mitsugu; Aono, Toshiaki; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,121,934, Cl. 96-22.000.

Yajima, Seishi; Hayashi, Josaburo; and Omori, Mamoru, to Research Institute for Special Inorganic Materials, The. Method for producing silicon carbide sintered moldings consisting mainly of SiC. 4,122,139, Cl. 264-44.000.

Yakubovsky, Petr Stepanovich: *See—*
Antipov, Georgy Afanasievich; Berezhnoi, Vitaly Alexandrovich; Gelfand, Mikhail Lvovich; Goldshtein, Boris Grigorievich; Gornik, Leonid Avrumovich; Lavnikov, Nikolai Stanislavovich; Teres, Leonid Nikolaevich; Urazhdin, Ivan Ivanovich; Tsipenjuk, Yakov Isaakovich; and Yakubovsky, Petr Stepanovich, 4,121,670, Cl. 173-20.000.

Yallourakis, Michael Dimitri, to Du Pont de Nemours, E. I., and Company. Epoxy resin powder coating composition. 4,122,060, Cl. 260-37.0EP.

Yamada, Seiichiro, to Yamaha Hatsudoki Kabushiki Kaisha. Lubricant oil pump for two-cycle engines. 4,121,559, Cl. 123-196.00R.

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Yamaguchi, Namio; and Sato, Yasuyuki, to Matsushita Electric Industrial Co., Ltd. Color demodulation apparatus. 4,122,491, Cl. 358-23.000.

Yamaguchi, Ryozo: *See—*
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Yamamoto, Hisao: *See—*
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Yamamoto, Tamechika; Nishimura, Yoichi; and Sanga, Seiji, to Catalysts & Chemicals Industries Co., Ltd. Reclaiming process for zeolite served for adsorbing ammoniacal nitrogen contained in sewage. 4,122,007, Cl. 210-32.000.

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Yamazaki, Hiroshi, to Kabushiki Kaisha Seikosha. Alarm timepiece. 4,121,414, Cl. 58-21.110.

Yankee, Ernest W., to Upjohn Company, The. Cis-4,5-didehydro-11-deoxy-PGF_1 analogs. 4,122,100, Cl. 260-408.000.

Yankee, Ernest W., to Upjohn Company, The. Cis-13-PGA_1 analogs. 4,122,101, Cl. 260-408.000.

Yankee, Ernest W., to Upjohn Company, The. cis-13 $PGE_2\beta$ analogs. 4,122,102, Cl. 260-408.000.

Yankee, Ernest W., to Upjohn Company, The. Cis-4,5-didehydro-cis-13-PGA_1 compounds. 4,122,103, Cl. 260-408.000.

Yankee, Ernest W., to Upjohn Company, The. 11-Deoxy-cis-13-PGF_2 analogs. 4,122,283, Cl. 560-121.000.

Yankee, Ernest W., to Upjohn Company, The. 11-Deoxy-cis-13-PFG, 15 methyl ethers. 4,122,284, Cl. 560-121.000.

Yano, Daihachiro, to Hillwood Electronic Musical Instruments Corporation. Voltage-controlled phase shifter circuit for an electronic musical instrument. 4,122,364, Cl. 307-262.000.

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Yardley, James Frank; and Nightingale, Allen Frederick, to Dunlop Limited. Bonding polyamide plastics to rubber compositions. 4,121,963, Cl. 156-308.000.

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Yasui, Seimei; and Sato, Hiroshi, to Sumitomo Chemical Company, Limited. Synthetic saturated oils, and their production and use. 4,122,023, Cl. 252-59.000.

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Yokokawa, Takao; Takano, Shigeo; Ichinose, Yasuaki; Kasahara, Toshiyuki; and Ikeda, Fumiaki, to Nippon Steel Corporation. Gas pressure welding process. 4,121,748, Cl. 228-102.000.

Yonemoto, Tomoo; Ishida, Hiroaki; Morino, Yukio; Watanabe, Masanori; and Onda, Eiichi, to Seiko Koki Kabushiki Kaisha. Diaphragm control device for flash photography. 4,122,464, Cl. 354-29.000.

York, Ausbie A. Telescope sight mount. 4,121,363, Cl. 42-1.0ST.

Yoshida Kogyo K.K.: *See—*
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Yoshioka, Masanori; Miwa, Akira; and Tamura, Zenzo, to Daiichi Seiyaku Co., Ltd. Antigens and antibodies of catecholamines. 4,122,078, Cl. 260-121.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Hasegawa, Gen; Oe, Takanori; and Kitami, Chiaki, 4,122,178, Cl. 424-250.000.

Yoshizaki, Hiroyuki: *See—*
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Young, John H., to United Technologies Corporation. Attachment for a nozzle centerbody. 4,121,768, Cl. 239-127.300.

Young, Joseph. Hair oil applicator. 4,121,602, Cl. 132-113.000.

Yue, Po Cheung: *See—*
Wong, Chak-Kuen; and Yue, Po Cheung, 4,122,536, Cl. 365-3.000.

Yukawa, Toru; Kawai, Nobuyasu; Honma, Katuhiko; Fujimoto, Hirofumi; Takigawa, Hiroshi; Hirono, Minoru; Ishii, Masaru; and Tatsuno, Tsuneo, to Kobe Steel, Ltd. Nitrogen containing high speed steel obtained by powder metallurgical process. 4,121,930, Cl. 75-238.000.

Zacher, Wieland: *See—*
Pfleger, Klaus; Boettcher, Klaus; Zacher, Wieland; and Juza, Dirk, 4,122,248, Cl. 528-481.000.
Zakharova, Nina Vasilievna; Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; and Shalimova, Zoya Stepanovna. Method of preparing 2,6-di-tert.butyl-4-methylphenol. 4,122,287, Cl. 568-784.000.
Zander, Georg: *See—*
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Zapf, Egon, to LuK Lamellen und Kupplungsbau GmbH. Hub, especially for clutch disks of motor vehicles. 4,121,706, Cl. 192-106.200.
Zappala', Giuseppe; and Farina, Attilio, to Indesit Industria Elettrodomestici Italiana S.p.A. Circuit arrangement for obtaining a sawtooth current in a coil. 4,122,363, Cl. 307-228.000.
Zbikowski, Gerhard; and Geafer, Salahaddin, to Motoren-und Turbinen-Union Friedrichshafen GmbH. Transmission linkage. 4,121,555, Cl. 123-140.00R.
Zehr, William J., to Protectoseal Company, The. Fire extinguisher cylinder filling station. 4,121,632, Cl. 141-59.000.
Zellweger Uster Ltd.: *See—*
Zurcher, Erwin, 4,121,450, Cl. 73-32.00R.
Zemke, Edward H.: *See—*
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Zeppellini, Dino Marco. Casting receptacle or ladle for moulded castings or various materials. 4,121,651, Cl. 164-337.000.
Zettler, John F.: *See—*
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Zhuchin, Vladimir Nikiforovich: *See—*
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Zhukovsky, Evgeny Grigorievich; Lobanov, Vyacheslav Mikhailovich; Rozgon, Vladimir Danilovich; and Roitman, Dmitry Leonidovich. Step motor control system. 4,122,380, Cl. 318-696.000.
Zimmerle, James R.: *See—*
Malo, Lowell L.; and Zimmerle, James R., 4,121,495, Cl. 85-1.00H.
Zimmerman, Harry M., to Reed Irrigation Systems. Pilot operated flushing valve. 4,121,621, Cl. 137-863.000.
Zimmerman, Otto; and Irle, Rolf Gerd, to Morgan Construction Company. Apparatus for connecting a cover to a chock in a rolling mill. 4,121,445, Cl. 72-237.000.
Zoecon Corporation: *See—*
Kinzer, David R.; and McDaniel, Joe D., 4,122,165, Cl. 424-84.000.
Zondler, Helmut: *See—*
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Zucker, Larry Reed: *See—*
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Zuech, Ernest A.: *See—*
Murtha, Timothy P.; Jones, William A.; Zuech, Ernest A.; and Johnson, Marvin M., 4,122,125, Cl. 260-668.00R.
Zurcher, Erwin, to Zellweger Uster Ltd. Apparatus for measuring the density of a moving elongate mass of filiform material. 4,121,450, Cl. 73-32.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Applied Power Inc.: *See—*
Marino, Joseph A., Re. 29,810, Cl. 73-117.300.
Avco Everett Research Laboratory, Inc.: *See—*
Gnanamuthu, Daniel S., Re. 29,815, Cl. 219-121.0LM.
Dowa-Mining Co., Ltd., The: *See—*
Yamamichi, Yoshikazu; and Nagao, Jun-ichi, Re. 29,813, Cl. 423-242.000.
Gnanamuthu, Daniel S., to Avco Everett Research Laboratory, Inc. Cladding. Re. 29,815, Cl. 219-121.0LM.
Jordan, John F.; and Lampkin, Curtis M., to Photon Power, Inc. Photovoltaic cell. Re. 29,812, Cl. 136-89.0TF.
Lampkin, Curtis M.: *See—*
Jordan, John F.; and Lampkin, Curtis M., Re. 29,812, Cl. 136-89.0TF.
Marino, Joseph A., to Applied Power Inc. Analyzer for multi-cylinder internal combustion engine having means for identifying individual cylinders. Re. 29,810, Cl. 73-117.300.
Nagao, Jun-ichi: *See—*
Yamamichi, Yoshikazu; and Nagao, Jun-ichi, Re. 29,813, Cl. 423-242.000.
Norddeutsche Schleifmittel-Indutrie Christiansen & Co.: *See—*
Wagner, Eckhard, Re. 29,808, Cl. 51-401.000.
Norris, Floyd E. Dental chair and adjustable head support mechanism therefor. Re. 29,811, Cl. 297-408.000.
Photon Power, Inc.: *See—*
Jordan, John F.; and Lampkin, Curtis M., Re. 29,812, Cl. 136-89.0TF.
Procter & Gamble Company, The: *See—*
Snyder, William Earl, Re. 29,814, Cl. 424-81.000.
Snyder, William Earl, to Procter & Gamble Company, The. Lanolin fatty acids, polysiloxane and water-soluble polymer containing skin conditioning emulsion. Re. 29,814, Cl. 424-81.000.
Wagner, Eckhard, to Norddeutsche Schleifmittel-Indutrie Christiansen & Co. Hollow body grinding materials. Re. 29,808, Cl. 51-401.000.
Yamamichi, Yoshikazu; and Nagao, Jun-ichi, to Dowa-Mining Co., Ltd., The. Process for the removal of sulfur oxide from waste gas. Re. 29,813, Cl. 423-242.000.

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Bailey, Catherine: *See—*
Williams, Edwin B.; Janick, Jules; Emerson, Frank H.; Dayton, Daniel F.; Hough, L. Fredrick; and Bailey, Catherine, 4,321, Cl. 34.000.
Williams, Edwin B.; Janick, Jules; Emerson, Frank H.; Dayton, Daniel F.; Hough, L. Fredric; and Bailey, Catherine, 4,322, Cl. 34.000.
Bailey, Catherine H.: *See—*
Williams, Edwin B.; Janick, Jules; Emerson, Frank H.; Dayton, Daniel F.; Hough, L. Fredric; and Bailey, Catherine H., 4,320, Cl. 34.000.
Dayton, Daniel F.: *See—*
Williams, Edwin B.; Janick, Jules; Emerson, Frank H.; Dayton, Daniel F.; Hough, L. Fredric; and Bailey, Catherine H., 4,320, Cl. 34.000.
Williams, Edwin B.; Janick, Jules; Emerson, Frank H.; Dayton, Daniel F.; Hough, L. Fredrick; and Bailey, Catherine, 4,321, Cl. 34.000.
Williams, Edwin B.; Janick, Jules; Emerson, Frank H.; Dayton, Daniel F.; Hough, L. Fredric; and Bailey, Catherine, 4,322, Cl. 34.000.
Emerson, Frank H.: *See—*
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Kleiner, Carl J. Illuminable pendant. 250,007, 10-24-78, Cl. D11-79.000.
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Lorenz, A. Michael. Combined lamp and radio. 250,058, 10-24-78, Cl. D48-20.00D.
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Morrison, Howard J.; and Schoenfield, Palmer J., to Marvin Glass & Associates. Toy house. 250,057, 10-24-78, Cl. D34-15.0LL.
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Sasson, Eli. Perpetual digital calendar. 250,031, 10-24-78, Cl. D19-25.000.
Sasson, Eli. Perpetual calendar. 250,032, 10-24-78, Cl. D19-25.000.
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Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Combined ink roller and holder therefor. 250,062, 10-24-78, Cl. D64-10.000.
Schimanski, Georg, to Globol-Werk GmbH, Firma. Air freshener. 250,041, 10-24-78, Cl. D23-150.000.
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Schwartz, Edwin L., to Rite Autotronics Corporation. Battery charger. 250,015, 10-24-78, Cl. D13-5.000.
Sebastian, Robert K. Wood stove. 250,040, 10-24-78, Cl. D23-97.000.
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Shenuski, John, to Woodland Machine & Die Company. Latch. 250,001, 10-24-78, Cl. D8-338.000.
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Spencer, Arthur Thomas; and Hardy, Paul Robert, to Pye (Electronic Products) Ltd. Electrical connector. 250,017, 10-24-78, Cl. D13-24.000.
Spinks, Charles W. Cat litter enclosure. 250,051, 10-24-78, Cl. D30-99.000.
Sprunger, Roger L., to Berne Furniture Company. Tete-a-tete. 249,988, 10-24-78, Cl. D6-61.000.
Starr, Elizabeth R. Flag. 250,010, 10-24-78, Cl. D11-175.000.
Stein, Age. Combined template and frame. 250,033, 10-24-78, Cl. D19-39.000.
Stolarz, Edward M., to Presto Lock Company, Division of Walter Kidde & Company, Inc. Key. 250,002, 10-24-78, Cl. D8-347.000.
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117.3	Re.29,810
	4,121,452
	4,121,453
194 EM	4,121,454
194 F	4,121,456
194 M	4,121,455
291	4,121,457
339 R	4,121,458
340	4,121,459
359 R	4,121,460
362 AR	4,121,462
362 SC	4,121,461
363.7	4,121,463
382 R	4,121,464
422 GC	4,121,465
423 A	4,121,466
597	4,121,467
602	4,121,468
643	4,121,469
	4,121,470

CLASS 74

41	4,121,471
87	4,121,472
89.15	4,121,473
217 B	4,121,474
242.15 R	4,121,475
410	4,121,481
411	4,121,476
462	4,121,482
479	4,121,483
527	4,121,477
529	4,121,478
687	4,121,479
700	4,121,480

CLASS 75

34	4,121,922
53	4,121,923
129	4,121,924
130 R	4,121,925
138	4,121,926
201	4,121,927
208 CS	4,121,928
238	4,121,929
	4,121,930

CLASS 76

83	4,121,484

CLASS 81

6	4,121,485

CLASS 82

4 C	4,121,486

CLASS 83

23	4,121,487

CLASS 84

1.01	4,121,348
	4,121,488
1.24	4,121,489
1.27	4,121,490
20	4,121,491
293	4,121,492
411 A	4,121,493
453	4,121,494

CLASS 85

1 H	4,121,495

CLASS 89

37.5 R	4,121,496
129 R	4,121,497

CLASS 91

186	4,121,498
282	4,121,499
391 R	4,121,500
487	4,121,502
505	4,121,503
519	4,121,501

CLASS 92

137	4,121,504

CLASS 93

1 H	4,121,505
52	4,121,506

CLASS 96

1 SD	4,121,931
1.2	4,121,932
1.5 R	4,121,933
22	4,121,934
27 E	4,121,935
35.1	4,121,936
44	4,121,937
48 PD	4,121,938
77	4,121,939

CLASS 99

275	4,121,507
283	4,121,508
386	4,121,509
425	4,121,510
550	4,121,511

CLASS 100

52	4,121,512
88	4,121,513
91	4,121,514
98 R	4,121,515

CLASS 101

23	4,121,516
93.14	4,121,517
93.33	4,121,518
124	4,121,519
316	4,121,520
348	4,121,521
463	4,121,522

CLASS 106

35	4,121,940
39.5	4,121,941
74	4,121,942
99	4,121,943
213	4,121,944
288 B	4,121,945
308 N	4,121,946

CLASS 109

2	4,121,523

CLASS 110

220	4,121,524

CLASS 111

1	4,121,525

CLASS 112

158 E	4,121,526
182	4,121,527

CLASS 113

120 S	4,121,528

CLASS 114

91	4,121,530
221 R	4,121,531
331	4,121,529

CLASS 115

34 R	4,121,532

CLASS 116

5	4,121,533
171	4,121,534

CLASS 118

5	4,121,535
6	4,121,536
7	4,121,537

CLASS 119

20	4,121,538
28	4,121,539
32	4,121,540

CLASS 122

1 R	4,121,541

CLASS 123

3	4,121,542
	4,121,543
30 D	4,121,544
32 EA	4,121,547
	4,121,549
32 EE	4,121,546
	4,121,548
32 EJ	4,121,545
41.31	4,121,550
59 B	4,121,551
65 PE	4,121,552
117 D	4,121,553
119 EC	4,121,554
140 R	4,121,555
148 E	4,121,556
195 R	4,121,557
196 R	4,121,558
	4,121,559

CLASS 126

63	4,121,560
65	4,121,561
85 B	4,121,562
116 A	4,121,563
270	4,121,564
	4,121,565
271	4,121,566
	4,121,567
	4,121,568
299 D	4,121,569
374	4,121,570

CLASS 128

1 B	4,121,571
2 S	4,121,572
2.05 R	4,121,574
2.06 E	4,121,575
2.06 V	4,121,576
2.1 A	4,121,573
69	4,121,577
142 R	4,121,578
145.7	4,121,580
145.8	4,121,579
	4,121,581
157	4,121,582
192	4,121,583
214 E	4,121,584
214 R	4,121,585
215	4,121,586
218 P	4,121,587
218 R	4,121,588
283	4,121,589
303.13	4,121,590
330	4,121,591
413	4,121,592
421	4,121,593
422	4,121,594

CLASS 131

21 R	4,121,595
109 B	4,121,596
190	4,121,597
194	4,121,598
261 R	4,121,599

CLASS 132

79 R	4,121,600
113	4,121,602

CLASS 133

2	4,121,603

CLASS 134

1	4,121,947
100	4,121,948

CLASS 135

4 R	4,121,604
65	4,121,605

CLASS 136

89 TF	Re.29,812

CLASS 137

15.1	4,121,606
78	4,121,608
101	4,121,601
115	4,121,609
117	4,121,610
340	4,121,611
344	4,121,612
351	4,121,613
382.5	4,121,614
412	4,121,618
454.5	4,121,607
469	4,121,619
555	4,121,615
615	4,121,616
630.14	4,121,617
828	4,121,620
863	4,121,621
	4,121,622

CLASS 138

114	4,121,623
122	4,121,624

CLASS 139

114	4,121,625
435	4,121,626

CLASS 140

92.1	4,121,627
105	4,121,628
112	4,121,629

CLASS 141

1	4,121,630
27	4,121,631
59	4,121,632
69	4,121,633
98	4,121,634
207	4,121,635

CLASS 144

193 R	4,121,636

CLASS 148

6.14 R	4,121,949
12.7 A	4,121,951
12.7 N	4,121,950
31.57	4,121,952
38	4,121,953
153	4,121,954

CLASS 150

1.6	4,121,637

54 A 4,121,638

CLASS 152

329 4,121,639
340 4,121,640
353 R 4,121,641
354 R 4,121,642
366 4,121,643

CLASS 156

71 4,121,955
79 4,121,957
4,121,958
80 4,121,956
201 4,121,959
219 4,121,960
249 4,121,961
272 4,121,962
308 4,121,963
507 4,121,964
608 4,121,965

CLASS 157

1.17 4,121,644

CLASS 160

135 4,121,645

CLASS 162

164 R 4,121,966
246 4,121,967
290 4,121,968

CLASS 164

4 4,121,646
50 4,121,647
252 4,121,648
269 4,121,649
329 4,121,650
337 4,121,651
446 4,121,652

CLASS 165

1 4,121,653
6 4,121,654
27 4,121,655
72 4,121,656

CLASS 166

66 4,121,657
85 4,121,658
129 4,121,659
135 4,121,660
252 4,121,661
259 4,121,662
4,121,663
309 4,121,664

CLASS 169

38 4,121,665
62 4,121,666

CLASS 171

110 4,121,667

CLASS 172

42 4,121,668
181 4,121,669

CLASS 173

20 4,121,670
131 4,121,671

CLASS 174

11 BH 4,122,297
28 4,122,298

CLASS 175

19 4,121,672
61 4,121,673
66 4,121,674
325 4,121,675

CLASS 176

18 4,121,969
38 4,121,970
39 4,121,971
68 4,121,972
84 4,121,973

CLASS 177

225 4,121,676
4,121,677
230 4,121,678

CLASS 178

26 A 4,122,299
68 4,122,300
73 4,122,301

CLASS 179

1 E 4,122,302
1 P 4,122,303
2 EB 4,122,304
6 E 4,122,305
4,122,306
6 R 4,122,307
7.1 R 4,122,308
15 AT 4,122,310
15 BA 4,122,309
15 BL 4,122,311
16 F 4,122,312
98 4,122,313
115.5 PS 4,122,315
115.5 R 4,122,314

CLASS 180

8 C 4,121,679
24 4,121,680
54 D 4,121,681
68 P 4,121,683
68 R 4,121,682
89.14 4,121,684
108 4,121,685

CLASS 181

233 4,121,686

CLASS 182

2 4,121,687
3 4,121,688
4,121,689
45 4,121,690
90 4,121,691
129 4,121,692
131 4,121,693

CLASS 184

6 4,121,694

CLASS 187

9 R 4,121,695

CLASS 188

71.3 4,121,696
72.7 4,121,697
73.3 4,121,698
4,121,699
73.4 4,121,700
79.5 GE 4,121,701
187 4,121,702
196 BA 4,121,703
282 4,121,704

CLASS 192

89 B 4,121,705
106.2 4,121,706

CLASS 194

10 4,121,707

CLASS 195

7 4,121,974
99 4,121,975
104 4,121,976

CLASS 198

766 4,121,708
781 4,121,709

CLASS 200

5 B 4,122,316
16 F 4,122,317
61.54 4,122,318
153 J 4,122,319
157 4,122,320

CLASS 203

11 4,121,977
58 4,121,978

CLASS 204

34 4,121,979
35 N 4,121,980
38 R 4,121,981
43 G 4,121,982
67 4,121,983
157.1 H 4,121,984
159.14 4,121,985
159.22 4,121,986
181 F 4,121,987
195 S 4,121,988
4,121,989
258 4,121,990
260 4,121,991
265 4,121,992
275 4,121,993
286 4,121,994

CLASS 206

45.16 4,121,710
63.3 4,121,711
150 4,121,712
274 4,121,713
347 4,121,715
363 4,121,714

CLASS 208

8 4,121,995
111 4,121,996
206 4,121,997
4,121,998
4,121,999
210 4,122,000

CLASS 209

129 4,122,002
147 4,122,003
166 4,122,004
232 4,122,005
382 4,122,006
564 4,121,716
675 4,122,001

CLASS 210

32 4,122,007
65 4,122,008
84 4,122,009
90 4,122,010
150 4,122,011
170 4,122,012
195 S 4,122,013
377 4,122,014
496 4,122,015
521 4,122,016
522 4,122,017

CLASS 211

46 4,121,717
49 R 4,121,718
69.5 4,121,719
113 4,121,720

CLASS 214

1 C 4,121,722
1 P 4,121,721
6 D 4,121,723
10 4,121,724
83.3 4,121,725

CLASS 215

211 4,121,727
260 4,121,728
276 4,121,729
310 4,121,730

CLASS 219

10.41 4,122,321
10.55 D 4,122,323
10.55 E 4,122,324
10.55 R 4,122,322
86.1 4,122,325
104 4,122,326
121 LM Re.29,815
121 P 4,122,327
4,122,328
370 4,122,329
449 4,122,330

CLASS 220

90.4 4,121,731
232 4,121,732

CLASS 221

37 4,121,726

CLASS 222

43 4,121,733
54 4,121,734
83.5 4,121,735
94 4,121,736
95 4,121,737
134 4,121,738
137 4,121,739
146 H 4,121,740
181 4,121,741
591 4,121,742

CLASS 224

1 R 4,121,743
45 R 4,121,744

CLASS 227

8 4,121,745

CLASS 228

9 4,121,746
17.7 4,121,747
102 4,121,748
173 A 4,121,749
219 4,121,750

CLASS 229

2.5 EC 4,121,751
27 4,121,752
37 R 4,121,753
38 4,121,754
4,121,755
44 CB 4,121,756
52 B 4,121,757

CLASS 232

17 4,121,758

CLASS 235

70 A 4,121,759
92 CA 4,122,332
92 PK 4,122,331
311 4,121,760

CLASS 236

12 R 4,121,761
49 4,121,762
87 4,121,763

CLASS 237

1 A 4,121,764

CLASS 238

14 4,121,765
110 4,121,766

CLASS 239

71 4,121,767
127.3 4,121,768
222.17 4,121,769
224 4,121,770
272 4,121,771
304 4,121,772
317 4,121,773
664 4,121,774

CLASS 241

30 4,121,775
46.11 4,121,776
58 4,121,777
79 4,121,778
79.2 4,121,779

CLASS 242

7.21 4,121,780
45 4,121,781
47.12 4,121,782
68.4 4,121,783
74 4,121,784
84.8 4,121,785
193 4,121,786

CLASS 244

35 R 4,121,787
50 4,121,788
118 P 4,121,790
118 R 4,121,789
120 4,121,791
122 B 4,121,792
149 4,121,793
153 A 4,121,794
213 4,121,795

CLASS 248

62 4,121,796
102 4,121,797
113 4,121,798
171 4,121,799
207 4,121,800
235 4,121,801
421 4,121,802
536 4,121,803

CLASS 249

187 R 4,121,804
197 4,121,805

CLASS 250

214 R 4,122,334
229 4,122,336
231 P 4,122,337
262 4,122,338
264 4,122,339
4,122,340
267 4,122,341
272 4,122,342
282 4,122,343
334 4,122,344
370 4,122,345
398 4,122,346
423 R 4,122,347
461 B 4,122,348
491 4,122,335
504 4,122,349
505 4,122,350
554 4,122,351
566 4,122,352

CLASS 252

8.55 D 4,122,020
8.6 4,122,018
8.8 4,122,019
26 4,122,021
28 4,122,022
59 4,122,023
62.1 P 4,122,024
173 4,122,025
299 4,122,026
4,122,027
301.1 W 4,122,028
309 4,122,029
313 R 4,122,030
313 S 4,122,031
321 4,122,032
400 A 4,122,033
402 4,122,034
414 4,122,035
421 4,122,036
429 R 4,122,037
431 C 4,122,038
435 4,122,039
447 4,122,040
449 4,122,041
513 4,122,042
527 4,122,043
532 4,122,044

CLASS 254

172 4,121,806

CLASS 260

22 A 4,122,051
23 EM 4,122,052
29.3 4,122,054
29.4 UA 4,122,053
4,122,055
29.6 NR 4,122,056
31.6 4,122,057
33.6 UB 4,122,058
37 EP 4,122,059
4,122,060
40 R 4,122,061
42.14 4,122,062
45.7 PH 4,122,063
45.75 S 4,122,064
4,122,065
45.85 R 4,122,066
112.5 S 4,122,077
121 4,122,078
153 4,122,079
239.55 C 4,122,080
287 B 4,122,081
4,122,082
294.8 A 4,122,083
294.8 G 4,122,085
294.8 J 4,122,084
306.7 R 4,122,086
325 R 4,122,087
327 B 4,122,088
328 4,122,089
332.1 4,122,090
332.2 A 4,122,091
340.5 R 4,122,092
343.3 P 4,122,093
345.6 4,122,094
346.11 4,122,095
346.75 4,122,096
405 4,122,097
408 4,122,098
4,122,099
4,122,100
4,122,101
4,122,102
4,122,103
412.4 4,122,104
413 4,122,105
429 R 4,122,106
429.3 4,122,107
448 A 4,122,108
448.2 S 4,122,109
449.5 4,122,110
463 4,122,112
465 D 4,122,113
465 H 4,122,114
544 Y 4,122,115
545 R 4,122,116
566 R 4,122,117
576 4,122,118
586 C 4,122,119
586 R 4,122,120
598 4,122,121
4,122,122
606.5 F 4,122,123
644 4,122,124
668 R 4,122,125
677 A 4,122,126
825 4,122,127
837 R 4,122,128
860 4,122,129
873 4,122,073
4,122,130
4,122,131
4,122,132
878 R 4,122,133
880 B 4,122,134
880 R 4,122,135
898 4,122,136

CLASS 264

22 4,122,137
25 4,122,138
44 4,122,139
65 4,122,140
89 4,122,141
97 4,122,142
104 4,122,143
123 4,122,144
174 4,122,145
245 4,122,146
255 4,122,147

CLASS 266

58 4,121,808
193 4,121,809
201 4,121,810
246 4,121,811

CLASS 267

35 4,121,812
57.1 A 4,121,813

CLASS 269

98 4,121,814
203 4,121,815
296 4,121,816
4,121,817

CLASS 270

54 4,121,818

CLASS 271

96 4,121,819
259 4,121,820

CLASS 272

3 4,121,821
78 4,121,822
93 4,121,825
117 4,121,826
137 4,121,827

CLASS 273

26 C 4,121,824
29 BF 4,122,451
63 E 4,121,828
95 A 4,121,829
138 A 4,121,830
160 4,121,831
171 4,121,832
175 4,121,833
249 4,121,823

CLASS 274

1 R 4,121,834
4,121,835
23 A 4,121,836
23 R 4,121,837

CLASS 277

3 4,121,839
4 4,121,840
38 4,121,841
112 4,121,842
176 4,121,838
200 4,121,843
212 FB 4,121,844
4,121,845
235 R 4,121,846

CLASS 279

2 R 4,121,847
60 4,121,848

CLASS 280

179 R 4,121,849
279 4,121,850
289 R 4,121,851
411 C 4,121,852
433 4,121,853
612 4,121,854
654 4,121,855

CLASS 282

1 R 4,121,856
11.5 A 4,121,857

CLASS 285

13 4,121,858
93 4,121,859
223 4,121,861
226 4,121,860
333 4,121,862

CLASS 290

1 A 4,122,353
31 4,122,354
38 C 4,122,355
52 4,122,356

CLASS 292

175 4,121,863
202 4,121,864

CLASS 294

2 4,121,865
19 R 4,121,866
82 R 4,121,867
116 4,121,868

CLASS 296

97 R 4,121,869
137 B 4,121,870

CLASS 297

408 Re.29,811

CLASS 301

105 R 4,121,871

CLASS 303

6 C 4,121,872
7 4,121,873
10 4,121,874

CLASS 305

39 4,121,875

CLASS 307

10 R 4,122,357
64 4,122,359
205 4,122,360

208 4,122,361
227 4,122,362
228 4,122,363
262 4,122,364

CLASS 308

3.8 4,121,876

CLASS 310

324 4,122,365

CLASS 312

19 4,121,877
341 R 4,121,878

CLASS 313

141 4,122,366
318 4,122,367
403 4,122,368
430 4,122,369
468 4,122,370

CLASS 315

5 4,122,372
5.41 4,122,373
84 4,122,371
98 4,122,374
4,122,375
167 4,122,376

CLASS 318

45 4,122,377
128 4,122,378
634 4,122,379
696 4,122,380

CLASS 320

48 4,122,381

CLASS 323

4 4,122,382
24 4,122,384
92 4,122,385

CLASS 324

0.5 H 4,122,386
10 4,122,387
20 R 4,122,383
54 4,122,388
65 R 4,122,389
4,122,390
78 Z 4,122,391
208 4,122,392

CLASS 325

324 4,122,393
344 4,122,394
453 4,122,395
492 4,122,396

CLASS 328

139 4,122,397

CLASS 330

107 4,122,398
149 4,122,399
207 P 4,122,400
257 4,122,401
288 4,122,402
289 4,122,403

CLASS 331

1 A 4,122,404
4,122,405
3 4,122,408
94.5 C 4,122,412
94.5 G 4,122,411
94.5 H 4,122,407
4,122,410
94.5 M 4,122,409
108 D 4,122,413
116 R 4,122,414

CLASS 332

37 R 4,122,415

CLASS 333

10 4,122,406
24 C 4,122,416
28 R 4,122,417
82 R 4,122,418
83 R 4,122,419

CLASS 335

80 4,122,420
213 4,122,421
4,122,422
234 4,122,423

CLASS 336

107 4,122,424
192 4,122,425

CLASS 337

163 4,122,426

CLASS 339

14 R 4,121,879
119 R 4,121,880

CLASS 340

1 R 4,122,427
3 C 4,122,428
3 R 4,122,429
5 R 4,122,430
15 4,122,432
15.5 MC 4,122,431
17 R 4,122,433
52 B 4,122,434
146.1 AB 4,122,441
146.1 C 4,122,358
146.3 H 4,122,443
146.3 SY 4,122,435
324 R 4,122,444
337 4,122,438
347 AD 4,122,439
4,122,442
347 DD 4,122,440
528 4,122,437
566 4,122,445
605 4,122,436

CLASS 343

7.7 4,122,448
8 4,122,449
17.1 R 4,122,450
18 E 4,122,452
100 SA 4,122,453
117 R 4,122,454
786 4,122,446
814 4,122,447

CLASS 346

74.1 4,122,455
4,122,456
75 4,122,457
4,122,458
140 R 4,122,459
4,122,460

CLASS 350

3.67 4,121,881
3.71 4,121,882
6.8 4,121,883
96.15 4,121,884

CLASS 351

177 4,121,885

CLASS 352

35 4,121,886

CLASS 353

27 R 4,121,887

CLASS 354

1 4,122,461
5 4,122,462
21 4,122,463
29 4,122,464
32 4,122,465
4,122,466
33 4,122,467
59 4,122,468
83 4,122,469
122 4,122,470
173 4,122,471
187 4,122,472
299 4,122,473
300 4,122,474
4,122,475

CLASS 355

14 4,121,888

CLASS 356

5 4,121,889
4,121,890
246 4,121,907

CLASS 357

16 4,122,476
17 4,122,486
19 4,122,479
38 4,122,480
43 4,122,481
46 4,122,482
49 4,122,483

CLASS 358

3 4,122,484
4 4,122,477
4,122,478
10 4,122,485
13 4,122,487
19 4,122,488
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PLANT PATENTS

06 : 4,323
18 : 4,320
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October 31, 1978 Volume 975 Number 5

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
May 2, 1978. *Acting Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of September 1978

Affirmed	229
Affirmed In Part	25
Reversed	73
Total	327

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 246,596, Re. S.N. 931,567, Filed Aug. 31, 1978, Cl. D23/19, COVER FOR SOLENOID OPERATED PILOT VALVE, Daniel H. Fialkowski, et al., Owner of Record: *Inventors,* Attorney or Agent: Paul F. Seibold, et al., Ex. Gp.: 290

3,097,488, Re. S.N. 935,084, Filed Aug. 18, 1978, Cl. 60/660, TURBINE CONTROL SYSTEM, Markus A. Eggenberger, et al., Owner of Record: *General Electric Company, Schenectady, N.Y.,* Attorney or Agent: John F. Ahern, et al., Ex. Gp.: 341

3,194,609, Re. S.N. 939,419, Filed Aug. 5, 1978, Cl. 305/57, SPROCKET AND CHAIN DRIVE, Lloyd Thurlow, Owner of Record: *Inventor,* Attorney or Agent: William A. Braddock, et al., Ex. Gp.: 311

3,632,538, Re. S.N. 937,677, Filed Aug. 28, 1978, Cl. 260/23 X, ORGANOTIN STABLIZER COMPOSITION CONTAINING MORE THAN 20% TIN AND RESIN COMPOSITIONS CONTAINING THE SAME, Otto Samuel Kauder, Owner of Record: *Argus Chemical Corporation, Brooklyn, N.Y.,* Attorney or Agent: John R. Janes, Ex. Gp.: 141

3,714,513, Re. S.N. 937,838, Filed Aug. 29, 1978, Cl. 361/415, PRINTED CIRCUIT CARD RETAINER AND RACK ASSEMBLY, Joseph Marconi, Owner of Record: *Inventor,* Attorney or Agent: Charles L. Gholz, Ex. Gp.: 217

3,808,178, Re. S.N. 931,355, Filed Aug. 7, 1978, Cl. 260/86, OXYGEN-PERMEABLE CONTACT LENS COMPOSITION METHOD AND ARTICLE OF MANUFACTURE, Norman G. Gaylord, Owner of Record: *Syntex (USA) Inc., Palo Alto, Calif.,* Attorney or Agent: Alan M. Krubiner, et al., Ex. Gp.: 144

3,809,344, Re. S.N. 930,647, Filed Jul. 31, 1978, Cl. 219/10.55, METHOD AND APPARATUS FOR TREATING HEAT-SENSITIVE PRODUCTS, Lennart Arvid Stenstrom, Owner of Record: *Alfa-Laval AB, Tumbia, Sweden,* Attorney or Agent: Cyrus S. Hapgood, et al., Ex. Gp.: 213

3,854,611, Re. S.N. 926,040, Filed Jul. 19, 1978, Cl. 214/302, METHOD AND APPARATUS FOR FEEDING CIGARETTES OR ANALOGOUS ARTICLES TO PACKING MACHINES OR THE LIKE, Gunter Wahle, Owner of Record: *Hauni-Werke Korber Co. KG, Hamburg, Germany,* Attorney or Agent: David S. Kane, et al., Ex. Gp.: 314

3,910,299, Re. S.N. 936,702, Filed Aug. 25, 1978, Cl. 137/13, TRANSPORTATION OF WAXY HYDROCARBON MIXTURE AS A SLURRY, James E. Tackett, et al., Owner of Record: *Marathon Oil Company, Findlay, Ohio,* Attorney or Agent: Joseph C. Herring, et al., Ex. Gp.: 241

3,935,466, Re. S.N. 940,156, Filed Sep. 5, 1978, Cl. 250/385, SMOKE DETECTOR ADAPTER TO A SMOKE SENSING APPARATUS, Yukio Tomioka, Owner of Record: *Hochiki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Eric H. Waters, et al., Ex. Gp.: 256

3,960,845, Re. S.N. 893,813, Filed Apr. 19, 1978, Cl. 260/239.1, PROCESS FOR PREPARING 7 BETA-ACYLAMINO-7 ALPHA-ALKOXYCEPHALOSPORINS OR 6 BETA-ACYLAMINO-6 ALPHA-ALKOXYPENICILLINS, Tetsuo Hiraoaka, et al., Owner of Record: *Sankyo Company Ltd., Tokyo, Japan,* Attorney or Agent: Robert D. Flynn, et al., Ex. Gp.: 122

3,979,359, Re. S.N. 940,450, Filed Sep. 7, 1978, Cl. 260/45.75, CARBOFUNCTIONAL SULFUR AND CARBOXYLATE BRIDGED TIN COMPOUNDS, Thomas G. Kugele, et al., Owner of Record: *Cincinnati Milacron Chemicals, Inc., Reading, Ohio,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 141

3,981,774, Re. S.N. 938,589, Filed Aug. 31, 1978, Cl. 195/49, FERMENTATION OF OXYGENATED HYDROCARBON COMPOUNDS WITH THERMOPHILIC MICROORGANISMS, Donald O. Hitzman, Owner of Record: *Phillips Petroleum Company, Bartlesville, Okla.,* Attorney or Agent: Donald J. Quigg, et al., Ex. Gp.: 172

3,997,307, Re. S.N. 936,674, Filed Aug. 24, 1978, Cl. 65/6, METHOD AND APPARATUS FOR MAKING GLASS FIBERS UTILIZING AN OSCILLATING SPINNER, Duane Harold Faulkner, et al., Owner of Record: *Johns-Manville Corporation, Denver, Colo.,* Attorney or Agent: Robert M. Krone, et al., Ex. Gp.: 173

4,004,778, Re. S.N. 930,655, Filed Jul. 31, 1978, Cl. 254/142, PORTABLE ROOF WINCH, George J. Steinhagen, Owner of Record: *Inventor,* Attorney or Agent: A. C. Ross, et al., Ex. Gp.: 315

4,027,287, Re. S.N. 936,968, Filed Aug. 25, 1978, Cl. 364/900, STORAGE-CONTROLLED OUTPUT DEVICE, Gerhard Dirks, Owner of Record: *Hale Bros. Associates, Inc., San Francisco, Calif.,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 237

4,033,746, Re. S.N. 922,124, Filed Jul. 5, 1978, Cl. 71/30, FOREST FERTILIZATION, Donald C. Young, et al., Owner of Record: *Union Oil Co., Los Angeles, Calif.,* Attorney or Agent: M. Howard Silverstein, et al., Ex. Gp.: 173

4,033,747, Re. S.N. 922,122, Filed Jul. 5, 1978, Cl. 71/30, SILVICULTURE FERTILIZATION, Donald Young, et al., Owner of Record: *one half to Union Oil Co., Los Angeles, Calif.; one half to the United States of America as represented by the Secretary of Agriculture,* Attorney or Agent: M. Howard Silverstein, et al., Ex. Gp.: 173

4,035,173, Re. S.N. 922,123, Filed Jul. 5, 1978, Cl. 71/30, SELECTIVELY THINNING AND FERTILIZING TIMBER FORESTS, Saburo Hashimoto, et al., Owner of

Record: *Union Oil Co., Los Angeles, Calif.,* Attorney or Agent: M. Howard Silverstein, et al., Ex. Gp.: 173

4,056,178, Re. S.N. 937,676, Filed Aug. 28, 1978, Cl. 192/58 B, MAGNETICALLY ACTUATED VISCOUS FLUID COUPLING, Rodney H. Detty, Owner of Record: *Eaton Corporation, Cleveland, Ohio,* Attorney or Agent: Robert J. McCloskey, et al., Ex. Gp.: 345

4,064,338, Re. S.N. 939,832, Filed Sep. 5, 1978, Cl. 526/230, METHOD FOR PREPARING BIOLOGICALLY ACTIVE COPOLYMERS OF TRIORGANOTIN ACRYLATES, David B. Russell, Owner of Record: *M & T Chemicals Inc., Greenwich, Conn.,* Attorney or Agent: Kenneth G. Wheeless, et al., Ex. Gp.: 144

4,092,081, Re. S.N. 938,241, Filed Aug. 30, 1978, Cl. 404/10, ROADWAY/TRAFFIC DELINEATOR, Donald W. Schmanski, Owner of Record: *Inventor,* Attorney or Agent: Vaugh W. North, et al., Ex. Gp.: 351

4,093,232, Re. S.N. 936,784, Filed Aug. 25, 1978, Cl. 273/121 A, PLAYER OPERATED GAME APPARATUS, David J. Nutting, et al., Owner of Record: *Bally Manufacturing Corporation, Chicago, Ill.,* Attorney or Agent: William E. Anderson, et al., Ex. Gp.: 334

PATENT NOTICES

Certificates of Correction for the Week of Oct. 31, 1978

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Re. 29,680	4,064,603	4,085,847	4,090,619
D. 247,818	4,066,597	4,085,975	4,090,817
D. 248,148	4,067,998	4,086,036	4,090,949
3,577,424	4,068,422	4,086,251	4,090,955
3,704,568	4,069,064	4,086,287	4,090,972
3,737,475	4,069,180	4,086,387	4,091,017
3,739,911	4,069,422	4,086,542	4,091,035
3,823,539	4,069,448	4,086,588	4,091,051
3,867,210	4,069,538	4,086,661	4,091,131
3,871,889	4,070,340	4,086,770	4,091,135
3,945,951	4,070,369	4,087,052	4,091,231
3,957,687	4,070,796	4,087,131	4,091,524
3,958,337	4,072,783	4,087,224	4,091,549
3,960,767	4,074,171	4,087,308	4,091,645
3,965,074	4,076,864	4,087,656	4,091,681
3,966,303	4,078,601	4,088,097	4,091,744
3,969,440	4,079,841	4,088,136	4,091,923
3,972,837	4,080,587	4,088,464	4,091,940
3,974,563	4,080,610	4,088,469	4,092,030
3,990,132	4,081,336	4,088,633	4,092,056
3,992,600	4,081,633	4,088,810	4,092,179
3,992,620	4,082,383	4,089,163	4,092,252
4,004,264	4,082,472	4,089,226	4,092,282
4,012,778	4,082,639	4,089,384	4,092,326
4,014,853	4,082,716	4,089,429	4,092,343
4,019,617	4,082,731	4,089,435	4,092,571
4,026,878	4,082,830	4,089,695	4,092,802
4,027,335	4,082,886	4,089,769	4,092,838
4,031,555	4,083,098	4,089,793	4,092,921
4,042,734	4,083,295	4,089,867	4,093,160
4,052,239	4,083,686	4,089,959	4,093,190
4,052,370	4,083,854	4,090,365	4,093,564
4,052,379	4,083,899	4,090,378	4,093,614
4,052,537	4,084,156	4,090,382	4,093,698
4,053,845	4,084,753	4,090,405	4,093,807
4,055,027	4,084,968	4,090,421	4,094,672
4,056,434	4,085,012	4,090,427	4,095,242
4,056,687	4,085,102	4,090,496	4,096,764
4,056,911	4,085,271	4,090,535	

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4,026,086. BUILDING BRICK. David Thomas Langley, Jr., 1809 Butts St., Georgetown, S.C. 29440.

4,065,840. APPARATUS FOR INTERCONNECTING A TELEPHONE LINE AND A PORTABLE CALCULATOR. Jeane Marie Rouiller, Convet, Switzerland. Correspondence to: Stevens, Davis, Miller & Mosher, P.O. Box 2627, Arlington, Va. 22202.

4,092,027. GOLD PRACTICE DEVICE. Lee T. Carter, 3400 Portola Drive, Sp. 11, Santa Cruz, Calif. 95062.

4,112,748. AUTOMATIC PORTABLE SOLID STATE VOLTAGE REGULATOR TESTER. Richard J. Walley, 6392 Marshall Ave., Buena Park, Calif. 90621.

The following two patents are offered by Philip Boone, 15 Fenwick Road, Winchester, Mass. 01890.

4,106,616. DEVICE FOR POSITIONING A CONTAINER OF SUPPLEMENTAL MATERIAL IN OPERATIONAL ALIGNMENT ADJACENT TO A TOILET-TISSUE HOLDER.

4,106,617. BATHROOM FIXTURE.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to Patent Counsel, Turbine Patent Operation, General Electric Company, 1 River Road, Building 18a–5th Floor, Schenectady, N.Y. 12345.

3,991,333. WINDING SUPPORT STRUCTURE FOR SUPERCONDUCTING ROTOR.

3,991,587. METHOD OF SUPPLYING CRYOGENIC FLUID THROUGH A TRANSFER JOINT EMPLOYING A STEPPED BAYONET RELATIVE MOTION GAP.

3,991,588. CRYOGENIC FLUID TRANSFER JOINT EMPLOYING A STEPPED BAYONET RELATIVE-MOTION GAP.

3,995,180. GENERATOR ROTOR OUTLETS FOR INCREASED VENTILATION.

4,018,059. CRYOGENIC FLUID TRANSFER JOINT EMPLOYING GASEOUS SEALS.

4,048,529. FLOW CONTROL DEVICE FOR SUPERCONDUCTIVE ROTOR REFRIGERANT.

4,054,809. STATOR CORE END MAGNETIC SHIELD FOR LARGE A.C. MACHINES.

4,089,653. APPARATUS FOR THE SEPARATION OF HYDROGEN SULFIDE FROM GAS MIXTURE INCLUDING CARBON DIOXIDE.

4,091,146. FLEXIBLE, LOW POROSITY AIRFOIL SKIN.

Applications for license may be addressed to: Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

3,812,314. HIGH POWER ELECTRICAL BUSHING HAVING A VACUUM SWITCH ENCAPSULATED THEREIN.

Application for license may be addressed to the General Electric Company, Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

D. 243,041. DESIGN FOR A LOOKING GLASS OR SIMILAR ARTICLE.

4,003,388. HAIR DRYER VARIABLE CONTROL.

4,088,869. DRYER TEMPERATURE LIMITER.

Gas Research Institute offers to grant nonexclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under these patents should be addressed to: Vice President, Operations, Gas Research Institute, 10 West 35th Street, Chicago, Ill. 60616, phone 312–567–6622.

3,055,209. METHOD FOR LOCATING LEAKS IN UNDERGROUND GAS CONDUITS.

3,120,589. SWITCH CONTROL APPARATUS, ESPECIALLY FOR GAS BURNER VALVES.

3,136,355. GAS IGNITION SYSTEM EMPLOYING PIEZOELECTRIC ELEMENT.

3,137,144. LEVEL CONTROL AND FAIL SAFE ARRANGEMENT FOR ABSORPTION REFRIGERATION SYSTEMS.

3,138,770. WAVE-COUPLING PLUG-IN APPARATUS FOR WAVE GUIDE COMMUNICATIONS THROUGH PRESSURIZED PIPE LINE.

3,142,332. GAS BURNER IGNITION SYSTEM.

3,142,782. TRANSISTOR SYSTEM FOR GAS IGNITION AND THE LIKE.

3,159,202. BURNER PILOT CONTROL MEANS.

3,164,445. GREASE VAPOR INCINERATOR.

3,170,631. HEAT AND PRESSURE SENSITIVE VALVE.

3,174,533. SPARK IGNITION SYSTEM FOR GAS BURNERS WITH IGNITION INDICATOR.

3,174,534. SPARK IGNITION SYSTEM FOR GAS BURNERS.

3,174,535. IGNITION SYSTEM FOR GAS BURNERS.

3,257,239. METHOD OF MAKING COMBINED FUEL CELL ELECTROLYE AND ELECTRODES.

3,264,864. APPARATUS FOR PINPOINTING LEAKS IN BURIED PIPES.

3,295,585. APPARATUS FOR SENSING THE COMPOSITION OF GASES, AND GAS BURNER SYSTEM EMPLOYING SAME.

3,306,596. HEATED-GAS SYSTEM WITH APPARATUS FOR REMOVING GAS-BORNE FOREIGN BODIES.

3,334,620. RADIANT OVEN.

3,347,647. CONVERSION OF SOLID FOSSIL FUELS TO HIGH-BTU PIPELINE GAS.

3,348,104. BIAS-CONTROLLED A.C.-OPERABLE VOLTAGE THRESHOLD CIRCUIT, AND SYSTEMS EMPLOYING SAME.

3,351,818. A.C.-OPERABLE VOLTAGE THRESHOLD CIRCUITS.

3,357,339. AUTOMATIC COFFEE MAKER.

3,375,081. GREASE INCINERATOR.

3,377,125. ELECTRICAL IGNITION SYSTEM FOR GASEOUS FUEL BURNERS AND THE LIKE.

3,384,068. GAS OVEN SYSTEM.

3,400,555. REFRIGERATION SYSTEM EMPLOYING HEAT ACTUATED COMPRESSOR.

3,402,704. GASEOUS FUEL ENGINE.

3,413,815. HEAT-ACTUATED REGENERATIVE COMPRESSOR FOR REGRIGERATING SYSTEMS.

3,421,868. FREE FALL SHALE HYDROGASIFICATION.

3,425,399. STRATIFIED CHARGE GAS ENGINE.

3,435,816. VENT ARRANGEMENT FOR SEALED COMBUSTION SYSTEMS.

3,437,085. SELF-CLEANING GAS OVEN SYSTEM AND GAS BURNER MEANS THEREFOR.

3,445,172. FAIL-SAFE SYSTEM.

3,458,445. ABSORPTION REFRIGERATION SYSTEM CONTAINING SOLUTIONS OF MONOETHYLAMINE WITH THIOCYANATES.

3,477,797. PROXIMITY-RESPONSIVE GAS BURNER IGNITER.

3,490,352. AIR BAFFLE APPARATUS.

3,507,725. PROCESS FOR REPAIRING GAS MAIN JOINTS.

3,526,285. ANGULARLY ADJUSTABLE AUGER HEAD.

3,527,199. GAS BURNER APPARATUS.

3,541,013. LITHIUM BROMIDE-LITHIUM THIOCYANATE-WATER COMPOSITION FOR AN ABSORBENT-REFRIGERATION SYSTEM.

3,554,301. OPTICAL AUGER GUIDANCE SYSTEM.

3,554,302. DIRECTIONAL CONTROL OF EARTH BORING APPARATUS.

3,556,917. HONEYCOMB INSULATION PANEL FOR CRYOGENIC TEMPERATURES.

3,559,724. COMFORT CONDITIONING SYSTEM.

3,587,756. GEODYNAMIC WING.

3,592,941. METHOD FOR PRODUCING ELECTRON FLOW IN CARBONATE ELECTROLYTE FUEL CELL.

3,609,087. SECONDARY ALCOHOL ADDITIVES FOR LITHIUM BROMIDE-WATER ABSORPTION REFRIGERATION SYSTEM.

3,621,665. THERMAL PUMP AND PROCESS.

3,621,666. COOLING APPARATUS AND PROCESS.

3,621,667. COOLING APPARATUS AND PROCESS.

3,677,026. INTERNAL COMBUSTION HEAT ENGINE AND PROCESS

3,677,027. INTERNAL COMBUSTION HEAT ENGINE AND PROCESS.

3,684,260. RADIATION REGENERATIVE BURNER.

3,690,113. GAS COOLING PROCESS AND APPARATUS.

3,703,886. PUMPLESS STRATIFIED CHARGE GAS ENGINE.

3,741,227. FLUID PRESSURE REGENERATOR AND PROCESS.

3,746,504. RADIANT GAS BURNER DEVICE FOR HEATING.

3,842,864. STOPPING APPARATUS FOR PIPE LINES.

3,865,070. DEVICE AND METHOD FOR CONVERTING HEAT FROM FUEL INTO VISIBLE LIGHT WITH CHANGEABLE COLORS.

3,891,403. OIL SHALE HYDROGASIFICATION PROCESS.

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3,907,980. THERMO-ELECTROCHEMICAL PROCESS FOR PRODUCING HYDROGEN AND OXYGEN FROM WATER.

3,922,215. PROCESS FOR PRODUCTION OF HYDROCARBON LIQUIDS AND GASES FROM OIL SHALE.

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National Technical Information Service

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

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U.S. DEPARTMENT OF AGRICULTURE
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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
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	New York Public Library (The Research Libraries)	(212) 790-6291
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Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 30, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-5-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-3-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-23-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-6-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-19-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-3-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-3-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	3-1-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	12-1-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-25-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-8-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during September 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 618, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,998,606 to 3,002,191, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

REISSUE PATENTS

GRANTED OCT. 31, 1978

ERRATA

For CLASS	See PATENT NO.
227–067	29,819

REISSUES

OCTOBER 31, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,816

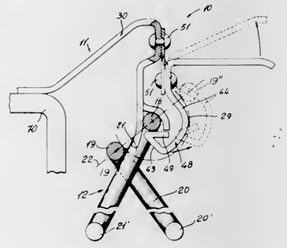
LOCKABLE HINGE STRUCTURE

Robert B. Winsor, Senneville, and George Thomson, Pierrefonds, both of Canada, assignors to IEC-Holden Ltd., Montreal, Canada

Original No. 3,987,516, dated Oct. 26, 1976, Ser. No. 628,897, Nov. 5, 1975. Application for reissue Nov. 21, 1977, Ser. No. 853,508

Int. Cl.[2] **E05D** *11/10*

U.S. Cl. 16—143 **14 Claims**



1. A lock hinge comprising a latch bracket and a base bracket; said base bracket having a pivot bar; said latch bracket having a saddle member defining a hinge seat with a mouth opening for receiving at least a portion of said pivot bar therein; a latch member having a lever end and a gate end; said latch member being interconnected to said saddle member by a flexible plate which is secured adjacent one end to said saddle member and adjacent an opposed end to said latch member, said gate end being displaceably held adjacent said mouth opening of said hinge seat by said flexible plate to retain said pivot bar captive in said hinge seat to interconnect said latch bracket to said base bracket, said gate end being displaceable away from adjacent said hinge seat mouth opening by [pulling] *displacing* said lever end in a predetermined direction against the spring load exerted by said [leaf] *flexible plate*.

Re. 29,817

DENTAL PIN

Nathaniel H. Lieb, Narberth, and Richard A. Wallace, Audubon, both of Pa., assignors to Star Dental Manufacturing Co. Inc., Conshohocken, Pa.

Original No. 3,861,043, dated Jan. 21, 1975, Ser. No. 350,235, Apr. 11, 1973. Application for reissue Jan. 12, 1977, Ser. No. 758,873

Int. Cl.[2] **A61K** *5/02*

U.S. Cl. 32—15 **11 Claims**



1. A dental pin comprising a shaft, a thread formed of said shaft, said thread having an arcuate outer edge, said shaft having a lower end, and means for tapping a thread in a tooth on said shaft, said tapping means comprising a cutting face on said thread, said cutting face being formed as the leading edge of said thread, said cutting face being formed at the lower end of said shaft, said shaft having a flute formed on the bottom thereof, said thread terminating at said flute, and said cutting face comprising the leading edge of said thread adjacent said flute.

Re. 29,818

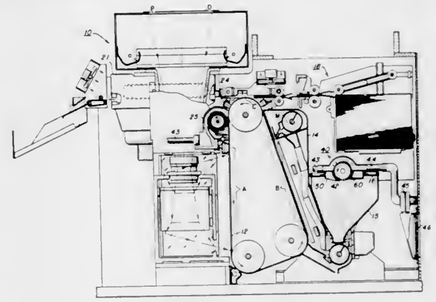
TONER-RECLAIMING SYSTEM

Dennis P. Gerbasi, West Webster, and James M. Donohue, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Original No. 3,641,979, dated Feb. 15, 1972, Ser. No. 847,861, Aug. 6, 1969. Application for reissue Feb. 28, 1977, Ser. No. 772,414

Int. Cl.[2] **G03G** *13/00*

U.S. Cl. 118—652 **2 Claims**



4. A particle reclaiming system for use in a machine having a working zone to which particles are supplied in excess of quantities needed and from where some of the excess particles are removed therefrom including,

a collecting surface adapted for movement through first and second spaces,

means for receiving the particles to be removed and for conveying the same into said first space for contacting said surface,

means for electrically charging the particles while in said first space for impressing an electrostatic charge thereon different from the electrostatic charge on said surface to which charged particles are attracted and adhere during movement thereof,

means contacting said collecting surface and adapted to wipe the particles from the surface, and

means for returning the removed particles to the working zone for reuse therein.

Re. 29,819

FASTENER ATTACHMENT SYSTEM NEEDLE CONSTRUCTIONS

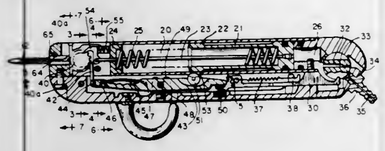
Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Original No. 3,895,753, dated Jul. 22, 1975, Ser. No. 382,963, Jul. 26, 1973. Continuation of Ser. No. 158,438, Jun. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 39,564, Apr. 17, 1970, Pat. No. 3,659,769. Application for reissue Jul. 22, 1977, Ser. No. 817,944

The portion of the term of this patent subsequent to Apr. 25, 1989, has been disclaimed.

Int. Cl.[2] B65C *7/00*

U.S. Cl. 227—67 30 Claims



26. A needle for dispensing attachments comprising

a body having a mounting tubular portion which is proportioned for the removable insertion of the needle into a dispensing device,

said needle including a central bore extending through said body and

an elongated slot communicating with said central bore and extending along said body,

said needle being provided with a cutting edge at least over a part of its mounting portion,

whereby the removability of said needle permits a worn needle and a dull point to be removed from the dispensing device and replaced by a substitute needle with a sharp point.

Re. 29,820

METHOD FOR THE PRODUCTION OF MATERIAL FOR PRINTED CIRCUITS

Jiri K. Konicek, Broad Brook, Conn., assignor to Perstorp, AB, Perstorp, Sweden

Original No. 3,990,926, dated Nov. 9, 1976, Ser. No. 579,911, May 22, 1975. Continuation of Ser. No. 283,955, Aug. 28, 1972, abandoned. Application for reissue Jun. 20, 1977, Ser. No. 808,331

Claims priority, application Sweden, Aug. 30, 1971, 10929/71

Int. Cl.[2] C23F *1/00;* C09J *5/06;* C25D *5/10*

U.S. Cl. 156—630 27 Claims

1. A method for the production of a material for printed circuits by transferring a metal layer via a temporary base to an insulating, final base, comprising electroplating a continuous layer of copper or a copper alloy to a temporary base of a throw-away type, in the form of a foil of aluminum or alloy thereof [have] *having* a thickness less than 200μm, electroplating copper or a copper alloy for at least one further step to form at least one further layer by changing at least one of the plating variables of current density and composition of the electroplating bath of the first step to improve the adhesion to the final base, said electroplated layers having a combined thickness of 1–17 μm measured by weight, placing at least one side of a material consisting of partially cured fiber reinforced thermosetting plastic towards such electroplated layers of copper or copper alloy of such a temporary base, laminating under heat and pressure to cure said plastic thereby forming the final base and bringing about an adhesion between the electroplated layers and the final base amounting to at least 6 lbs/in and removing the temporary base in connection with the printed circuit manufacturing by etching, stripping, tearing off or a combination thereof, leaving the thin, electroplated metal layers on the final base.

Re. 29,821

NOVEL PROCESSING AIDS FOR NATURAL AND SYNTHETIC RUBBER COMPOUNDS

Erwin Aron, Clifton, N.J., assignor to Technical Processing, Inc., Paterson, N.J.

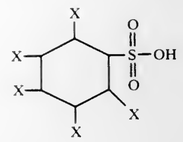
Original No. 3,787,341, dated Jan. 22, 1974, Ser. No. 263,752, Jun. 12, 1972. Application for reissue Jun. 17, 1975, Ser. No. 587,652

Int. Cl.[2] C08L *91/00*

U.S. Cl. 260—23.7 M 6 Claims

5. A composition [according to claim 1 to which is added] *of matter comprising:*

a. an alkali salt of an aromatic sulfonic acid having the formula



wherein x is hydrogen or a branched or straight chain alkyl group having from 4 to 14 carbon atoms;

b. a long chain fatty organic acid having a maximum of about 22 carbon atoms in the chain wherein the weight ratio of said fatty acid to said sulfonic acid is from 1:1 to 8.33:1; and

c. additional materials including aromatic esters, compounds with alcoholic and glycolic hydroxyl groups, potassium or sodium soaps of fats or fatty acids, a fatty acid, a metal soap of zinc, magnesium, calcium or barium, and a paraffin.

PLANT PATENTS

GRANTED OCTOBER 31, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,326

CHRYSANTHEMUM PLANT NAMED PARLIAMENT

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 16, 1977, Ser. No. 797,381

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 1 Claim

1. A new and distinct chrysanthemum cultivar substantially as herein shown and described, distinguished by its medium sized daisy-form blooms which have three to four rows of purple-pink ray florets, by its uniform 8 to 9 week year around flowering response, and by its ability to produce as many as 13 fully developed flowers on each terminal stem.

4,327

CHRYSANTHEMUM NAMED MINNGOPHER

Richard E. Widmer, St. Paul, Minn., assignor to Regents of The University of Minnesota, Minneapolis, Minn.

Filed May 16, 1977, Ser. No. 797,496

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—75 1 Claim

1. A new and distinct chrysanthemum cultivar substantially as herein shown and described, characterized by the dark red color of its medium sized blooms of decorative form displayed in an open spray formation on a short compact plant particularly suited for greenhouse pot plant culture and for outdoor garden growth.

4,328

CHRYSANTHEMUM NAMED BUCKEYE

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 17, 1977, Ser. No. 798,088

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 1 Claim

1. The new and distinct chrysanthemum cultivar substantially as herein shown and described, characterized by its large sized blooms of single flower form with dark red ray florets and yellow disc florets, by its excellent performance as a natural season garden chrysanthemum and as a spring, summer and fall potted plant, and by its uniform 7-week photoperiodic flowering response for greenhouse pot plant culture.

4,329

GRAPEVINE

Toru Kitahara, 86600 Avenue 72, Thermal, Calif. 92274

Filed Dec. 23, 1977, Ser. No. 863,852

Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—47 1 Claim

1. A new and distinct variety of grapevine characterized by its similarity to the Perlette grapevine, which it most nearly resembles, but distinguished therefrom by bearing grapes which ripen approximately 10 days later, are elongated and somewhat pear shaped, and are harder and crisper than the grapes of either the Perlette or the Thompson Seedless.

PATENTS

GRANTED OCT. 31, 1978

ERRATA

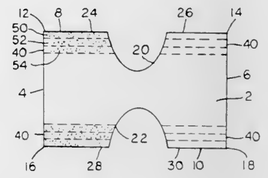
For CLASS	See PATENT NO.
128–134	4,122,587
123–200	4,122,669
405–261	4,122,681
405–150	4,122,682
405–142	4,122,683
085–030	4,122,752
273–001 E	4,123,050
273–001 R	4,123,051
400–328	4,123,182
432–001	4,123,219
422–059	4,123,224
422–098	4,123,225
422–274	4,123,228
422–199	4,123,229
096–029	4,123,330
526–024	4,123,396
528–127	4,123,420
528–065	4,123,421
528–273	4,123,422
528–071	4,123,423
528–337	4,123,424
562–503	4,123,456
562–466	4,123,457
562–595	4,123,458
562–595	4,123,459
353–026 R	4,123,699

PATENTS

GRANTED OCTOBER 31, 1978

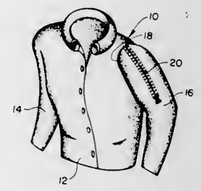
GENERAL AND MECHANICAL

4,122,552
DISPOSABLE UNDERGARMENTS
Fred Tedford, 2291 23rd St., Los Angeles, Calif. 90018
Filed Nov. 7, 1977, Ser. No. 848,812
Int. Cl.[2] A41B *9/00*
U.S. Cl. 2—78 R **6 Claims**



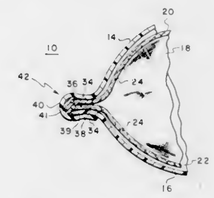
1. A disposable one-piece undergarment comprising a sheet of flexible light weight material having first and second edges parallel to each other and third and fourth edges parallel to each other and normal to and contiguous with said first and second edges, a first recess extending inwardly of said third edge and being generally parabolically shaped, a second recess extending inwardly of said fourth edge and being generally parabolically shaped and positioned complementarily to said first recess, said first recess dividing said third edge into fifth and sixth edge portions and said second recess dividing said fourth edge into seventh and eighth edge portions, each of said fifth, sixth, seventh, and eighth portions being provided with a band of connecting material extending from the respective first or second edge to the respective recess, each said band of connecting material having a plurality of narrower bands of strip-away material side-by-side thereon, whereby said fifth and sixth edge portions may be joined together by selective removal of said strip-away bands, and said seventh and eighth edge portions may be joined together by selective removal of said strip-away bands, thereby to provide said garment with a size desired.

4,122,553
CONVERTIBLE JACKET/VEST GARMENT
Alan R. Pitkanen, 3120 Ocean Dr., Manhattan Beach, Calif. 90266
Filed Apr. 29, 1977, Ser. No. 792,201
Int. Cl.[2] A41D *1/04*
U.S. Cl. 2—102 **3 Claims**



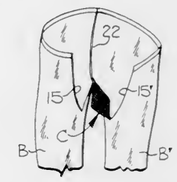
1. A garment having a first portion for covering the upper torso of a wearer and having arm holes in the sides of the first portion for receiving the arms of the wearer; a pair of sleeves attached to said first portion of the garment by respective shoulder seams which extend around said arm holes, each of said sleeves extending from the corresponding shoulder seam to the wrist of the wearer and each of said sleeves having a longitudinal linear slit therein extending down the outside of such sleeve from a point adjacent to the corresponding shoulder seam a predetermined distance along such sleeve to a point adjacent to the elbow of such sleeve; said slit having a selected length such that it may be opened to an opening corresponding in size to the corresponding arm hole in the side of said first portion of the garment; and a linear closure means attached to each of the sleeves for selectively opening and closing the corresponding slit.

4,122,554
DISPOSABLE COSMETIC GLOVE
Phyllis H. Stager, 7619 Chattington, Dallas, Tex. 75240
Filed Mar. 28, 1977, Ser. No. 782,004
Int. Cl.[2] A41D *19/02*
U.S. Cl. 2—164 **2 Claims**



1. A disposable cosmetic glove comprising, in combination, an outer glove shell characterized by superposed first and second layers of lotion impervious material, an inner glove lining disposed in nesting relation within the shell intermediate the first and second impervious layers, the lining being characterized by superposed first and second lotion absorbent layers, the shell and lining layers being sealed together along the marginal edge of the glove thereby defining a central hand receiving chamber; the lotion impervious layers being formed of thermoplastic material and the lotion absorbent layers being formed of fiber material, one of the thermoplastic layers being folded around the superposed marginal edge portions of the fiber layers and overlapping the other thermoplastic layer, the combination further including an adhesive deposit bonding the fiber layer edge portions to the thermoplastic edge portions, the overlapping thermoplastic edge portions being thermally fused together.

4,122,555
PANTY HOSE WITH CROTCH INSERT AND METHOD
Sam C. Safrit, Pfafftown; Kelly W. James, Creedmoor, and Roger D. Bullock, Stem, all of N.C., assignors to Alamance Industries, Inc., Burlington, N.C.
Filed Jun. 27, 1977, Ser. No. 810,524
Int. Cl.[2] A41B *9/04*
U.S. Cl. 2—401 **7 Claims**



1. A lower body garment comprising
(a) a pair of seamless knit legs,
(b) a panty portion formed of extensions integrally knit with said legs, said extensions being longitudinally slit and seamed together, and

(c) a separate single ply crotch insert of warp knit material of generally diamond-shaped configuration with pointed ends and first and second pairs of parallel side edges, said knitted crotch insert including wales extending parallel to said first pair of side edges, and courses extending perpendicular to the wales, said first pair of side edges comprising selvage edges, and said second pair of side edges comprising cut edges, and

(d) seam means connecting said first and second pairs of side edges to the slit edges of said extensions so that the crotch insert is positioned on the bias in the crotch portion of the panty.

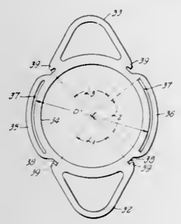
3. A method of forming a lower body garment from a pair of seamless tubular blanks, the garment including a panty portion and a pair of legs, said method comprising the steps of

(a) longitudinally slitting each of the seamless tubular blanks from one end and inwardly a predetermined distance,

(b) forming a crotch insert for said garment by severing a predetermined length from a strip of fabric having a width substantially corresponding to the desired width of the crotch insert, said predetermined length being severed from said strip along spaced apart, substantially parallel, diagonal lines extending across said strip so that said crotch insert is diamond-shaped with two of the sides of the diamond-shape being defined by the opposite side edges of said strip and the remaining two sides being defined by the diagonal cut lines, and

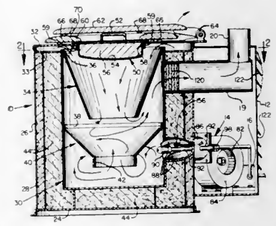
(c) sewing together the corresponding slit edges of the pair of tubular blanks while sewing the diamond-shaped crotch insert to the pair of tubular blanks between the slit edges and adjacent the ends of the slits.

4,122,556
INTRA-OCULAR LENS
Stanley Poler, 78 E. Second St., New York, N.Y. 10003
Filed Mar. 23, 1977, Ser. No. 780,445
Int. Cl.[2] A61F *1/16, 1/24*
U.S. Cl. 3—13 **32 Claims**



10. As an article of manufacture, a single unitary flexibly compliant mounting-adapter element having capability of assembly to another such mounting-adapter element for iris-stabilized mounting of an intra-ocular lens element of circular peripheral contour, comprising a circumferentially continuous centrally open inner-rim body formation of inner diameter less than the outer diameter of the lens element and for axial-retaining abutment with one axial side of the rim of the lens element, a pair of lens-positioning feet integral with diametrically opposed quadrant regions of said body formation and radially outwardly extending therefrom, and foot-engaging means integrally formed with opposed remaining quadrant regions of said body formation, each said foot-engaging means being at a radius greater than such lens-element outer radius and including means having interlocking engagement with one lens-positioning foot of another such mounting-adapter element when the latter is assembled to the other axial side of the lens element and when lens-positioning feet of the two such mounting-adapter elements are in quadrant-staggered interlace.

4,122,557
INCINERATOR
Frank N. Harris, 7700 SW. 69th Ave., Portland, Oreg. 97223
Filed Jul. 29, 1977, Ser. No. 820,347
Int. Cl.[2] A47K *11/02*
U.S. Cl. 4—111.3 **12 Claims**



1. In an incinerator,

a cylindrical, heat insulated bowl,

a tapered baffle in the bowl above the bottom of the bowl,

fuel injecting means for injecting fuel into the bowl below the baffle,

blower means for injecting air into the fuel,

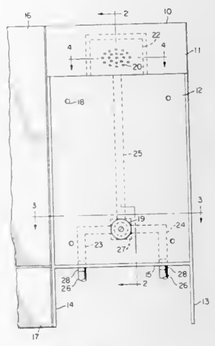
means for igniting the fuel and air below the baffle,

and exhaust means for exhausting products of combustion,

the blower means including a tubular outlet directed substantially tangentially into the bowl,

the fuel injecting means including a nozzle coaxial with the tubular outlet of the blower means.

4,122,558
WATER SHOWER UNIT
Menno Di Liberto, 45 Canterbury Dr., Athens, Ohio 47501, and Joseph P. Parisi, 87-60 97th St., Woodhaven, N.Y. 11421
Filed Dec. 23, 1976, Ser. No. 753,637
Int. Cl.[2] A47K *3/22*
U.S. Cl. 4—145 **20 Claims**



1. A shower unit comprising:

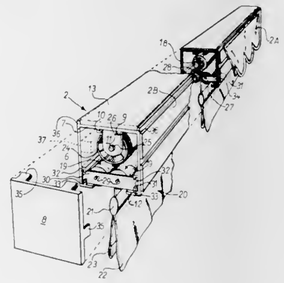
a panel member formed of plastic material having an upwardly extending ramp surface along a top margin thereof with a plurality of shower nozzles integrally formed in a defined area of the ramp surface;

a plenum assembly sealingly connected about the periphery of the defined area communicating with the nozzles;

open channel means sealingly connected along its exterior margins to the panel member forming a conduit from a water supply main to the plenum; and

a valve sealingly connected and mounted to the panel member interposed in the channel means for controlling the flow of water exiting from the shower nozzles.

4,122,559
SHOWER SCREENS
David B. Kelly, "Overwood", Wood La., Off Overdale Rd., Willaston-in-Wirral, Cheshire, England
Filed Mar. 28, 1977, Ser. No. 781,824
Claims priority, application United Kingdom, Apr. 3, 1976, 13581/76; Jun. 25, 1976, 26480/76
Int. Cl.[2] A47K *3/14, 3/22*
U.S. Cl. 4—149 **27 Claims**



1. In the known type of shower screen unit which includes an elongated casing which is adapted to be mounted horizontally, a roller shaft rotatably mounted within the casing, one side of a generally rectangular sheet of screen material being attached to the roller shaft so that as the roller shaft is rotated, the screen material is rolled up on said shaft or unrolled from said shaft, the improvement in said combination comprising at least one freely rotatable water absorbent roller,

(1) said water absorbent roller also mounted within said casing in a position parallel to said roller shaft,

(2) said water absorbent roller being positioned with respect to said roller shaft so that the water absorbent roller will press against the screen material as it is retracted into the casing,

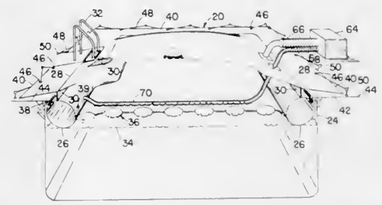
whereby any water on the surface of the screen material that contacts the water absorbent roller is absorbed by the water absorbent roller as the water absorbent roller rotates with the upward movement of the screen material.

4,122,560
QUICKLY TENSIONED DIVIDER LINE FOR SWIMMING POOLS
William H. Baker, 30 Honeysuckle Woods, Clover, S.C. 29710
Filed Jun. 7, 1977, Ser. No. 804,473
Int. Cl.[2] E04H *3/18*
U.S. Cl. 4—172 **10 Claims**



1. A swimming pool having the pool surface divided into lanes by a plurality of divider lines, comprising, in combination, a swimming pool having at least two opposite sides between which the divider lines extend; a plurality of means along each side for fixedly attaching the divider lines to fixed locations along said sides; and a plurality of quickly tensioned divider lines attached to said means along each side; the divider lines comprising, in combination, a first divider line section adapted for attachment to a first fixed location in a swimming pool; and a tensioning toggle attached to the line section and adapted for attachment to a second fixed location in a swimming pool, the line thereby being located in a divider line position in the pool; the toggle having a bifurcated inner first and second bifurcated outer toggle arms, the first toggle arm being pivotably mounted on the second toggle arm, and movable between retracted and extended positions, in the retracted position being axially coextensive over at least a part of its length with respect to the second toggle arm, and in the extended position being axially extended over at least a part of its length with respect to the second toggle arm; said first toggle arm having a pivot pin linking two portions of said first bifurcated toggle arm, and having first attaching means linked to the pivot pin for pivoting movement therewith with respect to the first toggle arm and nested between the bifurcated inner first toggle arm in the retracted position thereof; and second attaching means on the second toggle arm; the first toggle arm in the retracted position putting a divider line attached to one of the attaching means under relative tension, and in the extended position putting a divider line attached to one of the attaching means under relative slack; and means movable between positions retaining the first toggle arm in the retracted position and releasing the toggle arm from the retracted position to permit it to enter the extended position.

4,122,561
FLOATABLE COVER CAPABLE OF PARTIALLY OR FULLY COVERING SWIMMING POOLS
William D. Barr, 16614 Meadow Rd., Lynnwood, Wash. 98036
Filed Feb. 2, 1977, Ser. No. 764,749
Int. Cl.[2] E04H *3/19, 3/16*
U.S. Cl. 4—172.12 **21 Claims**



1. A floatable cover capable of partially or fully covering swimming pools and the like comprising:

a. a cover sheet of non-porous flexible material which may assume an arched configuration over the pool and having a periphery having the general shape of the pool;

b. an air tube in the approximate shape of the perimeter of the pool and dependently attached at the cover sheet perimeter to the under surface of the cover sheet to abut the interior perimeter of the pool;

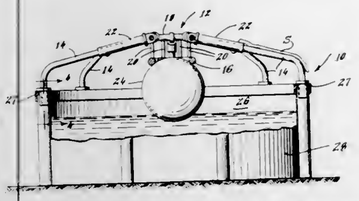
c. means for filling the air tube with air having a flexible air feeder tube entering the cover on one side and extending to a point in the air tube on the opposite side of the pool to first introduce air into the latter side of the air tube to inflate that side first so that the cover will automatically draw itself over the pool when the air is first introduced to the deflated cover; and

d. means for introducing air beneath the cover sheet, whereby the cover sheet, upon introduction of air, assumes an arched shape to shed rain and other contaminants falling on the cover sheet.

4,122,562
SUPPORT FRAME AND POOL COVER
Anthony Sorrentino, 45 Pearwood Dr., Huntington Station, N.Y. 11746
Filed May 19, 1977, Ser. No. 798,366
Int. Cl.[2] E04H *3/19*
U.S. Cl. 4—172.12 **6 Claims**

1. A pool cover for a pool having a perimeter, said pool cover comprising a pool frame and a sheet means which fits over said pool frame, said pool frame including a central ring, a plurality of tubular extensions pivotally coupled to said ring,

a floatation member adapted to fit into said ring and adapted to float on the pool water to support at least part of the weight of



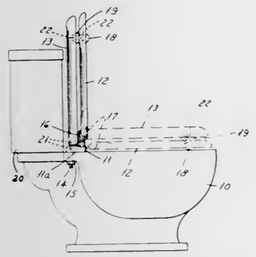
said frame and sheet means, and a plurality of tubular supports each adapted to be secured to a respective one of said extensions and to be secured to the perimeter of the pool.

4,122,563

TOILET SEAT ASSEMBLY

C. Evan Johnson, Onekama, Mich., assignor to Hitachi Magnetics Corp., Edmore, Mich.

Filed Dec. 10, 1976, Ser. No. 749,301
Int. Cl.[2] A47K *13/12*
U.S. Cl. 4—236 **4 Claims**



1. A toilet seat assembly comprising a toilet seat, a cover for said seat, and a hinge connecting said cover to said seat, said hinge having a stationary portion which includes means for mounting said hinge on a toilet bowl, a first magnetic latch positioned between the stationary portion of said hinge and the edge of said cover adjacent said hinge, said latch comprising a magnet securely positioned on one or the other of said stationary hinge portion or cover and a means securely position on the other of said stationary hinge portion or cover and in vertical alignment with said magnet when said cover is in vertical position, said first magnetic latch being operable to maintain said cover in vertical position when the assembly is mounted on a toilet bowl, and a second magnetic latch positioned between said cover and said seat at a point spaced from said hinge, said second magnetic latch being operable to maintain said seat and cover in close proximity to each other.

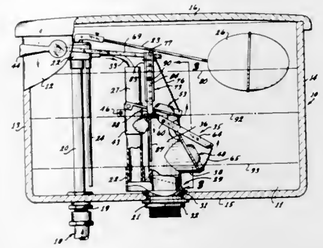
4,122,564

DUAL DISCHARGE VALVE UNIT

Lyle F. Addicks, 12313 Brookshire Ave., Downey, Calif. 90242; Bennie Gift, 9527 Brock Ave., Downey, Calif. 90240, and William R. DiCicco, Jr., 7033 Stewart & Gray Rd. #46, Downey, Calif. 90241

Filed Sep. 23, 1977, Ser. No. 836,086
Int. Cl.[2] E03D *1/14*
U.S. Cl. 4—326 **8 Claims**

1. A selective dual discharge flap valve unit for water flush tanks comprising: a central upright drain pipe having an upper valve port on the top thereof and a lower valve port on the side thereof; upper and lower hingedly mounted flap valves respectively seated on said upper and lower valve ports; a lower having a slot on one end thereof pivotally mounted on the side of said drain pipe; an upright rod having an intermediate shoulder disposed with its lower end portion loosely fitted in the slot of said lever; a lower chain connecting the end of said lower



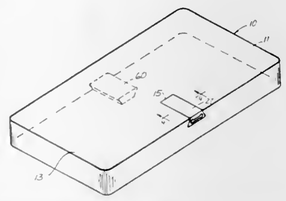
flap valve to the end of said lever; and an upper chain connecting the end of said upper flap valve to the upper end portion of said rod; said rod being vertically movable in either direction to respectively selectively lift said upper and lower flap valves.

4,122,565

MATTRESS ASSEMBLY TO ACCOMMODATE A BEDPAN

Blanche E. Hoben, 1748 Evergreen, Walla Walla, Wash. 99362

Filed Nov. 3, 1977, Ser. No. 848,117
Int. Cl.[2] A61G *7/02*
U.S. Cl. 5—90 **5 Claims**



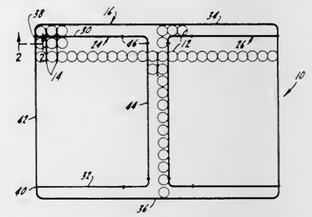
1. A mattress assembly to accommodate a bedpan comprising:
- a single unitary mattress having an upper patient support surface and a parallel bottom surface;
- an elongated cavity of a prescribed cross section formed in the upper surface extending from the central area of the mattress to one side of the mattress for receiving the bedpan, said cavity having a bottom wall spaced upwardly of the bottom surface and substantially parallel with the top surface of the mattress for supporting the bedpan;
- said cavity further including two countoured side walls;
- a first permanent magnet mounted in the bottom wall of the cavity;
- a mattress insert having a cross section equal to or slightly larger than that of the cavity;
- said insert being slidably received in the cavity and having top and bottom surfaces and contoured sides for permitting horizontal sliding movement of the mattress insert in the cavity from a closed position totally filling the cavity and an open position to permit the placement of a bedpan in the cavity supported by the bottom wall with an upper rim of the bedpan being substantially flush with the upper surface of the mattress, and
- a second permanent magnet mounted on the bottom of the mattress insert for attracting the first permanent magnet to hold the mattress insert firmly in place when the mattress insert is in the closed position.

4,122,566

FOUNDATION UNIT HAVING A POSTURIZED INNER BORDER

Chester R. Yates, Carthage, Mo., assignor to Steadley Company, Inc., Carthage, Mo.

Filed Mar. 16, 1977, Ser. No. 778,002
Int. Cl.[2] A47C *23/04*
U.S. Cl. 5—260 **10 Claims**



1. In a spring unit having a plurality of parallel longitudinal columns and transverse rows of coil springs, each row and column being the width of at least one coil spring, and top and bottom perimeter border members connected to the outer edges of the coil springs in the terminal longitudinal columns and transverse rows thereof, the improvement comprising:

top and bottom recurvate inner border members positioned to coact with at least some of the coil springs when depressed for increasing the depth dimensional firmness of the unit, each member having a pair of parallel side elements extending parallel to, but spaced from, the perimeter border members, each having free end portions of said side elements adjoining a single section of an adjacent perimeter border member, and each having a cross-connecting element uniting said side elements interior of, spaced from and unattached to the perimeter border members, and

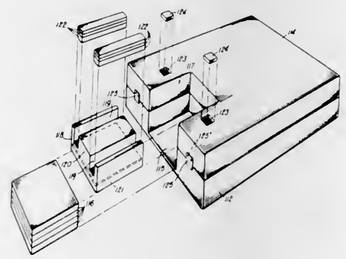
means joining the free end portions of each of said inner border members to the single section of the adjacent perimeter border member.

4,122,567

ARTICULATED BED

Paul B. Hanson, 2761 Eastwood Dr., Decatur, Ga. 30032

Continuation-in-part of Ser. No. 702,022, Jul. 2, 1976, Pat. No. 3,991,428, which is a division of Ser. No. 533,980, Dec. 18, 1974, which is a continuation of Ser. No. 406,567, Oct. 15, 1973, abandoned. This application Aug. 2, 1976, Ser. No. 710,597
Int. Cl.[2] A47C *27/00*
U.S. Cl. 5—345 R **12 Claims**



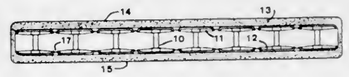
1. An improved articulated bed, comprising:
- (a) a main mattress support having flat top and bottom surfaces and a first cavity disposed in one of its ends;
- (b) a main mattress on said top surface and having a second cavity disposed along one of its ends in registry with said first cavity;
- (c) removable support means within the first cavity;
- (d) removable mattress means within said second cavity and being supported on said removable support means, said support means and said mattress means being selectively removable from said respective cavities to facilitate use of said main mattress and said cavities for sexual intercourse; said removable support means includes a plurality of pads stacked one on the other.

4,122,568

MATTRESS OF THE HARD SURFACE TYPE

José R. R. Bastos, and Eduardo R. Bastos, both of 16 Aurelino Leal St., Rio de Janeiro, Brazil

Filed Jun. 10, 1977, Ser. No. 805,469
Int. Cl.[2] A47C *27/04*
U.S. Cl. 5—345 R **5 Claims**



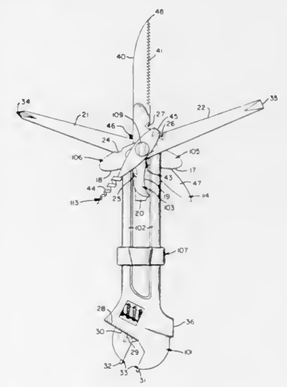
1. A mattress of the hard-surface type comprising a plurality of vertical rigid supporting members, each supporting member including a vertically disposed post and a rigid, flat platform at the upper and lower ends of said posts, said supporting members arranged side-by-side in a plurality of longitudinal and in transverse rows, the edges of the upper and lower platforms disposed adjacent related edges of other platforms in said longitudinal and transverse rows and spaced from said adjacent edges to provide flexability for said mattress, said upper and lower platforms forming the upper and lower planar surfaces of said mattress, including connecting means comprises at least one pin an at least one opening on each edge of said upper and lower platforms whereby the pins of one platform engages in a related opening of an adjacent platform.

4,122,569

INTEGRATED UNIVERSAL TOOL

Thomas H. Hitchcock, Box 8644, San Marino, Calif. 91108

Filed May 27, 1976, Ser. No. 690,799
Int. Cl.[2] B25F *1/04*
U.S. Cl. 7—134 **5 Claims**



1. A composite hand tool comprising: a frame, open at one end and closed at the opposite end thereof; said frame compris-

ing a pair of rails extending between said open and said closed end;

a first tool element forming a part of said closed end of said frame;

a first axle means mounted in and bridging said open end of said frame;

a second tool element pivotally mounted on said first axle means and being positionable thereon for storage nesting between said rails;

a second axle disposed in said second tool element and perpendicular to the axis of said first axle, said second axle forming a universal joint with said first axle;

a plurality of additional tool elements mounted on said second axle, each of said plurality of additional tool elements being individually articulatable on said second axle selectively to a use position and a storage position; and;

a keeper slidably disposed about said frame and being positionable thereon for holding any of said plurality of tool elements rigid and in an adjacent and parallel position relative to said frame when said tool elements are in said storage position and holding any extended tool elements in place in the use positions thereof, said keeper being slidably movable to another position on said frame whereby said second tool element is rotatable freely on said first axis and said plurality of additional tool elements may be rotated about said second axle unhindered.

4,122,570

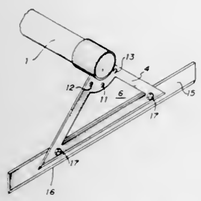
CULTIVATING SYSTEM

Francis P. Otken, 6611 Joliet Dr., Lubbock, Tex. 79413, and Henry L. Otken, 134 McGehee Dr., Baton Rouge, La. 70815

Filed Mar. 7, 1977, Ser. No. 775,376

Int. Cl.[2] B25F *1/02*

U.S. Cl. 7—114 **14 Claims**



1. An improved hoe for scraping and chopping soil and capable of having an implement selectively mounted thereto comprising:

an elongated rigid handle;

a head having a portion dimensioned to receive the end of said handle and including a working section disposed generally normal to the length of said handle and having the shape of a truncated isosceles triangle, said working section also defining an aperture therethrough having boundaries geometrically similar in shape to the outer periphery of said working section, said aperture having sufficient width to permit the passage of earth therethrough when the hoe is used for scraping; and

a chopping edge defined by the intersection of two planar cutting surfaces integrally formed and extending along the lower portion of said working section, said cutting surfaces on said working section disposed such that said chopping edge is applied substantially normally to the earth when the tool is used for chopping;

an implement constructed for being removably attached to said working section, said working section dimensioned to provide structural support for and to receive said implement; and

means for removably fastening said implement to said working section to perform a selected function.

4,122,571

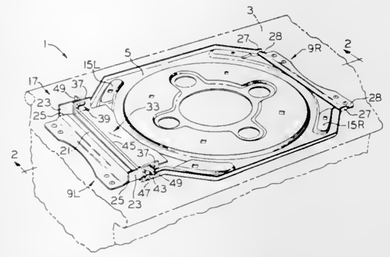
BOAT SEAT LATCHING ASSEMBLY

Denis S. Moeser, Clayton, Mo., assignor to Leisure Products, Inc., St. Louis, Mo.

Filed Jul. 11, 1977, Ser. No. 814,680

Int. Cl.[2] B63B *29/00*

U.S. Cl. 9—7 **21 Claims**



1. A latching assembly for rigidly mounting a seat on a boat thwart or the like comprising a base adapted to rest on top of the thwart and to have the seat secured thereto, a pair of keepers adapted to be mounted on top of the thwart for securing opposite sides of the base to the thwart, at least one latch mounted on one of said opposite sides of the base, the latch being selectively movable from a retracted position to an extended latching position in which the latch projects beyond the respective side of the base and underlies one keeper thereby to prevent vertical movement of the base relative to the thwart, and means for locking the latch in its latching position, the end of the latch being adapted to abut its respective keeper to block side-to-side movement of the base on the thwart when the latch is locked in its latching position, and the sides of the latch being adapted to abut the keeper to block movement of the base on the thwart in a front-to-back and back-to-front direction when the latch is in its latching position.

4,122,572

ADVANCING MECHANISM FOR AUTOMATIC SCREW THREAD CUTTING MACHINES

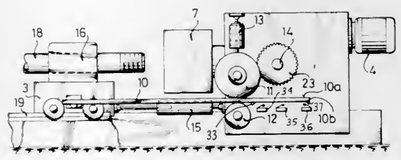
Kurt Pauls, Langenfeld, Fed. Rep. of Germany, assignor to Kieserling & Albrecht, Solingen, Fed. Rep. of Germany

Filed Jul. 28, 1977, Ser. No. 819,827

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2638626

Int. Cl.[2] B23G *11/00;* **B23Q** *5/26*

U.S. Cl. 10—105 **8 Claims**



1. In an automatic screw thread cutting machine, a combination comprising support means; clamping means mounted on said support means and adapted to carry an elongated workpiece; machine housing means mounted on said support means; a spindle mounted in said machine housing means for rotation about its axis and being arranged coaxial with a workpiece carried by said clamping means axially spaced therefrom, one of said two means mounted on said support means being movable in direction of said axis towards the other of said two means; a threading tool carried by an end of said spindle facing said clamping means; a drive motor; a speed reducing transmission between said drive motor and said spindle; and advancing means for moving said one of the two means mounted on said support means towards the other of said two means and including at least one exchangeable friction wheel having a smooth peripheral friction surface, a further speed reducing transmission means between said spindle and said friction wheel, and a friction surface extending in said direction, engaging with said friction wheel and connected to one of the first-mentioned two means.

4,122,573

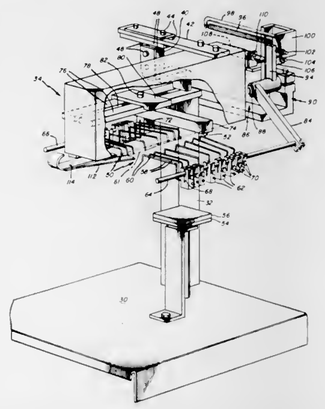
APPARATUS FOR STIFFENING SHOE INSOLES

Leo F. Stanton, Newburyport, Mass., assignor to Bush Universal, Inc., Woburn, Mass.

Filed Feb. 3, 1977, Ser. No. 765,095

Int. Cl.[2] A43D *31/00*

U.S. Cl. 12—18.3 **21 Claims**



1. An apparatus for applying a strip of externally activatable material to the bottom of an insole to form a shank in situ on the bottom of the insole, said strip including an externally activatable matrix surrounded by a sleeve, said apparatus comprising:

means for resiliently urging the strip toward, and for retaining the strip in, a predetermined position on the bottom of the insole; and

activating means, disposed at a location spaced from said urging and retaining means, for generating an external stimulus and directing said external stimulus toward said strip to activate said matrix while the strip is retained in said predetermined position.

4,122,574

METHOD OF MAKING FOOTWEAR

Victor L. Karalis, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Apr. 14, 1977, Ser. No. 787,408

Int. Cl.[2] A43D *9/00;* **A43C** *13/08*

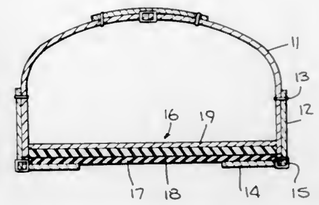
U.S. Cl. 12—142 RS **6 Claims**

1. The method of making an article of footwear comprising:

stitching a first strip having an outer surface comprising uncured elastomeric material to the lower edge of an upper of an article of footwear;

stitching a second strip having inner and outer surfaces comprising uncured elastomeric material to said first strip at approximately a right angle thereto;

attaching said inner surface of said second strip to the bottom surface of an insole; and



attaching said outer surface of said second strip to the top surface of an outsole.

4,122,575

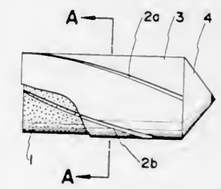
TUBE CLEANING MATERIAL

Teikichi Sagawa, Chigasaki, Japan, assignor to Nihon Pipeline Service Kabushiki Kiahsa, Tokyo, Japan

Filed May 9, 1977, Ser. No. 794,735

Int. Cl.[2] B08B *9/04*

U.S. Cl. 15—104.06 R **3 Claims**



1. A tube cleaning material comprising:

(a) a cylindrical body, the body being formed from a compressible elastic material and having a diameter somewhat larger than the inner diameter of a tube to be cleaned;

(b) at least one spiral groove in the peripheral surface of said cylindrical body extending in the same direction from the front to the rear end of said cylindrical body, and

(c) a polishing member provided on the surface of said cylindrical body,

wherein said groove has a width and depth which are increasingly larger toward the front end of said cylindrical body.

4,122,576

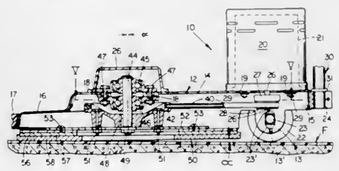
HIGH-SPEED FLOOR TREATING MACHINE

John F. Bevington, Toledo; Michael Savidge, Oregon, and Paul Meeker, Toledo, all of Ohio, assignors to The National Super Service Company, Toledo, Ohio

Filed Jul. 11, 1977, Ser. No. 814,158

Int. Cl.[2] A47L *11/162*

U.S. Cl. 15—49 R **29 Claims**

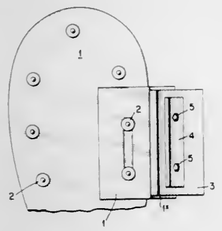


1. In a floor treating machine comprising:

A. a frame,

B. a guiding and control handle attached to said frame,
C. a supporting means of said frame,
D. an electric motor mounted on said frame,
E. a driving means rotated by said motor and mounted on said frame forwardly of said supporting means, and
F. a floor contacting means releasably attached to the floor side of said driving means,
the improvement comprising:
G. means for rotating said floor contacting means at a speed greater than about 600 rpm,
H. means whereby the angle of the plane of rotation of said floor contacting means is preset to be less than about 10° to the plane of the floor being treated, and
I. means for balancing the weight of said machine on said supporting means whereby the majority of the weight of said machine is supported by said supporting means.

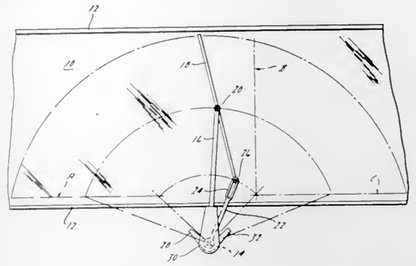
4,122,577
GOLF SHOE WIPING ATTACHMENT FOR GOLF CLUB HEADS
Salvadore Catania, 67 Wall St., New York, N.Y. 10005
Filed Jun. 24, 1976, Ser. No. 699,251
Int. Cl.[2] A46B *17/02;* **A63B** *57/00*
U.S. Cl. 15—160 **2 Claims**



1. A wiping attachment adapted to be attached to a golfer's shoe for cleaning golf club heads, comprising a plate formed with an elongated slot of such length and width to receive and to be frictionally held by two spaced spikes projecting from the underside of a golfer's shoe, said plate carrying at one side an upwardly and outwardly extending holding plate that would project at an incline away from the golfer's shoe, a wiping element, and means to secure the wiping element to the outer face of said holding plate with a portion of the wiping element extending thereabove, the wiping element being operative to clean a golf club head by a sweeping movement of the head against the same.

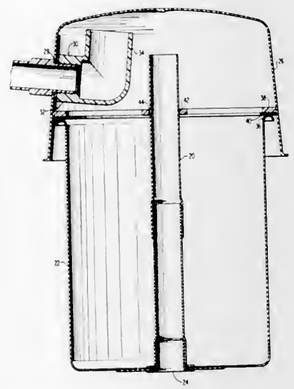
4,122,578
WINDOW WIPER ASSEMBLY
John E. Pretty, Brentwood, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 24, 1977, Ser. No. 827,401
Claims priority, application United Kingdom, Nov. 30, 1976, 49804/76
Int. Cl.[2] B60S *1/32, 1/40*
U.S. Cl. 15—250.23 **5 Claims**

5. In a vehicle window wiper assembly having a wiper blade reciprocable in substantially a circular arc,
a linkage for controlling the motion of the wiper blade, comprising:
a shaft rotatable in alternate directions between first and second positions,
an arm secured to the shaft for rotation therewith,
a wiper blade pivotally connected to the arm at a fixed first location spaced from the shaft, a radius arm mounted on the shaft for rotations relative thereto, a sliding connection between the radius arm and the wiper blade at a second location spaced from the shaft and from the first location, and stop means limiting movement of the radius



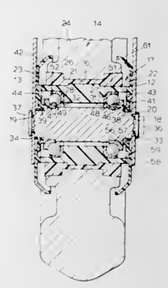
arm to an arc less than the arc between the first and second positions of the shaft.

4,122,579
STEAM CLEANER DUMP BUCKET
Carl Parise, Reno, Nev., assignor to Parise & Sons, Inc., Reno, Nev.
Continuation of Ser. No. 570,973, Apr. 23, 1975, abandoned, which is a continuation of Ser. No. 476,029, Jun. 3, 1974, Pat. No. 3,911,524. This application Dec. 21, 1976, Ser. No. 753,164
The portion of the term of this patent subsequent to Oct. 14, 1992, has been disclaimed.
Int. Cl.[2] A47L *7/00, 9/10*
U.S. Cl. 15—353 **1 Claim**



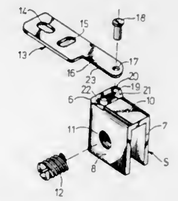
1. A dump bucket for a steam cleaner, said dump bucket comprising:
an upwardly open, lower, cup-shaped member having an aperture in the bottom thereof;
a hollow riser tube fixed to the bottom of said lower cup-shaped member, being open to said aperture and extending upwardly therefrom to a height above the open top of said lower cup-shaped member;
a downwardly open, upper cup-shaped member, said upper cup-shaped member having an aperture in the side thereof;
an inwardly extending annular shelf carried by said upper cup-shaped member on the inner side surface of said upper cup-shaped member above said lower cup-shaped member, extending the full circumference of said upper cup-shaped member and contacting said lower cup-shaped member in an air-tight seal;
an L-shaped hollow connector, means for mounting said L-shaped hollow connector to the wall of the upper cup-shaped member with a first leg of which extending inwardly from said aperture in said upper cup-shaped member and a second leg of which extends upwardly from said first leg stopping short but in proximity to the inner surface of the top of said upper cup-shaped member; and
strut means extending across said upper cup-shaped member from one portion of said annular shelf to another portion thereof and being integral therewith, said strut means intersecting said riser tube and being apertured to receive the upper end of said riser tube;
whereby, if vacuum is applied to the aperture in said lower cup-shaped member and a steam cleaner vacuum wand is connected to the exterior end of said first leg of said L-shaped hollow connector, dirty water will forced through said L-shaped hollow connector and sprayed against the inner surface of the top of said upper cup-shaped member, after which it will run down the sides of said upper and lower cup-shaped members without going down said hollow riser tube.

4,122,580
SOLID AXLE WHEEL SUPPORT AND SEALED BEARING CONSTRUCTION
John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.
Filed Jun. 15, 1977, Ser. No. 806,903
Int. Cl.[2] B60B *33/00*
U.S. Cl. 16—46 **4 Claims**



1. A wheel construction for a tire having a central coaxial opening therethrough, comprising:
a cylindrical sleeve fixedly disposed in said central opening in said tire, said sleeve having a portion of reduced inside diameter spaced from both axial ends thereof;
a pair of outer bearing races snugly disposed within said sleeve against the opposite axial ends of said portion of reduced diameter;
a solid cylindrical axle having spaced portions of reduced diameter defining spaced shoulders near the opposite ends thereof, said axle being disposed coaxially within and spaced from said reduced portion of said sleeve and extending axially beyond both ends thereof;
a pair of inner bearing races encircling said axle and radially aligned with said outer bearing races and antifriction means positioned between respective pairs of said bearing races;
a pair of axially spaced first upset portions on said axle located between said shoulders and pair of inner bearing races to fixedly hold said inner bearing races to said axle, said first upset portion defining a seal shoulder between said inner bearing races at one end of said axle and the respectively adjacent shoulder and including a generally circular and resiliently flexible end cap encircling said axle and bearing against said seal shoulder;
frame legs encircling said axial extensions of said axle and bearing snugly against said shoulders and a second upset portion at the end of each axial extension bearing against the leg adjacent thereto and holding same firmly against the respectively adjacent shoulder, said end cap having a portion thereof extending axially outwardly from said shoulder to bear against the inner face of the axially adjacent frame leg and said end cap further having an annular seal ring on the inner surface thereof bearing against the adjacent end of said cylindrical sleeve, the parts being so proportioned that when said frame leg is in position against said shoulder, the end cap is urged snugly against the seal shoulder and the annular seal ring thereof urged against the adjacent end of said cylindrical sleeve;
whereby said inner bearing races are locked permanently to said axle and said frame legs are locked permanently and firmly with respect to said axle and through said axle held rigidly with respect to each other all by the material of said solid axle.

4,122,581
FURNITURE HINGE
Willi Pittasch, Herford, Fed. Rep. of Germany, assignor to Richard Heinze, Fed. Rep. of Germany
Filed May 27, 1976, Ser. No. 690,526
Int. Cl.[2] E05D *5/02*
U.S. Cl. 16—158 **19 Claims**



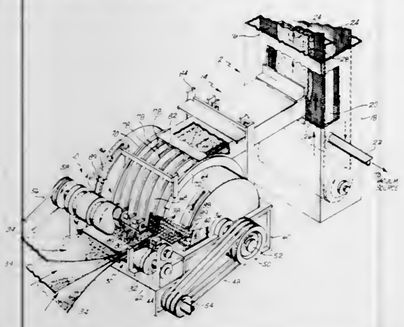
1. A hinge for pivoting and guiding a furniture door on a furniture body which encloses a space defined by walls and closed by a door, including in combination:
a first hinge member attachable to the inner surface of one of said walls of said furniture body inside said body and including a flat bracket which is disposed at right angle to a pivot axis at one end of said bracket; and
a second unitary hinge member attachable to the furniture door and being pivotally connected to the bracket at said pivot axis by a pivot pin,
said second hinge member being formed by a U-profile having two arms with one of said arms forming first wall means abutting the door outside face and visible when the door is closed,
with said arms connected to each other by a yoke forming second wall means abutting a side face of the door, and with said two arms of said U-profile, which encloses the door in form of a clamp, being connected to each other additionally by a stiffening web forming third wall means at right angles to the first and to the second wall means.

4,122,582
FIBER MAT FORMING MACHINE
Raymond A. Van Vliet, Castle Rock, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Jan. 12, 1977, Ser. No. 758,612
Int. Cl.[2] D01G *5/00*
U.S. Cl. 19—65 R **4 Claims**

1. In a fiberizing machine of the type having a fiberizing station into which compacted fiber sheets are fed, a cylindrical transversely extending shell having an infeed opening at the fiberizing station and an opening circumferentially spaced from the infeed opening at the inlet end of a conduit extending outwardly from the shell, and a cylindrical rotor mounted within the shell and having means thereon for mechanically fiberizing incoming fiber sheets, said rotor and the inside surface of the shell defining a transversely extending annular

volume within which an air-fiber mixture is formed at the fiberizing station and then flows circumferentially within at least a portion of the volume, the improvement comprising:

a portion of said shell diverging circumferentially outwardly from substantially adjacent the infeed opening and extending to a position substantially adjacent the inlet end of said conduit and terminating at the opening thereto, with the transverse dimension of said diverging portion being less than the transverse dimension of said shell.



4,122,583

FASTENING CLIPS FOR TRIM PANELS PARTICULARLY FOR MOTOR VEHICLES

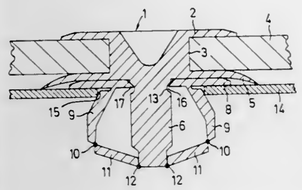
Heinz Grittner, Kürten-Dürscheid; Ralph Giese, Frechen-Buschbell, and Paul Korner, Cologne, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 10, 1978, Ser. No. 895,196

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2718170

Int. Cl.[2] A44B *17/00;* **F16B** *13/04*

U.S. Cl. 24—208 A **7 Claims**



1. A fastening clip for upholstered covering elements in particular motor vehicle trim elements, the fastening clip having a flat, disc-shaped retainer head extending perpendicularly to the clip axis, a central circular neck having a length corresponding to the thickness of a trim element, a thin disc-shaped sealing collar disposed parallel to the retainer head and retention elements attached to the latter, the retention elements consisting of at least two mutually oppositely disposed resilient arms which cooperate through detent shoulders with a locating hole in a vehicle body panel characterized in that the sealing collar is adjoined by a central rectangular shank connected through a deliberate frangible point to a supporting disc of part circular shape on whose underside two clip arms extend parallel to the clip axis and away from a supporting disc, these arms having substantially rectangular cross sections and being formed in such a fashion that they can be inclined, the other ends of these arms being articulated through integral hinges to spreader arms extending back substantially parallel to the clip axis to the supporting disc, these spreader arms having rectangular cross sections and being articulated through integral hinges to an end of the shank which extends downwards beyond the deliberate frangible point, the shank exhibiting at the top of its transverse sides detent grooves which cooperate with the break edges, these being designed as detent edges, of the deliberate frangible point.

4,122,584

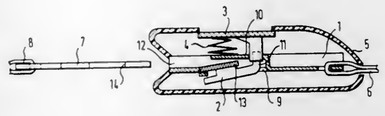
LOCK FOR MOTOR VEHICLE SAFETY BELTS

Artur Föhl, Schorndorf, Germany, assignor to Repa Feinstanzwerk GmbH, Aldorf, Germany

Filed Sep. 16, 1977, Ser. No. 833,769

Int. Cl.[2] A44B *11/25*

U.S. Cl. 24—230 A **4 Claims**



1. In a lock for motor vehicle safety belts having a metallic base plate with a recess in which a latching member having a latching projection is supported so that the latching member can be swung by a pushbutton against the action of a spring from the closed position about an axis extending transversely to the insertion direction of a plug-in blade, said plug-in blade having an undercut, the latching projection of the latching member snapping into said undercut of the plug-in blade upon insertion of the latter to lock the blade, the improvement comprising a recess in the base plate formed by punching free a lug, which bent out of the plane of the base plate is unitary with and spaced up from the base plate, forming an upper guide for the plug-in blade, and with said latching member inserted in said recess beneath said upper guide.

4,122,585

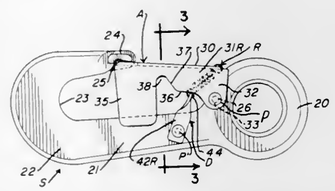
SINGLE-ACTION DOUBLE-LOCK SNAP

Jonathan E. Sharp, 3999 Hillside Dr., Littleton, Colo. 80123, and Frank R. Ross, 1371 Holly St., Denver, Colo. 80220

Filed Jul. 18, 1977, Ser. No. 816,447

Int. Cl.[2] A44B *13/02*

U.S. Cl. 24—241 SB **3 Claims**



1. In a single-action, double-lock snap, of the type combining a snap hook including a shank portion and a hook at one end thereof, with a throat portion between the point of the hook and the shank; and a lock arm having a laterally offset pivot head at one end of the arm overlying the shank at the end portion opposite to the hook and being connected thereto by a lock arm pivot with the opposite end of the lock arm being swingable across the throat portion to engage the hook point to close the snap and to lie adjacent to the shank to open the snap, the improvement comprising:

(a) a detent pivotally mounted on the shank between the hook and the lock arm pivot to extend laterally to engage the lock arm and to swing towards the hook and towards the lock arm pivot;

(b) a cam surface on a side of the lock arm engaged by the detent having a seat portion adjacent to the lock arm pivot head and a pocket adjacent to the hook, whereby to lock the lock arm in engagement with the point of the hook to close the snap when the detent is swung towards the lock arm pivot and onto the seat portion and to permit the lock arm to lie adjacent to the shank to open the snap when the detent is swung towards the hook and into the pocket; and

(c) a spring tensioned between the detent and to the lock arm adjacent to the laterally offset pivot head whereby the spring normally pulls the detent towards the lock arm pivot and onto the cam seat portion to hold the snap closed and whereas pressure against the detent to swing the detent towards the hook pulls the spring to swing the lock arm against the shank to open the snap.

4,122,586

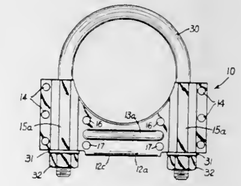
PIPE CLAMP SADDLE

Carl Nothdurft, 22412 Lavon, St. Clair Shores, Mich. 48084

Filed Jul. 19, 1976, Ser. No. 706,757

Int. Cl.[2] B65D *63/00;* **F16L** *3/10*

U.S. Cl. 24—277 **1 Claim**



1. An improvement in a U-bolt type pipe clamp saddle for clamping a pipe joint, said pipe clamp saddle having a pair of spaced-apart sleeve portions and a web therebetween, said improvement comprising said web having a tubular strengthening rib therein; said pipe clamp saddle being formed from a single metal stamping having a transverse line of symmetry thereacross from which a pair of opposed allochiral halves extend and along which line said stamping is folded forming said web, said sleeves and said tubular strengthening rib; portions of said opposed allochiral halves being spot welded together in coextensive, facially contacting relation; said fold being along the bottom edge of said web; each sleeve extending substantially perpendicularly to the fold and adjacent an edge of said web, the cross section of said sleeves being hexagonal; said tubular strengthening rib being formed from matching deformations in said allochiral halves.

4,122,587

PATIENT SECURING DEVICE

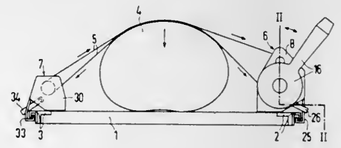
Karl Weiss, Erlangen-Buckenhof, and Helmut Rost, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 24, 1977, Ser. No. 771,447

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1976, 2610830

Int. Cl.[2] A61F *5/37*

U.S. Cl. 128—134 **14 Claims**



1. In a device for securing a patient to an examination table including an examination table, a belt for extending between the sides of the table over the top of the table and holder mechanisms including base means attached to the table adjacent each side thereof with the belt passing between the holder mechanisms, and means for tensioning the belt, the improvement of one of the holders being equipped with a freewheeling roller around which the belt passes, and a second holder having a slower revolvable take-up drum and a faster revolvable take-up drum mounted therein in parallel relationship to one another, said slower revolvable drum being mounted closest to said base means opposite ends of the belt being attached one end respectively to one drum and the other end respectively to the other drum, the belt passing around the freewheeling roller, selectively actuatable means or revolving the drums simultaneously including gear means on each drum for revolving the drums together at different relative rotational speeds whereby, the belt, when passed around the freewheeling roller having a lower stretch extending from a slower revolving drum across the examination table, closest to the surface of the examination table and another stretch passing across the examination table above the first mentioned stretch the other stretch attached to a faster revolving drum.

4,122,588

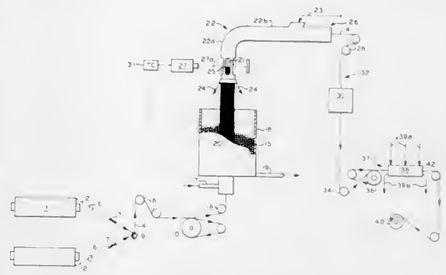
YARN PROCESSING APPARATUS

David E. Borenstein, and Richard C. Newton, both of Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 559,158, Mar. 17, 1975, Pat. No. 4,002,398, which is a division of Ser. No. 363,480, May 24, 1973, Pat. No. 3,886,636. This application Jun. 30, 1976, Ser. No. 701,455

Int. Cl.[2] D02G *1/20*

U.S. Cl. 28—221 **2 Claims**



1. Apparatus for processing yarn in one continuous operation without allowing the yarn to cool to ambient temperature comprising:

a first means for heating the yarn comprising a first heated roll and a second heated roll operated at a higher peripheral speed as compared to the first heated roll so that the yarn is heated and drawn,

a crimping means positioned to receive the drawn and heated yarn and to crimp the yarn and form a yarn plug comprising a fluid jet portion and a chamber containing a plurality of stacked members,

a tube positioned for receiving the yarn plug from the crimping means and a means for supplying a fluid to said tube in a direction counter-current to the direction of movement of the yarn plug in the tube,

a yarn plug control means for sensing the length of the yarn plug in the tube and adjusting the temperature of the second heated roll of the first heating means to control the length of the yarn plug,

an entangling means positioned for receiving and entangling the crimped yarn,

a second means positioned for receiving and increasing the temperature and tension of the heated, crimped and entangled yarn to produce a straightened, crimped and entangled yarn comprising a longitudinal chamber having a

yarn inlet and a yarn outlet and a source of heating fluid attached to said chamber, and

a winder positioned for winding the straightened, crimped and entangled yarn.

4,122,589

METHOD OF PRODUCING AXIAL ROLLER BEARING CAGES

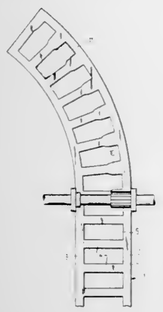
Robert Grimm, Herzogenaurach, and Hartmut Koschmieder, Erlangen, both of Germany, assignors to Industriewerk Schaeffler OHG, Herzogenaurach, Germany

Filed May 26, 1977, Ser. No. 800,949

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626398

Int. Cl.[2] **B21D** *53/12;* **B21H** *1/12*

U.S. Cl. 29—148.4 C **5 Claims**



1. A method for the production of an axial cylindrical roller bearing cage provided with pockets comprising applying pressure transverse to its longitudinal direction along the entire longitudinal extent of one end flange of a flat cage strip of plastically deformable material with two spaced end flanges connected by a plurality of crossbars to form pockets with corners approximately defining the end points of a rectangle for receiving cylindrical rollers.

4,122,590

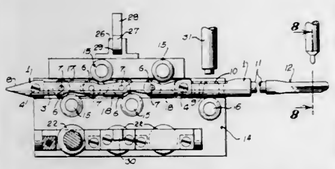
MEANS AND METHOD OF INSTALLING EMITTERS IN IRRIGATION TUBING

Lloyd Spencer, 220 Patrician Way, Pasadena, Calif. 91105

Filed May 9, 1977, Ser. No. 794,977

Int. Cl.[2] **B23P** *15/00, 13/00, 23/00*

U.S. Cl. 29—157 C **10 Claims**



1. A means for inserting emitter units into a flexible wall irrigation tube, comprising:

a. a core assembly having a body dimensioned to move freely in an irrigation tube of a selected size;

b. internal rollers carried by the body positioned to contact axially offset diametrically disposed portions of the inner surface of the irrigation tube;

c. external rollers positioned to engage corresponding axially offset diametrically disposed portions of the outer surface of the irrigation tube, the relative positions of the internal and external rollers being such as to restrain the core assembly against longitudinal movement in at least one longitudinal direction while permitting passage of the irrigation tube between the pairs of the internal and external rollers;

d. perforating means including an internal element fixed to the core assembly and a radially movable external element engageable with the internal element to effect a perforation in the irrigation tube;

e. and an emitter inserting means including an internal in fixed to the core in preselected spaced relation to the perforating means and an external element adapted to removably receive an emitter and move the emitter radially into cooperative relation with the internal element to secure the emitter with respect to the perforation.

9. A method for installing emitters in flexible irrigation tubes, characterized by:

a. inserting a core having rollers into an irrigation tube;

b. rotatably engaging the irrigation tube externally to depress the irrigation tube into restraining contact with the core rollers;

c. moving the irrigation tube axially while the core is restrained;

d. utilizing the restrained core and an external tool to perforate the tubing at selected intervals;

e. and utilizing the core and an external tool to install emitters in the perforations.

4,122,591

CATHETER

Bernhard Kramann, Planegg, and Heinrich Tammen, Munich, both of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik - GmbH, Constance, Germany

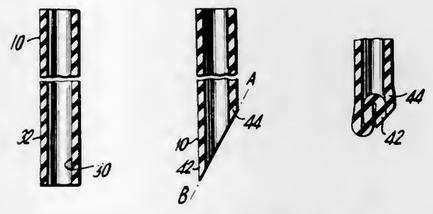
Division of Ser. No. 571,984, Apr. 28, 1975, Pat. No. 4,043,345.

This application Jun. 1, 1977, Ser. No. 802,547

Claims priority, application Fed. Rep. of Germany, May 2, 1974, 2421294

Int. Cl.[2] **B23P** *15/00*

U.S. Cl. 29—157 R **5 Claims**



1. A method for forming a valve in an open distal end of a hollow catheter hose having a proximal end connected to a fluid pressure tube and adapted to be invaginated and exserted from said tube comprising the steps of forming said distal end with an annular terminal wall lying in a plane extending obliquely to the axis of said hose, said terminal wall surrounding said open distal end of said hose, said distal end thus being configured with a longer side and a shorter side, and subsequently folding said longer side to be reentrant into said tube in overlapping abutment with said shorter side.

4,122,592

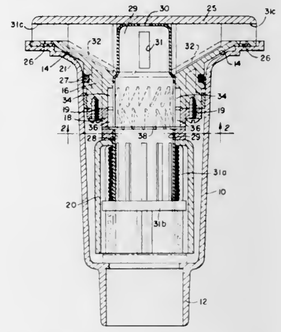
TEST PLUG ASSEMBLY AND METHOD FOR PRESSURE TESTING THE INLET CONNECTION FOR LIQUID JET FLOOR OUTLET FITTINGS

Gordon F. Ehret, Alhambra, and William N. Rowley, Palos Verdes Estates, both of Calif., assignors to Wylain, Inc., Dallas, Tex.

Filed Feb. 28, 1977, Ser. No. 773,013

Int. Cl.[2] **F16L** *55/10;* **G01M** *3/04*

U.S. Cl. 29—404 **8 Claims**



1. An improved test plug assembly of the type adapted to form a pressure resistant test seal in a liquid jet producing device, the liquid jet producing device comprising a housing with a shaped upper portion, a plurality of studs spaced around and projecting from the inner surface of the housing, an internal liquid jet producing mechanism adapted to be inserted in the housing, the upper portion of the mechanism including an undersurface shaped and dimensioned to mate with said shaped upper portion, a plurality of flanges projecting from the outer surface of the mechanism located and spaced apart so that the studs can pass between the flanges when the mechanism is inserted into the housing and so that the uppermost surface of the flanges will engage the lowermost surface of the studs when the said shaped upper portion and said undersurface portion are in contact and the mechanism is rotated relative to the housing for holding the mechanism in place, the improved test plug assembly comprising a body adapted to be inserted into the housing and prevent liquid under pressure from flowing therethrough, the body including an undersurface shaped and dimensioned to mate with said shaped upper portion, a plurality of flanges projecting from the outer surface of the body located and spaced apart so that the studs can pass between the flanges when the body is inserted into the housing and so that the uppermost surface of the flanges will engage the lowermost surface of the studs when said shaped upper portion and said undersurface are in contact and the body is rotated relative to the housing, and gripping means for gripping the body so it can be rotated into engagement with the housing.

4,122,593

METHOD OF MAKING GOLF CLUB SHAFTS

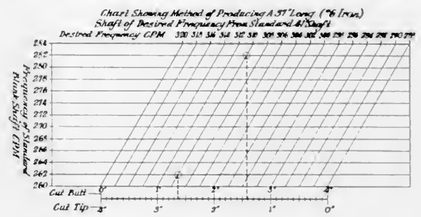
Joseph M. Braly, Kennett Square, Pa., assignor to Con-Sole Golf Corporation, Kennett Square, Pa.

Filed May 12, 1977, Ser. No. 796,080

Int. Cl.[2] **B23Q** *17/00;* **A63B** *69/36*

U.S. Cl. 29—407 **7 Claims**

1. A method of producing a golf club shaft of predetermined natural frequency and length from an oversized universal blank shaft of given length having tip and butt end portions and a natural frequency within a given range, the method including the steps of measuring the actual natural frequency of the blank shaft, determining relative amounts of material to be removed from the tip and butt end portions of the blank shaft to obtain the desired length and natural frequency of the shaft being produced, removing the relative amounts of shaft material so determined from both the tip and butt end portions of blank shaft, the total amount of material removed from the blank solely depending upon the length of the shaft desired, and the



relative amounts removed from the tip and butt end portions of the blank solely depending upon the natural frequency of the shaft desired.

4,122,594

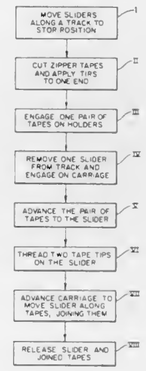
METHOD FOR ENGAGING A SLIDER AUTOMATICALLY ON A SLIDE FASTENER CHAIN

Anthony A. Azzara, Brooklyn, N.Y., assignor to Bruning Bros. Co., Inc., Commack, N.Y.

Filed Aug. 22, 1977, Ser. No. 826,773

Int. Cl.[2] **B21D** *53/50*

U.S. Cl. 29—408 **8 Claims**



1. A method of engaging sliders upon slide fastener tapes having chains of teeth thereon to make assemblies each consisting of two of said tapes and one of said sliders, comprising the steps of:

automatically moving a slider laterally to a tape engaging position from a track containing a single file of sliders;

automatically advancing one pair of tapes to said slider and simultaneously inserting one end of each of said tapes into said slider; and

continue moving said tapes toward said slider so that teeth following said one end move through said slider and are mutually engaged to form a slide fastener assembly.

4,122,595

SCORED RUPTURE DISK MANUFACTURING METHOD

Loren E. Wood; John E. Witten, and Edward H. Short, III, all of Tulsa, Okla., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.

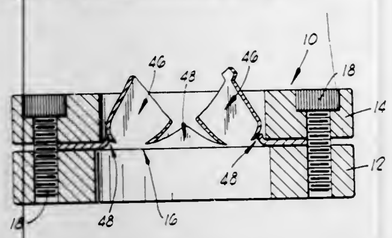
Filed Aug. 12, 1977, Ser. No. 824,161

Int. Cl.[2] **B23P** *17/00*

U.S. Cl. 29—424 **9 Claims**

1. A method of manufacturing a second rupture disk comprising the steps of:

(a) forming a flat section of sheet metal into a desired peripheral shape;
(b) applying a coating of flexible corrosion-resistant material to one side of said section in a manner whereby a score pattern is left unprotected on a portion of said section;
(c) forming said portion of said section containing said score pattern into a concave-convex dome shape;

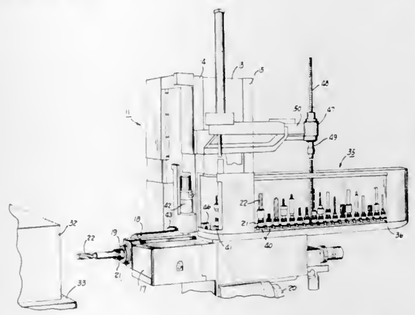


(d) contacting said side of said concave-convex dome portion containing said score pattern with a corrosive fluid for a period of time sufficient to corrode scores corresponding with said score pattern of desired depth into said section; and
(e) removing said corrosion-resistant material from said section.

4,122,596
MAGNESIUM DIE-CAST BRAKE MASTER CYLINDER
Everett H. Fields, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 5, 1977, Ser. No. 839,708
Int. Cl.[2] B22D *11/126*
U.S. Cl. 29—527.2 **7 Claims**

1. A method of making a master brake cylinder for an automobile, comprising:
(a) forming a steel tube having a uniform cylindrical wall closed at one end, the thickness of said wall being in the range of 0.06–0.08 inches, said wall having one or more openings formed at predetermined locations with a hole tolerance of ±0.004 inches and having a smooth interior surface,
(b) working the outer surface of said tube to provide numerous asperities thereon,
(c) forming a mold having a mold cavity adapted to receive said tube with the open mouth of said tube sealed against a die wall, said mold cavity having an inside contour effective to form a brake cylinder body about said tube and particularly to form a continuous enveloping cast wall about said tube, said continuous cast wall having a thickness about twice as thick as the wall of said tube, and
(d) injecting molten magnesium at a temperature of about 1,100° F. into said cavity defined by said mold and tube to fill same, cooling the mold to solidify the magnesium and removing the mold.

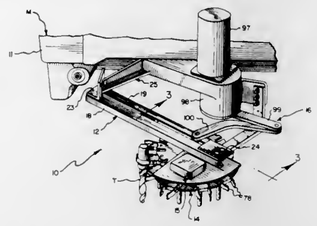
4,122,597
TOOL UTILIZATION MECHANISM
Nagle V. Gusching, and Ralph E. Prescott, both of Sidney, Ohio, assignors to The Monarch Machine Tool Company, Sidney, Ohio
Filed May 2, 1977, Ser. No. 792,783
Int. Cl.[2] B23Q *3/157*
U.S. Cl. 29—568 **17 Claims**



1. In a machine tool having a slide vertically movable on first and second ways on a base and power means connected through a first drive means to an actuation location on the slide to move the slide, the provision of a tool utilization mechanism comprising, in combination,
a tool storage magazine having tool storage sockets adapted to receive different sizes of tools and movable in a path to change the center of gravity of the tool storage magazine,
means mounting said magazine for vertical movement guided by the first and second ways and the weight of said magazine applying a load on the first and second ways which load varies in accordance with the position of said sockets in said magazine,
second drive means connected between the power means and said tool storage magazine to move said tool storage magazine in a vertical direction,
and said second drive means including means to effect vertical movement of said magazine substantially in accordance with the vertical movement of the slide.

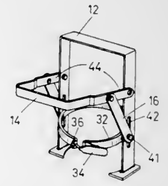
4,122,598
TOOL CHANGER
Frederick E. W. Pegler, Orchard Park, N.Y., and Howard H. Laucks, St. Petersburg, Fla., assignors to Moog Inc., East Aurora, N.Y.
Filed Jun. 3, 1977, Ser. No. 803,120
Int. Cl.[2] B23Q *3/157*
U.S. Cl. 29—568 **7 Claims**

7. In a tool changer adapted to be mounted on a machine tool having a spindle rotatable about an axis, said tool changer having a frame, a carriage mounted on said frame for movement toward and away from said spindle axis, and a tool storage magazine rotatably supported on said carriage and mounted for movement therewith, the improvement comprising:
carriage moving means operatively arranged to move said carriage between a retracted position remote from said spindle axis, and an extended position adjacent said spindle axis, said carriage moving means including motor means mounted on said frame and having an output shaft arranged to be rotated between two angular positions, a first arm having one marginal end portion fixed to said output shaft and having a distal marginal end portion, and a second arm having one marginal end portion freely pivotally connected to said first arm distal marginal end



portion and having its other marginal end portion pivotally connected to said carriage,
and rail means continuously guiding said other marginal end portion of said second arm along a path between said retracted and said extended positions from the spindle axis.

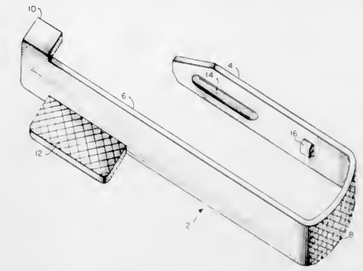
4,122,599
ELECTRICAL METER CONNECTING AND DISCONNECTING DEVICE
Alexander N. Lunycz, 225½ Annette St., Toronto, Ontario, Canada (M6P 1P9)
Filed Nov. 2, 1977, Ser. No. 847,748
Claims priority, application Canada, Nov. 18, 1976, 266056
Int. Cl.[2] H05K *13/04*
U.S. Cl. 29—758 **3 Claims**



1. A device for attaching and detaching a meter of the type having a base secured to a glass enclosure and to at least one prong for insertion into a socket provided in a meter base, said meter base having a rim provided with a flange spaced apart from said meter base, said device comprising: a stabilizing member for contacting said meter base and having a pad for accommodation in the space between said flange and said meter base; clamping means slideably connected to said stabilizing member for releasably engaging said glass enclosure; a handle pivotally connected to said stabilizing member; and link means pivotally connected to said clamping means and to said handle for causing the clamping means to slide relative to said stabilizing member upon pivotal movement of the handle whereby said meter prong is caused to move selectively into and out of said socket.

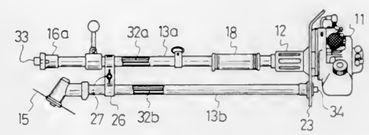
4,122,600
INJECTOR RAZOR ADAPTER
Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jul. 19, 1977, Ser. No. 816,934
Int. Cl.[2] B26B *21/40*
U.S. Cl. 30—90 **2 Claims**

1. An adapter for injector razors comprising a one-piece tool including a bayonet portion adapted for insertion into a head portion of an injector razor, an elongated level portion comprising a substantially planar portion extending in a plane generally parallel to a plane of said bayonet portion but removed therefrom, an end portion interconnecting said bayonet portion and said lever portion, said bayonet portion, said lever portion and said end portion being cooperatively of a U-configuration edge-wise, said lever portion including tab means disposed at a free end of said lever portion and extending generally normally of said lever portion and towards said plane



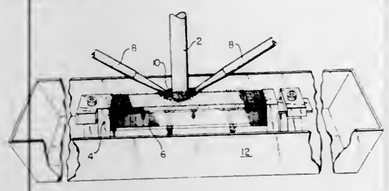
of said bayonet portion from an edge of said lever portion, said tab means being operable to engage a platform portion of said razor to urge said platform portion to a position separated from a cap portion of said razor, and pusher means comprising a projection extending from said lever portion in a direction opposite from said bayonet portion and having a surface generally normal to said plane of said lever portion, whereby said pusher means may be manipulated by an operator to cause said tab means to urge said platform portion to said position separated from said cap portion.

4,122,601
PORTABLE SEPARABLE GRASS AND BUSH CUTTER
Kazunari Katsuya, Okayama, Japan, assignor to Kaaz Machinery Co., Ltd., Okayama, Japan
Filed Feb. 7, 1977, Ser. No. 765,914
Claims priority, application Japan, Feb. 6, 1976, 51-13116[U]; May 29, 1976, 51-69032[U]
Int. Cl.[2] B26B *25/00;* **B27B** *9/00*
U.S. Cl. 30—296 A **8 Claims**



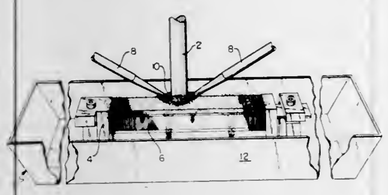
1. A portable grass and bush cutter comprising an elongated main pipe, a power source provided at one end of the main pipe, a cutting means provided at the other end of the main pipe and a main shaft housed within said pipe for transferring power from said power source to said cutting means, said portable grass and bush cutter characterized in that said main pipe together with said main shaft is arranged and configured to be separated into at least two pieces and is provided with a means for coupling together the sections of the main pipe and for coupling together the sections of the main shaft and a means for supporting parallel disposed disassembled sections of said bush cutter fixed to said cutter adjacent said power source and adjacent an end of a section of said main pipe.

4,122,602
PROCESSES FOR TREATING CUTTING EDGES
Suri A. Sastri, Stow, and Steve S. Hahn, Wellesley, both of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Jun. 3, 1977, Ser. No. 803,290
Int. Cl.[2] B26B *21/54*
U.S. Cl. 30—346.5 20 Claims



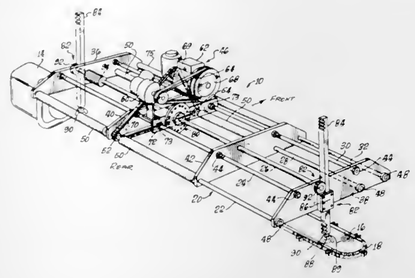
1. A process for microhoning the cutting edges of razor blades, said process comprising placing the edges in contact with a slurry of abrasive particles which have diameters of less than 3 microns and subjecting said slurry and said edges to sonic or ultrasonic energy from a horn or tool of a sonic or ultrasonic generator to cause said particles to hone said edges subjecting the edges to sonic or ultrasonic energy from the horn or too of a sonic or ultrasonic generator while said edges are in contact with a slurry of abrasive particles which have diameters of less than 3 microns.

4,122,603
PROCESSES FOR TREATING CUTTING EDGES
Suri A. Sastri, Stow, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jun. 3, 1977, Ser. No. 803,299
Int. Cl.[2] B26B *21/54*
U.S. Cl. 30—346.5 6 Claims



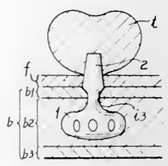
1. A process for microhoning the cutting edges of razor blades, said process comprising subjecting the edges to sonic or ultrasonic energy from the tool or horn of a sonic or ultrasonic generator while said edges are in contact with a slurry of abrasive particles which have diameters of less then 3 microns, said blades being stacked in a magazine with said cutting edges parallel to one another and the flat surfaces of said blades being in face-to-face relationship, said magazine and said horn which supplies said sonic or ultrasonic energy passing one another, the end of said horn having a corrugated surface comprising a plurality of ridges and valleys and orienting said horn so that the length of said ridges will be perpendicular to the length of said edges as said blades and said horn pass one another.

4,122,604
LUMBER FORMING ATTACHMENT FOR CHAIN SAWS
Arnold E. Brown, West Point, Calif. 95255
Filed Nov. 4, 1977, Ser. No. 848,766
Int. Cl.[2] B27B *27/02, 27/10*
U.S. Cl. 30—371 6 Claims



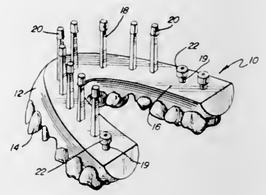
1. A lumber-forming attachment for chain saws adapted to make a longitudinal cut in a log, the chain saw including a saw chain, a chain blade, and a motor to operate said saw chain thereon, said attachment comprising:
an elongated carriage having a structural frame to be transversely supported across the longitudinal axis of said log;
drive means mounted as part of said structural means engageable with said log for longitudinal movement along the length of said log;
power means operably connected to said drive means to power said drive means independently of said chain saw;
guide means mounted on said carriage and positioned rearward of said drive means;
means for adjusting said chain saw in a predetermined position with respect to said carriage, and in a horizontal parallel relationship thereto; and
a selective-thickness-control means operably connected to said adjusting means and mounted to said carriage.

4,122,605
SOMATIC ELEMENT OF SINGLE CRYSTALLINE SAPPHIRE CERAMICS
Masaya Hirabayashi, Yokaichi; Haruyuki Kawahara, Moriguchi, and Yoshio Taniguchi, Gamo, all of Japan, assignors to Kyoto Ceramic Kabushiki Kaisha, Kyoto, Japan
Filed Sep. 22, 1976, Ser. No. 725,511
Int. Cl.[2] A61C *8/00*
U.S. Cl. 32—10 A 9 Claims



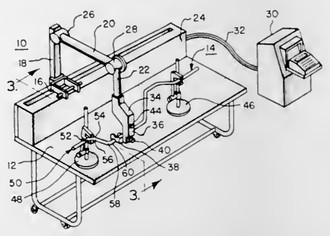
1. A somatic element for use as an implant in bone tissue and having good affinity with said bone tissue, said element comprising a single crystalline sapphire ceramic element having a bending strength of from about 9,000 to 20,000 kg/cm^2, said element being shaped into a desired implant configuration by cutting and working said element and further being smoothed by polishing such that said element is rendered substantially free from sharp edges and scars created by said cutting and working.

4,122,606
METHOD AND APPARATUS FOR MOUNTING DENTAL DIE MODELS IN DENTAL STONE
Richard C. Roman, 230 Westmoreland Dr., Vernon Hills, Ill. 60060
Filed Jul. 26, 1976, Ser. No. 708,641
Int. Cl.[2] A61C *13/00*
U.S. Cl. 32—11 15 Claims



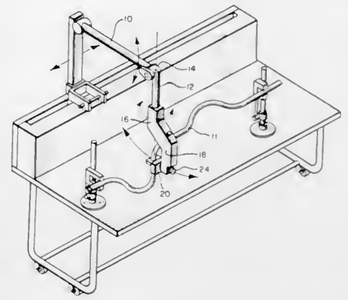
1. The method which comprises filling a flexible tray having sides with uncured, fluid dental stone, to provide a mass of dental stone of predetermined depth; inserting the outer ends of dowel pins carried by a die model into said stone while still in fluid condition, to bring the die model into contact with the surface of said dental stone; at least one of said dowel pins inserted into said dental model being covered with a colored indicating and spacing member; allowing said dental stone to harden; and flexing said flexible tray to remove the dental stone and the die model from it.

4,122,607
INSTRUMENT FOR MEASURING PREFORMED TUBES
Werner G. Hopf, Carpentersville, Ill., assignor to Teledyne Industries, Inc., Aurora, Ill.
Filed Dec. 22, 1976, Ser. No. 753,603
Int. Cl.[2] G01B *5/00*
U.S. Cl. 33—174 L 17 Claims



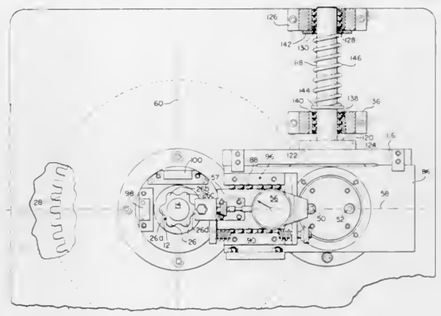
1. In an apparatus for measuring a location of a point along a straight portion of a preformed tube or pipe, said apparatus including means for mounting the tube or pipe in a known position, a member defining a first axis, means for positioning said member with respect to said tube, and means for sensing the position of said member, the improvement comprising:
tube feeler means mounted on said member and having surfaces shaped and positioned to engage opposite sides of the tube, said tube feeler means defining a second axis which intersects a projection of said first axis to form an intersection therewith, wherein said intersection lies at the centerline of the tube when said surfaces engage said opposite sides of said tube.

4,122,608
TUBE FEELER
Werner G. Hopf, Carpentersville, Ill., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Apr. 22, 1977, Ser. No. 790,053
Int. Cl.[2] G01B *7/00*
U.S. Cl. 33—174 L 21 Claims



6. In an apparatus for measuring the location of points along the straight portions of a preformed tube or pipe, said apparatus having a tube feeler defining a first and a second axis wherein projections of the first and second axes intersect, and means for positioning said tube feeler such that said intersection is positioned on the centerline of the tube, thereby acquiring each point to be measured, the improvement comprising: said tube feeler having
a base coupled to said means for positioning said tube feeler;
a pair of plates having facing tube-engaging surfaces; and
means mounting said plates on said base for movement toward and away from each other to bring said tube-engaging surfaces into contact with opposite sides of said tube so that the engagement of said surfaces with the tube positions the intersection of the axes on the centerline of the tube.

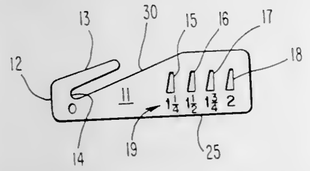
4,122,609
MACHINE FOR TRACING THE PROFILE OF AN ORBITING STAR GEAR
Henry J. Flair, Franklin Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 5, 1977, Ser. No. 793,976
Int. Cl.[2] B23F *23/08;* B24B *5/26;* B23F *5/27*
U.S. Cl. 33—174 P 6 Claims



1. A machine for checking the profile of an ideal orbiting star gear which comprises a predetermined number of teeth comprising first support means for supporting said star gear, first rotational drive means for rotating said first support means and said star gear at a predetermined angular velocity, profile

checking means positioned adjacent said star gear, second support means for supporting said profile checking means, an eccentric second rotational drive means coupled to said eccentric for rotating said eccentric at an angular velocity that is substantially equal to the angular velocity of said star gear multiplied by said number of teeth, said eccentric being coupled to said second support means in a manner so that it drives said profile checking means back and forth along a line that passes through the center of said star gear and guide means coupled to said second support means which allows said profile checking means to also be driven by said eccentric in a direction substantially normal to said line without substantial rotation of said profile checking means occuring.

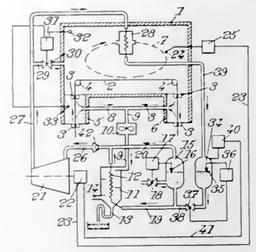
4,122,610
CUTTING GAUGE OR GUIDE
Lolotte M. Allo, 714 Fox Hunt La., Warminster, Pa. 18974
Filed Aug. 22, 1977, Ser. No. 826,431
Int. Cl.[2] B27G *23/00*
U.S. Cl. 33—186 **3 Claims**



1. A unitary cutting guide for use with a pair of shears, said guide comprising a unitary piece of material having a generally elongated shape defining first and second opposite faces, each of said faces having a first dimension substantially larger than a second perpendicular dimension, guide means adjacent one shorter dimensioned edge of said material, said guide means including a first inner surface extending between said faces in a direction parallel to said one shorter dimensioned edge and a first pair of inner surfaces extending between said faces of an angle to said one shorter dimensioned edge to define a slot having an opening adjacent one larger dimensioned edge of said material in which cloth can be received, a series of spaced apart openings extending between said faces in which one blade of a pair of shears can be received, each of such openings being at a predetermined spaced apart distance from said first inner surface.

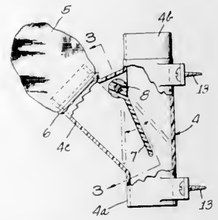
4,122,611
APPARATUS FOR THE CONTINUOUS THERMAL TREATMENT OF A PRODUCT MOVING THROUGH AN ENCLOSED SPACE
Paul Marchal, Garches, and Pierre Alvarez, St. Cloud, both of France, assignors to Air Industrie, Courbevoie, France
Filed Feb. 15, 1977, Ser. No. 768,862
Claims priority, application France, Feb. 19, 1976, 76 04597
Int. Cl.[2] F26B *21/06*
U.S. Cl. 34—73 **28 Claims**

1. Apparatus for the continuous thermal treatment of a product by steam comprising an enclosed space equipped with entry and exit air-locks, means for guiding the product to be treated through the air-locks and within the enclosed space, a thermal exchange device within the enclosed space to supply heat thereto, means for simultaneously extracting from the enclosed space a quantity of steam and a quantity of air from the air-locks and mixing the same, a first condensor having an inlet communicating with said extraction means to receive and condense said mixture, an evaporator associated with said first condensor having an entry port connected to a source of water and a vapor outlet port, a compressor having a low pressure entry port communicating with the vapor outlet of said evaporator and a high pressure discharge port; and, said thermal exchange means comprising a second condensor mounted within the enclosed space having an entry port communicating



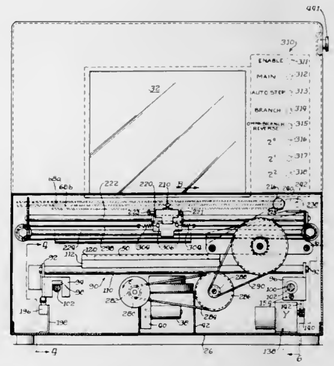
with the high pressure discharge port of the compressor, and an outlet port communicating with the source of water.

4,122,612
ENERGY SAVING DEVICE UTILIZING NORMALLY WASTED HEAT FROM CLOTHES DRYERS
John J. Mrofchak, 418 Willard NE., Warren, Ohio 44483
Filed Sep. 2, 1976, Ser. No. 719,734
Int. Cl.[2] F26B *19/00*
U.S. Cl. 34—86 **1 Claim**



1. For use with a conventional clothes dryer having a heat source and a high capacity fan for driving heated air through the clothes to be dried, and a vent pipe for venting heated, moist air from said dryer to the atmosphere, the improvement comprising:
- a hollow fitting comprising three tubular intercommunicating portions, a first tubular portion being adapted for connection to a first vent pipe part leading from the dryer, and a second tubular portion being adapted to be connected to a second vent pipe part leading to the atmosphere,
- the open end of a third tubular portion being adapted to communicate with space in the building in which said dryer is located,
- a damper disposed within said fitting and movable from one position to another, in said one position blocking air flow from said first tubular portion through said second tubular portion while permitting such air flow to exhaust through said third tubular portion and to said building space, and in said other damper position blocking air flow from said first tubular portion through said third tubular portion while permitting such air flow to exhaust through said second tubular portion and to the atmosphere,
- said damper being fixed to a shaft, the opposite ends of the latter being journalled within openings in said fitting and extdnding outwardly of said fitting, one shaft end having a manually manipulatable knob fixed there to and the other shaft end having a disc secured thereto, a face of said disc facing an exterior surface of said fitting and said face and surface having interengagable abutments for holding said damper in any one of a number of adjusted positions,
- a compression spring surrounding said shaft one end and disposed between said knob and an exterior surface of said fitting, said spring being operable to releasably hold said abutments in engagement, and
- a bag-like filter having an inlet mouth portion disposed closely over the open end of said third tubular portion and detachably secured thereto, said filter preventing lint and the like from said clothes dryer from entering said building space.

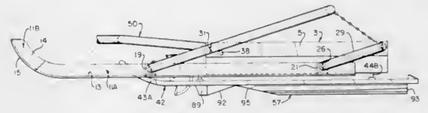
4,122,613
OPERATOR RESPONSIVE AUDIO-VISUAL TEACHING APPARATUS
George C. Karalus, Arlington Heights, and Robert R. Parker, Wheeling, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Jan. 24, 1977, Ser. No. 761,566
Int. Cl.[2] G09B *3/00*
U.S. Cl. 35—9 A **46 Claims**



3. An audio visual teaching device, comprising:
- a frame having a projection screen mounted thereon;
- a storage element including a visual record portion and an optical sound track portion representing audio information;
- a guide rail secured to said frame;
- an optical sound track transducer slidably mounted on said guide rail;
- projection means for projecting the visual record portion onto the projection screen and for projecting the optical sound track onto the sound track transducer;
- drive means for moving said sound track transducer with respect to said projected optical sound track;
- means for maintaining alignment of said guide rail with respect to said optical sound track, said alignment means comprising pivotal mounting means on one end of said guide rail and cam means connected to the other end of said guide rail for alignment thereof with respect to said optical sound track; and
- an audio amplifier connected to said sound track transducer for reproducing audio information.

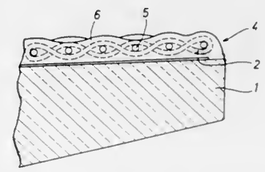
4,122,614
NORDIC SKI TRACK SLED
Stanley O. Cheney, Rte. 114 North, Bradford, N.H. 03221
Filed Mar. 28, 1977, Ser. No. 781,541
Int. Cl.[2] E01H *4/00*
U.S. Cl. 37—10 **15 Claims**

1. A track sled comprising:
- (1) a frame;
- (2) transporting means attached to said frame for transporting said track sled through snow along a selected ski path;
- (3) track-forming means for forming two parallel ski tracks of predetermined character along said ski path, wherein said track-forming means comprises two substantially identical tracking-forming assemblies mounted parallel to one another;
- (4) means for attaching said track-forming assemblies to said frame so that each of said track-forming assemblies is capable of rotating freely about an axis which extends longitudinally of said frame, whereby each of said track-forming assemblies is capable of forming said ski tracks with a bottom plane substantially perpendicular to the earth's gravitational force;



- (5) means for coupling said track sled to a suitable transport; and
- (6) means for providing relative vertical movement between said track-forming means and said transporting means so as to alternately (a) elevate said track-forming means above said transporting means so that said sled can be transported through snow without forming said ski track, and (b) lower said track-forming means in position to form a ski track as the sled is transported along a ski path.

4,122,615
SMOOTHING IRON SOLE
Erich R. Baumgartner, Tiroler Platz 4, and Peter Doehler, Kaulbachstr. 59, both of Munich, Fed. Rep. of Germany (8000)
Filed Apr. 11, 1977, Ser. No. 786,695
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1976, 2616286
Int. Cl.[2] D06F *75/38*
U.S. Cl. 38—93 **7 Claims**



1. A smoothing iron sole defining a sole surface, said sole having a sole body comprised at least partly of a glass material, and comprising a heating conductor arrangement mounted on a glass-material surface of the sole body facing the sole surface, said sole further comprising a thin fabric layer of heat-resistant fibers covering said glass-material surface for defining said sole surface said heat resistant fibers being sealed and closed off relative to the heating conductor arrangement by a heat-resistant connecting material which is also firmly bonded to the glass material surface.

4,122,616
METHOD AND APPARATUS FORMING THREE DIMENSIONAL SIGN DISPLAY CHARACTER
Frank A. Witt, Lexington, S.C., assignor to Colite Industries, Inc., West Columbia, S.C.
Filed Jun. 28, 1976, Ser. No. 700,218
Int. Cl.[2] G09F *1/00*
U.S. Cl. 40—596 **18 Claims**

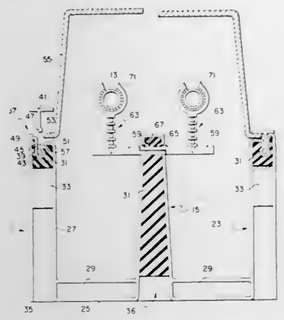
1. A sign character element having the shape of a character,

symbol or the like, for receiving a display sign face, comprising:

base structure means thinly molded from a plastic type material and including means forming a hollow wall member circumscribing the shape of a character, said wall member means having top side, inside and outside walls forming the hollow within said wall member means;

first means, including a configuration formed in said wall member means in the area of said top-side wall;

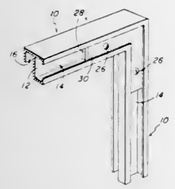
flexible means disposed within the hollow of said wall member means in the area of said formed configuration, said



flexible means compressible within the hollow for providing an expansive force against said thin configured wall member means when said flexible means is compressed by a force applied to said configuration; and

second means cooperable with said configuration for retainable coupling with said wall member means, said second means contacting said configuration during coupling for compressing said flexible means to provide said expansive force to frictional retain said second means to said wall member means, said second means cooperable with a sign face for securement thereof with respect to said structure means when coupling of said first and said second means.

4,122,617
PICTURE FRAME
Helmar Nielsen, 365 Main St., Townsend, Mass. 01469
Division of Ser. No. 496,746, Aug. 12, 1974, Pat. No. 3,965,601, which is a continuation of Ser. No. 422,900, Dec. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 217,915, Jan. 14, 1972, abandoned. This application Jun. 24, 1976, Ser. No. 699,267
The portion of the term of this patent subsequent to Jun. 28, 1993, has been disclaimed.
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—155 **15 Claims**

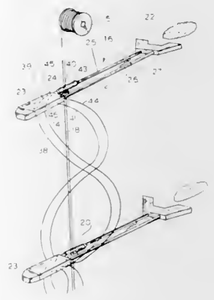


1. In a picture frame formed from frame sections, each of said frame sections having a rearwardly facing channel which terminates in inwardly extending lips, an improved means for securing an adjacent pair of said sections together at a corner junction comprising:

a bracket having a pair of legs disposed at an angle substantially identical to the angle made by said frame sections at said corner junction, said legs being adapted to fit within the rearwardly facing channels of adjacent frame sections at said corner junction, said legs being of a width which is greater than the rearwardly facing opening defined by said lips of said rearwardly facing channels thereby to retain said bracket within said channels; and

locking means for urging said bracket away from the bottom of said channels and toward and against said lips, said bracket and said lips of said adjacent frame sections being constructed and arranged to cause relative pivotal movement between each said frame section and the bracket leg engaged therewith along the longitudinal axes thereof in response to said urging by said locking means.

4,122,618
SKYWRITING APPARATUS
Gerald A. Gay, 1900 Alden Rd., Orlando, Fla. 32803
Filed May 31, 1977, Ser. No. 801,635
Int. Cl.[2] G09F *19/00*
U.S. Cl. 40—213 **22 Claims**



1. A skywriting apparatus comprising in combination:

an airplane;

a winch attached to said airplane;

a support cable supported from said winch and adapted to be lifted by said winch and to be lowered by said winch;

a plurality of vapor generating units for generating visible vapor on command;

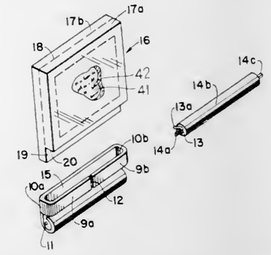
each said vapor generating unit being attached to said support cable in a spaced relationship to each other once the cable is extended and to be drawn together when such cable is raised; and

a spacer cable operatively connecting each said vapor generator together at predetermined spaced positions along said spacer cable and support cable whereby said support cable can raise and lower said vapor generators and said spacer cable can maintain the vapor generator spaced when said support cable is lowered.

4,122,619
MICROFILM-UNIT AND MAGNIFYING-GLASS LOCKET
Bernard M. Kruger, West Caldwell, N.J., assignor to Arnold Herman, Warren, N.J.
Filed Sep. 20, 1977, Ser. No. 834,898
Int. Cl.[2] G09F *11/30*
U.S. Cl. 40—365 **7 Claims**

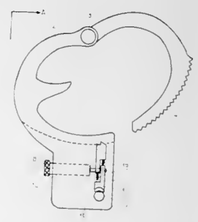
1. A microfilm-locket device comprising in combination: a portable fold-down locket adapted for transporting microfilm mounted therein including a mounting-base structure, and including fold-down magnifying glass means adapted for optically viewing in magnification a microfilm mounted by the locket means, as a unit; the improvement comprising a microfilm encased within transparent plastic casing, and holder means mounted on the mounting-base for retainable-insertion

of and supporting of the transparent plastic casing in a state and position viewable of the microfilm therein, adapted such that microfilm is protected and disposable, and said film and forward and rearward walls of the plastic casing extending in substantially parallel planes, and said casing including a step at its base, stepping from a smaller thickness of the step mount-



able within the frame means having a transverse wall of the step serving as a seating-abutment preventing further insertion into the frame means and providing a stabilizing support maintaining proper alignment of the microfilm with a viewing axis of the magnifying glass, when mounted within the frame means.

4,122,620
DEVICE FOR USE IN DEACTIVATING FIREARMS
Clifton J. Alexander, 14A Caffray Ave., Aramoho, Wanganui, New Zealand
Filed Jun. 6, 1977, Ser. No. 803,757
Claims priority, application New Zealand, Jun. 17, 1976, 181190
Int. Cl.[2] F41C *27/00*
U.S. Cl. 42—1 LP **10 Claims**

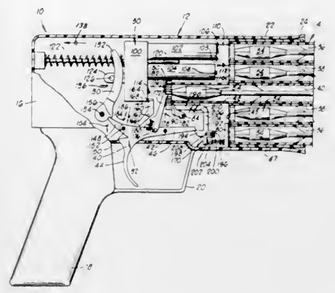


1. A device for securing a firearm comprising:

a first member which includes a projecting portion,

a second member hingeably associated with said first member and capable of having a free end thereof moved towards or away from said first member so that when moved away a firearm can be positioned between the two members and when moved together such a firearm is encircled, each of the said members including locking means to facilitate the locking of said members together so as to hold them in an encircling relationship with a firearm positioned therebetween, the construction and arrangement being such that when the firearm is thus located between said members said projecting portion interferes with the operation of the firearm, said first and second members being mutually lockable together whereby said members can only be separated under the action of a key and wherein a ratchet engagement is provided between said first and second members so that when they are being locked together the position of each member can be adjusted to more accurately encircle the firearm in question, the ratchet engagement being such as to allow tightening of the two members around a firearm and not to allow the release of the same unless the locking means by which two members are mutually lockable is released.

4,122,621
UNDERWATER REPEATING SPEAR GUN
W. Lincoln Barr, 314 S. 9th, Kingfisher, Okla. 73750
Filed Jul. 14, 1977, Ser. No. 815,668
Int. Cl.[2] F41C *3/00;* **F41F** *1/00*
U.S. Cl. 42—1 L **12 Claims**



1. A repeating spear gun for launching self-propelled spears, comprising:

a breech; a magazine connected to the breech in an assembled mode of the speargun and comprising:

a primary firing chamber containing a spear in a loaded condition thereof, said spear retainingly positionable at a launching position in the primary firing chamber; and

an auxiliary firing chamber containing a spear in a loaded condition thereof, said spear retainingly positionable at a launching position in the auxiliary firing chamber;

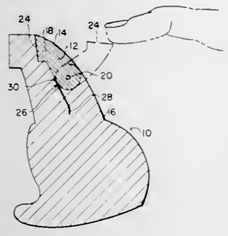
a bolt supported by the breech for movement toward the magazine and having a rest position and a firing position, the bolt characterized as comprising:

a primary firing pin mounted on the bolt and disposed to be positionable by movement of the bolt in striking engagement with a spear in the primary firing chamber in the loaded condition thereof, the primary firing pin disposed by the bolt a predetermined first firing pin distance from the launching position of the primary firing chamber when the bolt is in the rest position; and

an auxiliary firing pin mounted on the bolt and disposed to be positionable by the movement of the bolt in striking engagement with a spear in the auxiliary firing chamber in the loaded condition thereof, the auxiliary firing pin disposed by the bolt a predetermined second firing pin distance from the launching position of the auxiliary firing chamber when the bolt is in the rest position; and

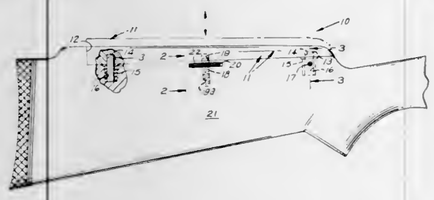
biasing means supported by the breech for forcefully urging the bolt toward the magazine along the firing path when the bolt is moved to the firing position and released therefrom, the first firing pin distance being greater than the second firing pin distance so that the primary firing pin is caused to strike and fire a spear in the primary firing chamber in the loaded condition thereof whereupon spear propulsion gases and spear impact absorb the movement of the biasing means to prevent simultaneous firing impact of the auxiliary firing pin with a spear in the auxiliary firing chamber, and so that the auxiliary firing pin is caused to strike and fire a spear in the auxiliary firing chamber in the loaded condition thereof when no spear is in the primary firing chamber.

4,122,622
DOUBLE ACTION REVOLVER HAMMER
Ralph J. Angelino, Box 173, 16 Leets Island Rd., Bramford, Conn. 06405
Filed Jan. 5, 1977, Ser. No. 756,769
Int. Cl.[2] F41C *19/00*
U.S. Cl. 42—65 10 Claims



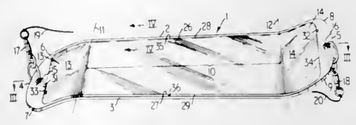
1. A double action revolver hammer comprising:
(a) a hammer,
(b) a groove situated in said hammer, and
(c) a link, mounted in said groove, pivotable from a closed unlocked position to an open locked position and capable of remaining in said open locked position or closed unlocked position,
said link, when pivoted to an open locked position, is capable of imparting movement to said hammer to cock a trigger of the revolver.

4,122,623
ADJUSTABLE GUN STOCK
Eldon C. Stice, 5201 Churchill Ave., Las Vegas, Nev. 89107
Filed Sep. 28, 1977, Ser. No. 837,577
Int. Cl.[2] F41C *23/00*
U.S. Cl. 42—73 1 Claim



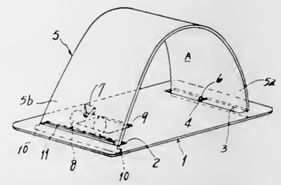
1. An adjustable gun stock, comprising, in combination, a stock and a comb for customizing said gun stock precisely to individual needs of a shooter, a recessed opening on an upper side of said stock, means for adjustably raising or lowering said comb in said opening, a pair of parallel, spaced-apart dowel pins secured to an underside of said comb and protruding downwardly therefrom, a threaded bolt parallel to said dowel pins being located therebetween and also secured within an underside of said comb and protruding downwardly therefrom; a pair of sleeves are each fitted within an opening on a horizontal upper surface of said recessed opening, said sleeves slidably receiving said down pins, a clearance opening in said upper surface of said recessed opening freely receiving said threaded bolt, said clearance opening intercepting a horizontal slot inside said stock between said recess upper surface, and a lower side of said stock, a knurled wheel freely received in said slot and having a threaded central opening thread engaged on said bolt, said wheel protruding outwardly of one side of said stock for accessibility of manual rotation thereof, and each said sleeve having a set screw in a side thereof for locking against a side of said dowel pins, said set screws extending to said stock side for accessibility of manual rotation thereof.

4,122,624
FISH ATTRACTOR
Brian F. Smith, 11332 Chalet Rd., Sidney, B. C., Canada
Filed Feb. 8, 1977, Ser. No. 766,798
Claims priority, application Canada, Feb. 20, 1976, 246179
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.33 3 Claims



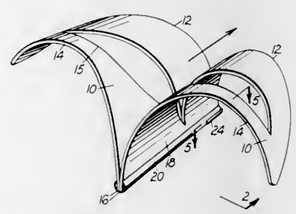
1. Fish attractor of the type of a light-reflective plate-like member having two side edges, a front end edge, a rear end edge and rounded joinder edges between each of said end edges and the respective side edges, said side edges being slightly divergent in the direction from said front end edge towards said rear end edge, said member having a generally planar, central portion whose sides are defined by a substantial portion of the length of each of said side edges, and whose ends are defined by a front bend and by a rear bend, said bends extending laterally of said member and defining joinders between said central portion and generally planar front and rear end portions, respectively, the end portions being inclined at an obtuse angle with respect to said central portion in mutually opposite directions with respect to a plane coincident with the surface of said central portion, and an attachment hole adjacent the front end edge and adjacent the rear end edge for securing said attractor to swivel means of a line; said plate-like member being composed from a first panel and a second panel, each of said panels being made of a transparent plastics material and having a central portion and two end portions generally corresponding to said central and end portions of the plate-like member; each of said panels comprising arresting means for preventing said panels, when assembled, from displacement relative to each other in at least the directions generally longitudinally and laterally of said plate; said first panel being provided in one surface thereof with a shallow, elongated cavity defined by a peripheral wall extending along and adjacent to the outside edges of said first panel, said outside edges of said first panel forming said side and end edges of the plate-like member, whereby a ridge is provided along each side and end edge of said first panel; said second panel having a peripheral edge arranged to closely fit within said cavity whereby said second panel produces a flush continuation of said one surface of the first panel, whereby the peripheral edges of said second panel are located against the respective portions of the peripheral wall of said cavity to form said arresting means, the peripheral edge of said second panel being in a generally abutted relationship with the associated portion of the peripheral wall of said cavity; means for joining the edges of said second panel with said peripheral wall of the cavity in a watertight fashion to produce a joinder seam between said panels, said joinder seam being generally coincident with only one face of said plate member; and a light reflecting sheet means providing a substantial portion of said plate-like member with light reflecting property, said light reflecting sheet means being located within said cavity and being sandwiched between said panels.

4,122,625
TRAP FOR SMALL ANIMALS DOING HARM TO POSSESSIONS
Tomoaki Ohtsuka, 10-22, Misaki 5-chome, Suminoe-ku, Osaka, Japan
Filed May 23, 1977, Ser. No. 799,193
Int. Cl.[2] A01M *23/24*
U.S. Cl. 43—82 10 Claims



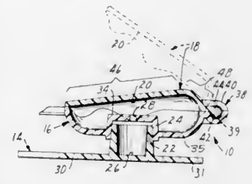
1. A trap for small animals doing harm to possessions, comprising a base plate whose one longitudinal end is formed with an elongated opening, an elastic plate whose base end is rotatably supported at the other end of said base plate and whose free end passes through said elongated opening and further extends to the front end side, an engagement projection on said elastic plate near the free end thereof, and an engagement member adapted to be interposed between the upper surface of said base plate and said engagement projection with said elastic plate upwardly curved between its base end and said elongated opening.

4,122,626
TOY GLIDER
John R. Waters, 9221 SE. 55th Ave., Portland, Oreg. 97206
Filed Oct. 4, 1976, Ser. No. 728,934
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—11 4 Claims



1. A toy glider comprising
(a) a pair of wings having inner and outer ends as well as forward and rearward ends,
(b) the forward ends of said wings having a rounded curvature,
(c) each of said wings being formed from a curved blank of material and having an upwardly arched configuration provided by the curve of the blank material,
(d) said curved blank of material comprising a container which is tapered so as to form wings of reduced radius toward the forward end,
(e) said wings being formed of a material having sufficient rigidity to be self-sustaining in said arched configuration,
(f) means connecting said wings together at their inner ends to form a body portion,
(g) and weight means secured to the body portion at the forward end of said wings.

4,122,627
UNDERWATER TOY OPERATED BY CHEMICALLY PRODUCED GAS BUBBLES
James F. Kubiatowicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.
Filed Feb. 25, 1977, Ser. No. 772,300
Int. Cl.[2] A63H *23/10*
U.S. Cl. 46—92 9 Claims



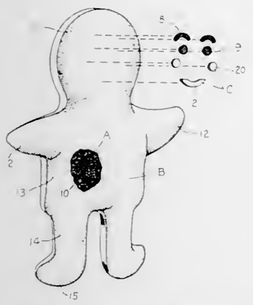
1. A toy for use under water comprising:
a base portion adapted to support said toy on a horizontal surface;
a central portion adapted to releasably engage and be supported by said base portion, mating parts of said base and central portions being adapted to provide a cavity therebetween and said part of said central portion having an aperture communicating through said central portion;
a cover portion having a generally concave surface; and
means adapted to mount said cover portion on said base portion for pivotable movement about an axis between a closed position with said concave surface adjacent said central portion over said aperture, and an open position with said concave surface spaced further from said aperture;
said generally concave surface comprising a part which is generally trough-like about an axis which is generally normal to the axis of pivoting for said cover portion, and a domed part adjacent the axis of pivoting for said cover portion which domed part smoothly joins the trough-like part, the axis of said trough-like part being inclined upwardly toward said domed part when said cover portion is in said closed position and being inclined upwardly away from said domed part when said cover portion is in said open position so that, with the assembled toy submerged in water with said base supported on a horizontal suface, gas bubbles produced by the combination of water and chemicals in said cavity will move through said aperture along said trough-like part and will be retained under the domed part of said concave surface until the buoyancy of the gas moves said cover portion to said open position at which the gas will move along said trough-like part and be released from under said cover portion.

4,122,628
THREE DIMENSIONAL DOLL
Florence S. Crowell, Box 125, Lake Toxaway, N.C. 28747, and Janice R. Hicks, Rte. 2, Box 20A, Lake Toxaway, N.C. 28749
Filed Sep. 10, 1976, Ser. No. 722,279
Int. Cl.[2] A63H *3/06, 3/44*
U.S. Cl. 46—135 R 1 Claim

1. A doll for which a vaiety of facial features and clothes can be readily changed in a variety of selectable positions for developing and promoting creative skills in children, comprising:
a three dimensional figure of stuffing material including a cover member containing said stuffing material and presenting a looped surface extending smoothly across and covering said three dimensional figure;
a variety of changeable facial feature accessories and a variety of changeable clothing accessories;
hook members carried on a back side of said accessories so

that said accessories can be readily secured to said loop surface of said three dimensional figure; and

said facial feature accessories and said clothing accessories being removably positionable upon said three dimensional figure by placement of said hook members upon any portion of said cover member;



whereby a child's creative skills are developed and promoted by allowing readily changing of the facial features and clothes of the doll on any desired location of said three dimensional figure selected by the child.

4,122,629

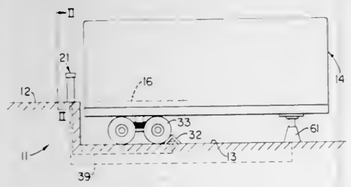
DOCK SAFETY APPARATUS

Virgil G. Rennick, 2367 Miller Hwy., Olivet, Mich. 49076

Filed Jan. 24, 1977, Ser. No. 761,588

Int. Cl.[2] E05F *11/00*

U.S. Cl. 49—357 **13 Claims**



1. A safety device for use with a loading dock having a substantially horizontal loading platform terminating adjacent a truck parking area which is at an elevation below said platform so that a truck positioned within said parking area has the bed thereof and the loading platform at similar elevations, said safety apparatus comprising:

a stationary frame structure adapted to be fixedly related with respect to said loading dock;

an elongated cantilevered gate swingably movable supported on said frame structure for swinging movement between a raised substantially upright position and a lowered substantially horizontal position, said gate when in said lowered position extending along the loading dock in a direction approximately parallel with the edge thereof and being spaced upwardly above the loading platform, said gate when in said lowered position also being positioned adjacent said edge and extending at least partially across that portion of the loading platform which provides direct access to the parking area;

drive means interconnected to said gate for causing selective swinging movement thereof between said raised and lowered positions;

sensing means associated with said parking area for sensing the presence of a stationarily positioned truck within said parking area in close proximity to said loading dock, said sensing means being maintained in an operative condition so long as it senses the presence of a stationary truck within said parking area in close proximity to said loading dock, said sensing means being maintained in an inoperative condition so long as it does not sense the presence of a stationary truck within said parking area in close proximity to said loading dock; and

control means responsive to said sensing means for causing energization of said drive means, said control means energizing said drive means to effect swinging of said gate means into said raised position whenever said sensing means is in said operative condition, and said control means energizing said drive means for automatically swinging said gate means into said lowered position whenever said sensing means is in said inoperative condition.

4,122,630

GATE AND SPRING HINGE THEREFORE

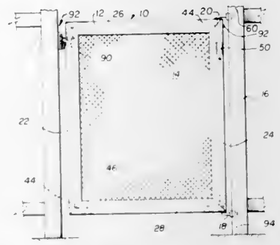
Rudolph E. Parisien, 891 Rainbow St., Ottawa, Canada

Filed Nov. 9, 1976, Ser. No. 740,230

Claims priority, application Canada, Dec. 1, 1975, 240806

Int. Cl.[2] E05F *1/10, 1/12*

U.S. Cl. 49—386 **1 Claim**



1. In combination, a gate, including a frame, and a spring hinge for said gate, said frame including channel members of rectangular cross section secured together by right angle corner keys, said spring hinge comprising a rod having a right angle bend one end of said rod being threaded for engagement with a gate post, an opposite end of said rod having a slot therein and passing through an aperture in a corner key of said gate and a helical spring surrounding said opposite end of said rod so that one end of said helical spring is anchored in said slot and an opposite end of said helical spring engages a wall of said channel member of said gate so that opening said gate in one direction will cause said spring to be twisted thereby storing energy to return said gate to a closed position, whereas the opening of said gate in the opposite direction will not cause said spring to engage, and wherein said spring hinge is constructed and arranged within said gate frame to prevent detachment from said gate frame while the gate is in the closed position.

4,122,631

PIPE RAIL AND GATE CONSTRUCTION

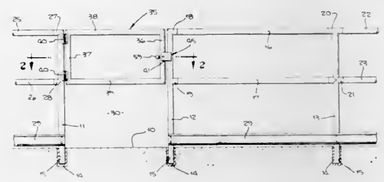
Roy W. Batcheller, South El Monte, Calif., assignor to Crane-Veyor Corporation, South El Monte, Calif.

Filed Jun. 27, 1977, Ser. No. 810,309

Int. Cl.[2] E05B *65/06*

U.S. Cl. 49—394 **9 Claims**

1. In a gate construction comprising a frame for a doorway including a cylindrical tubular post, a gate structure swingably mounted on said frame comprising a vertical tubular member on the side adjacent said post, and a latch assembly for the gate structure on the side adjacent said post, said latch assembly comprising a stop member and a latch bolt, said stop member comprising an anchor plate having an extruded arcuate shaped surface corresponding to the arcuate exterior of the respective tubular member and a stop plate extending tangentially from said anchor plate and outwardly relative to the gate structure, fastening means acting between the anchor plate and the corresponding tubular member for holding the stop member in place, means forming holes respectively in said tubular member and said post with the arcuate exterior of said post adjacent the hole therein serving as a strike, said latch bolt being spring actuated and extending slidably through the hole in the tubular member and adapted to extend into the hole in the adjacent post for holding the gate in closed position.



4,122,632

DRAUGHT AND WEATHER SEALING ARRANGEMENTS

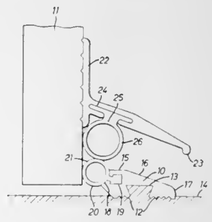
Bernard Dixon, Pampisford, England, assignor to Dixon International Limited, Pampisford, England

Filed Mar. 11, 1977, Ser. No. 776,611

Claims priority, application United Kingdom, Mar. 11, 1976, 9757/76

Int. Cl.[2] E06B *1/70*

U.S. Cl. 49—470 **15 Claims**



1. In a sealing arrangement,

a door mounted for hinging movement,

a sill,

a weatherboard carried by said door,

an elongate seal supported along said weatherboard, said seal having a resiliently supporting protruding portion for sealing a gap between said weatherboard and said sill when said door is in a closed position,

a rib provided on said sill, the rib being an elastomeric element retained by the sill, and extending along the sill and protruding therefrom, the rib further being arranged at the rear of the sill and sealing against the door when the door is in the closed condition,

said protruding seal portion, during hinging movement of said door from the closed condition to the open condition, passing through an intermediate condition in which the seal portion traverses the rib in contact therewith so that the whole length of the seal portion is wiped by the rib.

4,122,633

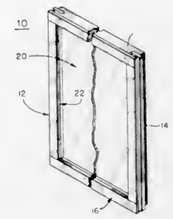
METHOD OF CLADDING A WINDOW PRODUCT

Joe W. Holdiman, Champaign, Ill., assignor to Scovill Manufacturing Company, Dubuque, Iowa

Filed Jan. 12, 1977, Ser. No. 763,910

Int. Cl.[2] E06B *3/00*

U.S. Cl. 49—501 **7 Claims**



1. A window product having a metal cladding applied to selected portions thereof comprising:

a first elongated milled element having a front and a rear face and an outwardly opening rabbet located on a side between the front and the rear faces thereof, said rabbet adapted to receive a glazing panel assembly traversing the first milled element therefor from a first end to a second end, the first end and the second end thereof adapted to receive a second milled element to form a miterless joint, a metal cladding covering said front side and extending into the rabbet, said cladding folded at each of the first and second ends thereof for retaining the cladding in engagement with the first milled element therefor.

4,122,634

CAM GRINDING MACHINE

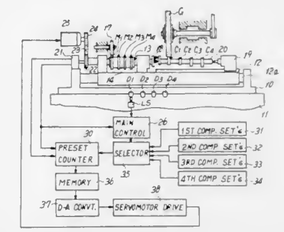
Hideo Nishimura, Nagoya, and Kuniyuki Niwa, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 23, 1977, Ser. No. 835,919

Claims priority, application Japan, Sep. 23, 1976, 51-114081

Int. Cl.[2] B24B *5/42, 17/10*

U.S. Cl. 51—165.71 **2 Claims**



1. In a cam grinding machine having a bed, a slide table slidably mounted upon said bed, a swing table swingably journalled upon said slide table, means mounted upon said swing table and including a rotatable spindle for rotatably supporting a workpiece to be ground, a master cam mounted on said spindle and rotated synchronously with the workpiece, a follower roller adapted to be held in contact with said master cam, and drive means for rotating said master cam and the workpiece synchronously in order to generate a cam profile on the workpiece in cooperation with a grinding wheel, the improvement comprising:

a servomotor in said drive means;

memory means for storing at memory addresses thereof data

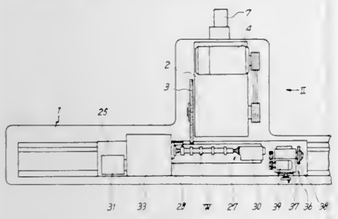
of rotational speeds of the workpiece corresponding to angular positions of the workpiece;
detecting means for generating a unit signal each time the workpiece is rotated a unit angle and a reference signal at a reference detecting point thereof;
a compensation amount setting circuit for storing a value corresponding to an angular difference between a grinding starting point of the workpiece and the reference detecting point of said detecting means;
a counter responsive to a unit signal from said detecting means for designating a memory address of said memory means to thereby read out a rotational speed data stored at the designated memory address, the content of the compensation amount setting circuit being preset in said counter as an initial value each time said detecting means generates a reference signal; and
means connected between said memory means and said servomotor for controlling the rotational speed of said servomotor in response to the rotational speed data read out by said counter to thereby rotate the workpiece at a constant circumferential speed at any anguiar position of the workpiece.

4,122,635

GRINDING MACHINE WITH A TRUING DEVICE

Hiroaki Asano, Chiryu, and Toshio Tsujiuchi, Anjoh, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 11, 1977, Ser. No. 841,106
Int. Cl.[2] B24B *49/18*
U.S. Cl. 51—165.71 **9 Claims**



1. A grinding machine comprising:
a bed,
a wheel head slidably mounted upon said bed and adapted to rotatably carry a grinding wheel,
work support means for rotatably supporting a workpiece,
truing means for truing said grinding wheel,
feed means for feeding said wheel head toward and away from said truing means,
original position detecting means for detecting an absolute original position of said wheel head,
distance designation means for designating a distance which is necessary for said wheel head to move from said absolute original position toward said truing means so as to infeed said grinding wheel by a predetermined truing infeed amount against said truing means, and
feed control means responsive to a truing instruction for controlling said feed means to feed said wheel to said absolute original position determined by said original position detecting means and then to feed said wheel head by said distance designated by said distance designation means from said absolute original position toward said truing means.

4,122,636

SYNTHETIC RD DIAMOND PARTICLES

Alexander R. Roy, 16 Cecil St. Meredale,, Johannesburg, Transvaal, and Anthony B. Clarke, Plot 54,"Vischukuil", P. O. Endicot, Transvaal, both of South Africa

Division of Ser. No. 505,982, Sep. 13, 1974, Pat. No. 4,036,937.
This application Feb. 15, 1977, Ser. No. 768,886
Claims priority, application South Africa, Sep. 14, 1973, 73/7322
Int. Cl.[2] C01B *33/06*; C09K *3/14*
U.S. Cl. 51—298 R **5 Claims**



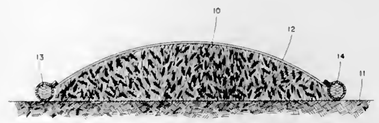
1. An elongate, synthetic RD diamond particle having a long axis and a transverse short axis, the ratio of the long axis to the short axis being at least 3 to 1 and having a ribbed structure down its long axis, the ribs of the structure being traces of <111> crystallographic planes and the long axis providing a backbone for the structure and being in the <100> crystallographic direction.
2. An RD diamond particle according to claim 1 which is in the range 60/170 U.S. mesh.

4,122,637

WINDROW RETAINER, AND METHOD OF CONFINING WINDROWS

Glen V. Runge, 6738 28th St., Hudsonville, Mich. 49426, and Glenn B. Morse, Grand Rapids, Mich., assignors to Glen V. Runge, Hudsonville, Mich.

Filed Apr. 22, 1977, Ser. No. 789,983
Int. Cl.[2] B62D *63/04*
U.S. Cl. 52—3 **2 Claims**



1. A windrow retainer, comprising
a plurality of elongated rollable flexible members each having an axially central portion formed at least by spaced transverse strands; and
flexible tubes extending along the lateral margins of each of said members and integral therewith, said tubes forming fillable and drainable containers of liquid; and
conduit means interconnecting said members in sequence, said conduit means incuding a valve.

4,122,638

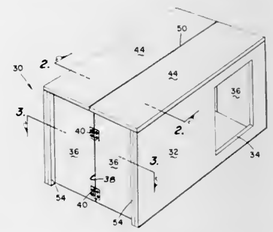
FOLDING STRUCTURES CONSIDERED TO BE PRIMARILY USEFUL FOR PLAY PURPOSES

Edward D. O'Brian, 910 Iroquois, Anaheim, Calif. 92801, and William M. Plachy, 3353 San Marcos Blvd., San Marcos, Calif. 92069

Filed Apr. 12, 1977, Ser. No. 786,884
Int. Cl.[2] E04B *1/344*
U.S. Cl. 52—70 **16 Claims**

1. A folding structure which includes:
two movable walls which during the folding and unfolding

of said structure are moved toward and away from one another,
a foldable limiting means connecting said walls for limiting the distance said walls may be moved away from one another,
a foldable toggle linkage connecting said walls for holding said walls as far from one another as said limiting means allows said walls to be moved away from one another,
said toggle linkage including at least two toggle links pivotally connected in end-to-end relationship, an end of one of said toggle links being pivotally connected to one of said walls, an end of another of said toggle links being pivotally connected to the other of said walls,



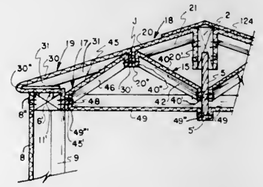
said pivotal connections of said toggle linkage having axes located so that said toggle linkage passes through a position which is overcenter relative to the connections of said toggle linkage to said walls when said walls are spaced as far from one another as permitted by said limiting means,
said toggle links of said toggle linkage in said unfolded position engaging one another and said walls so as to hold said walls as far from one another as permitted by said limiting means,
said limiting means being under tension and said toggle links being under compression and restrained against movement by contact with one another and said walls and by the compressive forces of said limiting means as applied to said toggle linkage through said walls when said structure is unfolded.

4,122,639

BUILDING STRUCTURE

John M. Barrell, Peachtree City, Ga., assignor to Renaissance Creations, Inc., Atlanta, Ga.

Filed Jan. 12, 1977, Ser. No. 758,718
Int. Cl.[2] E04C *3/07*
U.S. Cl. 52—90 **2 Claims**



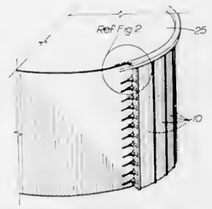
1. A building construction of prefabricated, abutted, vertical panels of a predetermined height to form a side wall for said building, the upper ends of said vertical side wall panels having means extending substantially horizontally over the upper ends thereof for supporting at least one side of a roof, the improved roof comprising:
a. said roof being formed with a plurality of roof panels wherein each panel is formed in two sections extending in the same plane from the side wall of the building to a laterally extended ridge member, each of the two roof sections being joined at one of the respective ends, the opposite end of one of the roof panel sections extending upwardly to a said lateral ridge member and means for securing said roof panel to the ridge member, the opposite end of the opposite roof panel section extending downwardly to substantially the horizontal side supporting means carried on the upper end of the side panels and means for fixing the said ends of the roof panels to the said roof supporting means carried by the side wall;
b. said lateral ridge member extending downwardly to a distance ending substantially in a horizontal plane with the upper ends of the wall members;
c. said jointure of the two roof sections having matched turned-in edges to engage each other and means for joining said ends to each other, and a pair of reinforcing roof members one extending angularly downwardly from the jointure of the two roof sections to the upper end of the side wall, and the opposite end of the other reinforcing member extending angularly downwardly and in the opposite direction from the jointure of the two roof section members to substantially the lower edge of the extended ridge member, and means for securing said members at their respective ends.

4,122,640

INSULATED TANK JACKETING SYSTEM

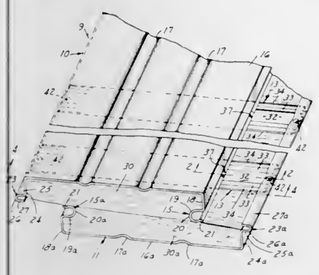
Alfred D. Commins, Livermore; Frederick T. Kindelvich, and Richard C. Schroter, both of Orinda, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 25, 1977, Ser. No. 827,643
Int. Cl.[2] B65D *25/16*
U.S. Cl. 52—248 **13 Claims**



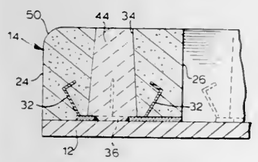
1. An insulating jacketing system for a storage tank wall and the like comprising a plurality of bands arranged circumferentially on and about the outside surface of the tank wall, means tightly securing a band in place, insulated panels secured crosswise of and and against said bands, said panels comprising channel-shaped sections having upstanding and opposed side flanges, one of which includes a terminal bead and the other of which includes a deformable sleeve that can be folded tightly about the bead on a similarly configured and adjacent channel-shaped section, insulaing material affixed to the underside of each panel section and an articulated fastener securing a pair of panel sections to a band, said fastener comprising a link element interposed between the side flanges of the adjacent panel sections and provided at one extremity with a bulbous rivetlike element insertable within and engageable with the interior wall of the bead of the one panel section about which the sleeve of the adjacent panel section is folded and at the other extremity with a deformable clamp crimped about and engagable with the said band.

4,122,641
WALL STRUCTURE
John A. Bard, Dearborn, and Francis J. Morrison, Grosse Ile, both of Mich., assignors to Walcon Corporation, Ecorse, Mich.
Filed Jul. 28, 1977, Ser. No. 819,799
Int. Cl.² E04C 1/10; E04B 1/90
U.S. Cl. 52—403 **12 Claims**



1. In a structural panel, the combination comprising:
(a) a pair of spaced apart panel members;
(b) each of said panel members having a main body portion forming an outer wall, and integral first and second side end portions forming side walls transverse to the outer face and having a free end;
(c) a joint means formed on the free end of each side end portions;
(d) said panel members facing each other and being disposed in a lateral offset relationship; and,
(e) at least one elongated sub-girt fastening member being disposed between said panel members on an acute angular axis relative to the outer walls of the panel members, and being mechanically attached at each end thereof to said joint means on each of the adjacent ends of the panel members for securing the panel members together.

4,122,642
REFRACTORY LINER BLOCK
James P. Buchy, Waterdown, Canada, assignor to Plibrico (Canada) Limited, Burlington, Canada
Filed Jul. 14, 1977, Ser. No. 815,667
Int. Cl.² F23M 5/00
U.S. Cl. 52—511 **2 Claims**



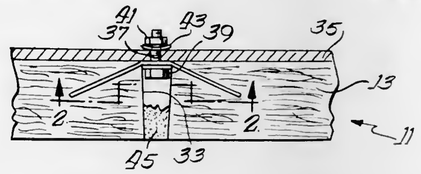
1. A lining block for lining the wall of a kiln of a furnace or the like comprising:
(a) a body of refractory material having an inner face, an outer face and a plurality of side faces, the side faces being adapted to be located in a face-to-face relationship with the side faces of the second block to form a composite lining, a passage extending through the refractory body and having an inner end located at the inner face and an outer end located at the outer face of the body, a recess in the inner face extending laterally from the inner end of said passage,
(b) an anchor plate having an inner surface, an outer surface and an opening extending therethrough from the inner surface to the outer surface, said anchor plate being mounted in said recess with said opening aligned with said passage and said inner surface bearing against an inner wall of the recess, a portion of said anchor plate projecting laterally into said passage and having its outer surface supported in the plane of said inner face of said lining block by engagement of said inner surface with the inner wall of said recess and anchor rib means mounted on said anchor plate and projecting from said anchor plate into said body to secure said anchor plate within said recess, said opening in said anchor plate being aligned with said passage of said block to provide welding access to said portion of said anchor plate.

4,122,643
CONSTRUCTION PANEL
Joseph A. Hafner, 91 Dover Dr., Stoney Creek, Ontario, Canada
Continuation-in-part of Ser. No. 766,107, Feb. 7, 1977, abandoned. This application Dec. 19, 1977, Ser. No. 861,922
Int. Cl.² E04D 1/06
U.S. Cl. 52—520 **17 Claims**



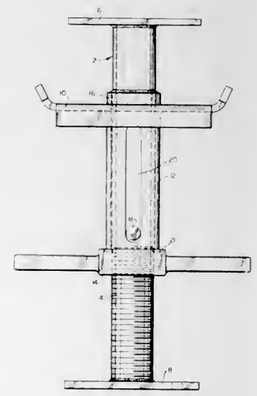
1. An elongated construction panel having a constant cross-section and comprising:
a main portion having a front face which is exposed on assembly of the panel on a building, the main portion having transverse extremities;
marginal first and second portions dependent from said respective transverse extremities of the main portion and extending longitudinally of the panel, these portions extending generally rearwardly with respect to the main portion of the panel;
said first portion defining a first engagement means and a second engagement means spaced rearwardly and outwardly with respect to the first engagement means and terminating in a flange extending outwardly beyond the second engagement means in generally parallel relationship with the main portion for use in attaching the panel to said building;
said second portion defining a third engagement means adapted to selectively co-operate with either another first engagement means of a further panel for producing a lapped siding effect in which an adjacent part of the front face of the further panel is contained in the third engagement means, or another second engagement means of said further panel for producing a flush siding effect.

4,122,644
HEAT-INSULATING FIBROUS PANELS
Richard K. Woodruff, Dundee, Ill., assignor to Refractory Products Co., Carpentersville, Ill.
Filed Jan. 31, 1977, Ser. No. 764,208
Int. Cl.² E04C 5/00
U.S. Cl. 52—787 **6 Claims**



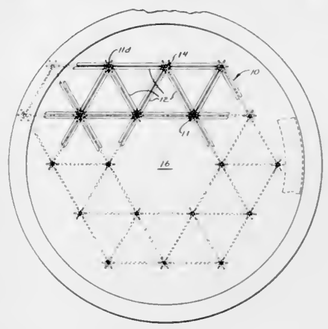
1. A heat insulating panel having a front surface for placement facing the heat source and an opposite rear surface, which panel comprises
a refractory fiber mat formed of discrete refractory fibers bonded together by an inorganic bonding agent, and
a metal supporting member embedded within said fiber mat, which member includes a central base section and a pair of wing sections extending in opposite directions from said central section and being disposed at an angle of between about 25° and about 50° to said rear surface, said wing sections each containing a plurality of holes so that said individual fibers extend through said holes and thus firmly anchor said member as an integral part of said mat.

4,122,645
APPARATUS FOR USE IN BUILDINGS
Jack R. Tooley, Cobham, England, assignor to Acrow (Engineers) Limited, London, England
Filed Mar. 7, 1977, Ser. No. 774,820
Claims priority, application United Kingdom, Apr. 27, 1976, 17054/76; Nov. 10, 1976, 46810/76
Int. Cl.² E04G 17/14
U.S. Cl. 52—648 **7 Claims**



1. An attachment for a builder' s prop, said attachment being adapted to support at least one shuttering element of the type used with concrete formwork, said attachment comprising
a stem having a top bearer plate fixed to the top end thereof and having screw threads provided on a portion thereof,-said stem being connectable to said prop,
a tubular sleeve having an intermediate bearer plate fixed thereto, said tubular sleeve being slidable relative to and coaxially disposed with said stem, and said intermediate bearer plate being adapted to support said shuttering element,
nut means threadably engaged with the threaded portion of said stem, said tubular sleeve being received in seated relation on said nut means so that rotation of said nut means adjustably positions said tubular sleeve longitudinally of said stem, and
a pin mounted on one of said stem and said sleeve, and a longitudinal slot defined in the other of said stem and said sleeve, said pin and said slot cooperating to prevent rotation of said sleeve relative to said stem as said sleeve is longitudinally repositioned relative to said stem by use of said nut means.

4,122,646
EQUILATERAL DERRICK STRUCTURE
Dennis H. Sapp, Terre Haute, Ind., assignor to Research-Cottrell, Inc., Chicago, Ill.
Filed Jun. 8, 1977, Ser. No. 804,611
Int. Cl.² E04H 12/06
U.S. Cl. 52—648 **10 Claims**



1. A derrick structure comprising:
horizontal angle members;
diagonal brace rod members;
vertical column right cylindrically tubular members; and a plurality of connectors readily removably interconnecting said horizontal, brace, and column members at a plurality of connections to form a rigid, readily assembleable and disassembleable framework derrick defined by a plurality of interconnected equilateral horizontal sections, said connectors having a configuration suitable to have each of at least one said horizontal, brace, and column members secured thereto.

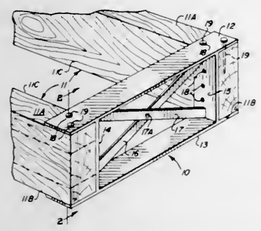
4,122,647
JOIST BRIDGING MEMBER
Paul J. Kovar, 4613 N. 53rd Dr., Phoenix, Ariz. 85031
Filed Jul. 29, 1977, Ser. No. 820,167
Int. Cl.² E04C 3/02
U.S. Cl. 52—695 **3 Claims**

2. An integral bridging element for interconnecting and applying supporting stress to spaced longitudinal juxtapositioned structural members such as joists, roof rafters and studding comprising:
a substantially rigid first beam member for fixedly securing to and being supported at its ends by the exterior edges of a pair of structural members,
aperture means formed in the ends of said first beam member for aiding in securing it to each of the structural members, and
a pair of spaced parallelly arranged support members extending laterally outwardly of said first beam member from the same side thereof one adjacent each end thereof,

a cross brace disposed between and attached to each of said support members,

said support members being juxtapositioned with the sides of each of the structural members, and

a second beam member extending between the free ends of said support members,



whereby the bridging element spaces and holds the structural members in place relative to each other during assembly and substantially reduces lateral warpage or deflection under normal building loads.

4,122,648

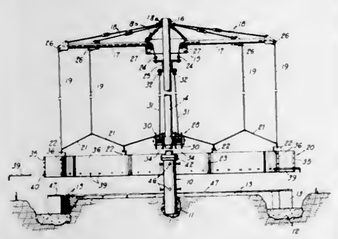
APPARATUS FOR PLACING MASONRY MODULES

Fred D. Godwin, 2611 Trenton La., Albany, Ga. 31705

Filed Jun. 9, 1977, Ser. No. 804,918

Int. Cl.[2] E04F *21/00*

U.S. Cl. 52—749 **15 Claims**



1. An apparatus for placing masonry modules onto a wall construction comprising a central upstanding support mast, booms carried by said mast near the top thereof and extending outwardly therefrom, suspension cable means movably carried by said booms, means for taking in and paying out said suspension cable means, a masonry module transport and placement frame of trough-like form suspended horizontally about said mast by said cable suspension means from said booms, and movable masonry support elements carried by said frame for supporting said masonry modules when the modules are disposed within said frame and when said support elements are in prescribed positions in said frame, said support elements being movable from their prescribed positions to positions for releasing said masonry modules from said frame.

4,122,649

COVER POSITIONING AND PLACEMENT DEVICE FOR SQUARE CONTAINERS

Thomas D. Sawvel, 10540 Ewing Ave. S., Bloomington, Minn. 55431

Filed Jul. 18, 1977, Ser. No. 816,485

Int. Cl.[2] B65B *7/28;* **B67B** *3/22*

U.S. Cl. 53—306 **7 Claims**

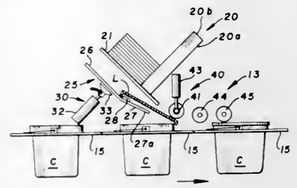
1. A device for automatically positioning and placing generally rectangular covers on generally rectangular containers including:

a. a cover application section for postively positioning a generally rectangular cover onto a generally rectangular container received into said section;

b. a cover supply section including means for retaining a plurality of covers in a supply position;

c. a positioning and registration section arranged intermediate said supply section and said application section, said positioning and registration section including a first ramping plate arranged in parallel, spaced relation to said cover supply section and a second camming plate arranged angularly to said ramping plate and said application section, whereby a cover may be transferred to said ramping plate and will slide therefrom onto said camming plate;

d. transfer means arranged to select a single cover from said supply and transfer the same to said positioning and registration section;



e. positioning and registration means provided at a selected portion of said camming plate arranged to contact and receive a portion of a cover delivered thereto from said ramping plate and retain the same thereon with a portion of the cover extending into said application section and positioning the cover in spaced relation to the cover receiving portion of a container received into said application section;

f. application means provided in said cover application section arranged to forceably shift the extending portion of the cover into sealed relation with the container and simultaneously shifting the cover from said positioning and registration means to permit the cover to be removed from said positioning and registration section; and,

g. means for moving the container and cover past said application means whereby the entire cover is sealed to the container.

4,122,650

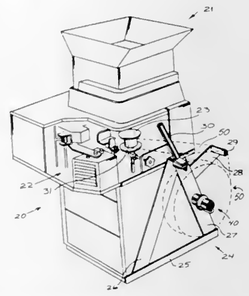
PAPER CARRIER FOR ROLL PAPER MACHINES

W. B. McDonald, 6460 S. Virginia St., Reno, Nev. 89502

Filed Mar. 31, 1975, Ser. No. 563,345

Int. Cl.[2] B65B *41/12*

U.S. Cl. 53—389 **3 Claims**



1. A device for feeding a roll of paper to a roll paper utilizing machine including, in combination with a roll paper means within the roll paper utilizing machine; (1) means to connect to said machine; (2) means to rotatably hold a roll of paper for utilization within said machine in parallel relationship to the base of said machine; (3) means cooperative with said means to hold said roll of paper to guide the paper from said roll to said machine; (4) adaptor means fastened within the roll paper means within said machine so as to allow free movement of paper being fed into said machine; wherein tensioning means are provided cooperative with said paper holding means so as to maintain uniform tension against rotation; said guide means comprises a fully rotatable roller in parallel relationship to the paper roll holding means; and a non-rotatable guide bar is associated with said roller in such manner as to guide paper from said roller into said machine at a 90° relationship to the axis of said roller.

4,122,651

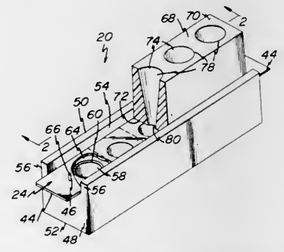
APPARATUS AND METHOD FOR FILLING MEDICINAL DISPENSING DEVICES

Milton Braverman, 640 Wynmill Pl., Philadelphia, Pa. 19115

Filed Sep. 30, 1977, Ser. No. 838,190

Int. Cl.[2] B65B *3/00, 67/00*

U.S. Cl. 53—390 **10 Claims**



1. Apparatus for filling a medicinal dispensing device with a flowable material, said device including a base having plural chambers for direct receipt of said flowable material therein, each of said chambers being surrounded by flanges and a closure for adhesive securement to said base via contact with said flanges to seal said material within said chambers, said apparatus comprising press means, a base support block having a longitudinally extending channel in a top surface thereof formed between a pair of sidewalls, said channel having a plurality of recesses spaced therealong, said channel being dimensioned to closely receive the device base therein, with said sidewalls aligning the device base within said channel, the recesses in said block being dimensioned and spaced from one another to receive respective chambers of the device therein, with the portions of the channel contiguous with the recesses supporting the flanges of the device base, and removable guide means in the form of an elongated block dimensioned to fit within said channel completely over and covering the flanges contiguous with each of said chambers, said guide means including a top and a bottom face with plural funnel-shaped openings extending therebetween and tapering down from the top face to the bottom face, said openings being spaced from one another so that when the guide means is disposed within the channel with its bottom face in contact with the flanges of the device base each funnel-shaped opening overlies the center of a respective chamber of said base, each opening being arranged to direct a flowable material therethrough and into the chamber disposed therebelow while preventing such material from contacting the contiguous flanges, said sidewalls aligning the device closure within said channel and over the device base after said chambers have been filled, said block including a pair of locating pins located adjacent opposite ends of the channel and extending through openings in the device base and engaging portions of the device closure between the pins to precisely position the device closure longitudinally over the device base, said press means being in the form of an elongated member having a contact face configured to fit closely within said channel to secure the closure to the underlying flanges by applying pressure to force said closure into engagement with said flanges once the chambers have been filled, the guide means removed and the closure inserted within the channel.

4,122,652

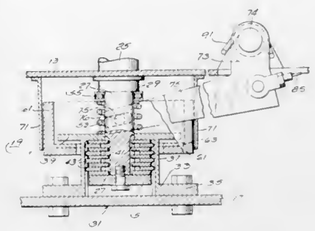
LAWN MOWER BLADE CLUTCH AND BRAKE

Theodore J. Holtermann, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 16, 1976, Ser. No. 706,122

Int. Cl.[2] A01D *69/08*

U.S. Cl. 56—11.3 **22 Claims**



18. A combined brake and clutch comprising a drive member, a driven member mounted for co-axial rotation relative to said drive member, interengagable clutch means extending from each of said drive member and said driven member, first means biasing said driven member to engage said clutch means, non-rotatably mounted means engagable with said driven member for displacing said driven member against the action of said biasing means to disengage said clutch means and for braking rotation of said driven member, second means biasing said non-rotatably mounted means into engagement with said driven member so as to overpower said first means biasing said driven member, and manually operable means for overpowering said means biasing said non-rotatably mounted means.

4,122,653

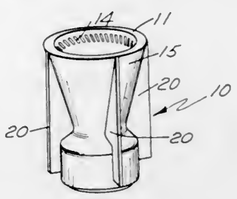
GROMMET FOR ROVING MACHINE

William Argereu, Hickory Dr., North Scituate, R.I. 02857

Filed Aug. 8, 1977, Ser. No. 822,740

Int. Cl.[2] D01H *7/46, 7/48*

U.S. Cl. 57—34 R **1 Claim**



1. A roving machine grommet comprising an oil impervious non metallic body having a top and bottom and a hole therethrough opening into said top and bottom and flaring outwardly from bottom to top along a generally inverted frustoconical surface, said surface having friction means adjacent its upper end so located as to be contacted by yarn leading to said opening at an acute angle to the axis of said opening greater than the angle of said surface to said axis, the outer surface of said body being generally parallel to the surface of said hole, and ribs extending radially from the inclined outer surface to a

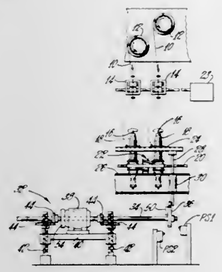
point the same as the radius of the outer edge of the top of said body.

4,122,654

TWIST FRAME CONTROL METHOD AND APPARATUS

Leo A. Oswald, Huntingdon, Pa., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 21, 1977, Ser. No. 817,760
Int. Cl.² D01H *1/36, 13/32*
U.S. Cl. 57—54 **8 Claims**



1. An improved twister apparatus of the type in which filamentary material is wound onto bobbins, and in which the yardage of filamentary material wound onto the bobbins is measured, and in which a guide rail reciprocates within a range of reciprocation over a portion of the height of said bobbins, and in which the range of reciprocation is reciprocated along the height of the bobbins in order that said guide rail distribute said filamentary material over a plurality of portions of said bobbins, the improvement comprising:

(a) first detecting means for detecting the presence of said guide rail within a predetermined portion of said bobbins;

(b) means responsive to the measurement of a predetermined yardage of filamentary material for activating said first detecting means;

(c) second detecting means for detecting the presence of said guide rail at a preselected position within the range of reciprocation of said guide rail;

(d) means responsive to the detection of said guide rail by said first detecting means for activating said second detecting means; and,

(e) means responsive to the detection of said guide rail by said second detecting means for discontinuing the movement of said guide rail.

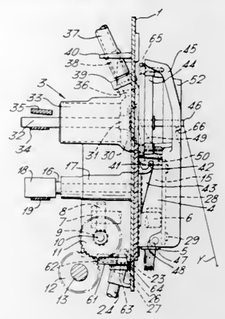
4,122,655

HOUSING AND MOUNTING MEANS FOR OPEN END SPINNERS

Gordon C. Anderson, Clemson, S.C., and James W. B. Clayton, Accrington, England, assignors to Platt Saco Lowell Limited, Helmshore, England

Filed May 11, 1977, Ser. No. 796,000
Claims priority, application United Kingdom, May 18, 1976, 20372/76
Int. Cl.² D01H *1/12, 1/16, 1/28*
U.S. Cl. 57—58.89 **4 Claims**

1. In an open end yarn spinning machine comprising a frame, a plurality of side-by-side yarn spinning stations fixed to and spaced along said frame, each of said stations including a housing, a yarn spinning rotor fixed to a shaft defining an axis therefor and for rotation thereabout and fixed to said housing for pivotal movement therewithin, a rotor drive means for rotating said rotor and its shaft in the spinning of yarn and being detachably interconnectable therewith, a fiber separating and opening roller fixed to a shaft defining an axis therefor and for rotation thereabout and fixed to said housing for pivotal movement therewithin, a roller drive means for rotating said roller and its shaft in the separation of fibers into discrete entities for conduction to said rotor and being detachably interconnectable therewith, and housing mounting means for supportively mounting said housing on said frame for pivotal movement between a first operable position wherein said rotor and roller and their shafts are drivingly interconnected to their respective drive means and a second inoperable position wherein said rotor and roller and their shafts are operably detached and disconnected from their respective drive means, said housing mounting means including support elements carried in part by said housing and said frame, said elements



defining an axis for said pivotal movement of said housing and elements fixed thereto between said first and second positions, said housing further including therewithin a fiber feed roller and an interconnected driving shaft defining an axis therefor, said interconnected driving shaft being fixed to said housing and interconnected with a feed roller drive means for continuous rotation of said driving shaft during operation of said machine,

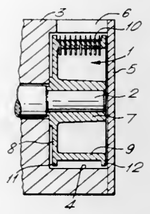
the improvement wherein said driving shaft axis extends parallel to said housing pivotal axis.

4,122,656

COATED PINNED ROLLER

Jack Shaw, Burnley, England, assignor to Platt Saco Lowell Limited, Helmshore, England

Continuation-in-part of Ser. No. 590,859, Jun. 27, 1975, Pat. No. 4,058,965. This application Oct. 6, 1977, Ser. No. 839,872
Claims priority, application United Kingdom, Oct. 19, 1976, 43268/76
Int. Cl.² D01H *1/12*
U.S. Cl. 57—58.91 **3 Claims**



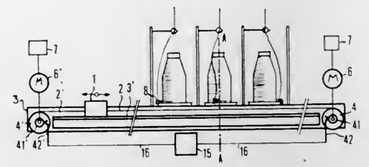
1. In an opening roller used for separating textile fibers in an open end spinning machine, which roller comprises a cylindrical shell and a plurality of pins fixed to said shell and protruding outwardly from its cylindrical surface, said pins each having a body portion fixed to said shell and a fiber-engaging portion protruding outwardly therefrom, the improvement wherein said fiber-engaging portion has a wear-resistant surface formed with a coating of carbo-chrome.

4,122,657

APPARATUS FOR MONITORING FOR THREAD BREAKAGE A CONTINUOUS SEQUENCE OF WORK POSITIONS ON A TEXTILE MACHINE

Ernst Felix, Uster, Switzerland, assignor to Zellweger, Ltd., Switzerland

Filed Oct. 5, 1977, Ser. No. 839,449
Claims priority, application Switzerland, Nov. 5, 1976, 013947/76
Int. Cl.² D01H *13/16*
U.S. Cl. 57—81 **15 Claims**



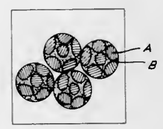
1. An apparatus for monitoring a continuous sequence of spaced work positions on a textile machine for thread breakage, comprising a probe for generating an electric signal upon detection of a thread, means for moving said probe on a path along the textile machine past the work positions so as to generate said electric signal at each work position where a thread is detected without contact with elements of the textile machine, which signals are produced at each work position only during correct thread travel and fail when there is no thread, said means for moving the probe along the textile machine including at least one conductive metallic drive band which forms an electrical connection to the probe, and detector means for detecting said electrical signals carried by said drive band.

4,122,658

FALSE-TWIST YARN AND PROCESS

Atsumi Morioka, and Tamotsu Nakashima, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 29, 1977, Ser. No. 828,502
Claims priority, application Japan, May 10, 1977, 52-53444
Int. Cl.² D02G *1/00, 3/04*
U.S. Cl. 57—140 R **17 Claims**





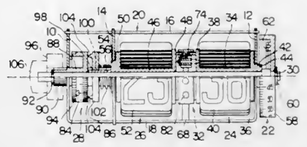
1. A false-twist yarn comprising a plurality of false-twisted "islands-in-a-sea" type composite synthetic polymer filaments, said filaments comprising a plurality of island components having a predetermined melting point, and a sea component having a melting point below that of said island components, characterized in that the cross-sectional configuration of the composite filament as a whole has been deformed the cross-sectional configuration of each of the island components in said filaments is substantially free of deformation.

4,122,659

DIGITAL CLOCK OF LEAF TYPE

Katuo Hashimoto, Iida, Japan, assignor to Iida Sankyo Kabushiki Kaisha, Japan

Filed Nov. 18, 1976, Ser. No. 742,890
Claims priority, application Japan, Nov. 20, 1975, 50/157515
Int. Cl.² G04B *13/00, 19/02, 19/20*
U.S. Cl. 58—7 **10 Claims**



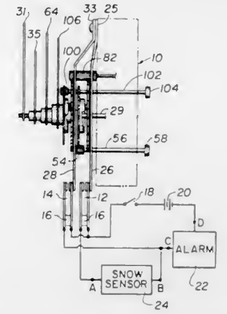
1. A digital clock of leaf type comprising a "minute's" display mechanism including a first continuously rotatable bobbin for supporting a plurality of leaf-like display members, and "hour's" display mechanism including a second continuously rotatable bobbin for supporting a plurality of leaf-like hour display members and a rotary transmission for transmitting rotation of said "minute's" display mechanism to said "hour's" display mechanism, said "minute's" and said "hour's" display mechanism, and said rotary transmission comprising a planetary gear rotatably mounted to said first bobbin adjacent said second bobbin, a fixed ring gear disposed between said first and second bobbins and in meshing engagement with said planetary gear for rotating said planetary gear as said first bobbin rotates, and a driven gear connected to said second bobbin in meshing engagement with said planetary gear rotatable by said planetary gear as said first bobbin rotates.

4,122,660

SNOW ALARM

Richard J. Canavan, 46 Merton Ave., Lynbrook, N.Y. 11563

Filed Jun. 9, 1977, Ser. No. 805,093
Int. Cl.² G04B *23/06*
U.S. Cl. 58—16.5 **7 Claims**



1. In a clock having a main shaft, a clock face and hands for indicating the time, a plurality of timing gears connected with the shaft, means for presetting a time, a pointer adjacent the clock face for indicating the time preset, and an alarm associated with the clock and for alarm operation thereby when the preset time is reached, the invention comprising:

means associated with the clock for sensing an accumulation of snow, including first switchable means responsive to the detection by said snow sensing means of an accumulation of snow;

means on the clock for presetting a second time for alarm operation, whereby the second preset time may be earlier

than the first preset time for alarm operation prior to the first preset time;

second switchable means on the clock and for actuation at the second preset time, said second switchable means being in series electrical connection with said first switchable means and the alarm; and

means on the clock for actuating said second switchable means at the second preset time, whereby the alarm is operable at the second preset time when said first switchable means is actuated by said snow sensing means concurrently with the actuation of said second switchable means to awaken a sleeper at a time earlier than the first preset time when there has been an accumulation of snow during the period of sleep.

4,122,661

ELECTRONIC TIMEPIECE DIGITAL DISPLAY DRIVE CIRCUIT

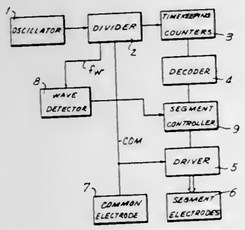
Masuo Tsuji, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 9, 1977, Ser. No. 767,094

Claims priority, application Japan, Feb. 9, 1976, 51-12975

Int. Cl.[2] G04C *3/00*

U.S. Cl. 58—23 R **11 Claims**



1. An electronic timepiece comprising timekeeping means for producing a plurality of timekeeping signals representative of actual time and a plurality of intermediate frequency signals; decoder means for receiving said plurality of timekeeping signals and in response thereto for producing a plurality of decoded timekeeping signals; driver means for receiving said plurality of decoded timekeeping signals and one of a plurality of intermediate frequency signals and in response thereto producing a plurality of intermediate frequency display drive signals; display means including a common electrode and a plurality of segment electrodes for defining at least one display digit, each said display digit being energized in an AC mode to thereby display actual time in response to an intermediate frequency drive signal applied to a segment electrode and one of said plurality of intermediate frequency signals applied to said common electrode; detecting and controlling means coupled intermediate said decoder means and said driver means for receiving the intermediate frequency signal applied to said common electrode and for inhibiting each of said decoded timekeeping signals from being applied to said driving means to thereby prevent said digital display means from being energized in response to detecting the absence of said intermediate frequency signal applied to said common electrode, said detecting and controlling means including a wave detector means for receiving said intermediate frequency signal applied to said common electrode and in response thereto for detecting the absence of said intermediate frequency signal applied to said common electrode producing a detecting signal, and segment controller means coupled to said wave detector means for receiving said detecting signal and said plurality of decoded timekeeping signals, and in response thereto being adapted to prevent said decoded timekeeping signals from being applied to said driver means to thereby prevent a voltage difference from being effected between the segment electrode and control electrode of each display digit.

4,122,662

WRIST WATCH IDENTIFICATION

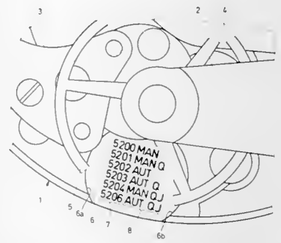
Gerald Visconti, Bellach, Switzerland, assignor to A. Schild S.A., Switzerland

Filed May 2, 1977, Ser. No. 792,856

Claims priority, application Switzerland, May 14, 1976, 6073/76

Int. Cl.[2] G04B *17/00, 33/00*

U.S. Cl. 58—59 **4 Claims**



1. A wrist watch movement comprising a platin with an inside face and a peripheral edge, a balance cock secured on said platin, a balance wheel mounted between said cock and said platin said balance wheel having a felloe passing near said peripheral edge, a flat recess in said inside face of the platin, visible through said felloe and a double series of markings provided within said flat recess, one of said series of markings being formed of numbers.

4,122,663

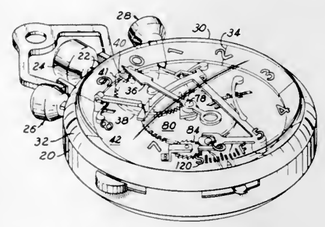
STOP WATCH AND TIMING DEVICE

Bruce A. Kock, 6017 Ocean View Dr., Oakland, Calif. 94618

Filed Mar. 18, 1976, Ser. No. 668,086

Int. Cl.[2] G04B *11/00, 27/04;* **G04F** *7/06, 7/08*

U.S. Cl. 58—74 **49 Claims**



1. In a resettable stop watch which includes driving means, a time train connecting the driving means to an escapement, a dial train, resettable time indicating means connected to said dial train, the improvement comprising,

a normally engaged clutch for coupling the dial train to the time train, and

clutch actuating means for disengaging the clutch during resetting of the time indicating means.

4,122,664

ELECTRONIC WATCH

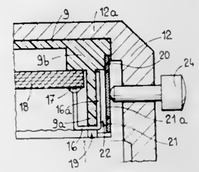
Jean-Marcel Stampfli, Le Landeron, Switzerland, assignor to Ebauches Electroniques S.A., Switzerland

Filed Mar. 9, 1977, Ser. No. 775,746

Claims priority, application Switzerland, Mar. 25, 1976, 3719/76

Int. Cl.[2] G04B *37/12*

U.S. Cl. 58—88 B **7 Claims**



1. An electronic watch of the solid state type with no movable mechanical elements excepting the control elements which are manually operable to control the functions of the watch, said watch comprising, a body retaining all of the electrical components of the watch including the display devices thereof, said electrical components being completely surrounded with insulating material to render the watch humidity resistant, a metallic ring surrounding said body, said ring being elastically deformable at least at some locations thereon, said ring being maintained on the greatest portion of its height at a distance from said body, electrical contact blocks connected with electrical components within the body, said blocks being carried by the body at a location opposite the deformable portions of the ring, the ring being connected to ground of the watch, whereby exertion of a radial force on the ring at a location opposite one or the other of said blocks will deform the ring to cause the same to contact a block and ground the ring to control a function of the watch.

4,122,665

METHOD OF MANUFACTURING A PALLET LEVER AND PALLET LEVER MADE BY THIS METHOD

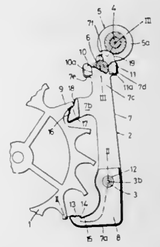
Urs Giger, Solothurn, Switzerland, assignor to ETA A.G. Ebauches-Fabrik, Switzerland

Filed Jul. 6, 1976, Ser. No. 703,010

Claims priority, application Switzerland, Aug. 5, 1975, 10203/75

Int. Cl.[2] G04B *15/08*

U.S. Cl. 58—121 R **15 Claims**



1. In a method of manufacturing a pallet lever for a timepiece movement of the type wherein a lever body is formed in one piece with active elements having functional faces intended to cooperate with an escape wheel and an impulse pin, respectively, the improvement comprising the steps of:

forming from a plane metal plate by stamping, a plurality of blocks projecting from one plane face of that plate, and constituting active elements, and,

thereafter blanking said lever body along an outline passing outside the contours of said blocks at least at the locations of the functional faces thereof.

4,122,666

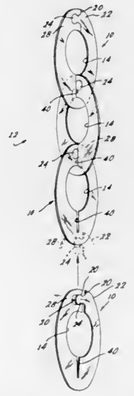
CHAIN

Quenton W. Jessop, 2351 Spruce St., Carlsbad, Calif. 92008

Filed Jul. 19, 1976, Ser. No. 706,439

Int. Cl.[2] F16G *13/18*

U.S. Cl. 59—80 **18 Claims**



1. The improvement in a chain having a series of interlocking links, comprising:

(a) each link being of uniform thickness and having flat faces and being formed from a thin, uniform-thickness sheet of plastic material,

(b) said link having a closed form shape defining a central opening and being divided on a line extending from the central opening to the outer boundary of the link, said plastic material forming said link having sufficient flexibility so that said link can be joined to another by spreading open said link on said line in a direction lateral of said faces of said link,

(c) said line having a shape defining interlocking link ends at said line preventing spreading apart of said link ends at said line in a direction lateral of said line in the plane of said link, whereby said link ends remain locked as long as said link ends remain in the same plane and as long as there is no material failure, and

(d) said opening being oblong and said link having said line at a first end thereof and having at the second end thereof a slot open to said opening and extending part way toward the outer boundary of said link and of a size to match the cross-sectional width and thickness of said first end at said line, first and second adjoining links in said chain being connected with said first end of the first link received in the slot at the second end of said second link with the walls of that slot holding interlocking link ends in a common plane thereby preventing separation thereof.

4,122,667

SYSTEM FOR DETECTING ABNORMALITY IN FUEL FEED CONTROL SYSTEM OF GAS TURBINE ENGINE

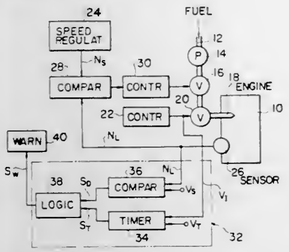
Akio Hosaka, and Eiji Tsuruta, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 7, 1976, Ser. No. 748,299

Claims priority, application Japan, Dec. 8, 1975, 50/165504[U]

Int. Cl.² F02C 7/26

U.S. Cl. 60—39.09 R **6 Claims**



1. A fuel feed control system for a gas turbine engine, including sensor means to produce an electrical first signal representing actual engine speed and first comparator means for producing a fuel feed rate control signal based on the magnitude of a deviation of the actual engine speed signal from a reference signal representing a variably intended engine speed, a subsystem for detecting the presence of an abnormality in the fuel feed control system shortly after the starting of the engine, said subsystem comprising:

timer means for producing an electrical second signal after the lapse of a predetermined period of time from the starting of said engine, said predetermined period of time being chosen such that when said second signal is produced the engine speed is low enough to take preventive action against the occurrence of an overrun if an abnormality is detected at this moment;

second comparator means for producing an electrical third signal if the amplitude of said first signal is below a predetermined value corresponding to an engine speed normally expected after the lapse of said predetermined period of time from the starting of said engine; and

logic means, connected to receive said second and third signals from said timer means and said comparing means for producing an electrical warning signal when said third electrical signal has a predetermined relationship to said second electrical signal.

4,122,668

IRIS CONTROL FOR GAS TURBINE ENGINE AIR BRAKE

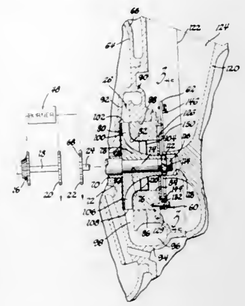
Cheng-Chien Chou, Carmel, Ind., and Theodore L. Rosebrock, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 707,494, Jul. 22, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,568

Int. Cl.² F02C 7/02

U.S. Cl. 60—39.16 R **4 Claims**

1. A flow controlled air brake assembly for braking a power shaft of a two shaft gas turbine engine comprising a turbine engine bulkhead, a power shaft extending through said bulkhead, a compressor case secured on said bulkhead having a pump chamber with an axial inlet and a radially located outlet, an air brake impeller located within said pump chamber secured to said shaft for rotation within said chamber, said impeller having blade means thereon to produce high specific work on air flow thereacross and an axially extending inlet hub surface, said blade means having an inlet inducer segment on said inlet hub surface, a plurality of iris vanes located circumferentially around said axial inlet, each of said vanes having a pivoted outer end and a free end, means for supporting said outer end on said case for pivotal movement of said vane with respect to said inlet, each of said vanes having a curved first edge segment thereon and a curved second edge segment thereon, control means for positioning said vanes in a maximum air throttle control position wherein each of said free ends engage a second edge segment to locate said first edge segments as a continuous circular edge, said first and second curved edge segments having an arcuate extent and radius to space said circular edge from said inlet hub surface to define an annular orifice opening around said inlet hub to produce limited mass air flow to the impeller to minimize power loss therefrom while maintaining flow of cooling air through the impeller, said annular orifice being located immediately axially upstream of said inlet inducer segment at a closely coupled distance so as to cause high velocity air streams downstream of said orifice to enter said inlet inducer segment before the air stream expands to fill the flow passage upstream of said inlet inducer thereby to reduce aerodynamic stall in said impeller at said limited mass air flow, said control means having a maximum brake control position wherein said vanes are swung completely radially outwardly of said inlet to define a large area annulus between said vanes and said inlet hub surface for unrestricted air flow into said impeller to produce increased power loss therefrom with resultant braking of said power shaft.



4,122,669

SINGLE STAGE OR MULTI-STAGE EXPANSION ENGINE

Cornelis Hubers, Van Ostadelaan 2, Rozenburg, Netherlands

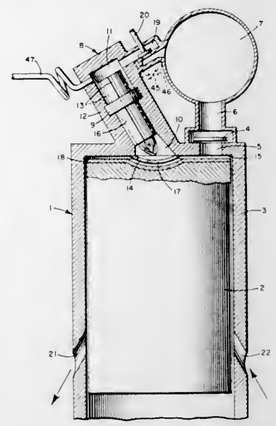
Continuation-in-part of Ser. No. 401,538, Sep. 27, 1973, abandoned, which is a continuation of Ser. No. 193,687, Oct. 29, 1971, abandoned. This application Jan. 5, 1976, Ser. No. 646,419

Claims priority, application Netherlands, Oct. 29, 1970, 7015863

Int. Cl.² F02G 1/02

U.S. Cl. 123—200 **6 Claims**

1. An expansion engine comprising at least one cylinder, a piston within said cylinder, a cylinder cover provided with a construction comprising a burner housing and an air accumulator reservoir, said housing defining a first and a second chamber, a partition dividing said chambers, at least one burner positioned in said partition, the first chamber of the burner housing being in open communication with the cylinder by means of an opening, the second chamber communicating with said air accumulator reservoir, a non-return valve connecting said reservoir to said cylinder, at least one pressure equalizing conduit interconnecting said chambers, said conduit being constructed as a seal to prevent combustion gases and combustion air from passing therethrough, means to supply fuel to the burner and means for controlling the quantity of air for furnishing power and for maintaining the flame at a minimum capacity during the remainder of the cycle.



4,122,670

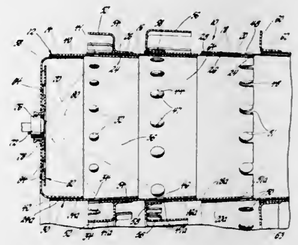
PARALLEL STAGE FUEL COMBUSTION SYSTEM

Samuel B. Reider, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 4, 1977, Ser. No. 765,846

Int. Cl.² F02C 7/22

U.S. Cl. 60—39.65 **3 Claims**



1. A combustor assembly for a gas turbine engine, comprising a head plate, a combustor liner joined to said plate including an outer wall and an inner wall, a plurality of pilot air holes in said liner located a first predetermined distance downstream of said head plate to supply a first combustion zone within said liner, a plurality of main air holes in said liner located downstream of said pilot air holes to supply a second combustion zone within said liner, a first fuel injection nozzle supported on said head plate for directing a first narrow fuel spray cone of a predetermined included angle to maintain a non-flammable air/fuel mixture within said first combustion zone at said narrow fuel spray cone, said narrow fuel spray cone being dispersed at said second combustion zone to define a flammable air/fuel mixture, a second fuel injection nozzle supported on said head plate in parallel to said first nozzle and including means therein to produce a wide angle fuel cone for supplying a fuel dispersion into said first combustion zone for combustion with air flow through said pilot air holes prior to passage into said second combustion zone to prevent combustor flame blow-out under lean fuel/air ratios.

4,122,671

HYDRAZINE DECOMPOSITION AND OTHER REACTIONS

Warren E. Armstrong, Lafayette; Donald S. La France, Walnut Creek, and Hervey H. Voge, Berkeley, all of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 26, 1962, Ser. No. 234,280

Int. Cl.² C06D 5/04

U.S. Cl. 60—218 **10 Claims**

1. A method for the self-starting decomposition of liquid hydrazine which comprises contacting the hydrazine with a catalyst consisting essentially of a porous support having a surface area of at least about 3 square meters per gram and about 0.1 to about 35% by weight of a mixture of ruthenium with at least one metal of the group consisting of iridium and platinum in which the ruthenium is about 20 to about 70 atom percent of said metals.

4,122,672

DUCT LININGS

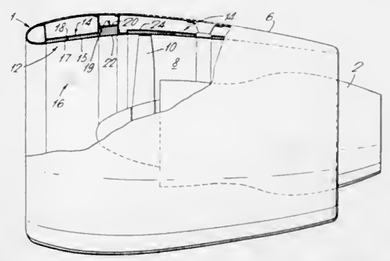
Brian W. Lowrie, Allestree, England, assignor to Rolls-Royce Limited, London, England

Filed Apr. 4, 1977, Ser. No. 784,637

Claims priority, application United Kingdom, Apr. 5, 1976, 3739/76

Int. Cl.² F02K 3/06, 1/26

U.S. Cl. 60—226 R **8 Claims**



1. In a duct containing an axial fluid-flow bladed rotor whose rotor blade tips attain a velocity of at least mach 1.1 relative to the fluid at a predetermined rotational speed, a non-sound absorbing by resonance acoustic lining which at said predetermined speed acts to combat the degeneration of shock-waves at blade passing frequency into multiple pure tone noise and which forms at least part of the duct wall near to the plane of rotation of said blades, said non-sound absorbing by resonance liner comprising a pervious facing skin, an impervious backing layer, and a spaced cell honeycomb layer sandwiched between said facing skin and said backing layer, said cells being of a depth substantially equal to half the wavelength of said blade passing frequency, whereby shock-wave energy which enters said non-sound absorbing by resonance liner is fed back into the duct to tend to maintain regular spacing and uniform amplitude of the shockwave pattern in said duct.

3. The combination of claim 1 in which the bladed rotor comprises a fan rotor in a turbofan aero engine.

4,122,673

INTERNAL COMBUSTION ENGINE WITH AFTERBURNING AND CATALYTIC REACTION IN A SUPERCHARGER TURBINE CASING

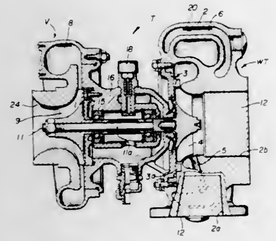
Alfred Leins, Uhingen, Germany, assignor to J. Eberspächer, Esslingen am Neckar, Germany

Continuation-in-part of Ser. No. 745,868, Nov. 29, 1976, abandoned, which is a continuation of Ser. No. 508,838, Sep. 24, 1974, abandoned. This application Mar. 10, 1977, Ser. No. 776,180

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1973, 2348866

Int. Cl.[2] **F01N** *5/04;* **F02B** *33/40;* **F01D** *9/02, 25/00*

U.S. Cl. 60—274 **19 Claims**



1. Method of cleaning the exhaust gases from a liquid fuel driven engine utilizing a turbosupercharger connected to the engine and including a turbine having a turbine casing, and a compressor, comprising the steps of accumulating the exhaust gases from the engine for increasing the temperature of the gases, initiating combustion of unreacted fuel in the exhaust gases for effecting a first afterburning between the engine and the turbine and before passing the exhaust gases into the turbine casing, passing the exhaust gases through the turbine casing, compressing fresh air within the compressor, withdrawing a part of the compressed air from the compressor and adding it to the exhaust gases passing through the turbine casing, providing a second afterburning of the mixture of exhaust gases and compressed air after the mixture of exhaust gases and compressed air have exited from the outlet from the turbine casing, and catalytically treating the exhaust gases within the turbine casing after the first afterburning and before the second afterburning for reducing the nitric oxide content in the exhaust gases including catalytically treating the exhaust gases within the turbine casing at the inlet into and the outlet from the turbine casing.

4,122,674

APPARATUS FOR SUPPRESSING COMBUSTION NOISE WITHIN GAS TURBINE ENGINES

Anders O. Andersson, Seattle, and Robert B. Purves, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

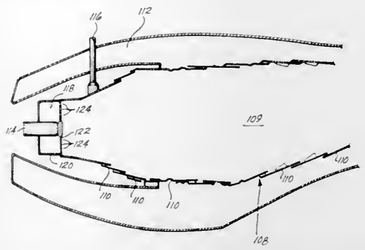
Filed Dec. 27, 1976, Ser. No. 754,584

Int. Cl.[2] **F02C** *7/24*

U.S. Cl. 60—39.65 **7 Claims**

1. In a gas turbine combustor apparatus including at least one burner having wall means defining an end face and an oppositely disposed substantially open end wherein fuel is injected into the interior region formed by said wall means by a fuel nozzle adapted for mounting within a central opening of said burner end face, said fuel being ignited within said interior region of said burner to supply a flow of gaseous combustion products through said open end of said burner, the improvement comprising:

a noise suppressing cavity for reducing the combustion noise generated by the ignition of said fuel within said burner, said noise suppressing cavity including an annular disc transversely disposed across said interior region of said burner and a tubular section for the injection of said fuel into said interior region of said burner, said tubular section extending from said central opening of said burner end face to the central opening within said annular disc, said tubular section passing through said central opening of said burner end face with the outer periphery of said tubular section being connected to the boundary of said central opening of said burner end face to prevent the passage of fluid flow between said outer periphery of said tubular section and said boundary of said central opening in said burner end face, said annular disc having a plurality



of openings therein for placing said noise suppressing cavity in acoustic communication with said interior region of said burner, said openings of said annular disc and said noise suppressing cavity being dimensioned and arranged to effect a minimum acoustic impedance relative to a theoretical constant velocity acoustic source positioned within a predetermined region of said interior region of said burner, said burner wall means being imperforate in the region extending from said burner end face to said transversely disposed annular disc.

4,122,675

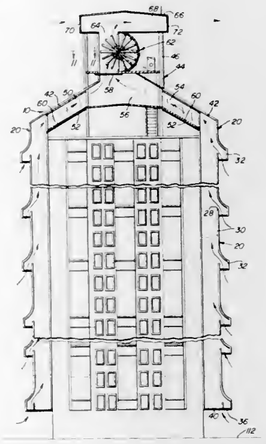
SOLAR HEAT SUPPLEMENTED CONVECTION AIR STACK WITH TURBINE BLADES

Jack Polyak, 1015 Kelly Ave., Joliet, Ill. 60435

Filed Mar. 17, 1977, Ser. No. 778,784

Int. Cl.[2] **F02C** *1/02;* **F03G** *7/00*

U.S. Cl. 60—398 **9 Claims**



1. In combination with a high rise building of the type including upstanding peripheral side walls, at least one of said side walls including horizontally spaced apart vertical tiers of vertically spaced windows, at least one duct means having a vertical outer wall, said duct means extending along, supported from and projecting outwardly of said one side wall between a pair of adjacent tiers of windows, said outer wall including vertically spaced horizontally outwardly projecting and downwardly opening snout-shaped shrouds opening in upwardly inclined directions into said duct means, and rotary turbine means supported from an upper portion of said building including an air inlet and an air outlet, the upper end portion of said duct means being communicated with said rotary turbine means inlet.

4,122,676

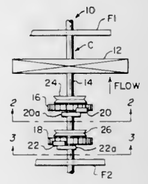
APPARATUS FOR EXTRACTING ENERGY FROM WAVE MOTION

Edmundo Kikut, Avenida 8 Calles 5-7, San Jose, Costa Rica

Filed Aug. 16, 1977, Ser. No. 825,142

Int. Cl.[2] **F16D** *33/00*

U.S. Cl. 60—398 **5 Claims**



1. Apparatus for extracting energy from the motion of water waves during both the ebb and flow of such waves, said apparatus including at least one wave responsive drive unit comprising:

a screw propeller adapted to be disposed in the path of such waves and rotatable in opposite directions responsive to the ebb and flow of the waves;

a drive shaft on which said propeller is mounted;

first and second ratchet wheels rotatably mounted on said shaft at spaced locations therealong;

first and second pawls respectively associated with said first and second ratchet wheels for respectively limiting the transmission of the rotation of said drive shaft to said opposite directions of rotation of the shaft produced by the ebb and flow of the waves;

an output shaft; and

first and second transmission means associated with said first ratchet wheel and said first pawl and with said second ratchet wheel and said pawl, respectively, for converting the rotation of the drive shaft produced by each ratchet wheel and pawl combination into rotation of said output shaft in a single direction.

4,122,677

LOAD RESPONSIVE VALVE ASSEMBLIES

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

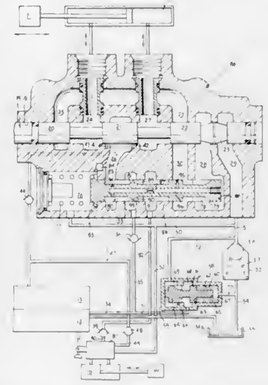
Continuation-in-part of Ser. No. 559,818, Mar. 19, 1975, Pat. No. 3,984,979, and a continuation-in-part of Ser. No. 522,324, Nov. 8, 1974, Pat. No. 3,998,134, and a continuation-in-part of Ser. No. 655,561, Feb. 5, 1976. This application Jul. 27, 1976, Ser. No. 709,205

The portion of the term of this patent subsequent to Oct. 12, 1993, has been disclaimed.

Int. Cl.[2] **F15B** *13/08*

U.S. Cl. 60—427 **17 Claims**

11. Multiple load responsive valve assemblies each comprising a housing having a fluid inlet chamber connected to pump means, said pump means having fluid output control means, a fluid supply chamber, first and second load chambers, a fluid outlet chamber, a fluid exhaust chamber, and fluid exhaust means connected to reservoir means, first valve means for selectively interconnecting said fluid load chambers with said fluid supply chamber and said fluid outlet chamber, said first valve means having variable metering orifice means operable to throttle fluid flow between said exhaust chamber and said fluid exhaust means, pressure sensing means selectively communicable with said load chambers by said first valve means and operable to transmit control load pressure signal to said fluid output control means, means to interconnect fluid exhaust means of said valve assemblies to form common exhaust manifold means, exhaust pressure relief valve means interposed between said exhaust manifold means and said reservoir means, second valve means having first throttling means between said fluid inlet chamber and said fluid supply chamber, said second valve means being responsive to pressure in said fluid exhaust



chamber and operable to maintain said pressure in said fluid exhaust chamber at a first relatively constant preselected pressure level while fluid flow is being throttled by said first throttling means, said second valve means having isolating means to isolate said fluid supply chamber from said fluid inlet chamber when one of said load chambers is connected to said fluid outlet chamber by said first valve means and said exhaust chamber is at a pressure higher than said first preselected pressure level, and fluid replenishing means to interconnect for fluid flow said fluid supply chamber and said exhaust manifold means when said fluid isolating means isolate said fluid supply chamber from said fluid inlet chamber.

4,122,678

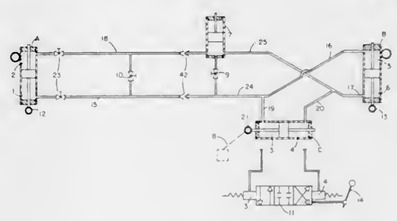
HYDRAULIC CONTROL WITH FEEDBACK FOR POWERED MACHINERY

Mahlon T. Wilson, 5 Erie La., Los Alamos, N. Mex. 87544

Filed May 23, 1977, Ser. No. 799,695

Int. Cl.[2] **F15B** *7/00*

U.S. Cl. 60—571 **11 Claims**



1. A hydraulic control system with position feedback for powered machinery comprising:

(a) a double-acting hydraulic master means,

(b) a double-acting hydraulic slave means,

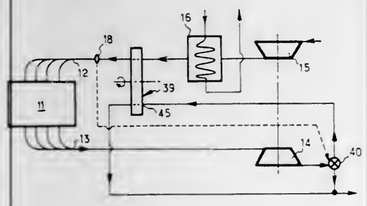
(c) a double-acting hydraulic control means, all of said means being hydraulically interconnected,
(d) said master means consisting of either a rotary actuator or cylinder which is situate and mechanically connected to a handle at a control station and hydraulically connected with
(e) the said control means, consisting of a rotary actuator or cylinder which is situate and is mechanically attached to the lever or is incorporated into the control mechanism that actuates the normal motive power system of the working element of the said machinery, and said control means being hydraulically connected with
(f) the slave means, consisting of either a rotary actuator or cylinder which manipulates both the said master and control means, said slave actuator or cylinder being attached on a linkage of the working element of the machinery.

4,122,679

METHOD AND MEANS FOR PRE-HEATING THE INTAKE AIR OF A SUPERCHARGED, LOW-COMPRESSION RATIO DIESEL ENGINE WHEN OPERATING AT LOW LOAD

Francis Charron, Croissy-sur-Seine, France, assignor to Societe d'Etudes de Machines Thermiques, Saint Denis, France

Continuation of Ser. No. 491,750, Jul. 25, 1974, abandoned. This application Oct. 6, 1976, Ser. No. 729,977
Claims priority, application France, Aug. 10, 1973, 73 29429
Int. Cl.[2] F02B *29/04*
U.S. Cl. 60—599 **19 Claims**



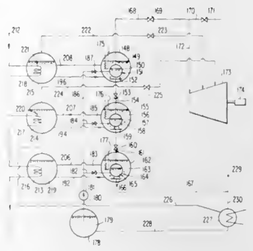
1. In combination with a supercharged low compression ratio diesel engine including an exhaust duct, an air intake duct, an exhaust gas-driven turbine connected in said exhaust duct and having an inlet for receiving exhaust gases from said engine and an outlet for said gases, a supercharging air compressor, means operatively coupling said turbine to said compressor, said compressor having a discharge outlet connected to said air intake duct and an aftercooler located in the intake duct downstream of the supercharging air compressor and having a cooling fluid inlet adapted to be connected to a source of cooling fluid and a cooling fluid outlet, a device for preheating the intake air to said engine, said device comprising:
heat exchange apparatus having a heating fluid input for receiving exhaust gases from the engine, a heating fluid output for the exhaust gases, a heated fluid input for receiving intake air for the engine, a heated fluid output for delivering heated intake air to the air intake duct of the engine, and a heat conveying means moving in a closed path of travel adapted to be in heat transfer relation with engine exhaust gases flowing between the heating fluid input and output for one part of the closed path and in heat transfer relation with engine intake air flowing between the heated fluid input and output for another part of the closed path;
a controllable three-way valve located in said exhaust duct and having an outlet connected to said heating fluid input of said heat exchange apparatus; and
means for operating said three-way valve to selectively control the flow of exhaust gases to the heating fluid input of said heat exchange apparatus for heating said heat conveying means in the one part of said closed path.

4,122,680

CONCENTRATION DIFFERENCE ENERGY OPERATED POWER PLANTS AND MEDIA USED IN CONJUNCTION THEREWITH

Naotsugu Isshiki, Kyodo; Isao Nikai, and Hiroyuki Uchida, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Ote, Japan

Filed Nov. 11, 1976, Ser. No. 741,033
Claims priority, application Japan, Nov. 13, 1975, 50-135716; Feb. 25, 1976, 51-18830; May 10, 1976, 51-57243; Jul. 7, 1976, 51-80533; Jul. 7, 1976, 51-80534
Int. Cl.[2] F01K *25/06*
U.S. Cl. 60—649 **6 Claims**



1. A multistage concentration difference energy engine comprising a plurality of aqueous solution tanks each of which includes a pure water boiler, means interconnecting said tanks so that the steam generated in the pure water boiler in the tank of a first stage may be injected through nozzles into the aqueous solution in the tank of an adjacent stage, and the steam generated in the pure water boiler in the last-named tank may be injected through nozzles into the aqueous solution in the tank in the next higher stage, and means for conducting steam generated in the pure water boiler in said tank in said latter stage to a steam engine, means for conducting exhaust steam from the steam engine through nozzles into the aqueous solution in the first stage tank, and means for feeding strong aqueous solution to each of said aqueous solution tanks.

4,122,681

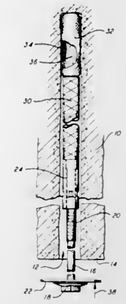
MINE ROOF SUPPORT ASSEMBLY

George S. Vass, Summersville, W. Va., and Gerald M. Speidel, Strongsville, Ohio, assignors to The Eastern Company, Naugatuck, Conn.

Filed Sep. 16, 1977, Ser. No. 833,867
Int. Cl.[2] E21D *21/02*
U.S. Cl. 405—261 **1 Claim**

1. A method of reinforcing a rock formation comprising the steps of:
(a) forming a hollow collar, open at both ends and having coaxial, internal threads extending from both ends toward the center;
(b) striking the external surface of said collar with a die to cause inward deformation of said internal threads to an extent that a predetermined torque is required to produce relative rotation of said collar and an externally threaded member engaged therewith;
(c) advancing the externally threaded end of an elongated bolt into one end of said collar until the end of the bolt engages said inward thread deformation;
(d) advancing the externally threaded end of an elongated bar into the other end of said collar until fixed stop means prevent further advancement of said bar;
(e) drilling a hole of predetermined dimensions into a face of the rock formation;

(f) inserting a destructible resin cartridge into said hole;
(g) inserting said bar, collar and bolt into said hole behind said cartridge with the bolt head left outside;
(h) rotating the bolt head to cause common rotation of said bolt, collar and bar, thereby fracturing said resin cartridge and mixing the contents thereof within the hole around said bar;



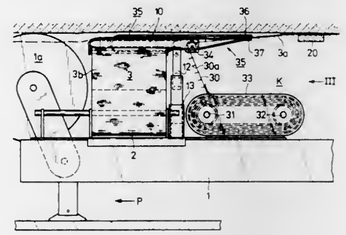
(i) stopping rotation for a period of time sufficient for the resin mixture to harden about said bar, thereby preventing further rotation of said bar and of said collar in a direction tending to advance said bar further into said collar; and
(j) applying to said bolt a torque in excess of said predetermined torque to advance the threaded end of said bolt into said collar past said inward thread deformation and engage the bolt head with structure engaging the face of said rock formation.

4,122,682

METHODS OF AND APPARATUS FOR APPLYING ROOF MATS TO MINE WORKINGS

Karl M. Groetschel, Jakob-Klar-Strasse 5, 8 Munchen 40, Fed. Rep. of Germany

Filed Jul. 29, 1977, Ser. No. 820,381
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634557; Dec. 15, 1976, 2656760
Int. Cl.[2] E21D *19/02*
U.S. Cl. 405—150 **26 Claims**



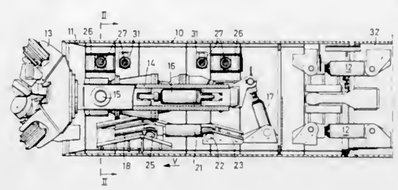
8. Apparatus for applying a flexible mat to the roof of a mine working along a plurality of generally parallel laterally offset paths comprising:
a. mobile means including a body, means thereon for storing a portion of flexible mat while permitting an extended portion to be led off from said stored portion for application to the underface of the roof,
b. applicator means for bringing into proximate relation an edge of the extended portion of mat applied to the roof along each of said paths and an edge of the extended portion of mat applied along the immediately preceding path,
c. means for mechanically fastening said extended portions of mat together adjacent to said edges.

4,122,683

TUNNEL DRIVE SHIELD

Hans G. Follert, Dortmund; Klaus Linde, Lunen, and Hans Jutte, Dortmund-Brechten, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Apr. 8, 1977, Ser. No. 785,891
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1976, 26152647
Int. Cl.[2] E01G *3/02*
U.S. Cl. 405—142 **7 Claims**



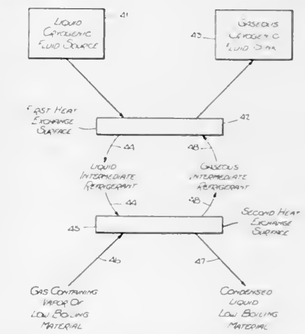
1. In a tunnel drive shield having a plurality of bracing units arranged around its periphery, the bracing units being expansible against the surrounding tunnel wall to control the direction of shield advance, the improvement comprising a bracing unit provided in each shield quadrant defined by the vertical and horizontal center planes of the shield, each bracing unit expansible by control means movable in a non-radial direction, each of said bracing units positioned below the horizontal center plane of the shield controlled by means of a hydraulic ram, said ram having working stroke lying in a direction parallel to the longitudinal axis of the shield.

4,122,684

METHOD FOR THE RECOVERY OF VOLATILE LIQUIDS

Michael J. Clarkson, Penmark, and Robert Duffield, Penarth, both of Wales, assignors to BP Chemicals Limited, London, England

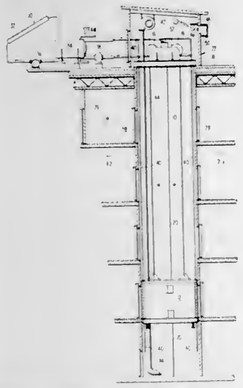
Filed Jun. 28, 1976, Ser. No. 700,556
Claims priority, application United Kingdom, Jul. 23, 1975, 30793/75
Int. Cl.[2] F17C *7/02*
U.S. Cl. 62—54 **10 Claims**



1. The process for the recovery of a low boiling material present as a vapour in a gas which comprises feeding a bulk cryogenic fluid from a source of liquid cryogenic fluid to a sink of gaseous cryogenic fluid across the first side of a first heat

exchange surface through which heat is removed from liquid intermediate refrigerant condensing on the second side of the first heat exchange surface, then passing the condensed liquid intermediate refrigerant, without compressing said refrigerant, to the first side of the second heat exchange surface through which it removes heat into boiling liquid intermediate refrigerant from low boiling materials present as a vapour in a gas, which vapour is condensing as a liquid on the second side of the second heat exchange surface.

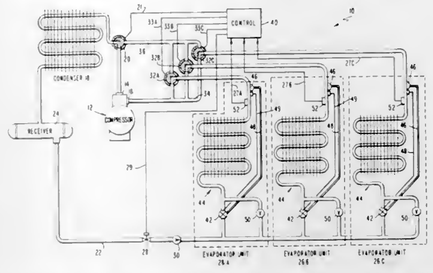
4,122,685
ELEVATOR SHAFT
Alonzo W. Ruff, York, Pa., assignor to St. Onge, Ruff & Associates, Inc., York, Pa.
Filed Mar. 29, 1977, Ser. No. 782,453
Int. Cl.[2] F25D *21/00*
U.S. Cl. 62—80 **2 Claims**



1. A method of modifying an existing cold storage warehouse for frozen commodities having at least one elevator shaft therein to eliminate ice formation within said shaft comprising:
sealing the upper end of said shaft from air and moisture leakage from the ambient atmosphere exterior to the warehouse;
establishing vestibule means enclosing the elevator doors on each floor to minimize transfer of air from the warehouse to the shaft when opening the elevator doors;
adding heat to said shaft to raise the temperature substantially above that of the warehouse interior; and
establishing a recirculating pattern flow of air within said shaft between the top and bottom thereof.

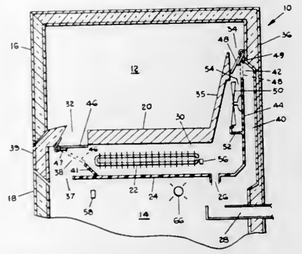
4,122,686
METHOD AND APPARATUS FOR DEFROSTING A REFRIGERATION SYSTEM
Herbert S. Lindahl, Danville, Ill., and Chander Datta, Longueuil, Canada, assignors to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Jun. 3, 1977, Ser. No. 803,121
Int. Cl.[2] F25B *41/00, 47/00*
U.S. Cl. 62—81 **8 Claims**

1. In a method of defrosting a refrigeration system which includes a compressor, condenser and receiver connected in series with each other and in series with a plurality of parallel connected evaporator expansion valve structures and wherein defrosting of an evaporator is accomplished by isolating the condenser and receiver from the compressor; isolating the defrosting evaporator outlet from the compressor inlet; and passing hot, compressed refrigerant gas directly from the compressor to the evaporator being defrosted while continuing the refrigeration cycle in the remaining evaporator expansion valve structures utilizing liquid refrigerant from the condenser, receiver and from the defrosting evaporator, the improvement comprising:
(a) discontinuing the flow of hot, compressed refrigerant gas to the defrosting evaporator at a predetermined, relatively high pressure, temperature or time;
(b) monitoring the pressure in the defrosting evaporator;



(c) maintaining the defrosting evaporator isolated from the compressor inlet line after said flow of hot, compressed gas to the defrosting evaporator is discontinued until a predetermined, lower pressure has been reached; and
(d) terminating the defrost cycle by re-establishing the connection between the defrosting evaporator outlet and the compressor inlet.

4,122,687
REFRIGERATION SYSTEM WITH LOW ENERGY DEFROST
Thomas M. McKee, 3003 Iroquois Trail, Hastings, Mich. 49058
Division of Ser. No. 749,073, Dec. 9, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,347
Int. Cl.[2] F25D *21/12*
U.S. Cl. 62—156 **3 Claims**



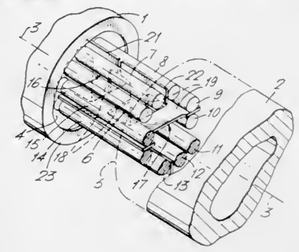
1. In a refrigeration unit having
a housing containing a freezer compartment;
an evaporator coil mounted within an air passage exterior to the freezer compartment;
a condenser and compressor operably connected to the evaporator coil for cooling air in heat exchange with the evaporator coil to a temperature below 0° C. (32° F.);
the air passage having a first set of apertures in open communication with the freezer compartment and a second set of apertures in open communication with a source of air;
means for circulating air either through the first set of apertures of the passageway so that air flows through the freezer compartment and across the evaporator coil in heat exchange therewith to cool the freezer compartment or through the second set of apertures of the passageway so that air having a temperature above 0° C. flows across the evaporator coils in heat exchange relationship therewith;
valve means for controlling the passage of air through the first and second set of apertures and through the air passageway;

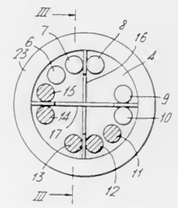
temperature sensitive means mounted within one of the freezer compartment and air passageway for turning off the compressor when a first predetermined temperature is detected and for turning on the compressor when a second predetermined higher temperature is detected; the improvement comprising:
an air duct positioned outside the insulating walls of the freezer space and within the outer shell of the refrigeration unit in communication with the air passage to supply air above 0° C. to the evaporator coils;
means coupled to the temperature sensitive means for controlling the valve means to direct air from the above 0° source to pass through the second set of apertures and across the evaporator coil when the compressor is turned off and to use the first set of apertures to prevent air from circulating through the freezer compartment, the air passage being free from heating means so that the evaporator is defrosted only by heat exchange with the air from the above 0° C. source.

4,122,688
REFRIGERATING SYSTEM
Taketoshi Mochizuki; Fumio Harada; Tadahiro Imaizumi, all of Shimizu, and Koichi Nose, Ashiya, all of Japan, assignors to Hitachi, Ltd. and Shin Meiwa Industry Co., Ltd., both of, Japan
Filed Jul. 19, 1977, Ser. No. 816,938
Claims priority, application Japan, Jul. 30, 1976, 51-90338; Jul. 30, 1976, 51-90340; Mar. 23, 1977, 52-34423[U]
Int. Cl.[2] F25B *41/00, 47/00*
U.S. Cl. 62—196 R **18 Claims**

1. A refrigerating system comprising a refrigerant compressor, a condenser, a reservoir for a condensate, a plurality of unit evaporator means, a plurality of expansion valves each located on the condenser side of one of said unit evaporator means and connected in parallel with a check valve, a plurality of electromagnetic valves each located in a line connecting one of said expansion valves to said reservoir for a condensate and connected in parallel with a check valve, a branch line connected at one end thereof to an outlet line of said compressor, and a plurality of flow passage change-over valves each located on the compressor side of one of said unit evaporator means and interchangeably connecting the respective unit evaporator means either to the suction side of said compressor or to the other end of said branch line, said electromagnetic valves being opened and said unit evaporator means being all connected to the suction side of said compressor when the refrigerating system operates in a refrigerating mode and any of the unit evaporator means desired to be defrosted being connected to the other end of said branch line through the associated flow passage changeover valve and the electromagnetic valve belonging to said unit evaporator means in which defrosting is performed being closed when the refrigerating system operates in a defrosting mode, wherein the improvement comprises:
a throttle means for a main refrigerant circuit located in a line of said main circuit connecting said compressor to said reservoir for a condensate in a position downstream of a point of joining of said branch line and said outlet line of said compressor; and
a bypass line connecting an upper portion of said reservoir for a condensate to the suction side of said compressor and mounting therein a throttle means for the bypass line;
said throttle means for the bypass line being closed and said throttle means for the main refrigerant circuit being opened when the refrigerating system operates in the refrigerating mode;
each of said unit evaporator means in which defrosting is desired to be effected being connected directly to said reservoir for a condensate by bypassing the associated expansion valve, the throttle valve means for the main refrigerant circuit having its degree of opening suitably reduced so as to throttle the flow therethrough of the refrigerant and said throttle means for the bypass line being opened when the refrigerating system operates in the defrosting mode.

4,122,689
FLEXURE-PIVOT ASSEMBLIES AND METHODS OF MAKING THEM
Geoffrey Beardmore, Cheltenham, England, assignor to Smiths Industries Limited, London, England
Filed Jul. 6, 1976, Ser. No. 702,827
Claims priority, application United Kingdom, Jul. 3, 1975, 28155/75
Int. Cl.[2] G01C *19/18;* B23P *11/00*
U.S. Cl. 64—15 B **9 Claims**





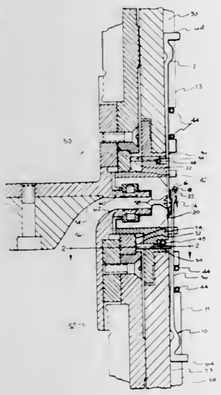
1. A flexure-pivot comprising first and second mounting members; first and second pairs of pins; means connecting said first and second pairs of pins to only said first mounting member; third and fourth pairs of pins; means connecting said third and fourth pairs of pins to only said second mounting member; a first flat spring for resiliently interconnecting the first and third pairs of pins; means mounting one end of said first spring between the pins of said first pair of pins; means mounting the other end of said first spring between the pins of said third pair of pins; a second flat spring for resiliently interconnecting the second and fourth pairs of pins; means mounting one end of said second spring between the pins of said second pair of pins; and means mounting the other end of said second spring between the pins of said fourth pair of pins so that the first and second mounting members are resiliently interconnected for relative angular displacement via said first and second springs.

4,122,690

METHOD AND MEANS FOR TRANSFERRING KNIT LOOPS BETWEEN CYLINDERS OF A DOUBLE CYLINDER KNITTING MACHINE

Battista Moreni, Brescia, Italy, assignor to Speizman Industries, Inc., Charlotte, N.C.

Continuation of Ser. No. 815,403, Jul. 13, 1977, abandoned. This application Jul. 25, 1977, Ser. No. 818,417
Claims priority, application Italy, Jul. 30, 1976, 25909 A/76
Int. Cl.[2] D04B *9/10*
U.S. Cl. 66—14 **10 Claims**



1. In a double cylinder knitting machine of the type operable for selectively knitting plain and purl stitches, the improvement comprising single-hook knitting needles disposed on both cylinders for axial reciprocation in a knitting operation the needles in one cylinder being aligned with the needles in the other cylinder to form pairs, and means extending through the walls of each said cylinder and acting on said needles for displacing needles radially outwardly from their cylinders to allow positioning of the hooks of the other needles of the needle pairs radially inwardly of the hooks of the displaced needles for entry into knit loops initially carried on the displaced needles and for receipt of said loops on said other needles upon shedding of said loops from the displaced needles to effect transfer of said loops.

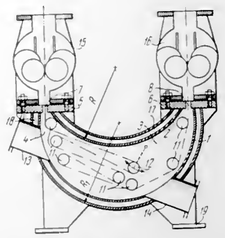
4,122,691

CHAMBER FOR TREATING BAND-TYPE MATERIAL UNDER OVERPRESSURE

Leonid G. Gorodissky, Dmitrovskoe shosse, 153/43, kv. 106, Moscow, U.S.S.R.; Nikolai T. Romanov, deceased, late of Moscow, U.S.S.R., and Anantasia I. by Romanova, administratrix, Bulatnikovsky proezd, 14, korpus 5, kv. 152, Moscow, U.S.S.R.

Filed Sep. 14, 1977, Ser. No. 833,075
Int. Cl.[2] D06B *23/18*
U.S. Cl. 68—5 E **2 Claims**

1. A chamber for treating a band-type material under overpressure comprising: side walls; an arched bottom; an arched roof hermetically joined with said bottom and side walls and made in such a manner that the chamber has a crescent cross section; flanges secured on said arched bottom, roof and side walls; throats formed by said arched bottom and arched roof and located near said flanges; slotted openings in said flanges, intended for admitting and discharging the band-type material into and out of the chamber; a device for transporting the band-type material; hatches provided for visual inspection and for fitting the band-type material into said material-transport device; gates arranged over said slotted openings and intended



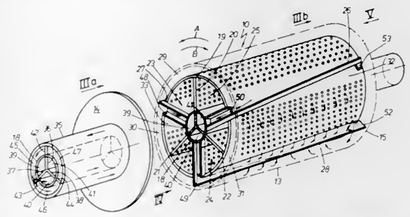
to pass the band-type material and to retain pressure in the chamber at a preset level.

4,122,692

DEVICE FOR TANNING, DYEING OR THE LIKE

Werner Dose, Lindenstrasse 12, D-7585 Lichtenau-Grauelsbaum, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,803
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648057
Int. Cl.[2] C14C *1/00*
U.S. Cl. 69—30 **29 Claims**



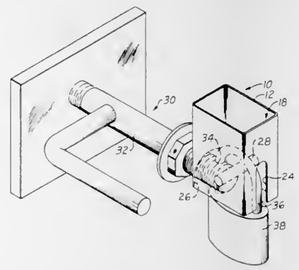
1. A device for tanning, dyeing or the like, comprising
(a) a horizontal rotary drum including a drum jacket having closing walls effecting sealing at the front ends and containing in its interior a tanning or dyeing compartment, which is accessible for loading and unloading via sealable charging openings in the drum jacket,
(b) a hollow shaft, which communicates with the tanning or dyeing compartment, for mounting the drum and for the drainage and/or intake of fluid treatment media,
(c) radial partition walls subdividing said compartment which walls are arranged relative to one another in approximately the same angle displacement into a number of treatment chambers corresponding to the number of radial partition walls, which chambers are of approximately equal size and each comprise a separate sealable charging opening;
(d) the rotary drum comprises, at least approximately in the area of its two frontal ends and in the radial direction, on its exterior a number of pockets corresponding to the number of the treatment chambers, each pocket being in joing communication with respectively two treatment chambers following one another in the circumferential direction;
(e) the hollow shaft penetrates the rotary drum in the centre and in an axially passing manner and extends it at one end, beyond the frontal closing wall and is surrounded by a coaxial pipe socket which is larger in diameter; and
(f) the rotary drum comprises at each axial drum end for each individual treatment chamber an approximately radial connecting line and of which those located at one frontal drum end open with their one end into the annular space between the hollow shaft and the pipe socket and those located at the opposite drum end open with their one end into the interior of the hollow shaft, while all the connecting lines are connected with their other end to a respectively associated pocket in such a way that respectively two connecting lines located opposite at the front ends of the drum open in respect of each treatment chamber into the pockets located at the same circumferential level or staggered relative to one another in the circumferential direction,
whereby during the rotation of the rotary drum in one direction of rotation the treatment medium emerges approximately radially from a treatment chamber and enters a pocket in the area of one front drum end, flows from this pocket through the connecting line thereof into the annular space between the hollow shaft and the pipe socket and returns therefrom, after deflection and possibly a simultaneous medium treatment, such as heating, concentration check etc., as a partial stream through one of the connecting lines at this drum end into a pocket provided there and through this latter, while being mixed with the treatment medium disposed in this pocket, approximately radially into a treatment chamber; the other partial stream flowing simultaneously through the hollow shaft in the axial direction to the opposite drum end and through a connecting line into an associated pocket being mixed with the treatment medium contained therein, and then flowing from this pocket approximately inwards into the same treatment chamber or one that follows in the direction of rotation and in that during the rotation of the rotary drum in the direction of rotation opposite thereto a corresponding scooping of the treatment medium occurs at the other frontal drum end and in the opposite flow direction.

4,122,693

SHACKLE GUARD FOR PADLOCKS

Rolla W. Barr, 16300 Fontaine Dr., Chesterfield, Mo. 63017

Filed Dec. 12, 1977, Ser. No. 859,309
Int. Cl.[2] E05B *67/38*
U.S. Cl. 70—56 **15 Claims**



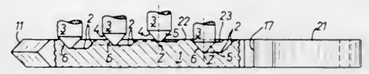
1. A shackle guard for padlocks comprising:
a housing having a cavity in one end thereof, a first relief in the housing adjacent the one end for receiving, into the cavity, a shackle portion of an associated padlock, and a second relief in the housing opposite the first relief and adjacent the one end for receiving, into the cavity, an associated member to be secured by the padlock; and
shackle-securing means connected in the housing for releasably securing the shackle within the cavity.

4,122,694

KEY FOR A CYLINDER LOCK

Heinrich Gretler, Hinwil, Switzerland, assignor to Bauer Kaba AG Sicherheits-Schliessyteme, Switzerland

Filed Sep. 7, 1976, Ser. No. 720,783
Claims priority, application Switzerland, Sep. 11, 1975, 11821/75
Int. Cl.[2] E05B *19/04, 19/06*
U.S. Cl. 70—406 **8 Claims**



1. A key for use in combination with a cylinder lock of the type having a bore and a movable portion rotatable in said bore to operate the lock, a substantially rectangular key slot in the movable portion, and a plurality of tumbler pins with conical distal ends carried by said movable portion and protruding into said key slot, the key comprising
an elongated blade portion insertable into said key slot, said blade portion having a substantially rectangular cross section with substantially flat sides having a transverse width significantly greater than the diameters of said tumbler pins;
a handle portion;
means for defining a fully inserted key position;
means in one of said sides of said blade portion defining a first plurality of longitudinally spaced elongated recesses for receiving the distal ends of said pins,
each of said recesses having a longitudinal dimension significantly greater than the distal ends of said pins,
each of said recesses being located along said blade in a position to receive one of said pins when said key is in said fully inserted position,
said recesses being formed with at least one sloping end surface to permit said pins to slide into and out of said recesses as said blade is inserted and withdrawn, said sloping end surfaces of said recesses being inclined at an angle of about 45° to the side surface of said blade portion,
the means defining at least one of said recesses being located so that, in said fully inserted position, the pin associated with said at least one recess is received by said recess adjacent the end thereof farthest from said handle portion whereby the bore of said lock limits the extent of movement of said pin associated with said at least one recess away from said recess upon longitudinal movement of said blade when said movable portion is moved away from its key withdrawal position, and the engagement of said pin with the end of said recess limits longitudinal motion of said blade portion; and
means defining a second plurality of longitudinally spaced elongated recesses disposed to receive pins extending into the key slot along a plane inclined at 45° from the first said plurality of recesses,
said recesses being located to receive their respective pins at positions spaced from the ends thereof.

4,122,695

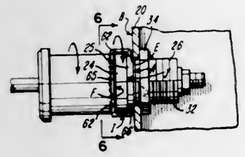
LOCK HEAD PROTECTOR

Mitchell A. Hall, Ft. Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.

Filed Sep. 21, 1977, Ser. No. 835,139
Int. Cl.[2] E05B *15/16*
U.S. Cl. 70—417 **12 Claims**

1. A key-activated cylindrical lock which comprises an elongate substantially cylindrical body portion, said body portion passing through an aperture defined in a panel to be mounted on that panel, an external head on the forward por-

tion of said body portion the diameter of which is greater than the diameter of said body portion, said external head including front, rear and intermediate surfaces, said front surface having a key-receptive opening therein, said rear surface extending outwardly at right angles from said body portion, and said intermediate surface extending between said front and rear surfaces, said external head having peripheral portions thereof abutting a front surface of the panel in which the lock is mounted to prevent the lock from passing inwardly through the panel via the aperture defined therein, a hardened, protective housing for said head, said housing including front, rear and intermediate walls each of which are disposed in overlying relationship with a corresponding surface of the said external



head, said front wall having a key-receptive opening therein, means rotatably securing said housing to said head, and a plurality of hardened ball bearings interposed between corresponding portions of the external head and housing, said ball bearings serving to space portions of the front and intermediate surfaces of the external head from corresponding adjacent portions of the front and intermediate walls of the housing, said ball bearings being disposed in spaced axial alignment with the periphery of the cylindrical body portion of the lock and in axial alignment with sections of said external lock head peripheral portions which must be disfigured in order to pass the lock inwardly through the aperture defined in the panel to dismount the lock from the panel thereby defeating the lock.

4,122,696

METHOD AND APPARATUS FOR MANUFACTURING METALLIC PIPE

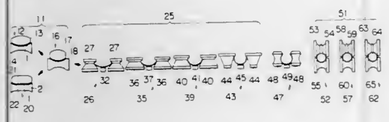
Wataru Midzutani, Kitakyshu; Koe Nakajima, Nakama; Toshio Kikuma, Onga; Keitaku Ondo, Kitakyushu, all of Japan, and assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 21, 1977, Ser. No. 789,716

Claims priority, application Japan, Dec. 13, 1976, 51-149519; Dec. 13, 1976, 51-149520; Dec. 30, 1976, 52-159254; Jan. 17, 1977, 52-3729

Int. Cl.² B21D *39/02, 5/12*

U.S. Cl. 72—52 **16 Claims**



1. In a method for manufacturing a metal pipe wherein a generally flat skelp is formed into an O-shaped cross-section by feeding the skelp in the longitudinal direction thereof through a forming mill having a train of U-shape forming stands, a prefinishing stand and a train of finishing stands, the improvement comprising: providing in the train of forming stands a plurality of pairs of spaced opposed forming rolls along the length of the train with the rolls of each pair symmetrically rotatably mounted on opposite sides of the centerline of the path of the skelp through the forming mill and having profiles with a generally V-shaped recess therein defined by portions of the roll profile having straight lines with the positions of the V-shaped recesses in the rolls of successive pairs of rolls in the direction toward the output end of the forming mill being further around the periphery of the forming stands from the position of the recess in the first forming stand, supplying the generally flat skelp into the train of said forming stands with at most the edge surfaces in line contact with the roll profiles in the bottoms of said recesses and the outer surface of the skelp adjacent the edges in substantially only point contact with the profiles of each of the pairs of the forming rolls in the bottoms of said recesses for holding the skelp so as to apply a bending load to the skelp, the successive pairs of rolls forming the skelp into an increasingly U-shaped skelp.

4,122,697

MEANS AND METHOD FOR REDUCING RADIUS EXPANSION IN THE BENDING OF ELONGATED MATERIALS

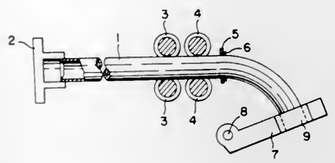
Susumu Hanyo, Yokohama; Jousuke Yamaguchi, Kanagawa; Yoshiyuki Morishita, Tokyo, and Itoshi Noguchi, Kawasaki, all of Japan, assignors to Daiichi Koshuha Kogya Kabushiki Kaisha, Japan

Division of Ser. No. 593,961, Jul. 8, 1975, Pat. No. 4,062,216. This application Jul. 29, 1976, Ser. No. 709,929

Claims priority, application Japan, May 30, 1975, 50-64956

Int. Cl.² B21D *7/16, 7/024*

U.S. Cl. 72—128 **8 Claims**



1. In an apparatus for hot bending elongated materials having an annular heating means for locally heating a limited portion of the material, an arm freely pivotable about an axis in the plane of the heating means, a clamp carried by said arm for engaging a leading portion of the material, and means for continuously advancing the material through said heating means and guiding the trailing, unbent portion of the material, the improvement wherein said advancing and guiding means is operative to maintain the longitudinal axis of the unbent portion of the elongated material at an acute angle with respect to a perpendicular to the plane of the heating means during the bending of the pipe by the pivotable arm, said angle being selected to compensate for the spring back material when the material is unclamped so that the material has the desired bending radius when the material is unclamped.

4,122,698

ARRANGEMENT FOR AIR COOLING ON DRAWING DIE DRUMS

Günter Herzog, Hemer-Deilinghofen, Fed. Rep. of Germany, assignor to Ernst Koch & Co., Hemer-Ihmert, Fed. Rep. of Germany

Filed Feb. 25, 1977, Ser. No. 772,006

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628173

Int. Cl.² B21C *9/00, 1/02*

U.S. Cl. 72—286 **8 Claims**

1. An arrangement for air cooling on drawing die drums, comprising

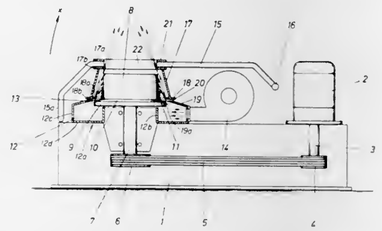
at least one drawing die drum,

a member having an inner wall and an outer wall of substantially the same height concentrically oriented and connected to each other at a bottom portion thereof, said member including an upwardly inwardly extending annular chamber wall connected to the top of said outer wall,

said walls defining an annular chamber connected with a source of cooling air,

a pivotally mounted protective screen laterally covering said drawing die drum and forming an upper exit opening above the latter,

said drawing die drum having a lower flanged end mounted above said inner wall and extending radially outwardly relative thereto extending into said annular chamber, said upwardly inwardly extending annular chamber wall having a free end pointing to and adjacent to an upper portion of said flanged end of said drawing die drum and forming therewith an air exit — annular gap,



at least one tube section being mounted and secured on said protective screen operatively disposed concentrically around said drawing die drum and having the form of a downwardly widening truncated cone, said tube section spans across substantially the entire spacing between said air exit — annular gap and said protective screen.

4,122,699

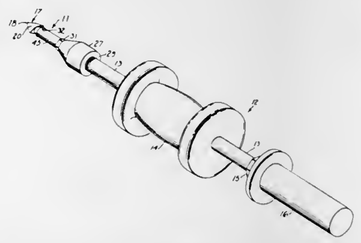
TOOL FOR REMOVING DENTS FROM SHEET METAL

Cletus R. Logsdon, 530 S. Sage, Rialto, Calif. 92376

Filed Sep. 6, 1977, Ser. No. 830,674

Int. Cl.² B21D *1/12, 31/02*

U.S. Cl. 72—325 **7 Claims**



1. In a device for removing dents in sheet metal, a tool comprising:

a metal piercing head,

means permitting use of said head with an impacting device whereby it can be driven through said sheet metal,

said head having two integral, symmetrically opposite narrow sides tapering, where they merge, to a pointed metal piercing tip,

said head also having two integral, symmetrically opposite broad sides tapering, where they merge, toward said tip,

said broad sides converging along their side edges to form metal shearing ridges extending along the length of said head, and

said broad side being convex in cross-section throughout whereby said head forms a double cuspid opening with inturned lips in said sheet metal when driven therethrough by means of said impacting device.

4,122,700

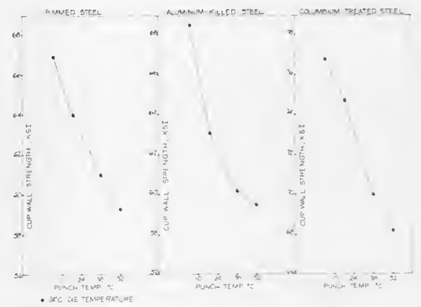
PROCESS FOR FORMING SHEET METAL STOCK

Wayne G. Granzow, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Continuation-in-part of Ser. No. 719,950, Sep. 2, 1976, abandoned. This application Apr. 25, 1977, Ser. No. 790,195

Int. Cl.² B21D *22/20*

U.S. Cl. 72—342 **5 Claims**



1. In a process for forming sheet metal in thicknesses up to about 6.5mm of a type exhibiting yield strength and tensile strength sensitivity to small changes in temperature under ambient conditions, wherein a sheet metal workpiece at room temperature is engaged between a concave die and a mating convex punch which are caused to move relative to one another whereby to draw said workpiece, by direct contact with said punch, into the internal configuration of said die, the improvement which comprises selectively cooling those areas of said workpiece to remove adiabatic heat from those critical areas of said workpiece susceptible to breakage.

4,122,701

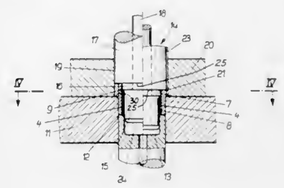
COLLAR SLEEVES AND PROCESS AND TOOL FOR THE MANUFACTURE THEREOF

Dieter Lehnhart, Mainz, Rhein, Germany, assignor to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden-Schierstein, Germany

Division of Ser. No. 549,953, Feb. 14, 1975, Pat. No. 4,048,703. This application May 4, 1977, Ser. No. 793,717

Int. Cl.² B21D *22/00*

U.S. Cl. 72—354 **5 Claims**



1. A tool for shaping collars to sleeves and simultaneously calibrating each sleeve body in manufacturing collar sleeves, comprising die means providing a first cylindrical bore, adapted to form an outer cylindrical calibration surface, and a coaxial larger diameter second clyindrical bore, a first die part extending into said first bore and having an axial face to engage one end of a prepared cylindrical sleeve of uniform radial thickness inserted into said first bore with its other end projecting into said second bore, and a second die part slidable in said second bore having an external axially extending cylindrical counter die surface of smaller diameter than said second die part extending around within the inner surface of said sleeve and being adapted to form an inner cylindrical calibration

surface coaxial with said outer cylindrical calibration surface to confine the sleeve under upsetting deformation between the said coaxial cylindrical calibration surfaces, said second die part having an axial face extending laterally outwardly from said counter die surface and adapted for abutting said other end of said sleeve, and means for relatively axially moving said die parts together with upsetting pressure whereby said projecting other end of said sleeve is increased in radial thickness within said second bore to form said collar.

4,122,702

APPARATUS FOR TESTING A FORMS SET FOR PRINT THROUGH QUALITY

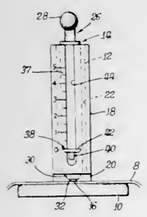
Alfred Walter, Rietbachstrasse 7,8952 Schlieren, Switzerland, assignor to Alfred Walter AG, Schlieren, Switzerland

Filed Nov. 7, 1977, Ser. No. 849,015

Claims priority, application Switzerland, Feb. 15, 1977, 1869/77

Int. Cl.² G01N *3/30*

U.S. Cl. 73—14 **11 Claims**



1. Apparatus for testing the print through quality of a forms set comprising a base plate adapted to receive the forms set thereon, a hammer, means disposed above said base plate for guiding said hammer for vertical movement to and from a position where the lower face of said hammer strikes the forms set, means for releasably locking said hammer at a plurality of heights above said base plate, the hammer being free falling in said guide means when released by said locking means from each of said heights, and a raised test sign disposed on either the face of said hammer or on the upper surface of the base plate below said face of said hammer, whereby gravity causes said hammer upon being released from a selected one of said heights to drop until the lower face of said hammer strikes the forms set to cause the impression of said test sign to be made on copies included in the forms set.

4,122,703

METHOD AND APPARATUS FOR REELING DISCRETE YARN STRAND PATTERNS

Jesse B. Davis, 8 Sagamore Hill Dr., Port Washington, N.Y. 11050

Filed Nov. 24, 1976, Ser. No. 744,527

Int. Cl.² G01B *13/04*

U.S. Cl. 73—37.7 **7 Claims**

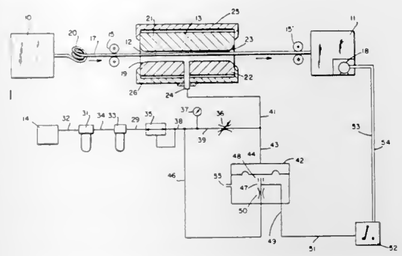
1. Yarn grading apparatus for monitoring a moving yarn line comprising one or more discrete strands to assure the denier consistency thereof, the apparatus including:

means forming an elongated sensing passage of sufficient cross sectional opening to closely surround a segment of said moving yarn line, whereby to define an elongated annular chamber between said yarn line and the walls of said sensing passage when said line segment is registered within said elongated sensing passage,

said means forming a sensing passage including a holder comprising elongated upper and lower members being pivotally engaged along a mutual edge thereof to permit pivotal movement of the respective members between open and closed positions, each of said upper and lower members having a cavity therein disposed in contiguous relationship when said respective members are in the closed position,

passage defining inserts (**21** and **22**) removably positioned within the respective cavities whereby to define said elongated sensing passage about said yarn line when the holder is in the closed position,

a source of sensing fluid including at least one conduit communicating said sensing fluid source with said elongated annular chamber to introduce a controlled flow of sensing



fluid to the latter, whereby to establish a fluid back pressure within said at least one conduit and said annular chamber as a result of the fluid flow resistance characteristics exhibited by said annular chamber, and

monitoring means communicated with said at least one conduit, being sensitive to the occurrence of variations in the magnitude of the said fluid back pressure, which occur in response to a change in fluid flow resistance within said annular chamber.

4,122,704

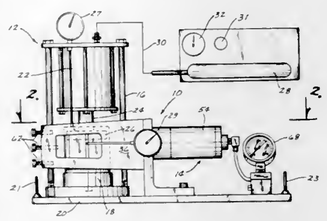
PORTABLE VARIABLE EXPANSION TESTING DEVICE FOR MEASURING LATERAL PRESSURE INDUCED ON A MATERIAL BY A VERTICAL APPLIED PRESSURE

Alan J. Lutenegger; Richard L. Handy, and James M. Hoover, Ames, Ala.L OF IA, assignors to Iowa State University Research Foundation, Ames, all of, Iowa

Filed Sep. 23, 1978, Ser. No. 836,153

Int. Cl.² G01N *3/10*

U.S. Cl. 73—822 **13 Claims**



1. A testing device to measure the lateral pressure induced on a material by a vertical applied pressure, said testing device comprising in combination,

a support means,

a material holding receptacle operatively mounted on said support means which is capable of lateral expansion in response to a vertical applied force on a material contained in said receptacle,

said receptacle being an elastic, cylindrical sleeve having a vertical slit along its entire length to define first and second vertical edge portions,

means retaining said first vertical edge portion against lateral movement upon said vertical applied pressure being applied to said material in said sleeve,

at least one lateral pressure cylinder means comprising a cylinder body having a movable piston therein, a cylinder rod connected to said piston and extending from said body and being operatively connected to said second vertical edge portion,

and a fluid pressure gauge operatively connected to said cylinder body for sensing and indicating pressure created in said second vertical edge portion being laterally deflected with respect to said first vertical edge portion when said vertical applied pressure is applied to said material in said sleeve.

4,122,705

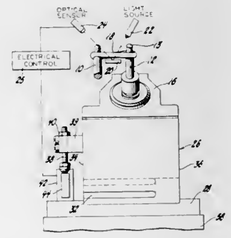
O-RING INSPECTION APPARATUS

Herbert E. Rober, Roseville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 24, 1977, Ser. No. 809,790

Int. Cl.² G01N *3/08*

U.S. Cl. 73—794 **2 Claims**



1. An apparatus for dynamically measuring the elasticity of O-rings formed of elastomeric material comprising,

a pair of spaced mandrels, each rotatably mounted in a support, the mandrels being crossed at an angle,

means for presenting an O-ring to a position adjacent the mandrels with the O-ring axis aligned with the mandrels,

means moving the mandrels generally along said axis for inserting the mandrels through the opening of the O-ring,

means for moving at least one of the mandrels laterally with respect to the axis to move the mandrels apart a fixed distance whereby the O-ring is securely gripped and stretched to effect a predetermined elongation of the O-ring,

means for rotating the mandrels to drive the O-ring through a path around the mandrels,

and means effective while the O-ring is driven through the said path for measuring the force on one of the mandrel supports resulting from the force developed by the elongation of the O-ring whereby the measured force is a measure of the O-ring elasticity.

4,122,706

APPARATUS FOR COMPUTING THE MEAN INDICATED PRESSURE OF AN ENGINE

Oluf R. Schmidt, Kastrup, Denmark, assignor to Als Burmeister & Wain's Motor-OG Maskinfabrik AF 1971, Copenhagen, Denmark

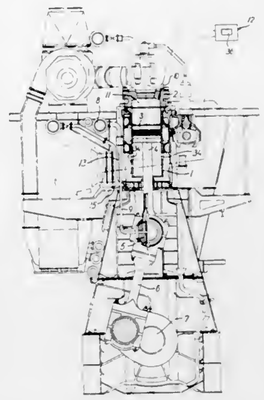
Filed Jul 12, 1977, Ser. No. 814,891

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1976, 2632470

Int. Cl.² G01M *15/00*

U.S. Cl. 73—115 **9 Claims**

1. In an apparatus for measuring instantaneous values of pressure in the cylinders of a reciprocating engine and for computing the mean indicated pressure by integration of the pressure as a function of the piston travel; the apparatus including transducer means for sensing said pressure at moments determined by sensor means cooperating with markings provided on a part of the drive system of the engine and electronic calculator means to which said transducer means and said sensor means are coupled, the improvement comprising a set of markings provided for each cylinder in said engine, said markings being provided on a part (**9**) of the engine rigidly con-



nected to the piston (**3**) belonging to the cylinder and which effects a reciprocating movement synchronous with the movement of the piston and said markings substantially covering only that part of the piston travel in which the pressure in the cylinder changes appreciably.

4,122,707

FLOW TEST STAND

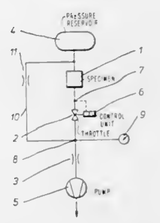
Ernst Leunig, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 17, 1977, Ser. No. 807,565

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1976, 2630521

Int. Cl.² G01M *15/00*

U.S. Cl. 73—118 R **6 Claims**



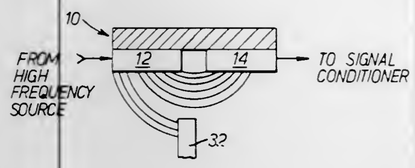
1. In a flow test stand for measuring the flow cross-section of a specimen wherein a fluid medium successively flows through the specimen and a test nozzle having a constant flow cross-section, said specimen having fluid characteristic quantities comprising outlet pressure and flow volume being related over a first characteristic curve, said test nozzle having fluid characteristic quantities comprising inlet pressure and flow volume being related over a second characteristic curve, the improvement wherein there is provided a variable flow section nozzle arranged in a fluid path bypassing said specimen for varying the flow volume through said test nozzle with respect to the flow volume through said specimen.

4,122,708

CAPACITIVE PROXIMITY SENSORS

Lawrence C. Maier, Middlebury, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Mar. 31, 1976, Ser. No. 672,481
Int. Cl.[2] G01L *3/10*
U.S. Cl. 73—136 A **5 Claims**



5. A torque measurement system for measuring the torque transmitted by a shaft, comprising first and second electrically conductive regions of varied radius spaced along the shaft, first and second capacitive proximity sensors non-rotatably mounted opposite the first and second regions of varied radius, respectively, and each comprising a non-conductive substrate and two spaced conductive regions on the substrate having opposed edges defining therebetween a narrow gap across which electric flux lines fringe outwards from the substrate into the path of the corresponding varied radius region when a potential is applied between the conductive regions, high frequency source means connected to supply an alternating potential to one said non-conductive region of each sensor, first and second signal conditioners connected to the other said conductive region of the first and second sensors, respectively, whereby to produce respective output signals modulated in dependence upon the degree of shielding of the flux lines extending between the conductive regions of their corresponding sensors by the varied radius regions associated with those sensors, each said signal conditioner being remotely located from its associated sensor and comprising means for maintaining said other region of the sensor at virtual ground, whereby to eliminate errors due to cabling capacitance between the sensor and signal conditioner, and comparator means connected to receive and compare said modulated output signals, whereby to produce a signal indicative of the relative phase of the modulated signals, said relative phase being a function of the shaft twist between said varied radius regions and thereby representative of the torque transmitted by the shaft.

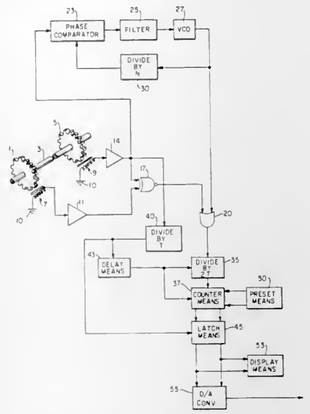
4,122,709

DIGITAL TORQUE METER

Winthrop K. Brown, Bellaire; James R. Bridges, and Kerry D. Savage, both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 5, 1977, Ser. No. 794,284
Int. Cl.[2] G01L *3/10*
U.S. Cl. 73—136 A **5 Claims**

1. A torque meter for measuring the torque of a rotating shaft comprising at least two sensing means affixed to the shaft and providing shaft pulse signals at the same frequency but having a phase difference corresponding to the torque of the shaft, each sensing means includes a wheel mounted on the shaft having T number of teeth, and coil means placed adjacent to the wheel for providing a pulse each time a tooth on the wheel passes the coil means; clock pulse means for providing clock pulses, said clock pulse means includes phase comparator means connected to one of the coil means and receiving its shaft pulse signal, first divider means connected to the phase comparator means for providing pulses at a rate of one pulse for every N pulses it receives, said phase comparator means providing a voltage output in accordance with the phase comparison, means for filtering the voltage from the phase comparator means to provide a filtered voltage, and a voltage-controlled oscillator connected to the filter means and to the first divider means for providing the clock pulses in accordance with the filtered voltage to the first divider means; and circuit means connected to the two coil means and to said clock pulse means for providing groups of clock pulses in accordance with the shaft pulses so that the number of clock pulses in each group corresponds to the torque of the shaft, said circuit means includes an exclusive NOR gate connected to the coil means



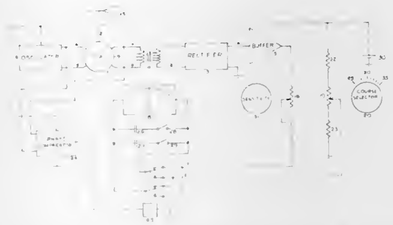
for providing a low logic level signal when the shaft pulse signals are not at substantially the same amplitude and for providing a high logic level signal when the shaft pulse amplitudes are substantially the same, and an OR gate connected to the exclusive NOR gate and to the voltage controlled oscillator for providing the groups of clock pulses in accordance with the signal from the exclusive NOR gate.

4,122,710

COURSE TO WIND GUIDANCE DEVICE

Ian V. Meller, 200 Rideau Ter., Apt. 617, Ottawa, Ontario, Canada

Filed Dec. 1, 1977, Ser. No. 856,686
Int. Cl.[2] G01C *21/00*
U.S. Cl. 73—178 R **8 Claims**



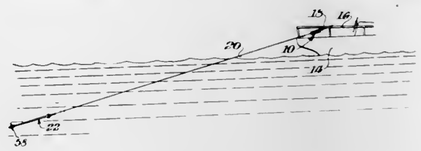
1. A device for providing to a helmsman of a sailing vessel an indication of deviations of the heading of the vessel from a selected angle with respect to the apparent wind on both port and starboard tacks comprising means for producing an electrical control signal having an amplitude proportional to deviations in angular position of a rotatable shaft from a central position, a wind vane mounted on said shaft and exposed to the wind whereby the angular position of said shaft is determined by said wind vane, dial means for setting said selected angle and for producing a reference electrical signal having an amplitude proportional to the selected angle, means for connecting the control signal and the reference signal in opposition through a meter having a pointer which produces an indication for the helmsman of any difference between them, sensing means for sensing port and starboard tacks and switching means responsive to said sensing means for reversing connections to the meter on port tacks as compared to starboard tacks so that a single dial setting results in correct meter readings on both port and starboard tacks.

4,122,711

DRAG FORCE KNOTMETER

Howard D. Irwin, 718 Ambleside Dr., Wilmington, Del. 19808

Filed Dec. 29, 1977, Ser. No. 865,532
Int. Cl.[2] G01C *21/10*
U.S. Cl. 73—184 **5 Claims**



1. A device for measuring the relative velocity between a boat and water comprising:
   (a) a flexible line from the boat to a
   (b) force-responsive means acting in cooperation with indicating means, and
   (c) an elastomeric line attached on one end to the force responsible means, and
   (d) a heavier-than-water drag attached to the other end of the elastomeric line wherein the drag is a stiff rod with a circular disk at one end,

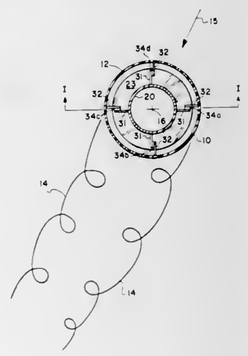
whereby the movement of the boat causes the water to exert force on the drag which is transmitted to the force responsive means thereby measuring the relative speed of the boat.

4,122,712

FLUID VELOCITY MEASURING DEVICE

David F. Thomas, Jr., and Leon A. Williams, Jr., both of Hampton, Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 30, 1977, Ser. No. 856,461
Int. Cl.[2] G01F *1/32*
U.S. Cl. 73—189 **7 Claims**



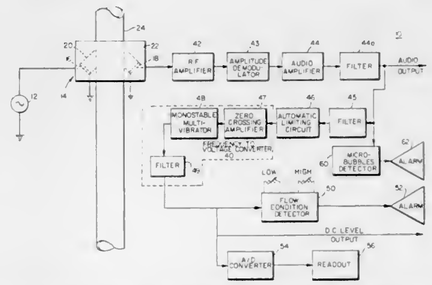
1. A fluid velocity measuring device positionable in a freestream of fluid flow to cause vortices to be shedded therefrom at a frequency proportional to fluid flow speed, said device comprising:
   a housing mounted on a spindle;
   said housing being capable of oscillatory rotary motion about said spindle induced by, and at a frequency indicative of, the periodic shedding of vortices therefrom; said housing being further capable of translational motion relative to said spindle induced by, and indicative of the direction of, said freestream fluid flow;
   said spindle fixable at one end to a reference structure and extending into said housing;
   bearing means providing low friction contact and alignment of said housing with said spindle;
   force sensing means attached between said housing and said spindle capable of generating an electric signal indicative of said vortex creation frequency and indicative of the direction of translational drag force on said housing by said fluid flow; and
   electric circuitry for translating said electric signal into a readout of fluid speed and direction.

4,122,713

LIQUID VELOCITY MEASURING SYSTEM

Peter Stasz, Minneapolis, and Floyd R. Patten, Stacy, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed May 19, 1977, Ser. No. 798,670
Int. Cl.[2] G01F *1/66*
U.S. Cl. 73—194 A **12 Claims**



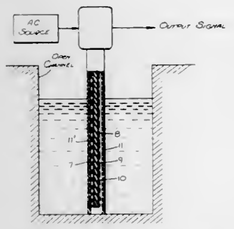
1. An ultrasonic wave system for measuring the characteristics of a liquid flowing through a conduit, said system comprising:
   (a) first and second transducer elements operatively associated with the conduit for respectively transmitting an ultrasonic wave into the liquid flowing through the conduit and for receiving an ultrasonic wave backscattered by the liquid directed through the conduit;
   (b) generator means for applying a high-frequency signal to said first transducer element causing it to emit the ultrasonic wave into the liquid;
   (c) said second transducer element providing an electrical output signal of a frequency corresponding to that high frequency of said generator means, amplitude-modulated in accordance with the backscattered signal derived from the liquid, the frequency having been shifted from that high frequency of said generator means by the Doppler phenomenon, dependent upon the velocity of the liquid directed through the conduit and whose amplitude is dependent on the acoustic impedance of the liquid;
   (d) first means coupled to receive the electrical output of said second transducer element for providing an amplitude demodulated output signal, bearing frequency components of the shifted frequency;
   (e) second means responsive to an increase in the amplitude output of said demodulating means for providing an alarm manifestation indicating an increase in the acoustic impedance due to presence of gaseous bubbles within the liquid directed through the conduit; and
   (f) third means coupled to receive the output signal of said first means and responsive to the frequency shift for providing a manifestation of the rate of the liquid flow.

4,122,714

MAGNETIC CURRENT METER FOR OPEN CHANNEL FLOW MEASUREMENT

Tamotsu Kobayashi, and Jun Futamura, both of Yokohama, Japan, assignors to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Oct. 27, 1977, Ser. No. 846,204
Int. Cl.² G01F *1/58*
U.S. Cl. 73—194 EM **8 Claims**



1. A magnetic current meter to sense the flow of liquid subject to variations in level through an open channel having a predetermined depth, said meter comprising:

A. a meter body formed of insulated material and having a longitudinal axis which, when the meter is installed in the channel, lies at right angles to the direction of liquid flow in the channel;

B. a pair of longitudinally-extending electrodes arranged on the surface of said body on opposite sides of said axis; and

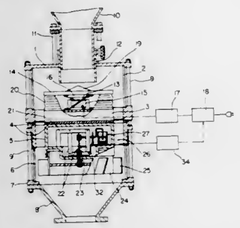
C. longitudinally-extending coil means disposed within said body to produce an external magnetic field which is intercepted by the flowing liquid to induce a signal in the electrodes which is a function of the mean flow velocity, the height of said body, said electrodes and said coil means in said channel exceeding the depth of said channel and being higher than the level of liquid therein whereby said signal is independent of variations in the level of said liquid.

4,122,715

APPARATUS FOR MEASURING FLOW RATE OF POWDERY AND/OR GRANULAR MATERIAL

Tohei Yokoyama, Toyonaka, and Kiyoshi Urayama, Kyoto, both of Japan, assignors to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, Osaka, Japan

Filed Feb. 15, 1977, Ser. No. 768,816
Claims priority, application Japan, Feb. 16, 1976, 51-16287
Int. Cl.² G01F *1/28*
U.S. Cl. 73—228 **5 Claims**



1. Apparatus for measuring the flow rate of gravitationally falling powdered or granular material comprising:

a housing;

loading table means within said housing for temporarily supporting the material;

means for feeding material to said table means;

means for vibrating said table to cause continuous flow of material over at least two areas of the peripheral portion of said table to establish free falling streams of the material within said housing;

at least two deflector means below said table means within said housing, symmetrically mounted for rotation around a vertical axis passing through the center of said table means and positioned to be impinged on by the falling material which exerts a moment of rotation thereto around said axis; and

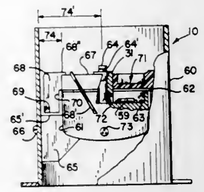
measuring means responsive to the value of said moment of rotation for indicating the flow rate of the material.

4,122,716

AIR FLOW TRANSDUCER

Jack C. Priegel, El Paso, Tex., assignor to Autotronic Controls Corporation, El Paso, Tex.

Division of Ser. No. 724,073, Sep. 17, 1976, which is a continuation of Ser. No. 470,566, May 16, 1974, abandoned, which is a division of Ser. No. 122,933, Mar. 10, 1971, Pat. No. 3,817,225. This application Jun. 2, 1977, Ser. No. 802,650
Int. Cl.² G01F *1/115*
U.S. Cl. 73—231 R **5 Claims**



1. An air-flow transducer for measuring the rate of air flow into the intake manifold of an internal combustion engine, said transducer comprising:

a housing forming a substantially straight passageway of substantially circular cross section,

means for mounting said housing to pass the air flowing to said intake manifold through said passageway,

a stator fixedly mounted in respect to said housing;

a rotor mounted within said passageway for rotation relative to said stator about the axis of said passageway, said rotor having a main body portion with a plurality of blades extending outwardly therefrom and equally spaced around the periphery thereof to intercept air flowing through said passageway and be moved by said air, said main body portion and said blades being integrally formed of low density plastic,

and signal means for providing an electrical signal systematically related to the rate of rotation of said rotor relative to said stator as produced by the flow of air through said passageway, said signal means including position marking means mounted on said rotor, and sensing means mounted on said stator and responsive to said position marking means.

4,122,717

RETAINING CLIP FOR FLOW METER

Stanley B. Loesch, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

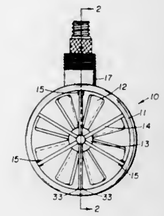
Filed Dec. 1, 1977, Ser. No. 856,476
Int. Cl.² G01F *1/115*
U.S. Cl. 73—231 R **37 Claims**

1. A fluid flow straightening device comprising:

a hollow housing having a recessed area extending about a portion of the interior surface of said hollow housing and through only a portion of the thickness of said hollow housing;

fluid flow straightening means having a recessed area in the exterior surface of said fluid flow straightening means; and

fastening means having a portion inserted in the area formed when said recessed area in said hollow housing and said recessed area in said fluid flow straightening means are aligned while the remaining portion of said fastening



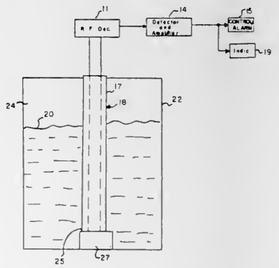
means substantially conforms to said exterior surface of said fluid flow straightening means thereby preventing both longitudinal and rotational movement of said fluid flow straightening means in said hollow housing.

4,122,718

LIQUID LEVEL SENSOR

Reuben V. Gustafson, 228 W. 17th St., New York, N.Y. 10011

Continuation-in-part of Ser. No. 596,511, Jul. 16, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 790,823
Int. Cl.² G01F *23/26*
U.S. Cl. 73—304 C **17 Claims**



1. A capacitive sensing probe for sensing the depth of liquid in a tank or the like comprising a flat flexible cable made of first and second parallel wires having a constant spacing of at least one half inch encased in modified ETFE fluoroplastic, with the one end of the cable sealed off so that the wires at said end are insulated from each other, the wires extending out of the cable at the other end; and capacitive sensing means coupled to the wires extending from said one end.

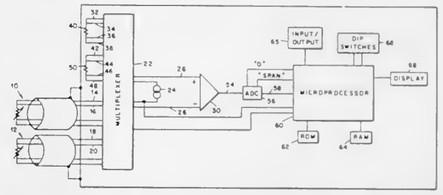
4,122,719

SYSTEM FOR ACCURATE MEASUREMENT OF TEMPERATURE

Thomas B. Carlson, and Gerhard Kreikebaum, both of Knoxville, Tenn., assignors to Environmental Systems Corporation, Knoxville, Tenn.

Filed Jul. 8, 1977, Ser. No. 813,951
Int. Cl.² G01K *7/10*
U.S. Cl. 73—342 **5 Claims**

5. A system for accurate temperature measurement comprising in combination a platinum resistance whose electrical resistance varies with its temperature, a source of relatively constant current of a predetermined known value, at least two electrical leads connecting said platinum resistance in series with said current source, amplifier means, at least two electrical leads connecting said platinum resistance in electrical communication with said amplifier means whereby when said constant current is impressed through said platinum resistance an electrical signal is developed that has a voltage value proportional to the value of said constant current times the then existing resistance value of said platinum resistance and said altered electrical signal is fed to said amplifier and amplified to develop an output signal in analog form, an analog to digital convertor means, means connecting said amplifier in electrical communication with said analog to digital convertor means, microprocessor means, means connecting said analog to digital convertor means in electrical communication with said microprocessor means in electrical communication with said display means, means electrically connecting said source of constant current to said microprocessor means whereby the value of



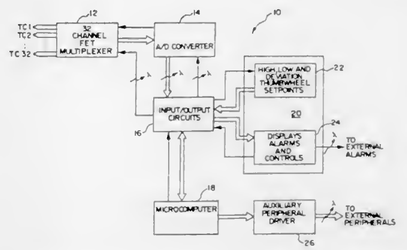
said current source becomes an input signal to said microprocessor means and said microprocessor monitors said current value and compensates for any variance of said current from its predetermined value in any processing within said microprocessor of said signal from said analog to digital convertor, means monitoring the drift of said analog to digital converter from its zero base and providing to said microprocessor an input signal representative of such drift, means monitoring the drift of said analog to digital convertor from its full scale base and providing to said microprocessor an input signal representative of such drift, means for selectively developing a digital representation of a variable probe parameter and introducing the same to said microprocessor.

4,122,720

DIESEL ENGINE EXHAUST TEMPERATURE MONITOR

William J. Podl, Hanover Park, Ill., assignor to Alnor Instrument Company, Niles, Ill.

Filed Apr. 7, 1977, Ser. No. 785,505
Int. Cl.² G01K *7/04*; F02B *77/08*
U.S. Cl. 73—346 **11 Claims**



1. A monitoring system for monitoring the operation of a diesel engine, said engine including a plurality of cylinders, each cylinder having a cylinder exhaust through which the cylinder gases are exhausted, comprising:

a plurality of thermocouples one coupled to each cylinder exhaust to develop an analog signal proportional to the engine exhaust gas temperature of each cylinder;

means for converting said analog signal to a digital signal representative of said temperature and including means for checking for an open thermocouple;

switching means for coupling each of said thermocouple analog signals to said converting means one at a time; and

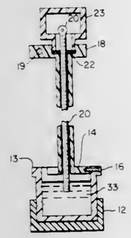
control means coupled to said converting means including means for storing each digital signal from each cylinder, means for numerically taking the average of the total of the latest stored digital signal from each cylinder and excluding any signal from an open thermocouple, and means for comparing each digital signal with said average and for determining if each signal is within a predetermined amount above and below said average.

4,122,721

WATER SAMPLING BUCKET

Theodore Zubricki, 30 Sanger St., Braintree, Mass. 02184

Filed Jan. 17, 1977, Ser. No. 754,971
Int. Cl.² G01K *13/12*
U.S. Cl. 73—354 **2 Claims**



1. A water sampling bucket comprising, a plastic bucket for receiving water samples, a rubber sheath for encasing the bottom of the bucket to protect it from impact, a thin extended shaft for holding said bucket upright, said shaft affixed said bucket at multiple concentric points permitting the free entry of water into said bucket, said shaft having means for receiving a line to enable said device to be thrown into the water to pick up a sample of water, said shaft having an open slot along its length, a thermometer, means for holding said thermometer concentric said shaft whereby the bulb of said thermometer is spacially placed mid center in said bucket for measuring water temperature, wherein said thermometer holding means includes a soft rubber grommet for encircling said thermometer, a threaded cap with a concentric opening to receive said grometted thermometer, said shaft having a threaded concentric opening for receiving said threaded cap and a shoulder for pressing said rubber grommet wherein the cap is tightened.

4,122,722

ANEMOMETER COMPENSATOR LINEARIZER

Stanley E. Newell, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 727,508, Sep. 28, 1976, Pat. No. 4,070,908.
This application Mar. 31, 1977, Ser. No. 783,361
Int. Cl.² G01K *7/24*
U.S. Cl. 73—362 AR **1 Claim**

1. A system for providing an output signal which is substantially linear with fluid temperature comprising:

operational amplifier circuit means having an output terminal;

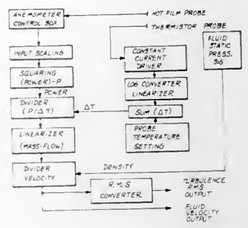
a thermistor probe having a resistance which is an exponential function of fluid temperature;

said thermistor resistance connected in feedback path with said operational amplifier circuit means;

log converter circuit means coupled to said output terminal of said operational amplifier circuit means for providing said output signal which is substantially linear with fluid temperature;

a hot probe temperature setting potentiometer having a volts-per-degree temperature sensitivity equal to the volts-per-degree temperature sensitivity of said output signal; and,

summing amplifier circuit means responsive to said output



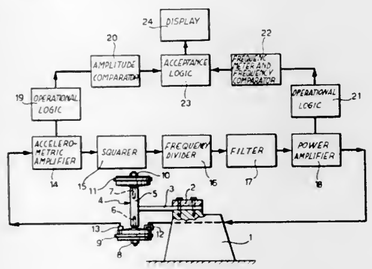
signal and connected to said probe temperature setting potentiometer for providing a signal voltage representative of the difference between hot probe operating temperature and the fluid temperature.

4,122,723

METHOD AND APPARATUS FOR TESTING THE QUALITY OF CAST IRON PIECES ESPECIALLY SPHEROIDAL CAST-IRON PIECES

Giannetto Levizzari, and Giacomo Ruspa, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Nov. 11, 1976, Ser. No. 741,072
Claims priority, application Italy, Nov. 25, 1975, 69903 A/75
Int. Cl.² G01H *13/00*
U.S. Cl. 73—579 **5 Claims**



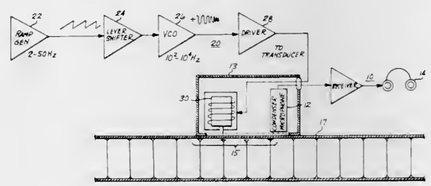
1. A method of testing the quality of cast iron pieces comprising the steps of mechanically coupling together in a mechanical oscillatory system a piece to be tested and a reference piece having the same form and geometry as the piece to be tested, oscillating the said system at resonance, obtaining signals representing the frequency and resonance amplitude of the oscillating system, and utilizing said signals to provide an indication of the quality of the piece to be tested by comparing said signals with the same signals obtained with two reference pieces having different degrees of acceptability, one of said reference pieces representing a lower limit of acceptability, and wherein the test piece is substituted for said one reference piece.

4,122,724

SWEPT FREQUENCY AUDIBLE BOND TESTER

Glenn A. Geithman, Renton, and Wayne E. Woodmansee, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 24, 1977, Ser. No. 809,871
Int. Cl.² G01N *29/04*
U.S. Cl. 73—588 **2 Claims**



1. Apparatus for sonic inspection of a work piece comprising:

a receiving transducer element comprising a condenser microphone adapted to be positioned in acoustically coupled relationship to the work piece;

receiver circuit means connected to said condenser microphone for providing an audio output signal having a vibrational spectrum responsive to detection of a flaw condition in said work piece;

a transmitting transducer element comprising an electromechanical transducer adapted to be positioned in acoustically coupled relationship to the work piece; and,

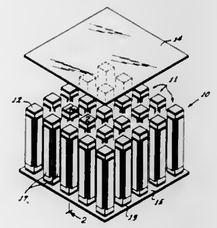
transmitter circuit means connected to said electromechanical transducer for providing an input signal to said electromechanical transducer having an audio frequency which is varied linearly from about 10^2 to 10^4 Hz with a repetition rate which is variable from about 2 Hz to about 50 Hz.

4,122,725

LENGTH MODE PIEZOELECTRIC ULTRASONIC TRANSDUCER FOR INSPECTION OF SOLID OBJECTS

Robert B. Thompson, Thousand Oaks, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 16, 1976, Ser. No. 696,679
Int. Cl.² H01L *41/10*
U.S. Cl. 73—632 **1 Claim**



1. A transducer for producing an ultrasonic inspection signal and for receiving an echo of such signal in a solid object having low acoustic impedance, comprising:

an array of individual piezoelectric transducer elements each having a first length dimension and two end faces extending transversely to the length dimension, one end face of each element being positioned in a common surface, said end faces each having linear dimensions which are small in relation to said first dimension of the respective element so that each element has a dominating mode in the direction of the length dimension, said elements being spaced apart and positioned parallel to each other to form said array;

a thin, flexible sheet bound to said one end face of each of said transducer elements in said common surface for providing mechanical interconnection of said transducer elements within coupling them together for any transmission of oscillatory energy from one of the elements to any of the other ones, said sheet providing a transducer aperature for placing directly against the solid object; and

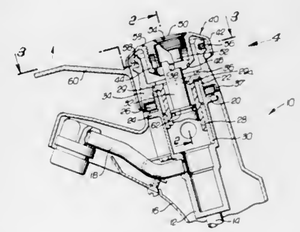
means for mechanically damping each of said transducer elements, said mechanical damping means being positioned between said transducer elements but not across said transducer aperature, whereby a low frequency signal can be launched deeply into a solid object having low acoustic impedance and ringing of the transducer dampened so that a returning signal can be detected.

4,122,726

LEVER MECHANISM FOR A MIXING VALVE

Julius L. Tolnai, Los Angeles, Calif., assignor to Price-Pfister Brass Mfg. Co., Pacoima, Calif.

Filed May 7, 1974, Ser. No. 467,712
Int. Cl.² F16H *21/02*
U.S. Cl. 74—21 **21 Claims**



1. In a lever mechanism for use with a mixing valve of the type wherein axial position controls flow volume and angular position controls mixture:

(a) said valve having a body mounted in a fixture and a control valve stem guided by the body for angular movement about the stem axis and for rectilinear movement along the axis, the stem having an upwardly extending accessible end;

(b) a generally cylindrical fulcrum bracket forming an upper end element of said fixture and surrounding the extending end of said control valve stem, said fulcrum bracket having a radially outwardly opening fulcrum member receiving groove extending around at least a portion of the outer periphery thereof concentrically with said stem axis;

(c) an operating lever including a cowl freely overlying said fulcrum bracket and having attached to the inside thereof to be shielded by said cowl, a fulcrum member which projects into said fulcrum member receiving groove with radial clearance; the upwardly extending end of said control valve stem being pivotally connected to the center of said cowl at a transverse axis perpendicular to said stem axis;

(d) tilting of said cowl about said fulcrum member causing axial movement of said valve stem to control flow volume, limited radial movement of said fulcrum member within said groove during said tilting permitting axial movement of said stem without binding, the angular extent of said groove being sufficient to permit angular motion of said cowl with concomitant mixture controlling angular movement of said stem;

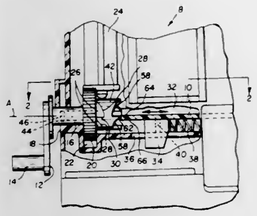
(e) said lever having a handle part opposite said fulcrum member whereby said cowl serves as a working element in the transmission of lifting force to said stem.

4,122,727

TOY SIDEWALK MECHANISM

Edward C. Teter, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 1, 1977, Ser. No. 764,735
Int. Cl.[2] F16H *25/12, 25/16;* **A63H** *33/00*
U.S. Cl. 74—56 **2 Claims**



1. A toy sidewalk mechanism for imparting reciprocal movement to the sidewalk for advancing toy objects placed thereon in steps, comprising:

a drive member rotatable about an axis in clockwise and counter-clockwise directions, said drive member having an axially extending annular member at one end thereof having first axially extending endless saw-tooth drive cams rotatable with said drive member about said axis;

a horizontal sidewalk for supporting toy objects placed thereof and reciprocally movable substantially along said axis, said sidewalk having a plate-like end portion;

resilient means for biasing said plate-like end portion of said sidewalk toward said drive cams; and

a sleeve rotatable about said axis and interposed between said drive cams and said plate-like portion of said sidewalk, said sleeve having first axially extending endless saw-tooth driven cams at one end mating with said drive cams and second axially extending endless saw-tooth driven cams at the opposite end engaging said plate-like end portion, said drive, first and second saw-tooth cams each have an inclined rise surface for moving said sidewalk and objects together in a forward direction for transporting the objects finite distances to advance positions, and a fall surface for allowing said sidewalk to be rapidly returned by said resilient means in a reverse direction while the objects due to inertia remain substantially at said advance positions whereby rotation of said drive member in one of said clockwise and counter-clockwise directions causes said drive cams to rotatably drive said first driven cams and said sleeve in said one direction causing said second driven cams to reciprocally move said sidewalk causing the objects to advance in steps on said sidewalk, and rotation of said drive member in the other of said clockwise and counter-clockwise directions causes said fall surfaces of said second driven cams to engage opposite faces of said plate-like end portion of said sidewalk preventing rotation of said sleeve, and said drive cams to cam said first driven cams and said sleeve axially outwardly for reciprocally moving said sleeve and said sidewalk for also causing the objects to advance in steps on said sidewalk.

4,122,728

CONTROL LEVER ASSEMBLY

Charles E. Pilarczyk, Bedford Heights, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

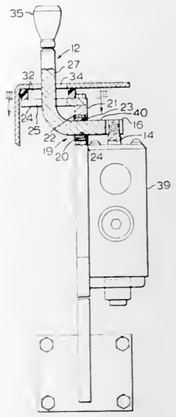
Filed Apr. 7, 1977, Ser. No. 785,619
Int. Cl.[2] F16H *21/44*
U.S. Cl. 74—103 **9 Claims**

1. A control lever assembly for effecting linear translation of an actuator of a machine comprising:

a control lever having one end adapted for pivoted connection to said actuator;

a first bracket plate adapted for fixture to said machine;

bearing means fixed in said first bracket for mounting said control lever and allowing rotation and translation of said control lever relative said bracket; and



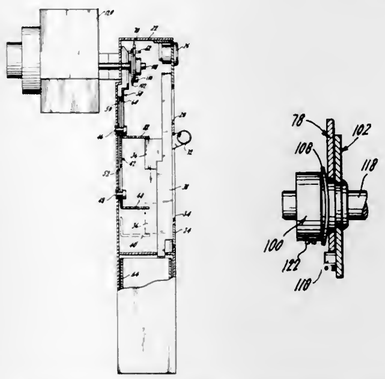
second bracket means fixed to, and extending generally at right angles to said first bracket plate, said second bracket means for limiting said rotative motion of said control lever to rotation about an axis generally lying in the plane of the first bracket and at right angles to the linear motion of said actuator.

4,122,729

OPERATION INITIATOR

Stanley Mitchel, 189 Farview Ave., Paramus, N.J. 07652

Filed Jan. 4, 1977, Ser. No. 756,913
Int. Cl.[2] F16H *27/02*
U.S. Cl. 74—128 **7 Claims**



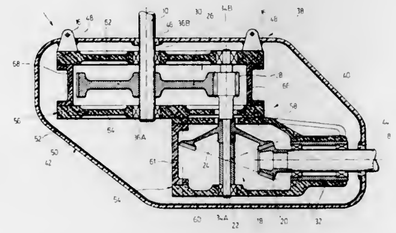
1. An apparatus for translating a predetermined number of operations of an actuation member into initiation of operation of a device, said apparatus comprising: a translating member and an initiating member; said translating member being a ratchet having at least first and second teeth thereon, said initiating member being a disc mounted for movement relative to said ratchet, said actuation member including a pawl; said translating member being mounted in operative relation to said actuation member and including means being constructed and arranged for movement of said translating member a predetermined amount in a given direction as a result of operation of said actuation member; means mounting said initiating member in operative relation to said translating member; coupling means for causing movement of said initiating member upon movement of said translating member in said given direction an amount greater than said predetermined amount; commencement means in operative relation to said initiating member and in operative relation to said device for initiating operation of said device upon said movement of said initiating member; said actuation member, said ratchet and said disc being constructed and arranged relative to one another and relative to said pawl, so that upon operation thereof from a first to a second position, said pawl engages one of said teeth on said ratchet and moves said ratchet in said given direction said predetermined amount, said disc including means being constructed and arranged so that said disc does not contact said pawl upon movement thereof to engage said teeth.

4,122,730

HOUSING FOR A MECHANICAL GEAR ARRANGEMENT

Emil Weiland, Hohenbrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Mar. 22, 1977, Ser. No. 780,017
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612937
Int. Cl.[2] F16H *57/02*
U.S. Cl. 74—606 R **9 Claims**



1. A housing particularly for an arrangement of sets of meshing toothed gears defining gear steps for transmitting a drive force between a drive shaft and a driven shaft, said housing comprising, a high-strength supporting framework structure carrying bearings journaling respective shafts for each of the gears of said gear steps, said framework structure arranged for absorbing and corresponding to reaction forces acting between said bearings, and a non-metallic protective skin unstressed by said reaction forces enclosing said arrangement of meshing gears and said supporting framework structure, said supporting framework structure comprising a plurality of individual bending-resistant girder members, each girder member extending in beam-like fashion between two bearings of a pair of gears journaling said shafts of said gear sets for absorbing said reaction forces acting between said bearings, said bending-resistant girder members having reinforcing chords made of material which is highly rigid along the longitudinal direction of said chords.

4,122,731

MULTISPEED GEAR TRANSMISSION WITH PLURAL INPUTS TO INTERNAL GEAR

Harry Bendure, Coffeyville, and Larry L. Traxson, Cherryvale, both of Kans., assignors to Gardner-Denver Company, Dallas, Tex.

Filed Mar. 18, 1977, Ser. No. 779,210
Int. Cl.[2] F16H *37/06*
U.S. Cl. 74—674 **9 Claims**

1. A constant mesh gear transmission comprising:

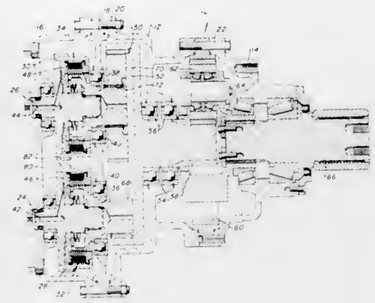
a housing;

an input shaft having an input gear mounted thereon;

a first clutch rotatably disposed in said housing including a first clutch gear and a first clutch output pinion;

a second clutch rotatably disposed in said housing including a second clutch gear and a second clutch output pinion;

said first and second clutches being operable to be selectively engaged and disengaged for driving their respective output pinions;



an internal gear rotatably disposed in said housing and in constant mesh with said first and second clutch output pinions;

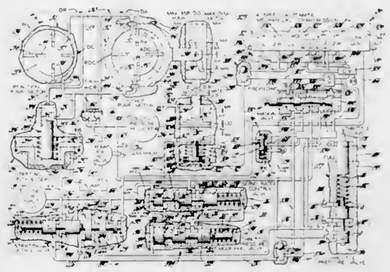
said first and second clutch gears being arranged to be driven by said input gear in such a way that said internal gear may be rotatably driven by said first or second clutch output pinions when said first or second clutch is engaged, respectively.

4,122,732

HYDROMECHANICAL MECHANICAL CONTINUOUSLY VARIABLE TRANSMISSION

Howard E. Chana, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 17, 1977, Ser. No. 759,826
Int. Cl.[2] B60K *41/04*
U.S. Cl. 74—863 **19 Claims**



1. In a transmission: an input element; an output element; continuously variable hydromechanical transmission means having planetary gearing means with an input member driven by said input element, an output member driving said output element and a reaction member for providing a mechanical torque path, and hydrostatic transmission means having ratio control means, including variable displacement means, providing a hydraulic torque path connected in parallel to said mechanical torque path between said reaction member and said output element and control means connected to said ratio control means for varying the hydrostatic transmission torque ratio, for providing a hydromechanical speed ratio range from zero speed ratio with all power transmitted in said hydraulic torque path and zero power in said mechanical torque path increasing to a transition speed ratio with a high portion of

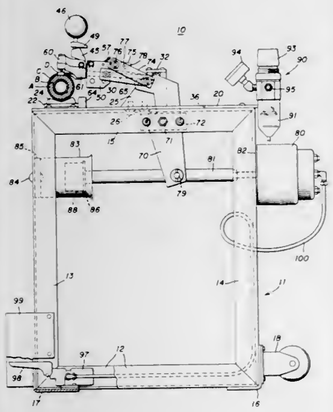
power transmitted in said mechanical torque path and a low portion of power transmitted in said hydraulic torque path and then to a mid-speed ratio with zero power in said hydraulic torque path and all power transmitted in said mechanical torque path and then limited to the highest used speed ratio with a high portion of power transmitted in said mechanical torque path and a low portion of power transmitted in said hydraulic torque path.

4,122,733

HOSE CLAMP APPLYING AND REMOVING MACHINE

John E. Ott, Oak Brook, and Marvin O. Bates, Bensenville, both of Ill., assignors to Punch-Lok Company, Chicago, Ill.

Filed Aug. 1, 1977, Ser. No. 820,433
Int. Cl.[2] B25B *27/10*
U.S. Cl. 81—9.3 **13 Claims**



1. A hose clamp applying machine for producing a predetermined tension in the metal band of a hose clamp, said machine comprising a slide member, band-pulling means mounted for sliding reciprocation on said slide member and adapted to engage the band, a reciprocating drive motor including an output shaft disposed for reciprocating movement in a direction substantially parallel to the direction of said slide member, and drive linkage providing interconnection between said band-pulling means and said output shaft intermediate the ends thereof and mounted for pivotal movement about a fixed axis disposed substantially normal to the direction of said slide member approximately midway between said slide member and said motor output shaft, said fixed axis being spaced from said slide member a distance such that said drive linkage is responsive to a single drive stroke of said drive motor output shaft for driving said band-pulling means along said slide member a distance sufficient completely to tension the associated band to said predetermined tension.

4,122,734

LABEL STRIPPING MACHINE

Richard F. Hurst, Childrens Farm/King Rd., Malvern, Pa. 19355

Filed Sep. 21, 1976, Ser. No. 725,252
Int. Cl.[2] B23B *3/00*
U.S. Cl. 82—1 C **9 Claims**

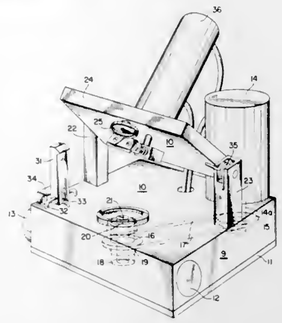
9. The method of removing a label from the outside of an irregular shaped cylindrical container comprising the steps of

centering said irregular shaped container on a rotatable platform,

applying an axial pressure on one end of said container to frictionally engage said container with said rotatable platform,

rotating said rotatable platform,

simultaneously axially moving a resiliently mounted cutting blade along the outside of said irregular cylindrical shaped container, and



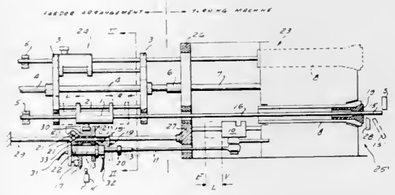
urging said resiliently mounted cutting blade into engagement with the outside of irregular shaped container to spirally remove said label attached thereon.

4,122,735

ARRANGEMENT FOR ADVANCING ROD STOCK PIECES IN TURNING MACHINES

Alfred Evers, Neumünster, Fed. Rep. of Germany, assignor to Hagenuk Vormals Neufeldt & Kuhnke GmbH, Kiel, Fed. Rep. of Germany

Filed Mar. 4, 1977, Ser. No. 775,362
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1976, 2609416
Int. Cl.[2] B23B *13/00*
U.S. Cl. 82—2.7 **9 Claims**



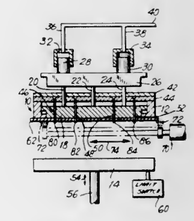
1. An arrangement for advancing rod stock pieces in a turning machine of the type having a drive and a work station at which successive workpiece portions of the rod stock pieces are to be treated, comprising means for successively feeding a rod stock piece to the work station, including a slide member for supporting a rod stock piece and being mounted on the machine for movement towards and away from the work station; means for coupling said slide member with the drive to thereby move said slide member together with the rod stock piece supported therewith through a stroke of predetermined length, including a slide carriage mounted on the machine for movement towards and away from the work station, means on said slide carriage and on said slide member for interconnecting said slide carriage and said slide member to thereby permit concomitant movement on said slide carriage and said slide member, and a control unit having a piston component and a cylinder component, one of said components being connected with said slide carriage and the other of said components being connected with the drive; and means for adjusting the length of the stroke of said slide member in dependence upon the length of the rod stock piece at the work station, including means for displacing one of said components relative to the other of said components to thereby move said slide carriage together with said slide member through a stroke of length greater than said predetermined stroke length.

4,122,736

APPARATUS AND METHOD FOR PERFORATING AN ARTICLE

Robert S. Price, Bicknell, and Norman L. Eisman, Vincennes, both of Ind., assignors to Universal Scientific Company, Vincennes, Ind.

Filed Nov. 14, 1977, Ser. No. 851,213
Int. Cl.[2] B26D *7/00, 7/08*
U.S. Cl. 83—23 **16 Claims**



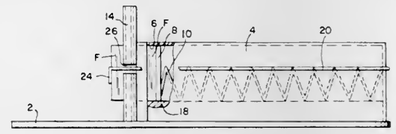
1. Punch apparatus comprising die punch means to penetrate an article for punching at least one portion therefrom, said die punch means including at least one part extending through said article in the course of punching the same, cleaning means for cleaning said part with the latter extending through said article, and positioning means for extending said cleaning means into engagement with said part for cleaning the latter and for retracting said cleaning means from said part to permit detaching said article from said part.

4,122,737

FOOD STUFFS HOLDER AND CUTTER ASSEMBLY

Richard E. Denson, 704 Perry St., Scottsborough, Ala. 35768

Filed Jun. 17, 1977, Ser. No. 807,446
Int. Cl.[2] B26D *7/16*
U.S. Cl. 83—268 **5 Claims**



1. A holder and cutter assembly for food stuffs in stick form, said assembly comprising a chamber for receiving a food stuff in stick form, a carrier disposed in said chamber and adapted to move lengthwise of said chamber in abutting relationship with said food stuff, means for biasing said carrier toward an opening in said chamber, stop means disposed outside said chamber proximate to said opening and in alignment with said chamber, said stop means being adapted to permit a portion of said food stuff stick to be exposed outside said chamber in response to said biasing means, and cutter means disposed adjacent to said opening and operable to cuttingly engage said exposed portion of said food stuff stick to sever said exposed portion from the remainder of said food stuff stick, said stop means being adapted to release said severed portion and move to a position removed from said severed portion, and wherein:

said assembly includes bracket means disposed adjacent to said opening, said bracket means slidably retaining said cutter means;

said stop means comprises wire spring means mounted on said housing, and said bracket means includes means for receiving said wire spring means and facilitating movement of said wire spring means in said slot means; and

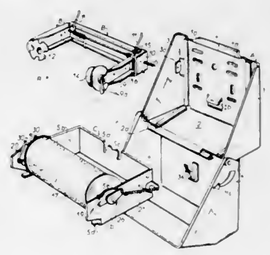
said cutter means has cam surfaces in engagement with said wire spring means to cause said wire spring means to move widthwise of said opening and outwardly therefrom in said slot means to disengage from said food stuff stick.

4,122,738

APPARATUS FOR THE CUTTING AND SIMULTANEOUS DISPENSING OF A WEB OF ROLL MATERIAL

Maurice Granger, 28 rue Charles de Gaulle, 42000 Saint-Etienne-Loire, France

Division of Ser. No. 671,818, Mar. 30, 1976, abandoned. This application Jul. 12, 1977, Ser. No. 814,931
Claims priority, application France, Nov. 19, 1975, 75 36254
Int. Cl.[2] B26D *1/56*
U.S. Cl. 83—314 **23 Claims**



1. An apparatus for successively cutting and simultaneously distributing sections from a web of roll material, the apparatus having a casing, a carrier for a roll of material mounted in the casing, a rotatable drum in said casing, said carrier being urged towards said drum such that the roll of material is frictionally engaged with the drum to cause the drum to be driven in rotation by manual traction applied to a free end of the material extending from the casing, said drum having opposite ends, a profiled pawl supported at one of the ends of the drum, elastic means positioned to engage said pawl for braking the rotation of said drum and halting the drum after one revolution thereof, an eccentric lever mounted at the other end of said drum for rotation therewith, energy storage means engaging said lever for resisting rotation of the drum during an initial period of rotation thereof while storing energy and then driving the drum in rotation by the stored energy, and cutting means for cutting the material on said drum, an improvement wherein said drum is hollow, said cutting means comprising a cutting member pivotably mounted in said drum for movement between operative and inoperative positions, cam means for pivotably moving the cutting member to its operative position by the drive of the drum, said drum having a slot therein, said cutting member being retracted in said drum in said inoperative position and projecting from said slot in said operative position, said cutting member being displaced by said cam means under the drive of the drum along a trajectory in the same direction of rotation of the drum to reach said operative position and cut the material to free a section thereof for release under the manual traction in the course of rotation of the drum.

4,122,739

MITERING DEVICE FOR WOOD AND METAL PICTURE FRAMES

Glenn Marlow, 3523 Robin Dr., Louisville, Ky. 40216

Filed May 19, 1977, Ser. No. 798,444
Int. Cl.[2] B27B *27/06*
U.S. Cl. 83—421 **23 Claims**

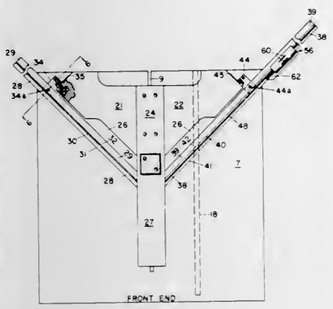
14. In the art of making mitered frame members on a work table associated with an operatively mounted mitering saw, an

improved device for use in mitering metal type stock and wood type stock, comprising:

A, a portable panel having a flat top work face, a front end, a rear end and a forwardly-rearwardly extending slot between such ends to receive said mitering saw,

1. said panel being removably mountable on said work table for guided back and forth sliding movement; and

B. abutment means including,

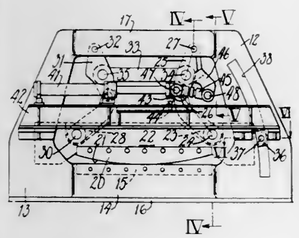


1. for one type of stock, one abutment means mounted on the panel to extend on and along the rear side of a vertical plane which converges forwardly toward the panel slot at an angle of about 45° on the rear side of said plane, and,
2. for the other type of stock, another abutment means mounted on the panel to extend on and along the front side of a parallel vertical plane, which converges forwardly toward the panel slot at an angle of about 135° on the front side of said parallel plane.

4,122,740
SHEAR

Jack Maltby, Sheffield, England, assignor to Davy-Loewy Limited, Sheffield, England

Filed Oct. 17, 1977, Ser. No. 842,819
Claims priority, application United Kingdom, Oct. 18, 1976, 43112/76; Nov. 15, 1976, 47453/76; Jun. 23, 1977, 26370/77; Jul. 1, 1977, 27614/77
Int. Cl.² B26D *5/18*
U.S. Cl. 83—646 **11 Claims**

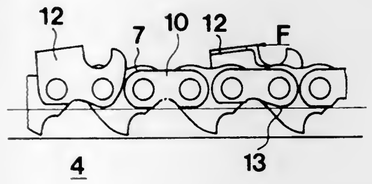


1. A rolling cut shear having
(a) a frame;
(b) a stationary blade carried by said frame;
(c) a movable blade to cooperate with said stationary blade; and
(d) supporting and driving means for said movable blade, said means comprising:
(e) a pair of opposed toggle mechanisms which are pivoted to said movable blade at locations spaced along the length of said movable blade, and are pivoted to said frame about axes substantially perpendicular to the length of said stationary blade;
(f) coupling means between said toggle mechanisms causing said mechanisms to swing together;
(g) hydraulic drive means operatively coupled to said toggle mechanisms for driving said mechanisms about said pivot axes; and
(h) means for guiding said movable blade,
(i) the swinging of said toggle mechanisms resulting in said movable blade executing a rolling motion relative to said stationary blade.

4,122,741
POWER SAW CHAIN

Thomas Engman, Mullsjöö; Dan Ericsson, and Goran Landen, both of Huskvarna, all of Sweden, assignors to Husqvarna AB, Huskvarna, Sweden

Filed Jul. 7, 1977, Ser. No. 813,688
Int. Cl.² B27B *33/14*
U.S. Cl. 83—834 **3 Claims**



1. A power saw chain comprising interconnected driving links, side links and cutting links, each cutting link having an upper surface defining a cutting edge, a lower surface, a first pivot forwardly of said cutting edge in the direction of propulsion of the saw and a second pivot rearwardly of said cutting edge, said pivots attaching said cutting link to successive driving links respectively, each side link having an upper surface, a lower surface and forward and rearward pivots attaching said link to successive driving links respectively and wherein when the first and second pivots of a cutting link and the forward and rearward pivots of a side link adjacent said cutting link lengthwise of the chain are disposed in a common plane, a portion of said undersurface of said cutting link under said second pivot is spaced more closely to said plane than is the undersurface of said side link.

4,122,742
TRANSIENT VOICE GENERATOR

Ralph Deutsch, Sherman Oaks, Calif., assignor to Deutsch Research Laboratories, Ltd., Sherman Oaks, Calif.

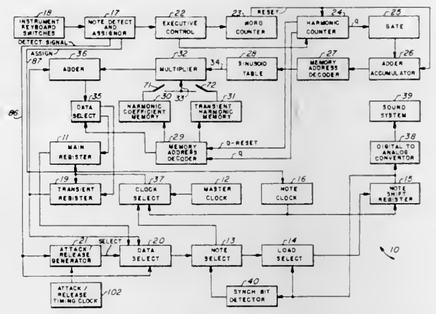
Filed Aug. 3, 1976, Ser. No. 711,397
Int. Cl.² G10H *3/00*
U.S. Cl. 84—1.11 **9 Claims**

1. In a musical instrument of the type including a keyboard having a plurality of key-operated switches, a plurality of tone setting stop switches, generation means for synthesizing a musical waveshape by calculating its constituent generalized Fourier components and wherein each Fourier component is established by a harmonic coefficient associated with the corresponding Fourier component, said generation means including first circuitry operative during a computation cycle for individually calculating the constituent Fourier components and an accumulator for summing these Fourier components to form a master data set in which the relative values of the words are established by a set of harmonic coefficients selected in response to the setting of said stop switches and second circuitry having a plurality of registers for receiving transferred master data set words, and a convertor means for generating analog output musical waveshapes from data read out of registers by associated clock generators; the improvement for time variant modification of the synthesized musical waveshapes comprising;

means for computing a master data set and a transient data set during a computation cycle,

a first storage means comprising a first memory means for writing said master data set to be thereafter read out and a second memory means for writing said transient data set to be thereafter read out,

a third memory means for writing input data to be thereafter read out,



means for repetitiously reading out data stored in said first storage means at selected rates,

a transient signal control generator wherein a select signal is created in response to actuation of said key-oriented switches, and

select means responsive to said select signal whereby data is selectively read out from said first memory means or is selectively read out from said second memory means and the selected data is transferred and caused to be written into said third memory means thereby producing said time variant modification of the synthesized musical waveshape.

4,122,743
ELECTRONIC MUSICAL INSTRUMENT WITH GLIDE

Norio Tomisawa, Hamamatsu; Yasuji Uchiyama, Hamakita; Takatoshi Okumura, Hamamatsu, and Toshio Takeda, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 581,180, May 27, 1975, abandoned.
This application Aug. 9, 1977, Ser. No. 823,236
Claims priority, application Japan, May 31, 1974, 49-61712; May 31, 1974, 49-61713
Int. Cl.² G10H *1/02*
U.S. Cl. 84—1.24 **8 Claims**

1. An electronic musical instrument comprising:

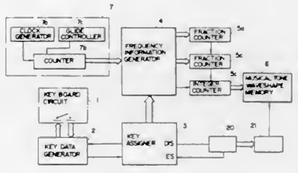
means for generating a key address code corresponding to a depressed key;

a frequency information memory for storing basic frequency information corresponding to notes of respective keys and producing, upon receipt of said key address code, frequency information corresponding to said key address code;

a glide code generator comprising a clock pulse generator, a counter for counting the clock pulses generated and producing a glide code output which progressively changes in value with the pulse count, and a glide controller for controlling the counting operation of said counter to perform counting during only a predetermined period of time;

a glide information generator coupled to said glide code generator and responsive to the glide code output thereof for producing a glide information output which initially represents a value other than 1 and thereafter changes in equal increments in time step with said glide code output until it represents a value equal to 1;

a multiplier coupled to said glide information generator and said frequency information memory for multiplying said glide information output with the basic frequency information produced by said frequency information memory;



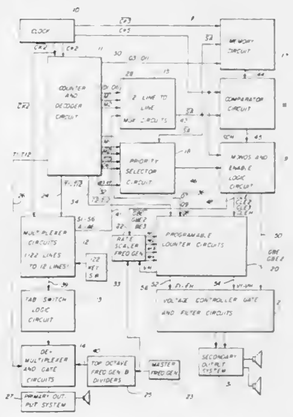
a frequency counter for receiving and cumulatively counting the multiplication results of said multiplier; and

a musical tone waveshape memory for storing a desired musical tone waveshape which is read out by the output of said frequency counter.

4,122,744
VARIABLE FREQUENCY GENERATOR FOR POLYPHONIC ELECTRONIC MUSIC SYSTEM

Dale M. Uetrecht, Colerain Township, Hamilton County, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Aug. 15, 1977, Ser. No. 824,562
Int. Cl.² G10H *1/04, 5/00*
U.S. Cl. 84—1.25 **5 Claims**



1. A frequency generator for keyboard electronic musical instruments for generating multiple master tone signals that may be dynamically shifted in frequency with respect to one another comprising:

master frequency clock generator means for producing master clock frequency signals;

vibrato signal means for providing first signals that vary in frequency at a rate depending on the number of keys played;

ensemble signal means for providing second signals the frequency of which varies depending on the time elapsed

since a first key was played, the number of keys played, and the highest note of the keys played;

frequency shifting means for receiving the master clock frequency signals, the first signals and the second signals and producing a plurality of output tone signals which are varied in frequency with respect to the master clock frequency signals and to one another in response to variation of the first and second signals.

4,122,745

STRINGED MUSICAL INSTRUMENT WITH AUXILIARY STRINGS

Francisco J. Darias Paya, Plaza Mayor, 4, Alcoy (Alicante), Spain

Filed Feb. 17, 1977, Ser. No. 769,462
Claims priority, application Spain, Feb. 17, 1976, 218.881
Int. Cl.² G10D *1/08, 3/02*
U.S. Cl. 84—267 **5 Claims**



1. A stringed musical instrument comprising a case including a cover having an opening therein, an elongated neck extending from said case and carrying a peg bridge at its free end, a fret carrying finger board secured to the surface of said neck and passageway means including a plurality of individual passageways extending longitudinally through said neck and finger board between said cover and peg bridge, a lower string bridge mounted on said cover opposite said opening from said finger board, an upper string bridge mounted at the end of said finger board opposite said case, pegs rotatable mounted in said peg bridge, regular strings to be operated by a player individually anchored at one end to said lower string bridge and stretched over said case opening and along said finger board and over said upper string bridge to respectively individual pegs to be tensioned thereby, said strings being spaced from each other and disposed in a plane spaced from said cover and finger board, and a plurality of auxiliary strings disposed between said regular strings and said cover and extending over said opening and respectively through said individual passageways of said passageway means to a peg on said peg bridge.

4,122,746

STRINGED MUSICAL INSTRUMENT PICK

Quilla H. Freeman, 1050 N. Gardner St., Los Angeles, Calif. 90046

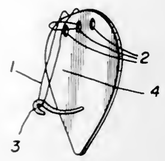
Filed Jan. 17, 1977, Ser. No. 760,190
Int. Cl.² G10D *3/16*
U.S. Cl. 84—322 **4 Claims**

1. A thumb pick for picking the strings of a stringed musical instrument, comprising:

a flat, generally triangular body having an apex used for picking said strings and a relatively broad edge opposite said apex;

a flexible band attached to said body proximate said broad edge, said band having a loop formed at the end remote from said body;

a hook member connected to said body in the vicinity of said apex, said hook member extending outwardly from said body;



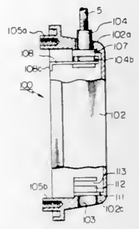
whereby said pick may be affixed to a player's thumb by stretching said band around said thumb and connecting said loop to said hook member.

4,122,747

LUG ASSEMBLY FOR ANCHORING DRUM HEADS TO DRUM BODY

Yamashita, Toshinori, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 22, 1977, Ser. No. 817,971
Claims priority, application Japan, Jul. 24, 1976, 51/99143[U]
Int. Cl.² G10D *13/02*
U.S. Cl. 84—411 R **11 Claims**



1. An improved lug assembly for drums comprising, in combination,

a hollow casing having an opening on the side thereof, a side wall spaced apart from said opening and at least one operational end wall connected to said side wall, said operational end wall being provided with a through-hole,

an inner extension formed within said casing at a position adjacent to said through-hole and having a member facing said opening, said extension being further provided with an outer groove opening to said through-hole, an intermediate groove extending adjacent to and in communication with said outer groove, an inner groove extending adjacent to and in communication with said intermediate groove, and a pair of shelves extending adjacent to said inner groove to partly define the innermost border of said inner groove,

a bushing having an end flange received in said intermediate groove and a cylindrical portion extending outwardly of said casing through said through-hole,

a non-metallic elastic insert inserted over said cylindrical portion of said bushing and compressively received in said outer groove,

a seat received in said inner groove and extending towards said opening of said casing, and

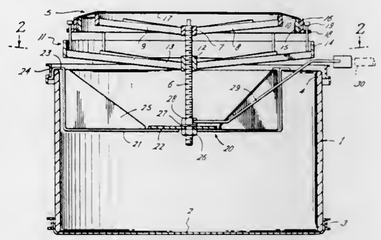
a lug bolt in screw engagement at one end thereof with said cylindrical portion of said bushing and adapted at the other end thereof for anchoring the drum head to the body of the drum.

4,122,748

ADJUSTABLE PITCH DRUM

Randall L. May, 7726 Dawnridge, Houston, Tex. 77071

Continuation-in-part of Ser. No. 731,361, Oct. 12, 1976, Pat. No. 4,048,895. This application Sep. 8, 1977, Ser. No. 831,671
The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.
Int. Cl.² G10D *13/02*
U.S. Cl. 84—411 A **9 Claims**



1. A supporting device for coupling a rotatable adjustable musical drum head having a threaded rod support to a hollow drum shell having an open end comprising:

a supporting spider having a hub with a threaded opening adapted to be positioned substantially axial of said drum shell when assembled.

said spider having a plurality of outwardly extending supporting legs having rebent outer end portions adapted to fit over the open end of said drum shell, and adapted to be held in position by a head hoop,

a threaded supporting rod having one end threaded adjustably in said threaded hub opening,

a locking nut threaded on said rod and adapted to lock said rod in any predetermined position, and

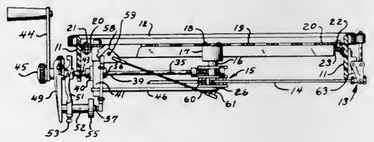
the other end of said rod being adapted to support said rotatable adjustable drum head.

4,122,749

MARCHING TIMPANI

John L. Hoellerich, Northbrook, Ill., assignor to Slingerland Drum Co., Niles, Ill.

Filed Mar. 2, 1977, Ser. No. 773,508
Int. Cl.² G10D *13/04*
U.S. Cl. 84—419 **15 Claims**



1. A marching timpani comprising:

an annular shell defining an open upper end, the height of said shell being a fraction of the diameter thereof;

a head secured across said upper end;

a horizontal support extending across said shell below said upper end;

pivot means mounted to said support coaxially of said shell;

a crank having a horizontal shaft and a handle at an outer end of the shaft accessible exteriorly adjacent said shell for manually rotating said shaft;

means for pivoting said pivot means as the result of rotation of said shaft; and

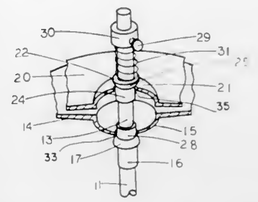
head adjusting means responsive to pivoting of said pivot means for adjustably tensioning said head.

4,122,750

HOLDING DEVICE FOR CYMBALS

Gary M. Rinker, 3121 E. 5th St., Anderson, Ind. 46012

Filed May 5, 1977, Ser. No. 794,035
Int. Cl.² G10D *13/02, 13/06*
U.S. Cl. 84—421 **12 Claims**



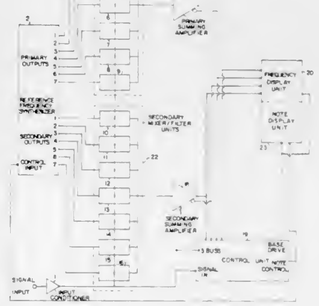
1. In a percussion instrument having a head cymbal and a lower cymbal mounted to a shaft through their openings for supporting said cymbals thereon, a holding device therefor comprising a first member secured to the shaft for supporting said lower cymbal thereon, a second member slidably engaged on said shaft and positioned above and in engagement with said head cymbal, and means connected to the shaft for urging said second member downwardly against said head cymbal to thereby yieldably hold the cymbals in contact with one another.

4,122,751

AUTOMATIC INSTRUMENT TUNER

Noel M. Calvin, 2683 Buena Vista Way, Berkeley, Calif. 94708

Filed Apr. 8, 1977, Ser. No. 786,008
Int. Cl.² G10G *7/02*
U.S. Cl. 84—454 **15 Claims**



1. An apparatus for determining which note in the musical spectrum is closest in frequency to an input signal and generating a display of the frequency difference between the input signal and that note, comprising in combination:

frequency generator means for simultaneously producing a plurality of signals corresponding to the same note in a plurality of octaves, said frequency generator means being programmable such that any of the twelve notes in the scale may be produced;

mixer filter means consisting of a plurality of mixer-filter units each of which mixes said input signal with one of the outputs of said frequency generator means and produces an output if the input signal is within ½ semitone of the frequency of said output of the frequency generator:

control means which monitors all of the mixer-filter units

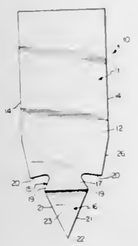
and programs the frequency generator to provide a different note if none of the mixer-filter units is producing an output, trying all twelve notes in sequence until one or more of the mixer filter units produces an output, at which time said control means activates a display means providing a display of the frequency difference between the input signal and said frequency generator.

4,122,752

FLAT FASTENER FOR DRIVING INTO METALLIC MATERIAL

Robert L. Hallock, 7136 NE. 8th Dr., Boca Raton, Fla. 33432

Filed Sep. 8, 1977, Ser. No. 831,443
Int. Cl.[2] F16B *15/00*
U.S. Cl. 85—30 **3 Claims**



1. A fastener for driving into metallic material comprising a body of predetermined width and thickness, said body being non-circular in cross-section and of a configuration to be formed by a press, a neck integrally formed at one end of said body and extending longitudinally outwardly therefrom, said one end of said body defining at least one shoulder adjacent to said neck, said neck having a thickness substantially equal to the thickness of said body, a head integrally formed at the other end of said neck, a portion of said head being generally square and having a width which is greater than the width of said neck and less than the width of said body thereby forming at least one recess adjacent to said neck, the width of said neck being at least approximately 85% as wide as said square portion of said head, said square portion of said head having a thickness substantially equal to the thickness of said body and said neck, and said head having inclined surfaces tapering to a penetrating portion, whereby when said fastener is driven into metallic material said head causes the metallic material to flow upwardly and outwardly into engagement with said shoulder and said shoulder forces a portion of such material into the recess adjacent to said neck to lock said fastener to said material.

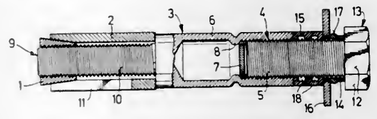
4,122,753

EXPANSION ANCHOR ASSEMBLY INCLUDING AN INTERCONNECTING DEVICE

Wolf Kuhlmann, Münich; Gerhard Rumpp, Inning, and Albert Busler, Altmuhldorf, all of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Aug. 13, 1976, Ser. No. 714,334
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1975, 2536136
Int. Cl.[2] F16B *13/06, 31/02*
U.S. Cl. 85—74 **40 Claims**

1. An expansion anchor assembly insertable into a borehole in a support structure for securing a member to the support structure, said anchor comprising an axially elongated first part having a first end and a second end with the second end arranged to be positioned exteriorily of the borehole and having a shoulder thereon at least adjacent the second end for use in securing the member to the support structure and the first end arranged to be positioned interiorly within the borehole, said first part being threaded for at least a portion of its axial length, an axially elongated second part having a first end and a second end with the first end projecting outwardly beyond the first end of said first part so that it is arranged to project further into the borehole and said second part being threaded in the axial direction adjacent the second end thereof and being in threaded engagement with said first part, a third part having a first end and a second end and the second end of said third part connected to the first end of said second part and projecting axially outwardly therefrom so that it is arranged to project therefrom further into the borehole, said third part being threaded in the axial direction thereof from the first end toward the second end thereof, a spreader in threaded engagement with said third part, an axially elongated expansion sleeve having a first end and a second end with said sleeve laterally enclosing at least a portion of said third part and arranged to be expanded radially by said spreader, means for interconnecting said first part and said second part so that said second part can



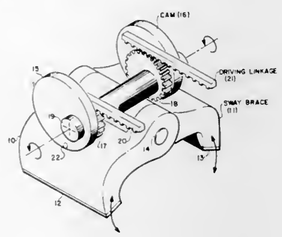
be rotated about its elongated axis by said first part and said means providing automatic disengagement of the interconnection between said first part and said second part when a minimum anchoring value is achieved as said third part connected to said second part pulls said spreader into said expansion sleeve and expands it radially outwardly into engagement with the borehole in the support structure, wherein the improvement comprises that said means interconnecting said first and second parts is located intermediate the second end of said expansion sleeve and the shoulder on said first part and said first part being rotatable about its elongated axis relative to said second part upon the automatic disengagement of said means so that said first part can be threaded into said second part for axial movement relative thereto permitting movement of said shoulder toward the second end of said second part, and when the member is secured to the support structure by said first part said means is completely enclosed and covered between the shoulder on said first part and said second part.

4,122,754

DEPENDENT SWAY BRACING WEAPON RESTRAINTS

Clayton E. Panlaqui, and Lloyd J. Holt, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 5, 1977, Ser. No. 822,125
Int. Cl.[2] F41F *5/02*
U.S. Cl. 89—1.5 B **7 Claims**



1. An automatic sway brace mechanism for an aircraft carrying a releaseable store comprising:
a mechanism including a pair of movable arms terminating in store engaging pads;

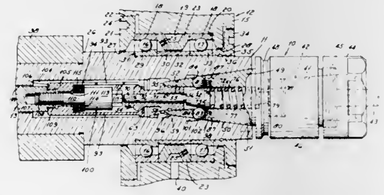
said arms being movable from a retracted to a store engaging position;
cam means in engagement with said arms and operative to drive said arms from the retracted to the store engaging position and back to the retracted position;
cam driving means for driving said cam means;
said sway brace mechanism being automatically self-centering and accommodating different store sizes without individual manual adjustment of the arms or pads.

4,122,755

SELF-LOCKING CHUCK

Charles R. Johnson, Howell; John K. Forlow, Wixom; Paul G. Black, Whitmore Lake, all of Mich.; William A. Mitchell, and John S. Clark, both of Springfield, Vt., assignors to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 739,390, Nov. 8, 1976, abandoned. This application Feb. 9, 1977, Ser. No. 767,176
Int. Cl.[2] B23C *5/26*
U.S. Cl. 90—11 A **6 Claims**



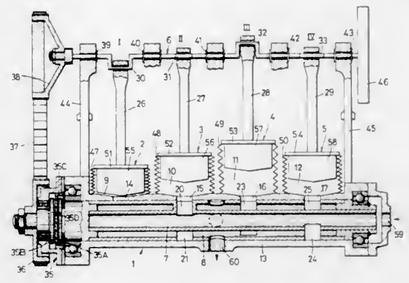
1. In a machine tool having a rotatable spindle with a bore formed therethrough, and wherein said spindle is provided with a tool holder seat comprising an inwardly coverging frusto-conical socket communicating with one end of said bore in said spindle, the combination comprising:
(a) a tool holder, said tool holder having a frustoconical shank and adapted to be operatively mounted in said spindle socket;
(b) a retention means carried by said tool holder;
(c) a tool holder gripping means operatively mounted in said spindle bore for releasable gripping engagement with said retention means for releasably retaining said tool holder in said spindle;
(d) a draw bar opertively mounted in said spindle bore for axial movement with repect to said spindle to operate said tool holder gripping means between a tool holder locked position and a tool holder unlocked position;
(e) a plurality of self-locking balls operatively mounted in said tool holder and being normally in a locked position for locking the tool holder in said spindle, and being adapted to be moved to an unlocked position by said draw bar when the draw bar is moved to a tool holder unlocked position;
(f) spring biased means for normally biasing each of said locking balls radially outward into locking engagement with the spindle;
(g) said spring biased means includes a plunger member engageable with each of said locking balls and a spring means for normally biasing said plunger member in a direction to move each of said locking balls radially outward into locking engagement with said spindle; and
(h) said spindle bore includes a frusto-conical inwardly converging seat for releasable locking engagement with said plurality of said locking balls.

4,122,756

VAPOR ENGINE

Edgard Grundmann, Fallersleben, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jan. 25, 1977, Ser. No. 762,453
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603249
Int. Cl.[2] F01B *1/02, 19/00;* **F16J** *3/04*
U.S. Cl. 91—180 **7 Claims**



1. A vapor engine using a refrigerant as its working medium, said engine comprising:
(a) a plurality of bellows each forming an expansion chamber for receiving the working medium, each of said expansion chambers changing its volume under the influence of the pressure exerted by the vaporized working medium;
(b) a crank shaft arranged above and mechanically connected to each of said bellows;
(c) rotary slide means arranged below said bellows for controlling the flow of the working medium to and from said bellows;
(d) said crank shaft and rotary slide means extending between two opposite ends of the engine, the axes of rotation of said crank shaft and said rotary slide means being generally parallel to each other;
(e) means arranged at one of said ends for connecting said crank shaft and rotary slide means for synchronous rotation with each other; and
(f) said engine having a casing and said means for rotationally connecting said crank shaft and said rotary slide means to each other including a magnetic coupling having two parts which are magnetically coupled for rotation with each other as well as a sealing portion which passes between said two magnetically coupled parts and which fluid-tightly seals the engine casing, said sealing portion being made of a material which allows the flow of magnetic flux between said two magnetically coupled parts.

4,122,757

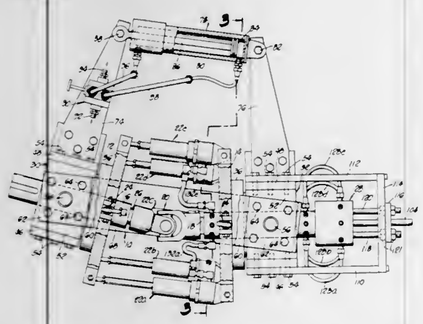
FLUID OPERATED ENGINE

David P. McConnell, P.O. Box 591, Minden, Nev. 89423, and Louis E. Tully, La Canada, Calif., assignors to David P. McConnell, Minden, Nev.

Filed Feb. 3, 1976, Ser. No. 654,763
Int. Cl.[2] F01B *13/04*
U.S. Cl. 91—506 **10 Claims**

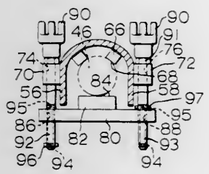
1. A fluid operable engine, comprising:
(a) a frame structure;
(b) a pair of confronting spaced apart disc-like plate members respectively mounted on said frame for rotation about a right-angled axis of rotation, said plate members being relatively oppositely inclined with respect to each other and relatively oriented on their axes to position points of maximum spacing on one side of their axes and points of minimum separation on an opposite side;

(c) a plurality of pressurized fluid actuated axially expansile and retractile devices extending between and being connected to corresponding circumferentially spaced points of said members;
(d) power delivery shaft means connecting said members for simultaneous rotation comprising separate shaft sections fixedly supporting said members and being independently supported for rotation at opposite ends of said frame structure, said shaft sections having adjacent ends disposed between said members interconnected by a universal joint;



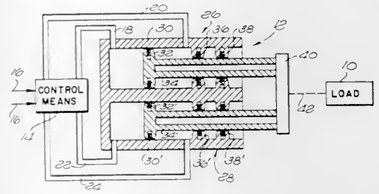
(e) a bearing assembly containing radial and axial thrust bearing elements for supporting each of said shaft sections, each of the bearing assemblies being supported on the frame structure for swinging movements to change the angular relationship of said shaft sections and said members thereon with respect to each other; and
(f) valve means operable in synchronized timed relation to said rotation for sequentially controlling the actuating fluid for said devices so as to cause rotation of said members and the connected power delivery shaft.

4,122,758
SERVICE SUPPORT
Harold F. Bieringer, Peoria; Derrell G. Jones, Washington, and Gary S. Schwartzkopf, Aurora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jun. 9, 1977, Ser. No. 804,978
Int. Cl.[2] F15B *15/26*
U.S. Cl. 92—23 **15 Claims**



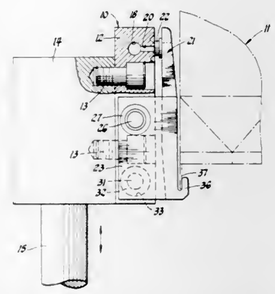
1. A service support in combination with a cylinder rod of a cylinder, said service support comprising an elongate U-shaped body portion having legs with bottom edges adapted to be placed over said cylinder rod, a pair of lugs carried by an intermediate portion of said body portion and extending outwardly on opposite sides thereof along axes extending perpendicular to a plane containing the bottom edges of said legs, a plate bridging the space between the legs of said U-shaped body portion and having threaded apertures aligned with said lugs, and a pair of threaded members passing through said lugs and being threaded into said apertures in said plate to secure said body portion to said cylinder rod.

4,122,759
JAM-PROOF ACTUATOR STRUCTURE
Manfred A. Runkel, Valencia, and Joseph Licha, Chatsworth, both of Calif., assignors to Textron Inc., Providence, R.I.
Filed Dec. 13, 1976, Ser. No. 750,110
Int. Cl.[2] F16J *9/06, 15/18;* **F15B** *11/16*
U.S. Cl. 92—168 **9 Claims**



1. An actuator having a jam-proof structure for allowing said actuator to continue movement subsequent to deformation of a portion thereof, said actuator comprising:
a cylinder including a metallic gland member defining an opening therethrough;
a metallic piston member slidably disposed within said cylinder and having a rod defining an outer periphery connected thereto and extending through said opening in said gland member;
said piston member including a pair of spaced apart radially extending opposed flanges;
said opposed flanges defining a plurality of radially extending slots therethrough thereby providing a plurality of radially disposed segments in said flanges, said slots extending to a depth such that the bottom of each slot is at substantially the outer periphery of said rod; and
a rubber-like material filling each of said slots and bonded to said flanges to provide solid flanges of alternate metal and rubber-like material.

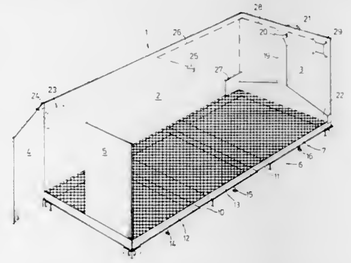
4,122,760
CARTON JAM DETECTION MEANS
Gregory J. Dwyer, Livonia, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Apr. 12, 1977, Ser. No. 731,174
Int. Cl.[2] B65B *57/02*
U.S. Cl. 93—36 R **4 Claims**



1. In a coated paperboard carton packaging machine having a carton loader apparatus, including a carton lift rod, the combination comprising:
(a) a valve block mounted on said lift rod and having pressurized air passages formed therethrough and having an inlet end adapted to be connected to a source of an air supply system, and having an outlet end forming a valve seat orifice;

(b) a carton lifter finger movably mounted on said valve body;
(c) vent valve means carried on said lifter finger for normally enclosing said valve seat orifice when the lifter finger is in a releasable carton loading position; and,
(d) means for normally biasing said lifter finger into said releasable carton loading position to maintain said vent valve on said valve seat orifice, whereby when a carton jam appears during the loading of a carton on a mandrel, the resistance of the carton jam will pivot the lifter finger from said releasable carton loading position to a position whereby the vent valve means is moved off of the valve seat orifice and air is permitted to vent to the atmosphere through the valve seat orifice and provide a control signal.

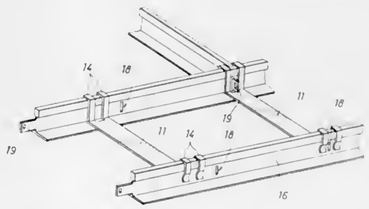
4,122,761
DANGEROUS GOODS SHIPPING CONTAINER
Per-Olov Westin, Ektorp, and Per A. Marklund, Skelleftea, both of Sweden, assignors to AB Svenska Godscentraler, Stockholm and AB Plastkarosser, Skelleftea, both of, Sweden
Filed May 10, 1977, Ser. No. 795,597
Int. Cl.[2] F24F *13/00;* **B65J** *1/02*
U.S. Cl. 98—33 R **8 Claims**



1. A shipping container for transporting dangerous goods, such as poisonous or explosive liquids stored in cans, comprising:
(a) a roof member, a bottom member and four side wall members joined together to form a gas tight enclosure, one of said members comprising access means,
(b) said bottom member comprising a plurality of upwardly open, liquid-tight trays separated from each other by respective tray side walls,
(c) a plurality of fork lift tyne tunnels spaced from each other and defined between adjacent tray side walls,
(d) an apertured, load-bearing inner floor disposed above said trays and tunnels to define a continuous ventillation passage extending beneath the full area of said inner floor,
(e) forced air exhaust means mounted in said container in communication with said ventillation passage, and
(f) adjustable air intake means disposed in said container and spaced from said air exhaust means, whereby any spilled liquid flows through said apertured inner floor into the tray therebeneath, and said exhaust means draws air through said intake means via the interior of said container and said ventillation passage, to thereby purge any dangerous liquid vapors from said container.

4,122,762
AIR-SLOT SPACER CLIP
Arthur C. Williams, 21711 Glenbranch, Spring, Tex. 77373
Filed Mar. 7, 1977, Ser. No. 775,387
Int. Cl.[2] G09F *7/18;* **F24F** *13/06*
U.S. Cl. 98—40 D **6 Claims**

1. An interconnected ceiling structure for a building having an air-slot therein for the introduction therethrough of conditioned air, comprising:
a plurality of spaced, inverted-tee support members, each having a flange portion and a vertical portion and supported in said building,
a plurality of ceiling tiles adapted for supporting placement between said inverted-tee support members for forming a building ceiling,
at leat one inverted-tee support member having a flange positioned adjacent to and spaced apart from a preselected one of said plurality of spaced apart inverted-tee support members supported in said building for defining an air-slot therebetween in said ceiling for the introduction therethrough of conditioned air,
an air conditioning troffer defining a discharge port corresponding in size and shape to said air-slot defined in said ceiling, and
a plurality of spacing clips attachable at each extremity to



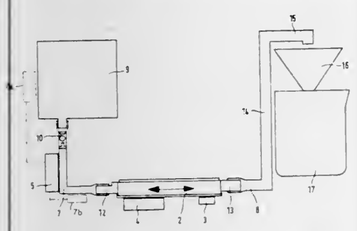
the vertical portion of one of said preselected spaced inverted-tee support members for rigidly maintaining said spaced apart relation therebetween and for receiving and supporting said discharge port of said air conditioning troffer in fixed relation to said ceiling, each spacing clip comprising
a central body member, a pair of leg members depending from opposing ends of said body member,
each of said leg members defining a slot sized to receive an intersecting inverted-tee support member therein and being a generally inverted U-shape for engaging said vertical portion of an adjacent inverted-tee support member and positioning said body member in abutting engagement with said flanges of said tee support members, and
means located on said leg members for securely gripping said vertical portion of said inverted-tee support members.

4,122,763
HOUSEHOLD COFFEE MACHINE WITH CALCIFICATION INDICATOR
Rudolf Waninger, Villingen-Schwenningen, and Frank Obrowski, Bad Duerrheim, both of Fed. Rep. of Germany, assignors to Wigo Gottlob Widmann & Soehne GmbH & Co. KG, Villingen-Schwenningen, Fed. Rep. of Germany
Filed Jun. 13, 1977, Ser. No. 805,979
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646312
Int. Cl.[2] A47J *31/58*
U.S. Cl. 99—281 **9 Claims**

1. In a household coffee machine having a coffee making cycle and including
a flow heater with
a cold water supply conduit,
a hot water outlet,
a thermostat for controlling the temperature of the flow heater, and
a calcification indicator switch responsive to a predetermined condition for effecting operation of a calcification indicator system,
the improvement wherein
the calcification indicator system comprises
a glow lamp operable in circuit arrangement with a signal flasher circuit, and
means to actuate said switch at a time dependent on the

conclusion of the coffee making cycle for disabling the calcification indicating system, and

at least a portion of said calcification indicator system being



connected in a parallel circuit connection with the thermostat,

whereby said thermostat, in a turn-on state, disables the calcification indicator system.

4,122,764

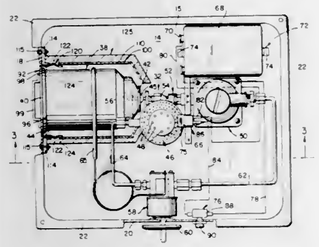
PORTABLE FOOD WARMER

Grace D'Ambra, 149-45 Northern Blvd., Flushing, N.Y. 11354

Filed Aug. 24, 1977, Ser. No. 827,364

Int. Cl.[2] F24C *5/20*

U.S. Cl. 99—483 **9 Claims**



1. A portable apparatus for warming food products and powered by fuel from a fuel container having a valve at one end thereof and an annular rim at substantially the other end thereof which fuel is to be initially ignited by a battery power source, said portable food warmer comprising in combination:

A. housing means having a chamber therein,

B. said housing means including a bottom wall with housing walls extending upwardly from said bottom wall and forming said chamber,

C. a hot plate mounted across said housing means with said chamber closed by said hot plate,

D. means for retaining said battery in removable position in said housing means,

E. heater means mounted in said chamber, said heater means comprising:

(1) a burner extending in vertically spaced relationship below said hot plate for heating same,

(2) regulator means operatively connected to said burner to control the volume of fuel flowing to said burner from said container, and

(3) coupling means for releasably connecting said regulator means to said valve of said container for operatively opening said valve to permit a flow of fuel to said regulator means,

F. ignition means in said chamber mounted in operable relation to said burner and adapted to be coupled to said battery so as to ignite the fuel upon the commencement of usage of the portable apparatus when fuel is flowing through said regulator means, said ignition means including

(4) a filament adapted to receive an electric current to elevate same to a temperature sufficient to ignite the fuel, and

(5) switching means coupled to said battery and said filament such that when said switching means is in its energized position electric current flows through said filament to heat same,

G. mounting means operatively associated with one of said walls of said housing means and in alignment with said coupling means so as to removably support said container in operative relation to said coupling means so as to bring said valve into abutting engagement with said coupling means to open said valve and permit a flow of fuel from said container to exit into said coupling means for use in said heater means for maintaining a flame in said burner,

H. said mounting means comprises:

(6) a closure having oppositely disposed inner and outer ends,

(7) support means mounted on said inner end to provide releasable engagement between said annular rim of said container and said closure such that said container may be moved into position so as to engage said coupling means,

(8) guide means extending within said chamber adjacent one said wall of said housing means to guide said container longitudinally into said position in which said coupling means engages said valve for opening same thereto,

(9) a handle mounted on said outer end of said closure such that insertion and removal of said container in said guide means is facilitated,

(10) said guide means includes:

(a) a guide member having an axially extending bore therethrough,

(b) said guide member being mounted on one of said walls such that said container is adapted to be positioned in telescopic relationship with said guide member, and

(c) said guide member includes a radial flange on one end thereof for coupling to one of said walls, and said other end includes an inwardly tapered skirt for extending in conformable relation to the end of said container having said valve thereon, and

(11) said support means includes:

(a) an arm extending outwardly from said inner end of said closure,

(b) a finger disposed in vertically spaced relationship to said inner end of said closure and connected to said arm at one end thereof, and

(c) said finger being spaced from said inner end of said closure a distance so as to provide a seat for receiving said rim of said container therein such that a releasable assembly therebetween is obtained,

I. latch means for coupling said closure in releasably fixed position relative to one of said walls of said housing means, and

J. said latch means includes:

(1) at least a pair of flexible latch members extending outwardly from said inner end of said closure,

(2) openings disposed on said guide means to provide a nest for receiving said latch members therein, and

(3) said latch members being received in said openings when said valve is in operative relationship with said coupling means.

4,122,765

APPARATUS FOR PITTING FRUITS OR DRUPE TYPE

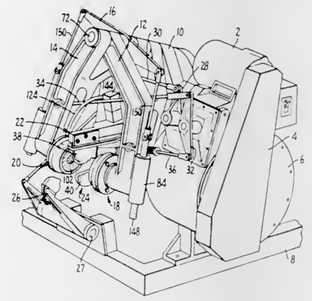
Jesus A. Silvestrini, Mendoza, Argentina, assignor to California Processing Machinery, San Ramon, Calif.

Continuation-in-part of Ser. No. 639,706, Dec. 11, 1975. This application Aug. 8, 1977, Ser. No. 822,669

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[2] A23N *4/22*

U.S. Cl. 99—551 **6 Claims**



1. Apparatus for bisecting and pitting fruits of the drupe type, comprising

means for receiving such a fruit, producing a partial cut in its pulp and thus defining two fruit halves adhered to the pit of said fruit, and gripping said pit,

means for gripping the outer surfaces of said two fruit halves, said gripping means comprising

a pair of opposed gripper heads, one each disposed on opposite sides of said fruit receiving and cutting means and each generally adjacent a respective one of said fruit halves, each said gripper head having a cavity facing said fruit receiving and cutting means,

means for moving said gripper heads between a position distal said fruit receiving and cutting means and a position proximal said fruit receiving and cutting means in which said gripper heads substantially surround their respectively adjacent said fruit halves,

an elastic, cup-like diaphragm element extending within and continuously across each said gripper head cavity for resiliently engaging and releasably gripping the outer surface of the respective said fruit halves and preventing contact between said fruit and other portions of said gripper head within said cavity when said gripper heads are in their fruit half surrounding positions,

means for supplying a pressurized operating fluid into the spaces between each said gripper head cavity and its respective diaphragm element, whereby the introduction of such pressurized fluid into the spaces between such cavities and diaphragm elements will cause the diaphragm elements to be elastically deformed so as to adapt those diaphragm elements to the shape of the respective fruit halves and thus grip those fruit halves,

valve means for controlling selective introduction and release of said pressurized fluid within said spaces, whereby such introduction and release of such pressurized fluid will effect selective gripping and release of the fruit by the gripping means, and

means for rotating said gripping heads in opposite directions about an axis extending through said fruit while said diaphragm elements grip said fruit halves, whereby the fruit halves may be freed from one another and from the pit.

4,122,766

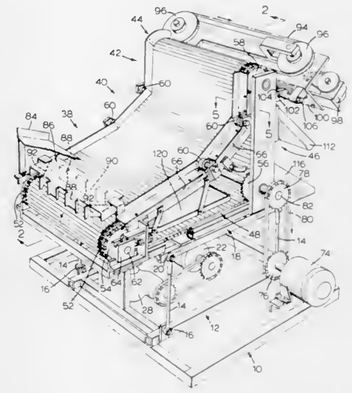
FRUIT AND VEGETABLE DECAPPING MACHINE

Richard L. Ledebuhr, Haslett; Clarence M. Hansen, E. Lansing, and Richard J. Patterson, Okemos, all of Mich., assignors to Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 469,164, May 13, 1974, abandoned. This application Jul. 26, 1976, Ser. No. 708,515

Int. Cl.[2] A23N *15/02*

U.S. Cl. 99—640 **17 Claims**



1. A machine for detopping fruits and vegetables by severing therefrom the top portion including a cap, if present, the machine comprising:

a frame;

a sub-frame;

means mounting the sub-frame to the frame for orbital motion relative to the frame in two directions transverse to one another and having at least a component in the horizontal plane;

drive means connected to the sub-frame for moving the sub-frame relative to the frame in the said orbital motion;

an upwardly-inclined conveyor mounted by the sub-frame for conveying fruits and vegetables upwards thereon from a receiving station on the upwardly-moving part thereof and to a severing station at which the said top portions are severed;

the conveyor including gripping means operative over the part of its path between the receiving and severing stations for gripping the fruits and vegetables on the conveyor by their tops with the bodies of the fruits and vegetables extending away from the conveyor and, so that gripped, topped fruits and vegetables will be conveyed upwards from the receiving station away from the conveyor;

the said orbital motion of the sub-frame and the conveyor changing the orientation of the fruits and vegetables on the conveyor to facilitate their gripping by the conveyor gripping means; and

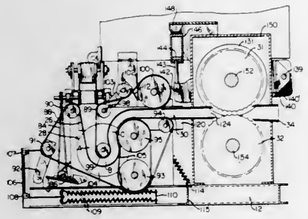
knife means at the severing station for severing the tops from the fruits and vegetables delivered thereto by the conveyor.

4,122,767

METHOD OF PRODUCING PRESSED HAY PELLETS

Ronald T. Jarrett, 1625 Knight St., and Edward J. Barrett, 521 S. Tamarack, both of Helena, Mont. 59601, assignors to Ronald T. Jarrett; Edward J. Barrett, both of Helena and D. Michael Curran, Great Falls, all of, Mont.

Division of Ser. No. 518,255, Oct. 29, 1974, Pat. No. 3,973,484.
This application May 28, 1976, Ser. No. 691,138
Int. Cl.[2] B30B *5/06, 11/00*
U.S. Cl. 100—35 11 Claims



1. The method of pelleting hay which has been chopped and moisturized comprising the steps of:

advancing the hay into an enclosure which is provided with a lower outlet, intercepting the hay as it is advanced toward the outlet to lift it and beat it primarily to passage through the outlet;

advancing the hay from the outlet in a direction transversely of its movement through the outlet as a continuously moving stream of hay;

yieldingly impelling the hay along an elongated, flexible, non-linear convergent guide path so as to compact the hay to increase its density, followed by

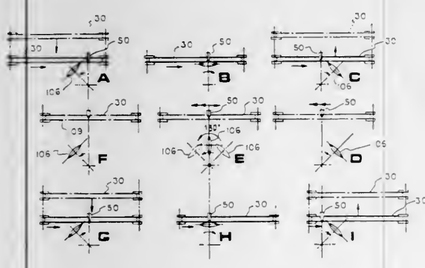
separating the stream of hay into distinct portions and further compressing each portion into compact cubicle form.

4,122,768

SCREEN PRINTING PRESS ATTACHMENT FOR PRINTING OBJECTS OF REVOLUTION

Jean-Louis Dubuit, Paris, France, and Charles H. Derrickson, Chicago, Ill., assignors to Dubuit of America, Inc., Chicago, Ill.

Filed Apr. 19, 1977, Ser. No. 788,911
Int. Cl.[2] B41F *17/22*
U.S. Cl. 101—39 6 Claims



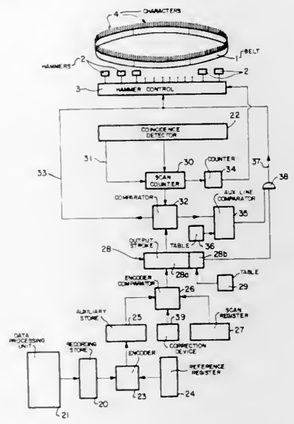
1. An attachment for use with a screen printing machine to permit printing upon both sides of an object with a stencil screen, said screen printing machine having means mounting said stencil screen, and drive means to move said means mounting said stencil screen horizontally for printing a first side of said object, to then return said means mounting said stencil screen, and to then again move said means mounting said stencil screen horizontally for printing a second side of said object, and squeegee means in engagement with said screen to force ink onto said object, said attachment including workholder means for rotating said object to be printed in timed relationship with horizontal movement of said screen, said squeegee means being in an operative position over said screen to print said object while said screen is moving horizontally from a first position to a second position to print on said first side of said object, means carried on said means mounting said stencil screen to shift said screen from said second operative position to a third operative position while said drive means returns said means mounting said screen, inverter means on said workholder means to rotate said object to be printed to expose said second side of said object while said workholder is moving said object to a location beneath said screen in said third operative position whereby said second side of said object may be printed with said same screen as it is moved to a fourth position.

4,122,769

CONTROL ARRANGEMENT FOR A BELT PRINTER

Jacques Sery, Vitry, Seine, and Serge A. E. Couture, Le Plessis-Robinson, both of France, assignors to Compagnie Honeywell Bull (Societe Anonyme), Paris, France

Filed May 20, 1974, Ser. No. 471,728
Claims priority, application France, May 28, 1973, 73 19329
Int. Cl.[2] B41J *1/22, 1/32*
U.S. Cl. 101—93.18 5 Claims



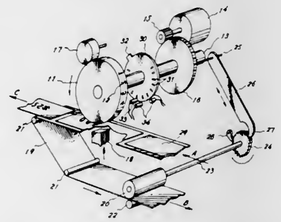
1. In a control arrangement for a belt printer having characters arranged in successive series on the belt and passing continuously in the front of a print support and hammers arranged for controlled striking of these characters in response to actuation of a control device, the improvement comprising a recording store for recording information relating to each character to be printed along a line on the said support; a calculating unit having its input connected to the output of said recording store; a scan register containing information relating to the coincidences between the characters and the hammers at any given time; storage means connected to said calculating unit, said storage means being divided in two parts including a first part containing first information indicating that a predetermined character in a line is to be struck by a given hammer in the course of a given scan; and a second part containing second information indicative of whether or not this predetermined character is repeated in the series of characters; first comparator means for effecting a first comparison, said first comparator means having two inputs and two outputs, one input of said first comparator being connected to the output of the first part of the storage member, the other input of said comparator being connected to the output of the scan register, one output of said first comparator being connected to the control device for actuation thereof when the result of the first comparison indicates an identity between first information of storage member and information contained in the scan register; reference means containing for each of the various series of characters, information relating to the distance of the different points at which a repeated character is situated; means for effecting a second comparison, said second comparison means having two inputs and an output, one of said inputs of said second comparator means being connected to the other output of the first comparator, the other of said inputs of the second comparator being connected to the output of the reference device; and a gate connected at its input to the output of the second part of the storage member and to the output of the second comparator, the output of this gate being connected to the control device for actuation thereof when the result of the second comparison indicates an identity between information received at the inputs of the second comparator.

4,122,770

SERIES PRINTER

Shoji Umeda, Kobe, and Akio Yoshikawa, Takasago, both of Japan, assignors to Yamato Scale Company, Ltd., Japan

Filed Apr. 19, 1977, Ser. No. 788,837
Claims priority, application Japan, Apr. 23, 1976, 51/51697[U]; Mar. 10, 1977, 52/29248[U]
Int. Cl.[2] B41J *1/22*
U.S. Cl. 101—93.19 3 Claims



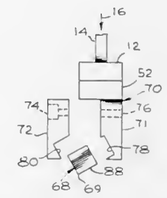
1. A series printer, comprising a type drum having a plurality of radially spaced coplanar types on the periphery and being fixed to a shaft for continuous rotation, a pulse generating device interlocked with said shaft for generating pulses in response to the respective passage of said types through a predetermined printing position, a printing hammer facing said type drum at said printing position, said pulse generating device including a type signal generator for counting said pulses to discriminate the type signal representing each type, a printing signal generator for generating a printing signal designating a type to be printed, hammer actuating means including a coincidence signal actuating said printing hammer, and printing said printing signal generator for comparing said type signals with the printing signal and producing a coincidence signal when the type signal is identical to the printing signal, said coicidence signal actuating said printing hammer, and printing paper feeding means feeding a printing paper through said printing position, said printing paper feeding means comprising a feed roller and a ratchet drive mechanism having a pawl coupled with and reciprocated by rotation of the shaft of said type drum and providing said feed roller with intermittent rotation, and means disabling the hammer actuating means during rotation of said feed roller.

4,122,771

SQUEEGEE HOLDER

James G. Barton, San Clemente, and James R. Ford, Sebastopol, both of Calif., assignors to General Dynamics, Pomona, Calif.

Filed Apr. 13, 1977, Ser. No. 787,185
Int. Cl.[2] B41F *15/44*
U.S. Cl. 101—123 1 Claim



1. A squeegee holder for use in a thick film printer apparatus comprising:

a wiper element having elongated sides intersection at generally square corners and having a substantially square cross section;

a first mounting plate forming a substantially rectangular recess with a straight horizontal and straight vertical surface, said first mounting plate having a wiper element-gripping jaw portion of generally U-shaped cross section for gripping a first and a second corner of said wiper element and for holding three adjacent sides thereof; and

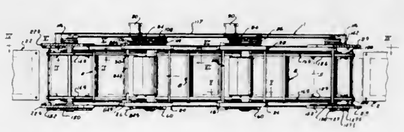
a second mounting plate having a shape to fit the recess of said first mounting plate and having a wiper element gripping jaw portion, said jaw portion of said second mounting plate forming a right-angular recess for gripping two adjacent sides and one corner of said wiper element, whereby the fourth corner of said wiper element remains exposed, a diagonal passing through said exposed corner and the opposite corner forming an angle of approximately 15° with a vertical plane passing between said mounting plates.

4,122,772

HYDROSTATIC BEARER FOR PRINTING PRESS

Harold P. Dahlgren, Dallas, Tex.

Continuation of Ser. No. 207,499, Dec. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 737,521, Jun. 17, 1968, Pat. No. 3,664,261. This application Aug. 9, 1974, Ser. No. 495,979
Int. Cl.[2] B41F *7/04;* F16C *7/04*
U.S. Cl. 101—218 1 Claim



1. In a sheet-fed lithographic offset printing press, a feeder station; a delivery station; at least one cylinder support, including spaced side members intermediate the feeder and delivery stations; a plate cylinder journaled between the side members, said plate cylinder having a longitudinally extending gap; a blanket cylinder journaled between the side members, said blanket cylinder having a longitudinally extending gap; an impression cylinder journaled between the side members adjacent the blanket cylinder; means to urge said plate cylinder and said blanket cylinder into rolling pressure relation; means to urge said blanket cylinder and impression cylinder into pressure relation; means for applying ink to the plate cylinder; gripper members adapted to receive and grip an edge of a sheet

at the feeder station and continuously convey a sheet between the surfaces of the blanket cylinder and the impression cylinder to the delivery station; continuous transfer means movably extending from the feeder station to the delivery station; means securing said gripper members to said transfer means; means to rotate said plate cylinder, blanket cylinder and impression cylinder; hollow bushings about ends of the plate cylinder, the blanket cylinder, and the impression cylinder, each of said bushings having a plurality of pressure recesses spaced about the inner side; an inlet communicating with each pressure recess; a source of pressurized fluid; and lines connecting said source and said inlets whereby fluid may be supplied to each pressure recess at predetermined pressure, said recesses being arranged such that force exerted by fluid pressure maintains axes of the plate cylinder, the blanket cylinder and impression cylinder in a fixed relationship as said cylinders rotate.

4,122,773

CHANGE-OVER MEANS FOR A STORAGE DRUM FOR SHEET TRANSFERRAL

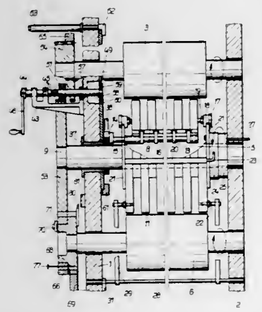
Arno Wirz, Bammental, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation of Ser. No. 571,257, Apr. 24, 1975, abandoned. This application Apr. 20, 1977, Ser. No. 789,009

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1974, 2419747

Int. Cl.[2] B41F *5/02, 1/30*

U.S. Cl. 101—230 **15 Claims**



1. In an assembly of a sheet-transfer drum, a sheet-turning drum and a storage drum located therebetween for transporting a sheet between individual printing units of a rotary printing press having two side walls disposed opposite and spaced from one another, the drums being disposed in the space between and journalled in the two side walls, the storage drum being mounted on a shaft and comprising forward sheet carrying means fixed to said shaft and rear sheet carrying means rotatable relative to said shaft, said rear sheet carrying means being lockable relative to said forward sheet carrying means, a change-over mechanism for converting the printing press from single-side sheet printing to double-side perfector printing and conversely as well as to different format sizes, the change-over mechanism being provided exclusively in that drum of the assembly of drums which is the storage drum and comprising a control shaft extending from a location outside said change-over mechanism through one of said side walls and being axially displaceable to at least first and second control positions, first and second control pinions mounted on said control shaft, a plurality of drive wheels couplable with said first control pinion, in said first control position of said control shaft for converting the printing press from single-side sheet printing to double-side perfector printing, means for guiding and holding a sheet disposed on the storage drum, gripper-release means for adjusting the format size for perfector printing, and a control member coupled with said gripper-release means, said first control pinion, in said second control position of said control shaft, meshing with one of said drive wheels for adjusting said means for guiding and holding a sheet, and said second control pinion, in said second control position of said control shaft, meshing with said control member for adjusting the format size.

4,122,774

BLANKET CLAMPING APPARATUS

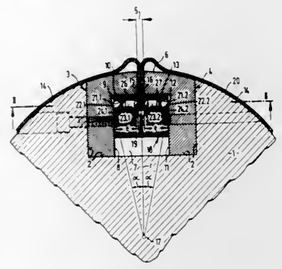
Hartmut K. Sauer, Himmelstadt, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed May 24, 1977, Ser. No. 800,115

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1976, 2631119

Int. Cl.[2] B41F *27/00*

U.S. Cl. 101—415.1 **18 Claims**



1. A blanket clamping and tensioning apparatus for a blanket cylinder having an axially extending groove at its periphery, said clamping and tensioning apparatus comprising:

at least two spaced inserts in said axial groove, said inserts having inner surfaces which cooperate with an inner surface of said axially extending groove to define a chamber within said blanket cylinder, said inserts being spaced from each other to provide an axial gap open at the periphery of said cylinder and extending to said chamber, the edges of a blanket being receivable within said gap to extend therethrough and into said chamber;

a camming surface formed on said inner surface of each of said inserts;

a clamp bar assembly in said chamber for clamping said blanket edges, said clamp bar assembly including a slot for receiving said blanket edges, said clamp bar assembly being radially movable and having means contacting said camming surfaces for movement thereby upon radial movement of said clamp bar assembly to effect clamping of said blanket edges within said slot and tensioning of said blanket; and

means to secure said clamp bar assembly in a desired position.

4,122,775

LAND MINE OF THE HOLLOW-CHARGE TYPE

Manfred Held, Aresing, Germany, assignor to Messerschmitt-Bölkow-Blöhm GmbH, Munich, Germany

Filed Jun. 1, 1977, Ser. No. 802,420

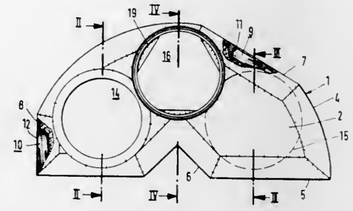
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624927

Int. Cl.[2] F42B *23/24*

U.S. Cl. 102—8 **8 Claims**

1. A land mine, of the hollow-charge type, comprising a flat mine housing having top and bottom flat broad surfaces and a side edge which is at least partially cylindrical, a tubular bushing in said housing extending between said top and bottom, a firing system in said tubular bushing, a bushing cover enclosing said bushing, an explosive charge in said housing between said flat board surfaces, and at least one projectile-forming cover

engaged over the explosive charge on the top and bottom of said housing and forming a part of said broad surface, the



projectile-forming covers on respective opposite broad sides being offset from each other.

4,122,776

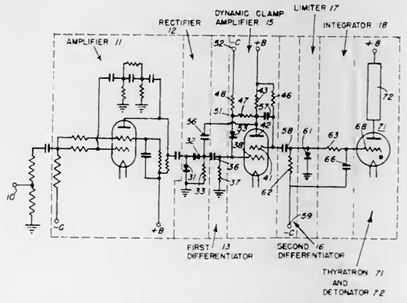
DYNAMIC CLAMP CIRCUITS

Paul M. Tedder, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 3, 1954, Ser. No. 454,237

Int. Cl.[2] F42B *5/08, 9/08, 21/38*

U.S. Cl. 102—214 **2 Claims**



1. An electronic ordnance fuze adapted to function upon receiving a target signal that increases in amplitude for at least a predetermined length of time, said fuze comprising: input means adapted to receive an alternating-current signal of increasing amplitude; first means for obtaining from said alternating-current signal a first negative-going unipotential signal of increasing amplitude, a ripple frequency due to the original alternating current being superimposed on said unipotential signal; an amplifier tube having at least a control grid, a screen grid, and an anode; means for applying said negative-going unipotential signal to said control grid; sources of direct current supply voltage for said screen grid and said anode, the voltage at the screen grid being maintained more positive than the voltage at the anode and the operating conditions being so maintained that the anode current remains substantially saturated for control grid signals more positive than a predetermined negative value; means for taking an amplified unipotential signal from said screen grid, said screen grid thus resembling functionally the plate of a triode amplifier; first and second capacitor means for coupling said ripple frequency present in said first negative-going unipotential signal to said screen grid and to said anode, said capacitor means tending to filter out said ripple, the degree of filtering being dependent upon the gain of said amplifier tube; means for obtaining a direct-current feedback voltage from said anode; a biased diode; means for applying said feedback voltage to said control grid through said biased diode, so that, if said alternating-current signal is of sufficient amplitude and increases in amplitude at an abnormally large rate, a direct-coupled inverse feedback voltage is applied to said control grid, reducing the gain of said amplifier but permitting the ripple-frequency output of said amplifier to increase; resistance-capacitance differentiator means adapted to produce a unipotential output signal upon receiving a positive-going unipotential signal from said screen grid of said amplifier; diode rectifier-limiter means connected between the output of said differentiator means and ground, said rectifier-limiter means serving to prevent the output of said differentiator means from rising appreciably above ground potential and serving also to rectify any component of said ripple frequency present in the input of said differentiator means, so as to make the output of said differentiator means more negative when the ripple-frequency output of said amplifier increases; resistance-capacitance integrator means connected to the output of said differentiator means; a thyratron; means for applying to the grid of said thyratron a signal from the output of said integrator means; and fixed bias means for maintaining the output of said differentiator and the grid of said thyratron a values sufficiently negative to prevent firing of said thyratron in the absence of a signal.

4,122,777

RAILWAY MAINTENANCE CAR

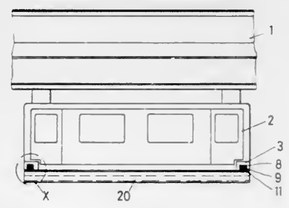
Udo Dietrich, Gevelsberg, Germany, assignor to Demag A.G., Duisburg, Germany

Filed Jan. 14, 1977, Ser. No. 759,538

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601593

Int. Cl.[2] B61B *3/00*

U.S. Cl. 104—89 **12 Claims**



1. Maintenance apparatus for elevated railways, comprising

(a) an elevated rail right of way;

(b) a maintenance car for said rail right of way; characterized by

(c) said maintenance car operable on said rail right of way;

(d) a transverse rail disposed on each end of said car;

(e) a cross carrier movable on said transverse rails;

(f) a maintenance access platform extendable from said cross carrier for moving personnel adjacent an area to be repaired and maintained;

(g) a maintenance floor on said platform;

(h) a longitudinal slot in said floor;

(i) a floor suspension disposed on said cross carrier;

(j) said floor suspension extending through said maintenance floor slot;

(k) rollers on said floor suspension; and

(l) said floor supported on said suspension rollers.

4,122,778

DAMPED SUSPENDED CONVEYOR TROLLEY

Getano Di Rosa, Pino Torinese (Turin), Italy, assignor to F.A.T.A - Fabbrica Apparecchi Di Sollevamento E Trasporto Ed Affint S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 625,227, Oct. 23, 1975, abandoned. This application May 19, 1977, Ser. No. 798,560

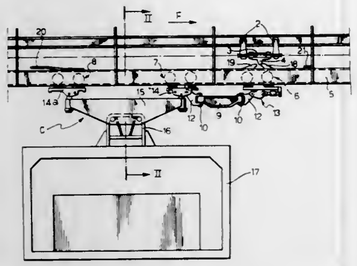
Claims priority, application Italy, Jul. 4, 1975, 68736 A/75

Int. Cl.[2] B61B *3/00, 9/00, 13/00;* **B61F** *13/00*

U.S. Cl. 104—172 S **1 Claim**

1. A load carrier for aerial conveyors of the double rail type

comprising load carrying means, front trolley means and rear trolley means operably connected to said load carrying means and shock absorbing means mounted on said front trolley means for dissipating kinetic energy associated with the starting and stopping of the load carrier, said front trolley means comprising a body, a rod pivoted at one end to said body and pivotally connected at the other end to said load carrying means and said shock absorbing means connected at one end to said body and at the other end to said rod adjacent the said other end of said rod, said shock absorbing means extending

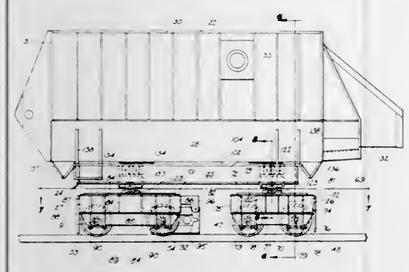


substantially in the plane of the direction of movement of the load carrier; said rod being in the form of a right-angled lever having an upstanding vertical arm hinged at its upper end to the body of the trolley for pivotal movement about a horizontaly axis perpendicular to the direction of displacement of the trolley and said shock absorbing means comprising a telescopic damper interposed between the end of a lower substantially horizontal arm of the lever and the body of the trolley, the elbow region at the junction of the two arms of the lever being pivotally connected to said load carrying means.

4,122,779
DUAL TRACK TRANSFER SYSTEM AND A TRANSFER CAR FOR USE THEREWITH

Earl C. Vice, Ashland, Ky., assignor to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 677,711, Apr. 16, 1976, Pat. No. 4,043,466.
This application Jan. 21, 1977, Ser. No. 760,914
Int. Cl.[2] B61F *5/30*
U.S. Cl. 105—199 R **5 Claims**

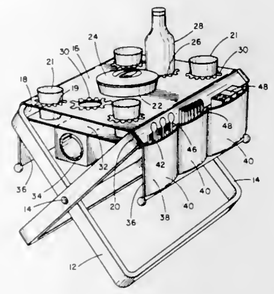


1. A transfer car for use with a dual track transfer system between first and second stations utilizing standard railroad-type rail and causing said transfer car to be turned at said second station at least 90° to its direction of travel immediately prior to its turning, said transfer car comprising a body, a lead truck and a following truck each having at least four standard flanged wheels, means to pivotally affix said lead and following trucks to said body, each of said lead and following trucks having a flat, horizontally oriented, deck-like upper surface supporting flat arcuate rails, said body having a first pair of rollers located to either side of said pivot means joining said lead truck to said body and riding upon said arcuate rails of said lead truck, said body having a second pair of rollers located to either side of said pivot means joining said following truck to said body and riding upon said arcuate rails of said following truck whereby said first and second pairs of rollers prevent roll motion of said transfer car body, said body having a flat, horizontal, deck-like upper surface, a plurality of draft gear-type shock absorbers supported within said body and extending upwardly through openings in said deck-like upper surfaces whereby said shock absorbers will contact and will absorb the shock of a load being placed upon said car body.

4,122,780
FOLDABLE BAR-TABLE

Harold Brickman, Chicago, Ill., assignor to Ever-Wear, Inc., Chicago, Ill.

Filed Oct. 25, 1977, Ser. No. 844,610
Int. Cl.[2] A47B *85/00*
U.S. Cl. 108—25 **6 Claims**



1. A foldable bar-table comprising a pair of frame members, each member of the pair having a pair of laterally spaced apart legs and a cross piece joining the upper end portions of the legs, pivotal means interconnecting intermediate portions of the legs of one frame member with the corresponding intermediate portion of the legs of the other frame member to enable relative rocking movement of the frame members about a pivotal interconnection between open and folded positions, upper and lower fabrics of flexible, non-stretchable material extending crosswise between the cross pieces and dimensioned to have a length corresponding to the spaced relation between side cross pieces when in open position, the lower fabric being spaced a short distance below and substantially in parallel relation with the upper fabric when in open position, openings in the upper fabric dimensioned to correspond with the cross section of containers to be retained thereby whereby said containers can extend through said openings into engagement for support by said lower fabric.

4,122,781
SELF SERVICE PLANT SALES RACK

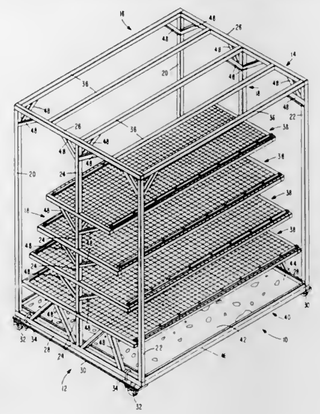
John M. Potter, 1828 S. Woodhouse, Virginia Beach, Va. 23454

Filed Jul. 19, 1977, Ser. No. 816,971
Int. Cl.[2] A47B *81/00*
U.S. Cl. 108—101 **1 Claim**

1. A self service plant sales rack assembly for displaying and storing a plurality of different plants in containers, said rack assembly comprising:

at least first and second upright support sections, each of said sections including a main upright column and at least one peripheral upright column, said main and peripheral upright columns on each of said upright support sections being joined at an upper portion by a top cross bar;

a plurality of generally horizontal plant container support members, uppermost ones of said horizontal support members being elongated hanger bars extending between said top cross bars of adjacent ones of said upright support sections, a bottommost one of said horizontal support members being a pan having a solid bottom and upraised sides and extending between said upright support sections, and intermediate horizontal shelves extending between said upright support sections and below said hanger bars and above said pan, at least one of said intermediate hori-



zontal shelves being a screened shelf, said shelves being placed in a step-like array;

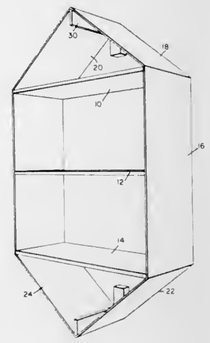
means for releasably securing said upright support sections and said container support members together to form said sales rack assembly; and

means for releasably securing wheels to lower portions of said upright support sections whereby said rack assembly may be movable.

4,122,782
FOLDING SHELVING

John F. Coombs, 531 Main St., Worcester, Mass. 01608

Filed Apr. 15, 1977, Ser. No. 787,945
Int. Cl.[2] A47B *3/00*
U.S. Cl. 108—111 **5 Claims**

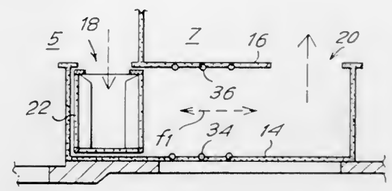


1. A folding shelving unit comprising a plurality of shelves of like length and width, a flexible belt surrounding the same being secured thereto at the ends thereof, said belt having at the top thereof a length of material greater than the length of the shelf adjacent thereto, and a single rigid top supporting member under the same at the top portion thereof forming a top compartment of inverted V shape, and means rigidly supporting the supporting member.

4,122,783
APPARATUS FOR PROTECTING A ROOM AGAINST PENETRATION THEREINTO OF ARMED PERSONS

Gisberto Pretini, S. Frediano a Settimo, Pisa, Italy

Filed Jan. 26, 1977, Ser. No. 762,803
Claims priority, application Italy, Jan. 30, 1976, 9329 A/76
Int. Cl.[2] E05G *5/02*
U.S. Cl. 109—3 **15 Claims**



1. In apparatus for protecting a room against penetration thereinto of armed persons, of the type including a locking system for access door means for the room, the improvement comprising, in combination, a movable compartment constituting said access door means and which must be entered by a person at an entry opening and moved along an access path to an access opening in order for such person to enter said room, said compartment having walls defining an enclosure open toward said entry and access openings; at least one fixed side wall extending along said access path between said entry opening and said access opening and cooperable with said compartment walls to prevent entry into and exit from said enclosure of said movable compartment except at said entry and access openings; and respective magnetic field producing components on a pair of spaced apart walls included in said walls of said access path and of said compartment, and between which a person must pass to proceed from said entry opening to said access opening; said magnetic field components producing a magnetic field therebetween constituting detector means operable to detect the presence of ferromagnetic masses, such as weapons, carried by a person within said movable compartment as said compartment moves along said access path; said movable compartment, upon such detection of the presence of a ferromagnetic mass thereinto, being arrested at a position along said access path preventing a person, in said movable compartment, entering said room.

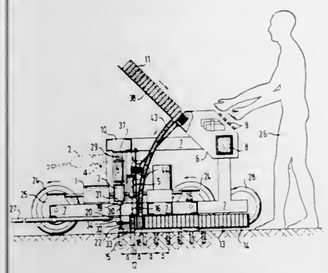
4,122,784
METHOD AND APPARATUS FOR THE REGENERATION OF LAWN SURFACES IN PARTICULAR OF GRASS SPORT PITCHES

Siegfried Joswig, Kausen, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Betzdorf, Fed. Rep. of Germany

Filed Mar. 1, 1977, Ser. No. 773,411
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628548
Int. Cl.[2] A01C *11/00*
U.S. Cl. 111—3 **6 Claims**

1. Completely automatic apparatus for inserting tubular plugs, initially contained in hollow container tubes into a turf area, said apparatus including a chassis, drive means on and driving said chassis a predetermined distance for each cycle of operation, drilling means for drilling holes in the turf area, automatic feed means including ram means for pushing said plugs from said container tubes for selectively inserting said

tubular plugs in holes drilled in said turf area by said drilling means, wherein said automatic feed means includes an interval



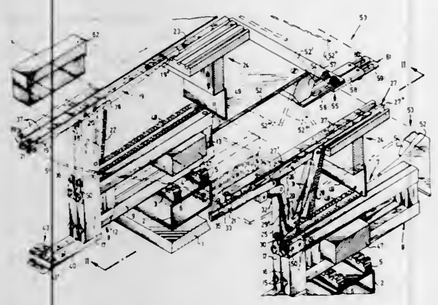
transport wheel mounted beneath said ram means and a feed hose conveying said container tubes to said transport wheel.

4,122,785

WORKPIECE SUPPORT FOR SEWING DEVICES

Hans Scholl, Oerlinghausen-Lipperreihe, and Horst Bernewasser, Steinhagen, both of Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed May 26, 1977, Ser. No. 800,709
Int. Cl.² D05B *21/00*
U.S. Cl. 112—121.15 **5 Claims**



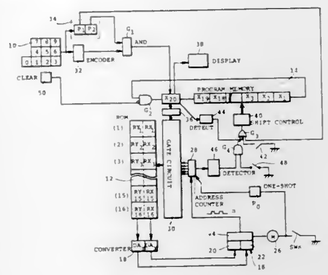
1. A workpiece holder for sewing machines comprising a plurality of supporting elements located next to one another and displaceable relative to one another; needles located at a rim zone of said supporting elements for supporting the edge of a workpiece to be processed, and means lowerable onto the workpiece and cooperating with the needles for holding the workpiece on said needles; contour adjusting means having templates for shifting said supporting elements, said templates having contours corresponding to seams to be applied to said workpiece; said supporting elements comprising rails of U-shaped cross-section and having crossbars for carrying said workpiece, said crossbars having recesses for permitting passage of said needles; a two-arm lever rotatably supported in each of said supporting elements, said needles being arranged on said two-arm lever; and spring means for holding said needles in a position permitting passage through said support elements within said recesses, said workpiece being supported unclamped by said needles.

4,122,786

PROGRAMMABLE STITCH PATTERN FORMING CONTROL IN AN ELECTRONIC SEWING MACHINE

Akira Tanimoto, Kashibara; Sanao Katob, Yamatokoriyama, and Yukihiro Yoshida, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 12, 1977, Ser. No. 796,238
Claims priority, application Japan, May 14, 1976, 51-55555; Jun. 18, 1976, 51-72426; Jun. 23, 1976, 51-74837
Int. Cl.² D05B *3/02*
U.S. Cl. 112—158 E **24 Claims**



1. In an electronic sewing machine which forms a stitch pattern by a stitch forming section responding to a needle position controlling signal and a work feed controlling signal, the improvement comprising:

a memory means for storing digital stitch information related to plural kinds of stitch patterns;

input means for selecting a desired stitch pattern stored in said memory means;

a program memory for storing a plurality of selection commands derived from said input means in the order of the selection operation conducted through said input means;

control means for sequentially developing the digital stitch information related to the stitch pattern which is selected by said selection command stored in said program memory; and

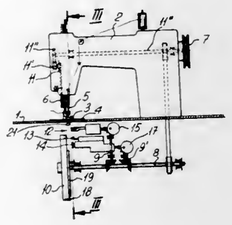
means for applying the digital stitch information developed by said control means to said stitch forming section as the needle position controlling signal and the work feed controlling signal.

4,122,787

SEWING METHOD AND MACHINE

Roberto Conti, Milan, Italy, assignor to Complett S.p.A., Milan, Italy

Filed Jul. 30, 1976, Ser. No. 710,138
Claims priority, application Italy, Sep. 5, 1975, 26954 A/75
Int. Cl.² D05B *23/00*
U.S. Cl. 112—170 **7 Claims**



1. A method of forming a stitched seam in a fabric with stitches lying alternately on opposite sides of the fabric, said method comprising the steps of:

(a) forming a length of thread above said fabric;

(b) engaging said length of thread in a laterally open eye of a needle and entraining a loop of said thread downwardly through said fabric to carry said loops below said fabric;

(c) releasing said thread from said eye and engaging said loop in a rotating hook disposed below said fabric to draw the free length of said thread downwardly through said fabric while raising said needle through said fabric;

(d) retaining the free length of thread below said fabric in a position enabling same to be engaged by a subsequent upward movement of said needle through said fabric, and passing said needle downwardly and upwardly through said fabric with said needle engaging the positioned thread length to draw a loop thereof upwardly through said fabric to the upper surface thereof;

(e) swinging an oscillating hook into engagement with said loop above the upper surface of said fabric to guide the remaining free length of thread therethrough to prevent the thread from tightening itself around the fabric and maintaining it alongside the needle;

(f) advancing said fabric each time said needle is withdrawn upwardly from said fabric to form alternate stitches on opposite sides thereof; and

(g) repeating steps (a) through (f) to form said seam.

2. A sewing machine for stitching a seam in a fabric with stitches lying alternately on opposite sides of said fabric, said sewing maching comprising:

(a) support means provided with a stitch plate adapted to receive a fabric thereon and formed with feed means for the stepwise advance of said fabric passing a stitching location;

(b) an arm extending over said stitch plate and provided with a presser foot and retaining said fabric against said stitch plate at said location;

(c) a needle vertically reciprocatable on said arm at said location for passing downwardly and upwardly through said fabric, said needle having a laterally open eye of double-hook configuration;

(d) a disk rotatable below said stitch plate and formed with a hook engageable with a loop of a free length of thread entrained downwardly through said fabric for disengagement of said thread from said eye and drawing out said length of thread below said fabric;

(e) a thread taker disposed below said stitch plate and engageable with the drawn out length of thread for holding same in a position for engagement in said eye upon a subsequent upstroke of said needle whereby said needle entrains a loop of said thread upwardly through said fabric;

(f) a hook pivotally mounted on said arm engageable with the loop entrained above said fabric by said needle for guiding the remaining free length of thread through said fabric and onto the upper surface thereof while maintaining the thread against the needle; and

(g) drive means for synchronously displacing said needle, said feed means, said disk, said thread taker and said hook.

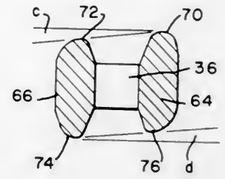
4,122,788

SEWING MACHINE NEEDLE

James P. Hickson, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Oct. 3, 1977, Ser. No. 838,485
Int. Cl.² D05B *85/00*
U.S. Cl. 112—222 **2 Claims**

1. In a sewing machine needle having a leading end, a blade, and a shank for fitting the needle into a sewing machine needle holder, said needle having an eye located in the area of the front of the blade and the back of the leading end and extending from the top to the bottom of the needle: the top of one side portion of the needle formed by the eye extends further from a horizontal plane through the axis of the needle than the top of the other side portion, and the bottom of said other side portion extends further from said horizontal plane than the bottom of



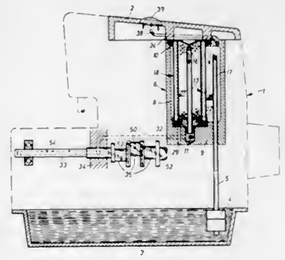
said one side portion, and the side portions convergingly taper toward the needle tip.

4,122,789

SEWING MACHINE HAVING AN OIL FILTER

Kurt Klundt, Hirschhorn, Germany, assignor to Pfaff Industriemaschinen GmbH, Germany

Filed Dec. 7, 1977, Ser. No. 858,162
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 7640656[U]
Int. Cl.² D05B *71/00*
U.S. Cl. 112—256 **8 Claims**



1. A sewing machine with a forced lubrication system, comprising an oil pan, a filter arranged above said oil pan, said filter having a housing, a removable filter insertable in said housing, said filter housing having an oil return bore defined therein in a position so that it is closed by insertion of said filter insert into said housing into an operative position therein, said oil return bore being cleared and opened when said filter insert is not in an operative position.

4,122,790

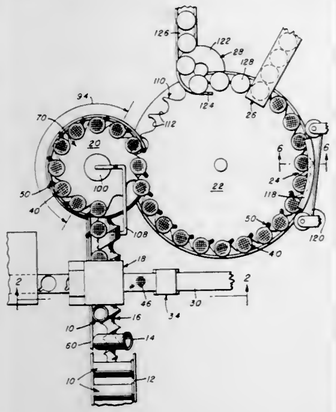
PEEL-TOP CONTAINER ASSEMBLY SYSTEM

E. Riley Rowe; Wade Fletcher; Herman R. Markert, and Dwight D. Grady, all of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed May 12, 1977, Ser. No. 796,216
Int. Cl.² B21D *51/44*
U.S. Cl. 113—120 R **13 Claims**

1. A high speed system for mounting end closures on containers, said system comprising means for introducing a series of containers to a given path, first conveying means for moving the series of containers along the given path, through a first station, means at said first station for forming and positioning a thin flexible generally planar membrane on one end of each container, second conveying means beyond said first conveying means and cooperating therewith for continuous movement of the containers beyond the first station, along the given path and through multiple subsequent stations, a second station along said path beyond said first station, means at said second

station for sealing each membrane to its associated container as the container moves continuously therethrough, means for retaining each membrane on the associated container as it moves along the path between the first and second stations comprising means for temproarily adhesively tacking the membrane to the container and further comprising vacuum means at the end of the container remote from the membrane



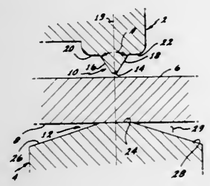
for developing a partial vacuum within the container, said vacuum means including a planar floor surface for support and sliding movement of the containers thereon, a third station along said path beyond said second station, and means at said third station for applying an end enclosing overcap over the membrane received end of each container as the container moves continuously therethrough.

4,122,791

METHOD AND APPARATUS FOR SCORING AN ENAMELED METAL SURFACE

Omar L. Brown, Dayton, Ohio, assignor to Dayton Reliable Tool & Manufacturing Company, Dayton, Ohio

Filed Jun. 30, 1977, Ser. No. 811,958
Int. Cl.[2] B21D *51/38*
U.S. Cl. 113—121 C **12 Claims**



1. A method for scoring an enameled metal sheet to form a line of weakness in said sheet while minimizing disruption of the enamel coating on said sheet during scoring, said method comprising:

placing the enameled lower surface of the metal sheet in contact with an anvil;

said anvil having a flat surface portion which underlies the desired line of score on the metal sheet;

said flat surface portion extending a short distance on either side of the desired line of score;

said anvil having angled surface portions which extend downwardly from said flat surface portion to create void spaces between the angled surface portions and said metal sheet;

bringing a scoring tool into forcible contact with the upper surface of the metal sheet along the desired line of score;

said scoring tool having a scoring edge and inclined side surfaces which are angled inwardly toward the scoring edge with the side surfaces displacing metal in said sheet in a downward and transverse direction away from the line of score as the scoring tool makes forcible contact with the metal sheet, and

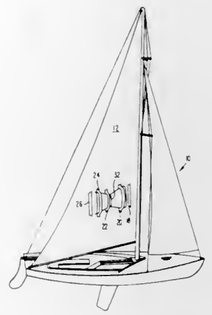
providing said angled surface portions of the anvil with an angle relative to said flat surface portion which is sufficient to provide a uniform downward flow of the metal of said sheet along the angled surface portions as the sheet is contacted by the scoring tool in minimizing disruption of the enamel coating of said sheet.

4,122,792

AERODYNAMIC DEVICE, PARTICULARLY FOR SAILS

John S. Rhoades, P.O. Box 197, Exton, Pa. 19341, and Patricia G. Rhoades, 38 Elm St., Marblehead, Mass. 01945

Filed Sep. 2, 1977, Ser. No. 830,329
Int. Cl.[2] B63H *9/04*
U.S. Cl. 114—103 **11 Claims**



7. In combination with a sail, an aerodynamic device for increased utilization of airflow across said sail, said device comprising a plurality of rearwardly extending, vertical fins disposed in a substantially horizontal row between the luff and the leech in substantially parallel relationship with a foot of said sail at an area of maximum air activity, the height of said row of fins extending a distance that is substantially less than the distance between the head and foot of said sail, each of said fins extending outwardly from said sail, one of said fins adjacent said luff and another one of said fins adjacent said leech, the distance between said one fin and said luff being less than the distance between said other fin and said leech, said fins operative to reach the free air layer beyond the zero activity and turbulent air layers flowing across said sail.

4,122,793

MAINSAIL AND/OR MIZZENSAIL FURLING DEVICE

Harold A. Molz, 17 Revell St., Annapolis, Md. 21401

Filed Nov. 28, 1977, Ser. No. 855,195
Int. Cl.[2] B63H *9/10*
U.S. Cl. 114—106 **10 Claims**

1. A mainsail furling device for use on a sailboat having a mast, a halyard extending up the mast toward a masthead and then extending downwardly therefrom, the mast having a boom connected thereto and being mounted on the device of the sailboat, and the sailboat having a bow and a stern, the device comprising:

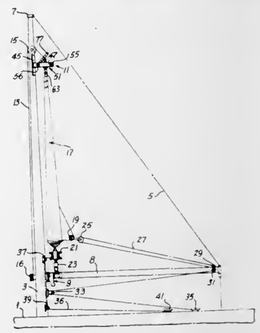
a. a lower swivel means mounted on the sailboat adjacent the base of the mast;

b. a hoistable upper masthead holding means slidably engaging the mast adjacent the masthead and movable relative thereto, said upper masthead holding means including:

1. means for movably engaging the mast,

2. a swivel,

3. means cooperating with the mast engaging means for maintaining said swivel a distance in the direction of the



stern from the mast and substantially parallel to the mast,

4. means for connecting said holding means to the halyard,

5. means for connecting said swivel to the mainsail.

4,122,794

LIGHTWEIGHT ANCHOR RAIL MOUNT

Alfred P. Rossini, 6 Belmore Rd., Framingham, Mass. 01701

Filed Dec. 1, 1976, Ser. No. 746,098
Int. Cl.[2] B63B *21/22*
U.S. Cl. 114—210 **4 Claims**



1. A lightweight anchor rail mount comprising:

(a) a base,

(b) a pair of hooks rigidly secured to the base, and

(c) means for securing the base to a rail

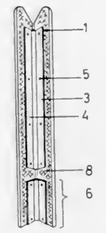
(d) said hooks being J shaped and disposed in parallel planes, spaced apart and aligned with each other, the hook portions of the two hooks defining a slot for receiving and holding a lightweight anchor, the legs of the two hooks being reversed relative to each other, the hooks extending downward from the base and being welded thereto, the base being in the shape of a rectangular open-bottomed box.

4,122,795

ELASTIC STREET DELINEATOR

Erich Döring, Langer Weg 3, 8052 Moosburg, Fed. Rep. of Germany

Filed Oct. 15, 1976, Ser. No. 733,004
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1975, 2546427
Int. Cl.[2] E01F *9/04*
U.S. Cl. 116—63 R **4 Claims**



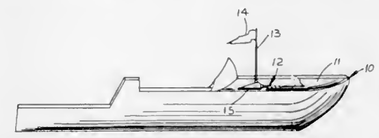
1. A street delineator comprising a pair of generally oppositely arranged, elongated rubber sheets which are connected to a support structure adapted to be anchored to the ground, said sheets comprising tread surface portions of used automobile tires from which the sidewalls have been removed, said support structure disposed between said sheets and including an upright reinforcing portion extending upwardly along said sheets from the lower ends thereof and in reinforcing contact therewith, said reinforcing portion of the support portion being approximately V-shaped in cross-section to define a V-shaped support portion, the two rubber sheets being fixed to legs of said V-shaped support portion so as to be disposed at an angle relative to each other, said support structure being completely interrupted above the lower end of the delineator at a location intermediate the ends of the sheets to define at least one rated bend point so that the delineator is continuously urged upright by the rubber sheets.

4,122,796

ADJUSTABLE PENNANT WARNING OF DOWNED WATER SKIERS

Kurt T. Pressler, 9 Canyon View Dr., Orinda, Calif. 94563, and Scott Cattell, 5515 Rio Vida La., Sebastapol, Calif. 95472

Filed Mar. 11, 1977, Ser. No. 776,790
Int. Cl.[2] A63C *15/00;* **G08B** *5/14*
U.S. Cl. 116—132 R **2 Claims**



1. Warning pennant and support means for warning other boats or the like of an immobile water skier downed in water adjacent to a tow boat, comprising:

(a) a mast having a first end fixedly attached to said warning pennant and a second end opposite to said pennant;

(b) a base fixedly attached to a deck or the like of said tow boat but carrying cooperative rotatable cup means for receiving said second end of said mast, and disconnectably swivelable along an arc defined by:

(i) a horizontal flat stowage position wherein said mast and said pennant attached thereto are positioned adjacent to said deck or the like, substantially parallel therewith; and

(ii) an upright signal position in which said first end of said

mast attached thereto is a maximum distance above said deck or the like whereby said pennant is afforded maximum viewability for warning other boats of said downed skier;

(c) said cooperative rotatable cup means also including a cylindrical swivel containing a slot at said one end to receive said mast and fitted with a bore at its opposite end defining an axis substantially normal to that of said slot; pin means fixedly positioned within said bore of said swivel but having ends extending there-beyond and rotatably attaching to upright extending walls of said base; and associated locking means located intermediate of said pin means and said bore for receiving said mast;

(d) said associated locking means includes first and second element means carried on said base and said rotatable cylindrical swivel respectively for releasably securing said base and swivel with respect to each other in stowage position (i) or signal position (ii);

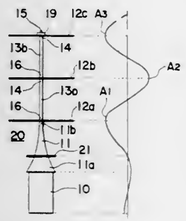
(e) said first element means of said associated locking means includes a central opening within said cylindrical swivel, a compression spring positioned within said opening, and tensionable metallic spheres carried at opposite ends of said spring in sliding contact with upright walls of said base, said second element means including spaced recess means provided in upright walls of said base.

4,122,797

ULTRASONIC SOUND SOURCE AND METHOD FOR MANUFACTURING RECTANGULAR DIAPHRAGM OF ULTRASONIC SOUND SOURCE

Masatada Kawamura, Hoya, and Hiroyuki Yamane, Yono, both of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Okayama, Japan

Filed Oct. 1, 1976, Ser. No. 728,883
Claims priority, application Japan, Mar. 25, 1976, 51/33236; Mar. 25, 1976, 51/33237; Sep. 10, 1976, 51/122357[U]
Int. Cl.[2] B06B *1/02, 1/10*
U.S. Cl. 116—137 A **10 Claims**



2. An ultrasonic sound source comprising a horn and a vibrator attached thereto, a longitudinal resonance rod mounted on the small end of said horn a set of rectangular diaphragms secured to said longitudinal resonance rod with the rectangular diaphragms disposed transversely of said rod, said rectangular diaphragms being fixed at positions of antinodes of the vibration amplitude of said horn and longitudinal resonance rod and spaced at multiples of $\frac{1}{2}$ wavelengths of the frequency of vibration of said horn, each diaphragm having a dimension of length l_L in the direction perpendicular to the nodal lines of vibration in the stripes mode and a width l_W in the direction of the nodal lines according to the equations

$$l_L = (N - \tfrac{1}{2}) \cdot d$$

$$l_W = N \cdot d$$

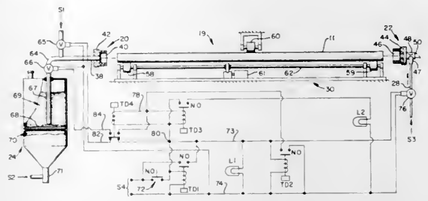
wherein N is the number of even-numbered nodal lines of the vibration in the stripes mode; N is an odd number smaller than N, and d is the distance between the nodal lines of the vibration in the stripes mode.

4,122,798

APPARATUS FOR COATING THE INTERIOR OF TUBULAR GOODS

Jack E. Gibson, 4905 Pepperidge Pl., Odessa, Tex. 79761

Continuation of Ser. No. 704,965, Jul. 13, 1976, Pat. No. 4,089,998. This application May 9, 1977, Ser. No. 795,127
Int. Cl.[2] C23C *13/08;* **B05C** *7/04*
U.S. Cl. 118—50 **9 Claims**



6. In a coating apparatus having means for heating a pipe and rotating the heated pipe, and a fluidized bed apparatus having a chamber therein for containing a fluidized bed of plastic particles, a source of high pressure blow air, a vacuum source, and inlet connector for being removably attached to one end of the pipe, and an outlet connector for being removably attached to the other end of the pipe, the improvement comprising:

means, including a paint valve, connector to control flow from said chamber to said inlet connector; means, including a blow air valve, connected to control the flow of said source of high pressure blow air to said inlet connector;

means for opening said paint valve while simultaneously closing said blow air valve, and vice versa;

means flow connecting said outlet connector to said vacuum source;

indicator means connected to provide a signal which indicates that said paint valve has closed after a charge from said fluidized bed has been transferred into said inlet connector so that said outlet connector can be removed from the other end of the pipe; said indicator means being connected to provide said signal in response to said paint valve and said blow valve, respectively, having been moved to the closed and open position, respectively, after having been positioned in the open and closed position, respectively;

whereby, said blow air valve can be opened to establish a flow of blow air through the inlet connector and into the rotating hot pipe while said outlet connector augments the flow therethrough due to the vacuum, whereupon, said paint valve can be opened while said blow air valve is simultaneously closed to thereby cause the vacuum at the outlet connector to cause a flow of plastic material to occur from the fluidized bed into the pipe, and thereafter said paint valve is closed while said blow air valve is opened to cause the plastic particles in the conduit to continue to flow into the pipe; and said outlet connector can be removed from the outlet end of the pipe prior to the charge reaching the outlet connector.

4,122,799

PAINTING DEVICE

Antonio Ortega, 2608 SW 8th St., Apt. #11, Miami, Fla. 33135

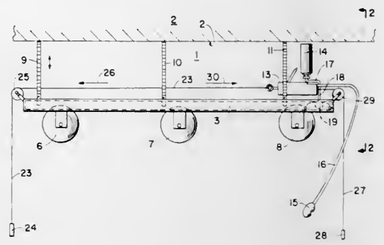
Filed Feb. 25, 1977, Ser. No. 771,940
Int. Cl.[2] B05C *1/00*
U.S. Cl. 118—207 **2 Claims**

1. A painting device for painting a strip of wall adjacent the ceiling of a room, said painting device comprising

expandable substantially linear guide means;

suction cup means affixed to the guide means for releasably affixing the guide means to a wall at a desired space below a ceiling meeting the wall;

paint applying means including a roller, said paint applying means being movably mounted on the guide means for movement along the length of said guide means with the roller in abutment with the wall; and



pulley and cord means mounted on the guide means and coupled to the paint applying means for moving the paint applying means as desired along the length of the guide means.

4,122,800

SELF-CONTAINED VIVARIUM HABITAT

Edward M. Mangarell, 0 - 92 W. Amsterdam Ave., Fair Lawn, N.J. 07410

Filed Jul. 5, 1977, Ser. No. 813,032
Int. Cl.[2] A01K *64/00*
U.S. Cl. 119—5 **1 Claim**

1. A self-contained, ecologically-balanced, thermostatically-regulated amphibian vivarium habitat designed to allow the contained amphibia ready access between discrete water and earth environments, comprising:

a base support structure having vertical legs and a horizontally oriented base frame member supported by said legs;

an upper habitat housing having a substantially rectangular shape, having transparent vertically oriented, abutting side walls, the bases of said side walls being recessed in said base frame member;

a plurality of right angle corner brackets connecting adjacent side walls;

a rectangular, transparent top cover situated removably on top of said transparent side walls, coplanar with said base frame member, displaced forward of the rear side of said upper habitat structure;

said base support structure and said upper habitat housing forming an integral portable, self-contained habitat which can be moved to any suitable location;

a rectangular shaped lighting apparatus removably mounted along the rear side walls of said upper habitat housing and displaced to the rear of said top cover;

said lighting apparatus having both a flourescent white light and an infrared dark light running parallel to said rear side wall;

a thermometer-thermostat means mounted within the upper habitat housing to regulate and display the ambient temperature within said habitat to provide a balanced ecological environment;

an integral molded, contoured foundation member for said upper habitat housing, mounting on said base support structure and within said transparent walls;

said contoured foundation member having a centrally oriented, irregularly shaped, depressed aquatic region to serve as the water area of said habitat;

said aquatic region being irregularly contoured and graduated in depth;

a barrier area contiguous to and surrounding the perimeter of said aquatic region, serving to separate the aquatic region from the plants contained within said vivarium habitat;

a terrestrial region contiguous to and surrounding said barrier area providing a raised area of level dry earth for planting extending to the transparent side walls of said upper habitat housing;

said contiguous and discrete terrestrial, barrier and aquatic regions permitting amphibia ease of access to the regions of said vivarium habitat;

a drain plug opening situated at the lowest point in said depressed aquatic region;

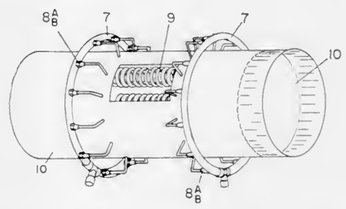
a drain plug snugly fitted into said drain plug opening and accessible from beneath said base frame member for draining and cleaning purposes.

4,122,801

WASTE ENERGY HOT WATER HEATER

Daniel E. Burns, 28 N. Main St., Canandaigua, N.Y. 14424

Filed Apr. 25, 1977, Ser. No. 785,654
Int. Cl.[2] F22D *1/02;* **F22B** *31/02*
U.S. Cl. 122—20 B **2 Claims**



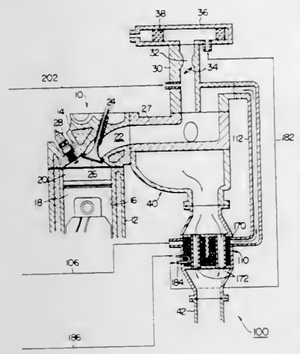
1. An accessory water heater for use in an exhaust flue of a heating device;

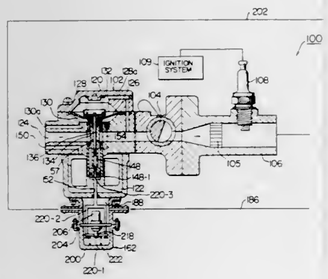
said accessory water comprising an inlet conduit externally around the exhaust flue, an outlet conduit disposed externally around the exhaust flue and spaced along the length of the flue from said inlet conduit, a plurality of small coils positioned around the inner periphery of the exhaust flue, each of said coils having inlet means and outlet means extending through the exhaust flue, means connecting said inlet means of each coil to said inlet conduit and means connecting said outlet means of each coil to said outlet conduit.

4,122,802
FUEL REFORMING SYSTEM

Masaaki Noguchi, Nagoya; Tsuchio Bunda, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 22, 1976, Ser. No. 725,521
Claims priority, application Japan, Sep. 25, 1975, 50-116203
Int. Cl.[2] F02B *43/08;* F02M *1/10*
U.S. Cl. 123—3 **11 Claims**



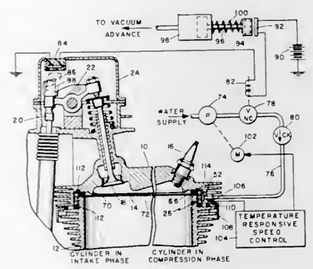


1. A fuel reforming system for converting a mixture of air and a fuel into a reformed gaseous mixture rich with free hydrogen and feeding the reformed gaseous mixture into an internal combustion engine, said system comrising:
- a fuel circuit having a downstream end adapted to be connected to an internal combustion engine;
- a carburetor disposed in said fuel circuit for producing a rich mixture of air and the fuel at an air-fuel ratio smaller than the stoichiometric air-fuel ratio of the mixture;
- said carburetor including an air intake passage, means providing a venturi in said air intake passage, a float chamber for the fuel, and means for supplying the fuel from said float chamber to said venturi substantially in proportion to the flow of air through said venturi to cooperate therewith to produce the rich air-fuel mixture;
- ignition means disposed in said fuel circuit downstream of said carburetor and being adapted to be operated, when required, to ignite and burn the air-fuel mixture in said circuit;
- a reactor vessel disposed in said fuel circuit downstream of said ignition means and containing a catalyst for facilitating a catalytic reformation of said rich air-fuel mixture into said reformed gaseous mixture, said catalyst being disposed in heat exchange relationship with the engine exhaust gases;
- said fuel supplying means comprising a fuel passage extending between said float chamber and said venturi;
- air-fuel ratio adjusting means mounted on said carburetor and being operative in response to the variation in the temperature in one of said engine and said reactor vessel to vary the cross-sectional area of said fuel passage for thereby controlling the air-fuel ratio of said rich air-fuel mixture, the arrangement being such that, when said temperature is high enough to activate said catalyst, the air-fuel ratio of the rich mixture controlled by said air-fuel ratio adjusting means is much smaller than the stoichiometric air-fuel ratio of the mixture and such that, when said temperature is not high enough to activate said catalyst, the air-fuel ratio of the rich mixture controlled by said air-fuel ratio adjusting means is still smaller than said stoichiometric air-fuel ratio but so large as to allow a part of the mixture to be ignited by said ignition means to produce heat in said fuel circuit.

4,122,803
COMBINED INTERNAL COMBUSTION AND STEAM ENGINE

Hugo S. Miller, 4133 Caflur Ave., San Diego, Calif. 92117

Filed Oct. 14, 1977, Ser. No. 842,065
Int. Cl.[2] F02D *21/06*
U.S. Cl. 123—25 P **19 Claims**



1. In combination with an internal combustion engine having at least one cylinder, a head secured on said cylinder, said head having a combustion chamber with ignition means and timed fuel inlet control means therein, the inprovement comprising:
- a boiler pack surrounding said cylinder between the cylinder and the head and being in thermally conducting engagement therewith;
- said boiler pack comprising a hollow ring member having at least one water conducting chamber therein, with a water inlet having means for connection to a source of pressurized water;
- said ring member having a substantially circumferential steam injection slot opening into said cylinder;
- a control valve connected between said water inlet and said source of pressurized water;
- and timing means actuated by said timed fuel inlet control means to open said control valve and release water into said injection slot when the cylinder is in the compression phase of the engine cycle.

4,122,804
DIESEL ENGINE COMBUSTION CHAMBERS

William L. Kingsbury, Lansing; Kelly W. Thurston, Okemos, and Harry L. Chapman, Lansing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

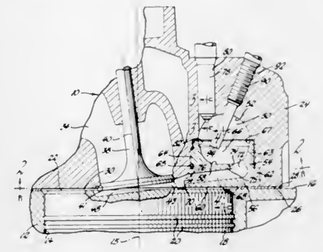
Continuation-in-part of Ser. No. 711,064, Aug. 2, 1976, abandoned. This application Jun. 24, 1977, Ser. No. 809,417
Int. Cl.[2] F02B *3/00, 23/00*
U.S. Cl. 123—32 ST **4 Claims**

1. A precombustion chamber type diesel engine of the type wherein combustion gases from a prechamber are discharged into the space between a piston and a cylinder heat at substantially the top dead center position of the piston including the combination of:
- a piston reciprocable on an axis between top and bottom dead center positions through successive compression and power strokes,
- a cylinder head in cooperating relation with the piston and having at least one poppet valve disposed on an axis canted in relation to said first axis and having a head which moves in valve opening movements toward the piston along said canted axis, the cylinder head and piston together defining a main combustion chamber having at the piston top dead center position a shallow pancake-like pocket under the valve head and extending normal to said canted axis, said pocket having an elevated side largely within the cylinder head,
- the cylinder head further defining a precombustion chamber having a discharge passage with a generally straight portion in substantial edge alignment with said pocket and having extent in the direction of the canted axis approximately equal to the extent of said pocket said passage being registered with and opening into the elevated side of said pocket so as to direct gaseous discharge into said pocket from the edge thereof at its elevated portion;
- said discharge passage at its end distal from said pocket having a portion extending sharply upward from said straight portion and opening into the precombustion chamber which extends from the opening primarily toward the canted axis so as to form a wall bounded by the discharge passage and the precombustion chamber, and
- means to inject fuel into said precombustion chamber in a direction generally parallel to said first axis and toward said wall, said fuel injection means including a spray tip having at least one pair of angularly disposed orifices arranged on axes lying in a plane generally parallel to said first axis, said nozzle orifices being oriented to direct fuel in a broad path downwardly toward said wall so that the air discharge into the precombustion chamber during each compression stroke generates a swirl initially curving inwardly towards said first axis and then traveling downwardly generally parallel to said axis and towards said wall and the injected fuel travels with said swirling airflow into a temporarily locally rich mixture space above the wall wherein combustion occurs under conditions relatively unfavorable to NO_x production,
- the precombustion chamber being about the size of the main chamber and the discharge passage being arranged such that gases discharging from the precombustion chamber fan out against the valve head and cylinder head and the piston so that the piston thermal load is comparable to the thermal load of the valve and cylinder head in the main chamber.

4,122,805
DIESEL ENGINE COMBUSTION CHAMBERS

William L. Kingsbury, Lansing, and Kelly W. Thurston, Okemos, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 710,924, Aug. 2, 1976, abandoned. This application Jun. 24, 1977, Ser. No. 809,418
Int. Cl.[2] F02B *3/00, 23/00*
U.S. Cl. 123—32 ST **15 Claims**



1. A precombustion chamber diesel engine of the type wherein combustion gases from a prechamber are discharged into the space between a piston and a cylinder head at substantially the top dead center position of the piston including the combination of:
- a piston reciprocable on an axis between top and bottom dead center positions through successive compression and power strokes,
- a cylinder head in cooperating relation with the piston and having at least one poppet valve disposed on an axis canted in relation to said first axis and having a head which moves in valve opening movements toward the piston along said canted axis, the cylinder head and piston together defining a main combustion chamber having at the piston top dead center position a shallow pancake-like pocket under the valve head and extending normal to said canted axis, said pocket having an elevated side largely within the cylinder head,
- the cylinder head further defining a precombustion chamber having a discharge passage with a generally straight portion in substantial edge alignment with said pocket and having extent in the direction of the canted axis approximately equal to the extent of said pocket, said passage being registered with and opening into the elevated side of said pocket so as to direct gaseous discharge into said pocket from the edge thereof at its elevated portion,
- said discharge passage at its end distal from said pocket having a portion extending sharply upward from said straight portion and opening into the precombustion chamber which extends from the opening primarily toward the canted axis so as to form a wall bounded by the discharge passage and the precombustion chamber, and
- means to inject fuel into said precombustion chamber in a direction generally parallel to said first axis and toward said wall so that the air discharge into the precombustion chamber during each compression stroke generates a swirl initially curving inwardly towards said first axis and then traveling downwardly generally parallel to said axis and towards said wall and the injected fuel travels with said swirling airflow into a temporarily locally rich mixture space above the wall wherein combustion occurs under conditions relatively unfavorable to NO_x production,
- the precombustion chamber being about the size of the main chamber and the discharge passage being arranged such that gases discharging from the precombustion chamber fan out against the valve head and cylinder head and the piston so that the piston thermal load is comparable to the

thermal load of the valve and cylinder head in the main chamber.

4,122,806

VALVE FOR ADDING EXTRA AIR IN AN INTERNAL COMBUSTION ENGINE

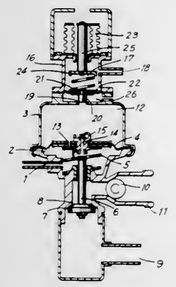
Wilfried Bockelmann, Kaarst, and Rainer Steinbrink, Wuppertal, both of Germany, assignors to Deutsche Vergaser GmbH & Co. Kg, Neuss, Germany

Filed Mar. 10, 1977, Ser. No. 776,417

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612951

Int. Cl.² F02D *11/08*

U.S. Cl. 123—103 R **4 Claims**



1. A valve arrangement for adding air to the intake line of an internal combustion engine, particularly Ottocycle engines during the deceleration phase, comprising: a first diagram controlled by via an intake pipe intake pipe pressure; dosing means 3 holding said first diaphragm, said first diaphragm dividing said dosing means into first and second chambers comprising, respectively, a control pressure chamber connected via a line with the intake pipe and a reference pressure chamber; first spring means acting against said first diaphragm; a valve and a rod actuated by said first diaphragm; a calibration and a check valve connecting said first and second chambers; second dosing means comprising second spring means acting against a second diaphragm dividing said second dosing means into third and fourth chambers; the third chamber being connected via a second line with the intake pipe; said second diaphragm being controlled by intake pipe pressure; the fourth chamber being open to atmosphere and connectable via bore means with said reference pressure chamber; said second diaphragm actuating a valve disc against the force of said second spring means for venting said reference pressure chamber.

4,122,807

IGNITION SPARK TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Akio Hosaka, Yokohama, and Satoshi Sakamoto, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Nov. 23, 1976, Ser. No. 744,261

Claims priority, application Japan, Dec. 5, 1975, 50/162926[U]

Int. Cl.² F02P *5/04*

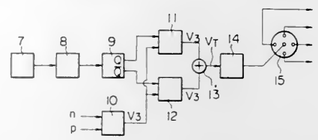
U.S. Cl. 123—117 R **5 Claims**

1. An ignition spark timing control system for an internal combustion engine, said ignition timing control system including an advance angle control unit for generating an output signal in response to the magnitude of the vacuum in the intake manifold of the engine and to the rotational speed of the crank shaft of the engine, and an ignition unit connected to the distributor of the engine for developing a high DC voltage in response to the output of said advance angle control unit, wherein the improvement comprises;

(1) a reference angle signal generator for generating reference angle signals corresponding to respective reference angles of each cylinder of the engine;

(2) a divider for dividing said reference angle signals to provide divided signals;

(3) at least two voltage-advance angle converters sequentially operated in an alternative manner in response to said



divided signals in dependence on the output signal of said advance angle control unit; and

(4) an adder connected to said voltage-advance angle converters to develope a control signal by adding the outputs of said voltage-advance angle converters, said control signal being supplied to said ignition unit for controlling the ignition timing.

4,122,808

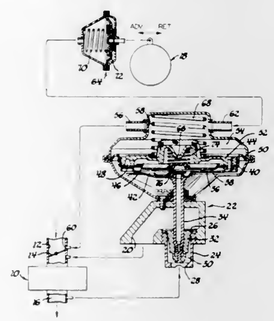
IGNITION TIMING CONTROL

William A. Vogelsberg, Yale, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 8, 1977, Ser. No. 785,778

Int. Cl.² F02P *5/10;* **F02M** *25/06*

U.S. Cl. 123—117 A **2 Claims**



1. An ignition timing control assembly for an internal combustion engine having an exhaust passage and means for effecting ignition, said ignition timing control assembly comprising means forming a pressure region and a motor for adjusting said ignition effecting means to advance the timing of ignition in inverse relation to the pressure in said region, said region having an orifice for sensing a subatmospheric pressure and a bleed for sensing atmospheric pressure, a valve member for varying air flow through said bleed to control the pressure in said region, and means responsive to variations in pressure in said exhaust passage for positioning said valve member whereby said valve member reduces flow through said bleed upon an increase in the exhaust passage pressure to reduce the control pressure and cause said motor to advance the timing of ignition and increases flow through said bleed upon a decrease in the exhaust passage pressure to increase the control pressure and cause said motor to retard the timing of ignition.

4,122,809

AIR-FUEL RATIO CONTROL SYSTEM

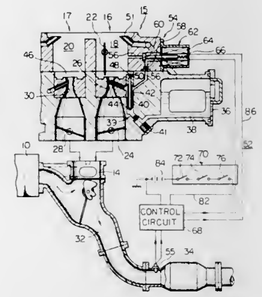
Yoshio Iwasa, Nagareyama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 27, 1976, Ser. No. 736,231

Claims priority, application Japan, Oct. 28, 1975, 50-129652

Int. Cl.² F02B *33/00;* **F02M** *7/00;* **F02B** *75/10*

U.S. Cl. 123—119 EC **10 Claims**



1. An air-fuel ratio control system in combination with an internal combustion engine including a carburetor having:

an intake passageway and

fuel supply passage means which communicates with the intake passageway and from which fuel is drawn into the intake passageway to form an air-fuel mixture; said air-fuel ratio control system comprising:

sensing means for sensing a parameter related to the concentration of a component contained in exhaust gases of the engine,

air bleed passage means communicating with the atmosphere and with the fuel supply passage means,

control valve means movably located relative to said air bleed passage means for controlling the flow of air drawn into the fuel supply passage means through said air bleed passage means,

solenoid means for operating said control valve means,

control circuit means electrically connected to said sensing means for generating a control signal in accordance with the value of said parameter sensed by said sensing means, siad solenoid means being electrically connected to said control circuit means for causing, in response to said control signal, said control valve means to move into a position in which said control valve means varies the flow of said air thereby varying the flow of fuel drawn from the fuel supply passage means into the intake passageway and to thereby control the air-fuel ratio of an air-fuel mixture formed by the carburetor to a desired air-fuel ratio,

an electrical circuit means connecting said control circuit to said solenoid means,

switch means, responsive to the temperature of the engine and located in said electrical circuit, for closing said electrical circuit in response to temperatures of the engine which are above a predetermined value and for opening said electrical circuit in response to temperatures of the engine which are below said predetermined value, and

means for causing, in response to an open condition of said electric circuit, said control valve means to move into a position in which said control valve means reduces the flow of said air thereby to increase the flow of said fuel and to have the carburetor form an enriched air-fuel mixture.

4,122,810

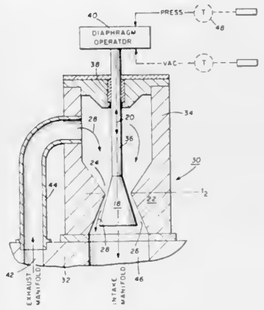
AUTOMOTIVE EXHAUST GAS RECIRCULATION VALVE

Lester P. Berriman, Irvine, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 7, 1977, Ser. No. 813,585

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **11 Claims**



1. In an exhaust gas recirculating valve adapted for use with an internal combustion engine comprising a housing internally containing a convergent-divergent flow path between a first opening adapted to receive exhaust gas from the exhaust manifold and a second opening adapted to discharge gas received from said first opening to the intake manifold, a movable pintle cooperating in said flow path to define a nozzle therewith for effecting sonic gas flow through the nozzle throat and operator means effective to axially displace said pintle toward and away from the nozzle throat in response to a predetermined engine variable, the improvement in which the direction of pintle movement by said operator toward restricting the flow area through said nozzle throat is counter to the direction of incoming flow adapted to be received at said first opening.

4,122,811

DIGITAL CLOSED LOOP FUEL CONTROL SYSTEM

Lauren L. Bowler, Bloomfield Hills, and John O. Rice, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 25, 1977, Ser. No. 818,428

Int. Cl.² F02B *33/00*

U.S. Cl. 123—119 EC **3 Claims**

1. A closed loop system for controlling the ratio of the air/fuel mixture supplied to an internal combustion engine, the system comprising:

means responsive to the content of the exhaust gas output of the internal combustion engine effective to generate an air/fuel ratio signal changing abruptly between first and second voltage values in accord with the relationship of the air/fuel ratio relative to a stoichiometric ratio;

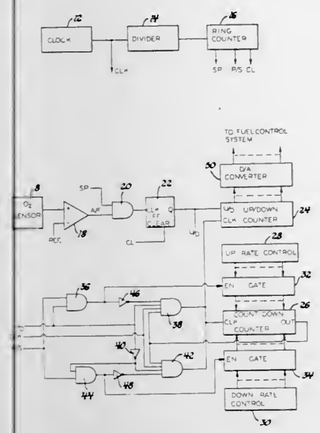
an up/down digital counter having selectable up and down counting modes;

means effective to generate clock pulses at a substantially constant frequency;

means responsive to the voltage values of the air/fuel ratio signal effective at sampling intervals having a predetermined time spacing to (1) enable the up/down counter to count a predetermined first number of clock pulses in one of its counting modes and maintain the net count to the next sampling interval when the air/fuel ratio signal is at one of its voltage values and (2) enable the up/down counter to count a predetermined second number of clock pulses in the other one of its counting modes and maintain the net count to the next sampling interval when the

air/fuel ratio signal is at the other one of its voltage values; and

means effective to vary the air/fuel ratio in accord with the net count in the up/down counter, the air/fuel ratio being controlled by the last mentioned means to a value offset from the stoichiometric value by an amount determined by the first and second numbers of clock pulses.



4,122,812

EXHAUST GAS RECIRCULATION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

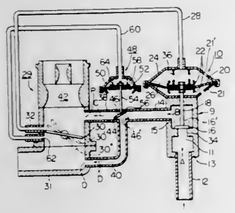
Yuuichi Takano, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 5, 1977, Ser. No. 756,858

Claims priority, application Japan, Oct. 19, 1976, 51-139573[U]

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **5 Claims**



1. An exhaust gas recirculation apparatus for an internal combustion engine, comprising:

a vacuum operated flow control valve having an inlet and an outlet, which valve is adapted for controlling the amount of exhaust gas to be recirculated from said inlet to said outlet in accordance with a vacuum level formed in the intake system of the engine;

a first pipe means adapted for connecting said inlet of the flow control valve with the exhaust system of the engine in order to introduce the exhaust gas in the exhaust gas pipe into said inlet;

second pipe means, one end of which is connected to the outlet of the flow control valve;

third pipe means adapted for connection of another end of the second pipe means with the intake system at the location situated upstream of the throttle valve;

a fourth pipe means adapted for connection of said other end of the second pipe means with the intake system at the location situated downstream of the throttle valve;

a switching valve member arranged adjacent to said other end of the third pipe means, which member is capable of being moved between a first position in which said second pipe means communicates with said third pipe means in order to form said first recirculation passageway connecting the outlet of the flow control valve with the intake system at the location upstream of the throttle valve, and a second position in which said second pipe means communicates with said fourth pipe means in order to form said second recirculation passageway connecting the outlet of the flow control valve with the intake system at the location downstream of the throttle valve, and;

operating means to move said switching valve member between said first and said second positions in accordance with engine operating conditions.

4,122,813

INJECTION TIMING ADJUSTMENT APPARATUS

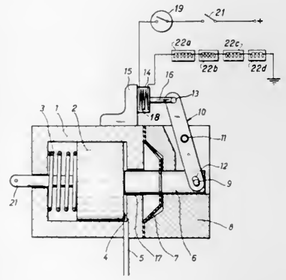
Konrad Barnert, and Günter Stein, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed May 13, 1976, Ser. No. 686,010

Claims priority, application Fed. Rep. of Germany, May 16, 1975, 2521827

Int. Cl.² F02D *1/16*

U.S. Cl. 123—139 ST **10 Claims**



1. Apparatus for adjusting the injection timing of an internal combustion engine fuel injection pump in response to supplied pressure proportional to the speed of said engine, comprising:

a cylinder;

a piston, movable within said cylinder in response to said supplied pressure, for advancing said injection timing in response to said supplied pressure;

a spring urging said piston against said pressure;

engaging means, movable between a first and a second position, for engaging said piston in said first position to move said piston against said spring to advance said timing independent of said supplied pressure and for disengaging said piston in said second position to permit said piston to operate freely in response to said supplied pressure;

and means for moving said engaging means to said first position during cold starting of said engine, and moving said engaging means to said second position during normal engine operation.

4,122,814

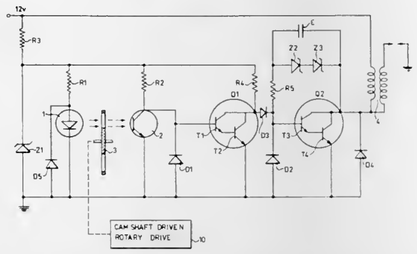
OPTO-ELECTRONIC IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Eric H. Ford, 17 Kensington Gate, London, W.8., England

Continuation-in-part of Ser. No. 655,138, Feb. 3, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,744

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 E **11 Claims**



1. An opto-electronic ignition system for controlling switching of the primary winding of an ignition coil of an internal combustion engine and capable of reliable operation at temperatures above about 125° C, said system comprising a source of radiation; a photo-transistor sensitive to radiation which will switch on or conduct when exposed to the radiation and switch off when the radiation is cut off; means disposed between said source and said photo-transistor for intermittently blocking radiation from said source in timed relation to the engine revolutions so as to control the periods during which radiation is received by said photo-transistor; and a switching circuit for controlling switching of the ingition coil responsive to the output of said photo-transistor; said switching circuit comprising a plurality of pairs of transistors the components of each pair being connected in a Darlington configuration and means for connecting said pairs of transistors to each other between said photo-transistor and the ignition coil such that each Darlington pair switches in inverse relationship to at least one other Darlington pair and a first Darlington pair switches in inverse relationship to said photo-transistor, so as to cause fast switching of the primary winding of the ignition coil thereby inducing a spark voltage in the second winding of the coil.

4,122,815

NON-DC IGNITION SYSTEM WITH VARIABLE IGNITION TIMING

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed Mar. 31, 1977, Ser. No. 783,388

Int. Cl.² F02P *3/02*

U.S. Cl. 123—148 E **25 Claims**

1. A method for fuel ignition in an engine by electrically energizing any of a plural number of igniters therein, comprising in combination the steps of:

(a) computing the individual firing period for each of the igniters, one igniter firing period at a time;

(b) compensating for the reactive component difference between the output of a non-DC power source and the input of an ignition transformer; and

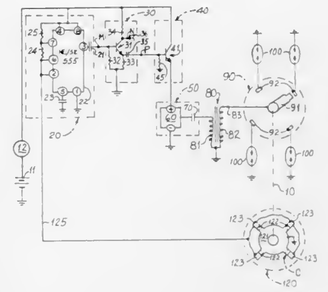
(c) energizing each of the igniters with the non-DC power provided to said transformer during each of their respectively computed firing periods.

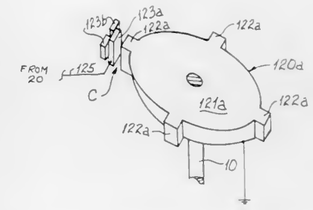
16. An ignition system which during its operative mode provides variable ignition timing periods to an engine, said system utilizing an ignition transformer, comprising the combination:

an angularly modulated waveform generator;

first means, integral with the waveform generator and driven by the engine during said operative mode, for providing wave trains of varying time durations, which time durations are inversely proportional to the rotational speed of the engine;

an electronic control circuit electrically coupled to the generator;





a non-DC power source electrically coupled to the transformer; and

a capacitor in circuit with the power source and the transformer.

4,122,816

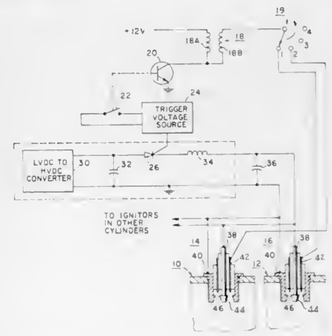
PLASMA IGNITER FOR INTERNAL COMBUSTION ENGINE

Dennis J. Fitzgerald, Pasadena, and Robert R. Breshears, La Canada, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 1, 1976, Ser. No. 672,636

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 DC **8 Claims**



1. A system for igniting the air/fuel mixture introduced into each of the chambers of an internal combustion engine comprising a pair of substantially parallel electrodes spaced with a gap of substantial depth within each of said chambers, said gap

being open to receive an air/fuel mixture, an intermediate spark electrode between said pair of spaced electrodes, a high voltage, high current storage capacitor voltage means for storing a high electrical charge in said capacitor, means for applying a spark voltage between said spark electrode and one of said pair of igniter electrodes, means for enabling an electrical current discharge between said pair of spaced electrodes with an amplitude which establishes a plasma between the electrodes, and which establishes electro-magnetic forces due to current from said capacitor through said spaced electrodes and plasma developing a magnetic field which drives the plasma in a direction parallel to said spaced electrodes deep into the combustion chamber at a supersonic velocity.

4,122,817

INTERNAL COMBUSTION VALVE HAVING AN IRON BASED HARD-FACING ALLOY CONTACT SURFACE

Wallace M. Matlock, Highland Heights, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 573,430, May 1, 1975, abandoned. This application Jun. 27, 1977, Ser. No. 810,407

Int. Cl.[2] **F01L** *3/04;* **C22C** *38/44;* **B32B** *15/18*

U.S. Cl. 123—188 AA **6 Claims**

1. An internal combustion engine valve having a body, a head, and a contact surface disposed on said head adapted to periodically enter into gas-sealing engagement with a valve seat, said contact surface being formed in a metal deposit welded to said valve head, the composition of said metal deposit, measured at said contact surface, consisting essentially of

Element	Wt. %
C	1.4–2.0
Mo	4.0–6.0
Ni	8–13
Cr	20–26
Si	0.1–1.0
Mn	0–3.0
Fe	balance

4,122,818

OIL CIRCULATING AND COOLING SYSTEM

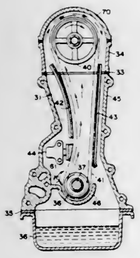
Kyo Hattori, Toyota, Japan, assignor to Toyoda Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 12, 1976, Ser. No. 685,497

Claims priority, application Japan, Nov. 11, 1975, 50-136063; Dec. 22, 1975, 50-157454

Int. Cl.[2] **F01M** *1/00*

U.S. Cl. 123—196 AB **7 Claims**



1. An oil circulating and cooling system for an internal combustion engine of the type having an oil pan and an oil distribution system comprising:

an oil pump to pump oil under pressure throughout the oil distribution system of said internal combustion engine;

a valve means coupled to the output of said oil pump for diverting a portion of said oil from said oil pump when the oil pressure from said oil pump is some predetermined value;

a half arc chain seat for a crank timing gear to hold said diverted oil from said valve means, said half arc seat and said valve means arranged and configured such that said diverted oil is applied directly to the crank timing gear to said half arc seat, and to said timing chain whereby as the timing chain revolves the diverted oil from said valve means is thrown from said timing chain and flows down the cam shaft cover, the cylinder head, and the timing chain cover and returns to the oil pan thereby cooling the oil.

4,122,819

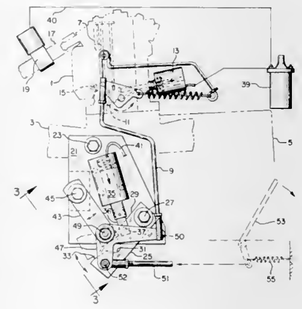
FUEL SUPPLY CONTROL AND CARBURETOR LINKAGE MECHANISM

Jerome F. Moshofsky, Portland, and Allan J. Vanderzanden, Cornelius, both of Oreg., assignors to Hyster Company, Portland, Oreg.

Filed Sep. 22, 1976, Ser. No. 725,514

Int. Cl.[2] **F02B** *77/08*

U.S. Cl. 123—198 D **8 Claims**



1. A fuel supply control system for an engine comprising a movable crank mounted on the engine for actuating fuel supply increasing means on the engine;

and means responsive to engine ignition for selectively relocating the pivot point of the crank so that actuation of the supply increasing means through the crank is prevented.

4,122,820

ENGINE COVER AND AIR CLEANER SUPPORT

John G. Ryberg, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 2, 1977, Ser. No. 802,612

Int. Cl.[2] **F02B** *75/22, 77/00*

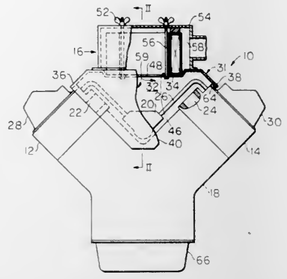
U.S. Cl. 123—198 E **8 Claims**

1. In an engine having first and second opposed end portions, and first and second spaced-apart side portions having a general "V" profile, the improvement comprising:

a cover having a first side portion sealably connected to the first engine side portion, a second side portion sealably connected to the second engine side portion, a first end portion sealably connected to the first engine end portion, a second end portion sealably connected to the second engine end portion, and a middle portion extending between the side and end portions of the cover;

a chamber defined by said engine and said cover and having an opening on the middle portion of the cover; and

an air cleaner mounted on the middle portion of the cover over the chamber opening and forming an air passageway



substantially free of obstructions to the first and second engine side portions.

4,122,821

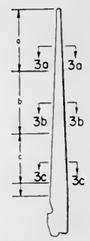
ARCHERY BOW AND METHOD OF ADVANTAGEOUSLY ALTERING BOW CHARACTERISTICS

Anthony C. Mamo, 1515 E. Central Ave., Apt. 264B, Arlington Heights, Ill. 60005

Filed Dec. 30, 1976, Ser. No. 755,972

Int. Cl.[2] **F41B** *5/00*

U.S. Cl. 124—23 R **5 Claims**



1. In an archery bow of the type having a longitudinally curved body member which includes a central grip portion with outwardly extending limbs, and a string member joining the outer ends of said outwardly extending limbs, the improvement which comprises a limb structure having cross-sectional configurations that are curved in its transverse planes which are substantially perpendicular to its longitudinal axis, said cross-sectional configurations having predetermined dimensions of thickness and predetermined dimensions of extent of curvature which progressively vary at different sections of the limb structure, such that with increasing draw distance in the archery bow, the radius of longitudinal curvature of the limb structure decreases while said cross-sectional configurations increase in radius of curvature progressively and at different rates at different sections of the limb structure.

4,122,822

SPRING TYPE APPARATUS FOR THE PROJECTING OF FOOTBALLS AND THE LIKE

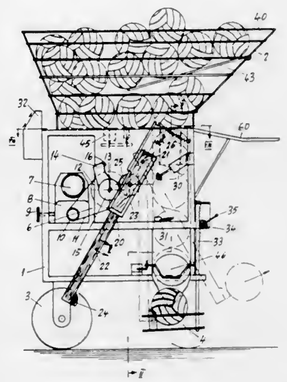
Kurt Scheiwiller, 25 Wiesentalstrasse, 9242 Oberuzwil, Switzerland

Filed Dec. 13, 1976, Ser. No. 749,604

Claims priority, application Switzerland, Dec. 11, 1975, 16192/75

Int. Cl.[2] **F41B** *7/00*

U.S. Cl. 124—54 **16 Claims**



1. Apparatus for shooting a football, comprising: a ball container adapted to contain a plurality of footballs, means defining a ball shooting station, transfer means for the transfer of balls one at a time from said container to said shooting station, striking means for striking a ball located at said shooting station, said striking means having ball engaging means that impacts against a ball to immediately propel a football through the air, adjustment means for adjusting the strength of the force with which said striking means strikes said ball, and position selection means for selecting the position of the point of impact of said striking force against said ball, said striking means comprising a striking bar and means for mechanically engaging and driving said striking bar in the shooting direction, said striking bar being mounted near its upper end on a horizontal pivot for pivoting movements in a vertical plane, said striking bar striking said ball at the lower end of the bar and in the general area of the lowest point of the swinging movement of the bar, said shooting station including determining support points to determine the position of said ball at said shooting station, said shooting station being in proximity to the ground, said mechanical driving means including positively driven means for abuttingly engaging said striking bar to accelerate said striking bar to initiate a shot and impact said striking bar against said ball with a striking force, and, after impact, continuing to apply said striking force to said ball to provide follow-through, whereby said ball is projected in a selected direction with desired strength.

4,122,823

TUBELESS HEAT RECUPERATOR

Robert F. Hunter, Burlington, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Canada

Filed Oct. 7, 1976, Ser. No. 730,959

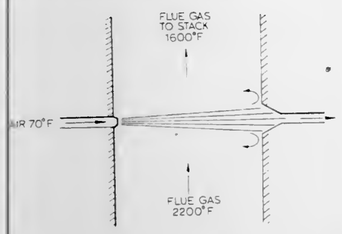
Claims priority, application United Kingdom, Oct. 8, 1975, 41318/75

Int. Cl.[2] **F28C** *3/02*

U.S. Cl. 126—117 **4 Claims**

1. Apparatus for transferring heat to combustion air for a furnace from hotter flue gas exiting from the same furnace, the flue gas containing tri-atomic molecules with good infra-red energy absorption characteristics comprising:

conduit means for passing said flue gas in a first direction, aligned nozzle and aperture means on opposed sides of the conduit means for directing the combustion air in jet form transversely across the flue gas flow, to allow triatomic molecules minimally entrained in the jet-form cooler com-



bustion air to provide heat to the cooler combustion air molecules through collision, and by absorbing infra-red energy radiated from the hotter flue gas and passing this absorbed energy to the cooler combustion air molecules also through collision.

4,122,824

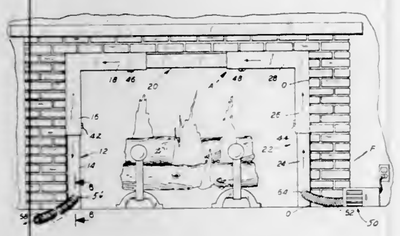
DEVICE FOR EXTRACTING HEAT FROM A FIREPLACE

Peter M. Borgran, 2131 E. Second St., Duluth, Minn. 55812

Continuation of Ser. No. 703,098, Jul. 6, 1976, abandoned. This application Nov. 17, 1977, Ser. No. 852,492

Int. Cl.[2] **F24B** *7/00*

U.S. Cl. 126—121 **1 Claim**



1. A thermal extractor for a fireplace opening comprising:

(a) an inverted U-shaped tubular member for securing to the front vertical and horizontal edges of the opening of a fireplace to be heated from heat in the fireplace,

(b) said tubular member having a rectangular cross section and including a tubular top central portion having an adjustable length substantially equal to the width of the fireplace opening at the top front edge thereof,

(c) a tubular leg portion depending from each end of said top central portion having an adjustable length substantially equal to the height of the fireplace opening at the front side edge thereof, said legs and said top central portion lying in substantially the same plane,

(d) one of said legs having an inlet tube member at the lower end thereof,

(e) the other of said legs having an outlet tube member at the lower end thereof,

(f) said top central portion having a baffle member internally thereof,

(g) a fan carried by said inlet tube,

(h) said top central portion having a portion slidable within the remaining portion,

(i) each of said legs having a portion slidable within the remaining portion,

(j) means for securing said portions of said top central portion against displacement,

(k) means for securing said portions of each of said leg portions against displacement,

(l) a fan carried by said inlet tube member adapted to circulate heated air through said top central portion and said leg portions and out through said outlet tube member.

4,122,825

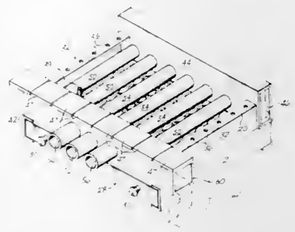
AIR-HEATER TYPE FIREPLACE GRATE

Robert C. Slate, 8225 17th NE, Seattle, Wash. 98115

Filed Mar. 10, 1977, Ser. No. 776,119

Int. Cl.[2] **F24B** *7/00*

U.S. Cl. 126—121 **14 Claims**



1. An air-heater type fireplace grate including tubular portions on which a fire is built and through which forced air is directed to be heated prior to being discharged into a room, characterized by:

a frame comprising a support base adapted to set on the floor of a fireplace firebox, spaced apart tubular front and rear air manifolds occupying upper front and upper rear positions on said base, and means connecting said front and rear manifolds to said base to make said frame an integral rigid structure;

said front and rear tubular air manifolds having opposed pairs of openings formed therein; and

a plurality of air-heating and fire supporting tubes extending between the front and rear manifolds, with end portions thereof snugly received within said openings but free of other connection to the front and rear manifolds so that they can expand and contract independently in response to uneven heating.

4,122,826

SUBMERSIBLE BODY WARMER APPARATUS

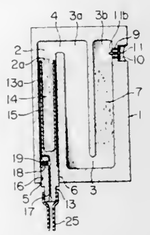
Katumi Suzuki, 15-1 Oozone-cho, Higashi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Dec. 23, 1976, Ser. No. 753,730

Claims priority, application Japan, Dec. 25, 1975, 50/155556

Int. Cl.[2] **A61F** *7/06*

U.S. Cl. 126—208 **4 Claims**



1. A submersible body warmer apparatus for an underwater diver wearing a wet suit which comprises

a primary pressure reduction device for attachment to a cylinder containing pressurized air carried by a diver,

a mouthpiece to be held in the mouth of a diver for inhalation connected to said reduction device for flow of air from said device to said mouthpiece.

a heat radiating casing body of flattened configuration adapted to be held under a diver's wet suit,

an exhaust opening in said casing body to communicate the interior thereof with the outside and the space defined between a diver's wet suit and his body,

an air supply inlet into said casing body,

a sinuous fluid passage way communicating said inlet with said exhaust opening,

fuel containing means positioned in said passageway,

a combustion chamber in said passageway between said means and said exhaust opening,

an air-pervious, water absorbent member in said passageway between said combustion chamber and said exhaust opening,

check valve means disposed in said exhaust opening to close and open said opening when water pressure is exerted on said valve means and when inner air pressure in said passageway serves to overcome said water pressure, respectively, and

air supply means connecting said inlet to said reduction device.

4,122,827

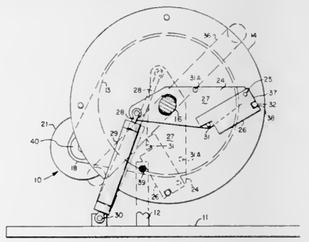
KINEMATIC SYNCHRONOUS SOLAR HELIOSTAT

William A. Rhodes, 4421 N. 13th Pl., Phoenix, Ariz. 85014

Filed Aug. 25, 1977, Ser. No. 827,750

Int. Cl.[2] **F24J** *3/02*

U.S. Cl. 126—270 **17 Claims**



1. An escapement movement comprising:

a frame,

a shaft rotatably mounted on said frame,

a wheel rotatably supported on said shaft,

an escapement means coupled to said shaft juxtapositioned to said wheel,

a frame mounted stationary unlocking pallet,

at least a pair of spacedly positioned pallets mounted on said wheel,

a first means for rotating said wheel in a first direction,

a second means for rotating said escapement means in a second direction opposite to said first direction,

one of said wheel mounted pallets and said escapement means engaging each other during at least a part of the movement of said wheel in said first direction,

said movement of said first wheel when in engagement with said escapement means causing a storage of potential energy in said second means until said unlocking pallet engages said escapement means causing a decoupling of said escapement means from said wheel,

whereby the kinetic energy stored in said second means causes counter rotation of said shaft and said wheel until the other of said wheel mounted pallets engages said escapement means.

4,122,828

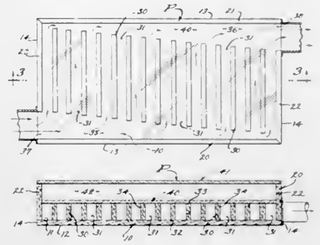
SOLAR ENERGY COLLECTOR FOR DIRECT AIR HEATING

Leonard J. DiPeri, 18325 Lahey St., Northridge, Calif. 91324

Filed Nov. 10, 1975, Ser. No. 630,360

Int. Cl.[2] **F24J** *3/02*

U.S. Cl. 126—270 **6 Claims**



1. A solar heat collector and heat storage panel for the direct and indirect absorption of heat into a moving column of air, and including; a base with a projecting perimeter frame forming an enclosure to be faced openly toward the radiant sun, a heat storage mass in the form of a multiplicity of partitions of substantial body made of wooden heat sink members disposed in spaced parallel relation transversely of the frame and exposed to open uni-directional channels therebetween, inner glazing supportably engaged with said multiplicity of partitions respectively to separately duct the multiplicity of channels, outer glazing spaced from the inner glazing and engaged with the perimeter frame to form a chamber, and inlet and outlet manifold means directing air flow uniformly and transversely through said multiplicity of ducted channels.

4,122,829

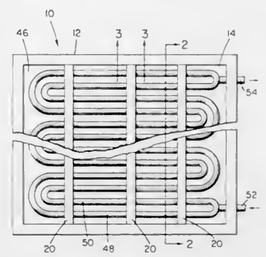
SOLAR ENERGY COLLECTOR

Wallace A. Lowe, P.O. Box 1845, Bradenton, Fla. 33506, and Donald E. Robarts, 1311 - 32nd St. West, Brandenton, Fla. 33505

Filed Jul. 9, 1976, Ser. No. 704,065

Int. Cl.[2] **F24J** *3/02*

U.S. Cl. 126—271 **6 Claims**



1. A solar energy collector for heating fluids such as water from an external source through absorption of the sun's energy: said solar energy collector comprises an enclosure structured to operatively house a fluid conduit means, said fluid conduit means including an inlet and outlet port to couple said solar energy collector to the external source to circulate fluid between said fluid conduit means and the external source, said enclosure comprising a back member and **9** substantially transparent medium held in fixed spaces relation relative to each other by a frame, said frame comprises inner perimeter frame members disposed on opposite sides of said frame, each said inner frame member comprising an upper and lower coupling

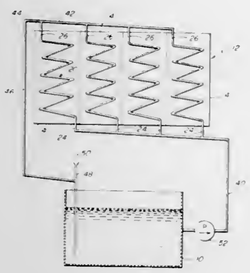
element held in fixed spaced relation relative to each other by an interconnecting element and upper and lower support elements held in fixed spaced relation relative to each other by said interconnecting element, and outer frame members disposed on opposite sides of said frame, each of said outer frame members comprising an upper and lower coupling element held in fixed spaced relation relative to each other by an interconnecting element, said lower coupling element of said outer frame member being disposed to operatively support said back member, said upper and lower coupling elements of said inner frame member disposed to engage said corresponding upper and lower coupling elements of said outer frame member to cooperatively form said frame, said upper support element of said outer frame members being disposed relative to said corresponding upper coupling element of said outer frame member to secure said substantially transparent medium therebetween, said solar energy collector further including a support element coupled between said lower coupling elements to operatively support said fluid conduit means, said fluid conduit means being disposed in a heat exchange chamber cooperatively formed between said back member and said substantially transparent medium to intercept the sun's energy to raise the temperature within said heat exchange chamber to heat the fluid within said fluid conduit means to be fed to the external source.

4,122,830

SOLAR HEATING SYSTEM

William H. Hapgood, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 27, 1976, Ser. No. 727,067
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **10 Claims**



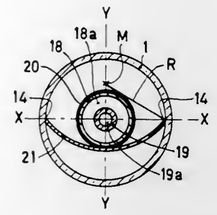
1. A solar energy system for heating a liquid comprising a reservoir for containing a supply of the liquid to be heated, at least one solar collector at a level higher than the reservoir, liquid conduit means in said collector including an inlet at a low point in the collector and an outlet at a high point in the collector, and piping connecting said inlet to said outlet, said piping throughout its length being pitched upwardly from the inlet to the outlet, a feed pipe connected at one end to said reservoir and pitched upwardly toward and connected to said inlet, a return pipe connected at one end to the reservoir and pitched upwardly therefrom to a peak level point above said outlet, a connector pipe connected to said outlet and pitched upwardly therefrom toward and connected to said peak level point of the return pipe, and pump means in said feed line for pumping liquid from the reservoir through the feed line, inlet, piping, outlet, connector pipe, and return pipe.

4,122,831

SOLAR COLLECTOR COMPRISING AN ELONGATE ABSORBER IN AN EVACUATED TRANSPARENT TUBE

Faramarz Mahdjuri, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 8, 1977, Ser. No. 785,916
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1976, 2618651
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **8 Claims**



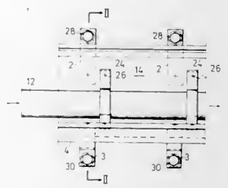
1. A solar collector which comprises a sealed and evacuated transparent tube that has a circular cross-section over at least a portion of its length, an internal reflector having an arcuate cross-section of substantially 120° and extending substantially co-extensive with said length portion, and an absorber having at least one duct for transferring heat derived from solar radiation incident on the absorber to a heat transport medium in the duct during operation and extending longitudinally of said tube with its largest transverse dimension in the symmetry plane of said internal reflector, said absorber being centrally arranged in the tube, said reflector being in engagement with the absorber and intersecting the tube at points situated at the ends of the tube circle diameter perpendicular to the internal reflector symmetry plane, and the centre of the circle including the internal reflector arc being situated on the internal reflector symmetry plane such that circle radii extend through the reflector/tube points of intersection and are tangent to the absorber.

4,122,832

SOLAR COLLECTOR

Ladislav Hirschsohn, 30 Ben Ami St., Acre, and Ephraim Hirschsohn, 61 Hashoftim St., Kiryat Motzkin, both of Israel

Filed May 4, 1977, Ser. No. 793,546
Claims priority, application Israel, May 14, 1976, 49575
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **9 Claims**



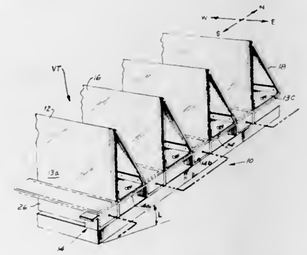
1. A solar collector for heating a liquid by solar radiations, comprising: an extrusion having at least one straight longitudinally-extending recess formed therein of semi-circular cross-section; a straight tube disposed within the longitudinally-extending recess for the liquid to be heated by the solar radiations; said tube being of circular cross-section and having an outer diameter substantially equal to the diameter of the semi-circular recess; and a transparent window overlying the extrusion and the straight tube disposed within its recess, said extrusion being of plastics material, and the tube being of metal, the collector further including a metal absorber having a solar-radiation-absorbing surface facing said window, the metal absorber including a longitudinally-recessed portion underlying and in contact with the metal tube.

4,122,833

NON-TRACKING SOLAR ENERGY COLLECTOR SYSTEM

Alan M. Lovelace, Acting Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and M. Kudret Selcuk, La Canada, Calif.

Continuation-in-part of Ser. No. 765,139, Feb. 3, 1977, Pat. No. 4,091,798. This application May 27, 1977, Ser. No. 801,452
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **1 Claim**



1. A non-tracking solar energy collector system for heating a working fluid comprising:

A. a flat plate receiver including a plurality of uniformly spaced insulated boxes of elongated configurations disposed in mutual parallelism closed by a plurality of transparent cover panels, and a multiplicity of lengths of finned absorber piping disposed in said boxes and interconnected to form a conduit for conducting a working fluid through the receiver along a path of a serpentine configuration; and

B. an energy concentrator disposed above the receiver for directing incident rays of solar energy on the boxes thereof including a plurality of juxtaposed reflector modules of a common asymmetrical cross-sectional configuration arranged in a uniform array, each reflector module being characterized by a pair of plates formed of a lightweight metal and having a pair of reflecting surfaces facing north-south directions and disposed in a pair of planes inclined at mutually distinct angles with respect to the plane of the flat plate receiver and intersecting above the plane of the receiver for defining therebetween an included angle equal to an included angle defined between intersecting planes of the plates of each pair of adjacent modules, and module support means for independently supporting said reflector modules including parallel straps having raised segments arranged in uniformly spaced relation for receiving therebetween said boxes and receiving thereon the opposite ends of said modules.

4,122,834

VENTILATING, COOLING AND HEAT RECLAIMING APPARATUS FOR COOKING EQUIPMENT

Eugene A. Jacobs, 7112 Darlington Dr., Baltimore, Md. 21234

Filed Apr. 4, 1977, Ser. No. 784,640
Int. Cl.[2] F24C *15/08;* **F23J** *11/00*
U.S. Cl. 126—299 D **8 Claims**

1. A venting and cooling system for use with cooking equipment comprising:

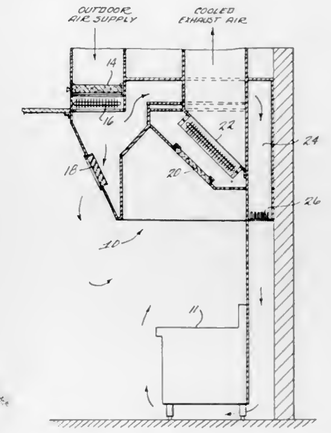
first duct means defining a supply passage for supplying fresh air to the vicinity of the equipment,

second duct means defining an exhaust passage for exhausting air from the vicinity of the equipment,

filter means disposed in said exhaust passage for removing particulate matter and droplets from the exhausting air,

a cooling coil disposed in said exhaust passage for cooling the exhausting air to improve removal of said particulate matter and droplets,

means connected to said cooling coil for supplying a fluid to said cooling coil at a temperature below the temperature of said exhausting air,



a further coil disposed in said supply passage for changing the temperature of said supply air,

means connecting said cooling coil to said further coil for supplying the fluid leaving said cooling coil to said further coil, and

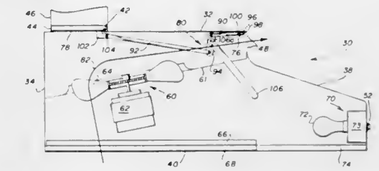
valve means disposed in said connecting means for controlling flow of said fluid from said cooling coil to said further coil.

4,122,835

VENTING AND RECIRCULATING VENT KITCHEN HOOD

Leon O. Bowen, Jr., and Michael T. McVean, both of Cleburne, Tex., assignors to Rangaire Corporation, Cleburne, Tex.

Division of Ser. No. 700,216, Jun. 28, 1976, Pat. No. 4,088,123. This application Sep. 23, 1977, Ser. No. 836,100
Int. Cl.[2] F24C *15/80;* **F23J** *11/00*
U.S. Cl. 126—299 D **8 Claims**



1. A kitchen stove hood for selectively providing air ventilation or recirculation in a kitchen area comprising:

a hood dimensioned to be disposed in the kitchen area over a stove and having top, bottom, sides, back and front portions;

said hood including an air intake opening at said bottom portion;

a fan for causing air from the kitchen area to flow through said air intake opening;

an air recirculation outlet communicating with said air intake opening and disposed in said hood for recirculating air to the kitchen area;

an air vent outlet communicating with said air intake opening and disposed in said hood for venting air from the kitchen area;

a recirculation damper blade mounted adjacent said air recirculation outlet and operable to move between open and closed positions to open and close said air recirculation outlet;

said recirculation damper blade dimensioned to completely close said air recirculation outlet and lie coincident with said air recirculation outlet in said recirculation damper blade closed position and being mounted to present substantially no resistance to the passage of air flowing through said air recirculation outlet in said recirculation damper blade open position;

a vent damper blade mounted adjacent said air vent outlet and operable to move between open and closed positions to open and close said air vent outlet;

said vent damper blade dimensioned to completely close said air vent outlet and lie coincident with said air vent outlet in said vent damper blade closed position and being mounted to present substantially no resistance to the passage of air flowing through said air vent outlet in said vent damper blade open position; and

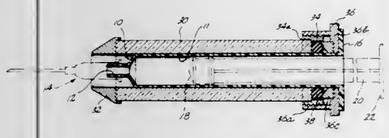
means for interconnecting said damper blades and being operable to positively move said recirculation damper blade between its open and closed positions while simultaneously moving said vent damper blade between its closed and open positions, such that when said recirculation damper blade is open said vent damper blade is closed to recirculate air to the kitchen area and when said recirculation damper blade is closed said vent damper blade is open to vent air outside the kitchen area.

4,122,836

SHIELDING HOLDER FOR RADIONUCLID SYRINGES

Thomas W. Burnett, Bellevue, Wash., assignor to Nuclear Pacific, Inc., Seattle, Wash.

Filed Sep. 13, 1976, Ser. No. 722,538
Int. Cl.[2] A61N 5/12
U.S. Cl. 128—1.1 **5 Claims**



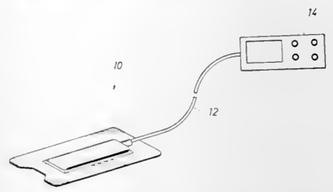
1. A full-viewing shielding holder for radionuclid injection syringes comprising a tubular body of radiation shielding glass transparent and optically polished substantially throughout its circumference and length adapted to gather light omnidirectionally and to reveal syringe contents and syringe graduation marks with the syringe extending longitudinally through said tubular body independently of its relative rotated position in said tubular body and of the tubular body's rotated position relative to the viewer, manually releasable gripping means fitted on one end of said tubular body manually operable to grip and hold the syringe against shifting therein when the syringe is being operated in the holder, said gripping means comprising an elastic ring positioned to closely encircle the syringe adjacent one end of the tubular body, and retainer means including annular clamping means manually operable to compress the elastic ring and constrict the same under pressure against the syringe and to release the syringe thereafter from such pressure.

4,122,837

BODY SURFACE CONTOUR DEFORMATION

Loren W. Leonard, 162 Plantation, Houston, Tex. 77024

Filed Aug. 2, 1976, Ser. No. 710,711
Int. Cl.[2] A61B 5/10
U.S. Cl. 128—2 S **4 Claims**



1. A detector for detecting body swelling or edema, comprising:

a generally rectangular chamber defined by a stiff portion having on one side thereof a pliant membrane which membrane has a deflectable surface of specified width and length which is exposed for surface contact against a selected area of a patient and which membrane conforms to and deflects with localized swelling or edema of the patient;

the stiff portion of the chamber incorporating a protruding lip extending outwardly along four edges in a common plane;

a side wall appended to said lip and extending above the membrane and which side wall is interrupted by an opening means connected through a hollow tube adapted to be connected to an alarm device;

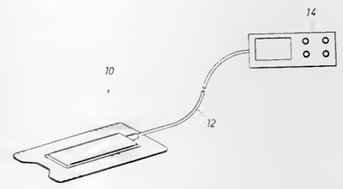
and wherein said surrounding lip is notched at a portion thereof to define an alignment means for a needle or catheter.

4,122,838

BODY SURFACE CONTOUR DEFORMATION SENSOR

Loren W. Leonard, 162 Plantation, Houston, Tex. 77024

Filed Aug. 9, 1976, Ser. No. 712,508
Int. Cl.[2] A61B 5/10
U.S. Cl. 128—2 S **3 Claims**



1. A detector for detecting body swelling or edema, comprising:

a chamber defined by a stiff portion encircled by a skirt of specified width and which skirt is exposed for contact and sealing against a selected area of a patient to enable localized swelling or edema of the patient;

the chamber being generally rectangular and open on one side thereof;

the skirt extending outwardly along four edges in a common plane;

a side wall appended to said skirt and which side wall is interrupted by an opening means connected through a hollow tube adapted to be connected to an alarm device; and

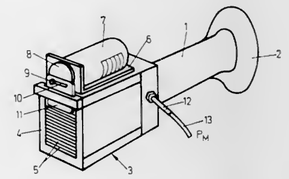
wherein said surrounding skirt is notched at a portion thereof to define an alignment means for a needle or catheter.

4,122,839

APPARATUS FOR THE DETERMINATION OF RESPIRATORY PASSAGEWAY RESISTANCE

Manfred Franetzki, Erlangen; Volker Korn, Nurnberg, and Karl Prestele, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation-in-part of Ser. No. 559,655, Mar. 18, 1975, Pat. No. 4,022,193. This application Jan. 26, 1977, Ser. No. 762,952
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1974, 2413960; France, Nov. 28, 1974, 74 38991
Int. Cl.[2] A61B 5/08
U.S. Cl. 128—2.08 **1 Claim**



1. In an apparatus for determining respiratory passageway resistance, including a flow tube having a passageway including a flow resistance with means for varying the resistance value periodically at a frequency lying above the breathing frequency, measuring means for supplying a measurement signal which varies in accordance with a parameter of the flow in the flow tube, the improvement comprising: said flow resistance comprising a single fixed resistance extending across the passageway of said flow tube and having a flow surface determining a basic resistance value R_o; and sinusoidally variable shutter means as resistance value varying means associated with said flow surface of said single fixed resistance for the periodic, substantially sinusoidal superposition of resistance variations r onto said basic resistance value; said measuring means comprising flow measuring means connected to said flow tube and having first and second measurement passageways connected to the output of said flow measuring means, a first frequency filter in said first measurement passageway, a second frequency filter in said second measurement passageway, said first frequency filter having a frequency characteristic for ascertaining flow components V_o due to low frequency breathing, and the second frequency filter having a frequency characteristic for ascertaining flow components v due to the higher frequency resistance variations caused by said shutter means, and further comprising circuit means connected to the outputs of said first and second measurement passageways to provide the respiratory passageway resistance R_{aw} from the lower and higher frequency flow components V_o and v obtained from said measurement passageways, and from the resistance values R_o and r in accordance with the relationship

$$R_{aw} = R_o\left(\frac{r}{R_o}\cdot\frac{V_o}{v} - 1\right).$$

4,122,840

APPARATUS FOR ANALYZING THE BALANCING FUNCTION OF THE HUMAN BODY

Kazuo Tsuchiya, Nagoya, and Noboru Ohnishi, Okazaki, both of Japan, assignors to Yaesu Rehabili Co., Ltd., Tokyo, Japan

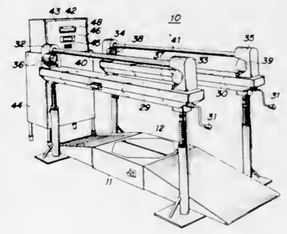
Filed May 23, 1977, Ser. No. 799,690
Claims priority, application Japan, Jun. 1, 1976, 51-63879
Int. Cl.[2] A61B 5/10
U.S. Cl. 128—2 S **11 Claims**

1. In an apparatus for analyzing human body's balancing function adapted to analyze the body load distributions of a person tested and applied onto his right and left feet so as to adjust his body balance, the improvement comprising: a pair of parallel foot steps spaced from each other, the person tested placing right and left feet on said foot steps; a plurality of body load detectors within said foot steps so as to detect body load distributions applied onto the right and left feet of the person tested;

an arithmetic circuit for receiving the body load signals detected by the plurality of body load detectors and developing a difference signal corresponding to the body load distributions applied onto the right and left feet of the person tested; and display means for displaying the difference signal from the arithmetic circuit and informing the person tested of the adjustability of his body balancing by visual feedbacks.

6. In an apparatus for analyzing a human body's balancing function by analyzing the body load distributions of a person tested and applied onto right and left feet so as to adjust the body balance, the improvement comprising;

a pair of parallel foot steps spaced from each other, the person tested placing right and left feet on said foot steps;



a plurality of body load detectors within said foot steps for detecting the body load distributions applied onto the right and left feet of the person tested;

an arithmetic circuit for receiving the body load distribution signals detected by said body load detectors and developing a difference signal of the body load distributions applied onto the right and left feet of the person tested;

a target signal generator providing target signals in the view of the person on the foot steps to render his balanced body load distribution into unbalanced condition;

target signal display means for receiving said target signals and displaying the same; and

display means for displaying the difference signal from the arithmetic circuit and/or the transfers of the body load distributions of the person tested when reacting while viewing the target signals shown on the target signal display means.

4,122,841

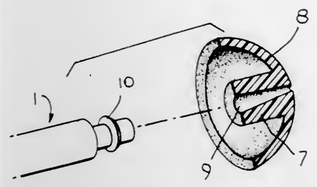
PROBE TIP

Erwin H. Rock, Dobbs Ferry, and Irwin Klar, New City, both of N.Y., assignors to American Electromedics Corporation, Acton, Mass.

Continuation of Ser. No. 647,752, Jan. 9, 1976, abandoned. This application Jun. 17, 1977, Ser. No. 807,591
Int. Cl.[2] A61B 10/00, 5/12
U.S. Cl. 128—2 Z **1 Claim**

1. In an improved replaceable and resilient and compressible tip for a test probe for forming an air tight seal between the probe and the ear canal of an ear being tested and having a central support portion with an elongated probe mounting aperture extending through said support portion the improvements comprising said aperture flaring outwardly toward one end of the support portion, a flange projecting radially outwardly from the other end of said support portion, said flange having a convex outer surface for engaging a ring-like area on the wall of the entrance to the outer ear canal to form the seal and having a concave inner surface generally parallel to said

convex outer surface and cooperating to form a C-shaped flange of uniform cross-section with the flange edge being the



radially outermost portion of the tip, and said support portion and said flange having generally equal dimensions parallel to the elongated probe mounting aperture.

4,122,842

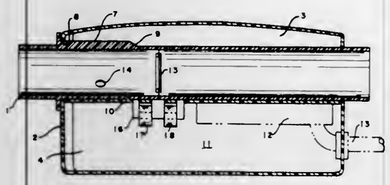
PULMONARY DIAGNOSTIC INSTRUMENT INCLUDING BREATH TRANSDUCER

Richard E. Pikul, DeSoto, Mo., assignor to Puritan Bennett Corporation, Kansas City, Mo.

Division of Ser. No. 495,329, Aug. 7, 1974, Pat. No. 3,946,726. This application Jan. 19, 1976, Ser. No. 649,986

Int. Cl.[2] A61B *5/08*

U.S. Cl. 128—2.08 **11 Claims**



1. A diagnostic instrument for use in detecting lung disfunction through specimen breathing and comprising a flow tube means adaptable for accommodating the flow of the breath therethrough, a resiliently mounted diaphragm means disposed within said tube means and subject to lineal displacement due to the force of the moving breath thereby, said diaphragm means comprising a plate means, said plate means having at least one aperture therethrough for allowing the unobstructed passage of the breath there past, said plate means suspended within said flow tube means to provide for its complete and uniform lineal displacement due to the force of the breath moving through the flow tube means, suspension means supporting the plate means within the flow tube means, said suspension means providing for centrally mounting of the said plate means within the said tube means, said suspension means including a pair of supports disposed diametrically across the interior of the tube means and spaced from each other a fixed distance, a rod member extending the distance between and connecting to said supports, said apertured plate means having said rod extending centrally therethrough without obstructing the lineal movement of said plate means with respect to said rod, at least one annulus connecting peripherally of the plate means and in proximity with the inner surface of the flow tube means, a series of resilient arcuate arms interconnecting between said annulus and rod member to provide for suspension of the apertured plate means and its lineal displacement during passage of specimen breath therethrough, and means cooperating with said flow tube means for detecting the degree of lineal displacement of said diaphragm means for providing representative information pertaining to pulmonary functioning for specimen diagnosis.

4,122,843

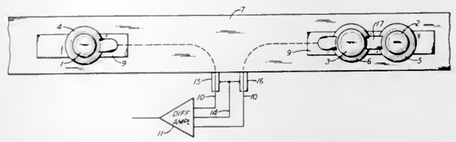
ELECTRODE SYSTEM FOR A HEART RATE MONITOR

Ronald J. Zdrojkowski, Pittsburgh, Pa., assignor to Electro-Technics, Inc., Pittsburgh, Pa.

Filed Aug. 10, 1977, Ser. No. 823,283

Int. Cl.[2] A61B *5/04*

U.S. Cl. 128—2.06 E **8 Claims**



1. An electrode system for a heart rate monitor having a differential amplifier, comprising two signal electrodes and a reference electrode each having a front face for engaging a person's skin, a dielectric member supporting each electrode with said front face exposed, means for holding said dielectric members with said electrode faces positioned to engage the skin, electro-static shields embedded in the dielectric members that support the signal electrodes, the shield being behind the signal electrodes and electrically insulated therefrom, a first pair of electrical conductors connected to the signal electrodes and adapted to electrically connect them with a differential amplifier, a second pair of electrical conductors connected to said shields and adapted to electrically connect them to the common input of the amplifier, and means electrically connecting one of said shields with said reference electrode.

4,122,844

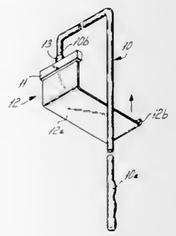
SURGICAL RETRACTOR

Philipp Rabban, P.O. Box 390942, Miami Beach, Fla. 33139

Filed Mar. 7, 1977, Ser. No. 775,138

Int. Cl.[2] A61B *17/02*

U.S. Cl. 128—20 **5 Claims**



1. A hand held surgical retractor comprising a shaft, the shaft having a first portion and a second portion, the second portion being oriented substantially perpendicularly to the first portion, an arm rigidly connected to one end of the second shaft portion and a flat blade rigidly connected to the arm, an end of the first shaft portion being free, a handle being formed at the free end of the first shaft portion, the shaft and the arm lying in the same plane and the blade having a portion extending substantially perpendicularly to said plane and having a free end, a lip formed at said free end and extending away from said handle, the axis of a portion of the shaft including the handle being substantially perpendicular to the plane of said flat blade and laterally offset from said portion of the blade and said end of said first shaft portion being substantially spaced from the plane of said blade portion.

4,122,845

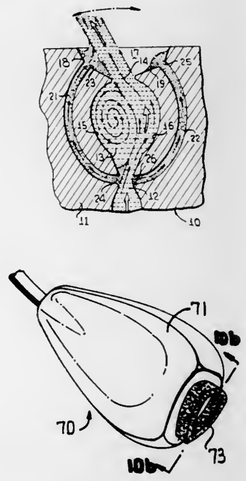
PERSONAL CARE SPRAY DEVICE

Ronald D. Stouffer, Silver Spring, and Harry C. Bray, Jr., Beltsville, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Division of Ser. No. 618,208, Sep. 30, 1975, Pat. No. 4,052,002, which is a continuation of Ser. No. 510,722, Sep. 30, 1974, abandoned. This application Jul. 22, 1977, Ser. No. 818,215

Int. Cl.[2] A61H *9/00*

U.S. Cl. 128—66 **5 Claims**



1. A personal spray device characterized by a nozzle which issues a liquid jet which is swept in at least one dimension transverse to the nominal jet flow direction, causing said jet to break up into liquid droplets, said device comprising:

a body member;

an inlet means defined in said body member for receiving liquid under pressure;

means for establishing a liquid pressure inside said body member which is greater than ambient pressure;

jet-defining means within said body member responsive to the received liquid for forming said liquid jet;

an outlet opening defined in said body member for issuing said jet exteriorly of said body member, said outlet opening being elongated in at least said one dimension transverse to the flow direction of said jet therethrough;

jet-sweeping means operated solely by the pressure of said liquid and located within said body member for repetitively sweeping said jet in at least said one dimension; and

a guard member projecting from said body member and disposed about said outlet opening.

4,122,846

BUBBLING DEVICE FOR THE TREATMENT OF THE HUMAN BODY

Ludwig G. Baumann, am Reckholder, CH Niederhelfenschwil, Switzerland

Filed Mar. 8, 1977, Ser. No. 775,602

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628248; Mar. 10, 1976, 2609786; Mar. 12, 1976, 2610342; Jul. 27, 1976, 2633625

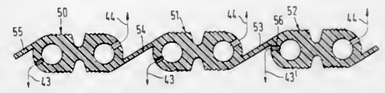
Int. Cl.[2] A61H *9/00*

U.S. Cl. 128—66 **9 Claims**

1. Bubble device for treating the human body, comprising a support element having two alternatively usable body-supporting surfaces each of which faces away from the other;

a plurality of relatively small first outlet openings for the bubble medium formed in one of said support surfaces;

a plurality of relatively large second outlet openings for the bubble medium formed in the other of said support surfaces;



first means for supplying bubble-forming medium to said first outlet openings; and

independent second means for supplying bubble-forming medium to said second outlet openings.

4,122,847

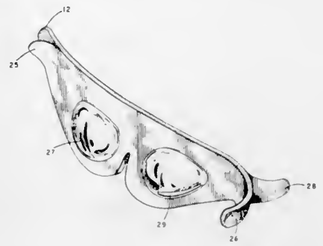
PROTECTIVE EYE SHIELD FOR SURGICAL PATIENTS

Robert G. Craig, 1915 Summit Ridge Dr., Escondido, Calif. 92025

Continuation of Ser. No. 620,814, Oct. 8, 1975, abandoned. This application Jul. 25, 1977, Ser. No. 818,291

Int. Cl.[2] A61F *9/04*

U.S. Cl. 128—132 R **2 Claims**



1. A protective eye shield for a surgical patient comprising:

a unitary flexible, soft and relatively thick, foamed, plastic blank means of substantially uniform thickness, having a substantially flat surface and shaped for covering a patient's lower forehead, across and beneath the eyes, and across the upper nose bridge, and having a pair of opposite openings over the eyes, said flat inner surface having a contact adhesive entirely around the peripheral portion thereof for securing the eye shield to the patient,

a pair of thin, transparent, plastic covers overlying said openings, each cover having a flange terminating in a peripheral edge extending therearound, and which flange is secured to the inner mask surface around said openings, and

tape, relatively thin as compared to the thickness of said foamed, plastic blank means, secured to said inner mask surface and substantially entirely around said flange to overlie said peripheral cover edge, whereby a patient is protected from said edge by said tape.

4,122,848

SURGICAL DRAPE SUPPORT

Emmett F. Carpel, 2683 E. Lake of the Isles Blvd., Minneapolis, Minn. 55408

Filed Apr. 28, 1977, Ser. No. 791,928

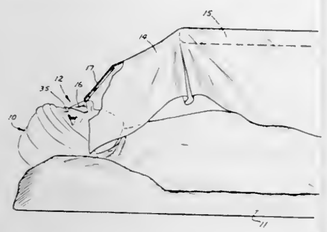
Int. Cl.[2] A61B *19/06*

U.S. Cl. 128—132 D **15 Claims**

1. A surgical drape support to space a surgical drape from the breathing area of a supine surgical patient during an ophthalmologic surgical procedure, comprising:

base means mountable to a portion of the face of the surgical patient;

holder means secured to the base means and extended therefrom to a location above the nose and mouth of the patient over the breathing area of the patient and away from the



eyes of the patient when the base means is mounted on the face of the patient, to support a surgical drape above the breathing area of the patient; and a surgical drape supported on the holder means over the breathing area of the patient to permit unimpeded breathing of the patient during an ophthalmologic surgical procedure.

4,122,849

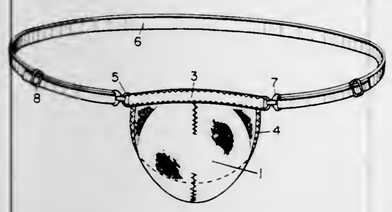
CUP SUPPORTER WITH REMOVABLE ELASTIC HIP BAND

Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530

Continuation of Ser. No. 723,451, Sep. 15, 1976, abandoned. This application Dec. 6, 1977, Ser. No. 858,023

Int. Cl.[2] A61F *5/40*

U.S. Cl. 128—158 **5 Claims**



1. A supporter comprising a cup-shaped hook pouch; said hook shaped pouch comprises a non-circular flexible laminate comprising sheet foam rubber and fabric, means of sewing adjacent edges of said non-circular flexible laminate to form a partial sphere, whereby said partial sphere is defined as a sphere cut by a second imaginary sphere whose center point is some distance from said partial sphere's center point forming a compartment curved to a hook shape; an elastic secured to top edge of said compartment curved to a hook shape, said elastic provides means for fastening half circular loops or hooks to said compartment curved to a hook shape; bias tape secured to sides and bottom edges of said compartment curved to a hook shape; a single adjustable elastic belt comprising an elastic belt, two buckles having said elastic belt's two ends threaded through the said buckles to form loops from said elastic belt's two ends, said loops are threaded through a second set of half circular loops or hooks having means to accept said loops from said elastic belt; said half circular loops and said hooks function with said second set of half circular loops or hooks to allow detaching said single adjustable belt from said hook shaped pouch.

4,122,850

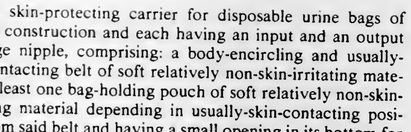
APPARATUS FOR PROVIDING LIVING BEINGS WITH ABSORBABLE IMPLANTS

Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741

Division of Ser. No. 693,134, Jun. 7, 1976, Pat. No. 4,030,499, which is a continuation-in-part of Ser. No. 537,572, Dec. 30, 1974, Pat. No. 3,982,537. This application Apr. 6, 1977, Ser. No. 785,290

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—216 **24 Claims**



1. Apparatus for injecting into tissue of a living being at least one composition for affecting the health or appearance of the living being, with the composition being solid at the temperature of the body of the living being while being injectable in a molten condition when elevated to a temperature above the body temperature of the living being, comprising a syringe means having a hollow interior containing at least one of said compositions in solid form, and heating means operatively connected with said syringe means for elevating the temperature of the composition therein sufficiently to place said composition in molten injectable condition in preparation for injecting the composition into the tissue of the living being, said syringe means including a barrel member and a needle member connected therewith and extending from said barrel member, and said heating means being operatively connected at least with said needle member for maintaining said composition in a molten condition as it flows through said needle member while the latter is situated at least in part in tissue of the living being.

4,122,851

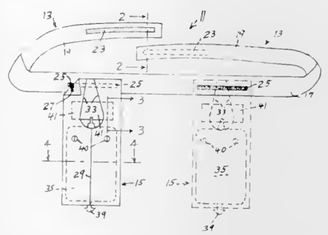
CARRIER AND SKIN-PROTECTING COVER FOR URINE BAGS

Dolores E. Grossner, 427 E. Jackson, Virden, Ill. 62690

Continuation of Ser. No. 685,983, May 13, 1976, abandoned. This application Aug. 31, 1977, Ser. No. 829,332

Int. Cl.[2] A61F *5/44*

U.S. Cl. 128—295 **5 Claims**



1. A skin-protecting carrier for disposable urine bags of known construction and each having an input and an output drainage nipple, comprising: a body-encircling and usually-skin-contacting belt of soft relatively non-skin-irritating material, at least one bag-holding pouch of soft relatively non-skin-irritating material depending in usually-skin-contacting position from said belt and having a small opening in its bottom for extension therethrough of the drainage nipple of said bag, said pouch having an opening in the upper portion of its front panel to facilitate attachment and detachment of tubes to and from the input nipple of said bag, a reinforcing tubeanchoring patch fixed to the rear panel of said pouch opposite said opening, and

pairs of mating snap-fasteners fixed to the front and rear panels of said pouch and positioned to bag-positioningly interengage through sealed openings in the upper corners of said bag of known construction.

4,122,852

DEVICE FOR APPLYING PRESSURE TO A SELECTED POINT OF A HUMAN FINGER

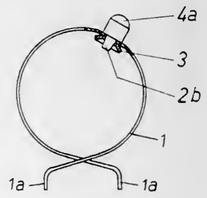
Wilfried Knetsch, Babenbergergasse 7/1, 2340 Mödling, and Elisabeth Petricek, Anton Brucknergasse 9, 3400 Klosterneuburg, both of Austria

Filed May 25, 1976, Ser. No. 690,029

Claims priority, application Austria, May 26, 1975, 4002/75

Int. Cl.[2] A61B *17/00*

U.S. Cl. 128—303 R **7 Claims**



1. A device for applying pressure to a selected point on the human finger comprising a split resilient clamping ring engageable over the finger with inner and outer circumferential surfaces and having end portion which cross each other at a point on the circumference of said ring and which extend radially outwardly from said outer circumferential surface, an actuating projection on said ring extending radially outwardly from said outer circumferential surface, pressure means connected to said actuating projection and extending radially inwardly therefrom and radially inwardly of said inner circumferential surface, and including a centering cup in the form of a dish which is concave radially inwardly toward the center of said ring, surrounding said pressure means on the inner circumference of said ring.

4,122,853

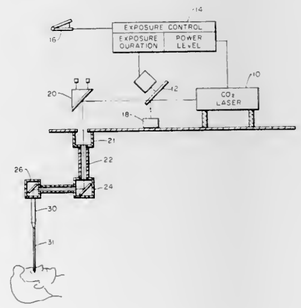
INFRARED LASER PHOTOCAUTERY DEVICE

Michael R. Smith, Thousand Oaks, Calif., assignor to Spectra-Med, Thousand Oaks, Calif.

Filed Mar. 14, 1977, Ser. No. 777,390

Int. Cl.[2] A61B *17/36*

U.S. Cl. 128—303.1 **21 Claims**



1. An apparatus for treating by cauterizing or cutting blood vessels and other biological tissue comprising:

laser beam generating means for generating a tissue absorbent laser beam;

optical means for manipulating, focusing and delivering the laser beam to a desired location in an absorptive medium while isolating the surrounding and intervening medium from the beam, said optical means including;

a laser light guide means,

window means transparent to said laser beam sealing said laser light guide means,

automatic control means for controlling the intensity and duration of said laser beam.

4,122,854

ELECTROSURGICAL APPARATUS

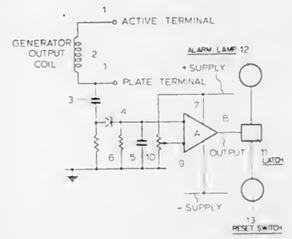
John H. Blackett, London, England, assignor to Matburn (Holdings) Limited, London, England

Filed Aug. 14, 1974, Ser. No. 497,317

Claims priority, application United Kingdom, Aug. 23, 1973, 39991/73

Int. Cl.[2] A61N *3/02*

U.S. Cl. 128—303.13 **6 Claims**



1. A radio-frequency electrosurgical device which comprises a radio-frequency generator, a power lead and a return lead, means for coupling the power lead and the return lead to the radio-frequency generator, an active electrosurgical electrode, means for coupling the power lead to the active electrosurgical electrode to power the active electrode, a passive electrode, means for coupling the passive electrode to the return lead, a high impedance connection coupling the return lead to ground at a point between the passive electrode and the ratio-frequency generator, voltage monitoring means coupled across the high impedance connection for indicating a predetermined voltage drop imposed across the high impedance connection.

4,122,855

CUTTING TOOL

Jirayr Tezel, 221 Falmouth Rd., Scarsdale, N.Y. 10583

Filed Dec. 27, 1971, Ser. No. 212,304

Int. Cl.[2] A61B *17/16*

U.S. Cl. 128—310 **13 Claims**

1. A cutting tool for forming removable plugs and sockets in the skin of the scalp of a person, comprising:

(a) an elongated handle;

(b) a hollow cylindrical cutting head detachably mounted to the handle at one end thereof;

(c) the head having a tapered portion at one end thereof

terminating in a circular knife edge for cutting into said skin; and



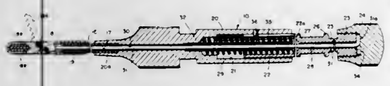
(d) the head including at least one bleed hole extending through the side wall thereof.

4,122,856

SURGICAL INSTRUMENT AND METHOD OF ASSEMBLY THEREOF

Donald J. Mosior, Mundelein, Ill.; Charles D. Cawood, Jr., Houston, Tex., and Michael H. Ekinaka, Irvine, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 8, 1976, Ser. No. 730,869
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—311 **12 Claims**



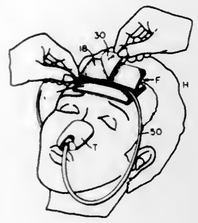
1. A surgical instrument comprising an elongated tubular sheath having a passage therethrough, a jaw assembly detachably connected to said sheath at one end thereof, a fixation housing secured to the opposite end of said sheath, said housing having a plunger chamber communicating with said passage, a plunger disposed within said chamber and having an axial bore therethrough aligned with said passage, an actuation rod extending through said passage and bore and operatively connected at one end to said jaw assembly, spring means urging said plunger in a direction extending axially and outwardly from said chamber, stop means at the outer end of said rod opposite from said one end thereof, said stop means projecting laterally relative to the axis of said plunger and normally engaging the plunger's outer end for precisely limiting the extent of outward travel of said plunger without preventing axial inward movement of said plunger independently of said rod and stop means, said outer end of said plunger being externally threaded, and a terminal member detachably connected to said plunger and having a recess receiving both said outer end of said plunger and said stop means, said terminal member being internally threaded for threadedly receiving the plunger's outer end and confining said stop means within said recess to secure said plunger and rod against independent axial movement, said stop means being separable from said rod and being exposed for separation when said terminal member is detached, whereby, upon detachment of said terminal member from said plunger, said plunger may be shifted inwardly independently of said rod to permit removal of said stop means, and upon removal of said stop means, said jaw assembly may be detached from said one end of said sheath and said actuation rod may be axially withdrawn from said housing and plunger.

4,122,857

PAD FOR ANCHORING AN ARTICLE TO THE SKIN OF A PATIENT

Raymond H. Haerr, Cincinnati, Ohio, assignor to Xomed Inc., Jacksonville, Fla.

Filed Jan. 25, 1977, Ser. No. 762,777
Int. Cl.[2] A61M *25/02*
U.S. Cl. 128—348 **14 Claims**



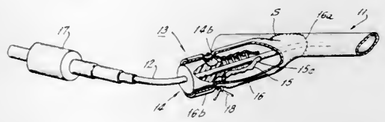
1. A composite pad of flexible material securable to the skin of a patient for anchoring an article, such as a catheter tube or the like thereto, comprising an upper panel and a lower panel each having side and end edges, and upper and lower surfaces with the upper surface of the lower panel confronting the lower surface of the upper panel; an adhesive coating the lower surface of the lower panel; a first removable backing sheet overlying the adhesive surface of the lower panel; an adhesive coating interposed between said upper and lower panels; a portion of the lower surface of the upper panel in contacting, adhesively secured, overlying relationship with a like portion of the lower panel; a second removable backing sheet in face-to-face relationship with the confronting surfaces of said upper and lower panels and overlying and coating, the interposed adhesive coating said upper panel including a flap which is integral with, and hingedly secured, along an edge to that portion of the upper panel which is secured to the lower panel; the lower surface of the lower panel adapted to be affixed to the skin of a patient upon removal of the first backing sheet; the lower surface of the flap adapted to be affixed to the underlying portion of the upper surface of the upper panel upon removal of the second backing sheet for anchoring an article, interposed between the adjacent surfaces of the flap and the lower panel to the pad.

4,122,858

ADAPTER FOR INTRA-AORTIC BALLOONS AND THE LIKE

Peter Schiff, Box 354, Rte. 7, Cookeville, Tenn. 38501

Filed Mar. 23, 1977, Ser. No. 780,295
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—348 **9 Claims**



1. An adapter for use with intra-aortic balloon assemblies and the like including a hollow tubular member, the adapter comprising:

a first resilient, hollow fluid carrying sleeve;

a generally annular-shaped body having a first portion of a first diameter and a second portion integral with said first portion and being of a reduced diameter relative to said first portion;

an elongated bore extending through both the larger and smaller diameter portions of said body and communicating with both end surfaces thereof;

a second resilient, stretchable plastic sleeve having a first portion thereof positioned about the end of the second portion of said body and having an opening adapted to receive an elongated hollow flexible tubular member;

the remaining portion of said second sleeve extending beyond the end of said second portion and adapted to embrace and form a sliding, fluid-tight seal about the tubular member extending through the bore in said body so as to allow the adapter to be slidably positioned at any point along said tubular member while maintaining the integrity of said sliding seal;

said adapter being inserted into said first sleeve; and

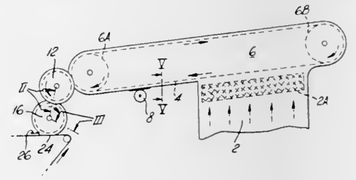
an annular groove being provided about the periphery of the first portion of said body to facilitate the tying of a suture about said first sleeve to urge the first sleeve into a fluid-tight seal with said body.

4,122,859

CIGARETTE-MAKING MACHINES

Edward G. Preston, Deptford, England, assignor to Molins Limited, London, England

Continuation of Ser. No. 449,808, Mar. 11, 1974, abandoned.
This application Jan. 2, 1976, Ser. No. 646,113
Claims priority, application United Kingdom, Mar. 13, 1973, 12033/73
Int. Cl.[2] A24C *5/00*
U.S. Cl. 131—84 B **4 Claims**



4. In a cigarette making machine including conveyor means arranged for movement along a predetermined path, means for showering tobacco onto said conveyor means to build up a continuous tobacco stream thereon and means spaced from said conveyor means for conveying a continuous wrapper web in a direction away from said conveyor means along a substantially horizontal path, the improvement comprising the combination of

(a) a first suction wheel, having an air-pervious peripheral surface arranged to travel along a first circular path, a portion of which is adjacent to the path of said conveyor means, and in a direction such that the adjacent portions of said peripheral surface of said first suction wheel and of said conveyor means travel in the same direction, for receiving said tobacco stream smoothly and without disturbance from said conveyor means at a first position along said first circular path and conveying said tobacco stream along said first circular path, and

(b) a second suction wheel, having an air-pervious peripheral surface arranged to travel along a second circular path, a portion of which is adjacent to the peripheral surface of said first suction wheel, and in a direction such that the adjacent portions of said peripheral surfaces of said first and second suction wheels travel in the same direction, for receiving said tobacco stream smoothly and without disturbance from the peripheral surface of said first suction wheel at a second position along said first path downstream of said first position, conveying said tobacco stream along a portion of said circular path and depositing it onto the top surface of said continuous wrapper web,

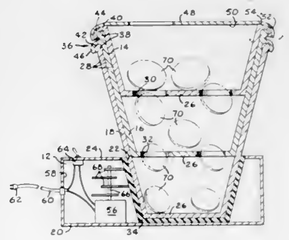
(c) said spaced confronting surfaces of said stationary side walls extending along one of said circular paths from a location immediately downstream of the position where said tobacco stream is transferred to said one suction wheel to a location adjacent said position where said tobacco stream is transferred therefrom, the other of said suction wheels including a peripheral groove defined by an air-pervious cylindrical bottom wall and spaced side walls projecting radially from opposite sides thereof, the confronting surfaces of said side walls of said other suction wheel being spaced substantially the same distance as the confronting surfaces of said stationary side walls of said one suction wheel.

4,122,860

COIN SORTING APPARATUS

Eli Weisman, 6838 N. Ninth St., Philadelphia, Pa. 19126

Filed Jan. 28, 1977, Ser. No. 763,351
Int. Cl.[2] G07D *3/10*
U.S. Cl. 133—3 B **7 Claims**



1. A coin sorting apparatus comprising in combination:

a plurality of nestling cup-like members, each having sidewalls and a base portion, each of said plurality of nestling cup-like members dimensioned to be partially co-extensively inserted in an adjacent one of said plurality of nestling cup-like members, each of said plurality of nestling cup-like members except one having a group of similarly sized apertures located in said base portion thereof, said groups of apertures being progressively graduated in size;

a housing for resting on a supporting surface, said housing having an open-ended chamber located therein, said open-end chamber opening through the uppermost surface of said housing, said open-ended chamber dimensioned to accept the insertion therein of said nestling cup-like member not having one of said groups of apertures located therein;

a cup shaped semi-resilient member, said semi-resilient member disposed within said open-ended chamber of said housing, said semi-resilient member for capturing and frictionally retaining one of said cup-like members when inserted therein; and

means for vibrating said plurality of nestling cup-like members, said vibrating means disposed within said housing.

4,122,861

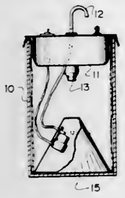
PUMP SUPPORT AND FLUID DEFLECTOR ASSEMBLY FOR PARTS WASHING MACHINES

Edward Lee, Winnipeg, Canada, assignor to Solv-X Inventions Ltd., Winnipeg, Canada

Filed Jun. 27, 1977, Ser. No. 810,488
Int. Cl.[2] B08B *3/02*
U.S. Cl. 134—109 **8 Claims**

1. In a solvent type parts cleaner which includes a sink, a solvent container below said sink and drain means in said sink for draining solvent from said sink into said container; a combination pump-and-motor-support and primary separator component in said container, said component including an upper, solvent receiving portion and an outwardly and downwardly

sloping wall portion to deflect solvent from said drain means, outwardly towards the wall of said container, means for solvent to enter the interior of said component from said container, said pump and motor unit including a pump intake situated above said pump and motor unit whereby said pump and motor unit remains submerged in the solvent in said container.

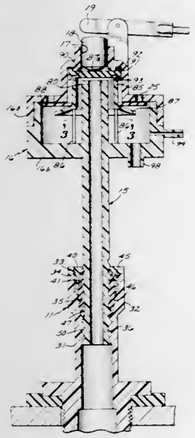


4,122,862

EXTENDIBLE BALLCOCK

Anthony R. Brandelli, 2418 W. 256th St., Lomita, Calif. 90717

Filed Apr. 12, 1976, Ser. No. 676,375
Int. Cl. F16k *31/18*
U.S. Cl. 137—437 **7 Claims**



1. A pressure sealing assembly of a pipe extendibly received in a through fitting comprising, in combination:

a pipe having a helically threaded peripheral segment proximate the lower end thereof, the thread contour of said peripheral segment being rounded on both the high and low extremities thereof;

an annular elastomeric seal having an exterior surface shaped in the manner of a longitudinal segment of an elliptic body of revolution and a substantially concentric interior surface conformed to receive a section of said peripheral segment on said pipe;

a through fitting having a first interior cavity proximate the upper end thereof conformed to partly receive the exterior surface of said seal, a second interior cavity extending axially from said first interior cavity into the interior of said fitting, said second cavity having an interior peripheral surface conformed to the thread contour of said peripheral segment and receiving said segment of said pipe; and

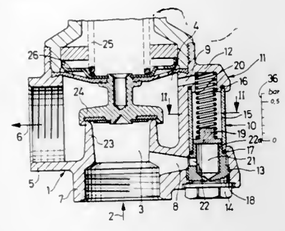
compression means securable to said upper end of said fitting and including a third interior cavity conformed to partly receive the exterior surface of said seal for compressing said seal therebetween.

4,122,863

DIFFERENTIAL PRESSURE OVERFLOW VALVE

Bernard W. Braukmann, Mosbach, Fed. Rep. of Germany, assignor to Braukmann Armaturen AG, Rothrist, Switzerland

Filed Jun. 7, 1976, Ser. No. 693,344
Int. Cl.² F16K *37/00*
U.S. Cl. 137—557 **2 Claims**



1. A differential pressure overflow valve having a housing, an inlet and an outlet to said housing, an inlet and outlet pressure chamber in said housing connected respectively to said inlet and outlet, a valve seat in said housing between said inlet and outlet chambers, a flexible diaphragm in said outlet pressure chamber attached to said housing, a valve plate supported by said diaphragm, a first spring bearing on said diaphragm and biasing said valve plate against said valve seat to effect closure of the latter, a differential pressure indicator in said housing, said indicator having a cylinder, a first passage connecting said inlet pressure chamber to said cylinder, a second passage connecting said outlet chamber to said cylinder, a piston in said cylinder and spaced therefrom to provide an annular gap, stop means in said cylinder for said piston located between said first passage and said piston, a second spring acting on said piston to bias the latter against said stop means, said cylinder being in the form of a transparent tube carrying a scale, a lift on said piston due to pressure exerted thereon through the first passage indicating the differential pressure between said inlet and outlet, the cross sectional area of said annular gap being substantially smaller than the total cross sectional area of said first and second passages to provide a choke effect.

4,122,864

SELECTIVE AND PROPORTIONAL HYDRAULIC REMOTE CONTROL DEVICE, IN PARTICULAR FOR HANDLING AND PUBLIC WORK GEARS

Maurice Tardy, Joly-Saint-Etienne, and Jean Paulet, Reclus-Saint-Etienne, both of France, assignors to Bennes Marrel, Saint-Etienne, France

Continuation of Ser. No. 659,784, Feb. 20, 1976, abandoned, which is a division of Ser. No. 542,173, Jan. 20, 1975, Pat. No. 4,044,795. This application Aug. 8, 1977, Ser. No. 822,773
Claims priority, application France, May 31, 1974, 74 19652
Int. Cl.² F15B *13/042, 13/08*
U.S. Cl. 137—625.6 **1 Claim**

1. A fluid control device comprising, in combination:

two fluid emitters which are substantially identical, each said emitter including body means and piston means;

said body means including a first port, a second port, and a third port;

a source of fluid operably connected to said fluid emitters;

said piston means being mounted in said body means for displacement therein;

said piston means being normally biased to a first position so that the first port, through which fluid from said source of fluid may be introduced into said fluid emitter, is closed, while the fluid which may flow from the third port is permitted to leave said fluid emitter through said second port;

said piston means being movable by an external force to a second position so that fluid from said source of fluid which is introduced into said fluid emitter through said first port is permitted to leave said fluid emitter through said third port, while the second port is closed;

said piston means being provided with control means for varying the effective fluid communication passageway between said first port and said third port;

a distributor provided with two ports which are alternatively inlet and outlet ports, each of said two ports being connected to one of said third ports of said two fluid emitters;

said fluid emitters allow in particular the admission of the fluid sent under low pressure toward said distributor connected to said fluid emitters through an inlet port of said distributor, wherein said distributor is adapted to control operation of power members, such as jacks or the like;

said control means of one of said emitters adjusts the pressure to the inlet port of said distributor, while the pressure of an outlet port of said distributor is constant;

said control means which adjusts the pressure of the inlet port of said distributor are grouped inside said fluid emitter;

said fluid emitter includes a body provided with at least one hollow piston which slides inside an axial bore in said body;

said control means includes calibrated holes drilled in a radial direction in said piston;

said two fluid emitters being alternatively manually operated by means of a control lever;

the position of said control lever defines the number of said calibrated holes being obturated, the unobturated holes defining a section of said inlet port by opening in a chamber of pressure;

said distributor having a slide valve with two opposite end faces, and each port of said distributor opens in a chamber in which is located one of said two opposite end faces of said slide valve;

said slide valve including a hole along its longitudinal axis extending from one of said end faces to the other of said end faces of said slide valve; and

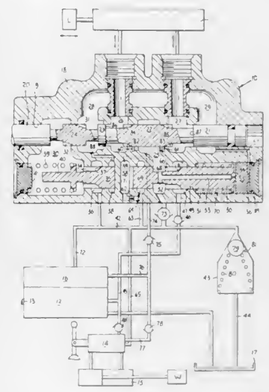
said hold being provided with a jet through which a controlled flowing out of said fluid set under low pressure takes place.

4,122,865

LOAD RESPONSIVE FLUID CONTROL VALVE

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 729,696, Oct. 5, 1976, Pat. No. 4,028,889, and Ser. No. 655,561, Feb. 5, 1976. This application Feb. 28, 1977, Ser. No. 773,421
Int. Cl.² F15B *13/02*
U.S. Cl. 137—596.13 **14 Claims**



1. A valve assembly supplied with pressure fluid by a pump, said valve assembly comprising a housing having a fluid inlet chamber, a fluid supply chamber, first and second load chambers, load pressure sensing means operable to transmit a control signal to said pump, and fluid exhaust means, first valve means for selectively interconnecting said fluid load chambers with said load pressure sensing means, said fluid supply chamber and said fluid exhaust means, variable metering orifice means responsive to movement of said first valve means and operable to throttle fluid flow between said fluid supply chamber and said load chambers, outlet fluid throttling means between said load chambers and said fluid exhaust means on said first valve means, second valve means having inlet fluid throttling means between said fluid inlet chamber and said fluid supply chamber responsive to pressure differential across said variable metering orifice means, said second valve means having inlet fluid isolating means between said fluid inlet chamber and said fluid supply chamber, said inlet fluid isolating means having means responsive to pressure upstream of said outlet fluid throttling means, and fluid replenishing means operable to supply fluid flow from said fluid exhaust means to one of said load chambers which is not pressurized when said fluid isolating means isolates said fluid supply chamber from said fluid inlet chamber.

4,122,866

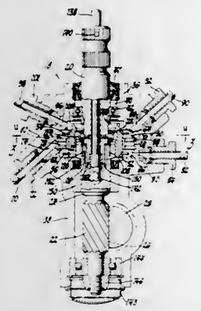
CONTROL VALVE FOR POWER CYLINDER OF STEERING GEAR

Floyd A. Schluckebier, Vassar, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 7, 1977, Ser. No. 785,597
Int. Cl.² F15B *9/1*
U.S. Cl. 137—625.27 **4 Claims**

1. A hydraulic control valve for a power steering unit comprising a valve housing, a manual input shaft mounted for limited rotary movement in said valve housing, a linearly movable valve element disposed around said input shaft mounted in said housing, said housing having an input passage for supplying pressure fluid to said valve element, an exhaust passage for exhausting fluid from said valve element and a pair of additional passages for right and left turn power steering, lever means supported within said housing and on said valve element for mechanically interconnecting said input shaft to

said valve element for shifting said valve element in a first linear direction in response to the turning of said input in a first rotary direction to thereby operatively connect the input passage to a first of said additional passages and to further connect the second of said additional passage to said exhaust passage for powered right turn steering, said lever means being acutated to shift said valve element in an opposite linear direction in response to the turning of said input shaft in a second rotary



direction to hydraulically connect said input passage to the second of said additional passages and to connect the first of said additional passages to said exhaust passage for powered left turn steering and spring means operatively connecting said input shaft to said valve element to center said valve element in a position whereby an input pressure fed to said input passage is operatively connected to said exhaust passage when turning effort exerted on said input shaft is terminated.

4,122,867

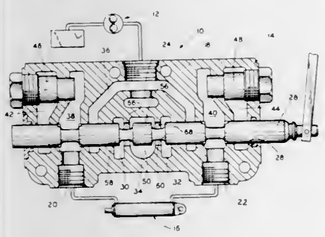
HYDRAULIC VALVE WITH OPEN CENTER METERING NOTCHES

Joseph L. Zagotta, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 538,685, Jan. 6, 1975, abandoned, and Ser. No. 365,648, May 31, 1973, abandoned. This application Jun. 9, 1977, Ser. No. 805,245

Int. Cl.[2] F16K *47/04*

U.S. Cl. 137—625.3 **10 Claims**



1. In a control valve comprising a valve body having a circular bore, a spool reciprocable along its longitudinal axis within the circular bore, the circular bore having an enlarged diameter portion forming a bore land, the spool having a reduced diameter portion forming a cylindrical spool land, the spool land having a flat radial surface adjacent the reduced diameter portion for controlling fluid flow passing across the bore land upon movement of the spool land in opposite axial directions to and from the bore land, means forming a throttling slot in the spool land, the throttling slot having a wall portion axially spaced from the flat radial surface of the spool land and extending radially outwardly from the reduced diameter portion to the cylindrical peripheral surface of the spool land, the throttling slot including a cavity means formed in the spool land extending radially inwardly from the reduced diameter portion toward the longitudinal axis of the spool, the cavity means having a first wall surface disposed axially from the flat radial surface of the spool land and extending perpendicular relative to the longitudinal axis of the spool, the cavity means further having a second wall surface extending perpendicular to the longitudinal axis of the spool and axially spaced from the first wall surface, the first and second wall surfaces parallel to and coinciding respectively with the wall portion of the throttling slot and the flat radial surface of the spool land.

4,122,868

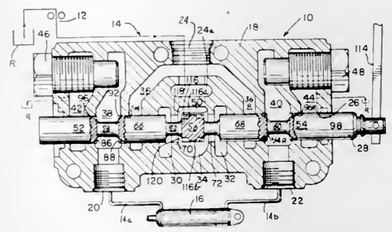
HYDRAULIC VALVE ASSEMBLY HAVING AN AXIAL FLOW FORCE BALANCED SPOOL

Gale A. Holloway, Joliet; Rudolph Yeh, Elmhurst, and Joseph L. Zagotta, Chicago, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 544,030, Jan. 24, 1975, abandoned, and a continuation-in-part of Ser. No. 365,649, May 31, 1973, abandoned. This application Jan. 24, 1977, Ser. No. 761,758

Int. Cl.[2] F15B *13/04;* **F16K** *11/07*

U.S. Cl. 137—625.69 **8 Claims**



1. A directional fluid flow control valve comprising:

a housing having left and right sides, a fluid flow inlet chamber centered in the housing between a pair of left and right fluid exit chambers;

a first pair of left and right wall members separating the inlet chamber from the exit chambers;

a second pair of left and right wall members respectively separating a pair of left and right alternating fluid flow input chambers from a pair of left and right alternating fluid flow receiving chambers; and

a third pair of left and right wall members respectively separating a pair of left and right alternating fluid discharge chambers from the pair of alternating fluid flow receiving chambers;

the three pairs of wall members having an axially extending cylindrical bore therethrough respectively forming first, second and third pairs of fluid flow control lands in the wall members; and

a cylindrical valve member slidably carried in the bore and having a central fluid flow position between a fluid flow left position and a fluid flow right position;

a first pair of axially spaced apart annular flow control grooves in the valve member forming a central spool valve element having left and right control edges located within the inlet chamber in the central fluid flow position and forming a first pair of left and right spool valve elements each having a first control edge respectively located within the left and right exit chambers, the left and right control edges on the central spool valve element respectively facing the first control edges on the first pair of left and right spool valve elements and defining a first pair of facing left and right control edges on opposite axial sides of the central spool valve element adapted to block fluid flow past the first pair of control lands between the inlet and exit chambers as the valve member is axially moved from the central fluid flow position to either the left or right fluid flow position;

a second pair of axially spaced apart annular fluid flow control grooves in the valve member forming ends of the first pair of left and right spool valve element and starts of a second pair of left and right spool valve elements, the starts of the second pair of spool valve elements having a set of control edges respectively facing a set of control edges on the ends of the first pair of spool valve elements, the two sets of control edges defining a second pair of facing left and right control edges, the ends of the first pair of spool valve elements blocking fluid flow past the second pair of control lands between the input and receiving chambers and the second pair of spool valve members blocking fluid flow past the third pair of control lands between the receiving and discharge chambers in the central fluid flow position, the second pair of facing control edges adapted to open fluid flow past one control land of the second pair of control lands on one side of the housing and to open fluid flow past one control land of the third pair of control lands on the other side of the housing and vice versa as the valve member is axially moved from the central fluid flow position to either the left or right fluid flow position;

first fluid metering means on one set of the first pair of facing control edges and second fluid metering means on both sets of the second pair of facing control edges for providing first and second primary restrictive flows respectively past one control land of the first pair of control lands and past the one control land of the second and third pairs of control lands and vice versa as the valve member is initially moved from the central fluid flow position towards either the left or right fluid flow position for reducing reactionary force exerted on the valve member by the momentum of the fluid flow between the inlet and exit chambers and between one input and one receiving chamber on one side of the housing and between the other receiving and one discharge chamber on the other side of the housing;

additional fluid metering means on the set of control edges of the center spool valve element for providing a secondary restrictive flow past the one control land of the first pair of control lands after the first fluid metering means is substantially blocked by said one control land upon continued movement of the valve member in the same axial direction, the additional fluid means having a channel of an axial length such that the secondary restrictive flow therethrough further balances the reactionary force produced on the valve member by the momentum of the second primary restrictive fluid flow past the one control land of the second pair of control lands on one side of the housing and past the one control land of the third pair of control lands on the other side of the housing.

4,122,869

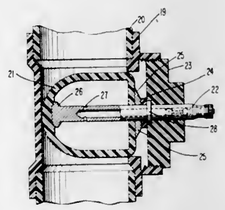
CLOSURE PLUG ASSEMBLY

Walter H. Roberson, Sr., 808 Second St., Altamonte Springs, Fla. 32701

Filed Nov. 12, 1976, Ser. No. 741,369

Int. Cl.[2] F16L *55/12*

U.S. Cl. 138—93 **18 Claims**



1. A closure plug test assembly for the pressure testing of a pipeline in liquid drain and vent systems having a tee or Y-test section with a test opening, said test assembly comprising:

(a) an inflatable body portion;

(b) a rigid holder portion having a hollow stem section and a cylindrical plug section having a structural configuration to engage said test opening,

(c) said hollow stem section havng an end portion which extends in a direction parallel to a longitudinal axis of the pipeline when the test assembly is disposed in the pipeline,

(d) tightening means for securing said cylindrical plug section engaged in place in said test section throughout the operation of the assembly,

(e) said tightening means including an outer threaded surface on said plug section and an inner threaded surface on said test opening into a drain or vent system for threaded engagement with respect to each other,

(f) stem end means for connecting the body portion to the holder portion, and

(g) valve means for inflating the body portion.

4,122,870

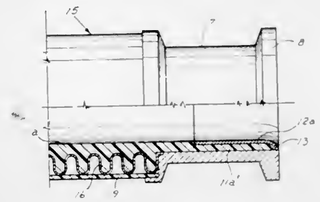
PROTECTIVE BUSHING TO ENCLOSE THE END OF A CONDUIT LINER

Vernon C. Hines, 1001 Tejon, Denver, Colo. 80204

Filed Dec. 8, 1976, Ser. No. 748,776

Int. Cl.[2] F16L *9/02*

U.S. Cl. 138—109 **3 Claims**



1. The combination of a uniform diameter conduit along its length having an essentially rigid metal, squared outer end, tubular end member and an elastomeric lining in said conduit terminating closely adjacent the tubular end member, and

(a) a uniform inner and outer diameter, smoothly belled flared end, rigid metal tubular bushing telescoped in said tubular end member, extending about the length of its diameter into said tubular end member and providing an annular space between the exterior of said bushing and the interior of the tubular end member,

(b) the flared end of said bushing being in snug fitting contact with said tubular end member, and

(c) said elastomeric lining being bonded to the interior of said tubular end member, completely filling said annular space and bonded to the exterior of said bushing, so as to provide no void spaces in said elastomeric filled annular space, and the interior diameter of said bushing being of the same interior diameter as the lining so as to form a smooth joint therebetween.

4,122,871

METHOD OF WEAVING AND APPARATUS THEREFOR

Thomas F. McGinley, 175 Prospect St., Phillipsburg, N.J. 08865

Filed Jul. 7, 1976, Ser. No. 703,307

Int. Cl.[2] D03D *47/00*

U.S. Cl. 139—11 **82 Claims**

1. A method of weaving which comprises the steps of

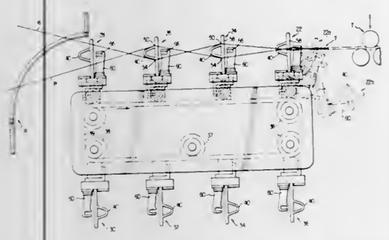
(a) forming a shed of warp members at a first location on a loom,

(b) inserting means into said shed to traverse said warp members and retain said sheds,

(c) moving said shed-retaining means and its associated shed

forwardly along said warp members in a substantially straight plane toward the fell of the woven product while concurrently and successively forming successive sheds at said first location,

(d) concurrently with said forward movement of said retaining means and shed, inserting retaining means successively into successive sheds at said first location to continuously retain one or more sheds having open weft-wise passageways traveling toward the fell of the woven product,



(e) inserting a weft member successively by weft-laying means into each of said sheds formed successively at said first location,

(f) removing said shed-retaining means from its shed-retaining position,

(g) and beating up said weft members into the fell of the woven product.

4,122,872

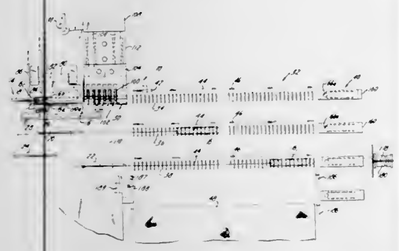
METHOD AND APPARATUS FOR INSERTING WEFT IN A WARP-WAVE WEAVING SYSTEM

Thomas F. McGinley, 175 Prospect St., Phillipsburg, N.J. 08865

Filed Oct. 4, 1976, Ser. No. 729,148

Int. Cl.² D03D *47/00*

U.S. Cl. 139—11 **67 Claims**



1. In a weaving loom utilizing a plurality of moving warp sheds, wherein the sheds move in the direction of the warp threads so that said sheds move in a longitudinal direction, the method of supplying and laying weft threads in each of said moving sheds comprising the steps of:

moving a gripper shuttle into a loading area on at least one side of said moving warp sheds,

supplying weft thread to said loading area from a plurality of stationary weft supply packages,

said gripper shuttle operating to grip said weft thread,

firing said gripper shuttle with the gripped weft thread through one of said moving warp sheds, said gripper shuttle being unconnected to said loom during its traversal through said one of said moving warp sheds, and

receiving and stopping said gripper shuttle at a receiving area on the other side of said moving warp sheds,

whereby weft thread is laid in said one of said moving warp sheds during the entire time said gripper shuttle traverses said moving warp shed.

4,122,873

CONTROL MEANS FOR CONTROLLING THE WARP LET-OFF OF A WEAVING MACHINE

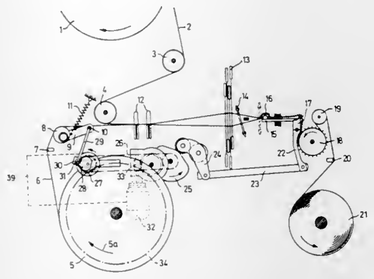
Erwin Pfarrwaller, Winterthur, and Eberhard Seifert, Sulz-Attikon, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 26, 1977, Ser. No. 836,359

Claims priority, application Switzerland, Sep. 27, 1976, 12184/76

Int. Cl.² D03D *49/10*

U.S. Cl. 139—110 **18 Claims**



1. In a weaving machine, the combination comprising

a machine drive;

a warp beam drive for rotating a warp beam in an incremental motion; and

a control means for controlling said warp beam drive, said control means including

a movably mounted detector responsive to a change in warp tension,

a pulse transmitter adapted to move in synchronism with a weaving cycle of said machine drive and in relative relation with said detector,

at least one sensing surface of variable shape on one of said detector and transmitter, and

a sensing element on the other of said detector and transmitter disposed to travel over said sensing surface to emit a pulse to said warp beam drive for stepping said warp beam, said pulse corresponding to the operative distance which said sensing element travels over said sensing surface whereby said pulse is variable in time-of-occurrence and in duration.

4,122,874

APPARATUS FOR STRAIGHTENING THE LEADS OF DUAL IN-LINE PACKAGES

Clifford Alan Tyner, 73 Peter, Campbell, Calif. 95008, and Dean Lee Westbrook, 377 Jai Dr., San Jose, Calif. 94086

Filed Jun. 14, 1976, Ser. No. 695,750

Int. Cl.² B21F *1/02*

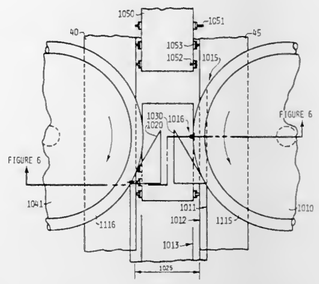
U.S. Cl. 140—147 **12 Claims**

1. Apparatus for straightening lead tips of a moving Dual In-Line Packaged (DIP) electronics device having a body and leads with shoulder and tip portions comprising:

guiding means having members forming a channel disposed to receive a DIP device having lead tips oriented in a generally upward position for guiding the body of the DIP device along a path as it moves by applying biasing force to the shoulder portions of the leads;

a pair of wheels disposed about the path for engaging the lead tips of a DIP device moving along the path and bending the lead tips toward the center of the path as the DIP device moves along the path; and

biasing means disposed along the path for bending the lead tips of a DIP device away from the center of the path by



applying a bias force to the tips as the DIP device moves along the path.

4,122,875

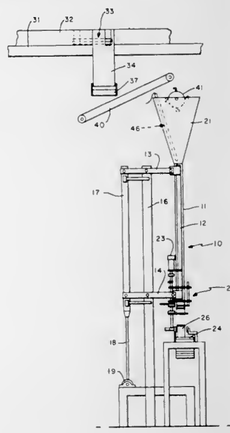
CAN FILLING APPARATUS AND METHODS AND APPARATUS AND METHODS FOR CONVEYING AND CONTROLLING THE FEEDING OF WET MATERIALS

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Mar. 30, 1977, Ser. No. 782,924

Int. Cl.² B65B *1/08*

U.S. Cl. 141—11 **10 Claims**



10. In a method for conveying wet material and for introducing measured amounts of such material into cans, the method making use of an upright tube having its upper open end communicating with a feed hopper for receiving moist material and having means at the lower end of the tube for continually severing measured amounts of the material, a conveyor belt being employed for moving the wet material in one direction to a region at a level above the upper end of the tube, the method comprising diverting wet material from one side of the conveyor belt, receiving the diverted material in an upright surge hopper, feeding the wet material from the lower end of the surge hopper to the region above the feed hopper and then dropping the material into the feed hopper whereby a column of the material is maintained within the tube in which the wet material is diverted from the moving conveyer belt by positioning at least two rollers across the upwardly faced run of the conveyer with the rollers being in parallel relationship and in close juxtaposition with the lowermost roller being in contact with the upper surface of the conveyer belt, the rollers extending at an angle across the conveyer belt that is less than 90° to form a barrier extending across the conveyer, and driving the rollers in the same direction of rotation, the direction of rotation being such that the lower peripheral surface of the lowermost roller turns in a direction opposite to the direction of movement of the conveyer belt.

4,122,876

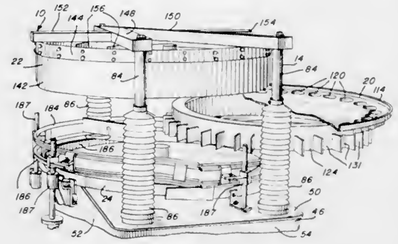
APPARATUS FOR FILLING CONTAINERS

John C. Nalbach, La Grange Park, Ill., assignor to John R. Nalbach Engineering Co., Inc., Chicago, Ill.

Filed Sep. 30, 1977, Ser. No. 838,311

Int. Cl.² B65B *43/50*

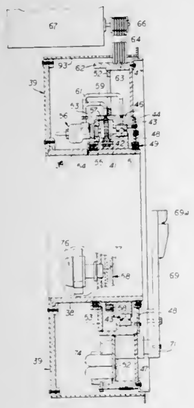
U.S. Cl. 141—150 **14 Claims**



1. An apparatus for filling like containers with a like amount of divided material, comprising: a base; a drive mounted on said base; a material reservoir for holding divided material connected to said base; a plurality of interchangeable rotary dispensers, each of said rotary dispensers being adapted for driving connection to the drive and to receive divided material from the reservoir when connected to the drive, each of said interchangeable rotary dispensers being adapted to receive removably a container of a given size different from the size container receivable by each of the other rotary dispensers of the plurality, each interchangeble rotary dispenser having a circular portion having a plurality of radially mounted vanes on its outer periphery and being spaced an equal distance from adjacent vanes on the circular portion, each of said vanes being relatively thin at its outer edge, the vanes of each of the interchangeable rotary dispensers being spaced apart from each other a distance sufficiently great to receive a container of a given size different from the container received between the vanes of each of the other interchangeable rotary dispensers of the plurality to hold the containers in a portion of a circle, a filler tube positioned between each pair of vanes, each of the filler tubes of one rotary dispenser being identical to each other filler tube of that rotary dispenser and different than the filler tubes on each of the other rotary dispensers of the plurality, each of said filler tubes being adapted to deliver a predetermined amount of divided material into a container of a given size held between its respective vanes, a selected one of said interchangeable rotary dispensers being drivingly connected to the drive and being rotatably positioned below the material reservoir to rotate relative to the material reservoir to receive said divided material into its respective filler tubes from the material reservoir while the remainder of the rotary dispensers of the plurality are disposed in an inoperative attitude; and a feed connected to the base to deliver empty like-sized containers to the selected rotary dispenser connected to the drive, whereby said selected one of said rotary dispensers being drivingly connected to the drive below the material reservoir to receive a maximum number of containers of a given size may be disconnected from the drive and removed from below the material reservoir and replaced by another one of the plurality of rotary dispensers to be connected to the drive below the

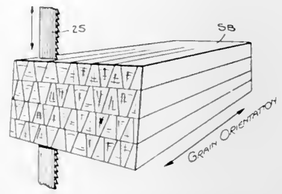
material reservoir to receive a maximum number of containers of another size.

4,122,877
RING TYPE DEBARKER
Bob R. Smith, 445 Sun Valley Rd., Birmingham, Ala. 35215; Harold L. West, Rte. 1, Box 297, Leeds, Ala. 35094; Thomas L. Bray, 452 Crest Dr., Birmingham, Ala. 35209, and Robert H. Wilder, Sr., 1141 Lay Dr., Birmingham, Ala. 35215
Filed Jul. 5, 1977, Ser. No. 812,909
Int. Cl.[2] B27L *1/00*
U.S. Cl. 144—208 E 5 Claims



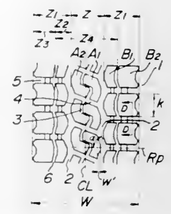
1. In a ring type debarker,
(a) a centrally disposed tube-like support member with its longitudinal axis lying substantially horizontally and having an internal diameter sufficient to permit logs to be fed into an infeed end thereof and discharged from an outfeed end thereof,
(b) means connected to the support member adjacent the outfeed end thereof for supporting the same,
(c) a debarker arm carrying member mounted for rotation relative to the support member,
(d) a plurality of debarker arms pivotally mounted on the arm carrying member adapted to engage and debark a log while passing through the support member,
(e) fluid pressure responsive operators associated with each of said arms effective when pressurized to bias the arms into debarking contact with a log passing through the apparatus,
(f) a pump for supplying fluid under pressure to said fluid pressure responsive means, said pump being mounted on and rotatable with the arm carrying member,
(g) an annular gear associated with the support member and having its teeth on the outer circumference thereof,
(h) a pinion carried by the pump and meshing with said gear, whereby rotation of the pump with the arm carrying member drives the pump,
(i) a belt sheave on the outer surface of the arm carrying member, and
(j) a motor and belt operative through said sheave to rotate the arm carrying member.

4,122,878
TECHNIQUE FOR CONVERTING BALSA LOGS INTO PANELS
Jean Kohn, New York, N.Y., assignor to Baltek Corporation, Northvale, N.J.
Filed Dec. 14, 1977, Ser. No. 860,617
Int. Cl.[2] B27D *1/00*; B27F *7/00*; B32B *31/00*
U.S. Cl. 144—316 14 Claims



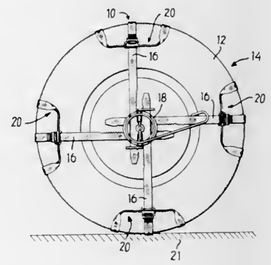
1. A high yield technique for converting logs of different diameter into large rectangular panels, said technique comprising the steps of:
A. radially cutting each log into a plurality of sectors having the same apex angle;
B. longitudinally cutting each sector both at its apex and at its arc to form a truncated feedstock piece whose cross-sectional geometry is that of an isosceles trapezoid, all feedstock pieces having the same base angles and a variable width depending on the diameter of the logs from which they are derived;
C. fitting together pieces in a complementary manner to create layers thereof which are superposed in a stack to define a dry block assembly;
D. wet-coating the feedstock pieces in the dry block assembly with a curable adhesive to form a wet block assembly;
E. subjecting the wet block assembly to compression in orthogonal directions for a period sufficient to cure the adhesive and to interlaminate the feedstock pieces to produce an integrated stock block; and
F. dividing the block into panels.

4,122,879
HEAVY DUTY PNEUMATIC RADIAL TIRE
Hiroyoshi Takigawa, Higashi-Murayama; Shigeo Watanabe, Kokubunji; Shigeta Aoki, Higashi-Murayama, and Hiroshi Ogawa, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Mar. 15, 1977, Ser. No. 777,875
Claims priority, application Japan, Mar. 24, 1976, 51-32128
Int. Cl.[2] B60C *11/04*
U.S. Cl. 152—209 R 10 Claims



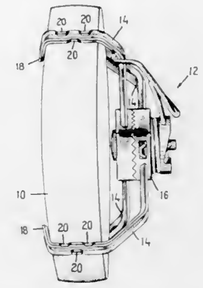
1. In a heavy duty pneumatic radial tire having an all-weather type tread pattern formed in a tread divided into a central zone and peripheral zones on both sides thereof by two main, continuous, circumferential zigzag grooves formed on both sides of an equatorial line of the tire, said central zone comprising a plurality of central blocks disposed in two rows divided by segment grooves along said equatorial line and a number of dividing grooves extending between said main grooves, each of said peripheral zones being circumferentially divided into blocks in the form of arrow feathers directed toward said equatorial line by traverse grooves communicating with said main groove at extended portions thereof opposite said equatorial line, and each of said peripheral zones being further divided by a further continuous zigzag groove substantially circumferentially parallel with said main grooves into a plurality of inner and outer peripheral blocks disposed in two rows, the improvement comprising:
(a) the distance between said main grooves being 25–38% of the overall width of the tread,
(b) the oblique zigzag angle α of said main grooves being 55°–78° relative to the axial direction of said tire,
(c) the walls of said traverse grooves being inclined at an angle β of 20°–40° relative to a cross-sectional center line of the traverse groove and extending to a depth from the outer surfaces of said blocks of at least 20% of the depth of said traverse grooves,
(d) the ratio of total area of the blocks in said central zone to that in one of said peripheral zones being 1:1.0 to 1:1.5, and
(e) the ratio of the total areas of said inner and outer peripheral blocks being 1:1.5 to 1:2.5.

4,122,880
AUXILIARY GRIPPING MEMBERS FOR GRIPPING SHOES FOR VEHICLE WHEELS
Egil Hyggen, Oslo, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway
Filed Mar. 30, 1977, Ser. No. 782,828
Claims priority, application Norway, Apr. 7, 1976, 761185
Int. Cl.[2] B60C *27/04*
U.S. Cl. 152—216 6 Claims



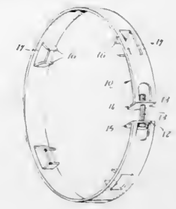
1. In a gripping shoe assembly for vehicle wheels comprising a plurality of J-shaped gripping members and a central housing having means for drawing said plurality of J-shaped gripping members snugly about a vehicle tire, each said J-shaped member comprising a long leg and a short leg and a traction member connecting said long leg and said short, the improvement comprising an auxiliary gripping member attached to at least one said J-shaped gripping member, said auxiliary gripping member comprising at least two traction members and a connecting member therebetween, a U-shaped member attached to approximately the center of said connecting member, a slot in said U-shaped member, said long leg fitting into said slot, the ends of said slot bearing against a first face of said long leg and part of said U-shaped member projecting past the second face of said long leg, a plurality of alternating corrugations on both faces of said long leg, the ends of said slot being placed against the corrugations on the first face of said long leg and affixed there by means of a pin-like member which passes between the second face of the long leg and the U-shaped member, said pin engaging at least one of said corrugations on the second face of said long leg to fixedly position the auxiliary gripping member.

4,122,881
GRIPPING SHOES FOR VEHICLE WHEELS
Egil Hyggen, Oslo, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway
Filed Mar. 30, 1977, Ser. No. 782,827
Claims priority, application Norway, Apr. 7, 1976, 761184
Int. Cl.[2] B60C *27/04*
U.S. Cl. 152—216 1 Claim



1. In a gripping shoe for vehicle wheels comprising a plurality of J-shaped gripping members and a central housing having means for drawing said plurality of J-shaped gripping members snugly about a vehicle tire, the improvement comprising said J-shaped gripping members having a uniform U-shape cross section throughout their length with the legs of said U-shape cross section protruding outwardly, the legs of said U-shape cross section at least in the area of said gripping member which engages the ground being wavy and the waves on one leg of the U-shape cross section being offset from the waves on the other leg of the U-shape cross section being offset from the waves on the other leg of the U-shape cross section whereby sideways sliding is resisted.

4,122,882
WHEEL RIM
Peter M. Fisher, Semington, and James A. Matsumiya, London, both of England, assignors to TSB International N.V., Curacao, Netherlands Antilles
Continuation of Ser. No. 572,627, Apr. 28, 1975, abandoned.
This application Nov. 22, 1976, Ser. No. 744,156
Int. Cl.[2] B60B *21/00*
U.S. Cl. 152—381.2 WC 7 Claims



7. An obstructor for a wheel rim having an axis, a cylindrical base coaxial with the axis of the rim and having a predetermined diameter, an annular flange extending outwardly from each axial side of the base, spaced-apart annular seats for respective beads of an inextensible bead tubeless pneumatic tire on the base respectively adjacent each flange, an annular well in the base axially between the bead seats and projecting radially inwardly of the bead seats, the well being any one of a plurality of different size wells in a said rim and having side walls and a well base the dimensions of which determine the size of the well, being adapted to obstruct any one of a plurality of different size wells in wheel rims having a cylindrical base of

a substantially common diameter, the obstructor comprising a band having an axial width less than the distance between the bead seats and ends disposed adjacent one another, the band being of inextensible material and having a thickness which is a fraction of the depth of the well, the band being positionable around the rim to lie at the mouth of the well and extending across the well and free of the bead seats, the obstructor further comprising retaining means independent of the presence, position or condition of inflation of any tire on the rim, the retaining means being directed tangentially to the axis of the rim and acting between adjacent ends of the band to draw them together and hold the band in tension positively against radial or circumferential expansion, the obstructor further comprising lugs disposed at an angle to the band and directed along the width of the band, spaced apart from one another circumferentially of the band to be substantially opposed to each other across the rim when positioned around the rim, the lugs having a thickness which is a fraction of the depth of the well and projecting radially inwardly of the band and lying radially between the level of the band and the level of the base when the obstructor is mounted at the mouth of the well, edges of the lugs being adapted to delimit a position of the obstructor relative to the rim in at least the axial direction, whereby the band is adapted to be held coaxially with the rim at the mouth of any one of a plurality of different size wells in a wheel rim having a cylindrical base of a substantially common predetermined diameter, to deny access to any substantial part of the circumferential length of the well to the beads of any tire on the rim.

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TIRE FITTING APPARATUS

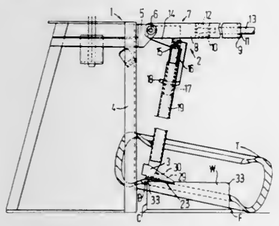
John F. Askam, Sutton Coldfield, England, assignor to Dunlop Limited, England

Continuation of Ser. No. 563,829, Mar. 31, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,922

Claims priority, application United Kingdom, Apr. 6, 1974, 15364/74

Int. Cl.[2] **B60C** *25/06*

U.S. Cl. 157—1.17 **7 Claims**



1. A tire fitting apparatus comprising: force applying means connected to a support, a flat arcuate plate and a shank extending from one side of said plate substantially perpendicular to the plane thereof and pivotally connected to said force-applying means, two end surfaces, one at each end of the plate, and a central surface disposed between said two surfaces being provided on the other side of the plate, the two end surfaces being co-planar, the common plane being parallel to and spaced apart from the plane of the central surface and being further from said one side than the plane of the central surface, and a surface for engagement with a wheel rim said surface being inclined to the length of the shank, the direction of inclination being such that a part of the surface further from the plate is nearer to the center of curvature of an edge of the plate in a radial sense than a part of the surface nearer to the plate said surface being on the shank and generally facing said center of curvature.

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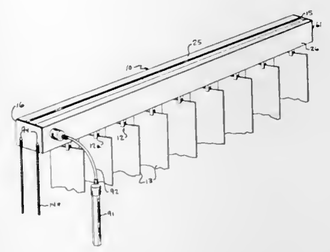
VERTICAL VENETIAN BLIND CONSTRUCTION

Ferdinand F. Salzmann, Middleton, Wis., assignor to Consolidated Foods Corporation, Chicago, Ill.

Filed Jan. 24, 1977, Ser. No. 762,197

Int. Cl.[2] **E06B** *9/30*

U.S. Cl. 160—168 R **17 Claims**



1. In a vertical venetian blind closure of the type including a horizontal carriage guide channel having an opening along one side, a plurality of carriages mounted on the guide channel for movement therealong, a slat carrier mounted on each of said carriages for rotation relative thereto about an upright carrier axis, a splined shaft extending lengthwise of said channel, and gear means on each of said carriages engaging said splined shaft for turning the slat carriers about their upright axes in response to turning of the splined shaft, the improvement comprising: said carriages each having spaced side walls extending transverse to the channel and a bottom wall extending between the side walls adjacent the open side of the channel, the bottom wall having a carrier opening to allow the slat carrier to extend therethrough and said side walls having aligned shaft openings for the passage of said splined shaft therethrough, said gear means including a carrier pinion on each slat carrier coaxial with its upright axis and a rack member having a first rack adapted to mesh with the splined shaft and a second rack in a plane transverse to the first rack and adapted to mesh with the carrier pinion, said carriages having passage means between the side walls extending from the bottom wall and opening at the top of the carriage, said passage means being shaped to allow insertion of the slat carrier and rack member as a subassembly into the carriage from the top thereof and to laterally retain the rack member with the second rack in meshing engagement with the carrier pinion during and after insertion of the subassembly into the carrier, said carrier opening being non-circular and said slat carrier having a non-circular end portion adapted to be slidably and non-rotatably received in said carrier opening in a preselected angular position and an intermediate portion between the end portion and the carrier pinion dimensioned to allow rotation of the slat carrier after it is inserted in the carriage, said passage means having upright wall portions intermediate said side walls and engageable with the ends of the rack member to longitudinally position the rack member during insertion into the carriage, and said upright wall portions having their lower ends spaced above said bottom wall to allow lengthwise reciprocation of the rack member after it is inserted in the carriage, and each slot carrier and rack members having interengaging means for inhibiting relative movement of the rack member and slat carrier in a direction paralleling the slat carrier axis during and after insertion of the subassembly into carrier.

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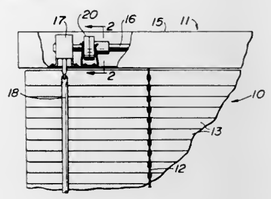
VENETIAN BLIND TILTER CLUTCH

Anthony F. Marotto, Philadelphia, Pa., assignor to Marathon Manufacturing Company, Houston, Tex.

Filed Nov. 7, 1977, Ser. No. 849,415

Int. Cl.[2] **E06B** *9/26*

U.S. Cl. 160—176 R **9 Claims**



1. The combination with a venetian blind including a rotary tilt rod for tilting slats and operating means for rotating said tilt rod, of coupling means interposed between said operating means and tilt rod, said coupling means comprising a drive element nonrotatably connected to said operating means for rotation therewith, a driven element nonrotatably connected to said tilt rod for rotation with the latter, separable interfitting formations on said drive and driven elements configured to effect driving engagement and urging said formations apart when in their interfitting relation and driving engagement, and resilient spring clip means of predetermined spring constant embracingly astride said drive and driven elements and urging said formations toward their interfitting relation, for driving said tilt rod by said operating means at a less than predetermined value of tilt rod resistance and disengaging said tilt rod from said operating means at a tilt rod resistance greater than said predetermined value.

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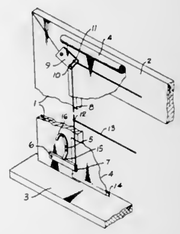
WINDOW SHADE TIE-DOWN SYSTEMS

Allen H. Marangoni, 3661 N. Decatur Rd., Decatur, Ga. 30031

Filed Feb. 17, 1977, Ser. No. 769,719

Int. Cl.[2] **E06B** *9/20*

U.S. Cl. 160—269 **3 Claims**



1. A tie-down system for holding the top and side edges of a shade to the top and sides of a window frame and with said tie-down system comprising a pair of brackets mounted to opposed upper corners of the window frame with portions of said brackets bearing cord guides overlaying the side of the shade distal said frame; a pair of clasps mounted to opposed lower corner of the window frame aside and straddling the shade; a pair of swing arms pivotably mounted to opposed lower corner of the window frame overlaying the side of said shade distal said window frame for movement into and out of locking engagement with said clasps; and flexible cord means extending between said swing arms through said pair of bracket cord guides.

4,122,887

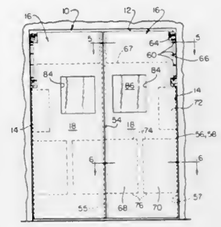
FLEXIBLE CURTAIN

Edmund J. Dussault, Shirley; August J. Kochis, Concord, and Arthur A. Cross, Arlington, all of Mass., assignors to Eckel Industries, Inc., Cambridge, Mass.

Filed May 24, 1977, Ser. No. 799,949

Int. Cl.[2] **A47H** *23/00*

U.S. Cl. 160—354 **8 Claims**



1. A closure apparatus comprising:
a vertical post;
means for rotatably mounting said post;
a first split sleeve coaxially mounted on said post so as to rotate therewith;
a second split sleeve positioned at right angles to said post and mounted to rotate therewith;
each of said sleeves including a pair of substantially parallel flanges, each of said flange pairs being substantially coextensive in length with its corresponding sleeve;
a flat bracing panel including first and second mutually perpendicular edges positioned between the flanges of said first and second sleeves respectively, said panel edges being at least partially coextensive with the length of the corresponding flange pairs, said flange pairs being fastened to said panel at spaced points along said edges;
a curtain including a pliant material folded on itself into at least a pair of layers and terminating in a pair of free edges opposite the fold of said material substantially parallel to said post;
said layers being formed into a pocket closed at the top and open at said free curtain edges and adapted to receive said second sleeve and said flat bracing panel;
said curtain being disposed so that said second sleeve and said bracing panel extend into said pocket; and
cooperating snaps disposed on said free curtain edges for removably fastening said free curtain edges around said first sleeve and said post.

4,122,888

METHOD OF GUIDING A CAST STRAND AND ARRANGEMENT FOR CARRYING OUT THE METHOD

Othmar Pühringer, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Apr. 27, 1976, Ser. No. 680,752

Claims priority, application Austria, Apr. 30, 1975, 3321/75

Int. Cl.[2] **B22D** *11/128*

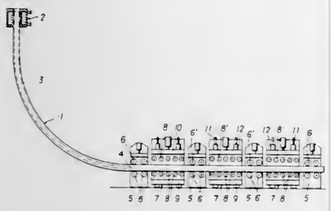
U.S. Cl. 164—82 **6 Claims**

1. In a method of guiding a cast strand which is extracted from a mold and is horizontally deflected toward a horizontal guiding path when still having a liquid core by using pairs of opposing driving rollers that are pressure-adjustable to the surface of the strand and by using pairs of opposing supporting rollers having a distance therebetween that is adjustable by form-locking connection means, the improvement comprising the step of releasing the form-locking connection means between the pairs of supporting rollers from a place in the horizontal guiding path where the strand has entirely solidified to the end of said guiding path so that the strand is only supported by the supporting rollers on its lower side while the pairs of

driving rollers remain in engagement on both sides of the strand.

4. An arrangement for guiding a cast strand extracted from a mould and horizontally deflected toward a horizontal guiding path while still having a liquid core, comprising

driving roller stands located along said horizontal guiding path and having two pairs of opposing driving rollers each, said driving roller stands being adjustable to the surface of the strand under pressure;



supporting roller stands in alternating arrangement with said driving roller stands along said horizontal guiding path and having at least five pairs of opposing upper and lower supporting rollers each, which rollers support the upper and lower sides of the strand, respectively; and

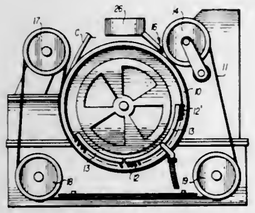
adjustable form-locking connection means for establishing the distance between said upper and lower supporting rollers said connection means being releasable for freeing from load the upper supporting rollers.

4,122,889

COOLING OF CONTINUOUSLY CAST BAR BY HYDRAULIC BAND LIFTING

Roy Richards, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Apr. 1, 1977, Ser. No. 783,580
Int. Cl.[2] B22D *11/06*
U.S. Cl. 164—87 **12 Claims**



1. In a wheel-band type continuous casting machine for casting molten metal into continuous cast bar, comprising a rotatable casting wheel having a groove formed in the periphery thereof which is closed over a portion of its length by an endless flexible metal band to form an arcuate mold having an inlet and an outlet, means for pouring molten metal into the inlet of the mold, means for cooling the molten metal in the mold to solidify the same in successive stages into cast bar, means for extracting the cast bar from the outlet of the mold, and wherein along a portion of the length of said arcuate mold the at least partially solidified cast bar shrinks away from the walls of the mold thus forming a gap therebetween;

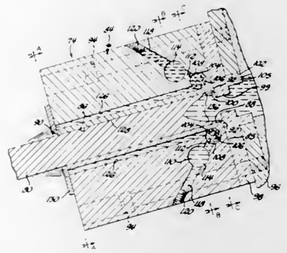
the improvement comprising means disposed in the region of said portion of the length of said arcuate mold for urging the at least partially solidified cast bar radially inwardly into contact with the walls of the casting groove so as to substantially close the gap therein and promote conduction heat transfer therebetween, wherein said urging means includes means for removing the band from a portion of the periphery of the casting wheel along a given segment of the arcuate length thereof disposed between the inlet and outlet of said mold, while maintaining said band in sealing contact with the periphery of the casting wheel over a substantial segment of the arcuate mold extending from each of the inlet and outlet, respectively, toward said given segment, and means for spraying a fluid jet into said arcuate mold in the region of said given segment between the cast bar and said band, said fluid jet exerting a pressure against the cast bar to force the same into contact with the walls of the casting groove.

4,122,890

NOZZLE FOR THE CONTINUOUS CASTING OF LEAD

Larry P. Atkins, Daleville, and James R. Bish, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1977, Ser. No. 819,896
Int. Cl.[2] B22D *11/124, 11/10*
U.S. Cl. 164—444 **3 Claims**



1. A nozzle for continuously casting lead strip from a lead melt, said nozzle being adapted for cooling with a coolant readily vaporizable at the melting temperature of the lead and comprising: a metal body defining an open-ended mold cavity having a melt inlet and a strip outlet; a first cooling channel formed in said body at and circumscribing said inlet, said channel having a hot surface closest to the melt in the inlet and a colder surface opposite said hot surface; a second cooling channel in said body generally paralleling said first channel near the cold surface thereof for supplying said coolant under pressure to said first channel; means for supplying said second cooling channel with coolant, under pressure; and a plurality of ports intermittantly interconnecting said channels along substantially the full lengths thereof and through said cold surface, and being adapted to direct high velocity streams of said coolant against said hot surface to purge said hot surface of any vapor films formed thereon.

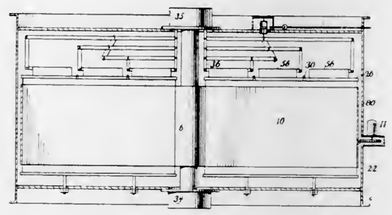
4,122,891

SECTOR PLATE SUPPORT

Roderick J. Baker, Belmont, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,533
Int. Cl.[2] F28D *19/00*
U.S. Cl. 165—9 **5 Claims**

1. Rotary regenerative heat exchange apparatus having a rotor including a central rotor post and a concentric rotor shell spaced therefrom to provide an annular space therebetween, a mass of heat absorbent material carried in the space between the rotor post and the rotor shell, a housing surrounding the rotor in spaced relation including inlet and outlet ducts at opposite ends thereof for a heating fluid and for a fluid to be heated, a support bearing at one end of the rotor adapted to support the rotor for rotation about its axis, a guide bearing at the opposite end of the rotor adapted to preclude radial movement of the rotor post, means for rotating the rotor about its axis, an articulated sector plate having radially adjacent plane sections pivotally joined to separate the heating fluid from the fluid to be heated, axially disposed support means adjacent the rotor post movable in response to axial expansion of the rotor post, an actuator for each section of the sector plate comprising



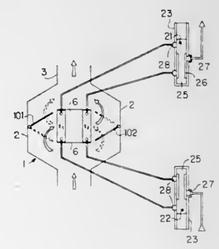
a lever extending radially outward from the axial support means, a pivotal linkage connecting each lever to the support means and to an independent section of the sector plate, and a fulcrum for each lever actuator mounted on said housing to provide an axial movement to each section of the sector plate in response to axial movement of the rotor post.

4,122,892

DEVICES FOR HEATING PREMISES BY THE USE OF HEAT PUMPS AND METHOD THEREFOR

Jean-Charlemagne Delaporte, Saint Bruno de Montarville, Canada, assignor to S.A. dite Compagnie Generale de Chauffe, Saint Andre, France

Filed Oct. 7, 1976, Ser. No. 730,454
Claims priority, application France, Oct. 16, 1975, 75 32232
Int. Cl.[2] F25D *21/12*
U.S. Cl. 165—12 **10 Claims**



1. An improved device for and in combination with heating premises utilizing a heat pump, comprising

premises to be heated,

at least two evaporators mounted adjacent the premises and having refrigeration fluid circulating therethrough when activated, respectively,

means for continuously directing air withdrawn from the premises at a temperature higher than 0° C onto both of said evaporators in sequence one after the other for cooling the air, said two evaporators being arranged in series with respect to the flow of the air and recovering heat energy from the air withdrawn from the premises, said means including means for reversing the sequence of the flow of the air onto said evaporators,

a separate heating fluid means for heating the premises,

condenser means operatively connected to said evaporators in communication with the refrigeration fluid for reheating the separate heating fluid means used for heating the premises by the recovered heat from the air being transferred to the heating fluid means via the refrigeration fluid,

means for operating each of said evaporators in cycles one at a time while the other of said evaporators is inactivated,

and with reversal of the sequence of the flow of the air onto said evaporators for simultaneously effecting a reversal in the operative and inactivated conditions of said evaporators, respectively, such that said first-mentioned operative evaporator simultaneously with the reversal of the sequence of flow of the air is momentarily and completely inactivated totally stopping circulation of refrigeration fluid therethrough and activating said other evaporator, initially with the air withdrawn from the premises being directed first onto one of said evaporators and in sequence then onto another of said evaporators, while said one evaporator is inactivated with no refrigeration fluid therethrough and said another evaporator is activated with circulation of the refrigeration fluid therethrough, with the air defrosting said one evaporator and being cooled and expelled at a temperature lower than normal such that said another evaporator becomes frosted, such that the reversing of the activated and inactivated conditions of said evaporators, respectively, as well as the reversing of the sequence of the flow of air to be cooled and expelled being effected as soon as the activated said another evaporator becomes covered with frost and said one evaporator is defrosted, thereupon reversing the sequence of the air flow, inactivating said another evaporator totally stopping the circulation of refrigeration fluid therethrough and activating said one evaporator, and so on cyclically, all reversals and operational conditions being effected continuously without interruption without other change in the operation of the refrigeration, in the heating fluids and in intake of the air, and also without any effect on the temperature of the heating fluid means, the defrosting of the inactivated evaporator being effected by the heat alone contained in the air withdrawn from the premises, ensuring per se only the heating of the premises due to removal of considerable quantities of heat from the air, by considerably lowering its temperature,

said means for reversing the sequence of the flow of air completely over each of the evaporators constitute swinging flap valves adjacent each of said evaporators,

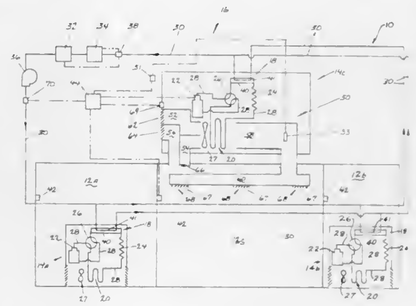
said reversing means for simultaneously swinging said flap valves in opposed directions up to opposite respective ends of the evaporators, so as to allow the air to completely pass over the evaporators in respective sequence.

4,122,893

AIR CONDITIONING SYSTEM

Roger L. Thompson, Sherrard, Ill., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Mar. 7, 1977, Ser. No. 774,585
Int. Cl.[2] F25B *29/00*
U.S. Cl. 165—16 **10 Claims**



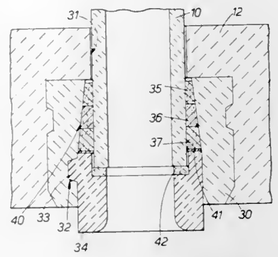
1. A heating and cooling system for controlling the air temperature within a plurality of zones in a multi-zoned building, the system comprising:

(a) at least one reversible cycle air cooling and heating unit for heating and cooling the air in each zone, each reversible cycle unit comprising:
at least one refrigerant-water contacted coil;
at least one refrigerant-air contacted coil;
a refrigerant compressor;
refrigerant expansion means;
refrigerant flow control means operable to selectively cause the refrigerant-air contacted coil to function as a refrigerant condensor and the refrigerant-water contacted coil to function as a refrigerant evaporator, or cause the refrigerant-air contacted coil to function as a refrigerant evaporator and the refrigerant-water contacted coil to function as a refrigerant condensor;
a refrigerant carrying conduit providing a closed path for refrigerant between the refrigerant-water contacted coil, the refrigerant-air contacted coil, the compressor, refrigerant expansion means, and refrigerant control means; and,
(b) a water carrying closed loop circulation circuit connected with the refrigerant-water contacted coil of each reversible cycle air heating and cooling unit of the system so that the water flowing from the closed loop circuit through the refrigerant-water contacted coils functioning as refrigerant condensors extracts heat from the refrigerant flowing through the refrigerant-water contacted coil and the extracted heat accumulates in the water flowing in the closed loop circuit, and so that the water flowing from the closed loop circuit through the refrigerant-water contacted coils functioning as refrigerant evaporators yields heat to the refrigerant flowing through the refrigerant-water contacted coils;
(c) energy economizer means comprising:
means for selectively preventing activation of the the refrigerant compressor of at least one preselected reversible cycle units when the temperature of the water in the water carrying closed loop circulation circuit is above a predetermined water temperature value, when the out-of-doors air temperature is lower than the air temperature in the zone served by the preselected reversible cycle unit, and when the zone air temperature is above a predetermined zone air temperature value;
means for selectively passing an appropriate volume rate of flow of out-of-doors air through the refrigerant-air contacted coil of the at least one preselected reversible cycle unit and into the zone served by the preselected reversible cycle unit to cool the zone air to the predetermined zone air temperature value; and,
(d) economizer override means comprising:
means for selectively activating the refrigerant compressor of the at least one preselected reversible cycle unit when the temperature of the water in the water carrying closed loop circulation circuit is below the predetermined water temperature value regardless of whether the out-of-doors air temperature is lower than the temperature in the zone served by the preselected reversible cycle unit, and when the air temperature in the zone served by the preselected reversible unit is above the predetermined zone temperature value; and,
means for selectively reducing the volume rate of flow of out-of-doors air through the refrigerant-air contacted coil of the at least one preselected reversible cycle unit and into the zone served by the preselected reversible cycle unit to a value whereat it is no longer adequate to cool the zone air to the predetermined zone air temperature value so that heat is extracted from the air passing through the refrigerant-air contacted coil by the refrigerant passing therethrough and subsequently extracted from the refrigerant by the water passing through the refrigerant-water contacted coil to heat the water flowing in the closed loop circulation circuit back to at least the predetermined water temperature value.

4,122,894
TUBE MOUNTING MEANS FOR A CERAMIC RECUPERATOR

William R. Laws, Worcester Park, and David A. Winkworth, Aldershot, both of England, assignors to British Steel Corporation, London, England

Continuation of Ser. No. 574,704, May 5, 1975, abandoned. This application Feb. 11, 1977, Ser. No. 767,802
Claims priority, application United Kingdom, May 13, 1974, 20998/74
Int. Cl.[2] F28F *9/08, 21/04;* **F16L** *5/02*
U.S. Cl. 165—76 **9 Claims**



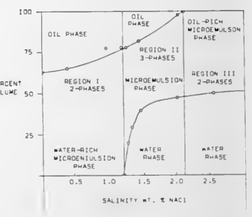
1. A recuperator including refractory walls, at least one horizontal ceramic tube located at each of its ends in tapered bores in opposite vertical refractory walls of the recuperator, such bores having sidewalls which have their minimum diameters located away from the ends of the tube, a plurality of annular seals extending between the outer circumferential surface of the end portion of each tube and the corresponding bore, each seal being comprised of a plurality of separate rings having outside diameters that are progressively larger in diameter towards the ends of the tube and being formed of fibrous refractory material, said rings being in individually precompressed condition between the respective sidewall of the bore and the tube circumferential surface, and means held in place by engagement with each recuperator wall for preventing the precompressed rings from expanding in a direction parallel to each tube to thereby maintain the rings in precompressed condition between each bore sidewall and adjacent tube circumferential surface, said means for preventing the precompressed rings from expanding being formed in a single piece wholly from ceramic material.

4,122,895
CORRELATION OF WEIGHTED EFFECT OF DIFFERENT IONS AND SURFACTANT COMPOSITION FOR SURFACTANT FLOOD

Donald M. Sitton, and Ronald E. Terry, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 6, 1977, Ser. No. 804,122
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—252 **28 Claims**

1. A method for forming a surfactant system comprising a surfactant, a cosurfactant and brine, said method comprising
(a) analyzing water available for said system for Na^+, Ca^{++}, and Mg^{++};
(b) forming said brine with a Na^+ weight equivalent concentration equal to the actual weight percent Na^+ concentration plus about 14 times the Ca^{++} concentration plus about 16 times the Mg^{++} concentration, which puts the system in the three-phase region of a phase volume diagram of said system equilibrated with oil corresponding to that to be produced, or at least immediately adjacent to



said three-phase region in systems exhibiting said three-phase behavior over a narrow range of salinity.

4,122,896
ACIDIZING CARBONATE RESERVOIRS WITH CHLOROCARBOXYLIC ACID SALT SOLUTIONS

Ronald F. Scheuerman; Edwin A. Richardson, and Charles C. Templeton, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 14, 1977, Ser. No. 842,204
Int. Cl.[2] E21B *43/27*
U.S. Cl. 166—250 **14 Claims**

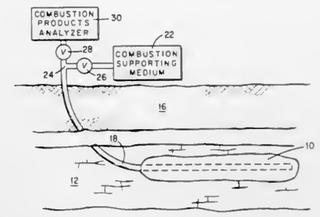
1. A process for relatively slowly acidizing a carbonate material in or around a well that communicates with a subterranean earth formation, which process comprises:
compounding an aqueous solution that contains at least one chlorocarboxylic acid salt and is substantially free of acid;
arranging the composition of the solution so that, at the temperature of the subterranean earth formation, the chlorocarboxylic acid salt hydrolyzes at a selected relatively slow rate to yield an acid that is capable of reacting with calcium or magnesium carbonates to form calcium or magnesium salts which are soluble at a concentration equivalent to the concentration of chlorocarboxylic acid salt; and
injecting the solution into the subterranean earth formation at a rate such that the carbonate material to be acidized is contacted by the solution before it contains enough acid to dissolve a significant proportion of the carbonate material, so that the rate of the acidization is limited to substantially the rate of the hydrolyzing of the chlorocarboxylic acid salt.

4,122,897
IN SITU GASIFICATION PROCESS FOR PRODUCING PRODUCT GAS ENRICHED IN CARBON MONOXIDE AND HYDROGEN

John P. Capp, and Larry A. Bissett, both of Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 28, 1977, Ser. No. 865,156
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—256 **7 Claims**

1. A method for increasing the concentration of carbon monoxide and hydrogen in the gaseous product resulting from the in situ combustion of coal in a subterranean coal bed, comprising the steps of providing a borehole in the coal bed, initiating an exothermic reaction in the coalbed contiguous to said borehole to establish a combustion zone in the coal bed, introducing combustion supporting medium into said combustion zone to support the reaction without exhausting the resulting gaseous products from the combustion zone and the coal bed, increasing the pressure of the combustion supporting medium flowing into the combustion zone for maintaining the reaction while forcing the gaseous products together with natural water in the coal bed into the coal bed away from the combustion zone, maintaining the flow of the combustion supporting medium into said combustion zone until the predetermined temperature and pressure are attained, terminating the flow of the combustion supporting medium into the combustion zone, and initiating outflow of the gaseous products from the combustion zone for decreasing the pressure therein causing water and gaseous products forced away from the

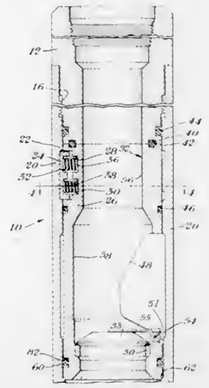


combustion zone to bleed through the coal bed into the combustion zone where the water and carbon dioxide in the gaseous products react endothermically with hot carbon defining the walls of the combustion zone to respectively effect the conversion of the water to carbon monoxide and hydrogen and the carbon dioxide to carbon monoxide.

4,122,898
TUBING TESTER

Wayne F. Nelson, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 25, 1977, Ser. No. 772,198
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—325 **6 Claims**



1. Tubing tester apparatus comprising:
(a) an elongated generally cylindrical outer sleeve having inner and outer side walls, and upper and lower ends, means adjacent to said upper end for coupling a connector member, lug means adjacent to said lower end for receiving a J-slot of an axially movable mandrel;
(b) an elongated mandrel having a rounded upper end part, a cylindrical middle part dimensioned to fit closely but slidably against the inner side wall of said outer sleeve, said mandrel having a generally axially disposed elongated grooved lower part adapted to move between said lugs in said outer sleeve, and a lower end part adapted to receive a coupling member;
(c) an inner sleeve having inner and outer side walls, an upper end part and a lower end part, said lower end containing a flapper valve assembly disposed across said

lower end part, said valve assembly including a valve seat structure having an axial aperture larger than the rounded upper end part of said mandrel and in axial alignment therewith and a spring loaded flapper having a double ended pivot part at one side, said pivot part being disposed in a transversely disposed grooved part of said lower end part, said spring loading including a spring coiled around said pivot of said flapper, said spring having one end bearing against the top of said flapper and a second end extending towards the top of said valve seat structure, said side walls having a cut out part adjacent to said flapper whereby when said flapper is fully open it partially fits into said cut out part, said outer sleeve having a shoulder along its inner wall against which said lower end of said inner sleeve abuts;

(d) a connector member, said connector member being coupled to said outer sleeve and having an end which abuts against said inner sleeve, and

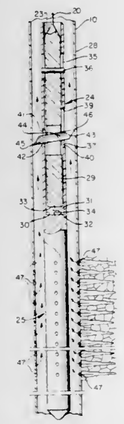
(e) a coupling member coupled to the lower end part of said mandrel and abutting against said grooved part.

4,122,899

WELL PERFORATOR WITH ANCHOR AND METHOD

Emmet F. Brieger, General Delivery, Nogal, N. Mex. 88341

Filed Aug. 8, 1977, Ser. No. 822,556
Int. Cl.² E21B *43/119, 40/00*
U.S. Cl. 166—297 **9 Claims**



8. Method of completing a cased well having a tubing string extending from a wellhead downhole towards and terminating short of a hydrocarbon containing formation, with a packer device separating the casing annulus from the lower borehole, comprising the steps:

running a perforating gun and tool hold-down apparatus downhole on a wireline and positioning the gun adjacent the hydrocarbon containing formation;

detonating the perforating gun to perforate the casing thereby communicating the interior of the casing with the hydrocarbon containing formation;

immediately open flowing the well concurrently with perforating the casing to surge the perforations with the maximum available driving force, thereby flowing the gun uphole due to the pressure drop thereacross;

suspending a mass from the wireline and suspending the perforating gun from the mass by a lost motion coupling so that as the gun commences to move uphole the mass remains stationary;

using the relative motion between the gun and the mass to set a tool hold-down apparatus, thereby arresting uphole travel of the gun;

flowing the well for an interval of time in order to clean up the formation;

reducing the flow rate, thereby reducing the pressure differential across gun to a value which does not provide sufficient lift to flow the gun uphole;

lifting the mass by the wireline and using the relative motion between mass and the gun to actuate the hold-down apparatus into the released configuration;

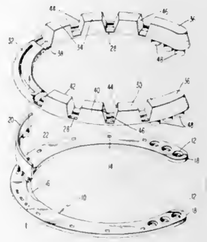
removing the gun, mass, and hold-down apparatus from borehole by using the wireline, thereby completing the well.

4,122,900

MULTIPURPOSE CUSHIONED HORSESHOE

Donald H. Barr, 8114 Gorman Ave., Laurel, Md. 20810, and Thomas A. Coggins, Box 121, Savage, Md. 20863

Filed Nov. 19, 1976, Ser. No. 743,479
Int. Cl.² A01L *7/06*
U.S. Cl. 168—12 **8 Claims**



1. A cushioned horseshoe for a racehorse comprising:

a generally "U" shaped metal horseshoe plate;

having a generally rectangular cross section of substantially uniform thickness;

having a hoof engaging surface and a tread bearing surface;

having a plurality of conventional nail holes extending through said plate and spaced longitudinally therealong, the last nail hole on each arm of said "U" shaped plate being spaced from the free ends thereof;

a heel portion extending from the last of said nail holes on each arm of said "U" shaped plate longitudinally therealong to the free ends thereof;

having one or more heel cushion holes through each heel portion of said plate from said hoof engaging surface to said tread bearing surface;

a unitary resilient tread bonded to substantially the entire tread bearing surface of said plate and molded to include:

a base portion of uniform thickness bonded directly to the tread bearing surface of said plate and extending substantially thereacross;

a toe calk raised above said base portion;

a heel calk raised above said base portion on each heel portion thereof, said base including in each said heel portion projections extending through said heel cushion holes in said plate and adapted to resiliently engage the horse's hoof to provide a substantial thickness of resilient cushioning material for the horse's heel equal to the combined thickness of said projection, said base and said heel calk; and,

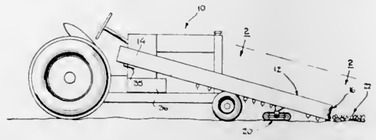
a plurality of traction cleats raised above said base and distributed from said toe calk to said heel calks and positioned between said nail holes.

4,122,901

UNPOWERED SUPPORT VEHICLE

Gilbert L. Koepplin, 25173 N. Hwy. 99, Acampo, Calif. 95220

Filed Jun. 25, 1975, Ser. No. 590,140
Int. Cl.² A01D *25/00*
U.S. Cl. 171—61 **13 Claims**



4. In combination: a vehicle having a radish picker apparatus cantilevered outward therefrom and downward toward the ground;

a second vehicle which is non-powered and has a frame with sprockets at each corner thereof, two sprocket-chains positioned over said sprockets on each side of said second vehicle and flexible segmented belt track means attached to said chains;

said second vehicle being positioned adjacent the unsupported end of said cantilevered radish picker apparatus and being attached to support said unsupported end;

means for adjusting the up-down and fore-aft position of said second vehicle to position said unsupported end of said radish picker close to the ground in radish picking height;

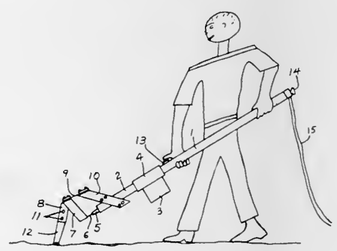
whereby said belt track means allows said second vehicle to be moved over the surface of the ground by motive power from said cantilevered means and to cause said radish picker apparatus to follow the ground contour.

4,122,902

MOTORIZED GARDENING TOOL

Warren A. Alexander, P.O. Box 147, Industry, Tex. 78944

Filed Oct. 11, 1977, Ser. No. 840,552
Int. Cl.² A01B *1/06*
U.S. Cl. 172—41 **4 Claims**



1. A garden cultivating tool comprising:

(a) a first shaft having a central bore,

(b) a second shaft within said bore,

(c) power means for imparting a first reciprocating motion to said second shaft,

(d) an assembly of parts for converting said first motion to a second reciprocating motion, and

(e) a blade in combination with said assembly,

(f) said assembly including a first spring member connecting said second shaft to a linkage member which supports said blade, and

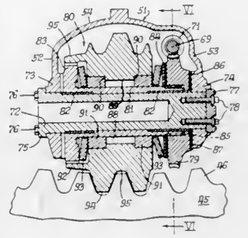
(g) a second spring member supporting said linkage member at a point substantially separated from the point at which said first spring member is connected.

4,122,903

MOTOR GRADER CIRCLE DRIVE

Carroll R. Cole, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 14, 1976, Ser. No. 696,020
Int. Cl.² E02F *3/76*
U.S. Cl. 172—781 **20 Claims**



20. In a motor vehicle which includes a mobile frame, a first member on said mobile frame and a second member on said mobile frame which is rotatable relative to said first member about a vertical axis, improved means for driving said second member comprising, in combination:

an internal gear of predetermined pitch diameter on one of said members;

a support detachably mounted on the other of said members inside the circle defined by the internal spur gear;

gear mounting means journalled in said support;

a barrel worm gear non-rotatably mounted for axial sliding movement on the gear mounting means, said worm gear having ends with a convex longitudinal surface therebetween which has a radius of curvature substantially equal to and no greater than that of the internal spur gear, a helical tooth on said convex longitudinal surface which is engaged with the internal spur gear teeth, said helical tooth having a pitch diameter effectively equal to that of the internal spur gear and having a predetermined lead angle, and said worm gear having an axis of rotation which is tilted with reference to the plane of the internal spur gear on an axis which is substantially equal to the lead angle of the helical tooth;

flanges carried by the support which flank the ends of the barrel worm gear to restrict said axial sliding movement of the barrel worm gear;

spring means bearing on the ends of the barrel worm gear and on the flanges to bias said barrel worm gear to a position centered between the flanges;

and means for driving said barrel worm gear.

4,122,904

PNEUMATIC HAMMER DRIVER

Harry M. Haytayan, Lincoln, Mass., assignor to Pneutek, Inc., Billerica, Mass.

Filed Jan. 27, 1977, Ser. No. 763,061
Int. Cl.² B25C *1/04, 5/02*
U.S. Cl. 173—15 **12 Claims**

1. A pneumatic driver for driving fasteners into a work surface comprising:

a cylinder including an end wall closing off one end of said cylinder, said end wall including (a) an interior surface normal to the axis of said cylinder, (b) a hole, and (c) a coaxial cavity intersecting said interior surface and open to the interior of said cylinder, said cavity being defined by inner and outer walls spaced respectively from said hole and said cylinder and the cross-section of the cavity widening with increasing depth from said interior surface;

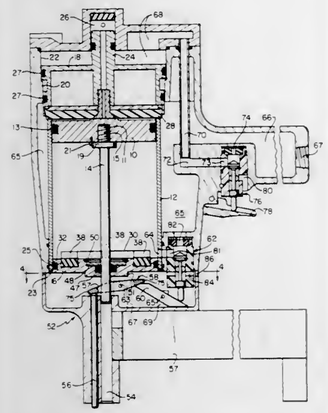
a piston slidably disposed in said cylinder;

a resilient piston cushion molded into said cavity and spaced from the cylindrical wall of said cylinder, said cushion

extending to a predetermined height above said interior surface;

a port extending through said cylindrical wall adjacent said end wall and being positioned clear of said cushion;

a foot portion positioned beyond said end wall, said foot portion including a bore coaxial with said hole and said cylinder and adapted to receive successive ones of said fasteners; and



a hammer in the form of a shaft coaxially connected to said piston, said hammer extending through said hole with said cushion coaxially spaced from said hammer, said hammer further extending into said bore and being adapted to drive said fasteners successively into said work surface, the length of said hammer being chosen to position said piston immediately adjacent said cushion when the free end of said hammer makes contact with said work surface.

4,122,905

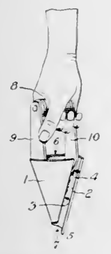
HAND AUGER

Frederick R. Kanigan, Nelson, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 15, 1977, Ser. No. 787,771

Int. Cl.[2] E21C *19/00*; A01B *1/00*

U.S. Cl. 175—396 **3 Claims**



1. A hand auger, comprising

a substantially frustoconical sheet of material having a substantially circular base edge and a bottom edge spaced from the base edge, said sheet of material being split along a substantially lateral strip to form a pair of substantially lateral edges in spaced relation radially and in spaced relation circumferentially from the bottom edge to an area intermediate the base and bottom edges, one of the edges being an inner edge of predetermined length and the other of the edges being an outer edge having a length longer than the predetermined length and extending beyond the inner edge at the bottom edge of the sheet to substantially a point, the bottom edge of the sheet being of substantially spiral configuration from the bottom of the inner edge to the bottom of the outer edge and the base edge being of split circular configuration and having a plurality of equidistantly spaced substantially circular cutouts formed therein forming a plurality of cutting teeth along said bottom edge between the inner and outer edges from said outer edge to a point intermediate said inner and outer edges; and

a handle having a pair of arms affixed to the sheet in the area of the base edge thereof and extending in spaced parallel relation from said base edge to enable a user to manually grasp the auger in the area of said base edge.

4,122,906

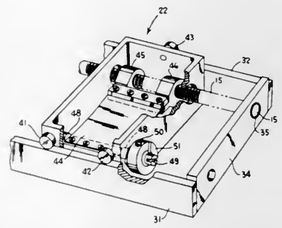
LOAD COUPLING DEVICE

Anthony Storace, Tarrytown, N.Y., and Paul R. Sette, Hamden, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jun. 17, 1977, Ser. No. 807,394

Int. Cl.[2] G01G *1/38*

U.S. Cl. 177—213 **4 Claims**



1. In an analytical balance having a movable balance weight displaceable along a pivoting balance beam, the balance weight and balance beam combination comprising:

a frame mounted for pivotable movement in response to the advancement of the balance weight upon the frame;

the balance weight being mounted for rolling movement upon said frame;

a rotatably lead screw being rotatively journalled upon said frame and being operatively connected to said balance weight to drive said balance weight along said frame, said frame substantially supporting the entire weight of the balance weight; and

means for biasing the balance weight into operative contact with said rotative lead screw, comprising a leaf spring connected to said balance weight at one end thereof and having a threaded journal member rotatively engaged with said lead screw and connected to said leaf spring on another end thereof, whereby as said lead screw is caused to rotate, the journal member will be caused to advance upon said lead screw, thus forcing the leaf spring to move said balance weight upon said frame.

4,122,907

ELECTRICALLY ASSISTED CYCLES

Charles P. D. Davidson, Droitwich, and Edward G. Philips, Colne, both of England, assignors to Lucas Industries Limited, Birmingham, England

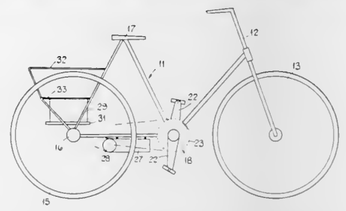
Filed Jun. 9, 1977, Ser. No. 805,131

Claims priority, application United Kingdom, Jun. 11, 1976, 24244/76

Int. Cl.[2] B62M *7/00*

U.S. Cl. 180—33 C **4 Claims**

1. An electrically assisted cycle including a frame rotatably supporting a ground engaging wheel, rider operable drive means mounted on the frame and mechanically coupled to said wheel whereby the rider can physically operate said drive means to propel the cycle, and electric motor and an associated power source carried by said frame, the output of said electric motor being coupled to said wheel whereby said motor can assist propulsion of the cycle, electrical switch means operable to energize said motor and sensing means for sensing the speed



of rotation of said rider operable drivemeans and for causing operation of said switch means to energize said motor only when said drive means is operated by a rider in excess of a predetermined speed whereby in order to obtain electrical assistance in propelling the cycle the rider must rotate said drive means at a speed in excess of said predetermined speed.

4,122,908

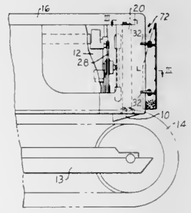
FAN NOISE SUPPRESSOR AND BAFFLE

Bruce W. Miers; Frederick D. Proksch, both of Peoria, and Gerald H. Welker, Eureka, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 12, 1977, Ser. No. 832,253

Int. Cl.[2] B60K *11/04*

U.S. Cl. 180—68 P **5 Claims**



1. In a power unit including a liquid-cooled engine, a radiator in fluid communication with said engine for cooling engine coolant, a fan on one side of said radiator for directing air therethrough, and a noise suppressing baffle on the other side of said radiator for altering the path of travel of air exiting said radiator and absorbing fan noise including a housing containing noise suppressing means, the improvement wherein said housing includes a perforated panel facing said radiator other side and slightly spaced therefrom, said panel being pyramid-shaped and extending toward said radiator and presenting at least three generally planar surfaces intersecting at a common point to said radiator.

4,122,909

AIR CUSHION SKIRT

Delbert W. Fair, and Graydon L. Brown, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 3, 1977, Ser. No. 773,925

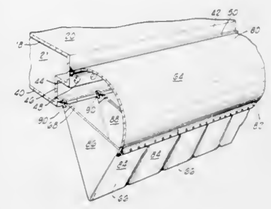
Int. Cl.[2] B60V *1/16*

U.S. Cl. 180—127 **6 Claims**

1. An air retention skirt apparatus for use with air cushion vehicles of the type having at least one peripheral side structure and bottom beneath which an air cushion is formed, comprising:

plural loop sections affixed serially around the peripheral side structure in arcuate attitude to surround and retain said air cushion, said plural loop sections including a plurality of loop sections for affixture to the straight peripheral side structure and a plurality of corner loop sections for affixture to the curved peripheral side structure; and

plural segment sections affixed continuously in series along each of said loop sections, each segment section being secured to the loop section and extending a pair of securing flaps inward for affixture to the peripheral side structure proximate said bottom in attitude to retain said air cushion, said plural segment sections including a first



plurality of segment sections having a generally rectangular central panel extending into securing flaps which are foldable at 90° to extend in parallel and with each terminating in a fastener tab pivotably affixed to said peripheral side structure proximate said bottom, and said plural segment sections further including a second plurality of corner segment sections having a central panel having parallel upper and lower edges and defining oppositely angled side securing flaps which are each foldable more than 90° to extend in convergence and with each terminating in a fastener tab pivotably affixed to said peripheral side structure proximate said bottom.

4,122,910

OMNIPHONIC MICROPHONE AND LOUDSPEAKER SYSTEM

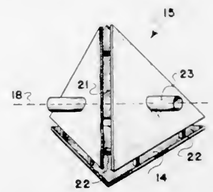
Raymond Wehner, 241 Eveline St., Selkirk, Canada

Filed Mar. 4, 1977, Ser. No. 774,451

Claims priority, application United Kingdom, Mar. 16, 1976, 10502/76

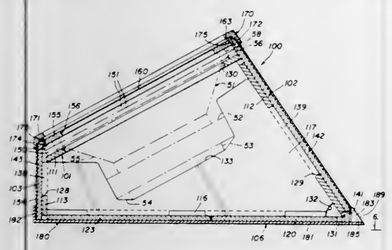
Int. Cl.[2] H05K *5/00*

U.S. Cl. 181—144 **12 Claims**



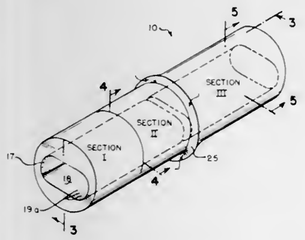
1. A transducer system for use in a sound system comprising in combination a tetrahedron support module, said module including four panels assembled to form said tetrahedron, a pair of transducers mounted one in each of two of said panels which are adjacent one another, said transducers being mounted on a horizontal line of sight and rotated 180° one with the other.

4,122,911
LOUDSPEAKER ASSEMBLY
Robert E. Croup, Indianapolis, Ind., assignor to Acoustic Fiber Sound Systems, Inc., Indianapolis, Ind.
Filed Jul. 1, 1976, Ser. No. 701,974
Int. Cl.[2] A47B *81/06*; H05K *5/00*
U.S. Cl. 181—199 **15 Claims**



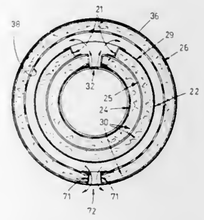
1. A loudspeaker assembly comprising a loudspeaker having a magnet means, an enclosure including a plurality of interconnected walls for accommodating said loudspeaker therein, one of said walls having an opening therein to facilitate the emission of sound waves from said enclosure, and support means carried within said enclosure and having rear and side supporting surfaces respectively disposed for supporting engagement with said magnet means along the rear and sides thereof to support said loudspeaker in said enclosure.

4,122,912
DRY COOLED JET AIRCRAFT RUNUP NOISE SUPPRESSION SYSTEM
Meyer Lepor, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 23, 1977, Ser. No. 780,571
Int. Cl.[2] F01N *1/02, 7/02*
U.S. Cl. 181—218 **7 Claims**



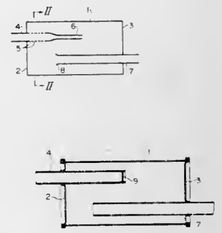
1. In a stationary jet exhaust noise suppressor having an elongate housing defining a longitudinal tunnel for passing jet exhaust therethrough, an improvement therefor is provided comprising:
means carried in the housing and communicating with the tunnel for attenuating the jet exhaust noise, the attenuating means is configured to have resonant frequencies which are the same as objectionable frequencies in the jet exhaust noise spectrum, the attenuating means is located outside the lateral dimensions of the longitudinal tunnel and extends the length of the longitudinal tunnel, is formed of more than one section differently configured from one another to have different resonant frequencies corresponding to different objectionable frequencies in the jet exhaust noise spectrum and is formed of a number of rigid panels shaped to define a number of empty resonant chambers, some of the rigid panels are provided with a number of perforations to communicate the resonant chambers with jet exhaust in the tunnel and
means formed in the shape of an annular duct and provided two-thirds along the length of the elongate housing for drawing an annular flow of ambient air into the jet exhaust in the tunnel for the last one-third of the length of the elongate housing for insulating the last one-third of the tunnel and for cooling the jet exhaust to prevent damage to the tunnel.

4,122,913
SILENCER
Leslie W. Stemp, 3089 Jaguar Valley Dr., Mississauga, Ontario, Canada (L5A 2J1)
Filed Aug. 9, 1976, Ser. No. 712,482
Int. Cl.[2] F01N *1/04, 1/08, 1/12*
U.S. Cl. 181—256 **2 Claims**



1. A silencer for absorbing the noise energy carried with the exhaust gases of an internal combustion engine, while freely moving the gases throughout the silencer without increase of back-pressure to the engine by the silencer comprising in combination;
a substantially cylindrical body composed of an inner shell and an outer shell concentrically fixed apart from one another to define an open space therebetween and having opposite ends thereto defining bulkheads to said body;
exhaust gas inlet means in each of said bulkheads to direct gas into the interior of said inner shell;
said outer shell having an outer imperforate wall and an inner perforate wall defining a space therebetween;
said inner shell having an imperforate wall with an inner and outer perforate wall spaced apart from said imperforate wall of said inner shell to define a space on either side thereof;
a slot-shaped duct extending through the inner shell between said bulkheads and having an opening area at least the total area of the combined gas inlet opening means;
a slot-shaped duct extending through the outer shell between the bulkheads diametrically opposite the slot-shaped duct extending through the the inner shell and having an opening area at least equal to the total area of the combined inlet means; and
noise-energy absorbing material filling the spaces between the perforate and imperforate walls of the inner and outer shells;
thereby creating a passage for exhaust gases in said silencer having noise-energy absorbing walls for the whole interior of said silencer.

4,122,914
MUFFLER
Eizo Suyama, Mitaka, Japan, assignor to Nihon Radiator Co., Ltd., Tokyo, Japan
Filed Apr. 22, 1977, Ser. No. 789,917
Claims priority, application Japan, Apr. 30, 1976, 51-53200[U]; Apr. 30, 1976, 51-53201[U]; Aug. 31, 1976, 51-115747[U]; Aug. 31, 1976, 51-115748[U]
Int. Cl.[2] F01N *3/06*
U.S. Cl. 181—258 **23 Claims**



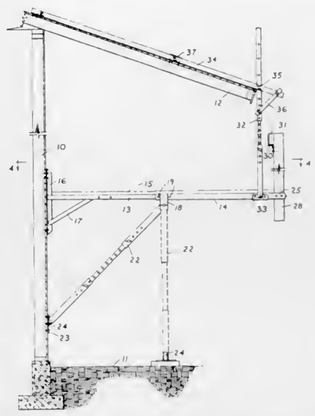
1. Muffler of the expansion type comprising a sealed, essentially cylindrical main body, front and back end plates at each end of said main body, an exhaust gas inlet pipe entering said main body through said front end plate and having a downstream end, an exhaust gas outlet pipe leading out of said main body through said back end plate and having an upstream end within said main body, said upstream end being outwardly flared for reduction of contraction loss and of noise as exhaust gas enters said outlet pipe, and in particular for eliminating Karman's vortex street and the attendant noise thereof.

4,122,915
SOUND ABSORBING AND DIFFUSING UNIT, AN ACOUSTIC SCREEN AND/OR A PARTITION
Kazunori Taguchi, 6-8, Sakanoshita, Kamakura City, Kanagawa Prefecture, Japan
Filed Jun. 30, 1976, Ser. No. 701,016
Claims priority, application Japan, Jun. 30, 1975, 50-81296; Jul. 12, 1975, 50-96921[U]
Int. Cl.[2] E04B *1/99*
U.S. Cl. 181—284 **2 Claims**



1. A sound absorbing and diffusing unit made of porous sound absorbing material, formed as a square having an arc-shaped cut out at each corner with a flat apex portion at each side, each arc-shaped portion tapered to form a ridge, wherein each apex of said unit is flattened, each arc-shaped side of said unit is formed into a ridge, a projection is radially provided on two neighboring apexes each respectively and a cavity is radially formed into two other neighboring apexes each respectively.

4,122,916
SCAFFOLDING
William C. Strobel, W. 4615 Wellesley, Spokane, Wash. 99205
Filed Jun. 6, 1977, Ser. No. 803,787
Int. Cl.[2] E04G *3/08*
U.S. Cl. 182—82 **8 Claims**



1. A scaffold structure for placement on an upright wall element, comprising:
first and second horizontal members adapted to support a horizontal work platform rested on the upper surfaces thereof;
said first horizontal member having opposed inner and outer ends;
means fixed to the inner end of the first horizontal member for securing it to an upright wall element at an above-ground elevation;
said second horizontal member having opposed inner and outer ends, the inner end of the second horizontal member being telescopically supported on the outer end of said first horizontal member coaxial adjustment relative thereto;
means for fixing said second horizontal member to said first horizontal member;
a bracket fixed to the inner end of said second horizontal member;
said bracket being open downwardly as well as vertically along a direction facing the first horizontal member;
and upright support means affixed to said bracket and extending downward perpendicular to said horizontal members or downward at an angle inclined to a fixed reference, whereby the first and second horizontal members are elevationally supported intermediate their combined lengths.

4,122,917
FIRE RESCUE EQUIPMENT
Theodore T. Kendrick, 1615 NW. 130th St., Miami, Fla. 33167
Filed Jun. 23, 1977, Ser. No. 809,158
Int. Cl.[2] A62B *1/02*
U.S. Cl. 182—144 **7 Claims**

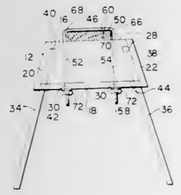
1. Fire rescue equipment for mounting on the roof of a building comprising:
(a) a boom including means to rotatably mount the boom to the roof,
(b) said boom including pulley means and cable means including means to raise and lower the cable means toward ground level upon operation of the pulley means;
(c) a basket including means to connect to the cable; and
(d) a guide means comprising a tie line to be raised and

lowered by the cable to guide the basket, said tie line including means to connect to a towing device at ground



level to guide the basket toward and away from the building.

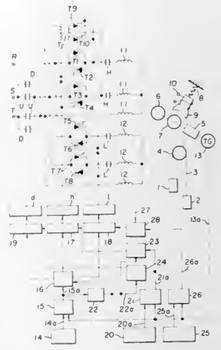
4,122,918
SAWHORSE LEGS
John Danks, Box 114, Pownal, Vt. 05261
Filed Feb. 7, 1977, Ser. No. 766,088
Int. Cl.² F16M *11/00*
U.S. Cl. 182—181 **1 Claim**



1. A pair of sawhorse legs for forming a bench, wherein each said sawhorse leg comprises:
(a) a frusto-pyramidal shaped bracket having a base, a pair of upwardly extending end walls, an upwardly extending front wall, an upwardly extending rear wall, and an open top, said base having a plurality of spaced holes therethrough:
(b) the upper ends of a pair of legs affixed to the inner surface of said end walls, each said leg extending downwardly through a pair of slots in said base and being adapted to engage the ground; and
(c) a clamp, said clamp having a center section and a pair of perpendicular end sections extending out in the same direction from said center section, a free end of each end section being externally threaded, said center section engaging on an upper surface of said board element, said free ends of said end sections extending through a pair of said holes in said base, and a nut threadably engaging onto each said free end below said base.

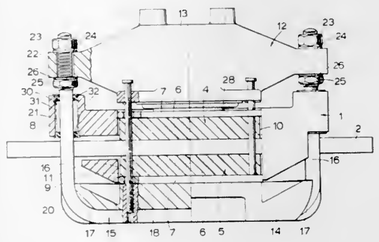
4,122,919
SPEED CONTROL APPARATUS FOR AC ELEVATOR
Nobuo Anzai, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 16, 1977, Ser. No. 778,218
Claims priority, application Japan, Mar. 23, 1976, 51-31579; Apr. 13, 1976, 51-41711
Int. Cl.² B66B *1/30*
U.S. Cl. 187—29 R **1 Claim**

1. A speed control apparatus for an A.C. powered elevator, which comprises:
a multi-speed A.C. motor having a low speed winding and a high speed winding;
thyristor means for applying power to the low speed winding and the high speed winding;
switching means for connecting said thyristor means to either the low speed winding or the high speed winding;
a power running circuit for starting the motor by the low speed winding during acceleration, disconnecting the low speed winding upon reaching the synchronous speed of the low speed winding and then connecting the high speed winding, said power running circuit coupled to said switching means;



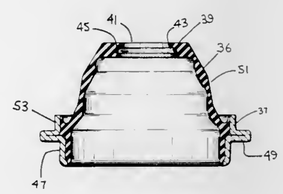
a decelerating circuit coupled to said switching means for disconnecting the high speed winding and connecting the low speed winding during deceleration, and for disconnecting the low speed winding upon reaching the synchronous speed of the low speed winding, and then connecting the high speed winding for D.C. braking thereof;
detector means for detecting the slip of said motor and setting an initial value for the firing angle of the thyristor means in accordance with the detected slip when disconnecting and connecting the low speed and the high speed windings, such that the motor produces a continuous torque upon changeover from the low speed and the high speed windings.

4,122,920
DISC BRAKES FOR VEHICLES
Geoffrey Harvey, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Aug. 29, 1977, Ser. No. 828,722
Claims priority, application United Kingdom, Sep. 22, 1976, 39372/76
Int. Cl.² F16D *55/224*
U.S. Cl. 188—73.4 **7 Claims**



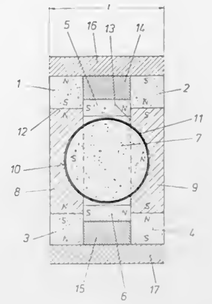
1. A disc brake for a vehicle comprising a rotatable disc, first and second friction pad assemblies for engagement with opposite faces of said disc, a stationary drag-taking member straddling the peripheral edge of said disc and having abutments on which said pad assemblies are guided for movement towards and away from said disc, a clamp assembly extending over the peripheral edge of said disc and slidably guided on said stationary member for movement in a direction substantially parallel to the axis of said disc, and actuating means for applying said first friction pad assembly directly to one side of said disc and applying said second friction pad assembly indirectly to said disc by a reaction transmitted to it through said clamp assembly, said clamp assembly comprising first and second pressure plates which are chordal to said disc and have superimposed openings at their outermost ends, said stationary member having openings superimposed with said openings in said pressure plates, and a bolt of U outline interconnecting said pressure plates comprising spaced parallel limbs which pass through said superimposed openings in said pressure plates and said stationary member, and a bridge piece interconnecting said limbs at one pair of adjacent ends and acting on one of said pressure plates, said actuating means acting between said first friction pad assembly and said first pressure plate which is adjacent thereto, and said second pressure plate acting on said second friction pad assembly.

4,122,921
FLEXIBLE SEAL FOR BRAKES
Edward J. Diggs, Stratford-upon Aveon, England, and Karl Grebe, Rodenbach, Fed. Rep. of Germany, assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed Nov. 10, 1977, Ser. No. 850,165
Int. Cl.² F16D *65/56*
U.S. Cl. 188—79.5 GE **6 Claims**



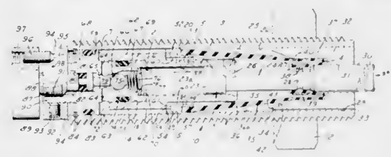
1. In a wedge actuated brake assembly having movable brake shoes adapted to engage a surrounding brake drum: a housing having first and second openings therein; a plunger assembly guided for linear movement in each of said first and second openings and adapted when urged out of said openings to force said shoe toward said drum; a flexible sealing member surrounding each said first and second openings and each said plunger assemblies, said flexible sealing member having a circular metallic body to be received within the end of each of said first and second openings to a depth determined by a radially extending lip formed thereon, said flexible sealing member including a flexible boot bonded at one end to said circular metallic body; said boot being generally in the form of a truncated cone having a radially inwardly facing lip at its end opposite the end of said boot bonded to said circular metallic body; said lip defining a centrally disposed hole therethrough which intimately surrounds and seals about each said plunger assemblies; there being two generally circular lips formed on the radially extending interior portion of said centrally disposed hole to enhance the sealing effect upon said plunger assemblies.

4,122,922
INFINITELY VARIABLE WEAR-FREE EDDY CURRENT AND/OR HYSTERESIS BRAKE, PREFERABLY FOR TRACK-BOUND VEHICLES
Max Baermann, Bensberg-Wulfshof, Postach 26, 5060 Bergisch Gladbach 1, Fed. Rep. of Germany
Filed Aug. 17, 1977, Ser. No. 825,298
Int. Cl.² B60L *7/28*
U.S. Cl. 188—267 **14 Claims**



1. An infinitely variable wear-free permanent magnetic eddy current and/or hysteresis brake, preferably for track-bound vehicles, comprising: one or a plurality of similar elements fastened adjacent to each other in the direction of motion, the total permanent magnet volume of each of said elements being composed of turnable and stationary permanent magnets, with the turnable permanent magnet being cylindrical and magnetized in the direction of its diameter, the cylinder axis of said turnable permanent magnet being arranged in perpendicular direction to the surface to be braked, said stationary permanent magnets being elongated and square-shaped in cross section with their greatest length also extending in perpendicular direction to the surface to be braked, each of said elements being provided with pole pieces made from soft iron which on their opposite inner surfaces are provided with arcuate-shaped recesses into which said turnable permanent magnet cylinder projects, said stationary permanent magnets being positioned with one pole facing said pole pieces and with the other pole facing lateral flux return plates so that in switched on position the same poles of said stationary permanent magnets and said turnable permanent magnet cylinder are each adjacent the same pole piece.

4,122,923
ADJUSTABLE HYDRAULIC SHOCK ABSORBER
Larry C. Ellis, Farmington Hills; John S. Ellis, Union Lake, and Russell N. Cossin, South Lyon, all of Mich., assignors to Ace Controls, Inc., Farmington, Mich.
Filed Jul. 11, 1977, Ser. No. 814,167
Int. Cl.² F16F *9/342*
U.S. Cl. 188—285 **10 Claims**



1. An adjustable hydraulic shock absorber comprising:
(a) an elongated housing;
(b) a piston cylinder carried in said housing;
(c) a piston movably mounted in said piston cylinder, and

having a piston rod extended out of one end of the housing to receive impact loads, and having a continuous inner end with no passageways through the piston;

(d) a double action flexible, tubular diaphragm positioned in said housing with an inner end secured to the housing and with an outer end secured to the piston rod to form an expandable fluid reservoir;

(e) two-directional fluid passageway means interconnecting said piston cylinder for alternate flow of fluid from the piston cylinder to the fluid reservoir during a shock absorbing operation and then back from the fluid reservoir to the piston cylinder, and including a valve seat means, and said fluid passageway means, piston cylinder and fluid reservoir being filled with fluid under pressure to normally move the piston to one end of the piston cylinder in an initial loading receiving position;

(f) a combination check valve and metering valve means operatively mounted in said fluid passageway means for operation with said valve seat means for metering the flow of fluid from the piston cylinder to the reservoir when the piston is moved inwardly of the piston cylinder under a load, and to allow a free flow of fluid through said fluid passageway means from the reservoir back to the piston cylinder when the load on the piston is removed; and,

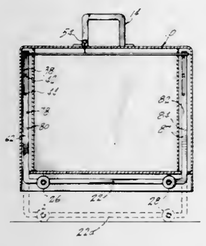
(g) means for adjusting the combination valve means for controlling the metering action of the same, whereby when a load is exerted on the piston rod, the piston is moved inwardly of the piston cylinder to force the fluid in the piston cylinder past the valve means in a metering action and through said passageway means into the reservoir means and said diaphragm is expanded and the speed of the load is controlled, and when the load is removed from the piston rod, the diaphragm contracts to return fluid from the reservoir through the passageway means and past the valve means in a free flow action into the piston cylinder to return the piston to its initial load receiving position.

4,122,924

WHEEL SUPPORTED LUGGAGE

David Wasserman, 1926 Cole Dr., East Meadow, N.Y. 11554

Filed Jul. 28, 1977, Ser. No. 819,759
Int. Cl.[2] A45C *5/14*
U.S. Cl. 190—18 A **8 Claims**



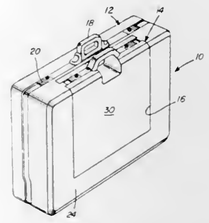
1. A wheel supported luggage apparatus comprising a pair of body portions, each of said pair of body portions being pivotably secured to one another, said each body portion having a compartment therein, said compartment having an open mouth portion, the open mouth portion of said each body portion being disposed in juxtaposed touching relationship when said each body portions are pivoted into a closed condition, said each body portion having an additional compartment therein, said additional compartment being located separated from said compartment, said additional compartment of each said body portion being disposed in aligned relationship with each other when said body portions are disposed in said closed condition, said each additional compartment having an open mouth portion disposed perpendicular to said open mouth portion of said compartment when said body portions are disposed in said closed condition, a pair of U-shaped bars, the legs of said pair of U-shaped bars being disposed in parallel spaced apart relationship and extending parallel to said open mouth portion of said compartments, said U-shaped bars carrying wheels, said wheels rotatably secured to said U-shaped bars along a portion thereof intermediate said legs, said portions of said U-shaped bars being disposed residing in said additional compartments, means to slidably secure said legs to said body portions, said portions of said U-shaped bars being movable outwardly of said additional compartment, means to selectively releasingly engage each said U-shaped bar in selected locations along the slidable path thereof.

4,122,925

COMBINED SUITCASE AND BRIEFCASE

Udo F. Schultheiss, Shramberg, Germany, assignor to Hans R. Mittemeijer, Winston-Salem, N.C.

Filed Dec. 29, 1977, Ser. No. 865,505
Int. Cl.[2] A45C *3/00*
U.S. Cl. 190—52 **5 Claims**



1. A container assembly comprising first and second container elements, wherein: said first container element has a first peripheral wall with a portion thereof defining a recess adapted to accept the second container element therein and form a firm releasable engagement therewith; said second container element being relatively smaller than said first container element and having a first substantially planar peripheral wall which is coplanar with a portion of said first container element first peripheral wall when said second container is disposed in said recess, thereby forming a container assembly first continuous peripheral wall composed of said portion of said first container first peripheral wall and said second container first substantially planar peripheral wall.

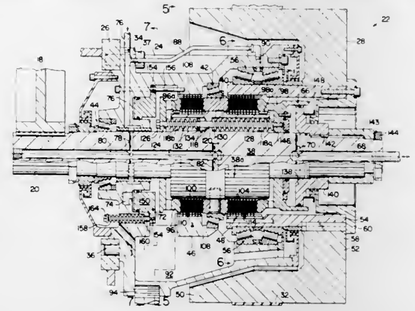
4,122,926

FLUID OPERATED CLUTCH AND BRAKE

Edwin A. Spanke, Oak Forest; Louis F. Carrieri, LaGrange Park, and Melvin H. Francey, Palos Heights, Ala.L OF IL, assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Dec. 2, 1976, Ser. No. 746,732
Int. Cl.[2] F16D *67/02*
U.S. Cl. 192—18 A **22 Claims**

1. A press drive mechanism comprising, a housing, shaft means extending through said housing and supported for rotation relative thereto about an axis, a flywheel coaxial with said shaft means and supported for rotation relative thereto and to said housing, clutch disc means cooperatively supported relative to said shaft means and said flywheel, brake disc means cooperatively supported relative to said housing and said shaft means, said brake disc means being axially spaced from said clutch disc means, abutment means fixed on said shaft means between said clutch disc means and brake disc means, a clutch disc presser member, a brake disc presser member, carrier means axially reciprocable between first and second positions relative to said fixed abutment means, one of said clutch and brake presser members being axially fixed on said carrier means and engaging the corresponding one of said clutch and brake disc means with said abutment means when said carrier means is in said first position, the other of said clutch and brake presser members being axially displaceable with and relative to said carrier means and engaging the other of said clutch and brake disc means with said abutment means when said carrier means is in said second position, actuating means for reciprocating said carrier means between said first and second positions, and means selectively operable to position said other presser member to engage said other disc means with said abutment means when said carrier means is in said first position.

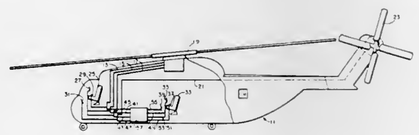


4,122,927

DISCONNECT LINKAGE FOR FORCE TRANSMISSION SYSTEM

Alan Berg, Horsham, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1977, Ser. No. 799,049
Int. Cl.[2] F16D *25/08, 25/10;* **G05G** *11/00*
U.S. Cl. 192—48.8 **13 Claims**



1. A disconnect linkage for a force transmission system, comprising:

a support;

a shaft slideably journaled in said support;

a plurality of pairs of mating members coaxially and rotatably disposed on said shaft for selective engagement with longitudinal movement of said shaft, respective members of said mating pairs being rotatably connected at spaced intervals to said support and slideably disposed on said shaft, and the other members of said pairs being operatively connected at correspondingly spaced intervals to said shaft for longitudinal movement therewith, each of said pairs of mating members being adapted to be interposed in the force transmission system for disconnectable linking thereof; and

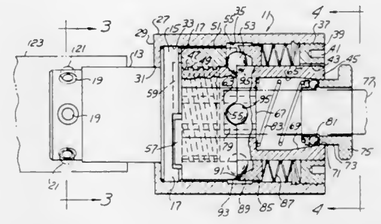
motor means connected to said shaft for selective longitudinal movement thereof.

4,122,928

TORQUE CLUTCH COUPLING

Theodore M. Smith, 39432 W. Archer Dr., Mt. Clemens, Mich. 48043, assignor to Theodore M. Smith Trust, Mt. Clemens, Mich., Lucille G. Smith & Theodore M. Smith, Trustees

Filed Jun. 13, 1977, Ser. No. 805,949
Int. Cl.[2] F16D *43/20*
U.S. Cl. 192—56 R **17 Claims**



1. A torque clutch coupling comprising an elongated torque clutch body adapted for support and rotative drive at one end upon a longitudinal axis;

an axial torque drive clutch at its other end;

a torque case mounted on and enclosing said drive clutch;

an adapter nested within said case coaxial of and spaced from said drive clutch;

said adapter adapted to axially mount a driven member for rotative drive thereof;

a driven torque clutch axially nested and journalled within said case, loosely receiving said adapter and normally connected to said drive clutch;

yieldable means in said case bearing against said driven clutch normally maintaining the driven clutch in operative registry with said drive clutch;

movable drive means on said driven clutch interconnecting said driven clutch and adapter;

said driven clutch adapted for longitudinal movement within said case;

and an adjustable rotative means between and interconnecting said driven clutch and adapter, and including multiple interconnected projections, at least one of said projections lying in an inclined plane at an acute angle to said axis, whereby a torque encountered by said adapter and driven member in excess of a predetermined torque, will effect an automatic longitudinal camming movement of said driven clutch relative to the drive clutch, completely disengaging said driven clutch therefrom, said drive clutch adapted for free rotation with respect to said adapter and driven member.

4,122,929

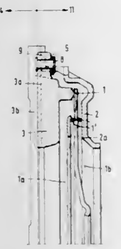
FRICTION CLUTCH, ESPECIALLY FOR MOTOR VEHICLES

Paul Maucher, Sasbach, and Edmund Maucher, Buhl, Baden, both of Germany, assignors to LuK Lamellen und Kupplungsbau GmbH, Buhl, Baden, Germany

Filed Feb. 28, 1977, Ser. No. 772,593
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2607939
Int. Cl.[2] F16D *13/18*
U.S. Cl. 192—70.18 **10 Claims**

1. Friction clutch including a pressure plate and other components wherein a cup spring, on the one side thereof, is braced against one of the other components of the clutch and, on the other side thereof, loads the pressure plate, transmission of torque between the pressure plate and the one of the other cluch components and lifting of the pressure plate being effected by a plurality of leaf springs which ensure relative movement between the pressure plate and the one of the other clutch components, the movement being effective at least over

the operating travel range of the clutch which amounts to the engagement and disengagement travel and the wear travel of a clutch disk, comprising means projecting into the travel path of the leaf springs for stopping the travel thereof, said stop



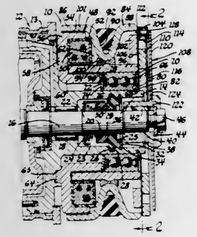
means being engageable by the leaf springs for stopping travel thereof at least when the pressure plate has reached substantially the position thereof corresponding to the maximum wear travel thereof.

4,122,930

ELECTROMAGNETIC CLUTCH

George T. Bennett, Kettering, and Byron L. Brucken, Miamisburg, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1977, Ser. No. 844,538
Int. Cl.[2] F16D *27/10*
U.S. Cl. 192—84 C **4 Claims**



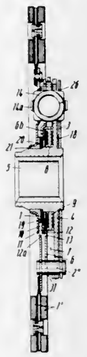
1. For use with an air-conditioning compressor including a casing having a fixed tubular extension extending from an end surface thereof and a drive shaft extending centrally through said tubular extension, with a drive hub secured to said drive shaft, an electromagnetic clutch comprising a coil housing having inner and outer walls, an energizable electromagnetic coil mounted in said coil housing, a bearing mounted around said tubular extension adjacent the end of said inner wall, drive means secured to said drive hub, an armature plate positioned adjacent said drive means on the coil side thereof, spring means secured at one end thereof to said armature plate and at the other end thereof to said drive means for movably supporting said armature plate and driveably connecting said armature plate to said drive means, a pulley operatively mounted intermediate said armature plate and said coil housing and including inner and outer cylindrical end portions and an intermediate groove portion, said inner cylindrical end portion extending freely adjacent said outer wall of said coil housing, said groove portion extending radially inwardly from said end portions, a pulley hub mounted around said bearing, and a non-magnetic member mounted in support relationship between the innermost surface of said groove portion and the adjacent outer surface of said pulley hub to form a pulley assembly in which the outer end portion of said pulley extends freely toward said armature plate, a clutch rotor secured to the end of said pulley hub adjacent said armature plate and extending radially outwardly therefrom so as to provide a radially outer uninterrupted circular air space with respect to the adjacent inner surface of said outer cylindrical end portion of the pulley, first slot means formed with spaced bridging in a radially inner portion of said clutch rotor providing an interrupted inner air gap adjacent the pulley hub, and second slot means formed with spaced bridging in said armature plate providing an interrupted air gap intermediate said uninterrupted outer air space and said inner air gap, the arrangement providing a magnetic flux path having the characteristic that no shorting can occur across said uninterrupted outer air space so that said armature plate is attracted more quickly with stronger magnetic force when said electromagnetic coil is energized.

4,122,931

CLUTCH DISK ASSEMBLY

Paul Maucher, Sasbach, Germany, assignor to LuK Lamellen und Kupplungsbau GmbH, Bühl, Germany

Filed Jul. 28, 1975, Ser. No. 599,856
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1974, 2436288
Int. Cl.[2] F16D *3/14*
U.S. Cl. 192—106.2 **5 Claims**



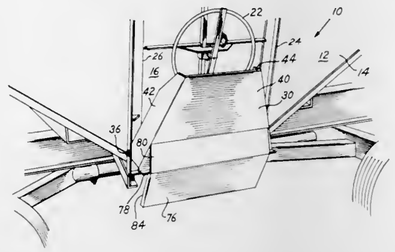
1. Clutch disk assembly comprising a hub, a friction lining support disk coaxially surrounding said hub, said friction lining support disk and said hub having mutual relative torsional play force storage means operatively connected between said hub and said friction lining support disk and effective against relative torsion therebetween, load friction means ineffective over a first given range of torsional play between said hub and said friction lining support disk and effective over a second given range of said torsional play, said load friction means comprising a friction member and friction means effective over said second given range or torsional play, at least one force-storage device compressible over said second given range of said torsional play being effective with said friction means, and a pair of disk-like members disposed in axial spaced relationship on said hub and rigid therewith against relative rotation, said load friction means being disposed in the axial space between said pair of disk-like members, said pair of disk-like members rigid with said hub against relative rotation being formed with recesses defined by respective stop contours located opposite to and in registry with one another, said force storage means comprising respective force storage devices received in said recesses and engageable with said stop contours.

4,122,932

COMBINATION GRAIN DISCHARGE CHUTE CONSTRUCTION FOR DUMP WAGON

Frederic B. Neubert, Seymour, Ill., and Kenneth M. Coldren, Fort Wayne, Ind., assignors to M & W Gear Company, Gibson City, Ill.

Filed Sep. 20, 1976, Ser. No. 724,603
Int. Cl.[2] B65G *11/04*
U.S. Cl. 193—5 **3 Claims**



1. In a hopper-type grain wagon which includes a side discharge door in a sidewall of the wagon, said door having a lower edge, the improvement of a dual direction chute for the side discharge door, said wagon including spaced supports on opposite sides of the hopper door defining a single horizontal pivot axis for attachment of the chute to the wagon, said chute comprising, in combination:

a bottom panel having connected spaced substantially vertical side flanges, each of said side flanges including a pivot connector for attachment with one of the pivot axis supports, each pivot connector being placed in a side flange above the panel bottom and adjacent an edge of the side flange whereby the botom panel is pivotal to a side discharge position and forms a grain slideway from the lower edge of the door, said bottom panel being pivotal to a second position opposed to and spaced from the door, and

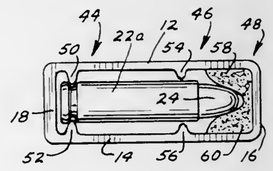
a reverse direction panel extending from said bottom panel in the opposite direction from the bottom panel and unitary therewith whereby when said chute is in the second position, the reverse direction panel directs grain discharge from the door to beneath the wagon, said reverse direction panel forming an acute angle with the bottom panel and spaced from the pivot connector a greater perpendicular distance than the bottom panel.

4,122,933

FEEDER TRANSFER CHUTE

Eugene J. Starzyk, 6409 Buena Vista, Greenville, Tex. 75401

Filed Apr. 4, 1977, Ser. No. 784,565
Int. Cl.[2] B65G *11/20*
U.S. Cl. 193—32 **15 Claims**



1. An apparatus for gravitational feeding of elongated substantially identical objects, each object having opposed first and second end portions, and each object being an ammunition cartridge having a forwardly directed projectile at the first end portion and a casing rearwardly of the projectile, said casing including, at the second end portion, means defining an annular extractor groove, said apparatus including:

a chute having walls including generally vertical side walls defining a passageway, a passageway entrance and a passageway exit, each of said objects, when positioned in the entrance in a selected substantially horizontal orientation, descending in a substantially vertical plane by gravity while confined in the passageway to travel toward the exit;

guide means acting upon the object to limit the amount of deviation of the axis of the object from horizontal while permitting the object substantially free fall movement in said vertical plane, said guide means including two parallel spaced-apart extractor ribs extending from the walls into the extractor groove; and

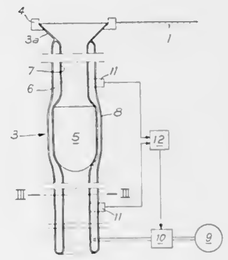
restricting means for continually retarding the descent of said first end portion to hold acceleration thereof to less than free fall acceleration.

4,122,934

APPARATUS FOR DECELERATING DESCENDING BODIES

Pierre A. Nieto de Moreno, Paris, France, assignor to Société Soberal S.A., Luxembourg

Continuation of Ser. No. 593,495, Jul. 7, 1975, abandoned. This application Mar. 10, 1977, Ser. No. 776,186
Claims priority, application France, Jul. 23, 1974, 74 25560
Int. Cl.[2] B65G *11/20*
U.S. Cl. 193—32 **4 Claims**



1. An apparatus for decelerating descending bodies from an elevated location, said apparatus comprising a flexible tubular arrangement extending substantially vertically from said elevated location and secured to a support at said elevated location, said tubular arrangement comprising:

an inner flexible sleeve which is substantially non-extensible in the longitudinal direction, and which extends substantially vertically from said elevated location along the whole length of said flexible tubular arrangement, in order to receive and guide the bodies to be conveyed; and,

at least one extensible chamber for filling with a pressurized gas, said chamber defined by a resilient wall distinct from said inner sleeve, said chamber having an annular shape, surrounding the inner sleeve and being associated with means for regulating the pressure of gas in said chamber so as to apply a retarding force to the body moving inside said inner sleeve, the wall of said chamber being flexible.

4,122,935

SYSTEM FOR CONTROLLING COIN-OPERATED LOCKERS

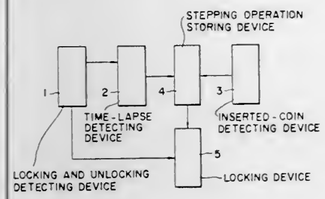
Komei Inoue, and Tosihisa Kosaka, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

Continuation-in-part of Ser. No. 593,042, Jul. 3, 1975, abandoned, which is a continuation of Ser. No. 423,798, Dec. 11, 1973, abandoned. This application Dec. 10, 1976, Ser. No. 749,615

Claims priority, application Japan, Dec. 11, 1972, 47-124583

Int. Cl.[2] G07F *5/02*

U.S. Cl. 194—32 **2 Claims**



1. In a coin-operated locker which is locked by the use of a coin and is unlocked by a key which is lent to a user when the locker is locked, a system for controlling said coin-operated locker, said system comprising:

(a) lock mechanism for locking and unlocking said coin-operated locker;

(b) locking detecting means for detecting the fact that said locker has been locked;

(c) a first time-lapse detecting means comprising a timer roller which makes one revolution per a predetermined period of time;

(d) a second time-lapse detecting means comprising a roller which when said locker has been locked is connected to and turned by said timer roller of said first time-lapse detecting means, and a switch for detecting the fact that said roller has rotated for said predetermined period of time starting from the locking of said locker, to produce a time-lapse signal;

(e) connecting means for operatively connecting, when said locking detecting means has detected the locking of said locker, said roller of said second time-lapse detecting means to said timer roller of said first time-lapse detecting means; and

(f) locking means, operable by said time-lapse signal produced by said second time-lapse detecting means, for preventing the unlocking operation of said lock mechanism, whereby said second time-lapse detecting means is operated starting from the locking of said locker to detect the lapse of time in use of said locker, and unlocking of said locker is controlled by said time-lapse signal produced by said second time-lapse detecting means.

4,122,936

CENTERING MECHANISM FOR MOVABLE MEMBER WITHIN A VARIABLE-WIDTH PASSAGEWAY

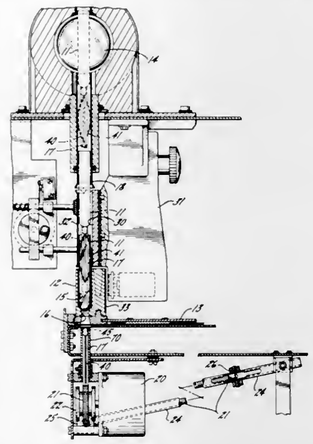
James F. Johnson, LaGrange Park, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Mar. 21, 1977, Ser. No. 779,367

Int. Cl.[2] B23Q *7/00*

U.S. Cl. 198—339 **6 Claims**

1. In a benchtop scintillation counter having a vertical well through which sample vials are transported between a cassette holding a row of sample vials and an overhead counting chamber by an elevator pedestal, said cassette having a hole beneath each vial that is small enough to prevent the vial from passing therethrough but large enough to allow passage of said elevator pedestal therethrough, a transverse dimension of said well varying along the length thereof with at least a portion of said well having a transverse dimension significantly greater than that of said pedestal, means for advancing and retracting said pedestal through said cassette and vertical well, a mechanism for centering said pedestal within said well comprising the combination of a plurality of smooth resilient guide elements secured within said pedestal, said guide elements being oriented generally along the axis of travel of said pedestal and bowed outwardly from said pedestal by at least one biasing means within said pedestal for continuously engaging the walls of said well and urging said pedestal toward the center of said well regardless of the transverse dimension of said well, said pedestal forming a plurality of slots with one of said guide elements projecting through each of said slots, said slots being oriented generally along the axis of travel of said pedestal in accordance with the orientation of said guide elements and spaced around the periphery of said pedestal in accordance



with the spacing of said guide elements, the width of said slots being slightly greater than the width of said guide elements, and the length of said slots being slightly greater than the length of said guide elements, for allowing said guide elements to be compressed fully within said slots and for providing lateral support for said guide elements as they flex in and out of said slots, the transverse dimension of at least a portion of said well varying abruptly along the length thereof with the bowing of said guide elements being sufficient to allow easy passage of said pedestal past said abruptly-varying portion, at least part of said well being formed by at least two hollow segments separated by a gap with the length and bowing of said guide elements being sufficient to allow easy passage of said pedestal past said gap and to keep said pedestal approximately centered as it enters and leaves each of said hollow segments.

4,122,937

METHOD AND APPARATUS FOR DISCHARGING CONTAINERS FROM A CLOSED LOOP CONTAINER CARRIER

Peter Vischer, Golden, and Paul J. Artzer, Broomfield, both of Colo., assignors to Coors Container Company, Golden, Colo.

Filed Feb. 23, 1976, Ser. No. 660,723

Int. Cl.[2] B65G *47/52*

U.S. Cl. 198—408 **20 Claims**

1. Apparatus for discharging bottle type containers or the like from a moving closed loop container carrier having a multiplicity of parallel longitudinally and transversely aligned rows of container baskets for supporting containers in the container carrier with each container basket being longitudinally and transversely offset from adjacent container baskets in adjacent longitudinal and transverse rows, and conveying the

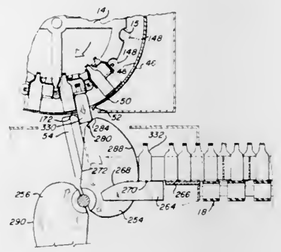
containers to a remote point for further processing, comprising:

means for inverting a portion of the container carrier to allow containers in the container baskets of the inverted portion to slide therefrom,

a first discharge conveyor,

a second discharge conveyor,

a first container transfer means for receiving containers from alternate transverse rows of container baskets and transferring the received containers to the first discharge conveyor,



a second container transfer means for receiving containers from the other alternate transverse rows of container baskets and transferring the received containers to the second discharge conveyor, and

means for supporting containers substantially within the container baskets of the inverted portion of the container carrier and allowing containers within alternate transverse rows of container baskets to slide out of the container baskets and into the first container transfer means and containers within the other alternate transverse rows of container baskets to slide out of the container baskets and into the second container transfer means.

4,122,938

APPARATUS FOR TOPPLING CONVEYED ARTICLES

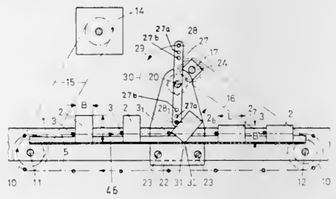
Theo Walz, Neunkirch, and Fritz Glauser, Neuhausen am Rheinfall, both of Switzerland, assignors to S I G Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Jul. 5, 1977, Ser. No. 812,522

Claims priority, application Switzerland, Jul. 2, 1976, 8519/76

Int. Cl.[2] B65G *47/24*

U.S. Cl. 198—411 **10 Claims**



1. In an apparatus for toppling stacks of conveyed articles of rectangular outline having opposite long sides and opposite short sides; the apparatus having a travel surface; a discontinuity in the travel surface; a first carrier means including article-engaging first carrier rods traveling at a distance above and along the travel surface and extending generally parallel to the travel surface and transversely to the direction of travel for advancing the article stacks by sliding the articles, on one of their short sides, on the travel surface up to the discontinuity and for advancing the articles by sliding them, on one of their long sides, on the travel surface from a point downstream of the discontinuity; the improvement comprising a second carrer means having

(a) at least one second carrier rod extending generally parallel to said first carrier rods above said travel surface;

(b) means for moving said second carrier rod in an endless path having an effective path portion extending in a zone above said discontinuity; said second carrier rod engaging each article of successive article stacks as said second carrier rod moves in said effective path portion; said second carrier rod, at least during its motion along said effective path portion, being located at a greater distance above said travel surface than said first carrier rods; and

(c) means for moving said second carrier rod, at least along said effective path portion, at a greater speed than the speed of said first carrier rods for effecting a takeover of article advance by said second carrier rod from the respective first carrier rod in the zone of said discontinuity for effecting, in cooperation with said discontinuity, a simultaneous toppling of the articles of the respective stacks on said travel surface to assume a lying position in which the articles engage said travel surface with one of the long sides thereof.

4,122,939

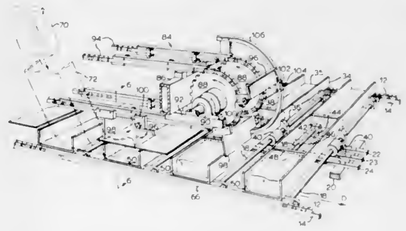
LOAD TRANSFER MECHANISM FOR PACKAGING MACHINE

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Ltd., Rexdale, Canada

Continuation of Ser. No. 663,092, Mar. 2, 1976, abandoned, which is a continuation of Ser. No. 543,023, Jan. 22, 1975, abandoned, which is a division of Ser. No. 434,043, Jan. 17, 1974, Pat. No. 3,879,929. This application Oct. 3, 1977, Ser. No. 838,983

Int. Cl.[2] B65G *19/02*

U.S. Cl. 198—482 **1 Claim**



1. In a packaging machine having a first conveyor for conveying a plurality of longitudinally spaced apart article receiving compartments of a fixed size through a loading station to receive size variable articles, the improvement of;

(a) said first conveyor having a loading run extending through said loading station in a first plane with said article receiving compartments opening upwardly therefrom; and

(b) loading means comprising;

(i) a loading platform disposed above said first conveyor and extending parallel to a portion of said loading run of said first conveyor in a second plane disposed to prevent slippage of said articles therealong due to gravitational forces applied to said articles, said loading platform having a discharge edge at one end thereof, the article receiving compartments moving forwardly from said discharge edge as they emerge from below said platform and travelling along said loading run,

(ii) a second conveyor disposed above said platform and having a length extending in a third plane parallel to said first plane for movement in the direction of movement of the first conveyor,

(iii) a plurality of wiper blade sets mounted at longitudinally

spaced apart intervals on said second conveyor for movement with said second conveyor in the direction of the path of travel of said compartments through said loading station, the movement of the wiper blade sets being synchronized with the movement of the compartments so that each wiper blade set will open into a compartment as a compartment emerges from said discharge edge of said platform, each of said wiper blade sets comprising a leading wiper blade and a trailing wiper blade which extend downwardly towards said first conveyor during their movement in the direction of movement of said second conveyor through said loading station, each leading wiper blade being mounted for movement between a first elevated position in which it will pass over an article located on said loading platform and a second lowered position in which it extends downwardly in a face-to-face relationship with respect to its associated trailing wiper blade,

(iv) a dispenser means for substantially randomly dispensing articles one at a time onto an article receiving portion of said loading platform such that an article may be dispensed onto said receiving portion at any time after the passage of a trailing wiper blade from said article receiving portion until the arrival of a subsequent trailing wiper blade at said article receiving portion of said loading platform,

(v) actuator means for elevating and lowering each leading wiper blade as it passes through said loading station, said actuator means being adapted to elevate each leading wiper blade before it arrives at said article receiving portion of said platform, and maintaining it in said elevated position so that there is an unrestricted space between successive trailing wiper blades to admit an article to said receiving portion of said platform at any time after the passage of a trailing wiper blade beyond said article receiving portion of said platform such that precise synchronization of the dispensing of articles onto said platform and positioning of each set of wiper blades in relation to the article receiving portion of said loading platform is not required, said actuator means lowering each leading wiper blade to said lowered position after it passes over said article receiving portion of said loading platform to locate an article between said wiper blades, said actuator means also elevating said leading wiper blade after it passes the discharge edge of said loading platform to permit an article located between said wiper blades to drop into an underlying article receiving compartment of said first conveyor.

4,122,940

APPARATUS FOR THE WEIGHING OF MASS PRODUCED ARTICLES

Wilhelm Hoffmann, Schwarbisch Hall, Fed. Rep. of Germany, assignor to Optima-Maschinenfabrik, Dr. Buehler KG, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,503

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2548988

Int. Cl.[2] B65G *69/00*

U.S. Cl. 198—504 **17 Claims**

1. Apparatus for weighing mass produced articles shortly after formation of said articles, comprising:

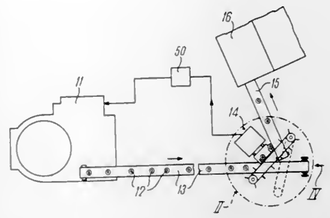
a weighing cell for measuring the weight of each of said articles;

a continuously moving weighing belt, supported by and connected to said weighing cell, for supporting each of said articles when weighed;

a delivery conveyor belt for continuously transporting said articles to said weighing belt;

a removal conveyor belt for continuously transferring said articles away from said weighing belt, running at an angle to said delivery conveyor belt, said weighing cell being interposed in the space formed by said angle; and

means extending over said delivery conveyor belt, said removal conveyor belt and said weighing belt for transferring said articles from said delivery conveyor belt to said weighing belt and from said weighing belt to said removal



conveyor belt, said transfer means having at least one finger member, and said weighing belt moving faster than said transfer means, thereby separating said articles from said transfer means.

4,122,941

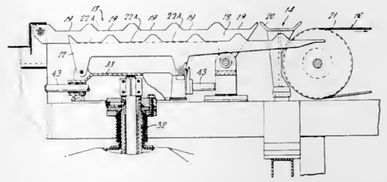
MACHINE FOR THE PREPARATION OF PACKS OF ARTICLES OF A PRE-DETERMINED WEIGHT

Alan F. Giles, Welwyn Garden City, England, and Albertus G. Hendriks, Vlaardingen, Netherlands, assignors to Internationale Octrooi Maatschappij "OCTROPA" B.V., Rotterdam, Netherlands

Filed Mar. 23, 1977, Ser. No. 780,791

Int. Cl.[2] B65G *25/02, 47/10;* **G01G** *13/34*

U.S. Cl. 198—774 **2 Claims**



1. For use in a machine having a plurality of feed stations at which individual pack units are supplied to the machine, a feeding mechanism for providing selective shifting of said pack units away from said feed stations, said feeding mechanism comprising:

(a) a plurality of pack transporting conveyor mechanisms for receiving pack units from said feed stations, each of said conveyor mechanisms comprising stationary carrier bars and movable transfer bars, said transfer bars being movable vertically and horizontally relative to said carrier bars; and

(b) a drive mechanism including a first drive system connected to all of said transfer bars for establishing a continuous, vertical reciprocating component of movement of all of said transfer bars, said first drive system including a first vertically reciprocable shaft, and a second drive system connected to all of said transfer bars for independently establishing a horizontal reciprocating component of movement of the transfer bars at selected ones of the conveyor mechanisms, said second drive system including a second shaft concentric with said first shaft, said second shaft being capable of rotary movement relative to said first shaft to provide the horizontal reciprocating component of movement at selected ones of the conveyor mechanisms, said first and second drive systems operating in synchronism to establish a pack unit-shifting elliptical movement of transfer bars only at selected conveyor mechanisms.

4,122,942

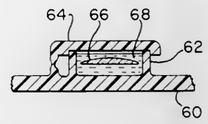
HYDROPHILIC CONTACT LENS CASE

Leonard G. Wolfson, 15 Varick Rd., Newton, Mass. 02168

Division of Ser. No. 438,443, Jan. 31, 1974, abandoned. This application Jul. 21, 1975, Ser. No. 597,591

Int. Cl.[2] A45C *11/04*

U.S. Cl. 206—5.1 **3 Claims**



1. A storage case for hydrophilic contact lenses, said cases comprising;

a well formed of high molecular weight synthetic polymeric material substantially softer than the material of said lens, and having a sealable cap dimensioned to fit over said well, the interior surface of said well having been treated by exposure to a plasma of an inert gas at a pressure substantially below atmospheric until said interior surfaces have been rendered hydrophilic.

4,122,943

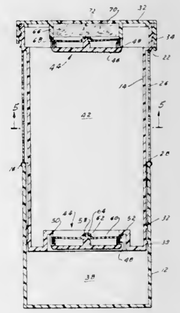
VALVED TWO COMPARTMENT DISPENSING CONTAINER

Jules Silver, Norwich, and Jerome Silverstein, North Franklin, both of Conn., assignors to Jules Silver, Norwich, Conn.

Filed Oct. 21, 1976, Ser. No. 734,609

Int. Cl.[2] B65D *25/08*

U.S. Cl. 206—221 **14 Claims**



1. A container comprising a first open topped container element and a second container element having closed upper and lower ends and dimensioned to be received with its lower end within said open topped container element, one way valve means in said lower end of said second container element for permitting fluid to flow in only one direction between said containers from said first container element into said second container element; said second container element including one way valve means in its upper end for permitting fluid to flow in only one direction from said second container element to escape from said second container element to the atmosphere when the pressure in said second container element is above a predetermined level.

4,122,944

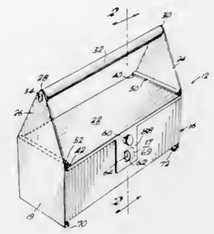
TOOL BOX

Vincent De Napoli, 1821 NW. 108 Ave., Pembroke Pines, Fla. 33026

Filed Oct. 25, 1977, Ser. No. 844,589

Int. Cl.[2] B65D *43/12*

U.S. Cl. 206—349 **4 Claims**



1. A tool box comprising:

a pair of opposed end wall portions of common size in confronting relation, each of said end portions having an inner face and an outer face and a lower edge,

said end wall portions each having parallel side edges extending vertically upwardly from said lower edge a common distance to a first predetermined height and said edges extending in converging relation to one another above said predetermined height to an apex,

each of said inner faces having an upper guide channel extending outwardly in perpendicular relation of said faces at said predetermined height, and extending across said inner faces between the respective side edges,

each of said inner faces having a lower inturned foot portion at said lower edge,

said box having a floor portion spanning the side wall portions in spaced relation above said lower inturned foot portion defining a lower guide means between the floor and the foot on each of said end wall portions,

said box including a front panel portion and a rear panel portion, each of said panel portions having an upper panel edge and said upper panel edges being in a common plane at a second predetermined height slightly less than said first predetermined height, defining between said upper panel edges,

said upper guide channel and said upper panel edges comprising an upper guide means between said upper panel edges and said upper guide channels,

said box including a lid, and

said lid being sized to span the end wall portions and panel portions and being of a thickness sized for sliding receipt in said upper and lower guide channel means, and

said lid including a downwardly extending tab normally overlaying said front panel, said tab including handle means, and said lid being adapted to be slidably removed from said upper guide means by said handle and rotated through 180° and reinserted into said lower guide means for storage, and

said box including handle means spanning the apexes of said end wall portions for carrying said box.

4,122,945

TAPE REEL CONTAINER

Robert A. Borzak, Opelika, Ala., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 5, 1978, Ser. No. 893,287

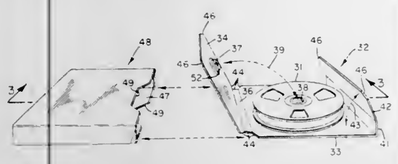
Int. Cl.[2] B65D *5/38, 85/67*

U.S. Cl. 206—395 **5 Claims**

1. In a reel container of the type including an outer carton having one open side, and being cut away adjacent said open side to facilitate grasping an insert member slidable into said open side of said carton, said member being formed with a first

spine and two first and second cover flaps extending therefrom and adapted to mount said reel by means of opposed spindle portions projecting from said flaps and into the hub opening of said reel on opposite sides of said reel, and a spine of said insert member being positionable as a closure for said open side of said carton, the combination comprising:

a second spine for said insert member, said first flap being attached to said second spine for hinged motion with respect thereto; and



a third flap hingedly attached to said second spine opposite said first flap;

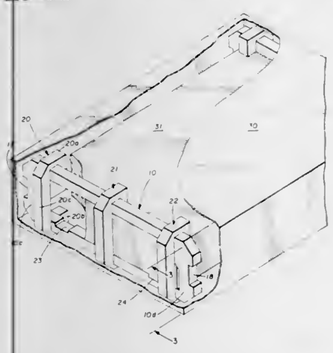
said third flap being of a size smaller than said first flap but still sufficient to close the adjacent cut-away portion of said carton, so that said third flap may be withdrawn to disclose the identity of the reel without the need for withdrawing the entire insert member.

4,122,946

INTERFITTING SHIPPING PAD

Ronnie E. Holley, Garland, Tex., assignor to Lane Container Company, Dallas, Tex.

Filed May 18, 1977, Ser. No. 798,159
Int. Cl.[2] B65D *81/10*
U.S. Cl. 206—523 **3 Claims**



1. A shock resistant shipping pad for packing an article in a transport container comprising:

a frame having parallel top and bottom members integrally joined to perpendicularly disposed first and second end members to define an aperture complementing an outer surface of the article;

said frame top member having a plurality of transverse grooves disposed at spaced points along a top surface of said frame top member;

said frame bottom member having a plurality of transverse grooves disposed at spaced points along a bottom surface of said frame bottom member opposite said transverse grooves of said frame top member; and

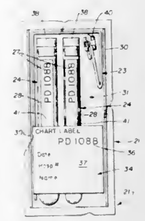
a plurality of cross members for providing lateral shock resistance to the article, each cross member having upper and lower ends and transversing said aperture defined by said frame members, such that said cross member upper ends of said plurality of cross members engage and interlock with said frame top member transverse apertures and said lower ends of said plurality of cross members engage and interlock with a corresponding frame bottom member transverse aperture to permit the outer surface of the article to contact said frame members and said plurality of cross members to provide three dimensional shock resistance to the article within the transport container.

4,122,947

PRE-PACKAGED PATIENT IDENTIFICATION KIT

Marjorie B. Falla, 3056 California St., Oakland, Calif. 94602

Filed Jan. 27, 1978, Ser. No. 873,008
Int. Cl.[2] A61B *19/02*
U.S. Cl. 206—569 **11 Claims**



1. A pre-packaged patient identification kit for use in assuring correlation between a patient and his specimens during patient treatment comprising:

package means;

wristband means formed for secure attachment to a patient, said wristband means being provided with patient identification indicia previously affixed thereto in a tamper-resistant manner;

at least one specimen container means formed for receipt of a specimen taken from said patient, said specimen container means being provided with patient identification indicia previously affixed thereto in a tamper-resistant manner; and

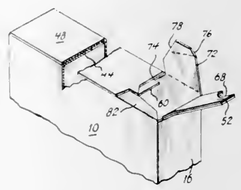
each said patient identifying indicia being identical, and said wristband means and said specimen container means being removably positioned in said package means.

4,122,948

CARTON INCORPORATING EASILY OPENABLE AND RECLOSABLE POURING APERTURE

Harold R. Grieve, and Thomas S. Andersen, both of Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jul. 20, 1977, Ser. No. 817,307
Int. Cl.[2] B65D *5/54*
U.S. Cl. 206—622 **11 Claims**



1. A carton providing for a reclosable pouring aperture comprising side and end wall panels, pivoted extensions on said panels forming flaps for closing said carton, said closing flaps including outer and inner top closure flaps each extending from a respective side wall panel and dust flaps each extending

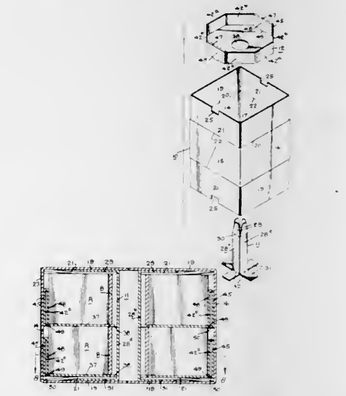
from a respective end wall panel and underlying said closure flaps, the inner of said top closure flaps having weakening lines thereon running serially from one to another free edge thereof forming a severable end section in the corresponding end area of said flap, the dust flap underlying said end section being adhesively-bonded thereto and shaped in conformance therewith, the outer of said top closure flaps having a weakening line running from its pivoted edge transversely across the flap forming an end section thereon overlying the end section of said inner closure flap, the end section on said outer closure flap being severable along its weakening line for pivotal upward movement, the end section of said inner closure flap and dust flap adhesively-bonded thereto being severable along the weakening lines of the former for pivotal upward movement so as to form said pouring aperture, said aperture being reclosable by downward pivotal movement of said end sections and tucking of a free edge of the end section of said outer closure flap below an end area of said inner closure flap bordering its severable end section.

4,122,949

ROLL HOLDING CARTON

David H. Blatt, Elkins Park, Pa., assignor to Franklin Container Corporation, Philadelphia, Pa.

Filed Sep. 2, 1977, Ser. No. 830,034
Int. Cl.[2] B65D *85/02, 85/67*
U.S. Cl. 206—303 **10 Claims**



1. In a shipping and storage container for rolls of sheet material of uniform width each convoluted about a hollow center core with the opposite side edges of the material respectively disposed flush with the opposite ends of said core in spaced parallel planes extending normal to the axis of the roll, in combination,

a. an open-ended box structure having vertically extending right-angularly related side walls respectively provided with integral oppositely projecting hinged closure flaps, said closure flaps being inwardly folded relative to their associated side walls to provide at each of the opposite ends of said box structure overlapping closure flaps extending normal to the side walls of the box structure thereby providing the latter with double-ply top and bottom closure walls,

b. a post member centrally disposed in said box structure and extending vertically between said closed top and bottom walls thereof and projecting through the hollow center core of said rolls,

c. means interlocking each of the opposite ends of said post member in fixedly secured position between said overlapping pairs of box closure flaps, and

d. at least one centrally apertured rigid flat-surfaced member underlying and flat-wise supporting the full circle of convolutions of one of said rolls of convoluted material and at least a portion of the center core thereof thereby maintaining intact the integrity of the roll against telescoping or other distortion of its convolutions, said rigid member being of an overall dimension large enough so as to prevent its radial displacement within said enclosure structure and being of an external perimetral outline sufficiently different from that of the enclosing side walls as to provide at least two diametrically opposed spaces between the perimetral edges of said rigid member and the enclosing side walls of said structure through which one may grasp the underside of said rigid member for axial movement of the roll carried by said rigid member onto or from said post.

4,122,950

FLOTATION SEPARATION OF GLASS FROM A MIXTURE OF COMMINUTED INORGANIC MATERIALS USING HYDROCARBON SULFONATES

William R. White, Upland, and Gary P. Van Tighem, Ontario, both of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation of Ser. No. 634,640, Nov. 24, 1975, abandoned. This application Sep. 22, 1977, Ser. No. 835,792
Int. Cl.[2] B03B *7/00*
U.S. Cl. 209—12 **24 Claims**

1. In a process for separating glass from a particulate mixture of substantially inorganic materials which comprises subjecting a particulate mixture of inorganic materials having a particle size between about 325 mesh and about 20 mesh and containing, as a portion thereof, a quantity of particulate glass particles comprising glasses having the composition of from about 70 to about 73 percent by weight SiO_2, from about 11 to about 18 percent by weight Na_2O, from about 7 to about 17 percent by weight CaO, the balance being essentially other metal oxides to froth flotation with a beneficiating collector reagent in an amount sufficient to form a float fraction comprising predominately particulate glass and an inorganic tailing substantially free of particulate glass, and wherein at least a portion of said particulate mixture of inorganic materials, exclusive of the particulate glass particles, is nonresponsive to the beneficiating action of the collector reagent to cause the particulate glass particles to concentrate in the float fraction, the improvement which comprises activating the surface of the particulate glass particles with at least one metal ion selected from metals of groups IIa, IIIb, and VIII of the Periodic Table and wherein the metal ion is divalent or trivalent state and using as the collector reagent a beneficiating amount of at least one water compatible sulfonated hydrocarbon containing at least 5 carbon atoms, the activation of the glass particles and the flotation occurring at a pH where the metal ion chemically associates with the glass particles.

4,122,951

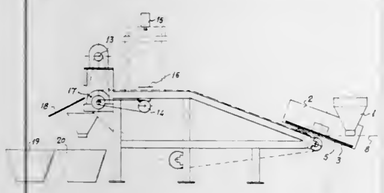
MACHINE FOR THE AUTOMATIC DETECTION OF BLEMISHES IN OLIVES AND OTHER FRUITS

Jose I. L. Alaminos, Avda. Manuel Siurot No. 3, Sevilla, Spain

Filed Feb. 28, 1977, Ser. No. 772,988
Int. Cl.[2] B07C *5/344*
U.S. Cl. 209—545 **7 Claims**

1. A machine for the automatic detection of blemishes in olives and other fruits, comprising: a hopper for the reception of the fruit, feed apparatus supplied by said hopper and including a container having a base with a line of orifices said feed apparatus including a rotary disc containing radial rows of orifices on which the olives are deposited in such a manner that with rotation of said disc each of the rows upon alignment with the row of orifices in said base allows the olives or pieces of fruit to fall therethrough, an endless belt constituted by a series of rollers that present a series of longitudinal lanes formed by dividing elements, the olives falling upon said belt and being transported to an observation zone, a television camera situ-

ated at the observation zone, means for causing the rollers to turn when they advance through the said zone, electronic means responsive to said television camera for transforming the video signal obtained with the television camera into an



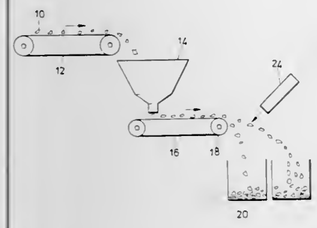
electrical signal, means responsive to said electronic means for the expulsion of the blemished fruit or olives, said expulsion means causing said blemished olives to be directed to a container different from that for the collection of unblemished olives.

4,122,952

PHOTOMETRIC SORTERS

Arthur W. Richards, Bulleen, Australia, assignor to Sphere Investments Limited, Nassau, The Bahamas

Filed Oct. 19, 1976, Ser. No. 733,843
Claims priority, application Australia, Apr. 26, 1976, 2481/76
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—579 **9 Claims**



1. In a method of sorting objects which includes the steps of passing each object through an area divided into zones and examining the object for a predetermined characteristic in each of the zones into which the object extends, the improvement of quantizing each zone into a predetermined number of spaced regions, generating a first series of signals corresponding to the regions into which the object extends, generating a second series of signals corresponding to the regions in which the predetermined characteristic is detected, and comparing the two sets of signals to produce a reference signal for attributing the characteristic to predetermined regions into which the object extends.

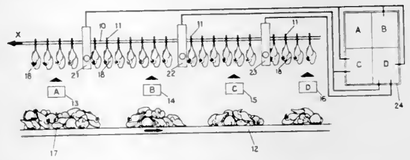
4,122,953

METHOD AND APPARATUS FOR GRADING ARTICLES

Richard M. Brook, Kirkheaton, Huddersfield, England, assignor to Auto Systems Limited, Yorkshire, England

Filed Aug. 29, 1977, Ser. No. 828,687
Claims priority, application United Kingdom, Sep. 7, 1976, 36952/76
Int. Cl.[2] B07C *7/00*
U.S. Cl. 209—551 **9 Claims**

1. A method of associating one of at least two grades with each of a plurality of articles which are to be fed in succession along a path, comprising feeding one grade of article into the path at a first feed station, for movement along the path, feeding a second grade of article into the path at a second feed station arranged upstream of the first feed station, so that only grades of articles other than the one grade travel along the path from the second feed station to the first feed station but after the first feed station all grades of article travel along the path, arranging a first sensor between the first feed station and the second feed station, the first sensor being arranged to emit



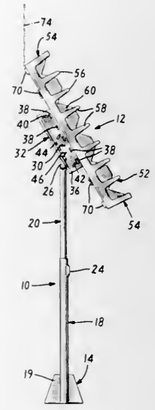
a signal each time an article passes the first sensor and having means to associate each signal with the article which generates the signal, and utilising the signals to associate grades with the articles.

4,122,954

ELEVATED TRAY DISPLAY DEVICE

John R. Slater, East Brunswick, N.J., assignor to Loew's Theatres, Inc., New York, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,159
Int. Cl.[2] A47F *3/14;* **A47G** *1/24;* **A47F** *5/12*
U.S. Cl. 211—133 **7 Claims**



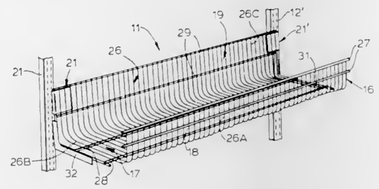
1. An elevated tray display device comprising a base having a lower vertical post and an upper vertical post, the upper post being received in telescoping relation on the lower post for adjustment of the height and rotational orientation of the upper post relative to the lower post, and having means for affixing the upper post to the lower post at a selected height and selected rotational orientation; a tray-mounting plate; means for attaching the plate to the top of the post in a selected one of a multiplicity of orientations and locations relative to the post including a projecting key-type lug on the post, a multiplicity of slots, each of which matches the lug, on the plate, and releasable fastener means for affixing the plate to the post with a selected slot on the plate receiving the lug; a tray adapted to receive products for dislay; and means mounting the tray on the plate in a selected one of an infinite number of locations within spaced-apart limit positions along at least one axis transverse to the vertical.

4,122,955

DISPLAY SHELVING

Harry Celms, Battle Creek, Mich., assignor to Roblin Industries, Inc., Battle Creek, Mich.

Filed Jun. 22, 1977, Ser. No. 809,026
Int. Cl.[2] A47F *5/12*
U.S. Cl. 211—126 **3 Claims**



1. In a shelf unit which extends between and is supported in a cantilever manner on a pair of horizontally spaced and vertically extending uprights having vertically spaced slots therein, said shelf unit including:

an upwardly opening basket-like shelf of wire rod construction and including back, bottom and front walls;

said shelf including a plurality of horizontally spaced and substantially parallel wire elements extending transversely thereof, each said wire element being of an upwardly opening channel-shaped configuration and including a front vertically extending leg portion forming a part of said front wall, a bottom substantially horizontal portion forming a part of said bottom wall, and a rear substantially vertically extending leg portion forming a part of said back wall;

each of said back, bottom and front walls have longitudinally extending reinforcing rods extending lengthwise of the respective wall in the lengthwise direction of the shelf, said reinforcing rods extending perpendicularly with respect to said wire elements and disposed adjacent the outer side of the respective wall, said reinforcing rods being fixed to the transversely extending wire elements at their points of engagement;

said plurality of reinforcing rods including first and second reinforcing rods fixedly associated with the back wall and disposed in vertically spaced relationship, said first reinforcing rod being spaced vertically upwardly a substantial distance above the second reinforcing rod and disposed adjacent the upper free edge of said back wall;

support means disposed adjacent each end of the shelf and fixedly connected to at least the back and bottom walls, said support means including a support rod extending transversely of the shelf and having a vertical leg portion fixed to the back wall and disposed rearwardly of the reinforcing rods and a horizontal leg portion fixed to the bottom wall, said support rod being engaged with and fixedly connected to the reinforcing rods associated with said bottom and back walls, said reinforcing rods of said bottom and back walls being sandwiched between said support rod and said transversely extending wire elements; and

a pair of removable mounting brackets coacting between the opposite ends of said rear wall and said pair of spaced uprights for connecting said shelf to said uprights, each of said mounting brackets having a pair of vertically spaced, downwardly opening hooks associated therewith for engagement with the respective upright, comprising the improvement wherein:

at least one rod-like retainer wire is fixedly associated with said back wall adjacent each end thereof and spaced inwardly from the adjacent support rod, said retainer wire extending transversely between and being fixedly connected to said first and second reinforcing rods, said retainer wire being disposed rearwardly of said first and second reinforcing rods so as to engage some on the same side thereof as said support rod, whereby said first and second reinforcing rods are sandwiched between the transversely extending wire elements on one side thereof and the support rod and the retainer wire on the other side thereof, thereby defining a narrow but tall guide channel which extends horizontally and opens outwardly through the adjacent end of the back wall; and

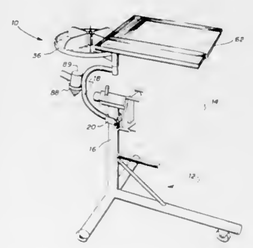
each said mounting bracket consisting solely of an L-shaped one-piece bracket member of integral construction and having first and second vertically planar plate-like flat legs which extend horizontally substantially at a right angle with respect to one another, said bracket member including said first and second legs having a vertical height which is only slightly less than the vertical spacing between said first and second reinforcing rods, said first leg being of relatively short horizontal length and having said hooks projecting outwardly therefrom for engagement with the slots formed in one of said uprights, said hooks being coplanar and integral with said first leg, said hooks also being positioned closely adjacent the upper and lower edges of said first leg so as to be vertically spaced a substantial distance apart, the second leg having a horizontal length which is substantially greater than the length of said first leg and which is at least of similar magnitude to the vertical height of the bracket member, said second leg being solely slidably engaged with said shelf and horizontally slidably confined within said narrow guide channel, said second leg when disposed within said narrow guide channel being closely confined on the front side thereof by the rear vertical leg portions of at least two of said wire elements and being closely confined on the rear side thereof by the vertical leg of said support rod and said rod-like retainer wire, whereby said second leg is solely slidably movable within said channel in the lengthwise direction of the back wall, and said second leg having a horizontally elongated upper edge disposed in slidable bearing engagement with the lower portion of the rounded outer peripheral surface of said first reinforcing rod when said shelf is supported in a cantilever manner on said uprights.

4,122,956

TOOL HOLDER APPARATUS FOR A WORKSTAND

Maxie G. Hargrove, Irving, Tex., assignor to B & H Automotive, Dallas, Tex.

Filed Jul. 25, 1977, Ser. No. 818,459
Int. Cl.[2] A47F *3/14*
U.S. Cl. 211—131 **3 Claims**



1. A tool and hardware holder apparatus for attachment to a workstand adapted to support an engine to be assembled or disassembled, which comprises:

a support arm having clamp means on the lower end to be affixed onto the workstand to extend above the workstand, and further including a vertically disposed spindle on the upper end;

a lower swivel arm having a collar on one end for receiving said spindle to pivotally mount said lower arm thereon for movement in a horizontal plane; said lower arm having a

vertically disposed spindle on the end thereof opposite said collar;

a lower tray having a collar for receiving the spindle on the end of said lower swivel arm to provide for rotational movement of said tray about said spindle, said tray having a plurality of bins to hold separate items of hardware for the engine;

a spacer sleeve placed around said support arm spindle above the collar on said lower swivel arm;

an upper swivel arm having a first collar on one end for receiving the upper portion of said support arm spindle extending through said spacer sleeve to pivotally mount said upper arm for movement in a horizontal plane, said upper arm having a second collar on the opposite end;

an upper tray having a shaft affixed to its underside for insertion into the second collar on said upper arm to provide rotational movement thereof, said tray having a compartment for holding tools required in assembling or disassembling the engine; and

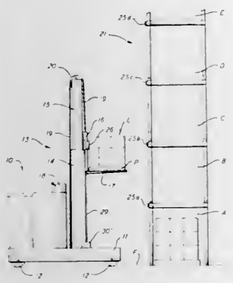
a strap affixed to said holder apparatus defining an opening of a predetermined cross-sectional configuration for receiving and supporting in said opening a rotary hand tool.

4,122,957

LIFT TRUCK HAVING HEIGHT INDICATING MEANS

Ralph E. Allen, and Christian D. Gibson, both of Greene, N.Y., assignors to The Raymond Corporation, Greene, N.Y.

Filed Oct. 6, 1977, Ser. No. 839,908
Int. Cl.² B65G *1/06; G05D 3/08*
U.S. Cl. 214—16.4 A **19 Claims**



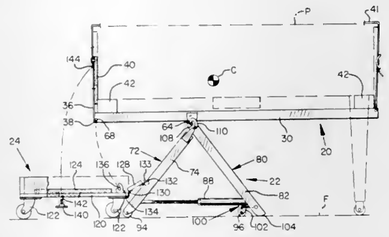
17. Apparatus for indicating the height of a lift truck load carriage relative to any of a plurality of reflective markers located at a plurality of different heights, comprising, in combination: photosensor means carried on said carriage and operative to provide an output signal whenever said carriage has a predetermined vertical relationship to any of said reflective markers; reel means having a cable connected to said carriage and operative to provide a shaft rotation commensurate with lifting and lowering of said carriage; an indicator means carried on said lift truck; a variable electrical device connected to operate said indicator means; clutch means responsive to at least one of said output signals for connecting said shaft rotation to vary said electrical device; means responsive to a predetermined variation of said electrical device for disengaging said clutch means; and means operable upon disengagement of said clutch means for returning said electrical device to a reference condition.

4,122,958

PIANO HAND TRUCK

Orla E. Thayer, P.O. Box 473, Waldport, Oreg. 97394

Filed Jul. 20, 1977, Ser. No. 817,369
Int. Cl.² B60P *1/34*
U.S. Cl. 214—38 CC **23 Claims**



1. A hand truck for transporting a freestanding article having an elevated undersurface comprising:

an elongated frame having a foot plate on one end thereof for supporting an article adapted to be placed on said frame;

jacking means attachable to said frame for lifting thereof and for free pivotal movement of said frame with respect to all portions of said jacking means about a horizontal pivot axis; and

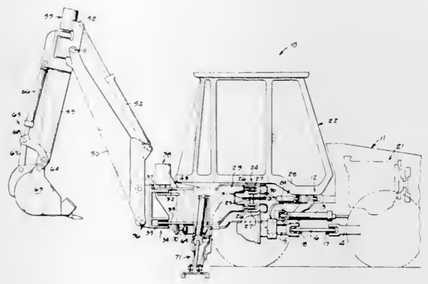
a generally horizontal transport base supported by casters and adapted to receive and cradle said foot plate.

4,122,959

BACKHOE WITH MULTI-MOVEMENT CAPABILITIES

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 661,088, Feb. 25, 1976, Pat. No. 4,049,139.
This application May 9, 1977, Ser. No. 795,336
Int. Cl.² B62D *5/06*
U.S. Cl. 314—138 R **8 Claims**



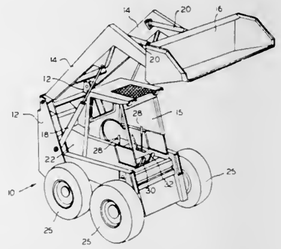
1. In an articulated construction vehicle of the type comprising a front frame, a rear frame and connection means pivotally interconnecting said front and rear frames together, the improvement wherein said connection means comprises a single universal pivot means pivotally interconnecting said front and rear frames together directly for relative pivotal and vertical movement and a single link means disposed below and at least in general vertical alignment with respect to said pivot means and universally interconnected by universal connections between said front and rear frames, said universal pivot means disposed longitudinally between the universal connections connecting said link means to said front and rear frames and further and continuously disposed in longitudinal alignment with respect to the universal connection connecting said link means to said rear frame whereby upon relative articulation of said front and rear frames about said universal pivot means said link means will pivot about the universal connection connecting said link means to said rear frame and said front frame and said link means are permitted vertical movements relative to said rear frame.

4,122,960

PEDAL LINKAGE FOR THE BOOM ARMS AND ATTACHMENT CARRIER OF A SKID-STEERED TRACTOR VEHICLE

James J. Bauer, Lisbon, and Lonnie D. Hoechst, Gwinner, both of N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Division of Ser. No. 635,537, Nov. 26, 1975, Pat. No. 4,063,832.
This application Jun. 22, 1977, Ser. No. 808,935
Int. Cl.² E02F *3/70*
U.S. Cl. 214—140 **3 Claims**



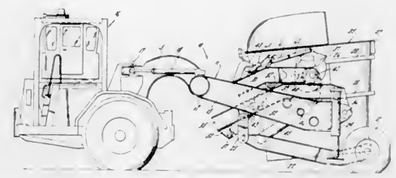
1. In a skid-steered tractor vehicle, a body, an engine mounted toward the rear, an operator's compartment forward of the engine having a space near the front of the body for the operator's legs, a pair of uprights, one on each side of the body, boom arms pivotally connected to the uprights extending forwardly and downwardly at the front of the body in the lowered position, an attachment carrier pivotally mounted on the ends of the boom arms, fluid motor means connected between the uprights and boom arms for raising and lowering the boom arms, other fluid motor means connected between the boom arms and attachment carrier for pivoting the attachment carrier, a control valve for operating the boom arms and attachment carrier having a first valve spool movable from a neutral position in one direction for extending the one fluid motor means causing the boom arms to be raised and movable in the opposite direction from the neutral position for retracting the one fluid motor means causing the boom lift arms to be lowered, a second valve spool operable in the same manner as the first for causing the other fluid motor means to either extend or retract for pivoting the attachment carrier, the improvement comprising rockable foot pedals in the operator's compartment, a first link member connected to one of the pedals, a second link member connected to one of the valve spools, said first and second link members having their opposite ends spaced laterally, a bridging link connecting the opposite ends of the first and second link members having a connection intermediate its ends on the vehicle, said connection including a pin received in a slot, each longer than it is wide in the lateral direction, one having flat sides while the other has curved sides in rockable, antifriction contact therewith, said bridging link rocking on said antifriction contact for transmitting the linear motion of the first link to said second link corresponding to the movement of said pedal, and other link means connecting the other pedal and valve spool to extend or retract the other fluid motor.

4,122,961

POT HANDLLING TRAILER WITH COMPOUND ACTION

Edward S. Kress, Peoria, Ill., assignor to Kress Corporation, Brimfield, Ill.

Filed Oct. 31, 1977, Ser. No. 846,813
Int. Cl.² B65G *65/04*
U.S. Cl. 214—313 **2 Claims**



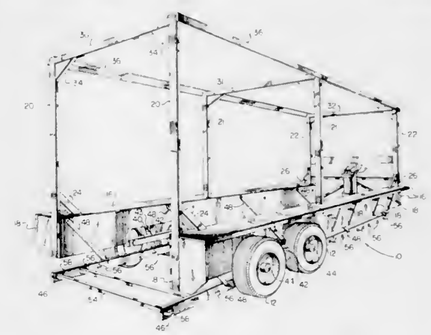
1. A trailer for handling a ladle having trunnions and a projection with top and bottom surfaces spaced from said trunnions, comprising in combination, a wheeled open-ended frame proportioned to embrace said ladle, a cradle pivoted on said frame and being open-ended to embrace said lable, a reaction frame pivoted on said cradle and having portions to engage and contain said trunnions in a position central of said wheeled frame, said frame having pads fitting about said top and bottom projection surfaces when said reaction frame portions contain said trunnions, means for elevating said cradle and reaction frame to a ladle carrying position, a first pair of linear actuators interconnecting said frame and said cradle for swinging the cradle, frame and ladle engaged by said cradle and frame to a ladle dumping position wherein said trunnions, and said ladle, are shifted out of said central position, and a pair of linear actuators interconnecting said cradle and said reaction frame for swinging the frame and ladle fitted in said frame pads to a ladle inverted position.

4,122,962

TRAILER

Wayne M. Goodwin, Sr., 2740 Farmers Branch Lane, Dallas, Tex. 75234

Filed Jul. 5, 1977, Ser. No. 812,819
Int. Cl.² B60P *1/14, 1/16*
U.S. Cl. 214—394 **4 Claims**



1. A trailer for hauling a load, comprising:

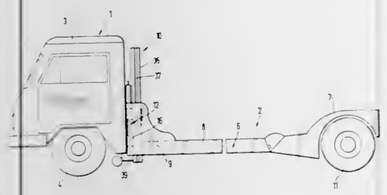
two lower side members extending beside each other in the direction of said hauling and separated to receive the load in the space between the members;

two wheel assemblies, each connected to a different one of the side members, on the outboard side thereof;

a first pair of vertical columns, each rigidly mounted on a

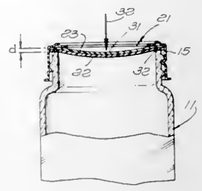
different one of the side members, near the rear portion thereof;
a second pair of vertical columns rigidly mounted on the side members near the front porton thereof;
first and second brace members associated with the first and second pairs of columns, respectively, rigidly interconnecting the two columns of each pair of points near the tops of the columns and substantially above the lower side members;
two upper side members, each rigidly interconnecting the columns above a different one of the lower side members, at points of connection near the brace members;
a front brace member lower than said second brace member, rigidly interconnecting the lower side members near the front portion thereof;
two beams, each along the inboard side of a different one of the lower side members, said beams having a plurality of oppositely disposed openings defined therein for receiving a plurality of crossbars supported between the beams;
a crossbeam interconnecting the two beams near the front thereof; and
means for selectively lowering the beams to a loading position near the ground and raising the beams to a hauling position.

4,122,963
AUTOMOTIVE GOODS-TRANSPORT VEHICLE
Kjell W. Berglund, Revingevagen 4, 240 35 Harlosa, and Karl S. Nordlund, Bjarshog, 212 90 Malmo, both of Sweden
Filed Feb. 24, 1977, Ser. No. 771,808
Claims priority, application Sweden, Feb. 25, 1976, 7602309
Int. Cl.[2] B60P *1/02*
U.S. Cl. 214—512 **19 Claims**



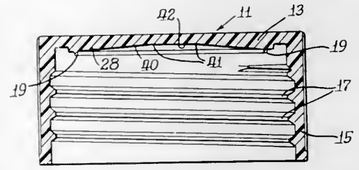
1. An automotive goods-transport vehicle comprising first and second wheeled chassis sections, a coupling device interconnecting said first and second chassis sections, said second chassis section having a forward portion adjacent said first chassis section and a back portion remote therefrom, said coupling device having means for moving said second chassis section relative to said first chassis section, said moving means including a main power means for raising said forward portion of said second chassis section, said coupling device including at least one lifting arm extending between said main power means and said second chassis section, said lifting arm extending laterally relative to the longitudinal axis of the vehicle and including a two-armed lever having pivotal connections on both sides of its fulcrum point, said second chassis section including at least two wheeled chassis arms, said second chassis section including remote power means coupled with said chassis arms, said chassis arms being swingable by said remote power means for raising said back portion of said second chassis section, said main power means cooperating with said remote power means such that said remote power means are operated as slave units to said main power means so as to coordinate the movements of all of said power means.

4,122,964
REUSABLE CLOSURES FOR HERMETICALLY SEALING CONTAINERS
Neal R. Morris, 5990 Hunter, Ventura, Calif. 93003
Continuation of Ser. No. 702,249, Jul. 2, 1976, abandoned. This application Nov. 3, 1977, Ser. No. 848,010
Int. Cl.[2] B65D *41/02*
U.S. Cl. 215—260 **24 Claims**



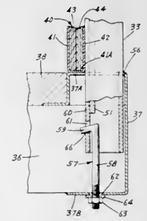
23. A system for hermetically sealing containers, comprising:
an open-mouth container;
an inner substantially flat circular disk formed of a non-porous material having elastomeric characteristics, said inner disk being adapted to be positioned on the rim of said container and having a diameter larger than the diameter of said container open-mouth;
an outer substantially flat, circular disk formed of a semi-rigid, deflectable material, said outer disk being adapted to be removably joined to said inner disk;
said inner disk surface providing means for wiping said container rim as said removably joined disks are drawn inwardly into said container open-mouth due to reduced pressure internal to said container respective pressure external to said container; and,
said disk inner surface providing means for hermetically sealing said container as said removably joined disks are drawn inwardly into said container.

4,122,965
LINERLESS CLOSURE
Gerald L. Roy, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Lancaster, Pa.
Filed Jul. 7, 1977, Ser. No. 813,622
Int. Cl.[2] B65D *53/00*
U.S. Cl. 215—344 **6 Claims**



1. A linerless closure for sealing a glass finish on a glass container having an external screw thread for threadably receiving said closure, said closure comprising a one-piece body of polypropylene having a top end wall for extending across the open top of a container, a dependent skirt wall integrally joined to said top end wall about the outer circumference of said top end wall, an integral screw thread formed on the inner side of said skirt wall for threading engagement with the external screw thread on a glass container, a rigid base ring means integral with and depending from said top wall, said base ring means having a substantially tapered cross section increasing in thickness in a radially outward direction, a rigid annular sealing fin having a downwardly tapered cross section integrally connected with and depending from said base ring means, a lower sealing end on said sealing fin for being crushed against the container finish to spread and to conform to irregularities in the container finish, said lower sealing end being substantially rigid and non-bending and being permanently deformed to a wider width when crushed, said base ring means having a substantially wider width than the upper end of said sealing fin and providing a substantially non-deformable support for said sealing fin, said sealing fin being crushed when used and non-returnable to its original shape after removal of said closure from a container, said crushed sealing fin being the only sealing member on said closure.

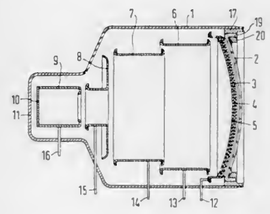
4,122,966
SANDWICH PANEL BOX STRUCTURE
Michael O. Anderson, Forest City, Iowa, assignor to Winnebago Industries, Inc., Forest City, Iowa
Filed Apr. 30, 1975, Ser. No. 573,319
Int. Cl.[2] B62D *23/00, 25/00, 27/06*
U.S. Cl. 220—1.5 **5 Claims**



1. A box assembly for vehicles carrying bulk material and the like, comprising,
a peripheral frame including a substantially planar top wall portion and a bottom wall portion spaced therefrom,
a floor mounted on said frame therewithin,
a plurality of substantially vertical front, side, and rear end walls seated upon and extending upwardly from said frame top wall portion, thereby to define with said floor a box,
a plurality of upright stakes,
first fastening means securing said walls to said stakes,
said frame top wall portion having holes therein at intervals therealong for receiving the lower ends of said stakes therethrough and with said stake lower ends in spaced relation to said frame bottom wall portion thereby to seat said walls secured thereto on said frame top wall portion, and,
second fastening means extending between said frame bottom wall portion and each said stake lower end securing said stakes to said frame with said walls urged firmly against said frame top wall portion.

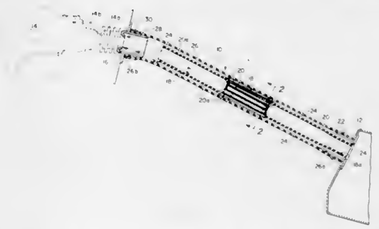
4,122,967
VACUUM-TIGHT WINDOW STRUCTURE FOR THE PASSAGE OF X-RAYS AND SIMILAR PENETRATING RADIATION
Heinz Röhrich, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Jan. 3, 1977, Ser. No. 756,472
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1976, 2605376
Int. Cl.[2] H01J *35/18*
U.S. Cl. 220—2.3 R **10 Claims**

1. A vacuum-tight window structure for the passage of X-ray energy and similar penetrating radiation, said structure comprising a frame having a tubular frame section with an edge directed generally axially toward the exterior side of the window construction, the tubular frame section extending generally axially and having a radially inner annular surface directed radially inwardly, a window member having a central disc-shaped window section transparent to penetrating radiation and having a tubular window flange section extending generally axially and providing radially inner and radially outer annular surfaces directed radially inwardly and radially outwardly respectively, and a ring section, said sections being assembled in a press-fit relationship to form a vacuum-tight joint between the frame section and the tubular window flange section with the material of the outer section having a thermal coefficient of expansion smaller than that of the window flange section, the tubular window flange section being disposed interiorly of the tubular frame section and terminating in an edge which is directed toward the exterior of the window structure, the ring section being disposed within the tubular



window flange section, and the window flange section being of material having a thermal coefficient of expansion greater than that of the tubular frame section, the radially outer annular surface of the tubular window flange section mating with the radially inner annular surface of the tubular frame section, the ring section having an axially extending radially outer annular surface mating with the radially inner annular surface of the tubular window flange section, the ring section being encircled by both the tubular window flange section and the tubular frame section, and the tubular frame section, the tubular window flange section and the ring section being forced together with sufficient pressure therebetween at the mating surfaces thereof to provide a vacuum-tight mechanical press-fit relationship in the absence of any additional securing means.

4,122,968
VAPOR RECOVERY FILLER NECK ASSEMBLY
Lee A. Germain, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 740,504, Nov. 10, 1976, abandoned. This application Dec. 9, 1977, Ser. No. 858,922
Int. Cl.[2] B65B *3/18*
U.S. Cl. 220—86 R **15 Claims**



1. A filler neck mounted between an entry fueling port and a fuel tank inlet nipple to provide fuel entry into the tank and recovery of fuel vapor from the tank while being serviced from a fuel dispensing nozzle having vapor recovery means, said filler neck comprising:
(A) a fuel delivery tube having a plurality of substantially longitudinal ribs extending the full length of its outside surface, said tube having one of its ends connected into the tank inlet nipple such that the ribs engage the inside of the nipple while the opposite end is left unconnected but the

length of the tube toward the fueling port is sufficient for receiving the dispensing nozzle therein: and

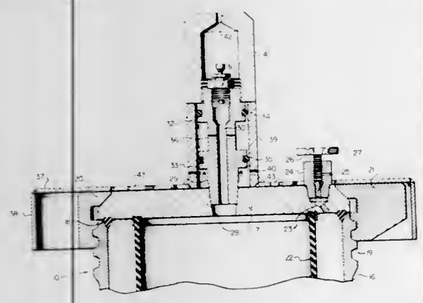
(B) a sleeve tube mounted over and coaxial with the fuel delivery tube and having one of its ends connected over the outside of the tank inlet nipple while the opposite end is connected to the fueling port, the relationship of the two tubes being such that a vapor path exists between the tubes in the valleys defined by the ribs and upon receiving an impact force at the fueling port connection the sleeve tube may move telescopically relative to the fuel delivery tube.

4,122,969

SAFETY CLOSURE APPARATUS FOR PRESSURE VESSELS

Dale G. Hugley, 3815 Timberline Dr. So., Fort Worth, Tex. 76119

Filed May 12, 1977, Ser. No. 796,215
Int. Cl.[2] B65D *45/00, 51/18*
U.S. Cl. 220—256 **8 Claims**



5. Safety closure apparatus for a pressure vessel having closure means with actuating surfaces thereon, said apparatus comprising:

a safety hood mounted on said closure means, said hood being generally conformed in shape to said closure means and having portions positioned to cover and block access to the actuating surfaces of said closure means and to give access to said actuating surfaces upon outward movement of said hood away from said closure means;

a vent valve for said vessel mounted on said closure means;

actuating means for said vent valve;

said safety hood being slotted to fit over said vent valve, said actuating means for said vent valve comprising a knob extending over a portion of said hood outwardly thereof; said slot having an edge lying radially closer to said vent valve than the edge of said knob to thereby prevent removal of said safety hood from said closure means until said knob is first removed to thereby vent said vessel.

4,122,970

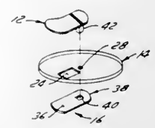
TAMPER-PROOF CONTAINER WITH ATTACHED END CLOSURE

Arnaldo Amabili, 7680 Dollier St., St. Leonard, Quebec, Canada

Continuation-in-part of Ser. No. 778,175, Mar. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 749,622, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 738,078, Nov. 2, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,664
Int. Cl.[2] B65D *51/18*
U.S. Cl. 220—256 **23 Claims**

1. A container closure device comprising a closure member having a pair of opposed wall sections one of which is adapted to constitute an exterior wall section for said closure member and the other of which is adapted to constitute an interior wall section for the closure member, said closure member having a first aperture therein adapted to permit dispensing of a commodity from a container on which the closure member may be mounted, a second aperture in said closure member located in a spaced-apart operative relationship to said first-mentioned aperture, an outer closure tab adapted to surround and close said first-mentioned aperture on the exterior surface of said closure member,

an inner closure tab adapted to be located in juxtaposition with the interior wall of said closure member, said inner closure tab having a body portion adapted to surround in



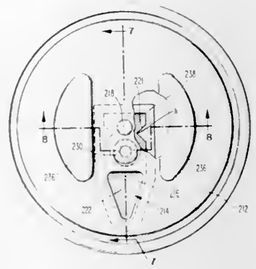
closing relationship said first-mentioned aperture of said closure member, means for mounting said outer closure tab and said inner closure tab in spaced-apart fixed relationship to each other through said second aperture of said closure member for movement about a fixed axis, whereby said outer and inner closure tabs may be rotated about said fixed axis for bringing said closure tabs into and out of closing relationship with said first-mentioned aperture of said closure member.

4,122,971

EASY OPENING CAN END WITH PUSH-IN TABS

Vinson S. Potts, Cherry Hill, N.J., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Continuation of Ser. No. 701,623, Jul. 1, 1976, which is a continuation-in-part of Ser. No. 637,867, Dec. 4, 1975, abandoned, and Ser. No. 596,530, Jul. 16, 1975, abandoned. This application Dec. 23, 1977, Ser. No. 863,892
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—268 **19 Claims**



1. A can end of the easy opening type comprising:

an end panel having an exterior side and an interior side, said end panel including a preformed dispensing opening and a peninsular hinge portion integrally formed with said end panel and extending into said dispensing opening;

a tab juxtaposed to said opening and said peninsular hinge portion, said tab including a first portion adapted to be permanently attached to said end panel adjacent said hinge portion and a second portion adapted to be releasably attached to said end panel around the periphery of said opening;

sealing means for attaching said first portion and said second portion to said end panel; and

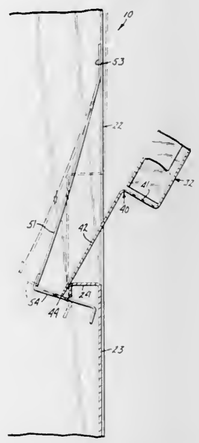
said tab including means of attachment to said hinge portion on said exterior side and said interior side of said end panel so as to assure attachment of said tab to said end panel after opening.

4,122,972

WEATHERPROOF CABINET CLOSURE

Robert Bozich, Eveleth, Minn., assignor to Malton Electric Company, Virginia, Minn.

Filed Jan. 25, 1978, Ser. No. 872,106
Int. Cl.[2] B65D *73/02, 85/42*
U.S. Cl. 220—331 **4 Claims**



1. In a weather resistant cabinet comprising a cabinet structure and a cover, said structure including a bottom, a pair of opposite sides, a back, an open top, and a front having an open upper portion and a lower portion closed by a panel having an inturned upper lip, and said cover having a top portion, configured to resiliently engage the upper edges of said back and said sides outwardly, and a front portion, configured to resiliently engage the edges of said sides outwardly, the improvement which comprises:

(A) a pair of flanges flanking the front edges of said sides and extended toward one another,

(B) resilient means secured to the rear surfaces of said flanges and extending therefrom downwardly and toward each other,

(C) forwardly directed support means carried at the bottom of said reslient means and normally urged below the lip of said panel and toward the inner surface of said panel, and

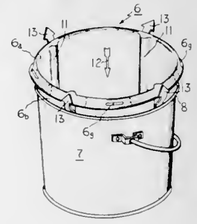
(D) a tongue extending from the bottom of said front portion of said cover and stepped inwardly and then downwardly to fit over and behind said lip and between said flanges.

4,122,973

LINED CONTAINERS FOR PAINT AND THE LIKE

Paul B. Ahern, 32 Stevens Rd., Melrose, Mass. 02176

Filed Oct. 14, 1977, Ser. No. 842,274
Int. Cl.[2] B65D *25/16*
U.S. Cl. 220—404 **2 Claims**



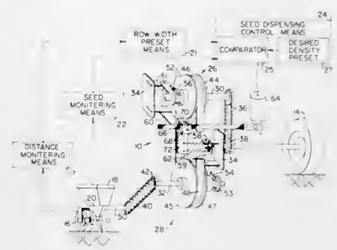
1. A disposable liquid-proof liner nestable closely within a rigid open-topped receptacle of predetermined shape and dimensions having a closed bottom and upstanding side walls terminating in an open upper rim, comprising a one-piece open-topped hollow, thermoplastic body having a closed circular bottom and a thin upstanding tubular side wall of external configuration and dimensions substantially matching those of the interior of a receptacle which it is to line, said thin side wall being capable of flexing into a desirable clinging skin-tight relationship with the interior of said receptable, said thin side wall having stiffness rendering it self-sustaining against tendencies to collapse, said stiffness promoted by several peripherally-spaced venting and stiffening ribs extending substantially vertically and being indented inwardly from said side wall toward the liner interior to form open channels running fully from the bottom of said body to an upper peripheral rim of said body on the exterior thereof, said peripheral rim being substantially annular and somewhat flexible and several times the thickness of said thin side walls to contribute peripheral stiffness to said body and extending outwardly to overlie the upper enlarged receptacle rim, and said peripheral rim having a plurality of indentations protruding inwardly just below the level of the receptacle rim when the body and receptacle are fully mated, said indentations being proportioned to frictionally engage the receptacle rim and thereby hold the body in fixed relationship to a receptacle which it lines.

4,122,974

VARIABLE SPEED PLANTER SEED DRIVE

Jimmy D. Harbert, Coal Valley, and Harold V. Hansen, Cordova, both of Ill., assignors to Deere & Company, Moline, Ill.

Continuation-in-part of Ser. No. 677,811, Apr. 16, 1976, abandoned. This application Aug. 17, 1977, Ser. No. 825,367
Int. Cl.[2] G07F *11/00*
U.S. Cl. 221—13 **14 Claims**



1. In a planter having a main frame and at least two seed dispensing planter units carried thereon, the latter having a planter drive shaft; a ground-engaging distance measuring wheel carried on the frame and having a distance monitoring device associated therewith for producing an electrical signal; a seed monitoring device carried on each planter unit for producing an electrical signal indicative of the rate of seed discharge by the planter unit; a driven drive shaft; a belt drive between the drive shaft and planter shaft including an adjustable variable speed pulley means; a member rotatable in opposite directions and connected to the variable speed pulley means to open and close the latter in accordance with the direction of rotation of the member; a bidirectional electric motor drivingly connected to the rotatable member; a row width preset means for receiving signals from the distance monitoring device and for producing an electrical signal; and a seed dispensing control means for setting the desired seed density for said planter units, said control means including a comparator means for receiving signals from the seed monitoring device and the row width preset means and responsive to said signals to determine seed discharge density and to compare said discharge density to desired seed density to thereby pass an electrical signal to and for driving said electric motor

in the direction necessary to make the monitored seed density substantially equal to the desired seed density.

4,122,975

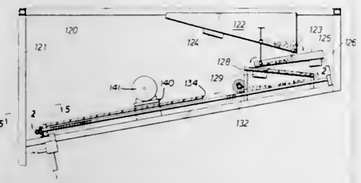
NAIL SEPARATOR APPARATUS

James V. Lowery, 1020 Dorothy St., Houston, Tex. 77008; Charles L. Lowery, 212 Taylor #2, Anchorage, Ak. 99504; Vernon L. Lowery, 6621 Stroud, Houston, Tex. 77074, and Jimmy R. Lowery, 1040 RUtland, Houston, Tex. 77008

Division of Ser. No. 276,131, Jul. 28, 1972, Pat. No. 4,025,030. This application May 23, 1977, Ser. No. 799,377

Int. Cl.[2] B65H *9/00*

U.S. Cl. 221—173 **16 Claims**



1. A nail separator comprising:

(a) container of nails adapted to supply a plurality of nails arranged in a random manner with respect to one another;

(b) at least a pair of parallel and spaced rods in proximity of said source and arranged to receive thereon a plurality of nails, said rods being spaced apart by a distance greater than the diameter of the shaft of the nails but less than the width of the heads thereon to define a slot;

(c) a worm arranged around at least one of said rods and having a pitch sized to receive the shaft of one of the nails between adjacent turns on said worm;

(d) means for relatively advancing said worm relatively toward a plurality of nails in the slot so that said worm engages one of the nails between adjacent turns; and

(e) notch means adjacent to said worm and formed in one of said rods, said notch means being sized to drop the head of a nail through said notch means.

4,122,976

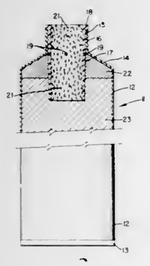
DISPENSING

Divaker B. Kenkare, South Plainfield; Clarence R. Robbins, Piscataway, and John C. Carson, Jr., Mansaquan Park, Ala.L OF NJ, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 11, 1976, Ser. No. 741,097

Int. Cl.[2] B65D *35/22*

U.S. Cl. 222—94 **5 Claims**



1. A container for dispensing creams, gels, pastes and the like in a solid column wherein fluent material of a predominantly base color has at least on its outer surface random but distinctive streaks and/or areas presenting a marbleized appearance comprising a flexible walled body adapted to contain a supply of said base color material, said body having a discharge outlet at one end, an open-ended tubular member fixed in said body with its outer end in said outlet and extending within the body sufficiently to dispose its inner end within the supply of base color material, means distributed over the internal surface of said member providing a multiplicity of irregular fixed sharp randomly spaced internal surface projections, means defining a space within said body around said member for a supply of fluent different color material, and means providing a plurality of openings in said member adjacent said outlet and upstream of at least some of said projections that are disposed to introduce material from said body space into base material passing through said member before discharge through said outlet, said materials being discharged through said member when the body wall is flexed.

4,122,977

ACTUATORS FOR VALVES FOR PRESSURIZED DISPENSERS

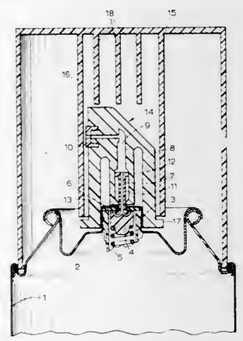
Roger A. Butcher, Horndean, England, assignor to Aerosol Inventions & Development S.A. AIDSA, Fribourg, Switzerland

Filed Feb. 3, 1977, Ser. No. 765,393

Claims priority, application United Kingdom, Feb. 13, 1976, 5672/76

Int. Cl.[2] B65D *83/14*

U.S. Cl. 222—182 **2 Claims**



1. A pressurized dispenser comprising a container and a valve assembly carried by said container, said assembly comprising a valve member, a stem and an actuating button, said stem connecting said valve member to said button, a valve seating, a valve mounting receiving said seating, said valve member being normally sealed against said seating but, on tilting of said valve member by said button, allowing dispensing of a product through said stem and button, wherein said button is movable with respect to said valve member in a direction along the axis of said stem between a first position wherein said button is free to tilt, and a second position wherein co-operating surfaces on said button and said valve mounting prevent tilting of said button, said container further comprising a removable overcap, said overcap being adapted to fit onto said container to conceal said valve assembly, and co-operating surfaces on said overcap and said button whereby application of said overcap to said container causes, through said last-mentioned surfaces, displacement of said button from said first to said second position.

4,122,978

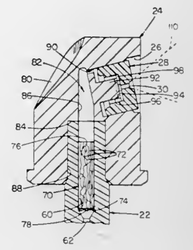
PRESSURIZED PACKAGE FOR DISPENSING A PRODUCT IN A FINELY DISPERSED SPRAY PATTERN WITH LITTLE DILUTION BY PROPELLANT

Ronald N. Guimond, Stoughton, and Harold R. Thompson, Duxbury, both of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 587,834, Jun. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 492,701, Jul. 29, 1974, abandoned. This application Oct. 6, 1976, Ser. No. 729,997

Int. Cl.[2] B65D *83/14;* **B67D** *5/58*

U.S. Cl. 222—189 **26 Claims**



1. A dispensing package for dispensing a liquid product such as a deodorant or a hair spray with less than ten percent propellant dilution in a finely divided and reproducible spray pattern that has substantially the same characteristics as the spray pattern of the liquid product dispensed in an aerosol system with about sixty percent propellant dilution comprising a pressurized container having therein a liquid product to be dispensed and a gaseous propellant, a valve for controlling the flow of product from the container, a discharge passage extending from said valve to a discharge orifice, said discharge orifice having a diameter in the range of 0.1–0.4 millimeter, a flow control member disposed in said discharge passage between said valve and said discharge orifice, said flow control member having multiple elongated passages and over dispensed through the discharge orifice, said product being dispensed from discrete passage apertures, the flow dimension of each elongated passage being in the range of one to one hundred microns, the total effective flow area of said elongated passages being greater than the area of said discharge orifice, and the length of at least some of said elongated passages being substantially greater than the maximum dimension of said discharge passage transverse to the product flow direction, said flow control member in dispensing action producing a pressure drop between its upstream and downstream ends as the product flows through said elongated passages, and product breakup means in said discharge passage between said flow control member and said discharge orifice for producing a turbulent flow pattern that assists the breakup of the liquid product into desirable spray form as it is dispensed through the discharge orifice, said product being dispensed from said discharge orifice in a finely divided spray pattern with less than 10 percent dilution by the gaseous propellant.

4,122,979

SQUEEZE BOTTLE CONTAINING A LIQUID PRODUCT AND OPERATIVE WHETHER UPRIGHT GR INVERTED

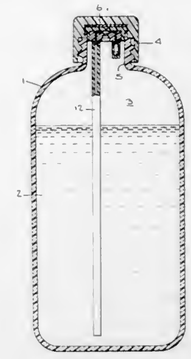
Robert H. Laauwe, 237 Green Ridge Rd., Franklin Lakes, N.J. 07417

Continuation-in-part of Ser. No. 691,709, Jun. 1, 1976. This application Apr. 20, 1977, Ser. No. 789,139

Int. Cl.[2] B65D *83/06*

U.S. Cl. 222—193 **9 Claims**

1. A liquid dispensing package comprising a container containing the liquid and a gas or vapor above the liquid, said container being provided with a dispensing nozzle having a spray orifice opening from a swirl chamber having at least two tangential injection orifices, a first means for connecting one of said injection orifices with said liquid, a second means for connecting the other of said injection orifices with said space, and means for pressurizing said gas or vapor and said liquid, said swirl chamber forming a substantially flat circular space,



said spray orifice opening axially and substantially centrally from said space and said injection orifices opening transversely into the periphery of said space and pointing in the same directions substantially tangentially with respect to said periphery, said space being an enclosed space other than for said orifice.

4,122,980

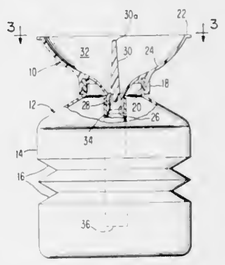
CONTAINER TOP WITH INTEGRAL STOPPER

Gerald C. Laverty, Santa Clara, Calif., assignor to Gary J. Mastman, San Jose, Calif.

Filed Jul. 25, 1977, Ser. No. 819,033

Int. Cl.[2] B65D *41/34*

U.S. Cl. 222—207 **2 Claims**



1. A top for a container having a corrugated side wall and an open neck comprising: a funnel-shaped body of a moldable material, said body having a top opening, a passage therethrough centrally disposed at the bottom thereof, and means thereon for coupling the body to the neck of the container with the passage communicating with the container, the body having an inner surface provided with a downward slope extending throughout a major part of the distance between said top opening and the passage and terminating at the passage; and an elongated stopper having a tapered outer surface and being of said material, said stopper being integral at one end thereof with the body at the termination of said inner surface, in alignment with said passage, and extending upwardly therefrom with the upper end of the stopper being adjacent to and below said top opening, there being a line of weakness at the junction between the body and the stopper to permit the latter to be separated from the body when the stopper is shifted relative to the body, the stopper having a maximum transverse dimension greater than that of the passage, whereby the stopper, after

being separated from the body, can be inverted and inserted into the passage to at least partially close the same.

4,122,981

TONER DISPENSING DEVICE HAVING RECIPROCATING DISPENSING PLATE AND AGITATOR

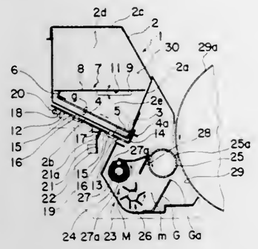
Koji Takeuchi, Gamagori, and Syotaro Inagaki, Okazaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 4, 1976, Ser. No. 729,602

Claims priority, application Japan, Oct. 18, 1975, 50-142296[U]; Oct. 25, 1975, 50-145674[U]; Aug. 20, 1976, 51-112158[U]

Int. Cl.² G01F *11/10*

U.S. Cl. 222—231 **7 Claims**



1. A toner dispensing device for use in an electrophotographic copying machine having a dry process developing apparatus, said toner dispensing device comprising a toner container disposed adjacent the developing apparatus for accommodating therein toner for replenishing toner used by the developing apparatus and having a bottom portion extending toward said developing apparatus, slit means in said bottom portion of said container between said toner container and said developing apparatus, a first plate member movably disposed along said bottom portion of said toner container for reciprocation through said slit means, said first plate member having bridging preventing means thereon and having at least one toner supplying opening therein adjacent the end thereof and which is positioned in said first plate member for being projected through said slit means to a first position in said developing apparatus and retracted through said slit means to a second position in said toner container during the reciprocation of said first plate member for transporting toner which fills said toner supplying opening when said first plate member is within said toner container out of said toner container as said opening in said first plate member is projected to said first position through said slit means, and a second plate member for stabilizing the toner and having a plurality of openings therein and being movably mounted in said toner container above said first plate member for dividing the interior of said toner container into upper and lower portions each containing toner therein, said second plate member being movable in association with the reciprocation of said first plate member for causing toner to pass through said openings in said second plate member into said lower portion of said toner container.

4,122,982

AEROSOL METERING VALVE PROVIDED WITH PUMPING EFFECT

Giancarlo Giuffredi, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Italy

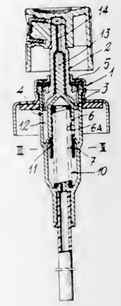
Filed Mar. 8, 1977, Ser. No. 775,626

Claims priority, application Italy, Mar. 16, 1976, 20983/76[U]

Int. Cl.² B67D *5/42*

U.S. Cl. 222—321 **8 Claims**

1. In an aerosol valve assembly, a hollow cylinder adapted to be fixed to an upper portion of a container the contents of which are to be dispensed, said cylinder having an inner open end adapted to communicate permanently with the interior of the container, an outer piston slidable fluid-tightly in said cylinder and having an elongated piston rod portion extending fluid-tightly through and beyond an outer end of said cylinder, said piston rod portion being formed with an axial bore passing therethrough and forming part of a dispensing path of travel for the contents of the container while said contents travel through said axial bore from an inner end toward an outer end thereof, an inner piston situated in said cylinder between said outer piston and said inner end of said cylinder, and spring means in said cylinder urging said inner piston toward said outer piston, said inner piston having an elongated solid piston rod portion normally pressed by said spring means against said inner end of said axial bore for normally closing the latter to prevent dispensing of the contents of said container, said inner piston having between said outer piston and said inner end of said cylinder an outer portion in slidable fluid-tight contact with said cylinder, and said inner piston having between said outer portion thereof and said outer piston an outer surface spaced from said outer piston and an inner surface of said cylinder to define a pressure chamber with said inner surface of said cylinder and said outer piston, said spring means urging both of said pistons to a rest position where said outer piston is



distant from said inner end of said cylinder while said inner piston is maintained by said spring means in a closed position closing said axial bore, said inner piston having a passage means placing an interior portion of said cylinder at the region of said inner end thereof, and thus the interior of said container, in communication with said pressure chamber when said pistons are in said rest position thereof but preventing communication between said interior portion of said cylinder and said pressure chamber when said pistons are both manually displaced toward said inner end of said cylinder in opposition to said spring means during a pressure stroke applied to said outer piston and through the latter to said inner piston for dispensing the contents of the container through said axial bore, said inner piston having in said pressure chamber in a plane normal to the axis of said bore a cross-sectional area at the outer surface of said inner piston great enough to provide from the incresing pressure of the fluid in said pressure chamber during the pressure stroke of said pistons a force sufficient to advance said inner piston automatically in opposition to said spring means inwardly beyond said outer piston for opening said axial bore to provide for automatic dispensing of the contents of the container when the pressure in said pressure chamber has increased sufficiently, whereby the contents of the container will be dispensed at a pressure greater than that prevailing in the interior of the container.

4,122,983

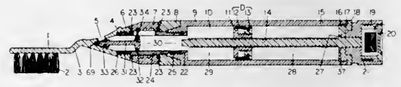
VERSATILE DISPENSING DENTAL HYGIENE AND SHAVING DEVICE

James D. Jolly, Rte. 2, Glen Dean, Ky. 40141

Filed Oct. 4, 1976, Ser. No. 729,116

Int. Cl.² G01F *11/00*

U.S. Cl. 222—390 **8 Claims**



1. A portable dispensing device comprising
a head assembly having an orifice therein;
a handle assembly removably attached to said head assembly, said handle assembly comprising
a hollow substantially rigid reservoir housing;
a piston assembly axially mounted within said reservoir housing;
a plug means at the end of said housing opposite said head assembly for sealing said housing;
an aperture through said housing positioned so that it is always behind the forward face of said piston;
a tapered expandable sleeve;
a compensating expander within said sleeve;
mating means within said sleeve and on the exterior of said expander for preventing rotational movement between said sleeve and said expander;
a piston compressing adjusting disk for axially moving said expander within said sleeve;
internal threading within said expander;
an externally threaded feed rod extending substantially the length of said housing and mating with said internal threading of said expander; and
an actuating knob secured to said feed rod externally of said housing.

4,122,984

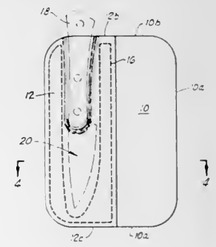
POCKET SCABBARD FOR KNIFE

A. G. Russell, 1705 Highway 71 N., Springdale, Ark. 72764

Filed Jan. 21, 1977, Ser. No. 761,466

Int. Cl.² F41B *13/04*

U.S. Cl. 224—2 D **1 Claim**



1. A pocket scabbard for a knife comprising:
a first pocket-sized flexible panel of rectangular configuration, having two opposed, substantially parallel side edges, a top edge and a bottom edge and further having a knife-receiving slot opening at said top edge;
second and third panels of rectangular configuration secured to said first panel on opposite sides thereof and each having a side edge aligned in coincidence with one side edge of said first panel and each having a second edge aligned in coincidence with said bottom edge of said first panel, said second and third panels covering said slot except for the opening thereof, each of said second and third panels defining a cavity aligned with said slot, said cavities and slot together forming a handle-receiving pocket for snugly receiving and frictionally engaging the handle of a knife placed in said scabbard and for limiting, by the bottom of said handle-receiving pocket as formed by the convergence of said second and third panels, the distance which the blade of said knife can extend into said knife-receiving slot in said first panel, said second and third panels being sewn to each other through said first panel along sew lines spaced from the boundary of the slot in said first panel so that said first panel terminates at the slot at a location between a knife blade in said slot and said sew lines, said pocket formed by said cavities and slot having a depth sized to cause a portion of the handle of a knife placed in said pocket to project beyond said first-mentioned edge of said first panel, and to retain the point of a blade of the knife positioned in said pocket to be spaced from the bottom of said slot, and each of said second and third panels having a width, as measured between the side edges thereof, which is about half the width of said first panel; and
the cross-sectional transverse dimension of said handle-receiving pocket, measured between said second panel and said third panel, being at least twice the cross-sectional transverse dimension of said knife-receiving slot.

4,122,985

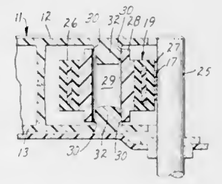
TAPE CARTRIDGE WITH SELF-ALIGNING TAPE TRANSPORT ROLLER

Norman E. Nelson, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 708,377, Jul. 26, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 854,601

Int. Cl.² B65H *17/20*

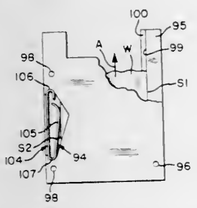
U.S. Cl. 226—181 **3 Claims**



1. In a tape cartridge including a case including opposed spaced apart sidewalls, a length of tape, support means in said case supporting said tape for movement along a path within said case past a tape drive station, said cartridge being adapted to be received in a recording and/or reproducing machine which machine includes a tape drive capstan positioned to engage one side of the tape at said tape drive station, said support means including a roller having a cylindrical peripheral surface and means for mounting said roller between said sidewalls at said drive station with said peripheral surface supporting the side of said tape opposite the side engaged by said drive capstan when the cartridge is inserted in a said machine, the improvement wherein: said means for mounting said roller comprises interacting portions of said sidewalls and roller providing bearing surfaces in continuous engagement at two locations spaced axially along said roller when said roller supports the tape against a said drive capstan, said bearing surfaces at each of said locations comprising one frusto-conical bearing surface and one circular edge bearing surface, said circular edge bearing surface having a diameter causing it to make engagement at only one position around its periphery when pressed against said frusto-conical surface, said frusto-conical surface being oriented to cause a force biasing said roller axially toward the other of said locations in response to a force applied radially of said roller to bias said bearing surfaces together, and said means for mounting allows movement

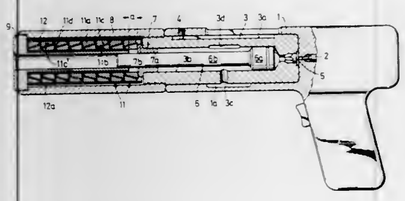
of said roller in either axial direction from a normal position with the axis of said roller generally normal to said sidewalls to change both of said spaced locations axially of said frusto-conical surfaces in response to differential forces applied across the width of tape on one side of the peripheral surface by the capstan in a said machine in which the cartridge is positioned, thereby causing tilting of the axis of the roller into parallel alignment with the axis of the drive capstan.

4,122,986
PINNING MACHINE
Richard W. Lewis, Centerville, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Division of Ser. No. 744,668, Nov. 24, 1976, Pat. No. 4,079,878.
This application Jun. 3, 1977, Ser. No. 803,013
Int. Cl.[2] B65H *23/32*
U.S. Cl. 226—198 **3 Claims**



2. Apparatus for guiding the edge of a sheet or web, comprising: means providing an undercut recess, and a leaf spring resiliently held captive in the recess without the aid of fasteners, the spring having a pair of U-shaped portions, an elongated portion joined to one of the legs of the U-shaped portions and a spring finger joined to the other leg of one of the U-shaped portions, the finger extending beyond the recess and being adapted to contact an edge of the sheet or web.

4,122,987
DAMPING DEVICE FOR A FASTENING ELEMENT SETTING GUN
Peter Jochum, Meiningen, Austria, and Eugen Schilter, Zurich, Switzerland, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Jul. 12, 1977, Ser. No. 814,930
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1976, 2632413
Int. Cl.[2] B25C *1/14*
U.S. Cl. 227—10 **7 Claims**



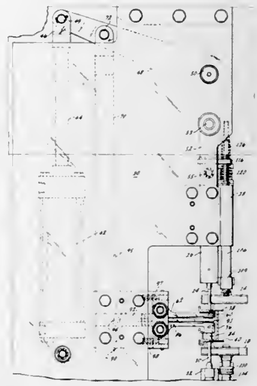
1. A setting gun using explosive force for propelling fastening elements into a receiving material comprising an axially elongated barrel forming an axially elongated bore, said bore having a forward end and a rearward end, an axially elongated muzzle tube aligned with and located forwardly of the forward end of said bore, a driving piston axially displaceably mounted within the bore in said barrel and extending forwardly of said barrel into said muzzle tube and being axially displaceable therethrough, an elastic damping device extending in the elongated axial direction of said barrel and located radially outwardly of said muzzle tube and extending in the axial direction between said muzzle tube and said barrel, said damping device having a forward end in contact with said muzzle tube and a rearward end, a stop ring located at and in contact with the forward end of said barrel and extending into contact with the rearward end of said damping device, said stop ring extending into the bore in said barrel, said driving piston comprising a head and an axially elongated shank extending forwardly of said head, said shank being axially displaceable through said stop ring, said stop ring having a forward end and a rearward end with the forward end disposed in contact with the rearward end of said damping device and the rearward end being in the path of movement of the head of said driving piston so that said stop ring is pressed forwardly against said damping device by a gas cushion within the bore as the head on said driving piston moves forwardly through the bore in said barrel, wherein the improvement comprises that said damping device comprises a plurality of pairs of rings arranged in series in the axial direction of said muzzle tube, each said pair of rings comprising an outer ring and an inner ring positioned radially inwardly of said outer ring, each said outer ring having a radially inwardly facing surface, each said inner ring having a radially outwardly facing surface, in each said pair of rings the radially inwardly facing surface on said outer ring being disposed in contact with the radially outwardly facing surface on said inner ring, each said outer and inner ring having a forward end face and a rearward end face each of which extends transversely of the axial direction of said muzzle tube, said damping device being displaceable when the setting gun is fired from an uncompressed condition to a compressed condition where said driving piston is displaced forwardly through the bore in said barrel and said muzzle tube, in the uncompressed condition of said damping device each said pair of rings having the forward end face of said outer ring extending axially forwardly of the forward end face of said inner ring and disposed in contact with the rearward end face of said inner ring in the next forwardly positioned said pair of rings and spaced axially rearwardly from the rearward end face of said outer ring in the next forwardly positioned said pair of rings, said radially inwardly facing surface on said outer ring and said radially outwardly facing surface on said inner ring of each said pair of rings extends in the same direction, said radially inwardly facing surface of said outer ring and said radially outwardly facing surface of said inner ring in each said pair of rings are frusto-conically shaped and converge inwardly in the axial direction toward the forward end of said muzzle tube, and the axial length of each of said pair of rings increases in the direction extending from said stop ring toward the forward end of said muzzle tube so that said pairs of rings have increasing masses toward the forward end of said muzzle tube.

4,122,988
PIERCE RIVET MACHINE
Max Casutt, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Filed Oct. 17, 1977, Ser. No. 842,738
Int. Cl.[2] B21J *15/10*
U.S. Cl. 227—53 **13 Claims**

1. A pierce rivet machine for simultaneously pierce riveting sheets of material to the opposing flanges of a channel shaped member comprising:
- a first pierce rivet driver and a second pierce rivet driver, said first and second pierce rivet drivers being diametrically opposed to each other,
- a first pierce rivet holder and a second pierce rivet holder for respectively holding rivets for said first and second pierce rivet drivers,
- a first and second anvil each respectively positioned to function in conjunction with the operation of said first and second pierce rivet drivers,

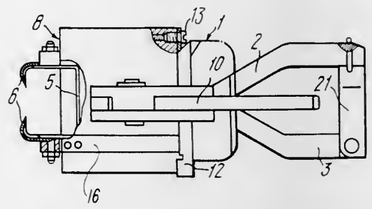
first anvil support means and second anvil support means,
a first drive rod supporting said first pierce rivet driver,

a second drive rod supporting said second pierce rivet driver,



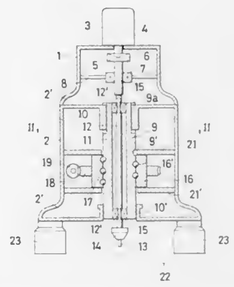
means for driving said first drive rod along an axial reciprocating path and means for driving said second drive rod along an axial reciprocating path.

4,122,989
INSTRUMENT FOR SUTURING WITH METAL STAPLES
Nikolai N. Kapitanov, ulitsa Iriny Levchenko, 3, kv. 9; Svetlana V. Kolosova, Zarevy proezd, 15, kv. 28; Vyacheslav D. Kolesnikov, Grokholsky pereulok, 30, korpus 2, kv. 65, all of Moscow, and Vladimir P. Kharchenko, Krasnogorsky raion, p/o Stepanovskoe, 18, kv. 28, Moskovskaya oblast. all of U.S.S.R.
Filed Nov. 18, 1976, Ser. No. 743,000
Claims priority, application U.S.S.R., Dec. 19, 1975, 2301823
Int. Cl.[2] B25C *5/02*
U.S. Cl. 227—108 **7 Claims**



1. A surgical instrument for suturing with metal staples, comprising an anvil unit including a pair of elongated jaws situated in alignment with each other and respectively having inner surfaces formed with guiding grooves for a staple, said jaws terminating in front ends, said unit including two anvils for bending the tips of a staple, said anvils respectively being fixed to front ends of said jaws and being shaped as needles which are curved at approximately 90° and which terminate in tips which are directed toward each other, said anvils being formed with longitudinal grooves which form extensions of said grooves of said jaws, said unit also including a means operatively connected with said jaws for releasably holding them together in a position wherein said longitudinal grooves at said inner surfaces of said jaws are approximately parallel to each other, and a staple-driving unit including a frame having means for detachably mounting the same on said jaws, said frame also being formed with grooves for receiving and holding a staple with the latter grooves also forming extensions of said jaws grooves, said staple-driving unit including a staple-driving member situated in said frame for propelling a staple toward said anvils, and said staple-driving unit also including a lever operatively connected with said staple-driving member for operating the same to propel a staple toward said anvils.

4,122,990
PORTABLE FRICTIONAL WELDING DEVICE
Yoshio Tasaki; Noboru Nakayama, both of Nagoya, and Hiroshi Kajihara, Kohnan, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Dec. 9, 1976, Ser. No. 748,880
Claims priority, application Japan, Dec. 11, 1975, 50-148237
Int. Cl.[2] B23K *19/02*
U.S. Cl. 228—2 **9 Claims**



1. A portable frictional welding device for welding an object which comprises:
- a casing;
- a rotary shaft disposed within said casing;
- means provided at the lower portion of said rotary shaft for grasping a metallic part to be subjected to welding;
- a motor for rotating said rotary shaft;
- a slidable cylindrical member provided with a spiral groove on the outer surface thereof for freely rotatably supporting said rotary shaft in the axial direction of said rotary shaft;
- a sleeve provided with a matching spiral groove on the inner surface thereof and with a worm wheel on the outer surface thereof, and fitted to said cylindrical member to form a spiral path by the matched spiral grooves in which path a plurality of balls are inserted;
- a torque motor for rotating said worm wheel for thereby sliding said cylindrical member in the axial direction of said rotary shaft; and,
- fixing means provided on the bottom surface of said casing for positionally fixing said device with respect to the object to which said metallic part is to be welded.

4,122,991
APPARATUS FOR ASSEMBLING SPACE STRUCTURE
James D. Johnston, Madison; Richard H. Tuggle, Jr., Huntsville; John L. Burch, and Keith H. Clark, both of Decatur, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 31, 1977, Ser. No. 829,316
Int. Cl.[2] B64G *9/00*
U.S. Cl. 228—13 **14 Claims**

1. An apparatus for forming structures in outer space from rolls of prepunched ribbon material comprising:
- a lower deck;
- an upper deck;
- legs extending between said upper deck and said lower deck;
- means for supporting a roll of said prepunched material adjacent one end of said upper deck;
- sheet forming mechanism carried by said upper deck;
- means for feeding said material from said roll through said

sheet forming mechanism for imparting a predetermined circular shape to said ribbon material defining a track; and drive means carried in said lower deck for propelling said apparatus on said track;

means for synchronzing said drive means with said means



for feeding said material through said sheet forming mechanism;

whereby said material is continuously formed into a predetermined shape as it is unrolled from said roll and as said apparatus is moved on said track defined by said sheet material previously fed through said sheet forming mechanism.

4,122,992

METHOD OF MAKING A COMPOSITE INTERLAYER FOR DIFFUSION BONDING

David S. Duvall, Cobalt, and Daniel F. Paulonis, Moodus, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 642,627, Dec. 19, 1975, Pat. No. 4,038,041. This application May 2, 1977, Ser. No. 792,628

Int. Cl.[2] B23K *19/00*

U.S. Cl. 228—176 **9 Claims**

1. A process for producing a ductile lamellar interlayer containing a melt depressant useful in the transient liquid phase bonding of metallic articles which includes the steps of:

a. providing a plurality of ductile lamellae having an overall composition which is similar to that of the articles being joined (exclusive of the melting point depressant),

b. bonding the lamellae together by co-rolling to produce a unitary ductile interlayer,

c. applying boron to the surface of the bonded lamellae by a boronizing process.

4,122,993

PRESSURE-EQUALIZING VALVE FOR A PACKAGING CONTAINER

Willi Glas, Renningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

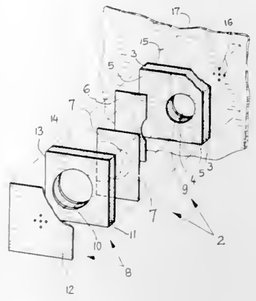
Filed Aug. 16, 1976, Ser. No. 714,636

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1975, 2537317

Int. Cl.[2] B65D *31/14*

U.S. Cl. 229—62.5 **11 Claims**

1. A pressure-equalizing valve suitable for use with packaging containers, said valve comprising a substantially rigid valve seat having a pair of opposed faces with a valve opening therebetween, an adhesive coating at least on one of said opposed faces on said valve seat, a flexible valve diaphragm at least partially surrounding and substantially covering said valve opening on said face with said adhesive coating of said valve seat, a separation layer secured to at least a portion of said adhesive coating on said face of said valve seat and at least partially surrounding said valve opening and being positioned between said coated face and said flexible valve diaphragm whereby there is provided a pressure-equalizing passage extending from said valve opening through said flexible valve



diaphragm, and a gas pervious protective covering placed in fixed relation to the container and valve seat.

4,122,994

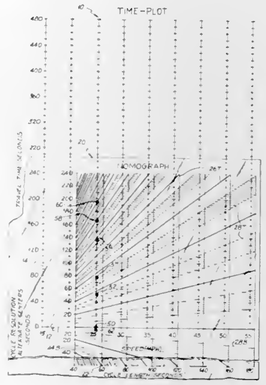
METHOD AND MEANS FOR DETERMINING OPTIMUM AVERAGE CYCLE LENGTHS

Marshall B. McReynolds, and Jack D. VanTilbury, both of Arlington, Va., assignors to Traffic Engineers Supply Corporation (TESCO), Alexandria, Va.

Filed Oct. 20, 1976, Ser. No. 734,125

Int. Cl.[2] G06C *3/00*

U.S. Cl. 235—89 R **5 Claims**



1. A computational device for determining optimum average cycle lengths for an arterial traffic control system, which comprises:

(a) a base member;

(b) a transparent overlay member;

said base member having indicia representative of a portion of a speed scale arrayed along a first axis, and indicia representative of a portion of a travel time scale arrayed along a second axis, said base member having a plurality of spaced, constant speed lines emanating from said first axis and disposed parallel to said second axis, whereby a first grid representative of speed versus travel time is obtained;

said overlay member having indicia representative of average cycle lengths in units of time and forming a portion of a time scale arrayed along a first axis, and indicia representative of cycle resolution centerpoints arrayed along a second axis, said overlay member having a plurality of lines extending ray-like from said centerpoints, pairs of adjacent ray-like lines defining first and second acceptable cycle length zones therebetween and an unacceptable cycle length zone positioned between said first and second acceptable cycle length zones, each zone extending ray-like between each pair of adjacent ray-like lines, whereby a second grid representative of average cycle length versus cycle resolution centerpoints is obtained; and

(c) said first and second grids having predetermined scale factor relationships which cooperate as the overlay member is shiftably aligned with the base member so as to produce an overlapping display of points plotted on constant speed lines of said base member with acceptable cycle length zones of said overlay member.

4,122,995

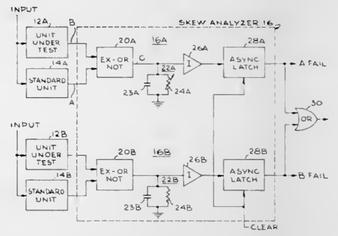
ASYNCHRONOUS DIGITAL CIRCUIT TESTING SYSTEM

Robert H. Franke, Santa Barbara, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 2, 1977, Ser. No. 821,118

Int. Cl.[2] G06F *11/00*

U.S. Cl. 235—302 **9 Claims**



1. Means for testing a digital unit comprising:

a standard unit to which it is desired that said digital unit conform;

digital signal input means for concurrently applying a test input signal to said digital unit and to said standard unit;

skew analyzer means to which the outputs of said digital unit and said standard unit are continuously and asynchronously applied, said skew analyzer means being operative to determine when the outputs of said units are out of skew for a time greater than an adjustable predetermined minimum time period; and

indicating means responsive to the determination by said skew analyzer means of an out of skew condition for at least said predetermined minimum time period for providing an output signal indicative of a potential or actual failure of said digital unit.

4,122,996

COPY REPRODUCTION MACHINE WITH CONTROLLER SELF CHECK SYSTEM

Stephen P. Wilczek, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1977, Ser. No. 829,018

Int. Cl.[2] G11C *29/00;* **G06F** *11/00*

U.S. Cl. 235—302.3 **4 Claims**

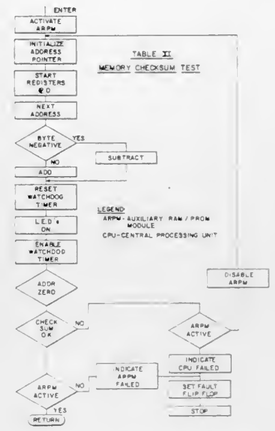
1. A method of operating a reproduction machine having a plurality of components which cooperate with one another and a photosensitive member to produce copies, said components being controlled by a controller having a memory section, said method comprising:

(a) sensing the application of power to the machine;

(b) totalizing the content of said memory;

(c) comparing the memory total with a first checksum;

(d) preventing actuation of the machine components if said



memory total fails to correspond with said first checksum; and

(e) displaying the cause of the failure.

4,122,997

OPTICAL READER

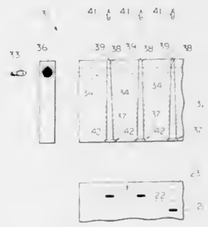
Mitsuhisa Fukuda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 7, 1977, Ser. No. 766,152

Claims priority, application Japan, Feb. 6, 1976, 51-11977

Int. Cl.[2] G06K *7/10;* **G08C** *9/06*

U.S. Cl. 235—455 **14 Claims**



1. An optical reader for sensing the presence and absence of a mark in an area of a sheet comprising:

illuminating optical fiber means for conveying light to illuminate said area;

light sensor means; and

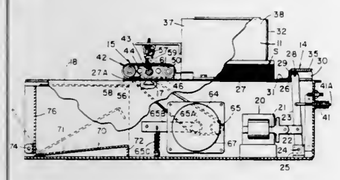
reading optical fiber means for conveying light reflected from said area to the light sensor means, a width of the reading optical fiber means in a direction parallel to the sheet and a distance of a light receiving end of the reading optical fiber means in said direction from a center of illumination of said area being selected so that a ratio of an amount of light conveyed to the light sensor means when the mark is absent to an amount of light conveyed to the light sensor means when the mark is present is a predetermined optimum value.

4,122,998

OPTICAL CARD READER APPARATUS

Vincent E. Eitzen, Marco Island, Fla., and Robert R. Moore, Glenview, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 9, 1977, Ser. No. 804,883
Int. Cl.[2] G06K *13/00, 7/10*
U.S. Cl. 235—475 **10 Claims**



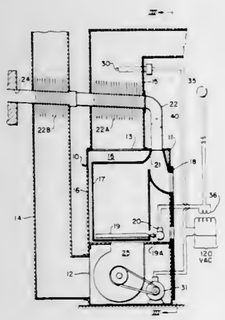
7. Apparatus for reading a plurality of opaque cards provided with apertures arranged in a grid of rows and columns comprising: a supply hopper for storing said cards in a vertical stack; pusher means responsive to an electrical signal for urging the bottom card of said stack from beneath said stack; driver mechanism including floating transport means provided with a pair of endless tracks, spaced at a distance approximately the width of a card and adapted to engage each card as it is urged from beneath said stack by said pusher means and for moving said cards sequentially along a reading path; a plurality of photodetectors mounted to said apparatus beneath said path and spaced apart at a distance corresponding to the spacing of said columns on said cards; and a source of light mounted to said supply hopper for generating a line of light parallel to the rows of said cards as they pass along said path beneath said transport means, said line of light being further focused on said photodetectors, whereby for each row of apertures in said cards, individual photodetectors will be energized by said source only if said card is apertured at the location above it as the card passes along said path.

4,122,999

FORCED AIR HEATING SYSTEM

Rosario Belcastro, deceased, late of Ambridge, Pa., and by Patricia Belcastro, administratrix, 1813 3rd Ave., New Brighton, Pa. 15066

Filed Mar. 17, 1977, Ser. No. 778,357
Int. Cl.[2] G05D *23/00*
U.S. Cl. 236—11 **7 Claims**



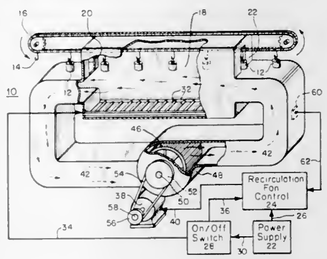
1. A forced air heating system including a chimney for exhausting burnt gases due to the burning of a fuel comprising the combination of:
a furnace housing,
a cold air supply duct connected to said furnace housing,
a driven blower in said furnace housing receiving air from said cold air supply duct,
a plenum chamber receiving air from said driven blower,
a combustion chamber including a burner for the combustion of fuel to heat the air delivered by said driven blower to said plenum chamber,
a flue duct communicating with said combustion chamber for exhausting burnt gases from the furnace housing,
a flue pipe extending from said flue duct through said plenum chamber and said cold air supply duct and then into said chimney for conducting burnt gases received from said flue duct to the chimney, said flue pipe including heat exchange means in said plenum chamber for withdrawing sensible heat from the burnt gases before passing into said chimney,
control means secured in said plenum chamber at a spaced location above said flue pipe passing therethrough to respond to the temperature of the air heated by said flue pipe while passing upwardly through said plenum chamber for controlling said driven blower, and
a thermostat means providing a signal for the delivery of fuel to said burner.

4,123,000

METHOD OF STARTING A HOT AIR FURNACE

Robert F. Miller, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Dec. 23, 1976, Ser. No. 753,702
Int. Cl.[2] F26B *21/00*
U.S. Cl. 236—11 **6 Claims**



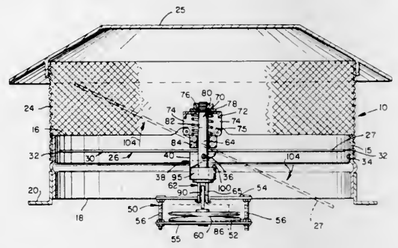
1. In a hot air recirculating furnace system having a heating element and means for igniting the heating element, a thermostat, air ducts adapted to provide recirculating airflow, a three-phased inductor motor for driving a recirculating fan, a three-phased power supply for providing power to the motor comprising:
a first contact means coupled to each of the three phases of the power supply for providing current flow therethrough when closed;
resistive means coupled between the power supply and the motor for providing a current path from the power supply to the motor;
a second contact means coupled between the power supply and the motor for providing an alternate current path from the power supply to the motor;
a first controller means for controlling the opening and closing of the first contact means; and
a second controller means responsive to the thermostat for controlling the current flow through the alternate current path.

4,123,001

AUTOMATIC VENTILATOR

Stanley Kolt, Mamaroneck, N.Y., assignor to Leonard W. Suroff, Jericho, N.Y., a part interest

Filed Sep. 12, 1977, Ser. No. 832,482
Int. Cl.[2] F24F *11/02*
U.S. Cl. 236—49 **35 Claims**



1. An automatic temperature responsive damper assembly for use within the conduit of a ventilating system designed to exhaust the air in a confined space to the atmosphere whereby said conduit may be opened in order to minimize excess heat build up in said confined space and closed when it is desired to prevent heat loss from said confined space, said assembly comprising:
A. at least one vane carried within said conduit,
B. mounting means operatively associated with said conduit for pivotally securing said at least one vane thereto, so as to be movable between a generally open position and a generally closed position in said conduit,
C. camming means secured to said at least one vane carried by said mounting means and including a camming surface thereon,
D. a temperature responsive drive assembly mounted to detect temperature changes in said conduit and adapted to actuate in response to temperature changes within a predetermined range,
E. transmission means operatively extending between said drive assembly and said camming surface of said camming means for communicating movement of said drive assembly to said camming means, such that said at least one vane is moved to varying positions in response to temperature changes in said ventilating conduit, and
F. biasing means for urging said camming means into contact with said transmission means in a direction opposite to the forces applied by said drive assembly, so as to obtain an automatic closing of said at least one vane irrespective of the mounted position of said conduit.

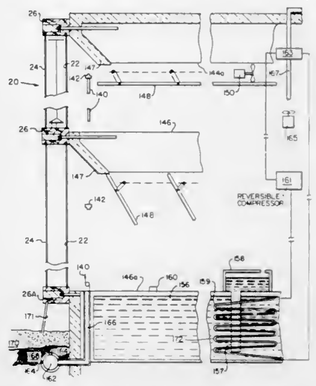
4,123,002

HEATING AND VENTILATION SYSTEM

Norman B. Saunders, 15 Ellis Rd., Weston, Mass. 02193

Continuation-in-part of Ser. No. 639,305, Dec. 30, 1975, abandoned, which is a division of Ser. No. 529,235, Dec. 3, 1974, Pat. No. 3,952,947. This application Aug. 3, 1977, Ser. No. 821,416
Int. Cl.[2] F24J *3/02*
U.S. Cl. 237—1 A **8 Claims**

1. A system for controlling the temperature, ventilation and humidity within an enclosed building comprising:
means disposed in the ground exterior to said building for changing the temperature and relative humidity of air passing therethrough, said means disposed in the ground including piping communicating with the interior of said building and having at least a portion disposed exterior of said building below the frost line, said portion of piping including at least one aperture for introducing exterior air from the ground into said piping;
means for drawing air from the exterior of said building to the interior of said building through said means disposed in the ground so as to change the relative humidity of the air drawn therethrough;
solar heating means for adding to the heat content of the air drawn through said means disposed in the ground so as to raise the temperature of the air; and
means for recovering exhaust heat from air leaving said building comprising a first fluid for storing said heat, a tank for storing said first fluid, a second fluid, a compressor for compressing said second fluid, heat exchanger means for transferring heat from air leaving the interior of said enclosure to said second fluid when heat is to be stored and transferring from said second fluid to air leaving the interior of said enclosure when heat is to be released from said system, and conduit means including a coil disposed in said tank for transferring heat between said first and second fluids so as to provide a condensor when said heat is to be stored in said tank.

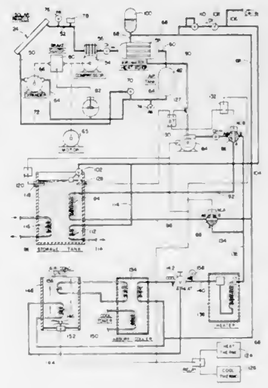


4,123,003

SOLAR ENERGY COLLECTION PANELS AND ENERGY RECOVERY SYSTEMS

Theodore Winston, 643 Stanford Rd., Burbank, Calif. 91504

Filed Sep. 3, 1976, Ser. No. 720,126
Int. Cl.[2] F24J *3/02;* **F25B** *27/00*
U.S. Cl. 237—1 A **20 Claims**



1. A system for recovering solar energy comprising:
a plurality of roofing panels, each having a decorative outer surface with an air flow path thereunder, each of said

panels having inlet means adjacent one end of said flow path for delivering air thereto and outlet means adjacent the second end of said flow path for receiving air therefrom;

a compressor for compressing air delivered thereto;

a first manifold means coupled between said outlet means and said compressor to deliver heated air from said panels to said compressor;

heat utilization means coupled to said compressor for removing heat from air received from said compressor;

expansion means coupled to said utilization means for controllably reducing the pressure of air delivered thereto; and

second manifold means coupled to said expansion means for delivering air passing through said expansion means to said inlet means on said plurality of roofing panels.

4,123,004

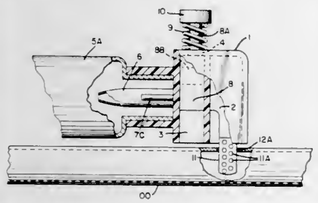
CAR HAND SPRAY WASHER

Frederick L. Jerry, 13971 Mubbell St., Detroit, Mich. 48227

Filed Jun. 24, 1976, Ser. No. 701,354

Int. Cl.[2] B05B *7/30*

U.S. Cl. 239—310 **1 Claim**



1. In a spray washer of the type wherein a wand has a brush at one end and is connected to a source of water under pressure at the other end, and a liquid soap container is connected to the wand such that liquid soap flows from the container into the wand through a hole therein to mix with water flowing through the wand, the improvement comprising: a valve body connecting the liquid soap container to the wand, said valve body including: a valve chamber having aligned inlet and outlet holes and an opening through an upper portion; a cavity extending from the outlet hole to the exterior of the valve body; a valve adapted to fit slidingly in said chamber between said holes and having a passageway therethrough which can be aligned with said holes, said valve also having a threaded shank extending through said opening, a button screwed onto a threaded end of the shank, and a spring disposed on said shank between the button and the upper portion of the valve chamber; a first cap extending outwardly from said valve body for holding the liquid soap container; a needle-like tube extending outwardly from said valve body into the liquid soap container and aligned with said inlet hole; a pair of guide pins extending outwardly from said valve body into the liquid soap container, one of the pins having a hole near the valve body to regulate the air in the container permitting free flow of soap out of the container; and, a second cap snugly fit into said cavity and extending outwardly into the hole in the wand, the second cap having holes therein, whereby depression of the button against the spring aligns the passageway in the valve with the inlet and outlet holes permitting liquid soap to flow from the container through the needle-like valve, the inlet hole, the valve passageway, the outlet hole and the cavity into the second cap wherein the liquid soap is mixed with the water flowing through the wand.

4,123,005

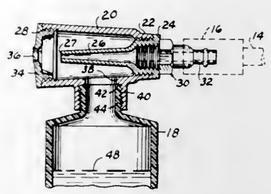
ACOUSTICAL TEXTURE APPLICATOR

Glenn I. Blunk, Rte. 1, Box 91, Oklahoma City, Okla. 73111

Continuation-in-part of Ser. No. 705,371, Jul. 14, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,774

Int. Cl.[2] B05B *7/14;* **B65D** *1/32*

U.S. Cl. 239—327 **1 Claim**



1. A viscous texture spray applicator, comprising:

an elongated hollow body of truncated conical form having an internally threaded forward end and a rearward inlet end forming a viscous fluid passageway throughout the major portion of its length tapering outwardly from its inlet end;

an elongated air tube coaxially disposed within said body and connected at one end with the inlet end of said body and being gradually reduced to a restricted extremity at its other end and terminating adjacent the inner limit of the forward end body threads for axially concentrating a stream of air flowing toward the forward end of said body;

a tubular fitting connected with said air tube opposite its restricted extremity and adapted to be connected with a source of air under pressure;

an end member threadedly connected with the forward end of said body,

said end member having an axial dish-shaped recess facing toward said air tube diametrically substantially equal with respect to the diameter of the fluid passageway at the forward end of said body and having an orifice coaxially aligned with and spaced forwardly of the restricted extremity of said air tube a distance at least greater than the depth of the recess,

said body having a lateral port, diametrically at least equal with respect to the transverse cross sectional area of the fluid passageway surrounding said air tubs at the inlet end of said body, intermediate its ends surrounded by an outstanding flange; and,

a flexible wall fluid container having an open neck portion adapted to be secured to said body flange,

hereby external pressure continuously applied to opposing exterior surfaces of said container forces contained viscous fluid through the lateral port to fill the fluid passageway and end member recess and be blown through the orifice by the air stream flowing toward the forward end of said body.

4,123,006

SPRAY PIPE FOR USE IN A PIPE LINE

Tuyoshi Yukishita, No. 77, Aza Tenpaku, Tenpaku-cho, Toyohashi-shi, Aichi, Japan, assignor to Osamu Shiina, Tokyo and Tuyoshi Yukishita, Toyohashi, both of, Japan

Filed Jun. 10, 1976, Ser. No. 694,538

Claims priority, application Japan, Jun. 20, 1975, 50-83658[U]

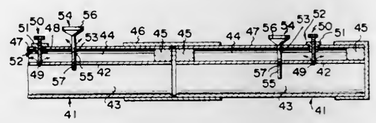
Int. Cl.[2] B05B *1/20*

U.S. Cl. 239—266 **6 Claims**

1. A pipe line comprising:

a plurality of spray pipe units, each of said pipe units having their opposite ends open and including a partition provided within the inner space thereof so as to divide said inner space into a main space and a secondary space, at least one spray hole provided within the outer peripheral

wall of the pipe defining said secondary space, a plug member positioned within each of the opposite ends of the secondary space so as to seal the same, means for fluidically communicating the main space with the secondary space, and means for adjustably restricting said communicating means between fully restricted and non-restricted states so as to adjust the flow rate of fluid from the main



space into the secondary space from substantially zero flow to full flow conditions;

said pipe units being serially disposed in an end-to-end manner such that the main spaces of said pipe units are fluidically communicated with each other; and

sleeve-shaped coupling means disposed about the joints of said pipe units defined by the adjacent ends thereof for connecting said pipe units together in a sealed manner.

4,123,007

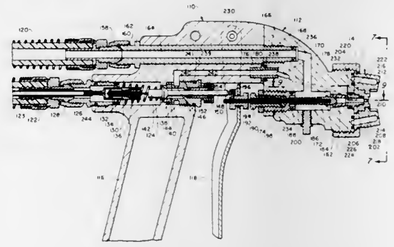
VALVE ASSEMBLY AND SPRAYING APPARATUS THEREFOR

Charles R. Gardner, 1549 Wilder St., Thousand Oaks, Calif. 91360

Continuation-in-part of Ser. No. 714,222, Aug. 13, 1976, abandoned, and Ser. No. 647,688, Jan. 9, 1976, abandoned, said Ser. No. 714,222, is a continuation of Ser. No. 571,456, Apr. 25, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,667

Int. Cl.[2] B05B *7/08*

U.S. Cl. 239—414 **31 Claims**



1. Apparatus for mixing two components comprising:

a chamber having an inlet and an outlet;

a housing secured in said chamber;

at least one passageway between the exterior of said housing and the interior of said chamber;

said housing having a bore;

an expendable valve assembly installed in said bore, said expendable valve assembly being independent of said housing;

mechanical means for opening and closing the valve in said expendable valve assembly;

first conduit connecting means on said housing for delivering a first component to said expendable valve assembly at the inlet side of said chamber;

second conduit connecting means for delivering a second component to the inlet side of said chamber;

whereby opening of the valve in said expendable valve assembly causes the two components to be mixed in said chamber for delivery to the outlet.

4,123,008

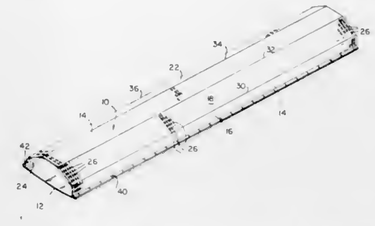
REACTOR DISTRIBUTION DUCT

Robert Woodrow McClain, Dallas, Tex., assignor to Glitsch, Inc., Dallas, Tex.

Filed Feb. 4, 1977, Ser. No. 765,717

Int. Cl.[2] B01J *8/12*

U.S. Cl. 239—568 **5 Claims**



1. An improved distribution duct for a reactor vessel comprising:

an elongated back plate;

an elongated front plate having a plurality of elongated perforated integral flat segments separated by elongated angular breaks, and two flat marginal edge portions on the opposite sides of said front plate, said marginal edge portions being in flush engagement with and welded to said back plate adjacent to the sides thereof, said flat segments defining with said back plate a flow chamber.

4,123,009

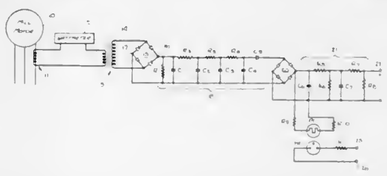
LOAD SENSOR FOR A GRINDING MILL

Leo T. Kilpinen, Sudbury, Canada, assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 470,169, May 14, 1974, abandoned. This application Mar. 25, 1976, Ser. No. 670,414

Int. Cl.[2] B02C *4/04;* **H02P** *3/00;* **G01R** *31/02*

U.S. Cl. 241—30 **4 Claims**



1. In the operation of a rod mill driven by an electric motor said rod mill having a plurality of rods for crushing ore, an improved method of monitoring said operation for incipient tangle of the rods comprising: predetermining a band of frequencies of relatively large amplitude associated with an incipient tangle of rods, deriving an electrical signal which is proportional to current drawn by the motor, and filtering out of said signal substantially all frequencies except those in the predetermined band, thereby enabling the detection of the occurrence of characteristic frequencies within the specific band of frequencies, and altering the process conditions in the rod mill to avoid incipient tangle of the rods.

4,123,010

ADAPTER HUB FOR A REEL

Donald M. Eger, Elkhart, Ind., assignor to International Radio & Electronics, Inc., Elkhart, Ind.

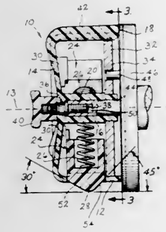
Filed Jan. 2, 1975, Ser. No. 537,936

Int. Cl.[2] B65H *17/02*

U.S. Cl. 242—68.3 **9 Claims**

1. An adapter hub for a reel, said hub being mountable to a

spindle shaft carried upon a turntable and comprising a body defined by a continuous side wall and an end wall, said side wall including an edge oppositely located from said end wall and having at least two openings formed therein angularly disposed about the side wall and spaced between said side wall edge and said end wall, a plunger means carried by said body and received within each side wall opening, said body including lug means projecting outwardly from said side wall for anchoring said reel against rotation relative to the body, said body including means defining a central bore therein for receiving said spindle shaft, means for releasably securing said body to said spindle shaft for rotation with the shaft with said side wall edge located adjacent said turntable and with the shaft received within said bore, a spring means partially compressed between and contacting said bore defining means and each plunger means for urging each plunger means laterally of said side wall into an extended position projecting outwardly from its side wall opening, each plunger means being shiftable with the compressive yielding of its contacting spring means into a retracted position within said body, each plunger means including a generally V-shaped reel contacting part which projects from said side wall when the plunger means is in its extended position, each reel contacting part including a first beveled face means extending at a first angle for urging the plunger means thereof into its retracted position as said reel is fitted onto said body and a second beveled face means extending at a second angle for overlying said reel to secure said reel to the hub and for urging the plunger means thereof into its retracted position as said reel is removed from said body.



4,123,011

COIL UNWIND AND WIND-UP METHOD AND APPARATUS THEREFOR

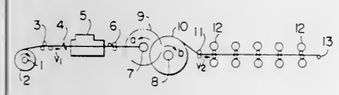
Toshiyuki Kajiwara, and Tadashi Nishino, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 657,234, Feb. 11, 1976, abandoned. This application Oct. 6, 1977, Ser. No. 839,772

Claims priority, application Japan, Feb. 19, 1975, 50-20615; Apr. 25, 1975, 50-49629; Jul. 2, 1975, 50-80803

Int. Cl.[2] **B21C** *47/02, 47/16, 47/24*

U.S. Cl. 242—78.1 **8 Claims**



1. A coil handling apparatus comprising:

first means for unwinding a strip from a plurality of coiled strips of an ordinary size;

first joining means for joining the trailing end of a preceding strip of one of a plurality of coiled strips to the leading end of a next succeeding strip from another of the plurality of coiled strips, said first unwinding means and first joining means being arranged in a first processing line;

processing means arranged in a second processing line parallel to and spaced from said first processing line for processing the joined strip;

first winding means for winding the joined strip to form a larger diameter coiled strip up to at least ten times the size of an ordinary size coiled strip, said winding means being arranged in said first processing line;

second unwinding means for unwinding and feeding said large diameter coiled strip to said processing means without a looper means so as to provide semi-continuous feeding to the strip with minimal interruption times of the strip feeding, said second unwinding means being arranged in said second processing line;

each of said first winding means and said second unwinding means including coil support means for supporting a large diameter coil thereon and being alternately displaceable between said first and second processing lines for utilization in winding and unwinding; and

means for rapidly and easily moving said coil support means of said first winding means having said large diameter coiled strip wound thereon in the axial direction thereof from said first processing line to said second processing line to enable unwinding of said strip therefrom and to provide for semi-continuous feeding of the strip and for moving said coil support means of said second unwinding means in the axial direction thereof from the second processing line to said first processing line to enable winding of the strip thereon.

4,123,012

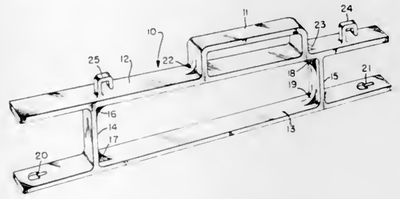
CORD HOLDER

W. Colton Hough, 18 Meadow La., E. Williston, N.Y. 11596

Filed May 12, 1977, Ser. No. 796,086

Int. Cl.[2] **B65H** *75/36*

U.S. Cl. 242—85.1 **2 Claims**



1. An integral cord holder comprising:

side walls disposed substantially parallel to each other;

an upper cross member connecting the upper portions of said side walls;

a lower cross member connecting lower portions of said side walls;

said cross members being substantially parallel to each other;

a reinforcing rib at the juncture of said upper cross member to said portions of said side walls;

a reinforcing rib at the juncture of the said lower cross member to said lower portions of said side walls;

a handle integral with one of said side walls;

reinforcing ribs at the juncture of said handle to said side walls;

a clip integral with one of said side walls for receiving the enlarged end of an extension cord whereby said enlarged end is secured for storage.

4,123,013

SAFETY BELT REWINDING MECHANISM WITH IMPROVED RETRACTION CHARACTERISTICS

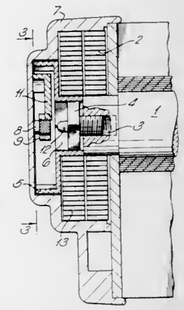
John Bottrill, Chichester, and Douglas J. Cunningham, Steep Marsh Nr. Petersfield, both of England, assignors to Britax (Wingard) Limited, Chichester, England

Filed Dec. 28, 1976, Ser. No. 755,095

Claims priority, application United Kingdom, Jan. 7, 1976, 490/76

Int. Cl.[2] **A62B** *35/02;* **B65H** *75/48*

U.S. Cl. 242—107 **16 Claims**



1. A safety belt retractor comprising: a safety belt; rotatable means for storing said belt; first and second means for biasing said rotatable means in a belt retracting direction, said first biasing means applying a light retraction force to said belt when worn, said first and second biasing means rewinding said belt on said rotatable means when said belt is not worn; lock-out means for disconnecting the bias of said second biasing means from said rotatable means, said lock-out means causing energy derived by pulling said belt from said rotatable means to be stored in said second biasing means, whereby only one said first biasing means applies the retraction force to said belt; actuator means for disengaging said lock-out means as said belt is retracted, to release said stored energy in said second biasing means; and,

counter means, responsive to a predetermined plurality of revolutions of said rotatable means in the retraction direction, for moving said actuator means to a disengaging position, whereby said actuator means disengages said lock-out means after said plurality of revolutions whereby both said first and second biasing means rewind said belt.

4,123,014

YARN TENSION CONTROL

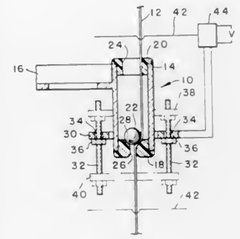
Robert W. McCullough, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 779,292, Mar. 21, 1977, abandoned. This application Nov. 25, 1977, Ser. No. 855,039

Int. Cl.[2] **B65H** *59/24*

U.S. Cl. 242—152.1 **2 Claims**

1. A yarn tension control device comprising: an elongated housing, means forming a yarn outlet in said housing, means forming a yarn inlet in said housing, a first eyelet mounted in said yarn inlet in said housing having a first opening therethrough for the passage of yarn, a second eyelet mounted in said yarn outlet having a second opening therethrough having a diameter greater than the diameter of said first opening, a metallic ball freely supported in said housing on said first eyelet for applying a retarding force to a yarn passing through said eyelets, an electro-magnet mounted adjacent to and operably associated with said metallic ball for applying a force to said metallic ball and means adjacent said yarn outlet responsive to the tension on the yarn exiting from said yarn outlet to regulate the current to said electro-magnet to adjust the force



of the electro-magnet on said metallic ball and thereby said retarding force on said yarn.

4,123,015

AUTOMATIC STOPPING DEVICE FOR TAPE RECORDER

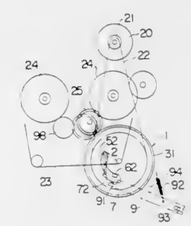
Fumito Komatsu, Suwa, and Shinkichi Yazima, Chino, both of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Japan

Filed Jan. 5, 1978, Ser. No. 866,950

Claims priority, application Japan, Jan. 20, 1977, 52-5627; Jan. 20, 1977, 52-5628

Int. Cl.[2] **B65H** *59/38;* **G03B** *1/02*

U.S. Cl. 242—191 **3 Claims**



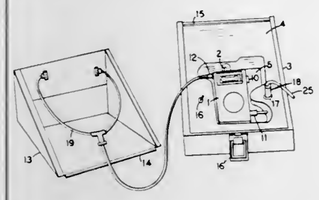
1. An automatic stopping device for tape recorder comprising a flywheel, a detection wheel disposed in overlying relationship with the flywheel and disposed for engagement with a tape feed member such as a reel mount or an idler connected therewith, a spring, a slide control member having a sliding wall and urged for rotation in one direction by said spring which has its one end connected with the flywheel, an operation release lever, a displacement member didposed for movement along the sliding wall of the control member and carrying a pin which bears against said operation release lever and also carrying a guide, and a base plate including a guide slot formed therein for receiving the pin to control the extent of movement of the displacement member and also including a guide pin located adjacent the guide of the displacement member for controlling the movement of the displacement member in the radial direction, the arrangement being such that when the tape feed member ceases to move to produce a load which causes the detection wheel to be angularly displaced with respect to the flywheel, the pin on the displacement member is driven in the radial direction onto a path of rotation of a greater diameter along which it is capable of engaging the release lever, thus actuating the release lever.

4,123,016

CONTROL FOR MINI TAPE RECORDER

William J. Burstein, 92 Brook Ave., Deer Park, N.Y. 11729

Filed Nov. 25, 1977, Ser. No. 854,518
Int. Cl.[2] G03B *1/04*
U.S. Cl. 242—201 1 Claim



1. Means to adapt a mini-tape recorder of the hand held type having a reverse wind control for transcribing control by a secretary comprising,

means to mount the mini-tape recorder,

comprising a mounting member with a slanting front face,

the front face having a recess adapted to receive the mini-tape recorder, the recess being formed so as to accommodate a power plug and head set plug inserted into the mini-tape recorder and to provide easy access to the volume control of the minitape recorder,

a solenoid in the mounting means adapted to actuate the reverse wind control,

foot operation switch means having two contacts, one contact being connected to actuate the tape recorder in the forward direction and the other contact being connected to the solenoid to actuate the rewind control to cause the tape to move in the reverse direction,

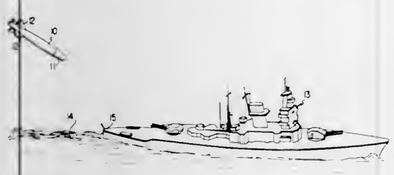
a removable cover for the mounting means, the cover being adapted to accommodate a head set and foot control.

4,123,017

DUAL, NON-CROSSING HORIZONTAL GATE TRACKING CIRCUIT AND METHOD

George R. Lewis, Maitland, and Allen Fernandez, Orlando, both of Fla., assignors to Martin Marietta Corporation, Orlando, Fla.

Filed Nov. 9, 1970, Ser. No. 88,089
Int. Cl.[2] F42B *15/10;* F42G *7/10;* F42B *15/00*
U.S. Cl. 244—3.16 11 Claims



1. Apparatus comprising:

means for producing a transduced electrical signature of an optical image of a target within a field of view;

first detector means for detecting a first edge of the optical image of the target;

second detector means for detecting a second edge of the optical image of the target;

target center detector means responsive to said first and second detector means for detecting a point on the target between the detected edges thereof; and

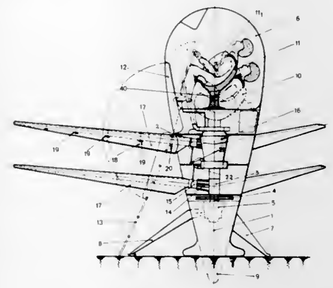
means responsive to said target center detector means for generating an electrical error signal related to the departure of the detected target center from the center of the field of view.

4,123,018

HELICOPTERS WITH COAXIAL ROTORS, OF CONVERTIBLE TYPE IN PARTICULAR

Rene C. A. Tassin de Montaigu, 6, Square d'Orleans, Paris, France

Continuation of Ser. No. 648,535, Jan. 12, 1976, abandoned. This application May 16, 1977, Ser. No. 797,486
Int. Cl.[2] B64C *27/10*
U.S. Cl. 244—17.23 13 Claims



1. Improvements to helicopters with coaxial rotors of convertible type in particular, consisting of at least two contra rotative rotors carrying blades having a coating for lifting and propelling, the fuselage having an axis common with the axes of the rotors and rocking jointly with the latter between substantially vertical and horizontal positions, improvements wherein each rotor consists of a nave carrying blades radially arranged, and said blades being movable in incidence and cyclically controlled and further comprising,

a shaft coaxial with said fuselage axis inside said fuselage forming a structural member of said fuselage,

and means for supporting the rotor naves axially displaced along and rotatable about said shaft,

said helicopter being free of fixed wings with said rotors being the sole means for providing lift when said fuselage is vertical and horizontal in flight,

propulsive transmissions and flight control systems external to said shaft,

engine means axially displaced from said shaft inside said fuselage embracing the common axis of said shaft and fuselage coupled to said propulsive transmission for providing driving power to said rotors,

wherein the incidence of the blades coating is driven by two cyclic plates located between the rotors and related to each of said rotors.

4,123,019

METHOD AND SYSTEM FOR GRAVITY COMPENSATION OF GUIDED MISSILES OR PROJECTILES

David S. Amberntson, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Nov. 10, 1976, Ser. No. 740,740
Int. Cl.[2] G06F *15/50*
U.S. Cl. 244—3.2 17 Claims

1. A system for producing a signal to compensate the flight path of a guided missile or projectile for the effects of gravity comprising:

means mounted in the missile or projectile for establishing an attitude reference axis independent of the attitude of the missile or projectile;

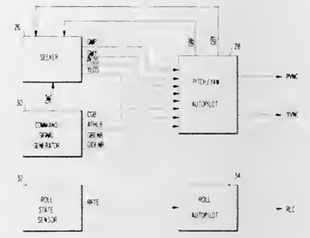
means for sensing an angular difference between the attitude of the missile or projectile and the attitude reference axis;

means for generating a gravity compensation signal in response to the sensed angular differences between the attitude of the missile or projectile and the reference axis;

means for storing said generated gravity compensation signal; and

means for compensating the flight path of the missile or projectile in response to the stored gravity compensation signal.

12. A method for dynamically producing a gravity compensation signal for compensating the flight path of a missile or projectile comprising the steps of:



establishing, within the missile or projectile, an attitude reference independent of the attitude of the missile or projectile;

sensing changes in the attitude of the missile or projectile relative to the attitude reference;

generating a gravity bias signal in response to the sensed changes in the attitude of the missile or projectile relative to the attitude reference; and,

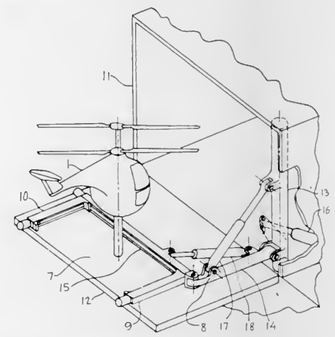
storing the gravity bias signal for subsequent modification of the flight path of the missile or projectile.

4,123,020

VTOL LAUNCHING AND RETRIEVAL SYSTEMS

Kazimierz Korsak, 1568 Ellsmere Ave., Los Angeles, Calif. 90019

Continuation-in-part of Ser. No. 660,642, Feb. 23, 1976, abandoned. This application Apr. 11, 1977, Ser. No. 786,683
Int. Cl.[2] B64F *1/22*
U.S. Cl. 244—116 2 Claims



1. A VTOL launching and retrieval system using in combination:

(a) a VTOL landing gear comprising in combination a single cylindrical stud having shock absorbing means, the structure of said stud being adequately rugged to withstand the clamping required to fully restrain said VTOL in a vertical direction by friction, without affecting the operation of said shock absorber and

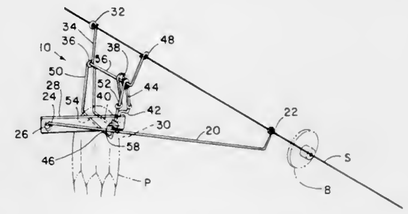
(b) a retrieval means at the landing site having a mechanical arm comprising: two digits, at least one of which is movable in an essentially horizonal plane from an open position to a closed position to guide said stud into a slot formed by said digits in said closed position; said mechanical arm further comprising stud clamping jaws, at least one of which is movable in said slot to further guide said stud in said horizontal plane to a predetermined position where it can be clamped by said jaws to fully restrain said VTOL, said combination thereby providing a VTOL retrieval by means of an orderly transfer of the control of the VTOL from that of its own flight control system to the control of said mechanical arm.

4,123,021

KITE LOAD-RELEASING MESSENGER

Claude R. Cruise, Jr., 2008 Virginia Hgts. Dr., Bluefield, W. Va. 24701

Filed Sep. 22, 1977, Ser. No. 835,457
Int. Cl.[2] A63H *27/08*
U.S. Cl. 244—155 R 9 Claims



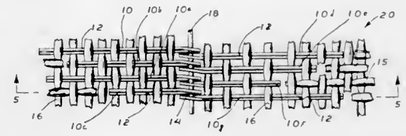
1. In a messenger for kites having means for slidably engaging a kite string having an obstruction thereon proximate a flying kite, the improvement comprising: the means for slidably engaging supporting a body having first and second jaws in opposed relation for releasably holding a parachute, means urging all said jaws apart, means for holding all said jaws together releasably, means for releasing the holding means; the means for releasing comprising a member forwardly extending from a first end of the messenger in position to strike said obstruction on said kite string, the forwardly extending member comprising a trigger, the means for slidably engaging including the trigger having at the forward end means for engaging said kite string; the means for holding including an arm having: a pivotal connection to the first jaw, a sear at an intermediate portion of the arm positionable with the arm for holding the second jaw proximate the first jaw, and a pivotal connection to the rearward portion of the trigger.

4,123,022

SEAM FOR FORMING WIRES AND DRYER FELTS

William H. Dutt, Rensselaer, and Eric R. Romanski, Delmar, both of N.Y., assignors to Albany International Corp., Albany, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,609
Int. Cl.[2] B21F *15/06*
U.S. Cl. 245—10 6 Claims



1. A seam construction joining together the ends of a forming wire press fabric or felt or a dryer felt, which comprises;

the ends to be joined;

a plurality of eyepins having sinuously curved bodies, replacing terminal portions of the lengthwise yarns in each of said ends, said eyepins being anchored in the ends by an

interweaving of the sinuous bodies with the crosswise yarns in the ends, the curves of the sinuous body mating with the crimp of the weave of said crosswise yarns, the eyes of said eyepins projecting from each end wherein the eyepin is anchored, said eyepins being positioned in the ends so that when the ends are brought together, the eyes of one end interleaf with the eyes of the other end; and

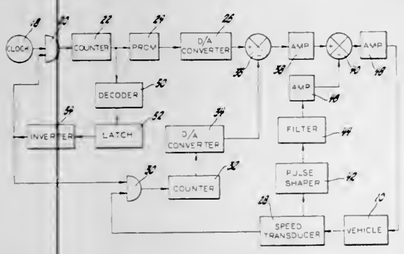
a joinder pin passing through the interleafed eyes of said eyepins whereby said ends are joined together.

4,123,023

SYSTEM FOR CONTROLLING VEHICLE MOVEMENT OVER A FIXED GUIDEWAY

Robert H. Nelson, Pleasant Ridge, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1977, Ser. No. 838,857
Int. Cl.[2] B61L *3/12*
U.S. Cl. 246—182 B **3 Claims**



1. A system for controlling the movement of a vehicle over a predetermined guideway comprising:

means effective to generate a command signal having a value representing a commanded absolute position of the vehicle on the guideway relative to a reference point on said guideway, the value of the command signal varying with time in a manner so as to represent desired vehicle motion characteristics;

means effective to provide a position signal having a value representing the actual absolute position of the vehicle on the guideway relative to the reference point;

means responsive to the command signal and the position signal effective to generate a velocity control signal having a value relating to the vehicle position error relative to the commanded position; and

means effective to control the velocity of the vehicle in accordance with the magnitude of the velocity control signal, wherein the vehicle motion characteristics over the length of the pathway are controlled in accordance with the time related characteristics of the commanded absolute vehicle position on the guideway.

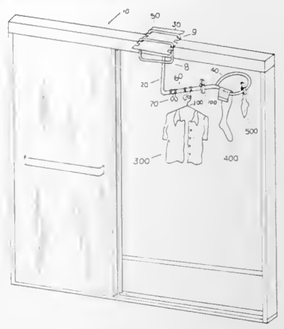
4,123,024

DEVICE FOR DRYING DRIP DRY APPAREL THAT IS EASILY ADJUSTED

Harold Levy, P.O. Box 600015, North Miami Beach, Fla. 33160

Filed May 26, 1977, Ser. No. 800,936
The portion of the term of this patent subsequent to Jul. 5, 1994, has been disclaimed.
Int. Cl.[2] E04G *3/00*
U.S. Cl. 248—214 **4 Claims**

1. An adjustable clothes drying device usable with a bathtub enclosure having a shower door beam of square cross section, the device comprising an adjustable clamp for fitting over the door beam and a cantilever arm horizontally extending outwardly from the clamp toward the interior of the bathtub enclosure, the clamp being constructed from an oblong plate of sheet material having opposite sides, said plate having at least three pairs of slots, one slot of each pair extending inwardly from one of said opposite sides and the other slot of each pair extending inwardly from the other of said opposite sides, said clamp further including a pair of spaced apart rectangular shaped clamping members, one of said clamping members engaging the slots of one of said pairs of slots and the other of said clamping members engaging the slots of another of said



pairs of slots, whereby the position of said clamping members may be selected in accordance with the size of said door beam such that when the oblong plate is positioned against the top of the door beam the clamping members straddle the door beam to stabilize the drying device.

4,123,025

PYRAMIDAL HANGER FOR PLANTS OR LIKE ORNAMENTS

Donald R. Darragh, Tulsa, Okla., assignor to James V. Snow, Tulsa, Okla.

Filed Jun. 13, 1977, Ser. No. 805,846
Int. Cl.[2] A47H *1/16;* **F16B** *45/00*
U.S. Cl. 248—303 **2 Claims**



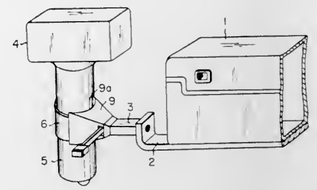
1. A pyramidal-shaped hanger for supporting plants or the like in horizontally spaced relation from a vertical wall comprising an arm adapted to extend downwardly and outwardly from an end of said arm which connects with said wall to a vertex point at the opposite end of said arm from said connecting end, a pair of legs connected to said arm only at said vertex point and extending divergently inward towards said wall from said vertex point, a substantially horizontal cross-piece connecting the ends of said legs opposite from the ends thereof which connect with said arm, and hook means at said vertex point.

4,123,026

OBJECT HOLDING DEVICE

Kawazoe Michio, 5-30-11, Narita Hihashi, Tokyo, Japan

Filed May 16, 1977, Ser. No. 796,986
Claims priority, application Japan, Jan. 29, 1977, 52/9609[U]
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—316 E **7 Claims**



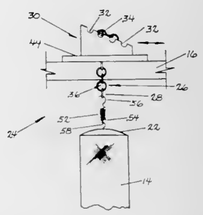
1. An object holding device for removably attaching a main object to an accessory object where either the main object or the accessory object has a pillar-shaped portion comprising: an annular clamping band being put on the pillar-shaped portion of one of the two objects; a holder having one end which is joined with the other object and the other end which is pushed against the pillar-shaped portion through the annular clamping band, the one end of the holder having a cylindrical hollow with a bottom, a centerhole of the bottom being made through the bottom, a surface of the bottom having one or plural convex planes, one or plural concave planes, and one or plura inclined planes which are arranged in a given order; a disk which is put rotatably in the cylindrical hollow, the disk having an operating lever, a surface of the disk having one or plural convex planes, one or plural concave planes, and one or plural inclined planes which are arranged in such a manner that the surface of the disk engages the surface of the bottom; and a headed connecting bolt having a screw head brought into contact with the disk and having a shank passing through the disk and the holder, the end of said shank being joined with the annular clamping band.

4,123,027

ADJUSTABLE TENSIONING AND RETAINING DEVICE

Robert G. Huntington, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Jan. 7, 1977, Ser. No. 757,575
Int. Cl.[2] F16M *11/04*
U.S. Cl. 248—327 **8 Claims**



1. An adjustable tensioning and retaining device for holding fast a filter bag in a baghouse apparatus, the adjustable tensioning and retaining device comprising:

an elongated linking member adapted to be connected to the filter bag;

a body member having a plurality of spaced indentations, the body member is wedge shaped with a sloping top surface and the indentations are formed in the sloping top surface;

means for mounting the body member to a supporting member for linear movement of the body member along the supporting member so that the plane of the sloping top surface of the body member containing the indentations is inclined to the direction of linear movement of the body member; and,

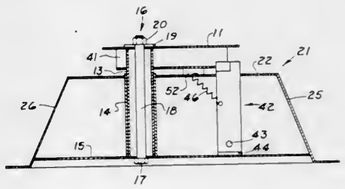
coupling means for removably connecting the linking member into any one of the indentations of the body member.

4,123,028

SWIVEL SEAT PEDESTAL

Howard M. Quakenbush, Apple River, Ill., assignor to Flexsteel Industries, Inc., Dubuque, Iowa

Filed Aug. 6, 1975, Ser. No. 602,204
The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—425 **9 Claims**



1. In a swivel pedestal for a vehicle seat, a mounting plate adapted to be secured to the underside of the seat, a shaft rigidly secured to and depending from said plate, a base member adapted to be rigidly secured to a floor portion of the vehicle, a tubular member rigidly secured to and upstanding from said base member to receive and journal said shaft for rotation about a vertical axis, a brace plate secured to said shaft and said mounting plate and including a horizontal portion in spaced relation below said mounting plate, a generally vertically extending lock bar mounted on said base member and having a portion of generally V-shaped cross-section with the apex of said portion pointing toward said vertical axis, and spring means acting on said lock bar to urge said portion toward said vertical axis and toward engagement with the periphery of said portion of said brace plate, said brace plate having a peripheral cam edge portion engagable with said lock bar portion during rotation of said shaft through a predetermined angle and of gradually increasing radial distance from said axis to cam said lock bar portion radially outwardly against the action of said spring means and having a radially inwardly extending generally V-shaped notch at the large radius end of said cam edge portion to receive said lock bar portion to lock said shaft in said mounting plate in a certain angular position.

4,123,029

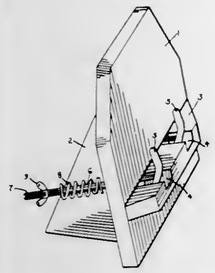
BOOK HOLDER

Michael A. Gillotti, 11600 Barnett Valley Rd., Sebastopol, Calif. 95472

Filed Apr. 28, 1977, Ser. No. 791,990
Int. Cl.[2] A47B *97/04*
U.S. Cl. 248—453 **4 Claims**

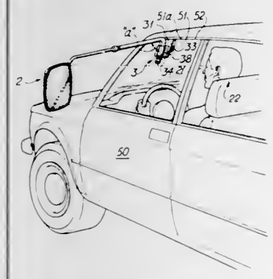
4. A book holder for holding a book in an open, upright position comprised of a face plate held in a rearwardly inclined position by a support plate mounted on the back side of said face plate, a book resting shelf mounted on the front side of said face plate and horizontally perpendicular to said face plate, a pair of spring biased, page gripping assemblies mounted at the level of the book resting shelf for releasable engagement of the lower edges of a book's leaves, each page gripping assembly comprising a rod extending through an

opening in the face plate, said shelf comprising a guide channel aligned with each opening and said page gripping assembly



comprising means engaging said guide channel, the weight of the book being supported by the book resting shelf.

4,123,030
REAR VIEW MIRROR
Nils G. Johansson, Ostrandsvagen 30, Timrä, Sweden (86100)
Filed Jun. 15, 1977, Ser. No. 806,940
Claims priority, application Sweden, Jun. 16, 1976, 7608123
Int. Cl.[2] A47G *1/24*
U.S. Cl. 248—478 **2 Claims**



1. A rear-view-mirror arrangement which can be detachably mounted to the window of a vehicle, said arrangement comprising an arm, on one end of which there is arranged a device for holding a mirror and on the other end of which there is arranged means for detachably mounting said arrangement to said window including a U-shaped member having limbs, whose distance apart is equal to or slightly greater than the thickness of said window, the outwardly facing limb of said attachment device carrying a sleeve arranged to co-act with said arm so as to permit rotation of said arm in said sleeve, wherein

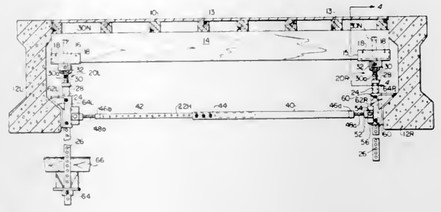
(a) said arm at said attachment device is provided with a curved portion whose angle of curvature is less than 80° and more than 45° so that it is locatable at the edge of or externally of the area of vision of the driver of said vehicle to said mirror;

(b) said other end of said arm having a threaded portion, with which a corresponding nut cooperates;

(c) a spring loosely surrounding said other end of said arm and biasing the lower surface of said sleeve and the upper surface of said nut apart; and,

(d) a pin affixed to said other end of said arm a predetermined axial distance from said threaded portion said pin bearing against the upper surface of said sleeve and compressing said sleeve against said spring, the upper surface of said sleeve having grooves which cooperate with said pin to thereby permit said mirror to be adjusted to anyone of a number of predetermined positions, and in that the arrangement of said arm is such that when said arm is subjected to a pressure exceeding a pre-determined value said pin will no longer co-act with said groove thereby enabling the arm to rotate relative to said sleeve.

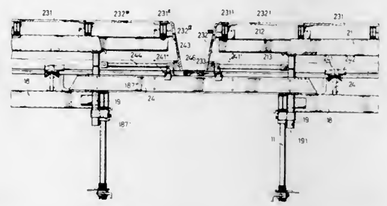
4,123,031
CONCRETE ROADWAY-SLAB FORMING AND FORM-ELEVATION ADJUSTING MEANS
Robert W. Hyre, P.O. Box 7082, Chattanooga, Tenn. 37410
Continuation-in-part of Ser. No. 723,136, Sep. 14, 1976, abandoned. This application Jun. 1, 1977, Ser. No. 802,564
Int. Cl.[2] E01D *1/00*
U.S. Cl. 249—24 **7 Claims**



1. In concrete roadway slab-forming and form-elevation adjusting means, wherein said means comprises generally planar decking adapted to extend between and to be disposed flush with the top-most horizontal surfaces of a spaced-apart in-place pair of girders provided with oppositely facing foot flanges, a plurality of longitudinally extending, spaced-apart joists on which said decking is lair, purlins extending transversely between upper portions of said girders providing support for said joists and decking, said purlins being supported adjacent their ends in upwardly opening U-members, a pair of adjustable length generally vertical rodform support members supporting said U-members and adapted to extend between said facing foot flanges of the girders and said U-members, and adjustable means extending transversely between and supporting the lower end-length portions of said rod-form support members and adapted to be forcefully held to said oppositely facing foot flanges, the improvement comprising said purlins being disposed in laterally spaced-apart pairs in said U-members, and each said rod-form support member extending upwardly into the space between the pairs of purlins and terminating in means enabling bodily adjustment of the elevation of said purlins, joists and decking from above said decking.

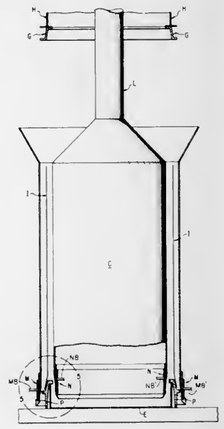
4,123,032
ARRANGEMENT FOR ENCASING STEEL CONCRETE CEILINGS PROVIDED WITH TRUSSES
Horst Teschner, Lichtendorf, Fed. Rep. of Germany, assignor to Ingenium Ingenieurgesellschaft für Mehrzweckbauten, Industrieanlagen und Geländenutzung mbH Bau-Kommanditgesellschaft, Schwerte-Lichtendorf, Fed. Rep. of Germany
Filed Jul. 5, 1977, Ser. No. 813,100
Int. Cl.[2] E04G *11/46*
U.S. Cl. 249—29 **11 Claims**

1. A portable casing table arrangement for encasing ceilings with trusses, comprising: a framework of four telescopic supports and strengthened by struts; casing beams held by said framework; telescopic ceiling casing carriers located on two sides of said casing beams; means on said framework for supporting the casing for the trusses, beam support carriers between said casing beams and said supports and being telescoped on both ends and combined into a fixed-angle frame detachably and tension-proof connected to said supports; truss casing carriers on the beam support carriers having abutments and adapted to bridge a space between adjacent casing table arrangements; for the truss casing said abutments being movable on said truss casing carriers; four intermediate supports detachably fastened to said beam support carriers; said casing



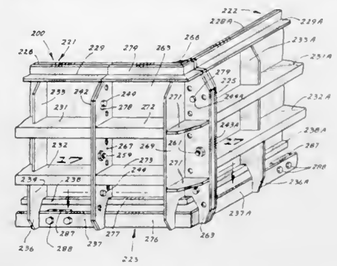
beams supporting said ceiling casing carriers and being combined with said ceiling casing carriers into a rigid-angle frame and being fastened to said four intermediate supports.

4,123,033
APPARATUS FOR FORMING HOLLOW CYLINDRICAL PIPES OF REINFORCED CONCRETE
Carl R. Joelson, P.O. Box 296, Venice, Fla. 33595
Filed Sep. 9, 1977, Ser. No. 831,967
Int. Cl.[2] B28B *7/18*
U.S. Cl. 249—65 **8 Claims**



1. In the apparatus for forming a reinforced concrete pipe in a vertical position comprising a removable inner form, a removable outer form and a support for the lower end of said pipe, a sealing assembly for the lower end portion of each of said forms comprising a depending seal plate assembly attached to and extending along one surface of the lower end portion of each of said forms in a continuous manner, said one form surface being opposite the surface of each form which will be in contact with a forming pipe, a flexible and continuous sealing member attached to each seal plate assembly and forming a chamber between said seal plate assembly and said flexible sealing member and means to cause said flexible member to be extended into contact with each said support upon which the pipe is to be formed and to be withdrawn from such contact with said support.

4,123,034
BOX FORM FOR CONCRETE CULVERT
Elmer Kenneth Crunk, and John W. Craft, both of Jonesboro, Ark., assignors to BC Pausch, Inc., Jonesboro, Ark.
Continuation-in-part of Ser. No. 743,789, Nov. 22, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,029
Int. Cl.[2] B28B *7/00*
U.S. Cl. 249—156 **42 Claims**



1. A box form mountable on a pallet assembly for use in making a box concrete culvert comprising: a first right angle section having upright normally disposed first and second walls, and said first wall having a first end, said second wall having a second end, a first outwardly directed upright flange secured to the first end, a second outwardly directed upright flange secured to the second end, a second right angle section having upright normally disposed first and second walls, said first wall of the second right angle section having a third end, said second wall of the second right angle section having a fourth end, a third outwardly directed upright flange secured to the third end, a fourth outwardly directed upright flange secured to the fourth end, reinforcing members secured to said first and second walls of the first and second right angle sections, a first corner unit having first and second normally disposed upright flanges located adjacent the first and fourth flanges, first studs secured to the first and fourth flanges, said first and second flanges of the first corner unit having holes accommodating said first studs to locate the first corner unit on the first and second sections, said flanges of the first corner unit and first and fourth flanges having first aligned holes, first releasable fastening means extended through said first aligned holes to secure the first corner unit to the first and second sections, a second corner unit, having first and second normally disposed upright flanges located adjacent the second and third flanges of the first and second sections, second studs secured to the second and third flanges, said first and second flanges of the second corner unit having holes accommodating the second studs to locate the second corner unit on the first and second sections, said first and second flanges of the second corner unit and said second and third flanges of the first and second sections having second aligned holes, second releasable fastening means extend through the second aligned holes to secure the second corner unit to the first and second sections, and rail means secured to lower portions of the first and second sections below and laterally outward from said first walls and second walls for locating the box form on a pallet assembly.

4,123,035
CONDUIT COUPLING MEANS FOR MILKING SYSTEMS AND METHOD OF MAKING SAME
Archie E. Boudreau, P.O. Box 1125, Modesto, Calif. 95353
Continuation-in-part of Ser. No. 850,665, Nov. 11, 1977, abandoned, which is a continuation of Ser. No. 764,805, Feb. 2, 1977, abandoned. This application Feb. 27, 1978, Ser. No. 881,246
Int. Cl.[2] F16L *41/00*
U.S. Cl. 251—146 **17 Claims**

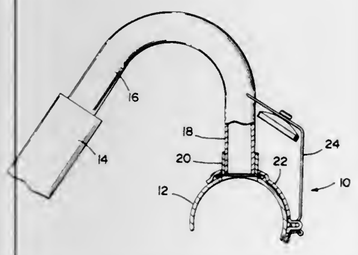
1. In a milking system comprising a tubular manifold having an opening through the wall thereof, a connector body

adapted for connecting a milking hose to said manifold adapted to be matingly fitted through said opening in said manifold and clamp means for mounting said connector body on said manifold, the improvement wherein said connector body comprises:

a. an elongated member of flat steel stock formed to provide a curved cross-section dimensioned to conform to the external periphery of said tubular manifold and having a circular opening at one end thereof, said elongated member having a generally rectangular opening therethrough spaced from said circular opening and being formed with an externally protruding bight extending transversely of said elongated member at a point spaced from the end of said rectangular opening adjacent said circular opening;

b. a length of thin wall tubing fixed through said circular opening at said one end of said elongated member and projecting inwardly of said curved cross-section a distance about equal to the wall thickness of the tubular manifold, the other end of said tubular connector body extending outwardly of said curved cross-section;

c. an O-ring surrounding said inwardly projecting tubing within said curved cross-section;



d. tongue means extending longitudinally with respect to said rectangular opening, said tongue means being made integral with said elongated member adjacent said one end of said rectangular opening with the free end of said tongue means adjacent said bight;

e. a generally "L" shaped closure arm made of flat stock steel, said closure arm having transverse dimensions adapted to be received in said rectangular opening, one leg of said closure arm being adapted to selectively close the outwardly projecting end of said tubing and the end of the other leg of said closure arm being provided with hinge means and having a lip extending in a direction generally parallel to said one leg adapted to engage said free end of said tongue in use; and

f. a pin through said bight in said elongated member, said hinge means of said closure arm being engaged with said pin and said lip of said closure arm being engaged with said free end of said tongue to cause said one leg of said closure arm to resiliently close said externally projecting end of said tubing.

4,123,036

FUEL CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

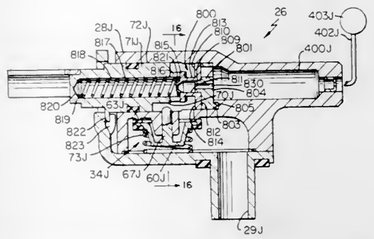
Charles D. Branson, and Roy C. Demi, both of Greensburg, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 570,864, Apr. 23, 1975, Pat. No. 4,007,907, which is a division of Ser. No. 530,605, Dec. 9, 1974, Pat. No. 3,989,064, which is a continuation-in-part of Ser. No. 443,783, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,389, Jul. 18, 1973, abandoned. This application Nov. 18, 1976, Ser. No. 742,847

Int. Cl.[2] **F16K** *25/00;* **F23N** *1/00*

U.S. Cl. 251—180 **4 Claims**

1. A fuel control device having passage defining means for interconnecting a fuel source with a main burner means, said control device having a rotatable selector shaft means, said control having throttle valve means for throttling fuel flow through said passage defining means to said burner means, said selector means being operatively interconnected to said throttle valve means to operate the same, said throttle valve means having adjustment means for providing substantially linear fuel flow adjustment, said adjustment means comprising a pair of members carried by said control device, one of said members being stationary and having aperture means therethrough, the other of said members being movable by said selector means relative to said one member to control the effective opening of said aperture means for fuel flow therethrough, said other



member being rotatable relative to said one member, said other member being rotatably mounted on said one member, said one member having a central hub part extending from one side thereof, said other member having a central hub part thereof telescopically receiving said hub part of said one member to rotatably mount said other member thereon, said hub part of said other member having spline means thereon, said selector shaft means having spline means interconnected to said spline means of said hub part of said other member whereby said spline means cause said other member to rotate in unison with the rotation of said selector shaft means while permitting axial movement therebetween.

4,123,037

VALVES

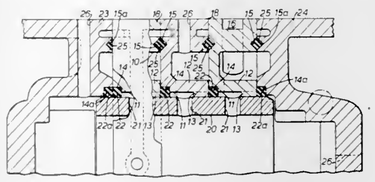
Peter J. Gillespie, Basingstoke, England, assignor to Bridon Engineering Limited, Sheffield, England

Filed Mar. 4, 1977, Ser. No. 774,614

Claims priority, application United Kingdom, Mar. 9, 1976, 9275/76

Int. Cl.[2] **F16K** *27/04*

U.S. Cl. 251—367 **7 Claims**



1. A valve comprising a valve housing containing a ported sleeve, the valve housing comprising a plurality of juxtaposed tubular housing members, each such member comprising a generally cup-shaped portion which is centrally apertured to accommodate the sleeve therethrough with a clearance therebetween, a plurality of relatively flexible leg members spaced about and extending axially from said aperture within said cup-shaped portion and a mounting ring carried on the free ends of said leg members arranged to surround and support the sleeve, seal means being located around said aperture and around the axially extending outer edge of the cup-shaped portion between each adjacent ones of said tubular members.

4,123,038

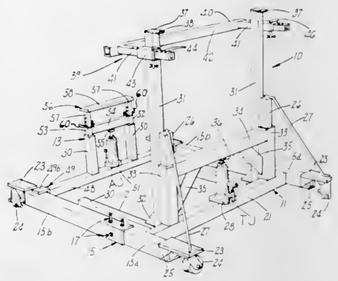
WHEEL LIFT

Gilbert D. Meyers, 2313 First Ave., Apt. 1334, Dodge City, Kans. 67801

Filed Jul. 15, 1977, Ser. No. 816,084

Int. Cl.[2] **B66F** *5/04*

U.S. Cl. 254—2 R **9 Claims**



1. A wheel lift apparatus for lifting and supporting wheel-mounted vehicle tires as a primary load, comprising a mobile base frame assembly including substantially parallel, longitudinal side frame members mounted on casters, a cross frame member rigidly interconnecting said side frame members adjacent one end thereof, said side and cross frame members forming a horizontal portion of said base frame assembly, and vertical guide means projecting upwardly from said horizontal portion; a lift frame assembly adapted for limited vertical movement between lower primary load orienting and upper primary load supporting positions relative to said base frame assembly, said lift frame assembly comprising first means for contacting the primary load in one plane thereof, and second means for contacting the primary load in a plane substantially normal to the first means; and an axle lift frame assembly for lifting and supporting an axle assembly associated with the vehicle tires as a secondary load, comprising a cross beam extending laterally of the base frame assembly and being removably attached to the side frame members thereof, said cross beam having vertical guide means projecting upwardly intermediate its ends, and axle support means including a jack frame adapted for vertical movement relative to the cross beam for lifting and supporting the secondary load.

4,123,039

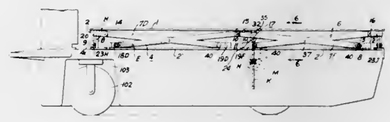
RAISE-LOWER DEVICE

Satinder K. Vig, Edinboro, Pa., assignor to American Sterilizer Company, Erie, Pa.

Continuation of Ser. No. 593,002, Jul. 3, 1975, abandoned. This application Dec. 28, 1976, Ser. No. 754,937

Int. Cl.[2] **B66B** *11/04*

U.S. Cl. 254—9 C **4 Claims**



1. In combination, a vehicle frame (A) and a lifting mechanism and a platform,

said lifting mechanism comprising,

a first plate-like member (**2**), and

a second plate-like member (**2'**),

said plate-like members being disposed in a common plane in end to end relation to each other and resting on said frame (A),

said lifting mechanism comprising a first lifting linkage (D) and a second lifting linkage (E), a third lifting linkage (F) and a fourth lifting linkage (G),

each said lifting linkage being made up of first links (**7D**, **7E**, **7F** and **7G**) and second links (**3**, **4**, **5** and **6**), attached to said frame and to said plate-like member,

each said first links being pivoted to a said second link adjacent their mid-points (**37D**, **37E**, **37F** and **37G**) to swing relative to each other,

the said links of each said first lifting linkage (D) and said second lifting linkage (E) having a first end swingably attached to said first plate-like member (**2**) and a second end supporting said platform (**1**),

the said links of each said third lifting linkage (F) and said fourth lifting linkage (G) having their first ends swingably attached to said second plate-like member (**2'**),

first front balance linkage means attached to said first plate-like member and connected to said first (D) and second (E) lifting linkages,

an intermediate balance linkage means attached to said second plate-like member and to said first and second, lifting linkages,

a rear balance linkage (J) connected to said second plate-like member and connecting said third (F) and fourth (G) lifting linkages to said second plate-like member (**2'**),

a front connecting rod (**14**),

an intermediate connecting rod (**15**) and a rear connecting rod (**16**),

means connecting the ends of said front connecting rod (**14**) to said first balance linkage means (H) and to the second ends of said first links (**3** and **4**) of said first lifting linkages (D and E), holding said second end of said first links of said first lifting linkage and said second lifting linkage in fixed, spaced relation to each other,

means connecting said intermediate connecting rod (**15**) to said intermediate balance linkage means (I) and to the second ends of the second links (**5** and **6**) of said first and second lifting linkages and to the second ends of the second links of said third lifting linkage and said fourth lifting linkage,

and means connecting said rear connecting rod (**16**) to said rear balance linkage means (J) and to second ends of said first links (**7F** and **7G**) of said third lifting linkage (F) and said fourth lifting linkage (G), holding said third lifting linkage and said fourth lifting linkage in fixed spaced relation to each other,

lifting linkage means comprising,

a lifting bar (**35'**) having its end (**35**) fixed to said second end of said second links (**5** and **6**) of said third balance linkage means (F) and said fourth balance linkage means (G),

said lifting means being supported on said frame and connected to the center of said lifting bar (**35'**) for lifting said platform relative to said frame.

4,123,040

WINCH MOUNTING APPARATUS

Encho J. Kuzarov, Milwaukie, Oreg., assignor to Warn Industries, Inc., Kent, Wash.

Continuation of Ser. No. 615,847, Sep. 23, 1975, abandoned. This application Apr. 1, 1977, Ser. No. 783,640

Int. Cl.[2] **B66D** *3/00*

U.S. Cl. 254—166 **6 Claims**

1. An improved, bumper-mounted winch assembly of the type having:

(a) a base structure, such as an automobile bumper bracket, to which the winch is mounted;

(b) a rotatable drum for winding a cable;

(c) a drive housing containing a drive assembly for said drum and supporting the driven end portion of said drum; and

(d) an idler housing fastened to the base structure and supporting the opposite, idler end portion of said drum, wherein the improvement comprises:

(e) an angularly variable drive housing mounting means in

line contact with said base structure, which connects said drive housing to said base structure and which permits limited angular movement of said drive housing relative to the base structure about a mounting axis, provided by such line contact, which is generally parallel to the base structure, wherein said angularly variable drive housing mounting means comprises a plurality of attachments aligned along said line contact mounting axis wherein:

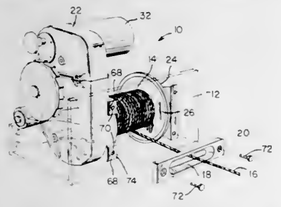
(i) each attachment comprises solely a fastener and a pair of contact surfaces;

(ii) one contact surface of each said pair is a part of said drive housing and the other contact surface of each said pair is a corresponding part of said base structure;

(iii) at least one contact surface of each pair of contact surfaces is a convex protrusion;

(iv) each pair of contact surfaces is held in contact by means of said fastener; and

(v) each said fastener extends completely through said base structure in an axial direction substantially perpendicular to said base structure and through said contact surfaces; whereby under conditions of distortion and misalignment of said base structure rolling contact can



occur between each pair of contact surfaces, the line of contact therebetween moving laterally across said base structure in a direction substantially parallel to said base structure; and

(f) mounting means for said idler end portion of said drum comprising sleeve bearing means stationary with respect to said idler housing and characterized by a relatively large diameter as compared to its axial length to provide both adequate bearing support and to permit angular motion of said idler end portion of the drum with respect to said idler housing by allowing said idler end portion to tip within said idler housing under conditions of base structure distortion and misalignment; whereby under circumstances of said base structure misalignment and distortion said angularly variable drive housing mounting means and said mounting means for said idler end portion of the drum are capable of properly compensating for said misalignment and distortion of the base structure to maintain said drum in a proper angular relationship with respect to the drive housing for proper operation of the drive components of the winch without binding, while simultaneously transmitting loads from drum to said base structure.

4,123,041

LIFTING TACKLE

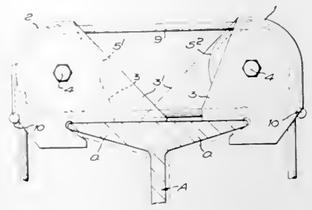
Arthur H. Bucknall, Ventnor Cottage, Sough Rd., Darwen, Lancaster, England

Filed Jul. 12, 1977, Ser. No. 815,022

Int. Cl.[2] B66D *3/08*

U.S. Cl. 254—195 **2 Claims**

1. A lifting tackle for raising a load into contact with the underside of a flanged I section girder or beam comprising pairs of brackets adapted to be mounted in laterally opposed relation on the upper flange of the girder or beam, side cheeks on each bracket recessed to form a V notch, the upper surface of each notch being substantially horizontal to grip the upper surface of the upper flange of the girder or beam, a spindle passing through the cheeks of each bracket and pulleys mounted on each spindle, one side cheek of each bracket being extended forwardly of the other cheek to allow the brackets of each pair to nest together laterally on assembly on small girders, and a cord or chain passing over the pulleys on the pair of



brackets with one end of the cord or chain depending from each bracket for attachment of the load to one depending cord or chain and for applying tension to the other depending end to raise the load.

4,123,042

STEEL CONVERTER VESSEL TUYERE BLOCK CONSTRUCTION

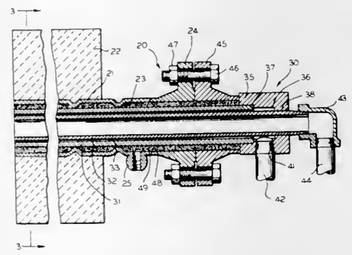
Jai K. Pearce, Pittsburgh, Pa., and William Wells, Sydney, Canada, assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Division of Ser. No. 369,820, Jun. 14, 1973, Pat. No. 4,036,481.

This application Feb. 10, 1977, Ser. No. 767,465

Int. Cl.[2] C21C *5/48*

U.S. Cl. 266—44 **4 Claims**



1. The method comprising the steps of:

casting a plurality of tubular tuyere housings in separate blocks of refractory material with one end of each said housing extending from the end of its associated block,

installing said plurality of blocks in the lower level of a refractory lined metallurgical vessel with said tuyere housings extending generally toward the interior thereof and the one end of said housings being exposed on the exterior of said vessel,

installing a first tuyere in at least a first one of said housings,

securing said first tuyere to the exposed end of said first housing,

plugging the remaining housings with refractory material,

containing a quantity of molten metal in said vessel,

injecting oxygen containing gases under pressure into said vessel through said tuyere and beneath the level of said metal causing said tuyere to burn down to a predetermined length,

removing said burned down tuyere from said first housing,

plugging the housing from which said burned tuyere was removed by inserting refractory material through the exposed end thereof,

opening a second one of said housings,

installing a second tuyere in said opened housing,

securing said second tuyere to the exposed end of said second housing, and

placing refractory around the inner end of said second tuyere so that the refractory lining of the vessel in the area surrounding said second tuyere has substantially its initial thickness.

4,123,043

GAS CLEANING SYSTEM FOR METALLURGICAL APPARATUS

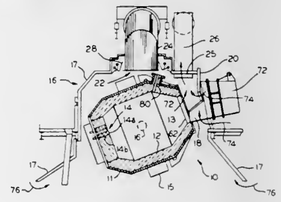
Harold Nomine, Essen, Fed. Rep. of Germany, and Eberhard G. Schempp, Pittsburgh, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Division of Ser. No. 647,112, Jan. 7, 1976, Pat. No. 4,081,269.

This application Sep. 6, 1977, Ser. No. 830,614

Int. Cl.[2] C21C *5/40*

U.S. Cl. 266—158 **10 Claims**



1. A metallurgical system comprising first and second metallurgical vessels each having tuyere means for injecting process fluids beneath the level of metal contained with each vessel and each having an opening formed therein through which exhaust gases discharge,

first and second enclosure means respectively surrounding at least the upper portions of said first and second vessels, first and second primary gas collecting means extending respectively through each enclosure and positioned to collect gases discharging from its associated vessel when the latter is in a normal process position,

an access opening formed in each enclosure and closure door means for selectively opening and closing said access opening,

said vessels being tiltable about generally horizontal axes for movement from a normal operating position and toward said access openings whereby said vessels may receive a metallic charge,

first and second secondary hood means coupled respectively, to said first and second enclosures,

first and second gas cleaning systems respectively connected to said first and second primary hood means and each including means for removing particulate from the exhaust gases and gas flow producing means,

and selectively operable coupling means for selectively coupling said first secondary hood means to said first or second gas cleaning systems and said second secondary hood means to said first or second gas cleaning systems.

4,123,044

TUNNEL FURNACE

Fritz Petzi, Nuremburg, Fed. Rep. of Germany, assignor to Ludwig Riedhammer GmbH & Co. K.G., Nuremburg, Fed. Rep. of Germany

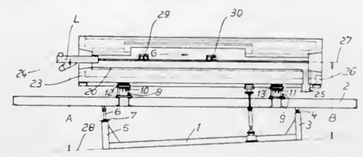
Filed Jul. 11, 1977, Ser. No. 814,400

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720630

Int. Cl.[2] F27B *9/14*

U.S. Cl. 266—255 **1 Claim**

1. In a sintering kiln for metal ceramics being inclined along its longitudinal axis and mounted for swinging movement in the transverse direction and incorporating: a lower muffle (**20**), an upper removable trough ceiling (**21**) connected to the lower muffle, a chassis (**1**), a box frame (**2**) mounted in inclined position on the chassis (**1**), transverse struts (**10**, **11**) pivotally mounted in the manner of a balance beam on the box frame (**2**), a hydraulic cylinder (**16**) and piston rod (**18**) associated therewith, the piston rod (**18**) being hingedly connected to a free



end of the transverse strut (**11**), the hydraulic cylinder (**16**) being hingedly connected to the support chassis, burners (**29**, **30**) and gas infeed pipes (**31**) being mounted laterally along the longitudinal extent of the kiln.

4,123,045

CRUCIBLE FOR INDUCTION HEATING APPARATUS

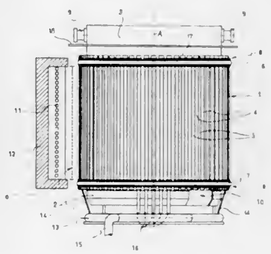
Jacques Michelet, Metz, and Hugues Zanetta, St-Julien-les-Metz, both of France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Oct. 4, 1977, Ser. No. 839,317

Claims priority, application France, Oct. 4, 1976, 76 29996

Int. Cl.[2] F27B *14/06*

U.S. Cl. 266—275 **10 Claims**



1. A crucible having an internal refractory line maintained by a metallic structure consisting of:

a base pan;

a collar spaced above said base pan;

respective lower and upper mounting rings secured to said base pan and said collar;

an annular array of non-round-section tierods extending vertically between said rings and having angularly juxtaposed sides defining spaces of outwardly decreasing angular width;

means for securing said rods to said rings and

wedge-shaped blocks of refractory and electrically insulating material tightly fitting between said sides of said rods and of outwardly decreasing angular width, whereby outward pressure on said blocks wedges same tightly between said rods.

4,123,046

DEVICE FOR SECURING A MIXING CAPSULE FOR DENTAL PREPARATIONS

Bruno A. Madlener, Feldkirch-Tosters, Austria, assignor to Etablissement Dentaire Ivoclar, Schaan, Liechtenstein

Filed Jun. 28, 1977, Ser. No. 810,813

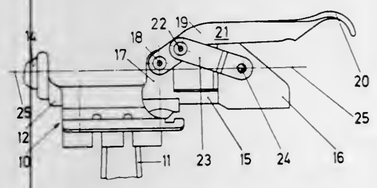
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1976, 2630376

Int. Cl.[2] B25B *5/14*

U.S. Cl. 269—228 **11 Claims**

1. In a device for securing a mixing capsule for dental preparations to the support of a vibrating machine for mixing the

components of said dental preparations, said support being provided with an abutment and a presser adjustable by an operating lever pivoted to said support, said abutment and said presser being adapted to secure said mixing capsule in a first position of said presser and to release said mixing capsule in a second position of said presser the improvement wherein said operating lever is a toggle lever connected by way of a link to



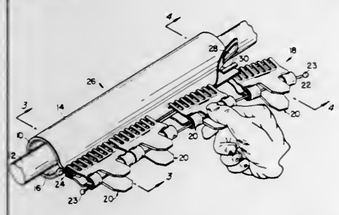
the presser such that when said toggle lever is moved to dispose said presser from said second position to said first position the link pivot point on said toggle overshoots a dead center position, said presser being axially movable in a reciprocating manner and in relation to the abutment from its second position to its first position and vice versa, the central thrust line of the apparatus being coincident with the central axis of a capsule to be disposed therein.

4,123,047

MODULAR CLIP ASSEMBLY FOR HEAT SHRINKABLE MATERIAL

Lowell I. Koht, Palo Alto; Michael J. Kinsch, Jr., Sunnyvale, and William H. Humphries, Freemont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 15, 1976, Ser. No. 750,977
Int. Cl.[2] B25B *5/14*
U.S. Cl. 269—238 **16 Claims**



1. A modular clip assembly for clamping laid-together portions of cross-linked, dimensionally heat unstable polymeric material along a to-be-formed bond line during the application of heat from an external heat source to form a bond between clamped portions of said material comprising:

a first manually operable clip module possessing first and second parallel jaws formed with a pair of cooperating plates, each of said cooperating plates possessing a terminal portion disposed inwardly to form a pair of continuous bond line gripping flanges, each continuous gripping flange and associated plate having a generally L-shaped cross-sectional configuration, the short arms of the L's which correspond to said continuous gripping flanges being substantially colinear when said jaws are closed, the portions of said plates corresponding to the long arms of the L's being provided with a plurality of ventilating apertures adjacent said continuous gripping flanges, first and second handles connected respectively to said first and second jaws, hinge means for allowing said jaws to move cooperatively into and out of engagement with each other in longitudinally parallel relationship, and spring means for urging said jaws into mutual engagement;

a second manually operable clip module possessing elements corresponding to those of said first manually operable clip module; and

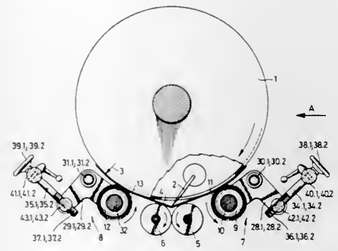
flexible linking means interconnecting said first and second clip modules for maintaining a selected longitudinal relationship between said modules thereby facilitating the hand installation of said modular clip assembly along said to-be-formed bond line.

4,123,048

GEAR FOLDER

Otto T. Weschenfelder, Wurzburg, and Horst B. Michalik, Hochberg, both of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Jul. 8, 1977, Ser. No. 814,071
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1976, 2634108
Int. Cl.[2] B65H *45/16*
U.S. Cl. 270—77 **6 Claims**



1. A gear folder for folding precut ribbon segments, said gear folder including a gear folding cylinder rotatable at a first speed in a first direction about a longitudinal axis and having at least one folding blade, and at least one pair of folding rollers for folding said ribbon segments inserted between said pair of folding rollers by said folding blade, said gear folder further including ribbon tensioning means to tension said ribbon segments against said folding cylinder, said ribbon tensioning means comprising:

a first rotating pressure means exerting pressure against said folding cylinder and being positioned in front of said pair of folding rolls in said first direction of rotation of said folding cylinder and extending generally parallel to said longitudinal axis of said folding cylinder;

a second rotating pressure means exerting pressure against said folding cylinder and being positioned behind said pair of folding rolls in said first direction of rotation of said folding cylinder and extending generally parallel to said longitudinal axis of said folding cylinder;

means for rotating said first and second pressure means in a second direction opposite to said first direction of rotation of said folding cylinder and at speeds different from each other and from said first speed of rotation of said folding cylinder; and

means for adjusting said pressure exerted by said first and second rotating pressure means against said folding cylinder whereby said ribbon segments are tensioned against said folding cylinder by said first and second rotating pressure means.

4,123,049

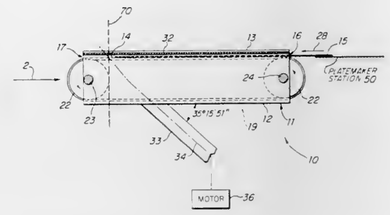
PRINTING PLATE TRANSFER APPARATUS

Robert D. Jacobs, Geneseo, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 4, 1977, Ser. No. 774,301
Int. Cl.[2] B65H *5/02, 5/18, 9/00*
U.S. Cl. 271—225 **13 Claims**

1. In a transfer apparatus for receiving an object from a first station and for transferring said object to a second station, wherein said objects enters said transfer apparatus from said first station moving in a first direction along an input plane and wherein said object leaves said transfer apparatus to said second station moving in a second direction along an output plane different from said first direction and said input plane, said transfer apparatus comprising:

A. receptor means for receiving said object, said receptor means having an input end wherein said object enters said receptor means and an output end opposite said input end wherein said object leaves said receptor means, and wherein said receptor means includes means for defining a substantially planar support surface for supporting said object, said receptor means being movable from a first position aligned with said input plane for receiving said object entering from said first station, to a second position aligned with said output plane for outputting said object to said second station; and



B. drives means for moving said receptor means from said first position to said second position, said drive means including:

a. shaft means having a shaft axis coupled to and supporting said receptor means, said shaft means being coupled to said receptor means with reference to a center line extending from said input end to said output end such that said axis intersects said substantially planar support surface at said center line with said axis oriented at a first acute angle relative to said center line, and at a second acute angle relative to said substantially planar support surface, and

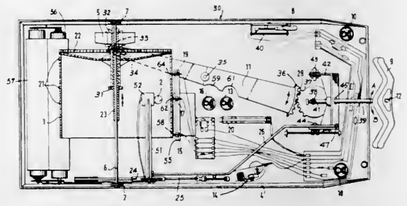
b. means for rotating said shaft means about its axis, rotation of said shaft means moving said receptor means from said first position to said second position.

4,123,050

TOY AIRCRAFT FLIGHT SIMULATOR

Fernando Casado, San Sebastian, Spain, assignor to Bianchi, S.A., San Sebastian, Spain

Filed Oct. 8, 1976, Ser. No. 730,917
Claims priority, application Spain, Oct. 8, 1975, 215.694
Int. Cl.[2] G09B *9/08;* **A63G** *31/16*
U.S. Cl. 273—1 E **14 Claims**



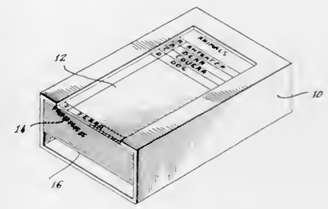
1. A toy aircraft flight simulator comprising a display screen, a rotating drum, the periphery of said rotating drum being a translucent screen having an aerial landscape image depicted thereon, means for rotating said drum, a light source with said drum, means for displacing said light source within said drum so as to vary the distance from said light source to said periphery of said drum, said light source projecting said aerial image upon said display screen and said image being altered in size as said light source is displaced within said drum, means for axially displacing said drum, and unitary control means, said unitary control means having first and second control movements, said first control movement operatively effecting said means for axially displacing said drum, said second control movement operatively effecting said means for displacing said light source within said drum.

4,123,051

EDUCATIONAL GAME

Hedwig R. Tsacoyannis, 110 E. End Ave., New York, N.Y. 10028

Filed Jul. 28, 1977, Ser. No. 819,953
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—1 R **6 Claims**



1. An educational game comprising in combination:

a plurality of category cards each having indicia thereon defining a category of items;

a plurality of reference cards, one of said reference cards corresponding in category to each of said category cards, each of said reference cards having indicia disposed thereon listing a plurality of items disposed in the category associated therewith, said plurality of items being arranged in alphabetical order;

a plurality of score cards having indicia disposed thereon dividing said score cards to facilitate the writing of items thereon;

a plurality of markers each having a letter of the alphabet disposed thereon; and

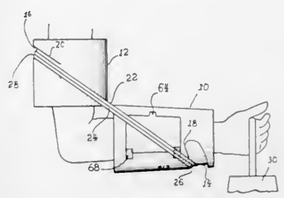
means for timing a preselected interval of time.

4,123,052

TOY OR GAME

John A. Perkins, Portage, Mich., assignor to Perky & Me Co., Battle Creek, Mich.

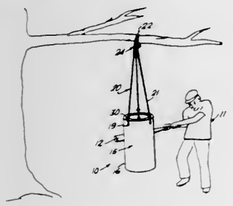
Filed Feb. 28, 1977, Ser. No. 772,435
Int. Cl.[2] A63J *3/00*
U.S. Cl. 272—8 N **19 Claims**



1. A device useful as a game or toy adapted to augment the muscle-power used in retracting the forearm, comprising a first sleeve adapted to embrace the forearm between the wrist and the elbow, first gripping means for causing said first sleeve snugly to embrace the forearm and to prevent it from slipping

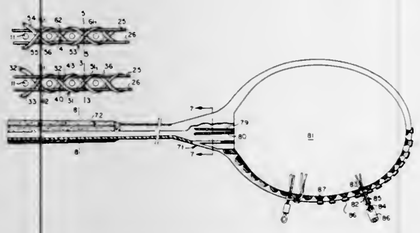
upwardly toward the elbow, a second sleeve adapted to embrace the upperarm between the elbow and the shoulder, second gripping means for causing said second sleeve snugly to embrace the upperarm and to prevent it from slipping downwardly toward said elbow, and first attaching means on said first sleeve and second attaching means on said second sleeve for attaching an elastic band to said sleeves with one end attached to the first attaching means and the other end attached to the second attaching means in a manner such that the elastic band is placed under tension by the extension of the forearm.

4,123,053
BATTING PRACTICE METHOD
Silvio D. Piccini, 13620 SW. 74th Ct., Miami, Fla. 33158
Division of Ser. No. 667,164, Mar. 15, 1976, Pat. No. 4,093,217.
This application May 25, 1977, Ser. No. 800,419
Int. Cl.[2] A63B *69/40*
U.S. Cl. 273—26 R **5 Claims**



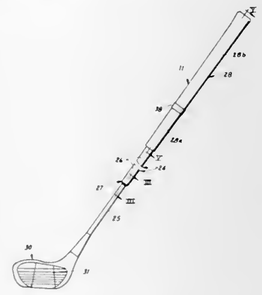
1. A method of practicing batting including,
- providing an open ended cylinder formed of an elastomeric material,
- slinging the cylinder from a support above the cylinder by using at least three support members symmetrically spaced and attached atop the cylinder at one end and attached to the support on the other end,
- repetitive swinging of a bat by a batter against a strike area on the cylinder.

4,123,054
TENNIS RACKET FRAME
Jacqueline Septier, 9, rue Lentonnet, Paris, France (75009)
Filed Mar. 2, 1976, Ser. No. 663,066
Claims priority, application France, Mar. 4, 1975, 75 06736
Int. Cl.[2] A63B *49/10*
U.S. Cl. 273—73 F **9 Claims**



1. A racket frame forming a head, a heart, and a handle, said head defining a middle plane co-extensive to the striking surface, comprising:
two strips extending along the frame in parallel relationship and symmetrically with respect to the middle plane, in order to form a frame reinforcement;
at least one resin impregnated glass fiber string wound along said reinforcement and resting alternatively on one strip and on the other, in order to form a braiding encircling passage for netting strings; and
said braiding comprising a first crossed braiding, a string passing from the internal edge of a strip to the external edge of the other strip and reciprocally, and a second braiding according to which a string passes from the external edge of a strip to the external edge of the other strip, then from the internal edge of said strip to the internal edge of the first strip, this pattern repeating itself along the reinforcement.

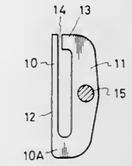
4,123,055
GOLF CLUBS
Harry M. Brill, 5818 N. Kostner, Chicago, Ill. 60629
Filed Jan. 3, 1977, Ser. No. 755,992
Int. Cl.[2] A63B *53/00, 53/12*
U.S. Cl. 273—77 A **27 Claims**



1. A golf club, comprising: a hollow shaft having a lower smaller diameter portion and an upper larger diameter portion with a step at a junction between the upper end of said smaller diameter portion and the lower end of said larger diameter portion, said larger diameter portion having a diameter of on the order of 0.5 inches and said smaller diameter portion having a diameter on the order of from 0.5 to 0.75 of that of said larger diameter portion, a grip secured on an upper end portion of said larger diameter portion of said shaft, and a head secured to a lower end portion of said smaller diameter portion and having a striking surface for impact with a golf ball to propel the ball a distance of at least on the order of 100 yards, said lower smaller diameter portion and said upper larger diameter portion being substantially uniform along their respective lengths, said step being located a substantial distance above said head to provide an exposed length of said smaller diameter portion between said head and said step, and said step being also located a substantial distance below the lower end of said grip to provide an exposed length of said upper diameter portion between said step and the lower end of said grip, transient forces developed during impact of said head with the ball and rebound following impact being rapidly transmitted through said exposed length of said smaller diameter portion to said step to develop at said step impact and rebound forces of short duration successively transmitted through said exposed length of said larger diameter portion and through said grip to the player's hands.

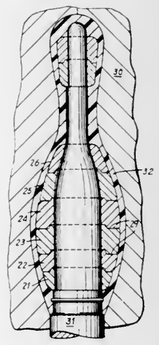
4,123,056
GOLFCLUB
Yoshiro Nakamatsu, 6-31-10,, Shimouma, Setagaya-ku, Tokyo, Japan
Filed Nov. 30, 1976, Ser. No. 746,263
Claims priority, application Japan, Jun. 26, 1976, 51-74990; Aug. 30, 1976, 51-102625
Int. Cl.[2] A63B *53/04*
U.S. Cl. 273—78 **4 Claims**

1. A golfclub comprising a club-head and a shaft, said club-head having two opposed members spaced from one another, each of said opposed members having longitudinal end portions with one end portion of one of said members being integrally joined to one end portion of the other opposed member and the other end portion of said one member being spaced from the other end portion of the other opposed member, the distance between the end portions of said one member being substantially equal to the distance between the end portions of said other member, said opposed members each having an upper edge and a lower edge with each upper and lower edge extending between said end portions of the respective member,



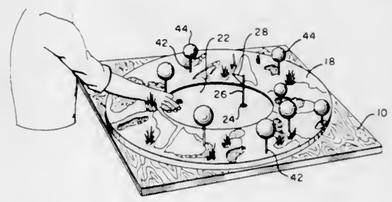
said upper edges of said opposed members being spaced from one another, said lower edges of said opposed members being spaced from one another, said one member having a flat striking face adapted to strike a golfball such that said one member vibrates relative to said other member upon striking of said golfball to produce an audible sound indicative of the position on said one member which struck the golfball, said shaft being connected to said other member.

4,123,057
MOLDED PLASTIC BOWLING PIN AND METHOD FOR THE MANUFACTURE THEREOF
George G. Murray, Jackson, N.J., assignor to The Strikemaster Manufacturing Corp., Washington, N.J.
Filed Jan. 6, 1977, Ser. No. 757,480
Int. Cl.[2] A63D *9/00*
U.S. Cl. 273—82 R **3 Claims**



1. A bowling pin having a base, side walls, belly, neck and head, said pin being formed of molded plastic material and comprising:
(a) a plurality of annular core elements each of which is constituted of a filled polymer formulation whose density is determined by the nature of quantity of the filler therein, said elements having varying sizes and shapes, being provided lengthwise of the pin from the base into the head;
(b) a shell constituted of a high impact strength thermoplastic polymer whose outer surfaces are softer than that of a bowling ball, are self-lubricating, and sound like wood upon impact by a bowling ball or another pin, said shell being formed integrally upon, being shrunk tightly about, and being firmly bonded to each of said elements, said shell having a substantially uniform thickness about said elements, defining the external configuration of the side walls, belly, neck and head of the pin, and providing a cavity adjacent to the base of the pin; and
(c) a bottom member defining the base of the pin and shaped to fit said cavity, said bottom member being capable of periodic replacement without impairing the pin;
said pin having a composite structure possessing a weight distribution meeting the standards set by the American Bowling Congress.

4,123,058
GAME: DISK-GOLF
Robert C. Furyk, and Jon E. P. Gow, both of Barrie, Canada, assignors to Creative Inventions
Filed May 20, 1977, Ser. No. 798,776
Int. Cl.[2] A63F *7/06*
U.S. Cl. 273—87 H **8 Claims**

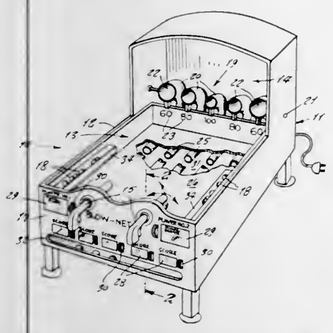


1. A game for simulating golf comprising:
a flat horizontal base;
a horizontal plate having a circular periphery, the top surface of said plate having an inner circular area which is recessed below the top surface and has an off-center small depression therein and an outer area which is annular in shape, said outer area being divided by radial lines into a plurality of sectors of like area, each sector having a top surface with roughened and smooth sections, said smooth sections communicating between the outer periphery and the inner periphery of said outer area; each sector having a different configuration of its top surface; and
means detachably securing said plate on top of said base in a manner at which said plate can be manually rotated about its center in either of clockwise and counterclockwise directions, while the base remains stationary, said means including a vertical shaft disposed at its bottom end in said base, the top end of the shaft being disposed in the center of the plate.

4,123,059
AIR GUN GAME WITH DIFFERENT SIZED TARGET PIPES
Mark Guibas, 28-25 56th Pl., Woodside, N.Y. 11377
Filed Aug. 1, 1977, Ser. No. 820,861
Int. Cl.[2] A63B *63/04;* **F41B** *1/00*
U.S. Cl. 273—101 **3 Claims**

1. A game device, comprising in combination, a housing on legs including a horizontal tray and a backstop, a pair of air-powered guns pivoted on a front wall of said tray, a plurality of elbow-shaped pipes pivoted in a row on a transverse rod in front of said back stop, each said pipe having an inlet, said inlets being of various sizes, each said pipe being numerically indicated with a scoring value according to a size of said inlet thereof, and a plurality of balls discharged from said guns toward said inlets; each said elbow pipe being connected by a

flexible rubber sleeve to a second pipe extending forwardly downwardly inclined through a counting mechanism and to a



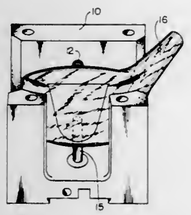
ball rest area adjacent to a ball-retrieving opening on said tray front wall.

4,123,060

GOLF CLUB AND JIG FOR MAKING SAME

Robert H. Sterling, 3017 Nebraska Ave., Santa Monica, Calif. 90404

Filed Apr. 11, 1977, Ser. No. 786,416
Int. Cl.[2] A63B *53/04*
U.S. Cl. 273—167 R **8 Claims**



1. A head for a wood golf club having a front face, a rear portion, a sole surface, all being formed with a predetermined configuration, said head having a precisely located tooling hole therein for receiving a dowel pin so as to support the head in a predetermined precisely established position within exacting tolerances in a tooling jig during the fabrication of the head to permit finishing operations to be performed on the head so as to cause the head to conform exactly to a predetermined shape; and a jig for holding the head, said jig including a base having a hole therein precisely located at a predetermined position, a side wall extending perpendicular to the base at one side thereof, a pair of posts extending perpendicular to the base at the opposite side thereof and spaced from one another, and a clamp mounted on said side wall on the interior side thereof for holding the head firmly against the posts; and a dowel pin extending through the hole in the base to be received in the tooling hole in the head.

4. A method for manufacturing a head for a wood golf club having a sole surface and a front face, which method comprises: forming a precisely located index tooling hole in the head; clamping the head in a tooling jig; inserting a dowel pin through a hole in the base of the tooling jig and into the index tooling hole in the head to locate the head in the tooling jig at a desired orientation; and performing finishing operations on the head while held in the tooling jig to cause the head to conform exactly to a predetermined shape.

4,123,061

BALL AND PROCESS AND COMPOSITION OF MATTER FOR PRODUCTION THEREOF

Warren M. Dusbiber, Plymouth, Mich., assignor to Acushnet Company, New Bedford, Mass.

Continuation-in-part of Ser. No. 689,358, May 20, 1976, abandoned, which is a division of Ser. No. 322,296, Jan. 10, 1973, Pat. No. 3,979,126, which is a continuation-in-part of Ser. No. 110,313, Jan. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 856,890, Sep. 2, 1969, abandoned, which is a continuation of Ser. No. 434,227, Feb. 23, 1965, abandoned. This application Mar. 17, 1977, Ser. No. 778,795
The portion of the term of this patent subsequent to Sep. 7, 1993, has been disclaimed.
Int. Cl.[2] A63B *37/02, 37/08, 37/12*
U.S. Cl. 273—220 **21 Claims**

1. A golf ball having the following physical characteristics:

Diameter	less than 1.70 inches
PGA Compression	at least 25
Hardness Shore "C" Scale	at least 60
Rebound 72 inch	at least 48 inches
Initial Velocity USGA	at least 230 feet/second

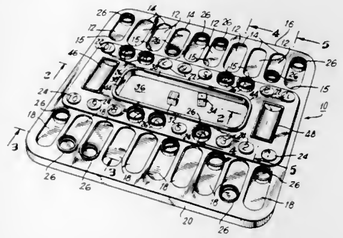
said golf ball comprising a core and a cover, at least one of which is prepared from a composition comprising a prepolymer of a polyether and a diisocyanate and a curing agent selected from the group consisting of trifunctional and tetrafunctional polyols and curing agents capable of curing the prepolymer and having at least two reactive amine groups, the prepolymer and the curing agent being present in an equivalent weight ratio of 1:1 ± 20%.

4,123,062

GAME WITH MULTIPLE CHOICE STRATEGY

Howard Wexler, New York, and Lawrence L. Reiner, Woodbury, both of N.Y., assignors to Mego Corp., New York, N.Y.

Filed Apr. 25, 1977, Ser. No. 789,860
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—248 **35 Claims**



1. In a game with multiple choice strategy for a player and an opponent player having alternate turns to play, a method of manipulating playing pieces consisting of a first plurality of playing pieces and a second plurality of playing pieces, the number of playing pieces in said first and second pluralities of playing pieces being equal, said first plurality of playing pieces relating to said player, and second plurality of playing pieces relating to said opponent player, each of said playing pieces in said first and second plurality of playing pieces relating to a distinct identifying symbol, the identifying symbol of each of said first plurality of playing pieces being the same as the identifying symbol of one of said second plurality of playing pieces, which comprises disposing each of said playing pieces at a location separate from the location of the balance of said playing pieces, said location for each playing piece being either

a start position, a vulnerable intermediate position to which the playing piece has been moved from said start position, or a non-vulnerable finish position to which the playing piece has been moved from said intermediate position, said player and said opponent player in alternate turn concomitantly manipulating a plurality of discrete identification means bearing identifying symbols, a first manipulation of said plurality of identification means being by said player and a second manipulation of said plurality of identification means being by said opponent player, each of said manipulation registering a plurality of said identifying symbols, said first player displacing, after said first manipulation of said plurality of identification means, and in correspondence to the symbols registered either on each or the combination of at least two identification means, at least one of said first plurality of playing pieces either from its start position or its finish position to its intermediate position, or at least one of said second plurality of playing pieces from its intermediate position to its start position, said player continuing his turn and manipulating said plurality of identification means until movement of a playing piece corresponding to each separate one or the combination of a plurality of registered identifying symbols is no longer possible, thereafter said opponent player moving all of said second plurality of playing pieces in intermediate position to finish position, thereafter said second player displacing, after said second manipulation of said plurality of identification means, and in correspondence to the symbols thereafter registered on each or the combination of at least two identification means, at least one of said second plurality of playing pieces either from its start position or its finish position to its intermediate position, or at least one of said first plurality of playing pieces from its intermediate position to its start position, said opponent player continuing his turn and manipulating said plurality of identification means until movement of a playing piece corresponding to each separate one or the combination of a plurality of registered identifying symbols is no longer possible, thereafter said player moving all of said first plurality of playing pieces in intermediate position to finish position, and continuing manipulation of said plurality of identification means alternately by said player and said opponent player until either said first plurality of playing pieces or said second plurality of playing pieces is entirely disposed away from their start position.

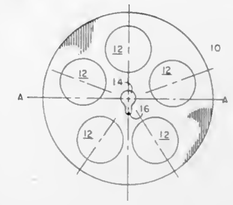
14. An article of manufacture consisting essentially of a game with multiple choice strategy for a player and an opponent player having alternate turns to play, comprising a flat planar playing board, a first plurality of linear channels on said board, a second plurality of linear channels on said board, said first and second plurality of channels consisting essentially of discrete slide spaces on the surface of said board, said first plurality of channels being juxtaposed in parallel substantially perpendicular to a first edge of said board, said second plurality of channels being juxtaposed in parallel substantially perpendicular to a second edge of said board, said second edge being opposite to said first edge, a first plurality of discrete means on said board, said first plurality of discrete means designating first finish positions, each of said first plurality of discrete means being on the surface of said board and juxtaposed with the inner end of one of said first plurality of channels, a second plurality of discrete means on said board, said second plurality of discrete means designating second finish positions, each of said second plurality of discrete means being on the surface of said board and juxtaposed with the inner end of one of said second plurality of channels, a plurality of distinct identifying symbols, each of said symbols relating to one of said channels and its associated discrete means, the identifying symbol of each of said first plurality of channels and discrete means being the same as the identifying symbol of one of said second plurality of channels and discrete means, a plurality of movable playing pieces, each playing piece being associated with one of said channels and associated discrete means, each playing piece being disposed either at one end of a channel or at its associated discrete means, and a plurality of discrete identification means bearing identifying symbols and capable of being manipulated.

4,123,063

REPLAY AND PROTECTIVE DISC FOR PHONOGRAPH RECORD CHANGERS

Martin J. Van Winkle, 338 Marlborough St., Boston, Mass. 02115

Filed Jan. 5, 1977, Ser. No. 757,090
Int. Cl.[2] G11B *3/62*
U.S. Cl. 274—1 R **2 Claims**



1. An accessory device for replaying and protecting phonograph records on automatic changers having a spindle and spindle record release lever, said device comprising:

a disc having a center hole and a keyway slot extending from said center hole, said keyway slot of sufficient size to slip over said release lever and wherein

the thickness of the central portion of said disc is less than the periphery of said disc;

the central portion of said disc is of a thickness at least about equal to the thickness of records to be played on the automatic changer; and

the diameter of said disc is no greater than the diameter of the labels of the records to be played on the automatic changer

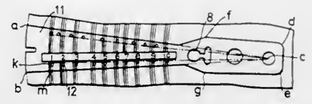
whereby during a single change cycle when the keyway is aligned with the release lever, the disc slides down the changer spindle with the underlying record and when the keyway is misaligned with the release lever, the disc remains atop the spindle.

4,123,064

PREDETERMINED INDEX GAUGE FOR LOCATING A SELECTED RECORD BAND ON A GRAMAPHONE RECORD

Kosuke Matsukata, 390 Tsurumi-cho, Tsurumi-ku, Yokohama, Kanagawa-ken, Japan

Filed May 24, 1977, Ser. No. 800,034
Claims priority, application Japan, May 26, 1976, 51-60159
Int. Cl.[2] G11B *3/00*
U.S. Cl. 274—1 R **3 Claims**



1. A method for forming a master index gauge for use in a phonograph record band selector comprising:

(a) shaping an index gauge pattern from a phonograph record having a plurality of recorded bands separated by at least one lead-in groove, said pattern including at least the spindle hole and a radial strip of said phonograph record;

(b) pin pricking through said pattern at each of said at least one lead-in groove;

(c) placing a blank master index gauge having a spindle hole therein onto a spindle;

(d) stacking said pattern on said spindle atop said blank master index gauge;

(e) transferring said pin pricking through said pattern onto said master index gauge by rotating said pattern above

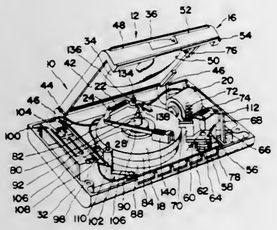
said master index gauge with marking means extending through said pin prickings whereby registered arcuate lines are marked on said master index gauge;
(f) cutting said blank index gauge a predetermined distance along each of said arcuate lines;
(g) cutting said blank index gauge with cuts which intersect the cuts along said arcuate lines; and
(h) cutting through two sides of said spindle hole in said master index gauge.

4,123,065

PHONOGRAPH FOR USE WITH RECORD CARTRIDGES

Katsumi Watanabe, Kawasaki, Japan, assignor to Yugen Kaisha Watanabe Kenkyusho, Kanagawa, Japan

Filed Apr. 14, 1977, Ser. No. 787,446
Claims priority, application Japan, Aug. 21, 1976, 51-100033
Int. Cl.[2] G11B *3/40, 3/04*
U.S. Cl. 274—9 B **6 Claims**



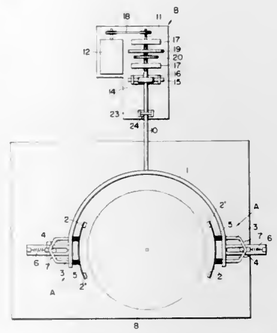
1. A sound reproducing apparatus for particular use with record cartridges of the type each having a phonograph record on a sheet-like record holder, comprising in combination:
a casing;
a cartridge holder mounted on said casing for pivotal movement between a first position for receiving a record cartridge and a second position for immovably holding the record cartridge with its record facing downwardly;
an upstanding spindle fixedly mounted within said casing and disposed in vertical register with the center of the record when said cartridge holder is in said second position;
a turntable mounted on said spindle so as to be both rotatable and movable up and down relative to same;
there being an aperture in said turntable;
a drive motor having an output shaft underlying the periphery of said turntable;
resilient means urging at least said output shaft of said drive motor upwardly into engagement with said turntable thereby urging said turntable upwardly;
a tone arm pivotally supported at one end in an eccentric position on said turntable;
a reproducing stylus extending upwardly from said tone arm so as to be urged by said resilient means into engagement with a record groove of the record cartridge when said cartridge holder is in said second position, said output shaft of said drive motor being held in frictional contact with the periphery of said turntable in driving relationship when said cartridge holder is in said second position;
a speaker cone mounted under said turntable for simultaneous rotation therewith, said speaker cone being disposed in concentric, back-to-back relationship to said turntable;
an armature connected to said speaker cone, said armature being at least partly exposed through said aperture in said turntable; and
a vibration transmitter rod substantially pivotally supported at one end on said turntable and resting at a point intermediate both ends thereof on said armature exposed through said aperture in said turntable, said tone arm resting at its free end on said vibration transmitter rod for sliding movement, during playback, from the other end of said vibration transmitter rod toward its point of contact with said armature.

4,123,066

DEVICE FOR AUTOMATICALLY TURNING DISCS FROM SIDE TO SIDE

Hajime Minemura, 1-3-1, Fukasawa, Setagaya-ku, Tokyo, Japan; Haruya Kusama, and Shoichi Sato, both of Tokyo, Japan, assignors to Hajime Minemura, Tokyo, Japan

Filed Jul. 19, 1977, Ser. No. 816,923
Int. Cl.[2] G11B *15/00*
U.S. Cl. 274—10 C **8 Claims**



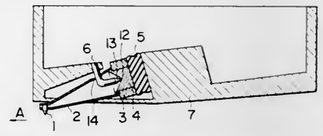
1. A device for automatically turning over a record disc mounted on a turntable rotatable on a base, said device comprising, in combination, an arcuate main arm extending, in an inactive position, partially around a record disc on the turntable and in substantially concentric radially spaced relation to the record disc; respective disc engaging arms slidably mounted on opposite ends of said main arm; respective stop means on said base operatively engageable with said disc engaging arms; respective first spring means biasing said stop means away from the disc to retain the associated disc engaging arms disengaged from the disc; respective second spring means biasing said disc engaging arms toward the disc; the biasing force of said first spring means being greater than that of said second spring means; respective electromagnetic means operable, when energized, to move said stop means, against the bias of said first spring means, toward the disc for engagement of said disc engaging arms, under the bias of said second spring means, with the disc; a main shaft secured to said main arm intermediate the ends thereof and extending radially outwardly therefrom; support means engaging said main shaft intermediate its ends and providing for rotation of said main shaft about its axis and for swinging of said main shaft between said inactive position of said main arm and an active position in which said main shaft extends outwardly at an angle to the horizontal sufficiently large to allow rotation of said main arm in clearing relation with the turntable; a drive shaft; a motor in driving relation with said drive shaft; a cam secured to said drive shaft and engageable with said main shaft, upon rotation of said drive shaft to swing said main shaft to said active position; a first gear on said main shaft; gear means fixed to said drive shaft and engageable with said first first gear, only when said main shaft is in said active position, to rotate said main shaft through exactly 180° responsive to rotation of said drive shaft; said cam, at the end of said rotation of said main shaft, providing for return movement of said main shaft to the inactive position in which said electromagnetic means are deenergized for movement of said disc engaging arms by said stop means under the bias of said first spring means, away from the disc.

4,123,067

STYLUS VIBRATING MECHANISM IN PICKUP CARTRIDGE

Tsugikuma Minamizono, Numazu, Japan, assignor to Kabushiki Kaisha Mitachi Onkyo Seisakusho, Numazu, Japan

Filed Jul. 6, 1977, Ser. No. 813,401
Claims priority, application Japan, Jul. 7, 1976, 51-90092[U]; Sep. 16, 1976, 51-124744[U]; Dec. 8, 1976, 51-164565[U]; May 13, 1977, 52-61271[U]; May 13, 1977, 52-61272[U]
Int. Cl.[2] G11B *3/02*
U.S. Cl. 274—37 **11 Claims**



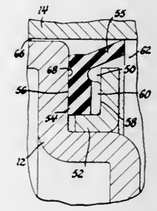
1. A stylus vibrating mechanism in a pickup cartridge comprising;
a cantilever having a stylus tip at the fore end and a through hole provided therethrough,
a magnet disposed continuously to said cantilever,
a pivot suspension, formed integrally with said magnet, having a tapered conical hole of a desired depth formed on said pivot suspension, the bottom of the hole being positioned substantially at the center of one surface of said magnet opposed to the stylus tip and substantially on the longitudinal center axis of said cantilever,
a rubber damper located behind said pivot suspension and said magnet to form a vibration transmission part with the magnet and the pivot suspension,
a stylus case anchored to a cartridge case supporting fixedly behind said rubber damper, and
a pivot having a pointed fore end to be inserted into the conical hole of said pivot suspension in the direction from the stylus tip of the cantilever and in parallel with the longitudinal center axis in such a manner that the fore end of the pivot is in contact with the bottom of the conical hole of said pivot suspension and applies pressure to said rubber damper and that the other end of the pivot extends outward from the cantilever via the through hole and is anchored to the stylus case while being kept out of contact with the through hole.

4,123,068

LIP TYPE OIL SEAL

Jack H. Van Gorder, Chelsea, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 21, 1977, Ser. No. 853,287
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—27 **1 Claim**



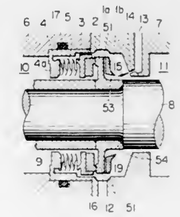
1. A lip type seal member for a piston and cylinder wherein the seal member is disposed in an annular seal groove formed on the piston or cylinder and cooperates with the piston and cylinder to define two working chambers and wherein pressurized fluid is admitted to one chamber during a first operating condition and to both chambers during a second operating condition and wherein the pressurized fluid is exhausted from the one chamber more rapidly resulting in a pressure reversal on the seal upon completion of the second operating condition; said seal comprising an annular body portion disposed in the seal groove and having a non sealing annular surface adjacent one side of the annular seal groove facing toward the one chamber which non sealing annular surface has a plurality of radial grooves which permit fluid flow from the other chamber to the one chamber when the one chamber is rapidly exhausted after both chambers have been pressurized, and an annular sealing surface adjacent the other side of the annular seal groove facing toward the other chamber which annular sealing surface seals in the annular seal groove when the one chamber only is pressurized to prevent fluid flow from the one chamber to the other chamber.

4,123,069

MECHANICAL SEALING DEVICE

Akira Sato, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 18, 1976, Ser. No. 733,309
Claims priority, application Japan, Jul. 23, 1976, 51-97536[U]
Int. Cl.[2] F16J *15/36*
U.S. Cl. 277—70 **7 Claims**

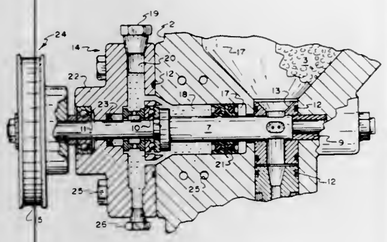


1. The combination of casings, a rotary shaft rotatable at high rpm and extending through said casings, and a mechanical sealing device, said sealing device comprising:
first and second stationary ring members arranged in surrounding and concentric relation to the rotary shaft;
a resilient bellows interposed between said first and said second stationary ring members;
a rotatable ring structure on the rotary shaft, said rotatable ring structure comprising third and fourth ring members rotatable together as a unit, said third ring member comprising a sleeve-shaped boss portion disposed around the rotary shaft and a disc portion extending radially outwardly from said boss portion, said disc portion being substantially radially coextensive with said fourth ring member;
said first ring member being affixed to one of said casings;
said second ring member being urged against said rotatable ring structure in sliding relation thereto by said bellows;
means defining a plurality of radially extending passages between said third and fourth ring members, each of said passages being substantially perpendicular to the axis of said rotary shaft and extending substantially from the radially inner end to the radially outer end of the fourth ring member and of the disc portion of the third ring member;
a supply port defined in one of said casings for a cooling medium, said port being open to the radially inner end of said radially extending passages.

4,123,070
HIGH PRESSURE HIGH TEMPERATURE LIGHT GAS DRIVE SHAFT SEAL

William D. Peterson, II, 1996 E. 4675 South, Salt Lake City, Utah 84117

Filed Oct. 5, 1976, Ser. No. 729,695
Int. Cl.[2] F16J *15/40*
U.S. Cl. 277—135 2 Claims

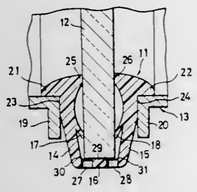


1. In a structure including a closed vessel pressured by confined gas therein, a shaft extending through a bore in the wall thereof, a bearing inside said vessel and a bearing outside said vessel journalling said shaft for rotation in said bore, an improved seal for said shaft comprising a pair of spaced apart shaft seals including an inner seal and an outer seal between said spaced apart bearings and encircling said shaft in said bore, said inner seal having one side exposed to pressured gas in said vessel, and comprising two oppositely axially opening U-shaped seal elements liquid filling said bore between said seals; and said inner seal exposed to said pressured gas from the interior of said vessel being axially slidable in an extended cylindrical bore recess on said shaft whereby to cause pressure on said liquid equal to the pressure of gas inside said closed vessel.

4,123,071
WATER-DRAINABLE GASKET

Yukio Yamamoto, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Sep. 21, 1977, Ser. No. 835,181
Claims priority, application Japan, Sep. 22, 1976, 51-128309[U]; Oct. 8, 1976, 51-136147[U]
Int. Cl.[2] E06B *7/23, 7/26*
U.S. Cl. 277—205 8 Claims

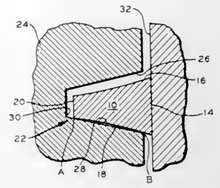


1. A water-drainable gasket for use between a panel and a frame disposed peripherally around the panel, comprising: a continuous resiliently flexible body of a substantially U-shaped cross-section for extending around and receiving the peripheral edges of the panel, said body including a pair of spaced sidewalls and a bottom extending between and interconnecting said sidewalls; and a plurality of pairs of transversely spaced passage means extending through said bottom, said passage means in each pair being transversely aligned with each other, and said pairs of passage means being located at a spaced interval along the length of said continuous body.

4,123,072
PISTON RING ASSEMBLY AND METHOD OF MAKING SAME

Robert L. Sharpe, Richmond, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 18, 1977, Ser. No. 779,281
Int. Cl.[2] F02F *5/00*; F16J *9/20*
U.S. Cl. 277—216 7 Claims



1. A piston and piston ring assembly for a fluid pressure cylinder comprising:
a piston with a peripheral groove having at least one inwardly converging side wall; and
a piston ring having an outer peripheral wall, an inner peripheral wall having an axial dimension less than the outer wall, and at least one wall tending to inwardly converge from the outer wall to the inner wall, said piston ring being loosely received within the peripheral groove of said piston with the inwardly converging wall in facing relation to the inwardly converging wall of the groove of said a piston, wherein at least one of the inwardly converging walls of said piston and said piston ring is of concavely curved cross-section over a major portion of the wall thereof so as to establish line-to-line contact between the facing wall.

4,123,073
SEALING BEAD FOR USE AT HIGH TEMPERATURES

Willi Cremerius, Benrodestrasse 7, 4 Dusseldorf-Benrath, Germany

Filed Aug. 24, 1976, Ser. No. 717,182
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1975, 2538765
Int. Cl.[2] F16J *15/10*
U.S. Cl. 277—229 5 Claims

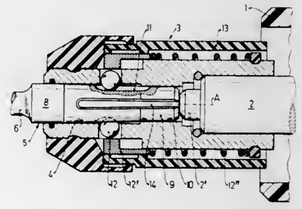


1. A sealing bead for sealing gaps in installations and machines which are operated at high temperatures, characterized in that the bead comprises a plurality of folded strips of paper consisting of from 60 to 80% of crimped paper and from 20 to 40% of tissue paper which is free of wood pulp, each of the paper strips having a surface/weight ratio not exceeding 30 grams per square meter, the strips of paper being twisted together to form a generally helically arranged bundle of strips which are bound together by a helical thread of unwaxed hemp with a thickness of about 0.3 mm, the helix formed by the thread being pitched less steeply than the helix formed by each of the strips.

4,123,074
TOOL SHANK AND CHUCK COMBINATION FOR A HAMMER DRILL

Karl Wanner, Echterdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 11, 1977, Ser. No. 840,624
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650134
Int. Cl.[2] B25D *17/08*
U.S. Cl. 279—19.5 10 Claims

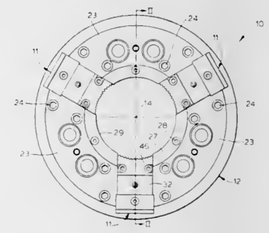


1. In combination with a chuck having a tool receptacle defining a chuck axis and tool-holding element radially displaceable into a position protruding into said receptacle, a tool having a shank which defines a tool axis and has a portion receivable axially in said receptacle, and having a free end, said shank being formed with a radially outwardly open recess closed at both of its axial ends and adapted to receive said tool-holding element, and with an axially extending groove separate from said recess and open axially at said free end, at least a section of said portion of said shank having a conical shape decreasing in a direction towards said free end and said chuck has a projection engaging in said axial groove of said shank.

4,123,075
SLEEVE-ENCASED JAW CHUCK

William V. Rosewarne, Portage, and Gerald W. Norton, Brady Township, Kalamazoo County, both of Mich., assignors to Buck Tool Company, Kalamazoo, Mich.

Filed Sep. 6, 1977, Ser. No. 830,388
Int. Cl.[2] B23B *31/16*
U.S. Cl. 279—121 12 Claims

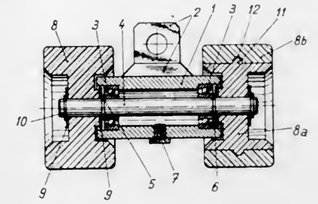


1. In a rotatable jaw chuck construction having body means, a plurality of jaw assemblies radially movably supported on said body means and adapted for gripping engagement with a workpiece, and axially movable actuator means interconnected to said jaw assemblies for radially displacing same into clamping engagement with a workpiece, comprising the improvement wherein:
said body means includes an inner sleevelike body having a plurality of guide slots formed therein and spaced circumferentially therearound, said guide slots extending substantially radially with respect to the longitudinal axis of said inner body and having said jaw assemblies slidably supported therein;
said actuator means including a plurality of slidable actuating wedges, each wedge being axially slidably supported on said body means and disposed in slidable camming engagement with a respective said jaw assembly for causing radial displacement thereof in response to axial displacement of said wedge; and
said body means including an outer sleevelike body fixed with respect to the inner body and disposed in snug surrounding relationship thereto, said outer body having an inner peripheral surface which axially slidably bearingly engages with a radially outer bearing surface formed on said actuator wedge, whereby centrifugal forces imposed on the jaw assembly are transmitted therefrom through said wedge to said outer body.

4,123,076
PAIR OF ROLLERS FOR ROLLER-SKATES

Gianfranco Passoni, Rte. de la Veveyse 24,, 1700 Fribourg, Switzerland

Filed Mar. 30, 1977, Ser. No. 782,664
Claims priority, application Switzerland, May 4, 1976, 04263/76
Int. Cl.[2] A63C *1/00*
U.S. Cl. 280—11.27 3 Claims



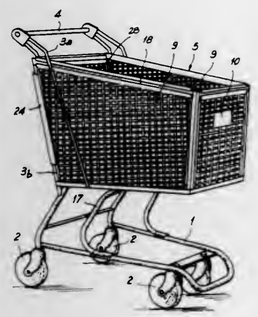
1. A roller assembly, for roller skates, comprising:
(i) a hollow mandrel having on it a radially projecting member for attachment of the mandrel to a shoe support, said mandrel being recessed internally at each end,
(ii) a pair of ball races each including an inner ring and an outer ring, the outer ring of each race being disposed in a respective end recess of the mandrel,
(iii) a spindle engaged in and projecting axially at each end beyond the inner rings of the races, said spindle having two axially-spaced circumferential radial recesses in each of its projecting end portions,
(iv) a first pair of resilient washers engaged in a first pair of said radial recesses and each abutting the inner ring of a respective ball race, to lock the spindle and the ball races against axial movement relative to the mandrel,
(v) a pair of rollers mounted to be freely rotatable each on a respective projecting end portion of the spindle and,
(vi) a second pair of resilient washers engaged in the other pair of said radial recesses and each serving to retain a respective one of said rollers on the spindle.

4,123,077

GOODS TRANSPORT CART WITH MOLDED PLASTIC PANEL

Raymond Joseph, Schiltigheim, France, assignor to Ateliers Reunis Societe Anonyme, Schiltigheim, France

Filed Dec. 1, 1976, Ser. No. 746,327
Claims priority, application France, Dec. 16, 1975, 75 38435
Int. Cl.[2] B62B *11/00*
U.S. Cl. 280—47.34 **10 Claims**



1. A cart for transporting loose articles and having a basket adapted to contain said articles, said cart comprising a plurality of discrete panels of molded plastic material; a frame structure comprising a rigid metallic ossature including a plurality of rigid components defining the contours of said basket and thereby constituting a frame of said basket, said frame being arranged to receive said panels to thereby define a plurality of walls for the basket, said ossature comprising a horizontal bottom frame having two opposite side edges, and a pair of vertical side frames each having a lower edge which is integral with a respective one of said edges and further comprising two upright members each being connected to a rear portion of a respective one of said vertical side frames and to a rear portion of said horizontal bottom frame and a handlebar connecting said two upright members, said panels comprising a bottom panel having a pair of opposite edges and being adapted for mounting in said horizontal bottom frame, and a pair of side panels each having a lower edge and being adapted for mounting in said horizontal bottom frame, and a pair of side panels each having a lower edge and being adapted for mounting in a respective one of said vertical frames; and means for assembling and fastening said panels within said frame structure, said means comprising two bottom panel grooves each extending along a respective one of said opposite side edges of said bottom panel, and two side panel grooves each of which extends along a lower edge of a respective one of said side panels, said bottom panel grooves each being fittable over a respective one of said opposite side edges of said horizontal bottom frame and said side panel grooves each being fittable over said lower edge of a respective one of said vertical side frames.

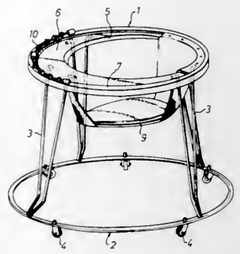
4,123,078

BABY WALKER WITH DEVICE FOR SUPPORTING STEM FOR BEADS

Mitsuo Murakami, Higashi-Osaka, Japan, assignor to Kabushiki Kaisha Famy, Osaka, Japan

Filed Sep. 24, 1976, Ser. No. 726,159
Int. Cl.[2] A47D *13/04*
U.S. Cl. 280—87.02 W **1 Claim**

1. A baby walker comprising a table (1) providing a tray (6) and an opening (5) under which a saddle (9) is suspended; said table (1) being formed with a peripheral ridge (7) of substantially inverted U-shaped cross-section integral therewith, the inner surface of said ridge being formed with radial reinforcing ribs (8); legs (3) for supporting said table (1) on a frame (2) having casters (4) thereon; a stem (12) for carrying ornamental beads (10) comprising a core rod covered by a plastic tube (13) and having a bulge (24) formed on each end thereof; support means comprising, at each said end, a support member (14) for supporting said stem (12), a number of ornamental beads (10) rotatably slidably mounted on said stem, said support member being formed with a head portion (16) and a trunk portion (15); said trunk portion (15) being mounted on said ridge (7) with rotation-preventive projections (22) adapted to a hole of said



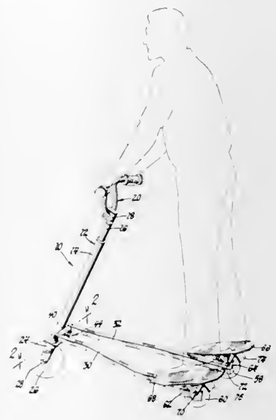
ridge (7) so as to prevent the rotation thereof; said head portion (16) being formed with a support hole (18) for receiving an end of said stem (12) said support hole (18) having a small diameter portion (19) and a large diameter portion (20) which differ in inner diameter, said small diameter portion (19) snugly receiving said stem (12), said large diameter portion (20) serving to grasp said bulge (24) formed on said end of stem (12), said bulge (24) being locked by the step in said support hole (18) at the junction between the different diameters.

4,123,079

OCCUPANT PROPELLED CAMBERING VEHICLE

Edward J. Biskup, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1977, Ser. No. 779,337
Int. Cl.[2] B62M *1/04*
U.S. Cl. 280—220 **4 Claims**



1. A three-point surface contact cambering vehicle having a longitudinally extending roll axis and comprising an upright steering column, an elongated steering shaft mounted in said steering column for turning movement about a substantially vertical axis, a steerable front surface contact means operatively connected to the lower end of said steering shaft for engagement with a support surface, a manual steering device operatively connected to the upper end of said steering shaft, a

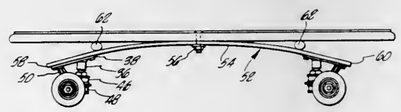
pair of elongated trailing arms extending rearwardly from said steering column and each having a front portion and a rear portion, laterally spaced rear surface contact means operatively connected to the rear portions of said trailing arms for engagement with the support surface, foot support means for an operator of the vehicle mounted on each of said trailing arms adjacent to each of said rear surface contact means, and spring means connecting the front portions of said trailing arms to said steering column and serving as the sole support for permitting said trailing arms to swing about a transverse axis and thereby allow the operator to roll said vehicle with respect to said roll axis and cause said trailing arms to move in opposite directions so that the rear surface contact means camber by an amount substantially equal to the vehicle roll.

4,123,080

SKATEBOARD

Christopher J. Agajanian, 217 Eleventh St., Manhattan Beach, Calif. 90266

Filed May 23, 1977, Ser. No. 799,545
Int. Cl.[2] B62M *1/00*
U.S. Cl. 280—87.04 A **7 Claims**



5. A skateboard comprising:
a platform having a front end, a back end, a lengthwise axis, an underside surface and an upper surface for accommodating the feet of a rider during the riding of the skateboard;
a front wheel assembly positioned under the plane of said platform and proximate said front end thereof;
a back wheel assembly positioned under the plane of said platform and proximate said back end thereof;
suspension means interposed between said platform and said wheel assemblies, said suspension means including biasing means and an elongated flexible member secured generally at its mid-section to said platform and substantially midway between said ends and extending in a direction substantially parallel to said lengthwise axis of said platform, said biasing means comprising cylindrical rods, with one of said rods on each side of the secured mid-section of said elongated member, said elongated member having at its ends said front and back wheel assemblies secured thereto with the ends of said elongated member biased from said underside surface of said platform; said biasing means biasing the ends of said elongated member and positioned between said elongated member and said underside surface, said biasing means permitting movement of the ends of said elongated member toward and away from said underside surface of said platform during riding of the skateboard.

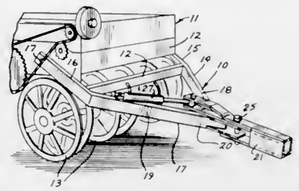
4,123,081

BEET HARVESTER HITCH

Earl H. Ellinger, Crookston, Minn., assignor to Dee, Inc., Crookston, Minn.

Filed Jul. 22, 1977, Ser. No. 817,928
Int. Cl.[2] B60D *1/14*
U.S. Cl. 280—463 **2 Claims**

1. A hitch for beet harvesters and the like for attachment to a tractor, comprising
a hitch frame spanning the width of the harvester and having rearwardly extending outer ends for attachment to the harvester, the hitch frame also having a rigid transverse beam connecting the outer ends together, the beam having side portions extending obliquely of each other and forwardly, and converging on each other at an apex, the side portions of the transverse beam having front faces occasionally engaged by the tractor tires during turning of the tractor,
a fore and aft extending hitch bar with a front end with a pivot adapted for attachment to the drawbar of such a tractor, the hitch bar traversing the apex of the transverse beam and having a pivot connecting the hitch bar to the



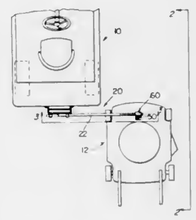
transverse beam adjacent the apex thereof for transverse and generally horizontal swinging relative to the hitch frame, the rear end of the bar being disposed significantly behind the apex, and
a hydraulic steering cylinder extending transversely of the hitch bar and being pivotally connected to one side portion of the beam and to the hitch bar adjacent the rear end thereof, the cylinder being disposed entirely behind the front face of said one side portion of the beam.

4,123,082

POSITIONALLY ADJUSTABLE LAWN MOWER HITCH

Joe D. Conner, Box 5695 Kilcrease Rd., Auburn, Ga. 30203

Filed May 6, 1977, Ser. No. 794,686
Int. Cl.[2] B60D *1/14*
U.S. Cl. 280—467 **15 Claims**



1. A hitch for connecting a towed mower to a towing mower comprising:
a trunnion on said towing mower having the axis thereof substantially vertical,
an L-shaped rod in a substantially vertical plane having a finger portion in said trunnion and an extending arm,
means for releasably securing said rod in either of two positions in which said arm extends to one side or the other of the towing mower,
and means for connecting said rod to a towed mower,
whereby said towed mower may be selectively positioned laterally on either side of said towing mower.

4,123,083

SKI BRAKE

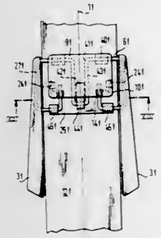
Tilo Riedel, Eching, Fed. Rep. of Germany, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy, France

Continuation-in-part of Ser. No. 666,232, Mar. 12, 1976. This application Apr. 20, 1976, Ser. No. 678,706

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1975, 2512052; Apr. 22, 1975, 2517794; Apr. 22, 1975, 2517838; Apr. 22, 1975, 2517820; Apr. 22, 1975, 2517829; Apr. 22, 1975, 2517862; Apr. 22, 1975, 2517861; May 2, 1975, 2519779

Int. Cl.[2] A63C *17/10*

U.S. Cl. 280—605 **28 Claims**



1. A brake for an elongated ski having an upper surface and a pair of sides, said brake comprising:

a support securable to said upper surface of said ski;

pivot means on said support defining a horizontal pivot axis generally parallel to said surface and transverse to said ski and an upright pivot axis generally perpendicular to said surface and transverse to said ski;

an elongated brake element at a respective one of said sides of said ski and having an upper end portion, a lower end, and an intermediate portion, one of said portions being secured to said pivot for pivoting of said element about said horizontal axis between a braking position extending transverse to and downwardly past said ski and a rest position extending generally parallel to and lying above said surface, said element further being pivotal about said upright axis in said rest position between a ready position in which said lower end is spaced laterally relative to the longitudinal direction of said ski from the respective side of said ski and a retracted position in which said lower end overlies said surface;

a pivot spring engaged between said element and said support and urging said element into said braking position; and

actuating means including a link connected substantially directly to said element and an actuating member connected substantially directly to said link, bearing through said link on one of said portions transversely of said longitudinal direction and generally parallel to said surface, and displaceable generally perpendicular relative to said surface from an up position relatively far from said surface to a down position relatively close to said surface for displacing said element about said horizontal axis from said braking position into said rest position and about said upright axis from said ready position into said retracted position.

4,123,084

SKI BOOT TOE BINDING

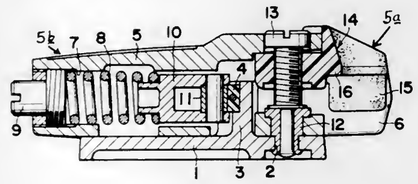
Tohru Takahashi, Tokyo, Japan, assignor to Hope Co., Ltd., Tokyo, Japan

Filed May 19, 1977, Ser. No. 798,484

Int. Cl.[2] A63C *9/08*

U.S. Cl. 280—630 **4 Claims**

1. A ski boot toe binding comprising a base plate adapted to be attached on a ski, a metallic main body having a toe holder at one end thereof, a pivot means provided at said one end of said main body adjacent said toe holder for rotatably mounting said main body upon said base plate, a vertical extension on said base plate spaced from said pivot means, a cam member fixed on said extension and having a cam surface thereon on the side thereof facing toward the opposite end of said main body, said cam member being separate from said pivot means and projecting into an opening in said main body between said pivot means and the said opposite end of said main body, a



piston within said body member and movable longitudinally thereof, a roller on the end of said piston adjacent said cam surface, and a horizontally disposed compression spring urging said roller against the cam surface of said cam member, whereby a lateral force against the ski boot will rotate said main body toward a toe releasing position, friction will be minimized and restitution forces will be increased.

4,123,085

SAFETY PANELLING ARRANGEMENT WITH A DEFORMABLE STRUCTURE

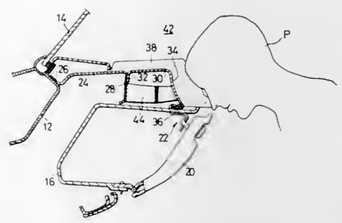
Takaaki Oda, Musashi-Murayama, and Chiyokatsu Yokokura, Kunitachi, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jan. 28, 1977, Ser. No. 763,334

Claims priority, application Japan, Jan. 31, 1976, 51/10542[U]

Int. Cl.[2] B60R *21/08*

U.S. Cl. 280—752 **13 Claims**



1. A safety panelling arrangement for a motor vehicle having a floor and an elongate rigid member transversely disposed in said vehicle at a front portion of the passenger compartment under the windscreen, comprising:

a first elongate sheet member transversely disposed in said vehicle and having the front end thereof fixed to said elongate rigid member and the rear end portion thereof bent downwardly, the rear end portion of said first elongate sheet member forming a first supporting part the lateral axis of which is substantially perpendicular to the longitudinal axis of said vehicle;

a second sheet member transversely disposed in said vehicle and having the front end thereof fixed to the rear surface of said first elongate sheet member and the rear end portion thereof bent downwardly, the rear end portion of said second elongate sheet member forming a second supporting part the lateral axis of which is substantially parallel with that of said first supporting part; and

a straightly extending member firmly spanned substantially horizontally between said first and second supporting parts, at a position below an area where said second elongate sheet member is fixed to said first elongate sheet member, in a manner that the longitudinal axis of said straightly extending member is inclined with respect to an imaginary plane which is perpendicular to said floor and includes therein said longitudinal axis of said vehicle, said area being an area most likely impacted by the head of a passenger in a passenger compartment in a vehicle collision.

4,123,086

CONTINUOUS STATIONERY ASSEMBLIES

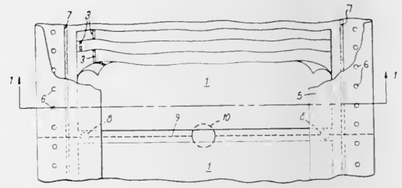
Denis E. E. French, London, England, assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Jul. 21, 1977, Ser. No. 817,861

Claims priority, application United Kingdom, Jul. 21, 1976, 30406/76

Int. Cl.[2] B41L *1/20*

U.S. Cl. 282—11.5 A **7 Claims**



1. A series-connected business form adapted to be fed through the printing means of a business machine, comprising a continuous locating web folded inwardly along marginal edges thereof to define longitudinal flaps having edges spaced transversely of one another, said flaps overlying said web, at least one of said flaps and said web underlying same each having feed holes extending longitudinally thereof in superimposed relationship and being arranged to engage the feed means of the business machine so that the business form is thereby advanced into and past the printing means, said flaps being attached to said web by first and second securement means respectively spaced outwardly of said flap edges, said web and said flaps having spaced transverse lines of perforations for separating the form therealong into individual units, individual sheets respectively associated with said units and overlying said web, each said sheet having first opposed marginal edges lying inwardly of said first and second securement means and having second opposed marginal edges respectively spaced inwardly of said transverse lines of perforations, means on said locating web lying adjacent said second opposed edges for immobilizing said sheets against shifting longitudinally of said web, and portions of said flaps overlapping said first marginal edges of said plies, whereby upon the printing of a number of said units, the next to the last of said units so printed may be separated along one of said transverse lines of perforations whereafter one of said sheets associated with the last of said units may be separated from said web to thereby leave said web of said last unit available as a drive web for initiating the feed of the remaining units to be printed through the printing means.

4,123,087

TYPING GUIDE

Alvin J. Baron, 718 Sherwood St., North Woodmere, N.Y. 11581

Filed Oct. 11, 1977, Ser. No. 841,105

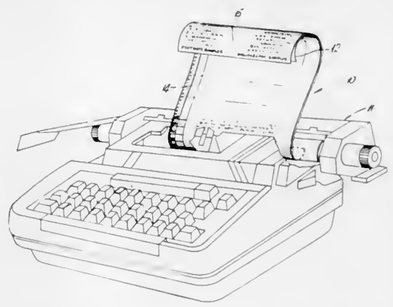
Int. Cl.[2] B42D *15/00*

U.S. Cl. 283—1 R **19 Claims**

1. A typing guide, comprising:

a single typewriter backing sheet adapted to underlie a sheet of typing paper when inserted in a typewriter, said backing sheet having front and back surfaces, and top, bottom and side edges, and footnote indicator means printed directly on said front surface for providing an indication of the space needed to type the required number of footnotes near the bottom portion of the sheet of typing paper.

11. A method of typing footnotes using a typing guide formed of a single backing sheet having a front and back surface with a plurality of marks in vertical sequence extending from the lower edge and printed adjacent one side of the front surface, the marks being numerically identified by a progressively increasing sequence of numbers, commencing from the lower most mark, said method comprising the steps of:



(a) placing a sheet of typing paper over the front surface of the backing sheet with the marks exposed at one side of the typing paper;

(b) inserting the typing paper and underlying backing sheet into the typewriter;

(c) typing the desired text material on the typing paper sequentially identifying the footnote numbers included in the text of that page;

(d) terminating typing of the text material when reaching the mark having the same identifying number as the last footnote number typed; and

(e) typing the footnotes on the remainder of the page.

4,123,088

LEAKAGE PREVENTIVE MECHANISM FOR FLEXIBLE HOSES

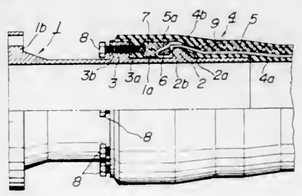
Mamoru Tanaka, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 6, 1978, Ser. No. 875,709

Claims priority, application Japan, Feb. 16, 1977, 52/16531[U]

Int. Cl.[2] F16L *39/02*

U.S. Cl. 285—14 **4 Claims**



1. A leakage preventive mechanism for flexible hoses, comprising a nipple flange including a nipple portion engageable with an end portion of a flexible hose, a rib and a bolt supporting base made integral with said nipple portion of the nipple flange and circumferentially extending around said nipple portion, said rib and bolt supporting base being axially spaced apart from each other, a reinforcing layer embedded in said flexible hose and surrounding an end of said nipple portion of the nipple flange, said reinforcing layer having a front end

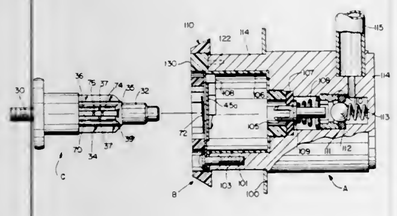
portion passing over said rib toward said bolt supporting base, a bead wire surrounding said front end portion of said reinforcing layer, said front end portion of said reinforcing layer being wrapped around said bead wire from its lower portion toward the upper portion thereof to form a turn-back portion inclined at an angle to said nipple portion of the nipple flange, a pair of rings surrounding said nipple portion and circumferentially making contact with the outside surface of said inclined turn-back portion of said reinforcing layer, and a plurality of bolts threadedly engaged with said bolt supporting base and urging said rings through said inclined turn-back portion of said reinforcing layer and said bead wire against said rib.

4,123,089

GAS SERVICE UNIT

Laurence Viero; John Cannon; George Rademaker; Williard Swanson, and Kenneth Fessett, all of Chicago, Ill., assignors to Oxequip Health Industries Inc., Chicago, Ill.

Filed Feb. 28, 1977, Ser. No. 773,035
Int. Cl.[2] F16L *21/00*
U.S. Cl. 285—39 **1 Claim**



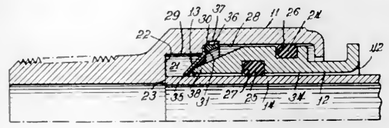
1. In the known gas outlet device comprising in combination
(a) a valve housing,
(b) an inlet section to said valve housing, said inlet section having an opening, and
(c) a connector tube that has one end that is adapted to be inserted through said openings and interengaged with said inlet section so as to cause the flow of gas through said valve housing, said inlet section and said connector tube,
the improvement which comprises
(1) the perimeter of said opening containing diametrically opposed slots,
(2) two diametrically opposed elongated ridges extending along the exterior surface of said connector tube, said elongated ridges being adapted to pass through said slots in said inlet section,
(3) a pair of spaced apart and parallel locking wires extending across the opening of said inlet section,
(4) two spaced apart wire engaging members located on the exterior of said connector tube, each of said wire engaging members including a first portion that is adapted to spread said locking wires outwardly with respect to each other and a second transverse slot portion that allows the locking wires to return to an approximately parallel relationship, and
(5) a disengager member associated with said connector tube which will when activated by pulling said connector tube, dislodge said locking wires from said transverse slot portion,
whereby by pushing said connector tube into said inlet section said locking wires will engage with said transverse slot portions to thereby hold the connector tube and inlet section together and by pulling said connector tube away from said inlet section said disengager member will dislodge said locking wires from said transverse slot portion.

4,123,090

PUSH-PULL FITTING

Mike D. Kotsakis, Mount Prospect, and Albert J. Schwarz, Lincolnwood, both of Ill., assignors to Imperial-Eastman Corporation, Chicago, Ill.

Filed Jul. 19, 1976, Ser. No. 706,823
Int. Cl.[2] F16L *21/02*
U.S. Cl. 285—39 **14 Claims**



1. In a tube fitting having a body provided with a through bore having an outwardly opening end adapted to receive the end of a tube, the improvement comprising: a one-piece annular carrier axially movably retained in said bore end having a through bore adapted to pass said tube end therethrough, an axially inner actuating portion, an axially outer manipulating portion extending out of the body and being accessible at said bore end, a mid-portion having a radially inwardly opening annular groove and a radially outwardly opening annular groove; first and second separate sealing rings carried by said carrier axially outwardly of said actuating portion, said first ring being disposed in said radially inwardly opening annular groove slidably sealingly engaging a portion of the tube end and said second ring being disposed in said radially outwardly opening annular groove slidably sealingly engaging only the body for maintained accurately prestressed sealing of said tube end to the body; a retainer positioned axially inwardly of said sealing rings and having at least one radially and axially inwardly projecting spring finger terminating in a locking edge axially inwardly of said carrier; and means positioned axially inwardly of said sealing rings for retaining said retainer to said body in said bore end to have said locking edge of the spring finger resiliently biased against said tube end axially inwardly of the portion thereof engaged by said first sealing ring while permitting said tube end to be moved axially inwardly into said bore end past said spring finger and to lock said tube as an incident of attempted subsequent axial outward movement of said tube end, thereby to retain said tube end in said bore end, said carrier actuating portion being axially inwardly movable in said bore end directly with said manipulating portion while effectively maintaining said prestressed sealing to cause said actuating portion to engage effectively positively said spring finger and urge the locking edge thereof radially outwardly from said tube end thereby to permit axial withdrawal of said tube end from said bore end through said carrier bore.

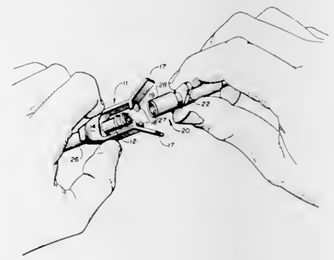
4,123,091

TUBE CONNECTOR

Louis C. Cosentino, Wayzata, and B. Steven Springrose, Minneapolis, both of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed Nov. 21, 1977, Ser. No. 853,133
Int. Cl.[2] F16L *21/08, 37/12*
U.S. Cl. 285—39 **9 Claims**

1. A flow-through connector assembly for use in transmitting the flow of blood and other fluids, comprising in combination:
a. first and second connector bodies adapted to be couplingly connected together and to be readily disconnected by relative rotation of at least one of said bodies about the body axis and the separation of the two bodies;
b. the connector bodies each being characterized by a coaxial fluid passageway therethrough with each body having one end thereof adapted to be joined to a fluid conduit and an opposite end adapted for mutual connection with the other connector body to form a continuous fluid passageway therethrough when the bodies are connected together;
c. the said opposite end of one of the connector bodies including a male tubular member and the said opposite end of the other connector body including a female tubular member for receiving the male member upon connecting the two connector bodies together, each of the tubular members comprising a portion of the fluid passageway;
d. a pair of resilient arm members formed integrally with the first connector body and positioned along opposite sides of the tubular member on the first connector body and extending parallel thereto beyond the end of the tubular member at which point each arm has a flared segment which flares outwardly at an acute angle with respect to the longitudinal axis of the connector body and which is of a length approximating the length of said arm, and an inwardly extending flange member carried by each arm at a position beyond the end of the tubular member for receiving the tubular member carried by the second con-



nector body when the two connector bodies are being connected together, the distance between the inward ends of the flanges being less than the outside diameter of the tubular member carried by the second connector body whereby the arms are resiliently spread apart when the tubular member is received between the flanges; and,
e. The second connector body being further characterized by an annular recessed collar positioned inwardly of the tubular member carried thereby for receiving the flanges of the first connector body when the tubular members are joined thereby connecting the connector bodies together, and a pair of oppositely positioned members formed integrally with and extending outwardly from the sides of the second connector body from an inward position beyond the recessed collar and the tubular member, the outwardly extending members being of such a length as to bear against the flaring arms when the connected connector bodies are rotated relative to each other whereby the flanges are lifted out of the recessed collar and the connector bodies may be disconnected by separating them.

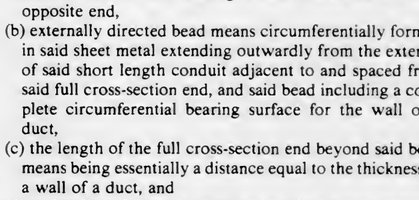
4,123,092

CONTRACTION RESISTANT COUPLING FOR PIPE LINES CARRYING GASES OR FLUIDS

Thomas E. Colbert, Jr., 150 Wood Valley La., Athens, Ga. 30601

Filed Sep. 8, 1976, Ser. No. 721,582
Int. Cl.[2] F16L *55/00*
U.S. Cl. 285—187 **4 Claims**

1. A temperature responsive coupling for two fluid carrying tubes comprising one tube having a low co-efficient of expansion and a second tube having a high co-efficient of expansion, said second tube having an enlarged hollow female end and said first tube having an extended male end to fit within said female end of said second tube, the open end of said enlarged hollow female end of said second tube provided with a closure disc having a circular aperture to encircle and slideably fit said first tube, seals provided between said disc and said first tube to insure a fluid tight relationship, said first tube provided with an enlarged end against which said disc may abut, said first tube provided with an extended portion having a threaded end, a circular plate to fit said first tube and abut with said closure element, a spring passed over said first tube to abut said circular plate and a disc fitted over the threaded end of said first tube to abut and compress said spring, a nut fitted to said



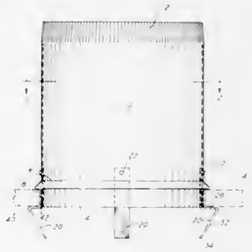
threaded end of said first tube to hold said spring compressed, said second tube movable in expansion and contraction with changes in external temperature, said coupling allowing a full linear expansion of said second tube and an expected degree of contraction during changes of temperature surrounding said coupling and attached lines.

4,123,093

DUCTBOARD COLLAR

William M. Newland, Littleton, Colo., assignor to Hercules Supply Company, Denver, Colo.

Filed Oct. 31, 1977, Ser. No. 847,001
Int. Cl.[2] F16L *41/00*
U.S. Cl. 285—189 **1 Claim**



1. A fitting for connecting conduits to larger ducts, comprising:
(a) a short length of full diameter sheet metal conduit of the size and shape of the conduit to be connected to the duct, having means at one end for communicating assembly with a conduit, and having a full cross-section at the opposite end,
(b) externally directed bead means circumferentially formed in said sheet metal extending outwardly from the exterior of said short length conduit adjacent to and spaced from said full cross-section end, and said bead including a complete circumferential bearing surface for the wall of a duct,
(c) the length of the full cross-section end beyond said bead means being essentially a distance equal to the thickness of a wall of a duct, and
(d) a plurality of three or more spring clips means mounted on said short length of conduit at the full cross-section end arranged in general opposition to provide holding of said fitting to duct and arranged to compress permitting entry of the full cross-section end through a bore in the wall of a duct and to expand after such entry to bear against the interior of the wall of the duct to bias said bearing surface against the exterior of the wall of the duct around the bore therethrough, said spring means each including a flat

spring section secured to the inside of said short length of conduit and extending toward and beyond said full cross-section opening and a 90° portion extending outwardly from said opposite end in position to contact the inside of a duct board and hold said fitting in an opening in a duct board when expanded.

4,123,094

DUCT JOINT ASSEMBLY

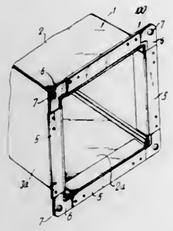
Günter Smitka, Am Bülzgraben, 5868 Letmathe, Germany

Continuation of Ser. No. 739,053, Nov. 5, 1976, abandoned. This application Jan. 19, 1978, Ser. No. 870,720

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556167

Int. Cl.[2] **F16L** *23/00*

U.S. Cl. 285—405 **13 Claims**



1. A joint assembly for connecting together at their ends a pair of ducts each consisting of sheet material forming side walls of said ducts, said ducts having congruent polygonal cross sectional configurations, said side walls being planar and joined together longitudinally of said ducts to form corners of said polygonal configuration, said joint assembly conprising:

a plurality of joint sections, each of said joint sections being formed to include a pair of generally perpendicularly extending flanges;

said flanges each being formed of double walls, with one of said flanges being adapted to engage therebetween one of the side walls to said ducts;

said joint sections each being mounted on the ends of said ducts with said one flange of each joint section having engaged between its double walls the end of one of said side walls of said ducts;

there being provided one joint section for each of the side walls of each of said ducts; and

a plurality of angle plates each including a corner region having a pair of arms extending from said corner region;

each of said angle plates being positioned within said joint assembly with each of said arms extending to between the double walls of the other of said flanges of said joint sections;

each of said angle plates being arranged so that its arms extend oppositely from said corner region into flanges of adjacent joint sections of one of said ducts;

said corner regions of each of said angle plates on one of said ducts being connected with a corner region of one of the angle plates on the other of said ducts, with each arm of each of said angle plates on one duct being brought into generally facing relationship across said joint assembly with an arm of an adjacent angle plate on the other of said ducts;

each pair of facing arms thus pressing therebetween one of the double walls of the flanges within which each said arms extend, each pair of arms therefore pressing therebetween two walls, one each from different flanges;

each of said arms of each of said angle plates being formed with a curved configuration which extends from said corner region outwardly therefrom to the end of each arm;

the curved configuration of said arms being oriented so that each of said pair of facing arms is arranged with the ends of each arm curving toward the end of the facing arm across the joint assembly to provide enhanced joinder pressure at the ends of each pair of arms, said curved configuration of the arms thus operating to form from each pair of facing arms individual pairs of pincers to enhance the joinder pressure by which said joint sections connect together said pair of ducts.

4,123,095

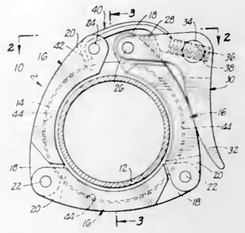
PIPE CLAMP HAVING AN OVERCENTER TOGGLE

Theodore A. Stehlin, Pasadena, Calif., assignor to Hansted Corporation, Carson City, Nev.

Filed Jun. 30, 1977, Ser. No. 811,783

Int. Cl.[2] **F16L** *23/00, 37/20*

U.S. Cl. 285—409 **1 Claim**



1. A clamping structure for use in holding adjacent, aligned, flanged pipe ends with respect to one another which comprises:

a band comprising a plurality of identical elongated clamping segments located in end-to-end relationship, said band having terminal ends,

each of said segments having a clamping surface comprising an internal groove which is curved throughout its length so as to correspond to the curvature of said flanged pipe ends and which has a cross-sectional configuration corresponding to the cross-sectional configuration of the exteriors of said flanges when said pipe ends are adjacent and aligned with one another, each of said clamping surfaces extending less than one hundred eighty degrees around the circumference of said pipe ends.

each of said segments having a single tongue extending from one end thereof and two spaced, parallel ears extending from the other end thereof, said tongues of said adjacent ends fitting between said ears at said adjacent ends,

a pivot means located so as to connect each pair of adjacent ends of said segments so that said segments can be pivoted relative to one another, said pivot means comprising pins extending between and connecting said ears and said tongues at said adjacent ends,

said band being of less length than the circumference of said flanged ends, and being of such dimension that said segments only engage the flanges on said pipe ends when located so that said grooves fit over said flanges on said pipe ends,

a locking arm pivotally mounted on one of said terminal ends, said locking arm including bifurcated ends,

a pin serving as a latch retainer located on the other of said terminal ends,

a latching element located on said locking arm, said latching element including a cylindrical member pivotally mounted on said bifurcated ends and a hook element, said cylindrical member having a threaded opening therein, said hook element including a rigid threaded base portion threaded within said opening in said cylindrical member, and a non-cylindrical elongated resilient section extending from the rigid base portion and having an inwardly bent hook adapted to engage said pin serving as a latch retainer,

said latch retainer, said latching element, and said locking arm form an overcenter toggle holding said locking arm in place when said clamping structure is in use.

4,123,096

LOCK FOR BIASING DOOR IN CLOSED POSITION

Pierre Ardizio, Rue de Saint-Jean 21, 1203-Geneva, Switzerland

Filed Apr. 25, 1977, Ser. No. 790,515

Claims priority, application Switzerland, Apr. 27, 1976, 5258/76; Apr. 12, 1977, 4490/77

Int. Cl.[2] **E05C** *3/24*

U.S. Cl. 292—216 **18 Claims**



1. A lock including at least two elements adapted to be hooked together, at least one element being movable and acting as a closing member, a second element acting as a retaining member, one of said elements mounted on a stationary frame and the other on a movable leaf, said lock comprising:

said closing member including an articulated hook operating as a pawl for hooking itself to said retaining member;

said retaining member including a lever articulated on a support and biased in a return direction by a return spring;

said hook mounted on a second support, said second support including a pushing member articulated thereon, said pushing member during the closing of said leaf acting against said retaining member opposite the return direction of said return spring to engage said retaining member on said pawl; and

release means to release said pushing member when said leaf is approximately in the closed position, the release of said pushing member releasing said retaining member which is then urged into the fully closed position by said return spring.

4,123,097

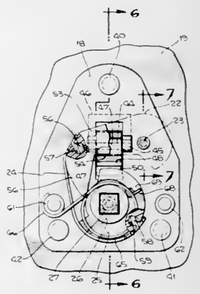
SECTIONAL ENTRANCE HANDLE RETRACT MECHANISM

James G. Allemann, Santa Ana, Calif., assignor to Norris Industries, Inc., South Gate, Calif.

Filed May 31, 1977, Ser. No. 802,043

Int. Cl.[2] **E05B** *1/16*

U.S. Cl. 292—336.3 **8 Claims**



1. A latch mechanism for a door in which a rectractable latch bolt is installed in the door, said latch mechanism com-

4,123,098

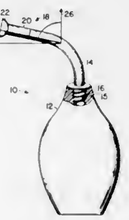
CONTACT LENS INSERTION AND RETRACTION DEVICE

Leo E. Shoup, 125 N. Mt. Vernon, Prescott, Ariz. 86301

Filed Jul. 25, 1977, Ser. No. 818,435

Int. Cl.[2] **A61F** *9/00*

U.S. Cl. 294—1 CA **4 Claims**



1. A soft contact lens insertion and retraction device comprising, in combination, a flexible bulb member, a thin, angled, connecting tubular member having one end connected to said flexible bulb member, a soft contact lens holder portion connected to the other end of said connecting tubular member, said soft contact lens holder portion having a cup-shaped member located at one end thereof, said cup-shaped member having a semi-circular shaped cavity, and concave blocking means extending across said semi-circular shaped cavity for preventing a soft contact lens from being sucked down in the direction of said flexible bulb member,

said concave blocking means comprising a diagonally extending concave blocking member having a relatively large opening on each side thereof for permitting maximum flow of air pressure.

4,123,099

CLOSURE FOR TRUCK BED

Charles Mashigan, Redford, Mich., assignor to American Motors Corporation, Southfield, Mich.

Filed May 4, 1977, Ser. No. 793,584

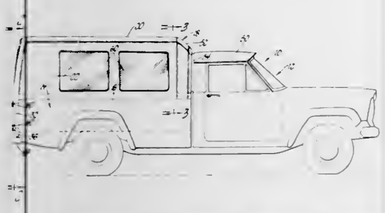
The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.[2] **B60P** *3/42*

U.S. Cl. 296—10 **7 Claims**

1. A removable rear bed closure for a truck having laterally

spaced side walls extending upwardly from the bed behind a front cab, the bed side walls having rear ends including taillights supported thereby, said closure comprising: an upper roof portion positioned above the bed; closure side walls extending downwardly from the bed side walls to the roof portion; the closure side walls and roof portion having rear ends that cooperate with the bed to define a rear opening; means for detachably securing the closure to the bed; and said rear ends of the closure side walls having downwardly projecting hinge



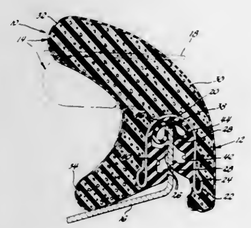
pillars located laterally inward from the taillights; said hinge pillars being located rearwardly of the bed side walls in longitudinal alignment therewith such that the rear opening has approximately the same lateral width as the bed; a pair of rear doors respectively supported by the hinge pillars for pivotal movement about vertical axes between open and closed positions with respect to the rear opening; and each door having an upper end that seals at the upper roof portion and a lower end that seals at the bed in the door closed position.

4,123,100

WEATHERSTRIP SEALING ARRANGEMENT

Jerry Ellis, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1977, Ser. No. 819,705
Int. Cl.[2] B60J *1/00*
U.S. Cl. 296—93 **1 Claim**



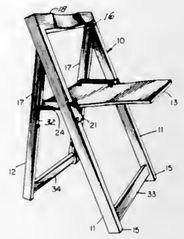
1. In a vehicular closure opening and a cooperating body flange, a weatherstrip comprising a molded retention member adapted to being mounted on the body flange and including equally spaced, laterally extending metal strips formed therein and crimped into a U-shaped configuration to form a recess having an end wall and a pair of oppositely disposed side walls, and having a predetermined width for receiving the body flange, and a pair of retention lips formed on each side wall of the U-shaped recess and extending toward the center of the recess to exert a pressure on the body flange to retain the weatherstrip in place thereon, and a flexible tubular member confined against and substantially uniformly depressed toward the end wall of the recess inward of the retention lips, said tubular member adapted to being further depressed toward the end wall of the recess along its entire length by the abutment of the body flange against the center portion thereof to thereby seal off the inside surface of the flange from the outside surface thereof.

4,123,101

FOLDING CHAIR

Lawrence D. Minsker, 102 Pleasant View Dr., Jamestown, N.Y. 14701

Continuation of Ser. No. 568,408, Apr. 16, 1975, abandoned.
This application Nov. 24, 1976, Ser. No. 744,655
Int. Cl.[2] A47C *4/00*
U.S. Cl. 297—58 **1 Claim**



1. A wooden folding chair comprising front legs disposed in rigid spaced relation with each other and extending upwardly and rearwardly to form supports for a back member,

and rear legs pivotally connected within the upper portions of said front legs disposed in rigid spaced relation with each other,

a seat pivotally disposed within said front and rear legs and a first bracket and a second bracket disposed on each side of said seat,

said brackets each comprising a seat angle member and a front leg angle member,

said seat angle members and said front leg angle members each having a first flange disposed in a vertical plane and a second flange fixed to the first flange and generally perpendicular thereto,

said first flanges of said seat angle member and said front leg angle member being disposed in planes adjacent and parallel to each other,

pivot means connecting said first flange of each of said angle members together at the front portion of the seat angle members,

said first flanges of said seat angle members resting on said seat edges,

said second flanges of said front leg angle member fixed to the front edges of said front legs,

said seat flanges of said second angle members underlying said seat and being fixed thereto,

said rear legs each having a downwardly extending inwardly facing slot and a laterally extending pin means on the rear portions said first flanges of said seat angle members slidably receivable in said slots in said rear legs.

4,123,102

ADJUSTABLE RECLINING CHAIR HAVING THREE-POINT SUSPENSION, AND METHOD

Archie C. Landry, Canoga Park, Calif., and Alexander C. Daswick, 647 Orange Grove, South Pasadena, Calif. 91030, assignors to Alexander C. Daswick, South Pasadena, Calif.

Filed Jul. 22, 1977, Ser. No. 817,997
Int. Cl.[2] A47C *1/02, 3/029*
U.S. Cl. 297—270 **9 Claims**

1. An adjustable reclining chair with three-point suspension, comprising:

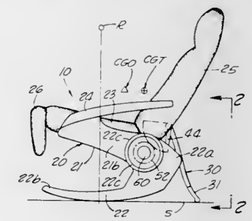
a chair frame having a seatrest, side arms, and a backrest;

a pair of semi-rocker-like members secured beneath said frame and normally engaging a floor surface to provide two front points of support;

a rear support frame angled downwardly and having its forward and upward end pivotally attached to said chair frame along a horizontal axis near the rearward end of said seatrest, the rearward and downward end thereof normally engaging the floor surface to effectively provide a single rear support point;

manually operable drive means, operable by the occupant while occupying the chair, for adjustably rotating said rear support frame relative to said chair frame to thereby adjust the angle of recline of said chair frame;

the chair being so constructed that in every position of said rear support frame both the center of gravity of the chair, and the composite center of gravity including the occupant when the chair is occupied, are at least about 3 inches rearwardly of said two front support points; and



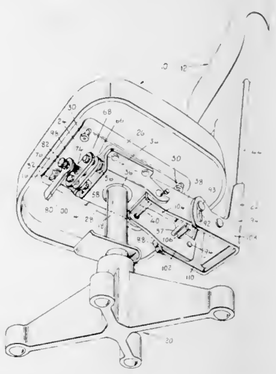
said rear support frame being resiliently constructed to permit limited rocking of the chair and its occupant, said drive means including a drive shaft disposed to the rear of said seat rest, said chair frame also having side frame portions in which the respective ends of said drive shaft are journaled; the ends of said drive shaft extending through said side frame portions and having knobs attached thereto so that the chair occupant may operate said drive shaft with either hand; and further including drive gear means coupling said drive shaft to the upper and forward end of said rear support frame.

4,123,103

CHAIR CONTROL FOR A TILTABLE STENOGRAPHER'S CHAIR

Frank Doerner, 138 Aberdeen Rd., Kitchener, Ontario, Canada (N2M 2Y7)

Filed Apr. 4, 1977, Ser. No. 784,166
Int. Cl.[2] A47C *3/00*
U.S. Cl. 297—305 **4 Claims**



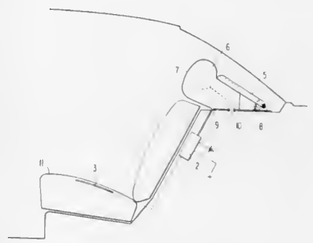
1. In a chair control for use with a tiltable stenographer's chair which comprises a fixed frame member mounted on a vertical post and attached to the undersurface of the seat of the chair, a movable frame member, the forward end of which is pivotally connected to said fixed frame member and with its opposite end adjustably connected to the seat back, a biasing means adapted to return said back of said chair to a resting position after said back has been depressed and released, wherein said movable frame member comprises an inverted substantially U-shaped horizontally aligned first bracket, the forward portion of which is pivotally connected to said fixed frame member, a substantially U-shaped horizontally aligned second bracket, the rearward portion of the arms of said first bracket and the forward portion of the arms of said second bracket overlapping and adjustably secured to each other, and a vertical bar, one end of which is adjustably secured to said second bracket and the other end secured to said seat back, said adjustable connection between said first and said second brackets of said movable frame member comprising a horizontal bolt extending through the arms of said first and said second brackets and a tightening means adapted to tighten and secure said first and said second brackets, the improvement comprising a downwardly depending rearward part of the top surface of said inverted substantially U-shaped first bracket which is located between the respective arms of said first and said second bracket around said horizontal bolt, said part adapted to resist the distortion of said first and said second brackets when said tightening means is tightened.

4,123,104

HEADREST FOR A MOTOR VEHICLE

Rudolf Andres, Sindelfingen; Gerhard Busch, Gechingen, and Werner Heiss, Doffingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Sep. 1, 1977, Ser. No. 829,712
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1976, 2640163
Int. Cl.[2] A47C *1/10*
U.S. Cl. 297—391 **9 Claims**



1. A headrest for a motor vehicle with an inflatable bellows means which is inflated only in case of need, comprising:

inflatable bellows means for forming the headrest itself;

means for inflating and deflating the bellows means; and

elastically yielding drawband means for operably returning the bellows means into its folded-together position in response to the deflating of the bellows means.

4,123,105

CHAIR CONSTRUCTION

Fred J. Frey, Michigan City; Stanley Hynek, Rolling Prairie, and Edward Losinski, Michigan City, all of Ind., assignors to InterRoyal Corporation, New York, N.Y.

Continuation of Ser. No. 626,810, Oct. 29, 1975, abandoned. This application Feb. 16, 1977, Ser. No. 769,089

Int. Cl.[2] A47C *7/02*

U.S. Cl. 297—451 **10 Claims**



1. A chair or the like comprising:

a front contoured shell having seat and back portions, said shell being provided with a forward surface having the predominant portion thereof disposed rearwardly of the remaining portion of such front surface;

a rear contoured shell having seat and back portions;

an independent intermediate load bearing matrix of sufficient structural strength to support the weight of the user and having a forward supporting matrix surface portion arranged for corresponding substantial underlying alignment with said remaining portion of the forward surface of the front shell and out of alignment with said predominant portion of such forward surface of the front shell, the back portion of said front shell being freely self-disposed in unsecured relation to said matrix and said shells and said matrix being secured together at the corresponding seat portions to provide a chair formation with said predominant portion of the forward surface of the front shell disposed rearwardly of and spaced from said forward supporting surface portion of the matrix, and said front and rear shells individually and together being of insufficient structural strength to support the weight of the user in the absence of the independent intermediate matrix.

4,123,106

Patent Not Issued For This Number

4,123,107

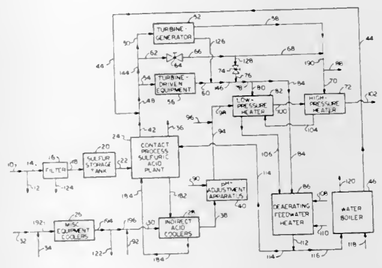
INTEGRATED SULFUR MINING - SULFURIC ACID PRODUCTION SYSTEM

Raymond G. Bryant, Jr., and Clifford M. Cockrell, both of New Orleans, La., assignors to Freeport Minerals Company, New York, N.Y.

Filed Feb. 3, 1977, Ser. No. 765,236

Int. Cl.[2] E21B *43/28;* **E21C** *41/14*

U.S. Cl. 299—6 **9 Claims**



1. An integrated sulfur mining and sulfuric acid manufacturing process which comprises injecting a superheated aqueous mining fluid which is above the melting point of sulfur into an underground sulfur formation to obtain mined sulfur in the molten state, oxidizing said molten sulfur to produce sulfur dioxide, catalytically converting said sulfur dioxide to sulfur trioxide, absorbing said sulfur trioxide in diluted sulfuric acid to obtain an acid of predetermined strength, preheating the aqueous mining fluid by indirect heat exchange with said acid of predetermined strength, producing high pressure steam from deaerated water by indirect heat exchange with the gases from both the oxidation of the molten sulfur to sulfur dioxide and the catalytic conversion of said sulfur dioxide, generating electrical and mechanical energy with at least a portion of said high pressure steam, heating the preheated aqueous mining fluid to obtain said superheated aqueous mining fluid by indirect heat exchange with the exhaust steam from said energy generation, said exhaust steam being condensed during said heating of the preheated aqueous mining fluid to form a condensate, deaerating said condensate in a deaerating feedwater heater, recycling at least a portion of said deaerated condensate for said production of high pressure steam, recycling the remaining portion of said deaerated condensate to a water boiler to produce high pressure steam, and combining the high pressure steam produced in the water boiler with the high pressure steam produced in said indirect heat exchange with said gases to form a combined stream of high pressure steam.

4,123,108

METHOD AND DEVICE FOR BREAKING A HARD COMPACT MATERIAL

Erik V. Lavon, Saltsjo-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sep. 3, 1976, Ser. No. 720,122

Claims priority, application Sweden, Sep. 19, 1975, 7510559

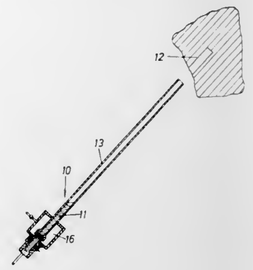
Int. Cl.[2] E21C *37/06*

U.S. Cl. 299—16 **23 Claims**

1. A method of breaking a hard compact material, such as rock, comprising:

mechanically pre-drilling at least one substantially cylindrical blind hole in the material to be broken, said material having free surfaces adjacent said hole,

accelerating an elongated mass body of substantially incompressible fluid to an impact velocity sufficient to cause cracks to form in the material, the smallest cross sectional dimension of said elongated mass body being at least 70% of the free cross sectional diameter of said hole, and



directing said elongated mass body into said pre-drilled hole for impacting the bottom thereof, and forming said elongated mass body of a length sufficient to break the material towards adjacent free surfaces of the material by means of the momentum of said elongated mass body.

4,123,109

MINING METHOD

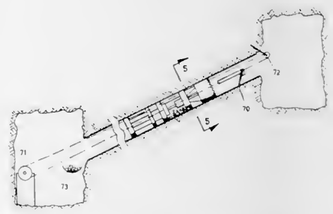
Bruce S. Hill, Mondeor, South Africa, assignor to Edenvale Engineering Works (Proprietary) Limited, Johannesburg, South Africa

Filed Oct. 14, 1976, Ser. No. 732,198

Claims priority, application South Africa, Oct. 28, 1975, 75/6817

Int. Cl.[2] E21C *27/20*

U.S. Cl. 299—18 **1 Claim**



1. A method of underground mining for producing a series of overlapping empty cylindrical holes in side-by-side relationship, comprising drilling a first cylindrical hole through rock with a core drill that rotates coaxially in said first hole, and after said first hole is drilled, drilling a second cylindrical hole through said rock with a said core drill in a manner to produce rock fragments, said second hole overlapping said first hole whereby said first and second holes communicate laterally with each other along their length, pushing said rock fragments laterally from said second hole into said first hole immediately as said rock fragments are formed, the region of lateral transfer of said rock fragments from said second hole to said first hole advancing lengthwise along said holes in the direction of drilling of said second hole and immediately behind the advancing bottom of said second hole, passing conveyor means along said first hole with no drilling means in said first hole while drilling said second hole thereby to remove substantially all said rock fragments from said first hole, and repeating the method with third and subsequent holes.

4,123,110

AUXILIARY DEVICE FOR A MINING MACHINE

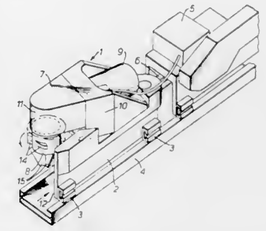
George A. Parrott, Wakefield, and John B. Norris, Leeds, both of Great Britain, assignors to Dresser Europe S.A., Brussels, Belgium

Filed Jun. 16, 1977, Ser. No. 807,305

Claims priority, application United Kingdom, Jun. 16, 1976, 24980/76

Int. Cl.[2] E21C *35/20*

U.S. Cl. 299—43 **10 Claims**



1. An auxiliary device adapted to be connected to a conveyor mounted, longwall mining machine, the auxiliary device comprising an underframe adapted for mounting on and travel along the conveyor of the mining machine, a rotary breaking element drivably carried by the underframe, and reaction means on the underframe against which material may be impacted by said rotary beaking element, the reaction means being spaced laterally, with respect to the direction of travel of the auxiliary device, from an adjacent periphery of the rotary element so as to define between the rotary element and the reaction means a material breaking gap, whereby, in use, material on the conveyor entering the material breaking gap is broken against the reaction means by the rotary element as the latter rotates.

4,123,111

SNAP-IN CONNECTION, ESPECIALLY COVER FOR WHEELS OF PASSENGER MOTOR VEHICLES

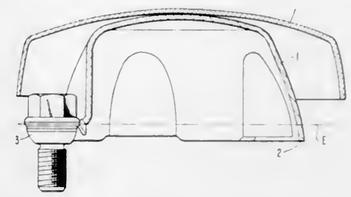
Udo D. Renz, Rechberghausen, and Dieter Memmhardt, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Sep. 23, 1976, Ser. No. 725,725

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 2542973

Int. Cl.[2] B60B *7/06*

U.S. Cl. 301—37 TP **5 Claims**



1. A snap-in cover cap adapted to be fastened by a force fit to a plurality of cap-retaining detents, said cover cap being formed of elastically deformable material and having an uninterrupted peripheral edge with first portions of a first configuration, said peripheral edge being further provided with a plurality of detent engaging recesses therein of a second configuration, said recesses forming slots which open axially and radially outwardly for receiving said detents and being alter-

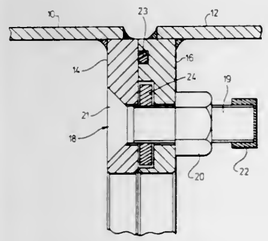
nately arranged with said first portions about said peripheral edge and having edge portions of a shape engageable from the inside toward the outside underneath said cap-retaining detents in an installed position and forming detent engaging points, said first configuration being dimensioned radially outwardly with respect to the engaging points of said second configuration a distance producing a lever arm between said first portions and connecting lines between adjacent detent engaging points which is sufficient for reducing the force required to achieve a predetermined compression of said cap at said engaging points while maintaining a satisfactory gripping force at said engaging points.

4,123,112

SPLIT WHEEL SAFETY FEATURE

Peter M. Mills, Pickering, Canada, assignor to Titan Proform Company Limited, Scarborough, Canada

Filed Jul. 18, 1977, Ser. No. 816,910
Int. Cl.[2] B60B *25/16*
U.S. Cl. 301—35 BJ **7 Claims**



1. A wheel for a pneumatic tire, said wheel comprising a first rim portion and a second rim portion, each rim portion having a respective radially inwardly extending flange at one axial end thereof, the flanges being adapted to be releasably secured together in the assembled wheel;

the first and second flanges having respective series of circumferentially spaced assembling apertures therein adapted to register with one another;

the assembling apertures on the second flange each comprising a circumferentially extending slot having a narrow end portion and a broad end portion communicating therewith, the narrow end portion thereof being at least partially bounded by a depression on the surface of the second flange which is presented towards the first flange in the assembled wheel, the side walls of said depression constituting an axially extending formation of the second flange at a position intermediate the narrow end portion and the broad end portion of the assembling aperture therein;

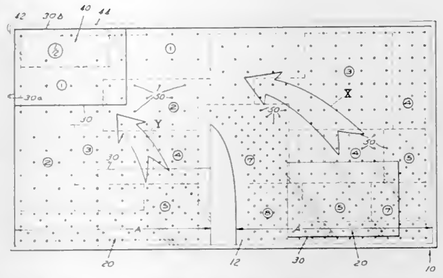
securing means adapted to extend through a registered pair of assembling apertures on the first and second flanges, said securing means including a shank portion adapted to pass through the narrow end portion of the aperture in the second flange and the aperture in the first flange, a head portion at one end of the shank portion adapted to be retained by the first flange, a nut threadably received on the shank portion and dimensioned so as to be engagable against side walls defining the narrow end portion of the aperture in the second flange but to pass through the broad end portion thereof, and an enlarged member on the shank portion between the nut and the head portion thereof, engagable against side walls defining the narrow end portion of the aperture in the second flange and adapted to be retained by said axially extending formation thereon against circumferential displacement relative to the flange when the nut is tightened.

4,123,113

GAS TABLE

George A. Koss, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 26, 1977, Ser. No. 836,623
Int. Cl.[2] B65G *51/02*
U.S. Cl. 302—2 R **12 Claims**



1. A method of moving an object which is floatable on a cushion of gas from a first station to a second station, which method comprises the steps of:

establishing a plurality of zones of gas flow by passing a gas upwardly through a porous table member, the amount of gas flow in each said zone being controlled by the porosity of said zone of said table member, the greater the porosity of said zone, the greater the amount of gas flow in said zone;

locating said zones of said porous table member in such a location that on a path of travel in a direction from said first station to said second station the amount of gas flow in the zones is generally reduced, provided, however, that many of said zones are contiguous and of the same gas flow to define a larger area, said larger area being smaller in size than the object to be moved;

flowing a gas through said porous table member to float the object to be moved thereover;

placing the object on said porous table at said first station, the movement of gas through the porous table member floating the object;

releasing the object at said first station to permit said object to move from said first station to said second station because different portions of said object are supported by different areas of differing gas flows which causes the object to tip front end downwardly in the area of lowest gas flow and thereby be moved over said porous table member to said second station.

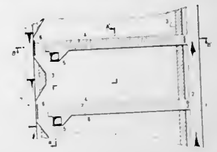
4,123,114

ARRANGEMENT FOR THE PNEUMATIC REMOVAL OF BULK PARTICULATE MATERIAL FROM THE FLOOR OF A STORAGE PLACE

Stanislav Rataj, Rudolfov; Karel Krch, Plana nad Luznici; Josef Pilousek, Lhota pod Horami; Jaroslav Blazek, Kosice u Tabora; Hynek Vitek, Podoli u Tabora, and Ladislav Macek, Tabor, all of Czechoslovakia, assignors to Zemedelsky nakupni a zasobovaci podnik narodni podnik, Ceske Budejovice, Czechoslovakia

Filed Mar. 9, 1977, Ser. No. 775,783
Int. Cl.[2] B65G *53/40*
U.S. Cl. 302—53 **3 Claims**

1. An arrangement for the pneumatic removal of air-floatable bulk particulate material from the floor of a multiple-sided walled storage place having first and second opposite walls spaced from each other, comprising a main air channel along said first side wall of the storage place, a source of pressure air connected to said main air channel, a number of material-floating and conveying channels extending substantially from the first to the second wall and having the ends thereof at the first wall connected to said main channel, the material-floating and conveying channels being distributed over the area of the floor of the storage place, air closures disposed between the main channel and the first ends of the individual material-floating channels adjacent the main channel, the material-floating channels being provided in the parts thereof engaging the material in a storage place with air-directing fins, the fins providing air discharging gaps directed toward the end of the material-floating channels remote from the main channel, gates for the bulk



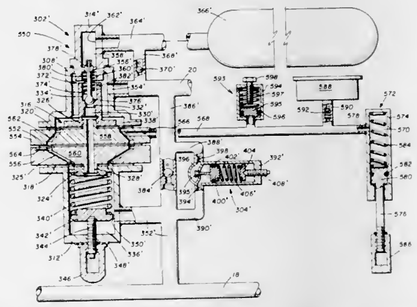
material provided in the wall of the storage place remote from the main air channel, conveyor means outwardly of the gates adapted to receive and forward material delivered thereto through the gates, an additional distribution channel for pressure air along the second side wall of the storage place, a source of pressure air for said additional distribution channel, and air closures and conduits connecting the additional distribution channel with the second ends of the individual material-floating and conveying channels.

4,123,115

BRAKE CONTROL METHOD AND APPARATUS FOR RAILWAY CARS

William R. King, 1909 Sunshine Sq., Longview, Tex. 75601

Continuation-in-part of Ser. No. 775,379, Mar. 7, 1977. This application Oct. 18, 1977, Ser. No. 843,285
Int. Cl.[2] B60T *8/18*
U.S. Cl. 303—22 R **37 Claims**



1. For railway cars having sprung and unsprung portions, a brake control apparatus interposed between a pressurized brake pressure supply line connected to a train brake valve and a pressurized brake cylinder line connected to the brakes of the railway car for transmitting a pressure drop signal received from the train brake valve to the brakes, which comprises:

structure defining a first chamber with a port connected to the brake pressure supply line for receiving the pressure drop signal from the train brake valve;

structure defining a second chamber with a port connected to the brake cylinder line for transmitting a predetermined pressure drop signal to the brakes;

first check valve means positioned between the brake pressure supply line and the brake cylinder line for connecting the first and second chambers when the pressure in the first chamber exceeds the pressure in the second chamber until the pressures in the brake pressure supply line and in the brake cylinder line equalize to effect brake release;

diaphragm means movably abutting said first and second chambers with surfaces of different areas;

first normally closed valve means mounted on the diaphragm means and responsive to predetermined positioning thereof for permitting fluid flow through the diaphragm means between the first and second chambers upon a pressure drop in the brake pressure supply line effected by the train brake valve until the diaphragm means regains equilibrium;

means for applying a predetermined bias to the diaphragm means urging the first valve means closed;

structure defining a third chamber with a port and abutted by at least part of the diaphragm means; and

strut cylinder means including a port connected to the port of the third chamber and an extending strut responsive to relative positioning of the sprung and unsprung portions of the railway car, which positioning corresponds to the particular railway car loading condition;

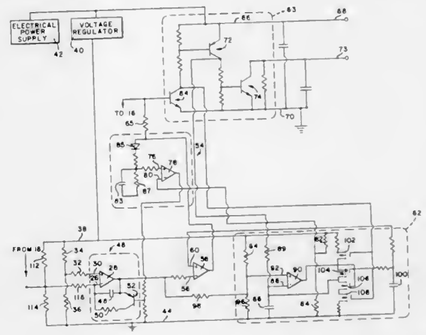
said strut cylinder applying a fluid bias through the third chamber to the diaphragm means urging the first valve means open when the railway car is loaded so that the brake cylinder line in a loaded railway car experiences a pressure drop substantially equal to the pressure drop experienced by the brake pressure supply line, and applying substantially zero fluid bias through the third chamber to the diaphragm means when the railway car is empty so that the brake cylinder line in an empty railway car experiences a pressure drop relatively smaller than the pressure drop experienced by the brake pressure supply line by the inverse ratio of the diaphragm means surface areas abutting the second and first chambers, respectively.

4,123,116

DUTY CYCLE TRANSLATOR WITH SOLENOID MODELING CIRCUIT FOR ADAPTIVE BRAKING SYSTEM

Ralph W. Carp; Leoncio T. Ang, both of Newport News, Va., and Guy T. Rini, North Ridgeville, Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 16, 1977, Ser. No. 807,285
Int. Cl.[2] B60T *8/00*
U.S. Cl. 303—103 **19 Claims**



1. In a vehicle having a wheel, a brake controlling said wheel, and fluid pressure responsive means for actuating said brake, an adaptive braking system controlling communication to said fluid pressure responsive means comprising speed sensing means for generating a speed signal as a function of the rotational velocity of said vehicle wheel, means for generating a brake pressure control signal, and modulator means including electrically actuated valve means responsive to the brake pressure control signal for controlling communication to the fluid pressure responsive means, said brake pressure control signal generating means including means for modeling the response time of the electrically actuated valve means, means responsive to said speed signal for generating a pressure command signal, means for generating a feedback signal as a function of the response time of said electrically actuated valve means mod-

eled by said modeling means, and means for comparing the feedback signal with the pressure command signal to generate said control signal when the feedback signal and the pressure command signal are in a predetermined relationship with one another, said modeling means including circuit means responsive to transmission of said control signal to said electrically actuated valve means to generate a modeled signal representing the current in said electrically actuated valve means, means for comparing said modeled signal with a reference signal to generate an output signal, and means responsive to said output signal for generating said feedback signal.

4,123,117

HYDRAULIC ROOSTING MEANS

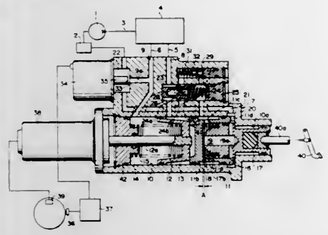
Yoshiharu Adachi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 572,390, Apr. 28, 1975, abandoned. This application Oct. 25, 1977, Ser. No. 845,308

Claims priority, application Japan, May 4, 1974, 49-50427; May 7, 1974, 49-49686

Int. Cl.[2] B60T *13/12*

U.S. Cl. 303—114 **6 Claims**



1. Hydraulic brake boosting means for a braking system having brake pedal means, a hydraulic power source, hydraulic reservoir means, wheel brake means and brake master cylinder means for actuating the wheel brake means, said hydraulic brake boosting means comprising:

a. power cylinder means;

b. power piston means slidably received in said power cylinder means and selectively cooperation with said brake master cylinder means for supplying hydraulic pressure to said wheel brake means;

c. power pressure chamber means defined at one side of said power piston means in said power cylinder means;

d. supply conduit means for hydraulically connecting the hydraulic power source with said power pressure chamber means;

e. return conduit means hydraulically connected to the hydraulic reservoir means;

f. variable orifice means hydraulically connected to said return conduit means;

g. control valve means having

(i) control cylinder means;

(ii) control piston means slidably disposed in said control cylinder means for defining at one side therein a first control pressure chamber means opening into said supply conduit means and a second control pressure chamber means at the other side hydraulically and continuously connected to said variable orifice means;

(iii) channel means formed in said control piston means and having an orifice with access to said supply conduit means for diverting a portion of the hydraulic pressure from said hydraulic power source and for connecting, and establishing a pressure differential between said first and second control pressure chamber means;

(iv) by-pass port means provided in said control cylinder means and in direct fluid communication with said return conduit means at all times, wherein said by-pass port means is open to said first control pressure chamber means when said control piston means is displaced toward said second control pressure chamber means by a predetermined distance and wherein said by-pass port means is closed to said first control pressure chamber means when said control piston means is displaced toward said first control pressure chamber means; and

(v) means for resiliently biasing said control piston means toward said first control pressure chamber means;

h. manually operated means, including input piston means operatively connected to said brake pedal means for controlling the opening of said variable orifice means; and

i. means disposed between said second control pressure chamber means and said variable orifice means for applying the pressure developed in said second control pressure chamber means as a braking reaction force to said input piston means.

4,123,118

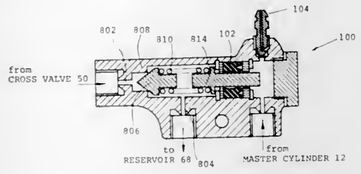
ANTILOCK BRAKE CONTROL SYSTEM FOR A MOTORCYCLE FRONT WHEEL

Takefumi Sato, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1977, Ser. No. 756,834

Int. Cl.[2] B60T *8/06*

U.S. Cl. 303—119 **5 Claims**



1. In a closed loop oil pressure actuated brake system including a master cylinder, a wheel cylinder, means for detecting wheel lock or impending lock and means for returning the brake oil contained within the wheel cylinder to a reservoir associated with the master cylinder through a pressure control valve when wheel lock or impending lock is detected, the improvement comprising:

an electromagnetic cross valve assembly including an inlet and a first outlet port for communicating brake oil pressure created within said master cylinder to said wheel cylinder, and a second outlet port connected to said pressure control valve, said electromagnetic cross valve assembly being actuated by said detecting means to close said inlet port and connect the brake oil pressure within said wheel cylinder to a first inlet in said pressure control valve through said first and second outlet ports of said electromagnetic cross valve when wheel lock or impending lock is detected;

said pressure control valve including a reciprocable valve element therein which is responsive to said brake oil pressure within said wheel cylinder supplied to said first inlet in said pressure control valve on one side of said valve element and also being responsive to said brake oil pressure created within said master cylinder which is supplied to a second inlet in said pressure control valve on the other side of said valve element which is always in direct communication with the brake oil from said master cylinder;

a seal means positioned adjacent said reciprocable valve element for isolating the brake oil from said wheel cylinder from the brake oil from said master cylinder;

said pressure control valve including an outlet for returning the brake oil from said wheel cylinder to said reservoir associated with said master cylinder only when a force created by said brake oil pressure from said wheel cylinder acting on said one side of said reciprocable valve element is greater than a foce created by the brake oil pressure acting on said other side of said reciprocable valve element from said master cylinder.

4,123,119

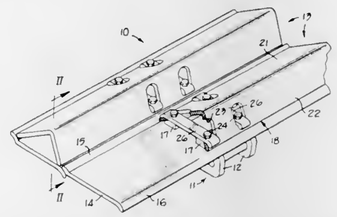
TRACK SHOE WITH CLAMPING MEANS

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 26, 1977, Ser. No. 828,004

Int. Cl.[2] B62D *55/28*

U.S. Cl. 305—39 **25 Claims**



1. An endless track assembly for a track-type vehicle comprising

an articulated link assembly including a plurality of pivotally interconnected links,

a track shoe releasably connected to each pair of laterally spaced links of said link assembly comprising

a base plate disposed on each said pair of said links,

a track plate disposed on said base plate and comprising an apex portion and a pair of sidewalls disposed in diverging relationship relative to each other and extending away from said apex portion and towards said base plate,

clamping means straddling said track plate for clamping said track plate to said base plate, and

fastening means releasably securing said clamping means, said base plate and each of said pair of links together for releasably securing said track shoe to said link assembly.

4,123,120

NOISE REDUCING DEVICE IN UNDERCARRIAGE OF TRACK-TYPE VEHICLE

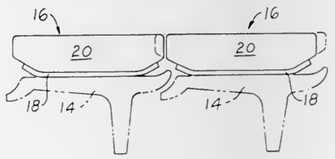
Yoshimasa Kohriyama, Tsukui, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Aug. 24, 1977, Ser. No. 827,207

Claims priority, application Japan, Sep. 13, 1976, 51-109554

Int. Cl.[2] B62D *55/20*

U.S. Cl. 305—41 **2 Claims**



1. A noise reducing device in an undercarriage of a track-type vehicle, comprising:

a pivotally linked chain of relatively movable track shoes;

resilient means for biasing each shoe out of contact with its immediately adjacent shoe, said means being connected to each shoe and including a plate spring and an elastomer connected to each plate spring, each plate spring encompassing opposite ends of its associated elastomer, and each plate spring being deflected in abutting engagement with an immediately adjacent plate spring.

4,123,121

BALL BEARING ASSEMBLY WITH PLURALITY OF BALL GUIDEWAYS

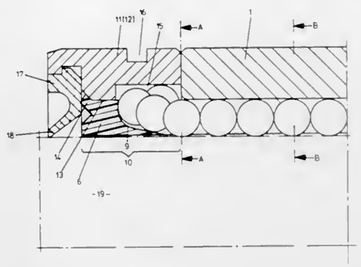
Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Dec. 14, 1976, Ser. No. 750,421

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557351

Int. Cl.[2] F16C *31/06*

U.S. Cl. 308—6 C **13 Claims**



1. In a ball bearing for linear motion having an outer sleeve with a bore, a retainer within said bore, said retainer and bore defining a plurality of endless raceways each having a pair of straight central portions joined at their ends by semicircular deflecting portions, the radially outer running surfaces of said raceways being defined by said bore, whereby the straight central portions of each said pair are circumferentially displaced in said ball bearing with respect to one another, and balls filling each of said endless raceways; the improvement wherein said sleeve has an axial length coextensive substantial only with said straight central portions of said raceways, said retainer extending axially beyond each end of said sleeve and having semicircular grooves in its radially outer surface for defining the radially inner running surfaces of said semicircular deflecting portions, and further comprising end rings at each end of said sleeve and affixed to the ends of said retainer which extend axially beyond said sleeve, said end rings radially outwardly covering said semicircular deflecting portions of said raceways.

4,123,122

BEARING ELEMENT

Alan L. Gabrielson, Bristol, and Harry Magazian, Monroe, both of Conn., assignors to The Torrington Company, Torrington, Conn.

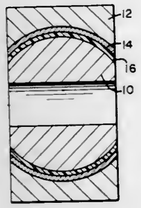
Filed Jul. 6, 1976, Ser. No. 702,953

Int. Cl.[2] F16C *32/00*

U.S. Cl. 308—238 **12 Claims**

1. A bearing element consisting of a bearing substrate having a low-friction slide surface layer, said layer comprising: a porous coating metallurgically spray-bonded to the substrate

surface, and having interstices, such as craters and undercuts, and an adhesive-solid lubricant formulation applied over the



coating, at least a portion of the adhesive-solid lubricant formulation at least partially filling the coating interstices.

4,123,123

METHOD AND APPARATUS FOR FIXING GLOVE TO GLOVE BOX AND GLOVE SUITABLE THEREFOR

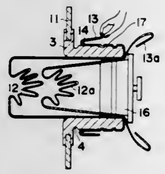
Shunichi Sato, Hitachi; Midori Kawasaki, Katsuta, and Mamoru Kunii, Tokyo, all of Japan, assignors to Kubushiki Kaisha Kokugo, Tokyo, Japan

Filed Mar. 5, 1976, Ser. No. 664,357

Claims priority, application Japan, Mar. 28, 1975, 50-41631[U]

Int. Cl.[2] **A61G** *11/00;* **A41D** *27/10*

U.S. Cl. 312—1 **3 Claims**



1. A glove to be attached to a glove box which has a tube opening extending outside said glove box for access thereinto, said glove comprising:

a glove body fitted through said tube opening and having a main portion fitted around the outside of said tube opening;

fixing ring means integrally formed with and surrounding said main portion of said glove body for securing said main portion of said glove body to said tube opening;

said glove body further having an extended fin portion integrally formed with and extending from said main portion, said fin portion extending around and covering said fixing ring means and overlapping said main portion; and

a clamping ring means fitted around the outside of said extended fin portion overlapped against main portion, whereby said glove body is secured to said tube opening by both said fixing ring means and said clamping ring means.

4,123,124

CONVERTIBLE SEWING MACHINE CABINET

Robert S. Peets, Watchung, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jul. 7, 1977, Ser. No. 813,567

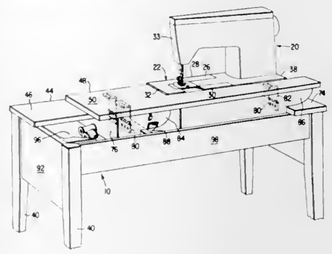
Int. Cl.[2] **A47B** *81/00*

U.S. Cl. 312—21 **3 Claims**

1. A cabinet for a sewing machine having a work supporting bed formed with a rear laterally disposed edge, a front laterally disposed edge, and first and second longitudinal edges joining said laterally disposed edges, said work supporting bed being convertible from a flat bed configuration to a cylinder bed configuration, said cabinet comprising:

a rear, laterally elongate, cabinet portion having a rear supporting surface;

means for pivotally supporting said sewing machine in a first position with said sewing machine retracted from view and in a second position with said rear laterally disposed edge of said work supporting bed adjacent to and forwardly of said rear cabinet portion, with said first longitudinal edge forwardly of said rear cabinet portion, and with said work supporting bed spaced above said rear work supporting surface; and



a vertically shiftable front, laterally elongate, cabinet portion having a front work supporting surface, said shiftable front cabinet portion, when in a lowered position, being located forwardly of and contiguous to said rear cabinet portion laterally beyond said sewing machine first longitudinal edge to the lateral end of said rear cabinet portion, said front work supporting surface being coplanar with said rear work supporting surface whereby said work supporting bed is spaced above said work supporting surfaces of both said rear and front cabinet portions.

4,123,125

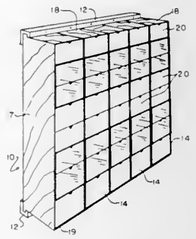
COMBINED DISPENSING AND INVENTORY CONTROL SYSTEM

Paul L. Andry, III, 2806 Soniat St., New Orleans, La. 70115

Filed Oct. 28, 1976, Ser. No. 736,455

Int. Cl.[2] **A47F** *1/00;* **B65D** *73/00*

U.S. Cl. 312—35 **3 Claims**



1. A combined package dispensing and inventory control system for packages having descriptive information on their exterior, for example, surgical suture packages, comprising:

a. at least one, elongated dispensing box each forming means for holding the packages having descriptive information thereon at the front of said box, each said box being provided with top, bottom, back and side walls but having an open front portion, each of said boxes being further provided with a plurality of inner shelf supporters on its walls; said dispensing box having a cross-sectional dimension which will allow for the stacking vertically within the said dispensing box a plurality of, for example, conventional surgical suture packages, said packages having written information thereon;

b. a plurality of shelves horizontally mountable on at least some of the inner shelf supporters of said boxes;

c. at least one panel means removably attachable to the front portion of each of said boxes, said panel means providing a writing surface thereon, said panel means dimensioned and so attachable to said box between two of said shelves as to provide an inlet above said panel and below a first, upper one of said shelves for the addition of, for example, surgical suture packages, to said box and an outlet below said panel and above a second, lower one of said shelves for the removal of said packages from said box; and said panel means being transparent, the descriptive information on said packages being visible through said panel means; rack means attachable to a support structure, for example, a wall, for the storage of at least one of said elongated dispensing boxes, said elongated dispensing boxes laterally movable on said rack means.

4,123,126

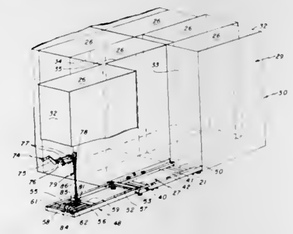
COMPACT SHELVING APPARATUS

Norman A. Querengasser, Methuen, Mass., assignor to Andrew Wilson Company, Lawrence, Mass.

Filed Aug. 4, 1977, Ser. No. 821,700

Int. Cl.[2] **A47B** *53/00, 87/00*

U.S. Cl. 312—201 **9 Claims**



1. Compact shelving of the type having a cluster of identical, elongated upstanding stacks of shelves, normally juxtaposed to each other side-by-side, said stacks being movable horizontally relative to a floor for separation from each other to gain access to the shelves on each opposite side of an individual said stack, said compact shelving characterized by:

each said stack being formed of a plurality of open shelves supported on each opposite side of a central, upstanding rectangular frame;

a plurality of pairs of elongated parallel, guide tracks set apart a predetermined space, each extending longitudinally under one of said stacks from back to front, each coextensive in length with a said stack; and each stationary relative to said floor and stack;

a plurality of elongated, rectangular, carriages, each affixed under and supporting, one of said stacks, and coextensive in length therewith;

a plurality of pairs of rollers, each on an opposite side of the rear of the bottom of said carriage and mounted for rotation on the pair of guide tracks under said stack,

a plurality of pairs of wheels, each on an opposite side of the front of the bottom of each said carriage normally mounted in said space between said tracks for rotation on said floor,

any of said juxtaposed stacks being movable longitudinally as an integral unit in an endwise direction from back to front and return on said wheels and on said rollers on said tracks, out of said cluster to expose the shelves on each opposite side thereof,

and mechanical advantage handle means on the front end of each said stack for enabling manual endwise movement thereof.

4,123,127

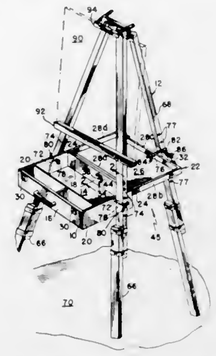
ARTIST'S KIT

Thomas E. Ford, 150-24 6th Ave., Whitestone, N.Y. 11354

Filed Apr. 20, 1977, Ser. No. 789,115

Int. Cl.[2] **A47B** *27/00*

U.S. Cl. 312—230 **12 Claims**



1. An artist's kit for use with a free standing easel of the type commercially available to artists and having at least three leg members configured to rest on a given plane during use for holding an artist's canvas or the like, said kit comprising;

a. a rectangular box for holding artist's materials, said box including a base and a front wall, a rear wall and side walls all substantially perpendicularly disposed with respect to said base;

b. means for covering said box comprising a rectangular shaped cover and means for mounting said cover to said box for pivotal movement between a closed position wherein said cover overlays the walls of said box and a fully opened position wherein said cover is disposed in a plane substantially parallel to the base of said box;

c. means for releasably locking said cover in said fully opened position to define an open top and rigid tray assembly, the releasable locking means including at least one locking member having portions connectable to at least one of one wall of said box and said cover; and

d. means for releasably connecting the rigid tray assembly between the leg members of the easel in a plane substantially parallel to the given plane for supporting the artist's materials during use.

4,123,128

PORTABLE PIE CASE

Carl L. Abele, 4863 Rainier Ave. South, Seattle, Wash. 98118

Filed Sep. 3, 1976, Ser. No. 720,259

Int. Cl.[2] **A47F** *3/00*

U.S. Cl. 312—244 **11 Claims**

1. A portable pie case for receiving and carrying a plurality of pies spaced vertically apart, each pie being disposed in a pie pan having a dish body and a peripheral lip, comprising:

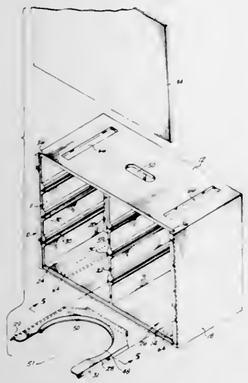
a housing having top, bottom, side and rear walls, together defining at least one pie receiving compartment;

a plurality of removable pie shelves, wherein each shelf comprises a relatively thin sheet member having a pie receiving opening therein sized to receive at least a portion of the body of said pie pan, a central open space at its front to provide a hand passage for facilitating placement and removal of a pie, a support portion bordering said opening and extending about said pie pan a substantial distance to both adequately support the weight of a pie and to restrain said pie against sliding movement in any direction, if subject to inertial forces during the transporting of said pie case, and a peripheral border portion;

wherein a substantial part of both said peripheral border

portion and said support portion are flanged at a downward angle with respect to the shelf proper for the purpose of increasing the strength and rigidity of said removable shelf;

wherein said peripheral border portions of each shelf are flanged at an angle of less than 90° with respect to the shelf proper, and the compartment side walls include a



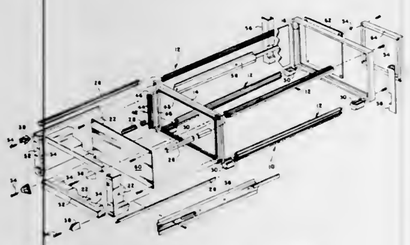
plurality of opposed slideways which are disposed at the same downward angle and which are adapted to receive and hold said removable pie shelves in a vertically spaced configuration, whereby positioning of said removable shelves within the pairs of opposed slideways locks the side walls together, thereby enhancing the lateral bracing and strength of said housing.

4,123,129

MODULAR ELECTRONIC INSTRUMENT CABINETS

Marlow Dole Butler, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 18, 1976, Ser. No. 743,016
Int. Cl.[2] A47B *43/00*
U.S. Cl. 312—257 R **6 Claims**



1. A modular electronic cabinet, comprising:

first and second panel members;

supporting members extending between said first and second panel members at the corners thereof, each of said supporting members having a pair of first grooves being respectively disposed in alignment with the respective first grooves of the respective supporting members, each of said supporting members having a pair of second grooves and a third groove provided between said pair of first grooves;

securing means extending through said panel members and in engagement with respective ones of said third groove thereby securing said panel members to said supporting members whereby frame means is formed;

strip means having edges matable with said second grooves of said supporting members; and

closure members having edges thereof slidably positioned along the aligned first grooves of said supporting members thereby enclosing said frame means;

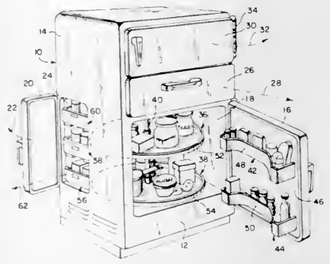
wherein said strip means is a trim strip and said edges thereof are matable with said second grooves for trimming the corners of the electronic cabinet or an interconnecting strip whereby said edges define first edges for slidably engaging the inner second grooves of adjacent supporting members and second edges for slidably engaging the outer second grooves of said adjacent supporting members to interconnect said modular electronic cabinet with another modular electronic cabinet.

4,123,130

REFRIGERATOR APPARATUS

Lillian Locke, 20 Harmony Rd. South, Oshawa, Ontario, Canada (L1H 6T1)

Continuation of Ser. No. 706,170, Jul. 19, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 885,506
Int. Cl.[2] A47B *81/00*
U.S. Cl. 312—285 **7 Claims**



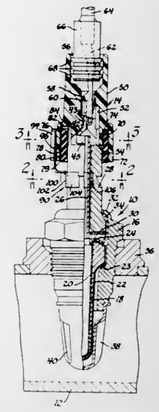
1. A refrigerator apparatus comprising a housing, said housing having a front panel, said housing having a pair of side panels in parallel spaced apart relationship adjacent said front panel, a first door hingably secured to said front panel, a second door hingably secured to one of said pair of side panels, a front access opening passing through said front panel, said front access opening disposed adjacent said first door when said first door is in a closed position, a side access opening passing through said one side panel, said side access opening disposed adjacent said second door when said second door is in a closed position, a compartment, said compartment disposed within said housing and accessible through said front access opening and said side access opening, a plurality of circular shelves disposed in overlying relationship to one another within said compartment, a shaft, said shaft rotatably supporting said plurality of circular shelves, a plurality of shelves fixedly secured to said first door, said plurality of shelves having circularly shaped wall portions affixed thereto, said circularly shaped wall portions residing adjacent portions of the marginal edges of said plurality of circular shelves when said first door is in said closed position, a plurality of pullout trays removably slidably secured within said compartment and totally removable from said compartment, said plurality of pullout trays being disposed passing through said side access opening when said second door is disposed in an open position relative to said side access opening, at least one of said plurality of pullout trays having curved wall portions affixed thereto, said curved wall portions residing adjacent portions of said marginal edges of at least one of said plurality of circular shelves.

4,123,131

VENTED ELECTRICAL CONNECTOR

Warren Pearce, Jr., Warren, and Andrew Russo, Jr., Fowler, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1977, Ser. No. 822,135
Int. Cl.[2] H01R *3/04*
U.S. Cl. 339—117 R **4 Claims**



1. An electrical connector for providing an environmentally protected, vented, temperature resistant electrical connection to an oxygen sensor or a like electrical device generating a low level electrical signal produced at least in part by means exposed to ambient air comprising:

a connector body of a relatively rigid, temperature resistant synthetic material, said connector body having a terminal receiving cavity extending therethrough from a plug-in opening to a lead receiving opening,

said connector body having an inner shroud at the plug-in opening of the terminal receiving cavity and an outer shroud radially spaced therefrom to form an annular chamber having an end wall,

said outer shroud projecting beyond the inner shroud,

a seal sleeve of temperature resistant elastomeric material disposed in said chamber in sealing engagement with an outer surface of the inner shroud,

said seal sleeve having a portion projecting beyond the inner shroud which portion has an inner surface adapted to receive and sealingly engage an insulator sleeve surrounding a hollow protruding center terminal of an oxygen sensor or like electrical device, and

vent means leading from an inlet at an exposed surface of the connector body to the terminal receiving cavity, said vent means including a radial passage through the inner shroud.

4,123,132

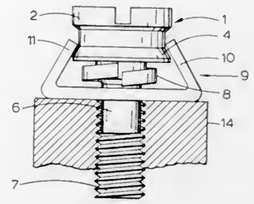
SCREW OR NUT AND A CAPTIVE WASHER

Paul R. Hardy, and Arthur T. Spencer, both of Biggleswade, England, assignors to PYE (Electronic Products Ltd.), Cambridge, England

Filed Sep. 12, 1977, Ser. No. 832,341
Claims priority, application United Kingdom, Oct. 12, 1976, 42331/76
Int. Cl.[2] H01R *9/10*
U.S. Cl. 339—246 **8 Claims**

1. A combination of a threaded fastening member and a captive washer, the member having a circumferential shoulder generally perpendicular to an axis defined by the thread of the member, and the captive washer having an apertured portion and a further portion extending from said apertured portion, the combination being adapted for applying clamping pressure between the apertured portion of the captive washer and a clamping surface of a body upon tightening of the threaded member,

wherein said apertured portion has a non-planar shape arranged so as to be plastically deformed upon tightening of



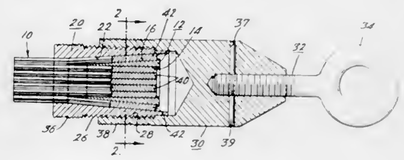
the threaded fastening member to apply clamping pressure against the clamping surface, said further portion being arranged so as to be deflected toward the axis and engage over said shoulder in response to the plastic deformation, whereby said washer becomes coupled axially to the member upon the first tightening of the member.

4,123,133

METHOD AND APPARATUS FOR APPLYING A CONNECTOR TO ELECTRICAL CONDUCTOR STRANDS

Wiley J. Pickett, 620 N. Washington Ave., Moorestown, N.J. 08057, and Albert A. Boye, 608 College Blvd., Wenonah, N.J. 08090

Filed Jun. 6, 1977, Ser. No. 803,548
Int. Cl.[2] H01R *11/08*
U.S. Cl. 339—273 R **23 Claims**



1. In cable connector apparatus for enabling the grasping and longitudinal pulling of electrical conductor strands of copper or aluminum, comprising

an outer connector member having a longitudinal aperture extending therethrough providing a conical inner surface for at least a substantial portion of the length of said aperture;

a longitudinally apertured inner connector member positioned within said outer connector member and having a continuous and uninterrupted conical outer surface extending parallel to said conical inner surface of said outer connector member for receiving some of said electrical conductor strands within its longitudinal aperture, and for receiving others of of said electrical conductor strands between said conical outer surface thereof and said conical inner surface of said outer connector member, the outer diameters of said inner connector member being sufficient that when said outer connector member is urged longitudinally toward the larger end of said inner connector member said other strands are wedged and grasped between said outer conical surface of said inner connector member and said inner conical surface of said outer connector member;

the improvement wherein said inner connector member is of a material which is highly malleable compared with said inner surface of said outer connector member and at least

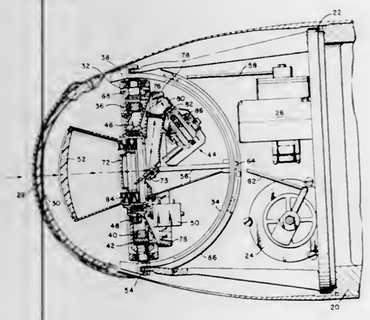
as malleable as the material of said cable, whereby said strands become embedded in both the inner and outer surfaces of said highly malleable material of said inner connector member when said wedging occurs, thereby to enhance the strength of said grasping of said strands without breaking them; said inner connector member being sufficiently hard to transmit compressive forces, due to said wedging, to said other conductors and thereby produce said embedding thereof; the outer diameter of said inner connector member being sufficient, over at least a portion of its length, to leave a substantial remanent thickness of said material between said some strands and said other strands upon application of said pulling; said remanent thickness being great enough that the maximum diameter formed by said other strands is greater, upon application of said pulling, than the diameter of the smaller end of said aperture in said inner connector member despite said embedding and espite compacting and extruding of said strands due to said compressive forces.

4,123,134

DUAL FIELD IMAGE SCANNER

Franklin J. Meyers, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 29, 1976, Ser. No. 727,310
Int. Cl.[2] G02B *27/17*
U.S. Cl. 350—6.7 **17 Claims**



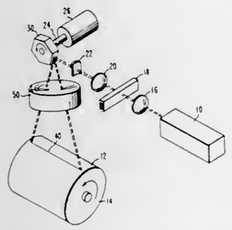
12. The invention as stated in claim 1, including a first set of lenses optically coupled to said reflective means.

4,123,135

OPTICAL SYSTEM FOR ROTATING MIRROR LINE SCANNING APPARATUS

Melbourne E. Rabedeau, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 812,028
Int. Cl.[2] G02B *27/17*
U.S. Cl. 350—6.8 **12 Claims**



1. An optical system for line scanning apparatus comprising,

apparatus for generating a beam of rays of radiant energy,

apparatus for deflecting said beam of radiant energy,

an optical element interposed between said generating and said deflecting apparatus for focussing rays of said beam of radiant energy in the azimuth normal to the plane of deflection of said deflecting apparatus to a line substantially on said deflecting apparatus,

apparatus arranged for intercepting and imaging said beam of radiant energy as deflected from said deflecting apparatus, and

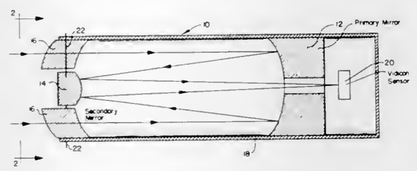
a nonrecollimating optical system having a negative cylindrical element with the axis thereof situated perpendicular to the plane of deflection of said beam by said deflection apparatus and interposed between said deflecting apparatus and said intercepting apparatus for focussing said deflected beam on said intercepting apparatus.

4,123,136

PIEZO-ELECTRIC LINE OF SIGHT CORRECTOR FOR INERTIAL PLATFORM STABILIZED SENSOR IN A STELLAR NAVIGATIONAL SYSTEM

Richard E. Dahab, New York, N.Y., and Howard M. Pollack, Fort Lee, N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Dec. 20, 1976, Ser. No. 752,496
Int. Cl.[2] G02B *23/00*
U.S. Cl. 350—16 **7 Claims**



4. In a telescope including a sensor, and an optical system having a primary mirror and a secondary mirror in a folded-type optical system for focusing an image of a remote light source on the sensor, a line-of-sight corrector comprising piezo-electric actuator means mechanically coupled to one of said mirrors, and means deriving an error signal representing perturbances of the sensor and for introducing said error signal to said piezo-electric actuator means to compensate for such perturbances.

4,123,137

OPTICAL FIBER ARRANGEMENT FOR SPLICING FIBERS SECURED TO RIBBONLIKE TAPE

Enrique A. J. Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

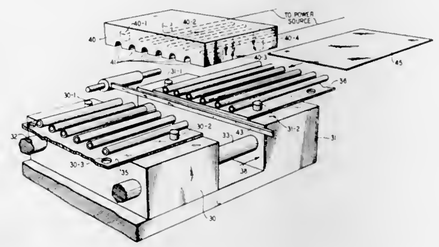
Division of Ser. No. 571,103, Apr. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 423,149, Dec. 10, 1973, abandoned, which is a continuation-in-part of Ser. No. 262,002, Jun. 12, 1972, Pat. No. 3,798,009. This application Oct. 26, 1976, Ser. No. 735,545
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.21 **7 Claims**

1. An optical fiber splice connection comprising:

a plate comprising a surface with a plurality of parallel fiber-receiving grooves, the interior surface of each said groove being formed to locate inserted fibers in planar, parallel relation;

a first group and a second group of optical fibers with respective mating end portions inserted from opposite directions into individual ones of said grooves with the ends of mating fibers abutted;

support means for said first and said second optical fiber groups, comprising for each group at least one ribbonlike tape continuously supporting the fibers along their full length leading into said plate and attaching the fibers to said tape to maintain the fibers in a tranverse spacing that approximately corresponds to the transverse spacing of



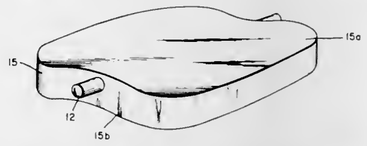
said fiber-receiving grooves of said plate while permitting transverse displacement of each said fiber, allowing said approximate fiber-to-fiber spacing to transversely adjust to the specific spacing of said fiber-receiving grooves.

4,123,138

OPTICAL FIBER CONNECTOR

Robert J. Morrison, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 5, 1977, Ser. No. 794,289
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.21 **6 Claims**



1. An optical fiber connector for joining fiber waveguide portions comprising:

(a) a sheet of elastically deformable material having opposed major plane surfaces;

(b) said material having at least one hole formed therein, said hole having the same shape and dimensions as the fiber portions to be aligned and joined by said connector;

(c) said hole extending through said sheet of material parallel to one of said major plane surfaces thereof and positioned to be nearer to said one surface than to the other surface thereof so that when said material is bent along the axial direction of said hole, the hole deforms to permit removal or insertion of said fiber portions.

4,123,139

OPTICAL FIBER CONNECTOR

Carl R. Sandahl, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1976, Ser. No. 754,601
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.21 **2 Claims**

1. An optical fiber connector comprising:

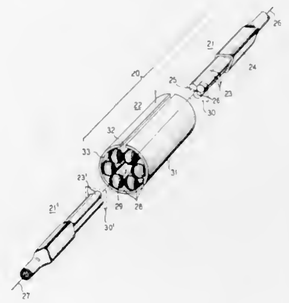
identical first and second male connectors each having;

at least three substantially identical parallel cylindrical inner rods held in tangential contact with each other so that they form an internal nest therebetween,

an optical fiber disposed within said nest, the end of said fiber and ends of said inner rods all terminating in a planar surface substantially perpendicular to the longitudinal axis of the fiber; and

a separate female connector sleeve having at least six substantially identical parallel cylindrical outer rods held in tangential contact with each other so that they form an internal nest to accommodate the inner rods of said first and second male connectors, the diameter of said outer rods being substantially greater than the diameter of said inner rods,

an outer spring means encompassing said outer rods and exerting radial pressure upon each of said outer rods to hold the same in fixed tangential contact with each other,



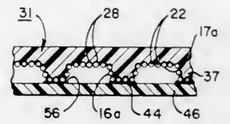
the optical fibers in each of said first and second male connectors being coupled end-to-end in axial alignment by slidingly engaging said first and second male connectors into axial abutment with each other within the internal nest formed by said outer rods.

4,123,140

REFLECTING SHEETING HAVING WIDE ANGLE RESPONSE

John R. Ryan, Jackson, Miss., and Paul Shalita, Roslyn Heights, N.Y., assignors to Ferro Corporation, Cleveland, Ohio

Filed Jun. 30, 1977, Ser. No. 811,945
Int. Cl.[2] G02B *5/128*
U.S. Cl. 350—105 **9 Claims**



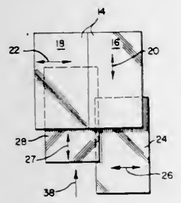
1. An encapsulated retroreflector having a wide angle response comprising sheeting having cavities of substantially uniform sizes and dimensions extending along one face thereof spaced apart by substantially flat ridges, said cavities having wall and bottom portions, light-reflecting beads partially embedded in said wall and bottom portions of the cavities of said sheeting, the embedded parts of said beads being coated with a reflective metal, adhesive means on said substantially flat ridges, a light-transmitting face film extending along said one face secured to said ridges by said adhesive means and serving to seal off said cavities, the perimeters of the openings of the cavities being adjacent to said face film, said beads extending substantially from points near said face film along and across said wall and bottom portions of the cavities and in cooperation with said uniform sizes and dimensions of the cavities serving to intercept and reflect incident light directed toward said sheeting through angles widely divergent from the normal thereto.

4,123,141

WINDOW SYSTEM COMPRISING LIGHT POLARIZERS

Norman W. Schuler, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1977, Ser. No. 830,207
Int. Cl.² G05D *25/00*; G02B *27/28*
U.S. Cl. 350—159 **5 Claims**



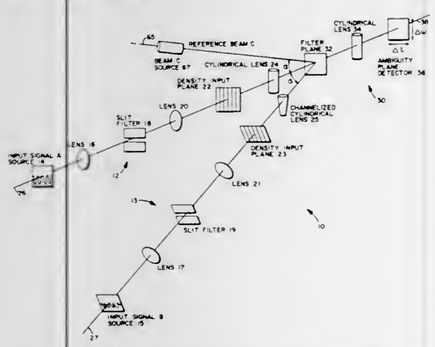
1. A light polarizing window comprising:
a first polarizing element having its absorption axis aligned in a predetermined direction;
a second polarizing element in a substantially parallel plane and superposed with said first polarizing element and having its absorption axis normal to the absorption axis of the said first polarizing element;
a third polarizing element adjacent to said second polarizing element and coincident with the plane of said second element, said third element having its absorption axis normal to the absorption of said second polarizing element; and
a movable polarizing element slideably mounted between a first position where it is superposed with said third polarizing element and a second position where it is interposed between said first and second polarizing elements, said moveable polarizing element including a polarizer having its absorption axis normal to that of the third polarizing element and a wave retarder on its surface closest to a source of light incident on said moveable element, said retarder being on the order of ½, 3/2, 5/2 or greater waves of retardation with respect to a reference wave length of the visible spectrum.

4,123,142

AMBIGUITY PLANE OPTICAL PROCESSOR INCORPORATING MAGNETO-OPTIC, BUBBLE DOMAIN HISTOGRAPH

David L. Fleming, Edina; Thomas R. Johansen, Minneapolis, and Ernest J. Torok, St. Paul, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,880
Int. Cl.² G06G *9/00*; G03H *1/16*
U.S. Cl. 350—162 SF **5 Claims**



1. An ambiguity plane optical processor that calculates the ambiguity function, $\Psi(\Delta w, \Delta t)$, of two signals A, B given by the equation

$$\Psi(\Delta w, \Delta t) = \int A(t)B(t+\Delta t)e^{-j\Delta w t}dt$$

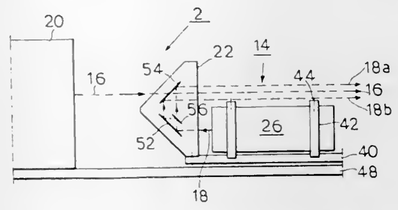
in which the correlation of the two signals A, B is given as a function of relative doppler shifts, Δw, and relative time shifts, Δt, comprising:
filter plane means storing the hologram of the signal Fourier transform in one dimension of a light signal A;
optical processing channel means for generating in a real-time light signal B a range of doppler shifts and producing at said filter plane means the signal Fourier transform in one dimension of said signal B having said range of doppler shifts therein; and,
common optical signal processing channel means, including said filter plane means and an ambiguity plane detector means, for generating the product of said stored hologram of the signal Fourier transform in one dimension of said signal A and of said signal Fourier transform in one dimension of said signal B, said ambiguity plane detector means displaying said product as the correlation of said signals A and B with the relative time shifts displayed along the X axis and the relative doppler shifts displayed along the Y axis.

4,123,143

LASER BEAM ALIGNING APPARATUS

Ami Yachin, Herzlia, and Baruch Gozhansky, Raanana, both of Israel assignors to Laser Industries Ltd., Tel Aviv, Israel

Filed Nov. 23, 1976, Ser. No. 744,422
Claims priority, application Israel, Nov. 27, 1975, 48554
Int. Cl.² A61B *17/36*
U.S. Cl. 350—171 **5 Claims**



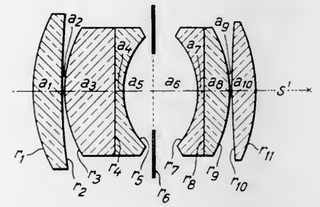
1. Laser apparatus particularly useful for freehand aligning of a working laser beam with respect to a working area, comprising: a first laser generating a high-energy working laser beam; a second laser generating a low-energy visible laser beam having a divergence angle not substantially greater than that of the working laser beam; a manipulatable guide device including a hand manipulator and focussing means for manipulating the working laser beam and for focussing same on the working area; and a beam splitting device oriented to receive said visible laser beam and to split same into sections disposed on opposite sides of the working laser beam as both beams enter the manipulatable guide device; said beam splitting device comprising a first mirror, a second mirror, and a beam-splitter; the first mirror being oriented to direct the visible laser beam to impinge the beam splitter; the beam-splitter being oriented to transmit a portion of the impinged visible beam to said second mirror, and to reflect another portion thereof back to said first mirror, the latter portion of the visible beam being reflected by the first mirror to the second mirror along a path which is spaced from and substantially parallel to that of the first portion of the beam transmitted by the beam splitter to the second mirror; the second mirror transmitting the working laser beam therethrough and being oriented to reflect the two visible beam portions to paths equally spaced on opposite sides of the working laser beam.

4,123,144

FOUR-MEMBER GAUSS OBJECTIVE

Walter Mandler; Garry Edwards, and Erich Wagner, all of Midland, Canada, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 797,386
Claims priority, application Fed. Rep. of Germany, May 18, 1976, 2621981
Int. Cl.² G02B *9/36*
U.S. Cl. 350—222 **9 Claims**



1. A four component six lens element Gauss type objective having an aperture ratio of at least 1:2.4 and a field angle of greater than 40°, comprising:
a pair of inner, cemented doublet meniscus components concave toward and defining a central diaphragm space, each of said doublet components having planer bond surfaces and said doublet components having at least one spherical surface each, which are of the same radius of curvature and which are arranged symmetrically with respect to the location of the diaphragm; and
a pair of outer components of positive power of refraction including a first single component positive meniscus concave toward the diaphragm space and being positioned ahead of said doublet components in the direction of light travel, said outer components having one spherical surface each, which are of the same radius of curvature and which are arranged symmetrically with respect to the location of the diaphragm; and
wherein said lens consists essentially of the following design parameters:
Focal length: $f = 100$
Aperture ratio: 1:2
Back focal length: $s' = 59.21$
Field angle: ±22.5°

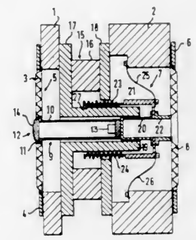
Surface No. (i)	Radius (r_i)	Distance to next surface (a_i)	Lens No.	Refractive Index ($n_{e,i}$)	Abbe-Number ($v_{e,i}$)
1	48.88	8.89	1	1.62286	60.08
2	182.96	0.38		1.0	—
3	36.92	15.11	2	1.58565	46.17
4	∞	2.31	3	1.67764	31.97
5	23.06	9.14		1.0	—
6	(diaphragm)	13.36		1.0	—
7	−23.91	1.92	4	1.57046	42.56
8	∞	7.77	5	1.64128	55.15
9	−36.92	0.38		1.0	—
10	1063.24	6.73	6	1.62286	60.08
11	−48.88	—		1.0	—

4,123,145

OPTICAL PATH LENGTH MODULATOR

Stephen C. L. Botcherby, Dorking, and Christopher P. Starbuck, London, both of England, assignors to Decca Limited, London, England

Filed Aug. 26, 1975, Ser. No. 608,198
Claims priority, application United Kingdom, Sep. 3, 1974, 38502/74
Int. Cl.² G05D *25/00*
U.S. Cl. 350—269 **9 Claims**



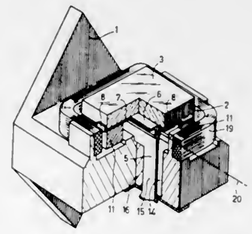
1. An optical path length modulator comprising; two spaced apart substantially parallel flexible supporting members;
a support which is mounted on and between said flexible supporting members for movement to and fro along an axis, a converging lens and a concave mirror, the lens and the mirror being carried by the support, the lens having a focal length equal to the distance between the lens and the surface of the mirror and the mirror having a radius of curvature equal to the focal length of the lens; and means for vibrating the support to and fro along said axis.

4,123,146

ELECTRICALLY CONTROLLABLE PIVOTING MIRROR ARRANGEMENT

Jan C. W. Dragt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1977, Ser. No. 787,079
Claims priority, application Netherlands, Jan. 24, 1977, 7700674
Int. Cl.² G02B *27/17*
U.S. Cl. 350—285 **3 Claims**



1. An electrically controllable pivoting mirror arrangement suitable for use in an apparatus for optically reading information tracks of an information carrier with the aid of a beam of radiation, or for writing information tracks on an information carrier comprising:
a frame;
a pivoting mirror having a reflective front and a back;
a mounting plate connected on one side to the back of the mirror;
mirror positioning means on the side of said mounting plate

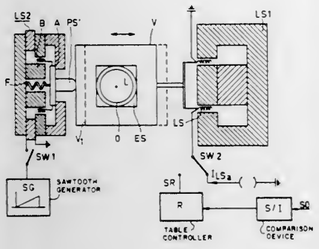
connected to the mirror for preventing relative motion between the mirror and the mounting plate;
a permanent magnet connected to a side of the mounting plate opposite the side that is connected to the mirror;
magnet positioning means on the side of the mounting plate connected to the magnet for preventing relative motion between the magnet and the mounting plate; and
a mirror support means for pivotally supporting the pivoting mirror and comprising a bearing support connected to the frame, and a mirror bearing extending through the mounting plate between the bearing support and the back of the mirror.

4,123,147

ELECTRICALLY CONTROLLED ADJUSTING DEVICE FOR A LIGHT BEAM WITH DIGITAL AND ANALOG DEFLECTION CONTROL

Bernhard Hill, Hamburg; Rudiger Pepperl, Pinneberg, and Johann Kruger, Quickborn, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1977, Ser. No. 775,454
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611617
Int. Cl.² G11B *21/02*
U.S. Cl. 350—285 **8 Claims**



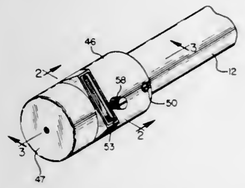
1. A controlled device for positioning a light beam with digital and analog deflection control to track data spiral segments and intervening guide segments on a rotating disk, comprising a light deflector, a slow analog light deflector control means for actuating said light deflector with a small stroke during the first turn of the data spiral, a digital light deflector control means for actuating said light deflector with a relatively large stroke during the other turns of the spiral, said digital light deflector control means being coupled to the analog light deflector.

4,123,148

REFLECTIVE LASER LINE GENERATOR

Dale E. Laird, Vancouver, Wash., assignor to Industrial Electrical Control Corporation, Vancouver, Wash.

Filed Apr. 13, 1977, Ser. No. 787,148
Int. Cl.² G02B *5/10*; G01B *11/00*
U.S. Cl. 350—293 **5 Claims**



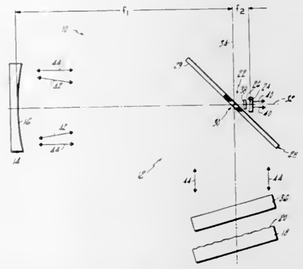
1. Apparatus for generating a straight line light beam comprising:
a. A laser emitting a collimated output beam along a predetermined light path;
b. a frame having means for mounting said laser and having an opening defined therein in a maner for passing said output beam;
c. a planar reflective surface mounted in said frame, intersecting said light beam in a manner to reflect said output beam into a reflected beam which is oriented approximately 90° with respect to said output beam;
d. a cylindrical reflective surface means, having a longitudinal axis which generally is perpendicular to said reflected beam and offset laterally therefrom, located so that said reflected beam strikes said cylindrical reflective surface means transversely off center and substantially normal to its longitudinal axis, for further reflecting said reflective beam into a thin, fan-shaped light beam;
e. wherein said planar reflective surface means is rotatable about an axis which is coextensive with its reflective surface, and perpendicular to said output beam, for adjusting the longitudinal location at which the reflected output beam intersects the cylindrical reflective surface means, thereby adjusting the straightness and perpendicularity of said fan-shaped light beam.

4,123,149

UNSTABLE RESONATOR HAVING HIGH MAGNIFICATION

Peter P. Chenausky, Avon, and William H. Glenn, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 8, 1977, Ser. No. 814,052
Int. Cl.² H01S *3/082*
U.S. Cl. 350—294 **16 Claims**



1. An unstable resonator having a centerline axis comprising:
a first optical cavity of providing high resolution to the bandwidth of a beam of electromagnetic radiation, including,
a first mirror, located on and symmetrically about the centerline axis, defining one end of the first optical cavity and having a reflective surface with a first focal length,
a diffraction grating, located off the centerline axis, defining the other end of the first cavity, and
a reflector mirror, located on and symmetrically about the centerline axis, having a flat reflective surface in a plane which intersects the centerline axis at an angle and forms a folded optical path between the reflective surface of the first mirror and the diffraction grating to provide line of sight communication therebetween; and
a second optical cavity, located on and symmetrically about the centerline axis, with the reflector mirror disposed therein, defined at one end by the first mirror whereby the first and second cavities are partially superimposed and at the other end by a second mirror with a reflective surface having a second focal length less than the first focal length of the first mirror, wherein the reflective surface of the second mirror is in line of sight communication with the reflective surface of the first mirror through an aperture in the reflector mirror.

4,123,150

STABLE RESONATORS FOR RADIAL FLOW LASERS

Edward A. Sziklas, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 21, 1977, Ser. No. 789,751
Int. Cl.² H01S *3/081*
U.S. Cl. 350—294 **12 Claims**



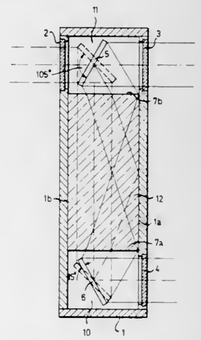
1. A stable resonator comprising:
an optical cavity,
an unstable resonator defining one end of the optical cavity, and
reflector means, in optical communication with the unstable resonator, defining the other end of the optical cavity wherein the reflector means is adapted for cooperating with the unstable resonator to form a stable resonator whereby radiation passing from the unstable resonator is reflected back into the unstable resonator.

4,123,151

PERISCOPIC MIRROR SYSTEM WITH SELECTABLY CHANGEABLE DIRECTION OF VIEWING

Friedrich Aurin, Heidenheim, Germany, assignor to Carl Zeiss, Oberkochen, Germany

Filed May 2, 1977, Ser. No. 792,680
Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623955
Int. Cl.² G02B *5/08, 7/24*
U.S. Cl. 350—301 **10 Claims**



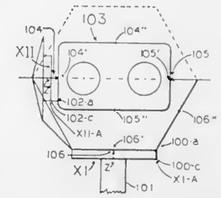
1. Periscope structure having the capability of providing a selected one of two 180° opposed generally horizontal viewing axes, said structure comprising an entrance mirror and an exit mirror, a hollow shaft supporting both said mirrors in spaced relation and for rotation about parallel pivot axes, said mirrors being positionable in a first position relationship to reflect light at substantially right angles in the manner of a periscope wherein said entrance mirror reflects entering light directly to said exit mirror along a vertical axis defined by and between said mirrors, said light entering on a first of said viewing axes from one side of said shaft, and wherein said exit mirror reflects such entrance-mirror reflected light on an exit axis extending from the other side of said shaft, an intermediate mirror within said shaft between said entrance and exit mirrors and facing but offset in substantial parallelism to said vertical axis, said offset being in the direction of said other side of said shaft, said entrance and exit mirrors being also positionable in a second position relationship wherein said entrance mirror reflects to said exit mirror via said intermediate mirror light entering on the second of said viewing axes and from said other side of said shaft and wherein said exit mirror reflects such intermediate-mirror reflected light on said exit axis, and means for moving said entrance and exit mirrors from one to the other of said first and second position relationships.

4,123,152

CIRCUMFERENTIAL STEREO SPECTACULAR WITH A MOSAIC IN A SCENE

Henry M. Farnum, Executive House, 225 E. 46th St., New York, N.Y. 10017

Continuation-in-part of Ser. No. 302,901, Nov. 1, 1972, Pat. No. 3,989,362. This application Aug. 5, 1976, Ser. No. 711,976
The portion of the term of this patent subsequent to Nov. 2, 1993, has been disclaimed.
Int. Cl.² G03B *37/00*
U.S. Cl. 352—69 **1 Claim**



1. In a stage with a cyclorama, an improved apparatus to record and display a scene, comprising:
a stage comprising a mosaic of locations in predetermined relationship to a cyclorama comprising a generally symmetrical geometric figure;
said cyclorama around at least a portion of said stage and generally spherical, with its center at a selected location in said mosaic; and
a reflecting means universally pivoted at a selected location in said mosaic and drive means for rotating said reflecting means at a uniform speed in a panning motion to reflect said scene to a camera comprising recording means to record said scene on film.

4,123,153

ADVANCE MECHANISM

John N. Brucat, Floral Park, N.Y., assignor to Instructional/-Communications Technology, Inc., Huntington Station, N.Y.

Continuation-in-part of Ser. No. 664,145, Mar. 5, 1976, Pat. No. 4,053,214. This application Feb. 8, 1977, Ser. No. 766,712
Int. Cl.² G03B *1/22*
U.S. Cl. 352—191 **8 Claims**

1. An advance mechanism for perforated materials for advancing the material through a path of light comprising:
A support structure adapted to be in line with a source of light so that light passes through an aperture in the support;
material support and advance means for directing the perforated material along the pathway into and out of alignment with the aperture;
a pawl mechanism including spring means on the support adjacent to the aperture and normally positioned in a normally retracted position in alignment with a slot adjacent to the aperture in the support;
drive means for cooperating with the material advance means and for biasing the spring and directing the pawl

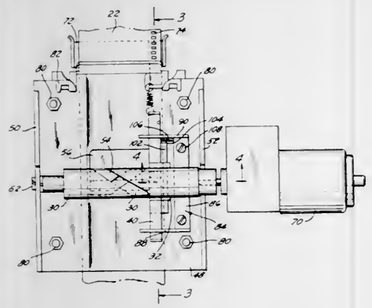
mechanism through the slot into engagement with a perforation in the material and then along the slot a predetermined distance to advance the material and then releasing the pawl mechanism permitting the spring to return the pawl to the retracted position out of the slot;

return means responsive to release of the pawl mechanism and retraction of the pawl through the slot to return the pawl to a normally retracted position;

limit means positioned on the support and on the pawl mechanism to restrict the distance of movement of the pawl mechanism along the length of the slot;

the drive means including a rotatable drive cylinder on the support and an integrally formed coupling extending therefrom, the coupling adapted to be coupled directly to the drive shaft of a motor and to prevent relative rotation of the cylinder with respect to the shaft of the motor and thereby prevent slippage between the cylinder and the drive shaft of the motor;

the pawl mechanism including an elongated leaf spring mounted on the support and having a downwardly extending pawl in alignment with and in position for extension through the slot in the support, a drive projection



extending from the leaf spring and in position for engagement by a portion of the drive means, the elongated leaf spring being movably positioned on the support so that engagement of the drive means with the drive projection and application of a force thereto will bias the leaf spring until the pawl extends through the slot into engagement with a perforation in the perforated material and then the leaf spring will be moved by the drive means and the perforated material accordingly advanced, and when the drive means is disengaged from the leaf spring, the leaf spring will return to its initial configuration with the pawl disengaged from the perforated material and withdrawn through the slot in the support whereupon the return means can return the leaf spring to the normal retracted position;

the drive projection on the elongated member being an upwardly extending prong which extends in the direction of movement of the elongated member when subjected to a force from the drive means; and

the drive cylinder including at least one helical aperture therethrough in alignment with the aperture in the support.

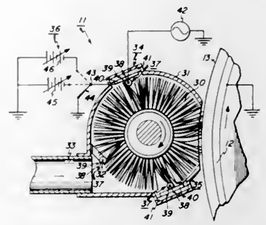
4,123,154

COMBINED CORONA GENERATOR AND IMAGING SURFACE CLEANER

Donald J. Fisher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 3, 1977, Ser. No. 773,999
Int. Cl.² G03G *21/00*
U.S. Cl. 355—15 **5 Claims**

1. In an electrostatographic reproducing machine including an imaging surface and cleaning means for removing residual material from said imaging surface, said cleaning means including at least one cleaning element which is arranged for moving engagement with said imaging surface, and further including corona generating means for applying a charging or a neutralizing corona emission to said cleaning element, said corona generating means including at least one corona discharge electrode, the improvement wherein said cleaning element is arranged for movement to frictionally engage said imaging surface and said corona discharge electrode whereby said clean-



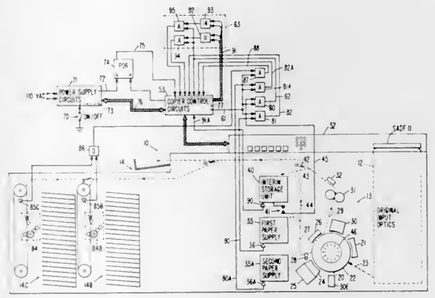
ing element is adapted to clean both said imaging surface and said corona discharge electrode, wherein said cleaning means includes a first of said corona generating means for selectively applying a neutralizing corona to said cleaning element and a second of said corona generating means for applying a charging corona to said cleaning element to bias said cleaning element, and wherein each of said corona generating means include at least one corona discharge electrode and wherein said cleaning element is arranged to engage each of said corona discharge electrodes.

4,123,155

COPY PRODUCTION MACHINE HAVING A DUPLEX COPY MODE

Wallace L. Hubert, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,453
Int. Cl.² G03B *27/32;* **G03G** *15/00*
U.S. Cl. 355—26 **12 Claims**



1. A copy production machine having a duplex copy production mode, copy production means having copy path means for transferring images to copy paper being transported therethrough, duplex copy interim storage means, duplex control means to direct single image duplex copies from said copy production means to said interim storage means and completed duplex copies to an output portion of said machine, first means indicating copies in said interim storage means,

the improvement including in combination:

power on means indicating a power on sequence; and

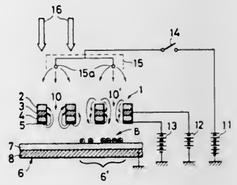
control means jointly responsive to said first indicating means and to said power on means to actuate said duplex control means to said machine to select copy production in said duplex mode.

4,123,156

METHOD AND APPARATUS FOR FORMING AN ELECTROSTATIC LATENT IMAGE USING AN IRON CONTROL GRID WITH DUAL ELECTRICAL FIELDS

Shigeru Inowa; Issei Nakamura, and Tutomu Furuya, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Hachioji, Japan

Filed Apr. 19, 1977, Ser. No. 788,831
Claims priority, application Japan, Apr. 26, 1976, 51-47410
Int. Cl.² G03G *15/00*
U.S. Cl. 355—3 SC **12 Claims**



1. Apparatus for forming an electrostatic image on a recording medium, in which a control grid controls ion current, comprising:

a control grid having a plurality of apertures and positioned adjacent to said recording medium for controlling ion current, said control grid having a photoconductive layer, a conductive layer and an insulating layer, which are superposed in this order;

means for forming a first electric field between said control grid and said recording medium to direct ions toward said recording medium, said means being connected to said conductive layer;

means for forming a second electric field in the apertures of said control grid to prevent ions from passing through said apertures;

an electrically discharging means for projecting ions on the surface of said photoconductive layer;

an optical image projection means for forming an optical image on said surface of said photoconductive layer; and

said electrically discharging means and said optical image projection means being arranged so that the area of said control grid which is being exposed to the ion current from said electrically discharging means is exposed to the light from said optical image projection means.

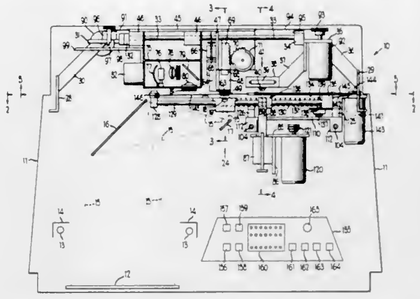
4,123,157

DRY PROCESS PRODUCTION AND ANNOTATION OF ARCHIVAL MICROFORM RECORDS FROM HARD COPY

Peter H. Klose, Troy, and Stanford R. Ovshinsky, Bloomfield Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 17, 1976, Ser. No. 742,645
Int. Cl.² G03B *27/70, 13/26, 27/32*
U.S. Cl. 355—43 **38 Claims**

1. In a dry-process apparatus for producing archival microform records from light reflecting hard copy wherein a light image reflected from the hard copy is reduced to microimage size and applied at an imaging station to a dry-process mask film strip which is photosensitive to and imaged by the light reflecting hard copy and which is developed by heat to provide microimaged transparencies therein, and wherein the microimaged transparencies in the mask film strip are transferred by radiant energy above a certain critical value passing therethrough to a dry-process microform film which has archival properties and which is sensitive to an imaged and developed by the radiant energy above the critical value applied thereto through the dry-process mask film strip to provide imaged microform records therein which conform to the transparent microimages in the dry-process mask film strip and which have archival properties, the improvement comprising an imaging station including a platform for receiving the hard copy and a projection means for reducing the light image reflected from the hard copy on the platform to microimage size and applying the same to the dry-process mask film strip



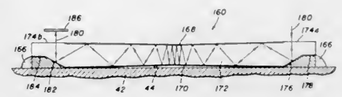
for producing microimaged transparencies therein for providing imaged microform records in the dry-process microform film, means for moving a desired image microform record in the dry-process microform film to the imaging station, and means including said projection means for expanding and projecting an image of the desired imaged microform record in the dry-process microform film in expanded normal size onto the platform for viewing the same.

4,123,158

PHOTOELASTIC STRAIN GAUGE

Zinovy V. Reytblatt, 3550 N. Lake Shore Dr., Chicago, Ill. 60657

Filed May 9, 1975, Ser. No. 576,197
Int. Cl.² G01B *11/18*
U.S. Cl. 356—32 **26 Claims**



1. A photoelastic strain gauge adapted to be bonded to a surface of a workpiece for displaying visual patterns representative of the strain in such workpiece, said strain gauge having a mounting plane adapted to be parallel to the workpiece surface, said strain gauge comprising two substantially parallel outer sheets of reflective material, a slab of photoelastic material between said outer sheets, an inner sheet of reflective material in said slab and being parallel to said outer sheets, said slab having an entry aperture for light to enter said slab and an exit aperture arranged to receive light which has passed through said slab to produce the visual patterns, first reflective means adjacent to one end of said slab for receiving light which has passed through said entry aperture and for directing such light at a predetermined angle so as to be reverberated within said slab between one of said outer sheets and said inner sheet, a further sheet of reflective material adjacent to the other end of said slab and being disposed substantially perpendicular to said inner and outer sheets and arranged to receive light which has been reverberated between said one outer sheet and said inner sheet and to reflect such light toward said second outer sheet for further reverberation between said second outer sheet and said inner sheets, and second reflective

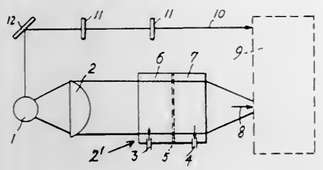
means adjacent to said one end of said slab for receiving light which has been reverberated by said sheets of reflective material and for directing such light to said exit aperture, thereby to increase the length of path of light through said slab so as to cause the visual patterns to be amplified, and to decrease the effects of bending and shear stresses in the workpiece.

4,123,159

APPARATUS FOR ANALYZING THE SIZE DISTRIBUTION AND QUANTITY OF SMALL PARTICLES IN AN AEROSOL

Werner Holländer, No. 15, Astenbergstrasse, 5949 Westfeld, and Josef Schörmann, No. 4, Im Kampe, 5948 Schmallenberg, Grafschaft, both of Fed. Rep. of Germany

Filed Feb. 9, 1977, Ser. No. 767,193
Int. Cl.[2] G01N *1/00, 15/02*
U.S. Cl. 356—38 **6 Claims**



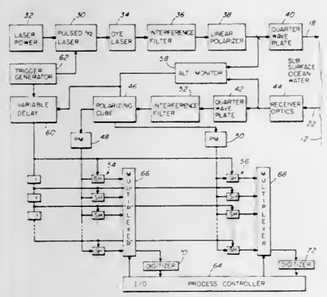
1. An apparatus for analyzing the size distribution and quantity of small particles in an aerosol, which comprises at least one filter containing linear pores extending substantially normal to the filter surface, said filter being substantially opaque outside the pores, means for directing light onto said filter surface on one side thereof, and means for measuring the change in transmission of said light through said pores due to the retention of particles in and around the pores.

4,123,160

METHOD AND APPARATUS FOR REMOTELY MEASURING SUB-SURFACE WATER TEMPERATURES

Bernard Caputo, Sprucewood Cir., Boxford, Mass. 01921, and Donald A. Leonard, 594 Main St., Stoneham, Mass. 02180

Filed Dec. 20, 1976, Ser. No. 752,161
Int. Cl.[2] G01J *5/44, 5/60*
U.S. Cl. 356—75 **9 Claims**



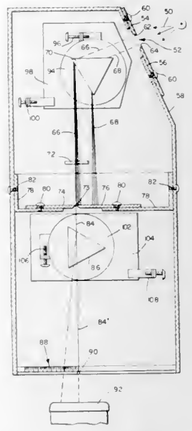
1. Apparatus for remotely monitoring the subsurface property of a body of water comprising
(a) first means for generating and directing a beam of laser light circularly polarized in one direction and of a frequency adapted to penetrate deeply into said water,
(b) second means for detecting the Raman backscatter produced by said beam, said backscatter including components polarized in said one direction and in the opposite direction, and,
(c) third means for analyzing the dual polarization backscatter on a wavelength segment by wavelength segment basis, and,
(d) fourth means for obtaining separate ratios of the intensity of one polarization component to the other polarization component for each wavelength segment, said ratios being a function of the property of the water.

4,123,161

APPARATUS FOR AND METHOD OF EXAMINING LIGHT

George J. Pappas, 866 Croton Rd., Wayne, Pa. 19087

Continuation of Ser. No. 480,565, Jun. 18, 1974, abandoned, which is a continuation of Ser. No. 262,463, Jun. 14, 1972, abandoned. This application Apr. 18, 1977, Ser. No. 788,578
Int. Cl.[2] G01J *3/12*
U.S. Cl. 356—99 **7 Claims**



1. A system for examining light of different wavelengths comprising:
a source of light;
means including a wide slit illuminated by said source and a dispersion means for separating said light into a first pair of divergent beams and a second pair of divergent beams separated by an intermediate beam converging to a point, light of longer wavelengths emanating as rays in said first pair of divergent beams, light of shorter wavelengths emanating as rays in said second pair of divergent beams;
a narrow slit situated between said dispersion means and the point at which said intermediate beam converges; and
means for measuring the dispersion of said beams with respect to a reference point.

4,123,162

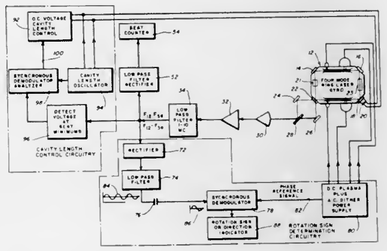
MULTIOSCILLATOR RING LASER GYRO OUTPUT INFORMATION PROCESSING SYSTEM

Virgil E. Sanders, Newbury Park, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Feb. 9, 1977, Ser. No. 766,986
Int. Cl.[2] G01B *9/02;* **G01P** *9/00*
U.S. Cl. 356—106 LR **10 Claims**

1. A ring laser gyro comprising:
a multi-oscillator ring laser including means for generating four modes of laser oscillation at four respectively different frequencies, and with two of the modes propagating in each direction;
an optical detector for receiving all of said four modes;

means coupled to said detector for determining the rate of rotation of said ring laser;
means coupled to said detector for determining the direction of rotation of said ring laser; and



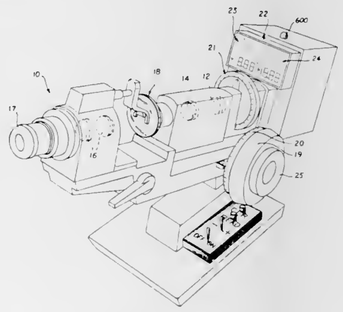
servo means coupled to said detector for adjusting the length of the cavity of said ring laser to substantially equalize the intensity of said four modes.

4,123,163

LENS POWER DISPLAY IN PRESCRIPTION FORM

Howard E. Chace, Southbridge, and Anthony F. Szwarc, Sturbridge, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Nov. 12, 1976, Ser. No. 741,257
Int. Cl.[2] G01B *9/00*
U.S. Cl. 356—124 **7 Claims**



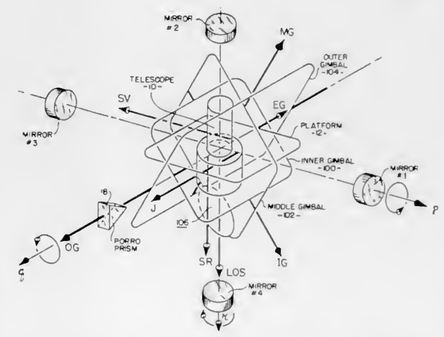
1. The combination comprising a lens measuring instrument for determining the optical powers of a test lens in each of two respectively orthogonal principal meridians, each said optical power being expressed as the net refractive power of said lens in the respective said meridians;
means for providing first and second signed electrical signals whose signed magnitudes are respectively representative of said optical power of said test lens as expressed in terms of said net refractive power in the respective meridian;
and electronic means at least semiautomatically responsive to said first and second signals representative of said refractive powers in the respective said meridians for providing signals representative of said optical powers expressed in prescription form having a signed net refractive power characterized as sphere power and a signed component of cylinder power and further including means for selectively, alternatively establishing a positive or a negative notation control signal; means responsive to said first and said second signed signals for providing a difference signal representative of the arithmetic difference therebetween, said difference signal assuming the sign established by said notation control signal for readout as said cylinder component of said prescription-form expression; means responsive to said notation control signal, the sign status of said first and second signals and the relative magnitudes between said first and second signals for selecting for readout as said sphere power, when said notation control means indicates a negative notation, said signed first signal if either said first signal is positive and said second signal is negative or both said first and second signals are negative and said second signal is larger or both said first and second signals are positive and said first signal is larger and otherwise said signed second signal and, when said notation control means indicates a positive notation, said signed first signal if either said first signal is negative and said second signal is positive or both said first and second signals are negative and said first signal is larger or both said first and second signals are positive and said second signal is larger and otherwise said second signal; and readout means for said signals indicative of said signed sphere power and said signed cylinder power.

4,123,164

AUTOCOLLIMATING ASSEMBLY FOR THE SELF-CALIBRATION OF A STELLAR NAVIGATIONAL SYSTEM

Ronald Tambor, Maplewood, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jan. 3, 1977, Ser. No. 756,517
Int. Cl.[2] G01B *11/26;* **G01C** *1/10*
U.S. Cl. 356—152 **7 Claims**



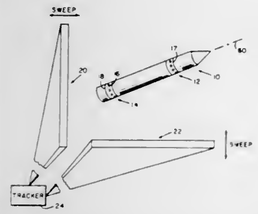
1. In a stellar navigation system having an inertial platform bearing a tracking or position-sensing sub-system including a sensor and a telescope with a lens system for focusing collimated light from a selected star into the plane of the sensor, the improvement comprising an assembly for accurately indexing the tracking or position-sensing sub-system which includes:
a light source;
means for directing light from said source through the lens system of the telescope to be collimated thereby;
a position-indexing mirror placed outside the inertial platform so that when the telescope is in alignment with the mirror, the mirror will reflect the collimated light back through the lens system into the plane of the sensor, thereby causing the sensor to generate electrical signals representing the angular displacement of the reflected light from a nominal position on the sensor; and
means for moving the telescope from a normal viewing position into alignment with the position-indexing mirror.

4,123,165

ATTITUDE DETERMINATION USING TWO COLOR, DUAL-SWEEPING LASER SYSTEM

David B. Brown, Huntsville; Jerry W. Vickers, Toney, both of Ala., and Kynric M. Pell, Laramie, Wyo., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 31, 1977, Ser. No. 801,885
Int. Cl.² G01B *11/26*
U.S. Cl. 356—152 **6 Claims**



4. In a tracking system having a transmitter-receiver adapted for tracking a moving vehicle wherein retroreflector arrays are disposed on the surface of said vehicle, a method of detecting the attitude of said vehicle comprising the steps of:

launching a vehicle into a general flight trajectory;

sweeping first and second beams of optical energy from a single ground station across said vehicle;

filtering said optical energy impinging on said retroreflector arrays from said tracking station for retroreflecting separate and distinct frequencies from respective arrays;

retroreflecting impinging energy of said optical energy from said first and second retroreflector arrays on the surface of said vehicle back toward said ground station; and

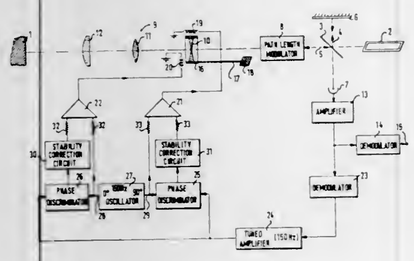
receiving said retroreflected energy by said tracking station for processing to provide vehicle attitude.

4,123,166

OPTICAL DETECTOR OF REMOTE MOVEMENT INCLUDING CYCLIC SCANNING OF TARGET

Stephen C. L. Botcherby, Dorking; Christopher P. Starbuck, London, and Jeremy A. Fitzherbert, Shepparton, all of England, assignors to Decca Limited, London, England

Filed Aug. 26, 1975, Ser. No. 608,197
Claims priority, application United Kingdom, Sep. 3, 1974, 38501/74
Int. Cl.² G01B *11/26*; G01N *29/00*
U.S. Cl. 356—152 **6 Claims**



1. A detector of remote movement, comprising:

means for projecting a beam of coherent light at a target;

means for mixing light reflected from the target with reference light to obtain a Doppler signal representing movement of the target;

means for providing cyclic variation in the direction of the projected light beam to move the point of impingement thereof over the surface of the target;

means responsive to a phase relationship between the variation in the direction of the projected light beam and modulation of the amplitude of the Doppler signal at the frequency of said variation to produce a bias signal; and

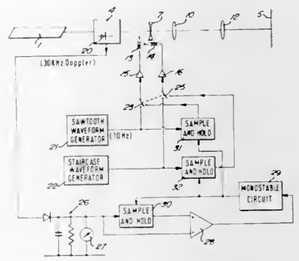
means responsive to the bias signal for superimposing corresponding bias on said cyclic variation so as to shift the mean direction of the beam in a sense to increase the amplitude of the Doppler signal.

4,123,167

OPTICAL DETECTING SYSTEM

Stephen C. L. Botcherby, Dorking, and Jeremy A. Fitzherbert, Shepperton, both of England, assignors to Decca Limited, London, England

Filed May 21, 1976, Ser. No. 686,687
Claims priority, application United Kingdom, May 30, 1975, 23640/75
Int. Cl.² G01B *11/26*; G01N *29/00*
U.S. Cl. 356—152 **7 Claims**



1. An optical detecting system comprising:

means for directing a coherent beam of light from a source at an object;

means for mixing light reflected from the object with light from the source to derive a doppler signal which represents movement of the object;

means responsive to scanning control signals to provide a reproducible scan of the light beam over a region of the object;

a detector responsive to the amplitude of said doppler signal to detect a local maximum or minimum signal amplitude thereof;

means operable in response to the detector to determine the values of the said control signals associated with the local maximum or minimum signal amplitude; means operable to store representations of the control signals when the detector detects said local turning point, and

means for reading out the said stored representations to substitute them in place of the control signals so as to redirect the said beam at a region, of the said object, that provides the detected local maximum or minimum signal amplitude of the doppler signal.

4,123,168

LASER OPTICAL LEVER ADJUNCT

Thomas H. Howell, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 22, 1977, Ser. No. 818,187
Int. Cl.² G01B *11/26*; G01C *1/00*
U.S. Cl. 356—152 **3 Claims**

1. An apparatus for measuring rocket attitude during the launch phase comprising: a laser source for providing a laser beam, said source being pointed towards said rocket along an off-line axis with respect to the longitudinal rocket axis; a mirror positioned on said rocket normally aligned to the longitudinal axis of said rocket for intercepting said laser beam and a target for receiving the reflected laser beam off-axis with respect to said rocket axis, said target including a plane showing the effect of the laser beam thereon and a detector assembly positioned behind said plane for producing analog signals to locate the position of the energy so that the rocket's attitude can be determined.

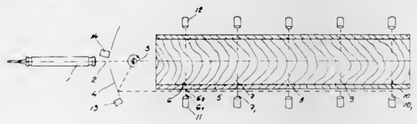


4,123,169

DEVICE FOR MEASURING THE WIDTH OF TIMBER

Heikki Meriläinen, Karhula, and Ulf J. G. Ström, Grankulla, both of Finland, assignors to A. Ahlstrom Osakeyhtio, Finland

Filed Feb. 14, 1977, Ser. No. 768,402
Claims priority, application Finland, Feb. 20, 1976, 760438
Int. Cl.² G01B *11/02*
U.S. Cl. 356—167 **5 Claims**



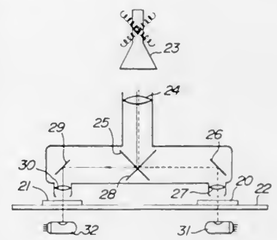
1. A device for measuring the width of a board, which comprises a laser tube emitting a beam of laser radiation; a rotating mirror means positioned so as to receive said laser beam and to impart a scanning motion thereto; optical reflector means so positioned that said rotating mirror means is at the focal point of the reflector means and that the reflector means reflects the laser beam from the rotating mirror means in a direction along said board; to scan the laser beam laterally there across; a plurality of mirror rasters positioned as mirror groups successively at predetermined spaced intervals along the length of the board at a certain distance therefrom and at a given angle so as to reflect the laser beam coming from the reflector means onto parts of the board that are situated stepwise in the lateral direction of the board; and a plurality of detectors including at least one detector at each of said intervals as defined by said group of mirrors, and arranged to receive laser pulses reflected from the board surface, to thereby provide information about the board width at said interval.

4,123,170

APPARATUS FOR DETECTING DEFECTS IN PATTERNS

Yasushi Uchiyama, Yokohama, and Daikichi Awamura, Kawasaki, both of Japan, assignors to Nippon Jido Seigyo, Ltd., Kawasaki, Japan

Filed Dec. 1, 1976, Ser. No. 746,584
Claims priority, application Japan, Nov. 26, 1975, 50-141394
Int. Cl.² G01B *11/00*
U.S. Cl. 356—167 **10 Claims**



1. An apparatus for detecting defects in patterns, particularly defects in chip patterns of photomasks used in manufacturing semiconductor integrated circuits comprising means for producing a scanning light spot;

an optical system for projecting said scanning light spot simultaneously onto identical portions of two patterns to be compared with each other;

first and second photoelectric converters each for receiving the light spot passing through or reflected from a respective pattern to produce an output electrical signal; and

electric circuit means for receiving the output signals from the first and second photoelectric converters and subtracting one of the output signals from the other to produce an output defect signal representing detected defects in the patterns; said circuit means comprising:

a subtracting circuit for producing a difference signal between the two output signals from the first and second photoelectric converters,

a delay circuit for delaying the difference signal for a predetermined time period so as to remove pseudo-defects from the output defect signal, and

circuit means for receiving the delayed difference signal and the non-delayed difference signal and processing them to produce the output defect signal having pseudo-defects deleted therefrom.

4,123,171

DENSITY MEASURING DEVICE

Masahiko Kato; Hisao Katogi, both of Kodaira, and Ikuo Seki, Tokyo, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1976, Ser. No. 723,895
Claims priority, application Japan, Sep. 22, 1975, 50-113695
Int. Cl.² G01J *3/50*
U.S. Cl. 356—175 **12 Claims**

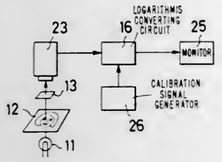
1. A measuring device for measuring the optical density of an object comprising:

scanning means for scanning said object to produce an optical density signal relating to the optical density of the scanned object;

display means responsive to said optical density signal for displaying said optical density signal in graphic form on said display means; and

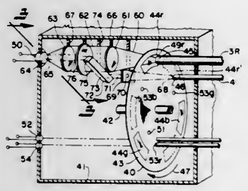
marker signal generating means responsive to said scanning means and independent of said optical density signal for generating a signal to produce a plurality of calibration markers on said display means in a predetermined relation-

ship to said optical density signal so that the measurement of the displayed optical density signal can be read directly



from said display means with the aid of said calibration markers.

4,123,172
COMPARISON TYPE COLORIMETER
Park French, Aurora, Ohio, assignor to Sterndent Corporation, Mount Vernon, N.Y.
Filed Sep. 7, 1976, Ser. No. 721,107
Int. Cl.[2] G01J *3/50*
U.S. Cl. 356—188 **18 Claims**



1. A system for directing two different light beams onto substantially the same portion of the surface area of a photosensor, comprising:

focusing means for focusing light onto a portion of the surface area of the photosensor, said focusing means comprising a lens positioned about one focal length from said photosensor,

first collimating means for substantially collimating a first beam of light and directing the same to said focusing means,

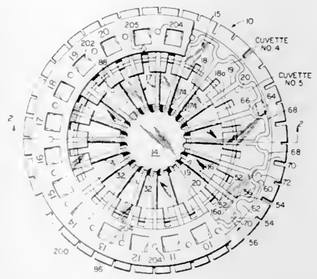
second means positioned in the path of at least part of said first beam for directing generally coaxially with said first beam, a second beam of light along a path in common with the path of said first beam of light to said focusing means, and

chopper means for cyclically alternately passing light to said respective first and second means for directing,

whereby said focusing means sequentially focuses each of said first and second beams of light onto substantially the same portion of the surface area of the photosensor,

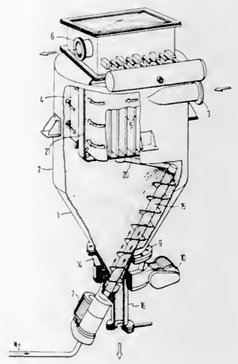
said first means for directing including means for supplying said first beam of light to said focusing means in a path having a relatively large cross-sectional area, and said second means for directing including means for directing said second beam of light to said focusing means as substantially collimated light having a relatively small cross-sectional area.

4,123,173
ROTATABLE FLEXIBLE CUVETTE ARRAYS
Frederick C. Bullock, Towaco, N.J.; Alvin Engelhardt, Nanuet; Thomas J. Cirincione, Flushing, both of N.Y., and Joseph A. Williams, Wayne, N.J., assignors to Electro-Nucleonics, Inc., Fairfield, N.J.
Filed Jun. 9, 1976, Ser. No. 694,303
Int. Cl.[2] G01N *1/10*
U.S. Cl. 356—246 **13 Claims**



1. A cuvette array for a centrifugal analyzer, said array comprising a plurality of compartments circumferentially spaced about a central point, said array is disposable and is formed from upper and lower discs of flexible thermoplastic material, said lower disc is formed with said compartments, and said upper disc is bonded to said lower disc and closes off at least a portion of each of said compartments.

4,123,174
MIXER
Hans-Joachim Titus, Katzenpfad 4, 6148 Heppenheim, Germany
Filed Jun. 17, 1977, Ser. No. 807,548
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627259
Int. Cl.[2] B01F *7/00, 13/02*
U.S. Cl. 366—102 **9 Claims**



1. A mixer, comprising:

(a) a mixing vessel with one end larger than the other, at least part of said mixing vessel having a wall of conical configuration, the larger end facing upwardly, the other end being a bottom end, said mixing vessel including a vertical axis;

(b) product outlet means in said vessel adjacent the bottom end thereof;

(c) a mixing worm in said vessel, said mixing worm having a longitudinal axis;

(d) means for rotating said mixing worm about said longitudinal axis;

(e) means for driving said mixing worm such that said axis thereof moves in a circular motion along said vessel wall of conical configuration;

(f) said mixing worm being so disposed as to enter said mixing vessel from said bottom end of said vessel;

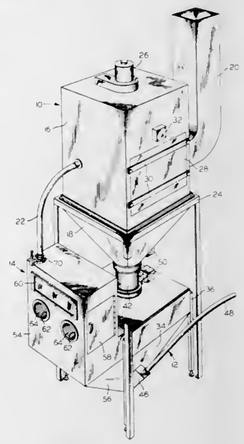
(g) a flanged opening in said vessel adjacent said product outlet;

(h) a bearing housing sealingly engaging said flanged opening of the mixing vessel from below;

(i) said bearing housing having a downwardly extending product outlet tube; and

(j) a rotatively driven mount which turns around the vertical axis of said vessel, said mount supporting said bearing housing.

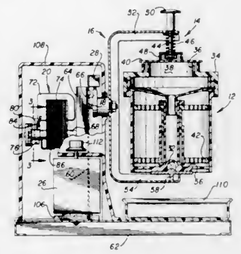
4,123,175
POWDER HANDLING SYSTEM
C. Burton Carlson, 400 Country Rd., Guilford, Conn. 06437, and Ernest R. Hughes, 47 Tackora Trail, Ridgefield, Conn. 06877
Filed Jul. 27, 1977, Ser. No. 819,549
Int. Cl.[2] B01F *15/00*
U.S. Cl. 366—151 **10 Claims**



1. A powder handling system comprising:

at least one enclosure defining therewithin collecting, loading and mixing chambers, said collecting and loading chambers being in gas-flow communication with one another and each being in powder-flow communication with said mixing chamber, said enclosure having an inlet for admitting airborne powder into said collecting chamber, an outlet for the withdrawal of powder from said mixing chamber, and a displaceable portion therein permitting entry into said loading chamber; valve means for controlling gas flow between said collecting and loading chambers; and means for creating a vacuum within said collecting chamber, whereby, in operation of said system, powder may be drawn into said collecting chamber and discharged from said mixing chamber, and whereby the supply thereof may be replenished during such operation by placing a fresh charge of powder within said loading chamber while said valve means is so controlled as to establish a vacuum therein.

4,123,176
PHOTOGRAPHIC DEVELOPER TURNING SYSTEM
Raymond H. Barker, 181 Cedarcrest La., Lewisville, Tex. 75067
Filed Oct. 21, 1977, Ser. No. 844,320
Int. Cl.[2] B01F *9/00*
U.S. Cl. 366—166 **10 Claims**



5. A photographic developer turning system connected to a power source, comprising:

a cylindrical film processing container dimensioned to retain exposed photographic film therein for processing;

a clamping means disposed about said container, adapted to rotate said container about an axis substantially perpendicular to the axis of said container;

an electric motor having a shaft, said shaft mechanically coupled to said clamping means and adapted to rotate said means about an axis substantially perpendicular to the axis of said container;

a cam mounted on said clamping means adapted to rotate therewith;

a mechanical switch capable of being opened by said cam for interrupting the supply of power to said motor after one rotation of said cam;

a time delay switch connected to said mechanical switch, capable of energizing said motor after a preselected time;

means for resetting said time delay switch to zero after said mechanical switch is opened by said cam;

braking means for smoothly braking the rotation of said motor when said cam opens said mechanical switch; and

means for disengaging said braking means from said motor when said motor is energized.

4,123,177
TRAY ROCKER DEVICE
Neill K. Banks, Jr., Gloucester, Mass., assignor to Bomco, Inc., Gloucester, Mass.
Filed May 25, 1977, Ser. No. 800,221
Int. Cl.[2] B01F *13/00*
U.S. Cl. 336—239 **9 Claims**



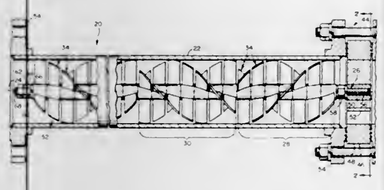
1. A tray rocker comprising a one-piece structure formed from a sheet-form structural material, said structure comprising:

a shallow U-shaped central portion;

tray support elements extending substantially horizontally from the ends of said U-shaped central portion, said support elements together defining a support platform to

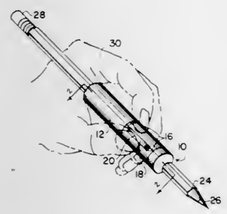
an upturned lip member formed across each said tray support element, said lip members together defining means to engage a tray received by said support platform.

4,123,178
IN-LINE BLENDER
Ronald N. Salzman, and Norman R. Herbst, both of Rochester, N.Y., assignors to General Signal Corporation, Rochester, N.Y.
Filed Mar. 21, 1977, Ser. No. 779,872
Int. Cl.[2] B01F *5/00*
U.S. Cl. 366—338 **26 Claims**



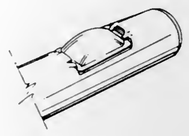
1. A device for mixing a fluid comprising:
(a) a conduit having a hollow interior disposed about a central axis; and
(b) means for mixing a fluid including a plurality of stationary mixing stages extending in series along said axis within said conduit, each of said mixing stages defining a plurality of spiral channels within the hollow interior of said conduit, said spiral channels extending the entire length of each of said mixing stages, each of said mixing stages including a plurality of distinct segments extending in series along said axis, one of said mixing stages defining a plurality of spiral channels which rotate in a first angular direction, and another of said mixing stages defining a plurality of spiral channels which rotate in a second angular direction opposite to said first angular direction.

4,123,179
ORTHOPEDIC FINGER PIECE FOR WRITING INSTRUMENTS
Nelly M. Pacheco, 102 Woodland Ct., Carpentersville, Ill. 60110
Filed Jan. 5, 1977, Ser. No. 756,824
Int. Cl.[2] A46B *5/02*
U.S. Cl. 401—6 **3 Claims**



1. Apparatus adapted to fit over an elongated writing instrument to protect fingers and aid in holding such writing instrument comprising a semi-resilient sleeve having a bore extending along the longitudinal axis thereof, said bore having a diameter substantially of the same configuration as the diameter of a writing instrument on which said sleeve is mounted through said bore, the diameter of said bore being sufficiently wide to allow said sleeve to be moved longitudinally along the length of such an elongated writing instrument, said sleeve having writing instrument securing means thereon for holding said sleeve in one position along the length of such a writing instrument, said securing means being engageable and disengageable with such a writing instrument positioned in said sleeve, said securing means comprising a lever pivotally mounted on a pivot axle, said pivot axle being secured to said sleeve substantially transverse to the longitudinal axis of said sleeve, said lever having a cam lobe at the end thereof extending through an opening in said sleeve, said cam lobe being arranged to grippingly engage the surface of a writing instrument when said sleeve is positioned thereon and when said lever is substantially parallel to the longitudinal axis of said sleeves, said cam lobe being arranged to substantially disengage the surface of such a writing instrument when said lever is pivoted about said pivot axle to a position substantially normal to the longitudinal axis of said sleeve.

4,123,180
TUBE CONNECTOR
Roland E. Nehma, 80 Roger Pilon St.,, Dollard des Ormeaux, Montreal, Quebec, Canada
Filed Jun. 11, 1976, Ser. No. 695,155
Claims priority, application Canada, Aug. 12, 1975. 233299
Int. Cl.[2] F16B *7/00*
U.S. Cl. 403—172 **25 Claims**

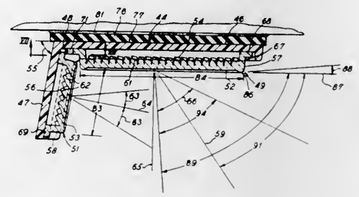


9. A connector for releasably joining a plurality of hollow tubes each having an open end, said connector comprising insertion members each adapted to closely but slidably fit into one end of a tube, said insertion member having at least one recess in the side thereof, said recess having a flat bottom surface and two end surfaces spaced apart in an axial direction with respect to the axis of said insertion member and having open sides and an open top, a resilient compressible spring member disposed in said recess between said end surfaces, said spring member having a maximum length dimension essentially equal to the distance between said end surfaces of said recess and having a width dimension substantially equal to the distance between said open sides of said recess and a dome arched both axially and transversely substantially along its entire length with respect to the axis of the insertion member, said dome having an upper portion protruding beyond the top of the recess and having a lower peripheral portion defining a base resting on the bottom surface of the recess, whereby forcible entry of the insertion member and spring member into a tube of appropriate size frictionally engages the arched surfaces of the upper portion of the dome with the tube and frictionally retains the insertion member removably in place in the tube.

4,123,181
ROADSIDE BARRIER MARKER SYSTEM
Arthur P. Schueler, Schaumburg, and Robert I. Nagel, Skokie, both of Ill., assignors to Astro Optics Corporation, Schaumburg, Ill.
Filed Dec. 2, 1977, Ser. No. 856,967
Int. Cl.[2] E01F *9/00*
U.S. Cl. 404—9 **21 Claims**

1. In a roadway construction of the type having generally longitudinally extending road surface portions within roadside edge portions, the improvement which comprises
(A) a plurality of individual retroreflective reflector means, each individual one of said reflector means
(1) having at least two regions which are each retroreflective of incident light, and each such region has one flattened exterior surface portion which respective such surface portions are inclined relative to one another,
(2) said two regions thereof being colored white, red, amber, or blue,

(3) said two regions thereof together further being continuously retroreflective of incident light rays striking the surface portions thereof over a predeterminable included angle of at least about 60° but less than 90° measured relative to said one flattened surface portion,



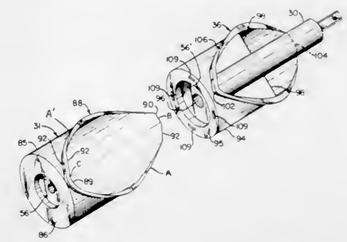
(4) the retroreflected light from any one of said reflector means at any given location within such included angle thereof having a minimum specific intensity value for retroreflectivity which is at least that shown in the following table:

Color of said regions	Specific intensity in candelas per foot candle
white	20
red	5
amber	12
blue	5

(B) a plurality of mounting means, each one being associated with a different one of said reflector means, for holding its associated individual such respective reflector means in a predetermined orientation relative to said roadside edge portions such that
(1) said flattened surface portions of each of said two regions are generally vertical, and
(2) 0° extends substantially parallelly to a tangent to said roadside edge portions in the region where each respective one of said reflector means is located, and the angle of 60° of retroreflectivity extends out into said road surface portions in a prechosen direction relative to a given direction of traffic flow along said road surface portions,
(C) the relationship between individual ones of said reflector means as so held by individual ones of said mounting means being such that said reflector means are in longitudinally spaced relationship to one another relative to said roadside edge portions, and also each one of said reflector means is located relative to said road surface portions in a similar position relative thereto, and
(D) the interrelationship between such plurality of reflector means and said road surface portions being such that the driver of a vehicle moving along said road surface portion at night, said vehicle being equipped with head light means, continuously sees each individual reflector means of said plurality within a viewing angle of at least from 0° to 60° but less than about 90° where 0° and 60° are as defined above.

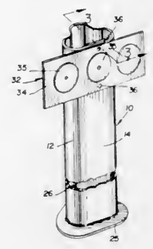
4,123,182
CAM DRIVE FOR MATRIX PRINT HEADS AND THE LIKE
Nicholas Kondur, Jr., Riverton, Wyo., assignor to LRC, Inc., Riverton, Wyo.
Filed May 17, 1976, Ser. No. 686,708
Int. Cl.[2] B41J *19/50, 19/56, 19/20*
U.S. Cl. 400—328 **13 Claims**

1. In a printing apparatus having a frame, a print head including a drive member therefor, said print head adapted to impress numbers or other indicia on a record medium, the improvement comprising:
print head drive means engageable with the drive member on said print head to reversibly drive said print head in a print and return direction, said drive means including an elongated drive axle mounted for rotation on said frame, a substantially hollow, axially elongated drum segment having a pair of closely spaced generally helically extending rib members forming a cylindrical surface of revolution in outer spaced concentric relation to said drive axle, said rib members defining one axial end of said drum segment and forming a common helical groove between said rib members extending in the form of an endless loop



between first and second points 180° removed from one another adjacent to opposite ends of said drive axle, a rigid support member extending between said drum segment and said drive axle to support said drum segment in outer concentric relation to said drive axle, and
motor drive means for rotating said print head drive means whereby engagement of said drive member by said loop will impart linear, reversible movement to said print head as said drive member advances throughout a complete cycle of revolution of said loop.

4,123,183
GUIDEPOST FOR ROADWAYS AND THE LIKE
John E. Ryan, 18113 Mt. Washington St., Fountain Valley, Calif. 92708
Filed Aug. 29, 1977, Ser. No. 828,743
Int. Cl.[2] E01F *9/00*
U.S. Cl. 404—10 **8 Claims**



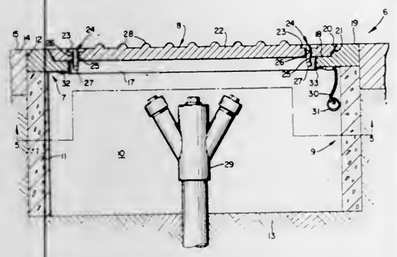
1. A guidepost structure, the combination comprising an elongated, tubular-body member of pliable plastic material, and said member having:
a front wall of substantial width;
a rear wall; and
a pair of side walls having a sinusoidal configuration, said side walls integrally connecting said front and rear walls;
wherein said front wall is substantially flat throughout the length thereof, and said rear wall is semi-circular throughout its length thereof;
said front wall, said side walls, and said rear wall defining a "T"-shaped, horizontal, cross-sectional configuration; and
wherein said elongated tubular body includes a memory factor whereby any distortion of said walls will slowly be corrected so that they can attain their original contour.

4,123,184

UNDERGROUND FIRE HYDRANT FRAME AND COVER

Leslie A. Whitlock, 510 Scenic Dr., Modesto, Calif. 95350

Filed Jan. 12, 1978, Ser. No. 868,870
Int. Cl.[2] E02D *29/14*
U.S. Cl. 404—25 **4 Claims**



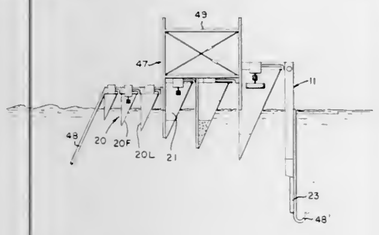
1. A closure for the open top of a pit containing an underground fire hydrant comprising a frame adapted to rest on and be supported by a part of the pit with the upper surface of said frame flush with a surrounding highway surface, said frame having a large opening and a recessed upper surface surrounding said opening, and a cover having a marginal portion shaped to fit in said recessed portion of the frame for closing the frame opening, said cover being of a thickness such that its upper surface is disposed substantially flush with the upper surface of the frame when the cover is supported by the frame, an electric heating element secured to the underside of the frame around the opening thereof for heating the frame and cover to prevent the accummulation of ice and snow on the upper surface thereof, and said frame having a depending lip surrounding the opening and disposed between said heating element and the opening to protect the heating element from moisture draining through the opening.

4,123,185

FLOATING BREAKWATER AND ENERGY COLLECTING SYSTEM

Alf R. Hagen, 16249 36th Ave., NE., Seattle, Wash. 98155, and Eric C. Hagen, 11223 109th NE., Kirkland, Wash. 98033

Filed Jun. 6, 1977, Ser. No. 803,543
Int. Cl.[2] E02B *9/08;* **F03C** *1/26*
U.S. Cl. 405—76 **10 Claims**



1. A combination floating breakwater and energy collector comprising:

floating platform means having a front side and a lea side, and containing a plurality of wave energy collection means arranged to receive waves advancing generally toward said front side,

said collection means comprising collection chambers open to the bottom and each having a relatively vertical back wall and a sloped front wall sloping in the lea direction from the bottom for receiving waves, said collection chambers being arranged in a plurality of rows located side-by-side from said front side to the lea side of the floating platform means, and being progressively larger in width and depth from the frontmost row to the leemost row,

converting means on said platform means for converting the wave energy collected at said cells into a transmittable form of energy, and

positioning means for selectively positioning said floating platform means so that its front side will be generally directed toward the oncoming waves whereby the wave action on the lea side of the platform is reduced as a consequence of wave deflection by said floating platform means and of the wave energy collected by said cells.

4,123,186

TOOL FOR MACHINING CLAY

Frederick E. Hoadley, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 6, 1977, Ser. No. 794,585
Int. Cl.[2] B26D *1/12*
U.S. Cl. 407—54 **4 Claims**



1. A milling cutter for machining soft material such as clay comprising a cylindrical shank adapted for rotation about its axis, flutes formed in said shank in the form of spirals extending along the axis of said shank, the tip of said shank being ground with an angle to form a point the apex of which falls substantially on the axis of said shank, each flute having a cutting edge ground on the side of the flute in the region of said tip, each cutting edge thereby having a lead-in surface that has an effective angle β relative to the axis of said shank that is greater than the corresponding angle α formed by the spiral flutes, the ground surface adjacent the cutting edge progressively decreasing in width as the cutting edges converge toward the tip of said tool.

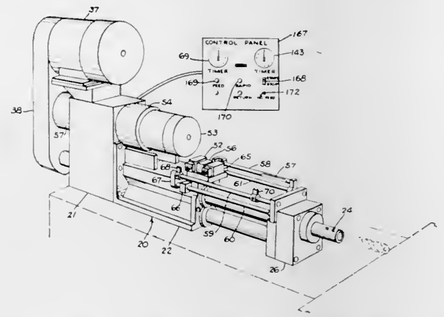
4,123,187

PECK-DRILLING APPARATUS FOR QUILL FEED UNITS

Frank W. Turner, 70 Sylvan, Pleasant Ridge, Mich. 48069

Division of Ser. No. 309,957, Nov. 28, 1972, Pat. No. 3,955,629.
This application May 5, 1976, Ser. No. 683,334
Int. Cl.[2] B23B *27/22, 47/18*
U.S. Cl. 408—17 **15 Claims**

1. An improvement in a mechanical quill feed unit of the type having a frame member, a tool quill of the type adapted for reciprocative movement with respect to said frame member and having electro-mechanical tool rotating means, electromechanical means to rapidly advance a tool toward a workpiece preparatory to performing a machining operation thereon, to slowly advance the tool while said machining operation is taking place and to rapidly retract said tool at the conclusion of said machining operation, the improvement comprising a peck-drilling apparatus including means to cause said electro-mechanical rapid advance means to advance the tool quill to a predetermined adjustable starting position and to thereupon turn off said electro-mechanical rapid advance means upon reaching said starting position, electro-mechanical means to feed said tool quill at a slow feed rate until the expiration of a predetermined time interval, electro-mechanical means to return said tool quill to its original starting position immediately after the expiration of said time interval, and to immediately rapidly advance it to its position at the expiration of said time interval to reflect the advance of said tool quill during said time interval, and to repeat the peck-drilling cycle until the desired depth of cut, as represented by the forward movement of the tool quill is reached, and electro-mechanical means to thereupon return said tool quill to its original position to await the beginning of another cycle, said electro-mechanical means to cause said rapid advance means to rapidly advance said tool quill to said predetermined adjustable starting position including a cam mounting bar fixedly mounted to said tool quill on an axis parallel to the axis of reciprocation thereof in



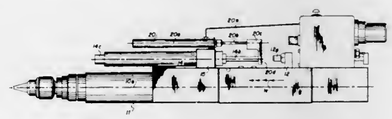
close proximity to said frame member, a special slideable cam mounted for movement along said cam mounting bar, a mounting block fixedly mounted to said frame member and having a plurality of guideways therein parallel to said cam mounting bar, with said cam mounting bar passing through one of said guideways, a slideable cam mounted in at least one other of said guideways and adapted for movement by said special slideable cam and having a recessed portion therein, a first limit switch mounted perpendicular to said slideable cam and being adapted to be operated by said recessed portion, said limit switch being operably connected to said rapid advance means and being adapted to rapidly advance said tool quill until said special slideable cam contacts and moves said slideable cam and causes said first limit switch to turn off said rapid advance and reactivate said feed means for said predetermined time.

4,123,188

CONTROL SYSTEM FOR PECK DRILLING TOOL

Edwin J. Deremo, and Hans P. Olving, both of Spring Lake, Mich., assignors to Gardner-Denver Company, Dallas, Tex.

Filed Apr. 4, 1977, Ser. No. 784,348
Int. Cl.[2] B23B *47/34*
U.S. Cl. 408—17 **10 Claims**



1. In a control system for a drill wherein a drill bit mounted on a feed mechanism is advanced at an advance travel rate in successively increasing steps to machine successive work faces in a work piece, and retracted between each step to remove cuttings, the combination which comprises:

(a) feed rate control means for engaging the feed mechanism when said drill bit is a predetermined distance from each successive work face to decrease the advance travel rate before said bit contacts the work piece, said feed rate control means being mechanically biased away from the work piece and being operable to retract to follow the retractive travel of the drill bit for a predetermined travel, and

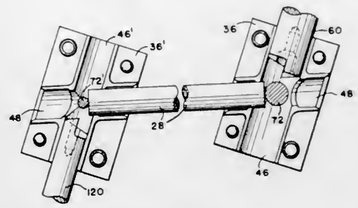
(b) means operable in response to initiation of each drill bit retraction for generating a force increasing with time to arrest the retraction of said control means before said drill bit is fully retracted to limit the retraction of said control means to the predetermined travel.

4,123,189

ROTARY-PLUNGE TUBE NOTCHING SYSTEM

Louis Ferlise, and Sherman E. Mackey, both of Celina, Ohio, assignors to Huffy Corporation, Miamisburg, Ohio

Filed Aug. 12, 1976, Ser. No. 713,908
Int. Cl.[2] B27C *3/00*
U.S. Cl. 408—21 **10 Claims**



1. Tube notching apparatus comprising:

a die including a tube receiving passage and a tool receiving passage,

said passages intersecting and crossing each other at an intersection thereof with portions of each of said passages extending in opposite directions from said intersection,

stop means projectable into said intersection of said tube and tool receiving passages for engaging an edge of an end of a tube as a tube moves through said tube receiving passage into said intersection to position an end of a tube at said intersection,

a tool rotatably and slidably received in said tool receiving passage,

said tool including a rotary cutting edge extending substantially axially of said tool and engageable with an edge of an end of a tube positioned at said intersection,

means for rotating said tool about a longitudinal axis thereof to bring said substantially axially extending rotary cutting edge thereof into engagement with a first portion of an edge of an end of a tube positioned at said intersection by said stop means and remove of a first segment of said tube,

a plunge shearing surface,

means for moving said tool axially thereof through said intersection and past said tube receiving passage to bring said plunge shearing surface into engagement with an inner surface of a second portion of an end of a tube positioned at said intersection and remove a second segment thereof opposite said first segment, and

means for moving said stop means into said intersection to position a tube thereat and out of said intersection prior to said axial movement of said tool through said intersection.

4,123,190

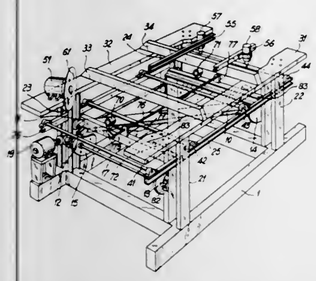
APPARATUS FOR PREPARING CORRUGATED SHEETS AUTOMATICALLY

Jean C. Baudot, Rue du Moulin de l'Arche, Saint-Fargeau, Yonne, France

Filed Oct. 6, 1976, Ser. No. 729,888
Claims priority, application France, Oct. 9, 1975, 75 30927
Int. Cl.[2] B23B *51/08*
U.S. Cl. 408—25 **6 Claims**

1. Apparatus for preparing corrugated sheets, which com-

prises a first rectangular framework having a pair of spaced apart vertical columns disposed at each of the four corners of said framework, each pair of columns forming a guideway and bearing a horizontal structure having affixed thereto a plurality of cutting and drilling tools which are adjustable in position; a second framework disposed in the guideway for supporting one or more corrugated sheets, said second framework comprising a pair of side members extending parallel to each other, each side member passing through each of the guideways formed by two adjacent pairs of columns, said side members



also having a plurality of rollers rotatably mounted upon and extending perpendicular to both said side memebers; a horizontally positioned table disposed below said second framework and having its corners mounted at said vertical columns; means for aligning one or more corrugated sheets fed into the apparatus in a position to engage said tools, said means being attached to the upper surface of said table and mounted in spaced relationship from said second framework; and displacement means attached to said first framework to vertically displace said table and said horizontal structure towards and away from each other to form prepared corrugated sheets.

4,123,191

MULTI-SPINDLE DRILL HEAD

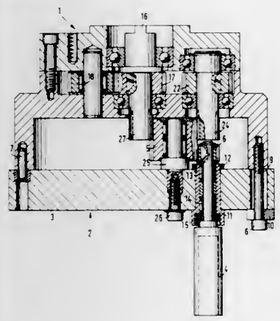
Erwin Braun, Stuttgart, Germany, assignor to Sigloch and Schrieder, Germany

Filed Jul. 25, 1977, Ser. No. 818,751

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1976, 2633660

Int. Cl.[2] B23B *47/14, 39/16*

U.S. Cl. 408—42 **12 Claims**



1. A multi-spindle drill head for use with a machine drive, comprising a main assembly, including a first housing member, at least one main spindle rotatably supported on said first housing member and having an end adapted to be connected to the machine drive for rotation thereof, gear means defining at least one secondary drive pinion rotatably mounted on said first housing member and connected to said main spindle for rotation thereby, a second housing member, a connecting gear rotatably mounted on said second housing member, at least one drill spindle rotatably mounted on said second housing member and engaged with said connecting gear, and means for securing said second housing member to said first housing member in an orientation to position said connecting gear in driving engagement with said secondary drive pinion to drive said connecting gear from said drive pinion along with said drill spindle, said gear means defining said at least one secondary drive pinion comprising said main spindle having a drive pinion formed thereon, and a plurality of secondary spindles, each having a spindle gear engaged with said main spindle.

4,123,192

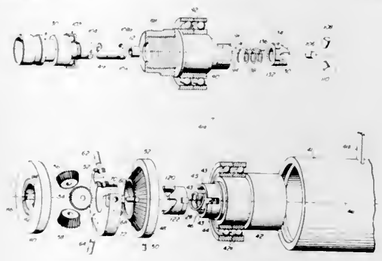
TAPPING ATTACHMENT FOR A MACHINE TOOL

Frederick W. Ruland, 59 Lincoln St., Waltham, Mass. 02154

Filed Oct. 11, 1977, Ser. No. 840,742

Int. Cl.[2] B23B *47/14, 47/00;* **B23G** *1/00*

U.S. Cl. 408—133 **11 Claims**



1. A tapping attachment for coupling a tapping tool to a machine, said machine including one or more tool drive shafts and associated workpiece spindles, and further including means for driving at least one of said tool drive shafts and its associated spindle in a rotary motion in the same direction about a reference axis, said tapping attachment comprising:

means for coaxially coupling said tool to said one drive shaft and to selectively rotate said tool at one of two rotational velocities about said axis in the same direction as said one drive shaft and its associated spindle, said rotational velocity of said tool being lower than that of said spindle when said tapping tool is biased with respect to said drive shaft along said axis in a first direction, and being higher than that of said spindle when said tapping tool is biased with respect to said drive shaft in the opposite direction along said axis.

4,123,193

DOUBLE ENDED DRILL STOP

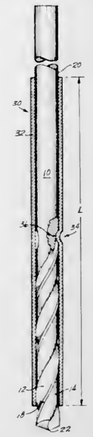
Horace E. Hill, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 17, 1976, Ser. No. 751,566

Int. Cl.[2] B23B *47/00*

U.S. Cl. 408—202 **4 Claims**

1. A double ended tubular shaped drill stop which is reversible for utilization upon decrease in length of the drill to provide continued further length of drill exposure, said double ended tubular shaped drill stop capable of telescoping over a drill having opposed helical flute surfaces which include run out ramp portions extending between the maximum depth portions of said flute surface and the other surface shank portion of the drill, said double ended tubular shaped drill stop including an inner protruding surface portion of the inner wall of said double ended tubular shaped drill stop disposed off center with respect to the longitudinal length thereof and extending from said inner wall of said double ended tubular shaped drill stop into at least one of the said helical flute surfaces and providing clearance fit therewith along said maximum depth portions and further providing an interference fit with respect to said run out ramp portions so that any further telescoping of said double ended tubular shaped drill stop



beyond a predetermined position up the outer surface shank portion of the drill is prevented upon the occurrence of said interference fit.

4,123,194

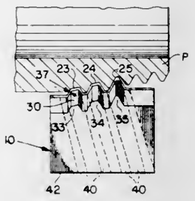
PROFILED CHIP BREAKER

Lawrence E. Cave, Painesville, Ohio, assignor to PMC Industries, Inc., Wickliffe, Ohio

Filed Jun. 27, 1977, Ser. No. 810,490

Int. Cl.[2] B23B *51/00;* **B26D** *1/12*

U.S. Cl. 408—221 **4 Claims**



1. A metalworking apparatus comprising, in combination, a cutting tool having cutting geometry thereon including at least two cutting teeth for removing metal chips from a workpiece and a chip breaker having an abutment surface thereon positioned in close proximity to the cutting geometry for breaking the metal chips directed thereagainst, said abutment surface having abutment teeth with the profile of each abutment tooth being the same as the cutting tooth aligned therewith to provide a uniform space therebetween across each such respective pair of aligned cutting and abutment teeth, said uniform space between respective pairs of aligned cutting and abutment teeth potentially varying from one pair to the next across the cutting geometry in accordance with the amount of chips being respectively removed by each cutting tooth, with a relative increase in chip removal by a particular cutting tooth requiring an increase in the uniform space at that cutting tooth, and vice versa.

4,123,195

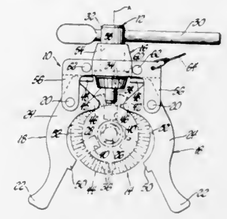
CHUCK KEY HOLDER

John R. Purviance, 29530 Highmeadow Rd., Farmington Hills, Mich. 48024

Filed Oct. 11, 1977, Ser. No. 840,682

Int. Cl.[2] B23B *39/00*

U.S. Cl. 408—241 R **8 Claims**



1. A chuck key holder comprising: a support having an opening for receiving and rotatably mounting a chuck key; a pair of clamp members mounted on the support for pivotal movement between open an closed positions about respective axes on opposite sides of the opening; each clamp member having a handle and a chuck clamping portion located between the handle thereof and the associated pivotal axes of movement on the support; said chuck clamping portion being cooperable in the closed position to position a drill chuck therebetween so as to securely position the chuck key for rotation in properly located spanning engagement with the chuck; each clamp member also having an ejecting portion located on the opposite side of the clamping portion thereof as the handle thereof; and means biasing the clamp members to the open position such that the ejecting portions thereof move the support away from the chuck and the chuck key out of spanning engagement therewith as the clamp members move from the closed position to the open position.

4,123,196

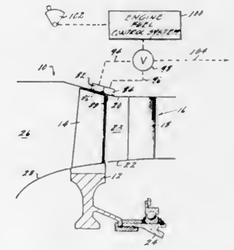
SUPERSONIC COMPRESSOR WITH OFF-DESIGN PERFORMANCE IMPROVEMENT

David C. Prince, Jr., and Carl C. Koch, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 1, 1976, Ser. No. 737,229

Int. Cl.[2] F01D *19/00;* **F02C** *00/00*

U.S. Cl. 415—181 **10 Claims**



10. In a method of operating a turbomachine having a row of blades disposed in an airflow and designed to operate at a supersonic inlet relative Mach number, and wherein each circumferentially adjacent pair of blades defines a generally convergent flow passage therebetween, the step of extracting air from the passages of an amount generally inversely related to the inlet relative Mach number, the amount of extracton at the design operating condition being substantially zero and the amount of extraction at lower inlet relative Mach numbers

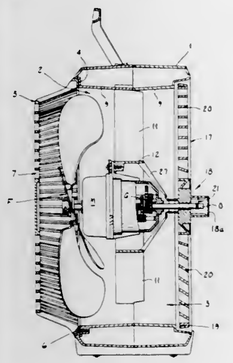
being such as to reduce the effective convergence through the passage, thereby restructuring the shock pattern.

4,123,197

FAN WITH AIR DIRECTING GRILLE

Phillip W. Keem, North Croydon; Laimons Kaimins, Forest Hill, and James Graham, Eltham, all of Australia, assignors to Allware Agencies Limited, London, England

Filed Feb. 4, 1977, Ser. No. 765,764
Int. Cl.[2] F16D *7/00, 63/00*
U.S. Cl. 415—123 **3 Claims**



1. A fan comprising a casing; a cylindrical wall defining an air passage through said casing, said air passage having an air inlet and an air outlet; a fan blade assembly mounted within said casing at the inlet end of said air passage; a motor mounted within said air passage for driving said fan blade assembly; an air directing grille mounted for rotation in the path of air flow downstream of the fan blade assembly at the air outlet; speed reducing means driven by the output of said motor opposite said fan blade assembly; a clutch mechanism coupling said speed reducing means to said grille for rotating said grille at a speed less than that of the fan blade assembly, said grille including a plurality of louvers arranged to direct the air flow in a substantially gyratory distribution pattern, said clutch having means permitting the output of said speed reducing means to continue rotation without imparting rotational movement to said grille when a predetermined restraint of rotation of said grille is applied thereto, said grille being movable axially of said casing and said casing having an annular portion engageable by an outer annular portion of said grille upon axial movement of said grille toward said casing annular portion; and retaining means operable to hold said grille annular portion against said casing annular portion by applying at least said predetermined restraint to said grille to permit locking of the grille without switching off said motor.

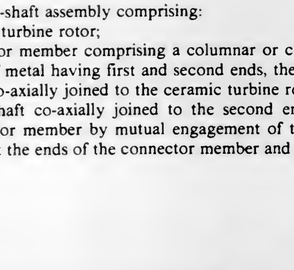
4,123,198

PROPELLER

Horace R. Harbord, 5a Avenida Norte #34, Mexicanos, El Salvador

Filed Mar. 28, 1977, Ser. No. 781,629
Int. Cl.[2] F04D *29/38*
U.S. Cl. 416—243 **4 Claims**

1. A propeller including, in combination:
(a) a central imperforate hub having a given hub diameter; and,
(b) a plurality of blades greater than two having roots and tips connected by straight line leading and trailing edges, said roots being secured to equal circumferentially spaced points on the periphery of said hub, each blade extending radially from its root connection on the hub to its tip a distance equal to one half said given diameter of the hub so that the circular locus of the blade tips is of a diameter equal to twice the diameter of said hub, and wherein further:
(1) the width of each blade at its root is equal to the spacing measured circumferentially along the periphery of the hub between adjacent blades,
(2) the straight leading edge of each blade being normal to a line tangential to the periphery of said hub at the point of securement of the root of the blade,
(3) the width of the tip of each blade being one half the width of the root such that the straight trailing edge of each blade defines a tapered blade decreasing uniformly in width from its root to its tip,



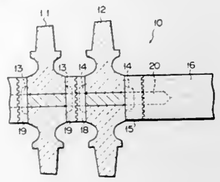
(4) the major portion of the cross section of each blade taken along its width dimension having a camber defined by an upper curved line convex when viewed from the top of a first given radius of curvature and a lower curved line concave when viewed from the bottom of a second given radius of curvature greater than said first given radius of curvature, and
(5) the angle of attack of the cord each blade being uniform from root to tip and having a value from 10° to 17° whereby when said propeller is rotated, a substantially constant air discharge from the roots to the tips of the blades is realized with a substantial elimination of radial air flow.

4,123,199

ROTOR-SHAFT ASSEMBLY

Syogo Shimizu, Chigasaki; Toshihiko Ochiai, and Masato Sakai, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 25, 1977, Ser. No. 781,417
Claims priority, application Japan, Mar. 31, 1976, 51-34416
Int. Cl.[2] F01D *5/34, 5/06*
U.S. Cl. 416—244 A **7 Claims**



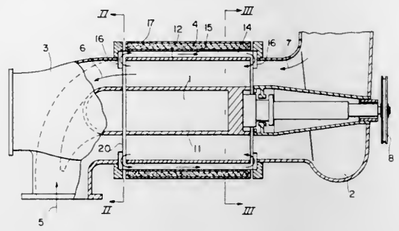
1. A rotor-shaft assembly comprising:
a ceramic turbine rotor;
a connector member comprising a columnar or cylindrical body of metal having first and second ends, the first end being co-axially joined to the ceramic turbine rotor; and
a metal shaft co-axially joined to the second end of the connector member by mutual engagement of teeth provided at the ends of the connector member and the metal shaft.

4,123,200

GAS-DYNAMIC PRESSURE-WAVE MACHINE

Hansulrich Hörler, Zurich, and Josef Perevuznik, Baden, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 15, 1975, Ser. No. 541,247
Claims priority, application Switzerland, Feb. 14, 1974, 2088/74
Int. Cl.[2] F04B *11/00*
U.S. Cl. 417—64 **5 Claims**



1. In a gas-dynamic pressure-wave machine comprising essentially a celled rotor including a cylindrical shroud forming the radially outer wall of the cells and operating within a stationary casing that includes a cylindrical middle portion co-extensive in length with and surrounding said shroud and two side casing portions located respectively adjacent opposite ends of said rotor for entrance and discharge of a hot gas to be expanded and a cold gas such as air to be compressed respectively which flow through the cells whereby some of the energy in said hot gas is imparted to said cold gas to cause the latter to be compressed accompanied by heating of said rotor and axial expansion thereof, the improvement wherein to prevent any rubbing action between the surfaces of said side casing portions and the opposite ends of said rotor as a result of its axially directed thermal expansion and yet maintain a desirable small axial operating clearance therebetween, the internal diameter of said cylindrical middle portion of said casing exceeds the external diameter of said shroud by an amount sufficient to establish an axially extending annular flow channel therebetween through which said hot gas flows from one end of said middle casing portion to the other thereby heating the latter for each operating condition approximately simultaneously with said rotor to a temperature which is at least approximately proportional to the average rotor temperature at that operating condition, and said machine includes at least one recess in each of said two side casing portions through which the said hot gas flows to or from said axially extending flow channel.

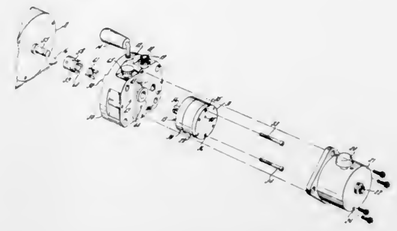
4,123,201

MODULAR VACUUM PUMP ASSEMBLY

Vytautas Andriulis, Chicago, Ill., assignor to Central Scientific Company, Inc., Chicago, Ill.

Filed Sep. 4, 1973, Ser. No. 394,092
Int. Cl.[2] F04B *23/10, 17/00, 35/04;* **F16D** *3/14*
U.S. Cl. 417—204 **2 Claims**

1. A rotary displacement vacuum pump assembly incorporating a rotor drive motor and comprising:
a mounting plate, the rotor drive motor being mounted on one side of said mounting plate;
a pump housing mounted on the opposite side of said mounting plate;
a stator body portion with an internal cavity that provides a pumping chamber;
a rotor located in said pump chamber;
a pair of end plates positioned on either end of said stator body portion;
fastening means to rigidly connect said end plates to said stator body portion to form an integral modular pump assembly, said modular pump assembly having a vacuum inlet and a pressure outlet;
mounting means to releasably connect said modular pump assembly to said mounting plate within said pump housing;
a coupling collar rigidly connected to the drive shaft of the rotor drive motor, a pair of cruciform slots being formed in said collar;



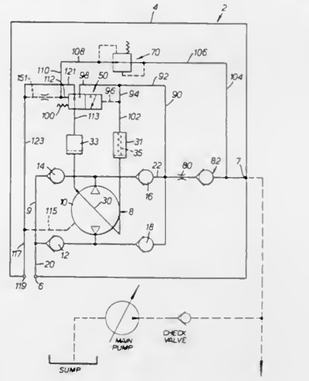
a pair of cruciform slits formed in the motor end of the rotor shaft; and
an elastomeric crosspiece to fit into said slots of said coupling collar and said slits in the rotor shaft to provide a driving connection between the rotor drive motor and said rotor.

4,123,202

HYDRAULIC PUMPING ARRANGEMENTS

Nicholas A. James, Wotton-under-Edge; John A. Hudson, Highworth; Derek G. Savage, Swindon, and Edward G. Morley, Tetbury, all of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Nov. 3, 1976, Ser. No. 738,625
Claims priority, application United Kingdom, Nov. 4, 1975, 45724/75
Int. Cl.[2] F04B *49/00*
U.S. Cl. 417—216 **7 Claims**



1. A hydraulic pumping arrangement for pumping a liquid to a hydraulic system, which comprises reversible pumping means for pumping the liquid, swash means including a variable swash member which enables the liquid output of the pumping means to be infinitely varied between minimum and maximum, a first piston-and-cylinder arrangement for increasing the position of the swash member to increase the liquid output of the pumping means, a second piston-and-cylinder arrangement for decreasing the position of the swash member to decrease the liquid output of the pumping means, control

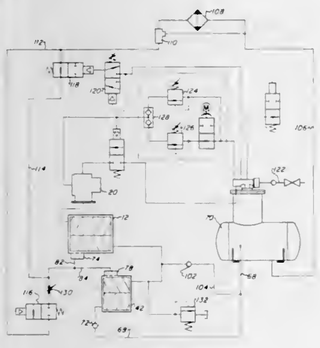
means for controlling the flow of liquid for the second piston-and-cylinder arrangement, switching means operative to pass liquid from the system to the control means at a first condition in the system and operative to stop liquid from the system passing to the control means at a second condition in the system, and valve means for isolating the pumping arrangement from the system and from a main pump normally supplying liquid to the system, the control means being operative when it is receiving liquid from the switching means to enable the swash member to be moved to an on-swash condition and therefore the pumping means to pump liquid to the system in the event of a lack of liquid output from the main pump.

4,123,203

MULTISTAGE HELICAL SCREW COMPRESSOR WITH LIQUID INJECTION

Stephen J. Kathmann; Roger L. Post; Michael G. Herschler, and Sylvester L. Anerino, all of Quincy, Ill., assignors to Gardner-Denver Company, Dallas, Tex.

Filed Oct. 14, 1977, Ser. No. 842,426
Int. Cl.[2] F04B *39/02;* **F04C** *23/00, 29/08, 29/02*
U.S. Cl. 417—252 **8 Claims**



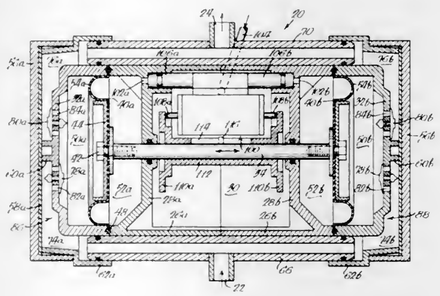
1. A multistage helical screw gas compressor comprising:
a first casing defining a pair of parallel intersecting bores in which are disposed a pair of intermeshing helical screw rotors forming a first compression stage;
a first inlet port and a first discharge port opening into said first casing;
a second casing defining a pair of parallel intersecting bores in which are disposed a pair of intermeshing helical screw rotors forming a second compression stage;
a second inlet port and a second discharge port opening into said second casing;
passage means connecting said first discharge port with said second inlet port;
a compressed gas receiver and liquid reservoir tank;
conduit means connecting said second discharge port with said tank;
means for circulating liquid from said tank to said first and second compression stages for cooling and mixing with the gas being compressed by said first and second compression stages;
a bypass conduit interconnecting said second inlet port with said tank for conducting gas compressed by said first compression stage to said tank without passing through said second compression stage; and,
a check valve interposed in said bypass conduit and responsive to a pressure differential between said second inlet port and said tank for causing compressed gas discharged from said first compression stage to be conducted directly to said tank to thereby force liquid stored in said tank to be circulated to said first and second compression stages on starting said compressor.

4,123,204

DOUBLE-ACTING, FLUID-OPERATED PUMP HAVING PILOT VALVE CONTROL OF DISTRIBUTOR MOTOR

William R. Scholle, Corona del Mar, Calif., assignor to Scholle Corporation, Northlake, Ill.

Filed Jan. 3, 1977, Ser. No. 756,495
Int. Cl.[2] F04B *17/00, 35/00;* **F01L** *25/02*
U.S. Cl. 417—393 **3 Claims**



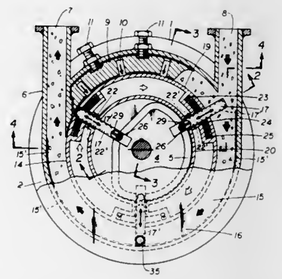
1. An air operated pump for fluids, comprising a pair of pumping stages, each including housing means forming an enlarged chamber therewithin, a flexible diaphragm positioned within said chamber and dividing said chamber into a fluid pumping section and an air receiving section, a pair of one way valve means in said housing means communicating with said pumping section, one of said valve means for passing fluid into said section and the other of said valve means for passing fluid from said section, an end closure on said housing means forming therewith fluid inlet and fluid outlet chambers, said end closure having an inlet to said fluid inlet chamber for being connected with a supply of fluid and an outlet from said fluid outlet chamber, said one valve means connecting said fluid inlet chamber with said housing means chamber and said other valve means connecting said housing means chamber with said fluid outlet chamber, said housing means having an air inlet port formed therethrough into said air section; means for mounting said housing means of said pumping stages in fixed relationship; a shaft extended between and secured at its opposite ends to said diaphragms constraining said diaphragms to conjoint reciprocating movement, such that said diaphragm of one of said stages moves into said pumping section thereof when said diaphragm of said other pump moves out of said pumping section thereof, and vice versa; directional valve means operable to apply compressed air from a source thereof selectively through one or the other of said ports into said associated air receiving section to move said diaphragm therein into said associated pumping section while venting the remaining air inlet port to atmosphere, and control valve means responsive to movement of said diaphragms toward the ends of their travel to operate said directional valve means to apply compressed air alternately through said ports, whereby said pumping stage diaphragms are reciprocatingly moved into and out of said pumping sections to alternately draw fluid from said inlets to said end closures into said pumping sections through said one valve means and to then expel said fluid to said end closure outlets through said other valve means, said one way valve means being flapper valves, said directional valve means including slide valve means connected between the source of air under pressure and said ports and movable between a first position for applying said air through one of said ports and a second position for applying said air through said other port, said control valve means being connected with said slide valve means and being responsive to said diaphragms closely approaching one end of their travel to move said slide valve means to said first position and to said diaphragms closely approaching the other end of their travel to move said slide valve means to said second position, said control valve means including first and second mechanically actuable valve means, said control valve means moving said slide valve means to said first position upon actuation of said first valve means and to said second position upon actuation of said second valve means, and means linking said first and said second valve means and said shaft upon said shaft closely approaching opposite ends of its travel for alternately actuating said first and second valve means, said linking means including a spool positioned around said shaft and having radial flanges at opposite ends thereof for engaging said valve means, said spool being movable with reciprocation of said shaft to alternately engage said first valve means with one of said flanges and said second valve means with the other of said flanges for actuating said valve means, said spool having a center tubular portion positioned around said shaft and said tubular portion having a longitudinal slot therein, said shaft having a radial pin extending into said slot and movable therein along the length thereof, said pin at opposite ends of shaft travel engaging ends of said slot to move said spool in directions to engage said first and second valve means with said flanges, said control valve means including a housing having a passage extending therethrough and a tubular member slidably received within said housing, said tubular member having a passage therethrough and an inner wall centrally located in said passage and closing said passage, whereby said tubular member closes said passage through said housing, said tubular member being connected with said slide valve means through a slot in said housing and movable within said housing passage to move said slide valve means between said first and said second positions, said first and said second valve means being positioned over and normally closing opposite ends of said housing passage and opening said respective end of said housing passage to atmosphere upon being actuated, and means for introducing air under pressure from said source thereof into said passage on opposite sides of said wall of said tubular member, whereby actuation of one or the other of said valve means by said spool vents to atmosphere compressed air in said passage on its respective side of said inner wall so that said tubular member is moved toward said actuated valve means by air under pressure on the opposite side of said wall to move said slide valve means to said first or said second position.

4,123,205

ROTARY VANE PUMP WITH SEALING MEANS

Gerhard Peleschka, Luetzelhausen, and Friederich Nuebling, Biebergemuend, both of Fed. Rep. of Germany, assignors to Wibau, Gruendau-Rothenbergen, Fed. Rep. of Germany

Filed Dec. 2, 1976, Ser. No. 746,734
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1976, 2601347
Int. Cl.[2] F01C *19/02, 19/08, 21/00, 1/00*
U.S. Cl. 418—127 **16 Claims**



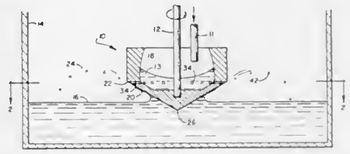
1. In a pump having housing means with inlet port means and outlet port means as well as rotary piston means rotatably mounted in said housing means, said rotary piston means and said housing means defining a conveying channel between said inlet and outlet port means, said conveying channel having a suction end adjacent said inlet port means and a pressure end adjacent said outlet port means, radially displaceable slide means mounted on said rotary piston means for radial movement into and out of said conveying channel, guide means in said rotary piston means for guiding the radial movement of said slide means, and cam means in said housing means for radially moving said slide means in response to piston rotation, the improvement comprising first sealing means (**12, 13**) operatively arranged between said housing means and said rotary piston means substantially along the circumference of said rotary piston means adjacent to each side thereof, second sealing means (**24, 25**) operatively arranged to provide a seal between said radially displaceable slide means and said guide means, third sealing means (**29**) arranged to urge said slide means with the outer ends thereof radially against said housing means, fourth sealing means (**9, 10**) operatively arranged between said outlet port means and said inlet port means to block return flow from said outlet port means to said inlet port means and fifth sealing means (**34**) in the form of a sealing ring having a radially outwardly facing V-groove, one such sealing ring being inserted on each side of the rotary piston means between the latter and the respective housing means, said V-groove sealing rings extending laterally around said guide means and said cam means to further seal the guide means and the cam means against leakage penetration.

4,123,206

ENCAPSULATING APPARATUS

Clarence C. Dannelly, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,294
Int. Cl.[2] B29C *13/00*
U.S. Cl. 425—5 **6 Claims**



1. Apparatus for encapsulating material comprising
(a) a nozzle supported for rotation about a substantially vertical axis and adapted to be charged with material to be encapsulated, said nozzle having an outside circumferential surface inclined upwardly with increasing radius of said nozzle, and having at least one orifice through its wall terminating at said inclined circumferential surface through which material from said nozzle is extruded by centrifugal force when said nozzle is rotated,
(b) means for rotating said nozzle, and
(c) means for providing a body of liquid in position relative to said nozzle such that at rest, at least a portion of the inclined circumferential portion is submerged, whereby rotation of said nozzle causes a sheet of said liquid to be impelled radially outwardly and upwardly along said inclined circumferential surface and across the orifice to separate successive leading tips from the extruded material and form capsules of said material.

4,123,207

UNDERWATER PELLETIZER AND HEAT EXCHANGER DIE PLATE

Vernon E. Dudley, Scott Depot, W. Va., assignor to Gala Industries, Inc., Eagle Rock, Va.

Filed Mar. 29, 1976, Ser. No. 671,363
Int. Cl.[2] B29F *3/08*
U.S. Cl. 425—67 **9 Claims**

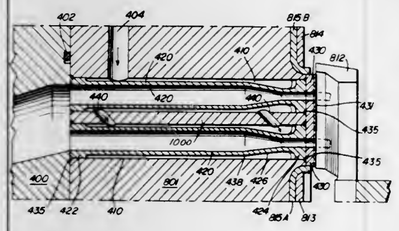
1. In an underwater pelletizer apparatus for extruding mol-

ten material into a water bath to solidify the material, the improvement comprising:

a solid die plate of substantial mass and having a plurality of spaced channels formed longitudinally therethrough, the channels extending completely through said die plate, solid portions of the die plate lying between the channels and defining walls of the channels, said solid portions being substantially continuous between adjacent channels, the die plate further having a plurality of passageways formed in said solid portions interconnecting the spaced channels;

a tubular member disposed within each of the spaced channels, the outer walls of each of the tubular members being spaced at least over central portions thereof from the walls of the channel in which said tubular member is disposed, each tubular member having a longitudinal opening formed therein, the opening communicating at a first end of the member with the water bath, the first end of each tubular member having a first enlarged portion which is contiguous about perimetric portions thereof to portions of the walls of said channel at the end of said channel adjacent said first end of said tubular member, each tubular member further having a second enlarged portion of the other end thereof contiguous to the walls of said channel at the end of said channel opposite said first end of said tubular member:

steam inlet means for directing a relatively heated fluent material into the portions of the spaced channels be-



tween the walls of said channels and the outer walls of the tubular members disposed therein, and through the passageways formed in the solid portions of the die plate to exchange heat with the tubular members and body portion of the die plate including said solid portions lying between the channels and defining the walls thereof;

steam outlet means for directing the heated fluent material from the spaced channels;

means for directing the molten material into and through the openings in the tubular members into the water bath; and,

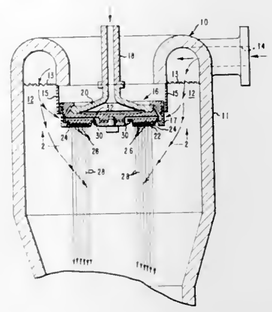
means for cutting the now-solidified molten material entering the water bath into substantially uniformally sized pellets, the molten material being maintained in a molten state throughout passage thereof through the tubular members due to heat exchange through walls of the tubular members including the first-mentioned enlarged portions thereof proximous to the water bath, the die plate including the solid portions lying between the channels and defining the walls thereof and the enlarged portions of the tubular members acting as means to retain heat for exchange with the molten material in heat sink fashion, and particularly to retain heat for transfer to the molten material at the first ends of the tubular members proximous to the water bath to present solidification of said molten material prior to entry thereof into the water bath.

4,123,208

DRY SPINNING PACK ASSEMBLY

Petrus Klaver, Waynesboro, Va., and Jacob G. Steenhof de Jong, Giessenburg, Netherlands, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1977, Ser. No. 783,454
Int. Cl.[2] B29F *3/08*
U.S. Cl. 425—72 S **3 Claims**



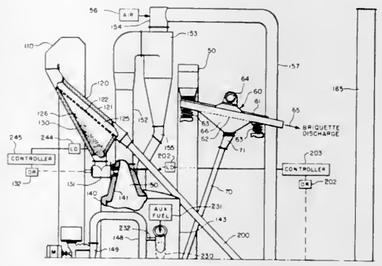
1. In an apparatus for spinning filaments that includes a spinning pack located in a chamber supplied with gas for impinging against and flowing through filaments extruded in a downward direction from the bottom surface of said spinning pack in concentric rings surrounding a central portion of said bottom surface, said spinning pack having a peripheral surface exposed to the gas in said chamber, the improvement comprising: a passage connecting said peripheral surface and said central portion of said bottom surface to provide a flow passage through said spinning pack for said gas, whereby a portion of the gas is aspirated from said chamber through said passage downwardly to the central portion of said bottom surface for impinging the innermost of said concentric rings as such filaments are being extruded.

4,123,209

BRIQUETTING PLANT

James E. Moore, 1401 Meadow La., Glenview, Ill. 60025

Filed Apr. 18, 1977, Ser. No. 788,639
The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.
Int. Cl.[2] B29B *3/00, 1/00*
U.S. Cl. 425—74 **37 Claims**



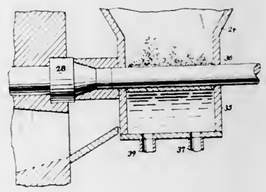
1. A plant for hot briquetting feed material consisting of particulate materials containing heat-softenable matter and for cooling the resulting briquettes comprising, in combination, a low temperature feed/briquette heat exchanger in the form of a tumbler having an input and an output, a low temperature screen at the output, an intermediate temperature feed/-briquette heat exchanger in the form of a tumbler having an input and an output and an intermediate temperature screen at the output, a furnace in the form of a fluid bed reactor having an input and an output, a roll type compactor at the output of the furnace, means for feeding the feed material to the plant in succession through the low and intermediate temperature heat exchangers and thence into the furnace, means for feeding hot briquettes from the compactor in succession through the intermediate and low temperature heat exchangers for progressive heating of the feed material and for discharge of the briquettes from the low temperature screen in substantially cooled condition.

4,123,210

BRIQUETTE FORMING APPARATUS

Albert C. Schulz, Hudson, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 3, 1977, Ser. No. 839,063
Int. Cl.[2] B30B *11/02*
U.S. Cl. 425—78 **6 Claims**



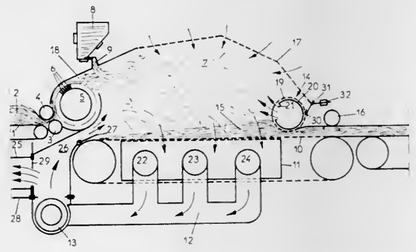
1. Briquette forming apparatus for compressing uniformly dense briquettes from a quantity of hot metallic chips, said apparatus including a chip-box assembly with horizontally aligned apertures adapted to receive said chips, an annular forming die carried by said chip-box in alignment with the horizontally aligned apertures, an anvil with a convex head horizontally aligned with the annular die, means supporting the convex' anvil independent from the chip-box assembly, means for moving the chip-box and die assembly horizontally against said convex anvil, and a ram movable through the chip-box and annular die adapted to compress a quantity of metallic chips in said die against the convex anvil.

4,123,211

APPARATUS FOR MAKING A BONDED FELT WEB

Bernard Rudloff, 30, avenue Charles de Gaulle, Ribeauville (Haut-Rhin), France

Filed Jun. 28, 1976, Ser. No. 700,348
Claims priority, application France, Jun. 30, 1975, 75 21619
Int. Cl.[2] B29C *13/00;* **D04H** *1/60*
U.S. Cl. 425—82.1 **5 Claims**



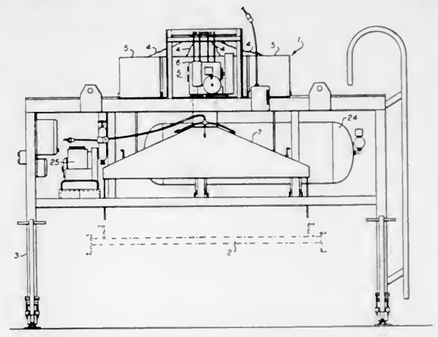
1. An apparatus for making non-woven webs comprising a feeding conveyor, a pair of fluted rollers to which fibres are fed by said feeding conveyor, a device for separating said fibres supplied thereto from between said fluted rollers, a mixing chamber receiving the separated fibres from said device, a sprinkling device for sprinkling powdered bonding resins into said mixing chamber through a channel, a perforated collecting conveyor forming the lower part of said mixing chamber, a suction chest disposed below an operative portion of said collecting conveyor, a duct leading from said suction chest, a suction fan drawing air through said duct from said suction chest, a levelling device for equalising the thickness of the wadding layer formed by said fibres deposited upon said collecting conveyor, and a flattening roller acting upon the wadding layer leaving said levelling device, the apparatus being characterised in that the device for separating the fibres is constituted by a carding drum provided with points.

4,123,212

APPARATUS FOR UNIFORMLY DISTRIBUTING GLASS FIBERS

Matthew R. Piazza, Nichols, Conn., assignor to Maso-Therm Corporation, Bridgeport, Conn.

Filed Jun. 27, 1977, Ser. No. 810,451
Int. Cl.[2] B29D *7/08*
U.S. Cl. 425—82.1 **5 Claims**



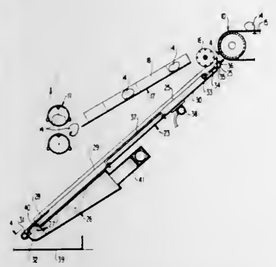
1. An apparatus for incorporating a substantially uniform distribution of glass fibers onto a forming bed of wet cementitious material, the apparatus comprising: a bed of wet cementitious material; means receptive of a multiplicity of continuous strands of glass fibers for chopping same into desired lengths; hood means downstream of the chopping means and receptive of glass fibers dropped therein for dispersing same to form a random uniform matrix and uniformly distributing same along a desired width of the bed, comprising means defining a first chamber for receiving chopped glass fibers dropped into the hood means, means defining a second chamber in communication with said first chamber and downstream thereof for dispersing the glass fibers received from the first chamber to effect the random uniform matrix thereof along the width of the bed and including means for creating a turbulence therein, and means defining a third chamber having an adjustable length elongated outlet aperture extending across a desired width of the bed and disposed downstream of the second chamber and receptive of the dispersed glass fibers in the random uniform matrix to substantially isolate the fibers therein from the turbulence in the second chamber; means mounting the hood and chopping means above the bed for movement relative thereto along the length of the bed for substantially uniformly distributing the glass fibers therein on the desired width of the bed by dropping same through the aperture during relative movement along the length of the bed; and means for distributing the uniform distribution of fibers in a random uniform matrix within the cementitious material.

4,123,213

AUTOMATIC BAKERY PRODUCT DUSTING FLOUR RECYCLING SYSTEM

William D. Laramore, Rte. 1, Summerhill Rd., Thomasville, Ga. 31792

Filed May 31, 1977, Ser. No. 802,056
Int. Cl.[2] A21C *9/04*
U.S. Cl. 425—104 **7 Claims**



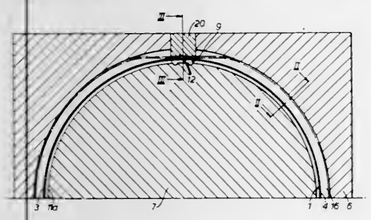
1. In bakery product manufacturing apparatus of the type in which bakery products are transferred from a dough dividing and rounding machine to a dough ball aging and panning machine by means of an inclined transfer chute disposed between the two machines, and said apparatus further including a dusting flour holding tank having a lower end flour sifting means above said transfer chute, the improvement comprising a pair of enclosure side walls bridging the transfer zone between said two machines and being disposed on opposite sides of said transfer chute, said enclosure side walls having inclined lower edges below the transfer chute, a correspondingly inclined dusting flour chute immediately below the enclosure side walls and substantially abutting said inclined lower edges, said dusting flour chute extending somewhat above and below the upper and lower ends of said transfer chute, a sifting screen substantially covering the top of the dusting flour chute in spaced relation to the bottom wall thereof, the dusting flour chute being open at its lower end, a vacuum nozzle mounted immediately below the bottom wall of the dusting flour chute and having a lower end intake disposed in direct communication with the lower open end of the dusting flour chute, and excess dusting flour recycling means interconnecting said vacuum nozzle with said dusting flour holding tank.

4,123,214

CONTAINERS

Brian L. C. Sutch, Thames Ditton, England, assignor to Airfix Industries Limited, London, England

Continuation of Ser. No. 581,670, May 28, 1975, abandoned.
This application May 26, 1977, Ser. No. 801,005
Claims priority, application United Kingdom, May 28, 1974, 23663/74
Int. Cl.[2] B29F *1/10*
U.S. Cl. 425—129 R **3 Claims**



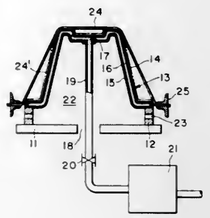
1. Apparatus for making a composite container of sheet material and injection moulded plastic comprising a core tool and a cavity tool which together define a blank cavity to receive blank sheet material in the shape of the container to be produced, one of the tools including a seam cavity to form a seal between juxtaposed edges of the blank material on one face of the blank material and a feed cavity communicating with the seam cavity, and the other tool including a bead mould channel, to which the face of the sheet material remote from the seam will be exposed, overlying the feed channel and in the absence of the blank sheet material the bead mould channel communicates with the feed channel and with the seam cavity, gate means in said cavity tool for injecting plastic material into said seam cavity and thence into said feed cavity to force the overlying portion of the sheet material into said bead mould cavity, and means reducing the depth of the bead mould channel, at least during the initial stages of injecting material, in the area where said channel overlies the seam cavity so as to prevent injected material in that area from spreading apart the juxtaposed edges of a blank of sheet material and flowing to the exterior of the blank material at those edges.

4,123,215

VACUUM FORMING APPARATUS

Tadahide Madenokoji, Tokyo, Japan, assignor to Kodama Kagaku Kohyo K. K., Tokyo, Japan

Continuation of Ser. No. 416,800, Nov. 19, 1973, abandoned.
This application Jun. 28, 1976, Ser. No. 700,186
Claims priority, application Japan, Nov. 22, 1972, 47-117307
Int. Cl.[2] B29C *17/04*
U.S. Cl. 425—388 **17 Claims**



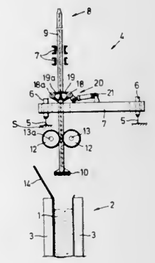
1. A vacuum forming mold for use in a vacuum forming operation in which a heated and softened plastic sheet secured in place is shaped which comprises a first shaped mold plate including an exterior surface against which said secured plastic sheet is disposed and an oppositely directed interior surface, a second mold plate disposed in juxtaposed spaced relation to at least a shaped portion of said interior surface of said first shaped mold plate forming an enclosed hollow space therebetween, said second mold plate having at least one opening, a vacuum source, a connecting pipe extending between said vacuum source and said at least one opening in said second mold plate so that a vacuum can be drawn through the enclosed hollow space, a plurality of openings provided in the first mold plate so that the vacuum established in the enclosed hollow space can draw said secured plastic sheet against the exterior surface of said first shaped mold plate, reinforcing members located within the enclosed hollow space extending between the interior surface of said first mold plate and the facing surface of said second mold plate for preventing the deformation of said first and second mold plates when a vacuum is drawn through the enclosed hollow space, said reinforcing members subdividing the enclosed hollow space into a plurality of subspaces and said reinforcing members having openings therethrough intercommunicating the subspaces, and means for moving said exterior surface of said first mold plate against said secured plastic sheet wherein said means for moving said exterior surface of said first mold plate includes a bed member, with an opening provided therein, so as to form an inner space disposed between said bed member and said second mold plate, such that said inner space is communicated to atmosphere through said opening provided in said bed member and wherein said connecting pipe extends through said opening and is partially disposed within said inner space.

4,123,216

COAL COMPACTING APPARATUS

Kurt Leibrock, Fürstenhausen, Fed. Rep. of Germany, assignor to Saarbergwerke Aktiengesellschaft, Saarbrucken, Fed. Rep. of Germany

Filed Jan. 25, 1977, Ser. No. 762,420
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1976, 2603677
Int. Cl.[2] B28B *1/04*
U.S. Cl. 425—431 **11 Claims**



1. In an apparatus for compacting coal into a cake for use in coke ovens, a combination comprising a pounding box for receiving coal to be compacted; a plurality of punners each having a foot and a rod formed with a web and projecting upwardly from the foot; means mounting said punners above said pounding box for repeated lifting relative to the pounding box and dropping onto the coal in the same; a mechanism for retaining the punners in raised position upon completion of the compacting operation, said mechanism comprising a pair of pivoted locking cams mounted at opposite sides of each of said punner rods, and each cam of a respective pair being mounted for swinging movement about a pivot and having an arcuate gripping contact surface which subtends an angle smaller than 90° at the associated pivot, and said cams being mounted on respective shafts with freedom of limited angular lost motion relative thereto; and means operatively connected with said cams for mechanically swinging the cams of each pair into gripping engagement with the opposite sides of said web of the associated rod for retaining the same in the raised position thereof.

4,123,217

APPARATUS FOR THE MANUFACTURE OF A THERMOPLASTIC CONTAINER WITH A HANDLE

Stefan Fischer, Lohmar; Dieter Wollschläger, Königswinter; Helmut Scharrenbroich, Neunkirchen-Seelscheid, and Rainer Fischer, Lohmar, all of Germany, assignors to Maschinenfabrik Johann Fischer, Lohmar, Germany

Continuation of Ser. No. 635,066, Nov. 25, 1975, abandoned.
This application Jul. 11, 1977, Ser. No. 814,759
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1974, 2456723; Oct. 8, 1975, 2545014
Int. Cl.[2] B29D *23/03*
U.S. Cl. 425—525 **16 Claims**

1. A blow molding apparatus for forming containers with handles from thermoplastic material, comprising in combination:

(a) two complementary mold halves, each defining a cavity which together define the container outline when the mold halves are engaged, and each including a channel which extends through the wall of the mold half and terminates in the cavity, said channels being in alignment when the mold halves are engaged;

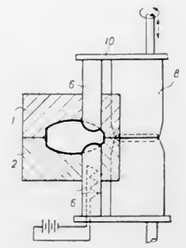
(b) a parison forming means for producing and inserting a parison between the mold halves, said parison forming means being located in proximity to the mold halves so that the parison is held in the cavities by the mold halves when the mold halves are engaged;

(c) means for supporting said mold halves such that the mold halves are engaged when the parison has been inserted by said parison forming means between said mold halves;

(d) blow molding means for inflating the thermoplastic material in the closed mold halves;

(e) a pair of complementary platforms, each having mounted thereon in spaced relationship a punch and a plunger and each located in proximity to a respective one of the mold halves for insertion of said punch and said plunger into the channel of the respective mold half, each punch and plunger defining an indexing position of its respective platform, with both punches and both plungers having a substantially similarly configured free end for engaging the thermoplastic material, and with both punches and both plungers being dimensioned for reception within the channel of its associated mold half; and

(f) drive means for each platform, said drive means engaging their respective platforms for rotation between their indexing positions and reciprocation toward and away from their associated mold halves at each of their indexing positions, wherein:



(i) the indexing positions of each platform are further defined by the respective alignment of the punches and plungers with their associated mold half channels;

(ii) the plungers extend through the aligned channels of their associated mold half and engage the thermoplastic material in the cavity of their associated mold half when the mold halves are engaged and as a result of the platforms being moved by their drive means toward their associated mold half, to thereby form aligned bulges in the thermoplastic material during the process of blow molding the material in the cavities; and

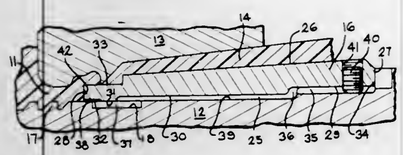
(iii) the punches extend through the aligned channels of their associated mold half and engage the thermoplastic material in the cavity of their associated mold half at the aligned bulges when the mold halves are engaged and as a result of the platforms being moved by their drive means toward their associated mold half, to thereby squeeze together the thermoplastic material in the region of the bulges, and consequently joining the thermoplastic material forming the bulges, to form spaced adjacent continuous surfaces of the container and handle.

4,123,218

BLOW PIN ASSEMBLY WITH VENTING MEANS

Thomas J. Krall, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 8, 1977, Ser. No. 813,854
Int. Cl.[2] B29D *23/03*
U.S. Cl. 425—535 **5 Claims**



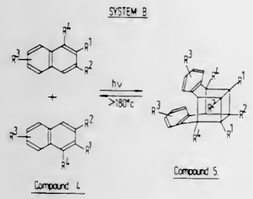
1. A blow pin assembly for forming a bunghole in a plastic parison and for supplying blow air to expand such parison into a hollow container, comprising a generally cylindrical pin body having an axial blow air passage means extending therethrough and having a projecting end means for inserting into an end of such parison, thread means formed in said projecting end means for molding bunghole threads in such parison end, a tubular sleeve mounted coaxially on said pin body, said sleeve having an annular end means adjacent said thread means and facing said projecting end means for molding a flat annular sealing surface in such parison end adjacent such bunghole threads, and means between said sleeve and said pin body for venting trapped air from between such parison, said thread means and said annular end means during molding.

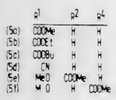
4,123,219

CHEMICAL STORAGE OF RADIANT ENERGY

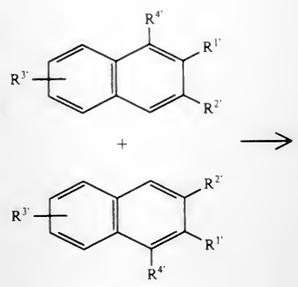
Wolfgang H. F. Sasse, Malvern East, and Tsutomu Teitei, Mulgrave, both of Australia, assignors to Commonwealth Scientific and Industrial Research, Cambell, Australia

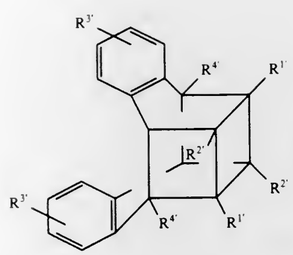
Division of Ser. No. 512,978, Oct. 7, 1974, Pat. No. 3,994,675. This application Sep. 17, 1976, Ser. No. 724,118
Claims priority, application Australia, Oct. 8, 1973, 5132/73
Int. Cl.[2] F24J *3/02*
U.S. Cl. 432—1 **10 Claims**





1. A method for generating heat which comprises exposing compounds of formula (4) to radiant energy to form a compound of formula (5)





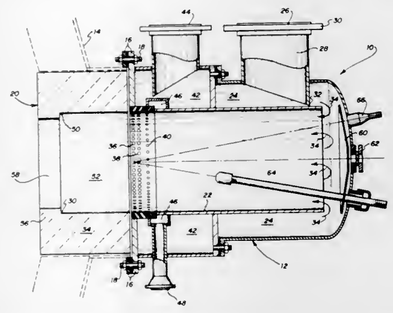
wherein in formula (4) and (5) $R^{3'}$ is hydrogen, an alkoxy group (up to C3) or an ester (COOR, where R is methyl, ethyl, or propyl); each of $R^{1'}$, $R^{2'}$ and $R^{4'}$ is hydrogen, alkoxy (up to C3), ester (COOR where R is methyl, ethyl or propyl), nitrile, alkyl (up to C4), fluoro or chloro provided that one or two of the groups $R^{1'}$ to $R^{4'}$ is hydrogen; or anhydrides of the naphthoic acids corresponding to the compound (4); heating compound (5) to release the energy as heat and reform the compounds (4).

4,123,220

GAS MIXER AND REACTOR

Desmond H. Bond; George W. Taggart, both of Dallas, and Kurt S. Jaeger, Hurst, all of Tex., assignors to Ford, Bacon & Davis Texas, Inc., Garland, Tex.

Division of Ser. No. 508,674, Sep. 23, 1974, Pat. No. 4,003,856. This application Mar. 31, 1976, Ser. No. 672,410
Int. Cl.[2] F23D *15/02*
U.S. Cl. 431—353 **24 Claims**



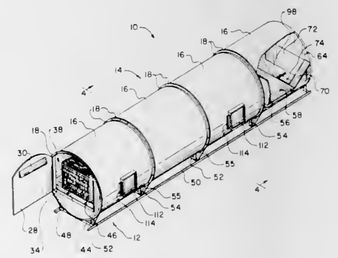
1. A gas mixer and reactor comprising:
(a) an elongated gas flow chamber having a first end which carries an inlet thereto and a second end which carries an outlet therefor;
(b) a thermal reaction chamber communicating with said outlet at said second end of said elongated gas flow chamber;
(c) injection means for injecting gas annularly into said elongated gas flow chamber through said inlet thereof towards said outlet thereof from points uniformly about the inner periphery of said elongated gas flow chamber;
(d) gas nozzle means positioned adjacent said second end and around said elongated gas flow chamber, and directed into said elongated gas flow chamber and toward said thermal reaction chamber; and
(e) an inset annular step in said thermal reaction chamber spaced from said outlet of said elongated gas flow chamber.

4,123,221

BULK TOBACCO CURING AND DRYING STRUCTURE

Tiras J. Danford, Lewiston, N.C., assignor to Harrington Manufacturing Company, Lewiston, N.C.

Filed Dec. 27, 1976, Ser. No. 754,586
Int. Cl.[2] F27B *9/04;* **A24B** *1/02*
U.S. Cl. 432—152 **15 Claims**



1. A bulk tobacco curing and drying structure comprising: a main cylindrical housing structure of an integrated top, side and bottom imperforated cylindrical wall design; said main cylindrical housing structure forming a structurally enclosed drying chamber that is relatively air tight and which includes at least one loading door for allowing bulk tobacco to be placed therein; said main cylindrical housing structure including a plurality of cylindrical sections with each cylindrical section having two ends, and wherein respective ends of said cylindrical sections are joined together such that the cylindrical sections are secured together end to end in axial alignment to form an elongated cylindrical housing structure; bulk tobacco container support means disposed interiorly of said drying chamber and supported by said main cylindrical housing for supporting a plurality of bulk tobacco container means within said curing and drying structure; bulk tobacco containing means for supporting bulk tobacco in said drying chamber and wherein said bulk tobacco containing means is adapted to be supported interiorly of said drying chamber on said bulk tobacco container support means; said cylindrical housing forming a lower plenum enclosure in an area below the lower level of tobacco contained and supported in said bulk tobacco containing means when supported within said drying chamber, said defined lower plenum area being integrally housed by said main cylindrical housing and forming a part thereof; a forced air furnace system operatively associated with said main cylindrical housing for forcing air into said drying chamber and through the bulk tobacco supported in said bulk tobacco containing means for curing and drying the tobacco disposed within the drying chamber, said furnace system heating the forced air as necessary to maintain a desired temperature within the curing and drying chamber of said curing and drying structure; said main cylindrical housing structure, said bulk tobacco container support means, and said bulk tobacco container means being designed so as to cooperate to confine and force vertically moving air from said furnace system to pass through the tobacco contained in said bulk tobacco container means without escaping from the tobacco before passing completely therethrough; and base support structure means engaged with said main cylindrical housing structure for supporting said main cylindrical housing structure above a site of installation, whereby said bulk tobacco curing and drying structure including said base support means and said main cylindrical housing presents an integrally constructed closed drying system that in a complete and self-sufficient bulk tobacco curing and drying system that may be directly placed about an installation site without requiring significant preinstallation preparation such as a preconstructed foundation or concrete slab structure.

4,123,222

PROCESS FOR THE DYEING OR PRINTING OF POLYACRYLONITRILE MATERIAL

Peter Loew, Munchenstein, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

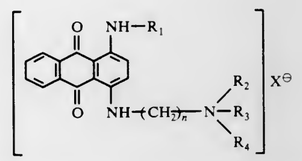
Filed Mar. 16, 1977, Ser. No. 778,655

Claims priority, application Switzerland, Mar. 23, 1976, 3606/76; Nov. 11, 1976, 14215/76

Int. Cl.[2] **C09B** *1/00;* **C07C** *97/12*

U.S. Cl. 8—39 A **5 Claims**

1. Process for the dyeing or printing of polyacrylonitrile materials, which process comprises the use of dyes of the formula (1)



(1)

wherein R_1 represents a low-molecular, straight-chain alkyl group, R_2 and R_3 independently of one another each represent a low-molecular alkyl group, R_4 represents an aralkyl group, n represents 2 or 3, and $X^{\ominus}$ represents a anion.

4,123,223

METAL-MODIFIED POLYPROPYLENE DYED WITH AZOMETHINE DYES DERIVED FROM AN O-HYDROXY AROMATIC ALDEHYDE AND A 2-AMINOPYRIDINE

Raouf Botros, Beech Creek, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

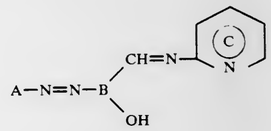
Division of Ser. No. 609,683, Sep. 2, 1975, Pat. No. 4,051,119. This application Jul. 20, 1977, Ser. No. 817,431

The portion of the term of this patent subsequent to Mar. 15, 1994, has been disclaimed.

Int. Cl.[2] **C09B** *29/12, 29/36;* **D06P** *1/18, 3/79*

U.S. Cl. 8—42 D **6 Claims**

1. A dyed polypropylene textile material, the polypropylene being modified with a metal selected from the group consisting of nickel, aluminum and zinc, and the dye being an azomethine dye of the formula:



wherein

A is phenyl, naphthyl, phenyl substituted by up to 3 substituents or naphthyl substituted by up to 2 substituents, said substituents being independently selected from lower alkyl of 1–4 carbons; lower alkoxy of 1–4 carbons; nitro; cyano; fluorine; chlorine; bromine; trifluoromethyl; hydroxyl; RCOO—, where R is alkyl of 1–4 carbons; carboxyl; ROOC—, where R is alkyl of 1–4 carbons; RCO-, where R is alkyl of 1–4 carbons; benzoyl; RCONH-, where R is alkyl of 1–4 carbons; ArCONH-, where Ar is phenyl; or carbamyl, the nitrogen of which is unsubstituted or singly or doubly substituted by alkyl of 1–4 carbons;

B is salicylaldehyde, o-hydroxy -naphthaldehyde, or salicylaldehyde or o-hydroxy-naphthaldehyde substituted by up to 2 substituents independently selected from lower alkyl of 1–4 carbons; lower alkoxy of 1–4 carbons; cyano; fluorine; chlorine or bromine; and

C is 2-aminopyridyl or 2-aminopyridyl substituted by up to 2 substituents independently selected from lower alkyl of 1–4 carbons; lower alkoxy of 1–4 carbons; nitro; chlorine or bromine.

4,123,224

DIAGNOSTIC TEST DEVICE

Morris L. Givner, Pierefonds, and Guenther Schilling, Westmount, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

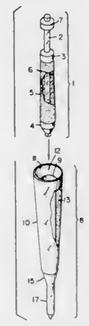
Continuation of Ser. No. 645,860, Dec. 31, 1975, Pat. No. 4,033,723. This application Jun. 21, 1977, Ser. No. 808,587

Claims priority, application Canada, Dec. 17, 1975, 242214

The portion of the term of this patent subsequent to Jul. 5, 1994, has been disclaimed.

Int. Cl.[2] **B01D** *31/00;* **G01N** *21/04, 33/16*

U.S. Cl. 422—59 **22 Claims**



1. A diagnostic test device suitable for the detection of human gonadotrophins, luteinizing hormone, or follicle-stimulating hormone in serum or urine, which comprises:

(a) chamber means including an ultrafiltration membrane for concentration of the urine or serum and means for collecting the concentrate;

(b) means for transferring the collected concentrate to a detection receptacle means;

(c) detection receptacle means for the detection of human gonadotrophins, luteinizing hormone, or follicle-stimulating hormone in the concentrate by immunological means; and

(d) wherein said chamber means including an ultrafiltration membrane has been prewashed with a solution of protein.

4,123,225

COMBUSTIBLE GAS DETECTORS

Eric Jones, Chelmsford, and Rodney P. Townsend, Harlington, both of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Jul. 5, 1977, Ser. No. 812,695

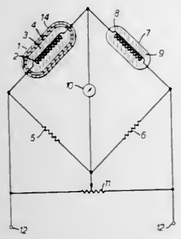
Claims priority, application United Kingdom, Jul. 6, 1976, 27961/76

Int. Cl.[2] **B01J** *23/40, 23/58;* **G01N** *27/16, 31/12*

U.S. Cl. 422—98 **17 Claims**

1. A gas detector comprising a heatable wire filament em-

bedded in a pellet and provided with an outer layer of non-catalytic porous material tending to prevent non-volatile resi-



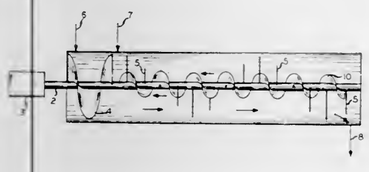
dues from reaching catalytically active regions of said detector.

4,123,226

METHOD EMPLOYING A MIXING DEVICE WITH INTERNAL RECYCLE

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 26, 1977, Ser. No. 762,690
Int. Cl.[2] B01F *7/04, 7/08;* **C09C** *1/58*
U.S. Cl. 23—314 **2 Claims**



1. In a method of mixing in an elongated horizontally disposed mixing zone comprising an agitating section, the steps which comprise continuously feeding to a locus in one end of said zone, materials to be mixed therein, maintaining in said zone a mass of materials to be mixed therein, passing the mass thus formed through said zone to a withdrawal locus at the other end of said zone and there withdrawing at least partly-mixed material from said zone, the improvement which comprises continuously impelling rearwardly at least a portion of said mass substantially only in the surface of said mass which is in the axial section of said zone as said mass moves from one locus of said zone to the other towards said withdrawal locus, thus moving said portion of said mass in said surface in said axial section of the said zone in counter-current flow with the overall movement of the mass through said zone.

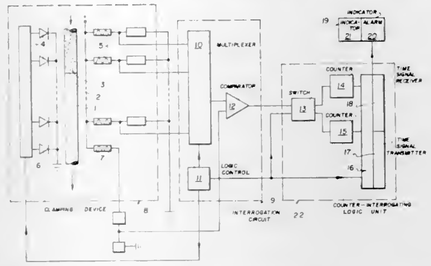
4,123,227

METHOD AND APPARATUS FOR EVALUATING CHANGES IN INDICATOR TUBES

Ulrich Heim, Reinfeld; Kurt Leichnitz, Gross Grönau, and Peter Wiesner, Ratekau, all of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed Jun. 24, 1977, Ser. No. 809,674
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1976, 2628790
Int. Cl.[2] G01N *21/26, 21/28, 31/06*
U.S. Cl. 23—232 R **10 Claims**

1. A method of gas measuring and warning using light barriers one of which is a reference light barrier located at spaced locations along the length of an indicator tube which has a substance therein which varies in light intensity and/or color to provide a gas value in accordance with a gas of a preselected type which is passed therethrough and wherein the light barriers are formed by a light source for directing light across the indicator tube and a light detector for sensing the light, comprising directing a gas to be measured through the indicator tube, directing light from the light source of the barriers through the indicator tube and sensing the intensity of the light which is passed through the indicator tube with the light detectors at the locations of the barriers, converting the light intensity sensed at the barriers into a logic signal by continuously comparing the light intensity sensed at the reference light



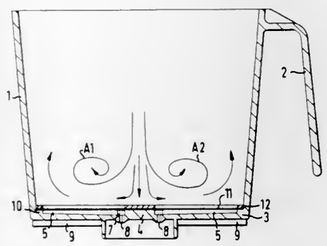
barrier with that sensed at the remaining light barriers, alternately storing the sensed logic signals into two separate counters, periodically determining the difference of the values in said two counters and using the determined difference to start a time signal transmitter and a time signal receiver, and whenever a new difference of the counters results from subsequent determinations of the difference in the counters which new difference produces a new signal, using the new signal to start an alarm.

4,123,228

FILTERS FOR LIQUIDS

Roland Frei, Widnau; Franz Gutmann, Rebstein; Peter Sieber, and Peter Koeppel, both of Widnau, all of Switzerland, assignors to Plaston AG, Kunststoffwerke Hans Frei & Sohne, Widnau, Switzerland

Filed Aug. 15, 1977, Ser. No. 824,694
Claims priority, application Switzerland, Mar. 21, 1977, 3537/77
Int. Cl.[2] B01D *59/22*
U.S. Cl. 422—274 **7 Claims**



1. Apparatus for leaching soluble components from particulate solids by means of a liquid, said apparatus comprising:
a container for said solids;
a base constituting part of said container and having a generally horizontal generally planar inner face;
a plurality of radial ribs on said inner face extending axially into said container and having upper surfaces lying in a plane approximately parallel to and closely spaced from the plane of said inner face, adjacent pairs of ribs defining passageways for radial flow of liquid;
a support member positioned centrally on said inner face and extending axially into said container and having a flat upper surface lying in the plane of said upper surfaces of said ribs;
a generally planar filter element of thin sheet material supported within said container on said upper surfaces of said ribs and on said upper surface of said support member in spaced parallel relationship to said base; means defining an imperforate, flat surface disposed above said support member and said filter element, said support member, ribs, filter element and said imperforate flat surface cooperatively functioning to provide a toroidal circulation sufficient to (a) significantly reduce compacting of said solids (b) promote formation of a filter cake of said solids (c) significantly reduce clogging of said filter element by said solids, and (d) substantially promote recovery of said soluble components from said particulate solids, when said liquid is poured into said container so as to impinge on said imperforate flat surface, and
at least one filtrate drainage opening in said base.

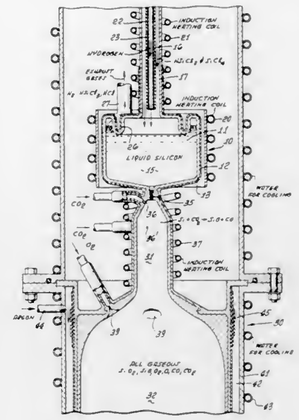
4,123,229

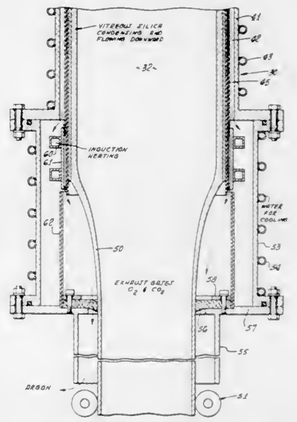
METHOD AND APPARATUS FOR MAKING VITREOUS SILICA

Justice N. Carman, Tarzana, Calif., assignor to John S. Pennish, Los Angeles, Calif., a part interest

Division of Ser. No. 684,108, May 7, 1976, Pat. No. 4,054,641. This application Jun. 6, 1977, Ser. No. 803,649
Int. Cl.[2] B01J *10/00;* **C01B** *33/12*
U.S. Cl. 422—199 **11 Claims**

1. In an apparatus for making vitreous silica, the combination of:
a first chamber for liquid silicon;
means for heating said first chamber;
a second elongate chamber disposed in a generally vertical position;
means for directing a stream of liquid from said first chamber into an upper section of said second chamber;
means for heating said upper section of said second chamber;
means for directing a stream of carbon dioxide into said upper section for mixing with said stream of liquid;
means for directing a stream of oxygen into a lower section of said second chamber below said upper section for mixing with the material moving down from said upper section; and





means for cooling the wall of said second chamber at said lower section for condensing silicon dioxide on the inner surface thereof.

4,123,230

SULFUR REMOVAL FROM COAL

Chalmer G. Kirkbride, 13 Elk Forest, R.D. #2, Elkton, Md. 21921

Filed Sep. 7, 1977, Ser. No. 831,170
Int. Cl.[2] C10L *9/10;* **C10B** *57/00;* **C10C** *1/08*
U.S. Cl. 44—1 R **11 Claims**

1. Process for reducing the sulfur content of coal which comprises subjecting a mixture of dry coal and hydrogen to microwave energy at a temperature of about 40° F. to about 300° F. for a time of not more than 10 minutes, and recovering coal having a reduced sulfur content as the product of the process.

4,123,231

CLEAR, BRIGHT OIL-SOLUBLE ALUMINUM-CONTAINING COMPOSITIONS

David B. Guthrie, and Donald M. Leiendecker, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 4, 1977, Ser. No. 765,725
Int. Cl.[2] C10L 1/10; C10M 1/10; C10L 1/12
U.S. Cl. 44—51 11 Claims

1. A process for preparing clear, bright, water-free, high aluminum-containing dispersions in hydrocarbons at at least about 20% aluminum content which is characterized by the step of dispersing alumina powder, prepared by the water hydrolysis of aluminum alkoxides, with an oil soluble sulfonic acid in a hydrocarbon solvent in the presence of aqueous mineral acid the anion of which is monovalent or salts thereof capable of generating said mineral acid in situ, said monovalent mineral acid being so selected and present in an amount sufficient to obtain the water-free dispersion substantially free of residues.

4,123,232

POUR POINT DEPRESSANTS

Kenneth A. Frost, Jr., San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 29, 1977, Ser. No. 811,236
Int. Cl.[2] C10L 1/22
U.S. Cl. 44—72 8 Claims

1. A fuel composition comprising a distillate fuel and a pour-point depressant amount of a material consisting essentially of the reaction product of

(1) an epoxidized alpha-olefin containing from 14 to 30 carbon atoms, and

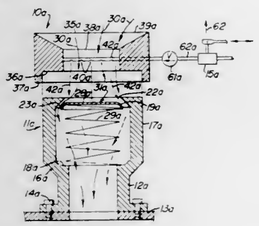
(2) a nitrogen-containing compound selected from an amine R_2NH wherein R contains from 6 to 30 carbon atoms, a polyamine $H_2N—(CH_2CH_2N)_x—CH_2CH_2—NH_2$ wherein x is 0 to 4, and a hydroxyalkylamine $HO—(CH_2)_y—NH_2$ wherein y is 1 to 5.

4,123,233

FUEL MIXTURE CHARGE DEVICE

Albert A. Mannino, 300 Chester Ave., Moorestown, N.J. 08057

Filed Jul. 11, 1977, Ser. No. 814,698
Int. Cl.[2] F02M 7/24, 13/08
U.S. Cl. 48—180 C 4 Claims



1. A fuel mixture charge device for association with the combustion chamber inlet of an internal combustion engine, said device comprising a longitudinally extending air inlet conduit having inlet and outlet ends, outlet end connection means on said conduit for connection to the combustion chamber inlet in fluid communication therewith, the inlet end of said conduit being connected with the ambient air for conducting air through said conduit to the combustion chamber, a one-way valve in said inlet end of said conduit for passing ambient air into said conduit, resilient means associated with said one-way inlet valve urging the latter closed to permit opening upon reduced pressure in said conduit, for passing air according to engine requirements and a fuel feeding needle valve associated with said conduit for feeding fuel to said conduit and comprising a hollow needle valve body having an inlet connected to a fuel supply pipe and an internally tapering outlet, and elongate needle valve element spaced within the interior of said valve body and longitudinally shiftable therein, an externally tapering end on and movable with said valve element within said internally tapering outlet toward and away from conforming closing engagement therein, a needle valve spring urging said needle valve element toward said closing engagement, and variable manual operating means connected to said needle valve element for selective positioning thereof, and a funnel on the air inlet end of said conduit for directing air into the latter, said fuel feeding needle valve being connected to said funnel for dispensing fuel into the air entering said conduit, said one-way valve comprising a seat in said conduit adjacent to and facing inwardly from its inlet end, and a valve element movable into and out of closing engagement with said seat, and said resilient means comprising bearing means in said conduit inwardly of and facing toward said seat, and resilient compression means interposed between said bearing means and valve element to yieldably urge the latter toward said closing engagement, said bearing means comprising a circumferential internal shoulder in said conduit facing toward said valve element, and said resilient compression means comprising a coil compression spring interposed between said shoulder and valve element, said spring being seated on said shoulder for passage of the air and fuel mixture radially through said spring.

4,123,234

ALKANOL AMINE PHOSPHATE FOR IMPROVING ELECTROSTATIC PRECIPITATION OF DUST PARTICLES

Peter H. Vossos, Lisle, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 12, 1977, Ser. No. 859,419
Int. Cl.[2] B03C 3/00
U.S. Cl. 55—5 2 Claims

1. In a method of improving the conductivity of particles entrained in a stream of particle-laden gas formed by the burning of coal, which particles are collected by an electrostatic precipitator the improvement of which comprises treating said gas containing particles prior to contact with the electrostatic precipitator at a temperature not greater than about 650° F. with a sufficient amount of resistivity-decreasing an alkanol amine phosphate.

4,123,235

SEPARATION OF CARBON BLACK BY THE USE OF AN OXYGEN CONTAINING HIGHER BOILING PRODUCT

Heinz Giesen; Josef Hibbel; Willi Jansen, and Sebastian Speth, all of Oberhausen, Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 602,238, Aug. 6, 1975, abandoned. This application Jul. 29, 1977, Ser. No. 820,341
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1974, 2440473
Int. Cl.[2] B01D 11/02
U.S. Cl. 55—85 9 Claims

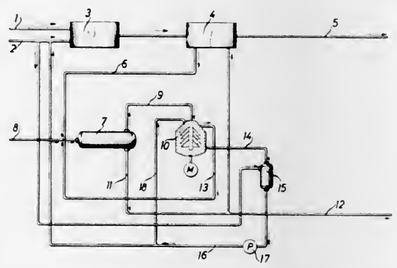
1. A process for separating carbon black from a liquid containing it comprising

(a) adding 20 to 100 parts of at least one oxygen containing higher boiling product which is the non-volatile residue produced as a by-product of the oxo-synthesis per part of carbon black to said liquid to form a first mixture and whereby said carbon black passes into the oxygen containing product phase to form an admixture

(b) passing said first mixture into a settling zone,

(c) separating said admixture from said liquid by the method comprising

(1) permitting said admixture to form a layer upon the surface of said liquid, and



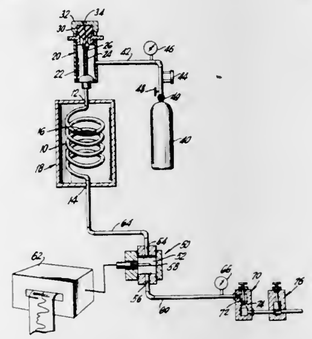
(d) passing said layer through a disk centrifuge having a plurality of conical disks.

4,123,236

GAS CHROMATOGRAPH DEVICE

T. Hirschfeld, Framingham, and David C.A.G. Brown, Cambridge, both of Mass., assignors to Block Engineering Inc., Cambridge, Mass.

Filed Feb. 28, 1975, Ser. No. 553,989
Int. Cl.[2] B01D 15/08
U.S. Cl. 55—197 4 Claims



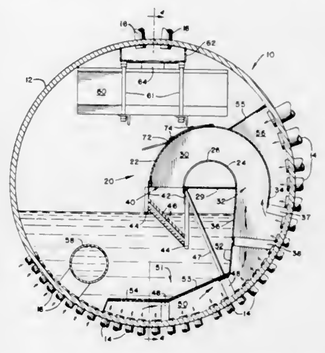
1. An improved gas chromatograph apparatus comprised of a pressure resistant gas chromatograph column, the column having an inlet opening at a first end and an outlet opening at a second end, an injection port means mounted to the column inlet opening, a reservoir of pressurized carrier gas, adjustable inlet pressure regulation means connecting the carrier gas reservoir to the injection port, the injection port means being provided with means for combining sample gaseous mixtures with the pressurized carrier gas and introducing these gases under pressure into the inlet opening of the column, adjustable flow restrictive means, the flow restrictive means being mounted to the column outlet opening, the flow restrictive means being adapted to adjust the pressure within the column in the vicinity of the column outlet opening from 1 atmosphere absolute upward to at least 50 atmospheres absolute pressure, whereby with appropriate adjustment of the flow restrictive means chromatograph separations of sample gas mixtures may be conducted within the column at absolute pressures measured at the column outlet opening in the range upward from one atmosphere to above 50 atmospheres absolute pressure, whereby the velocity of the gases flowing through the column may be adjusted to conform to a preselected value by simultaneously adjusting the flow restricting means at the outlet opening to fix the desired column pressure and adjusting the inlet pressure regulation means to fix the desired carrier gas column pressure, the aforesaid chromatograph apparatus further being a sample collection chamber, the sample collection chamber having an input port and an output port, the sample collection chamber input port being connected to the column outlet opening and the sample collection chamber output port being connected to the adjustable flow restriction means, a stop valve, the stop valve having a first and a second side, the first side being mounted to the flow restriction means and the second side venting to the atmosphere, whereby eluted pressurized samples of gas may be collected at low gas velocities in the sample collection chamber.

4,123,237

LOW PRESSURE DROP GIRTH BAFFLE STEAM SEPARATOR

Albert J. Zipay, Clifton, and Walter P. Gorzegno, Morristown, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Mar. 25, 1977, Ser. No. 781,392
Int. Cl.[2] B01D 19/00, 53/24
U.S. Cl. 55—205 17 Claims



1. A vapor and liquid separator for separating vapor and liquid from a mixture thereof, comprising:

a semi-cylindrical, inner member having a cut-out disposed on a portion of the curved surface;

a semi-cylindrical, outer member concentrically positioned with respect to said inner member to define a curved separation chamber between said inner and said outer members;

an inlet flow passage disposed tangentially with respect to said inner and outer members for the introduction of a mixture of vapor and liquid into said separation chamber;

a plate joining the edges of said inner member to form a flow passage for the separated vapor;

an outlet flow passage directed tangentially with respect to said inner and outer members for the discharge of separated liquid from said separation chamber; and

a perforated member disposed across said outlet flow passage to dissipate the flow velocity of the separated liquid,

whereby the mixture of vapor and liquid introduced into said inlet flow passage impinges upon the inner surface of said outer member, and centrifugal force causes the liquid to separate from the vapor, with the liquid collecting on the inner surface of said outer member and being discharged through said outlet flow passage, and the vapor being discharged through said cutout in said inner member.

6. In combination with a vapor and liquid drum of a vapor generator, said drum having a chamber disposed adjacent one side of the drum for receiving a vapor and liquid mixture, a separator for separating vapor and liquid from the mixture, said separator comprising:

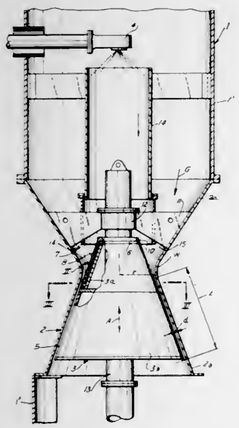
a semi-cylindrical, inner member having a longitudinal cutout disposed on a portion of the curved surface;
a semi-cylindrical, outer member concentrically disposed with respect to said inner member to define a curved separation chamber between said inner and said outer members;
an inlet flow passage extending from said receiving chamber and disposed tangentially with respect to said inner and outer members for introduction of the mixture from said receiving chamber to said separation chamber; and
an outlet flow passage directed tangentially with respect to said inner and outer members for the discharge of separated liquid from said separation chamber,
said mixture being introduced into said inlet passage and impinging upon the inner surface of said outer member, and centrifugal force causing the liquid to separate from the vapor, said liquid collecting on the inner surface of said outer member and discharging through said outlet passage, and the vapor being discharged through said cutout in said inner member.

4,123,238

FLOW-CONTROL NOZZLE FOR FLUE-GAS SCRUBBER

Karl-Rudolf Hegeman, Essen, Germany, assignor to Gottfried Bischoff Bau Kompl. Gastreinigungs- und Wasserruckkuhlanlagen Kommanditgesellschaft, Essen, Germany

Filed Aug. 16, 1976, Ser. No. 714,825
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1975, 7525946[U]
Int. Cl.[2] B01D *47/10*
U.S. Cl. 55—226 **10 Claims**



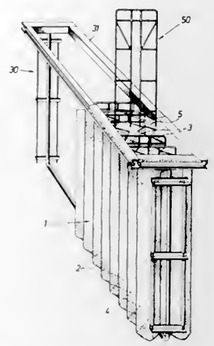
1. In a duct traversed by a descending flow of hot flue gases and divided into coaxial upper and lower parts, the upper part of said duct being provided with spray means for irrigating the gas flow with a liquid and being further provided with a stationary central tube extending downwardly from said spray means for the guidance of said liquid, the combination therewith of a flow-controlling nozzle comprising a generally hourglass-shaped tubular body interposed between said parts, said body having a waist substantially narrower than said duct separating a downwardly converging upper portion from a downwardly diverging lower portion of said body, and an insert in said body having a downwardly diverging peripheral surface of generally frustoconical shape which defines with said lower portion a narrow annular channel, said insert being vertically displaceable in said body between several operating positions for varying the width of said channel and being provided with a refractory layer on at least an annular zone of said surface extending above said waist in any of said operating positions, said tube having a bottom edge which lies above said waist and defines with said body a ring space directing the gas flow from around said tube toward said refractory layer.

4,123,239

FILTER IN A CASSETTE FRAME

Rune S. Andersson, Växjö, and Svante O. Berglund, Hovmantorp, both of Sweden, assignors to Aktiebolgatet Svenska Flaktfabriken, Nacka, Sweden

Filed Aug. 29, 1977, Ser. No. 828,426
Claims priority, application Sweden, Aug. 31, 1976, 7609625
Int. Cl.[2] B01D *46/02*
U.S. Cl. 55—379 **4 Claims**



1. For use in a filter housing, at least one filter cassette, and a bag-type filter element supported in said cassette, said filter element comprising a plurality of filter bags forming gas passageways which, at their lower ends are closed, and at their upper ends form a common gas opening, said cassette including a rectangular cassette frame surrounding said upper end, means for fastening the filter element in the cassette frame, and stiffening members telescopically engaged into the gas passageways formed by said bags, wherein the filter element consists of two rows of filter bags which, in the respective rows, are interconnected along their longitudinal side edges, said cassette frame at its end being provided with depending end wall pieces having clamping means detachably engaging the filter element at the ends of said rows to stretch the element, said pieces at their lower ends being rigidly connected to each other at the lower portion of the cassette frame, each of the stiffening members consisting of a substantially plane stiffening element common for two adjacent filter bags each lying in a separate one of said two rows, which element is provided with two legs lying in a plane, each positioned in a respective filter bag, the width of said leg corresponding to the width of the bag in its stretched state, the legs at their upper portions being connected to each other by a stiffening web, whereby said clamping means and stiffening elements maintain said passageways open in their stretched state.

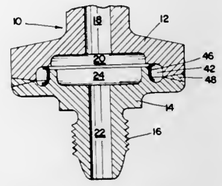
4,123,240

MEANS FOR INTERCEPTING WELD SPLATTER

Michael A. Keresman, Seven Hills, and Curtis H. Schueuerman, Newbury, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jun. 14, 1977, Ser. No. 806,381
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—385 C **12 Claims**

1. A housing comprising a body and a cover having a flow passage therethrough and joined together by welding of adjacent surfaces thereof, a vent passage between said surfaces and said flow passage, and perforated means between said surfaces and said vent passage for preventing weld splatter produced during the welding processfrom passing through said vent passage while permitting gases generated during said welding process to pass through said vent passage into said flow passage.

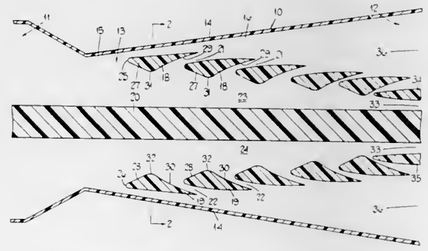


4,123,241

FILTER

Kenneth H. Maden, Accrington, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 21, 1976, Ser. No. 688,721
Claims priority, application United Kingdom, May 23, 1975, 22571/75
Int. Cl.[2] B01D *45/18*
U.S. Cl. 55—442 **45 Claims**



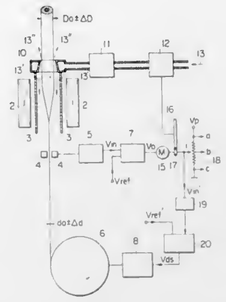
1. A filter for separating a stream of mixed materials into a material of greater density and a material of lesser density, said filter comprising a hollow body having an upstream end and a downstream end, means defining an inlet at said upstream end of said body for receiving said stream, means defining a pair of separate outlets at said downstream end of said body for discharging the respective separated materials, said body having a passage extending therethrough from said inlet to said outlets, and at least one set of separator vanes disposed in said body and spaced along said passage, said vanes being positioned to define at least one boundary of a first flow path extending longitudinally of said passage from said inlet to one of said outlets, each separator vane having an upstream edge, a first surface portion which extends from said upstream edge in a downstream direction and which is inclined towards the inlet, a second surface portion which extends downstream from said first portion and which is inclined towards the outlets and an apex junction between said first and second portions, adjacent vanes of said set being mutually spaced longitudinally of said passage so as to define second flow paths therebetween, said second flow paths leading from said first flow path to the other of said outlets, said vanes being so disposed that in each pair of adjacent vanes comprising an upstream vane and a downstream vane the upstream edge of the downstream vane is aligned, longitudinally of said passage with a part of said second surface portion of the upstream vane, said part being spaced downstream from said junction of said upstream vane whereby said junction of said upstream vane masks said second flow path defined between said upstream and said downstream vane against ingress of material of greater density flowing in said stream along said first flow path.

4,123,242

APPARATUS FOR PRODUCING OPTICAL FIBER

Katsuyuki Imoto, Sayama; Yoshitaka Takasaki, Tokorozawa, and Masao Sumi, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 13, 1977, Ser. No. 815,447
Claims priority, application Japan, Jul. 19, 1976, 51-85083
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—11 W **6 Claims**



1. In an apparatus for producing an optical fiber comprising means for heating an optical fiber preform, means for drawing out the optical fiber from said preform whose fore end part has been made molten by said heating means and for taking up the drawn out fiber, means for causing gas to flow along an outer peripheral surface of the molten part of said preform, and means for regulating both flow rate of said gas and drawing out speed of said optical fiber according to fluctuations in diameter of said optical fiber, the improvement comprising said regulating means including i) fiber diameter detector means for detecting the diameter of the optical fiber drawn out, ii) fiber diameter measuring means for measuring the optical fiber diameter detected by said detector means, iii) fiber diameter controlling circuit means for receiving and for comparing an output of said fiber diameter measuring means and a reference value for setting a fiber diameter to generate a fiber diameter controlling output, iv) gas flow rate controller means responsive to said fiber diameter controlling output for controlling gas flow, v) take-up speed controlling circuit means for receiving and for comparing a signal corresponding to said fiber diameter controlling output and a reference value for setting a take-up speed to generate a take-up speed controlling output, and vi) optical fiber take-up speed controller means responsive to said take-up speed controlling output for controlling take-up speed.

4,123,243

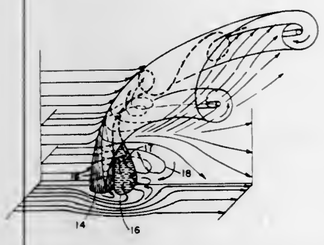
APPARATUS FOR FORMING FIBERS BY TORATION

Marcel Levecque, Saint-Gratien; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, all of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Division of Ser. No. 555,811, Mar. 6, 1975, Pat. No. 4,015,963, which is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1973, Pat. No. 3,874,886. This application Apr. 5, 1977, Ser. No. 784,720
Int. Cl.[2] C03B *37/06*
U.S. Cl. 65—16 **7 Claims**

3. In apparatus for fiberizing attenuable material by feeding a multiplicity of streams of attenuable material into a multiplicity of side-by-side toration zones established by interaction of gaseous jets with a gaseous blast, mechanism for directing gaseous jets toward the blast comprising a manifold having a

gas supply chamber and having a multiplicity of jet delivery passages receiving gas from said supply chamber, and the



manifold also having a cooling chamber therein in heat exchange relation with the gas supply chamber

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4,123,244

PROCESS OF FORMING A METAL OR METAL COMPOUND COATING ON A FACE OF A GLASS SUBSTRATE AND APPARATUS SUITABLE FOR USE IN FORMING SUCH COATING

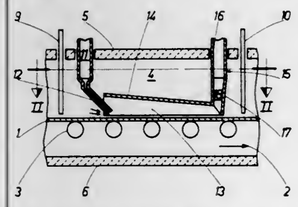
Robert Leclercq, Auvelais; Phileas Capouillet, Gosselies, and Albert Van Cauter, Charleroi, all of Belgium, assignors to BFG Glassgroup, Paris, France

Filed Mar. 28, 1977, Ser. No. 781,958

Claims priority, application United Kingdom, Apr. 13, 1976, 15064/76

Int. Cl.² C03C *17/00*

U.S. Cl. 65—60 C **34 Claims**



1. A process of forming a metal or metal compound coating on a face of a flat glas substrate which comprises the steps of contacting such face while it is at elevated temperature with a gaseous medium containing a substance in gaseous phase which undergoes chemical reaction or decomposition to form said metal or metal compound on said face, causing said gaseous medium to flow along said face as a substantially turbulent-free layer along a flow passage defined in part by the face of the glass and in part by a shroud, said flow of gaseous medium being caused in part by delivering a gas stream along a confined path which is at 45° or less to said face and discharging the gas stream from said path into said flow passage through a slot-like discharge mouth extending across the widthwise dimension of said flow passage, and drawing residual medium away from said face through exhaust ducting into which the flow passage leads, said flow passage tapering in the direction of gas flow therethrough at least over an end portion of its length leading up to said exhaust ducting.

21. Apparatus suitable for use in forming a metal or metal compound coating on a face of a flat glass substrate by contacting such face while it is at elevated temperature with a gaseous medium containing a substance in gaseous phase which undergoes chemical reaction or decomposition to form said metal or metal compound on said face, said apparatus comprising:

means for supporting said substrate,

means for heating such substrate,

a shroud mounted in a position to define with the substrate face to be coated a shallow flow passage,

feeding means for discharging gaseous medium into said shallow flow passage at one end thereof, and

exhaust ducting into which the opposite end of said shallow flow passage leads for drawing residual medium away from said shallow flow passage,

said gas feeding means comprising at least one conduit disposed for delivering a stream of gas along a confined path which is at an inclination of less than 45° to the substrate face to be coated and has a slot-like discharge mouth extending across the widthwise dimension of said shallow flow passage through which the stream of gas delivered along said confined path is discharged into said shallow flow passage, said shroud being formed such that the flow passage tapers toward said opposite end thereof.

4,123,245

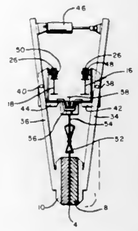
APPARATUS AND METHOD FOR PRESS BENDING AND TEMPERING GLASS SHEETS AND THE LIKE

William G. Bates, Sellersville, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Oct. 25, 1977, Ser. No. 845,339

Int. Cl.² C03B *23/02*

U.S. Cl. 65—104 **20 Claims**



1. In a method for press bending a glass sheet or the like, wherein the sheet is heated at a temperature sufficient to effect deformation thereof, said sheet depends from a carriage assembly, a pair of complementary shaping members depends from a shaping member assembly, said carriage assembly adapted to engaged said shaping member assembly to align said sheet with said shaping member, and wherein said sheet is sandwiched between said pair of complementary shaping members and cooled in a quench to temper the sheet, the steps comprising:

(a) keeping the sheet heated in a holding area immediately after it has left the furnace,

(b) providing alignment between said sheet while in said holding are with said shaping member,

(c) synchronously transporting by a common drive said sheet and shaping members toward said quench, and

(d) squeezing said sheet between the shaping members to press bend said sheet on the run while concurrently transferring it toward the quench.

11. In an apparatus for press shaping glass sheets and the like which apparatus includes a means adapted to heat the sheets to the desired deformation temperature, a quench downstream from the heating means, sheet grasping means and a pair of complementary shaping members which are spaced on opposite sides of the grasping means and adapted to impart the desired shape to the sheet interposed therebetween, the combination which comprises:

(a) a heated holding station located between the heating means and the quench;

(b) a shaping member assembly for transporting said shaping members;

(c) a sheet carriage assembly in communication with said sheet grasping means for transporting the sheet from the heating means to the quench, said sheet carriage assembly adapted to engage said shaping member assembly for alignment of said sheet with said shaping members;

(d) drive means for transporting both the sheet and the shaping members concurrently from the holding area toward the quench; and

(e) means for moving at least one of the shaping members toward the other to press the sheet into the desired shape while the shaping members and the sheet travel substantially in unison toward the quench.

4,123,246

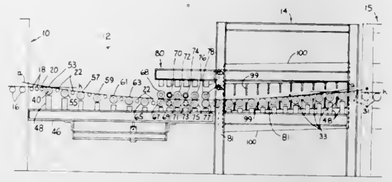
SHAPING AND QUENCHING GLASS SHEETS BY ROLL FORMING USING TRANSITION QUENCH ROLLS

Randall S. Johnson, Bellwood, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 26, 1978, Ser. No. 872,409

Int. Cl.² C03B *23/02*

U.S. Cl. 65—104 **10 Claims**



1. In apparatus for shaping and tempering glass sheets comprising a furnace, a cooling section spaced from said furnace and a forming section and a quenching section interposed between said furnace and said cooling section, a series of rotating forming rolls longitudinally spaced from one another along a generally arcuate path of approximately constant longitudinal curvature through said forming section and within at least a major portion of said quenching section, wherein the rotating rolls of said series within said quenching section closer to said cooling section are disposed in an upwardly sloped portion of said arcuate path whose upward slope increases to a slope at which a glass sheet would slip when engaged by adjacent rotating rolls disposed along said path, the improvement comprising means supporting said adjacent rotating rolls in said quenching section disposed in said upwardly sloped portion in such relative vertical positions of misalignment with said arcuate path that the maximum upward slope from roll to roll is less than an upward slope at which the glass sheets would slide relative to said adjacent rotating rolls.

8. In a method of shaping and tempering a series of glass sheets by the roll forming process comprising heating a plurality of glass sheets to a glass deformation temperature and conveying each of said plurality of glass sheets on a series of rotating forming rolls disposed along an arcuate path of substantially constant radius of curvature having a generally descending portion adjacent where the glass sheets are heated to shape said glass sheets to a curvature conforming to said arcuate path, and cooling said shaped glass sheets while conveyed on additional rotating rolls disposed along a continuation of said arcuate path rapidly enough to harden the glass sheet surfaces, the improvement comprising transferring said glass sheets after their surfaces have hardened to rotating rolls disposed along a line having a maximum upward slope from roll to roll less than an upward slope at which the glass sheet would slide relative to said rotating rolls.

4,123,247

APPARATUS FOR EXPANDING METALLURGICAL SLAG

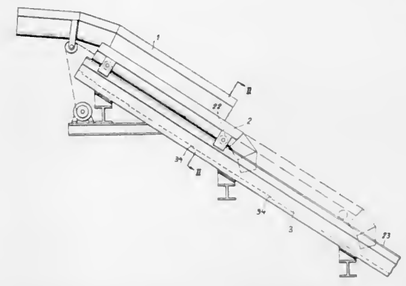
Paul Metz, Luxembourg; Robert Schockmel, Esch, Alzette, and Roland Mersch, Dudelange, all of Luxembourg, assignors to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED, Luxembourg, Luxembourg

Filed Nov. 15, 1977, Ser. No. 851,636

Claims priority, application Luxembourg, Nov. 17, 1976, 76218; Sep. 26, 1977, 78186

Int. Cl.² C03B *19/08*

U.S. Cl. 65—141 **12 Claims**



1. An apparatus for expanding a molten slag which comprises:

a fixed inlet trough inclined downwardly and having a discharge edge;

a movable intermediate trough disposed below said discharge edge and shiftable relative to said inlet trough;

a fixed prefoaming trough disposed below said intermediate trough and parallel thereto, said intermediate trough having a discharge side shiftable relative to said prefoaming trough to vary the point therealong at which molten slag is delivered to said prefoaming trough, said prefoaming rough being provided with means for contacting molten slag along a path extending along said prefoaming trough and of a length corresponding to the point at which said molten slag is delivered thereto, with a water film; and

further means downstream of said prefoaming trough for further expanding the slag pre-expanded on said prefoaming trough.

4,123,248

CONTROLLED RELEASE FERTILIZER

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 25, 1977, Ser. No. 827,469

Int. Cl.² C05B *17/00, 19/00*

U.S. Cl. 71—4 **11 Claims**

1. A slow release fertilizer composition comprising a vitreous matrix including a water soluble nitrogen source fertilizer material, a glass modifier, and as a glass former, phosphorous pentoxide, all within the matrix; the vitreous matrix including one or more inorganic oxide phases dispersed therein, the vitreous matrix having a low rate of solution in water such that when the composition is immersed in water the fertilizer is slowly released into solution, wherein said nitrogen source fertilizer material is an inorganic nitrogen containing compound stable at the fusing temperature of the glass being formed.

7. A fertilizer composition as claimed in claim **1** wherein the fertilizer composition contains one or more inorganic fungicides.

4,123,249

AQUATIC HERBICIDES

Joseph F. Vartiak, Naperville, Ill., and George E. Wortley, Jr., Longwood, Fla., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 18, 1977, Ser. No. 825,796

The portion of the term of this patent subsequent to Feb. 28, 1994, has been disclaimed.

Int. Cl.[2] A01N *17/00*

U.S. Cl. 71—66 **7 Claims**

1. A process for improving the activity of aquatic herbicides which comprises applying these herbicides under water to the vegetation to be controlled in the presence of:

A. From 0.005 to 0.2 pounds of a water soluble vinyl addition polymer per gallon of herbicidal solution applied, said water soluble vinyl addition polymer being selected from the group consisting of acrylamide-acrylic acid copolymers, acrylamide-methacrylic acid copolymers, polyacrylic acid, and polymethacrylic acid, said polymer further characterized as having a molecular weight of at least 10,000; and

B. From 0.01–5% by weight of the polymer of an inorganic cross-linking agent from the group consisting of water-soluble trivalent salts of aluminum.

4,123,250

INHIBITING PLANT BUD GROWTH WITH SUBSTITUTED 2,6-DI-NITROANILINES

Robert H. Kupelian, Bucks County, Pa., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 245,646, Apr. 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 158,538, Jun. 30, 1971, abandoned. This application Feb. 4, 1974, Ser. No. 439,193

Int. Cl.[2] A01N *5/00*

U.S. Cl. 71—78 **10 Claims**

1. A method for inhibiting the bud growth on plants comprising contacting the plants with a bud growth inhibiting amount of a compound which is N-sec-butyl-3,4-dimethyl-2,6-dinitroaniline, 3,4-dimethyl-2,6-dinitro-N-(3-pentyl)aniline, 4-chloro-2,6-dinitro-N-[1-(methoxymethyl)propyl]-m-toluidine, 3,4-dimethyl-2,6-dinitro-N-(2-methoxy-1-methylethyl-)aniline, 3-methoxy-2,6-dinitro-N-(3-pentyl)-p-toluidine, 4-chloro-2,6-dinitro-N-(1,3-dimethylbutyl)-m-toluidine, 3,4-dimethyl-2,6-dinitro-N-(2-pentyl)aniline, 3,4-dimethyl-2,6-dinitro-N-(3-hexyl)aniline, N-sec-butyl-3-methyl-4-chloro-2,6-dinitroaniline, 4-chloro-2,6-dinitro-N-(3-pentyl)-m-toluidine, 4-chloro-2,6-dinitro-N-(2-pentyl)-m-toluidine, or 4-trifluoromethyl-2,6-dinitro-N-(3-pentyl)-m-toluidine.

4,123,251

O-AMIDOPHENYLMORPHOLINE COMPOUNDS AND METHOD OF USE

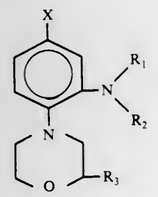
Kelvin K. Shen, Fountain Valley, Calif., and Wayne S. Belles, Moscow, Id., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Jun. 2, 1977, Ser. No. 802,606

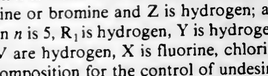
Int. Cl.[2] C07D *295/12;* **A01N** *9/28*

U.S. Cl. 71—88 **16 Claims**

1. A compound of the formula



wherein X is selected from lower alkyl, halo, halo-lower alkyl, lower alkylsulfonyl, and halo-lower alkylsulfonyl, R_1 is selected from



and the halo and lower alkoxy substituted derivatives thereof, R_2 is selected from the group consisting of hydrogen and the groups represented by R_1, and R_3 is selected from hydrogen and alkyl of 1 to 3 carbon atoms.

9. The method of controlling undesirable plant growth which comprises applying a phytotoxic amount of a compound according to claim 1 to the locus of said plants.

4,123,252

METHOXY SUBSTITUTED CYCLOALKANAPYRAZOLE HERBICIDES

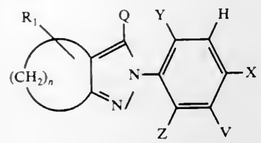
Steven J. Goddard, West Grove, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 649,901, Jan. 16, 1976, abandoned. This application Sep. 24, 1976, Ser. No. 726,295

Int. Cl.[2] A01N *9/22;* **C07D** *231/54, 231/56*

U.S. Cl. 71—92 **53 Claims**

1. A compound of the formula



where

n is 3, 4 or 5;

Q is —O—CH_3 or —S—CH_3—;

R_1 is hydrogen or methyl;

V is hydrogen, fluorine or chlorine;

X is fluorine, chlorine, bromine, iodine, cyano or methoxy;

Y is hydrogen, fluorine or chlorine; and

Z is hydrogen or fluorine; and

with the proviso that:

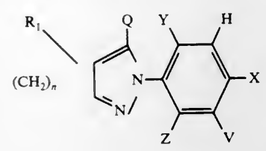
(a) when *n* is 3, R_1 is hydrogen, and when V is fluorine or chlorine, X is fluorine, chlorine or bromine and Z is hydrogen;

(b) when *n* is 4 and V is fluorine or chlorine, X is fluorine, chlorine or bromine and Z is hydrogen; and

(c) when *n* is 5, R_1 is hydrogen, Y is hydrogen or fluorine, Z and V are hydrogen, X is fluorine, chlorine or bromine.

11. A composition for the control of undesirable vegetation consisting essentially of a herbicidally effective amount of a compound of claim 1 and at least one of (a) a surface-active agent and (b) a solid or liquid diluent.

42. A compound of the formula



where

n is 3 or 4;

Q is —$S(O)_m$—CH_3;

m is 1 or 2;

R_1 is hydrogen or methyl;

V is hydrogen;

X is fluorine, chlorine, bromine, iodine, cyano or methoxy;

Y is fluorine; and

Z is hydrogen; and

with the proviso that:

(a) when *n* is 3, R_1 is hydrogen.

44. A composition for the control of undesirable vegetation consisting essentially of a herbicidally effective amount of a compound of claim 42 and at least one of (a) a surface-active agent and (b) a solid or liquid diluent.

4,123,253

HERBICIDAL COMPOSITIONS

Helmut Hack, Odenthal; Robert R. Schmidt, Cologne, and Karl-fried Dickoré, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

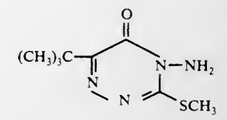
Filed Sep. 10, 1976, Ser. No. 722,305

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1975, 2543974

Int. Cl.[2] A01N *9/22, 9/02*

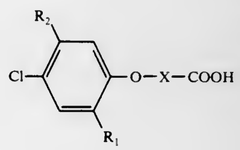
U.S. Cl. 71—93 **16 Claims**

1. Herbicidal composition for the selective combating of weeds in cereal cultures, containing as active ingredients (1) a 1,2,4-triazin-5(4H)-one derivative of the general formula



(I),

and (2) a phenoxyalkanecarboxylic acid of the general formula



(II)

in which

X is methylene or methylmethylene,

R_1 is chlorine or methyl and

R_2 is hydrogen or chlorine,

which acid may be in the form of a salt or ester thereof, the weight ratio of (1) to (2) being about 1:2–5.

4,123,254

GERMICIDAL HERBICIDE FOR AGRICULTURE AND HORTICULTURE

Tetsuji Iwasaki; Norioki Miyamoto; Yukio Sugimura; Kyozaburo Tachibana, and Tsuneyuki Takeno, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1977, Ser. No. 809,023

Claims priority, application Japan, Jun. 30, 1976, 51/77194; Jun. 30, 1976, 51/77197

Int. Cl.[2] A01N *9/12, 9/14*

U.S. Cl. 71—98 **7 Claims**

1. A method of inhibiting the growth of noxious weeds which comprises applying a herbicidally effective amount of at least one compound of the formula:

R—X—CH=CH—COOY

wherein R represents an alkyl or alkenyl group having 1 to 20 carbon atoms, X represents S, SO or SO_2, and Y represents a hydrogen atom, an alkali metal, an alkaline earth metal, NH_4, an alkenyl group having 1 to 20 carbon atoms, a polyalcohol residue which may have therein ether bonds formed by intramolecular or intermolecular dehydration, an acetal glycerol residue, or an oxyethylene (1 to 20 units) or oxypropylene group (1 to 20 units) terminated by an alkyl group having 1 to 20 carbon atoms.

4,123,255

O-SULFONYL-ALPHA-CYANO 2,6-DIHALOBENZALDOXIMES

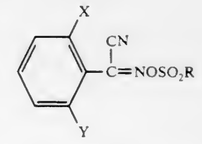
Francis J. Freenor, III, Richmond, and Barbara M. Koerber, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 3, 1977, Ser. No. 756,566

Int. Cl.[2] A01N *9/14;* **C07C** *121/66*

U.S. Cl. 71—103 **19 Claims**

1. A compound of the formula



wherein R is alkyl of 1 to 4 carbon atoms, haloalkyl of 1 to 4 carbon atoms and of 1 fluoro, chloro, bromo or iodo, or dialkylamino of 2 to 6 carbon atoms, X is chloro or bromo and Y is chloro or bromo.

7. A method for the control of undesirable vegetation which comprises applying thereto a herbicidally effective amount of the compound defined in claim 1.

4,123,256

N-(4-SUBSTITUTED BENZYLOXY)PHENYL)-N-METHYL-N-METHOXYUREA

Ryo Yoshida, Kawanishi; Ichiki Takemoto, Toyonaka; Seizo Sumida, Nishinomiya, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

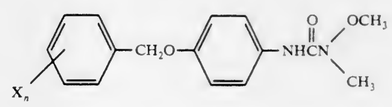
Filed Sep. 22, 1977, Ser. No. 835,745

Claims priority, application Japan, Sep. 30, 1976, 51-118046

Int. Cl.[2] C07C *69/76, 121/75;* **A01N** *9/20*

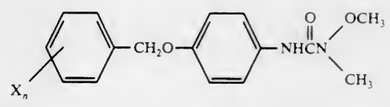
U.S. Cl. 71—105 **11 Claims**

1. A compound of the formula:



wherein X, which may be the same or different, is halogen, nitro, cyano, trifluoromethyl, lower alkyl or lower alkoxy and *n* is an integer of 1 to 5.

8. A herbicidal composition which comprises as an active ingredient a herbicidally effective amount of a compound of the formula:



wherein X, which may be the same or different, is halogen, nitro, cyano, trifluoromethyl, lower alkyl or lower alkoxy and *n* is an integer of 1 to 5, and an inert carrier.

4,123,257

METHOD OF TREATING A PLATING SLUDGE

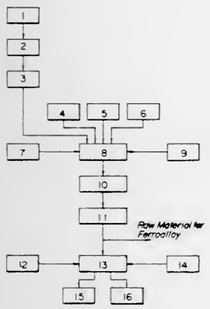
Hiroshi Fukuoka, Tokuyama; Terubiko Kameyama, Shinnanyo; Yoshio Tanaka, Tokuyama; Hideyo Suzuki, Yokohama, and Kimiaki Imai, Narashino, all of Japan, assignors to Nisshin Steel Company Ltd. and Japan Metals & Chemicals, Co., Ltd., both of, Japan

Filed Jun. 13, 1977, Ser. No. 806,096

Claims priority, application Japan, Jun. 25, 1976, 51-74377

Int. Cl.[2] C21B *13/00;* C22B *1/24*

U.S. Cl. 75—40 **16 Claims**



1. A method of treating a plating sludge comprising mixing 100 parts by weight of a plating sludge, whose water content is decreased to not higher than 10% by weight, with 10–100 parts by weight of scale, 10–200 parts by weight of dust, both of the scale and dust being formed in the production of alloy steel, 10–100 parts by weight of a binder, and not larger than 40 parts by weight of a carbonaceous material; further adding 10–200 parts by weight of water to the resulting mixture to adjust the water content of the mixture to 7–30% by weight; kneading fully the mixture; molding the homogeneously kneaded mixture into a briquet by means of a briquet-molding machine; subjecting the briquet to a strength-improving treatment to use the above treated briquet as a raw material for ferroalloy.

8. A method of treating a plating sludge comprising mixing 100 parts by weight of a plating sludge, whose water content is decreased to not higher than 10% by weight, with 10–100 parts by weight of scale, 10–200 parts by weight of dust, both of the scale and dust being formed in the production of alloy steel, 10–100 parts by weight of a binder, and not larger than 40 parts by weight of a carbonaceous material; further adding 10–200 parts by weight of water to the resulting mixture to adjust the water content of the mixture to 7–30% by weight; kneading fully the mixture; molding the homogeneously kneaded mixture into a briquet by means of a briquet-molding machine; subjecting the briquet to a strength-improving treatment; charging the above treated briquet into a reduction-smelting furnace together with a carbonaceous reducing agent; subjecting the mixture to a reduction smelting in the furnace to recover metal for use as a raw material for alloy steel.

4,123,258

PROCESS FOR THE PRODUCTION OF STEEL WITH INCREASED DUCTILITY AND FOR THE DESULFURIZATION OF A STEEL MELT

Wilhelm Klapdar, Essen; Helmut Richter, Oberhausen; Heinrich-Wilhelm Rommerswinkel, Mühlheim/Ruhr; Edgar Spetzler, and Jochen Wendorff, both of Oberhausen, all of Germany, assignors to Thyssen Niederrhein, Oberhausen, Germany

Continuation-in-part of Ser. No. 742,363, Nov. 11, 1976, Pat. No. 4,067,730, which is a continuation of Ser. No. 569,150, Apr. 18, 1975, Pat. No. 3,992,195. This application Aug. 16, 1977, Ser. No. 825,103

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1974, 2419070; Apr. 20, 1974, 2419176

Int. Cl.[2] C21C *7/02*

U.S. Cl. 75—58 **5 Claims**

1. A process for the production of steel of high ductility comprising the steps of:

(a) deoxidizing a sulfur-containing starting steel melt having a sulfur content of at least 0.02% by weight;

(b) maintaining the deoxidized steel melt in a ladle having a lining free from siliceous oxides;

(c) covering said steel melt with a synthetic slag substantially free from siliceous oxides;

(d) slowly injecting a magnesium-containing treating agent in fine-grain particulate form into said melt at a depth of at least 2000 mm in a carrier gas to desulfurize and purify said melt; and

(e) maintaining the rate of introduction of said magnesium-containing agent in step (d) at most equal to the rate at which said agent is able to react with said melt, said agent being introduced into said melt over a period of at least 5 minutes in a total quantity of at least 0.36 kg of Mg per ton of steel and sufficient to reduce the sulfur content of the melt to a value below 0.015% by weight.

4,123,259

METHOD FOR SUPPLYING THERMAL ENERGY TO STEEL MELTS

Helmut Knüppel; Karl Brotzmann, and Hans G. Fassbinder, all of Sulzbach-Rosenberg, Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH, Sulzbach-Rosenberg, Germany

Filed May 20, 1977, Ser. No. 799,029

Int. Cl.[2] C21C *5/34*

U.S. Cl. 75—60 **2 Claims**

1. A process for increasing the amount of scrap which can be melted in a refining vessel equipped with at least one tuyere comprising at least two concentric pipes mounted in the refractory masonry of the refining vessel underneath the surface of a melt in said vessel to produce a steel melt by supplying thermal energy to said steel melt, which process comprises: introducing a stream of oxygen and a stream of protective medium selected from the group consisting of hydrocarbons and mixtures thereof through said tuyere and into a pig iron melt in said vessel; refining said pig iron melt to a carbon content of not more than 0.05% by blowing oxygen and said hydrocarbon protective medium around said oxygen through said tuyeres and into said melt, the proportions of hydrocarbon to oxygen being such that the tuyere is protected from destructive burnback; and thereafter, after said melt has been refined to a carbon content of not more than about 0.05%, blowing oxygen and carbon-containing fuel into said melt through said tuyere thereby burning said carbon-containing fuel with said oxygen and passing the hot gases resulting from the combustion of said fuel with said oxygen through said melt, the relative proportions of said fuel to said oxygen being substantially greater than the proportion of hydrocarbon to oxygen used to protect said tuyere during said refining and being sufficient to completely burn said fuel so as to produce a hot combustion gas containing substantial amounts of CO_2 whereby said melt is heated by passage of said combustion gas through said melt and therefore

the amount of scrap which can be melted is increased as compared with that which can be melted in an otherwise similar process, without the additional step of blowing oxygen and said carbon-containing fuel into said melt.

4,123,260

SELECTIVE RECOVERY OF NICKEL AND COBALT OR COPPER AND ZINC FROM SOLUTION

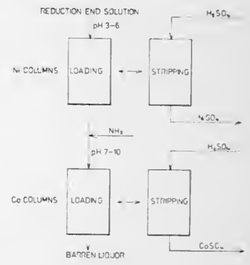
Verner B. Sefton, Edmonton, and Russell P. Kofluk, Opal, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed May 12, 1977, Ser. No. 796,495

Claims priority, application Canada, Feb. 25, 1977, 272687

Int. Cl.[2] C22B *15/08, 19/22*

U.S. Cl. 75—117 **26 Claims**



1. A process for separately recovering nickel and cobalt from a feed solution containing dissolved nickel and cobaltous cobalt, including adjusting the pH of the solution if necessary to a value between about 3 and about 6, and then contacting the solution with a chelating ion exchange resin having aminocarboxylic acid functional groups to selectively load nickel onto the resin to produce a nickel loaded resin and a nickel depleted cobalt containing solution.

4,123,261

TITANIUM-STABILIZED DEEP DRAWING STEEL SUITABLE FOR HOT GALVANIZING

Karl-Erik Moren, and Par S. Sixtensson, both of Borlange, Sweden, assignors to Stora Kopparbergs Bergslags AB, Falun, Sweden

Filed Oct. 5, 1977, Ser. No. 839,417

Claims priority, application Sweden, Oct. 21, 1976, 7611673

Int. Cl.[2] C22C *38/42, 38/50*

U.S. Cl. 75—125 **2 Claims**

1. A titanium-stabilized deep drawing steel suitable for hot galvanizing which contains up to about 0.02 weight percent carbon, up to about 0.04 weight percent manganese, from about 0.01 to about 0.4 weight percent titanium, from about 0.04 to about 1.0 weight percent chromium, from about 0.04 to about 1.0 weight percent copper, and about 0.02 to about 0.05 weight percent nickel.

4,123,262

DENTAL GOLD ALLOY

Paul J. Cascone, New Rochelle, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 6, 1977, Ser. No. 813,363

Int. Cl.[2] C22C *5/00*

U.S. Cl. 75—165 **10 Claims**

1. A dental gold alloy consisting, in percent by weight, of about: 50 to 58% gold, 0.5 to 10.5% indium, 0.5 to 8.5% tin or 1.0 to 3.0% gallium, and the balance palladium; said alloy being non-staining and bondable to porcelain, castable without difficulty below 2500° F., and having at least 10% elongation in one inch.

4,123,263

PLATINUM-RHODIUM ALLOYS

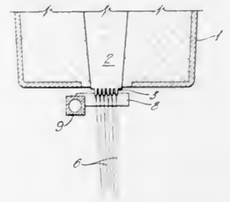
Darryl J. Costin, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 2, 1977, Ser. No. 847,887

The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.

Int. Cl.[2] C22C *5/04*

U.S. Cl. 75—172 R **20 Claims**



1. As a composition of matter a creep resistant alloy consisting essentially of rhodium in an amount of from about 10 to about 40 weight percent, boron in an amount of about 0.002 to about 0.05 weight percent, zirconium is an amount of about 0.064 to about 0.27 weight percent and the balance of said composition being platinum.

4,123,264

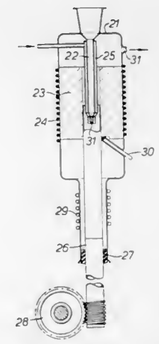
PRODUCTION OF FERROUS BODIES

Ralph V. Riley, Stamford; Samuel Muir, Nr. Market Harborough; Christopher Bloor, Corby, and Tibor Jozsef, Gretton, all of England, assignors to British Steel Corporation, United Kingdom

Filed Apr. 8, 1974, Ser. No. 458,601

Int. Cl.[2] B22F *1/00*

U.S. Cl. 75—211 **21 Claims**



1. A method of producing a ferrous body comprising reacting an iron compound in a gaseous state with a reducing gas, maintaining a former at a temperature at least equal to the reduction temperature of the reaction and lower than the melting point of iron and maintaining turbulent gas flow conditions adjacent said former to deposit iron on said former as a solid ferrous body of crystalline form.

4,123,265

METHOD OF PRODUCING FERROUS SINTERED ALLOY OF IMPROVED WEAR RESISTANCE

Kentaro Takahashi, and Shigeru Urano, both of Ohmiya, Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 671,781, Mar. 30, 1976, abandoned, and a continuation-in-part of Ser. No. 551,815, Feb. 21, 1975, abandoned. This application Feb. 23, 1977, Ser. No. 771,854
Claims priority, application Japan, Feb. 21, 1974, 49-19971
Int. Cl.² B22F *1/00*
U.S. Cl. 75—211 **2 Claims**

1. A method of producing a wear-resistant sintered ferrous alloy including the steps of

(1) mixing powders of a ferrous alloy containing more than about 50% by weight iron, tungsten in the range of about 0.5 to 5.0% by weight, and optionally at least one of an element selected from the group consisting of C, Ni, Mn, Mo, Cr and Cu,

(2) sintering the mixture of powders of step (1) to produce a sintered product,

(3) infiltrating into the sintered product of step (2) a component selected from the group consisting of copper or a copper alloy principally containing copper at a temperature above the melting point of the copper or the copper alloy to produce an infiltrated sintered product and

(4) cooling the infiltrated sintered product of step (3);

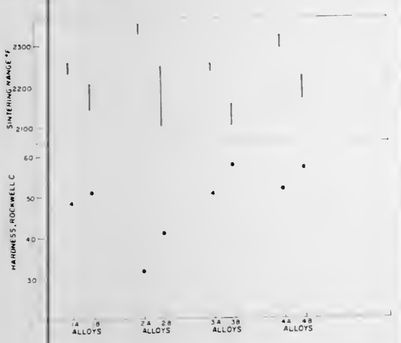
the improvement comprising said mixture of powders of step (1) having a composition sufficient to cause the production of martensite and bainite matrixes during the cooling step (4) in an amount of at least about 10% of the alloy microstructure.

4,123,266

SINTERED HIGH PERFORMANCE METAL POWDER ALLOY

Edward M. Foley, Russiaville; Dennis G. Dreyer, Kokomo, and Herbert E. Rogers, Jr., Sharpsville, all of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Continuation of Ser. No. 344,753, Mar. 26, 1973, abandoned. This application Jan. 19, 1978, Ser. No. 870,917
Int. Cl.² B22F *3/00*
U.S. Cl. 75—244 **10 Claims**



1. An article of liquid-phase sintered metal powder consisting of chromium from about 24% to 34%, tungsten from about 3.5% to about 20%, carbon from about 0.08% to about 3.5%, silicon up to about 1.5%, manganese up to about 1%, iron up to about 5%, nickel up to about 3.0%, boron about 0.43% to about 0.56%, molybdenum up to about 1.5%, and the balance cobalt and incidental impurities, said boron present to provide a wider sintering temperature range of the metal powder.

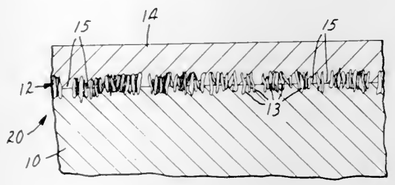
6. In a process for the production of a dense article from high performance cobalt-base alloy powder including the steps of consolidating the powder under pressure into an article of the desired shape and then sintering that article, the improvement comprising incorporating boron in the powder in an amount about 0.43% to about 0.56% by weight thereby providing a wider sintering temperature range, and liquid-phase sintering the article at a temperature between the solidus and liquidus temperature of the alloy.

4,123,267

PHOTOCONDUCTIVE ELEMENT HAVING A BARRIER LAYER OF ALUMINUM HYDROXYOXIDE

Gary L. Dorer, Taunton, Mass., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 27, 1977, Ser. No. 810,577
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1 PC **7 Claims**



1. A photoconductive element consisting essentially of (a) an electrically conductive substrate, (b) a layer of aluminum hydroxyoxide crystallites on said substrate, and (c) a continuous photoconductive layer over said layer of crystallites wherein said photoconductive layer is selected from selenium, selenium compounds and alloys of selenium.

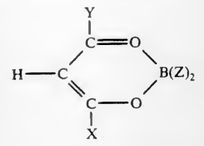
4,123,268

BORON CHELATES AS ACCEPTOR TYPE SENSITIZERS FOR PHOTOCONDUCTIVE POLYMERS

James M. Halm, Lombard, Ill. assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Jun. 22, 1977, Ser. No. 808,859
Int. Cl.² G03G *5/09, 5/04*
U.S. Cl. 96—1 PC **22 Claims**

1. A method of making a reproduction comprising the steps of applying an electrostatic charge to an organic photoconductive polymer of the electron donor type sensitized with a compound of the formula:



where X and Y each independently is a member selected from the group consisting of alkyl, aryl and electron withdrawing alkyl and electron withdrawing aryl and Z is a member selected from the group consisting of fluoro and phenyl, said compound being present in an amount ranging from 0.1 mole to 100 moles per 100 moles of polymer, the molecular weight of said polymer being taken as the weight of the monomer;

exposing the charged polymer to a pattern of light and shadow comprising electromagnetic radiation in the visible range to produce a latent image thereon; and

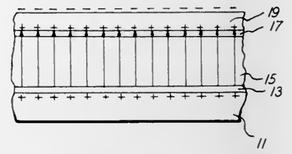
applying electroscopic powder to produce a material image corresponding to said pattern of light and shadow.

4,123,269

ELECTROSTATOGRAPHIC PHOTOSENSITIVE DEVICE COMPRISING HOLE INJECTING AND HOLE TRANSPORT LAYERS

Donald C. Von Hoene; Joseph Y. C. Chu, both of Fairport; Inan Chen, Webster, and Robert N. Jones, Fairport, all of N.Y., assignors to Xerox Corporation, Stamfod, Conn.

Filed Sep. 29, 1977, Ser. No. 837,666
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1 PC **14 Claims**



1. A layered photosensitive device for use in electrostatographic copying which comprises from the bottom up:

(a) an electrically conductive substrate;

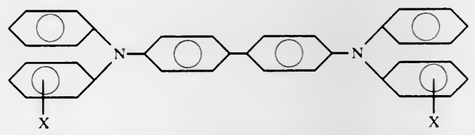
(b) a layer of material capable of injecting holes into a layer on its surface, this material being selected from the group consisting of gold and graphite;

(c) a hole transport layer in operative contact with the layer of hole injecting material which transport layer comprises a combination of a highly insulating organic resin having dispersed therein small molecules of an electrically active material, the combination of which is substantially non-absorbing to visible light but allows injection of photogenerated holes from a charge generator in contact with said hole transport layer and electrically induced holes from the layer of injecting material;

(d) a layer of a charge generating photoconductive material on and in operative contact with the charge transport layer; and

(e) a layer of an insulating organic resin overlaying the layer of charge generating material.

2. The device of claim 1 wherein the electrically active material dispersed in the insulating organic resin is a nitrogen containing composition of the formula:



wherein X is (ortho) CH_3, (meta) CH_3, (para) CH_3, (ortho) Cl, (metal) Cl or (para) Cl.

7. The device of claim 1 wherein the highly insulating organic resin in the hole transport layer is a polycarbonate, an acrylate polymer, a vinyl polymer, a cellulose polymer, a polyester, a polysiloxane, a polyamide, a polyurethane or an epoxy.

4,123,270

METHOD OF MAKING ELECTROPHOTOGRAPHIC IMAGING ELEMENT

Walter P. Heil, and David B. Sclove, both of Boulder County, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

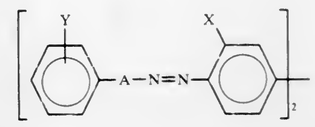
Continuation-in-part of Ser. No. 613,595, Sep. 15, 1975, abandoned. This application Jan. 12, 1976, Ser. No. 648,610
Int. Cl.² G03G *5/06, 5/05*
U.S. Cl. 96—1.5 R **18 Claims**

1. The process of manufacturing an electrophotographic imaging element including an electrically conductive substrate comprising the steps of:

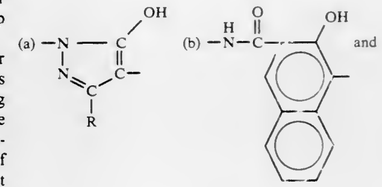
essentially completely dissolving organic primary amine soluble dyes capable of charge generations in a solvent which contains an organic primary amine as a portion of the solvent,

said charge generating material selected from the group consisting of at least one organic primary amine soluble disazo and squaric acid derivative dye;

said disazo dye having a formula



wherein A is selected from the group consisting of:

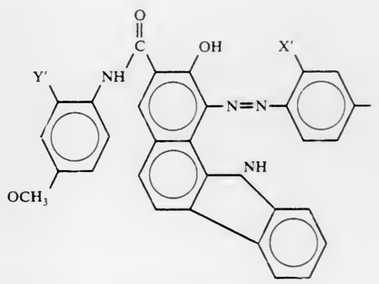


wherein R is selected from the group consisting of lower alkyl and



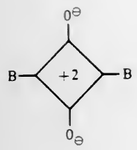
lower alkyl, and X and Y are each selected from the group consisting of: NO_2, CN, H, CH_3, OCH_3, OC_2H_5, OH, Cl, Br, and $N(C_2H_5)_2$

or wherein the said disazo dye has the formula

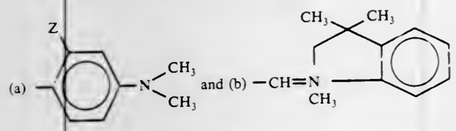


wherein Y' is H or CH_3 and X' is H or Cl.

and said derivatives of squaric acid include those having the formula



wherein B is selected from the group consisting of



wherein Z is selected from the group consisting of H, OH and CH_3;
and then coating the resulting solution onto said conductive substrate.

4,123,271

ALKALI METAL DICHROMATE AS MEMORY RESISTANCE IMPROVER FOR ZINC OXIDE PHOTOCONDUCTORS IN ELECTROSTATIC PHOTOGRAPHY

Akira Fushida, Suita; Hiroichi Morikawa, Osaka; Toshihiro Shinsho, Katano; Takaaki Miyazaki, Daito, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 435,576, Jan. 22, 1974, abandoned. This application Nov. 23, 1976, Ser. No. 744,450
Int. Cl.[2] G03G *7/00*
U.S. Cl. 96—1.8 **2 Claims**



1. A process for the preparation of a photosensitive material for electrostatic photography having an improved memory resistance without substantial reduction of the initial surface potential and the dark decay residual ratio, which comprises applying to an electrically conductive substrate a coating composition prepared by adding (a) a solution of an alkali metal dichromate in a polar solvent selected from the group consisting of methanol and ethanol to (b) a composition of a finely divided photoconductive zinc oxide and an electrically insulating organic synthetic resin binder having a specific resistance of at least 10^{14} ohm-cm selcted from acrylic resin, polyester resin and alkyd resin in an aromatic solvent selected from the group consisting of toluene and xylene, said binder being present in an amount of 5 to 50 parts by weight per 100 parts by weight of the zinc oxide, said alkali metal dichromate being present in an amount of 0.001 to 0.01% by weight based on the zinc oxide, said coating composition being applied in a coated amount of 5 to 50 g/m^2, and then drying the coating composition.

4,123,272

DOUBLE-NEGATIVE POSITIVE-WORKING PHOTOHARDENABLE ELEMENTS

John A. Quinn, Morganville, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 17, 1977, Ser. No. 797,832
Int. Cl.[2] G03C *1/68*
U.S. Cl. 96—35.1 **19 Claims**

1. A photohardenable element comprising in order
(a) a sheet or plate support;
(b) a solid, negative-working, first solvent-developable photohardenable stratum;
(c) a solid, negative-working, second solvent-developable photohardenable stratum containing radiation absorbers in the spectrum actinic for stratum (b) in an amount sufficient to yield an optical density therein of at least 1.0 unit.

10. A process which comprises exposing, imagewise to actinic radiation a photohardenable element comprising in order
(a) a sheet or plate support;
(b) a solid, negative-working, first solvent-developable photohardenable stratum;
(c) a solid, negative-working, second solvent-developable photohardenable stratum containing radiation absorbers in the spectrum actinic for stratum (b) in an amount sufficient to yield an optical density therein of at least 1.0 unit;
removing the unexposed areas of stratum (c) with said second solvent which has no affect on stratum (b); exposing the resulting element to actinic radiation through the remainder of stratum (c) until the exposed areas of photohardenable stratum (b) are polymerized without polymerization in the unexposed areas; removing the exposed areas of stratum (c) and removing the unexposed areas of stratum (b) with said first solvent.

4,123,273

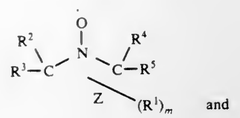
STABLE FREE RADICAL NITROXYL BLEACHING AGENTS FOR PHOTOGRAPHIC PROCESSES

Samuel Ciurca, Jr., Rochester, and Carl F. Kohrt, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 11, 1977, Ser. No. 814,620
Int. Cl.[2] G03C *1/02, 5/30*
U.S. Cl. 96—66 T **20 Claims**

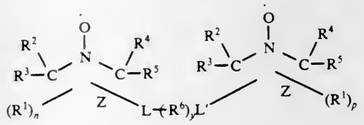
1. A photothermographic element comprising a support having thereon a layer comprising:
a. a reducing agent which provides a developed image within about 90 seconds at a temperature of about 100° to 250° C. upon heating said element;
b. an organic silver salt oxidizing agent; and
c. a silver halide; and, in the same or a different layer,
a stable free radical nitroxyl bleaching agent having a formula selected from the group consisting of:

I.



and

II.



wherein Z comprises the nonmetallic atoms necessary to complete a 5 to 7 member heterocyclic ring; *y* is 0 or 1; *m*, *n* and *p* are independently selected from the group of integers of 1 to 4, R^1 is independently selected from the group consisting of hydrogen, alkyl, amino, aryl, cycloalkyl, hydroxy, hydroxyimino, imino, isothiocyanato, oxo, a 5 to 10 member nonmetallic heterocyclic ring, a complexing ligand for silver (I) ion wherein the Ksp of the complexed product of the ligand and silver (I) ion is less than about 10^{-12} at 25° C., and —L—R^9; L and L′ are the same or different and are linking groups selected from the group consisting of amino, carbonamido, ureylene, thioureylene, oxymethylenecarbonamido, carbonyloxy, carbonyldioxy, oxycarbonyl, carbonyl, sulfonamido, amidothiocarbonyl, oxymethyleneoxycarbonyl and dicarbonamido; R^9 is selected from the group consisting of hydrogen, alkyl, aryl, alkenyl, aryloxy, hydroxy, amino, a cation of a quaternary ammonium salt and a 5 to 10 member nonmetallic heterocyclic ring; and R^6 is selected from the group consisting of alkylene, cycloalkylene, arylene, a 5 to 7 member bivalent nitrogen-containing heterocycle, and a thio-interrupted alkylene chain; and R^2, R^3, R^4 and R^5 are independently selected from the group consisting of alkyl, cycloalkyl, aralkyl, aryl, or R^2 and R^3 or R^4 and R^5 can be taken together with the carbon atom of the ring to which they are attached to form a cycloalkyl or cycloalkenyl having from 4 to 10 carbon atoms.

4,123,274

HEAT DEVELOPABLE IMAGING MATERIALS AND PROCESS

Phillip D. Knight, Fairport; Richard A. deMauriac, Webster, and Patricia A. Graham, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1977, Ser. No. 778,183
Int. Cl.[2] G03C *5/30, 1/02, 1/76, 3/00*
U.S. Cl. 96—66 T **32 Claims**

1. A photothermographic element comprising a support having thereon in reactive association
(a) photosensitive silver halide,
(b) an image-forming combination comprising
(i) a silver salt of a 3-amino-1,2,4-mercaptotriazole represented by the formula:



wherein Y is aryl containing 6 to 12 carbon atoms; n is 0 to 2; and Z is hydrogen, hydroxyl or —NH_2; with
(ii) a silver halide developing agent, and a polymeric binder.

2. A process of developing an image in an exposed photothermographic element as defined in claim **1** comprising heating said element to a temperature within the range of 125° C. to 200° C. until an image is developed.

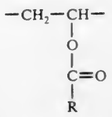
4,123,275

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC MATERIALS WITH VINYL COPOLYMER NEUTRALIZATION RATE CONTROLLING LAYER

Yukio Karino; Shinji Sakaguchi, and Takashi Yoshida, all of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed Jul. 26, 1976, Ser. No. 708,973
Claims priority, application Japan, Jul. 24, 1975, 50/90616
Int. Cl.[2] G03C *7/00, 5/54, 1/40*
U.S. Cl. 96—77 **18 Claims**

1. A color diffusion transfer photographic material comprising a photosensitive element including at least one silver halide emulsion layer having associated therewith a dye image providing material, an image receiving element for fixing the diffusible dye formed from said dye image providing material to form a dye image, an alkaline processing composition for developing the exposed photosensitive element, neutralizing means to lower the pH of the processing composition, and, if desired, another hydrophilic layer or layers, said neutralizing means including a neutralization rate controlling layer and said neutralization rate controlling layer containing a copolymer of at least one vinyl compound and at least one unsaturated monomer addition polymerizable with the vinyl compound, said copolymer having the recurring structural unit represented by the general formula:



wherein R represents a hydrogen atom of an aliphatic group having 1 to 4 carbon atoms wherein the proportion of the recurring structural unit ranges from 65 to 95 mol % and at least one of the unsaturated monomer(s) addition polymerizable with the vinyl compound is selected from hydroxyalkyl acrylates, hydroxyalkyl methacrylates, vinyl heterocyclic compounds, acrylamides or methacrylamides, said neutralization rate controlling layer being so configured that a support has coated thereon, in order, as essential layers, one of configurations (1) to (4):
(1) an acid polymer layer, the neutralization rate controlling layer, and an image receiving layer;
(2) an acid polymer layer, the neutralization rate controlling layer, and a photosensitive layer or layers;
(3) an acid polymer layer, the neutralization rate controlling layer, an image receiving layer, a white reflecting layer, and a photosensitive layer or layers; or
(4) an acid polymer layer, and the neutralization rate controlling layer, the neutralization rate controlling layer being disposed so as to be between the acid polymer layer and the alkaline processing composition when the alkaline processing composition is spread for developing the exposed photosensitive element.

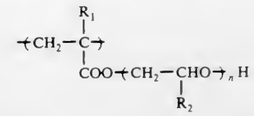
4,123,276

PHOTOSENSITIVE COMPOSITION

Nobuyuki Kita, and Yasuhisa Narutomi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan and National Patent Development Corporation, New York, N.Y.

Continuation of Ser. No. 551,106, Feb. 20, 1975, abandoned. This application Jan. 18, 1977, Ser. No. 760,371
Claims priority, application Japan, Feb. 28, 1974, 49-23940
Int. Cl.[2] G03C *1/52*
U.S. Cl. 96—91 R **21 Claims**

1. A photosensitive composition suitable for use in a planographic printing plate consisting essentially of
(a) a copolymer in which, on weight basis,
(I) from 30 to 80% of the repeating structural units of said copolymer are represented by the general formula (I)



wherein R_1 is a hydrogen atom or methyl group, R_2 is a hydrogen atom, methyl, ethyl or chloromethyl group and *n* is an integer of 1 to 10;
(2) from 5 to 60% of the repeating structural units of said copolymer are acrylonitrile units or methacrylonitrile of the units of the formula



wherein R_3 is hydrogen or methyl;
(3) repeating structural units of said copolymer include

alpha, beta ethylenically unsaturated carboxylic acid units or the half ester units of a cycle acid anhydride with I, the amount of (3) being sufficient so that said copolymer has an acid value of 10 to 100; and

(4) from 64 to 0% of the repeating units of said copolymer are addition polymerizable ethylenically unsaturated compound units other than (1), (2), or (3), wherein said unsaturated compound is selected from the group consisting of acrylates, methacrylates, acrylamide, methacrylamide, allyl compounds, vinyl ethers, vinyl esters, styrenes or crotonates;

the viscosity of said copolymer being 1,000 to 20,000 cps as determined for a 33% by weight solution of said copolymer in ethylene glycol monomethyl ether at 25° C by means of a Brookfield rotational viscosimeter, and

(b) a diazonium compound, said copolymer being 50 to 95% by weight of the total weight of (a) and (b),

wherein said photosensitive composition, if unexposed to actinic light, is soluble in a weak aqueous alkaline solution and wherein said photosensitive composition is insoluble in said solution if said photosensitive composition is exposed to actinic light.

6. A composition according to claim **1** in which the content of the copolymer (a) is 60 to 92% by weight and the content of the diazonium compound (b) is 40 to 8% by weight, based on the total weight of components (a) and (b).

4,123,277

COPOLYMER SUBBING MATERIAL FOR PHOTOGRAPHIC ELEMENTS

Takeji Ochiai, Fujimiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Continuation of Ser. No. 499,360, Aug. 21, 1974, abandoned. This application Mar. 24, 1977, Ser. No. 780,881

Claims priority, application Japan, Aug. 21, 1973, 48/93578

Int. Cl.[2] G03C *1/86, 1/94, 5/54, 1/78*

U.S. Cl. 96—85 **31 Claims**

1. A photographic element which comprises a resin film or resin coated paper having superimposed thereon a subbing layer of a composition consisting essentially of a copolymer of components (A), (B) and (C), wherein component (A) is present in an amount from about 0.1 to 15% by weight, component (B) is present in an amount of from 0.01 to 5% by weight, and component (C) is present in an amount of from about 20 to 80% by weight, component (A) being a monomer containing therein a moiety of the general formula (I)



(I)

wherein R_1 and R_2 each is a hydrogen atom or an alkyl group having 1 to 12 carbon atoms, component (B) being a monomer containing a carboxyl group or a branched alkoxy carbonyl group selected from the group consisting of acrylic acid, methacrylic acid, ethacrylic acid, chloroacrylic acid, maleic acid, fumaric acid, itaconic acid, mesaconic acid, citraconic acid, sorbic acid, acryloxypropionic acid, itaconic acid anhydride, maleic acid anhydride or a mixture of these acids, and component (C) being at least one monomer selected from the group consisting of isoprene, butadiene, butene, octene, styrene, methylstyrene, methyl vinyl ether, ethyl vinyl ether, chloroethyl vinyl ether, butyl vinyl ether, unsubstituted vinyl esters, acrylates, methacrylates, and acrylonitrile and a hydrophilic colloid layer coated on the layer of said composition comprising said copolymer containing therein the moiety of the general formula (I), said copolymer having a molecular weight of about 10,000 to 1,000,000 and being present in an amount effective to provide increased adhesion, of a degree useful in photographic element, between said resin film or resin coated paper and said hydrophilic colloid layer, and said resin film or resin coated paper having at least one layer containing a light-sensitive silver halide, physical development nuclei as used in a diffusion transfer process or a diazo compound.

4,123,278

POLYESTER FILM COATED WITH ADHESIVE POLYMER COMPOSITION

August J. Van Paesschen, Antwerp, and Lucien J. Van Gossum, Kontich, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Mar. 17, 1977, Ser. No. 778,736

Claims priority, application United Kingdom, Mar. 19, 1976, 11216/76

Int. Cl.[2] G03C *1/80*

U.S. Cl. 96—87 R **18 Claims**

1. A coated film comprising a dimensionally stable polyester film support, said film support having a hydrophilic coating adherent thereto by way of a single intermediate adhesive layer strongly adhering to said film support, said adhesive layer consisting essentially of about 25 to 60% by weight of a chlorine-containing copolymer, about 15 to 40% by weight of a butadiene copolymer, and about 2 to 10% by weight of a water-soluble melamine-formaldehyde or hydantoin-formaldehyde resin and being free of gelatin.

17. A process for preparing coated film comprising a dimensionally stable polyester film support having a hydrophilic coating adherent thereto by way of an adhesive layer strongly adhering to said film support, which comprises applying said adhesive layer to an at most monoaxially stretched polyester film support, stretching the thus covered polyester film support as necessary to impart biaxial stretching thereto, heat-setting the thus treated film at a temperature of 180° to 225° C., and applying a hydrophilic coating to said heat-set adhesive layer, said adhesive layer consisting essentially of a gelatin-free mixture of from 25 to 60% by weight of a chlorine-containing copolymer, from 15 to 40% by weight of a butadiene copolymer, and from 2 to 10% by weight of a water-soluble melamine-formaldehyde or hydantoin-formaldehyde resin.

4,123,279

LIGHT-SENSITIVE O-QUINONEDIAZIDE CONTAINING PLANOGRAPHIC PRINTING PLATE

Kesanao Kobayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 561,762, Mar. 25, 1975, abandoned. This application Jan. 4, 1977, Ser. No. 756,653

Claims priority, application Japan, Mar. 25, 1974, 49-33264

Int. Cl.[2] G03C *1/60;* **G03F** *7/08*

U.S. Cl. 96—91 D **15 Claims**

1. A positive-working light-sensitive planographic printing plate capable of providing a useful print on paper after about 8 to 10 sheets of printing when said plate is coated after development with gum arabic solution of 14° Be, and then stored for about a period of one day, comprising a support having thereon a light-sensitive layer containing in admixture a o-quinonediazide light-sensitive material which becomes alkali solution-soluble upon irradiation with actinic light selected from the group consisting of an ester of an amide compound of o-benzoquinonediazide, o-naphthaquinonediazide, quinolinequinonediazide which comprises adding to the light-sensitive layer

(a) about 15 to 50% by weight of said o-quinonediazide light-sensitive material,

(b) about 1 to 20% by weight of an organic solvent soluble novolak resin produced by the condensation of an aldehyde and tertbutyl phenol, and

(c) about 40 to 83% by weight of an alkali-solution soluble phenol-formaldehyde resin or an alkali-solution soluble cresol-formaldehyde resin, each percent by weight being based on the weight of said light-sensitive layer, components (a), (b) and (c) being present in said light-sensitive layer in admixture.

4,123,280

SILVER HALIDE VAPOR DEPOSITION METHOD

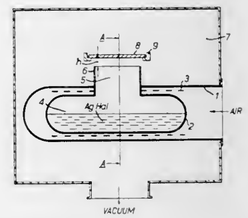
Yordan P. Malinovski; Borislav D. Mednikarov, and Jakob J. Assa, all of Sofia, Bulgaria, assignors to Zlafop pri BAN, Sofia, Bulgaria

Filed Jun. 12, 1975, Ser. No. 586,429

Claims priority, application Bulgaria, Jun. 14, 1974, 26984

Int. Cl.[2] G03C *1/02;* **C23C** *13/00;* **B05B** *13/06;* **C03C** *5/00*

U.S. Cl. 96—94 BF **35 Claims**



1. A method for the production of a photographic material including a silver halide-coated substrate which comprises heating a silver halide having a purity of not less than 99.999% under vacuum conditions in a crucible formed of a material that is inert when heated to an elevated temperature with radiant heating means located around the outside of the crucible to achieve substantially uniform heating of the crucible and its contents to effect thereby a sublimation of the silver halide and the production of a concentrated stream of silver halide vapor issuing from an outlet in the crucible, said radiant heating means being located remote from and out of communication with said vacuum conditions, and passing a substrate under said vacuum conditions over the outlet of the crucible at a distance of not more than 10 mm away so that the vapor stream of silver halide issuing from the outlet of the crucible impinges perpendicularly on the substrate, said silver halide being deposited on the substrate at a rate of 200–2000 A/sec.

4,123,281

PHOTOGRAPHIC SILVER HALIDE COLOR MATERIAL CONTAINING FAST-ACTING HARDENER AND 2-PYRAZOLIN-5-ONE COUPLER PRECURSORS

Marcel J. Monbaliu, Mortsel, Belgium; Hans-Heinrich Credner, Munich, Fed. Rep. of Germany; Wolfgang Himmelmann, Opladen-Lutzenkirchen, Fed. Rep. of Germany; Ernst Meier, Munich, Fed. Rep. of Germany; Gaston J. Benoy, Edegem; Raphael K. Van Poucke, Berchem, both of Belgium; Karl-Wilhelm Schranz, Odenthal-Hahnenberg, Fed. Rep. of Germany, and George F. Van Veelen, Mortsel, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Aug. 17, 1976, Ser. No. 715,105

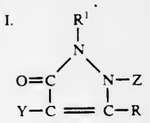
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1975, 2539729

Int. Cl.[2] G03C *1/40*

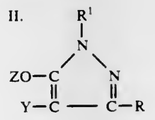
U.S. Cl. 96—100 R **8 Claims**

1. Colour photographic silver halide material containing a fast-acting hardener selected from the group consisting of carbodiimides, dihydroquinolines, carbamoyl pyridiniums and carbamoyloxy pyridiniums wherein said material contains a 2-pyrazolin-5-one coupler precursor corresponding to one of the following general formulae I or II:

I.



II.



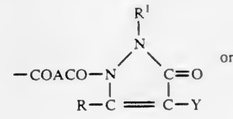
in which

R^1 represents an alkyl group or an aryl group,

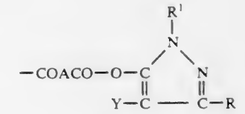
R represents an alkyl group, an aryl group, an anilino group, or an acylamino group derived from a carboxylic or sulphonic acid,

Y represents hydrogen, a group that can be split off during the colour development for the formation of colour-forming coloured or colourless 2-pyrazolin-5-one couplers, or a group that cannot be split off for the formation of 2-pyrazolin-5-one competing coupler, and

Z represents an acyl group deriving from an organic carboxylic acid, an alkoxy-carbonyl group, an aryloxycarbonyl group, or the group



or



in which R^1, R, and Y have the above-defined significance, and A represents an alkylene group or an arylene group.

4,123,282

PHOTOTHERMOGRAPHIC TONERS

John M. Winslow, South Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 611,025, Sep. 8, 1975, Pat. No. 3,994,732. This application Aug. 9, 1976, Ser. No. 712,682

The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.

Int. Cl.[2] G03C *1/02, 1/40*

U.S. Cl. 96—114.1 **7 Claims**

1. In a photosensitive, heat-developable, dry silver sheet material containing an image-forming system including a preformed photosensitive silver halide catalyst-forming means and, as heat sensitive image forming means, an organic silver compound and a reducing agent therefor, the oxidation reduction reaction of which to produce a visible image is accelerated by said catalyst, and sufficient toner to increase the density of said visible image, the improvement characterized by said toner being a mixture of (a) phthalazine and (b) at least one acid of the formula:

R - A - R_1

wherein A is phenyl or naphthyl and R and R_1 are selected from —COOH and CH_2COOH, R and R^1 bonded respectively to the 2 and 3 positions of A_1

and anhydrides of said acid R - A - R_1.

4,123,283

SETTING ELECTRICAL LATENT IMAGES IN MIGRATION IMAGING ELEMENTS

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1973, Ser. No. 349,506

Int. Cl.[2] G03G *13/22*

U.S. Cl. 96—1 PS **33 Claims**

1. An imaging method, comprising:

(A) providing an imaging member comprising a migration layer comprising migration material and substantially electrically insulating softenable material, said softenable material capable of having its resistance to migration of migration material decreased sufficiently to allow migra-

tion of migration material in depth in said softenable material;

(B) providing said imaging member with an electrical latent image; and



(C) setting said electrical latent image by softening said softenable material without decreasing the resistance of the softenable material to migration of migration material sufficient to allow migration of migration material in depth in said softenable material.

4,123,284

POROUS CERAMIC BODIES

Konrad C. Rieger, New Fairfield, Conn., assignor to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed May 6, 1977, Ser. No. 794,425

Int. Cl.² C04B *35/14, 35/44*

U.S. Cl. 106—40 R **14 Claims**

1. A method for producing a porous ceramic product having uniform pore distribution comprising the steps of mixing together about 40 to 65 percent by weight water and about 60 to 35 percent by weight of a mineral mixture comprising about 10 to 100 percent by weight pyrophyllite and about 90 to 0 percent by weight clay selected from the group consisting of china clay and ball clay, agitating the resulting mixture to form a self-foaming slurry, curing and subsequently firing.

4,123,285

FOAMED CERAMIC ELEMENT

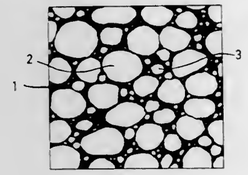
Peter Schuster, Mannheim, Neu-Edingen, and Bernd von Chiari, Rodental, both of Germany, assignors to Schneider GmbH & Co., Frenchen, Germany

Filed Feb. 3, 1977, Ser. No. 765,304

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1976, 2604793

Int. Cl.² C04B *21/02*

U.S. Cl. 106—40 R **11 Claims**



1. Foamed ceramic element of lightweight and of uniform construction throughout formed from mineral raw materials comprising a body portion with relatively large, spherical-like closed pores substantially uniformly distributed throughout said portion, a solid portion of web-like construction surrounding said relatively large, spherical-like pores, said solid portion of web-like construction including relatively small pores distributed throughout said solid portion, the ratio of the mean diameter of the larger pores to the mean diameter of the smaller pores ranging from 3:1 to 8:1, said ceramic element having a crystalline phase of at least about 10 percent by weight and further characterized as having a water absorption characteristic nearly zero and a diffusion resistance factor which is practically infinite.

4,123,286

SILICON CARBIDE POWDER COMPOSITIONS

John A. Coppola, Lewiston; Harry A. Lawler, and Carl H. McMurtry, both of Youngstown, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 27, 1976, Ser. No. 754,648

Int. Cl.² C01B *31/36*

U.S. Cl. 106—44 **12 Claims**

1. A silicon carbide powder containing:

(a). From about 5 to about 100 percent by weight alpha crystalline phase silicon carbide,

(b). said powder containing a maximum of the following components in percent by weight:

SiO_2	2.00
Free Silicon	0.25
Iron	0.50
Alkali and Alkaline Earth Metals	0.50
Total Metal Oxides	3.75

(c). the particles in said powder having an average particle size from about 0.10 to about 2.50 microns,

(d). said powder characterized by the property of being sinterable under substantially pressureless conditions at a temperature between about 1950° C. and about 2500° C. when mixed with between about 0.05 and about 4.0 percent by weight of combinable carbon and from about 0.03 to about 3.0 percent by weight of a densification aid.

4,123,287

GLASS FIBRES FOR REINFORCEMENT OF CEMENT PRODUCTS

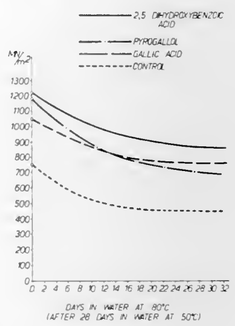
David R. Cockram, Wigan, England, assignor to Pilkington Brothers Limited, Merseyside, England

Filed Jul. 26, 1976, Ser. No. 708,977

Claims priority, application United Kingdom, Jul. 24, 1975, 31016/75

Int. Cl.² C04B *7/02;* **D02G** *3/00*

U.S. Cl. 106—99 **8 Claims**



1. Glass fibres intended for use as reinforcement in cementitious products, said fibres being coated with a composition comprising, as a protective material, at least one dihydroxybenzoic acid.

4,123,288

CALCINATION

James A. Stringer, Barnstone, and David Watson, Waltham on the Wolds, Nr. Melton Mowbray, both of England, assignors to The Associated Portland Cement Manufacturers Limited, England

Filed Oct. 26, 1976, Ser. No. 735,541

Claims priority, application United Kingdom, Oct. 30, 1975, 44954/75; Jan. 13, 1976, 01177/76

Int. Cl.² C04B *7/02*

U.S. Cl. 106—100 **15 Claims**

1. In a method of thermal calcination of minerals which comprises the steps of introducing mineral matter into a calcination system comprising an optimal pretreatment zone and a kiln, introducing combustion air and high grade fuel directly into said kiln in such quantities as to effect calcination of said mineral matter, and recovering the calcined mineral matter from the kiln, the high grade fuel having an ash content which does not exceed a predetermined value and a calorific value sufficient to produce a temperature in excess of 900° C. in said kiln, the improvement which comprises:

burning combustible matter externally of said kiln and obtaining at least one heated gaseous medium which is at a temperature not greater than about 900° C., and transferring heat from said heated gaseous medium to said calcination system whereby the quantity of said high grade fuel may be reduced, said combustible matter having an ash content significantly higher and a calorific value significantly lower than said high grade fuel.

4,123,289

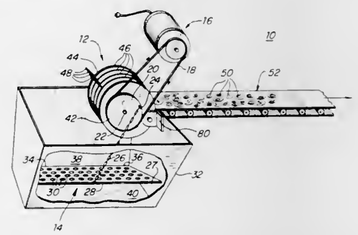
AUTOMATIC PICK-UP AND RELEASE MECHANISM AND AGITATOR DEVICE

Ronald D. Bourgeois, 38 Ellison Park, Waltham, Mass. 02154

Filed Jul. 5, 1977, Ser. No. 812,616

Int. Cl.² B08B *3/04*

U.S. Cl. 134—134 **1 Claim**



1. An automatic pick-up and release system for handling annular and quasi-annular items presented in a fluid and depositing them on a conveyor comprising:

a fluid container for holding fluid containing said items;

an automatic pick-up and release mechanism including a curved surface fixed with said container and having an axis of curvature; a rotatable shaft having an axis parallel and eccentric to said axis of curvature; at least one pick-up element extending radially from and fixed to rotate with said shaft; each said element extending beyond said curved surface and into said fluid for spearing the items and extending short of said curved surface proximate the conveyor for releasing and depositing said items on the conveyor in an area farther from said shaft axis; a slot, corresponding to each of said elements in said curved surface, extending circumferentially about said axis of curvature for accommodating motion of its associated said element; and

an agitator device in said fluid container including a swash plate; a support structure in said container for swingably supporting one edge of said swash plate; drive means; and link means, interconnecting said drive means and said swash plate for reciprocally rotating said swash plate about its edge supported by said support structure for agitating the fluid and keeping in motion the items to be speared by said elements.

4,123,290

CHROMIUM-CONTAINING COATING OF ENHANCED CORROSION RESISTANCE

Alexander W. Kennedy, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 21, 1977, Ser. No. 789,405

Int. Cl.² C23F *7/26*

U.S. Cl. 148—6.2 **10 Claims**

1. In a pulverulent-metal-containing aqueous coating composition containing pulverulent zinc, aluminum, or their mixtures, which composition is adapted for treating metal substrates and for providing corrosion resistance thereto, said coating composition containing hexavalent chromium, pH adjusting agent and a reducing agent for said hexavalent chromium, and with the weight ratio of chromium, expressed as CrO_3, to reducing agent being from about 4:1 to about 50:1, the improvement for enhancing the corrosion resistance of resulting coated metal substrates which comprises incorporating 0.1–20 grams per liter of urea into said composition as at least a portion of said reducing agent, and with the proviso that said pH adjusting agent is selected from the group consisting of basic zinc oxides, basic zinc peroxides, zinc salts of weak acids, and mixtures thereof, said agent having sufficient water solubility in said composition to provide for pH adjustment.

4,123,291

METHOD OF TREATING STEEL STRIP AND SHEET SURFACES, IN SULFUR-BEARING ATMOSPHERE, FOR METALLIC COATING

Jerry L. Arnold, Franklin; Frank C. Dunbar, Monroe; Alan F. Gibson, Middletown, and Marvin B. Pierson, Franklin, all of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Dec. 23, 1976, Ser. No. 753,622

Int. Cl.² C23C *11/08*

U.S. Cl. 148—6.35 **9 Claims**



1. A method of preparing the sufaces of steel strip and sheet stock for fluxless hot dip coating with molten metal, comprising the steps of passing the stock through a furnace heated by direct combustion with air of gaseous fuel containing sulfur compounds ranging from about 5 to about 1600 grains of sulfur per 100 cubic feet of fuel to produce an atmosphere of gaseous products of combustion containing sulfur and from about 2% free oxygen by volume to about 2% by volume excess combustibles in the form of carbon monoxide and hydrogen in which atmosphere said stock is heated to about 540° to about 705° C., thereby causing the formation of a visible sulfur and oxygen rich layer on the stock surfaces, continuing the heating of said stock in a further heating zone isolated from said furnace in an atmosphere consisting of a gas inert to said sulfur and oxygen rich layer and less than 5% hydrogen by volume, thereby preserving said layer, and cooling said stock approximately to the temperature of the molten coating metal in a cooling zone isolated from said heating zones, said cooling zone containing a reducing atmosphere comprising at least 10% hydrogen by volume, whereby to reduce said sulfur and oxygen rich layer completely to a metallic iron surface wettable by said coating metal.

4,123,292

METHOD OF TREATING STEEL STRIP AND SHEET SURFACES FOR METALLIC COATING

Alan F. Gibson, Middletown, and Marvin B. Pierson, Franklin, both of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Dec. 23, 1976, Ser. No. 753,623
Int. Cl.[2] C23C *11/08*
U.S. Cl. 148—6.35 7 Claims



1. A method of preparing the surfaces of steel strip and sheet stock for fluxless hot dip coating with molten metal, comprising the steps of passing the stock through a first heating section containing an atmosphere of gaseous products of combustion having substantially no excess combustibles and from 0% to 2% free oxygen by volume in which atmosphere said stock is heated to a temperature above that at which said stock is oxidized and within the range of about 540° to about 705° C. whereby to form a visible iron oxide layer on the stock surfaces in the color range of dark straw through blue, continuing the heating of said stock without exposure thereof to outside atmosphere in a second heating section isolated from said first heating section in an atmosphere containing less than 5% hydrogen by volume and the balance a gas inert to said oxide layer, thereby preserving said oxide layer, and cooling said stock approximately to the temperature of the molten coating metal in a cooling section isolated from said heating sections, said cooling section containing a reducing atmosphere comprising at least 10% hydrogen by volume, whereby to reduce said iron oxide layer completely to a metallic iron surface wettable by said coating metal.

4,123,293

METHOD OF PROVIDING SEMICONDUCTOR PELLET WITH HEAT SINK

Susumu Okikawa, Ohme; Osamu Yukawa, Kodaira; Hiroshi Mikino, Tachikawa, and Yoshio Nonaka, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 3, 1976, Ser. No. 663,471
Claims priority, application Japan, Mar. 7, 1975, 50-27149
Int. Cl.[2] C22F *1/08*
U.S. Cl. 148—11.5 C 13 Claims



6. A method of providing a silicon semiconductor pellet with a heat sink comprising the steps of:

preparing a heat sink material consisting mainly of copper, said heat sink material containing about 0.10–0.13 weight % of a metal selected from the group consisting of Sn, Fe, Ag, Ni, Zn and P;

rolling said heat sink material;

shaping the rolled heat sink material into a heat sink having desired dimensions;

annealing said heat sink; and

placing said silicon semiconductor pellet over said heat sink with gold foil interposed therebetween and scrubbing them at a temperature for forming a eutectic alloy between said gold foil and said silicon semiconductor pellet.

4,123,294

METHOD OF SEPARATING FERRITIC STEEL OR DUCTILE IRON FROM CERTAIN NONFERROUS METALS

Dean K. Hanink, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1977, Ser. No. 763,301
Int. Cl.[2] C21D *1/44*
U.S. Cl. 148—13.1 3 Claims

1. A method of treating a composite comprising a layered portion of a nonferrous metal taken from the group consisting of silver, silver alloys, gold, gold alloys, copper and copper alloys bonded to a layered portion of iron or low carbon steel wherein the ferrous layer can be through carburized to substantially separate the nonferrous metal from the ferrous metal comprising;

heating the composite material in a carburizing environment at a temperature above the austenitic transformation temperature of said ferrous metal portion until sufficient carbon has diffused into the ferrous metal portion to render it through hardenable,

quenching the composite from a temperature above the austenitic temperature of the carburized ferrous metal portion to a temperature below the transformation temperature of the ferrous metal portion to convert said portion to martensite,

subjecting said composite to a comminuting operation which substantially breaks the hardened ferrous metal portion away from the nonferrous portion reducing the hardened ferrous portion to particles that are smaller in size than comminution products of unhardened nonferrous portion, and

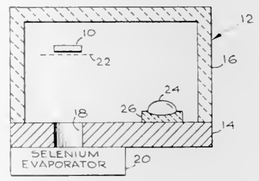
separating the ferrous metal particles from the nonferrous metal comminution products.

4,123,295

MERCURY CHALCOGENIDE CONTACT FOR SEMICONDUCTOR DEVICES

James O. McCaldin, and John S. Best, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 14, 1977, Ser. No. 759,350
Int. Cl.[2] H01L *21/363*
U.S. Cl. 148—33 3 Claims



1. In combination with a semiconductor, an improved contact made by stoichiometric deposition of one of the mercury chalcogenides selected from the group consisting of the binary compounds HgSe, HgTe, and β-HgS, or solid solutions of these binary compounds on a semiconductor body to form an abrupt interface and energy gap change between the contact and the semiconductor body.

4,123,296

HIGH STRENGTH STEEL ROD OF LARGE GAUGE

Noboru Yamakoshi, Kobe; Tsugio Kaneda, Akashi; Nobuyasu Hatsuoka, Itami; Shinichi Shimazu; Tatsu Fujita, both of Kobe; Yoshiro Yamada, Akashi; Tetsuo Yamada, and Atsuo Mizuta, both of Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Division of Ser. No. 533,508, Dec. 17, 1974, Pat. No. 4,046,600.
This application May 20, 1977, Ser. No. 799,016
Claims priority, application Japan, Dec. 17, 1973, 48/141691; Dec. 17, 1973, 48/141692
The portion of the term of this patent subsequent to Sep. 6, 1994, has been disclaimed.
Int. Cl.[2] C22C *38/18*
U.S. Cl. 148—36 2 Claims

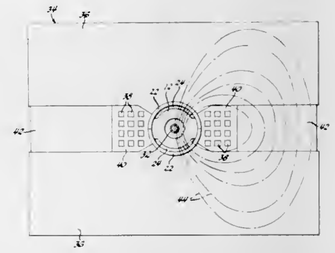
1. A large gauge, high strength steel rod having a diameter of not less than 9 mm prepared by the process which comprises subjecting a high carbon steel rod billet consisting essentially of from 0.65 to 0.9% C, from 0.15 to 1.5% chromium, less than 2.0% silicon, less than 1.5% manganese, at least one element from the group consisting of aluminum, niobium, vanadium zirconium, and titanium in an amount of less than 0.3% in total, balance essentially iron, to hot rolling immediately followed by a controlled cooling treatment, by the use of an air cooling medium, so as to effect a phase transformation to obtain a structure consisting essentially of fine pearlite, wherein said steel rod has a tensile strength of above 115 kg/mm^2, and wherein the reduction in the area of said rod obtained by tensile test is in excess of 35%.

4,123,297

FORMING CURVED THIN MAGNETS FROM RARE EARTH-TRANSITION METAL POWDERS

William F. Jandeska, Rochester; Charles F. Netherton, Marine City, and Charles W. Vigor, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 779,525, Mar. 21, 1977. This application Aug. 1, 1977, Ser. No. 820,600
Int. Cl.[2] H01F *7/02*
U.S. Cl. 148—103 3 Claims



1. A method of making a rare earth-transition metal powder compact having a thin, curved shape, comprising:

compacting a quantity of rare earth-transition metal composition powder in a first press to a pack density of at least 50% of the theoretical density, said powder being substantially magnetically aligned by an applied magnetic field during said compacting, said powder being confined during said compacting in a thin, curved cavity defined between a mandrel shaped to define the inner curved surface of said compact and a die liner shaped to define the outer curved surface of said compact, the compacting force being applied in a direction parallel to the longitudinal axes of said curved inner and outer surfaces,

transporting said powder from said first press to a second press, said powder being held substantially undisturbed in its compacted and magnetically aligned state between said mandrel and liner, said mandrel and liner protecting said powder during the transportation,

thereafter further compacting said powder particles in said cavity in said second press by applying a compacting force in said longitudinal axial direction to a density sufficient to form a relatively strong and self-supporting green compact, said further compacting being accomplished without an applied magnetic field, the magnetic alignment of said powder in said compact not being substantially decreased thereby.

4,123,298

POST DECARBURIZATION ANNEAL FOR CUBE-ON-EDGE ORIENTED SILICON STEEL

Dale M. Kohler, Middletown; Norris A. Dahlstrom, Hamilton, and David W. Taylor, Middletown, all of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Jan. 14, 1977, Ser. No. 759,326
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—111 3 Claims

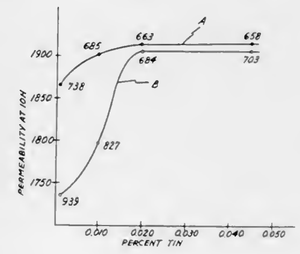
1. In a process of producing grain oriented silicon steel chosen from the class consisting of cube-on-edge oriented silicon steel having a permeability at 796 A/m of more than about 1850 and cube-on-edge oriented silicon steel having a permeability at 796 A/m of less than about 1850 and including the steps of hot rolling to hot band thickness, annealing, pickling, cold rolling to final gauge, decarburizing and subjecting the decarburized silicon steel to a final box anneal during which the final desired cube-on-edge orientation is achieved, the improvement comprising the step of subjecting the silicon steel to a continuous high temperature strip anneal after decarburization and prior to said final box anneal, conducting said continuous high temperature strip anneal in an atmosphere chosen from the class consisting of pure nitrogen, pure hydrogen, nitrogenhydrogen combinations, inert gases and decarburizing atmospheres to improve both the permeability and core loss of said silicon steel, conducting said continuous high temperature strip anneal, when producing said cube-on-edge oriented silicon steel having a permeability at 796 A/m of more than about 1850, at a temperature of from about 950° C. to about 1175° C. for a time of from about 15 seconds to about 5 minutes, said time bearing an inverse relationship to said temperature, and conducting said continuous high temperature anneal, when producing said cube-on-edge oriented silicon steel having a permeability at 796 A/m of less than about 1850, at a temperature of from about 925° C. to about 1100° C. for a time of from about 15 seconds to about 10 minutes, said time again bearing an inverse relationship to said temperature.

4,123,299

METHOD OF PRODUCING SILICON-IRON SHEET MATERAL, AND PRODUCT

Howard C. Fiedler, Schenectady, N.Y., and Joseph T. Cohen, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1978, Ser. No. 837,505
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—111 9 Claims



1. The method of producing grain oriented silicon-iron sheet which comprises the steps of providing a silicon-iron melt

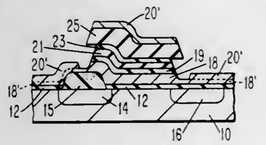
containing 2.2 to 4.5 percent silicon, between about three and 35 parts per million boron, between about 30 and 75 parts per million nitrogen in the ratio to boron of 1 to 15 parts per part of boron, from 0.02 to 0.05 percent manganese, 0.005 to 0.025 percent sulfur and tin in amounts ranging from 0.01 to 0.10 percent, casting the melt and hot rolling the resulting billet to form an elongated sheet-like body, cold rolling the hot rolled body to provide a sheet of final gauge thickness, and subjecting the resulting cold-rolled sheet to a final heat treatment to decarburize it and to develop (110) [001] secondary recrystallization texture in it.

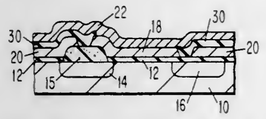
4,123,300

INTEGRATED CIRCUIT PROCESS UTILIZING LIFT-OFF TECHNIQUES

Madhukar L. Joshi; Paul F. Landler, and Ronald Silverman, all of Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1977, Ser. No. 793,217
Int. Cl.[2] H01L *29/58, 21/265*
U.S. Cl. 148—187 **15 Claims**





1. A method of making an integrated circuit in a semiconductor comprising the steps of

forming a dielectric layer on the semiconductor surface;

depositing a first layer of polycrystalline silicon on said dielectric layer;

superimposing on said silicon layer a patterned layer of photoresist defining within the edges of said patterned layer of photoresist a protected region of said first layer of polycrystalline silicon;

removing that portion of said first polycrystalline silicon layer without said protected region;

depositing a second layer of polycrystalline silicon over said dielectric layer without the edges of said patterned layer of photoresist and over said patterned photoresist layer;

removing said patterned photoresist layer and that portion of said second layer of polycrystalline silicon deposited over said patterned photoresist layer; and

oxidizing the surfaces of the remaining portions of said first and second polycrystalline silicon layers to form insulated polycrystalline silicon segments in proximity to each other on said dielectric layer.

4,123,301

METHOD FOR QUENCH HARDENING STEEL CASINGS

Thomas A. Pope, Munster, and John M. Holleran, Dyer, both of Ind., assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Jan. 7, 1977, Ser. No. 757,774
Int. Cl.[2] C21D *9/08*
U.S. Cl. 148—153 **9 Claims**

1. In the quenching of a steel casing while it is moved longitudinally, a method comprising:

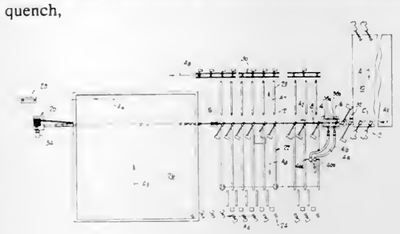
heating the casing in a furnace to a temperature suitable for quenching,

moving the casing from the furnace in a path extending in the longitudinal direction of the casing through an external quench and about an internal quench established through structure at the end of a fluid supply tube longer than the casing,

supporting the supply tube adjacent the external quench to locate the internal quench structure in a position to be received within the casing,

sensing the casing after at least a portion leaves the furnace and in response thereto removing the support after the internal quench structure is received within the casing and before the casing reaches the support,

quenching the casing by directing quenching fluid against internal and external surfaces of the casing as the casing is moved through the external quench and about the internal quench,



initiating removal of the internal quench structure from the moving casing after the casing passes beyond said structure and while still at least partially within the external quench by moving said structure in the same longitudinal direction as the casing but at a substantially faster speed until after it leaves the casing,

then moving the casing transversely out of longitudinal alignment with the internal quench structure,

returning said structure to a position within the external quench, and

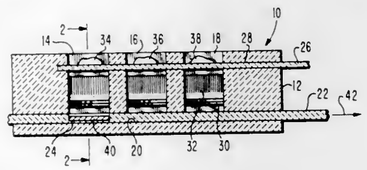
again supporting said structure adjacent the external quench in a location to be received within a casing.

4,123,302

METHOD FOR DEPOSITING EPITAXIAL SEMICONDUCTOR FROM THE LIQUID PHASE

Donald P. Marinelli, Hamilton Square, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,488
Int. Cl.[2] H01L *21/208*
U.S. Cl. 148—171 **7 Claims**



1. A method of depositing an epitaxial layer of a semiconductor material on a substrate comprising the steps of:

(a) bringing the substrate into closely spaced relation to a wafer,

(b) dropping a molten solution of the semiconductor material in a solvent into an edge of the space between the wafer and the substrate so that that solution is sucked up into the space by capillary action and fills the space, and then

(c) cooling said solution so as to precipitate the semiconductor material and deposit the semiconductor material on the substrate.

4,123,303

IGNITABLE COMPOSITIONS

Robert J. Benge, Waltham Abbey, and Cecil H. Miller, Woodford Green, both of England, assignors to Ministry of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sep. 18, 1970, Ser. No. 73,649
Claims priority, application United Kingdom, Sep. 19, 1969, 46393/69
Int. Cl.[2] C06B *45/04*
U.S. Cl. 149—17 **7 Claims**

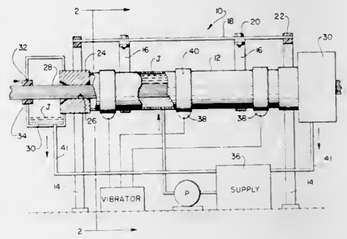
1. A process for the preparation of an explosive delay composition consisting substantially of barium chromate and at least one solid fuel selected from the group consisting of boron, silicon, titanium, tantalum, niobium, antimony and zirconium, comprising suspending the solid fuel in finely divided form in an aqueous medium and reacting in the aqueous medium at elevated temperature a water-soluble chromate with a water-soluble barium compound to thereby precipitate the fuel particles by substantial incorporation of the particles in insoluble barium chromate.

4,123,304

JELLY TUBE CONSTRUCTION AND METHOD OF WATERPROOFING CABLE

Norman O. Gaudette, 221 Partition St., Warwick, R.I. 02888

Filed Dec. 27, 1976, Ser. No. 754,825
Int. Cl.[2] H01B *13/00*
U.S. Cl. 156—48 **7 Claims**



1. A method of waterproofing a core of a communication cable, wherein the core is defined by a plurality of bundled individual material strands that are located in relatively close adjacent parallel relation, comprising the steps of continuously advancing said core through an enclosed filling chamber, directing a jelly-like waterproofing compound in at least a semi-fluid state under pressure into said chamber and in substantially complete enveloping contact with the outer surfaces of said continuously advancing core, and directly vibrating said compound by vibrating means located within said chamber in contact with said compound while maintaining said strands in the relatively close, adjacent parallel relation, wherein said compound is forced between said strands to fill the interstices therebetween, thereby completely waterproofing said strands.

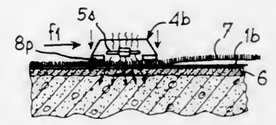
4,123,305

METHOD OF HEATING FOR CONNECTING A PLATE ELEMENT TO A SUPPORT BY MEANS OF A THERMOFUSIBLE GLUE

Thaddée Krzeszowski, Lesigny, France, assignor to Societe Anonyme dite: Weber et Broutin, Seine et Marne, France

Filed Apr. 20, 1977, Ser. No. 789,441
Claims priority, application France, Apr. 21, 1976, 76 11750
Int. Cl.[2] B23K *13/02;* **H05B** *5/00;* **E04B** *2/00;* **B29C** *19/02*
U.S. Cl. 156—71 **10 Claims**

1. A method of fixing a covering sheet to a surface of a support having a surface area at least as large as the covering sheet, comprising spreading over an entire area of the surface of said support substantially equal to the area of the covering sheet a layer including hot melt glue and a material capable of being heated in response to an induction field of vibrations, arranging the covering sheet on the layer so as to sandwich the



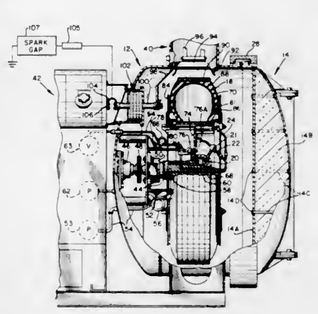
layer between the support and the covering sheet, generating through the covering sheet an induction field of vibrations having an area of at least one square decimeter and substantially less than the area of the covering sheet, and displacing said field over the entire covering sheet to cause the entire covering sheet to be evenly glued to the support.

4,123,306

METHOD AND SYSTEM FOR RETREADING TIRES UTILIZING RF ENERGY

Robert G. Landry, Lewiston, Me., assignor to Long Mile Rubber Company, Dallas, Tex.

Filed Dec. 29, 1976, Ser. No. 755,484
Int. Cl.[2] B29H *5/04, 17/36*
U.S. Cl. 156—96 **47 Claims**



47. A method of retreading tires comprising:

removing an old tread from a tire casing,

applying a length of uncured cushion gum about the outer periphery of the tire casing,

applying a length of a pre-cured tread about the outer periphery of the cushion gum,

positioning an inner tube within the tire casing,

mounting the tire casing on a hub,

mounting the hub such that the periphery of the pre-cured tread is adjacent an RF antenna,

rotating the pre-cured tread and the RF antenna relative to one another while maintaining continuous pressure against the pre-cured tread to the tire casing,

applying RF energy to said antenna of a magnitude sufficient to vulcanize the cushion gum in order to vulcanize the pre-cured tire tread to the tire casing, and

providing an RF energy path from the tire casing to circuit ground.

4,123,307

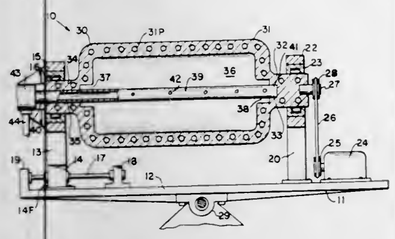
METHOD FOR FORMING HOLLOW SHELLS BY ROTATIONAL CASTING AND WINDING THEREON

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 547,621, Feb. 6, 1975, Pat. No. 4,043,721, Continuation of Ser. No. 300,248, Oct. 24, 1972, Pat. No. 3,875,275, which is a continuation of Ser. No. 744,048, Jul. 1, 1968, abandoned, Continuation-in-part of Ser. No. 612,719, Sep. 12, 1975. This application Oct. 12, 1976, Ser. No. 731,799

Int. Cl.[2] **B29C** *2/00*

U.S. Cl. 156—172 **10 Claims**



1. A method of forming a composite article comprising the steps of:

forming a hollow preform by disposing a structural member across a cavity of a mold, introducing a molding material into said mold cavity and causing said molding material to form a hollow body wherein the opposite end portions of said structural member are integrally secured to respective opposite wall portions of said hollow body during the molding procedure by the solidification of said molding material against said structural member and wherein said opposite end-portions of said structural member are accessible to the exterior of said hollow body,

removing said hollow body with said structural member secured thereacross from said mold and disposing said structural member with the hollow body thereon between the centers of a filament winding fixture with the opposite end-portions of said structural member providing rotational support on said fixture for said hollow body and wherein said structural member defines an axis of rotation for said hollow body,

thereafter power rotating said hollow body on said filament winding fixture while simultaneously winding at least one flexible reinforcing member around at least a portion of the outside surface of said hollow body and bonding said reinforcing member to said outside surface to form a composite body composed of said hollow body, said structural member, and said reinforcing flexible member wound thereon in integral assembly therewith.

4,123,308

PROCESS FOR CHEMICALLY BONDING A POLY-P-XYLYLENE TO A THERMOSETTING RESIN AND ARTICLE PRODUCED THEREBY

Thomas E. Nowlin, Somerset, and Ronald A. Martineau, Irvington, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 19, 1977, Ser. No. 843,653

Int. Cl.[2] **C08F** *8/00, 2/46;* **B05D** *3/06*

U.S. Cl. 156—272 **19 Claims**

1. A process for chemically bonding a thermosetting resin to a poly-p-xylylene substrate comprising:

(a) providing a cold plasma within a confined region evacuated to a pressure lower than about 100 torr;

(b) exposing at least one surface of said substrate directly to said plasma within said region for a time period sufficient to form, at the surface of the substrate, functional groups containing oxygen and active hydrogen atoms;

(c) depositing an uncured liquid thermosetting resin capable of reacting with said active hydrogen atoms on said surface; and

(d) curing said resin on said substrate for a time period sufficient to set the resin and chemically bond said surface to the resin in situ via said functional groups.

4,123,309

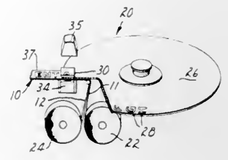
TRANSFER LETTER SYSTEM

Kenneth J. Perrington, New Brighton; Phillip A. Taylor, Lake Elmo, and Peter J. Vogelgesang, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 318,257, Dec. 26, 1976, abandoned. This application Nov. 29, 1973, Ser. No. 420,310

Int. Cl.[2] **G03C** *5/16;* **B41B** *13/00*

U.S. Cl. 156—234 **4 Claims**



1. A method of composing a series of graphics such as letters, numbers, symbols or pictures comprising the sequential steps of:

providing an accepting tape comprising a layer of latent adhesive material, which adhesive material is nontacky at normal room temperature, but is softened and activated when heated to a temperature range slightly above normal room temperature; and a transfer tape comprising a donor web and a layer of microgranules of up to 5 micron average diameter releasably adhered to said donor web, at least one of said layers bearing a radiation absorbing pigment and at least one of said tapes being essentially transparent to radiant energy from one exterior surface at least to said pigment;

positioning said layers of said tapes in face-to-face contact to provide a composite strip material;

briefly and sequentially directing radiation toward successive areas on said exterior surface of the composite strip material, said radiation having sufficient energy to heat said radiation absorbing pigment above the softening range of said adhesive material, while reflectively masking said directed radiation except in successive graphic patterns so that the layer of adhesive material softens selectively in the successive graphic patterns and adheres to the layer of microgranules to provide a series of visible graphic patterns corresponding to the pattern of radiation; and

separating the accepting tape and donor web to transfer microgranules to the accepting tape in the configuration of the visible graphic patterns.

4,123,310

APPARATUS FOR APPLYING A LABEL TO AN OBJECT

Miquel A. Varon, Upland, and Paul F. Paddock, Riverside, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Mar. 10, 1977, Ser. No. 776,319

Int. Cl.[2] **B65C** *3/00*

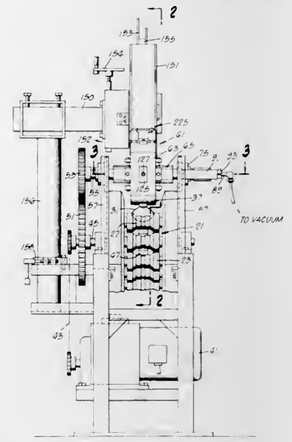
U.S. Cl. 156—351 **28 Claims**

1. Apparatus for successively applying labels respectively to a plurality of objects, comprising:

(a) a mechanism including a label carrier tape for successively delivering a plurality of detached labels at spaced intervals to a labeling station, each of said labels having an adherent surface and a non-adherent surface;

(b) conveyor means for successively moving a plurality of objects at spaced intervals to said labeling station in synchronism with the delivery of said labels; and

(c) label transfer means at said labeling station for successively transferring the delivered detached labels and applying them to the objects as they are successively moved



to the labeling station, said transfer means comprising a rotatable wheel peripherally mounting a plurality of circumferentially spaced suction cups each having a relatively thin peripheral lip, for synchronously releasably gripping the non-adherent surfaces of the delivered labels and applying them with their adherent surfaces engaged with the objects, whereby during application of a label to an object, deformation of the lip will relieve any suction forces remaining within the suction lip.

4,123,311

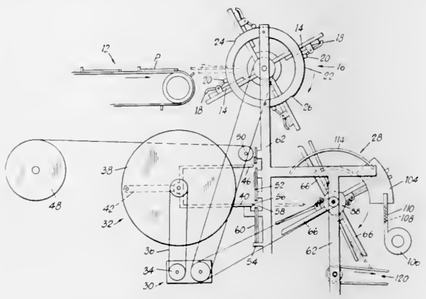
MACHINE FOR WRAPPING BATTERY PLATES

Charles H. McAlpine, Coloma, Mich., assignor to Mac Engineering & Equipment Company, Inc., Benton Harbor, Mich.

Continuation of Ser. No. 543,518, Jan. 23, 1975, abandoned. This application Feb. 12, 1976, Ser. No. 657,693

Int. Cl.[2] **B32B** *31/20*

U.S. Cl. 156—443 **2 Claims**



1. Battery plate wrapping apparatus comprising

a wrapping and sealing wheel having radially disposed pairs of opposed plates having suction surfaces,

one plate of each pair being swingable toward and away from the other,

means for advancing said wheel in a step-by-step motion to four consecutive stations,

means for inserting a folded wrapper sheet between the plates of said pairs of plates with the folded edge of the sheet inwardly and centered axially of the wheel at a first receiving station,

each side of the folded sheet having a single spaced pair of registering notches in each folded half thereof,

means for inserting a battery plate between the folds of said wrapper at a second station, said pairs of plates being in upwardly opening position at this station,

means responsive to rotation of said wheel to admit vacuum to said vacuum surfaces of said plates from in advance of said first station to behind said second station,

pairs of segmental arcuate rails arranged around each end of a sector of said wheel extending from the exit of said first station to a third station

said rails having edges converging axially of said wheel to enter into the notches in said wrapper and center said battery plate between the side edges of said wrapper,

the side edges of said pairs of plates having notches formed therein clearing said rails,

means for heating said wrapper at said third station,

cam means responsive to rotation of said wheel past said third station to close the plates of said pairs of plates into gripping and retaining engagement with the wrapper and battery plate enclosed therein,

means for sealing the projecting edges of said wrapper sheets,

said sealing means being actuated by the closing of said plates,

and cam means responsive to rotation of said wheel to open said pairs of plates and release said wrapper plates at a fourth station.

4,123,312

APPARATUS FOR PRODUCING COLLAPSIBLE CONTAINERS

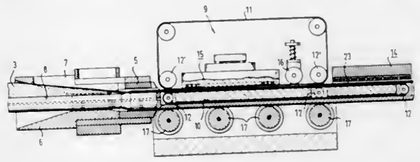
Günter Schmid, Vevey, and Rudolf Jeker, Vouvry, both of Switzerland, assignors to Automation Industrielle SA, Vouvry, Switzerland

Filed Feb. 24, 1977, Ser. No. 771,627

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2643089

Int. Cl.[2] **B65C** *3/12*

U.S. Cl. 156—466 **8 Claims**



1. Apparatus for forming containers having a deformable tubular body and a closing cap attached to one end of said tubular body which comprises:

a. feeding means for feeding a strip of deformable material through a two step shaping means comprising a shaping tube and a mandrel axially positioned partially within said tube to shape said material into a cylinder having overlapping edges, at least a portion of said shaping tube upstream of a welding means being closed in the peripheral direction, said feeding means including a first endless belt positioned within said mandrel and a second endless driven belt positioned exterior of said mandrel,

b. means for moving said first and second endless belt to frictionally contact and move said shaped material along said mandrel said shaped material and first endless belt being moved solely by said second belt and friction from

said second belt to said first belt via said material said second belt being the sole means for moving said shaped material in said feeding means,

c. said welding means comprising high frequency induction means or ultrasonic means adjacent said mandrel adapted to heat said overlapping edges while moving said material along said mandrel,

d. pressing means adjacent said welding means adapted to press the flowing or liquid heated phase of said shaped material to seal the edges of the shaped material internally and externally,

e. cooling means adjacent said pressing means to set said flowing or liquid phase,

f. cutting means comprising two mating rotated knives adjacent and downstream of said mandrel adapted to segment said closed cylinder into cylindrical tubes of desired length, and

g. means adjacent said cutting means for welding a tube head to one end of each of said cylindrical tubes comprising a high frequency induction means or an ultrasonic means utilized to weld overlapping portions of said tube and said head.

4,123,313

APPARATUS FOR MAKING A COMPOSITE FABRIC

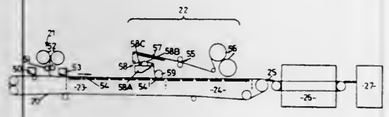
David S. Queen, Sanquhar; Peter W. Bell, Beith; Thomas H. Dick, Dundee, and John B. Edgar, Giffnock, all of England, assignors to Sidlaw Industries Limited, London, England

Continuation of Ser. No. 631,917, Nov. 14, 1975, abandoned, which is a division of Ser. No. 439,931, Feb. 5, 1974, Pat. No. 3,953,269. This application Oct. 5, 1977, Ser. No. 839,566

Claims priority, application United Kingdom, Feb. 19, 1973, 6997/73

Int. Cl.² B32B *3/26*

U.S. Cl. 156—498 **5 Claims**



1. Apparatus for manufacturing a composite fabric, comprising first and second contiguous sets of planar support surfaces, an endless carrier belt having a non-stick surface and traversible over said first and second contiguous sets of planar support surfaces, heating means for heating the first set of planar support surfaces, cooling means for cooling the second set of planar support surfaces, first means for supplying a relatively thick substrate to said carrier belt in advance of said first set of planar support surfaces, said first means including a device for applying deaerated thermo-plastics material in liquid form directly to the surface of said carrier belt, second means for supplying pile-forming material, third means arranged to receive said pile-forming material from said second means, said third means including a lick roller for coating one surface of said pile-forming material with plastics material in liquid form, and fourth means including a roller cooperating with one of said planar support surfaces of said first set substantially immediately adjacent the junction between said first and second sets of planar support surfaces for applying said coated surface of the pile-forming material under heat to said substrate material, whereby said coating on said pile-forming material is briefly heated and gelled and immediately thereafter said composite fabric is cooled.

4,123,314

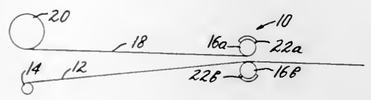
APPARATUS AND METHOD FOR JOINING WEBS ON THE FLY

George H. Sundin, Hermantown, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Aug. 19, 1977, Ser. No. 826,173

Int. Cl.² B31F *5/00;* **B65H** *19/14*

U.S. Cl. 156—505 **7 Claims**



1. Apparatus for splicing moving web comprising:

(a) first and second rolls;

(b) said first and second rolls being parallel and spaced apart;

(c) a first strip of resilient material on said first roll, said strip of resilient material covering from about 10 to about 80 percent of the circumference of said first roll and extending over substantially the entire length of said first roll;

(d) a second strip of resilient material on said second roll, said second strip of resilient material covering from about 10 to about 80 percent of the circumference of said second roll and extending over substantially the entire length of said second roll;

(e) means for feeding a supply web between said first and second rolls;

(f) means for positioning the leading edge of a reserve web between said rolls;

(g) said first and second rolls being normally stationary and being adapted when actuated to simultaneous rotation through a turn at a peripheral velocity substantially equal to the linear speed of the web; and

(h) said first and second strips of resilient material being out of contact in the stationary position of the first and second rolls and applying opposing force to each other during rotation.

4,123,315

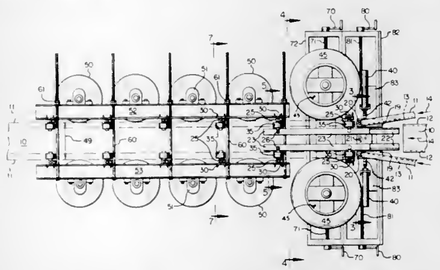
MACHINE FOR ASSEMBLING WOOD I-BEAMS

James R. Keller, Tualatin, and William A. Nickerson, Portland, both of Oreg., assignors to Wm. A. Nickerson & Co., Ltd., Tualatin, Oreg.

Continuation-in-part of Ser. No. 743,532, Nov. 5, 1976, Pat. No. 4,074,498, which is a continuation-in-part of Ser. No. 558,350, Mar. 14, 1975, Pat. No. 3,991,535. This application Jun. 23, 1977, Ser. No. 809,176

Int. Cl.² B26D *1/10;* **B32B** *31/00*

U.S. Cl. 156—560 **9 Claims**



1. A machine for assembling a pair of grooved wood chord members on opposite side edges of a tongued web member to make an I-beam, said machine comprising means for supporting said web and chord members with tongues on said opposite side edges of said web member in positions to enter grooves in opposed face sides of said chord members, a pair of resilient drive wheels engageable with the opposite sides of said chord members to press said chord members onto said tongues and cause said tongues to enter part way into said grooves, and idle sizing rollers engagable with said opposite sides of said chord members to cause said tongues to enter farther into said grooves to produce a beam of predetermined width measured between said opposite sides of said chord members.

4,123,316

PLASMA PROCESSOR

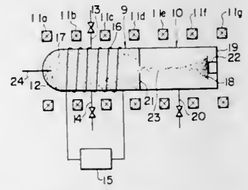
Takashi Tsuchimoto, Kodaira, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 6, 1976, Ser. No. 729,987

Claims priority, application Japan, Oct. 6, 1975, 50/119769; Feb. 16, 1976, 51/14854

Int. Cl.² B01K *1/00*

U.S. Cl. 156—643 **27 Claims**



1. A plasma processor comprising a plasma generating chamber having a plasma outflow port, means for introducing a gas into said plasma generating chamber, means for ionizing said gas in said plasma generating chamber to form a plasma, a plasma processing chamber disposed in communication with said plasma outflow port and which receives therein at a predetermined location a member to be processed, means for generating coaxial magnetic fields at least between said plasma outflow port and said member located in said plasma processing chamber for confining the plasma effused from said outflow port within a volume defined by said coaxial magnetic fields and for transporting said confined plasma from said plasma outflow port to said member to be processed in said plasma processing chamber, and means for evacuating said plasma processing chamber such that the distance between said plasma outflow port and said member to be processed in said plasma processing chamber is less than the length of the mean free path of any gas remaining in said plasma processing chamber.

4,123,317

METHOD AND AN APPARATUS FOR PROCESSING FINELY DIVIDED FIBROUS PULP WITH GAS WITHOUT OVERPRESSURE

Bjørn H. Fritzvold; Helge Carling, and Leif H. Eriksen, all of Oslo, Norway, assignors to Myrens Verksted A/S, Oslo, Norway

Filed Oct. 29, 1976, Ser. No. 737,033

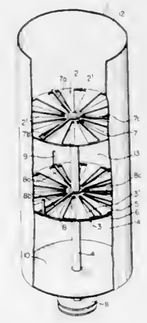
Claims priority, application Norway, Oct. 31, 1975, 3661/75

Int. Cl.² D21C *3/24, 7/00, 9/10*

U.S. Cl. 162—17 **25 Claims**

1. A method of treating finely divided fibrous pulp with a gas without overpressure, comprising the steps of substantially continuously supplying pulp to a reactor having a plurality of stages, said pulp being distributed in layers which substantially cover the entire cross-section of the reactor, each stage being divided by a surface having sufficiently small radially extending apertures evenly distributed across the entire cross-section of the reactor for the pulp to form bridges temporarily supporting each layer in turn, the pulp being conveyed from stage to stage by gravity; continuously flowing the gas through all of the apertures and through the temporarily supported pulp over the entire cross-section of the reactor; and breaking the pulp bridges at periodic time intervals thereby advancing the pulp downwards through the apertures from one stage to another for merging with a subjacent layer or to be removed from the reactor as a processed pulp.

13. Apparatus for treating finely divided fibrous pulp, with gas without overpressure, comprising a reactor having an inlet for distributing a suitable layer of pulp, inlet means for fresh gas and outlet means for used gas, a rotatable central shaft having an axis, one or more subjacent substantially stationary supporting means, each extending across substantially the total cross-section of the reactor and each serving temporarily to collect the distributed pulp in a layer, each supporting means



being provided with generally radially extending apertures evenly distributed across the total surface of the supporting means and having a shape and size allowing the finely divided pulp to form bridges across the apertures, said apertures allowing the gas to flow continuously through the pulp, and movable breaking means associated with each supporting means and advanced by driving means along the upper side of the supporting means in the area of the pulp bridges to break these bridges so that the pulp under the influence of gravity is advanced downwards in the reactor to merge with a subjacent layer or to be removed from the reactor as finished processed pulp.

4,123,318

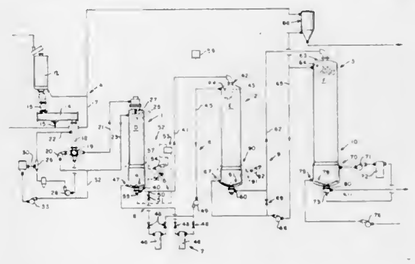
THREE-VESSEL TREATMENT SYSTEM

Michael I. Sherman, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed Jun. 29, 1976, Ser. No. 701,037

Int. Cl.² D21C *7/10*

U.S. Cl. 162—19 **4 Claims**



1. A method of treating cellulosic fiber material utilizing a first vessel, s separate second, digesting vessel, and a separate third vessel, said method comprising the steps of continuously

(a) feeding cellulosic fiber material entrained in treatment liquid into a top portion of the first vessel,

(b) establishing a first flow path of cellulosic fiber material

entrained in and impregnated with treatment liquid from a bottom portion of the first vessel to a top portion of the second vessel, liquid substantially filling the second vessel,
(c) establishing a column of fiber material in the second vessel below the level of liquid in the second vessel,
(d) withdrawing liquid from a top portion of the second vessel,
(e) establishing a second flow path of the liquid withdrawn from the second vessel back toward a bottom portion of the first vessel,
(f) heating the liquid during transport said second flow path,
(g) feeding a portion of the heated liquid flowing in the second flow path into said first flow path, while feeding the rest of the heated liquid to a bottom portion of the first vessel,
(h) withdrawing fiber material from the bottom of the second vessel and feeding it in a third flow path, without significant reduction of the pressure thereof, to the top of the third vessel,
(i) maintaining the temperature in the bottom of the second vessel low enough to prevent pulp degradation by providing an enlarged portion of said second vessel bottom, withdrawing liquid from the enlarged bottom portion of the second vessel, subjecting a portion of the withdrawn liquid to a large pressure reduction in a pressure reduction area so that a portion thereof flashes into steam and the rest remaining as liquid, and removing this liquid from the pressure reduction area for ultimate recovery or disposal thereof and removing the flashed steam from the pressure reduction area for ultimate reuse thereof,
(j) effecting countercurrent washing of the fiber material in the third vessel,
(k) withdrawing washed pulp from the bottom of the third vessel,
(l) withdrawing liquid from the top portion of the third vessel,
(m) subjecting a portion of the withdrawn liquid to a large pressure reduction in a pressure reduction area so that a portion thereof flashes into steam and the rest remaining as liquid,
(n) removing this liquid from the pressure reduction area for ultimate recovery or disposal thereof and removing the flashed steam from the pressure reduction area,
(o) establishing a fourth flow path of a portion of the liquid withdrawn from the third vessel and not fed to the pressure reduction area from the third vessel and back toward a bottom portion of the second vessel, and
(p) feeding a portion of the liquid flowing in said fourth flow path into the third flow path while feeding the rest of the liquid in the fourth flow path to a bottom portion of the second vessel.

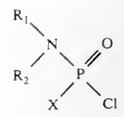
4,123,319

PROCESS FOR SIZING CELLULOSE FIBERS

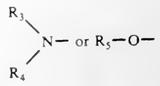
James Axel C. Bjorklund, Saltsjo-Boo, and Turid Ekengren, Sollentuna, both of Sweden, assignors to KemaNobel AB, Stockholm, Sweden

Filed Mar. 1, 1976, Ser. No. 663,001
Claims priority, application Sweden, Mar. 20, 1975, 7503208
Int. Cl.[2] D21D *3/00*
U.S. Cl. 162—158 **6 Claims**

1. A process for sizing cellulose fibers or cellulose fiber containing materials wherein cellulose fibers in aqueous suspension or in paper products are reacted with at least 0.001 percent by weight based on dry fibers of a sizing agent, said sizing agent being a compound having the general formula



where X is the group



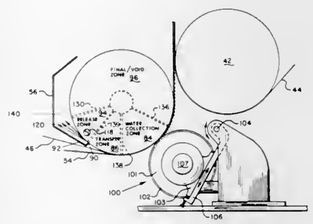
wherein R_1 is an organic, hydrophobic group having from 8 to 40 carbon atoms and R_2, R_3, R_4 and R_5 independent of each other are alkyl groups having 1 to 7 carbon atoms or have the same meaning as R_1.

4,123,320

WATER CONTROL SYSTEM INCLUDING A PRESSURE ROLL FOR SUCTION ROLLS IN PAPERMAKING MACHINES

Fred T. Stone, West Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.

Filed Jan. 6, 1975, Ser. No. 538,933
Int. Cl.[2] D21F *3/10*
U.S. Cl. 162—199 **18 Claims**



16. In a papermaking process of the type wherein water is removed from paper that is being run over a suction roll, such as for example a couch roll, the improvement comprising the following steps:
(a) providing a suction roll with a vacuum means for removing water;
(b) providing a wire mesh surface tension covering covering at least a portion of the suction roll, said wire mesh surface tension covering allowing a film-forming action to take place between it and the water from a wet paper web;
(c) providing a pressure roll in face-to-face, pressure engagement with the exterior surface of the suction roll, said pressure roll serving as a means to counteract the tendency of the fines and other substances from the paper from plugging up said wire mesh surface tension covering.

4,123,321

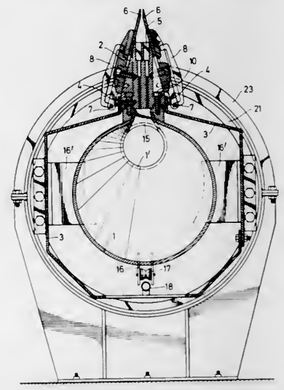
REMOVABLE HEAD BOX FOR A PAPER MAKING MACHINE

Christoph Link, and Robert Trondle, both of Ravensburg, Germany, assignors to Escher Wyss GmbH, Ravensburg, Germany

Filed Jun. 29, 1977, Ser. No. 810,939
Claims priority, application Switzerland, Jul. 6, 1976, 8624/76
Int. Cl.[2] D21F *1/02*
U.S. Cl. 162—272 **9 Claims**

1. A head box for a paper making machine comprising

a distribution pipe of narrowing cross-section in the direction of a flow of pulp therethrough;
a pulp guide connected to said pipe for uniformly distributing the flow of pulp from said pipe onto a permeable element to form a non-woven web;
a box-shaped support having a constant cross-section along a longitudinal axis thereof, said support having said pipe and said pulp guide housed therein;
a pair of annular bearings, each said annular bearing being secured to a respective end of said support; and
a pair of bearing housings, each said housing having a respective annular bearing rotatably mounted therein for



rotation of said support with said pipe and pulp guide therein.

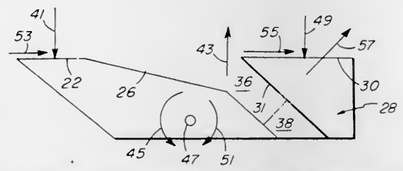
8. A head box for a paper making machine comprising
a distribution pipe of narrowing cross-section in the direction of a flow of pulp therethrough;
a pulp guide connected to said pipe for uniformly distributing the flow of pulp from said pipe onto a permeable element to form a non-woven web;
a box-shaped support having a constant cross-section along a longitudinal axis thereof, said support having said pipe and said pulp guide housed therein; and
means for movably mounting said pipe in said support along said axis.

4,123,322

DRAINAGE FOIL ELEMENT HAVING TWO WIRE BEARING PORTIONS

David P. Hoult, Wellesley, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Jun. 24, 1977, Ser. No. 809,909
Int. Cl.[2] D21F *1/48*
U.S. Cl. 162—352 **5 Claims**



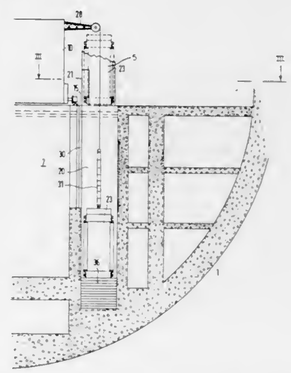
1. A drainage foil element for removable attachment to a web-forming machine having a forming wire and support means for said element extending transversely of said forming wire for supporting said foil element in working relation to said forming wire, said foil element comprising in a unitary structure: a part for confronting said forming wire in use, said part having a first forming wore bearing portion, a suction-creating portion trailing said first bearing portion, a second forming wire bearing portion affixed to and trailing said suction-creating portion, and drainage means between said suction-creating portion and said second bearing portion, whereby during use of said foil element the suction force created by said suction-creating portion is located between a pair of bearing forces imposed by said forming wire on said respective wire bearing portions and located in a part of said element that in use is remote from said forming wire; and mounting means extending lengthwise of said foil for fixing said foil element to said support means, said mounting means being located in said foil element between said wire bearing portions so that the respective torques around said support means produced by said bearing forces are in opposite directions.

4,123,323

NUCLEAR REACTOR PLANT

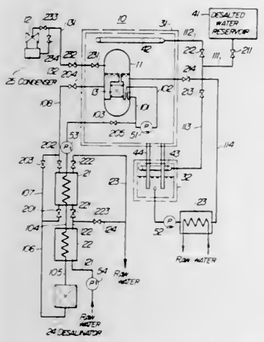
Robert Weber, Uttenreuth; Erich Katscher, Marloffstein, and Hans-Peter Schabert, Erlangen, all of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Jun. 22, 1976, Ser. No. 698,510
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1975, 2528825
Int. Cl.[2] G21C *19/00*
U.S. Cl. 176—30 **6 Claims**



1. In a nuclear power plant having a pit building constructed of concrete and forming walls defining a fuel-element storage pit and a cask pit adjacent thereto for safely lowering a fuel-element transporting cask therein, the cask pit being connected by a spur channel to the fuel-element storage pit, a barrier disposed in vicinity of the spur channel and extending transversely thereto, the fuel-element storage pit having means defining a transport plane disposed at an upper edge thereof, said barrier extending upwardly from said transport plane and having a height equal to at least one-half the vertical length of the fuel-element transporting cask, said barrier being formed with a gap located above said spur channel through which fuel-elements are transportable between the fuel-element storage pit and the cask pit, said gap being narrower than the transporting cask.

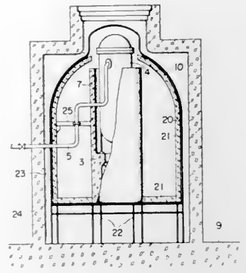
4,123,324
APPARATUS FOR DECONTAMINATING A RADIOACTIVELY CONTAMINATED COOLANT
Takahiro Sanada, and Kanehiro Ochiai, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan
Filed Jan. 25, 1977, Ser. No. 762,265
Claims priority, application Japan, Feb. 2, 1976, 51/9323
Int. Cl.[2] G21C *19/30*
U.S. Cl. 176—37 13 Claims



1. An apparatus for decontaminating a coolant for a nuclear reactor having a core of the type which is cooled by the coolant containing radioactively contaminated impurities, the coolant being in a condition in which it is heated by decay heat in the core, comprising, in combination:
means for withdrawing the coolant from the core;
means for cooling the coolant withdrawn from the core by said withdrawing means;
means for removing radioactively contaminated impurities from the cooled coolant from said cooling means;
means for heating the decontaminated coolant from said impurities removing means;
a pipe line means for returning the heated coolant from said heating means to the core;
a bypass pipe line means bypassing said heating means and connecting said impurities removing means to said coolant returning pipe line means for supplying unheated decontaminated coolant thereto; and
means for selectively passing the coolant from said impurities removing means through said heating means or said bypass pipe line means.

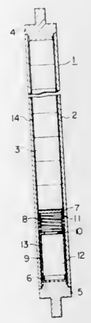
4,123,325
CONTAINERS FOR HOUSING NUCLEAR REACTORS
Tadaharu Ichiki, Tokyo; Eiji Shiho, Machida, and Koji Kitagawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Feb. 2, 1976, Ser. No. 654,175
Claims priority, application Japan, Feb. 5, 1975, 50-15942
Int. Cl.[2] G21C *9/00*
U.S. Cl. 176—38 6 Claims

1. In a pressure tight steel container for housing a rigidly supported pressure vessel containing a nuclear reactor of the type wherein said container comprises a bottom wall and a substantially cylindrical side wall which is surrounded by a biological shield wall spaced from said container side wall, the improvement which comprises:
a relatively flexible metal framework supporting structure for supporting the bottom wall of said container, and
a protective wall provided along substantially the entire inner surface of said container and supported by the bottom wall thereof for receiving the jet stream and the



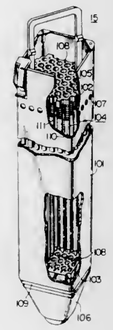
percussive forces of high speed moving bodies which are created in said container in the case of an emergency.

4,123,326
NUCLEAR FUEL ELEMENT AND METHOD FOR FABRICATING THE NUCLEAR FUEL ELEMENT
Katsutoshi Shinbo, Katsuta, Japan, assignor to Hitachi, Ltd., Japan
Filed May 19, 1975, Ser. No. 578,766
Claims priority, application Japan, May 22, 1974, 49-56504
Int. Cl.[2] G21C *3/02*
U.S. Cl. 176—68 10 Claims



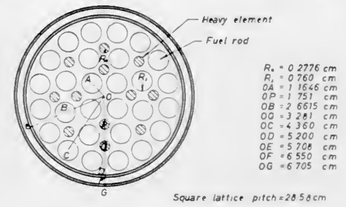
1. A nuclear fuel element comprising: a sealed fuel cladding; nuclear fuel pellets contained within said sealed fuel cladding, said pellets having a size smaller than an internal dimension of said sealed fuel cladding to form a gap between said pellets and said sealed fuel cladding, and said pellets having an axial through hole disposed therethrough; a gas plenum contained within said sealed fuel cladding; gas circulation means including said gap and said axial through hole for causing circulation of helium gas around said nuclear fuel pellets within said sealed fuel cladding; means for causing (n, α) reaction disposed in said gas plenum; and a receptacle arranged in said gas plenum for containing said means for causing (n, α) reaction, wherein said receptacle includes a nozzle for discharging gas produced by said (n, α) reaction, said discharge nozzle being inserted into said axial through hole to define an annular passage between said discharge nozzle and said axial through hole, said gas circulation means being further constituted by said annular passage.

4,123,327
FUEL ASSEMBLY FOR A NUCLEAR REACTOR
Toshihiko Sugisaki; Tetsuo Horiuchi; Hideo Ogasawara; Shozo Yamanari, and Kenji Tominaga, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan
Filed May 25, 1976, Ser. No. 689,817
Claims priority, application Japan, May 30, 1975, 50/64353
Int. Cl.[2] G21C *3/02*
U.S. Cl. 176—76 9 Claims



1. A nuclear reactor core comprising:
a housing,
upper and lower grid plates with a plurality of through holes, said upper and lower grid plates being secured in said housing, and
first and second fuel assemblies held between said upper and lower grid plates, each of said first fuel assemblies having,
an open-ended tubular first channel having channel walls
upper and lower first tie plates with a plurality of through holes, said upper and lower first tie plates being secured near upper and lower open ends of the first channel, respectively,
a plurality of first elongated fuel elements held between the upper and lower first tie plates, the first fuel element having a first clad tube and first fuel pellets packed therein, and
first openings for bypassing vapor generated in the first channel, the first openings being disposed in said walls of the first channel just below the first upper tie plate, each of said second fuel assemblies having,
an open-ended tubular second channel having channel walls,
upper and lower second tie plates with a plurality of through holes, said upper and lower second tie plates being secured near the upper and lower open ends of the second channel, respectively,
a larger number of second elongated fuel elements than that of first elongated fuel elements held between the upper and lower second tie plates, the second fuel element having a second clad tube and second fuel pellets packed therein, and
second openings for bypassing vapor generated in the second channel, the second openings being disposed in said walls of the second channel just below the second upper tie plates, total area of the second openings of each second fuel assembly being larger than that of the first openings of each first fuel assembly.

4,123,328
UTILIZATION OF HEAVY ELEMENTS IN THERMAL AND EPITHERMAL REACTORS
Alvin Radkowsky, Elizabeth, N.J.; Ji-Peng Chien, Tao Yuan, Taiwan; Chao-Yie Yang, Tao Yuan, Taiwan, and Horng-Ming Hsieh, Tao Yuan, Taiwan, assignors to Institute of Nuclear Energy Research, Atomic Energy Council, Taiwan
Filed Sep. 15, 1976, Ser. No. 723,482
Int. Cl.[2] G21C *1/04*
U.S. Cl. 176—78 28 Claims



1. In a heavy water moderated reactor in which rods of nuclear fuel are arranged in a plurality of fuel bundles, the improvement which comprises inserting at least one rod of a heavy element having high inelastic cross section for high energy neutrons having energies above 1 MEV and low capture cross sections, said heavy element being selected from the group consisting of lead, bismuth, compounds and mixtures thereof into the said reactor positioned to obtain reactivity increases whereby the amount of heavy water in the said heavy water moderated reactor can be reduced without substantially detrimentally affecting the reactivity of the reactor.

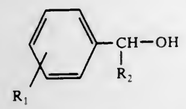
4,123,329
PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION
Tsutomu Tanaka, Kobe; Yoshio Nakamura, Takasago; Koji Asahi, Takasago; Tadayoshi Shiraishi, Takasago, and Kenji Takahara, Kakogawa, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed May 27, 1977, Ser. No. 801,083
Int. Cl.[2] C12D *13/06*
U.S. Cl. 195—28 R 9 Claims

1. Process for producing L-lysine comprising aerobically culturing a microorganism belonging to the species *Nocardia alkanoglutinousa* and having the morphological, culturing and physiological properties of *Nocardia alkanoglutinousa* No. 223-59 (ATCC 31220) or *Nocardia alkanoglutinousa* No. 223-15 (ATCC 31221) in a medium and recovering L-lysine accumulated in said medium.

4,123,330
COLOR DIFFUSION TRANSFER PROCESS USING BENZYL ALCOHOL AND DERIVATIVES THEREOF
Jiro Takahashi, and Akihiko Miyamoto, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Oct. 14, 1976, Ser. No. 732,210
Claims priority, application Japan, Oct. 16, 1975, 50-124727
Int. Cl.[2] G03C *7/00, 5/54*
U.S. Cl. 96—29 D 6 Claims

1. In a process for forming a color dye image in an image-receiving layer by diffusion transfer from a light-sensitive element comprising a silver halide emulsion and a diffusible dye developer which process comprises; image-wise exposing the light-sensitive element to light, subjecting the exposed light-sensitive element to an alkaline processing solution to correspondingly form an image of a diffusible dye developer in the light-sensitive element, and transferring, by diffusion, the diffusible dye developer from the light-sensitive element to the

receiving layer superimposed thereon during the subjecting step to form the color dye image in the receiving layer, the improvement which comprises the alkaline processing solution containing a compound represented by the formula



wherein R_1 represents hydrogen, methyl, ethyl, methoxy or hydroxymethyl and R_2 represents hydrogen, methyl or ethyl.

4,123,331

METHOD OF KEEPING THE CIRCULATING SPRINKLING WATER FOR THE UPTAKES OF COKE OVENS CLEAN

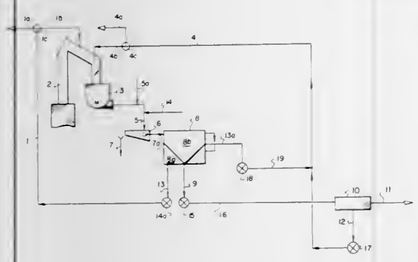
Dieter Laufhütte, Recklinghausen, Germany, assignor to Firma Carl Still Recklinghausen, Germany

Filed Dec. 23, 1976, Ser. No. 753,683

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1976, 2600130

Int. Cl.² C10B *27/04*

U.S. Cl. 201—4 **3 Claims**



1. A method of keeping the circulating sprinkling water which is delivered to the gas uptake of coke ovens clean, comprising directing sprinkling water to the uptake of the coke ovens and spraying it into the uptake, condensing and collecting a sprinkling water condensate from the uptake after it has cooled the gases flowing upwardly therein and picked up a quantity of tar, tar oils, hydrocarbons and solids, directing the sprinkling water condensate into a water-tar separator to separate out a sprinkling liquid from the condensate, directing the separated sprinkling liquid to the uptake, directing a tar which is substantially free of solids in an amount of from one to five times the amount by weight of the separated sprinkling liquid into the uptake along with the separated sprinkling liquid at least during the filling of the coke oven with coal and the start of a coking process which is a time of increased solid particle contamination in the uptake gases to form a tar-sprinkling water condensate, separating a thick-tar from the tar-sprinkling water condensate, and directing tar-sprinkling water condensate from the thick-tar separator to the water-tar separator, whereby during said period of increased solid particle contamination the ratio of tar to solids in the uptake gases is increased to permit the thick-tar separation so that a subsequent tar-water separation may take place.

4,123,332

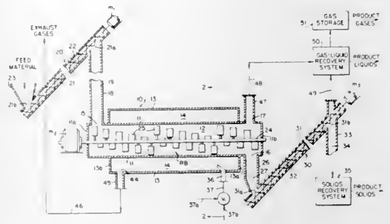
PROCESS AND APPARATUS FOR CARBONIZING A COMMINUTED SOLID CARBONIZABLE MATERIAL

Franz Rotter, Portland, Oreg., assignor to Energy Recovery Research Group, Inc., Portland, Oreg.

Filed Sep. 6, 1977, Ser. No. 830,753

Int. Cl.² C10B *1/06, 1/10, 47/20, 47/30*

U.S. Cl. 201—15 **26 Claims**



1. A process for carbonizing a comminuted solid carbonizable material to form combustible gases, vaporous hydrocarbons and solid residue which comprises:

(a) introducing said comminuted solid carbonizable material into an elongated horizontally-extending reaction zone under conditions to effectively exclude oxygen-containing gases therefrom;

(b) passing said comminuted solid carbonizable material as a bed through said reaction zone;

(c) agitating said bed of comminuted solid carbonizable material during passage through said reaction zone;

(d) introducing a burning mixture of an oxygen-containing combustion gas and fuel into a heating zone surrounding said reaction zone in a manner to spirally pass said burning mixture through said heating zone generally countercurrent to said bed of comminuted solid carbonizable material passing through said reaction zone thereby to carbonize said comminuted solid carbonizable material to form said combustible gases, vaporous hydrocarbons and solid residue;

(e) withdrawing combusted gases from said heating zone at a point below a horizontal plane passing through the axis of said heating zone;

(f) withdrawing said solid residue from an outlet end of said reaction zone under conditions to effectively exclude oxygen-containing gases therefrom; and

(g) withdrawing said combustible gases and vaporous hydrocarbons from said reaction zone under conditions to effectively exclude oxygen-containing gases.

4,123,333

DUCT EQUIPMENT FOR EXHAUSTING COKE GASES

Fritz Schulte, Meerbusch; Johann G. Riecker, Ratingen, and Günther Rozas, Erkrath, all of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

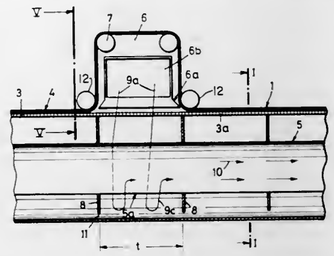
Filed Feb. 7, 1977, Ser. No. 766,217

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1976, 2604950; May 17, 1976, 2621889

Int. Cl.² C10B *27/06*

U.S. Cl. 202—255 **7 Claims**

1. Equipment for exhausting gases from a movable gas collecting truck, said equipment comprising a stationary outer collection duct for exhausting the gases defining along an upper surface a slot-like opening, a plurality of divider means in said outer collection duct extending across portions of the interior axial cross section of said duct at longitudinally spaced locations to define a plurality of longitudinally spaced chambers, a flexible belt in contact with and covering said opening, a collecting truck being disposed on said outer duct beneath said belt and in communication with said opening, means for shifting said collecting truck from chamber to chamber along said duct while lifting the belt off the collection duct to permit movement of said truck and exhausting of gases from the collecting truck to the collection duct, and an arcuate belt protection member disposed within said outer collection duct and longitudinally extending through and between each of said



divider means, said belt protection member spaced from the belt for inhibiting the flow of gas against said belt and defining on its side opposite said belt an inner collection channel for directing exhaust gases received from the collecting truck in a given chamber out through the inner collection channel while preventing contact of said exhaust gases with the belt to prevent deterioration thereof.

4,123,334

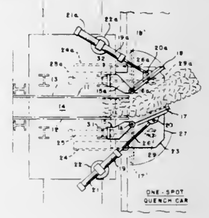
RECIPROCATING COKE GUIDE EXTENSION

William G. Emery, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jan. 9, 1978, Ser. No. 867,680

Int. Cl.² C10B *33/14*

U.S. Cl. 202—262 **12 Claims**



1. A reciprocating coke guide extension, for use in conjunction with a horizontal coke oven, comprising:

(a) a coke guide aligned, when in use, with said coke oven, further comprising:

(i) a rectangular vertical right wall;

(ii) a rectangular vertical left wall;

(iii) a rectangular horizontal floor connected, at its side edges, to the lower edges of said right wall and said left wall in the form of a channel;

(b) a vertical right wing the vertical rear edge of which is positioned adjacent to the vertical front edge of said right wall, being the edge of said right wall which is remote from said coke oven;

(c) means for pivotally connecting said front edge of said right wall to said read edge of said right wing;

(d) a vertical left wing the vertical rear edge of which is positioned adjacent to the vertical front edge of said left wall, being the edge of said right wall which is remote from said coke oven;

(e) means for pivotally connecting said front edge of said left wall to said rear edge of said left wing;

(f) means for pivoting said right wing;

(g) means for pivoting said left wing;

(h) a floor extension coextensively positioned to the front edge of said floor, being the edge of said floor remote from said coke oven, said floor extension being as wide as the summation of the lengths of said right wing and said left wing and the width of said floor, said floor extension being reciprocatingly mounted to extend beyond and retract from said front edge of said floor;

(i) means to linearly guide the motion of said floor extension;

(j) means to reciprocate said floor extension in a linear direction from a retracted position where the leading edge of said floor is adjacent to said front edge of said floor to an extended position where the trailing edge of said floor extension is adjacent to said front edge of said floor.

4,123,335

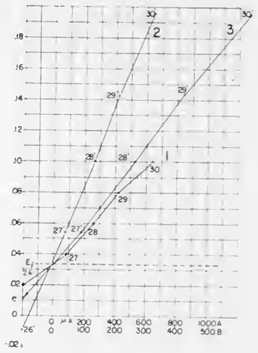
VOLTAGE MEASUREMENT WITH SPACED REFERENCE ELECTRODE

Rogert G. Seyl, 1123 Mulford St., Evanston, Ill. 60202

Continuation-in-part of Ser. No. 654,854, Feb. 3, 1976, Pat. No. 4,060,461, and a continuation-in-part of Ser. No. 785,865, Apr. 7, 1977. This application Aug. 17, 1977, Ser. No. 825,282

Int. Cl.² G01N *27/46, 27/30*

U.S. Cl. 204—1 T **24 Claims**



1. In the measurement of corrosion currents of an Interface Electrode System through measurement of a range of current-potential relationships on a system including a nongaseous ionic conductor in which are immersed a measured electrode, an opposed electrode, and a reference electrode wherein the reference electrode is spaced from said measured electrode, the method of correcting for the sum of the IR voltage drops of ionic conduction between said measured and reference electrodes and of electronic conduction in a lead wire between a measuring device and the measured electrode, comprising the steps of:

establishing an IR drop across a potentiometer by passing a DC correction current therethrough, said IR drop having a voltage greater than the sum of the IR drops to be corrected for;

maintaining said correction current at a value proportional to a DC polarizing current of said measured current-potential relationship, and in a direction of flow fixed with relation to the direction of flow of said DC polarizing current;

providing one end and an arm of said potentiometer in series with a potential measuring circuit between said measured and reference electrodes, and in polarity to oppose the polarity of said IR drops; and

adjusting the arm of said potentiometer to deliver that value of correction voltage that produces approximately 0.02 volt separations between transition points of line slope change in an X-Y recording of said measured range of current-potential relationships.

10. In apparatus for measuring corrosion currents of an Interface Electrode System through measurement of a range of current-potential relationships on a system including a nongaseous ionic conductor in which are immersed a measured electrode, an opposed electrode, and a reference electrode wherein the reference electrode is spaced from said measured electrode, improvement through means to correct for the sum of IR voltage drops of ionic conduction between said measured and reference electrodes and of electrode conduction in a lead wire between a measuring device and the measured electrode, said apparatus comprising:

means for establishing an IR drop across a potentiometer by passing a DC correction current therethrough, said IR drop having a voltage greater than the sum of the IR drops to be corrected for;

means for maintaining said correction current at a value proportional to a DC polarizing current of said measured current-potential relationship, and in a direction of flow fixed with the relation to the directional flow of said DC polarizing current;

one end and an arm of said potentiometer in series with a potential measuring circuit between said measured and reference electrodes, and in polarity to oppose the polarity of said IR drops; and

means for adjusting the arm of said potentiometer to deliver that value of correction voltage that produces approximate ly 0.02 volt separations between transition points of line scope change in an X-Y recording of said measured range of current-potential relationships

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4,123,336

PROCESS FOR ELECTROLYSIS OF AQUEOUS ALKALI METAL HALIDE SOLUTION

Maomi Seko; Yasumichi Yamakoshi, both of Tokyo; Hirotsugu Miyauchi, Kawasaki; Kyoji Kimoto, and Yoshinori Masuda, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 25, 1977, Ser. No. 781,410

Claims priority, application Japan, Mar. 31, 1976, 51-35594

Int. Cl.² C25B *1/46, 13/08*

U.S. Cl. 204—98 **7 Claims**

1. A process for electrolysis of a sodium chloride solution in an electrolytic cell in which anode and cathode are separated by a cation exchange membrane to divide said cell into anode and cathode chambers, said cation exchange membrane comprising at least one fluorocarbon polymer which contains sulfonic acid cation exchange groups and at least one cation exchange group with weaker acidity than sulfonic acid group, the cation exchange groups in surface stratum on the cathode side of the membrane being richer in said weaker cation exchange group than the balance of the membrane, the proton concentration in the anolyte being maintained at a value up to the critical proton concentration $C_{H^+}{}^{o}$ as defined by the following formula:

$$C_{H^+}{}^{o} = (id/FD_{H^+})(l - y - t_{H^+})$$

wherein i represents current density (A/dm^2), F the Faraday constant: 96,500 coulomb/eq., d the thickness of the desalted layer (cm), y the transport number of sodium ions through the membrane, D_{H^+} the diffusion coefficient of protons in the anolyte (cm^2·sec^{-1}), and t_{H^+} the transport number of the protons in the anolyte of the formula:

$$t_{H^+} = \frac{D_{H^+}}{(D_{H^+} + D_{Cl^-}) + (C_{Na^+}/C^{o}_{H^+})(D_{Na^+} + D_{Cl^-})}$$

wherein D_{Na^+} and D_{Cl^-} represent diffusion coefficients of sodium ions and chlorine ions in the anolyte, respectively, and C_{Na^+} concentration (N) of sodium ions in the anolyte, respectively.

4,123,337

METHOD OF IMPROVING THE SURFACE INSULATION RESISTANCE OF ELECTRICAL STEELS HAVING AN INSULATIVE COATING THEREON

David C. Brewer, Miamisburg; James D. Evans; Dale M. Kohler, both of Middletown, and Michael H. Haselkorn, Franklin, all of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Nov. 2, 1977, Ser. No. 847,760

Int. Cl.² C25F *3/06, 3/14, 3/24*

U.S. Cl. 204—129.3 **13 Claims**

1. A process of improving the surface insulation resistance of an electrical steel having a primary insulative coating thereon comprising the steps of causing said steel to serve as an anode and subjecting said steel to electrochemical treatment in an electrolyte of the type which will cause the precipitation of a metal hydroxide to remove small metallic particles extending through a protruding above said insulative coating.

4,123,338

METHOD FOR PREVENTION OF FOULING AND CORROSION UTILIZING TECHNETIUM-99

Carl B. Wootten, Rte. 1, Keswick, Va. 22947

Continuation-in-part of Ser. No. 473,691, May 28, 1974, Pat. No. 4,017,370. This application Jan. 5, 1977, Ser. No. 757,079

The portion of the term of this patent subsequent to Apr. 12, 1994, has been disclaimed.

Int. Cl.² C23F *13/00;* C25D *3/54;* B63B *59/00*

U.S. Cl. 204—147 **10 Claims**

1. A method for the prevention of fouling of a substrate in contact with water, which comprises:

including in or coating on said substrate prior to its exposure to said water, an amount of technetium-99 effective to prevent the growth of aqueous organisms on said substrate;

and thereafter exposing said substrate to a fresh water or marine environment which contains sufficient organisms, and for a period of time which would be expected to cause fouling of said substrate if not treated.

4,123,339

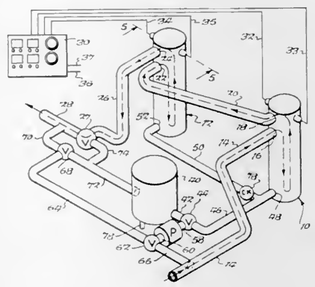
METHOD AND APPARATUS FOR ELECTROCHEMICAL CONTAMINANT REMOVAL FROM LIQUID MEDIA

Stephen B. Gale, Williamsville; Phillip P. O'Donnell, Buffalo, and Stanley Bruckenstein, Williamsville, all of N.Y., assignors to Andco Industries, Inc., Buffalo, N.Y.

Filed Feb. 7, 1975, Ser. No. 547,940

Int. Cl.² C02C *5/12*

U.S. Cl. 204—149 **6 Claims**



1. In a method for electrochemically removing from an ionizing medium a contaminant ion which is capable of forming an insoluble iron compound or complex, said method including passing an electric current between an anode electrode which has a surface or a protion of a surface thereof of iron, iron alloy or insoluble iron compound, and a cathode electrode, through the ionizing medium containing the ion to be removed, so as to produce an insoluble iron compound or complex with the contaminant ion, and removing such insoluble material from the ionizing medium, the improvement comprising treating the electrodes with a dilute inorganic acid solution by flowing said acid solution along and between the surfaces of said electrodes at a flow rate sufficient to provide a mechanical washing action to remove any electrochemically formed substances on or lodged between the surfaces of said electrodes.

4,123,340

METHOD AND APPARATUS FOR TREATING METAL CONTAINING WASTE WATER

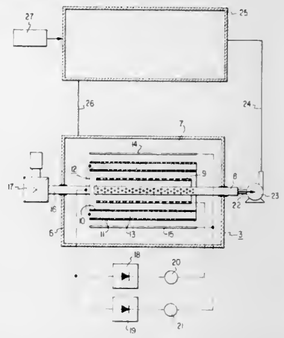
Roland Kammel, and Hans-Wilhelm Lieber, both of Berlin, Fed. Rep. of Germany, assignors to Gotzelmann KG Industrieabwasser-Anlagen, Stuttgart, Fed. Rep. of Germany

Filed Nov. 22, 1977, Ser. No. 854,004

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2652934

Int. Cl.² C02C *5/12*

U.S. Cl. 204—149 **12 Claims**



1. Method for treating metal containing waste water employing a vessel containing the waste water in which there is provided at least one anode and a cathode consisting essentially of electrically conductive particles and in which the waste water is subjected to electrolysis during which the waste water and the particles of the cathode are being moved, comprising: arranging the particles of the cathode in a cage closed on all sides whose walls are perforated, moving the cage by an external force during the electrolysis in order to move the particles and simultaneously moving the waste water by producing a forced flow through the particles.

4,123,341

APPARATUS AND PROCESS FOR TREATING CONTAMINATED WATER

Jurgen Gnieser, Weinfelden, and Luciano Pelloni, Zurich, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 6, 1977, Ser. No. 830,809

Claims priority, application Switzerland, Sep. 27, 1976, 12183/76

Int. Cl.² C02B *1/82*

U.S. Cl. 204—152 **3 Claims**

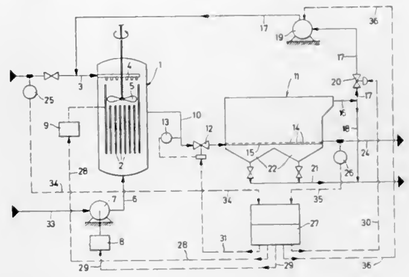
1. A process for treating contaminated water having electrically-charged suspended particles therein, said process comprising the steps of

passing the contaminated water through an inlet line into an electrical field in an electro-coagulator to discharge the electrically-charged particles while simultaneously dissociating at least some of the water;

coagulating the discharged particles;

thereafter separating the coagulated particles from the water in a flotation stage and removing a flow of clarified water from the flotation stage through an outlet line;

measuring the turbidity of the water flowing through at least one of the inlet line and the outlet line; and



controlling the current density in the coagulator in response to the measured turbidity whereby the voltage of said electro-coagulator is increased in response to an increase in turbidity and decreased in response to a decrease in turbidity below a predetermined level.

4,123,342

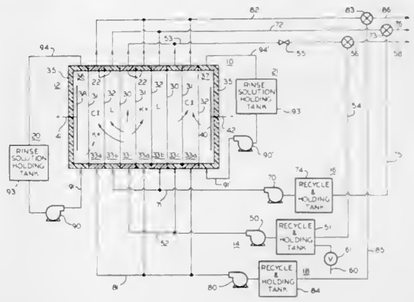
ULTRAFILTRATION AND ELECTRODIALYSIS METHOD AND APPARATUS

Richard M. Ahlgren, Waukesha, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Division of Ser. No. 670,159, Mar. 25, 1976, abandoned. This application Jun. 9, 1977, Ser. No. 805,121

Int. Cl.² B01D *13/02*

U.S. Cl. 204—180 P **7 Claims**



1. A filtration process comprising:

providing a filtration system including at least one ultrafiltration cell group which is defined by an ultrafiltration membrane disposed between a pair of ion permeable membranes, a first one of which is cation selective and the other of which is at least cation and anion permeable,

applying an electric field across said cell group, the cathode being arranged on the side of said housing said first ion-permeable membrane, and

injecting a fluid to be simultaneously ultrafiltered and deionized under pressure into a first cell of said cell group formed by said ultrafiltration membrane and one of said ion permeable membranes, whereby ionic constitutents of said fluid are drawn out of said first cell in one direction relative to said field and whereby permeate is forced through said ultrafiltration membrane into a second cell of said cell group.

4,123,343

PURIFICATION OF GLYCOPROTEINS AND IMMUNIZATION THEREWITH

John Krupey, Montreal, and Ewald F. Welchner, LaSalle, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Jun. 14, 1977, Ser. No. 806,562
Int. Cl.[2] G01N *27/26, 33/16;* **C25B** *7/00*
U.S. Cl. 204—180 G **5 Claims**

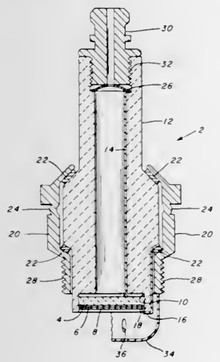
1. A method for purifying the beta subunit of human chorionic gonatrophin which comprises subjecting the β-hCG subunit to polyacrylamide gel electrophoresis in a tube containing an upper gel and a lower gel suspended in an electrophoretic apparatus having upper and lower buffer chambers wherein both the lower gel and the upper chamber buffer contain a fluorescent probe consisting of the magnesium salt of 8-anilino-1-naphthalene-sulfonic acid terminating the electrophoresis, and cutting out the fluorescent boundaries corresponding to the β-hCG subunit located at the most anodic portion of the gel.

4,123,344

TWO FIRE CERAMIC SEALED OXYGEN SENSING DEVICE AND METHOD OF FORMING SAME

Donald C. Davis, Fostoria, Ohio, assignor to Bendix Autolite Corporation, Fostoria, Ohio

Filed Apr. 15, 1977, Ser. No. 787,721
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 S **1 Claim**



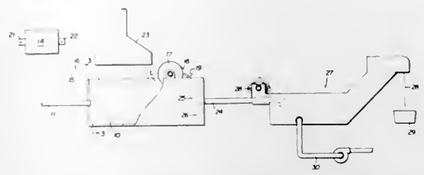
1. An oxygen sensing device comprising:
a hollow, elongated, ceramic insulating tube having first and second open ends, said first end having a recess formed therein coaxial with the tube;
a wafer formed of a solid electrolyte ceramic material positioned in said recess and secured therein by direct engagement with walls of said recess to provide an inner surface of the wafer facing the interior of the hollow tube and an outer surface of the wafer facing away from the hollow tube;
first conductive means along the inside of the tube in contact with the inner surface of the wafer;
a threaded recess in said second end of the insulating tube;
a threaded hollow conductive means positioned in the threaded recess, and engaged with said insulating tube, in conductive contact with said first conductive means;
second conductive means along the outside of the tube in contact with the outer surface of the wafer; and
a metal shell intermediate the ends of the insulating tube and enclosing a portion of the same, said shell being in contact with the second conductive means.

4,123,345

LIQUID TREATING APPARATUS

Don L. Shettel, Bloomfield Hills, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Division of Ser. No. 499,670, Aug. 22, 1974, Pat. No. 3,970,536.
This application Mar. 29, 1976, Ser. No. 671,213
Int. Cl.[2] C02C *5/12;* **B03C** *5/00*
U.S. Cl. 204—275 **2 Claims**



1. An apparatus for gravitationally segregating a fluid from contaminants suspended therein, comprising:
a vessel; delivery means for continuously flowing said fluid with suspended contaminants into said vessel; means for removing contaminants from the surface of said fluid; and discharge means for continuously flowing said fluid from said vessel after treatment;
the improvements comprising a first electrically charged means in said vessel and immersed within said fluid, and
a second electrically charged means in said vessel and immersed in spaced relation to said first charged means within said fluid,
a substantially constant DC power source for establishing a substantially constant positive electrical charge on said first electrically charged means and an identical, substantially constant negative electrical charge on said second electrically charged means,
said first charged means and said second charged means each comprising a plurality of pairs of generally planar, vertical and parallel electrodes arranged to provide a series of oppositely charged conductors in alternating, side-by-side relationship, said electrodes comprised of a material substantially electrochemically inert with respect to said fluid,
said first charged means electrodes and said second charged means electrodes arranged such that the continuous horizontal flow of said fluid through said vessel is generally parallel to said electrodes, said delivery means and said discharge means so arranged on said vessel as to regulate the flow of said fluid through said vessel such that an electrophoretic attraction of said suspended contaminants toward said first charged means electrodes occurs with resulting agglomeration of said suspended contaminants between said first and second charged means electrodes, said second charged means electrodes electrolytically generating hydrogen bubbles that attach to the agglomerated contaminants and float the contaminants to the surface of the fluid within said vessel.

4,123,346

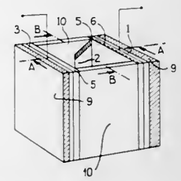
ELECTROPHORETIC DEVICE

Jean Luc Ploix, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 10, 1977, Ser. No. 795,424
Claims priority, application France, May 11, 1976, 76 14161
Int. Cl.[2] C25D *1/12;* **G03G** *13/00*
U.S. Cl. 204—299 R **15 Claims**

1. An electrophoretic device comprising:
two outer plates and liners assembled in a fluid-tight manner the inner walls of said outer plates and liners forming a container accomodating a suspension of solid electrically charged particles in a liquid medium;

electrodes on the facing faces of said outer plates between which a potential difference is applied in operation.



an electret layer consisting of a layer of dielectric material carrying a permanent electrical charge said electret layer coating at least pat of the inner walls of the device.

4,123,347

COAL LIQUEFACTION PROCESS

Peter S. Maa, Baytown, Tex., assignor to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 753,215, Dec. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 641,489, Dec. 17, 1975, Pat. No. 4,022,680, which is a continuation-in-part of Ser. No. 607,433, Aug. 25, 1975, abandoned. This application Sep. 26, 1977, Ser. No. 836,821
Int. Cl.[2] C10G *1/04, 1/08*
U.S. Cl. 208—8 **13 Claims**

1. A process for liquefying a particulate coal feed to produce useful petroleum-like liquid products, which comprises:
(a) contacting, in a series of coal liquefaction zones, graded with respect to temperature such that the temperature ascends from the initial to the final zone of the series, an admixture of a polar compound selected from the group consisting the low molecular weight heterocyclic oxygen compounds containing from about 2 to about 6 fused rings, one or more of which is a five- or six-membered heterocyclic ring having from four to five carbon atoms in the nucleus and from one to two atoms of oxygen and the low molecular weight heterocyclic sulfur compounds containing from 2 to about 6 fused rings, one or more of which is a five- or six-membered heterocyclic ring having from four to five carbon atoms in the nucleus and from one to two atoms of sulfur a hydrogen donor solvent and particulate coal;
the initial zone being maintained at a temperature between about 70° F. and 750° F. while providing a residence time ranging from about 20 minutes to about 150 minutes to disperse the coal, and
the final zone being maintained at a temperature between about 750° F. and 950° F. while maintaining a residence time ranging from about 10 minutes to about 70 minutes, sufficient to hydroconvert and liquefy the coal,
(b) separating the product from the coal liquefaction zone into fractions inclusive of a liquid solvent fraction with contains at least 30 weight percent hydrogen donor compounds,
(c) hydrogenating said liquid solvent fraction in a hydrogenation zone, and
(d) recycling the hydrogenated liquid solvent mixture to the initial zone of the series.

4,123,348

PROCESS FOR CATALYTIC HYDROGENATION OF COAL

Helmut Wurfel, Niederwurzbach, Fed. Rep. of Germany, assignor to Saarbergwerke Aktiengesellschaft, Saarbrucken, Fed. Rep. of Germany

Filed Nov. 17, 1976, Ser. No. 742,605
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1975, 2551641
Int. Cl.[2] C10G *1/08*
U.S. Cl. 208—10 **5 Claims**

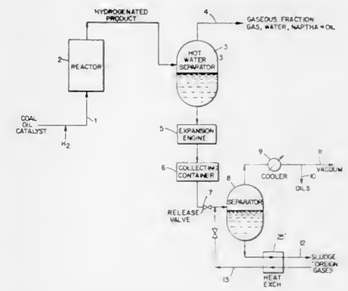
1. In a process for the hydrogenation of coal wherein an original slurry flow of coal and oil reactants is introduced into and hydrogenated in a reaction zone in the presence of hydrogen and a bed of solid particles comprising a catalyst, to produce a reaction product which is withdrawn from the upper portion of said reaction zone, the improvement comprising imparting pulsating motion to said bed in said reaction zone by intermittantly introducing and superimposing onto said original slurry flow one of the following:
a. recycled reaction product
b. slurry of coal and oil whereby a pulsating motion is imparted to said solid particles in said bed.

4,123,349

SEPARATION OF SOLIDS CONTAINING RESIDUES FROM LIQUID FRACTIONS OF A COAL HYDROGENATION PROCESS USING AN EXPANSION ENGINE AND A PRESSURE RELEASE MEANS

Helmut Wurfel, Niederwurzbach, Germany, assignor to Saarbergwerke Aktiengesellschaft, Saarbrucken, Germany

Filed Jun. 1, 1977, Ser. No. 802,517
Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623022
Int. Cl.[2] C10G *1/08, 37/04;* **B01D** *3/06*
U.S. Cl. 208—10 **8 Claims**



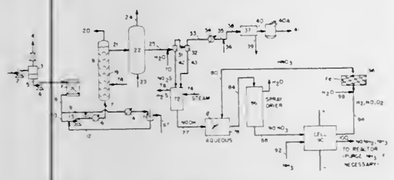
1. In a process for separation of distillation oils from a liquid product fraction comprising solids containing residues resulting from a hydrogenation process for coal at elevated pressures and temperatures, and from which said product fraction the lower boiling components of said product fraction are separated by expansion and subsequent separation of the phases, the improvement comprising expanding said liquid product fraction in at least two successive steps, a first expansion step effected in an expansion engine in liquid phase wherein no evaporation of said distillation oils occurs, and a second expansion-evaporation step effected in a pressure release means, whereby solids containing residues are separated from said vaporized distillation oils.

4,123,350

PROCESS FOR DESULFURIZATION OF RESIDUA WITH SODAMIDE-HYDROGEN AND REGENERATION OF SODAMIDE

William C. Baird, Jr.; Roby Bearden, Jr., and Ralph L. Bollinger, Jr., all of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 571,955, Apr. 28, 1975, Pat. No. 4,017,381.
This application Aug. 11, 1976, Ser. No. 713,510
Int. Cl.[2] C10G *13/06;* B01J *23/04, 23/90*
U.S. Cl. 208—108 10 Claims



1. A process for the desulfurization and hydroconversion of a sulfur-containing petroleum oil feedstock, which comprises;

contacting a sulfur-containing petroleum oil feedstock, in a desulfurization-hydroconversion zone, with sodamide in the presence of added hydrogen at a temperature of from between 400–2,000° F., said feedstock being maintained substantially in the liquid phase, thereby forming an oil-salt mixture comprising a sulfur-reduced oil phase and a salt phase, said salt phase comprising sodium sulfur salts;

contacting said mixture with water to form an aqueous sodium sulfur salt phase and to separate the oil phase from the aqueous sodium sulfur salt phase;

converting said aqueous sodium sulfur salts to sodium nitrate;

converting said sodium nitrate to sodamide; and

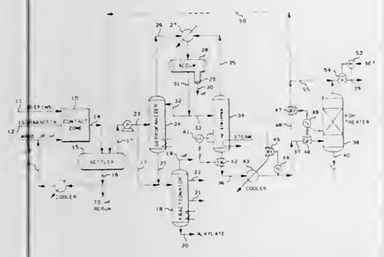
returning at least a portion of the so-regenerated sodamide to said desulfurization-hydroconversion zone.

4,123,351

HYDROCARBON PURIFICATION PROCESS

Charles C. Chapman, and Joe Van Pool, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 15, 1977, Ser. No. 824,583
Int. Cl.[2] C10G *17/00*
U.S. Cl. 208—262 7 Claims



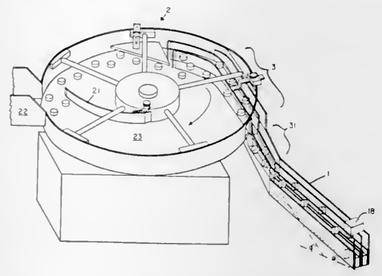
1. In a process for removing HF acid from hydrocarbon streams containing same by contacting with solid KOH in a treating zone, the step of preventing an excessive temperature increase above a preselected maximum allowable temperature and subsequent explosion in said treating zone when unexpected excess HF is present in said stream charged to said treating zone comprising obtaining a temperature measurement in the system indicative of an excess amount of HF which would cause an excessive temperature increase in said treating zone and controlling the flow of said stream passed to said treating zone in response to said temperature measurement by decreasing and/or terminating the flow of said stream charged to said zone when the temperature measurement reaches and/or exceeds said preselected maximum value so that the temperature within said zone does not exceed said preselected value.

4,123,352

APPARATUS FOR DETECTING FLAWS IN CIRCULAR TABLET

Masao Yamamoto, Amagasaki, and Sumio Iwanaga, Takatsuki, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jan. 22, 1976, Ser. No. 651,236
Claims priority, application Japan, Feb. 21, 1975, 50-22165
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—546 10 Claims



1. An apparatus for detecting flaws in tablets having a circular cross-section, which comprises: a transferring pathway adapted to bridge equipment in a tablet processing line including a parallel spaced pair of rails having shoulders on opposed faces thereof capable of carrying the tablets with the circular cross-section thereof substantially upright, said pathway being arranged so that the parallel lines of the shoulders have an inclination with respect to the horizontal sufficient to impart to a normal tablet being carried a self-rotating and travelling tendency along the pathway, and side plates above the shoulders capable of permitting unobstructed passage therebetween of travelling tablets with the circular cross-section thereof substantially upright and adapted to prevent smooth passage of defective tablets in a position diverging substantially from an upright position.

4,123,353

METHOD AND APPARATUS FOR MEASURING THE CONTENT OF A LOW-MOLECULAR WEIGHT COMPOUND IN A COMPLEX MEDIUM

Bo H. Håkansson; Ulf T. G. Nylén, and Lars A. G. Qvarnström, all of Lund, Sweden, assignors to Gambro AB, Lund, Sweden

Filed Nov. 29, 1977, Ser. No. 855,604
Claims priority, application Sweden, Nov. 30, 1976, 76133750
Int. Cl.[2] D01D *13/00*
U.S. Cl. 210—22 C 10 Claims

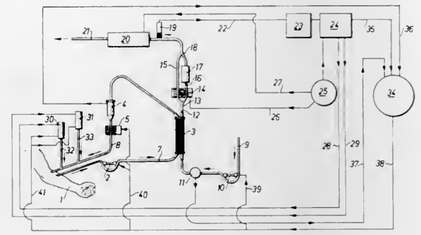
8. A method for measuring the content of a low-molecular weight compound in a complex medium, comprising the steps of:

conveying said complex medium through a dialyzer,

supplying dialysis fluid to said dialyzer so that it receives a portion of the low-molecular weight compound by diffusion from said complex medium to produce a dialysate,

conducting the dialysate produced from said dialyzer to a measuring unit via a main flow line or a shunt flow line,

effecting the dialysate in at least one of said main and shunt flow lines, and



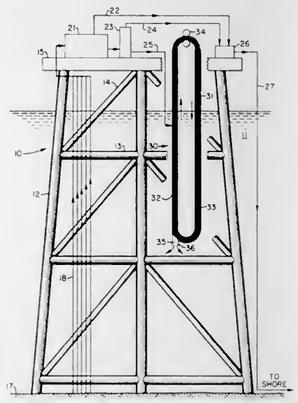
comparing the dialysate coming from said main flow line and the dialysate coming from said shunt flow line.

4,123,354

METHOD OF REMOVING OIL FROM WATER

Robert E. Williams, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Nov. 7, 1977, Ser. No. 849,158
Int. Cl.[2] B01D *15/00, 33/14*
U.S. Cl. 210—40 6 Claims



1. A method of removing oil from a mixture of oil and water produced on an offshore rig comprising:

injecting said oil and water mixture downwardly into a partially submerged vertical pipe adjacent said rig;

upwardly passing through said pipe an endless oleophilic fibrous cord to countercurrently contact said oil and water mixture and selectively absorb oil from said mixture, said fibrous cord having sufficient residence time within said pipe to substantially reduce the oil content of said oil and water mixture; and

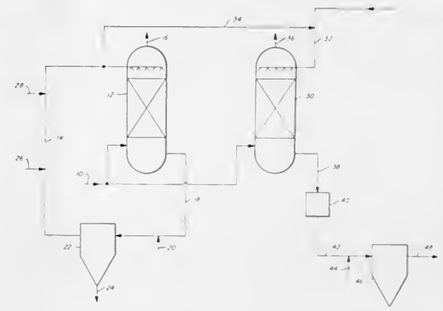
removing the oil collected by said fibrous cord at the surface and returning said cord to the lower end of said pipe for renewed contact with said oil and water mixture.

4,123,355

SIMULTANEOUS TREATMENT OF SO_2 CONTAINING STACK GASES AND WASTE WATER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Jerry C. Poradek, Houston, Tex., and Dwight D. Collins, Bakersfield, Calif.

Filed Nov. 21, 1977, Ser. No. 853,705
Int. Cl.[2] C02B *1/34;* B01D *53/34*
U.S. Cl. 210—50 11 Claims



1. A process for the simultaneous treatment of a sulfur dioxide containing gas stream and waste water of the type derived from domestic sewage comprising:

introducing a first portion of said gas stream and a first portion of said waste water into a first gas-liquid scrubbing zone, said first portion of said waste water containing from about 500 to about 1200 parts per million iron and having a pH of from about 1.5 to about 3, the temperature in said first scrubbing zone being from about 120° to about 160° F.,

contacting said first portion of said gas stream and said first portion of said waste water in said first scrubbing zone to absorb SO_2 into said waste water, the contact time in said scrubbing zone being sufficient to permit substantial oxidation of absorbed SO_2, said waste water being recycled through said first scrubbing zone,

introducing a second portion of said gas stream, a portion of said recirculating waste water from said first scrubbing zone, and a second portion of said waste water into a second gas-liquid scrubbing zone, said second portion of said waste water in said second scrubbing zone containing from about 50 to about 200 parts per million iron,

contacting said second portion of said gas stream with said second portion of said waste water in said second scrubbing zone to absorb SO_2 into said second portion of said waste water and acidify said second portion of said waste water,

removing said acidified waste water from said second scrubbing zone, and

treating said acidified waste water removed from said second scrubbing zone to remove solids originally present in said waste water.

4,123,356

FILTER CLEANING METHOD AND FILTER SYSTEM

Yoshikazu Sugimoto, Hitachi; Hideo Yusa, Katsuta; Yomei Kato, Hitachi; Kunio Kamiya, Hitachi, and Makoto Kikuchi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 20, 1976, Ser. No. 752,150
Claims priority, application Japan, Feb. 25, 1976, 51-18883
Int. Cl.[2] B01D *41/04*
U.S. Cl. 210—67 9 Claims

1. A filter cleaning method, in which fluid to be processed is filtered through fluid passages defined among a central hollow shaft and a plurality of discs that are centered on said shaft, one

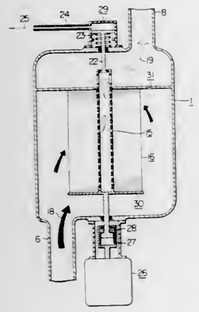
on top of another in press-contacting relation by an external force imposed upon said discs by a lifting member, when said lifting member is in engagement with said central hollow shaft, said method comprising the steps of:

relieving said discs from said external force by disengaging said central hollow shaft from said lifting member in order to provide clearances among said discs sufficient to facilitate cleaning thereof; and

cleaning said flow passages subsequently both by simultaneously rotating said discs to produce centrifugal force and by reversing fluid flow from the interior of said shaft outwardly along said discs through said flow passages.

7. A filter system having a filtration mode and a cleaning mode, said system comprising:

a filter consisting of discs which are assembled one on top of another and have flow passages among said discs;



a filter-supporting tube extending through the center of said filter and having a through hole leading to said flow passages;

a supporting-tube lifting member engaging and thereby lifting said filter supporting tube so as to bring said discs into press-contacting relation for said filtration mode, and for disengaging said filter supporting tube for said filter cleaning mode, so as to cause said discs not to be in press-contacting relation, thereby providing clearances therebetween sufficient to facilitate cleaning of said discs;

disc cleaning means for said cleaning mode, comprising:

a rotary machine for rotating said discs;

means for inducing reverse fluid cleaning of said discs when said clearances are provided therebetween.

4,123,357

RECOVERING OIL FROM EMULSION BY STIRRING, HEATING, AND SETTLING

Luther D. Clements, Lubbock, Tex.; Michael D. Hannan, Scotch Plains, N.J.; Robert J. Hinds, San Rafael, and Richard W. Vose, Oakland, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 22, 1977, Ser. No. 809,134
Int. Cl.[2] C02B *1/02*
U.S. Cl. 210—71 **8 Claims**

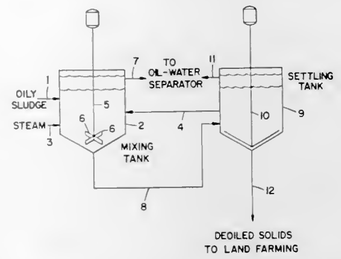
1. A process for treating sludge containing oil, water and particulate solid, said sludge having, in parts by weight, a free-water content in the range of from about 4 to 50 parts per part of said solid, comprising:

(1) forming a first upper layer comprising oil or oil and water and a first lower layer comprising an aqueous suspension of said solid and residual oil by stirring said sludge while maintaining the resulting mixture at a mixing temperature in the range above about 95° F. and below the boiling point thereof, and thereafter maintaining said mixture under sludge settling conditions including a settling temperature in the range above 95° F. and below the boiling point thereof for a period in the range of from about 0.5 to 24 hours and sufficient for said first layers to form, said stirring expending for each 1000 gallons of said sludge an amount of mechanical energy in the range of from about 0.1 to 5 horsepower;

(2) withdrawing at least a portion of said first upper layer from the resulting settled mixture;

(3) withdrawing at least a portion of said first lower layer from said resulting settled mixture;

(4) separating at least a portion of said withdrawn portion of said first lower layer into (i) a second upper layer comprising at least a portion of said residual oil, or said portion and water; and (ii) a second lower layer, said second lower layer having an upper zone comprising water substantially free of said solid and a lower zone comprising settled



solid, the remainder of said residual oil, and water by maintaining said withdrawn portion of said first lower layer under sludge settling conditions for a period in the range from about 0.5 to 48 hours;

(5) withdrawing at least a portion of said second upper layer from the resulting settled withdrawn portion of said first lower layer;

(6) withdrawing at least a portion of said upper zone from said settled withdrawn lower portion and returning at least a portion of it to said first lower layer, and

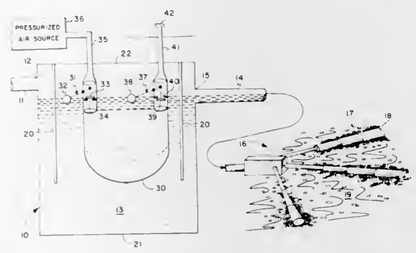
(7) withdrawing at least a portion of said lower zone from said settled withdrawn lower portion, said portion of said lower zone containing, based upon said settled solid, less than 30 weight percent of oil.

4,123,358

SEPTIC SYSTEM LIQUID LEVEL CONTROL APPARATUS

Bruce Flagge, 107 Dogwood Court Dr., Yorktown, Va. 23490

Filed Jul. 25, 1977, Ser. No. 819,030
Int. Cl.[2] C02C *1/02*
U.S. Cl. 210—104 **10 Claims**



1. A septic system comprising:

a settling tank having an inner floor, roof and wall forming a volume wherein sedimentation and anaerobic decomposition of effluent can occur;

a drain field whereby liquid is absorbed from said septic system;

an inlet pipe opening into the interior of said settling tank through said wall between said roof and said inner floor for communicating said liquid from an effluent source to said settling tank;

an outlet pipe opening into the interior of said settling tank through said wall below said inlet pipe for communicating said liquid from said settling tank to said drain field;

a barrier suspended from said settling tank roof extending below said inlet and outlet pipes to prevent floating effluent from communicating through said outlet pipe;

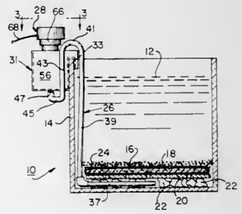
means for controlling the liquid level in said settling tank, said controlling means including upper level regulating means to establish an upper liquid level, and lower level regulating means to establish a lower liquid level, said controlling means preventing effluent back up in said inlet pipe, preventing surface seepage at said drain field, and enabling more efficient anaerobic decomposition of said effluent.

4,123,359

WATER PURIFYING SYSTEM AND PUMP THEREFOR

John D. Smith, 5748 King Dr., Chicago, Ill. 60637

Continuation-in-part of Ser. No. 566,004, Apr. 7, 1975, Pat. No. 4,002,566. This application Dec. 22, 1976, Ser. No. 753,202
The portion of the term of this patent subsequent to Jan. 11, 1994, has been disclaimed.
Int. Cl.[2] E04H *3/20*
U.S. Cl. 210—169 **9 Claims**



1. A system for purifying water, said system including a container confining water therein, comprising:

a perforated member disposed within the container and spaced above the bottom thereof and extending substantially over the entire area thereof;

pump means for transferring water between an upper portion of said container above said member and the bottom of said container below said member to recirculate the water;

means located at the path of travel of the water for aerating it;

a bacteria culture bed overlying said perforated member including a mixture of gravel, clay and one selected from the group consisting of skeletal residue material, readily decomposable vegetal material and skeletal residue material and readily decomposable vegetal material; and

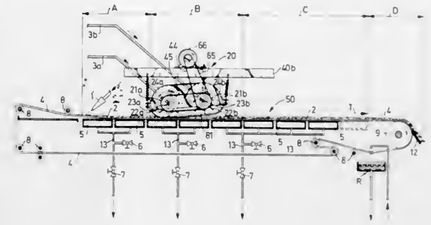
said pump means including conduit means disposed in said path of travel of the water and having one of its end portions disposed in the space under said perforated member, and a pump connected to the other end of said conduit means and positioned at least partially outside of the container for transferring water via said conduit means between the underside of said perforated member and said pump, water flow means disposed in said path of travel of the water positioned at least partially outside of the container and connecting in fluid communication said pump and the water in the space above said perforated member.

4,123,360

METHOD AND APPARATUS FOR THE LIQUID TREATMENT OF FILTER CAKES

Paul Havalda, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 2, 1976, Ser. No. 672,915
Claims priority, application Switzerland, Apr. 4, 1975, 4295/76
Int. Cl.[2] B01D *33/00, 33/34*
U.S. Cl. 210—216 **12 Claims**



1. A belt filter apparatus comprising as a filtering medium an endless belt of filter cloth arranged to have filtering section including a separating zone followed by a liquid treatment zone; vacuum trays disposed beneath said filtering section means for feeding material to be filtered into said separating zone at least one agitator means positioned above said filtering section in said liquid treatment zone, said agitator means including at least one rotatable agitator having an axis of rotation parallel to and extending across the filter cloth and comprising a plurality of agitating vanes extending substantially radially from said axis of rotation; a semicylindrical hood covering the agitator, the central longitudinal axis of the hood being coaxial to the axis of rotation of the agitator; and means for supplying treatment liquid to the agitator within said hood; and further comprising means for generating relative movement between said filter cloth and said agitator means and means for rotating said agitator in a direction opposite to that of said relative movement.

4,123,361

LINT FILTER ASSEMBLY

Loren H. Marschman, 411 N. Pine, Arlington Heights, Ill. 60004

Filed May 27, 1977, Ser. No. 801,057
Int. Cl.[2] B01D *25/08*
U.S. Cl. 210—232 **8 Claims**

1. A filter assembly for removing lint from water discharged through a hose from a washing machine, comprising:

an elongate tubular housing having an inlet end releasably connectable with the hose, another end opposite the inlet end, and a side wall extending between the opposite ends, said side wall having a plurality of fluid passageways for discharging water along the length thereof:

an elongate tubular filter element located within the body; and

a filter removal element within the body, said removal element having a section underlying the filter element adjacent the other end of the body, in loose supportive engagement therewith, said section being substantially coextensive with and having a shape conforming to that of the inside of the housing to substantially close the other end for causing the discharge water to exit through the filter element along the length of the housing, and an elongate stem extending from the section through the filter element to adjacent the open end, said stem being manually acces-

sible through the open end of the body for withdrawal of the removal element from the body, said underlying section carrying the filter element out of the body when the filter removal element is withdrawn.

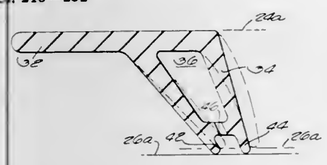


4,123,362

PRESSURIZED SEAL SUCH AS FOR DRUM SCREENS

Hosein Mansouri, New Berlin, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 2, 1977, Ser. No. 847,960
Int. Cl.² B01D *33/34*
U.S. Cl. 210—232 **6 Claims**



1. In a drum screen apparatus for screening raw water and the like and including a stationary structure including a raw water delivery channel and a screened water holding tank wherein a given elevation of screened water is maintained and further including a drum disposed to receive water from said channel and to rotate within said tank on a horizontal axis with the uppermost section of its cylindrical surface above said elevation for cleaning purposes, said structure and said drum having interfacing sealing surfaces, said structure having a wiping seal mounted on its sealing surface so as to engage the sealing surface on said drum and prevent any passage of raw water therebetween from said channel into said tank, an improved wiping seal for said apparatus comprising (A) a flexible, elongated element including (1) a tubular body defining a distribution chamber having opposite ends, said body being of trapezoidal section and having larger and smaller parallel sides and two converging sides, (2) spaced, parallel wiping flanges extending from the two converging sides and in wiping engagement with the sealing surface of said drum, (3) a series of ports in the smaller side and between said flanges and opening from said chamber, (B) means closing said opposite ends of said distribution chamber, (C) a clean water supply connection opening into said chamber at one or both of said opposite ends thereof and (D) means securing the larger side to the sealing surface on said structure with said opposite ends adjoining each other above said elevation and so that the smaller side is axially offset toward said channel such that the larger side pivots and the smaller side cooperatively bows outwardly to compensate for variations in the annular space between the sealing surfaces, said seal being adapted to be supplied with clean water at a pressure which prevents raw water from passing said seal where such wiping engagement may not occur.

5. In a drum screen apparatus for screening a liquid, said apparatus comprising:

(a) a stationary structure comprising:
  (i) a liquid delivery channel,
  (ii) a screened liquid holding tank, and
  (iii) means for maintaining a pre-determined elevation of screened liquid in said holding tank;
(b) a screening drum disposed to receive liquid from said delivery channel and to rotate within said tank, said structure and said drum having interfacing sealing surfaces; and
(c) a wiping seal mounted on one or the other of said interfacing sealing surfaces to prevent passage of unscreened liquid from said delivery channel into said holding tank,

the improvement wherein said wiping seal comprises:

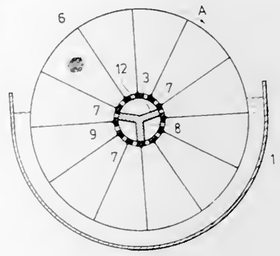
(d) a tubular body of trapezoidal section and having converging larger and smaller sides such that the larger sides pivot and the smaller sides cooperatively bow outwardly to compensate for variations in the annular space between the sealing surfaces, said body defining a distribution chamber and having a series of ports leading from said distribution chamber into an annular groove to be recited;
(e) spaced, wiping flanges extending from said two sides and defining an annular groove therebetween, said wiping flanges normally being in wiping engagement with the one of said interfacing sealing surfaces on which said wiping seal is not mounted; and
(f) means for supplying screened liquid or its equivalent to said distribution chamber at a pressure which prevents liquid from passing said seal where one or the other or both of said wiping flanges are not in wiping engagement with said one of said interfacing sealing surfaces.

4,123,363

DISK FILTER

Ensio Koskinen, Savonlinna, Finland, assignor to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Jun. 29, 1977, Ser. No. 811,206
Claims priority, application Finland, Jul. 2, 1976, 761930
Int. Cl.² B01D *33/08*
U.S. Cl. 210—331 **2 Claims**



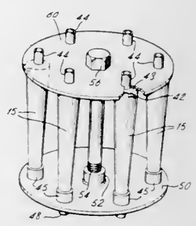
1. Filter apparatus for filtering a liquid comprising: tank means containing therein a liquid to be filtered; an elongated hollow shaft rotatably mounted on said tank means; a plurality of disk filters arranged on said hollow shaft at spaced intervals along the length thereof and affixed to said hollow shaft for rotation therewith, said disk filters essentially comprising a generally circular configuration having said hollow shaft extending through the central portion thereof, said disk filters being arranged to be at least partially submerged in the liquid contained in said tank means for passage therethrough upon rotation of said shaft; means on said disk filters defining hollow filtration sectors extending radially from said hollow shaft to the periphery of each of said disk filters, each of said hollow sectors having radially extending opposed filtration faces through which liquid may pass into said filtration sectors, each of said filtration faces being defined by filter material operative to filter particulate matter from liquid passing therethrough into said filtration sectors; means defining flow holes in said shaft to place said hollow filtration sectors in flow communication with the hollow interior of said shaft; a slide member having a generally Y-shaped sectional configuration and extending longitudinally along said shaft within the hollow interior thereof, said slide member being affixed relative to said tank means and arranged to have said shaft rotate relative thereto; said slide member thereby defining the interior of said shaft into three interior chambers each adapted to be placed in flow communication with said filtration sectors through said flow holes upon rotation of said shaft relative to said slide member; a pair of end plates located on opposite ends of said shaft closing off said three interior chambers, with said three interior chambers thus extending continuously between said pair of end plates; and vacuum means connected to two of said interior chambers through at least one of said end plates to create a suction effect in said two chambers to draw liquid from said tank means through said filtration faces and into said two interior chambers to effect filtration thereof.

4,123,364

CYCLONE CONSTRUCTION AND FIXING

Richard H. Mozley, Falmouth, England, assignor to National Research Development Corporation, London, England

Filed Mar. 28, 1977, Ser. No. 782,295
Claims priority, application United Kingdom, Apr. 2, 1976, 13527/76
Int. Cl.² B04C *5/28*
U.S. Cl. 210—512 M **10 Claims**



1. A kit of parts for assembly to form a cyclone, said kit comprising:

an apex nozzle; said apex nozzle including an annular body having an axially outwardly projecting, flexible spigot; a throughbore extending axially through the annular body and flexible spigot; and an annular skirt formed integrally on said body, said skirt circumferentially surrounding said flexible spigot, with radial spacing therefrom, and extending axially somewhat further than said flexible spigot;

an internally frusto-conical tubular member having a narrower end capable of sealing engagement with the apex nozzle when these two parts are pressed together axially;

a feed head, comprising:
  means providing a tangential inlet, and
  an axially extending tube;

the axially extending tube being capable of sealing engagement with said tubular member when the tubular member and feed head are pressed together axially,

such that when the apex nozzle, tubular member and feed head are all serially pressed together, these three parts together can function as a cyclone,

the throughbore of the annular body frustoconically tapering so as to have a portion contiguous with said internally frusto-conical tubular member and which forms a substantially continuous internal extension thereof when these two parts are pressed together axially.

3. A cyclone assembly, comprising:

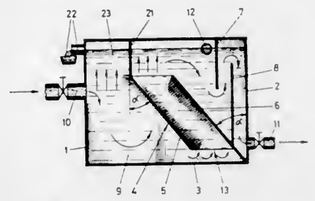
(a) a plurality of individual cyclones, arranged in a ring each comprising:
  (i) an apex nozzle including a throughbore;
  (ii) an internally frusto-conical tubular member having a narrower end and a wider end, the narrower end being in engagement with said apex nozzle; and
  (iii) a feed head, including: means providing a tangential inlet; and an axially extending tube, the axially extending tube being in engagement with the wider end of said tubular member;
(b) two opposite end plates, one bearing against all the apex nozzles and the other bearing against all the feed head; and
(c) connector means bearing against both opposite end plates and applying pressure thereto in a sense to draw the respective apex nozzles, internally frusto-conical members and feed heads axially together and to maintain respectively sealed communication from the respective of said tangential inlets, through the respective of said axially extending tube and the respective of said internally frusto-conical members to the respective of said throughbores of the respective of said apex nozzles said connector means being constituted by a single, tightenable rod member extending between said end plates within the ring.

4,123,365

OIL-WATER SEPARATOR

Cornelis G. Middelbeek, Nootdorp, Netherlands, assignor to Ballast-Nedam Groep N.V. and Skimovex B.V., both of Nootdorp, Netherlands

Continuation of Ser. No. 603,810, Aug. 12, 1975, abandoned.
This application Aug. 25, 1977, Ser. No. 827,723
Claims priority, application Netherlands, Aug. 14, 1974, 7410902
Int. Cl.² B01D *21/10*
U.S. Cl. 210—521 **2 Claims**



1. A separating device for separating substances from a liquid to be purified, said separating device comprising:

a tank having substantially vertical outer walls, a bottom, and a substantially vertical inner wall spaced horizontally from one of said outer walls;

a separator in said tank, said separator comprising two parallel inclined plates spaced from each other, the one of said plates closest to said one outer wall being connected at its upper end to said vertical inner wall;

a first outlet in the tank for the purified liquid;

an overflow between the first outlet and the separator;

a second outlet above the separator for the separated light substances, said second outlet being between said separator and said overflow;

an inlet in said one outer wall of said tank for the liquid to be purified;

said one outer wall of the tank defining with said inner wall and the one of said two parallel plates closest to said one wall a space therebetween to substantially eliminate turbulence of the liquid to be purified before entering the separator, said space including a portion between said one

outer wall and said one of said two parallel plates closest thereto of increasing cross-section with increasing depth;
a third outlet from said space for substances to be separated that are lighter than the purified liquid, said third outlet being from the upper end of the space; and
the other one of said two parallel plates extends from a region adjacent another outer wall of said tank opposite said one wall.

4,123,366

DRILLING MUD CONTAINING SODIUM CARBOXYMETHYLCELLULOSE AND SODIUM CARBOXYMETHYL STARCH

Charles A. Sauber, and Louis E. Roper, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 3, 1977, Ser. No. 821,369
Int. Cl.[2] C09K *7/02*
U.S. Cl. 252—8.5 A **2 Claims**

1. A clay-based drilling mud composed with seawater containing as additive therein to provide a low fluid loss and improved flow properties sodium carboxymethyl starch and sodium carboxymethylcellulose wherein said additives are respectively present in a weight ratio of from about 3:2 to about 19:1.

4,123,367

METHOD OF REDUCING DRAG AND ROTATING TORQUE IN THE ROTARY DRILLING OF OIL AND GAS WELLS

Anita A. Dodd, 445 The Main Bldg., Houston, Tex. 77002

Filed Apr. 29, 1977, Ser. No. 791,425
Int. Cl.[2] C09K *7/04, 7/06*
U.S. Cl. 252—8.5 B **3 Claims**

1. A method of reducing torque and drag in a wellbore having drilling fluid therein, including the addition of quantities of solid minute spherical glass beads without gas inclusions to the drilling fluid, such glass beads having a particle size of 88 to 44 microns and a hardness of 5.5 on the Moh's scale.

4,123,368

ALKALINE EARTH METAL SALT DISPERSIONS IN ACRYLIC POLYMERS

Norman A. Leister, Huntington Valley, and Andrew Neuman, Maple Glen, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 24, 1977, Ser. No. 780,931
Int. Cl.[2] C10M *1/10, 3/02, 5/02, 7/02*
U.S. Cl. 252—25 **18 Claims**

1. An overbased additive composition suitable for addition to a lubricating oil comprising a colloidal dispersion of (a) 1 part to 10 parts of an alkaline earth metal salt comprising the reaction product of metal compounds selected from the group consisting of barium, magnesium and calcium oxides and hydroxides with acidic gases selected from the group consisting of carbon dioxide, sulfur dioxide, sulfur trioxide, hydrogen chloride, nitrogen dioxide, and hydrogen sulfide in (b) 99 parts to 90 parts of an oil-soluble acrylic polymer which is polymerized from a monomer system of at least one alkyl or hetero-substituted alkyl ester of an acrylic monomer selected from the group consisting of methacrylates and acrylates represented by the formula

$$CH_2{=}C(R^1){-}\overset{O}{\overset{\|}{C}}{-}O{-}R^2$$

wherein R^1 is a $-CH_3$ or $-H$ radical and R^2 is a C_{1-30} alkyl, or hetero-substituted alkyl, radical or a mixture thereof, said ester or mixture of esters having an R^2 radical containing a sufficient number of carbon atoms to render the polymer oil-soluble.

11. A finished lubricating oil composition comprising (a) 1 part to 15 parts of the overbased additive of claim **1** blended with (b) 99 parts to 85 parts of a lubricating oil composition which comprises greater than 50% up to and including 100% by weight of a lubricating oil base selected from the group consisting of mineral lubricating oils including petroleum distillate oils and oils derived from paraffinic, naphthenic, asphaltic, and mixed base crude oils, and of synthetic oils including hydrocarbons, halogenated hydrocarbons, dibasic acid esters, carbonate esters, poly silicones, phosphate esters, poly glycols, and glycol esters.

4,123,369

LUBRICATING OIL COMPOSITION

Edsel L. Miller, and Robert A. Krenowicz, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Dec. 1, 1976, Ser. No. 746,284
Int. Cl.[2] C10M *1/48, 3/42, 5/24, 7/46*
U.S. Cl. 252—32.7 E **4 Claims**

1. In a crankcase lubricating oil composition consisting of a base oil and an additive package, the improvement wherein the composition contains from 0.2 to 1.2 percent by weight active ingredient of overbased magnesium sulfonate having a base number of about 400 and from 0.2 to 2.0 percent by weight active ingredient of slightly overbased calcium phosphonate-phenate sulfide, and the ratio of magnesium sulfonate to calcium phosphonate-phenate sulfide is from 0.5:1 to 1.5:1.

4,123,370

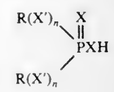
PREPARATION AND USE OF BASIC METAL SALT COMPOSITIONS OF PHOSPHORUS-CONTAINING ACIDS

Norman A. Meinhardt, Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 798,738, May 19, 1977, Pat. No. 4,089,793.
This application Mar. 20, 1978, Ser. No. 890,563
Int. Cl.[2] C10M *1/48, 3/42, 1/44, 3/38*
U.S. Cl. 252—32.7 E **44 Claims**

1. A reaction mixture suitable for preparation of basic metal salt compositions of one or more phosphorus-containing acids which comprises:

(A) at least one Group II metal salt of one or more phosphorus-containing acids of the formula



(I)

wherein each X and X' are independently oxygen or divalent sulfur with the proviso that each *n* may be zero or one, each R is independently the same or a different hydrocarbon-based radical and the Group II metal has an atomic weight between about 24 and about 115; and

(B) at least one basically reacting alkali metal compound; wherein the equivalent ratio of the acid of (A) : (B) in the reaction mixture is sufficient to form a basic or a more basic metal salt of (A).

4,123,371

PROCESS FOR PREPARING OVER-BASED SULFURIZED ALKALINE EARTH METAL PHENATES

Takashi Hori, and Suetou Hayashida, both of Soka, Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Dec. 21, 1977, Ser. No. 862,809
Claims priority, application Japan, Dec. 29, 1976, 51-160376
Int. Cl.[2] C10M *1/54, 3/48, 5/28, 7/52*
U.S. Cl. 252—42.7 **9 Claims**

1. A process for preparing an over-based sulfurized alkaline earth metal phenate which comprises reacting a phenol; sulfur; and an alkaline earth metal oxide or hydroxide; in the presence of a dihydric alcohol, with the gram equivalent ratio of the alkaline earth metal oxide or hydroxide per phenolic hydroxyl group of the phenol being maintained at about 0.99 to about 0.001, to obtain a reaction product and then reacting the reaction product with carbon dioxide at a temperature of about 50° to about 230° C.

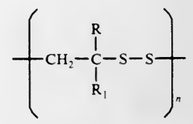
4,123,372

LUBRICANT COMPOSITIONS CONTAINING ANTIOXIDANTS

Robert F. Bridger, Hopewell, and Phillip S. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,570
Int. Cl.[2] C10M *1/38, 3/32, 5/22*
U.S. Cl. 252—48.2 **14 Claims**

1. A composition comprising a major proportion of an organic medium normally susceptible to oxidation wherein the organic medium is selected from the group consisting of oils of lubricating viscosity and greases prepared therefrom, and a minor proportion sufficient to impart antioxidant properties thereto of a mixture soluble therein comprising a polydisulfide having at least one unit therein with the following general structure:



where *n* is from 2 to about 20 and R and R_1 are hydrogen or C_1–C_{10} alkyl; and a compound selected from the group consisting of arylamines and hindered phenols wherein the arylamine is selected from N-phenyl-1-naphthylamine; N-phenyl-2-naphthylamine; 4,4'-thiobis[N-phenyl-1-naphthylamine]; 1,1'-thiobis[N-phenyl-2-naphthylamine]; diphenylamine, dinaphthylamine and phenothiazine and wherein the hindered phenol is selected from 2,6-di-t-butyl-p-cresol; 2,2'-methylenebis(2,6-di-t-butyl-p-cresol) 2,2'-methylenebis(2,6-t-butyl-m-cresol; 4,4'-butylidine-bis(6-t-butyl-m-cresol); 4,4'-methylenebis(2,6-di-t-butylphenol); 2,6-di-t-butyl-p-phenol and 4,4'-butylidinebis(6-t-butylphenol).

4,123,373

LACTONE POLYOL ESTERS AS OLEAGINOUS ADDITIVES

Stanley J. Brois, Westfield, and Antonio Gutierrez, Hamilton Square, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Feb. 14, 1977, Ser. No. 768,265
Int. Cl.[2] C07D *307/32;* **C10M** *1/28*
U.S. Cl. 252—48.6 **16 Claims**

1. An oil-soluble reaction product comprising principally lactone polyol ester having at least one hydroxy moiety, obtained from heating together a mixture of hydrocarbon-substituted lactone acid material and a polyol having 2–8 hydroxy groups and containing a total of 2 to 20 carbons, at a temperature of from about 100°–240° C. until esterification is complete by infrared analysis and/or cessation of water evolution, wherein said lactone acid material is obtained by lactonization of alkenyl succinic anhydride containing a total of 8 to 400 carbon atoms by intramolecular cyclization.

10. A lubricating oil composition comprising: a major amount of lubricating oil and 0.01 to 20 wt. % of an oil-soluble reaction product comprising principally lactone polyol ester having at least one hydroxy moiety obtained from heating together a mixture of an oil-soluble hydrocarbon substituted lactone acid material and a polyol having 2 to 8 hydroxy groups and containing a total of 2 to 20 carbons at a temperature of from 100°–240° C. until esterification is complete by infrared analysis and/or cessation of water evolution indicating completion of the esterification reaction, wherein said lactone acid material is obtained by lactonization of alkenyl succinic anhydride containing a total of 8 to 400 carbon atoms by intramolecular cyclization.

4,123,374

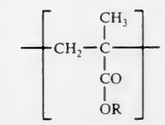
ELECTROPHORETIC DEVELOPMENT

Yvan K. Gilliams, Hever; Noël J. De Volder, Edegem; Walter F. De Winter, 's-Gravenwezel, and Bernard H. Tavernier, Edegem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

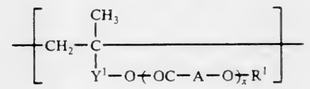
Filed Jan. 19, 1977, Ser. No. 760,516
Claims priority, application United Kingdom, Jan. 23, 1976, 2699/76
Int. Cl.[2] G03G *9/12*
U.S. Cl. 252—62.1 L **12 Claims**

1. A liquid developer composition for use in developing electrostatic charge patterns, which composition contains in an electrically insulating carrier liquid having a volume resistivity of at least 10^9 Ohm.cm and a dielectric constant below 3, a dispersed particulate colouring substance bearing at least one charge control substance and an organic polymeric material, wherein said polymeric material is a copolymer containing recurring units in the amount of at least about 49% by weight of B or C, a sufficient amount of A to adsorb the copolymer upon said dispersed particulate colouring substance, and up to about 2% by weight of D, wherein said units A–D have the following structural formulae:

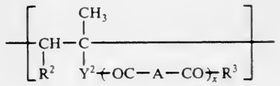
(A)



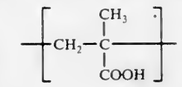
(B)



(C)



(D)



wherein:

R represents an alkyl group of 1 to 4 carbon atoms,
R^1 represents a hydrogen or an acyl group,
R^2 represents hydrogen or carboxyl in free acid or salt form,
R^3 represents hydroxyl or an ether group,
A represents an alkylene chain of 12 to 20 carbon atoms,
Y^1 represents $-CO-O-CH_2-CHOH-CH_2-$,
Y^2 represents $-CO-$, and
x represents 4 to 20.

4,123,375
DISHWASHER DETERGENT WITH CLEAR RINSING EFFECT AND METHOD OF MACHINE WASHING DISHES

Theodor Altenschöpfer, Dusseldorf-Holthausen, and Albertus van Wageningen, Erkrath-Unterbach, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Germany

Filed Nov. 19, 1976, Ser. No. 743,472

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1975, 2552506

Int. Cl.[2] A47L *15/02;* **C11D** *3/20, 3/395, 7/56*

U.S. Cl. 252—99 **1 Claim**

1. A powdered dishwasher detergent with a clear rinsing effect consisting essentially of 40% by weight of sodium tripolyphosphate, 40% by weight of sodium metasilicate, 5% by weight of a compound releasing active chlorine in aqueous solution, 5% of low-sudsing nonionic surface active compounds were the suds level of the low-sudsing nonionic surface-active compounds according to DIN 53,902 is from 10 to 80 ml of 50° C, 7% by weight of anhydrous trisodium citrate, and 3% by weight of sodium acetate.

4,123,376
PEROXYMONOSULFATE-BASE BLEACHING AND BLEACHING DETERGENT COMPOSITIONS

Frederick W. Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 391,058, Aug. 24, 1973, Pat. No. 4,028,263. This application Jul. 6, 1976, Ser. No. 702,395

The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.

Int. Cl.[2] C11D *7/56*

U.S. Cl. 252—99 **10 Claims**

1. A bleaching composition consisting essentially of about 5 to 25 parts by weight of a water soluble peroxymonosulfate bleach, about 3 to 20 parts by weight of a water soluble inorganic bromide, in sufficient quantity to promote the bleaching activity of the peroxymonosulfate and about 2 to 30 parts by weight of an aromatic sulfonamide compound selected from the group consisting of benzene sulfonamide, toluene sulfonamide, ethylbenzene sulfonamide, dodecylbenzene sulfonamide and xylene sulfonamide, N-alkali metal salts of said sulfonamides, N-acetyl and N-benzoyl derivatives of said sulfonamides and of said salts of said sulfonamides and mixtures of such sulfonamides, salts and derivatives, which inhibits destruction of dyes and overbleaching of dyed materials while stains to be bleached by the composition are effectively removed from substrates.

4,123,377
PARTICULATE DETERGENT COMPOSITION CONTAINING DIBASIC MAGNESIUM HYPOCHLORITE

Christopher R. Davey, Fairfield, and Peter J. Buckley, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 25, 1977, Ser. No. 827,759

Int. Cl.[2] C11D *7/56*

U.S. Cl. 252—103 **27 Claims**

1. A particulate detergent composition consisting essentially of

(a) from 5 to 50% by weight of an organic detergent surfactant;

(b) from 0 to 90% by weight of a detergency builder and mixtures thereof;

(c) from 1 to 50% by weight of the bleaching agent dibasic magnesium hypochlorite having an average particle diameter of less than about 88 microns; and

(d) from 0 to about 50% of a buffering agent, there being at least 1% of said buffering agent where the dibasic magnesium hypochlorite particle diameter is greater than about 45μm to give compositions having a pH of from about 8.0 to about 9.6 when added to water at a concentration of 1500 parts per million detergent.

4,123,378
STAIN REMOVING AGENTS AND PROCESS FOR CLEANING AND OPTIONALLY DYEING TEXTILE MATERIAL

Heinz Abel, and Alfred Berger, both of Reinach, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

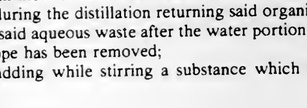
Filed Aug. 26, 1976, Ser. No. 717,976

Claims priority, application Switzerland, Sep. 16, 1975, 12011/75; Apr. 30, 1976, 5448/76

Int. Cl.[2] C11D *1/22, 1/29, 3/43;* **D06P** *5/00*

U.S. Cl. 252—171 **5 Claims**

1. A stain removing composition, which consists essentially of (1) 20 to 30 percent by weight of an anionic surfactant of the formula



wherein p is an integer from 8 to 12, n_1 is an integer of 1 to 50 and X is the acid radical of an inorganic acid which contains oxygen or the radical of a carboxylic acid, (2) 6 to 20 percent by weight of an aliphatic saturated or unsaturated, branched or straight-chain monoalcohol which contains 8 to 18 carbon atoms or a mixture of such alcohols, (3) 6 to 20 percent by weight of pine oil and (4) 40 to 68 percent by weight of water.

4,123,379
PRODUCTION OF VERY STRONGLY ACIDIC SOLIDS FOR HYDROCARBON CONVERSIONS

Bruce C. Gates, Newark, Del.; Vincent L. Magnotta, Whitehall, Pa., and George C. A. Schuit, Neunen, Netherlands, assignors to University of Delaware, Newark, Del.

Filed May 4, 1977, Ser. No. 793,780

Int. Cl.[2] B01J *31/10*

U.S. Cl. 252—184 **7 Claims**

1. A process for production of a very strongly acidic solid which comprises reacting aluminum trichloride with the sulfonic acid groups of a porous solid having sulfonic acid groups and ion-exchange properties, to produce hydrogen chloride and a solid acidic compound having a sulfur to aluminum to chlorine atomic ratio of about 2:1:2 in the reacted groups.

4,123,380
WASTE DISPOSAL

Karl T. Norell, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed Apr. 4, 1977, Ser. No. 784,305

Claims priority, application Sweden, Apr. 2, 1976, 7603924; Apr. 2, 1976, 7603925

Int. Cl.[2] G21F *9/08*

U.S. Cl. 252—301.1 W **21 Claims**

1. A method of transferring the solid constituents from aqueous waste containing low and/or medium active radioactive solid constituents into solid units intended for longtime depositing wherein said solid constituents contain ion-exchange masses which comprises:

(A) conveying said aqueous waste to a container provided with a stirrer;

(B) adding an organic compound which forms an azeotrope with water to said aqueous waste;

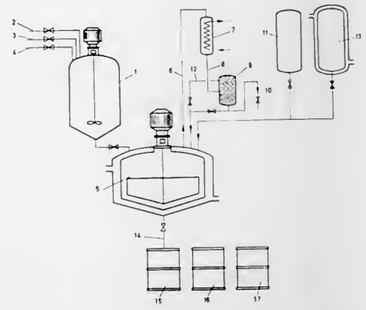
(C) distilling off said azeotrope and continuing the distilling until most or all of the water has been removed;

(D) during the distillation returning said organic compound to said aqueous waste after the water portion of said azeotrope has been removed;

(E) adding while stirring a substance which subsequently

either through hardening or reaction with another substance is transformable into a solid state;

(F) distilling off most or all of said organic compound;



(G) pouring the waste from said container into a vessel for transformation into solid units for subsequent deposition.

4,123,381
PROCESS FOR PRODUCING CELLULOSE MICROCAPSULES, AND RESULTING CELLULOSE MICROCAPSULES

Masataka Morishita; Mitsuru Fukushima; Tutomu Sasagawa; Yoshihito Inaba, all of Shizuoka; Yasuo Yokokawa, Tokyo; Satoshi Araragi; Narumi Yoshida, both of Nobeoka, and Hachiro Uchiyama, Moriyama, all of Japan, assignors to Toyo Jozo Company, Ltd. and Asahi Kasei Kogyo Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 560,936, Mar. 21, 1975, abandoned. This application Feb. 8, 1977, Ser. No. 766,729

Claims priority, application Japan, Feb. 20, 1975, 50-20381

Int. Cl.[2] B01J *13/02*

U.S. Cl. 252—316 **10 Claims**

1. A process for producing an adsorbing cellulose microcapsule having an outer diameter of from 100 to 5000 microns and consisting of an outer semipermeable barrier layer of continuous solid phase cellulose having a thickness of from 0.5 to 5 microns and containing micropores of about 10 to 80 angstroms in diameter and adsorbent powders dispersed within a cellulose gel matrix innerside said barrier layer, which comprises dispersing said adsorbent powders in a solution of cellulose dissolved in a solvent which is not adversely affected by the adsorbing capacity of the adsorbent powders and which is selected from the group consisting of a cellulose xanthate solution and a cellulose cuprammonium solution, said cellulose xanthate solution being a viscose prepared by adding 10 to 50% (W/V) of carbon disulfide to alkali cellulose and said cellulose cuprammonium solution being a copper tetramine hydroxide solution containing 2 to 7% (W/V) of copper, 5 to 15% (W/V) of ammonia and 5 to 15% (W/V) of cellulose, then forming the resulting dispersion into droplets and finally effecting precipitation of cellulose on the droplets, each of said droplets forming a cellulose microcapsule.

10. An adsorbing cellulose microcapsule produced by the process of claim 1.

4,123,382
METHOD OF MICROENCAPSULATION

Lewis D. Morse, Princeton; William G. Walker, Avenel, and Paul A. Hammes, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 25, 1973, Ser. No. 364,223

Int. Cl.[2] B01J *13/02;* **A61K** *9/50*

U.S. Cl. 252—316 **6 Claims**

1. A process for producing microencapsulated solid products which comprises introducing said solid products in a finely divided state to soft blank microcapsules formed from an encapsulating material selected from the group consisting of ethylcellulose, methylcellulose, hydroxypropylmethylcellulose, polyvinyl alcohol, cellulose acetate phthallate, gelatin, gum arabic and carageenan alginates in a solvent medium, hardening said soft microcapsules after said solid products have entered said microcapsules, and recovering the microencapsulated product from the resultant mixture.

4,123,383
SILICA BASED DEFOAMER COMPOSITIONS HAVING IMPROVED STABILITY

Frederick J. Ihde, Jr., Mountain Lakes, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Sep. 19, 1977, Ser. No. 834,163

Int. Cl.[2] B01D *19/04*

U.S. Cl. 252—321 **30 Claims**

1. In an aqueous system defoamer composition containing from about 2 to about 20% by weight of hydrophobic silica suspended in a liquid carrier, the improvement consisting essentially of addition of an effective amount of oil soluble resin and optionally an aliphatic acid having from about 8 to about 22 carbon atoms sufficient to stabilize and inhibit settling of the silica suspended in the liquid carrier.

4,123,384
CONTROL SERUM CONTAINING ALKALINE PHOSPHATASE OF CONSTANT ACTIVITY

Dieter Hundt, Percha, über Starnberg; Wolfgang Gruber, Tutzing-Unterzeismering; Michael Klarwein, Garmisch-Partenkirchen, and Peter Roeschlau, Seeshaupt, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Aug. 16, 1976, Ser. No. 715,021

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2537127

Int. Cl.[2] C09K *3/00;* **G01N** *31/14, 33/16*

U.S. Cl. 252—408 **16 Claims**

10. Aqueous control solution having substantially stabilized alkaline phosphatase activity comprising a predetermined amount of alkaline phosphatase in an aqueous solution and at least one of Mn^{2+} and Cd^{2+} ions dissolved therein, in an amount sufficient to substantially improve the stability of the activity of said alkaline phosphatase therein.

4,123,385
PROCESS FOR IMPROVING THE ACTIVITY OF USED SUPPORTED SILVER CATALYSTS

Siegfried Rebsdat, Burg; Sigmund Mayer, Burgkirchen, Alz; Josef Alfranseder, Marktl, Inn, and Josef Riedl, Burgkirchen, Alz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1977, Ser. No. 823,032

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636680

Int. Cl.[2] B01J *23/96, 23/50;* **C07D** *301/10, 303/04*

U.S. Cl. 252—414 **11 Claims**

1. Process for improving the activity of supported silver catalysts for the direct oxidation of ethylene with molecular oxygen or air, the catalyst being arranged as a fixed bed, by applying an average caesium and/or rubidium content of 20 to 1.000 parts per 1 million parts of catalyst to the catalyst, which has already been used for the direct oxidation, with an impregnating liquid which contains caesium compounds and/or rubidium compounds, wherein the application is carried out so that a concentration gradient from 0.5 to 20 parts of caesium and/or rubidium per 1 million parts of catalyst per meter of fixed bed is produced, so that the concentration gradient increases in the direction of flow of the gases to be reacted.

2. Process according to claim 1, wherein several separate portions of the silver catalyst are wetted with impregnating liquids which have concentrations, which are different from

one another, within a range from 0.003 to 0.6% by weight relative to the total impregnating liquid of caesium and/or rubidium in the form of at least one dissolved or dispersed chemical compound in at least one organic solvent which is inert towards the catalyst, optionally with the addition of water, each catalyst portion remaining in contact with the impregnating liquid for about 3 to 120 minutes, this liquid is then allowed to run off and the volatile constituents of the impregnating liquid which still remain on the catalyst particles are subsequently removed by warming after which the catalyst portions thus treated are arranged in the reactor so that the caesium and/or rubidium concentrations increase constantly in the direction of flow of the gases to be reacted on the catalyst.

4,123,386

CHEMICALLY REDUCING SOLIDS WHICH MAY BE APPLIED TO THE POLYMERIZATION OF OLEFINS

Michel M. Avaro, "Rendence les Esperelles" 33 Bd des Esperelles, and Pierre M. Mangin, "Le Megaran " Bd Girard Philipe, both of 13500 Martigues, France

Division of Ser. No. 595,770, Jul. 14, 1975, abandoned. This application Dec. 9, 1976, Ser. No. 748,947

Claims priority, application France, Aug. 14, 1974, 74 28207

Int. Cl.[2] C08F *4/64, 4/68, 4/62*

U.S. Cl. 252—429 B **20 Claims**

1. A method for preparing catalysts for polymerizing olefins, comprising two successive main steps, the first step comprising the preparation of chemically reducing solids by polymerizing an olefin of the formula $ACH = CH_2$, wherein A is hydrogen or an alkyl radical containing 1 to 8 carbon atoms, in contact with solid particles of a compound of a transition metal from sub-groups IV*a*, V*a* and VI*a* of the periodic table in a lower valency state, and in the presence of an organomagnesium compound in the form of a C_1–C_{12} alkyl magnesium compound in the relative proportion such that the molar ratio of organic groups of the alkyl magnesium compound to the transition metal is 0.2–2.0/1, and the second step comprising contacting the chemically reducing solids from the first step with reducible compounds of transition metals from sub-groups IV*a*, V*a* and VI*a* of the periodic table to effect reduction thereof, terminating the polymerization in the first step when the quantity of olefin polymerized is from 50 mg.–50 g. per mg.-atom of transition metal.

4,123,387

CATALYSTS FOR POLYMERIZATION OF OLEFINS

Akinobu Shiga; Yoshiharu Fukui; Kazuhiro Matsumura; Toshio Sasaki, and Masahisa Ohkawa, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 14, 1977, Ser. No. 777,269

Claims priority, application Japan, Mar. 15, 1976, 51-28313

Int. Cl.[2] C08F *4/64*

U.S. Cl. 252—429 B **22 Claims**

1. In a method for the production of a solid catalyst for olefin polymerization comprising preparing a titanium trichloride composition by reducing tetrachloride with an organoaluminum compound of the formula:

$$R_nA\,X_{3-n}$$

wherein R is a straight or branched alkyl group, an alicyclic group or an aromatic hydrocarbon group, each having up to 18 carbon atoms, X is a halogen atom or a hydrogen atom, and n satisfies the relationship $1 \leqq n \leqq 3$, at a temperature of about $-100°$ to about 60° C. to obtain a solid reduction product, and then treating the resulting solid reduction product by one of the following methods, (a), (b), (c), (d), (e) or (f):

(a) heat-treating the solid reduction product at about 100° to about 180° C. in the absence of or presence of an inert solvent,

(b) catalytically treating the solid reduction product with an aluminum compound of the formula:

$$R''_pA\,X_{3-p}$$

wherein R'' is a straight or branched alkyl group, an alicyclic group or an aromatic hydrocarbon group, each having up to 18 carbon atoms, X is a halogen atom, and p satisfies the relationship $1 = p$ 1.5,

and, optionally, further catalytically treating the resulting product with an ether,

(c) catalytically treating the solid reduction product with an ether and then with an aluminum compound of the formula:

$$R''_pA\,X_{3-p}$$

wherein R'' is a straight or branched alkyl group, an alicyclic group or an aromatic hydrocarbon group, each having up to 18 carbon atoms, X is a halogen atom, and p satisfies the relationship $1 \leqq p < 1.5$,

and, optionally, further catalytically treating the resulting product with an ether,

(d) catalytically treating the solid reduction product with an ether and then with an aluminum compound of the formula:

$$R''_pA\,X_{3-p}$$

wherein R'' is a straight or branched alkyl group, an alicyclic group or an aromatic hydrocarbon group, each having up to 18 carbon atoms, X is a halogen atom, and p satisfies the relationship $1 \leqq p < 1.5$,

in the presence of an organo-halogen compound of the formula:

$$R'''X$$

wherein R''' is a straight or branched alkyl group, an alicyclic group or an aromatic hydrocarbon group, each having up to 18 carbon atoms, and X is a halogen atom, and, optionally, further catalytically treating the resulting product with an ether,

(e) catalytically treating the solid reduction product with an ether and then with an aluminum halide of the formula:

$$AlX_3$$

wherein X is a halogen atom, dissolved in an aromatic hydrocarbon in the presence of a hydrogen halide of the formula:

$$HX$$

wherein X is a halogen atom, and, optionally, further catalytically treating the resulting product with an ether,

(f) catalytically treating the solid reduction product with an ether and then with titanium tetrachloride;

the improvement comprising treating the thus produced titanium trichloride composition at a temperature of from about 0° to about 150° C. with a mixture of a halogenated hydrocarbon (1) represented by the formula

$$CH_qX_{4-q}$$

wherein X is a halogen atom and q is an integer satisfying the relationship $0 \leqq q < 4$, and an ether (2) represented by the formula

$$R_3—O—R_4$$

wherein R_3 and R_4, which may be the same or different, each is an alkyl group, an alicyclic group or an aromatic hydrocarbon group, each having up to 10 carbon atoms, wherein the amounts of the halogenated hydrocarbon and ether used in the catalytic treating of the titanium trichloride composition are about 0.001 to about 1.0 and about 0.001 to about 5 times on a molar basis to the amount of the titanium trichloride contained in the titanium trichloride composition, respectively.

4,123,388

CATALYST AND PROCESS FOR PREPARING MALEIC ANHYDRIDE FROM C_4 HYDROCARBONS

Ralph O. Kerr, and Bruno J. Barone, both of Houston, Tex., assignors to Denka Chemical Corporation, Houston, Tex.

Division of Ser. No. 667,624, Mar. 17, 1976, Pat. No. 4,049,574, which is a division of Ser. No. 473,489, Mar. 28, 1974, Pat. No. 3,989,585. This application Jul. 5, 1977, Ser. No. 812,582

Int. Cl.[2] B01J *27/18*

U.S. Cl. 252—437 **1 Claim**

1. An improved vanadium-phosphorus-oxygen catalyst complex for the oxidation of normal butane to produce maleic anhydride consisting essentially of active components in the atom ratios vanadium 1:phosphorus 0.90 to 1.3:copper 0.005 to 0.3:Me 0.005 to 0.25 wherein Me consists essentially of Ce and further containing as an active component an alkali or alkaline earth metal in the atom ratio of 0.001 to 0.01 per atom of V.

4,123,389

PYROGENIC SILICA OR TITANIA OR ALPHA-ALUMINA CUPROUS CHLORIDE CATALYST OF HYDROGEN CHLORIDE/OXYGEN REACTION

Wim J. M. Pieters, Morristown; Emery J. Carlson, Chatham; William E. Gates, Andover, and William C. Conner, Jr., Succasunna, all of N.J., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed Feb. 2, 1977, Ser. No. 765,161

Int. Cl.[2] B01J *27/06;* **C07C** *17/00;* **B01J** *27/06*

U.S. Cl. 252—441 **7 Claims**

1. An improved copper chloride/alkali metal chloride catalyst on silica, titania or alpha-alumina carrier, effective for production of chlorine or chlorination of organic material by vapor phase reaction between hydrogen chloride and elemental oxygen, which catalyst is essentially anhydrous and consists essentially of granules composed of a relatively low bulk density carrier of open structure and active catalyst; the carrier being between about 30% and about 85% by weight of the total catalyst and being silica, titania or alpha-alumina particles, which particles are non-porous and have diameters in the range of about 50 to 1000 A, and said carrier having surface area of at least about 50 square meters per gram measured by the BET method using nitrogen gas; the catalyst granules having voids within the granules such that at least 20% of the voids have radius greater than 200 A as measured by nitrogen sorption isotherms; and the surface of said granules being occupied by active catalyst composed of a first layer of copper chloride, essentially in the cuprous form, being at least about 10% by weight of the total catalyst and of a second layer of at least one alkali metal chloride, permissibly also containing at least one rare earth metal chloride, said copper chloride being the largest molecular proportion of said active ingredients and the amount of active ingredients being at least sufficient theoretically to cover the carrier particles with a coating one molecule thick.

4,123,390

ZEOLITE AGGLOMERATES HAVING CONTROLLED PORE STRUCTURE

John D. Sherman, Chappaqua, and Ronald J. Ross, Upper Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 742,062

Int. Cl.[2] B01J *29/06, 35/00*

U.S. Cl. 252—455 Z **5 Claims**

1. A porous rigid agglomerated body comprising zeolitic molecular sieve crystals having average diameters of from 0.5 to 15 microns and having pores large enough to adsorb carbon dioxide, said molecular sieve crystals being present in an amount of at least 6 grams and comprising at least 40 weight percent, in their activated state, of said body, said body having a piece density of at least 0.5 g./cm.^{3}, an effective thickness value of greater than 0.20 cm., a total capillary pore volume of from 0.2 to 1.0 cc./gm. in the activated state, of which from 4 to 75 percent thereof is created by macropores having average diameters of from 2 to 100 microns, and at least 10 percent thereof being created by macropores having diameters less than 1 micron.

2. A porous rigid agglomerated body according to claim 1 which comprises in addition to zeolitic molecular sieve crystals, a refractory inorganic oxide binder in an amount of 50 to 60 weight percent of the overall body in the activated state.

4,123,391

AUTO EMISSION PURIFYING CATALYST AND METHOD OF MANUFACTURE

Masaaki Noguchi, Nagoya, and Tsuchio Bunda, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 26, 1976, Ser. No. 735,785

Claims priority, application Japan, Oct. 23, 1975, 50-127985

Int. Cl.[2] B01J *21/04, 23/44*

U.S. Cl. 252—466 PT **10 Claims**

1. An auto emission purification catalyst, comprising:

palladium supported on an α-alumina carrier having a total pore volume of 0.05 – 0.50 cc/g and an average pore diameter of 0.05 – 5.0μ.

4,123,392

NON-COMBUSTIBLE NUCLEAR RADIATION SHIELDS WITH HIGH HYDROGEN CONTENT

William C. Hall, Central Valley, and John M. Peterson, Rock Tavern, both of N.Y., assignors to Chemtree Corporation, Central Valley, N.Y.

Continuation-in-part of Ser. No. 243,825, Apr. 13, 1972, abandoned. This application Jun. 14, 1976, Ser. No. 695,378

Int. Cl.[2] C09K *3/00*

U.S. Cl. 252—478 **22 Claims**

1. A method comprising attenuating nuclear radiation by intercepting the radiation with a non-combustible, self supporting system formed of a continuous phase of fire resistant cementitious material and in which is dispersed a discontinuous phase, said discontinuous phase containing hydrogen atoms in the form of a rigid, combustible organic plastic or resin with a particle size distribution such that no more than 10 percent of said discontinuous phase passes a 150 mesh screen and with a volume percent range of said continuous phase between about 40 percent and about 98 percent of the total shield volume.

21. A self-supporting, non-combustible, nuclear radiation shielding composition comprising a continuous phase of fire resistant cementitious material and a discontinuous phase dispersed therein, said discontinuous phase containing hydrogen atoms in the form of a rigid, combustible, organic plastic or resin with a particle size distribution such that no more than 10 percent of said discontinuous phase passes a 150 mesh screen and with a volume percent range of said continuous phase between about 40 percent and about 98 percent of the total shield volume, said continuous phase being adapted to retain its shape in the presence of a temperature adapted to soften, melt or decompose the discontinuous phase, said composition further comprising a further material dispersed in the continuous phase and including a substance containing at least one enriched isotope of an element in a ratio different from that present in natural abundance.

4,123,393

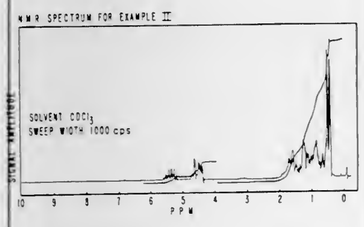
SUBSTITUTED-NORBORNANE PERFUME COMPOSITIONS

Kenneth K. Light, Long Branch; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

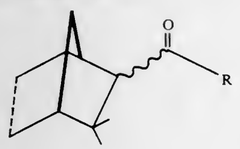
Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,133

Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **22 Claims**



1. A perfume composition comprising one or more norbornane derivatives having the structure:



wherein R is C_3–C_5 alkenyl or C_3–C_5 alkylidene and the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond and at least one adjuvant selected from the group consisting of natural perfume oil, synthetic perfume oil, alcohols, aldehydes, ketones other than said norbornane derivatives, nitriles, esters and lactones.

4,123,394

TRICYCLO[5.2.1.0^{2,6}]DECANE-METHYLOL OR ITS LOWER ALKYL OR ALKENYL ESTER OR ETHER DERIVATIVES IN PERFUME COMPOSITIONS

Werner Skorianetz, Dardagny; Khurshid P. Dastur, Satigny, and Hugo Strickler, Dardagny, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

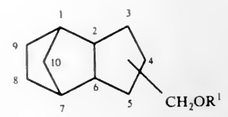
Filed Dec. 1, 1976, Ser. No. 746,211

Claims priority, application Switzerland, Dec. 8, 1975, 15897/75

Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **8 Claims**

1. A process for preparing perfume compositions comprising the step of admixing a fragrance-imparting amount of a compound of formula



(I)

wherein:

symbol R^1 represents a lower saturated or unsaturated linear or branched alkyl radical, having from 1 to 6 carbon atoms, an acyl radical containing from 1 to 6 carbon atoms or a hydrogen atom, and

the side-chain is bound to cyclopentane ring at positions 4 or 5 of the said ring;

to confer a flowery, fruity or woody note to such perfume compositions.

4,123,395

COMPOSITIONS CONTAINING NONIONIC SURFACTANT AND SULFONATED AROMATIC COMPATIBILIZING AGENT

Edward J. Maguire, Jr., and Robert A. Staab, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 635,831, Nov. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 479,953, Jun. 17, 1974, abandoned. This application Sep. 28, 1977, Ser. No. 837,343

Int. Cl.[2] C11D *3/34, 1/831, 1/83*

U.S. Cl. 252—559 **31 Claims**

1. A cleaning composition, particularly suitable for use in automatic dishwashers and having improved antiredeposition properties, comprising:

(a) at least about 4% by weight of an alkoxylated low-foaming nonionic surface-active agent, wherein said nonionic surface-active agent is selected from the group consisting of a condensation product of one mole tallow alcohol with from about 6 to about 20 moles of ethylene oxide; an alkoxylate having the formula

$$Y[(C_3H_6O)_n(C_2H_4O)_mH]_x$$

wherein x has a value of at least about 2, n has a value such that the molecular weight of the polyoxypropylene hydrophobic base is at least about 900 and m has a value such that the oxyethylene content of the molecule is from about 10% to about 90% by weight, and wherein Y is selected from the group consisting of propylene glycol, glycerine, pentaerythritol, trimethylolpropane, ethylene diamine and mixtures thereof; a polyetherester having the formula

$$(ClC_6H_4)_2CHCO_2(CH_2CH_2O)_xR$$

wherein x is an integer from 4 to 20 and R is a lower alkyl group containing not more than 4 carbon atoms; a surfactant having the formula

$$Y(C_3H_6O)_n(C_2H_4O)_mH$$

wherein Y is the residue of an organic compound having from about 1 to 6 carbon atoms and one reactive hydrogen atom, n has an average of at least about 6.4, as determined by hydroxyl number, and m has a value such that the oxyethylene portion constitutes about 10 to 90 weight percent of the molecule; a surfactant having the formula

$$P[(C_3H_6O)_n(C_2H_4O)_mH]_x$$

wherein P is the residue of an organic compound having from about 8 to 18 carbon atoms and containing x reactive hydrogen atoms in which x has a value of 1 or 2, n has a value such that the molecular weight of the polyoxypropylene portion is at least about 58 and m has a value such

that the oxyethylene content of the molecule is from about 10 to 90 weight percent; a surfactant having the formula

$$P[(C_2H_4O)_n(C_3H_6O)_mH]_x$$

wherein P is the residue of an organic compound having from about 8 to 18 carbon atoms and containing x reactive hydrogen atoms in which x has a value of 1 or 2, n has a value such that the molecular weight of the polyoxyethylene portion is at least about 44 and m has a value such that the oxypropylene content of the molecule is from about 10 to 90 weight percent; a condensation product of benzyl chloride and an ethoxylated alkyl phenol wherein the alkyl group has from about 6 to about 12 carbon atoms and wherein from about 12 to about 20 ethylene oxide molecules have been condensed per mole of alkyl phenol; and mixtures of the foregoing surfactants; and

(b) at least about 5% by weight of a sulfonated aromatic compatibilizing agent having a critical micelle concentration greater than 1% by weight at 25° C., wherein the weight ratio of said alkoxylated nonionic surface-active agent to said sulfonated compatibilizing agent is in the range from about 2:5 to about 5:3, the compositions being substantially free of a chlorine bleach component and being in a form selected from the group consisting of a solid, a paste, a gel, or a non-aqueous liquid.

4,123,396

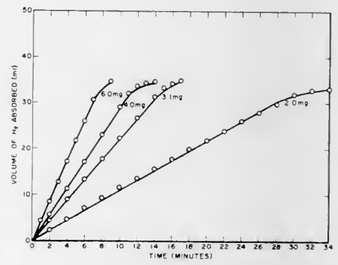
IMPREGNATED METAL-POLYMERIC FUNCTIONAL BEADS

Alan Rembaum, Altadena, and Willi Volksen, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Aug. 27, 1976, Ser. No. 718,103

Int. Cl.[2] C08F *8/42*

U.S. Cl. 526—24 **7 Claims**



1. A metal containing polymeric microsphere composition comprising:

polymeric microspheres having a diameter below 100 microns containing at least 20% by weight of a tertiary amine substituted monomer having the amine ligand pendant from the polymer backbone selected from the group consisting of cross-linked polystyrene-divinylbenzene substituted with $—CH_2NMe_2$, polyethylene imine, polyvinylbenzimidazole and polyvinylpyridine, said ligands being capable of ionic reaction or coordination with Group IV, VI, VII, or VIII metal compounds selected from oxides, salts or acids to form complexes therewith and said microspheres containing;

at least 0.1 weight percent of finely divided, free metal associated with the amine ligands formed by reduction of the compound in situ within the microsphere by reaction with a reducing agent selected from the group consisting of borohydrides and aluminum hydrides.

4,123,397

AGGLOMERATION OF STARCH-HYDROLYZED POLYACRYLONITRILE GRAFT COPOLYMER

Duane A. Jones, Minneapolis, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Jun. 15, 1977, Ser. No. 806,641

Int. Cl.[2] C08L *3/02*

U.S. Cl. 260—17.4 GC **3 Claims**

1. A process of agglomerating and desolventizing starch-hydrolyzed polyacrylonitrile graft copolymer wherein said acrylonitrile is hydrolyzed to carboxamide and alkali metal carboxylate groups, comprising wetting particles of starch-hydrolyzed polyacrylonitrile copolymer during mixing with atomized, liquid water until the moisture content of the particles reaches about 17% to 22% by weight based upon the weight of the total composition and subsequently drying the particles at a temperature between about 25° C. to 100° C. to a moisture content of about 3% to 12.5% by weight of the total composition.

4,123,398

FLAME RESISTANT CELLULOSIC PRODUCT CONTAINING ANTIMONY PENTOXIDE AND POLYVINYL BROMIDE

David G. Unrau, Budd Lake; Norman A. Portnoy, Hopatcong, and Peter J. Hartmann, Dover, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 25, 1977, Ser. No. 800,186

Int. Cl.[2] C08L *1/24;* **D01F** *2/06*

U.S. Cl. 260—17.4 CL **10 Claims**

1. A flame resistant cellulosic product regenerated from a cellulosic viscose solution containing from 3 to 7% by weight of colloidal Sb_2O_5 and from 5 to 30% by weight of polyvinyl bromide, said weights being based upon the weight of cellulose.

4,123,399

PLASTICIZED, HEAT-STABILIZED PVC COMPOSITIONS

Michel Gay, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jun. 28, 1977, Ser. No. 810,845

Claims priority, application France, Jun. 28, 1976, 76 20181; Jan. 28, 1977, 77 3086

Int. Cl.[2] C08K *5/09*

U.S. Cl. 260—23 XA **18 Claims**

1. A composition of matter comprising (1) a vinyl chloride polymer, (2) a plasticizer therefor, and (3) heat-stabilizing amounts of (i) a mixture of metal salts of aliphatic and aromatic organic acids, (ii) a polyol having at least four hydroxyl functions, at least one of which being a primary alcohol function, and (iii) a β-diketone having the structural formula:

$$R_1 — CO — CHR_2 — CO — R_3 \quad (I)$$

wherein R_1 and R_3, which can be identical or different, represent:

a linear or branched chain alkyl or alkenyl radical having at least one and up to 36 carbon atoms,

an aralkyl radical having from 7 to 36 carbon atoms, and

an aryl or cycloaliphatic radical having fewer than 14 carbon atoms, the cycloaliphatic radicals optionally comprising carbon-to-carbon unsaturation; with the proviso that the foregoing radicals R_1 and R_3 either may or may not be substituted, and, when substituted, each said substituent is selected from the group consisting of halogen, or, in the case of the aryl or cycloaliphatic radicals, methyl or ethyl radicals; said R_1 and R_3 optionally may also be modified by the presence of one or more of the linkages —O—,



or —CO—, in an aliphatic chain; and together R_1 and R_3 can also form a divalent alkylene radical of 2 to 5 carbon atoms, optionally containing a bridging oxygen or nitrogen atom;

R_2 represents:

a hydrogen atom,

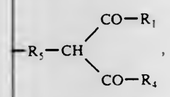
an alkyl or alkenyl radical, having at least one and up to 36 carbon atoms, which can contain one or more of the linkages —O—,



or —Co—,

a radical of the formula —CO—R_4, R_4 representing an alkyl radical having from 1 to 36 carbon atoms, or an aryl rdical having from 6 to 10 carbon atoms, or

a radical of the formula



R_5 representing an alkyl radical having from 1 to 6 carbon atoms, and R_1 and R_3 being as above; with the further proviso that;

for R_1 and R_3, the carbon atom bonded to the respective carbonyl function of the compound (I) is free from ethylenic or carbonyl unsaturation;

for R_1 or R_3, the carbon atom bonded to the respective carbonyl function does not comprise a moiety which includes aromatic unsaturation;

one of the radicals R_1 or R_3 can represent a hydrogen atom;

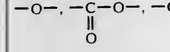
R_1 and R_2 together can represent a divalent radical selected from among the following:

a linear or branched alkylene or alkenylene radical, having up to 36 carbon atoms,

an aralkylene radical having from 7 to 36 carbon atoms, and

an arylene or cycloalkylene radical having fewer than 14 carbon atoms, the cycloaliphatic radicals optionally comprising carbon-to-carbon unsaturation;

and with the further proviso that such latter radicals too either may or may not be substituted, and, when substituted, each such substituent is selected from the group consisting of halogen, or, in the case of the aryl or cycloaliphatic radicals, methyl or ethyl radicals, and such latter radicals optionally being modified by the presence, in an aliphatic chain, of one of more of the linkages:



4,123,400

HEAT-STABILIZED PVC COMPOSITIONS

Michel Gay, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jun. 28, 1977, Ser. No. 810,849

Claims priority, application France, Jun. 28, 1976, 76 20180

Int. Cl.[2] C08K *5/09*

U.S. Cl. 260—23 XA **17 Claims**

1. A composition of matter comprising

(1) a vinyl chloride polymer, and

(2) heat-stabilizing amounts of (1) a mixture of metal salts of aliphatic and aromatic organic acids selected from the group consisting of calcium/zinc, calcium/cadmium, barium/zinc and barium/cadmium salts of aliphatic and aromatic organic acids, (ii) a polyol, and (iii) a β-diketone having the structural formula:

$$R_1 - CO - CHR_2 - CO - R_3 \qquad (I)$$

wherein R_1 and R_3, which can be identical or different, represent:

a linear or branched chain alkyl or alkenyl radical having at least one and up to 36 carbon atoms,

an aralkyl radical having from 7 to 36 carbon atoms, and

an aryl or cycloaliphatic radical having fewer than 14 carbon atoms, the cycloaliphatic radicals optionally comprising carbon-to-carbon unsaturation; with the proviso that the foregoing radicals R_1 and R_3 either may or may not be substituted, and, when substituted, each said substituent is selected from the group consisting of halogen, or, in the case of the aryl or cycloaliphatic radicals, methyl or ethyl radicals; said R_1 and R_3 optionally may also be modified by the presence of one or more of the linkages —O—,



or —CO—, in an aliphatic chain; and together R_1 and R_3 can also form a divalent alkylene radical of 2 to 5 carbon atoms, optionally containing a bridging oxygen or nitrogen atom;

R_2 represents: a hydrogen atom,

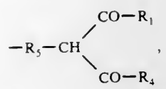
an alkyl or alkenyl radical, having at least one and up to 36 carbon atoms, which can contain one or more of the linkages —O—,



or —CO—,

a radical of the formula —CO—R_4, R_4 representing an alkyl radical having from 1 to 36 carbon atoms, or an aryl radical having from 6 to 10 carbon atoms, or

a radical of the formula



R_5 representing an alkyl radical having from 1 to 6 carbon atoms, and R_1 and R_3 being as above; with the further proviso that;

for R_1 and R_3, the carbon atom bonded to the respective carbonyl function of the compound (I) is free from ethylenic or carbonyl unsaturation;

for R_1 or R_3, the carbon atom bonded to the respective carbonyl function does not comprise a moiety which includes aromatic unsaturation;

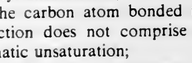
one of the radicals R_1 or R_3 can represent a hydrogen atom;

R_1 and R_2 together can represent a divalent radical selected from among the following:

a linear or branched alkylene or alkenylene radical, having up to 36 carbon atoms,

an aralkylene radical having from 7 to 36 carbon atoms, and

an arylene or cycloalkylene radical having fewer than 14 carbon atoms, the cycloaliphatic radicals optionally comprising carbon-to-carbon unsaturation; and with the further proviso that such latter radicals too either may or may not be substituted, and, when substituted, each such substituent is selected from the group consisting of halogen, or, in the case of the aryl or cycloaliphatic radicals, methyl or ethyl radicals, and such latter radicals optionally being modified by the presence, in an aliphatic chain, of one or more of the linkages:



4,123,401

FINISHES HAVING IMPROVED SCRATCH RESISTANCE PREPARED FROM COMPOSITIONS OF FLUOROPOLYMER, MICA PARTICLES OR METAL FLAKE, A POLYMER OF MONOETHYLENICALLY UNSATURATED MONOMERS AND A LIQUID CARRIER

Jacques M. L. Berghmans, Lint, Belgium, and Eva M. Vary, Wynnewood, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 710,618, Aug. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 597,491, Jul. 21, 1975, abandoned. This application Feb. 2, 1978, Ser. No. 874,491

Int. Cl.[2] C08L *27/18*

U.S. Cl. 260—29.6 F **15 Claims**

1. A coating composition consisting essentially of

(a) about 80–99.8%, by weight of the total of (a) and (b), of a particulate polymer polymerized or copolymerized from monomers selected from one or more monoethylenically unsaturated hydrocarbon monomers and hydrocarbon ether monomers, said monomers being completely substituted with fluorine atoms or a combination of fluorine atoms and chlorine atoms;

(b) about 0.2–20%, by weight of the total of (a) and (b), of mica particles, mica particles coated with pigment, or metal flake;

the total of (a) and (b) equaling 100%;

(c) about 2–300%, by weight of (a), of one or more polymers of monoethylenically unsaturated monomers which depolymerize and whose depolymerization products vaporize in the temperature range of about 150° C below the fusion temperature of (a) to about the decomposition temperature of (a); and

(d) a liquid carrier,

said coating composition being suitable for forming finishes having improved scratch resistance.

4,123,402

CURING AGENT FOR WATER-BASED EPOXY RESINS

Ivar P. Thomassen, Mishawaka, Ind., assignor to The O'Brien Corporation, South Bend, Ind.

Continuation of Ser. No. 553,524, Feb. 27, 1975, abandoned, which is a division of Ser. No. 473,777, May 28, 1974, abandoned, which is a continuation of Ser. No. 307,937, Nov. 20, 1972, abandoned. This application Feb. 28, 1977, Ser. No. 773,420

Int. Cl.[2] C08L *63/00;* **C08K** *5/17*

U.S. Cl. 260—29.2 EP **11 Claims**

1. A water-dispersible or water-soluble curing agent having a pot-life of between about 2–12 hours for epoxy resins for producing a curing reaction under ambient conditions on a structural surface which curing agent comprises a mixture of water and the hyroxylated amido-poly amine terminated reaction product of an aliphatic polyepoxide, an aliphatic polyamine having at least one primary amine and a polyfunctional carboxylic acid, said amine terminated reaction product having an amine value of from about 150 to about 800, a molecular weight of from about 280 to about 1500, from two to about ten hydroxyl groups per molecule and being essentially free of unreacted carboxylic acid groups and water, said curing agent being substantially free of organic solvents, cosolvents and emulsifiers, said mixture of water and amine terminated reaction product having a pH about about 9.0.

4,123,403

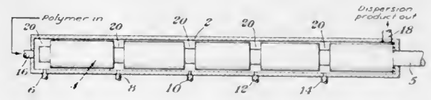
CONTINUOUS PROCESS FOR PREPARING AQUEOUS POLYMER MICROSUSPENSIONS

Gregory L. Warner, and Douglas E. Leng, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 27, 1977, Ser. No. 810,221

Int. Cl.[2] C08J *3/06*

U.S. Cl. 260—29.2 EP **18 Claims**



1. A continuous process for preparing aqueous polymer microsuspensions which comprises the steps of:

(a) forming a heterogeneous composition having a discontinuous aqueous phase and a continuous polymer phase by subjecting substantially all of a composition comprising a heat plastified polymer, water and an emulsifying agent to essentially the same maximum shear under conditions of laminar flow for a time sufficient to provide the dispersed polymer particles in the final aqueous polymer microsuspension with a D84/D50 particle size distribution of 1.8 or less;

(b) converting the resulting polymer-continuous heterogeneous composition to an aqueous-phase-continuous heterogeneous composition having a discontinuous polymer phase by adding an additional amount of water to such polymer-continuous composition; and

(c) cooling the aqueous-phase-continuous heterogeneous composition to below the melting point of the polymer.

4,123,404

WATER-BASED COATINGS

Edward A. Lasher, Beverly Hills, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Continuation of Ser. No. 576,914, May 12, 1975, abandoned, which is a division of Ser. No. 246,353, Apr. 21, 1972, abandoned. This application Jul. 25, 1977, Ser. No. 818,789

Int. Cl.[2] C08L *61/28*

U.S. Cl. 260—29.4 R **16 Claims**

1. A method of making a heat-curable, aqueous resin solution incorporating water-thinnable ester therein for use in making a water-insoluble coating consisting of the steps of:

admixing (1) a polyol having a hydroxyl functionality between about 3 and about 3.5 and having a carbon/oxygen ratio between about 5:3 and about 7:3 with (2) a polycarboxylic acid having from 3 to about 10 carbon atoms and having 2 to 4 carboxyl groups in an equivalents ratio of said polyol to said polycarboxylic acid of about 3:1;

heating the admixture of said polyol and polycarboxylic acid to substantially esterify said polyol and said acid to thereby produce said water-thinnable ester, said ester being selected from the group consisting of monoester, diester, triester and mixture thereof;

admixing and water-thinnable ester with (a) a water-thinnable ester with (a) a water-soluble, aminoplast resin in an amount sufficient to produce, upon curing in combination with said ester, a substantially water-insoluble, cured coating, and (b) a solvent for said ester and said aminoplast resin with water comprising at least a substantial portion of said solvent, to produce said heat-curable, resin solution.

4,123,405

PROCESS FOR PRODUCING AQUEOUS EMULSIONS OF VINYL CHLORIDE/VINYL ACETATE/ETHYLENE TERPOLYMERS

Takeo Oyamada; Kazuhisa Satoh; Choji Tomizawa, all of Ichihara, and Takamasa Ishihara, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 9, 1977, Ser. No. 805,029
Claims priority, application Japan, Jun. 17, 1976, 51/71862
Int. Cl.² C08L *33/00*
U.S. Cl. 260—29.6 R **4 Claims**

1. In the process for producing an aqueous emulsion of vinyl chloride/vinyl acetate/ethylene terpolymer by polymerizing vinyl chloride, vinyl acetate and ethylene in an aqueous dispersion system under an ethylene pressure of 15 to 120 kg/cm² in the presence of an emulsifier and/or protective colloid using a radical initiator at a temperature of 30° to 70° C. while maintaining the pH of the system at 3 to 7, the process comprising a first polymerization step and a second polymerization step to give an aqueous emulsion of vinyl chloride/vinyl acetate/ethylene terpolymer comprising 30 to 70% by weight of vinyl chloride, 15 to 55% by weight of vinyl acetate and 5 to 35% by weight of ethylene, the first polymerization step comprising adding vinyl chloride and vinyl acetate to said aqueous dispersion system at substantially fixed rates while maintaining the concentration of unreacted vinyl acetate in the system in the range of 1.5 to 15% weight based on the total weight of the system, said addition of all the vinyl chloride monomer being completed in the first polymerization step and the second polymerization step comprising adding successively additional vinyl acetate of 3 to 20% by weight based on the total weight of vinyl acetate which has been added until that time in order to maintain the concentration of unreacted vinyl acetate in the aqueous system unchanged and then further continuing the polymerization until the concentration of unreacted vinyl acetate in the system is decreased to 1% by weight or less based on the total weight of the system, wherein the volume of the aqueous dispersion system is at least 50% by volume based on the volume of the reactor when addition of the additional vinyl acetate is completed.

4,123,406

METHOD OF PREPARING SHAPED ARTICLES FROM CROSS-LINKED HYDROGELS

Artur Stoy, and Renata Urbanova, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Division of Ser. No. 127,375, Mar. 23, 1971, abandoned. This application Feb. 4, 1976, Ser. No. 655,208
Claims priority, application Czechoslovakia, Mar. 26, 1970, 2021/70
Int. Cl.² C08L *35/04*
U.S. Cl. 260—29.6 AN **1 Claim**

1. A method for preparing a shaped article from a cross-linked hydrogel swellable in water and in aqueous solution, consisting of the steps of

(a) polymerizing acrylonitrile alone or with a minor amount of a monoethylenically unsaturated monomer copolymerizable therewith, in concentrated nitric acid under radical polymerization conditions without adding additional chain-transfer and cross-linking agents and in the absence of any organic dispersion medium, said monomer being used in a concentration ranging from 25 to 40% by weight, based on the weight of the total mixture, at temperatures not exceeding 40° C, in a mold without stirring to produce a lyogel,

(b) maintaining said lyogel in the presence of said concentrated nitric acid at a temperature of 0° to 50° C. until said lyogel is partially hydrolyzed to form a hydrogel having a swelling capacity of about 20 to 95% by weight of water, and

(c) removing nitric acid by washing the hydrogel in an aqueous liquid selected from the group consisting of water and water containing an alkaline substance.

4,123,407

HYDROPHILIC CONTACT LENS

Stanley I. Gordon, Rochester, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 26, 1976, Ser. No. 745,140
Int. Cl.² C08F *212/36;* **C08L** *25/02;* **G02C** *7/04*
U.S. Cl. 260—29.6 TA **15 Claims**

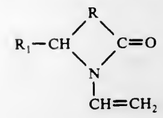
1. A shaped transparent contact lens of concave-convex shape with the concave surface substantially conforming to the cornea of the eye, said lens being formed of a hydrogel composition consisting essentially of:

(A) a polymerized water-insoluble but water-swellable polymer composition from a polymerizable mixture consisting essentially of:

(1) polymerizable monoester of an acid selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol having 2 to 6 alcohol groups and being selected from the group consisting of ethylene glycol, 1,3-propanediol, a dialkylene glycol, a polyalkylene glycol, 1,6-hexamethylene glycol, 1,4-butanediol, glycerol, trimethylol propane, trimethylolethane, pentaerythritol, mannitol, and sorbitol;

(2) monoethylenically unsaturated esters selected from the group consisting of alkyl acrylates, alkyl methacrylates, vinyl esters of saturated monocarboxylic acids of up to 22 carbon atoms, and mixtures thereof; wherein the alkyl groups of said methacrylate or acrylate contain from 1 to 22 carbon atoms;

(3) heterocyclic N-vinyl polymerizable compounds containing at least one nitrogen atom in the ring, and a carbonyl functionality adjacent to a nitrogen in the heterocyclic ring and being selected from the group consisting of vinyl lactams having the formula:



wherein R represents an alkylene bridge group of 2 to 4 carbon atoms and R_1 represents a member selected from the group of hydrogen, alkyl, aryl, aralkyl, and alkaryl groups; N-vinyl imidazolidone, N-vinyl succinimide, N-vinyl diglycolylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone, and N-vinyl-5-methyl-3-morpholinone; and

(4) a divinyl compound selected from the group consisting of divinyl benzene, divinyl toluene, and mixtures thereof;

wherein said polymerizable mixture contains from about 93.8% to about 51.8% by weight of (1); from about 1 to about 6% by weight of (2); from about 5 to about 40% by weight of (3); and from about 0.2 to about 2.2% by weight of (4) based upon the total weight of (1), (2), (3), and (4) in said polymerizable mixture; and

(B) physiologically acceptable aqueous solution; wherein said hydrogel contains from about 30 to about 80% by weight of (A) based upon the total weight of (A) and (B), and from about 20 to about 70% by weight of (B) based upon the total weight of (A) and (B).

4,123,408

HYDROGEL CONTACT LENS

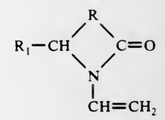
Stanley I. Gordon, Rochester, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 26, 1976, Ser. No. 745,141
Int. Cl.² C08L *33/08, 33/10, 25/02;* **G02C** *7/04*
U.S. Cl. 260—29.6 TA **15 Claims**

1. A shaped transparent contact lens of concave-convex shape with the concave surface substantially conforming to the cornea of the eye, said lens being formed of a hydrogel composition consisting essentially of:

(A) a polymerized water-insoluble but water-swellable polymer composition from:

(1) a water-soluble polymer of a heterocyclic N-vinyl polymerizable compounds containing at least one nitrogen atom in the ring, and a carbonyl functionality adjacent to a nitrogen in the heterocyclic ring and being selected from the group consisting of vinyl lactams having the formula:



wherein R represents an alkylene bridge group of 2 to 4 carbon atoms and R_1 represents a member selected from the group of hydrogen, alkyl, aryl, aralkyl, and alkaryl groups; N-vinyl imidazolidone, N-vinyl succinimide, N-vinyl diglycolylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone, and N-vinyl-5-methyl-3-morpholinone; and

(2) a polymerizable mixture consisting essentially of:

(a) polymerizable monoester of an acid selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol having 2 to 6 alcohol groups and being selected from the group consisting of ethylene glycol, 1,3-propanediol, a dialkylene glycol, a polyalkylene glycol, 1,6-hexamethylene glycol, 1,4-butanediol, glycerol, trimethylol propane, trimethylolethane, pentaerythritol, mannitol, and sorbitol;

(b) monoethylenically unsaturated esters selected from the group consisting of alkyl acrylates, alkyl methacrylates, vinyl esters of saturated monocarboxylic acids of up to 22 carbon atoms, and mixtures thereof; wherein the alkyl groups of said methacrylate or acrylate contain from 1 to 22 carbon atoms; and

(c) a divinyl compound selected from the group consisting of divinyl benzene, divinyl toluene, and mixtures thereof;

wherein the relative amounts of (A) (1), (A) (2) (a), (A) (2) (b), and (A) (2) (c) are from about 5 to about 40% by weight of (A) (1), from about 93.8% to about 51.8% by weight of (A) (2) (a), from about 1 to about 6% by weight of (A) (2) (b), and from about 0.2 to about 2.2% by weight of (A) (2) (c) based upon the total weight of (A) (1), (A) (2) (a), (A) (2) (b), and (A) (2) (c); and

(B) physiologically acceptable aqueous solution; wherein said hydrogel contains from about 30 to about 80% by weight of (A) based upon the total weight of (A) and (B), and from about 20 to about 70% by weight of (B) based upon the total weight of (A) and (B).

4,123,409

SEALING MATERIAL FOR USE IN CONTACT WITH ANIMAL TISSUE

David H. Kaelble, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 4, 1977, Ser. No. 774,297
Int. Cl.² C08L *83/10*
U.S. Cl. 260—29.1 SB **2 Claims**

1. A method of fabricating a prophylactic device for use in contact with living animal tissue, comprising the steps of:

providing a block copolymer having the general formula

$$(A - B)_n - A \quad n \geq 1.0$$

wherein A is a non-elastomeric thermoplastic polyalphamethylstyrene end block and B is an elastomeric polydimethylsiloxane intermediate block, said blocks forming separate phases A and B, said end blocks A each having a minimum average molecular weight of about 5,000, said elastomeric intermediate block B having a minimum average molecular weight of about 25,000, said block copolymer having an average molecular weight ranging from about 35,000 to about 600,000, the sum of the average molecular weights of both end blocks A being not in excess of 35% of the total average molecular weight of said block copolymer;

admixing a high molecular weight nonvolatile silicone oil in the weight ratio 1 part of said block copolymer to at least 1 part of said oil, said oil being selectively dissolved in said elastomeric intermediate block B phase of said block copolymer; and

forming the mixture into said prophylactic device for use in contacting living animal tissue.

4,123,410

POLYPHENYLENE ETHER RESIN COMPOSITIONS OF REDUCED MELT VISCOSITY

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 30, 1977, Ser. No. 838,372
Int. Cl.² C08K *5/49*
U.S. Cl. 260—30.6 R **14 Claims**

1. A thermoplastic composition comprising by weight, based on the total weight of the composition, a major proportion of polyphenylene ether resin having intimately admixed therewith a minor proportion of a plasticizer; and poly(1,4-butylene terephthalate) or a copolyester thereof with a minor amount of a branching composition in an amount sufficient to reduce the melt viscosity of said composition without substantially reducing the heat distortion temperature and ductility properties thereof.

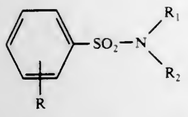
4,123,411

PLASTICIZED COMPOSITION OF COPOLYETHEREST ER ELASTOMER AND AROMATIC SULFONAMIDE

Aubert Y. Coran, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed May 12, 1977, Ser. No. 796,235
Int. Cl.² C08G *63/12;* **C08K** *5/04, 5/41, 5/16*
U.S. Cl. 260—30.8 R **11 Claims**

1. A plasticized composition comprising thermoplastic copolyetherester elastomer consisting essentially of recurring linear etherester and ester segments wherein the etherester segments are derived from difunctional polyether glycol and dicarboxylic acid, and the ester segments are derived from organic diol and aromatic dicarboxylic acid and, in an amount from 10 parts per 100 parts polyester segment up to an amount which exudes from the composition, a normally liquid sulfonamide of the formula



in which R and R_1 are hydrogen or alkyl of 1–6 carbon atoms, R_2 is alkyl of 1–12 carbon atoms and R, R_1 and R_2 contain a total of at least 2 carbon atoms.

4,123,412

URETHANE-BASE SEALING MATERIAL

Kiyou Fukuda, Yokohama; Toshihiko Kawabata, and Kiyotsugu Asai, both of Tokyo, all of Japan, assignors to Mitsui-Nisso Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 630,760, Nov. 11, 1975, abandoned, which is a continuation of Ser. No. 450,469, Mar. 12, 1974, abandoned. This application Jun. 14, 1977, Ser. No. 806,532

Int. Cl.[2] C08K *5/20*

U.S. Cl. 260—30.8 DS **12 Claims**

1. A thixotropic urethane-base sealing material comprising:

(1) a base polymer selected from the group consisting of a urethane prepolymer having isocyanate end groups and a mixture thereof with a polyol having hydroxyl end groups, prior to being hardened;

(2) from 0.5 to 30 parts by weight per 100 parts of base polymer of an anti-sag agent selected from the group consisting of colloidal silica and bentonite; and

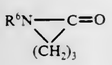
(3) from 0.05 to 10 parts by weight per 100 parts by weight of said base polymer of an anti-sag additive selected from the group consisting of a sulfoxide expressed by the formula

R^1SOR^2

wherein R^1 and R^2 each represent lower alkyl, and an amide expressed by the formulas

$R^3CONR^4R^5$

and



wherein R^3, R^4, R^5 and R^6 are independently hydrogen or lower alkyl.

4,123,413

POLYCARBONATE COMPOSITION CONTAINING URETHANE PLASTICIZER

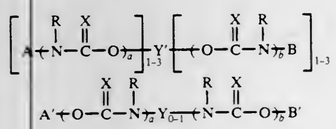
Victor Mark, Evansville, and Phillip S. Wilson, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 16, 1976, Ser. No. 751,450

Int. Cl.[2] C08K *5/36, 5/16*

U.S. Cl. 260—32.6 NR **9 Claims**

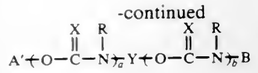
1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of a urethane plasticizer of the following formulae:



I.

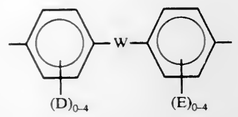
II.

-continued

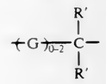


III.

wherein A, A′, B, B′ and R are independently selected from the group consisting of C_1 to C_{30} alkyl, aryl of 6 to 14 carbon atoms, substituted aryl wherein the substituents are selected from the group consisting of halogen, C_1 to C_{30} alkyl, C_1 to C_{30} alkoxy, aryloxy of 6 to 14 carbon atoms, alkylthio of 1 to 30 carbon atoms, arylthio of 6 to 14 carbon atoms, aralkyl of 7 to 15 carbon atoms, with the proviso that A, B and R may also be hydrogen; X is independently selected from O or S; Y is selected from the group consisting of C_1 to C_{30} alkylene, arylene of 6 to 14 carbon atoms, alkarylene of 7 to 30 carbon atoms, aralkylene of 7 to 30 carbon atoms, $+CH_2+_{1-4}$ $O+CH_2+_{1-4}$; $+CH_2+_{1-4}$ $S+CH_2+_{1-4}$; Y′ is the same as Y and is additionally selected from: C — CH_2 — O — CH_2 — C or

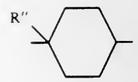


wherein W is selected from the group consisting of:



(a)

wherein G is



and R″ is hydrogen or C_1–C_4 alkyl; R′ is independently selected from the group consisting of hydrogen, C_1–C_{15} alkyl, aryl of 6–14 carbon atoms and substituted aryl wherein the substituents are C_1–C_5 alkyl;

$-CH_2CH_2-$ (b)

$-CH_2J-CH_2-$ (c)

wherein J is C_1–C_{16} alkylene or arylene of 6 to 14 carbon atoms;



(d)

wherein *c* is an integer of 3 to 15;

—O—; (3)

—S—; (f)



(g)

D and E are independently selected from the group consisting of halogen and C_1–C_{12} alkyl; *a* and *b* are integers of 0–1 with the proviso that the sum of *a* and *b* is at least 1.

4,123,414

METHOD OF MANUFACTURING REINFORCED PHENOL RESIN ARTICLES, AND PRODUCTS THUS OBTAINED

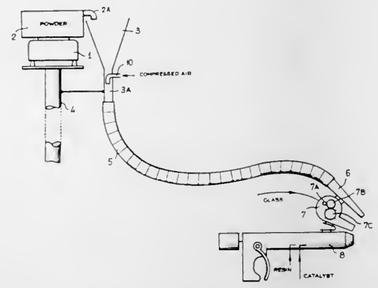
Henri Milette, Chazey-Bons, France, assignor to Societe Chimique des Charbonnages, Courbevoie, France

Filed Nov. 11, 1976, Ser. No. 741,053

Claims priority, application France, Nov. 12, 1975, 75 34448; May 19, 1976, 76 15068

Int. Cl.[2] C08L *61/06;* **B28B** *1/32*

U.S. Cl. 260—38 **4 Claims**



1. In a method of manufacturing molded articles of liquid phenol resins or resols wherein main component elements comprising at least one resin of the aforesaid type, glass reinforcing elements and at least one acid catalyst are simultaneously projected onto a mold surface, the improvement comprising simultaneously projecting at least one anhydrous and hydrophilous inorganic compound selected from the group consisting of semi-hydrated calcium sulphate $(SO_4Ca)H_2O$ and finely powdered boric anhydride B_2O_3 with said main component elements in an amount corresponding to from about 8 to 12% of the weight of the liquid phenol resin.

4,123,415

REINFORCED THERMOPLASTIC POLYESTER COMPOSITIONS HAVING IMPROVED RESISTANCE TO HEAT DEFLECTION

Allen D. Wambach, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 6, 1976, Ser. No. 747,636

Int. Cl.[2] C08K *3/40*

U.S. Cl. 260—40 R **13 Claims**

1. A reinforced thermoplastic composition having improved retention of heat deflection temperature, said composition comprising:

(a) a high molecular weight polyester resin; and

(b) a reinforcement therefor comprising glass fibers, said glass fibers having an average standard diameter of no greater than about 0.0005 inches, wherein the glass fibers are present in an amount at least sufficient to provide reinforcement and to improve the resistance to deflection by heat of said composition in comparison with a reinforced composition including glass fibers having an average standard diameter of greater than about 0.0005 inches.

4,123,416

CURABLE COMPOSITION COMPRISING A CALCIUM FLUORO-ALUMINO SILICATE GLASS AND POLY(CARBOXYLIC ACID) OR PRECURSOR THEREOF

William D. Potter, Ware; Andrew C. Barclay, Harlow; Reginald Dunning, Near Wigan, and Richard J. Parry, Southport, all of England, assignors to Smith & Nephew Research Limited, Esses, England

Filed May 11, 1976, Ser. No. 685,486

Claims priority, application United Kingdom, May 13, 1975, 20196/75; May 13, 1975, 20197/75; Aug. 15, 1975, 34128/75

Int. Cl.[2] C08K *7/14*

U.S. Cl. 260—42.18 **35 Claims**

1. A curable composition comprising a calcium fluoroaluminosilicate glass in particulate form and consisting essentially of from 25 to 35% by weight of silicon calculated as silica, from 30 to 40% by weight of aluminum calculated as alumina, from 20 to 35% by weight calcium, calculated as calcium oxide, and an effective amount up to 9% by weight fluorine; together with a crosslinkable material chosen from the group consisting of poly(carboxylic acids) and polymeric precursors thereof.

13. A curable composition as claimed in claim **1** in the form of a mixture of the particulate glass and solid particulate crosslinkable polymeric material.

26. A curable composition as claimed in claim **13** further comprising a particulate filler.

27. A curable composition as claimed in claim **26** wherein the filler is chosen from silica and alumina.

4,123,417

LOW DENSITY POLYETHYLENE TOUGHENED WITH ETHYLENE/PROPYLENE COPOLYMER

Arne O. Finberg, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 513,680, Oct. 10, 1974, abandoned. This application Aug. 12, 1976, Ser. No. 713,767

Int. Cl.[2] C08L *23/16*

U.S. Cl. 260—42.46 **5 Claims**

1. Films of blends comprising low density polyethylene having a density of 0.91 to 0.925 containing, by weight of the blend, between about 0.5 percent and about 10 percent of a copolymer consisting of ethylene and propylene having an ethylene content of about 70 weight percent and an X-ray crystallinity of about 11 percent.

4,123,418

STABILIZER SYSTEM FOR STABILIZING STYRENE POLYMERS

Bernard Gilg, Saint-Louis, France; Helmut Muller, Binningen, and Jean Rody, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 461,188, Apr. 9, 1974, abandoned. This application Dec. 5, 1975, Ser. No. 638,125

Claims priority, application Switzerland, Apr. 19, 1973, 5753/73

Int. Cl.[2] C08K *5/34*

U.S. Cl. 260—45.8 NT **1 Claim**

1. A stabilized composition consisting essentially of

(a) An acrylonitrile-butadiene-styrene resin;

(b) A sterically hindered cyclic amine selected from the group consisting of bis-(1,2,2,6,6,-pentamethyl-4-piperidyl)-sebacate and bis-(2,2,6,6-tetramethyl-4-piperidyl)-suberate; and

(c) 2-(2′-hydroxy-5′-methylphenyl)-benztriazole as a co-stabilizer; the ratio of the cyclic amine to the co-stabilizer being from 1:10 to 10:1.

4,123,419
STABILIZED THERMOPLASTIC POLYESTERURETHANES

Herbert L. Heiss, New Martinsville; Robert P. Yeater, Moundsville, and Russell P. Carter, Jr., New Martinsville, all of W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 26, 1977, Ser. No. 828,120
Int. Cl.[2] C08K 5/35; C08G 18/82
U.S. Cl. 260—45.8 NZ 9 Claims

1. A polyesterurethane stabilized against hydrolysis and/or processing discoloration by having incorporated therein a stabilizing amount of a 2-oxazolidone.

4,123,420
AROMATIC COPOLYESTER COMPOSITION CONTAINING PHOSPHORUS COMPOUNDS

Kayomon Kyo, kyoto; Yasuhiko Asai, Uji, and Shinichi Tokumitsu, Uji, all of Japan, assignors to Unitika Ltd., Amagasaki, Japan

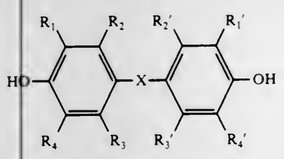
Filed Oct. 28, 1977, Ser. No. 846,670
Int. Cl.[2] C08G 63/68
U.S. Cl. 528—127 19 Claims

1. A resin composition comprising:

(A) an aromatic copolyester produced by polymerization of a substantially equimolar mixture of the monomeric components

(a) a mixture of (i) terephthalic acid and/or an acid halide, dialkyl ester or diaryl ester thereof and (ii) isophthalic acid and/or an acid halide, dialkyl ester or diaryl ester thereof, with the terephthalic acid unit/isophthalic acid unit mole ratio being about 9:1 to about 1:9, and

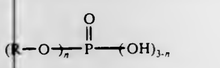
(b) at least one bisphenol of the general formula (I)



(I)

wherein —X— is selected from the group consisting of —O—, —S—, $-SO_2-$, —SO—, —CO—, an alkylene group containing 1 to 4 carbon atoms or an alkylidene group containing 1 to 4 carbon atoms, and R_1, R_2, R_3, R_4, R_1', R_2', R_3' and R_4', which may be the same or different, each is selected from the group consisting of a hydrogen atom, a chlorine atom, a bromine atom or an alkyl group containing 1 to 4 carbon atoms, or a metal salt or diester of said bisphenol of the general formula (I), and

(B) about 0.01 to less than about 2% by weight, based on the aromatic copolyester (A), of a phosphorus-containing compound of the general formula (II)



(II)

wherein n is 0 or an integer of 1 to 3, and R is an alkyl group containing 1 to 18 carbon atoms, in which one or more of the hydrogen atoms of the alkyl group may be replaced by a halogen atom or a hydrocarbon group.

4,123,421
STABLE TERTIARY AMINE CONTAINING TERMINALLY UNSATURATED POLYURETHANE RESINS

Richard D. Cowell, Jersey City; Peter Loewrigkeit, Wyckoff, both of N.J.; William Rosenblatt, Pearl River, N.Y., and Claire Bluestein, Secaucus, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Mar. 21, 1977, Ser. No. 779,437
Int. Cl.[2] C08G 18/10
U.S. Cl. 528—65 24 Claims

1. A substantially linear terminally unsaturated polyurethane resin said resin having a tertiary amine group, said terminal unsaturation being a $H_2C=C<$ group, there being about 1.5 to 2.5 of said unsaturated groups per molecule of said polyurethane resin.

4,123,422
AMIDE MODIFIED SATURATED POLYESTER POLYOLS AND METHOD OF MAKING

J. Alden Erikson, Gibsonia, and William J. Birkmeyer, Oakmont, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 25, 1977, Ser. No. 855,041
Int. Cl.[2] C08G 63/68, 63/76
U.S. Cl. 528—273 20 Claims

1. An amide modified saturated polyester polyol wherein the polester polyol backbone is prepared from a polyhydric alcohol having from 2 to 15 carbon atoms and a polybasic carboxylic acid having from 4 to 14 carbon atoms, said polyester polyol backbone having an acid number of from about 3 to about 30 and a hydroxyl number of from about 10 to about 300, said polyester polyol backbone being modified with a primary or secondary amine of formula $N(H)(R)_a(C_yH_{2y}OH)_b$ where R is hydrogen or an alkyl group containing from 1 to 4 carbon atoms, y is 2 or 3, a is 0 or 1 and b is 1 or 2 with the proviso that $a + b = 2$, said amide modified polyester polyol having an acid number of from about 0 to about 27, a hyrdoxyl number of from about 12 to about 360 and an amine number of from about 0.1 to about 6.5.

4,123,423
PROCESS FOR THE MANUFACTURE OF PLASTICS CONTAINING ESTER AND/OR URETHANE GROUPS

Wolfgang Wenzel, and Dieter Dieterich, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 13, 1977, Ser. No. 832,778
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1976, 2642073
Int. Cl.[2] C08G 18/00
U.S. Cl. 528—71 12 Claims

1. A process for the preparation of self cross-linking films from aqueous dispersions comprising

1. preparing a polyester or polyurethane oligomer which
   a. has a number average molecular weight below about 20,000,
   b. has a softening point of at least about 40° C.,
   c. contains hydrophilic groups selected from the group consisting of:
      i. about 4 to 180 milliequivalents per 100 g of oligomer of ionic groups and groups capable of conversion to ionic groups,
      ii. about 2 to 20 weight percent, based on the weight of oligomer of ethylene oxide units of the formula

—CH_2—CH_2—O— and

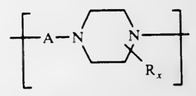
      iii. mixtures of i) and ii), and
   d. contains cross-linking sites selected from the group consisting of:
      i. olefinic double bonds reactive with atmospheric oxygen,
      ii. sulphhydryl groups and
      iii. blocked isocyanate groups which liberate free isocyanate groups at elevated temperatures,
2. combining said oligomer in the form of lumps or coarse powders with water to form a storage stable dispersion with the conversion of those potential ionic groups to ionic groups in a known manner which are necessary to assure a stable dispersion before, during or after the combination with water,
3. applying the dispersion to a substrate to form a film and
4. drying and cross-linking the film so formed through the action of heat and/or siccatives.

4,123,424
POLYMERIC PIPERAZINAMIDES AND MEMBRANES FOR REVERSE OSMOSIS MADE THEREFROM

Lino Credali, Casalecchio di Reno (Bologna), and Vincenzo Guidotti, Milan, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 466,677, May 3, 1974, abandoned. This application Nov. 24, 1975, Ser. No. 634,760
Claims priority, application Italy, May 7, 1973, 23770 A/73
Int. Cl.[2] C08G 69/26; B01D 39/16
U.S. Cl. 528—337 3 Claims

1. A membrane forming polymeric piperazinamide consisting essentially of the repeating unit having a structure defined by the formula (I):



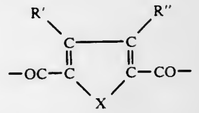
(I)

wherein the group defined by the general formula (II):



(II)

is a bivalent piperazine radical, wherein x is zero or a whole number from 1 to 8, and where, when x is not zero, R is alkyl; said —A— groups representing at least two different dicarbonylic groups, a first dicarboxylic group having a structure defined by the formula (III):



(III)

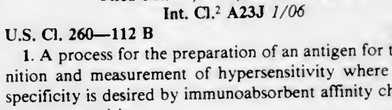
wherein X is oxygen or sulfur, and R′ and R″ are independently selected from the group consisting of hydrogen, alkyl, and aryl radicals; and constituting at least 10 mol% of said —A— groups and a second dicarboxylic group constituting that portion of said A groups that is not made up of dicarbonylic radicals of the formula (III), and being the dicarbonylic radical from one or more dicarboxylic acids selected from the group consisting of fumaric, mesaconic, orthophthalic, isophthalic, terephthalic and thiofurazan-3,4-dicarboxylic acid.

4,123,425
(2-MEALA[5])-SOMATOSTATIN AND ANALOGUES THEREOF

Victor M. Garsky, Radnor, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed May 11, 1977, Ser. No. 795,686
Int. Cl.[2] C07C 103/52; A61K 37/00
U.S. Cl. 260—112.5 S 3 Claims

1. A polypeptide of the formula:



its linear reduced form or a non-toxic acid addition salt thereof in which X_8 is L—Trp or D—Trp.

4,123,426
PROCESS FOR DECOMPOSING MICROBIAL CELLS

Masao Katayama, Niigata, and Yataro Tabeta, Tokyo, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc. and Daiichi Kasei Sangyo Co., Ltd., both of Japan

Filed Aug. 2, 1977, Ser. No. 821,316
Claims priority, application Japan, Aug. 5, 1976, 51-93833
Int. Cl.[2] A23J 1/18; C07G 7/00
U.S. Cl. 260—112 R 4 Claims

1. A process for decomposing microbial cells to obtain foamable hydrolyzed proteins, which comprises treating the microbial cells with an alkaline aqueous solution containing an alkaline earth metal hydroxide and an alkali metal hydroxide, said alkaline earth metal hydroxide being at least one compound selected from the group consisting of calcium hydroxide, barium hydroxide and magnesium hydroxide, and said alkali metal hydroxide being at least one compound selected from the group consisting of sodium hydroxide and potassium hydroxide, the alkaline earth metal hydroxide being 15 to 50% by weight and the amount of the alkali metal hydroxide being 2 to 20% by weight, both based on the weight of the microbial cells.

4,123,427
METHOD FOR THE PURIFICATION OF MYCOBACTERIAL PROTEIN ANTIGENS AND RESULTING PRODUCT

Thomas M. Daniel, 3028 Chadbourne Rd., Shaker Heights, Ohio 44120

Filed Jul. 27, 1976, Ser. No. 708,950
Int. Cl.[2] A23J 1/06
U.S. Cl. 260—112 B 26 Claims

1. A process for the preparation of an antigen for the recognition and measurement of hypersensitivity where antigenic specificity is desired by immunoabsorbent affinity chromatography, comprising:

coupling antibodies to an appropriate inert substrate by chemical bonding to form an absorbent in which said specific antibody acts as a ligand;

preparing crude mixtures containing desired said antigen;

absorbing said antigen from said crude mixtures containing said antigen by the said prepared absorbent;

eluting the desired said antigen from said absorbent using 3–6 molar urea at PN 7 – 9

recovering the purified antigen.

4,123,428

METALLIZED POLYAZO DYES DERIVED FROM A COUPLING COMPONENT OBTAINED BY ACIDIC CONDENSATION OF FORMALDEHYDE WITH AT LEAST ONE PHENOLIC COMPOUND

Herbert Holliger, Allschwil, and Heinz Wicki, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 25, 1976, Ser. No. 717,523

Claims priority, application Switzerland, Sep. 2, 1975, 11404/75

Int. Cl.[2] C09B *45/24, 45/34*

U.S. Cl. 260—145 C **26 Claims**

1. A metal complex polyazo dye having a diazo component radical D— or a bisdiazo component radical —D— and, as a coupling component radical, the radical of a coupling component K,

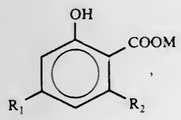
wherein

D— is a diazo component radical having at least one metallized azo group,

—D— is a bisdiazo component radical having at least one metallized azo group, and

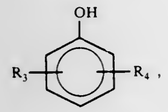
K is the product of the condensation, under acidic conditions, of formaldehyde with

(i) a compound of the formula



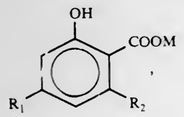
or a mixture of such compounds,

(ii) a compound of the formula

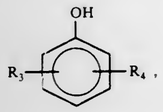


or a mixture of such compounds, or

(iii) a compound of the formula



or a mixture of such compounds, and a compound of the formula



or a mixture of such compounds,

wherein each of

R_1, R_2, R_3 and R_4 is independently hydrogen, halo, hydroxy, alkyl, substituted alkyl, alkoxy or substituted alkoxy, and

M is hydrogen or a non-chromophoric cation, with the provisos that the mol ratio of formaldehyde to the compound or mixture of compounds of (i), (ii) or (iii) is at least 0.6:1 and that at least 50 mol % of the compounds or mixture of compounds of (i), (ii) or (iii) contains a —COOM group,

wherein

M is hydrogen or a non-chromophoric cation.

4,123,429

1:1 CHROMIFEROUS COMPLEX AZO COMPOUNDS HAVING A BIDENTATE CHELATING GROUP AND A MONOFUNCTIONAL NEUTRAL LIGAND

Claude M. H. E. Brouard, Sotteville les Rouen, and Paulette G. Ficht, Mont Saint Aignan, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

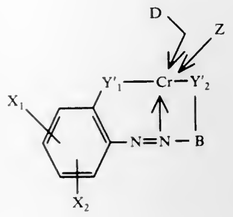
Continuation of Ser. No. 609,638, Sep. 2, 1975, abandoned, which is a continuation of Ser. No. 426,379, Dec. 19, 1973, abandoned. This application Oct. 27, 1976, Ser. No. 736,027

Claims priority, application France, Dec. 28, 1972, 72.46599

Int. Cl.[2] C09B *45/16*

U.S. Cl. 260—147 **6 Claims**

1. A chromiferous complex of formula:



in which

D is the residue of a bidentate chelating agent selected from the group consisting of acetylacetone, benzoylacetone, 1,3-diphenyl-1,3-propanedione and salicylaldehyde:

Y'_1 is oxygen or



Y'_2 is oxygen or



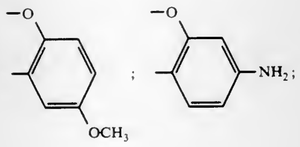
Z is a monofunctional neutral ligand selected from the group consisting of ammonia, pyridine, ethylamine, ethanolamine and laurylamine;

X_1 is hydrogen, chlorine or nitro;

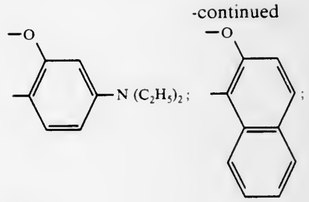
X_2 is hydrogen, chloro, nitro, sulfonamido or methylsulfonamido, with the proviso that X_1 is always hydrogen when X_2 is sulfonamido or methylsulfonamido and that Y'_1 is

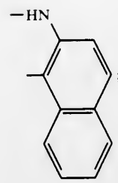


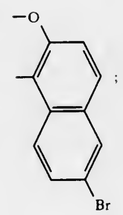
when both X_1 and X_2 are hydrogen; and —B—Y'_2— is one of the following radicals:

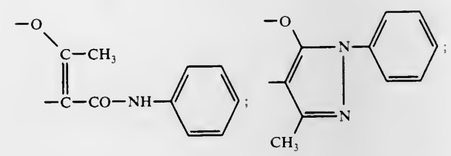


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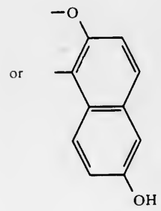


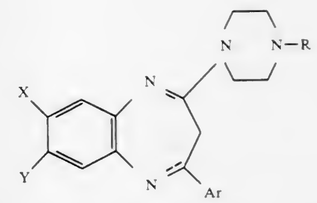






or





wherein R is hydrogen, alkyl having from 1 to 7 carbon atoms or phenyl; Ar is phenyl, trifluoromethylphenyl or phenyl substituted with 1 or 2 halogen, alkyl having from 1 to 4 carbon atoms or alkoxy having from 1 to 4 carbon atoms; X and Y are each hydrogen, halogen, alkyl having from 1 to 7 carbon atoms or alkoxy having from 1 to 7 carbon atoms; and the dotted line represents a single bond wherein hydrogen is attached to N or a double bond.

4,123,431

NON-OXO-CARBONYL CONTAINING BENZOYL ECGONINE AND COCAINE COMPOUNDS AND DERIVATIVES THEREOF

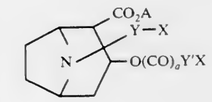
Michael J. Soffer, Los Angeles, and Richard S. Schneider, Saratoga, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 364,842, May 29, 1973, Pat. No. 4,045,420. This application May 6, 1977, Ser. No. 794,442

Int. Cl.[2] C07D *451/12, 451/06*

U.S. Cl. 260—292 **16 Claims**

1. A compound of the formula:



wherein

A is hydrogen or methyl;

one of Y and Y' is hydrocarbylene of from 1 to 10 carbon atoms, wherein Y–X is methyl when Y' is hydrocarbylene and Y'X is phenyl or hydrogen when Y is hydrocarbylene;

X, when bonded to hydrocarbylene, is a non-oxo-carbonyl functionality selected from the group consisting of carboxylic acid, mixed anhydride, and imidate; and

a is zero when Y'X is hydrogen and one when Y'X is other than hydrogen.

4,123,430

2-ARYL-4-(1-PIPERAZINYL)-3H-1,5-BENZODIAZEPINES

Charles R. Ellefson, Chicago, and Fred M. Hershenson, Morton Grove, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 10, 1977, Ser. No. 850,438

Int. Cl.[2] C07D *295/12, 403/04*

U.S. Cl. 260—243.3 **15 Claims**

1. A compound of the formula

4,123,432

TETRAZOLE-5-CARBOXAMIDE DERIVATIVES

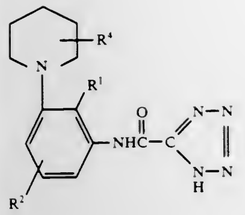
John H. Sellstedt, Pottstown, and Dieter H. Klaubert, Perkiomenville, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 726,374, Sep. 24, 1976, which is a division of Ser. No. 669,570, Mar. 23, 1976, Pat. No. 4,013,647. This application Dec. 23, 1977, Ser. No. 864,064

Int. Cl.[2] C07D *401/12*

U.S. Cl. 260—293.69 **5 Claims**

1. A compound of the formula:



in which

R^1 is —CN or —$CONH_2$;

R^2 is hydrogen, lower alkyl, lower alkoxy, halo, polyhalo(lower)alkyl, lower alkyl carbonyl or carb (lower) alkoxy; and

R^4 is hydrogen or lower alkyl; or a pharmaceutically acceptable salt thereof.

4,123,433

2-CYANO-5-(SUBSTITUTED TRIPHENYLMETHYL) PYRIDINES

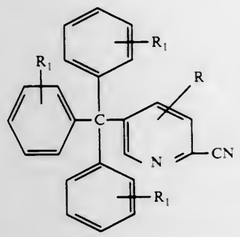
Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 636,010, Nov. 28, 1975, Pat. No. 4,044,140. This application Aug. 12, 1977, Ser. No. 824,026

Int. Cl.² C07D *213/57*

U.S. Cl. 260—294.9 **3 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof wherein R is hydrogen or alkyl; each R_1 is a member selected from the group consisting of hydrogen, hydroxy, alkyl, alkoxy, trifluoromethyl and phenyl wherein said alkyl or alkoxy contains up to 12 carbon atoms.

4,123,434

PROCESS FOR PREPARING TRIMERIC Δ^1-PIPERIDEINS AND TRIMERIC 1-PYRROLINE

Klaus Warning, Liederbach, and Michael Mitzlaff, Bad Homburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

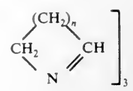
Filed Aug. 9, 1977, Ser. No. 823,155

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1976, 2636098

Int. Cl.² C07D *213/22, 207/20*

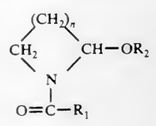
U.S. Cl. 260—296 D **6 Claims**

1. Process for the manufacture of aliphatic cyclic nitrogen bases of the general formula



I

in which n means 2 or 3, which comprises saponifying 1-acyl-2-alkoxypiperidines or pyrrolidines of the general formula



II

in which n means 2 or 3

R_1 represents hydrogen or a linear or branched C_1-C_4 alkyl radical and

R_2 represents a linear or branched C_1-C_4 alkyl radical

in aqueous and/or alcoholic solution in known manner in the presence of a strong acid or base and trimerizing the reaction product at a pH equal to or greater than 8.

4,123,435

NITRO-SUBSTITUTED BENZOXAZOLES HAVING UTILITY AS METALLURGICAL EXTRACTANTS

Robert R. Grinstead; Kenneth C. Jones, both of Walnut Creek, and Wilmonte A. Nasutavicus, Lafayette, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1977, Ser. No. 827,650

Int. Cl.² C07D *263/56*

U.S. Cl. 260—307 D **7 Claims**

1. A benzoxazole of the formula

wherein:

one of R^3 and R^4 is NO_2 and the other is H, NO_2 or alkyl of 1 to 20 carbons, and

R^1 and R^2 independently are H or alkyl of 1–20 carbons,

with the proviso that R^1, R^2, R^3 and R^4 contain a total of at least 7 carbons.

4,123,436

POLYCARBONATE COMPOSITION PLASTICIZED WITH ESTERS

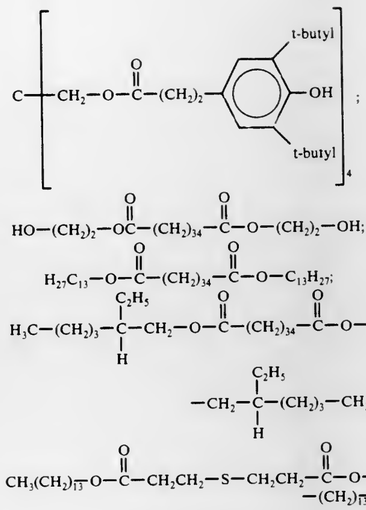
Fred F. Holub, Schenectady, N.Y.; Steven W. Scott, Evansville, and Phillip S. Wilson, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 16, 1976, Ser. No. 751,433

Int. Cl.² C08K *5/36, 5/09, 5/10*

U.S. Cl. 260—30.8 R **3 Claims**

1. A plasticized polycarbonate composition comprising a mechanical admixture of a high molecular weight aromatic carbonate polymer and about 0.05–5.0 parts per hundred parts of said aromatic carbonate polymer of an ester selected from the following group of esters:



4,123,437

PROCESS FOR PREPARING 1,2,4-TRIAZOLE DERIVATIVES

Beat Böhner, Binningen; Dag Dawes, Pratteln, and Willy Meyer, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

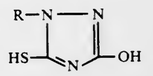
Continuation of Ser. No. 587,500, Jun. 16, 1975, abandoned, which is a division of Ser. No. 420,121, Nov. 29, 1973, abandoned. This application Feb. 28, 1977, Ser. No. 773,026

Claims priority, application Switzerland, Dec. 8, 1972, 17897/72

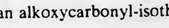
Int. Cl.² C07D *249/12;* **C07F** *9/65*

U.S. Cl. 260—308 R **5 Claims**

1. A process for the preparation of 1,2,4-triazoles of the formula

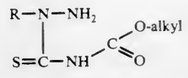


wherein B represents hydrogen; straight-chain or branched C_1-C_{18} alkyl optionally substituted by halogen, cyano, nitro, thiocyano, alkoxycarbonyl, N-alkyl-carbamoyl, N,N-dialkyl carbamoyl, alkoxy or alkylthio; straight-chain or branched C_3-C_8 alkenyl or C_3-C_8 alkynyl, each optionally substituted by methyl or ethyl; phenyl optionally substituted by halogen, haloalkyl, nitro, alkyl, cyano, thiocyano, alkoxy, alkylthio, alkylsulphonyl, alkylsulphinyl, phenoxy, phenylthio, phenylsulphonyl, phenylsulphinyl, benzyloxy, benzylthio, benzylsulphonyl or benzylsulphinyl; naphthyl, benzyl, phenylethyl or phenylpropyl optionally, substituted by halogen, haloalkyl, nitro or alkyl; or C_3-C_8 cycloalkyl which can be bound by way of a methylene bridge member, or be substituted by an alkyl radical, lower alkyl being indicated for the alkyl groups in all of said substituted groups having an alkyl substituent; which process comprises adding, at a temperature of −40° to +100° C., a hydrazine of the formula



to an alkoxycarbonyl-isothiocyanate of the formula

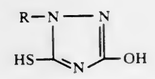
a) and subsequently closing the triazole ring of the resulting thiosemicarbazide of the formula



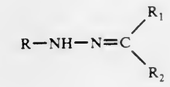
b) by splitting off an alkanol at a temperature of 20° to 120° C. in the presence of an inorganic or an organic acid or an acid salt.

c) **5**. A process for the preparation of 1,2,4-triazoles of the formula

d)



(e) wherein R represents hydrogen; straight-chain or branched C_1-C_{18} alkyl optionally substituted by halogen, cyano, nitro, thiocyano, alkoxycarbonyl, N-alkyl-carbamoyl, N,N-dialkyl carbamoyl, alkoxy or alkylthio; straight-chain or branched C_3-C_8 alkenyl or C_3-C_8 alkynyl, each optionally substituted by methyl or ethyl; phenyl optionally substituted by halogen, nitro, alkyl, cyano, thiocyano, alkoxy, alkylthio, alkylsulphonyl, alkylsulphinyl, phenoxy, phenylthio, phenylsulphonyl, phenylsulphinyl, benzyloxy, benzylthio, benzylsulphonyl or benzylsulphinyl; naphthyl benzyl, phenylethyl or phenylpropyl optionally substituted by halogen, haloalkyl, nitro or alkyl; or C_3-C_8 cycloalkyl which can be bound by way of a methylene bridge member, or be substituted by an alkyl radical, lower alkyl being indicated for the alkyl groups in all of said substituted groups having an alkyl substituent; in which process a hydrazone of the formula



wherein

R has the above given meanings,

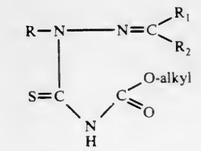
R_1 represents hydrogen or lower alkyl, and

R_2 represents lower alkyl,

is reacted in the presence of an inert solvent with an alkoxycarbonyl-isothiocyanate of the formula

alkyl—O—CO—NCS

to form a thiosemicarbazone of the formula



and this intermediate is subsequently heated in an aqueous medium in the presence of hydrochloric acid to effect ring closure.

4,123,438

PROCESS FOR PREPARING 2-PYRROLIDONES

Leonardus H. Geurts, Sittard, and Peter J. N. Meijer, Munstergeleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 784,367, Apr. 4, 1977, abandoned, which is a continuation of Ser. No. 661,784, Feb. 26, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,781

Claims priority, application Netherlands, Mar. 5, 1975, 7502574

Int. Cl.² C07D *207/26*

U.S. Cl. 260—326.5 FN **11 Claims**

1. In a process for the preparation of 2-pyrrolidone comprising the steps of hydrogenating 1,2-dicyanoethane and then hydrolyzing the reaction product by treatment with water at an elevated temperature and recovering the 2-pyrrolidone product, the improvement comprising conducting the hydrogenation step:

(1) at a temperature of about 50°-200° C.,

(2) in the liquid phase,

(3) in the presence of ammonia, and

(4) at a partial hydrogen pressure of about 1-50 atmospheres, and thereafter conducting the hydrolysis step at a temperature of about 100°-300° C.

4,123,439

CHROMENOINDOLE COMPOUNDS

Heinz Ball, Riehen; Sigmund Gunzenhauser, Arlesheim, and Jean C. Petitpierre, Kaiseraugst, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

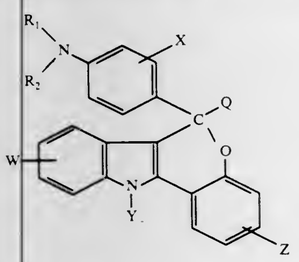
Filed May 20, 1977, Ser. No. 799,063

Claims priority, application Switzerland, Jun. 4, 1976, 7115/76

Int. Cl.² C07D *491/04*

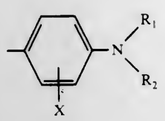
U.S. Cl. 260—326.5 B **3 Claims**

1. A chromenoindole compound of the formula



(2)

wherein R_1 and R_2 independently of one another represent lower alkyl, phenyl or benzyl, and R_1 also represents hydrogen, or R_1 and R_2, together with the nitrogen atom which links them, represent pyrrolidino, piperidino or morpholino, X represents hydrogen, halogen, methyl or lower alkoxy, Q represents hydrogen, lower alkyl, phenyl, benzyl or the group of the formula



(2a)

W represents hydrogen, halogen, lower alkyl, lower alkoxy or phenoxy, Y represents hydrogen, lower alkyl, phenyl or benzyl and Z represents hydrogen, halogen, lower alkyl, lower alkoxy, amino or amino substituted by lower alkyl, benzyl or phenyl.

4,123,440

BICYCLO [2.2.1]-HEPTANE-2,3,DI-ENDO-CARBOXYLIC ACID IMIDE ESTERS

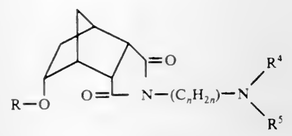
Ronald L. Buchanan, Fayetteville; John T. Woolever, Chittenango, both of N.Y., and Alex M. Jelenevsky, Nashville, N.C., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 715,951, Aug. 19, 1976. This application Feb. 13, 1978, Ser. No. 877,042

Int. Cl.² C07D *409/12*

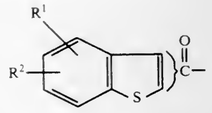
U.S. Cl. 260—326.28 **16 Claims**

1. A compound having the formula

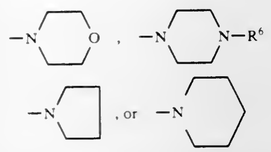


I

wherein R is a group of the formula



in which R^1 and R^2 are alike or different and are each hydrogen, chloro, bromo, fluoro, (lower)alkyl, nitro, trifluoromethyl, hydroxy or (lower)alkoxy, n is an integer of 2 to 4 inclusive and R^4 and R^5 are alike or different and each is hydrogen, (lower)alkyl or, when taken together with the nitrogen, a heterocyclic ring of the formula



in which R^6 is (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

4,123,441

ENLARGED-HETERO-RING PROSTACYCLIN ANALOGS

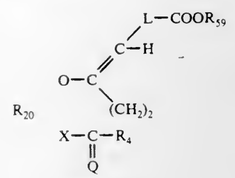
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,856

Int. Cl.² C07D *311/02;* **A61K** *31/35*

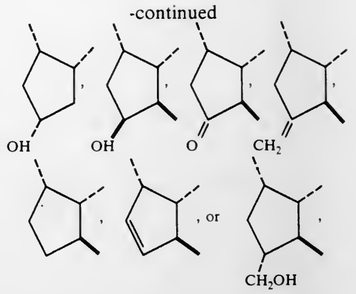
U.S. Cl. 260—345.2 **22 Claims**

1. A 4Z compound of formula



wherein R_{20} is

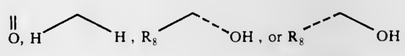
-continued



wherein L is $-(CH_2)_d-C(R_2)_2-$

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,

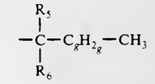
wherein Q is



wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_{59} is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive,

or (c) a pharmacologically acceptable cation; wherein R_4 is



wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro; and

wherein X is

(1) trans—CH=CH—

(2) cis—CH=CH—

(3) —C≡C— or

(4) $-CH_2CH_2-$;

including the lower alkanoates thereof.

4,123,442

REGENERATION OF MALEIC ANHYDRIDE VANADIUM-PHOSPHORUS-OXYGEN CATALYST BY CONTACTING WITH SULFUR TRIOXIDE

Kiran R. Bakshi, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 24, 1977, Ser. No. 809,735

Int. Cl.² C07D *307/60;* **B01J** *27/28, 23/92*

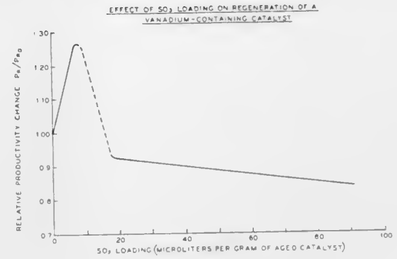
U.S. Cl. 260—346.75 **13 Claims**

1. A process for partially regenerating the catalytic properties of an aged vanadium-phosphorus-oxygen catalyst used in the oxidation of hydrocarbons to maleic anhydride, which comprises contacting the aged catalyst with sulfur trioxide under conditions effective to increase the average vanadium valence of the aged catalyst to a value from about 3.9 to about 4.6.

3. A process according to claim 1 wherein regeneration is carried out during the course of said oxidation of hydrocarbons.

5. A process according to claim 1 wherein the aged catalyst is contacted with an amount of sulfur trioxide in microliters per gram of aged catalyst up to an amount equal to about 135 times the difference between the initial average vanadium valence of the catalyst and the average vanadium valence of the aged catalyst.

9. In a process for production of maleic anhydride from the oxidation of hydrocarbons which comprises contacting said hydrocarbon in the vapor phase with a solid complex catalyst comprising a vanadium-phosphorus-oxygen complex having an intrinsic surface area in the range from about 7 to 50 square meters per gram, a phosphorus to vanadium atomic ratio in the range 0.9-1.8:1, and an average vanadium valence in the range 3.9 to 4.6, wherein the catalytic properties of the catalyst for the production of maleic anhydride from said hydrocarbon have decreased from a level achieved during earlier catalyst life; the improvement which comprises contacting said aged catalyst complex with sulfur trioxide under conditions effective to increase the average vanadium valence of the aged catalyst to a value from about 3.9 to about 4.6.



4,123,443

PROCESS FOR THE PREPARATION OF BROMOACETIC ACID AND ESTERS THEREOF

Umekawa Osamu, Takatsuki; Takemori Koji, Osaka, and Katayama Sakae, Kobe, all of Japan, assignors to Katayama Chemical Works Co., Ltd., Osaka, Japan

Continuation of Ser. No. 721,792, Sep. 9, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,519

Claims priority, application Japan, Sep. 16, 1975, 50-112381; Sep. 20, 1975, 50-113897

Int. Cl.² C07C *53/16, 69/63*

U.S. Cl. 260—347.4 **10 Claims**

1. A process for the preparation of bromoacetic acid esters which comprises gradually adding concentrated sulfuric acid to an aqueous solution of chloroacetic acid and an alkali metal bromide or ammonium bromide, maintaining the resulting mixture at a temperature of from about 40° C to about 70° C, adding to the reaction an organic solvent which is capable of forming an azeotrope, heating while removing water, and adding an alcohol and further heating, followed by isolating a bromoacetic acid ester from the resulting organic layer.

4,123,444

2-ALKOXY-TETRAHYDROFURANS VIA HYDROFORMYLATION OF ALLYLIC ALCOHOLS

William E. Smith, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Jun. 13, 1977, Ser. No. 806,073

Int. Cl.² C07D *307/20*

U.S. Cl. 260—347.8 **11 Claims**

1. A process for preparing a 2-alkoxytetrahydrofuran or 2-alkoxy-substituted tetrahydrofuran which comprises contacting an allylic alcohol, carbon monoxide, hydrogen and a corresponding alkanol with a rhodium hydroformylation catalyst.

4,123,445

NOVEL HOMOGENEOUS TRANSITION-METAL CATALYZED GEOMETRIC ISOMERIZATION OF CYCLIC EPOXY ALCOHOLS

James E. Lyons, Wallingford, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Filed Nov. 13, 1974, Ser. No. 523,310
Int. Cl.² C07D *301/00*
U.S. Cl. 260—348.12 **6 Claims**

1. A process for the geometrical isomerization of a cis-hexacyclic epoxy alcohol to the corresponding trans-form which comprises contacting said alcohol in the presence of a solvent with a catalyst of the formula

$$LxM^{n}Xy$$

wherein L is a neutral ligand; X is an anionic ligand; M is a group VIII metal selected from the group consisting of ruthenium, rhodium, osmium, and iridium; *n* is an integer of from 0–3 denoting the valence of the metal; *x* is an integer of from 0–6; and *y* is an integer of from 0–3 and is equal to *n*, but when *n* is 0, then *x* equals at least 1; but when either *x* or *y* is 0, then the other integer may be at least 1.

4,123,446

SYNTHESIS OF METAL ALKYL CARBONATES

Stylianos Sifniades, Madison; Allen A. Tunick, Boonton, and Herbert C. Wohlers, Mountain Lakes, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Apr. 11, 1977, Ser. No. 786,160
Int. Cl.² C07F *15/04*
U.S. Cl. 260—439 R **11 Claims**

1. A process for preparing metal alkyl carbonates which comprises reacting an inorganic metal salt with an alkyl monohydric alcohol containing 1 to 3 carbon atoms and carbon dioxide under substantially anhydrous conditions in the presence of a solid acid acceptor, said salt being soluble in said alcohol and said alcohol being employed in sufficient amount to form a solution of the resulting metal alkyl carbonate in the alcohol.

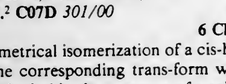
4,123,447

TRANS-HALO(ACYL)BIS(TRIETHYLPHOSPHINE)-NICKEL(II) COMPLEXES AND PREPARATION THEREOF

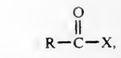
Darryl R. Fahey, and John E. Mahan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 8, 1976, Ser. No. 739,763
Int. Cl.² C07F *15/04*
U.S. Cl. 260—439 R **37 Claims**

15. A process for preparing a trans-halo(acyl)bis(triethylphosphine)nickel(II) complex of the formula

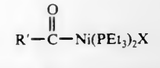


wherein X is halogen; PEt_3 is triethylphosphine; and R is selected from the group consisting of alkyl hydrocarbon radicals containing 1 to 12 carbon atoms; aryl hydrocarbon radicals containing 6 to 12 carbon atoms; substituted aryl radicals containing 6 to 12 carbon atoms and having as the only non-hydrocarbon substituents 1 or 2 halogens selected from fluorine, chlorine, and bromine bonded to the aromatic portion of the aryl radical; and substituted aralkyl radicals containing 7 to 12 carbon atoms and having as the only non-hydrocarbon substituents one or more halogens selected from fluorine, chlorine, and bromine bonded to the aromatic portion of the aralkyl radical, comprising reacting in solution (1,5-cyclooctadiene)-bis(triethylphosphine)nickel(O) and an acyl halide of the formula



wherein R and X are as above defined, under reaction conditions suitable for producing said trans-halo(acyl)bis(triethylphosphine)nickel(II) complex.

21. A process for preparing a trans-halo(acyl)bis(triethylphosphine)nickel(II) complex of the formula



wherein X is a halogen; PEt_3 is triethylphosphine; and R′ is selected from the group consisting of aryl hydrocarbon radicals containing 6 to 12 carbon atoms; substituted aryl radicals containing 6 to 12 carbon atoms and as the only non-hydrocarbon substituents 1 or 2 halogens selected from fluorine, chlorine, and bromine bonded to the aromatic portion of the aryl radical; and substituted aralkyl radicals containing 7 to 12 carbon atoms and as the only non-hydrocarbon substituents one or more halogens selected from fluorine, chlorine, and bromine bonded to the aromatic portion of the aralkyl radical, said process comprising reacting a solution of nickel complex of the formula R′—$Ni(PEt_3)_2X$, wherein R′, PEt_3, and X are as defined above, with carbon monoxide under conditions sufficient to produce said trans-halo(acyl)bis(triethylphosphine)-nickel(II) complex.

4,123,448

ADIABATIC REACTOR

Joseph A. Kleinpeter, McMurray, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Jun. 1, 1977, Ser. No. 802,383
Int. Cl.² C07C *1/04*
U.S. Cl. 260—449 M **8 Claims**

1. A method for improving the efficiency of an adiabatic, catalytic reactor for exothermic reactions, wherein said reactor includes a catalyst bed, positioned in said reactor, said method comprising;

(a) passing a first fluid reactant stream comprising carbon oxides, hydrogen, and water into a first end of said catalyst bed at reaction conditions so that said carbon oxides and hydrogen react to form methane as the stream passes along the length of said catalyst bed toward a second end of said catalyst bed;

(b) determining a first location in said catalyst bed at which the catalyst temperature has increased to a substantially constant value;

(c) injecting a second fluid reactant stream comprising carbon oxides, hydrogen and water into said catalyst bed between said first location and said second end of said catalyst bed;

(d) determining a second location in said catalyst bed at which the catalyst temperature has increased to a substantially constant value, said second location being between the point at which said second fluid reactant stream is introduced and said second end of said catalyst bed;

(e) injecting a third fluid reactant stream comprising carbon oxides, hydrogen and water between said second location and said second end of said catalyst bed; and,

(f) recovering methane from said reactor.

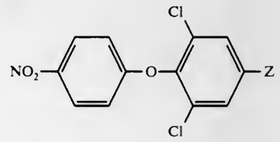
4,123,449

4-NITRO-4-ISOCYANATO- OR AMINO-DIPHENYL ETHERS

Wilhelm Sirrenberg, Sprockhoevel; Jürgen Schramm, Dormagen; Erich Klauke, Odenthal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 651,986, Jan. 23, 1976, Pat. No. 4,041,177. This application Apr. 25, 1977, Ser. No. 790,359
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1975, 2504983
Int. Cl.² C07C *87/60, 119/048*
U.S. Cl. 260—453 AR **3 Claims**

1. A 4-nitro-2′,6′-dichloro-4′-substituted diphenyl ether of the formula



wherein

Z: is NH_2 or NCO.

4,123,450

PROCESS FOR PREPARING ALKYL ISOCYANATES

Harry W. Weber, Jr., Newtown, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Sep. 22, 1977, Ser. No. 835,564
Int. Cl.² C07C *118/00*
U.S. Cl. 260—453 P **7 Claims**

1. A process for producing an alkyl isocyanate which comprises:

(1) reacting a hydroxybenzene of the formula



wherein R is hydrogen or lower alkyl of 1 or 2 carbon atoms, and phosgene in a halogenated hydrocarbon solvent with an aqueous alkali metal hydroxide, permitting the aqueous and organic phases to separate, removing the aqueous phase and recovering the organic phase comprising a solution of the corresponding chloroformate in said solvent,

(2) reacting the organic phase recovered from step 1, in the presence of an alkali metal hydroxide, with an alkylamine in which the alkyl group corresponds to the alkyl group of the alkyl isocyanate, allowing the aqueous and organic phases to separate, and recovering the organic phase comprising a solution of the corresponding N-alkylcarbamate in said solvent,

(3) stripping said solvent from the organic phase resulting from step (2),

(4) pyrolyzing the bottoms product of step (3) and selectively condensing and collecting said alkyl isocyanate.

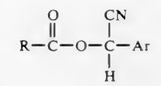
4,123,451

PREPARATION OF ESTERS

Roger A. Sheldon, and Peter Been, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 3, 1977, Ser. No. 765,188
Claims priority, application United Kingdom, Mar. 1, 1976, 8046/76
Int. Cl.² C07C *120/00, 121/66, 120/04*
U.S. Cl. 260—465 D **13 Claims**

1. A process for the preparation of an ester of formula I



(I)

wherein Ar is a phenoxy substituted phenyl group and R is a branched-chain alkyl group substituted by a halophenyl group, which process comprises contacting an aromatic aldehyde of the formula ArC(O)H and an acyl halide of the formula RC(O)Hal, in which formulas Ar and R have the same meaning as in formula I and Hal represents a halogen atom having an atomic number of from 9 to 53, inclusive, with water and water-soluble cyanide in the presence of at least one substantially water-immiscible alkane solvent containing from 6 to 10 carbon atoms or mixture thereof and recovering the desired ester product from the reaction mixture.

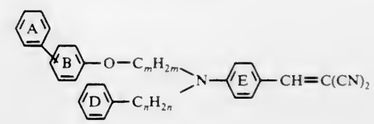
4,123,452

STYRYL DYESTUFFS

Hermann Beecken, Bergisch-Gladbach, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 11, 1977, Ser. No. 776,658
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1976, 2610674
Int. Cl.² C07C *121/78;* C09B *23/14*
U.S. Cl. 260—465 E **8 Claims**

1. Styryl dyestuff of the formula



wherein

the phenyl nuclei A, B, D and E can each be substituted by 1 or 2 radicals from the series methyl, ethyl, trifluoromethyl, methoxy, ethoxy and halogen,

m denotes the numbers 2 or 3 and

n denotes the numbers 1–3.

4,123,453

PROCESS FOR THE MANUFACTURE OF ACRYLONITRILE AND METHACRYLONITRILE

Robert K. Grasselli, Garfield Heights; Arthur F. Miller, Cleveland, and Harley F. Hardman, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 112,780, Feb. 4, 1971, abandoned. This application Jan. 24, 1977, Ser. No. 761,829
Int. Cl.² C07C *120/14*
U.S. Cl. 260—465.3 **13 Claims**

1. In the process for the conversion of an olefin selected from the group consisting of propylene, isobutylene and mixtures thereof, to acrylonitrile, methacrylonitrile and mixtures thereof respectively by reacting in the vapor phase at a temperature of from about 500° to 1100° F. and at a pressure of from about 0.5 to 5 atmospheres said olefin with a molecular oxygen-containing gas and ammonia in the presence of an oxide catalyst, the improvement comprising:

conducting the reaction in the presence of a catalyst selected from the group of those catalysts having atomic ratios described by the empirical formula:

$$A_a B_b C_c D_d Fe_e Bi_f Mo_g O_x$$

wherein

A is an alkali metal;

B is one or more of the elements selected from the group consisting of nickel and cobalt;

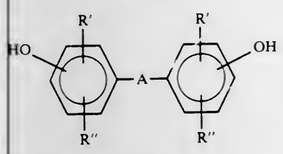
C is phosphorus or arsenic or both; and
D is at least one element selected from Group IIB of the Periodic Classification of Elements; and
wherein
a is a number from 0 to less than 0.1;
b is a number from 0 to 12;
c is a number from 0 to 3;
d is a number from 0.1 to 10;
e and *f* are each a number from 0.1 to 6;
g is a number from 8 to 16; and
x is a number determined by the valence requirements of the other elements present.

4,123,454
THERMOPLASTIC COPOLYESTERS

Lothar Buxbaum, Lindenfels, Odenwald, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1977, Ser. No. 838,281
Claims priority, application Switzerland, Oct. 7, 1976, 12701/76
Int. Cl.² C08G *63/18*
U.S. Cl. 260—22 D **13 Claims**

1. A linear thermoplastic copolyester which has a relative viscosity of at least 1.3, measured on a solution of 1 gram of polyester in 100 ml of solvent consisting of equal parts of phenol and symmetrical tetrachloroethane at 30° C., which comprises the condensation product in about a 1:1 molar ratio of diacids (a) and (c) with bisphenols (b) so that the composition of the polyester comprises
in the diacid component of the polyester
(a) from 49.5 to 45 mol %, based on the total polyester, of radicals of at least one aromatic dicarboxylic acid, and
(c) from 0.5 to 5 mol %, based on the total polyester, of radicals of one or more dimer acids; and in the bisphenol component of the polyester
(b) 50 mol %, based on the total polyester, of radicals of at least one bisphenol of the formula I



(I)

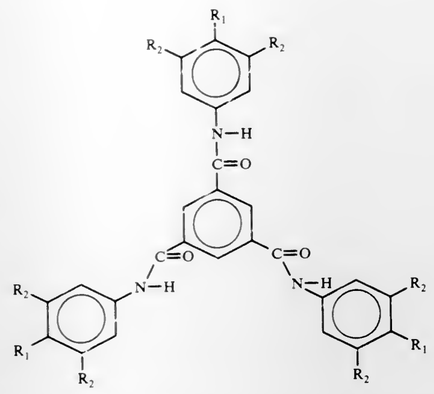
wherein R′ and R″ are hydrogen, alkyl of 1 to 6 carbon atoms, chloro or bromo, and A is a direct bond, O, S, SO_2, alkylidene of 2 to 8 carbons atoms, dichloroethylidene, trichloroethylidene, alkylene of 1 to 2 carbon atoms, phenylmethylene, diphenylmethylene or cycloalkylidene of 5 to 8 carbon atoms; wherein the radicals (a) and (c) are attached to the radicals (b) through ester linkages in a random distribution.

4,123,455
PHENENYLTRIS(CARBONYLIMINO) MULTI-ANIONIC SUBSTITUTED TRIPHENYL ACIDS AND SALTS

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 13, 1977, Ser. No. 805,773
Int. Cl.² C07C *143/52*; A61K *31/245*
U.S. Cl. 260—507 R **2 Claims**

1. A compound of the formula:



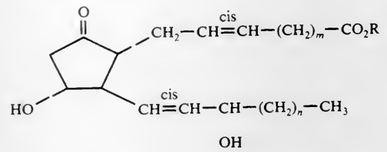
wherein R_1 is hydrogen; and R_2 is SO_3R_3, wherein R_3 is selected from the group consisting of alkali metal and alkali earth metal; and the pharmaceutically acceptable salts thereof.

4,123,456
NOVEL 11-HYDROXY-9-KETO-5,6-CIS-13,14-CIS-PROSTADIENOIC ACID DERIVATIVES

Karel F. Bernady, Belle Mead, N.J.; Middleton B. Floyd, Jr., Suffern; John F. Poletto, Nanuet, both of N.Y.; Robert E. Schaub, Upper Saddle River, and Martin J. Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 521,719, Nov. 7, 1974, abandoned, which is a continuation of Ser. No. 355,352, Apr. 27, 1973, abandoned. This application Feb. 17, 1977, Ser. No. 769,764
Int. Cl.² C07C *177/00*
U.S. Cl. 562—503 **9 Claims**

1. A compound selected from the group consisting of an optionally active compound of the formula:



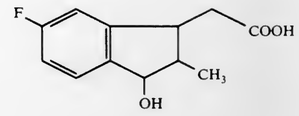
and a racemic compound of that formula and the mirror image thereof wherein *m* is an integer from 2 to 5, inclusive, and *n* is an integer from 3 to 6, inclusive, R is selected from the group consisting of hydrogen and C_1-C_4 alkyl; and the pharmacologically acceptable cationic salts thereof.

4,123,457
2-METHYL-5-FLUORO-INDANOL-3-ACETIC ACID

Roger J. Tull, Metuchen, and David G. Melillo, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 511,349, Oct. 2, 1974, Pat. No. 3,998,875. This application Sep. 22, 1976, Ser. No. 725,593
Int. Cl.² C07C *65/14*
U.S. Cl. 562—466 **1 Claim**

1. A compound of the formula:

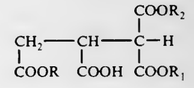


4,123,458
PREPARATION OF CIS AND TRANS ACONITIC ACIDS AND THEIR SALTS

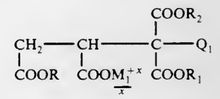
Eddie N. Gutierrez, Fort Lee, and Vincent Lamberti, Upper Saddle River, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 22, 1975, Ser. No. 642,850
Int. Cl.² C07C *51/38*
U.S. Cl. 562—595 **5 Claims**

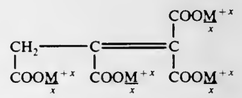
1. A process for preparing aconitic acid, salts of aconitic acid and mixtures thereof comprising:
a. halogenating, in an aqueous medium at a pH of less than about 8 with a halogenating agent which is hypochlorous acid, hypobromous acid or a solution of a substance capable of forming hypochlorous acid or hypobromous acid selected from the group consisting of chlorine, bromine and alkali and alkaline earth metal hypochlorites and hypobromites, a compound of the general formula



wherein R and R_2 are independently primary alkyl groups of 1 to 4 carbon atoms and R_1 is a primary alkyl group of 1 to 4 carbon atoms, a lithium, a sodium, or potassium cation; to produce a halogenated compound of the general formula



wherein said R, said R_1 and said R_2 are as previously defined, wherein M_1 is hydrogen or a lithium, sodium, potassium, magnesium, calcium, strontium or barium cation, wherein *x* is either 1 or 2 and corresponds to the valency of said M_1 and wherein said Q_1 is chlorine or bromine;
b. heating said halogenated compound in an aqueous medium at a pH of about 11 to about 12 to produce a propene-1,1,2,3-tetracarboxylate compound of the general formula



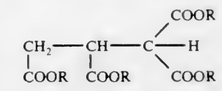
wherein M is a cation selected from the group consisting of calcium, strontium, barium, lithium, sodium and potassium and wherein *x* is a previously defined;
c. lowering the pH of the aqueous medium containing the tetracarboxylate compound to about 8 or less to cause decarboxylation of said tetracarboxylate compound, producing cis and trans aconitic acids, salts of cis and trans aconitic acids or a mixture of the acid and salt forms of cis and trans aconitic acids depending on the pH selected for the decarboxylation.

4,123,459
PREPARATION OF ACONITIC ACID

Eddie N. Gutierrez, Fort Lee, and Vincent Lamberti, Upper Saddle River, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 22, 1975, Ser. No. 642,840
Int. Cl.² C07C *51/38*
U.S. Cl. 562—595 **6 Claims**

1. A process for preparing aconitic acid comprising: chlorinating a tetraester compound of the formula



wherein R independently represents a lower primary alkyl group of 1 to 4 carbon atoms in an aqueous medium, with hypochlorous acid at a pH of about 2 to about 8 to form a chlorinated tetraester; dehydrohalogenating and saponifying said chlorinated tetraester in an aqueous medium with magnesium hydroxide at a pH of less than about 9 to form an aqueous mixture of magnesium aconitate and acidifying said aqueous mixture with a mineral acid to a pH of less than 2 to form said aconitic acid.

4,123,460
PROCESS FOR THE PRODUCTION OF MONOHALOACETYLHALIDES

Barry Jackson, and Christoph Zinsstag, both of Visp, Switzerland, assignors to Lonza, Ltd, Gambel, Switzerland

Filed Sep. 28, 1977, Ser. No. 837,437
Claims priority, application Switzerland, Sep. 28, 1976, 12234/76
Int. Cl.² C07C *51/58*
U.S. Cl. 260—544 D **9 Claims**

1. Process for the production of a monohaloacetylhalide characterized in that (a) $CH_2{=}C{=}O$, $R_4CH{=}C{=}O$ or $R_4R_5C{=}C{=}O$, wherein R_4 and R_5 can be the same or different and are aryl or alkyl having 1 to 6 carbon atoms, is reacted with (b) a halogen in the presence of a diester of phosphonic acid of the formula:



wherein R_1, R_2 and R_3 are the same or different alkyl or aryl, or R_1 and R_2 are the same or different alkyl or aryl and R_3 is —COOR or $-CH_2COOR$, wherein R is alkyl or aryl, the reaction being conducted in the liquid phase at a temperature between about −50° and about 100° C.

4,123,461
BENZENE-TRICARBOXYLIC ACID-(1,3,5)-TRI-N-CHLORAMIDE AND PROCESS FOR THE PREPARATION THEREOF

Hans-Georg Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 651,089, Jan. 21, 1976, Pat. No. 4,057,588. This application Apr. 28, 1977, Ser. No. 791,811
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1975, 2502429
Int. Cl.² C07C *103/24, 39/10*
U.S. Cl. 260—558 A **2 Claims**

1. Benzene-tricarboxylic acid-(1,3,5)-tri-N-chloramide.

4,123,462

AMINATION PROCESS USING NICKEL-RHENIUM CATALYSTS

Donald C. Best, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 7, 1976, Ser. No. 647,065
Int. Cl.[2] C07C *85/00, 85/02, 85/06, 85/08*
U.S. Cl. 260—585 B **16 Claims**

1. In the process for aminating a lower aliphatic alkane derivative with ammonia in the presence of a solid catalyst wherein the products comprise both economically desirable alkylamines and undesirable by-products of lesser economic significance, the improvement in selectivity and increased conversion, evidenced by the production of a substantially greater amount of said valuable alkylamines together with concomitant reduction in the yield of undesirable by-products from a given alkane charge, which comprises reacting under amination conditions said alkane charge with ammonia in the presence of hydrogen and a nickel-rhenium catalyst comprising rhenium and nickel impregnated on a support material selected from the group consisting of aluminas, silicas, silica-aluminas, kieselguhrs or diatomaceous earths and silica-titanias, wherein said catalyst has a total nickel and rhenium metal content of 3–30% by weight of the support and the atom ratio of the nickel to the rehnium present is in the range from about 2:1 to about 30:1.

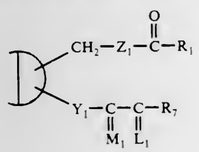
4,123,463

2-DECARBOXY-2-ALKYLKETONE PROSTAGLANDINS

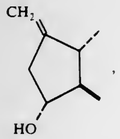
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

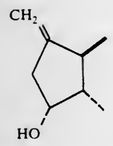
Filed Mar. 21, 1978, Ser. No. 888,695
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—586 R **47 Claims**

1. A prostaglandin analog of the formula

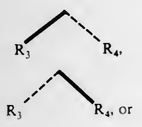


wherein D is





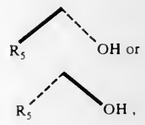
wherein R_1 is alkyl of one to 4 carbon atoms, inclusive; wherein L_1 is



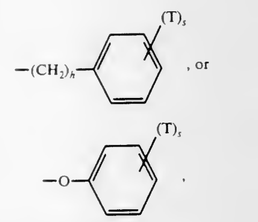
a mixture of



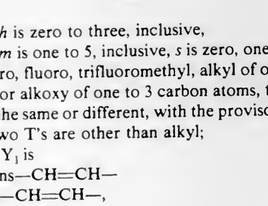
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein R_7 is
(1) $-(CH_2)_m-CH_3$,



(2)



(3)

wherein *h* is zero to three, inclusive,
wherein *m* is one to 5, inclusive, *s* is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms or alkoxy of one to 3 carbon atoms, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein Y_1 is
(1) trans—CH=CH—
(2) cis—CH=CH—,
(3) $—CH_2CH_2—$, or
(4) —C≡C—; and
wherein Z_1 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—, (3) cis—CH-$_2$—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_q$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —$(CH_2)_2$—O—$(CH_2)_g$—CH_2—,
(8) —$(CH_2)_3$—O—$(CH_2)_g$—,
(9) —C≡C—CH_2—$(CH_2)_g$—CH_2—,
(10) —CH_2—C≡C—$(CH_2)_g$—CH_2—, or
(11) trans-$(CH_2)_2$—$(CH_2)_g$—CH=CH—,
wherein *g* is one, two, or three.

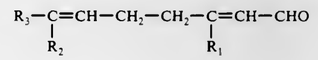
4,123,464

PROCESS FOR THE PREPARATION OF ALDEHYDES

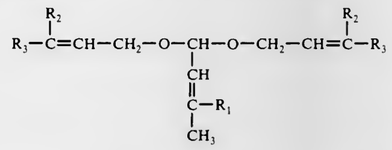
Willy Leimgruber, Montclair, and Donald H. Valentine, Jr., Westfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 442,991, Feb. 15, 1974, Pat. No. 4,016,212, which is a continuation-in-part of Ser. No. 340,496, Mar. 12, 1973, abandoned. This application Dec. 30, 1976, Ser. No. 755,693
Int. Cl.[2] C07C *47/20*
U.S. Cl. 260—601 R **3 Claims**

1. A process for producing a compound of the formula:

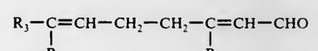


wherein R_1 and R_2 are lower alkyl; and R_3 is hydrogen, lower alkyl or a linear or branched chain aliphatic hydrocarbon containing from 2 to 8 carbon atoms and from 1 to 2 double bonds;
comprising subjecting an acetal of the formula:

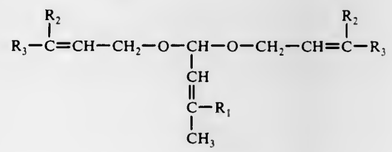


wherein R_1, R_2 and R_3 are as above; to pyrolysis wherein said pyrolysis is carried out in the gas phase at a temperature of from about 200° C. to 400° C.

2. A process for producing a compound of the formula:



wherein R_1 and R_2 are lower alkyl; and R_3 is hydrogen, lower alkyl or a linear or branched chain aliphatic hydrocarbon containing from 2 to 8 carbon atoms and from 1 to 2 double bonds;
comprising subjecting an acetal of the formula:



wherein R_1, R_2 and R_3 are as above; to pyrolysis wherein the pyrolysis is carried out in the liquid phase at a temperature of from about 120° C. to 230° C. in the presence of an acid catalyst.

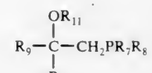
4,123,465

CHIRAL TERTIARY PHOSPHINES

Donald H. Valentine, Jr., Westfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 623,140, Oct. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 519,442, Oct. 31, 1974, abandoned. This application Aug. 10, 1977, Ser. No. 823,373
Int. Cl.[2] C07F *9/50*
U.S. Cl. 260—606.5 P **10 Claims**

1. A chiral phosphine of the formula:



wherein R_7 is methyl, isopropyl, xylyl, mesityl, benzyl, aryl or a substituted aryl selected from the group consisting of tolyl, ethylphenyl, cyclohexylphenyl, dimethylphenyl and methoxyphenyl; R_8 is lower alkyl, aryl or a substituted aryl selected from the group consisting of tolyl, dimethylphenyl and methoxyphenyl; R_9 is hydrogen, alkyl, hydroxylalkyl, aminoalkyl, perfluoroalkyl, aryl or methoxyphenyl; R_{10} is hydrogen, alkyl, aryl, hydroxyalkyl, aminoalkyl or perfluoroalkyl, with the proviso that R_9 and R_{10} must be different; R_{11} is hydrogen, alkyl or aryl.

4,123,466

PROCESS FOR NITRATING AROMATIC HYDROCARBONS

Chung-Yuan Lin, Northford; Fred A. Stuber, North Haven, and Henri Ulrich, Northford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 12, 1977, Ser. No. 859,388
Int. Cl.[2] C07B *11/00*
U.S. Cl. 260—645 **12 Claims**

1. In a process for the nitration of an aromatic hydrocarbon the improvement which comprises reacting said hydrocarbon with gaseous nitrogen dioxide in the presence of a catalytic amount of sulfuric acid and in the substantial absence of oxygen at a temperature of about 50° C to about 150° C.

4,123,467

OXYCHLORINATION OF ETHYLENE

Ramsey G. Campbell, Berkeley; Elliott P. Doane, Moraga; M. Henry Heines, Oakland; Joseph S. Naworski, Martinez, and Harvey J. Vogt, Lafayette, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 595,465, Jul. 14, 1975, abandoned. This application May 14, 1976, Ser. No. 686,333
Int. Cl.[2] C07C *17/15*
U.S. Cl. 260—659 A **31 Claims**

1. A process for the oxychlorination of ethylene in a fixed bed comprising the steps of:
(a) reacting ethylene, hydrogen chloride and a first portion of an oxygen-containing gas in a first reaction zone in contact with a first catalyst bed substantially undiluted by catalytically inert particles and comprising cupric chloride and potassium chloride supported on spherical particles of activated alumina, the first catalyst bed being divided into two portions in the direction of flow of reactants therethrough, the first portion comprising between about 45% and about 75% of the bed, the second portion comprising between about 25% and about 55% of the bed, the first portion comprising 4.5 and about 12.5 weight % cupric chloride and between about 1.5 and about 7 weight % potassium chloride, in a weight ratio of cupric chloride to potassium chloride of between about 1.5:1 and about 4:1, the second portion comprising between about 12 and about 25 weight % cupric chloride and between about 0.5 and about 4 weight % potassium chloride, in a weight ratio of cupric chloride to potassium chloride of between about 5:1 and about 15:1;
(b) reacting the product of step (a) and a second portion of an oxygen-containing gas in a second reaction zone in contact with a second catalyst bed substantially undiluted by catalytically inert particles and comprising cupric chloride and potassium chloride supported on spherical particles of activated alumina, the second catalyst bed being divided into two portions in the direction of flow of reactanta therethrough, the first portion comprising between about 45% and about 75% of the bed, the second

portion comprising between about 25% and about 55% of the bed, the first portion of the bed comprising between about 5.5 and about 15 weight % cupric chloride and between about 1 and about 5 weight % potassium chloride, in a weight ratio of cupric chloride to potassium chloride of between about 2:1 and about 6:1, the second portion of the bed comprising between about 12 and about 25 weight % cupric chloride and between about 0.5 and about 4 weight % potassium chloride, in a weight ratio of cupric chloride to potassium chloride of between about 5:1 and about 15:1, the weight ratio of cupric chloride to potassium chloride in the first portion of the bed being lower than that in the second portion of the bed; and

(c) reacting the product of step (b) and a third portion of an oxygen-containing gas in a third reaction zone in contact with a third catalyst bed substantially undiluted by catalytically inert particles and comprising between about 12 and about 25 weight % cupric chloride and between about 0.5 and about 4 weight % potassium chloride, supported on spherical particles of activated alumina, in a weight ratio of cupric chloride to potassium chloride of between about 5:1 and about 15:1.

4,123,468

TITANIUM TETRACHLORIDE AS HETEROGENEOUS CATALYST FOR ISOMERIZATION OF ALKYLAROMATIC HYDROCARBON

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 644,783, Dec. 29, 1975, Pat. No. 4,048,247. This application Apr. 21, 1977, Ser. No. 789,755

Int. Cl.[2] **C07C** *5/28*

U.S. Cl. 260—668 A **5 Claims**

1. A process for the isomerization of an alkylaromatic hydrocarbon which comprises contacting the alkylaromatic hydrocarbon at isomerization conditions in the presence of a catalyst system consisting essentially of titanium tetrachloride on an activated Group III-A metal oxide having surface hydroxyl groups, said catalyst system having been prepared by passing $TiCl_4$ vapor with an inert gas over said metal oxide at a temperature of 20° C. to 400° C. for 1 to 10 hours and thereafter thermally treating the resultant $TiCl_4$-containing oxide in an inert atmosphere at a temperature of from about 135° C. to about 550° C.

4,123,469

PROCESS FOR PRODUCTION OF BICYCLIC COMPOUNDS

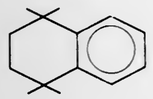
Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,616

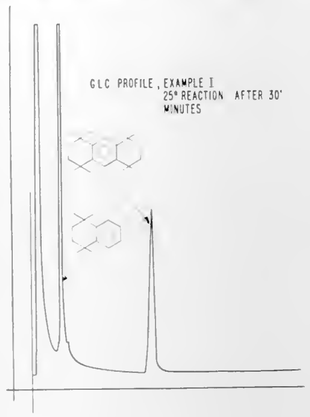
Int. Cl.[2] **C11B** *9/00*

U.S. Cl. 260—668 F **4 Claims**

1. The process for preparing 1,1,4,4-tetramethyltetrahydronaphthalene having the structure:



comprising the step of reacting benzene with 2,5-dimethylhexane-2,5-diol in the presence of an aluminum chloride catalyst (i) in a first stage at a temperature in the range of from about 15° C up to about 25° C and (ii) in a second stage sequentially following said first stage at a temperature in the range of from about 25° C up to the reflux temperature of the reaction mass; said benzene being in molar excess with respect to said diol compound whereby the mole ratio of said benzene:diol compounds in the range of from about 15:1 up to about 50:1.



4,123,470

BIARYL PRODUCTION

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 6, 1977, Ser. No. 804,125

Int. Cl.[2] **C07C** *15/14*

U.S. Cl. 260—668 D **8 Claims**

1. A process for the production of biaryl compounds from monocyclic aromatic hydrocarbons which comprises:

(a) contacting at least one monocyclic aromatic hydrocarbon with hydrogen in the presence of a hydroalkylation catalyst and under hydroalkylation conditions which produce cycloalkyl aromatic hydrocarbons, and

(b) treating said cycloalkyl aromatic hydrocarbons produced in (a) with hydrogen in the presence of a metal dehydrogenation catalyst on an acidic support and under dehydrogenation conditions which produce biaryl compounds substantially free of by-product triaryls and higher ring assemblies.

4,123,471

OLEFIN PRODUCTION PROCESS

Natale Bertolini, via G.A. Amedeo 54, Milan; Claudio Divo, via Ramazzotti 20, Saronno (Varese); Petri Maris, via C. Battisti 23/A, Paderno Dugnano (Milan), and Giovanni Maiorano, via Assietta 31, Milan, all of Italy

Filed Jul. 26, 1977, Ser. No. 819,613

Int. Cl.[2] **C07C** *3/16*

U.S. Cl. 260—683.15 C **14 Claims**

1. A process for preparing C_7–C_9 olefins from a mixture of propylene and butenes, over a supported phosphoric acid catalyst, comprising the steps of

feeding a stream comprising propylene, butenes and recycle olefins beyond C_9 to one end of an adiabiatic reaction zone containing the catalyst;

carrying out the operation in said zone at a temperature of 160° to 300° C. and under a pressure such as to maintain the reagents and reaction products in the homogeneous liquid phase, until at least 30% but not more than 70% of the fed propylene and butenes has been converted;

recovering the reaction products at the other end of the reaction zone, and separating the unconverted propylene and butenes, the C_6 olefins, the C_7–C_9 fraction and the fraction beyond C_9

and at least partially recycling the latter fraction to that end of the reaction zone to which the reagents are fed.

4,123,472

OIL RESISTANT MODIFIED SILICONE COMPOSITION

J. Charles Getson, Adrian, Mich., and Patrick J. Adams, Valley City, Ohio, assignors to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 610,583, Sep. 5, 1975, abandoned, which is a continuation of Ser. No. 447,442, Mar. 1, 1974, abandoned, which is a continuation of Ser. No. 862,045, Sep. 29, 1959, abandoned. This application Dec. 18, 1975, Ser. No. 642,082

Int. Cl.[2] **C08L** *83/10, 43/04*

U.S. Cl. 260—827 **6 Claims**

1. A method for imparting oil resistant properties to a modified organopolysiloxane composition which comprises reacting a diorganopolysiloxane having hydrocarbon radicals with up to 18 carbon atoms linked to the silicon atoms which are selected from the class consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals and having terminal groups selected from the class consisting of aliphatic unsaturated groups and hydroxyl groups with a mixture containing an acrylic ester monomer selected from the class consisting of alkyl acrylates and methacrylates in which the alkyl group has from 1 to 4 carbon atoms and a nitrile monomer selected from the class consisting of acrylonitrile, methacrylonitrile and alpha-chloroacrylonitriles in the presence of a free-radical initiator to form a modified organopolysiloxane composition containing polymers and copolymers which are derived from recurring units of the acrylic ester containing monomer and the nitrile containing monomer at a temperature below about 150° C., said diorganopolysiloxane is present in an amount of from 25 to 75 percent by weight based on the weight of the diorganopolysiloxane and acrylic ester and nitrile monomers and said nitrile monomer is present in an amount of from 5 to 95 mol percent based on the nitrile and acrylic ester monomers and when said modified organopolysiloxane contains terminal hydroxyl groups, then a cross-linking agent is added which is selected form the group consisting of silanes of the formula

$$X_{4-m}SiY_m \text{ and}$$

siloxanes in which the silicon atoms are linked through Si-O-Si linkages, wherein X is selected from the group consisting of alkyl and aryl radicals, Y is selected from the group consisting of acyloxy, oximo, alkoxy, aryloxy, halogen, aminoxy, amido and phosphato groups and m is a number of from 2 to 4, curing said composition in the presence of atomspheric moisture and thereafter heat aging the composition in the presence of air at a temperature of from about 125° C. to 300° C. for at least about 4 hours.

4,123,473

TRANSPARENT SHEETS AND CONTAINERS FORMED FROM POLYCARBONATE-POLYESTER BLENDS AND FORMATION THEREOF

Surendra A. Amin, Pottsville; Phillip S. Bollen, Auburn, both of Pa., and William Sacks, Gillette, N.J., assignors to Allied Chemical Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 625,299, Oct. 23, 1975, abandoned. This application Nov. 5, 1976, Ser. No. 739,214

Int. Cl.[2] **C08L** *67/02*

U.S. Cl. 260—860 **6 Claims**

1. A sheet suitable for use in hot filling of foods and being formed from a uniform blend of from about 80 to 97% by weight of polyethylene terephthalate having an intrinsic viscosity of about 0.9 as measured in a mixed solvent of 60 parts by weight phenol and 40 parts by weight tetrachloroethane at 25° C, and a melt viscosity at 525° F of above about 10,000 poises and correspondingly from about 20 to 3% by weight of a polycarbonate resin having an intrinsic viscosity of about 0.4 to 0.6, as measure in dioxane at 30° C, and a melt viscosity of 500° F. of less than 50,000 poises said sheet being non-oriented having a haze value as determined by ASTM D-1003 of less than about 2% wherein the polyethylene terephthalate portion of the sheet has a degree of crystallinity of less than 5%.

4,123,474

POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING A DIPHENYLAMINE

Arthur Katchman, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 8, 1975, Ser. No. 638,803

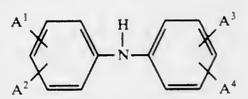
Int. Cl.[2] **C08L** *25/06, 71/04*

U.S. Cl. 260—874 **18 Claims**

1. A stabilized thermoplastic molding composition which consists essentially of:

(a) a polyphenylene ether resin or a polyphenylene ether resin in combination with an alkenyl aromatic resin;

(b) a stabilizing amount of a diphenylamine of the formula:



wherein A^1, A^2, A^3 and A^4 are independently selected from the group consisting of hydrogen, halogen, hydrocarbon radicals, halohydrocarbon radicals, hydrocarbonoxy radicals, halohydrocarbonoxy radicals and mixtures of said diphenylamines.

4,123,475

ANTISTATIC POLYPHENYLENE ETHER COMPOSITIONS

Visvaldis Abolins, and Arthur Katchman, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1977, Ser. No. 865,322

Int. Cl.[2] **C08L** *71/04*

U.S. Cl. 260—874 **9 Claims**

1. An antistatic thermoplastic composition which comprises:

(a) a polyphenylene ether resin with or without a styrene resin, and

(b) a minor, effective amount of an antistatic agent consisting of a mixture of triethanolamine, toluene sulfonic acid and sodium lauryl sulfate.

4,123,476

REINFORCED PLASTIC MATERIAL AND A PROCESS FOR THE PRODUCTION THEREOF

Alain Bonnefon, Epinay-sur-Seine; Alain Coupard, Asnieres, and Michel Maffre, Versailles, all of France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, France

Continuation-in-part of Ser. No. 463,186, Apr. 22, 1974, abandoned. This application Dec. 10, 1975, Ser. No. 639,307

Claims priority, application France, Apr. 20, 1973, 73.14721

Int. Cl.[2] **C08L** *23/06, 23/08*

U.S. Cl. 260—897 A **4 Claims**

1. A flexible anisotropic plastic material having in a longitudinal direction a resistance to breaking higher than 400 kg/cm^2 with a breaking elongation lower than 10% and an elasticity modulus at least 8 times greater than the elasticity modulus in the other transversal directions perpendicular to said longitudinal direction; said flexible plastic material comprising a matrix of thermoplastic material and 5–100 parts by weight of a reinforcing polymer which is not miscible with said matrix, said polymer consisting of a crystalline polyethylene having a molecular weight at least equal to 500,000 and being in the form of elongated fibrils having a diameter less than 5 microns, a length greater than 2 mm. and a dominant orientation in the longitudinal direction; said thermoplastic material forming the matrix having a lower softening point than the melting point of the reinforcing polyethylene and said thermoplastic material of the matrix being selected from the group consisting of polyvinyl chloride, polyethylene having a low

molecular weight and an ethylene and vinyl acetate or vinyl chloride copolymer.

4,123,477

POLYVINYLIDENE CHLORIDE RESIN COMPOSITIONS

Takeshi Watanabe, and Kenichiro Kodama, both of Nobeoka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Nov. 4, 1977, Ser. No. 848,521

Claims priority, application Japan, Nov. 9, 1976, 51-133735

Int. Cl.² C08L *23/28*

U.S. Cl. 260—897 C **6 Claims**

1. A polyvinylidene chloride resin composition, which comprises 100 parts by weight of (A) a copolymer of 75 to 75% by weight of vinylidene chloride and 25 to 5% by weight of a monomer copolymerizable with vinylidene chloride and 3 to 60 parts by weight of (B) a chlorinated ethylene-vinyl ester copolymer containing 10 to 40% by weight (based on unchlorinated ethylene-vinyl ester copolymer) of a vinyl ester and 3 to 55% by weight (based on chlorinated ethylene-vinyl ester copolymer) of chlorine.

4,123,478

PREPARATION OF O, O-DIMETHYL-O-(2,2-DICHLOROVINYL)-THIONOPHOSPHORIC ACID ESTER

Reimer Cölln, Wuppertal, and Wilhelm Sirrenberg, Sprockhoevel, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

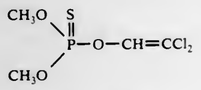
Filed Jul. 29, 1977, Ser. No. 820,500

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1976, 2636786

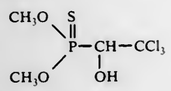
Int. Cl.² C07F *9/165*

U.S. Cl. 260—986 **7 Claims**

1. A process for the preparation of O,O-dimethyl-O-(2,2-dichlorovinyl)-thionophosphoric acid ester of the formula



comprising reacting O,O-dimethyl-1-hydroxy-2,2,2-trichloroethanethionophosphonic acid ester of the formula



in isopropanol with a concentrated aqueous solution of an alkali metal hydroxide.

4,123,479

CARBURETOR CONTROLLED BY A SLIDING MOVEMENT

Anders O. Andreassen, Alphyddevägen 21, S-131 00 Nacka, Sweden

Filed Jan. 25, 1977, Ser. No. 762,785

Claims priority, application Sweden, Jan. 28, 1976, 7600870; Nov. 1, 1976, 7612117

Int. Cl.² F02M *9/06*

U.S. Cl. 261—44 B **9 Claims**

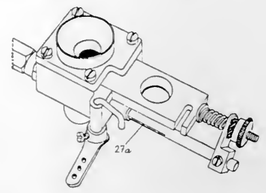
1. A carburetor for a combustion engine comprising:

a housing having a venturi tube defining a flow passage,

means for supplying air through said venturi tube including a member having an aperture in registration with said venturi tube and forming part of the flow passage through the venturi tube, said member being carried by said housing for translational movement whereby the size of the flow passage and consequent flow through said venturi tube is controlled in accordance with the translational position of said member relative to said venturi tube,

means carried by said housing for supplying fuel through the carburetor and defining a fuel path including an elongated opening in said housing,

means carried by said housing for controlling the flow of fuel through said fuel supply means including an elongated movable plunger in said opening having a longitudinally extending groove along its outer surface, at least a portion of said groove forming part of said fuel path and which groove extends monotonically in the direction of the longitudinal extent of said plunger, said plunger having a first end within said opening and defining a chamber therewith in said fuel path and which chamber decreases in volume in response to movement of said plunger inwardly of said housing,



means coupling the opposite end of said plunger and said member one to the other for conjoint movement, said groove in said plunger having a cross section diminishing in the direction toward said first plunger end so that, when the fuel and air supply are increased by conjoint movement of said plunger and said member, the volume of said chamber decreases to cause an increase of fuel pressure with accompanying richer fuel mixture.

4,123,480

THROTTLE CONTROL MECHANISM FOR A CARBURETOR

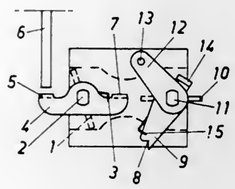
Rolf A. G. Johansson, Unnaryd, Sweden, assignor to Jonsereds AB, Partille, Sweden

Filed Feb. 14, 1977, Ser. No. 768,378

Claims priority, application Sweden, Feb. 16, 1976, 76 016799

Int. Cl.² F02M *1/02*

U.S. Cl. 261—52 **6 Claims**



1. A control mechanism for a fuel/air mixing apparatus having a throttle valve and a choke valve, said valves each having an idling position, a cold starting position and a full speed position, said control mechanism including first biasing means biasing said throttle valve toward its idling position, second biasing means biasing said choke valve toward its full speed position, interengageable means associated with the respective valves for holding both valves in their cold starting positions in opposition to the biasing means upon movement of said choke valve from its idling position toward its full speed position and further means associated with the throttle valve for releasing said interengageable means by movement of the throttle valve from its cold starting position toward its full speed position.

4,123,481

DEVICE FOR CARBURETION OF LIQUID FUELS

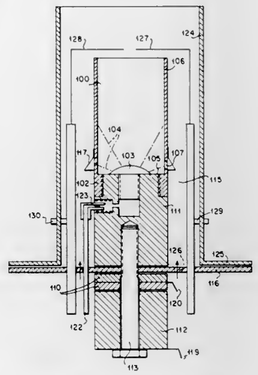
Wilhelm Herold, Biebererstr. 27, D-6055 Hausen, and Johannes Pickert, Fichtenweg 2, D-6057 Dietzenbach, both of Germany

Continuation of Ser. No. 569,609, Apr. 21, 1975, abandoned. This application Aug. 1, 1977, Ser. No. 821,023

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1975, 2507495

Int. Cl.² F02M *27/08*

U.S. Cl. 261—81 **9 Claims**



1. A device for carburetion of liquid fuels comprising:

an airflow tube;

an oscillatory body disposed within said tube, said body terminating in a cup-shaped portion opening toward the down-stream end of said airflow tube, said cup-shaped portion having at least one air inlet opening through the side wall thereof;

an electro-mechanical transducer coupled to said oscillatory body;

a fuel supply nozzle disposed in the bottom of said cup-shaped portion for spraying fuel onto the inner walls thereof;

means affording connection of said nozzle to a source of liquid fuel under pressure; and

means for connecting said transducer to a source of electrical energy.

4,123,482

MECHANICAL AERATOR

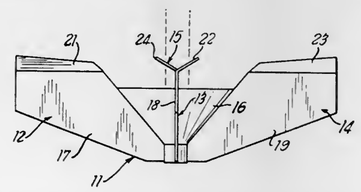
Kenneth L. Wyatt, Oswestry, and Keith J. Ilett, Crewe, both of England, assignors to Air Products & Chemicals, Inc., Allentown, Pa.

Filed Jul. 7, 1977, Ser. No. 813,593

Claims priority, application United Kingdom, Jul. 8, 1976, 28453/76

Int. Cl.² B01F *3/04*

U.S. Cl. 261—91 **3 Claims**



1. A mechanical aerator comprising a boss secured to a vertical drive shaft and a plurality of blades secured to said boss, said boss having a vertical axis of rotation, each of said blades extending radially from said axis of rotation and having a body portion and a deflector portion, said body portions being planar and extending in substantially the vertical plane, said deflector portions of said blades being planar and extending from the upper edge of said blade portions upwardly and rearwardly relative to the direction of rotation about said axis wherein the angle between the body portions and the deflector portions is in the range of 100° to 150°.

4,123,483

MANUFACTURING METHOD OF AN OPTICAL WAVEGUIDE

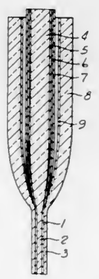
Tsuneo Nakahara; Masao Hoshikawa, both of Yokohama City; Satoshi Shiraishi; Shiro Kurosaki, and Kunio Fujiwara, all of Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 12, 1973, Ser. No. 406,112

Claims priority, application Japan, Oct. 13, 1972, 47-102839; Oct. 13, 1972, 47-102840

Int. Cl.² G02B *5/14*

U.S. Cl. 264—1 **18 Claims**



1. A method of manufacturing an optical waveguide comprising the steps of,

providing an elongated member of fused silica having a smooth cylindrical surface,

forming a layer of fused silica on said smooth surface,

forming a thin layer of doped fused silica having an index of refraction greater than that of said fused silica over said layer of fused silica,

forming a second layer of fused silica over said layer of doped fused silica,

heating the composite structure so formed to the drawing temperature of the materials thereof, and

drawing the heated structure to reduce the cross-sectional area thereof and form an optical waveguide having a cylindrical layer of higher refractive index interposed between a core and an outer cylindrical layer of lesser refractive index.

4,123,484

PROCESS FOR THE REMOVAL OF FISSION-PRODUCT INERT GASES IN THE REPROCESSING OF NUCLEAR FUEL MATERIAL

Harald Schnez, Waldsee, Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Germany

Filed Oct. 13, 1976, Ser. No. 731,990

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1976, 2602897

Int. Cl.² G21C *21/00*

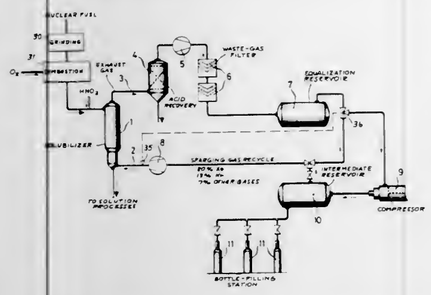
U.S. Cl. 264—0.5 **5 Claims**

1. A process for treating nuclear fuel material in the form of elements containing graphitic components, comprising the steps of:

comminuting said nuclear fuel elements;

combusting said nuclear fuel elements to burn off graphitic components thereof and form a residue;

chemically solubilizing the residue following the comminution and combustion of said nuclear fuel elements in a digester by contacting said residue with an acid in which said residue is soluble;



passing recycled fission product inert gas as a sparging gas through the solution in said digester to entrain with said sparging gas fission-product inert gases released from said nuclear fuel elements and forming with the released fission-product inert gases a waste gas; and

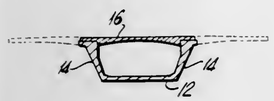
recycling a portion of the fission-product inert gas to said digester as said sparging gas.

4,123,485

STAGE CONSTRUCTION OF AN ELEVATED BOX GIRDER AND ROADWAY STRUCTURE

Man-Chung Tang, Queens, N.Y., assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany

Filed Apr. 20, 1977, Ser. No. 789,223
Int. Cl.[2] E04B *1/16*; E01D *19/12*
U.S. Cl. 264—33 **8 Claims**



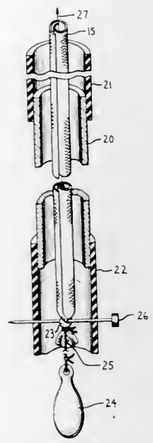
1. A method of constructing an elongated roadway structure including a box girder and roadway slab where the box girder includes a bottom slab, upright webs including two laterally spaced outside webs extending upwardly from the bottom slab and defining the outside surfaces of the box girder and a top slab extending transversely across the upper ends of the outside webs and forming a part of the roadway slab, and the roadway slab including two cantilever sections each extending laterally outwardly from an opposite side of the top slab transversely of the elongated direction, comprising the steps of setting up a support structure for a portion of the elongated dimension of the roadway structure, supporting forms for the bottom slab and the two outside webs of the box girder on the support structure so that the opposite ends of the forms for the bottom slab and the two outside webs spaced apart in the elongated direction of the roadway structure rest on the support structure and providing bearing support for the support structure at least adjacent the opposite ends of the support structure spaced apart in the elongated direction of the roadway structure, pouring concrete into the forms for the bottom slab and the outside webs for constructing a first section of the bottom slab and the outside webs and allowing the concrete to set for a predetermined period, removing the support structure and the forms for the bottom slab and the outside webs from the first section after the completion of the predetermined period, supporting forms for the roadway slab from the bottom slab and the outside webs of the first section and pouring concrete into the forms for the roadway slab of the first section, moving the support structure to the next section of the box girder to be constructed, moving the supporting forms for the bottom slab and the outside webs and placing them on the support structure for the next section of the box girder to be constructed, pouring concrete into the form for the bottom slab and the outside webs of the next section, moving the forms for the roadway slab to the next poured section of the bottom slab and outside web and supporting the forms from the poured bottom slab and outside webs, pouring the roadway slab of the next poured section and repeating the foregoing steps of constructing a section of the elongated dimension of the elevated structure until the elevated structure has been completed.

4,123,486

METHOD OF MAKING A COMPLIANT MANDREL IN A MANDREL ASSEMBLY FOR GROWING GRAFT TUBES

Charles H. Sparks, deceased, late of Portland, Oreg. (by Margaret J. Sparks, executrix), assignor to Margaret J. Sparks, Portland, Oreg.

Division of Ser. No. 506,214, Sep. 16, 1974, Pat. No. 3,938,524, which is a continuation-in-part of Ser. No. 368,811, Jun. 11, 1973, Pat. No. 3,866,609, which is a continuation of Ser. No. 241,189, Apr. 5, 1972, abandoned, which is a division of Ser. No. 101,031, Dec. 23, 1970, Pat. No. 3,710,777. This application Aug. 29, 1975, Ser. No. 608,840
Int. Cl.[2] A61B *17/00*; B29D *27/04*
U.S. Cl. 264—46.6 **5 Claims**



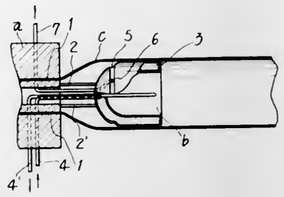
1. The method of making a mandrel for a mandrel assembly for growing a graft tube with living tissue, comprising suspending a casting tube with open upper and lower ends and a smooth interior surface in vertical position, slightly stretching an elongated stretchable porous tension element axially in the center of said tube, injecting upwardly a liquid foamable elastomer material into the open lower end of said tube to cause gas bubbles generated in the elastomer to be small in size and completely enclosed by the elastomer and to prevent the inclusion of air bubbles in the elastomer, causing said elastomer material to set in said tube and impregnate said tension element, and then withdrawing said tension element and elastomer from said tube.

4,123,487

PROCESS FOR PREPARING A TUBULAR ARTICLE OF THERMOPLASTIC RESIN

Shoji Saito, Toyono, Japan, assignor to Shin'Etsu Kasei Kabushiki Kaisha, Nagano, Japan

Continuation of Ser. No. 396,541, Sep. 12, 1973, abandoned. This application Oct. 20, 1975, Ser. No. 624,188
Claims priority, application Japan, Sep. 12, 1972, 47-92039
Int. Cl.[2] B29D *23/04*
U.S. Cl. 264—90 **8 Claims**



1. In a process for preparing a tubular article of thermoplastic resin which comprises mounting a die having an annular orifice on the forward end of an extruder, further mounting a mandrel having a desired outer cross-sectional shape on the forward end of the inner core of said die, extruding from said orifice a tube of thermoplastic resin, advancing the tube along the outer surface of said mandrel by pulling out the tube by means of take-up rolls, and cooling said mandrel; an improvement which comprises positioning the mandrel away from the forward end of the inner core, providing the mandrel with a groove in the form of a ring on the outer surface of the mandrel in the vicinity of where the tube begins to contact with the outer surface of the mandrel, forming at least one aperture in the groove, and withdrawing the air in the space between the mandrel and the tube through the aperture and through the interior of the die by reducing the pressure in the space between the mandrel, the die face and the tube wherein the tube contacts the mandrel due to the removal of the air.

3. In an apparatus for forming a tubular article of thermoplastic resin comprising a die having an annular orifice on the forward end of an extuder, a mandrel positioned on the forward end of the inner core of said die, and take-up rolls wherein said tubular article is extruded from said orifice and drawn along the outer surface of said mandrel by said take-up rolls the improvement comprising:

evacuation means for withdrawing the air from the space between the mandrel, the die and the tubular article, said evacuation means comprising:

(a) a groove means formed on the outer surface of said mandrel in the vicinity of where the tube begins to contact the outer surface of the mandrel;

(b) pressure reducing means for reducing the pressure on the exterior of the die to a pressure below the pressure in the space between the mandrel and the tubular article;

(c) at least one aperture means in said groove means; and

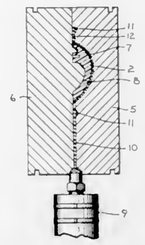
(d) connection means connecting said at least one aperture means in said groove means, and said pressure reducing means, said at least one aperture means and connection means providing a discharge path for air between the mandrel, the die and the tubular article wherein when said tubular article contacts said mandrel and the air therebetween is forced into said groove means and then into said aperture means such that it is discharged therefrom; whereby said tubular article closely contacts the surface of said mandrel, thus forming a smooth surface on said tubular article.

4,123,488

MOLDED PLASTIC ARTICLE AND METHOD OF MAKING THE SAME

David E. Lawson, 701 Riford Rd., Glen Ellyn, Ill. 60137

Filed Sep. 6, 1977, Ser. No. 830,873
Int. Cl.[2] B29C *5/00*; B29D *3/02*; B29F *1/00*
U.S. Cl. 264—135 **11 Claims**



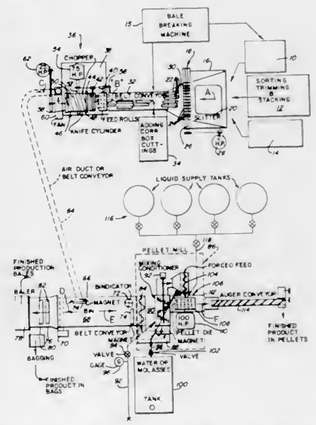
1. A method of making a molded composite structure, comprising the steps of placing in a mold cavity a fibrous material impregnated with an uncured thermosetting resin system capable of being cured by the application of heat, and injecting a molten thermoplastic resin into the mold cavity under pressure and at a temperature above the temperature required to cure the thermosetting resin system, the sensible heat of the thermoplastic resin providing heat required to cause the thermosetting resin system to cure to provide a composite structure having a cured thermosetting resin backing layer and a smooth thermoplastic resin outer surface bonded to the backing layer.

4,123,489

METHOD FOR CONVERTING WASTE PAPER PRODUCTS INTO USEFUL FORMS

Joseph A. Kelley, Chicago, Ill., assignor to Flett Development Company, Chicago, Ill.

Filed May 17, 1977, Ser. No. 797,623
Int. Cl.[2] B02C *18/44*
U.S. Cl. 264—141 **14 Claims**



1. A method of converting waste paper materials into a more useful form comprising the steps of:

feeding said material in a transverse direction across a cutter bar into the path of helical knives moving in a rotary cylindrical path which is tangent to said cutter bar around a pivot axis parallel thereof for a first phase of linear shear cutting said material moving across said bar into pieces;

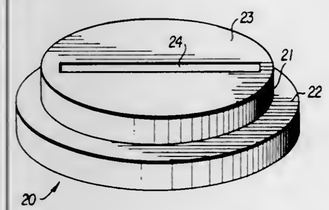
second cutting said pieces by passing said pieces out of said cylindrical knife path through the sizing openings in an arcuate recutter screen positioned adjacent a portion of the cylindrical path of said moving knives and having screen cutter bars for a second phase of final shear cutting of said pieces to pass through said sizing openings, said second phase of said final shear cutting producing a plurality of pieces of flat paper materials having random polygonal shapes with at least a pair of shear cut linear edges and a majority of said pieces having a maximum dimension between any two points thereon of 3 inches and a minimum dimension of approximately ⅛ inch and extruding said finally shear cut pieces under pressure in an extrusion die having multiple elongated extrusion passages to form pellets of circular cross-section therefrom.

4,123,490

PRODUCTION OF A HIGH TENACITY, LOW DENIER POLY(ETHYLENE TEREPHTHALATE) FIBRILLATED TAPE YARN

John D. Gibbon, Charlotte, N.C., assignor to Fiber Industries Inc., Charlotte, N.C.

Filed Nov. 20, 1975, Ser. No. 633,758
Int. Cl.² B29D *7/04, 7/24;* **B29C** *17/14;* **D02G** *1/16*
U.S. Cl. 264—147 **17 Claims**



1. A method of producing a low denier, high tenacity relatively uniformly fibrillatable poly(ethylene terephthalate) tape comprising
   a. intimately mixing poly(ethylene terephthalate) polymer with from about 0.1 to about 20 percent based on the weight of poly(ethylene terephthalate) of polypropylene,
   b. extruding said polymer mixture in the form of a tape at a melt draw down of from about 26:1 to about 75:1 through a slit die characterized by having a modified entry port wherein the depth of the slit is greater at both ends than at the middle by an amount equal to 0.1 to 0.4 times said slits length,
   c. quenching said tape,
   d. hot drawing said tape in two stages wherein said tape is initially hot drawn to a draw ratio of from about 3.1:1 to about 4.2:1 while being subjected to a temperature of from about 80° to about 140° centigrade and thereafter hot drawn to a total draw ratio of about 5.0:1 while being heated to a temperature above 160° centigrade.

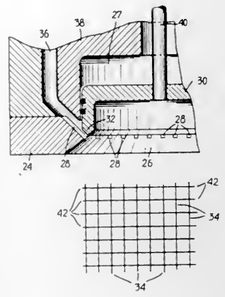
9. A method of producing a low denier, high tenacity relatively uniformly fibrillated poly(ethylene terephthalate) tape yarn comprising
   a. intimately mixing poly(ethylene terephthalate) polymer with from about 0.1 to about 20 percent based on the weight of poly(ethylene terephthalate) of polypropylene,
   b. extruding said polymer mixture in the form of a tape at a melt draw down of from about 26:1 to about 75:1 through a slit die characterized by having a modified entry port wherein the depth of the slit is greater at both ends than at the middle,
   c. quenching said tape,
   d. hot drawing said tape in two stages wherein said tape is initially hot drawn to a draw ratio of from about 3.1:1 to about 4.2:1 while being subjected to a temperature of from about 80° to about 140° centigrade and thereafter hot drawn to a total draw ratio of about 5.0:1 while being heated to a temperature above 160° centigrade,
   e. fibrillating the drawn tape.

4,123,491

PROCESS FOR MANUFACTURING HIGH STRAND COUNT PLASTIC NET

Ronald L. Larsen, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 653,474, Jan. 29, 1976, abandoned, and Ser. No. 653,541, Jan. 29, 1976, abandoned, which is a continuation of Ser. No. 697,492, Jan. 12, 1968, abandoned. This application Apr. 8, 1977, Ser. No. 785,862
Int. Cl.² B29C *17/02*
U.S. Cl. 264—167 **17 Claims**



1. A process for the manufacture of oriented high strand count plastic net which comprises the steps of:
   (a) extruding a first plurality of plastic strands;
   (b) extruding a second plurality of plastic strands to intersect said first plurality of strands at an angle;
   (c) extruding the plastic strands sufficiently close together to extrude a structure with a net hole density equivalent to a balanced-net hole density of at least 1200 and thereby cause a portion of the strands between intersections to merge into integrally consolidated joints at the intersections; and
   (d) stretching the extruded structure in at least one direction to regenerate and draw out from the integral joints separate lengths of individual strands between the joints to produce high strand count oriented net having a net hole density equivalent to a balanced-oriented net hole density of at least 49.

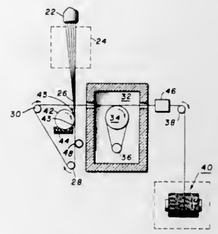
4,123,492

NYLON 66 SPINNING PROCESS

Michael M. McNamara, Jalisco, Mexico; Wayne T. Mowe, and Darwyn E. Walker, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed May 22, 1975, Ser. No. 577,951
Int. Cl.² D01D *5/12*
U.S. Cl. 264—210 F **40 Claims**

1. A process for producing a yarn from a thermoplastic melt-spinnable polyamide polymer, said process comprising:
   a. extruding said polymer through a spinneret as a plurality of molten streams into a quench zone wherein the streams are cooled and solidified into spun filaments;
   b. forwarding said spun filaments with control means comprising a roll for controlling the spinning speed of said filaments by withdrawing said spun filaments from said quench zone at a spinning speed of at least 2285 meters per minute;



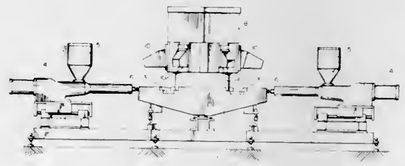
   c. feeding said filaments from said control means into an orientation zone between 0.002 and 0.25 seconds after solidfication of said filaments; and
   d. stretching said filaments in said orientation zone.

4,123,493

METHOD OF MAKING A SHOE SOLE HAVING A PREFORMED INSERT

Waldemar Schilke, Trenton, and Ladislav Hujik, Batawa, both of Canada, assignors to Bata Shoe Company, Inc., Belcamp, Md.

Filed May 3, 1977, Ser. No. 793,398
Int. Cl.² B29C *5/00;* **B29D** *3/00, 31/00;* **B29F** *1/10*
U.S. Cl. 264—244 **2 Claims**



1. A method of molding a filler-containing sole for an article of footwear comprising the steps of inserting a filler into a recess in the bottom surface of a dummy last; forming a first mold cavity employing the dummy last, the filler, first portions of opposing mold sides and a bottom mold piston; molding a first sole portion onto the bottom surface of the filler in a first molding operation; opening the mold while leaving the first sole portion and filler on the bottom mold piston; forming a second mold cavity employing an upper or the like on a clamping last, second portions of said mold sides, and the filler and said first sole portion on the bottom mold piston; and molding a second sole portion around the sides of the first sole portion and over the top and side surfaces of the filler in a second molding operation.

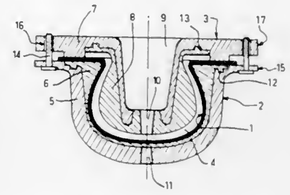
4,123,494

METHOD AND APPARATUS FOR REINFORCING A HOT SHAPED SHELL

Paul Evrard, Gisors, and Michel-Claude Terroy, Puiseux le Hauberger, both of France, assignors to Altulor, Paris, France

Filed Jul. 6, 1977, Ser. No. 813,348
Int. Cl.² B29D *9/00;* **B29F** *1/00*
U.S. Cl. 264—258 **9 Claims**

1. A method for reinforcing a fragile, hot-shaped, hollow shell in a mold, comprising:
   placing said fragile shell against an elastically deformable female member shaped to uniformly mate with said shell and uniformly support said shell against molding stresses;
   pressing a male mold member within said shell against peripheral portions of said shell thereby forming a mold cavity between said mold member and areas of said shell to be covered with a resin material; securing said male mold member to a rigid female support member; injecting



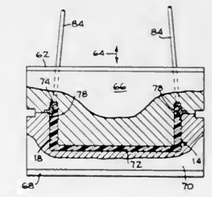
   a molding resin material into said mold cavity and hardening said material; and
   removing said resin coated shell from said mold.

4,123,495

METHOD FOR MAKING MOLDED ARTICLES OF EXPANDED CELLULAR MATERIAL

John A. Abey, Salinas, Calif., assignor to Bud Antle, Inc., Salinas, Calif.

Continuation of Ser. No. 648,244, Jan. 12, 1976, abandoned, which is a division of Ser. No. 510,289, Sep. 30, 1974, abandoned. This application Nov. 7, 1977, Ser. No. 849,053
Int. Cl.² B29F *1/14;* **B29C** *1/14*
U.S. Cl. 264—318 **1 Claim**



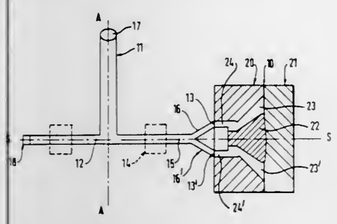
1. A method for molding an elongate surface discontinuity on a wall surface of a part comprising the steps of providing complemental male and female mold sections, supporting said mold sections in confronting juxtaposition at a parting plane to define a cavity having a shape corresponding to the part, forming a recess in the male member bounding the plane and adjacent the surface, the recess having a dimension in the plane greater than the elongate surface discontinuity, providing at least one ejector bar in the surface of the male mold section, said ejector bar having a rear portion remote from the female mold section substantially coextensive with the recess, a surface in coplanar relation to the parting plane when the rear portion resides in the recess, and a front portion extending from the surface which has a surface discontinuity that is the mirror image of the surface discontinuity on the part, filling the cavity with moldable material, curing the moldable material separating the mold sections at the parting plane along a linear path generally parallel to the wall surface and perpendicular to the parting plane, and applying a uniform force to each of a plurality of spaced apart points on the rear portion of the ejector bar to move the ejector bar outward of the male mold section in a direction normal to the parting plane and oblique of the linear path and away from the surface plane discontinuity on the wall surace of the part thereby releasing the part from the male mold section and the ejector bar discontinuity.

4,123,496

PROCESS FOR THE INJECTION MOLDING OF PNEUMATIC TIRES HAVING SYMMETRICAL PARTS OF SIMILAR PHYSICAL CHARACTERISTICS

Achille Gallizia, and Paolo Bandel, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Feb. 7, 1977, Ser. No. 766,038
Claims priority, application Italy, Feb. 19, 1976, 20307 A/76
Int. Cl.² B29F *1/04;* B29H *3/08*
U.S. Cl. 264—329 **9 Claims**



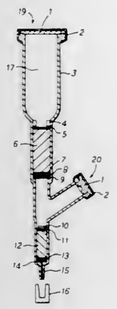
1. A process for the injection molding of pneumatic tires, which comprises forming a primary feed stream of an injectable tire molding compound, obtaining from said primary feed stream a plurality of first intermediate streams predominantly formed from the outer strata of said primary feed stream and another plurality of second intermediate streams predominantly formed from the axial strata of said primary feed stream, combining at least one of said first intermediate streams with at least one of said second intermediate streams to form a combined stream, drawing from said combined stream at least one injection stream, and filling a mold cavity corresponding to each part of each pair of symmetrical parts of the tire with molding compound contained in said injection stream.

4,123,497

PURIFICATION OF TECHNETIUM-99M PERTECHNETATE SOLUTIONS

Clinton F. Ruddock, Amersham, England, assignor to The Radiochemical Centre Limited, England

Filed Feb. 25, 1976, Ser. No. 661,552
Claims priority, application United Kingdom, Mar. 6, 1975, 9479/75
Int. Cl.² C01G *57/00*
U.S. Cl. 423—2 **9 Claims**



1. A method of preparing a solution of pertechnetate ion in water, which method comprises the steps of:

(1) providing an aqueous electrolyte containing cations and anions and containing technetium-99m in the form of pertechnetate ion TcO_4^-; and

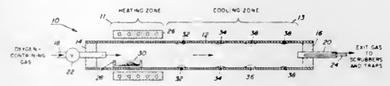
(2) contacting the electrolyte with a cation-exchange material having adsorbed on cation-exchange sites thereof a cation which forms an insoluble salt with said anions in said aqueous electrolyte, whereby there is obtained an aqueous solution of the pertechnetate which is otherwise substantially free of cations and anions.

4,123,498

PROCESS FOR SEPARATING FISSION PRODUCT MOLYBDENUM FROM AN IRRADIATED TARGET MATERIAL

Herman S. Rosenbaum, Fremont; Douglas R. Packard, Sunol, and Harry A. Levin, Livermore, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 17, 1977, Ser. No. 769,576
Int. Cl.² C01G *39/00*
U.S. Cl. 423—2 **12 Claims**



1. A process for the separation and collection of molybdenum-99 from an irradiated enriched uranium-containing target material, the process comprising the steps of

(a) establishing a thermochromatographic zone having a heating zone and a cooling zone cooled by atmospheric cooling,

(b) passing an oxidizing atmosphere successively through said heating and cooling zones,

(c) heating the target material in the heating zone at a temperature less than the melting point of said target material, said temperature being sufficient to drive off fission product gases, oxidize oxide-forming components of the target material and subline sublimable materials including molybdenum-99 trioxide into said oxidizing atmosphere to form a gaseous mixture to be carried into said cooling zone, and

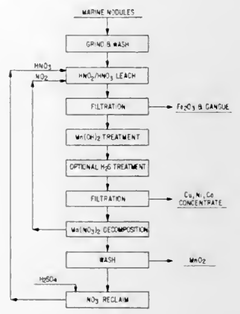
(d) cooling the gaseous mixture in said cooling zone so that the sublimed materials including the molybdenum-99 trioxide are progressively condensed and collected at successive locations in the cooling zone in the form of substantially separate deposits.

4,123,499

RECOVERING METAL VALUES FROM MARINE MANGANESE NODULES

Jay Y. Welsh, Catonsville, and Irving Sochol, Baltimore, both of Md., assignors to Chemetals Corporation, Baltimore, Md.

Filed May 20, 1977, Ser. No. 798,773
Int. Cl.² C01G *45/02*
U.S. Cl. 423—35 **9 Claims**



8. A method of processing marine nodules to selectively recover manganese values, the nodules comprising primarily oxides of Mn and Fe with lesser proportions of compounds of Cu, Ni, Co, alkali metals and alkaline earth metals, which method comprises the steps of:

(a) washing the nodules with water until substantially all soluble chloride salts have been removed;

(b) leaching the nodules at a temperature below about 80° C. with an aqueous solution of nitrous and nitric acids having a pH of 1.0–2.0 under an equilibrium partial pressure of a combination of nitric oxide and water vapor less than atmospheric pressure, wherein said nodules contain a stoichiometric excess of manganese dioxide equivalent in relation to the nitrous acid content of the aqueous solution, to selectively dissolve Mn, Cu, Ni, and Co while retaining substantially all of the iron oxide in the gangue;

(c) filtering the resulting slurry containing Mn, Cu, Ni, Co, alkali metal and alkaline earth metal nitrates at a pH of less than 2.5 to remove insoluble iron oxide and gangue;

(d) adding $Mn(OH)_2$ to the filtrate in a quantity at least equal to the stoichiometric value of the Cu, Ni and Co metals present in the solution to selectively precipitate said metals as hydroxides;

(e) adding to the filtrate a quantity of H_2S in any proportion up to the $Mn(OH)_2$ equivalent present to precipitate additional metal traces as sulfides;

(f) filtering the solution to remove precipitated metals and separate the manganese nitrate solution.

4,123,500

RECOVERY OF PRECIOUS METALS BY OXIDATION IN THE AQUEOUS PHASE OF ASSOCIATED CARBONACEOUS SUPPORT MATERIAL

Gary J. K. Acres, and Alfred J. Bird, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Continuation of Ser. No. 553,066, Feb. 25, 1975, abandoned. This application Jan. 14, 1977, Ser. No. 759,551
Claims priority, application United Kingdom, Mar. 1, 1974, 9393/74
Int. Cl.² C01G *5/00;* C22B *11/04;* B01J *23/96, 21/20*
U.S. Cl. 423—35 **2 Claims**

1. A process for the recovery of silver from photographic film comprising subjecting the film in contact with water at a temperature of not less than 200° C. and a pressure not less than 75 atmospheres in an atmosphere comprising a quantity of oxygen at least sufficient to oxidise substantially all the carbon present, the oxidation being carried out in the presence of a liquid aqueous phase, and recovering silver as the oxide from said water.

2. A process according to claim 1, wherein the oxygen present is substantially pure oxygen.

4,123,501

OXIDATION OF METALLIC IRON TO BLACK OXIDE PIGMENTS

Klaus Köbler; Peter Woditsch, and Karl-Heinz Schultz, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 14, 1977, Ser. No. 787,729
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1976, 2617569
Int. Cl.² C01G *49/02*
U.S. Cl. 423—152 **5 Claims**

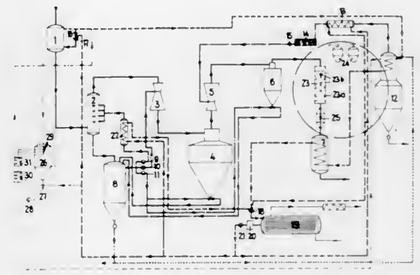
1. A process for the preparation of a black pigment comprising oxidizing a metallic iron-containing starting material in aqueous suspension with an oxygen-containing gas in the presence of about 5 to 40% of finely divided Fe_3O_4 nuclei of magnetite structure and about 2.5 to 200% of at least one electrolyte, percentages being by weight of metallic iron, at a pH of about 4 to 6.5 and a temperature of about 75° C to 100° C, and separating the resultant Fe_3O_4 pigment from the aqueous medium.

4,123,502

PROCESS FOR THE PURIFICATION OF GAS GENERATED IN THE PRESSURE GASIFICATION OF COAL

Heinz Hölter, Beisenstr. 39-41, Gladbeck, Fed. Rep. of Germany; Heinz Gresch, Dortmund-Derne, and Heinrich Igelbuscher, Gladbeck, both of Fed. Rep. of Germany, assignors to Heinz Hölter, Fed. Rep. of Germany

Filed Aug. 15, 1975, Ser. No. 605,074
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1975, 2504839; Feb. 28, 1975, 2508666; Mar. 6, 1975, 2509667; Mar. 6, 1975, 2509733; Mar. 6, 1975, 2509789; Mar. 7, 1975, 250994
Int. Cl.² B01D *53/34;* C10J *3/00*
U.S. Cl. 423—230 **40 Claims**



1. In a process for purifying gas (generated in pressure gasification of coal, under pressure, at a temperature within the range of from 550° to 1000° C. and containing tar, other heavy hydrocarbons, dust and hydrogen sulfide) which comprises washing the gas with a washing liquid, the improvement wherein the gas is not contacted with water, the washing liquid is a tar oil 95 percent of which has a boiling temperature within the range of from 250° to 360° C., the gas is preliminarily cooled to a temperature within the last-noted range prior to contact with the tar oil and the gas is cooled during the washing only to a temperature which is within the boiling temperature range of the tar oil.

4,123,503

CATALYSIS OF PHOSPHAZENE CYCLICS TO POLYMER, USING LEWIS ACID COMPOUNDS

Dennis L. Snyder, Bolivar; Mark L. Stayer, Jr., Suffield, and Jung W. Kang, Clinton, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 606,802, Aug. 22, 1975, abandoned. This application Mar. 23, 1977, Ser. No. 771,221
Int. Cl.² C01B *25/10*
U.S. Cl. 423—300 **6 Claims**

1. A process for polymerizing cyclic $(NPCl_2)_n$ in which n is an integer smaller than 7 which comprises heating said polydichlorophosphazene in the presence of an effective amount of a catalyst comprising a Lewis Acid compound selected from the group consisting of (1) organo metallic compounds of a Group IIIA metal represented by the general formula R_aMX_b in which M is a metal of Group IIIA having a valence of $a+b$, X is anionic, R is a monovalent hydrocarbon radical selected from the group consisting of alkyl, aryl, cycloalkyl, alkaryl and arylalkyl, and a is an integer from 1 to 3 and b is an integer from 0 to 3 and (2) boron halides represented by the formula BX_3 wherein X is selected from the group consisting of F, Cl and Br and at temperatures up to about 290° C. to produce a substantially linear $(NPCl_2)_m$ polymer in which m is between about 10 and about 50,000.

4,123,504

METHOD OF MAKING DIAMONDS SYNTHETICALLY

Alexandr A. Shulzhenko, Novo-Konstantinovskaya, 17, kv. 27, and Anatoly F. Getman, Syretskaya, 38, kv. 2, both of Kiev, U.S.S.R.

Continuation of Ser. No. 683,705, May 6, 1976, abandoned, which is a continuation of Ser. No. 582,461, May 28, 1975, abandoned, which is a continuation of Ser. No. 464,431, Apr. 25, 1974, abandoned, which is a division of Ser. No. 292,396, Sep. 26, 1972, Pat. No. 3,906,082, which is a continuation of Ser. No. 68,006, Aug. 28, 1970, abandoned. This application Apr. 4, 1977, Ser. No. 784,593

Int. Cl.[2] C01B *31/06*

U.S. Cl. 423—446 1 Claim

1. A method of making diamonds synthetically, comprising the steps of: preparing a reaction mixture comprising a carbonaceous material and a combination of components one of which comprises calcium carbonate, while the other component includes at least a single element selected from a group consisting of aluminum and boron; and subjecting said reaction mixture to a temperature of at least about 1800° C. and a pressure corresponding to a selected temperature within the diamond stable region during the time required for forming a diamond.

4,123,505

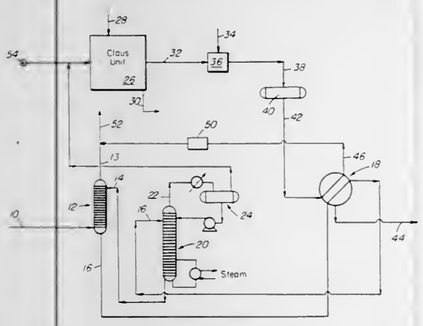
REDUCING SO_2 IN REFINERY OFF GAS

Albert E. Williamson, Belllingham, Wash., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 688,805, May 21, 1976, abandoned. This application Feb. 2, 1978, Ser. No. 874,454

Int. Cl.[2] C01B *17/16, 17/02*

U.S. Cl. 423—564 7 Claims



1. In the process of reducing sulfur moieties from a fuel gas stream containing hydrogen sulfide by scrubbing the fuel gas with an amine solution whereby transferring hydrogen sulfide from said fuel gas to said solution and forming a fuel gas leaner in hydrogen sulfide and an amine solution richer in hydrogen sulfide; springing an intermediate gas comprising hydrogen sulfide from said rich amine solution and simultaneously regenerating said amine scrubbing solution; recirculating said regenerated amine solution to said scrubbing; and converting hydrogen sulfide in said intermediate gas with oxygen, to elemental sulfur and a tail gas comprising sulfur dioxide; the improvement which comprises converting sulfur dioxide in said tail gas to hydrogen sulfide by reducing such with a reducing agent comprising hydrogen; condensing water from said reduction product; and admixing said tail gas derived hydrogen sulfide with said fuel gas leaner in hydrogen sulfide.

4,123,506

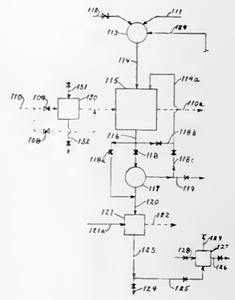
UTILIZATION OF IMPURE STEAM CONTAMINATED WITH HYDROGEN SULFIDE

Jerome S. Spevack, New Rochelle, NY, assignor to Deuterium Corporation, White Plains, N.Y.

Filed Aug. 6, 1976, Ser. No. 712,170

Int. Cl.[2] F22G *1/00;* F03G *7/02;* C01B *17/16, 31/20*

U.S. Cl. 423—566 82 Claims



1. A process controlling emissions of hydrogen sulfide from a system which utilizes a flow of geothermal steam at superatmospheric pressure and produces discharges of liquid water and of noncondensable gases, said steam containing said noncondensable gases together with hydrogen sulfide as impurities therein, which process comprises:

(a) providing a flow of aqueous liquid phase containing reactant dispersed therein, said reactant consisting essentially of at least one metal compound, the metal of which is selected from the class of metals having an electrode oxidation potential positive with respect to hydrogen in the electromotive series, which metal compound has the capability of undergoing reaction with aqueous hydrogen sulfide at the temperature of and in the presence of said flow of geothermal steam to form a solid metal sulfide reaction product suspended in said flow of liquid, said metal sulfide having a solubility product, at 25° C., smaller than 10×10^{-15},

(b) passing said flow of geothermal steam at superatmospheric pressure in contact with said flow of aqueous liquid phase to extract hydrogen sulfide from said flow of geothermal steam by transferring the same into said liquid flow and effecting said reaction with hydrogen sulfide therein,

(c) recovering from said contact the resulting flow of steam at superatmospheric pressure containing noncondensable gases, but depleted in hydrogen sulfide, and the resulting flow of aqueous liquid and metal sulfide reaction product,

(d) delivering said recovered flow of steam at superatmospheric pressure to said system for said utilization as an energy source,

(e) condensing liquid water from said steam in said system,

(f) discharging from said system liquid water condensate substantially free of hydrogen sulfide noncondensable, and

(g) discharging from said system said noncondensable gases substantially free of hydrogen sulfide.

4,123,507

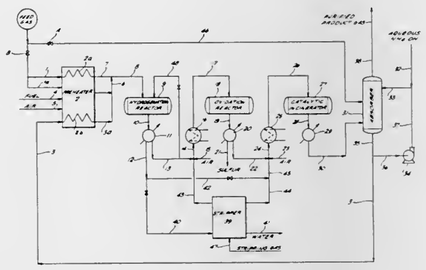
PROCESS FOR REMOVING SULFUR AND NO_x COMPONENTS FROM A GAS STREAM

Robert H. Hass, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 738,134, Nov. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 605,638, Aug. 18, 1975. This application Jun. 23, 1977, Ser. No. 809,285

Int. Cl.[2] C01B *17/04;* B01D *53/34*

U.S. Cl. 423—573 G 25 Claims



1. A process for the desulfurization of a feed gas stream containing one or more sulfur components selected from the class consisting of SO_2, COS, CS_2, SO_3, light mercaptans, and sulfur vapor, which process comprises the steps of:

(1) hydrogenating sufficient of the SO_2, SO_3, light mercaptans, and sulfur vapor components and/or hydrolyzing sufficient of the CS_2 and COS components contained in a mixed gas stream comprising said feed gas stream and a vaporized bleed stream recycled from step (7) hereinafter such that, by reaction with sufficient of one or more components selected from the class consisting of H_2, CO plus water vapor, and water vapor, at least about 80% of the non-H_2S sulfur components in the mixed gas stream are converted to H_2S;

(2) contacting at a temperature in excess of 250° F. a mixture of product gas withdrawn from step (1) and a gaseous oxidant comprising oxygen and/or SO_2 with a solid oxidation catalyst so as to oxidize in excess of 50% of the H_2S contained in said product gas to elemental sulfur;

(3) separating free sulfur from the gases produced in step (2), thereby obtaining an off-gas stream containing residual H_2S;

(4) oxidizing with sufficient oxygen at least 90% of the residual H_2S in said off-gas stream to SO_2;

(5) absorbing essentially all of the SO_2 in the SO_2-containing gas obtained in step (4) in an aqueous solution maintained at a pH between about 3.0 and about 6.6, said aqueous solution comprising a component selected from the class consisting of ammonia, soluble amines, ammonium compounds, and combinations thereof;

(6) withdrawing from step (5) a liquid bleed stream containing absorbed SO_2;

(7) vaporizing said bleed stream and recycling vapors so produced to step (1); and

(8) discharging from step (5) a purified product gas stream essentially free of sulfur components including H_2S.

4,123,508

APPARATUS AND METHOD FOR MANUFACTURING DEUTERIUM ENRICHED WATER

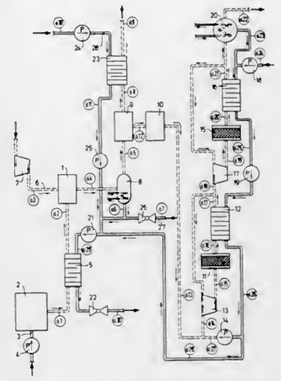
Charles Mandrin, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 20, 1976, Ser. No. 725,148

Claims priority, application Switzerland, Sep. 22, 1975, 12269/75

Int. Cl.[2] C01B *5/00*

U.S. Cl. 423—580 13 Claims



1. An apparatus for manufacturing deuterium-enriched water comprising

a hydrogen generator for generating hydrogen;

a high pressure steam generator for generating a flow of steam, said steam generator being connected to said hydrogen generator to deliver a flow of steam thereto;

at least one isotope exchange column disposed between said steam generator and said hydrogen generator in the path of the steam flow;

a condensor connected to said hydrogen generator to receive an outflow mixture of hydrogen, steam and nitrogen therefrom for condensing deuterium-enriched water from said mixture; and

at least one exchange stage connected to said condensor downstream of said hydrogen generator relative to a flow of steam and hydrogen from said condensor, said exchange stage including a separating means for a deuterium isotope exchange between hydrogen and steam and an exchange column for an isotope exchange between a flow of steam from said separating means and a flow of water taken from a water source.

9. A method of manufacturing deuterium-enriched water comprising the steps of

passing a flow of heated steam into isotope exchange with a stream of deuterium-enriched water to enrich the steam with deuterium;

thereafter passing the flow of deuterium-enriched steam into a hydrogen generator;

dissociating hydrocarbons in the presence of the steam in the hydrogen generator to produce a flow containing at least deuterium-enriched hydrogen and steam;

thereafter condensing deuterium-enriched water from the flow of deuterium-enriched hydrogen and steam in a condensor downstream of the hydrogen generator while emitting a vaporized mixture of deuterium-enriched hydrogen and steam;

supplying a portion of the deuterium-enriched water in the condensor as a first part of said stream for enriching said flow of heated steam;

feeding the non-condensed mixture in the condensor to at least one exchange stage consisting of a separating means with a catalyst sufficient to perform an enrichment of the steam component of said mixture with deuterium while

depleting deuterium from the hydrogen component of said mixture and subsequently passing said mixture into an exchange column for deuterium exchange in counterflow to a flow of water to enrich said flow of water in deuterium while depleting the deuterium from said steam component;

exhausting the hydrogen from the exchange stage while passing the deuterium-enriched water as a second part of said stream for enriching said flow of heated steam; and

supplying a remainder of the deuterium-enriched water in the condensor as a raw material to a plant for manufacturing heavy water.

4,123,509

PREGNANCY TEST

Upendra K. Banik, and Morris L. Givner, both of Pierrefonds, Canada, assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 534,400, Dec. 19, 1974, abandoned. This application Apr. 11, 1977, Ser. No. 786,721

Int. Cl.[2] **B01D** *13/00;* **G01N** *1/00, 31/00, 33/16*

U.S. Cl. 424—12 **9 Claims**

1. A pregnancy test method suitable for detection of the human chorionic gonadotropin of pregnancy in urine at a concentration as low as about 40 m.i.u./ml of urine and capable of detecting pregnancy as early as day 26 of a regular 28 day menstrual cycle which comprises

(a) clarifying a sample of the urnine to be tested;

(b) subjecting about 5 to 50 ml of the clarified urine sample to absorbent induced ultrafiltration through an ultrafiltration membrane, said membrane having been prewashed with 0.1 to 5% aqueous solution of a protein selected from the group consisting of bovine serum albumin, rabbit serum albumin, human serum albumin, bovine gamma globulin, human gamma globulin, myoglobin, fibrinogen, human hemoglobin, and keyhold limpet hemocyanin so that adsorption of human chorionic gonadotropin from the sample onto the membrane is substantially reduced, and said membrane having a molecular weight cut-off from about 15,000 to about 35,000, whereby human chorionic gonadotropin is retained in the sample;

(c) continuing the ultrafiltration until the retentate sample is one-tenth to one-five hundredth its original volume;

(d) diluting the retentate sample with sufficient water to provide a retentate sample of about 0.5 ml; and

(e) contacting the retentate sample with the appropriate amount of an immunological reagent for detecting the presence of human chorionic gonadotropin in the retentate sample.

6. A pregnancy test method suitable for detection of the human chorionic gonadotropin of pregnancy in urine at a concentration as low as about 40 m.i.u./ml of urine and capable of detecting pregnancy as early as day 26 of a regular 28 day menstrual cycle which comprises:

(a) clarifying a sample of the urine to be tested;

(b) contacting the urine sample before or after clarification with a sufficient amount of a protein selected from the group consisting of bovine serum albumin, rabbit serum albumin, human serum albumin, bovine gamma globulin, human gamma globulin, myoglobin, fibrinogen, human hemoglobin, and keyhold limpet hemocyanin to give a concentration of the protein in the urine of from 0.001 to 1.0% so that absorption of human chorionic gonadotropin from the sample onto the membrane is substantially reduced;

(c) subjecting about 5 to 50 ml of the clarified urine sample to absorbent induced ultrafiltration through an ultrafiltration membrane having a molecular weight cut-off from about 15,000 to about 35,000, whereby human chorionic gonadotropin is retained in the sample;

(d) continuing the ultrafiltration until the retentate sample is one-tenth to one-five hundredth its original volume;

(e) diluting the retentate sample with sufficient water to provide a retentate sample of about 0.5 ml; and

(f) contacting the retentate sample with the appropriate amount of an immunological reagent for detecting the presence of human chorionic gonadotropin in the retentate sample.

9. A pregnancy test method suitable for detection of the human chorionic gonadotropin of pregnancy in urine at a concentration as low as about 40 m.i.u./ml of urine and capable of detecting pregnancy as early as day 26 of a regular 28 day menstrual cycle which comprises:

(a) clarifying a sample of the urine to be tested through a filter, said filter having been pretreated with an 0.1 to 5.0% aqueous solution of a protein selected from the group consisting of bovine serum albumin, rabbit serum albumin, human serum albumin, bovine gamma globulin, human gamma globulin, myoglobin, fibrinogen, human hemoglobin, and keyhold limpet hemocyanin so that absorption of human chorionic gonadotropin from the sample onto the membrane is substantially reduced;

(b) subjecting about 5 to 50 ml of the clarified urine sample to absorbent induced ultrafiltration through an ultrafiltration membrane having a molecular weight cut-off from about 15,000 to about 35,000, whereby human chorionic gonadotropin is retained in the sample;

(c) continuing the ultrafiltration until the retentate sample is one-tenth to one-five hundredth its original volume;

(d) diluting the retentate sample with sufficient water to provide a retentate sample of about 0.5 ml; and

(e) contacting the retentate sample with the appropriate amount of an immumological reagent for detecting the presence of human chorionic gonadotropin in the retentate sample.

4,123,510

METHOD FOR THE DETERMINATION OF GONADOTROPINS

Upendra K. Banik, and Morris L. Givner, both of Pierrefonds, Canada, assignors to American Home Products Corp. (Del.), New York, N.Y.

Continuation-in-part of Ser. No. 786,721, Apr. 11, 1977, which is a continuation-in-part of Ser. No. 534,400, Dec. 19, 1974, abandoned. This application Jun. 14, 1977, Ser. No. 806,569

Int. Cl.[2] **B01D** *13/00;* **G01N** *1/00, 31/00, 33/16*

U.S. Cl. 424—12 **12 Claims**

1. A method suitable for detection of luteinizing hormone in urine at a concentration as low as about 25 m.I.U./ml of urine and capable of detecting ovulation in a cycling woman, which comprises:

(a) clarifying a sample of the urine to be tested;

(b) contacting the urine sample before, during or after clarification with 0.1 to 5% aqueous solution of a protein selected from the group consisting of bovine serum albumin, rabbit serum albumin, human serum albumin, gamma globulin, myoglobin, fibrinogen, human hemoglobin, and keyhold limpet hemomycin so that adsorption of luteinizing hormone from the sample onto the membrane is substantially reduced;

(c) subjecting about 5 to 50 ml of the clarified urine sample to absorbent induced ultrafiltration through an ultrafiltration membrane having a molecular weight cut-off from about 5,000 to about 50,000, whereby luteinizing hormone is retained in the sample;

(d) continuing the ultrafiltration until the retentate sample is concentrated to one-tenth to one-five hundredth its original volume;

(e) diluting the retentate sample with sufficient water to provide a retentate sample of about 0.5 ml; and

(f) contacting the retentate sample with the appropriate amount of an immunological reagent for detecting the presence of luteinizing hormone in the retentate sample.

3. A method for detecting follicle stimulating hormone or human menopausal gonadotropin in urine at a concentration of 15 or more m.I.U./ml of urine, which comprises:

(a) clarifying a sample of the urine to be tested;

(b) contacting the urine sample before, during or after clarification with 0.1 to 5% aqueous solution of a protein selected from the group consisting of bovine serum albumin, rabbit serum albumin, human serum albumin, gamma globulin, myoglobin, fibrinogen, human hemoglobin, and keyhold limpet hemomycin so that adsorption of follicle-stimulating hormone or human menopausal gonadotropin from the sample onto the membrane is substantially reduced;

(c) subjecting about 5 to 50 ml of the clarified urine sample to absorbent induced ultrafiltration through an ultrafiltration membrane having a molecular weight cut-off from about 5,000 to about 50,000, whereby follicle-stimulating hormone or human menopausal gonadotropin is retained in the sample;

(d) continuing the ultrafiltration until the retentate sample is one-tenth to one-five hundredth its original volume;

(e) diluting the retentate sample with sufficient water to provide a retentate sample of about 0.5 ml; and

(f) contacting the retentate sample with the appropriate amount of an immunological reagent for detecting the presence of follicle-stimulating hormone or human menopausal gonadotropin.

11. A test method suitable for detection of pituitary gonadotropins in urine at a concentration as low as about 15 m.I.U./ml of urine, which comprises:

(a) clarifying a sample of the urine to be tested through a filter, said filter having been pretreated with an 0.1 to 5.0% aqueous solution of a protein selected from the group consisting of bovine serum albumin, rabbit serum albumin, human serum albumin, gamma globulin, myoglobin, fibrinogen, human hemoglobin, and keyhold limpet hemocyanin so that adsorption of the gonadotropin from the sample onto the membrane is substantially reduced;

(b) subjecting about 5 to 50 ml of the clarified urine sample to absorbent induced ultrafiltration through an ultrafiltration membrane having a molecular weight cut-off from about 5,000 to about 50,000, whereby the gonadotropin is retained in the sample;

(c) continuing the ultrafiltration until the retentate sample is one-tenth to one-five hundredth its original volume;

(d) diluting the retentate sample with sufficient water to provide a retentate sample of about 0.5 ml; and

(e) contacting the retentate sample with the appropriate amount of an immunological reagent for detecting the presence of the gonadotropin in the retentate sample.

4,123,511

THERAPEUTIC COPPER COMPOSITIONS

York Heintze, Bochum, Fed. Rep. of Germany, assignor to Gertrude Fischer, East Liverpool, Ohio

Continuation of Ser. No. 487,713, Jul. 11, 1974, abandoned. This application Jul. 2, 1975, Ser. No. 592,463

Int. Cl.[2] **A61K** *9/14;* **A61L** *9/04;* **A61K** *33/34, 31/695*

U.S. Cl. 424—46 **7 Claims**

1. A non-staining, water-removable sprayable therapeutic copper-containing composition having anti-spasmodic and fungicidal activity for external application to human skin for the treatment of muscle spasms and cramps and athlete's foot fungus which composition consists essentially of a therapeutically potentiating combination of about 2–10% of the composition of a suspension of metallic copper powder or about 0.25–0.75% of the composition of a solution of copper oleate, about 0.4–0.6% of the composition of colloidal silica and about 5% oil of rosemary in isopropyl or ethyl alcohol and methylene chloride, said percentages being by weight.

4,123,512

ANTIBACTERIAL ORAL COMPOSITION

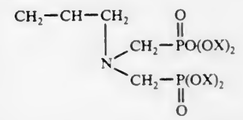
Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 629,749, Nov. 7, 1975, Pat. No. 4,042,679. This application Apr. 25, 1977, Ser. No. 790,782

Int. Cl.[2] **A61K** *7/16, 7/22*

U.S. Cl. 424—54 **9 Claims**

1. An oral composition comprising an oral vehicle, an amidine antibacterial antiplaque agent tending to stain dental surfaces and a water soluble polymeric polyphosphonic compound having the recurring group:



wherein X is selected from the group consisting of hydrogen and an orally acceptable cation and said compound antistain additive has a molecular weight of at least about 2,000.

4,123,513

QUATERNARY COMPOUNDS HAVING ANTI-MICROBIAL ACTIVITY

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 606,138, Aug. 20, 1975, abandoned, which is a division of Ser. No. 400,097, Sep. 24, 1973, Pat. No. 3,928,411, which is a continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application Jun. 2, 1977, Ser. No. 802,761

Int. Cl.[2] **A61K** *7/22, 31/14;* **C07C** *87/30*

U.S. Cl. 424—54 **6 Claims**

1. A chemical compound having the structural formula:

$$[RZ(CH_2)_nN^+(CH_3)_2R']X^-$$

wherein R is 1-adamantyl, R′ is a long chain alkyl group of 10 to 18 carbon atoms, Z is selected from the group consisting of CH_2 and CHOH, *n* is an integer 1 to 3 and X is an anion.

5. An anti-microbial pharmaceutical composition comprising about 0.1–10% by weight of a chemical compound having the structural formula:

$$[RZ(CH_2)_nN^+(CH_3)_2R']X^-$$

wherein R is 1-adamantyl, R′ is a long chain alkyl group of 10 to 18 carbon atoms, Z is selected from the group consisting of CH_2 and CHOH, *n* is an integer 1 to 3 and X is an anion, admixed with a pharmaceutical vehicle, wherein said pharmaceutical vehicle comprises an inert carrier and a surface active agent in which said compound is dissolved or a solid inert carrier.

4,123,514

QUATERNARY COMPOUNDS HAVING ANTI-MICROBIAL ACTIVITY

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 606,138, Aug. 20, 1975, abandoned, which is a division of Ser. No. 400,097, Sep. 24, 1973, Pat. No. 3,928,411, which is a continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application Jun. 2, 1977, Ser. No. 802,763

Int. Cl.[2] **A61K** *7/22, 31/27;* **C07C** *69/00*

U.S. Cl. 424—54 **4 Claims**

1. A chemical compound having the structural formula:

$$[RNHCOO(CH_2)_nN^+(CH_3)_2R']X^-$$

wherein R is 1-adamantyl, R′ is a long chain alkyl group of 10 to 18 carbon atoms, *n* is an integer 1 to 3 and X is an anion.

3. An anti-microbial pharmaceutical composition compris-

ing about 0.1–10% by weight of a chemical compound having the structural formula:

$$[RNHCOO(CH_2)_nN^+(CH_3)_2R']X^-$$

wherein R is 1-adamantyl, R′ is a long chain alkyl group of 10 to 18 carbon atoms, *n* is an integer 1 to 3 and X is an anion, admixed with a pharmaceutical vehicle, wherein said pharmaceutical vehicle comprises an inert carrier and a surface active agent in which said compound is dissolved or a solid inert carrier.

4,123,515

QUATERNARY COMPOUNDS HAVING ANTI-MICROBIAL ACTIVITY

Robert A. Bauman, New Brunswick, NJ, assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 606,138, Aug. 20, 1975, abandoned, which is a division of Ser. No. 400,097, Sep. 24, 1973, Pat. No. 3,928,411, which is a continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application Jun. 2, 1977, Ser. No. 802,764

Int. Cl.[2] A61K *7/22, 31/27*

U.S. Cl. 424—54 **5 Claims**

1. An anti-microbial pharmaceutical composition comprising about 0.1–10% by weight of a chemical compound having the structural formula:

$$[RNHCSO(CH_2)_nN(CH_3)_2R^1+]X^-$$

wherein R is 1-adamantyl, R^1 is a long chain alkyl group of 10 to 18 carbon atoms, *n* is an integer from 1 to 3, and X is a compatible anion admixed with a pharmaceutical carrier.

4,123,516

QUATERNARY COMPOUNDS HAVING ANTI-MICROBIAL ACTIVITY

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 606,138, Aug. 20, 1975, abandoned, which is a division of Ser. No. 400,097, Sep. 24, 1973, Pat. No. 3,928,411, which is a continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application Jun. 2, 1977, Ser. No. 802,760

Int. Cl.[2] A61K *7/22, 31/215*

U.S. Cl. 424—54 **6 Claims**

1. anti anti-microbial pharmaceutical composition comprising about 0.1–10% by weight of a chemical compound having the structural formula

$$[RCOO(CH_2)_nN(CH_3)_2R^{1+}]X^-$$

wherein R is 1-adamantyl, R^1 is a long chain alkyl group of 10 to 18 carbon atoms, *n* is an integer from 1 to 3 and X is a compatible anion, admixed with a pharmaceutical vehicle, wherein said pharmaceutical vehicle comprises an inert carrier and a surface active agent in which said compound is dissolved or a solid inert carrier.

4,123,517

TOOTHPASTE COMPOSITIONS

Eric Baines, Flixton, and Kenneth Harvey, Wilmslow, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

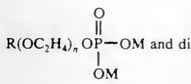
Filed Dec. 31, 1975, Ser. No. 645,743

Claims priority, application United Kingdom, Jan. 15, 1975, 1798/75

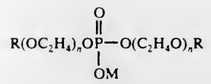
Int. Cl.[2] A61K *7/16, 7/18*

U.S. Cl. 424—57 **7 Claims**

1. A toothpaste comprising a dentally acceptable oral vehicle and dispersed therein about 20–75% by weight of a polishing material including ground alpha-alumina trihydrate having an average particle diameter in a range of about 2 to 20 microns wherein the pH of a 10–20% by weight of a slurry of the alpha alumina trihydrate prior to grinding is in the range of about 7.5–9.5 and the pH of such a slurry after said grinding is higher than before grinding and is above 8, said alpha alumina trihydrate being present in amount of at least 10% by weight of the toothpaste, and about 0.5–3% by weight of an anionic phosphate ester surface active agent comprising a mixture of mono ester of the formula



and diester of the formula



wherein R is an alkyl group of 10 – 20 carbon atoms, *n* is an integer from 1 – 6 and M is selected from the group consisting of hydrogen, alkali metal and ammonium, said toothpaste having a pH toothpaste of about 5 – 9, said anionic phosphate ester surface active agent being effective to provide consistency and body to said toothpaste and render said toothpaste compatible with an unlined aluminum container.

4,123,518

INSECTICIDAL PHOSPHATE ESTER-BASED SOLID COMPOSITION WITH DEPOT GAS ACTION

Wolfgang Behrenz, Overath-Steinenbrueck, and Klaus Burkhardt, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 624,215, Oct. 20, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,390

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1974, 2450677

Int. Cl.[2] A01N *17/00*

U.S. Cl. 424—78 **5 Claims**

1. An insecticidal preparation having a depot gas action and comprising an insecticidally effective amount of dimethyl-2,2-dichlorovinyl thiophosphate in admixture with an unsaturated polyester copolymer resin as carrier, the resin being a condensation product of maleic anhydride, phthalic anhydride, propanediol, dipropylene glycol and styrene, whereby the preparation exhibits extended insecticidal activity.

4,123,519

INJECTABLE CONTRACEPTIVE VACCINE AND METHOD

Ronald L. Tribble, Savannah, and Charles M. Stagg, St. Joseph, both of Mo., assignors to Philips Roxane, Inc., St. Joseph, Mo.

Continuation of Ser. No. 715,163, Aug. 17, 1976, abandoned. This application Feb. 23, 1978, Ser. No. 880,506

Int. Cl.[2] A61K *39/00*

U.S. Cl. 424—88 **4 Claims**

1. A method of inducing a contraceptive effect in a female canine having had at least one previous estrous cycle, which method comprises parenterally administering to said female canine during the period subsequent to estrous, in an amount sufficient to bind at least 70 pg of estradiol-17 beta per ml of serum, an injectable composition capable of preventing conception in a female canine, said injectable composition being produced by a process which comprises the steps of: esterifying the hydroxyl groups of estradiol-17 beta with succinic anhydride to form the estradiol-17 beta hemisuccinate and coupling said hemisuccinate to the amino group of a protein selected from the group consisting of keyhole limpet hemocyanin, bovine serum albumin and human serum albumin, about 5 to about 40 molecules of estradiol-17 beta being bound to each molecule of the protein, to obtain an antigen and emulsifying said antigen in an adjuvant in the order of 1 mg of antigen per 2 mls of adjuvant therefor.

4,123,520

METHOD FOR PREPARING HIGH MOLECULAR WEIGHT MENINGOCOCCAL GROUP C VACCINE

Arpi Hagopian, Clark; Dennis J. Carlo, South Amboy, and Thomas H. Stoudt, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 1, 1977, Ser. No. 820,665

Int. Cl.[2] A61K *39/02*

U.S. Cl. 424—92 **5 Claims**

1. A process for the preparation of antigenic meningococcal polysaccharide active against Group C meningococci wherein at least 80% of the polysaccharide has a molecular weight in excess of 100,000,000 daltons comprising:

a. growing a culture of Group C meningococci in a suitable culture media;
b. isolating the polysaccharide from culture by precipitation with a quaternary ammonium halide salt;
c. dissolving the precipitate in aqueous calcium chloride solution;
d. precipitating the polysaccharide by bringing the aqueous polysaccharide solution to 75%–85% v/v in ethanol;
e. dissolving the precipitate in buffer at a pH of 6.8 to 7.2, and extracting with aqueous phenol solution;
f. precipitating the polysaccharide by bringing the phenol extracted solution to a concentration of 40%–50% v/v in ethanol; and
g. collecting the precipitate.

2. A method of purifying a polysaccharide of Group C meningococci comprising dissolving a precipitate of the polysaccharide in an aqueous buffer at pH 6.8 to 7.2; extracting the solution comprising the polysaccharide a plurality of times with an aqueous phenol solution; bringing the polysaccharide solution to a concentration of 30%–33% v/v in ethanol and ultracentrifuged; then bringing the supernatant fluid to a concentration of 40%–50% v/v in ethanol to precipitate the polysaccharide, and collecting the polysaccharide.

4,123,521

ANTIBIOTIC U-53,946 AND PROCESS FOR PREPARING THE SAME

Ladislav J. Hanka, and Paul F. Wiley, both of Kalamazoo, MI, assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 22, 1977, Ser. No. 789,644

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—121 **5 Claims**

1. Antibiotic U-53,946, which is active against Gram-positive bacteria, and which in its essentially pure form:

(a) has the molecular formula $C_{61}H_{107}N_{11}O_{14}$;
(b) has the following elemental analysis: C, 60.13, 59.73; H, 9.21, 8.92; N, 12.16, 11.97; O, 18.44;
(c) has a specific rotation of $[\alpha]_D^{25} = -26°$ (c, 0.9175 EtOH);
(d) is soluble in lower alcohols, for example, methanol, ethanol and butanol; ketones, for example, methyl ethyl ketone, halogenated solvents, ethyl acetate, or other ester-type solvents; and is relatively insoluble in aliphatic hydrocarbons;
(e) has a characteristic infrared adsorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings; and,
(f) has a characteristic UV spectrum as shown in FIG. 2 of the drawings.

4,123,522

CONTROL OF BLOAT IN RUMINANTS

Jeremiah J. O'Connor, Flemington; Raymond R. Pilote, Somerset, both of N.J., and Wayne H. Linkenheimer, Washington Crossing, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 15, 1977, Ser. No. 806,793

Int. Cl.[2] A61K *35/70*

U.S. Cl. 424—116 **12 Claims**

1. The method of treating bloat in ruminants comprising administering an effective amount of the antibiotic S 15–1 to the bloated ruminant.

4,123,523

ANALGESIC AND SEDATIVE POLYPEPTIDES

Anand S. Dutta; James J. Gormley; Christopher F. Hayward; John S. Morley; Nigel N. Petter, and Gilbert J. Stacey, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 3, 1977, Ser. No. 803,233

Claims priority, application United Kingdom, Jun. 21, 1976, 25643/76; Oct. 28, 1976, 44840/76

Int. Cl.[2] A61K *37/02;* **C07C** *103/52*

U.S. Cl. 424—177 **10 Claims**

1. A polypeptide of the formula:-

H-Tyr-A-Gly-Phe-B-P-E I

in which A is selected from the group consisting of D-Ala, D-Ser, D-Met and Gly; B is selected from the group consisting of Leu and Met, E is selected from the group consisting of a hydroxy and amino radical and an alkoxy radical of 1 to 6 carbons; and P is a peptide residue selected from those of the formula:-

Lys-Lys II

Asn-Ala-Y-Lys-Lys III

Ala-Ile-X-Lys-Asn-Ala-Y-Lys-Lys IV

Thr-Leu-Phe-Lys-Asn-Ala-Ile-X-Lys-Asn-Ala-Y-Lys-Lys V

and

Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn
Ala-Ile-X-Lys-Asn-Ala-Y-Lys-Lys VI

in which X is Val or Ile and Y is Tyr or His; and the pharmaceutically-acceptable acid-addition salts thereof, and where the polypeptide of the formula I contains a free carboxygroup, the pharmaceutically-acceptable base-addition salts thereof.

9. A method of producing analgesia in warm-blooded animals including man which comprises administering an analgesically-effective amount of a polypeptide as claimed in claim **1**.

4,123,524

SYNTHESIS OF 6-AMINO-4-METHYL-8-(β-D-RIBOFURANOSYL)PYRROLO[4,3,2-DE]PYRIMIDO[4,5-C]PYRIDAZINE-5′-PHOSPHATE AS A NOVEL COMPOUND AND ITS UTILITY AGAINST L-1210 MOUSE LEUKEMIA

Leroy B. Townsend; Arthur F. Lewis, and Linda W. Roti Roti, all of Salt Lake City, Utah, assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jun. 8, 1977, Ser. No. 804,601

Int. Cl.[2] A61K *31/70;* **C07H** *19/02*

U.S. Cl. 424—180 **2 Claims**

2. The method of alleviating and treating L-1210 mouse leukemia which comprises injecting intraperitoneally over a 9-day administration span daily an anti-leukemic dosage of the compound 6-amino-4-methyl-8-(β-D-ribofuranosyl)pyrrolo[4,3,2-de]pyrimido[4,5-c]pyridazine-5′-phosphate in a dose range of 8–62 mg/kg.

4,123,525

SUBLIMABLE INSECTICIDAL COMPOSITIONS CONTAINING TRIISOPROPYL- OR TRITERTIARY-BUTYL-S-TRIOXANE CARRIERS

Yasuhiko Ueno, Kawanishi; Yoshito Saeki, Suita; Takuya Akiyama, Nagaokakyo, and Masao Fujita, Amagasaki, all of Japan, assignors to Ogawa & Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 463,176, Apr. 22, 1974, abandoned. This application Oct. 29, 1976, Ser. No. 737,196

Claims priority, application Japan, Jun. 15, 1973, 48/68013; Jun. 15, 1973, 48/68014

Int. Cl.[2] **A01N** *9/36, 9/28, 9/20*

U.S. Cl. 424—200 **20 Claims**

1. In a sublimable insecticidal composition in the form of rough grains, pulverized powders or tablets consisting essentially of an effective amount of at least one phosphate or carbamate insecticide and a carrier therefor, said insecticide being intimately mixed with the carrier, the improvement wherein the carrier is triisopropyl-s-trioxane having a melting point of 62.5° C. or tritertiarybutyl-s-trioxane having a melting point of 92.0° C.

4,123,526

THIONOPHOSPHATE INSECTICIDE ACTIVATORS

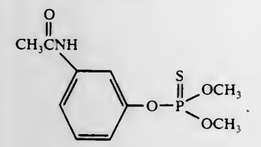
George B. Large, Orinda, Calif., and Leland S. Pitt, Greenville, Miss., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 24, 1975, Ser. No. 643,969

Int. Cl.[2] **A01N** *9/36*

U.S. Cl. 424—200 **22 Claims**

1. A method of controlling insects comprising applying to the habitat thereof an insecticidally effective amount of a composition of matter comprising N-(mercaptomethyl)phthalimide S-(O,O-dimethylphosphorodithioate) and an effective amount of an activator having the formula



4,123,527

N-TRICYCLIC DERIVATIVES OF AZETIDINE AND PROCESS FOR THEIR PREPARATION

Piero Melloni, Bresso, Milan; Arturo Della Torre, Gallarate, Varese; Francesco Lauria, Milan; Norina Passerini, Milan; Alessandro Rossi, Milan, and Raffaele Tommasini, Milan, all of Italy, assignors to Carlo Erba, S.p.A., Milan, Italy

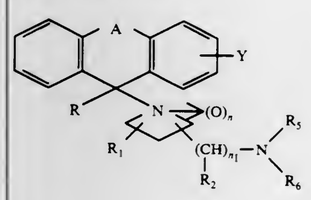
Filed Jan. 9, 1976, Ser. No. 647,980

Claims priority, application Italy, Jan. 24, 1975, 19535 A/75

Int. Cl.[2] **C07D** *205/04;* **A61K** *31/395*

U.S. Cl. 424—244 **58 Claims**

1. A compound of the formula:



wherein

A is a C_1–C_3 alkylene, a C_1–C_3 alkylene substituted by at least one C_1–C_4 alkyl; a C_2–C_3 alkenylene; a cyclopropylene;

R, R_1 and R_2, each independently represent a hydrogen atom or a C_1–C_6 alkyl;

Y is a hydrogen atom; a C_1–C_6 alkyl; a halogen atom; a trifluoromethyl; an $—OR_3$, wherein R_3 is hydrogen or C_1–C_6 alkyl; or a $—SO_2R_4$, wherein R_4 is C_1–C_6 alkyl, an amino or an amino substituted by 1–2 C_1–C_6 alkyls;

n is zero or 1;

n_1 is zero, 1 or 2;

R_5 and R_6 each independently represent,

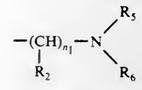
(a) hydrogen;

(b) formyl;

(c) a C_1–C_6 alkyl, a C_2–C_6 alkenyl or C_2–C_6 alkynyl group,

(d) a C_2–C_6 alkanoyl group, wherein the alkyl chain can be substituted by at least one substituent selected from the group consisting of halogen, C_1–C_6 alkoxy, amino, an amino substituted by 1–2 C_1–C_6 alkyl groups, phenyl, phenyl substituted by at least one Y radical, wherein Y is as defined above,

provided that when n_1 is zero, the



radical is exclusively bound to the carbon atom in the 3-position of the azetidine radical;

and the pharmaceutically acceptable acid addition salts thereof.

2. 1-[5-(10,11-dihydro-5H-dibenzo[a,d]cycloheptenyl)]-3-methylamino-azetidine as claimed in claim **1**.

5. 1-[5-(10,11-dihydro-5H-dibenzo[a,d]cycloheptenyl)]-3-ethylamino-azetidine, as claimed in claim **1**.

4,123,528

3-(SUBSTITUTED THIO) CEPHALOSPORINS, DERIVATIVES AND NUCLEAR ANALOGUES THEREOF

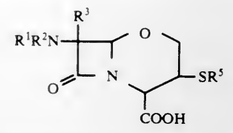
Lovji D. Cama, Edison, and Burton G. Christensen, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 634,081, Nov. 21, 1975, abandoned. This application Jul. 27, 1977, Ser. No. 819,652

Int. Cl.[2] **C07D** *498/04;* **A61K** *31/535*

U.S. Cl. 424—248.52 **3 Claims**

1. A compound having the structural formula:



and the non-toxic, pharmaceutically acceptable salts thereof; wherein:

the dotted line indicates provision for both Δ^2 and Δ^3 embodiments;

R^1 and R^2 are independently selected from the group consisting of hydrogen and acyl;

R^3 is hydrogen, methoxy, and lower alkyl thio; and

R^5 is amino loweralkyl.

4,123,529

PHENYLPIPERAZINE DERIVATIVES

John P. Verge, Middle Assendon, and William B. Jamieson, Kettlewell Close, both of England, assignors to Lilly Industries Limited, London, England

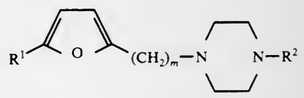
Continuation-in-part of Ser. No. 781,602, Mar. 28, 1977, abandoned. This application Jul. 8, 1977, Ser. No. 813,912

Claims priority, application United Kingdom, Apr. 23, 1976, 16256/76

Int. Cl.[2] **A61K** *31/495;* **C07D** *413/06, 417/06, 407/06*

U.S. Cl. 424—250 **18 Claims**

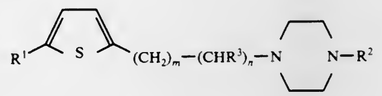
1. A phenylpiperazine derivative which is a furan of formula (II):



(II)

where R^1 is phenyl or phenyl substituted by one or two radicals selected from halogen, C_{1-4} alkyl, C_{1-4} alkoxy and C_{1-4} haloalkyl; R^2 is phenyl or phenyl substituted by C_{1-4} alkyl, amino, C_{1-4} alkylsulphonamido and C_{1-4} alkoxy and *m* is 1 or 3, with the exception of compounds in which R^1 is unsubstituted phenyl, *m* is 1 and R^2 is unsubstituted phenyl; or where R^1 is methyl, *m* is 1 and R^2 is phenyl or phenyl substituted by a single radical selected from halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl or is disubstituted by two C_{1-4} alkyl radicals; or a pharmaceutically-acceptable salt thereof.

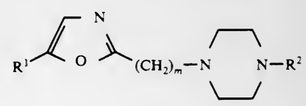
2. A phenylpiperazine which is a thiophene of formula (III):



(III)

where R^1 is phenyl; R^2 is phenyl, phenyl singly substituted by C_{1-4} alkyl or C_{1-4} haloalkyl or doubly substituted by two radicals selected from the group comprising halogen, C_{1-4} haloalkyl and C_{1-4} alkyl, and where *m* is 1 or 2 and $n = 0$; or where *m* is 1, *n* is 1 and R^3 is ethyl; or a pharmaceutically-acceptable salt thereof.

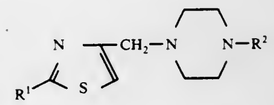
3. A phenylpiperazine which is an oxazole of formula (IV):



(IV)

where R^1 is phenyl optionally substituted by C_{1-4} alkoxy or halogen; R^2 is phenyl optionally substituted by C_{1-4} alkyl, C_{1-4} haloalkyl, halogen, amino or C_{2-4} alkanoylamino and *m* is 1 or 2; or a pharmaceutically-acceptable salt thereof.

4. A phenylpiperazine of formula (I) according to claim **1**, which is a thiazole of formula:



where R^1 is benzyl, R^2 is phenyl or p-halophenyl; or a pharmaceutically-acceptable salt thereof.

18. A method of treating a mammal, including a human, suffering from, or susceptible to, an immediate hypersensitivity condition such as asthma which comprises administering to the mammal a chemotherapeutically effective amount of a compound of formula (I) as claimed in claim **4**.

4,123,530

N-CYCLOHEXYL-PIPERAZINO ACETAMIDES AND PROPIONAMIDES

Camillo Corvi-Mora, Milan, Italy, assignor to Camillo Corvi S.p.A., Piacenza, Italy

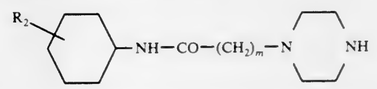
Filed Jan. 12, 1977, Ser. No. 758,725

Claims priority, application Italy, Jan. 23, 1976, 19517 A/76

Int. Cl.[2] **H61K** *31/495;* **C07D** *295/14*

U.S. Cl. 424—250 **6 Claims**

1. A compound of the formula



wherein R_2 is hydrogen or a lower alkyl group of from 1 to 6 carbon atoms and *m* is 1 or 2.

4. A pharmaceutical composition having antisecretory and antiulcer activity comprising a compound according to claim **1** together with a pharmaceutically compatible carrier.

4,123,531

ANTI-CONVULSANT N-ETHANOLAMINE DIPHENYL ACETAMIDES

Michel Vincent, Bagneux; Georges Remond, Versailles; Michel Laubie, Vaucresson, and Jean-Claude Poignant, Bures, Yvette, all of France, assignors to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

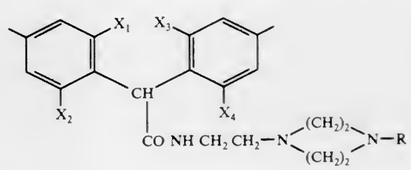
Filed Nov. 26, 1976, Ser. No. 745,032

Claims priority, application France, Dec. 3, 1975, 75 36918

Int. Cl.[2] **A61K** *31/165, 31/495;* **C07D** *295/08, 295/10*

U.S. Cl. 424—250 **11 Claims**

1. A compound having the formula



in which

X_1, X_2, X_3, and X_4 are the same or different and are selected from the group consisting of a lower alkyl radical having from 1 to 6 carbon atoms

R is hydrogen, an alkyl radical having from 1 to 6 carbon atoms, a hydroxylower alkyl radical of 1 to 6 carbon atoms, a acyloxylower alkyl radical of 1 to 6 carbon atoms or a lower alkoxy lower alkyl radical of 1 to 6 carbon atoms.

10. A method for treating epilepsy in the man or in the animals suffering from said illness which consists in administering to the patients a small but effective amount of a compound of claim **1**.

4,123,532

METHOD FOR TREATMENT OF ASTHMA

B. Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

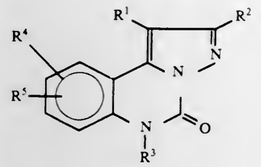
Filed Mar. 28, 1977, Ser. No. 781,618

Int. Cl.[2] **A61K** *31/505*

U.S. Cl. 424—251 **7 Claims**

1. A method of preventing the symptoms of asthma in a mammalian host in need of such treatment, which comprises

administering to a mammalian host a prophylactically effective amount of a compound of the structure



wherein R^1 is hydrogen, lower alkoxycarbonyl, lower alkyl, phenyl optionally substituted with halogen, lower alkyl or lower alkoxy, R^2 is lower alkoxycarbonyl, carboxyl, acetyl, hydrogen, lower alkyl, benzoyl or monosubstituted benzoyl in which the substituent is fluoro, chloro, bromo, lower alkyl, or lower alkoxy; and R^3 is hydrogen, methyl, benzyl, phenyl or monosubstituted phenyl or monosubstituted benzyl in which the substituent is fluoro, chloro or bromo; R^4 and R^5 may be the same or different and may be hydrogen, lower alkyl, lower alkoxy, F, Cl or Br or pharmaceutically acceptable salts thereof, dispersed in a non-toxic physiologically acceptable carrier.

4,123,533

FUSED PYRIMIDINE DERIVATIVES AND COMPOSITIONS FOR TREATING ATHEROSCLEROSIS CONTAINING THEM

István Hermecz; Zoltán Mészáros; Sándor Virag; Lelle Vasvári née Debreczy; Agnes Horváth; József Knoll; Gyula Sebestyén, and Ágoston Dávid, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

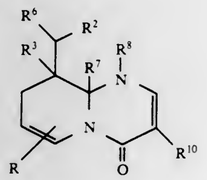
Filed Feb. 4, 1977, Ser. No. 765,595

Claims priority, application Hungary, Feb. 12, 1976, CI 1642

Int. Cl.[2] C07D *487/04;* **A61K** *31/505*

U.S. Cl. 424—251 **27 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen or C_1 to C_6 alkyl;

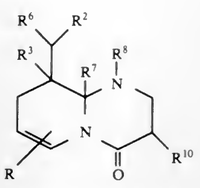
R^2 and R^3 are each hydrogen or together form a valency bond;

R^6 is carboxy or C_1 to C_6 alkoxycarbonyl;

R^7 and R^8 are each hydrogen or together form a valency bond;

R^{10} is carboxy or C_1 to C_6 alkoxycarbonyl and the dotted line represents two hydrogen atoms or a valency bond.

27. A pharmaceutical composition for treating atherosclerosis consisting essentially of a compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen or C_1 to C_6 alkyl;

R^2 and R^3 are hydrogen or together form a valency bond;

R^6 is carboxy or C_1 to C_6 alkoxycarbonyl;

R^7 and R^8 are each hydrogen or together form a valency bond;

R^{10} is carboxy or C_1 to C_6 alkoxycarbonyl; and the dotted line represents two hydrogen atoms or a valency bond, in combination with a pharmaceutically acceptable carrier.

4,123,534

ADENINE DERIVATIVES AND HYPOLIPIDEMIC COMPOSITION THEREOF

Karl Credner, Kaarst; Günter Brenner, Grefrath; Manfred Tauscher, Gronau, Leine, and Ljerka Jozic, Hannover, all of Fed. Rep. of Germany, assignors to Johann W. Wulfing, Fed. Rep. of Germany

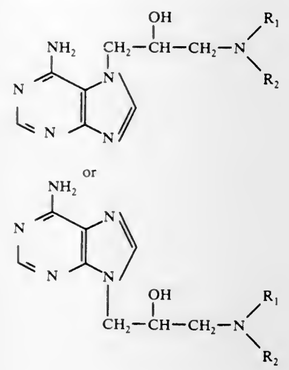
Filed Apr. 22, 1977, Ser. No. 789,845

Claims priority, application United Kingdom, Apr. 24, 1976, 16720/76; Apr. 24, 1976, 16721/76

Int. Cl.[2] C07D *473/34;* **A61K** *31/52*

U.S. Cl. 424—253 **13 Claims**

1. An acid addition salt of an amine of the formula:



wherein

R_1 is alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 2 to 4 carbon atoms or alkoxyalkyl of 2 to 6 carbon atoms; and

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms; hydroxyalkyl of 2 to 4 carbon atoms or alkoxyalkyl of 2 to 6 carbon atoms;

and an acid selected from the group consisting of 3-methylpyrazole-5-carboxylic acid, 3-methylisoxazole-5-carboxylic acid, acetylsalicylic acid, clofibric acid, nicotinic acid, fusaric acid, theophyllinyl-7-acetic acid, orotic acid, 5-chloroindole-2-carboxylic acid, 5-methylisoxozole-3-carboxylic acid, 3,4,5,-trimethoxybenzoic acid and flufenamic acid.

12. The method of reducing hyperlipidemia in an animal which comprises administering thereto a hypolipidemically effective amount of a salt according to claim **1**.

4,123,535

PSYCHOSTIMULATING 14-AMINO-14,15-DIHYDROEBURNAMENINES

Paul Pfaffli, Arlesheim, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

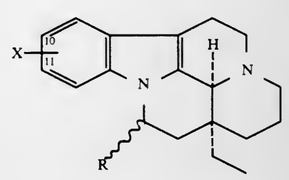
Division of Ser. No. 609,357, Sep. 2, 1975, Pat. No. 4,045,443. This application Apr. 18, 1977, Ser. No. 788,510

Claims priority, application Switzerland, Sep. 6, 1974, 12153/74; Jun. 3, 1975, 7118/75

Int. Cl.[2] C07D *519/04;* **A61K** *31/445*

U.S. Cl. 424—256 **11 Claims**

1. A compound of formula I,



I

wherein

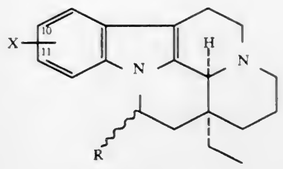
X is hydrogen or halogen having an atomic number from 9 to 35 in the 10- or 11-position, and

R is NR_3R_4, and

R_3 and R_4 are, independently, hydrogen, alkyl or 1 to 4 carbon atoms, phenyl or phenylalkyl of 7 to 10 carbon atoms in the aggregate thereof,

or a pharmaceutically acceptable acid addition salt thereof.

9. A vigilance increasing composition comprising an effective vigilance increasing amount of a compound of the formula



where X and R are as defined in claim **9**.

4,123,536

DIALKYL ({[3-(ALKOXYCARBONYL)-1,4-DIHYDRO-4-OXO-8-QUINOLINYL]AMINO}METHYLENE)PROPANEDIOATES

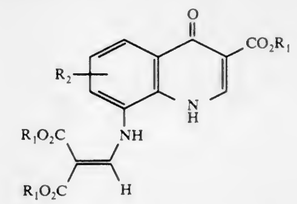
David T. Connor, Ann Arbor, Mich.; Patricia A. Young, Madison, N.J., and Maximilian Von Strandtmann, New Castle, Del., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 14, 1977, Ser. No. 860,526

Int. Cl.[2] A61K *31/47;* **C07D** *215/56*

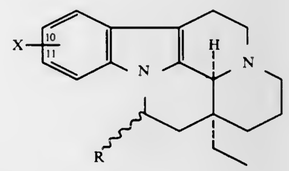
U.S. Cl. 424—258 **7 Claims**

1. A compound having the formula IV:



IV

wherein R_1 is lower alkyl; and R_2 is hydrogen, halogen, lower alkyl or nitro.



wherein

X is hydrogen or halogen having an atomic number from 9 to 35 in the 10- or 11-position, and

R is SR_2 or NR_3R_4,

wherein R_2 is alkyl of 1 to 4 carbon atoms, hydroxyalkyl or aminoalkyl of 2 to 4 carbon atoms, wherein the hydroxy and amino groups are in other than the α-position to the O or S atom, phenyl or phenylalkyl of 7 to 10 carbon atoms in the aggregate thereof, and

R_3 and R_4 are, independently, hydrogen, alkyl or 1 to 4 carbon atoms, phenyl or phenylalkyl of 7 to 10 carbon atoms in the aggregate thereof,

or a pharmaceutically acceptable acid addition salt thereof in association with a pharmaceutical carrier or diluent.

11. A method of psychostimulation in animals, which comprises administering to an animal in need of such treatment an effective psychostimulating amount of a compound of the formula

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4,123,537

2-HALO-4-AMINOMETHYL-6-ALKYL-3-PYRIDINOLS USEFUL AS DIURETICS IN TREATING HYPERTENSION AND EDEMA

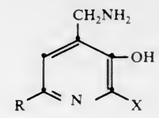
Robert L. Smith, Lansdale; Gerald E. Stokker, Gwynedd Valley, and Edward J. Gragoe, Jr., Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 26, 1977, Ser. No. 800,973

Int. Cl.[2] A61K *31/345;* **C07D** *213/65*

U.S. Cl. 424—263 **11 Claims**

1. A compound of the formula:



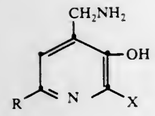
wherein

X is chloro, bromo or iodo;

R is straight or branched chain lower alkyl having up to 5 carbon atoms

and the non-toxic pharmaceutically acceptable acid addition salts thereof.

8. A pharmaceutical composition useful for the treatment of edema and hypertension which comprises a compound of the formula:



wherein

X is chloro, bromo or iodo;

R is straight or branched chain lower alkyl having up to 5 carbon atoms; or

the non-toxic pharmaceutically acceptable salts thereof and a pharmaceutically acceptable carrier.

4,123,538

(2-AMINO-2-OXOETHOXY)ACETIC ACID COMPOUNDS, COMPOSITIONS AND METHODS

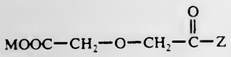
Michael J. Umen, Glenside, PA, assignor to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Filed Aug. 30, 1977, Ser. No. 829,117

Int. Cl.[2] C07D *211/16;* A61K *31/445*

U.S. Cl. 424—267 **4 Claims**

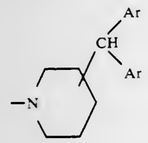
1. A pharmaceutical composition suitable for inhibiting gastric secretion in dosage unit form comprising per dosage unit from about 10 to about 500 milligrams of a (2-amino-2-oxoethoxy)acetic acid compound represented by the formula



wherein

M is hydrogen, alkali metal, alkaline earth metal, ammonium, alkylammonium or hydroxyalkylammonium; and

Z is a radical represented by



wherein

Ar is phenyl, trifluoromethylphenyl, halo-substituted-phenyl, lower alkyl-substituted-phenyl, or lower alkoxy-substituted-phenyl.

4,123,539

6-ETHYLPENICILLANIC ACID

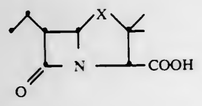
Frank P. DiNinno, Old Bridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 29, 1977, Ser. No. 865,639

Int. Cl.[2] A61K *31/425;* C07D *513/04*

U.S. Cl. 424—270 **3 Claims**

1. A compound having the structure:



wherein: X is S or SO; and the pharmaceutically acceptable salts thereof.

4,123,540

ISOCLAVULANIC ACID AS AN ANTIBACTERIAL AND A β-LACTAMASE INHIBITOR

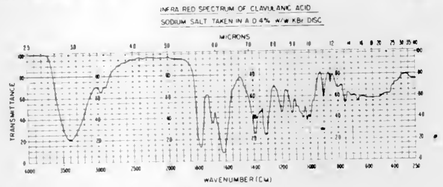
Thomas T. Howarth, Elmhurst, England, assignor to Beecham Group Limited, Great Britain

Filed Dec. 8, 1975, Ser. No. 638,373

Claims priority, application United Kingdom, Dec. 18, 1974, 54788/74; Apr. 14, 1975, 15210/75

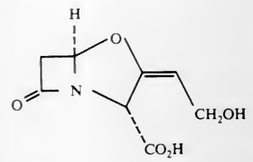
Int. Cl.[2] C07D *498/04;* A61K *31/42*

U.S. Cl. 424—272 **18 Claims**



1. Isoclavulanic acid of formula (II):

(II)



or a pharmaceutically acceptable salt thereof.

4,123,541

2-AMINOMETHYL-5-PHENYLOXAZOLES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Sho Inoue; Katsuya Ohata, both of Kyoto; Satoshi Tsutsui, Yokohama, and Tatsuo Nomura, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo and Nippon Shinyaku Company, Limited, Kyoto, both of, Japan

Division of Ser. No. 766,975, Feb. 9, 1977. This application Oct. 4, 1977, Ser. No. 839,354

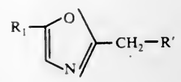
Claims priority, application Japan, Feb. 12, 1976, 51-14194; Feb. 26, 1976, 51-20328

Int. Cl.[2] A61K *31/42;* C07D *263/32*

U.S. Cl. 424—272 **7 Claims**

1. A 2-aminomethyl-5-phenyloxazole having the formula (I):

(I)

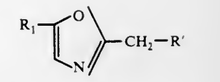


wherein R_1 is phenyl or halophenyl; R′ is



wherein R_2 and R_3 are selected from the group consisting of hydrogen and C_1–C_{10} alkyl, and the pharmaceutically acceptable acid addition salt thereof.

7. A method of meliorating inflammation in warm blooded animals, which comprises administering to said animal an anti-inflammatory effective amount of a compound having the formula (I):



wherein R_1 is phenyl or halophenyl; R′ is



wherein R_2 and R_3 are selected from the group consisting of hydrogen and C_1–C_{10} alkyl, or the pharmaceutically acceptable acid addition salt thereof.

4,123,542

DERIVATIVES OF N-ALKYL IMIDAZOLES

Keith A. M. Walker, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jan. 19, 1977, Ser. No. 760,804

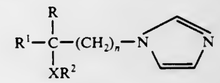
The portion of the term of this patent subsequent to Mar. 7, 1995, has been disclaimed.

Int. Cl.[2] C07D *233/60;* A61K *31/415*

U.S. Cl. 424—273 R **28 Claims**

1. A compound of the formula:

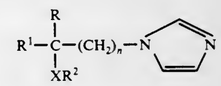
(I)



wherein R is lower alkyl; R^1 is 4-halo or 2,4-dihalo substituted phenethyl or phenylpropyl; R^2 is halo and/or methoxy substituted benzyl or phenyl; X is oxygen or sulfur; *n* is an integer of from 1 to 4; and the antimicrobial addition salts thereof.

26. A method of inhibiting the growth of fungi, bacteria or protozoa which comprises applying to a host object containing, or subject to attach by, fungi, bacteria or protozoa, an effective amount of a compound of the formula:

(I)



wherein R is lower alkyl; R^1 is 4-halo or 2,4-dihalo substituted phenethyl or phenylpropyl; R^2 is halo and/or methoxy substituted benzyl or phenyl; X is oxygen or sulfur; *n* is an integer of from 1 to 4; or an antimicrobial acid addition salt thereof, or a composition containing same as an active ingredient.

4,123,543

DERIVATIVES OF SUBSTITUTED INDOLINE LACTANS WITH EFFECT ON THE CENTRAL NERVOUS SYSTEM

Nils Å. Jönsson, Södertälje; Lembit Mikiver, Järna, and Pinchas Moses, Solna, all of Sweden, assignors to AB Kabi, Stockholm, Sweden

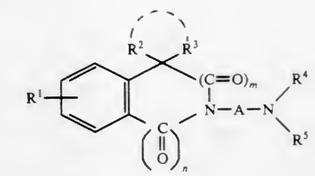
Continuation of Ser. No. 670,782, Mar. 26, 1976, which is a division of Ser. No. 288,027, Sep. 11, 1972, Pat. No. 3,947,451. This application Mar. 30, 1976, Ser. No. 671,768

Int. Cl.[2] A61K *31/40;* C07D *209/96, 209/34*

U.S. Cl. 424—274 **20 Claims**

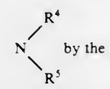
1. A pharmacodynamically active nitrogen containing heterocyclic compound of the general formula

(I)



in which *m* = 1 and *n* = 0,

A is an ethylene or a trimethylene group or such a group having a methyl substituent, or A signifies an acetyl group or such a group having an α-alkyl substituent having 1–4 carbon atoms, connected to the group



by the carbonyl CO linkage,

R^1 is hydrogen, halogen or a nitro group,

R^2 and R^3 are allyl or propargyl or saturated normal alkyl groups of up to 6 carbon atoms, which may be taken together with the carbon atom to which they are bonded to form a ring, which may be substituted by an oxo or a hydroxy group, R^4 and R^5 are hydrogen or alkyl radicals of at most 6 carbon atoms or R^4 and R^5 together with the nitrogen form a pyrrolidine ring, and where A does not signify a possibly alkylated acetyl group, the corresponding amine oxides and quaternary lower alkyl ammonium compounds, as well as salts of the basic compounds with non-toxic physiologically acceptable acids.

14. A pharmaceutical preparation for the treatment of depression containing as an active ingredient an anti-depression effective amount of a compound according to claim **1**, together with a pharmaceutically acceptable carrier.

16. A method for the treatment of depression, comprising administering to a person in need thereof an anti-depression effective amount of a compound according to claim **1**.

4,123,544

ACETYLSALICYLIC ACID DERIVATIVES

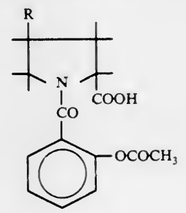
Henri Kornowski, Paris; Bernard Roques, St. Maurice; Robert Oberlin, Mantes LaVille, and André Jondet, St. Mande, all of France, assignors to Merrell Toraude S. A., Paris, France

Filed Mar. 2, 1977, Ser. No. 773,564

Int. Cl.[2] C07D *207/12;* A61K *31/40;* C07D *207/16*

U.S. Cl. 424—274 **2 Claims**

1. 1-(o-acetoxybenzoyl)-L-prolines of the formula:



where R is H or OH.

2. An analgesic, anti-inflammatory or antipyretic composition in dosage unit form consisting of from 100 mg to 1 g of a compound of claim **1** and a pharmaceutical carrier.

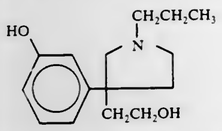
4,123,545

N-PROPYL-3(β-HYDROXYETHYL)-3-(META-HYDROXYPHENYL)-PYRROLIDINE

Klaus Hasspacher, Riehen, and Michael Strasser, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jun. 30, 1977, Ser. No. 811,586
The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.
Int. Cl.[2] C07D *207/44;* **A61K** *31/40*
U.S. Cl. 424—274 **3 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt form thereof.

2. A method of treating psychotic disturbances in animals which comprises administering to an animal in need of such treatment a therapeutically effective amount of a compound of claim **1**.

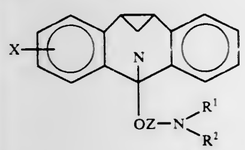
4,123,546

ANTIDEPRESSANT COMPOUNDS

Michael J. Haire, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 1, 1977, Ser. No. 812,405
Int. Cl.[2] A61K *31/40;* **C07D** *471/18*
U.S. Cl. 424—274 **18 Claims**

1. A compound of the formula



where

X is H, F, Cl, Br, C_{1-4} alkyl, C_{1-4} alkoxy, CF_3 or C_{1-4} alkyl sulfonyl;

Z is C_2–C_3 alkylene; and

R^1 and R^2 independently are H, C_{1-4} alkyl;

or its pharmaceutically suitable acid addition salt.

13. A method of alleviating depression in a mammal which comprises administering to the mammal as effective antidepressant amount of a compound of claim **1**.

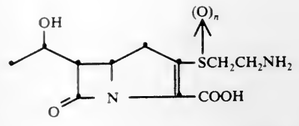
4,123,547

THIENAMYCIN SULFOXIDE AND SULPHONE

Burton G. Christensen, Metuchen, and Edward Walton, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 821,679, Aug. 4, 1977, abandoned, which is a continuation of Ser. No. 667,323, Mar. 16, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,620
Int. Cl.[2] C07D *487/04;* **A61K** *31/40*
U.S. Cl. 424—274 **3 Claims**

1. A compound having the structural formula:



wherein *n* is an integer selected from 1 or 2 and the non-toxic, pharmaceutically acceptable salts thereof.

3. An antibacterial pharmaceutical composition comprising, in unitary dosage form, a therapeutically effective amount of a compound according to claim **1** and a pharmaceutical carrier therefor.

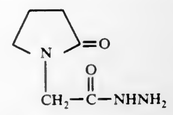
4,123,548

(2-OXO-PYRROLIDINES)-ACETIC HYDRAZIDES

Fritz-Walter Lange, Gauting; Haireddin Jacobi, Leichlingen, and Jens Müller, Gauting, all of Fed. Rep. of Germany, assignors to Chemisches Laboratorium Fritz-Walter Lange GmbH & Co KG, Gauting, Fed. Rep. of Germany

Division of Ser. No. 661,138, Feb. 25, 1976, Pat. No. 4,069,336.
This application Oct. 17, 1977, Ser. No. 842,908
Int. Cl.[2] A61K *31/40*
U.S. Cl. 424—274 **2 Claims**

1. (2-oxo-pyrrolidine-1) acetic hydrazide of the formula



2. A pharmaceutical preparation useful as a psychopharmacon and for treatment of diseases occurring in the cerebral function region of the brain containing, as an active ingredient, an effective amount of a compound of claim **1**, together with suitable pharmaceutically inert carrier and auxiliary substances.

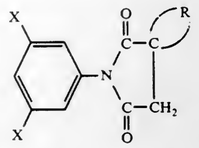
4,123,549

N-(3,5-DIHALOPHENYL)-α-SPIROCYCLOALKANESUCCINIMIDES, AND THEIR PREPARATION AND USE

Nobuyuki Kameda, Takarazuka; Yoshio Hisada, Kawanishi; Chiyozo Takayama, Toyonaka; Toshiro Kato, Ibaraki, and Akira Fujinami, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

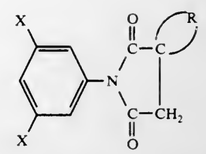
Filed Dec. 12, 1977, Ser. No. 859,756
Claims priority, application Japan, Feb. 7, 1977, 52-12800
Int. Cl.[2] A61K *31/40;* **C07D** *207/40*
U.S. Cl. 424—274 **5 Claims**

1. A compound of the formula:



wherein X is a chlorine or bromine atom and R is a C_3–C_6 alkylene group.

4. A fungicidal composition which comprises as an active ingredient a fungicidally effective amount of a compound of the formula:



wherein X is a chlorine or bromine atom and R is a C_3–C_6 alkylene group and an inert carrier.

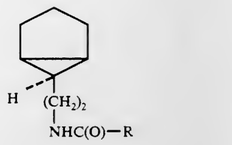
4,123,550

BICYCLO[3.1.0]HEXYLETHYLAMINOCARBONYL-SUBSTITUTED HETEROARYL CARDIOVASCULAR AGENTS

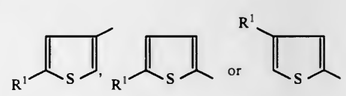
Karl G. Untch, Los Altos; Stefan H. Unger, Palo Alto, and Brian Lewis, Mountain View, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 31, 1977, Ser. No. 846,959
Int. Cl.[2] A01N *9/00;* **C07D** *333/24*
U.S. Cl. 424—275 **15 Claims**

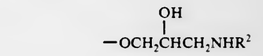
1. A compound of the formula:



where R is



where R^1 is the radical



wherein R^2 is C_1 to C_4 linear or branched alkyl, and pharmaceutically acceptable salts thereof.

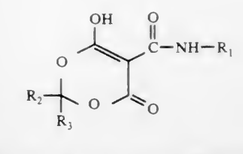
4,123,551

2,2-DISUBSTITUTED-PHENYLCARBAMOYL-6-HYDROXY-M-DIOXIN-4-ONE DERIVATIVES HAVING INSECTICIDAL PROPERTIES

Ernst Beriger, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 10, 1977, Ser. No. 758,260
Claims priority, application Switzerland, Jan. 14, 1976, 396/76; Jul. 28, 1976, 9639/76; Dec. 14, 1976, 15700/76
Int. Cl.[2] A01N *9/28;* **C07D** *319/06, 319/08*
U.S. Cl. 424—279 **5 Claims**

1. A method of controlling insects in crop plants and on productive livestock which method comprises applying to said plants and livestock or their environment an insecticidally effective amount of a compound of the formula



wherein R_1 is phenyl mono- or di- substituted by halogen, methyl or trifluoromethyl; and either R_2 is methyl or ethyl, and R_3 is methyl, or R_2 and R_3 together are tetramethylene or pentamethylene, with the proviso that when R_2 and R_3 both represent methyl groups or when R_2 and R_3 together represent a tetramethylene or pentamethylene group, R_1 may not represent 3-chlorophenyl, 4-chlorophenyl, 3,4-dichlorophenyl or 4-fluorophenyl.

4,123,552

COMPOSITIONS FOR PRESERVING CROPS AND ANIMAL FEEDSTUFFS

Daniel L. Kensler, Jr., West Des Moines, Iowa; Gustave K. Kohn, Berkeley, Calif., and David D. Walgenbach, Brookings, S. Dak., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 468,629, May 9, 1974, Pat. No. 3,931,412, which is a continuation-in-part of Ser. No. 266,945, Jun. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,364, Sep. 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 871,940, Oct. 28, 1969, abandoned. This application Oct. 17, 1975, Ser. No. 623,287
Int. Cl.[2] A01N *9/24*
U.S. Cl. 424—311 **4 Claims**

1. A composition useful for preventing the growth of fungi in crops and animal feedstuffs and for conserving the palatability and nutritional values of said crops and animal feedstuff comprising an oxidation inhibiting amount of an antioxidant selected from hindered phenols and dialkyl thiodipropionates and a fungicidally effective amount of bis-ester of the formula



wherein R and R^2 independently are alkyl of 1 to 6 carbon atoms, R′ is chloroalkyl of 1 to 4 carbon atoms and 1 to 5 chloro groups or alkaryl of 7 to 10 carbon atoms, and *n* is 1, 2 or 3, or a mixture thereof.

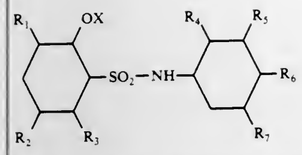
4,123,553

ANTHELMINTICS EFFECTIVE AGAINST LIVER FLUKES

Milan Mitrovic, Nutley, and Terence J. Hayes, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

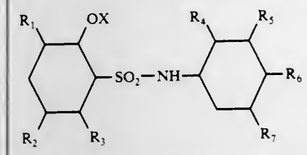
Continuation of Ser. No. 724,785, Sep. 20, 1976, Pat. No. 4,034,110. This application Mar. 7, 1977, Ser. No. 775,064
The portion of the term of this patent subsequent to Jul. 5, 1994, has been disclaimed.
Int. Cl.[2] A61K *31/22, 31/18*
U.S. Cl. 424—311 **12 Claims**

1. A composition for parenteral administration to an animal for treatment of *Fasciola hepatica* infections which comprises a non-toxic carrier material suitable for parenteral administration and an effective amount of an anthelmintic compound represented by the formula



wherein each of R_1 and R_2 are independently chlorine or bromine, R_3 is hydrogen or chlorine and each of R_4 through R_7 is independently hydrogen, halogen or trifluoromethyl, with the proviso that at least 2 of R_3 through R_7 is other than hydrogen and X is hydrogen or lower alkanoyl.

8. A composition for oral administration to an animal in the form of a bolus for treatment of *Fasciola hepatica* infections said bolus comprising suitable non-toxic carrier material and an effective amount of an anthelmintic compound represented by the formula



wherein each of R_1 and R_2 are independently chlorine or bromine, R_3 is hydrogen or chlorine and each of R_4 through R_7 is independently hydrogen, halogen or trifluoromethyl, with the proviso that at least 2 of R_3 through R_7 are other than hydrogen and X is hydrogen or lower alkanoyl.

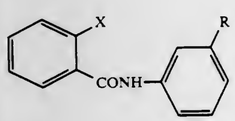
4,123,554

FUNGICIDAL AND GERMICIDAL BENZANILIDES

Seigo Kawada, Fujieda; Yoshitaka Suda, Shizuoka; Shigeru Tsuchiya, Shimizu; Nobuya Ohta; Norimichi Muramatsu, both of Shizuoka, and Kazuo Nishio, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 585,078, Jun. 9, 1975, abandoned. This application Nov. 11, 1976, Ser. No. 740,878
Claims priority, application Japan, Jun. 12, 1974, 49/66767; Jan. 21, 1975, 50/8981
Int. Cl.[2] C07C *103/78;* **A61K** *31/165*
U.S. Cl. 424—324 **16 Claims**

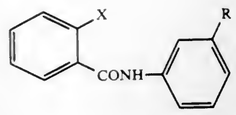
1. A benzanilide derivative having the following general formula (I):



(I)

wherein X stands for a halogen atom or a methyl radical; and R stands for an alkyl or alkoxy radical containing 3 to 6 carbon atoms provided that R represents an alkyl radical containing 3 to 6 carbon atoms when X is a methyl radical.

14. A method for killing fungi and germs on plants which comprises applying to plants or soil a fungicidally or germicidally effective amount of a benzanilide derivative represented by the general formula (I):



(I)

wherein X stands for a halogen atom or methyl radical; and R stands for an alkyl or alkoxy radical containing 3 to 6 carbon atoms provided that R represents an alkyl radical with 3 to 6 carbon atoms when X is a methyl radical.

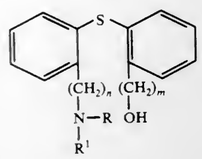
4,123,555

SULFIDE COMPOUNDS AND METHODS AND COMPOSITIONS FOR TREATING DEPRESSION

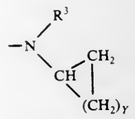
Nariman B. Mehta, and Lawrence E. Brieaddy, both of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 597,697, Jul. 21, 1975, Pat. No. 3,997,540.
This application Nov. 12, 1976, Ser. No. 741,196
Int. Cl.[2] A61K *31/135;* **C07C** *87/29*
U.S. Cl. 424—330 **24 Claims**

1. A compound of the formula

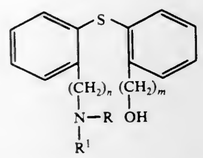


or a pharmaceutically acceptable acid addition salt thereof where NRR^1 is

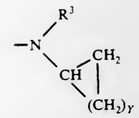


where Y is 3 or 4 and R is hydrogen or lower alkyl, in the above lower alkyl has 1 to 4 carbon atoms and n and m are the same or different and are each 1, 2, or 3.

16. The method of treating depression in a mammal which comprises administering to a depressed mammal an effective antidepressant amount of a compound of the formula



or a pharmaceutically acid addition salt thereof where NRR^1 is



where Y is 3 or 4 and R^3 is hydrogen or lower alkyl, in the

above lower alkyl has 1 to 4 carbons and n and m are the same or different and are each 1, 2 or 3.

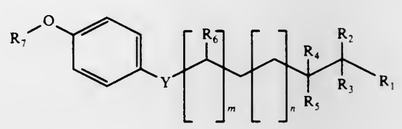
4,123,556

INSECTICIDAL COMPOSITION

Friedrich Karrer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

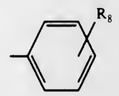
Continuation-in-part of Ser. No. 414,033, Nov. 8, 1973, abandoned, which is a division of Ser. No. 328,218, Jan. 31, 1973, abandoned. This application Sep. 18, 1975, Ser. No. 614,394
Claims priority, application Switzerland, Feb. 4, 1972, 1695/72; Feb. 16, 1972, 2240/72
Int. Cl.[2] A01N *9/24*
U.S. Cl. 424—341 **10 Claims**

1. A method for combatting insects by inhibiting the development of the larvae, or pupae, thereof which comprises treating, by contact or ingestion, an immature form of said insect with a development inhibiting amount of a compound of the formula

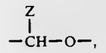


wherein

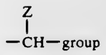
R_1 represents hydrogen, halogen, C_1-C_4-alkyl, vinyl or ethynyl,
R_2 represents hydrogen, halogen, methyl or ethyl, or
R_1 and R_2 together represent the cyclopentyl or cyclohexyl ring,
R_3 represents hydrogen, halogen, methyl, ethyl or C_1-C_4-alkoxy,
R_4 represents hydrogen, halogen or methyl,
R_5 represents hydrogen or halogen, or
R_3 and R_5 together represent a carbon-carbon bond,
R_6 represents hydrogen, methyl or ethyl,
R_7 represents cyclohexyl or the group



R_8 represents hydrogen, halogen, C_1-C_4-alkyl or C_1-C_4-alkoxy,
Y represents oxygen, or the group



whereby the



is bound to the phenyl ring,
Z represents hydrogn or methyl, and
m and *n* each represent the number 0 to 1.

4,123,557

MEANS FOR EFFECTING IMPROVEMENT IN THE MANUFACTURE OF COMMINUTED MEAT PRODUCTS

Felix Epstein, and Peter R. Epstein, both of 33-33 Greenpoint Ave., Long Island City, N.Y. 11101

Filed May 24, 1977, Ser. No. 799,984
Int. Cl.[2] A22C *11/00*
U.S. Cl. 426—105 **8 Claims**

1. In a comminuted meat product comprising flesh meat, fat and water, the improvement which includes an effective amount of a binding agent comprising lactose and proteins of milk, the proteins being the serum proteins and solubilized casein in the respective ratio of about 1:1 by weight, and the ratio of lactose-to-proteins being, respectively, 38–50 to 28–35 parts by weight.

4,123,558

COATING OF POTATOES TO PREVENT GREENING

Peter A. Poapst, Kentville, and Frank R. Forsyth, Berwick, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 498,813, Aug. 19, 1974, abandoned. This application Jul. 9, 1976, Ser. No. 703,886
Claims priority, application Canada, Aug. 8, 1975, 233131
Int. Cl.[2] A23B *7/16*
U.S. Cl. 426—268 **11 Claims**

1. A method for treating, raw, unpeeled, cold-stored potato tubers to inhibit greening due to chlorophyll development which comprises applying a mixture consisting essentially of water and as active anti-greening agent one of (a) an effective amount up to about 15% of the mixture of a non-toxic or food grade surfactant or (b) a mixture of said surfactant with an organic acid which is selected from the group consisting of mono- or polycarboxylic acids having from 2 to 6 carbon atoms and at least one hydroxy or oxo group, and lactones thereof, excepting those dicarboxylic acids which readily form internal anhydrides, to said tubers in a quantity which is sufficient upon drying to form a thin continuous micelle containing film of said surfactant thereon; said surfactant consisting essentially of long chain fatty acid moieties, and at least one of polyoxyalkylene and polyhydroxy moieties and having an HLB rating below about 15.

4,123,559

PROCESS FOR THE PRODUCTION OF SPICE EXTRACTS

Otto Vitzthum, and Peter Hubert, both of Bremen, Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim, Ruhr, Fed. Rep. of Germany

Continuation of Ser. No. 560,432, Mar. 20, 1975, abandoned, which is a continuation of Ser. No. 258,586, Jun. 1, 1972, abandoned. This application Dec. 27, 1976, Ser. No. 754,803
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1971, 2127611
Int. Cl.[2] A23L *1/22, 1/221*
U.S. Cl. 426—312 **9 Claims**

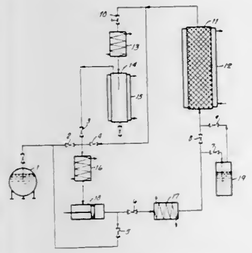
1. A process for the production of spice extracts from natural spice which comprises the steps of:

(a) contacting a solvent gas, which in the dry supercritical state is effective to dissolve the essential oil component containing aroma constituents from the natural spice and leave a first spice residue containing flavor constituents, with the natural spice, for a time sufficient to extract the essential oil component of the spice and leave a first spice residue containing flavor constituents, the solvent gas being in dry supercritical state,
(b) separating the aroma constituents from the solvent gas,
(c) contacting a solvent gas, which in the wet supercritical condition is effective to dissolve the flavor constituents of the natural spices and leave a second spice residue, with the first spice residue, for a time sufficient to extract the flavor constituents of the first spice residue and leave said

second spice residue, the solvent gas being in wet supercritical state,

(d) separating the flavor constituents from the extraction solvent gas of step c,

wherein the solvent gas in each of steps (a) and (c) is selected from the group consisting of carbon dioxide; saturated and



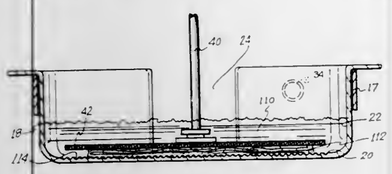
unsaturated hydrocarbons containing up to about three carbon atoms; nitrous oxide; saturated and unsaturated halogenated hydrocarbons containing up to about three carbon atoms wherein the halogen is at least one of flourine and chlorine; sulfur hexaflouride and mixtures thereof.

4,123,560

METHOD FOR FLASH COOKING FOOD

Jaxon O. Hice, Clover, S.C., assignor to Research Associates Ltd., Charlotte, N.C.

Filed Jun. 8, 1977, Ser. No. 804,492
Int. Cl.² A23L *1/01*
U.S. Cl. 426—509 **7 Claims**



1. A method of flash cooking a portion of food, comprising the steps of:

(a) providing a cooking surface which is generally flat but contoured such that it retains a small quantity of cooking liquid collected at one face of said cooking surface;

(b) pressing said food portion against said cooking surface with a sufficient compressive force to maintain said collected liquid between said cooking surface and said food portion;

(c) causing said compressed food portion to be submerged in a volume of cooking liquid, while

(d) applying external heat directly to the other face of said cooking surface to raise the temperature of said cooking surface to a level which will (i) vaporize said liquid collected between said food portion and said cooking surface; (ii) cause cooking of said food portions pressed against said cooking surface by applying the heat of said cooking surface directly to said food portion; and (iii) raise the temperature of said cooking liquid to cause additional cooking of said food portion without burning the food.

4,123,561

METHOD FOR PROCESSING HOPS FOR BREWING

Herbert L. Grant, Yakima, Wash., assignor to S.S. Steiner, Inc., New York, N.Y.

Filed Feb. 1, 1977, Ser. No. 764,600
Int. Cl.² C12C *9/02;* **C07C** *45/00, 49/00*
U.S. Cl. 426—600 **29 Claims**

1. A method for processing powdered hops which stabilizes the hops and the alpha acids present against deterioration, said method comprising the steps of:

(i) mixing a hops powder or hops powder concentrate, said powder or powder concentrate containing alpha acids, with one or more oxides of a divalent metal suitable for use in food products, so as to intimately contact said metal oxide with the alpha acids under conditions insufficient to form a solution; and

(ii) maintaining said mixture of hops powder or powder concentrate and metal oxide under suitable reaction conditions to enable said hops powder or powder concentrate and said alpha acids to become stabilized.

10. A method for isomerizing the alpha acids contained in powdered hops, said method comprising the steps of:

(i) mixing a hops powder or hops powder concentrate, said powder or powder concentrate containing alpha acids, with one or more oxides of a divalent metal suitable for use in food products, so as to intimately contact said metal oxide with the alpha acids under conditions insufficient to form a solution; and

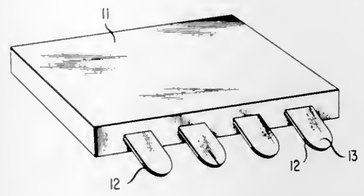
(ii) maintaining said mixture of hops powder or powder concentrate and metal oxide under suitable reaction conditions to enable the isomerization of said alpha acids to occur.

4,123,562

TECHNIQUE FOR PROMOTING THE SOLDERABILITY OF A METAL SURFACE

Edwin A. Chandross, Berkeley Heights, and Coralie A. Pryde, Morristown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

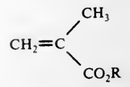
Division of Ser. No. 584,869, Jun. 9, 1975, Pat. No. 3,998,993.
This application Nov. 1, 1976, Ser. No. 737,405
Int. Cl.² B05D *5/12*
U.S. Cl. 427—58 **3 Claims**



1. Method for promoting the solderability of a metal surface to at least a portion of which electrical connections are to be made by soldering which comprises the steps of

(a) dipping a cleansed metal surface selected from the group consisting of copper and its alloys in an aqueous benzotriazole solution,

(b) depositing upon the resultant cleansed metal surface a thin layer of polymer selected from the groups consisting of homopolymers formed by polymerization of a methacrylate monomer of the general formula



wherein R is selected from the group consisting of alkyl radicals of the general formula C_nH_{2n+1} wherein n is an integer from 1-6, and copolymers formed solely by copolymerization of methacrylate monomers of said general formula wherein R is selected from the group consisting of alkyl radicals of the general formula C_nH_{2n-1} wherein n is an integer from 1-6, and a glycidyl radical, the said glycidyl monomer being present in said copolymer in an amount ranging up to 10 percent, by weight, and

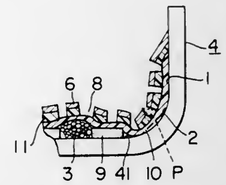
(c) heating the resultant assembly to a temperature within the range of 85°-115° C. for a time period ranging from 15-30 minutes, so resulting in a coating on said surface having a thickness ranging from 1-2 microns.

4,123,563

PROCESS FOR THE PRODUCTION OF COLOR TELEVISION PICTURE TUBES

Koichi Mitobe, Chiba, and Yasuhiko Uehara, Mobara, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 23, 1977, Ser. No. 771,244
Int. Cl.² H01J *31/20;* **C03C** *17/32, 17/30*
U.S. Cl. 427—68 **1 Claim**



1. In a process for the production of color television picture tubes which comprises at least the step of forming a phosphor layer on the inner surface of a panel, the step of coating said inner surface of the panel including said phosphor layer with an aqueous emulsion of a water-insoluble film-forming resin to form a volatilizable substrate layer, the step of forming a metal film on the substrate layer and the step of volatilizing the organic substances, the improvement characterized by forming said substrate layer from at least two layers each of an emulsion, drying the resulting respective film coatings of emulsion after formation thereof, adding 0.1 to 3.0% by weight colloidal silica, 0.05 to 1.00% by weight of an aqueous ammonium oxalate solution (concentration 25% by weight) and 0.5 to 1.0% by weight aqueous hydrogen peroxide (concentration 35% by weight) to the first layer emulsion, and adding 0.5 to 5.0% by weight polyvinyl alcohol-boric acid complex and a small amount of ammonium hydroxide to the emulsion of the layer contacting directly with said metal film.

4,123,564

METHOD OF PRODUCING SEMICONDUCTOR DEVICE

Takashi Ajima, Tokyo; Kiyoshi Takaoki, Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1976, Ser. No. 746,897
Claims priority, application Japan, Dec. 3, 1975, 50/144254
Int. Cl.² B05D *5/12;* **H01L** *21/22*
U.S. Cl. 427—85 **21 Claims**

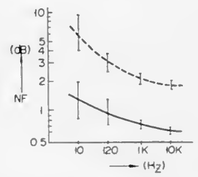
1. A method of producing a semiconductor device, comprising the steps of:

forming all desired semiconductor regions in a semiconductor substrate using masking films;

removing all of the masking films used in forming the desired semiconductor regions within the semiconductor substrate to expose the entire surface of the semiconductor substrate;

forming a first insulation film on the exposed surface of the substrate;

selectively forming a polycrystalline silicon film on the surface of the first insulation film to provide covered and



uncovered portions of the first insulation film at predetermined locations; and

forming a second insulation film selectively at least on the uncovered portions of the first insulation film by using the selectively formed polycrystalline silicon film

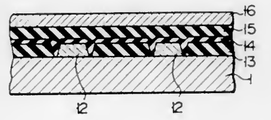
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4,123,565

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Yasusuke Sumitomo, Yokohama, and Yoshie Ohashi, Fujisawa, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1976, Ser. No. 748,897
Claims priority, application Japan, Dec. 10, 1975, 50-146368
Int. Cl.² B05D *5/12, 3/12*
U.S. Cl. 427—88 **6 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of: (a) forming a first insulating layer and a first wiring layer on one surface of a semiconductor substrate, said first wiring layer being formed on at least a portion of the one surface of the semiconductor substrate where the first insulating layer is not formed and having substantially the same thickness as that of the first insulating layer; (b) forming an insulating film flat on the first insulating and wiring layers by coating and then burning a liquid insulating material on the first insulating and wiring layers so that the liquid material occupies grooves between the first insulating and wiring layers; (c) forming an intermediate insulating layer on the insulating film; and (d) forming a second wiring layer on the intermediate insulating layer.

4,123,566

NA/S CELL REACTANT CONTAINER WITH METAL ALUMINIDE COATING

Debajyoti Chatterji, Latham, and Robert R. Dubin, Charlton, both of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 752,369, Dec. 20, 1976, Pat. No. 4,048,390.
This application Jun. 23, 1977, Ser. No. 809,217
Int. Cl.² B05D *5/12;* **C23C** *13/02*
U.S. Cl. 427—115 **3 Claims**

1. In a method for fabricating a sodium sulfur battery having iron, cobalt or nickel based container or component surfaces and operable at temperatures of 300° C. or higher, where said container or component surface is exposed to sulfur-sodium polysulfide melts, the improvement which comprises:

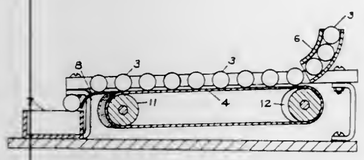
aluminiding said surfaces prior to fabrication of said battery.

4,123,567

PROCESS FOR APPLYING ELECTRODES TO THE SURFACES OF ELECTROACOUSTIC TRANSDUCER ELEMENTS SUCH AS CERAMIC DISCS

Frank Massa, Cohasset, Mass., assignor to Donald P. Massa & Fred M. Dellorfano, Jr. Trustees of The Stonleigh Trust u/d/t, Cohasset, Mass.

Filed May 26, 1977, Ser. No. 800,710
Int. Cl.² B05D *5/12, 3/12*
U.S. Cl. 427—123 **5 Claims**



1. A process for applying electrically conducting surfaces to the opposite flat surfaces of a plurality of thin disc-shaped electroacoustic transducers which includes the following steps:

(a) Coat the entire disc, including the edge, with a film of electrically conducting material,

(b) Place the coated discs individually into a slot-like guide which holds the discs with their plane surface approximately at right angles to the moving surface of an abrasive belt which is located to serve as a bottom for said slot-like guide,

(c) Provide means for causing the discs to roll along the slot-like guide,

(d) Provide alignment means for the slot-like guide which controls the direction of the rolling discs, such that the direction of motion of the rolling discs is skewed with relation to the direction of motion of the abrasive surface,

(e) Adjust the skew angle between the direction of motion of the rolling discs and the direction of motion of the abrasive belt such that the film of electrically conducting material is completely removed from the edges of the discs as they roll along the slot-like guide.

4,123,568

METHOD OF MANUFACTURING AN IRON ELECTRODE FOR ALKALINE ACCUMULATORS

Viktor Evmenievich Kononenko, poselok Akkumulyator, 31, kv. 7; Valentina Nikolaevna Tamazina, ulitsa Radischeva, 71/1, kv. 20, and Alla Ivanovna Ozerova, ulitsa Vtoraya Rabochaya, 2/41, kv. 28, all of Kursk, U.S.S.R.

Filed Jun. 1, 1976, Ser. No. 691,887
Int. Cl.² H01M *4/04, 4/26*
U.S. Cl. 427—126 **1 Claim**

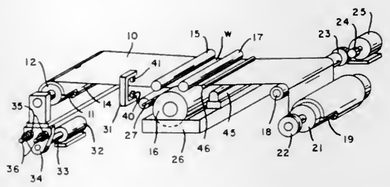
1. A method of manufacturing an electrode for an alkaline accumulator by applying on to a grid made of a steel band, a mass consisting essentially of a mixture of black iron ore concentrate, Fe_3O_4, in the amount of 95 parts by weight, iron oxide, Fe_2O_3, in the amount of 5 parts by weight, synthetic fibre in an amount of 0.1 to 0.2 parts by weight, FeS, in the amount of 1.05 to 1.25 parts by weight, aqueous nickel sulfate in the amount of 12.5 parts by weight, a surface active agent in the amount of 9 parts by weight, and adding an aqueous solution of polyvinyl alcohol in the amount of 2 parts by weight mixed with concentrated sulfuric acid in a weight ratio of 1 to 5 with respect to said polyvinyl alcohol, wherein said parts by weight refer to the total mass, rubbing the resulting activated mass into said grid and drying for 15 to 30 minutes at a temperature within the range of from 110° to 180° C.

4,123,569

DIRECT RIBBON INKING BY GRAVURE

Glenn E. Peterson, Carle Place; Robert T. Emerson, Manhasset, and William J. Schoenlein, Levittown, all of N.Y., assignors to Columbia Ribbon & Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Division of Ser. No. 676,301, Apr. 12, 1976, Pat. No. 4,048,952.
This application May 25, 1977, Ser. No. 800,385
Int. Cl.² B41J *31/14*
U.S. Cl. 427—141 **7 Claims**



1. A method for applying liquid ink to an ink-absorbent web comprising the steps of:

(a) providing a rotatable ink-applicator gravure roll having a surface comprising a multiplicity of ink-retaining recesses;

(b) providing a continuous supply of liquid ink to the surface of said roll and to said ink-retaining recesses thereon;

(c) wiping said liquid ink from said surface except from said ink-retaining recesses;

(d) moving a length of said ink-absorbent web, under tension, into compression-free contact with the ink-carrying surface of said roll while rotating said roll at a surface speed which is slower than the speed of movement of said web in contact therewith to cause said web to wipe over the surface of said ink roll and to absorb sufficient liquid ink from said ink-retaining recesses to satisfy the absorbency of the web; and

(e) collecting said length of inked web onto a wind-up roll.

4,123,570

PREPARATION OF UREAFORM

Willy H. P. Van Hijfte, Assenede; Luc A. Vanmarcke, Lembeke, and Anton Niks, Rixensart, all of Belgium, assignors to Compagnie Neerlandaise de l'Azote (Societe Anonyme), Brussels, Belgium

Filed Jun. 29, 1977, Ser. No. 811,434
Claims priority, application United Kingdom, Jul. 2, 1976, 27759/76
Int. Cl.² C05C *1/02, 7/00, 9/02*
U.S. Cl. 427—222 **8 Claims**

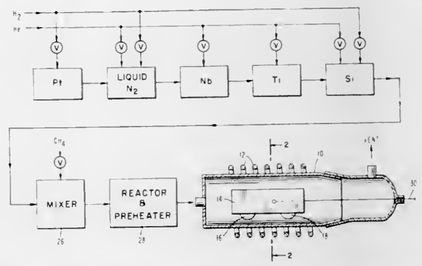
1. A process for preparing ureaform granules, which comprises mixing a concentrated aqueous solution of a urea-formaldehyde condensate with a catalyst comprising a salt of a strong inorganic or organic acid and a weak, volatile or nonstable base, which salt at normal temperature effects no or virtually no acid condensation, but at elevated temperature releases so much strong acid as to effect the acid condensation in at most a few seconds, spraying the mixture of solution and catalyst over solid ureaform particles which are kept in spaced interrelationship and at such an elevated temperature that the catalyst is decomposed and acid condensation is effected, whereby the sprayed particles are coated with a layer of ureaform and dried.

4,123,571

METHOD FOR FORMING SMOOTH SELF LIMITING AND PIN HOLE FREE SIC FILMS ON SI

Moshe Balog, Jerusalem, Israel; Melvin Berkenblit, Yorktown Heights, N.Y.; See-Ark Chan, Croton-on-Hudson, N.Y., and Arnold Reisman, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1977, Ser. No. 831,561
Int. Cl.² B44D *1/14, 1/18*
U.S. Cl. 427—249 **12 Claims**



1. A method for forming smooth, dense highly adherent and pin hole free SiC films on Si substrates comprising the steps of:

(a) placing said Si substrates in a tantalum susceptor coated with tantalum carbide, said susceptor having the effect of floating within a reactor,

(b) having said Si substrates at atmosphere pressure in a pure He ambient at a temperature and for a time sufficient to remove native SiO_2 from the surfaces of said substrates,

(c) cooling the substrates to a temperature of about 900° C.

(d) flowing a preheated CH_4/He mixture into said reactor while maintaining said temperature at about 900° C. for a time sufficient to crack methane whereby a coating of C is deposited on said substrates, said CH_4 being present in the amount from about 0.8×10^{-3} to about 2.4×10^{-3} moles/liter of the mixture;

(e) stopping the flow of CH_4 and heating said substrates in a pure He ambient to a temperature and for a time sufficient to form SiC films of desired thickness on said substrates; and thereafter

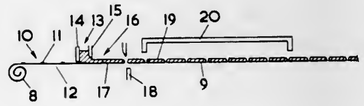
(f) slowly cooling said substrates to room temperature.

4,123,572

CUTTING SHEET MATERIAL HAVING TACKY LAYER THEREON

John A. F. Gidley, Sutton Coldfield, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Aug. 23, 1976, Ser. No. 716,455
Claims priority, application United Kingdom, Sep. 2, 1975, 36124/75
Int. Cl.² B05D *3/12, 1/32*
U.S. Cl. 427—272 **15 Claims**



1. A method of making a plurality of sheet material blanks each having a surface thereof uniformly coated with a tacky photopolymerizable layer, the method comprising the steps of:

(a) passing a long length of said sheet material horizontally through a first station in which tapes are located at desired longitudinally spaced-apart locations on said surface of the sheet material transversely to the direction of passage of said sheet material through said first station,

(b) passing said sheet material with said tapes thereon horizontally through a second station at which a continuous layer of uniform tacky photopolymerizable material is applied to said surface at a constant thickness and over said tapes whereby said tapes mask transverse regions of said surface,

(c) passing said sheet material horizontally through a third station in which the tapes are removed from the sheet material thereby removing strips of said tacky material from said surface to leave said transverse regions of said surface free from tacky material,

(d) passing said sheet material horizontally past cutting means which cut the sheet material transversely in said transverse regions of said surface free from tacky material thereby to produce a plurality of smaller sheets of material each having on a surface thereof a uniform tacky photopolymerizable layer.

4,123,573

METHOD FOR IMPARTING FLAME RETARDANT PROPERTY TO CELLULOSIC CONTAINING MATERIAL

George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 715,763, Aug. 19, 1976, abandoned, which is a continuation of Ser. No. 537,525, Dec. 30, 1974, abandoned. This application Jun. 20, 1977, Ser. No. 808,015
Int. Cl.² D06M *13/44*
U.S. Cl. 427—324 **7 Claims**

1. A method of imparting flame retardant character to cellulosic containing material which includes at least 20 percent by weight of a polyester by applying an effective fire retarding imparting amount of a phosphorus composition to the material and curing the phosphorus composition, the improvement which comprises pretreating the cellulose containing material with from about 1 to about 10 percent by weight of an aqueous caustic solution prior to applying the phosphorus composition.

4,123,574

PROCESS FOR FLAME RETARDING CELLULOSICS

George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 628,678, Nov. 3, 1975, Pat. No. 4,068,026, which is a continuation-in-part of Ser. No. 493,815, Aug. 1, 1974, Pat. No. 3,933,122, which is a division of Ser. No. 244,574, Apr. 17, 1972, Pat. No. 3,846,155. This application Sep. 2, 1976, Ser. No. 720,030
The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.
Int. Cl.² C09K *3/28;* **B05D** *3/04*
U.S. Cl. 427—341 **23 Claims**

1. A process for rendering cellulosic-containing materials durably flame retardant comprising:

a. Impregnating a cellulose-containing material with a flame retarding solution comprising from about 10 to about 40 percent by weight poly(hydroxymethyl) phosphonium cation and from about 0.5 to about 20 percent by weight of a basic catalyst, said solution having a pH of from about 2 to about 9;

b. Drying the impregnated material at a temperature of less than 125° C., to a moisture content of from about 0 to about 8 percent by weight;

c. Aerating the dried material by directing a current of air from about 1,000 to about 3,000 cubic feet per minute through the dried material to eliminate any formaldehyde formed in said drying step;

d. Exposing the aerated material in an enclosed chamber for a period of at least about 5 seconds but less than about 60 seconds to an atmosphere containing at least about 50 percent by volume of gaseous ammonia to cure the phosphorus containing resin in and on the material;

e. Contacting the material with water to a wet pick-up of from about 10 to about 60 percent by weight to render the material durably flame retardant; and

f. Further exposing the water contacted material for a period of from about 1 to about 10 seconds to an atmosphere containing at least about 50 percent by volume of gaseous ammonia.

4,123,575

FIRE-RETARDING EPOXY RESIN MATERIAL, METHOD FOR THE MANUFACTURE THEREOF AND USE THEREOF AS COATING COMPOSITION

Ludwig Wesch, Gorresstrasse 54, Heidelberg, Germany; Luis C. Roma, C/Montserrat 22, Sabadell, and Carlos F. Pellicer, C/Balmes 454 s/a, Barcelona, both of Spain

Filed Feb. 2, 1977, Ser. No. 764,849
Claims priority, application Spain, Feb. 3, 1976, 444.862
Int. Cl.[2] C09K *3/28;* **B05D** *3/04;* **C08L** *63/02*
U.S. Cl. 427—386 **17 Claims**

1. A fire-retarding foam-forming epoxy resin composition suitable for protecting substrates as an applied layer thereon, said composition comprising essentially of an epoxy resin containing at least one amine curing agent and the following ingredients:

about 30% to 70% by weight referred to the epoxy resin-curing agent content of at least two members containing 20 mol% nitrogen and/or phosphorus selected from the group consisting of cyclic, aliphatic, aromatic, alicyclic-aromatic polyamines having a molecular weight of about 100 to 400 and melamine phosphate, quanidine phosphate, guanylurea phosphate, melamineborate, guanidine carbonate and benzosulfohydrazide, said epoxy composition optionally containing fillers,

said members having a decomposition temperature of about 100° C to 400° C and being characterized in that the decomposition of each member differs from each other by at least about 50° C.

8. A fire-retarding foam-forming epoxy resin composition in the form of a coating comprising a plurality of cured layers on a substrate, said composition comprising essentially of an epoxy resin containing at least one amine curing agent and the following ingredients:

about 30% to 70% by weight referred to the epoxy resin-curing agent content of at least two members containing 20 mol% nitrogen and/or phosphorus selected from the group consisting of cyclic, aliphatic, aromatic, alicyclic-aromatic polyamines having a molecular weight of about 100 to 400 and melamine phosphate, guanidine phosphate, guanylurea phosphate, melamine borate, guanidine carbonate and benzosulfohydrazide, said epoxy composition optionally containing fillers,

said members having a decomposition temperature of about 100° C to 400° C and being characterized in that the decomposition of each member differs from each other by at least about 50° C,

and characterized by at least one protective layer of polyurethane over said cured coating of epoxy resin composition.

9. A method of protecting a substrate with a fire-retarding epoxy resin composition coating which comprises, formulating said composition by mixing said epoxy resin with at least one amine curing agent and then adding thereto the following ingredients,

about 30% to 70% by weight referred to the epoxy resin-curing agent content of at least two members containing 20 mol% nitrogen and/or phosphorus selected from the group consisting of cyclic, aliphatic, aromatic, alicyclic-aromatic polyamines having a molecular weight of about 100 to 400 and melamine phosphate, guanidine phosphate, guanylurea phosphate, melamine borate, guanidine carbonate and benzosulfohydrazide, said epoxy composition optionally containing fillers,

said members having a decomposition temperature of about 100° C to 400° C and being characterized in that the decomposition of each member differs from each other by at least about 50° C,

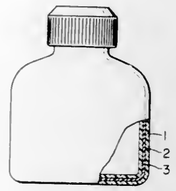
and applying a plurality of layers of said composition as a coating to the substrate to be protected and curing said composition.

4,123,576

BONDING A MULTI-LAYERED STRUCTURE OF OLEFIN-CONTAINING AND NITRILE-CONTAINING POLYMERS AND ARTICLE

Akio Kobayashi, and Masaki Ohya, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1976, Ser. No. 706,559
Claims priority, application Japan, Jul. 23, 1975, 50/89130
Int. Cl.[2] B65D *89/00, 1/02*
U.S. Cl. 428—35 **17 Claims**



1. A synthetic-resin laminated structure comprising a first layer of a nitrile-containing polymer (I) comprising 40 to 90 mol percent of a unit of at least one member of acrylonitrile and methacrylonitrile, a second layer of a polymer mixture (II) comprising a nitrile-containing polymer (A) comprising 20 to 90 mol percent of a unit of at least one member of acrylonitrile and methacrylonitrile and an olefin-containing polymer of substantially no nitrile content (B) blended together, and a third layer of an olefin-containing polymer of substantially no nitrile content (III), said first, second and third layers being fused together in a laminated form with the second layer interposed between the first and third layers, and the 180° peel strength between the first layer and the third layer being at least 30 g/cm according to A.S.T.M. D903.

4,123,577

PRIMARY BACKING FOR TUFTED CARPETS AND CARPETS MADE THEREFROM

Morton I. Port, London, England; Juergen Nebe, and Bernhard H. Ladeur, both of Gronau-Epe, Germany, assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 703,612, Jul. 8, 1976, abandoned. This application Dec. 22, 1976, Ser. No. 753,403
Int. Cl.[2] B32B *5/02, 5/06*
U.S. Cl. 428—95 **30 Claims**

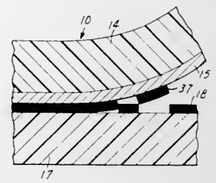
1. An article suitable for use as a primary backing for tufted carpets comprising a substrate and a web having a weight per square meter of at least about 3 grams bonded thereto which web comprises about 5% to 100% by weight of a first fiber component which is heat bonded to said substrate and which has a denier of at least about 1.2 dtex and a fiber length of at least about 5 millimeters, and about 95% to 0.0% by weight of a second fiber component which is bonded to said first fiber component and which has a denier of at least about 1.2 dtex, and a fiber length of at least about 5 millimeters.

4,123,578

TRANSFER LETTER SYSTEM

Kenneth J. Perrington, New Brighton; Phillip A. Taylor, Lake Elmo, and Peter J. Vogelgesang, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 420,310, Nov. 29, 1973, which is a continuation-in-part of Ser. No. 318,257, Dec. 26, 1972, abandoned. This application Aug. 3, 1976, Ser. No. 711,366
Int. Cl.[2] G03C *5/16;* **B41B** *13/00*
U.S. Cl. 428—206 **22 Claims**



1. A composite strip material for composing graphics such as letters, numbers, symbols or pictures in accordance with patterns of radiation, the strip material comprising:

an accepting tape comprising a layer of latent adhesive material, which adhesive material is nontacky at normal room temperature, but is softened and activated when heated to a temperature range somewhat above normal room temperature;

a donor web;

a friable layer of microgranules of up to 5 microns average diameter releasably adhered to the doner web and in face-to-face contact with the layer of adhesive material, said microgranules having a softening temperature above that of the adhesive material;

at least one of said layers bearing a radiation absorbing pigment; and

the composite strip material being essentially transparent to radiant energy between one exterior surface and said pigment to afford exposure of the pigment by momentary radiation so that the pigment is selectively heated in accordance with the pattern or radiation and momentarily softens the adjacent portions of the layer of adhesive material which then adheres to microgranules so that upon separation of the accepting tape and donor web, the microgranules are carried to the accepting tape only in irradiated areas.

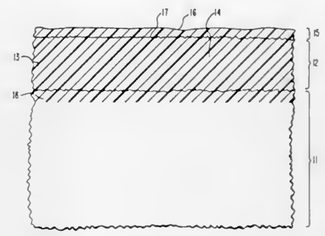
4,123,579

RESIN COATED SUBSTRATE USING A SHORT-SET, HIGH-FLOW MELAMINE-FORMALDEHYDE IMPREGNATING RESIN

Harold O. McCaskey, Jr., Allendale, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1977, Ser. No. 782,697
Int. Cl.[2] B32B *27/42;* **C08G** *12/38*
U.S. Cl. 428—264 **10 Claims**

1. A resin film coated substrate comprising at least one substrate layer impregnated with resin and having a continuous film on its surface of dried, catalyzed, uncured resin, the resin consisting essentially of the reaction product of 1 mole of melamine, 1.8 moles to 2.7 moles of uninhibited formaldehyde and 0.05 mole to 0.40 mole of urea; the resin, prior to drying, having had a solids content of between about 40 wt.% to about 60 wt.%, a pH of between about 8 to about 10.5 and a water dilutability of between about 85% to about 195%; wherein the resin content of the substrate is between about 50 wt.% to about 85 wt.%, and the dried continuous film on the surface of the substrate layer will cure within about 30 seconds to about 90 seconds, under pressures of between about 150 psi. to about



500 psi., and remain on the surface of the substrate after pressing without the formation of a discontinuous film.

4,123,580

COLOR SOURCE SHEET WITH RUBBER BINDER

Victor R. Franer, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 23, 1977, Ser. No. 809,320
Int. Cl.[2] B44D *1/18*
U.S. Cl. 428—304 **5 Claims**

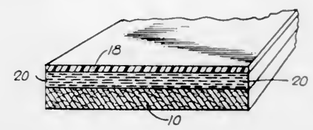
1. A color source sheet consisting of a thin porous paper having on one surface a thin uniform coating comprising a rubber binder in which is dispersed particulate heat-volatilizable dye and a particulate filler which is non-absorptive of said dye, wherein said particulate filler has a major dimension no greater than about 35 microns.

4,123,581

SELF-ADHERING STENCIL

Abraham D. Davis, Dolton, and Kenneth W. Pinter, Mundelein, both of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed Nov. 18, 1976, Ser. No. 742,903
Int. Cl.[2] B32B *5/18, 29/00;* **B41N** *1/24*
U.S. Cl. 428—318 **1 Claim**



1. A self-adhering stencil comprising a porous stencil base tissue, a stencilizable layer present as a coating on the stencil base tissue and a heat sensitive adhesive material present as an outer layer on the stencilizable layer in an amount sufficient to yield a heat bond of minimum peel strength for bonding the stencil to a separate substrate.

4,123,582

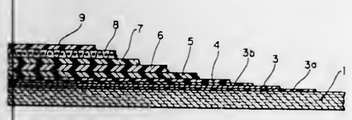
BUILDING FORM FOR MOLDED ARTICLES HAVING A URETHANE COATING

William Musyt, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 379,639, Jun. 13, 1973, abandoned, which is a continuation of Ser. No. 153,085, Jun. 14, 1971, abandoned, which is a continuation of Ser. No. 789,111, Jan. 2, 1969, abandoned. This application Mar. 28, 1977, Ser. No. 781,608
Int. Cl.[2] B32B *27/10, 29/06*
U.S. Cl. 428—335 **1 Claim**

1. In a cardboard building form for preparing molded articles by spray coating a polyurethane reaction mixture thereon, curing the reaction mixture to form a molded article and re-

moving it therefrom by water-destructing the building form, the improvement which comprises, in sequence, an outer, water soluble release agent coating over a water permeable cellophane film casting surface adhered with a water soluble cement to an inner, water destructible cardboard support layer, where said water soluble release agent and said water



soluble cement are selected from at least one of sugar, polyvinyl alcohol, and methyl cellulose, and where said cellophane film has a water permeability of about 4000 to about 8000 grams per 100 square meters per 24 hours according to ASTM Test E96E and a thickness of from about 0.0005 to about 0.002 inch.

4,123,583

FILAMENTARY REINFORCEMENT PRODUCT

Harold E. DeBolt, Andover, Mass., assignor to Avco Corporation, Wilmington, Del.

Division of Ser. No. 634,478, Nov. 24, 1975, Pat. No. 4,045,597, which is a continuation-in-part of Ser. No. 230,867, Mar. 1, 1972, abandoned. This application May 23, 1977, Ser. No. 799,249

Int. Cl.[2] B32B *9/00;* **D02G** *3/36*

U.S. Cl. 428—336 **4 Claims**

1. A filamentary product consisting of in cross section:

a core of amorphous carbon;

an integral skin layer of highly-oriented graphite having boron, dispersed therein, said graphite being formed by the catalytic conversion of the surface region of the amorphous carbon filament; and

an outer layer of boron deposited on the integral skin layer.

4,123,584

METHOD FOR RECLAIMING PROCESSED THERMOSETTING PLASTIC COMPOUNDS

Lee K. Brewton, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Jan. 31, 1977, Ser. No. 763,783

Int. Cl.[2] B44D *1/42;* **B29H** *19/00*

U.S. Cl. 428—379 **8 Claims**

1. A process for utilizing reclaimed thermosetting crosslinkable polyethylene recovered from an extruder, said recovered polyethylene being fully compounded to permit re-extrusion to a final product, the steps comprising:

a. initially extruding said fully compounded polyethylene without adding additional crosslinking agents at a temperature generally sufficient to cause crosslinking of said polyethylene, said temperature being above about 170° F. and below about 480° F.;

b. recovering the hot polyethylene;

c. granulating the recovered polyethylene while still warm and before it has become substantially crosslinked;

d. cooling the granulated polyethylene to arrest further crosslinking;

e. grinding the cooled granules to a powder of about 30 mesh or less; and

f. regranulating the powder suitable for extrusion use.

4,123,585

POLYMERIC COMPOSITION COMPRISING A HALIDE POLYMER, AN ETHYLENE TERPOLYMER AND AN ALKYL ACRYLATE COPOLYMER

Walter J. Sparzak, Catonsville, and William C. Vesperman, Bel Air, both of Md., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 888,254

Int. Cl.[2] C08L *27/06, 27/08*

U.S. Cl. 428—379 **13 Claims**

1. A polymeric composition which comprises:

(1) a solid halide polymer selected from the group consisting of a vinyl halide polymer and a vinylidene halide polymer;

(2) a terpolymer comprising by weight (a) 40 to 80 percent ethylene, (b) 3 to 30 percent carbon monoxide and (c) 5 to 60 percent of one or more monomers copolymerizable therewith in order to produce a solid copolymer, wherein said (c) is selected from the group consisting of unsaturated mono- or dicarboxylic acids of 2 to 20 carbon atoms, esters of said unsaturated mono- or dicarboxylic acids, vinyl esters of saturated carboxylic acids where the acid group has 1 to 8 carbon atoms, vinyl alkyl ethers wherein the alkyl group has 1 to 18 carbon atoms, acrylonitrile, methacrylonitrile, norbornene, alpha-olefins of 3 to 12 carbon atoms and vinyl aromatic compounds; and

(3) a blending agent mixture comprising (a') a mixed alkyl phthalate having dissimilar alkyl groups of 6 to 11 carbon atoms and (b') a copolymer of from about 5 to about 95 percent by weight of an alkyl acrylate wherein the alkyl radical contains from 1 to about 12 carbon atoms and from about 95 to about 5 percent by weight of a dissimilar alkyl acrylate wherein the alkyl radical contains from 3 to 24 carbon atoms, said mixed alkyl phthalate (a') being present in an amount by weight at least equal to the amount by weight of said copolymer (b').

7. An electrical conductor provided with an extrudable coating of a composition comprising:

(1) a solid halide polymer selected from the group consisting of a vinyl halide polymer and a vinylidene halide polymer;

(2) a terpolymer comprising by weight (a) 40 to 80 percent ethylene, (b) 3 to 30 percent carbon monoxide and (c) 5 to 60 percent of one or more monomers copolymerizable therewith in order to produce a solid copolymer, wherein said (c) is selected from the group consisting of unsaturated mono- or dicarboxylic acids of 2 to 20 carbon atoms, esters of said unsaturated mono- or dicarboxylic acids, vinyl esters of saturated carboxylic acids where the acid group has 1 to 18 carbon atoms, vinyl alkyl ethers wherein the alkyl group has 1 to 18 carbon atoms, acrylonitrile, methacrylonitrile, norbornene, alpha-olefins of 3 to 12 carbon atoms and vinyl aromatic compounds; and

(3) a blending agent mixture comprising (a') a mixed alkyl phthalate having dissimilar alkyl groups of 6 to 11 carbon atoms and (b') a copolymer of from about 5 to about 95 percent by weight of an alkyl acrylate wherein the alkyl radical contains from 1 to about 12 carbon atoms and from about 95 to about 5 percent by weight of a dissimilar alkyl acrylate wherein the alkyl radical contains from 3 to 24 carbon atoms, said mixed alkyl phthalate (a') being present in an amount by weight at least equal to the amount of said copolymer (b').

4,123,586

FLAME-RESISTANT COMPOSITION, AND ELECTRICAL PRODUCT THEREOF

Joseph E. Betts, Westport, Conn., and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 554,471, Mar. 3, 1975, abandoned. This application Jul. 18, 1977, Ser. No. 816,857

Int. Cl.[2] D02G *3/00;* **B32B** *25/20*

U.S. Cl. 428—391 **7 Claims**

1. An electrical conductor comprising a metallic conductive element having a flame-resistant, cross-link cured polyolefin insulation thereabout consisting essentially of the following, in the approximate relative parts by weight of:

Polyolefin	100
Decabromodiphenyl ether	15 - 50
Silicone gum	3 - 10
Organic lead salt	3 - 10
Antimony oxide	5 - 25
Fumed silica	3 - 10

4,123,587

METHOD OF MANUFACTURING A FINELY GRANULAR CONCENTRATE OF FIRE-RETARDING FOAM-FORMING SOLID ADDITION SUBSTANCES FOR PLASTICS, VARNISHES, COATING COMPOSITIONS, AND SIMILAR SUBSTRATES

Ludwig Wesch, Gorresstrasse 54, Heidelberg, Germany; Luis C. Roma, C/Montserrat 22, Sabadell, and Carlos F. Pellicer, C/Balmes 454 s/a, Barcelona, both of Spain

Filed Feb. 2, 1977, Ser. No. 764,847

Claims priority, application Spain, Feb. 3, 1976, 444,861

Int. Cl.[2] C08K *9/06;* **B32B** *31/00*

U.S. Cl. 428—407 **18 Claims**

1. A method of producing a fine granular concentrate of fire-retarding, foam-forming solids for addition to a host material including plastics, paints, coating compositions and the like which comprises,

providing particles of solid fire-retarding additives of particle size less than about 5 μm,

forming a mixture of said particles with a polymeric material wherein said particles are surrounded and coated by said polymeric material, said polymeric material being compatible with or the same as the host material to which the coated particles are subsequently added to confer fire-retarding and foam-forming properties thereto,

comminuting said polymeric-particle mixture to a granular product of less than about 50 μm,

and repeating the coating procedure at least one more time on said granular product by mixing said granular product with polymeric material,

drying and comminuting said granular-polymeric mixture to provide a granular concentrate having a size of less than about 50 μm with an outer layer of said polymeric material,

said polymeric material in at least the outer layer of said granular concentrate being characterized by being capable of splitting off nitrogen and/or water under pyrolitic conditions.

4,123,588

LAMINATES

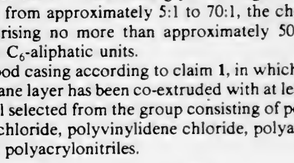
Richard E. Molari, Jr., Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 586,630, Jun. 13, 1975, Pat. No. 4,027,072, which is a continuation-in-part of Ser. No. 369,663, Jun. 13, 1973, abandoned. This application Jan. 24, 1977, Ser. No. 761,876

Int. Cl.[2] B32B *9/00, 17/10, 27/36*

U.S. Cl. 428—412 **8 Claims**

1. A laminate of an acrylic polymer and other material selected from the group comprising solid resinous material, glass, wood, ceramics, metals and cermets and having as adhesive interlayer block polysiloxane-polycarbonate copolymer prepared by reacting (A) a halogen chain-stopped polydiorganosiloxane composed of from about 5 to 200 chemically combined diorganosiloxy units consisting essentially of dialkylsiloxy units which are connected to each other by silicon-oxygen-silicon linkages wherein each of the silicon atoms has two organo radicals attached through a carbon-silicon bond, and (B) a dihydric phenol having the formula



where Z is a member selected from the class consisting of hydrogen, lower alkyl radicals and halogen radicals and combinations thereof, and R is a member selected from the class consisting of hydrogen, hydrocarbon and halogenated hydrocarbon radicals, and phosgenating the purified reaction product until the resulting copolymer achieves a maximum intrinsic viscosity.

4,123,589

POLYURETHANES AND FOOD CASING MADE THEREFROM PARTICULARLY BY EXTRUSION AND STRETCHING

Rudi Korlatzki, Laudenbach, and Gunter Schuhmacher, Weinheim, both of Germany, assignors to Naturin-Werk Becker & Do., Weinheim, Germany

Filed Dec. 23, 1976, Ser. No. 753,694

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1975, 2559318

Int. Cl.[2] C08G *18/42;* **B32B** *27/40;* **A22C** *13/00*

U.S. Cl. 428—425 **24 Claims**

1. A food casing comprising at least one layer of plastic material, such layer comprising a polyurethane elastomer exhibiting thermoplastic properties on processing, the polyurethane consisting essentially of base units derived from the reaction of

(a) at least one high molecular weight diol,

(b) at least one di-isocyanate, and

(c) at least one low molecular weight glycol as chain-extender, both the base units derived from both the high molecular weight diol and the di-isocyanate consisting essentially of linear C_6-aliphatic units, the equivalent ratio of high molecular diol to di-isocyanate base units being in the range of approximately 1:3.5 to 1:70, the quantity-weight ratio of said base units being in the range of from approximately 1:0.4 to 1:4.0, respectively, the equivalent ratio of the low molecular glycol to high molecular diol being from approximately 5:1 to 70:1, the chain extender comprising no more than approximately 50 mole-% of linear C_6-aliphatic units.

10. A food casing according to claim 1, in which at least one polyurethane layer has been co-extruded with at least one layer of material selected from the group consisting of polyurethane, polyvinylchloride, polyvinylidene chloride, polyamides, polyesters and polyacrylonitriles.

4,123,590

DRY WRITING BOARD POSSESSING ANTI-HALATION EFFECT AND PROCESS FOR PRODUCING THE SAME

Tetuya Hasegawa, and Akihiro Itishasi, both of Tokyo, Japan, assignors to Pilot Man-Nen-hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1975, Ser. No. 643,955

Claims priority, application Japan, Dec. 28, 1974, 49-1165

Int. Cl.[2] B32B *15/04*

U.S. Cl. 428—450 **6 Claims**

1. A dry, enameled writing board possessing an anti-halation effect which comprises a steel plate, a ground coat on said steel plate, and a multi-layered fire-coated glaze on said ground coat, the multi-layered fire-coated glaze consisting essentially of 30 to 45% silicon oxide, 15 to 25% titanium oxide, 5 to 10% sodium oxide, 5 to 15% potassium oxide, 1 to 5% calcium oxide, 2 to 5% aluminum oxide and 10 to 20% boron trioxide, all percentages being by weight, said fire-coated glaze being

composed of the following layers, in an order beginning nearest said ground coat: a first layer of aluminum oxide, calcium oxide and boron trioxide, a second layer of silicon oxide and titanium oxide formed on said first layer, and a third layer of sodium oxide and potassium oxide formed on said second layer, the interface between said first layer and said second layer being a rough surface of irregularities.

4,123,591

PROCESS FOR FORMING AN OPTICAL BLACK SURFACE AND SURFACE FORMED THEREBY

Kenneth A. Karki, Lakewood, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 16, 1977, Ser. No. 778,031
Int. Cl.[2] G02B *1/10*
U.S. Cl. 428—454 **49 Claims**

1. A method of making an optically black surface having a low reflectance of electromagnetic radiation, especially in the solar spectrum, a relatively high heat resistance, and a relatively low amount of off-gassing, comprising the steps of

(a) Milling the following mixture of ingredients for up to about 25 minutes:

Ingredient	Amount (% by weight)
Alkali metal silicate	13–21
Black metal oxide pigment	17–27
Kaolin	0–5
Mica	0–3
Water	50–70

(b) Coating the surface to be rendered optically black
(1) by applying at least four coats of an inorganic composition comprising alkali metal silicate and metal oxide pigment composition, and
(2) by spraying at least the last two surface coatings, said last two surface coatings being said mixture, and
(c) Drying at least the coats prior to the last two coats, before applying the last two coats.

4,123,592

PROCESS FOR INCORPORATING FLAVORANT INTO CELLULOSIC SUBSTRATES AND PRODUCTS PRODUCED THEREBY

Norman B. Rainer, and Peter A. Wilson, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Apr. 7, 1976, Ser. No. 674,613
Int. Cl.[2] D21H *1/40, 5/22*
U.S. Cl. 428—532 **11 Claims**

1. A method for producing stable, flavored cellulose products comprising impregnating a dry cellulosic substrate with an essentially anhydrous solution comprising liquid ammonia and a solute of volatile flavorant and then evaporating essentially all of the impregnated ammonia from said substrate such that from about 0.2% to 2.0% of the flavorant based on the dry weight of the cellulose is physically encapsulated within the cellulose structure and is not released therefrom until the cellulose is contacted with either heat or moisture.

8. The product produced by the process of claim 1.

4,123,593

PAPER FOR SERVING CABLE CORES

Hans W. Dörr, Wiesbaden-Biebrich, and Ludwig Grosse, Taunusstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Dec. 16, 1974, Ser. No. 533,466
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1973, 2363164
Int. Cl.[2] B32B *29/06*
U.S. Cl. 428—535 **1 Claim**

1. A paper for serving cable cores for the purpose of providing a swellable layer, comprising a paper base having a layer thereon of granules of a cross-linked cellulose ether which is inherently soluble in water, but is insoluble therein due to cross-linking, and which remains water-absorbent.

4,123,594

METALLIC COATED ARTICLE OF IMPROVED ENVIRONMENTAL RESISTANCE

David R. Chang, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 22, 1977, Ser. No. 835,542
Int. Cl.[2] B32B *15/18, 15/20*
U.S. Cl. 428—651 **7 Claims**

1. A metallic article comprising:
a substrate of a superalloy based on an element selected from the group consisting of Fe, Co and Ni, and
a graded coating diffused with said substrate to increase the hot corrosion resistance of the substrate, the graded coating consisting essentially of:
(i) an inner coating portion adjacent to and diffused with the substrate, and consisting essentially of, by weight, 10–50% Cr, up to 30% Al, up to 10% Hf, up to 30% of elements selected from the group consisting of Pt, Rh and Pd, up to 3% Y, with the balance at least one element selected from the group consisting of Fe, Co and Ni, and elements diffused from the substrate and the outer coating portion, and
(ii) an outer coating portion adjacent to and diffused with the inner coating portion, and consisting essentially of, by weight, 10–50% Al and 1–40% of elements selected from the group consisting of Hf, Pt, Rh and Pd, with the balance elements diffused from the inner coating portion.

4,123,595

METALLIC COATED ARTICLE

David R. Chang, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 22, 1977, Ser. No. 835,543
Int. Cl.[2] B32B *15/00, 15/18*
U.S. Cl. 428—667 **5 Claims**

1. A metallic article comprising:
a substrate of a superalloy based on an element selected from the group consisting of Fe, Co and Ni, and
a graded coating diffused with said substrate to increase the hot corrosion resistance of the substrate, the graded coating consisting essentially of:
(i) an inner coating portion adjacent to and diffused with the substrate, and consisting essentially of, by weight, 8–30% Al, 10–50% Cr, up to 10% Hf, up to 30% of elements selected from the group consisting of Pt, Rh and Pd, up to 3% Y, with the balance at least one element selected from the group consisting of Fe, Co and Ni, and elements diffused from the substrate and the outer coating portion and
(ii) an outer coating portion adjacent to and diffused with the inner coating portion, and consisting essentially of 5–50 weight percent of elements selected from the group consisting of Hf, Pt, Rh and Pd, with the balance elements diffused from the inner coating portion.

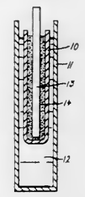
4,123,596

CATHODE STRUCTURE FOR SODIUM SULPHUR CELLS

Graham Robinson, Chester, England, assignor to Chloride Silent Power Limited, London, England

Filed Aug. 2, 1977, Ser. No. 821,107
Claims priority, application United Kingdom, Mar. 2, 1977, 4534/77
Int. Cl.[2] H01M *10/39*
U.S. Cl. 429—104 **11 Claims**

1. In a sodium sulphur cell having a cathodic region containing sulphur/polysulphides forming a cathodic reactant between a solid electrolyte and a cathode current collector, a porous packing in the cathodic region forming an electronic conductor impregnated with the cathodic reactant, which packing is constituted at least partly of a porous metal structure



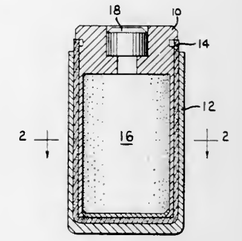
coated with graphite or carbon forming an electronically conductive protective coating over the metal.

4,123,597

THERMAL CELLS

John H. Zauner, Bloomington, and Lyle G. Waller, Clinton, both of Ill., assignors to National Union Electric Corporation, Bloomington, Ill.

Filed Oct. 19, 1953, Ser. No. 387,019
Int. Cl.[2] H01M *6/36*
U.S. Cl. 429—112 **10 Claims**



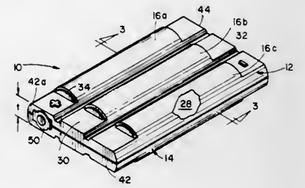
1. A thermal cell comprising a metal container, heat source material in said container, said container forming one electrode of said cell, dry electrolyte in contact with the outer surface of said container, and an outer metal shell contacting said electrolyte and separated thereby from said container and constituting another electrode of said cell.

4,123,598

BATTERY PACK AND CONTAINER

Ronald O. Hammel, Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Apr. 24, 1978, Ser. No. 899,036
Int. Cl.[2] H01M *6/42*
U.S. Cl. 429—159 **15 Claims**



1. A battery container for housing adjacent rows of interconnected unitary electrochemical cells comprising a pair of cofitting molded trays, at least one of said trays having an outer surface formed of a plurality of parallelized closely spaced elongate arches interconnected at adjoining base portions and defining within the container cylindrical chambers for receiving the cells, end surfaces extending generally transversely of and bridging together the arches or marginal extensions thereof of the outer surface, and notch means in the end surfaces for receiving electrical conductive terminal means.

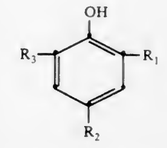
4,123,599

FOAMS FROM PHENOLIC RESINS AND ISOCYANATES, AND PROCESS FOR THE MANUFACTURE THEREOF

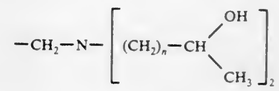
Karl-Heinz Hilterhaus, Georgsmarienhütte, and Franz G. Reuter, Lemforde, both of Fed. Rep. of Germany, assignors to Chemie-Anlagenbau Bischofsheim GmbH, Osnabruck; Reuter Technologie GmbH, Lemforde and Metallgesellschaft, Frankfurt am Main, all of, Fed. Rep. of Germany

Filed Sep. 27, 1976, Ser. No. 726,779
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 2542900
Int. Cl.[2] C08G *18/14, 18/50;* **C08K** *3/22, 3/08*
U.S. Cl. 521—123 **5 Claims**

1. A process for the manufacture of a foam based on a phenolic resin having an OH number of from 300 to 600 and being an oxyalkylated mannich condensation product of the basic formula



where the radicals R_1, R_2 and R_3 are identical or different and denote



where n represents an integer from 1 to 6, said process comprising reacting said product with an organic diisocyanate or polyisocyanate or mixtures thereof, in the presence of a blowing agent consisting essentially of a gas produced by metal powder or a metal powder and a metal oxide powder, wherein the metal of the metal powder and the metal of the metal oxide powder are selected from the group consisting of aluminum, selenium, zinc, vanadium, manganese, cobalt, nickel, copper, chromium and mixtures thereof.

4,123,600

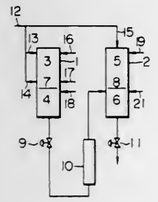
PROCESS FOR THE HIGH PRESSURE PRODUCTION OF POLYETHYLENE

Shinichiro Kita, Niihama; Fumihiko Hiki, Ichihara; Masayuki Shimizu, and Akira Kondou, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 4, 1977, Ser. No. 821,920
Claims priority, application Japan, Aug. 13, 1976, 51-97162
Int. Cl.[2] C08F *4/04, 4/34, 10/02*
U.S. Cl. 526—65 **7 Claims**

1. In a process for polymerizing ethylene under high temperature and high pressure conditions by using a battery of two or more autoclave reactors connected in series by piping provided with a heat exchanger, in which the reaction mixture withdrawn from the autoclave reactor of the preceding stage is cooled by said heat exchanger and the cooled reaction mixture is further introduced into the succeeding autoclave reactor, the improvement which comprises supplying a substantial portion of feed ethylene into the upper reaction zone of the preceding autoclave reactor having an upper reaction zone and a lower

reaction zone, while supplying the remaining portion of said feed ethylene into the upper reaction zone of the succeeding autoclave reactor having an upper reaction zone and a lower reaction zone, polymerizing the ethylene in the upper reaction zone of said preceding autoclave reactor under a pressure of 1,000 to 2,800 kg/cm^2 and at a temperature of 130° to 200° C. in the presence of a polymerization initiator, introducing the thus obtained reaction mixture into the upper or lower reaction zone of said preceding autoclave reactor and polymerizing said mixture therein at a temperature of 220° to 280° C. in the presence of a polymerization initiator, cooling the reaction mixture withdrawn from the bottom end of said preceeding



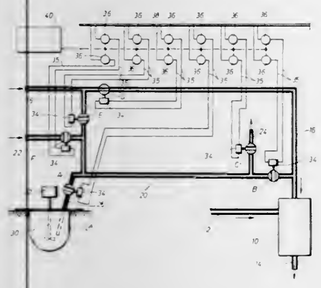
reactor to a temperature higher than 120° C. but lower than the reaction temperature in the lower reaction zone of said preceding reactor by 20° C. or more by the heat exchanger provided between said preceding and succeeding reactors, then forwarding the cooled reaction mixture into the upper reaction zone of said succeeding reactor and polymerizing said mixture therein under a pressure of 1,000 to 2,800 kg/cm^2 and at a temperature of 130° to 200° C. in the presence of a polymerization initiator, introducing the thus obtained reaction mixture into the lower reaction zone of said succeeding reactor and further polymerizing said mixture therein at a temperature of 220° to 280° C. in the presence of a polymerization initiator.

4,123,601

CATALYST FEEDING APPARATUS

Gene E. Kellum, and Jack W. Thompson, both of Orange, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Apr. 20, 1977, Ser. No. 789,051
Int. Cl.^{2} B01J *8/00*; C08F *2/00, 4/00*
U.S. Cl. 526—79 **4 Claims**



1. Apparatus for feeding controlled quantities of a slurry of catalyst solids in a liquid medium to a reactor in a controlled time sequence consisting essentially of:

a. a reactor,
b. a fluid line to feed a liquid to said reactor,
c. a bypass line which connects to two parts of said fluid line and constitutes loop in said fluid line,
d. a first valve in said fluid line intermediate of the loop ports,
e. a second valve positioned in said loop near its inlet port,
f. a third valve positioned in said loop near its outlet port,
g. a fourth valve positioned in said loop intermediate of said second and third valves to feed a liquid to said loop,
h. a fifth valve positioned in said loop intermediate of said second and third valves to vent fluid from said loop,
i. a liquid reservoir adapted to contain a slurry of catalyst solids in a liquid medium and
j. a feed line connecting said liquid reservoir to said loop and having a sixth valve therein.

4,123,602

TERPOLYMERS OF TETRAFLUOROETHYLENE, ETHYLENE AND PERFLUOROALKYL VINYL MONOMER AND PROCESS FOR PRODUCING THE SAME

Hiroshi Ukihashi, Tokyo; Masaaki Yamabe, Machida, and Haruhisa Miyake, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 689,526, May 24, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,894
Int. Cl.^{2} C08F *210/02, 214/18, 214/26*
U.S. Cl. 526—206 **34 Claims**

1. A terpolymer having a volumetric flow rate of 10 to 500 mm^3/sec. as determined at 300° C under a load of 30 kg/cm^2 containing mainly tetrafluoroethylene and ethylene which consists essentially of components of 40 to 60 mole % of tetrafluoroethylene, 40 to 60 mole % of ethylene and 0.1 to 10 mole % of perfluoroalkyl vinyl monomer having the formula

$$CH_2=CH-C_nF_{2n+1}$$

wherein n is an integer of 2 to 10.

4,123,603

FLUOROELASTOMER COMPOSITION

Clare A. Stewart, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 31, 1977, Ser. No. 801,567
Int. Cl.^{2} C08F *214/22*
U.S. Cl. 526—254 **2 Claims**

1. An improved elastomeric terpolymer containing polymerized units of vinylidene fluoride, hexafluoropropene and tetrafluoroethylene wherein the improvement is characterized in that said vinylidene fluoride is present in the amount of 57–61 weight percent, said hexafluoropropene is present in the amount of 27–31 weight percent, said tetrafluoroethylene is present in the amount of 10–14 weight percent, and said terpolymer has a glass transition temperature of −24° C. or below and, when vulcanized, high compression set recovery as measured by a test from the group consisting of (1) less than 20% residual compression set measured within one hour after warming the sample to room temperature following compression set determination at 0° C. for 70 hours according to ASTM D-395, Method B, and (2) less than 10% residual compression set measured after allowing the sample to recover at room temperature overnight for at least 16 hours following the compression set determination according to said ASTM method.

4,123,604

PROCESS FOR COATING A SUBSTRATE AND AN IMPROVED COATING THEREFORE

Robert W. Sandford, Jr., Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 605,491, Aug. 18, 1975. This application Oct. 6, 1977, Ser. No. 839,876
Int. Cl.^{2} C08G *77/04*
U.S. Cl. 528—31 **4 Claims**

1. A composition comprising

(1) 100 parts by weight of a diorganopolysiloxane-based formulation which is heat curable to an elastomer by the addition of methylhydrogenpolysiloxanes to silicon-bonded alkenyl groups,

(2) from 0.5 to 90 parts by weight of a toluene soluble copolymer of (a) $R_3SiO_{1/2}$ units, (b) $(CH_2=CH)R_2SiO_{1/2}$ units and (c) $SiO_{4/2}$ units, the ratio of said (a) and (b) units to (c) units being from 0.6:1 to 1.1:1 and the silicon bonded hydroxy content of (2) being no more than 0.7 weight percent based on the weight of (2), where R is a monovalent hydrocarbon radical of no more than 2 carbon atoms, and

(3) a catalyst comprising complexes of rhodium selected from the group consisting of (i) $RhX_3(SR'_2)_3$ and (ii) $Rh_2(CO)_4X_2$, wherein each X represents a halogen atom and each R′ represents an alkyl, aryl, aralkyl or alkaryl radical having from 1 to 8 inclusive carbon atoms or the R''_3SiQ- group in which Q represents a divalent aliphatic hydrocarbon radical having from 1 to 6 inclusive carbon atoms and R″ represents an alkyl, aryl, aralkyl or alkaryl radical having from 1 to 8 inclusive carbon atoms or a $(CH_3)_3Si$- group, not more than one R″ per molecule being $(CH_3)_2Si$-, the entire composition being essentially free of solvents.

4,123,605

META-ISOCYANATOBENZYL ISOCYANATE-DERIVED POLYURETHANES

Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 422,623, Dec. 7, 1973, Pat. No. 4,079,073. This application Jul. 11, 1977, Ser. No. 814,587
Int. Cl.^{2} C08G *18/42, 18/48, 18/14*
U.S. Cl. 528—60 **5 Claims**

1. A polyurethane composition made by reacting meta-isocyanatobenzylisocyanate wih a polyfunctional alcohol having at least two hydroxyl groups and a molecular weight of at least 92, under conditions sufficient to obtain a material useful as a coating material, as a paint constituent, as a varnish substitute, or as a foam.

4,123,606

DEAGGLOMERATION PROCESS

Satish C. Malhotra, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 21, 1977, Ser. No. 835,806
Int. Cl.^{2} C08F *6/00*
U.S. Cl. 528—499 **4 Claims**

1. An improvement in the process for preparing agglomerated granules of non-melt-fabricable granular tetrafluoroethylene polymer by agitating in an agitation vessel particles of said polymer in which the particle size averages, by weight, between about 5 and about 200 microns, in a liquid medium selected from the group consisting of (a) water and (b) a two-phase mixture of water and an organic liquid which is soluble in water up to at most 15% by weight at the operating temperature of the process and which has a surface tension no greater than about 40 dynes/cm. at 25° C. and in which the organic liquid is present in an amount of 0.1 to 0.5 cc per gram of polymer, said agitation being carried out at a level and for a time sufficient to agglomerate the particles, followed by isolating said agglomerates, the improvement which comprises, after said agitation is carried out, removing agglomerates larger than a predetermined size and agitating the removed oversize agglomerates in an agitation vessel along with water at a level higher than the level used in the agglomeration and for a time sufficient to subdivide oversize agglomerates into a size smaller than said predetermined size, and recovering the subdivided agglomerates.

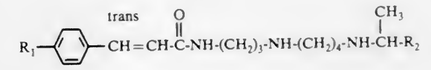
4,123,607

ALKYLATED DERIVATIVES OF ANTIBIOTIC BM123γ

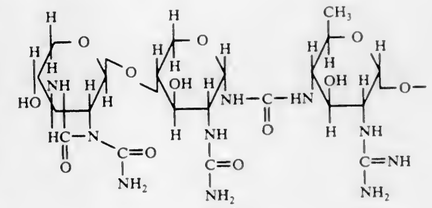
Joseph J. Hlavka, Tuxedo, and Panayota Bitha, Pomona, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 630,564, Nov. 10, 1975, Pat. No. 4,048,431, which is a continuation-in-part of Ser. No. 612,975, Sep. 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 529,862, Dec. 5, 1974, abandoned. This application May 31, 1977, Ser. No. 801,898
Int. Cl.^{2} C07H *13/12*
U.S. Cl. 536—17 **31 Claims**

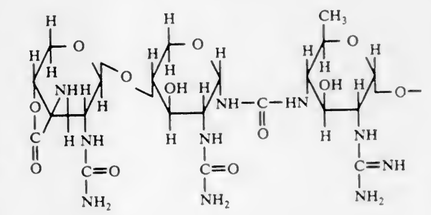
1. A compound selected from the group consisting of those of the formula:



wherein R_1 is a moiety selected from the group consisting of those of the formulae:



and



R_2 is selected from the group consisting of N,N-dipropylaminomethyl, styryl, 4-methylpenten-3-yl, 1,3-dimethylhexyl, β-indolylmethyl, cyclopenten-2-ylmethyl, (o-tolylcarbamoyl)methyl, methoxymethyl, cyclohexylmethyl, 2-(4-hydroxyphenyl)ethyl, n-nonyl, n-dodecyl, methoxyvinyl, 1-methyl-2-hydroxyethyl, N,N-diethylaminoethyl, carbethoxychloromethyl, 1-methyl-1-hydroxyethyl, (tert-butylcarbamoyl)methyl, dimethoxymethyl, phenoxymethyl, ethynyl, N,N-dimethylaminomethyl, N,N-diethylaminopropyl, cyclopropyl, 2,2-dimethoxy-ethyl, acetonyl, 4-chlorobenzyl, 3-chlorobenzyl, 2-chlorobenzyl, 1-acetamidoethyl, 3-pyridyl, 1-carbethoxyethyl, 1-hydroxyethyl, 1-methyl-2-hydroxyethyl, n-heptyl, 3-hydroxypropyl, n-octyl, 4-methylhexen-3-yl and 2-cyclopenten-1-ylmethyl; and the pharmacologically acceptable acid-addition salts thereof.

4,123,608

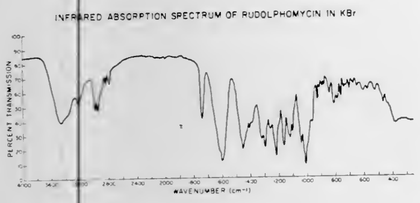
ANTIBIOTIC COMPOUND

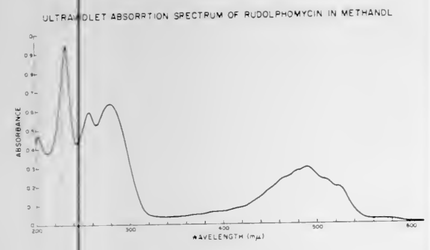
Donald E. Nettleton, Jr., Jordan; Terrence W. Doyle, Fayetteville, and William T. Bradner, Manlius, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

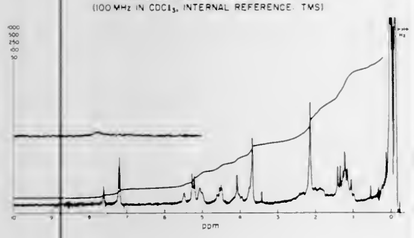
Continuation-in-part of Ser. No. 816,427, Jul. 18, 1977, abandoned. This application Jan. 25, 1978, Ser. No. 872,291

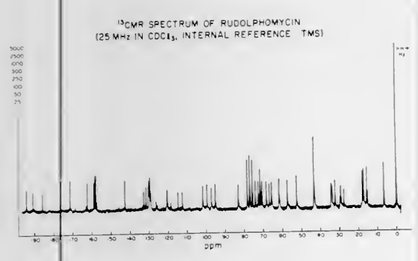
Int. Cl.[2] C07G *11/00*

U.S. Cl. 536—17 **1 Claim**

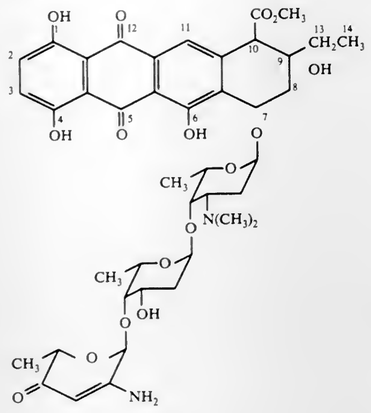








1. The anthracycline antibiotic, rudolphomycin, or a pharmaceutically acceptable salt thereof, said antibiotic being substantially free of substances co-produced therewith and having the structural formula:



4,123,609

PROCESS FOR THE PRODUCTION OF 9-(β-D-ARABINOFURANOSYL)ADENINE, 5'-PHOSPHATE

Walter E. Behnke, St. Clair Shores; William R. Marsh, Roseville, and Theodore H. Haskell, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 738,425, Nov. 3, 1976, abandoned. This application Sep. 12, 1977, Ser. No. 831,703

Int. Cl.[2] C07H *17/00*

U.S. Cl. 536—27 **15 Claims**

1. In a process for the production of the ester product 9-(β-D-arabinofuranosyl)adenine, 5'-phosphate, comprising converting 9-(β-D-arabinofuranosyl)adenine to a 5'-monophosphorylated intermediate product in the presence of trialkyl phosphate solvent, and subjecting the reaction mixture to aqueous hydrolysis, the steps of isolating the ester product in crystalline form by means other than adsorption and elution comprising adjusting the pH of the aqueous hydrolysis mixture upward sufficiently to cause separation into aqueous and non-aqueous liquid phases, removing the trialkyl phosphate solvent from the aqueous mixture, maintaining the residual aqueous mixture at a pH at which the ester product is insoluble to cause said ester product to precipitate directly in crystalline form from the aqueous mixture, and isolating said crystalline ester product.

4,123,610

NUCLEIC ACID CROSSLINKING AGENT AND AFFINITY INACTIVATION OF NUCLEIC ACIDS THEREWITH

James E. Summerton, Denver, Colo., and Paul A. Bartlett, El Carrito, Calif., assignors to The United States Government, Washington, D.C.

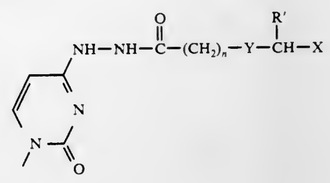
Filed Mar. 9, 1977, Ser. No. 775,800

Int. Cl.[2] C07H *19/20, 19/10, 21/02*

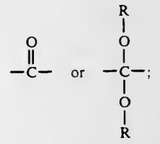
U.S. Cl. 536—28 **12 Claims**

5. An affinity inactivating agent for nucleic acids which is adapted for use in selectively inactivating a guanine residue-containing single-stranded polynucleotide target chain having a designated nucleotide sequence by base-pairing and covalently crosslinking therewith, said affinity inactivating agent comprising a derivatized cytosine residue-containing single-stranded polynucleotide carrier chain which has a nucleotide sequence complementary to said designated nucleotide sequence and which is capable of base-pairing with said target chain, at least one of the cytosine residues of said derivatized

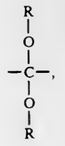
carrier chain being a C-4-substituted cytosine residue having the formula



wherein *n* is an integer of from 2 to 4; R′ is hydrogen or methyl; X is Cl or Br; Y is



when Y is



R is methyl or ethyl.

4,123,611

N-PROTECTED AMINO COMPOUNDS

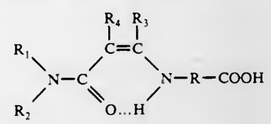
Toshiyasu Ishimaru, Suita; Yasutsugu Shimonishi, Nishinomiya; Hisayuki Sakurai, Osaka, and Minoru Hatanaka, Takatsuki, all of Japan, assignors to President of Osaka University, Japan

Continuation of Ser. No. 82,814, Oct. 21, 1970, abandoned. This application Jan. 6, 1975, Ser. No. 538,576

Int. Cl.[2] C07D *501/20;* **A61K** *31/545*

U.S. Cl. 542—421 **6 Claims**

1. An N-protected amino acid represented by the formula,



wherein R_1 and R_2 each is a lower alkyl group having 1 to 3 carbon atoms, or when taken together with the nitrogen atom attached thereto R_1 and R_2 jointly form a morpholine ring or a piperidine ring; R_3 is a lower alkyl group having 1 to 3 carbon atoms, R_4 is a hydrogen atom or a lower alkyl group having 1 to 3 carbon atoms, or when taken together with the carbon atoms attached thereto R_3 and R_4 jointly form cyclopentenyl or cyclohexenyl, and R is an alkylene group or a group of the formula,



wherein R_5 is a hydrogen atom and R_6 is selected from the group consisting of methylthioethyl, phenyl and thienyl groups, and wherein R_5 and R_6 together represent a cyclopentyl or cyclohexyl group, or the alkali salts thereof.

4,123,612

7-(5-AMINO-5-CARBOXYVALERAMIDO)-3-(CARBAMOYLOXYMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

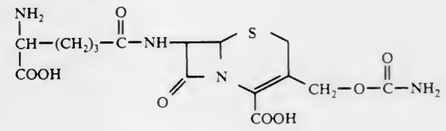
Marvin Gorman; Calvin E. Higgens, and Ramakrishnan Nagarajan, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 62,390, Aug. 10, 1970, abandoned, which is a continuation-in-part of Ser. No. 849,395, Aug. 12, 1969, abandoned. This application Apr. 23, 1974, Ser. No. 463,233

Int. Cl.[2] C07D *501/60*

U.S. Cl. 544—16 **3 Claims**

1. The compound of the formula



or a salt thereof.

4,123,613

SUBSTITUTED PYRAZINES AS INHIBITORS OF PLATELET AGGREGATION

Luigi Bernardi; Carlo Elli; Giovanni B. Falconi, all of Milan, and Rosella Ferrari, Sovico (Milan), all of Italy, assignors to Societa Farmaceutici Italia S.p.A., Milan, Italy

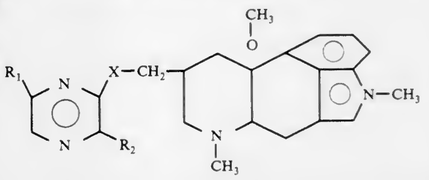
Filed May 23, 1977, Ser. No. 799,167

Claims priority, application United Kingdom, May 26, 1976, 21801/76

Int. Cl.[2] C07D *241/18*

U.S. Cl. 544—408 **6 Claims**

1. A compound having the formula (I):



(I)

where R_1 and R_2 may be methyl, methoxy, halogen (particularly chlorine, bromine or fluorine), or hydrogen, with the proviso that R_1 and R_2 cannot both be hydrogen, and

X may be S or NH.

4,123,614

NOVEL ASSAY REAGENTS

David H. Rammler, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 509,528, Sep. 26, 1974, abandoned, which is a division of Ser. No. 225,342, Feb. 10, 1972, Pat. No. 3,880,934. This application Oct. 18, 1976, Ser. No. 733,638

Int. Cl.[2] C07C *79/22*

U.S. Cl. 560—254 **3 Claims**

1. A reagent useful for enzyme measurements which is a compound selected from those represented by the following formula:

$$R^1-CH_2-(CH_2)_n-\underset{\underset{R^{10}}{|}}{CH}-\underset{\underset{R^{11}}{|}}{CH}-R^2$$

wherein,

R^1 is 4-nitrophenyloxy or 2,4-dinitrophenyloxy;

n is 1;

R^2 is hydrogen; and

R^{10} and R^{11} each is independently hydroxy or a carboxylic ester of the formula

$$R^3-\overset{\overset{O}{\|}}{C}-O-$$

wherein R^3 is alkyl of one to eighteen carbon atoms, provided that at least one of R^{10} and R^{11} is a carboxylic ester.

4,123,615

PROCESS FOR PREPARING THE THREO- AND ERYTHRO-ISOMERS OF 1-PHENYL-2-NITRO-1,3-PROPANEDIOL

László Lévai, and Gyula Mikite, both of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Feb. 23, 1977, Ser. No. 771,369

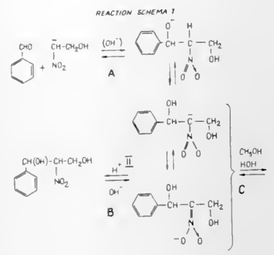
Claims priority, application Hungary, Feb. 25, 1976, EE 2407

Int. Cl.² C07C *76/02*

U.S. Cl. 568—712 **10 Claims**

1. A process for producing the threo- and erythro-isomers of 1-phenyl-2-nitro-1,3-propanediol in the form of the free nitrodiol in crystalline form, through the aldol-type alkaline condensation of benzaldehyde and nitroethanol and acidifying the reaction mixture, characterized in that the condensation is carried out in the presence of a catalytical amount of an alkaline hydroxide which is only a minor fraction of the stoichiometric amount.

REACTION SCHEMA 1



4,123,616

PROCESS FOR HYDROGENATION OF ORGANIC PEROXIDE

Shunsuke Mabuchi; Kenji Tsuzuki, and Sadakatsu Kumoi, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Jun. 15, 1977, Ser. No. 806,703

Claims priority, application Japan, Jul. 15, 1976, 51-83513

Int. Cl.² C07C *29/00*

U.S. Cl. 568—861 **11 Claims**

1. A process for hydrogenation of an organic peroxide to produce the corresponding mono- or polyhydric alcohol while substantially avoiding loss of catalyst activity for a long period of time which comprises feeding the organic peroxide into a suspension of more than 3 wt. % of a nickel catalyst in an inert solvent, at a rate of 0.05 to 10 g/hr. per 1 g of the nickel catalyst, at a reaction temperature of 140° to 200° C., under 10 to 300 Kg/cm^2 of hydrogen pressure, in a suspensoid process or a fluidized bed process; wherein said organic peroxide is fed into said suspension of the nickel catalyst heated at higher than 140° C. without contacting said suspension at lower than 140° C.

4,123,617

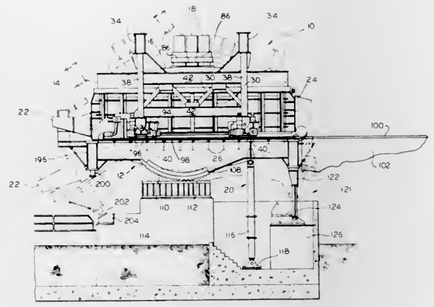
ELECTRIC ARC FURNACE

Peter J. Wynne, Pittsburgh, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed May 4, 1977, Ser. No. 793,754

Int. Cl.² F27B *14/02*

U.S. Cl. 13—10 **11 Claims**



1. An electric arc furnace comprising a platform pivotable about a generally horizontal axis,

a generally horizontally extending support floor adjacent said platform,

a furnace body mounted on said platform and having electrode means and a removable roof,

roof elevating means mounted on said platform and being constructed and arranged to elevate said roof and said electrode means and for swinging the same away from said furnace body and toward one side of said platform,

and support means disposed below said platform and on the side thereof toward which said roof and electrode means move,

said support means including pivotally mounted first column means, means for pivoting said first column means into and out of a substantially vertical position beneath said platform,

bearing means mounted below said platform and adapted to engage said first column means when the same is in its substantially vertical position whereby said platform is supported in general horizontal alignment with said support floor when said roof and electrode means are being swung, said first column means being pivotal in a direction opposite to that in which said platform tilts whereby tilting movement of said first column means will move the same out of the pivotal path of said bearing means to permit said platform to tilt,

said roof elevating means including gantry means having beam means extending horizontally above said roof means,

second column means supporting said beam means at one end and having roller means adjacent its lower end,

means at the opposite side of said furnace body for supporting said beam means for pivotal movement in a plane generally parallel to said platform, and means for pivoting said beam means whereby said roller means move off one side of said platform and onto an adjacent support floor at a point displaced horizontally from the pivot axis of said platform to swing said roof and electrode means away from said furnace body,

said first column means being disposed below the one side of said platform so that said pivotal movement of said platform is prevented as said roller means moves across said platform and onto the support floor.

4,123,618

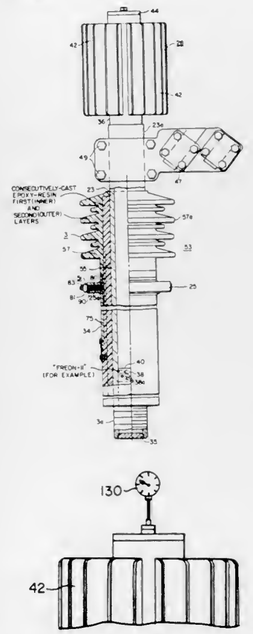
VAPOR-COOLED TERMINAL-BUSHINGS FOR OIL-TYPE CIRCUIT-INTERRUPTERS

George B. Cushing, Penn Hills, and Richard E. Kothmann, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 9, 1976, Ser. No. 694,105

Int. Cl.² H01B *17/26, 17/54;* **H01H** *33/68;* **F28D** *5/00*

U.S. Cl. 174—11 BH **4 Claims**



3. A high amperage-current self-vapor-cooled terminal-bushing structure comprising, in combination: means defining a tubular sealed metallic terminal lead, volatile fluid means disposed within said tubular sealed metallic terminal lead; means defining a body of solid resinous insulating material cast directly around said terminal lead; means defining a heat-exchanger device (**28**) affixed to said tubular sealed metallic terminal lead and in vapor-communication therewith for effecting cooling liquefaction of heated vapor generated within the terminal lead; a mounting flange affixed adjacent the mid-portion of said body of solid resinous insulating material for supporting purposes; and a massive metallic line-terminal connector (**47**) affixed to the terminal lead intermediate the location of the said heat exchanger (**28**) and one end of the body of resinous insulating material for additional heat-dissipation purposes.

4,123,619

GAS TERMINATION SUPPORT SYSTEM

Philip C. Bolin, Westborough, Mass., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1977, Ser. No. 812,085

Int. Cl.² H02G *15/22, 15/24*

U.S. Cl. 174—19 **7 Claims**

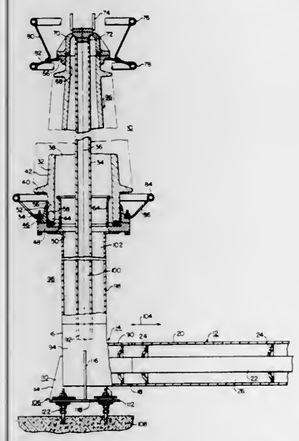
1. Gas-insulated electrical apparatus comprising:

a vertically disposed gas-insulated termination comprising a hollow insulating shell, a termination conductor disposed within said insulating shell, support means supporting said termination conductor within said insulating shell, and a first insulating gas disposed within said insulating shell and

electrically insulating said termination conductor from said insulating shell;

a generally horizontally disposed gas-insulated transmission line comprising an outer sheath, an inner conductor disposed within said outer sheath, support means insulatably supporting said inner conductor within said outer sheath, and a second insulating gas disposed within said outer sheath and electrically insulating said inner conductor from said outer sheath;

a gas-insulated transition member having a first end section aligned with said termination and a second end section aligned with said transmission line, said transition member



comprising an outer housing fixedly secured at a first end section to said insulating shell and at a second end section to said outer sheath, a transition conductor disposed within said outer housing and fixedly secured at a first end section to said termination conductor and at a second end section to said inner conductor, and a third insulating gas disposed within said outer housing and electrically insulating said transition conductor from said outer housing; and

means for supporting said termination comprising a base, a frame member fixedly secured to said outer housing and extending outwardly therefrom, and means for slidingly supporting said frame member on said base.

4,123,620

APPARATUS FOR CONTROLLING THE SOUND GENERATION IN THE LOUDSPEAKERS OF INTERCOMMUNICATING TELEPHONE SETS IN RESPONSE TO SPEECH SIGNALS FROM THE MICROPHONES OF SAID TELEPHONE SETS

Lars P. Karlsson, Masvägen 13, 183 51 Täby, Sweden

Filed Jun. 2, 1977, Ser. No. 802,803
Claims priority, application Sweden, Jun. 8, 1976, 7606399
Int. Cl.[2] H04M *9/10*
U.S. Cl. 179—1 CN **4 Claims**

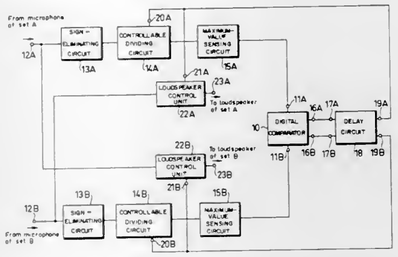
1. For use in a telephone system having a plurality of telephone sets, each telephone set including a microphone and a loudspeaker, an apparatus for controlling the generation of sound in the loudspeakers of intercommunicating telephone sets in response to pulse-code modulated speech signals from the microphones of said telephone sets comprising:

a plurality of controllable dividing circuits;

a plurality of maximum value sensing circuits, each sensing circuit including a storage function;

a plurality of control units, each one of said control units in series with a particular one of said loudspeakers; and

a digital comparator having a plurality of inputs, each input for receiving a speech signal in pulse-code modulated form from one of said microphones via one of said controllable dividing circuits in series with one of said maximum-value sensing circuits, said digital comparator having a number of outputs, from which the comparator delivers binary control signals to the dividing circuits to control said dividing circuits and to the control units to control said control units, said comparator being arranged to compare the received speech signals with each other and to deliver a binary control signal to the dividing



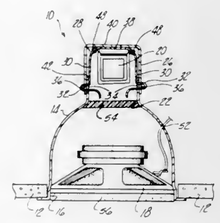
circuit through which the speech signal having the highest maximum value passes, said dividing circuit responding by dividing the speech signal passing therethrough with a lower factor than the remaining dividing circuits, said binary control signal further causing the control unit, associated with the loudspeaker of the telephone set having the microphone from which said maximum value speech signal emanates, to suppress the generation of sound in that loudspeaker.

4,123,621

ACOUSTICAL SPEAKER DEVICE

Frank J. Walker, 3300 Lone Pine, West Bloomfield, Mich. 48033

Filed Dec. 5, 1977, Ser. No. 857,390
Int. Cl.[2] H04R *1/28*
U.S. Cl. 179—1 E **14 Claims**



1. An acoustic speaker device comprising:

a parabolic shaped housing adapted to be recessed in a ceiling or the like, the parabolic housing being open opposite the concave end thereof and having an aperture formed through the concave end;

a collar coaxially surrounding the aperture and projecting outwardly of the housing from the convex side of the concave end of the housing;

an electrical transformer disposed in the collar,

means for removably mounting the transformer in the collar;

a cap coaxially disposed over the collar for closing the collar;

means for removably securing the cap to the collar; and,

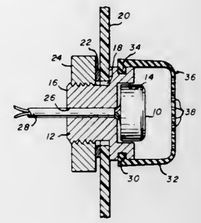
a loudspeaker device disposed within the housing proximate the opening of the housing and oriented to radiate sound waves outwardly of the housing through the opening.

4,123,622

PROTECTIVE COVER FOR SOUND TRANSDUCERS LOCATED IN FACE MASKS OF DIVERS

Norman C. MacLeod, Sunnyvale, Calif., assignor to Technology Development Corporation, Sunnyvale, Calif.

Filed Apr. 14, 1977, Ser. No. 787,342
Int. Cl.[2] H04R *1/02*
U.S. Cl. 179—1 UW **5 Claims**



1. A moisture protective housing for a sound transducer mounted within the face mask of a diver comprising:

a base member attachable to the interior of the face mask for holding said transducer and for making hermetically sealed electrical connection thereto;

a cover enveloping said transducer and sealingly engaging said base member; said cover having a deformable portion; and

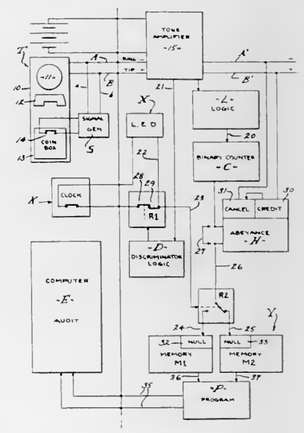
a plurality of pin prick type perforations in said deformable portion, the size and number of said perforations being selected so that said perforated portion becomes permeable only if and when the pressure differential across said deformable portion exceeds a preselected value.

4,123,623

PAY TELEPHONE ALARM AND AUDIT SYSTEM

Steve I. McElliott, 3934 Lyceum Ave., Los Angeles, Calif. 90066

Filed Oct. 22, 1976, Ser. No. 734,812
Int. Cl.[2] H04M *17/00*
U.S. Cl. 179—6.3 R **25 Claims**



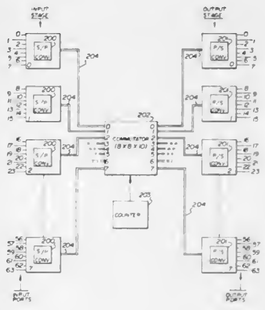
1. A money collection totaling system for loop start telephones having a coin tone generator and coin hopper passing coins into a coin vault with a vault switch operable by removal of a coin box therefrom, said tone generator being connected to a telephone cable pair to transmit tone bursts thereover according to the denomination of coins deposited through the hopper, and including; a distinguishable signal generator means connected to the telephone cable pair and controlled by said vault switch to be energized thereby and to transmit a distinguishable signal thereover when said vault switch is operated, a discriminator means connected to the telephone cable pair and responsive to said distinguishable signal to produce an operational signal, memory means to be connected to an extension of the said cable pair remote from the telephone to record the tone bursts as information, and relay means in circuit with and actuated by the operational signal from the discriminator means to disconnect the said memory means from said remote cable pair when the vault switch is operated by removal of the coin box to store money collection information in said memory means.

4,123,624

SWITCHING NETWORK FOR A PCM TDM SYSTEM

Real Gagnier, Hull; John B. Bourne, Ottawa, and John B. Terry, Carp, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 10, 1977, Ser. No. 795,615
Int. Cl.[2] H04J *3/00*
U.S. Cl. 179—15 AT **11 Claims**



8. In a time division multiplex system comprising a switching network having an input stage and an output stage, each of the stages having a corresponding plurality of time switches, each of the time switches comprising a data memory for storing data words in parallel and an associated connection memory, a circuit for connecting the input stage to the output stage comprising, a commutator circuit for sequentially and periodically connecting each of the switches in the input stage to each of the switches in the output stage in a predetermined time invariant pattern such that each of the input stage time switches is connected to a respective one of the output stage time switches at any one time.

4,123,625

DIGITAL REGENERATOR HAVING IMPROVING NOISE IMMUNITY

Peter E. K. Chow, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 3, 1977, Ser. No. 848,301
Int. Cl.[2] H04B *3/36*
U.S. Cl. 179—16 EA **14 Claims**



9. In a digital repeater for regenerating a partial-response signal, subject to noise interference having a power density which varies with frequency, said repeater comprising:

a regenerator for regenerating said partial-response signal; the improvement comprising:

a first filter disposed between the input of the digital repeater and the regenerator to introduce intersymbol interference so as to transform the partial-response signal to a modified partial-response signal having not more than the same number of levels, the filter reducing the overall power of the noise interference; and

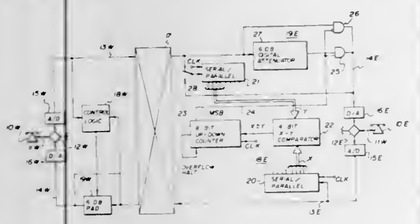
a second filter disposed between the regenerator and the output of the digital repeater having a transfer function which is the inverse of said first filter so as to derive a replica of said partial-response signal at the output thereof.

4,123,626

DIGITAL ECHO ATTENUATION CIRCUIT FOR A TELEPHONE SYSTEM

Ernst A. Munter, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 23, 1977, Ser. No. 854,118
Int. Cl.[2] H04B *3/20*
U.S. Cl. 179—170.2 **8 Claims**



1. In a telephone system having a two-wire analog transmission path coupled to a four-wire digital transmission path via a hybrid network interposed A/D and D/A converters in the four-wire path;

a voice controlled digital echo attenuation circuit comprising:

a comparator for comparing a sample of *n*-bits of each *m*-bit encoded word of tramsmit and receive pulse code modulated signals in the four-wire path to derive an output signal having a first or a second characteristic when the transmitted signal code is respectively not less than or less than the received signal code;

a L-bit up/down counter, having a maximum non-overflow store of $(2^L - 1)$ that is incremented or decremented by said output signal of the first or of the second characteristic respectively;

a digital attenuator responsive to the output of the up/down counter for attenuating the receive pulse code modulated signal in the four-wire path wherein said output is generated only when the store in the counter is at least $2^{(L-1)}$.

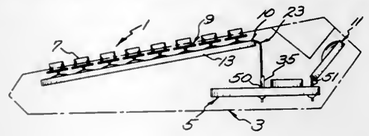
4,123,627

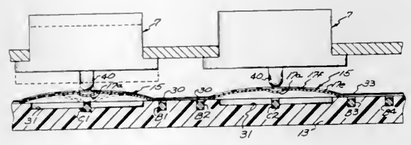
KEYBOARD APPARATUS

Henry J. Boulanger, Cumberland, R.I., and Salvatore P. Rizzo, Foxboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 6, 1976, Ser. No. 747,654
Int. Cl.[2] H01H *13/70, 9/00*
U.S. Cl. 200—5 A **17 Claims**

1. A switch assembly comprising a base member, said base member formed of a moldable material and having relatively flat top and bottom surfaces, at least one contact wire groove and at least one bus wire groove formed in the top surface of the base member, the grooves extending parallel to an axis, an electrically conductive contact wire disposed in each contact wire groove and an electrically conductive bus wire disposed in each bus wire groove, means to securely lock the wires in the grooves comprising portions of the base member displaced from areas contiguous to the grooves onto the wires, at least one switching station disposed along each contact wire, a flexible electrically conductive member overlying the top surface at each switching station, said member being permanently electrically connected to a respective bus wire and





being depressable into engagement with a contact wire to close a circuit between a bus wire and a contact wire;

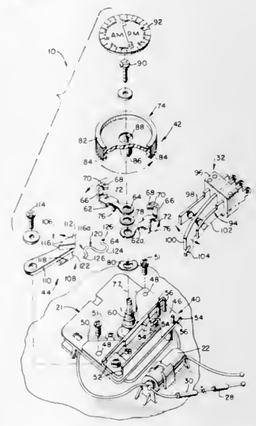
the wires having a diameter *d* and the grooves having a width no less than *d*.

4,123,628

TIMER SWITCH ASSEMBLY

Kenneth E. Kern, and James W. Richmond, both of Charlotte, N.C., assignors to General Time Corporation, Thomaston, Conn.

Filed Feb. 3, 1976, Ser. No. 654,949
Int. Cl.[2] H01H *43/10*
U.S. Cl. 200—38 FB **6 Claims**



1. Timing apparatus comprising motor means including a supporting member and rotatable output shaft rotatable through a revolution in a prescribed period of time, switching means operatively connected to said supporting member of said motor means for alternating switching between two discrete positions for respectively operating electrical output devices, indicating means operatively connected to said output shaft for movement in unison with said output shaft, and for selective independent movement with respect to said output shaft in response to adjustment for adjustably setting the times within said prescribed period of time at which said switching means will be operated to effect such switching between the

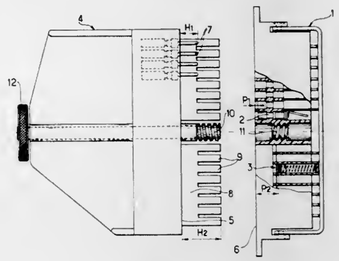
electrical output devices, and actuating means operatively connected to said supporting member of said motor means, directly connected to said switching means and being operatively contacted by said indicating means for periodic movement between opposed first and second positions in response to displacement of said indicating means, said actuating means including biasing means for resiliently snapping and maintaining said switching means in either one of the two discrete positions whenever said actuating means is correspondingly in one of said first and second positions, said actuating means includes an oscillating arm connected to said supporting member of said motor means for oscillatory movement between said first and second positions, camming means directly connected to one end portion of said oscillatory arm and being positioned to be struck by said indicating means, said biasing means directly interconnecting said actuating means to said switching means for snapping said switching means to said either of the two discrete positions in response to said oscillatory movement of said oscillating arm.

4,123,629

CONNECTOR FOR TESTING AN ELECTRIC INSTALLATION

Maurice Chagnon, Villeurbanne, and Michel Lemery, Ste Foy les Lyon, both of France, assignors to Delle-Alsthom S.A., Villeurbanne, France

Filed Feb. 25, 1977, Ser. No. 772,202
Claims priority, application France, Feb. 26, 1975, 76 05368
Int. Cl.[2] H01R *13/70, 33/54*
U.S. Cl. 200—51 R **4 Claims**



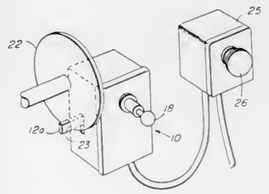
1. A connector for connecting a protective device of an electric installation under operation to a test device without removing said protective device from said installation, said connector comprising: a first half connected to said electric installation and a second, portable half connected to said test device, said second half comprising a plurality of identical rows of elements, each second half row comprising two electrically connected long pins, a short pin and a finger made of insulating material, said first half comprising a plurality of rows, said first half rows being of a first and second kind, said first kind of first half rows comprising two sockets receiving respectively a short pin and a long pin of a second half row, said two sockets being electrically bridged by a first bridge member; resilient means normally pressing said first bridge member onto said two sockets, said first bridge member being removed from said two sockets by said finger when said first half is connected to said second half, said second kind of first half rows comprising two sockets receiving respectively a short pin and a long pin of a row of said second half, said second kind of first half row two sockets being electrically bridged by a second bridge member, resilient means normally pressing said second bridge member onto said second kind of first half row two sockets, said second bridge member being at a different position with respect to said finger than said first bridge member of said first kind of rows, said second bridge member being removed from said second kind of first half row two sockets by a finger when said first half is connected to said second half, said second kind of rows comprising a third socket receiving a long pin of said second half, and means to in final sequence, electrically connect said third socket to a corresponding third socket of an adjacent row.

4,123,630

SAFETY DEVICE

Robert W. Mac Intyre, 103 Grove St., Concord; Edward J. Wysocki, 5 Radford Pl., Hyde Park; Philip Orifice, 28 Galen St., Waltham, and Ralph DiTillio, 15 Hazel Park, Everett, all of Mass.

Filed Nov. 17, 1976, Ser. No. 742,596
Int. Cl.[2] H01H *35/00;* **F16D** *9/00*
U.S. Cl. 200—52 R **2 Claims**



1. A safety device to prevent inadvertent operation of a control element in a machine comprising:

(a) a container (**10**) having an interior, transverse frame means (**15**);

(b) a solenoid (**13**) spaced within said container (**10**) and having a longitudinally movable core extension (**12**), said core extension (**12**) extending through a slot (**15***a*) in said transverse frame means and having means cooperable with the control element:

(c) return spring means (**14**) associated with said core extension (**12**);

(d) vertically movable plunger means (**17**) extending through an orifice (**15***a*, **16***a*) in said transverse frame means;

(e) return spring means **19** associated with said plunger means (**17**); and,

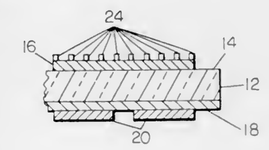
(f) switch means (**25**, **26**) connected to said solenoid (**13**) and requiring constand pressure to keep said solenoid energized.

4,123,631

TOUCH SWITCH

Albert D. Lewis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 16, 1977, Ser. No. 769,260
Int. Cl.[2] H01H *9/26*
U.S. Cl. 200—52 R **7 Claims**



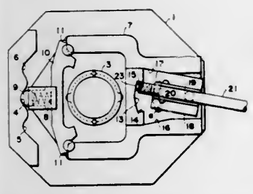
1. A touch actuated capacitance type switch which comprises, in combination:

a substrate plate, made of a dielectric material, having opposing faces;

a plurality of separated conductive touch pads formed on and adhered to one face of said plate, each of said pads being a relatively thin metallic area possessing little resis-

tance to abrasive wear and having a touch surface parallel to said plate;
a protective overcoat of a relatively abrasion resistant material overlying each of said touch pads in an open pattern which obscures no more than about seventy-percent of the total available area of said touch surface of said touch pads;
a plurality of separated and discrete conductive pads formed on and adhered to the other face of said substrate plate, said conductive pads being positioned in general alignment with said touch pads across the thickness of said substrate plate to thereby define capacitors; and
a conductor network intrconnecting said conductive pads in a predetermined logic configuration to thereby define a switch.

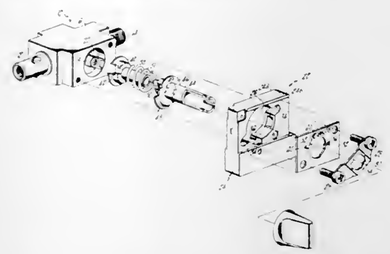
4,123,632
TURN SIGNAL MECHANISM FOR USE IN MOTOR VEHICLES
Toshiya Muto, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Filed Oct. 27, 1976, Ser. No. 735,965
Claims priority, application Japan, Oct. 27, 1975, 50-146287[U]
Int. Cl.² H01H *3/16*
U.S. Cl. 200—61.27 **4 Claims**



1. A turn signal indicating mechanism comprising:
a housing;
a movable bracket movable to right and left turn and neutral positions provided in said housing;
an operating lever pivotally coupled to said movable bracket which is pivotable from a neutral position relative to said movable bracket to right and left lane change positions, said operating lever further causing said movable bracket to move to said right and left turn positions when said operating lever is pivoted beyond said right and left lane change positions; and
a turn signal switch operated by said lever such that a turn signal for a lane change is generated by pivoting the operating lever from said neutral position to a lane change position without moving said movable bracket and a turn signal for a right or left turn is generated by pivoting the operating lever beyond said lane change positions until the movable bracket is moved to either said right or left turn positions from said neutral position.

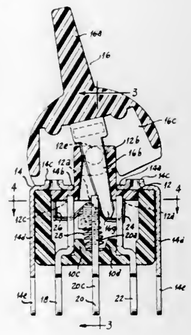
4,123,633
SWITCH-VALVE ASSEMBLY HAVING ROTATABLE OPERATING MECHANISM WITH LATCH
Joe M. Stevens, Thompson Station, and Elmer D. Porter, Franklin, both of Tenn., assignors to Essex Group, Inc., Fort Wayne, Ind.
Filed Apr. 13, 1977, Ser. No. 787,195
Int. Cl.² H01H *9/06*
U.S. Cl. 200—61.86 **2 Claims**

1. A combination valve-switch assembly, which comprises:
a valve housing;
a rotatable operating stem extending from said valve housing;
a switch assembly including an insulating housing seated against said valve housing, an axial bore through said insulating housing aligned axially with said rotatable operating stem, switch blades enclosed in said housing, electrically insulated switch operating means on said housing extending radially into said bore for moving said switch blades into contact with one another;



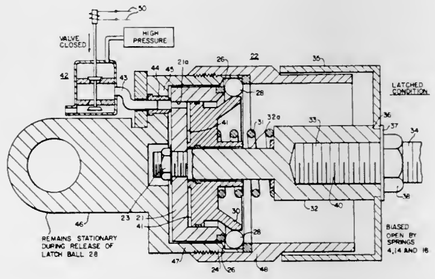
an axially compressible, rotatable, operating mechanism axially aligned with said operating stem, and extending axially through said bore;
latch means for preventing rotatable movement of said operating mechanism; and
a cam mounted on said operating mechanism and arranged to cooperate with said switch operating means.

4,123,634
SNAP-ACTION SWITCH WITH CONTACT WIPING ACTION
Harold W. Hults, New Berlin, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Apr. 20, 1977, Ser. No. 789,262
Int. Cl.² H01H *13/28*
U.S. Cl. 200—67 A **7 Claims**



1. In a snap-action electric switch, the combination comprising:
a housing;
at least two stationary contacts spaced apart in said housing;
movable contact means in said housing including a member having an inverted V-shaped surface;
an operator mounted on said housing having an exterior portion, and a portion within said housing which engages with said inverted V-shaped surface of said member, and
spring means in said housing which engages with said movable contact means and urges said inverted V-shaped surface into engagement with the last mentioned portion of said operator,
said operator being movable from one extreme position to cam said movable contact means to pivot inwardly of said housing and compress said spring means until said last mentioned portion of said operator rides over the apex of said V-shaped surface of said member, whereupon said spring means moves said contact means with snap action upwardly and longitudinally in said housing to change circuit connections between said stationary contacts.

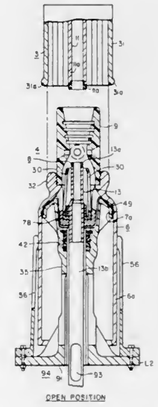
4,123,635
MULTI-POLE HIGH-VOLTAGE CIRCUIT-INTERRUPTER HAVING INDEPENDENT POLE TRIPPING WITH A SINGLE COMMON OPERATING MECHANISM
Joseph R. Rostron, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 6, 1976, Ser. No. 646,796
Int. Cl.² H01H *33/28*
U.S. Cl. 200—148 F **6 Claims**



1. The combination in a multi-pole high-power high-voltage circuit-interrupter assemblage having a plurality of pole-units ("A", "B", "C") each with its separable arcing contacts, adaptable for interrupting multi-phase high-voltage circuits of considerable amperage, of a single common operating mechanism at ground potential for simultaneously effecting the opening and closing operations of the several arcing contacts for all of the several pole-units, a mechanical interconnecting operating linkage positively connected between the individual pairs of separable arcing contacts of the several pole-units and said single common operating mechanism situated at ground potential, an independently-operated ball-release latching means (**22**) interposed in said positive interconnecting operating linkage (**20, 34, 46**) for at least one of said pole-units, means responsive to a fault condition existing in said one pole-unit to release said independently-operated ball-release latching means (**22**) to thereby trip the said one affected faulted pole-unit open independently of the condition of said single common operating mechanism at ground potential.

4,123,636
DOUBLE-FLOW PUFFER-TYPE SINGLE-PRESSURE COMPRESSED-GAS CIRCUIT-INTERRUPTER
Charles F. Cromer, Penn Township, Allegheny County; Kue H. Yoon, Pittsburgh, and Willie B. Freeman, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 31, 1975, Ser. No. 645,752
Int. Cl.² H01H *33/88*
U.S. Cl. 200—148 A **8 Claims**

1. A double-flow, puffer-type compressed-gas circuit-interrupter adaptable for high-current ratings including means defining a relatively-stationary contact structure, said relatively-stationary contact structure including a cluster of stationary main contact fingers (**31**) disposed in a generally cylindrical arrangement and a centrally-disposed stationary tubular arcing contact (**11**), means defining a cooperable movable contact structure (**8**), a movable operating-cylinder assembly (**6**) carrying said movable contact structure (**8**) and an insulating nozzle, said movable operating-cylinder assembly (**6**) having disposed thereon adjacent its forward end an annular relativelyheavy movable main contact (**32**) making cooperable engagement with said cluster of stationary main contact fingers (**31**) in the closed-circuit position of the circuit-interrupter, means defining a relatively-fixed piston member (**7**), said movable operating-cylinder assembly (**6**) slidable over said relatively-fixed piston member (**7**) during the opening operation, said movable contact assembly (**8**) additionally carrying a centrally-disposed movable tubular arc horn (**13***a*) at its forward end which enters the stationary tubular arcing contact (**11**) in the closed-circuit position of the device, gas being compressed between the movable operating cylinder and the relatively-fixed piston to be forced out of the movable cylinder assembly through said hollow insulating nozzle (**9**) into engagement with the established arc drawn within the hollow movable nozzle (**9**) and between the stationary tubular contact (**11**) and the movable tubular arc horn (**13***a*) during the opening operation of the



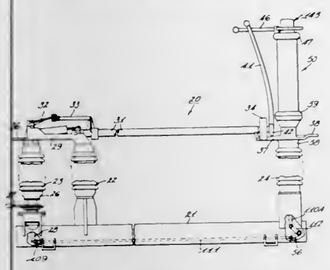
device, the movable insulating nozzle (**9**) making close valve-like engagement with the stationary tubular arcing contact (**11**) for an appreciable time following separation of the arcing contacts (**11, 13***a*), double-flow gas exhausting through said separated arcing contacts (**11, 13***a*) immediately following their separation during the opening operation of the circuit-interrupter, said cluster of main contact fingers (**31**) first parting contacting engagement with the main movable annular contact (**32**) of the movable operating cylinder assembly (**6**) during the opening operation, and then at a subsequent point in time the movable auxiliary fingers (**30**) parting contacting engagement with the relatively-stationary tubular arcing contact (**11**), so that final contacting separation occurs between the movable tubular arc horn (**13***a*) and the relatively-stationary tubular arcing contact (**11**).

4,123,637
HIGH VOLTAGE AIR DISCONNECT SWITCH INCORPORATING A PUFFER-TYPE LOAD BREAK SWITCH
Donald L. Lott, Portland; Guenter G. Schockelt, Tigard, and Matthew L. Worrix, Sheridan, all of Oreg., assignors to Siemens-Allis, Inc., Milwaukee, Wis.
Filed Dec. 27, 1976, Ser. No. 754,574
Int. Cl.² H01H *33/88*
U.S. Cl. 200—148 A **4 Claims**

1. In a gas insulated circuit interrupter comprising an open-ended hollow cylindrical envelope of an electrical insulating material having metallic end caps for sealing the open ends of said envelope in a gas-tight manner, said envelope containing an arc extinguishing gas under pressure;
an internal open-ended cylindrical insulating housing coaxially disposed within said envelope, said housing extending between said envelope end caps;

a plurality of pairs of axially aligned contact members separable to draw an arc therebetween, one contact of each of said pairs of contacts is carried by a cone-configured member fixedly secured within said housing;

a stationary blast nozzle surrounding a contact of each pair of contacts, said nozzles are carried by said cone-configured members in coaxial relationship with the contact carried by the cone-configured member;



said other one of each of said pair of contacts are carried by an associated movable member disposed within said housing, some of said movable members serving as said piston means; and,

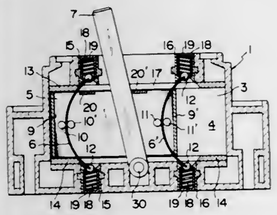
drive means connected to all of said movable members including a spring means within the housing and operable when released to effect the opening movement of said contacts.

4,123,638

HIGH SPEED SWITCHING DEVICE FOR SWITCH AND BREAKER

Motomu Miyamoto, 108 House Toritsudai, 12-21, 2-Chome, Nakane, Meguro-Ku, Tokyo, Japan

Filed Jun. 22, 1976, Ser. No. 698,631
Int. Cl.[2] H01H *3/00*
U.S. Cl. 200—153 G **3 Claims**



1. A high speed device for switching an electric switch from one position to another which comprises in combination

(a) a main housing chamber

(b) a runner in the form of a flattened hollow box slideably mounted within said housing chamber,

(c) at least one shaft integrally attached to said runner and extending laterally outwardly therefrom in engagement with said electric switch

(d) a lever extending completely through said runner and having one end pivotally attached to said chamber,

(e) two spaced apart plate springs extending through said runner,

(f) four spaced apart resilient mounting means in said main housing chamber for resiliently receiving and retaining the four ends of said two plate springs, the total force of the two resilient mounting means on each end of a plate spring being sufficient to cause the plate spring to take the shape of an arcuate bow,

(g) two plate spring engaging means extending through the interior of said runner, each spring engaging means serving to restrict an intermediate portion of a plate spring from moving laterally with respect to said runner,

(h) lever engaging means located on said runner, said lever being positioned so that movement of the lever from one position to another will move the runner laterally a sufficient distance that at least one of said plate spring engaging means will move its associated plate spring from an arcuate disposition to at least slightly beyond a straight up and down disposition,

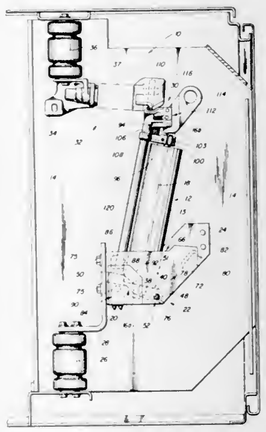
whereby movement of said lever from one position to another will move said shaft from one position to another and the natural resiliency of said plate springs will cause the runner and shaft to continue to move to the maximum extent in the direction initiated by the lever.

4,123,639

SUPPORT ASSEMBLY FOR A CIRCUIT INTERRUPTING DEVICE

David M. Evans, Palatine, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Sep. 27, 1977, Ser. No. 837,243
Int. Cl.[2] H01H *1/42*
U.S. Cl. 200—254 **25 Claims**



1. An improved support assembly for a circuit-interrupting device having first and second end fittings on respective ends thereof, the end fittings defining the major axis of the device and being engageable with and disengageable from respective first and second mountings spaced apart in the assembly in insulated relation; a hookstick held by a human operator being selectively attachable to the first end fitting for manipulating the device to engage and disengage the end fittings and their respective mountings; wherein the improvement comprises:

first means for permitting slideable engagement and disengagement of the second mounting and the second end fitting in only one orientation of the second end fitting;

second means for permitting rotation of the second end fitting in the second mounting after slideable engagement therebetween to rotate the device about the second mounting; and

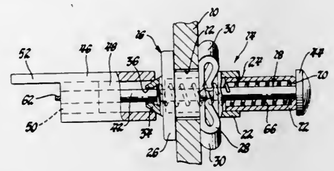
third means for supporting the device to position the second end fitting in the one orientation.

4,123,640

PUSH BUTTON TYPE SWITCH HAVING DEFORMABLE HOUSING SLEEVE FOR PERMANENT ATTACHMENT TO CONDUCTIVE PANEL

David B. Ballantyne, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 690,509, May 27, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 862,151
Int. Cl.[2] H01H *13/02;* **G12B** *9/00*
U.S. Cl. 200—296 **5 Claims**



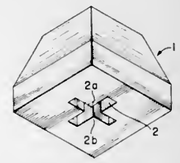
1. An operating mechanism adapted for mounting on an apertured support and operable to effect movement of an actuatable mechanism, said operating mechanism comprising: a tubular body adapted for insertion into the aperture of the support and having an axially extending bore, said body having an abutment portion engageable with one side of the support to limit insertion of the body through the support aperture and a radially expandable and axially collapsible sleeve portion located on the other side of the support, a plunger guide member supported within said bore of said tubular body, a plunger member extending through said guide member, one of said members including a head portion engageable with the end of said sleeve portion of the tubular body opposite the abutment means, means on the other end of said one member for engagement by a tool to move said one member relative to said tubular body and engage said head portion with said end of said body sleeve portion to axially collapse and radially expand said sleeve portion against said opposite side of said support and thereby attach said tubular body to said support, resilient means biasing said plunger member outwardly of said tubular body to an engageable position, stop means locating the plunger member against the bias of the spring means in said engageable position and means operatively connecting the plunger member with the actuatable mechanism.

4,123,641

PUSHBUTTON SWITCH

Taneo Murata, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Feb. 16, 1977, Ser. No. 769,055
Claims priority, application Japan, Feb. 27, 1976, 51-22911[U]
Int. Cl.[2] H01H *3/12*
U.S. Cl. 200—340 **3 Claims**



1. In a pushbutton switch including a pushbutton formed of a synthetic resin material and having a recess, and a lever having an attachment portion for fitting into said recess, the improvement comprising:

said recess being substantially cross-shaped,

said attachment portion being substantially crossshaped in cross section and complementary with said recess, and

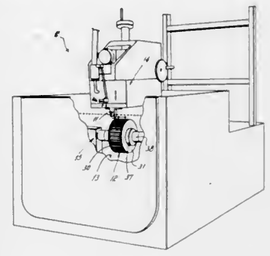
integral projections extending outwardly from the inner corners of said attachment portion to thrust into the wall of said recess, said lever being formed of a synthetic resin material relatively harder and relatively smaller in creep contraction rate than the material of said pushbutton, whereby over extended periods of use, said projections will be continually thrust into the wall of said recess.

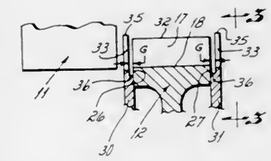
4,123,642

APPARATUS FOR INDUCTION HARDENING GEAR TEETH

Howard W. Dammel, Cincinnati; Robert M. Frantz, Milford; James H. Luke, Loveland, all of Ohio, and William G. Skrzypczyk, Harborcreek, Pa., assignors to Cincinnati Steel Treating Company, Cincinnati, Ohio and General Electric Company, Erie, Pa.

Division of Ser. No. 608,630, Aug. 28, 1975, Pat. No. 4,026,732. This application Dec. 13, 1976, Ser. No. 749,905
Int. Cl.[2] H05B *5/08*
U.S. Cl. 219—10.59 **5 Claims**





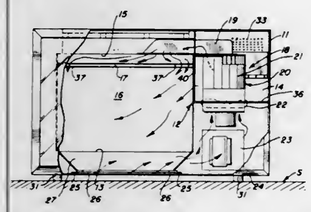
1. In combination, a machine for induction hardening oppositely facing working surfaces of adjacent teeth of a gear and a template for use with said machine, said machine including an electrical current intensifier movable between adjacent teeth of a gear while electrical current is flowing in said intensifier so that an electrical current is induced to flow through the opposed working surfaces of the teeth to effect heating of said working surfaces, said template having at least a peripheral portion in close proximity to but spaced from one side of the gear teeth, said template being in the form of a plate made from a low electrical resistance material, said plate having a peripheral contour similar to the peripheral contour of the gear teeth and having teeth formed thereon, the sides and roots of said teeth of said plate being undersized and spaced inwardly from the sides and roots of said gear teeth when said template is positioned for induction hardening said working surfaces of said gear teeth.

4,123,643

AIR CIRCULATION SYSTEM FOR MICROWAVE OVEN

Harry D. Burke, Marion, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 31, 1977, Ser. No. 801,834
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 R **20 Claims**



1. In a microwave oven having a cabinet defining a front opening, wall means within the cabinet dividing the interior of the cabinet into a oven space accessible through said cabinet front opening and a generating space, electrically operated generator means in said generating space for generating microwave energy, and waveguide means for conducting the microwave energy from the generating means to said oven cavity, improved air flow means comprising

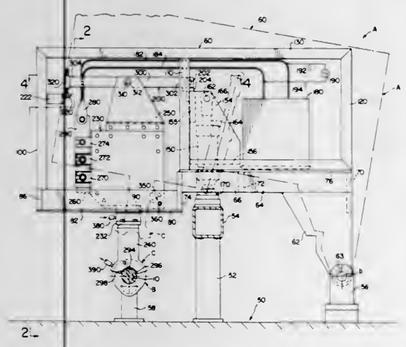
a bottom wall portion of said cabinet cooperating with said wall means to define means for conducting ambient air into said cabinet under said oven space and forwardly and rearwardly therefrom to pass through a front portion and a rear portion of the cabinet to said generating space.

4,123,644

DEVICE FOR INDUCTIVELY HEATING CYLINDRICAL SURFACES

Phillips N. Sorensen, Bedford, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Feb. 14, 1977, Ser. No. 768,164
Int. Cl.[2] H05B 5/02
U.S. Cl. 219—10.57 **14 Claims**



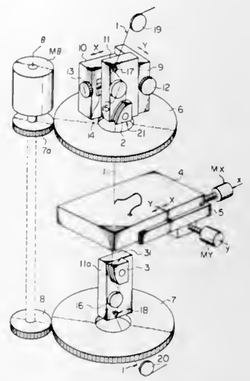
1. A device for inductively heating at least two cylindrical metal surfaces on an elongated workpiece having a central axis, said surfaces being generally concentric with said axis, said device comprising: an inductor for each surface and each inductor having a generally cylindrical coupling surface matching one of said metal surfaces; support means for carrying said inductors; means for moving said support means between a first position with said inductors spaced substantially from said cylindrical metal surfaces and a second fixed position with said inductors in their heating positions; stop means for supporting said support means in said second fixed position; an intermediate frame means for mounting each of said inductors onto said support means; each of said intermediate frame means comprising a first link extending generally horizontally over said workpiece axis and having first and second ends and an intermediate portion, means for mounting said link on said support means at said first end for pivotal movement toward and away from said workpiece and about an axis generally parallel to said central axis, a second link, means for pivotally mounting said second link on said intermediate portion of said first link for oscillation generally transverse to said workpiece axis and about an axis above and generally parallel to said central axis, means for mounting one of said inductors on said second link; and, means for selectively energizing said inductors.

4,123,645

NUMERICALLY CONTROLLED WIRE-CUTTING ELECTRIC DISCHARGE MACHINE

Hiromichi Shichida, Hino; Gotaro Gamo, Komae; Yoshiyuki Nomura, Hino; Kiyoshi Hattori, Tachikawa, and Yutaka Koiwai, Koganei, all of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Feb. 14, 1977, Ser. No. 768,562
Claims priority, application Japan, Feb. 25, 1976, 51/19548
Int. Cl.[2] B23P 1/08
U.S. Cl. 219—69 W **7 Claims**



1. A numerically controlled wire-cutting electric discharge machine using a wire electrode comprising:

a numerical control apparatus sending out, at least a first, a second and a third command signal for at least three control axes;

a workpiece supporting means for supporting a workpiece;

a first motor means which moves said workpiece in a direction along an axis in a plane which is perpendicular to a predetermined axis;

a second motor means which moves said workpiece in another direction along another axis in said plane;

a pair of V type slot guides including a first guide and a second guide, said first and second guides being arranged opposed to each other with respect to said workpiece so as to stretch, in a direction which coincides with said predetermined axis, said wire electrode which passes through said workpiece;

a rotatable supporting member which supports said second guide and which can rotate around said predetermined axis;

an offset means which offsets said second guide in a predetermined direction in said plane which is perpendicular with said predetermined axis, so that the position of said wire electrode at said first guide coincides with said predetermined axis and the position of said wire electrode at said second guide is offset a predetermined amount from said predetermined axis;

a third motor means coupled to said rotatable supporting means for rotating said second guide around said predetermined axis;

said numerical control apparatus supplies first and second signals to said first and second motor means, respectively, and said wire electrode moves relatively with respect to said workpiece in the plane which is perpendicular to said predetermined axis, and said numerical apparatus supplies said third signal to said third motor means and rotates said rotatable supporting means so that the surface which is determined by said predetermined axis and said wire electrode which is offset is perpendicular with respect to a relative movement between said wire electrode and said workpiece, and

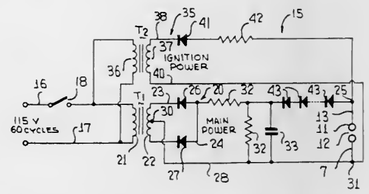
wherein said second guide is mounted on said rotatable supporting member in such a manner that the center line of the V type slot of said second guide is perpendicular to the relative motion between said wire electrode and said workpiece.

4,123,646

ARC WELDING SYSTEM

Henry J. Keinanen, Hickory Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 436,954, Jan. 28, 1974, abandoned. This application Feb. 9, 1976, Ser. No. 656,741
Int. Cl.[2] B23K 9/06
U.S. Cl. 219—137 R **12 Claims**



1. A method of arc welding a material in the absence of a protective agent, said method comprising the steps of:

(a) providing a welding electrode and a workpiece comprising a pair of electrodes defining a spark gap therebetween;

(b) repetitively applying to said pair of electrodes at a given cyclic rate and during alternate half cycles thereof, a high-voltage pulse of greater voltage than required for welding so as to produce across said gap, at a given instant during each of said alternate half cycles, an over-voltage of such magnitude as to create an ionized channel between said pair of electrodes; and

(c) applying to said pair of electrodes, at said given cyclic rate and at said given instant within each of said alternate half cycles, a high current welding current impulse of such magnitude as to effect welding of said material and of such impulse duration as to produce a shock wave propagating across said gap, whereby a substantially vacuum condition is created and maintained within said gap so as to minimize oxidation of said material during welding in the absence of a protective agent.

4,123,647

THERMAL HEAD APPARATUS

Fujio Oda, Ashiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

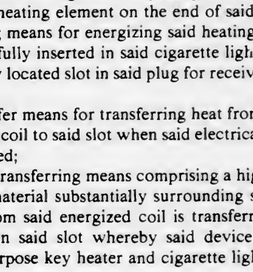
Filed May 23, 1977, Ser. No. 799,297
Claims priority, application Japan, May 31, 1976, 51/63796; Aug. 18, 1976, 51/99132
Int. Cl.[2] H05B 1/00
U.S. Cl. 219—216 **3 Claims**

1. A thermal head apparatus comprising

a support,

a heating block having an electrically and thermally insulative substrate located on said support and a plurality of heating elements disposed on said electrically and thermally insulative substrate along a straight line, said plurality of heating elements being divided into a plurality of groups having a common connection for each group,

a plurality of diode groups corresponding to said plurality of heating element groups, said plurality of diode groups including a plurality of diodes of identical polarity arranged along a straight line,



an insulating substrate located on said support and having a group of conductors thereon for matrix-wiring said heating elements through said diode groups, and

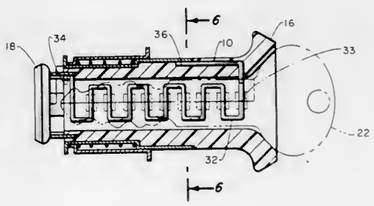
a film carrier provided with conductors for connecting said heating element block to the terminals on one side of said diode groups and the terminals on the other side of said diode groups to said group of conductors.

4,123,648

KEY FOR DEFROSTING LOCKS

Bob J. Clark, Rte. #5, Box 2054, Port Angeles, Wash. 98362

Filed Jan. 7, 1977, Ser. No. 757,717
Int. Cl.[2] H05B 3/06
U.S. Cl. 219—521 **6 Claims**



1. A device for heating a key to defrost frozen locks, comprised of:

a plug formed of electrical insulating material and adapted to fit a standard automobile cigarette lighter socket;

an electrical heating coil comprising an electrical cigarette lighter heating element on the end of said plug;

energizing means for energizing said heating coil when said plug is fully inserted in said cigarette lighter socket;

a centrally located slot in said plug for receiving the blade of a key;

heat transfer means for transferring heat from said electrical heating coil to said slot when said electrical heating coil is energized;

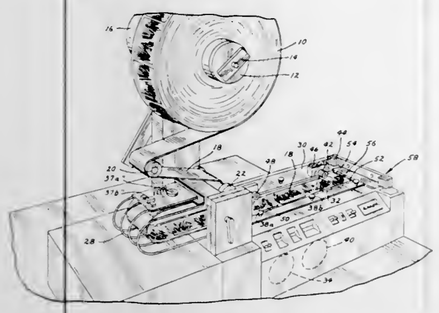
said heat transferring means comprising a high heat conductivity material substantially surrounding said slot so that heat from said energized coil is transferred to a key inserted in said slot whereby said device functions as a dual-purpose key heater and cigarette lighter.

4,123,649

PRINT AND ORDER TOTALIZER FOR AUTOMATIC PHOTOGRAPHIC PAPER CUTTER

Gerald R. Strunc, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Sep. 29, 1977, Ser. No. 838,065
Int. Cl.[2] G06M *3/06;* **G07C** *3/10*
U.S. Cl. 235—92 PD **4 Claims**



1. In a photographic print cutter system in which photographic prints from a plurality of customer orders are cut from a strip of photographic paper, the improvement comprising:

knife means;

knife actuating means for actuating the knife means to cut a photographic print from the strip;

print count means for incrementing a print count for an order each time the knife actuating means actuates the knife means;

end-of-order means for providing an end-of-order signal indicative of the end of a customer order;

accumulator means for holding a count;

display means for displaying the count held in the accumulator means;

means for producing a packer/sorter signal indicating that an automatic print packing or sorting device is being used in conjunction with the photographic print cutter system; and

first means for causing the print count then contained in the print count means to be supplied to the accululator means if either the end-of-order signal or the packer/sorter signal is present.

4,123,650

RANGE FINDER SYSTEM

Kazuya Hosoe, Machida; Seiichi Matsumoto, Yokohama; Hideo Yokota, Tokyo; Tsuyoshi Asaeda, Sagamihara; Tadahide Fukushima, Tokyo; Tamotsu Shingu, Kamakura; Shigeru Hashimoto, Yokohama, and Tomonori Iwashita, Chofu, all of Japan

Continuation of Ser. No. 552,320, Feb. 24, 1975, abandoned. This application Dec. 28, 1976, Ser. No. 755,006
Claims priority, application Japan, Feb. 26, 1974, 49-23088
Int. Cl.[2] G01J *1/20;* **G03B** *7/08*
U.S. Cl. 250—201 **39 Claims**

1. A system for setting an imaging optical system along an optical axis so as to adjust the focus of the optical system to an object, comprising:

projecting means for projecting a beam of radiant energy toward said object,

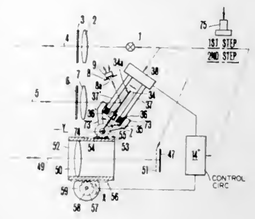
beam receiving optical means offset from said projecting means for receiving the beam reflected by the object at an angle depending upon the distance to the object from the projecting means and for forming a beam path depending upon the angle,

sensing means positioned in the path of the beam from the receiving optical means for sensing the reflected beam and producing an electrical signal in response thereto,

oscillating means for cyclically varying the mutual relationship between the sensing means and the path of the beam toward the sensing means and for intermittently diverting the reflected beam from the sensing means and directing it toward the sensing means so that the sensing means produces intermittent signals during each cycle of the oscillating means at a time interval responsive to the distance to the object from the projecting means,

reference signal generating means for generating reference signals at a predetermined time interval, and

adjusting means operatively coupled to said imaging optical system for substantially continuously varying the mutual



relationship between said sensing means and the path of the beam toward the sensing means on the basis of the change of the position of said optical system along the optical axis,

said sensing means producing the signals having a time interval corresponding to the deviation of the set position of the optical system along the optical axis from a focused position at which the optical system is properly focused on the object,

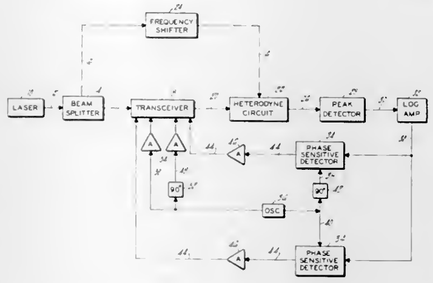
said adjusting means adjusting the time interval of the output signals of the sensing means until the time interval of the output signals of the sensing means has a predetermined relationship to the time interval of the reference signals generated by the reference signal generating means.

4,123,651

APPARATUS AND METHOD FOR SPECKLE TRACKING

Robert J. Mongeon, East Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 13, 1977, Ser. No. 815,611
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—203 R **17 Claims**



1. A system for tracking a target utilizing optical speckle produced by the interaction of a beam of electromagnetic radiation with a surface of the target to improve the signal to noise ratio of a received signal comprising:

means for providing a beam of coherent electromagnetic radiation;

means for separating the beam into a reference beam and a transmitted beam;

a transceiver having a telescopic system with an aperture for directing the transmitted beam to a target and for collecting a beam reflected from the target to provide a received beam including,

means for directing the transmitted beam to the telescopic system and for directing the received beam to a heterodyne circuit wherein the transmitted and received beam have a common optical path within the transceiver, and

means for dithering the means for directing the transmitted and received beams to impress an identical conical scan on the transmitted and received beams;

a heterodyne circuit capable of heterodyning the received beam with the reference beam to provide an electrical received signal proportional to the intensity of the received beam, the conically scanned speckle within the received beam traverse about the geometric center of the reference beam generating fluctuations in the electrical received signal having amplitude and phase characteristics proportional to the position of the speckle within the aperture of the transceiver;

detection means for processing the fluctuations of the electrical received signal to produce an output signal;

a phase sensitive detector responsive to the output signal;

means for providing an electrical signal to the phase sensitive detector to provide a forcing function for processing the output signal to obtain a two axis discriminate having error signals proportional to the position of a speckle maximum in the aperture of the transceiver and for providing an electrical signal to the means for dithering the means for directing the transmitted and received beams; and

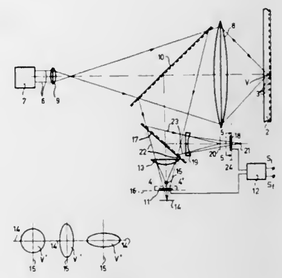
a transceiver pointing control responsive to the two axis discriminate for directing the azimuthal and zenith pointing of the transceiver to maintain the speckle maximum in the plane of the aperture of the transceiver to minimize the fluctuations of the electrical received signal to improve the signal to noise ratio of the received signal.

4,123,652

APPARATUS FOR READING A RADIATION-REFLECTING RECORD CARRIER

Gijsbertus Bouwhuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1977, Ser. No. 798,563
Claims priority, application Netherlands, Mar. 22, 1977, 7703077
Int. Cl.[2] G01J *1/36*
U.S. Cl. 250—204 **3 Claims**



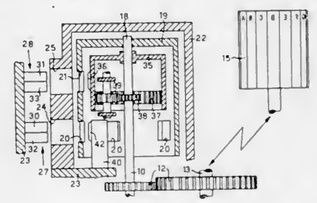
1. Apparatus for reading a radiation-reflecting record carrier on which information is stored in an optically readable information structure arranged in tracks, comprising a radiation source means for producing a read beam of radiation, an objective system means for focussing the read beam on the record carrier, whereby the record carrier modulates said read beam, a radiation-sensitive information detection system in the path of the modulated read beam for converting the modulated read beam into an electrical signal, means for directing the modulated radiation beam from the record carrier along a path separated from the read beam provided by the radiation source means, a beam splitter means in the separate path for dividing the modulated beam from the record carrier into two sub-beams of substantially equal intensity, a first astigmatic element in the path of one of the sub-beams, a second astigmatic element in the path of the other of said sub-beams, the astigmatism of the first astigmatic element being opposed to that of the second astigmatic element, a first detector assembly of four sub-detectors in the path of the first sub-beam from the first astigmatic element, said sub-detectors of the first detector assembly being disposed in four different quadrants of an imaginary X-Y co-ordinate system, the X and Y axes being disposed at an angle of 45° with respect to the astigmatic focal lines of the first astigmatic element, a second detector assembly of four sub-detectors in the path of the second sub-beam from the second astigmatic element, said sub-detectors of the second detector assembly being disposed in four different quadrants of an X-Y co-ordinate system, the X and Y axes of the co-ordinate system of said second detector assembly being disposed at an angle of 45° with the astigmatic focal lines of the second astigmatic element.

4,123,653

ARRANGEMENT FOR DETECTING THE ANGULAR POSITION OF A ROTATABLE PART

Michele Bovio, Banchette (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Dec. 22, 1976, Ser. No. 753,498
Claims priority, application Italy, Dec. 31, 1975, 70232 A/75
Int. Cl.[2] G01D *5/34*
U.S. Cl. 250—231 SE **5 Claims**



1. An arrangement for detecting a plurality of angular positions of a rotatable part and a complete revolution thereof, said arrangement comprising:

a first rotatable element coupled to said rotatable part, through speed multiplication means, for rotating in synchronism therewith, said first rotatable element comprising, along a first circumferential track, a plurality of windows equally spaced therebetween and positioned to correspond to said angular positions, and, along a second circumferential track, a single window;

a first detecting unit cooperative with said plurality of windows for generating an output signal indicative of said angular positions, at the passage of each one of said plurality of windows in front of said unit;

a second rotatable element coupled to said first rotatable element through speed reduction means and having a single synchronizing element disposed aligned with said second circumferential track; and

a second detecting unit cooperative with said single window and said single synchronizing element for generating another output signal indicative of said complete revolution when said single window and said single synchronizing element are aligned therewith.

4,123,654

METHOD FOR DETERMINING THE DENSITY OF BODIES BY MEANS OF PENETRATING RAYS AND APPARATUS FOR CARRYING OUT SAID METHOD

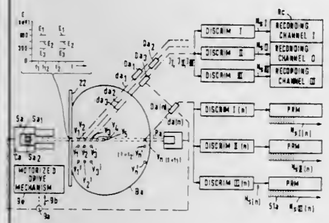
Karl-Hans Reiss, and Klaus Killig, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 4, 1976, Ser. No. 729,461

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1975, 2544354

Int. Cl.[2] G01N *23/20*

U.S. Cl. 250—272 **60 Claims**



1. The method of determining the density of bodies by means of penetrating rays, which comprises

directing rays of plural preselected different wavelengths from at least one radiation source means to produce at least one beam of rays along a beam path extending from the source means to an internal region of the body whose density is to be measured,

arranging detector means outside of said beam of rays for receiving scattered radiation from said internal region along respective detector axes which intersect said region and form respective angles other than an angle in the vincinity of zero degrees with said beam path, and

responding to the scattered radiation received by said detector means along the respective detector axes to supply a plurality of output signals as a function thereof which output signals are responsive only to plural preselected wavelengths of scattered radiation as produced by the plural preselected different wavelengths from the source means.

4,123,655

ARRANGEMENT FOR PREVENTING THE ALTERATION OF THE PRIMARY BEAM BY UNWANTED PARTICLES, SUCH AS SPUTTER PRODUCTS, CHARGED IONS AND ELECTRONS AND THEIR SECONDARY PROCESSES

Uwe Maixner, Barum, and Dieter Milferstädt, Tespe-Bütlingen, both of Fed. Rep. of Germany, assignors to Gesellschaft für Kernenergieverwertung in Schiffbau und Schiffahrt mbH, Geesthacht-Tesperhude, Fed. Rep. of Germany

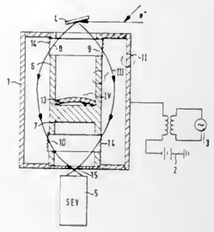
Filed Aug. 24, 1977, Ser. No. 827,307

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1976, 2639033

Int. Cl.[2] H01J *39/00*

U.S. Cl. 250—305 **10 Claims**

1. An electron or ion beam instrument wherein substantially all surfaces of the instrument adjacent the beam are formed from a metal having a low atomization rate and a very low desorption rate and are provided with closely spaced apertures of less than 0.5 mm diameter extending substantially perpendicular to the surface, the depth of the apertures being at least equal to their opening cross section and the total cross sectional area of the apertures corresponding to at least half of the metal surface in which they are provided.



4,123,656

STORAGE TYPE SMOKE DETECTOR

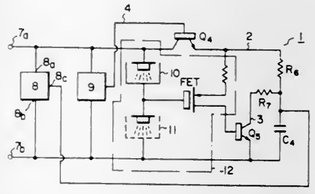
Shigeru Kajii, Kawasaki, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Jul. 6, 1977, Ser. No. 813,182

Claims priority, application Japan, Jul. 7, 1976, 51-8940151[U]

Int. Cl.[2] G01T *1/18*

U.S. Cl. 250—381 **4 Claims**



1. A storage type smoke detector comprising:

a switching circuit connected between a pair of connection terminals of said detector, for shorting the pair of connection terminals upon receipt of a predetermined voltage,

an oscillator circuit connected in parallel to said switching circuit, for producing a series of pulses,

an ionization smoke sensor connected in parallel to said switching circuit,

a P-channel type field effect transistor having a gate connected to an output end of said ionization smoke sensor and a source received a series of pulses from said oscillator circuit,

a charging circuit including a capacitor connected in series to said connection terminals, for charging to a predetermined voltage effective to activate said switching circuit,

a discharging circuit connected in parallel to said capacitor, for discharging a capacitor voltage by receiving an output pulse from a drain of said P-channel type field effect transistor, and

means connected between the source of said field effect transistor and said oscillator circuit, for periodically switching on said field effect transistor,

whereby the P-channel type field effect transistor periodically switches on to discharge the capacitor voltage until said transistor turns off by receiving the output from said ionization smoke sensor.

4,123,657

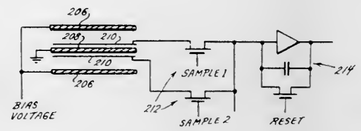
X-RAY DETECTOR

Kenneth E. Krippner, St. Louis, and Albert R. Zacher, Jr., University City, both of Mo., assignors to Artronix Inc., St. Louis, Mo.

Filed Nov. 28, 1975, Ser. No. 636,101

Int. Cl.[2] G01T *1/18*

U.S. Cl. 250—385 **12 Claims**



1. A detector for detecting the presence of radiation for subsequent measurement and evaluation by a charge measuring circuit comprising a pressure vessel, the vessel having one wall having means forming a radiation receiving window therein with a covering member transparent to radiation for containing an ionizable gas in the pressure vessel at an elevated pressure, mounting means in the pressure vessel for mounting and retaining detector plates, a plurality of detector plates mounted in the detector, the plates being aligned perpendicular to the window and intersecting the plane of a beam of radiation passing through the window, the plates comprising a first plate connected to means for electrically biasing the plate at a preselected potential, a second plate adjacent to the first plate, the second plate having means to bias the second plate to a second preselected potential, the second plate having adhered thereon a third plate, the third plate being located between the first and second plate, and the third plate collecting charge in the detector for transmission to and detection, measurement and evaluation by a charge measuring circuit.

4,123,658

SELF-POWERED NEUTRON DETECTOR

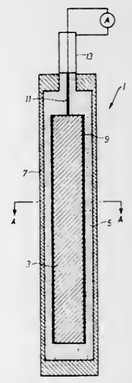
Lars O. Johansson, Nyköping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Mar. 10, 1977, Ser. No. 776,424

Claims priority, application Sweden, Mar. 12, 1976, 7603246

Int. Cl.[2] G01T *3/00*

U.S. Cl. 250—390 **9 Claims**



1. In a self-powered neutron detector comprising a centralized emitter core, an insulator surrounding said core, an outer collector in turn surrounding said insulator, and conduit means connected to said emitter core and collector for withdrawal of generated current, the improvement consisting of a layer positioned between the emitter core and the insulator which consists of a material having a high atomic number and a low neutron activation cross section and has a thickness of at most about 5 microns.

4,123,659

RADIOGRAPHY

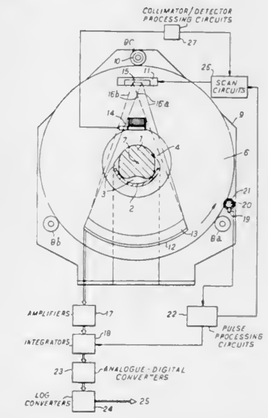
Colin C. Oliver, Slough, England, assignor to EMI Limited, Middlesex, England

Filed May 23, 1977, Ser. No. 799,712

Claims priority, application United Kingdom, Jun. 1, 1976, 22637/76

Int. Cl.[2] H05G *1/30*

U.S. Cl. 250—403 **13 Claims**



1. An apparatus, for examining a region of the body of a patient by means of penetrating radiation, including a source of radiation arranged to project the radiation from an origin in the source along a plurality of paths through the body, means for displacing the origin of the radiation relative to the source to project the radiation through the body along different paths, detector means disposed to receive the radiation emerging from the body after traversing said paths, monitoring means, disposed between the source and the body, for detecting part of the radiation emitted from the source during said displacement to provide scan signals indicative of the progress of said displacement and means for comparing the scan signals with control signals, indicative of a desired progress of said displacement, to tend to reduce variations of said indicated progress from said desired progress.

4,123,660

OPTICAL ALIGNMENT APPARATUS FOR TELETHERAPY MACHINE OR THE LIKE

Norman H. Horwitz, West Bloomfield, Mich., assignor to William Beaumont Hospital, Royal Oak, Mich.

Filed Feb. 22, 1977, Ser. No. 770,558

Int. Cl.[2] G01B *11/26;* G01N *21/00, 23/00*

U.S. Cl. 250—491 **27 Claims**

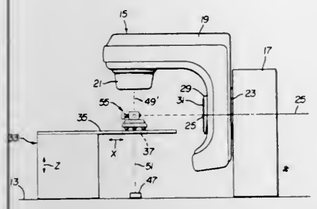
1. An alignment fixture particularly for alignment of high energy sources including lasers, comprising a centrally apertured support base mountable upon a support;

a centrally apertured turntable mounted and journalled upon said support base;

a telescope mount on and secured to said turntable having side walls, top and bottom walls and a longitudinal bore;

a telescope supported within said bore having a longitudinal axis, and an eyepiece with cross hairs, said support base being adjustably mounted whereby said cross hairs are adapted for visible alignment with the epicenter axis of rotation of a teletherapy machine head; said head adapted

to direct a radial high energy beam at right angles to and intersecting said epicenter axis at an isocenter;
and a mirror mounted on each of said telescope mount walls, with their central axes passing through said longitudinal axis;



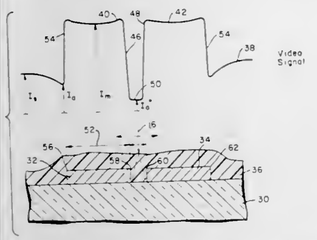
said mirrors being adapted to reflect the beams of a series of right-angularly related pairs of opposed light sources spaced therefrom to verify by the reflection of said beams upon said mirrors with the respective beams all intersecting said isocenter.

4,123,661

CONTRAST ENHANCEMENT OF ELECTRON BEAM ALIGNMENT MARKS

Edward D. Wolf, Northridge, and Walter E. Perkins, Jr., Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 601,943, Aug. 4, 1975, abandoned. This application Apr. 8, 1977, Ser. No. 785,801
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—492 A **10 Claims**



1. Instrumentality for obtaining alignment in fabricating microcircuit devices including:
a microcircuit workpiece and means permanently placed thereon for defining a pair of alignment marks, said workpiece comprising matter whose atomic number is lower than that of said alignment marks means for enhancing contrast therebetween of backscattered electron video signals obtained from directing an electron beam at said workpiece, and said alignment marks means having a close spacing from one another for augmenting the enhanced contrast as a direct result of the close spacing between said alignment marks means.

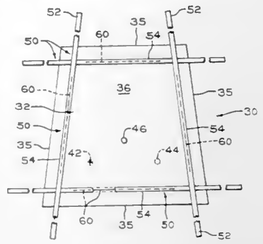
4,123,662

SHIELD BAG

John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed Mar. 7, 1977, Ser. No. 775,076
Int. Cl.[2] G21C *11/00*
U.S. Cl. 250—518 **6 Claims**

1. A neutron shield bag having a plurality of flexible walls enclosing a sealed chamber, port means in said bag for filling said chamber with neutron shielding fluid, and bag anchoring means attached to and extending from at least one of said walls to secure said bag in shielding position, said anchoring means



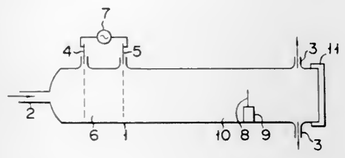
being adapted to detach from a portion of said wall and sever said wall along such portion.

4,123,663

GAS-ETCHING DEVICE

Yasuhiro Horiike, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1976, Ser. No. 647,448
Claims priority, application Japan, Jan. 22, 1975, 50-8642; Mar. 25, 1975, 50-34994; Mar. 29, 1975, 50-36851
Int. Cl.[2] B01K *1/00*; B23K *9/00*
U.S. Cl. 250—531 **11 Claims**



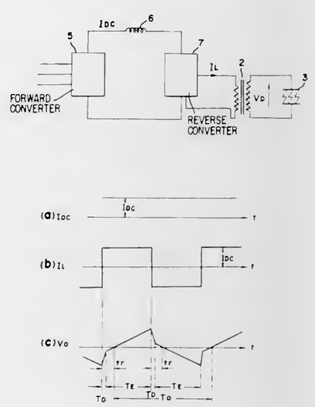
1. A gas etching device for plasma-free etching of a material comprising:
a vacuum vessel having an etching gas-producing region and a reaction region spaced therefrom, the reaction region having a defined location at which the etching gas reacts with the material,
means to introduce gases into said etching gas-producing region,
a high frequency discharging means positioned with respect to said etching gas-producing region to activate said gases to form a long-life active species as the etching gas,
pipe means interposed between the etching gas producing region and the reaction region,
means to withdraw the etching gas from the etching gas-producing region to the reaction region through the pipe means, the reaction region being spaced from said etching gas-producing region a distance fixed to provide electrical isolation of said defined location from electric fields in the etching gas-producing region, whereby the etching gas at said defined location is plasma-free and remains sufficiently activated to etch the material at said defined location.

4,123,664

OZONE GENERATING APPARATUS

Takashi Yamamura; Norikazu Tabata, and Yoshihiko Yamamoto, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 577,456, May 14, 1975, abandoned. This application Apr. 20, 1977, Ser. No. 789,437
Claims priority, application Japan, Jun. 12, 1974, 49-65484
Int. Cl.[2] C01B *13/11*
U.S. Cl. 250—536 **6 Claims**



1. An ozone generating apparatus comprising:
an ozone generator having a discharge tube with discharge electrodes, and
a rectangular waveform current feeding device for feeding rectangular waveform current through the discharge electrodes of the discharge tube without a capacitive coupling circuit between the discharge electrodes and the rectangular waveform current feeding device for driving the ozone generator.

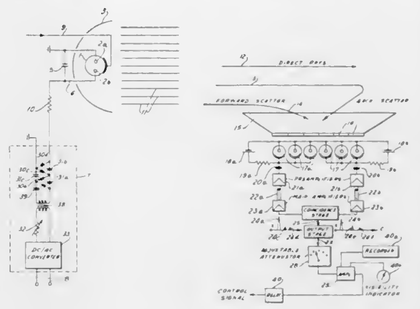
4,123,665

ARRANGEMENT FOR DETERMINING THE DENSITY OF NATURAL FOG IN THE ATMOSPHERE

Frank Früngel, Glockenacker 2, Zurich, Switzerland

Continuation of Ser. No. 533,171, Dec. 16, 1974, abandoned, which is a continuation of Ser. No. 433,445, Jan. 15, 1974, abandoned, which is a division of Ser. No. 266,441, Jun. 26, 1972, Pat. No. 3,808,430, which is a continuation of Ser. No. 498,195, Oct. 4, 1965, Pat. No. 3,672,775, which is a continuation of Ser. No. 194,235, May 14, 1962, abandoned. This application Aug. 9, 1976, Ser. No. 712,956
Claims priority, application Fed. Rep. of Germany, May 16, 1961, 33930
Int. Cl.[2] G01N *21/28*
U.S. Cl. 250—565 **8 Claims**

1. In an arrangement for measuring atmospheric visibility in fog, in combination, light-projecting means operative for projecting into fog-laden atmosphere in the presence of ambient light a beam of pulsed direct light so that a portion of the light of said beam is scattered by fog droplets and thereby converted into pulsed scattered light while the remainder of the light of said beam stays in the form of pulsed direct light; light receiver means so constructed and arranged relative to said light projecting means that said light receiver means does not receive said direct light but does receive scattered light pulses and also ambient light; signal-generating means connected to said light receiver means and operative for generating an electrical light-indicating signal comprised of pulsed first portions corresponding in amplitude and duration to the intensity and duration of the scattered light pulses received by said receiver means and generated during time intervals corresponding to said scattered light pulses and alternating with second portions corresponding in amplitude and duration to the intensity and duration of the ambient light received by said receiver means during the time intervals intermediate the receipt of successive scattered light pulses and generated during the time intervals intermediate the time intervals corresponding to said scattered light pulses; and indicating means including a visibility indicator calibrated in units of atmospheric visibility, operative for



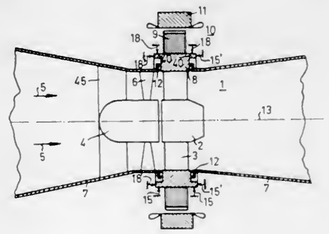
deriving from said light-indicating signal an atmospheric-visibility indication dependent upon the density of said light-scattering fog droplets, said indicating means including suppressing means operative during the time intervals intermediate the receipt by said receiver means of successive scattered light pulses and in dependence upon the light received by said light receiver means but independently of the rate of change of received light for suppressing the effect upon said atmospheric-visibility indication of at least parts of said second portions of said light-indicating signal.

4,123,666

RIM-TYPE HYDROELECTRIC MACHINE

Helmut Miller, Niederrohrdorf, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

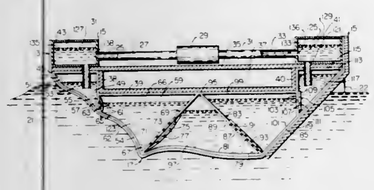
Filed Nov. 23, 1976, Ser. No. 744,244
Claims priority, application Switzerland, Dec. 2, 1975, 15608/75
Int. Cl.[2] F01D *17/04*; F16C *27/00*; H02K *7/08*
U.S. Cl. 290—52 **15 Claims**



1. A hydroelectric machine including
a. a tube-type hydraulic machine having a bladed wheel which rotates about a horizontal axis and includes fixed, radially extending blades;
b. an annular rim surrounding the bladed wheel and secured to the blades at their outer ends;
c. an electrical machine surrounding the rim and having a rotor attached to the rim,

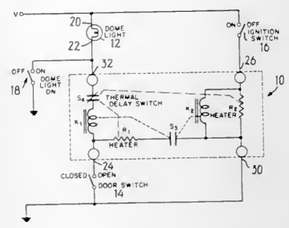
d. the rotor, rim and bladed wheel forming a single rotating unit;
e. an annular bearing surface on said rotating unit;
f. at least two hydrostatic centering supporting devices, each of which includes a piston which is positioned by an hydraulic support motor and which cooperates with the annular bearing surface to radially support said unit without physical contact,
g. the centering supporting devices being in two regions at one side of the horizontal plane containing the axis of rotation, being inclined and positioned symmetrically with respect to the vertical plane containing said axis, having an angle of inclination not greater than 40° to 70°, and providing supporting forces which increase and decrease, respectively, as the bearing surface approaches and retreats from the associated pistons; and
h. at least one hydrostatic damping supporting device including a piston which is positioned by an hydraulic support motor and which cooperates with the bearing surface to provide radial support for said unit without physical contact under dynamic loading conditions,
i. the damping supporting device being located at the opposite side of said horizontal plane from the centering supporting devices and furnishing a supporting force which acts in a direction opposite to the resultant of the forces supplied by the centering supporting devices and has a magnitude which normally is constant and relatively small but increases materially when the bearing surface suddenly moves toward its piston.

4,123,667
WAVE ENERGY GENERATOR-BREAKWATER-BARGE-DOCK
Bert J. Decker, 136 Capen Blvd., Buffalo, N.Y. 14226
Filed Mar. 28, 1977, Ser. No. 781,531
Int. Cl.² F03B *13/12*
U.S. Cl. 290—53 **14 Claims**



1. A wave energy generator-breakwater-barge-dock which comprises an electric generator including relatively rotatable portions, the relative motion of which causes the production of electricity, means for relatively rotating such parts of the electric generator in response to liquid flow, a breakwater-barge-dock body for supporting the electric generator and the means for causing relative rotational motion of the parts thereof, which body comprises an upper portion and a lower portion, said lower portion being distortable in response to wave motions, having a plurality of flexible compartments therein with a gas inside said compartments at the tops thereof and a liquid inside said compartments at the bottoms thereof, a plurality of said compartments having flexible internal one-way flow walls separating them and said flexible compartments being communicated with the means for rotating the generator so that in response to wave motion liquid flows from a downstream compartment through the means for rotating the generator, causing rotation of said means, out said means and back to an upstream compartment and through the plurality of compartments having one-way flow walls separating them, to the downstream compartment.

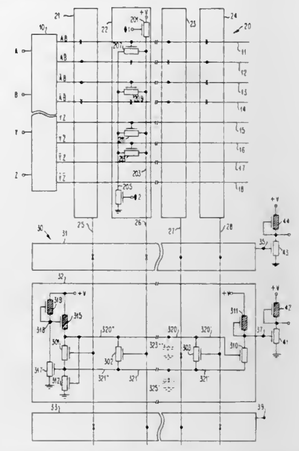
4,123,668
AUTOMOTIVE DOME LIGHT CONTROL WITH VARIABLE-TIME AUTOMATIC HOLDING
Walter Pecota, Boonton, N.J., assignor to Wagner Electric Corporation, St. Louis, Mo.
Filed Jun. 6, 1977, Ser. No. 803,663
Int. Cl.² B60Q *3/02*
U.S. Cl. 307—10 LS **15 Claims**



1. A light control for controlling the energization and de-energization of a light for a vehicle having at least one door with an electric switch actuated thereby and at least one ignition switch having off and on positions said light control comprising:
(a) first means for energizing said light for a first time period for actuation by the closing of the last of said at least one door having an electric switch;
(b) means for immediately terminating said first time period before the end thereof for actuation by said ignition switch being switched from its off to its on position during said first time period, whereby said light is immediately extinguished;
(c) second means for energizing said light for a second time period for actuation by the switching of said ignition switch from its on to its off position;
(d) said means for immediately terminating also being effective to terminate said second time period for actuation by said ignition switch being switched from its off position to its on position during said second time period whereby said light is immediately extinguished.

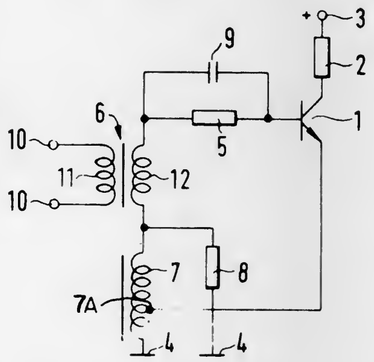
4,123,669
LOGICAL OR CIRCUIT FOR PROGRAMMED LOGIC ARRAYS
William T. Devine, Ulster Park, and William F. Washburn, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 8, 1977, Ser. No. 831,582
Int. Cl.² H03K *19/08, 19/30, 17/04;* **G06F** *9/00*
U.S. Cl. 307—205 **5 Claims**

1. A binary logical OR circuit comprising:
a plurality of input switching devices, each of said input devices being connected between a first node and a second node for providing a low resistance path between said first node and said second node when a binary logic signal is received at a control input of any one of said input devices;
a first non-linear load connected between a voltage source and said first node and a second load connected between a reference voltage and said second node, said second load having a control input connected to said first node to render said second load less conductive when any one of said plurality of input devices is providing said low resistance path;
a third load connected between said voltage source and an output node, and a output switching device connected between said output node and said second node, said output device having a control input connected to said first node for substantially increasing the resistance of said output device whenever any one of said input devices is providing a low resistance path between said first node and said second node;



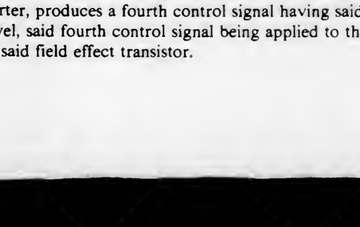
whereby said third load is allowed to provide an output signal in response to a signal received at a control input of any one of said input devices.

4,123,670
TRANSISTOR SWITCHING CIRCUIT
Werner Pollmeier, Verl, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany
Filed Dec. 6, 1978, Ser. No. 747,983
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1975, 2255168
Int. Cl.² H03K *17/00*
U.S. Cl. 307—254 **12 Claims**



1. A transistor switching circuit arrangement for switching at least one switching transistor on and off, said circuit arrangement having means for achieving low power dissipation by delaying the change which occurs in base current to the cut-off valve on conversion into the blocked state and by a subsequent brief disruptive operation of the base emitter section and also for achieving fast switching for the transistor by increasing the base current occurring at the time of switching on, said means comprising a choke coil connected between the base circuit of said transistor and a subsequent point through which part of the base-emitter current of said switching transistor is fed and also connected in part between the emitter of said transistor and said subsequent point, wherein the collector-emitter current being switched is passed through said part of the choke coil in positive feedback mode.

4,123,671
INTEGRATED DRIVER CIRCUIT FOR DISPLAY DEVICE
Mitsuo Aihara, Tokyo, and Hisaharu Ogawa, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan
Filed Apr. 21, 1977, Ser. No. 789,690
Claims priority, application Japan, Apr. 21, 1976, 57-44469
Int. Cl.² H05B *43/00, 39/00;* **H03K** *5/02;* **G04B** *19/30*
U.S. Cl. 307—270 **3 Claims**



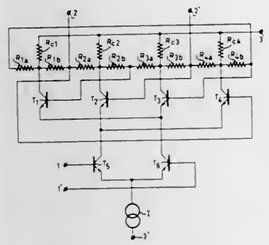
1. A driver circuit arranged as an integrated circuit, for use with an external display device, comprising:
a power source;
a signal generator for producing a first output signal having a first voltage level when supplied by the power source;
a field effect transistor connected across the power source through the external display device, the field effect transistor having a gate which controls the field effect transistor to actuate the display device upon the application to the gate of a control voltage level n-fold ($n > 1$) larger than that of the power source;
an ON-OFF control circuit for producing a first control signal in response to conduction and non-conduction of external switching means provided outside of said integrated circuit;
a first voltage stepping-up circuit for producing a second output signal having a second voltage level by stepping-up said first output signal from said signal generator;
a first level converter which, when supplied with said second output signal from said first voltage stepping-up circuit and said first control signal from said ON-OFF control circuit, produces a second control signal having said second level;
a second voltage stepping-up circuit which, when supplied with said second output signal from said first voltage stepping-up circuit and said second control signal from said first level converter produces a third output signal having a third voltage level n-fold ($n > 1$) larger than the power source;
a second level converter which, when supplied with said second output signal from said first voltage stepping-up circuit and said first control signal from said ON-OFF control circuit, produces a third control signal having said second level; and
a third level converter which, when supplied with said third output signal from said second voltage stepping-up circuit and said third control signal from said second level converter, produces a fourth control signal having said third level, said fourth control signal being applied to the gate of said field effect transistor.

4,123,672

CIRCUIT ARRANGEMENT FOR FREQUENCY DIVISION OF HIGH-FREQUENCY PULSES

Wolfdietrich G. Kasperkovitz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 635,987, Nov. 28, 1975, abandoned.
This application Jun. 2, 1977, Ser. No. 802,725
Claims priority, application Netherlands, Nov. 29, 1974, 7415575
Int. Cl.² H03K *21/00*
U.S. Cl. 307—303 **7 Claims**



1. A circuit comprising:

first and second equal sized groups of transistors, each group having at least one pair of transistors, a cyclic electrical sequence being defined for said transistors, said sequence alternating between said groups so that each of said transistors is followed in said sequence by a transistor of the other group, each of said transistors having a collector, a base and an emitter;

a plurality of electrical resistances, each of said resistances connecting the collector of a transistor in said cyclic sequence to the collector of the following transistor in said sequence, each of said electrical resistances having a tapping electrically connected directly to the base of the transistor which preceedes, in said sequence, the pair of transistors between the collectors of which said tapping is disposed;

first and second driver transistors, the output from said first driver transistor being electrically connected to each of the emitters of the transistors of said first group, the output from said second driver transistor being electrically connected to each of the emitters of the transistors of said second group;

means for alternately driving said first and second driver transistors into conduction; and

output means electrically connected to at least one of said tappings.

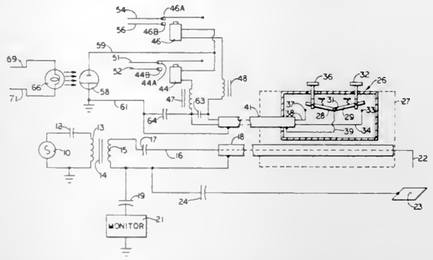
4,123,673

CONTROL CIRCUIT FOR AN ELECTRICAL DEVICE

Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research and Development Corporation, Milford, Del.

Filed Mar. 14, 1977, Ser. No. 777,077
Int. Cl.² A61B *17/36*
U.S. Cl. 307—326 **8 Claims**

1. A control circuit for a radiofrequency electrosurgical device including a radiofrequency generator, a handpiece, an active electrode means supported on the handpiece, and switch means mounted in the handpiece which comprises photovoltaic cell means and relay means connected in series with the switch means, means for illuminating the photovoltaic cell means, whereby closing of contacts of the switch means causes acturation of the relay means, and means connected to the relay means for causing the radiofrequency generator to power



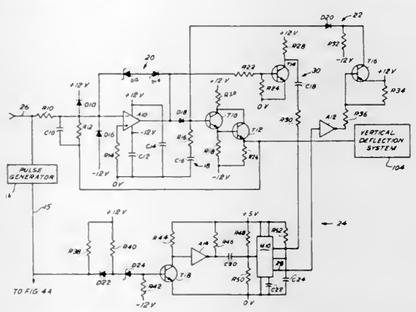
the active electrode, voltage at the switch means being limited by the voltage produced by the photovoltaic cell means.

4,123,674

VOLTAGE PEAK SHORT STORE SYSTEM

Gary F. Comiskey, Cook County; Gregory N. Hesse, DuPage County, both of Ill., and Johannes P. Bovenlander, Kormmenie, Netherlands, assignors to Sun Electric Corporation, Chicago, Ill.

Division of Ser. No. 640,220, Dec. 12, 1975, Pat. No. 4,019,127.
This application Aug. 19, 1976, Ser. No. 715,975
Int. Cl.² H03K *17/56, 5/20;* G01R *29/00*
U.S. Cl. 307—351 **8 Claims**



1. In a device for displaying a voltage, said voltage having a peak, an improvement comprising, in combination:

voltage storage means;

amplifier means for receiving said voltage and charging said voltage storage means in response thereto, said amplifier means producing a charging voltage;

controllably conductive means, coupled to said voltage storage, for selectively discharging said voltage storage means, said controllably conductive means having an operative discharging state and an inoperative state;

pulse generating means for receiving said voltage and generating a trigger pulse in response thereto;

control means, coupled to said controllably conductive means and said pulse generating means, for controlling said controllably conductive means, said control means placing said controllably conductive means in said inoperative state in response to said trigger pulse and placing said controllably conductive means in said operative discharging state a predetermined time after entering said inoperative state, whereby said voltage storage means is charged to a potential substantially proportional to said peak prior to discharge; and

controllable interconnect means, coupled to said voltage storage means and said amplifier means and responsive to said charging voltage and said potential, for connecting and disconnecting said voltage storage means and said amplifier means, said controllable interconnect means disconnecting said voltage storage means from said amplifier means prior to said operative discharging state and connecting said voltage storage means to said amplifier means after initiation of said operative discharging state whenever said potential substantially equals said charging voltage;

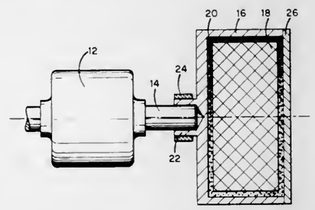
said amplifier means, said controllably conductive means and said controllable interconnect means cooperatively defining signal following means for maintaining said potential on said voltage storage means substantially proportional to said voltage after discharge of said voltage storage means.

4,123,675

INERTIA DAMPER USING FERROFLUID

Ronald Moskowitz, Merrimack, N.H.; Philip Stahl, Holliston, Mass., and Walter R. Reed, Merrimack, N.H., assignors to Ferrofluidics Corporation, Burlington, Mass.

Filed Jun. 13, 1977, Ser. No. 805,643
Int. Cl.² H02K *37/00*
U.S. Cl. 310—49 R **14 Claims**



1. A viscous-fluid inertia damper, which damper comprises:

(a) a housing having a chamber therein;

(b) a nonferromagnetic seismic mass disposed in the chamber and in a closely spaced-apart relationship with the internal wall surfaces of the chamber;

(c) a means to couple the housing to a dynamic element whose energy is to be dampened;

(d) a ferrofluid of selected viscosity in the remaining volume between the housing walls and the seismic mass; and

(e) a permanent magnet disposed within or forming a part of the housing to provide a magnetic field, so as to suspend the seismic mass in the ferrofluid, whereby the energy of a dynamic system coupled to the damper may be dissipated.

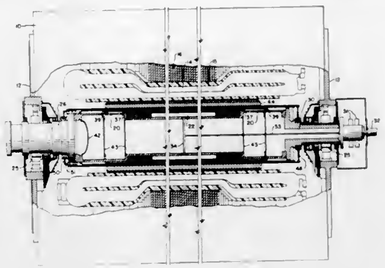
4,123,676

ROTOR MEMBER FOR SUPERCONDUCTING GENERATOR

Glenn D. Cooper, North Huntingdon, and Donald C. Litz, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 22, 1976, Ser. No. 734,943
Int. Cl.² H02K *9/00*
U.S. Cl. 310—52 **3 Claims**

1. A rotor for a dynamoelectric machine comprising a hollow cylindrical rotor body carrying a field winding of superconducting material, means for circulating a cryogenic coolant fluid through said field winding, shaft portions at opposite ends of the rotor body, one of said shaft portions being a drive shaft, a cylindrical radiation shield surrounding the rotor body concentrically therewith and attached to the rotor at the ends of the radiation shield, a cylindrical vacuum enclosure disposed concentrically with the rotor body outside the radiation shield and spaced radially therefrom, the vacuum enclosure being attached to the rotor adjacent each end thereof with a sealing attachment and the space within the enclosure being evacuated, a cylindrical damper-shield member of high electrical conductivity surrounding the rotor body concentrically therewith outside the vacuum enclosure and spaced radially therefrom, means for rigidly attaching said shield member to the rotor at the end thereof opposite said drive shaft, and means for supporting the shield member on the rotor at the end adjacent the drive shaft.

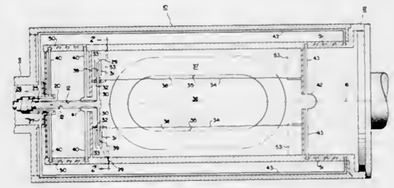


4,123,677

SELF-REGULATING TRANSPORT MECHANISM FOR SUPER-CONDUCTIVE ROTOR REFRIGERANT

Evangelos T. Laskaris, Schenectady; Bruce B. Gamble, Elnora, and Burton D. Hatch, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 30, 1975, Ser. No. 573,168
Int. Cl.² H02K *9/00*
U.S. Cl. 310—52 **13 Claims**



1. A self-regulating transport mechanism for superconductive rotor winding coolant comprising:

a rotating conduit extending axially into the interior of a rotor and carrying a flow of coolant in the liquid phase, at constant pressure;

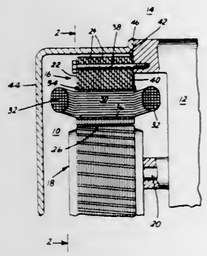
open-ended radial tube means within said rotor attached to, and rotatable with, said conduit, said radial tube means having an inner diameter sufficiently large to accommodate flow of coolant in the liquid phase along its inner surface and to accommodate flow of coolant in the gaseous phase through its central core, said radial tube means delivering said coolant to the interior of said rotor so as to maintain a layer of liquefied coolant of predetermined depth extending radially inward from the interior surface of said rotor and a central core of evaporated coolant in said rotor during rotation of said rotor, said radial tube means having its open end submerged in said layer of liquefied coolant; and

tubing means in gaseous communication with said central core of evaporated coolant for conducting said evaporated coolant out of the interior of said rotor.

4,123,678
LAMINATED STATOR CORE MEMBER SECURED ONLY BY BONDING THE WINDINGS

Thomas A. Jacoby, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Aug. 25, 1977, Ser. No. 827,622
Int. Cl.[2] H02K *1/06, 15/00*
U.S. Cl. 310—217 **12 Claims**

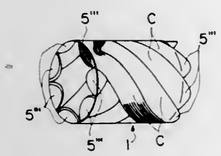


1. In a magnetic device comprising a core member formed of a stacked assembly of relatively thin laminations of magnetic material, and a winding formed of a plurality of turns of magnet wire embracing a part of said core member, the improvement wherein said turns are bonded together and comprise the sole means for holding said laminations in assembled relation.

4,123,679
CORELESS CYLINDRICAL ARMATURE FOR ELECTRICAL ROTARY MACHINES

Takao Miyasaka, Yokohama, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Feb. 2, 1977, Ser. No. 765,104
Claims priority, application Japan, Feb. 5, 1976, 51-11760; Apr. 14, 1976, 51-46526[U]; Apr. 14, 1976, 51-46527[U]
Int. Cl.[2] H02K *1/22*
U.S. Cl. 310—266 **20 Claims**

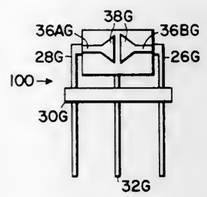


1. A coreless armature for an electrical rotary machine, comprising:
a main shaft;
a bracket secured to said main shaft;
a rectifier secured to said bracket; and
a coil cylinder having two opposed peripheral edges bounding a peripheral surface and including therein at least one coil unit connected at respective connections with said rectifier,
characterized in that
said coil unit comprises:
a plurality of first lead wire portions, *n* in number, each extending on said peripheral surface over a range corresponding to a respective first electrical angle of 180° from along one peripheral edge of said cylinder toward the other peripheral edge thereof;
a respective plurality of second lead wire portions each extending on said peripheral surface over a range corresponding to a respective further, second electrical angle of 180° from along said other peripheral edge of said cylinder toward said one peripheral edge thereof;
each first lead wire portion joining and forming with each respective second lead wire portion a respective continuous lead wire which extends completely circumferentially of said peripheral surface;
the first through *n*th such lead wires being regularly distributed in a circular series angularly of said peripheral surface;
each first lead wire portion being connected to the respective second lead wire portion of the respective angularly next lead wire in said circular series, thereby forming a said connection, each such connection being connected to said rectifier;
the breadth of each lead wire being such as to provide, complementarily with
each lead wire being sufficiently broad, angularly of said peripheral surface, that all of said lead wires, considered together, provide a full pitch, substantially completely double-layer winding, excepting at a respective plurality of relatively axially short apical regions at each peripheral edge of said cylinder, typically where a respective first lead wire joins a respective second lead wire, where should each such region not be bent double upon itself along a generally circumferentially extending axis intermediate the axial extent thereof longitudinally of said cylinder the winding remains of single layer.

4,123,680
PIEZOELECTRIC QUARTZ CRYSTAL PRODUCTS AND FABRICATION METHODS THEREFOR

Daryl M. Kemper, and Louis A. Dick, both of Litchfield Park, Ariz., assignors to Tyco Crystal Products, Inc., Phoenix, Ariz.

Filed May 26, 1977, Ser. No. 800,725
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—320 **27 Claims**

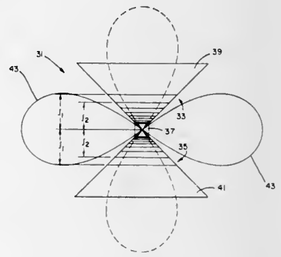


1. A piezoelectric device comprising, in combination, a pie shaped piezoelectric substrate at least two electrically conductive support members connected to said pie shaped piezoelectric substrate, at least one pie shaped electrode located on each surface of said pie shaped piezoelectric substrate, said one pie shaped electrode on one surface of said pie shaped piezoelectric substrate being electrically connected to one of said two electrically conductive support members, said one pie shaped electrode on the other surface of said pie shaped piezoelectric substrate being electrically connected to the other of said two electrically conductive support members, said one pie shaped electrode located on one surface of said pie shaped piezoelectric substrate overlapping and in registry with said one pie shaped electrode located on the other surface of said pie shaped piezoelectric substrate.

4,123,681
WIDE BAND PROPORTIONAL TRANSDUCER ARRAY

Michael L. Barlow, Silverdale, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 501,918, Aug. 29, 1974, abandoned. This application Nov. 19, 1976, Ser. No. 743,441
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—322 **2 Claims**



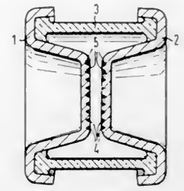
1. A transducer array comprising:
(a) at least three transducer elements;
(b) each of said elements having a discrete resonant frequency that is different from the discrete resonant frequency of any other of said transducer elements;
(c) said elements being arranged so that the ratio of the resonant frequencies of adjacent elements is substantially constant;
(d) a passive electrical network operatively connected to said transducer elements to provide the electrical drive voltages and currents to each of said transducer elements for operating predetermined elements at their resonant frequencies over said band width;
(e) said ratio is selected to have a predetermined value of about 1.26 such that the composite impedence of said array is about constant over its entire band width;
(f) said elements are arranged to form at least one cone wherein said elements of said at least one cone are of progressively decreasing size and progressively increasing frequency;
(g) the ratio of the heights, diameters and thicknesses of adjacent elements are substantially constant;
(h) the ratio of said frequencies is about inversely proportional to the ratios of said heights, diameters and thicknesses; and
(i) said transducer array is for operating only as a receiver or only as a transmitter at any instant of time.

4,123,682
COLD CATHODE GAS-DISCHARGE TUBE

Gerhard Lange, and Gerhard Peche, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sep. 8, 1975, Ser. No. 610,927
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1974, 2445063
Int. Cl.[2] H01J *17/00*
U.S. Cl. 313—54 **3 Claims**

1. A surge voltage arrestor comprising:
a gas-tight electrical insulating housing;
an ionizable gas in said housing;
a pair of spaced apart electrodes symmetrically mounted in said gas-tight housing with their frontal surfaces facing each other;
a preparation of nickel power containing Nickel 63 radioactive material for pre-ionizing said gas;
said radioactive material being adhered to at least a portion of the surface of both of said electrodes; and

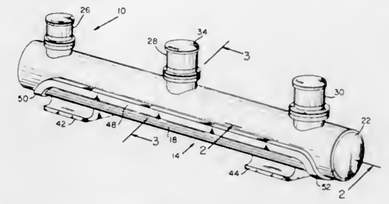


said nickel powder having a grain size of approximately 8 μm.

4,123,683
ELONGATED CROSSED-FIELD SWITCH DEVICE

Robin J. Harvey, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 15, 1977, Ser. No. 833,527
Int. Cl.[2] H01J *1/50*
U.S. Cl. 313—156 **11 Claims**



1. A crossed-field switch device comprising:
an anode electrode and a cathode electrode spaced from each other to define an interelectrode space so that a selected gas at a selected pressure can occupy the space, said electrodes being electrically isolated so that application of voltage between said electrodes results in an electric field which is oriented in a direction between said electrodes across the space, magnetic field means for providing a magnetic field in the interelectrode space to define an active region in the interelectrode space where the magnetic field is substantially perpendicular with respect to the electric field so that electrons traverse a closed path in the active region to cause cascading ionization which results in self-sustaining plasma and interelectrode electrical conduction, the improvement comprising:
the path of the active region in the interelectrode space being configured with an elongated shape having greater length than width to reduce the overall width as compared to a circular path having the same length.

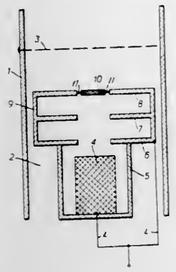
4,123,684
THYRATRONS

Hugh Menown, Writtle, and Robert J. Wheldon, Chelmsford, both of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Mar. 16, 1977, Ser. No. 778,255
Claims priority, application United Kingdom, Mar. 18, 1976, 10889/76
Int. Cl.[2] H01J *17/04*
U.S. Cl. 313—205 **13 Claims**

1. A thyratron including a thermionic cathode, at least a first control electrode, and a baffled structure arranged between

said thermionic cathode and said first control electrode, said baffled structure comprising a plurality of baffled plates form-



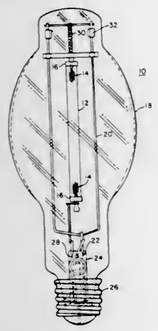
ing at least two transversely extending cavities connected to be at cathode potential.

4,123,685

HID LAMP ELECTRODE COMPRISING SOLID SOLUTION OF DIBARIUM CALCIUM MOLYBDATE AND TUNGSTATE

Ranbir S. Bhalla, West Paterson, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 21, 1977, Ser. No. 844,154
Int. Cl.[2] H01J *61/06*
U.S. Cl. 313—218 **5 Claims**



1. In combination with a high-intensity vapor discharge lamp comprising a radiation-transmitting arc tube having electrodes operatively supported therein proximate the ends thereof and adapted to have an elongated arc discharge maintained therebetween, and means for connecting said electrodes to an energizing power source, the improved structure for said electrodes each of which comprises:

(a) an elongated refractory metal member having one end portion thereof supported proximate an end of said arc tube and the other end portion of said metal member projecting a short distance inwardly within said arc tube, and overfitting refractory metal coil means carried on the inwardly projecting portion of said elongated metal member; and

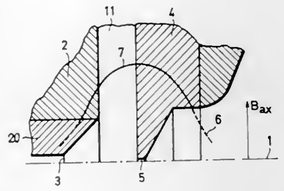
(b) electron emissive material carried intermediate turns of said overfitting coil means, said electron emissive material consisting essentially of a solid solution of dibarium calcium tungstate (Ba_2CaWO_6) and dibarium calcium molybdate (Ba_2CaMoO_6) wherein the molar ratio of said tungstate to said molybdate falls within the range of from 9:1 to 1:9.

4,123,686

ION GENERATING SOURCE

Roderich Keller, Darmstadt, and Michael Müller, Mannheim, both of Fed. Rep. of Germany, assignors to Gesellschaft für Schwerionenforschung mbH, Darmstadt, Fed. Rep. of Germany

Filed Mar. 4, 1977, Ser. No. 774,655
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610165
Int. Cl.[2] H01J *27/00*
U.S. Cl. 313—230 **10 Claims**



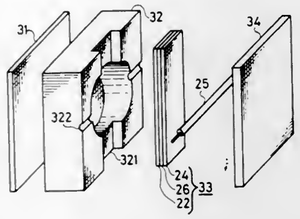
1. In a charged ion generating source composed of a glow cathode, an intermediate electrode and an anode electrode having a common axis of symmetry, each electrode being provided with an opening constituting an axial passage extending along the common axis of symmetry, means defining a discharge chamber bordered by the electrodes and in which electrons and/or auxiliary gas ions form the charged ions, and a system composed of a coil and a magnetic yoke for producing a magnetic field having an axial component along the common axis of symmetry, the improvement wherein said axial passage of said opening of said anode electrode is located in a region where the magnitude of the axial component of the flux density of the magnetic field is close to the maximum value of that component.

4,123,687

DISPLAY SYSTEM USING LOW ENERGY ELECTRONS

Raymond Poirier, and Nicolas Szydlo, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 19, 1977, Ser. No. 798,568
Claims priority, application France, May 21, 1976, 76 15516
Int. Cl.[2] H01J *61/067, 61/44*
U.S. Cl. 313—484 **6 Claims**



1. A display system comprising:

a first transparent insulating plate member in which recesses have been cut out, said recesses forming a matrix with rows and columns, and being filled with a gas at such a pressure that said gas forms an ionic plasma in an electric field, said member bearing a first and a second series of notches forming lines intersecting one another at the centers of said recesses, the notches of the first series being laid out in lines parallel to rows of said matrix, and the notches of the second series being laid out in lines parallel to columns of said matrix;

a first series of electrodes sunk in the first series of notches, said electrodes being made of strips comprising starting from the bottoms of the notches a thin metallic plate to function as an anode, a layer of insulating material and a layer of a material containing phosphors capable of emitting visible light when receiving ions from said plasma;

a second series of electrodes sunk in the second series of notches, said electrodes being made of metallic wires each covered with a layer of an insulating material, each wire functioning as a grid, and said layer having a thickness calculated to allow the charge and the discharge of said grids with said ions in the duration of a predetermined time;

a metallic layer disposed upon the surface of said member opposite to said recesses, said layer functioning as a cathode;

a second transparent insulating plate member covering the recesses of said first member;

means for sealing said first and second members to form a sealed envelope;

whereby said anode and said cathode form a plasma;

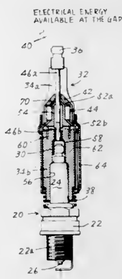
and whereby a variable voltage applied between said grid and said anode allows ions to issue from the cathode-anode space and fall upon phosphors contained in said strips.

4,123,688

SPARK PLUG CAP

Masazi Yoshikawa, and Tomoe Sawada, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 656,723, Feb. 9, 1976, Pat. No. 4,082,980. This application Jan. 5, 1977, Ser. No. 756,919
Claims priority, application Japan, Feb. 13, 1975, 50-21425[U]; May 15, 1975, 50-65019[U]; May 17, 1975, 50-66088[U]; Jun. 12, 1975, 50-81296[U]
Int. Cl.[2] H01J *7/44, 13/46, 23/16;* **H01K** *1/62*
U.S. Cl. 315—58 **17 Claims**



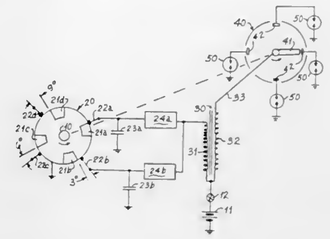
1. A spark plug cap for electrically and mechanically connecting a spark plug to an ignition current supply cord to intensify sparking across the gap between central and ground electrodes of the spark plug, comprising an insulating body, said body having means for mechanically connecting said cap to said spark plug and terminal means adapted to be connected to said supply cord, electrically conductive means extending through said body to electrically connect said terminal means to the center electrode of said spark plug and at least one capacitor unit supported within said body and electrically connected in parallel to said spark gap and characterized in that said capacitor unit comprises a cylindrical dielectric through which said conductive means extends and a pair of electrodes positioned on the opposite end faces of said cylindrical dielectric base.

4,123,689

TRANSIENT INTERMODULATION IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed Jul. 11, 1977, Ser. No. 814,456
Int. Cl.[2] H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **9 Claims**



1. An ignition system having electrical igniters and producing a plural number of transient signals during firing period of any one of the igniters, comprising the combination of:

a timer, driven during operative mode of the system, having a plural number of electrical contactors coupled thereto;

an electrical circuit, composed of passive components only, connected to each of the contactors, one said circuit per contactor; and

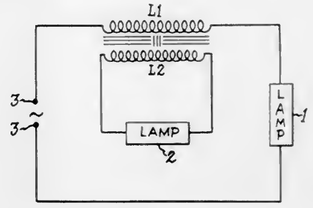
an ignition transformer having a primary winding, said primary winding being electrically connected to all of the electrical circuits.

4,123,690

DISCHARGE LAMP BALLAST CIRCUIT

Mitchell M. Osteen, Zirconia, N.C., assignor to General Electric Company, N.Y.

Filed Mar. 7, 1977, Ser. No. 775,005
Int. Cl.[2] H05B *41/16*
U.S. Cl. 315—258 **8 Claims**



4. Lamp operating apparatus comprising, in combination an alternating current source, a first circuit comprising a first inductor and a first gaseous discharge lamp connected in series across said alternating current source, and a second circuit comprising a second inductor inductively coupled to said first inductor and a second gaseous discharge lamp connected across said second inductor, the current in said second circuit being derived solely from the inductive coupling of said first and second inductors, the output current of said second circuit leading the output current of said first circuit, whereby the power factor of said alternating current source is improved, said apparatus including a magnetic core forming a closed magnetic circuit and having spaced leg portions, said first and second inductors respectively comprising first and second coils wound on at least one of said leg portions and substantially spaced from each other.

4,123,691

ELECTROMAGNETIC DEVICES

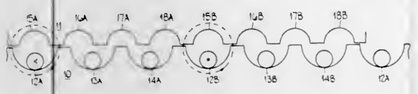
Alec H. Selly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation-in-part of Ser. No. 701,342, Jun. 30, 1976, abandoned. This application Aug. 22, 1977, Ser. No. 826,755

Claims priority, application United Kingdom, Jul. 5, 1975, 28435/75

Int. Cl.[2] H02K *33/00*

U.S. Cl. 318—119 **4 Claims**



1. An electromagnetic device comprising a pair of relatively movable parts and a winding which when supplied with electric current generates a magnetic field which results in a force acting between the parts to cause linear relative movement of the parts, the first of said parts defining a generally cylindrical working surface whilst the second part has a working surface presented to but spaced from the working surface of said first part, one of said parts having formed on its working surface at least three screw thread formations, the thread formations each consisting of a pair of threads, winding sets associated with the thread formations respectively, each winding set comprising windings located in said threads respectively and through which in use, electric current can be caused to flow in opposite directions, the working surface of the other of said parts having one extra number of thread formations with the threads of the formations having the same helix angle, whereby upon energisation of the windings the magnetic field produced by current flow in the windings will cause axial movement of the parts to effect a decrease in the reluctance of the magnetic paths between the parts and connection means whereby the windings of the sets can be selectively energised to produce relative movement of said parts.

4,123,692

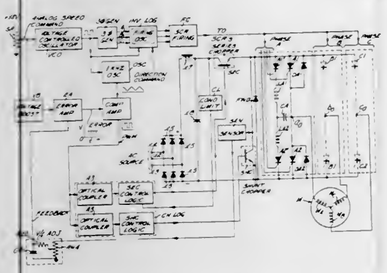
ADJUSTABLE SPEED ELECTRIC MOTOR DRIVE HAVING CONSTANT HARMONIC CONTENT

Thomas P. Gilmore, Wauwatosa, and Frederick A. Stich, Milwaukee, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 26, 1976, Ser. No. 735,609

Int. Cl.[2] H02P *5/40, 7/62*

U.S. Cl. 318—227 **29 Claims**



24. An adjustable speed electric motor drive which does not require a filter between the series chopper and the inverter comprising, in combination,

a unidirectional electric power source,

an inverter having *n* output phases and positive and negative load current carrying semiconductor switches in series in each output phase with an output terminal at the junction therebetween for connection to the respective phase windings of said motor and also having feedback diodes in inverse polarity shunt relation with said semiconductor switches,

a semiconductor transistor series chopper in one polarity of said source between said source and said inverter,

a semiconductor shunt chopper switch connected at the output of said series chopper in shunt with said series arrangement of positive and negative switches in each inverter output phase,

a free-wheeling diode in inverse polarity parallel relation with said shunt chopper switch,

voltage controlled oscillator means for deriving a train of modulation frequency controlling pulses whose frequency is a function of the magnitude of an analog speed reference signal,

a generator for deriving *n* phase reference waves synchronized to said modulation frequency controlling pulses and displaced 360/*n* electrical degrees each of which is associated with one phase of said inverter,

means for controlling the switching of the semiconductor switches in the respective phases of said inverter as a function of the associated phase reference waves,

oscillator means for generating a train of constant frequency generally triangular ramp pulses,

sensing means for deriving a feedback signal proportional to the average voltage across said shunt chopper switch,

means for comparing said analog speed reference signal to said feedback signal and for deriving a unidirectional error signal which is a function of their difference,

means for comparing said error signal to said train of ramp pulses to derive variable width signals at said constant frequency whose width is a function of the magnitude of said error signal, and

pulse width modulating means for switching said series chopper in accordance with said variable width signals and for switching said shunt chopper switch to the opposite conductive state from said series chopper.

4,123,693

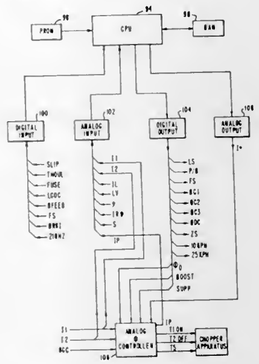
TRANSIT VEHICLE GENERATED VOLTAGE CONTROL APPARATUS AND METHOD

Larry W. Anderson, Pittsburgh, and James H. Franz, Jr., Murrysville both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 29, 1976, Ser. No. 709,685

Int. Cl.[2] H02P *3/14*

U.S. Cl. 318—376 **9 Claims**



1. In control apparatus for a chopper operative with a power supply line to energize an electric motor, the combination of:

means including said chopper for controlling the generated energy of the motor during braking,

means responsive to the voltage of the supply line;

means for providing at least one predetermined limit for said supply line voltage; and

means for comparing said supply line voltage with said limit and coupled with said generated energy controlling means to provide a predetermined reduction of the generated energy of said motor to establish the supply line voltage below said limit.

4,123,694

CIRCUIT ARRANGEMENT FOR A WIPER DRIVING MOTOR

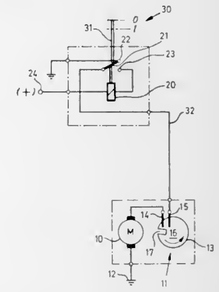
Marcel Andrei-Alexandru, Bietigheim-Bissingen; Gunther Gille, Sersheim; Horst Goertler, Sachsenheim; Hans Prohaska, Bietigheim-Bissingen; Walter Steeb, Bittenfeld, and Wolfgang Spieth, Freiberg, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 29, 1976, Ser. No. 755,502

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645707

Int. Cl.[2] H02P *1/04*

U.S. Cl. 318—443 **25 Claims**



1. A circuit arrangement for driving a wiper motor, comprising: a controllable switching element for switching a motor operating circuit, a limit switch having a pair of normally closed contacts serially coupled with said switch element and said limit switch being mechanically coupled to the output of said wiper motor and being responsive thereto to open said normally closed contacts during a portion of the operating cycle of said wiper motor to provide a disconnection signal, said switching element being controllable by a manually actuable operating switch and by said disconnection signal of said limit switch, and wherein the disconnection signal of the limit switch is directly conducted to the switching element through the motor supply lead.

4,123,695

PATTERN RECOGNITION SYSTEM

Jacques A. G. Hale, Crawley Down, and Alan Robert Turner-Smith, Redhill, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 30, 1975, Ser. No. 618,031

Claims priority, application United Kingdom, Oct. 4, 1974, 43136/74

Int. Cl.[2] G05B *13/00*

U.S. Cl. 318—561 **11 Claims**

1. An automatic machine tool system comprising a stationary bed;

a two-dimensional positioning table supported on said bed having an operative plane;

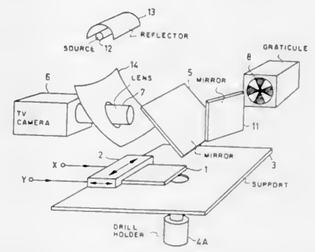
means for measuring the displacement of said table in each said dimension relative to said bed;

a tool holder fixed relative to said bed and having an operative center;

visual input means fixed relative to said bed having a field of view including a portion of said table containing said operative center, comprising:

(a) means for identifying a predetermined mark inherently present on a surface of an object fixed in a predetermined position on said table, the surface lying in said operative plane, and detecting in said operative plane a plurality of picture elements, each of said picture elements having a predetermined one of a plurality of intensity levels;

(b) means for applying an operator to said predetermined mark, said operator comprising an operative center element adapted to register with one of said picture elements, and a plurality of peripheral elements situated on rows extending radially outward from the region of said operative center element for registering with picture elements extending radially outward from said one picture element;



(c) means for producing a recognition signal if at least one of said peripheral elements in each of said rows satisfies the condition that said at least one peripheral element is in registration with a picture element having an intensity level which differs from that of said one picture element in registration with said operative center element by at least a predetermined threshold amount;

means for introducing a graticule having a center into the field of view of said visual input means so that said center of said graticule is substantially aligned with said operative center;

means for identifying the location of said graticule;

means for measuring the separation of said mark from said center of said graticule; and

driving means for producing a relative displacement between said table and said tool holder corresponding to said measured separation for aligning said mark with said center of said graticule.

4,123,696

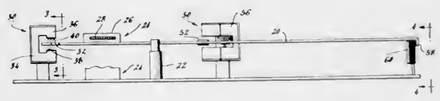
SIGNAL HANDLING APPARATUS

Everett O. Olsen, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Division of Ser. No. 543,443, Jan. 23, 1975, abandoned, which is a continuation of Ser. No. 333,997, Feb. 20, 1973, abandoned. This application Dec. 15, 1975, Ser. No. 641,075

Int. Cl.[2] G05B *5/01*

U.S. Cl. 318—623 **13 Claims**



1. Positioning apparatus for use with industrial process instrument systems and the like, comprising:

actuator means responsive to a control signal and producing a control force for positioning a movable member;

sensing means associated with said movable member and including means to produce a signal representing the position of said member;

feedback means coupled to said sensing means to direct to the input of said actuator means a feedback signal to cause said movable member to be positioned in correspondence to the magnitude of said control signal; and

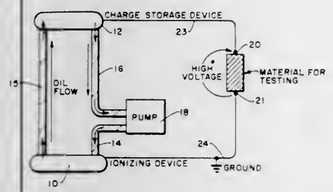
magnetic means including a mass of small magnetizable particles engaging the surface of a part movable with said member, said particles being magnetically influenced to develop a frictional engagement with said surface and producing on said member a frictional restraining force opposing the effect of said control force, said frictional restraining force having a magnitude less than said control force and permitting while resisting any movement of said member responsive to said control force, said frictional restraining force being capable of holding said member in fixed position when said actuator means is inactive.

4,123,697

ELECTROSTATIC HIGH POTENTIAL SYSTEM

Aleksy J. Paszyc, Ventura; Dallas M. Shiroma, Oxnard, and Kwang T. Huang, Ventura, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1977, Ser. No. 812,883
Int. Cl.[2] H02N *1/10*
U.S. Cl. 322—2 A **12 Claims**



1. A high voltage generating system, comprising:

(a) a conductive ionizing chamber having a fluid inlet at one side thereof and a fluid outlet at the opposite side thereof;

(b) a first dielectric baffle means of large surface area within said ionizing chamber between the fluid inlet and the fluid outlet thereto;

(c) a conductive charge storage chamber having a fluid inlet at one side thereof and a fluid outlet at the opposite side thereof;

(d) a second dielectric baffle means of large surface area within said charge storage chamber between the fluid inlet and the fluid outlet thereto;

(e) a first dielectric conduit means connected between the fluid outlet from said ionizing chamber and the fluid inlet to said charge storage chamber;

(f) a second dielectric conduit means connected between the fluid outlet from said charge storage chamber and the fluid inlet to said ionizing chamber;

(g) a dielectric fluid of high resistivity filling said ionizing chamber, said charge storage chamber, and said first and second dielectric conduit means; said dielectric fluid being operable to generate electrostatic charges when moved against the surface of said first dielectric baffle means within said ionizing chamber;

(h) means operable to continuously circulate said dielectric fluid through said ionizing chamber and said charge storage chamber via said first and second conduit means wherein said dielectric fluid moving against the surface of said first dielectric baffle means is electrostatically charged;

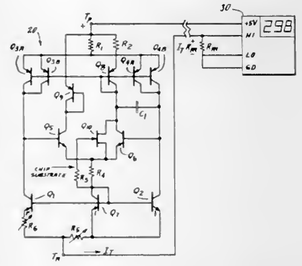
(i) electrode means being located within said second dielectric baffle means and electrically connected to said charge storage chamber between the inlet and outlet thereto; said electrode means being operable to draw off the electrostatic charges from said charged dielectric fluid as said fluid is circulated through said charge storage chamber wherein an electrostatic high potential is produced and made available for use between said ionizing chamber and said charge storage chamber.

4,123,698

INTEGRATED CIRCUIT TWO TERMINAL TEMPERATURE TRANSDUCER

Michael P. Timko, and Adrian P. Brokaw, both of Burlington, Mass., assignors to Analog Devices, Incorporated, Norwood, Mass.

Filed Jul. 6, 1976, Ser. No. 703,087
Int. Cl.[2] G05F *1/58*; H01L *19/00*
U.S. Cl. 323—1 **36 Claims**



1. In a two terminal transducer for generating an output current through said two terminals varying linearly with absolute temperature by circuit means operable wholly by the current flow through said two terminals, said circuit means comprising first and second transistors having conductive areas of predetermined sizes, means connected to the collectors of the first and second transistors to supply current therethrough, means for controlling the current supplying means to control the currents through the first and second transistors to operate them at different current densities, thereby to produce different base to emitter voltages in the first and second transistors, and means responsive to the difference in the base to emitter voltages of the first and second transistors for developing currents therethrough corresponding to the difference in base to emitter voltages, the improved means for controlling currents through the first and second transistors comprising:

transistor means connected to compare the currents flowing through the first and second transistors and to control the current supply means, said transistor means carrying bias current;

means for generating a controlled current varying linearly with absolute temperature to be combined with the currents through the first and second transistors to form an output current flowing through said two terminals; and

means for directing the bias current in the transistor control means through the controlled current means to compel the bias current to become a component of the controlled output current;

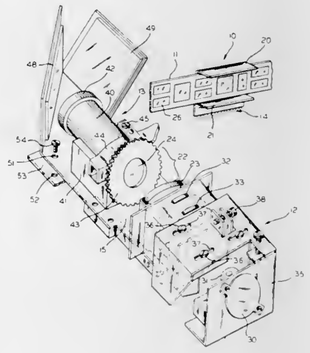
whereby the bias current through the transistor control means does not erroneously affect the output current.

4,123,699

VERTICALLY SCANNING MICROFILM READER AND READER PRINTER

Thomas J. Persha, Juneau, and David Jagielski, West Bend, both of Wis., assignors to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 675,656, Apr. 12, 1976, abandoned.
This application Sep. 23, 1977, Ser. No. 836,207
Int. Cl.[2] G03B *23/12, 1/48, 21/14*
U.S. Cl. 353—26 R **3 Claims**



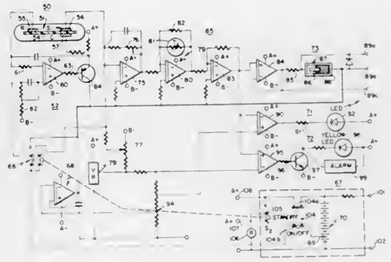
1. A microfilm reader or microfilm reader-printer for vertically scanning, without having to continuously refocus, across a strip of film in which frames are successively recorded in longitudinal orientation along the length of the film, said reader or reader-printer comprising a chassis; a stationary and vertical with respect to gravity microfilm gate anchored to said chassis, means for supporting said strip of film for transport through said gate while said film is in a vertical orientation, said film gate being shaped and dimensioned to present said successive frames, one at a time; a complete optical system floatingly mounted to move together as a single rigid unit, said complete optical system comprising light system means mounted on one side of said gate and an optical projecting lens and focusing system mounted on the other side of said gate, said focusing system having a telescoping barrel which gives a range of lens travel for focusing and maintaining a focused lens position, said means for mounting said complete optical system including rigid base means for commonly supporting said light system, focusing barrel, lens and focusing system, said base being horizontally-oriented with respect to gravity; elevator means for raising and lowering said base member, relative to said chassis, to raise and lower as a rigid unit at least said floating light, lens barrel, lens, and focusing systems without changing the focus of said telescoping barrel and lens, said elevator means comprising a vertical telescoping shaft with one telescoping part fixed on said chassis and a second telescoping part fixed horizontally on said rigid base means, a height adjusting shaft having opposite ends with an eccentric pin at one end and a means to rotate the opposite end, a horizontally disposed rectangular slot on said second telescoping part which receives said eccentric pin, whereby rotating the adjusting shaft causes the eccentric pin to move within the horizontal slot and raises or lowers the second telescoping part and the image on the film in the vertical gate may be scanned in one dimension transverse to the width of the film, without requiring a refocusing of said telescoping barrel.

4,123,700

POTENTIOSTATED, SELF-HUMIDIFYING, SOLID POLYMER ELECTROLYTE CARBON MONOXIDE DOSIMETER

Anthony B. LaConti, Lynnfield; Robert A. Torkildsen, Danvers, and Robert C. Jones, Wakefield, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Nov. 14, 1977, Ser. No. 851,129
Int. Cl.[2] G01N *27/42*
U.S. Cl. 324—29 **15 Claims**



1. A gas dosage instrumentality for measuring the total quantity of a selected gas comprising the combination of;

(a) a gas-sensing cell for electrochemically converting the selected gas to produce an electrical signal directly related to the concentration of the selected gas,

(b) means for bringing gaseous samples to said sensing cell,

(c) means for measuring the total quantity of the selected gas sensed by said cell, including

(1) a reversible, electrochemical integrating device for continuously storing the signals from said cell to provide a measure of the accumulated quantity of the selected gas,

(2) means coupled to said integrating device for selectively applying an electrical resetting signal thereto for readout of the stored information and to reset the integrating device,

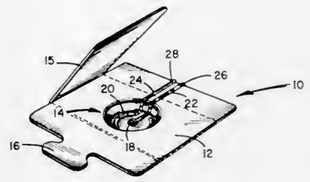
(3) means responsive to said resetting signal for measuring and indicating the accumulated dosage.

4,123,701

DISPOSABLE SAMPLE CARD HAVING A WELL WITH ELECTRODES FOR TESTING A LIQUID SAMPLE

Turi L. H. Josefsen, New York, N.Y., and George J. Veth, Fairfield, Conn., assignors to United States Surgical Corporation, Stamford, Conn.

Filed Jul. 1, 1976, Ser. No. 701,885
Int. Cl.[2] G01N *27/42*
U.S. Cl. 324—30 B **21 Claims**



1. A sample card for electrically operating on a liquid sample, the card comprising: a substantially planar base portion; a well portion extending out of said base portion so as to leave a substantially planar region completely surrounding said well portion; first electrode means in said well portion; second electrode means in said well portion, spaced and insulated from said first electrode means; first and second electrical leads

electrically integral with said first and second electrode means, respectively, and connector means electrically integral with each of said first and second electrical leads, wherein said first electrode means is a button electrode located in the central region of said well portion; and wherein said second electrode means is a ring electrode extending substantially entirely around said first electrode means.

4,123,702

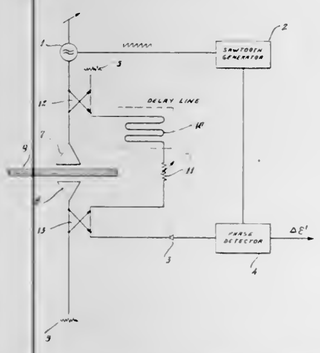
METHOD FOR CLASSIFYING AND MEASURING OF TIMBERS

Ilmari Kinanen, Lansiportti 1 E 27, 02210 Espoo 21, and Jim Duncker, Anjankuja 2E, 02230 Espoo 23, both of Finland

Continuation-in-part of Ser. No. 657,768, Feb. 13, 1976, abandoned. This application Sep. 22, 1977, Ser. No. 835,575

Int. Cl.[2] G01R *27/04*

U.S. Cl. 324—58.5 A **1 Claim**



1. A method for sorting out and classifying timber in terms of knots characterized in that frequency modulated radio energy in the microwave range is applied from at least one transmitting antenna to one side of the lumber, which is passed in front of the antenna; on the other side of the lumber is a receiving antenna; a portion of the frequency modulated signal applied to the lumber is delayed so that at operating frequency the phase of this reference signal is, opposite to the phase of signal coupled through the receiving antenna, the change of frequency at which the sum of the two detected signals is at minimum is a measure of the phase shift caused by the knot.

4,123,703

MICROWAVE METHOD OF AND APPARATUS FOR FLAW DETECTION

Lloyd A. Robinson, Mountain View, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Sep. 2, 1977, Ser. No. 830,151

Int. Cl.[2] G01R *27/04*

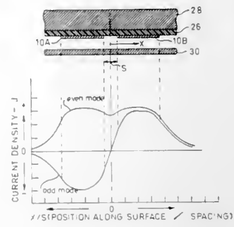
U.S. Cl. 324—58.5 B **13 Claims**

1. Apparatus for detecting flaws at the surface of a test object comprising,

a pair of parallel strip transmission lines,

means for coupling said strip transmission lines to a microwave source for signal propagation therealong of one mode to excite microwave currents on the surface of the test object, and

means coupled to said strip transmission lines for detection of signals of an orthogonal mode produced as a result of



perturbations in the excited microwave currents produced by surface flaws.

4,123,704

FREQUENCY DEVIATION DIGITAL DISPLAY CIRCUIT

Kenneth C. Johnson, Bountiful, Utah, assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,449

Int. Cl.[2] G01R *23/02*

U.S. Cl. 324—78 Z **9 Claims**

1. A circuit for producing a digital display of the deviation of the actual frequency of an input signal from a preselected desired frequency, comprising:

means for producing alternating sampling and display period pulses;

means for receiving said input signal and said sampling and display pulses and producing, during the period of a sampling pulse, clock pulses at a rate proportional to the actual frequency of said incoming signal;

counter means for receiving said clock pulses and counting the number thereof produced during the period of a sampling pulse, said counter means being operable to hold said count during the period of a display pulse succeeding said sampling pulse;

digital display means; and

means for sensing the count held by said counter means and decoding the same to drive said display means to digitally indicate, when within a predetermined range, the magnitude of deviation of the actual frequency of said incoming signal from the preselected desired frequency.

4,123,705

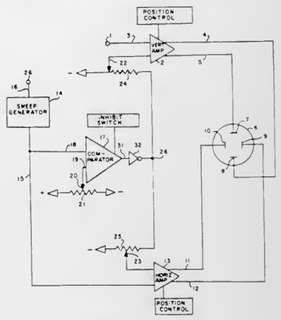
OSCILLOGRAPHIC APPARATUS FOR MEASURING THE MAGNITUDE AND DURATION AND FOR SEPARATELY VIEWING AN INPUT SIGNAL

Ronald Arthur Olson, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 634,818, Nov. 24, 1975, abandoned, which is a continuation of Ser. No. 503,199, Sep. 4, 1974, abandoned. This application Jun. 8, 1977, Ser. No. 804,827

Int. Cl.[2] G01R *13/20;* **H01J** *29/70*

U.S. Cl. 324—121 R **4 Claims**



1. An improved oscillographic instrument for providing a display of an input waveform applied thereto, the instrument of the type which includes deflection means for generating a deflection signal in accordance with the instantaneous amplitude of the input waveform for determining the amplitude of the display and for generating a deflection signal for providing a time base sweep, and also including electric means for causing substantially instantaneous amplitude changes in the deflection signals produced by the deflection means, the improvement comprising:

means for selectively comparing the time base sweep to a reference value for providing calibrated electrical values for application to the electric means whereby the instrument will provide a display of recurring and non-recurring input waveforms applied thereto.

4,123,706

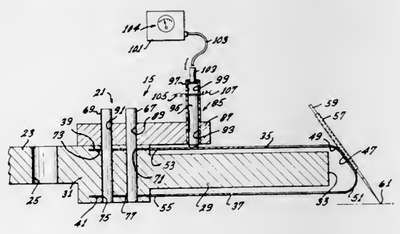
PROBE CONSTRUCTION

Jacques L. Roch, San Jose, Calif., assignor to Electroglas, Inc., Santa Clara, Calif.

Continuation of Ser. No. 554,645, Mar. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,844, Jan. 28, 1974, Pat. No. 3,939,414. This application Jan. 11, 1977, Ser. No. 758,393

Int. Cl.[2] G01R *1/06, 31/02*

U.S. Cl. 324—158 P **26 Claims**



1. A probe for testing an electrical circuit on a semiconductor surface comprising:

a dielectric support body having first and second opposite ends;

a first conductive spring arm having a length defined by an inner end and an outer end;

a second conductive spring arm having a length defined by an inner end and an outer end;

a conductive probe tip having a point;

the first and second spring arms being connected to the support member at their inner ends for flexure relative to each other and for flexure of the second arm in accordance with the flexure of the first arm and being provided with particular lengths relative to each other to provide for substantially a movement of the probe tip in a straight line in accordance with the flexure of the arms;

said probe tip being supported by the outer ends of said first and second arms for movement in substantially only a straight line toward the semiconductor surface in accordance with the flexure of the first and second spring means;

fluid-operated means disposed in cooperative relationship with the flexing means for flexing the first conductive spring arm; and

means responsive to the operation of the fluid-operated means for indicating whether or not the probe tip has been moved into contact with the electrical circuit on the semiconductor surface.

4,123,707

MAGNETIC FIELD SENSOR HOUSED IN A COOLING DEVICE FOR SENSING THE CHARGE IN A SHAFT FURNACE OR THE LIKE

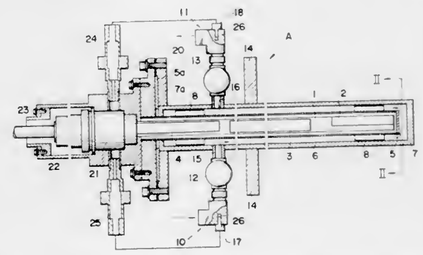
Yoshihiro Fujii; Taketoshi Moriyama, both of Sakai; Yoshikatsu Shigematsu, Kawachi-Nagano; Shinjiro Takeuchi, Toda; Toshiro Kikuchi, Toda; Makio Taguchi, Toda, and Satoshi Ichioka, Toda, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Mishima Kosan Co., Ltd., Kitakyushu, both of, Japan

Filed Nov. 9, 1976, Ser. No. 739,861

Claims priority, application Japan, Nov. 11, 1975, 50-153383[U]

Int. Cl.[2] G01R *33/12*

U.S. Cl. 324—208 **4 Claims**



1. A magnetic field sensor structure comprising an outer casing having a cooling medium injecting pipe with a flow control valve therein and a cooling medium exhaust pipe with a flow control valve therein, a flange on the outer peripheral surface of the outer casing at a predetermined position along the outer casing in one direction from the injecting pipe and the exhaust pipe, a sensor comprising an inner core body consisting of a permanent magnet exciter for magnetizing and exciting a charge in a shaft furnace or the like, a magnetic field sensing member positioned along the inner core body adjacent one end of the exciter for detecting the exciting magnetic field generated from said exciter the magnetic field sensing member being on the same side of the exciter as the flange is positioned in relation to the pipes, and a driving circuit positioned along the inner core body adjacent the other end of the exciter for driving said magnetic field sensing member, and an inner cas-

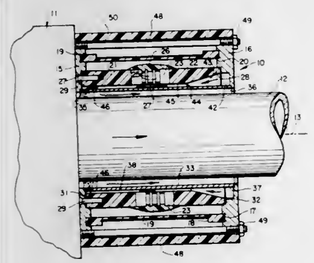
ing in which the inner core body is contained, said inner casing being positioned in said outer casing and spaced from the interior surface of said outer casing for providing a space for circulating a cooling medium through the space to cool the inner core body.

4,123,708

METHOD AND APPARATUS FOR EDDY CURRENT INSPECTION OF HOT TEST PIECES WITH MEANS TO COOL THE DETECTOR AND TO PURGE THE TEST PATH OF CONTAMINANTS

Joseph P. Vild, Lyndhurst; William I. Cleary, Youngstown, and Donald P. Fox, Cleveland, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 471,183, May 20, 1974, Pat. No. 4,024,470. This application Nov. 22, 1976, Ser. No. 744,111
The portion of the term of this patent subsequent to May 17, 1994, has been disclaimed.
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—224 **16 Claims**



1. In an eddy current flaw inspection apparatus including structure defining a test path and means to move a detection assembly and a high temperature article to be inspected relative to each other, the improved detection assembly comprising:

(a) exciter means positioned near said test path for inducing eddy currents in an article being inspected;

(b) a detector near said path for detecting variations in induced eddy currents indicative of flaws in the article;

(c) a nonmagnetic, metallic heat shield between the detector and the test path, said heat shield and said article defining a first coolant flow path, and said heat shield and said detector defining a second flow path; and

(d) cooling means to cause the flow of cooling medium along the second coolant flow path, the detector and heat shield being configured to provide a coolant flow path of diminishing cros-sectional area in the direction of cooling medium flow whereby to maintain a good coolant medium velocity head with substantially uniform flow to maintain said shield and said detector at temperatures sufficiently below that of the article under inspection to assure substantially uniform detection performance substantially free of aberrations or variances due to excessive detector temperature levels.

4,123,709

ADAPTIVE DIGITAL DELTA MODULATION FOR VOICE TRANSMISSION

David E. Dodds; Andrzej M. Sendyk, both of Saskatoon, and Donald B. Wohlberg, Richmond, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

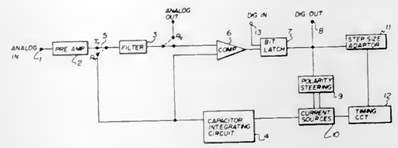
Filed Jan. 24, 1977, Ser. No. 762,436
Int. Cl.[2] H03K *13/22*
U.S. Cl. 325—38 B **8 Claims**

1. In an adaptive delta modulation system wherein an analog signal is represented by a stream of signal binary bits each occupying a fixed time period, apparatus for converting the stream of signal binary bits to an analog output signal comprising:

integrator means for receiving a charge to provide the analog output signal;

first means for increasing or decreasing the charge on the integrator means by a variable step size S during each of fixed time periods in response to successive signal binary bits, the increase and decrease of the charge being determined by the logic level of the binary bits;

digital means for storing the step size number S; and



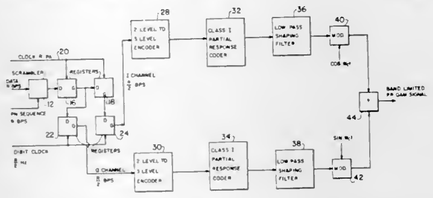
summing means coupled to the digital storing means for receiving the step size number S and a predetermined fixed fraction ΔS of the step size number, and for adding or subtracting the predetermined fixed fraction ΔS of the step size number S to the stored step size number S to produce a resultant step size number for storage in the digital means in response to each successive binary bit, the fixed fraction ΔS being added to the step size number S in response to successive similar binary bits and the fixed fraction ΔS being subtracted from the step size number S in response to successive dissimilar bits.

4,123,710

PARTIAL RESPONSE QAM MODEM

Richard L. Stuart, Simpsonville, Md., and Arvind M. Bhopale, Placentia, Calif., assignors to Rixon, Inc., Silver Spring, Md.

Continuation of Ser. No. 736,581, Oct. 28, 1976, abandoned. This application Nov. 30, 1977, Ser. No. 856,072
Int. Cl.[2] H04L *3/00*
U.S. Cl. 325—38 A **6 Claims**



1. A partial response QAM data transmission system comprising:

transmitter means having

means located in an inphase channel and a quadrature phase channel for receiving data input and for encoding sets of five bits into pairs of six-level signals;

partial response precoder means located in said inphase channel and said quadrature phase channel for partial response coding said six-level signals;

shaping filters located in said inphase channel and said quadrature phase channel for filtering the outputs of said partial response precoder means;

a first modulator located in said inphase channel for modulating the output of the shaping filter located in said inphase channel with an inphase carrier;

a second modulator located in said quadrature phase channel for modulating the output of the shaping filter located in said quadrature phase channel with a quadrature phase carrier;

summing means for summing the outputs of said first and second filters to produce a partial response coded QAM signal;

receiver means, for receiving the partial response coded QAM signal transmitted by said transmitter means, having

automatic equalizer means for receiving said transmitted signal and producing a phase equalized received signal in response thereto;

carrier recovery means for recovering the transmitted carrier and for generating a recovered inphase carrier and a recovered quadrature phase carrier;

first and second demodulator means for demodulating the received signal with said recovered inphase carrier and said recovered quadrature carrier so as to produce first and second recovered baseband signals;

first and second partial response decoding circuits for partial response decoding said first and second recovered baseband signals; and

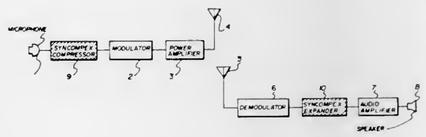
six-level decoding means for converting said decoded recovered baseband signals into a recovered date input.

4,123,711

SYNCHRONIZED COMPRESSOR AND EXPANDER VOICE PROCESSING SYSTEM FOR RADIO TELEPHONE

Sherman M. Chow, Bells Corners, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jan. 24, 1977, Ser. No. 762,435
Int. Cl.[2] H04B *1/64*; H03G *7/00*
U.S. Cl. 325—62 **11 Claims**



1. A voice processing system for radio telephones having an amplitude modulating signal transmitter and receiver, comprising:

compressor means for adjusting the input voice signal to be transmitted by the transmitter, said compressor means including means for receiving and dividing the input voice signal into sequential syllabic groups of equal length M, means for detecting the peak amplitude of each sequential syllabic group and adjusting the amplitude of the corresponding syllabic group by a gain adjustment determined by the detected peak amplitude, and means for providing a control signal representative of the sequential gain adjustments for transmission with the adjusted voice signal; and

expander means for restoring the adjusted voice signal from the transmitted signals received by the receiver, said expander means including means for receiving and dividing the received adjusted voice signal into the sequential syllabic groups of equal length M and means for receiving the control signal and adjusting the amplitude of each sequential syllabic group by a gain adjustment determined by the received control signal, thereby restoring the received adjusted signal to the original input voice signal.

4,123,712

SYMMETRICAL POLYPHASE NETWORK

Wasfy B. Mikhael, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 22, 1977, Ser. No. 789,804
Int. Cl.[2] H04B *1/02*
U.S. Cl. 325—137 **8 Claims**

1. In a symmetrical polyphase network having a plurality of symmetrical sections each comprising:

an input and an output;

a first impedance having one phase angle, connected between the input and output of an associated one of said sections,

a second impedance having a different phase angle, connected between the input of said associated one section and the output of a different section;

the improvement comprising:

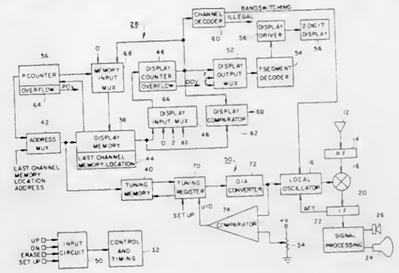
a third impedance in each of said sections connected in shunt with said output to decrease the passband ripple with negligible effect on the stopband response of the network.

4,123,713

MEMORY TYPE TUNING SYSTEM WITH PROVISIONS TO FACILITATE SETUP

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1977, Ser. No. 810,877
Int. Cl.[2] H04B *1/26*
U.S. Cl. 325—455 **11 Claims**



1. An apparatus for tuning a receiver to a predetermined number of preferred tuning positions less than all the tuning positions available in a predetermined tuning range, comprising:

memory means including a number, equal to said predetermined number of preferred tuning positions, of memory locations for storing binary signals;

control means for selectively entering binary signals into one of said memory locations during an entry control mode and retrieving binary signals from one of said memory locations during a retrieval control mode;

means for examining the binary signals contained in each of said memory locations and generating a fail signal during one of said control modes when each of said memory locations contains binary signals representing infomation of a predetermined kind and that said memory means is in a predetermined condition;

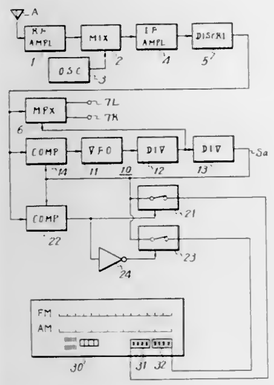
display means responsive to said fail signal for displaying a predetermined symbol representing said predetermined condition.

4,123,714

FM RECEIVER WITH LIQUID CRYSTAL SIGNAL INDICATOR

Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1976, Ser. No. 671,394
Claims priority, application Japan, Apr. 1, 1975, 50-40148
Int. Cl.[2] H04H *5/00*
U.S. Cl. 325—455 **4 Claims**



1. An FM receiver comprising:
(a) means for receiving both stereo broadcast signals and monaural broadcast signals and for discriminating signals of a selected broadcast frequency channel;
(b) means for detecting whether a pilot signal indicating the existence of a stereo signal is present in said discriminated signals of said selected broadcast frequency channel;
(c) a first phase comparator circuit to which the output signal of said discriminating means is fed;
(d) a second phase comparator circuit to which the output signal of said discriminating means is fed;
(e) one of said phase comparator circuits including means on its output side for inverting a signal passing therethrough;
(f) a phase-lock-loop which includes said first phase comparator, a variable frequency oscillator, a first frequency divider, and a second frequency divider;
(g) means for producing an AC signal in said phase-lock-loop;
(h) first and second gating circuits;
(i) means for feeding said AC signal to said first and second gating circuits, means for feeding the output of said second comparator circuit to said first gating circuit, and means for feeding the inverted output of said second comparator circuit to said second gating circuit;
(j) one of said gating circuits being in an ON state, and one being in an OFF state when a broadcast signal is being received; and
(k) a liquid crystal display means connected to said gating circuits for displaying a stereo indicating sign when one of said gating circuits is ON and for displaying a monaural indicating sign when the other of said gating circuits is ON.

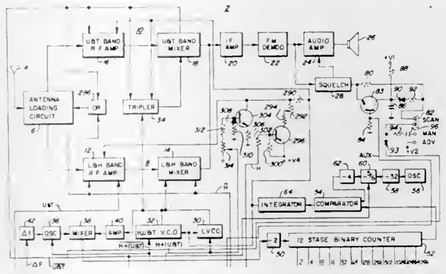
4,123,715

PROGRAM APPARATUS FOR RADIO RECEIVER USING FREQUENCY SYNTHESIZER

George H. Fathauer, Mesa, Ariz., assignor to Masco Corporation of Indiana, Cumberland, Ind.

Filed Jan. 30, 1975, Ser. No. 545,433
Int. Cl.[2] H04B *1/06*
U.S. Cl. 325—464 **31 Claims**

1. A scanning, superheterodyne radio receiver capable of sequentially tuning to a plurality of predetermined radio frequencies and comprising:
frequency synthesizing circuitry for generating a local oscillator signal and including a programmable frequency divider circuit;
memory means having a plurality of outputs coupled to said frequency divider circuit, said memory means outputs being capable of assuming a plurality of discrete states corresponding to a plurality of words stored in said memory and operable to control the frequency to which said receiver is tuned;
squelch circuit means for generating a signal responsive to the presence of a radio frequency signal at the frequency to which said receiver is tuned;
scanning circuit means coupled to said squelch circuit means



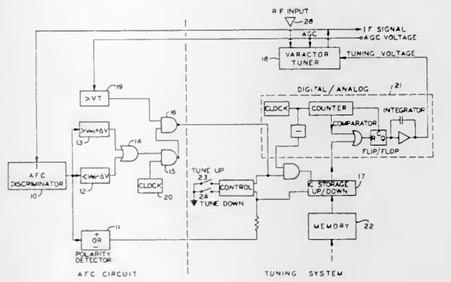
and said memory means for causing said memory means outputs to change state in the absence of a radio frequency signal at the frequency to which said receiver is tuned and for causing said memory means outputs to be maintained at a constant state in the presence of a radio frequency signal at the frequency to which said receiver is tuned;
lockout circuit means coupled to said scanning circuit means for causing said memory means outputs to change states despite the presence of a radio frequency signal at the frequency to which said receiver is tuned, said lockout circuit means comprising a plurality of manually operable switches; and
memory program circuit means coupled to said memory means for altering the memory means output states corresponding to said words, said program circuit means comprising said plurality of switches.

4,123,716

AUTOMATIC FREQUENCY CONTROL FOR DIGITAL TUNING SYSTEMS

Arthur N. Borg, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Aug. 12, 1976, Ser. No. 713,731
Int. Cl.[2] H04B *1/06*
U.S. Cl. 325—464 **8 Claims**



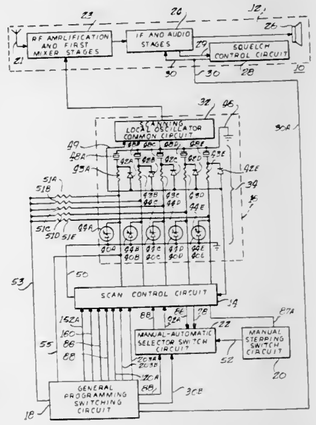
1. In combination, a varactor tuner for providing an intermediate frequency signal in response to a radio frequency signal, a tuning system of the type wherein a binary word is used to develop a tuning voltage for selecting the tuning frequency of said varactor tuner, an automatic frequency control apparatus comprising a frequency discriminator for providing a signal indicative of the direction of a tuning error in response to said intermediate frequency signal, and means for modifying said binary word in response to said discriminator signal to minimize said tuning error.

4,123,717

SCANNING RECEIVER HAVING PRIORITY CHANNEL INDICATION IN MEMORY

Joseph T. Yiu, Lincoln, and Roy L. Holmes, Lexington, both of Nebr., assignors to Hy-Gain De Puerto Rico, Inc., Lincoln, Nebr.

Filed Jul. 14, 1977, Ser. No. 815,712
Int. Cl.[2] H04B *1/32*
U.S. Cl. 325—470 **13 Claims**



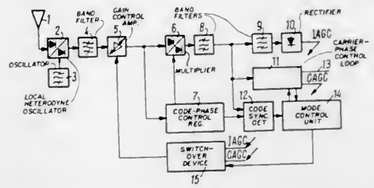
1. A signal seeking radio receiver comprising:
means for receiving radio signals on a plurality of different channels;
means for automatically changing from channel to channel;
said means for changing from channel to channel including sequencing means for changing from channel to channel in a predetermined sequence and means for locking on a selected channel when a radio frequency signal is received on said channel;
said means for sequencing further including programmable means including memory means for storing an indication of a priority channel, means for writing said indication in said memory and memory addressing means for selecting said indication;
said means for addressing said memory including means for selecting said indication in accordance with the channel selected by the sequencing means; and
said programming means including means for interrogating the channel indicated as the priority channel in said memory means and means for locking on priority channel when a signal is received thereon even though it is not in said predetermined sequence.

4,123,718

SSMA RECEIVER WITH SYNCHRONOUS DEMODULATION AND VARIABLE GAIN CONTROL

Ernst Lampert, Unterpfaffenhofen, and Helmut Mahner, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sep. 27, 1971, Ser. No. 184,238
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1970, 2048056
Int. Cl.[2] H03D *3/18;* **H04B** *1/10*
U.S. Cl. 325—474 **5 Claims**



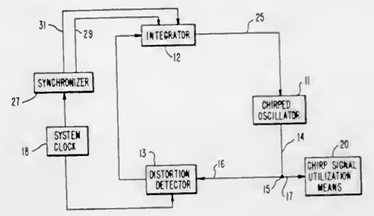
1. A receiver for electric oscillations modulated in accordance with SSMA transmission techniques, comprising
a multiplier for multiplying an intermediate frequency signal with a code which is to be received;
a synchronous demodulator for obtaining the information to be received connected to said multiplier;
a control amplifier connected to and preceding said multiplier;
a first gain control derivation circuit connected between said multiplier and said control amplifier for controlling the operation of said amplifier in an unsynchronized state of said synchronous demodulator; and
a second gain control derivation circuit connected between said synchronous demodulator and said control amplifier for controlling the operation of said amplifier when said synchronous demodulator is in a synchronized state.

4,123,719

CHIRP PHASE DISTORTION DETECTOR IN A WIDEBAND LINEARIZATION FEEDBACK CONTROL LOOP

Francis W. Hopwood, Severna Park, and Lester K. Staley, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 22, 1977, Ser. No. 789,906
Int. Cl.[2] H03K *13/32*
U.S. Cl. 328—155 **5 Claims**



1. In a system having a clock and utilizing means to generate a pulsed linearly frequency modulated waveform, a phase distortion detector comprising:
a signal generating means responsive to said clock for producing a first signal having a first predetermined frequency along a first signal path and a second signal having a second predetermined frequency less than said first predetermined frequency along a second signal path;
a phase comparison means connected to and responsive to said first and second signals and to said frequency modu-

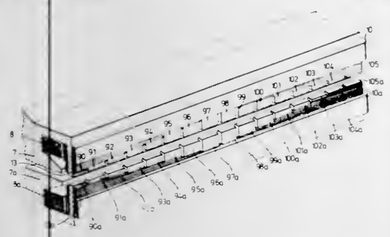
lated waveform for producing a third signal proportional to the non-linearity of said frequency modulated waveform; p1 means for applying said third signal to said means to generate a pulsed linearly frequency modulated waveform.

4,123,720

METHOD AND APPARATUS FOR COMPENSATON OF EFFECTS OF MISALIGNMENT BETWEEN DEFLECTING MAGNETIC FIELDS AND A LINEAR ACCELERATOR IN A RACE TRACK MICROTRON

Staffan B. F. S. J. Rosander, Skiftesvägen 98; Miroslav Sedlacek, Marknadsvägen 99, both of Täby, and Olle S. V. Wernholm, Rålambsvägen 21, Stockholm, all of Sweden

Filed Jun. 2, 1977, Ser. No. 802,863
Claims priority, application Sweden, Jun. 3, 1976, 7606321
Int. Cl.[2] H05H *13/00*
U.S. Cl. 328—234 **4 Claims**



1. A method for compensating for the effects of misalignment between deflecting magnetic fields and a linear accelerator in a race track microtron where properly injected and accelerated electrons travel along successive complete orbits numbered in sequence comprising the steps of:

generating on both sides of the linear accelerator a compensating magnetic field perpendicular to the common plane of the orbits, each field intersecting all complete successive orbits and having a field strength in the regions of the intersections varying stepwise from intersection to intersection; and

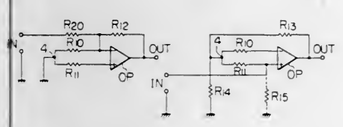
simultaneously varying the field strength at the intersections while maintaining a linear relationship between the field strength at an intersection and the number of the intersecting complete orbit.

4,123,721

BIAS CURRENT COMPENSATED OPERATIONAL AMPLIFIER CIRCUIT

Akio Hosaka, and Eiji Tsuruta, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Dec. 20, 1976, Ser. No. 752,181
Claims priority, application Japan, Dec. 27, 1975, 51-155773
Int. Cl.[2] H03F *3/45*
U.S. Cl. 330—69 **8 Claims**



1. Operational amplifier circuitry comprising:

first and second input terminals for receiving an input signal, said second input terminal being connected to ground;

an operational amplifier having first and second input terminals and an output terminal, means connecting one of said first and second input terminals of said operational amplifier for said operational amplifier to receive said input signal from said first input terminal;

a junction;

means for determining a predetermined electric potential of said junction relative to ground; and

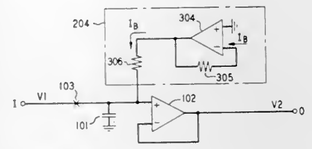
first and second resistors each respectively having first and second terminals, said first terminal of said first resistor being connected to said first input terminal of said operational amplifier, said first terminal of said second resistor being connected to said second input terminal of said operational amplifier, said second terminals of said first and second resistors being connected to said junction, the value of the resistances of said first and second resistors being selected and fixed to develop a voltage difference between said first and second input terminals of said operational amplifier substantially equal to the offset voltage of said operational amplifier, thereby compensating for bias currents of said operational amplifier.

4,123,722

OPERATIONAL AMPLIFIER DECOUPLING CIRCUIT

Richard J. Cubbison, Jr., Littleton, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 9, 1977, Ser. No. 804,877
Int. Cl.[2] H03F *1/08*
U.S. Cl. 330—85 **8 Claims**



1. A decoupling circuit comprising:

an input terminal;

an output terminal;

isolation amplifier means for isolating said decoupling circuit output terminal from said decoupling circuit input terminal, said isolation amplifier means having an input terminal connected to said decoupling circuit input terminal, an output terminal connected to said decoupling circuit output terminal;

active circuit bias current generating means connected to said input of said isolation amplifier means for dynamically generating and supplying said isolation amplifier means with dc input bias current;

wherein said bias current generating means comprises a first operational amplifier of a matched pair of operational amplifiers, and said isolation amplifier means comprises a second operational amplifier of said matched pair of operational amplifiers; and

wherein said active circuit bias current generating means senses its own dc input bias current to generate said isolation amplifier means dc input bias current.

4,123,723

TRANSISTOR AMPLIFIER CIRCUIT

Tsutomu Sugawara, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 7, 1977, Ser. No. 813,467
Claims priority, application Japan, Jul. 9, 1976, 51-81741
Int. Cl.[2] H03F *3/04*
U.S. Cl. 330—311 **5 Claims**

1. A transistor amplifier circuit comprising:

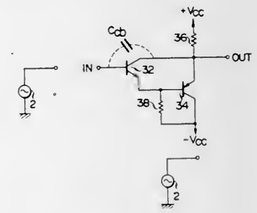
a first and a second power sources of which the polarities are opposite to each other;

an input terminal;

a first output terminal;

a first transistor which is connected at the base to said input terminal and at the collector to said first output terminal;

a second transistor related to said first transistor in complementary fashion, which said second transistor is connected at the base to the emitter of said first transistor and at the collector to said first power source and at the emitter to said first output terminal;



first resistive means which is connected at one end to the emitter of said first transistor and at the other end to said first power source;

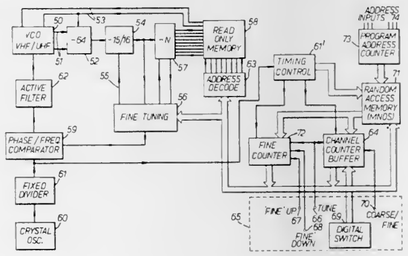
second resistive means having much smaller resistance than that of said first resistive means, which said second resistive means is connected at one end to the connection point of the collector of said first transistor, the emitter of said second transistor and said first output terminal, and connected at the other end to the second power source.

4,123,724

COMMUNICATION EQUIPMENT

Tapan K. Das; Peter H. Boyce, and Graham J. Fletcher, all of Swindon, England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Aug. 1, 1977, Ser. No. 820,731
Claims priority, application United Kingdom, Aug. 4, 1976, 32419/76
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—1 A **32 Claims**



1. A frequency synthesis control system for communications equipment including a variable frequency oscillator the frequency of which is changed to effect channel or frequency tuning of said equipment, the control system comprising,

first divider means for dividing the output of the variable frequency oscillator by a first division ratio or a second division ratio under the control of a fine tune control signal applied to said first divider means, the output of said first divider means being a first divided signal,

variable frequency divider means for dividing said first divided signal, the division ratio of which is selected in accordance with a required channel or frequency of said equipment, the output of said variable divider means being a second divided signal,

reference frequency generator means for generating a reference frequency signal, and

comparator means for comparing the second divided signal and the reference frequency signal and for producing a control signal which is fed to the variable frequency oscillator for controlling its frequency,

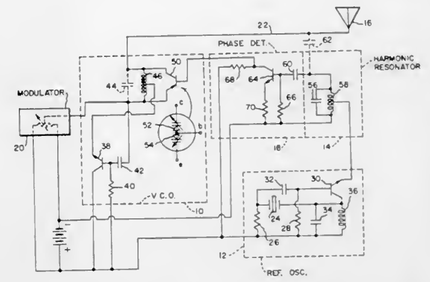
fine tuning means being provided for applying the fine tuning control signal to the first divider means and for applying a further fine tuning control signal to the variable frequency divider means whereby the division ratios of both divider means are changed for effecting fine tuning of the variable frequency oscillator.

4,123,725

PHASE LOCKED LOOP SYSTEM

Manfred Davis, Bronx, N.Y., assignor to Transcience Industries, Inc., Stamford, Conn.

Filed Apr. 18, 1977, Ser. No. 788,377
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—8 **16 Claims**



1. Apparatus for generating a control signal representing deviations from a certain frequency of a signal from a source which comprises

circuit means resonant at a frequency which differs slightly from said certain frequency,

means for applying signals having a frequency which is the product of $1/n$ and said certain frequency, where n is an integer, to said circuit means,

phase detector means responsive to the signal from said source and having an input and an output, said input being coupled to said circuit means and to said source such that the signals from both said circuit means and said source are applied together to said input for phase detection and for providing said control signal at said output.

4,123,726

CIRCUIT FOR SYNCHRONIZING THE OSCILLATION OF AN OSCILLATOR KEYED BY A PULSE, WITH A REFERENCE OSCILLATION

Peter Schucht, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

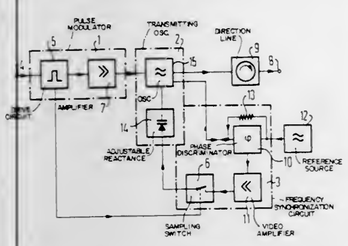
Filed Sep. 15, 1977, Ser. No. 833,488
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648796
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—14 **12 Claims**

1. A synchronization circuit for an oscillator keyed by a keying pulse, with a low amplitude reference oscillation which is input coupled to the oscillator, comprising:

a phase regulating loop including a phase discriminator connected to receive the output oscillations of the oscillator and the reference oscillation and to compare the phase states thereof and produce a resultant regulating voltage, said phase discriminator including a high impedance output;

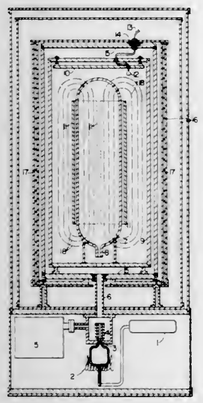
an adjustable reactance connected to the oscillator and to said phase discriminator for controlling the output fre-

quency of the oscillator in accordance with said regulating voltage;
a phase shift device which is adjustable up to 180° connected between the oscillator and said phase discriminator;
an impedance converter connecting said high impedance output of said phase discriminator in a low impedance fashion to said adjustable reactance;



a sampling switch serially interposed between said adjustable reactance, said sampling switch connected to receive and respond to the keying pulse and close for a duration less than the pulse duration; and
a holding circuit for holding the regulating voltage across said adjustable reactance from a time prior to the end of a keying pulse until the next closure of said sampling switch.

4,123,727
ATOMIC STANDARD WITH REDUCED SIZE AND WEIGHT
Harry E. Peters, 1675 Northwood Lake, Northport, Ala. 35476
Filed Jan. 19, 1978, Ser. No. 871,088
Int. Cl.[2] H01S *1/06*
U.S. Cl. 331—94 **6 Claims**



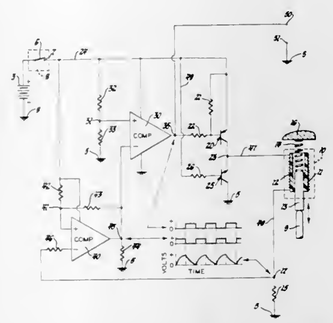
1. An improved atomic or molecular frequency standard device utilizing the storage of atoms or molecules for periods of time within a defined storage region of space inside a microwave cavity, wherein the improvement comprises:
a. At least one electrode about and juxtapositioned to said storage region and within said microwave cavity;
b. Said electrodes so configured and placed to enhance, concentrate, and orient the oscillating magnetic field in the storage region;
c. Said electrodes being arrayed generally circumferentially around said storage region and in a surface of revolution about the axis of the atomic or molecular beam;
d. Said electrodes, storage region and microwave cavity so proportioned to be tuned for operation at approximately the atomic or molecular quantum transition frequency of the atoms or molecules used.

4,123,728
ELECTROGENERATED CHEMILUMINESCENT (ECL) LASER
James L. Jernigan, Inyokern; Richard S. Hughes, China Lake, and Russell R. Van Devender, Jr., Inyokern, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 1, 1976, Ser. No. 737,238
Int. Cl.[2] H01S *3/20, 3/09, 3/081*
U.S. Cl. 331—94.5 L **6 Claims**



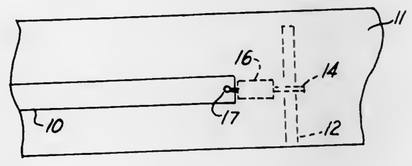
1. An electrogenerated chemiluminescent laser comprising:
a lasing solution which comprises an organic dye and a supporting electrolyte mixed with a solvent so as to exhibit the phenomenon of electrogenerated chemiluminescence;
a resonant laser cavity having an output window and containing said lasing solution;
a pair of electrodes, each of which have a plurality of wires attached thereto;
said pair of electrodes forming an interdigitated electrode configuration as a means for electrically stimulating said lasing solutin to produce cations and anions; and
means for hydrodynamically mixing said cations and anions to produce laser action in said laser cavity.

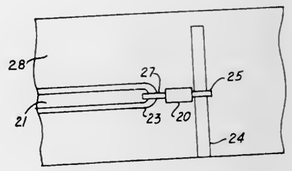
4,123,729
DISPLACEMENT TRANSDUCER
Earl H. Buetemeister, Alexandria, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jul. 22, 1977, Ser. No. 818,006
Int. Cl.[2] F02B *33/00*
U.S. Cl. 331—181 **6 Claims**



1. A circuit for producing a series of substantially square wave output signals of a repetition rate determined by the inductance value of the inductance coil of a variable inductor device comprising in combination with a unidirectional supply potential source: switching means electrically operable in a manner to alternately connect said inductance coil to a charge circuit including said supply potential source and to a discharge circuit; and means for effecting a series of inductance coil charge and discharge cycles at a switching frequency determined by the inductance value of said inductance coil, said last named means including first circuit means responsive to the rise of inductance coil charge current to a selected first level as determined by a reference voltage of a selected first level for producing a first electrical signal and for reducing said reference voltage to a selected second level and responsive to the fall of inductance coil discharge current to a selected second level as determined by said selected second level of said reference voltage for producing a second electrical signal and for increasing said reference voltage to said selected first level and second circuit means responsive to said first and second electrical signals for operating said switching means in a manner to connect said inductance coil to said charge circuit and to said discharge circuit alternatively at a switching frequency determined by the inductance value of said inductance coil and for producing a series of substantially square wave output signals.

4,123,730
SLOT TRANSMISSION LINE COUPLING TECHNIQUE USING A CAPACITOR
Josef L. Fikart, Port Coquitlam, Canada, assignor to GTE Lenkurt Electric (Canada) Ltd., Burnaby, Canada
Filed Jul. 5, 1977, Ser. No. 812,890
Int. Cl.[2] H01P *3/08, 5/10*
U.S. Cl. 333—26 **6 Claims**





1. Apparatus for coupling a microstrip transmission line to a slot transmission line and for effecting an impedance transformation, said apparatus comprising:
said microstrip transmission line having a characteristic impedance Z_o and capable of propagating a microwave signal having a wavelength λ;
said slot transmission line having a characteristic impedance Z_s, $Z_s \neq Z_o$, said slot line consisting of a narrow slot in a conductive coating on one side of a dielectric substrate, said slot further having a segment with one end electrically at the same potential as the conductive coating; and
a microwave capacitor having a first lead connected to said microstrip and a second lead connected to said conductive coating, said second lead positioned across and at right angles to said slot transmission line and such that said slot segment extends $N\lambda/4$ beyond the point said second lead crosses said slot line, where N is an odd integer.

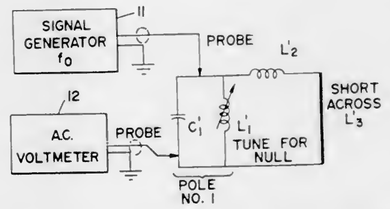
4,123,731
GLASS FOR USE IN ULTRASONIC DELAY LINES
Tohru Kanbara; Michihiko Uemura, both of Yokohama, and Nobuhiro Yokoo, Yokosuka, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan
Filed Aug. 24, 1977, Ser. No. 827,259
Claims priority, application Japan, Sep. 21, 1976, 51-112500; Dec. 23, 1976, 51-154229
Int. Cl.[2] H03H *7/30;* **C03C** *3/10, 3/04*
U.S. Cl. 333—30 R **12 Claims**

1. In a solid ultrasonic delay line comprising an input transducer, a delay medium, and an output transducer, the improvement wherein said delay medium is a glass characterized by a rate of shear wave propagation not exceeding 2.40Km/sec., and which consists essentially of:

	Weight percent
SiO_2	42–27
PbO	71–52
PbF_2	10–0
BaF_2	10–0
KHF_2	9–0
K_2SiF_6	7–0
Na_2SiF_6	5–0
K_2O	12–0
Na_2O	6–0
ZnO	6–0
CdO	6–0
BaO	10–0
SrO	6–0
ZrO_2	5–0
TiO_2	5–0
La_2O_3	7–0
Al_2O_3	5–0
B_2O_3	9–0
$Sb_2O_3 + As_2O_3$	2–0

and wherein the composition of the glass includes 1–10 wt.% of $K_2O + Na_2O$.

4,123,732
METHOD OF MAKING TUNED RESONANCE PASSIVE ELECTRONIC FILTERS
Richard A. Daniel, Kingston, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 31, 1977, Ser. No. 764,482
Int. Cl.[2] H03H *7/10, 7/14*
U.S. Cl. 333—70 R **4 Claims**



1. The method of making a tuned resonance passive electronic filter that includes at least first and second electrically connected poles wherein each pole includes first and second components connected in parallel and adjacent poles are coupled by coupling means comprising the steps of:
(a) selecting each of said first components of said electrically connected poles to be a standard unmatched component that approximates the computed value of that component;
(b) selecting each of said second components of said electrically connected poles to be variable components that have a predetermined variable range on each side of the computed value of that component; and
(c) tuning each of said electrically connected poles separately by applying an a.c. resonant frequency signal to

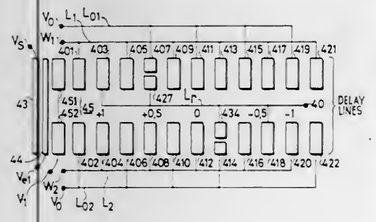
each preselected pole, while shorting adjacent poles, and tuning the variable second component of each preselected pole to resonance as indicated by the null in the a.c. voltage of each preselected pole.

4,123,733

METHOD OF FILTERING ANALOGUE SIGNALS BY TRANSFERRING ELECTRICAL CHARGES IN A SEMICONDUCTOR MEDIUM

Raymond Poirier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 25, 1976, Ser. No. 661,151
Claims priority, application France, Feb. 28, 1975, 75 06252
Int. Cl.[2] H03H *7/28;* **H01L** *29/10, 27/10;* **G11C** *27/02*
U.S. Cl. 333—70 T **7 Claims**



1. A method of filtering analogue signals by charge transfer in a semiconductor medium, consisting of:

taking samples of said signals at the rhythm of a first phase of a twophase clock;

introducing them simultaneously into a first and a second charge transfer delay line, each of said lines comprising a first and a second series of electrodes having surfaces, the maximum of which is S, said electrodes of both series being mutually parallel and of a constant pitch, the series being sandwiched, and the electrodes of said second series being divided into a first and a second portions having a total surface equal to S, the surface ratio of said second portion to said surface S representing the proportion of transferred charges to be collected according to a previous calculation, one of said portions being equal to zero as the case may be;

feeding the electrodes of first series by one phase in the case of said first delay line and by the other phase in the case of said second delay line;

feeding said first electrode portions of both lines under a constant voltage;

collecting filtered signals on a single bus bar connected to said second portions of both lines.

4,123,734

CIRCUIT BREAKER WITH IMPROVED LATCH MECHANISM

Alfred E. Maier, Chippewa, and Robert H. Hill, South Beaver Township, Beaver County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 6, 1976, Ser. No. 730,107
Int. Cl.[2] H01H *77/06*
U.S. Cl. 335—9 **21 Claims**

1. A circuit interrupter comprising:

a center pole unit and a pair of outside pole units, each of said pole units comprising separable contacts and means for supporting said contacts;

an operating mechanism for moving said contact support means to operate said contacts between open and closed positions, said operating mechanism comprising an arm releasable to effect automatic separation of said contacts;

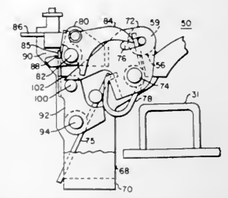
a latch mechanism operable upon actuation to release said arm, said latch mechanism comprising:

a releasable primary latch member cooperating with said arm to maintain said arm in the latched position,

a movable secondary latch member restraining said primary latch member,

means for biasing said secondary latch member toward a position restraining said primary latch member,

a movable trip lever maintaining said secondary latch member in a position restraining said primary latch member, and



a movable trip bar adapted for translational movement and operable when translated to move said trip lever to release said secondary latch member, said primary latch member, and said arm to effect automatic separation of said contacts;

an undervoltage release mechanism operable upon actuation to translate said trip bar; and

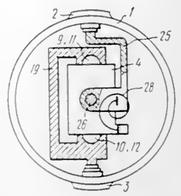
an overcurrent trip mechanism operable upon actuation to translate said trip bar.

4,123,735

INDUCTION-TYPE METER FOR MEASURING MECHANICAL QUANTITIES

Dmitry M. Mash, ulitsa Lenskaya 14, kv. 34; Savely S. Schedrovitsky, 13 Parkovaya ulitsa 25 korpus 1, kv. 12; Zoya I. Golovko, Chengarsky bulvar 22, korpus 2, kv. 50; Mikhail P. Zaitsev, Butikovsky pereulok 5, kv. 25; Andrei N. Sorokin, Festivalnaya ulitsa 41, kv. 43; Agnia A. Belyaeva, Angarskaya ulitsa 29, kv. 9, and Ivan I. Kharitonov, Khlebozavodskoi proezd 8, korpus 2, kv. 149, all of Moscow, U.S.S.R.

Continuation of Ser. No. 553,026, Feb. 25, 1975, abandoned.
This application Feb. 28, 1977, Ser. No. 772,684
Int. Cl.[2] H01F *21/04*
U.S. Cl. 336—30 **2 Claims**



1. An induction-type meter for measuring a controlled mechanical parameter comprising in combination:

a first converter means for converting the controlled mechanical parameter into a displacement; said first converter means having elements capable of relative movement;

a second converter means for converting said displacement into an electric signal and comprising a magnetic circuit with a block of coils and a diagmagnetic screen;

said magnetic circuit embodied as a closed-open loop system comprised of two parallel parts formed by armored cores upon which are mounted said coils and arranged to provide a gap; said magnetic circuit being mounted on one of said elements capable of relative movement of said first converter; and wherein

said diamagnetic screen includes profiled working edges and is secured on the other one of said elements capable of relative movement of said first converter and is disposed in said gap; and

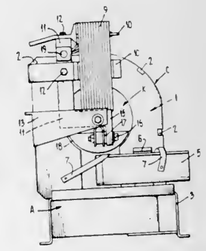
said meter further including means for varying an inclination angle of said screen with said direction of movement.

4,123,736

LEAKAGE REACTANCE TRANSFORMER

William K. Brougham, Novar Gardens, Australia, assignor to Welding Industries of Australia Pty. Ltd., Thomastown, Australia

Filed Sep. 23, 1976, Ser. No. 725,733
Claims priority, application Australia, Sep. 23, 1975, 3289/75
Int. Cl.[2] H01F *21/04, 21/06*
U.S. Cl. 336—120 **7 Claims**



1. In a transformer suitable for supplying electrical arc welding current comprising a magnetic core formed of a stack of laminated core material and having a closed flux path, primary and secondary windings having axial ends on said core, one of said windings being stationary and the other being movable relative to the stationary winding to vary the current output of the transformer, and a magnetic shunt means adapted for movement from a first position in which it contributes to the leakage reactance of the transformer, to a second position in which it contributes substantially no leakage reactance, at least that portion of said core between the primary and secondary windings being arcuate and said movable winding being arcuately movable along said portion, said shunt means being movable with said movable winding, such that when said movable winding is most remote from the other winding, said shunt means is in its first position, and when said movable winding is in close proximity to the other winding, the shunt means is in its second position, the improvement comprising a keyhole-shaped opening in said core, said opening defining an arcuate portion and two spaced legs extending therefrom with a gap between said legs, a keeper secured to the free ends of said legs to close the flux path, the stationary winding surrounding one of said legs and being free of penetration by said keeper, the movable winding surrounding said arcuate portion, said magnetic shunt means substantially bridging said gap between said legs when in said first position, wherein most of the surface area of an axial end of the movable winding is in overlapping face-to-face relationship with most of the surface area of an axial end of the stationary winding when the windings are brought into close proximity, and said windings cannot be placed in concentric relationship.

4,123,737

BIMETALLIC CIRCUIT BREAKER

Porter Hoagland, Jr., Noank, Conn., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Nov. 8, 1976, Ser. No. 739,965
Int. Cl.[2] H01H *71/16*
U.S. Cl. 337—68 **9 Claims**

1. A bimetallic circuit breaker comprising

a housing,

a sub-assembly received within said housing and comprising

a body extending within said housing,

first and second terminals carried by said body,

said first terminal including a stationary contact,

said second terminal including a bimetallic blade having a movable contact,

said bimetallic blade being movable on predetermined conditions from a contacts closed position to a contacts tripped position and thereafter to a contacts open position,

an actuator operatively carried by said body and interposed between said contacts for movement between contacts closed and opened positions,

said actuator having an opening through which said movable contact extends to abut said stationary contact to restrain movement of said actuator by engagement of said movable contact with said actuator,

a spring operatively carried by said body and biasing said actuator to the contacts open position,

said actuator extends out of said housing upon electrical tripping opening of said contacts,

said body includes a wall for properly spacing said contacts from each other, and

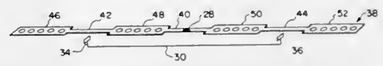
said actuator has a portion mating with said wall for guiding slidable movement of said actuator relative to said wall as said actuator moves back and forth between the contacts closed and open positions.

4,123,738

HIGH VOLTAGE CURRENT LIMITING FUSE

William J. Huber, Racine, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed May 16, 1977, Ser. No. 797,063
Int. Cl.[2] H01H *85/04*
U.S. Cl. 337—159 **3 Claims**



1. In a high voltage, current limiting fuse having

a main fusible element which includes a plurality of serially related sections of relatively large cross-sectional area connected by intermediate sections of relatively small cross-sectional area,

a body of low melting temperature alloy in intimate contact with a central porton of the main fusible element, and

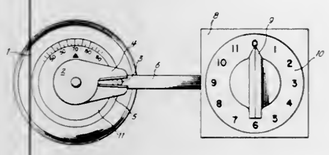
at least one auxiliary fusible element, each auxiliary element having at least one pair of terminals spaced slightly from other portions of the main fusible element on opposite sides of the body of alloy to form respective air gaps with the main element,

the improvement wherein:

said central portion and said other portions of the main element forming air gaps with said auxiliary element terminals, each comprise an elongated portion extending between adjoining portions of the main element, said adjoining portions including said serially related large and small sections, each said elongated portion having a cross-sectional area at any point along its extent substantially less than the largest cross-sectional area of said serially related large sections and at least as large as the smallest cross-sectional area of said serially related small sections, the length of each elongated portion being substantially

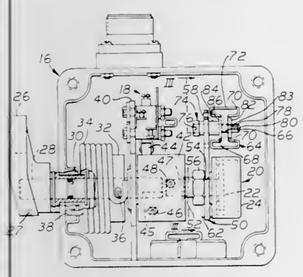
greater than the length of any one of said serially related small sections.

4,123,739
THERMOSTAT CONTROL
Thomas F. Helms, Sherman, Conn., assignor to Altek Company, Torrington, Conn.
Filed Feb. 9, 1977, Ser. No. 767,111
Int. Cl.[2] H01H *37/62*
U.S. Cl. 337—301 3 Claims



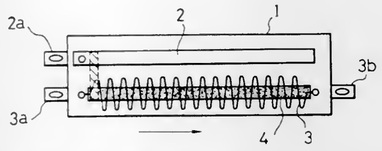
1. A thermostat control comprising an attachment for a thermostat having a rotary setting dial,
an adjustable cam assembly affixed to said dial,
a timing mechanism located adjacent the thermostat,
an arm carried by and actuated by said timing mechanism,
a pin mounted on said arm and engaged with said cam assembly
whereby motion of the timing mechanism arm actuates the pin and the engaged cam assembly for setting and resetting the thermostat dial.

4,123,740
ADJUSTABLE POTENTIOMETER IN AN ACCELERATOR CONTROL
Norman H. G. Palmer, Mentor, and Wayne T. Wiblin, Ashtabula, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio
Filed Jul. 1, 1977, Ser. No. 812,093
Int. Cl.[2] H01C *13/00*
U.S. Cl. 338—67 15 Claims



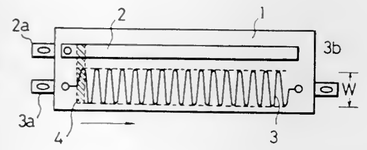
1. In apparatus having a power souce, a movable accelerator element operably connected to an accelerator control housing, a switch in the housing responsive to movement of the accelerator element and a potentiometer in the housing including an inner potentiometer portion movable relative to an outer potentiometer portion in response to movement of the accelerator element, the improvement comprising:
adjusting means connected for adjusting the outer potentiometer portion relative to the inner portion, the adjusting means including a slot formed in one end;
support means connected in the housing for supporting the adjusting means relative to the potentiometer, the support means including a slot formed in one end in overlapping relationship with the slot of the adjusting means; and
positioning means interconnecting the adjusting and support means for positioning the adjusting means relative to the support means, the positioning means includes a bolt passing through the slots.

4,123,741
RESISTANCE ELEMENT FOR VARIABLE RESISTORS
Tetsuhiro Kiyono; Moritoshi Nakamura, both of Miyagi, and Jun Nakanowatari, Furukawa, all of Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Jun. 27, 1977, Ser. No. 810,082
Claims priority, application Japan, Jul. 1, 1976, 51-86980
Int. Cl.[2] H01C *10/30*
U.S. Cl. 338—121 4 Claims



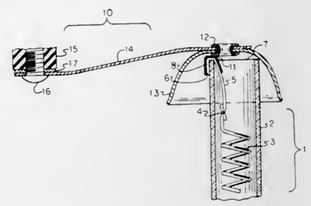
1. A variable resistor comprising:
an elongate, substantially planar base plate formed from an electrically insulating material;
a resistance element formed in a zig-zag pattern on a surface of said base plate by depositing thereon a material having a predetermined resistivity;
an elongate resistance film formed over said resistance element and extending along the central portion thereof, said resistance film being formed from a material having a resistivity higher than that of the material forming said resistance element; and
a slider having a portion thereof in sliding contact with said resistance film and adapted to be moved therealong.

4,123,742
VARIABLE RESISTOR
Moritoshi Nakamura, Miyagi, and Jun Nakanowatari, Furukawa, both of Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Jun. 27, 1977, Ser. No. 810,110
Claims priority, application Japan, Jul. 2, 1976, 51-87825
Int. Cl.[2] H01C *10/00*
U.S. Cl. 338—137 2 Claims



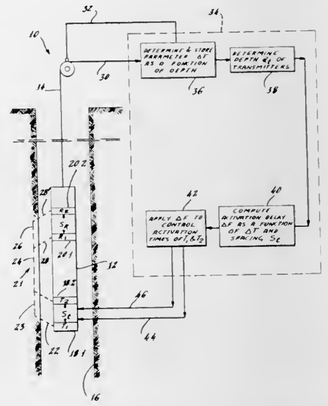
1. A variable resistor comprising:
a substrate plate formed from an electrically insulating material;
a resistance body formed in a back and forth winding pattern upon said substrate plate; and
a slider adapted to be moved along said resistance body, said slider having a width at least as wide as the widest portion of said resistance body and being provided with a plurality of contacts arranged along its width whereby the contacts of said slider will maintain a continuous electrical contact traveling along the winding length of said resistance body as said slider is moved longitudinally along said winding resistance body.

4,123,743
TERMINATION FOR AN ELECTRICAL RESISTANCE ELEMENT
John L. Eaton, Jr., Delanco, N.J., assignor to SCM Corporation, New York, N.Y.
Filed Aug. 18, 1976, Ser. No. 715,483
Int. Cl.[2] H01C *1/14*
U.S. Cl. 338—322 11 Claims



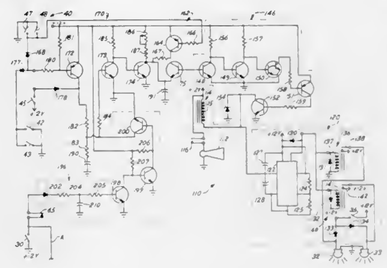
1. In an electrical resistance element comprising an open-end insulating tubular case having an axis, the open end defining a peripheral edge, and the case sheathing a helical resistance member having two ends, the combination thereof with at least one elongate, unitary termination having a first substantially axially-extending portion affixed to one of said two ends of the resistance member, and a second portion in a shape adapted to engage the peripheral edge of said case under control of said helical resistance member, only a minor fraction of the peripheral edge being engaged and said shape of the second portion alone preventing displacement of the termination in a direction perpendicular to said case.

4,123,744
METHOD AND APPARATUS FOR DYNAMICALLY INVESTIGATING A BOREHOLE
John D. Ingram, Meudon, France (92190), assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Mar. 10, 1977, Ser. No. 776,336
Int. Cl.[2] G01V *1/40*
U.S. Cl. 340—15.5 TN 25 Claims



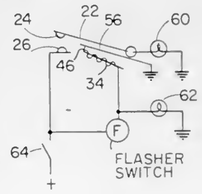
1. A method for investigating a borehole with a well logging tool having a plurality of transmitters for generating separate transmissions which may be variably and relatively delayed to provide a steerable energy beam and further having a receiver operatively located ahead of the transmitters to receive incident transmissions and generate a received wave representative of the borehole investigation comprising the steps of
deriving a parameter from the received wave; and
automatically varying the activating delay between the transmitters as a function of the derived parameter to dynamically steer the transmissions from said transmitters in a direction towards the receiver during the borehole investigation.

4,123,745
VEHICLE THEFT PREVENTION SYSTEM
Joseph F. Gurgone, 241 W. 24th St., Chicago, Ill. 60616
Continuation-in-part of Ser. No. 707,838, Jul. 22, 1976, abandoned. This application Jan. 31, 1977, Ser. No. 763,828
Int. Cl.[2] B60R *25/04*
U.S. Cl. 340—63 11 Claims



1. An automatic theft prevention system for use in a vehicle powered by an engine including an ignition system operated from an ignition switch which is closed in order to run the engine and opened in order to stop the engine, a door for entry to the vehicle, a lid for gaining access to a portion of the vehicle and first and second headlights, said theft prevention system comprising:
a first switch operable in a first state when the door is open and operable in a second state when the door is closed;
cutoff means for automatically disabling the ignition system in response to a cutoff signal and for automatically enabling the ignition system in response to a reset signal;
cutoff control means for generating the cutoff signal in response to the simultaneous opening of the ignition switch and the operation of the first switch in the first state, whereby the ignition system is automatically disabled; and
reset means for generating the reset signal in response to manual actuation by an operator of the vehicle, whereby the operation of the vehicle is enabled.

4,123,746
THERMAL RELAY AND AUTOMOBILE CORNERING LAMP CONTROL UTILIZING THE SAME
Gideon A. DuRocher, Mt. Clemens, Mich., assignor to Essex Group, Inc., Fort Wayne, Ind.
Filed May 23, 1977, Ser. No. 799,424
Int. Cl.[2] B60Q *1/26*
U.S. Cl. 340—81 R 12 Claims



1. An electrically actuated thermal switch, which comprises:

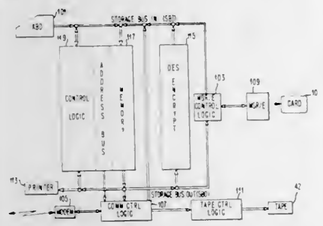
main electrical contacts movable between a normal position and an operated position;
means biasing said main electrical contacts to said operated position;
an electrical heater;
normally closed auxiliary electrical contacts controlling electrical power supplied to said electrical heater; and
a thermally responsive actuator movable between actuated and deactuated positions, said thermally responsive actuator being situated in heat transfer relationship with said electrical heater and arranged to sequentially actuate said main electrical contacts from said normal position to said operated position and then open said normally closed auxiliary contacts when electrical current is initially supplied to said electrical heater, said thermally responsive actuator, electrical heater, main electrical contacts and auxiliary electrical contacts further being arranged to allow said auxiliary electrical contacts to cycle between closed and open positions after said main electrical contacts have initially been operated without moving said main electrical contacts from the operated position.

4,123,747

IDENTITY VERIFICATION METHOD AND APPARATUS

Donald C. Lancto, Red Hook, and Robert E. Shuck, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1977, Ser. No. 799,050
Int. Cl.[2] G06K *7/08;* **G06F** *7/06;* **H04Q** *9/00*
U.S. Cl. 340—149 A **6 Claims**



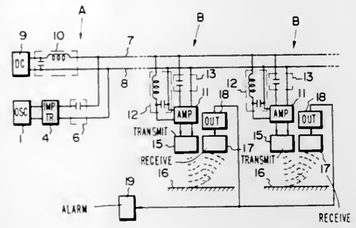
1. A method of using a secure identification card comprising the steps of:
reading a personal encryption key and a partial result from said card:
receiving characteristic characters related to a prospective user of said card;
encrypting said characteristic characters with said key to obtain a result;
comparing a first part of said result with said partial result read from said card to verify a first level of correspondence between said characteristic character and said card;
denying use of said card by said prospective user if said first part compares unfavorably with said partial result;
comparing a second part of said result with a second partial result stored at a central data base for said card, if said first part compares favorably with said partial result to verify a second level of correspondence between said characteristic characters and said card;
denying use of said card by said prospective user if said second part compares unfavorably with said second partial result.

4,123,748

BURGLAR ALARMS UTILIZING ULTRASONIC WAVES

Hiroaki Otani, Kawasaki, Japan, assignor to Nippon Prosensor Co., Ltd., Kawasaki, Japan

Filed Dec. 8, 1976, Ser. No. 748,682
Int. Cl.[2] G08B *13/16*
U.S. Cl. 340—558 **6 Claims**



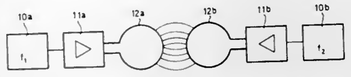
1. In an ultrasonic burglar alarm including,
a main unit having sending terminals for electrical power and for an oscillating signal,
at least one remote unit to be driven by said main unit and having receiving terminals for said electrical power and said oscillating signal, said remote units each having means responsive to said electrical power and oscillating signal for emitting a reflectable ultrasonic wave and responsive to disturbance of the reflected ultrasonic wave for producing an input signal, and an alarm actuable by said input signal, and
power source lines connecting the electrical power receiving terminals of each said remote unit to the electrical power sending terminals of said main unit,
the improvement comprised in that:
the same said power source lines also connect the oscillating signal receiving terminals of each said remote unit to the oscillating signal sending terminals of said main unit for simultaneously over the same said power source lines applying said electrical power and said oscillating signal from said main unit to said remote units, and including
low pass filters inserted between said power source line and each of the electrical power terminals of said main unit and remote units, and DC cut-off filters inserted between said power source lines and each of said oscillating signal terminals of said main unit and remote units.

4,123,749

METHOD AND SYSTEM FOR DETERMINING THE PRESENCE OF OBJECTS WITHIN A PARTICULAR SURVEILLANCE AREA, IN PARTICULAR FOR PREVENTION OF SHOPLIFTING

Ernst G. Hartmann, Hilden; Hans Krech, Kaarst, and Franz Meir, Waldenbuch, all of Fed. Rep. of Germany, assignors to Bizerba-Werke Wilhelm Kraut KG, Balingen, Fed. Rep. of Germany

Filed Mar. 28, 1977, Ser. No. 782,098
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614429; Sep. 1, 1976, 2639284; Sep. 17, 1976, 2641876
Int. Cl.[2] G08B *13/24*
U.S. Cl. 340—572 **11 Claims**



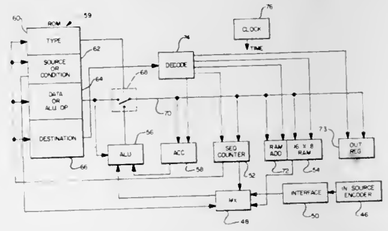
1. A method for detecting the presence of objects within a particular surveillance area, in particular for detection of shoplifting, comprising generating at least two alternating magnetic fields each of predetermined frequency in the surveillance area, affixing to the objects to be detected non-linear marking elements which upon being energized by an alternating magnetic field of predetermined fundamental frequency generate and transmit at least one harmonic signal which represents a multiple of the fundamental frequency, coupling the alternating magnetic fields to each other to form a common resulting magnetic field, and varying the alternating magnetic fields such as to form said common resultant magnetic field with a continuous charge in direction, strength and position within the surveillance area.

4,123,750

SIGNAL PROCESSOR FOR POSITION ENCODER

David E. Leney, Westford; Robert W. Stuart, Bedford, and John S. Anderegg, Carlisle, all of Mass., assignors to Dynamics Research Corporation, Wilmington, Mass.

Filed Nov. 29, 1973, Ser. No. 420,222
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 P **10 Claims**



1. A system for providing an output indication of relative position in response to signals from a position encoder comprising:
means for receiving signals from said encoder;
means for producing a selectable transformation in said received signals in response to a selection control;
means for providing the control of said transforming means and including:
means for defining a sequence of steps; and
means operative in association with said transformation producing means and responsive to the defined sequence of steps for providing said selection control to select at least one transformation for at least one corresponding step in the defined sequence; and
means for providing an output indication representative of the transformed received signals.

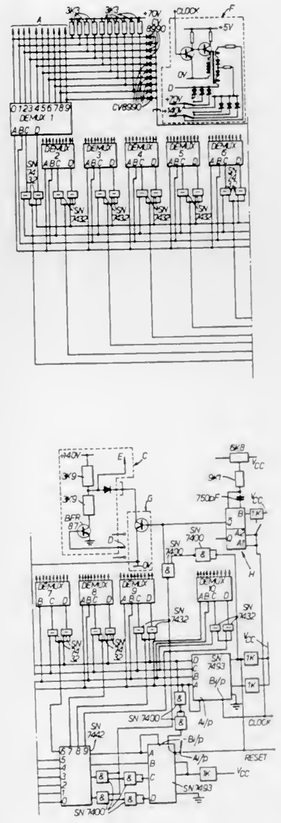
4,123,751

ELECTRONIC DISPLAY APPARATUS INCLUDING A DC-RESPONSIVE ELECTRO-LUMINESCENT PHOSPHOR SCREEN

David J. Gladstone, Ilford, and Peter A. Moldram, Aylesbury, both of England, assignors to The Post Office, London, England

Filed Apr. 5, 1976, Ser. No. 673,697
Claims priority, application United Kingdom, Apr. 8, 1975, 14424/75
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—324 M **17 Claims**

1. Display apparatus comprising:
a display screen having two transversely arranged sets of conductors with DC-responsive electro-luminescent phosphor material adapted to emit light when stimulated merely by a unidirectional electrical signal proximate the sets of conductors, and connected to a DC drive means comprising:
first means to select one or more conductors of a first set and apply to the selected conductor or conductors a first unidirectional potential difference relative to ground potential whilst simultaneously holding the remaining conductors of the first set at a second unidirectional potential between ground potential and the first potential, and
second means to select one or more conductors of a second set and apply to the selected conductor or conductors, at least partially coexistant with the application of the first



and second potentials to the first set of conductors, substantially ground potential whilst holding the remaining conductors of the second set at a third unidirectional potential between ground potential and the first potential so that said material is activated only at crossings between said selected conductors of the first and second sets.

4,123,752

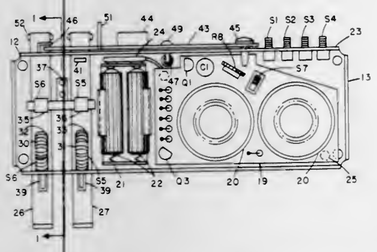
BURGLAR ALARM

Raymond J. Novotny, 52 Summit Trail, Sparta, N.J. 07871

Filed Oct. 4, 1976, Ser. No. 729,278
Int. Cl.[2] G08B *13/08*
U.S. Cl. 340—545 **8 Claims**

1. In combination with a door and a door jamb, an alarm comprising a housing mounted to the inside or protected enclosure side of said door and a plate mounted to said door jamb, said housing containing audible alarm means, manual arming means and manual pre-arming means, alarm actuation means, locking means, electric circuit latching and electric circuit time delay means having electric supply means, alarm "ON" and "OFF" electric switching means attached to said housing; said manual arming means attached to said housing and cooperat-

ing with said plate and said alarm actuation means to permit manual arming of said alarm from said inside of said door while said door is closed, said electric latching circuit cooperating with said alarm actuation means and said locking means cooperating with said plate to simultaneously and instantaneously actuate said audible alarm and lock said door; said pre-arming means attached to said housing and cooperating with said plate and said alarm actuation means to permit manual pre-arming of said alarm from said inside of said door while said door is open,



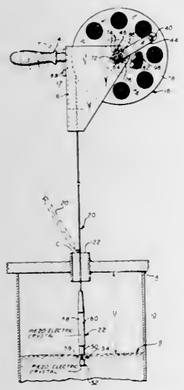
said manual pre-arming means and said alarm actuation means cooperating with said plate to permit automatic arming of said alarm when said door is closed, said electric circuit latching and said electric circuit time delay means cooperating with said alarm actuation means and said plate to actuate said audible alarm means after the opening of said door; said manual arming means and said manual pre-arming means having stop means adapted to engage said housing to place said alarm actuation means of said alarm in an inoperative condition.

4,123,753

ULLAGE MEASURING DEVICE

William H. Gravert, Port Washington, N.Y., assignor to Marine Moisture Control Company, Inc., Inwood, N.Y.

Filed Sep. 29, 1976, Ser. No. 727,894
Int. Cl.[2] G08B *21/00;* **G01B** *3/10;* **B65H** *75/30*
U.S. Cl. 340—621 **20 Claims**



1. An ullage measuring device for the measurement of fluid in a storage tank without visual sighting while affording protection from gas fumes or other noxious substances, comprising:

a fluid responsive device for producing an output signal when in contact with a fluid medium comprising a sonic energy transmitting device, sonic energy receiving device, and a housing enclosing said sonic energy devices in spaced relationship relative to each other to provide a free space therebetween to permit the application of different mediums between said transmitting and receiving devices for the transmission of sonic energy depending upon the medium, interposed in said free space, from said transmitting device to said receiving device;

a tape reel mechanism comprising a tape assembly having measuring indicia thereon, said tape assembly having one end coupled with said fluid responsive device and another end coupled with said tape reel mechanism;

an alarm indication mechanism associated with said tape reel mechanism responsive to said output signal which is generated in response to the fluid filling said free space for producing an alarm indication; and,

means coupled with said tape reel mechanism to control the amount of payout of said tape assembly for stopping the payout thereof when said fluid responsive device makes contact with said fluid medium.

18. A tape assembly for use in connection with the measurement of ullage of a liquid in a storage tank without visual inspection thereof, said tape assembly including one end adapted for connection to a detection device and its other end adapted for connection to a tape assembly payout device, comprising:

an outer jacket of material impervious to the liquid under measurement and electrically non-conductive;

A pair of electrically conductive elements contained within said outer jacket; and,

a tape of electrically conductive material containing measuring indicia contained within said jacket and juxtaposed to said electrically conductive elements but insulated therefrom to form a composite tape formed of said pair of conductive elements and said indicia tape;

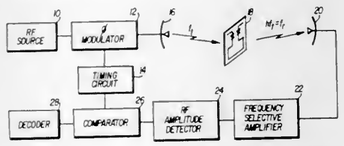
said jacket having a dimpled surface forming a lengthwise discontinuous non-uniform outer surface overlying said tape and providing for cross-sectional areas having a narrower transverse cross-section than other cross-sectional areas of said jacket, said narrower longitudinal cross-sectional areas providing for a shorter path for electrical charge to leak through said jacket to said indicia tape for dissipation to a ground on said tape assembly payout device.

4,123,754

ELECTRONIC DETECTION AND IDENTIFICATION SYSTEM

Frank L. Armstrong, Pleasantville, N.Y. 10570

Filed Jun. 28, 1976, Ser. No. 700,185
Int. Cl.[2] G01S *9/56*
U.S. Cl. 343—615 SS **12 Claims**



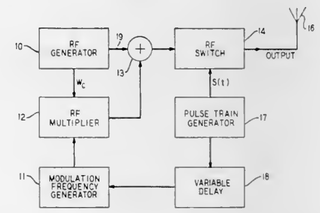
1. An electronic detection and identification system comprising, in combination, an electronic transmitter-receiver unit and a carrier member containing passive circuitry thereon for reflecting a signal comprising at least one selected harmonic of the signal transmitted thereto from said transmitter-receiver unit, said unit comprising a transmitter comprising a radio frequency source for generating a radio frequency signal, means for frequency sweeping said radio frequency signal with a frequency varying signal to produce a frequency swept signal and means for radiating said frequency swept signal towards said carrier member; and a receiver comprising means for receiving the signal reflected by the passive circuitry of carrier member; amplitude detector means for detecting the instantaneous amplitude envelope of the received signal; means for providing a predetermined reference signal representative of the expected received signal envelope profile corresponding to the selected harmonic of the transmitted signal and comparator means for comparing, in the time domain, the amplitude envelope of the detected signal with said reference signal, said comparator means comprising at least two comparators for comparing the amplitude envelope of the detected signal at at least two points in time sequence respectively representative of two different frequencies with two corresponding points of the reference signal.

4,123,755

RADAR INTERFERENCE REDUCTION

William Fishbein, 283 Norgrove Pl., Elberon, N.J. 07740; Reinhard Olesch, 17 Greenleaf, Englishtown, N.J. 07726, and Otto Rittenbach, 17 Jumping Brook Dr., Neptune, N.J. 07753

Filed Oct. 10, 1975, Ser. No. 621,261
Int. Cl.[2] G01S *7/28*
U.S. Cl. 343—17.1 R **4 Claims**



1. A pulsed radar system of the type wherein a beam of microwave energy interrogates a target, said target generating a return echo which is received by the interrogating antenna means for subsequent signal processing, comprising:

means for shaping the pulses comprising said beam so that the envelope of each pulse assumes a $\cos^n$ shape, n being equal to or greater than one, said shaping means including means for generating a microwave carrier signal,

means for generating a train of pulses, each pulse having a width w,

a modulation frequency generator for shaping the waveform of said pulses of said pulse train,

a radio frequency multiplier for multiplying the output of said carrier generating means with the output of said modulation frequency generator to provide rf multiplier output frequencies spaced with respect to one another by $1/w$,

switching means interposed between the output of said multiplier and said antenna means and operated in response to said pulse train, and

delay means for adjusting the output of said pulse generating means to insure that said switching means turns on and off when $\cos^n = 0$.

4,123,756

BUILT-IN MINIATURE RADIO ANTENNA

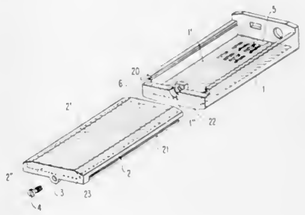
Koichi Nagata; Takashi Oda, and Koji Yamashita, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1977, Ser. No. 835,755
Claims priority, application Japan, Sep. 24, 1976, 51-115060
Int. Cl.[2] H01Q *1/24, 7/00;* **H04B** *1/08*
U.S. Cl. 343—702 **6 Claims**

1. An antenna for a miniature radio of the type having a housing structure formed of plastic material in two sections including a casing member adapted to accommodate a radio circuit and a cover member overlying said casing member, comprising:

(a) first and second electrically conductive members provided, respectively, on opposing sections of said housing structure,

(b) first means for interconnecting said first and second conductive members at their one ends when said cover member is fitted to said casing member, and



(c) second means for connecting said first and second conductive members to said radio circuit at their other ends.

4,123,757

RADAR SECTOR SCAN REVERSAL APPARATUS

Roger H. Lapp, Silver Spring, Md., and Jacob D. Schneider, Los Alamos, N. Mex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1976, Ser. No. 714,732
Int. Cl.[2] H01Q *3/02*
U.S. Cl. 343—766 **9 Claims**

1. A radar sector scan reversal apparatus comprising:

a stationary element,

a motor having a shaft which can rotate clockwise and counterclockwise,

bumper means attached to the shaft,

spring means affixed to the stationary element, said spring means being positioned such that said bumper means comes into contact with said spring means prior to the end of each clockwise or counterclockwise rotation and such that said spring means stores sufficient energy following each rotation to induce rotation in the opposite direction,

means coordinated with the rotation of said shaft for switching off said motor before said spring means begins to release energy at the end of either a clockwise or counterclockwise rotation, and

means for switching on said shaft rotating motor after the direction of shaft rotation is reversed,

wherein the spring means comprises two spring members and wherein the bumper means comprises one bumper, such that one spring member contacts the bumper following a clockwise rotation and the other spring member contacts the bumper following a counterclockwise rotation, and

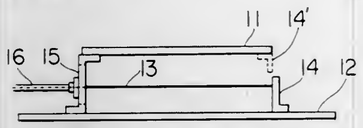
wherein each of said spring members comprises:

a flat spring which flexes about an axis parallel to the axis of said shaft when the flat spring comes into contact with said stationary bumper means.

4,123,758
DISC ANTENNA

Yoshizo Shibano, Osaka; Tamao Saito, and Toshiaki Saikawa, both of Nishinomiya, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 28, 1977, Ser. No. 772,588
Claims priority, application Japan, Mar. 4, 1976, 51-23968; Feb. 27, 1976, 51-20668
Int. Cl.[2] H01Q 9/16
U.S. Cl. 343—830 5 Claims

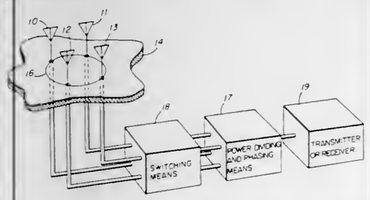


1. A disc antenna for common use with first and second signal frequencies comprising first and second signal sources for respectively generating first and second signal frequencies, a ground plate and conductor disc spaced substantially in parallel with each other, said first and second signal sources connected to one point on the circumference of said conductor disc for signal feeding to said one point, a grounding conductor conductively shorting a circumferential point on said conductor disc diametrically opposite said one point to the point opposite said circumferential point on said ground plate, the circumference of said conductor disc divided into a plurality of sections by connection points including said circumferential point, the length of each section being at most equal to one-half of the shorter of the wave lengths of the first and second signal frequencies, said connection points dividing said sections other than said circumferential point each grounded by a first filter circuit respectively, each said first filter circuit being open to said first signal frequency and being closed to said second frequency, each middle circumferential point of each of said sections on said conductor disc connected to said one point through coaxial cables and a second filter circuit to supply the second signal frequency thereto in phase to said middle points, each said second filter being open to said first signal frequency and being closed to said second signal frequency.

4,123,759
PHASED ARRAY ANTENNA

Marion E. Hines, Weston; Harold E. Stinehelfer, Sr., Burlington, and Dana W. Atchley, Jr., Lincoln, all of Mass., assignors to Microwave Associates, Inc., Burlington, Mass.

Filed Mar. 21, 1977, Ser. No. 779,701
Int. Cl.[2] H01Q 3/26; G01S 5/04; H01Q 19/10, 3/24
U.S. Cl. 343—854 22 Claims

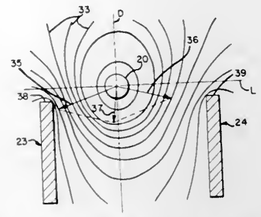


1. An antenna system for producing from a fixed array of active antenna elements which are each omnidirectional in a plane, a sensitivity pattern that is directional in said plane and which can be rotated around the array, comprising at least three of said elements each located at the corner of a regular polygon, and means for exciting all of the elements with currents of substantially equal magnitudes that are instantaneously in the same phase at two of said corners next adjacent and on either side of a third of said corners, and different in phase by substantially 90 electrical degrees at said third corner, the distance between two adjacent corners of said polygon being in the range substantially one-quarter to substantially 0.288 of the length of a wave at the mid-frequency of the operating frequency band of said system.

4,123,760
APPARATUS AND METHOD FOR JET DEFLECTION AND RECORDING

Shou L. Hou, Centerville, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 28, 1977, Ser. No. 772,845
Int. Cl.[2] G01D 15/18
U.S. Cl. 346—75 26 Claims

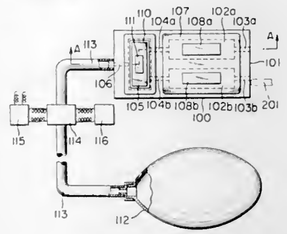


25. A method of deflecting a jet of uncharged dielectric liquid comprising the steps of generating a deflection control signal corresponding to a desired deflection sequence, deflecting the trajectory of said jet by establishing a gradient electrical field thereacross in accordance with said deflection control signal, and catching said jet in one trajectory position.

4,123,761
METHOD OF PURGING INK PASSAGES OF AN INK JET RECORDING DEVICE

Yoshiaki Kimura; Masanori Kawai, and Takashi Hatano, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1977, Ser. No. 802,673
Claims priority, application Japan, Jun. 7, 1976, 51-66894
Int. Cl.[2] G01D 15/18
U.S. Cl. 346—140 R 14 Claims



13. In an ink jet printer comprising a plurality of ink pressure chambers, each chamber having a separate valveless outlet passage and means individually controllable for suddenly reducing the volume of the chamber upon receipt of an individual electrical pulse to eject an ink droplet on demand from its outlet passage, a common ink reservoir in constant fluid communication with each of said chambers to supply ink thereto, ink being driven back into the reservoir from a chamber upon actuation of its volume reduction means simultaneously with ejecting an ink droplet from its outlet, an ink supply connected through an ink supply valve to said reservoir, means associated with said reservoir for measuring ink volume and/or pressure therein, electronic means responsive to said measuring means for opening said ink supply valve upon the ink within the reservoir falling below a certain minimum threshold and for closing said valve when the ink is above a certain upper threshold, said ink supply storing ink under a steady state pressure, whereby the volume and/or pressure of ink within said reservoir is automatically maintained between set limits, a system for purging ink therefrom, comprising:

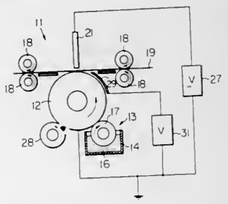
means for causing said ink supply valve to open for a predetermined time period independently of the operation of said electronic means, and

means for simultaneously and temporarily during said predetermined time period increasing the pressure of said ink supply above said steady state pressure, thereby to purge ink through each of the plurality of chambers and out their respective outlet passages, whereby bubbles and impurities are also removed.

4,123,762
IMPROVED ELECTROSTATIC HEAD WITH TONER-REPELLING ELECTRODE

Satoru Tomita; Tamio Ohori, and Shuichi Karasawa, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,599
Claims priority, application Japan, Dec. 26, 1975, 50/156512
Int. Cl.[2] G03G 15/08; B05C 5/02
U.S. Cl. 346—155 15 Claims



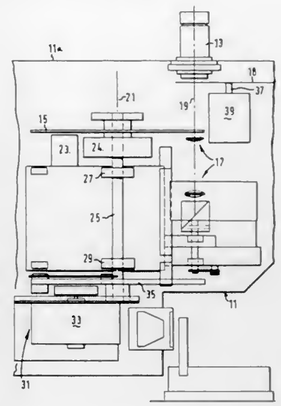
1. An electrostatic printing apparatus comprising;
a base electrode;
means for applying a developing substance including charged particles onto the base electrode;
a printing head including a plurality of printing electrode sets formed into an array, each printing electrode set including a plurality of shaping electrodes and a bias electrode and being disposed closely adjacent to the base electrode with the recording sheet disposed between the base electrode and the printing head;
a plurality of electrode set select wires connected to the bias electrodes of the printing electrode sets respectively;
a plurality of shaping electrode select wires each of which is connected to corresponding shaping electrodes of all of the printing electrode sets;
first voltage source means for selectively applying a first voltage to the shaping electrode select wires for printing; and
second voltage source means for applying a selected one of a second and a third voltage to the electrode set select wires, the second and third voltages both urging the charged particles against the base electrode, the first voltage being insufficient to overcome the second voltage and being sufficient to overcome the third voltage to attract only those charged particles in areas of the base electrode adjacent to shaping electrodes to which the first voltage is applied to the recording sheet for printing.

4,123,763
PHOTODRAFTING EQUIPMENT

David W. Eadie, Corfe Mullen, and Charles J. Hancock, Bournemouth, both of England, assignors to Quest Automation Limited, Dorset, England

Filed Sep. 26, 1977, Ser. No. 836,825
Claims priority, application United Kingdom, Sep. 29, 1976, 40196/76
Int. Cl.[2] G03B 41/00
U.S. Cl. 354—4 8 Claims

1. In photodrafting equipment, projection apparatus comprising:
(a) first and second light sources, the first light source comprising an incandescent lamp and being operable continuously at relatively low intensity, and the second light source comprising a gas discharge lamp and being a flash source of relatively high intensity; and

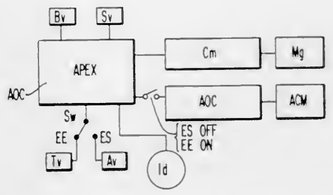


(b) light source selection means operable to enable either one of said light sources to be selected in use to provide a source for the beam of light projected by the apparatus.

4,123,764
EXPOSURE CONTROL DEVICE

Naoyuki Uno, Urawa; Tetsuji Shono, Saitama; Fumio Urano, Omiya, and Masahiro Kawasaki, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1975, Ser. No. 644,018
Claims priority, application Japan, Dec. 26, 1974, 50-3778
Int. Cl.[2] G03B 7/08
U.S. Cl. 354—24 5 Claims



1. An automatic exposure control device for a camera, said device being capable of accomplishing at least the aperture dominant exposure control operation, the shutter dominant exposure control operation and manual exposure control operation, said device being of the type having a logarithmic compression circuit for developing voltages V_E, V_D, V_A and V_B dependent on the APEX indicating quantites Av, Tv, Sv and Bv, respectively, of aperture level A, manual exposure time T, film sensitivity S and brightness of an object B, so as to carry out the APEX operation in accordance with the relationship of $Av + Tv = Sv + Bv$; shutter speed control means for said camera having an input circuit means, said shutter speed control means being adapted to control the shutter speed in dependence upon the voltage applied to said input means, an aperture level determining means selectively operative to start adjustment of the aperture mechanism of said camera in response to the shutter release operation of said camera and to carry out said adjustment at a predetermined speed; said logarithmic compression circuit means including an aperture transducer means coactive with said aperture level determining means to develop said voltage V_E dependent upon the Av quantity; the improvement being characterized by,

(a) automatic aperture circuit means responsive to the voltage corresponding to the B_V, S_V and manually set T_V quantities for stopping the aperture level determining means when the aperture mechanism is closed down an amount to cause said developed voltage V_E to become equal or greater than $(V_A+V_B-V_D)$, said automatic aperture circuit means being selectively connectable and disconnectable with said aperture level determining means for shutter dominant and aperture dominant operations, respectively,

(b) switchable shutter circuit means for selectively applying to said input circuit of said shutter control circuit, a voltage dependent directly upon V_D for shutter preferred operation and a voltage dependent upon $(V_A+V_B-V_E)$ for aperture preferred operation, and

(c) indicator means connected to said logarithmic compression circuit for selectively operating as an aperture indicator and a shutter speed indicator.

4,123,765

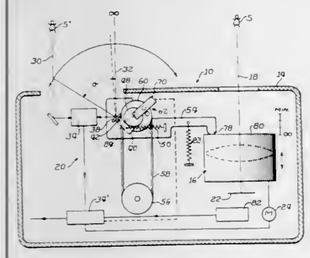
AUTOMATIC FOCUS ADJUSTING DEVICE

Tadao Isono, Kokubunji, Japan, assignor to Nihon Beru-Haueru Kabushiki Kaisha, Higashimurayama, Japan

Filed Apr. 21, 1977, Ser. No. 789,477

Int. Cl.[2] G03B *13/18*

U.S. Cl. 354—25 **10 Claims**



1. For an optical instrument having a focusable objective lens, and an automatic focusing system including a scanner optical system having a scanner means and a reference optical system wherein images of a remote subject are caused respectively to impinge on a detector means, the detector means generating an output signal representing the object distance of the subject when the images on the detector are coincident, and including means to adjust the focus of the objective lens to the object distance, the improvement in a means to relate the orientation of the scanner and the focus condition of the objective lens comprising:

reference means on said objective lens adjustable in response to variations in focus condition of said lens,

scanner driver means for driving said scanner means about an axis oscillatably through a predetermined angle,

means supporting the scanner means for arcuate movement of the axis thereof, and

means on said scanner supporting means for engagement with said objective lens focus condition reference means for arcuate positioning of said supporting means,

whereby the central alignment of said predetermined angle through which said scanner moves corresponds to the focus condition of said objective lens.

4,123,766

ELECTRICALLY CONTROLLED PHOTOGRAPHIC SHUTTER

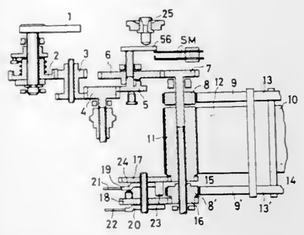
Goro Hasegawa, Fuchu, Japan, assignor to Canon, Inc., Tokyo, Japan

Continuation of Ser. No. 443,721, Feb. 19, 1974, abandoned, which is a continuation of Ser. No. 287,018, Sep. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 886,957, Dec. 22, 1969, abandoned. This application Jul. 2, 1976, Ser. No. 701,990

Claims priority, application Japan, Dec. 28, 1968, 43-96019; Dec. 5, 1969, 44-97707; Dec. 18, 1969, 44-102147

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—51 **20 Claims**



1. An exposure control system for a camera, comprising a shutter, shutter operating means for opening and closing the shutter so as to hold the shutter open and then close it, electric shutter control means associated with said operating means for controlling the time during which said operating means holds open said shutter, said electric shutter control means assuming an effective state when electrically energized beyond a predetermined electrical value and an ineffective state in which it is not energized beyond the electrical value; mechanical control means movable into a first position in which said mechanical control means is engageable with said operating means for controlling the time during which said operating means holds open said shutter and retractable from the first position to a second position in which said mechanical control means remains out of engagement with said operating means; and first means forming a part of said electric shutter control means for assuming one condition when said electric control means is energized into the effective state and another condition when said electric shutter control means is in the ineffective state, and turn-over means associated with said first means for automatically allowing said mechanical control means to retract to the second position when said first means is in the one condition and for automatically allowing said mechanical control means to move to the first position when said first means is in the other condition.

4,123,767

CAMERA AND FILM IDENTIFICATION SYSTEM

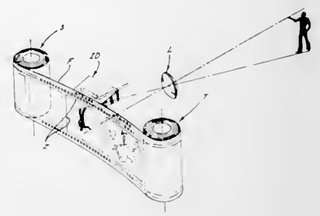
Neil S. Halpern, 6437 Todd Ct., Cornwells Heights, Pa. 19020

Filed Nov. 17, 1975, Ser. No. 632,385

Int. Cl.[2] G03B *17/24*

U.S. Cl. 354—107 **4 Claims**

1. A camera for photographically exposing film, the camera comprising means providing for stepwise feed of a film strip through an exposure zone from a supply to a take up reel to provide for sequential exposure of succeeding sections of the film strip and further comprising an exposure trigger, an enclosed chamber positioned in the camera between said reels in front of the exposure zone and having walls in predeterminedly fixed position with respect to each other and with one wall positioned to contact each film section along an edge thereof in the exposure zone, said one wall having permanently established portions of contrasting light transmission capability in the pattern of predeterminedly fixed distinctive camera ownership identifying indicia, the other walls of said enclosure being opaque, an electric lamp in said chamber having a current supply circuit, and a switch in said circuit operated by said exposure trigger thereby providing for exposure of each succeeding film section with the same distinctive camera ownership identifying indicia.



4,123,768

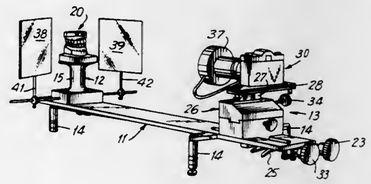
METHOD AND APPARATUS FOR PHOTOGRAPHICALLY RECORDING THREE-DIMENSIONAL MODELS OF DENTAL ARCH PROFILES

James Kilshaw, deceased, late of Leigh, England (by Edna M. Kilshaw, legal representative), and Edward Dervin, Chadderton, England, assignors to Victoria University of Manchester, Manchester, England

Filed Mar. 9, 1977, Ser. No. 775,977

Int. Cl.[2] G03B *15/00*

U.S. Cl. 354—292 **10 Claims**



6. An apparatus for the accurate photographic recording of a three-dimensional model of a dental arch profile, which comprises:

(a) a supporting bench;

(b) a mounting platform rotatably secured perpendicular to the bench, for supporting the models of the top and bottom arches of the dental arch profile in centric occlusion with the line of intersection of the mid-saggital plane and the occlusal reference plane of the models coincident with the axis of the lens of a recording camera and the anterior of the models facing the camera at a fixed model-lens distance;

(c) means for rotating the mounting platform to rotate the models about an axis normal to the occlusal reference plane and lying in the mid-saggital plane from 7 to 23 mm. posterior of the inter-canine line;

(d) a camera holder axially slidably secured to the bench and spaced longitudinally from the mounting platform for supporting a camera, said holder including a camera base plate which is formed for mounting the camera, a pedestal supporting the camera base plate, a mounting block which vertically slidably receives the pedestal, and means for vertical adjustment of the pedestal, said mounting block including means for transverse adjustment of the pedestal and being axially slidably secured to the bench; and

(e) means for axial adjustment of the camera holder along the bench so that said camera may be placed at a predetermined, substantially constant distance from said models.

4,123,769

WASHING CHAMBER FOR PHOTOGRAPHIC DEVELOPING APPARATUS

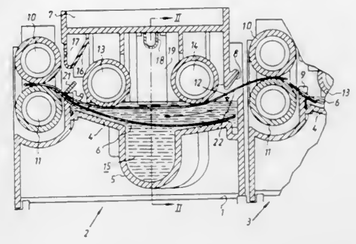
Avelino Fernandez, Gauting; Josef Glass, Ottobrunn; Viktor Osegowitsch, Taufkirchen, and Wilfried Hehn, Muenchen, Kleinhadern, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 796,881

Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623702

Int. Cl.[2] G03D *3/08*

U.S. Cl. 354—322 **6 Claims**



1. In a developing apparatus of the type comprised of a plurality of successive processing chambers arranged for generally horizontal travel of a photographic material to be developed through the successive processing chambers, with each processing chamber being provided with a processing-fluid tank and guide means for guiding photographic material through the processing chamber, and with transport roller pairs being provided intermediate adjoining processing chambers for transporting photographic material from one chamber to the next, with the last processing chamber being a washing chamber, a washing chamber of novel construction comprising a wash-water tank containing a body of wash water with the upper surface of the body of wash water maintained at a predetermined level; guide means for guiding photographic material through the washing chamber, including submerging means for causing transported photographic material to pass below the upper surface of the body of wash water; a pair of outfeed rollers at the outlet end of the washing chamber for outfeed of washed photographic material, one roller being arranged above the other; and a spray pipe located intermediate the submerging means and the outfeed rollers and provided with a plurality of spray outlets oriented for spraying wash water onto the peripheral surface of the upper one of the pair of outfeed rollers.

4,123,770

PROCESS AND APPARATUS FOR DEVELOPING PHOTOGRAPHS

Shiuta Itoh; Masuko Itoh, both of No. 16-43, 3-chome, Horinouchi, Suginami-ku, Tokyo, and Masato Kitaura, No. 33-10, 1-chome, Zoushigaya, Toshima-ku, Tokyo, all of Japan

Filed Sep. 15, 1976, Ser. No. 723,541

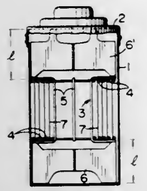
Claims priority, application Japan, Oct. 2, 1975, 50-119150

Int. Cl.[2] G03D *13/08*

U.S. Cl. 354—337 **5 Claims**

1. Apparatus for developing photographs comprising a development tank having an open upper end to be closed by a cap member after filled with developing solution, a film holding framework having two film guide members disposed vertically spaced with each other and adapted to hold a photographic sensitive film in the vertical position and a frame body for supporting the film guide members, a lower spacer disposed at the lower end of the tank for spacing the film on the film holding frame apart from the lower inside surface of the development tank at a distance of at least 10 millimeters, and an upper spacer for spacing the film apart from the upper inside

surface of the development tank at a distance of at least 10 millimeters, said lower and said upper spacer being formed of cross-like thin plates vertically positioned and having a height of at least 10 millimeters, said film holding frame and said



lower and upper spaces having no substantial obstacle in the vertical flow path for the solution leading to the film surfaces and being capable of providing substantially laminar flow of the solution over the film surfaces.

4,123,771

NONVOLATILE SEMICONDUCTOR MEMORY

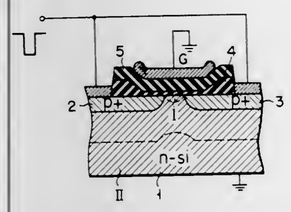
Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 507,611, Sep. 19, 1974, abandoned. This application Jul. 15, 1976, Ser. No. 705,561

Claims priority, application Japan, Sep. 21, 1973, 48-106793

Int. Cl.[2] H01L *29/78, 27/02, 29/34;* **H03K** *5/00*

U.S. Cl. 357—23 **2 Claims**



1. A metal-nitride-oxide semiconductor memory device comprising:

a semiconductor *n*-type substrate;

an elongated *p*-type source region in the surface of said substrate;

an elongated *p*-type drain region in the surface of said substrate running parallel to said elongated source region;

a first gate insulation film consisting of a very thin oxide film formed on a substrate surface region between said elongated source and drain regions;

a silicon-nitride film formed on said first gate insulation film;

first and second metal-oxide-semiconductor field-effect transistors, the source and drain of each of said transistors being said elongated source and drain regions, said transistors being positioned respectively on either side of said first gate insulation film and having respectively second and third gate insulation films between said elongated source and drain regions;

source, drain, and first, second and third gate electrodes respectively formed on said elongated source and drain regions, and said first, second and third gate insulation films, said second and third gate electrodes being separated from said first gate electrode;

means for effecting writing-in of information by ejecting carriers from said substrate surface region between said source and drain regions into electron traps in said silicon-nitride film;

means for impressing ground potential to said substrate and to said first gate electrode and a predetermined negative potential to said source, drain and second and third gate electrodes so as to form a depletion layer which surrounds completely the substrate surface region under said first gate insulation film at the time of effecting writing-in of information; and

means for allowing the potential of said substrate surface regions completely enclosed by said depletion layer to approach that of said source and drain regions by injecting carriers into said surface region.

4,123,772

MULTISEGMENT HALL ELEMENT FOR OFFSET VOLTAGE COMPENSATION

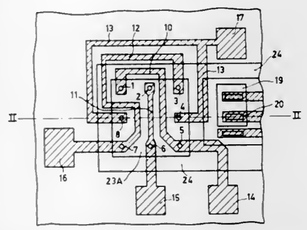
Johannes H. H. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 654,557, Feb. 2, 1976, abandoned, which is a continuation of Ser. No. 474,588, May 30, 1974, abandoned. This application May 31, 1977, Ser. No. 801,924

Claims priority, application Netherlands, Jun. 18, 1973, 7308409

Int. Cl.[2] H01L *27/22, 43/06*

U.S. Cl. 357—27 **12 Claims**



1. A Hall device with substantially suppressed offset voltage comprising a layer-shaped semiconductor body having a central portion and a peripheral portion surrounding said central portion, an even number of at least four current contact members forming a plurality of pairs of anode and cathode contact members distributed in said peripheral portion in alternate spaced arrangement, each cathode contact member being situated between two anode contact members a plurality of pairs of Hall contact members of opposite polarities forming the same even number of Hall contact members distributed in said peripheral portion in alternate spaced arrangement, each Hall contact of one polarity being situated between two Hall contacts of the opposite polarity, only one single Hall contact being present between each pair of successive anode and cathode current contact members and equidistant therefrom thus forming a plurality of adjacent arranged Hall sub-elements, the main current direction between each pair of successive anode and cathode contacts being substantially parallel to the main current direction between an associated pair of anode and cathode contacts situated diametrically opposite on the body, all anode contact members being connected to one single anode input terminal, all cathode contact members being connected to one single cathode input terminal, all Hall contact members of one polarity being connected to one single first Hall output terminal and all Hall contact members of the opposite polarity being connected to one single second Hall output terminal.

4,123,773

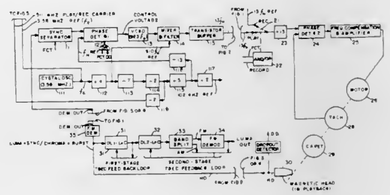
SERVO ARRANGEMENT FOR THE RECORDING TAPE DRIVE IN BROADBAND SIGNAL REPRODUCING SYSTEMS

Gerhard Rotter, Mission Viejo; William A. Buchan, Newport Beach, and Rainer E. an der Heiden, Anaheim, all of Calif., assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 14, 1977, Ser. No. 777,123

Int. Cl.[2] H04N *5/79, 5/785*

U.S. Cl. 358—4 **13 Claims**



1. A servo arrangement for regulating the speed of means for driving a recording tape relative to a signal transducer in a broadband signal reproducing system, the broadband signal recorded on said tape including a synchronizing information signal; said arrangement including:

a tachometer servo loop comprising said drive means, means for producing a tachometer signal representing the speed of said drive means, means for detecting the phase difference between said tachometer signal and a tape lock reference signal and for providing a loop control signal representing the detected phase difference, and means for regulating the speed of said drive means in response to said control signal; and

a tape lock loop comprising said signal transducer, means for separating said synchronizing information signal from the signal transducer output, means for detecting the phase difference between said synchronizing information signal and a fixed reference signal and for providing an oscillator control signal, and controllable means dependent on said oscillator control signal for providing a frequency representing the tape lock reference signal to said first mentioned phase detecting means whereby said first mentioned phase detecting means is common to said tachometer loop and said tape-lock loop;

said controllable means including a voltage controlled oscillator having a center frequency, and also including means connected between said voltage controlled oscillator and said first-mentioned phase detecting means for heterodyning the voltage controlled oscillator output signal to a relatively lower frequency, whereby a highly stable tape lock reference signal is generated.

4,123,774

COLOR SIGNAL ENCODING METHODS AND APPARATUS FOR VIDEO RECORDING AND PLAYBACK

Bernhard A. Hjortzberg, Mission Viejo, Calif., assignor to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Germany

Filed Feb. 7, 1977, Ser. No. 766,541

Int. Cl.[2] H04N *5/79*

U.S. Cl. 358—4 **134 Claims**

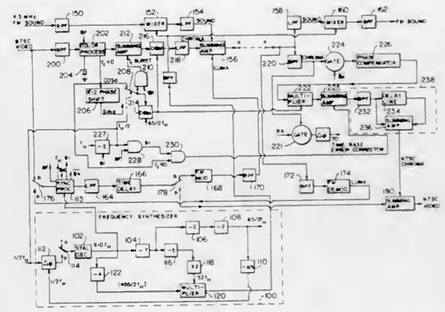
1. A method of processing a color video signal in which quadrature modulated chroma information amplitude modulated at a first carrier frequency is translated to bisequential chroma information amplitude modulated at a second carrier frequency with suppressed carrier, comprising the steps of:

(a) separating a signal representing said amplitude and quadrature modulated chroma information from said color video signal;

(b) applying said separated chroma information signal to one input of a first double balanced modulator;

(c) switching the phase of a reference source of said first carrier frequency alternately between zero degrees and ninety degrees from one horizontal video scan line to the next;

(d) mixing said phase switched first carrier reference with a reference source of said second carrier frequency to produce a signal comprising the sum and difference frequencies of said phase switched first carrier and said second carrier; and



(e) applying said sum and difference frequency signal to a second input of said first double balanced modulator, whereby the output signal of said first double balanced modulator represents chroma information bisequentially amplitude modulated at said second carrier frequency with suppressed carrier.

4,123,775

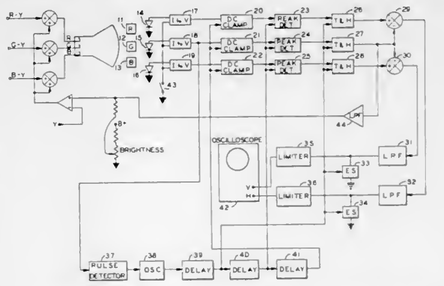
APPARATUS AND METHOD FOR ADJUSTING THE COLOR TEMPERATURE OF A TELEVISION RECEIVER

Anthony R. Bugni, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed May 2, 1977, Ser. No. 792,826

Int. Cl.[2] H04N *9/62, 9/535*

U.S. Cl. 358—10 **4 Claims**



1. An apparatus for determining the difference in color temperature between a television receiver having a partially illuminated color picture tube, and a reference color temperature comprising:

a. means for illuminating a segment of said picture tube to produce a constant brightness level;

b. light detector means for providing first, second, and third signals in response to the amount of red, green and blue light produced within said segment;

c. means for sampling said first, second and third signals of said light detectors to provide a voltage representative of said signals; and

d. means for comparing said voltages representing said first,

second and third signals whereby the relative magnitude of each voltage level is indicative of said reference color temperature.

4,123,776

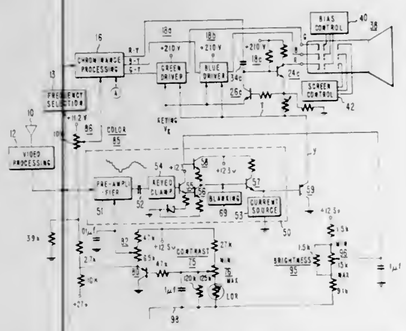
SERVICE SWITCH ARRANGEMENT FOR A COLOR TELEVISION RECEIVER

Larry A. Cochran, and Robert L. Shanley, II, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed May 12, 1977, Ser. No. 796,338

Int. Cl.² H04N *9/62*

U.S. Cl. 358—10 **13 Claims**



1. In a system for processing an image representative composite color video signal containing luminance, chrominance and synchronizing signal components, said system including a signal channel for processing said luminance and chrominance components to develop output signals, a color image reproducing device responsive to said output signals; deflection means associated with said image device for providing horizontal and vertical scanning of said image reproducing device in response to said synchronizing component; control apparatus comprising:

adjustable image brightness control means coupled to said signal channel and providing a control voltage thereto for varying the D.C. level of said output signals;

adjustable image contrast control means coupled to said signal channel and providing a control voltage thereto for varying the peak amplitude of said output signals; and

switching means coupled to said signal channel, deflection means, and brightness and contrast control means, said switching means having

a first position for selectively rendering said signal channel, deflection means, and brightness and contrast control means normally operative; and

a second position for selectively rendering said signal channel inoperative to process said chrominance component, said deflection means inoperative to provide scanning of said image device in one direction, and for causing said brightness and contrast control means to respectively provide predetermined control voltages to said channel substantially independent of the setting of said brightness and contrast control means to establish predetermined values of said D.C. level and said peak amplitude of said output signals, to permit service adjustment of said image reproducing device.

4,123,777

COLOR TELEVISION CAMERA HAVING AN AUXILIARY ILLUMINATION SOURCE

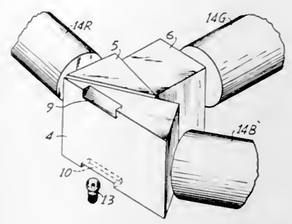
Takeshi Sekiguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1977, Ser. No. 782,022

Claims priority, application Japan, Mar. 20, 1976, 51/38236

Int. Cl.² H04N *9/04*

U.S. Cl. 358—55 **6 Claims**



1. A color television camera having an auxiliary illumination source, which comprises

an objective lens;

a color separation prism receiving a light from said objective lens and providing a plurality of component color beams, said color separation prism including a plurality of prism blocks and an incidence prism within the plurality of the prism blocks and being provided with a first and a second recesses;

an auxiliary illumination device arranged on the first recess of said color separation prism; and

plural image pickup tubes on which said color component images are formed;

whereby the light coming from said auxiliary illumination device enters said color separation prism through the surface having the first recess, and a part of the light entering said color separation prism is directed to said second recess and reflected by the surface having the second recess, emitted through the exit surfaces of said color separation prism, and directed to the image pickup tubes, and the other part of light entering said color separation prism is directed to said image pickup tubes after being emitted through the exit surfaces of said color separation prism.

4,123,778

METHOD OF AND APPARATUS FOR DETERMINING THE SHARPNESS OF A PICTURE

Jean-Pierre Graf, Zürich, and Tino Celio, Ambri, both of Switzerland, assignors to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule, Zürich, Switzerland

Filed Dec. 7, 1976, Ser. No. 748,300

Claims priority, application Switzerland, Dec. 9, 1975, 15971/75

Int. Cl.² H04N *7/02, 5/30*

U.S. Cl. 358—107 **8 Claims**

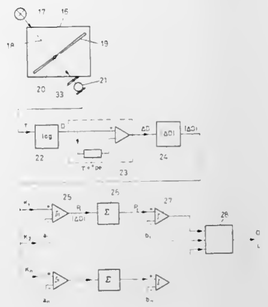
1. A method of determining the sharpness of a picture through the detection and evaluation of the absolute values of the density differences between adjoining points of the picture of at least one selected area of the picture, comprising the steps of:

(a) determining the absolute values $|\Delta D|$ of the density-differences of a plurality of adjacent image elements within at least one area of a picture;

(b) for these absolute values, selecting at least two different threshold values $a_1 \ldots a_n$;

(c) comparing the absolute difference values $|\Delta D|$ with each of the threshold values $a_1 \ldots a_n$ and separately counting those absolute difference values which exceed each of these threshold values to obtain a corresponding number of counts $N_1 \ldots N_n$;

(d) comparing each of the obtained counts $N_1 \ldots N_n$ with a



corresponding reference value $b_1 \ldots b_n$ to produce a decision output for each comparison; and

(e) combining the decision outputs of the comparisons to obtain a decision as to the sharpness of the image.

4,123,779

TURNTABLE ROTATIONAL SPEED AND PHASE CONTROL SYSTEM FOR A VIDEO DISC PLAY/RECORD APPARATUS

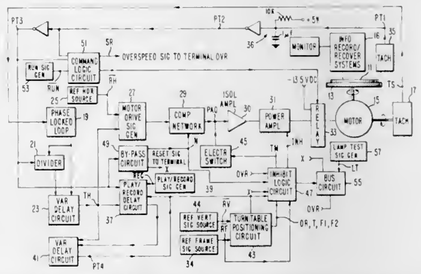
Arthur M. Goldschmidt, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 14, 1977, Ser. No. 777,478

Claims priority, application United Kingdom, Mar. 19, 1976, 11105/76

Int. Cl.² H04N *5/76;* **G11B** *19/28, 17/00*

U.S. Cl. 358—128 **18 Claims**



1. In a disc record player and recorder apparatus operable in either of an information recording or recovery mode for use with a source of frames of composite video signals including horizontal and vertical synchronization pulses and means for providing a frame synchronization signal; and apparatus comprising the combination:

a turntable;

means for rotating said turntable;

means for synchronizing the speed of rotation of said turntable in response to synchronization pulses derived from said source;

means, cooperating with said turntable; for providing a signal responsive to the rotation of the turntable;

means, cooperating with said rotating means, for altering the phase of rotation of said turntable;

first means for rendering said phase altering means responsive to the phase difference between said rotation responsive signal and said frame synchronization signal; and

second means for rendering said phase altering means additionally responsive to the relative position of a predetermined sector of a disc, supported on said turntable, with respect to a predetermined sector of said turntable.

4,123,780

SIGNAL NOISE FILTRATION FOR LASER BEAM RECORDING SYSTEM

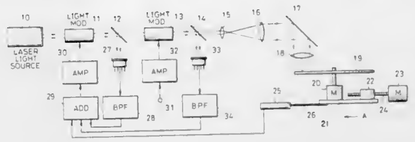
Yoshihiko Honjo, Ayase, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 21, 1976, Ser. No. 753,003

Claims priority, application Japan, Dec. 22, 1975, 50-152000; Dec. 22, 1975, 50-152001

Int. Cl.² H04N *5/76;* **G11B** *7/12*

U.S. Cl. 358—128 **10 Claims**



1. A system for optically recording information signals on a recording medium, comprising:

a laser beam light source;

an optical system means including a lens for focusing the laser light beam in a spot on the recording medium;

first light modulator means for modulating the intensity of the laser light beam responsive to an information signal, the light modulator means being in a light path extending from the light source to the optical system;

means in the light path for detecting signal noise components in the laser light beam; and

filter means for removing from the signal the noise components in the laser light beam responsive to an output of the detecting means,

said optical system means recording the information signal on the recording medium by the laser light beam, in which the noise components have been removed from the signal by the noise component removing means and on which the information signal has been applied by the light modulator.

4,123,781

TELEVISION TUNER WITH FINE TUNING MEANS

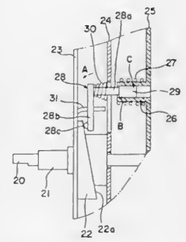
Katsuo Ito, and Kazunori Yoshimura, both of Kanazawa, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Mar. 15, 1977, Ser. No. 777,703

Claims priority, application Japan, Mar. 15, 1976, 51-31540[U]; Mar. 15, 1976, 51-31541[U]

Int. Cl.² H04B *1/26;* **H03J** *1/14*

U.S. Cl. 358—191 **3 Claims**



1. In a television tuner having fine tuning means comprising: the combination of a cam body provided on a sleeve for controlling fine tuning means;

said cam body having a cam surface adapted to convert rotary motion to reciprocating motion;
said fine tuning means comprising a bobbin having a coil around the outside thereof and being disposed in a direction parallel to the axis of an operating shaft of said tuner;
an L-shaped plunger having at one end a core and the other end an arm portion, said core being slidably disposed within said bobbin;
said arm portion being provided with a slit or hole and kept in contact with said cam surface at the free end thereof so that said arm reciprocates said core within said bobbin with the rotation of said sleeve; and
guide means for said L-shaped plunger provided on a tuner housing and inserted into said slit or hole in said arm portion.

4,123,782

CONTROL DEVICE FOR TELEVISION CAMERA

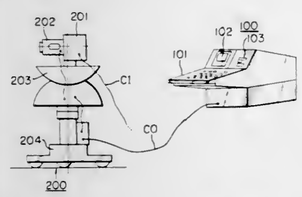
Sigeyosi Kitahara; Isamu Okada; Shigeru Jumonji, all of Tokyo; Takayuki Nemoto, Kunitachi; Shigeru Yoshimura, Yokohama; Tsunenori Soma, and Nobuhiko Shinoda, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1976, Ser. No. 706,486

Claims priority, application Japan, Jul. 18, 1975, 50-88116; Jul. 18, 1975, 50-88117; Jul. 18, 1975, 50-88118; Jul. 18, 1975, 50-88119; Jul. 18, 1975, 50-88120; Jul. 18, 1975, 50-88121

Int. Cl.[2] **H04N** *5/30, 5/24*

U.S. Cl. 358—210 **13 Claims**



1. A control device for a television camera, which comprises in combination:
(a) control information setting means to set control quantities of the control elements for the television camera;
(b) conversion means to convert the control quantities set by said setting means into electrical signals;
(c) memory circuits to store the electrical signals converted by said conversion means, said memory circuits having a plurality of address portions to selectively store said electrical signals in predetermined address portions;
(d) selection means to select images to be picked up, said selections means forming pick-up image signals corresponding to the selected pick-up images; and
(e) a signal transmission circuit to selectively transmit said electrical signals to the predetermined address portions of said memory circuit, said signal transmission circuit designating the address portions corresponding to said signals in response to said pick-up image signals, and applying said electrical signals to said memory circuit,
whereby the desired control quantity of the television camera in the pick-up images are stored by selection of the predetermined address portions for each pick-up image.

4,123,783

MAGNETIC BUBBLE DISPLAY SYSTEMS

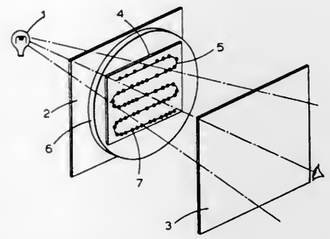
Ronald F. Pearson, Reigate; David E. Lacklison, Oxted; George B. Scott, Warnham, and John S. Palfreeman, Brockham, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 547,943, Feb. 7, 1975, abandoned. This application Mar. 8, 1976, Ser. No. 664,821

Claims priority, application United Kingdom, Feb. 13, 1974, 6477/74

Int. Cl.[2] **H04N** *5/66*

U.S. Cl. 358—230 **12 Claims**



1. A picture transmission system comprising:
means for scanning an original image of arbitrary shape in a boustrophedral pattern to produce a video signal;
means for digitally transmitting said video signal along a communication channel;
means for receiving said video signal from said communication channel; and
means for displaying said original image comprising a source for emitting a beam of radiation; a magnetic material supporting a single magnetic bubble domain shift register channel covering a display area in a pattern corresponding to said boustrophedral scan, said channel being connected to said means for receiving being located in the path of said beam and functioning to produce a modulated beam displaying said original image from an image encoded signal applied thereto from said receiving means; and screen means in the path of said modulated beam for providing a visual display of said original image.

4,123,784

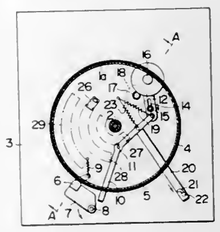
SELECTABLE FRACTION OF REVOLUTION TAPE RECORDER

Isamu Ichiugi, 4-16 1 chome Denechofu, Otaku, Tokyo, Japan

Filed Jan. 31, 1977, Ser. No. 763,901

Int. Cl.[2] **G11B** *25/02, 19/02, 5/76*

U.S. Cl. 360—100 **5 Claims**



1. A tape recorder comprising:
a base;
a rotatable disc rotatably mounted to said base around a vertical axis, said disc including a vertical cylindrical portion having an inside and an outside surface extending downward from said disc, and being concentric therewith, said disc including a plurality of switching paths arranged circularly and concentrically, each including a recessed portion which extends for a fraction of the perimeter of its respective path, the fractions of the paths being different from one another;
a peripheral band of magnetic sound recording tape on the outside of said cylindrical portion;
a magnetic head for reproducing sound recorded on said tape;
a rotatable table mounted to said base and supporting said head for movement toward and away from reproducing proximity to said tape band;
a drive motor mounted to said base;
a capstan;
a slideplate slidably mounted to said base and mounting said capstan for movement toward and away from driving contact with said inside surface and with said motor;
a lever pivotally mounted to said base and so disposed and arranged relative to said table and said slideplate that it has a first setting which enables the head to move to a sound reproducing position and the capstan to move to a driving position, and a second setting in which they are removed from said positions;
first switch means mounted to said base adjacent to said switching paths and being movable from path to path, said switch means having a first and a second switching condition, one of which is closed and the other of which is open, the switching condition being determined by whether the switch means is adjacent to a recessed or non-recessed part of a respective switching path;
normally-open second switch means in parallel connection with said first switch means which can physically be closed;
and connection means in series connection with said parallel-connected switch adapted to be connected to a source of electricity;
whereby closure of said second switch means starts operation of the motor, which continues so long as one of the switching means is closed, the duration of closure of the first switch means being determined by the angular subtense of the recessed or non-recessed part of the switching track to which the first switch means is adjacent.

4,123,785

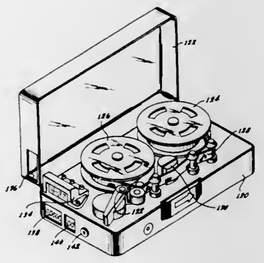
RECORDER FOR CARDIAC SIGNALS WITH MANUALLY ACTUATED EVENT MARKING

Isaac R. Cherry, Mission Viejo, and Donald L. Anderson, San Juan Capistrano, both of Calif., assignors to Del Mar Avionics, Irvine, Calif.

Division of Ser. No. 717,651, Aug. 25, 1976, Pat. No. 4,073,011. This application Mar. 2, 1977, Ser. No. 773,618

Int. Cl.[2] **G11B** *5/00*

U.S. Cl. 360—6 **6 Claims**



1. A recorder for use with a dynamic multispeed ECG computer for reproducing ECG information contained on a recording medium recorded at a particular speed and with the computer including first means for moving the recording medium past a plurality of readout positions and with the computer including second means for controlling the first means to move the recording medium at a plurality of speeds including a movement at a speed corresponding to the particular speed of recording, and including a movement of the recording medium at at least one speed greater than the particular speed to provide real time and high speed playbacks of the recorded information and with the computer including third means located at a first one of the readout positions for reproducing the recorded information when the first means moves the recording medium to provide real time playback and with the computer including fourth means located at a second one of the readout positions for reproducing the recorded information when the first means moves the recording medium to provide high speed playback and with the computer including fifth means responsive to an event signal contained within the ECG information played back at high speed to control the second means to move the recording medium for real time playback for a predetermined period of time and then control the second means to return to high speed playback, the recorder including:
a recording medium system including a channel for recording ECG information in response to applied ECG input signals,
an event marker means for producing an event signal consisting of a short burst of a predetermined number of pulses in a predetermined period of time, and
switching means coupled to the event marker means and the recording medium system for selectively interrupting the recording of the ECG information and recording the event signal on said channel of said recording medium in response to manual actuation of the switching means.

4,123,786

X-RAY EXAMINING DEVICE COMPRISING A TELEVISION CHAIN WHICH INCLUDES A MEMORY

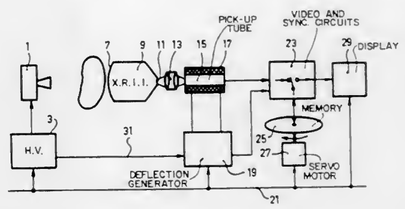
Rudy R. Cramer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,847

Claims priority, application Netherlands, Jul. 7, 1976, 7607475

Int. Cl.[2] **H04N** *5/79*

U.S. Cl. 360—35 **2 Claims**



1. An X-ray examining device which comprises:
a high voltage generator;
an X-ray source;
an X-ray detector in an image intensifier,
an image pick-up tube; and
electronic circuit means and a memory for reading a charge image produced on a photosensitive target of the image pick-up by the X-ray source via the image intensifier, for recording the image in the memory, and for displaying the image on a display screen;
wherein said electronic circuit means are connected to produce line and frame deflection signals, for reading the charge image, for image recording and for display which are synchronized with the zero crossing of the phase of power supply mains and to uncouple the said synchronization from the power supply mains at least during the switching on of the high voltage generator.

4,123,787

ELECTRONIC AND KINEMATIC CONTRIVANCE FOR A SELECTIVE RECORDING OF SIGNALS ON A SINGLE TAPE

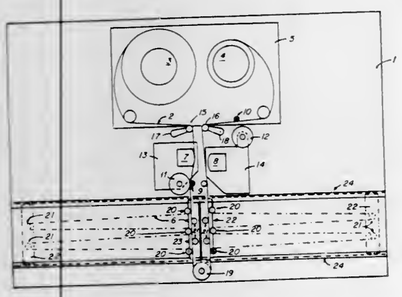
Bruno Leclerc du Sablon, Le Moulin du Gue, Couzeix, and André Dejoux, 15, rue Lakanal, 75015 Paris, both of France

Filed Jul. 15, 1976, Ser. No. 705,550

Claims priority, application France, Jul. 17, 1975, 75 22293; Jun. 24, 1976, 76 19177

Int. Cl.² G11B *15/06, 15/28*

U.S. Cl. 360—74 **6 Claims**



1. A device for recording signals on magnetic tape comprising:

a supply reel with means to drive said supply reel;

a takeup reel with means to drive said takeup reel;

loop support means intermediate said supply reel and said takeup reel, said loop support means adapted to support a loop of magnetic tape and being selectively actuatable to vary the length of said loop between a maximum and a minimum loop length;

a first tape drive capstan between said supply reel and said loop support means selectively engageable with said magnetic tape to transport said magnetic tape from said supply reel to said loop support means;

a first magnetic head between said supply reel and said loop support means selectively engageable with said magnetic tape;

a second drive capstan between said takeup reel and said loop support means selectively engageable with said tape to transport said magnetic tape from said loop support means to said takeup reel;

a second magnetic head between said takeup reel and said loop support means selectively engageable with said magnetic tape;

an auxiliary tape drive capstan intermediate said takeup reel and said loop support means selectively engageable with said magnetic tape between said takeup reel and said loop support means to transport said magnetic tape from said takeup reel to said loop support means at a transport speed higher than the transport speed of said first and second capstans;

said device operating in a cyclic manner in response to control signals from a control means, said cycle including

a short loop mode during which said magnetic tape is transported from said supply reel to said takeup reel through said loop support means which responds to said control means to support said tape at its minimum length loop, and during which said first and second capstans and heads engage said tape to record signals thereon;

a short loop to long loop transition mode during which said first capstan and magnetic head engage said tape to record signals thereon and transport said tape from said supply reel to said loop support means and during which said auxiliary tape capstan engages said tape to transport said tape from said takeup reel to said loop support means with said loop support means responding to said control means to vary the length of said loop from its minimum to its maximum length;

a long loop mode during which said tape is transported from said supply reel to said takeup reel through said loop support means with said loop support means responding to said control means to support said tape at its maximum loop length, and during which said first and second capstans and heads engage said tape to record signals thereon; and

a long loop to short loop transition mode during which said second capstan and head engage said tape to record signals thereon and transport said magnetic tape to said takeup reel, and during which said tape is transported from said loop support means to said supply reel with said loop support means responding to said control means to vary said loop length from its maximum to its minimum loop length.

4,123,788

MAGNETIC INFORMATION CARRIER WITH OPTICAL SERVO TRACKS AND APPARATUS FOR READING AND WRITING THE SAME

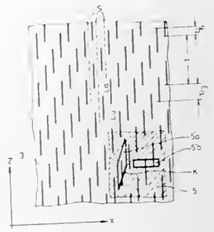
Johann Kruger, Quickborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 8, 1977, Ser. No. 785,963

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615838

Int. Cl.² G11B *7/08*

U.S. Cl. 360—77 **9 Claims**



1. Information carrier with a magnetic storage layer, comprising optical servo tracks between magnetic information tracks in said carrier said optical tracks being in the form of periodically interrupted lines, of substantially constant period length, the phase relationship between said interrupted lines differing between adjacent servo tracks in a fixed manner.

4,123,789

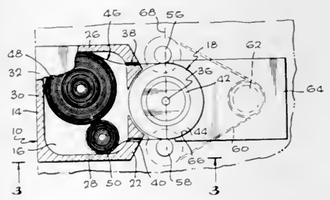
MAGNETIC TAPE STORAGE AND TRANSPORT CARTRIDGE AND MECHANISMS THEREFOR

Rubin Shatavsky, 14343 Addison St., #208, Sherman Oaks, Calif. 91423

Filed Nov. 4, 1977, Ser. No. 848,448

Int. Cl.² G11B *15/29, 23/08*

U.S. Cl. 360—96 **13 Claims**



12. A tape head mechanism including, in combination:

a magnetic tape head, said tape head having a partially cylindrical concave surface, said surface having a cylindrical axis;

first and second capstans, said first and second capstans being rotatably mounted with respect to said tape head on rotation axes which are substantially parallel to said axis of said tape head surface, said axes of said capstans being beyond a plane through said axis of said cylindrical tape head surface from said tape head surface;

a tape cartridge, said cartridge having a body and a tape storage chamber in said body, said cartridge having a resilient pressure roll rotatably mounted on said body; and

a magnetic tape having first and second ends, said magnetic tape extending around said pressure roll intermediate said ends, said magnetic tape being prestressed so that said ends of said tape coil individually upon themselves to form first and second storage coils, both said first and second storage coils being positioned within said tape storage chamber to share said tape storage chamber, said capstans engaging said tape where it extends around said pressure roll to move said tape in and out of said storage chamber and past said magnetic head.

4,123,790

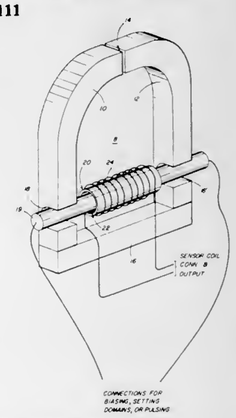
MAGNETIC HEAD WITH MECHANICALLY ISOLATED THIN FILM SENSOR

Charles R. Moeller, Cardiff-by-the-Sea, and Frederick J. Jeffers, Escondido, both of Calif., assignors to Eastman Technology, Inc., Rochester, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,107

Int. Cl.² G11B *5/30*

U.S. Cl. 360—111 **3 Claims**



1. A magnetic head comprising:

(a) first and second magnetic pole pieces disposed with respect to each other, means cooperative with said pole pieces for maintaining a non-magnetic transducer gap between said pole pieces;

(b) an elongated electrical conductor secured to and extending between the pole pieces remote from said transducer gap, said conductor having a thin single domain coating film of magnetic material coated therealong;

(c) a hollow non-magnetic mandril said conductor extending through the hollow portion of said mandril; and

(d) a coil wound on said mandril inductively coupled to said conductor, but mechanically isolated from said film, whereby mechanical contact between the coil and the single domain film is precluded.

4,123,791

MAGNETIC TRANSDUCER DEVICE WITH OUTRIGGER BARS

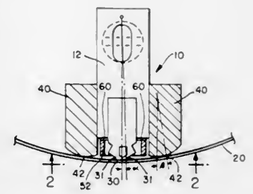
Gerhard Rotter, Mission Viejo; Alojzy Bakowski, Arcadia, and Donald L. Burdorf, Newport Beach, all of Calif., assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 755,214, Dec. 29, 1976, abandoned.

This application Dec. 19, 1977, Ser. No. 862,221

Int. Cl.² G11B *5/22*

U.S. Cl. 360—130 **9 Claims**



1. In a magnetic transducer assembly of the type wherein a magnetic recording tape is transported under tension along a path extending over the transducing face of a magnetic head, the plane of which protrudes into the magnetic surface of said recording tape causing it to wrap over said magnetic head at an angle as the recording tape approaches and departs said transducing face, the improvement comprising:

a pair of outrigger bars mounted on the transducer assembly transverse to the path along which the recording tape is transported, each of said transverse outrigger bars being spaced from the magnetic head on opposite sides thereof and each of said transverse outrigger bars having an outer surface formed thereon facing the magnetic surface of said recording tape, the plane extending between said outer surfaces being located at a predetermined level below the plane of the transducing face of said magnetic head, whereby the wrap angle at which said recording tape passes over said transducing face is maintained at a constant, shallow value regardless of slight misalignments of the magnetic transducer assembly with respect to said recording tape path thereby inhibiting undesirable tape fly over and wear of the transducing face of said magnetic head.

4,123,792

CIRCUIT FOR MONITORING THE MECHANICAL POWER FROM AN INDUCTION MOTOR AND FOR DETECTING EXCESSIVE HEAT EXCHANGER ICING

Don A. Gephart, 5400 Banbury Dr., Worthington, Ohio 43085, and Bruce H. Weber, 2370 Zollinger Rd., Columbus, Ohio 43221

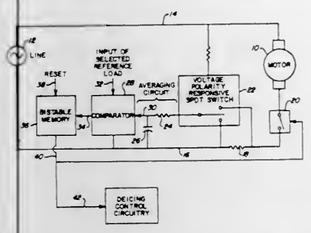
Filed Apr. 7, 1977, Ser. No. 785,346

Int. Cl.² H02J *7/22*

U.S. Cl. 361—30 **10 Claims**

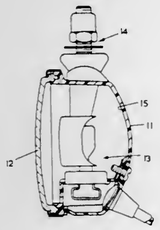
1. A method for generating an electrical signal which is substantially proportional to the mechanical power delivered

by an induction motor, the method comprising detecting an electronic signal proportional to the average product of motor



current multiplied by the cosine of the phase angle between motor current and the motor voltage.

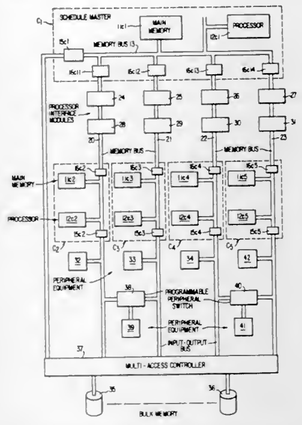
4,123,793
LAMP REFLECTORS
John Lilley, West Midlands, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Oct. 20, 1976, Ser. No. 734,296
Int. Cl.[2] F21V *7/00*
U.S. Cl. 362—350 **10 Claims**



1. A lamp reflector comprising a dished body having a reflective coating on an inner surface thereof, said dished body being formed of a cured, low profile polyester moulding composition containing glass fibre and an, internal lubricant chemically bonded to a filler.

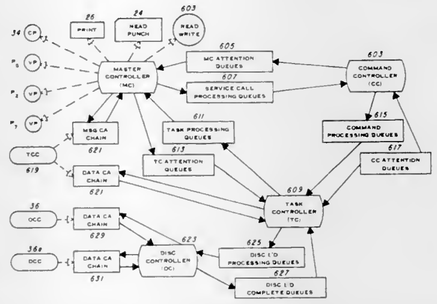
4,123,794
MULTI-COMPUTER SYSTEM
Yoshihiro Matsumoto, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Limited, Tokyo, Japan
Continuation-in-part of Ser. No. 549,926, Feb. 14, 1975, abandoned. This application Dec. 21, 1976, Ser. No. 752,909
Claims priority, application Japan, Feb. 15, 1974, 49-17536
Int. Cl.[2] G06F *15/16*
U.S. Cl. 364—101 **10 Claims**

1. A multi-computer system for control of an industrial process comprising:
- a plurality of interconnected computers each located at a position capable of access to a portion of said industrial process,
- at least one bulk memory device coupled to at least one of said computers,
- a multi-access controller coupled to said bulk memory device for allowing access by said computers to said bulk memory device,
- said one of computers operating as a schedule master to the others and functioning to transfer data preloaded to said schedule master from storage in said bulk memory into any of said other computers in response to an invocation coming from said industrial process, said preloading of the data into said schedule master computer being performed at a time before the time at which said invocation occurs, said advanced time being varied in accordance with the load on said multi-computer system,
- a programmable peripheral switch coupled between at least two of said computers other than said schedule master computer; and,



- an input-output device selectively connected to one of said computers through said programmable peripheral switch,
- whereby upon failure of any of said computers important functions of the failed computer are transferred to another computer by switchcover of said programmable peripheral switch.

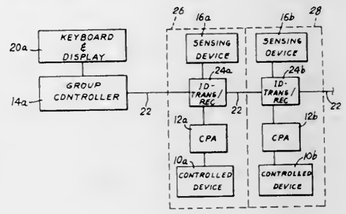
4,123,795
CONTROL SYSTEM FOR A STORED PROGRAM MULTIPROCESSOR COMPUTER
Lura C. Dean, Jr.; Gary T. Boswell, both of Austin; Wayne Winkelman, Leander, and Frank S. Little, Austin, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 178,357, Sep. 7, 1971. This application Jan. 21, 1974, Ser. No. 435,042
Int. Cl.[2] G06F *9/06*
U.S. Cl. 364—200 **23 Claims**



1. In a stored program computer comprising a plurality of data processors, a common control system comprising:
- (a) a master controller, operatively connected and responsive to said plurality of data processors, and a plurality of subcontrollers wherein each of said master controller and subcontrollers has a specific function and responsibility for a plurality of said processors and wherein each of said master controller and subcontrollers is autonomous with respect to its function and responsibility; and

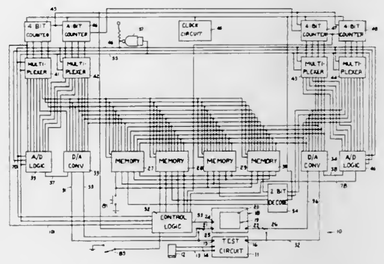
- (b) memory register means for interconnecting said master controller and subcontrollers in a fixed hierarchy of control, said master controller being bilaterally connected to at least one of said subcontrollers through said memory register means, said subcontrollers being bilaterally connected to at least the next least and next most significant subcontrollers in said hierarchy through said memory register means.

4,123,796
CONTROLLER FOR ENVIRONMENTAL CONDITIONING APPARATUS
James Y. Shih, Arlington Heights, Ill., assignor to Powers Regulator Company, Skokie, Ill.
Filed Nov. 19, 1976, Ser. No. 743,110
Int. Cl. G05b *11/32;* G05d *23/22;* F24f *11/00*
U.S. Cl. 364—900 **18 Claims**



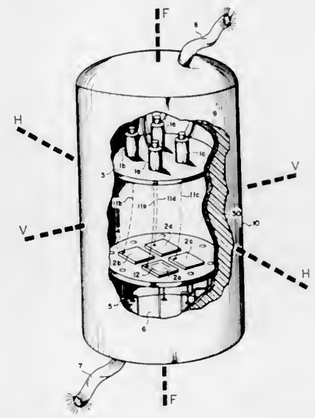
17. A controller as defined in claim 12 wherein said display means comprises means for printing information relating to the operation of a device.

4,123,797
FLYING SPOT PATTERN STORAGE SYSTEM
Eric J. Strauts, Park Ridge, and John J. Flaherty, Elk Grove Village, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.
Filed Mar. 1, 1977, Ser. No. 773,338
Int. Cl.[2] G11C *11/26*
U.S. Cl. 365—118 **7 Claims**



1. In a signal storage system for a display section including a cathode ray tube having a screen and including a pair of deflection signal inputs and a spot intensity control input, raster scan means for applying a low frequency sawtooth field sweep signal and a higher frequency sawtooth line sweep signal to said pair of deflection signal inputs and for causing a spot to traverse said screen in a certain raster pattern, digital memory means, memory scanning means for scanning said memory means in synchronism with said scanning of said screen and in a numerical order having a certain relationship to said raster pattern, a pair of analog signal input circuits, sampling and writing means for periodically sampling the amplitudes of signals applied to said inputs and for writing a corresponding number into said memory means, means operative during scanning of said memory means for developing an output signal in response to detection of each number stored therein, and means for applying said output signal to said spot intensity control input of said display section.

4,123,798
HIGH DENSITY BEAM-ACCESSED MEMORY WITH REFERENCE TARGET
Francis J. Cook, Topsfield, and Frederick E. Kline, Melrose, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.
Filed Dec. 5, 1977, Ser. No. 857,314
Int. Cl.[2] G11C *8/00, 11/23*
U.S. Cl. 365—237 **26 Claims**



1. In a vacuum-tube device for storage of electrical data as patterns of charge stored at addressed locations upon an insulating target and accessed by electron beam means deflected to said addressed locations in a vacuum in correspondence with an addressing signal comprising a plurality of values, the combination comprising:
- (a) a plurality of beam-target modules, each said beam-target module comprising an electron beam source and a facing target surface, each said electron beam source projecting an electron beam upon its respective facing target module;
- (b) electron beam deflection means for providing a common deflection field for deflecting said electron beams, all of said electron beams being disposed within said deflection field and being commonly deflected thereby;
- (c) first circuit means for applying a deflection signal to said electron beam deflection means for providing said common deflection field deflecting in unison the electron beams of said beam-target modules;
- (d) electron-beam-sensitive reference points upon the target surface of one of said beam-target modules, said one of said beam-target modules being at least in part a reference beam-target module having a reference electron beam and a reference target surface;
- (e) second circuit means coupled to said reference target surface for providing an output signal when the impingement of said reference beam upon said reference target surface falls upon any one of said reference points;
- (f) third circuit means for receiving the output signal of said second circuit means and comparing it with said addressing signal and providing at least one control output signal representing the spatial difference between impingement of said reference beam and the location upon said reference target surface corresponding to a predetermined value of said addressing signal;
- (g) fourth circuit means for receiving the control output signal of said third means and the deflection signal of said

first circuit means to control said first circuit means to reduce said spatial difference;

(h) fifth circuit means for coupling at least one of said plurality of beam-target modules to a system utilizing electrical data; and

(i) sixth circuit means for control of potentials of said beam-target modules to accomplish writing, reading and erasing of electrical data.

4,123,799

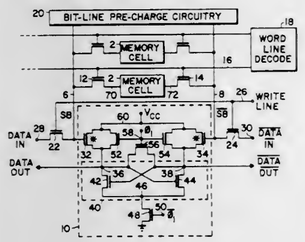
HIGH SPEED IFGET SENSE AMPLIFIER/LATCH

Benjamin C. Peterson, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 19, 1977, Ser. No. 834,583

Int. Cl.² G11C 7/06

U.S. Cl. 365—205 **10 Claims**



1. A sense amplifier for differentially receiving voltage data signals from an IGFET device memory circuit comprising:

(a) a cross-coupled circuit, and

(b) first and second depletion mode IGFET devices coupled to the cross-coupled circuit for coupling the data signals to said cross-coupled circuit, and for providing a selective differential load impedance for latching said cross-coupled circuit to one of two states.

4,123,800

MIXER-INJECTOR

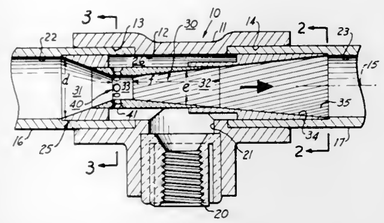
Angelo L. Mazzei, 11001 Mountain View, Bakersfield, Calif. 93307

Filed May 18, 1977, Ser. No. 798,242

Int. Cl.² B01F 5/04

U.S. Cl. 366—150 **14 Claims**

1. A mixer-injector having a body with a carrier stream inlet, an additive stream inlet, an outlet, and between said carrier stream inlet and said outlet a throat means having an axis of flow, a constricting portion of decreasing diameter, an expanding portion of increasing diameter both as they progress downstream from the carrier stream inlet, and a substantially cylindrical throat portion of substantial axial length interconnecting said constricting and expanding portions, and port means discharging from said additive stream inlet into said throat portion closely adjacent to the intersection of said throat portion and said constricting portion, there being a substantial length



of imperforate throat portion downstream from said port means.

4,123,801

POT-TYPE MALAXATOR

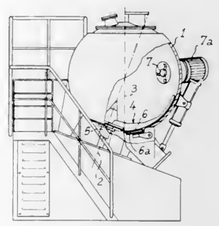
Pierre Armanet, Rueil-Malmaison, France, assignor to Societe Moritz, Chatou, France

Filed Mar. 1, 1977, Ser. No. 773,184

Claims priority, application France, Mar. 3, 1976, 76 06025

Int. Cl.² B01F 7/00

U.S. Cl. 366—292 **4 Claims**



1. A malaxator for forming a pasty mass from a material being treated which comprises:

a pot including a bottom and having a spherically-shaped interior surface mounted on a vertical axis;

a first agitator means disposed in said bottom of said pot proximate to said vertical axis and including at least two arms, said first agitator means having an axis of rotation inclined to the vertical axis of said pot, said arms having an edge conforming to said spherically-shaped interior surface;

means for driving said agitator means;

a second agitator means disposed in an equatorial zone of said pot in a portion thereof outside a sweep area of said arms of said first agitator means to cause said material to follow said surface of said pot above said equatorial zone;

a discharge opening disposed in said bottom of said pot proximate to said vertical axis of said pot;

a closure flap for closing said discharge opening; and

means for closing said closure flap during operative cycling of said malaxator.

DESIGN PATENTS

GRANTED OCT. 31, 1978

ERRATA

For CLASS	See PATENT NO.
D13–017	250,110
D34–005 SS	250,133
D34–005 ST	250,134
D34–005 K	250,135
D34–005 GH	250,136
D34–015 C	250,137

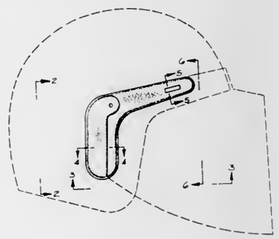
DESIGNS

OCTOBER 31, 1978

250,066
SHIRT
Gilbert Truedsson, New York, N.Y. 10022, assignor to The Swedish Fashion Group, Ltd., New York, N.Y.
Filed Aug. 23, 1976, Ser. No. 716,530
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—208



250,067
HELMET FACE SHIELD MOUNTING BRACKET
Elvert H. Land, Jr., 16205 E. Pawnee, Wichita, Kans. 67211
Filed Jan. 27, 1977, Ser. No. 763,070
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



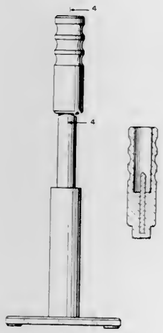
250,068
NIPPLE AND BOTTLE CLEANING BRUSH
Robert F. Ducotey, 1926 Kimberly Dr., Kent, Ohio 44240
Filed Oct. 11, 1977, Ser. No. 841,155
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—08



250,069
BRUSH
Jean L. Wachtel, Selestat, France, assignor to Celluloid S.A., France
Filed Aug. 5, 1977, Ser. No. 822,358
Claims priority, application France, Jun. 7, 1977, 77 158
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35



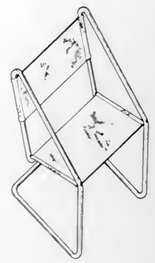
250,070
COMBINED STICK INSERTER AND DISPLAY STAND FOR A FOOD PRODUCT
Edward D. Cottrell, Cattaraugus, N.Y., assignor to Champion International Corporation, Stamford, Conn.
Filed Jul. 12, 1976, Ser. No. 704,433
Term of patent 14 years
Int. Cl. D6—*99;* D20—*02*
U.S. Cl. D6—25



250,071
MULTI-PASSENGER AIRCRAFT SEAT
Arque B. Dickerson, New Fairfield, Conn., assignor to UOP Inc., Des Plaines, Ill.L
Filed Jan. 10, 1977, Ser. No. 758,238
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



250,072
CHAIR OR SIMILAR ARTICLE
David G. Fong, 1637 Sacramento St., #15, San Francisco, Calif. 94109
Filed Nov. 26, 1976, Ser. No. 745,348
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



250,073
CHAIR OR SIMILAR ARTICLE
Warren D. Petersen, St. Charles, Ill., assignor to Burd, Inc., Howell Division
Filed Mar. 23, 1977, Ser. No. 780,650
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



250,074
CHAIR OR SIMILAR ARTICLE
Warren D. Petersen, St. Charles, Ill., assignor to Burd, Inc., Howell Division
Filed Mar. 23, 1977, Ser. No. 780,651
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

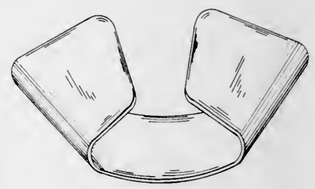


250,075
CHAIR OR SIMILAR ARTICLE
Warren D. Petersen, St. Charles, Ill., assignor to Burd, Inc., Howell Division
Filed Mar. 23, 1977, Ser. No. 780,652
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67

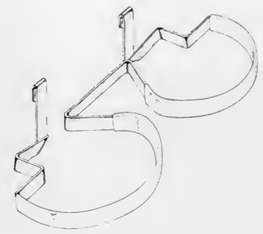


250,076
SOAP HOLDER
Louis E. Aust, 110 Walters Ave., Johnstown, Pa. 15904
Filed Feb. 17, 1977, Ser. No. 769,590
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02;* D6—*125*
U.S. Cl. D6—90; D6—125

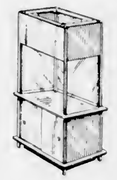




250,077
SHOE RACK FOR LOCKER DOORS OR THE LIKE
Walter Urbach, Jr., 7906 Journey La., Springfield, Va. 22153
Filed Aug. 5, 1977, Ser. No. 822,147
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—116



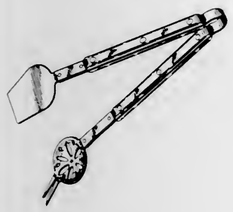
250,078
COMBINED SALES AND DISPLAY UNIT FOR IRON-ON TRANSFERS OR THE LIKE
Nadine F. Gayda, 21541 Ann's La., Laguna Beach, Calif. 92651
Filed Oct. 7, 1976, Ser. No. 730,373
Term of patent 7 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—172



250,079
WORKBENCH
Ronald P. Hickman, "Badgers," Middle St., Waltham Abbey, Essex EN9 2LB, and Brian Anthony Luff, 25, Western Rd., Nazeing, Waltham Abbey, Essex, both of England
Filed Jan. 21, 1977, Ser. No. 760,940
Claims priority, application United Kingdom, Jul. 22, 1976, 976581
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—178



250,080
BARBECUE TOOL
Harold C. Kavalaris, Hoffman Estates, Ill., assignor to Keystone Aniline & Chemical Co.
Filed Jan. 31, 1977, Ser. No. 763,972
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—105



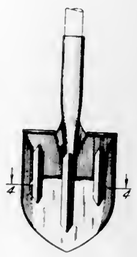
250,081
STOVE BURNER LINER
Warren H. Stansberry, Jr., and Arthur C. Kieft, both of Grand Haven, Mich., assignors to Stanco Metal Products, Inc., Grand Haven, Mich.
Filed Mar. 14, 1977, Ser. No. 776,836
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—136



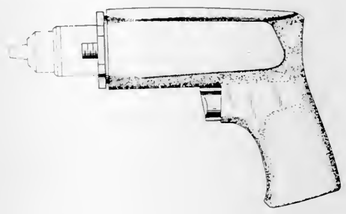
250,082
KNIFE HANDLE
Carl A. Bræger, Malmö, Sweden, assignor to Shapes Establishment, Vaduz, Liechtenstein
Filed Jan. 31, 1977, Ser. No. 764,156
Claims priority, application Sweden, Jul. 30, 1976, 761520
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—152



250,083
SHOVEL BLADE
Charles J. Insalaco, Pigeon Swamp Rd., South Windham, Conn. 06266
Filed Nov. 3, 1976, Ser. No. 738,540
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—10

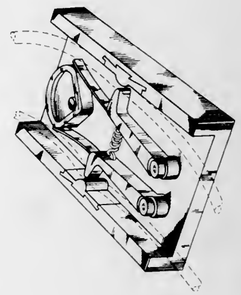


250,084
PNEUMATIC DRILL
Raymond J. Kirschensteiner; Kenneth C. Foran, both of Cleveland; Hugh T. Greenlee, Gates Mills; Roy P. Hess, Vermillion, all of Ohio, and Raymond J. Schaedler, New Hartford, N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.
Filed Mar. 14, 1977, Ser. No. 776,960
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—68

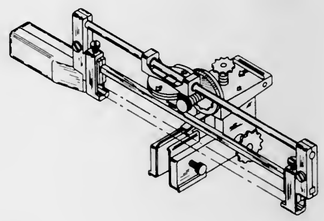




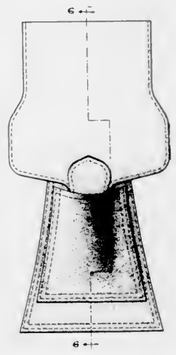
250,085
BLOOD FLOW CONTROLLER AND THE LIKE
Glenn L. Tuttle, Bountiful, Utah, assignor to Sandoz, Inc., E. Hanover, N.J.
Filed Sep. 22, 1976, Ser. No. 725,654
Term of patent 14 years
Int. Cl. D8—*02;* D24—*02*
U.S. Cl. D8—72



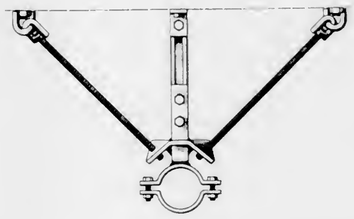
250,086
CHAIN SAW SHARPENING DEVICE
Elof Granberg, 15 Harbor View Ct., San Rafael, Calif. 94901
Filed Nov. 15, 1976, Ser. No. 741,772
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—91



250,087
COMBINED LUGGAGE FLAP, TAB AND CONCEALED CATCH OR SIMILAR ARTICLE
Theodore Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Oct. 19, 1977, Ser. No. 843,747
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—346



250,088
COMBINED PIPE HANGER AND SEISMIC BRACE
James R. McDonald, Jr., 1133 Blumenfeld Dr., Sacramento, Calif. 95815
Filed Feb. 18, 1977, Ser. No. 770,185
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—355



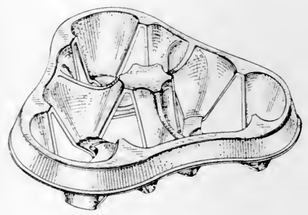
250,089
CLIP FOR CABLES, PIPES AND ELECTRIC WIRES
Bengt E. Legerius, Nyköping, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Sep. 13, 1976, Ser. No. 723,016
Claims priority, application Sweden, Mar. 22, 1976, 76-0656
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—396



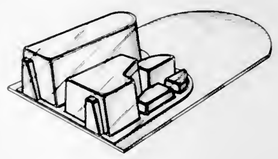
250,090
COMBINED BOTTLE AND CAP OR SIMILAR ARTICLE
Allen H. Strang, Ridgewood, and Emil Polito, Paramus, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Jun. 7, 1976, Ser. No. 693,583
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168



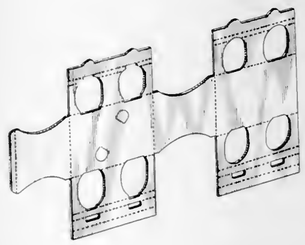
250,091
BEVERAGE CONTAINER CARRIER
Donald K. Jewell, Naperville, Ill., assignor to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Oct. 22, 1976, Ser. No. 734,804
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—179



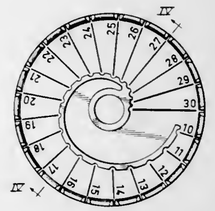
250,092
PACKAGING CONTAINER
Palmer J. Schoenfield, Evanston; Kathy A: Dunn, Chicago, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Apr. 2, 1976, Ser. No. 673,251
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192



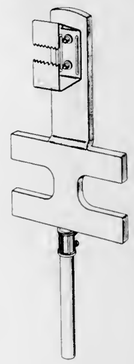
250,093
BLANK FOR DRINKING GLASS CARRIER
Joseph F. Schillinger, Morrison, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Sep. 30, 1976, Ser. No. 728,395
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



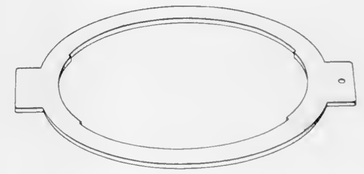
250,094
MEASURING INSTRUMENT FOR DENTAL FILES
Tore A. Forsman, Saltsjöbaden, and Christer Odvik, Djursholm, both of Sweden, assignors to Toringe Consult AB and Christer Odvik AB
Filed Jul. 8, 1976, Ser. No. 703,431
Claims priority, application Sweden, Jan. 9, 1976, 7600003
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



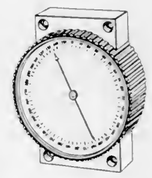
250,095
ELECTRICAL BOX SETTING GAUGE
Neil W. Douglas, and William C. Cress, Jr., both of Sanford, N.C., assignors to D. & C. Manufacturing Co., Inc.
Filed Dec. 29, 1976, Ser. No. 755,131
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



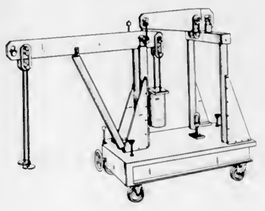
250,096
BALL GAUGE
Joseph D. Brinkley, Box 431, Liberty, N.C. 27299
Filed Mar. 18, 1977, Ser. No. 779,24[illegible]
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



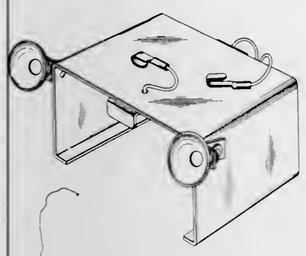
250,097
POSITION INDICATOR
Robert V. Hendershot, 404 Lake St., Evanston, Ill. 60201
Filed Feb. 7, 1977, Ser. No. 765,986
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



250,098
SCALE CALIBRATING MACHINE
Max van Mastrigt, Tarzana, Calif., assignor to W. C. Dillon and Company, Inc., Van Nuys, Calif.
Filed Feb. 4, 1977, Ser. No. 765,668
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—83

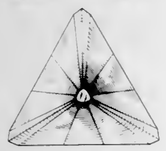


250,099
RADAR UNIT HOLDER
Harlen F. Willis, 5330 N. Agnes, Kansas City, Mo. 64119
Filed Jan. 3, 1977, Ser. No. 756,054
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—121



250,100
PRECIOUS, SEMIPRECIOUS OR SYNTHETIC CUT STONE
Leon Finker, 5 Riverside Dr., New York, N.Y. 10023, and Marvin Finker, 5 Keith Dr., Monsey, N.Y. 10952
Continuation of Ser. No. 847,934, Nov. 2, 1977, abandoned. This application Jan. 30, 1978, Ser. No. 873,161
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—90





250,101
CHRISTMAS GARLAND
Klaus R. Bartels, and Ruth W. Bartels, both of 66 Celeste Dr., West Hill, Ontario, Canada
Filed Oct. 12, 1976, Ser. No. 731,322
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—119

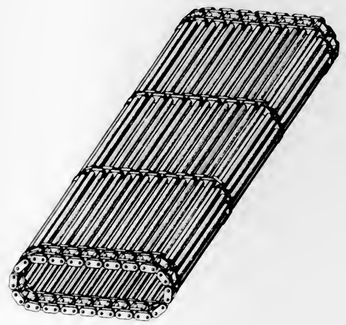


250,102
SUPPORT FOR POTTED PLANTS
Richard E. Cone, 249 Bowman Dr., Kent, Ohio 44240
Filed Nov. 10, 1977, Ser. No. 850,083
Term of patent 14 years
Int. Cl. D11—*02*; D6—*06*
U.S. Cl. D11—164





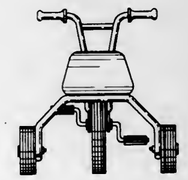
250,103
ROLLER CONVEYOR BELT
Ronald D. Bourgeois, 138 Ellison Park, Waltham, Mass. 02154
Filed Sep. 27, 1976, Ser. No. 726,551
Term of patent 14 years
Int. Cl. D12—*60*
U.S. Cl. D12—60



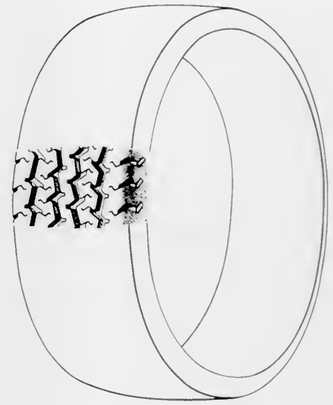
250,104
ROLLER CONVEYOR BELT WITH FLIGHTS
Ronald D. Bourgeois, 138 Ellison Park, Waltham, Mass. 02154
Filed Oct. 20, 1976, Ser. No. 734,361
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—60



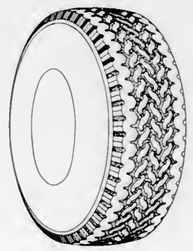
250,105
TRICYCLE
Fredrick Michelau, Des Plaines, Ill., assignor to Radio Steel & Mfg. Co., Chicago, Ill.
Filed Sep. 23, 1976, Ser. No. 726,043
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



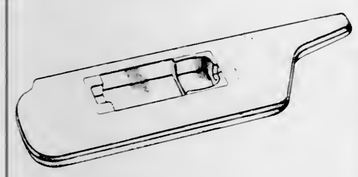
250,106
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Wilbraham, Mass., assignor to Uniroyal, Inc.
Filed Nov. 28, 1977, Ser. No. 855,148
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



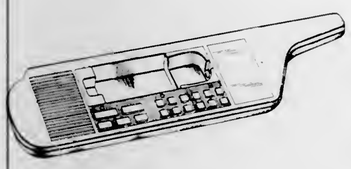
250,107
VEHICLE TIRE
Norio Iwata, Kodaira, and Hiroshi Kojima, Hino, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Sep. 1, 1977, Ser. No. 829,799
Claims priority, application Japan, Apr. 1, 1977, 52-11627
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



250,108
TELEPHONE SET BASE
Donald M. Genaro, Haworth; John A. Meyerle, Manasquan; Rembert R. Stokes, Middletown, all of N.J.; Gordon E. Sylvester, Jamaica, N.Y., and Alvin R. Tilley, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sep. 15, 1976, Ser. No. 723,221
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



250,109
TELEPHONE SET BASE
Donald M. Genaro, Haworth; John M. Meyerle, Manasquan; Rembert R. Stokes, Middletown, all of N.J.; Gordon E. Sylvester, Jamaica, N.Y., and Alvin R. Tilley, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 723,221, Sep. 15, 1976. This application Apr. 17, 1978, Ser. No. 897,522
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. 14—60



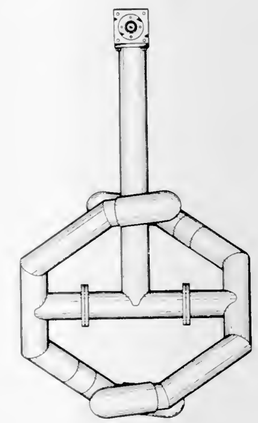
250,110
INSULATING WIRE FASTENING MEMBER FOR USE ON SHINGLES OR SIDING
Rocco Pallante, 11 Crowell Pl., Maplewood, N.J. 07040
Filed Jun. 13, 1977, Ser. No. 806,009
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—17

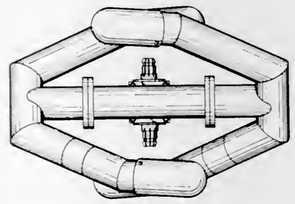


250,111
TELEPHONE APPARATUS
Antonio Peral Hernandez, deceased, late of Madrid, Spain, by Soledad Salcedor-Porras, widow and heir, Apolonio Morales 21, Madrid, Spain
Filed May 26, 1976, Ser. No. 689,983
Claims priority, application Spain, Nov. 26, 1975, 85.693[U]
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

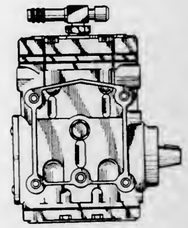


250,112
OMNIDIRECTIONAL CIRCULARLY POLARIZED TRANSMITTING ANTENNA
Thomas B. Silliman, 108 Market St., Newburgh, Ind. 47630
Filed Mar. 21, 1977, Ser. No. 779,618
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86

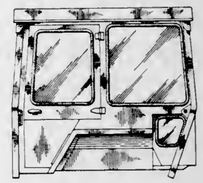


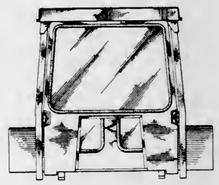


250,113
COMPRESSOR
Tetsuo Nobata, 10 Ibaragi-chou, Mizuho-ku, Nagoya City, Aichi Prefecture, Japan
Filed Nov. 19, 1976, Ser. No. 743,355
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9



250,114
VEHICLE CAB
Jaime Segales, Vallirana (Barcelona), Spain, assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Mar. 17, 1977, Ser. No. 778,639
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D15—30

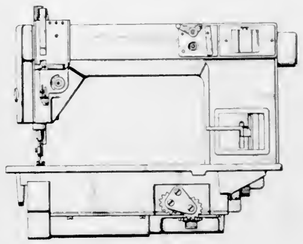




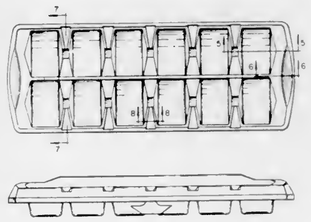
250,115
PORTABLE ELECTRICAL VACUUM CLEANER
Gentaro Kawamura, 647, Nagae, Hayama-machi, Miura-gun, Kanagawa-ken, 240-01, Japan
Filed May 20, 1976, Ser. No. 688,356
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—52



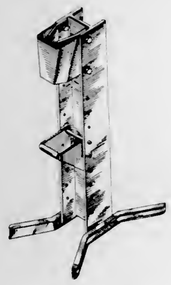
250,116
SEWING MACHINE
George D. LaPolice, 10 W. Crestwood Ave., Somerville, N.J. 08876
Filed Nov. 8, 1976, Ser. No. 739,751
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69



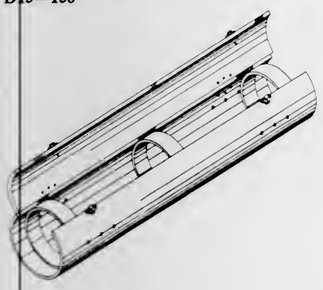
250,117
ICE CUBE TRAY
Michael G. Lalonde, 37 Lutsch Ave., Suite 5, Leamington, Ontario, Canada (N8H 2N4)
Filed Apr. 13, 1977, Ser. No. 787,009
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—90



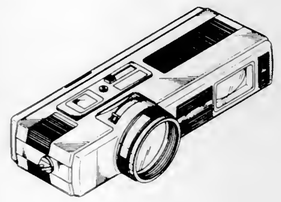
250,118
PRESS FRAME
Anthony Caccioli, Long Meadow, Mass.; Philip A. Carlson, Glastonbury, Conn., and David Guidi, Springfield, Mass., assignors to Gulf & Western Manufacturing Company
Filed Dec. 2, 1976, Ser. No. 747,121
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—123



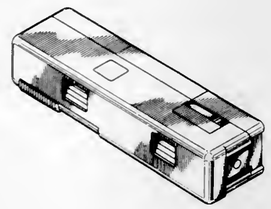
250,119
IRRIGATION SHAFT GUARD
Stephen R. Qualls, Box 321, Booker, Tex. 79005
Filed Sep. 27, 1976, Ser. No. 727,046
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—138



250,120
CAMERA
Tsuneaki Munakata, and Hiroshi Fukuda, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed May 5, 1976, Ser. No. 683,343
Claims priority, application Japan, Jan. 9, 1976, 51/1111
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—06



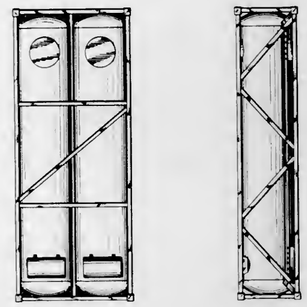
250,121
MINIATURE CAMERA
Heinz Waaske, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Brunswick, Germany
Filed May 18, 1976, Ser. No. 687,529
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1975, MR 1070; Mar. 12, 1976, MR 1082
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—06



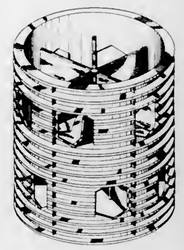
250,122
COMBINED DESK SET AND CALCULATOR STAND
Franklin J. Locke, 1050 Hillsboro Mile, Hillsboro Beach, Fla. 33062
Filed Jul. 12, 1976, Ser. No. 704,679
Term of patent 7 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



250,123
TRANSPORT CONTAINER FOR DANGEROUS LIQUIDS
Ernst Berwald, Bergkamen, Heil, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany
Filed Jan. 10, 1977, Ser. No. 758,327
Term of patent 3½ years
Int. Cl. D23—*01*
U.S. Cl. D23—2



250,124
MODULE FOR FILTER MEDIA
Donald L. Glaspie, and Thomas L. Cantrell, both of Dallas County, Tex., assignors to Glitsch, Inc., Dallas, Tex.
Filed Aug. 27, 1976, Ser. No. 718,422
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



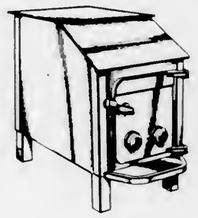
250,125
SADDLE CLAMP FOR A SELF TAPPING VALVE
Anthony C. Wilcock, 75 E. Palm, Burbank, Calif. 91501
Filed Jun. 7, 1976, Ser. No. 693,342
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



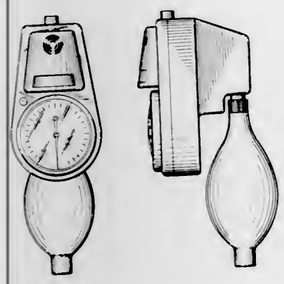
250,126
COMBINATION WATER CLOSET AND BIDET
Manfred Ibel, 178 Fifth Ave., New York, N.Y. 10010
Filed Mar. 3, 1977, Ser. No. 774,012
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—51



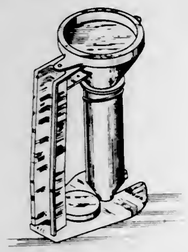
250,127
WOOD STOVE
Robert G. Ramacher, Jr., 2506 NE. 152 La., Anoka, Minn. 55303
Filed Feb. 22, 1977, Ser. No. 771,009
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



250,128
SPHYGMOMANOMETER
Tadashi Miyazawa, 131-4 Ohkido-cho, Chiba-shi, Chiba-ken, Japan, assignor to Kabushiki Kaisha Brethren Shoji, Japan
Filed Aug. 22, 1977, Ser. No. 826,665
Claims priority, application Japan, Dec. 1, 1976, 51-46660
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—21



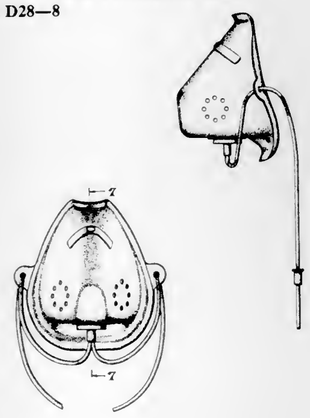
250,129
SPECIMEN COLLECTION UNIT
Norman Skinner, Camarillo, Calif., assignor to Sandoz, Inc., E. Hanover, N.J.
Filed Aug. 9, 1976, Ser. No. 712,523
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—56



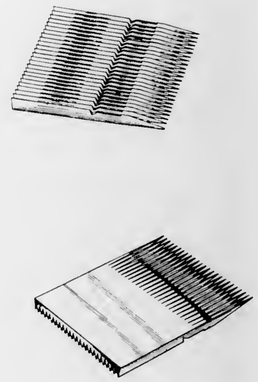
250,130
RAZOR
William K. Douglas, Tokyo, Japan, assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Oct. 21, 1976, Ser. No. 734,568
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46



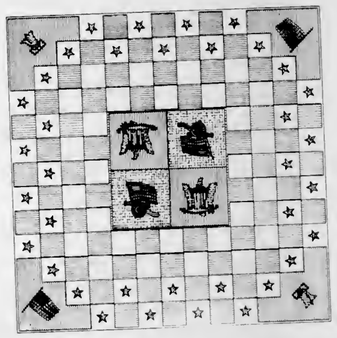
250,131
BREATHING MASK
George T. Lewis, Fallbrook, and John H. Price, La Jolla, both of Calif., assignors to Chemetron Corporation, Chicago, Ill.
Filed Oct. 18, 1976, Ser. No. 733,571
Term of patent 14 years
Int. Cl. D29—*02*; D24—*02*
U.S. Cl. D28—8



250,132
INTERDENTAL STIMULATOR BLOCK
Per Axel Torbjorn Axelsson, Barstavagen 22, Hammaro, Sweden
Filed Sep. 28, 1977, Ser. No. 837,351
Claims priority, application Sweden, Mar. 28, 1977, 690/77
Term of patent 14 years
Int. Cl. D24—*04*; D28—*08*
U.S. Cl. D28—64



250,133
GAME BOARD
Helen C. Azbill, 3689 Bridgport Ct. #4, San Jose, Calif. 95117 and Laurence G. Porter, deceased, late of Santa Clara County, Calif.; by Mildred E. Smith, administratrix, P.O. Box 734, Seminole, Okla. 74868
Filed Oct. 20, 1976, Ser. No. 734,376
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



250,134
BAT OR RACKET
Alfred Baumgartner, Romanshorn, Switzerland, assignor to Zimm-Zamm Aktiengesellschaft, Zug, Switzerland
Filed Dec. 22, 1976, Ser. No. 753,376
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



250,135
EXERCISER
John G. Moyski, Denver, and Horst W. Mueller, Erie, both of Colo., assignors to Chaparral Industries, Inc., Denver, Colo.
Filed Jan. 14, 1977, Ser. No. 759,363
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



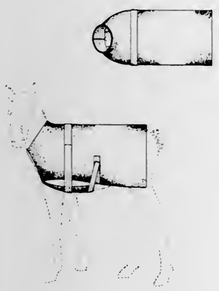
250,136
DRIVING IRON HEAD
Paul B. Gelinas, 66 Prospect St., Manchester, N.H. 03104
Filed Mar. 31, 1977, Ser. No. 783,479
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



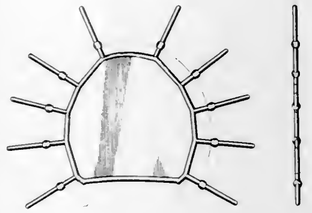
250,137
TOY MICROPHONE
Steven R. Dorfman, Levittown, N.Y., assignor to L.J.N. Toys, Ltd., New York, N.Y.
Filed Apr. 20, 1977, Ser. No. 789,126
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C



250,138
BLANKET FOR A FOAL OR THE LIKE
Catherine Bartolac, 7090 W. 75th Ave., Schererville, Ind. 46375, and Doris J. Adkisson, 7802 W. Lincoln Hwy., Crown Point, Ind. 46307
Filed May 4, 1977, Ser. No. 793,766
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—37



250,139
SELF-CLEANING DIAPHRAGM FOR RACING PLATE
Stanley R. Brown, 7356 Reese Rd., Sacramento, Calif. 95828
Filed Oct. 4, 1977, Ser. No. 839,264
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—35



250,140
APPLIQUE
Pauline M. Dinger, 318 S. 9th St., Bismarck, N. Dak. 58501
Filed Jul. 1, 1976, Ser. No. 701,596
Term of patent 14 years
Int. Cl. D5—*99*
U.S. Cl. D33—9 C



250,141
UTILITY LIGHT
Richard E. TenEyck, Wichita; Richard J. Robbins, Derby; Robert W. Fee, Wichita; Michael L. Meister, Wichita, and John R. Kraft, Wichita, all of Kans., assignors to Engmans. Inc., Des Moines, Iowa
Filed Nov. 28, 1977, Ser. No. 855,470
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



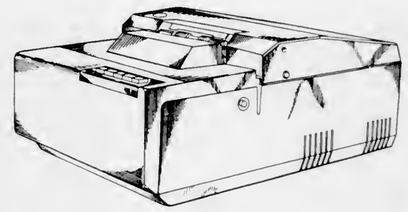
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LAMP POST
Stig Hasselqvist, Mjolby, Sweden, assignor to Handelsbolaget Scanovator, Linkoping, Sweden
Filed Jun. 17, 1977, Ser. No. 807,497
Term of patent 14 years
Int. Cl. D26—*03;* D25—*01*
U.S. Cl. D48—38



250,143
GASOLINE DISPENSER
John A. Todd, Salisbury, Md., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 4, 1976, Ser. No. 729,314
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D52—2 A



250,144
VALIDATION/JOURNAL PRINTER
John B. Coppola, Trumbull, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Apr. 26, 1976, Ser. No. 680,291
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



250,145
CANDLE
Dominic Antinucci, Jr., 989 Washington Ave., N. Bellmore, N.Y. 11710
Filed Feb. 24, 1977, Ser. No. 771,762
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D73—1 R



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PATENTS WERE ISSUED ON THE 31ST DAY OF OCTOBER, 1978

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A. Schild S.A.: *See—*
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Aerosol Inventions & Development S.A. AIDSA: *See—*
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Lavon, Erik V., 4,123,108, Cl. 299-16.000.
Aurin, Friedrich, to Zeiss, Carl. Periscopic mirror system with selectably changeable direction of viewing. 4,123,151, Cl. 350-301.000.
Auto Systems Limited: *See—*
Brook, Richard M., 4,122,953, Cl. 209-551.000.
Automation Industrielle SA: *See—*
Schmid, Gunter; and Jeker, Rudolf, 4,123,312, Cl. 156-466.000.
Autotronic Controls Corporation: *See—*
Priegel, Jack C., 4,122,716, Cl. 73-231.00R.
Avaro, Michel M.; and Mangin, Pierre M. Chemically reducing solids which may be applied to the polymerization of olefins. 4,123,386, Cl. 252-429.00B.
Avco Corporation: *See—*
DeBolt, Harold E., 4,123,583, Cl. 428-336.000.
Avco Everett Research Laboratory, Inc.: *See—*
Cook, Francis J.; and Kline, Frederick E., 4,123,798, Cl. 365-237.000.
Awamura, Daikichi: *See—*
Uchiyama, Yasushi; and Awamura, Daikichi, 4,123,170, Cl. 356-167.000.
Azzara, Anthony A., to Bruning Bros. Co., Inc. Method for engaging a slider automatically on a slide fastener chain. 4,122,594, Cl. 29-408.000.
B.F. Goodrich Company, The: *See—*
Fisher, John M., 4,123,662, Cl. 250-518.000.
B & H Automotive: *See—*
Hargrove, Maxie G., 4,122,956, Cl. 211-131.000.
Backskai, Robert, to Chevron Research Company. Meta-isocyanatobenzyl isocyanate-derived polyurethanes. 4,123,605, Cl. 528-60.000.
Baermann, Max. Infinitely variable wear-free eddy current and/or hysteresis brake, preferably for track-bound vehicles. 4,122,922, Cl. 188-267.000.
Baines, Eric; and Harvey, Kenneth, to Colgate-Palmolive Company. Toothpaste compositions. 4,123,517, Cl. 424-57.000.
Baird, William C., Jr.; Bearden, Roby, Jr.; and Bollinger, Ralph L., Jr., to Exxon Research & Engineering Co. Process for desulfurization of residua with sodamide-hydrogen and regeneration of sodamide. 4,123,350, Cl. 208-108.000.
Baker, Roderick J., to Air Preheater Company, Inc., The. Sector plate support. 4,122,891, Cl. 165-9.000.
Baker, William H. Quickly tensioned divider line for swimming pools. 4,122,560, Cl. 4-172.000.
Bakowski, Alojzy: *See—*
Rotter, Gerhard; Bakowski, Alojzy; and Burdorf, Donald L., 4,123,791, Cl. 360-130.000.
Bakshi, Kiran R., to Chevron Research Company. Regeneration of maleic anhydride vanadium-phosphorus-oxygen catalyst by contacting with sulfur trioxide. 4,123,442, Cl. 260-346.750.
Ballantyne, David B., to General Motors Corporation. Push button type switch having deformable housing sleeve for permanent attachment to conductive panel. 4,123,640, Cl. 200-296.000.
Ballast-Nedam Groep N.V.: *See—*
Middelbeek, Cornelis G., 4,123,365, Cl. 210-521.000.
Balli, Heinz; Gunzenhauser, Sigmund; and Petitpierre, Jean C., to Ciba-Geigy Corporation. Chromenoindole compounds. 4,123,439, Cl. 260-326.50B.
Balog, Moshe; Berkenblit, Melvin; Chan, See-Ark; and Reisman, Arnold, to International Business Machines Corporation. Method for forming smooth self limiting and pin hole free SiC films on Si. 4,123,571, Cl. 427-249.000.
Baltek Corporation: *See—*
Kohn, Jean, 4,122,878, Cl. 144-316.000.
Bandel, Paolo: *See—*
Gallizia, Achille; and Bandel, Paolo, 4,123,496, Cl. 264-329.000.
Banik, Upendra K.; and Givner, Morris L., to American Home Products Corporation. Pregnancy test. 4,123,509, Cl. 424-12.000.
Banik, Upendra K.; and Givner, Morris L., to American Home Products Corp. (Del.). Method for the determination of gonadotropins. 4,123,510, Cl. 424-12.000.
Banks, Neill K., Jr., to Bomco, Inc. Tray rocker device. 4,123,177, Cl. 336-239.000.
Barclay, Andrew C.: *See—*
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,123,416, Cl. 260-42.180.
Bard, John A.; and Morrison, Francis J., to Walcon Corporation. Wall structure. 4,122,641, Cl. 52-403.000.
Barker, Raymond H. Photographic developer turning system. 4,123,176, Cl. 366-166.000.
Barlow, Michael L., to United States of America, Navy. Wide band proportional transducer array. 4,123,681, Cl. 310-322.000.
Barnert, Konrad; and Stein, Gunter, to Volkswagenwerk Aktiengesellschaft. Injection timing adjustment apparatus. 4,122,813, Cl. 123-139.0ST.
Baron, Alvin J. Typing guide. 4,123,087, Cl. 283-1.00R.
Barone, Bruno J.: *See—*
Kerr, Ralph O.; and Barone, Bruno J., 4,123,388, Cl. 252-437.000.
Barr, Donald H.; and Coggins, Thomas A. Multipurpose cushioned horseshoe. 4,122,900, Cl. 168-12.000.
Barr, Rolla W. Shackle guard for padlocks. 4,122,693, Cl. 70-56.000.
Barr, W. Lincoln. Underwater repeating spear gun. 4,122,621, Cl. 42-1.00L.
Barr, William D. Floatable cover capable of partially or fully covering swimming pools. 4,122,561, Cl. 4-172.120.
Barrell, John M., to Renaissance Creations, Inc. Building structure. 4,122,639, Cl. 52-90.000.
Barrett, Edward J.: *See—*
Jarrett, Ronald T.; and Barrett, Edward J., 4,122,767, Cl. 100-35.000.
Bartlett, Paul A.: *See—*
Summerton, James E.; and Bartlett, Paul A., 4,123,610, Cl. 536-28.000.
Barton, James G.; and Ford, James R., to General Dynamics. Squeegee holder. 4,122,771, Cl. 101-123.000.
BASF Aktiengesellschaft: *See—*
Hjortzberg, Bernhard A., 4,123,774, Cl. 358-4.000.
Rotter, Gerhard; Buchan, William A.; and an der Heiden, Rainer E., 4,123,773, Cl. 358-4.000.
Rotter, Gerhard; Bakowski, Alojzy; and Burdorf, Donald L., 4,123,791, Cl. 360-130.000.
Bastos, Eduardo R.: *See—*
Bastos, Jose R. R.; and Bastos, Eduardo R., 4,122,568, Cl. 5-345.00R.
Bastos, Jose R. R.; and Bastos, Eduardo R. Mattress of the hard surface type. 4,122,568, Cl. 5-345.00R.
Bata Shoe Company, Inc.: *See—*
Schilke, Waldemar; and Hujik, Ladislav, 4,123,493, Cl. 264-244.000.
Batcheller, Roy W., to Crane-Veyor Corporation. Pipe rail and gate construction. 4,122,631, Cl. 49-394.000.
Bates, Marvin O.: *See—*
Ott, John E.; and Bates, Marvin O., 4,122,733, Cl. 81-9.300.
Bates, William G., to Selas Corporation of America. Apparatus and method for press bending and tempering glass sheets and the like. 4,123,245, Cl. 65-104.000.
Battigelli, Jean A.: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,123,243, Cl. 65-16.000.
Baudot, Jean C. Apparatus for preparing corrugated sheets automatically. 4,123,190, Cl. 408-25.000.
Bauer, James J.; and Hoechst, Lonnie D., to Clark Equipment Company. Pedal linkage for the boom arms and attachment carrier of a skid-steered tractor vehicle. 4,122,960, Cl. 214-140.000.
Bauer Kaba AG Sicherheits-Schliessyteme: *See—*
Gretler, Heinrich, 4,122,694, Cl. 70-406.000.
Bauman, Robert A., to Colgate-Palmolive Company. Quaternary compounds having anti-microbial activity. 4,123,513, Cl. 424-54.000.
Bauman, Robert A., to Colgate-Palmolive Company. Quaternary compounds having anti-microbial activity. 4,123,514, Cl. 424-54.000.
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Bauman, Robert A., to Colgate-Palmolive Company. Quaternary compounds having anti-microbial activity. 4,123,516, Cl. 424-54.000.
Baumann, Ludwig G. Bubbling device for the treatment of the human body. 4,122,846, Cl. 128-66.000.
Baumgartner, Erich R.; and Doehler, Peter. Smoothing iron sole. 4,122,615, Cl. 38-93.000.
Bayer Aktiengesellschaft: *See—*
Beecken, Hermann, 4,123,452, Cl. 260-465.00E.
Behrenz, Wolfgang; and Burkhardt, Klaus, 4,123,518, Cl. 424-78.000.
Colln, Reimer; and Sirrenberg, Wilhelm, 4,123,478, Cl. 260-986.000.
Hack, Helmut; Schmidt, Robert R.; and Dickore, Karlfried, 4,123,253, Cl. 71-93.000.
Kohler, Klaus; Woditsch, Peter; and Schultz, Karl-Heinz, 4,123,501, Cl. 423-152.000.
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,123,449, Cl. 260-453.0AR.
Wenzel, Wolfgang; and Dieterich, Dieter, 4,123,423, Cl. 528-71.000.
BBC Brown Boveri & Company Limited: *See—*
Horler, Hansulrich; and Perevuznik, Josef, 4,123,200, Cl. 417-64.000.
BC Pausch, Inc.: *See—*
Crunk, Elmer Kenneth; and Craft, John W., 4,123,034, Cl. 249-156.000.
Bearden, Roby, Jr.: *See—*
Baird, William C., Jr.; Bearden, Roby, Jr.; and Bollinger, Ralph L., Jr., 4,123,350, Cl. 208-108.000.
Beardmore, Geoffrey, to Smiths Industries Limited. Flexure-pivot assemblies and methods of making them. 4,122,689, Cl. 64-15.00B.
Beecham Group Limited: *See—*
Howarth, Thomas T., 4,123,540, Cl. 424-272.000.
Beecken, Hermann, to Bayer Aktiengesellschaft. Styryl dyestuffs. 4,123,452, Cl. 260-465.00E.
Been, Peter: *See—*
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Behnke, Walter E.; Marsh, William R.; and Haskell, Theodore H., to Warner-Lambert Company. Process for the production of 9-(β-D-arabinofuranosyl)adenine, 5'-phosphate. 4,123,609, Cl. 536-27.000.
Behrenz, Wolfgang; and Burkhardt, Klaus, to Bayer Aktiengesellschaft. Insecticidal phosphate ester-based solid composition with depot gas action. 4,123,518, Cl. 424-78.000.
Belcastro, Patricia, administratrix: *See—*
Belcastro, Rosario, deceased; and Belcastro, Patricia, administratrix, 4,122,999, Cl. 236-11.000.
Belcastro, Rosario, deceased; and by Belcastro, Patricia, administratrix. Forced air heating system. 4,122,999, Cl. 236-11.000.

Bell & Howell Company: *See—*
Karalus, George C.; and Parker, Robert R., 4,122,613, Cl. 35-9.00A.
Persha, Thomas J.; and Jagielski, David, 4,123,699, Cl. 353-26.00R.
Bell, Peter W.: *See—*
Queen, David S.; Bell, Peter W.; Dick, Thomas H.; and Edgar, John B., 4,123,313, Cl. 156-498.000.
Bell Telephone Laboratories, Incorporated: *See—*
Chandross, Edwin A.; and Pryde, Coralie A., 4,123,562, Cl. 427-58.000.
Cubbison, Richard J., Jr., 4,123,722, Cl. 330-85.000.
Marcatili, Enrique A. J., 4,123,137, Cl. 350-96.210.
Sandahl, Carl R., 4,123,139, Cl. 350-96.210.
Belles, Wayne S.: *See—*
Shen, Kelvin K.; and Belles, Wayne S., 4,123,251, Cl. 71-88.000.
Belyaeva, Agnia A.: *See—*
Mash, Dmitry M.; Schedrovitsky, Savely S.; Golovko, Zoya I.; Zaitsev, Mikhail P.; Sorokin, Andrei N.; Belyaeva, Agnia A.; and Kharitonov, Ivan I., 4,123,735, Cl. 336-30.000.
Bendix Autolite Corporation: *See—*
Davis, Donald C., 4,123,344, Cl. 204-195.00S.
Bendix Corporation, The: *See—*
Carp, Ralph W.; Ang, Leoncio T.; and Rini, Guy T., 4,123,116, Cl. 303-103.000.
Bendure, Harry; and Traxson, Larry L., to Gardner-Denver Company. Multispeed gear transmission with plural inputs to internal gear. 4,122,731, Cl. 74-674.000.
Benge, Robert J.; and Miller, Cecil H., to United Kingdom of Great Britain and Northern Ireland, Ministry of Technology in Her Britannic Majesty's Government of the. Ignitable compositions. 4,123,303, Cl. 149-17.000.
Bennes Marrel: *See—*
Tardy, Maurice; and Paulet, Jean, 4,122,864, Cl. 137-625.600.
Bennett, George T.; and Brucken, Byron L., to General Motors Corporation. Electromagnetic clutch. 4,122,930, Cl. 192-84.00C.
Benoy, Gaston J.: *See—*
Monbaliu, Marcel J.; Credner, Hans-Heinrich; Himmelmann, Wolfgang; Meier, Ernst; Benoy, Gaston J.; Van Poucke, Raphael K.; Schranz, Karl-Wilhelm; and Van Veelen, George F., 4,123,281, Cl. 96-100.00R.
Berg, Alan, to United States of America, Navy. Disconnect linkage for force transmission system. 4,122,927, Cl. 192-48.800.
Berger, Alfred: *See—*
Abel, Heinz; and Berger, Alfred, 4,123,378, Cl. 252-171.000.
Bergfeld, Manfred: *See—*
Zengel, Hans-Georg; and Bergfeld, Manfred, 4,123,461, Cl. 260-558.00A.
Berghmans, Jacques M. L.; and Vary, Eva M., to Du Pont de Nemours, E. I., and Company. Finishes having improved scratch resistance prepared from compositions of fluoropolymer, mica particles or metal flake, a polymer of monoethylenically unsaturated monomers and a liquid carrier. 4,123,401, Cl. 260-29.60F.
Berglund, Kjell W.; and Nordlund, Karl S. Automotive goods-transport vehicle. 4,122,963, Cl. 214-512.000.
Berglund, Svante O.: *See—*
Andersson, Rune S.; and Berglund, Svante O., 4,123,239, Cl. 55-379.000.
Beriger, Ernst, to Ciba-Geigy Corporation. 2,2-Disubstituted-phenylcarbamoyl-6-hydroxy-m-dioxin-4-one derivatives having insecticidal properties. 4,123,551, Cl. 424-279.000.
Berkenblit, Melvin: *See—*
Balog, Moshe; Berkenblit, Melvin; Chan, See-Ark; and Reisman, Arnold, 4,123,571, Cl. 427-249.000.
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., to American Cyanamid Company. Novel 11-hydroxy-9-keto-5,6-cis-13,14-cis-prostadienoic acid derivatives. 4,123,456, Cl. 562-503.000.
Bernardi, Luigi; Elli, Carlo; Falconi, Giovanni B.; and Ferrari, Rosella, to Societa Farmaceutici Italia S.p.A. Substituted pyrazines as inhibitors of platelet aggregation. 4,123,613, Cl. 544-408.000.
Bernewasser, Horst: *See—*
Scholl, Hans; and Bernewasser, Horst, 4,122,785, Cl. 112-121.150.
Bernstein, Seymour: *See—*
Conrow, Ransom B.; and Bernstein, Seymour, 4,123,455, Cl. 260-507.00R.
Berriman, Lester P., to Dresser Industries, Inc. Automotive exhaust gas recirculation valve. 4,122,810, Cl. 123-119.00A.
Bertolini, Natale; Divo, Claudio; Maris, Petri; and Maiorano, Giovanni. Olefin production process. 4,123,471, Cl. 260-683.15C.
Best, Donald C., to Union Carbide Corporation. Amination process using nickel-rhenium catalysts. 4,123,462, Cl. 260-585.00B.
Best, John S.: *See—*
McCaldin, James O.; and Best, John S., 4,123,295, Cl. 148-33.000.
Betts, Joseph E.; and Holub, Fred F., to General Electric Company. Flame-resistant composition, and electrical product thereof. 4,123,586, Cl. 428-391.000.
Bevington, John F.; Savidge, Michael; and Meeker, Paul, to National Super Service Company, The. High-speed floor treating machine. 4,122,576, Cl. 15-49.00R.
BFG Glassgroup: *See—*
Leclercq, Robert; Capouillet, Phileas; and Van Cauter, Albert, 4,123,244, Cl. 65-60.00C.
Bhalla, Ranbir S., to Westinghouse Electric Corp. HID lamp electrode comprising solid solution of dibarium calcium molybdate and tungstate. 4,123,685, Cl. 313-218.000.
Bhopale, Arvind M.: *See—*
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Bianchi, S.A.: *See—*
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Bieringer, Harold F.; Jones, Derrell G.; and Schwartzkopf, Gary S., to Caterpillar Tractor Co. Service support. 4,122,758, Cl. 92-23.000.
Bird, Alfred J.: *See—*
Acres, Gary J. K.; and Bird, Alfred J., 4,123,500, Cl. 423-35.000.
Birkmeyer, William J.: *See—*
Erikson, J. Alden; and Birkmeyer, William J., 4,123,422, Cl. 528-273.000.
Bish, James R.: *See—*
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Biskup, Edward J., to General Motors Corporation. Occupant propelled cambering vehicle. 4,123,079, Cl. 280-220.000.
Bissett, Larry A.: *See—*
Capp, John P.; and Bissett, Larry A., 4,122,897, Cl. 166-256.000.
Bitha, Panayota: *See—*
Hlavka, Joseph J.; and Bitha, Panayota, 4,123,607, Cl. 536-17.000.
Bizerba-Werke Wilhelm Kraut KG: *See—*
Hartmann, Ernst G.; Krech, Hans; and Meir, Franz, 4,123,749, Cl. 340-572.000.
Bjorklund, James Axel C.; and Ekengren, Turid, to KemaNobel AB. Process for sizing cellulose fibers. 4,123,319, Cl. 162-158.000.
Black, John W., to Pemco-Kalamazoo, Inc. Solid axle wheel support and sealed bearing construction. 4,122,580, Cl. 16-46.000.
Black, Paul G.: *See—*
Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,122,755, Cl. 90-11.00A.
Black, Sivalls & Bryson, Inc.: *See—*
Wood, Loren E.; Witten, John E.; and Short, Edward H., III, 4,122,595, Cl. 29-424.000.
Blackett, John H., to Matburn (Holdings) Limited. Electrosurgical apparatus. 4,122,854, Cl. 128-303.130.
Blatt, David H., to Franklin Container Corporation. Roll holding carton. 4,122,949, Cl. 206-303.000.
Blazek, Jaroslav: *See—*
Rataj, Stanislav; Krch, Karel; Pilousek, Josef; Blazek, Jaroslav; Vitek, Hynek; and Macek, Ladislav, 4,123,114, Cl. 302-53.000.
Block Engineering Inc.: *See—*
Hirschfeld, T.; and Brown, David C.A.G., 4,123,236, Cl. 55-197.000.
Bloor, Christopher: *See—*
Riley, Ralph V.; Muir, Samuel; Bloor, Christopher; and Jozsef, Tibor, 4,123,264, Cl. 75-211.000.
Bluestein, Claire: *See—*
Cowell, Richard D.; Loewrigkeit, Peter; Rosenblatt, William; and Bluestein, Claire, 4,123,421, Cl. 528-65.000.
Blunk, Glenn I. Acoustical texture applicator. 4,123,005, Cl. 239-327.000.
Bockelmann, Wilfried; and Steinbrink, Rainer, to Deutsche Vergaser GmbH & Co. Kg. Valve for adding extra air in an internal combustion engine. 4,122,806, Cl. 123-103.00R.
Boehringer Mannheim GmbH: *See—*
Hundt, Dieter; Gruber, Wolfgang; Klarwein, Michael; and Roeschlau, Peter, 4,123,384, Cl. 252-408.000.
Boeing Company, The: *See—*
Andersson, Anders O.; and Purves, Robert B., 4,122,674, Cl. 60-39.650.
Geithman, Glenn A.; and Woodmansee, Wayne E., 4,122,724, Cl. 73-588.000.
Hill, Horace E., 4,123,193, Cl. 408-202.000.
Newell, Stanley E., 4,122,722, Cl. 73-362.0AR.
Bohner, Beat; Dawes, Dag; and Meyer, Willy, to Ciba-Geigy Corporation. Process for preparing 1,2,4-triazole derivatives. 4,123,437, Cl. 260-308.00R.
Bolin, Philip C., to Westinghouse Electric Corp. Gas termination support system. 4,123,619, Cl. 174-19.000.
Bollen, Phillip S.: *See—*
Amin, Surendra A.; Bollen, Phillip S.; and Sacks, William, 4,123,473, Cl. 260-860.000.
Bollinger, Ralph L., Jr.: *See—*
Baird, William C., Jr.; Bearden, Roby, Jr.; and Bollinger, Ralph L., Jr., 4,123,350, Cl. 208-108.000.
Bomco, Inc.: *See—*
Banks, Neill K., Jr., 4,123,177, Cl. 336-239.000.
Bond, Desmond H.; Taggart, George W.; and Jaeger, Kurt S., to Ford, Bacon & Davis Texas, Inc. Gas mixer and reactor. 4,123,220, Cl. 431-353.000.
Bonnefon, Alain; Coupard, Alain; and Maffre, Michel, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Reinforced plastic material and a process for the production thereof. 4,123,476, Cl. 260-897.00A.
Borenstein, David E.; and Newton, Richard C., to Phillips Petroleum Company. Yarn processing apparatus. 4,122,588, Cl. 28-221.000.
Borg, Arthur N., to Magnavox Company, The. Automatic frequency control for digital tuning systems. 4,123,716, Cl. 325-464.000.
Borgran, Peter M. Device for extracting heat from a fireplace. 4,122,824, Cl. 126-121.000.
Borzak, Robert A., to Ampex Corporation. Tape reel container. 4,122,945, Cl. 206-395.000.
Boswell, Gary T.: *See—*
Dean, Lura C., Jr.; Boswell, Gary T.; Winkelman, Wayne; and Little, Frank S., 4,123,795, Cl. 364-200.000.

Botcherby, Stephen C. L.; and Starbuck, Christopher P., to Decca Limited. Optical path length modulator. 4,123,145, Cl. 350-269.000.
Botcherby, Stephen C. L.; Starbuck, Christopher P.; and Fitzherbert, Jeremy A., to Decca Limited. Optical detector of remote movement including cyclic scanning of target. 4,123,166, Cl. 356-152.000.
Botcherby, Stephen C. L.; and Fitzherbert, Jeremy A., to Decca Limited. Optical detecting system. 4,123,167, Cl. 356-152.000.
Botros, Raouf, to American Color & Chemical Corporation. Metal-modified polypropylene dyed with azomethine dyes derived from an 0-hydroxy aromatic aldehyde and a 2-aminopyridine. 4,123,223, Cl. 8-42.00D.
Bottrill, John; and Cunningham, Douglas J., to Britax (Wingard) Limited. Safety belt rewinding mechanism with improved retraction characteristics. 4,123,013, Cl. 242-107.000.
Boudreau, Archie E. Conduit coupling means for milking systems and method of making same. 4,123,035, Cl. 251-146.000.
Boulanger, Henry J.; and Rizzo, Salvatore P., to Texas Instruments Incorporated. Keyboard apparatus. 4,123,627, Cl. 200-5.00A.
Bourgeois, Ronald D. Automatic pick-up and release mechanism and agitator device. 4,123,289, Cl. 134-134.000.
Bourne, John B.: *See—*
Gagnier, Real; Bourne, John B.; and Terry, John B., 4,123,624, Cl. 179-15.0AT.
Bouwhuis, Gijsbertus, to U.S. Philips Corporation. Apparatus for reading a radiation-reflecting record carrier. 4,123,652, Cl. 250-204.000.
Bovenlander, Johannes P.: *See—*
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Bovio, Michele, to Ing. C. Olivetti & C., S.p.A. Arrangement for detecting the angular position of a rotatable part. 4,123,653, Cl. 250-231.0SE.
Bowen, Leon O., Jr.; and McVean, Michael T., to Rangaire Corporation. Venting and recirculating vent kitchen hood. 4,122,835, Cl. 126-299.00D.
Bowler, Lauren L.; and Rice, John O., to General Motors Corporation. Digital closed loop fuel control system. 4,122,811, Cl. 123-119.0EC.
Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D.; and Bray, Harry C., Jr., 4,122,845, Cl. 128-66.000.
Boyce, Peter H.: *See—*
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Boye, Albert A.: *See—*
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Bozich, Robert, to Malton Electric Company. Weatherproof cabinet closure. 4,122,972, Cl. 220-331.000.
BP Chemicals Limited: *See—*
Clarkson, Michael J.; and Duffield, Robert, 4,122,684, Cl. 62-54.000.
Bradner, William T.: *See—*
Nettleton, Donald E., Jr.; Doyle, Terrence W.; and Bradner, William T., 4,123,608, Cl. 536-17.000.
Braly, Joseph M., to Con-Sole Golf Corporation. Method of making golf club shafts. 4,122,593, Cl. 29-407.000.
Brandelli, Anthony R. Extendible ballcock. 4,122,862, Cl. 137-437.000.
Brandenstein, Manfred: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,123,121, Cl. 308-6.00C.
Branson, Charles D.; and Demi, Roy C., to Robertshaw Controls Company. Fuel control system and control device therefor or the like. 4,123,036, Cl. 251-180.000.
Braukmann Armaturen AG: *See—*
Braukmann, Bernard W., 4,122,863, Cl. 137-557.000.
Braukmann, Bernard W., to Braukmann Armaturen AG. Differential pressure overflow valve. 4,122,863, Cl. 137-557.000.
Braun, Erwin, to Sigloch and Schrieder. Multi-spindle drill head. 4,123,191, Cl. 408-42.000.
Braverman, Milton. Apparatus and method for filling medicinal dispensing devices. 4,122,651, Cl. 53-390.000.
Bray, Harry C., Jr.: *See—*
Stouffer, Ronald D.; and Bray, Harry C., Jr., 4,122,845, Cl. 128-66.000.
Bray, Thomas L.: *See—*
Smith, Bob R.; West, Harold L.; Bray, Thomas L.; and Wilder, Robert H., Sr., 4,122,877, Cl. 144-208.00E.
Brenner, Gunter: *See—*
Credner, Karl; Brenner, Gunter; Tauscher, Manfred; and Jozic, Ljerka, 4,123,534, Cl. 424-253.000.
Breshears, Robert R.: *See—*
Fitzgerald, Dennis J.; and Breshears, Robert R., 4,122,816, Cl. 123-148.0DC.
Brewer, David C.; Evans, James D.; Kohler, Dale M.; and Haselkorn, Michael H., to Armco Steel Corporation. Method of improving the surface insulation resistance of electrical steels having an insulative coating thereon. 4,123,337, Cl. 204-129.300.
Brewton, Lee K., to Southwire Company. Method for reclaiming processed thermosetting plastic compounds. 4,123,584, Cl. 428-379.000.
Brickman, Harold, to Ever-Wear, Inc. Foldable bar-table. 4,122,780, Cl. 108-25.000.
Bridger, Robert F.; and Landis, Phillip S., to Mobil Oil Corporation. Lubricant compositions containing antioxidants. 4,123,372, Cl. 252-48.200.
Bridges, James R.: *See—*
Brown, Winthrop K.; Bridges, James R.; and Savage, Kerry D., 4,122,709, Cl. 73-136.00A.
Bridgestone Tire Company Limited: *See—*
Takigawa, Hiroyoshi; Watanabe, Shigeo; Aoki, Shigeta; and Ogawa, Hiroshi, 4,122,879, Cl. 152-209.00R.
Tanaka, Mamoru, 4,123,088, Cl. 285-14.000.
Bridon Engineering Limited: *See—*
Gillespie, Peter J., 4,123,037, Cl. 251-367.000.
Brieaddy, Lawrence E.: *See—*
Mehta, Nariman B.; and Brieaddy, Lawrence E., 4,123,555, Cl. 424-330.000.
Brieger, Emmet F. Well perforator with anchor and method. 4,122,899, Cl. 166-297.000.
Brill, Harry M. Golf clubs. 4,123,055, Cl. 273-77.00A.
Bristol-Myers Company: *See—*
Buchanan, Ronald L.; Woolever, John T.; and Jelenevsky, Alex M., 4,123,440, Cl. 260-326.280.
Nettleton, Donald E., Jr.; Doyle, Terrence W.; and Bradner, William T., 4,123,608, Cl. 536-17.000.
Britax (Wingard) Limited: *See—*
Bottrill, John; and Cunningham, Douglas J., 4,123,013, Cl. 242-107.000.
British Steel Corporation: *See—*
Laws, William R.; and Winkworth, David A., 4,122,894, Cl. 165-76.000.
Riley, Ralph V.; Muir, Samuel; Bloor, Christopher; and Jozsef, Tibor, 4,123,264, Cl. 75-211.000.
Brois, Stanley J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Lactone polyol esters as oleaginous additives. 4,123,373, Cl. 252-48.600.
Brokaw, Adrian P.: *See—*
Timko, Michael P.; and Brokaw, Adrian P., 4,123,698, Cl. 323-1.000.
Brook, Richard M., to Auto Systems Limited. Method and apparatus for grading articles. 4,122,953, Cl. 209-551.000.
Brotzmann, Karl: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans G., 4,123,259, Cl. 75-60.000.
Brouard, Claude M. H. E.; and Ficht, Paulette G., to Produits Chimiques Ugine Kuhlmann. 1:1 Chromiferous complex azo compounds having a bidentate chelating group and a monofunctional neutral ligand. 4,123,429, Cl. 260-147.000.
Brougham, William K., to Welding Industries of Australia Pty. Ltd. Leakage reactance transformer. 4,123,736, Cl. 336-120.000.
Brown, Arnold E. Lumber forming attachment for chain saws. 4,122,604, Cl. 30-371.000.
Brown, David B.; Vickers, Jerry W.; and Pell, Kynric M., to United States of America, Army. Attitude determination using two color, dual-sweeping laser system. 4,123,165, Cl. 356-152.000.
Brown, David C.A.G.: *See—*
Hirschfeld, T.; and Brown, David C.A.G., 4,123,236, Cl. 55-197.000.
Brown, Graydon L.: *See—*
Fair, Delbert W.; and Brown, Graydon L., 4,122,909, Cl. 180-127.000.
Brown, Omar L., to Dayton Reliable Tool & Manufacturing Company. Method and apparatus for scoring an enameled metal surface. 4,122,791, Cl. 113-121.00C.
Brown, Winthrop K.; Bridges, James R.; and Savage, Kerry D., to Texaco Inc. Digital torque meter. 4,122,709, Cl. 73-136.00A.
Brucat, John N., to Instructional/Communications Technology, Inc. Advance mechanism. 4,123,153, Cl. 352-191.000.
Brucken, Byron L.: *See—*
Bennett, George T.; and Brucken, Byron L., 4,122,930, Cl. 192-84.00C.
Bruckenstein, Stanley: *See—*
Gale, Stephen B.; O'Donnell, Phillip P.; and Bruckenstein, Stanley, 4,123,339, Cl. 204-149.000.
Bruning Bros. Co., Inc.: *See—*
Azzara, Anthony A., 4,122,594, Cl. 29-408.000.
Bryant, Raymond G., Jr.; and Cockrell, Clifford M., to Freeport Minerals Company. Integrated sulfur mining - sulfuric acid production system. 4,123,107, Cl. 299-6.000.
Bucalo, Louis. Apparatus for providing living beings with absorbable implants. 4,122,850, Cl. 128-216.000.
Buchan, William A.: *See—*
Rotter, Gerhard; Buchan, William A.; and an der Heiden, Rainer E., 4,123,773, Cl. 358-4.000.
Buchanan, Ronald L.; Woolever, John T.; and Jelenevsky, Alex M., to Bristol-Myers Company. Bicyclo [2.2.1]-heptane-2,3,di-endo-carboxylic acid imide esters. 4,123,440, Cl. 260-326.280.
Buchy, James P., to Plibrico (Canada) Limited. Refractory liner block. 4,122,642, Cl. 52-511.000.
Buck Tool Company: *See—*
Rosewarne, William V.; and Norton, Gerald W., 4,123,075, Cl. 279-121.000.
Buckley, Peter J.: *See—*
Davey, Christopher R.; and Buckley, Peter J., 4,123,377, Cl. 252-103.000.
Bucknall, Arthur H. Lifting tackle. 4,123,041, Cl. 254-195.000.
Bud Antle, Inc.: *See—*
Abey, John A., 4,123,495, Cl. 264-318.000.
Budzich, Tadeusz. Load responsive valve assemblies. 4,122,677, Cl. 60-427.000.

Budzich, Tadeusz. Load responsive fluid control valve. 4,122,865, Cl. 137-596.130.

Buetemeister, Earl H., to General Motors Corporation. Displacement transducer. 4,123,729, Cl. 331-181.000.

Bugni, Anthony R., to Magnavox Company, The. Apparatus and method for adjusting the color temperature of a television receiver. 4,123,775, Cl. 358-10.000.

Bullock, Frederick C.; Engelhardt, Alvin; Cirincione, Thomas J.; and Williams, Joseph A., to Electro-Nucleonics, Inc. Rotatable flexible cuvette arrays. 4,123,173, Cl. 356-246.000.

Bullock, Roger D.: *See—*
Safrit, Sam C.; James, Kelly W.; and Bullock, Roger D., 4,122,555, Cl. 2-401.000.

Bunda, Tsuchio: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; and Tanaka, Taro, 4,122,802, Cl. 123-3.000.
Noguchi, Masaaki; and Bunda, Tsuchio, 4,123,391, Cl. 252-466.0PT.

Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-alkylketone prostaglandins. 4,123,463, Cl. 260-586.00R.

Burch, John L.: *See—*
Johnston, James D.; Tuggle, Richard H., Jr.; Burch, John L.; and Clark, Keith H., 4,122,991, Cl. 228-13.000.

Burdorf, Donald L.: *See—*
Rotter, Gerhard; Bakowski, Alojzy; and Burdorf, Donald L., 4,123,791, Cl. 360-130.000.

Burke, Harry D., to Whirlpool Corporation. Air circulation system for microwave oven. 4,123,643, Cl. 219-10.55R.

Burkhardt, Klaus: *See—*
Behrenz, Wolfgang; and Burkhardt, Klaus, 4,123,518, Cl. 424-78.000.

Burnett, Thomas W., to Nuclear Pacific, Inc. Shielding holder for radionuclid syringes. 4,122,836, Cl. 128-1.100.

Burns, Daniel E. Waste energy hot water heater. 4,122,801, Cl. 122-20.00B.

Burroughs Corporation: *See—*
Franke, Robert H., 4,122,995, Cl. 235-302.000.

Burroughs Wellcome Co.: *See—*
Mehta, Nariman B.; and Brieaddy, Lawrence E., 4,123,555, Cl. 424-330.000.

Burstein, William J. Control for mini tape recorder. 4,123,016, Cl. 242-201.000.

Busch, Gerhard: *See—*
Andres, Rudolf; Busch, Gerhard; and Heiss, Werner, 4,123,104, Cl. 297-391.000.

Bush Universal, Inc.: *See—*
Stanton, Leo F., 4,122,573, Cl. 12-18.300.

Busler, Albert: *See—*
Kuhlmann, Wolf; Rumpp, Gerhard; and Busler, Albert, 4,122,753, Cl. 85-74.000.

Butcher, Roger A., to Aerosol Inventions & Development S.A. AIDSA. Actuators for valves for pressurized dispensers. 4,122,977, Cl. 222-182.000.

Butler, Marlow Dole, to Tektronix, Inc. Modular electronic instrument cabinets. 4,123,129, Cl. 312-257.00R.

Buxbaum, Lothar, to Ciba-Geigy Corporation. Thermoplastic copolyesters. 4,123,454, Cl. 260-22.00D.

Byk Gulden Lomberg Chemische Fabrik - GmbH: *See—*
Kramann, Bernhard; and Tammen, Heinrich, 4,122,591, Cl. 29-157.00R.

Cabot Corporation: *See—*
Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., 4,123,266, Cl. 75-244.000.

California Institute of Technology: *See—*
McCaldin, James O.; and Best, John S., 4,123,295, Cl. 148-33.000.
Rembaum, Alan; and Volksen, Willi, 4,123,396, Cl. 526-24.000.

California Processing Machinery: *See—*
Silvestrini, Jesus A., 4,122,765, Cl. 99-551.000.

Calvin, Noel M. Automatic instrument tuner. 4,122,751, Cl. 84-454.000.

Cama, Lovji D.; and Christensen, Burton G., to Merck & Co., Inc. 3-(Substituted thio) cephalosporins, derivatives and nuclear analogues thereof. 4,123,528, Cl. 424-248.520.

Camillo Corvi S.p.A.: *See—*
Corvi-Mora, Camillo, 4,123,530, Cl. 424-250.000.

Campbell, Ramsey G.; Doane, Elliott P.; Heines, M. Henry; Naworski, Joseph S.; and Vogt, Harvey J., to Stauffer Chemical Company. Oxychlorination of ethylene. 4,123,467, Cl. 260-659.00A.

Canadian Patents and Development Limited: *See—*
Chow, Sherman M., 4,123,711, Cl. 325-62.000.
Dodds, David E.; Sendyk, Andrzej M.; and Wohlberg, Donald B., 4,123,709, Cl. 325-38.00B.
Poapst, Peter A.; and Forsyth, Frank R., 4,123,558, Cl. 426-268.000.

Canavan, Richard J. Snow alarm. 4,122,660, Cl. 58-16.500.

Cannon, John: *See—*
Vieto, Laurence; Cannon, John; Rademaker, George; Swanson, William; and Fessett, Kenneth, 4,123,089, Cl. 285-39.000.

Canon, Inc.: *See—*
Hasegawa, Goro, 4,123,766, Cl. 354-51.000.

Canon Kabushiki Kaisha: *See—*
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,123,782, Cl. 358-210.000.
Sekiguchi, Takeshi, 4,123,777, Cl. 358-55.000.

Capouillet, Phileas: *See—*
Ledercq, Robert; Capouillet, Phileas; and Van Cauter, Albert, 4,123,244, Cl. 65-60.00C.

Capp, John P.; and Bissett, Larry A., to United States of America, Energy. In situ gasification process for producing product gas enriched in carbon monoxide and hydrogen. 4,122,897, Cl. 166-256.000.

Caputo, Bernard; and Leonard, Donald A. Method and apparatus for remotely measuring sub-surface water temperatures. 4,123,160, Cl. 356-75.000.

Carborundum Company, The: *See—*
Coppola, John A.; Lawler, Harry A.; and McMurtry, Carl H., 4,123,286, Cl. 106-44.000.

Carl Still Recklinghausen, Firma: *See—*
Laufhutte, Dieter, 4,123,331, Cl. 201-4.000.

Carling, Helge: *See—*
Fritzvold, Bjorn H.; Carling, Helge; and Eriksen, Leif H., 4,123,317, Cl. 162-17.000.

Carlo, Dennis J.: *See—*
Hagopian, Arpi; Carlo, Dennis J.; and Stoudt, Thomas H., 4,123,520, Cl. 424-92.000.

Carlo Erba, S.p.A.: *See—*
Melloni, Piero; Della Torre, Arturo; Lauria, Francesco; Passerini, Norina; Rossi, Alessandro; and Tommasini, Raffaele, 4,123,527, Cl. 424-244.000.

Carlson, C. Burton; and Hughes, Ernest R. Powder handling system. 4,123,175, Cl. 366-151.000.

Carlson, Emery J.: *See—*
Pieters, Wim J. M.; Carlson, Emery J.; Gates, William E.; and Conner, William C., Jr., 4,123,389, Cl. 252-441.000.

Carlson, Thomas B.; and Kreikebaum, Gerhard, to Environmental Systems Corporation. System for accurate measurement of temperature. 4,122,719, Cl. 73-342.000.

Carman, Justice N., to Pennish, John S., a part interest. Method and apparatus for making vitreous silica. 4,123,229, Cl. 422-199.000.

Carp, Ralph W.; Ang, Leoncio T.; and Rini, Guy T., to Bendix Corporation, The. Duty cycle translator with solenoid modeling circuit for adaptive braking system. 4,123,116, Cl. 303-103.000.

Carpel, Emmett F. Surgical drape support. 4,122,848, Cl. 128-132.00D.

Carrieri, Louis F.: *See—*
Spanke, Edwin A.; Carrieri, Louis F.; and Francey, Melvin H., 4,122,926, Cl. 192-18.00A.

Carson, John C., Jr.: *See—*
Kenkare, Divaker B.; Robbins, Clarence R.; and Carson, John C., Jr., 4,122,976, Cl. 222-94.000.

Carter, Russell P., Jr.: *See—*
Heiss, Herbert L.; Yeater, Robert P.; and Carter, Russell P., Jr., 4,123,419, Cl. 260-45.8NZ.

Casado, Fernando, to Bianchi, S.A. Toy aircraft flight simulator. 4,123,050, Cl. 273-1.00E.

Cascone, Paul J., to Pennwalt Corporation. Dental gold alloy. 4,123,262, Cl. 75-165.000.

Casutt, Max, to Rohr Industries, Inc. Pierce rivet machine. 4,122,988, Cl. 227-53.000.

Catania, Salvadore. Golf shoe wiping attachment for golf club heads. 4,122,577, Cl. 15-160.000.

Caterpillar Mitsubishi Ltd.: *See—*
Kohriyama, Yoshimasa, 4,123,120, Cl. 305-41.000.

Caterpillar Tractor Co.: *See—*
Bieringer, Harold F.; Jones, Derrell G.; and Schwartzkopf, Gary S., 4,122,758, Cl. 92-23.000.
Cole, Carroll R., 4,122,903, Cl. 172-781.000.
Miers, Bruce W.; Proksch, Frederick D.; and Welker, Gerald H., 4,122,908, Cl. 180-68.00P.
Ryberg, John G., 4,122,820, Cl. 123-198.00E.
Stedman, Robert N., 4,122,959, Cl. 314-138.00R.
Stedman, Robert N., 4,123,119, Cl. 305-39.000.

Cattell, Scott: *See—*
Pressler, Kurt T.; and Cattell, Scott, 4,122,796, Cl. 116-132.00R.

Cave, Lawrence E., to PMC Industries, Inc. Profiled chip breaker. 4,123,194, Cl. 408-221.000.

Cawood, Charles D., Jr.: *See—*
Mosior, Donald J.; Cawood, Charles D., Jr.; and Ekinaka, Michael H., 4,122,856, Cl. 128-311.000.

Celio, Tino: *See—*
Graf, Jean-Pierre; and Celio, Tino, 4,123,778, Cl. 358-107.000.

Celms, Harry, to Roblin Industries, Inc. Display shelving. 4,122,955, Cl. 211-126.000.

Central Scientific Company, Inc.: *See—*
Andriulis, Vytautas, 4,123,201, Cl. 417-204.000.

Ceskoslovenska akademie ved: *See—*
Stoy, Artur; and Urbanova, Renata, 4,123,406, Cl. 260-29.6AN.

Chace, Howard E.; and Szwarc, Anthony F., to American Optical Corporation. Lens power display in prescription form. 4,123,163, Cl. 356-124.000.

Chagnon, Maurice; and Lemery, Michel, to Delle-Alsthom S.A. Connector for testing an electric installation. 4,123,629, Cl. 200-51.00R.

Chan, See-Ark: *See—*
Balog, Moshe; Berkenblit, Melvin; Chan, See-Ark; and Reisman, Arnold, 4,123,571, Cl. 427-249.000.

Chana, Howard E., to General Motors Corporation. Hydromechanical mechanical continuously variable transmission. 4,122,732, Cl. 74-863.000.

Chandross, Edwin A.; and Pryde, Coralie A., to Bell Telephone Laboratories, Incorporated. Technique for promoting the solderability of a metal surface. 4,123,562, Cl. 427-58.000.

Chang, David R., to General Electric Company. Metallic coated article of improved environmental resistance. 4,123,594, Cl. 428-651.000.

Chang, David R., to General Electric Company. Metallic coated article. 4,123,595, Cl. 428-667.000.

Chapman, Charles C.; and Van Pool, Joe, to Phillips Petroleum Company. Hydrocarbon purification process. 4,123,351, Cl. 208-262.000.

Chapman, Harry L.: *See—*
Kingsbury, William L.; Thurston, Kelly W.; and Chapman, Harry L., 4,122,804, Cl. 123-32.0ST.

Charron, Francis, to Societe d'Etudes de Machines Thermiques. Method and means for pre-heating the intake air of a supercharged, low-compression ratio diesel engine when operating at low load. 4,122,679, Cl. 60-599.000.

Chatterji, Debajyoti; and Dubin, Robert R., to Electric Power Research Institute, Inc. NA/S Cell reactant container with metal aluminide coating. 4,123,566, Cl. 427-115.000.

Chemetals Corporation: *See—*
Welsh, Jay Y.; and Sochol, Irving, 4,123,499, Cl. 423-35.000.

Chemie-Anlagenbau Bischofsheim GmbH: *See—*
Hilterhaus, Karl-Heinz; and Reuter, Franz G., 4,123,599, Cl. 521-123.000.

Chemisches Laboratorium Fritz-Walter Lange GmbH & Co KG: *See—*
Lange, Fritz-Walter; Jacobi, Haireddin; and Muller, Jens, 4,123,548, Cl. 424-274.000.

Chemtree Corporation: *See—*
Hall, William C.; and Peterson, John M., 4,123,392, Cl. 252-478.000.

Chen, Inan: *See—*
Von Hoene, Donald C.; Chu, Joseph Y. C.; Chen, Inan; and Jones, Robert N., 4,123,269, Cl. 96-1.0PC.

Chenausky, Peter P.; and Glenn, William H., to United Technologies Corporation. Unstable resonator having high magnification. 4,123,149, Cl. 350-294.000.

Cheney, Stanley O. Nordic ski track sled. 4,122,614, Cl. 37-10.000.

Cherry, Isaac R.; and Anderson, Donald L., to Del Mar Avionics. Recorder for cardiac signals with manually actuated event marking. 4,123,785, Cl. 360-6.000.

Chevron Research Company: *See—*
Bacskai, Robert, 4,123,605, Cl. 528-60.000.
Bakshi, Kiran R., 4,123,442, Cl. 260-346.750.
Clements, Luther D.; Hannan, Michael D.; Hinds, Robert J.; and Vose, Richard W., 4,123,357, Cl. 210-71.000.
Freenor, Francis J., III; and Koerber, Barbara M., 4,123,255, Cl. 71-103.000.
Frost, Kenneth A., Jr., 4,123,232, Cl. 44-72.000.
Kensler, Daniel L., Jr.; Kohn, Gustave K.; and Walgenbach, David D., 4,123,552, Cl. 424-311.000.

Chien, Ji-Peng: *See—*
Radkowsky, Alvin; Chien, Ji-Peng; Yang, Chao-Yie; and Hsieh, Horng-Ming, 4,123,328, Cl. 176-78.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Knoll, Jozsef; Sebestyen, Gyula; and David, Agoston, 4,123,533, Cl. 424-251.000.

Chloride Silent Power Limited: *See—*
Robinson, Graham, 4,123,596, Cl. 429-104.000.

Chou, Cheng-Chien; and Rosebrock, Theodore L., to General Motors Corporation. Iris control for gas turbine engine air brake. 4,122,668, Cl. 60-39.16R.

Chow, Peter E. K., to Northern Telecom Limited. Digital regenerator having improving noise immunity. 4,123,625, Cl. 179-16.0EA.

Chow, Sherman M., to Canadian Patents and Development Limited. Synchronized compressor and expander voice processing system for radio telephone. 4,123,711, Cl. 325-62.000.

Christensen, Burton G.; and Walton, Edward, to Merck & Co., Inc. Thienamycin sulfoxide and sulphone. 4,123,547, Cl. 424-274.000.

Christensen, Burton G.: *See—*
Cama, Lovji D.; and Christensen, Burton G., 4,123,528, Cl. 424-248.520.

Chu, Joseph Y. C.: *See—*
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Ciba-Geigy AG: *See—*
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Ciba-Geigy Corporation: *See—*
Balli, Heinz; Gunzenhauser, Sigmund; and Petitpierre, Jean C., 4,123,439, Cl. 260-326.50B.
Beriger, Ernst, 4,123,551, Cl. 424-279.000.
Bohner, Beat; Dawes, Dag; and Meyer, Willy, 4,123,437, Cl. 260-308.00R.
Buxbaum, Lothar, 4,123,454, Cl. 260-22.00D.
Gilg, Bernard; Muller, Helmut; and Rody, Jean, 4,123,418, Cl. 260-45.8NT.
Havalda, Paul, 4,123,360, Cl. 210-216.000.
Karrer, Friedrich, 4,123,556, Cl. 424-341.000.
Loew, Peter, 4,123,222, Cl. 8-39.00A.

Cincinnati Steel Treating Company: *See—*
Dammel, Howard W.; Frantz, Robert M.; Luke, James H.; and Skrzypczyk, William G., 4,123,642, Cl. 219-10.590.

Cirincione, Thomas J.: *See—*
Bullock, Frederick C.; Engelhardt, Alvin; Cirincione, Thomas J.; and Williams, Joseph A., 4,123,173, Cl. 356-246.000.

Ciurca, Samuel, Jr.; and Kohrt, Carl F., to Eastman Kodak Company. Stable free radical nitroxyl bleaching agents for photographic processes. 4,123,273, Cl. 96-66.00T.

Clark, Bob J. Key for defrosting locks. 4,123,648, Cl. 219-521.000.

Clark Equipment Company: *See—*
Bauer, James J.; and Hoechst, Lonnie D., 4,122,960, Cl. 214-140.000.

Clark, John S.: *See—*
Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,122,755, Cl. 90-11.00A.

Clark, Keith H.: *See—*
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Clarke, Anthony B.: *See—*
Roy, Alexander R.; and Clarke, Anthony B., 4,122,636, Cl. 51-298.00R.

Clarkson, Michael J.; and Duffield, Robert, to BP Chemicals Limited. Method for the recovery of volatile liquids. 4,122,684, Cl. 62-54.000.

Clayton, James W. B.: *See—*
Anderson, Gordon C.; and Clayton, James W. B., 4,122,655, Cl. 57-58.890.

Cleary, William I.: *See—*
Vild, Joseph P.; Cleary, William I.; and Fox, Donald P., 4,123,708, Cl. 324-224.000.

Clements, Luther D.; Hannan, Michael D.; Hinds, Robert J.; and Vose, Richard W., to Chevron Research Company. Recovering oil from emulsion by stirring, heating, and settling. 4,123,357, Cl. 210-71.000.

Cochran, Larry A.; and Shanley, Robert L., II, to RCA Corporation. Service switch arrangement for a color television receiver. 4,123,776, Cl. 358-10.000.

Cockram, David R., to Pilkington Brothers Limited. Glass fibres for reinforcement of cement products. 4,123,287, Cl. 106-99.000.

Cockrell, Clifford M.: *See—*
Bryant, Raymond G., Jr.; and Cockrell, Clifford M., 4,123,107, Cl. 299-6.000.

Coggins, Thomas A.: *See—*
Barr, Donald H.; and Coggins, Thomas A., 4,122,900, Cl. 168-12.000.

Cohen, Joseph T.: *See—*
Fiedler, Howard C.; and Cohen, Joseph T., 4,123,299, Cl. 148-111.000.

Colbert, Thomas E., Jr. Contraction resistant coupling for pipe lines carrying gases or fluids. 4,123,092, Cl. 285-187.000.

Coldren, Kenneth M.: *See—*
Neubert, Frederic B.; and Coldren, Kenneth M., 4,122,932, Cl. 193-5.000.

Cole, Carroll R., to Caterpillar Tractor Co. Motor grader circle drive. 4,122,903, Cl. 172-781.000.

Colgate-Palmolive Company: *See—*
Baines, Eric; and Harvey, Kenneth, 4,123,517, Cl. 424-57.000.
Bauman, Robert A., 4,123,513, Cl. 424-54.000.
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Gaffar, Abdul, 4,123,512, Cl. 424-54.000.
Gray, Frederic W., 4,123,376, Cl. 252-99.000.
Kenkare, Divaker B.; Robbins, Clarence R.; and Carson, John C., Jr., 4,122,976, Cl. 222-94.000.

Colite Industries, Inc.: *See—*
Witt, Frank A., 4,122,616, Cl. 40-596.000.

Collins, Dwight D.: *See—*
United States of America, National Aeronautics and Space Administration; Poradek, Jerry C.; and Collins, Dwight D., 4,123,355, Cl. 210-50.000.

Colln, Reimer; and Sirrenberg, Wilhelm, to Bayer Aktiengesellschaft. Preparation of O, O-dimethyl-O-(2,2-dichlorovinyl)-thionophosphoric acid ester. 4,123,478, Cl. 260-986.000.

Columbia Ribbon & Carbon Manufacturing Co., Inc.: *See—*
Peterson, Glenn E.; Emerson, Robert T.; and Schoenlein, William J., 4,123,569, Cl. 427-141.000.

Combustion Engineering, Inc.: *See—*
Schulz, Albert C., 4,123,210, Cl. 425-78.000.

Comiskey, Gary F.; Hesse, Gregory N.; and Bovenlander, Johannes P., to Sun Electric Corporation. Voltage peak short store system. 4,123,674, Cl. 307-351.000.

Commins, Alfred D.; Kindelvich, Frederick T.; and Schroter, Richard C., to Kaiser Aluminum & Chemical Corporation. Insulated tank jacketing system. 4,122,640, Cl. 52-248.000.

Commonwealth Scientific and Industrial Research: *See—*
Sasse, Wolfgang H. F.; and Teitei, Tsutomu, 4,123,219, Cl. 432-1.000.

Compagnie Honeywell Bull (Societe Anonyme): *See—*
Sery, Jacques; and Couture, Serge A. E., 4,122,769, Cl. 101-93.180.

Compagnie Neerlandaise de l'Azote (Societe Anonyme): *See—*
Van Hijfte, Willy H. P.; Vanmarcke, Luc A.; and Niks, Anton, 4,123,570, Cl. 427-222.000.

Complett S.p.A.: *See—*
Conti, Roberto, 4,122,787, Cl. 112-170.000.

Con-Sole Golf Corporation: *See—*
Braly, Joseph M., 4,122,593, Cl. 29-407.000.

Conner, Joe D. Positionally adjustable lawn mower hitch. 4,123,082, Cl. 280-467.000.

Conner, William C., Jr.: *See—*
Pieters, Wim J. M.; Carlson, Emery J.; Gates, William E.; and Conner, William C., Jr., 4,123,389, Cl. 252-441.000.

Connor, David T.; Young, Patricia A.; and Von Strandtmann, Maximilian, to Warner-Lambert Company. Dialkyl ({[3-(alkoxycarbonyl)-1,4-dihydro-4-oxo-8-quinolinyl]amino}methylene)propanedioates. 4,123,536, Cl. 424-258.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Phenenyltris(carbonylimino) multi-anionic substituted triphenyl acids and salts. 4,123,455, Cl. 260-507.00R.

Consolidated Foods Corporation: *See—*
Salzmann, Ferdinand F., 4,122,884, Cl. 160-168.00R.
Conti, Roberto, to Complett S.p.A. Sewing method and machine. 4,122,787, Cl. 112-170.000.
Continental Can Company, Inc.: *See—*
Keinanen, Henry J., 4,123,646, Cl. 219-137.00R.
Continental Oil Company: *See—*
Fair, Delbert W.; and Brown, Graydon L., 4,122,909, Cl. 180-127.000.
Kleinpeter, Joseph A., 4,123,448, Cl. 260-449.00M.
Miller, Edsel L.; and Krenowicz, Robert A., 4,123,369, Cl. 252-32.70E.
Conwed Corporation: *See—*
Larsen, Ronald L., 4,123,491, Cl. 264-167.000.
Sundin, George H., 4,123,314, Cl. 156-505.000.
Cook, Francis J.; and Kline, Frederick E., to Avco Everett Research Laboratory, Inc. High density beam-accessed memory with reference target. 4,123,798, Cl. 365-237.000.
Coombs, John F. Folding shelving. 4,122,782, Cl. 108-111.000.
Cooper, Glenn D.; and Litz, Donald C., to Westinghouse Electric Corp. Rotor member for superconducting generator. 4,123,676, Cl. 310-52.000.
Coors Container Company: *See—*
Vischer, Peter; and Artzer, Paul J., 4,122,937, Cl. 198-408.000.
Copal Company Limited: *See—*
Miyasaka, Takao, 4,123,679, Cl. 310-266.000.
Coppola, John A.; Lawler, Harry A.; and McMurtry, Carl H., to Carborundum Company, The. Silicon carbide powder compositions. 4,123,286, Cl. 106-44.000.
Coran, Aubert Y., to Monsanto Company. Plasticized composition of copolyetherester elastomer and aromatic sulfonamide. 4,123,411, Cl. 260-30.80R.
Corvi-Mora, Camillo, to Camillo Corvi S.p.A. N-cyclohexyl-piperazino acetamides and propionamides. 4,123,530, Cl. 424-250.000.
Cosentino, Louis C.; and Springrose, B. Steven, to Renal Systems, Inc. Tube connector. 4,123,091, Cl. 285-39.000.
Cossin, Russell N.: *See—*
Ellis, Larry C.; Ellis, John S.; and Cossin, Russell N., 4,122,923, Cl. 188-285.000.
Coster Tecnologie Speciali S.p.A.: *See—*
Giuffredi, Giancarlo, 4,122,982, Cl. 222-321.000.
Costin, Darryl J., to Owens-Corning Fiberglas Corporation. Platinum-rhodium alloys. 4,123,263, Cl. 75-172.00R.
Coupard, Alain: *See—*
Bonnefon, Alain; Coupard, Alain; and Maffre, Michel, 4,123,476, Cl. 260-897.00A.
Couture, Serge A. E.: *See—*
Sery, Jacques; and Couture, Serge A. E., 4,122,769, Cl. 101-93.180.
Cowell, Richard D.; Loewrigkeit, Peter; Rosenblatt, William; and Bluestein, Claire, to Witco Chemical Corporation. Stable tertiary amine containing terminally unsaturated polyurethane resins. 4,123,421, Cl. 528-65.000.
Craft, John W.: *See—*
Crunk, Elmer Kenneth; and Craft, John W., 4,123,034, Cl. 249-156.000.
Craig, Robert G. Protective eye shield for surgical patients. 4,122,847, Cl. 128-132.00R.
Cramer, Rudy R., to U.S. Philips Corporation. X-ray examining device comprising a television chain which includes a memory. 4,123,786, Cl. 360-35.000.
Crane-Veyor Corporation: *See—*
Batcheller, Roy W., 4,122,631, Cl. 49-394.000.
Creative Inventions: *See—*
Furyk, Robert C.; and Gow, Jon E. P., 4,123,058, Cl. 273-87.00H.
Credali, Lino; and Guidotti, Vincenzo, to Montedison S.p.A. Polymeric piperazinamides and membranes for reverse osmosis made therefrom. 4,123,424, Cl. 528-337.000.
Credner, Hans-Heinrich: *See—*
Monballu, Marcel J.; Credner, Hans-Heinrich; Himmelmann, Wolfgang; Meier, Ernst; Benoy, Gaston J.; Van Poucke, Raphael K.; Schranz, Karl-Wilhelm; and Van Veelen, George F., 4,123,281, Cl. 96-100.00R.
Credner, Karl; Brenner, Gunter; Tauscher, Manfred; and Jozic, Ljerka, to Wulfing, Johann W. Adenine derivatives and hypolipidemic composition thereof. 4,123,534, Cl. 424-253.000.
Cremerius, Willi. Sealing bead for use at high temperatures. 4,123,073, Cl. 277-219.000.
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., to Westinghouse Electric Corp. Double-flow puffer-type single-pressure compressed-gas circuit-interrupter. 4,123,636, Cl. 200-148.00A.
Cross, Arthur A.: *See—*
Dussault, Edmund J.; Kochis, August J.; and Cross, Arthur A., 4,122,887, Cl. 160-354.000.
Croup, Robert E., to Acoustic Fiber Sound Systems, Inc. Loudspeaker assembly. 4,122,911, Cl. 181-199.000.
Crowell, Florence S.; and Hicks, Janice R. Three dimensional doll. 4,122,628, Cl. 46-135.00R.
Crown Cork & Seal Company, Inc.: *See—*
Potts, Vinson S., 4,122,971, Cl. 220-268.000.
Cruise, Claude R., Jr. Kite load-releasing messenger. 4,123,021, Cl. 244-155.00R.
Crunk, Elmer Kenneth; and Craft, John W., to BC Pausch, Inc. Box form for concrete culvert. 4,123,034, Cl. 249-156.000.
Cubbison, Richard J., Jr., to Bell Telephone Laboratories, Incorporated. Operational amplifier decoupling circuit. 4,123,722, Cl. 330-85.000.
Cunningham, Douglas J.: *See—*
Bottrill, John; and Cunningham, Douglas J., 4,123,013, Cl. 242-107.000.
Curran, D. Michael: *See—*
Jarrett, Ronald T.; and Barrett, Edward J., 4,122,767, Cl. 100-35.000.
Cushing, George B.; and Kothmann, Richard E., to Westinghouse Electric Corp. Vapor-cooled terminal-bushings for oil-type circuit-interrupters. 4,123,618, Cl. 174-11.0BH.
Custom Concepts, Incorporated: *See—*
Kubiatowicz, James F., 4,122,627, Cl. 46-92.000.
Cutler-Hammer, Inc.: *See—*
Hults, Harold W., 4,123,634, Cl. 200-67.00A.
D. H. Baldwin Company: *See—*
Uetrecht, Dale M., 4,122,744, Cl. 84-1.250.
Dahab, Richard E.; and Pollack, Howard M., to Singer Company, The. Piezo-electric line of sight corrector for inertial platform stabilized sensor in a stellar navigational system. 4,123,136, Cl. 350-16.000.
Dahlgren, Harold P. Hydrostatic bearer for printing press. 4,122,772, Cl. 101-218.000.
Dahlstrom, Norris A.: *See—*
Kohler, Dale M.; Dahlstrom, Norris A.; and Taylor, David W., 4,123,298, Cl. 148-111.000.
Daiichi Kasei Sangyo: *See—*
Katayama, Masao; and Tabeta, Yataro, 4,123,426, Cl. 260-112.00R.
Daiichi Koshuha Kogya Kabushiki Kaisha: *See—*
Hanyo, Susumu; Yamaguchi, Jousuke; Morishita, Yoshiyuki; and Noguchi, Itoshi, 4,122,697, Cl. 72-128.000.
Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Busch, Gerhard; and Heiss, Werner, 4,123,104, Cl. 297-391.000.
Renz, Udo D.; and Memmhardt, Dieter, 4,123,111, Cl. 301-37.0TP.
D'Ambra, Grace. Portable food warmer. 4,122,764, Cl. 99-483.000.
Dammel, Howard W.; Frantz, Robert M.; Luke, James H.; and Skrzypczyk, William G., to Cincinnati Steel Treating Company; and General Electric Company. Apparatus for induction hardening gear teeth. 4,123,642, Cl. 219-10.590.
Dana Corporation: *See—*
Sharpe, Robert L., 4,123,072, Cl. 277-216.000.
Danford, Tiras J., to Harrington Manufacturing Company. Bulk tobacco curing and drying structure. 4,123,221, Cl. 432-152.000.
Daniel, Richard A., to United States of America, Navy. Method of making tuned resonance passive electronic filters. 4,123,732, Cl. 333-70.00R.
Daniel, Thomas M. Method for the purification of mycobacterial protein antigens and resulting product. 4,123,427, Cl. 260-112.00B.
Danks, John. Sawhorse legs. 4,122,918, Cl. 182-181.000.
Dannelly, Clarence C., to Eastman Kodak Company. Encapsulating apparatus. 4,123,206, Cl. 425-5.000.
Darias Paya, Francisco J. Stringed musical instrument with auxiliary strings. 4,122,745, Cl. 84-267.000.
Darragh, Donald R., to Snow, James V. Pyramidal hanger for plants or like ornaments. 4,123,025, Cl. 248-303.000.
Das, Tapan K.; Boyce, Peter H.; and Fletcher, Graham J., to Plessey Handel und Investments AG. Communication equipment. 4,123,724, Cl. 331-1.00A.
Dastur, Khurshid P.: *See—*
Skorianetz, Werner; Dastur, Khurshid P.; and Strickler, Hugo, 4,123,394, Cl. 252-522.000.
Daswick, Alexander C.: *See—*
Landry, Archie C.; and Daswick, Alexander C., 4,123,102, Cl. 297-270.000.
Datta, Chander: *See—*
Lindahl, Herbert S.; and Datta, Chander, 4,122,686, Cl. 62-81.000.
Davey, Christopher R.; and Buckley, Peter J., to Procter & Gamble Company, The. Particulate detergent composition containing dibasic magnesium hypochlorite. 4,123,377, Cl. 252-103.000.
David, Agoston: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Knoll, Jozsef; Sebestyen, Gyula; and David, Agoston, 4,123,533, Cl. 424-251.000.
Davidson, Charles P. D.; and Philips, Edward G., to Lucas Industries Limited. Electrically assisted cycles. 4,122,907, Cl. 180-33.00C.
Davis, Abraham D.; and Pinter, Kenneth W., to A. B. Dick Company. Self-adhering stencil. 4,123,581, Cl. 428-318.000.
Davis, Donald C., to Bendix Autolite Corporation. Two fire ceramic sealed oxygen sensing device and method of forming same. 4,123,344, Cl. 204-195.00S.
Davis, Jesse B. Method and apparatus for reeling discrete yarn strand patterns. 4,122,703, Cl. 73-37.700.
Davis, Manfred, to Transcience Industries, Inc. Phase locked loop system. 4,123,725, Cl. 331-8.000.
Davy-Loewy Limited: *See—*
Maltby, Jack, 4,122,740, Cl. 83-646.000.
Dawes, Dag: *See—*
Bohner, Beat; Dawes, Dag; and Meyer, Willy, 4,123,437, Cl. 260-308.00R.
Dayton Reliable Tool & Manufacturing Company: *See—*
Brown, Omar L., 4,122,791, Cl. 113-121.00C.
Dean, Lura C., Jr.; Boswell, Gary T.; Winkelman, Wayne; and Little, Frank S., to Texas Instruments Incorporated. Control system for a stored program multiprocessor computer. 4,123,795, Cl. 364-200.000.
DeBolt, Harold E., to Avco Corporation. Filamentary reinforcement product. 4,123,583, Cl. 428-336.000.

Decca Limited: *See—*
Botcherby, Stephen C. L.; and Starbuck, Christopher P., 4,123,145, Cl. 350-269.000.
Botcherby, Stephen C. L.; Starbuck, Christopher P.; and Fitzherbert, Jeremy A., 4,123,166, Cl. 356-152.000.
Botcherby, Stephen C. L.; and Fitzherbert, Jeremy A., 4,123,167, Cl. 356-152.000.
Decker, Bert J. Wave energy generator-breakwater-barge-dock. 4,123,667, Cl. 290-53.000.
Dee, Inc.: *See—*
Ellinger, Earl H., 4,123,081, Cl. 280-463.000.
Deere & Company: *See—*
Harbert, Jimmy D.; and Hansen, Harold V., 4,122,974, Cl. 221-13.000.
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Cherry, Isaac R.; and Anderson, Donald L., 4,123,785, Cl. 360-6.000.
Del Monte Corporation: *See—*
Ross, Edward E., 4,122,875, Cl. 141-11.000.
Delaporte, Jean-Charlemagne, to S.A. dite Compagnie Generale de Chauffe. Devices for heating premises by the use of heat pumps and method therefor. 4,122,892, Cl. 165-12.000.
Della Torre, Arturo: *See—*
Melloni, Piero; Della Torre, Arturo; Lauria, Francesco; Passerini, Norina; Rossi, Alessandro; and Tommasini, Raffaele, 4,123,527, Cl. 424-244.000.
Delle-Alsthom S.A.: *See—*
Chagnon, Maurice; and Lemery, Michel, 4,123,629, Cl. 200-51.00R.
Demag A.G.: *See—*
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deMauriac, Richard A.: *See—*
Knight, Phillip D.; deMauriac, Richard A.; and Graham, Patricia A., 4,123,274, Cl. 96-66.00T.
Demi, Roy C.: *See—*
Branson, Charles D.; and Demi, Roy C., 4,123,036, Cl. 251-180.000.
De Napoli, Vincent. Tool box. 4,122,944, Cl. 206-349.000.
Denka Chemical Corporation: *See—*
Kerr, Ralph O.; and Barone, Bruno J., 4,123,388, Cl. 252-437.000.
Denson, Richard E. Food stuffs holder and cutter assembly. 4,122,737, Cl. 83-268.000.
Dentsply Research and Development Corporation: *See—*
Gonser, Donald I., 4,123,673, Cl. 307-326.000.
Deremo, Edwin J.; and Olving, Hans P., to Gardner-Denver Company. Control system for peck drilling tool. 4,123,188, Cl. 408-17.000.
Derrickson, Charles H.: *See—*
Dubuit, Jean-Louis; and Derrickson, Charles H., 4,122,768, Cl. 101-39.000.
Dervin, Edward: *See—*
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Deuterium Corporation: *See—*
Spevack, Jerome S., 4,123,506, Cl. 423-566.000.
Deutsch, Ralph, to Deutsch Research Laboratories, Ltd. Transient voice generator. 4,122,742, Cl. 84-1.110.
Deutsch Research Laboratories, Ltd.: *See—*
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Deutsche Vergaser GmbH & Co. Kg: *See—*
Bockelmann, Wilfried; and Steinbrink, Rainer, 4,122,806, Cl. 123-103.00R.
Devine, William T.; and Washburn, William F., to International Business Machines Corporation. Logical OR circuit for programmed logic arrays. 4,123,669, Cl. 307-205.000.
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De Winter, Walter F.: *See—*
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Kennedy, Alexander W., 4,123,290, Cl. 148-6.200.
DiCicco, William R., Jr.: *See—*
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Dick, Thomas H.: *See—*
Queen, David S.; Bell, Peter W.; Dick, Thomas H.; and Edgar, John B., 4,123,313, Cl. 156-498.000.
Dickore, Karlfried: *See—*
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Dieterich, Dieter: *See—*
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Dietrich, Udo, to Demag A.G. Railway maintenance car. 4,122,777, Cl. 104-89.000.
Dietz, Henry G. Cup supporter with removable elastic hip band. 4,122,849, Cl. 128-158.000.
Diggs, Edward J.; and Grebe, Karl, to Rockwell International Corporation. Flexible seal for brakes. 4,122,921, Cl. 188-79.5GE.
Di Liberto, Menno; and Parisi, Joseph P. Water shower unit. 4,122,558, Cl. 4-145.000.
DiNinno, Frank P., to Merck & Co., Inc. 6-Ethylpenicillanic acid. 4,123,539, Cl. 424-270.000.
DiPeri, Leonard J. Solar energy collector for direct air heating. 4,122,828, Cl. 126-270.000.
Di Rosa, Getano, to F.A.T.A - Fabbrica Apparecchi Di Sollevamento E Trasporto Ed Affint S.p.A. Damped suspended conveyor trolley. 4,122,778, Cl. 104-172.00S.
DiTillio, Ralph: *See—*
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Bertolini, Natale; Divo, Claudio; Maris, Petri; and Maiorano, Giovanni, 4,123,471, Cl. 260-683.15C.
Dixon, Bernard, to Dixon International Limited. Draught and weather sealing arrangements. 4,122,632, Cl. 49-470.000.
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Dixon, Bernard, 4,122,632, Cl. 49-470.000.
Doane, Elliott P.: *See—*
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Dodd, Anita A. Method of reducing drag and rotating torque in the rotary drilling of oil and gas wells. 4,123,367, Cl. 252-8.50B.
Dodds, David E.; Sendyk, Andrzej M.; and Wohlberg, Donald B., to Canadian Patents and Development Limited. Adaptive digital delta modulation for voice transmission. 4,123,709, Cl. 325-38.00B.
Doehler, Peter: *See—*
Baumgartner, Erich R.; and Doehler, Peter, 4,122,615, Cl. 38-93.000.
Doerner, Frank. Chair control for a tiltable stenographer's chair. 4,123,103, Cl. 297-305.000.
Donald P. Massa & Fred M. Dellorfano, Jr. Trustees of The Stonleigh Trust u/d/t: *See—*
Massa, Frank, 4,123,567, Cl. 427-123.000.
Dorer, Gary L., to Minnesota Mining and Manufacturing Company. Photoconductive element having a barrier layer of aluminum hydroxyoxide. 4,123,267, Cl. 96-1.0PC.
Doring, Erich. Elastic street delineator. 4,122,795, Cl. 116-63.00R.
Dorr, Hans W.; and Grosse, Ludwig, to Hoechst Aktiengesellschaft. Paper for serving cable cores. 4,123,593, Cl. 428-535.000.
Dose, Werner. Device for tanning, dyeing or the like. 4,122,692, Cl. 69-30.000.
Dow Chemical Company, The: *See—*
Grinstead, Robert R.; Jones, Kenneth C.; and Nasutavicus, Wilmonte A., 4,123,435, Cl. 260-307.00D.
Nelson, Wayne F., 4,122,898, Cl. 166-325.000.
Warner, Gregory L.; and Leng, Douglas E., 4,123,403, Cl. 260-29.2EP.
Dow Corning Corporation: *See—*
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Doyle, Terrence W.: *See—*
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Dragerwerk Aktiengesellschaft: *See—*
Heim, Ulrich; Leichnitz, Kurt; and Wiesner, Peter, 4,123,227, Cl. 23-232.00R.
Dragt, Jan C. W., to U.S. Philips Corporation. Electrically controllable pivoting mirror arrangement. 4,123,146, Cl. 350-285.000.
Drake, Cyril F., to International Standard Electric Corporation. Controlled release fertilizer. 4,123,248, Cl. 71-4.000.
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Parrott, George A.; and Norris, John B., 4,123,110, Cl. 299-43.000.
Dresser Industries, Inc.: *See—*
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Dreyer, Dennis G.: *See—*
Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., 4,123,266, Cl. 75-244.000.
Dubin, Robert R.: *See—*
Chatterji, Debajyoti; and Dubin, Robert R., 4,123,566, Cl. 427-115.000.
Dubuit, Jean-Louis; and Derrickson, Charles H., to Dubuit of America, Inc. Screen printing press attachment for printing objects of revolution. 4,122,768, Cl. 101-39.000.
Dubuit of America, Inc.: *See—*
Dubuit, Jean-Louis; and Derrickson, Charles H., 4,122,768, Cl. 101-39.000.
Dudley, Vernon E., to Gala Industries, Inc. Underwater pelletizer and heat exchanger die plate. 4,123,207, Cl. 425-67.000.
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Dunning, Reginald: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Berghmans, Jacques M. L.; and Vary, Eva M., 4,123,401, Cl. 260-29.60F.
Goddard, Steven J., 4,123,252, Cl. 71-92.000.
Haire, Michael J., 4,123,546, Cl. 424-274.000.

Klaver, Petrus; and Steenhof de Jong, Jacob G., 4,123,208, Cl. 425-72.00S.
Malhotra, Satish C., 4,123,606, Cl. 528-499.000.
Quinn, John A., 4,123,272, Cl. 96-35.100.
Stewart, Clare A., Jr., 4,123,603, Cl. 526-254.000.

DuRocher, Gideon A., to Essex Group, Inc. Thermal relay and automobile cornering lamp control utilizing the same. 4,123,746, Cl. 340-81.00R.

Dusbiber, Warren M., to Acushnet Company. Ball and process and composition of matter for production thereof. 4,123,061, Cl. 273-220.000.

Dussault, Edmund J.; Kochis, August J.; and Cross, Arthur A., to Eckel Industries, Inc. Flexible curtain. 4,122,887, Cl. 160-354.000.

Dutt, William H., and Romanski, Eric R., to Albany International Corp. Seam for forming wires and dryer felts. 4,123,022, Cl. 245-10.000.

Dutta, Anand S.; Gormley, James J.; Hayward, Christopher F.; Morley, John S.; Petter, Nigel N.; and Stacey, Gilbert J., to Imperial Chemical Industries Limited. Analgesic and sedative polypeptides. 4,123,523, Cl. 424-177.000.

Duvall, David S.; and Paulonis, Daniel F., to United Technologies Corporation. Method of making a composite interlayer for diffusion bonding. 4,123,992, Cl. 228-176.000.

Dwyer, Gregory J., to Ex-Cell-O Corporation. Carton jam detection means. 4,122,760, Cl. 93-36.00R.

Dyckerhoff & Widmann Aktiengesellschaft: *See*—
Tang, Man-Chung, 4,123,485, Cl. 264-33.000.

Dynamics Research Corporation: *See*—
Leney, David E.; Stuart, Robert W.; and Anderegg, John S., 4,123,750, Cl. 340-347.00P.

E. R. Squibb & Sons, Inc.: *See*—
O'Connor, Jeremiah J.; Pilote, Raymond R.; and Linkenheimer, Wayne H., 4,123,522, Cl. 424-116.000.
Vogt, B. Richard, 4,123,532, Cl. 424-251.000.

Eadie, David W.; and Hancock, Charles J., to Quest Automation Limited. Photodrafting equipment. 4,123,763, Cl. 354-4.000.

Eastern Company, The: *See*—
Vass, George S.; and Speidel, Gerald M., 4,122,681, Cl. 405-261.000.

Eastman Kodak Company: *See*—
Ciurca, Samuel, Jr.; and Kohrt, Carl F., 4,123,273, Cl. 96-66.00T.
Dannelly, Clarence C., 4,123,206, Cl. 425-5.000.
Knight, Phillip D.; deMauriac, Richard A.; and Graham, Patricia A., 4,123,274, Cl. 96-66.00T.

Eastman Technology, Inc.: *See*—
Moeller, Charles R.; and Jeffers, Frederick J., 4,123,790, Cl. 360-111.000.

Eaton, John L., Jr., to SCM Corporation. Termination for an electrical resistance element. 4,123,743, Cl. 338-322.000.

Ebauches Electroniques S.A.: *See*—
Stampfli, Jean-Marcel, 4,122,664, Cl. 58-88.00B.

Eberspacher, J.: *See*—
Leins, Alfred, 4,122,673, Cl. 60-274.000.

Eckel Industries, Inc.: *See*—
Dussault, Edmund J.; Kochis, August J.; and Cross, Arthur A., 4,122,887, Cl. 160-354.000.

Edenvale Engineering Works (Proprietary) Limited: *See*—
Hill, Bruce S., 4,123,109, Cl. 299-18.000.

Edgar, John B.: *See*—
Queen, David S.; Bell, Peter W.; Dick, Thomas H.; and Edgar, John B., 4,123,313, Cl. 156-498.000.

Edwards, Garry: *See*—
Mandler, Walter; Edwards, Garry; and Wagner, Erich, 4,123,144, Cl. 350-122.000.

Eger, Donald M., to International Radio & Electronics, Inc. Adapter hub for a reel. 4,123,010, Cl. 242-68.300.

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Levai, Laszlo; and Mikite, Gyula, 4,123,615, Cl. 568-712.000.

Ehret, Gordon F.; and Rowley, William N., to Wylain, Inc. Test plug assembly and method for pressure testing the inlet connection for liquid jet floor outlet fittings. 4,122,592, Cl. 29-404.000.

Eisenwerk-Gesellschaft Maximilianshutte mbH: *See*—
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans G., 4,123,259, Cl. 75-60.000.

Eisman, Norman: *See*—
Price, Robert; and Eisman, Norman, 4,122,736, Cl. 83-23.000.

Eitzen, Vincent E.; and Moore, Robert R., to American Hospital Supply Corporation. Optical card reader apparatus. 4,122,998, Cl. 235-475.000.

Ekengren, Turid: *See*—
Bjorklund, James Axel C.; and Ekengren, Turid, 4,123,319, Cl. 162-158.000.

Ekinaka, Michael H.: *See*—
Mosior, Donald J.; Cawood, Charles D., Jr.; and Ekinaka, Michael H., 4,122,856, Cl. 128-311.000.

Electric Power Research Institute, Inc.: *See*—
Chatterji, Debajyoti; and Dubin, Robert R., 4,123,566, Cl. 427-115.000.

Electro-Nucleonics, Inc.: *See*—
Bullock, Frederick C.; Engelhardt, Alvin; Cirincione, Thomas J.; and Williams, Joseph A., 4,123,173, Cl. 356-246.000.

Electro-Technics, Inc.: *See*—
Zdrojkowski, Ronald J., 4,122,843, Cl. 128-2.06E.

Electroglas, Inc.: *See*—
Roch, Jacques L., 4,123,706, Cl. 324-158.00P.

Eli Lilly and Company: *See*—
Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishnan, 4,123,612, Cl. 544-16.000.

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Hyggen, Egil, 4,122,880, Cl. 152-216.000.
Hyggen, Egil, 4,122,881, Cl. 152-216.000.

Ellefson, Charles R.; and Hershenson, Fred M., to G. D. Searle & Co. 2-Aryl-4-(1-piperazinyl)-3H-1,5-benzodiazepines. 4,123,430, Cl. 260-243.300.

Elli, Carlo: *See*—
Bernardi, Luigi; Elli, Carlo; Falconi, Giovanni B.; and Ferrari, Rosella, 4,123,613, Cl. 544-408.000.

Ellinger, Earl H., to Dee, Inc. Beet harvester hitch. 4,123,081, Cl. 280-463.000.

Ellis, Jerry, to General Motors Corporation. Weatherstrip sealing arrangement. 4,123,100, Cl. 296-93.000.

Ellis, John S.: *See*—
Ellis, Larry C.; Ellis, John S.; and Cossin, Russell N., 4,122,923, Cl. 188-285.000.

Ellis, Larry C.; Ellis, John S.; and Cossin, Russell N., to Ace Controls, Inc. Adjustable hydraulic shock absorber. 4,122,923, Cl. 188-285.000.

Emerson, Robert T.: *See*—
Peterson, Glenn E.; Emerson, Robert T.; and Schoenlein, William J., 4,123,569, Cl. 427-141.000.

Emery, William G., to Koppers Company, Inc. Reciprocating coke guide extension. 4,123,334, Cl. 202-262.000.

EMI Limited: *See*—
Oliver, Colin C., 4,123,659, Cl. 250-403.000.

Energy Conversion Devices, Inc.: *See*—
Klose, Peter H.; and Ovshinsky, Stanford R., 4,123,157, Cl. 355-43.000.

Energy Recovery Research Group, Inc.: *See*—
Rotter, Franz, 4,123,332, Cl. 201-15.000.

Engelhardt, Alvin: *See*—
Bullock, Frederick C.; Engelhardt, Alvin; Cirincione, Thomas J.; and Williams, Joseph A., 4,123,173, Cl. 356-246.000.

English Electric Valve Company Limited: *See*—
Jones, Eric; and Townsend, Rodney P., 4,123,225, Cl. 422-98.000.
Menown, Hugh; and Wheldon, Robert J., 4,123,684, Cl. 313-205.000.

Engman, Thomas; Ericsson, Dan; and Landen, Goran, to Husqvarna AB. Power saw chain. 4,122,741, Cl. 83-834.000.

Enso-Gutzeit Osakeyhtio: *See*—
Koskinen, Ensio, 4,123,363, Cl. 210-331.000.

Environmental Systems Corporation: *See*—
Carlson, Thomas B.; and Kreikebaum, Gerhard, 4,122,719, Cl. 73-342.000.

Epstein, Felix; and Epstein, Peter R. Means for effecting improvement in the manufacture of comminuted meat products. 4,123,557, Cl. 426-105.000.

Epstein, Peter R.: *See*—
Epstein, Felix; and Epstein, Peter R., 4,123,557, Cl. 426-105.000.

Ericsson, Dan: *See*—
Engman, Thomas; Ericsson, Dan; and Landen, Goran, 4,122,741, Cl. 83-834.000.

Eriksen, Leif H.: *See*—
Fritzvold, Bjorn H.; Carling, Helge; and Eriksen, Leif H., 4,123,317, Cl. 162-17.000.

Erikson, J. Alden; and Birkmeyer, William J., to PPG Industries, Inc. Amide modified saturated polyester polyols and method of making. 4,123,422, Cl. 528-273.000.

Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Industrial Trading & Development Company B.V. Ball bearing assembly with plurality of ball guideways. 4,123,121, Cl. 308-6.00C.

Ernst Koch & Co.: *See*—
Herzog, Gunter, 4,122,698, Cl. 72-286.000.

Ernst Leitz Wetzlar GmbH: *See*—
Mandler, Walter; Edwards, Garry; and Wagner, Erich, 4,123,144, Cl. 350-222.000.

Escher Wyss GmbH: *See*—
Link, Christoph; and Trondle, Robert, 4,123,321, Cl. 162-272.000.

Escher Wyss Limited: *See*—
Miller, Helmut, 4,123,666, Cl. 290-52.000.

Essex Group, Inc.: *See*—
DuRocher, Gideon A., 4,123,746, Cl. 340-81.00R.
Stevens, Joe M.; and Porter, Elmer D., 4,123,633, Cl. 200-61.860.

ETA A.G. Ebauches-Fabrik: *See*—
Giger, Urs, 4,122,665, Cl. 58-121.00R.

Etablissement Dentaire Ivoclar: *See*—
Madlener, Bruno A., 4,123,046, Cl. 269-228.000.

Evans, David M., to S & C Electric Company. Support assembly for a circuit interrupting device. 4,123,639, Cl. 200-254.000.

Evans, James D.: *See*—
Brewer, David C.; Evans, James D.; Kohler, Dale M.; and Haselkorn, Michael H., 4,123,337, Cl. 204-129.300.

Ever-Wear, Inc.: *See*—
Brickman, Harold, 4,122,780, Cl. 108-25.000.

Evers, Alfred, to Hagenuk Vormals Neufeldt & Kuhnke GmbH. Arrangement for advancing rod stock pieces in turning machines. 4,122,735, Cl. 82-2.700.

Evrard, Paul; and Terroy, Michel-Claude, to Altulor. Method and apparatus for reinforcing a hot shaped shell. 4,123,494, Cl. 264-258.000.

Ex-Cell-O Corporation: *See*—
Dwyer, Gregory J., 4,122,760, Cl. 93-36.00R.

Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,122,755, Cl. 90-11.00A.

Exxon Production Research Company: *See*—
Williams, Robert E., 4,123,354, Cl. 210-40.000.

Exxon Research & Engineering Co.: *See*—
Baird, William C., Jr.; Bearden, Roby, Jr.; and Bollinger, Ralph L., Jr., 4,123,350, Cl. 208-108.000.
Brois, Stanley J.; and Gutierrez, Antonio, 4,123,373, Cl. 252-48.600.
Maa, Peter S., 4,123,347, Cl. 208-8.000.

F.A.T.A - Fabbrica Apparecchi Di Sollevamento E Trasporto Ed Affint S.p.A.: *See*—
Di Rosa, Getano, 4,122,778, Cl. 104-172.00S.

Fahey, Darryl R.; and Mahan, John E., to Phillips Petroleum Company. Trans-halo(acyl)bis(triethylphosphine)nickel(II) complexes and preparation thereof. 4,123,447, Cl. 260-439.00R.

Fair, Delbert W.; and Brown, Graydon L., to Continental Oil Company. Air cushion skirt. 4,122,909, Cl. 180-127.000.

Falconi, Giovanni B.: *See*—
Bernardi, Luigi; Elli, Carlo; Falconi, Giovanni B.; and Ferrari, Rosella, 4,123,613, Cl. 544-408.000.

Falla, Marjorie B. Pre-packaged patient identification kit. 4,122,947, Cl. 206-569.000.

Farnum, Henry M. Circumferential stereo spectacular with a mosaic in a scene. 4,123,152, Cl. 352-69.000.

Fassbinder, Hans G.: *See*—
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans G., 4,123,259, Cl. 75-60.000.

Fathauer, George H., to Masco Corporation of Indiana. Program apparatus for radio receiver using frequency synthesizer. 4,123,715, Cl. 325-464.000.

Felix, Ernst, to Zellweger, Ltd. Apparatus for monitoring for thread breakage a continuous sequence of work positions on a textile machine. 4,122,657, Cl. 57-81.000.

Ferlise, Louis; and Mackey, Sherman E., to Huffy Corporation. Rotary-plunge tube notching system. 4,123,189, Cl. 408-21.000.

Fernandez, Allen: *See*—
Lewis, George R.; and Fernandez, Allen, 4,123,017, Cl. 244-3.160.

Fernandez, Avelino; Glass, Josef; Osegowitsch, Viktor; and Hehn, Wilfried, to Agfa-Gevaert AG. Washing chamber for photographic developing apparatus. 4,123,769, Cl. 354-322.000.

Ferrari, Rosella: *See*—
Bernardi, Luigi; Elli, Carlo; Falconi, Giovanni B.; and Ferrari, Rosella, 4,123,613, Cl. 544-408.000.

Ferro Corporation: *See*—
Ryan, John R.; and Shalita, Paul, 4,123,140, Cl. 350-105.000.

Ferrofluidics Corporation: *See*—
Moskowitz, Ronald; Stahl, Philip; and Reed, Walter R., 4,123,675, Cl. 310-49.00R.

Fessett, Kenneth: *See*—
Viero, Laurence; Cannon, John; Rademaker, George; Swanson, Williard; and Fessett, Kenneth, 4,123,089, Cl. 285-39.000.

Fiat Societa per Azioni: *See*—
Levizzari, Giannetto; and Ruspa, Giacomo, 4,122,723, Cl. 73-579.000.

Fiber Industries Inc.: *See*—
Gibbon, John D., 4,123,490, Cl. 264-147.000.

Ficht, Paulette G.: *See*—
Brouard, Claude M. H. E.; and Ficht, Paulette G., 4,123,429, Cl. 260-147.000.

Fiedler, Howard C.; and Cohen, Joseph T., to General Electric Company. Method of producing silicon-iron sheet materal, and product. 4,123,299, Cl. 148-111.000.

Fields, Everett H., to Ford Motor Company. Magnesium die-cast brake master cylinder. 4,122,596, Cl. 29-527.200.

Fikart, Josef L., to GTE Lenkurt Electric (Canada) Ltd. Slot transmission line coupling technique using a capacitor. 4,123,730, Cl. 333-26.000.

Finberg, Arne O., to Mobil Oil Corporation. Low density polyethylene toughened with ethylene/propylene copolymer. 4,123,417, Cl. 260-42.460.

Firestone Tire & Rubber Company, The: *See*—
Snyder, Dennis L.; Stayer, Mark L., Jr.; and Kang, Jung W., 4,123,503, Cl. 423-300.000.

Firmenich SA: *See*—
Skorianetz, Werner; Dastur, Khurshid P.; and Strickler, Hugo, 4,123,394, Cl. 252-522.000.

Fischer, Gertrude: *See*—
Heintze, York, 4,123,511, Cl. 424-46.000.

Fischer, Rainer: *See*—
Fischer, Stefan; Wollschlager, Dieter; Scharrenbroich, Helmut; and Fischer, Rainer, 4,123,217, Cl. 425-525.000.

Fischer, Stefan; Wollschlager, Dieter; Scharrenbroich, Helmut; and Fischer, Rainer, to Maschinenfabrik Johann Fischer. Apparatus for the manufacture of a thermoplastic container with a handle. 4,123,217, Cl. 425-525.000.

Fishbein, William; Olesch, Reinhard; and Rittenbach, Otto. Radar interference reduction. 4,123,755, Cl. 343-17.10R.

Fisher, Donald J., to Xerox Corporation. Combined corona generator and imaging surface cleaner. 4,123,154, Cl. 355-15.000.

Fisher, John M., to B.F. Goodrich Company, The. Shield bag. 4,123,662, Cl. 250-518.000.

Fisher, Peter M.; and Matsumiya, James A., to TSB International N.V. Wheel rim. 4,122,882, Cl. 152-381.2WC.

Fitzgerald, Dennis J.; and Breshears, Robert R., to United States of America, National Aeronautics and Space Administration. Plasma igniter for internal combustion engine. 4,122,816, Cl. 123-148.0DC.

Fitzherbert, Jeremy A.: *See*—
Botcherby, Stephen C. L.; Starbuck, Christopher P.; and Fitzherbert, Jeremy A., 4,123,166, Cl. 356-152.000.
Botcherby, Stephen C. L.; and Fitzherbert, Jeremy A., 4,123,167, Cl. 356-152.000.

Flagge, Bruce. Septic system liquid level control apparatus. 4,123,358, Cl. 210-104.000.

Flaherty, John J.: *See*—
Strauts, Eric J.; and Flaherty, John J., 4,123,797, Cl. 365-118.000.

Flair, Henry J., to Illinois Tool Works Inc. Machine for tracing the profile of an orbiting star gear. 4,122,609, Cl. 33-174.00P.

Fleming, David L.; Johansen, Thomas R.; and Torok, Ernest J., to Sperry Rand Corporation. Ambiguity plane optical processor incorporating magneto-optic, bubble domain histograph. 4,123,142, Cl. 350-162.0SF.

Fletcher, Graham J.: *See*—
Das, Tapan K.; Boyce, Peter H.; and Fletcher, Graham J., 4,123,724, Cl. 331-1.00A.

Fletcher, Wade: *See*—
Rowe, E. Riley; Fletcher, Wade; Markert, Herman R.; and Grady, Dwight D., 4,122,790, Cl. 113-120.00R.

Flett Development Company: *See*—
Kelley, Joseph A., 4,123,489, Cl. 264-141.000.

Flexsteel Industries, Inc.: *See*—
Quakenbush, Howard M., 4,123,028, Cl. 248-425.000.

Floyd, Middleton B., Jr.: *See*—
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,123,456, Cl. 562-503.000.

FMC Corporation: *See*—
Weber, Harry W., Jr., 4,123,450, Cl. 260-453.00P.

Fohl, Artur, to Repa Feinstanzwerk GmbH. Lock for motor vehicle safety belts. 4,122,584, Cl. 24-230.00A.

Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., to Cabot Corporation. Sintered high performance metal powder alloy. 4,123,266, Cl. 75-244.000.

Follert, Hans G.; Linde, Klaus; and Jutte, Hans, to Gewerkschaft Eisenhutte Westfalia. Tunnel drive shield. 4,122,683, Cl. 405-142.000.

Ford, Bacon & Davis Texas, Inc.: *See*—
Bond, Desmond H.; Taggart, George W.; and Jaeger, Kurt S., 4,123,220, Cl. 431-353.000.

Ford, Eric H. Opto-electronic ignition systems for internal combustion engines. 4,122,814, Cl. 123-148.00E.

Ford, James R.: *See*—
Barton, James G.; and Ford, James R., 4,122,771, Cl. 101-123.000.

Ford Motor Company: *See*—
Fields, Everett H., 4,122,596, Cl. 29-527.200.
Grittner, Heinz; Giese, Ralph; and Korner, Paul, 4,122,583, Cl. 24-208.00A.
Hoadley, Frederick E., 4,123,186, Cl. 407-54.000.
Koss, George A., 4,123,113, Cl. 302-2.00R.
Pretty, John E., 4,122,578, Cl. 15-250.230.

Ford, Thomas E. Artist's kit. 4,123,127, Cl. 312-230.000.

Forlow, John K.: *See*—
Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,122,755, Cl. 90-11.00A.

Forsyth, Frank R.: *See*—
Poapst, Peter A.; and Forsyth, Frank R., 4,123,558, Cl. 426-268.000.

Foster Wheeler Energy Corporation: *See*—
Zipay, Albert J.; and Gorzegno, Walter P., 4,123,237, Cl. 55-205.000.

Fox, Donald P.: *See*—
Vild, Joseph P.; Cleary, William I.; and Fox, Donald P., 4,123,708, Cl. 324-224.000.

Foxboro Company, The: *See*—
Olsen, Everett O., 4,123,696, Cl. 318-623.000.

Francey, Melvin H.: *See*—
Spanke, Edwin A.; Carrieri, Louis F.; and Francey, Melvin H., 4,122,926, Cl. 192-18.00A.

Franer, Victor R., to Minnesota Mining and Manufacturing Company. Color source sheet with rubber binder. 4,123,580, Cl. 428-304.000.

Franetzki, Manfred; Korn, Volker; and Prestele, Karl, to Siemens Aktiengesellschaft. Apparatus for the determination of respiratory passageway resistance. 4,122,839, Cl. 128-2.080.

Franke, Robert H., to Burroughs Corporation. Asynchronous digital circuit testing system. 4,122,995, Cl. 235-302.000.

Franklin Container Corporation: *See*—
Blatt, David H., 4,122,949, Cl. 206-303.000.

Frantz, Robert M.: *See*—
Dammel, Howard W.; Frantz, Robert M.; Luke, James H.; and Skrzypczyk, William G., 4,123,642, Cl. 219-10.590.

Franz, James H., Jr.: *See*—
Anderson, Larry W.; and Franz, James H., Jr., 4,123,693, Cl. 318-376.000.

Freeman, Quilla H. Stringed musical instrument pick. 4,122,746, Cl. 84-322.000.

Freeman, Willie B.: *See*—
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., 4,123,636, Cl. 200-148.00A.

Freenor, Francis J., III; and Koerber, Barbara M., to Chevron Research Company. O-sulfonyl-alpha-cyano 2,6-dihalobenzaldoximes. 4,123,255, Cl. 71-103.000.

Freeport Minerals Company: *See*—
Bryant, Raymond G., Jr.; and Cockrell, Clifford M., 4,123,107, Cl. 299-6.000.

Frei, Roland; Gutmann, Franz; Sieber, Peter; and Koeppel, Peter, to

Plaston AG, Kunststoffwerke Hans Frei & Sohne. Filters for liquids. 4,123,228, Cl. 422-274.000.
French, Denis E. E., to Moore Business Forms, Inc. Continuous stationery assemblies. 4,123,086, Cl. 282-11.50A.
French, Park, to Sterndent Corporation. Comparison type colorimeter. 4,123,172, Cl. 356-188.000.
Frey, Fred J.; Hynek, Stanley; and Losinski, Edward, to InterRoyal Corporation. Chair construction. 4,123,105, Cl. 297-451.000.
Fritzvold, Bjorn H.; Carling, Helge; and Eriksen, Leif H., to Myrens Verksted A/S. Method and an apparatus for processing finely divided fibrous pulp with gas without overpressure. 4,123,317, Cl. 162-17.000.
Frost, Kenneth A., Jr., to Chevron Research Company. Pour point depressants. 4,123,232, Cl. 44-72.000.
Frungel, Frank. Arrangement for determining the density of natural fog in the atmosphere. 4,123,665, Cl. 250-565.000.
Fuji Photo Film Co., Ltd.: *See—*
Karino, Yukio; Sakaguchi, Shinji; and Yoshida, Takashi, 4,123,275, Cl. 96-77.000.
Kita, Nobuyuki; and Narutomi, Yasuhisa, 4,123,276, Cl. 96-91.00R.
Kobayashi, Odawara, 4,123,279, Cl. 96-91.00D.
Ochiai, Takeji, 4,123,277, Cl. 96-85.000.
Fujii, Yoshihiro; Moriyama, Taketoshi; Shigematsu, Yoshikatsu; Takeuchi, Shinjiro; Kikuchi, Toshiro; Taguchi, Makio; and Ichioka, Satoshi, to Nippon Steel Corporation; and Mishima Kosan Co., Ltd. Magnetic field sensor housed in a cooling device for sensing the charge in a shaft furnace or the like. 4,123,707, Cl. 324-208.000.
Fujinami, Akira: *See—*
Kameda, Nobuyuki; Hisada, Yoshio; Takayama, Chiyozo; Kato, Toshiro; and Fujinami, Akira, 4,123,549, Cl. 424-274.000.
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Fujitsu Fanuc Limited: *See—*
Shichida, Hiromichi; Gamo, Gotaro; Nomura, Yoshiyuki; Hattori, Kiyoshi; and Koiwai, Yutaka, 4,123,645, Cl. 219-69.00W.
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Nakahara, Tsuneo; Hoshikawa, Masao; Shiraishi, Satoshi; Kurosaki, Shiro; and Fujiwara, Kunio, 4,123,483, Cl. 264-1.000.
Fukuda, Kiyou; Kawabata, Toshihiko; and Asai, Kiyotsugu, to Mitsui-Nisso Corporation. Urethane-base sealing material. 4,123,412, Cl. 260-30.8DS.
Fukuda, Mitsuhisa, to Ricoh Company, Ltd. Optical reader. 4,122,997, Cl. 235-455.000.
Fukui, Yoshiharu: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Ohkawa, Masahisa, 4,123,387, Cl. 252-429.00B.
Fukuoka, Hiroshi; Kameyama, Teruhiko; Tanaka, Yoshio; Suzuki, Hideyo; and Imai, Kimiaki, to Nisshin Steel Company Ltd.; and Japan Metals & Chemicals, Co., Ltd. Method of treating a plating sludge. 4,123,257, Cl. 75-40.000.
Fukushima, Mitsuru: *See—*
Morishita, Masataka; Fukushima, Mitsuru; Sasagawa, Tutomu; Inaba, Yoshihito; Yokokawa, Yasuo; Araragi, Satoshi; Yoshida, Narumi; and Uchiyama, Hachiro, 4,123,381, Cl. 252-316.000.
Fukushima, Tadahide: *See—*
Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; Asaeda, Tsuyoshi; Fukushima, Tadahide; Shingu, Tamotsu; Hashimoto, Shigeru; and Iwashita, Tomonori, 4,123,650, Cl. 250-201.000.
Furuya, Tutomu: *See—*
Inowa, Shigeru; Nakamura, Issei; and Furuya, Tutomu, 4,123,156, Cl. 355-3.0SC.
Furyk, Robert C.; and Gow, Jon E. P., to Creative Inventions. Game: Disk-golf. 4,123,058, Cl. 273-87.00H.
Fushida, Akira; Morikawa, Hiroichi; Shinsho, Toshihiro; Miyazaki, Takaaki; and Aizawa, Tatsuo, to Mita Industrial Company, Limited. Alkali metal dichromate as memory resistance improver for zinc oxide photoconductors in electrostatic photography. 4,123,271, Cl. 96-1.800.
Futamura, Jun: *See—*
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G. D. Searle & Co.: *See—*
Ellefson, Charles R.; and Hershenson, Fred M., 4,123,430, Cl. 260-143.300.
Gabrielson, Alan L.; and Magazian, Harry, to Torrington Company, The. Bearing element. 4,123,122, Cl. 308-238.000.
Gaffar, Abdul, to Colgate-Palmolive Company. Antibacterial oral composition. 4,123,512, Cl. 424-54.000.
Gagnier, Real; Bourne, John B.; and Terry, John B., to Northern Telecom Limited. Switching network for a PCM TDM system. 4,123,624, Cl. 179-15.0AT.
Gala Industries, Inc.: *See—*
Dudley, Vernon E., 4,123,207, Cl. 425-67.000.
Gale, Stephen B.; O'Donnell, Phillip P.; and Bruckenstein, Stanley, to Andco Industries, Inc. Method and apparatus for electrochemical contaminant removal from liquid media. 4,123,339, Cl. 204-149.000.
Gallizia, Achille; and Bandel, Paolo, to Industrie Pirelli S.p.A. Process for the injection molding of pneumatic tires having symmetrical parts of similar physical characteristics. 4,123,496, Cl. 264-329.000.
Gamble, Bruce B.: *See—*
Laskaris, Evangelos T.; Gamble, Bruce B.; and Hatch, Burton D., 4,123,677, Cl. 310-52.000.
Gambro AB: *See—*
Hakansson, Bo H.; Nylen, Ulf T. G.; and Qvarnstrom, Lars A. G., 4,123,353, Cl. 210-22.00C.
Gamo, Gotaro: *See—*
Shichida, Hiromichi; Gamo, Gotaro; Nomura, Yoshiyuki; Hattori, Kiyoshi; and Koiwai, Yutaka, 4,123,645, Cl. 219-69.00W.
Gardner, Charles R. Valve assembly and spraying apparatus therefor. 4,123,007, Cl. 239-414.000.
Gardner-Denver Company: *See—*
Bendure, Harry; and Traxson, Larry L., 4,122,731, Cl. 74-674.000.
Deremo, Edwin J.; and Olving, Hans P., 4,123,188, Cl. 408-17.000.
Kathmann, Stephen J.; Post, Roger L.; Herschler, Michael G.; and Anerino, Sylvester L., 4,123,203, Cl. 417-252.000.
Garsky, Victor M., to American Home Products Corporation. (2-MeAla^5)-somatostatin and analogues thereof. 4,123,425, Cl. 260-112.50S.
Gates, Bruce C.; Magnotta, Vincent L.; and Schuit, George C. A., to University of Delaware. Production of very strongly acidic solids for hydrocarbon conversions. 4,123,379, Cl. 252-184.000.
Gates Rubber Company, The: *See—*
Hammel, Ronald O., 4,123,598, Cl. 429-159.000.
Gates, William E.: *See—*
Pieters, Wim J. M.; Carlson, Emery J.; Gates, William E.; and Conner, William C., Jr., 4,123,389, Cl. 252-441.000.
Gaudette, Norman O. Jelly tube construction and method of waterproofing cable. 4,123,304, Cl. 156-48.000.
Gay, Gerald A. Skywriting apparatus. 4,122,618, Cl. 40-213.000.
Gay, Michel, to Rhone-Poulenc Industries. Plasticized, heat-stabilized PVC compositions. 4,123,399, Cl. 260-23.0XA.
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Barton, James G.; and Ford, James R., 4,122,771, Cl. 101-123.000.
General Electric: *See—*
Katchman, Arthur, 4,123,474, Cl. 260-874.000.
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Abolins, Visvaldis; and Katchman, Arthur, 4,123,475, Cl. 260-874.000.
Betts, Joseph E.; and Holub, Fred F., 4,123,586, Cl. 428-391.000.
Chang, David R., 4,123,594, Cl. 428-651.000.
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Dammel, Howard W.; Frantz, Robert M.; Luke, James H.; and Skrzypczyk, William G., 4,123,642, Cl. 219-10.590.
Fiedler, Howard C.; and Cohen, Joseph T., 4,123,299, Cl. 148-111.000.
Holub, Fred F.; Scott, Steven W.; and Wilson, Phillip S., 4,123,436, Cl. 260-30.80R.
LaConti, Anthony B.; Torkildsen, Robert A.; and Jones, Robert C., 4,123,700, Cl. 324-29.000.
Laskaris, Evangelos T.; Gamble, Bruce B.; and Hatch, Burton D., 4,123,677, Cl. 310-52.000.
Lee, Gim F., Jr., 4,123,410, Cl. 260-30.60R.
Mark, Victor; and Wilson, Phillip S., 4,123,413, Cl. 260-32.6NR.
Molari, Richard E., Jr., 4,123,588, Cl. 428-412.000.
Osteen, Mitchell M., 4,123,690, Cl. 315-258.000.
Prince, David C., Jr.; and Koch, Carl C., 4,123,196, Cl. 415-181.000.
Rosenbaum, Herman S.; Packard, Douglas R.; and Levin, Harry A., 4,123,498, Cl. 423-2.000.
Smith, William E., 4,123,444, Cl. 260-347.800.
Wambach, Allen D., 4,123,415, Cl. 260-40.00R.
General Foods Corporation: *See—*
Grieve, Harold R.; and Andersen, Thomas S., 4,122,948, Cl. 206-622.000.
General Mills Chemicals, Inc.: *See—*
Jones, Duane A., 4,123,397, Cl. 260-17.4GC.
General Motors Corporation: *See—*
Atkins, Larry P.; and Bish, James R., 4,122,890, Cl. 164-444.000.
Ballantyne, David B., 4,123,640, Cl. 200-296.000.
Bennett, George T.; and Brucken, Byron L., 4,122,930, Cl. 192-84.00C.
Biskup, Edward J., 4,123,079, Cl. 280-220.000.
Bowler, Lauren L.; and Rice, John O., 4,122,811, Cl. 123-119.0EC.
Buetemeister, Earl H., 4,123,729, Cl. 331-181.000.
Chana, Howard E., 4,122,732, Cl. 74-863.000.
Chou, Cheng-Chien; and Rosebrock, Theodore L., 4,122,668, Cl. 60-39.16R.
Ellis, Jerry, 4,123,100, Cl. 296-93.000.
Hanink, Dean K., 4,123,294, Cl. 148-13.100.
Jandeska, William F.; Netherton, Charles F.; and Vigor, Charles W., 4,123,297, Cl. 148-103.000.
Kingsbury, William L.; Thurston, Kelly W.; and Chapman, Harry L., 4,122,804, Cl. 123-32.0ST.
Kingsbury, William L.; and Thurston, Kelly W., 4,122,805, Cl. 123-32.0ST.
Nelson, Robert H., 4,123,023, Cl. 246-182.00B.
Pearce, Warren, Jr.; and Russo, Andrew, Jr., 4,123,131, Cl. 339-117.00R.
Reider, Samuel B., 4,122,670, Cl. 60-39.650.
Rober, Herbert E., 4,122,705, Cl. 73-794.000.
Schluckebier, Floyd A., 4,122,866, Cl. 137-625.270.

Van Gorder, Jack H., 4,123,068, Cl. 277-27.000.
Vogelsberg, William A., 4,122,808, Cl. 123-117.00A.
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Salzman, Ronald N.; and Herbst, Norman R., 4,123,178, Cl. 366-338.000.
General Time Corporation: *See—*
Kern, Kenneth E.; and Richmond, James W., 4,123,628, Cl. 200-38.0FB.
Gephart, Don A.; and Weber, Bruce H. Circuit for monitoring the mechanical power from an induction motor and for detecting excessive heat exchanger icing. 4,123,792, Cl. 361-30.000.
Germain, Lee A., to Goodyear Tire & Rubber Company, The. Vapor recovery filler neck assembly. 4,122,968, Cl. 220-86.00R.
Gerry, Martin E. Non-DC ignition system with variable ignition timing. 4,122,815, Cl. 123-148.00E.
Gerry, Martin E. Transient intermodulation ignition system. 4,123,689, Cl. 315-209.00R.
Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH: *See—*
Maixner, Uwe; and Milferstadt, Dieter, 4,123,655, Cl. 250-305.000.
Gesellschaft fur Schwerionenforschung mbH: *See—*
Keller, Roderich; and Muller, Michael, 4,123,686, Cl. 313-230.000.
Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule: *See—*
Graf, Jean-Pierre; and Celio, Tino, 4,123,778, Cl. 358-107.000.
Getman, Anatoly F.: *See—*
Shulzhenko, Alexandr A.; and Getman, Anatoly F., 4,123,504, Cl. 423-446.000.
Getson, J. Charles; and Adams, Patrick J., to SWS Silicones Corporation. Oil resistant modified silicone composition. 4,123,472, Cl. 260-827.000.
Geurts, Leonardus H.; and Meijer, Peter J. N., to Stamicarbon, B.V. Process for preparing 2-pyrrolidones. 4,123,438, Cl. 260-326.5FN.
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Follert, Hans G.; Linde, Klaus; and Jutte, Hans, 4,122,683, Cl. 405-142.000.
Gibbon, John D., to Fiber Industries Inc. Production of a high tenacity, low denier poly(ethylene terephthalate) fibrillated tape yarn. 4,123,490, Cl. 264-147.000.
Gibson, Alan F.; and Pierson, Marvin B., to Armco Steel Corporation. Method of treating steel strip and sheet surfaces for metallic coating. 4,123,292, Cl. 148-6.350.
Gibson, Alan F.: *See—*
Arnold, Jerry L.; Dunbar, Frank C.; Gibson, Alan F.; and Pierson, Marvin B., 4,123,291, Cl. 148-6.350.
Gibson, Christian D.: *See—*
Allen, Ralph E.; and Gibson, Christian D., 4,122,957, Cl. 214-16.40A.
Gibson, Jack E. Apparatus for coating the interior of tubular goods. 4,122,798, Cl. 118-50.000.
Gidley, John A. F., to Imperial Metal Industries (Kynoch) Limited. Cutting sheet material having tacky layer thereon. 4,123,572, Cl. 427-272.000.
Giese, Ralph: *See—*
Grittner, Heinz; Giese, Ralph; and Korner, Paul, 4,122,583, Cl. 24-208.00A.
Giesen, Heinz; Hibbel, Josef; Jansen, Willi; and Speth, Sebastian, to Ruhrchemie Aktiengesellschaft. Separation of carbon black by the use of an oxygen containing higher boiling product. 4,123,235, Cl. 55-85.000.
Gift, Bennie: *See—*
Addicks, Lyle F.; Gift, Bennie; and DiCicco, William R., Jr., 4,122,564, Cl. 4-326.000.
Giger, Urs, to ETA A.G. Ebauches-Fabrik. Method of manufacturing a pallet lever and pallet lever made by this method. 4,122,665, Cl. 58-121.00R.
Giles, Alan F.; and Hendriks, Albertus G., to Internationale Octrooi Maatschappij "OCTROPA" B.V. Machine for the preparation of packs of articles of a pre-determined weight. 4,122,941, Cl. 198-774.000.
Gilg, Bernard; Muller, Helmut; and Rody, Jean, to Ciba-Geigy Corporation. Stabilizer system for stabilizing styrene polymers. 4,123,418, Cl. 260-45.8NT.
Gille, Gunther: *See—*
Andrei-Alexandru, Marcel; Gille, Gunther; Goertler, Horst; Prohaska, Hans; Steeb, Walter; and Spieth, Wolfgang, 4,123,694, Cl. 318-443.000.
Gillespie, Peter J., to Bridon Engineering Limited. Valves. 4,123,037, Cl. 251-367.000.
Gillette Company, The: *See—*
Guimond, Ronald N.; and Thompson, Harold R., 4,122,978, Cl. 222-189.000.
Perry, Roger L., 4,122,600, Cl. 30-90.000.
Sastri, Suri A.; and Hahn, Steve S., 4,122,602, Cl. 30-346.500.
Sastri, Suri A., 4,122,603, Cl. 30-346.500.
Gilliams, Yvan K.; De Volder, Noel J.; De Winter, Walter F.; and Tavernier, Bernard H., to Agfa-Gevaert N.V. Electrophoretic development. 4,123,374, Cl. 252-62.10L.
Gillotti, Michael A. Book holder. 4,123,029, Cl. 248-453.000.
Gilmore, Thomas P.; and Stich, Frederick A., to Allis-Chalmers Corporation. Adjustable speed electric motor drive having constant harmonic content. 4,123,692, Cl. 318-227.000.
Girling Limited: *See—*
Harvey, Geoffrey, 4,122,920, Cl. 188-73.400.
Giuffredi, Giancarlo, to Coster Tecnologie Speciali S.p.A. Aerosol metering valve provided with pumping effect. 4,122,982, Cl. 222-321.000.
Givner, Morris L.; and Schilling, Guenther, to American Home Products Corporation. Diagnostic test device. 4,123,224, Cl. 422-59.000.
Givner, Morris L.: *See—*
Banik, Upendra K.; and Givner, Morris L., 4,123,509, Cl. 424-12.000.
Banik, Upendra K.; and Givner, Morris L., 4,123,510, Cl. 424-12.000.
Gladstone, David J.; and Moldram, Peter A., to Post Office, The. Electronic display apparatus including a DC-responsive electroluminescent phosphor screen. 4,123,751, Cl. 340-324.00M.
Glas, Willi, to Robert Bosch GmbH. Pressure-equalizing valve for a packaging container. 4,122,993, Cl. 229-62.500.
Glass, Josef: *See—*
Fernandez, Avelino; Glass, Josef; Osegowitsch, Viktor; and Hehn, Wilfried, 4,123,769, Cl. 354-322.000.
Glauser, Fritz: *See—*
Walz, Theo; and Glauser, Fritz, 4,122,938, Cl. 198-411.000.
Glenn, William H.: *See—*
Chenausky, Peter P.; and Glenn, William H., 4,123,149, Cl. 350-294.000.
Glitsch, Inc.: *See—*
McClain, Robert Woodrow, 4,123,008, Cl. 239-568.000.
Glory Kogyo Kabushiki Kaisha: *See—*
Inoue, Komei; and Kosaka, Toshisa, 4,122,935, Cl. 194-32.000.
Glyco-Metall-Werke Daelen & Loos GmbH: *See—*
Lehnhart, Dieter, 4,122,701, Cl. 72-354.000.
Gnieser, Jurgen; and Pelloni, Luciano, to Sulzer Brothers Limited. Apparatus and process for treating contaminated water. 4,123,341, Cl. 204-152.000.
Goddard, Steven J., to Du Pont de Nemours, E. I., and Company. Methoxy substituted cycloalkanepyrazole herbicides. 4,123,252, Cl. 71-92.000.
Godwin, Fred D. Apparatus for placing masonry modules. 4,122,648, Cl. 52-749.000.
Goertler, Horst: *See—*
Andrei-Alexandru, Marcel; Gille, Gunther; Goertler, Horst; Prohaska, Hans; Steeb, Walter; and Spieth, Wolfgang, 4,123,694, Cl. 318-443.000.
Goffe, William L., to Xerox Corporation. Setting electrical latent images in migration imaging elements. 4,123,283, Cl. 96-1.0PS.
Goldschmidt, Arthur M., to RCA Corporation. Turntable rotational speed and phase control system for a video disc play/record apparatus. 4,123,779, Cl. 358-128.000.
Golovko, Zoya I.: *See—*
Mash, Dmitry M.; Schedrovitsky, Savely S.; Golovko, Zoya I.; Zaitsev, Mikhail P.; Sorokin, Andrei N.; Belyaeva, Agnia A.; and Kharitonov, Ivan I., 4,123,735, Cl. 336-30.000.
Gonser, Donald I., to Dentsply Research and Development Corporation. Control circuit for an electrical device. 4,123,673, Cl. 307-326.000.
Goodwin, Wayne M., Sr. Trailer. 4,122,962, Cl. 214-394.000.
Goodyear Aerospace Corporation: *See—*
Musyt, William, 4,123,582, Cl. 428-335.000.
Goodyear Tire & Rubber Company, The: *See—*
Germain, Lee A., 4,122,968, Cl. 220-86.00R.
Gordon, Stanley I., to American Optical Corporation. Hydrophilic contact lens. 4,123,407, Cl. 260-29.6TA.
Gordon, Stanley I., to American Optical Corporation. Hydrogel contact lens. 4,123,408, Cl. 260-29.6TA.
Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishnan, to Eli Lilly and Company. 7-(5-Amino-5-carboxyvaleramido)-3-(carbamoyloxymethyl)-3-cephem-4-carboxylic acid. 4,123,612, Cl. 544-16.000.
Gormley, James J.: *See—*
Dutta, Anand S.; Gormley, James J.; Hayward, Christopher F.; Morley, John S.; Petter, Nigel N.; and Stacey, Gilbert J., 4,123,523, Cl. 424-177.000.
Gorodissky, Leonid G.; Romanov, Nikolai T., deceased; and by Romanova, Anantasia I., administratrix. Chamber for treating band-type material under overpressure. 4,122,691, Cl. 68-5.00E.
Gorzegno, Walter P.: *See—*
Zipay, Albert J.; and Gorzegno, Walter P., 4,123,237, Cl. 55-205.000.
Gottfried Bischoff Bau Kompl. Gastreinigungs- und Wasserruckkuhlanlagen Kommanditgesellschaft: *See—*
Hegeman, Karl-Rudolf, 4,123,238, Cl. 55-226.000.
Gotzelmann KG Industrieabwasser-Anlagen: *See—*
Kammel, Roland; and Lieber, Hans-Wilhelm, 4,123,340, Cl. 204-149.000.
Gow, Jon E. P.: *See—*
Furyk, Robert C.; and Gow, Jon E. P., 4,123,058, Cl. 273-87.00H.
Gozhansky, Baruch: *See—*
Yachin, Ami; and Gozhansky, Baruch, 4,123,143, Cl. 350-171.000.
Grady, Dwight D.: *See—*
Rowe, E. Riley; Fletcher, Wade; Markert, Herman R.; and Grady, Dwight D., 4,122,790, Cl. 113-120.00R.
Graf, Jean-Pierre; and Celio, Tino, to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule. Method of and apparatus for determining the sharpness of a picture. 4,123,778, Cl. 358-107.000.
Gragoe, Edward J., Jr.: *See—*
Smith, Robert L.; Stokker, Gerald E.; and Gragoe, Edward J., Jr., 4,123,537, Cl. 424-263.000.

Graham, James: *See*—
Keem, Phillip W.; Kaimins, Laimons; and Graham, James, 4,123,197, Cl. 415-123.000.

Graham, Patricia A.: *See*—
Knight, Phillip D.; deMauriac, Richard A.; and Graham, Patricia A., 4,123,274, Cl. 96-66.00T.

Granger, Maurice. Apparatus for the cutting and simultaneous dispensing of a web of roll material. 4,122,738, Cl. 83-314.000.

Grant, Herbert L., to S.S. Steiner, Inc. Method for processing hops for brewing. 4,123,561, Cl. 426-600.000.

Granzow, Wayne G., to Armco Steel Corporation. Process for forming sheet metal stock. 4,122,700, Cl. 72-342.000.

Grasselli, Robert K.; Miller, Arthur F.; and Hardman, Harley F., to Standard Oil Company, The. Process for the manufacture of acrylonitrile and methacrylonitrile. 4,123,453, Cl. 260-465.300.

Gravert, William H., to Marine Moisture Control Company, Inc. Ullage measuring device. 4,123,753, Cl. 340-621.000.

Gray, Frederic W., to Colgate-Palmolive Company. Peroxymonosulfate-base bleaching and bleaching detergent compositions. 4,123,376, Cl. 252-99.000.

Grebe, Karl: *See*—
Diggs, Edward J.; and Grebe, Karl, 4,122,921, Cl. 188-79.5GE.

Gresch, Heinz: *See*—
Holler, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,123,502, Cl. 423-230.000.

Gretler, Heinrich, to Bauer Kaba AG Sicherheits-Schliessyteme. Key for a cylinder lock. 4,122,694, Cl. 70-406.000.

Grieve, Harold R.; and Andersen, Thomas S., to General Foods Corporation. Carton incorporating easily openable and reclosable pouring aperture. 4,122,948, Cl. 206-622.000.

Grimm, Robert; and Koschmieder, Hartmut, to Industriewerk Schaeffler OHG. Method of producing axial roller bearing cages. 4,122,589, Cl. 29-148.40C.

Grinstead, Robert R.; Jones, Kenneth C.; and Nasutavicus, Wilmonte A., to Dow Chemical Company, The. Nitro-substituted benzoxazoles having utility as metallurgical extractants. 4,123,435, Cl. 260-307.00D.

Grittner, Heinz; Giese, Ralph; and Korner, Paul, to Ford Motor Company. Fastening clips for trim panels particularly for motor vehicles. 4,122,583, Cl. 24-208.00A.

Groetschel, Karl M. Methods of and apparatus for applying roof mats to mine workings. 4,122,682, Cl. 405-150.000.

Grosse, Ludwig: *See*—
Dorr, Hans W.; and Grosse, Ludwig, 4,123,593, Cl. 428-535.000.

Grossner, Dolores E. Carrier and skin-protecting cover for urine bags. 4,122,851, Cl. 128-295.000.

Gruber, Wolfgang: *See*—
Hundt, Dieter; Gruber, Wolfgang; Klarwein, Michael; and Roeschlau, Peter, 4,123,384, Cl. 252-408.000.

Grundmann, Edgard, to Volkswagenwerk Aktiengesellschaft. Vapor engine. 4,122,756, Cl. 91-180.000.

GTE Lenkurt Electric (Canada) Ltd.: *See*—
Fikart, Josef L., 4,123,730, Cl. 333-26.000.

Guibas, Mark. Air gun game with different sized target pipes. 4,123,059, Cl. 273-101.000.

Guidotti, Vincenzo: *See*—
Credali, Lino; and Guidotti, Vincenzo, 4,123,424, Cl. 528-337.000.

Guimond, Ronald N.; and Thompson, Harold R., to Gillette Company, The. Pressurized package for dispensing a product in a finely dispersed spray pattern with little dilution by propellant. 4,122,978, Cl. 222-189.000.

Gulf Oil Corporation: *See*—
Kallum, Gene E.; and Thompson, Jack W., 4,123,601, Cl. 526-79.000.

Gulf & Western Manufacturing Company: *See*—
Lindahl, Herbert S.; and Datta, Chander, 4,122,686, Cl. 62-81.000.
Spanke, Edwin A.; Carrieri, Louis F.; and Francey, Melvin H., 4,122,926, Cl. 192-18.00A.

Gunzenhauser, Sigmund: *See*—
Balli, Heinz; Gunzenhauser, Sigmund; and Petitpierre, Jean C., 4,123,439, Cl. 260-326.50B.

Gurgone, Joseph F. Vehicle theft prevention system. 4,123,745, Cl. 340-63.000.

Gusching, Nagle V.; and Prescott, Ralph E., to Monarch Machine Tool Company, The. Tool utilization mechanism. 4,122,597, Cl. 29-568.000.

Gustafson, Reuben V. Liquid level sensor. 4,122,718, Cl. 73-304.00C.

Guthrie, David B.; and Leiendecker, Donald M., to Petrolite Corporation. Clear, bright oil-soluble aluminum-containing compositions. 4,123,231, Cl. 44-51.000.

Gutierrez, Antonio: *See*—
Brois, Stanley J.; and Gutierrez, Antonio, 4,123,373, Cl. 252-48.600.

Gutierrez, Eddie N.; and Lamberti, Vincent, to Lever Brothers Company. Preparation of cis and trans aconitic acids and their salts. 4,123,458, Cl. 562-595.000.

Gutierrez, Eddie N.; and Lamberti, Vincent, to Lever Brothers Company. Preparation of aconitic acid. 4,123,459, Cl. 562-595.000.

Gutmann, Franz: *See*—
Frei, Roland; Gutmann, Franz; Sieber, Peter; and Koeppel, Peter, 4,123,228, Cl. 422-274.000.

H. J. Langen & Sons Ltd.: *See*—
Langen, Marinus J. M., 4,122,939, Cl. 198-482.000.

Hack, Helmut; Schmidt, Robert R.; and Dickore, Karlfried, to Bayer Aktiengesellschaft. Herbicidal compositions. 4,123,253, Cl. 71-93.000.

Haerr, Raymond H., to Xomed Inc. Pad for anchoring an article to the skin of a patient. 4,122,857, Cl. 128-348.000.

Hafner, Joseph A. Construction panel. 4,122,643, Cl. 52-520.000.

Hagen, Alf R.; and Hagen, Eric C. Floating breakwater and energy collecting system. 4,123,185, Cl. 405-76.000.

Hagen, Eric C.: *See*—
Hagen, Alf R.; and Hagen, Eric C., 4,123,185, Cl. 405-76.000.

Hagenuk Vormals Neufeldt & Kuhnke GmbH: *See*—
Evers, Alfred, 4,122,735, Cl. 82-2.700.

Hagopian, Arpi; Carlo, Dennis J.; and Stoudt, Thomas H., to Merck & Co., Inc. Method for preparing high molecular weight meningococcal Group C vaccine. 4,123,520, Cl. 424-92.000.

Hahn, Steve S.: *See*—
Sastri, Suri A.; and Hahn, Steve S., 4,122,602, Cl. 30-346.500.

Haire, Michael J., to Du Pont de Nemours, E. I., and Company. Antidepressant compounds. 4,123,546, Cl. 424-274.000.

Hakansson, Bo H.; Nylen, Ulf T. G.; and Qvarnstrom, Lars A. G., to Gambro AB. Method and apparatus for measuring the content of a low-molecular weight compound in a complex medium. 4,123,353, Cl. 210-22.00C.

Hale, Jacques A. G.; and Turner-Smith, Alan Robert, to U.S. Philips Corporation. Pattern recognition system. 4,123,695, Cl. 318-561.000.

Hall, John B.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.

Hall, Mitchell A., to Monarch Tool & Manufacturing Company. Lock head protector. 4,122,695, Cl. 70-417.000.

Hall, William C.; and Peterson, John M., to Chemtree Corporation. Non-combustible nuclear radiation shields with high hydrogen content. 4,123,392, Cl. 252-478.000.

Halliburton Company: *See*—
Loesch, Stanley B., 4,122,717, Cl. 73-231.00R.

Hallock, Robert L. Flat fastener for driving into metallic material. 4,122,752, Cl. 85-30.000.

Halm, James M. Boron chelates as acceptor type sensitizers for photoconductive polymers. 4,123,268, Cl. 96-1.0PC.

Halpern, Neil S. Camera and film identification system. 4,123,767, Cl. 354-107.000.

Hammann, Ingeborg: *See*—
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,123,449, Cl. 260-453.0AR.

Hammel, Ronald O., to Gates Rubber Company, The. Battery pack and container. 4,123,598, Cl. 429-159.000.

Hammes, Paul A.: *See*—
Morse, Lewis D.; Walker, William G.; and Hammes, Paul A., 4,123,382, Cl. 252-316.000.

Hancock, Charles J.: *See*—
Eadie, David W.; and Hancock, Charles J., 4,123,763, Cl. 354-4.000.

Handy, Richard L.: *See*—
Lutenegger, Alan J.; Handy, Richard L.; and Hoover, James M., 4,122,704, Cl. 73-822.000.

Hanink, Dean K., to General Motors Corporation. Method of separating ferritic steel or ductile iron from certain nonferrous metals. 4,123,294, Cl. 148-13.100.

Hanka, Ladislav J.; and Wiley, Paul F., to Upjohn Company, The. Antibiotic U-53,946 and process for preparing the same. 4,123,521, Cl. 424-121.000.

Hannan, Michael D.: *See*—
Clements, Luther D.; Hannan, Michael D.; Hinds, Robert J.; and Vose, Richard W., 4,123,357, Cl. 210-71.000.

Hansen, Clarence M.: *See*—
Ledebuhr, Richard L.; Hansen, Clarence M.; and Patterson, Richard J., 4,122,766, Cl. 99-640.000.

Hansen, Harold V.: *See*—
Harbert, Jimmy D.; and Hansen, Harold V., 4,122,974, Cl. 221-13.000.

Hanson, Paul B. Articulated bed. 4,122,567, Cl. 5-345.00R.

Hansted Corporation: *See*—
Stehlin, Theodore A., 4,123,095, Cl. 285-409.000.

Hanyo, Susumu; Yamaguchi, Jousuke; Morishita, Yoshiyuki; and Noguchi, Itoshi, to Daiichi Koshuha Kogya Kabushiki Kaisha. Means and method for reducing radius expansion in the bending of elongated materials. 4,122,697, Cl. 72-128.000.

Hapgood, William H., to Raytheon Company. Solar heating system. 4,122,830, Cl. 126-271.000.

Harada, Fumio: *See*—
Mochizuki, Taketoshi; Harada, Fumio; Imaizumi, Tadahiro; and Nose, Koichi, 4,122,688, Cl. 62-196.00R.

Harbert, Jimmy D.; and Hansen, Harold V., to Deere & Company. Variable speed planter seed drive. 4,122,974, Cl. 221-13.000.

Harbord, Horace R. Propeller. 4,123,198, Cl. 416-243.000.

Hardman, Harley F.: *See*—
Grasselli, Robert K.; Miller, Arthur F.; and Hardman, Harley F., 4,123,453, Cl. 260-465.300.

Hardy, Paul R.; and Spencer, Arthur T., to PYE (Electronic Products Ltd.). Screw or nut and a captive washer. 4,123,132, Cl. 339-246.000.

Hargrove, Maxie G., to B & H Automotive. Tool holder apparatus for a workstand. 4,122,956, Cl. 211-131.000.

Harrington Manufacturing Company: *See*—
Danford, Tiras J., 4,123,221, Cl. 432-152.000.

Harris, Frank N. Incinerator. 4,122,557, Cl. 4-111.300.

Hartmann, Ernst G.; Krech, Hans; and Meir, Franz, to Bizerba-Werke Wilhelm Kraut KG. Method and system for determining the presence of objects within a particular surveillance area, in particular for prevention of shoplifting. 4,123,749, Cl. 340-572.000.

Hartmann, Peter J.: *See*—
Unrau, David G.; Portnoy, Norman A.; and Hartmann, Peter J., 4,123,398, Cl. 260-17.4CL.

Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See*—
Schulte, Fritz; Riecker, Johann G.; and Rozas, Gunther, 4,123,333, Cl. 202-255.000.

Harvey, Geoffrey, to Girling Limited. Disc brakes for vehicles. 4,122,920, Cl. 188-73.400.

Harvey, Kenneth: *See*—
Baines, Eric; and Harvey, Kenneth, 4,123,517, Cl. 424-57.000.

Harvey, Robin J., to Hughes Aircraft Company. Elongated crossed-field switch device. 4,123,683, Cl. 313-156.000.

Hasegawa, Goro, to Canon, Inc. Electrically controlled photographic shutter. 4,123,766, Cl. 354-51.000.

Hasegawa, Tetuya; and Itishasi, Akihiro, to Pilot Man-Nen-hitsu Kabushiki Kaisha. Dry writing board possessing anti-halation effect and process for producing the same. 4,123,590, Cl. 428-450.000.

Haselkorn, Michael H.: *See*—
Brewer, David C.; Evans, James D.; Kohler, Dale M.; and Haselkorn, Michael H., 4,123,337, Cl. 204-129.300.

Hashimoto, Katuo, to Iida Sankyo Kabushiki Kaisha. Digital clock of leaf type. 4,122,659, Cl. 58-7.000.

Hashimoto, Shigeru: *See*—
Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; Asaeda, Tsuyoshi; Fukushima, Tadahide; Shingu, Tamotsu; Hashimoto, Shigeru; and Iwashita, Tomonori, 4,123,650, Cl. 250-201.000.

Haskell, Theodore H.: *See*—
Behnke, Walter E.; Marsh, William R.; and Haskell, Theodore H., 4,123,609, Cl. 536-27.000.

Hass, Robert H., to Union Oil Company of California. Process for removing sulfur and NO_x components from a gas stream. 4,123,507, Cl. 423-573.00G.

Hasspacher, Klaus; and Strasser, Michael, to Sandoz Ltd. N-Propyl-3(β-hydroxyethyl)-3-(meta-hydroxyphenyl)-pyrrolidine. 4,123,545, Cl. 424-274.000.

Hatanaka, Minoru: *See*—
Ishimaru, Toshiyasu; Shimonishi, Yasutsugu; Sakurai, Hisayuki; and Hatanaka, Minoru, 4,123,611, Cl. 542-421.000.

Hatano, Takashi: *See*—
Kimura, Yoshiaki; Kawai, Masanori; and Hatano, Takashi, 4,123,761, Cl. 346-140.00R.

Hatch, Burton D.: *See*—
Laskaris, Evangelos T.; Gamble, Bruce B.; and Hatch, Burton D., 4,123,677, Cl. 310-52.000.

Hatsuoka, Nobuyasu: *See*—
Yamakoshi, Noboru; Kaneda, Tsugio; Hatsuoka, Nobuyasu; Shimazu, Shinichi; Fujita, Tatsu; Yamada, Yoshiro; Yamada, Tetsuo; and Mizuta, Atsuo, 4,123,296, Cl. 148-36.000.

Hattori, Kiyoshi: *See*—
Shichida, Hiromichi; Gamo, Gotaro; Nomura, Yoshiyuki; Hattori, Kiyoshi; and Koiwai, Yutaka, 4,123,645, Cl. 219-69.00W.

Hattori, Kyo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oil circulating and cooling system. 4,122,818, Cl. 123-196.0AB.

Havalda, Paul, to Ciba-Geigy Corporation. Method and apparatus for the liquid treatment of filter cakes. 4,123,360, Cl. 210-216.000.

Hayashida, Suetou: *See*—
Hori, Takashi; and Hayashida, Suetou, 4,123,371, Cl. 252-42.700.

Hayes, Terence J.: *See*—
Mitrovic, Milan; and Hayes, Terence J., 4,123,553, Cl. 424-311.000.

Haytayan, Harry M., to Pneutek, Inc. Pneumatic hammer driver. 4,122,904, Cl. 173-15.000.

Hayward, Christopher F.: *See*—
Dutta, Anand S.; Gormley, James J.; Hayward, Christopher F.; Morley, John S.; Petter, Nigel N.; and Stacey, Gilbert J., 4,123,523, Cl. 424-177.000.

Hegeman, Karl-Rudolf, to Gottfried Bischoff Bau Kompl. Gastreinigungs- und Wasserruckkuhlanlagen Kommanditgesellschaft. Flow-control nozzle for flue-gas scrubber. 4,123,238, Cl. 55-226.000.

Hehn, Wilfried: *See*—
Fernandez, Avelino; Glass, Josef; Osegowitsch, Viktor; and Hehn, Wilfried, 4,123,769, Cl. 354-322.000.

Heidelberger Druckmaschinen AG: *See*—
Wirz, Arno, 4,122,773, Cl. 101-230.000.

Heil, Walter P.; and Sclove, David B., to International Business Machines Corporation. Method of making electrophotographic imaging element. 4,123,270, Cl. 96-1.50R.

Heim, Ulrich; Leichnitz, Kurt; and Wiesner, Peter, to Dragerwerk Aktiengesellschaft. Method and apparatus for evaluating changes in indicator tubes. 4,123,227, Cl. 23-232.00R.

Heinemann Electric Company: *See*—
Hoagland, Porter, Jr., 4,123,737, Cl. 337-68.000.

Heines, M. Henry: *See*—
Campbell, Ramsey G.; Doane, Elliott P.; Heines, M. Henry; Naworski, Joseph S.; and Vogt, Harvey J., 4,123,467, Cl. 260-659.00A.

Heintze, York, to Fischer, Gertrude. Therapeutic copper compositions. 4,123,511, Cl. 424-46.000.

Heinze, Richard: *See*—
Pittasch, Willi, 4,122,581, Cl. 16-158.000.

Heiss, Herbert L.; Yeater, Robert P.; and Carter, Russell P., Jr., to Mobay Chemical Corporation. Stabilized thermoplastic polyesterurethanes. 4,123,419, Cl. 260-45.8NZ.

Heiss, Werner: *See*—
Andres, Rudolf; Busch, Gerhard; and Heiss, Werner, 4,123,104, Cl. 297-391.000.

Held, Manfred, to Messerschmitt-Bolkow-Blohm GmbH. Land mine of the hollow-charge type. 4,122,775, Cl. 102-8.000.

Helms, Thomas F., to Altek Company. Thermostat control. 4,123,739, Cl. 337-301.000.

Hendriks, Albertus G.: *See*—
Giles, Alan F.; and Hendriks, Albertus G., 4,122,941, Cl. 198-774.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Altenschopfer, Theodor; and van Wageningen, Albertus, 4,123,375, Cl. 252-99.000.

Herbst, Norman R.: *See*—
Salzman, Ronald N.; and Herbst, Norman R., 4,123,178, Cl. 366-338.000.

Hercules Supply Company: *See*—
Newland, William M., 4,123,093, Cl. 285-189.000.

Herman, Arnold: *See*—
Kruger, Bernard M., 4,122,619, Cl. 40-365.000.

Hermecz, Istvan; Meszaros, Zoltan; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Knoll, Jozsef; Sebestyen, Gyula; and David, Agoston, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Fused pyrimidine derivatives and compositions for treating atherosclerosis containing them. 4,123,533, Cl. 424-251.000.

Herold, Wilhelm; and Pickert, Johannes. Device for carburetion of liquid fuels. 4,123,481, Cl. 261-81.000.

Herschler, Michael G.: *See*—
Kathmann, Stephen J.; Post, Roger L.; Herschler, Michael G.; and Anerino, Sylvester L., 4,123,203, Cl. 417-252.000.

Hershenson, Fred M.: *See*—
Ellefson, Charles R.; and Hershenson, Fred M., 4,123,430, Cl. 260-243.300.

Herzog, Gunter, to Ernst Koch & Co. Arrangement for air cooling on drawing die drums. 4,122,698, Cl. 72-286.000.

Hesse, Gregory N.: *See*—
Comiskey, Gary F.; Hesse, Gregory N.; and Bovenlander, Johannes P., 4,123,674, Cl. 307-351.000.

Hibbel, Josef: *See*—
Giesen, Heinz; Hibbel, Josef; Jansen, Willi; and Speth, Sebastian, 4,123,235, Cl. 55-85.000.

Hice, Jaxon O., to Research Associates Ltd. Method for flash cooking food. 4,123,560, Cl. 426-509.000.

Hicks, Janice R.: *See*—
Crowell, Florence S.; and Hicks, Janice R., 4,122,628, Cl. 46-135.00R.

Hickson, James P., to Torrington Company, The. Sewing machine needle. 4,122,788, Cl. 112-222.000.

Higgens, Calvin E.: *See*—
Gorman, Marvin; Higgens, Calvin E.; and Nagarajan, Ramakrishnan, 4,123,612, Cl. 544-16.000.

Hiki, Fumihiko: *See*—
Kita, Shinichiro; Hiki, Fumihiko; Shimizu, Masayuki; and Kondou, Akira, 4,123,600, Cl. 526-65.000.

Hill, Bernhard; Pepperl, Rudiger; and Kruger, Johann, to U.S. Philips Corporation. Electrically controlled adjusting device for a light beam with digital and analog deflection control. 4,123,147, Cl. 350-285.000.

Hill, Bruce S., to Edenvale Engineering Works (Proprietary) Limited. Mining method. 4,123,109, Cl. 299-18.000.

Hill, Horace E., to Boeing Company, The. Double ended drill stop. 4,123,193, Cl. 408-202.000.

Hill, Robert H.: *See*—
Maier, Alfred E.; and Hill, Robert H., 4,123,734, Cl. 335-9.000.

Hilterhaus, Karl-Heinz; and Reuter, Franz G., to Chemie-Anlagenbau Bischofsheim GmbH; Reuter Technologie GmbH; and Metallgesellschaft. Foams from phenolic resins and isocyanates, and process for the manufacture thereof. 4,123,599, Cl. 521-123.000.

Hilti Aktiengesellschaft: *See*—
Jochum, Peter; and Schilter, Eugen, 4,122,987, Cl. 227-10.000.
Kuhlmann, Wolf; Rumpp, Gerhard; and Busler, Albert, 4,122,753, Cl. 85-74.000.

Himmelmann, Wolfgang: *See*—
Monbaliu, Marcel J.; Credner, Hans-Heinrich; Himmelmann, Wolfgang; Meier, Ernst; Benoy, Gaston J.; Van Poucke, Raphael K.; Schranz, Karl-Wilhelm; and Van Veelen, George F., 4,123,281, Cl. 96-100.00R.

Hinds, Robert J.: *See*—
Clements, Luther D.; Hannan, Michael D.; Hinds, Robert J.; and Vose, Richard W., 4,123,357, Cl. 210-71.000.

Hines, Marion E.; Stinehelfer, Harold E., Sr.; and Atchley, Dana W., Jr., to Microwave Associates, Inc. Phased array antenna. 4,123,759, Cl. 343-854.000.

Hines, Vernon C. Protective bushing to enclose the end of a conduit liner. 4,122,870, Cl. 138-109.000.

Hirabayashi, Masaya; Kawahara, Haruyuki; and Taniguchi, Yoshio, to Kyoto Ceramic Kabushiki Kaisha. Somatic element of single crystalline sapphire ceramics. 4,122,605, Cl. 32-10.00A.

Hirschfeld, T.; and Brown, David C.A.G., to Block Engineering Inc. Gas chromatograph device. 4,123,236, Cl. 55-197.000.

Hirschsohn, Ephraim: *See*—
Hirschsohn, Ladislav; and Hirschsohn, Ephraim, 4,122,832, Cl. 126-271.000.

Hirschsohn, Ladislav; and Hirschsohn, Ephraim. Solar collector. 4,122,832, Cl. 126-271.000.

Hisada, Yoshio: *See*—
Kameda, Nobuyuki; Hisada, Yoshio; Takayama, Chiyozo; Kato, Toshiro; and Fujinami, Akira, 4,123,549, Cl. 424-274.000.

Hitachi, Ltd.: *See—*
Imoto, Katsuyuki; Takasaki, Yoshitaka; and Sumi, Masao, 4,123,242, Cl. 65-11.00W.
Kajiwara, Toshiyuki; and Nishino, Tadashi, 4,123,011, Cl. 242-78.100.
Mitobe, Koichi; and Uehara, Yasuhiko, 4,123,563, Cl. 427-68.000.
Mochizuki, Taketoshi; Harada, Fumio; Imaizumi, Tadahiro; and Nose, Koichi, 4,122,688, Cl. 62-196.00R.
Okikawa, Susumu; Yukawa, Osamu; Mikino, Hiroshi; and Nonaka, Yoshio, 4,123,293, Cl. 148-11.50C.
Sanada, Takahiro; and Ochiai, Kanehiro, 4,123,324, Cl. 176-37.000.
Shinbo, Katsutoshi, 4,123,326, Cl. 176-68.000.
Sugimoto, Yoshikazu; Yusa, Hideo; Kato, Yomei; Kamiya, Kunio; and Kikuchi, Makoto, 4,123,356, Cl. 210-67.000.
Sugisaki, Toshihiko; Horiuchi, Tetsuo; Ogasawara, Hideo; Yamanari, Shozo; and Tominaga, Kenji, 4,123,327, Cl. 176-76.000.
Tsuchimoto, Takashi, 4,123,316, Cl. 156-643.000.
Hitachi Magnetics Corp.: *See—*
Johnson, C. Evan, 4,122,563, Cl. 4-236.000.
Hitchcock, Thomas H. Integrated universal tool. 4,122,569, Cl. 7-134.000.
Hjortzberg, Bernhard A., to BASF Aktiengesellschaft. Color signal encoding methods and apparatus for video recording and playback. 4,123,774, Cl. 358-4.000.
Hlavka, Joseph J.; and Bitha, Panayota, to American Cyanamid Company. Alkylated derivatives of antibiotic BM123y. 4,123,607, Cl. 536-17.000.
Hoadley, Frederick E., to Ford Motor Company. Tool for machining clay. 4,123,186, Cl. 407-54.000.
Hoagland, Porter, Jr., to Heinemann Electric Company. Bimetallic circuit breaker. 4,123,737, Cl. 337-68.000.
Hoben, Blanche E. Mattress assembly to accommodate a bedpan. 4,122,565, Cl. 5-90.000.
Hochiki Corporation: *See—*
Kajii, Shigeru, 4,123,656, Cl. 250-381.000.
Hoechst Aktiengesellschaft: *See—*
Dorr, Hans W.; and Grosse, Ludwig, 4,123,593, Cl. 428-535.000.
Rebsdat, Siegfried; Mayer, Sigmund; Alfranseder, Josef; and Riedl, Josef, 4,123,385, Cl. 252-414.000.
Warning, Klaus; and Mitzlaff, Michael, 4,123,434, Cl. 260-296.00D.
Hoechst, Lonnie D.: *See—*
Bauer, James J.; and Hoechst, Lonnie D., 4,122,960, Cl. 214-140.000.
Hoellerich, John L., to Slingerland Drum Co. Marching timpani. 4,122,749, Cl. 84-419.000.
Hoffmann-La Roche Inc.: *See—*
Leimgruber, Willy; and Valentine, Donald H., Jr., 4,123,464, Cl. 260-601.00R.
Mitrovic, Milan; and Hayes, Terence J., 4,123,553, Cl. 424-311.000.
Valentine, Donald H., Jr., 4,123,465, Cl. 260-606.50P.
Hoffmann, Wilhelm, to Optima-Maschinenfabrik, Dr. Buehler KG. Apparatus for the weighing of mass produced articles. 4,122,940, Cl. 198-504.000.
Hokushin Electric Works, Ltd.: *See—*
Kobayashi, Tamotsu; and Futamura, Jun, 4,122,714, Cl. 73-194.0EM.
Holdiman, Joe W., to Scovill Manufacturing Company. Method of cladding a window product. 4,122,633, Cl. 49-501.000.
Hollander, Werner; and Schormann, Josef. Apparatus for analyzing the size distribution and quantity of small particles in an aerosol. 4,123,159, Cl. 356-38.000.
Holleran, John M.: *See—*
Pope, Thomas A.; and Holleran, John M., 4,123,301, Cl. 141-153.000.
Holley, Ronnie E., to Lane Container Company. Interfitting shipping pad. 4,122,946, Cl. 206-523.000.
Holliger, Herbert; and Wicki, Heinz, to Sandoz Ltd. Metallized polyazo dyes derived from a coupling component obtained by acidic condensation of formaldehyde with at least one phenolic compound. 4,123,428, Cl. 260-145.00C.
Holloway, Gale A.; Yeh, Rudolph; and Zagotta, Joseph L., to International Harvester Company. Hydraulic valve assembly having an axial flow force balanced spool. 4,122,868, Cl. 137-625.690.
Holmes, Roy L.: *See—*
Yiu, Joseph T.; and Holmes, Roy L., 4,123,717, Cl. 325-470.000.
Holt, Lloyd J.: *See—*
Panlaqui, Clayton E.; and Holt, Lloyd J., 4,122,754, Cl. 89-1.50B.
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, to Holter, Heinz. Process for the purification of gas generated in the pressure gasification of coal. 4,123,502, Cl. 423-230.000.
Holtermann, Theodore J., to Outboard Marine Corporation. Lawn mower blade clutch and brake. 4,122,652, Cl. 56-11.300.
Holub, Fred F.; Scott, Steven W.; and Wilson, Phillip S., to General Electric Company. Polycarbonate composition plasticized with esters. 4,123,436, Cl. 260-30.80R.
Holub, Fred F.: *See—*
Betts, Joseph E.; and Holub, Fred F., 4,123,586, Cl. 428-391.000.
Honjo, Yoshihiko, to Victor Company of Japan, Limited. Signal noise filtration for laser beam recording system. 4,123,780, Cl. 358-128.000.
Hooker Chemicals & Plastics Corp.: *See—*
Wagner, George M., 4,123,573, Cl. 427-324.000.
Wagner, George M., 4,123,574, Cl. 427-341.000.
Hoover, James M.: *See—*
Lutenegger, Alan J.; Handy, Richard L.; and Hoover, James M., 4,122,704, Cl. 73-822.000.
Hope Co., Ltd.: *See—*
Takahashi, Tohru, 4,123,084, Cl. 280-630.000.
Hopf, Werner G., to Teledyne Industries, Inc. Instrument for measuring preformed tubes. 4,122,607, Cl. 33-174.00L.
Hopf, Werner G., to Teledyne Industries, Inc. Tube feeler. 4,122,608, Cl. 33-174.00L.
Hopwood, Francis W.; and Staley, Lester K., to Westinghouse Electric Corp. Chirp phase distortion detector in a wideband linearization feedback control loop. 4,123,719, Cl. 328-155.000.
Hori, Takashi; and Hayashida, Suetou, to Maruzen Oil Co., Ltd. Process for preparing over-based sulfurized alkaline earth metal phenates. 4,123,371, Cl. 252-42.700.
Horiike, Yasuhiro, to Tokyo Shibaura Electric Co., Ltd. Gas-etching device. 4,123,663, Cl. 250-531.000.
Horiuchi, Tetsuo: *See—*
Sugisaki, Toshihiko; Horiuchi, Tetsuo; Ogasawara, Hideo; Yamanari, Shozo; and Tominaga, Kenji, 4,123,327, Cl. 176-76.000.
Horler, Hansulrich; and Perevuznik, Josef, to BBC Brown Boveri & Company Limited. Gas-dynamic pressure-wave machine. 4,123,200, Cl. 417-64.000.
Horvath, Agnes: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Knoll, Jozsef; Sebestyen, Gyula; and David, Agoston, 4,123,533, Cl. 424-251.000.
Horwitz, Norman H., to William Beaumont Hospital. Optical alignment apparatus for teletherapy machine or the like. 4,123,660, Cl. 250-491.000.
Hosaka, Akio; and Tsuruta, Eiji, to Nissan Motor Company, Limited. System for detecting abnormality in fuel feed control system of gas turbine engine. 4,122,667, Cl. 60-39.09R.
Hosaka, Akio; and Sakamoto, Satoshi, to Nissan Motor Company, Limited. Ignition spark timing control system for an internal combustion engine. 4,122,807, Cl. 123-117.00R.
Hosaka, Akio; and Tsuruta, Eiji, to Nissan Motor Company, Limited. Bias current compensated operational amplifier circuit. 4,123,721, Cl. 330-69.000.
Hoshikawa, Masao: *See—*
Nakahara, Tsuneo; Hoshikawa, Masao; Shiraishi, Satoshi; Kurosaki, Shiro; and Fujiwara, Kunio, 4,123,483, Cl. 264-1.000.
Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; Asaeda, Tsuyoshi; Fukushima, Tadahide; Shingu, Tamotsu; Hashimoto, Shigeru; and Iwashita, Tomonori. Range finder system. 4,123,650, Cl. 250-201.000.
Hou, Shou L., to Mead Corporation, The. Apparatus and method for jet deflection and recording. 4,123,760, Cl. 346-75.000.
Hough, W. Colton. Cord holder. 4,123,012, Cl. 242-85.100.
Hoult, David P., to Thermo Electron Corporation. Drainage foil element having two wire bearing portions. 4,123,322, Cl. 162-352.000.
Howarth, Thomas T., to Beecham Group Limited. Isoclavulanic acid as an antibacterial and a β-lactamase inhibitor. 4,123,540, Cl. 424-272.000.
Howell, Thomas H., to United States of America, Army. Laser optical lever adjunct. 4,123,168, Cl. 356-152.000.
Hruza, Denis E., Sr.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.
Hsieh, Horng-Ming: *See—*
Radkowsky, Alvin; Chien, Ji-Peng; Yang, Chao-Yie; and Hsieh, Horng-Ming, 4,123,328, Cl. 176-78.000.
Huang, Kwang T.: *See—*
Paszyc, Aleksy J.; Shiroma, Dallas M.; and Huang, Kwang T., 4,123,697, Cl. 322-2.00A.
Huber, William J., to McGraw-Edison Company. High voltage current limiting fuse. 4,123,738, Cl. 337-159.000.
Hubers, Cornelis. Single stage or multi-stage expansion engine. 4,122,669, Cl. 123-200.000.
Hubert, Peter: *See—*
Vitzthum, Otto; and Hubert, Peter, 4,123,559, Cl. 426-312.000.
Hubert, Wallace L., to International Business Machines Corporation. Copy production machine having a duplex copy mode. 4,123,155, Cl. 355-26.000.
Hudson, John A.: *See—*
James, Nicholas A.; Hudson, John A.; Savage, Derek G.; and Morley, Edward G., 4,123,202, Cl. 417-216.000.
Huffy Corporation: *See—*
Ferlise, Louis; and Mackey, Sherman E., 4,123,189, Cl. 408-21.000.
Hughes Aircraft Company: *See—*
Harvey, Robin J., 4,123,683, Cl. 313-156.000.
Meyers, Franklin J., 4,123,134, Cl. 350-6.700.
Morrison, Robert J., 4,123,138, Cl. 350-96.210.
Wolf, Edward D.; and Perkins, Walter E., Jr., 4,123,661, Cl. 250-492.00A.
Hughes, Ernest R.: *See—*
Carlson, C. Burton; and Hughes, Ernest R., 4,123,175, Cl. 366-151.000.
Hughes, Richard S.: *See—*
Jernigan, James L.; Hughes, Richard S.; and Van Devender, Russell R., Jr., 4,123,728, Cl. 331-94.50L.
Hugley, Dale G. Safety closure apparatus for pressure vessels. 4,122,969, Cl. 220-256.000.
Hujik, Ladislav: *See—*
Schilke, Waldemar; and Hujik, Ladislav, 4,123,493, Cl. 264-244.000.

Hults, Harold W., to Cutler-Hammer, Inc. Snap-action switch with contact wiping action. 4,123,634, Cl. 200-67.00A.
Humphries, William H.: *See—*
Koht, Lowell I.; Kinsch, Michael J., Jr.; and Humphries, William H., 4,123,047, Cl. 269-238.000.
Hundt, Dieter; Gruber, Wolfgang; Klarwein, Michael; and Roeschlau, Peter, to Boehringer Mannheim GmbH. Control serum containing alkaline phosphatase of constant activity. 4,123,384, Cl. 252-408.000.
Hunter, Robert F., to Steel Company of Canada, Limited, The. Tubeless heat recuperator. 4,122,823, Cl. 126-117.000.
Huntington, Robert G., to American Air Filter Company, Inc. Adjustable tensioning and retaining device. 4,123,027, Cl. 248-327.000.
Hurst, Richard F. Label stripping machine. 4,122,734, Cl. 82-1.00C.
Husqvarna AB: *See—*
Engman, Thomas; Eriesson, Dan; and Landen, Goran, 4,122,741, Cl. 83-834.000.
Hy-Gain De Puerto Rico, Inc.: *See—*
Yiu, Joseph T.; and Holmes, Roy L., 4,123,717, Cl. 325-470.000.
Hyggen, Egil, to Elkem-Spigerverket A/S. Auxiliary gripping members for gripping shoes for vehicle wheels. 4,122,880, Cl. 152-216.000.
Hyggen, Egil, to Elkem-Spigerverket A/S. Gripping shoes for vehicle wheels. 4,122,881, Cl. 152-216.000.
Hynek, Stanley: *See—*
Frey, Fred J.; Hynek, Stanley; and Losinski, Edward, 4,123,105, Cl. 297-451.000.
Hyre, Robert W. Improvements in concrete roadway-slab forming and form-elevation adjusting means. 4,123,031, Cl. 249-24.000.
Hyster Company: *See—*
Moshofsky, Jerome F.; and Vanderzanden, Allan J., 4,122,819, Cl. 123-198.00D.
Ichiki, Tadaharu; Shiho, Eiji; and Kitagawa, Koji, to Tokyo Shibaura Denki Kabushiki Kaisha. Containers for housing nuclear reactors. 4,123,325, Cl. 176-38.000.
Ichioka, Satoshi: *See—*
Fujii, Yoshihiro; Moriyama, Taketoshi; Shigematsu, Yoshikatsu; Takeuchi, Shinjiro; Kikuchi, Toshiro; Taguchi, Makio; and Ichioka, Satoshi, 4,123,707, Cl. 324-208.000.
Ichiugi, Isamu. Selectable fraction of revolution tape recorder. 4,123,784, Cl. 360-100.000.
Igelbuscher, Heinrich: *See—*
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,123,502, Cl. 423-230.000.
Ihde, Frederick J., Jr., to Diamond Shamrock Corporation. Silica based defoamer compositions having improved stability. 4,123,383, Cl. 252-321.000.
Iida Sankyo Kabushiki Kaisha: *See—*
Hashimoto, Katuo, 4,122,659, Cl. 58-7.000.
Ilett, Keith J.: *See—*
Wyatt, Kenneth L.; and Ilett, Keith J., 4,123,482, Cl. 261-91.000.
Illinois Tool Works Inc.: *See—*
Flair, Henry J., 4,122,609, Cl. 33-174.00P.
Imai, Kimiaki: *See—*
Fukuoka, Hiroshi; Kamcyama, Teruhiko; Tanaka, Yoshio; Suzuki, Hideyo; and Imai, Kimiaki, 4,123,257, Cl. 75-40.000.
Imaizumi, Tadahiro: *See—*
Mochizuki, Taketoshi; Harada, Fumio; Imaizumi, Tadahiro; and Nose, Koichi, 4,122,688, Cl. 62-196.00R.
Imoto, Katsuyuki; Takasaki, Yoshitaka; and Sumi, Masao, to Hitachi, Ltd. Apparatus for producing optical fiber. 4,123,242, Cl. 65-11.00W.
Imperial Chemical Industries Limited: *See—*
Dutta, Anand S.; Gormley, James J.; Hayward, Christopher F.; Morley, John S.; Petter, Nigel N.; and Stacey, Gilbert J., 4,123,523, Cl. 424-177.000.
Imperial-Eastman Corporation: *See—*
Kotsakis, Mike D.; and Schwarz, Albert J., 4,123,090, Cl. 285-39.000.
Imperial Metal Industries (Kynoch) Limited: *See—*
Gidley, John A. F., 4,123,572, Cl. 427-272.000.
Inaba, Yoshihito: *See—*
Morishita, Masataka; Fukushima, Mitsuru; Sasagawa, Tutomu; Inaba, Yoshihito; Yokokawa, Yasuo; Araragi, Satoshi; Yoshida, Narumi; and Uchiyama, Hachiro, 4,123,381, Cl. 252-316.000.
Inagaki, Syotaro: *See—*
Takeuchi, Koji; and Inagaki, Syotaro, 4,122,981, Cl. 222-231.000.
Industrial Electrical Control Corporation: *See—*
Laird, Dale E., 4,123,148, Cl. 350-293.000.
Industrie Pirelli S.p.A.: *See—*
Gallizia, Achille; and Bandel, Paolo, 4,123,496, Cl. 264-329.000.
Industriewerk Schaeffler OHG: *See—*
Grimm, Robert; and Koschmieder, Hartmut, 4,122,589, Cl. 29-148.40C.
Ing. C. Olivetti & C., S.p.A.: *See—*
Bovio, Michele, 4,123,653, Cl. 250-231.0SE.
Ingenium Ingenieurgesellschaft fur Mehrzweckbauten, Industrieanlagen und Gelandenutzung mbH Bau-Kommanditgesellschaft: *See—*
Teschner, Horst, 4,123,032, Cl. 249-29.000.
Ingram, John D., to Schlumberger Technology Corporation. Method and apparatus for dynamically investigating a borehole. 4,123,744, Cl. 340-15.5TN.
Inoue, Komei; and Kosaka, Tosihisa, to Glory Kogyo Kabushiki Kaisha. System for controlling coin-operated lockers. 4,122,935, Cl. 194-32.000.
Inoue, Sho; Ohata, Katsuya; Tsutsui, Satoshi; and Nomura, Tatsuo, to Mitsubishi Chemical Industries Limited; and Nippon Shinyaku Company, Limited. 2-Aminomethyl-5-phenyloxazoles and the pharmaceutically acceptable salts thereof. 4,123,541, Cl. 424-272.000.
Inowa, Shigeru; Nakamura, Issei; and Furuya, Tutomu, to Konishiroku Photo Industry Co., Ltd. Method and apparatus for forming an electrostatic latent image using an iron control grid with dual electrical fields. 4,123,156, Cl. 355-3.0SC.
Institut de Recherches de la Siderurgie Francaise: *See—*
Michelet, Jacques; and Zanetta, Hugues, 4,123,045, Cl. 266-275.000.
Institute of Nuclear Energy Research, Atomic Energy Council: *See—*
Radkowsky, Alvin; Chien, Ji-Peng; Yang, Chao-Yie; and Hsieh, Horng-Ming, 4,123,328, Cl. 176-78.000.
Instructional/Communications Technology, Inc.: *See—*
Brucat, John N., 4,123,153, Cl. 352-191.000.
International Business Machines Corporation: *See—*
Balog, Moshe; Berkenblit, Melvin; Chan, See-Ark; and Reisman, Arnold, 4,123,571, Cl. 427-249.000.
Devine, William T.; and Washburn, William F., 4,123,669, Cl. 307-205.000.
Heil, Walter P.; and Sclove, David B., 4,123,270, Cl. 96-1.50R.
Hubert, Wallace L., 4,123,155, Cl. 355-26.000.
Joshi, Madhukar L.; Landler, Paul F.; and Silverman, Ronald, 4,123,300, Cl. 148-187.000.
Lancto, Donald C.; and Shuck, Robert E., 4,123,747, Cl. 340-149.00A.
Rabedeau, Melbourne E., 4,123,135, Cl. 350-6.800.
International Flavors & Fragrances Inc.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.
Sprecker, Mark A., 4,123,469, Cl. 260-668.00F.
International Harvester Company: *See—*
Holloway, Gale A.; Yeh, Rudolph; and Zagotta, Joseph L., 4,122,868, Cl. 137-625.690.
Zagotta, Joseph L., 4,122,867, Cl. 137-625.300.
International Nickel Company, Inc., The: *See—*
Kilpinen, Leo T., 4,123,009, Cl. 241-30.000.
International Radio & Electronics, Inc.: *See—*
Eger, Donald M., 4,123,010, Cl. 242-68.300.
International Standard Electric Corporation: *See—*
Drake, Cyril F., 4,123,248, Cl. 71-4.000.
International Telephone and Telegraph Corporation: *See—*
Unrau, David G.; Portnoy, Norman A.; and Hartmann, Peter J., 4,123,398, Cl. 260-17.4CL.
Internationale Octrooi Maatschappij "OCTROPA" B.V.: *See—*
Giles, Alan F.; and Hendriks, Albertus G., 4,122,941, Cl 198-774.000.
InterRoyal Corporation: *See—*
Frey, Fred J.; Hynek, Stanley; and Losinski, Edward, 4,123,105, Cl. 297-451.000.
Iowa State University Research Foundation: *See—*
Lutenegger, Alan J.; Handy, Richard L.; and Hoover, James M., 4,122,704, Cl. 73-822.000.
Irwin, Howard D. Drag force knotmeter. 4,122,711, Cl. 73-184.000.
Ishihara, Takamasa: *See—*
Oyamada, Takeo; Satoh, Kazuhisa; Tomizawa, Choji; and Ishihara, Takamasa, 4,123,405, Cl. 260-29.60R.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Isshiki, Naotsugu; Nikai, Isao; and Uchida, Hiroyuki, 4,122,680, Cl. 60-649.000.
Ishimaru, Toshiyasu; Shimonishi, Yasutsugu; Sakurai, Hisayuki; and Hatanaka, Minoru, to Osaka University, President of. N-protected amino compounds. 4,123,611, Cl. 542-421.000.
Isono, Tadao, to Nihon Beru-Haueru Kabushiki Kaisha. Automatic focus adjusting device. 4,123,765, Cl. 354-25.000.
Isshiki, Naotsugu; Nikai, Isao; and Uchida, Hiroyuki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Concentration difference energy operated power plants and media used in conjunction therewith. 4,122,680, Cl. 60-649.000.
Itek Corporation: *See—*
Jacobs, Robert D., 4,123,049, Cl. 271-225.000.
Itishasi, Akihiro: *See—*
Hasegawa, Tetuya; and Itishasi, Akihiro, 4,123,590, Cl. 428-450.000.
Ito, Katsuo; and Yoshimura, Kazunori, to Murata Manufacturing Co., Ltd. Television tuner with fine tuning means. 4,123,781, Cl. 358-191.000.
Itoh, Masuko: *See—*
Itoh, Shiuta; Itoh, Masuko; and Kitaura, Masato, 4,123,770, Cl. 354-337.000.
Itoh, Shiuta; Itoh, Masuko; and Kitaura, Masato. Process and apparatus for developing photographs. 4,123,770, Cl. 354-337.000.
ITT Industries, Inc.: *See—*
Andrei-Alexandru, Marcel; Gille, Gunther; Goertler, Horst; Prohaska, Hans; Steeb, Walter; and Spieth, Wolfgang, 4,123,694, Cl. 318-443.000.
Iwanaga, Sumio: *See—*
Yamamoto, Masao; and Iwanaga, Sumio, 4,123,352, Cl. 209-546.000.
Iwasa, Yoshio, to Nissan Motor Company, Limited. Air-fuel ratio control system. 4,122,809, Cl. 123-119.0EC.
Iwasaki, Tetsuji; Miyamoto, Norioki; Sugimura, Yukio; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, to Kao Soap Co., Ltd. Germicidal herbicide for agriculture and horticulture. 4,123,254, Cl. 71-98.000.

Iwashita, Tomonori: *See—*
Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; Asaeda, Tsuyoshi; Fukushima, Tadahide; Shingu, Tamotsu; Hashimoto, Shigeru; and Iwashita, Tomonori, 4,123,650, Cl. 250-201.000.

Jackson, Barry; and Zinsstag, Christoph, to Lonza, Ltd. Process for the production of monohaloacetylhalides. 4,123,460, Cl. 260-544.00D.

Jacobi, Haireddin: *See—*
Lange, Fritz-Walter; Jacobi, Haireddin; and Muller, Jens, 4,123,548, Cl. 424-274.000.

Jacobs, Eugene A. Ventilating, cooling and heat reclaiming apparatus for cooking equipment. 4,122,834, Cl. 126-299.00D.

Jacobs, Robert D., to Itek Corporation. Printing plate transfer apparatus. 4,123,049, Cl. 271-225.000.

Jacoby, Thomas A., to Tecumseh Products Company. Laminated stator core member secured only by bonding the windings. 4,123,678, Cl. 310-217.000.

Jaeger, Kurt S.: *See—*
Bond, Desmond H.; Taggart, George W.; and Jaeger, Kurt S., 4,123,220, Cl. 431-353.000.

Jagielski, David: *See—*
Persha, Thomas J.; and Jagielski, David, 4,123,699, Cl. 353-26.00R.

James, Kelly W.: *See—*
Safrit, Sam C.; James, Kelly W.; and Bullock, Roger D., 4,122,555, Cl. 1-401.000.

James, Nicholas A.; Hudson, John A.; Savage, Derek G.; and Morley, Edward G., to Plessey Handel und Investments AG. Hydraulic pumping arrangements. 4,123,202, Cl. 417-216.000.

Jamieson, William B.: *See—*
Verge, John P.; and Jamieson, William B., 4,123,529, Cl. 424-250.000.

Jandeska, William F.; Netherton, Charles F.; and Vigor, Charles W., to General Motors Corporation. Forming curved thin magnets from rare earth-transition metal powders. 4,123,297, Cl. 148-103.000.

Jansen, Willi: *See—*
Giesen, Heinz; Hibbel, Josef; Jansen, Willi; and Speth, Sebastian, 4,123,235, Cl. 55-85.000.

Janssen, Johannes H. H., to U.S. Philips Corporation. Multisegment Hall element for offset voltage compensation. 4,123,772, Cl. 357-27.000.

Japan Metals & Chemicals, Co., Ltd.: *See—*
Fukuoka, Hiroshi; Kameyama, Teruhiko; Tanaka, Yoshio; Suzuki, Hideyo; and Imai, Kimiaki, 4,123,257, Cl. 75-40.000.

Jarrett, Ronald T.; and Barrett, Edward J., to Jarrett, Ronald T.; Barrett, Edward J.; and Curran, D. Michael. Method of producing pressed hay pellets. 4,122,767, Cl. 100-35.000.

Jeffers, Frederick J.: *See—*
Moeller, Charles R.; and Jeffers, Frederick J., 4,123,790, Cl. 360-111.000.

Jeker, Rudolf: *See—*
Schmid, Gunter; and Jeker, Rudolf, 4,123,312, Cl. 156-466.000.

Jelenevsky, Alex M.: *See—*
Buchanan, Ronald L.; Woolever, John T.; and Jelenevsky, Alex M., 4,123,440, Cl. 260-326.280.

Jernigan, James L.; Hughes, Richard S.; and Van Devender, Russell R., Jr., to United States of America, Navy. Electrogenerated chemiluminescent (ECL) laser. 4,123,728, Cl. 331-94.50L.

Jerry, Frederick L. Car hand spray washer. 4,123,004, Cl. 239-310.000.

Jessop, Quenton W. Chain. 4,122,666, Cl. 59-80.000.

Jochum, Peter; and Schilter, Eugen, to Hilti Aktiengesellschaft. Damping device for a fastening element setting gun. 4,122,987, Cl. 227-10.000.

Joelson, Carl R. Apparatus for forming hollow cylindrical pipes of reinforced concrete. 4,123,033, Cl. 249-65.000.

Johansen, Thomas R.: *See—*
Fleming, David L.; Johansen, Thomas R.; and Torok, Ernest J., 4,123,142, Cl. 350-162.0SF.

Johansson, Lars O., to Aktiebolaget Atomenergi. Self-powered neutron detector. 4,123,658, Cl. 250-390.000.

Johansson, Nils G. Rear view mirror. 4,123,030, Cl. 248-478.000.

Johansson, Rolf A. G., to Jonsereds AB. Throttle control mechanism for a carburetor. 4,123,480, Cl. 261-52.000.

John R. Nalbach Engineering Co., Inc.: *See—*
Nalbach, John C., 4,122,876, Cl. 141-150.000.

Johnson, C. Evan, to Hitachi Magnetics Corp. Toilet seat assembly. 4,122,563, Cl. 4-236.000.

Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., to Ex-Cell-O Corporation. Self-locking chuck. 4,122,755, Cl. 90-11.00A.

Johnson, James F., to Packard Instrument Company, Inc. Centering mechanism for movable member within a variable-width passageway. 4,122,936, Cl. 198-339.000.

Johnson, Kenneth C., to Sperry Rand Corporation. Frequency deviation digital display circuit. 4,123,704, Cl. 324-78.00Z.

Johnson, Matthey & Co., Limited: *See—*
Acres, Gary J. K.; and Bird, Alfred J., 4,123,500, Cl. 423-35.000.

Johnson, Randall S., to PPG Industries, Inc. Shaping and quenching glass sheets by roll forming using transition quench rolls. 4,123,246, Cl. 65-104.000.

Johnson, Roy A., to Upjohn Company, The. Enlarged-hetero-ring prostacyclin analogs. 4,123,441, Cl. 260-345.200.

Johnston, James D.; Tuggle, Richard H., Jr.; Burch, John L.; and Clark, Keith B., to United States of America, National Aeronautics and Space Administration. Apparatus for assembling space structure. 4,122,991, Cl. 223-3.000.

Jolly, James D. Versatile dispensing dental hygiene and shaving device. 4,122,983, Cl. 222-390.000.

Jondet, Andre: *See—*
Kornowski, Henri; Roques, Bernard; Oberlin, Robert; and Jondet, Andre, 4,123,544, Cl. 424-274.000.

Jones, Derrell G.: *See—*
Bieringer, Harold F.; Jones, Derrell G.; and Schwartzkopf, Gary S., 4,122,758, Cl. 92-23.000.

Jones, Duane A., to General Mills Chemicals, Inc. Agglomeration of starch-hydrolyzed polyacrylonitrile graft copolymer. 4,123,397, Cl. 260-17.4GC.

Jones, Eric; and Townsend, Rodney P., to English Electric Valve Company Limited. Combustible gas detectors. 4,123,225, Cl. 422-98.000.

Jones, Kenneth C.: *See—*
Grinstead, Robert R.; Jones, Kenneth C.; and Nasutavicus, Wilmonte A., 4,123,435, Cl. 260-307.00D.

Jones, Robert C.: *See—*
LaConti, Anthony B.; Torkildsen, Robert A.; and Jones, Robert C., 4,123,700, Cl. 324-29.000.

Jones, Robert N.: *See—*
Von Hoene, Donald C.; Chu, Joseph Y. C.; Chen, Inan; and Jones, Robert N., 4,123,269, Cl. 96-1.0PC.

Jonsereds AB: *See—*
Johansson, Rolf A. G., 4,123,480, Cl. 261-52.000.

Jonsson, Nils A.; Mikiver, Lembit; and Moses, Pinchas, to AB Kabi. Derivatives of substituted indoline lactans with effect on the central nervous system. 4,123,543, Cl. 424-274.000.

Josefsen, Turi L. H.; and Veth, George J., to United States Surgical Corporation. Disposable sample card having a well with electrodes for testing a liquid sample. 4,123,701, Cl. 324-30.00B.

Joseph, Raymond, to Ateliers Reunis Societe Anonyme. Goods transport cart with molded plastic panel. 4,123,077, Cl. 280-47.340.

Joshi, Madhukar L.; Landler, Paul F.; and Silverman, Ronald, to International Business Machines Corporation. Integrated circuit process utilizing lift-off techniques. 4,123,300, Cl. 148-187.000.

Joswig, Siegfried, to Wolf-Gerate GmbH. Method and apparatus for the regeneration of lawn surfaces in particular of grass sport pitches. 4,122,784, Cl. 111-3.000.

Jozic, Ljerka: *See—*
Credner, Karl; Brenner, Gunter; Tauscher, Manfred; and Jozic, Ljerka, 4,123,534, Cl. 424-253.000.

Jozsef, Tibor: *See—*
Riley, Ralph V.; Muir, Samuel; Bloor, Christopher; and Jozsef, Tibor, 4,123,264, Cl. 75-211.000.

JPX: *See—*
Midzutani, Wataru; Nakajima, Koe; Kikuma, Toshio; Ondo, Keitaku; and JPX, 4,122,696, Cl. 72-52.000.

Jumonji, Shigeru: *See—*
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,123,782, Cl. 358-210.000.

Jutte, Hans: *See—*
Follert, Hans G.; Linde, Klaus; and Jutte, Hans, 4,122,683, Cl. 405-142.000.

Kaaz Machinery Co., Ltd.: *See—*
Katsuya, Kazunari, 4,122,601, Cl. 30-296.00A.

Kabushiki Kaisha Famy: *See—*
Murakami, Mitsuo, 4,123,078, Cl. 280-87.02W.

Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho: *See—*
Yokoyama, Tohei; and Urayama, Kiyoshi, 4,122,715, Cl. 73-228.000.

Kabushiki Kaisha Mitachi Onkyo Seisakusho: *See—*
Minamizono, Tsugikuma, 4,123,067, Cl. 274-37.000.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Komatsu, Fumito; and Yazima, Shinkichi, 4,123,015, Cl. 242-191.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Tsuji, Masuo, 4,122,661, Cl. 58-23.00R.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Muto, Toshiya, 4,123,632, Cl. 200-61.270.

Kaelble, David H., to Rockwell International Corporation. Sealing material for use in contact with animal tissue. 4,123,409, Cl. 260-29.1SB.

Kaimins, Laimons: *See—*
Keem, Phillip W.; Kaimins, Laimons; and Graham, James, 4,123,197, Cl. 415-123.000.

Kaiser Aluminum & Chemical Corporation: *See—*
Commins, Alfred D.; Kindelvich, Frederick T.; and Schroter, Richard C., 4,122,640, Cl. 52-248.000.

Kajihara, Hiroshi: *See—*
Tasaki, Yoshio; Nakayama, Noboru; and Kajihara, Hiroshi, 4,122,990, Cl. 228-2.000.

Kajii, Shigeru, to Hochiki Corporation. Storage type smoke detector. 4,123,656, Cl. 250-381.000.

Kajiwara, Toshiyuki; and Nishino, Tadashi, to Hitachi, Ltd. Coil unwind and wind-up method and apparatus therefor. 4,123,011, Cl. 242-78.100.

Kamath, Venkatesh: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.

Kameda, Nobuyuki; Hisada, Yoshio; Takayama, Chiyozo; Kato, Toshiro; and Fujinami, Akira, to Sumitomo Chemical Company, Limited. N-(3,5-dihalophenyl)-α-spirocycloalkanesuccinimides, and their preparation and use. 4,123,549, Cl. 424-274.000.

Kameyama, Teruhiko: *See—*
Fukuoka, Hiroshi; Kameyama, Teruhiko; Tanaka, Yoshio; Suzuki, Hideyo; and Imai, Kimiaki, 4,123,257, Cl. 75-40.000.

Kamiya, Kunio: *See—*
Sugimoto, Yoshikazu; Yusa, Hideo; Kato, Yomei; Kamiya, Kunio; and Kikuchi, Makoto, 4,123,356, Cl. 210-67.000.

Kammel, Roland; and Lieber, Hans-Wilhelm, to Gotzelmann KG Industrieabwasser-Anlagen. Method and apparatus for treating metal containing waste water. 4,123,340, Cl. 204-149.000.

Kamoshita, Katsuzo: *See—*
Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, 4,123,256, Cl. 71-105.000.

Kamyr, Inc.: *See—*
Sherman, Michael I., 4,123,318, Cl. 162-19.000.

Kanbara, Tohru; Uemura, Michihiko; and Yokoo, Nobuhiro, to Asahi Glass Company, Ltd. Glass for use in ultrasonic delay lines. 4,123,731, Cl. 333-30.00R.

Kaneda, Tsugio: *See—*
Yamakoshi, Noboru; Kaneda, Tsugio; Hatsuoka, Nobuyasu; Shimazu, Shinichi; Fujita, Tatsu; Yamada, Yoshiro; Yamada, Tetsuo; and Mizuta, Atsuo, 4,123,296, Cl. 148-36.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Tanaka, Tsutomu; Nakamura, Yoshio; Asahi, Koji; Shiraishi, Tadayoshi; and Takahara, Kenji, 4,123,329, Cl. 195-28.00R.

Kang, Jung W.: *See—*
Snyder, Dennis L.; Stayer, Mark L., Jr.; and Kang, Jung W., 4,123,503, Cl. 423-300.000.

Kanigan, Frederick R., to Raymond Lee Organization, Inc., The, a part interest. Hand auger. 4,122,905, Cl. 175-396.000.

Kao Soap Co., Ltd.: *See—*
Iwasaki, Tetsuji; Miyamoto, Norioki; Sugimura, Yukio; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,123,254, Cl. 71-98.000.

Kapitanov, Nikolai N.; Kolosova, Svetlana V.; Kolesnikov, Vyacheslav D.; and Kharchenko, Vladimir P. Instrument for suturing with metal staples. 4,122,989, Cl. 227-108.000.

Karalis, Victor L., to Uniroyal, Inc. Method of making footwear. 4,122,574, Cl. 12-142.0RS.

Karalus, George C.; and Parker, Robert R., to Bell & Howell Company. Operator responsive audio-visual teaching apparatus. 4,122,613, Cl. 35-9.00A.

Karasawa, Shuichi: *See—*
Tomita, Satoru; Ohori, Tamio; and Karasawa, Shuichi, 4,123,762, Cl. 346-155.000.

Karino, Yukio; Sakaguchi, Shinji; and Yoshida, Takashi, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic materials with vinyl copolymer neutralization rate controlling layer. 4,123,275, Cl. 96-77.000.

Karki, Kenneth A., to Martin Marietta Corporation. Process for forming an optical black surface and surface formed thereby. 4,123,591, Cl. 428-454.000.

Karlsson, Lars P. Apparatus for controlling the sound generation in the loudspeakers of intercommunicating telephone sets in response to speech signals from the microphones of said telephone sets. 4,123,620, Cl. 179-1.0CN.

Karrer, Friedrich, to Ciba-Geigy Corporation. Insecticidal composition. 4,123,556, Cl. 424-341.000.

Kasperkovitz, Wolfdietrich G., to U.S. Philips Corporation. Circuit arrangement for frequency division of high-frequency pulses. 4,123,672, Cl. 307-303.000.

Katayama Chemical Works Co., Ltd.: *See—*
Osamu, Umekawa; Koji, Takemori; and Sakae, Katayama, 4,123,443, Cl. 260-347.400.

Katayama, Masao; and Tabeta, Yataro, to Mitsubishi Gas Chemical Company, Inc.; and Daiichi Kasei Sangyo. Process for decomposing microbial cells. 4,123,426, Cl. 260-112.00R.

Katchman, Arthur, to General Electric. Polyphenylene ether resin compositions containing a diphenylamine. 4,123,474, Cl. 260-874.000.

Katchman, Arthur: *See—*
Abolins, Visvaldis; and Katchman, Arthur, 4,123,475, Cl. 260-874.000.

Kathmann, Stephen J.; Post, Roger L.; Herschler, Michael G.; and Anerino, Sylvester L., to Gardner-Denver Company. Multistage helical screw compressor with liquid injection. 4,123,203, Cl. 417-252.000.

Kato, Masahiko; Katogi, Hisao; and Seki, Ikuo, to Toppan Printing Co., Ltd. Density measuring device. 4,123,171, Cl. 356-175.000.

Kato, Toshiro: *See—*
Kameda, Nobuyuki; Hisada, Yoshio; Takayama, Chiyozo; Kato, Toshiro; and Fujinami, Akira, 4,123,549, Cl. 424-274.000.

Kato, Yomei: *See—*
Sugimoto, Yoshikazu; Yusa, Hideo; Kato, Yomei; Kamiya, Kunio; and Kikuchi, Makoto, 4,123,356, Cl. 210-67.000.

Katogi, Hisao: *See—*
Kato, Masahiko; Katogi, Hisao; and Seki, Ikuo, 4,123,171, Cl. 356-175.000.

Katoh, Sanao: *See—*
Tanimoto, Akira; Katoh, Sanao; and Yoshida, Yukihiro, 4,122,786, Cl. 112-158.00E.

Katscher, Erich: *See—*
Weber, Robert; Katscher, Erich; and Schabert, Hans-Peter, 4,123,323, Cl. 176-30.000.

Katsuya, Kazunari, to Kaaz Machinery Co., Ltd. Portable separable grass and bush cutter. 4,122,601, Cl. 30-296.00A.

Kawabata, Toshihiko: *See—*
Fukuda, Kiyou; Kawabata, Toshihiko; and Asai, Kiyotsugu, 4,123,412, Cl. 260-30.8DS.

Kawada, Seigo; Suda, Yoshitaka; Tsuchiya, Shigeru; Ohta, Nobuya; Muramatsu, Norimichi; and Nishio, Kazuo, to Kumiai Chemical Industry Co., Ltd. Fungicidal and germicidal benzanilides. 4,123,554, Cl. 424-324.000.

Kawahara, Haruyuki: *See—*
Hirabayashi, Masaya; Kawahara, Haruyuki; and Taniguchi, Yoshio, 4,122,605, Cl. 32-10.00A.

Kawai, Masanori: *See—*
Kimura, Yoshiaki; Kawai, Masanori; and Hatano, Takashi, 4,123,761, Cl. 346-140.00R.

Kawamura, Masatada; and Yamane, Hiroyuki, to Kurashiki Boseki Kabushiki Kaisha. Ultrasonic sound source and method for manufacturing rectangular diaphragm of ultrasonic sound source. 4,122,797, Cl. 116-137.00A.

Kawasaki, Masahiro: *See—*
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; and Kawasaki, Masahiro, 4,123,764, Cl. 354-24.000.

Kawasaki, Midori: *See—*
Sato, Shunichi; Kawasaki, Midori; and Kunii, Mamoru, 4,123,123, Cl. 312-1.000.

Keem, Phillip W.; Kaimins, Laimons; and Graham, James, to Allware Agencies Limited. Fan with air directing grille. 4,123,197, Cl. 415-123.000.

Keinanen, Henry J., to Continental Can Company, Inc. Arc welding system. 4,123,646, Cl. 219-137.00R.

Keller, James R.; and Nickerson, William A., to Wm. A. Nickerson & Co., Ltd. Machine for assembling wood I-beams. 4,123,315, Cl. 156-560.000.

Keller, Roderich; and Muller, Michael, to Gesellschaft fur Schwerionenforschung mbH. Ion generating source. 4,123,686, Cl. 313-230.000.

Kelley, Joseph A., to Flett Development Company. Method for converting waste paper products into useful forms. 4,123,489, Cl. 264-141.000.

Kellum, Gene E.; and Thompson, Jack W., to Gulf Oil Corporation. Catalyst feeding apparatus. 4,123,601, Cl. 526-79.000.

Kelly, David B. Shower screens. 4,122,559, Cl. 4-149.000.

KemaNobel AB: *See—*
Bjorklund, James Axel C.; and Ekengren, Turid, 4,123,319, Cl. 162-158.000.

Kemper, Daryl M.; and Dick, Louis A., to Tyco Crystal Products, Inc. Piezoelectric quartz crystal products and fabrication methods therefor. 4,123,680, Cl. 310-320.000.

Kendrick, Theodore T. Fire rescue equipment. 4,122,917, Cl. 182-144.000.

Kenkare, Divaker B.; Robbins, Clarence R.; and Carson, John C., Jr., to Colgate-Palmolive Company. Dispensing. 4,122,976, Cl. 222-94.000.

Kennedy, Alexander W., to Diamond Shamrock Corporation. Chromium-containing coating of enhanced corrosion resistance. 4,123,290, Cl. 148-6.200.

Kensler, Daniel L., Jr.; Kohn, Gustave K.; and Walgenbach, David D., to Chevron Research Company. Compositions for preserving crops and animal feedstuffs. 4,123,552, Cl. 424-311.000.

Keresman, Michael A.; and Schueuerman, Curtis H., to Parker-Hannifin Corporation. Means for intercepting weld splatter. 4,123,240, Cl. 55-385.00C.

Kern, Kenneth E.; and Richmond, James W., to General Time Corporation. Timer switch assembly. 4,123,628, Cl. 200-38.0FB.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Schnez, Harald, 4,123,484, Cl. 264-0.500.

Kerr Glass Manufacturing Corporation: *See—*
Roy, Gerald L., 4,122,965, Cl. 215-344.000.

Kerr, Ralph O.; and Barone, Bruno J., to Denka Chemical Corporation. Catalyst and process for preparing maleic anhydride from C_4 hydrocarbons. 4,123,388, Cl. 252-437.000.

Kharchenko, Vladimir P.: *See—*
Kapitanov, Nikolai N.; Kolosova, Svetlana V.; Kolesnikov, Vyacheslav D.; and Kharchenko, Vladimir P., 4,122,989, Cl. 227-108.000.

Kharitonov, Ivan I.: *See—*
Mash, Dmitry M.; Schedrovitsky, Savely S.; Golovko, Zoya I.; Zaitsev, Mikhail P.; Sorokin, Andrei N.; Belyaeva, Agnia A.; and Kharitonov, Ivan I., 4,123,735, Cl. 336-30.000.

Kieserling & Albrecht: *See—*
Pauls, Kurt, 4,122,572, Cl. 10-105.000.

Kikuchi, Makoto: *See—*
Sugimoto, Yoshikazu; Yusa, Hideo; Kato, Yomei; Kamiya, Kunio; and Kikuchi, Makoto, 4,123,356, Cl. 210-67.000.

Kikuchi, Toshiro: *See—*
Fujii, Yoshihiro; Moriyama, Taketoshi; Shigematsu, Yoshikatsu; Takeuchi, Shinjiro; Kikuchi, Toshiro; Taguchi, Makio; and Ichioka, Satoshi, 4,123,707, Cl. 324-208.000.

Kikuma, Toshio: *See—*
Midzutani, Wataru; Nakajima, Koe; Kikuma, Toshio; Ondo, Keitaku; and JPX, 4,122,696, Cl. 72-52.000.

Kikut, Edmundo. Apparatus for extracting energy from wave motion. 4,122,676, Cl. 60-398.000.

Killig, Klaus: *See—*
Reiss, Karl-Hans; and Killig, Klaus, 4,123,654, Cl. 250-272.000.

Kilpinen, Leo T., to International Nickel Company, Inc., The. Load sensor for a grinding mill. 4,123,009, Cl. 241-30.000.

Kilshaw, Edna M., legal representative: *See—*
Kilshaw, James, deceased; and Dervin, Edward, 4,123,768, Cl. 354-292.000.

Kilshaw, James, deceased (by Kilshaw, Edna M., legal representative); and Dervin, Edward, to Victoria University of Manchester. Method

and apparatus for photographically recording three-dimensional models of dental arch profiles. 4,123,768, Cl. 354-292.000.

Kimoto, Kyoji: *See—*
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; and Masuda, Yoshinori, 4,123,336, Cl. 204-98.000.

Kimura, Yoshiaki; Kawai, Masanori; and Hatano, Takashi, to Konishiroku Photo Industry Co., Ltd. Method of purging ink passages of an ink jet recording device. 4,123,761, Cl. 346-140.00R.

Kinanen, Ilmari; and Duncker, Jim. Method for classifying and measuring of timbers. 4,123,702, Cl. 324-58.50A.

Kindelvich, Frederick T.: *See—*
Commins, Alfred D.; Kindelvich, Frederick T.; and Schroter, Richard C., 4,122,640, Cl. 52-248.000.

King, William R. Brake control method and apparatus for railway cars. 4,123,115, Cl. 303-22.00R.

Kingsbury, William L.; Thurston, Kelly W.; and Chapman, Harry L., to General Motors Corporation. Diesel engine combustion chambers. 4,122,804, Cl. 123-32.0ST.

Kingsbury, William L.; and Thurston, Kelly W., to General Motors Corporation. Diesel engine combustion chambers. 4,122,805, Cl. 123-32.0ST.

Kinsch, Michael J., Jr.: *See—*
Koht, Lowell I.; Kinsch, Michael J., Jr.; and Humphries, William H., 4,123,047, Cl. 269-238.000.

Kirkbride, Chalmer G. Sulfur removal from coal. 4,123,230, Cl. 44-1.00R.

Kita, Nobuyuki; and Narutomi, Yasuhisa, to Fuji Photo Film Co., Ltd.; and National Patent Development Corporation. Photosensitive composition. 4,123,276, Cl. 96-91.00R.

Kita, Shinichiro; Hiki, Fumihiko; Shimizu, Masayuki; and Kondou, Akira, to Sumitomo Chemical Company, Limited. Process for the high pressure production of polyethylene. 4,123,600, Cl. 526-65.000.

Kitagawa, Koji: *See—*
Ichiki, Tadaharu; Shiho, Eiji; and Kitagawa, Koji, 4,123,325, Cl. 176-38.000.

Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. Control device for television camera. 4,123,782, Cl. 358-210.000.

Kitaura, Masato: *See—*
Itoh, Shiuta; Itoh, Masuko; and Kitaura, Masato, 4,123,770, Cl. 354-337.000.

Kiyono, Tetsuhiro; Nakamura, Moritoshi; and Nakanowatari, Jun, to Alps Electric Co., Ltd. Resistance element for variable resistors. 4,123,741, Cl. 338-121.000.

Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, to Thyssen Niederrhein. Process for the production of steel with increased ductility and for the desulfurization of a steel melt. 4,123,258, Cl. 75-58.000.

Klar, Irwin: *See—*
Rock, Erwin H.; and Klar, Irwin, 4,122,841, Cl. 128-2.00Z.

Klarwein, Michael: *See—*
Hundt, Dieter; Gruber, Wolfgang; Klarwein, Michael; and Roeschlau, Peter, 4,123,384, Cl. 252-408.000.

Klaubert, Dieter H.: *See—*
Sellstedt, John H.; and Klaubert, Dieter H., 4,123,432, Cl. 260-293.690.

Klauke, Erich: *See—*
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,123,449, Cl. 260-453.0AR.

Klaver, Petrus; and Steenhof de Jong, Jacob G., to Du Pont de Nemours, E. I., and Company. Dry spinning pack assembly. 4,123,208, Cl. 425-72.00S.

Kleinpeter, Joseph A., to Continental Oil Company. Adiabatic reactor. 4,123,448, Cl. 260-449.00M.

Kline, Frederick E.: *See—*
Cook, Francis J.; and Kline, Frederick E., 4,123,798, Cl. 365-237.000.

Klose, Peter H.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Dry process production and annotation of archival microform records from hard copy. 4,123,157, Cl. 355-43.000.

Klundt, Kurt, to Pfaff Industriemaschinen GmbH. Sewing machine having an oil filter. 4,122,789, Cl. 112-256.000.

Knetsch, Wilfried; and Petricek, Elisabeth. Device for applying pressure to a selected point of a human finger. 4,122,852, Cl. 128-303.00R.

Knight, Phillip D.; deMauriac, Richard A.; and Graham, Patricia A., to Eastman Kodak Company. Heat developable imaging materials and process. 4,123,274, Cl. 96-66.00T.

Knoll, Jozsef: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Knoll, Jozsef; Sebestyen, Gyula; and David, Agoston, 4,123,533, Cl. 424-251.000.

Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans G., to Eisenwerk-Gesellschaft Maximilianshutte mbH. Method for supplying thermal energy to steel melts. 4,123,259, Cl. 75-60.000.

Kobayashi, Akio; and Ohya, Masaki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Bonding a multi-layered structure of olefin-containing and nitrile-containing polymers and article. 4,123,576, Cl. 428-35.000.

Kobayashi, Odawara, to Fuji Photo Film Co., Ltd. Light-sensitive o-quinonediazide containing planographic printing plate. 4,123,279, Cl. 96-91.00D.

Kobayashi, Tamotsu; and Futamura, Jun, to Hokushin Electric Works, Ltd. Magnetic current meter for open channel flow measurement. 4,122,714, Cl. 73-194.0EM.

Kobe Steel, Ltd.: *See—*
Yamakoshi, Noboru; Kaneda, Tsugio; Hatsuoka, Nobuyasu; Shimazu, Shinichi; Fujita, Tatsu; Yamada, Yoshiro; Yamada, Tetsuo; and Mizuta, Atsuo, 4,123,296, Cl. 148-36.000.

Koch, Carl C.: *See—*
Prince, David C., Jr.; and Koch, Carl C., 4,123,196, Cl. 415-181.000.

Kochis, August J.: *See—*
Dussault, Edmund J.; Kochis, August J.; and Cross, Arthur A., 4,122,887, Cl. 160-354.000.

Kochs Adler AG: *See—*
Scholl, Hans; and Bernewasser, Horst, 4,122,785, Cl. 112-121.150.

Kock, Bruce A. Stop watch and timing device. 4,122,663, Cl. 58-74.000.

Kodama Kagaku Kohyo K. K.: *See—*
Madenokoji, Tadahide, 4,123,215, Cl. 425-388.000.

Kodama, Kenichiro: *See—*
Watanabe, Takeshi; and Kodama, Kenichiro, 4,123,477, Cl. 260-897.00C.

Koenig & Bauer Aktiengesellschaft: *See—*
Sauer, Hartmut K., 4,122,774, Cl. 101-415.100.
Weschenfelder, Otto T.; and Michalik, Horst B., 4,123,048, Cl. 270-77.000.

Koeppel, Peter: *See—*
Frei, Roland; Gutmann, Franz; Sieber, Peter; and Koeppel, Peter, 4,123,228, Cl. 422-274.000.

Koepplin, Gilbert L. Unpowered support vehicle. 4,122,901, Cl. 171-61.000.

Koerber, Barbara M.: *See—*
Freenor, Francis J., III; and Koerber, Barbara M., 4,123,255, Cl. 71-103.000.

Kofluk, Russell P.: *See—*
Sefton, Verner B.; and Kofluk, Russell P., 4,123,260, Cl. 75-117.000.

Kohler, Dale M.; Dahlstrom, Norris A.; and Taylor, David W., to Armco Steel Corporation. Post decarburization anneal for cube-on-edge oriented silicon steel. 4,123,298, Cl. 148-111.000.

Kohler, Dale M.: *See—*
Brewer, David C.; Evans, James D.; Kohler, Dale M.; and Haselkorn, Michael H., 4,123,337, Cl. 204-129.300.

Kohler, Klaus; Woditsch, Peter; and Schultz, Karl-Heinz, to Bayer Aktiengesellschaft. Oxidation of metallic iron to black oxide pigments. 4,123,501, Cl. 423-152.000.

Kohn, Gustave K.: *See—*
Kensler, Daniel L., Jr.; Kohn, Gustave K.; and Walgenbach, David D., 4,123,552, Cl. 424-311.000.

Kohn, Jean, to Baltek Corporation. Technique for converting balsa logs into panels. 4,122,878, Cl. 144-316.000.

Kohriyama, Yoshimasa, to Caterpillar Mitsubishi Ltd. Noise reducing device in undercarriage of track-type vehicle. 4,123,120, Cl. 305-41.000.

Kohrt, Carl F.: *See—*
Ciurca, Samuel, Jr.; and Kohrt, Carl F., 4,123,273, Cl. 96-66.00T.

Koht, Lowell I.; Kinsch, Michael J., Jr.; and Humphries, William H., to Raychem Corporation. Modular clip assembly for heat shrinkable material. 4,123,047, Cl. 269-238.000.

Koiwai, Yutaka: *See—*
Shichida, Hiromichi; Gamo, Gotaro; Nomura, Yoshiyuki; Hattori, Kiyoshi; and Koiwai, Yutaka, 4,123,645, Cl. 219-69.00W.

Koji, Takemori: *See—*
Osamu, Umekawa; Koji, Takemori; and Sakae, Katayama, 4,123,443, Cl. 260-347.400.

Kolesnikov, Vyacheslav D.: *See—*
Kapitanov, Nikolai N.; Kolosova, Svetlana V.; Kolesnikov, Vyacheslav D.; and Kharchenko, Vladimir P., 4,122,989, Cl. 227-108.000.

Kolosova, Svetlana V.: *See—*
Kapitanov, Nikolai N.; Kolosova, Svetlana V.; Kolesnikov, Vyacheslav D.; and Kharchenko, Vladimir P., 4,122,989, Cl. 227-108.000.

Kolt, Stanley, to Suroff, Leonard W., a part interest. Automatic ventilator. 4,123,001, Cl. 236-49.000.

Komatsu, Fumito; and Yazima, Shinkichi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Automatic stopping device for tape recorder. 4,123,015, Cl. 242-191.000.

Kondou, Akira: *See—*
Kita, Shinichiro; Hiki, Fumihiko; Shimizu, Masayuki; and Kondou, Akira, 4,123,600, Cl. 526-65.000.

Kondur, Nicholas, Jr., to LRC, Inc. Cam drive for matrix print heads and the like. 4,123,182, Cl. 400-328.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Inowa, Shigeru; Nakamura, Issei; and Furuya, Tutomu, 4,123,156, Cl. 355-3.0SC.
Kimura, Yoshiaki; Kawai, Masanori; and Hatano, Takashi, 4,123,761, Cl. 346-140.00R.
Takahashi, Jiro; and Miyamoto, Akihiko, 4,123,330, Cl. 96-29.00D.

Kononenko, Viktor Evmenievich; Tamazina, Valentina Nikolaevna; and Ozerova, Alla Ivanovna. Method of manufacturing an iron electrode for alkaline accumulators. 4,123,568, Cl. 427-126.000.

Koppers Company, Inc.: *See—*
Emery, William G., 4,123,334, Cl. 202-262.000.

Korlatzki, Rudi; and Schuhmacher, Gunter, to Naturin-Werk Becker & Do. Polyurethanes and food casing made therefrom particularly by extrusion and stretching. 4,123,589, Cl. 428-425.000.

Korn, Volker: *See—*
Franetzki, Manfred; Korn, Volker; and Prestele, Karl, 4,122,839, Cl. 128-2.080.

Korner, Paul: *See—*
Grittner, Heinz; Giese, Ralph; and Korner, Paul, 4,122,583, Cl. 24-208.00A.

Kornowski, Henri; Roques, Bernard; Oberlin, Robert; and Jondet, Andre, to Merrell Toraude S. A. Acetylsalicylic acid derivatives. 4,123,544, Cl. 424-274.000.

Korsak, Kazimierz. VTOL launching and retrieval systems. 4,123,020, Cl. 244-116.000.

Kosaka, Tosihisa: *See—*
Inoue, Komei; and Kosaka, Tosihisa, 4,122,935, Cl. 194-32.000.

Koschmieder, Hartmut: *See—*
Grimm, Robert; and Koschmieder, Hartmut, 4,122,589, Cl. 29-148.40C.

Koskinen, Ensio, to Enso-Gutzeit Osakeyhtio. Disk filter. 4,123,363, Cl. 210-331.000.

Koss, George A., to Ford Motor Company. Gas table. 4,123,113, Cl. 302-2.00R.

Kothmann, Richard E.: *See—*
Cushing, George B.; and Kothmann, Richard E., 4,123,618, Cl. 174-11.0BH.

Kotsakis, Mike D.; and Schwarz, Albert J., to Imperial-Eastman Corporation. Push-pull fitting. 4,123,090, Cl. 285-39.000.

Kovar, Paul J. Joist bridging member. 4,122,647, Cl. 52-695.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Weber, Robert; Katscher, Erich; and Schabert, Hans-Peter, 4,123,323, Cl. 176-30.000.

Krall, Thomas J., to Owens-Illinois, Inc. Blow pin assembly with venting means. 4,123,218, Cl. 425-535.000.

Kramann, Bernhard; and Tammen, Heinrich, to Byk Gulden Lomberg Chemische Fabrik - GmbH. Catheter. 4,122,591, Cl. 29-157.00R.

Krch, Karel: *See—*
Rataj, Stanislav; Krch, Karel; Pilousek, Josef; Blazek, Jaroslav; Vitek, Hynek; and Macek, Ladislav, 4,123,114, Cl. 302-53.000.

Krech, Hans: *See—*
Hartmann, Ernst G.; Krech, Hans; and Meir, Franz, 4,123,749, Cl. 340-572.000.

Kreikebaum, Gerhard: *See—*
Carlson, Thomas B.; and Kreikebaum, Gerhard, 4,122,719, Cl. 73-342.000.

Krenowicz, Robert A.: *See—*
Miller, Edsel L.; and Krenowicz, Robert A., 4,123,369, Cl. 252-32.70E.

Kress Corporation: *See—*
Kress, Edward S., 4,122,961, Cl. 214-313.000.

Kress, Edward S., to Kress Corporation. Pot handlling trailer with compound action. 4,122,961, Cl. 214-313.000.

Krippner, Kenneth E.; and Zacher, Albert R., Jr., to Artronix Inc. X-ray detector. 4,123,657, Cl. 250-385.000.

Kruger, Bernard M., to Herman, Arnold. Microfilm-unit and magnifying-glass locket. 4,122,619, Cl. 40-365.000.

Kruger, Johann, to U.S. Philips Corporation. Magnetic information carrier with optical servo tracks and apparatus for reading and writing the same. 4,123,788, Cl. 360-77.000.

Kruger Johann: *See—*
Hiil, Bernhard; Pepperl, Rudiger; and Kruger, Johann, 4,123,147, Cl. 350-285.000.

Krupey, John; and Welchner, Ewald F., to American Home Products Corporation. Purification of glycoproteins and immunization therewith. 4,123,343, Cl. 204-180.00G.

Krzeszowski, Thaddee, to Societe Anonyme dite: Weber et Broutin. Method of heating for connecting a plate element to a support by means of a thermofusible glue. 4,123,305, Cl. 156-71.000.

Kubiatowicz, James F., to Custom Concepts, Incorporated. Underwater toy operated by chemically produced gas bubbles. 4,122,627, Cl. 46-92.000.

Kubushiki Kaisha Kokugo: *See—*
Sato, Shunichi; Kawasaki, Midori; and Kunii, Mamoru, 4,123,123, Cl. 312-1.000.

Kuhlmann, Wolf; Rumpp, Gerhard; and Busler, Albert, to Hilti Aktiengesellschaft. Expansion anchor assembly including an interconnecting device. 4,122,753, Cl. 85-74.000.

Kumiai Chemical Industry Co., Ltd.: *See—*
Kawada, Seigo; Suda, Yoshitaka; Tsuchiya, Shigeru; Ohta, Nobuya; Muramatsu, Norimichi; and Nishio, Kazuo, 4,123,554, Cl. 424-324.000.

Kumoi, Sadakatsu: *See—*
Mabuchi, Shunsuke; Tsuzuki, Kenji; and Kumoi, Sadakatsu, 4,123,616, Cl. 568-861.000.

Kunii, Mamoru: *See—*
Sato, Shunichi; Kawasaki, Midori; and Kunii, Mamoru, 4,123,123, Cl. 312-1.000.

Kupelian, Robert H., to American Cyanamid Company. Inhibiting plant bud growth with substituted 2,6-di-nitroanilines. 4,123,250, Cl. 71-78.000.

Kurashiki Boseki Kabushiki Kaisha: *See—*
Kawamura, Masatada; and Yamane, Hiroyuki, 4,122,797, Cl. 116-137.00A.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Akio; and Ohya, Masaki, 4,123,576, Cl. 428-35.000.

Kurosaki, Shiro: *See—*
Nakahara, Tsuneo; Hoshikawa, Masao; Shiraishi, Satoshi; Kurosaki, Shiro; and Fujiwara, Kunio, 4,123,483, Cl. 264-1.000.

Kusama, Haruya: *See—*
Minemura, Hajime; Kusama, Haruya; and Sato, Shoichi, 4,123,066, Cl. 274-10.00C.

Kuzarov, Encho J., to Warn Industries, Inc. Winch mounting apparatus. 4,123,040, Cl. 254-166.000.

Kyo, Kayomon; Asai, Yasuhiko; and Tokumitsu, Shinichi, to Unitika Ltd. Aromatic copolyester composition containing phosphorus compounds. 4,123,420, Cl. 528-127.000.

Kyoto Ceramic Kabushiki Kaisha: *See—*
Hirabayashi, Masaya; Kawahara, Haruyuki; and Taniguchi, Yoshio, 4,122,605, Cl. 32-10.00A.

Laauwe, Robert H. Squeeze bottle containing a liquid product and operative whether upright or inverted. 4,122,979, Cl. 222-193.000.

Lacklison, David E.: *See—*
Pearson, Ronald F.; Lacklison, David E.; Scott, George B.; and Palfreeman, John S., 4,123,783, Cl. 358-230.000.

LaConti, Anthony B.; Torkildsen, Robert A.; and Jones, Robert C., to General Electric Company. Potentiostated, self-humidifying, solid polymer electrolyte carbon monoxide dosimeter. 4,123,700, Cl. 324-29.000.

Ladeur, Bernhard H.: *See—*
Port, Morton I.; Nebe, Juergen; and Ladeur, Bernhard H., 4,123,577, Cl. 428-95.000.

La France, Donald S.: *See—*
Armstrong, Warren E.; La France, Donald S.; and Voge, Hervey H., 4,122,671, Cl. 60-218.000.

Laird, Dale E., to Industrial Electrical Control Corporation. Reflective laser line generator. 4,123,148, Cl. 350-293.000.

Lamberti, Vincent: *See—*
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,123,458, Cl. 562-595.000.
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,123,459, Cl. 562-595.000.

Lampert, Ernst; and Mahner, Helmut, to Siemens Aktiengesellschaft. SSMA receiver with synchronous demodulation and variable gain control. 4,123,718, Cl. 325-474.000.

Lancto, Donald C.; and Shuck, Robert E., to International Business Machines Corporation. Identity verification method and apparatus. 4,123,747, Cl. 340-149.00A.

Landen, Goran: *See—*
Engman, Thomas; Ericsson, Dan; and Landen, Goran, 4,122,741, Cl. 83-834.000.

Landis, Phillip S.: *See—*
Bridger, Robert F.; and Landis, Phillip S., 4,123,372, Cl. 252-48.200.

Landler, Paul F.: *See—*
Joshi, Madhukar L.; Landler, Paul F.; and Silverman, Ronald, 4,123,300, Cl. 148-187.000.

Landry, Archie C.; and Daswick, Alexander C., to Daswick, Alexander C. Adjustable reclining chair having three-point suspension, and method. 4,123,102, Cl. 297-270.000.

Landry, Robert G., to Long Mile Rubber Company. Method and system for retreading tires utilizing RF energy. 4,123,306, Cl. 156-96.000.

Lane Container Company: *See—*
Holley, Ronnie E., 4,122,946, Cl. 206-523.000.

Lange, Fritz-Walter; Jacobi, Haireddin; and Muller, Jens, to Chemisches Laboratorium Fritz-Walter Lange GmbH & Co KG. (2-Oxo-pyrrolidines)-acetic hydrazides. 4,123,548, Cl. 424-274.000.

Lange, Gerhard; and Peche, Gerhard, to Siemens Aktiengesellschaft. Cold cathode gas-discharge tube. 4,123,682, Cl. 313-54.000.

Langen, Marinus J. M., to H. J. Langen & Sons Ltd. Load transfer mechanism for packaging machine. 4,122,939, Cl. 198-482.000.

Lapp, Roger H.; and Schneider, Jacob D., to United States of America, Navy. Radar sector scan reversal apparatus. 4,123,757, Cl. 343-766.000.

Laramore, William D. Automatic bakery product dusting flour recycling system. 4,123,213, Cl. 425-104.000.

Large, George B.; and Pitt, Leland S., to Stauffer Chemical Company. Thionophosphate insecticide activators. 4,123,526, Cl. 424-200.000.

Larsen, Ronald L., to Conwed Corporation. Process for manufacturing high strand count plastic net. 4,123,491, Cl. 264-167.000.

Laser Industries Ltd.: *See—*
Yachin, Ami; and Gozhansky, Baruch, 4,123,143, Cl. 350-171.000.

Lasher, Edward A., to Whittaker Corporation. Water-based coatings. 4,123,404, Cl. 260-29.40R.

Laskaris, Evangelos T.; Gamble, Bruce B.; and Hatch, Burton D., to General Electric Company. Self-regulating transport mechanism for super-conductive rotor refrigerant. 4,123,677, Cl. 310-52.000.

Laubie, Michel: *See—*
Vincent, Michel; Remond, Georges; Laubie, Michel; and Poignant, Jean-Claude, 4,123,531, Cl. 424-250.000.

Laucks, Howard H.: *See—*
Pegler, Frederick E. W.; and Laucks, Howard H., 4,122,598, Cl. 29-568.000.

Laufhutte, Dieter, to Carl Still Recklinghausen, Firma. Method of keeping the circulating sprinkling water for the uptakes of coke ovens clean. 4,123,331, Cl. 201-4.000.

Lauria, Francesco: *See—*
Melloni, Piero; Della Torre, Arturo; Lauria, Francesco; Passerini, Norina; Rossi, Alessandro; and Tommasini, Raffaele, 4,123,527, Cl. 424-244.000.

Laverty, Gerald C., to Mastman, Gary J. Container top with integral stopper. 4,122,980, Cl. 222-207.000.

Lavon, Erik V., to Atlas Copco Aktiebolag. Method and device for breaking a hard compact material. 4,123,108, Cl. 299-16.000.

Lawler, Harry A.: *See—*
Coppola, John A.; Lawler, Harry A.; and McMurtry, Carl H., 4,123,286, Cl. 106-44.000.

Laws, William R.; and Winkworth, David A., to British Steel Corpora-

tion. Tube mounting means for a ceramic recuperator. 4,122,894, Cl. 165-76.000.

Lawson, David E. Molded plastic article and method of making the same. 4,123,488, Cl. 264-135.000.

Leclerc du Sablon, Bruno; and Dejoux, Andre. Electronic and kinematic contrivance for a selective recording of signals on a single tape. 4,123,787, Cl. 360-74.000.

Leclercq, Robert; Capouillet, Phileas; and Van Cauter, Albert, to BFG Glassgroup. Process of forming a metal or metal compound coating on a face of a glass substrate and apparatus suitable for use in forming such coating. 4,123,244, Cl. 65-60.00C.

Lectromelt Corporation: *See*—
Wynne, Peter J., 4,123,617, Cl. 13-10.000.

Ledebuhr, Richard L.; Hansen, Clarence M.; and Patterson, Richard J., to Michigan State University. Fruit and vegetable decapping machine. 4,122,766, Cl. 99-640.000.

Lee, Edward, to Solv-X Inventions Ltd. Pump support and fluid deflector assembly for parts washing machines. 4,122,861, Cl. 134-109.000.

Lee, Gim F., Jr., to General Electric Company. Polyphenylene ether resin compositions of reduced melt viscosity. 4,123,410, Cl. 260-30.60R.

Lehnhart, Dieter, to Glyco-Metall-Werke Daelen & Loos GmbH. Collar sleeves and process and tool for the manufacture thereof. 4,122,701, Cl. 72-354.000.

Leibrock, Kurt, to Saarbergwerke Aktiengesellschaft. Coal compacting apparatus. 4,123,216, Cl. 425-431.000.

Leichnitz, Kurt: *See*—
Heim, Ulrich; Leichnitz, Kurt; and Wiesner, Peter, 4,123,227, Cl. 23-232.00R.

Leiendecker, Donald M.: *See*—
Guthrie, David B.; and Leiendecker, Donald M., 4,123,231, Cl. 44-51.000.

Leimgruber, Willy; and Valentine, Donald H., Jr., to Hoffmann-La Roche Inc. Process for the preparation of aldehydes. 4,123,464, Cl. 260-601.00R.

Leins, Alfred, to Eberspacher, J. Internal combustion engine with afterburning and catalytic reaction in a supercharger turbine casing. 4,122,673, Cl. 60-274.000.

Leister, Norman A.; and Neuman, Andrew, to Rohm and Haas Company. Alkaline earth metal salt dispersions in acrylic polymers. 4,123,368, Cl. 252-25.000.

Leisure Products, Inc.: *See*—
Moeser, Denis S., 4,122,571, Cl. 9-7.000.

Lemelson, Jerome H. Method for forming hollow shells by rotational casting and winding thereon. 4,123,307, Cl. 156-172.000.

Lemery, Michel: *See*—
Chagnon, Maurice; and Lemery, Michel, 4,123,629, Cl. 200-51.00R.

Leney, David E.; Stuart, Robert W.; and Anderegg, John S., to Dynamics Research Corporation. Signal processor for position encoder. 4,123,750, Cl. 340-347.00P.

Leng, Douglas E.: *See*—
Warner, Gregory L.; and Leng, Douglas E., 4,123,403, Cl. 260-29.2EP.

Leonard, Donald A.: *See*—
Caputo, Bernard; and Leonard, Donald A., 4,123,160, Cl. 356-75.000.

Leonard, Loren W. Body surface contour deformation. 4,122,837, Cl. 128-2.00S.

Leonard, Loren W. Body surface contour deformation sensor. 4,122,838, Cl. 128-2.00S.

Lepor, Meyer, to United States of America, Navy. Dry cooled jet aircraft runup noise suppression system. 4,122,912, Cl. 181-218.000.

Leunig, Ernst, to Volkswagenwerk Aktiengesellschaft. Flow test stand. 4,122,707, Cl. 73-118.00R.

Levai, Laszlo; and Mikite, Gyula, to Egyt Gyogyszervegyeszeti Gyar. Process for preparing the threo- and erythro-isomers of 1-phenyl-2-nitro-1,3-propanediol. 4,123,615, Cl. 568-712.000.

Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, to Saint-Gobain Industries. Apparatus for forming fibers by toration. 4,123,243, Cl. 65-16.000.

Lever Brothers Company: *See*—
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,123,458, Cl. 562-595.000.
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,123,459, Cl. 562-595.000.

Levin, Harry A.: *See*—
Rosenbaum, Herman S.; Packard, Douglas R.; and Levin, Harry A., 4,123,498, Cl. 423-2.000.

Levizzari, Giannetto; and Ruspa, Giacomo, to Fiat Societa per Azioni. Method and apparatus for testing the quality of cast iron pieces especially spheroidal cast-iron pieces. 4,122,723, Cl. 73-579.000.

Levy, Harold. Device for drying drip dry apparel that is easily adjusted. 4,123,024, Cl. 248-214.000.

Lewis, Albert D., to Owens-Illinois, Inc. Touch switch. 4,123,631, Cl. 200-52.00R.

Lewis, Arthur F.: *See*—
Townsend, Leroy B.; Lewis, Arthur F.; and Roti Roti, Linda W., 4,123,524, Cl. 424-180.000.

Lewis, Brian: *See*—
Untch, Karl G.; Unger, Stefan H.; and Lewis, Brian, 4,123,550, Cl. 424-275.000.

Lewis, George R.; and Fernandez, Allen, to Martin Marietta Corporation. Dual, non-crossing horizontal gate tracking circuit and method. 4,123,017, Cl. 244-3.160.

Lewis, Richard W., to Monarch Marking Systems, Inc. Pinning machine. 4,122,986, Cl. 226-198.000.

Licha, Joseph: *See*—
Runkel, Manfred A.; and Licha, Joseph, 4,122,759, Cl. 92-168.000.

Lieber, Hans-Wilhelm: *See*—
Kammel, Roland; and Lieber, Hans-Wilhelm, 4,123,340, Cl. 204-149.000.

Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Substituted-norbornane perfume compositions. 4,123,393, Cl. 252-522.000.

Lilley, John, to Lucas Industries Limited. Lamp reflectors. 4,123,793, Cl. 362-350.000.

Lilly Industries Limited: *See*—
Verge, John P.; and Jamieson, William B., 4,123,529, Cl. 424-250.000.

Lin, Chung-Yuan; Stuber, Fred A.; and Ulrich, Henri, to Upjohn Company, The. Process for nitrating aromatic hydrocarbons. 4,123,466, Cl. 260-645.000.

Lindahl, Herbert S.; and Datta, Chander, to Gulf & Western Manufacturing Company. Method and apparatus for defrosting a refrigeration system. 4,122,686, Cl. 62-81.000.

Linde, Klaus: *See*—
Follert, Hans G.; Linde, Klaus; and Jutte, Hans, 4,122,683, Cl. 405-142.000.

Link, Christoph; and Trondle, Robert, to Escher Wyss GmbH. Removable head box for a paper making machine. 4,123,321, Cl. 162-272.000.

Linkenheimer, Wayne H.: *See*—
O'Connor, Jeremiah J.; Pilote, Raymond R.; and Linkenheimer, Wayne H., 4,123,522, Cl. 424-116.000.

Little, Frank S.: *See*—
Dean, Lura C., Jr.; Boswell, Gary T.; Winkelman, Wayne; and Little, Frank S., 4,123,795, Cl. 364-200.000.

Litton Systems, Inc.: *See*—
Sanders, Virgil E., 4,123,162, Cl. 356-106.0LR.

Litz, Donald C.: *See*—
Cooper, Glenn D.; and Litz, Donald C., 4,123,676, Cl. 310-52.000.

Locke, Lillian. Refrigerator apparatus. 4,123,130, Cl. 312-285.000.

Loesch, Stanley B., to Halliburton Company. Retaining clip for flow meter. 4,122,717, Cl. 73-231.00R.

Loew, Peter, to Ciba-Geigy Corporation. Process for the dyeing or printing of polyacrylonitrile material. 4,123,222, Cl. 8-39.00A.

Loewrigkeit, Peter: *See*—
Cowell, Richard D.; Loewrigkeit, Peter; Rosenblatt, William; and Bluestein, Claire, 4,123,421, Cl. 528-65.000.

Loew's Theatres, Inc.: *See*—
Slater, John R., 4,122,954, Cl. 211-133.000.

Logsdon, Cletus R. Tool for removing dents from sheet metal. 4,122,699, Cl. 72-325.000.

Long Mile Rubber Company: *See*—
Landry, Robert G., 4,123,306, Cl. 156-96.000.

Lonza, Ltd: *See*—
Jackson, Barry; and Zinsstag, Christoph, 4,123,460, Cl. 260-544.00D.

Losinski, Edward: *See*—
Frey, Fred J.; Hynek, Stanley; and Losinski, Edward, 4,123,105, Cl. 297-451.000.

Lott, Donald L.; Schockelt, Guenter G.; and Worrix, Matthew L., to Siemens-Allis, Inc. High voltage air disconnect switch incorporating a puffer-type load break switch. 4,123,637, Cl. 200-148.00A.

Lowe, Wallace A.; and Robarts, Donald E. Solar energy collector. 4,122,829, Cl. 126-271.000.

Lowery, Charles L.: *See*—
Lowery, James V.; Lowery, Charles L.; Lowery, Vernon L.; and Lowery, Jimmy R., 4,122,975, Cl. 221-173.000.

Lowery, James V.; Lowery, Charles L.; Lowery, Vernon L.; and Lowery, Jimmy R. Nail separator apparatus. 4,122,975, Cl. 221-173.000.

Lowery, Jimmy R.: *See*—
Lowery, James V.; Lowery, Charles L.; Lowery, Vernon L.; and Lowery, Jimmy R., 4,122,975, Cl. 221-173.000.

Lowery, Vernon L.: *See*—
Lowery, James V.; Lowery, Charles L.; Lowery, Vernon L.; and Lowery, Jimmy R., 4,122,975, Cl. 221-173.000.

Lowrie, Brian W., to Rolls-Royce Limited. Duct linings. 4,122,672, Cl. 60-226.00R.

LRC, Inc.: *See*—
Kondur, Nicholas, Jr., 4,123,182, Cl. 400-328.000.

Lubrizol Corporation, The: *See*—
Meinhardt, Norman A., 4,123,370, Cl. 252-32.70E.

Lucas Industries Limited: *See*—
Davidson, Charles P. D.; and Philips, Edward G., 4,122,907, Cl. 180-33.00C.
Lilley, John, 4,123,793, Cl. 362-350.000.
Maden, Kenneth H., 4,123,241, Cl. 55-442.000.
Seilly, Alec H., 4,123,691, Cl. 318-119.000.

Ludwig Riedhammer GmbH & Co. K.G.: *See*—
Petzi, Fritz, 4,123,044, Cl. 266-255.000.

LuK Lamellen und Kupplungsbau GmbH: *See*—
Maucher, Paul; and Maucher, Edmund, 4,122,929, Cl. 192-70.180.
Maucher, Paul, 4,122,931, Cl. 192-106.200.

Luke, James H.: *See*—
Dammel, Howard W.; Frantz, Robert M.; Luke, James H.; and Skrzypczyk, William G., 4,123,642, Cl. 219-10.590.

Lunycz, Alexander N. Electrical meter connecting and disconnecting device. 4,122,599, Cl. 29-758.000.

Lutenegger, Alan J.; Handy, Richard L.; and Hoover, James M., to Iowa State University Research Foundation. Portable variable expansion testing device for measuring lateral pressure induced on a material by a vertical applied pressure. 4,122,704, Cl. 73-822.000.

Lyons, James E., to Sun Ventures, Inc. Novel homogeneous transition-metal catalyzed geometric isomerization of cyclic epoxy alcohols. 4,123,445, Cl. 260-348.120.

M & W Gear Company: *See*—
Neubert, Frederic B.; and Coldren, Kenneth M., 4,122,932, Cl. 193-5.000.

Maa, Peter S., to Exxon Research & Engineering Co. Coal liquefaction process. 4,123,347, Cl. 208-8.000.

Mabuchi, Shunsuke; Tsuzuki, Kenji; and Kumoi, Sadakatsu, to Toyo Soda Manufacturing Co., Ltd. Process for hydrogenation of organic peroxide. 4,123,616, Cl. 568-861.000.

Mac Engineering & Equipment Company, Inc.: *See*—
McAlpine, Charles H., 4,123,311, Cl. 156-443.000.

Macek, Ladislav: *See*—
Rataj, Stanislav; Krch, Karel; Pilousek, Josef; Blazek, Jaroslav; Vitek, Hynek; and Macek, Ladislav, 4,123,114, Cl. 302-53.000.

Mac Intyre, Robert W.; Wysocki, Edward J.; Orifice, Philip; and DiTillio, Ralph. Safety device. 4,123,630, Cl. 200-52.00R.

Mackey, Sherman E.: *See*—
Ferlise, Louis; and Mackey, Sherman E., 4,123,189, Cl. 408-21.000.

MacLeod, Norman C., to Technology Development Corporation. Protective cover for sound transducers located in face masks of divers. 4,123,622, Cl. 179-1.0UW.

Maden, Kenneth H., to Lucas Industries Limited. Filter. 4,123,241, Cl. 55-442.000.

Madenokoji, Tadahide, to Kodama Kagaku Kohyo K. K. Vacuum forming apparatus. 4,123,215, Cl. 425-388.000.

Madlener, Bruno A., to Etablissement Dentaire Ivoclar. Device for securing a mixing capsule for dental preparations. 4,123,046, Cl. 269-228.000.

Maffre, Michel: *See*—
Bonnefon, Alain; Coupard, Alain; and Maffre, Michel, 4,123,476, Cl. 260-897.00A.

Magazian, Harry: *See*—
Gabrielson, Alan L.; and Magazian, Harry, 4,123,122, Cl. 308-238.000.

Magnaflux Corporation: *See*—
Strauts, Eric J.; and Flaherty, John J., 4,123,797, Cl. 365-118.000.

Magnavox Company, The: *See*—
Borg, Arthur N., 4,123,716, Cl. 325-464.000.
Bugni, Anthony R., 4,123,775, Cl. 358-10.000.

Magnotta, Vincent L.: *See*—
Gates, Bruce C.; Magnotta, Vincent L.; and Schuit, George C. A., 4,123,379, Cl. 252-184.000.

Maguire, Edward J., Jr.; and Staab, Robert A., to Procter & Gamble Company, The. Compositions containing nonionic surfactant and sulfonated aromatic compatibilizing agent. 4,123,395, Cl. 252-559.000.

Mahan, John E.: *See*—
Fahey, Darryl R.; and Mahan, John E., 4,123,447, Cl. 260-439.00R.

Mahdjuri, Faramarz, to U.S. Philips Corporation. Solar collector comprising an elongate absorber in an evacuated transparent tube. 4,122,831, Cl. 126-271.000.

Mahner, Helmut: *See*—
Lampert, Ernst; and Mahner, Helmut, 4,123,718, Cl. 325-474.000.

Maier, Alfred E.; and Hill, Robert H., to Westinghouse Electric Corp. Circuit breaker with improved latch mechanism. 4,123,734, Cl. 335-9.000.

Maier, Lawrence C., to Simmonds Precision Products, Inc. Capacitive proximity sensors. 4,122,708, Cl. 73-136.00A.

Maiorano, Giovanni: *See*—
Bertolini, Natale; Divo, Claudio; Maris, Petri; and Maiorano, Giovanni, 4,123,471, Cl. 260-683.15C.

Maixner, Uwe; and Milferstadt, Dieter, to Gesellschaft fur Kernenergieverwertung in Schiffbau und Schiffahrt mbH. Arrangement for preventing the alteration of the primary beam by unwanted particles, such as sputter products, charged ions and electrons and their secondary processes. 4,123,655, Cl. 250-305.000.

Malhotra, Satish C., to Du Pont de Nemours, E. I., and Company. Deagglomeration process. 4,123,606, Cl. 528-499.000.

Malinovski, Yordan P.; Mednikarov, Borislav D.; and Assa, Jakob J., to Zlafop pri BAN. Silver halide vapor deposition method. 4,123,280, Cl. 96-94.0BF.

Maltby, Jack, to Davy-Loewy Limited. Shear. 4,122,740, Cl. 83-646.000.

Malton Electric Company: *See*—
Bozich, Robert, 4,122,972, Cl. 220-331.000.

Mamo, Anthony C. Archery bow and method of advantageously altering bow characteristics. 4,122,821, Cl. 124-23.00R.

Mandler, Walter; Edwards, Garry; and Wagner, Erich, to Ernst Leitz Wetzlar GmbH. Four-member gauss objective. 4,123,144, Cl. 350-222.000.

Mandrin, Charles, to Sulzer Brothers Limited. Apparatus and method for manufacturing deuterium enriched water. 4,123,508, Cl. 423-580.000.

Mangarell, Edward M. Self-contained vivarium habitat. 4,122,800, Cl. 119-5.000.

Mangin, Pierre M.: *See*—
Avaro, Michel M.; and Mangin, Pierre M., 4,123,386, Cl. 252-429.00B.

Mannino, Albert A. Fuel mixture charge device. 4,123,233, Cl. 48-180.00C.

Mansouri, Hosein, to Rexnord Inc. Pressurized seal such as for drum screens. 4,123,362, Cl. 210-232.000.

Marangoni, Allen H. Window shade tie-down systems. 4,122,886, Cl. 160-269.000.

Marathon Manufacturing Company: *See*—
Marotto, Anthony F., 4,122,885, Cl. 160-176.00R.

Marcatili, Enrique A. J., to Bell Telephone Laboratories, Incorporated. Optical fiber arrangement for splicing fibers secured to ribbonlike tape. 4,123,137, Cl. 350-96.210.

Marchal, Paul; and Alvarez, Pierre, to Air Industrie. Apparatus for the continuous thermal treatment of a product moving through an enclosed space. 4,122,611, Cl. 34-73.000.

Marine Moisture Control Company, Inc.: *See*—
Gravert, William H., 4,123,753, Cl. 340-621.000.

Marinelli, Donald P., to RCA Corporation. Method for depositing epitaxial semiconductor from the liquid phase. 4,123,302, Cl. 148-171.000.

Maris, Petri: *See*—
Bertolini, Natale; Divo, Claudio; Maris, Petri; and Maiorano, Giovanni, 4,123,471, Cl. 260-683.15C.

Mark, Victor; and Wilson, Phillip S., to General Electric Company. Polycarbonate composition containing urethane plasticizer. 4,123,413, Cl. 260-32.6NR.

Markert, Herman R.: *See*—
Rowe, E. Riley; Fletcher, Wade; Markert, Herman R.; and Grady, Dwight D., 4,122,790, Cl. 113-120.00R.

Marklund, Per A.: *See*—
Westin, Per-Olov; and Marklund, Per A., 4,122,761, Cl. 98-33.00R.

Marlow, Glenn. Mitering device for wood and metal picture frames. 4,122,739, Cl. 83-421.000.

Marotto, Anthony F., to Marathon Manufacturing Company. Venetian blind tilter clutch. 4,122,885, Cl. 160-176.00R.

Marschman, Loren H. Lint filter assembly. 4,123,361, Cl. 210-232.000.

Marsh, William R.: *See*—
Behnke, Walter E.; Marsh, William R.; and Haskell, Theodore H., 4,123,609, Cl. 536-27.000.

Martin Marietta Corporation: *See*—
Amberntson, David S., 4,123,019, Cl. 244-3.200.
Karki, Kenneth A., 4,123,591, Cl. 428-454.000.
Lewis, George R.; and Fernandez, Allen, 4,123,017, Cl. 244-3.160.

Martineau, Ronald A.: *See*—
Nowlin, Thomas E.; and Martineau, Ronald A., 4,123,308, Cl. 156-272.000.

Maruzen Oil Co., Ltd.: *See*—
Hori, Takashi; and Hayashida, Suetou, 4,123,371, Cl. 252-42.700.

Maschinenfabrik Johann Fischer: *See*—
Fischer, Stefan; Wollschlager, Dieter; Scharrenbroich, Helmut; and Fischer, Rainer, 4,123,217, Cl. 425-525.000.

Masco Corporation of Indiana: *See*—
Fathauer, George H., 4,123,715, Cl. 325-464.000.

Mash, Dmitry M.; Schedrovitsky, Savely S.; Golovko, Zoya I.; Zaitsev, Mikhail P.; Sorokin, Andrei N.; Belyaeva, Agnia A.; and Kharitonov, Ivan I. Induction-type meter for measuring mechanical quantities. 4,123,735, Cl. 336-30.000.

Mashigan, Charles, to American Motors Corporation. Closure for truck bed. 4,123,099, Cl. 296-10.000.

Maso-Therm Corporation: *See*—
Piazza, Matthew R., 4,123,212, Cl. 425-82.100.

Massa, Frank, to Donald P. Massa & Fred M. Dellorfano, Jr. Trustees of The Stonleigh Trust u/d/t. Process for applying electrodes to the surfaces of electroacoustic transducer elements such as ceramic discs. 4,123,567, Cl. 427-123.000.

Mastman, Gary J.: *See*—
Laverty, Gerald C., 4,122,980, Cl. 222-207.000.

Masuda, Yoshinori: *See*—
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; and Masuda, Yoshinori, 4,123,336, Cl. 204-98.000.

Matburn (Holdings) Limited: *See*—
Blackett, John H., 4,122,854, Cl. 128-303.130.

Matlock, Wallace M., to TRW Inc. Internal combustion valve having an iron based hard-facing alloy contact surface. 4,122,817, Cl. 123-188.0AA.

Matsukata, Kosuke. Predetermined index gauge for locating a selected record band on a gramaphone record. 4,123,064, Cl. 274-1.00R.

Matsumiya, James A.: *See*—
Fisher, Peter M.; and Matsumiya, James A., 4,122,882, Cl. 152-381.2WC.

Matsumoto, Seiichi: *See*—
Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; Asaeda, Tsuyoshi; Fukushima, Tadahide; Shingu, Tamotsu; Hashimoto, Shigeru; and Iwashita, Tomonori, 4,123,650, Cl. 250-201.000.

Matsumoto, Yoshihiro, to Tokyo Shibaura Electric Co., Limited. Multicomputer system. 4,123,794, Cl. 364-101.000.

Matsumura, Kazuhiro: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Ohkawa, Masahisa, 4,123,387, Cl. 252-429.00B.

Matsushita Electric Industrial Co., Ltd.: *See*—
Oda, Fujio, 4,123,647, Cl. 219-216.000.

Maucher, Edmund: *See*—
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Mazzei, Angelo L. Mixer-injector. 4,123,800, Cl. 366-150.000.
McAlpine, Charles H., to Mac Engineering & Equipment Company, Inc. Machine for wrapping battery plates. 4,123,311, Cl. 156-443.000.
McCaldin, James O.; and Best, John S., to California Institute of Technology. Mercury chalcogenide contact for semiconductor devices. 4,123,295, Cl. 148-33.000.
McCaskey, Harold O., Jr., to Westinghouse Electric Corp. Resin coated substrate using a short-set, high-flow melamine-formaldehyde impregnating resin. 4,123,579, Cl. 428-264.000.
McClain, Robert Woodrow, to Glitsch, Inc. Reactor distribution duct. 4,123,008, Cl. 239-568.000.
McConnell, David P.; and Tully, Louis E., to McConnell, David P. Fluid operated engine. 4,122,757, Cl. 91-506.000.
McCullough, Robert W., to Milliken Research Corporation. Yarn tension control. 4,123,014, Cl. 242-152.100.
McDonald, W. B. Paper carrier for roll paper machines. 4,122,650, Cl. 53-389.000.
McElliott, Steve I. Pay telephone alarm and audit system. 4,123,623, Cl. 179-6.30R.
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McKee, Thomas M. Refrigeration system with low energy defrost. 4,122,687, Cl. 62-156.000.
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Coppola, John A.; Lawler, Harry A.; and McMurtry, Carl H., 4,123,286, Cl. 106-44.000.
McNamara, Michael M.; Mowe, Wayne T.; and Walker, Darwyn E., to Monsanto Company. Nylon 66 spinning process. 4,123,492, Cl. 264-210.00F.
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McVean, Michael T.: *See—*
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Mead Corporation, The: *See—*
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Mehta, Naiman B.; and Brieaddy, Lawrence E., to Burroughs Wellcome Co. Sulfide compounds and methods and compositions for treating depression. 4,123,555, Cl. 424-330.000.
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Meller, Ian V. Course to wind guidance device. 4,122,710, Cl. 73-178.00R.
Melloni, Piero; Della Torre, Arturo; Lauria, Francesco; Passerini, Norina; Rossi, Alessandro; and Tommasini, Raffaele, to Carlo Erba, S.p.A. N-tricyclic derivatives of azetidine and process for their preparation. 4,123,527, Cl. 424-244.000.
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Menown, Hugh; and Wheldon, Robert J., to English Electric Valve Company Limited. Thyratrons. 4,123,684, Cl. 313-205.000.
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Cama, Lovji D.; and Christensen, Burton G., 4,123,528, Cl. 424-248.520.
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DiNinno, Frank P., 4,123,539, Cl. 424-270.000.
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Merilainen, Heikki; and Strom, Ulf J. G., to A. Ahlstrom Osakeyhtio. Device for measuring the width of timber. 4,123,169, Cl. 356-167.000.
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Ledebuhr, Richard L.; Hansen, Clarence M.; and Patterson, Richard J., 4,122,766, Cl. 99-640.000.
Michio, Kawazoe. Object holding device. 4,123,026, Cl. 248-316.00E.
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Hines, Marion E.; Stinehelfer, Harold E., Sr.; and Atchley, Dana W., Jr., 4,123,759, Cl. 343-854.000.
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Midzutani, Wataru; Nakajima, Koe; Kikuma, Toshio; Ondo, Keitaku; and JPX, to Nippon Steel Corporation. Method and apparatus for manufacturing metallic pipe. 4,122,696, Cl. 72-52.000.
Miers, Bruce W.; Proksch, Frederick D.; and Welker, Gerald H., to Caterpillar Tractor Co. Fan noise suppressor and baffle. 4,122,908, Cl. 180-68.00P.
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Miller, Edsel L.; and Krenowicz, Robert A., to Continental Oil Company. Lubricating oil composition. 4,123,369, Cl. 252-32.70E.
Miller, Helmut, to Escher Wyss Limited. Rim-type hydroelectric machine. 4,123,666, Cl. 290-52.000.
Miller, Hugo S. Combined internal combustion and steam engine. 4,122,803, Cl. 123-25.00P.
Miller, Robert F., to Modine Manufacturing Company. Method of starting a hot air furnace. 4,123,000, Cl. 236-11.000.
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Minamizono, Tsugikuma; to Kabushiki Kaisha Mitachi Onkyo Seisakusho. Stylus vibrating mechanism in pickup cartridge. 4,123,067, Cl. 274-37.000.
Minemura, Hajime; Kusama, Haruya; and Sato, Shoichi, to Minemura, Hajime. Device for automatically turning discs from side to side. 4,123,066, Cl. 274-10.00C.
Minnesota Mining and Manufacturing Company: *See—*
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Perrington, Kenneth J.; Taylor, Phillip A.; and Vogelgesang, Peter J., 4,123,309, Cl. 156-234.000.
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Mishima Kosan Co., Ltd.: *See—*
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Mitobe, Koichi; and Uehara, Yasuhiko, to Hitachi, Ltd. Process for the production of color television picture tubes. 4,123,563, Cl. 427-68.000.
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Moeller, Charles R.; and Jeffers, Frederick J., to Eastman Technology, Inc. Magnetic head with mechanically isolated thin film sensor. 4,123,790, Cl. 360-111.000.
Moeser, Denis S., to Leisure Products, Inc. Boat seat latching assembly. 4,122,571, Cl. 9-7.000.
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Molins Limited: *See—*
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Monarch Marking Systems, Inc.: *See—*
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Monbaliu, Marcel J.; Credner, Hans-Heinrich; Himmelmann, Wolfgang; Meier, Ernst; Benoy, Gaston J.; Van Poucke, Raphael K.; Schranz, Karl-Wilhelm; and Van Veelen, George F., to Agfa-Gevaert N.V. Photographic silver halide color material containing fast-acting hardener and 2-pyrazolin-5-one coupler precursors. 4,123,281, Cl. 96-100.00R.
Mongeon, Robert J., to United Technologies Corporation. Apparatus and method for speckle tracking. 4,123,651, Cl. 250-203.00R.
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Moren, Karl-Erik; and Sixtensson, Par S., to Stora Kopparbergs Bergslags AB. Titanium-stabilized deep drawing steel suitable for hot galvanizing. 4,123,261, Cl. 75-125.000.
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Morris, Neal R. Reusable closures for hermetically sealing containers. 4,122,964, Cl. 215-260.000.
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Moshofsky, Jerome F.; and Vanderzanden, Allan J., to Hyster Company. Fuel supply control and carburetor linkage mechanism. 4,122,819, Cl. 123-198.00D.
Mosior, Donald J.; Cawood, Charles D., Jr.; and Ekinaka, Michael H., to American Hospital Supply Corporation. Surgical instrument and method of assembly thereof. 4,122,856, Cl. 128-311.000.
Moskowitz, Ronald; Stahl, Philip; and Reed, Walter R., to Ferrofluidics Corporation. Inertia damper using ferrofluid. 4,123,675, Cl. 310-49.00R.
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Mozley, Richard H., to National Research Development Corporation. Cyclone construction and fixing. 4,123,364, Cl. 210-512.00M.
Mrofchak, John J. Energy saving device utilizing normally wasted heat from clothes dryers. 4,122,612, Cl. 34-86.000.
Muir, Samuel: *See—*
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Muller, Helmut: *See—*
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Munter, Ernst A., to Northern Telecom Limited. Digital echo attenuation circuit for a telephone system. 4,123,626, Cl. 179-170.200.

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Murata, Taneo, to Alps Electric Co., Ltd. Pushbutton switch. 4,123,641, Cl. 200-340.000.

Murray, George G., to Strikemaster Manufacturing Corp., The. Molded plastic bowling pin and method for the manufacture thereof. 4,123,057, Cl. 273-82.00R.

Murtha, Timothy P., to Phillips Petroleum Company. Biaryl production. 4,123,470, Cl. 260-668.00D.

Musyt, William, to Goodyear Aerospace Corporation. Building form for molded articles having a urethane coating. 4,123,582, Cl. 428-335.000.

Muto, Toshiya, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Turn signal mechanism for use in motor vehicles. 4,123,632, Cl. 200-61.270.

Myrens Verksted A/S: *See—*
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Nagarajan, Ramakrishnan: *See—*
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Nagata, Koichi; Oda, Takashi; and Yamashita, Koji, to Nippon Electric Co., Ltd. Built-in miniature radio antenna. 4,123,756, Cl. 343-702.000.

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Nakahara, Tsuneo; Hoshikawa, Masao; Shiraishi, Satoshi; Kurosaki, Shiro; and Fujiwara, Kunio, to Sumitomo Electric Industries, Ltd. Manufacturing method of an optical waveguide. 4,123,483, Cl. 264-1.000.

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Midzutani, Wataru; Nakajima, Koe; Kikuma, Toshio; Ondo, Keitaku; and JPX, 4,122,696, Cl. 72-52.000.

Nakamatsu, Yoshiro. Golfclub. 4,123,056, Cl. 273-78.000.

Nakamura, Issei: *See—*
Inowa, Shigeru; Nakamura, Issei; and Furuya, Tutomu, 4,123,156, Cl. 365-3.0SC.

Nakamura, Moritoshi; and Nakanowatari, Jun, to Alps Electric Co., Ltd. Variable resistor. 4,123,742, Cl. 338-137.000.

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Kiyono, Tetsuhiro; Nakamura, Moritoshi; and Nakanowatari, Jun, 4,123,741, Cl. 338-121.000.

Nakamura, Yoshio: *See—*
Tanaka, Tsutomu; Nakamura, Yoshio; Asahi, Koji; Shiraishi, Tadayoshi; and Takahara, Kenji, 4,123,329, Cl. 195-28.00R.

Nakanowatari, Jun: *See—*
Kiyono, Tetsuhiro; Nakamura, Moritoshi; and Nakanowatari, Jun, 4,123,741, Cl. 338-121.000.
Nakamura, Moritoshi; and Nakanowatari, Jun, 4,123,742, Cl. 338-137.000.

Nakashima, Tamotsu: *See—*
Morioka, Atsumi; and Nakashima, Tamotsu, 4,122,658, Cl. 57-140.00R.

Nakayama, Noboru: *See—*
Tasaki, Yoshio; Nakayama, Noboru; and Kajihara, Hiroshi, 4,122,990, Cl. 228-2.000.

Nalbach, John C., to John R. Nalbach Engineering Co., Inc. Apparatus for filling containers. 4,122,876, Cl. 141-150.000.

Nalco Chemical Company: *See—*
Vartuli, Joseph F.; and Wortley, George E., Jr., 4,123,249, Cl. 71-66.000.
Vosson, Peter H., 4,123,234, Cl. 55-5.000.

Narutomi, Yasuhisa: *See—*
Kita, Nobuyuki; and Narutomi, Yasuhisa, 4,123,276, Cl. 96-91.00R.

Nasutavicus, Wilmonte A.: *See—*
Grinstead, Robert R.; Jones, Kenneth C.; and Nasutavicus, Wilmonte A., 4,123,435, Cl. 260-307.00D.

National Patent Development Corporation: *See—*
Kita, Nobuyuki; and Narutomi, Yasuhisa, 4,123,276, Cl. 96-91.00R.

National Research Development Corporation: *See—*
Mozley, Richard H., 4,123,364, Cl. 210-512.00M.

National Super Service Company, The: *See—*
Bevington, John F.; Savidge, Michael; and Meeker, Paul, 4,122,576, Cl. 15-49.00R.

National Union Electric Corporation: *See—*
Zauner, John H.; and Waller, Lyle G., 4,123,597, Cl. 429-112.000.

Naturin-Werk Becker & Do.: *See—*
Korlatzki, Rudi; and Schuhmacher, Gunter, 4,123,589, Cl. 428-425.000.

Naworski, Joseph S.: *See—*
Campbell, Ramsey G.; Doane, Elliott P.; Heines, M. Henry; Naworski, Joseph S.; and Vogt, Harvey J., 4,123,467, Cl. 260-659.00A.

Nebe, Juergen: *See—*
Port, Morton I.; Nebe, Juergen; and Ladeur, Bernhard H., 4,123,577, Cl. 428-95.000.

Nehma, Roland E. Tube connector. 4,123,180, Cl. 403-172.000.

Nelson, Norman E., to Minnesota Mining and Manufacturing Company. Tape cartridge with self-aligning tape transport roller. 4,122,985, Cl. 226-181.000.

Nelson, Robert H., to General Motors Corporation. System for controlling vehicle movement over a fixed guideway. 4,123,023, Cl. 246-182.00B.

Nelson, Wayne F., to Dow Chemical Company, The. Tubing tester. 4,122,898, Cl. 166-325.000.

Nemoto, Takayuki: *See—*
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,123,782, Cl. 358-210.000.

Netherton, Charles F.: *See—*
Jandeska, William F.; Netherton, Charles F.; and Vigor, Charles W., 4,123,297, Cl. 148-103.000.

Nettleton, Donald E., Jr.; Doyle, Terrence W.; and Bradner, William T., to Bristol-Myers Company. Antibiotic compound. 4,123,608, Cl. 536-17.000.

Neubert, Frederic B.; and Coldren, Kenneth M., to M & W Gear Company. Combination grain discharge chute construction for dump wagon. 4,122,932, Cl. 193-5.000.

Neuman, Andrew: *See—*
Leister, Norman A.; and Neuman, Andrew, 4,123,368, Cl. 252-25.000.

Newell, Stanley E., to Boeing Company, The. Anemometer compensator linearizer. 4,122,722, Cl. 73-362.0AR.

Newland, William M., to Hercules Supply Company. Ductboard collar. 4,123,093, Cl. 285-189.000.

Newton, Richard C.: *See—*
Borenstein, David E.; and Newton, Richard C., 4,122,588, Cl. 28-221.000.

Nickerson, William A.: *See—*
Keller, James R.; and Nickerson, William A., 4,123,315, Cl. 156-560.000.

Nielsen, Helmar. Picture frame. 4,122,617, Cl. 40-155.000.

Nieto de Moreno, Pierre A., to Societe Soberal S.A. Apparatus for decelerating descending bodies. 4,122,934, Cl. 193-32.000.

Nihon Beru-Haueru Kabushiki Kaisha: *See—*
Isono, Tadao, 4,123,765, Cl. 354-25.000.

Nihon Pipeline Service Kabushiki Kiahsa: *See—*
Sagawa, Teikichi, 4,122,575, Cl. 15-104.06R.

Nihon Radiator Co., Ltd.: *See—*
Suyama, Eizo, 4,122,914, Cl. 181-258.000.

Nikai, Isao: *See—*
Isshiki, Naotsugu; Nikai, Isao; and Uchida, Hiroyuki, 4,122,680, Cl. 60-649.000.

Niks, Anton: *See—*
Van Hijfte, Willy H. P.; Vanmarcke, Luc A.; and Niks, Anton, 4,123,570, Cl. 427-222.000.

Nippon Electric Co., Ltd.: *See—*
Nagata, Koichi; Oda, Takashi; and Yamashita, Koji, 4,123,756, Cl. 343-702.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 4,122,743, Cl. 84-1.240.
Yamashita, Toshinori, 4,122,747, Cl. 84-411.00R.

Nippon Jido Seigyo, Ltd.: *See—*
Uchiyama, Yasushi; and Awamura, Daikichi, 4,123,170, Cl. 356-167.000.

Nippon Piston Ring Co., Ltd.: *See—*
Takahashi, Kentaro; and Urano, Shigeru, 4,123,265, Cl. 75-211.000.

Nippon Prosensor Co., Ltd.: *See—*
Otani, Hiroaki, 4,123,748, Cl. 340-558.000.

Nippon Shinyaku Company, Limited: *See—*
Inoue, Sho; Ohata, Katsuya; Tsutsui, Satoshi; and Nomura, Tatsuo, 4,123,541, Cl. 424-272.000.

Nippon Soken, Inc.: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; and Tanaka, Taro, 4,122,802, Cl. 123-3.000.

Nippon Steel Corporation: *See—*
Fujii, Yoshihiro; Moriyama, Taketoshi; Shigematsu, Yoshikatsu; Takeuchi, Shinjiro; Kikuchi, Toshiro; Taguchi, Makio; and Ichioka, Satoshi, 4,123,707, Cl. 324-208.000.
Midzutani, Wataru; Nakajima, Koe; Kikuma, Toshio; Ondo, Keitaku; and JPX, 4,122,696, Cl. 72-52.000.

Nishimura, Hideo; and Niwa, Kuniyuki, to Toyoda Koki Kabushiki Kaisha. Cam grinding machine. 4,122,634, Cl. 51-165.710.

Nishino, Tadashi: *See—*
Kajiwara, Toshiyuki; and Nishino, Tadashi, 4,123,011, Cl. 242-78.100.

Nishio, Kazuo: *See—*
Kawada, Seigo; Suda, Yoshitaka; Tsuchiya, Shigeru; Ohta, Nobuya; Muramatsu, Norimichi; and Nishio, Kazuo, 4,123,554, Cl. 424-324.000.

Nissan Motor Company, Limited: *See—*
Hosaka, Akio; and Tsuruta, Eiji, 4,122,667, Cl. 60-39.09R.
Hosaka, Akio; and Sakamoto, Satoshi, 4,122,807, Cl. 123-117.00R.
Hosaka, Akio; and Tsuruta, Eiji, 4,123,721, Cl. 330-69.000.

Iwasa, Yoshio, 4,122,809, Cl. 123-119.0EC.
Oda, Takaaki; and Yokokura, Chiyokatsu, 4,123,085, Cl. 280-752.000.

Nisshin Steel Company Ltd.: *See—*
Fukuoka, Hiroshi; Kameyama, Teruhiko; Tanaka, Yoshio; Suzuki, Hideyo; and Imai, Kimiaki, 4,123,257, Cl. 75-40.000.

Niwa, Kuniyuki: *See—*
Nishimura, Hideo; and Niwa, Kuniyuki, 4,122,634, Cl. 51-165.710.

Nixdorf Computer AG: *See—*
Pollmeier, Werner, 4,123,670, Cl. 307-254.000.

Noguchi, Itoshi: *See—*
Hanyo, Susumu; Yamaguchi, Jousuke; Morishita, Yoshiyuki; and Noguchi, Itoshi, 4,122,697, Cl. 72-128.000.

Noguchi, Masaaki; Bunda, Tsuchio; and Tanaka, Taro, to Nippon Soken, Inc. Fuel reforming system. 4,122,802, Cl. 123-3.000.

Noguchi, Masaaki; and Bunda, Tsuchio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Auto emission purifying catalyst and method of manufacture. 4,123,391, Cl. 252-466.0PT.

Nomine, Harold; and Schempp, Eberhard G., to Pennsylvania Engineering Corporation. Gas cleaning system for metallurgical apparatus. 4,123,043, Cl. 266-158.000.

Nomura, Tatsuo: *See—*
Inoue, Sho; Ohata, Katsuya; Tsutsui, Satoshi; and Nomura, Tatsuo, 4,123,541, Cl. 424-272.000.

Nomura, Yoshiyuki: *See—*
Shichida, Hiromichi; Gamo, Gotaro; Nomura, Yoshiyuki; Hattori, Kiyoshi; and Koiwai, Yutaka, 4,123,645, Cl. 219-69.00W.

Nonaka, Yoshio: *See—*
Okikawa, Susumu; Yukawa, Osamu; Mikino, Hiroshi; and Nonaka, Yoshio, 4,123,293, Cl. 148-11.50C.

Nordlund, Karl S.: *See—*
Berglund, Kjell W.; and Nordlund, Karl S., 4,122,963, Cl. 214-512.000.

Norell, Karl T., to AB Bofors. Waste disposal. 4,123,380, Cl. 252-301.10W.

Norris Industries, Inc.: *See—*
Allemann, James G., 4,123,097, Cl. 292-336.300.

Norris, John B.: *See—*
Parrott, George A.; and Norris, John B., 4,123,110, Cl. 299-43.000.

Northern Telecom Limited: *See—*
Chow, Peter E. K., 4,123,625, Cl. 179-16.0EA.
Gagnier, Real; Bourne, John B.; and Terry, John B., 4,123,624, Cl. 179-15.0AT.
Mikhael, Wasfy B., 4,123,712, Cl. 325-137.000.
Munter, Ernst A., 4,123,626, Cl. 179-170.200.

Norton, Gerald W.: *See—*
Rosewarne, William V.; and Norton, Gerald W., 4,123,075, Cl. 279-121.000.

Nose, Koichi: *See—*
Mochizuki, Taketoshi; Harada, Fumio; Imaizumi, Tadahiro; and Nose, Koichi, 4,122,688, Cl. 62-196.00R.

Nothdurft, Carl. Pipe clamp saddle. 4,122,586, Cl. 24-277.000.

Novotny, Raymond J. Burglar alarm. 4,123,752, Cl. 340-545.000.

Nowlin, Thomas E.; and Martineau, Ronald A., to Union Carbide Corporation. Process for chemically bonding a poly-p-xylylene to a thermosetting resin and article produced thereby. 4,123,308, Cl. 156-272.000.

Nuclear Pacific, Inc.: *See—*
Burnett, Thomas W., 4,122,836, Cl. 128-1.100.

Nuebling, Friederich: *See—*
Peleschka, Gerhard; and Nuebling, Friederich, 4,123,205, Cl. 418-127.000.

Nylen, Ulf T. G.: *See—*
Hakansson, Bo H.; Nylen, Ulf T. G.; and Qvarnstrom, Lars A. G., 4,123,353, Cl. 210-22.00C.

Oberlin, Robert: *See—*
Kornowski, Henri; Roques, Bernard; Oberlin, Robert; and Jondet, Andre, 4,123,544, Cl. 424-274.000.

O'Brian, Edward D.; and Plachy, William M. Folding structures considered to be primarily useful for play purposes. 4,122,638, Cl. 52-70.000.

O'Brien Corporation, The: *See—*
Thomassen, Ivar P., 4,123,402, Cl. 260-29.2EP.

Obrowski, Frank: *See—*
Waninger, Rudolf; and Obrowski, Frank, 4,122,763, Cl. 99-281.000.

Occidental Petroleum Corporation: *See—*
White, William R.; and Van Tighem, Gary P., 4,122,950, Cl. 209-12.000.

Ochiai, Kanehiro: *See—*
Sanada, Takahiro; and Ochiai, Kanehiro, 4,123,324, Cl. 176-37.000.

Ochiai, Takeji, to Fuji Photo Film Co., Ltd. Copolymer subbing material for photographic elements. 4,123,277, Cl. 96-85.000.

Ochiai, Toshihiko: *See—*
Shimizu, Syogo; Ochiai, Toshihiko; and Sakai, Masato, 4,123,199, Cl. 416-244.00A.

O'Connor, Jeremiah J.; Pilote, Raymond R.; and Linkenheimer, Wayne H., to E. R. Squibb & Sons, Inc. Control of bloat in ruminants. 4,123,522, Cl. 424-116.000.

Oda, Fujio, to Matsushita Electric Industrial Co., Ltd. Thermal head apparatus. 4,123,647, Cl. 219-216.000.

Oda, Takaaki; and Yokokura, Chiyokatsu, to Nissan Motor Company, Limited. Safety panelling arrangement with a deformable structure. 4,123,085, Cl. 280-752.000.

Oda, Takashi: *See—*
Nagata, Koichi; Oda, Takashi; and Yamashita, Koji, 4,123,756, Cl. 343-702.000.

O'Donnell, Phillip P.: *See—*
Gale, Stephen B.; O'Donnell, Phillip P.; and Bruckenstein, Stanley, 4,123,339, Cl. 204-149.000.

Ogasawara, Hideo: *See—*
Sugisaki, Toshihiko; Horiuchi, Tetsuo; Ogasawara, Hideo; Yamanari, Shozo; and Tominaga, Kenji, 4,123,327, Cl. 176-76.000.

Ogawa & Co., Ltd.: *See—*
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,123,525, Cl. 424-200.000.

Ogawa, Hiroshi: *See—*
Takigawa, Hiroyoshi; Watanabe, Shigeo; Aoki, Shigeta; and Ogawa, Hiroshi, 4,122,879, Cl. 152-209.00R.

Ogawa, Hisaharu: *See—*
Aihara, Mitsuo; and Ogawa, Hisaharu, 4,123,671, Cl. 307-270.000.

Ohashi, Yoshie: *See—*
Sumitomo, Yasusuke; and Ohashi, Yoshie, 4,123,565, Cl. 427-88.000.

Ohata, Katsuya: *See—*
Inoue, Sho; Ohata, Katsuya; Tsutsui, Satoshi; and Nomura, Tatsuo, 4,123,541, Cl. 424-272.000.

Ohkawa, Masahisa: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Ohkawa, Masahisa, 4,123,387, Cl. 252-429.00B.

Ohnishi, Noboru: *See—*
Tsuchiya, Kazuo; and Ohnishi, Noboru, 4,122,840, Cl. 128-2.00S.

Ohori, Tamio: *See—*
Tomita, Satoru; Ohori, Tamio; and Karasawa, Shuichi, 4,123,762, Cl. 346-155.000.

Ohsawa, Mitsuo, to Sony Corporation. FM Receiver with liquid crystal signal indicator. 4,123,714, Cl. 325-455.000.

Ohta, Nobuya: *See—*
Kawada, Seigo; Suda, Yoshitaka; Tsuchiya, Shigeru; Ohta, Nobuya; Muramatsu, Norimichi; and Nishio, Kazuo, 4,123,554, Cl. 424-324.000.

Ohtsuka, Tomoaki. Trap for small animals doing harm to possessions. 4,122,625, Cl. 43-82.000.

Ohya, Masaki: *See—*
Kobayashi, Akio; and Ohya, Masaki, 4,123,576, Cl. 428-35.000.

Okada, Isamu: *See—*
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,123,782, Cl. 358-210.000.

Okikawa, Susumu; Yukawa, Osamu; Mikino, Hiroshi; and Nonaka, Yoshio, to Hitachi, Ltd. Method of providing semiconductor pellet with heat sink. 4,123,293, Cl. 148-11.50C.

Okumura, Takatoshi: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 4,122,743, Cl. 84-1.240.

Olesch, Reinhard: *See—*
Fishbein, William; Olesch, Reinhard; and Rittenbach, Otto, 4,123,755, Cl. 343-17.10R.

Olinkraft, Inc.: *See—*
Stone, Fred T., 4,123,320, Cl. 162-199.000.

Oliver, Colin C., to EMI Limited. Radiography. 4,123,659, Cl. 250-403.000.

Olschewski, Armin: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,123,121, Cl. 308-6.00C.

Olsen, Everett O., to Foxboro Company, The. Signal handling apparatus. 4,123,696, Cl. 318-623.000.

Olson, Ronald Arthur, to Tektronix, Inc. Oscillographic apparatus for measuring the magnitude and duration and for separately viewing an input signal. 4,123,705, Cl. 324-121.00R.

Olving, Hans P.: *See—*
Deremo, Edwin J.; and Olving, Hans P., 4,123,188, Cl. 408-17.000.

Ondo, Keitaku: *See—*
Midzutani, Wataru; Nakajima, Koe; Kikuma, Toshio; Ondo, Keitaku; and JPX, 4,122,696, Cl. 72-52.000.

Optima-Maschinenfabrik, Dr. Buehler KG: *See—*
Hoffmann, Wilhelm, 4,122,940, Cl. 198-504.000.

Orifice, Philip: *See—*
Mac Intyre, Robert W.; Wysocki, Edward J.; Orifice, Philip; and DiTillio, Ralph, 4,123,630, Cl. 200-52.00R.

Ortega, Antonio. Painting device. 4,122,799, Cl. 118-207.000.

Osaka University, President of: *See—*
Ishimaru, Toshiyasu; Shimonishi, Yasutsugu; Sakurai, Hisayuki; and Hatanaka, Minoru, 4,123,611, Cl. 542-421.000.

Osamu, Umekawa; Koji, Takemori; and Sakae, Katayama, to Katayama Chemical Works Co., Ltd. Process for the preparation of bromoacetic acid and esters thereof. 4,123,443, Cl. 260-347.400.

Osegowitsch, Viktor: *See—*
Fernandez, Avelino; Glass, Josef; Osegowitsch, Viktor; and Hehn, Wilfried, 4,123,769, Cl. 354-322.000.

Osteen, Mitchell M., to General Electric Company. Discharge lamp ballast circuit. 4,123,690, Cl. 315-258.000.

Oswald, Leo A., to Owens-Corning Fiberglas Corporation. Twist frame control method and apparatus. 4,122,654, Cl. 57-54.000.

Otani, Hiroaki, to Nippon Prosensor Co., Ltd. Burglar alarms utilizing ultrasonic waves. 4,123,748, Cl. 340-558.000.

Otken, Francis P.; and Otken, Henry L. Cultivating system. 4,122,570, Cl. 7-114.000.

Otken, Henry L.: *See—*
Otken, Francis P.; and Otken, Henry L., 4,122,570, Cl. 7-114.000.

Ott, John E.; and Bates, Marvin O., to Punch-Lok Company. Hose clamp applying and removing machine. 4,122,733, Cl. 81-9.300.

Outboard Marine Corporation: *See—*
Holtermann, Theodore J., 4,122,652, Cl. 56-11.300.

Ovshinsky, Stanford R.: *See—*
Klose, Peter H.; and Ovshinsky, Stanford R., 4,123,157, Cl. 355-43.000.

Owens-Corning Fiberglas Corporation: *See—*
Costin, Darryl J., 4,123,263, Cl. 75-172.00R.
Oswald, Leo A., 4,122,654, Cl. 57-54.000.

Owens-Illinois, Inc.: *See—*
Krall, Thomas J., 4,123,218, Cl. 425-535.000.
Lewis, Albert D., 4,123,631, Cl. 200-52.00R.

Oxequip Health Industries Inc.: *See—*
Viero, Laurence; Cannon, John; Rademaker, George; Swanson, Williard; and Fessett, Kenneth, 4,123,089, Cl. 285-39.000.

Oyamada, Takeo; Satoh, Kazuhisa; Tomizawa, Choji; and Ishihara, Takamasa, to Sumitomo Chemical Company, Limited. Process for producing aqueous emulsions of vinyl chloride/vinyl acetate/ethylene terpolymers. 4,123,405, Cl. 260-29.60R.

Ozerova, Alla Ivanovna: *See—*
Kononenko, Viktor Evmenievich; Tamazina, Valentina Nikolaevna; and Ozerova, Alla Ivanovna, 4,123,568, Cl. 427-126.000.

Pacheco, Nelly M. Orthopedic finger piece for writing instruments. 4,123,179, Cl. 401-6.000.

Packard, Douglas R.: *See—*
Rosenbaum, Herman S.; Packard, Douglas R.; and Levin, Harry A., 4,123,498, Cl. 423-2.000.

Packard Instrument Company, Inc.: *See—*
Johnson, James F., 4,122,936, Cl. 198-339.000.

Paddock, Paul F.: *See—*
Varon, Miquel A.; and Paddock, Paul F., 4,123,310, Cl. 156-351.000.

Pako Corporation: *See—*
Strunc, Gerald R., 4,123,649, Cl. 235-92.0PD.

Palfreeman, John S.: *See—*
Pearson, Ronald F.; Lacklison, David E.; Scott, George B.; and Palfreeman, John S., 4,123,783, Cl. 358-230.000.

Palmer, Norman H. G.; and Wiblin, Wayne T., to Towmotor Corporation. Adjustable potentiometer in an accelerator control. 4,123,740, Cl. 338-67.000.

Panlaqui, Clayton E.; and Holt, Lloyd J., to United States of America, Navy. Dependent sway bracing weapon restraints. 4,122,754, Cl. 89-1.50B.

Pappas, George J. Apparatus for and method of examining light. 4,123,161, Cl. 356-99.000.

Parise, Carl, to Parise & Sons, Inc. Steam cleaner dump bucket. 4,122,579, Cl. 15-353.000.

Parise & Sons, Inc.: *See—*
Parise, Carl, 4,122,579, Cl. 15-353.000.

Parisi, Joseph P.: *See—*
Di Liberto, Menno; and Parisi, Joseph P., 4,122,558, Cl. 4-145.000.

Parisien, Rudolph E. Gate and spring hinge therefore. 4,122,630, Cl. 49-386.000.

Park-Ohio Industries, Inc.: *See—*
Sorensen, Phillips N., 4,123,644, Cl. 219-10.570.

Parker-Hannifin Corporation: *See—*
Keresman, Michael A.; and Schueuerman, Curtis H., 4,123,240, Cl. 55-385.00C.

Parker, Robert R.: *See—*
Karalus, George C.; and Parker, Robert R., 4,122,613, Cl. 35-9.00A.

Parrott, George A.; and Norris, John B., to Dresser Europe S.A. Auxiliary device for a mining machine. 4,123,110, Cl. 299-43.000.

Parry, Richard J.: *See—*
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,123,416, Cl. 260-42.180.

Passerini, Norina: *See—*
Melloni, Piero; Della Torre, Arturo; Lauria, Francesco; Passerini, Norina; Rossi, Alessandro; and Tommasini, Raffaele, 4,123,527, Cl. 424-244.000.

Passoni, Gianfranco. Pair of rollers for roller-skates. 4,123,076, Cl. 280-11.270.

Paszyc, Aleksy J.; Shiroma, Dallas M.; and Huang, Kwang T., to United States of America, Navy. Electrostatic high potential system. 4,123,697, Cl. 322-2.00A.

Patten, Floyd R.: *See—*
Stasz, Peter; and Patten, Floyd R., 4,122,713, Cl. 73-194.00A.

Patterson, Richard J.: *See—*
Ledebuhr, Richard L.; Hansen, Clarence M.; and Patterson, Richard J., 4,122,766, Cl. 99-640.000.

Paulet, Jean: *See—*
Tardy, Maurice; and Paulet, Jean, 4,122,864, Cl. 137-625.600.

Paulonis, Daniel F.: *See—*
Duvall, David S.; and Paulonis, Daniel F., 4,122,992, Cl. 228-176.000.

Pauls, Kurt, to Kieserling & Albrecht. Advancing mechanism for automatic screw thread cutting machines. 4,122,572, Cl. 10-105.000.

Pearce, Jai K.; and Wells, William, to Pennsylvania Engineering Corporation. Steel converter vessel tuyere block construction. 4,123,042, Cl. 266-44.000.

Pearce, Warren, Jr.; and Russo, Andrew, Jr., to General Motors Corporation. Vented electrical connector. 4,123,131, Cl. 339-117.00R.

Pearson, Ronald F.; Lacklison, David E.; Scott, George B.; and Palfreeman, John S., to U.S. Philips Corporation. Magnetic bubble display system. 4,123,783, Cl. 358-230.000.

Peche, Gerhard: *See—*
Lange, Gerhard; and Peche, Gerhard, 4,123,682, Cl. 313-54.000.

Pecota, Walter, to Wagner Electric Corporation. Automotive dome light control with variable-time automatic holding. 4,123,668, Cl. 307-10.0LS.

Peets, Robert S., to Singer Company, The. Convertible sewing machine cabinet. 4,123,124, Cl. 312-21.000.

Pegler, Frederick E. W.; and Laucks, Howard H., to Moog Inc. Tool changer. 4,122,598, Cl. 29-568.000.

Peleschka, Gerhard; and Nuebling, Friederich, to Wibau. Rotary vane pump with sealing means. 4,123,205, Cl. 418-127.000.

Pell, Kynric M.: *See—*
Brown, David B.; Vickers, Jerry W.; and Pell, Kynric M., 4,123,165, Cl. 356-152.000.

Pellicer, Carlos F.: *See—*
Wesch, Ludwig; Roma, Luis C.; and Pellicer, Carlos F., 4,123,575, Cl. 427-386.000.
Wesch, Ludwig; Roma, Luis C.; and Pellicer, Carlos F., 4,123,587, Cl. 428-407.000.

Pelloni, Luciano: *See—*
Gnieser, Jurgen; and Pelloni, Luciano, 4,123,341, Cl. 204-152.000.

Pemco-Kalamazoo, Inc.: *See—*
Black, John W., 4,122,580, Cl. 16-46.000.

Pennish, John S.: *See—*
Carman, Justice N., 4,123,229, Cl. 422-199.000.

Pennsylvania Engineering Corporation: *See—*
Nomine, Harold; and Schempp, Eberhard G., 4,123,043, Cl. 266-158.000.
Pearce, Jai K.; and Wells, William, 4,123,042, Cl. 266-44.000.

Pennwalt Corporation: *See—*
Cascone, Paul J., 4,123,262, Cl. 75-165.000.

Pepperl, Rudiger: *See—*
Hill, Bernhard; Pepperl, Rudiger; and Kruger, Johann, 4,123,147, Cl. 350-285.000.

Perevuznik, Josef: *See—*
Horler, Hansulrich; and Perevuznik, Josef, 4,123,200, Cl. 417-64.000.

Perkins, John A., to Perky & Me Co. Toy or game. 4,123,052, Cl. 272-8.00N.

Perkins, Walter E., Jr.: *See—*
Wolf, Edward D.; and Perkins, Walter E., Jr., 4,123,661, Cl. 250-492.00A.

Perky & Me Co.: *See—*
Perkins, John A., 4,123,052, Cl. 272-8.00N.

Perrington, Kenneth J.; Taylor, Phillip A.; and Vogelgesang, Peter J., to Minnesota Mining and Manufacturing Company. Transfer letter system. 4,123,309, Cl. 156-234.000.

Perrington, Kenneth J.; Taylor, Phillip A.; and Vogelgesang, Peter J., to Minnesota Mining and Manufacturing Company. Transfer letter system. 4,123,578, Cl. 428-206.000.

Perry, Roger L., to Gillette Company, The. Injector razor adapter. 4,122,600, Cl. 30-90.000.

Persha, Thomas J.; and Jagielski, David, to Bell & Howell Company. Vertically scanning microfilm reader and reader printer. 4,123,699, Cl. 353-26.00R.

Peters, Harry E. Atomic standard with reduced size and weight. 4,123,727, Cl. 331-94.000.

Peterson, Benjamin C., to Motorola, Inc. High speed IFGET sense amplifier/latch. 4,123,799, Cl. 365-205.000.

Peterson, Glenn E.; Emerson, Robert T.; and Schoenlein, William J., to Columbia Ribbon & Carbon Manufacturing Co., Inc. Direct ribbon inking by gravure. 4,123,569, Cl. 427-141.000.

Peterson, John M.: *See—*
Hall, William C.; and Peterson, John M., 4,123,392, Cl. 252-478.000.

Peterson, William D., II. High pressure high temperature light gas drive shaft seal. 4,123,070, Cl. 277-135.000.

Petitpierre, Jean C.: *See—*
Balli, Heinz; Gunzenhauser, Sigmund; and Petitpierre, Jean C., 4,123,439, Cl. 260-326.50B.

Petricek, Elisabeth: *See—*
Knetsch, Wilfried; and Petricek, Elisabeth, 4,122,852, Cl. 128-303.00R.

Petrolite Corporation: *See—*
Guthrie, David B.; and Leiendecker, Donald M., 4,123,231, Cl. 44-51.000.

Petter, Nigel N.: *See—*
Dutta, Anand S.; Gormley, James J.; Hayward, Christopher F.; Morley, John S.; Petter, Nigel N.; and Stacey, Gilbert J., 4,123,523, Cl. 424-177.000.

Petzi, Fritz, to Ludwig Riedhammer GmbH & Co. K.G. Tunnel furnace. 4,123,044, Cl. 266-255.000.

Pfaff Industriemaschinen GmbH: *See—*
Klundt, Kurt, 4,122,789, Cl. 112-256.000.

Pfaffli, Paul, to Sandoz Ltd. Psychostimulating 14-amino-14,15-dihydroeburnamenines. 4,123,535, Cl. 424-256.000.

Pfarrwaller, Erwin; and Seifert, Eberhard, to Sulzer Brothers Limited. Control means for controlling the warp let-off of a weaving machine. 4,122,873, Cl. 139-110.000.

Philip Morris Incorporated: *See—*
Rainer, Norman B.; and Wilson, Peter A., 4,123,592, Cl. 428-532.000.

Philips, Edward G.: *See—*
Davidson, Charles P. D.; and Philips, Edward G., 4,122,907, Cl. 180-33.00C.

Philips Roxane, Inc.: *See—*
Tribble, Ronald L.; and Stagg, Charles M., 4,123,519, Cl. 424-88.000.

Phillips Petroleum Company: *See—*
Borenstein, David E.; and Newton, Richard C., 4,122,588, Cl. 28-221.000.
Chapman, Charles C.; and Van Pool, Joe, 4,123,351, Cl. 208-262.000.
Fahey, Darryl R.; and Mahan, John E., 4,123,447, Cl. 260-439.00R.
Murtha, Timothy P., 4,123,470, Cl. 260-668.00D.
Sauber, Charles A.; and Roper, Louis E., 4,123,366, Cl. 252-8.50A.
Sitton, Donald M.; and Terry, Ronald E., 4,122,895, Cl. 166-252.000.
Vanderveen, John W., 4,123,226, Cl. 23-314.000.

Piazza, Matthew R., to Maso-Therm Corporation. Apparatus for uniformly distributing glass fibers. 4,123,212, Cl. 425-82.100.

Piccini, Silvio D. Batting practice method. 4,123,053, Cl. 273-26.00R.

Pickert, Johannes: *See—*
Herold, Wilhelm; and Pickert, Johannes, 4,123,481, Cl. 261-81.000.

Pickett, Wiley J.; and Boye, Albert A. Method and apparatus for applying a connector to electrical conductor strands. 4,123,133, Cl. 339-273.00R.

Pierson, Marvin B.: *See—*
Arnold, Jerry L.; Dunbar, Frank C.; Gibson, Alan F.; and Pierson, Marvin B., 4,123,291, Cl. 148-6.350.
Gibson, Alan F.; and Pierson, Marvin B., 4,123,292, Cl. 148-6.350.

Pieters, Wim J. M.; Carlson, Emery J.; Gates, William E.; and Conner, William C., Jr., to Allied Chemical Corporation. Pyrogenic silica or titania or alpha-alumina cuprous chloride catalyst of hydrogen chloride/oxygen reaction. 4,123,389, Cl. 252-441.000.

Pikul, Richard E., to Puritan Bennett Corporation. Pulmonary diagnostic instrument including breath transducer. 4,122,842, Cl. 128-2.080.

Pilarczyk, Charles E., to Towmotor Corporation. Control lever assembly. 4,122,728, Cl. 74-103.000.

Pilkington Brothers Limited: *See—*
Cockram, David R., 4,123,287, Cl. 106-99.000.

Pilot Man-Nen-hitsu Kabushiki Kaisha: *See—*
Hasegawa, Tetuya; and Itishasi, Akihiro, 4,123,590, Cl. 428-450.000.

Pilote, Raymond R.: *See—*
O'Connor, Jeremiah J.; Pilote, Raymond R.; and Linkenheimer, Wayne H., 4,123,522, Cl. 424-116.000.

Pilousek, Josef: *See—*
Rataj, Stanislav; Krch, Karel; Pilousek, Josef; Blazek, Jaroslav; Vitek, Hynek; and Macek, Ladislav, 4,123,114, Cl. 302-53.000.

Pinter, Kenneth W.: *See—*
Davis, Abraham D.; and Pinter, Kenneth W., 4,123,581, Cl. 428-318.000.

Pitkanen, Alan R. Convertible jacket/vest garment. 4,122,553, Cl. 2-102.000.

Pitney-Bowes, Inc.: *See—*
Storace, Anthony; and Sette, Paul R., 4,122,906, Cl. 177-213.000.

Pitt, Leland S.: *See—*
Large, George B.; and Pitt, Leland S., 4,123,526, Cl. 424-200.000.

Pittasch, Willi, to Heinze, Richard. Furniture hinge. 4,122,581, Cl. 16-158.000.

Plachy, William M.: *See—*
O'Brian, Edward D.; and Plachy, William M., 4,122,638, Cl. 52-70.000.

Plantard, Dominique: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,123,243, Cl. 65-16.000.

Plaston AG, Kunststoffwerke Hans Frei & Sohne: *See—*
Frei, Roland; Gutmann, Franz; Sieber, Peter; and Koeppel, Peter, 4,123,228, Cl. 422-274.000.

Platt Saco Lowell Limited: *See—*
Anderson, Gordon C.; and Clayton, James W. B., 4,122,655, Cl. 57-58.890.
Shaw, Jack, 4,122,656, Cl. 57-58.910.

Plessey Handel und Investments AG: *See—*
Das, Tapan K.; Boyce, Peter H.; and Fletcher, Graham J., 4,123,724, Cl. 331-1.00A.
James, Nicholas A.; Hudson, John A.; Savage, Derek G.; and Morley, Edward G., 4,123,202, Cl. 417-216.000.

Plibrico (Canada) Limited: *See—*
Buchy, James P., 4,122,642, Cl. 52-511.000.

Ploix, Jean Luc, to Thomson-CSF. Electrophoretic device. 4,123,346, Cl. 204-299.00R.

PMC Industries, Inc.: *See—*
Cave, Lawrence E., 4,123,194, Cl. 408-221.000.

Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Bonnefon, Alain; Coupard, Alain; and Maffre, Michel, 4,123,476, Cl. 260-897.00A.

Pneutek, Inc.: *See—*
Haytayan, Harry M., 4,122,904, Cl. 173-15.000.

Poapst, Peter A.; and Forsyth, Frank R., to Canadian Patents and Development Limited. Coating of potatoes to prevent greening. 4,123,558, Cl. 426-268.000.

Podl, William J., to Alnor Instrument Company. Diesel engine exhaust temperature monitor. 4,122,720, Cl. 73-346.000.

Poignant, Jean-Claude: *See—*
Vincent, Michel; Remond, Georges; Laubie, Michel; and Poignant, Jean-Claude, 4,123,531, Cl. 424-250.000.

Poirier, Raymond; and Szydlo, Nicolas, to Thomson-CSF. Display system using low energy electrons. 4,123,687, Cl. 313-484.000.

Poirier, Raymond, to Thomson-CSF. Method of filtering analogue signals by transferring electrical charges in a semiconductor medium. 4,123,733, Cl. 333-70.00T.

Polaroid Corporation: *See—*
Schuler, Norman W., 4,123,141, Cl. 350-159.000.

Poler, Stanley. Intra-ocular lens. 4,122,556, Cl. 3-13.000.

Poletto, John F.: *See—*
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,123,456, Cl. 562-503.000.

Pollack, Howard M.: *See—*
Dahab, Richard E.; and Pollack, Howard M., 4,123,136, Cl. 350-16.000.

Pollmeier, Werner, to Nixdorf Computer AG. Transistor switching circuit. 4,123,670, Cl. 307-254.000.

Polyak, Jack. Solar heat supplemented convection air stack with turbine blades. 4,122,675, Cl. 60-398.000.

Pope, Thomas A.; and Holleran, John M., to Republic Steel Corporation. Method for quench hardening steel casings. 4,123,301, Cl. 148-153.000.

Poradek, Jerry C.: *See—*
United States of America, National Aeronautics and Space Administration; Poradek, Jerry C.; and Collins, Dwight D., 4,123,355, Cl. 210-50.000.

Port, Morton I.; Nebe, Juergen; and Ladeur, Bernhard H., to Standard Oil Company (Indiana). Primary backing for tufted carpets and carpets made therefrom. 4,123,577, Cl. 428-95.000.

Porter, Elmer D.: *See—*
Stevens, Joe M.; and Porter, Elmer D., 4,123,633, Cl. 200-61.860.

Portnoy, Norman A.: *See—*
Unrau, David G.; Portnoy, Norman A.; and Hartmann, Peter J., 4,123,398, Cl. 260-17.4CL.

Post Office, The: *See—*
Gladstone, David J.; and Moldram, Peter A., 4,123,751, Cl. 340-324.00M.

Post, Roger L.: *See—*
Kathmann, Stephen J.; Post, Roger L.; Herschler, Michael G.; and Anerino, Sylvester L., 4,123,203, Cl. 417-252.000.

Potter, John M. Self service plant sales rack. 4,122,781, Cl. 108-101.000.

Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., to Smith & Nephew Research Limited. Curable composition comprising a calcium fluoro-alumino silicate glass and poly(carboxylic acid) or precursor thereof. 4,123,416, Cl. 260-42.180.

Potts, Vinson S., to Crown Cork & Seal Company, Inc. Easy opening can end with push-in tabs. 4,122,971, Cl. 220-268.000.

Powers Regulator Company: *See—*
Shih, James Y., 4,123,796, Cl. 364-900.000.

PPG Industries, Inc.: *See—*
Erikson, J. Alden; and Birkmeyer, William J., 4,123,422, Cl. 528-273.000.
Johnson, Randall S., 4,123,246, Cl. 65-104.000.

Prescott, Ralph E.: *See—*
Gusching, Nagle V.; and Prescott, Ralph E., 4,122,597, Cl. 29-568.000.

Pressler, Kurt T.; and Cattell, Scott. Adjustable pennant warning of downed water skiers. 4,122,796, Cl. 116-132.00R.

Prestele, Karl: *See—*
Franetzki, Manfred; Korn, Volker; and Prestele, Karl, 4,122,839, Cl. 128-2.080.

Preston, Edward G., to Molins Limited. Cigarette-making machines. 4,122,859, Cl. 131-84.00B.

Pretini, Gisberto. Apparatus for protecting a room against penetration thereinto of armed persons. 4,122,783, Cl. 109-3.000.

Pretty, John E., to Ford Motor Company. Window wiper assembly. 4,122,578, Cl. 15-250.230.

Price-Pfister Brass Mfg. Co.: *See—*
Tolnai, Julius L., 4,122,726, Cl. 74-21.000.

Price, Robert; and Eisman, Norman, to Universal Scientific Company. Apparatus and method for perforating an article. 4,122,736, Cl. 83-23.000.

Priegel, Jack C., to Autotronic Controls Corporation. Air flow transducer. 4,122,716, Cl. 73-231.00R.

Prince, David C., Jr.; and Koch, Carl C., to General Electric Company. Supersonic compressor with off-design performance improvement. 4,123,196, Cl. 415-181.000.

Procter & Gamble Company, The: *See—*
Davey, Christopher R.; and Buckley, Peter J., 4,123,377, Cl 252-103.000.
Maguire, Edward J., Jr.; and Staab, Robert A., 4,123,395, Cl. 252-559.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Brouard, Claude M. H. E.; and Ficht, Paulette G., 4,123,429, Cl. 260-147.000.

Prohaska, Hans: *See—*
Andrei-Alexandru, Marcel; Gille, Gunther; Goertler, Horst; Prohaska, Hans; Steeb, Walter; and Spieth, Wolfgang, 4,123,694, Cl. 318-443.000.

Proksch, Frederick D.: *See—*
Miers, Bruce W.; Proksch, Frederick D.; and Welker, Gerald H., 4,122,908, Cl. 180-68.00P.

Pryde, Coralie A.: *See—*
Chandross, Edwin A.; and Pryde, Coralie A., 4,123,562, Cl. 427-58.000.

Puhringer, Othmar, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Method of guiding a cast strand and arrangement for carrying out the method 4,122,888, Cl. 164-82.000.

Punch-Lok Company: *See—*
Ott, John E.; and Bates, Marvin O., 4,122,733, Cl. 81-9.300.

Puritan Bennett Corporation: *See—*
Pikul, Richard E., 4,122,842, Cl. 128-2.080.

Purves, Robert B.: *See—*
Andersson, Anders O.; and Purves, Robert B., 4,122,674, Cl. 60-39.650.

Purviance, John R. Chuck key holder. 4,123,195, Cl. 408-241.00R.

PYE (Electronic Products Ltd.): *See—*
Hardy, Paul R.; and Spencer, Arthur T., 4,123,132, Cl. 339-246.000.

Quakenbush, Howard M., to Flexsteel Industries, Inc. Swivel seat pedestal. 4,123,028, Cl. 248-425.000.

Quaker Oats Company, The: *See—*
Teter, Edward C., 4,122,727, Cl. 74-56.000.

Queen, David S.; Bell, Peter W.; Dick, Thomas H.; and Edgar, John B., to Sidlaw Industries Limited. Apparatus for making a composite fabric. 4,123,313, Cl. 156-498.000.

Querengasser, Norman A., to Andrew Wilson Company. Compact shelving apparatus. 4,123,126, Cl. 312-201.000.

Quest Automation Limited: *See—*
Eadie, David W.; and Hancock, Charles J., 4,123,763, Cl. 354-4.000.

Quinn, John A., to Du Pont de Nemours, E. I., and Company. Double-negative positive-working photohardenable elements. 4,123,272, Cl. 96-35.100.

Qvarnstrom, Lars A. G.: *See—*
Hakansson, Bo H.; Nylen, Ulf T. G.; and Qvarnstrom, Lars A. G., 4,123,353, Cl. 210-22.00C.

R. T. Vanderbilt Company, Inc.: *See—*
Rieger, Konrad C., 4,123,284, Cl. 106-40.00R.

Rabban, Philipp. Surgical retractor. 4,122,844, Cl. 128-20.000.

Rabedeau, Melbourne E., to International Business Machines Corporation. Optical system for rotating mirror line scanning apparatus. 4,123,135, Cl. 350-6.800.

Rademaker, George: *See—*
Viero, Laurence; Cannon, John; Rademaker, George; Swanson, William; and Fessett, Kenneth, 4,123,089, Cl. 285-39.000.

Radiochemical Centre Limited, The: *See—*
Ruddock, Clinton F., 4,123,497, Cl. 423-2.000.

Radkowsky, Alvin; Chien, Ji-Peng; Yang, Chao-Yie; and Hsieh, Horng-Ming, to Institute of Nuclear Energy Research, Atomic Energy Council. Utilization of heavy elements in thermal and epithermal reactors. 4,123,328, Cl. 176-78.000.

Rainer, Norman B.; and Wilson, Peter A., to Philip Morris Incorporated. Process for incorporating flavorant into cellulosic substrates and products produced thereby. 4,123,592, Cl. 428-532.000.

Rammler, David H., to Syntex (U.S.A.) Inc. Novel assay reagents. 4,123,614, Cl. 560-254.000.

Rangaire Corporation: *See—*
Bowen, Leon O., Jr.; and McVean, Michael T., 4,122,835, Cl. 126-299.00D.

Rataj, Stanislav; Krch, Karel; Pilousek, Josef; Blazek, Jaroslav; Vitek, Hynek; and Macek, Ladislav, to Zemedelsky nakupni a zasobovaci podnik narodni podnik. Arrangement for the pneumatic removal of bulk particulate material from the floor of a storage place. 4,123,114, Cl. 302-53.000.

Raychem Corporation: *See—*
Koht, Lowell I.; Kinsch, Michael J., Jr.; and Humphries, William H., 4,123,047, Cl. 269-238.000.

Raymond Corporation, The: *See—*
Allen, Ralph E.; and Gibson, Christian D., 4,122,957, Cl. 214-16.40A.

Raymond Lee Organization, Inc., The: *See—*
Kanigan, Frederick R., 4,122,905, Cl. 175-396.000.

Raytheon Company: *See—*
Hapgood, William H., 4,122,830, Cl. 126-271.000.

RCA Corporation: *See—*
Cochran, Larry A.; and Shanley, Robert L., II, 4,123,776, Cl. 358-10.000.
Goldschmidt, Arthur M., 4,123,779, Cl. 358-128.000.
Marinelli, Donald P., 4,123,302, Cl. 148-171.000.
Wine, Charles M., 4,123,713, Cl. 325-455.000.

Rebsdat, Siegfried; Mayer, Sigmund; Alfranseder, Josef; and Riedl, Josef, to Hoechst Aktiengesellschaft. Process for improving the activity of used supported silver catalysts. 4,123,385, Cl. 252-414.000.

Reed, Walter R.: *See—*
Moskowitz, Ronald; Stahl, Philip; and Reed, Walter R., 4,123,675, Cl. 310-49.00R.

Refractory Products Co.: *See—*
Woodruff, Richard K., 4,122,644, Cl. 52-787.000.

Reider, Samuel B., to General Motors Corporation. Parallel stage fuel combustion system. 4,122,670, Cl. 60-39.650.

Reiner, Lawrence L.: *See—*
Wexler, Howard; and Reiner, Lawrence L., 4,123,062, Cl. 273-248.000.

Reisman, Arnold: *See—*
Balog, Moshe; Berkenblit, Melvin; Chan, See-Ark; and Reisman, Arnold, 4,123,571, Cl. 427-249.000.

Reiss, Karl-Hans; and Killig, Klaus, to Siemens Aktiengesellschaft. Method for determining the density of bodies by means of penetrating rays and apparatus for carrying out said method. 4,123,654, Cl. 250-272.000.

Rembaum, Alan; and Volksen, Willi, to California Institute of Technology. Impregnated metal-polymeric functional beads. 4,123,396, Cl. 526-24.000.

Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; Laubie, Michel; and Poignant, Jean-Claude, 4,123,531, Cl. 424-250.000.

Renaissance Creations, Inc.: *See—*
Barrell, John M., 4,122,639, Cl. 52-90.000.

Renal Systems, Inc.: *See—*
Cosentino, Louis C.; and Springrose, B. Steven, 4,123,091, Cl. 285-39.000.

Rennick, Virgil G. Dock safety apparatus. 4,122,629, Cl. 49-357.000.

Renz, Udo D.; and Memmhardt, Dieter, to Daimler-Benz Aktiengesellschaft. Snap-in connection, especially cover for wheels of passenger motor vehicles. 4,123,111, Cl. 301-37.0TP.

Repa Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,122,584, Cl. 24-230.00A.

Republic Steel Corporation: *See—*
Pope, Thomas A.; and Holleran, John M., 4,123,301, Cl. 148-153.000.
Vild, Joseph P.; Cleary, William I.; and Fox, Donald P., 4,123,708, Cl. 324-224.000.

Research Associates Ltd.: *See—*
Hice, Jaxon O., 4,123,560, Cl. 426-509.000.

Research-Cottrell, Inc.: *See—*
Sapp, Dennis H., 4,122,646, Cl. 52-648.000.

Reuter, Franz G.: *See—*
Hilterhaus, Karl-Heinz; and Reuter, Franz G., 4,123,599, Cl. 521-123.000.

Reuter Technologie GmbH: *See—*
Hilterhaus, Karl-Heinz; and Reuter, Franz G., 4,123,599, Cl. 521-123.000.

Rexnord Inc.: *See—*
Mansouri, Hosein, 4,123,362, Cl. 210-232.000.

Reytblatt, Zinovy V. Photoelastic strain gauge. 4,123,158, Cl. 356-32.000.

Rhoades, John S.; and Rhoades, Patricia G. Aerodynamic device, particularly for sails. 4,122,792, Cl. 114-103.000.

Rhoades, Patricia G.: *See—*
Rhoades, John S.; and Rhoades, Patricia G., 4,122,792, Cl. 114-103.000.

Rhodes, William A. Kinematic synchronous solar heliostat. 4,122,827, Cl. 126-270.000.

Rhone-Poulenc Industries: *See—*
Gay, Michel, 4,123,399, Cl. 260-23.0XA.
Gay, Michel, 4,123,400, Cl. 260-23.0XA.

Rice, John O.: *See—*
Bowler, Lauren L.; and Rice, John O., 4,122,811, Cl. 123-119.0EC.

Richards, Arthur W., to Sphere Investments Limited. Photometric sorters. 4,122,952, Cl. 209-579.000.

Richards, Roy, to Southwire Company. Cooling of continuously cast bar by hydraulic band lifting. 4,122,889, Cl. 164-87.000.

Richardson, Edwin A.: *See—*
Scheuerman, Ronald F.; Richardson, Edwin A.; and Templeton, Charles C., 4,122,896, Cl. 166-250.000.

Richmond, James W.: *See—*
Kern, Kenneth E.; and Richmond, James W., 4,123,628, Cl. 200-38.0FB.

Richter, Helmut: *See—*
Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, 4,123,258, Cl. 75-58.000.

Ricoh Company, Ltd.: *See—*
Fukuda, Mitsuhisa, 4,122,997, Cl. 235-455.000.
Tomita, Satoru; Ohori, Tamio; and Karasawa, Shuichi, 4,123,762, Cl. 346-155.000.

Riecker, Johann G.: *See—*
Schulte, Fritz; Riecker, Johann G.; and Rozas, Gunther, 4,123,333, Cl. 202-255.000.

Riedel, Tilo, to S.A. Etablissements Francois Salomon & Fils. Ski brake. 4,123,083, Cl. 280-605.000.

Riedl, Josef: *See—*
Rebsdat, Siegfried; Mayer, Sigmund; Alfranseder, Josef; and Riedl, Josef, 4,123,385, Cl. 252-414.000.

Rieger, Konrad C., to R. T. Vanderbilt Company, Inc. Porous ceramic bodies. 4,123,284, Cl. 106-40.00R.

Riley, Ralph V.; Muir, Samuel; Bloor, Christopher; and Jozsef, Tibor, to British Steel Corporation. Production of ferrous bodies. 4,123,264, Cl. 75-211.000.

Rini, Guy T.: *See—*
Carp, Ralph W.; Ang, Leoncio T.; and Rini, Guy T., 4,123,116, Cl. 303-103.000.

Rinker, Gary M. Holding device for cymbals. 4,122,750, Cl. 84-421.000.

Rittenbach, Otto: *See—*
Fishbein, William; Olesch, Reinhard; and Rittenbach, Otto, 4,123,755, Cl. 343-17.10R.

Rixon, Inc.: *See—*
Stuart, Richard L.; and Bhopale, Arvind M., 4,123,710, Cl. 325-38.00A.

Rizzo, Salvatore P.: *See—*
Boulanger, Henry J.; and Rizzo, Salvatore P., 4,123,627, Cl. 200-5.00A.

Robarts, Donald E.: *See—*
Lowe, Wallace A.; and Robarts, Donald E., 4,122,829, Cl. 126-271.000.

Robbins, Clarence R.: *See—*
Kenkare, Divaker B.; Robbins, Clarence R.; and Carson, John C., Jr., 4,122,976, Cl. 222-94.000.

Rober, Herbert E., to General Motors Corporation. O-ring inspection apparatus. 4,122,705, Cl. 73-794.000.

Roberson, Walter H., Sr. Closure plug assembly. 4,122,869, Cl. 138-93.000.

Robert Bosch GmbH: *See—*
Glas, Willi, 4,122,993, Cl. 229-62.500.
Wanner, Karl, 4,123,074, Cl. 279-19.500.

Robertshaw Controls Company: *See—*
Branson, Charles D.; and Demi, Roy C., 4,123,036, Cl. 251-180.000.

Robinson, Graham, to Chloride Silent Power Limited. Cathode structure for sodium sulphur cells. 4,123,596, Cl. 429-104.000.

Robinson, Lloyd A., to SRI International. Microwave method of and apparatus for flaw detection. 4,123,703, Cl. 324-58.50B.

Roblin Industries, Inc.: *See—*
Celms, Harry, 4,122,955, Cl. 211-126.000.

Roch, Jacques L., to Electroglas, Inc. Probe construction. 4,123,706, Cl. 324-158.00P.

Rock, Erwin H.; and Klar, Irwin, to American Electromedics Corporation. Probe tip. 4,122,841, Cl. 128-2.00Z.

Rockwell International Corporation: *See—*
Diggs, Edward J.; and Grebe, Karl, 4,122,921, Cl. 188-79.5GE.
Kaelble, David H., 4,123,409, Cl. 260-29.1SB.

Rody, Jean: *See—*
Gilg, Bernard; Muller, Helmut; and Rody, Jean, 4,123,418, Cl. 260-45.8NT.

Roeschlau, Peter: *See—*
Hundt, Dieter; Gruber, Wolfgang; Klarwein, Michael; and Roeschlau, Peter, 4,123,384, Cl. 252-408.000.

Rogers, Herbert E., Jr.: *See—*
Foley, Edward M.; Dreyer, Dennis G.; and Rogers, Herbert E., Jr., 4,123,266, Cl. 75-244.000.

Rohm and Haas Company: *See—*
Leister, Norman A.; and Neuman, Andrew, 4,123,368, Cl. 252-25.000.

Rohr Industries, Inc.: *See—*
Casutt, Max, 4,122,988, Cl. 227-53.000.

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Rolls-Royce Limited: *See—*
Lowrie, Brian W., 4,122,672, Cl. 60-226.00R.

Roma, Luis C.: *See—*
Wesch, Ludwig; Roma, Luis C.; and Pellicer, Carlos F., 4,123,575, Cl. 427-386.000.
Wesch, Ludwig; Roma, Luis C.; and Pellicer, Carlos F., 4,123,587, Cl. 428-407.000.

Roman, Richard C. Method and apparatus for mounting dental die models in dental stone. 4,122,606, Cl. 32-11.000.

Romanov, Nikolai T., deceased: *See—*
Gorodissky, Leonid G.; Romanov, Nikolai T., deceased; and Romanova, Anantasia I., administratrix, 4,122,691, Cl. 68-5.00E.

Romanova, Anantasia I., administratrix: *See—*
Gorodissky, Leonid G.; Romanov, Nikolai T., deceased; and Romanova, Anantasia I., administratrix, 4,122,691, Cl. 68-5.00E.

Romanski, Eric R.: *See—*
Dutt, William H.; and Romanski, Eric R., 4,123,022, Cl. 245-10.000.

Rommerswinkel, Heinrich-Wilhelm: *See—*
Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, 4,123,258, Cl. 75-58.000.

Roper, Louis E.: *See—*
Sauber, Charles A.; and Roper, Louis E., 4,123,366, Cl. 252-8.50A.

Roques, Bernard: *See—*
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Rosander, Staffan B. F. S. J.; Sedlacek, Miroslav; and Wernholm, Olle S. V. Method and apparatus for compensaton of effects of misalignment between deflecting magnetic fields and a linear accelerator in a race track microtron. 4,123,720, Cl. 328-234.000.

Rosebrock, Theodore L.: *See—*
Chou, Cheng-Chien; and Rosebrock, Theodore L., 4,122,668, Cl. 60-39.16R.

Rosenbaum, Herman S.; Packard, Douglas R.; and Levin, Harry A., to General Electric Company. Process for separating fission product molybdenum from an irradiated target material. 4,123,498, Cl. 423-2.000.

Rosenblatt, William: *See—*
Cowell, Richard D.; Loewrigkeit, Peter; Rosenblatt, William; and Bluestein, Claire, 4,123,421, Cl. 528-65.000.

Rosewarne, William V.; and Norton, Gerald W., to Buck Tool Company. Sleeve-encased jaw chuck. 4,123,075, Cl. 279-121.000.

Ross, Edward E., to Del Monte Corporation. Can filling apparatus and methods and apparatus and methods for conveying and controlling the feeding of wet materials. 4,122,875, Cl. 141-11.000.

Ross, Frank R.: *See—*
Sharp, Jonathan E.; and Ross, Frank R., 4,122,585, Cl. 24-241.0SB.

Ross, Ronald J.: *See—*
Sherman, John D.; and Ross, Ronald J., 4,123,390, Cl. 252-455.00Z.

Rossi, Alessandro: *See—*
Melloni, Piero; Della Torre, Arturo; Lauria, Francesco; Passerini, Norina; Rossi, Alessandro; and Tommasini, Raffaele, 4,123,527, Cl. 424-244.000.

Rossini, Alfred P. Lightweight anchor rail mount. 4,122,794, Cl. 114-210.000.

Rost, Helmut: *See—*
Weiss, Karl; and Rost, Helmut, 4,122,587, Cl. 128-134.000.

Rostron, Joseph R., to Westinghouse Electric Corp. Multi-pole high-voltage circuit-interrupter having independent pole tripping with a single common operating mechanism. 4,123,635, Cl. 200-148.00F.

Roti Roti, Linda W.: *See—*
Townsend, Leroy B.; Lewis, Arthur F.; and Roti Roti, Linda W., 4,123,524, Cl. 424-180.000.

Rotter, Franz, to Energy Recovery Research Group, Inc. Process and apparatus for carbonizing a comminuted solid carbonizable material. 4,123,332, Cl. 201-15.000.

Rotter, Gerhard; Buchan, William A.; and an der Heiden, Rainer E., to BASF Aktiengesellschaft. Servo arrangement for the recording tape drive in broadband signal reproducing systems. 4,123,773, Cl. 358-4.000.

Rotter, Gerhard; Bakowski, Alojzy; and Burdorf, Donald L., to BASF Aktiengesellschaft. Magnetic transducer device with outrigger bars. 4,123,791, Cl. 360-130.000.

Rowe, E. Riley; Fletcher, Wade; Markert, Herman R.; and Grady, Dwight D., to Sonoco Products Company. Peel-top container assembly system. 4,122,790, Cl. 113-120.00R.

Rowley, William N.: *See—*
Ehret, Gordon F.; and Rowley, William N., 4,122,592, Cl. 29-404.000.

Roy, Alexander R.; and Clarke, Anthony B. Synthetic RD diamond particles. 4,122,636, Cl. 51-298.00R.

Roy, Gerald L., to Kerr Glass Manufacturing Corporation. Linerless closure. 4,122,965, Cl. 215-344.000.

Rozas, Gunther: *See—*
Schulte, Fritz; Riecker, Johann G.; and Rozas, Gunther, 4,123,333, Cl. 202-255.000.

Ruddock, Clinton F., to Radiochemical Centre Limited, The. Purification of Technetium-99m pertechnetate solutions. 4,123,497, Cl. 423-2.000.

Rudloff, Bernard. Apparatus for making a bonded felt web. 4,123,211, Cl. 425-82.100.

Ruff, Alonzo W., to St. Onge, Ruff & Associates, Inc. Elevator shaft. 4,122,685, Cl. 62-80.000.

Ruhrchemie Aktiengesellschaft: *See—*
Giesen, Heinz; Hibbel, Josef; Jansen, Willi; and Speth, Sebastian, 4,123,235, Cl. 55-85.000.

Ruland, Frederick W. Tapping attachment for a machine tool. 4,123,192, Cl. 408-133.000.

Rumpp, Gerhard: *See—*
Kuhlmann, Wolf; Rumpp, Gerhard; and Busler, Albert, 4,122,753, Cl. 85-74.000.

Runge, Glen V.; and Morse, Glenn B., to Runge, Glen V. Windrow retainer, and method of confining windrows. 4,122,637, Cl. 52-3.000.

Runkel, Manfred A.; and Licha, Joseph, to Textron Inc. Jam-proof actuator structure. 4,122,759, Cl. 92-168.000.

Ruspa, Giacomo: *See—*
Levizzari, Giannetto; and Ruspa, Giacomo, 4,122,723, Cl. 73-579.000.

Russell, A. G. Pocket scabbard for knife. 4,122,984, Cl. 224-2.00D.

Russo, Andrew, Jr.: *See—*
Pearce, Warren, Jr.; and Russo, Andrew, Jr., 4,123,131, Cl. 339-117.00R.

Ryan, John E. Guidepost for roadways and the like. 4,123,183, Cl. 404-10.000.

Ryan, John R.; and Shalita, Paul, to Ferro Corporation. Reflecting sheeting having wide angle response. 4,123,140, Cl. 350-105.000.

Ryberg, John G., to Caterpillar Tractor Co. Engine cover and air cleaner support. 4,122,820, Cl. 123-198.00E.

Ryu, Ji-Yong, to UOP Inc. Titanium tetrachloride as heterogeneous catalyst for isomerization of alkylaromatic hydrocarbon. 4,123,468, Cl. 260-668.00A.

S & C Electric Company: *See—*
Evans, David M., 4,123,639, Cl. 200-254.000.

S'1 G Schweizerische Industrie-Gesellschaft: *See—*
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S.S. Steiner, Inc.: *See—*
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Saarbergwerke Aktiengesellschaft: *See—*
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Wurfel, Helmut, 4,123,349, Cl. 208-10.000.

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Saeki, Yoshito: *See—*
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,123,525, Cl. 424-200.000.

Safrit, Sam C.; James, Kelly W.; and Bullock, Roger D., to Alamance Industries, Inc. Panty hose with crotch insert and method. 4,122,555, Cl. 2-401.000.

Sagawa, Teikichi, to Nihon Pipeline Service Kabushiki Kiahsa. Tube cleaning material. 4,122,575, Cl. 15-104.06R.

Saikawa, Toshiaki: *See—*
Shibano, Yoshizo; Saito, Tamao; and Saikawa, Toshiaki, 4,123,758, Cl. 343-830.000.

Saint-Gobain Industries: *See—*
Levecque, Marcel; Battigelli, Jean A.; and Plantard, Dominique, 4,123,243, Cl. 65-16.000.

St. Onge, Ruff & Associates, Inc.: *See—*
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Saito, Shoji, to Shin'Etsu Kasei Kabushiki Kaisha. Process for preparing a tubular article of thermoplastic resin. 4,123,487, Cl. 264-90.000.

Saito, Tamao: *See—*
Shibano, Yoshizo; Saito, Tamao; and Saikawa, Toshiaki, 4,123,758, Cl. 343-830.000.

Sakae, Katayama: *See—*
Osamu, Umekawa; Koji, Takemori; and Sakae, Katayama, 4,123,443, Cl. 260-347.400.

Sakaguchi, Shimi: *See—*
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Sakai, Masato: *See—*
Shimizu, Syogo; Ochiai, Toshihiko; and Sakai, Masato, 4,123,199, Cl. 416-244.00A.

Sakamoto, Satoshi: *See—*
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Sakurai, Hisayuki: *See—*
Ishimaru, Toshiyasu; Shimonishi, Yasutsugu; Sakurai, Hisayuki; and Hatanaka, Minoru, 4,123,611, Cl. 542-421.000.

Salzman, Ronald N.; and Herbst, Norman R., to General Signal Corporation. In-line blender. 4,123,178, Cl. 366-338.000.

Salzmann, Ferdinand F., to Consolidated Foods Corporation. Vertical venetian blind construction. 4,122,884, Cl. 160-168.00R.

Sanada, Takahiro; and Ochiai, Kanehiro, to Hitachi, Ltd. Apparatus for decontaminating a radioactively contaminated coolant. 4,123,324, Cl. 176-37.000.

Sandahl, Carl R., to Bell Telephone Laboratories, Incorporated. Optical fiber connector. 4,123,139, Cl. 350-96.210.

Sanders, James M.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.

Sanders, Virgil E., to Litton Systems, Inc. Multioscillator ring laser gyro output information processing system. 4,123,162, Cl. 356-106.0LR.

Sandford, Robert W., Jr., to Dow Corning Corporation. Process for coating a substrate and an improved coating therefore. 4,123,604, Cl. 528-31.000.

Sandoz Ltd.: *See—*
Hasspacher, Klaus; and Strasser, Michael, 4,123,545, Cl. 424-274.000.
Holliger, Herbert; and Wicki, Heinz, 4,123,428, Cl. 260-145.00C.
Pfaffli, Paul, 4,123,535, Cl. 424-256.000.

Sapp, Dennis H., to Research-Cottrell, Inc. Equilateral derrick structure. 4,122,646, Cl. 52-648.000.

Sasagawa, Tutomu: *See—*
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Sasaki, Toshio: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Ohkawa, Masahisa, 4,123,387, Cl. 252-429.00B.

Sasse, Wolfgang H. F.; and Teitei, Tsutomu, to Commonwealth Scientific and Industrial Research. Chemical storage of radiant energy. 4,123,219, Cl. 432-1.000.

Sastri, Suri A.; and Hahn, Steve S., to Gillette Company, The. Processes for treating cutting edges. 4,122,602, Cl. 30-346.500.

Sastri, Suri A., to Gillette Company, The. Processes for treating cutting edges. 4,122,603, Cl. 30-346.500.

Sato, Akira, to Toyota Jidosha Kogyo Kabushiki Kaisha. Mechanical sealing device. 4,123,069, Cl. 277-70.000.

Sato, Shoichi: *See—*
Minemura, Hajime; Kusama, Haruya; and Sato, Shoichi, 4,123,066, Cl. 274-10.00C.

Sato, Shunichi; Kawasaki, Midori; and Kunii, Mamoru, to Kubushiki Kaisha Kokugo. Method and apparatus for fixing glove to glove box and glove suitable therefor. 4,123,123, Cl. 312-1.000.

Sato, Takefumi, to Sharp Kabushiki Kaisha. Antilock brake control system for a motorcycle front wheel. 4,123,118, Cl. 303-119.000.

Satoh, Kazuhisa: *See—*
Oyamada, Takeo; Satoh, Kazuhisa; Tomizawa, Choji; and Ishihara, Takamasa, 4,123,405, Cl. 260-29.60R.

Sauber, Charles A.; and Roper, Louis E., to Phillips Petroleum Company. Drilling mud containing sodium carboxymethylcellulose and sodium carboxymethyl starch. 4,123,366, Cl. 252-8.50A.

Sauer, Hartmut K., to Koenig & Bauer Aktiengesellschaft. Blanket clamping apparatus. 4,122,774, Cl. 101-415.100.

Saunders, Norman B. Heating and ventilation system. 4,123,002, Cl. 237-1.00A.

Savage, Derek G.: *See—*
James, Nicholas A.; Hudson, John A.; Savage, Derek G.; and Morley, Edward G., 4,123,202, Cl. 417-216.000.

Savage, Kerry D.: *See—*
Brown, Winthrop K.; Bridges, James R.; and Savage, Kerry D., 4,122,709, Cl. 73-136.00A.

Savidge, Michael: *See—*
Bevington, John F.; Savidge, Michael; and Meeker, Paul, 4,122,576, Cl. 15-49.00R.

Sawada, Tomoe: *See—*
Yoshikawa, Masazi; and Sawada, Tomoe, 4,123,688, Cl. 315-58.000.

Sawvel, Thomas D. Cover positioning and placement device for square containers. 4,122,649, Cl. 53-306.000.

Schabert, Hans-Peter: *See—*
Weber, Robert; Katscher, Erich; and Schabert, Hans-Peter, 4,123,323, Cl. 176-30.000.

Scharrenbroich, Helmut: *See—*
Fischer, Stefan; Wollschlager, Dieter; Scharrenbroich, Helmut; and Fischer, Rainer, 4,123,217, Cl. 425-525.000.

Schaub, Robert E.: *See—*
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Schedrovitsky, Savely S.: *See—*
Mash, Dmitry M.; Schedrovitsky, Savely S.; Golovko, Zoya I.; Zaitsev, Mikhail P.; Sorokin, Andrei N.; Belyaeva, Agnia A.; and Kharitonov, Ivan I., 4,123,735, Cl. 336-30.000.

Scheiwiller, Kurt. Spring type apparatus for the projecting of footballs and the like. 4,122,822, Cl. 124-54.000.

Schempp, Eberhard G.: *See—*
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Schering Corporation: *See—*
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Scheuerman, Ronald F.; Richardson, Edwin A.; and Templeton, Charles C., to Shell Oil Company. Acidizing carbonate reservoirs with chlorocarboxylic acid salt solutions. 4,122,896, Cl. 166-250.000.

Schiff, Peter. Adapter for intra-aortic balloons and the like. 4,122,858, Cl. 128-348.000.

Schilke, Waldemar; and Hujik, Ladislav, to Bata Shoe Company, Inc. Method of making a shoe sole having a preformed insert. 4,123,493, Cl. 264-244.000.

Schilling, Guenther: *See—*
Givner, Morris L.; and Schilling, Guenther, 4,123,224, Cl. 422-59.000.

Schilter, Eugen: *See—*
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Schluckebier, Floyd A., to General Motors Corporation. Control valve for power cylinder of steering gear. 4,122,866, Cl. 137-625.270.

Schlumberger Technology Corporation: *See—*
Ingram, John D., 4,123,744, Cl. 340-15.5TN.

Schmid, Gunter; and Jeker, Rudolf, to Automation Industrielle SA. Apparatus for producing collapsible containers. 4,123,312, Cl. 156-466.000.

Schmidt, Oluf R., to Als Burmeister & Wain's Motor-OG Maskinfabrik AF 1971. Apparatus for computing the mean indicated pressure of an engine. 4,122,706, Cl. 73-115.000.

Schmidt, Robert R.: *See—*
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Schneider GmbH & Co.: *See—*
Schuster, Peter; and von Chiari, Bernd, 4,123,285, Cl. 106-40.00R.

Schneider, Jacob D.: *See—*
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Schneider, Richard S.: *See—*
Soffer, Michael J.; and Schneider, Richard S., 4,123,431, Cl. 260-292.000.

Schnez, Harald, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Process for the removal of fission-product inert gases in the reprocessing of nuclear fuel material. 4,123,484, Cl. 264-0.500.

Schockelt, Guenter G.: *See—*
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Schockmel, Robert: *See—*
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Schoenlein, William J.: *See—*
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Scholl, Hans; and Bernewasser, Horst, to Kochs Adler AG. Workpiece support for sewing devices. 4,122,785, Cl. 112-121.150.

Scholle Corporation: *See—*
Scholle, William R., 4,123,204, Cl. 417-393.000.

Scholle, William R., to Scholle Corporation. Double-acting, fluid-operated pump having pilot valve control of distributor motor. 4,123,204, Cl. 417-393.000.

Schormann, Josef: *See—*
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Schramm, Jurgen: *See—*
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,123,449, Cl. 260-453.0AR.

Schranz, Karl-Wilhelm: *See—*
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Schreiber, William L.: *See—*
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Schroter, Richard C.: *See—*
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Schucht, Peter, to Siemens Aktiengesellschaft. Circuit for synchronizing the oscillation of an oscillator keyed by a pulse, with a reference oscillation. 4,123,726, Cl. 331-14.000.

Schueler, Arthur P.; and Nagel, Robert I., to Astro Optics Corporation. Roadside barrier marker system. 4,123,181, Cl. 404-9.000.

Schueuerman, Curtis H.: *See—*
Keresman, Michael A.; and Schueuerman, Curtis H., 4,123,240, Cl. 55-385.00C.

Schuhmacher, Gunter: *See—*
Korlatzki, Rudi; and Schuhmacher, Gunter, 4,123,589, Cl. 428-425.000.

Schuit, George C. A.: *See—*
Gates, Bruce C.; Magnotta, Vincent L.; and Schuit, George C. A., 4,123,379, Cl. 252-184.000.

Schuler, Norman W., to Polaroid Corporation. Window system comprising light polarizers. 4,123,141, Cl. 350-159.000.

Schulte, Fritz; Riecker, Johann G.; and Rozas, Gunther, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Duct equipment for exhausting coke gases. 4,123,333, Cl. 202-255.000.

Schultheiss, Udo F., to Mittemeijer, Hans R. Combined suitcase and briefcase. 4,122,925, Cl. 190-52.000.

Schultz, Karl-Heinz: *See—*
Kohler, Klaus; Woditsch, Peter; and Schultz, Karl-Heinz, 4,123,501, Cl. 423-152.000.

Schulz, Albert C., to Combustion Engineering, Inc. Briquette forming apparatus. 4,123,210, Cl. 425-78.000.

Schuster, Peter; and von Chiari, Bernd, to Schneider GmbH & Co. Foamed ceramic element. 4,123,285, Cl. 106-40.00R.

Schwartzkopf, Gary S.: *See—*
Bieringer, Harold F.; Jones, Derrell G.; and Schwartzkopf, Gary S., 4,122,758, Cl. 92-23.000.

Schwarz, Albert J.: *See—*
Kotsakis, Mike D.; and Schwarz, Albert J., 4,123,090, Cl. 285-39.000.

Science Union et Cie, Societe Francaise de Recherche Medicale: *See—*
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Sclove, David B.: *See—*
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SCM Corporation: *See—*
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Scott, George B.: *See—*
Pearson, Ronald F.; Lacklison, David E.; Scott, George B.; and Palfreeman, John S., 4,123,783, Cl. 358-230.000.

Scott, Steven W.: *See—*
Holub, Fred F.; Scott, Steven W.; and Wilson, Phillip S., 4,123,436, Cl. 260-30.80R.

Scovill Manufacturing Company: *See—*
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Sebestyen, Gyula: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Knoll, Jozsef; Sebestyen, Gyula; and David, Agoston, 4,123,533, Cl. 424-251.000.

Sedlacek, Miroslav: *See—*
Rosander, Staffan B. F. S. J.; Sedlacek, Miroslav; and Wernholm, Olle S. V., 4,123,720, Cl. 328-234.000.

Sefton, Verner B.; and Kofluk, Russell P., to Sherritt Gordon Mines Limited. Selective recovery of nickel and cobalt or copper and zinc from solution. 4,123,260, Cl. 75-117.000.

Seifert, Eberhard: *See—*
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Seilly, Alec H., to Lucas Industries Limited. Electromagnetic devices. 4,123,691, Cl. 318-119.000.

Seki, Ikuo: *See—*
Kato, Masahiko; Katogi, Hisao; and Seki, Ikuo, 4,123,171, Cl. 356-175.000.

Sekiguchi, Takeshi, to Canon Kabushiki Kaisha. Color television camera having an auxiliary illumination source. 4,123,777, Cl. 358-55.000.

Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; and Masuda, Yoshinori, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for electrolysis of aqueous alkali metal halide solution. 4,123,336, Cl. 204-98.000.

Selas Corporation of America: *See—*
Bates, William G., 4,123,245, Cl. 65-104.000.

Selcuk, M. Kudret: *See—*
United States of America, National Aeronautics and Space Administration; and Selcuk, M. Kudret, 4,122,833, Cl. 126-271.000.

Sellstedt, John H.; and Klaubert, Dieter H., to American Home Products Corporation. Tetrazole-5-carboxamide derivatives. 4,123,432, Cl. 260-293.690.

Sendyk, Andrzej M.: *See—*
Dodds, David E.; Sendyk, Andrzej M.; and Wohlberg, Donald B., 4,123,709, Cl. 325-38.00B.

Septier, Jacqueline. Tennis racket frame. 4,123,054, Cl. 273-73.00F.

Sery, Jacques; and Couture, Serge A. E., to Compagnie Honeywell Bull (Societe Anonyme). Control arrangement for a belt printer. 4,122,769, Cl. 101-93.180.

Sette, Paul R.: *See—*
Storace, Anthony; and Sette, Paul R., 4,122,906, Cl. 177-213.000.

Seyl, Rogert G. Voltage measurement with spaced reference electrode. 4,123,335, Cl. 204-1.00T.

Shalita, Paul: *See—*
Ryan, John R.; and Shalita, Paul, 4,123,140, Cl. 350-105.000.

Shanley, Robert L., II: *See—*
Cochran, Larry A.; and Shanley, Robert L., II, 4,123,776, Cl. 358-10.000.

Sharp, Jonathan E.; and Ross, Frank R. Single-action double-lock snap. 4,122,585, Cl. 24-241.0SB.

Sharp Kabushiki Kaisha: *See—*
Sato, Takefumi, 4,123,118, Cl. 303-119.000.
Tanimoto, Akira; Katoh, Sanao; and Yoshida, Yukihiro, 4,122,786, Cl. 112-158.00E.

Sharpe, Robert L., to Dana Corporation. Piston ring assembly and method of making same. 4,123,072, Cl. 277-216.000.

Shatavsky, Rubin. Magnetic tape storage and transport cartridge and mechanisms therefor. 4,123,789, Cl. 360-96.000.

Shaw, Jack, to Platt Saco Lowell Limited. Coated pinned roller. 4,122,656, Cl. 57-58.910.

Sheldon, Roger A.; and Been, Peter, to Shell Oil Company. Preparation of esters. 4,123,451, Cl. 260-465.00D.

Shell Oil Company: *See—*
Armstrong, Warren E.; La France, Donald S.; and Voge, Hervey H., 4,122,671, Cl. 60-218.000.
Scheuerman, Ronald F.; Richardson, Edwin A.; and Templeton, Charles C., 4,122,896, Cl. 166-250.000.
Sheldon, Roger A.; and Been, Peter, 4,123,451, Cl. 260-465.00D.

Shen, Kelvin K.; and Belles, Wayne S., to United States Borax & Chemical Corporation. o-Amidophenylmorpholine compounds and method of use. 4,123,251, Cl. 71-88.000.

Sherlock, Margaret H., to Schering Corporation. 2-Cyano-5-(substituted triphenylmethyl) pyridines. 4,123,433, Cl. 260-294.900.

Sherman, John D.; and Ross, Ronald J., to Union Carbide Corporation. Zeolite agglomerates having controlled pore structure. 4,123,390, Cl. 252-455.00Z.

Sherman, Michael I., to Kamyr, Inc. Three-vessel treatment system. 4,123,318, Cl. 162-19.000.

Sherritt Gordon Mines Limited: *See—*
Sefton, Verner B.; and Kofluk, Russell P., 4,123,260, Cl. 75-117.000.

Shettel, Don L., to AMSTED Industries Incorporated. Liquid treating apparatus. 4,123,345, Cl. 204-275.000.

Shibano, Yoshizo; Saito, Tamao; and Saikawa, Toshiaki, to Sumitomo Electric Industries, Ltd. Disc antenna. 4,123,758, Cl. 343-830.000.

Shichida, Hiromichi; Gamo, Gotaro; Nomura, Yoshiyuki; Hattori, Kiyoshi; and Koiwai, Yutaka, to Fujitsu Fanuc Limited. Numerically controlled wire-cutting electric discharge machine. 4,123,645, Cl. 219-69.00W.

Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Ohkawa, Masahisa, to Sumitomo Chemical Company, Limited. Catalysts for polymerization of olefins. 4,123,387, Cl. 252-429.00B.

Shigematsu, Yoshikatsu: *See—*
Fujii, Yoshihiro; Moriyama, Taketoshi; Shigematsu, Yoshikatsu; Takeuchi, Shinjiro; Kikuchi, Toshiro; Taguchi, Makio; and Ichioka, Satoshi, 4,123,707, Cl. 324-208.000.

Shih, James Y., to Powers Regulator Company. Controller for environmental conditioning apparatus. 4,123,796, Cl. 364-900.000.

Shiho, Eiji: *See—*
Ichiki, Tadaharu; Shiho, Eiji; and Kitagawa, Koji, 4,123,325, Cl. 176-38.000.

Shiina, Osamu: *See—*
Yukishita, Tuyoshi, 4,123,006, Cl. 239-266.000.

Shimazu, Shinichi: *See—*
Yamakoshi, Noboru; Kaneda, Tsugio; Hatsuoka, Nobuyasu; Shimazu, Shinichi; Fujita, Tatsu; Yamada, Yoshiro; Yamada, Tetsuo; and Mizuta, Atsuo, 4,123,296, Cl. 148-36.000.

Shimizu, Masayuki: *See—*
Kita, Shinichiro; Hiki, Fumihiko; Shimizu, Masayuki; and Kondou, Akira, 4,123,600, Cl. 526-65.000.

Shimizu, Syogo; Ochiai, Toshihiko; and Sakai, Masato, to Tokyo Shibaura Electric Co., Ltd. Rotor-shaft assembly. 4,123,199, Cl. 416-244.00A.

Shimonishi, Yasutsugu: *See—*
Ishimaru, Toshiyasu; Shimonishi, Yasutsugu; Sakurai, Hisayuki; and Hatanaka, Minoru, 4,123,611, Cl. 542-421.000.

Shin Meiwa Industry Co., Ltd.: *See—*
Mochizuki, Taketoshi; Harada, Fumio; Imaizumi, Tadahiro; and Nose, Koichi, 4,122,688, Cl. 62-196.00R.

Shinbo, Katsutoshi, to Hitachi, Ltd. Nuclear fuel element and method for fabricating the nuclear fuel element. 4,123,326, Cl. 176-68.000.

Shin'Etsu Kasei Kabushiki Kaisha: *See—*
Saito, Shoji, 4,123,487, Cl. 264-90.000.

Shingu, Tamotsu: *See—*
Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; Asaeda, Tsuyoshi; Fukushima, Tadahide; Shingu, Tamotsu; Hashimoto, Shigeru; and Iwashita, Tomonori, 4,123,650, Cl. 250-201.000.

Shinoda, Nobuhiko: *See—*
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,123,782, Cl. 358-210.000.

Shinsho, Toshihiro: *See—*
Fushida, Akira; Morikawa, Hiroichi; Shinsho, Toshihiro; Miyazaki, Takaaki; and Aizawa, Tatsuo, 4,123,271, Cl. 96-1.800.

Shionogi & Co., Ltd.: *See—*
Yamamoto, Masao; and Iwanaga, Sumio, 4,123,352, Cl. 209-546.000.

Shiraishi, Satoshi: *See—*
Nakahara, Tsuneo; Hoshikawa, Masao; Shiraishi, Satoshi; Kurosaki, Shiro; and Fujiwara, Kunio, 4,123,483, Cl. 264-1.000.

Shiraishi, Tadayoshi: *See—*
Tanaka, Tsutomu; Nakamura, Yoshio; Asahi, Koji; Shiraishi, Tadayoshi; and Takahara, Kenji, 4,123,329, Cl. 195-28.00R.

Shiroma, Dallas M.: *See—*
Paszyc, Aleksy J.; Shiroma, Dallas M.; and Huang, Kwang T., 4,123,697, Cl. 322-2.00A.

Shono, Tetsuji: *See—*
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; and Kawasaki, Masahiro, 4,123,764, Cl. 354-24.000.

Short, Edward H., III: *See—*
Wood, Loren E.; Witten, John E.; and Short, Edward H., III, 4,122,595, Cl. 29-424.000.

Shoup, Leo E. Contact lens insertion and retraction device. 4,123,098, Cl. 294-1.0CA.

Shuck, Robert E.: *See—*
Lancto, Donald C.; and Shuck, Robert E., 4,123,747, Cl. 340-149.00A.

Shulzhenko, Alexandr A.; and Getman, Anatoly F. Method of making diamonds synthetically. 4,123,504, Cl. 423-446.000.

Shuster, Edward J.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.

Sidlaw Industries Limited: *See—*
Queen, David S.; Bell, Peter W.; Dick, Thomas H.; and Edgar, John B., 4,123,313, Cl. 156-498.000.

Sieber, Peter: *See—*
Frei, Roland; Gutmann, Franz; Sieber, Peter; and Koeppel, Peter, 4,123,228, Cl. 422-274.000.

Siemens Aktiengesellschaft: *See—*
Franetzki, Manfred; Korn, Volker; and Prestele, Karl, 4,122,839, Cl. 128-2.080.
Lampert, Ernst; and Mahner, Helmut, 4,123,718, Cl. 325-474.000.
Lange, Gerhard; and Peche, Gerhard, 4,123,682, Cl. 313-54.000.
Reiss, Karl-Hans; and Killig, Klaus, 4,123,654, Cl. 250-272.000.
Rohrich, Heinz, 4,122,967, Cl. 220-2.30R.
Schucht, Peter, 4,123,726, Cl. 331-14.000.
Weiss, Karl; and Rost, Helmut, 4,122,587, Cl. 128-134.000.

Siemens-Allis, Inc.: *See—*
Lott, Donald L.; Schockelt, Guenter G.; and Worrix, Matthew L., 4,123,631, Cl. 200-148.00A.

Sifniades, Stylianos; Tunick, Allen A.; and Wohlers, Herbert C., to Allied Chemical Corporation. Synthesis of metal alkyl carbonates. 4,123,446, Cl. 260-439.00R.

Sigloch and Schrieder: *See—*
Braun, Erwin, 4,123,191, Cl. 408-42.000.

Silver, Jules; and Silverstein, Jerome, to Silver, Jules. Valved two compartment dispensing container. 4,122,943, Cl. 206-221.000.

Silverman, Ronald: *See—*
Joshi, Madhukar L.; Landler, Paul F.; and Silverman, Ronald, 4,123,300, Cl. 148-187.000.

Silverstein, Jerome: *See—*
Silver, Jules; and Silverstein, Jerome, 4,122,943, Cl. 206-221.000.

Silvestrini, Jesus A., to California Processing Machinery. Apparatus for pitting fruits or drupe type. 4,122,765, Cl. 99-551.000.

Simmonds Precision Products, Inc.: *See—*
Maier, Lawrence C., 4,122,708, Cl. 73-136.00A.

Singer Company, The: *See—*
Dahab, Richard E.; and Pollack, Howard M., 4,123,136, Cl. 350-16.000.
Peets, Robert S., 4,123,124, Cl. 312-21.000.
Tambor, Ronald, 4,123,164, Cl. 356-152.000.

Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. 4-Nitro-4-isocyanato- or amino-diphenyl ethers. 4,123,449, Cl. 260-453.0AR.

Sirrenberg, Wilhelm: *See—*
Colln, Reimer; and Sirrenberg, Wilhelm, 4,123,478, Cl. 260-986.000.

Sitton, Donald M.; and Terry, Ronald E., to Phillips Petroleum Company. Correlation of weighted effect of different ions and surfactant composition for surfactant flood. 4,122,895, Cl. 166-252.000.

Sixtensson, Par S.: *See—*
Moren, Karl-Erik; and Sixtensson, Par S., 4,123,261, Cl. 75-125.000.

SKF Industrial Trading & Development Company B.V.: *See—*
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,123,121, Cl. 308-6.00C.

Skimovex B.V.: *See—*
Middelbeek, Cornelis G., 4,123,365, Cl. 210-521.000.

Skorianetz, Werner; Dastur, Khurshid P.; and Strickler, Hugo, to Firmenich SA. Tricyclo[5.2.1.$0^{2,6}$]decane-methylol or its lower alkyl or alkenyl ester or ether derivatives in perfume compositions. 4,123,394, Cl. 252-522.000.

Skrzypczyk, William G.: *See—*
Dammel, Howard W.; Frantz, Robert M.; Luke, James H.; and Skrzypczyk, William G., 4,123,642, Cl. 219-10.590.

Slate, Robert C. Air-heater type fireplace grate. 4,122,825, Cl. 126-121.000.

Slater, John R., to Loew's Theatres, Inc. Elevated tray display device. 4,122,954, Cl. 211-133.000.

Slingerland Drum Co.: *See—*
Hoellerich, John L., 4,122,749, Cl. 84-419.000.

Smith, Bob R.; West, Harold L.; Bray, Thomas L.; and Wilder, Robert H., Sr. Ring type debarker. 4,122,877, Cl. 144-208.00E.

Smith, Brian F. Fish attractor. 4,122,624, Cl. 43-42.330.

Smith, John D. Water purifying system and pump therefor. 4,123,359, Cl. 210-169.000.

Smith, Michael R., to Spectra-Med. Infrared laser photocautery device. 4,122,853, Cl. 128-303.100.

Smith & Nephew Research Limited: *See—*
Potter, William D.; Barclay, Andrew C.; Dunning, Reginald; and Parry, Richard J., 4,123,416, Cl. 260-42.180.

Smith, Robert L.; Stokker, Gerald E.; and Gragoe, Edward J., Jr., to Merck & Co., Inc. 2-Halo-4-aminomethyl-6-alkyl-3-pyridinols useful as diuretics in treating hypertension and edema. 4,123,537, Cl. 424-263.000.

Smith, Theodore M., to Theodore M. Smith Trust, Lucille G. Smith & Theodore M. Smith, Trustees. Torque clutch coupling. 4,122,928, Cl. 192-56.00R.

Smith, William E., to General Electric Company. 2-Alkoxy-tetrahydrofurans via hydroformylation of allylic alcohols. 4,123,444, Cl. 260-347.800.

Smiths Industries Limited: *See—*
Beardmore, Geoffrey, 4,122,689, Cl. 64-15.00B.

Smitka, Gunter. Duct joint assembly. 4,123,094, Cl. 285-405.000.

Snow, James V.: *See—*
Darragh, Donald R., 4,123,025, Cl. 248-303.000.

Snyder, Dennis L.; Stayer, Mark L., Jr.; and Kang, Jung W., to Firestone Tire & Rubber Company, The. Catalysis of phosphazene cyclics to polymer, using Lewis acid compounds. 4,123,503, Cl. 423-300.000.

Sochol, Irving: *See—*
Welsh, Jay Y.; and Sochol, Irving, 4,123,499, Cl. 423-35.000.

Societa Farmaceutici Italia S.p.A.: *See—*
Bernardi, Luigi; Elli, Carlo; Falconi, Giovanni B.; and Ferrari, Rosella, 4,123,613, Cl. 544-408.000.

S.A. dite Compagnie Generale de Chauffe: *See—*
Delaporte, Jean-Charlemagne, 4,122,892, Cl. 165-12.000.

Societe Anonyme dite: Weber et Broutin: *See—*
Krzeszowski, Thaddee, 4,123,305, Cl. 156-71.000.

S.A. Etablissements Francois Salomon & Fils: *See—*
Riedel, Tilo, 4,123,083, Cl. 280-605.000.

Societe Chimique des Charbonnages: *See—*
Milette, Henri, 4,123,414, Cl. 260-38.000.

Societe d'Etudes de Machines Thermiques: *See—*
Charron, Francis, 4,122,679, Cl. 60-599.000.

Societe Moritz: *See—*
Armanet, Pierre, 4,123,801, Cl. 366-292.000.

Societe Soberal S.A.: *See—*
Nieto de Moreno, Pierre A., 4,122,934, Cl. 193-32.000.

Soffer, Michael J.; and Schneider, Richard S., to Syva Company. Non-oxo-carbonyl containing benzoyl ecgonine and cocaine compounds and derivatives thereof. 4,123,431, Cl. 260-292.000.

Solv-X Inventions Ltd.: *See—*
Lee, Edward, 4,122,861, Cl. 134-109.000.

Soma, Tsunenori: *See—*
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,123,782, Cl. 358-210.000.

Sonoco Products Company: *See—*
Rowe, E. Riley; Fletcher, Wade; Markert, Herman R.; and Grady, Dwight D., 4,122,790, Cl. 113-120.00R.

Sony Corporation: *See—*
Ohsawa, Mitsuo, 4,123,714, Cl. 325-455.000.

Sorensen, Phillips N., to Park-Ohio Industries, Inc. Device for inductively heating cylindrical surfaces. 4,123,644, Cl. 219-10.570.

Sorokin, Andrei N.: *See—*
Mash, Dmitry M.; Schedrovitsky, Savely S.; Golovko, Zoya I.; Zaitsev, Mikhail P.; Sorokin, Andrei N.; Belyaeva, Agnia A.; and Kharitonov, Ivan I., 4,123,735, Cl. 336-30.000.

Sorrentino, Anthony. Support frame and pool cover. 4,122,562, Cl. 4-172.120.

Southwire Company: *See—*
Brewton, Lee K., 4,123,584, Cl. 428-379.000.
Richards, Roy, 4,122,889, Cl. 164-87.000.

Spanke, Edwin A.; Carrieri, Louis F.; and Francey, Melvin H., to Gulf & Western Manufacturing Company. Fluid operated clutch and brake. 4,122,926, Cl. 192-18.00A.

Sparks, Charles H., deceased (by Sparks, Margaret J., executrix), to Sparks, Margaret J. Method of making a compliant mandrel in a mandrel assembly for growing graft tubes. 4,123,486, Cl. 264-46.600.

Sparks, Margaret J.: *See—*
Sparks, Charles H., deceased, 4,123,486, Cl. 264-46.600.

Sparks, Margaret J., executrix: *See—*
Sparks, Charles H., deceased, 4,123,486, Cl. 264-46.600.

Sparzak, Walter J.; and Vesperman, William C., to Western Electric Company, Inc. Polymeric composition comprising a halide polymer, an ethylene terpolymer and an alkyl acrylate copolymer. 4,123,585, Cl. 428-379.000.

Spectra-Med: *See—*
Smith, Michael R., 4,122,853, Cl. 128-303.100.

Speidel, Gerald M.: *See—*
Vass, George S.; and Speidel, Gerald M., 4,122,681, Cl. 405-261.000.

Speizman Industries, Inc.: *See—*
Moreni, Battista, 4,122,690, Cl. 66-14.000.

Spencer, Arthur T.: *See—*
Hardy, Paul R.; and Spencer, Arthur T., 4,123,132, Cl. 339-246.000.

Spencer, Lloyd. Means and method of installing emitters in irrigation tubing. 4,122,590, Cl. 29-157.00C.

Sperry Rand Corporation: *See—*
Fleming, David L.; Johansen, Thomas R.; and Torok, Ernest J., 4,123,142, Cl. 350-162.0SF.
Johnson, Kenneth C., 4,123,704, Cl. 324-78.00Z.

Speth, Sebastian: *See—*
Giesen, Heinz; Hibbel, Josef; Jansen, Willi; and Speth, Sebastian, 4,123,235, Cl. 55-85.000.

Spetzler, Edgar: *See—*
Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, 4,123,258, Cl. 75-58.000.

Spevack, Jerome S., to Deuterium Corporation. Utilization of impure steam contaminated with hydrogen sulfide. 4,123,506, Cl. 423-566.000.

Sphere Investments Limited: *See—*
Richards, Arthur W., 4,122,952, Cl. 209-579.000.

Spieth, Wolfgang: *See—*
Andrei-Alexandru, Marcel; Gille, Gunther; Goertler, Horst; Prohaska, Hans; Steeb, Walter; and Spieth, Wolfgang, 4,123,694, Cl. 318-443.000.

Sprecker, Mark A., to International Flavors & Fragrances Inc. Process for production of bicyclic compounds. 4,123,469, Cl. 260-668.00F.

Sprecker, Mark A.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.

Springrose, B. Steven: *See—*
Cosentino, Louis C.; and Springrose, B. Steven, 4,123,091, Cl. 285-39.000.

SRI International: *See—*
Robinson, Lloyd A., 4,123,703, Cl. 324-58.50B.

Staab, Robert A.: *See—*
Maguire, Edward J., Jr.; and Staab, Robert A., 4,123,395, Cl. 252-559.000.

Stacey, Gilbert J.: *See—*
Dutta, Anand S.; Gormley, James J.; Hayward, Christopher F.; Morley, John S.; Petter, Nigel N.; and Stacey, Gilbert J., 4,123,523, Cl. 424-177.000.

Stager, Phyllis H. Disposable cosmetic glove. 4,122,554, Cl. 2-164.000.

Stagg, Charles M.: *See—*
Tribble, Ronald L.; and Stagg, Charles M., 4,123,519, Cl. 424-88.000.

Stahl, Philip: *See—*
Moskowitz, Ronald; Stahl, Philip; and Reed, Walter R., 4,123,675, Cl. 310-49.00R.

Staley, Lester K.: *See—*
Hopwood, Francis W.; and Staley, Lester K., 4,123,719, Cl. 328-155.000.

Stamicarbon, B.V.: *See—*
Geurts, Leonardus H.; and Meijer, Peter J. N., 4,123,438, Cl. 260-326.5FN.

Stampfli, Jean-Marcel, to Ebauches Electroniques S.A. Electronic watch. 4,122,664, Cl. 58-88.00B.

Standard Oil Company, The: *See—*
Grasselli, Robert K.; Miller, Arthur F.; and Hardman, Harley F., 4,123,453, Cl. 260-465.300.

Standard Oil Company (Indiana): *See—*
Port, Morton I.; Nebe, Juergen; and Ladeur, Bernhard H., 4,123,577, Cl. 428-95.000.

Stanton, Leo F., to Bush Universal, Inc. Apparatus for stiffening shoe insoles. 4,122,573, Cl. 12-18.300.

Starbuck, Christopher P.: *See—*
Botcherby, Stephen C. L.; and Starbuck, Christopher P., 4,123,145, Cl. 350-269.000.
Botcherby, Stephen C. L.; Starbuck, Christopher P.; and Fitzherbert, Jeremy A., 4,123,166, Cl. 356-152.000.

Starzyk, Eugene J. Feeder transfer chute. 4,122,933, Cl. 193-32.000.

Stasz, Peter; and Patten, Floyd R., to Medtronic, Inc. Liquid velocity measuring system. 4,122,713, Cl. 73-194.00A.

Stauffer Chemical Company: *See—*
Campbell, Ramsey G.; Doane, Elliott P.; Heines, M. Henry; Naworski, Joseph S.; and Vogt, Harvey J., 4,123,467, Cl. 260-659.00A.
Large, George B.; and Pitt, Leland S., 4,123,526, Cl. 424-200.000.

Stayer, Mark L., Jr.: *See—*
Snyder, Dennis L.; Stayer, Mark L., Jr.; and Kang, Jung W., 4,123,503, Cl. 423-300.000.

Steadley Company, Inc.: *See—*
Yates, Chester R., 4,122,566, Cl. 5-260.000.

Stedman, Robert N., to Caterpillar Tractor Co. Backhoe with multi-movement capabilities. 4,122,959, Cl. 314-138.00R.

Stedman, Robert N., to Caterpillar Tractor Co. Track shoe with clamping means. 4,123,119, Cl. 305-39.000.

Steeb, Walter: *See—*
Andrei-Alexandru, Marcel; Gille, Gunther; Goertler, Horst; Prohaska, Hans; Steeb, Walter; and Spieth, Wolfgang, 4,123,694, Cl. 318-443.000.

Steel Company of Canada, Limited, The: *See—*
Hunter, Robert F., 4,122,823, Cl. 126-117.000.

Steenhof de Jong, Jacob G.: *See—*
Klaver, Petrus; and Steenhof de Jong, Jacob G., 4,123,208, Cl. 425-72.00S.

Stehlin, Theodore A., to Hansted Corporation. Pipe clamp having an overcenter toggle. 4,123,095, Cl. 285-409.000.

Stein, Gunter: *See—*
Barnert, Konrad; and Stein, Gunter, 4,122,813, Cl. 123-139.0ST.

Steinbrink, Rainer: *See—*
Bockelmann, Wilfried; and Steinbrink, Rainer, 4,122,806, Cl. 123-103.00R.

Stemp, Leslie W. Silencer. 4,122,913, Cl. 181-256.000.

Stendel, Wilhelm: *See—*
Sirrenberg, Wilhelm; Schramm, Jurgen; Klauke, Erich; Hammann, Ingeborg; and Stendel, Wilhelm, 4,123,449, Cl. 260-453.0AR.

Sterling, Robert H. Golf club and jig for making same. 4,123,060, Cl. 273-167.00R.

Sterndent Corporation: *See—*
French, Park, 4,123,172, Cl. 356-188.000.

Stevens, Joe M.; and Porter, Elmer D., to Essex Group, Inc. Switch-valve assembly having rotatable operating mechanism with latch. 4,123,633, Cl. 200-61.860.

Stewart, Clare A., Jr., to Du Pont de Nemours, E. I., and Company. Fluoroelastomer composition. 4,123,603, Cl. 526-254.000.

Stice, Eldon C. Adjustable gun stock. 4,122,623, Cl. 42-73.000.

Stich, Frederick A.: *See—*
Gilmore, Thomas P.; and Stich, Frederick A., 4,123,692, Cl. 318-227.000.

Stinehelfer, Harold E., Sr.: *See—*
Hines, Marion E.; Stinehelfer, Harold E., Sr.; and Atchley, Dana W., Jr., 4,123,759, Cl. 343-854.000.

Stokker, Gerald E.: *See—*
Smith, Robert L.; Stokker, Gerald E.; and Gragoe, Edward J., Jr., 4,123,537, Cl. 424-263.000.

Stone, Fred T., to Olinkraft, Inc. Water control system including a pressure roll for suction rolls in papermaking machines. 4,123,320, Cl. 162-199.000.

Stora Kopparbergs Bergslags AB: *See—*
Moren, Kari-Erik; and Sixtensson, Par S., 4,123,261, Cl. 75-125.000.

Storace, Anthony; and Sette, Paul R., to Pitney-Bowes, Inc. Load coupling device. 4,122,906, Cl. 177-213.000.

Stoudt, Thomas H.: *See—*
Hagopian, Arpi; Carlo, Dennis J.; and Stoudt, Thomas H., 4,123,520, Cl. 424-92.000.

Stouffer, Ronald D.; and Bray, Harry C., Jr., to Bowles Fluidics Corporation. Personal care spray device. 4,122,845, Cl. 128-66.000.

Stoy, Artur; and Urbanova, Renata, to Ceskoslovenska akademie ved. Method of preparing shaped articles from cross-linked hydrogels. 4,123,406, Cl. 260-29.6AN.

Strasser, Michael: *See—*
Hasspacher, Klaus; and Strasser, Michael, 4,123,545, Cl. 424-274.000.

Strauts, Eric J.; and Flaherty, John J., to Magnaflux Corporation. Flying spot pattern storage system. 4,123,797, Cl. 365-118.000.

Strickler, Hugo: *See—*
Skorianetz, Werner; Dastur, Khurshid P.; and Strickler, Hugo, 4,123,394, Cl. 252-522.000.

Strikemaster Manufacturing Corp., The: *See—*
Murray, George G., 4,123,057, Cl. 273-82.00R.

Stringer, James A.; and Watson, David, to Associated Portland Cement Manufacturers Limited, The. Calcination. 4,123,288, Cl. 106-100.000.

Strobel, William C. Scaffolding. 4,122,916, Cl. 182-82.000.

Strom, Ulf J. G.: *See—*
Merilainen, Heikki; and Strom, Ulf J. G., 4,123,169, Cl. 356-167.000.

Strunc, Gerald R., to Pako Corporation. Print and order totalizer for automatic photographic paper cutter. 4,123,649, Cl. 235-92.0PD.

Stuart, Richard L.; and Bhopale, Arvind M., to Rixon, Inc. Partial response QAM modem. 4,123,710, Cl. 325-38.00A.

Stuart, Robert W.: *See—*
Leney, David E.; Stuart, Robert W.; and Anderegg, John S., 4,123,750, Cl. 340-347.00P.

Stuber, Fred A.: *See—*
Lin, Chung-Yuan; Stuber, Fred A.; and Ulrich, Henri, 4,123,466, Cl. 260-645.000.

Studiengesellschaft Kohle mbH: *See—*
Vitzthum, Otto; and Hubert, Peter, 4,123,559, Cl. 426-312.000.

Suda, Yoshitaka: *See—*
Kawada, Seigo; Suda, Yoshitaka; Tsuchiya, Shigeru; Ohta, Nobuya; Muramatsu, Norimichi; and Nishio, Kazuo, 4,123,554, Cl. 424-324.000.

Sugawara, Tsutomu, to Tokyo Shibaura Electric Co., Ltd. Transistor amplifier circuit. 4,123,723, Cl. 330-311.000.

Sugimoto, Yoshikazu; Yusa, Hideo; Kato, Yomei; Kamiya, Kunio; and Kikuchi, Makoto, to Hitachi, Ltd. Filter cleaning method and filter system. 4,123,356, Cl. 210-67.000.

Sugimura, Yukio: *See—*
Iwasaki, Tetsuji; Miyamoto, Norioki; Sugimura, Yukio; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,123,254, Cl. 71-98.000.

Sugisaki, Toshihiko; Horiuchi, Tetsuo; Ogasawara, Hideo; Yamanari, Shozo; and Tominaga, Kenji, to Hitachi, Ltd. Fuel assembly for a nuclear reactor. 4,123,327, Cl. 176-76.000.

Sulzer Brothers Limited: *See—*
Gnieser, Jurgen; and Pelloni, Luciano, 4,123,341, Cl. 204-152.000.
Mandrin, Charles, 4,123,508, Cl. 423-580.000.
Pfarrwaller, Erwin; and Seifert, Eberhard, 4,122,873, Cl. 139-110.000.

Sumi, Masao: *See—*
Imoto, Katsuyuki; Takasaki, Yoshitaka; and Sumi, Masao, 4,123,242, Cl. 65-11.00W.

Sumida, Seizo: *See—*
Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, 4,123,256, Cl. 71-105.000.

Sumitomo Chemical Company, Limited: *See—*
Kameda, Nobuyuki; Hisada, Yoshio; Takayama, Chiyozo; Kato, Toshiro; and Fujinami, Akira, 4,123,549, Cl. 424-274.000.
Kita, Shinichiro; Hiki, Fumihiko; Shimizu, Masayuki; and Kondou, Akira, 4,123,600, Cl. 526-65.000.
Oyamada, Takeo; Satoh, Kazuhisa; Tomizawa, Choji; and Ishihara, Takamasa, 4,123,405, Cl. 260-29.60R.
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Ohkawa, Masahisa, 4,123,387, Cl. 252-429.00B.
Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, 4,123,256, Cl. 71-105.000.

Sumitomo Electric Industries, Ltd.: *See—*
Nakahara, Tsuneo; Hoshikawa, Masao; Shiraishi, Satoshi; Kurosaki, Shiro; and Fujiwara, Kunio, 4,123,483, Cl. 264-1.000.
Shibano, Yoshizo; Saito, Tamao; and Saikawa, Toshiaki, 4,123,758, Cl. 343-830.000.

Sumitomo, Yasusuke; and Ohashi, Yoshie, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing semiconductor devices. 4,123,565, Cl. 427-88.000.

Summerton, James E.; and Bartlett, Paul A., to United States of America, Government. Nucleic acid crosslinking agent and affinity inactivation of nucleic acids therewith. 4,123,610, Cl. 536-28.000.

Sun Electric Corporation: *See—*
Comiskey, Gary F.; Hesse, Gregory N.; and Bovenlander, Johannes P., 4,123,674, Cl. 307-351.000.

Sun Ventures, Inc.: *See—*
Lyons, James E., 4,123,445, Cl. 260-348.120.

Sundin, George H., to Conwed Corporation. Apparatus and method for joining webs on the fly. 4,123,314, Cl. 156-505.000.

Sunkist Growers, Inc.: *See—*
Varon, Miquel A.; and Paddock, Paul F., 4,123,310, Cl. 156-351.000.

Suroff, Leonard W.: *See—*
Kolt, Stanley, 4,123,001, Cl. 236-49.000.

Sutch, Brian L. C., to Airfix Industries Limited. Containers. 4,123,214, Cl. 425-129.00R.

Suyama, Eizo, to Nihon Radiator Co., Ltd. Muffler. 4,122,914, Cl. 181-258.000.

Suzuki, Hideyo: *See—*
Fukuoka, Hiroshi; Kameyama, Teruhiko; Tanaka, Yoshio; Suzuki, Hideyo; and Imai, Kimiaki, 4,123,257, Cl. 75-40.000.

Suzuki, Katumi. Submersible body warmer apparatus. 4,122,826, Cl. 126-208.000.

Swanson, Williard: *See—*
Viero, Laurence; Cannon, John; Rademaker, George; Swanson, Williard; and Fessett, Kenneth, 4,123,089, Cl. 285-39.000.

SWS Silicones Corporation: *See—*
Getson, J. Charles; and Adams, Patrick J., 4,123,472, Cl. 260-427.000.

Syntex (U.S.A.) Inc.: *See—*
Rammler, David H., 4,123,614, Cl. 560-254.000.
Untch, Karl G., Unger, Stefan H.; and Lewis, Brian, 4,123,550, Cl. 424-275.000.
Walker, Keith A. M., 4,123,542, Cl. 424-273.00R.

Syva Company: *See—*
Soffer, Michael J.; and Schneider, Richard S., 4,123,431, Cl. 260-292.000.

Sziklas, Edward A., to United Technologies Corporation. Stable resonators for radial flow lasers. 4,123,150, Cl. 350-294.000.

Szwarc, Anthony F.: *See—*
Chace, Howard E.; and Szwarc, Anthony F., 4,123,163, Cl. 356-124.000.

Szydlo, Nicolas: *See—*
Poiriet, Raymond; and Szydlo, Nicolas, 4,123,687, Cl. 313-484.000.

Tabata, Norikazu: *See—*
Yamamura, Takashi; Tabata, Norikazu; and Yamamoto, Yoshihiko, 4,123,664, Cl. 250-536.000.

Tabeta, Yataro: *See—*
Katayama, Masao; and Tabeta, Yataro, 4,123,426, Cl. 260-112.00R.

Tachibana, Kyozaburo: *See—*
Iwasaki, Tetsuji; Miyamoto, Norioki; Sugimura, Yukio; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,123,254, Cl. 71-98.000.

Taggart, George W.: *See—*
Bond, Desmond H.; Taggart, George W.; and Jaeger, Kurt S., 4,123,220, Cl. 431-353.000.

Taguchi, Kazunori. Sound absorbing and diffusing unit, an acoustic screen and/or a partition. 4,122,915, Cl. 181-284.000.

Taguchi, Makio: *See—*
Fujii, Yoshihiro; Moriyama, Taketoshi; Shigematsu, Yoshikatsu; Takeuchi, Shinjiro; Kikuchi, Toshiro; Taguchi, Makio; and Ichioka, Satoshi, 4,123,707, Cl. 324-208.000.

Takahara, Kenji: *See—*
Tanaka, Tsutomu; Nakamura, Yoshio; Asahi, Koji; Shiraishi, Tadayoshi; and Takahara, Kenji, 4,123,329, Cl. 195-28.00R.

Takahashi, Jiro; and Miyamoto, Akihiko, to Konishiroku Photo Industry Co., Ltd. Color diffusion transfer process using benzyl alcohol and derivatives thereof. 4,123,330, Cl. 96-29.00D.

Takahashi, Kentaro; and Urano, Shigeru, to Nippon Piston Ring Co., Ltd. Method of producing ferrous sintered alloy of improved wear resistance. 4,123,265, Cl. 75-211.000.

Takahashi, Tohru, to Hope Co., Ltd. Ski boot toe binding. 4,123,084, Cl. 280-630.000.

Takano, Yuuichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation apparatus for an internal combustion engine. 4,122,812, Cl. 123-119.00A.

Takaoki, Kiyoshi: *See—*
Ajima, Takashi; Takaoki, Kiyoshi; and Yonezawa, Toshio, 4,123,564, Cl. 427-85.000.

Takasaki, Yoshitaka: *See—*
Imoto, Katsuyuki; Takasaki, Yoshitaka; and Sumi, Masao, 4,123,242, Cl. 65-11.00W.

Takayama, Chiyozo: *See—*
Kameda, Nobuyuki; Hisada, Yoshio; Takayama, Chiyozo; Kato, Toshiro; and Fujinami, Akira, 4,123,549, Cl. 424-274.000.

Takeda, Toshio: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 4,122,743, Cl. 84-1.240.

Takemoto, Ichiki: *See—*
Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, 4,123,256, Cl. 71-105.000.

Takeno, Tsuneyuki: *See—*
Iwasaki, Tetsuji; Miyamoto, Norioki; Sugimura, Yukio; Tachibana, Kyozaburo; and Takeno, Tsuneyuki, 4,123,254, Cl. 71-98.000.

Takeuchi, Koji; and Inagaki, Syotaro, to Minolta Camera Kabushiki Kaisha. Toner dispensing device having reciprocating dispensing plate and agitator. 4,122,981, Cl. 222-231.000.

Takeuchi, Shinjiro: *See—*
Fujii, Yoshihiro; Moriyama, Taketoshi; Shigematsu, Yoshikatsu; Takeuchi, Shinjiro; Kikuchi, Toshiro; Taguchi, Makio; and Ichioka, Satoshi, 4,123,707, Cl. 324-208.000.

Takigawa, Hiroyoshi; Watanabe, Shigeo; Aoki, Shigeta; and Ogawa, Hiroshi, to Bridgestone Tire Company Limited. Heavy duty pneumatic radial tire. 4,122,879, Cl. 152-209.00R.

Tamazina, Valentina Nikolaevna: *See—*
Kononenko, Viktor Evmenievich; Tamazina, Valentina Nikolaevna; and Ozerova, Alla Ivanovna, 4,123,568, Cl. 427-126.000.

Tambor, Ronald, to Singer Company, The. Autocollimating assembly for the self-calibration of a stellar navigational system. 4,123,164, Cl. 356-152.000.

Tammen, Heinrich: *See—*
Kramann, Bernhard; and Tammen, Heinrich, 4,122,591, Cl. 29-157.00R.

Tanaka, Mamoru, to Bridgestone Tire Company Limited. Leakage preventive mechanism for flexible hoses. 4,123,088, Cl. 285-14.000.

Tanaka, Taro: *See—*
Noguchi, Masaaki; Bunda, Tsuchio; and Tanaka, Taro, 4,122,802, Cl. 123-3.000.

Tanaka, Tsutomu; Nakamura, Yoshio; Asahi, Koji; Shiraishi, Tadayoshi; and Takahara, Kenji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for producing L-lysine by fermentation. 4,123,329, Cl. 195-28.00R.

Tanaka, Yoshio: *See—*
Fukuoka, Hiroshi; Kameyama, Teruhiko; Tanaka, Yoshio; Suzuki, Hideyo; and Imai, Kimiaki, 4,123,257, Cl. 75-40.000.

Tang, Man-Chung, to Dyckerhoff & Widmann Aktiengesellschaft. Stage construction of an elevated box girder and roadway structure. 4,123,485, Cl. 264-33.000.

Taniguchi, Yoshio: *See—*
Hirabayashi, Masaya; Kawahara, Haruyuki; and Taniguchi, Yoshio, 4,122,605, Cl. 32-10.00A.

Tanimoto, Akira; Katoh, Sanao; and Yoshida, Yukihiro, to Sharp Kabushiki Kaisha. Programmable stitch pattern forming control in an electronic sewing machine. 4,122,786, Cl. 112-158.00E.

Tardy, Maurice; and Paulet, Jean, to Bennes Marrel. Selective and proportional hydraulic remote control device, in particular for handling and public work gears. 4,122,864, Cl. 137-625.600.

Tasaki, Yoshio; Nakayama, Noboru; and Kajihara, Hiroshi, to Agency of Industrial Science & Technology. Portable frictional welding device. 4,122,990, Cl. 228-2.000.

Tassin de Montaigu, Rene C. A. Helicopters with coaxial rotors, of convertible type in particular. 4,123,018, Cl. 244-17.230.

Tauscher, Manfred: *See—*
Credner, Karl; Brenner, Gunter; Tauscher, Manfred; and Jozic, Ljerka, 4,123,534, Cl. 424-253.000.

Tavernier, Bernard H.: *See—*
Gilliams, Yvan K.; De Volder, Noel J.; De Winter, Walter F.; and Tavernier, Bernard H., 4,123,374, Cl. 252-62.10L.

Taylor, David W.: *See—*
Kohler, Dale M.; Dahlstrom, Norris A.; and Taylor, David W., 4,123,298, Cl. 148-111.000.

Taylor, Phillip A.: *See—*
Perrington, Kenneth J.; Taylor, Phillip A.; and Vogelgesang, Peter J., 4,123,309, Cl. 156-234.000.
Perrington, Kenneth J.; Taylor, Phillip A.; and Vogelgesang, Peter J., 4,123,578, Cl. 428-206.000.

Technology Development Corporation: *See—*
MacLeod, Norman C., 4,123,622, Cl. 179-1.0UW.

Tecumseh Products Company: *See—*
Jacoby, Thomas A., 4,123,678, Cl. 310-217.000.

Tedder, Paul M., to United States of America, Army. Dynamic clamp circuits. 4,122,776, Cl. 102-214.000.

Tedford, Fred. Disposable undergarments. 4,122,552, Cl. 2-78.00R.

Teitei, Tsutomu: *See—*
Sasse, Wolfgang H. F.; and Teitei, Tsutomu, 4,123,219, Cl. 432-1.000.

Tektronix, Inc.: *See—*
Butler, Marlow Dole, 4,123,129, Cl. 312-257.00R.
Olson, Ronald Arthur, 4,123,705, Cl. 324-121.00R.

Teledyne Industries, Inc.: *See—*
Hopf, Werner G., 4,122,607, Cl. 33-174.00L.
Hopf, Werner G., 4,122,608, Cl. 33-174.00L.

Templeton, Charles C.: *See—*
Scheuerman, Ronald F.; Richardson, Edwin A.; and Templeton, Charles C., 4,122,896, Cl. 166-250.000.

Terroy, Michel-Claude: *See—*
Evrard, Paul; and Terroy, Michel-Claude, 4,123,494, Cl. 264-258.000.

Terry, John B.: *See—*
Gagnier, Real; Bourne, John B.; and Terry, John B., 4,123,624, Cl. 179-15.0AT.

Terry, Ronald E.: *See—*
Sitton, Donald M.; and Terry, Ronald E., 4,122,895, Cl. 166-252.000.

Teschner, Horst, to Ingenium Ingenieurgesellschaft fur Mehrzweckbauten, Industrieanlagen und Gelandenutzung mbH Bau-Kommanditgesellschaft. Arrangement for encasing steel concrete ceilings provided with trusses. 4,123,032, Cl. 249-29.000.

Teter, Edward C., to Quaker Oats Company, The. Toy sidewalk mechanism. 4,122,727, Cl. 74-56.000.

Texaco Inc.: *See—*
Brown, Winthrop K.; Bridges, James R.; and Savage, Kerry D., 4,122,709, Cl. 73-136.00A.

Texas Instruments Incorporated: *See—*
Boulanger, Henry J.; and Rizzo, Salvatore P., 4,123,627, Cl. 200-5.00A.
Dean, Lura C., Jr.; Boswell, Gary T.; Winkelman, Wayne; and Little, Frank S., 4,123,795, Cl. 364-200.000.

Textron Inc.: *See—*
Runkel, Manfred A.; and Licha, Joseph, 4,122,759, Cl. 92-168.000.

Tezel, Jirayr. Cutting tool. 4,122,855, Cl. 128-310.000.

Thayer, Orla E. Piano hand truck. 4,122,958, Cl. 214-38.0CC.

Theodore M. Smith Trust: *See—*
Smith, Theodore M., 4,122,928, Cl. 192-56.00R.

Thermo Electron Corporation: *See—*
Hoult, David P., 4,123,322, Cl. 162-352.000.

Thomas, David F., Jr.; and Williams, Leon A., Jr., to United States of America, National Aeronautics and Space Administration. Fluid velocity measuring device. 4,122,712, Cl. 73-189.000.

Thomassen, Ivar P., to O'Brien Corporation, The. Curing agent for water-based epoxy resins. 4,123,402, Cl. 260-29.2EP.

Thompson, Harold R.: *See—*
Guimond, Ronald N.; and Thompson, Harold R., 4,122,978, Cl. 222-189.000.

Thompson, Jack W.: *See—*
Kellum, Gene E.; and Thompson, Jack W., 4,123,601, Cl. 526-79.000.

Thompson, Robert B., to United States of America, National Aeronautics and Space Administration. Length mode piezoelectric ultrasonic transducer for inspection of solid objects. 4,122,725, Cl. 73-632.000.

Thompson, Roger L., to American Air Filter Company, Inc. Air conditioning system. 4,122,893, Cl. 165-16.000.

Thomson-CSF: *See—*
Ploix, Jean Luc, 4,123,346, Cl. 204-299.00R.
Poirier, Raymond; and Szydlo, Nicolas, 4,123,687, Cl. 313-484.000.
Poirier, Raymond, 4,123,733, Cl. 333-70.00T.

Thurston, Kelly W.: *See—*
Kingsbury, William L.; Thurston, Kelly W.; and Chapman, Harry L., 4,122,804, Cl. 123-32.0ST.
Kingsbury, William L.; and Thurston, Kelly W., 4,122,805, Cl. 123-32.0ST.

Thyssen Niederrhein: *See—*
Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, 4,123,258, Cl. 75-58.000.

Timko, Michael P.; and Brokaw, Adrian P., to Analog Devices, Incorporated. Integrated circuit two terminal temperature transducer. 4,123,698, Cl. 323-1.000.

Titan Proform Company Limited: *See—*
Mills, Peter M., 4,123,112, Cl. 301-35.0BJ.

Titus, Hans-Joachim. Mixer. 4,123,174, Cl. 366-102.000.

Tokumitsu, Shinichi: *See—*
Kyo, Kayomon; Asai, Yasuhiko; and Tokumitsu, Shinichi, 4,123,420, Cl. 528-127.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ichiki, Tadaharu; Shiho, Eiji; and Kitagawa, Koji, 4,123,325, Cl. 176-38.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Aihara, Mitsuo; and Ogawa, Hisaharu, 4,123,671, Cl. 307-270.000.
Ajima, Takashi; Takaoki, Kiyoshi; and Yonezawa, Toshio, 4,123,564, Cl. 427-85.000.
Horiike, Yasuhiro, 4,123,663, Cl. 250-531.000.
Matsumoto, Yoshihiro, 4,123,794, Cl. 364-101.000.
Shimizu, Syogo; Ochiai, Toshihiko; and Sakai, Masato, 4,123,199, Cl. 416-244.00A.
Sugawara, Tsutomu, 4,123,723, Cl. 330-311.000.
Sumitomo, Yasusuke; and Ohashi, Yoshie, 4,123,565, Cl. 427-88.000.
Uchida, Yukimasa, 4,123,771, Cl. 357-23.000.

Tolnai, Julius L., to Price-Pfister Brass Mfg. Co. Lever mechanism for a mixing valve. 4,122,726, Cl. 74-21.000.

Tominaga, Kenji: *See—*
Sugisaki, Toshihiko; Horiuchi, Tetsuo; Ogasawara, Hideo; Yamanari, Shozo; and Tominaga, Kenji, 4,123,327, Cl. 176-76.000.

Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with glide. 4,122,743, Cl. 84-1.240.

Tomita, Satoru; Ohori, Tamio; and Karasawa, Shuichi, to Ricoh Company, Ltd. Improved electrostatic head with toner-repelling electrode. 4,123,762, Cl. 346-155.000.

Tomizawa, Choji: *See—*
Oyamada, Takeo; Satoh, Kazuhisa; Tomizawa, Choji; and Ishihara, Takamasa, 4,123,405, Cl. 260-29.60R.

Tommasini, Raffaele: *See—*
Melloni, Piero; Della Torre, Arturo; Lauria, Francesco; Passerini, Norina; Rossi, Alessandro; and Tommasini, Raffaele, 4,123,527, Cl. 424-244.000.

Tooley, Jack R., to Acrow (Engineers) Limited. Apparatus for use in buildings. 4,122,645, Cl. 52-648.000.

Toppan Printing Co., Ltd.: *See—*
Kato, Masahiko; Katogi, Hisao; and Seki, Ikuo, 4,123,171, Cl. 356-175.000.

Toray Industries, Inc.: *See—*
Morioka, Atsumi; and Nakashima, Tamotsu, 4,122,658, Cl. 57-140.00R.

Torkildsen, Robert A.: *See—*
LaConti, Anthony B.; Torkildsen, Robert A.; and Jones, Robert C., 4,123,700, Cl. 324-29.000.

Torok, Ernest J.: *See—*
Fleming, David L.; Johansen, Thomas R.; and Torok, Ernest J., 4,123,142, Cl. 350-162.0SF.

Torrington Company, The: *See—*
Gabrielson, Alan L.; and Magazian, Harry, 4,123,122, Cl. 308-238.000.
Hickson, James P., 4,122,788, Cl. 112-222.000.

Towmotor Corporation: *See—*
Palmer, Norman H. G.; and Wiblin, Wayne T., 4,123,740, Cl. 338-67.000.
Pilarczyk, Charles E., 4,122,728, Cl. 74-103.000.

Townsend, Leroy B.; Lewis, Arthur F.; and Roti Roti, Linda W., to United States of America, Health, Education and Welfare. Synthesis of 6-amino-4-methyl-8-(β-D-ribofuranosyl)pyrrolo[4,3,2-de]-pyrimido[4,5-C]pyridazine-5'-phosphate as a novel compound and its utility against L-1210 mouse leukemia. 4,123,524, Cl. 424-180.000.

Townsend, Rodney P.: *See—*
Jones, Eric; and Townsend, Rodney P., 4,123,225, Cl. 422-98.000.

Toyo Jozo Company, Ltd.: *See—*
Morishita, Masataka; Fukushima, Mitsuru; Sasagawa, Tutomu; Inaba, Yoshihito; Yokokawa, Yasuo; Araragi, Satoshi; Yoshida, Narumi; and Uchiyama, Hachiro, 4,123,381, Cl. 252-316.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Mabuchi, Shunsuke; Tsuzuki, Kenji; and Kumoi, Sadakatsu, 4,123,616, Cl. 568-861.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Asano, Hiroaki; and Tsujiuchi, Toshio, 4,122,635, Cl. 51-165.710.
Nishimura, Hideo; and Niwa, Kuniyuki, 4,122,634, Cl. 51-165.710.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hattori, Kyo, 4,122,818, Cl. 123-196.0AB.
Noguchi, Masaaki; and Bunda, Tsuchio, 4,123,391, Cl. 252-466.0PT.
Sato, Akira, 4,123,069, Cl. 277-70.000.
Takano, Yuuichi, 4,122,812, Cl. 123-119.00A.

Traffic Engineers Supply Corporation (TESCO): *See—*
McReynolds, Marshall B.; and VanTilbury, Jack D., 4,122,994, Cl. 235-89.00R.

Transcience Industries, Inc.: *See—*
Davis, Manfred, 4,123,725, Cl. 331-8.000.

Traxson, Larry L.: *See—*
Bendure, Harry; and Traxson, Larry L., 4,122,731, Cl. 74-674.000.

Tribble, Ronald L.; and Stagg, Charles M., to Philips Roxane, Inc. Injectable contraceptive vaccine and method. 4,123,519, Cl. 424-88.000.

Trondle, Robert: *See—*
Link, Christoph; and Trondle, Robert, 4,123,321, Cl. 162-272.000.

TRW Inc.: *See—*
Matlock, Wallace M., 4,122,817, Cl. 123-188.0AA.

Tsacoyannis, Hedwig R. Educational game. 4,123,051, Cl. 273-1.00R.

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Fisher, Peter M.; and Matsumiya, James A., 4,122,882, Cl. 152-381.2WC.

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Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.

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Tsuchiya, Shigeru: *See—*
Kawada, Seigo; Suda, Yoshitaka; Tsuchiya, Shigeru; Ohta, Nobuya; Muramatsu, Norimichi; and Nishio, Kazuo, 4,123,554, Cl. 424-324.000.

Tsuji, Masuo, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece digital display drive circuit. 4,122,661, Cl. 58-23.00R.

Tsujiuchi, Toshio: *See—*
Asano, Hiroaki; and Tsujiuchi, Toshio, 4,122,635, Cl. 51-165.710.

Tsuruta, Eiji: *See—*
Hosaka, Akio; and Tsuruta, Eiji, 4,122,667, Cl. 60-39.09R.
Hosaka, Akio; and Tsuruta, Eiji, 4,123,721, Cl. 330-69.000.

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Inoue, Sho; Ohata, Katsuya; Tsutsui, Satoshi; and Nomura, Tatsuo, 4,123,541, Cl. 424-272.000.

Tsuzuki, Kenji: *See—*
Mabuchi, Shunsuke; Tsuzuki, Kenji; and Kumoi, Sadakatsu, 4,123,606, Cl. 568-861.000.

Tuggle, Richard H., Jr.: *See—*
Johnston, James D.; Tuggle, Richard H., Jr.; Burch, John L.; and Clark, Keith H., 4,122,991, Cl. 228-13.000.

Tull, Roger J.; and Melillo, David G., to Merck & Co., Inc. 2-Methyl-5-fluoro-indanol-3-acetic acid. 4,123,457, Cl. 562-466.000.

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McConnell, David P.; and Tully, Louis E., 4,122,757, Cl. 91-506.000.

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Turner, Frank W. Peck-drilling apparatus for quill feed units. 4,123,187, Cl. 408-17.000.

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Hale, Jacques A. G.; and Turner-Smith, Alan Robert, 4,123,695, Cl. 318-561.000.

Tyco Crystal Products, Inc.: *See—*
Kemper, Daryl M.; and Dick, Louis A., 4,123,680, Cl. 310-320.000.

Tyner, Clifford Alan; and Westbrook, Dean Lee. Apparatus for straightening the leads of dual in-line packages. 4,122,874, Cl. 140-147.000.

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Uchida, Yukimasa, to Tokyo Shibaura Electric Co., Ltd. Nonvolatile semiconductor memory. 4,123,771, Cl. 357-23.000.

Uchiyama, Hachiro: *See—*
Morishita, Masataka; Fukushima, Mitsuru; Sasagawa, Tutomu; Inaba, Yoshihito; Yokokawa, Yasuo; Araragi, Satoshi; Yoshida, Narumi; and Uchiyama, Hachiro, 4,123,381, Cl. 252-316.000.

Uchiyama, Yasuji: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 4,122,743, Cl. 84-1.240.

Uchiyama, Yasushi; and Awamura, Daikichi, to Nippon Jido Seigyo, Ltd. Apparatus for detecting defects in patterns. 4,123,170, Cl. 356-167.000.

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Mitobe, Koichi; and Uehara, Yasuhiko, 4,123,563, Cl. 427-68.000.

Uemura, Michihiko: *See—*
Kanbara, Tohru; Uemura, Michihiko; and Yokoo, Nobuhiro, 4,123,731, Cl. 333-30.00R.

Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, to Ogawa & Co., Ltd. Sublimable insecticidal compositions containing triisopropyl- or tritertiary-butyl-s-trioxane carriers. 4,123,525, Cl. 424-200.000.

Uetrecht, Dale M., to D. H. Baldwin Company. Variable frequency generator for polyphonic electronic music system. 4,122,744, Cl. 84-1.250.

Ukihashi, Hiroshi; Yamabe, Masaaki; and Miyake, Haruhisa, to Asahi Glass Company, Ltd. Terpolymers of tetrafluoroethylene, ethylene and perfluoroalkyl vinyl monomer and process for producing the same. 4,123,602, Cl. 526-206.000.

Ulrich, Henri: *See—*
Lin, Chung-Yuan; Stuber, Fred A.; and Ulrich, Henri, 4,123,466, Cl. 260-645.000.

Umeda, Shoji; and Yoshikawa, Akio, to Yamato Scale Company, Ltd. Series printer. 4,122,770, Cl. 101-93.190.

Umen, Michael J., to McNeil Laboratories, Incorporated. (2-Amino-2-oxoethoxy)acetic acid compounds, compositions and methods. 4,123,538, Cl. 424-267.000.

Unger, Stefan H.: *See—*
Untch, Karl G.; Unger, Stefan H.; and Lewis, Brian, 4,123,550, Cl. 424-275.000.

Union Carbide Corporation: *See—*
Best, Donald C., 4,123,462, Cl. 260-585.00B.
Nowlin, Thomas E.; and Martineau, Ronald A., 4,123,308, Cl. 156-272.000.
Sherman, John D.; and Ross, Ronald J., 4,123,390, Cl. 252-455.00Z.

Union Oil Company of California: *See—*
Hass, Robert H., 4,123,507, Cl. 423-573.00G.

Uniroyal, Inc.: *See—*
Karalis, Victor L., 4,122,574, Cl. 12-142.0RS.

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Benge, Robert J.; and Miller, Cecil H., 4,123,303, Cl. 149-17.000.

United States Borax & Chemical Corporation: *See—*
Shen, Kelvin K.; and Belles, Wayne S., 4,123,251, Cl. 71-88.000.

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Army: *See—*
Brown, David B.; Vickers, Jerry W.; and Pell, Kynric M., 4,123,165, Cl. 356-152.000.
Howell, Thomas H., 4,123,168, Cl. 356-152.000.
Tedder, Paul M., 4,122,776, Cl. 102-214.000.
Energy: *See—*
Capp, John P.; and Bissett, Larry A., 4,122,897, Cl. 166-256.000.
Government: *See—*
Summerton, James E.; and Bartlett, Paul A., 4,123,610, Cl. 536-28.000.
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Townsend, Leroy B.; Lewis, Arthur F.; and Roti Roti, Linda W., 4,123,524, Cl. 424-180.000.
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Selcuk, M. Kudret. Non-tracking solar energy collector system. 4,122,833, Cl. 126-271.000.
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Poradek, Jerry C.; and Collins, Dwight D. Simultaneous treatment of SO_2 containing stack gases and waste water. 4,123,355, Cl. 210-50.000.
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Johnston, James D.; Tuggle, Richard H., Jr.; Burch, John L.; and Clark, Keith H., 4,122,991, Cl. 228-13.000.
Thomas, David F., Jr.; and Williams, Leon A., Jr., 4,122,712, Cl. 73-189.000.
Thompson, Robert B., 4,122,725, Cl. 73-632.000.
Navy: *See—*
Barlow, Michael L., 4,123,681, Cl. 310-322.000.
Berg, Alan, 4,122,927, Cl. 192-48.800.
Daniel, Richard A., 4,123,732, Cl. 333-70.00R.
Jernigan, James L.; Hughes, Richard S.; and Van Devender, Russell R., Jr., 4,123,728, Cl. 331-94.50L.
Lapp, Roger H.; and Schneider, Jacob D., 4,123,757, Cl. 343-766.000.
Lepor, Meyer, 4,122,912, Cl. 181-218.000.
Panlaqui, Clayton E.; and Holt, Lloyd J., 4,122,754, Cl. 89-1.50B.
Paszyc, Aleksy J.; Shiroma, Dallas M.; and Huang, Kwang T., 4,123,697, Cl. 322-2.00A.
U.S. Philips Corporation: *See—*
Bouwhuis, Gijsbertus, 4,123,652, Cl. 250-204.000.
Cramer, Rudy R., 4,123,786, Cl. 360-35.000.
Dragt, Jan C. W., 4,123,146, Cl. 350-285.000.
Hale, Jacques A. G.; and Turner-Smith, Alan Robert, 4,123,695, Cl. 318-561.000.
Hill, Bernhard; Pepperl, Rudiger; and Kruger, Johann, 4,123,147, Cl. 350-285.000.
Janssen, Johannes H. H., 4,123,772, Cl. 357-27.000.
Kasperkovitz, Wolfdietrich G., 4,123,672, Cl. 307-303.000.
Kruger, Johann, 4,123,788, Cl. 360-77.000.
Mahdjuri, Faramarz, 4,122,831, Cl. 126-271.000.
Pearson, Ronald F.; Lacklison, David E.; Scott, George B.; and Palfreeman, John S., 4,123,783, Cl. 358-230.000.
United States Surgical Corporation: *See—*
Josefsen, Turi L. H.; and Veth, George J., 4,123,701, Cl. 324-30.00B.
United Technologies Corporation: *See—*
Chenausky, Peter P.; and Glenn, William H., 4,123,149, Cl. 350-294.000.
Duvall, David S.; and Paulonis, Daniel F., 4,122,992, Cl. 228-176.000.
Mongeon, Robert J., 4,123,651, Cl. 250-203.00R.
Sziklas, Edward A., 4,123,150, Cl. 350-294.000.
Unitika Ltd.: *See—*
Kyo, Kayomon; Asai, Yasuhiko; and Tokumitsu, Shinichi, 4,123,420, Cl. 528-127.000.
Universal Scientific Company: *See—*
Price, Robert; and Eisman, Norman, 4,122,736, Cl. 83-23.000.
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Gates, Bruce C.; Magnotta, Vincent L.; and Schuit, George C. A., 4,123,379, Cl. 252-184.000.
Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; and Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure control device. 4,123,764, Cl. 354-24.000.
Unrau, David G.; Portnoy, Norman A.; and Hartmann, Peter J., to International Telephone and Telegraph Corporation. Flame resistant cellulosic product containing antimony pentoxide and polyvinyl bromide. 4,123,398, Cl. 260-17.4CL.
Untch, Karl G.; Unger, Stefan H.; and Lewis, Brian, to Syntex (U.S.A.) Inc. Bicyclo[3.1.0]hexylethylaminocarbonyl-substituted heteroaryl cardiovascular agents. 4,123,550, Cl. 424-275.000.
UOP Inc.: *See—*
Ryu, Ji-Yong, 4,123,468, Cl. 260-668.00A.
Upjohn Company, The: *See—*
Bundy, Gordon L., 4,123,463, Cl. 260-586.00R.
Hanka, Ladislav J.; and Wiley, Paul F., 4,123,521, Cl. 424-121.000.
Johnson, Roy A., 4,123,441, Cl. 260-345.200.
Lin, Chung-Yuan; Stuber, Fred A.; and Ulrich, Henri, 4,123,466, Cl. 260-645.000.
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Uno, Naoyuki; Shono, Tetsuji; Urano, Fumio; and Kawasaki, Masahiro, 4,123,764, Cl. 354-24.000.
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Urayama, Kiyoshi: *See—*
Yokoyama, Tohei; and Urayama, Kiyoshi, 4,122,715, Cl. 73-228.000.
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Stoy, Artur; and Urbanova, Renata, 4,123,406, Cl. 260-29.6AN.
Valentine, Donald H., Jr., to Hoffmann-La Roche Inc. Chiral tertiary phosphines. 4,123,465, Cl. 260-606.50P.
Valentine, Donald H., Jr.: *See—*
Leimgruber, Willy; and Valentine, Donald H., Jr., 4,123,464, Cl. 260-601.00R.

Van Cauter, Albert: *See—*
Leclercq, Robert; Capouillet, Phileas; and Van Cauter, Albert, 4,123,244, Cl. 65-60.00C.

Vanderveen, John W., to Phillips Petroleum Company. Method employing a mixing device with internal recycle. 4,123,226, Cl. 23-314.000.

Vanderzanden, Allan J.: *See—*
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Van Devender, Russell R., Jr.: *See—*
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Van Gorder, Jack H., to General Motors Corporation. Lip type oil seal. 4,123,068, Cl. 277-27.000.

Van Gossum, Lucien J.: *See—*
Van Paesschen, August J.; and Van Gossum, Lucien J., 4,123,278, Cl. 96-87.00R.

Van Hijfte, Willy H. P.; Vanmarcke, Luc A.; and Niks, Anton, to Compagnie Neerlandaise de l'Azote (Societe Anonyme). Preparation of ureaform. 4,123,570, Cl. 427-222.000.

Vanmarcke, Luc A.: *See—*
Van Hijfte, Willy H. P.; Vanmarcke, Luc A.; and Niks, Anton, 4,123,570, Cl. 427-222.000.

Van Paesschen, August J.; and Van Gossum, Lucien J., to Agfa-Gevaert N.V. Polyester film coated with adhesive polymer composition. 4,123,278, Cl. 96-87.00R.

Van Pool, Joe: *See—*
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Van Poucke, Raphael K.: *See—*
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Van Tighem, Gary P.: *See—*
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VanTilbury, Jack D.: *See—*
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Van Veelen, George F.: *See—*
Monbaliu, Marcel J.; Credner, Hans-Heinrich; Himmelmann, Wolfgang; Meier, Ernst; Benoy, Gaston J.; Van Poucke, Raphael K.; Schranz, Karl-Wilhelm; and Van Veelen, George F., 4,123,281, Cl. 96-100.00R.

Van Vliet, Raymond A., to Weyerhaeuser Company. Fiber mat forming machine. 4,122,582, Cl. 19-65.00R.

van Wageningen, Albertus: *See—*
Altenschopfer, Theodor; and van Wageningen, Albertus, 4,123,375, Cl. 252-99.000.

Van Winkle, Martin J. Replay and protective disc for phonograph record changers. 4,123,063, Cl. 274-1.00R.

Varon, Miquel A.; and Paddock, Paul F., to Sunkist Growers, Inc. Apparatus for applying a label to an object. 4,123,310, Cl. 156-351.000.

Vartiak, Joseph F.; and Wortley, George E., Jr., to Nalco Chemical Company. Aquatic herbicides. 4,123,249, Cl. 71-66.000.

Vary, Eva M.: *See—*
Berghmans, Jacques M. L.; and Vary, Eva M., 4,123,401, Cl. 260-29.60F.

Vass, George S.; and Speidel, Gerald M., to Eastern Company, The. Mine roof support assembly. 4,122,681, Cl. 405-261.000.

Vasvari nee Debreczy, Lelle: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Knoll, Jozsef; Sebestyen, Gyula; and David, Agoston, 4,123,533, Cl. 424-251.000.

Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: *See—*
Puhringer, Othmar, 4,122,888, Cl. 164-82.000.

Verge, John P.; and Jamieson, William B., to Lilly Industries Limited. Phenylpiperazine derivatives. 4,123,529, Cl. 424-250.000.

Vesperman, William C.: *See—*
Sparzak, Walter J.; and Vesperman, William C., 4,123,585, Cl. 428-379.000.

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Josefsen, Turi L. H.; and Veth, George J., 4,123,701, Cl. 324-30.00B.

Vice, Earl C., to Armco Steel Corporation. Dual track transfer system and a transfer car for use therewith. 4,122,779, Cl. 105-199.00R.

Vickers, Jerry W.: *See—*
Brown, David B.; Vickers, Jerry W.; and Pell, Kynric M., 4,123,165, Cl. 356-152.000.

Victor Company of Japan, Limited: *See—*
Honjo, Yoshihiko, 4,123,780, Cl. 358-128.000.

Victoria University of Manchester: *See—*
Kilshaw, James, deceased; and Dervin, Edward, 4,123,768, Cl. 354-292.000.

Viero, Laurence; Cannon, John; Rademaker, George; Swanson, Williard; and Fessett, Kenneth, to Oxequip Health Industries Inc. Gas service unit. 4,123,089, Cl. 285-39.000.

Vig, Satinder K., to American Sterilizer Company. Raise-lower device. 4,123,039, Cl. 254-9.00C.

Vigor, Charles W.: *See—*
Jandeska, William F.; Netherton, Charles F.; and Vigor, Charles W., 4,123,297, Cl. 148-103.000.

Vild, Joseph P.; Cleary, William I.; and Fox, Donald P., to Republic Steel Corporation. Method and apparatus for eddy current inspection of hot test pieces with means to cool the detector and to purge the test path of contaminants. 4,123,708, Cl. 324-224.000.

Vinals, Joaquin: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.

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Virag, Sandor: *See—*
Hermecz, Istvan; Meszaros, Zoltan; Virag, Sandor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; Knoll, Jozsef; Sebestyen, Gyula; and David, Agoston, 4,123,533, Cl. 424-251.000.

Vischer, Peter; and Artzer, Paul J., to Coors Container Company. Method and apparatus for discharging containers from a closed loop container carrier. 4,122,937, Cl. 198-408.000.

Visconti, Gerald, to A. Schild S.A. Wrist watch identification. 4,122,662, Cl. 58-59.000.

Vitek, Hynek: *See—*
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Vitzthum, Otto; and Hubert, Peter, to Studiengesellschaft Kohle mbH. Process for the production of spice extracts. 4,123,559, Cl. 426-312.000.

Vock, Manfred H.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,123,393, Cl. 252-522.000.

Voge, Hervey H.: *See—*
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Vogelgesang, Peter J.: *See—*
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Vogelsberg, William A., to General Motors Corporation. Ignition timing control. 4,122,808, Cl. 123-117.00A.

Vogt, B. Richard, to E. R. Squibb & Sons, Inc. Method for treatment of asthma. 4,123,532, Cl. 424-251.000.

Vogt, Harvey J.: *See—*
Campbell, Ramsey G.; Doane, Elliott P.; Heines, M. Henry; Naworski, Joseph S.; and Vogt, Harvey J., 4,123,467, Cl. 260-659.00A.

Volksen, Willi: *See—*
Rembaum, Alan; and Volksen, Willi, 4,123,396, Cl. 526-24.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Barnert, Konrad; and Stein, Gunter, 4,122,813, Cl. 123-139.0ST.
Grundmann, Edgard, 4,122,756, Cl. 91-180.000.
Leunig, Ernst, 4,122,707, Cl. 73-118.00R.

von Chiari, Bernd: *See—*
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Von Hoene, Donald C.; Chu, Joseph Y. C.; Chen, Inan; and Jones, Robert N., to Xerox Corporation. Electrostatographic photosensitive device comprising hole injecting and hole transport layers. 4,123,269, Cl. 96-1.0PC.

Von Strandtmann, Maximilian: *See—*
Connor, David T.; Young, Patricia A.; and Von Strandtmann, Maximilian, 4,123,536, Cl. 424-258.000.

Vose, Richard W.: *See—*
Clements, Luther D.; Hannan, Michael D.; Hinds, Robert J.; and Vose, Richard W., 4,123,357, Cl. 210-71.000.

Vossos, Peter H., to Nalco Chemical Company. Alkanol amine phosphate for improving electrostatic precipitation of dust particles. 4,123,234, Cl. 55-5.000.

Wagner Electric Corporation: *See—*
Pecota, Walter, 4,123,668, Cl. 307-10.0LS.

Wagner, Erich: *See—*
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Wagner, George M., to Hooker Chemicals & Plastics Corp. Method for imparting flame retardant property to cellulosic containing material. 4,123,573, Cl. 427-324.000.

Wagner, George M., to Hooker Chemicals & Plastics Corp. Process for flame retarding cellulosics. 4,123,574, Cl. 427-341.000.

Walcon Corporation: *See—*
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Walgenbach, David D.: *See—*
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Walker, Darwyn E.: *See—*
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Walker, Frank J. Acoustical speaker device. 4,123,621, Cl. 179-1.00E.

Walker, Keith A. M., to Syntex (U.S.A.) Inc. Derivatives of N-alkyl imidazoles. 4,123,542, Cl. 424-273.00R.

Walker, William G.: *See—*
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Waller, Lyle G.: *See—*
Zauner, John H.; and Waller, Lyle G., 4,123,597, Cl. 429-112.000.

Walter, Alfred, to Alfred Walter AG. Apparatus for testing a forms set for print through quality. 4,122,702, Cl. 73-14.000.

Walter, Lothar: *See—*
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Walton, Edward: *See—*
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Walz, Theo; and Glauser, Fritz, to S I G Schweizerische Industrie-Gesellschaft. Apparatus for toppling conveyed articles. 4,122,938, Cl. 198-411.000.

Wambach, Allen D., to General Electric Company. Reinforced thermoplastic polyester compositions having improved resistance to heat deflection. 4,123,415, Cl. 260-40.00R.

Waninger, Rudolf; and Obrowski, Frank, to Wigo Gottlob Widmann & Soehne GmbH & Co. KG. Household coffee machine with calcification indicator. 4,122,763, Cl. 99-281.000.

Wanner, Karl, to Robert Bosch GmbH. Tool shank and chuck combination for a hammer drill. 4,123,074, Cl. 279-19.500.

Warn Industries, Inc.: *See—*
Kuzarov, Encho J., 4,123,040, Cl. 254-166.000.

Warner, Gregory L.; and Leng, Douglas E., to Dow Chemical Company, The. Continuous process for preparing aqueous polymer microsuspensions. 4,123,403, Cl. 260-29.2EP.

Warner-Lambert Company: *See—*
Behnke, Walter E.; Marsh, William R.; and Haskell, Theodore H., 4,123,609, Cl. 536-27.000.
Connor, David T.; Young, Patricia A.; and Von Strandtmann, Maximilian, 4,123,536, Cl. 424-258.000.

Warning, Klaus; and Mitzlaff, Michael, to Hoechst Aktiengesellschaft. Process for preparing trimeric Δ^1-piperideins and trimeric 1-pyrroline. 4,123,434, Cl. 260-296.00D.

Washburn, William F.: *See—*
Devine, William T.; and Washburn, William F., 4,123,669, Cl. 307-205.000.

Wasserman, David. Wheel supported luggage. 4,122,924, Cl. 190-18.00A.

Watanabe, Katsumi, to Yugen Kaisha Watanabe Kenkyusho. Phonograph for use with record cartridges. 4,123,065, Cl. 274-9.00B.

Watanabe, Shigeo: *See—*
Takigawa, Hiroyoshi; Watanabe, Shigeo; Aoki, Shigeta; and Ogawa, Hiroshi, 4,122,879, Cl. 152-209.00R.

Watanabe, Takeshi; and Kodama, Kenichiro, to Asahi-Dow Limited. Polyvinylidene chloride resin compositions. 4,123,477, Cl. 260-897.00C.

Waters, John R. Toy glider. 4,122,626, Cl. 46-11.000.

Watson, David: *See—*
Stringer, James A.; and Watson, David, 4,123,288, Cl. 106-100.000.

Weber, Bruce H.: *See—*
Gephart, Don A.; and Weber, Bruce H., 4,123,792, Cl. 361-30.000.

Weber, Harry W., Jr., to FMC Corporation. Process for preparing alkyl isocyanates. 4,123,450, Cl. 260-453.00P.

Weber, Robert; Katscher, Erich; and Schabert, Hans-Peter, to Kraftwerk Union Aktiengesellschaft. Nuclear reactor plant. 4,123,323, Cl. 176-30.000.

Wehner, Raymond. Omniphonic microphone and loudspeaker system. 4,122,910, Cl. 181-144.000.

Weiland, Emil, to Messerschmitt-Bolkow-Blohm GmbH. Housing for a mechanical gear arrangement. 4,122,730, Cl. 74-606.00R.

Weisman, Eli. Coin sorting apparatus. 4,122,860, Cl. 133-3.00B.

Weiss, Karl; and Rost, Helmut, to Siemens Aktiengesellschaft. Patient securing device. 4,122,587, Cl. 128-134.000.

Weiss, Martin J.: *See—*
Bernacky, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,123,456, Cl. 562-503.000.

Welchner, Ewald F.: *See—*
Krupey, John; and Welchner, Ewald F., 4,123,343, Cl. 204-180.00G.

Welding Industries of Australia Pty. Ltd.: *See—*
Brougham, William K., 4,123,736, Cl. 336-120.000.

Welker, Gerald H.: *See—*
Miers, Bruce W.; Proksch, Frederick D.; and Welker, Gerald H., 4,122,908, Cl. 180-68.00P.

Wells, William: *See—*
Pearce, Jai K.; and Wells, William, 4,123,042, Cl. 266-44.000.

Welsh, Jay Y., and Sochol, Irving, to Chemetals Corporation. Recovering metal values from marine manganese nodules. 4,123,499, Cl. 423-35.000.

Wendorff, Jochen: *See—*
Klapdar, Wilhelm; Richter, Helmut; Rommerswinkel, Heinrich-Wilhelm; Spetzler, Edgar; and Wendorff, Jochen, 4,123,258, Cl. 75-58.000.

Wenzel, Wolfgang; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Process for the manufacture of plastics containing ester and/or urethane groups. 4,123,423, Cl. 528-71.000.

Wernholm, Olle S. V.: *See—*
Rosander, Staffan B. F. S. J.; Sedlacek, Miroslav; and Wernholm, Olle S. V., 4,123,720, Cl. 328-234.000.

Wesch, Ludwig; Roma, Luis C.; and Pellicer, Carlos F. Fire-retarding epoxy resin material, method for the manufacture thereof and use thereof as coating composition. 4,123,575, Cl. 427-386.000.

Wesch, Ludwig; Roma, Luis C.; and Pellicer, Carlos F. Method of manufacturing a finely granular concentrate of fire-retarding foam-forming solid addition substances for plastics, varnishes, coating compositions, and similar substrates. 4,123,587, Cl. 428-407.000.

Weschenfelder, Otto T.; and Michalik, Horst B., to Koenig & Bauer Aktiengesellschaft. Gear folder. 4,123,048, Cl. 270-77.000.

West, Harold L.: *See—*
Smith, Bob R.; West, Harold L.; Bray, Thomas L.; and Wilder, Robert H., Sr., 4,122,877, Cl. 144-208.00E.

Westbrook, Dean Lee: *See—*
Tyner, Clifford Alan; and Westbrook, Dean Lee, 4,122,874, Cl. 140-147.000.

Western Electric Company, Inc.: *See—*
Sparzak, Walter J.; and Vesperman, William C., 4,123,585, Cl. 428-379.000.

Westin, Per-Olov; and Marklund, Per A., to AB Svenska Godscentraler; and AB Plastkarosser. Dangerous goods shipping container. 4,122,761, Cl. 98-33.00R.

Westinghouse Electric Corp.: *See—*
Anderson, Larry W.; and Franz, James H., Jr., 4,123,693, Cl. 318-376.000.
Bhalla, Ranbir S., 4,123,685, Cl. 313-218.000.
Bolin, Philip C., 4,123,619, Cl. 174-19.000.
Cooper, Glenn D.; and Litz, Donald C., 4,123,676, Cl. 310-52.000.
Cromer, Charles F.; Yoon, Kue H.; and Freeman, Willie B., 4,123,636, Cl. 200-148.00A.
Cushing, George B.; and Kothmann, Richard E., 4,123,618, Cl. 174-11.0BH.
Hopwood, Francis W.; and Staley, Lester K., 4,123,719, Cl. 328-155.000.
Maier, Alfred E.; and Hill, Robert H., 4,123,734, Cl. 335-9.000.
McCaskey, Harold O., Jr., 4,123,579, Cl. 428-264.000.
Rostron, Joseph R., 4,123,635, Cl. 200-148.00F.

Wexler, Howard; and Reiner, Lawrence L., to Mego Corp. Game with multiple choice strategy. 4,123,062, Cl. 273-248.000.

Weyerhaeuser Company: *See—*
Van Vliet, Raymond A., 4,122,582, Cl. 19-65.00R.

Wheldon, Robert J.: *See—*
Menown, Hugh; and Wheldon, Robert J., 4,123,684, Cl. 313-205.000.

Whirlpool Corporation: *See—*
Burke, Harry D., 4,123,643, Cl. 219-10.55R.

White, William R.; and Van Tighem, Gary P., to Occidental Petroleum Corporation. Flotation separation of glass from a mixture of comminuted inorganic materials using hydrocarbon sulfonates. 4,122,950, Cl. 209-12.000.

Whitlock, Leslie A. Underground fire hydrant frame and cover. 4,123,184, Cl. 404-25.000.

Whittaker Corporation: *See—*
Lasher, Edward A., 4,123,404, Cl. 260-29.40R.

Wibau: *See—*
Peleschka, Gerhard; and Nuebling, Friederich, 4,123,205, Cl. 418-127.000.

Wiblin, Wayne T.: *See—*
Palmer, Norman H. G.; and Wiblin, Wayne T., 4,123,740, Cl. 338-67.000.

Wicki, Heinz: *See—*
Holliger, Herbert; and Wicki, Heinz, 4,123,428, Cl. 260-145.00C.

Wiesner, Peter: *See—*
Heim, Ulrich; Leichnitz, Kurt; and Wiesner, Peter, 4,123,227, Cl. 23-232.00R.

Wigo Gottlob Widmann & Soehne GmbH & Co. KG: *See—*
Waninger, Rudolf; and Obrowski, Frank, 4,122,763, Cl. 99-281.000.

Wilczek, Stephen P., to Xerox Corporation. Copy reproduction machine with controller self check system. 4,122,996, Cl. 235-302.300.

Wilder, Robert H., Sr.: *See—*
Smith, Bob R.; West, Harold L.; Bray, Thomas L.; and Wilder, Robert H., Sr., 4,122,877, Cl. 144-208.00E.

Wiley, Paul F.: *See—*
Hanka, Ladislav J.; and Wiley, Paul F., 4,123,521, Cl. 424-121.000.

Wm. A. Nickerson & Co., Ltd.: *See—*
Keller, James R.; and Nickerson, William A., 4,123,315, Cl. 156-560.000.

William Beaumont Hospital: *See—*
Horwitz, Norman H., 4,123,660, Cl. 250-491.000.

Williams, Arthur C. Air-slot spacer clip. 4,122,762, Cl. 98-40.00D.

Williams, Joseph A.: *See—*
Bullock, Frederick C.; Engelhardt, Alvin; Cirincione, Thomas J.; and Williams, Joseph A., 4,123,173, Cl. 356-246.000.

Williams, Leon A., Jr.: *See—*
Thomas, David F., Jr.; and Williams, Leon A., Jr., 4,122,712, Cl. 73-189.000.

Williams, Robert E., to Exxon Production Research Company. Method of removing oil from water. 4,123,354, Cl. 210-40.000.

Williamson, Albert E., to Mobil Oil Corporation. Reducing SO_2 in refinery off gas. 4,123,505, Cl. 423-564.000.

Wilson, Mahlon T. Hydraulic control with feedback for powered machinery. 4,122,678, Cl. 60-571.000.

Wilson, Peter A.: *See—*
Rainer, Norman B.; and Wilson, Peter A., 4,123,592, Cl. 428-532.000.

Wilson, Phillip S.: *See—*
Holub, Fred F.; Scott, Steven W.; and Wilson, Phillip S., 4,123,436, Cl. 260-30.80R.
Mark, Victor; and Wilson, Phillip S., 4,123,413, Cl. 260-32.6NR.

Wine, Charles M., to RCA Corporation. Memory type tuning system with provisions to facilitate setup. 4,123,713, Cl. 325-455.000.

Winkelman, Wayne: *See—*
Dean, Lura C., Jr.; Boswell, Gary T.; Winkelman, Wayne; and Little, Frank S., 4,123,795, Cl. 364-200.000.

Winkworth, David A.: *See—*
Laws, William R.; and Winkworth, David A., 4,122,894, Cl. 165-76.000.

Winnebago Industries, Inc.: *See—*
Anderson, Michael O., 4,122,966, Cl. 220-1.500.

Winslow, John M., to Minnesota Mining and Manufacturing Company. Photothermographic toners. 4,123,282, Cl. 96-114.100.

Winston, Theodore. Solar energy collection panels and energy recovery systems. 4,123,003, Cl. 237-1.00A.

Wirz, Arno, to Heidelberger Druckmaschinen AG. Change-over means for a storage drum for sheet transferral. 4,122,773, Cl. 101-230.000.

Witco Chemical Corporation: *See—*
Cowell, Richard D.; Loewrigkeit, Peter; Rosenblatt, William; and Bluestein, Claire, 4,123,421, Cl. 528-65.000.

Witt, Frank A., to Colite Industries, Inc. Method and apparatus forming three dimensional sign display character. 4,122,616, Cl. 40-596.000.

Witten, John E.: *See—*
Wood, Loren E.; Witten, John E.; and Short, Edward H., III, 4,122,595, Cl. 29-424.000.

Woditsch, Peter: *See—*
Kohler, Klaus; Woditsch, Peter; and Schultz, Karl-Heinz, 4,123,501, Cl. 423-152.000.

Wohlberg, Donald B.: *See—*
Dodds, David E.; Sendyk, Andrzej M.; and Wohlberg, Donald B., 4,123,709, Cl. 325-38.00B.

Wohlers, Herbert C.: *See—*
Sifniades, Stylianos; Tunick, Allen A.; and Wohlers, Herbert C., 4,123,446, Cl. 260-439.00R.

Wolf, Edward D.; and Perkins, Walter E., Jr., to Hughes Aircraft Company. Contrast enhancement of electron beam alignment marks. 4,123,661, Cl. 250-492.00A.

Wolf-Gerate GmbH: *See—*
Joswig, Siegfried, 4,122,784, Cl. 111-3.000.

Wolfson, Leonard G. Hydrophilic contact lens case. 4,122,942, Cl. 206-5.100.

Wollschlager, Dieter: *See—*
Fischer, Stefan; Wollschlager, Dieter; Scharrenbroich, Helmut; and Fischer, Rainer, 4,123,217, Cl. 425-525.000.

Wood, Loren E.; Witten, John E.; and Short, Edward H., III, to Black, Sivalls & Bryson, Inc. Scored rupture disk manufacturing method. 4,122,595, Cl. 29-424.000.

Woodmansee, Wayne E.: *See—*
Geithman, Glenn A.; and Woodmansee, Wayne E., 4,122,724, Cl. 73-588.000.

Woodruff, Richard K., to Refractory Products Co. Heat-insulating fibrous panels. 4,122,644, Cl. 52-787.000.

Woolever, John T.: *See—*
Buchanan, Ronald L.; Woolever, John T.; and Jelenevsky, Alex M., 4,123,440, Cl. 260-326.280.

Wootten, Carl B. Method for prevention of fouling and corrosion utilizing technetium-99. 4,123,338, Cl. 204-147.000.

Worrix, Matthew L.: *See—*
Lott, Donald L.; Schockelt, Guenter G.; and Worrix, Matthew L., 4,123,637, Cl. 200-148.00A.

Wortley, George E., Jr.: *See—*
Vartiak, Joseph F.; and Wortley, George E., Jr., 4,123,249, Cl. 71-66.000.

Wulfing, Johann W.: *See—*
Credner, Karl; Brenner, Gunter; Tauscher, Manfred; and Jozic, Ljerka, 4,123,534, Cl. 424-253.000.

Wurfel, Helmut, to Saarbergwerke Aktiengesellschaft. Process for catalytic hydrogenation of coal. 4,123,348, Cl. 208-10.000.

Wurfel, Helmut, to Saarbergwerke Aktiengesellschaft. Separation of solids containing residues from liquid fractions of a coal hydrogenation process using an expansion engine and a pressure release means. 4,123,349, Cl. 208-10.000.

Wyatt, Kenneth L.; and Ilett, Keith J., to Air Products & Chemicals, Inc. Mechanical aerator. 4,123,482, Cl. 261-91.000.

Wylain, Inc.: *See—*
Ehret, Gordon F.; and Rowley, William N., 4,122,592, Cl. 29-404.000.

Wynne, Peter J., to Lectromelt Corporation. Electric arc furnace. 4,123,617, Cl. 13-10.000.

Wysocki, Edward J.: *See—*
Mac Intyre, Robert W.; Wysocki, Edward J.; Orifice, Philip; and DiTillio, Ralph, 4,123,630, Cl. 200-52.00R.

Xerox Corporation: *See—*
Fisher, Donald J., 4,123,154, Cl. 355-15.000.
Goffe, William L., 4,123,283, Cl. 96-1.0PS.
Von Hoene, Donald C.; Chu, Joseph Y. C.; Chen, Inan; and Jones, Robert N., 4,123,269, Cl. 96-1.0PC.
Wilczek, Stephen P., 4,122,996, Cl. 235-302.300.

Xomed Inc.: *See—*
Haerr, Raymond H., 4,122,857, Cl. 128-348.000.

Yachin, Ami; and Gozhansky, Baruch, to Laser Industries Ltd. Laser beam aligning apparatus. 4,123,143, Cl. 350-171.000.

Yaesu Rehabili Co., Ltd.: *See—*
Tsuchiya, Kazuo; and Ohnishi, Noboru, 4,122,840, Cl. 128-2.00S.

Yamabe, Masaaki: *See—*
Ukihashi, Hiroshi; Yamabe, Masaaki; and Miyake, Haruhisa, 4,123,602, Cl. 526-206.000.

Yamada, Tetsuo: *See—*
Yamakoshi, Noboru; Kaneda, Tsugio; Hatsuoka, Nobuyasu; Shimazu, Shinichi; Fujita, Tatsu; Yamada, Yoshiro; Yamada, Tetsuo; and Mizuta, Atsuo, 4,123,296, Cl. 148-36.000.

Yamada, Yoshiro: *See—*
Yamakoshi, Noboru; Kaneda, Tsugio; Hatsuoka, Nobuyasu; Shimazu, Shinichi; Fujita, Tatsu; Yamada, Yoshiro; Yamada, Tetsuo; and Mizuta, Atsuo, 4,123,296, Cl. 148-36.000.

Yamaguchi, Jousuke: *See—*
Hanyo, Susumu; Yamaguchi, Jousuke; Morishita, Yoshiyuki; and Noguchi, Itoshi, 4,122,697, Cl. 72-128.000.

Yamakoshi, Noboru; Kaneda, Tsugio; Hatsuoka, Nobuyasu; Shimazu, Shinichi; Fujita, Tatsu; Yamada, Yoshiro; Yamada, Tetsuo; and Mizuta, Atsuo, to Kobe Steel, Ltd. High strength steel rod of large gauge. 4,123,296, Cl. 148-36.000.

Yamakoshi, Yasumichi: *See—*
Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; Kimoto, Kyoji; and Masuda, Yoshinori, 4,123,336, Cl. 204-98.000.

Yamamoto, Masao; and Iwanaga, Sumio, to Shionogi & Co., Ltd. Apparatus for detecting flaws in circular tablet. 4,123,352, Cl. 209-546.000.

Yamamoto, Yoshihiko: *See—*
Yamamura, Takashi; Tabata, Norikazu; and Yamamoto, Yoshihiko, 4,123,664, Cl. 250-536.000.

Yamamoto, Yukio, to Yoshida Kogyo K.K. Water-drainable gasket. 4,123,071, Cl. 277-205.000.

Yamamura, Takashi; Tabata, Norikazu; and Yamamoto, Yoshihiko, to Mitsubishi Denki Kabushiki Kaisha. Ozone generating apparatus. 4,123,664, Cl. 250-536.000.

Yamanari, Shozo: *See—*
Sugisaki, Toshihiko; Horiuchi, Tetsuo; Ogasawara, Hideo; Yamanari, Shozo; and Tominaga, Kenji, 4,123,327, Cl. 176-76.000.

Yamane, Hiroyuki: *See—*
Kawamura, Masatada; and Yamane, Hiroyuki, 4,122,797, Cl. 116-137.00A.

Yamashita, Koji: *See—*
Nagata, Koichi; Oda, Takashi; and Yamashita, Koji, 4,123,756, Cl. 343-702.000.

Yamashita, Toshinori, to Nippon Gakki Seizo Kabushiki Kaisha. Lug assembly for anchoring drum heads to drum body. 4,122,747, Cl. 84-411.00R.

Yamato Scale Company, Ltd.: *See—*
Umeda, Shoji; and Yoshikawa, Akio, 4,122,770, Cl. 101-93.190.

Yang, Chao-Yie: *See—*
Radkowsky, Alvin; Chien, Ji-Peng; Yang, Chao-Yie; and Hsieh, Horng-Ming, 4,123,328, Cl. 176-78.000.

Yates, Chester R., to Steadley Company, Inc. Foundation unit having a posturized inner border. 4,122,566, Cl. 5-260.000.

Yazima, Shinkichi: *See—*
Komatsu, Fumito; and Yazima, Shinkichi, 4,123,015, Cl. 242-191.000.

Yeater, Robert P.: *See—*
Heiss, Herbert L.; Yeater, Robert P.; and Carter, Russell P., Jr., 4,123,419, Cl. 260-45.8NZ.

Yeh, Rudolph: *See—*
Holloway, Gale A.; Yeh, Rudolph; and Zagotta, Joseph L., 4,122,868, Cl. 137-625.690.

Yiu, Joseph T.; and Holmes, Roy L., to Hy-Gain De Puerto Rico, Inc. Scanning receiver having priority channel indication in memory. 4,123,717, Cl. 325-470.000.

Yokokawa, Yasuo: *See—*
Morishita, Masataka; Fukushima, Mitsuru; Sasagawa, Tutomu; Inaba, Yoshihito; Yokokawa, Yasuo; Araragi, Satoshi; Yoshida, Narumi; and Uchiyama, Hachiro, 4,123,381, Cl. 252-316.000.

Yokokura, Chiyokatsu: *See—*
Oda, Takaaki; and Yokokura, Chiyokatsu, 4,123,085, Cl. 280-752.000.

Yokoo, Nobuhiro: *See—*
Kanbara, Tohru; Uemura, Michihiko; and Yokoo, Nobuhiro, 4,123,731, Cl. 333-30.00R.

Yokota, Hideo: *See—*
Hosoe, Kazuya; Matsumoto, Seiichi; Yokota, Hideo; Asaeda, Tsuyoshi; Fukushima, Tadahide; Shingu, Tamotsu; Hashimoto, Shigeru; and Iwashita, Tomonori, 4,123,650, Cl. 250-201.000.

Yokoyama, Tohei; and Urayama, Kiyoshi, to Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho. Apparatus for measuring flow rate of powdery and/or granular material. 4,122,715, Cl. 73-228.000.

Yonezawa, Toshio: *See—*
Ajima, Takashi; Takaoki, Kiyoshi; and Yonezawa, Toshio, 4,123,564, Cl. 427-85.000.

Yoon, Kue H.: *See—*
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Yoshida Kogyo K.K.: *See—*
Yamamoto, Yukio, 4,123,071, Cl. 277-205.000.

Yoshida, Narumi: *See—*
Morishita, Masataka; Fukushima, Mitsuru; Sasagawa, Tutomu; Inaba, Yoshihito; Yokokawa, Yasuo; Araragi, Satoshi; Yoshida, Narumi; and Uchiyama, Hachiro, 4,123,381, Cl. 252-316.000.

Yoshida, Ryo; Takemoto, Ichiki; Sumida, Seizo; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. N-(4-substituted benzyloxy)phenyl)-N-methyl-N-methoxyurea. 4,123,256, Cl. 71-105.000.

Yoshida, Takashi: *See—*
Karino, Yukio; Sakaguchi, Shinji; and Yoshida, Takashi, 4,123,275, Cl. 96-77.000.

Yoshida, Yukihiro: *See—*
Tanimoto, Akira; Katoh, Sanao; and Yoshida, Yukihiro, 4,122,786, Cl. 112-158.00E.
Yoshikawa, Akio: *See—*
Umeda, Shoji; and Yoshikawa, Akio, 4,122,770, Cl. 101-93.190.
Yoshikawa, Masazi; and Sawada, Tomoe, to Murata Manufacturing Co., Ltd. Spark plug cap. 4,123,688, Cl. 315-58.000.
Yoshimura, Kazunori: *See—*
Ito, Katsuo; and Yoshimura, Kazunori, 4,123,781, Cl. 358-191.000.
Yoshimura, Shigeru: *See—*
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,123,782, Cl. 358-210.000.
Young, Patricia A.: *See—*
Connor, David T.; Young, Patricia A.; and Von Strandtmann, Maximilian, 4,123,536, Cl. 424-258.000.
Yugen Kaisha Watanabe Kenkyusho: *See—*
Watanabe, Katsumi, 4,123,065, Cl. 274-9.00B.
Yukawa, Osamu: *See—*
Okikawa, Susumu; Yukawa, Osamu; Mikino, Hiroshi; and Nonaka, Yoshio, 4,123,293, Cl. 148-11.50C.
Yukishita, Tuyoshi, to Shiina, Osamu; and Yukishita, Tuyoshi. Spray pipe for use in a pipe line. 4,123,006, Cl. 239-266.000.
Yusa, Hideo: *See—*
Sugimoto, Yoshikazu; Yusa, Hideo; Kato, Yomei; Kamiya, Kunio; and Kikuchi, Makoto, 4,123,356, Cl. 210-67.000.
Zacher, Albert R., Jr.: *See—*
Krippner, Kenneth E.; and Zacher, Albert R., Jr., 4,123,657, Cl. 250-385.000.
Zagotta, Joseph L., to International Harvester Company. Hydraulic valve with open center metering notches. 4,122,867, Cl. 137-625.300.
Zagotta, Joseph L.: *See—*
Holloway, Gale A.; Yeh, Rudolph; and Zagotta, Joseph L., 4,122,868, Cl. 137-625.690.
Zaitsev, Mikhail P.: *See—*
Mash, Dmitry M.; Schedrovitsky, Savely S.; Golovko, Zoya I.; Zaitsev, Mikhail P.; Sorokin, Andrei N.; Belyaeva, Agnia A.; and Kharitonov, Ivan I., 4,123,735, Cl. 336-30.000.
Zanetta, Hugues: *See—*
Michelet, Jacques; and Zanetta, Hugues, 4,123,045, Cl. 266-275.000.
Zauner, John H.; and Waller, Lyle G., to National Union Electric Corporation. Thermal cells. 4,123,597, Cl. 429-112.000.
Zdrojkowski, Ronald J., to Electro-Technics, Inc. Electrode system for a heart rate monitor. 4,122,843, Cl. 128-2.06E.
Zeiss, Carl: *See—*
Aurin, Friedrich, 4,123,151, Cl. 350-301.000.
Zellweger, Ltd.: *See—*
Felix, Ernst, 4,122,657, Cl. 57-81.000.
Zemedelsky nakupni a zasobovaci podnik narodni podnik: *See—*
Rataj, Stanislav; Krch, Karel; Pilousek, Josef; Blazek, Jaroslav; Vitek, Hynek; and Macek, Ladislav, 4,123,114, Cl. 302-53.000.
Zengel, Hans-Georg; and Bergfeld, Manfred, to Akzona Incorporated. Benzene-tricarboxylic acid-(1,3,5)-tri-N-chloramide and process for the preparation thereof. 4,123,461, Cl. 260-558.00A.
Zinsstag, Christoph: *See—*
Jackson, Barry; and Zinsstag, Christoph, 4,123,460, Cl. 260-544.00D.
Zipay, Albert J.; and Gorzegno, Walter P., to Foster Wheeler Energy Corporation. Low pressure drop girth baffle steam separator. 4,123,237, Cl. 55-205.000.
Zlafop pri BAN: *See—*
Malinovski, Yordan P.; Mednikarov, Borislav D.; and Assa, Jakob J., 4,123,280, Cl. 96-94.0BF.
Zubricki, Theodore. Water sampling bucket. 4,122,721, Cl. 73-354.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 31ST DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aron, Erwin, to Technical Processing, Inc. Novel processing aids for natural and synthetic rubber compounds. Re. 29,821, Cl. 260-23.70M.
Bone, Arnold R., to Dennison Manufacturing Company. Fastener attachment system needle constructions. Re. 29,819, Cl. 227-67.000.
Dennison Manufacturing Company: *See—*
Bone, Arnold R., Re. 29,819, Cl. 227-67.000.
Donohue, James M.: *See—*
Gerbasi, Dennis P.; and Donohue, James M., Re. 29,818, Cl. 118-652.000.
Gerbasi, Dennis P.; and Donohue, James M., to Xerox Corporation. Toner-reclaiming system. Re. 29,818, Cl. 118-652.000.
IEC-Holden Ltd.: *See—*
Winsor, Robert B.; and Thomson, George, Re. 29,816, Cl. 16-143.000.
Konicek, Jiri K., to Perstorp, AB. Method for the production of material for printed circuits. Re. 29,820, Cl. 156-630.000.
Lieb, Nathaniel H.; and Wallace, Richard A., to Star Dental Manufacturing Co. Inc. Dental pin. Re. 29,817, Cl. 32-15.000.
Perstorp, AB: *See—*
Konicek, Jiri K., Re. 29,820, Cl. 156-630.000.
Star Dental Manufacturing Co. Inc.: *See—*
Lieb, Nathaniel H.; and Wallace, Richard A., Re. 29,817, Cl. 32-15.000.
Technical Processing, Inc.: *See—*
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51 4,123,231
72 4,123,232

CLASS 46

11 4,122,626
92 4,122,627
135 R 4,122,628

CLASS 48

180 C 4,123,233

CLASS 49

357 4,122,629
386 4,122,630
394 4,122,631
470 4,122,632
501 4,122,633

CLASS 51

165.71 4,122,634
4,122,635
298 R 4,122,636

CLASS 52

3 4,122,637
70 4,122,638
90 4,122,639
248 4,122,640
403 4,122,641
511 4,122,642
520 4,122,643
648 4,122,645
4,122,646
695 4,122,647
749 4,122,648
787 4,122,644

CLASS 53

306 4,122,649
389 4,122,650
390 4,122,651

CLASS 55

5 4,123,234
85 4,123,235
197 4,123,236
205 4,123,237
226 4,123,238
379 4,123,239
385 C 4,123,240
442 4,123,241

CLASS 56

11.3 4,122,652

CLASS 57

34 R 4,122,653
54 4,122,654
58.89 4,122,655
58.91 4,122,656
81 4,122,657
140 R 4,122,658

CLASS 58

7 4,122,659
16.5 4,122,660
23 R 4,122,661
59 4,122,662
74 4,122,663
88 B 4,122,664
121 R 4,122,665

CLASS 59

80 4,122,666

CLASS 60

39.09 R 4,122,667
39.16 R 4,122,668
39.65 4,122,670
4,122,674
218 4,122,671
226 R 4,122,672
274 4,122,673
398 4,122,675
4,122,676
427 4,122,677
571 4,122,678
599 4,122,679
649 4,122,680

CLASS 62

54 4,122,684
80 4,122,685
81 4,122,686
156 4,122,687
196 R 4,122,688

CLASS 64

15 B 4,122,689

CLASS 65

11 W 4,123,242
16 4,123,243
60 C 4,123,244
104 4,123,245
4,123,246
141 4,123,247

CLASS 66

14 4,122,690

CLASS 68

5 E 4,122,691

CLASS 69

30 4,122,692

CLASS 70

56 4,122,693
406 4,122,694
417 4,122,695

CLASS 71

4 4,123,248
66 4,123,249
78 4,123,250
88 4,123,251
92 4,123,252
93 4,123,253
98 4,123,254
103 4,123,255
105 4,123,256

CLASS 72

52 4,122,696
128 4,122,697
286 4,122,698
325 4,122,699
342 4,122,700
354 4,122,701

CLASS 73

14 4,122,702
37.7 4,122,703
115 4,122,706
118 R 4,122,707
136 A 4,122,708
4,122,709
178 R 4,122,710
184 4,122,711
189 4,122,712
194 A 4,122,713
194 EM 4,122,714
228 4,122,715
231 R 4,122,716
4,122,717
304 C 4,122,718
342 4,122,719
346 4,122,720
354 4,122,721
362 AR 4,122,722
579 4,122,723
588 4,122,724
632 4,122,725
794 4,122,705
822 4,122,704

CLASS 74

21 4,122,726
56 4,122,727
103 4,122,728
128 4,122,729
606 R 4,122,730
674 4,122,731
863 4,122,732

CLASS 75

40 4,123,257
58 4,123,258
60 4,123,259
117 4,123,260
125 4,123,261
165 4,123,262
172 R 4,123,263
211 4,123,264
4,123,265
244 4,123,266

CLASS 81

9.3 4,122,733

CLASS 82

1 C 4,122,734
2.7 4,122,735

CLASS 83

23 4,122,736
268 4,122,737
314 4,122,738
421 4,122,739
646 4,122,740
834 4,122,741

CLASS 84

1.11 4,122,742
1.24 4,122,743
1.25 4,122,744
267 4,122,745
322 4,122,746
411 A 4,122,748
411 R 4,122,747
419 4,122,749
421 4,122,750
454 4,122,751

CLASS 85

30 4,122,752
74 4,122,753

CLASS 89

1.5 B 4,122,754

CLASS 90

11 A 4,122,755

CLASS 91

180 4,122,756
506 4,122,757

CLASS 92

23 4,122,758
168 4,122,759

CLASS 93

36 R 4,122,760

CLASS 96

1 PC 4,123,267
4,123,268
4,123,269
1 PS 4,123,283
1.5 R 4,123,270
1.8 4,123,271
29 D 4,123,330
35.1 4,123,272
66 T 4,123,273
4,123,274
77 4,123,275
85 4,123,277
87 R 4,123,278
91 D 4,123,279
91 R 4,123,276
94 BF 4,123,280
100 R 4,123,281
114.1 4,123,282

CLASS 98

33 R 4,122,761
40 D 4,122,762

CLASS 99

281 4,122,763
483 4,122,764
551 4,122,765
640 4,122,766

CLASS 100

35 4,122,767

CLASS 101

39 4,122,768
93.18 4,122,769
93.19 4,122,770
123 4,122,771
218 4,122,772
230 4,122,773
415.1 4,122,774

CLASS 102

8 4,122,775
214 4,122,776

CLASS 104

89 4,122,777
172 S 4,122,778

CLASS 105

199 R 4,122,779

CLASS 106

40 R 4,123,284
4,123,285
44 4,123,286
99 4,123,287
100 4,123,288

CLASS 108

25 4,122,780
101 4,122,781
111 4,122,782

CLASS 109

3 4,122,783

CLASS 111

4,122,784

CLASS 112

121.15 4,122,785
158 E 4,122,786
170 4,122,787
222 4,122,788
256 4,122,789

CLASS 113

120 R 4,122,790
121 C 4,122,791

CLASS 114

103 4,122,792
106 4,122,793
210 4,122,794

CLASS 116

63 R 4,122,795
132 R 4,122,796
137 A 4,122,797

CLASS 118

50 4,122,798
207 4,122,799
652 Re.29,818

CLASS 119

5 4,122,800

CLASS 122

20 B 4,122,801

CLASS 123

3 4,122,802
25 P 4,122,803
32 ST 4,122,804
4,122,805
103 R 4,122,806
117 A 4,122,808
117 R 4,122,807
119 A 4,122,810
4,122,812
119 EC 4,122,809
4,122,811
139 ST 4,122,813
148 DC 4,122,816
148 E 4,122,814
4,122,815
188 AA 4,122,817
196 AB 4,122,818
198 D 4,122,819
198 E 4,122,820
200 4,122,669

CLASS 124

23 R 4,122,821
54 4,122,822

CLASS 126

117 4,122,823
121 4,122,824
4,122,825
208 4,122,826
270 4,122,827
4,122,828
271 4,122,829
4,122,830
4,122,831
4,122,832
4,122,833
299 D 4,122,834
4,122,835

CLASS 128

1.1 4,122,836
2 S 4,122,837
4,122,838
4,122,840
2 Z 4,122,841
2.06 E 4,122,843
2.08 4,122,839
4,122,842
20 4,122,844
66 4,122,845
4,122,846
132 D 4,122,848
132 R 4,122,847
134 4,122,587
158 4,122,849
216 4,122,850
295 4,122,851
303 R 4,122,852
303.1 4,122,853
303.13 4,122,854
310 4,122,855
311 4,122,856
348 4,122,857
4,122,858

CLASS 131

84 B 4,122,859

CLASS 133

3 B 4,122,860

CLASS 134

109 4,122,861
134 4,123,289

CLASS 137

437 4,122,862
557 4,122,863
596.13 4,122,865
625.27 4,122,866
625.3 4,122,867
625.6 4,122,864
625.69 4,122,868

CLASS 138

93 4,122,869
109 4,122,870

CLASS 139

11 4,122,871
4,122,872
110 4,122,873

CLASS 140

147 4,122,874

CLASS 141

11 4,122,875
150 4,122,876

CLASS 144

208 E 4,122,877
316 4,122,878

CLASS 148

6.2 4,123,290
6.35 4,123,291
4,123,292
11.5 C 4,123,293
13.1 4,123,294
33 4,123,295
36 4,123,296
103 4,123,297
111 4,123,298
4,123,299
153 4,123,301
171 4,123,302
187 4,123,300

CLASS 149

17 4,123,303

CLASS 152

209 R 4,122,879
216 4,122,880
4,122,881
381.2 WC 4,122,882

CLASS 156

48 4,123,304
71 4,123,305
96 4,123,306
172 4,123,307
234 4,123,309
272 4,123,308
351 4,123,310
443 4,123,311
466 4,123,312
498 4,123,313
505 4,123,314
560 4,123,315
630 Re.29,820
643 4,123,316

CLASS 157

1.17 4,122,883

CLASS 160

168 R 4,122,884
176 R 4,122,885
269 4,122,886
354 4,122,887

CLASS 162

17 4,123,317
19 4,123,318
158 4,123,319
199 4,123,320
272 4,123,321
352 4,123,322

CLASS 164

82 4,122,888
87 4,122,889
444 4,122,890

CLASS 165

9 4,122,891
12 4,122,892
16 4,122,893
76 4,122,894

CLASS 166

250 4,122,896
252 4,122,895
256 4,122,897
297 4,122,899
325 4,122,898

CLASS 168

12 4,122,900

CLASS 171

61 4,122,901

CLASS 172

41 4,122,902
781 4,122,903

CLASS 173

15 4,122,904

CLASS 174

11 BH 4,123,618
19 4,123,619

CLASS 175

396 4,122,905

CLASS 176

30 4,123,323
37 4,123,324
38 4,123,325
68 4,123,326
76 4,123,327
78 4,123,328

CLASS 177

213 4,122,906

CLASS 179

1 CN 4,123,620
1 E 4,123,621
1 UW 4,123,622
6.3 R 4,123,623
15 AT 4,123,624
16 EA 4,123,625
170.2 4,123,626

CLASS 180

33 C 4,122,907
68 P 4,122,908
127 4,122,909

CLASS 181

144 4,122,910
199 4,122,911
218 4,122,912
256 4,122,913
258 4,122,914
284 4,122,915

CLASS 182

82 4,122,916
144 4,122,917
181 4,122,918

CLASS 187

29 R 4,122,919

CLASS 188

73.4 4,122,920
79.5 GE 4,122,921
267 4,122,922
285 4,122,923

CLASS 190

18 A 4,122,924
52 4,122,925

CLASS 192

18 A 4,122,926
48.8 4,122,927
56 R 4,122,928
70.18 4,122,929
84 C 4,122,930
106.2 4,122,931

CLASS 193

5 4,122,932
32 4,122,933
4,122,934

CLASS 194

4,122,935

CLASS 195

28 R 4,123,329

CLASS 198

339 4,122,936
408 4,122,937
411 4,122,938
482 4,122,939
504 4,122,940
774 4,122,941

CLASS 200

5 A 4,123,627
38 FB 4,123,628
51 R 4,123,629
52 R 4,123,630
4,123,631
61.27 4,123,632
61.86 4,123,633
67 A 4,123,634
148 A 4,123,636
4,123,637
148 F 4,123,635
153 G 4,123,638
254 4,123,639
296 4,123,640
340 4,123,641

CLASS 201

4 4,123,331
15 4,123,332

CLASS 202

255 4,123,333
262 4,123,334

CLASS 204

1 T 4,123,335
98 4,123,336
129.3 4,123,337
147 4,123,338
149 4,123,339
4,123,340
152 4,123,341
180 G 4,123,343
180 P 4,123,342
195 S 4,123,344
275 4,123,345
299 R 4,123,346

CLASS 206

5.1 4,122,942
221 4,122,943
303 4,122,949
349 4,122,944
395 4,122,945
523 4,122,946
569 4,122,947
622 4,122,948

CLASS 208

8 4,123,347
10 4,123,348
4,123,349
108 4,123,350
262 4,123,351

CLASS 209

12 4,122,950
545 4,122,951
546 4,123,352
551 4,122,953
579 4,122,952

CLASS 210

22 C 4,123,353
40 4,123,354
50 4,123,355
67 4,123,356
71 4,123,357
104 4,123,358
169 4,123,359
216 4,123,360
232 4,123,361
4,123,362
331 4,123,363
512 M 4,123,364
521 4,123,365

CLASS 211

126 4,122,955
131 4,122,956
133 4,122,954

CLASS 214

16.4 A 4,122,957
38 CC 4,122,958
140 4,122,960
313 4,122,961
394 4,122,962
512 4,122,963

CLASS 215

260 4,122,964
344 4,122,965

CLASS 219

10.55 R 4,123,643
10.57 4,123,644
10.59 4,123,642
69 W 4,123,645
137 R 4,123,646
216 4,123,647
521 4,123,648

CLASS 220

1.5 4,122,966
2.3 R 4,122,967
86 R 4,122,968
256 4,122,969
4,122,970
268 4,122,971
331 4,122,972
404 4,122,973

CLASS 221

13 4,122,974
173 4,122,975

CLASS 222

94 4,122,976
182 4,122,977
189 4,122,978
193 4,122,979
207 4,122,980
231 4,122,981
321 4,122,982
390 4,122,983

CLASS 224

2 D 4,122,984

CLASS 226

181 4,122,985
198 4,122,986

CLASS 227

10 4,122,987
53 4,122,988
67 Re.29,819
108 4,122,989

CLASS 228

2 4,122,990
13 4,122,991
176 4,122,992

CLASS 229

62.5 4,122,993

CLASS 235

89 R 4,122,994
92 PD 4,123,649
302 4,122,995
302.3 4,122,996
455 4,122,997
475 4,122,998

CLASS 236

11 4,122,999
4,123,000
49 4,123,001

CLASS 237

1 A 4,123,002
4,123,003

CLASS 239

266 4,123,006
310 4,123,004
327 4,123,005
414 4,123,007
568 4,123,008

CLASS 241

30 4,123,009

CLASS 242

68.3 4,123,010
78.1 4,123,011
85.1 4,123,012
107 4,123,013
152.1 4,123,014
191 4,123,015
201 4,123,016

CLASS 244

3.16 4,123,017
3.2 4,123,019
17.23 4,123,018
116 4,123,020
155 R 4,123,021

CLASS 245

10 4,123,022

CLASS 246

182 B 4,123,023

CLASS 248

214 4,123,024
303 4,123,025
316 E 4,123,026
327 4,123,027
425 4,123,028
453 4,123,029
478 4,123,030

CLASS 249

24 4,123,031
29 4,123,032
65 4,123,033
156 4,123,034

CLASS 250

201 4,123,650
203 R 4,123,651
204 4,123,652
231 SE 4,123,653
272 4,123,654
305 4,123,655
381 4,123,656
385 4,123,657
390 4,123,658
403 4,123,659
491 4,123,660
492 A 4,123,661
518 4,123,662
531 4,123,663
536 4,123,664
565 4,123,665

CLASS 251

146 4,123,035
180 4,123,036
367 4,123,037

CLASS 252

8.5 A 4,123,366
8.5 B 4,123,367
25 4,123,368
32.7 E 4,123,369
4,123,370
42.7 4,123,371
48.2 4,123,372
48.6 4,123,373
62.1 L 4,123,374
99 4,123,375
4,123,376
103 4,123,377
171 4,123,378
184 4,123,379
301.1 W 4,123,380
316 4,123,381
4,123,382
321 4,123,383
408 4,123,384
414 4,123,385
429 B 4,123,386
4,123,387
437 4,123,388
441 4,123,389
455 Z 4,123,390
466 PT 4,123,391
478 4,123,392
522 4,123,393
4,123,394
559 4,123,395

CLASS 254

2 R 4,123,038
9 C 4,123,039
166 4,123,040
195 4,123,041

CLASS 260

17.4 CL 4,123,398
17.4 GC 4,123,397
22 D 4,123,454
23 XA 4,123,399
4,123,400
23.7 M Re.29,821
29.1 SB 4,123,409
29.2 EP 4,123,402
4,123,403
29.4 R 4,123,404
29.6 AN 4,123,406
29.6 F 4,123,401
29.6 R 4,123,405
29.6 TA 4,123,407
4,123,408
30.6 R 4,123,410
30.8 DS 4,123,412
30.8 R 4,123,411
4,123,436
32.6 NR 4,123,413
38 4,123,414
40 R 4,123,415
42.18 4,123,416
42.46 4,123,417
45.8 NT 4,123,418
45.8 NZ 4,123,419
112 B 4,123,427
112 R 4,123,426
112.5 S 4,123,425
145 C 4,123,428
147 4,123,429
243.3 4,123,430
292 4,123,431
293.69 4,123,432
294.9 4,123,433
296 D 4,123,434
307 D 4,123,435
308 R 4,123,437
326.28 4,123,440
326.5 B 4,123,439
326.5 FN 4,123,438
345.2 4,123,441
346.75 4,123,442
347.4 4,123,443
347.8 4,123,444
348.12 4,123,445
439 R 4,123,446
4,123,447
449 M 4,123,448
453 AR 4,123,449
453 P 4,123,450
465 D 4,123,451
465 E 4,123,452
465.3 4,123,453
507 R 4,123,455
544 D 4,123,460
558 A 4,123,461
585 B 4,123,462
586 R 4,123,463
601 R 4,123,464
606.5 P 4,123,465
645 4,123,466
659 A 4,123,467
668 A 4,123,468
668 D 4,123,470
668 F 4,123,469
683.15 C 4,123,471
827 4,123,472
860 4,123,473
874 4,123,474
4,123,475
897 A 4,123,476
897 C 4,123,477
986 4,123,478

CLASS 261

44 B 4,123,479
52 4,123,480
81 4,123,481
91 4,123,482

CLASS 264

0.5 4,123,484
1 4,123,483
33 4,123,485
46.6 4,123,486
90 4,123,487
135 4,123,488
141 4,123,489
147 4,123,490
167 4,123,491
210 F 4,123,492
244 4,123,493
258 4,123,494
318 4,123,495
329 4,123,496

CLASS 266

44 4,123,042
158 4,123,043
255 4,123,044
275 4,123,045

CLASS 269

228 4,123,046
238 4,123,047

CLASS 270

77 4,123,048

CLASS 271

225 4,123,049

CLASS 272

8 N 4,123,052

CLASS 273

1 E 4,123,050
1 R 4,123,051
26 R 4,123,053
73 F 4,123,054
77 A 4,123,055
78 4,123,056
82 R 4,123,057
87 H 4,123,058
101 4,123,059
167 R 4,123,060
220 4,123,061
248 4,123,062

CLASS 274

1 R 4,123,063
4,123,064
9 B 4,123,065
10 C 4,123,066
37 4,123,067

CLASS 277

27 4,123,068
70 4,123,069
135 4,123,070
205 4,123,071
216 4,123,072
229 4,123,073

CLASS 279

19.5 4,123,074
121 4,123,075

CLASS 280

11.27 4,123,076
47.34 4,123,077
87.02 W 4,123,078
87.04 A 4,123,080
220 4,123,079
463 4,123,081
467 4,123,082
605 4,123,083
630 4,123,084
752 4,123,085

CLASS 282

11.5 A 4,123,086

CLASS 283

1 R 4,123,087

CLASS 285

14 4,123,088
39 4,123,089
4,123,090
4,123,091
187 4,123,092
189 4,123,093
405 4,123,094
409 4,123,095

CLASS 290

52 4,123,666
53 4,123,667

CLASS 292

216 4,123,096
336.3 4,123,097

CLASS 294

1 CA 4,123,098

CLASS 296

10 4,123,099

93 4,123,100

CLASS 297

58 4,123,101
270 4,123,102
305 4,123,103
391 4,123,104
451 4,123,105

CLASS 299

6 4,123,107
16 4,123,108
18 4,123,109
43 4,123,110

CLASS 301

35 BJ 4,123,112
37 TP 4,123,111

CLASS 302

2 R 4,123,113
53 4,123,114

CLASS 303

22 R 4,123,115
103 4,123,116
114 4,123,117
119 4,123,118

CLASS 305

39 4,123,119
41 4,123,120

CLASS 307

10 LS 4,123,668
205 4,123,669
254 4,123,670
270 4,123,671
303 4,123,672
326 4,123,673
351 4,123,674

CLASS 308

6 C 4,123,121
238 4,123,122

CLASS 310

49 R 4,123,675
52 4,123,676
4,123,677
217 4,123,678
266 4,123,679
320 4,123,680
322 4,123,681

CLASS 312

1 4,123,123
21 4,123,124
35 4,123,125
201 4,123,126
230 4,123,127
244 4,123,128
257 R 4,123,129
285 4,123,130

CLASS 313

54 4,123,682
156 4,123,683
205 4,123,684
218 4,123,685
230 4,123,686
484 4,123,687

CLASS 314

138 R 4,122,959

CLASS 315

58 4,123,688
209 R 4,123,689
258 4,123,690

CLASS 318

119 4,123,691
227 4,123,692
376 4,123,693
443 4,123,694
561 4,123,695
623 4,123,696

CLASS 322

2 A 4,123,697

CLASS 323

1 4,123,698

CLASS 324

29 4,123,700
30 B 4,123,701
58.5 A 4,123,702
58.5 B 4,123,703
78 Z 4,123,704
121 R 4,123,705
158 P 4,123,706
208 4,123,707
224 4,123,708

CLASS 325

38 A 4,123,710
38 B 4,123,709
62 4,123,711
137 4,123,712
455 4,123,713
4,123,714
464 4,123,715
4,123,716
470 4,123,717
474 4,123,718

CLASS 328

155 4,123,719
234 4,123,720

CLASS 330

69 4,123,721
85 4,123,722
311 4,123,723

CLASS 331

1 A 4,123,724
8 4,123,725
14 4,123,726
94 4,123,727
94.5 L 4,123,728
181 4,123,729

CLASS 333

26 4,123,730
30 R 4,123,731
70 R 4,123,732
70 T 4,123,733

CLASS 335

9 4,123,734

CLASS 336

30 4,123,735
120 4,123,736
239 4,123,177

CLASS 337

68 4,123,737
159 4,123,738
301 4,123,739

CLASS 338

67 4,123,740
121 4,123,741
137 4,123,742
322 4,123,743

CLASS 339

117 R 4,123,131
246 4,123,132
273 R 4,123,133

CLASS 340

15.5 TN 4,123,744
63 4,123,745
81 R 4,123,746
149 A 4,123,747
324 M 4,123,751
347 P 4,123,750
545 4,123,752
558 4,123,748
572 4,123,749
621 4,123,753

CLASS 343

17.1 R 4,123,755
615 SS 4,123,754
702 4,123,756
766 4,123,757
830 4,123,758
854 4,123,759

CLASS 346

75 4,123,760
140 R 4,123,761
155 4,123,762

CLASS 350

6.7 4,123,134
6.8 4,123,135
16 4,123,136
96.21 4,123,137
4,123,138
4,123,139
105 4,123,140
159 4,123,141
162 SF 4,123,142
171 4,123,143
222 4,123,144
269 4,123,145
285 4,123,146
4,123,147
293 4,123,148
294 4,123,149
4,123,150
301 4,123,151

CLASS 352

69 4,123,152
191 4,123,153

CLASS 353

26 R 4,123,699

CLASS 354

4 4,123,763
24 4,123,764
25 4,123,765
51 4,123,766
107 4,123,767
292 4,123,768
322 4,123,769
337 4,123,770

CLASS 355

3 SC 4,123,156
15 4,123,154
26 4,123,155
43 4,123,157

CLASS 356

32 4,123,158
38 4,123,159
75 4,123,160
99 4,123,161
106 LR 4,123,162
124 4,123,163
152 4,123,164
4,123,165
4,123,166
4,123,167
4,123,168
167 4,123,169
4,123,170
175 4,123,171
188 4,123,172
246 4,123,173

CLASS 357

23 4,123,771
27 4,123,772

CLASS 358

4 4,123,773
4,123,774
10 4,123,775
4,123,776
55 4,123,777
107 4,123,778
128 4,123,779
4,123,780
191 4,123,781
210 4,123,782
230 4,123,783

CLASS 360

6 4,123,785
35 4,123,786
74 4,123,787
77 4,123,788
96 4,123,789
100 4,123,784
111 4,123,790
130 4,123,791

CLASS 361

30 4,123,792

CLASS 362

350 4,123,793

CLASS 364

101 4,123,794
200 4,123,795
900 4,123,796

CLASS 365

118 4,123,797
205 4,123,799
237 4,123,798

CLASS 366

102 4,123,174
150 4,123,800
151 4,123,175
166 4,123,176
292 4,123,801
338 4,123,178

CLASS 400

328 4,123,182

CLASS 401

6 4,123,179

CLASS 403

172 4,123,180

CLASS 404

9 4,123,181
10 4,123,183
25 4,123,184

CLASS 405

76 4,123,185
142 4,122,683
150 4,122,682
261 4,122,681

CLASS 407

54 4,123,186

CLASS 408

17 4,123,187
4,123,188
21 4,123,189
25 4,123,190
42 4,123,191
133 4,123,192
202 4,123,193
221 4,123,194
241 R 4,123,195

CLASS 415

123 4,123,197
181 4,123,196

CLASS 416

243 4,123,198
244 A 4,123,199

CLASS 417

64 4,123,200
204 4,123,201
216 4,123,202
252 4,123,203
393 4,123,204

CLASS 418

127 4,123,205

CLASS 422

59 4,123,224
98 4,123,225
199 4,123,229
274 4,123,228

CLASS 423

2 4,123,497
4,123,498
35 4,123,499
4,123,500
152 4,123,501
230 4,123,502
300 4,123,503
446 4,123,504
564 4,123,505
566 4,123,506
573 G 4,123,507
580 4,123,508

CLASS 424

12 4,123,509
4,123,510
46 4,123,511
54 4,123,512
4,123,513
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4,123,516
57 4,123,517
78 4,123,518
88 4,123,519
92 4,123,520
116 4,123,522
121 4,123,521
177 4,123,523
180 4,123,524
200 4,123,525
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244 4,123,527
248.52 4,123,528
250 4,123,529
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251 4,123,532
4,123,533
253 4,123,534
256 4,123,535
258 4,123,536
263 4,123,537
267 4,123,538
270 4,123,539
272 4,123,540
4,123,541
273 R 4,123,542
274 4,123,543
4,123,544
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4,123,547
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4,123,549
275 4,123,550
279 4,123,551
311 4,123,552
4,123,553
324 4,123,554
330 4,123,555
341 4,123,556

CLASS 425

5 4,123,206
67 4,123,207
72 S 4,123,208
74 4,123,209
78 4,123,210
82.1 4,123,211
4,123,212
104 4,123,213
129 R 4,123,214
388 4,123,215
431 4,123,216
525 4,123,217
535 4,123,218

CLASS 426

105 4,123,557
268 4,123,558
312 4,123,559
509 4,123,560
600 4,123,561

CLASS 427

58 4,123,562
68 4,123,563
85 4,123,564
88 4,123,565
115 4,123,566
123 4,123,567
126 4,123,568
141 4,123,569
222 4,123,570
249 4,123,571
272 4,123,572
324 4,123,573
341 4,123,574
386 4,123,575

CLASS 428

35 4,123,576
95 4,123,577
206 4,123,578
264 4,123,579
304 4,123,580
318 4,123,581
335 4,123,582
336 4,123,583
379 4,123,584
4,123,585
391 4,123,586
407 4,123,587
412 4,123,588
425 4,123,589
450 4,123,590
454 4,123,591
532 4,123,592
535 4,123,593
651 4,123,594
667 4,123,595

CLASS 429

104 4,123,596
112 4,123,597
159 4,123,598

CLASS 431

353 4,123,220

CLASS 432

1 4,123,219
152 4,123,221

CLASS 521

123 4,123,599

CLASS 526

24 4,123,396
65 4,123,600
79 4,123,601
206 4,123,602
254 4,123,603

CLASS 528

31 4,123,604
60 4,123,605
65 4,123,421
71 4,123,423
127 4,123,420
273 4,123,422
337 4,123,424
499 4,123,606

CLASS 536

17 4,123,607
4,123,608
27 4,123,609
28 4,123,610

CLASS 542

421 4,123,611

CLASS 544

16 4,123,612
408 4,123,613

CLASS 560

254 4,123,614

CLASS 562

466 4,123,457
503 4,123,456
595 4,123,458
4,123,459

CLASS 568

712 4,123,615
861 4,123,616

CLASSIFICATION OF DESIGNS

D2—	208	250,066	D7—	105	250,080	14—	60	250,109		143	250,106	D16—	06	250,120	D30—	35	250,139
	232	250,067		136	250,081	D10—	64	250,094		146	250,107			250,121		37	250,138
D4—	08	250,068		152	250,082			250,095	D13—	17	250,110	D19—	77	250,122	D33—	9 C	250,140
	35	250,069	D8—	10	250,083			250,096	D14—	53	250,111	D23—	2	250,123	D34—	5 GH	250,136
D6—	25	250,070		68	250,084		65	250,097		60	250,108		4	250,124		5 K	250,135
	48	250,071		72	250,085		83	250,098		86	250,112		40	250,125		5 SS	250,133
	56	250,072		91	250,086		121	250,099	D15—	9	250,113		51	250,126		5 ST	250,134
		250,074		346	250,087	D11—	90	250,100		30	250,114		97	250,127		15 C	250,137
	66	250,073		355	250,088		119	250,101		52	250,115	D24—	21	250,128	D48—	24 A	250,141
	67	250,075		396	250,089		164	250,102		69	250,116		56	250,129		38	250,142
	90	250,076	D9—	168	250,090	D12—	60	250,103		90	250,117	D28—	8	250,131	D52—	2 A	250,143
	16	250,077		179	250,091			250,104		123	250,118		46	250,130	D64—	11 R	250,144
	72	250,078		192	250,092		112	250,105		138	250,119		64	250,132	D73—	1 R	250,145
	78	250,079		245	250,093												

CLASSIFICATION OF PLANTS

P—	47	4,329	74	4,326		4,328	75	4,327			

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Canal Zone	7	Minnesota	27	Tennessee	47
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Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
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Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 4,122,991	4,122,553	4,123,542	13 : 4,122,567	4,123,430	4,123,499
4,123,165	4,122,564	4,123,605	4,122,639	4,123,468	4,123,585
2 : 4,123,061	4,122,569	4,123,614	4,122,648	4,123,488	4,123,710
4 : 4,123,799	4,122,590	4,123,623	4,122,889	4,123,489	4,123,719
5 : 4,122,984	4,122,592	4,123,661	4,123,082	4,123,581	4,123,757
4,123,034	4,122,604	4,123,683	4,123,092	4,123,597	25 : Re.29,819
6 : 4,122,638	4,122,631	4,123,689	4,123,213	4,123,639	4,122,573
4,122,640	4,122,666	4,123,697	4,123,584	4,123,646	4,122,600
4,122,663	4,122,671	4,123,703	17 : 4,122,606	4,123,674	4,122,602
4,122,725	4,122,699	4,123,706	4,122,607	4,123,745	4,122,603
4,122,726	4,122,751	4,123,728	4,122,609	4,123,796	4,122,617
4,122,742	4,122,759	4,123,785	4,122,613	4,123,797	4,122,721
4,122,746	4,122,771	4,123,789	4,122,633	18 : 4,122,646	4,122,782
4,122,754	4,122,796	4,123,791	4,122,644	4,122,668	4,122,794
4,122,862	4,122,803	4,123,800	4,122,675	4,122,670	4,122,830
4,122,874	4,122,810	08 : 4,122,585	4,122,720	4,122,736	4,122,887
4,122,947	4,122,815	4,122,870	4,122,733	4,122,750	4,122,904
4,123,007	4,122,816	4,122,937	4,122,749	4,122,890	4,122,942
4,123,102	4,122,828	4,123,093	4,122,758	4,122,911	4,122,973
4,123,134	4,122,833	4,123,155	4,122,780	4,123,010	4,122,978
4,123,135	4,122,847	4,123,270	4,122,820	4,123,072	4,123,002
4,123,138	4,122,853	4,123,591	4,122,821	4,123,105	4,123,063
4,123,184	4,122,875	4,123,610	4,122,851	4,123,266	4,123,126
4,123,255	4,122,901	4,123,722	4,122,856	4,123,294	4,123,141
4,123,431	4,122,912	09 : Re.29,820	4,122,867	4,123,301	4,123,160
4,123,435	4,122,950	4,122,574	4,122,868	4,123,402	4,123,163
4,123,467	4,122,964	4,122,622	4,122,876	4,123,413	4,123,177
4,123,495	4,122,980	4,122,788	4,122,893	4,123,415	4,123,192
4,123,507	4,122,988	4,123,212	4,122,903	4,123,612	4,123,236
4,123,550	4,122,995	4,123,466	4,122,908	4,123,716	4,123,267
4,123,622	4,123,003	4,123,737	4,122,926	4,123,729	4,123,289
4,123,773	4,123,020	4,123,739	4,122,932	4,123,775	4,123,567
4,123,774	4,123,029	10 : 4,122,711	4,122,936	4,123,776	4,123,583
4,123,790	4,123,035	4,123,379	4,122,959	19 : 4,122,704	4,123,588
8 : 4,123,598	4,123,047	4,123,546	4,122,961	4,122,966	4,123,619
9 : 4,122,943	4,123,060	4,123,603	4,122,974	4,123,552	4,123,630
4,122,992	4,123,080	11 : 4,123,355	4,123,028	20 : 4,122,731	4,123,651
4,123,122	4,123,095	12 : 4,122,618	4,123,055	4,123,038	4,123,696
4,123,149	4,123,097	4,122,752	4,123,089	21 : 4,122,695	4,123,698
4,123,175	4,123,162	4,122,776	4,123,090	4,122,739	4,123,700
4,123,284	4,123,183	4,122,799	4,123,119	4,122,779	4,123,750
4,123,586	4,123,204	4,122,829	4,123,158	4,122,983	4,123,759
01 : 4,122,737	4,123,229	4,122,844	4,123,179	4,123,027	4,123,798
4,122,877	4,123,232	4,122,869	4,123,181	22 : 4,123,107	26 : 4,122,563
4,122,945	4,123,251	4,122,917	4,123,201	4,123,125	4,122,580
4,123,168	4,123,295	4,122,944	4,123,203	4,123,320	4,122,586
4,123,727	4,123,310	4,122,998	4,123,209	4,123,350	4,122,596
04 : 4,122,647	4,123,396	4,123,017	4,123,234	23 : 4,123,306	4,122,629
4,122,827	4,123,404	4,123,019	4,123,249	24 : 4,122,793	4,122,637
4,123,098	4,123,409	4,123,024	4,123,268	4,122,834	4,122,641
4,123,680	4,123,442	4,123,033	4,123,335	4,122,845	4,122,687
4,123,715	4,123,498	4,123,053	4,123,359	4,122,900	4,122,705
06 : 4,122,552	4,123,526	4,123,150	4,123,361	4,123,230	4,122,732

4,122,755
4,122,760
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28 : 4,123,140
29 : 4,122,566
4,122,571
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30 : 4,122,767
31 : 4,123,717
32 : 4,122,579
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33 : 4,122,614
4,123,675
34 : Re.29,821
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35 : 4,122,678
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36 : Re.29,818
4,122,556
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4,123,669
4,123,677
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37 : 4,122,555
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38 : 4,122,960
39 : 4,122,558
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